Member IMC Group Tungaloy

ACCELERATED MACHINING



General Catalog

2017 / 2018


tungaloy



Member IMC Group Tungaloy

In an accelerated world, a quick response to market needs is necessary. As a pioneer in innovation, **Tungaloy** leads the market in developing unique and powerful grades and geometries for this new era. TUNGFORCE, our newest line of products is designed for accelerated machining, bringing you the newest and greatest solutions for your machining needs.

Member IMC Group Tungaloy

2017 / 2018

full product line



www.tungaloy.com

Grade A

Coated Grade CVD	A002
Coated Grade PVD	A003
Ceramic	A005
Cermet	A005
CBN (T-CBN)	A006
PCD (T-DIA)	A007
Uncoated Cemented Carbide	A007

TurnLine B

Insert	B002
External Toolholder	B180
Internal Toolholder	B262
Miniature Machining	B318
Threading	B376

GrooveLine C

Parting, Grooving, and Groove-Turn system	C002

MillLine D

High-Feed Milling	D002
Shoulder Milling	D032
Face Milling	D118
Slot Milling	D172
Profile Milling	D188
Multi-Functional Milling	D224
Milling Insert	D315

DrillLine E

Full Effective Drill	E004
Indexable Drill	E070
Deep Hole Drill	E102

ToolLine F

Tooling System	F002

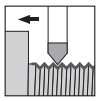
User´s Guide G

Parts for Tool	G002
Technical Reference	G029
Alphanumeric Index	G084

Introduction

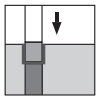
Icons in the chart section for each product

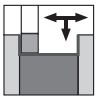
Threading

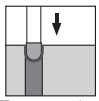

Ext. threading


Int. threading

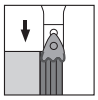
Grooving

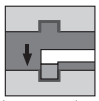

Ext. grooving


Ext. grooving and turning


Ext. grooving (full R)

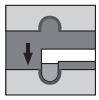

Ext. grooving and turning (full R)

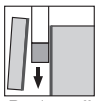

Forming

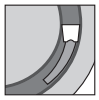

Int. grooving


Int. grooving and turning

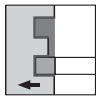

Int. grooving and turning (full R)

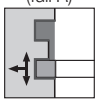

Int. grooving (full R)


Parting-off


Face grooving


Face grooving and turning


Int. face grooving


Int. face grooving and turning


Face grooving for shaft

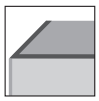
Milling


Shoulder milling


Deep shoulder milling



Shoulder milling (with radius)


Face milling

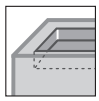

Slotting

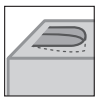


Slotting (with radius)


Side slotting


Side milling

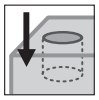

Pocketing


Ramping


Profiling


Plunging

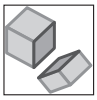

Hole enlarging


Holemaking

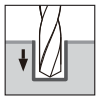

Counterboring

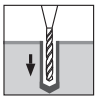

Hole chamfering


Chamfering


Cutting-off

Drilling


Drilling


Small-diameter drilling


Deep-hole drilling


Hole chamfering



Tool kit

Oil hole

Oil hole for high-pressure

Icons in column on the right/left side of the page

Turning

Ext. toolholder

Int. toolholder

Miniature tool

Threading tool

Grooving, turning, and parting-off

Grooving, turning, and parting-off tool

Milling

High-feed milling

Shoulder milling

Face milling

Slot milling

Profile milling

Multi-functional milling

Drilling

2-effective drill

Indexable drill

Deep hole drill

Tooling system

Tooling system

Introduction

Note in using this catalog:

★ This catalog provides the information of Tungaloy's cutting tools as of November 2016.

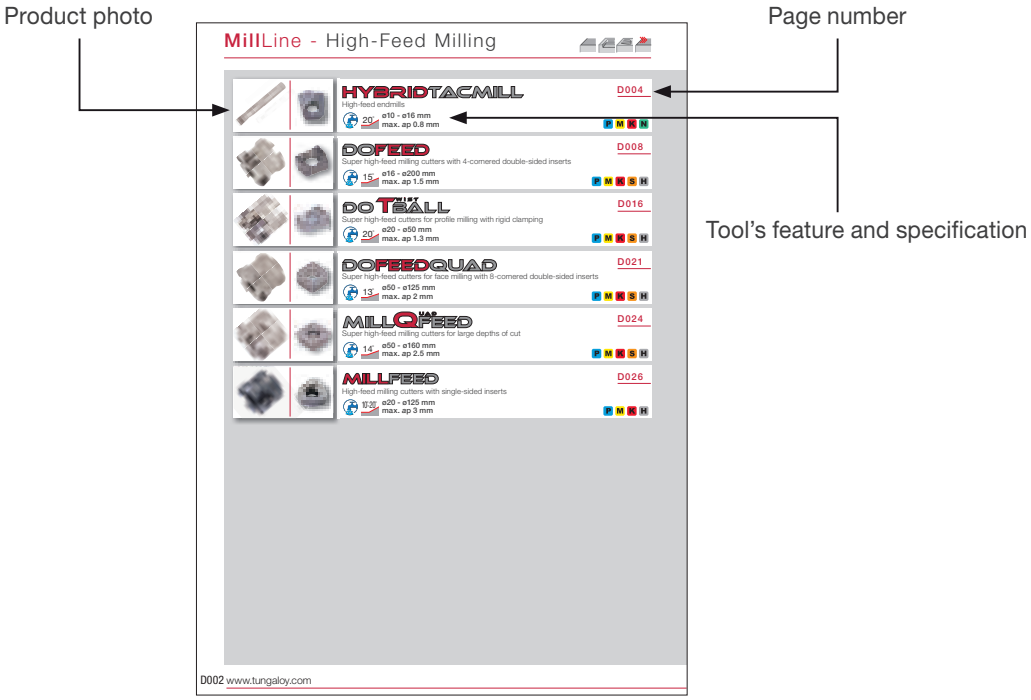
★ Our products are being modified for further improvement, and the specifications are subject to change without prior notice. Also, the products may be discontinued in the future due to the development of new products.

★ The dimensions of all products are shown in millimeters (mm).

★ For indexable tools, such as toolholders, cutters, drill bodies, applicable inserts or heads need to be ordered separately.

How to find a tool:

★ The catalog classifies the cutting tools into 5 lines – TurnLine (turning tools), GrooveLine (grooving tools), MillLine (milling tools), DrillLine (drilling tools), and ToolLine (tooling systems). The tools in each line are categorized by the applications.



Example: Contents of the cutters for high-feed milling in MillLine

★ Alphanumeric index in User's Guide helps you search a specific product.

How to read the list for the standard items:

★ Designations for indexable tools – toolholders, cutters, drill bodies, etc.

· Orders are to be received for the tools with the designations in the catalog.

· For the tool with right- and left-hand options, the designation includes **R/L** as shown below.

Ex. 1: Designation: A16Q-STFP**R/L**13-D180

You can order both right- and left-hand tools. A16Q-STFP**R**13-D180 (a right-hand tool) and A16Q-STFP**L**13-D180 (a left-hand tool) will be available.

Ex. 2: Designation: A20R-STFP**R**13-D220

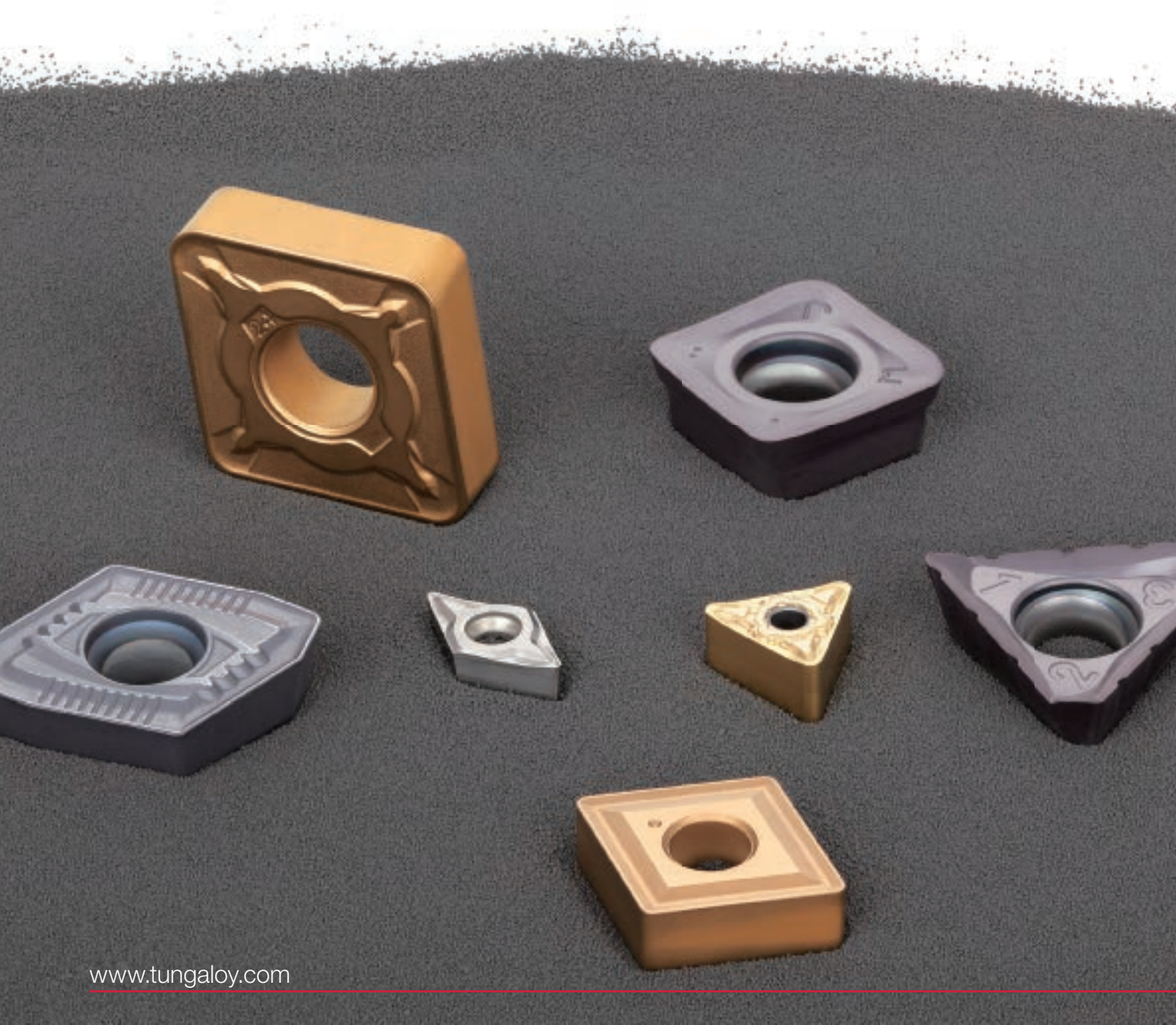
You can order only right-hand tools. Please contact us when you need left-hand tools.

★ Line-up for inserts and solid tools

● : Orders will be always received for the product.

Blank : Please contact us regarding the product.

Grade



GRADE

Coated Grade CVD A002

Coated Grade PVD A003

Ceramic A005

Cermet A005

CBN (T-CBN) A006

PCD (T-DIA) A007

Uncoated Cemented Carbide A007

CVD - Coated Grade

Grade	Coating		Application	Feature	Turning	Grooving	Milling	Drilling
	Main composition	Thickness / µm						
T9105 P01 - P10 K10 - K20	TiCN-Al_2O_3	16	P K	- Good wear resistance - Excellent performance in high-speed cutting	■			
T9115 P10 - P20 K15 - K30	TiCN-Al_2O_3	16	P K	- Well-balanced between wear and chipping resistance - Suitable for a wide range of turning applications	■			
T9125 P20 - P30	TiCN-Al_2O_3	16	P	- High chipping resistance in light to medium interrupted cutting - First choice for machining steel	■	■		
T9135 P30 - P40	TiCN-Al_2O_3	16	P	- Excellent fracture resistance in heavy interrupted cutting	■			
T6120 P10 - P20 M10 - M20	TiCN	6	P M	- Good wear resistance in continuous cutting at high speed	■			
T6130 P15 - P30 M15 - M30	TiCN	6	P M	- High wear resistance in cutting at medium to high speed - First choice for machining stainless steel	■			
T515 K10 - K20	TiCN-Al_2O_3	16	K	- Good wear resistance even in high-speed machining - First choice for roughing cast iron	■			
T5105 K05 - K15	TiCN-Al_2O_3	16	K	- High resistance to wear and plastic deformation in continuous cutting at high speed	■			
T5115 K10 - K20	TiCN-Al_2O_3	16	K	- Stable machining in a wide range of applications from continuous to interrupted cutting	■			
T5125 K15 - K30	TiCN-Al_2O_3	16	K	- Strong resistance to sudden fracture - Ideal for heavy interrupted machining	■			
T313V -	TiCN-Al_2O_3	3	Threading	- Good resistance to plastic deformation - Designed for threading	■			
T3225 P20 - P35 M20 - M35	TiCN-Al_2O_3	10	P M	- High chipping and fracture resistance - Suitable for machining steel and stainless steel			■	
T3130 P20 - P40 M20 - M40	TiCN-Al_2O_3	6	P M	- Good balance between wear and chipping resistance - Ideal for machining steel and stainless steel			■	
T1215 K10 - K25	TiCN-Al_2O_3	10	K	- Good balance between wear and chipping resistance - Designed for machining cast iron			■	
T1115 K10 - K25	TiCN-Al_2O_3	11	K	- High wear resistance - Ideal for machining cast iron			■	

PVD - Coated Grade

Grade	Coating: Main composition	Coating: Thickness / μm	Application	Feature	Turning	Grooving	Milling	Drilling
AH110 P05 - P15 M05 - M15 K10 - K25 S05 - S15	(Ti, Al)N	3	P M K S	- High wear resistance - Suitable for finishing steel, cast iron, and high-hardened material	■		■	
AH120 P15 - P25 M15 - M25 K15 - K30 S10 - S25	(Ti, Al)N	3	P M K S	- Good balance between wear and fracture resistance - Suitable for machining steel, stainless steel, and cast iron under general cutting conditions	■	■	■	■
AH130 P25 - P40 M25 - M40	(Ti, Al)N	3	P M	- High chipping and fracture resistance - Designed for machining austenitic stainless steel under general cutting conditions			■	
AH140 M30 - M45	(Ti, Al)N	3	M	- High fracture resistance - Suitable for machining stainless steel			■	
AH170 P20 - P35 M20 - M35 K15 - K30	(Ti, Al)N	3	P M K	- High wear resistance - Suitable for steel and cast iron drilling				■
AH180 P20 - P35 M20 - M35 K15 - K30	(Ti, Al)N	3	P M K	- High wear resistance - Suitable for steel and cast iron, stainless drilling				■
AH330 P15 - P30	(Ti, Al)N	3	P	- Excellent wear resistance	■		■	
AH630 P15 - P30 M15 - M30	(Ti, Al)N	5	P M	- Good resistance to wear and fracture in machining stainless steel at low to medium cutting speed	■			
AH645 P30 - P40 M30 - M40	(Ti, Al)N	5	P M	- High fracture resistance in machining stainless steel	■			
AH710 P05 - P15 K05 - K15 H05 - H15	(Ti, Al)N	3	P K H	- High wear resistance - Ideal for finishing cast iron and high-hardened material	■	■	■	
AH725 P15 - P30 M15 - M30 K25 - K30 S15 - S25	(Ti, Al)N	2	P M K S	- Good balance between wear and chipping resistance - Suitable for machining steel and stainless steel under general cutting conditions	■	■	■	■
AH7025 P20 - P30 M20 - M30 S15 - S25	(Ti, Al)N	3.5	P M K	- Excellent wear resistance and high rigidity - First choice for grooving of various materials		■		
AH730 P15 - P30	(Ti, Al)N	3	P	- Well-balanced between wear and fracture resistance	■		■	
AH740 P25 - P40	(Ti, Al)N	3	P	- Excellent chipping resistance in machining steel				■
AH750 H15 - H30	(Ti, Al)N	3	H	- High wear resistance - Suitable for hard material machining			■	
AH8005 M01 - M10 S01 - S10	(Al,Ti)N	3.5	M S	- Good balance between wear and fracture resistance - First choice for machining heat-resistant alloys under general cutting conditions	■			
AH8015 M10 - M20 S10 - S20	(Al,Ti)N	3.5	M S	- Strong resistance to wear and built-up edge	■			
AH905 S01 - S10	(Al, Ti)N	1.5	S	- Strong resistance to wear and built-up edge	■	■		

PVD - Coated Grade

Grade	Coating: Main composition	Coating: Thickness / µm	Application	Feature	Turning	Grooving	Milling	Drilling
AH3035 P20 - P45 H20 - H30	(Ti, Al)N	5	P H	- Good balance between wear and chipping resistance - Suitable for machining high-hardened material at high feed			■	
AH3135 P30 - P40 M30 - M40	(Ti, Al)N	4	P M	- High fracture resistance - Ideal for machining steel and stainless steel under general cutting conditions			■	
AH4035 M30 - M45	(Ti, Al)N	5	M	- Good balance for wear and fracture resistance - Suitable for difficult stainless steel machining			■	
AH6030 M25 - M35 S15 - S30	(Ti, Al)N	5	M S	- High fracture resistance - Ideal for drilling stainless steel and heat-resistant alloys under general cutting conditions				■
AH9030 P15 - 35 K10 - 25	(Ti, Al)N	5	P K	- High wear resistance - Designed for drilling steel and cast iron at high speed				■
SH725 P20 - P30 M20 - M30	(Ti, Al)N	2	P M	- Excellent wear resistance - Suitable for machining steel and stainless steel	■	■		
SH730 P20 - P35 M20 - M35 S05 - S15	(Ti, Al)N	1	P M S	- High wear resistance - Suitable for machining steel, stainless steel, and difficult-to-cut materials	■	■		
GH110 K10 - K25 N05 - N15	Ti(C, N, O)	3	K N	- Good wear resistance	■		■	
GH130 P25 - P40 M25 - M40 K25 - K40	Ti(C, N, O)	3	P M K	- High chipping and fracture resistance - Suitable for machining steel, stainless steel and cast iron		■	■	■
GH330 P15 - P30 M15 - M30 K05 - K30	Ti(C, N, O)	3	P M K	- Strong resistance to wear and fracture - Suitable for continuous to medium interrupted cutting	■	■	■	
GH730 P20 - P35 M20 - M35 K20 - K30	Ti(C, N, O)	3	P M K	- High wear resistance - Ideal for turning and grooving at low speed	■	■		
J740 -	TiN	1	For small lathes	- Ultra-fine-grain cemented carbide coated with TiN-based compound	■	■		
YH170 P20 - P35 M20 - M35	Ti(C, N)	1.5	P M	- Strong resistance to wear and fracture - Suitable for steel and stainless drilling				■
YH180 P20 - P35 M20 - M35	Ti(C, N)	1.5	P M	- High wear resistance - Suitable for steel and stainless drilling				■
JM10 P20 - P35 M20 - M35	TiN	1	P M	- High wear resistance - Suitable for steel and stainless drilling				■
DS1100 N05 - N20	DLC coating	Thin layer	N	- High wear resistance - Designed for finishing aluminium			■	
DS1200 N10 - N25	DLC coating	Thin layer	N	- Good balance between wear and chipping resistance - Ideal for semi-finishing to finishing of aluminium			■	

Ceramic

Grade	Specific gravity	Hard-ness (HRA)	T.R.S. (GPa)	Application	Feature	Turning	Grooving	Milling	Drilling
LX11	4.35	94.0	0.9	H	- Alumina base - Suitable for continuous cutting of high-hardened materials	■			
LX21	4.24	94.0	0.8	K	- Alumina base - Excellent chipping resistance in continuous cutting of cast iron	■			
FX105	3.24	93.0	1.3	K	- Silicon nitride base - Suitable for high-speed machining of cast iron	■		■	
CX710	3.20	92.9	1.1	K	- Silicon nitride base - Excellent performance in high-speed machining of cast iron	■			

Cermet

Grade	Coating		Application	Feature	Turning	Grooving	Milling	Drilling
	Main composition	Thickness / µm						
GT9530	Ti(C, N, O)	3	P K	- High wear resistance - Ideal for finishing with high surface quality	■			
J9530	TiN	1	For small lathes	- Suitable for small-part machining	■	■		
NS9530	Uncoated	-	P K	- High fracture resistance - Suitable for finishing to medium cutting of steel	■	■		
NS740	Uncoated	-	P	- Good resistance to fracture and thermal crack - Ideal for milling operations that require high rigidity			■	
NS520	Uncoated	-	P K	- Good wear resistance	■			
GT720	Ti(C, N, O)	3	P K	- Good wear resistance in high speed machining	■			
X407	Uncoated	-	P	- Good wear resistance for finish on dry machining	■		■	
N308	Uncoated	-	P	- Good wear resistance			■	

CBN (T-CBN)

Grade	Hardness (Hv)	T.R.S. (GPa)	Application	Feature	Turning	Grooving	Milling	Drilling
BXA20	3300 ~ 3500	1.30 ~ 1.50	H	- Excellent performance in machining hardened steel	■			
BXM10	2700 ~ 2900	0.80 ~ 0.90	H	- Suitable for machining hardened steel with continuous cutting at high speed	■			
BXM20	3500 ~ 3700	1.35 ~ 1.50	H	- First choice for machining hardened steel in a wide range of applications	■			
BXC50	3500 ~ 3700	1.15 ~ 1.30	H	- High fracture resistance in continuous to interrupted machining	■			
BX310	2700 ~ 2900	0.80 ~ 0.90	H	- Good wear resistance - Designed for continuous cutting of hardened steel at high speed	■			
BX330	2800 ~ 3000	0.85 ~ 0.95	H	- Excellent sharpness - Designed for finishing hardened steel	■			
BX360	3200 ~ 3400	1.00 ~ 1.10	H	- Suitable for general-purpose machining of hardened steel	■	■		
BX380	3500 ~ 3700	1.15 ~ 1.30	H	- High fracture resistance - Suitable for heavy interrupted cutting of hardened steel	■			
BX530	2800 ~ 3000	0.85 ~ 0.95	H	- Suitable for finishing hardened steel with high surface quality	■			
BXC90 (BX90S)	3900 ~ 4100	1.80 ~ 1.90	K	- Suitable for machining cast iron at high speed	■		■	
BX910	2600 ~ 2800	0.80 ~ 0.90	K	- Excellent wear resistance in high-speed machining - Ideal for machining centrifugally cast iron	■		■	
BX930	3000 ~ 3200	0.95 ~ 1.20	K	-Designed for machining ductile cast iron	■			
BX950	3900 ~ 4100	1.80 ~ 1.90	K S	- High fracture resistance - Good performance in high-speed machining	■		■	
BX850	3300 ~ 3500	0.75 ~ 0.85	K H	- High fracture resistance in machining cast iron - Suitable for hardened steel finish milling	■		■	
BX870	3000 ~ 3200	0.95 ~ 1.20	K	- High wear resistance - Suitable for machining cylinder liners made of cast iron	■		■	
BX470	4100 ~ 4300	1.90 ~ 2.10	Sintered metal	- Excellent sharpness - Suitable for machining ferrous sintered metal	■			
BX480	4100 ~ 4300	1.90 ~ 2.10	Sintered metal	- Hardest grade of all T-CBN grades - Suitable for machining ferrous sintered metal	■			
M714B	3000 ~ 3200	1.00 ~ 1.10	S	- High wear resistance and thermostability - Good performance in high-speed machining of Inconel	■			

PCD (T-DIA)

Grades	Grain size (μm)	Hard-ness (Hv)	T.R.S. (GPa)	Application	Feature	Turning	Grooving	Milling	Drilling
DX110	< 1	8500	1.8	N	- Excellent sharpness for high surface quality - Suitable for finishing non-ferrous metal and nonmetal				
DX120	4.5	9000	1.8	N	- Suitable for precision machining of non-ferrous metal and nonmetal				
DX140	12.5	10000	1.7	N	- High wear resistance - Suitable for machining non-ferrous metal and nonmetal				
DX160	28	11000	1.6	N	- Designed for machining ceramic, cemented carbide, and nonmetal				
DX180	45	12000	1.5	N	- High wear resistance - Designed for ceramic, cemented carbide, and nonmetal				

Uncoated Cemented Carbide

Grades	Specific gravity	Hard-ness (HRA)	T.R.S. (GPa)	Application	Turning	Grooving	Milling	Drilling
UX30 P30 M30	12.6	91.1	2.3	P M				
TH10 P10 M10 K10 N10	14.7	92.0	2.4	P M K N				
KS05F K05 S05 N05	15.0	93.0	2.9	K S N				
KS15F N15	14.4	91.5	3.0	N				
KS20 K20 N20 S20	14.5	90.8	2.8	K S N				
TH03 P05 M05 K05 N05	13.8	93.8	1.9	P M K N				
F	14.9	93.4	2.5	P K				
EM10 P10 - P25 K10 - K25	14	91.5	3.4	P K				

Grades	Specific gravity	Hard-ness (HRA)	T.R.S. (GPa)	Application	Turning	Grooving	Milling	Drilling
UM K10 - K25 N10 - N25	13.9	90.9	3.5	K N				
G2 K10 - K25 N10 - N25	15	90.8	2.7	K N				
G1F P10 - P25 K10 - K25	15.1	92	2.6	P K				
MD10 P10 - P25 M10 - M25	15	92.8	3.4	P M				
MD20 P20 - P35 M20 - M35	14.4	91.5	3.9	P M				

TurnLine

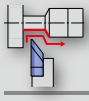


TURNING

 Insert B002

 External Toolholder B180

 Internal Toolholder B262

 Miniature Machining B318

 Threading B376



Negative type

Coated grades CVD/PVD, Cermet, Uncoated cemented carbides, Ceramic

B050



Posivite type

Coated grades CVD/PVD, Cermet, Uncoated cemented carbides, Ceramic

B104



CBN/PCD Insert

CBN (T-CBN), PCD (T-DIA)

B158


08

TurnLine - Designation system for Insert

● Conforms to “Indexable Inserts for Cutting Tools - Designation” (JIS B4120-1998, and ISO 1832 / AM1-1998)

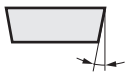
① Shape

Symbol	Shape	Nose angle (degree)	Figure
H	Hexagonal	120°	
O	Octagonal	135°	
P	Pentagonal	108°	
S	Square	90°	
T	Triangular	60°	
C	Rhombic	80°	
D		55°	
E		75°	
F		50°	
G	G-shape (Tungaloy's symbol)	70°	
M	Rhombic	86°	
V		35°	
Y	Y-shape (Tungaloy's symbol)	25°	
W	Trigon	80°	
L	Rectangular	90°	
A	Parallelogram	85°	
B		82°	
K		55°	
R	Round	-	

Notes : With respect to the nose angles of rhombic and parallelogram shaped inserts, use the smaller angle respectively.

② Relief angle

Symbol	Relief angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
O	Others
X	Special



③ Accuracy

Symbol (class)	Tolerance (mm)		
	Corner height (m)	Thickness (s)	I. C. dia. (ød)
A	±0.005	±0.025	±0.025
F	±0.005	±0.025	±0.013
C	±0.013	±0.025	±0.025
H	±0.013	±0.025	±0.013
E	±0.025	±0.025	±0.025
G	±0.025	±0.13	±0.025
J	±0.005	±0.025	±0.005 ~ ±0.13
K	±0.013	±0.025	±0.05 ~ ±0.13
L	±0.025	±0.025	±0.05 ~ ±0.13
M	±0.08 ~ ±0.18	±0.13	±0.05 ~ ±0.13
N	±0.08 ~ ±0.18	±0.025	±0.05 ~ ±0.13
U	±0.13 ~ ±0.38	±0.13	±0.08 ~ ±0.25

	①	②	③	④	⑤
[Example]	T	N	M	G	16
[Example]	C	C	G	T	09

④ Groove and hole

Symbol	Hole	Shape of hole	Chip-breaker	Shape
N	Without	-	Without	
R			Single-sided	
F			Double-sided	
A	With	Cylindrical hole	Without	
M			Single-sided	
G			Double-sided	
W		Partly cylindrical hole, single-side 40° ~ 60° Counter sink	Without	
T			Single-sided	
Q		Partly cylindrical hole, double-side 40° ~ 60° Counter sink	Without	
U			Double-sided	
B		Partly cylindrical hole, single-side 70° ~ 90° Counter sink	Without	
H			Single-sided	
C		Partly cylindrical hole, double-side 70° ~ 90° Counter sink	Without	
J			Double-sided	
X	-	-	-	

⑤ Cutting edge length

* R		S		C		W		T		D		V		K		I. C.dia. (mm)
Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	Symbol	Length	
		03	3.97	03	4.0			06	6.9	04	4.8					3.97
		04	4.76	04	4.8			08	8.2	05	5.8	08	8.3			4.76
*05	5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	5
		05	5.56	05	5.6	03	3.8	09	9.6	06	6.8					5.56
*06	6	–	–	–	–	–	–	–	–	–	–	–	–	–	–	6
		06	6.35	06	6.5	04	4.3	11	11	07	7.8	11	11.2			6.35
		07	7.94	08	8.1	05	5.4	13	13.8	09	9.7					7.94
*08	8	–	–	–	–	–	–	–	–	–	–	–	–	–	–	8
09	9.525	09	9.525	09	9.7	06	6.5	16	16.5	11	11.6	16	16.6	16	19.7	9.525
*10	10	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10
*12	12	–	–	–	–	–	–	–	–	–	–	–	–	–	–	12
12	12.7	12	12.7	12	12.9	08	8.7	22	22	15	15.5	22	22.1			12.7
15	15.875	15	15.875	16	16.1	10	10.9	27	27.5	19	19.4					15.875
*16	16	–	–	–	–	–	–	–	–	–	–	–	–	–	–	16
19	19.05	19	19.05	19	19.3	13	13	33	33	23	23.3					19.05
*20	20	–	–	–	–	–	–	–	–	–	–	–	–	–	–	20
		22	22.225	22	22.6			38	38.5	27	27.1					22.225
*25	25	–	–	–	–	–	–	–	–	–	–	–	–	–	–	25
25	25.4	25	25.4	25	25.8			44	44	31	31					25.4
31	31.75	31	31.75	32	32.2			55	55	38	38.8					31.75
*32	32	–	–	–	–	–	–	–	–	–	–	–	–	–	–	32

*When M0 is included in Designation, the inscribed-circle diameter is metric size.

● Detailed accuracy for J,K,L,M,N and U classes

For inserts with nose corner angles larger than 55°

Unit: mm

Inscribed circle	Tolerance on inscribed circle dia. (ød)		Tolerance on corner height (m)		Insert shapes applied
	J,K,L,M,N (class)	U (class)	J,K,L,M,N (class)	U (class)	
6.35	±0.05	±0.08	±0.08	±0.13	H W O R P S T C,E,M
9.525					
12.7	±0.08	±0.13	±0.13	±0.2	
15.875	±0.1	±0.18	±0.15	±0.27	
19.05					
25.4	±0.13	±0.25	±0.18	±0.38	
31.75	±0.15	±0.25	±0.2	±0.38	
32					

For M-type inserts with nose corner angles of 55° (Shape: D), 35° (Shape: V), 25° (Shape: Y)

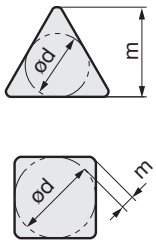
Unit: mm

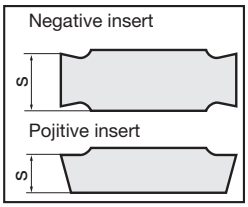
Inscribed circle	Tolerance on inscribed circle dia. (ød)	Tolerance on corner height (m)	Insert shapes applied
6.35	±0.05	±0.11	D
9.525			
12.7	±0.08	±0.15	
15.875	±0.1	±0.18	
19.05			
6.35	±0.05	±0.16	V
9.525			Y

Note on insert thickness

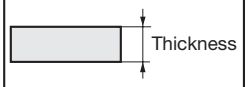
With regard to the insert thickness for chipbreaker inserts, the thickness (s) drawn in the outlined insert shapes on pages XX to XX is defined as "s" (height from the bottom face to the cutting edge) shown in the figure at right.

Inscribed circle (ød)
Corner height (m)





Symbol	Thickness (mm)
X1	1.39
01	1.59
T1	1.98(1.79)
02	2.38
T2	2.78
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35
07	7.94
09	9.52



⑥ Thickness

Insert

[Example]

⑥	⑦				⑩
04	08			-	TM
T3	04	F	N	-	JS
⑥	⑦	⑧	⑨		⑩

(Optional symbol) (Optional symbol) (Supplementary symbol)

⑦ Corner radius



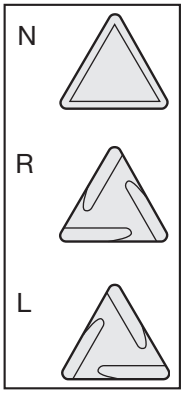
Symbol	Corner radius r_ε (mm)
00	0.03
02	0.2
04	0.4
08	0.8
12	1.2
16	1.6
20	2.0
24	2.4
28	2.8
32	3.2

⑧ Symbols of major cutting edge

Symbol	Condition of cutting edge	Shape
F	Sharp edge	
E	Honed rounded edge	
W.T	Honed chamfered edge	
S	Combination honed edge	

⑨ Hand of insert

Symbol	Hand
R	Right
L	Left
N	Neutral



⑩ Chipbreakers

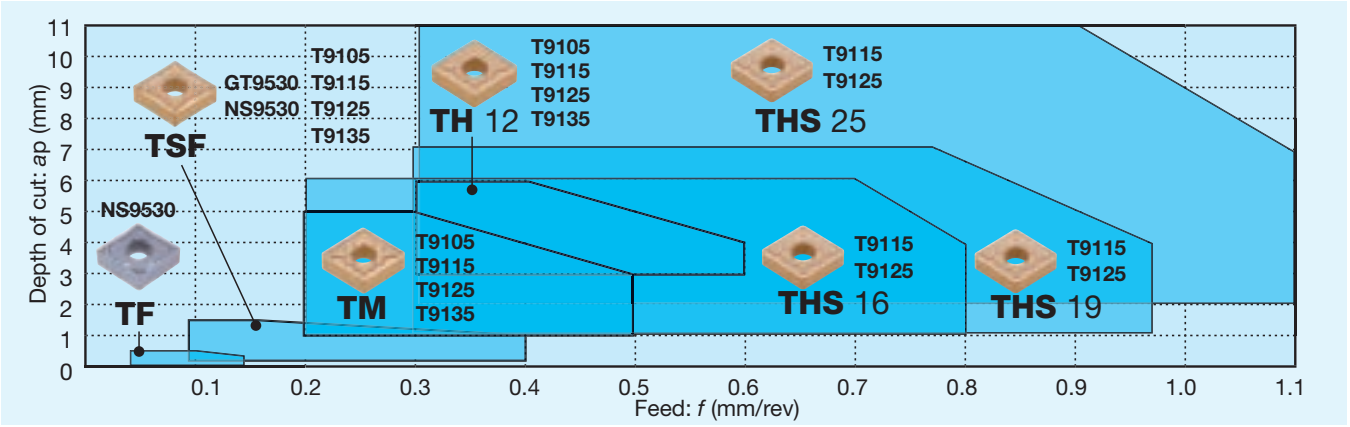
Symbol	Applications	Symbol	Applications
01(TF)	Precision finishing (Basic selection)	CB	Medium cutting
TS	Finishing (Basic selection)	CM	Medium cutting of cast irons
TSF	Finishing (Basic selection)	All-round	Medium cutting
TM	Medium cutting (Basic selection)	A	Finishing (Right and left hand)
THS	Medium to heavy cutting (Basic selection)	B	Finishing (Right and left hand)
TRS	Medium to heavy cutting	C	Finishing (Right and left hand)
TUS	Heavy cutting	D	Finishing (Right and left hand)
DM	Medium cutting	P	Finishing of Aluminium alloys
HRF	Finishing	W	Finishing (Angular type)
HRM	Finishing to medium cutting	PSF	Finishing (Positive type)
HMM	Medium cutting	PSS	Finishing to light cutting (Positive insert)
SF	Finishing of stainless steels	PS	Finishing to medium cutting (Positive type Basic selection)
SS	Finishing of stainless and mild steels	PM	Medium cutting (Positive type)
SM	Medium cutting of stainless steels	AL	Finishing to medium cutting of aluminium alloys
S	Medium cutting of stainless steels	RS	Medium cutting (For round inserts)
SH	Medium to heavy cutting of stainless steels	W□□	Finishing (Angular type)
SA	For heat-resisting alloys and stainless steels	H□□	Finishing (Parallel)
ZF	Finishing and copying	11	Finishing
ZM	Finishing to medium cutting and copying	61	Small depth of cut and high feed (For round inserts)
NS	Finishing and copying	S1	Finishing (For KNMX type)
NM	Finish to medium cutting and copying	J08,J10	For small lathes
AS	Small depth of cut and high feed	JS	For small lathes
AM	Small depth of cut and high feed	JRP	For small lathes
FW	Finishing (Wiper type)	JPP	For small lathes
SW	Finishing to medium cutting (Wiper type)	JSP	For small lathes
AFW	Small depth of cut and high feed (Wiper type Inserts)		
ASW	Small depth of cut and high feed (Wiper type Inserts)		

TurnLine - Chipbreaker Guide

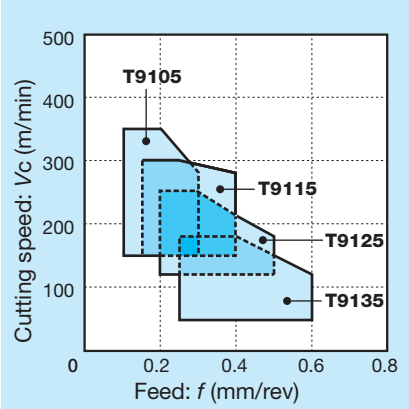
BASIC CHIPBREAKERS: NEGATIVE INSERTS

P Steel

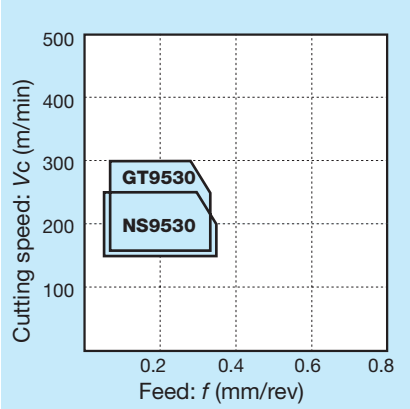
Chipbreaker System for Turning (Negative Inserts)

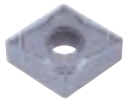


CVD coated grades



Coated cermets / Cermets



Chipbreaker	Appearance	Features
TF		The sharp cutting edge and raised projection near corner contribute to excellent chip control at very small depths of cut and low feeds. Economical M-class tolerance and low cost.
TSF		First choice chipbreaker for finishing steels. The dimple structure decreases the contact area between the insert surface and chips, resulting in significant reduction of heat occurrence.

Chipbreaker	Appearance	Features
TM		General purpose chipbreaker used for medium cutting. Unique chipbreaker geometry with sharp edges and large rake angle assures free cutting action in a wide range of cutting conditions.
TH		Double-sided 3-dimensional chipbreaker with a wide land and broad groove used for medium to heavy cutting including interruption and unfavorable surface conditions. Also performs well in high feed machining.
THS		Excellent chip control in a broad range of depth of cut. Strong cutting edge being suitable for interrupted and high feed operations.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min) Low carbon steels, Alloy steels	Medium carbon steels, Alloy steels	High carbon steels, Alloy steels
P	Precision finishing	Continuous to light interrupted	TF	NS9530	0.05 - 0.5	0.03 - 0.15	150 - 250	100 - 250	100 - 200
	Finishing	Continuous to light interrupted	TSF	GT9530	0.2 - 1.5	0.08 - 0.4	150 - 300	80 - 250	80 - 200
		Heavy interrupted	TSF	T9125	0.2 - 1.5	0.08 - 0.4	120 - 250	80 - 200	80 - 150
	Medium cutting	Continuous to heavy interrupted	TM	T9105	1.0 - 5.0	0.2 - 0.5	180 - 350	180 - 350	180 - 300
			TM	T9115	1.0 - 5.0	0.2 - 0.5	150 - 300	150 - 300	120 - 250
			TM	T9125	1.0 - 5.0	0.2 - 0.5	120 - 250	80 - 200	80 - 150
			TM	T9135	1.0 - 5.0	0.2 - 0.5	50 - 180	50 - 150	50 - 120
	Medium to heavy cutting	Continuous to heavy interrupted	TH	T9105	3.0 - 6.0	0.3 - 0.6	180 - 350	180 - 350	180 - 300
			TH	T9115	3.0 - 6.0	0.3 - 0.6	150 - 300	150 - 300	120 - 250
			TH	T9125	3.0 - 6.0	0.3 - 0.6	120 - 250	80 - 200	80 - 150
			TH	T9135	3.0 - 6.0	0.3 - 0.6	50 - 180	50 - 150	50 - 120

Low carbon steels, Alloy steels: C10, 18CrMo4, E275A, 20Cr4, etc. Medium carbon steels, Alloy steels: C45, 42CrMo4, etc.
High carbon steels, Alloy steels: 41CrNiMo2, etc.

SELECTION SYSTEM: NEGATIVE INSERTS

P Steel





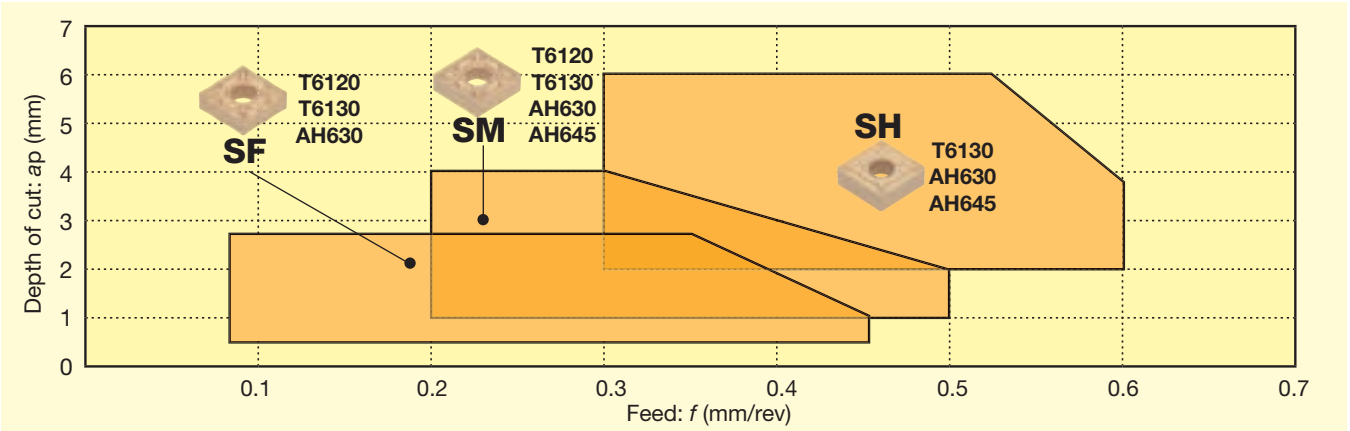
	Continuous	Light interrupted	Heavy interrupted
Precision finishing [a_p = ~ 0.5 mm]	Basic: TF NS9530 → Wear: 01 GT9530	Basic: TF NS9530 → Fracture: TSF GT9530	
Finishing [a_p = 0.3 ~ 1.5 mm]	Basic: TSF GT9530 → Chip control: ZF GT9530	Basic: TSF GT9530 → Fracture: TSF T9115	Basic: TSF T9125 → Fracture: TSF T9135
Medium cutting [a_p = 1.0 ~ 4.0 mm]	Basic: TM T9115 → Wear: TM T9105; Chip control: ZM T9115	Basic: TM T9125 → Fracture: TM T9135; Wear: TM T9115	Basic: TM T9135 → Fracture: DM T9135
Medium to heavy cutting [a_p = 3.0 ~ 6.0 mm]	Basic: TH T9115 → Wear: TH T9105; Chip control: TM T9115	Basic: TH T9125 → Fracture: TH T9135; Wear: TH T9115	Basic: TH T9135 → Fracture: TUS T9135

TurnLine - Chipbreaker Guide

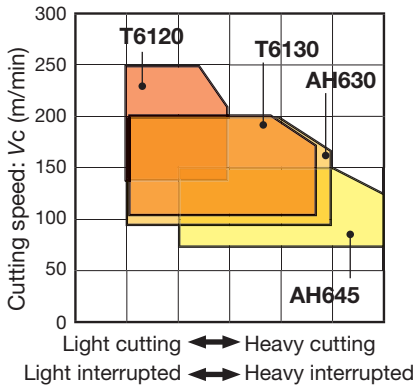
BASIC CHIPBREAKERS: NEGATIVE INSERTS

M Stainless Steel

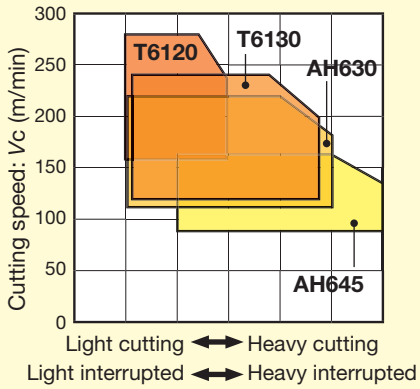
Chipbreaker System for Turning



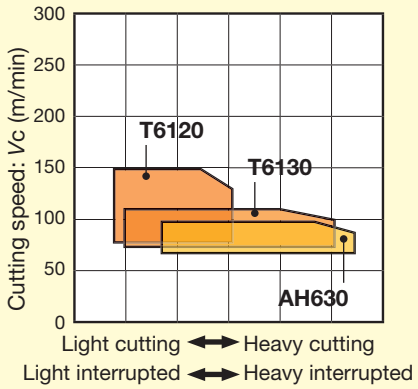
Austenitic stainless steel

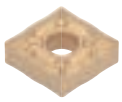
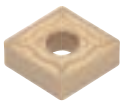


Ferritic / martensite stainless steel



Precipitation hardened stainless steel



Chipbreaker	Appearance	Features
SF		Exellent chip control when finish cutting. Outstanding chip control when high feed turning at small depth of cut.
SH		Suitable for roughing operations and interrupted machining with tough cutting edges.

Chipbreaker	Appearance	Features
SM		Applicable to a wide range of cutting condition with sharp edge. Recommended chipbreaker for stainless steel turning.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chipbreaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed *Vc* (m/min)
M	Finishing	Continuous	SF	T6120	0.5 - 2.5	0.08 - 0.45	140 - 240
		Continuous to light interrupted	SF	T6130	0.5 - 2.5	0.08 - 0.45	100 - 200
		Heavy interrupted	SF	AH630	0.5 - 2.5	0.08 - 0.45	90 - 190
	Medium cutting	Continuous	SM	T6120	1.0 - 4.0	0.2 - 0.5	140 - 240
		Continuous to light interrupted	SM	T6130	1.0 - 4.0	0.2 - 0.5	100 - 200
		Light interrupted	SM	AH630	1.0 - 4.0	0.2 - 0.5	90 - 190
		Heavy interrupted	SM	AH645	1.0 - 4.0	0.2 - 0.5	70 - 150
	Medium to heavy cutting	Continuous to light interrupted	SH	T6130	2.0 - 6.0	0.3 - 0.6	100 - 200
		Light interrupted	SH	AH630	2.0 - 6.0	0.3 - 0.6	90 - 190
		Heavy interrupted	SH	AH645	2.0 - 6.0	0.3 - 0.6	70 - 150

Stainless steels: X5CrNi18-9, X5CrNiMo17-12-3, etc.

SELECTION SYSTEM: NEGATIVE INSERTS

M Stainless Steel



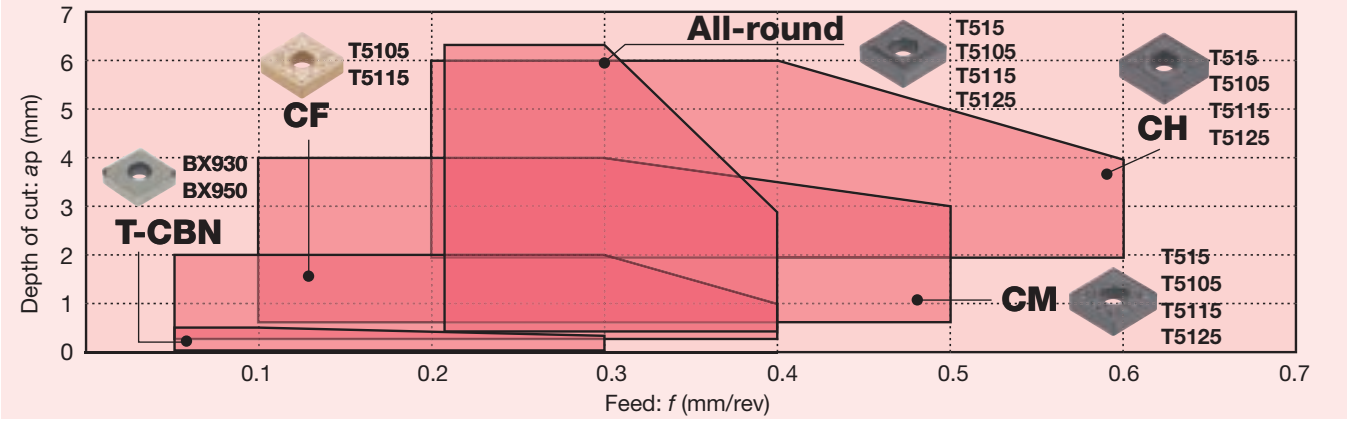


	Continuous	Light interrupted	Heavy interrupted
Finishing [a_p = 0.5 ~ 1.5 mm]	Basic: **SM T6130** Wear → **SM T6120** Chip control → **SF T6130**	Basic: **SM AH630** Fracture → **SM AH645** Wear → **SM T6130** Chip control → **SF AH630**	Basic: **SM AH630** Fracture → **SM AH645** Chip control → **SF AH630**
Medium cutting [a_p = 1.0 ~ 4.0 mm]	Basic: **SM T6130** Wear → **SM T6120** Chip control → **SF T6130**	Basic: **SM AH630** Fracture → **SM AH645** Wear → **SM T6130**	Basic: **SH AH630** Fracture → **SH AH645**
Medium to heavy cutting [a_p = 2.0 ~ 6.0 mm]	Basic: **SH AH630** Wear → **SH T6130** Chip control → **SM AH630**	Basic: **SH AH630** Fracture → **SH AH645** Wear → **SH T6130**	Basic: **SH AH630** Fracture → **SH AH645**

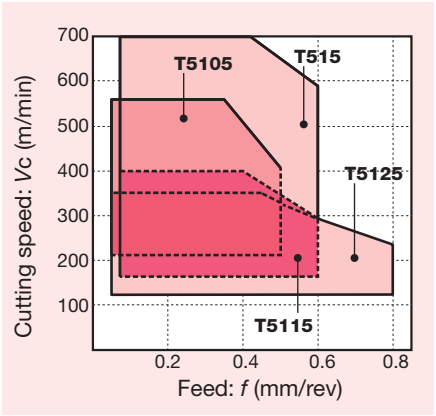
BASIC CHIPBREAKERS: NEGATIVE INSERTS

K Cast Iron

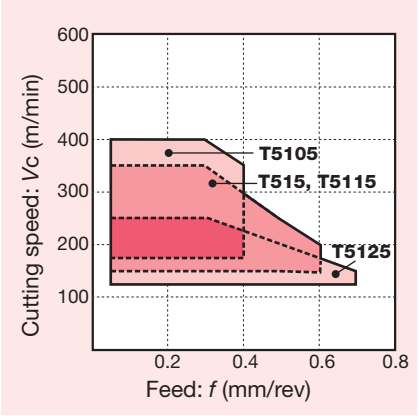
Chipbreaker System for Turning (Negative Inserts)



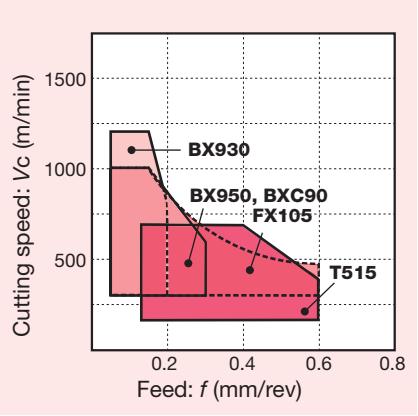
Grey cast irons

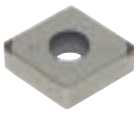
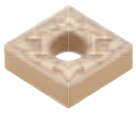
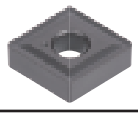


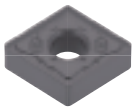
Ductile cast irons



High speed cutting: for grey cast irons



Chip-breaker	Appearance	Features
No chip-breaker (T-CBN)		T-CBN inserts. Performs well in high speed finishing of cast iron.
CF		Low cutting force chipbreaker for cast iron. Combined with an arc-shaped concave and a high rake (substantially 20° rake angle), allows drastically reducing cutting forces and suppressing the deformation of thin walled components and burr occurrence.
All-round		Highly reliable chipbreaker for medium cutting under a wide range of conditions from continuous to interrupted cutting.

Chip-breaker	Appearance	Features
CM		First choice chipbreaker for cast iron. An all around chipbreaker, which is applicable for a wide range of cutting conditions from continuous to interrupted machining with the positive land and wide chip pocket
CH		Chipbreaker with reinforced cutting-edge for cast iron. Utilizing the land support and negative land design, features stable insert seating and high cutting edge strength even in heavy cutting.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)	
							Grey cast irons	Ductile cast irons
K	High speed cutting	Continuous	Without	BX930	0.05 - 0.5	0.05 - 0.2	300 - 1200	100 - 500
		Light interrupted	Without	BX950	0.05 - 0.5	0.05 - 0.3	300 - 1000	100 - 300
		Continuous	Without	BXC90	0.08 - 3.0	0.05 - 0.4	300 - 1000	100 - 300
	Finishing	Continuous	CF	T5105	0.5 - 2.0	0.05 - 0.4	180 - 480	180 - 400
		Light interrupted	CF	T5115	0.5 - 2.0	0.05 - 0.4	140 - 400	140 - 370
	Medium cutting	Continuous	CM	T5105	1.0 - 5.0	0.1 - 0.5	180 - 480	180 - 400
		Light interrupted	AR	T515	1.0 - 5.0	0.1 - 0.5	150 - 700	140 - 370
		Heavy interrupted	CM	T5125	1.0 - 5.0	0.1 - 0.5	120 - 300	120 - 250
	Heavy cutting	Continuous	CH	T5105	3.0 - 6.0	0.2 - 0.6	180 - 480	180 - 400
		Light interrupted	CH	T515	3.0 - 6.0	0.2 - 0.6	150 - 700	140 - 370
		Heavy interrupted	CH	T5125	3.0 - 6.0	0.2 - 0.6	120 - 300	120 - 250

Grey cast irons: 250, etc. Ductile cast irons: 450-10S, etc.

SELECTION SYSTEM: NEGATIVE INSERTS

K Cast Iron





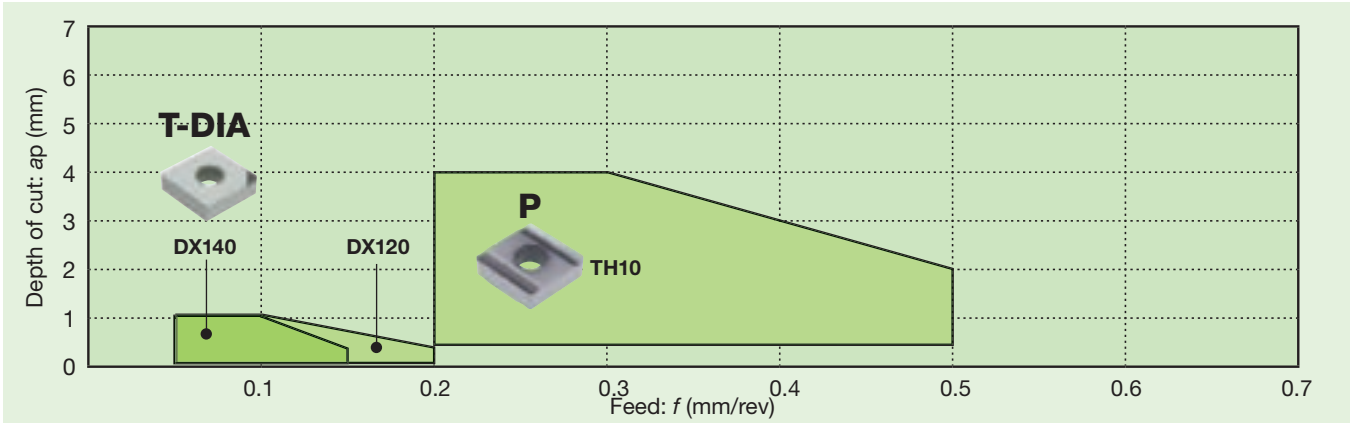
	Continuous	Light interrupted	Heavy interrupted
Finishing [a_p = 0.5 ~ 2.0 mm]	Basic: All-round T515 → Wear: All-round T5105; Burr occurrence: CF T5105	Basic: All-round T515 → Wear: All-round T5105; Fracture: CH T515; Burr occurrence: CF T5115	Basic: CH T515 → Wear: CH T5105; Fracture: CH T5125; Burr occurrence: All-round T515
Medium cutting [a_p = 1.0 ~ 5.0 mm]	Basic: All-round T515 → Wear: All-round T5105; Burr occurrence: CF T5105	Basic: All-round T515 → Wear: All-round T5105; Fracture: CH T515; Burr occurrence: CF T5115	Basic: CH T515 → Wear: CH T5105; Fracture: CH T5125; Burr occurrence: All-round T515
Medium to heavy cutting [a_p = 3.0 ~ 6.0 mm]	Basic: All-round T515 → Wear: All-round T5105; Burr occurrence: CF T5105	Basic: All-round T515 → Wear: All-round T5105; Fracture: CH T515; Burr occurrence: CF T5115	Basic: CH T515 → Wear: CH T5105; Fracture: CH T5125; Burr occurrence: All-round T515

TurnLine - Chipbreaker Guide

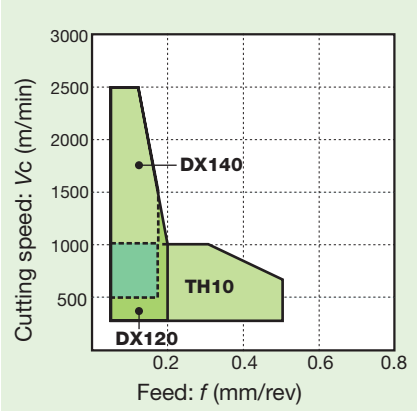
BASIC CHIPBREAKERS: NEGATIVE INSERTS

N Non-ferrous Metal

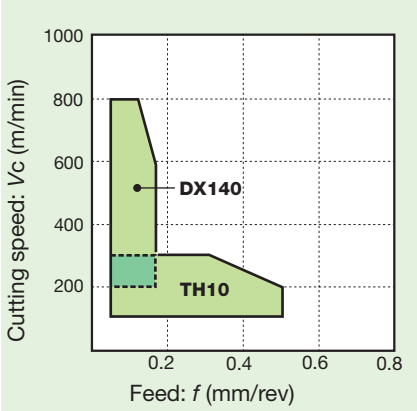
Chipbreaker System for Turning (Negative Inserts)



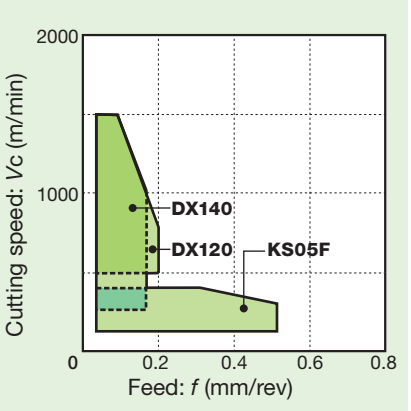
Aluminium alloys (Si < 12%)

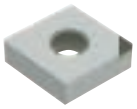
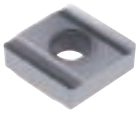


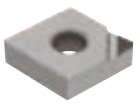
Aluminium alloys (Si ≥ 12%)



Copper alloys



Chip-breaker	Appearance	Features
No chip-breaker (T-DIA)		Performs well in high speed finishing of non-ferrous materials.
P		Excels in sharpness of cutting edges and effectively used for machining non-ferrous metals such as aluminium alloys and copper alloys.

Chip-breaker	Appearance	Features
With chip-breaker (T-DIA)		The wide chipbreaker width contributes to excellent chip control.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min) Aluminium alloys (Si < 12%)	Aluminium alloys (Si > 12%)	Copper alloys
N	Precision finishing	Continuous	With	DX120	0.05 - 1.0	0.05 - 0.15	500 - 2500	400 - 800	500 - 1500
		Light interrupted	Without	DX140	0.05 - 1.0	0.05 - 0.20	300 - 2500	-	500 - 1500
	Finishing	Continuous	Without	DX140	0.05 - 1.0	0.05 - 0.15	500 - 2500	400 - 800	500 - 1500
		Light interrupted	Without	DX140	0.05 - 1.0	0.05 - 0.15	300 - 1800	400 - 600	400 - 1200
		Heavy interrupted	P	TH10	0.5 - 4.0	0.2 - 0.5	100 - 500	100 - 200	100 - 200
	Medium cutting	Continuous	P	TH10	0.5 - 4.0	0.2 - 0.5	100 - 1000	100 - 300	100 - 300
		Light interrupted	P	TH10	0.5 - 4.0	0.2 - 0.5	100 - 800	100 - 200	100 - 200
		Heavy interrupted	P	TH10	0.5 - 4.0	0.2 - 0.5	100 - 500	100 - 200	100 - 200

SELECTION SYSTEM: NEGATIVE INSERTS

N Non-ferrous Metal



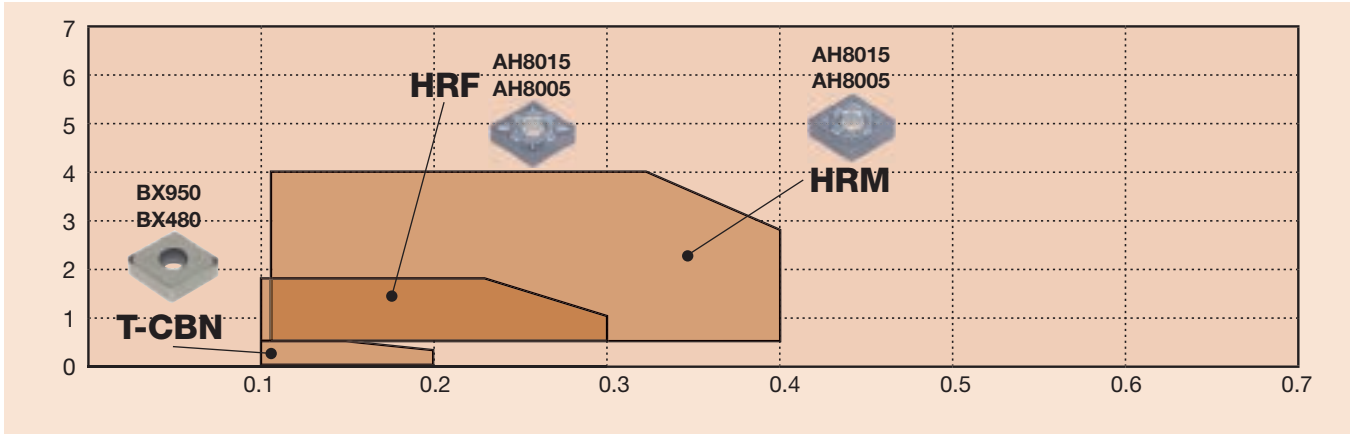


	Continuous	Light interrupted	Heavy interrupted
Precision finishing [a_p = ~ 0.5 mm]	Basic: T-DIA DX140 → Wear: T-DIA DX160	Basic: T-DIA DX140 → Surface: With chipbreaker T-DIA DX120; Wear: T-DIA DX160	
Finishing [a_p = 0.5 ~2.0 mm]	Basic: T-DIA DX140 → Surface: With chipbreaker T-DIA DX120; Wear: T-DIA DX160	Basic: T-DIA DX140 → Fracture: P TH10; Wear: T-DIA DX160	Basic: P TH10
Medium cutting [a_p = 1.0 ~ 4.0 mm]	Basic: P TH10 → Wear: T-DIA DX140	Basic: P TH10 → Wear: T-DIA DX140	Basic: P TH10

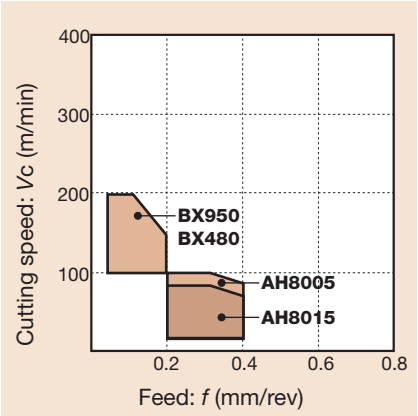
BASIC CHIPBREAKERS: NEGATIVE INSERTS

S Superalloys and titanium

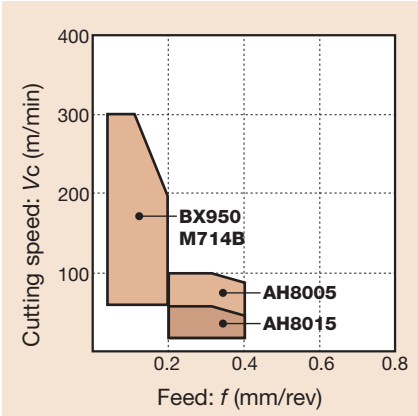
Chipbreaker System for Turning (Negative Inserts)



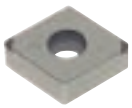
Titanium alloys



Ni-base alloys



Chipbreaker	Appearance	Features
HRF		Suitable for finishing operation of superalloys. Special protrusion provides excellent chip control in lower depth of cut.
HRM		The 1st recommended chipbreaker for supperalloy turning. Optimized geometry provides stable chip control in various depth of cut.

Chipbreaker	Appearance	Features
No chip-breaker (T-CBN)		T-CBN inserts. Performs well in finishing of heat-resistant or titanium alloys.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)	
							Titanium alloys	Ni-base alloys
S	Precision finishing	Continuous	Without	BX950	0.1 - 0.5	0.05 - 0.2	100 - 200	70 - 300
			Without	M714B	0.1 - 0.5	0.05 - 0.2	-	70 - 400
		Light interrupted	Without	BX480	0.1 - 0.5	0.05 - 0.2	100 - 200	-
	Finishing	Continuous	HRF	AH8005	0.5 - 1.5	0.05 - 0.25	20 - 100	20 - 100
		Light interrupted	HRF	AH8015	0.5 - 1.5	0.05 - 0.25	20 - 80	20 - 50
		Heavy interrupted	HRF	AH8015	0.5 - 1.5	0.05 - 0.25	10 - 60	10 - 40
	Finishing to Medium cutting	Continuous	HRM	AH8005	0.5 - 4.0	0.1 - 0.4	20 - 100	20 - 100
		Light interrupted	HRM	AH8015	0.5 - 4.0	0.1 - 0.4	20 - 80	20 - 50
		Heavy interrupted	HRM	AH8015	0.5 - 4.0	0.1 - 0.4	10 - 60	10 - 40

Ni-base alloys: INCONEL718, etc.
Titanium alloys: Ti-6Al-4V, etc

SELECTION SYSTEM: NEGATIVE INSERTS

S Superalloys and titanium



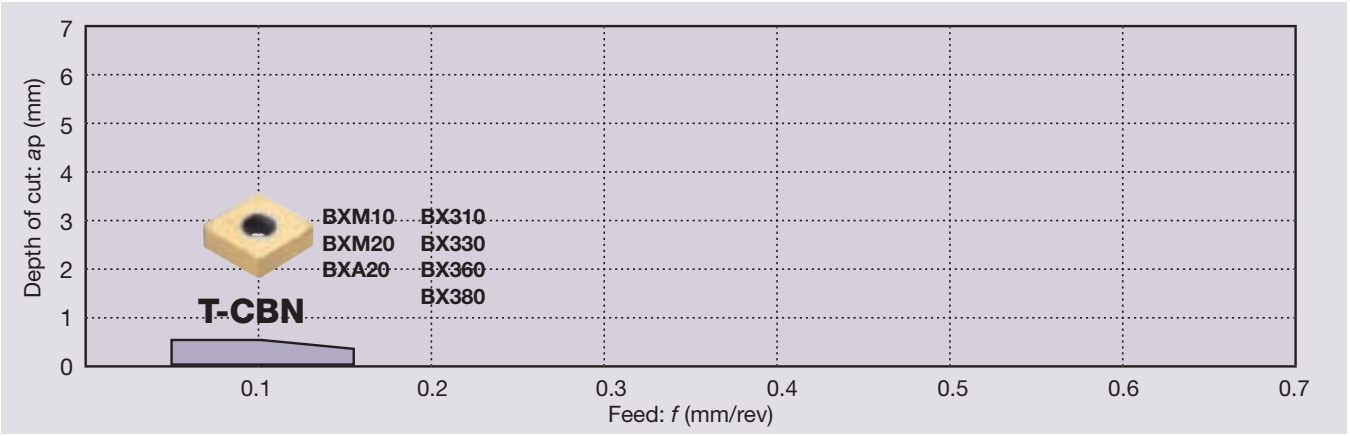


	Continuous	Light interrupted	Heavy interrupted
Precision finishing [a_p = ~ 0.5 mm]	Basic → **T-CBN BX950**	Basic → **T-CBN BX950**; Fracture → No chipbreaker **TH10**	
Finishing [a_p = 0.5 ~ 1.5 mm]	Basic → **HRF AH8015**; Wear → **HRF AH8005**	Basic → **HRF AH8015**; Fracture → **HRM AH8015**; Wear → **HRF AH8005**	Basic → **HRF AH8015**; Fracture → **HRM AH8015**; Wear → **HRF AH8005**
Medium cutting [a_p = 0.5 ~ 4.0 mm]	Basic → **HRM AH8015**; Wear → **HRM AH8005**; Chip control → **HRF AH8015**	Basic → **HRM AH8015**; Fracture → **SM AH630**; Wear → **HRM AH8005**	Basic → **HRM AH8015**; Fracture → **SM AH630**; Wear → **HRF AH8005**

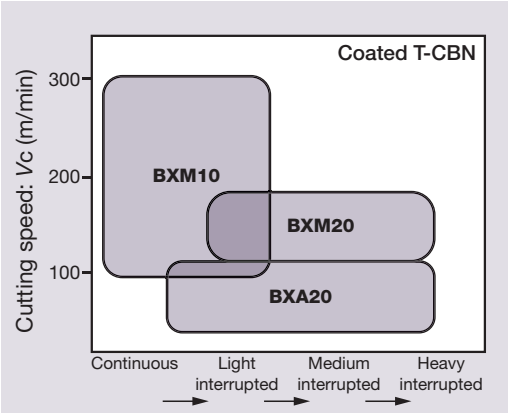
BASIC CHIPBREAKERS: NEGATIVE INSERTS

H Hard Materials

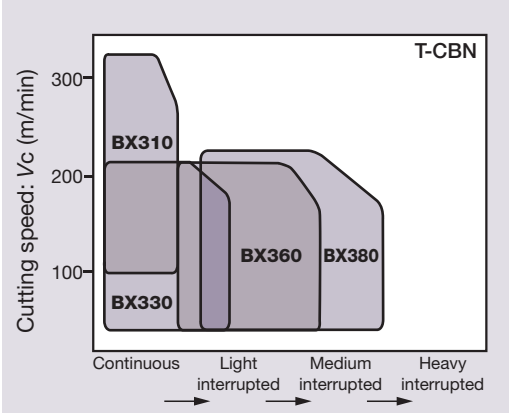
Chipbreaker System for Turning (Negative Inserts)



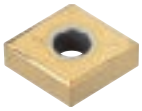
Coated T-CBN



T-CBN



Chipbreaker	Appearance	Features
No chip-breaker (T-CBN)		Performs well in finishing of hardened steel.

Chipbreaker	Appearance	Features
HF		When used in removing a carburized layer, excels in chip control at small depth of cut.
HM		When used in removing a carburized layer, excels in chip control at large depth of cut.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chipbreaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed *Vc* (m/min)
H	Precision finishing	Continuous to light interrupted	Without	BXM10	0.05 - 0.3	0.03 - 0.18	150 - 350
	Finishing	Continuous to heavy interrupted	Without	BXM20 BXA20	0.05 - 0.3	0.05 - 0.25	70 - 220
	Removing of carburized layer	Continuous	HF	BXM20	0.2 - 0.75	0.05 - 0.2	70 - 200
		Continuous	HM	BXM20 BXA20	0.5 - 1.0	0.05 - 0.2	70 - 200

Hardened steels, Pre-hardened steels: X153CrMoV12, X40CrMoV5-1, etc.

SELECTION SYSTEM: NEGATIVE INSERTS

H Hard Materials



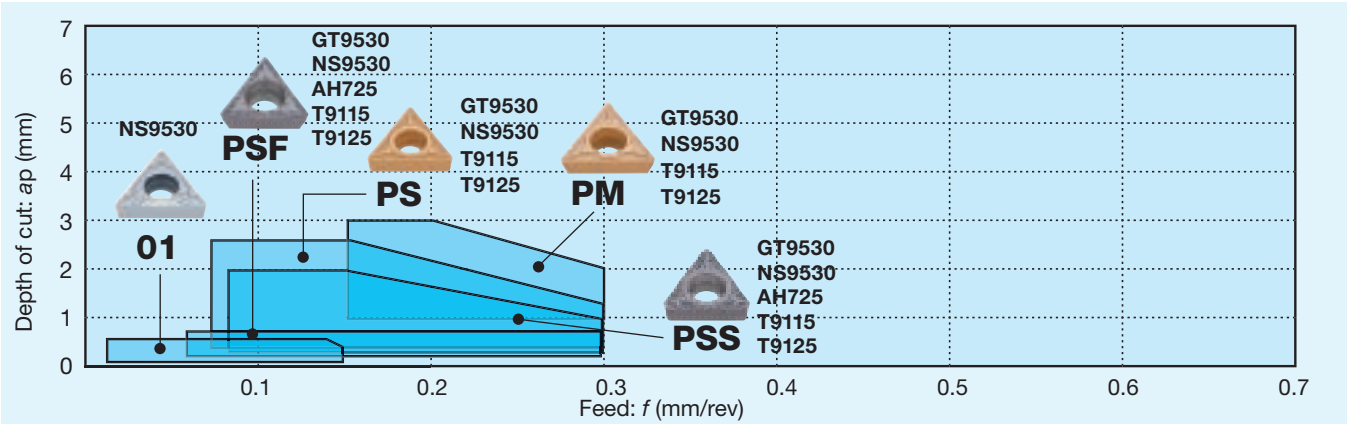


	Continuous	Light interrupted	Heavy interrupted
Precision finishing [a_p = ~ 0.2 mm]	Basic → T-CBN BXM10	Basic → T-CBN BXM20 Fracture → T-CBN BXA20 For high speed Wear → T-CBN BXM10	
Finishing [a_p = ~ 0.5 mm]	Basic → T-CBN BXM10	Basic → T-CBN BXM20 Fracture → -H BXM20 For high speed Wear → T-CBN BXM10	Basic → T-CBN BXM20 Fracture → -H BXM20

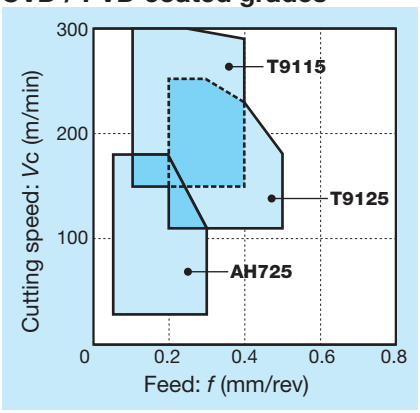
BASIC CHIPBREAKERS: POSITIVE INSERTS

P Steel

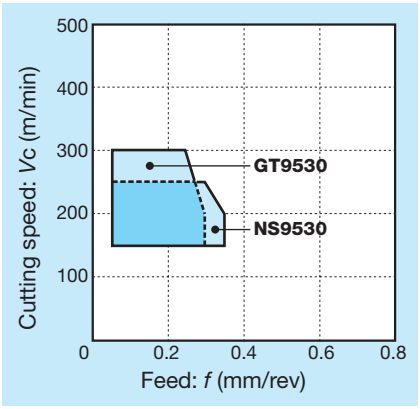
Chipbreaker System for Turning (Positive Inserts)

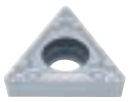


CVD / PVD coated grades



Coated cermets / Cermets



Chipbreaker	Appearance	Features
01		The sharp cutting edge and raised projection near corner contribute to excellent chip control at very small depth of cut and low feed.
PSF		Developed chipbreaker for finishing at low cutting depths. Optimal chip control due to pre-positioned chipbreaker element.
PSS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.

Chipbreaker	Appearance	Features
PS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.
PM		Developed chipbreaker for medium cutting. Excellent chip control due to wide, positive chip flow zone.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min) Low carbon steels, Alloy steels	Medium carbon steels, Alloy steels	High carbon steels, Alloy steels
P	Precision finishing	Continuous	01	NS9530	0.05 - 0.5	0.03 - 0.15	150 - 250	80 - 220	80 - 180
		Light interrupted	01	NS9530	0.05 - 0.5	0.03 - 0.15	150 - 250	80 - 220	80 - 180
	Finishing	Continuous	PSS	NS9530	0.1 - 0.5	0.05 - 0.3	150 - 250	80 - 220	80 - 180
		Light interrupted	PSS	NS9530	0.1 - 0.5	0.05 - 0.3	150 - 250	80 - 220	80 - 180
		Heavy interrupted	PSS	NS9530	0.1 - 0.5	0.05 - 0.3	150 - 250	80 - 220	80 - 180
	Finishing to light cutting	Continuous	PS	NS9530	0.3 - 2.0	0.08 - 0.3	150 - 250	80 - 220	80 - 180
		Light interrupted	PS	NS9530	0.3 - 2.0	0.08 - 0.3	150 - 250	80 - 220	80 - 180
		Heavy interrupted	PS	NS9530	0.3 - 2.0	0.08 - 0.3	150 - 250	80 - 220	80 - 180
	Finishing to Medium cutting	Continuous to Heavy interrupted	PS	T9115	0.5 - 2.5	0.08 - 0.3	150 - 300	100 - 200	80 - 180
			PS	T9125	0.5 - 2.5	0.08 - 0.3	120 - 250	80 - 180	80 - 120
	Medium cutting	Continuous to Heavy interrupted	PM	T9115	1.0 - 3.0	0.15 - 0.3	150 - 300	100 - 200	80 - 180
			PM	T9125	1.0 - 3.0	0.15 - 0.3	120 - 250	80 - 180	80 - 120

Low carbon steels, Alloy steels: C10, 18CrMo4, E275A, 20Cr4, etc. Medium carbon steels, Alloy steels: C45, 42CrMo4, etc.
Hi carbon steels, Alloy steels: 41CrNiMo2, etc.

TurnLine - Selection System

SELECTION SYSTEM: POSITIVE INSERTS

P Steel





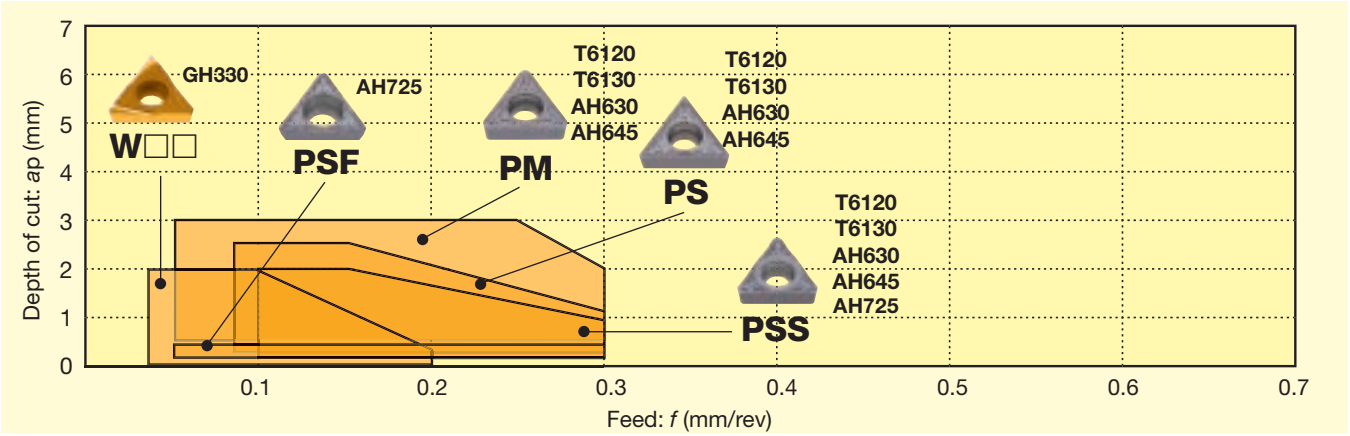
	Continuous	Light interrupted	Heavy interrupted
Precision finishing [a_p = ~ 0.5 mm]	Basic: **01 NS9530**	Basic: **01 NS9530** → Fracture: **PSF NS9530**	
Finishing [a_p = 0.1 ~ 0.5 mm]	Basic: **PSS NS9530** → Wear: **PSS GT9530**; Fracture: **PS NS9530**; Chip control: **PSF NS9530**	Basic: **PSS NS9530** → Wear: **PSS GT9530**; Fracture: **PS NS9530**; Chip control: **PSF NS9530**	Basic: **PSS NS9530** → Wear: **PSS GT9530**; Fracture: **PS NS9530**; Chip control: **PSF NS9530**
Finishing to Medium cutting [a_p = 0.5 ~ 2.5 mm]	Basic: **PS T9115** → Fracture: **PS T9125**; Wear: **PS NS9530**	Basic: **PS T9115** → Fracture: **PS T9125**; Wear: **PS NS9530**	Basic: **PS T9125** → Fracture: **PM T9125**
Medium cutting [a_p = 1.0 ~ 3.0 mm]	Basic: **PM T9115** → Wear: **PM NS9530**	Basic: **PM T9115** → Fracture: **PM T9125**	Basic: **PM T9125**

TurnLine - Chipbreaker Guide

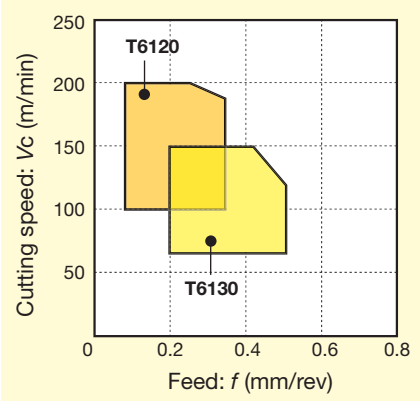
BASIC CHIPBREAKERS: POSITIVE INSERTS

M Stainless Steel

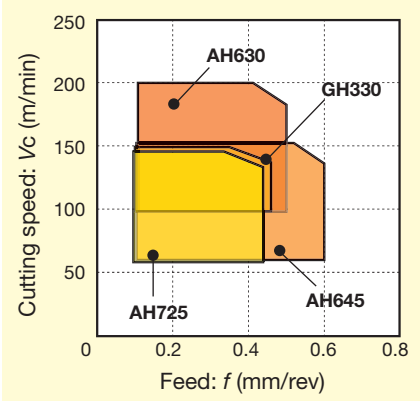
Chipbreaker System for Turning (Positive Inserts)



CVD coated grades



PVD coated grades



Chipbreaker	Appearance	Features
W□□		Designed to control the direction of chip flow and used for precision finish boring. Provides excellent chip evacuation which is important to attain a highly accurate bore.
PSF		Developed chipbreaker for finishing at low cutting depths. Optimal chip control due to pre-positioned chipbreaker element.

Chipbreaker	Appearance	Features
PSS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.
PS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.
PM		Developed chipbreaker for medium cutting. Excellent chip control due to wide, positive chip flow zone.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chipbreaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed *Vc* (m/min)
M	Precision finishing	Continuous	W□□	GH330	0.05 - 2.0	0.03 - 0.2	100 - 150
	Finishing	Continuous	PSF	AH725	0.1 - 0.5	0.05 - 0.3	50 - 150
		Light interrupted	PSF	AH725	0.1 - 0.5	0.05 - 0.3	50 - 150
		Heavy interrupted	PSF	AH725	0.1 - 0.5	0.05 - 0.3	50 - 120
	Finishing to light cutting	Continuous	PSS	AH630	0.3 - 2.0	0.08 - 0.3	90 - 190
		Light interrupted	PSS	AH630	0.3 - 2.0	0.08 - 0.3	90 - 190
		Heavy interrupted	PSS	AH630	0.3 - 2.0	0.08 - 0.3	90 - 190
	Finishing to medium cutting	Continuous	PS	T6130	0.5 - 2.5	0.08 - 0.3	100 - 200
		Light interrupted	PS	AH630	0.5 - 2.5	0.08 - 0.3	90 - 190
		Heavy interrupted	PS	AH630	0.5 - 2.5	0.08 - 0.3	90 - 190
	Medium cutting	Continuous	PM	T6130	1.0 - 3.0*	0.15 - 0.3	100 - 200
		Light interrupted	PM	AH630	1.0 - 3.0*	0.15 - 0.3	90 - 190
		Heavy interrupted	PM	AH630	1.0 - 3.0*	0.15 - 0.3	90 - 190

* For CCMT0602 and DCMT0702 type inserts, *ap* = 0.5 - 2.5
Stainless steels: X5CrNi18-9, X5CrNiMo17-12-3, etc.

SELECTION SYSTEM: POSITIVE INSERTS

M Stainless Steel



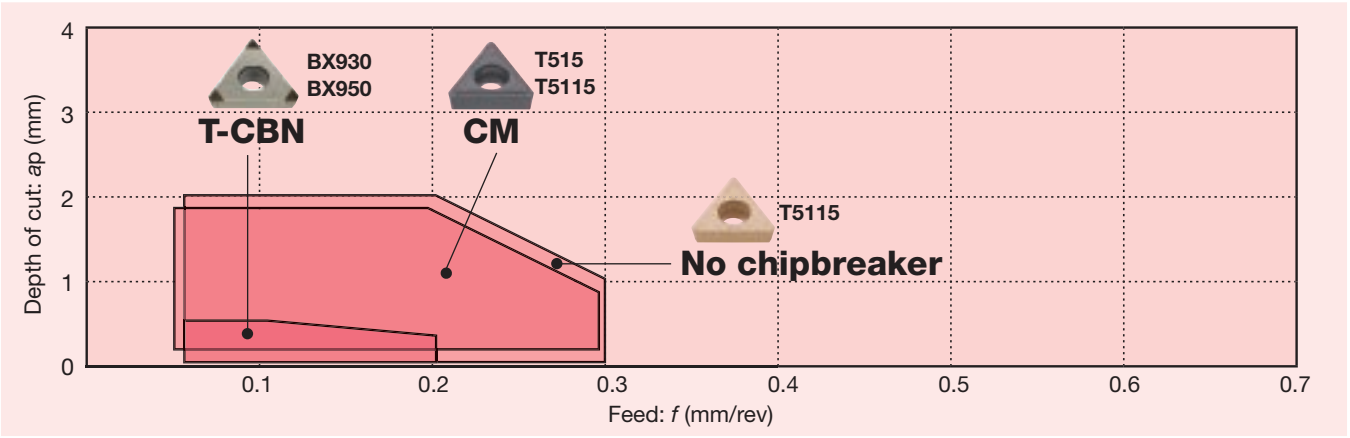


	Continuous	Light interrupted	Heavy interrupted
Precision finishing [a_p = ~ 0.5 mm]	Basic: W□□ GH330	Basic: W□□ GH330	
Finishing [a_p = 0.3 ~ 1.5 mm]	Basic: PSF AH725 → Wear: PSS T6130	Basic: PSF AH725 → Fracture: PSS AH630; Wear: PSS T6130	Basic: PSF AH725 → Fracture: PSS AH630
Finishing to Medium cutting [a_p = 0.5 ~ 2.5 mm]	Basic: PSS AH630 → Wear: PS T6130	Basic: PS AH630 → Fracture: PM AH645; Wear: PS T6130	Basic: PS AH630 → Fracture: PM AH645; Wear: PS T6130
Medium cutting [a_p = 1.0 ~ 3.0 mm]	Basic: PM AH630 → Wear: PM T6130	Basic: PM AH630 → Fracture: PM AH645; Wear: PM T6130	Basic: PM AH630 → Fracture: PM AH645

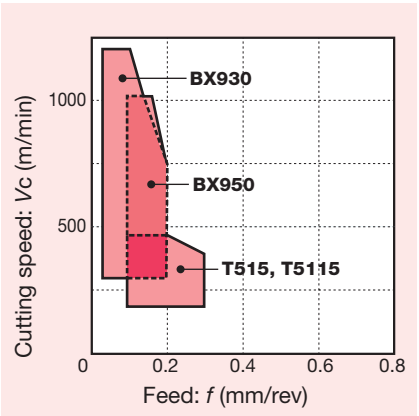
BASIC CHIPBREAKERS: POSITIVE INSERTS

K Cast Iron

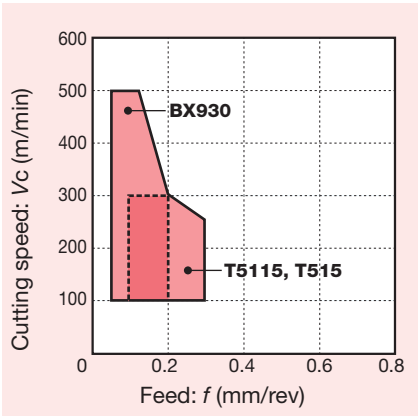
Chipbreaker System for Turning (Positive Inserts)



Grey cast irons



Ductile cast irons



Chipbreaker	Appearance	Features
No chip-breaker (T-CBN)		Performs well in high speed finishing of cast iron.
No chip-breaker		Can cover a wide range of applications from finishing to roughing of cast irons. Excels in cutting edge strength.

Chipbreaker	Appearance	Features
CM		All-around chipbreaker for general purpose cutting, provides low cutting forces and excellent performance in finishing to medium cutting.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)	
							Grey cast irons	Ductile cast irons
K	Precision finishing	Continuous	Without	BX930	0.05 - 0.5	0.05 - 0.2	300 - 1200	100 - 500
		Light interrupted	Without	BX950	0.05 - 0.5	0.05 - 0.2	300 - 800	100 - 300
			Without	BX470	0.05 - 0.5	0.05 - 0.2	300 - 800	100 - 300
	Finishing	Continuous	CM	T515	0.05 - 2.0	0.05 - 0.3	150 - 700	150 - 300
		Heavy interrupted	CM	T515	0.05 - 2.0	0.05 - 0.3	100 - 200	100 - 200
	Medium cutting	Light interrupted	CM	T515	0.05 - 2.0	0.05 - 0.3	100 - 300	100 - 250

Grey cast irons: 250, etc.
Ductile cast irons: 450-10S, etc.

SELECTION SYSTEM: POSITIVE INSERTS

K Cast Iron



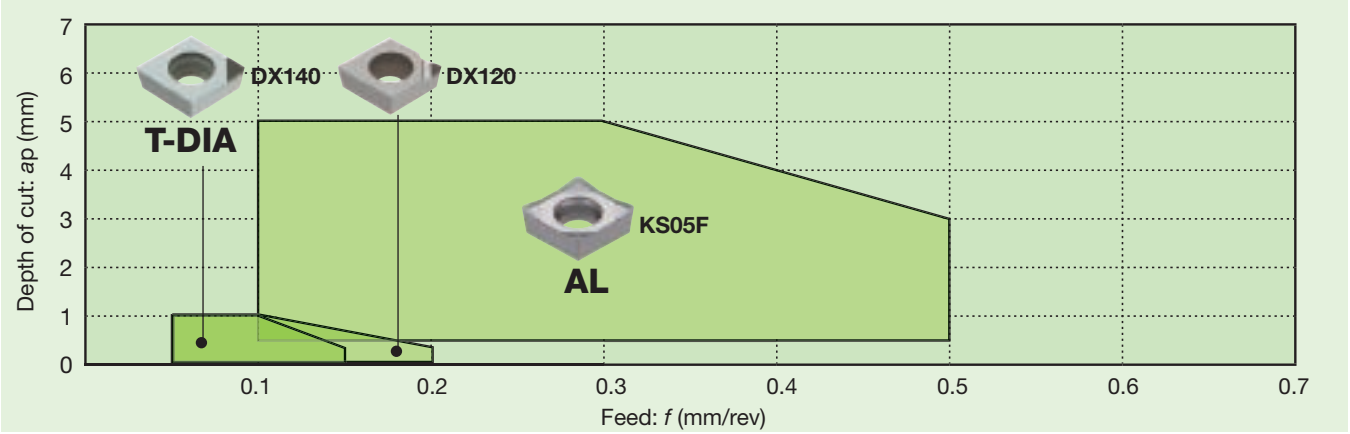


	Continuous	Light interrupted	Heavy interrupted
Finishing to Medium cutting [a_p = 0.5 ~ 3.0 mm]	Basic: CM T515 → Wear → T-CBN BX930	Basic: CM T515	Basic: CM T515

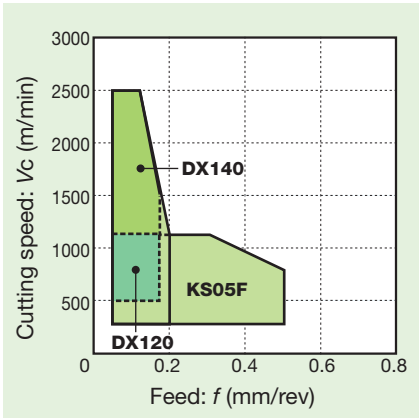
BASIC CHIPBREAKERS: POSITIVE INSERTS

N Non-ferrous Metal

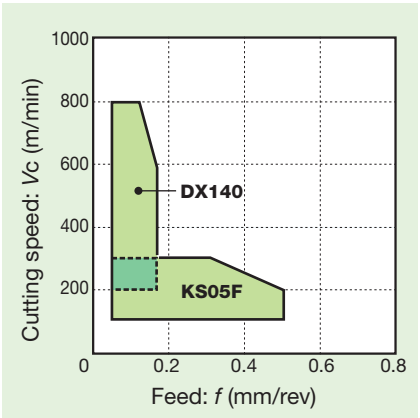
Chipbreaker System for Turning (Positive Inserts)



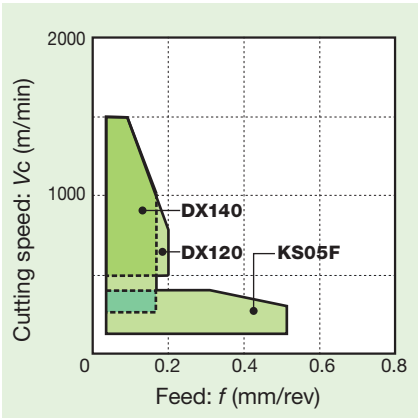
Aluminium alloys (Si < 12%)

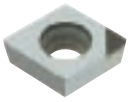
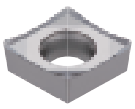


Aluminium alloys (Si ≥ 12%)



Copper alloys



Chipbreaker	Appearance	Features
No chip-breaker (T-DIA)		Performs well in high speed finishing of non-ferrous materials.
AL		Extremely sharp cutting edge. Polished surface. Excellent chip forming at high cutting feeds. Low power consumption.

Chipbreaker	Appearance	Features
With chip-breaker (T-DIA)		The wide chipbreaker width contributes to excellent chip control.

STANDARD CUTTING CONDITIONS

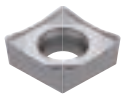
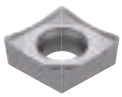
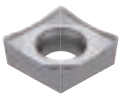
ISO	Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min) Aluminium alloys (Si < 12%)	Aluminium alloys (Si > 12%)	Copper alloys
N	Precision finishing	Continuous	With	DX120	0.05 - 1.0	0.05 - 0.15	500 - 2500	400 - 800	500 - 1500
		Light interrupted	Without	DX140	0.05 - 1.0	0.05 - 0.2	300 - 2500	-	500 - 1500
	Finishing	Continuous	Without	DX140	0.05 - 1.0	0.05 - 0.15	500 - 2500	400 - 800	500 - 1500
		Light interrupted	Without	DX140	0.05 - 1.0	0.05 - 0.15	300 - 1800	400 - 600	400 - 1200
		Heavy interrupted	AL	KS05F	0.5 - 5.0	0.1 - 0.5	100 - 600	100 - 200	-
	Medium cutting	Continuous	AL	KS05F	0.5 - 5.0	0.1 - 0.5	100 - 1200	100 - 300	100 - 300
		Light interrupted	AL	KS05F	0.5 - 5.0	0.1 - 0.5	100 - 900	100 - 200	100 - 200
		Heavy interrupted	AL	KS05F	0.5 - 5.0	0.1 - 0.5	100 - 600	100 - 200	-

SELECTION SYSTEM: POSITIVE INSERTS

N Non-ferrous Metal



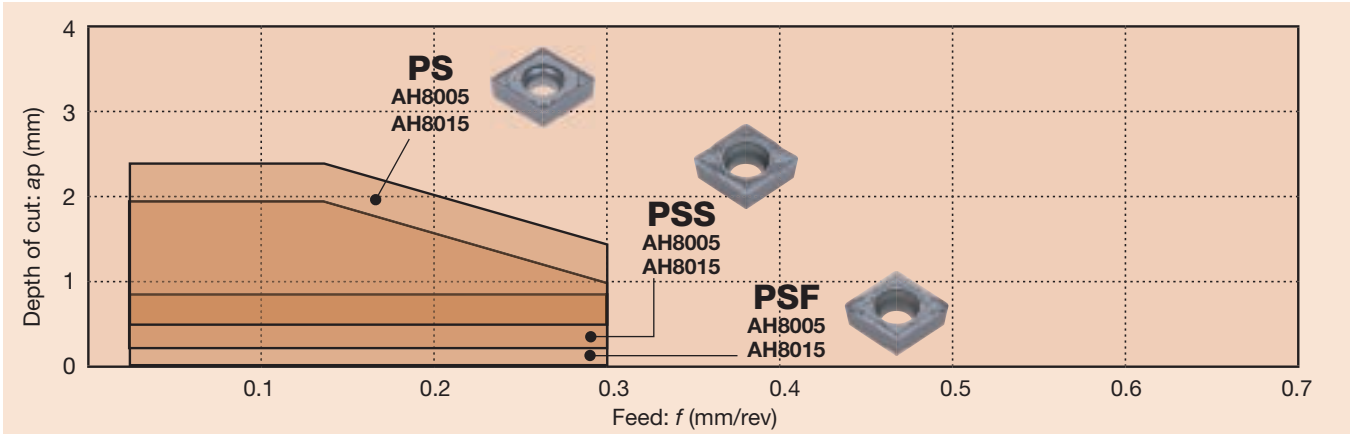


	Continuous	Light interrupted	Heavy interrupted
Precision finishing [a_p = ~ 0.5 mm]	Basic:  With chipbreaker DX120 → Wear → T-DIA DX140	Basic:  With chipbreaker DX120 → Wear → T-DIA DX140	
Finishing [a_p = 0.5 ~ 2.0 mm]	Basic:  T-DIA DX140 → Wear → T-DIA DX160; Chip control → With chipbreaker T-DIA DX120	Basic:  T-DIA DX140 → Fracture → AL KS05F; Wear → T-DIA DX160	Basic:  AL KS05F
Medium cutting [a_p = 1.0 ~ 5.0 mm]	Basic:  AL KS05F → Wear → With chipbreaker T-DIA DX120	Basic:  AL KS05F → Wear → T-DIA DX140	Basic:  AL KS05F

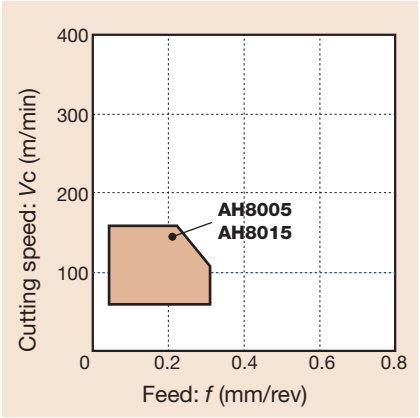
BASIC CHIPBREAKERS: POSITIVE INSERTS

S Superalloys and titanium

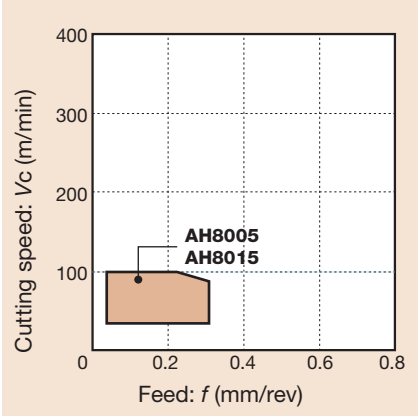
Chipbreaker System for Turning (Positive Inserts)



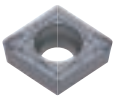
Titanium alloys



Ni-base alloys



Chipbreaker	Appearance	Features
PS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.

Chipbreaker	Appearance	Features
PSF		Developed chipbreaker for finishing at low cutting depths. Optimal chip control due to pre-positioned chipbreaker element.
PSS		3-dimensional chipbreaker designed to have excellent chip control capability and low cutting force in finishing to medium cutting. Low cost, M-class positive insert used for high efficiency boring in a wide range of applications.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chip-breaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed: *Vc* (m/min)	
							Titanium alloys	Ni-base alloys
S	Finishing	Continuous	PSS	AH8015	0.3 - 2.0	0.02 - 0.3	20 - 150	20 - 100
		Light interrupted	PSS	AH8015	0.3 - 2.0	0.02 - 0.3	20 - 150	20 - 100
	Finishing to medium cutting	Continuous	PS	AH8015	0.5 - 2.5	0.02 - 0.3	20 - 150	20 - 100
		Light interrupted	PS	AH8015	0.5 - 2.5	0.02 - 0.3	20 - 150	20 - 100

Ni-base alloys: INCONEL718 etc.
Titanium alloys: Ti - 6Al - 4V etc.

SELECTION SYSTEM: POSITIVE INSERTS

S Superalloys and titanium



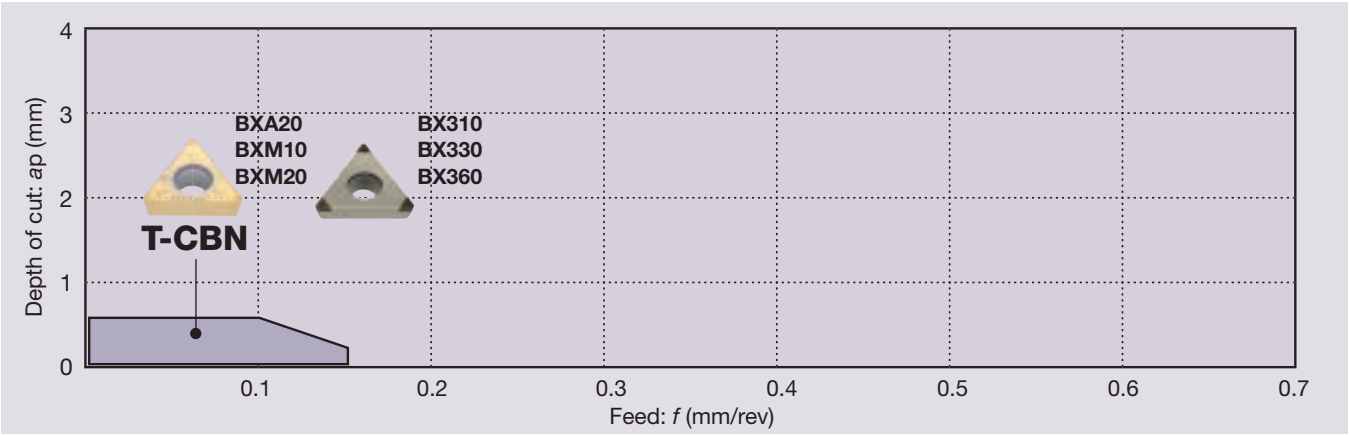


	Continuous	Light interrupted	Heavy interrupted
Finishing [a_p = 0.3 ~ 2.0 mm]	Basic: PSS AH8015 → Wear: PSS AH8005	Basic: PSS AH8015 → Wear: PSS AH8005; Fracture: PS AH8015	
Finishing to medium cutting [a_p = 0.5 ~ 2.5 mm]	Basic: PS AH8015 → Wear: PSS AH8005	Basic: PS AH8015 → Fracture: All-round AH8015	Basic: PS AH8015 → Fracture: All-round AH8015

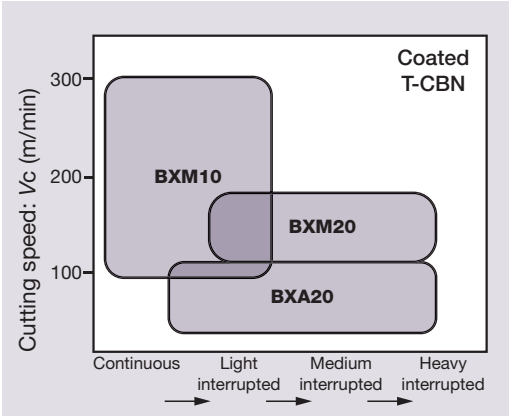
BASIC CHIPBREAKERS: POSITIVE INSERTS

H Hard Materials

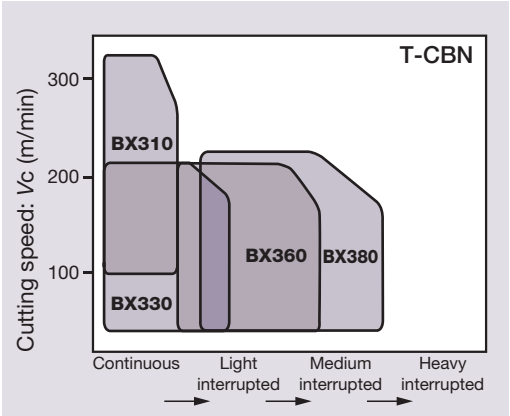
Chipbreaker System for Turning (Positive Inserts)



Coated T-CBN



T-CBN



Chipbreaker	Appearance	Features
No chip-breaker (T-CBN)		Performs well in finishing of hardened steel.

STANDARD CUTTING CONDITIONS

ISO	Operation	Work condition	Chipbreaker	Grade	Depth of cut *ap* (mm)	Feed *f* (mm/rev)	Cutting speed *Vc* (m/min)
H	Precision finishing	Continuous	No chipbreaker (T-CBN)	BXM10	0.05 - 0.3	0.03 - 0.15	150 - 350
		Light interrupted	No chipbreaker (T-CBN)	BXM20 BXA20	0.05 - 0.3	0.03 - 0.15	70 - 220
	Finishing	Continuous ~ interrupted	No chipbreaker (T-CBN)	BXM20 BXA20	0.07 - 0.5	0.05 - 0.3	70 - 220

Hardened steels, Pre-hardened steels: X153CrMoV12, X40CrMoV5-1, etc.

SELECTION SYSTEM: POSITIVE INSERTS

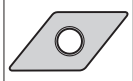
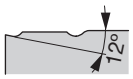
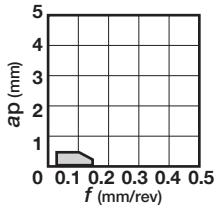
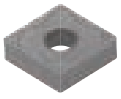
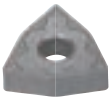
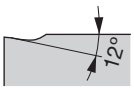
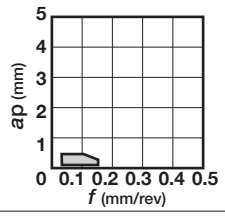
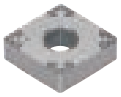
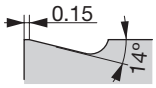
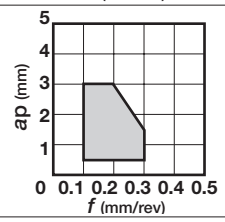
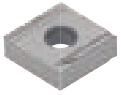
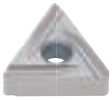
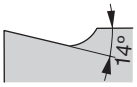
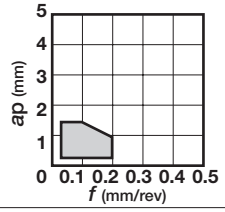
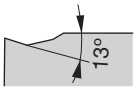
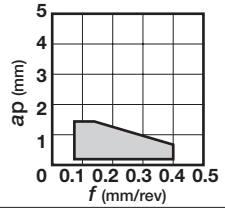
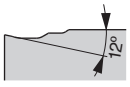
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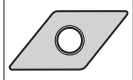
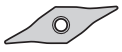
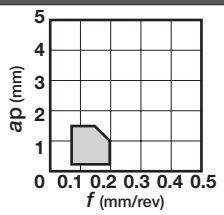
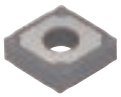
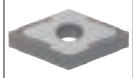
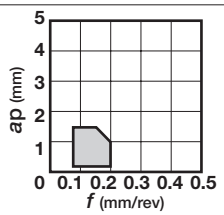
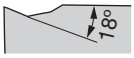
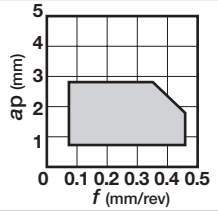
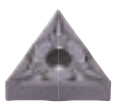
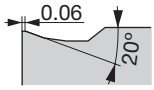
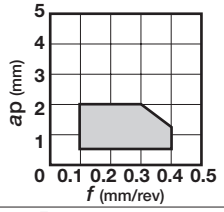
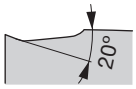
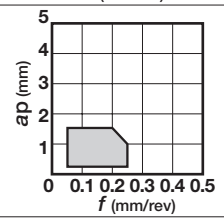




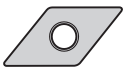
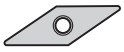
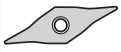
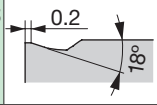
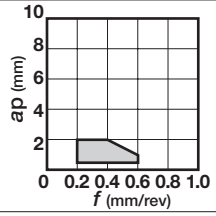
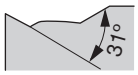
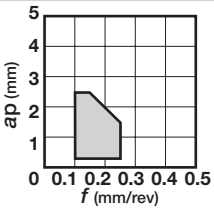
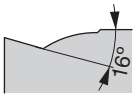
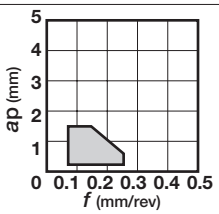
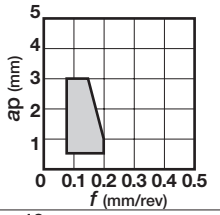
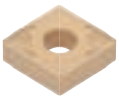
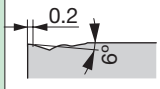
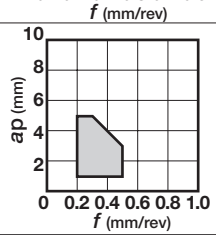
	Continuous	Light interrupted	Heavy interrupted
Finishing [a_p = ~ 0.3 mm]	Basic → T-CBN BXM10	Basic → T-CBN BXM20 Fracture → T-CBN BXA20 For high speed Wear → T-CBN BXM10	
Finishing [a_p = ~ 0.3 mm]	Basic → T-CBN BXM10	Basic → T-CBN BXM20 Fracture → T-CBN BXA20 For high speed Wear → T-CBN BXM10	Basic → T-CBN BXM20 Fracture → T-CBN BXA20

TurnLine - Chipbreaker Overview

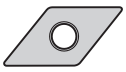
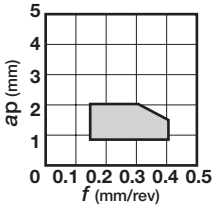
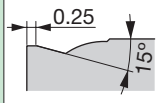
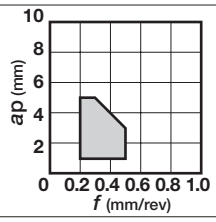
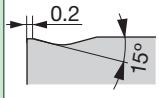
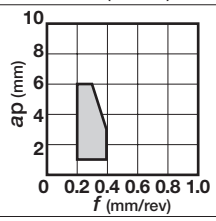
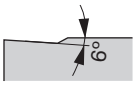
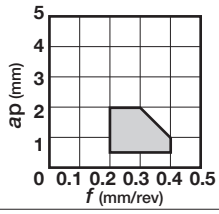
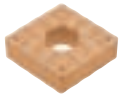
Application	Negative type with hole	C	D	S	T	W	V	Y
								
		80°	55°	90°	60°	80°	35°	25°
Precision finishing	TF  	 B050	 B061	 B070	 B079	 B090	 B097	
	01  	 B050	 B061	 B070	 B079	 B090	 B097	
	A~D  	 B050		 B070	 B079			
	W  				 B080			
Finishing	TSF  	 B050	 B061	 B070	 B080	 B090	 B097	
Finishing (Wiper)	FW 	B050	B061		B080	B090		
	AFW	B050				B090		
Finishing	ZF	B051	B061		B080	B090	B097	B101

Application	Negative type with hole		C	D	S	T	W	V	Y
									
			80°	55°	90°	60°	80°	35°	25°
Finishing	**11**	 	 B051	 B062	 B071	 B081	 B091	 B097	
Finishing of mild steels	**17**	 	 B051	 B062	 B071	 B081	 B091		
Finishing	**SF**	 	 B051	 B062	 B071	 B081	 B091	 B097	
	CF	 	 B051	 B062	 B071	 B081	 B091	 B098	
	HRF	 	B051	B062	B071	B081	B091	B098	
	TS		B052	B063	B072	B082	B091	B098	
Finishing to medium cutting (Wiper)	**SW**		B052	B063		B082	B092		
	ASW		B052				B092		

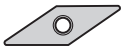
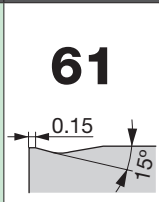
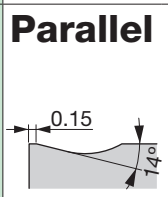
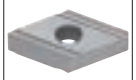
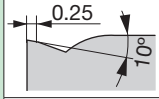
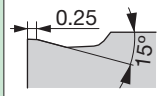
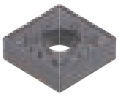
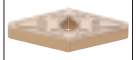
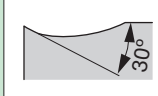
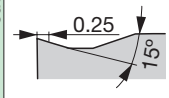
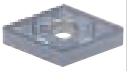
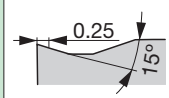
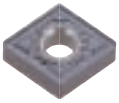
TurnLine - Chipbreaker Overview

Application	Negative type with hole	C	D	S	T	W	V	Y
								
		80°	55°	90°	60°	80°	35°	25°
High feed, small depth of cut	**AS**  	 B052	 B063	 B072	 B082	 B092		
Boring (Double sided)	**CB**  	 B052	 B063		 B082	 B092		
Finishing	**NS**  	 B053	 B063	 B072	 B082	 B092		
	SS  	 B053	 B064	 B072	 B083	 B092	 B098	
Medium cutting	**TM**  	 B053	 B064	 B072	B083	B093	B098	
Finishing to medium cutting	**AM**	B053	B064		B083	B093		
	NM	B053	B064		B083	B093		
	TQ	B054	B065		B083	B093	B099	

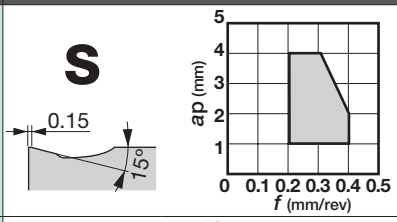
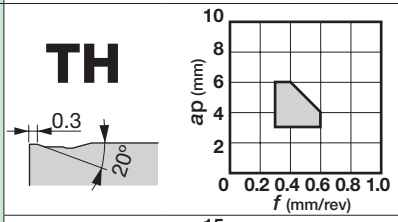
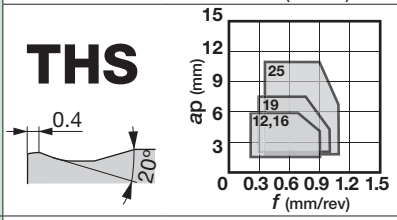
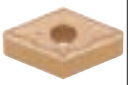
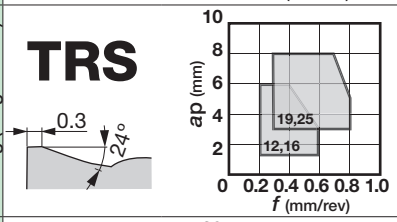
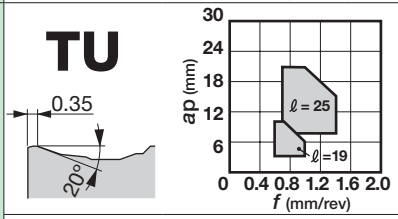
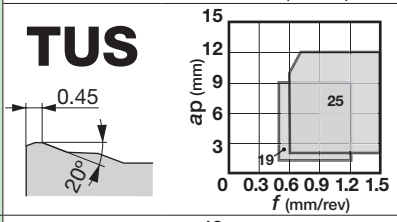
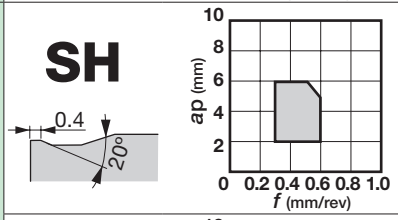
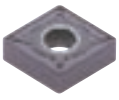
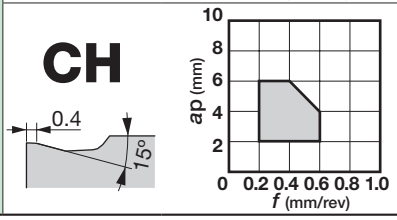
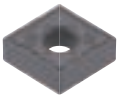
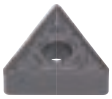
TurnLine - Chipbreaker Overview

Application	Negative type with hole		C	D	S	T	W	V	Y
									
			80°	55°	90°	60°	80°	35°	25°
Finishing to medium cutting	**ZM**	 	 B054	 B065	 B073	 B084	 B093	 B099	 B101
Medium cutting	**DM**	 	 B054	 B065	 B073	 B084	 B094	 B099	
	All-round	 	 B054	 B065	 B073	 B084	 B094	 B099	
Finishing to medium cutting	**27**	 	 B055	 B065	 B073	 B084	 B094		
Medium cutting	**28**		B055	B066		B085		B099	
	33		B055	B066		B085	B094	B099	
	37		B055	B066	B074	B085	B094		
	38		B055			B085			

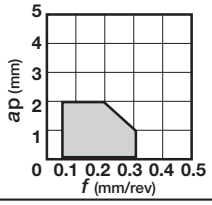
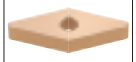
TurnLine - Chipbreaker Overview

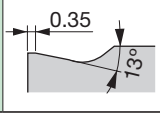
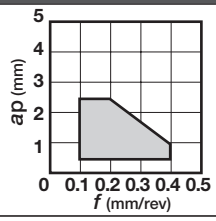
Application	Negative type with hole		C	D	S	T	W	V	R
									
			80°	55°	90°	60°	80°	35°	
Heavy cutting (Single sided)	**61**								 B102
Medium cutting	**Parallel**			 B066					
	SM		 B056	 B066	 B074	 B085	 B095	 B100	
	CM		 B056	 B067	 B074	 B085	 B095	 B100	
	P		 B056	 B067	 B074	 B086			
Finishing to medium cutting	**HRM**		 B056	 B067	 B074	 B086	 B095	 B100	
Medium cutting	**HMM**		 B056	 B067	B075	B086	B095	B100	
	SA		B057	B067	B075	B086	B095		

TurnLine - Chipbreaker Overview

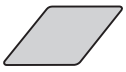
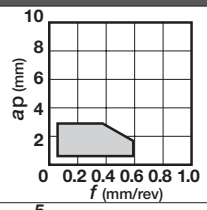
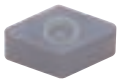
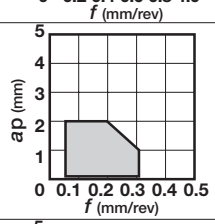
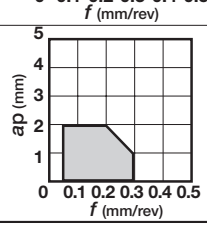
Application	Negative type with hole		C	D	S	T	W	V	R
			80°	55°	90°	60°	80°	35°	
Medium cutting	**S**		 B057	 B067	 B075	 B087			
Medium to heavy cutting	**TH**		 B057	 B068	 B075	 B087	 B096		
	THS		 B057	 B068	 B075	 B087	 B096		
Medium to heavy cutting (Single sided)	**TRS**		 B058		 B076				
Heavy cutting (Single sided)	**TU**		 B058		 B076				
	TUS		 B058		 B076				
Medium to heavy cutting	**SH**		 B058	 B068	 B076		 B096		
	CH		 B058	 B068	 B076	 B087	 B096		

TurnLine - Chipbreaker Overview

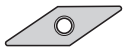
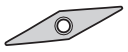
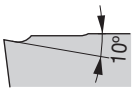
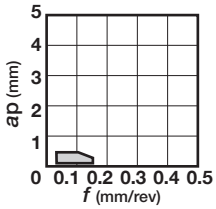
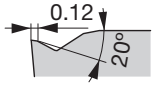
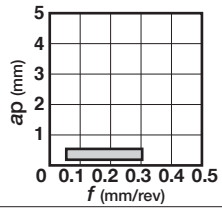
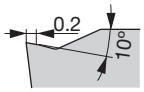
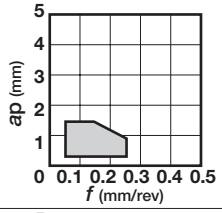
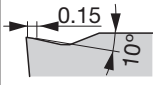
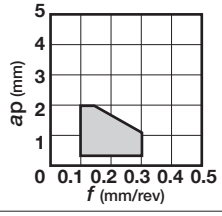
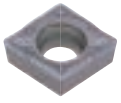
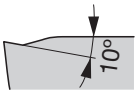
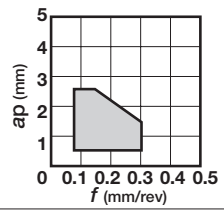
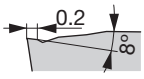
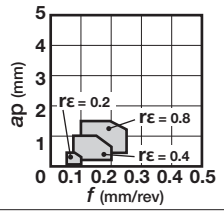
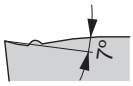
Application	Negative type with hole	C	D	S	T	W	V	R
								
		80°	55°	90°	60°	80°	35°	
Finishing to medium cutting	M,G-class  							
		B059	B068	B077	B088	B096	B100	B102

Application	Negative type with hole	C	D	S	T	R	KNMX	LNGN
								
		80°	55°	90°	60°		55°	90°
Finishing	S1  							
							B103	

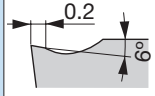
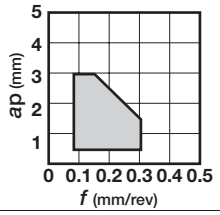
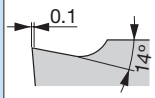
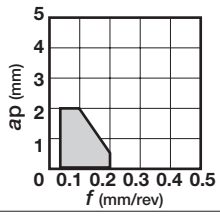
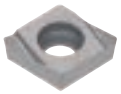
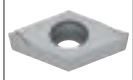
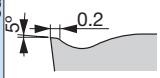
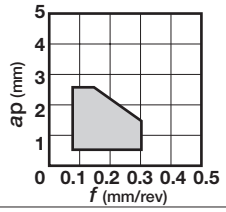
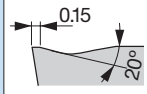
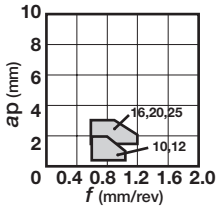
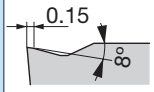
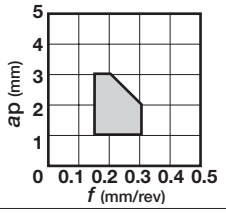
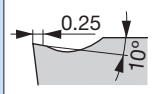
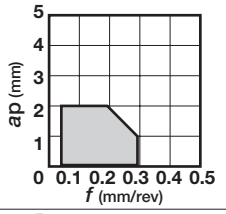
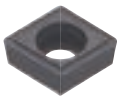
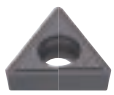
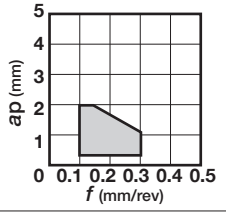
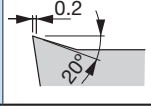
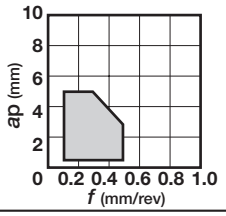
TurnLine - Chipbreaker Overview

Application	Negative type without hole		C	D	S	T	V	R	H
									
			80°	55°	90°	60°	35°		120°
Finishing to medium cutting	— G-class		 B060	 B069	 B078		 B101		 B103
	— M,G-class		 B060	 B069	 B078	 B089		 B102	
Finishing to roughing	— M,G-class		 B060	 B069	 B078				

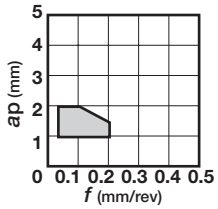
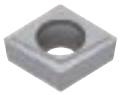
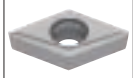
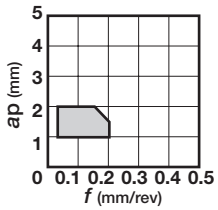
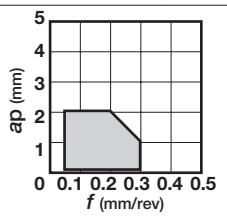
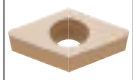
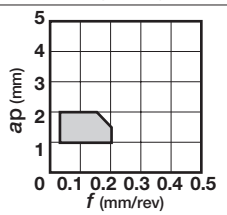
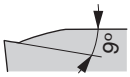
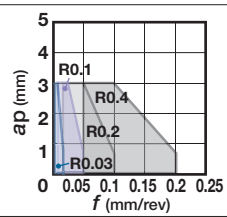
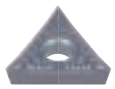
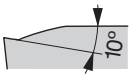
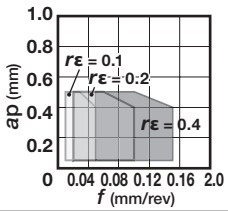
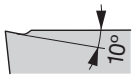
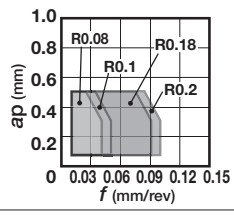
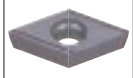
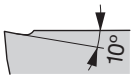
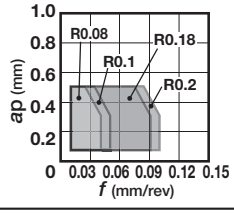
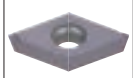
TurnLine - Chipbreaker Overview

Application	Positive 7° with hole	C	D	S	T	V	Y	R
								
		80°	55°	90°	60°	35°	25°	
Precision finishing	01  	 B104	 B114		 B126			
Finishing	PSF  	 B104	 B114		 B126	 B145		
	PF  	 B104	 B114			 B145		
Finishing to light cutting	PSS  	 B105	 B115		 B126	 B145		
Finishing to medium cutting	PS  	 B105	 B115	 B122	 B127	 B145		
	ZF  						 B148	
	ZM 						B148	
	23	B105	B115	B122	B127			

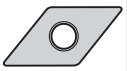
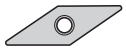
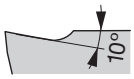
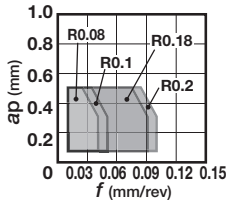
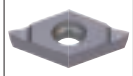
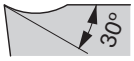
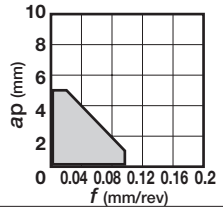
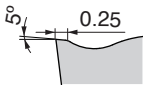
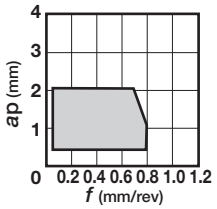
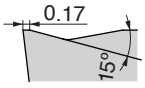
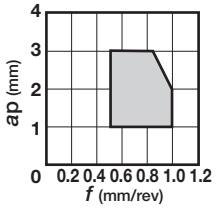
TurnLine - Chipbreaker Overview

Application	Positive 7° with hole	C	D	S	T	V	Y	R
		80°	55°	90°	60°	35°	25°	
Medium cutting	**24**  	 B105	 B115	 B122	 B127	 B146		
Finishing	**W****  	 B106	 B116		 B127			
Finishing to medium cutting	**RS**  							 B152
Heavy cutting	**61**  							 B153
Medium cutting	**PM**  	 B107	 B116	 B122	 B128			
Finishing to medium cutting	**CM**  	 B107	 B116	 B122	 B128	 B146		 B152
	SS  				 B128			
	AL  	 B108	 B117		 B128	B146		B152

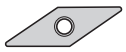
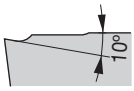
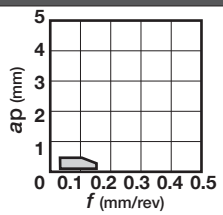
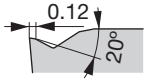
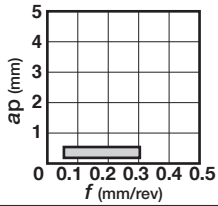
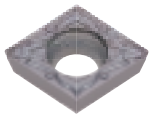
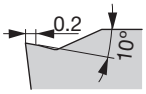
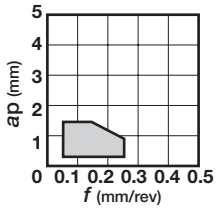
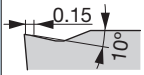
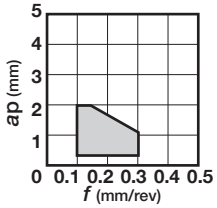
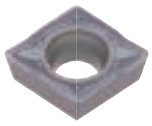
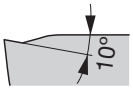
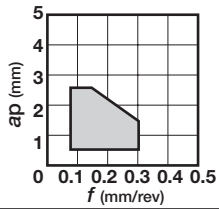
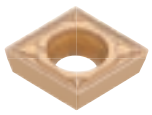
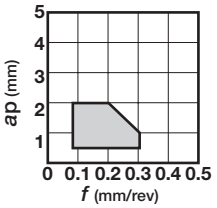
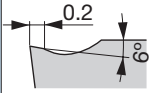
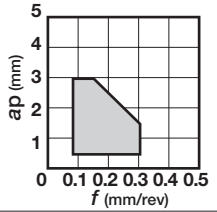
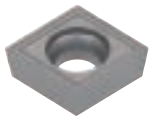
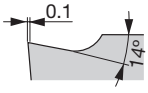
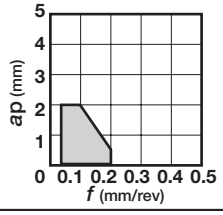
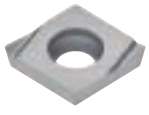
TurnLine - Chipbreaker Overview

Application	Positive 7° with hole	C	D	S	T	V	Y	R
		80°	55°	90°	60°	35°	25°	
Finishing to medium cutting	**All-round**  	 B108	 B117			 B146		
	Angular  	 B108	 B117					
	— **M,G-class**  	 B108	 B117					
	— (with hand)  				 B129			
For external turning on small lathes (Sharp edge)	**JS**  	 B109	 B118		 B129			
For internal turning on small lathes	**JS**  	 B109						
For external turning on small lathes (Sharp edge)	**JPP**  		 B118					
	JRP  		 B119					

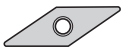
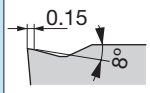
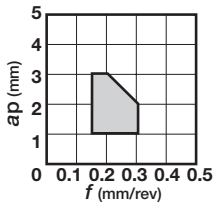
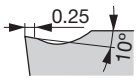
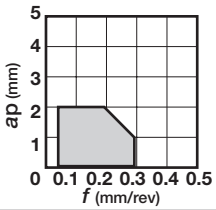
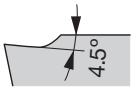
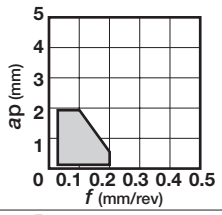
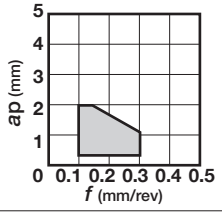
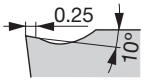
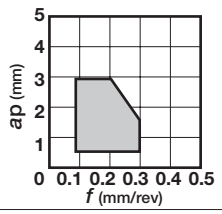
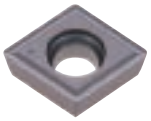
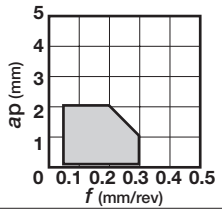
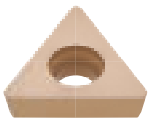
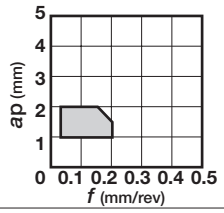
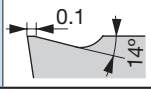
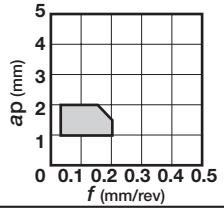
TurnLine - Chipbreaker Overview

Application	Positive 7° with hole	C	D	S	T	V	Y	R
								
		80°	55°	90°	60°	35°	25°	
For external turning on small lathes (Sharp edge)	**JSP**  		 B119					
	J□□  	 B110	 B119		 B129			
Low cutting force	**6RS**  							 B253
General use	**6RM**  							 B253

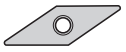
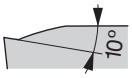
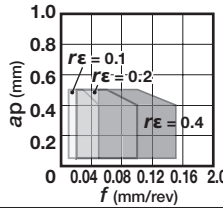
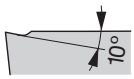
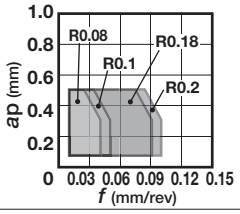
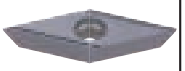
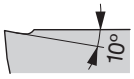
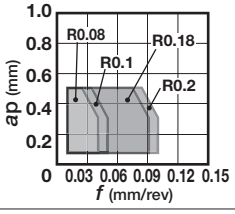
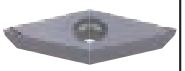
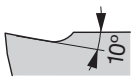
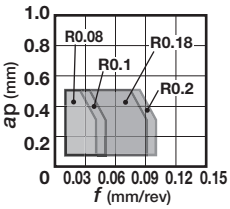
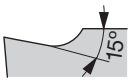
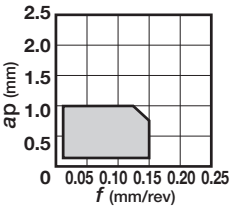
TurnLine - Chipbreaker Overview

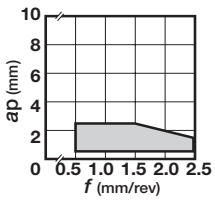
Application	Positive 11° with hole	C	S	T	E	V
						
		80°	90°	60°	75°	35°
Precision finishing	**01**  			 B131		
Finishing	**PSF**  	 B111		 B131		
	PF  	 B111		 B131		
Finishing to light cutting	**PSS**  	 B111		 B132		
Finishing to medium cutting	**PS**  	 B111	 B123	 B132		
	23  		 B123	 B132		
Medium cutting	**24**  	 B112	 B123	 B133		
Finishing	**W****  	 B112	 B123	 B133	 B120	

TurnLine - Chipbreaker Overview

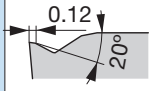
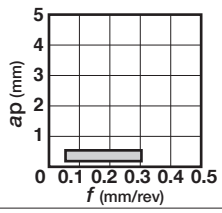
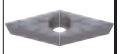
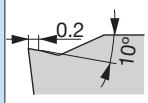
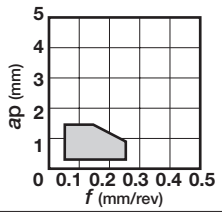
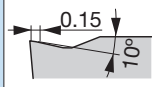
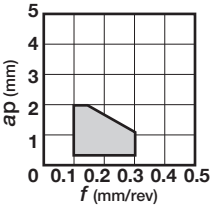
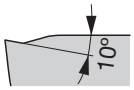
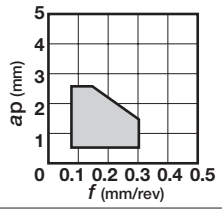
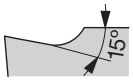
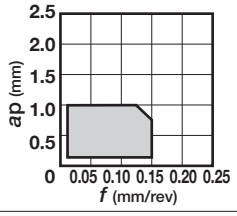
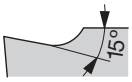
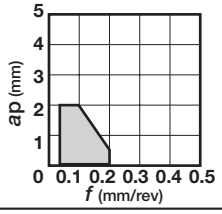
Application	Positive 11° with hole	C	S	T	E	V
						
		80°	90°	60°	75°	35°
Medium cutting	**PM**  	 B113		 B135		
Finishing to medium cutting	**CM**  	 B113	 B124	 B135		
	H**  			 B136		
	SS  			 B135		
Medium cutting	**All-round**  	 B113				
Finishing to medium cutting	— **M,G-class**  	 B113	 B124	 B136		
Finishing	— (with hand)  		 Former Tungaloy-standard hole Not ISO B124			
	— (with hand)  			 Former Tungaloy-standard hole Not ISO B136		

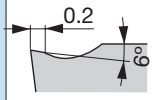
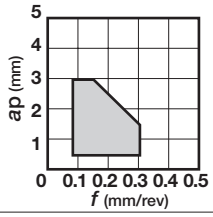
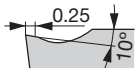
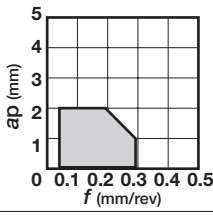
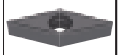
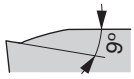
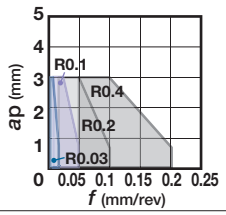
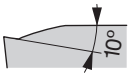
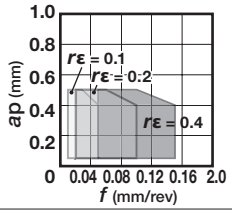
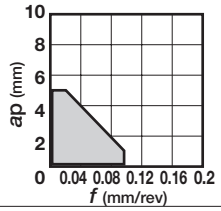
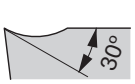
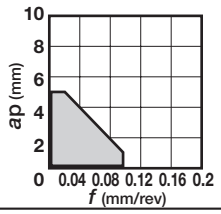
TurnLine - Chipbreaker Overview

Application	Positive 11° with hole	C	S	T	E	V
						
		80°	90°	60°	75°	35°
For intemal turning on small lathes	**JS**  			 B138	 B121	
For external turning on small lathes (Sharp edge)	**JPP**  					 B147
	JRP  					 B147
	JSP  					 B147
Finishing	**J08**  				 B121	

Application	Positive 11° with hole	W
		
		80°
Heavy cutting	**ML**  	 B142

TurnLine - Chipbreaker Overview

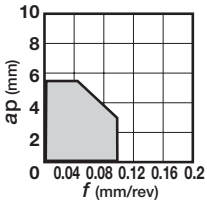
Application	Positive 5° with hole	W 80°	V 35°
Finishing	**PSF**  		 B142
Finishing	**PF**  		 B142
Finishing to light cutting	**PSS**  		 B143
Finishing to medium cutting	**PS**  		 B143
Finishing	**W08**  	 B141	
Finishing	**W11**  	 B141	

Application	Positive 5° with hole	W 80°	V 35°
Medium cutting	**24**  		 B143
Finishing to medium cutting	**CM**  		 B143
For external turning on small lathes (Sharp edge)	**JS**  		 B144
For internal turning on small lathes	**JS**  	 B141	
For external turning on small lathes (Sharp edge)	**J10**  		 B144
For external turning on small lathes (Honed edge)	**J10**  		 B144

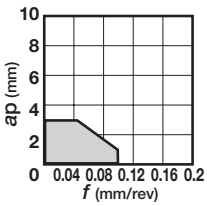
Insert

TurnLine - Chipbreaker Overview

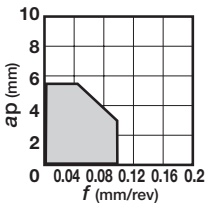
Application	Positive with hole	JXF□
Front-turning Insert	—	 B155



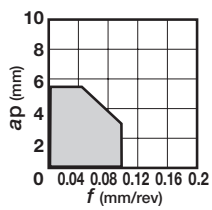
Application	Positive with hole	J10E□
Back-turning Insert	—	 B156



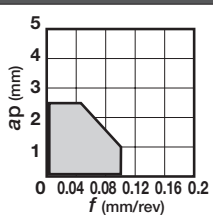
Application	Positive with hole	JXB□
Back-turning Insert	—	 B155



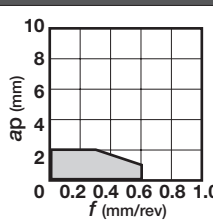
Application	Positive with hole	JXR□
Reverse-turning Insert	—	 B155



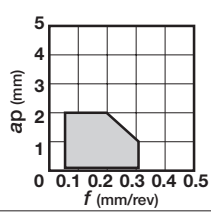
Application	Positive with hole	JTB□
Back-turning Insert	—	 B156



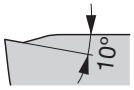
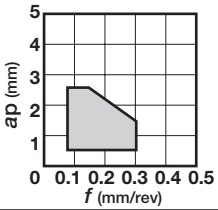
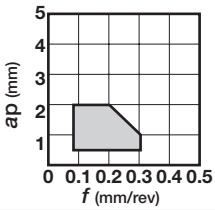
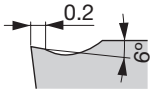
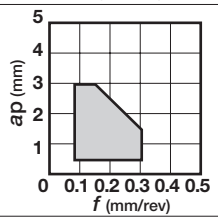
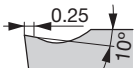
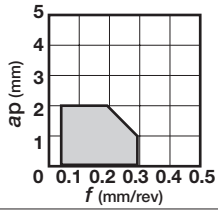
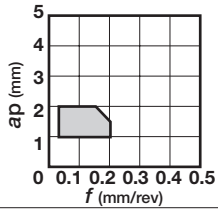
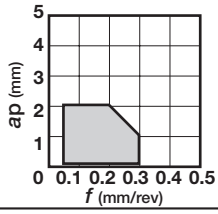
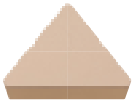
Application	Positive without hole	RT□
Medium cutting	—	Special round insert  B153



Application	Positive without hole	RCGX□
Medium cutting	—	Special round insert  B154

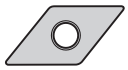
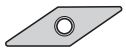
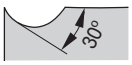
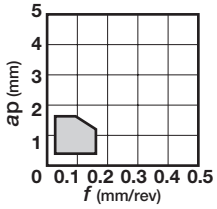
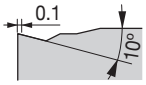
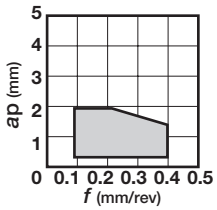
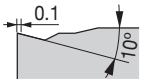
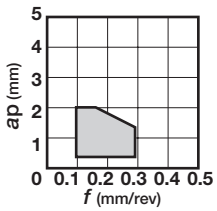
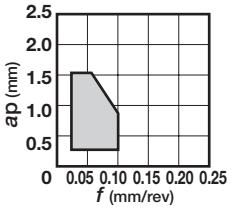
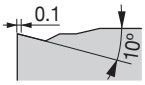
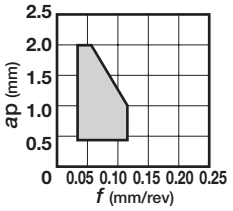
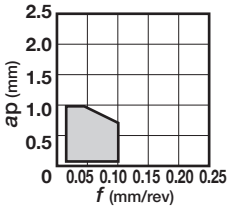


TurnLine - Chipbreaker Overview

Application	Positive 11° without hole		S	T
				
			90°	60°
Finishing to medium cutting	**PS** 			 B139
	23 		 B125	 B139
	24 			 B139
	CM 		 B125	 B139
	— (with hand) 		 B125	 B140
	— M,G-class 		 B125	 B140

Insert

TurnLine - Chipbreaker Overview

Application	Chipbreaker Positive, double-sided		D	W	V
					
			55°	80°	35°
Finishing (Low cutting force)	SS 		 B151	 B149	
Finishing (Wiper)	TSW 			 B149	
Finishing to medium cutting	TS 		 B151	 B149	
Finishing (Low cutting force) (sharp edge)	JSS 		 B150	 B149	
Finishing to medium cutting (sharp edge)	JTS 		 B150	 B149	
Finishing (sharp edge)	JRP 		 B150		 B151

MEMO

TurnLine - Insert

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° with hole

P	Steel	●	●ⓒ	●ⓒ	✣	✣	●ⓒ	●			●ⓒ					●ⓒ	●ⓒ			●											
M	Stainless						●ⓒ	●												●											
K	Cast iron	●ⓒ	●ⓒ	●ⓒ			●ⓒ	●			●ⓒ					●ⓒ	●ⓒ			●											
N	Non-ferrous																			●											
S	Superalloys						●ⓒ	●																							
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating						Coated cermet		Cermet		Uncoated																	
				T9105	T9115	T9125	T9135	AH120	GH110	GT9530		NS9530	NS520	TH10																	
Precision finishing	TF	CNMG120404-TF	0.4									●		●																	
		CNMG120408-TF	0.8									●																			
	01	CNGG090302-01	0.2									●																			
		CNGG090304-01	0.4									●																			
		CNGG090308-01	0.8									●																			
		CNGG120402-01	0.2									●	●	●																	
		CNGG120404-01	0.4									●	●	●																	
		CNGG120408-01	0.8									●	●	●																	
	C	CNGG120404R-C	0.4						●			●																			
		CNGG120404L-C	0.4									●																			
		CNGG120408R-C	0.8									●																			
		CNGG120408L-C	0.8									●																			
Finishing	TSF	CNMG090404E-TSF	0.4		●	●				●		●																			
		CNMG090408E-TSF	0.8		●	●				●		●																			
		CNMG120404-TSF	0.4	●	●	●		●		●		●																			
		CNMG120408-TSF	0.8	●	●	●	●	●		●		●																			
		CNMG120412-TSF	1.2		●	●		●																							
Finishing (Wiper)	FW	CNMG090404E-FW	0.4	●	●	●				●		●																			
		CNMG090408E-FW	0.8	●	●	●				●		●																			
		CNMG120404-FW	0.4		●					●		●																			
		CNMG120408-FW	0.8	●	●	●				●		●																			
	AFW	CNMG120404-AFW	0.4		●	●				●		●																			
		CNMG120408-AFW	0.8	●	●	●	●			●																					

● : Line-up

External toolholders → B200 -
J series toolholders → B342
PINZBOHR® → F136 - F151
Internal toolholders → B274 -
TungCap → B215, F046 -
Cartridges → F152 -

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° with hole

		Coating										Coated cermet				Cermet				Uncoated			
		T9115	T9125	T9135	T6120	T6130	AH630	T5105	T5115	AH8005	AH8015	GT9530	GT720			NS9530				TH10			
P	Steel	●ɔ	ɔ✣	✣	ɔ	✣	ɔ✣					●ɔ	●ɔ			●ɔ				●			
M	Stainless				●	ɔ	ɔ			●	ɔ									●			
K	Cast iron	●ɔ						●	ɔ			●ɔ	●ɔ			●ɔ				●			
N	Non-ferrous																			●			
S	Superalloys									●	ɔ												
H	Hard materials																						

Application	Chipbreaker	Designation	Corner radius	T9115	T9125	T9135	T6120	T6130	AH630	T5105	T5115	AH8005	AH8015	GT9530	GT720	NS9530	TH10
Finishing	**ZF**	**CNMG090404E-ZF**	0.4	●	●												
		**CNMG120404-ZF**	0.4	●	●									●		●	
		CNMG120408-ZF	0.8	●	●	●								●		●	
	11	**CNMG120404-11**	0.4											●		●	●
		**CNMG120408-11**	0.8											●	●	●	●
Finishing of mild steels	**17**	**CNMG120404-17**	0.4													●	
		**CNMG120408-17**	0.8													●	
Finishing	**SF**	**CNMG090304-SF**	0.4				●	●	●								
		**CNMG090308-SF**	0.8				●	●	●								
		CNMG120404-SF	0.4				●	●	●								
		CNMG120408-SF	0.8				●	●	●								
		CNMG120412-SF	1.2				●	●	●								
	CF	**CNMG120404-CF**	0.4							●	●						
		**CNMG120408-CF**	0.8							●	●						
		CNMG120412-CF	1.2							●	●						
	HRF	**CNMG120404-HRF**	0.4									●	●				
		**CNMG120408-HRF**	0.8									●	●				
		CNMG120412-HRF	1.2									●	●				

● : Line-up

External toolholders	→ **B200 -**	Internal toolholders	→ **B274 -**
J series toolholders	→ **B342**	TungCap	→ **B215, F046 -**
PINZBOHR®	→ **F136 - F151**	Cartridges	→ **F152 -**

TurnLine - Insert

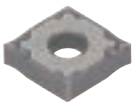
● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° with hole

P	Steel	●	●ɔ	ɔ✣	✣	✣						●ɔ				●ɔ	●ɔ																
M	Stainless					ɔ																											
K	Cast iron	●ɔ	●ɔ					●ɔ	ɔ			●ɔ				●ɔ	●ɔ																
N	Non-ferrous																																
S	Superalloys																																
H	Hard materials																																

Application	Chipbreaker	Designation	Corner radius	Coating								Coated cermet				Cermet																	
				T9105	T9115	T9125	T9135	T6130	T515	T5115		GT9530				NS9530	NS520																
Finishing	TS	CNMG120404-TS	0.4		●	●	●					●				●	●																
		CNMG120408-TS	0.8	●	●	●	●	●				●				●	●																
		CNMG120412-TS	1.2		●	●	●																										
Finishing to medium cutting (Wiper)	SW	CNMG090408E-SW	0.8	●	●	●				●																							
		CNMG090412E-SW	1.2	●	●	●				●																							
		CNMG120408-SW	0.8	●	●	●			●	●																							
		CNMG120412-SW	1.2	●	●	●			●	●																							
	ASW	CNMG120408-ASW	0.8	●	●	●										●																	
		CNMG120412-ASW	1.2	●	●	●																											
High feed, small depth of cutting	AS	CNMG120404-AS	0.4	●	●	●										●																	
		CNMG120408-AS	0.8	●	●	●	●									●																	
		CNMG120412-AS	1.2		●	●	●																										
Boring (Double sided)	CB	CNMG090304-CB	0.4													●																	
		CNMG090308-CB	0.8													●																	

● : Line-up

External toolholders	→ B200 -	Internal toolholders	→ B274 -
J series toolholders	→ B342	TungCap	→ B215, F046 -
PINZBOHR®	→ F136 - F151	Cartridges	→ F152 -

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° with hole

P	Steel	●	●ɔ	ɔ✣	✣	ɔ	✣	ɔ✣	✣		●	●ɔ	ɔ		●ɔ				●ɔ										
M	Stainless					●	ɔ	ɔ	✣		●	●ɔ	ɔ	ɔ	●ɔ														
K	Cast iron	●ɔ	●ɔ							●ɔ	●	●ɔ	ɔ		●ɔ				●ɔ										
N	Non-ferrous																												
S	Superalloys										●	●ɔ	●	ɔ															
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating														Cermet											
				T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	T515	AH110	AH120	AH725	AH8015	GH330	NS9530											
Finishing	NS	CNMG120404-NS	0.4															●											
		CNMG120408-NS	0.8		●	●												●											
	SS	CNMG090404E-SS	0.4							●	●																		
		CNMG090408E-SS	0.8							●	●																		
		CNMG120404-SS	0.4					●	●	●	●						●												
		CNMG120408-SS	0.8					●	●	●	●			●			●												
		CNMG120412-SS	1.2					●	●	●	●						●												
Medium cutting	TM	CNMG090304-TM	0.4		●	●																							
		CNMG090308-TM	0.8		●	●	●																						
		CNMG090404E-TM	0.4		●	●		●	●	●		●		●		●													
		CNMG090408E-TM	0.8		●	●		●	●	●		●		●		●													
		CNMG090412E-TM	1.2		●	●		●	●	●		●		●		●													
		CNMG120404-TM	0.4	●	●	●	●	●	●	●	●	●		●		●													
		CNMG120408-TM	0.8	●	●	●	●	●	●	●	●	●		●	●	●													
		CNMG120412-TM	1.2	●	●	●	●	●	●	●	●	●	●	●		●													
		CNMG120416-TM	1.6		●	●	●	●	●	●	●	●		●		●													
		CNMG160612-TM	1.2	●	●	●	●							●															
		CNMG190608-TM	0.8	●	●	●	●							●															
		CNMG190612-TM	1.2	●	●	●	●							●															
Finishing to medium cutting	AM	CNMG120408-AM	0.8		●	●																							
		CNMG120412-AM	1.2		●	●																							
		CNMG120416-AM	1.6		●	●																							
	NM	CNMG120408-NM	0.8	●	●	●	●											●											
		CNMG120412-NM	1.2		●	●	●																						

● : Line-up

External toolholders	→ B200 -	Internal toolholders	→ B274 -
J series toolholders	→ B342	TungCap	→ B215, F046 -
PINZBOHR®	→ F136 - F151	Cartridges	→ F152 -

TurnLine - Insert

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° with hole

P	Steel	●	●ɔ	ɔ✣	✣					●	●ɔ				●ɔ	●ɔ			●ɔ	●ɔ			●						
M	Stainless									●	●ɔ												●						
K	Cast iron	●ɔ	●ɔ			●ɔ	●	ɔ	✣	●	●ɔ				●ɔ	●ɔ			●ɔ	●ɔ			●						
N	Non-ferrous																						●						
S	Superalloys									●	●ɔ																		
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet				Uncoated					
				T9105	T9115	T9125	T9135	T515	T5105	T5115	T5125	AH110	AH120					GT9530	GT720			NS9530	NS520			TH10			
Finishing to medium cutting	**TQ**	**CNMG120404-TQ**	0.4															●				●							
		CNMG120408-TQ	0.8															●				●							
	ZM	**CNMG090408E-ZM**	0.8		●	●																							
		CNMG120408-ZM	0.8		●	●	●											●				●							
		CNMG120412-ZM	1.2		●	●	●											●											
		CNMG120416-ZM	1.6		●	●																							
Medium cutting	**DM**	**CNMG120404-DM**	0.4		●	●																							
		CNMG120408-DM	0.8	●	●	●	●																						
		CNMG120412-DM	1.2	●	●	●	●																						
	All-round	**CNMG090304**	0.4		●	●																●							
		CNMG090308	0.8	●	●	●	●												●			●							
		CNMG120404	0.4	●	●	●	●	●	●	●	●	●	●					●				●				●			
		CNMG120408	0.8	●	●	●	●	●	●	●	●	●	●					●				●	●			●			
		CNMG120412	1.2	●	●	●	●	●	●	●	●	●	●										●			●			
		CNMG120416	1.6	●	●	●	●	●	●	●	●																		
		CNMG160608	0.8	●	●	●	●		●	●	●		●																
		CNMG160612	1.2	●	●	●	●	●	●	●	●		●																
		CNMG160616	1.6	●	●	●	●	●	●	●	●																		
		CNMG190608	0.8		●	●	●																						
		CNMG190612	1.2	●	●	●	●	●	●	●	●		●																
		CNMG190616	1.6		●	●	●	●	●	●	●		●																

● : Line-up

External toolholders	→ **B200 -**	Internal toolholders	→ **B274 -**
J series toolholders	→ **B342**	TungCap	→ **B215, F046 -**
PINZBOHR®	→ **F136 - F151**	Cartridges	→ **F152 -**

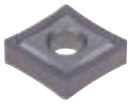
● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° with hole

P	Steel	●ɔ	ɔ✣	✣	●	●ɔ	ɔ	●ɔ				●ɔ				●ɔ				●									
M	Stainless				●	●ɔ	ɔ	●ɔ												●									
K	Cast iron	●ɔ			●	●ɔ	ɔ	●ɔ				●ɔ				●ɔ				●									
N	Non-ferrous																			●									
S	Superalloys				●	●ɔ	●																						
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating								Coated cermet			Cermet			Uncoated											
				T9115	T9125	T9135	AH110	AH120	AH725	GH330		GT720			NS9530			TH10											
Finishing to medium cutting	27	CNMG120404-27	0.4	●	●										●														
		CNMG120408-27	0.8	●	●	●									●														
Medium cutting	28	CNMG120404-28	0.4		●		●	●																					
		CNMG120408-28	0.8				●	●																					
	33	CNMG120408-33	0.8				●					●																	
		CNMG120416-33	1.6	●																									
		CNMG160612-33	1.2	●																									
		CNMG190612-33	1.2	●																									
	37	CNMG120404-37	0.4	●											●														
		CNMG120408-37	0.8	●						●					●			●											
		CNMG120412-37	1.2	●																									
	38	CNMG120404-38	0.4							●																			
		CNMG120408-38	0.8	●					●	●																			

● : Line-up

External toolholders	→ **B206 -**	Internal toolholders	→ **B292 -**
J series toolholders	→ **B342**	TungCap	→ **B215, F046 -**
PINZBOHR®	→ **F136 - F151**	Cartridges	→ **F152 -**

TurnLine - Insert

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° with hole

P	Steel	ɔ	✣	ɔ✣	✣					ɔ				●						●ɔ				●			
M	Stainless	●	ɔ	ɔ	✣					ɔ	●	ɔ		●										●			
K	Cast iron					●ɔ	●	ɔ	✣	ɔ				●						●ɔ				●			
N	Non-ferrous																							●			
S	Superalloys									●	●	ɔ	ɔ	●													
H	Hard materials																										

Application	Chipbreaker	Designation	Corner radius	Coating														Cermet				Uncoated				
				T6120	T6130	AH630	AH645	T515	T5105	T5115	T5125	AH725	AH8005	AH8015	AH905	GH110						TH10				
Medium cutting	SM	CNMG090404E-SM	0.4	●	●	●																				
		CNMG090408E-SM	0.8	●	●	●																				
		CNMG090412E-SM	1.2	●	●	●																				
		CNMG120404-SM	0.4	●	●	●	●					●														
		CNMG120408-SM	0.8	●	●	●	●					●			●											
		CNMG120412-SM	1.2	●	●	●	●					●														
	CM	CNMG120404-CM	0.4						●	●	●															
		CNMG120408-CM	0.8					●	●	●	●															
		CNMG120412-CM	1.2					●	●	●	●															
		CNMG160608-CM	0.8						●	●	●															
		CNMG160612-CM	1.2						●	●	●															
	P	CNGG120404R-P	0.4													●						●				
		CNGG120404L-P	0.4													●						●				
		CNGG120408R-P	0.8													●						●				
		CNGG120408L-P	0.8													●						●				
Finishing to medium cutting	HRM	CNMG120404-HRM	0.4										●	●												
		CNMG120408-HRM	0.8										●	●												
		CNMG120412-HRM	1.2										●	●												
		CNMG160608-HRM	0.8										●	●												
		CNMG160612-HRM	1.2										●	●												
		CNMG190612-HRM	1.2										●	●												
		CNMG190616-HRM	1.6										●	●												
Medium cutting	HMM	CNMG120404-HMM	0.4												●											
		CNMG120408-HMM	0.8												●											
		CNMG120412-HMM	1.2												●											
		CNMG160608-HMM	0.8												●											
		CNMG160612-HMM	1.2												●											
		CNMG160616-HMM	1.6												●											

● : Line-up

External toolholders → B200 -
J series toolholders → B342
PINZBOHR® → F136 - F151
Internal toolholders → B274 -
TungCap → B215, F046 -
Cartridges → F152 -

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° with hole

P	Steel	●	●c	c✣	✣	c	✣	c✣	✣	●	●c	●c			●c				●c										
M	Stainless					●	c	c	✣	●	●c	●c																	
K	Cast iron	●c	●c							●	●c	●c			●c				●c				c✣						
N	Non-ferrous																						c✣						
S	Superalloys									●	●c												c✣						
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating											Coated cermet				Cermet				Uncoated						
				T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	AH110	AH120	GH330	GT720				NS9530				KS20						
Medium cutting	SA	CNMG120404-SA	0.4					●	●	●	●		●																
		CNMG120408-SA	0.8					●	●	●	●	●	●										●						
		CNMG120412-SA	1.2					●	●	●	●		●										●						
		CNMG190612-SA	1.2										●										●						
		CNMG190616-SA	1.6																				●						
	S	CNMG120404R-S	0.4			●	●		●	●	●			●	●				●										
		CNMG120404L-S	0.4			●	●		●	●	●			●					●										
		CNMG120408R-S	0.8			●	●		●	●	●			●	●				●										
		CNMG120408L-S	0.8			●	●		●	●	●			●					●										
Medium to heavy cutting	TH	CNMG120408-TH	0.8	●	●	●	●		●				●																
		CNMG120412-TH	1.2	●	●	●	●		●				●																
		CNMG120416-TH	1.6	●	●	●	●																						
		CNMG160612-TH	1.2	●	●	●	●						●																
		CNMG160616-TH	1.6	●	●	●	●						●																
		CNMG190612-TH	1.2	●	●	●	●						●																
		CNMG190616-TH	1.6	●	●	●	●						●																
	THS	CNMG120408-THS	0.8	●	●	●	●																						
		CNMG120412-THS	1.2	●	●	●	●																						
		CNMG120416-THS	1.6	●	●	●	●																						
		CNMG160612-THS	1.2	●	●	●	●																						
		CNMG160616-THS	1.6	●	●	●	●																						
		CNMG190612-THS	1.2		●	●	●																						
		CNMG190616-THS	1.6		●	●	●																						
		CNMG190624-THS	2.4		●	●	●																						
		CNMG250924-THS	2.4		●	●	●																						

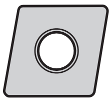
● : Line-up

External toolholders → B206 -
J series toolholders → B342
PINZBOHR® → F136 - F151
Internal toolholders → B292 -
TungCap → B215, F046 -
Cartridges → F152 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

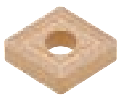
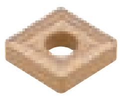
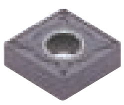
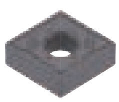
TurnLine - Insert

NEGATIVE TYPE



Rhombic, 80° with hole

	Material	T9115	T9125	T9135	T6130	AH630	AH645	T515	T5105	T5115	T5125
P	Steel	●◐	◐✣	✣	✣	◐✣	✣				
M	Stainless				◐	◐	✣				
K	Cast iron	●◐						●◐	●	◐	✣
N	Non-ferrous										
S	Superalloys										
H	Hard materials										

Application	Chipbreaker	Designation	Corner radius	T9115	T9125	T9135	T6130	AH630	AH645	T515	T5105	T5115	T5125
				Coating									
Medium to heavy cutting (Single sided)	TRS 	CNMM120408-TRS	0.8	●	●	●							
		CNMM120412-TRS	1.2	●	●	●							
		CNMM160612-TRS	1.2	●	●	●							
		CNMM160616-TRS	1.6	●	●	●							
		CNMM190616-TRS	1.6	●	●	●							
		CNMM190624-TRS	2.4	●	●	●							
		CNMM250924-TRS	2.4	●	●	●							
Heavy cutting (Single sided)	TU 	CNMM190612-TU	1.2		●	●							
		CNMM190616-TU	1.6		●	●							
		CNMM190624-TU	2.4	●	●	●							
		CNMM250924-TU	2.4		●	●							
	TUS 	CNMM190608-TUS	0.8	●	●								
		CNMM190612-TUS	1.2	●	●	●							
		CNMM190616-TUS	1.6	●	●	●							
		CNMM190624-TUS	2.4	●	●	●							
		CNMM190632-TUS	3.2	●	●								
		CNMM250916-TUS	1.6	●	●	●							
		CNMM250924-TUS	2.4	●	●	●							
		CNMM250932-TUS	3.2	●	●								
Medium to heavy cutting	SH 	CNMG120408-SH	0.8				●	●	●				
		CNMG120412-SH	1.2				●	●	●				
		CNMG120416-SH	1.6				●	●	●				
		CNMG160612-SH	1.2				●	●	●				
		CNMG160616-SH	1.6				●	●	●				
		CNMG190612-SH	1.2				●	●	●				
		CNMG190616-SH	1.6				●	●	●				
	CH 	CNMG120404-CH	0.4								●	●	●
		CNMG120408-CH	0.8							●	●	●	●
		CNMG120412-CH	1.2							●	●	●	●
		CNMG160612-CH	1.2								●	●	●
		CNMG160616-CH	1.6								●	●	●
		CNMG190612-CH	1.2								●	●	●
		CNMG190616-CH	1.6								●	●	●

● : Line-up

External toolholders → B206 -
J series toolholders → B342
PINZBOHR® → F136 - F151
Internal toolholders → B292 -
TungCap → B215, F046 -
Cartridges → F152 -

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° with hole

P	Steel	●								●ⓒ				●															
M	Stainless													●															
K	Cast iron	●ⓒ	●ⓒ	●	ⓒ	✣				●ⓒ				●				●ⓒ	●										
N	Non-ferrous													●															
S	Superalloys																												
H	Hard materials																			●									

Application	Chipbreaker	Designation	Corner radius	Coating							Cermet			Uncoated			Ceramics												
				T9105	T515	T5105	T5115	T5125			NS520			TH10			FX105	LX21	LX11										
Finishing to medium cutting	-	CNMA120404	0.4			●	●	●						●															
		CNMA120408	0.8	●	●	●	●	●			●			●			●												
		CNMA120412	1.2	●	●	●	●	●						●			●												
		CNMA120416	1.6	●		●	●	●						●			●												
		CNMA160608	0.8			●	●	●																					
		CNMA160612	1.2		●	●	●	●																					
		CNMA160616	1.6		●	●	●	●																					
		CNMA190612	1.2		●	●	●	●																					
		CNMA190616	1.6		●	●	●	●																					
	Wiper	CNMA120408W	0.8														●												
		CNMA120412W	1.2														●		●										
		CNMA120416W	1.6														●												
	-	CNGA120404	0.4															●	●										
		CNGA120408	0.8								●						●	●	●										
		CNGA120412	1.2														●	●	●										
		CNGA120416	1.6														●		●										
		CNGA120420	2.0																●										

● : Line-up

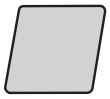
Insert
Negative
C

External toolholders	→ **B206 -**	Internal toolholders	→ **B292 -**
TungCap	→ **B215, F046 -**	PINZBOHR®	→ **F136 - F151**
Cartridges	→ **F152 -**		

TurnLine - Insert

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 80° without hole

		FX105	LX21	LX11	CX710
P	Steel				
M	Stainless				
K	Cast iron	●◐	●		●◐
N	Non-ferrous				
S	Superalloys				
H	Hard materials			●	

Application	Chipbreaker	Designation	Corner radius	Ceramics FX105	LX21	LX11	CX710
Finishing to medium cutting	-	CNGD120712	1.2	●			
		CNGD120716	1.6	●			
	-	CNMN120408	0.8	●			
		CNMN120412	1.2	●			
	-	CNGN120404	0.4			●	
		CNGN120408	0.8	●		●	
		CNGN120412	1.2	●		●	
		CNGN120416	1.6	●	●	●	
		CNGN120420	2.0	●			
		CNGN120708	0.8	●		●	
		CNGN120712	1.2	●		●	
		CNGN120716	1.6	●		●	
		CNGN120720	2.0			●	
	-	CNGX120712	1.2	●			
		CNGX120716	1.6	●			●
		CNMX120716	1.6	●			

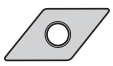
● : Line-up

CNGD... : External toolholders → **B254**

CNMN..., CNGN... : External toolholders → **B233**, Internal toolholders → **B311**

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 55° with hole

		Coating									Coated cermet				Cermet				Uncoated							
		T9105	T9115	T9125	T9135	AH120	GH110				GT9530	GT720			NS9530	NS520			TH10							
P	Steel	●	●ɔ	ɔ✣	✣	●ɔ	●				●ɔ	●ɔ			●ɔ	●ɔ			●							
M	Stainless					●ɔ	●												●							
K	Cast iron	●ɔ	●ɔ			●ɔ	●				●ɔ	●ɔ			●ɔ	●ɔ			●							
N	Non-ferrous																		●							
S	Superalloys					●ɔ	●																			
H	Hard materials																									

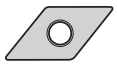
Application	Chipbreaker	Designation	Corner radius	T9105	T9115	T9125	T9135	AH120	GH110	GT9530	GT720	NS9530	NS520	TH10
Precision finishing	**TF**	**DNMG150404-TF**	0.4									●		●
		DNMG150408-TF	0.8									●		
	01	**DNGG110402-01**	0.2									●		
		DNGG110404-01	0.4									●	●	
		DNGG110408-01	0.8								●	●		
		DNGG150402-01	0.2									●	●	●
		DNGG150404-01	0.4						●			●	●	●
		DNGG150408-01	0.8						●			●	●	●
Finishing	**TSF**	**DNMG110404E-TSF**	0.4		●	●				●		●		
		DNMG110408E-TSF	0.8		●	●				●		●		
		DNMG110412E-TSF	1.2		●	●				●		●		
		DNMG150404-TSF	0.4	●	●	●	●	●		●		●		
		DNMG150408-TSF	0.8	●	●	●	●	●		●		●		
		DNMG150412-TSF	1.2	●	●	●	●	●						
		DNMG150604-TSF	0.4		●	●				●		●		
		DNMG150608-TSF	0.8	●	●	●	●			●		●		
		DNMG150612-TSF	1.2	●	●	●	●							
Finishing (Wiper)	**FW**	**DNMG110404E-FW**	0.4		●									
		DNMG110408E-FW	0.8		●									
		DNMG150404-FW	0.4		●									
		DNMG150408-FW	0.8		●									
		DNMG150604-FW	0.4		●									
		DNMG150608-FW	0.8		●									
Finishing	**ZF**	**DNMG110404E-ZF**	0.4		●	●								
		DNMG150404-ZF	0.4		●	●	●			●		●		
		DNMG150408-ZF	0.8		●	●	●			●		●		
		DNMG150412-ZF	1.2		●	●	●							
		DNMG150604-ZF	0.4		●	●								
		DNMG150608-ZF	0.8		●	●	●							
		DNMG150612-ZF	1.2		●	●								

● : Line-up

External toolholders → **B201 -**
J series toolholders → **B342**
Internal toolholders → **B276 -**
TungCap → **B215, F046 -**

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 55° with hole

P	Steel	●ⓒ ⓒ ✣ ⓒ✣ ● ● ● ●ⓒ ● ● ● ●ⓒ ● ● ● ● ● ● ● ●
M	Stainless	● ⓒ ✣ ⓒ ● ● ● ●ⓒ ● ● ● ● ● ● ● ●
K	Cast iron	●ⓒ ● ● ● ⓒ ● ●ⓒ ● ● ● ●ⓒ ● ● ● ● ● ● ● ●
N	Non-ferrous	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
S	Superalloys	● ⓒ ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●
H	Hard materials	● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

Application	Chipbreaker	Designation	Corner radius	Coating T9115	T6120	T6130	AH630	T5105	T5115	AH8005	AH8015	GH330	Cermet NS9530	Uncoated TH10
Finishing	11	DNMG110404-11	0.4										●	
		DNMG110408-11	0.8										●	
		DNMG150404-11	0.4									●	●	●
		DNMG150408-11	0.8	●									●	
Finishing of mild steels	17	DNMG150404-17	0.4										●	
		DNMG150408-17	0.8										●	
Finishing	SF	DNMG150404-SF	0.4		●	●	●							
		DNMG150408-SF	0.8		●	●	●							
		DNMG150604-SF	0.4		●	●	●							
		DNMG150608-SF	0.8		●	●	●							
	CF	DNMG150404-CF	0.4					●	●					
		DNMG150408-CF	0.8					●	●					
		DNMG150412-CF	1.2					●	●					
		DNMG150604-CF	0.4					●	●					
		DNMG150608-CF	0.8					●	●					
		DNMG150612-CF	1.2					●	●					
	HRF	DNMG150404-HRF	0.4							●	●			
		DNMG150408-HRF	0.8							●	●			
		DNMG150604-HRF	0.4							●	●			
		DNMG150608-HRF	0.8							●	●			

● : Line-up

External toolholders → B201 -
J series toolholders → B342
Internal toolholders → B276 -
TungCap → B215, F046 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 55° with hole

P	Steel	●	●◐	◐✣	✣					●◐					●◐	●◐																
M	Stainless																															
K	Cast iron	●◐	●◐							●◐					●◐	●◐																
N	Non-ferrous																															
S	Superalloys																															
H	Hard materials																															

Application	Chipbreaker	Designation	Corner radius	Coating							Coated cermet				Cermet																	
				T9105	T9115	T9125	T9135				GT9530				NS9530	NS520																
Finishing	**TS**	**DNMG150404-TS**	0.4		●	●	●				●				●	●																
		**DNMG150408-TS**	0.8	●	●	●	●				●				●	●																
		DNMG150412-TS	1.2	●	●	●	●																										
		DNMG150604-TS	0.4								●				●	●																
		DNMG150608-TS	0.8		●	●					●				●	●																
		DNMG150612-TS	1.2		●	●																											
Finishing to medium cutting (Wiper)	**SW**	**DNMG110408E-SW**	0.8		●																											
		**DNMG110412E-SW**	1.2		●																											
		DNMG150408-SW	0.8		●																											
		DNMG150412-SW	1.2		●																											
		DNMG150608-SW	0.8		●																											
		DNMG150612-SW	1.2		●																											
High feed, small depth of cutting	**AS**	**DNMG150404-AS**	0.4		●		●								●																	
		**DNMG150408-AS**	0.8		●	●	●								●																	
		DNMG150412-AS	1.2		●	●	●																										
		DNMG150604-AS	0.4		●																											
		DNMG150608-AS	0.8		●	●																										
		DNMG150612-AS	1.2		●																											
Boring (Double sided)	**CB**	**DNMG110404-CB**	0.4								●				●																	
		**DNMG110408-CB**	0.8		●						●				●																	
Finishing	**NS**	**DNMG150404-NS**	0.4			●									●																	
		**DNMG150408-NS**	0.8	●	●	●									●																	

● : Line-up

External toolholders → **B201 -**
J series toolholders → **B342**
Internal toolholders → **B276 -**
TungCap → **B215, F046 -**

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 55° with hole

P	Steel	●	●c	c✣	✣	c	✣	c✣	✣	●	●c	●c			●c					●c									
M	Stainless					●	c	c	✣	●	●c	●c																	
K	Cast iron	●c	●c							●	●c	●c			●c					●c							c✣		
N	Non-ferrous																										c✣		
S	Superalloys									●	●c																c✣		
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating											Coated cermet				Cermet				Uncoated					
				T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	AH110	AH120	GH330	GT9530				NS9530				KS20					
Finishing	SS	DNMG110404E-SS	0.4							●	●																	
		DNMG110408E-SS	0.8							●	●																	
		DNMG150404-SS	0.4					●	●	●	●			●														
		DNMG150408-SS	0.8					●	●	●	●			●									●					
		DNMG150412-SS	1.2					●	●	●	●																	
		DNMG150604-SS	0.4					●	●	●	●			●														
		DNMG150608-SS	0.8					●	●	●	●			●														
		DNMG150612-SS	1.2					●	●	●	●																	
Medium cutting	TM	DNMG110404E-TM	0.4		●	●																						
		DNMG110408E-TM	0.8		●	●																						
		DNMG110412E-TM	1.2		●	●																						
		DNMG110404-TM	0.4		●	●	●																					
		DNMG110408-TM	0.8		●	●	●																					
		DNMG150404-TM	0.4	●	●	●	●						●															
		DNMG150408-TM	0.8	●	●	●	●						●															
		DNMG150412-TM	1.2	●	●	●	●					●	●															
		DNMG150416-TM	1.6		●	●																						
		DNMG150604-TM	0.4	●	●	●	●						●															
		DNMG150608-TM	0.8	●	●	●	●						●															
		DNMG150612-TM	1.2	●	●	●	●						●															
		DNMG150616-TM	1.6	●	●	●	●																					
Finishing to medium cutting	AM	DNMG150408-AM	0.8		●	●																						
		DNMG150412-AM	1.2		●	●																						
		DNMG150416-AM	1.6		●	●																						
		DNMG150608-AM	0.8		●	●																						
		DNMG150612-AM	1.2		●	●																						
		DNMG150616-AM	1.6		●	●																						
	NM	DNMG150408-NM	0.8		●	●	●								●				●									
		DNMG150412-NM	1.2		●	●	●																					
		DNMG150608-NM	0.8												●				●									

● : Line-up

External toolholders → B201 -
J series toolholders → B342
Internal toolholders → B276 -
TungCap → B215, F046 -

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 55° with hole

P	Steel	●	●c	c✣	✣					●	●c				●c				●c	●c			●				
M	Stainless									●	●c												●				
K	Cast iron	●c	●c			●c	●	c	✣	●	●c				●c				●c	●c			●				
N	Non-ferrous																						●				
S	Superalloys									●	●c																
H	Hard materials																										

Application	Chipbreaker	Designation	Corner radius	Coating											Coated cermet				Cermet				Uncoated				
				T9105	T9115	T9125	T9135	T515	T5105	T5115	T5125	AH110	AH120		GT9530				NS9530	NS520			TH10				
Finishing to medium cutting	**TQ**	**DNMG150404-TQ**	0.4												●				●								
		DNMG150408-TQ	0.8												●				●								
	ZM	**DNMG110408E-ZM**	0.8		●	●																					
		DNMG150408-ZM	0.8		●	●	●								●				●								
		DNMG150412-ZM	1.2		●	●	●																				
		DNMG150608-ZM	0.8		●	●	●																				
		DNMG150612-ZM	1.2		●	●																					
Medium cutting	**DM**	**DNMG150408-DM**	0.8		●	●	●																				
		DNMG150412-DM	1.2	●	●	●	●																				
		DNMG150604-DM	0.4		●																						
		DNMG150608-DM	0.8		●	●	●																				
		DNMG150612-DM	1.2	●	●	●	●																				
		DNMG150616-DM	1.6	●																							
	All-round	**DNMG110404**	0.4		●	●			●	●	●				●				●								
		DNMG110408	0.8	●	●	●	●		●	●	●				●				●								
		DNMG150404	0.4		●	●	●		●	●	●	●	●		●				●	●			●				
		DNMG150408	0.8	●	●	●	●	●	●	●	●	●	●		●				●	●			●				
		DNMG150412	1.2	●	●	●	●	●	●	●	●	●	●						●	●			●				
		DNMG150416	1.6		●	●			●	●	●																
		DNMG150604	0.4		●	●			●	●	●												●				
		DNMG150608	0.8	●	●	●	●	●	●	●	●												●				
		DNMG150612	1.2	●	●	●	●	●	●	●	●												●				
		DNMG150616	1.6		●	●																					
Finishing to medium cutting	**27**	**DNMG150404-27**	0.4			●													●								
		DNMG150408-27	0.8		●	●													●								
		DNMG150412-27	1.2			●																					

● : Line-up

External toolholders → B201 -
J series toolholders → B342, B343
Internal toolholders → B276 -
TungCap → B215, F046 -

TurnLine - Insert

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 55° with hole

P	Steel	ɔ	✣	●ɔ	✣	●	●ɔ	●ɔ				●ɔ				●ɔ				●ɔ					
M	Stainless	●	ɔ	ɔ	✣	●	●ɔ	●ɔ																	
K	Cast iron					●	●ɔ	●ɔ				●ɔ				●ɔ				●ɔ					
N	Non-ferrous																								
S	Superalloys					●	●ɔ																		
H	Hard materials																								

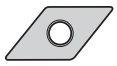
Application	Chipbreaker	Designation	Corner radius	Coating								Coated cermet			Cermet				Uncoated					
				T6120	T6130	AH630	AH645	AH110	AH120	GH330		GT9530			NS9530				TH10					
Medium cutting	28	DNMG150404-28	0.4						●															
		DNMG150408-28	0.8						●															
	33	DNMG150404-33	0.4					●																
		DNMG150408-33	0.8					●											●					
	37	DNMG150404-37	0.4												●									
		DNMG150408-37	0.8							●					●									
	Parallel	DNGG150404R	0.4									●			●									
		DNGG150404L	0.4									●			●									
		DNGG150408R	0.8												●									
		DNGG150408L	0.8												●									
	SM	DNMG110404E-SM	0.4	●	●	●																		
		DNMG110408E-SM	0.8	●	●	●																		
		DNMG150404-SM	0.4	●	●	●	●																	
		DNMG150408-SM	0.8	●	●	●	●																	
		DNMG150412-SM	1.2	●	●	●	●																	
		DNMG150604-SM	0.4	●	●	●	●																	
		DNMG150608-SM	0.8	●	●	●	●																	
		DNMG150612-SM	1.2	●	●	●	●																	

● : Line-up

External toolholders → B201 -
J series toolholders → B342
Internal toolholders → B276 -
TungCap → B215, F046 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 55° with hole

		T9125	T9135	T6130	AH630	AH645	T515	T5105	T5115	T5125	AH120	AH8005	AH8015	AH905	GH110	GH330	NS9530	TH10
P	Steel	◐✣	✣	✣	◐✣	✣					●◐				●	●◐		●
M	Stainless			◐	◐	✣					●◐	●	◐		●	●◐		●
K	Cast iron						●◐	●	◐	✣	●◐				●	●◐	●◐	●
N	Non-ferrous																	●
S	Superalloys										●◐	●	◐	◐	●			
H	Hard materials																	

Application	Chipbreaker	Designation	Corner radius	Coating														Cermet	Uncoated
				T9125	T9135	T6130	AH630	AH645	T515	T5105	T5115	T5125	AH120	AH8005	AH8015	AH905	GH110	GH330	NS9530	TH10
Medium cutting	**CM**	**DNMG150404-CM**	0.4							●	●	●							
		DNMG150408-CM	0.8						●	●	●	●							
		DNMG150412-CM	1.2						●	●	●	●							
		DNMG150604-CM	0.4							●	●	●							
		DNMG150608-CM	0.8							●	●	●							
		DNMG150612-CM	1.2							●	●	●							
	P	**DNGG150402R-P**	0.2														●		●
		DNGG150402L-P	0.2														●		●
		DNGG150404R-P	0.4														●		●
		DNGG150404L-P	0.4														●		●
		DNGG150408R-P	0.8																●
		DNGG150408L-P	0.8																●
Finishing to medium cutting	**HRM**	**DNMG150404-HRM**	0.4											●	●				
		DNMG150408-HRM	0.8											●	●				
		DNMG150412-HRM	1.2											●	●				
		DNMG150604-HRM	0.4											●	●				
		DNMG150608-HRM	0.8											●	●				
		DNMG150612-HRM	1.2											●	●				
Medium cutting	**HMM**	**DNMG150404-HMM**	0.4													●			
		DNMG150408-HMM	0.8													●			
		DNMG150412-HMM	1.2													●			
	SA	**DNMG150404-SA**	0.4										●						
		DNMG150408-SA	0.8										●						
		DNMG150604-SA	0.4										●						
		DNMG150608-SA	0.8										●						
	S	**DNMG150404R-S**	0.4	●	●	●	●	●										●	
		DNMG150404L-S	0.4	●	●	●	●	●										●	
		DNMG150408R-S	0.8	●	●	●	●	●										●	
		DNMG150408L-S	0.8	●	●	●	●	●										●	
		DNMG150604R-S	0.4	●	●	●	●	●											
		DNMG150604L-S	0.4	●	●	●	●	●											
		DNMG150608R-S	0.8	●	●	●	●	●											
		DNMG150608L-S	0.8	●	●	●	●	●											

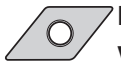
● : Line-up

External toolholders → **B207 -**
J series toolholders → **B342**
Internal toolholders → **B295 -**
TungCap → **B215, F046 -**

TurnLine - Insert

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 55° with hole

P	Steel	●ⓒ	ⓒ✣	✣	✣	ⓒ✣	✣					●ⓒ		●ⓒ				●ⓒ			●						
M	Stainless				ⓒ	ⓒ	✣					●ⓒ									●						
K	Cast iron	●ⓒ						●ⓒ	●	ⓒ	✣	●ⓒ		●ⓒ				●ⓒ			●			●ⓒ	●		
N	Non-ferrous																				●						
S	Superalloys											●ⓒ															
H	Hard materials																										●

Application	Chipbreaker	Designation	Corner radius	Coating											Coated cermet				Cermet				Uncoated			Ceramics		
				T9115	T9125	T9135	T6130	AH630	AH645	T515	T5105	T5115	T5125	AH120	GT720				NS520				TH10			FX105	LX21	LX11
Medium to heavy cutting	TH	DNMG150408-TH	0.8	●	●	●								●														
		DNMG150412-TH	1.2	●	●	●								●														
		DNMG150416-TH	1.6	●	●																							
		DNMG150608-TH	0.8	●	●	●								●														
		DNMG150612-TH	1.2	●	●	●								●														
		DNMG150616-TH	1.6	●	●	●																						
	THS	DNMG150408-THS	0.8	●	●	●																						
		DNMG150412-THS	1.2	●	●	●																						
		DNMG150416-THS	1.6	●	●																							
		DNMG150608-THS	0.8	●	●	●																						
		DNMG150612-THS	1.2	●	●	●																						
		DNMG150616-THS	1.6	●	●																							
	SH	DNMG150408-SH	0.8				●	●	●																			
		DNMG150412-SH	1.2				●	●	●																			
		DNMG150416-SH	1.6				●	●	●																			
		DNMG150608-SH	0.8				●	●	●																			
		DNMG150612-SH	1.2				●	●	●																			
	CH	DNMG150404-CH	0.4								●	●	●															
		DNMG150408-CH	0.8							●	●	●	●															
		DNMG150412-CH	1.2							●	●	●	●															
		DNMG150604-CH	0.4								●	●	●															
		DNMG150608-CH	0.8								●	●	●															
		DNMG150612-CH	1.2								●	●	●															
Finishing to medium cutting	-	DNMA150404	0.4							●	●	●	●		●				●				●					
		DNMA150408	0.8							●	●	●	●										●					
		DNMA150412	1.2								●	●	●															
		DNMA150604	0.4							●	●	●	●															
		DNMA150608	0.8							●	●	●	●															
		DNMA150612	1.2								●	●	●															
	-	DNGA150404	0.4																●				●				●	●
		DNGA150408	0.8																●				●			●	●	●
		DNGA150412	1.2																							●	●	●
		DNGA150416	1.6																							●		
		DNGA150608	0.8																									●
		DNGA150612	1.2																									●
		DNGA150616	1.6																									●
		DNGA150620	2.0																									●

● : Line-up

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE

Rhombic, 55° without hole

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Application	Chipbreaker	Designation	Corner radius	Ceramics FX105	Ceramics LX11
Finishing to medium cutting	-	**DNGD150708**	0.8	●	
		DNGD150712	1.2	●	
		DNGD150716	1.6	●	
	-	**DNGN150404**	0.4		●
		DNGN150408	0.8		●
		DNGN150412	1.2	●	●
		DNGN150416	1.6	●	
		DNGN150708	0.8		●
		DNGN150712	1.2		●
		DNGN150716	1.6		●
	-	**DNGX150712**	1.2	●	
		DNMX150716	1.6	●	

● : Line-up

External toolholders → **B207 -** Internal toolholders → **B295 -**
J series toolholders → **B342** TungCap → **B215, F046 -**

DNGD... : External toolholders → **B254, B255**

DNGN... : External toolholders → **B234**, Internal toolholders → **B313**

TurnLine - Insert

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Square, 90° with hole

P	Steel	●ɔ	ɔ✣					●ɔ						●ɔ	●ɔ	●																		
M	Stainless																																	
K	Cast iron	●ɔ						●ɔ						●ɔ	●ɔ	●																		
N	Non-ferrous																																	
S	Superalloys																																	
H	Hard materials																																	

Application	Chipbreaker	Designation	Corner radius	Coating					Coated cermet					Cermet																				
				T9115	T9125				GT9530					NS9530	NS520	X407																		
Precision finishing	TF	SNMG120404-TF	0.4											●																				
		SNMG120408-TF	0.8											●																				
	01	SNGG090302-01	0.2											●	●																				
		SNGG090304-01	0.4											●																				
		SNGG090308-01	0.8											●	●																				
		SNGG120402-01	0.2											●																				
		SNGG120404-01	0.4											●																				
		SNGG120408-01	0.8											●	●																				
	B ~ D	SNGG090304R-B	0.4						●					●		●																		
		SNGG090304L-B	0.4						●					●		●																		
		SNGG090308R-B	0.8											●		●																		
		SNGG090308L-B	0.8											●		●																		
		SNGG120404R-C	0.4						●					●																				
		SNGG120404L-C	0.4						●					●		●																		
		SNGG120408R-C	0.8											●																				
		SNGG120408L-C	0.8											●		●																		
		SNGG120408R-D	0.8											●																				
		SNGG120408L-D	0.8											●																				
Finishing	TSF	SNMG120404-TSF	0.4	●	●				●					●																				
		SNMG120408-TSF	0.8	●	●				●					●																				
		SNMG120412-TSF	1.2	●	●																													

● : Line-up

External toolholders → **B209 -** Internal toolholders → **B293 -**

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Square, 90° with hole

P	Steel	ⓒ	✣	ⓒ✣								●ⓒ				●													
M	Stainless	●	ⓒ	ⓒ			●	ⓒ								●													
K	Cast iron				●	ⓒ						●ⓒ				●													
N	Non-ferrous															●													
S	Superalloys						●	ⓒ																					
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating								Cermet			Uncoated														
				T6120	T6130	AH630	T5105	T5115	AH8005	AH8015		NS9530			TH10														
Finishing	11	SNMG120404-11	0.4									●																	
		SNMG120408-11	0.8									●			●														
Finishing of mild steels	17	SNMG120408-17	0.8									●																	
Finishing	SF	SNMG120404-SF	0.4	●	●	●																							
		SNMG120408-SF	0.8	●	●	●																							
	CF	SNMG120408-CF	0.8				●	●																					
		SNMG120412-CF	1.2				●	●																					
	HRF	SNMG120408-HRF	0.8						●	●																			
		SNMG120412-HRF	1.2						●	●																			

● : Line-up

External toolholders → **B209 -** Internal toolholders → **B293 -**

TurnLine - Insert

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Square, 90° with hole

P	Steel	●	●ɔ	ɔ✣	✣	ɔ	✣	ɔ✣	✣	●ɔ	●ɔ				●ɔ				●ɔ										
M	Stainless					●	ɔ	ɔ	✣	●ɔ	●ɔ																		
K	Cast iron	●ɔ	●ɔ							●ɔ	●ɔ				●ɔ				●ɔ										
N	Non-ferrous																												
S	Superalloys									●ɔ																			
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet				
				T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	AH120	GH330	GT9530				NS9530				
Finishing	TS	SNMG120404-TS	0.4		●	●								●				●				
		SNMG120408-TS	0.8	●	●	●	●							●				●				
		SNMG120412-TS	1.2		●	●	●															
High feed, small depth of cutting	AS	SNMG120404-AS	0.4															●				
		SNMG120408-AS	0.8	●	●													●				
Finishing	NS	SNMG120408-NS	0.8		●	●																
																						
	SS	SNMG120404-SS	0.4					●	●	●	●		●									
		SNMG120408-SS	0.8					●	●	●	●		●									
		SNMG120412-SS	1.2					●	●	●	●											
Medium cutting	TM	SNMG090304-TM	0.4		●	●	●															
		SNMG090308-TM	0.8		●	●	●															
		SNMG120404-TM	0.4		●	●						●										
		SNMG120408-TM	0.8	●	●	●	●					●										
		SNMG120412-TM	1.2	●	●	●	●					●										
		SNMG120416-TM	1.6		●	●	●															
		SNMG150608-TM	0.8		●																	
		SNMG150612-TM	1.2		●							●										
		SNMG190608-TM	0.8		●																	
		SNMG190612-TM	1.2		●							●										

● : Line-up

External toolholders → **B209 -** Internal toolholders → **B293 -**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Square, 90° with hole

P	Steel	●	●◐	◐✣	✣	✣						●	●◐			●◐				●◐	●◐			●							
M	Stainless					◐						●	●◐											●							
K	Cast iron	●◐	●◐				●◐	●	◐	✣		●	●◐			●◐				●◐	●◐			●							
N	Non-ferrous																							●							
S	Superalloys											●	●◐																		
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating												Coated cermet				Cermet				Uncoated							
				T9105	T9115	T9125	T9135	T6130	T515	T5105	T5115	T5125	AH110	AH120		GT720				NS9530	NS520			TH10							
Finishing to medium cutting	ZM	SNMG120408-ZM	0.8		●	●	●																	●							
		SNMG120412-ZM	1.2		●	●	●																								
Medium cutting	DM	SNMG120408-DM	0.8		●	●																									
		SNMG120412-DM	1.2		●	●	●																								
	All-round	SNMG090304	0.4		●	●															●			●							
		SNMG090308	0.8		●	●	●														●			●							
		SNMG120404	0.4		●	●	●			●	●	●	●	●							●	●		●							
		SNMG120408	0.8	●	●	●	●		●	●	●	●	●	●		●					●	●		●							
		SNMG120412	1.2	●	●	●	●		●	●	●	●	●	●										●							
		SNMG120416	1.6	●	●	●	●			●	●	●																			
		SNMG120420	2.0		●	●	●			●	●	●																			
		SNMG150612	1.2		●	●	●	●	●																						
		SNMG150616	1.6		●	●			●																						
		SNMG190612	1.2		●	●	●	●	●	●	●	●		●																	
		SNMG190616	1.6		●	●	●		●	●	●	●		●																	
		SNMG250724	2.4		●	●	●																								
Finishing to medium cutting	27	SNMG120408-27	0.8			●															●										
		SNMG120412-27	1.2			●																									

● : Line-up

External toolholders → **B209 -** Internal toolholders → **B293 -**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Square, 90° with hole

P	Steel	●◐ ◐ ✣ ◐✣ ✣
M	Stainless	● ◐ ◐ ✣
K	Cast iron	●◐ ● ◐ ✣
N	Non-ferrous	●
S	Superalloys	● ● ◐ ●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating												Cermet				Uncoated				
				T9115	T6120	T6130	AH630	AH645	T5105	T5115	T5125	AH725	AH8005	AH8015	GH110	GH330	NS9530				TH10				
Medium cutting	37	SNMG120408-37	0.8	●												●	●							
	SM	SNMG120408-SM	0.8		●	●	●	●				●												
		SNMG120412-SM	1.2		●	●	●	●																
	CM	SNMG120408-CM	0.8						●	●	●													
		SNMG120412-CM	1.2						●	●	●													
	P	SNGG090304R-P	0.4												●						●			
		SNGG090304L-P	0.4												●						●			
		SNGG090308R-P	0.8												●	●					●			
		SNGG090308L-P	0.8																		●			
		SNGG120404R-P	0.4												●						●			
		SNGG120404L-P	0.4												●						●			
		SNGG120408R-P	0.8												●						●			
		SNGG120408L-P	0.8												●						●			
Finishing to medium cutting	HRM	SNMG120408-HRM	0.8										●	●										
		SNMG120412-HRM	1.2										●	●										
		SNMG150608-HRM	0.8										●	●										
		SNMG150612-HRM	1.2										●	●										
		SNMG190612-HRM	1.2										●	●										
		SNMG190616-HRM	1.6										●	●										

● : Line-up

External toolholders → B209 - Internal toolholders → B293 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Square, 90° with hole

P	Steel	●	●◐	◐✣	✣	◐	✣	◐✣	✣	●◐		●◐			●◐																
M	Stainless					●	◐	◐	✣	●◐		●◐																			
K	Cast iron	●◐	●◐							●◐		●◐			●◐					◐✣										
N	Non-ferrous																			◐✣										
S	Superalloys									●◐	◐									◐✣										
H	Hard materials																													

Application	Chipbreaker	Designation	Corner radius	Coating												Cermet				Uncoated										
				T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	AH120	AH905	GH330		NS9530				KS20										
Medium cutting	**HMM**	**SNMG120408-HMM**	0.8										●																	
		SNMG120412-HMM	1.2										●																	
	SA	**SNMG120404-SA**	0.4					●	●	●	●	●																		
		SNMG120408-SA	0.8					●	●	●	●	●								●										
		SNMG120412-SA	1.2					●	●	●	●	●																		
		SNMG190612-SA	1.2																	●										
	S	**SNMG120404R-S**	0.4			●	●		●	●	●						●													
		SNMG120404L-S	0.4			●	●		●	●	●						●													
		SNMG120408R-S	0.8			●	●		●	●	●			●			●													
		SNMG120408L-S	0.8			●	●		●	●	●			●			●													
Medium to heavy cutting	**TH**	**SNMG120408-TH**	0.8		●	●	●					●																		
		SNMG120412-TH	1.2		●	●	●					●																		
		SNMG150612-TH	1.2	●	●	●						●																		
		SNMG150616-TH	1.6	●	●	●						●																		
		SNMG190612-TH	1.2	●	●	●	●					●																		
		SNMG190616-TH	1.6	●	●	●	●					●																		
	THS	**SNMG120408-THS**	0.8		●	●	●																							
		SNMG120412-THS	1.2		●	●	●																							
		SNMG150612-THS	1.2		●	●																								
		SNMG150616-THS	1.6		●	●																								
		SNMG190608-THS	0.8		●	●	●																							
		SNMG190612-THS	1.2		●	●	●																							
		SNMG190616-THS	1.6		●	●	●																							
		SNMG190624-THS	2.4		●	●	●																							
		SNMG250716-THS	1.6		●	●	●																							
		SNMG250724-THS	2.4		●	●	●																							

● : Line-up

External toolholders → **B209 -** Internal toolholders → **B293 -**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Square, 90° with hole

P	Steel	●◐ ◐✣ ✣ ✣ ◐✣ ✣
M	Stainless	◐ ◐ ✣
K	Cast iron	●◐ ● ◐ ✣
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating: T9115	T9125	T9135	T6130	AH630	AH645	T5105	T5115	T5125
Medium to heavy cutting (Single sided)	TRS	SNMM150612-TRS	1.2	●	●	●						
		SNMM150616-TRS	1.6	●	●	●						
		SNMM190616-TRS	1.6	●	●	●						
		SNMM190624-TRS	2.4	●	●	●						
		SNMM250924-TRS	2.4	●	●	●						
	TU	SNMM190616-TU	1.6			●						
		SNMM190624-TU	2.4		●	●						
		SNMM250724-TU	2.4		●	●						
		SNMM250924-TU	2.4	●	●							
	TUS	SNMM190612-TUS	1.2	●	●	●						
		SNMM190616-TUS	1.6	●	●	●						
		SNMM190624-TUS	2.4	●	●	●						
		SNMM250724-TUS	2.4	●	●	●						
		SNMM250732-TUS	3.2	●	●							
		SNMM250924-TUS	2.4	●	●	●						
		SNMM250932-TUS	3.2	●	●							
Medium to heavy cutting	SH	SNMG120408-SH	0.8				●	●	●			
		SNMG120412-SH	1.2				●	●	●			
		SNMG150612-SH	1.2				●	●	●			
		SNMG150616-SH	1.6				●	●	●			
		SNMG190612-SH	1.2				●	●	●			
		SNMG190616-SH	1.6				●	●	●			
	CH	SNMG120408-CH	0.8							●	●	●
		SNMG120412-CH	1.2							●	●	●
		SNMG120416-CH	1.6							●	●	●

● : Line-up

External toolholders → B209 - Internal toolholders → B293 -

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Square, 90° with hole

		Coating								Coated cermet				Cermet				Uncoated				Ceramics							
		T515	T5105	T5115	T5125					GT720				NS520				TH10				FX105	LX21	LX11					
P	Steel									●ⓒ				●ⓒ				●											
M	Stainless																	●											
K	Cast iron	●ⓒ	●	ⓒ	✣					●ⓒ				●ⓒ				●				●ⓒ	●						
N	Non-ferrous																	●											
S	Superalloys																												
H	Hard materials																							●					

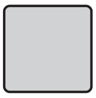
Application	Chipbreaker	Designation	Corner radius	T515	T5105	T5115	T5125	GT720	NS520	TH10	FX105	LX21	LX11
Finishing to medium cutting	-	SNMA090308	0.8		●					●			
		SNMA120404	0.4		●	●	●	●					
		SNMA120408	0.8	●	●	●	●		●	●	●		
		SNMA120412	1.2	●	●	●	●		●	●	●		
		SNMA120416	1.6		●	●	●						
	-	SNGA090304	0.4							●			
		SNGA120404	0.4					●		●			●
		SNGA120408	0.8						●	●	●		●
		SNGA120412	1.2							●	●	●	●
		SNGA120416	1.6								●		●

● : Line-up

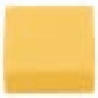
External toolholders → **B209 -** Internal toolholders → **B293 -**

TurnLine - Insert

NEGATIVE TYPE



Square, 90° without hole

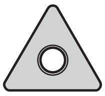
				AH120	TH10	FX105	LX21	LX11
P	Steel			●◐	●			
M	Stainless			●◐	●			
K	Cast iron			●◐	●	●◐	●	
N	Non-ferrous				●			
S	Superalloys			●◐				
H	Hard materials							●
				Coating	Uncoated	Ceramics		
Application	Chipbreaker	Designation	Corner radius	AH120	TH10	FX105	LX21	LX11
Finishing to medium cutting	- 	SNGD120712	1.2			●		
		SNGD120716	1.6			●		
	- 	SNGN090308	0.8				●	●
		SNGN120304	0.4					●
		SNGN120312	1.2					●
		SNGN120404	0.4					●
		SNGN120408	0.8		●	●	●	●
		SNGN120412	1.2			●	●	●
		SNGN120416	1.6			●	●	●
		SNGN120420	2.0			●	●	
		SNGN120424	2.4			●		
		SNGN120708	0.8					●
		SNGN120712	1.2			●		●
		SNGN120716	1.6			●		●
		SNGN120720	2.0					●
	- 	SNMN120408	0.8		●			
		SNMN120412	1.2	●				
	- 	SNGX120712	1.2			●		
		SNGX120716	1.6			●		
		SNMX120712	1.2			●		
		SNMX120716	1.6			●		

● : Line-up

SNGD... : External toolholders → B255
SNGN..., SNMN... : External toolholders → B240, Internal toolholders → B312

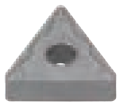
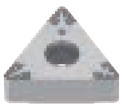
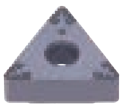
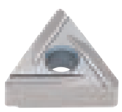
● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° with hole

Material		GH110	GH330	SH725	GT9530	GT720	NS9530	NS520	X407	TH10
P	Steel	●	●◐	●◐	●◐	●◐	●◐	●◐	●	●
M	Stainless	●	●◐	●◐						●
K	Cast iron	●	●◐		●◐	●◐	●◐	●◐	●	●
N	Non-ferrous									●
S	Superalloys	●								
H	Hard materials									

Application	Chipbreaker	Designation	Corner radius	Coating: GH110	Coating: GH330	Coating: SH725	Coated cermet: GT9530	Coated cermet: GT720	Cermet: NS9530	Cermet: NS520	Cermet: X407	Uncoated: TH10
Precision finishing	TF	TNMG160404-TF	0.4						●	●		●
		TNMG160408-TF	0.8						●	●		
												
	01	TNGG110302-01	0.2						●			
		TNGG110304-01	0.4						●			
		TNGG110308-01	0.8						●	●		
		TNGG160402-01	0.2	●					●	●		●
		TNGG160404-01	0.4	●					●	●		●
		TNGG160408-01	0.8	●					●	●		
		TNGG160412-01	1.2					●	●			
Precision finishing (Sharp edgeds)	01	TNGG160402F-01	0.2			●						
		TNGG160404F-01	0.4			●						
		TNGG160408F-01	0.8			●						
Precision finishing	A~C	TNGG110304R-A	0.4				●		●			
		TNGG110304L-A	0.4				●		●			
		TNGG110308R-A	0.8				●		●			
		TNGG110308L-A	0.8				●		●			
		TNGG160304R-C	0.4						●		●	
		TNGG160304L-C	0.4						●			
		TNGG160308R-C	0.8						●			
		TNGG160308L-C	0.8						●			
		TNGG160400R-C	0.03						●			
		TNGG160400L-C	0.03						●			
		TNGG160402R-C	0.2				●		●		●	●
		TNGG160402L-C	0.2				●		●			
		TNGG160404R-C	0.4	●	●		●		●	●	●	●
		TNGG160404L-C	0.4	●	●		●		●		●	●
		TNGG160408R-C	0.8	●	●		●		●	●	●	●
		TNGG160408L-C	0.8	●	●		●		●		●	●

● : Line-up

External toolholders → B208 -
J series toolholders → B343, B344
Internal toolholders → B294 -
Cartridges → F152 -

TurnLine - Insert

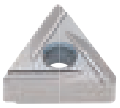
● : Continuous cutting
ᑕ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° with hole

P	Steel	●	●ᑕ	ᑕ✣	✣	●ᑕ	●ᑕ				●ᑕ				●ᑕ	●			●												
M	Stainless					●ᑕ	●ᑕ												●												
K	Cast iron	●ᑕ	●ᑕ			●ᑕ					●ᑕ				●ᑕ				●												
N	Non-ferrous																		●												
S	Superalloys					●ᑕ																									
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating						Coated cermet			Cermet			Uncoated															
				T9105	T9115	T9125	T9135	AH120	SH725	GT9530			NS9530	X407		TH10															
Precision finishing	D	TNGG220404R-D	0.4										●	●																	
		TNGG220404L-D	0.4										●																		
		TNGG220408R-D	0.8										●	●																	
		TNGG220408L-D	0.8										●																		
	W	TNGG160404R-W	0.4										●			●															
		TNGG160404L-W	0.4										●			●															
		TNGG160408R-W	0.8										●																		
		TNGG160408L-W	0.8										●																		
Precision finishing (Sharp edgeds)	W	TNGG160402FR-W	0.2						●																						
		TNGG160402FL-W	0.2						●																						
		TNGG160404FR-W	0.4						●																						
		TNGG160404FL-W	0.4						●																						
		TNGG160408FR-W	0.8						●																						
		TNGG160408FL-W	0.8						●																						
Finishing	TSF	TNMG110404E-TSF	0.4		●	●					●			●																	
		TNMG110408E-TSF	0.8		●	●					●			●																	
		TNMG160402-TSF	0.2					●			●			●																	
		TNMG160404-TSF	0.4		●	●	●	●			●			●																	
		TNMG160408-TSF	0.8	●	●	●	●	●			●			●																	
		TNMG160412-TSF	1.2		●	●	●				●																				
Finishing (Wiper)	FW	TNMG110404E-FW	0.4		●																										
		TNMG110408E-FW	0.8		●																										
		TNMG160404-FW	0.4		●																										
		TNMG160408-FW	0.8		●																										
Finishing	ZF	TNMG160404-ZF	0.4		●	●	●				●			●																	
		TNMG160408-ZF	0.8		●	●	●				●			●																	
		TNMG160412-ZF	1.2			●																									

● : Line-up

External toolholders → B203 -
J series toolholders → B343, B344
Internal toolholders → B276 -
Cartridges → F152 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° with hole

		Coating												Cermet				Uncoated										
		T9125	T6120	T6130	AH630	T5105	T5115	AH8005	AH8015	GH330				NS9530				TH10										
P	Steel	◐✣	◐	✣	◐✣					●◐				●◐				●										
M	Stainless		●	◐	◐			●	◐	●◐								●										
K	Cast iron					●	◐			●◐				●◐				●										
N	Non-ferrous																	●										
S	Superalloys							●	◐																			
H	Hard materials																											

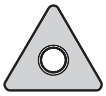
Application	Chipbreaker	Designation	Corner radius	T9125	T6120	T6130	AH630	T5105	T5115	AH8005	AH8015	GH330				NS9530				TH10										
Finishing	**11**	**TNMG110304-11**	0.4													●														
		TNMG110308-11	0.8													●														
		TNMG160402-11	0.2													●														
		TNMG160404-11	0.4									●				●				●										
		TNMG160408-11	0.8													●														
		TNMG220404-11	0.4													●														
		TNMG220408-11	0.8													●														
Finishing of mild steels	**17**	**TNMG160404-17**	0.4	●								●				●														
		TNMG160408-17	0.8	●												●														
Finishing	**SF**	**TNMG160404-SF**	0.4		●	●	●																							
		TNMG160408-SF	0.8		●	●	●																							
		TNMG160412-SF	1.2		●	●	●																							
	CF	**TNMG160404-CF**	0.4					●	●																					
		TNMG160408-CF	0.8					●	●																					
	HRF	**TNMG160404-HRF**	0.4							●	●																			
		TNMG160408-HRF	0.8							●	●																			

● : Line-up

External toolholders → **B208 -**
J series toolholders → **B343, B344**
Internal toolholders → **B294 -**
Cartridges → **F152 -**

● : Continuous cutting
◐ : Light interrupted cutting
✠ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° with hole

ISO	Work material	T9105	T9115	T9125	T9135	GT9530	NS9530	NS520
P	Steel	●	●◐	◐✠	✠	●◐	●◐	●◐
M	Stainless							
K	Cast iron	●◐	●◐			●◐	●◐	●◐
N	Non-ferrous							
S	Superalloys							
H	Hard materials							

Application	Chipbreaker	Designation	Corner radius	Coating T9105	Coating T9115	Coating T9125	Coating T9135	Coated cermet GT9530	Cermet NS9530	Cermet NS520
Finishing	TS 	TNMG160404-TS	0.4		●	●	●	●	●	●
		TNMG160408-TS	0.8	●	●	●	●	●	●	●
		TNMG160412-TS	1.2	●	●	●	●			
Finishing to medium cutting (Wiper)	SW 	TNMG110408E-SW	0.8		●					
		TNMG110412E-SW	1.2		●					
		TNMG160408-SW	0.8		●					
		TNMG160412-SW	1.2		●					
High feed, small depth of cutting	AS 	TNMG160404-AS	0.4			●	●		●	
		TNMG160408-AS	0.8	●	●	●	●		●	
		TNMG160412-AS	1.2	●	●	●				
Boring (Double sided)	CB 	TNMG110304-CB	0.4		●				●	
		TNMG110308-CB	0.8		●				●	
Finishing	NS 	TNMG160404-NS	0.4		●	●			●	
		TNMG160408-NS	0.8	●	●	●			●	

● : Line-up

External toolholders → B203 -
J series toolholders → B343, B344
Internal toolholders → B276 -
Cartridges → F152 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° with hole

P	Steel	●	●◐	◐✣	✣	◐	✣	◐✣	✣	●◐	◐	●◐			●◐				●◐										
M	Stainless					●	◐	◐	✣	●◐	◐	●◐																	
K	Cast iron	●◐	●◐							●◐	◐	●◐			●◐				●◐							◐✣			
N	Non-ferrous																									◐✣			
S	Superalloys									●◐	●															◐✣			
H	Hard materials																												

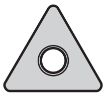
Application	Chipbreaker	Designation	Corner radius	Coating											Coated cermet				Cermet				Uncoated					
				T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	AH120	AH725	GH330	GT9530				NS9530				KS20					
Finishing	SS	TNMG110404E-SS	0.4							●	●																	
		TNMG110408E-SS	0.8							●	●																	
		TNMG160404-SS	0.4					●	●	●	●			●									●					
		TNMG160408-SS	0.8					●	●	●	●			●									●					
		TNMG160412-SS	1.2					●	●	●	●			●														
		TNMG220404-SS	0.4					●	●	●	●			●														
		TNMG220408-SS	0.8					●	●	●	●			●														
		TNMG220412-SS	1.2					●	●	●	●																	
Medium cutting	TM	TNMG110304-TM	0.4		●	●	●																					
		TNMG110308-TM	0.8		●	●	●																					
		TNMG110404E-TM	0.4		●	●																						
		TNMG110408E-TM	0.8		●	●																						
		TNMG110412E-TM	1.2		●	●																						
		TNMG160404-TM	0.4		●	●	●					●	●															
		TNMG160408-TM	0.8	●	●	●	●					●	●															
		TNMG160412-TM	1.2	●	●	●	●																					
		TNMG220404-TM	0.4									●																
		TNMG220408-TM	0.8	●	●	●	●					●																
		TNMG220412-TM	1.2		●	●	●					●																
		TNMG220416-TM	1.6		●	●																						
Finishing to medium cutting	AM	TNMG160408-AM	0.8		●	●																						
		TNMG160412-AM	1.2		●	●																						
	NM	TNMG160408-NM	0.8			●																						
		TNMG160412-NM	1.2		●	●																						
	TQ	TNMG160404-TQ	0.4												●				●									
		TNMG160408-TQ	0.8												●				●									

● : Line-up

External toolholders → **B203 -**
J series toolholders → **B343, B344**
Internal toolholders → **B276 -**
Cartridges → **F152 -**

TurnLine - Insert

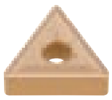
NEGATIVE TYPE



Triangular, 60° with hole

● : Continuous cutting
◐ : Light interrupted cutting
✠ : Heavy interrupted cutting

		T9105	T9115	T9125	T9135	AH630	T515	T5105	T5115	T5125	AH110	AH120	GT9530	GT720	NS9530	NS520	TH10
P	Steel	●	●◐	◐✠	✠	◐✠					●	●◐	●◐	●◐	●◐	●◐	●
M	Stainless					◐					●	●◐					●
K	Cast iron	●◐	●◐				●◐	●	◐	✠	●	●◐	●◐	●◐	●◐	●◐	●
N	Non-ferrous																●
S	Superalloys										●	●◐					
H	Hard materials																

Application	Chipbreaker	Designation	Corner radius	Coating: T9105	T9115	T9125	T9135	AH630	T515	T5105	T5115	T5125	AH110	AH120	Coated cermet: GT9530	GT720	Cermet: NS9530	NS520	Uncoated: TH10
Finishing to medium cutting	ZM 	TNMG160404-ZM	0.4		●	●	●								●		●		
		TNMG160408-ZM	0.8		●	●	●								●		●		
		TNMG160412-ZM	1.2		●	●	●												
		TNMG220412-ZM	1.2			●													
Medium cutting	DM 	TNMG160408-DM	0.8	●	●	●	●												
		TNMG160412-DM	1.2		●	●													
	All-round 	TNMG110304	0.4		●	●				●	●	●					●		●
		TNMG110308	0.8		●	●				●	●	●					●		●
		TNMG160304	0.4																●
		TNMG160308	0.8																●
		TNMG160404	0.4	●	●	●	●		●	●	●	●	●	●			●	●	●
		TNMG160408	0.8	●	●	●	●		●	●	●	●	●	●		●	●	●	●
		TNMG160412	1.2	●	●	●	●		●	●	●	●	●	●					●
		TNMG160416	1.6		●	●	●			●	●	●							●
		TNMG160420	2.0		●	●	●												
		TNMG220408	0.8	●	●	●	●			●	●	●							●
		TNMG220412	1.2	●	●	●	●	●		●	●	●							●
		TNMG220416	1.6		●	●				●	●	●							●
		TNMG270608	0.8			●								●					
		TNMG270612	1.2			●								●					
		TNMG270616	1.6											●					
Finishing to medium cutting	27 	TNMG160404-27	0.4		●	●													
		TNMG160408-27	0.8		●	●											●		
		TNMG160412-27	1.2		●	●													
		TNMG220404-27	0.4			●													
		TNMG220408-27	0.8			●													
		TNMG220412-27	1.2			●													

● : Line-up

External toolholders → B208 -
J series toolholders → B343, B344
Internal toolholders → B294 -
Cartridges → F152 -

● : Continuous cutting
ᑕ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° with hole

P	Steel	●ᑕ	ᑕ✣	✣	ᑕ	✣	ᑕ✣	✣					●ᑕ	ᑕ	●ᑕ	●ᑕ				●ᑕ				●		
M	Stainless				●	ᑕ	ᑕ	✣					●ᑕ	ᑕ	●ᑕ									●		
K	Cast iron	●ᑕ							●ᑕ	●	ᑕ	✣	●ᑕ	ᑕ	●ᑕ	●ᑕ				●ᑕ				●		
N	Non-ferrous																							●		
S	Superalloys												●ᑕ	●												
H	Hard materials																									

Application	Chipbreaker	Designation	Corner radius	Coating														Coated cermet				Cermet				Uncoated			
				T9115	T9125	T9135	T6120	T6130	AH630	AH645	T515	T5105	T5115	T5125	AH120	AH725	GH330	GT720				NS9530				TH10			
Medium cutting	**28**	**TNMG160404-28**	0.4												●														
		**TNMG160408-28**	0.8												●														
		TNMG220404-28	0.4												●														
		TNMG220408-28	0.8												●														
	33	**TNMG160404-33**	0.4																							●			
		TNMG160408-33	0.8																							●			
		**TNMG160416-33**	1.6		●																								
		TNMG220404-33	0.4		●													●											
		TNMG220412-33	1.2			●																							
		TNMG220416-33	1.6		●																								
	37	**TNMG160404-37**	0.4	●													●					●							
		TNMG160408-37	0.8	●													●					●							
																													
	38	**TNMG160404-38**	0.4														●												
		TNMG160408-38	0.8														●												
																													
	SM	**TNMG110404E-SM**	0.4				●	●	●																				
		TNMG110408E-SM	0.8				●	●	●																				
		TNMG160404-SM	0.4				●	●	●	●						●													
		TNMG160408-SM	0.8				●	●	●	●						●													
		**TNMG160412-SM**	1.2				●	●	●	●																			
		TNMG220408-SM	0.8				●	●	●	●																			
		TNMG220412-SM	1.2				●	●	●	●																			
	CM	**TNMG160404-CM**	0.4								●	●	●	●															
		TNMG160408-CM	0.8								●	●	●	●															
		**TNMG160412-CM**	1.2								●	●	●	●															
		TNMG220408-CM	0.8									●	●	●															
		TNMG220412-CM	1.2									●	●	●															

● : Line-up

External toolholders → B203 -
J series toolholders → B343, B344
Internal toolholders → B276 -
Cartridges → F152 -

TurnLine - Insert

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° with hole

P	Steel	◐	✣	●◐	✣	●◐				●	●◐	●◐				●◐					●								
M	Stainless	●	◐	◐	✣	●◐	●	◐		●	●◐	●◐									●								
K	Cast iron					●◐				●	●◐					●◐					●	◐✣							
N	Non-ferrous																				●	◐✣							
S	Superalloys					●◐	●	◐	◐	●												◐✣							
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating													Cermet				Uncoated								
				T6120	T6130	AH630	AH645	AH120	AH8005	AH8015	AH905	GH110	GH330	SH725			NS9530				TH10	KS20							
Medium cutting	P	TNGG160402R-P	0.2									●	●				●				●								
		TNGG160402L-P	0.2									●	●				●				●								
		TNGG160404R-P	0.4									●	●				●				●								
		TNGG160404L-P	0.4									●	●				●				●								
		TNGG160408R-P	0.8									●	●				●				●								
		TNGG160408L-P	0.8									●	●				●				●								
Medium cutting (Sharp edge)	P	TNGG160402FR-P	0.2											●															
		TNGG160402FL-P	0.2											●															
		TNGG160404FR-P	0.4											●															
		TNGG160404FL-P	0.4											●															
		TNGG160408FR-P	0.8											●															
		TNGG160408FL-P	0.8											●															
Finishing to medium cutting	HRM	TNMG160404-HRM	0.4						●	●																			
		TNMG160408-HRM	0.8						●	●																			
		TNMG160412-HRM	1.2						●	●																			
Medium cutting	HMM	TNMG160404-HMM	0.4								●																		
		TNMG160408-HMM	0.8								●																		
		TNMG160412-HMM	1.2								●																		
	SA	TNMG160404-SA	0.4	●	●	●	●	●																					
		TNMG160408-SA	0.8	●	●	●	●	●														●							
		TNMG160412-SA	1.2	●	●	●	●	●														●							
		TNMG220408-SA	0.8	●	●	●	●	●														●							
		TNMG220412-SA	1.2	●	●	●	●																						

● : Line-up

External toolholders → B208 -
J series toolholders → B343, B344
Internal toolholders → B294 -
Cartridges → F152 -

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° with hole

P	Steel	●ɔ	ɔ✣	✣	✣	ɔ✣	✣					●ɔ	ɔ	●ɔ				●ɔ													
M	Stainless				ɔ	ɔ	✣					●ɔ	ɔ	●ɔ																	
K	Cast iron	●ɔ						●ɔ	●	ɔ	✣	●ɔ	ɔ	●ɔ				●ɔ													
N	Non-ferrous																														
S	Superalloys											●ɔ	●																		
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating														Cermet													
				T9115	T9125	T9135	T6130	AH630	AH645	T515	T5105	T5115	T5125	AH120	AH725	GH330		NS9530													
Medium cutting	S	TNMG160404R-S	0.4	●	●	●	●	●	●						●	●		●													
		TNMG160404L-S	0.4		●	●	●	●	●							●		●													
		TNMG160408R-S	0.8		●	●	●	●	●						●	●		●													
		TNMG160408L-S	0.8		●	●	●	●	●							●		●													
		TNMG220404R-S	0.4		●	●	●	●	●							●		●													
		TNMG220404L-S	0.4		●	●	●	●	●							●		●													
		TNMG220408R-S	0.8		●	●	●	●	●							●		●													
		TNMG220408L-S	0.8		●	●	●	●	●							●		●													
Medium to heavy cutting	TH	TNMG220408-TH	0.8	●	●	●								●																	
		TNMG220412-TH	1.2	●	●	●																									
	THS	TNMG220408-THS	0.8	●	●	●																									
		TNMG220412-THS	1.2	●	●	●																									
	CH	TNMG160404-CH	0.4							●	●	●	●																		
		TNMG160408-CH	0.8							●	●	●	●																		
		TNMG160412-CH	1.2							●	●	●	●																		
		TNMG220408-CH	0.8								●	●	●																		
		TNMG220412-CH	1.2								●	●	●																		
		TNMG220416-CH	1.6								●	●	●																		

● : Line-up

External toolholders → **B208 -**
J series toolholders → **B343, B344**
Internal toolholders → **B294 -**
Cartridges → **F152 -**

TurnLine - Insert

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° with hole

P	Steel					●					●c				●c				●	●						
M	Stainless					●													●	●						
K	Cast iron	●c	●	c	✣	●					●c				●c				●	●			●c	●		
N	Non-ferrous																		●	●						
S	Superalloys					●																				
H	Hard materials																								●	

Application	Chipbreaker	Designation	Corner radius	Coating								Coated cermet				Cermet				Uncoated				Ceramics			
				T515	T5105	T5115	T5125	GH110				GT720				NS520				TH03	TH10			FX105	LX21	LX11	
Finishing to medium cutting	-	TNMA160404	0.4	●	●	●	●														●						
		TNMA160408	0.8	●	●	●	●					●				●					●			●			
		TNMA160412	1.2	●	●	●	●																	●			
		TNMA160416	1.6		●	●	●																				
		TNMA160420	2.0		●	●	●																				
		TNMA220404	0.4		●	●	●																				
		TNMA220408	0.8		●	●	●																				
		TNMA220412	1.2		●	●	●																				
		TNMA220416	1.6		●	●	●																				
	-	TNGA110304	0.4																		●						
		TNGA110308	0.8																		●						
		TNGA160304	0.4																		●						
		TNGA160308	0.8																		●						
		TNGA160404	0.4					●								●				●	●				●	●	
		TNGA160408	0.8					●								●				●	●			●	●	●	
		TNGA160412	1.2													●					●			●	●	●	
		TNGA160416	1.6																		●			●		●	
		TNGA220408	0.8																		●						

● : Line-up

External toolholders → B208 -
J series toolholders → B343, B344
Internal toolholders → B294 -
Cartridges → F152 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Triangular, 60° without hole

P	Steel	●																													
M	Stainless	●																													
K	Cast iron	●				●◐		●																							
N	Non-ferrous	●																													
S	Superalloys																														
H	Hard materials								●																						

Application	Chipbreaker	Designation	Corner radius	Uncoated			Ceramics																								
				TH10			FX105	LX21	LX11																						
Finishing to medium cutting	-	**TNGN160404**	0.4					●	●																						
		TNGN160408	0.8	●				●	●																						
		TNGN160412	1.2	●			●	●	●																						
		TNGN160416	1.6				●		●																						
		TNGN160420	2.0				●																								
		TNGN160708	0.8						●																						
		TNGN160712	1.2						●																						

● : Line-up

External toolholders for TNGN... → **B234, B235, B240 -**

Internal toolholders for TNGN... → **B312**

TurnLine - Insert

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Trigon, 80° with hole

P	Steel	● ●c ●c ✣ ✣ ●c ●c ●c
M	Stainless	●c ●c
K	Cast iron	●c ●c ●c ●c ●c ●c ●c ●c
N	Non-ferrous	
S	Superalloys	●c
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating T9105	Coating T9115	Coating T9125	Coating T9135	Coating AH120	Coated cermet GT9530	Coated cermet GT720	Cermet NS9530	Cermet NS520
Precision finishing	TF	WNMG080404-TF	0.4								●	
		WNMG080408-TF	0.8								●	
	01	WNGG080402-01	0.2								●	●
		WNGG080404-01	0.4							●	●	●
		WNGG080408-01	0.8							●	●	
Finishing	TSF	WNMG060404E-TSF	0.4		●	●			●		●	
		WNMG060408E-TSF	0.8		●	●			●		●	
		WNMG060412E-TSF	1.2		●	●			●		●	
		WNMG060404-TSF	0.4		●	●						
		WNMG060408-TSF	0.8		●	●						
		WNMG080404-TSF	0.4		●	●	●	●	●		●	
		WNMG080408-TSF	0.8		●	●	●	●	●		●	
		WNMG080412-TSF	1.2	●	●	●	●	●				
Finishing (Wiper)	FW	WNMG060404E-FW	0.4	●	●	●			●		●	
		WNMG060408E-FW	0.8	●	●	●			●		●	
		WNMG080404-FW	0.4		●	●			●		●	
		WNMG080408-FW	0.8	●	●	●			●		●	
	AFW	WNMG060404-AFW	0.4		●	●					●	
		WNMG060408-AFW	0.8	●	●	●	●				●	
		WNMG080404-AFW	0.4		●	●					●	
		WNMG080408-AFW	0.8	●	●	●	●				●	
Finishing	ZF	WNMG060404E-ZF	0.4		●	●						
		WNMG060404-ZF	0.4		●	●						
		WNMG060408-ZF	0.8		●	●						
		WNMG080404-ZF	0.4		●	●	●		●		●	
		WNMG080408-ZF	0.8		●	●	●		●		●	
		WNMG080412-ZF	1.2		●							

● : Line-up

External toolholders → B200 - Internal toolholders → B275 -
TungCap → F046 -

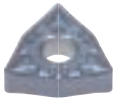
● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Trigon, 80° with hole

P	Steel	●◐	◐✣	✣	◐	✣	◐✣									●◐				●◐	●◐								
M	Stainless				●	◐	◐			●	◐																		
K	Cast iron	●◐						●	◐							●◐				●◐	●◐								
N	Non-ferrous																												
S	Superalloys									●	◐																		
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet											
				T9115	T9125	T9135	T6120	T6130	AH630	T5105	T5115	AH8005	AH8015				GT9530				NS9530	NS520							
Finishing	**11**	**WNMG080404-11**	0.4																		●								
		**WNMG080408-11**	0.8																		●								
Finishing of mild steels	**17**	**WNMG080404-17**	0.4																		●								
		**WNMG080408-17**	0.8																		●								
Finishing	**SF**	**WNMG060404-SF**	0.4				●	●	●																				
		**WNMG060408-SF**	0.8				●	●	●																				
		WNMG080404-SF	0.4				●	●	●																				
		WNMG080408-SF	0.8				●	●	●																				
	CF	**WNMG080404-CF**	0.4							●	●																		
		**WNMG080408-CF**	0.8							●	●																		
		WNMG080412-CF	1.2							●	●																		
	HRF	**WNMG080404-HRF**	0.4									●	●																
		**WNMG080408-HRF**	0.8									●	●																
	TS	**WNMG080404-TS**	0.4	●	●	●											●				●	●							
		**WNMG080408-TS**	0.8	●	●	●											●				●	●							
		WNMG080412-TS	1.2	●	●	●																							

● : Line-up

External toolholders → **B200 -** Internal toolholders → **B275 -**
TungCap → **F046 -**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Trigon, 80° with hole

P	Steel	● ●◐ ◐✣ ✣ ◐ ✣ ◐✣ ✣ ●◐
M	Stainless	● ◐ ◐ ✣ ●◐
K	Cast iron	●◐ ●◐ ●◐ ◐ ●◐
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	T515	T5115	GH330	Cermet NS9530
Finishing to medium cutting (Wiper)	SW	WNMG060408E-SW	0.8	●	●	●							●		
		WNMG060412E-SW	1.2	●	●	●							●		
		WNMG080408-SW	0.8	●	●	●						●	●		
		WNMG080412-SW	1.2		●	●						●	●		
	ASW	WNMG060408-ASW	0.8	●	●	●									
		WNMG060412-ASW	1.2	●	●	●	●								
		WNMG080408-ASW	0.8	●	●	●	●								
		WNMG080412-ASW	1.2	●	●	●	●								
High feed, small depth of cutting	AS	WNMG080404-AS	0.4	●											●
		WNMG080408-AS	0.8	●	●	●	●								●
		WNMG080412-AS	1.2	●	●	●	●								
Boring (Double sided)	CB	WNMG060404-CB	0.4			●									●
		WNMG060408-CB	0.8			●									●
Finishing	NS	WNMG080404-NS	0.4		●	●									●
		WNMG080408-NS	0.8		●	●									●
	SS	WNMG060404E-SS	0.4							●	●				
		WNMG060408E-SS	0.8							●	●				
		WNMG060412E-SS	1.2							●	●				
		WNMG080404-SS	0.4					●	●	●	●			●	
		WNMG080408-SS	0.8					●	●	●	●			●	
		WNMG080412-SS	1.2					●	●	●	●				

● : Line-up

External toolholders → B200 - Internal toolholders → B275 -
TungCap → F046 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Trigon, 80° with hole

P	Steel	●	●◐	◐✣	✣	●◐	◐				●◐				●◐																
M	Stainless					●◐	◐																								
K	Cast iron	●◐	●◐			●◐	◐				●◐				●◐																
N	Non-ferrous																														
S	Superalloys					●◐	●																								
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating						Coated cermet				Cermet																	
				T9105	T9115	T9125	T9135	AH120	AH725	GT9530				NS9530																	
Medium cutting	**TM**	**WNMG060404E-TM**	0.4		●	●																									
		WNMG060408E-TM	0.8		●	●																									
		WNMG060412E-TM	1.2		●	●																									
		WNMG060404-TM	0.4		●	●	●																								
		WNMG060408-TM	0.8	●	●	●	●	●																							
		WNMG080404-TM	0.4	●	●	●	●	●	●																						
		WNMG080408-TM	0.8	●	●	●	●	●	●																						
		WNMG080412-TM	1.2	●	●	●	●	●																							
		WNMG080416-TM	1.6	●	●	●		●																							
Finishing to medium cutting	**AM**	**WNMG080408-AM**	0.8		●	●																									
		WNMG080412-AM	1.2		●	●																									
		WNMG080416-AM	1.6		●	●																									
	NM	**WNMG060412E-NM**	1.2			●																									
		WNMG080408-NM	0.8	●	●	●																									
		WNMG080412-NM	1.2	●	●	●	●																								
	TQ	**WNMG080404-TQ**	0.4							●				●																	
		WNMG080408-TQ	0.8							●				●																	
	ZM	**WNMG060408E-ZM**	0.8		●	●																									
		WNMG060408-ZM	0.8		●	●	●																								
		WNMG060412-ZM	1.2		●	●	●																								
		WNMG080408-ZM	0.8		●	●	●			●				●																	
		WNMG080412-ZM	1.2		●	●	●																								
		WNMG080416-ZM	1.6		●	●																									

● : Line-up

External toolholders → **B200 -** Internal toolholders → **B275 -**
TungCap → **F046 -**

TurnLine - Insert

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Trigon, 80° with hole

P	Steel	●	●c	c✣	✣					●	●c	●c			●c				●c	●c			●				
M	Stainless									●	●c	●c											●				
K	Cast iron	●c	●c			●c	●	c	✣	●	●c	●c			●c				●c	●c			●				
N	Non-ferrous																						●				
S	Superalloys									●	●c																
H	Hard materials																										

Application	Chipbreaker	Designation	Corner radius	Coating												Coated cermet				Cermet				Uncoated					
				T9105	T9115	T9125	T9135	T515	T5105	T5115	T5125	AH110	AH120	GH330		GT720				NS9530	NS520			TH10					
Medium cutting	**DM**	**WNMG080408-DM**	0.8	●	●	●	●																						
		WNMG080412-DM	1.2	●	●	●	●																						
	All-round	**WNMG060404**	0.4		●	●			●	●	●																		
		WNMG060408	0.8		●	●			●	●	●																		
		WNMG080404	0.4	●	●	●	●	●	●	●	●	●	●							●				●					
		WNMG080408	0.8	●	●	●	●	●	●	●	●	●	●							●	●			●					
		WNMG080412	1.2	●	●	●	●	●	●	●	●	●	●											●					
		WNMG080416	1.6	●	●	●	●	●	●	●	●																		
Finishing to medium cutting	**27**	**WNMG080408-27**	0.8			●																							
Medium cutting	**33**	**WNMG080404-33**	0.4													●													
		WNMG080408-33	0.8	●																				●					
	37	**WNMG080404-37**	0.4																	●									
		WNMG080408-37	0.8		●									●						●									

● : Line-up

External toolholders → **B200 -** Internal toolholders → **B275 -**
TungCap → **F046 -**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Trigon, 80° with hole

P	Steel	◐	✣	◐✣	✣					●◐	◐																		
M	Stainless	●	◐	◐	✣					●◐	◐	●	◐																
K	Cast iron					●◐	●	◐	✣	●◐	◐								●✣										
N	Non-ferrous																		●✣										
S	Superalloys									●◐	●	●	◐	◐					●✣										
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating														Uncoated											
				T6120	T6130	AH630	AH645	T515	T5105	T5115	T5125	AH120	AH725	AH8005	AH8015	AH905		KS20											
Medium cutting	**SM**	**WNMG060404E-SM**	0.4	●	●	●																							
		WNMG060408E-SM	0.8	●	●	●																							
		WNMG060412E-SM	1.2	●	●	●																							
		WNMG060408-SM	0.8										●																
		WNMG080404-SM	0.4	●	●	●	●																						
		WNMG080408-SM	0.8	●	●	●	●						●																
		WNMG080412-SM	1.2	●	●	●	●						●																
	CM	**WNMG080404-CM**	0.4							●																			
		WNMG080408-CM	0.8					●	●	●	●																		
		WNMG080412-CM	1.2					●	●	●	●																		
Finishing to medium cutting	**HRM**	**WNMG080404-HRM**	0.4											●	●														
		WNMG080408-HRM	0.8											●	●														
		WNMG080412-HRM	1.2											●	●														
Medium cutting	**HMM**	**WNMG080404-HMM**	0.4													●													
		WNMG080408-HMM	0.8													●													
		WNMG080412-HMM	1.2													●													
	SA	**WNMG080408-SA**	0.8	●	●	●	●					●	●					●											
		WNMG080412-SA	1.2	●	●	●	●					●																	

● : Line-up

External toolholders → **B200 -** Internal toolholders → **B275 -**
TungCap → **F046 -**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Trigon, 80° with hole

P	Steel	● ●◐ ◐✣ ✣ ✣ ◐✣ ✣ ●◐ ●◐
M	Stainless	◐ ◐ ✣ ●◐ ●◐
K	Cast iron	●◐ ●◐ ●◐ ●◐ ● ◐ ✣ ●◐ ●◐ ●◐ ●
N	Non-ferrous	●
S	Superalloys	●◐
H	Hard materials	

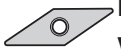
Application	Chipbreaker	Designation	Corner radius	Coating												Cermet				Uncoated					
				T9105	T9115	T9125	T9135	T6130	AH630	AH645	T515	T5105	T5115	T5125	AH120	NS520				TH10					
Medium to heavy cutting	TH	WNMG080408-TH	0.8	●	●	●	●	●							●										
		WNMG080412-TH	1.2	●	●	●	●								●										
		WNMG080416-TH	1.6	●	●	●																			
		WNMG100612-TH	1.2		●	●																			
		WNMG100616-TH	1.6		●	●																			
	THS	WNMG080408-THS	0.8	●	●	●	●																		
		WNMG080412-THS	1.2	●	●	●	●																		
		WNMG080416-THS	1.6		●	●																			
		WNMG100612-THS	1.2		●	●	●																		
		WNMG100616-THS	1.6		●	●	●																		
	SH	WNMG080408-SH	0.8					●	●	●															
		WNMG080412-SH	1.2					●	●	●															
	CH	WNMG080408-CH	0.8									●	●	●											
		WNMG080412-CH	1.2									●	●	●											
Finishing to medium cutting	-	WNMA080404	0.4									●	●	●						●					
		WNMA080408	0.8								●	●	●	●		●				●					
		WNMA080412	1.2								●	●	●	●											
		WNMA080416	1.6								●	●	●	●											

● : Line-up

External toolholders → B206 - Internal toolholders → B275 -
TungCap → B215, F046 -

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 35° with hole

P	Steel	● ●ɔ ɔ✣ ✣ ɔ ✣ ɔ✣ ●ɔ ● ●ɔ
M	Stainless	● ɔ ɔ ●ɔ ● ●ɔ
K	Cast iron	●ɔ ●ɔ ●ɔ ● ●ɔ ●ɔ ●ɔ ●ɔ ●ɔ
N	Non-ferrous	●
S	Superalloys	●ɔ ●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet		Cermet		Uncoated
				T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH120	GH110	GH330	GT9530	GT720	NS9530	NS520	TH10
Precision finishing	**TF**	**VNMG160404-TF**	0.4													●		
		VNMG160408-TF	0.8												●	●		
	01	**VNGG160402-01**	0.2									●				●	●	●
		VNGG160404-01	0.4													●	●	●
		VNGG160408-01	0.8													●	●	
Finishing	**TSF**	**VNMG160402-TSF**	0.2								●			●		●		
		VNMG160404-TSF	0.4	●	●	●	●				●			●		●		
		VNMG160408-TSF	0.8	●	●	●	●				●			●		●		
		VNMG160412-TSF	1.2	●	●	●	●											
	ZF	**VNMG160404-ZF**	0.4		●	●	●							●		●		
		VNMG160408-ZF	0.8		●	●	●							●		●		
		VNMG160412-ZF	1.2		●	●	●											
	11	**VNMG160404-11**	0.4										●			●		●
		VNMG160408-11	0.8													●		
		VNMG160412-11	1.2													●		
	SF	**VNMG160404-SF**	0.4					●	●	●								
		VNMG160408-SF	0.8					●	●	●								

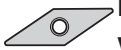
● : Line-up

External toolholders → **B207 -** Internal toolholders → **B296, B299**

TurnLine - Insert

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 35° with hole

P	Steel	●	●c	c✣	✣	c	✣	c✣	✣			●	●c			●c			●c							●c	●c				
M	Stainless					●	c	c	✣			●	●c	●	c	●c															
K	Cast iron	●c	●c							●	c	●	●c			●c			●c							●c	●c				
N	Non-ferrous																														
S	Superalloys											●	●c	●	c																
H	Hard materials																														

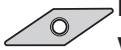
Application	Chipbreaker	Designation	Corner radius	Coating																Coated cermet				Cermet			
				T9105	T9115	T9125	T9135	T6120	T6130	AH630	AH645	T5105	T5115	AH110	AH120	AH8005	AH8015	GH330		GT9530				NS9530	NS520		
Finishing	CF	VNMG160404-CF	0.4									●	●														
		VNMG160408-CF	0.8									●	●														
	HRF	VNMG160404-HRF	0.4													●	●										
		VNMG160408-HRF	0.8													●	●										
	TS	VNMG160404-TS	0.4		●	●	●													●				●	●		
		VNMG160408-TS	0.8		●	●	●													●				●	●		
		VNMG160412-TS	1.2		●	●	●																				
	SS	VNMG160404-SS	0.4					●	●	●	●				●			●									
		VNMG160408-SS	0.8					●	●	●	●				●			●									
		VNMG160412-SS	1.2					●	●	●	●							●									
Medium cutting	TM	VNMG160404-TM	0.4	●	●	●	●		●						●												
		VNMG160408-TM	0.8	●	●	●	●							●	●												
		VNMG160412-TM	1.2	●	●	●	●							●													

● : Line-up

External toolholders → **B207 -** Internal toolholders → **B296, B299**

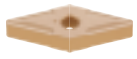
● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 35° with hole

P	Steel	●	●ɔ	ɔ✣	✣					●	●ɔ				●ɔ				●ɔ				●				
M	Stainless									●	●ɔ												●				
K	Cast iron	●ɔ	●ɔ			●ɔ	●	ɔ	✣	●	●ɔ				●ɔ				●ɔ				●				
N	Non-ferrous																						●				
S	Superalloys									●	●ɔ																
H	Hard materials																										

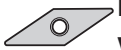
Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet				Uncoated				
				T9105	T9115	T9125	T9135	T515	T5105	T5115	T5125	AH110	AH120	GT9530				NS9530				TH10				
Finishing to medium cutting	**TQ**	**VNMG160404-TQ**	0.4											●				●								
		VNMG160408-TQ	0.8											●				●								
																										
	ZM	**VNMG160408-ZM**	0.8		●	●	●																			
		VNMG160412-ZM	1.2		●	●	●																			
																										
Medium cutting	**DM**	**VNMG160408-DM**	0.8	●	●	●	●																			
		VNMG160412-DM	1.2		●	●	●																			
																										
	All-round	**VNMG160404**	0.4	●	●	●	●	●	●	●	●	●	●					●				●				
		VNMG160408	0.8	●	●	●	●	●	●	●	●	●	●					●				●				
		VNMG160412	1.2		●	●		●	●	●	●							●								
																										
	28	**VNMG160404-28**	0.4										●													
		VNMG160408-28	0.8										●													
																										
	33	**VNMG160404-33**	0.4			●						●										●				
		VNMG160408-33	0.8		●																	●				
																										

● : Line-up

External toolholders → **B207 -** Internal toolholders → **B296, B299**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE



Rhombic, 35° with hole

P	Steel	◐	✣	◐✣	✣											●◐				●						
M	Stainless	●	◐	◐	✣				●	◐										●						
K	Cast iron					●	◐	✣								●◐				●						
N	Non-ferrous																			●						
S	Superalloys								●	◐	◐															
H	Hard materials																									

Application	Chipbreaker	Designation	Corner radius	Coating										Cermet				Uncoated							
				T6120	T6130	AH630	AH645	T5105	T5115	T5125	AH8005	AH8015	AH905												
Medium cutting	SM	VNMG160404-SM	0.4	●	●	●	●																		
		VNMG160408-SM	0.8	●	●	●	●																		
		VNMG160412-SM	1.2	●	●	●	●																		
	CM	VNMG160408-CM	0.8					●	●	●															
		VNMG160412-CM	1.2					●	●	●															
Finishing to medium cutting	HRM	VNMG160404-HRM	0.4								●	●													
		VNMG160408-HRM	0.8								●	●													
		VNMG160412-HRM	1.2								●	●													
Medium cutting	HMM	VNMG160404-HMM	0.4										●												
		VNMG160408-HMM	0.8										●												
		VNMG160412-HMM	1.2										●												
Finishing to medium cutting	-	VNMA160402	0.2																	●					
		VNMA160404	0.4					●	●	●				●						●					
		VNMA160408	0.8					●	●	●				●						●					

● : Line-up

External toolholders → B207 - Internal toolholders → B296, B299

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE

Rhombic, 35° without hole

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Application	Chipbreaker	Designation	Corner radius	Ceramics: FX105
Finishing to medium cutting	-	**VNGD160712**	1.2	●



Rhombic, 25° with hole

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Application	Chipbreaker	Designation	Corner radius	Coating: T9125	Coating: T9135	Coated cermet: GT9530	Cermet: NS9530
Finishing to medium cutting	**ZF**	**YNMG160404-ZF**	0.4	●	●	●	●
		YNMG160408-ZF	0.8	●	●	●	●
	ZM	**YNMG160404-ZM**	0.4	●	●	●	●
		YNMG160408-ZM	0.8	●	●	●	●





● : Line-up

VNGD... : External toolholders → **B255**

YNMG... : External toolholders → **B207, B208, B213**, Internal toolholders → **B296, B299**

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

NEGATIVE TYPE

Round, with hole

P	Steel	●	●ⓒ	ⓒ✣	✣	●ⓒ				●																						
M	Stainless					●ⓒ				●																						
K	Cast iron	●ⓒ	●ⓒ			●ⓒ				●																						
N	Non-ferrous									●																						
S	Superalloys					●ⓒ																										
H	Hard materials													●																		

Application	Chipbreaker	Designation	Corner radius	Coating								Uncoated				Ceramics																
				T9105	T9115	T9125	T9135	AH120				TH10				LX11																
Heavy cutting	61	RNMG090300-61	-		●	●																										
		RNMG120400-61	-	●	●	●	●	●				●																				
		RNMG150600-61	-		●	●																										
		RNMG190600-61	-		●	●	●																										
		RNMG250900-61	-		●	●																										
Finishing to medium cutting	-	RNGA120400	-													●																
																																

Round, without hole

P	Steel																															
M	Stainless																															
K	Cast iron	●ⓒ																														
N	Non-ferrous																															
S	Superalloys																															
H	Hard materials		●																													

Application	Chipbreaker	Designation	Corner radius	Ceramics																												
				FX105	LX11																											
Finishing to medium cutting	-	RNGN120400	-	●	●																											
		RNGN120700	-	●	●																											

● : Line-up

RNMG..., RNGA... : External toolholders → **B213 -**

● : Continuous cutting
◐ : Light interrupted cutting
✤ : Heavy interrupted cutting

NEGATIVE TYPE

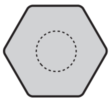


Parallelogram, 55° without hole

Material	GH330
P Steel	●◐
M Stainless	●◐
K Cast iron	●◐
N Non-ferrous	
S Superalloys	
H Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating: GH330
Finishing	S1	KNMX160405R-S1	0.5	●
		KNMX160405L-S1	0.5	●

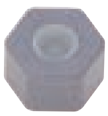




Hexagon, 120° without hole

Material	FX105
P Steel	
M Stainless	
K Cast iron	●◐
N Non-ferrous	
S Superalloys	
H Hard materials	

Application	Chipbreaker	Designation	Corner radius	Ceramics: FX105
Finishing	-	HNGD050712	1.2	●
		HNGD050716	1.6	●



● : Line-up

KNMX... : External toolholders → B240
HNGD... : External toolholders → B256

TurnLine - Insert

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 80° with hole Positive 7°

P	Steel	●ɔ ɔ✣ ✣ ɔ ɔ
M	Stainless	ɔ ɔ ● ɔ ɔ
K	Cast iron	●ɔ ɔ ɔ
N	Non-ferrous	
S	Superalloys	● ● ɔ
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet								
				T9115	T9125	T6130	AH725	AH8005	AH8015	GH730	SH725	J740			GT9530				NS9530							
Precision finishing	01	CCGT060202-01	0.2									●														
		CCGT09T302-01	0.2									●														
Precision finishing (Sharp edgeds)	01	CCGT060202F-01	0.2								●															
		CCGT060204F-01	0.4								●															
		CCGT09T302F-01	0.2								●															
Finishing	PSF	CCMT060202-PSF	0.2				●								●				●							
		CCMT060204-PSF	0.4	●	●		●	●	●						●				●							
		CCMT09T302-PSF	0.2				●												●							
		CCMT09T304-PSF	0.4	●	●		●	●	●						●				●							
		CCMT09T308-PSF	0.8	●	●		●								●				●							
	PF	CCMT060202-PF	0.2							●					●				●							
		CCMT060204-PF	0.4			●				●					●				●							
		CCMT060208-PF	0.8												●				●							
		CCMT09T302-PF	0.2							●									●							
		CCMT09T304-PF	0.4							●					●				●							
		CCMT09T308-PF	0.8		●										●				●							

● : Line-up

External toolholders → B245
Internal toolholders → B278, B301
J series toolholders → B328 - B331
PINZBOHR® → F136 - F151

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 80° with hole Positive 7°

P	Steel	●ɔ	ɔ✣	ɔ	✣	ɔ✣	✣	●ɔ	ɔ			ɔ				●ɔ				●ɔ									
M	Stainless			●	ɔ	ɔ	✣	●ɔ	ɔ	●	ɔ	ɔ																	
K	Cast iron	●ɔ						●ɔ	ɔ			ɔ				●ɔ				●ɔ									
N	Non-ferrous																												
S	Superalloys							●ɔ	●	●	ɔ																		
H	Hard materials																												

Application	Chipbreaker	Designation	Corner radius	Coating												Coated cermet				Cermet									
				T9115	T9125	T6120	T6130	AH630	AH645	AH120	AH725	AH8005	AH8015	GH730		GT9530				NS9530									
Finishing to light cutting	**PSS**	**CCMT060204-PSS**	0.4	●	●	●	●	●	●		●	●	●			●				●									
		CCMT060208-PSS	0.8	●	●	●	●	●	●		●	●	●			●				●									
		CCMT09T304-PSS	0.4	●	●	●	●	●	●		●	●	●			●				●									
		CCMT09T308-PSS	0.8	●	●	●	●	●	●		●	●	●			●				●									
		CCMT120404-PSS	0.4	●	●	●	●	●	●		●																		
		CCMT120408-PSS	0.8	●	●	●	●	●	●		●																		
		CCMT120412-PSS	1.2	●	●	●	●	●	●		●																		
Finishing to medium cutting	**PS**	**CCMT060202-PS**	0.2	●	●	●	●	●	●	●	●			●		●				●									
		CCMT060204-PS	0.4	●	●	●	●	●	●	●	●	●	●	●		●				●									
		CCMT060208-PS	0.8	●	●	●	●	●	●	●	●	●	●	●		●				●									
		CCMT09T302-PS	0.2	●	●	●	●	●	●	●	●			●		●				●									
		CCMT09T304-PS	0.4	●	●	●	●	●	●	●	●	●	●	●		●				●									
		CCMT09T308-PS	0.8	●	●	●	●	●	●	●	●	●	●	●		●				●									
		CCMT120404-PS	0.4	●	●	●	●	●	●		●	●	●																
		CCMT120408-PS	0.8	●	●	●	●	●	●		●	●	●																
		CCMT120412-PS	1.2	●	●	●	●	●	●		●																		
	23	**CCMT060202-23**	0.2																	●									
		CCMT060204-23	0.4		●															●									
		CCMT060208-23	0.8		●																								
		CCMT09T304-23	0.4		●															●									
		CCMT09T308-23	0.8		●															●									
Medium cutting	**24**	**CCMT060202-24**	0.2		●															●									
		CCMT060204-24	0.4	●	●					●										●									
		CCMT060208-24	0.8	●	●		●													●									
		CCMT09T302-24	0.2		●															●									
		CCMT09T304-24	0.4	●	●															●									
		CCMT09T308-24	0.8	●	●		●													●									
		CCMT120408-24	0.8	●	●					●										●									

● : Line-up

External toolholders → **B245**
Internal toolholders → **B278, B301**
J series toolholders → **B328 - B331**
PINZBOHR® → **F136 - F151**

TurnLine - Insert

POSITIVE TYPE



Rhombic, 80° with hole Positive 7°

P	Steel	●ᑕ	●ᑕ					●																									
M	Stainless	●ᑕ	●ᑕ					●																									
K	Cast iron							●																									
N	Non-ferrous							●																									
S	Superalloys		●ᑕ																														
H	Hard materials																																

Application	Chipbreaker	Designation	Corner radius	Coating					Uncoated																									
				SH725	SH730				TH10																									
Finishing	W08	CCGT03X100R-W08	0.03		●				●																									
		CCGT03X100L-W08	0.03		●				●																									
		CCGT03X101R-W08	0.1		●				●																									
		CCGT03X101L-W08	0.1		●				●																									
		CCGT03X102R-W08	0.2		●				●																									
		CCGT03X102L-W08	0.2		●				●																									
		CCGT03X104R-W08	0.4		●				●																									
		CCGT03X104L-W08	0.4		●				●																									
		CCGT04T100R-W08	0.03		●				●																									
		CCGT04T100L-W08	0.03		●				●																									
		CCGT04T101R-W08	0.1		●				●																									
		CCGT04T101L-W08	0.1		●				●																									
		CCGT04T102R-W08	0.2		●				●																									
		CCGT04T102L-W08	0.2		●				●																									
		CCGT04T104R-W08	0.4		●				●																									
		CCGT04T104L-W08	0.4		●				●																									
Finishing (Sharp edge)	W08	CCGT03X100FL-W08	0.03	●																													
		CCGT03X100FR-W08	0.03	●																													
		CCGT03X101FL-W08	0.1	●																													
		CCGT03X101FR-W08	0.1	●																													
		CCGT03X102FL-W08	0.2	●																													
		CCGT03X102FR-W08	0.2	●																													
		CCGT03X104FL-W08	0.4	●																													
		CCGT03X104FR-W08	0.4	●																													
		CCGT04T100FL-W08	0.03	●																													
		CCGT04T100FR-W08	0.03	●																													
		CCGT04T101FL-W08	0.1	●																													
		CCGT04T101FR-W08	0.1	●																													
		CCGT04T102FL-W08	0.2	●																													
		CCGT04T102FR-W08	0.2	●																													
		CCGT04T104FL-W08	0.4	●																													
		CCGT04T104FR-W08	0.4	●																													

● : Line-up

Internal toolholders → B278
PINZBOHR® → F136 - F151

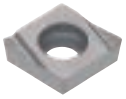
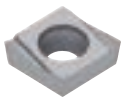
● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 80° with hole Positive 7°

P	Steel	●ɔ	ɔ✣	ɔ	✣	ɔ✣	✣			●ɔ	ɔ	●	●ɔ	ɔ		●ɔ					●ɔ				●	ɔ					
M	Stainless			●	ɔ	ɔ	✣			●ɔ	ɔ	●	●ɔ	ɔ											●	ɔ					
K	Cast iron	●ɔ						●ɔ	ɔ	●ɔ	ɔ	●	●ɔ	ɔ		●ɔ					●ɔ				●						
N	Non-ferrous																								●						
S	Superalloys									●ɔ	●	●																			
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating														Coated cermet				Cermet				Uncoated			
				T9115	T9125	T6120	T6130	AH630	AH645	T515	T5115	AH120	AH725	GH110	GH330	GH730		GT9530				NS9530				TH10	UX30		
Finishing	**W15**	**CCGT060200R-W15**	0.03																							●			
		**CCGT060200L-W15**	0.03																			●				●			
		CCGT060202R-W15	0.2																			●				●			
		CCGT060202L-W15	0.2															●				●				●			
		CCGT060204R-W15	0.4												●							●				●			
		CCGT060204L-W15	0.4											●	●			●				●				●	●		
	W20	**CCGT09T302R-W20**	0.2																			●				●			
		CCGT09T302L-W20	0.2															●				●				●			
		**CCGT09T304R-W20**	0.4																			●							
		CCGT09T304L-W20	0.4											●	●			●				●				●			
		CCGT09T308R-W20	0.8																			●							
		CCGT09T308L-W20	0.8															●				●							
Medium cutting	**PM**	**CCMT060204-PM**	0.4	●	●	●	●	●	●			●	●			●		●				●							
		CCMT060208-PM	0.8	●	●	●	●	●	●			●	●			●		●				●							
		**CCMT09T304-PM**	0.4	●	●	●	●	●	●			●	●			●		●				●							
		CCMT09T308-PM	0.8	●	●	●	●	●	●			●	●			●		●				●							
		CCMT09T312-PM	1.2	●	●	●	●	●	●				●																
		CCMT120408-PM	0.8			●	●	●	●				●																
		CCMT120412-PM	1.2			●	●	●	●				●																
Finishing to medium cutting	**CM**	**CCMT060204-CM**	0.4							●	●																		
		CCMT060208-CM	0.8							●	●																		
		**CCMT09T304-CM**	0.4							●	●																		
		CCMT09T308-CM	0.8							●	●																		
		CCMT09T312-CM	1.2								●																		
		CCMT120404-CM	0.4								●																		
		CCMT120408-CM	0.8								●																		

● : Line-up

External toolholders → **B245** Internal toolholders → **B278, B301**
J series toolholders → **B328 - B331** PINZBOHR® → **F136 - F151**

TurnLine - Insert

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 80° with hole Positive 7°

		Coating			Cermet			Uncoated			
P	Steel		●		●ɔ			●			
M	Stainless		●					●			
K	Cast iron	ɔ	●		●ɔ			●	●		
N	Non-ferrous							●	●		
S	Superalloys		●						●		
H	Hard materials										

Application	Chipbreaker	Designation	Corner radius	T5115	GH110	NS9530	TH10	KS05F
Finishing to medium cutting	AL	CCGT060202-AL	0.2					●
		CCGT060204-AL	0.4					●
		CCGT09T302-AL	0.2					●
		CCGT09T304-AL	0.4					●
		CCGT09T308-AL	0.8					●
		CCGT120402-AL	0.2					●
		CCGT120404-AL	0.4					●
		CCGT120408-AL	0.8					●
	All-round	CCGT060202	0.2			●		
		CCGT060204	0.4			●		
		CCGT09T302	0.2			●		
		CCGT09T304	0.4			●		
		CCGT09T308	0.8			●		
	Angular	CCGT060200R	0.03				●	
		CCGT060202R	0.2				●	
		CCGT060202L	0.2				●	
		CCGT060204L	0.4				●	
		CCGT09T302R	0.2				●	
		CCGT09T302L	0.2				●	
		CCGT09T304R	0.4				●	
		CCGT09T304L	0.4				●	
	-	CCMW060204	0.4	●				
		CCMW060208	0.8	●				
		CCMW09T304	0.4	●				
		CCMW09T308	0.8	●				
	-	CCGW060202	0.2				●	
		CCGW060204	0.4				●	
		CCGW09T304	0.4		●		●	

● : Line-up

External toolholders → B245
Internal toolholders → B278, B301
J series toolholders → B328 - B331
PINZBOHR® → F136 - F151

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 80° with hole Positive 7°

P	Steel	ɔ ●ɔ ●ɔ
M	Stainless	ɔ ●ɔ ●ɔ
K	Cast iron	ɔ
N	Non-ferrous	
S	Superalloys	● ●ɔ
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating AH725	SH725	SH730
For internal turning on small lathes	JS	CCGT03X101-JS	0.1			●
		CCGT03X102-JS	0.2			●
		CCGT03X104-JS	0.4			●
		CCGT04T101-JS	0.1			●
		CCGT04T102-JS	0.2			●
		CCGT04T104-JS	0.4			●
For internal turning on small lathes (Sharp edge)	JS	CCGT03X101F-JS	0.1		●	
		CCGT03X102F-JS	0.2		●	
		CCGT03X104F-JS	0.4		●	
		CCGT04T101F-JS	0.1		●	
		CCGT04T102F-JS	0.2		●	
		CCGT04T104F-JS	0.4		●	
For external turning on small lathes	JS	CCGT060201N-JS	0.1	●		
		CCGT060202N-JS	0.2	●		
		CCGT060204N-JS	0.4	●		
		CCGT09T301N-JS	0.1	●		
		CCGT09T302N-JS	0.2	●		
		CCGT09T304N-JS	0.4	●		
For external turning on small lathes (Sharp edge)	JS	CCGT060200FN-JS	0.03		●	●
		CCGT060201FN-JS	0.1		●	●
		CCGT060202FN-JS	0.2		●	●
		CCGT060204FN-JS	0.4		●	●
		CCGT09T300FN-JS	0.03		●	●
		CCGT09T301FN-JS	0.1		●	●
		CCGT09T302FN-JS	0.2		●	●
		CCGT09T304FN-JS	0.4		●	●

● : Line-up

External toolholders → **B245**
Internal toolholders → **B278, B301**
J series toolholders → **B328 - B331**
PINZBOHR® → **F136 - F151**

TurnLine - Insert

POSITIVE TYPE



Rhombic, 80° with hole Positive 7°

P	Steel	●ᑕ	●ᑕ					●ᑕ					●																					
M	Stainless	●ᑕ	●ᑕ										●																					
K	Cast iron							●ᑕ					●																					
N	Non-ferrous												●																					
S	Superalloys																																	
H	Hard materials																																	

Application	Chipbreaker	Designation	Corner radius	Coating					Cermet					Uncoated				
				SH725	J740				NS9530					TH10				
For external turning on small lathes (Sharp edge)	J10	CCGT060200FR-J10	0.03	●	●									●				
		CCGT060200FL-J10	0.03	●	●									●				
		CCGT060201FR-J10	0.1	●	●				●					●				
		CCGT060201FL-J10	0.1	●	●									●				
		CCGT060202FR-J10	0.2	●	●				●					●				
		CCGT060202FL-J10	0.2	●	●				●					●				
		CCGT09T300FR-J10	0.03	●	●									●				
		CCGT09T300FL-J10	0.03	●	●									●				
		CCGT09T301FR-J10	0.1	●	●									●				
		CCGT09T301FL-J10	0.1	●	●									●				
		CCGT09T302FR-J10	0.2	●	●									●				
		CCGT09T302FL-J10	0.2	●	●									●				
		CCGT09T304FR-J10	0.4	●														



● : Line-up

External toolholders → **B245**
J series toolholders → **B328 - B331**
Internal toolholders → **B278, B301**
PINZBOHR® → **F136 - F151**

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 80° with hole Positive 11°

P	Steel	●ɔ	ɔ✣	ɔ	✣	ɔ✣	✣	●ɔ	ɔ	ɔ				●ɔ				●ɔ										
M	Stainless			●	ɔ	ɔ	✣	●ɔ	ɔ	ɔ																		
K	Cast iron	●ɔ						●ɔ	ɔ	ɔ				●ɔ				●ɔ										
N	Non-ferrous																											
S	Superalloys							●ɔ	●																			
H	Hard materials																											

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet										
				T9115	T9125	T6120	T6130	AH630	AH645	AH120	AH725	GH730			GT9530				NS9530									
Finishing	PSF	CPMT060202-PSF	0.2								●																	
		CPMT060204-PSF	0.4	●	●						●																	
		CPMT080202-PSF	0.2								●																	
		CPMT080204-PSF	0.4	●	●						●																	
		CPMT090302-PSF	0.2								●				●				●									
		CPMT090304-PSF	0.4	●	●						●				●				●									
		CPMT09T302-PSF	0.2								●																	
		CPMT09T304-PSF	0.4	●	●						●																	
	PF	CPMT090302-PF	0.2												●				●									
		CPMT090304-PF	0.4												●				●									
Finishing to light cutting	PSS	CPMT060204-PSS	0.4	●	●						●				●				●									
		CPMT080204-PSS	0.4	●	●	●	●	●	●		●				●				●									
		CPMT080208-PSS	0.8	●	●	●	●	●	●		●				●				●									
		CPMT090304-PSS	0.4	●	●	●	●	●	●		●				●				●									
		CPMT090308-PSS	0.8	●	●	●	●	●	●		●				●				●									
		CPMT09T304-PSS	0.4	●	●						●																	
		CPMT09T308-PSS	0.8	●	●						●																	
Finishing to medium cutting	PS	CPMT060202-PS	0.2	●	●						●	●							●									
		CPMT060204-PS	0.4	●	●					●	●	●			●				●									
		CPMT080202-PS	0.2	●	●	●	●	●	●		●				●				●									
		CPMT080204-PS	0.4	●	●	●	●	●	●		●				●				●									
		CPMT080208-PS	0.8	●	●	●	●	●	●		●				●				●									
		CPMT090304-PS	0.4	●	●	●	●	●	●		●				●				●									
		CPMT090308-PS	0.8	●	●	●	●	●	●		●				●				●									
		CPMT09T302-PS	0.2	●	●						●																	
		CPMT09T304-PS	0.4	●	●						●																	
		CPMT09T308-PS	0.8	●	●					●	●																	

● : Line-up

Internal toolholders → B280, B301

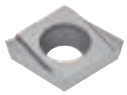
● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 80° with hole Positive 11°

		Coating			Cermet			Uncoated		
P	Steel	c✣			●c			●		
M	Stainless							●		
K	Cast iron				●c			●		
N	Non-ferrous							●		
S	Superalloys									
H	Hard materials									

Application	Chipbreaker	Designation	Corner radius	T9125			NS9530			TH10		
Medium cutting	**24**	**CPMT120408-24**	0.8				●					
		**CPMT160508-24**	0.8	●			●					
		CPMT160512-24	1.2				●					
Finishing	**W15**	**CPGT050202L-W15**	0.2				●					
		**CPGT050204L-W15**	0.4				●					
		CPGT080202R-W15	0.2							●		
		CPGT080202L-W15	0.2				●			●		
		CPGT080204R-W15	0.4							●		
		CPGT080204L-W15	0.4				●			●		
	W20	**CPGT090302R-W20**	0.2				●			●		
		**CPGT090302L-W20**	0.2				●			●		
		CPGT090304R-W20	0.4				●			●		
		CPGT090304L-W20	0.4				●			●		

● : Line-up

Internal toolholders → B280, B301 Cartridges → F152 -
Boring bar tools → F169 - F172

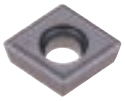
● : Continuous cutting
ᑕ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 80° with hole Positive 11°

P	Steel	●	ᑕ	✣	ᑕ✣	✣				ᑕ									●ᑕ												
M	Stainless		●	ᑕ	ᑕ	✣				ᑕ	●	ᑕ																			
K	Cast iron	●ᑕ					●ᑕ	●	ᑕ	ᑕ									●ᑕ												
N	Non-ferrous																														
S	Superalloys									●	●	ᑕ	ᑕ																		
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating													Cermet														
				T9105	T9125	T6120	T6130	AH630	AH645	T515	T5115	AH725	AH8005	AH8015	AH905			NS9530													
Medium cutting	**PM**	**CPMT060204-PM**	0.4			●	●	●	●			●																			
		**CPMT060208-PM**	0.8		●	●	●	●	●			●																			
		CPMT090304-PM	0.4		●	●	●	●	●			●						●													
		CPMT090308-PM	0.8		●	●	●	●	●			●						●													
Finishing to medium cutting	**CM**	**CPMT060204-CM**	0.4								●																				
		**CPMT060208-CM**	0.8								●																				
		CPMT080204-CM	0.4								●																				
		CPMT080208-CM	0.8								●																				
		CPMT090304-CM	0.4							●	●																				
		CPMT090308-CM	0.8							●	●																				
		CPMT09T304-CM	0.4							●	●																				
		CPMT09T308-CM	0.8							●	●																				
		CPMT09T312-CM	1.2								●																				
		CPMT120408-CM	0.8								●																				
		CPMT120412-CM	1.2								●																				
Medium cutting	**All-round**	**CPMT120408**	0.8										●	●	●																
																															
	-	**CPMW080204**	0.4								●																				
		CPMW080208	0.8								●																				
		**CPMW090304**	0.4	●							●																				
		CPMW090308	0.8								●																				

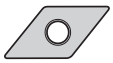
● : Line-up

Internal toolholders → B280, B301
Boring bar tools → F169 - F172

TurnLine - Insert

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 55° with hole Positive 7°

P	Steel	●c	c✣	c				c	●c	●c				●c	●c				●c												
M	Stainless			c	●	c		c	●c	●c																					
K	Cast iron	●c		c				c						●c	●c				●c												
N	Non-ferrous																														
S	Superalloys			●	●	c	c																								
H	Hard materials																														

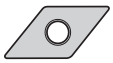
Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet													
				T9115	T9125	AH725	AH8005	AH8015	AH905	GH730	SH725	J740		GT9530	J9530			NS9530													
Precision finishing	01	DCGT070202-01	0.2									●			●																
		DCGT11T302-01	0.2									●																			
																															
Precision finishing (Sharp edgeds)	01	DCGT070202F-01	0.2								●																				
		DCGT11T302F-01	0.2								●																				
																															
Finishing	PSF	DCMT070202-PSF	0.2			●								●				●													
		DCMT070204-PSF	0.4	●	●	●								●				●													
		DCMT11T302-PSF	0.2			●								●				●													
		DCMT11T304-PSF	0.4	●	●	●	●	●	●					●				●													
		DCMT11T308-PSF	0.8	●	●	●	●	●	●																						
																															
	PF	DCMT070202-PF	0.2							●				●				●													
		DCMT070204-PF	0.4							●				●				●													
		DCMT070208-PF	0.8											●				●													
		DCMT11T302-PF	0.2							●				●				●													
		DCMT11T304-PF	0.4							●				●				●													
		DCMT11T308-PF	0.8											●																	
																															

● : Line-up

External toolholders → B217 -
Internal toolholders → B287 -
J series toolholders → B331 - 335

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 55° with hole Positive 7°

P	Steel	●◐	◐✣	◐	✣	◐✣	✣	●◐	◐				◐				●◐				●◐							
M	Stainless			●	◐	◐	✣	●◐	◐	●	◐		◐															
K	Cast iron	●◐						●◐	◐				◐				●◐				●◐							
N	Non-ferrous																											
S	Superalloys							●◐	●	●	◐	◐																
H	Hard materials																											

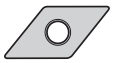
Application	Chipbreaker	Designation	Corner radius	Coating														Coated cermet				Cermet							
				T9115	T9125	T6120	T6130	AH630	AH645	AH120	AH725	AH8005	AH8015	AH905	GH730			GT9530				NS9530							
Finishing to light cutting	**PSS**	**DCMT070204-PSS**	0.4	●	●	●	●	●	●		●							●				●							
		**DCMT070208-PSS**	0.8	●	●	●	●	●	●		●							●				●							
		DCMT11T304-PSS	0.4	●	●	●	●	●	●		●	●	●	●				●				●							
		DCMT11T308-PSS	0.8	●	●	●	●	●	●		●	●	●	●				●				●							
		DCMT11T312-PSS	1.2	●	●	●	●	●	●		●	●	●	●															
Finishing to medium cutting	**PS**	**DCMT070202-PS**	0.2	●	●	●	●	●	●	●	●				●			●				●							
		**DCMT070204-PS**	0.4	●	●	●	●	●	●	●	●				●			●				●							
		DCMT070208-PS	0.8	●	●						●				●			●				●							
		DCMT11T302-PS	0.2	●	●	●	●	●	●	●	●				●			●				●							
		DCMT11T304-PS	0.4	●	●	●	●	●	●	●	●	●	●	●	●			●				●							
		DCMT11T308-PS	0.8	●	●	●	●	●	●	●	●	●	●	●	●			●				●							
		DCMT11T312-PS	1.2	●	●	●	●	●	●		●	●	●	●															
	23	**DCMT070204-23**	0.4																			●							
		**DCMT11T304-23**	0.4																			●							
		DCMT11T308-23	0.8																			●							
Medium cutting	**24**	**DCMT070202-24**	0.2																			●							
		**DCMT070204-24**	0.4	●	●																	●							
		DCMT070208-24	0.8		●																	●							
		DCMT11T302-24	0.2		●																	●							
		DCMT11T304-24	0.4	●	●																	●							
		DCMT11T308-24	0.8	●	●		●															●							

● : Line-up

External toolholders → **B217 -**
Internal toolholders → **B287 -**
J series toolholders → **B331 - 335**

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 55° with hole Positive 7°

P	Steel	●ɔ	ɔ✣	ɔ	✣	ɔ✣	✣			●ɔ	ɔ	●ɔ	ɔ		●ɔ				●ɔ				●				
M	Stainless			●	ɔ	ɔ	✣			●ɔ	ɔ	●ɔ	ɔ										●				
K	Cast iron	●ɔ						●ɔ	ɔ	●ɔ	ɔ	●ɔ	ɔ		●ɔ				●ɔ				●				
N	Non-ferrous																						●				
S	Superalloys									●ɔ	●																
H	Hard materials																										

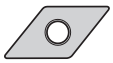
Application	Chipbreaker	Designation	Corner radius	Coating												Coated cermet				Cermet				Uncoated			
				T9115	T9125	T6120	T6130	AH630	AH645	T515	T5115	AH120	AH725	GH330	GH730	GT9530				NS9530				TH10			
Finishing	W10	DCGT070200R-W10	0.03																					●			
		DCGT070200L-W10	0.03																					●			
		DCGT070202R-W10	0.2																	●				●			
		DCGT070202L-W10	0.2													●				●							
		DCGT070204R-W10	0.4											●						●				●			
		DCGT070204L-W10	0.4											●		●				●				●			
	W15	DCGT11T302R-W15	0.2																	●				●			
		DCGT11T302L-W15	0.2													●				●							
		DCGT11T304R-W15	0.4																	●							
		DCGT11T304L-W15	0.4											●		●				●				●			
		DCGT11T308R-W15	0.8																	●				●			
		DCGT11T308L-W15	0.8																	●				●			
Medium cutting	PM	DCMT070204-PM	0.4	●	●	●	●	●	●			●	●		●	●				●							
		DCMT070208-PM	0.8	●	●	●	●	●	●			●	●		●	●				●							
		DCMT11T304-PM	0.4	●	●	●	●	●	●			●	●		●	●				●							
		DCMT11T308-PM	0.8	●	●	●	●	●	●			●	●		●	●				●							
		DCMT11T312-PM	1.2		●	●	●	●	●				●														
Finishing to medium cutting	CM	DCMT070204-CM	0.4								●																
		DCMT070208-CM	0.8								●																
		DCMT11T304-CM	0.4							●	●																
		DCMT11T308-CM	0.8							●	●																
		DCMT11T312-CM	1.2								●																

● : Line-up

External toolholders → B217 - Internal toolholders → B287 -
J series toolholders → B331 - 335

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 55° with hole Positive 7°

		T9105	T5115	GH110	NS9530	TH10	KS05F
P	Steel	●		●	●ɔ	●	
M	Stainless			●		●	
K	Cast iron	●ɔ	ɔ	●	●ɔ	●	●
N	Non-ferrous					●	●
S	Superalloys			●			●
H	Hard materials						

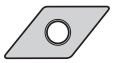
Application	Chipbreaker	Designation	Corner radius	Coating			Cermet	Uncoated	
				T9105	T5115	GH110	NS9530	TH10	KS05F
Finishing to medium cutting	**AL**	**DCGT070202-AL**	0.2						●
		DCGT070204-AL	0.4						●
		DCGT11T302-AL	0.2						●
		DCGT11T304-AL	0.4						●
		DCGT11T308-AL	0.8						●
	All-round	**DCGT070202**	0.2				●		
		DCGT070204	0.4				●		
		DCGT11T302	0.2				●		
		DCGT11T304	0.4				●		
		DCGT11T308	0.8				●		
	Angular	**DCGT070202R**	0.2					●	
		DCGT070202L	0.2					●	
		DCGT070204R	0.4					●	
		DCGT070204L	0.4					●	
		DCGT11T302R	0.2					●	
		DCGT11T302L	0.2					●	
		DCGT11T304R	0.4					●	
		DCGT11T304L	0.4					●	
Medium cutting	**-**	**DCMW070204**	0.4	●	●				
		DCMW070208	0.8		●				
		DCMW11T304	0.4	●	●				
		DCMW11T308	0.8		●				
	-	**DCGW070202**	0.2					●	
		DCGW070204	0.4			●		●	
		DCGW11T304	0.4					●	
		DCGW11T308	0.8					●	

● : Line-up

External toolholders → **B217 -**
Internal toolholders → **B287 -**
J series toolholders → **B331 - 335**

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 55° with hole Positive 7°

P	Steel	ɔ	●ɔ	●ɔ
M	Stainless	ɔ	●ɔ	●ɔ
K	Cast iron	ɔ		
N	Non-ferrous			
S	Superalloys	●		●ɔ
H	Hard materials			

Application	Chipbreaker	Designation	Corner radius	Coating AH725	Coating SH725	Coating SH730
For external turning on small lathes (Sharp edge)	JS	DCGT070200FN-JS	0.03		●	●
		DCGT070201FN-JS	0.1		●	●
		DCGT070202FN-JS	0.2		●	●
		DCGT11T300FN-JS	0.03		●	●
		DCGT11T301FN-JS	0.1		●	●
		DCGT11T302FN-JS	0.2		●	●
		DCGT11T304FN-JS	0.4		●	●
For external turning on small lathes	JS	DCGT070201N-JS	0.1	●		
		DCGT070202N-JS	0.2	●		
		DCGT11T301N-JS	0.1	●		
		DCGT11T302N-JS	0.2	●		
		DCGT11T304N-JS	0.4	●		
For external turning on small lathes (Sharp edge)	JPP	DCET0702008MFR-JPP	<0.08*		●	●
		DCET0702008MFL-JPP	<0.08*		●	●
		DCET070201MFR-JPP	<0.1*		●	●
		DCET070201MFL-JPP	<0.1*		●	●
		DCET0702018MFR-JPP	<0.18*		●	●
		DCET0702018MFL-JPP	<0.18*		●	●
		DCET070202MFR-JPP	<0.2*		●	●
		DCET070202MFL-JPP	<0.2*		●	●
		DCET11T3008MFR-JPP	<0.08*		●	●
		DCET11T3008MFL-JPP	<0.08*		●	●
		DCET11T301MFR-JPP	<0.1*		●	●
		DCET11T301MFL-JPP	<0.1*		●	●
		DCET11T3018MFR-JPP	<0.18*		●	●
		DCET11T3018MFL-JPP	<0.18*		●	●
		DCET11T302MFR-JPP	<0.2*		●	●
		DCET11T302MFL-JPP	<0.2*		●	●

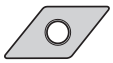
* Corner radius has minus tolerance.

● : Line-up

External toolholders → B217 - Internal toolholders → B287 -
J series toolholders → B331 - 335

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 55° with hole Positive 7°

P	Steel	●ⓒ		●ⓒ		●ⓒ						●ⓒ					●ⓒ					●												
M	Stainless	●ⓒ		●ⓒ		●ⓒ																●												
K	Cast iron											●ⓒ					●ⓒ					●												
N	Non-ferrous																					●												
S	Superalloys			●ⓒ																														
H	Hard materials																																	

Application	Chipbreaker	Designation	Corner radius	Coating						Coated cermet						Cermet						Uncoated													
				SH725		SH730		J740		J9530						NS9530						TH10												
For external turning on small lathes (Sharp edge)	JRP	DCET0702008MFR-JRP	<0.08*	●		●																											
		DCET0702008MFL-JRP	<0.08*	●		●																											
		DCET070201MFR-JRP	<0.1*	●		●																											
		DCET070201MFL-JRP	<0.1*	●		●																											
		DCET0702018MFR-JRP	<0.18*	●		●																											
		DCET0702018MFL-JRP	<0.18*	●		●																											
		DCET070202MFR-JRP	<0.2*	●		●																											
		DCET070202MFL-JRP	<0.2*	●		●																											
		DCET11T3008MFR-JRP	<0.08*	●		●																											
		DCET11T3008MFL-JRP	<0.08*	●		●																											
		DCET11T301MFR-JRP	<0.1*	●		●																											
		DCET11T301MFL-JRP	<0.1*	●		●																											
		DCET11T3018MFR-JRP	<0.18*	●		●																											
		DCET11T3018MFL-JRP	<0.18*	●		●																											
		DCET11T302MFR-JRP	<0.2*	●		●																											
		DCET11T302MFL-JRP	<0.2*	●		●																											
	JSP	DCET0702008MFN-JSP	<0.08*	●		●																											
		DCET070201MFN-JSP	<0.1*	●		●																											
		DCET0702018MFN-JSP	<0.18*	●		●																											
		DCET070202MFN-JSP	<0.2*	●		●																											
		DCET11T3008MFN-JSP	<0.08*	●		●																											
		DCET11T301MFN-JSP	<0.1*	●		●																											
		DCET11T3018MFN-JSP	<0.18*	●		●																											
		DCET11T302MFN-JSP	<0.2*	●		●																											
	J10	DCGT070200FR-J10	0.03	●				●																●										
		DCGT070200FL-J10	0.03	●				●																●										
		DCGT070201FR-J10	0.1	●				●										●						●										
		DCGT070201FL-J10	0.1	●				●										●						●										
		DCGT070202FR-J10	0.2	●				●										●						●										
		DCGT070202FL-J10	0.2	●				●										●						●										
		DCGT070204FR-J10	0.4	●																														
		DCGT070204FL-J10	0.4	●																														
		DCGT11T300FR-J10	0.03	●				●																●										
		DCGT11T300FL-J10	0.03	●				●																●										
		DCGT11T301FR-J10	0.1	●				●										●						●										
		DCGT11T301FL-J10	0.1	●				●										●						●										
		DCGT11T302FR-J10	0.2	●				●										●						●										
		DCGT11T302FL-J10	0.2	●				●										●						●										
On small lathes (Honed edge)	J10	DCGT070202R-J10	0.2							●																								
		DCGT11T302R-J10	0.2							●																								

* Corner radius has minus tolerance.

● : Line-up

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 75° with hole Positive 11°

P	Steel	●	ɔ	●	ɔ	●	ɔ					●	ɔ					●	ɔ					●	ɔ						
M	Stainless	●	ɔ	●	ɔ	●	ɔ																	●	ɔ						
K	Cast iron	●										●	ɔ					●	ɔ					●							
N	Non-ferrous																							●							
S	Superalloys	●		●	ɔ																										
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating						Coated cermet						Cermet						Uncoated									
				GH110		SH725		SH730		GT9530						NS9530						TH10		UX30							
Finishing	W08	EPGT03X100R-W08	0.03					●														●									
		EPGT03X100L-W08	0.03					●														●									
		EPGT03X101R-W08	0.1					●														●									
		EPGT03X101L-W08	0.1					●														●									
		EPGT03X102R-W08	0.2					●														●									
		EPGT03X102L-W08	0.2					●														●									
		EPGT03X104R-W08	0.4					●														●									
		EPGT03X104L-W08	0.4					●														●									
		EPGT040100R-W08	0.03					●														●									
		EPGT040100L-W08	0.03	●				●								●						●									
		EPGT040101R-W08	0.1					●														●									
		EPGT040101L-W08	0.1					●														●									
		EPGT040102R-W08	0.2	●				●								●						●									
		EPGT040102L-W08	0.2	●				●				●				●						●		●							
		EPGT040104R-W08	0.4	●				●								●						●									
		EPGT040104L-W08	0.4	●				●				●				●						●		●							
Finishing (Sharp edge)	W08	EPGT03X100FL-W08	0.03			●																									
		EPGT03X100FR-W08	0.03			●																									
		EPGT03X101FL-W08	0.1			●																									
		EPGT03X101FR-W08	0.1			●																									
		EPGT03X102FL-W08	0.2			●																									
		EPGT03X102FR-W08	0.2			●																									
		EPGT03X104FL-W08	0.4			●																									
		EPGT03X104FR-W08	0.4			●																									
		EPGT040100FL-W08	0.03			●																									
		EPGT040100FR-W08	0.03			●																									
		EPGT040101FL-W08	0.1			●																									
		EPGT040101FR-W08	0.1			●																									
		EPGT040102FL-W08	0.2			●																									
		EPGT040102FR-W08	0.2			●																									
		EPGT040104FL-W08	0.4			●																									
		EPGT040104FR-W08	0.4			●																									

● : Line-up

Internal toolholders → B279 - Boring bar tools → F169 - F172
Top-borer tools → F173 -

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 75° with hole Positive 11°

P	Steel	●ⓒ●ⓒ●ⓒ
M	Stainless	●ⓒ●ⓒ●ⓒ
K	Cast iron	
N	Non-ferrous	
S	Superalloys	●ⓒ
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating SH725	Coating SH730	Coating J740
For internal turning on small lathes	JS	EPGT03X101-JS	0.1		●	
		EPGT03X102-JS	0.2		●	
		EPGT03X104-JS	0.4		●	
		EPGT040101-JS	0.1		●	
		EPGT040102-JS	0.2		●	
		EPGT040104-JS	0.4		●	
For internal turning on small lathes (Sharp edge)	JS	EPGT03X101F-JS	0.1	●		
		EPGT03X102F-JS	0.2	●		
		EPGT03X104F-JS	0.4	●		
		EPGT040101F-JS	0.1	●		
		EPGT040102F-JS	0.2	●		
		EPGT040104F-JS	0.4	●		
Finishing	J08	EPGT040100L-J08	0.03		●	●
		EPGT040102L-J08	0.2		●	●
		EPGT040104L-J08	0.4		●	●
Finishing (Sharp edge)	J08	EPGT040100FL-J08	0.03	●		
		EPGT040102FL-J08	0.2	●		
		EPGT040104FL-J08	0.4	●		

● : Line-up

Internal toolholders → B279 - Boring bar tools → F169 - F172
Top-borer tools → F173 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Square, 90° with hole Positive 7°

P	Steel	●◐ ◐✣ ◐ ✣ ◐✣ ✣ ●◐ ◐
M	Stainless	● ◐ ◐ ✣ ●◐ ◐
K	Cast iron	●◐ ●◐ ◐ ●◐ ◐ ●◐ ●◐
N	Non-ferrous	
S	Superalloys	●◐ ●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet							
				T9115	T9125	T6120	T6130	AH630	AH645	T515	T5115	AH120	AH725					GT9530				NS9530			
Finishing to medium cutting	PS	SCMT09T304-PS	0.4	●	●	●	●	●	●				●					●				●			
		SCMT09T308-PS	0.8	●	●	●	●	●	●				●					●				●			
		SCMT120404-PS	0.4	●	●	●	●	●	●				●									●			
		SCMT120408-PS	0.8	●	●	●	●	●	●				●									●			
	23	SCMT09T302-23	0.2																			●			
		SCMT09T308-23	0.8		●							●													
		SCMT120408-23	0.8		●							●	●												
Medium cutting	24	SCMT070204-24	0.4		●																	●			
		SCMT09T302-24	0.2																			●			
		SCMT09T304-24	0.4		●																	●			
		SCMT09T308-24	0.8	●	●																	●			
		SCMT120404-24	0.4		●																	●			
		SCMT120408-24	0.8		●																	●			
	PM	SCMT09T304-PM	0.4	●	●	●	●	●	●				●									●			
		SCMT09T308-PM	0.8	●	●	●	●	●	●				●									●			
		SCMT120408-PM	0.8	●	●	●	●	●	●				●									●			
		SCMT120412-PM	1.2		●	●	●	●	●				●									●			
Finishing to medium cutting	CM	SCMT09T304-CM	0.4							●	●														
		SCMT09T308-CM	0.8							●	●														
		SCMT09T312-CM	1.2								●														
		SCMT120404-CM	0.4							●	●														
		SCMT120408-CM	0.8							●	●														

● : Line-up

External toolholders → B249

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Square, 90° with hole Positive 11°

P	Steel	●c	c✣	c	✣	c✣	✣	●c	c				●c				●c				●			
M	Stainless			●	c	c	✣	●c	c												●			
K	Cast iron	●c						●c	c				●c				●c				●			
N	Non-ferrous																				●			
S	Superalloys							●c	●															
H	Hard materials																							

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet			Cermet			Uncoated				
				T9115	T9125	T6120	T6130	AH630	AH645	AH120	AH725			GT9530			NS9530			TH10				
Finishing to medium cutting	**PS**	**SPMT090304-PS**	0.4	●	●	●	●	●	●		●			●			●							
		**SPMT090308-PS**	0.8	●	●	●	●	●	●		●			●			●							
		SPMT120404-PS	0.4	●	●	●	●	●	●		●													
		SPMT120408-PS	0.8	●	●	●	●	●	●		●													
	23	**SPMT090304-23**	0.4		●												●							
		**SPMT090308-23**	0.8		●												●							
Medium cutting	**24**	**SPMT090304-24**	0.4		●												●							
		**SPMT090308-24**	0.8		●					●							●							
		SPMT120404-24	0.4														●							
		SPMT120408-24	0.8														●							
Finishing	**W15**	**SPGT090302L-W15**	0.2														●							
		**SPGT090304L-W15**	0.4														●			●				
		SPGT090308R-W15	0.8																	●				
		SPGT090308L-W15	0.8														●			●				
	W20	**SPGT120404L-W20**	0.4														●							
																								

● : Line-up

External toolholders → **B242 -** Internal toolholders → **B282, B305**
Cartridges → **F152 - F172**

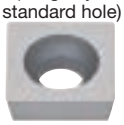
TurnLine - Insert

POSITIVE TYPE



Square, 90° with hole Positive 11°

P	Steel								●ɔ				●																		
M	Stainless												●																		
K	Cast iron	●ɔ	ɔ						●ɔ				●																		
N	Non-ferrous												●																		
S	Superalloys																														
H	Hard materials																														

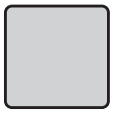
Application	Chipbreaker	Designation	Corner radius	Coating T515	Coating T5115	Cermet NS9530	Uncoated TH10
Finishing to medium cutting	CM	SPMT090304-CM	0.4		●		
		SPMT090308-CM	0.8		●		
		SPMT120404-CM	0.4	●	●		
		SPMT120408-CM	0.8	●	●		
	-	SPGM090304L	0.4			●	
	(Tungaloy's standard hole)	SPGM120304L	0.4			●	
		SPGM120308L	0.8			●	
	-	SPMW090304	0.4		●		
		SPMW090308	0.8		●		
		SPMW120404	0.4		●		
		SPMW120408	0.8		●		
	-	SPGW090302	0.2				●
		SPGW090304	0.4				●
		SPGW120404	0.4				●
	-	SPGA090304	0.4			●	
	(Tungaloy's standard hole)						
							

● : Line-up

External toolholders → B242 - Internal toolholders → B282, B305
Cartridges → F152 -

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Square, 90° without hole Positive 11°

		Coating						Cermet				Uncoated				Ceramics													
P	Steel	ɔ✣						●ɔ				●	●																
M	Stainless											●	●																
K	Cast iron		ɔ					●ɔ				●																	
N	Non-ferrous											●																	
S	Superalloys																												
H	Hard materials															●													

Application	Chipbreaker	Designation	Corner radius	T9125	T5115	NS9530	TH10	UX30	LX11
Finishing to medium cutting	23	SPMR090304-23	0.4			●			
		SPMR090308-23	0.8	●		●			
		SPMR120304-23	0.4	●		●			
		SPMR120308-23	0.8	●		●			
	CM	SPMR090304-CM	0.4		●				
		SPMR090308-CM	0.8		●				
		SPMR120304-CM	0.4		●				
		SPMR120308-CM	0.8		●				
		SPMR120312-CM	1.2		●				
	-	SPGR090304L	0.4			●			
	-	SPGN090304	0.4				●		●
		SPGN090308	0.8				●		●
		SPGN120304	0.4				●		●
		SPGN120308	0.8				●		●
		SPGN120312	1.2			●			●
		SPGN120408	0.8				●		
	-	SPMN090304	0.4		●				
		SPMN090308	0.8		●				
		SPMN120304	0.4		●				
		SPMN120308	0.8		●	●	●	●	
		SPMN120312	1.2		●		●		
		SPMN120408	0.8		●		●		
		SPMN120412	1.2		●				

● : Line-up

External toolholders → B242 - Internal toolholders → B282, B305
Cartridges → F152 -

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 7°

P	Steel	●◐ ◐✣ ◐ ●◐ ●◐ ●◐
M	Stainless	◐ ●◐ ●◐ ●
K	Cast iron	●◐ ◐ ●◐ ●◐ ●◐ ●
N	Non-ferrous	●
S	Superalloys	●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating					Coated cermet	Cermet		Uncoated
				T9115	T9125	AH725	SH725	J740	GT9530	NS9530	NS520	TH10
Precision finishing	01	TCGT090204-01	0.4								●	●
		TCGT110202-01	0.2					●				
		TCGT110204-01	0.4						●	●	●	●
		TCGT110208-01	0.8							●		
		TCGT16T304-01	0.4									●
		TCGT16T308-01	0.8								●	●
Precision finishing (Sharp edgeds)	01	TCGT110202F-01	0.2				●					
Finishing	PSF	TCMT090202-PSF	0.2			●						
		TCMT090204-PSF	0.4	●	●	●						
		TCMT110202-PSF	0.2			●						
		TCMT110204-PSF	0.4	●	●	●						
		TCMT110302-PSF	0.2			●						
		TCMT110304-PSF	0.4	●	●	●						
		TCMT16T304-PSF	0.4	●	●	●						
Finishing to light cutting	PSS	TCMT090204-PSS	0.4	●	●	●						
		TCMT090208-PSS	0.8	●	●	●						
		TCMT110204-PSS	0.4	●	●	●						
		TCMT110208-PSS	0.8	●	●	●						
		TCMT110304-PSS	0.4	●	●	●						
		TCMT110308-PSS	0.8	●	●	●						
		TCMT16T304-PSS	0.4	●	●	●						
		TCMT16T308-PSS	0.8	●	●	●						
		TCMT16T312-PSS	1.2	●	●	●						

● : Line-up

External toolholders → B246 Internal toolholders → B283
J series toolholders → B336 PINZBOHR® → F136 - F151

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 7°

P	Steel	●ɔ	ɔ✣	ɔ	✣	ɔ✣	✣	ɔ	ɔ				●ɔ				●ɔ				●			
M	Stainless			●	ɔ	ɔ	✣	ɔ	ɔ												●			
K	Cast iron	●ɔ						ɔ	ɔ				●ɔ				●ɔ				●			
N	Non-ferrous																				●			
S	Superalloys							●																
H	Hard materials																							

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet				Uncoated				
				T9115	T9125	T6120	T6130	AH630	AH645	AH725	GH730			GT9530				NS9530				TH10				
Finishing to medium cutting	PS	TCMT090204-PS	0.4							●																
		TCMT090208-PS	0.8							●																
		TCMT110202-PS	0.2	●	●	●	●	●	●	●	●			●				●								
		TCMT110204-PS	0.4	●	●	●	●	●	●	●	●			●				●								
		TCMT110208-PS	0.8	●	●	●	●	●	●	●	●			●				●								
		TCMT110302-PS	0.2	●	●	●	●	●	●																	
		TCMT110304-PS	0.4	●	●	●	●	●	●																	
		TCMT110308-PS	0.8	●	●	●	●	●	●																	
		TCMT16T302-PS	0.2	●	●	●	●	●	●	●								●								
		TCMT16T304-PS	0.4	●	●	●	●	●	●	●								●								
		TCMT16T308-PS	0.8	●	●	●	●	●	●	●																
	23	TCMT090204-23	0.4		●													●								
		TCMT110204-23	0.4															●								
		TCMT16T304-23	0.4															●								
		TCMT16T308-23	0.8		●																					
Medium cutting	24	TCMT090202-24	0.2															●								
		TCMT090204-24	0.4	●	●													●								
		TCMT110202-24	0.2															●								
		TCMT110204-24	0.4	●	●													●								
		TCMT110208-24	0.8		●																					
		TCMT16T304-24	0.4	●	●																					
		TCMT16T308-24	0.8	●	●					●																
Finishing	W15	TCGT16T302L-W15	0.2																			●				
		TCGT16T304L-W15	0.4															●				●				
		TCGT16T308L-W15	0.8																			●				

● : Line-up

External toolholders → B246 Internal toolholders → B283
J series toolholders → B336 PINZBOHR® → F136 - F151

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 7°

P	Steel	●◐	◐✣	◐	✣	◐✣	✣			◐				●◐														
M	Stainless			●	◐	◐	✣			◐																		
K	Cast iron	●◐						●◐	◐	◐				●◐				●										
N	Non-ferrous																	●										
S	Superalloys									●								●										
H	Hard materials																											

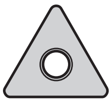
Application	Chipbreaker	Designation	Corner radius	Coating										Cermet				Uncoated										
				T9115	T9125	T6120	T6130	AH630	AH645	T515	T5115	AH725		NS9530				KS05F										
Medium cutting	PM	TCMT110202-PM	0.2			●	●	●	●			●																
		TCMT110204-PM	0.4	●	●	●	●	●	●			●		●														
		TCMT110208-PM	0.8	●	●	●	●	●	●			●		●														
		TCMT110302-PM	0.2			●	●	●	●																			
		TCMT110304-PM	0.4			●	●	●	●																			
		TCMT110308-PM	0.8			●	●	●	●																			
		TCMT16T304-PM	0.4	●	●	●	●	●	●			●		●														
		TCMT16T308-PM	0.8	●	●	●	●	●	●			●		●														
		TCMT16T312-PM	1.2	●	●	●	●	●	●			●																
Finishing to medium cutting	CM	TCMT090204-CM	0.4								●																	
		TCMT090208-CM	0.8								●																	
		TCMT110204-CM	0.4								●																	
		TCMT110208-CM	0.8								●																	
		TCMT110304-CM	0.4								●																	
		TCMT110308-CM	0.8								●																	
		TCMT16T304-CM	0.4							●	●																	
		TCMT16T308-CM	0.8							●	●																	
		TCMT16T312-CM	1.2							●	●																	
	SS	TCGT110202-SS	0.2											●														
		TCGT110204-SS	0.4											●														
		TCGT110208-SS	0.8											●														
		TCGT16T304-SS	0.4											●														
	AL	TCGT110202-AL	0.2															●										
		TCGT110204-AL	0.4															●										
		TCGT16T302-AL	0.2															●										
		TCGT16T304-AL	0.4															●										
		TCGT16T308-AL	0.8															●										

● : Line-up

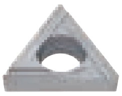
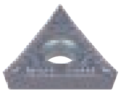
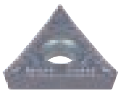
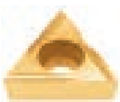
External toolholders → B246 Internal toolholders → B283
J series toolholders → B336 PINZBOHR® → F136 - F151

● : Continuous cutting
◐ : Light interrupted cutting
✥ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 7°

Application	Chipbreaker	Designation	Corner radius	Coating AH725	Coating SH725	Coating SH730	Coating J740	Cermet NS9530	Uncoated TH10
P Steel				◐	●◐	●◐	●◐	●◐	●
M Stainless				◐	●◐	●◐	●◐		●
K Cast iron				◐				●◐	●
N Non-ferrous									●
S Superalloys				●		●◐			
H Hard materials									
Finishing	- 	TCGT080102R	0.2					●	●
For external turning on small lathes (Sharp edge)	JS 	TCGT110200FN-JS	0.03		●	●			
		TCGT110201FN-JS	0.1		●	●			
		TCGT110202FN-JS	0.2		●	●			
		TCGT110204FN-JS	0.4		●	●			
On small lathes (Honed edge)	JS 	TCGT110201N-JS	0.1	●					
		TCGT110202N-JS	0.2	●					
		TCGT110204N-JS	0.4	●					
For external turning on small lathes (Sharp edge)	J08 	TCGT080200FR-J08	0.03		●		●		●
		TCGT080200FL-J08	0.03		●		●		●
		TCGT080201FR-J08	0.1		●		●		●
		TCGT080201FL-J08	0.1		●		●		●
		TCGT080202FR-J08	0.2		●		●		●
		TCGT080202FL-J08	0.2		●		●		●
		TCGT080204FR-J08	0.4		●				

● : Line-up

Internal toolholders → B283
J series toolholders → B336

TurnLine - Insert

POSITIVE TYPE



Triangular, 60° with hole Positive 7°

P	Steel	●◐	●◐					●◐						●◐					●															
M	Stainless	●◐	●◐																●															
K	Cast iron							●◐						●◐					●															
N	Non-ferrous																		●															
S	Superalloys																																	
H	Hard materials																																	

Application	Chipbreaker	Designation	Corner radius	Coating					Coated cermet					Cermet					Uncoated																
				SH725	J740				J9530					NS9530					TH10																
For external turning on small lathes (Sharp edge)	J10	TCGT110200FR-J10	0.03	●	●														●																
		TCGT110200FL-J10	0.03	●	●														●																
		TCGT110201FR-J10	0.1	●	●														●																
		TCGT110201FL-J10	0.1	●	●														●																
		TCGT110202FR-J10	0.2	●	●									●					●																
		TCGT110202FL-J10	0.2	●	●									●					●																
		TCGT110204FR-J10	0.4	●																															
		TCGT110300FR-J10	0.03	●	●														●																
		TCGT110300FL-J10	0.03	●	●														●																
		TCGT110301FR-J10	0.1	●	●														●																
		TCGT110301FL-J10	0.1	●	●														●																
		TCGT110302FR-J10	0.2	●	●									●					●																
		TCGT110302FL-J10	0.2	●	●									●					●																
On small lathes (Honed edge)	J10	TCGT110302R-J10	0.2						●																										
		TCGT110302L-J10	0.2						●																										

● : Line-up

Internal toolholders → B283
J series toolholders → B336

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 11°

P	Steel	●ɔ	ɔ✣	ɔ	ɔ				●ɔ	●ɔ			●ɔ	●ɔ			●														
M	Stainless			ɔ	ɔ												●														
K	Cast iron	●ɔ		ɔ	ɔ				●ɔ	●ɔ			●ɔ	●ɔ			●														
N	Non-ferrous																●														
S	Superalloys			●																											
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating							Coated cermet				Cermet				Uncoated												
				T9115	T9125	AH725	GH730				GT9530	GT720			NS9530	NS520			TH10												
Precision finishing	01	TPGT090202-01	0.2								●				●																
		TPGT090204-01	0.4								●				●	●			●												
		TPGT110202-01	0.2								●				●																
		TPGT110204-01	0.4								●				●	●			●												
		TPGT110208-01	0.8												●																
		TPGT130302-01	0.2									●			●																
		TPGT130304-01	0.4								●				●	●			●												
		TPGT130308-01	0.8												●	●															
		TPGT16T304-01	0.4								●				●	●			●												
		TPGT16T308-01	0.8									●			●	●															
Finishing	PSF	TPMT090202-PSF	0.2			●									●																
		TPMT090204-PSF	0.4	●	●	●					●				●																
		TPMT110202-PSF	0.2			●					●				●																
		TPMT110204-PSF	0.4	●	●	●					●				●																
		TPMT110302-PSF	0.2			●									●																
		TPMT110304-PSF	0.4	●	●	●					●				●																
		TPMT130304-PSF	0.4	●	●	●																									
		TPMT16T304-PSF	0.4	●	●	●									●																
	PF	TPMT110204-PF	0.4				●				●				●																
		TPMT110208-PF	0.8								●				●																
		TPMT110302-PF	0.2				●								●																
		TPMT110304-PF	0.4				●				●				●																
		TPMT130304-PF	0.4								●				●																
		TPMT130308-PF	0.8												●																
		TPMT16T304-PF	0.4								●				●																

● : Line-up

Mounting hole specifications → **B136**

External toolholders → **B242 - B244** Internal toolholders → **B284 -**
Cartridges → **F152 -**

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 11°

P	Steel	●c ●c✣ c ✣ c✣ ✣ ●c c c
M	Stainless	● c c ✣ ●c c c
K	Cast iron	●c ●c c c
N	Non-ferrous	
S	Superalloys	●c ●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating									Coated cermet		Cermet		
				T9115	T9125	T6120	T6130	AH630	AH645	AH120	AH725	GH730	GT9530		NS9530		
Finishing to light cutting	PSS	TPMT090204-PSS	0.4	●	●	●	●	●	●		●		●		●		
		TPMT090208-PSS	0.8	●	●	●	●	●	●		●		●		●		
		TPMT110204-PSS	0.4	●	●	●	●	●	●		●		●		●		
		TPMT110208-PSS	0.8	●	●	●	●	●	●		●		●		●		
		TPMT110304-PSS	0.4	●	●	●	●	●	●		●						
		TPMT110308-PSS	0.8	●	●	●	●	●	●		●						
		TPMT130304-PSS	0.4	●	●	●	●	●	●		●						
		TPMT130308-PSS	0.8	●	●	●	●	●	●		●		●		●		
		TPMT16T304-PSS	0.4	●	●	●	●	●	●		●		●		●		
		TPMT16T308-PSS	0.8	●	●	●	●	●	●		●		●		●		
Finishing to medium cutting	PS	TPMT090202-PS	0.2	●	●	●	●	●	●		●	●	●		●		
		TPMT090204-PS	0.4	●	●	●	●	●	●		●	●	●		●		
		TPMT090208-PS	0.8	●	●	●	●	●	●		●	●	●		●		
		TPMT110202-PS	0.2	●	●	●	●	●	●		●	●	●		●		
		TPMT110204-PS	0.4	●	●	●	●	●	●	●	●	●	●		●		
		TPMT110208-PS	0.8	●	●	●	●	●	●	●	●	●	●		●		
		TPMT110304-PS	0.4	●	●	●	●	●	●		●	●	●		●		
		TPMT110308-PS	0.8	●	●	●	●	●	●		●	●	●		●		
		TPMT130302-PS	0.2	●	●						●		●		●		
		TPMT130304-PS	0.4	●	●	●	●	●	●		●		●		●		
		TPMT130308-PS	0.8	●	●	●	●	●	●		●		●		●		
		TPMT16T304-PS	0.4	●	●	●	●	●	●		●		●		●		
		TPMT16T308-PS	0.8	●	●	●	●	●	●		●		●		●		
	23	TPMT090202-23	0.2												●		
		TPMT090204-23	0.4		●										●		
		TPMT110204-23	0.4		●										●		
		TPMT130304-23	0.4		●										●		
		TPMT130308-23	0.8		●										●		
		TPMT16T304-23	0.4												●		
		TPMT16T308-23	0.8		●										●		

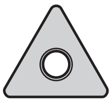
● : Line-up

Mounting hole specifications → B136

External toolholders → B242 - B244 Internal toolholders → B284 -
Cartridges → F152 -

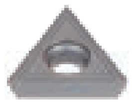
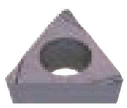
● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 11°

		Coating				Coated cermet	Cermet	Uncoated	
		T9125	GH110	SH725	SH730	GT9530	NS9530	TH10	UX30
P	Steel	◐✣	●	●◐	●◐	●◐	●◐	●	◐
M	Stainless		●	●◐	●◐			●	◐
K	Cast iron		●			●◐	●◐	●	
N	Non-ferrous							●	
S	Superalloys		●		●◐				
H	Hard materials								

Application	Chipbreaker	Designation	Corner radius	T9125	GH110	SH725	SH730	GT9530	NS9530	TH10	UX30
Medium cutting	**24** 	**TPMT090204-24**	0.4	●					●		
		TPMT110204-24	0.4	●					●		
		TPMT110208-24	0.8						●		
		TPMT130304-24	0.4	●					●		
		TPMT130308-24	0.8	●					●		
		TPMT16T304-24	0.4	●					●		
		TPMT16T308-24	0.8	●					●		
Finishing	**W08** 	**TPGT070100R-W08**	0.03				●			●	
		TPGT070100L-W08	0.03				●			●	
		TPGT070101R-W08	0.1				●			●	
		TPGT070101L-W08	0.1				●			●	
		TPGT070102R-W08	0.2				●			●	
		TPGT070102L-W08	0.2				●			●	
		TPGT070104R-W08	0.4				●			●	
		TPGT070104L-W08	0.4				●			●	
		TPGT080200L-W08	0.03					●	●		
		TPGT080202L-W08	0.2		●			●	●	●	●
		TPGT080204L-W08	0.4		●			●	●	●	●
Finishing (Sharp edge)	**W08** 	**TPGT070100FL-W08**	0.03			●					
		TPGT070100FR-W08	0.03			●					
		TPGT070101FL-W08	0.1			●					
		TPGT070101FR-W08	0.1			●					
		TPGT070102FL-W08	0.2			●					
		TPGT070102FR-W08	0.2			●					
		TPGT070104FL-W08	0.4			●					
		TPGT070104FR-W08	0.4			●					

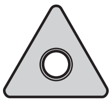
● : Line-up

Mounting hole specifications → B136
External toolholders → B242 - B244 Internal toolholders → B284 -
Cartridges → F152 - Top-borer tools → F175

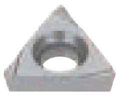
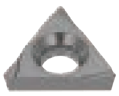
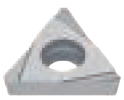
Insert
Positive
T

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 11°

Application	Chipbreaker	Designation	Corner radius	GH110 (Coating)	GH330 (Coating)	GT9530 (Coated cermet)	NS9530 (Cermet)	TH10 (Uncoated)	UX30 (Uncoated)
P Steel				●	●◐	●◐	●◐	●	◐
M Stainless				●	●◐			●	◐
K Cast iron				●	●◐	●◐	●◐	●	
N Non-ferrous								●	
S Superalloys				●					
H Hard materials									
Finishing	W10	TPGH080202L-W10	0.2			●	●		
		TPGH080204L-W10	0.4			●	●		
		TPGH090204L-W10	0.4			●	●		
	W13	TPGH110204L-W13	0.4			●	●		
		TPGH110302L-W13	0.2			●	●		
		TPGH110304L-W13	0.4			●	●		
	W15	TPGT090202R-W15	0.2				●		
		TPGT090202L-W15	0.2			●	●	●	
		TPGT090204R-W15	0.4				●		
		TPGT090204L-W15	0.4	●	●	●	●	●	●
		TPGT110202R-W15	0.2				●		
		TPGT110202L-W15	0.2			●	●	●	
		TPGT110204L-W15	0.4	●	●	●	●	●	●
		TPGT110208R-W15	0.8				●		
		TPGT110208L-W15	0.8						●
		TPGT110302L-W15	0.2				●		
		TPGT110304R-W15	0.4				●		
		TPGT110304L-W15	0.4				●		
		TPGT110308L-W15	0.8				●		
		TPGT130302R-W15	0.2				●		
		TPGT130302L-W15	0.2			●	●	●	
		TPGT130304R-W15	0.4	●			●		
		TPGT130304L-W15	0.4	●	●	●	●	●	●
		TPGT130308L-W15	0.8				●	●	
		TPGT16T302R-W15	0.2				●		
		TPGT16T302L-W15	0.2			●	●	●	
		TPGT16T304R-W15	0.4				●	●	
		TPGT16T304L-W15	0.4	●	●	●	●	●	●
		TPGT16T308L-W15	0.8				●	●	●

● : Line-up

Mounting hole specifications → B136

External toolholders → B242 - B244 Internal toolholders → B284 -

Cartridges → F152 -

Insert

Positive

T

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 11°

P	Steel	●ɔ	ɔ✣	ɔ	✣	ɔ✣	✣			●ɔ	ɔ	●ɔ	ɔ			●ɔ				●ɔ											
M	Stainless			●	ɔ	ɔ	✣			●ɔ	ɔ	●ɔ	ɔ																		
K	Cast iron	●ɔ						●ɔ	ɔ	●ɔ	ɔ	●ɔ	ɔ			●ɔ				●ɔ											
N	Non-ferrous																														
S	Superalloys									●ɔ	●																				
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating													Coated cermet				Cermet										
				T9115	T9125	T6120	T6130	AH630	AH645	T515	T5115	AH120	AH725	GH330	GH730		GT9530				NS9530										
Medium cutting	**PM**	**TPMT090204-PM**	0.4			●	●	●	●				●																		
		TPMT090208-PM	0.8			●	●	●	●				●																		
		TPMT110204-PM	0.4	●	●	●	●	●	●				●		●		●				●										
		TPMT110208-PM	0.8	●	●	●	●	●	●			●	●		●																
		TPMT110304-PM	0.4	●	●	●	●	●	●				●		●		●				●										
		TPMT110308-PM	0.8	●	●	●	●	●	●				●		●																
		TPMT130304-PM	0.4		●	●	●	●	●				●								●										
		TPMT130308-PM	0.8		●	●	●	●	●				●				●				●										
		TPMT16T304-PM	0.4		●	●	●	●	●				●								●										
		TPMT16T308-PM	0.8		●	●	●	●	●				●																		
		TPMT16T312-PM	1.2		●	●	●	●	●				●																		
Finishing to medium cutting	**CM**	**TPMT090204-CM**	0.4								●																				
		TPMT090208-CM	0.8								●																				
		TPMT110204-CM	0.4								●																				
		TPMT110208-CM	0.8								●																				
		TPMT110304-CM	0.4								●																				
		TPMT110308-CM	0.8								●																				
		TPMT130304-CM	0.4								●																				
		TPMT130308-CM	0.8								●																				
		TPMT16T304-CM	0.4							●	●																				
		TPMT16T308-CM	0.8							●	●																				
		TPMT16T312-CM	1.2							●	●																				
	SS	**TPGT110202-SS**	0.2																		●										
		TPGT110204-SS	0.4											●							●										
		TPGT130302-SS	0.2																		●										
		TPGT130304-SS	0.4											●							●										
		TPGT16T304-SS	0.4											●							●										

● : Line-up

Mounting hole specifications → **B136**

External toolholders → **B242 - B244** Internal toolholders → **B284 -**
Cartridges → **F152 -**

TurnLine - Insert

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



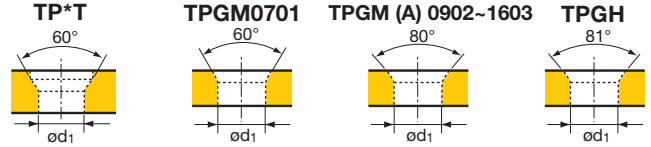
Triangular, 60° with hole Positive 11°

P	Steel							●c				●c				●	c																
M	Stainless															●	c																
K	Cast iron	c						●c				●c				●																	
N	Non-ferrous															●																	
S	Superalloys																																
H	Hard materials																																

Application	Chipbreaker	Designation	Corner radius	Coating			Coated cermet			Cermet			Uncoated																			
				T5115			GT9530			NS9530			TH10	UX30																		
Finishing to medium cutting	H11	TPGH110302L-H11	0.2				●			●																						
		TPGH110304L-H11	0.4				●			●																						
																																	
	-	TPGM070102R	0.2							●																						
		TPGM070102L	0.2							●			●																			
		TPGM070104R	0.4							●																						
		TPGM070104L	0.4							●			●																			
		TPGM090202R	0.2							●																						
		TPGM090202L	0.2							●																						
		TPGM090204L	0.4							●																						
		TPGM110202R	0.2							●																						
	Tungaloy-standard hole Not ISO	TPGM110202L	0.2							●				●																		
		TPGM110204R	0.4							●																						
		TPGM110204L	0.4							●				●																		
		TPGM110302R	0.2							●																						
		TPGM110302L	0.2							●																						
	TPGM...R/L	TPGM110302L-2	0.2										●																			
		TPGM110304R	0.4							●																						
		TPGM110304L	0.4							●				●																		
		TPGM110304L-2	0.4										●																			
		TPGM160302L	0.2							●																						
		TPGM160304R	0.4							●																						
		TPGM160304L	0.4							●				●																		
		TPGM160304L-2	0.4										●																			
	-	TPMW110204	0.4	●																												
		TPMW110208	0.8	●																												
		TPMW130304	0.4	●																												
		TPMW130308	0.8	●																												
		TPMW16T304	0.4	●																												
		TPMW16T308	0.8	●																												

● : Line-up

Mounting hole specifications



ød1 (mm)	0701**	0802**	0902**	1102**	1103**	1303**	1603**	16T3**
TP*T(W)	-	2.3	2.5	2.8	3.4	3.4	-	4.4
TPGM(A)	2.7	-	3.2	3.0	3.0	-	4.0	-
TPGH	-	2.3	3.0	3.4	3.4	-	4.5	-

External toolholders → B242 - B244 Internal toolholders → B284 -
Cartridges → F152 -

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 11°

		GH110	NS9530	TH10
P	Steel	●	●ɔ	●
M	Stainless	●		●
K	Cast iron	●	●ɔ	●
N	Non-ferrous			●
S	Superalloys	●		
H	Hard materials			

Application	Chipbreaker	Designation	Corner radius	Coating GH110	Cermet NS9530	Uncoated TH10
Finishing to medium cutting	-	TPGA090204	0.4			●
		TPGA110202	0.2		●	●
		TPGA110204	0.4			●
		TPGA110302	0.2		●	●
		TPGA110304	0.4			●
		TPGA160304	0.4		●	●
		TPGA160308	0.8			●
	-	TPGW090202	0.2			●
		TPGW090204	0.4			●
		TPGW110202	0.2			●
		TPGW110204	0.4	●		●
		TPGW110304	0.4			●
		TPGW130304	0.4			●
		TPGW16T304	0.4	●		●
		TPGW16T308	0.8			●

● : Line-up

External toolholders → **B242 - B244** Internal toolholders → **B284 -**
Cartridges → **F152 -**

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° with hole Positive 11°

P	Steel	●c●c
M	Stainless	●c●c
K	Cast iron	
N	Non-ferrous	
S	Superalloys	●c
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating SH725	Coating SH730
For internal turning on small lathes	JS	TPGT070101-JS	0.1		●
		TPGT070102-JS	0.2		●
		TPGT070104-JS	0.4		●
For internal turning on small lathes (Sharp edge)	JS	TPGT070101F-JS	0.1	●	
		TPGT070102F-JS	0.2	●	
		TPGT070104F-JS	0.4	●	

● : Line-up

Internal toolholders → B284 -

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° without hole Positive 11°

P	Steel	●ⓒ	●ⓒ	✣		ⓒ				●ⓒ				●																		
M	Stainless					ⓒ								●																		
K	Cast iron	●ⓒ			ⓒ	ⓒ				●ⓒ				●																		
N	Non-ferrous													●																		
S	Superalloys					●																										
H	Hard materials																															

Application	Chipbreaker	Designation	Corner radius	Coating							Cermet				Uncoated																	
				T9115	T9125	T5115	AH725				NS9530				TH10																	
Finishing to medium cutting	**PS**	**TPMR110304-PS**	0.4		●																											
		**TPMR110308-PS**	0.8		●																											
		TPMR160304-PS	0.4		●																											
		TPMR160308-PS	0.8		●																											
	23	**TPMR110304-23**	0.4	●	●						●																					
		**TPMR110308-23**	0.8		●						●				●																	
		TPMR160304-23	0.4	●	●						●				●																	
		TPMR160308-23	0.8		●						●																					
Medium cutting	**24**	**TPMR110304-24**	0.4		●						●																					
		**TPMR110308-24**	0.8		●						●																					
		TPMR160304-24	0.4	●	●		●				●																					
		TPMR160308-24	0.8	●	●						●																					
Finishing to medium cutting	**CM**	**TPMR110304-CM**	0.4			●																										
		**TPMR110308-CM**	0.8			●																										
		TPMR160304-CM	0.4			●																										
		TPMR160308-CM	0.8			●																										
		TPMR160312-CM	1.2			●																										

● : Line-up

External toolholders → **B243, B244** Internal toolholders → **B305**
Cartridges → **F152 -**

TurnLine - Insert

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Triangular, 60° without hole Positive 11°

P	Steel		●				●ɔ				●	ɔ																			
M	Stainless		●								●	ɔ																			
K	Cast iron	ɔ	●				●ɔ				●				●																
N	Non-ferrous										●																				
S	Superalloys		●																												
H	Hard materials																	●													

Application	Chipbreaker	Designation	Corner radius	Coating					Cermet				Uncoated				Ceramics														
				T5115	GH110				NS9530				TH10	UX30			LX21	LX11													
Finishing to medium cutting	-	TPGR110302L	0.2						●																						
		TPGR110304L	0.4						●																						
		TPGR160304R	0.4						●																						
		TPGR160304L	0.4						●																						
		TPGR160308L	0.8						●																						
	-	TPMN110304	0.4	●									●																		
		TPMN110308	0.8	●																											
		TPMN160304	0.4	●									●																		
		TPMN160308	0.8	●									●	●																	
		TPMN160312	1.2	●																											
		TPMN220408	0.8											●																	
	-	TPGN110302	0.2										●																		
		TPGN110304	0.4		●								●				●	●													
		TPGN110308	0.8										●					●													
		TPGN160302	0.2										●																		
		TPGN160304	0.4		●				●				●					●													
		TPGN160308	0.8		●				●				●					●													
		TPGN160312	1.2															●													
		TPGN220404	0.4										●																		

● : Line-up

External toolholders → **B243, B244** Internal toolholders → **B305**
Cartridges → **F152 -**

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Trigon, 80° with hole Positive 5°

		Coating						Cermet				Uncoated																				
		GH110		SH725		SH730		NS9530				TH10		UX30																		
P	Steel	●		●ɔ		●ɔ		●ɔ				●		ɔ																		
M	Stainless	●		●ɔ		●ɔ						●		ɔ																		
K	Cast iron	●						●ɔ				●																				
N	Non-ferrous											●																				
S	Superalloys	●				●ɔ																										
H	Hard materials																															

Application	Chipbreaker	Designation	Corner radius	GH110	SH725	SH730	NS9530	TH10	UX30
Finishing	W08	WBGT030100R-W08	0.03			●			
		WBGT030100L-W08	0.03			●	●	●	●
		WBGT030101R-W08	0.1			●			
		WBGT030101L-W08	0.1			●		●	
		WBGT030102R-W08	0.2			●			
		WBGT030102L-W08	0.2	●		●	●	●	●
		WBGT030104R-W08	0.4			●			
		WBGT030104L-W08	0.4	●		●	●	●	●
Finishing (Sharp edge)	W08	WBGT030100FL-W08	0.03		●				
		WBGT030100FR-W08	0.03		●				
		WBGT030101FL-W08	0.1		●				
		WBGT030101FR-W08	0.1		●				
		WBGT030102FL-W08	0.2		●				
		WBGT030102FR-W08	0.2		●				
		WBGT030104FL-W08	0.4		●				
		WBGT030104FR-W08	0.4		●				
	W11	WBGT060102L-W11	0.2				●		
		WBGT060104L-W11	0.4				●		
		WBGT080202L-W11	0.2				●		
		WBGT080204L-W11	0.4				●		
For internal turning on small lathes	JS	WBGT030101R-JS	0.1			●			
		WBGT030101L-JS	0.1			●			
		WBGT030102R-JS	0.2			●			
		WBGT030102L-JS	0.2			●			
		WBGT030104R-JS	0.4			●			
		WBGT030104L-JS	0.4			●			
For internal turning on small lathes (Sharp edge)	JS	WBGT030101FL-JS	0.1		●				
		WBGT030101FR-JS	0.1		●				
		WBGT030102FL-JS	0.2		●				
		WBGT030102FR-JS	0.2		●				
		WBGT030104FL-JS	0.4		●				
		WBGT030104FR-JS	0.4		●				

● : Line-up

Internal toolholders → B286 Top-borer tools → F173 -

TurnLine - Insert

POSITIVE TYPE

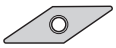


Trigon, 80° with hole Positive 11°

P	Steel	●c ✣● c
M	Stainless	●c
K	Cast iron	●c ●c
N	Non-ferrous	
S	Superalloys	●c
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating T9115	Coating T9125	Coating AH120
Heavy cutting	ML	WPMT090725ZPR-ML	2.5	●	●	●
		WPMT090725ZPL-ML	2.5	●	●	●





Rhombic, 35° with hole Positive 5°

P	Steel	●c ✣● c ●c ●c
M	Stainless	c
K	Cast iron	●c c ●c ●c
N	Non-ferrous	
S	Superalloys	●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating T9115	Coating T9125	Coating AH725	Coated cermet GT9530	Cermet NS9530
Finishing	PSF	VBMT110302-PSF	0.2			●	●	●
		VBMT110304-PSF	0.4	●	●	●	●	●
		VBMT160402-PSF	0.2			●	●	●
		VBMT160404-PSF	0.4	●	●	●	●	●
	PF	VBMT110302-PF	0.2				●	●
		VBMT110304-PF	0.4				●	●
		VBMT110308-PF	0.8				●	●
		VBMT160404-PF	0.4				●	●
		VBMT160408-PF	0.8		●		●	●





● : Line-up

WPMT... : External toolholders → **B257**

VBMT... : External toolholders → **B217**, Internal toolholders → **B282 -**, J series toolholders → **B337 - B340**

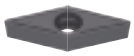
● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 35° with hole Positive 5°

P	Steel	●ɔ ɔ✣ ɔ ✣ ɔ✣ ✣
M	Stainless	● ɔ ɔ ✣
K	Cast iron	●ɔ ●ɔ ɔ
N	Non-ferrous	
S	Superalloys	●ɔ ●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating										Coated cermet				Cermet							
				T9115	T9125	T6120	T6130	AH630	AH645	T515	T5115	AH120	AH725					GT9530				NS9530			
Finishing to light cutting	**PSS**	**VBMT110304-PSS**	0.4	●	●	●	●	●	●				●					●				●			
		**VBMT110308-PSS**	0.8	●	●	●	●	●	●				●					●				●			
		VBMT160404-PSS	0.4	●	●	●	●	●	●				●					●				●			
		VBMT160408-PSS	0.8	●	●	●	●	●	●				●					●				●			
		VBMT160412-PSS	1.2	●	●								●												
Finishing to medium cutting	**PS**	**VBMT110302-PS**	0.2	●	●	●	●	●	●				●					●				●			
		**VBMT110304-PS**	0.4	●	●	●	●	●	●			●	●					●				●			
		VBMT110308-PS	0.8	●	●	●	●	●	●			●	●					●				●			
		VBMT160402-PS	0.2	●	●	●	●	●	●				●					●				●			
		VBMT160404-PS	0.4	●	●	●	●	●	●			●	●					●				●			
		VBMT160408-PS	0.8	●	●	●	●	●	●			●	●					●				●			
Medium cutting	**24**	**VBMT160404-24**	0.4	●	●																	●			
		**VBMT160408-24**	0.8	●	●																	●			
Finishing to medium cutting	**CM**	**VBMT110304-CM**	0.4								●														
		**VBMT110308-CM**	0.8								●														
		VBMT160404-CM	0.4							●	●														
		VBMT160408-CM	0.8							●	●														
		VBMT160412-CM	1.2							●	●														

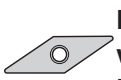
● : Line-up

External toolholders → **B217** Internal toolholders → **B282 -**
J series toolholders → **B337 - B340**

TurnLine - Insert

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 35° with hole Positive 5°

P	Steel	◐	●◐	●◐	●◐				●◐				●◐				●														
M	Stainless	◐	●◐	●◐	●◐												●														
K	Cast iron	◐							●◐				●◐				●														
N	Non-ferrous																●														
S	Superalloys	●		●◐																											
H	Hard materials																														

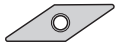
Application	Chipbreaker	Designation	Corner radius	Coating AH725	Coating SH725	Coating SH730	Coating J740	Coated cermet J9530	Cermet NS9530	Uncoated TH10
For external turning on small lathes (Sharp edge)	JS	VBGT110300FN-JS	0.03		●	●				
		VBGT110301FN-JS	0.1		●	●				
		VBGT110302FN-JS	0.2		●	●				
		VBGT110304FN-JS	0.4		●	●				
For external turning on small lathes	JS	VBGT110301N-JS	0.1	●						
		VBGT110302N-JS	0.2	●						
		VBGT110304N-JS	0.4	●						
For external turning on small lathes (Sharp edge)	J10	VBGT110300FR-J10	0.03		●		●			●
		VBGT110300FL-J10	0.03		●		●			●
		VBGT110301FR-J10	0.1		●		●		●	●
		VBGT110301FL-J10	0.1		●		●		●	●
		VBGT110302FR-J10	0.2		●		●		●	●
		VBGT110302FL-J10	0.2		●		●		●	●
		VBGT110304FR-J10	0.4		●		●		●	●
		VBGT110304FL-J10	0.4		●		●		●	●
On small lathes (Honed edge)	J10	VBGT110302R-J10	0.2					●		
		VBGT110302L-J10	0.2					●		
		VBGT110304R-J10	0.4					●		
		VBGT110304L-J10	0.4					●		

● : Line-up

External toolholders → B217 Internal toolholders → B282 -
J series toolholders → B337 - B340

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 35° with hole
Positive 7°

P	Steel	●c	c✣	c	✣	c✣	✣	●c	c							●c				●c								
M	Stainless			●	c	c	✣	●c	c	●	c																	
K	Cast iron	●c						●c	c							●c				●c								
N	Non-ferrous																											
S	Superalloys							●c	●	●	c	c																
H	Hard materials																											

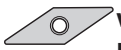
Application	Chipbreaker	Designation	Corner radius	Coating												Coated cermet				Cermet								
				T9115	T9125	T6120	T6130	AH630	AH645	AH120	AH725	AH8005	AH8015	AH905		GT9530				NS9530								
Finishing	**PSF**	**VCMT080202-PSF**	0.2								●					●				●								
		VCMT080204-PSF	0.4	●	●						●					●				●								
		VCMT110302-PSF	0.2								●																	
		VCMT110304-PSF	0.4	●	●						●																	
		VCMT160404-PSF	0.4	●	●						●	●	●	●		●				●								
		VCMT160408-PSF	0.8	●	●						●	●	●	●		●				●								
	PF	**VCMT080202-PF**	0.2													●				●								
		VCMT080204-PF	0.4													●				●								
		VCMT160404-PF	0.4													●				●								
		VCMT160408-PF	0.8													●				●								
Finishing to light cutting	**PSS**	**VCMT110304-PSS**	0.4	●	●	●	●	●	●		●					●				●								
		VCMT110308-PSS	0.8	●	●	●	●	●	●		●					●				●								
		VCMT160404-PSS	0.4	●	●	●	●	●	●		●	●	●	●		●				●								
		VCMT160408-PSS	0.8	●	●	●	●	●	●		●	●	●	●		●				●								
Finishing to medium cutting	**PS**	**VCMT110302-PS**	0.2	●	●	●	●	●	●		●					●				●								
		VCMT110304-PS	0.4	●	●	●	●	●	●		●					●				●								
		VCMT110308-PS	0.8	●	●	●	●	●	●		●					●				●								
		VCMT160404-PS	0.4	●	●	●	●	●	●	●	●	●	●	●		●				●								
		VCMT160408-PS	0.8	●	●	●	●	●	●	●	●	●	●	●		●				●								

● : Line-up

External toolholders → **B245 -** Internal toolholders → **B282 -**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 35° with hole Positive 7°

P	Steel	●◐ ◐✣ ◐ ✣
M	Stainless	● ◐
K	Cast iron	●◐ ●◐ ◐ ●◐ ●
N	Non-ferrous	●
S	Superalloys	● ◐ ◐ ●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating T9115	Coating T9125	Coating T515	Coating T5115	Coating AH8005	Coating AH8015	Coating AH905	Cermet NS9530	Uncoated KS05F
Finishing to medium cutting	**24**	**VCMT160404-24**	0.4	●	●						●	
		VCMT160408-24	0.8	●	●						●	
	CM	**VCMT080204-CM**	0.4				●					
		VCMT160404-CM	0.4			●	●					
		VCMT160408-CM	0.8			●	●					
		VCMT160412-CM	1.2				●					
Medium cutting	**All-round**	**VCMT160404**	0.4					●	●	●		
		VCMT160408	0.8					●	●	●		
		VCMT160412	1.2					●	●	●		
Finishing to medium cutting	**AL**	**VCGT160404-AL**	0.4									●
		VCGT160408-AL	0.8									●
		VCGT160412-AL	1.2									●
		VCGT220520-AL	2.0									●
		VCGT220530-AL	3.0									●

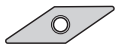
● : Line-up

VC*T... : External toolholders → **B245 -**, Internal toolholders → **B282 -**

VPET... : J series toolholders → **B341**

● : Continuous cutting
ⓒ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 35° with hole Positive 11°

P	Steel	●ⓒ●ⓒ
M	Stainless	●ⓒ●ⓒ
K	Cast iron	
N	Non-ferrous	
S	Superalloys	●ⓒ
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating SH725	Coating SH730
For external turning on small lathes (Sharp edge)	JPP	VPET0802008MFR-JPP	<0.08*	●	●
		VPET0802008MFL-JPP	<0.08*	●	●
		VPET080201MFR-JPP	<0.1*	●	●
		VPET080201MFL-JPP	<0.1*	●	●
		VPET0802018MFR-JPP	<0.18*	●	●
		VPET0802018MFL-JPP	<0.18*	●	●
		VPET080202MFR-JPP	<0.2*	●	●
		VPET080202MFL-JPP	<0.2*	●	●
		VPET1103008MFR-JPP	<0.08*	●	●
		VPET1103008MFL-JPP	<0.08*	●	●
		VPET110301MFR-JPP	<0.1*	●	●
		VPET110301MFL-JPP	<0.1*	●	●
		VPET1103018MFR-JPP	<0.18*	●	●
		VPET1103018MFL-JPP	<0.18*	●	●
		VPET110302MFR-JPP	<0.2*	●	●
		VPET110302MFL-JPP	<0.2*	●	●
	JRP	VPET0802008MFR-JRP	<0.08*	●	●
		VPET0802008MFL-JRP	<0.08*	●	●
		VPET080201MFR-JRP	<0.1*	●	●
		VPET080201MFL-JRP	<0.1*	●	●
		VPET0802018MFR-JRP	<0.18*	●	●
		VPET0802018MFL-JRP	<0.18*	●	●
		VPET080202MFR-JRP	<0.2*	●	●
		VPET080202MFL-JRP	<0.2*	●	●
		VPET1103008MFR-JRP	<0.08*	●	●
		VPET1103008MFL-JRP	<0.08*	●	●
		VPET110301MFR-JRP	<0.1*	●	●
		VPET110301MFL-JRP	<0.1*	●	●
		VPET1103018MFR-JRP	<0.18*	●	●
		VPET1103018MFL-JRP	<0.18*	●	●
		VPET110302MFR-JRP	<0.2*	●	●
		VPET110302MFL-JRP	<0.2*	●	●
For external turning on small lathes (Sharp edge)	JSP	VPET0802008MFN-JSP	<0.08*	●	●
		VPET080201MFN-JSP	<0.1*	●	●
		VPET0802018MFN-JSP	<0.18*	●	●
		VPET080202MFN-JSP	<0.2*	●	●
		VPET1103008MFN-JSP	<0.08*	●	●
		VPET110301MFN-JSP	<0.1*	●	●
		VPET1103018MFN-JSP	<0.18*	●	●
		VPET110302MFN-JSP	<0.2*	●	●

* Corner radius has minus tolerance.

● : Line-up

● : Continuous cutting
c : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Rhombic, 25° with hole Positive 7°

P	Steel	c✣				●c																											
M	Stainless																																
K	Cast iron					●c																											
N	Non-ferrous																																
S	Superalloys																																
H	Hard materials																																

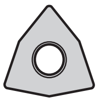
Application	Chipbreaker	Designation	Corner radius	Coating			Coated cermet		
				T9125			GT9530		
Finishing to medium cutting	ZF	YWMT11T202-ZF	0.2	●			●		
		YWMT11T204-ZF	0.4	●			●		
		YWMT16T302-ZF	0.2	●			●		
		YWMT16T304-ZF	0.4	●			●		
		YWMT16T308-ZF	0.8	●			●		
	ZM	YWMT11T204-ZM	0.4	●			●		
		YWMT16T304-ZM	0.4	●			●		
		YWMT16T308-ZM	0.8	●			●		

● : Line-up

External toolholders → B219, B220
Internal toolholders → B300

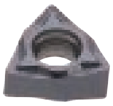
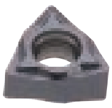
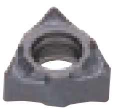
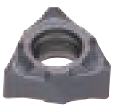
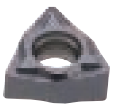
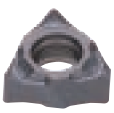
● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE DOUBLE-SIDED



Trigon, 80° with hole

	Material	AH725	SH725	GT9530	NS9530	KS05F
P	Steel	◐	●◐	●◐	●◐	
M	Stainless	◐	●◐			
K	Cast iron	◐		●◐	●◐	●
N	Non-ferrous					●
S	Superalloys	●				●
H	Hard materials					

Application	Chipbreaker	Designation	Corner radius	AH725 (Coating)	SH725 (Coating)	GT9530 (Coated cermet)	NS9530 (Cermet)	KS05F (Uncoated)
Finishing to medium cutting (Sharp edge)	JTS 	WXGU040301MFR-JTS	<0.1*		●			
		WXGU040301MFL-JTS	<0.1*		●			
		WXGU040302MFR-JTS	<0.2*		●			
		WXGU040302MFL-JTS	<0.2*		●			
Finishing to medium cutting	JTS 	WXGU040301MR-JTS	<0.1*	●				
		WXGU040301ML-JTS	<0.1*	●				
		WXGU040302MR-JTS	<0.2*	●				
		WXGU040302ML-JTS	<0.2*	●				
Finishing (Low cutting force) (Sharp edge)	JSS 	WXGU040301MFR-JSS	<0.1*		●			
		WXGU040301MFL-JSS	<0.1*		●			
		WXGU040302MFR-JSS	<0.2*		●			
		WXGU040302MFL-JSS	<0.2*		●			
Finishing (Low cutting force)	JSS 	WXGU040301MR-JSS	<0.1*	●				
		WXGU040301ML-JSS	<0.1*	●				
		WXGU040302MR-JSS	<0.2*	●				
		WXGU040302ML-JSS	<0.2*	●				
Finishing to medium cutting	TS 	WXGU040302R-TS	0.2	●		●	●	●
		WXGU040302L-TS	0.2	●		●	●	●
		WXGU040304R-TS	0.4	●		●	●	●
		WXGU040304L-TS	0.4	●		●	●	●
		WXGU040308R-TS	0.8	●		●	●	●
		WXGU040308L-TS	0.8	●		●	●	●
Finishing (Wiper)	TSW 	WXGU040304R-TSW	0.4	●		●	●	
		WXGU040304L-TSW	0.4	●		●	●	
		WXGU040308R-TSW	0.8	●		●	●	
		WXGU040308L-TSW	0.8	●		●	●	
Finishing (Low cutting force)	SS 	WXGU040302R-SS	0.2	●		●	●	●
		WXGU040302L-SS	0.2	●		●	●	●
		WXGU040304R-SS	0.4	●		●	●	●
		WXGU040304L-SS	0.4	●		●	●	●

* Corner radius has minus tolerance.

● : Line-up

External toolholders → B188, B189, B216
Internal toolholders → B268

● : Continuous cutting
ᑕ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE DOUBLE-SIDED



Rhombic, 55° with hole

P	Steel	ᑕ ●ᑕ
M	Stainless	ᑕ ●ᑕ
K	Cast iron	ᑕ
N	Non-ferrous	
S	Superalloys	●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating: AH725	Coating: SH725
Finishing (Sharp edge)	JRP	DXGU070301MFRE-JRP	<0.1*		●
		DXGU070301MFLE-JRP	<0.1*		●
		DXGU070302MFRE-JRP	<0.2*		●
		DXGU070302MFLE-JRP	<0.2*		●
Finishing to medium cutting (Sharp edge)	JTS	DXGU070301MFR-JTS	<0.1*		●
		DXGU070301MFL-JTS	<0.1*		●
		DXGU070302MFR-JTS	<0.2*		●
		DXGU070302MFL-JTS	<0.2*		●
Finishing to medium cutting	JTS	DXGU070301MR-JTS	<0.1*	●	
		DXGU070301ML-JTS	<0.1*	●	
		DXGU070302MR-JTS	<0.2*	●	
		DXGU070302ML-JTS	<0.2*	●	
Finishing (Low cutting force) (Sharp edge)	JSS	DXGU070301MFR-JSS	<0.1*		●
		DXGU070301MFL-JSS	<0.1*		●
		DXGU070302MFR-JSS	<0.2*		●
		DXGU070302MFL-JSS	<0.2*		●

* Corner radius has minus tolerance.

● : Line-up

External toolholders → B190 -
Internal toolholders → B268, B269

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE DOUBLE-SIDED

Rhombic, 55° with hole

P	Steel	ɔ ●ɔ ●ɔ
M	Stainless	ɔ ●ɔ ●ɔ
K	Cast iron	ɔ ●ɔ ●ɔ ●
N	Non-ferrous	●
S	Superalloys	● ●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating: AH725	Coated cermet: GT9530	Cermet: NS9530	Uncoated: KS05F
Finishing (Low cutting force)	JSS	DXGU070301MR-JSS	<0.1*	●			
		DXGU070301ML-JSS	<0.1*	●			
		DXGU070302MR-JSS	<0.2*	●			
		DXGU070302ML-JSS	<0.2*	●			
Finishing to medium cutting	TS	DXGU070302R-TS	0.2	●	●	●	●
		DXGU070302L-TS	0.2	●	●	●	●
		DXGU070304R-TS	0.4	●	●	●	●
		DXGU070304L-TS	0.4	●	●	●	●
		DXGU070308R-TS	0.8	●	●	●	●
		DXGU070308L-TS	0.8	●	●	●	●
Finishing (Low cutting force)	SS	DXGU070302R-SS	0.2	●	●	●	●
		DXGU070302L-SS	0.2	●	●	●	●
		DXGU070304R-SS	0.4	●	●	●	●
		DXGU070304L-SS	0.4	●	●	●	●

Rhombic, 35° with hole

P	Steel	●ɔ
M	Stainless	●ɔ
K	Cast iron	
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating: SH725
Finishing (Sharp edge)	JRP	VXGU09T201MFRE-JRP	<0.1*	●
		VXGU09T201MFLE-JRP	<0.1*	●
		VXGU09T202MFRE-JRP	<0.2*	●
		VXGU09T202MFLE-JRP	<0.2*	●

* Corner radius has minus tolerance.

● : Line-up

DXGU... : External toolholders → **B190 -**, Internal toolholders → **B268, B269**

VXGU... : External toolholders → **B192 - B194, B216**

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Round, with hole Positive 7°

P	Steel	●ɔ	ɔ✣		●ɔ																										
M	Stainless				●ɔ	●	ɔ																								
K	Cast iron	●ɔ		ɔ	●ɔ									●																	
N	Non-ferrous													●																	
S	Superalloys				●ɔ	●	ɔ	ɔ						●																	
H	Hard materials																														

Application	Chipbreaker	Designation	Corner radius	Coating								Uncoated																			
				T9115	T9125	T5115	AH120	AH8005	AH8015	AH905		KS05F																			
Finishing to medium cutting	**RS**	**RCMT10T3M0-RS**	-	●	●			●	●	●																					
		**RCMT1204M0-RS**	-	●	●			●	●	●																					
		RCMT1606M0-RS	-	●	●		●																								
		RCMT2006M0-RS	-		●																										
		RCMT2507M0-RS	-		●																										
	CM	**RCMT0502M0-CM**	-			●																									
		**RCMT0602M0-CM**	-			●																									
		RCMT0803M0-CM	-			●																									
	AL	**RCGT0602M0-AL**	-									●																			
		**RCGT0803M0-AL**	-									●																			
		RCGT1003M0-AL	-									●																			

● : Line-up

External toolholders → **B232 -**

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Round, with hole Positive 7°

P	Steel	●ɔ ɔ✣ ● ɔ ●ɔ ●
M	Stainless	● ɔ ●
K	Cast iron	●ɔ ●ɔ ●
N	Non-ferrous	●
S	Superalloys	● ɔ ɔ
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating T9115	Coating T9125	Coating AH8005	Coating AH8015	Coating AH905	Cermet NS9530	Uncoated TH10
Heavy cutting	61	RCMT0502M0-61	-	●	●				●	●
		RCMT0602M0-61	-	●	●				●	●
		RCMT0803M0-61	-	●	●				●	●
	61	RCMM1003M0-61	-	●	●	●	●	●	●	●
		RCMM1204M0-61	-	●	●	●	●	●	●	●
		RCMM1606M0-61	-	●	●					●
		RCMM2006M0-61	-		●					●
		RCMM2507M0-61	-		●					

ød1 (mm) Designation	0502M0	0602M0	0803M0	1003M0	10T3M0	1204M0	1606M0	2006M0	2507M0
RC*T	2.5	2.8	3.4	4.4	4.4	4.4	5.5	6.5	7.6
RCMM	-	-	-	3.6	-	4.2	5.2	6.5	7.2



Special Round Insert

P	Steel	●
M	Stainless	●
K	Cast iron	● ɔ✣
N	Non-ferrous	● ɔ✣
S	Superalloys	ɔ✣
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Uncoated TH10	Uncoated KS20
Medium cutting	-	RT05	-	●	
		RT06	-	●	●
		RT08	-	●	

● : Line-up

RC... : External toolholders → **B232 -**

RT... : External toolholders → **B251**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Round, without hole
Positive 7°

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Application	Chipbreaker	Designation	Corner radius	Ceramics LX11
Finishing	-	RCGX090800	-	●
		RCGX120800	-	●



● : Line-up

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Front turning Insert

Material		Coating J740	Uncoated TH10
P	Steel	●◐	●
M	Stainless	●◐	●
K	Cast iron		●
N	Non-ferrous		●
S	Superalloys		
H	Hard materials		

Application	Chipbreaker	Designation	Corner radius	J740	TH10
Front turning	-	JXFR8000F	0.03	●	●
		JXFR8010F	0.1	●	●



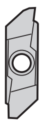


Reverse turning Insert

Material		Coating J740	Uncoated TH10
P	Steel	●◐	●
M	Stainless	●◐	●
K	Cast iron		●
N	Non-ferrous		●
S	Superalloys		
H	Hard materials		

Application	Chipbreaker	Designation	Corner radius	J740	TH10
Reverse turning	-	JXRR8000F	0.03	●	●
		JXRR8010F	0.1	●	●





Back turning Insert

Material		Coating J740	Uncoated TH10
P	Steel	●◐	●
M	Stainless	●◐	●
K	Cast iron		●
N	Non-ferrous		●
S	Superalloys		
H	Hard materials		

Application	Chipbreaker	Designation	Corner radius	J740	TH10
Back turning	-	JXBR8000F	0.03	●	●
		JXBL8000F	0.03	●	●
		JXBR8005F	0.05	●	●
		JXBL8005F	0.05	●	●
		JXBR8005	0.05	●	
		JXBL8005	0.05	●	
		JXBR8010F	0.1	●	●
		JXBL8010F	0.1	●	●
		JXBR8010	0.1	●	
		JXBL8010	0.1	●	
		JXBR8015F	0.15	●	●
		JXBL8015F	0.15	●	●
		JXBR8015	0.15	●	
		JXBL8015	0.15	●	

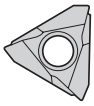


JXF..., JXR... : J series toolholders → **B345**, JXB... : J series toolholders → **B346**

● : Line-up

TurnLine - Insert

POSITIVE TYPE



Back turning Insert

P	Steel	●c	●c					●c					●c					●															
M	Stainless	●c	●c															●															
K	Cast iron							●c					●c					●															
N	Non-ferrous																	●															
S	Superalloys																																
H	Hard materials																																

Application	Chipbreaker	Designation	Corner radius	Coating					Coated cermet					Cermet					Uncoated															
				SH725		J740			J9530					NS9530					TH10															
Back turning	-	JTBR3000F	0.03	●		●													●															
		JTBL3000F	0.03	●		●													●															
		JTBR3005F	0.05	●		●													●															
		JTBL3005F	0.05	●		●													●															
		JTBR3005	0.05			●			●																									
		JTBL3005	0.05			●																												
		JTBR3010F	0.1	●		●								●					●															
		JTBL3010F	0.1	●		●								●					●															
		JTBR3010	0.1			●			●																									
		JTBL3010	0.1			●																												
		JTBR3015F	0.15	●		●																												
		JTBL3015F	0.15	●																														





Back turning Insert

P	Steel	●c	●c					●c					●c					●															
M	Stainless	●c	●c															●															
K	Cast iron							●c					●c					●															
N	Non-ferrous																	●															
S	Superalloys																																
H	Hard materials																																

Application	Chipbreaker	Designation	Corner radius	Coating					Coated cermet					Cermet					Uncoated															
				SH725		J740			J9530					NS9530					TH10															
Back turning	-	J10ER005BF	0.05	●		●								●					●															
		J10EL005BF	0.05	●		●													●															
		J10ER005B	0.05			●			●																									
		J10EL005B	0.05			●																												
		J10ER010BF	0.1	●		●								●					●															
		J10EL010BF	0.1	●		●													●															
		J10ER010B	0.1			●			●																									
		J10EL010B	0.1			●																												
		J10EL015BF	0.15	●																														
		J10ER015BF	0.15	●																														



● : Line-up

JTB... : J series toolholders → **B347**

J10E...: J series toolholders → **B349**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

POSITIVE TYPE



Back turning Insert

P	Steel	●
M	Stainless	●
K	Cast iron	●
N	Non-ferrous	●
S	Superalloys	
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Uncoated TH10
Back turning	-	**10ER100B**	0.03	●
		**10EL100B**	0.03	●
		10ER150B	0.03	●
		10EL150B	0.03	●
		10ER300	-	●
		10EL300	-	●

● : Line-up

Insert
Positive
OTHERS

J series toolholders → B349

TurnLine - Designation System for T-CBN (PCBN) Inserts

Multi-Corner type

2 QP - CNGA120404 -L

① ② ③ ④

① Number of corners

② Type

QP	CBN Inserts

③ ISO symbol

④ Special feature & chipbreaker

Without	Standard honing
-L	Light honing angle Wear resistance priority
-H	Heavy honing angle Impact resistance priority
W	Wiper type insert
W□	Round wiper type insert
F	Sharp edge
-HF	With chipbreaker
-HM	With chipbreaker

Multi-Corner type (10 inserts packing)

T 2 QP - CNGA120408

① "T" shows 10 inserts packing.

For general turning

TNGA160402 - QBN

① ISO symbol

② CBN inserts

T-CBN (PCBN tipped) grooving Inserts

XG R 63 10 S - QBN

① ② ③ ④ ⑤

① For grooving tool GX-type

② Hand of Insert

L	Left
R	Right

③ Groove width (mm)

10	1.0
15	1.5

④ Corner radius: r_ε (mm)

S	0.2

⑤ CBN inserts

For TUNGCUT

S G N 200 - 020

① ② ③ ④ ⑤

① Number of edge

S	Single corner

② Application

G	Grooving

③ For use

N	Non breaker

④ Groove width (mm)

200	2.0

⑤ Corner radius: r_ε (mm)

020	0.2

TurnLine - Designation System for T-DIA (PCD) Inserts

Inserts for turning

TPGW110204 - DIA

① ISO symbol

② PCD inserts

TurnLine - T-CBN Inserts GNGA type

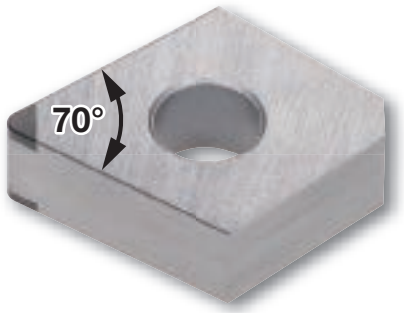
GNGA

Negative relief angle, G class, rhombic insert with 70° corner angle .

New shape CBN insert for general turning

- 70° corner angle makes large clearance between insert and workpiece.

- Large clearance reduces the cutting force and wear on edge, and provides smooth chip flow to prevent scratches on machined surface by chips.



High versatility

- Standard toolholder for ISO CN**1204 insert is available.

- No need offsets compared to CN**1204 insert, due to same geometry of cutting edge position.

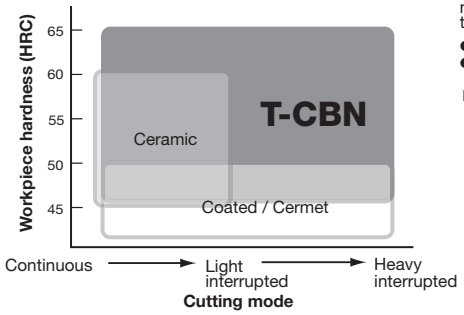
- Double sided insert with 2 cutting edges.

- 4 types of CBN grades are available for machining of a wide range of materials.



H T-CBN series for machining hardened steels and hard materials

Application area



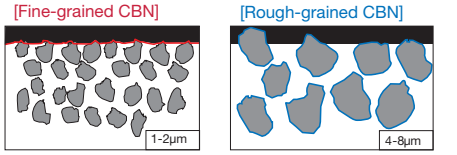
Necessity of PCBN grades

The condition necessary to cut the work

material is:
Hardness of tool ≥ Hardness of tool X 3

- Hardened steel (60HRC) → 700 Hv
- Cemented carbide → 1600 Hv
- PCBN (BX360) → 3300 Hv

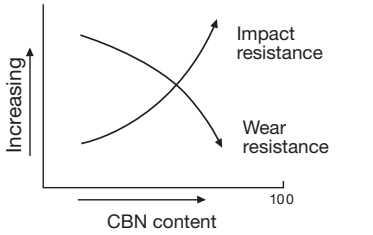
Effects of grain size of CBN on surface roughness and cutting speed



Fine grained PCBN provided with sharp cutting edge.
Good surface roughness

Rough grained PCBN. CBN particles are hold firmly.
Allows high speed machining

Features of CBN grades for machining hardened steel and other hard materials



Fewer CBN content ⇨ Increasing wear resistance
Much CBN content ⇨ Increasing impact resistance

Basic selection of T-CBN grades in machining of hardened steel and hard material

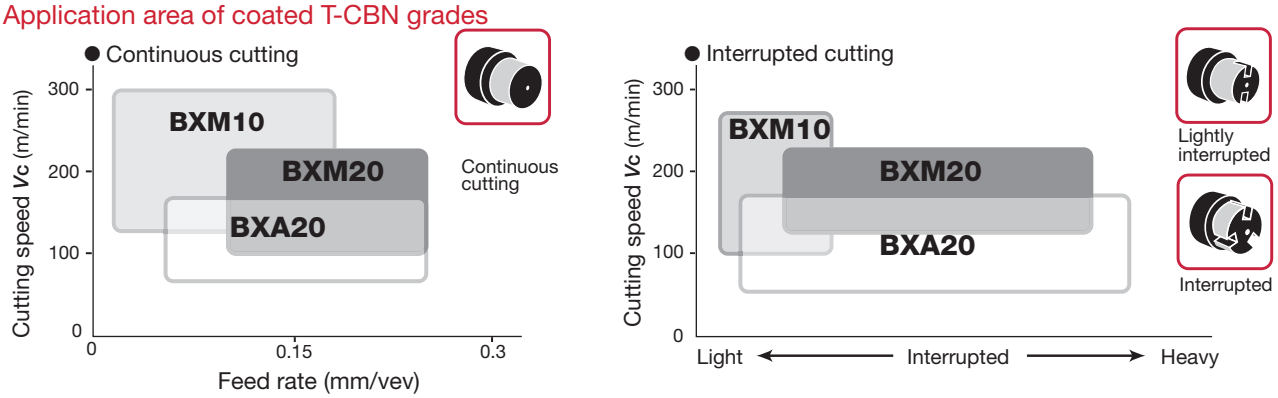
● Coated T-CBN grades

BXM10 For high speeds cutting
BXM20 For general purpose, more than *Vc* = 180 m/min
BXA20 For general purpose, less than *Vc* = 180 m/min

● Uncoated T-CBN grades

BX310 For high speeds / Priority on wear resistance in continuous cutting
BX330 For medium speeds / Priority on surface quality
BX360 For low to medium speeds / General purpose grade, excels in impact resistance
BX380 For low to medium speeds / Priority on impact resistance in heavily interrupted cutting

Application area of coated T-CBN grades



Effects of Coated T-CBN grades



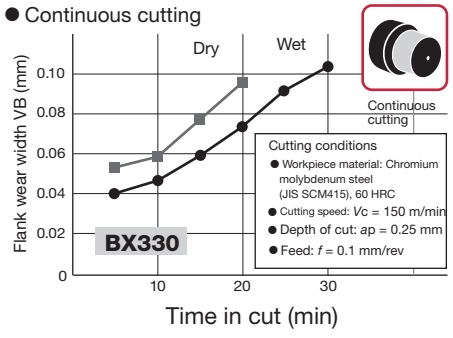
Coated on hard CBN
Hardness:
CBN > Coating layer

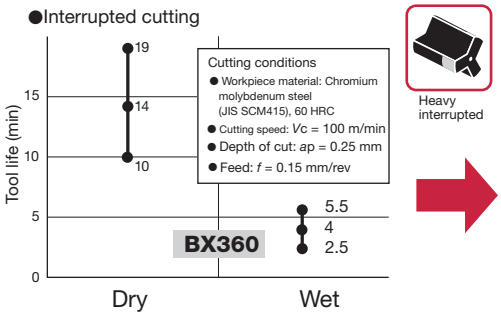
● **Protect CBN from oxidation wear**
Since the coating layer intercepts air, oxidation wear of CBN can be prevented.

● **Peeling of coating layer can be protected**
Hard and deformation resistant CBN is excellent substrate material.

→ **Improved resistance to flank wear**

Effects of coolant in machining of hardened steel



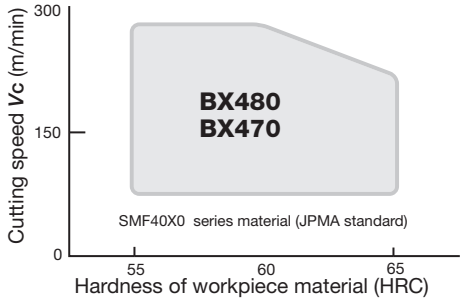


- In continuous cutting, wet cutting is superior to dry cutting in tool life for wear.
- In interrupted cutting, dry cutting is superior to wet cutting in tool life for fracture.

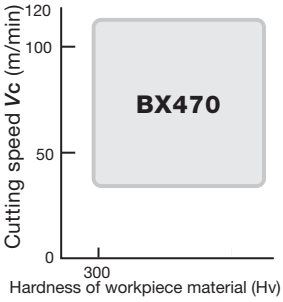
T-CBN series for machining sintered metals

Application area

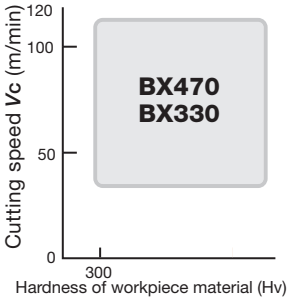
● Ferrous Sintered metal



● Valve seat (Plunge cutting)



● Valve seat (Traverse cutting)

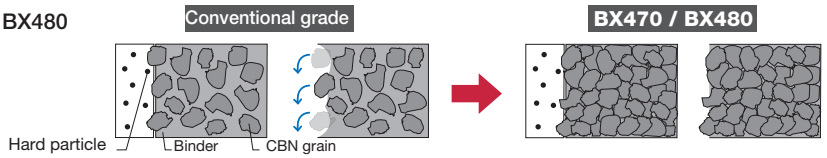


BX470
Priority on burr prevention and surface finish

BX480
Priority on wear resistance and versatility

Features of BX470 and BX480

●Machining of Sintered metal including hard particles



Binder phase are selectively worn away by hard particles.
⇨ Wear proceeds with falling-out of CBN grains,

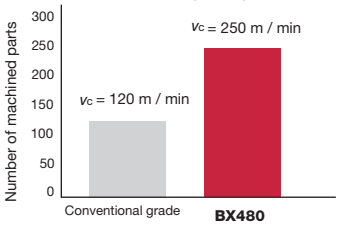
By increasing CBN content, wear of binder layer is suppressed.
⇨ Improved wear resistance

●Features of **BX470** and **BX480**

CBN content: 95 vol%
Hv = 4100 ~ 4300

The world highest CBN content as a commercially available material.

■ BX480 (Facing of gears)



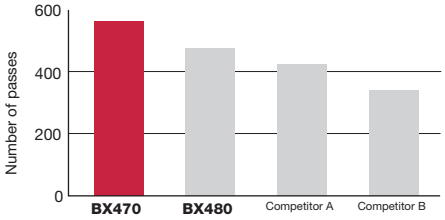
Cutting conditions
- Workpiece material: Sintered metal (> HRA60)
- Insert: DCMW11T308
- Depth of cut: ap = 0.2 ~ 0.5 mm
- Feed : f = 0.07 mm/rev
- Coolant : Water soluble type
- Interrupted cutting

■ BX470/BX480 Tool failure after machining Sintered metal



Cutting conditions
- Workpiece material: Sintered metal (> HRA60), Nitriding, Hard particles included
- Cutting speed: Vc = 110 m/min ● Depth of cut: ap = 0.15 mm
- Feed: f = 0.1 mm/rev ● Coolant : Water soluble type
- Interrupted cutting

■ BX470 (Tool life criterion: Burr occurrence)

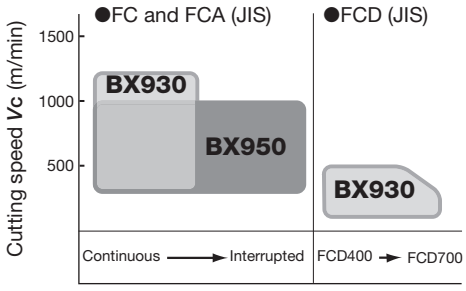


Cutting conditions
- Workpiece material: Ferrous Sintered metal
- Cutting speed: Vc = 100 m/min
- Depth of cut: ap = 0.15 ~ 0.3 mm
- Feed: f = 0.07 ~ 0.25 mm/rev
- Dry and interrupted cutting

K T-CBN series for machining grey and ductile cast irons

Application area

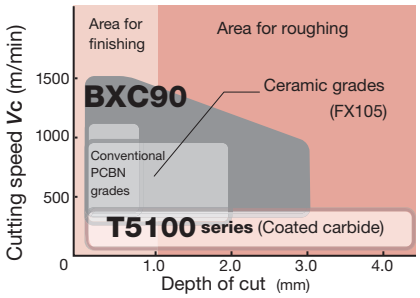
●FC and FCA (JIS) ●FCD (JIS)



BX930
- General purpose, first choice grade.
- Dedicated grade for machining ductile Cast iron

BX950
- Suitable for interrupted machining
- Excels in impact resistance

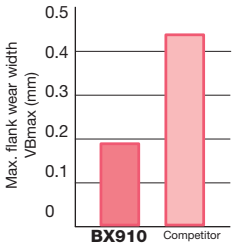
● Solid coated T-CBN grades



BXC90
- One-piece solid structure
- Applicable for small to large depths of cut

■ Machining of cylinder liners (Machining example of **BX910**)

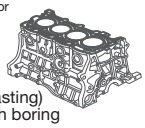
●Wear width after machining 120 pcs.



●Tool failure after machining 120 pcs.

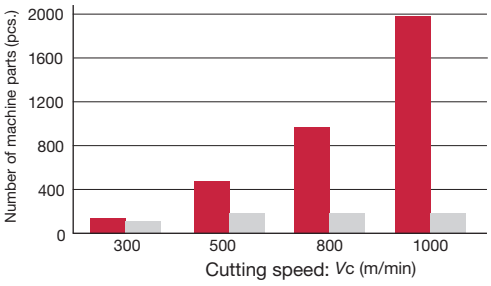


Cutting conditions



- Workpiece material: Cylinder liner (Spin casting) Machining type: Finish boring
- Cutting speed: Vc = 1,000 m/min
- Machine: Special purpose machine
- Coolant: Wet

■ Tool life comparison in machining of disc brakes



Cutting conditions
- Workpiece material: Disc rotor (JIS FC250)
- Insert: SNGN 120412 BXC90
- Depth of cut: ap = 0.7 mm
- Feed: f = 0.35 mm/rev
- Coolant: Dry
- Tool life criterion: Conditions of finished surface

BX910 For machining cylinder liners

Honing specifications

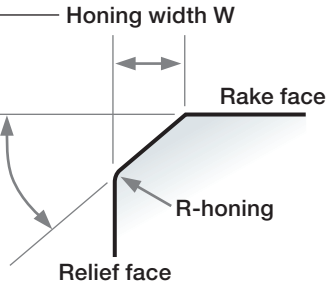
● T-CBN inserts with special honing specifications are made to order. Refer to the following description.

Designation system for honing

Example:
Honing width: 0.15 mm
Honing angle: -30°
With R-honing

S	0	1	5	3	0

Shape | Honing width (W) | Honing angle (α)



T ··· Chamfered honing
S ··· Chamfered + R-honing
E ··· R-honing alone
F ··· Sharp edge

● Symbol

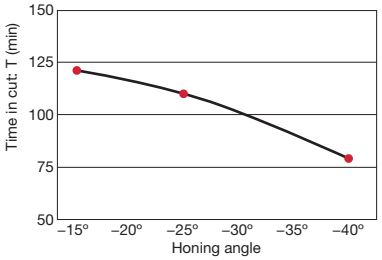
W	Amount of honing (mm)
005	0.05
010	0.10
013	0.13
015	0.15
020	0.20

α	Honing angle
10°	-10°
15°	-15°
20°	-20°
25°	-25°
30°	-30°
35°	-35°
40°	-40°

● Honing specification can be selected in combination of items described here.
● Inserts with "R" honing alone are available.

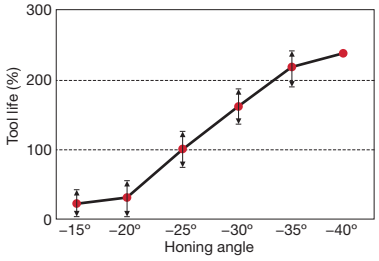
Honing specifications for machining hardened steels and other hard materials
Standard honing: -25° + R-honing
"-L" honing : -15° + R-honing
"-H" honing : -35° + R-honing

● Relationship between honing angle and tool life in continuous turning



Cutting conditions
Workpiece material:
Chromium molybdenum steel (JIS SCM415), 60 HRC
Insert: TNGN160404 BX360
Cutting speed: *Vc* = 100 m/min
Feed: *f* = 0.15 mm/rev
Depth of cut: *ap* = 0.25 mm
Coolant: Dry
Tool life criterion: VBmax = 0.15 mm
Honing: -□□°+ R-honing

● Relationship between honing angle and tool life in interrupted turning



Cutting conditions
Workpiece material:
Chromium molybdenum steel (JIS SCM415), 60 HRC
Insert: TNGN160404 BX360
Cutting speed: *Vc* = 100 m/min
Feed: *f* = 0.15 mm/rev
Depth of cut: *ap* = 0.25 mm
Coolant: Dry
Tool life criterion: Fracture
Honing: -□□°+ R-honing

● General rule
- For continuous cutting, small honing angle is favorable to minimize wear in general.
- For interrupted cutting, large honing angle is favorable to minimize fracture in general.

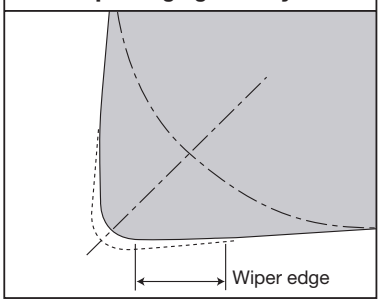
● Standard honing specifications

Grades	BXM10	BXM20	BXA20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
Negative insert	S01325	S01325	S01325	S01325	S01325	S01325	S01325	S01325	T01315	S01325	S01315	S01315	S01325
Positive insert	S01325	S01325	S01325	–	S00515	S00515	S00515	–	T01315	–	S01315	S00515	S00515

Wiper insert

● A finishing edge (wiper edge) is formed at the point of intersection between corner radius and straight cutting edge.

Wiper edge geometry

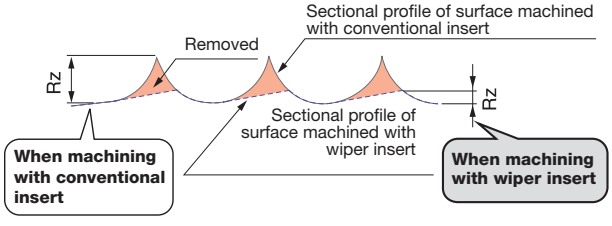


■ Effect of wiper edge

● Doubles the productivity → Reduced machining time
The wiper edge can double the feed rate and moreover does not deteriorate the surface roughness. (Note: Feed rate: *f* < 0.3 mm/rev)

● Superior surface roughness → By integrating roughing and finishing into one process, productivity can be increased.
Compared with conventional inserts only with corner radius, surface roughness can be improved with the wiper edge.

■ Profiles of surface roughness



■ Recommended toolholders for wiper-edged inserts

	2QP-CNGA1204**WL	3QP-WNGA080408WL	2QP-DNGA1504**WJ	3QP-TNGA1604**WG
End cutting angle	95°		93°	91°
External toolholder	ACLNR/L**12-A	AWLNR/L**08-A	ADJNR/L**15-A	ATGNR/L**16-A ATFNR/L**16-A
	DCLNR/L**12	DWLNR/L**08	DDJNR/L**15	DTGNR/L**16 DTFNR/L**16
Internal toolholder	A**-ACLNR/L12-D...	A**-AWLNR/L08-D...	A**-ADUNR/L15-D...	A**-ATFNR/L16-D...

TurnLine - CBN Insert

Negative insert · Multi-corner type

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

					P	Steel													
					M	Stainless													
					K	Cast iron									◐	✣	◐	◐	
					N	Non-ferrous													
					S	Superalloys													●
					H	Hard materials	●	◐	◐	✣	●	◐	◐	✣					
						Sintered metal									◐	◐✣			
Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BXM10	BXM20	BXA20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX930	BX950
Sharp edge		2QP-CNGA120404F	0.4	2	2.3									●			
		2QP-CNGA120408F	0.8	2	2.2									●			
General purpose		2QP-CNGA120404	0.4	2	2.3	●	●	●		●	●	●	●	●	●	●	●
		2QP-CNGA120408	0.8	2	2.2	●	●	●		●	●	●	●	●	●	●	●
		2QP-CNGA120412	1.2	2	2.4		●	●		●	●	●	●	●	●	●	●
Light honing		2QP-CNGA120404-L	0.4	2	2.3	●	●				●						
		2QP-CNGA120408-L	0.8	2	2.2	●	●				●						
		2QP-CNGA120412-L	1.2	2	2.4	●	●				●						
Heavy honing		2QP-CNGA120404-H	0.4	2	2.3		●					●	●				
		2QP-CNGA120408-H	0.8	2	2.2		●	●				●	●				
		2QP-CNGA120412-H	1.2	2	2.4		●					●	●				
Wiper edge		2QP-CNGA120404WL	0.4	2	2.3	●	●										
		2QP-CNGA120408WL	0.8	2	2.2	●	●	●									
		2QP-CNGA120412WL	1.2	2	2.4	●	●										
		2QP-CNMA120404W	0.4	2	2.3						●						
		2QP-CNMA120408W	0.8	2	2.2						●						
		2QP-CNMA120412W	1.2	2	2.4						●						
General purpose		T2QP-CNGA120404	0.4	2	2.3							●					
		T2QP-CNGA120408	0.8	2	2.2							●					
General purpose		4QP-CNGA120404	0.4	4	2.3				●								
		4QP-CNGA120408	0.8	4	2.2				●								
		4QP-CNGA120412	1.2	4	2.4				●								
Wiper edge		4QP-CNMA120404W	0.4	4	2.3				●								
		4QP-CNMA120408W	0.8	4	2.2				●								
		4QP-CNMA120412W	1.2	4	2.4				●								
General purpose Nose angle 70°		*2QP-GNGA120404	0.4	2	2.3		●	●				●					
		*2QP-GNGA120408	0.8	2	2.2		●	●				●		●		●	
		*2QP-GNGA120412	1.2	2	2.4		●	●				●		●		●	
General purpose		2QP-DNGA150404	0.4	2	2.5	●	●			●	●	●	●	●	●	●	●
		2QP-DNGA150408	0.8	2	2.1	●	●	●		●	●	●	●	●	●	●	●
		2QP-DNGA150412	1.2	2	2.0	●	●			●	●	●	●		●	●	●
Light honing		2QP-DNGA150404-L	0.4	2	2.5	●	●				●						
		2QP-DNGA150408-L	0.8	2	2.1	●	●				●						
		2QP-DNGA150412-L	1.2	2	2.0		●				●						
Heavy honing		2QP-DNGA150404-H	0.4	2	2.5		●					●	●				
		2QP-DNGA150408-H	0.8	2	2.1		●	●				●	●				
		2QP-DNGA150412-H	1.2	2	2.0		●					●	●				
Wiper edge		2QP-DNGA150404WJ	0.4	2	2.5	●	●	●									
		2QP-DNGA150408WJ	0.8	2	2.1	●	●	●									
General purpose		2QP-DNGA150604	0.4	2	2.5	●	●										
		2QP-DNGA150608	0.8	2	2.1	●	●	●									
		2QP-DNGA150612	1.2	2	2.0	●	●										

Note:
Letter "T" in the first position of designation shows that the standard packing quantity is 10 pieces.
Recommended toolholders for wiper inserts, W, WL, or WJ are shown on page **B162**

● : Line-up

* Tungaloy's original shape

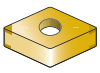
External toolholders	→ **B206 -**	Internal toolholders	→ **B292 -**
J series toolholders	→ **B342 -**	TungCap	→ **B215, F046 -**
PINZBOHR®	→ **F136 - F151**	Cartridges	→ **F169 - F172**

TurnLine - CBN Insert

Negative insert · Multi-corner type

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

		BXM10	BXM20	BXA20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX910	BX930	BX950
P	Steel													
M	Stainless													
K	Cast iron									●◐	✣	●	●◐	◐
N	Non-ferrous													
S	Superalloys													●
H	Hard materials	●	◐	◐	✣	●	◐	◐	✣					
	Sintered metal									●◐	◐✣			

Specification	Shape	Designation	Corner radius	No. of corner	CBN Length
General purpose		4QP-DNGA150404	0.4	4	2.5
		4QP-DNGA150408	0.8	4	2.1
		4QP-DNGA150412	1.2	4	2.0
General purpose		2QP-SNGA120404	0.4	2	2.4
		2QP-SNGA120408	0.8	2	2.4
		2QP-SNGA120412	1.2	2	2.4
Light honing		2QP-SNGA120404-L	0.4	2	2.4
		2QP-SNGA120408-L	0.8	2	2.4
		2QP-SNGA120412-L	1.2	2	2.4
Heavy honing		2QP-SNGA120404-H	0.4	2	2.4
		2QP-SNGA120408-H	0.8	2	2.4
		2QP-SNGA120412-H	1.2	2	2.4
General purpose		4QP-SNGA120404	0.4	4	2.4
		4QP-SNGA120408	0.8	4	2.4
		4QP-SNGA120412	1.2	4	2.4
General purpose		2QP-SNGN090308	0.8	2	2.4
		2QP-SNGN090312	1.2	2	2.4
Sharp edge		3QP-TNGA160404F	0.4	3	2.2
		3QP-TNGA160408F	0.8	3	1.9
General purpose		3QP-TNGA160404	0.4	3	2.2
		3QP-TNGA160408	0.8	3	1.9
		3QP-TNGA160412	1.2	3	2.4
Light honing		3QP-TNGA160404-L	0.4	3	2.2
		3QP-TNGA160408-L	0.8	3	1.9
		3QP-TNGA160412-L	1.2	3	2.4
Heavy honing		3QP-TNGA160404-H	0.4	3	2.2
		3QP-TNGA160408-H	0.8	3	1.9
		3QP-TNGA160412-H	1.2	3	2.4
Wiper edge		3QP-TNGA160404WG	0.4	3	2.2
		3QP-TNGA160408WG	0.8	3	1.9
General purpose		T3QP-TNGA160404	0.4	3	2.2
		T3QP-TNGA160408	0.8	3	1.9
General purpose		6QP-TNGA160404	0.4	6	2.2
		6QP-TNGA160408	0.8	6	1.9
		6QP-TNGA160412	1.2	6	2.4

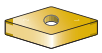
Note:
Letter “T” in the first position of designation shows that the standard packing quantity is 10 pieces.
Recommended toolholders for wiper inserts, WG are shown on page **B162**

● : Line-up

External toolholders → **B207 -**
J series toolholders → **B342 -**
Cartridges → **F152 -**
Internal toolholders → **B293 -**
TungCap → **B215, F046 -**

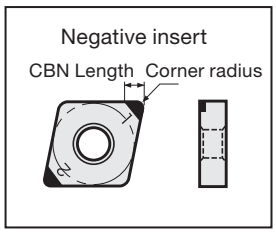
TurnLine - CBN Insert

Negative insert · Multi-corner type

						BXM10	BXM20	BXA20	BXC50	BX310	BX330	BX360	BX380	BX470	BX480	BX930	BX950
		P Steel															
		M Stainless															
		K Cast iron												●C	✠	●C	C
		N Non-ferrous															
		S Superalloys															●
		H Hard materials				●	●C	●C	✠	●	●C	●C	✠				
		Sintered metal												●C	C✠		
Specification	Shape	Designation	Corner radius	No. of corner	CBN Length												
General purpose		2QP-VNGA160404	0.4	2	3.1	●	●	●		●	●	●	●	●	●	●	●
		2QP-VNGA160408	0.8	2	2.2	●	●	●		●	●	●	●	●	●	●	●
		2QP-VNGA160412	1.2	2	3.0		●										
Light honing		2QP-VNGA160404-L	0.4	2	3.1	●	●				●						
		2QP-VNGA160408-L	0.8	2	2.2	●	●				●						
Heavy honing		2QP-VNGA160404-H	0.4	2	3.1		●	●				●	●				
		2QP-VNGA160408-H	0.8	2	2.2		●	●				●	●				
General purpose		4QP-VNGA160404	0.4	4	3.1				●								
		4QP-VNGA160408	0.8	4	2.2				●								
Heavy honing		4QP-VNGA160408-H	0.8	4	2.2												
General purpose		3QP-WNGA080408	0.8	3	2.2	●	●	●		●	●	●	●		●	●	●
																	
Wiper edge		3QP-WNGA080408WL	0.8	3	2.2	●	●										
General purpose		6QP-WNGA080408	0.8	6	2.2				●								

Recommended toolholders for wiper inserts, WL are shown on page **B162**

● : Line-up



External toolholders → **B206 -**
Internal toolholders → **B293 -**
TungCap → **B215, F046 -**

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

Negative insert · Multi-corner type Hard Breaker
(T-CBN insert with chipbreaker)

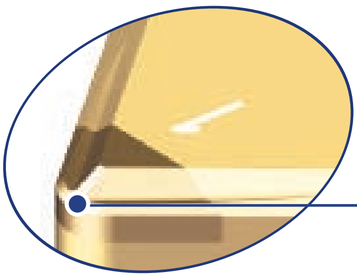
Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BXM20	BXA20
		P Steel					
		M Stainless					
		K Cast iron					
		N Non-ferrous					
		S Superalloys					
		H Hard materials				●◐	●◐
With chipbreaker		2QP-CNGM120408-HF	0.8	2	2.2	●	
		2QP-CNGM120412-HF	1.2	2	2.4	●	
		2QP-DNGM150408-HF	0.8	2	2.1	●	
		2QP-DNGM150412-HF	1.2	2	2.0	●	
		3QP-TNGM160408-HF	0.8	3	1.9	●	
		3QP-TNGM160412-HF	1.2	3	2.4	●	
		2QP-VNGM160408-HF	0.8	2	2.2	●	
		2QP-CNGM120408-HM	0.8	2	2.2	●	●
		2QP-CNGM120412-HM	1.2	2	2.4	●	●
		2QP-DNGM150408-HM	0.8	2	2.1	●	
		2QP-DNGM150412-HM	1.2	2	2.0	●	
		3QP-TNGM160408-HM	0.8	3	1.9	●	
		3QP-TNGM160412-HM	1.2	3	2.2	●	
		2QP-VNGM160408-HM	0.8	2	2.4	●	

● : Line-up

"Hard Breakers" for removing the carburized layer

Two types of chipbreaker provide excellent chip control in a wide application range !

HF type — For finishing

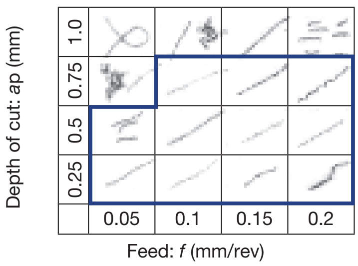


Single sided CBN insert provides higher stability in heavy machining.

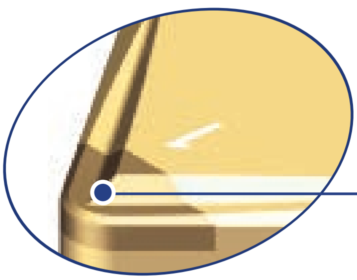
Excellent chip control in small DoC due to the high functional nose. Delivers exceptional surface finishes.

■ Example of chips

●HF type



HM type — For medium cutting

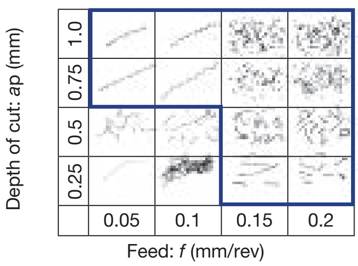


Single sided CBN insert provides higher stability in heavy machining.

Providing ideal chip control in large DoC by the well designed chipbreaker. Suitable for medium cutting or roughing.

■ Example of chips

●HM type

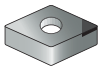


TurnLine - CBN Insert

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

Negative insert · One-corner type

					P	Steel	
					M	Stainless	
					K	Cast iron	
					N	Non-ferrous	
					S	Superalloys	
					H	Hard materials	●◐

Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BX360
General purpose		**CNGA120402-QBN**	0.2	1	4.1	●
		CNGA120404-QBN	0.4	1	4.0	●
		CNGA120408-QBN	0.8	1	3.9	●
		CNGA120412-QBN	1.2	1	3.9	●
		**DNGA150402-QBN**	0.2	1	4.3	●
		DNGA150404-QBN	0.4	1	4.1	●
		DNGA150408-QBN	0.8	1	3.8	●
		DNGA150412-QBN	1.2	1	3.4	●
		**SNGA120402-QBN**	0.2	1	4.1	●
		SNGA120404-QBN	0.4	1	4.1	●
		SNGA120408-QBN	0.8	1	4.1	●
		SNGA120412-QBN	1.2	1	4.1	●
		**TNGA160402-QBN**	0.2	1	4.4	●
		TNGA160404-QBN	0.4	1	4.2	●
		TNGA160408-QBN	0.8	1	4.0	●
		TNGA160412-QBN	1.2	1	3.7	●

● : Line-up

External toolholders → **B206 -**
J series toolholders → **B342 - B344**
Cartridges → **F152 -**
Internal toolholders → **B292 -**
PINZBOHR® → **F136 - F151**

TurnLine - CBN Insert

Positive insert · Multi-corner type (G class)

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials
	Sintered metal

Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BXM10	BXM20	BXA20	BX470	BX910
General purpose		2QP-CCGW060202	0.2	2	2.3	●	●			
		2QP-CCGW060204	0.4	2	2.3	●	●	●	●	
		2QP-CCGW09T304	0.4	2	2.3	●	●	●	●	
		2QP-CCGW09T308	0.8	2	2.2	●	●	●	●	
General purpose		2QP-DCGW070202	0.2	2	2.7	●	●	●		
		2QP-DCGW070204	0.4	2	2.5	●	●	●	●	
		2QP-DCGW070208	0.8	2	2.5				●	
Sharp edge		2QP-DCGW11T302F	0.2	2	2.7				●	
		2QP-DCGW11T304F	0.4	2	2.5				●	
General purpose		2QP-DCGW11T302	0.2	2	2.7	●	●			
		2QP-DCGW11T304	0.4	2	2.5	●	●		●	
		2QP-DCGW11T308	0.8	2	2.1	●	●	●	●	
General purpose		2QP-SPGW09T308	0.8	2	2.4					●
		2QP-SPGW09T312	1.2	2	2.4					●
		2QP-SPGW120408	0.8	2	2.4					●
		2QP-SPGW120412	1.2	2	2.4					●
		2QP-SPGW120416	1.6	2	2.4					●
General purpose		2QP-SPGN090308	0.8	2	2.4					●
		2QP-SPGN090312	1.2	2	2.4					●
General purpose		3QP-TPGW080204	0.4	3	2.2	●	●			
		3QP-TPGW090202	0.2	3	2.3		●			
		3QP-TPGW090204	0.4	3	2.2	●	●			
		3QP-TPGW110202	0.2	3	2.3		●			
		3QP-TPGW110204	0.4	3	2.2	●	●		●	
		3QP-TPGW110208	0.8	3	2.2				●	
Sharp edge		3QP-TPGW110304F	0.4	3	2.2				●	
		3QP-TPGW110308F	0.8	3	2.2				●	
General purpose		3QP-TPGW110302	0.2	3	2.3		●			
		3QP-TPGW110304	0.4	3	2.2	●	●	●	●	
		3QP-TPGW110308	0.8	3	2.2	●	●	●	●	●
		3QP-TPGW130302	0.2	3	2.3		●			
		3QP-TPGW130304	0.4	3	2.2	●	●			
		3QP-TPGW16T304	0.4	3	2.2	●	●			
		3QP-TPGW16T308	0.8	3	1.9	●	●			
General purpose		3QP-TPGW160404	0.4	3	2.2	●	●			
		3QP-TPGW160408	0.8	3	1.9		●			
General purpose		3QP-TPGN110308	0.8	3	2.2					●
		3QP-TPGN110312	1.2	3	2.4					●

● : Line-up

External toolholders → B217 -
J series toolholders → B328 -
Cartridges → F152 -
Top-borer tools → F175
Internal toolholders → B278 -
PINZBOHR® → F136 - F151
Boring bar tools → F169 - F172

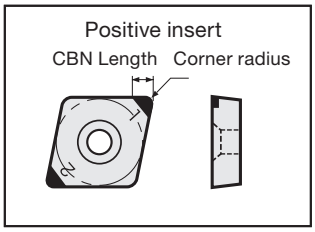
TurnLine - CBN Insert

Positive insert · Multi-corner type (G class)

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BXM10	BXM20	BXA20
General purpose		**2QP-VBGW110304**	0.4	2	3.1	●	●	●
		2QP-VBGW110308	0.8	2	2.2	●	●	●
		2QP-VBGW160404	0.4	2	3.1	●	●	●
		2QP-VBGW160408	0.8	2	2.2	●	●	●
General purpose		**2QP-VCGW160404**	0.4	2	3.1	●	●	

● : Line-up



Insert
PCD / CBN

External toolholders → **B217 -**
J series toolholders → **B337 -**
Internal toolholders → **B282 -**
TungCap → **F046 -**

TurnLine - CBN Insert

Positive insert · Multi-corner type

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

												P	Steel												
												M	Stainless												
												K	Cast iron				●ɔ	ɔ							
												N	Non-ferrous												
												S	Superalloys					●							
												H	Hard materials	●	●ɔ	●ɔ									
Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BX310	BX330	BX360	BX930	BX950															
General purpose		2QP-CCMW060202	0.2	2	2.3	●	●	●																	
		2QP-CCMW060204	0.4	2	2.3	●	●	●	●	●															
		2QP-CCMW09T304	0.4	2	2.3	●	●	●	●	●															
		2QP-CCMW09T308	0.8	2	2.2	●	●	●																	
General purpose		2QP-DCMW070202	0.2	2	2.7	●	●	●																	
		2QP-DCMW070204	0.4	2	2.5	●	●	●	●	●															
		2QP-DCMW11T302	0.2	2	2.7	●	●	●																	
		2QP-DCMW11T304	0.4	2	2.5	●	●	●	●	●															
		2QP-DCMW11T308	0.8	2	2.1	●	●	●																	
General purpose		2QP-SPMN090304	0.4	2	2.4		●	●	●																
		2QP-SPMN090308	0.8	2	2.4		●	●	●																
General purpose		3QP-TPMW080204	0.4	3	2.2	●	●	●	●																
		3QP-TPMW090202	0.2	3	2.3		●	●	●																
		3QP-TPMW090204	0.4	3	2.2	●	●	●	●																
		3QP-TPMW110202	0.2	3	2.3	●	●	●	●																
		3QP-TPMW110204	0.4	3	2.2	●	●	●	●																
		3QP-TPMW110302	0.2	3	2.3	●	●	●	●	●															
		3QP-TPMW110304	0.4	3	2.2	●	●	●	●	●															
		3QP-TPMW110308	0.8	3	1.9	●	●	●	●	●															
		3QP-TPMW130302	0.2	3	2.4	●	●	●	●	●															
		3QP-TPMW130304	0.4	3	2.2	●	●	●	●	●															
		3QP-TPMW16T304	0.4	3	2.2	●	●	●	●	●															
		3QP-TPMW16T308	0.8	3	1.9	●																			
		3QP-TPMW160404	0.4	3	2.2	●	●	●	●																
		3QP-TPMW160408	0.8	3	1.9	●	●	●	●																
General purpose		3QP-TPMN110302	0.2	3	2.3		●	●	●	●															
		3QP-TPMN110304	0.4	3	2.2		●	●	●	●															
		3QP-TPMN110308	0.8	3	1.9		●	●	●	●															
		3QP-TPMN160304	0.4	3	2.2		●	●	●	●															
		3QP-TPMN160308	0.8	3	1.9		●	●	●	●															
General purpose		2QP-VBMW110304	0.4	2	3.1	●	●	●	●																
		2QP-VBMW110308	0.8	2	2.2	●	●	●	●																
		2QP-VBMW160404	0.4	2	3.1	●	●	●																	
		2QP-VBMW160408	0.8	2	2.2	●	●	●																	
General purpose		2QP-VCMW160404	0.4	2	3.1		●	●	●																

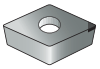
● : Line-up

External toolholders → B217 -
J series toolholders → B328 -
PINZBOHR® → F136 - F151
Boring bar tools → F169 - F172
Internal toolholders → B278 -
TungCap → F046 -
Cartridges → F152 -

TurnLine - CBN Insert

Positive insert · One-corner type

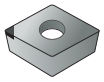
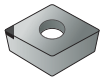
P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BX330
						●◐
General purpose		Q-CCMW060204	0.4	1	2.5	●
		Q-CCMW09T304	0.4	1	2.5	●
General purpose		Q-DCMW070204	0.4	1	2.1	●
		Q-DCMW11T304	0.4	1	2.1	●
General purpose		Q-SPGN090304	0.4	1	2.8	●
		Q-SPGN090308	0.8	1	2.8	●
General purpose		Q-TPMW080204	0.4	1	2.2	●
		Q-TPMW090202	0.2	1	2.4	●
		Q-TPMW090204	0.4	1	2.3	●
		Q-TPMW110202	0.2	1	2.4	●
		Q-TPMW110204	0.4	1	2.2	●
		Q-TPMW110304	0.4	1	2.3	●
		Q-TPMW110308	0.8	1	2.2	●
		Q-TPMW130302	0.2	1	2.4	●
		Q-TPMW130304	0.4	1	2.3	●
		Q-TPMW16T304	0.4	1	2.3	●
		Q-TPMW160404	0.4	1	2.3	●
		Q-TPMW160408	0.8	1	1.9	●
General purpose		Q-TPGN110304	0.4	1	2.2	●
		Q-TPGN110308	0.8	1	2.2	●
		Q-TPGN160304	0.4	1	2.3	●
		Q-TPGN160308	0.8	1	1.9	●

Note: Packing Qty : 2 pcs.

Positive insert · Mini

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials
	Sintered metal

Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BX310	BX470
						●	●◐
General purpose		1QP-CCGW03X102	0.2	1	1.4	●	●
		1QP-CCGW03X104	0.4	1	1.3	●	●
		1QP-CCGW04T102	0.2	1	1.9	●	●
		1QP-CCGW04T104	0.4	1	1.8	●	●
General purpose		1QP-EPGW03X102	0.2	1	1.4	●	●
		1QP-EPGW03X104	0.4	1	1.3	●	●
		1QP-EPGW040102	0.2	1	1.7	●	●
		1QP-EPGW040104	0.4	1	1.6	●	●

● : Line-up

External toolholders → B217 -
Internal toolholders → B278 -
J series toolholders → B328 -
PINZBOHR® → F136 - F151
Cartridges → F152 -
Boring bar tools → F169 - F172
Top-borer tools → F173 -

TurnLine - CBN Insert

Positive insert · One-corner type

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BX360
General purpose		SPGN090304-QBN	0.4	1	4.1	●
		SPGN090308-QBN	0.8	1	4.1	●
		SPGN090312-QBN	1.2	1	4.1	●
		SPGN120308-QBN	0.8	1	4.1	●
		SPGN120312-QBN	1.2	1	4.1	●
General purpose		TPGW090202-QBN	0.2	1	3.3	●
		TPGW090204-QBN	0.4	1	3.2	●
		TPGW110202-QBN	0.2	1	3.9	●
		TPGW110204-QBN	0.4	1	3.7	●
		TPGW130302-QBN	0.2	1	3.9	●
		TPGW130304-QBN	0.4	1	3.7	●
		TPGW16T302-QBN	0.2	1	4.4	●
		TPGW16T304-QBN	0.4	1	4.2	●
		TPGW16T308-QBN	0.8	1	4.0	●
General purpose		TPGN110304-QBN	0.4	1	3.7	●
		TPGN110308-QBN	0.8	1	3.5	●
		TPGN160304-QBN	0.4	1	4.2	●
		TPGN160308-QBN	0.8	1	4.0	●
General purpose		CPGA090204-QBN	0.4	1	4.0	●
		CPGA090208-QBN	0.8	1	3.8	●
General purpose		TPGA090202-QBN	0.2	1	3.1	●
		TPGA090204-QBN	0.4	1	2.9	●
		TPGA110202-QBN	0.2	1	3.9	●
		TPGA110204-QBN	0.4	1	3.7	●
		TPGA110302-QBN	0.2	1	3.9	●
		TPGA110304-QBN	0.4	1	3.7	●
		TPGA160302-QBN	0.2	1	4.4	●
		TPGA160304-QBN	0.4	1	4.2	●
		TPGA160308-QBN	0.8	1	4.0	●

Positive insert · Full-face type

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Specification	Shape	Designation	Corner radius	No. of corner	CBN Length	BX360
General purpose		TBGN060104-15-QBN	0.4	3	-	●
		TBGN060108-15-QBN	0.8	3	-	●

● : Line-up

External toolholders → B242 - Internal toolholders → B282 -
Cartridges → F152 - Boring bar tools → F169 - F172

TurnLine - CBN Insert

Coated Solid CBN (BXC90)

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

P	Steel	
M	Stainless	
K	Cast iron	●◐
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Specification	Shape	Designation	Corner radius	No. of corner	BXC90
General purpose		**S-CNGN090308**	0.8	4	●
		S-CNGN090312	1.2	4	●
		S-CNGN120408	0.8	4	●
		S-CNGN120412	1.2	4	●
General purpose		**S-RNGN090300**	-	-	●
		S-RNGN120400	-	-	●
General purpose		**S-SNGN090308**	0.8	8	●
		S-SNGN090312	1.2	8	●
		S-SNGN120308	0.8	8	●
		S-SNGN120312	1.2	8	●
		S-SNGN120408	0.8	8	●
		S-SNGN120412	1.2	8	●
General purpose		**S-TNGN110308**	0.8	6	●
		S-TNGN110312	1.2	6	●
		S-TNGN160408	0.8	6	●
		S-TNGN160412	1.2	6	●

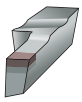
● : Line-up

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting

TurnLine - CBN Insert

T-CBN (PCBN tipped) grooving Insert

		BX360
P	Steel	
M	Stainless	
K	Cast iron	
N	Non-ferrous	
S	Superalloys	
H	Hard materials	●◐

Specification	Shape	Designation	Corner radius	No. of corner	Grooving width ±0.05	BX360
Grooving		XGR6310S-QBN	0.2	1	1.0	
		XGR6315S-QBN	0.2	1	1.5	●
		XGR6320S-QBN	0.2	1	2.0	●
		XGR6325S-QBN	0.2	1	2.5	●
		XGR6330S-QBN	0.2	1	3.0	●
		XGR6335S-QBN	0.2	1	3.5	●
		XGR6340S-QBN	0.2	1	4.0	●
		XGR6345S-QBN	0.2	1	4.5	●

TungCut CBN insert for hardened steels

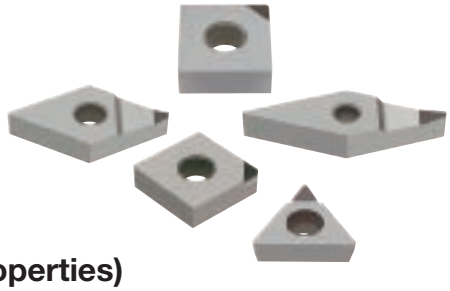
		BX360
P	Steel	
M	Stainless	
K	Cast iron	
N	Non-ferrous	
S	Superalloys	
H	Hard materials	●◐

Specification	Shape	Designation	Corner radius	No. of corner	Grooving width ±0.025	BX360
Grooving		SGN200-020	0.2	1	2.0	●
		SGN300-020	0.2	1	3.0	●
		SGN400-020	0.2	1	4.0	●

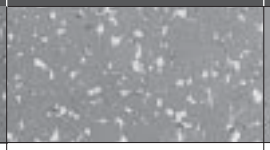
● : Line-up

XGR... : Toolholders → C030
SGN... : Toolholders → C054

Expanded product line allows T-DIA tools to be applied to wider workpiece materials and cutting conditions.



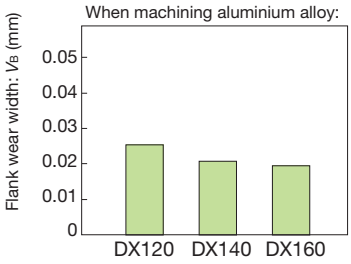
Features and applications (Physical and mechanical properties)

	DX110	DX120	DX140	DX160	DX180
Grade					
Property	Super fine grained grade. Excels in surface finish.	Fine grained grade. Excels in surface finish.	General purpose grade	High purity grade for hard materials	Highly wear resistant grade for special applications
Approx. grain size of diamond (μm)	< 1	5	13	28	45
Hardness (Hv)	8500 →				12000 (Harder)
Wear resistance	→				Higher
Grindability (Cutting edge sharpness)	Better ←				

Note: T-DIA grades are not suitable for ferrous materials (such as hardened steel, chilled Cast iron), and Ni- or Co-base Superalloys.

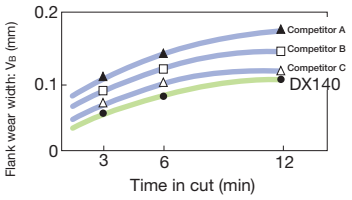
Cutting performance (Wear resistance)

When machining aluminium alloy:



Continuous external turning
- Workpiece material: 10 % Si, aluminium alloy
- Insert: SPGN120308-DIA
- Toolholder: CSBPR2525M4
- Cutting speed: v_c = 500 m/min
- Feed: f = 0.1 mm/rev
- Depth of cut: a_p = 0.5 mm
- Coolant: Dry cutting
- Time in cut: 30 min

When machining FRP:



Face milling
- Workpiece material: Fiber reinforced plastics (FRP)
- Insert: SPCN42ZFR-DIA
- Milling cutter: TPG4208R-A
- Cutting speed: v_c = 942 m/min
- Feed: f = 0.1 mm/rev
- Depth of cut: a_p = 1.5 mm
- Coolant: Dry cutting

Grade selection guide

DX140 Basic selection (General purpose grade)

- For precision machining
- When good surface finish is required.
- When interrupted cutting is involved.

→ **DX120** Excels in cutting-edge sharpness and impact resistance. → **DX110** Super fine grained grade

- When machining hard materials such as high silicon aluminium alloys (Si > 12 %)
- Simultaneous machining of aluminium alloy and Cast iron.
- When high wear resistance is required.

→ **DX160** Superior wear resistance → **DX180** Special purpose grade

- When requiring higher wear resistance than DX160 (such as when machining high silicon materials, cemented carbides, semi-sintered ceramics, etc.)

STANDARD CUTTING CONDITIONS FOR TURNING

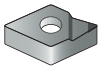
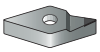
ISO	Workpiece material	Grade applicability DX110	DX120	DX140	DX160	DX180	Cutting speed v_c (m/min)	Depth of cut a_p (mm)	Feed f (mm/rev)
N	Aluminium alloys (Si < 12 %)	○	○	◎			1000 - 2500	0.05 - 2.0	0.05 - 0.2
	Aluminium alloys (Si > 12 %)			○	◎		400 - 800	0.05 - 2.0	0.05 - 0.2
	Copper, brass	○	○	◎			500 - 1500	0.05 - 2.0	0.05 - 0.2
	Phosphor bronze	○	○	◎			300 - 500	0.05 - 2.0	0.05 - 0.2
	Carbon, graphite			◎			300 - 500	0.05 - 2.0	0.05 - 0.2
	FRP	○	◎	○			500 - 1000	0.05 - 0.5	0.03 - 0.1
	Plastics	○	◎	○			500 - 1000	0.05 - 0.5	0.01 - 0.05
	Cemented carbides (D40 ~ D60)				○	◎	10 - 20	0.05 - 0.2	0.01 - 0.05
	Semi-sintered ceramics				○	◎	100 - 150	0.05 - 2.0	0.03 - 0.1

(Note) ◎ : First choice ○ : Second choice

TurnLine - PCD Insert

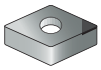
Negative insert (with rake angle)

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Specification	Shape	Designation	Corner radius	No. of corner	PCB Length	DX120
Low cutting force		**CNMM120402-DIA**	0.2	1	3.5	●
		CNMM120404-DIA	0.4	1	3.5	●
Low cutting force		**DNMM150402-DIA**	0.2	1	3.3	●
		DNMM150404-DIA	0.4	1	3.1	●
Low cutting force		**TNMM160402-DIA**	0.2	1	3.3	●
		TNMM160404-DIA	0.4	1	3.2	●
Low cutting force		**VNMM160402-DIA**	0.2	1	4.8	●
		VNMM160404-DIA	0.4	1	4.4	●
		VNMM160408-DIA	0.8	1	3.6	●

Negative insert

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

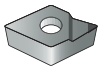
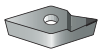
Specification	Shape	Designation	Corner radius	No. of corner	PCB Length	DX140	DX160
General purpose		**CNGA120404-DIA**	0.4	1	3.5	●	
General purpose		**DNGA150404-DIA**	0.4	1	3.1	●	●
		DNGA150408-DIA	0.8	1	2.8	●	
General purpose		**TNGA160404-DIA**	0.4	1	3.2	●	●
		TNGA160408-DIA	0.8	1	2.9	●	●
General purpose		**SNGA120404-DIA**	0.4	1	3.6	●	
		SNGA120408-DIA	0.8	1	3.6	●	
General purpose		**SNGN120408-DIA**	0.8	1	3.6	●	

● : Line-up

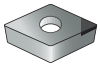
External toolholders → B206 -
J series toolholders → B342 - B344
PINZBOHR® → F136 - F151
Internal toolholders → B292 -
TungCap → B215, F046 -
Cartridges → F152 -

TurnLine - PCD Insert

Positive insert (with rake angle)

							DX120
						P Steel	
						M Stainless	
						K Cast iron	
						N Non-ferrous	●◐
						S Superalloys	
						H Hard materials	
Specification	Shape	Designation	Corner radius	No. of corner	Relief angle	PCB Length	
Low cutting force		CCMT060202-DIA	0.2	1	7°	2.4	●
		CCMT060204-DIA	0.4	1	7°	2.4	●
		CCMT09T302-DIA	0.2	1	7°	3.5	●
		CCMT09T304-DIA	0.4	1	7°	3.5	●
Low cutting force		DCMT070202-DIA	0.2	1	7°	2.3	●
		DCMT070204-DIA	0.4	1	7°	2.1	●
		DCMT11T302-DIA	0.2	1	7°	3.2	●
		DCMT11T304-DIA	0.4	1	7°	3.0	●
Low cutting force		TCMT080202-DIA	0.2	1	7°	2.4	●
		TCMT080204-DIA	0.4	1	7°	2.3	●
		TCMT110202-DIA	0.2	1	7°	2.4	●
		TCMT110204-DIA	0.4	1	7°	2.2	●
		TCMT110302-DIA	0.2	1	7°	2.4	●
		TCMT110304-DIA	0.4	1	7°	2.2	●
Low cutting force		VCMT160402-DIA	0.2	1	7°	4.8	●
		VCMT160404-DIA	0.4	1	7°	4.4	●

Positive insert

							DX120	DX140	DX160
						P Steel			
						M Stainless			
						K Cast iron			
						N Non-ferrous	●◐	●◐	●◐
						S Superalloys			
						H Hard materials			
Specification	Shape	Designation	Corner radius	No. of corner	Relief angle	PCB Length			
General purpose		CCGW060200-DIA	0.05	1	7°	2.4		●	
		CCGW060202-DIA	0.2	1	7°	2.4		●	
		CCGW060204-DIA	0.4	1	7°	2.4		●	
		CCGW09T302-DIA	0.2	1	7°	3.5		●	
		CCGW09T304-DIA	0.4	1	7°	3.5		●	●
		CCGW09T308-DIA	0.8	1	7°	3.4		●	
General purpose		DCGW070200-DIA	0.05	1	7°	2.4		●	
		DCGW070202-DIA	0.2	1	7°	2.3	●	●	
		DCGW070204-DIA	0.4	1	7°	2.1		●	
		DCGW11T302-DIA	0.2	1	7°	3.2		●	
		DCGW11T304-DIA	0.4	1	7°	3.0		●	
		DCGW11T308-DIA	0.8	1	7°	2.7		●	
General purpose		SPGN090308-DIA	0.8	1	11°	3.6		●	
		SPGN120302-DIA	0.2	1	11°	3.6		●	
		SPGN120304-DIA	0.4	1	11°	3.6		●	
		SPGN120308-DIA	0.8	1	11°	3.6		●	●

● : Line-up

External toolholders → B217 -
J series toolholders → B328 -
PINZBOHR® → F136 - F151
Internal toolholders → B278 -
TungCap → F046 -
Cartridges → F152 -

TurnLine - PCD Insert

● : Continuous cutting
ɔ : Light interrupted cutting
✣ : Heavy interrupted cutting

Positive insert

P	Steel
M	Stainless
K	Cast iron
N	Non-ferrous
S	Superalloys
H	Hard materials

Specification	Shape	Designation	Corner radius	No. of corner	Relief angle	PCB Length	DX120	DX140
General purpose		TPGW080202-DIA	0.2	1	11°	2.4		●
		TPGW080204-DIA	0.4	1	11°	2.3		●
		TPGW090202-DIA	0.2	1	11°	2.4	●	●
		TPGW090204-DIA	0.4	1	11°	2.2		●
		TPGW110202-DIA	0.2	1	11°	2.4	●	●
		TPGW110204-DIA	0.4	1	11°	2.2		●
		TPGW130302-DIA	0.2	1	11°	3.3	●	●
		TPGW130304-DIA	0.4	1	11°	3.2		●
		TPGW16T302-DIA	0.2	1	11°	3.3		●
		TPGW16T304-DIA	0.4	1	11°	3.2		●
		TPGW16T308-DIA	0.8	1	11°	2.9		●
General purpose		TPGN090204-DIA	0.4	1	11°	2.2		●
		TPGN110304-DIA	0.4	1	11°	3.2	●	●
		TPGN110308-DIA	0.8	1	11°	2.9		●
		TPGN160302-DIA	0.2	1	11°	3.3		●
		TPGN160304-DIA	0.4	1	11°	3.2	●	●
		TPGN160308-DIA	0.8	1	11°	2.9		●
General purpose		VCGW160402-DIA	0.2	1	7°	4.8		●
		VCGW160404-DIA	0.4	1	7°	4.4		●
General purpose		EPGW040102-DIA	0.2	1	11°	2.0		●
		EPGW040104-DIA	0.4	1	11°	1.9		●
General purpose		CPGA090202-DIA	0.2	1	11°	3.5		●
		CPGA090204-DIA	0.4	1	11°	3.5		●
General purpose		TPGA090202-DIA	0.2	1	11°	2.4		●
		TPGA090204-DIA	0.4	1	11°	2.2		●
		TPGA110202-DIA	0.2	1	11°	2.4		●
		TPGA110204-DIA	0.4	1	11°	2.2		●
		TPGA110302-DIA	0.2	1	11°	2.4		●
		TPGA110304-DIA	0.4	1	11°	2.2		●
		TPGA110308-DIA	0.8	1	11°	2.9		●
		TPGA160302-DIA	0.2	1	11°	3.3		●
		TPGA160304-DIA	0.4	1	11°	3.2		●
		TPGA160308-DIA	0.8	1	11°	2.9		●

● : Line-up

External toolholders → B242 - Internal toolholders → B279 -
Cartridges → F152 - Boring bar tools → F169 - F172

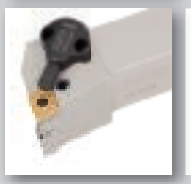
MEMO

TurnLine - External Toolholder



MINIFORCE TURN
Economical double-sided inserts with excellent sharpness

B188



ISOECO TURN
Small-sized “Eco” insert series for maximized profits

B200



TURNINGA
Highly rigid clamping system with excellent repeatability

B206



TUNGTJET TURN
Toolholders for high pressure coolant supply

B214



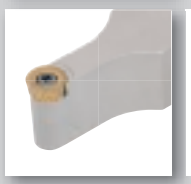
Y-PRO SERIES
Inserts with 25° corner angle for profiling

B219



ISO-Turn External
Toolholders for general external turning
D-type, H-type, M-type, P-type, S-type, T-type

B220



FIXRTURN
Highly productive round insert with 6 indexes

B252



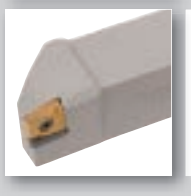
DIMPLEFX
Ceramic insert with dimple for highly efficient cast iron machining

B254



TURNFEED
Tool series for high-feed cutting

B257

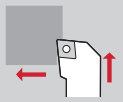
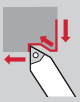
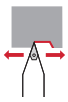
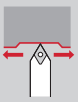
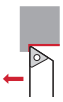


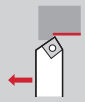
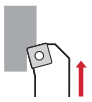
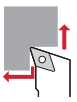
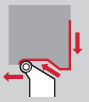
TURNTEC
Inserts and toolholders for roughing large depths of cut with high productivity

B258



External Toolholder - Quick Guide

	Turning Facing	External profiling				Turning		
	L 95° 	**J 93°** 	**N 63°** 	**V 72.5°** 	**P 62.5°** 	**A 91°** 	**G 91°** 	**B·R 75°** 
Turning A Double clamping	**80°** CN□□ ACLNR/L □0904-A □12-A □16-A □19-A **B200, B206** **80°** WN□□ AWLNR/L □06-A □08-A **B200, B206**	**55°** DN□□ ADJNR/L □1104-A □15-A □1506-A **B201, B207** **35°** VN□□ AVJNR/L □16-A **B207** **60°** TN□□ ATJNR/L □16-A **B208** **25°** YNMG AVJNR/L □16-A **B207**		**35°** VN□□ AVVNN □16-A **B208** **25°** YNMG AVVNN □16-A **B208**	**55°** DN□□ ADPNN □15-A **B208**		**60°** TN□□ ATGNR/L □16-A □22-A **B209**	**90°** SN□□ ASBNR/L □12-A □15-A □19-A **B209**
D One-Double	**80°** CN□□ DCLNR/L □12 □16 □19 **B220** **80°** WN□□ DWLNR/L □06 □08 **B221**	**55°** DN□□ DDJNR/L □15 □1506 **B221**					**60°** TN□□ DTGNR/L □16 □22 **B222**	**90°** SN□□ DSBNR/L □12 □15 □19 **B222**
C Double clamping for dimple ceramic insert	**80°** CN□□ CCLNR/L □1207-RD **B254**	**55°** DN□□ CDJNR/L □1507-RD **B254**	**55°** DNGD CDNNN □1507-RD **B255**	**35°** VNGD CVVNN □1607-RD **B255**				
P Lever lock	**80°** CN□□ PCLNR/L □0904 □09 □12 □16 □19 **B200, B201** TungTurn-Jet, **B214** TungTurn-Jet, **B225** **80°** WN□□ PWLNR/L □0604 **B201**	**55°** DN□□ PDJNR/L □11 □1104 □15 □1506 **B202** TungTurn-Jet, **B214** TungTurn-Jet, **B226** **60°** TN□□ PTJNR/L □1104 **B203**			**55°** DN□□ PDPNN □15 □1506 **B227**		**60°** TN□□ PTGNR/L □1104 □16 □22 **B203, B227**	**90°** SN□□ PSBNR/L □09 □12 □19 **B228** **100°** CN□□ PCBNR/L □12 **B228**
M Multi clamping	**80°** CN□□ MCLNR/L □12 **B233** **80°** CN□□ MCLNR/L □12 **B233** **80°** WN□□ MWLNR/L □08 **B233**	**35°** VN□□ MVJNR/L □16 **B233** **25°** YNMG MVJNR/L □16 **B233** **60°** TN□□ MTJNR/L □16 □22 **B234** **55°** DN□□ MDJNR/L □15 **B234** **55°** DN□□ MDJNR/L □15 **B234** **60°** TN□□ MTJNR/L □16 **B234**		**35°** VN□□ MVVNN □16 **B234** **25°** YNMG MVVNN □16 **B234**	**55°** DN□□ MDPNN □15 **B235** **55°** DN□□ MDPNN □15 **B235**			
C Clamp-on		**55°** KNMX CKJNR/L □16 **B240**					**60°** TN□□ CTGNR/L □16 **B240**	**90°** SN□□ CSBNR/L □12 **B240**
H Retract-pin								**90°** SNMM HSRNR/L □31 **B244**
JT Back clamping						**60°** TN□□ JTTANR/L □16 **B343**		

Turning chamfering		Turning/Facing chamfering	Facing			Profiling		External profiling
E 60° 	**D 45°** 	**S 45°** 	**K 75°** 	**F 91°** 	**C 90°** 	**X 100°** 	**Q*1 · H*1 45°** 	**Special** 
	90° SN□□ ASDNN □12-A **B210**	**90°** SN□□ ASSNR/L □12-A □15-A □19-A **B210**	**90°** SN□□ ASKNR/L □12-A **B211**	**60°** TN□□ ATFNR/L □16-A □22-A **B211**			**55°** DN□□ ADQNR/L □1104-A □15-A □1506-A **B204, B212** **35°** VN□□ AVQNR/L □16-A **B213** **60°** TN□□ ATQNR/L □16-A **B212** **25°** YNMG AVQNR/L □16-A **B213**	- RN□□ ARGNR/L □12-A **B213**
	90° SN□□ DSDNN □12 **B222**	**90°** SN□□ DSSNR/L □12 **B223**	**90°** SN□□ DSKNR/L □12 **B223**	**60°** TN□□ DTFNR/L □16 □22 **B223**			**55°** DN□□ DDQNR/L □15 □1506 **B224**	- RN□□ DRGNR/L □12-A **B224**
		90° SNGD CSSNR/L □1207-RD **B255** **90°** HNGD CHSNR/L □0507-RD **B256**						
	90° SN□□ PSDNN □09 □12 **B229**	**90°** SN□□ PSSNR/L □09 □12 □19 **B229**	**90°** SN□□ PSKNR/L □09 □12 □19 **B230**	**60°** TN□□ PTFNR/L □1104 □16 □22 **B204, B230** **80°** CN□□ PCFNR/L □12 **B231**			**55°** DN□□ PDQNR/L □15 **B231**	- RNMG PRGNR/L □09 □12 **B231**
60° TN□□ MTENN □16 **B235**							**35°** VN□□ MVQNR/L □16 **B236** **25°** YNMG MVQNR/L □16 **B236** **60°** TN□□ MTQNR/L □16 **B235**	
	90° SN□□ CSDNN □12 **B241**	**90°** SN□□ CSSNR/L □12 **B241, B255**	**90°** SN□□ CSKNR/L □12 **B241**	**60°** TN□□ CTFNR/L □16 **B242**				

Note:*1 marked Q and H style are Tungaloy Standard.

External Toolholder - Quick Guide

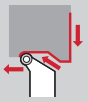
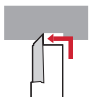
	Turning Facing	External profiling			Turning			Turning Facing	
	L 95°	**J 93°**		**V 72.5°**	**N 62.5°**	**A 91°**	**G 91°**	**B·R 75°**	**X 20°**	
X Double clamping screw-on/clamping									80° WPMT XWXPR/L □09 **B257**	
P Lever lock	80° WXGU JPWL2XR/L □04 **B188**	55° DXGU JPDJ2XR/L □07 **B190**	35° VXGU JPVJ2XR/L □09 **B192**							
C Clamp-on							60° TP□□ CTGPR/L □16 **B242**	90° SP□□ CSBPR/L □09 □12 **B242**		
J Screw-on	80° CC□□ JSCLCR/L □06 □09 **B329** 80° CC□□ JSCL2CR/L*2 □06 □09 **B328** 35° VP□□ JSVL2PR/L □08 □11 **B341** 80° WXGU JSWLXR □04 **B189** JSWL2XR/L □04 **B188, B189** **B216** TungTurn-Jet	55° DC□□ JSDJCR/L □07 □11 **B332, B333** 55° DC□□ JSDJ2CR/L*2 □07 □11 **B217** TungTurn-Jet, **B331, B333** 35° VB□□ JSVJBR/L □11 **B337, B339** 35° VB□□ JSVJ2BR/L □11 **B217** TungTurn-Jet, **B337, B338**	55° DXGU JSDJXR □07 **B191** JSDJ2XR/L □07 **B190, B191** **B216** TungTurn-Jet 35° VXGU JSVJXR □09 **B193** JSVJ2XR/L □09 **B192, B193,** **B216** TungTurn-Jet	33° VB□□ JSVNBN □11 **B340**	55° DC□□ JSDNCN □07 □11 **B334** 55° DC□□ JSDN3CR/L*3 □08 □11 **B334**	80° CC□□ JSCACL □06 □09 **B330** 60° TC□□ JSTACR/L □08 □11 **B336** 35° VB□□ JSVABR/L □11 **B338**	80° CC□□ JSCGCR/L □06 □09 **B331**			
S Screw-on	80° CC□□ SCLCR/L □06 □09 □12 **B245**	55° DC□□ SDJCR/L □11 **B245** 35° VC□□ SVJCR/L □16 **B245** 25° YWMT SYJBR/L □16 **B219**		35° VC□□ SVVCN □16 **B246**	55° DC□□ SDNCN □11 **B246**	60° TC□□ STACR/L □16 **B246**				
JT Back clamping	80° CC□□ JTCL2CR/L □06 □09 **B328**	55° DC□□ JTDJ2CR/L □07 □11 **B332**				60° TC□□ JTTACR/L □08 □11 **B336**				
T Taper-lock										

*2: L2 and J2: without offset *3 63°

Turning Chamfering	Turning / Facing Chamfering	Facing		Profiling			
D 45°	S 45°	F 91°	C 90°	Q*1 45° · H*1 17.5°	H 100°	I 76.5°	P 117.5°
90° □ SP□□ CSDPN □09 □12 B243	90° □ SP□□ CSSPR/L □09 □12 B243	60° △ TP□□ CTFPR/L □16 B243	60° △ TP□□ CTCPR/L □16 B244				
		55° ◇ DC□□ JSDFCR/L □07 □11 B335					35° ◇ VP□□ JSVP2PR/L □08 □11 B341
90° ○ SC□□ SSDCN □07 □09 B249 90° ○ SP□□ SSDPN Tungaloy standard □07 □09 B249				35° ◇ VC□□ SVQCR/L □16 B250 55° ◇ DC□□ SDQCR/L □11 B250 35° ◇ VCG□ SVHCR/L □22 B250 25° ◇ YWMT SYQBR/L □16 B219	25° ◇ YWMT SYHBR/L □16 B220	25° ◇ YWMT SYIBN □16 B220	

Note:*1 marked Q and H style are Tungaloy Standard.

External Toolholder - Quick Guide

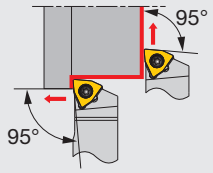
	External profiling	Back turning	Front turning / Revese turning
	Special 		
X Double clamping screw-on/clamping			
P Lever lock	- RCM□ PRGCR/L □10 □12 □16 □20 **B232** - RCM□ PRDCN □10 □12 □16 □20 □25 **B232**		
C Clamp-on			
J Screw-on		JXB JSXBR/L □08 **B346** JTB JSTBR/L □03 **B347** JS□□K-TBL3 □3 **B347** J10E JSEGR/L □10 **B349**	JX□□ JSXGR/L □08 **B362**
S Screw-on	- RCMT SRACR/L □05 □06 □08 **B247** - RCMT SRGCR/L □05 □06 □08 □10 □12 **B248, B252** FixRTurn - RCMT SRDCN □06 □08 □10 **B249, B252** FixRTurn	**Note:** JSXBR/L type is also used for JXT-type threading inserts.	**Note:** JSXGR/L type is also used for JXG-type grooving inserts.
JT Back clamping			
T Taper-lock	- RT□□ TRACN □05 □06 □08 **B251** - RT□□ TRDCN □05 □06 □08 **B251**		

MEMO

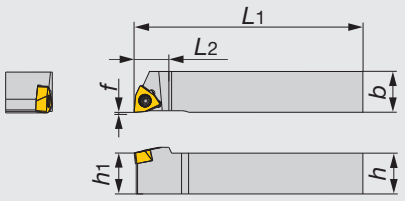
MINIFORCE TURN

JSWL2XR/L

Screw-on toolholder without offset with 95° approaach angle, for WXGU inserts



Cutting edge style **L2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSWL2XR/L1010X04	10	10	120	11	10	0	0.2	WXGU0403**L/R...	0.9
JSWL2XR/L1212F04	12	12	85	11	12	0	0.2	WXGU0403**L/R...	0.9
JSWL2XR/L1212X04	12	12	120	11	12	0	0.2	WXGU0403**L/R...	0.9
JSWL2XR/L1616X04	16	16	120	13	16	0	0.2	WXGU0403**L/R...	0.9
JSWL2XR/L2020H04	20	20	100	13	20	0	0.2	WXGU0403**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

SPARE PARTS

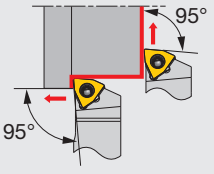



Designation	Clamping screw	Wrench
JSWL2XR/L...	SR34-514	T-7F

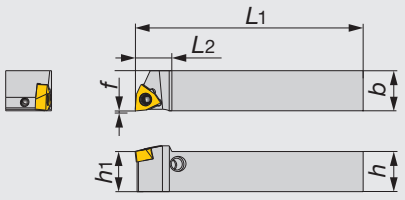
MINIFORCE TURN

JPWL2XR/L

Side clamp toolholder without offset with 95° approach angle, for WXGU inserts



Cutting edge style **L2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JPWL2XR/L1010X04	10	10	120	11	10	0	0.2	WXGU0403**L/R...	0.9
JPWL2XR/L1212F04	12	12	85	11	12	0	0.2	WXGU0403**L/R...	0.9
JPWL2XR/L1212X04	12	12	120	11	12	0	0.2	WXGU0403**L/R...	0.9
JPWL2XR/L1616X04	16	16	120	13	16	0	0.2	WXGU0403**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

SPARE PARTS



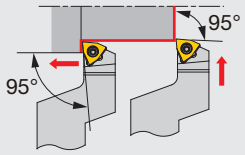



Designation	Lever	Pin	Clamping screw	Wrench
JPWL2XR/L...	SLLV-2	SL-PI-2	SR10400611	HW2.0/5RED

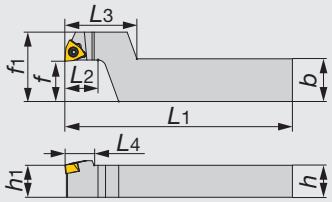
JSWL2XR/L, JPWL2XR/L: Inserts → **B195 -**, Standard cutting conditions → **B198**

JSWLXR-F

Screw-on stepped-head toolholder with 95° approach angle, for WXGU inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*L*3	*L*4	*h*1	*f*	*f*1	*r*ε**	Insert	Torque*
JSWLXR1016X04-F15	10	16	120	12	27	11	10	15	26	0.2	WXGU0403**L...	0.9
JSWLXR1216F04-F15	12	16	85	12	27	11	12	15	26	0.2	WXGU0403**L...	0.9
JSWLXR1216X04-F15	12	16	120	12	27	11	12	15	26	0.2	WXGU0403**L...	0.9
JSWLXR1620X04-F15	16	20	120	12	27	11	16	15	26	0.2	WXGU0403**L...	0.9

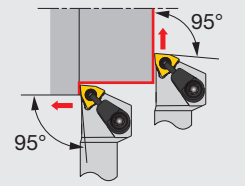
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L).

SPARE PARTS

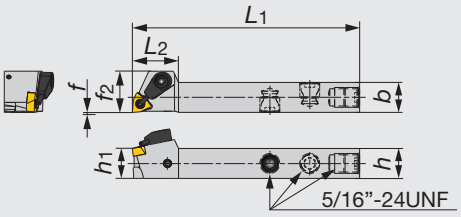
Designation	Clamping screw	Wrench
JSWLXR**-F15	SR34-514	T-7F

JSWL2XR/L-CHP

Screw-on toolholder without offset with 95° approach angle, for WXGU inserts,with channels for high pressure coolant



Cutting edge style **L2**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSWL2XR/L1212F04-CHP	12	12	85	18	12	0	16.5	0.2	WXGU0403**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

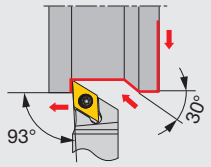
SPARE PARTS

Designation	Clamping screw	Coolant unit	Wrench
JSWL2XR/L1212F04-CHP	SR34-514	S-CU-CHP	T-7F

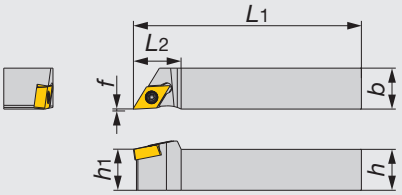
JSWLXR-F, JSWL2XR/L-CHP: Inserts → **B195**, Standard cutting conditions → **B198**

MINIFORCE TURN
JSDJ2XR/L

Screw-on toolholder without offset with 93° approach angle, for DXGU inserts



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSDJ2XR/L1010X07	10	10	120	14	10	0	0.2	DXGU0703**L/R...	0.9
JSDJ2XR/L1212F07	12	12	85	14	12	0	0.2	DXGU0703**L/R...	0.9
JSDJ2XR/L1212X07	12	12	120	14	12	0	0.2	DXGU0703**L/R...	0.9
JSDJ2XR/L1616X07	16	16	120	18	16	0	0.2	DXGU0703**L/R...	0.9
JSDJ2XR/L2020H07	20	20	100	18	20	0	0.2	DXGU0703**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

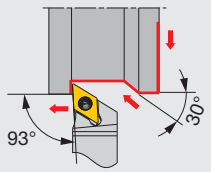
SPARE PARTS



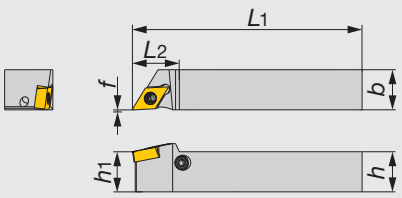

Designation	Clamping screw	Wrench
JSDJ2XR/L...	SR34-514	T-7F

MINIFORCE TURN
JPDJ2XR/L

Side clamp toolholder without offset with 93° approach angle, for DXGU inserts



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JPDJ2XR/L1010X07	10	10	120	14	10	0	0.2	DXGU0703**L/R...	0.9
JPDJ2XR/L1212F07	12	12	85	14	12	0	0.2	DXGU0703**L/R...	0.9
JPDJ2XR/L1212X07	12	12	120	14	12	0	0.2	DXGU0703**L/R...	0.9
JPDJ2XR/L1616X07	16	16	120	18	16	0	0.2	DXGU0703**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

SPARE PARTS



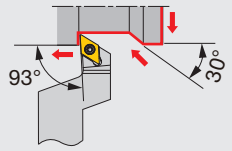



Designation	Lever	Pin	Clamping screw	Wrench
JPDJ2XR/L...	SLLV-2	SL-PI-2	SR10400611	HW2.0/5RED

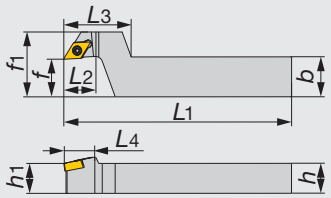
JSDJ2XR/L, JPDJ2XR/L: Inserts → **B196 -**, Standard cutting conditions → **B198**

MINIFORCE TURN
JSDJXR-F

Screw-on stepped-head toolholder with 93° approach angle, for DXGU inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*L*3	*L*4	*h*1	*f*	*f*1	*r*ε**	Insert	Torque*
JSDJXR1016X07-F15	10	16	120	12	27	14	10	15	26	0.2	DXGU0703**L...	0.9
JSDJXR1216F07-F15	12	16	85	12	27	14	12	15	26	0.2	DXGU0703**L...	0.9
JSDJXR1216X07-F15	12	16	120	12	27	14	12	15	26	0.2	DXGU0703**L...	0.9
JSDJXR1620X07-F15	16	20	120	12	27	14	16	15	26	0.2	DXGU0703**L...	0.9

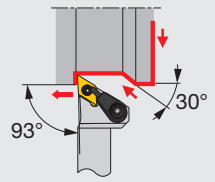
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L).

SPARE PARTS

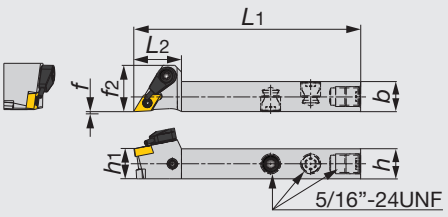
Designation	Clamping screw	Wrench
JSDJXR**-F15	SR34-514	T-7F

MINIFORCE TURN
JSDJ2XR/L-CHP

Screw-on toolholder without offset with 93° approach angle, for DXGU inserts, with channels for high pressure coolant



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSDJ2XR/L1212F07-CHP	12	12	85	19	12	0	18.5	0.2	DXGU0703**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

SPARE PARTS

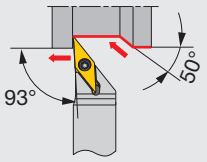
Designation	Clamping screw	Coolant unit	Wrench
JSDJ2XR/L1212F07-CHP	SR34-514	S-CU-CHP	T-7F

JSDJXR-F, JSDJ2XR/L-CHP: Inserts → **B196 -**, Standard cutting conditions → **B198**

MINIFORCE TURN

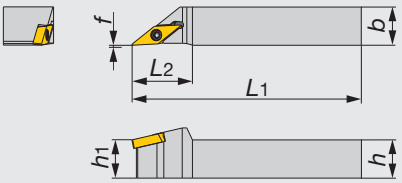
JSVJ2XR/L

Screw-on toolholder without offset with 93° approach angle, for VXGU inserts



Cutting edge style **J2**

Without offset



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert	Torque*
JSVJ2XR/L1010X09	10	10	120	17	10	0	0.2	VXGU09T2**L/R...	0.9
JSVJ2XR/L1212F09	12	12	85	19	12	0	0.2	VXGU09T2**L/R...	0.9
JSVJ2XR/L1212X09	12	12	120	19	12	0	0.2	VXGU09T2**L/R...	0.9
JSVJ2XR/L1616X09	16	16	120	19	16	0	0.2	VXGU09T2**L/R...	0.9
JSVJ2XR/L2020H09	20	20	100	19	20	0	0.2	VXGU09T2**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

SPARE PARTS

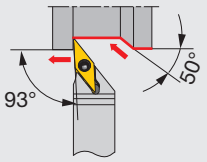



Designation	Clamping screw	Wrench
JSVJ2XR/L...	SR34-508	T-7F

MINIFORCE TURN

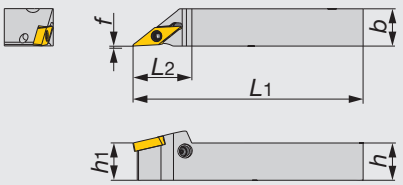
JPVJ2XR/L

Side clamp toolholder without offset with 93° approach angle, for VXGU inserts



Cutting edge style **J2**

Without offset



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert	Torque*
JPVJ2XR/L1010X09	10	10	120	19	10	0	0.2	VXGU09T2**L/R...	0.9
JPVJ2XR/L1212F09	12	12	85	19	12	0	0.2	VXGU09T2**L/R...	0.9
JPVJ2XR/L1212X09	12	12	120	19	12	0	0.2	VXGU09T2**L/R...	0.9
JPVJ2XR/L1616X09	16	16	120	19	16	0	0.2	VXGU09T2**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

SPARE PARTS



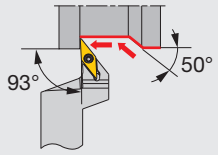



Designation	Lever	Pin	Clamping screw	Wrench
JPVJ2XR/L...	SLLV-1	SL-PI-2	SR10400611	HW2.0/5RED

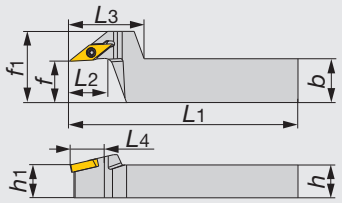
JSVJ2XR/L, JPVJ2XR/L: Inserts → **B197**, Standard cutting conditions → **B198**

JSVJXR-F

Screw-on stepped-head toolholder with 93° approach angle, for VXGU inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*L*3	*L*4	*h*1	*f*	*f*1	*r*ε**	Insert	Torque*
JSVJXR1016X09-F15	10	16	120	12	27	19	10	15	26	0.2	VXGU09T2**L...	0.9
JSVJXR1216F09-F15	12	16	85	12	27	19	12	15	26	0.2	VXGU09T2**L...	0.9
JSVJXR1216X09-F15	12	16	120	12	27	19	12	15	26	0.2	VXGU09T2**L...	0.9
JSVJXR1620X09-F15	16	20	120	12	27	19	16	15	26	0.2	VXGU09T2**L...	0.9

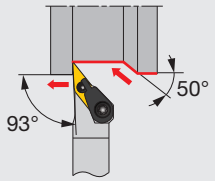
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L).

SPARE PARTS

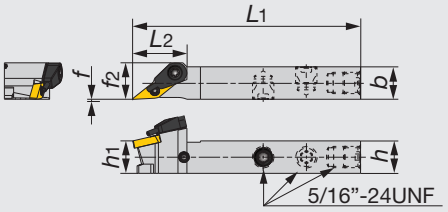
Designation	Clamping screw	Wrench
JSVJXR**-F15	SR34-508	T-7F

JSVJ2XR/L-CHP

Screw-on toolholder without offset with 93° approach angle, for VXGU inserts, with coolant nozle for high pressure



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSVJ2XR/L1212F09-CHP	12	12	85	17.5	12	0	13.5	0.2	VXGU09T2**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

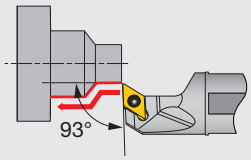
SPARE PARTS

Designation	Clamping screw	Coolant unit	Wrench
JSVJ2XR/L1212F09-CHP	SR34-508	S-CU-CHP	T-7F

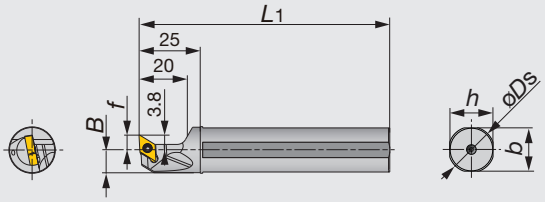
JSVJXR-F, JSVJ2XR/L-CHP: Inserts → **B197**, Standard cutting conditions → **B198**

MINIFORCE TURN
JS-SDUXL

Screw-on toolholder with 93° approach angle, for 55° rhombic insert with 4 edges



Cutting edge style **U**



Left hand (L) shown.

Designation	øDs	f	L1	h	b	B	rε**	Insert	Torque*
JS14H-SDUXL07	14	6	100	13	6.75	6.75	0.2	DXGU0703**L...	0.9
JS159F-SDUXL07	15.875	6	85	15	7.687	7.687	0.2	DXGU0703**L...	0.9
JS16F-SDUXL07	16	6	85	15	7.75	7.75	0.2	DXGU0703**L...	0.9
JS19G-SDUXL07	19.05	6	90	18	9.275	9.275	0.2	DXGU0703**L...	0.9
JS19X-SDUXL07	19.05	6	120	18	9.275	9.275	0.2	DXGU0703**L...	0.9
JS20G-SDUXL07	20	6	90	19	9.75	9.75	0.2	DXGU0703**L...	0.9
JS20X-SDUXL07	20	6	120	19	9.75	9.75	0.2	DXGU0703**L...	0.9
JS22X-SDUXL07	22	10	120	21	10.75	10.75	0.2	DXGU0703**L...	0.9
JS25H-SDUXL07	25	10	100	24	12.25	12.25	0.2	DXGU0703**L...	0.9
JS254X-SDUXL07	25.4	10	120	24	12.45	12.45	0.2	DXGU0703**L...	0.9

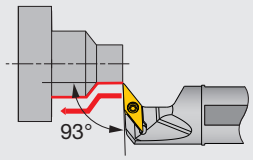
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: Left-hand toolholders (L) are used with left-hand inserts (L).

SPARE PARTS

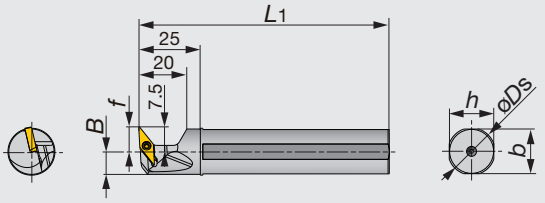
Designation	Clamping screw	Wrench
JS**-SDUXL07	SR34-514	T-7F

MINIFORCE TURN
JS-SVUXL

Screw-on toolholder with 93° approach angle, for VXGU inserts with 4 edges



Cutting edge style **U**



Left hand (L) shown.

Designation	øDs	f	L1	h	b	B	rε**	Insert	Torque*
JS159F-SVUXL09	15.875	10	85	15	7.7	7.7	0.2	VXGU09T2**L...	0.9
JS16F-SVUXL09	16	10	85	15	7.7	7.7	0.2	VXGU09T2**L...	0.9
JS19G-SVUXL09	19.05	10	90	18	9.2	9.2	0.2	VXGU09T2**L...	0.9
JS19X-SVUXL09	19.05	10	120	18	9.2	9.2	0.2	VXGU09T2**L...	0.9
JS20G-SVUXL09	20	10	90	19	9.7	9.7	0.2	VXGU09T2**L...	0.9
JS20X-SVUXL09	20	10	120	19	9.7	9.7	0.2	VXGU09T2**L...	0.9
JS22X-SVUXL09	22	10	120	21	10.7	10.7	0.2	VXGU09T2**L...	0.9
JS25H-SVUXL09	25	10	100	24	12.2	12.2	0.2	VXGU09T2**L...	0.9
JS254X-SVUXL09	25.4	10	120	24	12.4	12.4	0.2	VXGU09T2**L...	0.9

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: Left-hand toolholders (L) are used with left-hand inserts (L).

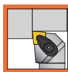
SPARE PARTS

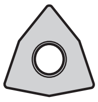
Designation	Clamping screw	Wrench
JS**-SVUXL09	SR34-508	T-7F

JS-SDUXL: Inserts → **B196 -**, Standard cutting conditions → **B198**

JS-SVUXL: Inserts → **B197**, Standard cutting conditions → **B198**

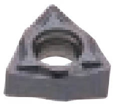
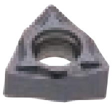
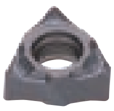
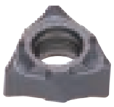
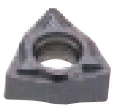
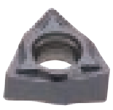
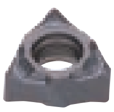
● : Continuous cutting
◐ : Light interrupted cutting
✤ : Heavy interrupted cutting





Trigon, 80° with hole

	Material	AH725	SH725	GT9530	NS9530	KS05F
P	Steel	◐	●◐	●◐	●◐	
M	Stainless	◐	●◐			
K	Cast iron	◐		●◐	●◐	●
N	Non-ferrous					●
S	Superalloys	●				●
H	Hard materials					

Application	Chipbreaker	Designation	Corner radius	Coating: AH725	Coating: SH725	Coated cermet: GT9530	Cermet: NS9530	Uncoated: KS05F
Finishing to medium cutting(Sharp edge)	JTS	WXGU040301MFR-JTS	<0.1*		●			
		WXGU040301MFL-JTS	<0.1*		●			
		WXGU040302MFR-JTS	<0.2*		●			
		WXGU040302MFL-JTS	<0.2*		●			
Finishing to medium cutting	JTS	WXGU040301MR-JTS	<0.1*	●				
		WXGU040301ML-JTS	<0.1*	●				
		WXGU040302MR-JTS	<0.2*	●				
		WXGU040302ML-JTS	<0.2*	●				
Finishing (Low cutting force) (Sharp edge)	JSS	WXGU040301MFR-JSS	<0.1*		●			
		WXGU040301MFL-JSS	<0.1*		●			
		WXGU040302MFR-JSS	<0.2*		●			
		WXGU040302MFL-JSS	<0.2*		●			
Finishing (Low cutting force)	JSS	WXGU040301MR-JSS	<0.1*	●				
		WXGU040301ML-JSS	<0.1*	●				
		WXGU040302MR-JSS	<0.2*	●				
		WXGU040302ML-JSS	<0.2*	●				
Finishing to medium cutting	TS	WXGU040302R-TS	0.2	●		●	●	●
		WXGU040302L-TS	0.2	●		●	●	●
		WXGU040304R-TS	0.4	●		●	●	●
		WXGU040304L-TS	0.4	●		●	●	●
		WXGU040308R-TS	0.8	●		●	●	●
		WXGU040308L-TS	0.8	●		●	●	●
Finishing (Wiper)	TSW	WXGU040304R-TSW	0.4	●		●	●	
		WXGU040304L-TSW	0.4	●		●	●	
		WXGU040308R-TSW	0.8	●		●	●	
		WXGU040308L-TSW	0.8	●		●	●	
Finishing (Low cutting force)	SS	WXGU040302R-SS	0.2	●		●	●	●
		WXGU040302L-SS	0.2	●		●	●	●
		WXGU040304R-SS	0.4	●		●	●	●
		WXGU040304L-SS	0.4	●		●	●	●

* Corner radius has minus tolerance

● : Line-up

● : Continuous cutting
ɔ : Light interrupted cutting
✻ : Heavy interrupted cutting

INSERT



Rhombic, 55° with hole

P	Steel	ɔ ●ɔ
M	Stainless	ɔ ●ɔ
K	Cast iron	ɔ
N	Non-ferrous	
S	Superalloys	●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating: AH725	Coating: SH725
Finishing (sharp edge)	JRP 	DXGU070301MFRE-JRP	<0.1*		●
		DXGU070301MFLE-JRP	<0.1*		●
		DXGU070302MFRE-JRP	<0.2*		●
		DXGU070302MFLE-JRP	<0.2*		●
Finishing to medium cutting(sharp edge)	JTS 	DXGU070301MFR-JTS	<0.1*		●
		DXGU070301MFL-JTS	<0.1*		●
		DXGU070302MFR-JTS	<0.2*		●
		DXGU070302MFL-JTS	<0.2*		●
Finishing to medium cutting	JTS 	DXGU070301MR-JTS	<0.1*	●	
		DXGU070301ML-JTS	<0.1*	●	
		DXGU070302MR-JTS	<0.2*	●	
		DXGU070302ML-JTS	<0.2*	●	
Finishing (Low cutting force) (sharp edge)	JSS 	DXGU070301MFR-JSS	<0.1*		●
		DXGU070301MFL-JSS	<0.1*		●
		DXGU070302MFR-JSS	<0.2*		●
		DXGU070302MFL-JSS	<0.2*		●

* Corner radius has minus tolerance

● : Line-up

● : Continuous cutting
ɔ : Light interrupted cutting
❄ : Heavy interrupted cutting

Rhombic, 55° with hole

P	Steel	ɔ ●ɔ ●ɔ
M	Stainless	ɔ
K	Cast iron	ɔ ●ɔ ●ɔ ●
N	Non-ferrous	●
S	Superalloys	● ●
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating: AH725	Coated cermet: GT9530	Cermet: NS9530	Uncoated: KS05F
Finishing (Low cutting force)	JSS	DXGU070301MR-JSS	<0.1*	●			
		DXGU070301ML-JSS	<0.1*	●			
		DXGU070302MR-JSS	<0.2*	●			
		DXGU070302ML-JSS	<0.2*	●			
Finishing to medium cutting	TS	DXGU070302R-TS	0.2	●	●	●	●
		DXGU070302L-TS	0.2	●	●	●	●
		DXGU070304R-TS	0.4	●	●	●	●
		DXGU070304L-TS	0.4	●	●	●	●
		DXGU070308R-TS	0.8	●	●	●	●
		DXGU070308L-TS	0.8	●	●	●	●
Finishing (Low cutting force)	SS	DXGU070302R-SS	0.2	●	●	●	●
		DXGU070302L-SS	0.2	●	●	●	●
		DXGU070304R-SS	0.4	●	●	●	●
		DXGU070304L-SS	0.4	●	●	●	●

Rhombic, 35° with hole

P	Steel	●ɔ
M	Stainless	●ɔ
K	Cast iron	
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	Coating: SH725
Finishing (sharp edge)	JRP	VXGU09T201MFRE-JRP	<0.1*	●
		VXGU09T201MFLE-JRP	<0.1*	●
		VXGU09T202MFRE-JRP	<0.2*	●
		VXGU09T202MFLE-JRP	<0.2*	●

* Corner radius has minus tolerance

● : Line-up

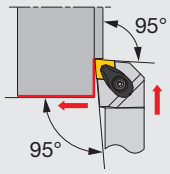
STANDARD CUTTING CONDITIONS
FOR EXTERNAL TURNING

Applications	ISO	Workpiece material	Priority	Chip-breaker	Grade	Cutting speed *Vc* (m/min)	Depth of cut *ap* (mm)	Feed *f* (mm/rev)
For swiss type automatic lathes	P	Low carbon steel E275A, etc. Carbon steel C45, etc. Low alloy steel 18CrMo4, etc. Alloy steel 42CrMo4, etc.	With high sharpness	JSS	SH725	50 - 180	0.1 - 1.5	0.03 - 0.1
			First choice	JTS	AH725	50 - 180	0.1 - 2	0.03 - 0.1
	M	Stainless steel (Austenitic) X5CrNi18-9, etc. Stainless steel (Martensitic and ferritic) X6Cr17, etc. Stainless steel (Precipitation hardened) X5CrNiCuNb16-4, etc.	First choice	JSS	SH725	50 - 180	0.1 - 1.5	0.03 - 0.1
			For impact resistance	JTS	AH725	50 - 180	0.1 - 2	0.03 - 0.1
For small size CNC lathes	P	Low carbon steel E275A, etc. Carbon steel C45, etc. Low alloy steel 18CrMo4, etc. Alloy steel 42CrMo4, etc.	First choice	SS	AH725	50 - 180	0.15 - 1.5	0.05 - 0.2
				TS	AH725	50 - 180	0.3 - 2	0.08 - 0.3
			For improved surface finish	SS	NS9530	80 - 200	0.15 - 1.5	0.05 - 0.2
				TS	NS9530	80 - 200	0.3 - 2	0.08 - 0.3
			For wear resistance	SS	GT9530	80 - 250	0.15 - 1.5	0.05 - 0.2
				TS	GT9530	80 - 250	0.3 - 2	0.08 - 0.3
	M	Stainless steel (Austenitic) X5CrNi18-9, etc. Stainless steel (Martensitic and ferritic) X6Cr17, etc. Stainless steel (Precipitation hardened) X5CrNiCuNb16-4, etc.	First choice	SS	AH725	50 - 150	0.15 - 1.5	0.05 - 0.2
			For impact resistance	TS	AH725	50 - 150	0.3 - 2	0.08 - 0.3

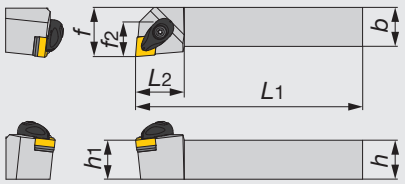
MEMO

ISOETURN ACLNR/L-Eco

Double-clamp toolholder with 95° approach angle, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ACLNR/L2020K0904-A	20	20	125	25	20	25	18	0.8	CN**0904...	3
ACLNR/L2525M0904-A	25	25	150	25	25	32	18	0.8	CN**0904...	3

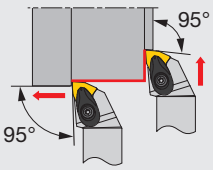
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

SPARE PARTS

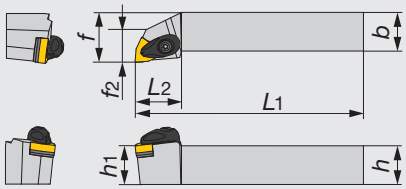
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ACLNR/L**0904-A	ACP3S-E	ACS-5W	BP-7	SP-2.5	ASC322	CSTB-3.5	T-15F

ISOETURN AWLNR/L-Eco

Double-clamp toolholder with 95° approach angle, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
AWLNR/L2020K0604-A	20	20	125	27	20	25	16	0.8	WN**0604...	3
AWLNR/L2525M0604-A	25	25	150	27	25	32	23	0.8	WN**0604...	3

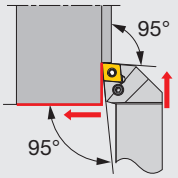
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

SPARE PARTS

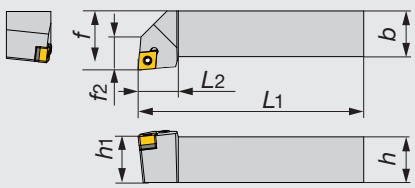
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
AWLNR/L**0604-A	ACP3S-E	ACS-5W	BP-7	SP-2.5	ASW322	CSTB-3.5	T-15F

ISOETURN PCLNR/L-Eco

Lever lock type toolholder with 95° approach angle, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
PCLNR/L2020K0904	20	20	125	20	20	25	15	0.8	CN**0904...	2
PCLNR/L2525M0904	25	25	150	25	25	32	18	0.8	CN**0904...	2

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

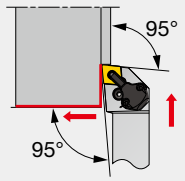
SPARE PARTS

Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PCLNR/L**0904	LSC317	LCS3	P-2.5	LSP3	LCL33

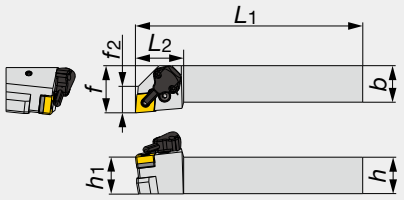
ACLNR/L-Eco, PCLNR/L-Eco: Inserts → **B050 -**, AWLNR/L-Eco: Inserts → **B090 -**

PCLNR/L-CHP-Eco

Lever lock type toolholder with 95° approach angle, for negative 80° rhombic inserts with channels for high pressure coolant



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
PCLNR/L2525M0904-CHP	25	25	150	33	25	32	18	0.8	CN**0904...	2

*Torque: Recommended torque (N·m) for clamping **r*ε*: Standard corner radius

SPARE PARTS

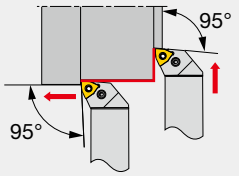
Designation	Shim	Clamping screw	Wrench 1	Spring pin	Lever
PCLNR/L2525M0904-CHP	LSC317	LCS3	P-2.5	LSP3	LCL33

SPARE PARTS

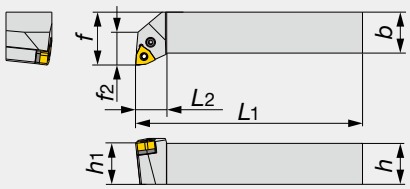
Designation	Coolant unit	Mounting screw	Wrench 2	O-ring	Coolant screw	Wrench 3
PCLNR/L2525M0904-CHP	CU-CW-CHP	SRM3	T-8F	OR6.4X0.9N	SRM4X4TL360	P-2

PWLNR/L-Eco

Lever lock type toolholder with 95° approach angle, for negative 80° trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
PWLNR/L2020K0604	20	20	125	15	20	25	18	0.8	WN**0604...	2
PWLNR/L2525M0604	25	25	150	19	25	32	20	0.8	WN**0604...	2

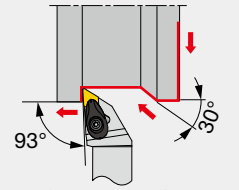
*Torque: Recommended torque (N·m) for clamping **r*ε*: Standard corner radius

SPARE PARTS

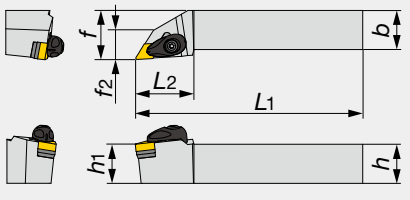
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PWLNR/L**0604	LSW312	LCS3	P-2.5	LSP3	LCL3

ADJNR/L-Eco

Double-clamp toolholder with 93° approach angle, for negative 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ADJNR/L2020K1104-A	20	20	125	30	20	25	16	0.8	DN**1104...	3
ADJNR/L2525M1104-A	25	25	150	30	25	32	19	0.8	DN**1104...	3

*Torque: Recommended torque (N·m) for clamping **r*ε*: Standard corner radius

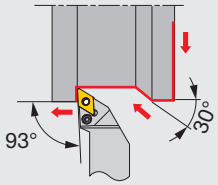
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ADJNR/L**1104-A	ACP3S-E	ACS-5W	BP-7	SP-2.5	ASD322	CSTB-3.5	T-15F

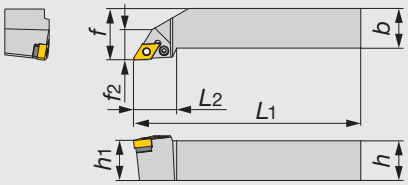
PCLNR/L-CHP-Eco: Inserts → **B050 -**, PWLNR/L-Eco: Inserts → **B090 -**, ADJNR/L-Eco: Inserts → **B061 -**

ISOETURN
PDJNR/L-Eco

Lever lock type toolholder with 93° approach angle, for negative 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
PDJNR/L1616H1104	16	16	100	27	16	20	16	0.8	DN**1104...	2
PDJNR/L2020K1104	20	20	125	27	20	25	16	0.8	DN**1104...	2
PDJNR/L2525M1104	25	25	150	27	25	32	19	0.8	DN**1104...	2

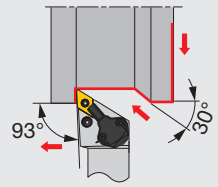
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

SPARE PARTS

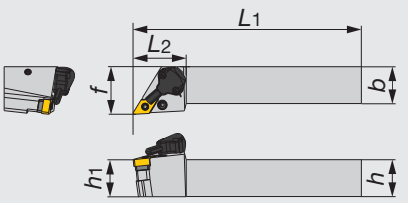
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PDJNR/L**1104	ELSD32	LCS3	P-2.5	LSP3	LCL33L

ISOETURN
PDJNR/L-CHP-Eco

Lever lock type toolholder with 93° approach angle, for negative 55° rhombic inserts, with channels for high pressure coolant



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
PDJNR/L2525M1104-CHP	25	25	150	36	25	32	0.8	DN**1104...	2

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

SPARE PARTS

Designation	Shim	Clamping screw	Wrench 1	Spring pin	Lever
PDJNR/L2525M1104-CHP	ELSD32	LCS3	P-2.5	LSP3	LCL33L

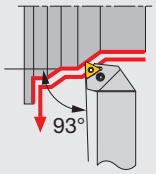
SPARE PARTS

Designation	Coolant unit	Mounting screw	Wrench 2	O-ring	Coolant screw	Wrench 3
PDJNR/L2525M1104-CHP	CU-D-CHP	SRM3	T-8F	OR6.4X0.9N	SRM4X4TL360	P-2

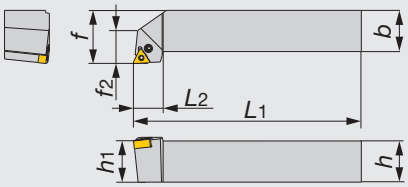
PDJNR/L-Eco, PDJNR/L-CHP-Eco: Inserts → **B061 -**

PTJNR/L-Eco

Lever lock type toolholder with 93° approach angle, for negative triangle inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	f_2	r_ε**	Insert	Torque*
PTJNR/L2525M1104	25	25	150	18	25	32	20	0.8	TN**1104...	2

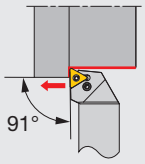
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

SPARE PARTS

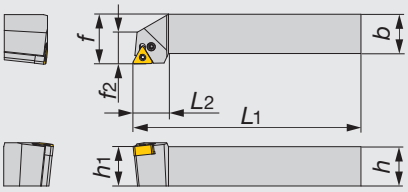
Designation	Clamping screw	Wrench	Lever
PTJNR/L2525M1104	LCS23A	P-2.5	LCL23

PTGNR/L-Eco

Lever lock type toolholder with 91° approach angle, for negative triangle inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	f_2	r_ε**	Insert	Torque*
PTGNR/L2020K1104	20	20	125	20	20	25	15	0.8	TN**1104...	2
PTGNR/L2525M1104	25	25	150	20	25	32	22.5	0.8	TN**1104...	2

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

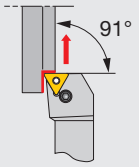
SPARE PARTS

Designation	Clamping screw	Wrench	Lever
PTGNR/L**1104	LCS23A	P-2.5	LCL23

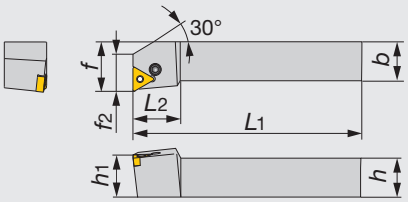
PTJNR/L-Eco, PTGNR/L-Eco: Inserts → **B080 -**

ISOETURN
PTFNR/L-Eco

Lever lock type toolholder for facing with 91° approach angle, for negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
PTFNR/L2020K1104	20	20	125	16	20	25	16	0.8	TN**1104...	2
PTFNR/L2525M1104	25	25	150	22	25	32	20	0.8	TN**1104...	2

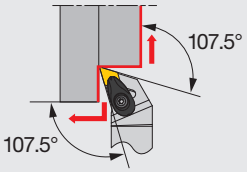
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

SPARE PARTS

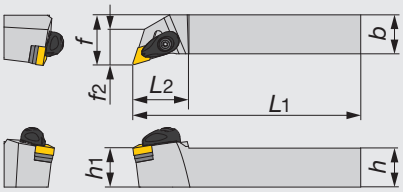
Designation	Clamping screw	Wrench	Lever
PTFNR/L**1104	LCS23A	P-2.5	LCL23

ISOETURN
ADQNR/L-Eco

Double-clamp toolholder with 107.5° approach angle, for negative 55° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ADQNR/L2020K1104-A	20	20	125	30	20	25	18	0.8	DN**1104...	3
ADQNR/L2525M1104-A	25	25	150	30	25	32	20	0.8	DN**1104...	3

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ADQNR/L**1104-A	ACP3S-E	ACS-5W	BP-7	SP-2.5	ASD322	CSTB-3.5	T-15F

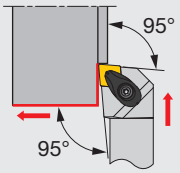
PTFNR/L-Eco: Inserts → **B080 -**

ADQNR/L-Eco: Inserts → **B061 -**

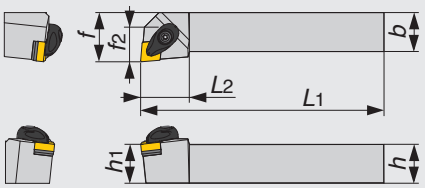
MEMO

ACLNR/L

Double-clamp toolholder with 95° approach angle, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	f2	rε**	Insert	Torque*
ACLNR/L2020K12-A	20	20	125	26	20	25	19	0.8	CN**1204...	3
ACLNR/L2525M12-A	25	25	150	30	25	32	21	0.8	CN**1204...	3
ACLNR/L3225P12-A	32	25	170	30	32	32	21	0.8	CN**1204...	3
ACLNR/L2525M16-A	25	25	150	31	25	32	22	1.2	CN**1606...	6.4
ACLNR/L3225P16-A	32	25	170	31	32	32	22	1.2	CN**1606...	6.4
ACLNR/L3232P16-A	32	32	170	31	32	40	22	1.2	CN**1606...	6.4
ACLNR/L3232P19-A	32	32	170	40	32	40	25	1.2	CN**1906...	6.4
ACLNR/L4040S19-A	40	40	250	40	40	50	25	1.2	CN**1906...	6.4

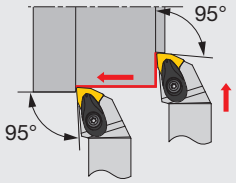
*Torque: Recommended torque (N·m) for clamping
**rε: Standard corner radius

SPARE PARTS

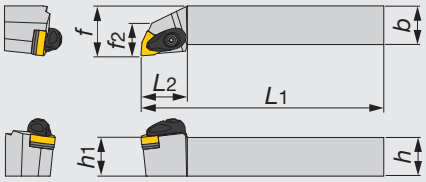
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench 1	Wrench 2
ACLNR/L**12-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASC422	CSTB-3.5	T-15F	-
ACLNR/L**16-A	ACP5S	ACS-6W	BP-8.8	SP-2.5	ASC533	CSTB-5	-	KEYV-T20
ACLNR/L**19-A	ACP6S	ACS-6W	BP-8.8	SP-2.5	ASC634	CSTB-5	-	KEYV-T20

AWLNR/L

Double-clamp toolholder with 95° approach angle, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	f2	rε**	Insert	Torque*
AWLNR/L2020K06-A	20	20	125	27	20	25	16	0.8	WN**0604...	3
AWLNR/L2020K08-A	20	20	125	30	20	25	19	0.8	WN**0804...	3
AWLNR/L2525M06-A	25	25	150	27	25	32	23	0.8	WN**0604...	3
AWLNR/L2525M08-A	25	25	150	30	25	32	21	0.8	WN**0804...	3
AWLNR/L3225P08-A	32	25	170	30	32	32	21	0.8	WN**0804...	3

*Torque: Recommended torque (N·m) for clamping
**rε: Standard corner radius

SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
AWLNR/L**06-A	ACP3S	ACS-5W	BP-7	SP-2.5	ASW322	CSTB-3.5	T-15F
AWLNR/L**08-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASW422	CSTB-3.5	T-15F

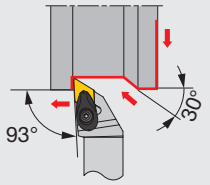
ACLNR/L: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176**

AWLNR/L: Inserts → **B090 -**, CBN → **B165**

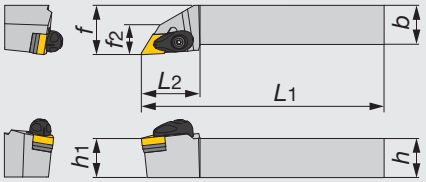
TURNING

ADJNR/L

Double-clamp toolholder with 93° approach angle, for negative 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ADJNR/L2020K15-A	20	20	125	36	20	25	17	0.8	DN**1504...	3
ADJNR/L2020K1506-A	20	20	125	36	20	25	17	0.8	DN**1506...	3
ADJNR/L2525M15-A	25	25	150	36	25	32	18	0.8	DN**1504...	3
ADJNR/L2525M1506-A	25	25	150	36	25	32	18	0.8	DN**1506...	3
ADJNR/L3225P15-A	32	25	170	36	32	32	18	0.8	DN**1504...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

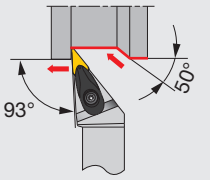
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ADJNR/L**15-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASD432	CSTB-3.5	T-15F
ADJNR/L**1506-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASD423	CSTB-3.5	T-15F

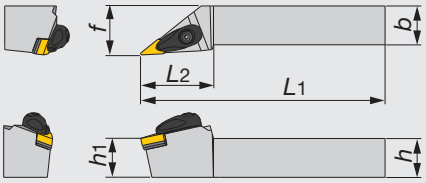
TURNING

AVJNR/L

Double-clamp toolholder with 93° approach angle, for negative 35° and 25° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
AVJNR/L2020K16-A	20	20	125	43	20	25	0.8	V/YN**1604...	3
AVJNR/L2525M16-A	25	25	150	46	25	32	0.8	V/YN**1604...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
AVJNR/L**16-A	ACP3L	ACS-5W	BP-7	SP-2.5	ASV322	CSTB-3.5	T-15F

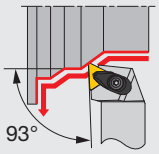
ADJNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

AVJNR/L: Inserts → **B097 -**, CBN → **B165 -**, PCD → **B176**

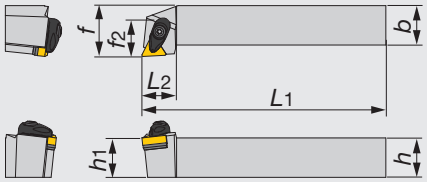
TURNING A

ATJNR/L

Double-clamp toolholder with 93° approach angle, for negative triangle inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ATJNR/L2020K16-A	20	20	125	22	20	25	23	0.8	TN**1604...	3
ATJNR/L2525M16-A	25	25	150	22	25	32	25	0.8	TN**1604...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

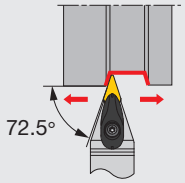
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ATJNR/L**16-A	ACP3S	ACS-5W	BP-7	SP-2.5	AST322	CSTB-3.5	T-15F

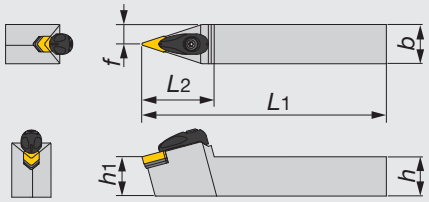
TURNING A

AVVNN

Double-clamp toolholder with 72.5° approach angle, for negative 35° and 25° rhombic inserts



Cutting edge style **V**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
AVVNN2020K16-A	20	20	125	46	20	10	0.8	V/YN**1604...	3
AVVNN2525M16-A	25	25	150	46	25	12.5	0.8	V/YN**1604...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

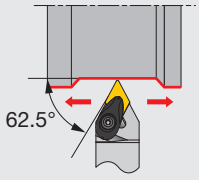
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
AVVNN**16-A	ACP3L	ACS-5W	BP-7	SP-2.5	ASV322	CSTB-3.5	T-15F

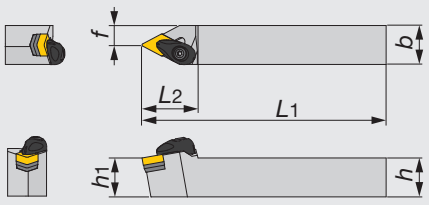
TURNING A

ADPNN

Double-clamp toolholder with 62.5° approach angle, for negative 55° rhombic inserts



Cutting edge style **P**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
ADPNN2020K15-A	20	20	125	36	20	7.5	0.8	DN**1504...	3
ADPNN2525M15-A	25	25	150	36	25	12.5	0.8	DN**1504...	3

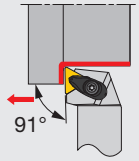
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

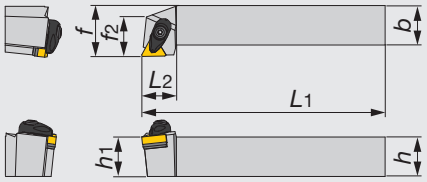
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ADPNN**15-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASD432	CSTB-3.5	T-15F

ATGNR/L

Double-clamp toolholder with 91° approach angle, for negative triangle inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	h	b	L_1	L_2	h_1	f	f_2	r_ε**	Insert	Torque*
ATGNR/L2020K16-A	20	20	125	22	20	25	22	0.8	TN**1604...	3
ATGNR/L2525M16-A	25	25	150	22	25	32	25	0.8	TN**1604...	3
ATGNR/L2525M22-A	25	25	150	26	25	32	26	0.8	TN**2204...	3

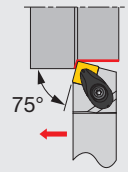
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

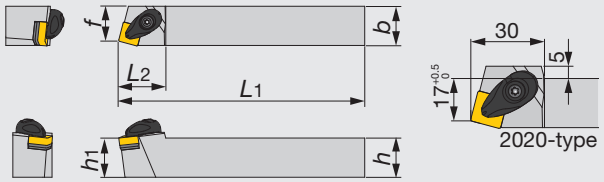
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ATGNR/L**16-A	ACP3S	ACS-5W	BP-7	SP-2.5	AST322	CSTB-3.5	T-15F
ATGNR/L**22-A	ACP4S	ACS-5W	BP-7	SP-2.5	AST422	CSTB-3.5	T-15F

ASBNR/L

Double-clamp toolholder with 75° approach angle, for negative square inserts



Cutting edge style **B**



Right hand (R) shown.

Designation	h	b	L_1	L_2	h_1	f	r_ε**	Insert	Torque*
ASBNR/L2020K12-A	20	20	125	30	20	17	0.8	SN**1204...	3
ASBNR/L2525M12-A	25	25	150	30	25	22	0.8	SN**1204...	3
ASBNR/L2525M15-A	25	25	150	42.5	25	22	1.2	SN**1506...	6.4
ASBNR/L3232P15-A	32	32	170	42.5	32	27	1.2	SN**1506...	6.4
ASBNR/L3232P19-A	32	32	170	47.5	32	27	1.2	SN**1906...	6.4
ASBNR/L4040S19-A	40	40	250	47.5	40	35	1.2	SN**1906...	6.4

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

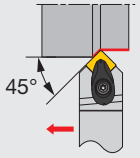
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench 1	Wrench 2
ASBNR/L**12-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASS422	CSTB-3.5	T-15F	-
ASBNR/L**15-A	ACP5S	ACS-6W	BP-8.8	SP-2.5	ASS533	CSTB-5	-	KEYV-T20
ASBNR/L**19-A	ACP6S	ACS-6W	BP-8.8	SP-2.5	ASS634	CSTB-5	-	KEYV-T20

Ext. Toolholder

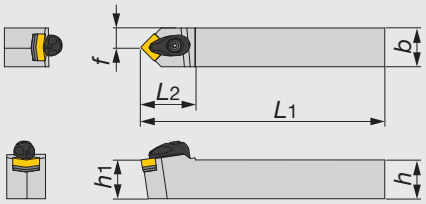
ATJNR/L, ATGNR/L: Inserts → **B079 -**, CBN → **B164**, PCD → **B176**
AVVNN: Inserts → **B097 -**, CBN → **B165 -**, PCD → **B176**
ADPNN: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**
ASBNR/L: Inserts → **B070 -**, CBN → **B164 -**, PCD → **B176**

ASDNN

Double-clamp toolholder with 45° approach angle, for negative square inserts



Cutting edge style **D**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
ASDNN2020K12-A	20	20	125	35	20	10	0.8	SN**1204...	3
ASDNN2525M12-A	25	25	150	35	25	12.5	0.8	SN**1204...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

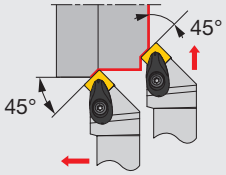
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ASDNN**12-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASS422	CSTB-3.5	T-15F

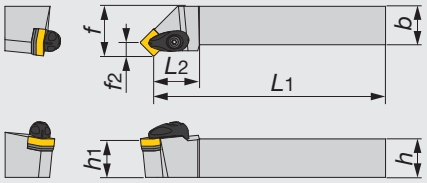
TURNING

ASSNR/L

Double-clamp toolholder with 45° approach angle (S-style), for negative square inserts



Cutting edge style **S**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ASSNR/L2020K12-A	20	20	125	30	20	25	8.3	0.8	SN**1204...	3
ASSNR/L2525M12-A	25	25	150	30	25	32	8.3	0.8	SN**1204...	3
ASSNR/L2525M15-A	25	25	150	25	25	32	10.3	1.2	SN**1506...	6.4
ASSNR/L3232P15-A	32	32	170	25	32	40	10.3	1.2	SN**1506...	6.4
ASSNR/L3232P19-A	32	32	170	27.5	32	40	12.5	1.2	SN**1906...	6.4
ASSNR/L4040S19-A	40	40	250	27.5	40	50	12.5	1.2	SN**1906...	6.4

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

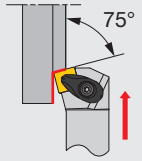
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench 1	Wrench 2
ASSNR/L**12-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASS422	CSTB-3.5	T-15F	-
ASSNR/L**15-A	ACP5S	ACS-6W	BP-8.8	SP-2.5	ASS533	CSTB-5	-	KEYV-T20
ASSNR/L**19-A	ACP6S	ACS-6W	BP-8.8	SP-2.5	ASS634	CSTB-5	-	KEYV-T20

ASDNN, ASSNR/L: Inserts → **B070 -**, CBN → **B164**, PCD → **B176**

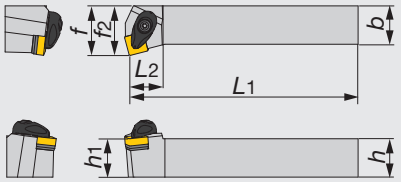
TURNING A

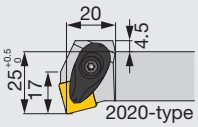
ASKNR/L

Double-clamp toolholder with 75° approach angle, for negative square inserts



Cutting edge style **K**





Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ASKNR/L2020K12-A	20	20	125	20	20	25	17	0.8	SN**1204...	3
ASKNR/L2525M12-A	25	25	150	22	25	32	21	0.8	SN**1204...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

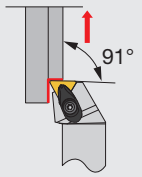
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ASKNR/L**12-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASS422	CSTB-3.5	T-15F

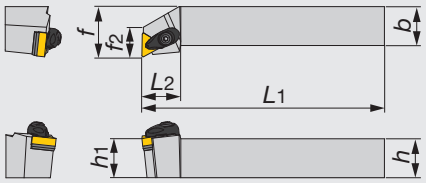
TURNING A

ATFNR/L

Double-clamp toolholder for facing with 91° approach angle, negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ATFNR/L2020K16-A	20	20	125	25	20	25	18	0.8	TN**1604...	3
ATFNR/L2525M16-A	25	25	150	25	25	32	19	0.8	TN**1604...	3
ATFNR/L2525M22-A	25	25	150	29	25	32	23	0.8	TN**2204...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ATFNR/L**16-A	ACP3S	ACS-5W	BP-7	SP-2.5	AST322	CSTB-3.5	T-15F
ATFNR/L**22-A	ACP4S	ACS-5W	BP-7	SP-2.5	AST422	CSTB-3.5	T-15F

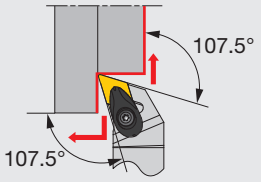
ASKNR/L: Inserts → **B070 -**, CBN → **B164**, PCD → **B176**

ATFNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

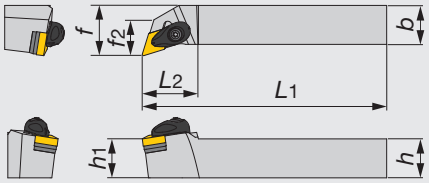
TURNINGA

ADQNR/L

Double-clamp toolholder with 107.5° approach angle, for negative 55° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ADQNR/L2020K15-A	20	20	125	32	20	25	21	0.8	DN**1504...	3
ADQNR/L2020K1506-A	20	20	125	32	20	25	21	0.8	DN**1506...	3
ADQNR/L2525M15-A	25	25	150	36	25	32	23	0.8	DN**1504...	3
ADQNR/L2525M1506-A	25	25	150	36	25	32	23	0.8	DN**1506...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

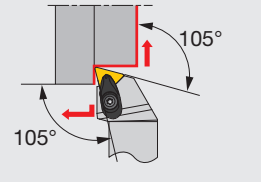
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ADQNR/L**15-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASD432	CSTB-3.5	T-15F
ADQNR/L**1506-A	ACP4S	ACS-5W	BP-7	SP-2.5	ASD423	CSTB-3.5	T-15F

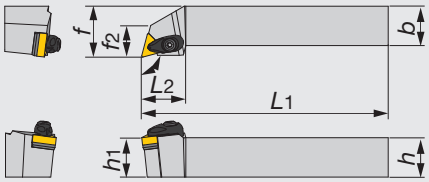
TURNINGA

ATQNR/L

Double-clamp toolholder with 105° approach angle, for negative triangle inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ATQNR/L2020K16-A	20	20	125	28	20	25	18	0.8	TN**1604...	3
ATQNR/L2525M16-A	25	25	150	28	25	32	20	0.8	TN**1604...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ATQNR/L**16-A	ACP3S	ACS-5W	BP-7	SP-2.5	AST322	CSTB-3.5	T-15F

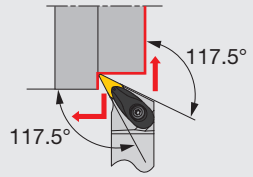
ADQNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

ATQNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

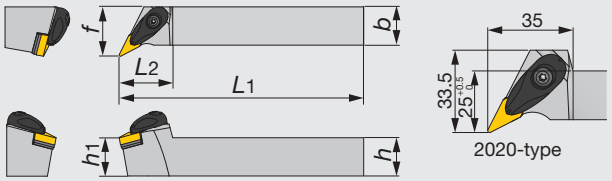
TURNING

AVQNR/L

Double-clamp toolholder with 117.5° approach angle, for negative 35° or 25° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
AVQNR/L2020K16-A	20	20	125	35	20	25	0.8	V/YN**1604...	3
AVQNR/L2525M16-A	25	25	150	35	25	32	0.8	V/YN**1604...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

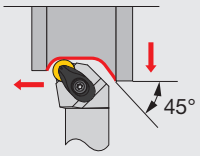
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
AVQNR/L...	ACP3L	ACS-5W	BP-7	SP-2.5	ASV322	CSTB-3.5	T-15F

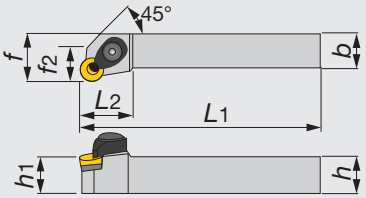
TURNING

ARGNR/L

Double-clamp toolholder with 91° approach angle, for negative round inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
ARGNR/L2525M12-A	25	25	150	28	25	32	20	6.35	RN**120400	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

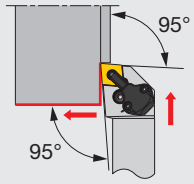
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
ARGNR/L...	ACP4S	ACS-5W	BP-7	SP-2.5	ASR420	CSTB-3.5	T-15F

AVQNR/L: Inserts → **B097 -**, CBN → **B165 -**, PCD → **B176**

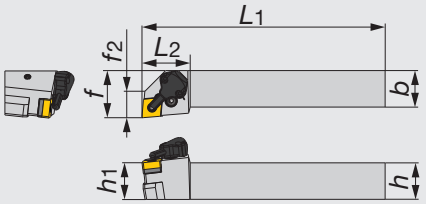
ARGNR/L: Inserts → **B102**

PCLNR/L-CHP

Lever lock type toolholder with 95° approach angle, for negative 80° rhombic inserts, with channels for high pressure coolant



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
PCLNR/L2525M12-CHP	25	25	150	33	25	32	18	0.8	CN**1204...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

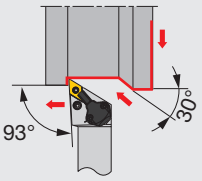
Designation	Shim	Clamping screw	Wrench 1	Spring pin	Lever
PCLNR/L2525M12-CHP	LSC42	LCS4	P-3	LSP4	LCL4

SPARE PARTS

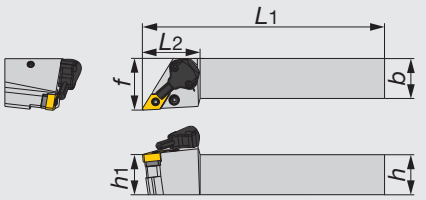
Designation	Coolant unit	Mounting screw	Wrench 2	O-ring	Coolant screw	Wrench 3
PCLNR/L2525M12-CHP	CU-CW-CHP	SRM3	T-8F	OR6.4X0.9N	SRM4X4TL360	P-2

PDJNR/L-CHP

Lever lock type toolholder with 93° approach angle, for negative 55° rhombic inserts, with channels for high pressure coolant



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
PDJNR/L2525M15-CHP	25	25	150	36	25	32	0.8	DN**1504...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Shim	Clamping screw	Wrench 1	Spring pin	Lever
PDJNR/L2525M15-CHP	LSD43A	LCS4	P-3	LSP4	LCL4

SPARE PARTS

Designation	Coolant unit	Mounting screw	Wrench 2	O-ring	Coolant screw	Wrench 3
PDJNR/L2525M15-CHP	CU-D-CHP	SRM3	T-8F	OR6.4X0.9N	SRM4X4TL360	P-2

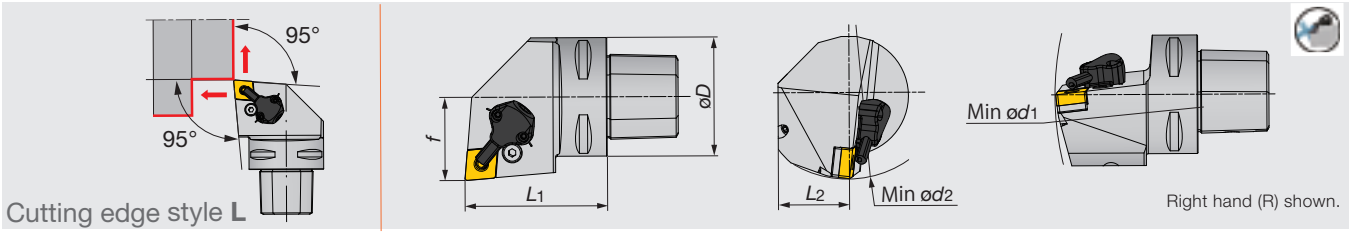
PCLNR/L-CHP: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176**

PDJNR/L-CHP: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

C-PCLN-CHP, C-PWLN-CHP, C-PDJN-CHP:
Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176**

TUNGTJET URN C-PCLN-CHP

Lever lock type toolholder with TungCap connection, for negative inserts, C 80° rhombic with channels for high pressure coolant

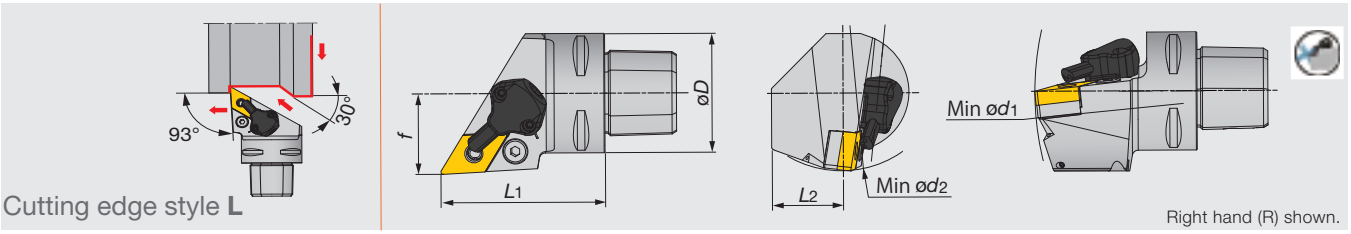


Designation	øD	L1	L2	f	ød1	ød2	r_ε**	Insert
C4PCLNR/L27050-0904-CHP	40	50	25	27	140	110	0.8	CN**0904...
C4PCLNR/L27050-12-CHP	40	50	25	27	140	110	0.8	CN**1204...
C5PCLNR/L35060-12-CHP	50	60	32	35	165	110	0.8	CN**1204...
C6PCLNR/L45065-0904-CHP	63	65	41	45	190	125	0.8	CN**0904...
C6PCLNR/L45065-12-CHP	63	65	41	45	190	125	0.8	CN**1204...

**r_ε: Standard corner radius

TUNGTJET URN C-PDJN-CHP

Lever lock type toolholder with TungCap connection, for negative inserts, D 55° rhombic with channels for high pressure coolant

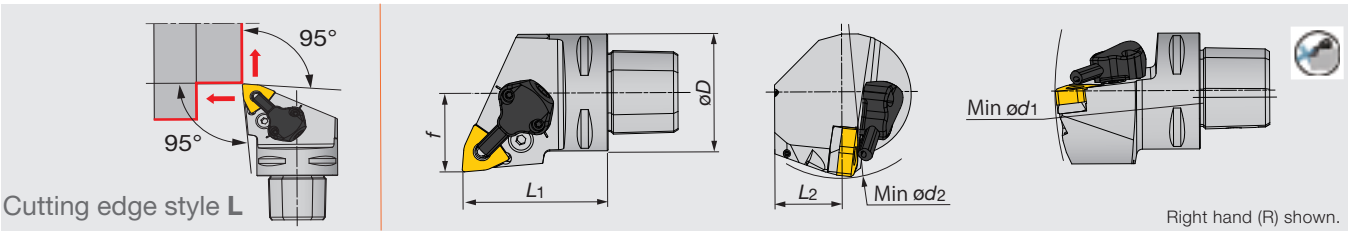


Designation	øD	L1	L2	f	ød1	ød2	r_ε**	Insert
C4PDJNR/L27050-1104-CHP	40	50	25	27	140	110	0.8	DN**1104...
C4PDJNR/L27050-15-CHP	40	50	25	27	140	110	0.8	DN**1504(06)...
C5PDJNR/L35060-15-CHP	50	60	32	35	165	110	0.8	DN**1504(06)...
C6PDJNR/L45065-1104-CHP	63	65	41	45	190	110	0.8	DN**1104...
C6PDJNR/L45065-15-CHP	63	65	41	45	190	110	0.8	DN**1504(06)...

**r_ε: Standard corner radius

TUNGTJET URN C-PWLN-CHP

Lever lock type toolholder with TungCap connection, for negative inserts, W 80° trigon with channels for high pressure coolant



Designation	øD	L1	L2	f	ød1	ød2	r_ε**	Insert
C4PWLNR/L27050-0604-CHP	40	50	25	27	140	110	0.8	WN**0604...
C4PWLNR/L27050-08-CHP	40	50	25	27	140	110	0.8	WN**0804...
C6PWLNR/L45065-08-CHP	63	65	41	45	190	125	0.8	WN**0804...

**r_ε: Standard corner radius

SPARE PARTS FOR P-TYPE

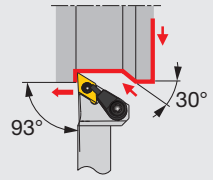
Designation	Shim	Clamping screw	Wrench 1	Spring pin	Lever
C*PCLNR/L**-12-CHP	LSC42	LCS4	P-3	LSP4	LCL4
C*PWLNR/L**-08-CHP	LSW42BL	LCS4	P-3	LSP4	LCL4
C*PDJNR/L**-15-CHP	LSD43A	LCS4	P-3	LSP4	LCL4
C*PCLNR/L**0904-CHP	LSC317	LCS3	P-2.5	LSP3	LCL33
C*PWLNR/L**0604-CHP	LSW312	LCS3	P-2.5	LSP3	LCL3
C*PDJNR/L**1104-CHP	ELSD32	LCS3	P-2.5	LSP3	LCL33L

COOLANT SET

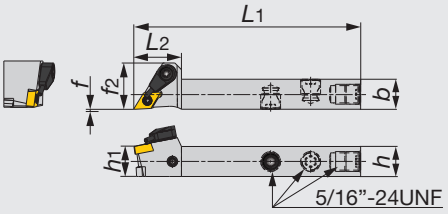
Designation	Coolant unit	Mounting screw	Wrench 2	O-ring
C*PCLNR/L**-CHP	CU-CW-CHP	SRM3	T-8F	OR6.4X0.9N
C*PWLNR/L**-CHP	CU-CW-CHP	SRM3	T-8F	OR6.4X0.9N
C*PDJLNR/L**-CHP	CU-D-CHP	SRM3	T-8F	OR6.4X0.9N

JSDJ2XR/L-CHP

Screw-on toolholder without offset with 93° approach angle, for DXGU inserts, with channels for high pressure coolant



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSDJ2XR/L1212F07-CHP	12	12	85	19	12	0	18.5	0.2	DXGU0703**L/R...	0.9

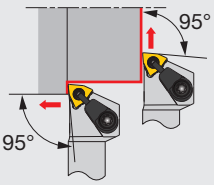
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

SPARE PARTS

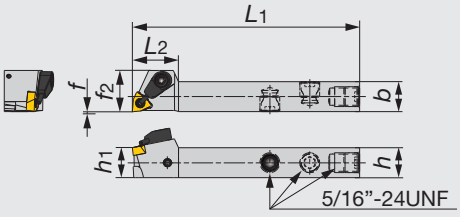
Designation	Clamping screw	Coolant unit	Wrench
JSDJ2XR/L1212F07-CHP	SR34-514	S-CU-CHP	T-7F

JSWL2XR/L-CHP

Screw-on toolholder offset with 95° approach angle, for WXGU inserts, with channels for high pressure coolant



Cutting edge style **L2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSWL2XR/L1212F04-CHP	12	12	85	18	12	0	16.5	0.2	WXGU0403**L/R...	0.9

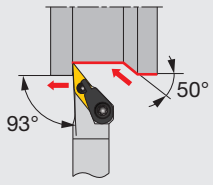
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

SPARE PARTS

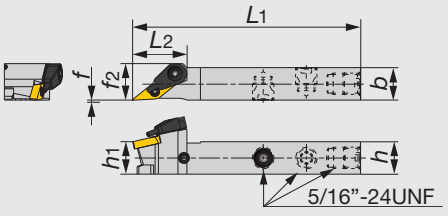
Designation	Clamping screw	Coolant unit	Wrench
JSWL2XR/L1212F04-CHP	SR34-514	S-CU-CHP	T-7F

JSVJ2XR/L-CHP

Screw-on toolholder without offset with 93° approach angle, for VXGU inserts, with coolant nozle for high pressure



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSVJ2XR/L1212F09-CHP	12	12	85	20	12	0	13.5	0.2	VXGU09T2**L/R...	0.9

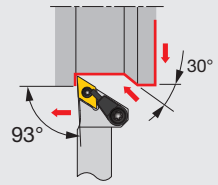
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: Right-hand toolholders (R) are used with left-hand inserts (L). Left-hand toolholders (L) are used with right-hand inserts (R).

SPARE PARTS

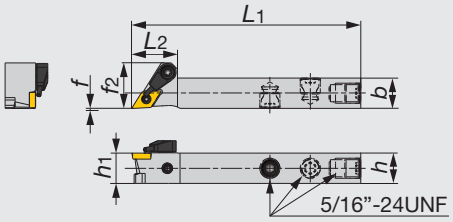
Designation	Clamping screw	Coolant unit	Wrench
JSVJ2XR/L1212F09-CHP	SR34-508	S-CU-CHP	T-7F

JSDJ2CR/L-CHP

Screw-on toolholder without offset with 93° approach angle, for positive 55° rhombic inserts, with channels for high pressure coolant



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	f2	rε**	Insert	Torque*
JSDJ2CR/L1212F07-CHP	12	12	85	18	12	0	18	0.2	DC**0702...	0.9
JSDJ2CR/L1212F11-CHP	12	12	85	19	12	0	20.5	0.2	DC**11T3...	0.9

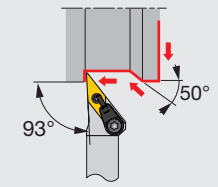
*Torque: Recommended torque (N·m) for clamping
**rε: Standard corner radius

SPARE PARTS

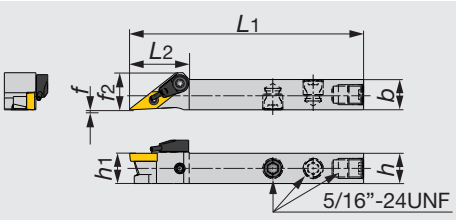
Designation	Clamping screw	Coolant unit	Wrench
JSDJ2CR/L1212F07-CHP	CSTB-2.5	S-CU-CHP	T-8F
JSDJ2CR/L1212F11-CHP	CSTB-4SD	S-CU-CHP	T-8F

JSVJ2BR/L-CHP

Screw-on toolholder without offset with 93° approach angle, for positive 35° rhombic inserts, with channels for high pressure coolant



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	f2	rε**	Insert	Torque*
JSVJ2BR/L1212F11-CHP	12	12	85	23.6	12	0	14.7	0.2	VB**1103...	1.2

*Torque: Recommended torque (N·m) for clamping
**rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Coolant unit	Wrench
JSVJ2BR/L1212F11-CHP	CSTB-2.5	S-CU-CHP	T-8F

JSDJ2XR/L-CHP: Inserts → **B150 -**

JSWL2XR/L-CHP: Inserts → **B149**

JSVJ2XR/L-CHP: Inserts → **B151**

JSDJ2CR/L-CHP: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

JSVJ2BR/L-CHP: Inserts → **B142 -**, CBN → **B169 -**

Connecting hose

Fig. 1

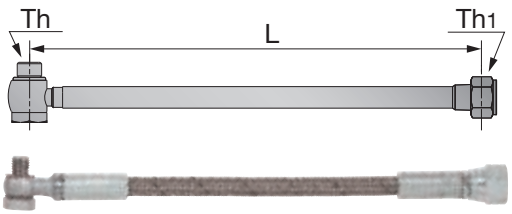
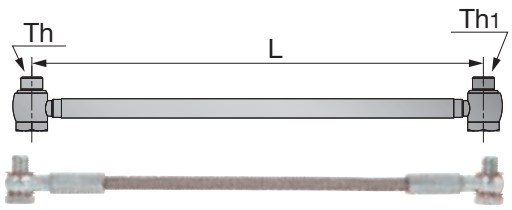
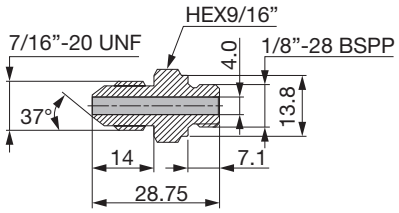


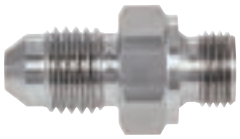
Fig. 2



Designation	L	Th	Th1	Max. pressure (Mpa)	Fig.
CHP-HOSE-G1/8-7/16-200BS	200	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-G1/8-7/16-250BS	250	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-5/16-7/16-200BS	200	5/16"-24UNF	7/16"-20 UNF	20	1
CHP-HOSE-5/16-G1/8-200BS	200	5/16"-24UNF	G1/8"-28 BSPP	20	1
CHP-HOSE-G1/8-G1/8-200BB	200	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2
CHP-HOSE-G1/8-G1/8-250BB	250	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2

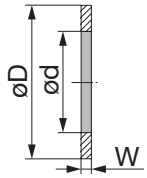
Connector





Designation
CHP-NIPPLE-G1/8-7/16UNF

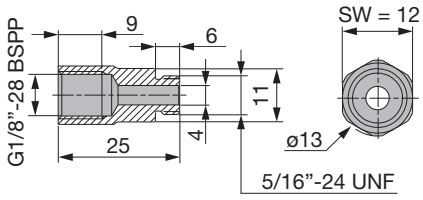
Seal washer





Designation	øD	ød	W
CHP-COPPER-SEAL1/8	15	10	1
CHP-COPPER-SEAL5/16	11	8	1
CHP-COPPER-SEAL5/16-2.5	11	8	2.5

Connector for small lathe with seal washer

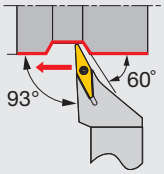




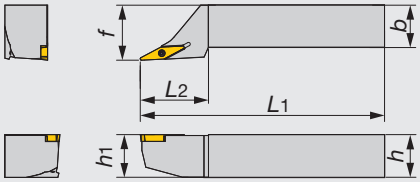
Designation
CHP-CONECTOR/5/16-G1/8

SYJBR/L

Screw-on clamp toolholder with 93° approach angle, for positive 25° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
SYJBR/L2020K16	20	20	125	35	20	25	0.8	YWMT16T3...
SYJBR/L2525M16	25	25	150	40	25	32	0.8	YWMT16T3...

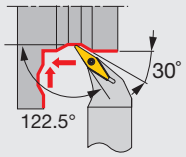
**r_ε: Standard corner radius

SPARE PARTS

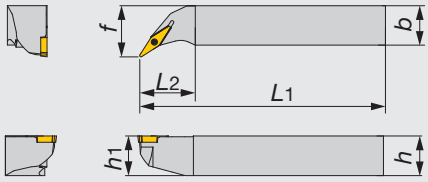
Designation	Clamping screw	Wrench
SYJBR/L...	CSTB-2.5L080	T-8F

SYQBR/L

Screw-on clamp toolholder with 122.5° approach angle, for positive 25° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
SYQBR/L2020K16	20	20	125	35	20	27	0.8	YWMT16T3...
SYQBR/L2525M16	25	25	150	35	25	32	0.8	YWMT16T3...

**r_ε: Standard corner radius

SPARE PARTS

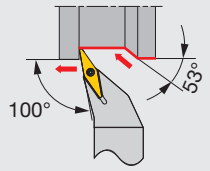
Designation	Clamping screw	Wrench
SYQBR/L...	CSTB-2.5L080	T-8F

SYJBR/L, SYQBR/L: Inserts → **B148**

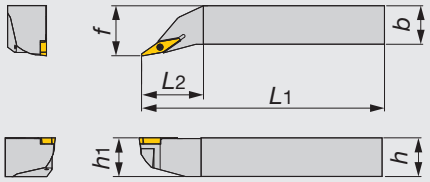
Y-PRO SERIES

SYHBR/L

Screw-on clamp toolholder with 100° approach angle, for positive 25° rhombic inserts



Cutting edge style **H**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
SYHBR/L2020K16	20	20	125	35	20	27	0.8	YWMT16T3...
SYHBR/L2525M16	25	25	150	40	25	32	0.8	YWMT16T3...

**r_ε: Standard corner radius

SPARE PARTS

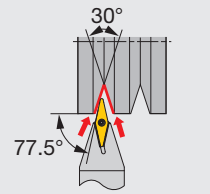



Designation	Clamping screw	Wrench
SYHBR/L...	CSTB-2.5L080	T-8F

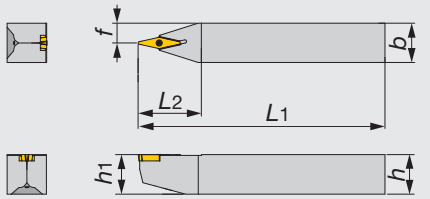
Y-PRO SERIES

SYIBN

Screw-on clamp toolholder with 77.5° approach angle, for positive 25° rhombic inserts



Cutting edge style **I**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
SYIBN2020K16	20	20	125	32	20	10	0.8	YWMT16T3...
SYIBN2525M16	25	25	150	40	25	12.5	0.8	YWMT16T3...

**r_ε: Standard corner radius

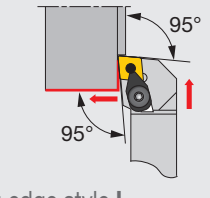
SPARE PARTS



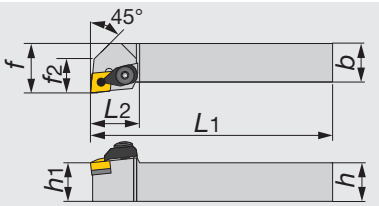

Designation	Clamping screw	Wrench
SYIBN...	CSTB-2.5L080	T-8F

DCLNR/L

"One-Double" toolholder with 95° approach angle, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert
DCLNR/L2020K12	20	20	125	30	20	25	18	0.8	CN**1204...
DCLNR/L2525M12	25	25	150	30	25	32	18	0.8	CN**1204...
DCLNR/L3225P12	32	25	170	30	32	32	18	0.8	CN**1204...

Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS







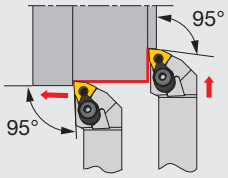




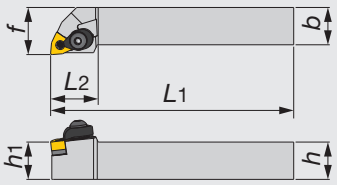
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DCLNR/L...	DCPM-43	DLCL43	DPIS43	DLCS43	LSC42	BP-10	LSP4	P-3	P-4

DWLNR/L

"One-Double" toolholder with 95° approach angle, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
DWLNR/L2020K06	20	20	125	25.5	20	25	0.8	WN**0604...
DWLNR/L2020K08	20	20	125	31	20	25	0.8	WN**0804...
DWLNR/L2525M06	25	25	150	26	25	32	0.8	WN**0604...
DWLNR/L2525M08	25	25	150	31	25	32	0.8	WN**0804...
DWLNR/L3225P08	32	25	170	30	32	32	0.8	WN**0804...

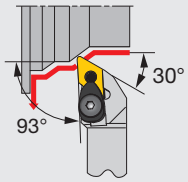
Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS

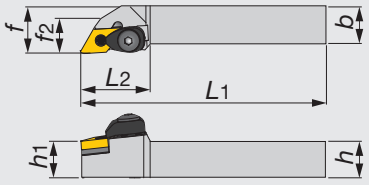
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DWLNR/L**06	DCPM-33	LCL33	DPIS33	DLCS33	LSW312	BP-9	LSP3	P-2.5	P-3
DWLNR/L**08	DCPM-43	DLCL43	DPIS43	DLCS43	LSW42	BP-10	LSP4	P-3	P-4

DDJNR/L

"One-Double" toolholder with 93° approach angle, for negative 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	f_2	r_ε**	Insert
DDJNR/L2020K15	20	20	125	38	20	25	19	0.8	DN**1504...
DDJNR/L2020K1506	20	20	125	38	20	25	19	0.8	DN**1506...
DDJNR/L2525M15	25	25	150	38	25	32	19	0.8	DN**1504...
DDJNR/L2525M1506	25	25	150	38	25	32	19	0.8	DN**1506...
DDJNR/L3225P15	32	25	170	38	32	32	19	0.8	DN**1504...
DDJNR/L3225P1506	32	25	170	38	32	32	19	0.8	DN**1506...

Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DDJNR/L**15	DCPM-43	DLCL43	DPIS43	DLCS43	LSD42	BP-10	LSP4	P-3	P-4
DDJNR/L**1506	DCPM-43	DLCL43	DPIS44	DLCS43	LSD42	BP-10	LSP4	P-3	P-4

SYHBR/L, SYIBN: Inserts → **B148**

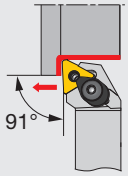
DCLNR/L: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176**

DWLNR/L: Inserts → **B090 -**, CBN → **B165**

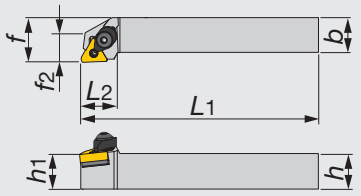
DDJNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

DTGNR/L

"One-Double" toolholder with 91° approach angle, for negative triangle inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	f_2	r_ε**	Insert
DTGNR/L2020K16	20	20	125	21	20	25	16	0.8	TN**1604...
DTGNR/L2525M16	25	25	150	21	25	32	21	0.8	TN**1604...
DTGNR/L2525M22	25	25	150	28	25	32	25	0.8	TN**2204...

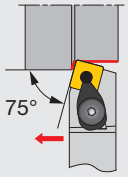
Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS

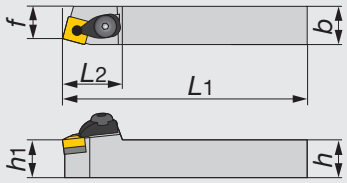
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DTGNR/L**16	DCPM-33	LCL33	DPIS33	DLCS33	LST317	BP-9	LSP3	P-2.5	P-3
DTGNR/L**22	DCPM-43	DLCL43	DPIS43	DLCS43	LST42	BP-10	LSP4	P-3	P-4

DSBNR/L

"One-Double" toolholder with 75° approach angle, for negative square inserts



Cutting edge style **B**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
DSBNR/L2020K12	20	20	125	35	20	17	0.8	SN**1204...
DSBNR/L2525M12	25	25	150	35	25	22	0.8	SN**1204...

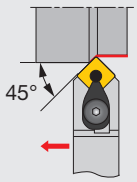
Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS

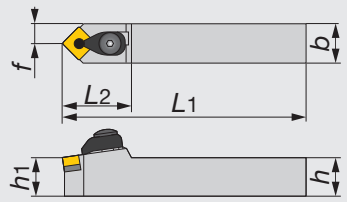
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DSBNR/L...	DCPM-43	DLCL43	DPIS43	DLCS43	LSS42	BP-10	LSP4	P-3	P-4

DSDNN

"One-Double" toolholder with 45° approach angle, for negative square inserts



Cutting edge style **D**



Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
DSDNN2020K12	20	20	125	36	20	10	0.8	SN**1204...
DSDNN2525M12	25	25	150	36	25	12.5	0.8	SN**1204...

Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS

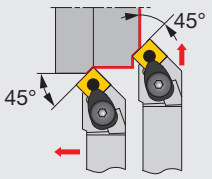
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DSDNN...	DCPM-43	DLCL43	DPIS43	DLCS43	LSS42	BP-10	LSP4	P-3	P-4

DTGNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

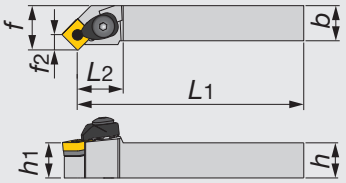
DSBNR/L, DSDNN: Inserts → **B070 -**, CBN → **B164**, PCD → **B176**

DSSNR/L

"One-Double" toolholder with 45° approach angle (S-style), for negative square inserts



Cutting edge style **S**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert
DSSNR/L2020K12	20	20	125	34.3	20	25	8.3	0.8	SN**1204...
DSSNR/L2525M12	25	25	150	34.3	25	32	8.3	0.8	SN**1204...

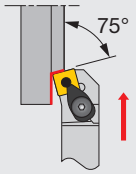
Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS

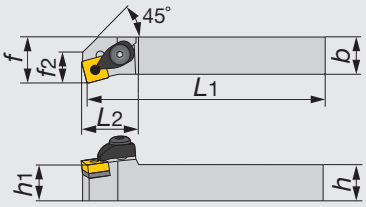
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DSSNR/L...	DCPM-43	DLCL43	DPIS43	DLCS43	LSS42	BP-10	LSP4	P-3	P-4

DSKNR/L

"One-Double" toolholder with 75° approach angle, for negative square inserts



Cutting edge style **K**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert
DSKNR/L2020K12	20	20	125	31	20	25	17	0.8	SN**1204...
DSKNR/L2525M12	25	25	150	31	25	32	17	0.8	SN**1204...

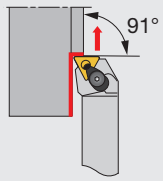
Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS

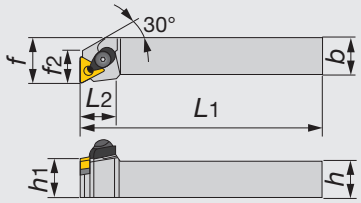
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DSKNR/L...	DCPM-43	DLCL43	DPIS43	DLCS43	LSS42	BP-10	LSP4	P-3	P-4

DTFNR/L

"One-Double" toolholder for facing with 91° approach angle, negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert
DTFNR/L2020K16	20	20	125	23	20	25	18.5	0.8	TN**1604...
DTFNR/L2525M16	25	25	150	23	25	32	20	0.8	TN**1604...
DTFNR/L2525M22	25	25	150	31	25	32	24	0.8	TN**2204...

Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS

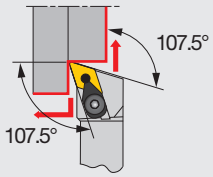
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DTFNR/L**16	DCPM-33	LCL33	DPIS33	DLCS33	LST317	BP-9	LSP3	P-2.5	P-3
DTFNR/L**22	DCPM-43	DLCL43	DPIS43	DLCS43	LST42	BP-10	LSP4	P-3	P-4

DSSNR/L, DSKNR/L: Inserts → **B070 -**, CBN → **B164**, PCD → **B176**

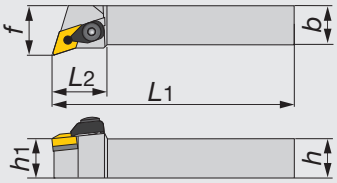
DTFNR/L: Inserts → **B079 -**, CBN → **B164**, PCD → **B176**

DDQNR/L

"One-Double" toolholder with 107.5° approach angle, for negative 55° rhombic inserts



Cutting edge style **Q**



Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
DDQNR/L2020K15	20	20	125	35	20	25	0.8	DN**1504...
DDQNR/L2020K1506	20	20	125	35	20	25	0.8	DN**1506...
DDQNR/L2525M15	25	25	150	35	25	32	0.8	DN**1504...
DDQNR/L2525M1506	25	25	150	35	25	32	0.8	DN**1506...
DDQNR/L3225P15	32	25	170	35	32	32	0.8	DN**1504...
DDQNR/L3225P1506	32	25	170	35	32	32	0.8	DN**1506...

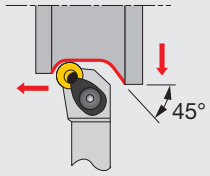
Note: Except for 57-type chipbreaker inserts
**r_ε: Standard corner radius

SPARE PARTS

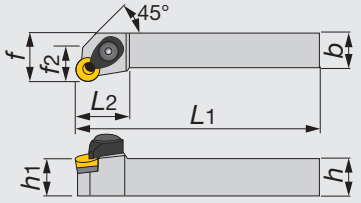
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DDQNR/L**15	DCPM-43	DLCL43	DPIS43	DLCS43	LSD42	BP-10	LSP4	P-3	P-4
DDQNR/L**1506	DCPM-43	DLCL43	DPIS44	DLCS43	LSD42	BP-10	LSP4	P-3	P-4

DRGNR/L

"One-Double" toolholder with 91° approach angle, for negative round inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	f_2	r_ε**	Insert
DRGNR/L2525M12	25	25	150	28	25	32	18	6.35	RN**120400

**r_ε: Standard corner radius

SPARE PARTS

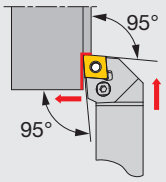
Designation	Clamp	Lever	Piston	Clamp screw	Shim	Spring	Spring pin	Wrench 1	Wrench 2
DRGNR/L...	DCPM-43	DLCL43	DPIS43	DLCS43	LSR42	BP-10	LSP4	P-3	P-4

DDQNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

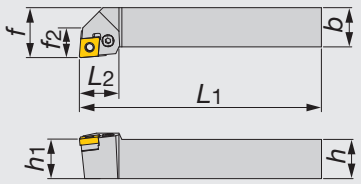
DRGNR/L: Inserts → **B102 -**

PCLNR/L

Lever lock type toolholder with 95° approach angle, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert
PCLNR/L1616H09	16	16	100	20	16	20	15	0.8	CN**0903...
PCLNR/L2020K09	20	20	125	20	20	25	15	0.8	CN**0903...
PCLNR/L2525M09	25	25	150	20	25	32	15	0.8	CN**0903...
PCLNR/L1616	16	16	100	26	16	20	–	0.8	CN**1204...
PCLNR/L2020	20	20	125	28	20	25	18	0.8	CN**1204...
PCLNR/L2525M4	25	25	150	28	25	32	18	0.8	CN**1204...
PCLNR/L3225P4	32	25	170	28	32	32	18	0.8	CN**1204...
PCLNR/L3232	32	32	170	40	32	40	25	1.2	CN**1906...
PCLNR/L1616H12E	16	16	100	26	16	20	–	0.8	CN**1204...
PCLNR/L2020K12E	20	20	125	28	20	25	18	0.8	CN**1204...
PCLNR/L2525M12E	25	25	150	28	25	32	18	0.8	CN**1204...
PCLNR/L3225P12E	32	25	170	28	32	32	18	0.8	CN**1204...
PCLNR/L2525M16E	25	25	150	31	25	25	–	1.2	CN**1606...
PCLNR/L3225P16E	32	25	150	31	32	32	–	1.2	CN**1606...
PCLNR3232P16E	32	32	170	31	32	40	–	1.2	CN**1606...
PCLNR/L3232P19E	32	32	170	40	32	40	25	1.2	CN**1906...

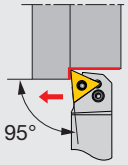
**r_ε: Standard corner radius

SPARE PARTS

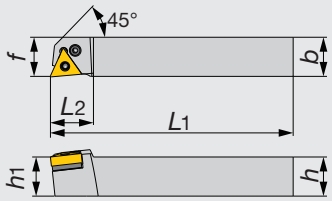
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PCLNR/L1616H09	ELSC32	LCS3	P-2.5	LSP3L	LCL33
PCLNR/L2020K09	ELSC32	LCS3	P-2.5	LSP3L	LCL33
PCLNR/L2525M09	ELSC32	LCS3	P-2.5	LSP3L	LCL33
PCLNR/L1616	LSC42	LCS4CA	P-3	LSP4	LCL4
PCLNR/L2020	LSC42	LCS4	P-3	LSP4	LCL4
PCLNR/L2525M4	LSC42	LCS4	P-3	LSP4	LCL4
PCLNR/L3225P4	LSC42	LCS4	P-3	LSP4	LCL4
PCLNR/L3232	LSC63	LCS6	P-4	LSP6	LCL6
PCLNR/L1616H12E	ELSC42	LCS4CA	P-3	LSP4	LCL4
PCLNR/L2020K12E	ELSC42	LCS4	P-3	LSP4S	LCL43M
PCLNR/L2525M12E	ELSC42	LCS4	P-3	LSP4S	LCL43M
PCLNR/L3225P12E	ELSC42	LCS4	P-3	LSP4S	LCL43M
PCLNR/L2525M16E	ELSC53	LCS5	P-3	LSP6C	LCL5
PCLNR/L3225P16E	ELSC53	LCS5	P-3	LSP6C	LCL5
PCLNR/L3232P16E	ELSC53	LCS5	P-3	LSP6C	LCL5
PCLNR/L3232P19E	ELSC63	LCS6	P-4	LSP6	LCL6

PTL2NR/L

No-offset Lever-lock clamp toolholder with 95° approach approach angle, for negative 60° triangular inserts



Cutting edge style **L2**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
PTL2NR/L2020H16	20	20	100	22	20	20	0.4	TN**1604...	2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

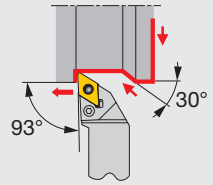
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PTL2NR/L...	LST317 D30	LCS3	P-2.5	LSP3	LCL3

PCLNR/L: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176 -**

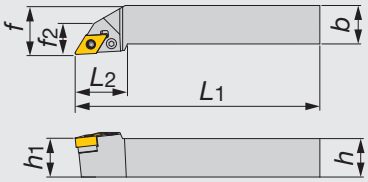
PTL2NR/L: Inserts → **B079 -**, CBN → **B164**, PCD → **B176**

PDJNR/L

Lever lock type toolholder with 93° approach angle, for negative 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	f_2	r_ε**	Insert
PDJNR/L1616H11	16	16	100	27	16	20	16	0.8	DN**1104...
PDJNR/L2020K11	20	20	125	27	20	25	16	0.8	DN**1104...
PDJNR/L2020	20	20	125	34	20	25	19	0.8	DN**1504...
PDJNR2020K15E	20	20	125	36	20	25	-	0.8	DN**1506...
PDJNR/L2520	25	20	150	34	25	25	19	0.8	DN**1504...
PDJNR/L2525M11	25	25	150	27	25	32	19	0.8	DN**1104...
PDJNR/L2525	25	25	150	34	25	32	19	0.8	DN**1504...
PDJNR/L2525M15E	25	25	150	36	25	32	-	0.8	DN**1506...
PDJNR/L3225	32	25	170	32	32	32	19	0.8	DN**1504...
PDJNR3225P15E	32	25	170	36	32	34	-	0.8	DN**1506...

**r_ε: Standard corner radius

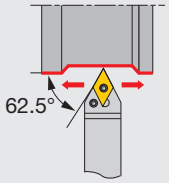
SPARE PARTS

Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PDJNR/L1616H11, 2020K11	ELSD32	LCS3	P-2.5	LSP3	LCL33L
PDJNR/L2020	LSD42	LCS4	P-3	LSP4	LCL4
PDJNR2020K15E	ELSD42	ELCS4	P-3	LSP4S	LCL44
PDJNR/L2520	LSD42	LCS4	P-3	LSP4	LCL4
PDJNR/L2525	LSD42	LCS4	P-3	LSP4	LCL4
PDJNR/L2525M15E	ELSD42	ELCS4	P-3	LSP4S	LCL44
PDJNR/L3225	LSD42	LCS4	P-3	LSP4	LCL4
PDJNR3225P15E	ELSD42	ELCS4	P-3	LSP4S	LCL44

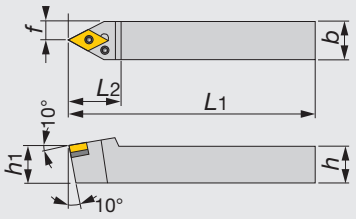
PDJNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

PDPNN

Lever lock type toolholder with 62.5° approach angle, for negative 55° rhombic inserts



Cutting edge style **P**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
PDPNN2525	25	25	150	36	25	12.5	0.8	DN**1504...
PDPNN2525M15E	25	25	150	36	25	12.5	0.8	DN**1506...

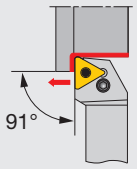
**r*ε: Standard corner radius

SPARE PARTS

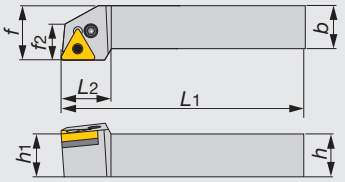
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PDPNN2525	LSD42	LCS4	P-3	LSP4	LCL4
PDPNN2525M15E	ELSD42	ELCS4	P-3	LSP4S	LCL44

PTGNR/L

Lever lock type toolholder with 91° approach angle, for negative triangle inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert
PTGNR/L1616	16	16	100	22	16	20	16	0.8	TN**1604...
PTGNR/L2020	20	20	125	22	20	25	16	0.8	TN**1604...
PTGNR/L2525M3	25	25	150	22	25	32	21	0.8	TN**1604...
PTGNR/L2525M4	25	25	150	28	25	32	24	0.8	TN**2204...
PTGNR3225P4	32	25	170	28	32	32	24	0.8	TN**2204...

**r*ε: Standard corner radius

SPARE PARTS

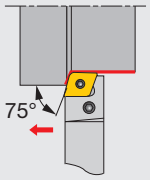
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PTGNR/L1616, 2020	LST317	LCS3	P-2.5	LSP3	LCL3
PTGNR/L2525M3	LST317	LCS3	P-2.5	LSP3	LCL3
PTGNR/L2525M4	LST42	LCS4	P-3	LSP4	LCL4
PTGNR3225P4	LST42	LCS4	P-3	LSP4	LCL4

PDPNN: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

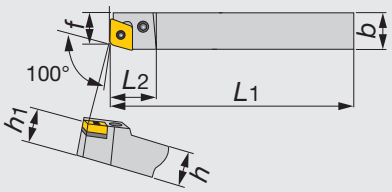
PTGNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

PCBNR/L

Lever lock type toolholder with 75° approach angle, for negative 80° rhombic inserts



Cutting edge style **B**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
PCBNR/L2525	25	25	150	28	25	22	0.8	CN**1204...

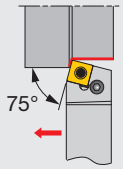
Note: 100° corners are used
**r_ε: Standard corner radius

SPARE PARTS

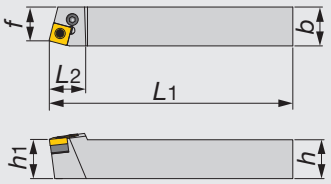
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PCBNR/L2525	LSC42	LCS4	P-3	LSP4	LCL4

PSBNR/L

Lever lock type toolholder with 75° approach angle, for negative square inserts



Cutting edge style **B**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
PSBNR/L1616	16	16	100	22	16	13	0.8	SN**0903...
PSBNR/L2020	20	20	125	28	20	17	0.8	SN**1204...
PSBNR/L2525	25	25	150	24	25	22	0.8	SN**1204...
PSBNR/L3232	32	32	170	40	32	27	1.2	SN**1906...

**r_ε: Standard corner radius

SPARE PARTS

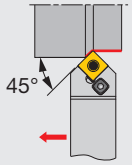
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PSBNR/L1616	LSS33	LCS3	P-2.5	LSP3L	LCL3
PSBNR/L2*2*	LSS42	LCS4	P-3	LSP4	LCL4
PSBNR/L3232	LSS63	LCS6	P-4	LSP6	LCL6

PCBNR/L: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176**

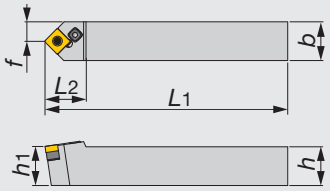
PSBNR/L: Inserts → **B070 -**, CBN → **B164**, PCD → **B176**

PSDNN

Lever lock type toolholder with 45° approach angle, for negative square inserts



Cutting edge style **D**



Designation	h	b	L1	L2	h1	f	rε**	Insert
PSDNN1616	16	16	100	22	16	8	0.8	SN**0903...
PSDNN2020	20	20	125	30	20	10.3	0.8	SN**1204...
PSDNN2525	25	25	150	30	25	12.8	0.8	SN**1204...

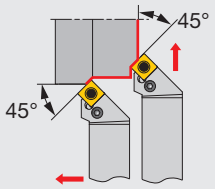
**rε: Standard corner radius

SPARE PARTS

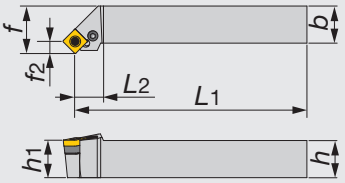
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PSDNN1616	LSS33	LCS3	P-2.5	LSP3L	LCL3
PSDNN2020	LSS42	LCS4	P-3	LSP4	LCL4
PSDNN2525	LSS42	LCS4	P-3	LSP4	LCL4

PSSNR/L

Lever lock type toolholder with 45° approach angle (S-style), for negative square inserts



Cutting edge style **S**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	f2	rε**	Insert
PSSNR/L1616	16	16	94	16	16	20	6.1	0.8	SN**0903...
PSSNR/L2020	20	20	116	21	20	25	8.3	0.8	SN**1204...
PSSNR/L2525	25	25	141	21	25	32	8.3	0.8	SN**1204...
PSSNR3225	32	25	161	21	32	32	8.3	0.8	SN**1204...
PSSNR/L3232	32	32	157.5	27.5	32	40	12.5	1.2	SN**1906...

**rε: Standard corner radius

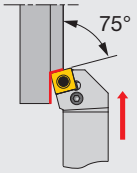
SPARE PARTS

Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PSSNR/L1616	LSS33	LCS3	P-2.5	LSP3L	LCL3
PSSNR/L2020	LSS42	LCS4	P-3	LSP4	LCL4
PSSNR/L**25	LSS42	LCS4	P-3	LSP4	LCL4
PSSNR/L3232	LSS63	LCS6	P-4	LSP6	LCL6

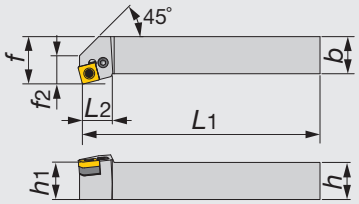
PSDNN, PSSNR/L: Inserts → **B070 -**, CBN → **B164 -**, PCD → **B176 -**

PSKNR/L

Lever lock type toolholder with 75° approach angle, for negative square inserts



Cutting edge style **K**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	f_2	r_ε**	Insert
PSKNR/L1616	16	16	100	17	16	25	15	0.8	SN**0903...
PSKNR/L2020	20	20	125	22	20	25	17	0.8	SN**1204...
PSKNR/L2525	25	25	150	22	25	32	17	0.8	SN**1204...
PSKNR3232	32	32	170	40	32	40	27	1.2	SN**1906...

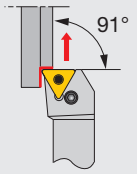
**r_ε: Standard corner radius

SPARE PARTS

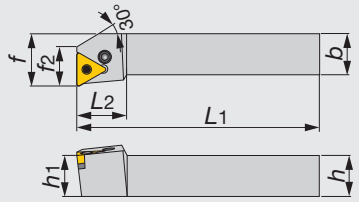
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PSKNR/L1616	LSS33	LCS3	P-2.5	LSP3L	LCL3
PSKNR/L2*2*	LSS42	LCS4	P-3	LSP4	LCL4
PSKNR3232	LSS63	LCS6	P-4	LSP6	LCL6

PTFNR/L

Lever lock type toolholder for facing with 91° approach angle, negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	f_2	r_ε**	Insert
PTFNR/L1616	16	16	100	22	16	20	16	0.8	TN**1604...
PTFNR/L2020	20	20	125	22	20	25	16	0.8	TN**1604...
PTFNR/L2525M3	25	25	150	22	25	32	20	0.8	TN**1604...
PTFNR/L2525M4	25	25	150	28	25	32	24	0.8	TN**2204...
PTFNR/L3225P4	32	25	170	28	32	32	24	0.8	TN**2204...

**r_ε: Standard corner radius

SPARE PARTS

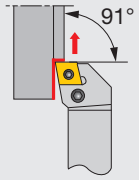
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PTFNR/L1616, 2020	LST317	LCS3	P-2.5	LSP3	LCL3
PTFNR/L2525M3	LST317	LCS3	P-2.5	LSP3	LCL3
PTFNR/L**25*4	LST42	LCS4	P-3	LSP4	LCL4

PSKNR/L: Inserts → **B070 -**, CBN → **B164**, PCD → **B176**

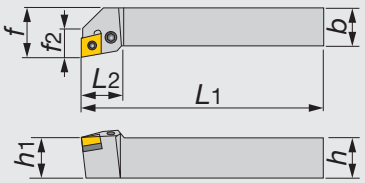
PTFNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

PCFNR/L

Lever lock type toolholder for facing with 91° approach angle, negative 80° rhombic inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	h	b	L_1	L_2	h_1	f	f_2	r_ε**	Insert
PCFNR/L2020	20	20	125	28	20	25	18	0.8	CN**1204...
PCFNR/L2525	25	25	150	28	25	32	18	0.8	CN**1204...

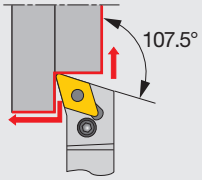
**r_ε: Standard corner radius

SPARE PARTS

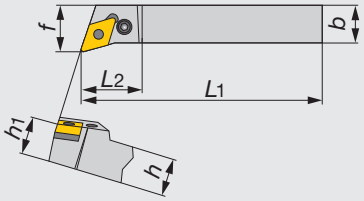
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PCFNR/L...	LSC42 D30	LCS4	P-3	LSP4	LCL4

PDQNR/L

Lever lock type toolholder with 107.5° approach angle, for negative 55° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	h	b	L_1	L_2	h_1	f	r_ε**	Insert
PDQNR/L2525	25	25	150	32	25	32	0.8	DN**1504...

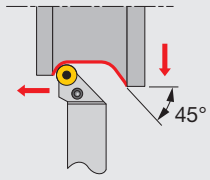
**r_ε: Standard corner radius

SPARE PARTS

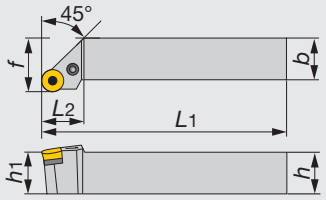
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PDQNR/L...	LSD42 D30	LCS4	P-3	LSP4	LCL4

PRGNR/L

Lever lock type toolholder with 91° approach angle, for negative round inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	h	b	L_1	L_2	h_1	f	r_ε**	Insert
PRGNR/L2020	20	20	125	19	20	25	4.76	RNMG090300-61
PRGNR/L2525M4	25	25	150	25	25	32	6.35	RN**120400

**r_ε: Standard corner radius

SPARE PARTS

Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PRGNR/L2020	LSR32	LCS3	P-2.5	LSP3	LCL3
PRGNR/L2525M4	LSR42	LCS4	P-3	LSP4	LCL4

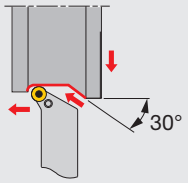
PCFNR/L: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176 -**

PDQNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

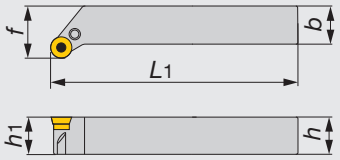
PRGNR/L: Inserts → **B102**

PRGCR/L

Lever lock type toolholder with 91° approach angle, for positive round inserts



Cutting edge style **G**



Right hand (R) shown.

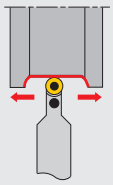
Designation	*h*	*b*	*L*1	*h*1	*f*	Insert
PRGCR/L2020K10	20	20	125	20	25	RCMM1003...
PRGCR/L2525M12	25	25	150	25	32	RCM*1204...
PRGCR/L3225P16	32	25	170	32	32	RCM*1606...
PRGCR/L3232P20	32	32	170	32	40	RCM*2006...

SPARE PARTS

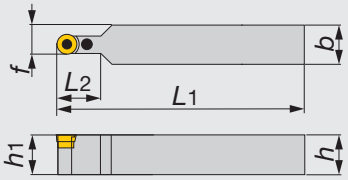
Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PRGCR/L2020K10	LSR32C	LCS2	P-2	LSP3	LCL3C
PRGCR/L2525M12	LSR42C	LCS3	P-2.5	LSP3	LCL4C
PRGCR/L3225P16	LSR53C	LCS5	P-3	LSP4	LCL5C
PRGCR/L3232P20	LSR63C	LCS5	P-3	LSP6C	LCL6C

PRDCN

Lever lock type toolholder with 45° approach angle, for positive round inserts



Cutting edge style **D**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	Insert
PRDCN2020K10	20	20	125	22	20	15	RCMM1003...
PRDCN2525M12	25	25	150	24	25	18.5	RCM*1204...
PRDCN3225P12	32	25	170	24	32	18.5	RCM*1204...
PRDCN3225P16	32	25	170	28	32	20.5	RCM*1606...
PRDCN3232P20	32	32	170	32	32	26	RCM*2006...
PRDCN4040R25	40	40	200	42	40	32.5	RCM*2507...

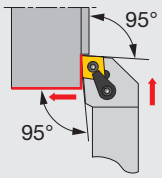
SPARE PARTS

Designation	Shim	Clamping screw	Wrench	Spring pin	Lever
PRDCN2020K10	LSR32C	LCS2	P-2	LSP3	LCL3C
PRDCN**25*12	LSR42C	LCS3	P-2.5	LSP3	LCL4C
PRDCN3225P16	LSR53C	LCS5	P-3	LSP4	LCL5C
PRDCN3232P20	LSR63C	LCS5	P-3	LSP6C	LCL6C
PRDCN4040R25	LSR84C	LCS8C	P-4	LSP6	LCL8C

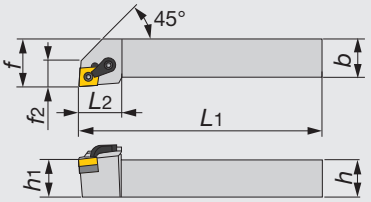
PRGCR/L, PRDCN: Inserts → **B152 -**

MCLNR/L

Multi-clamp toolholder with 95° approach angle, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert
MCLNR/L2525M12	25	25	150	32	25	32	18	0.8	CN**1204...

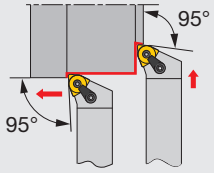
**r_ε: Standard corner radius

SPARE PARTS

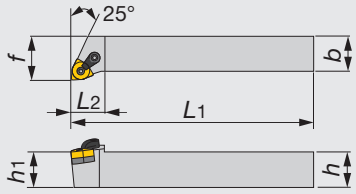
Designation	Clamp	Pin	Right-left screw	Shim	Wrench 1	Wrench 2
MCLNR/L...	MCPM-21	MLP46	MCS625-3	MSC-432	P-3	P-2.5F

MWLNR/L

Multi-clamp toolholder with 95° approach angle, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
MWLNR2020K08	20	20	125	25	20	25	0.8	WN**0804...
MWLNR/L2525M08	25	25	150.	25	25	32	0.8	WN**0804...

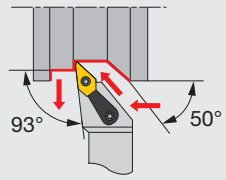
**r_ε: Standard corner radius

SPARE PARTS

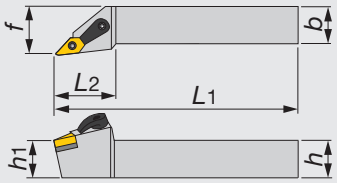
Designation	Clamp	Pin	Right-left screw	Shim	Wrench
MWLNR/L...	MCPM-6	MLP46	MCS520-2.5	MSW-432	P-2.5

MVJNR/L

Multi-clamp toolholder with 93° approach angle, for negative 35° or 25° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
MVJNR/L2020K16	20	20	125	42	20	25	0.8	V/YN**1604...
MVJNR/L2525M16	25	25	150	42	25	32	0.8	V/YN**1604...
MVJNR/L3225P16	32	25	170	42	32	32	0.8	V/YN**1604...
MVJNR/L3232P16	32	32	170	42	32	40	0.8	V/YN**1604...

**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Pin	Right-left screw	Shim	Wrench 1	Wrench 2
MVJNR/L...	MCPM-22	MLP34L	MCS625-3	MSV-322	P-3	P-2F

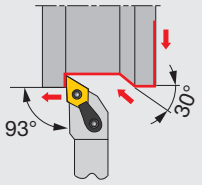
MCLNR/L: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176**

MWLNR/L: Inserts → **B090 -**, CBN → **B165**

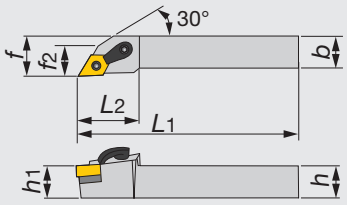
MVJNR/L: Inserts → **B097 -**, CBN → **B165 -**, PCD → **B176**

MDJNR

Multi-clamp toolholder with 93° approach angle, for negative 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert
MDJNR2525M15	25	25	150	38	25	32	19	0.8	DN**15...

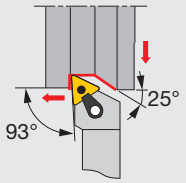
**r_ε: Standard corner radius

SPARE PARTS

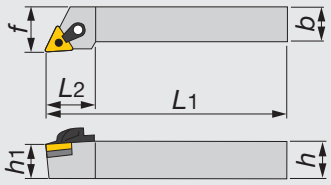
Designation	Clamp	Pin	Right-left screw	Shim	Wrench 1	Wrench 2
MDJNR2525M15	MCPM-22	MLP46L	MCS625-3	MSD-432	P-3	P-2.5F

MTJNR

Multi-clamp toolholder with 93° approach angle, for negative triangle inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
MTJNR2525M16	25	25	150	28	25	32	0.8	TN**16...

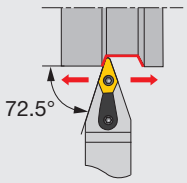
**r_ε: Standard corner radius

SPARE PARTS

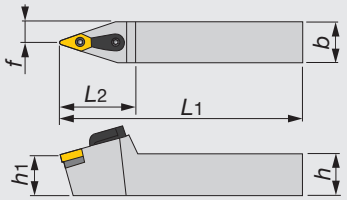
Designation	Clamp	Pin	Right-left screw	Shim	Wrench 1	Wrench 2
MTJNR2525M16	MCPM-21	MLP34L	MCS625-3	MST-322	P-3	P-2F

MVVNN

Multi-clamp toolholder with 72.5° approach angle, for negative 35° or 25° rhombic inserts



Cutting edge style **V**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
MVVNN2020K16	20	20	125	48	20	10	0.8	V/YN**1604...
MVVNN2525M16	25	25	150	48	25	12.5	0.8	V/YN**1604...
MVVNN3225P16	32	25	170	48	32	12.5	0.8	V/YN**1604...

**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Pin	Right-left screw	Shim	Wrench 1	Wrench 2
MVVNN...	MCPM-30	MLP34L	MCS828-4	MSV-322	P-4	P-2F

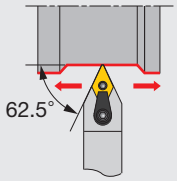
MDJNR: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

MTJNR: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

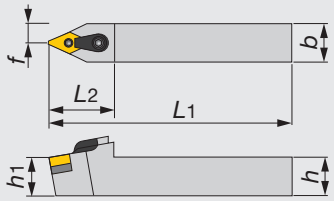
MVVNN: Inserts → **B097 -**, CBN → **B165 -**, PCD → **B176**

MDPNN

Multi-clamp toolholder with 62.5° approach angle, for negative 55° rhombic inserts



Cutting edge style **P**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
MDPNN2525M15	25	25	150	42	25	12.5	0.8	DN**15...

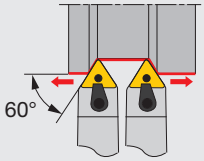
**r_ε: Standard corner radius

SPARE PARTS

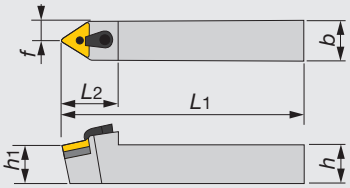
Designation	Clamp	Pin	Right-left screw	Shim	Wrench 1	Wrench 2
MDPNN2525M15	MCPM-22	MLP46L	MCS625-3	MSD-432	P-3	P-2.5F

MTENN

Multi-clamp toolholder with 60° approach angle, for negative triangle inserts



Cutting edge style **E**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
MTENN2525M16	25	25	150	35	25	12.5	0.8	TN**16...

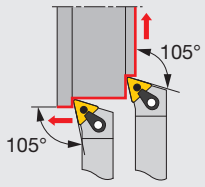
**r_ε: Standard corner radius

SPARE PARTS

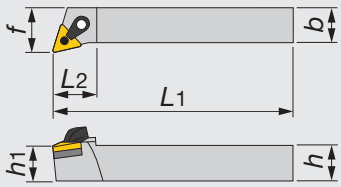
Designation	Clamp	Pin	Right-left screw	Shim	Wrench 1	Wrench 2
MTENN2525M16	MCPM-21	MLP34L	MCS625-3	MST-322	P-3	P-2F

MTQNR

Multi-clamp toolholder with 105° approach angle, for negative triangle inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
MTQNR2020K16	20	20	125	26	20	25	0.8	TN**16...
MTQNR2525M16	25	25	150	26	25	32	0.8	TN**16...

**r_ε: Standard corner radius

SPARE PARTS

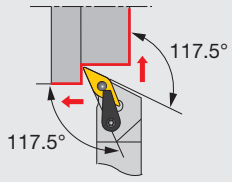
Designation	Clamp	Pin	Right-left screw	Shim	Wrench 1	Wrench 2
MTQNR...	MCPM-21	MLP34L	MCS625-3	MST-322	P-3	P-2F

MDPNN: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

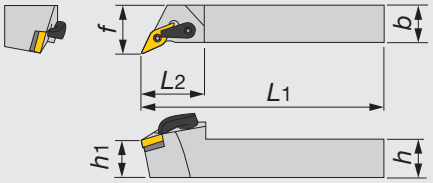
MTENN, MTQNR: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

MVQNR/L

Multi-clamp toolholder with 117.5° approach angle, for negative 35° or 25° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
MVQNR/L2020K16	20	20	125	40	20	25	0.8	V/YN**1604...
MVQNR/L2525M16	25	25	150	40	25	32	0.8	V/YN**1604...
MVQNR/L3232P16	32	32	170	40	32	40	0.8	V/YN**1604...

**r_ε: Standard corner radius

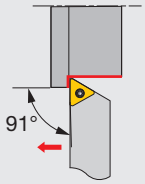
SPARE PARTS

Designation	Clamp	Pin	Right-left screw	Shim	Wrench 1	Wrench 2
MVQNR/L...	MCPM-22	MLP34L	MCS625-3	MSV-322	P-3	P-2F

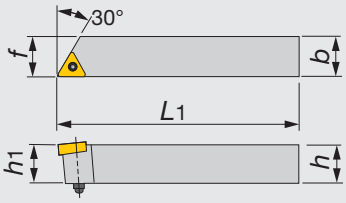
MVQNR/L: Inserts → **B097 -**, CBN → **B165 -**, PCD → **B176**

ETANR

Pin-lock toolholder with 91° approach angle, for negative triangle inserts



Cutting edge style **A**



Right hand (R) shown.

Designation	h	b	L1	h1	f	rε**	Insert
ETANR1616H33	16	16	100	15.5	16	0.8	TN**1604...
ETANR2020K33	20	20	125	19.5	20	0.8	TN**1604...

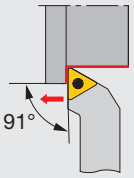
**rε: Standard corner radius

SPARE PARTS

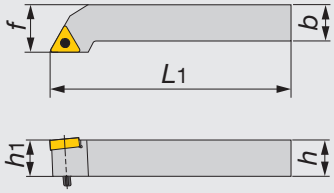
Designation	E-ring	Pin	Wrench
ETANR1616H33	ER3	P332US	KY40
ETANR2020K33	ER3	P333US	KY40

ETGNR/L

Pin-lock toolholder with 91° approach angle, for negative triangle inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	h	b	L1	h1	f	rε**	Insert
ETGNR/L1212	12	12	80	11.5	16	0.4	TN**1103...
ETGNR/L1616H33	16	16	100	15.5	20	0.8	TN**1604...
ETGNR/L2020K33	20	20	125	19.5	25	0.8	TN**1604...
ETGNR/L2020K33W	20	20	125	19.5	25	0.8	TN**1604...
ETGNR2525M33	25	25	150	24.5	32	0.8	TN**1604...
ETGNR/L2525M33W	25	25	150	24.5	32	0.8	TN**1604...

**rε: Standard corner radius

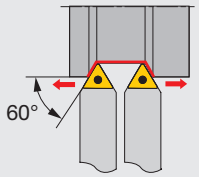
SPARE PARTS

Designation	E-ring	Pin	Shim	Wrench
ETGNR/L1212	ER2	P221US	-	KY25
ETGNR/L1616H33	ER3	P332US	-	KY40
ETGNR/L2020K33	ER3	P333US	-	KY40
ETGNR/L2020K33W	ER3	P333WS	EST32	KY40
ETGNR2525M33	ER3	P334US	-	KY40
ETGNR/L2525M33W	ER3	P334WS	EST32	KY40

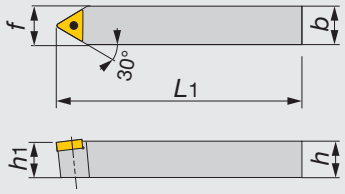
ETANR, ETGNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

ETENN

Pin-lock toolholder with 60° approach angle, for negative triangle inserts



Cutting edge style **E**



Designation	*h*	*b*	L_1	h_1	*f*	r_ε**	Insert
ETENN1212	12	12	80	11.5	6	0.4	TN**1103...
ETENN1616H33	16	16	100	15.5	8	0.8	TN**1604...
ETENN2020K33	20	20	125	19.5	10	0.8	TN**1604...
ETENN2020K33W	20	20	125	19.5	10	0.8	TN**1604...
ETENN2525M33W	25	25	150	24.5	12.5	0.8	TN**1604...

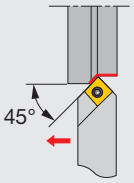
**r_ε: Standard corner radius

SPARE PARTS

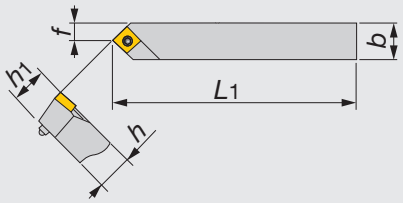
Designation	E-ring	Pin	Shim	Wrench
ETENN1212	ER2	P221US	-	KY25
ETENN1616H33	ER3	P332US	-	KY40
ETENN2020K33	ER3	P333US	-	KY40
ETENN2020K33W	ER3	P333WS	EST32	KY40
ETENN2525M33W	ER3	P334WS	EST32	KY40

ESDNR/L

Pin-lock toolholder with 45° approach angle, for negative square inserts



Cutting edge style **D**



Right hand (R) shown.

Designation	*h*	*b*	L_1	h_1	*f*	r_ε**	Insert
ESDNR1212	12	12	80	11.5	6	0.8	SN**0903...
ESDNR1616H32	16	16	100	15.5	8	0.8	SN**0903...

**r_ε: Standard corner radius

SPARE PARTS

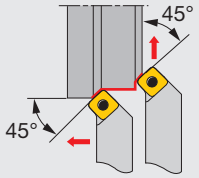
Designation	E-ring	Pin	Wrench
ESDNR1212	ER3	P321US	KY40
ESDNR1616H32	ER3	P322US	KY40

ETENN: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

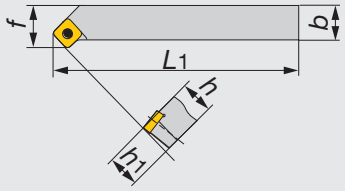
ESDNR/L: Inserts → **B070 -**

ESSNR/L

Pin-lock toolholder with 45° approach angle, for negative square inserts



Cutting edge style **S**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*h*1	*f*	*r*ε**	Insert
ESSNR1616H32	16	16	100	15.5	20	0.8	SN**0903...
ESSNR2020W	20	20	125	19.5	25	0.8	SN**1204...

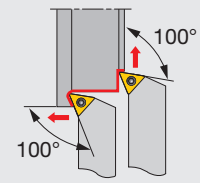
**r_ε: Standard corner radius

SPARE PARTS

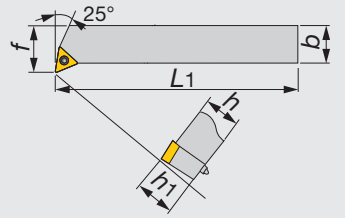
Designation	E-ring	Pin	Shim	Wrench
ESSNR1616H32	ER3	P322US	-	KY40
ESSNR2020W	ER3	P433W	ESS42	KY40

ETXNR/L

Pin-lock toolholder with 100° approach angle, for negative triangle inserts



Cutting edge style **X**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*h*1	*f*	*r*ε**	Insert
ETXNL1616H33	16	16	100	15.5	20	0.8	TN**1604...
ETXNR2020K33	20	20	125	19.5	25	0.8	TN**1604...

**r_ε: Standard corner radius

SPARE PARTS

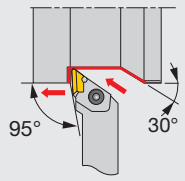
Designation	E-ring	Pin	Wrench
ETXNL1616H33	ER3	P332US	KY40
ETXNR2020K33	ER3	P333US	KY40

ESSNR/L: Inserts → **B070 -**, CBN → **B164 -**, PCD → **B176**

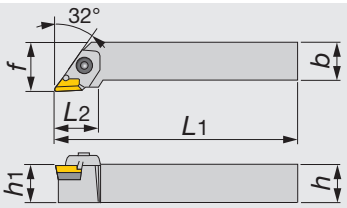
ETXNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

CKJNR/L

Clamp-on toolholder with 93° approach angle, for negative 55° parallelogram inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
CKJNR/L2525	25	25	150	32	25	32	0.8	KNMX1604...

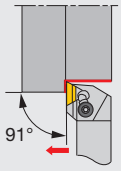
**r_ε: Standard corner radius

SPARE PARTS

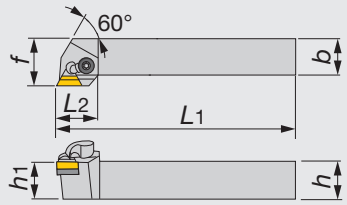
Designation	Clamp	Pin	Clamping screw	Shim screw	Shim	Spring	Wrench
CKJNR2525	CPK5R	BP-490	CTS-M6	SM3X0.5X10	CSK54R	SP913	P-4
CKJNL2525	CPK5L	BP-490	CTS-M6	SM3X0.5X10	CSK54L	SP913	P-4

CTGNR/L

Clamp-on toolholder with 91° approach angle, for negative triangle inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
CTGNR/L2020	20	20	125	28.5	20	25	0.8	TN**1604...
CTGNR/L2525	25	25	150	28.5	25	32	0.8	TN**1604...

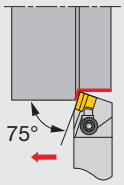
**r_ε: Standard corner radius

SPARE PARTS

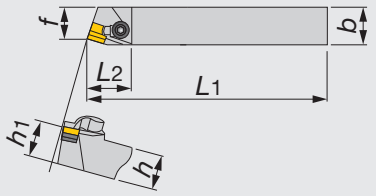
Designation	Chipbreaker piece	Clamp	Clamping screw	Shim screw	Shim	Wrench
CTGNR/L...	NCT-2M	NF-84A	NDS-8A	SM3X0.5X8	NAT-32	P-4

CSBNR/L

Clamp-on toolholder with 75° approach angle, for negative square inserts



Cutting edge style **B**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
CSBNR2020	20	20	125	31	20	17	0.8	SN**1204...
CSBNR/L2525	25	25	150	31	25	22	0.8	SN**1204...

**r_ε: Standard corner radius

SPARE PARTS

Designation	Chipbreaker piece	Clamp	Clamping screw	Shim screw	Shim	Wrench
CSBNR/L...	NCS-3M	NF-84A	NDS-8A	SM3X0.5X8	NAS-42	P-4

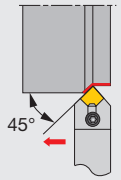
CKJNR/L: Inserts → **B103**

CTGNR/L: Inserts → **B089**, CBN → **B173**

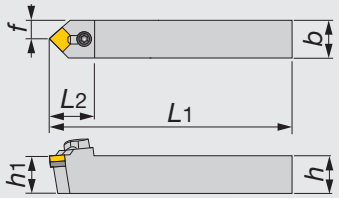
CSBNR/L: Inserts → **B078**, CBN → **B173**, PCD → **B176**

CSDNN

Clamp-on toolholder with 45° approach angle, for negative square inserts



Cutting edge style **D**



Designation	h	b	L1	L2	h1	f	rε**	Insert
CSDNN2020	20	20	125	32	20	10	0.8	SN**1204...
CSDNN2525	25	25	150	32	25	12.5	0.8	SN**1204...

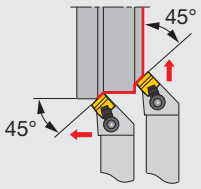
**rε: Standard corner radius

SPARE PARTS

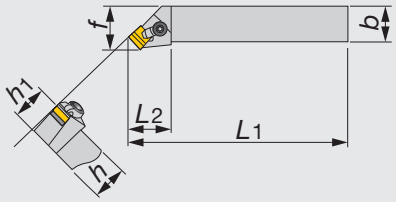
Designation	Chipbreaker piece	Clamp	Clamping screw	Shim screw	Shim	Wrench
CSDNN...	NCS-3MN	NF-84A	NDS-8A	SM3X0.5X8	NAS-42	P-4

CSSNR/L

Clamp-on toolholder with 45° approach angle (S-style), for negative square inserts



Cutting edge style **S**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
CSSNR/L2020	20	20	125	31	20	25	0.8	SN**1204...
CSSNR/L2525	25	25	150	31	25	32	0.8	SN**1204...

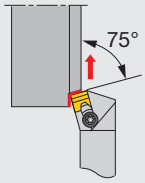
**rε: Standard corner radius

SPARE PARTS

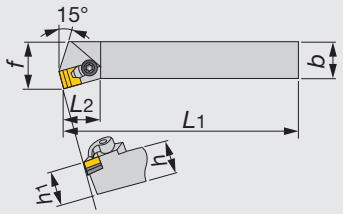
Designation	Chipbreaker piece	Clamp	Clamping screw	Shim screw	Shim	Wrench
CSSNR/L...	NCS-3M	NF-84A	NDS-8A	SM3X0.5X8	NAS-42	P-4

CSKNR/L

Clamp-on toolholder with 75° approach angle, for negative square inserts



Cutting edge style **K**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
CSKNR/L2525	25	25	150	25	25	32	0.8	SN**1204...

**rε: Standard corner radius

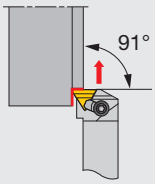
SPARE PARTS

Designation	Chipbreaker piece	Clamp	Clamping screw	Shim screw	Shim	Wrench
CSKNR/L2525	NCS-3MN	NF-84A	NDS-8A	SM3X0.5X8	NAS-42	P-4

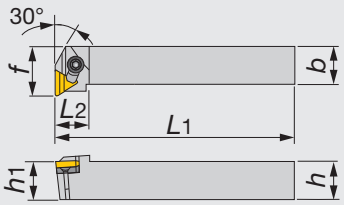
CSDNN, CSSNR/L, CSKNR/L: Inserts → **B078**, CBN → **B173**, PCD → **B176**

CTFNR/L

Clamp-on toolholder for facing with 91° approach angle, negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
CTFNR/L2020	20	20	125	22	20	25	0.8	TN**1604...
CTFNR/L2525	25	25	150	22	25	32	0.8	TN**1604...

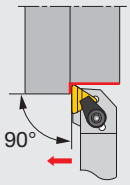
**rε: Standard corner radius

SPARE PARTS

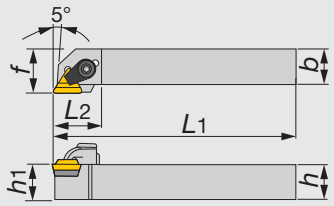
Designation	Chipbreaker piece	Clamp	Clamping screw	Shim screw	Shim	Wrench
CTFNR/L...	NCT-2M	NF-84A	NDS-8A	SM3X0.5X8	NAT-32	P-4

CTGPR/L

Clamp-on toolholder with 90° approach angle, for positive triangle inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
CTGPR/L1616H3	16	16	100	23	16	20	0.8	TP**1603...
CTGPR/L2020K3	20	20	125	27	20	25	0.8	TP**1603...
CTGPR/L2525M3	25	25	150	27	25	32	0.8	TP**1603...

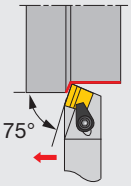
**rε: Standard corner radius

SPARE PARTS

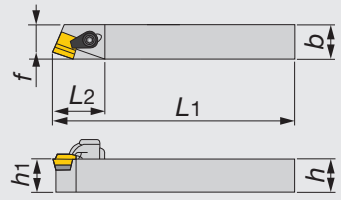
Designation	Chipbreaker piece	Clamp set	Shim screw	Shim	Wrench
CTGPR/L1616H3	CBT-3M	CSG-6L	SM3X0.5X8	PAT-32	P-3
CTGPR/L2*2**3	CBT-3M	CSG-8	SM3X0.5X8	PAT-32	P-4

CSBPR/L

Clamp-on toolholder with 75° approach angle, for positive square inserts



Cutting edge style **B**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
CSBPR/L1616H3	16	16	100	25	16	13	0.4	SP**0903...
CSBPR/L2020K4	20	20	125	32	20	17	0.8	SP**1203...
CSBPR/L2525M4	25	25	150	32	25	22	0.8	SP**1203...

**rε: Standard corner radius

SPARE PARTS

Designation	Chipbreaker piece	Clamp set	Shim screw	Shim	Wrench
CSBPR/L1616H3	CBS-3M	CSG-6L	SM2.5X0.45X8	PAS-32	P-3
CSBPR/L2*2**4	CBS-4M	CSG-8	SM3X0.5X8	PAS-42	P-4

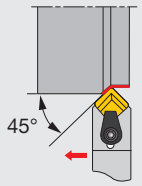
CTFNR/L: Inserts → **B089**, CBN → **B173**

CTGPR/L: Inserts → **B139 -**, CBN → **B170 -**, PCD → **B178**

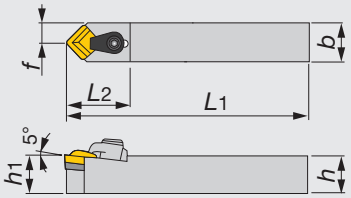
CSBPR/L: Inserts → **B125**, CBN → **B168 -**, PCD → **B177**

CSDPN

Clamp-on toolholder with 45° approach angle, for positive square inserts



Cutting edge style **D**



Designation	h	b	L1	L2	h1	f	rε**	Insert
CSDPN1616H3	16	16	100	26	16	8	0.8	SP**0903...
CSDPN2020K4	20	20	125	34	20	10	0.8	SP**1203...
CSDPN2525M4	25	25	150	34	25	12.5	0.8	SP**1203...

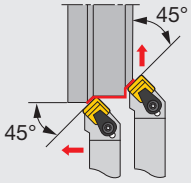
**rε: Standard corner radius

SPARE PARTS

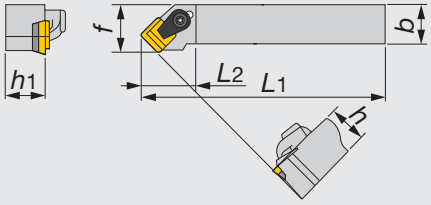
Designation	Chipbreaker piece	Clamp set	Shim screw	Shim	Wrench
CSDPN1616H3	CBS-3MN	CSG-6L	SM2.5X0.45X8	PAS-32	P-3
CSDPN2*2**4	CBS-4MN	CSG-8	SM3X0.5X8	PAS-42	P-4

CSSPR

Clamp-on toolholder with 45° approach angle (S-style), for positive square inserts



Cutting edge style **S**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
CSSPR1616H3	16	16	105.5	23	16	20	0.8	SP**0903...
CSSPR2020K4	20	20	133	28	20	25	0.8	SP**1203...
CSSPR2525M4	25	25	158	28.	25	32	0.8	SP**1203...

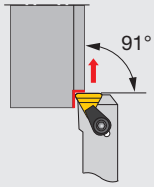
**rε: Standard corner radius

SPARE PARTS

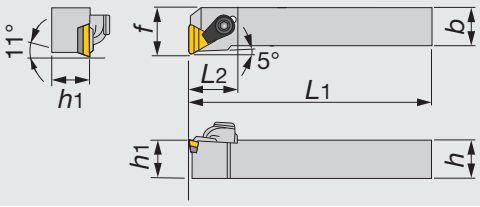
Designation	Chipbreaker piece	Clamp set	Shim screw	Shim	Wrench
CSSPR1616H3	CBS-3M	CSG-6L	SM2.5X0.45X8	PAS-32	P-3
CSSPR2*2**4	CBS-4M	CSG-8	SM3X0.5X8	PAS-42	P-4

CTFPR/L

Clamp-on toolholder for facing with 91° approach angle, positive triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
CTFPR/L1616H3	16	16	100	23	16	20	0.8	TP**1603...
CTFPR/L2020K3	20	20	125	26	20	25	0.8	TP**1603...
CTFPR/L2525M3	25	25	150	26	25	32	0.8	TP**1603...

**rε: Standard corner radius

SPARE PARTS

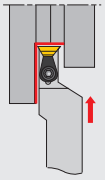
Designation	Chipbreaker piece	Clamp set	Shim screw	Shim	Wrench
CTFPR/L1616H3	CBT-3M	CSG-6L	SM3X0.5X8	PAT-32	P-3
CTFPR/L2*2**3	CBT-3M	CSG-8	SM3X0.5X8	PAT-32	P-4

CSDPN, CSSPR: Inserts → **B125**, CBN → **B168 -**, PCD → **B177**

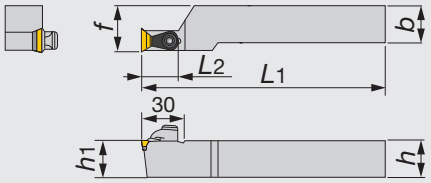
CTFPR/L: Inserts → **B139 -**, CBN → **B170 -**, PCD → **B178**

CTCPR/L

Clamp-on toolholder for facing with 90° approach angle, positive triangle inserts



Cutting edge style **C**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
CTCPR/L2525M3	25	25	150	32	25	32	0.8	TP**1603...

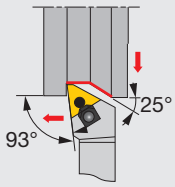
**rε: Standard corner radius

SPARE PARTS

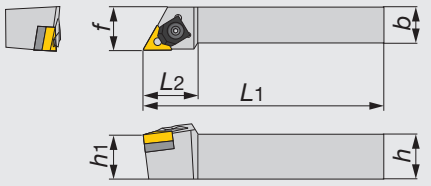
Designation	Chipbreaker piece	Clamp set	Shim screw	Shim	Wrench
CTCPR/L2525M3	CBT-3M	CSW-2	SM3X0.5X8	PAT-32	P-4

WTJNR/L

Wedge-on toolholder with 93° approach angle, for negative triangle inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
WTJNR2020	20	20	125	31	20	25	0.8	TN**1604...
WTJNR/L2525M3	25	25	150	31	25	32	0.8	TN**1604...

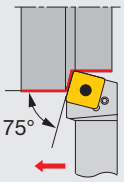
**rε: Standard corner radius

SPARE PARTS

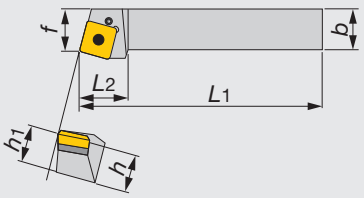
Designation	Clamp	E-ring	Nut	Pin	Clamping screw	Shim	Wrench
WTJNR2020	WCW3	5103-25	WCN3S	WCP3S	WCS3	WST33	P-3
WTJNR/L2525M3	WCW3	5103-25	WCN3	WCP3S	WCS3	WST33	P-3

HSRNR/L

Retract-pin clamp toolholder with 75° approach angle, for negative square inserts



Cutting edge style **R**



Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	rε**	Insert
HSRNR/L4040R	40	40	200	50	40	43	1.6	SNMM3109...
HSRNR/L5050S	50	50	250	60	50	53	1.6	SNMM3109...

**rε: Standard corner radius

SPARE PARTS

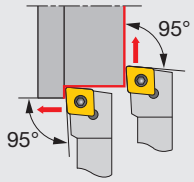
Designation	Pin	Clamping screw	Shim	Wrench
HSRNR/L...	SW99	LS-8	NAS-04	P-4

CTCPR/L: Inserts → **B139 -**, CBN → **B170 -**, PCD → **B178**

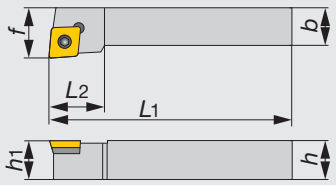
WTJNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

SCLCR/L

Screw-on clamp toolholder with 95° approach angle, for positive 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
SCLCR/L1616H09	16	16	100	16	16	20	0.8	CC**09T3...
SCLCR/L2020K12	20	20	125	20	20	25	0.8	CC**1204...

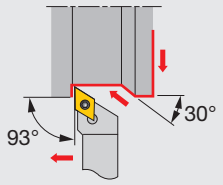
**r_ε: Standard corner radius

SPARE PARTS

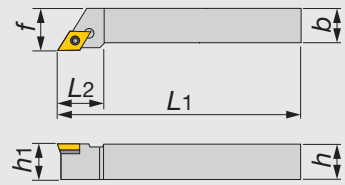
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SCLCR/L1616H09	CSTB-3.5L	DTS5-3.5	SSC32	P-3.5	T-15F
SCLCR/L2020K12	CSTB-4F	DTS6-4	SSC4T3	P-4	T-15F

SDJCR/L

Screw-on clamp toolholder with 93° approach angle, for positive 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
SDJCR1616H11	16	16	100	20	16	20	0.8	DC**11T3...
SDJCR/L2020K11	20	20	125	20.5	20	25	0.8	DC**11T3...
SDJCR/L2525M11	25	25	150	21.5	25	32	0.8	DC**11T3...

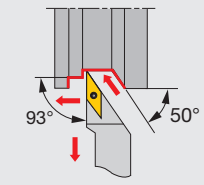
**r_ε: Standard corner radius

SPARE PARTS

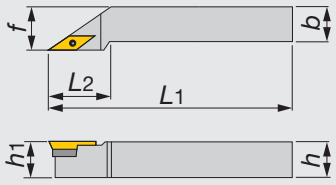
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SDJCR/L...	CSTB-3.5L	DTS5-3.5	SSD32	P-3.5	T-15F

SVJCR/L

Screw-on clamp toolholder with 93° approach angle, for positive 35° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
SVJCR/L1616H16	16	16	100	32	16	20	0.8	VC**1604...
SVJCR/L2020K16	20	20	125	32	20	25	0.8	VC**1604...
SVJCR/L2525M16	25	25	150	40	25	32	0.8	VC**1604...

**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SVJCR/L...	CSTB-3.5L	DTS5-3.5	SSV32	P-3.5	T-15F

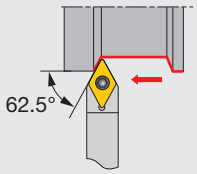
SCLCR/L: Inserts → **B104 -**, CBN → **B168 -**, PCD → **B177**

SDJCR/L: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

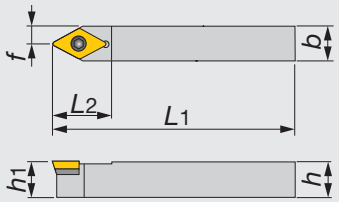
SVJCR/L: Inserts → **B145 -**, CBN → **B169 -**, PCD → **B177 -**

SDNCN

Screw-on clamp toolholder with 62.5° approach angle, for positive 55° rhombic inserts



Cutting edge style **N**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
SDNCN1616H11	16	16	100	21	16	8	0.8	DC**11T3...
SDNCN2020K11	20	20	125	21	20	10	0.8	DC**11T3...
SDNCN2525M11	25	25	150	21	25	12.5	0.8	DC**11T3...

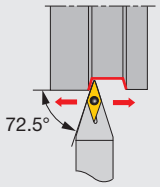
**r_ε: Standard corner radius

SPARE PARTS

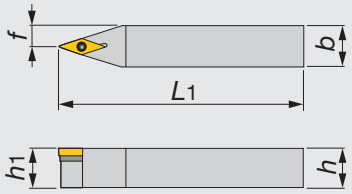
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SDNCN...	CSTB-3.5L	DTS5-3.5	SSD32	P-3.5	T-15F

SVVCN

Screw-on clamp toolholder with 72.5° approach angle, for positive 35° rhombic inserts



Cutting edge style **V**



Designation	*h*	*b*	*L*1	*h*1	*f*	*r*ε**	Insert
SVVCN2020K16	20	20	125	20	10	0.8	VC**1604...
SVVCN2525M16	25	25	150	25	12.5	0.8	VC**1604...

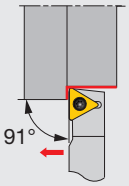
**r_ε: Standard corner radius

SPARE PARTS

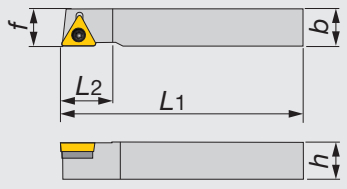
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SVVCN...	CSTB-3.5L	DTS5-3.5	SSV32	P-3.5	T-15F

STACR/L

Screw-on toolholder with 91° approach angle, for positive triangle inserts



Cutting edge style **A**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
STACR/L1616H16	16	16.	100	22.5	16	16	0.8	TC**16T3...

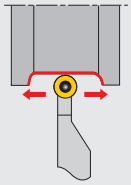
**r_ε: Standard corner radius

SPARE PARTS

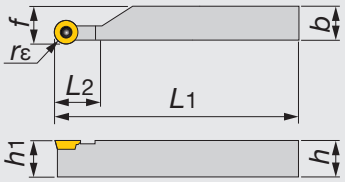
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
STACR/L...	CSTB-3.5L	DTS5-3.5	SST32	P-3.5	T-15F

SRACR/L

Screw-on toolholder with 91° approach angle, for positive round inserts



Cutting edge style **A**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
SRACR1010H05	10	10	100	10	10	10.3	2.5	RCMT0502...
SRACR/L1212H05	12	12	100	10	12	12.3	2.5	RCMT0502...
SRACR/L1212H06	12	12	100	12	12	12.4	3	RC*T0602...
SRACR1616H05	16	16	100	10	16	16.3	2.5	RCMT0502...
SRACR/L1616H06	16	16	100	12	16	16.4	3	RC*T0602...
SRACR/L1616H08	16	16	100	16	16	16.5	4	RC*T0803...
SRACR/L2020K05	20	20	125	10	20	20.3	2.5	RCMT0502...
SRACR/L2020K06	20	20	125	12	20	20.4	3	RC*T0602...
SRACR/L2020K08	20	20	125	16	20	20.5	4	RC*T0803...
SRACR/L2525M05	25	25	150	10	25	25.3	2.5	RCMT0502...
SRACR/L2525M06	25	25	150	12	25	25.4	3	RC*T0602...
SRACR/L2525M08	25	25	150	16	25	25.5	4	RC*T0803...

**r_ε: Standard corner radius

SPARE PARTS




Designation	Clamping screw	Wrench
SRACR/L1*1*H05	CSTB-2.2R	T-7F
SRACR/L1212H06	CSTB-2.5	T-8F
SRACR1616H05	CSTB-2.2R	T-7F
SRACR/L1616H06	CSTB-2.5	T-8F
SRACR/L1616H08	CSTB-3	T-9F
SRACR/L2020K05	CSTB-2.2R	T-7F
SRACR/L2020K06	CSTB-2.5	T-8F
SRACR/L2020K08	CSTB-3	T-9F
SRACR/L2525M05	CSTB-2.2R	T-7F
SRACR/L2525M06	CSTB-2.5	T-8F
SRACR/L2525M08	CSTB-3	T-9F

SDNCN: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

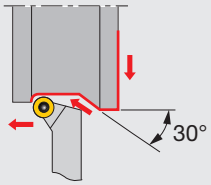
SVVCN: Inserts → **B145 -**, CBN → **B169 -**, PCD → **B177 -**

STACR/L: Inserts → **B126 -**

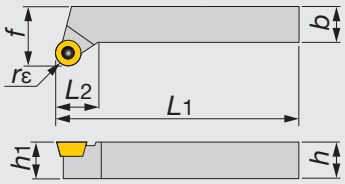
SRACR/L: Inserts → **B152 -**

SRGCR/L

Screw-on toolholder with 91° approach angle, for positive round inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
SRGCR1212H05	12	12	100	9.5	12	16	2.5	RCMT0502...
SRGCR/L1212H06	12	12	100	10	12	16	3	RC*T0602...
SRGCR/L1616H05	16	16	100	9.5	16	20	2.5	RCMT0502...
SRGCR/L1616H06	16	16	100	10	16	20	3	RC*T0602...
SRGCR/L1616H08	16	16	100	11	16	20	4	RC*T0803...
SRGCR/L2020K05	20	20	125	11.2	20	25	2.5	RCMT0502...
SRGCR/L2020K06	20	20	125	12	20	25	3	RC*T0602...
SRGCR/L2020K08	20	20	125	12.7	20	25	4	RC*T0803...
SRGCR/L2020K10	20	20	125	14	25	25	5	RC*T1003...
SRGCR/L2525M05	25	25	150	14.7	25	32	2.5	RCMT0502...
SRGCR/L2525M06	25	25	150	15	25	32	3	RC*T0602...
SRGCR/L2525M08	25	25	150	16.2	25	32	4	RC*T0803...
SRGCR/L2525M10	25	25	150	17.5	25	32	5	RC*T1003...

**r_ε: Standard corner radius

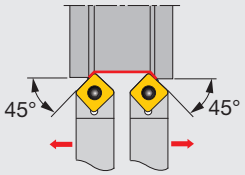
SPARE PARTS

Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SRGCR1212H05	CSTB-2.2R	-	-	-	T-7F
SRGCR/L1212H06	CSTB-2.5	-	-	-	T-8F
SRGCR/L1616H05	CSTB-2.2R	-	-	-	T-7F
SRGCR/L1616H06	CSTB-2.5	-	-	-	T-8F
SRGCR/L1616H08	CSTB-3	-	-	-	T-9F
SRGCR/L2020K05	CSTB-2.2R	-	-	-	T-7F
SRGCR/L2020K06	CSTB-2.5	-	-	-	T-8F
SRGCR/L2020K08	CSTB-3	-	-	-	T-9F
SRGCR/L2020K10	CSTB-3.5L	DTS5-3.5	SSR32	P-3.5	T-15F
SRGCR/L2525M05	CSTB-2.2R	-	-	-	T-7F
SRGCR/L2525M06	CSTB-2.5	-	-	-	T-8F
SRGCR/L2525M08	CSTB-3	-	-	-	T-9F
SRGCR/L2525M10	CSTB-3.5L	DTS5-3.5	SSR32	P-3.5	T-15F

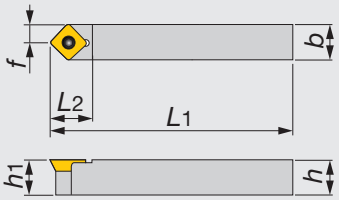
SRGCR/L: Inserts → **B152 -**

SSDC/PN

Screw-on clamp toolholder with 45° approach angle, for positive square inserts



Cutting edge style **D**



Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
SSDCN1010K07	10	10	125	12	10	5	0.4	SC**0702...
SSDPN1010H	10	10	100	12	10	5	0.4	SP*P042...
SSDCN1212K09	12	12	125	15	12	6	0.8	SC**09T3...
SSDPN1212H	12	12	100	12	12	6	0.4	SP*P042...
SSDCN1616H09	16	16	100	15	16	8	0.8	SC**09T3...
SSDPN1616H	16	16	100	14	16	8	0.8	SP*M322...

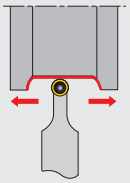
**r_ε: Standard corner radius

SPARE PARTS

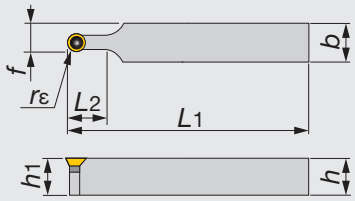
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SSDCN1010K07	CSTB-3	-	-	-	T-9F
SSDPN1010H	CSTA-NO3	-	-	-	T-9F
SSDCN1212K09	CSTB-4	-	-	-	T-15F
SSDPN1212H	CSTA-NO3	-	-	-	T-9F
SSDCN1616H09	CSTB-3.5L	DTS5-3.5	SSS32	P-3.5	T-15F
SSDPN1616H	CSTA-NO5	-	-	-	T-9F

SRDCN

Screw-on toolholder with 45° approach angle, for positive round inserts



Cutting edge style **D**



Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert
SRDCN2020K06	20	20	125	12	20	13	3	RC*T0602...
SRDCN2020K08	20	20	125	16	20	14	4	RC*T0803...
SRDCN2020K10	20	20	125	20.3	25	15	5	RC*T1003...
SRDCN2525M06	25	25	150	12	25	15.5	3	RC*T0602...
SRDCN2525M08	25	25	150	16	25	16.5	4	RC*T0803...
SRDCN2525M10	25	25	150	20.3	25	17.5	5	RC*T1003...

**r_ε: Standard corner radius

SPARE PARTS

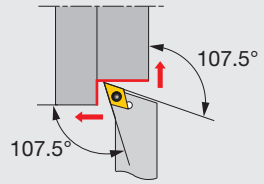
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SRDCN2020K06	CSTB-2.5	-	-	-	T-8F
SRDCN2020K08	CSTB-3	-	-	-	T-9F
SRDCN2020K10	CSTB-3.5L	DTS5-3.5	SSR32	P-3.5	T-15F
SRDCN2525M06	CSTB-2.5	-	-	-	T-8F
SRDCN2525M08	CSTB-3	-	-	-	T-9F
SRDCN2525M10	CSTB-3.5L	DTS5-3.5	SSR32	P-3.5	T-15F

SSDC/PN: Inserts → **B122, E100**

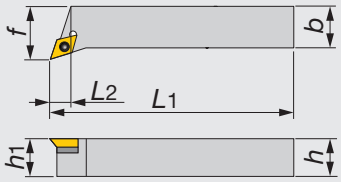
SRDCN: Inserts → **B152 -**

SDQCR/L

Screw-on clamp toolholder with 107.5° approach angle, for positive 55° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
SDQCR/L2020K11	20	20	125	20.5	20	25	0.8	DC**11T3...
SDQCR2525M11	25	25	150	21.5	25	32	0.8	DC**11T3...

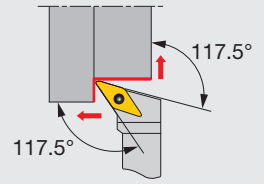
**r_ε: Standard corner radius

SPARE PARTS

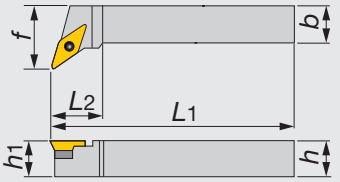
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SDQCR/L...	CSTB-3.5L	DTS5-3.5	SSD32	P-3.5	T-15F

SVQCR/L

Screw-on clamp toolholder with 117.5° approach angle, for positive 35° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
SVQCR/L2020K16	20	20	125	35	20	27	0.8	VC**1604...
SVQCR/L2525M16	25	25	150	35	25	32	0.8	VC**1604...

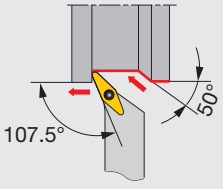
**r_ε: Standard corner radius

SPARE PARTS

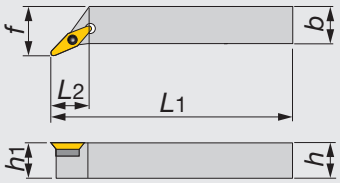
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SVQCR/L...	CSTB-3.5L	DTS5-3.5	SSV32	P-3.5	T-15F

SVHCR/L

Screw-on clamp toolholder with 107.5° approach angle, for positive 35° rhombic inserts



Cutting edge style **H**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert
SVHCR/L2525M22	25	25	150	33.8	25	32	0.8	VCG*2205...

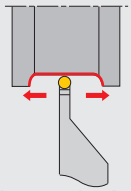
**r_ε: Standard corner radius

SPARE PARTS

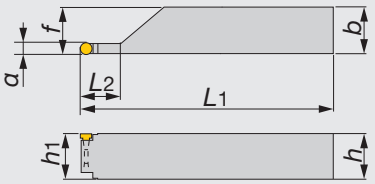
Designation	Clamping screw	Shim screw	Shim	Wrench 1	Wrench 2
SVHCR/L2525M22	CSTB-4.5L110P	DTS6-4.5	SSV42	P-4.5	T-15F

TRACN

Taper-lock toolholder with 91° approach angle, for RT type tapered round inserts



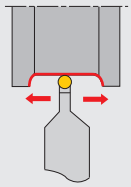
Cutting edge style **A**



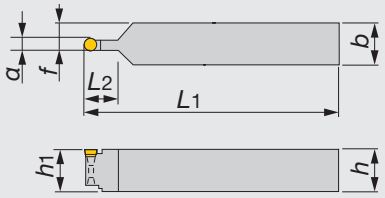
Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*α*	Insert
TRACN2020K05	20	20	125	20	20	20.3	5	RT05
TRACN2020K06	20	20	125	22	20	20.4	6	RT06
TRACN2525M05	25	25	150	20	25	25.3	5	RT05
TRACN2525M06	25	25	150	22	25	25.4	6	RT06
TRACN2525M08	25	25	150	25	25	25.5	8	RT08

TRDCN

Taper-lock toolholder with 45° approach angle, for RT type tapered round inserts



Cutting edge style **D**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*α*	Insert
TRDCN2020K05	20	20	125	20	20	12.5	5	RT05
TRDCN2525M05	25	25	150	20	25	15	5	RT05
TRDCN2525M06	25	25	150	22	25	15.5	6	RT06

SDQCR/L: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

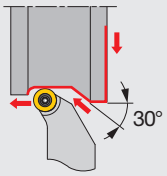
SVQCR/L: Inserts → **B145 -**, CBN → **B169 -**, PCD → **B177 -**

SVHCR/L: Inserts → **B146**

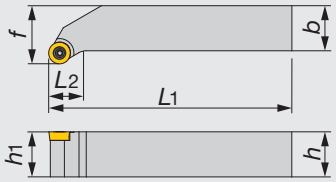
TRACN, TRDCN: Inserts → **B153**

FIXRTURN SRGCR/L

Screw-on toolholder with 91° approach angle, for positive round inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	Insert	Torque*
SRGCR/L2525M12-6F	25	25	150	18.6	25	32	RCMT1204M0-6RS/-6RM	3

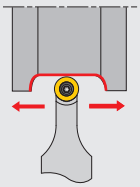
*Torque: Recommended torque (N·m) for clamping

SPARE PARTS

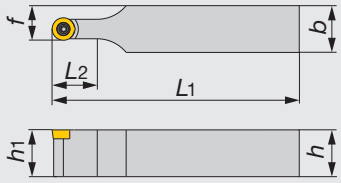
Designation	Clamping screw	Lubricant	Wrench
SRGCR/L2525M12-6F	CSTB-4	M-1000	T-15F

FIXRTURN SRDCN

Screw-on toolholder with 45° approach angle, for positive round inserts



Cutting edge style **D**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	Insert	Torque*
SRDCN2525M12-6F	25	25	150	24.1	25	18.5	RCMT1204M0-6RS/-6RM	3

*Torque: Recommended torque (N·m) for clamping

SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
SRDCN2525M12-6F	CSTB-4	M-1000	T-15F

SRGCR/L, SRDCN: Inserts → **B253**, Standard cutting conditions → **B253**

INSERT

RCMT



6RS



6RM

Designation	Coating		Cermet	ød	s	ød1
	T9115	T9125	NS9530			
RCMT1204M0-6RS	●	●	●	12	4.76	5.16
RCMT1204M0-6RM	●	●	●	12	4.76	5.16

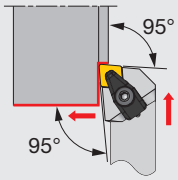
● : Line-up

STANDARD CUTTING CONDITIONS

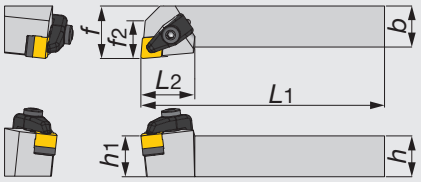
ISO	Workpiece material	Chip-breaker	Grade	Cutting speed *Vc* (m/min)	Depth of cut *ap* (mm)	Feed *f* (mm/rev)
P	Steels C45, 18CrMo4, etc.	6RS	T9115	150 - 300	0.5 - 2.0	0.5 - 1.0
		6RS	T9125	120 - 250	0.5 - 2.0	0.5 - 1.0
		6RS	NS9530	150 - 250	0.5 - 2.0	0.5 - 1.0
		6RM	T9115	150 - 300	1.0 - 3.0	0.5 - 1.0
		6RM	T9125	120 - 250	1.0 - 3.0	0.5 - 1.0
		6RM	NS9530	150 - 250	1.0 - 3.0	0.5 - 1.0

DIMPLEFX
CCLNR/L-RD

Double-clamp toolholder for ceramic insert with dimple, 95° approach angle, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
CCLNR/L2525M1207-RD	25	25	150	33	25	32	23	1.2	CN*D1207...	4
CCLNR3225P1207-RD	32	25	170	33	32	32	23	1.2	CN*D1207...	4

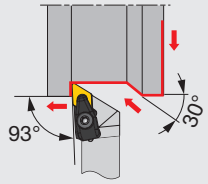
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

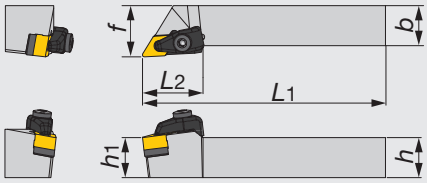
Designation	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench 1	Wrench 2
CCLNR/L**-RD	CCP4-A	CCS4-A	CC44-A	BH5-10-A	BP-5-A	P-3	P-4

DIMPLEFX
CDJNR/L-RD

Double-clamp toolholder for ceramic insert with dimple, 93° approach angle, for negative 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
CDJNR/L2525M1507-RD	25	25	150	38	25	32	1.2	DN*D1507...	4
CDJNR3225P1507-RD	32	25	170	38	32	32	1.2	DN*D1507...	4

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

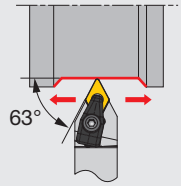
Designation	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench 1	Wrench 2
CDJNR/L**-RD	CCP4-A	CCS4-A	CD44-A	BH5-10-A	BP-5-A	P-3	P-4

CCLNR/L-RD: Inserts → **B060**, Standard cutting conditions → **B256**

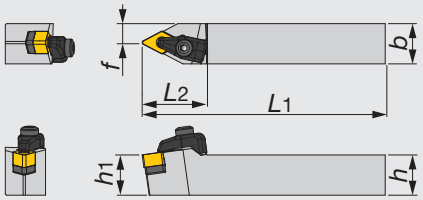
CDJNR/L-RD: Inserts → **B069**, Standard cutting conditions → **B256**

DIMPLEFX CDNNN-RD

Double-clamp toolholder for ceramic insert with dimple, 63° approach angle, for negative 55° rhombic inserts



Cutting edge style **N**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
CDNNN2525M1507-RD	25	25	150	40	25	12.5	1.2	DN*D1507...	4

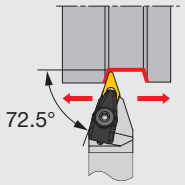
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

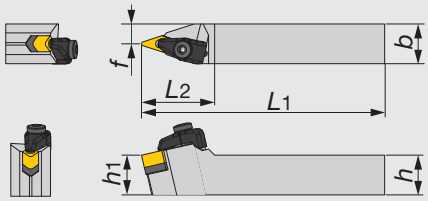
Designation	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench 1	Wrench 2
CDNNN2525M1507-RD	CCP4-A	CCS4-A	CD44-A	BH5-10-A	BP-5-A	P-3	P-4

DIMPLEFX CVVNN-RD

Double-clamp toolholder for ceramic insert with dimple, 72.5° approach angle, for negative 35° rhombic inserts



Cutting edge style **V**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
CVVNN2525M1607-RD	25	25	150	46	25	12.5	1.2	VN*D160712	4

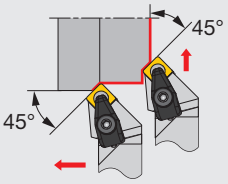
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

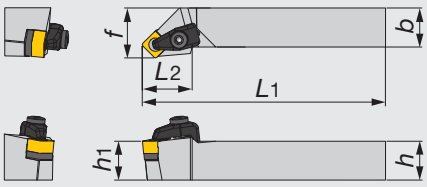
Designation	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench 1	Wrench 2
CVVNN2525M1607-RD	CCP4-A	CCS4-A	CV34-A	BH-4-10-A	BP-5-A	P-3	P-4

DIMPLEFX CSSNR/L-RD

Double-clamp toolholder for ceramic insert with dimple, 45° approach angle, for negative square inserts



Cutting edge style **S**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
CSSNR/L2525M1207-RD	25	25	150	32	25	32	1.2	SN*D1207...	4

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

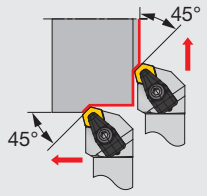
SPARE PARTS

Designation	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench 1	Wrench 2
CSSNR/L2525M1207-RD	CCP4-A	CCS4-A	CS44-A	BH5-10-A	BP-5-A	P-3	P-4

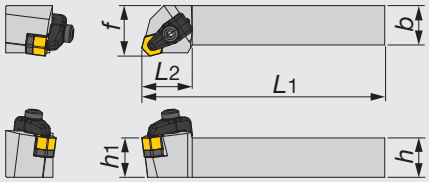
CDNNN-RD: Inserts → **B069**, CVVNN-RD: Inserts → **B101**, CSSNR/L-RD: Inserts → **B078**
Standard cutting conditions → **B256**

DIMPLEFX
CHSNR-RD

Double-clamp toolholder for ceramic insert with dimple, 45° approach angle, for negative hexagonal inserts



Cutting edge style **S**



Right hand (R) shown.

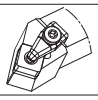
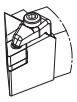
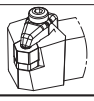
Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert	Torque*
CHSNR2525M0507-RD	25	25	150	32	25	32	1.2	HN*D0507...	4

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench 1	Wrench 2
CHSNR2525M0507-RD	CCP4-A	CCS4-A	CH44-A	BH-40050-A	BP-5-A	P-3	P-4

Parts for C-type

Toolholders Designation	Applicable Insert Designation		Clamp	Clamp screw	Shim	Shim screw	Spring	Wrench
CCLNR2525M1207-RD	**CNGD1207□□**		**CCP4-A**	**CCS4-A**	**CC44-A**	**BH5-10-A**	**BP-5-A**	**P-4 P-3**
CCLNL2525M1207-RD								
CCLNR3225P1207-RD								
CSSNR2525M1207-RD	**SNGD1207□□**				**CS44-A**			
CSSNL2525M1207-RD								
CDJNR2525M1507-RD	**DNGD1507□□**				**CD44-A**			
CDJNL2525M1507-RD								
CDJNR3225P1507-RD								
CDNNN2525M1507-RD	**DNGD1507□□**							
CVVNN2525M1607-RD	**VNGD160712**				**CV34-A**	**BH-4-10-A**		
CHSNR2525M0507-RD	**HNGD0507□□**				**CH44-A**	**BH-40050-A**		

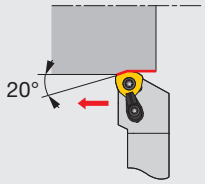
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Depth of cut *ap* (mm)	Feed *f* (mm/rev)
K	Grey cast irons	FX105	700 (300 - 1000)	1 (0.05 - 3)	0.3 (0.05 - 0.6)
	Ductile cast irons	FX105	200 (100 - 300)	1 (0.05 - 3)	0.2 (0.05 - 0.4)

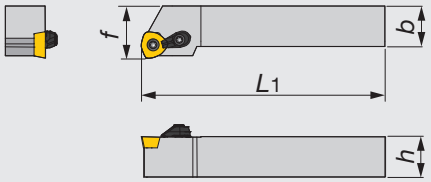
CHSNR-RD: Inserts → **B103**, Standard cutting conditions → **B256**

XWXPR/L

Double clamping toolholder with 20° approach angle for roughing operation with positive trigon inserts



Cutting edge style **X**



Right hand (R) shown.

Designation	*h*	*b*	L_1	*f*	Insert
XWXPR/L2525M09	25	25	150	32	WPMT090725ZPR/L-ML
XWXPR/L3232P09	32	32	170	40	WPMT090725ZPR/L-ML
XWXPR/L4040S09	40	40	250	50	WPMT090725ZPR/L-ML

SPARE PARTS

Designation	Clamp set	Clamping screw	Wrench
XWXPR/L...	CSY-20	CSPB-5	IP-20T

Note: Care should be taken not to confuse the hand of inserts to be used.

INSERT

WPMT09-ML

● : Continuous cutting
◐ : Light interrupted cutting
✣ : Heavy interrupted cutting



Trigon, 80° with hole Positive 11°

		Coating		
		T9115	T9125	AH120
P	Steel	●◐	◐✣	●◐
M	Stainless			●◐
K	Cast iron	●◐		●◐
N	Non-ferrous			
S	Superalloys			●◐
H	Hard materials			

Application	Chipbreaker	Designation	Corner radius	T9115	T9125	AH120
Heavy	ML	WPMT090725ZPR-ML	2.5	●	●	●
		WPMT090725ZPL-ML	2.5	●	●	●



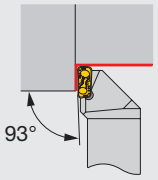
● : Line-up

STANDARD CUTTING CONDITIONS

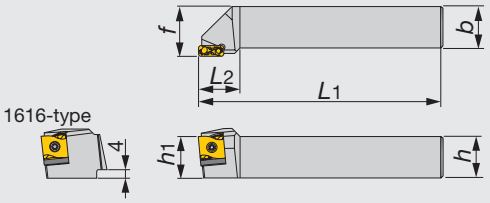
ISO	Workpiece material	Grade	Chipbreaker	Cutting speed: *Vc* (m/min)	Depth of cut: *ap* (mm)	Feed: *f* (mm/rev)
P	Mild and low carbon steels E275A, C15E4, etc. < 180 HB	T9125	ML	150 (100 - 250)	0.5 - 2.5	1.5 (0.5 - 2.5)
	Carbon and alloy steels C55, 42CrMo4, etc. < 300HB	T9115	ML	150 (100 - 250)	0.5 - 2.5	1.5 (0.5 - 2.5)
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-3, etc. < 250 HB	T9125	ML	150 (100 - 250)	0.5 - 2.5	1.5 (0.5 - 2.5)
K	Grey and ductile cast irons 250, 400-15S, etc.	AH120	ML	150 (100 - 250)	0.5 - 2.5	1.5 (0.5 - 2.5)

Note: When the side cutting edge is used for facing, the maximum feed is limited to within 1.0 mm/rev.

Screw-on clamp toolholder for roughing operation with 93° approach angle, for negative tangential inserts



Cutting edge style **A**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	Insert
TLANR/L1616H12	16	16	100	20	16	20	LNMX1204**R/L...
TLANR/L1616M12S	16	16	150	20	16	20	LNMX1204**R/L...
TLANR/L2020K12	20	20	125	20	20	25	LNMX1204**R/L...
TLANR/L2020K16	20	20	125	25	20	25	LNMX1606**R/L...
TLANR/L2525M12	25	25	150	20	25	30	LNMX1204**R/L...
TLANR/L2525M16	25	25	150	25	25	30	LNMX1606**R/L...
TLANR/L3232P16	32	32	170	35	32	37	LNMX1606**R/L...
TLANR/L3232P24	32	32	170	35	32	38	LNMX2410**R/L...
TLANR/L4040R16	40	40	200	35	40	47	LNMX1606**R/L...
TLANR/L4040R24	40	40	200	40	40	47	LNMX2410**R/L...
TLANR/L5050S24	50	50	250	40	50	57	LNMX2410**R/L...

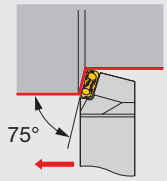
SPARE PARTS

Designation	Clamping screw	Shim screw	Shim	Spring	Wrench 1	Wrench 2
TLANR1616H12	CSTB-3.5L115-S	CSTF-2L055-S	TSL12R	-	KEYV-T10	T-6F-S
TLANL1616H12	CSTB-3.5L115-S	CSTF-2L055-S	TSL12L	-	KEYV-T10	T-6F-S
TLANR1616M12S	CSTB-3.5L115-S	CSTF-2L055-S	TSL12R	-	KEYV-T10	T-6F-S
TLANL1616M12S	CSTB-3.5L115-S	CSTF-2L055-S	TSL12L	-	KEYV-T10	T-6F-S
TLANR2020K12	CSTB-3.5L115-S	CSTF-2L055-S	TSL12R	-	KEYV-T10	T-6F-S
TLANL2020K12	CSTB-3.5L115-S	CSTF-2L055-S	TSL12L	-	KEYV-T10	T-6F-S
TLANR2020K16	CSTB-4L115-S	-	TSL16R	PSP-16	KEYV-T15	-
TLANL2020K16	CSTB-4L115-S	-	TSL16L	PSP-16	KEYV-T15	-
TLANR2525M12	CSTB-3.5L115-S	CSTF-2L055-S	TSL12R	-	KEYV-T10	T-6F-S
TLANL2525M12	CSTB-3.5L115-S	CSTF-2L055-S	TSL12L	-	KEYV-T10	T-6F-S
TLANR2525M16	CSTB-4L115-S	-	TSL16R	PSP-16	KEYV-T15	-
TLANL2525M16	CSTB-4L115-S	-	TSL16L	PSP-16	KEYV-T15	-
TLANR3232P16	CSTB-4L115-S	-	TSL16R	PSP-16	KEYV-T15	-
TLANL3232P16	CSTB-4L115-S	-	TSL16L	PSP-16	KEYV-T15	-
TLANR3232P24	CSTB-5L163-S	-	TSL24R	SP 16-L14	KEYV-T20	-
TLANL3232P24	CSTB-5L163-S	-	TSL24L	SP 16-L14	KEYV-T20	-
TLANR4040R16	CSTB-4L115-S	-	TSL16R	PSP-16	KEYV-T15	-
TLANL4040R16	CSTB-4L115-S	-	TSL16L	PSP-16	KEYV-T15	-
TLANR4040R24	CSTB-5L163-S	-	TSL24R	SP 16-L14	KEYV-T20	-
TLANL4040R24	CSTB-5L163-S	-	TSL24L	SP 16-L14	KEYV-T20	-
TLANR5050S24	CSTB-5L163-S	-	TSL24R	SP 16-L14	KEYV-T20	-
TLANL5050S24	CSTB-5L163-S	-	TSL24L	SP 16-L14	KEYV-T20	-

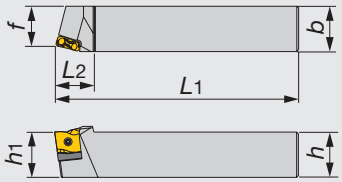
TLANR/L: Inserts → **B260**, Standard cutting conditions → **B261**

TURNTEC TLBNR/L

Screw-on clamp toolholder for roughing operation with 75° approach angle, for negative tangential inserts



Cutting edge style **B**



Right hand (R) shown.

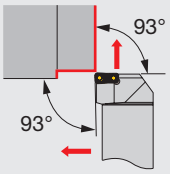
Designation	*h*	*b*	L_1	L_2	h_1	*f*	Insert
TLBNR/L4040R24	40	40	200	35	40	35	LNMX2410**R/L...

SPARE PARTS

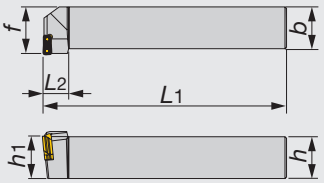
Designation	Clamping screw	Shim	Spring pin	Wrench
TLBNR4040R24	CSTB-5L163-S	TSL24R	PSP-16	KEYV-T20
TLBNL4040R24	CSTB-5L163-S	TSL24L	PSP-16	KEYV-T20

TURNTEC TLFNR/L

Screw-on clamp toolholder for roughing operation with 93° approach angle, for negative tangential inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	Insert
TLFNR/L2525M16	25	25	150	20	25	30	LNMX1606**L/R...
TLFNR/L3232P16	32	32	170	20	32	37	LNMX1606**L/R...

Note: The right hand insert (R) is used for the left hand toolholders (TLFNL** type), and the left hand insert (L) is used for the right hand toolholders (TLFNR** type).

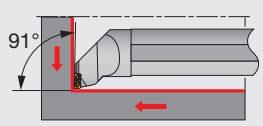
SPARE PARTS

Designation	Clamping screw	Shim	Spring pin	Wrench
TLFNR2525M16	CSTB-4L115-S	TSL16L	PSP-16	KEYV-T15
TLFNL2525M16	CSTB-4L115-S	TSL16R	PSP-16	KEYV-T15
TLFNR3232P16	CSTB-4L115-S	TSL16L	PSP-16	KEYV-T15
TLFNL3232P16	CSTB-4L115-S	TSL16R	PSP-16	KEYV-T15

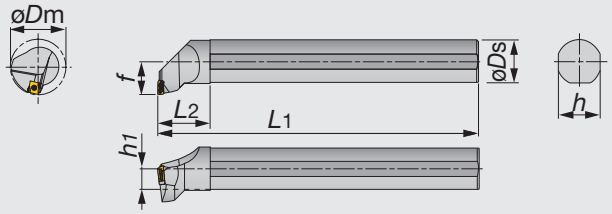
TLBNR/L, TLFNR/L: Inserts → **B260**, Standard cutting conditions → **B261**

S-TLANR/L

Screw-on clamp toolholder for roughing operation with 91° approach angle, for negative tangential inserts



Cutting edge style **A**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	h1	Insert
S25T-TLANR/L12-D530	Steel	53	25	17	300	40	23	11.5	LNMX1204**L/R...
S32U-TLANR/L12-D530	Steel	53	32	22	350	45	29	14.5	LNMX1204**L/R...
S40V-TLANR/L12-D530	Steel	53	40	27	400	53	36	18	LNMX1204**L/R...
S50U-TLANR/L16-D850	Steel	85	50	37	350	63	46	23	LNMX1606**L/R...

Note: The right hand insert (R) is used for the left hand toolholders (TLANL** type), and the left hand insert (L) is used for the right hand toolholders (TLANR** type).

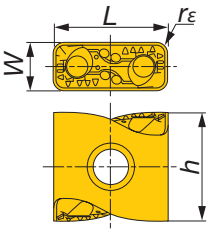
SPARE PARTS

Designation	Clamping screw	Shim screw	Shim	Spring pin	Wrench 1	Wrench 2
S**-TLANR/L12-D530	CSTB-3.5L115-S	CSTF-2L055-S	TSL12L/RI	-	KEYV-T10	T-6F-S
S50U-TLANR16-D850	CSTB-4L115-S	-	TSL16LI	PSP-16	KEYV-T15	-
S50U-TLANL16-D850	CSTB-4L115-S	-	TSL16RI	PSP-16	KEYV-T15	-

INSERT

LNMX12/16/24





Designation	rε	Coating						W	L	h
		T9115		T9125		AH725				
		R	L	R	L	R	L			
LNMX120408R/L-TDR	0.8	●	●	●	●			4.8	12	11.6
LNMX120412R/L-TDR	1.2	●	●	●	●			4.8	12	11.6
LNMX160608R/L-TDR	0.8	●	●	●	●			6.4	16.2	13.5
LNMX160612R/L-TDR	1.2	●	●	●	●			6.4	16.2	13.5
LNMX160616R/L-TDR	1.6	●	●	●	●			6.4	16.2	13.5
LNMX241016R/L-TDR	1.6	●	●	●	●			9.4	24	20.5
LNMX241024R/L-TDR	2.4	●	●	●	●			9.4	24	20.5
LNMX160608R/L-MDR	0.8	●	●			●	●	6.4	16.2	13.5
LNMX160612R/L-MDR	1.2	●	●			●	●	6.4	16.2	13.5
LNMX160608R/L-TWR	0.8	●	●	●	●			6.4	16.2	13.5
LNMX160612R/L-TWR	1.2	●	●	●	●			6.4	16.2	13.5

● : Line-up

S-TLANR/L: Inserts → **B260**, Standard cutting conditions → **B261**

STANDARD CUTTING CONDITIONS

LNMX1204

*** Values in red shows the condition for facing**

ISO	Workpiece material	Chip-breaker	Grade	Cutting speed *Vc* (m/min)	Depth of cut: *ap* (mm)		Feed: *f* (mm/rev)	
					r_ε : 0.8	r_ε : 1.2	r_ε : 0.8	r_ε : 1.2
P	Steels C45, 18CrMo4, etc.	TDR	T9115	120 - 250	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		TDR	T9125	80 - 180	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	TDR	T9115	100 - 180	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8
		TDR	T9125	80 - 180	0.5 - 5 0.5 - 2.2	0.8 - 5 0.8 - 2.2	0.15 - 0.6	0.25 - 0.8

LNMX1606

ISO	Workpiece material	Chip-breaker	Grade	Cutting speed *Vc* (m/min)	Depth of cut: *ap* (mm)			Feed: *f* (mm/rev)		
					r_ε : 0.8	r_ε : 1.2	r_ε : 1.6	r_ε : 0.8	r_ε : 1.2	r_ε : 1.6
P	Steels C45, 18CrMo4, etc.	TDR	T9115	120 - 250	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	1 - 8 1 - 3.2	0.15 - 0.6	0.25 - 0.8	0.3 - 1
		TDR	T9125	80 - 180	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	1 - 8 1 - 3.2	0.15 - 0.6	0.25 - 0.8	0.3 - 1
		TWR	T9115	120 - 250	1 - 8 1 - 3.2	0.8 - 6 0.8 - 3.2	-	0.15 - 0.6	0.25 - 0.8	-
		TWR	T9125	80 - 180	1 - 8 1 - 3.2	0.8 - 6 0.8 - 3.2	-	0.15 - 0.6	0.25 - 0.8	-
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	TDR	T9115	100 - 180	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	1 - 8 1 - 3.2	0.15 - 0.6	0.25 - 0.8	0.3 - 1
		TDR	T9125	80 - 180	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	1 - 8 1 - 3.2	0.15 - 0.6	0.25 - 0.8	0.3 - 1
		MDR	T9115	100 - 150	1.5 - 6 0.5 - 3.2	1.5 - 7 0.8 - 3.2	-	0.1 - 0.5	0.15 - 0.7	-
		MDR	AH725	50 - 150	1.5 - 6 0.5 - 3.2	1.5 - 7 0.8 - 3.2	-	0.1 - 0.5	0.15 - 0.7	-
		TWR	T9115	100 - 180	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	-	0.15 - 0.6	0.25 - 0.8	-
		TWR	T9125	80 - 180	0.5 - 5 0.5 - 3.2	0.8 - 6 0.8 - 3.2	-	0.15 - 0.6	0.25 - 0.8	-

LNMX2410

ISO	Workpiece material	Chip-breaker	Grade	Cutting speed *Vc* (m/min)	Depth of cut: *ap* (mm)		Feed: *f* (mm/rev)	
					r_ε : 1.6	r_ε : 2.4	r_ε : 1.6	r_ε : 2.4
P	Steels C45, 18CrMo4, etc.	TDR	T9115	120 - 250	4 - 15 1 - 4.5	5 - 15 1 - 4.5	0.3 - 1	0.3 - 1.1
		TDR	T9125	80 - 150	4 - 15 1 - 4.5	5 - 15 1 - 4.5	0.3 - 1	0.3 - 1.1
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	TDR	T9115	100 - 180	4 - 15 1 - 4.5	5 - 15 1 - 4.5	0.3 - 1	0.3 - 1.1
		TDR	T9125	80 - 150	4 - 15 1 - 4.5	5 - 15 1 - 4.5	0.3 - 1	0.3 - 1.1



MINIFORCE TURN

Economical double-sided inserts with excellent sharpness

Shank ø10 - 25 mm

B268



ISOECO TURN

Small-sized “Eco” insert series for maximized profits

Shank ø16 - 32 mm

B274

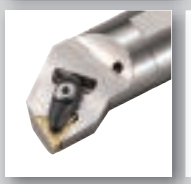


STREAMJETBAR

Highly rigid toolholders providing good chip evacuation

Shank ø4 - 50 mm

B278



TURNINGA

Highly rigid clamping system with excellent repeatability

Shank ø25 - 50 mm

B297



Y-PRO SERIES

Inserts with 25° corner angle for profiling

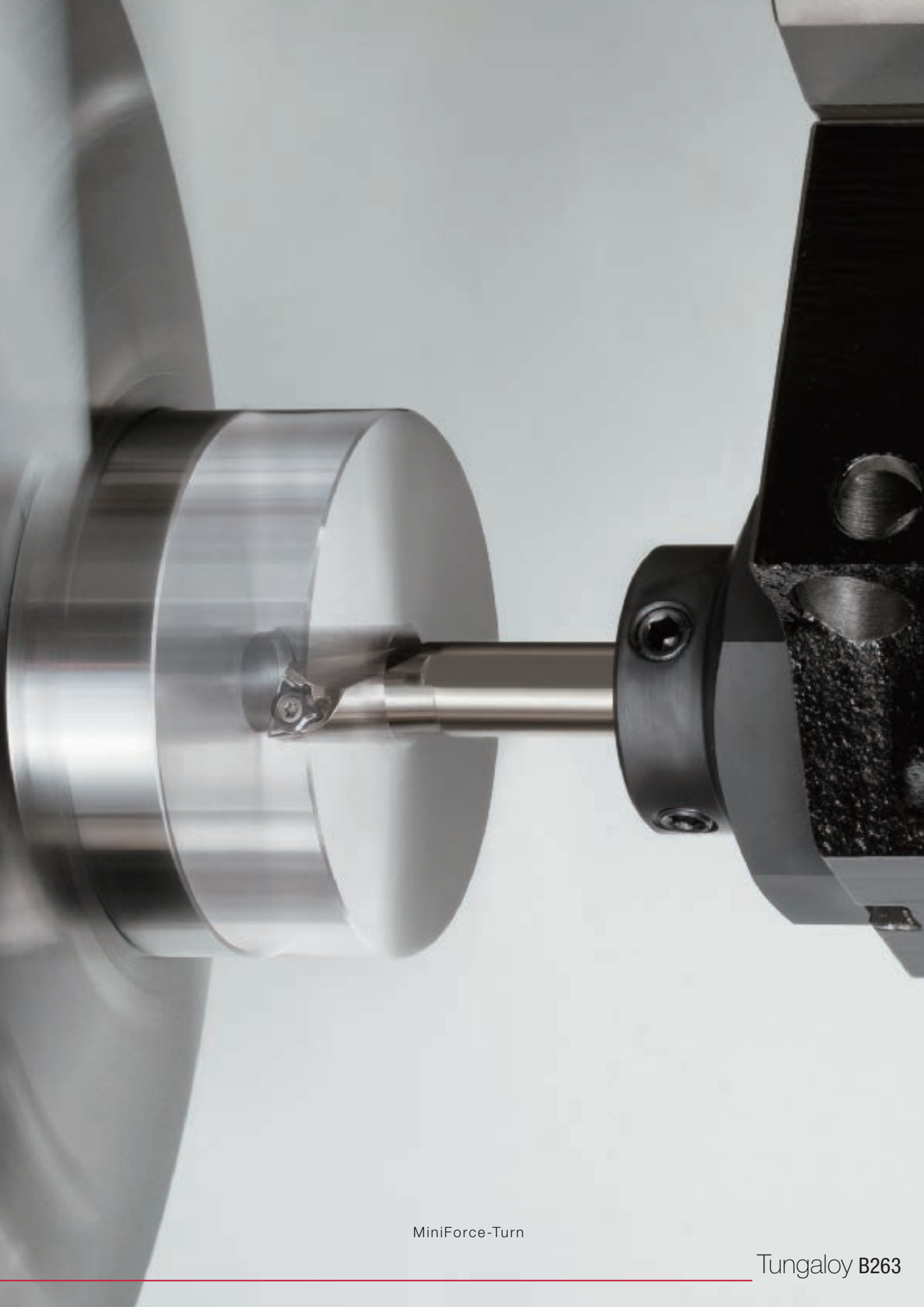
Shank ø12 - 16 mm

B300

ISO-Turn Internal

Toolholders for general internal turning

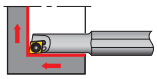
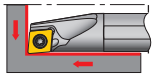
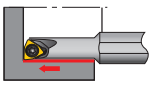
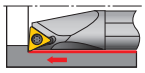
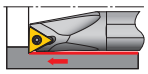
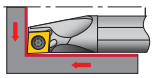
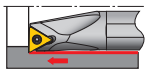
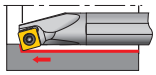
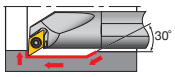
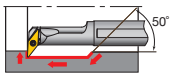
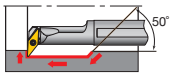
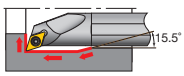
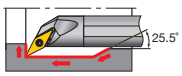
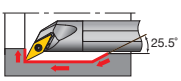
B301

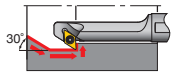
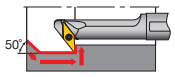
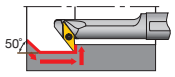
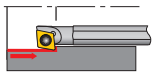
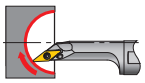
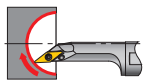
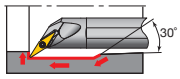
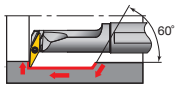


MiniForce-Turn

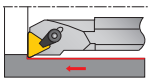
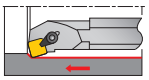
Internal Toolholder - Quick Guide

Positive type

Style	StreamJet-Bar Description & Application	ISO Insert	Y-Pro	Shank Type	Shank Ø	Min. bore diameter (mm) 0 10 20 30 40 50	
	**SEXPR/L** Boring & internal facing Insert type: EP□□	✓		Steel Carbide	ø4 - ø8 ø4 - ø8	ø4.5 ø7 ø4.5 ø7	B279 B281
	**SCLCR/L** Boring & internal facing Insert type: CC□□	✓		Steel Carbide Reinforced	ø4 - ø25 ø4 - ø25 ø12 - ø25	ø5 ø27 ø5 ø27 ø16 ø32	B278 B301
	**SWUBR/L** Boring Insert type: WB□□	✓		Steel Carbide	ø5 - ø8 ø5 - ø8	ø6 ø8 ø6 ø8	B286
	**STUPR/L** Boring Insert type: TP□□	✓		Steel Carbide Reinforced	ø7 - ø32 ø7 - ø25 ø12 - ø25	ø8 ø34 ø8 ø27 ø14 ø31	B285 B302
	**STFPR/L** Blind hole boring Insert type: TP□□	✓		Steel Carbide	ø8 - ø25 ø8 - ø20	ø10 ø27 ø10 ø22	B284
	**SCLPR/L** Boring & internal facing Insert type: CP□□	✓		Steel Carbide Reinforced	ø8 - ø25 ø8 - ø16 ø12 - ø25	ø10 ø27 ø10 ø20 ø14 ø32	B280 B301
	**STFCR/L** Blind hole boring Insert type: TC□□	✓		Steel Carbide	ø10 - ø16 ø10 - ø16	ø12 ø18 ø12 ø18	B283
	**SSKPR/L** Through boring Insert type: SP□□	✓		Steel	ø16 - ø25	ø20 ø31	B282
	**SDUCR/L** Boring & internal profiling Insert type: DC□□	✓		Steel Carbide	ø10 - ø25 ø10 - ø20	ø13 ø32 ø13 ø27	B287
	**SVUCR/L** Boring & internal profiling Insert type: VC□□	✓		Steel Carbide Reinforced	ø12 - ø25 ø12 - ø25 ø25	ø16 ø32 ø18 ø32 ø32	B288 B303
	**SVUBR/L** Boring & internal profiling Insert type: VB□□	✓		Steel Carbide Reinforced	ø16 - ø25 ø16 - ø25 ø20	ø20 ø32 ø24.5 ø34 ø25	B287 B303
	**SDQCR/L** Boring & internal profiling Insert type: DC□□	✓		Steel Carbide Reinforced	ø10 - ø25 ø10 - ø20 ø16 - ø25	ø13 ø30 ø13 ø25 ø20 ø32	B288 B303
	**SVQCR/L** Boring & internal profiling Insert type: VC□□	✓		Steel Carbide Reinforced	ø10 - ø16 ø10 - ø16 ø25	ø13.5 ø21.5 ø13.5 ø21.5 ø32	B289 B304
	**SVQBR/L** Boring & internal profiling Insert type: VB□□	✓		Steel Carbide Reinforced	ø12 - ø25 ø12 - ø25 ø20	ø17 ø30.5 ø17 ø30.5 ø25	B289 B304

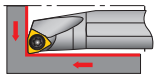
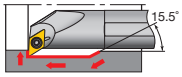
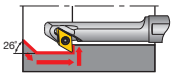
Style	StreamJet-Bar Description & Application	ISO Insert	Y-Pro	Shank Type	Shank Ø	Min. bore diameter (mm) 0 10 20 30 40 50	
	**SDZCR/L** Internal retracting Insert type: DC□□	✓		Steel Carbide	ø12 - ø25 ø12 - ø16	ø14 ø25 ø18 ø22	B290
	**SVZCR/L** Internal retracting Insert type: VC□□	✓		Steel	ø12	ø16	B291
	**SVZBR/L** Internal retracting Insert type: VB□□	✓		Steel	ø16 - ø32	ø20 ø40	B291
	**SEZPR/L** Internal retracting Insert type: EP□□	✓		Steel Carbide	ø4 - ø5 ø4 - ø5	ø5.5 ø6.5 ø5.5 ø6.5	B292
	**SVJCR/L** Internal sphere cutting Insert type: VC□□	✓		Steel	ø12 - ø16	ø16 ø20	B282
	**SVJBR/L** Internal sphere cutting Insert type: VB□□	✓		Steel	ø20 - ø25	ø25 ø30	B282
	**SYQBR/L** Internal undercut & profiling Insert type: YW□□		✓	Steel Carbide	ø12 - ø16 ø12 - ø16	ø17 ø21.5 ø17 ø21.5	B300
	**SYUBR/L** Boring & internal profiling Insert type: YW□□		✓	Steel Carbide	ø16 ø12 - ø16	ø20 ø20 ø24.5	B300

Clamp-on

Style	Description & Aplication	ISO insert	Shank Type	Shank Ø	Min. bore diameter (mm) 0 10 20 30 40 50	
	**CTFPR/L** Blind hole boring Insert type: TP□□ (Without hole)	✓	Steel Carbide	ø12 - ø32 ø12 - ø16	ø16 ø40 ø16 ø20	B305
	**CSKPR/L** Through boring Insert type: SP□□ (Without hole)	✓	Steel	ø16 - ø25	ø20 ø32	B305

Internal Toolholder - Quick Guide

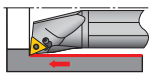
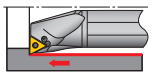
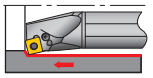
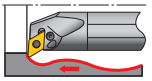
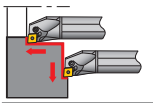
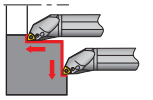
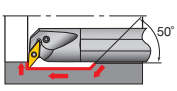
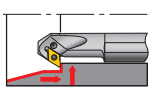
MiniForce-Turn - Double-sided insert with positive cutting edges

Style	MiniForce-Turn Description & Application	MiniForce -Turn	Shank Type	Shank Ø	Min. bore diameter (mm) 0 10 20 30 40 50	
	**SWLXR/L** Boring & facing Insert type: WXGU	✓	Steel Carbide	ø10 - ø20 ø10 - ø20	ø12 ø22 ø12 ø22	B268
	**SDXXR/L** Internal profiling Insert type: DXGU	✓	Steel Carbide	ø10 - ø20 ø10 - ø20	ø13 ø24 ø13 ø24	B268
	**SDZXR/L** Internal retracting Insert type: DXGU	✓	Steel Carbide	ø12 - ø20 ø12 - ø16	ø14 ø20 ø18 ø22	B269

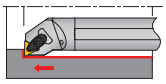
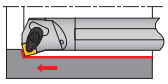
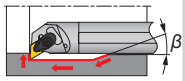
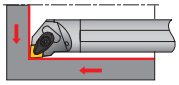
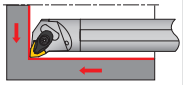
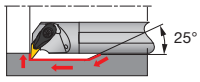
Internal Toolholder - Quick Guide

Negative type

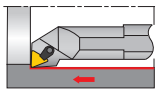
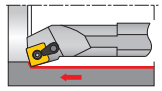
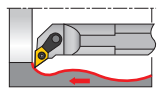
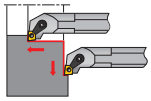
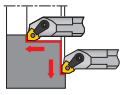
Lever-lock

Style	StreamJet-Bar Description & Application	ISO insert	ISO-EcoTurn	Shank Type	Shank Ø	Min. bore diameter (mm) 20 30 40 50 60 70	
	**PTUNR/L** Boring Insert type: TN□□	✓	✓	Steel Reinforced	ø16 - ø32 ø16 - ø50	ø20 ø40 ø20 ø63	B277 B295 B309 B310
	**PTFNR/L** Boring Insert type: TN□□	✓	✓	Steel	ø25 - ø50	ø32 ø63	B276 B294 B308
	**PSKNR/L** Through boring Insert type: SN□□	✓		Steel	ø32 - ø50	ø40 ø63	B293 B307
	**PDUNR/L** Internal profiling Insert type: DN□□	✓	✓	Steel Reinforced	ø20 - ø50 ø32 - ø50	ø25 ø63 ø40 ø63	B276 B295 B308 B309
	**PCLNR/L** Boring & internal facing Insert type: CN□□	✓	✓	Steel Reinforced	ø16 - ø50 ø16 - ø50	ø20 ø63 ø20 ø63	B274 B292 B306
	**PWLNR/L** Boring & facing Insert type: WN□□	✓	✓	Steel	ø16 - ø40	ø20 ø50	B275 B293 B307
	**PVUNR/L** Boring & internal profiling Insert type: VN□□	✓		Steel	ø25 - ø40	ø37 ø50	B296
	**PDZNR/L** Internal retracting Insert type: DN□□	✓		Steel	ø32 - ø50	ø40 ø63	B296 B310

Double-clamp

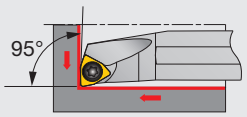
Style	Turning A Description & Application	ISO insert	ISO-EcoTurn	Shank Type	Shank Ø	Min. bore diameter (mm) 20 30 40 50 60 70	
	**ATFNR/L** Boring Insert type: TN□□	✓		Steel	ø25 - ø32	ø32 ø40	B298
	**ASKNR/L** Boring Insert type: SN□□	✓		Steel	ø25 - ø32	ø32 ø40	B298
	**ADUNR/L** Boring & internal profiling Insert type: DN□□	✓	✓	Steel	ø25 - ø50	ø32 ø63	B276 B299
	**ACLNR/L** Boring & internal facing Insert type: CN□□	✓	✓	Steel	ø25 - ø50	ø32 ø63	B274 B297
	**AWLNR/L** Boring & internal facing Insert type: WN□□	✓	✓	Steel	ø25 - ø50	ø32 ø63	B275 B297
	**AVUNR/L** Boring & internal profiling Insert type: VN□□	✓		Steel	ø32 - ø40	ø40 ø50	B299

Multi-clamp

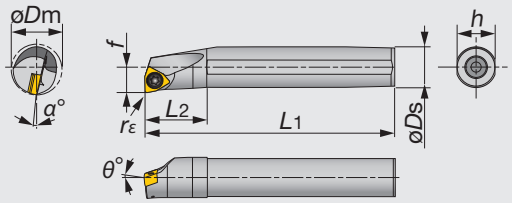
Style	Description & Application	ISO insert	Shank Type	Shank Ø	Min. bore diameter (mm) 20 30 40 50 60 70	
	**MTFNR/L** Boring Insert type: TN□□	✓	Steel	ø25	ø32	B312
	**MSKNR/L** Through boring Insert type: SN□□	✓	Steel	ø25	ø32	B312
	**MDUNR/L** Boring & internal profiling Insert type: DN□□	✓	Steel	ø25	ø32	B313
	**MCLNR/L** Boring & internal facing Insert type: CN□□	✓	Steel	ø25	ø32	B311
	**MWLNR/L** Boring & internal facing Insert type: WN□□	✓	Steel	ø25 - ø50	ø32 ø70	B311

MINIFORCE TURN
A/E-SWLXR/L

For trigon insert with 6 edges



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	θ°	α°	rε**	Insert	Torque*
A10K-SWLXR/L04-D120	STEEL	12	10	6	125	20	9	-10	-16	0.4	WXGU0403**L/R...	0.9
A12M-SWLXR/L04-D140	STEEL	14	12	7	150	24	11	-10	-14	0.4	WXGU0403**L/R...	0.9
A16Q-SWLXR/L04-D180	STEEL	18	16	9	180	32	15	-10	-11	0.4	WXGU0403**L/R...	0.9
A20R-SWLXR/L04-D220	STEEL	22	20	11	200	36	18	-10	-10	0.4	WXGU0403**L/R...	0.9
E10M-SWLXR/L04-D120	CARBIDE	12	10	6	150	25	9	-10	-16	0.4	WXGU0403**L/R...	0.9
E12Q-SWLXR/L04-D140	CARBIDE	14	12	7	180	27	11	-10	-14	0.4	WXGU0403**L/R...	0.9
E16R-SWLXR/L04-D180	CARBIDE	18	16	9	200	32	15	-10	-11	0.4	WXGU0403**L/R...	0.9
E20S-SWLXR/L04-D220	CARBIDE	22	20	11	250	36	18	-10	-10	0.4	WXGU0403**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: Right hand toolholders (R) are used with left hand inserts (L) Left hand toolholders (L) are used with right hand inserts (R)

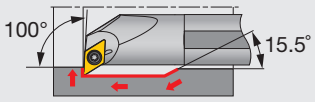
SPARE PARTS



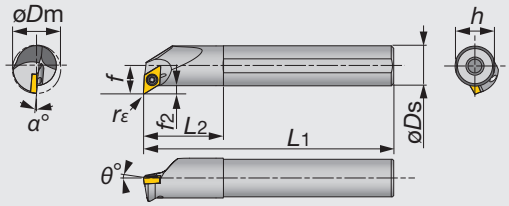

Designation	Clamping screw	Wrench
A/E**-SWLXR/L...	SR34-514	T-7F

MINIFORCE TURN
A/E-SDXXR/L

For 55° rhombic insert with 4 edges



Cutting edge style **X**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A10K-SDXXR/L07-D130	STEEL	13	10	7.6	125	20	9	2.6	-14	-16	0.4	DXGU0703**L/R...	0.9
A12M-SDXXR/L07-D160	STEEL	16	12	8.6	150	24	11	2.6	-14	-14	0.4	DXGU0703**L/R...	0.9
A16Q-SDXXR/L07-D200	STEEL	20	16	10.6	180	32	15	2.6	-13	-13	0.4	DXGU0703**L/R...	0.9
A20R-SDXXR/L07-D240	STEEL	24	20	12.6	200	36	18	2.6	-13	-12	0.4	DXGU0703**L/R...	0.9
E10M-SDXXR/L07-D130	CARBIDE	13	10	7.6	150	25	9	2.6	-14	-16	0.4	DXGU0703**L/R...	0.9
E12Q-SDXXR/L07-D160	CARBIDE	16	12	8.6	180	27	11	2.6	-14	-14	0.4	DXGU0703**L/R...	0.9
E16R-SDXXR/L07-D200	CARBIDE	20	16	10.6	200	32	15	2.6	-13	-13	0.4	DXGU0703**L/R...	0.9
E20S-SDXXR/L07-D240	CARBIDE	24	20	12.6	250	36	18	2.6	-13	-12	0.4	DXGU0703**L/R...	0.9

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: Right hand toolholders (R) are used with left hand inserts (L) Left hand toolholders (L) are used with right hand inserts (R)

SPARE PARTS



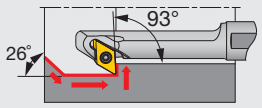

Designation	Clamping screw	Wrench
A/E**-SDXXR/L...	SR34-514	T-7F

A/E-SWLXR/L: Inserts → **B270**, Standard cutting conditions → **B273**

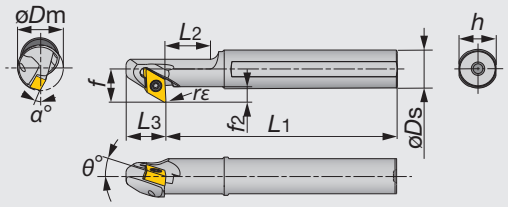
A/E-SDXXR/L: Inserts → **B271 -**, Standard cutting conditions → **B273**

A/E-SDZXR/L

For 55° rhombic insert with 4 edges



Cutting edge style **Z**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	L3	h	f2	θ°	α°	rε**	Insert	Torque*
A12M-SDZXR/L07-D140	STEEL	14	12	11	150	30	13	11	4.5	-10	-14	0.4	DXGU0703**R/L...	0.9
A16Q-SDZXR/L07-D160	STEEL	16	16	13	180	35	13	15	4.5	-10	-12.5	0.4	DXGU0703**R/L...	0.9
A20R-SDZXR/L07-D200	STEEL	20	20	15	200	40	13	18	4.5	-10	-10.5	0.4	DXGU0703**R/L...	0.9
E12Q-SDZXR/L07-D180	CARBIDE	18	12	11	180	-	13	11	4.5	-11	-11	0.4	DXGU0703**R/L...	0.9
E16R-SDZXR/L07-D220	CARBIDE	22	16	13	200	-	13	15	4.5	-11	-9	0.4	DXGU0703**R/L...	0.9

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: Right hand toolholders (R) are used with right hand inserts (R) Left hand toolholders (L) are used with left hand inserts (L)

SPARE PARTS




Designation	Clamping screw	Wrench
A/E**-SDZXR/L...	SR34-514	T-7F

A/E-SDXXR/L: Inserts → **B271 -**, Standard cutting conditions → **B273**

● : Continuous cutting
◐ : Light interrupted cutting
✠ : Heavy interrupted cutting

INSERT



Trigon, 80° with hole

P	Steel	◐	●◐					●◐						●◐																				
M	Stainless	◐	●◐																														
K	Cast iron	◐						●◐						●◐						●													
N	Non-ferrous																			●													
S	Superalloys	●																		●													
H	Hard materials																																

Application	Chipbreaker	Designation	Corner radius	Coating		Coated cermet	Cermet	Uncoated
				AH725	SH725	GT9530	NS9530	KS05F
Finishing to medium cutting (Sharp edge)	JTS	WXGU040301MFR-JTS	<0.1*		●			
		WXGU040301MFL-JTS	<0.1*		●			
		WXGU040302MFR-JTS	<0.2*		●			
		WXGU040302MFL-JTS	<0.2*		●			
Finishing to medium cutting	JTS	WXGU040301MR-JTS	<0.1*	●				
		WXGU040301ML-JTS	<0.1*	●				
		WXGU040302MR-JTS	<0.2*	●				
		WXGU040302ML-JTS	<0.2*	●				
Finishing (Low cutting force) (Sharp edge)	JSS	WXGU040301MFR-JSS	<0.1*		●			
		WXGU040301MFL-JSS	<0.1*		●			
		WXGU040302MFR-JSS	<0.2*		●			
		WXGU040302MFL-JSS	<0.2*		●			
Finishing (Low cutting force)	JSS	WXGU040301MR-JSS	<0.1*	●				
		WXGU040301ML-JSS	<0.1*	●				
		WXGU040302MR-JSS	<0.2*	●				
		WXGU040302ML-JSS	<0.2*	●				
Finishing to medium cutting	TS	WXGU040302R-TS	0.2	●		●	●	●
		WXGU040302L-TS	0.2	●		●	●	●
		WXGU040304R-TS	0.4	●		●	●	●
		WXGU040304L-TS	0.4	●		●	●	●
		WXGU040308R-TS	0.8	●		●	●	●
		WXGU040308L-TS	0.8	●		●	●	●
Finishing (Wiper)	TSW	WXGU040304R-TSW	0.4	●		●	●	
		WXGU040304L-TSW	0.4	●		●	●	
		WXGU040308R-TSW	0.8	●		●	●	
		WXGU040308L-TSW	0.8	●		●	●	
Finishing (Low cutting force)	SS	WXGU040302R-SS	0.2	●		●	●	●
		WXGU040302L-SS	0.2	●		●	●	●
		WXGU040304R-SS	0.4	●		●	●	●
		WXGU040304L-SS	0.4	●		●	●	●

* Corner radius has minus tolerance

● : Line-up

● : Continuous cutting
ɔ : Light interrupted cutting
✤ : Heavy interrupted cutting



Rhombic, 55° with hole

P	Steel	ɔ	●ɔ
M	Stainless	ɔ	●ɔ
K	Cast iron	ɔ	
N	Non-ferrous		
S	Superalloys	●	
H	Hard materials		

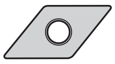
Application	Chipbreaker	Designation	Corner radius	Coating: AH725	Coating: SH725
Finishing (sharp edge)	JRP	DXGU070301MFRE-JRP	<0.1*		●
		DXGU070301MFLE-JRP	<0.1*		●
		DXGU070302MFRE-JRP	<0.2*		●
		DXGU070302MFLE-JRP	<0.2*		●
Finishing to medium cutting(sharp edge)	JTS	DXGU070301MFR-JTS	<0.1*		●
		DXGU070301MFL-JTS	<0.1*		●
		DXGU070302MFR-JTS	<0.2*		●
		DXGU070302MFL-JTS	<0.2*		●
Finishing to medium cutting	JTS	DXGU070301MR-JTS	<0.1*	●	
		DXGU070301ML-JTS	<0.1*	●	
		DXGU070302MR-JTS	<0.2*	●	
		DXGU070302ML-JTS	<0.2*	●	
Finishing (Low cutting force)(sharp edge)	JSS	DXGU070301MFR-JSS	<0.1*		●
		DXGU070301MFL-JSS	<0.1*		●
		DXGU070302MFR-JSS	<0.2*		●
		DXGU070302MFL-JSS	<0.2*		●

* Corner radius has minus tolerance

● : Line-up

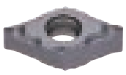
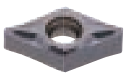
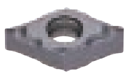
● : Continuous cutting
◐ : Light interrupted cutting
✠ : Heavy interrupted cutting

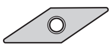
INSERT



Rhombic, 55° with hole

Material		AH725	GT9530	NS9530	KS05F
P	Steel	◐	●◐	●◐	
M	Stainless	◐			
K	Cast iron	◐	●◐	●◐	●
N	Non-ferrous				●
S	Superalloys	●			●
H	Hard materials				

Application	Chipbreaker	Designation	Corner radius	AH725 (Coating)	GT9530 (Coated cermet)	NS9530 (Cermet)	KS05F (Uncoated)
Finishing (Low cutting force)	JSS 	DXGU070301MR-JSS	<0.1*	●			
		DXGU070301ML-JSS	<0.1*	●			
		DXGU070302MR-JSS	<0.2*	●			
		DXGU070302ML-JSS	<0.2*	●			
Finishing to medium cutting	TS 	DXGU070302R-TS	0.2	●	●	●	●
		DXGU070302L-TS	0.2	●	●	●	●
		DXGU070304R-TS	0.4	●	●	●	●
		DXGU070304L-TS	0.4	●	●	●	●
		DXGU070308R-TS	0.8	●	●	●	●
		DXGU070308L-TS	0.8	●	●	●	●
Finishing (Low cutting force)	SS 	DXGU070302R-SS	0.2	●	●	●	●
		DXGU070302L-SS	0.2	●	●	●	●
		DXGU070304R-SS	0.4	●	●	●	●
		DXGU070304L-SS	0.4	●	●	●	●



Rhombic, 35° with hole

Material		SH725
P	Steel	●◐
M	Stainless	●◐
K	Cast iron	
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

Application	Chipbreaker	Designation	Corner radius	SH725 (Coating)
Finishing (sharp edge)	JRP 	VXGU09T201MFRE-JRP	<0.1*	●
		VXGU09T201MFLE-JRP	<0.1*	●
		VXGU09T202MFRE-JRP	<0.2*	●
		VXGU09T202MFLE-JRP	<0.2*	●

* Corner radius has minus tolerance

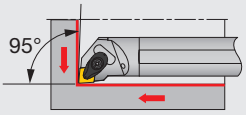
● : Line-up

STANDARD CUTTING CONDITIONS
FOR INTERNAL TURNING

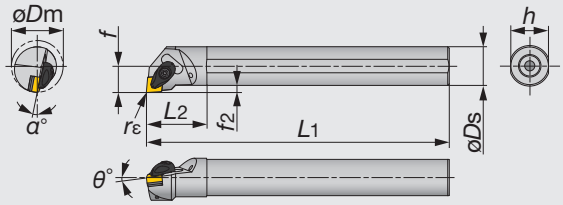
ISO	Workpiece material	Grade			Cutting speed *Vc* (m/min)	Depth of cut *ap* (mm)	Feed *f* (mm/rev)
		First Choice	For surface finish	For wear resistance (High speed)			
P	Low carbon steel E275A, C25, etc.	AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
		-	-	GT9530	80 - 300	0.3 - 2	0.08 - 0.3
	Carbon steel C45, C55, etc.	AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
		-	-	GT9530	80 - 300	0.3 - 2	0.08 - 0.3
	Low alloy steel 18CrMo4, etc.	AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
		-	-	GT9530	80 - 300	0.3 - 2	0.08 - 0.3
	Alloy steel 42CrMo4, 20Cr4, etc.	AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
		-	-	GT9530	80 - 300	0.3 - 2	0.08 - 0.3
M	Stainless steel (Austenitic) X5CrNi18-9, X5CrNiMo17-12-3, etc.	AH725	-	-	50 - 150	0.3 - 2	0.08 - 0.3
	Stainless steel (Martensitic and ferritic) X6Cr17, X20Cr13, etc.	AH725	-	-	50 - 150	0.3 - 2	0.08 - 0.3
	Stainless steel (Precipitation hardening) X5CrNiCuNb16-4, etc.	AH725	-	-	50 - 150	0.3 - 2	0.08 - 0.3
K	Grey cast iron 250, etc.	AH725	-	-	50 - 180	0.3 - 2	0.08 - 0.3
		-	NS9530	-	80 - 250	0.3 - 2	0.08 - 0.3
		-	-	GT9530	80 - 300	0.3 - 2	0.08 - 0.3
	Ductile cast iron 600-3, etc.	AH725	-	-	50 - 120	0.3 - 2	0.08 - 0.3
		-	NS9530	-	80 - 150	0.3 - 2	0.08 - 0.3
		-	-	GT9530	80 - 180	0.3 - 2	0.08 - 0.3
N	Non ferrous Metal Aluminum alloy, etc.	KS05F	-	-	100 - 300	0.3 - 2	0.08 - 0.3
	Non ferrous Metal Copper Alloy, etc.	KS05F	-	-	100 - 300	0.3 - 2	0.08 - 0.3

ISOETURN A-ACLNR/L-Eco

Double-clamp boring bar, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-ACLNR/L0904-D320	STEEL	32	25	17	200	45	23	4	-6	-13	0.8	CN**0904...	3
A32S-ACLNR/L0904-D400	STEEL	40	32	22	250	50	30	6	-6	-10	0.8	CN**0904...	3

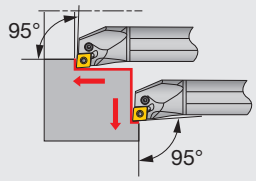
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius

SPARE PARTS

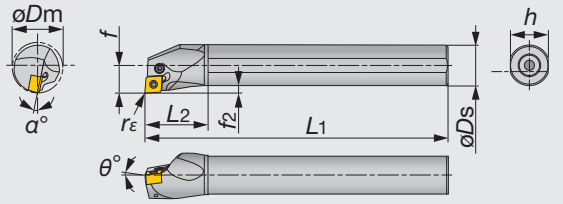
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
A**-ACLNR/L0904...	ACP3S-E	ACS-5W	BP-7	SP-2.5	ASC322	CSTB-3.5	T-15F

ISOETURN A-PCLNR/L-Eco

Lever clamp boring bars, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A16M-PCLNR/L0904-D200	STEEL	20	16	11	150	32	15	3	-6	-16	0.8	CN**0904...	1.7
A20Q-PCLNR/L0904-D250	STEEL	25	20	13	180	36	18	3	-6	-12	0.8	CN**0904...	1.7

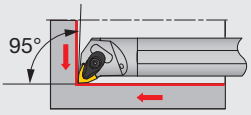
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius

SPARE PARTS

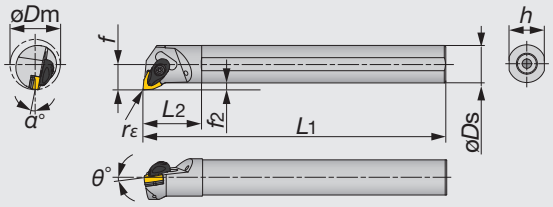
Designation	Clamping screw	Wrench	Lever	Oil supply attachment	Screw for oil hole
A16M-PCLNR/L0904-D200	LCS33	P-2F	LCL33N	-	SSHM3-4
A20Q-PCLNR/L0904-D250	LCS33	P-2F	LCL33N	EA20	SSHM3-4

A-ACLNR/L-Eco, A-PCLNR/L-Eco: Inserts → **B050 -**

Double-clamp boring bars, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

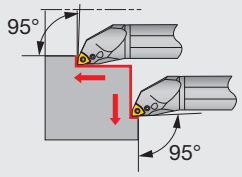
Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-AWLNR/L0604-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	0.8	WN**0604...	3
A32S-AWLNR/L0604-D400	STEEL	40	32	22	250	50	30	6	-6	-10	0.8	WN**0604...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius

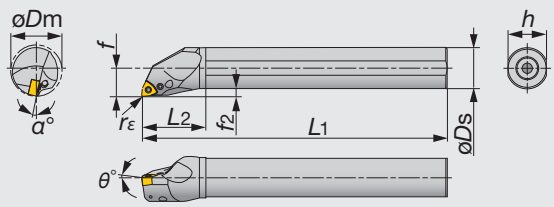
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
A**-AWLNR/L...	ACP3S-E	ACS-5W	BP-7	SP-2.5	ASW322	CSTB-3.5	T-15F

Lever clamp boring bars, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A16M-PWLNR/L0604-D200	STEEL	20	16	11	150	32	15	3	-8	-17	0.8	WN**0604...	1.7
A20Q-PWLNR/L0604-D250	STEEL	25	20	13	180	36	18	3	-6	-14	0.8	WN**0604...	1.7

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius

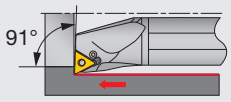
SPARE PARTS

Designation	Clamping screw	Wrench	Lever	Oil supply attachment	Screw for oil hole
A16M-PWLNR/L0604-D200	LCS33	P-2F	LCL33N	-	SSHM3-4
A20Q-PWLNR/L0604-D250	LCS33	P-2F	LCL33N	EA20	SSHM3-4

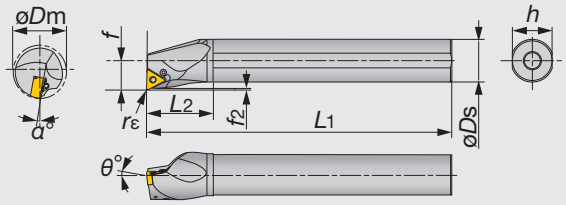
A-AWLNR/L-Eco, A-PWLNR/L-Eco: Inserts → **B090 -**

A-PTFNR/L-Eco

Lever clamp boring bars, for negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-PTFNR/L1104-D320	STEEL	32	25	17	200	45	23	1.31	-6	-12	0.8	TN**1104...	2
A32S-PTFNR/L1104-D400	STEEL	40	32	22	250	50	30	1.25	-6	-10	0.8	TN**1104...	2

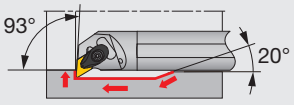
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius

SPARE PARTS

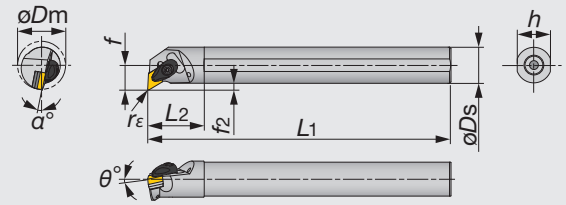
Designation	Clamping screw	Wrench	Lever
A**-PTFNR/L...	LCS23A	P-2.5	LCL23

A-ADUNR/L-Eco

Double-clamp boring bars, for negative 55° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-ADUNR/L1104-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	0.8	DN**1104...	3
A32S-ADUNR/L1104-D400	STEEL	40	32	22	250	50	30	6	-6	-11	0.8	DN**1104...	3

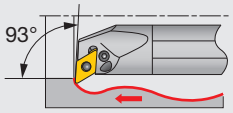
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius

SPARE PARTS

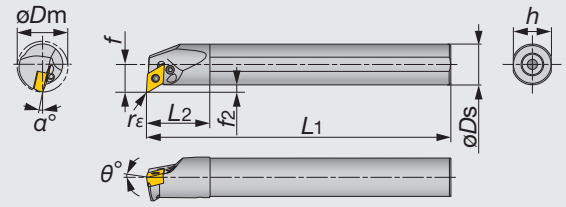
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
A**-ADUNR/L...	ACP3S-E	ACS-5W	BP-7	SP-2.5	ASD322	CSTB-3.5	T-15F

A-PDUNR/L-Eco

Lever clamp boring bars, for negative 55° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

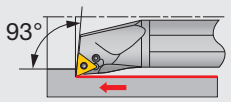
Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A20Q-PDUNR/L1104-D250	STEEL	25	20	13	180	36	18	3	-6	-14	0.8	DN**1104...	1.7

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PDUNL ** type), and the left hand insert (L) is used for the right hand toolholders (PDUNR ** type).

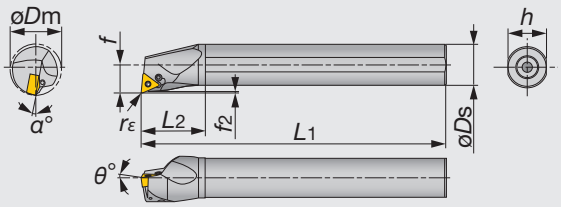
SPARE PARTS

Designation	Clamping screw	Wrench	Lever	Oil supply attachment	Screw for oil hole
A20Q-PDUNR/L1104-D250	LCS22A	P-2F	LCL33NL	EA20	SSHM2.5-3

Lever clamp boring bars, for negative triangle inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-PTUNR/L1104-D320	STEEL	32	25	17	200	45	23	1.22	-6	-12	0.8	TN**1104...	2
A32S-PTUNR/L1104-D400	STEEL	40	32	22	250	50	30	1.16	-6	-10	0.8	TN**1104...	2

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius

SPARE PARTS

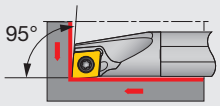
Designation	Clamping screw	Wrench	Lever	Oil supply attachment	Screw for oil hole
A25R-PTUNR/L1104-D320	LCS23A	P-2.5	LCL23	EA-25	SSHM4-5
A32S-PTUNR/L1104-D400	LCS23A	P-2.5	LCL23	EA-32	SSHM4-5

A-PTFNR/L-Eco, A-PTUNR/L-Eco: Inserts → **B079 -**

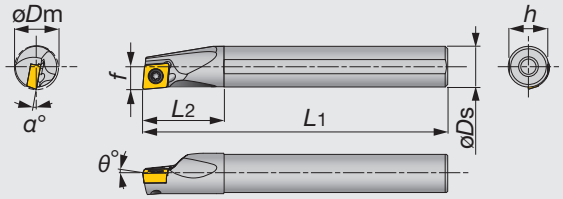
A-ADUNR/L-Eco, A-PDUNR/L-Eco: Inserts → **B061 -**

A/E-SCLCR/L

Screw-on boring bars, for positive 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	θ°	α°	rε**	Insert	Torque*
A04F-SCLCR/L03-D050	STEEL	5	4	2.5	80	8	3.8	0	-15	0.2	CC**03X1...	0.6
A05F-SCLCR/L03-D060	STEEL	6	5	3	80	9	4.8	0	-13	0.2	CC**03X1...	0.6
A06G-SCLCR/L04-D070	STEEL	7	6	3.5	90	11	5.75	0	-13	0.2	CC**04T1...	0.6
A07G-SCLCR/L04-D080	STEEL	8	7	4	90	12	6.75	0	-11	0.2	CC**04T1...	0.6
A08H-SCLCR/L06-D100	STEEL	10	8	5.5	100	16	7.5	0	-13	0.4	CC**0602...	1.2
A10F-SCLCR06-D120	STEEL	12	10	6	80	20	9	0	-10	0.4	CC**0602...	1.2
A10K-SCLCR/L06-D120	STEEL	12	10	6	125	20	9	0	-10	0.4	CC**0602...	1.2
A12H-SCLCR06-D140	STEEL	14	12	7	100	24	11	0	-8	0.4	CC**0602...	1.2
A12M-SCLCR/L06-D140	STEEL	14	12	7	150	24	11	0	-8	0.4	CC**0602...	1.2
A12H-SCLCR06-D160	STEEL	16	12	9	100	24	11	0	-7	0.4	CC**0602...	1.2
A12M-SCLCR/L06-D160	STEEL	16	12	9	150	24	11	0	-7	0.4	CC**0602...	1.2
A16K-SCLCR09-D180	STEEL	18	16	9	125	32	15	0	-9	0.8	CC**09T3...	3
A16Q-SCLCR/L09-D180	STEEL	18	16	9	180	32	15	0	-10	0.8	CC**09T3...	3
A16K-SCLCR09-D200	STEEL	20	16	11	125	32	15	0	-9	0.8	CC**09T3...	3
A16Q-SCLCR/L09-D200	STEEL	20	16	11	180	32	15	0	-9	0.8	CC**09T3...	3
A20R-SCLCR/L09-D220	STEEL	22	20	11	200	32	18	0	-8	0.8	CC**09T3...	3
A25S-SCLCR/L09-D270	STEEL	27	25	13.5	250	45	23	0	-6	0.8	CC**09T3...	3
E04G-SCLCR/L03-D050	CARBIDE	5	4	2.5	90	9	3.8	0	-15	0.2	CC**03X1...	0.6
E05G-SCLCR/L03-D060	CARBIDE	6	5	3	90	10	4.8	0	-13	0.2	CC**03X1...	0.6
E06H-SCLCR/L04-D070	CARBIDE	7	6	3.5	100	12	5.75	0	-13	0.2	CC**04T1...	0.6
E07H-SCLCR/L04-D080	CARBIDE	8	7	4	100	14	6.75	0	-11	0.2	CC**04T1...	0.6
E08G-SCLCR06-D100	CARBIDE	10	8	5.5	90	22	7.5	0	-13	0.4	CC**0602...	1.2
E08K-SCLCR/L06-D100	CARBIDE	10	8	5.5	125	22	7.5	0	-13	0.4	CC**0602...	1.2
E10F-SCLCR06-D120	CARBIDE	12	10	6	80	25	9	0	-10	0.4	CC**0602...	1.2
E10H-SCLCR06-D120	CARBIDE	12	10	6	100	25	9	0	-10	0.4	CC**0602...	1.2
E10M-SCLCR/L06-D120	CARBIDE	12	10	6	150	25	9	0	-10	0.4	CC**0602...	1.2
E12G-SCLCR06-D140	CARBIDE	14	12	7	90	27	11	0	-8	0.4	CC**0602...	1.2
E12J-SCLCR06-D140	CARBIDE	14	12	7	110	27	11	0	-8	0.4	CC**0602...	1.2
E12Q-SCLCR/L06-D140	CARBIDE	14	12	7	180	27	11	0	-8	0.4	CC**0602...	1.2
E12G-SCLCR06-D160	CARBIDE	16	12	9	90	27	11	0	-7	0.4	CC**0602...	1.2
E12J-SCLCR06-D160	CARBIDE	16	12	9	110	27	11	0	-7	0.4	CC**0602...	1.2
E12Q-SCLCR/L06-D160	CARBIDE	16	12	9	180	27	11	0	-7	0.4	CC**0602...	1.2
E16H-SCLCR09-D180	CARBIDE	18	16	9	100	32	15	0	-10	0.8	CC**09T3...	3
E16L-SCLCR09-D180	CARBIDE	18	16	9	130	32	15	0	-10	0.8	CC**09T3...	3
E16R-SCLCR/L09-D180	CARBIDE	18	16	9	200	32	15	0	-10	0.8	CC**09T3...	3
E16H-SCLCR09-D200	CARBIDE	20	16	11	100	32	15	0	-9	0.8	CC**09T3...	3
E16L-SCLCR09-D200	CARBIDE	20	16	11	130	32	15	0	-9	0.8	CC**09T3...	3
E16R-SCLCR/L09-D200	CARBIDE	20	16	11	200	32	15	0	-9	0.8	CC**09T3...	3
E20S-SCLCR09-D220	CARBIDE	22	20	11	250	36	18	0	-8	0.8	CC**09T3...	3
E25T-SCLCR09-D270	CARBIDE	27	25	13.5	300	45	23	0	-6	0.8	CC**09T3...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SCLCL** type), and the left hand insert (L) is used for the right hand toolholders (SCLCR** type).

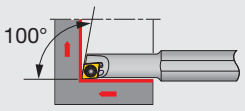
SPARE PARTS



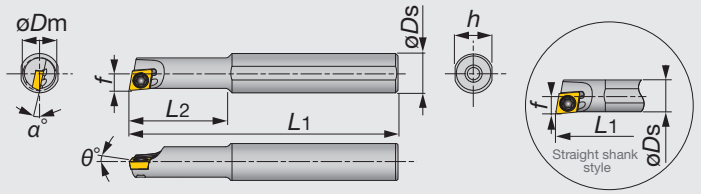

Designation	Clamping screw	Wrench
A**-SCLCR/L03-D...	CSTA-1.6	T-6F
A**-SCLCR/L04-D...	CSTB-2	T-6F
A**-SCLCR/L06-D...	CSTB-2.5S	T-8F
A**-SCLCR/L09-D...	CSTB-4S	T-15F
E**-SCLCR/L03-D...	CSTA-1.6	T-6F
E**-SCLCR/L04-D...	CSTB-2	T-6F
E**-SCLCR/L06-D...	CSTB-2.5S	T-8F
E16*-SCLCR/L09-D...	CSTB-4L060	T-15F
E2**-SCLCR/L09-D...	CSTB-4S	T-15F

A/E-SEXPR/L

Screw-on boring bars, for positive 75° rhombic inserts



Cutting edge style **X**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	θ°	α°	rε**	Insert	Torque*
A04F-SEXPR/L03-D045	STEEL	4.5	4	2.3	80	8	3.8	0	-15	0.2	EP**03X1...	0.6
A04F-SEXPR/L03-D050	STEEL	5	4	2.5	80	8	3.8	0	-13	0.2	EP**03X1...	0.6
A05F-SEXPR/L04-D055	STEEL	5.5	5	2.75	80	9	4.8	0	-12	0.4	EP**0401...	0.6
A06G-SEXPR/L04-D070	STEEL	7	6	3.6	90	11	5.75	0	-12	0.4	EP**0401...	0.6
A08H-SEXPR/L04-D055	STEEL	5.5	8	2.75	100	16	7.5	0	-12	0.4	EP**0401...	0.6
A08H-SEXPR/L04-D070	STEEL	7	8	3.6	100	20	7.5	0	-12	0.4	EP**0401...	0.6
E04G-SEXPR/L03-D045	CARBIDE	4.5	4	2.3	90	9	3.8	0	-15	0.2	EP**03X1...	0.6
E04G-SEXPR/L03-D050	CARBIDE	5	4	2.5	90	9	3.8	0	-13	0.2	EP**03X1...	0.6
E05G-SEXPR/L04-D055	CARBIDE	5.5	5	2.75	90	10	4.8	0	-12	0.4	EP**0401...	0.6
E06H-SEXPR/L04-D070	CARBIDE	7	6	3.6	100	12	5.75	0	-12	0.4	EP**0401...	0.6
E08K-SEXPR/L04-D055	CARBIDE	5.5	8	2.75	125	28	7.5	0	-12	0.4	EP**0401...	0.6
E08K-SEXPR/L04-D070	CARBIDE	7	8	3.6	125	40	7.5	0	-12	0.4	EP**0401...	0.6

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SEXPL** type), and the left hand insert (L) is used for the right hand toolholders (SEXPR** type).

SPARE PARTS




Designation	Clamping screw	Wrench
A**-SEXPR/L03-D...	CSTA-1.6	T-6F
A**-SEXPR/L04-D...	CSTB-2	T-6F
E**-SEXPR/L03-D...	CSTA-1.6	T-6F
E**-SEXPR/L04-D...	CSTB-2	T-6F

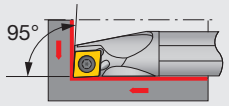
Int. Toolholder

A/E-SCLCR/L: Inserts → **B104 -**, CBN → **B168 -**, PCD → **B177**

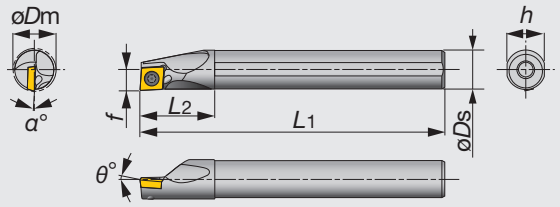
A/E-SEXPR/L: Inserts → **B120 -**, CBN → **B171**, PCD → **B178**

A/E-SCLPR/L

Screw-on boring bars, for positive 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	θ°	α°	rε**	Insert	Torque*
A08H-SCLPR/L06-D100	STEEL	10	8	5.5	100	16	7.5	5	-8	0.4	CP**0602...	1.2
A10K-SCLPR/L06-D120	STEEL	12	10	6	125	20	9	5	-5	0.4	CP**0602...	1.2
A10K-SCLPR/L08-D120	STEEL	12	10	6	125	20	9	5	-5	0.4	CP**0802...	1.4
A12M-SCLPR/L06-D140	STEEL	14	12	7	150	24	11	5	-4	0.4	CP**0602...	1.2
A12M-SCLPR/L08-D140	STEEL	14	12	7	150	24	11	5	-4	0.4	CP**0802...	1.4
A12M-SCLPR/L08-D160	STEEL	16	12	9	150	24	11	5	-3	0.4	CP**0802...	1.4
A16Q-SCLPR/L09-D180	STEEL	18	16	9	180	32	15	5	-3.5	0.8	CP**0903...	3
A16Q-SCLPR/L09-D200	STEEL	20	16	11	180	32	15	5	-3	0.8	CP**0903...	3
A20R-SCLPR/L09-D220	STEEL	22	20	11	200	36	18	5	-2	0.8	CP**0903...	3
A25S-SCLPR/L09-D270	STEEL	27	25	13.5	250	45	23	5	-1	0.8	CP**0903...	3
E08K-SCLPR/L06-D100	CARBIDE	10	8	5.5	125	22	7.5	5	-8	0.4	CP**0602...	1.2
E10M-SCLPR/L06-D120	CARBIDE	12	10	6	150	25	9	5	-5	0.4	CP**0602...	1.2
E10H-SCLPR08-D120	CARBIDE	12	10	6	100	25	9	5	-5	0.4	CP**0802...	1.4
E10M-SCLPR/L08-D120	CARBIDE	12	10	6	150	25	9	5	-5	0.4	CP**0802...	1.4
E12Q-SCLPR/L06-D140	CARBIDE	14	12	7	180	27	11	5	-4	0.4	CP**0602...	1.2
E12G-SCLPR08-D140	CARBIDE	14	12	7	90	27	11	5	-4	0.4	CP**0802...	1.4
E12J-SCLPR08-D140	CARBIDE	14	12	7	110	27	11	5	-4	0.4	CP**0802...	1.4
E12Q-SCLPR/L08-D140	CARBIDE	14	12	7	180	27	11	5	-4	0.4	CP**0802...	1.4
E12G-SCLPR08-D160	CARBIDE	16	12	9	90	27	11	5	-3	0.4	CP**0802...	1.4
E12J-SCLPR08-D160	CARBIDE	16	12	9	110	27	11	5	-3	0.4	CP**0802...	1.4
E12Q-SCLPR/L08-D160	CARBIDE	16	12	9	180	27	11	5	-3	0.4	CP**0802...	1.4
E16H-SCLPR09-D180	CARBIDE	18	16	9	100	32	15	5	-3.5	0.8	CP**0903...	3
E16L-SCLPR09-D180	CARBIDE	18	16	9	130	32	15	5	-3.5	0.8	CP**0903...	3
E16R-SCLPL09-D180	CARBIDE	18	16	9	200	32	15	5	-3.5	0.8	CP**0903...	3
E16H-SCLPR09-D200	CARBIDE	20	16	11	100	32	15	5	-3	0.8	CP**0903...	3
E16L-SCLPR09-D200	CARBIDE	20	16	11	130	32	15	5	-3	0.8	CP**0903...	3
E16R-SCLPL09-D200	CARBIDE	20	16	11	200	32	15	5	-3	0.8	CP**0903...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SCLPL** type), and the left hand insert (L) is used for the right hand toolholders (SCLPR** type).

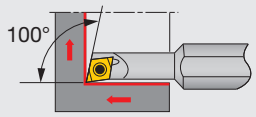
SPARE PARTS

Designation	Clamping screw	Wrench
A**-SCLPR/L06-D...	CSTB-2.5S	T-8F
A10K-SCLPR/L08-D120	CSTB-3L042	T-9F
A12M-SCLPR/L08-D...	CSTB-3L050	T-9F
A**-SCLPR/L09-D...	CSTB-4L060	T-15F
E**-SCLPR/L06-D...	CSTB-2.5S	T-8F
E10*-SCLPR/L08-D...	CSTB-3L042	T-9F
E12*-SCLPR/L08-D...	CSTB-3L050	T-9F
E16*-SCLPR/L09-D...	CSTB-4L060	T-15F

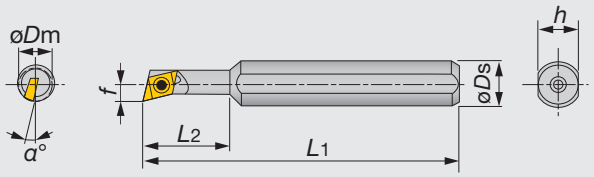
A/E-SCLPR/L: Inserts → **B111 -**

JS-SEXPR/L

Screw-on boring bar, for positive 75° rhombic inserts



Cutting edge style **X**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	α°	rε**	Insert	Torque*
JS08H-SEXPR045	STEEL	5.5	8	2.7	100	16	7	12	0.4	EP**0401...	0.6
JS08H-SEXPR047	STEEL	7	8	3.6	100	20	7	12	0.4	EP**0401...	0.6

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SEXPL** type), and the left hand insert (L) is used for the right hand toolholders (SEXPR** type).

SPARE PARTS



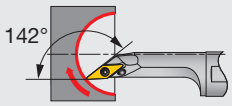

Designation	Clamping screw	Wrench
JS08H-SEXPR04...	CSTB-2	T-6F

JS-SEXPR/L: Inserts → **B120 -**, CBN → **B171**, PCD → **B178**

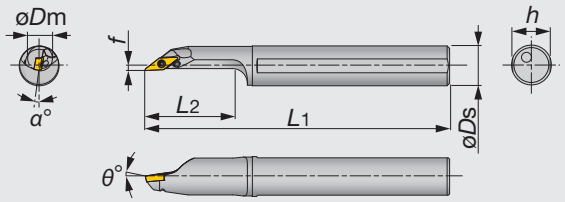
STREAMJETBAR

A-SVJBR/L

Screw-on boring bars, for positive 35° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	θ°	α°	rε**	Insert	Torque*
A20R-SVJBR/L11-D250	STEEL	25	20	2	200	40	18	-5	-5	0.4	VB**1103...	1.2
A25S-SVJBR/L11-D300	STEEL	30	25	3.5	250	50	23	-5	-5	0.4	VB**1103...	1.2

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVJBL** type), and the left hand insert (L) is used for the right hand toolholders (SVJBR** type).

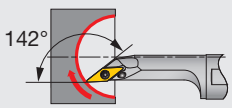
SPARE PARTS

Designation	Clamping screw	Wrench
A**-SVJB*11-D...	CSTB-2.5	T-8F

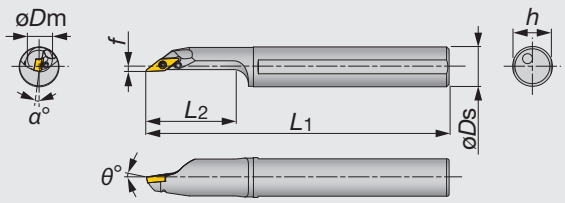
STREAMJETBAR

A-SVJCR/L

Screw-on boring bars, for positive 35° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	θ°	α°	rε**	Insert	Torque*
A12M-SVJCR/L08-D160	STEEL	16	12	2	150	28	11	-5	-5	0.4	VC**0802...	0.6
A16Q-SVJCR/L08-D200	STEEL	20	16	2	180	35	15	-5	-5	0.4	VC**0802...	0.6

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVJCL** type), and the left hand insert (L) is used for the right hand toolholders (SVJCR** type).

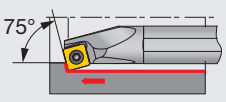
SPARE PARTS

Designation	Clamping screw	Wrench
A**-SVJC*08-D...	CSTB-2L	T-6F

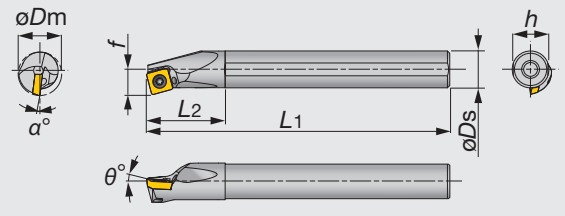
STREAMJETBAR

A-SSKPR

Screw-on boring bars, for positive square inserts



Cutting edge style **K**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	θ°	α°	rε**	Insert	Torque*
A16Q-SSKPR09-D200	STEEL	20	16	11	180	32	15	5	-6	0.8	SP**0903...	3
A20R-SSKPR09-D240	STEEL	24	20	13	200	36	18	5	-2	0.8	SP**0903...	3
A25S-SSKPR12-D310	STEEL	31	25	17	250	45	23	5	-2	0.8	SP**1204...	6

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SSKPL** type), and the left hand insert (L) is used for the right hand toolholders (SSKPR** type).

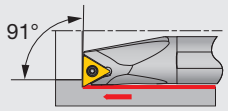
SPARE PARTS

Designation	Clamping screw	Wrench
A**-SSKPR09-D2*0	CSTB-4L060	T-15F
A25S-SSKPR12-D310	CSTB-5S	T-20F

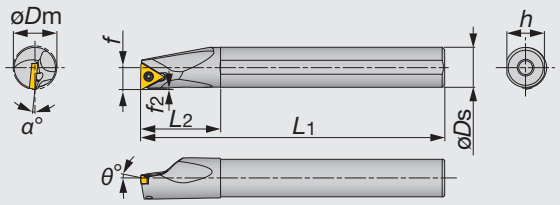
STREAMJETBAR

A/E-STFCR/L

Screw-on boring bars, for positive triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A10K-STFCR/L1103-D120	STEEL	12	10	6.5	125	20	9	0.6	0	-13	0.4	TC**1103...	1.2
A12M-STFCR/L1103-D140	STEEL	14	12	7	150	24	11	0.5	0	-10	0.4	TC**1103...	1.2
A16Q-STFCR/L1103-D180	STEEL	18	16	9	180	32	15	0.5	0	-7	0.4	TC**1103...	1.2
E10M-STFCR/L1103-D120	CARBIDE	12	10	6.5	150	25	9	0.7	0	-13	0.4	TC**1103...	1.2
E12Q-STFCR/L1103-D140	CARBIDE	14	12	7	180	27	11	0.5	0	-10	0.4	TC**1103...	1.2
E16R-STFCR/L1103-D180	CARBIDE	18	16	9	200	32	15	0.5	0	-7	0.4	TC**1103...	1.2

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (STFCL** type), and the left hand insert (L) is used for the right hand toolholders (STFCR** type).

SPARE PARTS





Designation	Clamping screw	Wrench
A**-STFCR/L1103-D...	CSTB-2.5	T-8F
E**-STFCR/L1103-D...	CSTB-2.5	T-8F

A-SVJBR/L: Inserts → **B142 -**, CBN → **B169 -**

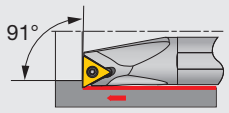
A-SVJCR/L: Inserts → **B145 -**

A-SSKPR: Inserts → **B123 -**, CBN → **B168**

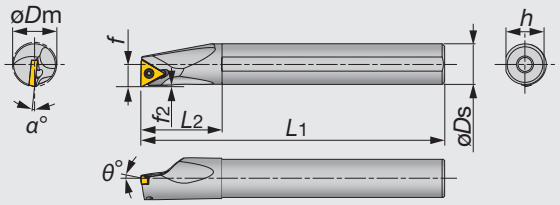
A/E-STFCR/L: Inserts → **B126 -**, PCD → **B177**

A/E-STFPR/L

Screw-on boring bars, for positive triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A08H-STFPR/L09-D100	STEEL	10	8	5.5	100	16	7.5	0.7	5	-8	0.4	TP**0902...	0.9
A10K-STFPR/L1102-D120	STEEL	12	10	6.5	125	20	9	0.7	5	-6	0.4	TP**1102...	1.2
A12M-STFPR/L1102-D140	STEEL	14	12	7.0	150	24	11	0.6	5	-4	0.4	TP**1102...	1.2
A16Q-STFPR/L13-D180	STEEL	18	16	9	180	32	15	0.7	5	-2	0.4	TP**1303...	1.4
A20R-STFPR13-D220	STEEL	22	20	11	200	36	18	0.8	5	-2	0.4	TP**1303...	1.4
A25S-STFPR16-D270	STEEL	27	25	13.5	250	45	23	0.6	5	-1	0.4	TP**16T3...	3
E08K-STFPR/L09-D100	CARBIDE	10	8	5.5	125	22	7.5	0.7	5	-8	0.4	TP**0902...	0.9
E10M-STFPR/L1102-D120	CARBIDE	12	10	6.5	150	25	9	0.7	5	-6	0.4	TP**1102...	1.2
E12Q-STFPR/L1102-D140	CARBIDE	14	12	7	180	27	11	0.6	5	-4	0.4	TP**1102...	1.2
E16R-STFPR13-D180	CARBIDE	18	16	9	200	32	15	0.7	5	-2	0.4	TP**1303...	1.4
E20S-STFPR13-D220	CARBIDE	22	20	11	250	36	18	0.8	5	-2	0.4	TP**1303...	1.4

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius

Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (STFPL ** type), and the left hand insert (L) is used for the right hand toolholders (STFPR ** type).

(1) Inserts of TPGH, TPGM and TPGA are not applicable.

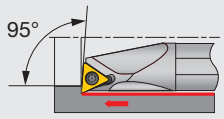
SPARE PARTS

Designation	Clamping screw	Wrench
A08H-STFPR/L09-D100	CSTB-2.2S	T-7F
A10K-STFPR/L1102-D120	CSTB-2.5B	T-8F
A12M-STFPR/L1102-D140	CSTB-2.5	T-8F
A16Q-STFPR/L13-D180	CSTB-3S	T-9F
A20R-STFPR13-D220	CSTB-3	T-9F
A25S-STFPR16-D270	CSTB-4M	T-15F
E08K-STFPR/L09-D100	CSTB-2.2S	T-7F
E10M-STFPR/L1102-D120	CSTB-2.5B	T-8F
E12Q-STFPR/L1102-D140	CSTB-2.5	T-8F
E16R-STFPR13-D180	CSTB-3S	T-9F
E20S-STFPR13-D220	CSTB-3	T-9F

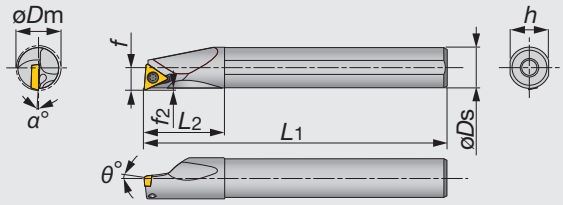
A/E-STFPR/L: Inserts → **B131 -**, CBN → **B168 -**, PCD → **B178**

A/E-STUPR/L

Screw-on boring bars, for positive triangle inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A07G-STUPR/L07-D080	STEEL	8	7	4	90	12	6.75	0.4	5	-10	0.4	TP**0701...	0.9
A08H-STUPR/L07-D080	STEEL	8	8	4	100	19.5	7.5	0.5	5	-10	0.4	TP**0701...	0.9
A08H-STUPR/L09-D100	STEEL	10	8	5.5	100	16	7.5	0.6	5	-8	0.4	TP**0902...(1)	0.9
A10F-STUPR1102-D120	STEEL	12	10	6.5	80	20	9	1.4	5	-6	0.4	TP**1102...(1)	1.2
A10K-STUPR/L1102-D120	STEEL	12	10	6.5	125	20	9	0.7	5	-6	0.4	TP**1102...(1)	1.2
A10K-STUPR/L1103-D120	STEEL	12	10	6.5	125	20	9	0.6	5	-10	0.4	TP**1103...(1)	1.4
A12H-STUPR1102-D140	STEEL	14	12	7	100	24	11	0.9	5	-4	0.4	TP**1102...(1)	1.2
A12M-STUPR/L1102-D140	STEEL	14	12	7	150	24	11	0.7	5	-4	0.4	TP**1102...(1)	1.2
A12M-STUPR/L1103-D140	STEEL	14	12	7	150	24	11	0.6	5	-6	0.4	TP**1103...(1)	1.4
A12H-STUPR1102-D160	STEEL	16	12	9	100	24	11	0.6	5	-3	0.4	TP**1102...(1)	1.2
A12M-STUPR/L1102-D160	STEEL	16	12	9	150	24	11	0.6	5	-3	0.4	TP**1102...(1)	1.2
A16K-STUPR13-D180	STEEL	18	16	9	125	32	15	0.9	5	-3	0.4	TP**1303...(1)	1.4
A16Q-STUPR/L1103-D180	STEEL	18	16	9	180	32	15	0.8	5	-4	0.4	TP**1103...(1)	1.4
A16Q-STUPR/L13-D180	STEEL	18	16	9	180	32	15	0.6	5	-3	0.4	TP**1303...(1)	1.4
A16K-STUPR13-D200	STEEL	20	16	11	125	32	15	0.6	5	-3	0.4	TP**1303...(1)	1.4
A16Q-STUPR/L13-D200	STEEL	20	16	11	180	32	15	0.6	5	-3	0.4	TP**1303...(1)	1.4
A20R-STUPR/L1103-D220	STEEL	22	20	11	200	36	18	0.7	5	-2	0.4	TP**1103...(1)	1.4
A20R-STUPR/L13-D220	STEEL	22	20	11	200	36	18	0.7	5	-2	0.4	TP**1303...(1)	1.4
A25S-STUPR/L16-D270	STEEL	27	25	13.5	250	45	23	0.5	5	-1	0.8	TP**16T3...(1)	3
A32T-STUPR/L16-D340	STEEL	34	32	17	300	50	30	0.7	5	0	0.8	TP**16T3...	3
E07H-STUPR/L07-D080	CARBIDE	8	7	4	100	14	6.75	0.3	5	-10	0.4	TP**0701...	0.9
E08G-STUPR07-D080	CARBIDE	8	8	4	90	44.5	7.5	0.5	5	-10	0.4	TP**0701...	0.9
E08K-STUPR/L07-D080	CARBIDE	8	8	4	125	44.5	7.5	0.5	5	-10	0.4	TP**0701...	0.9
E08G-STUPR09-D100	CARBIDE	10	8	5.5	90	22	7	0.6	5	-8	0.4	TP**0902...(1)	0.9
E08K-STUPR/L09-D100	CARBIDE	10	8	5.5	125	22	7	0.6	5	-8	0.4	TP**0902...(1)	0.9
E10F-STUPR1102-D120	CARBIDE	12	10	6.5	80	25	9	0.5	5	-6	0.4	TP**1102...(1)	1.2
E10H-STUPR1102-D120	CARBIDE	12	10	6.5	100	25	9	0.6	5	-6	0.4	TP**1102...(1)	1.2
E10M-STUPR/L1102-D120	CARBIDE	12	10	6.5	150	25	9	0.6	5	-6	0.4	TP**1102...(1)	1.2
E10M-STUPR/L1103-D120	CARBIDE	12	10	6.5	150	25	9	0.7	5	-10	0.4	TP**1103...(1)	1.4
E12G-STUPR1102-D140	CARBIDE	14	12	7	90	27	11	0.9	5	-4	0.4	TP**1102...(1)	1.2
E12J-STUPR1102-D140	CARBIDE	14	12	7	110	27	11	0.6	5	-4	0.4	TP**1102...(1)	1.2
E12Q-STUPR/L1102-D140	CARBIDE	14	12	7	180	27	11	0.6	5	-4	0.4	TP**1102...(1)	1.2
E12Q-STUPR/L1103-D140	CARBIDE	14	12	7	180	27	11	0.7	5	-6	0.4	TP**1103...(1)	1.4
E12G-STUPR1102-D160	CARBIDE	16	12	9	90	27	11	0.6	5	-3	0.4	TP**1102...(1)	1.2
E12J-STUPR1102-D160	CARBIDE	16	12	9	110	27	11	0.6	5	-3	0.4	TP**1102...(1)	1.2
E12Q-STUPR/L1102-D160	CARBIDE	16	12	9	180	27	11	0.6	5	-3	0.4	TP**1102...(1)	1.2
E16H-STUPR13-D180	CARBIDE	18	16	9	100	32	15	0.9	5	-3	0.4	TP**1303...(1)	1.4
E16R-STUPR/L1103-D180	CARBIDE	18	16	9	200	32	15	0.8	5	-3	0.4	TP**1103...(1)	1.4
E16L-STUPR13-D180	CARBIDE	18	16	9	130	32	15	0.6	5	-3	0.4	TP**1303...(1)	1.4
E16R-STUPR/L13-D180	CARBIDE	18	16	9	200	32	15	0.6	5	-3	0.4	TP**1303...(1)	1.4
E16H-STUPR13-D200	CARBIDE	20	16	11	100	32	15	0.6	5	-3	0.4	TP**1303...(1)	1.4
E16L-STUPR13-D200	CARBIDE	20	16	11	130	32	15	0.6	5	-3	0.4	TP**1303...(1)	1.4
E16R-STUPL13-D200	CARBIDE	20	16	11	200	32	15	0.6	5	-3	0.4	TP**1303...(1)	1.4
E20S-STUPR1103-D220	CARBIDE	22	20	11	250	36	18	0.7	5	-2	0.4	TP**1103...(1)	1.4
E20S-STUPR13-D220	CARBIDE	22	20	11	250	36	18	0.6	5	-2	0.4	TP**1303...(1)	1.4
E25T-STUPR16-D270	CARBIDE	27	25	13.5	300	45	23	0.5	5	-1	0.8	TP**16T3...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius

Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (STUPL ** type), and the left hand insert (L) is used for the right hand toolholders (STUPR ** type).

(1) Inserts of TPGH, TPGM and TPGA are not applicable.

A/E-STUPR/L: Inserts → **B131 -**, CBN → **B168 -**, PCD → **B178**

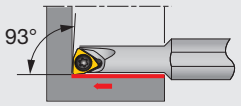
SPARE PARTS

Designation	Clamping screw	Wrench
A07/08-STUPR/L07/09-D...	CSTB-2.2L038	T-7F
A10*-STUPR/L1102-D120	CSTB-2.5S	T-8F
A12*-STUPR/L1102-D...	CSTB-2.5B	T-8F
A12M-STUPR/L1103-D140	CSTB-3L050	T-9F
A16*-STUPR/L13-D...	CSTB-3S	T-9F
A20R-STUPR/L13-D220	CSTB-3	T-9F
A**-STUPR/L16-D...	CSTB-4M	T-15F
E07/08-STUPR/L07/09-D...	CSTB-2.2L038	T-7F
E10*-STUPR/L1102-D120	CSTB-2.5S	T-8F
E12*-STUPR/L1102-D...	CSTB-2.5B	T-8F
E**-STUPR/L1103-D...	CSTB-3L050	T-9F
E16*-STUPR/L13-D...	CSTB-3S	T-9F
E20S-STUPR13-D220	CSTB-3	T-9F
E25T-STUPR16-D270	CSTB-4M	T-15F

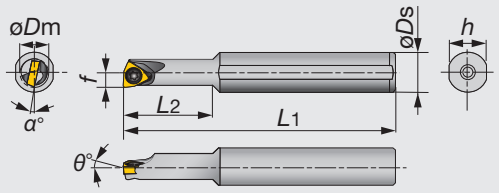
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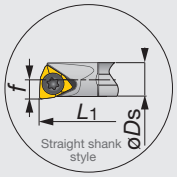
A/E-SWUBR/L

Screw-on boring bars, for positive trigon inserts



Cutting edge style **U**





Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	θ°	α°	rε**	Insert	Torque*
A05F-SWUBR/L03-D060	STEEL	6	5	3	80	9	4.8	0	-13	0.4	WB**0301...	0.6
A06G-SWUBR/L03-D070	STEEL	7	6	3.5	90	11	5.75	0	-12	0.4	WB**0301...	0.6
A07G-SWUBR/L03-D080	STEEL	8	7	4	90	12	6.75	0	-11	0.4	WB**0301...	0.6
A08H-SWUBR03-D060	STEEL	6	8	3.1	100	18	7.5	0	-12	0.4	WB**0301...	0.6
A08H-SWUBR03-D070	STEEL	7	8	3.6	100	20	7.5	0	-12	0.4	WB**0301...	0.6
E05G-SWUBR/L03-D060	CARBIDE	6	5	3	90	10	4.8	0	-13	0.4	WB**0301...	0.6
E06H-SWUBR/L03-D070	CARBIDE	7	6	3.5	100	12	5.75	0	-12	0.4	WB**0301...	0.6
E07H-SWUBR/L03-D080	CARBIDE	8	7	4	100	14	6.75	0	-11	0.4	WB**0301...	0.6
E08K-SWUBR03-D060	CARBIDE	6	8	3.1	125	30	7.5	0	-12	0.4	WB**0301...	0.6
E08K-SWUBR03-D070	CARBIDE	7	8	3.6	125	40	7.5	0	-12	0.4	WB**0301...	0.6

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SWUBL** type), and the left hand insert (L) is used for the right hand toolholders (SWUBR** type).

SPARE PARTS

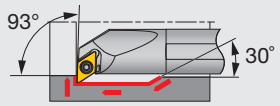
Designation	Clamping screw	Wrench
A/E**-SWUBR/L...	CSTB-2	T-6F

A/E-SWUBR/L: Inserts → **B141**

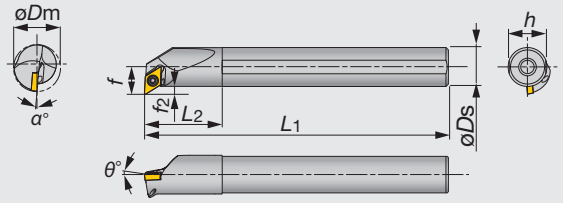
STREAMJETBAR

A/E-SDUCR/L

Screw-on boring bars, for positive 55° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A10K-SDUCR/L07-D130	STEEL	13	10	7	125	20	9	2	0	-10	0.4	DC**0702...	1.2
A12M-SDUCR/L07-D160	STEEL	16	12	9.3	150	24	11	3.3	0	-6	0.4	DC**0702...	1.2
A16Q-SDUCR/L07-D200	STEEL	20	16	11.3	180	32	15	3.3	0	-5	0.4	DC**0702...	1.2
A20R-SDUCR/L11-D270	STEEL	27	20	16.1	200	36	18	6.1	0	-5	0.8	DC**11T3...	3
A25S-SDUCR/L11-D320	STEEL	32	25	18.6	250	45	23	6.1	0	-4	0.8	DC**11T3...	3
E10H-SDUCR07-D130	CARBIDE	13	10	7	100	25	9	1.9	5	-3.5	0.4	DC**0702...	1.2
E10M-SDUCR/L07-D130	CARBIDE	13	10	7	150	25	9	2	0	-10	0.4	DC**0702...	1.2
E12J-SDUCR07-D160	CARBIDE	16	12	9.3	110	27	11	3.2	0	-6	0.4	DC**0702...	1.2
E12Q-SDUCR/L07-D160	CARBIDE	16	12	9.3	180	27	11	3.3	0	-6	0.4	DC**0702...	1.2
E16L-SDUCR07-D200	CARBIDE	20	16	11.3	130	32	15	3.2	0	-5	0.4	DC**0702...	1.2
E16R-SDUCR/L07-D200	CARBIDE	20	16	11.3	200	32	15	3.3	0	-5	0.4	DC**0702...	1.2
E20S-SDUCR11-D270	CARBIDE	27	20	16.1	250	36	18	6.1	0	-5	0.8	DC**11T3...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SDUCL** type), and the left hand insert (L) is used for the right hand toolholders (SDUCR** type).

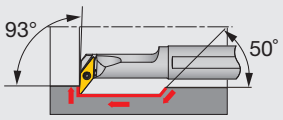
SPARE PARTS

Designation	Clamping screw	Wrench
A1**-SDUCR/L07-D1*0	CSTB-2.5S	T-8F
A16Q-SDUCR/L07-D200	CSTB-2.5	T-8F
A2**-SDUCR/L11-D**0	CSTB-4S	T-15F
E1**-SDUCR/L07-D1*0	CSTB-2.5S	T-8F
E16*-SDUCR/L07-D200	CSTB-2.5	T-8F
E20S-SDUCR11-D270	CSTB-4S	T-15F

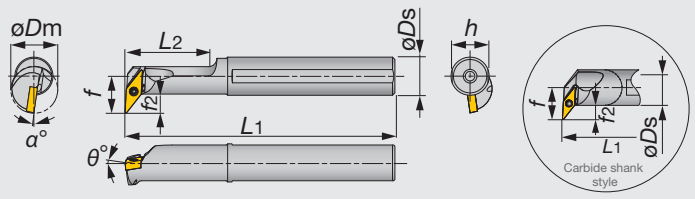
STREAMJETBAR

A/E-SVUBR/L

Screw-on boring bars, for positive 35° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A16Q-SVUBR/L11-D200	STEEL	20	16	15.5	180	35	15	8	0	-8	0.4	VB**1103...	1.2
A20R-SVUBR/L11-D250	STEEL	25	20	17.5	200	40	19	8	0	-7	0.4	VB**1103...	1.2
A25S-SVUBR/L16-D320	STEEL	32	25	20.5	250	50	23	8.5	0	-6	0.8	VB**1604...	3
E16R-SVUBR/L11-D245	CARBIDE	24.5	16	16	200	-	15	8	0	-8	0.4	VB**1103...	1.2
E20S-SVUBR/L11-D285	CARBIDE	28.5	20	18	250	-	19	8	0	-7	0.4	VB**1103...	1.2
E25T-SVUBR/L16-D340	CARBIDE	34	25	21	300	-	23	8.5	0	-6	0.8	VB**1604...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVUBL** type), and the left hand insert (L) is used for the right hand toolholders (SVUBR** type).

SPARE PARTS

Designation	Clamping screw	Wrench
A**-SVUBR/L11-D2*0	CSTB-2.5	T-8F
A25S-SVUBR/L16-D320	CSTB-3.5	T-15F
E**-SVUBR/L11-D2*5	CSTB-2.5	T-8F
E25T-SVUBR/L16-D340	CSTB-3.5	T-15F

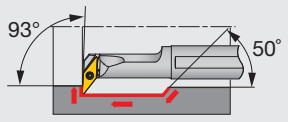
A/E-SDUCR/L: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

A/E-SVUBR/L: Inserts → **B142 -**, CBN → **B169 -**

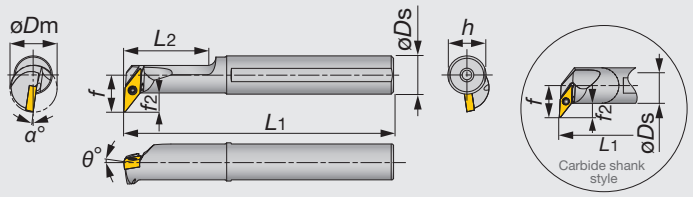
STREAMJETBAR

A/E-SVUCR/L

Screw-on boring bars, for positive 35° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A12M-SVUCR/L08-D160	STEEL	16	12	11	150	30	11	5.5	0	-8	0.4	VC**0802...	0.6
A25S-SVUCR/L16-D320	STEEL	32	25	19	250	45	23	6.5	0	-5	0.8	VC**1604...	3
E12Q-SVUCR/L08-D180	CARBIDE	18	12	11.5	180	-	11	5.5	0	-8	0.4	VC**0802...	0.6
E25T-SVUCR/L16-D320	CARBIDE	32	25	19	300	-	23	6.5	0	-5	0.8	VC**1604...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVUCL** type), and the left hand insert (L) is used for the right hand toolholders (SVUCR** type).

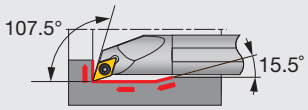
SPARE PARTS

Designation	Clamping screw	Wrench
A12M-SVUCR/L08-D160	CSTB-2L	T-6F
A25S-SVUCR/L16-D320	CSTB-3.5	T-15F
E12Q-SVUCR/L08-D180	CSTB-2L	T-6F
E25T-SVUCR/L16-D320	CSTB-3.5	T-15F

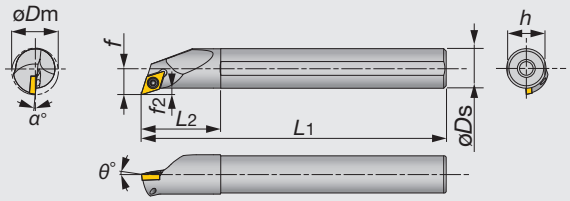
STREAMJETBAR

A/E-SDQCR/L

Screw-on boring bars, for positive 55° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A10K-SDQCR/L07-D130	STEEL	13	10	7.6	125	20	9	2.6	0	-8	0.4	DC**0702...	1.2
A12M-SDQCR/L07-D160	STEEL	16	12	8.6	150	24	11	2.6	0	-6	0.4	DC**0702...	1.2
A16Q-SDQCR/L07-D200	STEEL	20	16	10.6	180	32	15	2.6	0	-5	0.4	DC**0702...	1.2
A20R-SDQCR/L11-D250	STEEL	25	20	13.7	200	36	18	3.7	0	-7	0.8	DC**11T3...	3
A25S-SDQCR/L11-D300	STEEL	30	25	16.2	250	45	23	3.7	0	-4	0.8	DC**11T3...	3
E10H-SDQCR07-D130	CARBIDE	13	10	7.6	100	25	9	2.5	0	-8	0.4	DC**0702...	1.2
E10M-SDQCR/L07-D130	CARBIDE	13	10	7.6	150	25	9	2.6	0	-8	0.4	DC**0702...	1.2
E12J-SDQCR07-D160	CARBIDE	16	12	8.6	110	27	11	2.5	0	-6	0.4	DC**0702...	1.2
E12Q-SDQCR/L07-D160	CARBIDE	16	12	8.6	180	27	11	2.6	0	-6	0.4	DC**0702...	1.2
E16L-SDQCR07-D200	CARBIDE	20	16	10.6	130	32	15	2.5	0	-5	0.4	DC**0702...	1.2
E16R-SDQCR/L07-D200	CARBIDE	20	16	10.6	200	32	15	2.6	0	-5	0.4	DC**0702...	1.2
E20S-SDQCR/L11-D250	CARBIDE	25	20	13.7	250	36	18	3.7	0	-7	0.8	DC**11T3...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SDQCL** type), and the left hand insert (L) is used for the right hand toolholders (SDQCR** type).

SPARE PARTS

Designation	Clamping screw	Wrench
A1**-SDQCR/L07-D**0	CSTB-2.5S	T-8F
A2**-SDQCR/L11-D**0	CSTB-4S	T-15F
E1**-SDQCR/L07-D**0	CSTB-2.5S	T-8F
E20S-SDQCR/L11-D250	CSTB-4S	T-15F

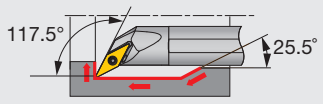
A/E-SVUCR/L: Inserts → **B145 -**, CBN → **B169 -**, PCD → **B177 -**

A/E-SDQCR/L: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

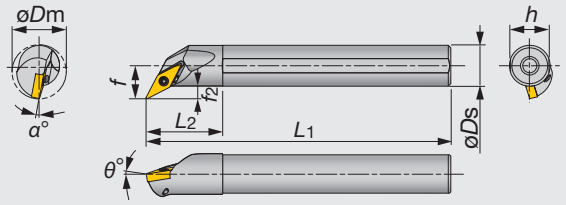
STREAMJETBAR

A/E-SVQBR/L

Screw-on boring bars, for positive 35° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A12M-SVQBR/L11-D170	STEEL	17	12	10.5	150	24	11	4.5	-5	-10	0.4	VB**1103...	1.2
A16Q-SVQBR/L11-D215	STEEL	21.5	16	13	180	30	15	5	-5	-8	0.4	VB**1103...	1.2
A20R-SVQBR/L11-D255	STEEL	25.5	20	15	200	36	18	5	-5	-6	0.4	VB**1103...	1.2
A25S-SVQBR/L16-D305	STEEL	30.5	25	17.5	250	45	23	5	-5	-8	0.8	VB**1604...	3
E12Q-SVQBR/L11-D170	CARBIDE	17	12	10.5	180	27	11	4.5	-5	-10	0.4	VB**1103...	1.2
E16R-SVQBR/L11-D215	CARBIDE	21.5	16	13	200	32	15	5	-5	-8	0.4	VB**1103...	1.2
E20S-SVQBR/L11-D255	CARBIDE	25.5	20	15	250	36	18	5	-5	-6	0.4	VB**1103...	1.2
E25T-SVQBR/L16-D305	CARBIDE	30.5	25	17.5	300	45	23	5	-5	-8	0.8	VB**1604...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVQBL type), and the left hand insert (L) is used for the right hand toolholders (SVQBR type).

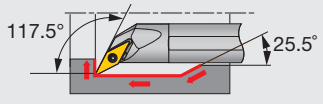
SPARE PARTS

Designation	Clamping screw	Wrench
A**-SVQBR/L11-D...	CSTB-2.5	T-8F
A25S-SVQBR/L16-D305	CSTB-3.5	T-15F
E**-SVQBR/L11-D...	CSTB-2.5	T-8F
E25T-SVQBR/L16-D305	CSTB-3.5	T-15F

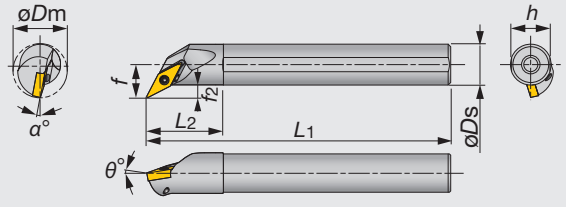
STREAMJETBAR

A/E-SVQCR/L

Screw-on boring bars, for positive 35° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A10K-SVQCR/L08-D135	STEEL	13.5	10	8	125	20	9	3	-5	-8	0.4	VC**0802...	0.6
A16Q-SVQCR/L11-D215	STEEL	21.5	16	13	180	30	15	4.9	-5	-8	0.4	VC**1103...	1.2
E10M-SVQCR/L08-D135	CARBIDE	13.5	10	8	150	25	9	3	-5	-8	0.4	VC**0802...	0.6
E16R-SVQCR/L11-D215	CARBIDE	21.5	16	13	200	32	15	4.9	-5	-8	0.4	VC**1103...	1.2

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVQCL ** type), and the left hand insert (L) is used for the right hand toolholders (SVQCR ** type).

SPARE PARTS

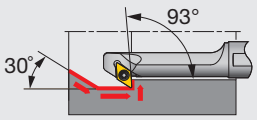
Designation	Clamping screw	Wrench
A10K-SVQCR/L08-D135	CSTB-2L	T-6F
A16Q-SVQCR/L11-D215	CSTB-2.5	T-8F
E10M-SVQCR/L08-D135	CSTB-2L	T-6F
E16R-SVQCR/L11-D215	CSTB-2.5	T-8F

A/E-SVQBR/L: Inserts → **B142 -**, CBN → **B169 -**

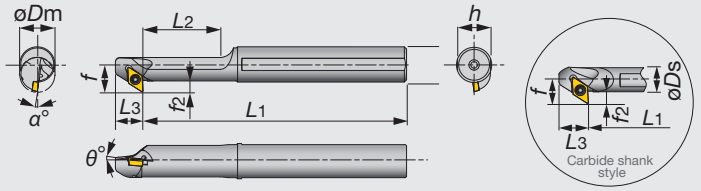
A/E-SVQCR/L: Inserts → **B145 -**

A/E-SDZCR/L

Screw-on boring bars, for positive 55° rhombic inserts



Cutting edge style **Z**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	L3	h	f2	θ°	α°	rε**	Insert	Torque*
A12M-SDZCR/L07-D140	STEEL	14	12	10.5	150	30	12.5	11	4.5	0	-9	0.4	DC**0702...	1.2
A16Q-SDZCR/L07-D160	STEEL	16	16	12.5	180	35	12.5	15	4.5	0	-8	0.4	DC**0702...	1.2
A20R-SDZCR/L11-D200	STEEL	20	20	15.5	200	40	15.0	18	5.5	0	-8	0.8	DC**11T3...	3
A25S-SDZCR/L11-D250	STEEL	25	25	18	250	50	15	23	5.5	0	-6	0.8	DC**11T3...	3
E12Q-SDZCR/L07-D180	CARBIDE	18	12	10.5	180	-	12.5	11	4.5	0	-8	0.4	DC**0702...	1.2
E16R-SDZCR/L07-D220	CARBIDE	22	16	12.5	200	-	12.5	15	4.5	0	-6	0.4	DC**0702...	1.2

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius

Note: When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (SDZCR ** type), and the left hand insert (L) is used for the left hand toolholders (SDZCL ** type).

SPARE PARTS





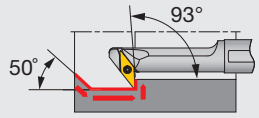
Designation	Clamping screw	Wrench
A1**-SDZCR/L07-D1*0	CSTB-2.5	T-8F
A2**-SDZCR/L11-D2*0	CSTB-4S	T-15F
E1**-SDZCR/L07-D**0	CSTB-2.5	T-8F

A/E-SDZCR/L: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

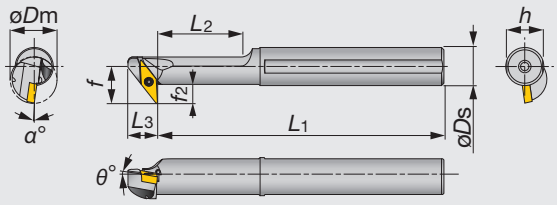
STREAMJETBAR

A-SVZBR/L

Screw-on boring bars, for positive 35° rhombic inserts



Cutting edge style **Z**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	L3	h	f2	θ°	α°	rε**	Insert	Torque*
A16Q-SVZBR/L11-D200	STEEL	20	16	15.5	180	35	12.5	15	8	0	-8	0.4	VB**1103...	1.2
A20R-SVZBR/L11-D250	STEEL	25	20	17.5	200	40	12.5	18	8	0	-7	0.4	VB**1103...	1.2
A25S-SVZBR/L16-D320	STEEL	32	25	24	250	50	17.5	23	12	0	-6	0.8	VB**1604...	3
A32T-SVZBR/L16-D400	STEEL	40	32	27.5	300	72	17.5	30	12	0	-5	0.8	VB**1604...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (SVZBR type), and the left hand insert (L) is used for the left hand toolholders (SVZBL type).

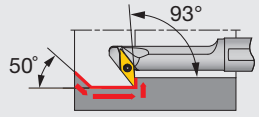
SPARE PARTS

Designation	Clamping screw	Wrench
A**-SVZBR/L11-D2*0	CSTB-2.5	T-8F
A25S-SVZBR/L16-D320	CSTB-3.5	T-15F
A32T-SVZBR/L16-D400	CSTB-3.5L	T-15F

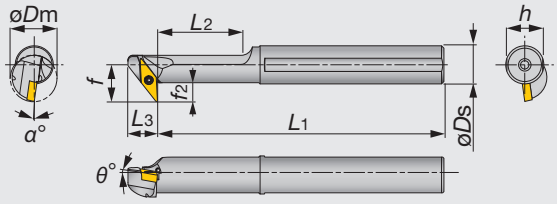
STREAMJETBAR

A-SVZCR/L

Screw-on boring bars, for positive 35° rhombic inserts



Cutting edge style **Z**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	L3	h	f2	θ°	α°	rε**	Insert	Torque*
A12M-SVZCR/L08-D160	STEEL	16	12	11	150	30	10	11	5.5	0	-8	0.4	VC**0802...	0.6

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (SVZCR ** type), and the left hand insert (L) is used for the left hand toolholders (SVZCL ** type).

SPARE PARTS

Designation	Clamping screw	Wrench
A12M-SVZCR/L08-D160	CSTB-2L	T-6F

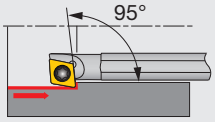
A-SVZBR/L: Inserts → **B142 -**, CBN → **B169 -**

A-SVZCR/L: Inserts → **B145 -**

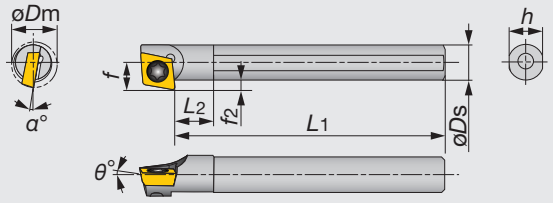
STREAMJETBAR

A/E-SEZPR/L

Screw-on boring bars, for positive 75° rhombic inserts



Cutting edge style **Z**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A04F-SEZPR/L03-D055	STEEL	5.5	4	3.2	80	4	3.8	1.2	0	-8	0.2	EP**03X1...	0.6
A05F-SEZPR/L03-D065	STEEL	6.5	5	3.7	80	5	4.8	1.2	0	-6	0.2	EP**03X1...	0.6
E04G-SEZPR/L03-D055	CARBIDE	5.5	4	3.2	90	5	3.8	1.2	0	-8	0.2	EP**03X1...	0.6
E05G-SEZPR/L03-D065	CARBIDE	6.5	5	3.7	90	6	4.8	1.2	0	-6	0.2	EP**03X1...	0.6

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (SEZPR ** type), and the left hand insert (L) is used for the left hand toolholders (SEZPL ** type).

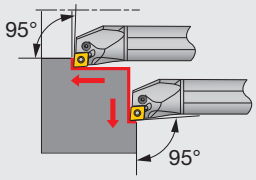
SPARE PARTS

Designation	Clamping screw	Wrench
A**-SEZPR/L03-D...	CSTA-1.6	T-6F
E**-SEZPR/L03-D...	CSTA-1.6	T-6F

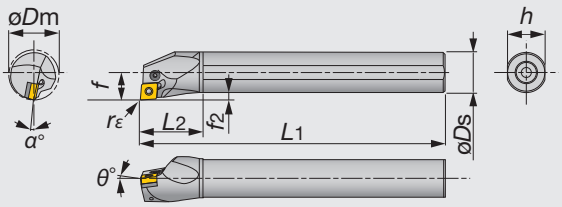
STREAMJETBAR

A-PCLNR/L

Lever-lock boring bars, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A16M-PCLNR/L09-D200	STEEL	20	16	11	150	32	15	3	-6	-14	0.8	CN**0903...	1.7
A20Q-PCLNR/L09-D250	STEEL	25	20	13	180	36	18	3	-6	-12	0.8	CN**0903...	1.7
A25R-PCLNR/L09-D320	STEEL	32	25	17	200	45	23	4.5	-6	-11	0.8	CN**0903...	1.7
A25R-PCLNR/L12-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	0.8	CN**1204...	2.7
A32S-PCLNR/L12-D400	STEEL	40	32	22	250	50	30	6	-6	-11	0.8	CN**1204...	4.8
A40T-PCLNR/L12-D500	STEEL	50	40	27	300	60	37	7	-6	-10	0.8	CN**1204...	4.8
A50U-PCLNR/L12-D630	STEEL	63	50	35	350	65	47	10	-6	-8	0.8	CN**1204...	4.8

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PCLNL ** type), and the left hand insert (L) is used for the right hand toolholders (PCLNR ** type).

SPARE PARTS

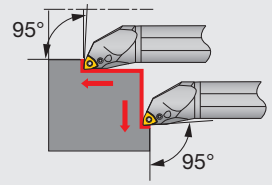
Designation	Shim	Clamping screw 1	Clamping screw 2	Wrench 1	Wrench 2	Spring	Lever
A**-PCLNR/L09-D**0	-	LCS22A	-	P-2F	-	-	LCL32N
A25R-PCLNR/L12-D320	-	LCS43	-	-	P-2.5	-	LCL43N
A32S-PCLNR12-D400	LSC42BR	-	LCS4	-	P-3	LSP4	LCL4
A32S-PCLNL12-D400	LSC42BL	-	LCS4	-	P-3	LSP4	LCL4
A40T-PCLNR12-D500	LSC42BR	-	LCS4	-	P-3	LSP4	LCL4
A40T-PCLNL12-D500	LSC42BL	-	LCS4	-	P-3	LSP4	LCL4
A50U-PCLNR12-D630	LSC42BR	-	LCS4	-	P-3	LSP4	LCL4
A50U-PCLNL12-D630	LSC42BL	-	LCS4	-	P-3	LSP4	LCL4

A/E-SEZPR/L: Inserts → **B120 -**, CBN → **B171**

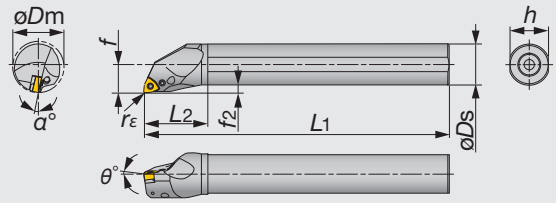
A-PCLNR/L: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176**

A-PWLNR/L

Lever-lock boring bars, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A16M-PWLNR/L06-D200	STEEL	20	16	11	150	32	15	3	-8	-17	0.8	WN**0604...	1.7
A20Q-PWLNR/L06-D250	STEEL	25	20	13	180	36	18	3	-6	-14	0.8	WN**0604...	1.7
A25R-PWLNR/L06-D320	STEEL	32	25	17	200	45	23	4.5	-6	-12	0.8	WN**0604...	2.7
A32S-PWLNR/L06-D400	STEEL	40	32	22	250	50	30	6	-6	-11	0.8	WN**0604...	2.7
A25R-PWLNR/L08-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	0.8	WN**0804...	2.7
A32S-PWLNR/L08-D400	STEEL	40	32	22	250	50	30	6	-6	-11	0.8	WN**0804...	4.8
A40T-PWLNR/L08-D500	STEEL	50	40	27	300	60	37	7	-6	-10	0.8	WN**0804...	4.8

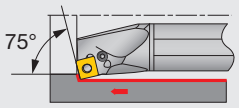
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

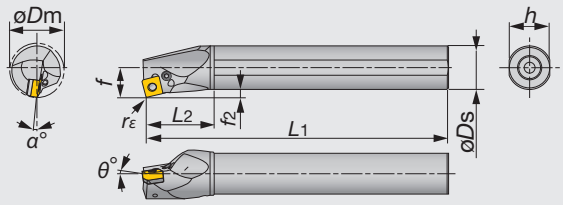
Designation	Shim	Clamping screw 1	Clamping screw 2	Wrench 1	Wrench 2	Spring	Lever	Oil supply attachment	Screw for oil hole
A16M-PWLNR/L06-D200	-	LCS33	-	P-2F	-	-	LCL33N	-	SSHM3-4
A20Q-PWLNR/L06-D250	-	LCS33	-	P-2F	-	-	LCL33N	EA-20	SSHM3-4
A25R-PWLNR/L06-D320	LSW312BR/L	-	LCS3B	-	P-2.5	LSP3	LCL3	EA-25	SSHM4-5
A32S-PWLNR/L06-D400	LSW312BR/L	-	LCS3	-	P-2.5	LSP3	LCL3	EA-32	SSHM4-5
A25R-PWLNR/L08-D320	-	LCS43	-	-	P-2.5	-	LCL43N	EA-25	SSHM4-5
A32S-PWLNR/L08-D400	LSW42BR/L	-	LCS4	-	P-3	LSP4	LCL4	EA-32	SSHM4-5
A40T-PWLNR/L08-D500	LSW42BR/L	-	LCS4	-	P-3	LSP4	LCL4	-	SSHM4-5

A-PSKNR/L

Lever-lock boring bars, for negative square inserts



Cutting edge style **K**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A32S-PSKNR/L12-D400	STEEL	40	32	22	250	50	30	6	-6	-10	0.8	SN**1204...	4.8
A40T-PSKNR/L12-D500	STEEL	50	40	27	300	60	37	7	-6	-10	0.8	SN**1204...	4.8
A50U-PSKNR/L12-D630	STEEL	63	50	35	350	65	47	10	-6	-8	0.8	SN**1204...	4.8

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PSKNL ** type), and the left hand insert (L) is used for the right hand toolholders (PSKNR ** type).

SPARE PARTS

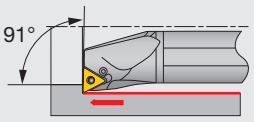
Designation	Shim	Clamping screw	Wrench	Spring	Lever	Oil supply attachment	Screw for oil hole
A32S-PSKNR/L12-D400	LSS42BR/L	LCS4	P-3	LSP4	LCL4	EA-32	SSHM4-5
A40T-PSKNR/L12-D500	LSS42BR/L	LCS4	P-3	LSP4	LCL4	-	SSHM6-6
A50U-PSKNR/L12-D630	LSS42BR/L	LCS4	P-3	LSP4	LCL4	-	SSHM6-6

A-PWLNR/L: Inserts → **B090 -**, CBN → **B165**

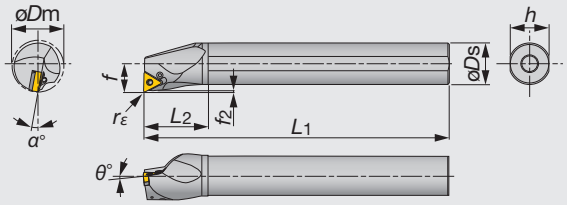
A-PSKNR/L: Inserts → **B070 -**, CBN → **B164 -**, PCD → **B176**

A-PTFNR/L

Lever-lock boring bars, for negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-PTFNR/L16-D320	STEEL	32	25	17	200	45	23	1.2	-6	-12	0.8	TN**1604...	2.7
A32S-PTFNR/L16-D400	STEEL	40	32	22	250	50	30	1.1	-6	-10	0.8	TN**1604...	2.7
A40T-PTFNR/L16-D500	STEEL	50	40	27	300	60	37	1.1	-6	-10	0.8	TN**1604...	2.7
A50U-PTFNR/L16-D630	STEEL	63	50	35	350	65	47	1.1	-6	-8	0.8	TN**1604...	2.7

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PTFNL ** type), and the left hand insert (L) is used for the right hand toolholders (PTFNR ** type).

SPARE PARTS

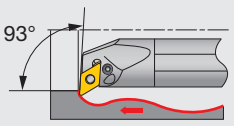
Designation	Shim	Clamping screw	Wrench	Spring	Lever	Oil supply attachment	Screw for oil hole
A25R-PTFNR/L16-D320	ELST317BR/L	LCS3	P-2.5	LSP3	LCL33	EA-25	SSHM4-5
A32S-PTFNR/L16-D400	LST317BR/L	LCS3	P-2.5	LSP3	LCL3	EA-32	SSHM4-5
A40T-PTFNR/L16-D500	LST317BR/L	LCS3	P-2.5	LSP3	LCL3	-	SSHM6-6
A50U-PTFNR/L16-D630	LST317BR/L	LCS3	P-2.5	LSP3	LCL3	-	SSHM6-6

A-PTFNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

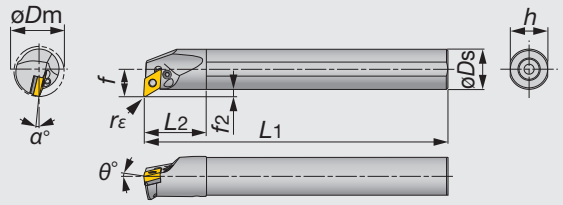
STREAMJETBAR

A-PDUNR/L

Lever-lock boring bars, for negative 55° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A20Q-PDUNR/L11-D250	STEEL	25	20	13	180	36	18	3	-6	-14	0.8	DN**1104...	1.7
A25R-PDUNR/L11-D320	STEEL	32	25	17	200	45	23	4.5	-6	-12	0.8	DN**1104...	2.7
A32S-PDUNR/L15-D400	STEEL	40	32	22	250	50	30	6	-6	-13	0.8	DN**1504...	4.8
A40T-PDUNR/L15-D500	STEEL	50	40	27	300	60	37	7	-6	-10	0.8	DN**1504...	4.8
A50U-PDUNR/L15-D630	STEEL	63	50	35	350	65	47	10	-6	-8	0.8	DN**1504...	4.8
A32S-PDUNR/L1506-D400	STEEL	40	32	22	250	50	30	6	-6	-13	0.8	DN**1506...	4.8
A40T-PDUNR/L1506-D500	STEEL	50	40	27	300	60	37	7	-6	-11	0.8	DN**1506...	4.8
A50U-PDUNR/L1506-D630	STEEL	63	50	35	350	65	47	10	-6	-10	0.8	DN**1506...	4.8

*Torque: Recommended torque (N·m) for clamping
**rε: Standard corner radius

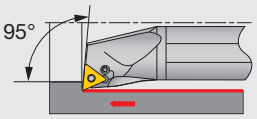
SPARE PARTS

Designation	Shim	Clamping screw 1	Clamping screw 2	Wrench 1	Wrench 2	Spring	Lever	Oil supply attachment	Screw for oil hole
A20Q-PDUNR/L11-D250	-	LCS22A	-	P-2F	-	-	LCL33NL	EA-20	SSHM2.5-3
A25R-PDUNR/L11-D320	ELSD317BR/L	-	LCS3	-	P-2.5	LSP3	LCL33L	EA-25	SSHM3-4
A32S-PDUNR/L15-D400	LSD42BR/L	-	LCS4	-	P-3	LSP4	LCL4	EA-32	SSHM5-6
A40T-PDUNR/L15-D500	LSD42BR/L	-	LCS4	-	P-3	LSP4	LCL4	-	SSHM6-6
A50U-PDUNR/L15-D630	LSD42BR/L	-	LCS4	-	P-3	LSP4	LCL4	-	SSHM6-6
A32S-PDUNR/L1506-D400	ELSD42	-	ELCS4	-	P-3	LSP4S	LCL44	EA-20	SSHM5-6
A40T-PDUNR/L1506-D500	ELSD42	-	ELCS4	-	P-3	LSP4S	LCL44	-	SSHM6-6
A50U-PDUNR/L1506-D630	ELSD42	-	ELCS4	-	P-3	LSP4S	LCL44	-	SSHM6-6

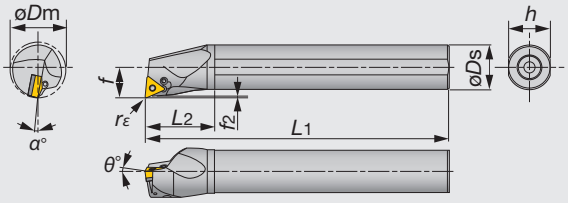
STREAMJETBAR

A-PTUNR/L

Lever-lock boring bars, for negative triangle inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A16M-PTUNR/L11-D200	STEEL	20	16	11	150	32	15	1	-6	-14	0.4	TN**1103...	1.7
A20Q-PTUNR/L11-D250	STEEL	25	20	13	180	36	18	1	-6	-12	0.4	TN**1103...	1.7
A25R-PTUNR/L16-D320	STEEL	32	25	17	200	45	23	1.4	-6	-12	0.8	TN**1604...	2.7
A32S-PTUNR/L16-D400	STEEL	40	32	22	250	50	30	1.3	-6	-10	0.8	TN**1604...	2.7

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: The insert hole conforms to the ISO standard.
Tool holder length may be different to the ISO standard.
When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (PTUNL ** type), and the left hand insert (L) is used for the right hand toolholders (PTUNR ** type).

SPARE PARTS

Designation	Shim	Clamping screw1	Clamping screw2	Wrench 1	Wrench 2	Spring	Lever	Oil supply attachment	Screw for oil hole
A16M-PTUNR/L11-D200	-	LCS22A	-	P-2F	-	-	LCL22N	-	SSHM3-4
A20Q-PTUNR/L11-D250	-	LCS22A	-	P-2F	-	-	LCL22N	EA20	SSHM3-4
A25R-PTUNR/L16-D320	ELST317BR/L	-	LCS3	-	P-2.5	LSP3	LCL33	EA25	SSHM4-5
A32S-PTUNR/L16-D400	LST317BR/L	-	LCS3	-	P-2.5	LSP3	LCL3	EA32	SSHM4-5

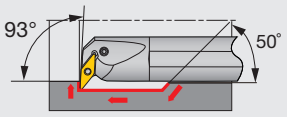
A-PDUNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

A-PTUNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

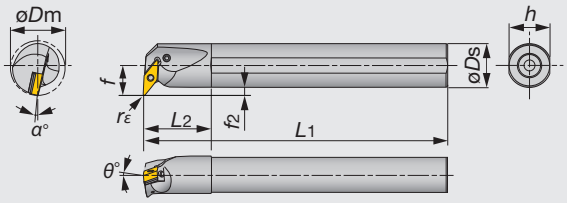
STREAMJETBAR

A-PVUNR/L

Lever-lock boring bars, for negative 35° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-PVUNR/L16-D370	STEEL	37	25	22	200	45	23	9.5	-5	-14	0.8	V/YN**1604...	2.7
A32S-PVUNR/L16-D400	STEEL	40	32	22	250	50	30	6	-5	-12	0.8	V/YN**1604...	2.7
A40T-PVUNR/L16-D500	STEEL	50	40	27	300	60	37	7	-5	-10	0.8	V/YN**1604...	2.7

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

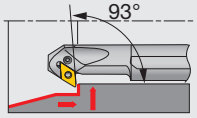
SPARE PARTS

Designation	Shim	Clamping screw	Wrench	Spring	Lever	Oil supply attachment	Screw for oil hole
A25R-PVUNR/L16-D370	LSV317BR/L	LCS3V	P-2.5	LSP3	LCL3V	EA-25	SSHM4-5
A32S-PVUNR/L16-D400	LSV317BR/L	LCS3V	P-2.5	LSP3	LCL3V	EA-32	SSHM4-5
A40T-PVUNR/L16-D500	LSV317BR/L	LCS3V	P-2.5	LSP3	LCL3V	-	SSHM5-6

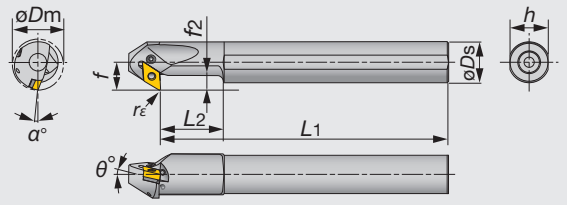
STREAMJETBAR

A-PDZNR/L

Lever-lock boring bars, for negative 55° rhombic inserts



Cutting edge style **Z**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A32S-PDZNR/L15-D400	STEEL	40	32	22	250	50	30	11.5	-6	-13	0.8	DN**1504...	4.8
A40T-PDZNR/L15-D500	STEEL	50	40	27	300	60	37	14.5	-6	-10	0.8	DN**1504...	4.8
A50U-PDZNR/L15-D630	STEEL	63	50	35	350	65	47	14.5	-6	-8	0.8	DN**1504...	4.8

*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the right hand toolholders (PDZNR** type), and the left hand insert (L) is used for the left hand toolholders (PDZNL** type).

SPARE PARTS

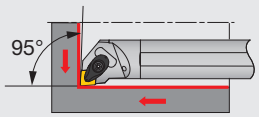
Designation	Shim	Clamping screw	Wrench	Spring	Lever	Oil supply attachment	Screw for oil hole
A32S-PDZNR15-D400	LSZ42BR	LCS4	P-3	LSP4	LCL4	EA-32	SSHM4-5
A32S-PDZNL15-D400	LSZ42BL	LCS4	P-3	LSP4	LCL4	EA-32	SSHM4-5
A40T-PDZNR15-D500	LSZ42BR	LCS4	P-3	LSP4	LCL4	-	SSHM5-6
A40T-PDZNL15-D500	LSZ42BL	LCS4	P-3	LSP4	LCL4	-	SSHM5-6
A50U-PDZNR15-D630	LSZ42BR	LCS4	P-3	LSP4	LCL4	-	SSHM6-6
A50U-PDZNL15-D630	LSZ42BL	LCS4	P-3	LSP4	LCL4	-	SSHM6-6

A-PVUNR/L: Inserts → **B097 -**, CBN → **B165 -**, PCD → **B176**

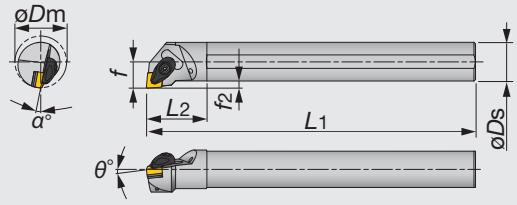
A-PDZNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

A-ACLNR/L

Double-clamp boring bar, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-ACLNR/L12-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	0.8	CN**1204...	3
A32S-ACLNR/L12-D400	STEEL	40	32	22	250	50	30	6	-6	-10	0.8	CN**1204...	3
A40T-ACLNR/L12-D500	STEEL	50	40	27	300	55	37	7	-6	-8	0.8	CN**1204...	3
A50U-ACLNR12-D630	STEEL	63	50	35	350	65	47	10	-6	-7	0.8	CN**1204...	3

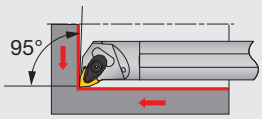
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

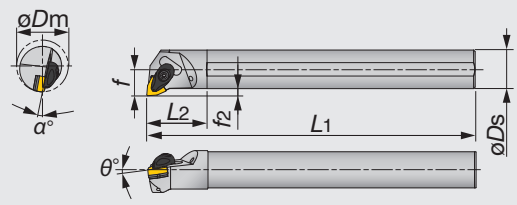
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
A**-ACLNR/L12-D...	ACP4S	ACS-5W	BP-7	SP-2.5	ASC422	CSTB-3.5	T-15F

A-AWLNR/L

Double-clamp boring bar, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-AWLNR/L06-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	0.8	WN**0604...	3
A32S-AWLNR/L06-D400	STEEL	40	32	22	250	50	30	6	-6	-10	0.8	WN**0604...	3
A25R-AWLNR/L08-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	0.8	WN**0804...	3
A32S-AWLNR/L08-D400	STEEL	40	32	22	250	50	30	6	-6	-10	0.8	WN**0804...	3
A40T-AWLNR/L08-D500	STEEL	50	40	27	300	55	37	7	-6	-8	0.8	WN**0804...	3
A50U-AWLNR/L08-D630	STEEL	63	50	35	350	65	47	10	-6	-7	0.8	WN**0804...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
A**-AWLNR/L06-D...	ACP3S	ACS-5W	BP-7	SP-2.5	ASW322	CSTB-3.5	T-15F
A**-AWLNR/L08-D...	ACP4S	ACS-5W	BP-7	SP-2.5	ASW422	CSTB-3.5	T-15F

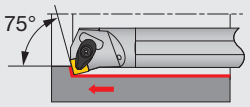
A-ACLNR/L: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176**

A-AWLNR/L: Inserts → **B090 -**, CBN → **B165**

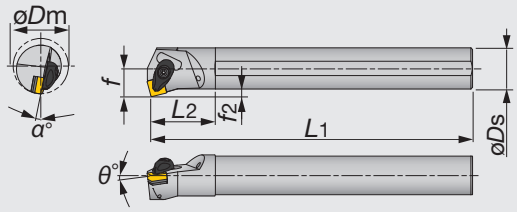
TURNINGA

A-ASKNR/L

Double-clamp boring bar, for negative square inserts



Cutting edge style **K**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-ASKNR/L12-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	0.8	SN**1204...	3
A32S-ASKNR/L12-D400	STEEL	40	32	22	250	50	30	6	-6	-10	0.8	SN**1204...	3

*Torque: Recommended torque (N·m) for clamping
**rε: Standard corner radius

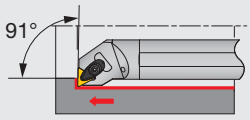
SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
A**-ASKN*12-D...	ACP4S	ACS-5W	BP-7	SP-2.5	ASS422	CSTB-3.5	T-15F

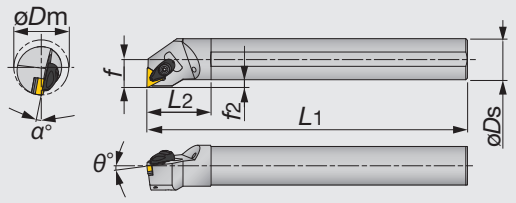
TURNINGA

A-ATFNR/L

Double-clamp boring bar, for negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A25R-ATFNR/L16-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	0.8	TN**1604...	3
A32S-ATFNR/L16-D400	STEEL	40	32	22	250	50	30	6	-6	-10	0.8	TN**1604...	3

*Torque: Recommended torque (N·m) for clamping
**rε: Standard corner radius

SPARE PARTS

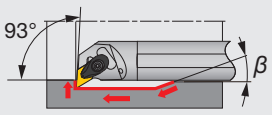
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
A**-ATFNR/L16-D...	ACP3S	ACS-5W	BP-7	SP-2.5	AST322	CSTB-3.5	T-15F

A-ASKNR/L: Inserts → **B070 -**, CBN → **B164 -**, PCD → **B176**

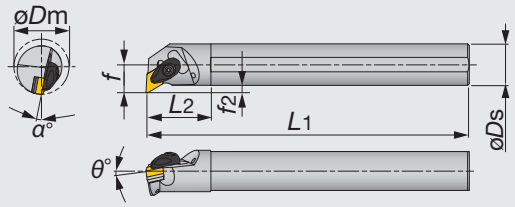
A-ATFNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

A-ADUNR/L

Double-clamp boring bar, for negative 55° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	β	rε**	Insert	Torque*
A25R-ADUNR/L15-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	30	0.8	DN**1504...	3
A32S-ADUNR/L15-D400	STEEL	40	32	22	250	50	30	6	-6	-11	20	0.8	DN**1504...	3
A40T-ADUNR15-D500	STEEL	50	40	27	300	55	37	7	-6	-8	15	0.8	DN**1504...	3
A50U-ADUNR15-D630	STEEL	63	50	35	350	65	47	10	-6	-7	15	0.8	DN**1504...	3
A25R-ADUNR/L1506-D320	STEEL	32	25	17	200	45	23	4.5	-6	-13	15	0.8	DN**1506...	3
A32S-ADUNR/L1506-D400	STEEL	40	32	22	250	50	30	6	-6	-11	20	0.8	DN**1506...	3

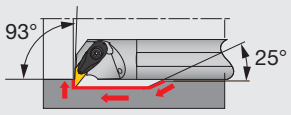
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

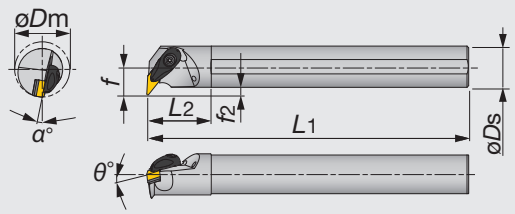
Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
A**-ADUNR/L15-D...	ACP4S	ACS-5W	BP-7	SP-2.5	ASD432	CSTB-3.5	T-15F
A**-ADUNR/L1506-D...	ACP4S	ACS-5W	BP-7	SP-2.5	ASD423	CSTB-3.5	T-15F

A-AVUNR/L

Double-clamp boring bar, for negative 35° or 25° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A32S-AVUNR/L16-D400	STEEL	40	32	22	250	50	30	6	-6	-10	0.8	V/YN**1604...	3
A40T-AVUNR/L16-D500	STEEL	50	40	27	300	55	37	7	-6	-8	0.8	V/YN**1604...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Clamp screw	Spring	Spring pin	Shim	Shim screw	Wrench
A**-AVUNR/L16-D...	ACP3L	ACS-5W	BP-7	SP-2.5	ASV322	CSTB-3.5	T-15F

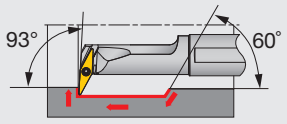
A-ADUNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

A-AVUNR/L: Inserts → **B097 -**, CBN → **B165 -**, PCD → **B176**

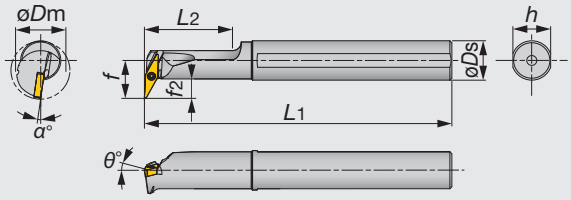
Y-PRO SERIES

A/E-SYUBR/L

Screw-on boring bars, for positive 25° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A16Q-SYUBR/L11-D200	STEEL	20	16	15.5	180	35	15	8	0	-8	0.4	YW**11T2...	0.6
E12Q-SYUBR/L11-D200	CARBIDE	20	12	13.5	180	27	11	7.5	0	-8	0.4	YW**11T2...	0.6
E16R-SYUBR/L11-D245	CARBIDE	24.5	16	16	200	32	15	8	0	-8	0.4	YW**11T2...	0.6

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

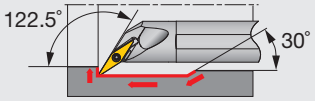
SPARE PARTS

Designation	Clamping screw	Wrench
A16Q-SYUBR/L11-D200	CSTB-2L	T-6F
E**-SYUBR/L11-D...	CSTB-2L	T-6F

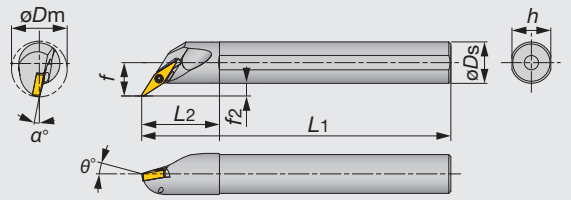
Y-PRO SERIES

A/E-SYQBR/L

Screw-on boring bars, for positive 25° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	θ°	α°	rε**	Insert	Torque*
A12M-SYQBR/L11-D170	STEEL	17	12	10.5	150	24	11	4.5	-5	-10	0.4	YW**11T2...	0.6
A16Q-SYQBR/L11-D215	STEEL	21.5	16	13	180	30	15	5	-5	-8	0.4	YW**11T2...	0.6
E12Q-SYQBR/L11-D170	CARBIDE	17	12	10.5	180	27	11	4.5	-5	-10	0.4	YW**11T2...	0.6
E16R-SYQBR/L11-D215	CARBIDE	21.5	16	13	200	32	15	5	-5	-8	0.4	YW**11T2...	0.6

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

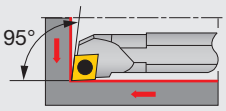
SPARE PARTS

Designation	Clamping screw	Wrench
A**-SYQBR/L11-D...	CSTB-2L	T-6F
E**-SYQBR/L11-D...	CSTB-2L	T-6F

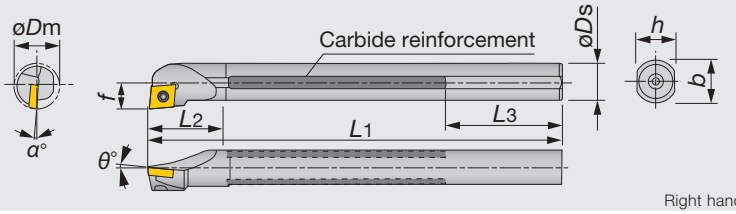
A/E-SYUBR/L, A/E-SYQBR/L: Inserts → **B148**

T-SCLCR/L

Tsuppari-Ichiban, Screw-on boring bar, for positive 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	b	α°	θ°	rε**	Insert	Torque*
T12M-SCLCR/L06	TSUPPARI	16	–	12	9	150	22	59	11	–	-10	0	0.4	CC**0602...	1.2
T16Q-SCLCR/L09	TSUPPARI	20	–	16	11	180	27	59	15	–	-10	0	0.8	CC**09T3...	3
T20R-SCLCR/L09C	TSUPPARI	25	Rc1/4	20	13	200	35	49	18	–	-8	0	0.8	CC**09T3...	3
T25S-SCLCR/L09C	TSUPPARI	32	Rc1/4	25	17	250	40	64	23	–	-6	0	0.8	CC**09T3...	3

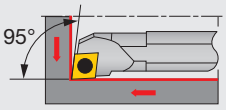
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: The hole of inserts conforms to ISO standard.
When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SCLCL** type), and the left hand insert (L) is used for the right hand toolholders (SCLCR** type).

SPARE PARTS

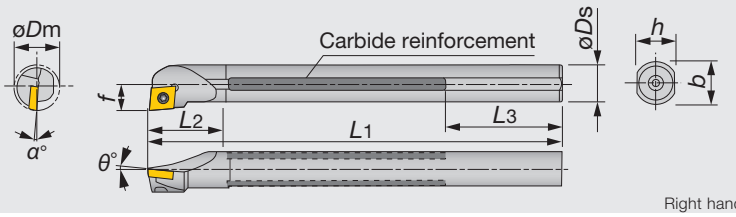
Designation	Clamping screw	Wrench
T12M-SCLCR/L06	CSTB-2.5	T-8F
T16Q-SCLCR/L09	CSTB-4S	T-15F
T20R-SCLCR/L09C	CSTB-4S	T-15F
T25S-SCLCR/L09C	CSTB-4S	T-15F

T-SCLPR/L

Tsuppari-Ichiban, Screw-on boring bar, for positive 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	α°	θ°	rε**	Insert	Torque*
T12M-SCLPR08-D14	TSUPPARI	14	-	12	7	150	22	59	11	-4	5	0.4	CP**0802...	1.4
T12M-SCLPR/L08	TSUPPARI	16	-	12	9	150	25	59	11	-3	5	0.4	CP**0802...	1.4
T16Q-SCLPR09-D18	TSUPPARI	18	-	16	9	180	27	59	15	-3.5	5	0.8	CP**0903...	3
T16Q-SCLPR/L09	TSUPPARI	20	-	16	11	180	30	59	15	-4	5	0.8	CP**0903...	3
T20R-SCLPR09C-D22	TSUPPARI	22	Rc1/4	20	11	200	35	49	18	-2	5	0.8	CP**0903...	3
T20R-SCLPR/L09	TSUPPARI	25	-	20	13	200	35	49	18	-2	5	0.8	CP**0903...	3
T25S-SCLPR09C-D27	TSUPPARI	27	Rc1/4	25	13.5	250	40	64	23	-1	5	0.8	CP**0903...	3
T25S-SCLPR/L09	TSUPPARI	32	-	25	17	250	40	64	23	0	5	0.8	CP**0903...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SCLPL** type), and the left hand insert (L) is used for the right hand toolholders (SCLPR** type).

SPARE PARTS

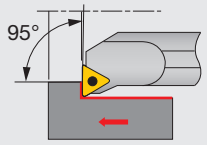
Designation	Clamping screw	Wrench
T12M-SCLPR/L08...	CSTB-3L050	T-9F
T16Q-SCLPR09-D18	CSTB-4L060	T-15F
T16Q-SCLPR/L09	CSTB-4S	T-15F
T20R-SCLPR09C-D22	CSTB-4L060	T-15F
T20R-SCLPR/L09	CSTB-4S	T-15F
T25S-SCLPR09C-D27	CSTB-4L060	T-15F
T25S-SCLPR/L09	CSTB-4S	T-15F

T-SCLCR/L: Inserts → **B104 -**, CBN → **B168 -**, PCD → **B177**

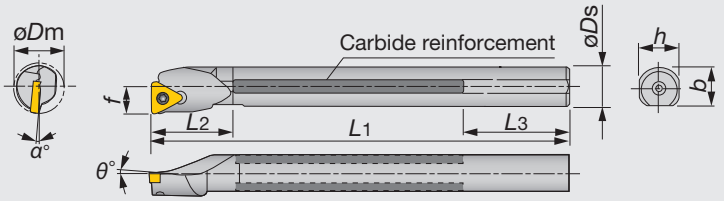
T-SCLPR/L: Inserts → **B111 -**

T-STUPR/L

Tsuppari-Ichiban boring bar, for positive triangle inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	θ°	α°	rε**	Insert	Torque*
T12M-STUPR11-D14	TSUPPARI	14	-	12	7	150	24	59	11	5	-4	0.4	TP**1102...	1.2
T12M-STUPR/L11	TSUPPARI	16	-	12	9	150	25	58	11	5	-4	0.4	TP**1102...	1.2
T16Q-STUPR13-D18	TSUPPARI	18	-	16	9	180	30	59	15	5	-3.5	0.4	TP**1303...	1.4
T16Q-STUPR/L13	TSUPPARI	20	-	16	11	180	30	59	15	5	-3	0.4	TP**1303...	1.4
T20R-STUPR13C-D22	TSUPPARI	22	Rc1/4	20	11	200	35	49	18	5	-2	0.4	TP**1303...	1.4
T20R-STUPR/L13	TSUPPARI	24	-	20	13	200	40	49	18	5	-2	0.4	TP**1303...	1.4
T25S-STUPR16C-D27	TSUPPARI	27	Rc1/4	25	13.5	250	40	64	23	5	-1	0.8	TP**16T3...	3
T25S-STUPR/L16	TSUPPARI	31	-	25	17	250	45	64	23	5	0	0.8	TP**16T3...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (STUPL** type), and the left hand insert (L) is used for the right hand toolholders (STUPR** type).

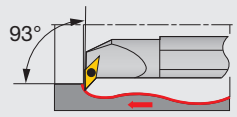
SPARE PARTS

Designation	Clamping screw	Wrench
T12M-STUPR11-D14	CSTB-2.5B	T-8F
T12M-STUPR/L11	CSTB-2.5	T-8F
T16Q-STUPR13-D18	CSTB-3S	T-9F
T16Q-STUPR/L13	CSTB-3	T-9F
T20R-STUPR13C-D22	CSTB-3S	T-9F
T20R-STUPR/L13	CSTB-3	T-9F
T25S-STUPR/L16...	CSTB-4S	T-15F

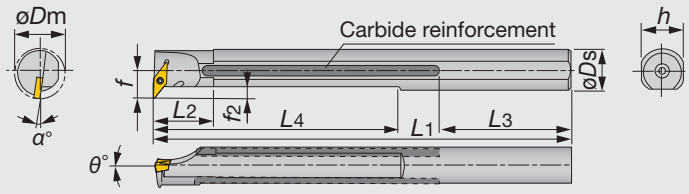
T-STUPR/L: Inserts → **B131 -**, CBN → **B168 -**, PCD → **B178**

T-SVUBR

Tsuppari-Ichiban, Screw-on boring bar, for positive 35° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	L4	h	f2	θ°	α°	rε**	Insert	Torque*
T20R-SVUBR11C	TSUPPARI	25	Rc1/4	20	14	200	30	59	121	18	4	0	-8	0.4	VB**1103...	1.2

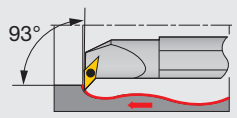
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (SVUBL** type), and the left hand insert (L) is used for the right hand toolholders (SVUBR** type).

SPARE PARTS

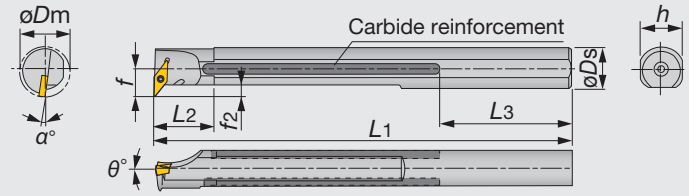
Designation	Clamping screw	Wrench
T20R-SVUBR11C	CSTB-2.5	T-8F

T-SVUCR

Tsuppari-Ichiban, Screw-on boring bar, for positive 35° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	f2	θ°	α°	rε**	Insert	Torque*
T25S-SVUCR16C	TSUPPARI	32	Rc1/4	25	19	250	40	64	23	6.5	0	-5	0.8	VC**1604...	3

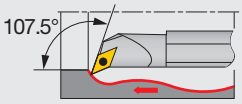
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: The hole of inserts conforms to ISO standard.
When using a right or left hand insert, the right hand insert (R) is used for left hand toolholders (L) and the left hand insert (L) is used for right hand toolholders (R).

SPARE PARTS

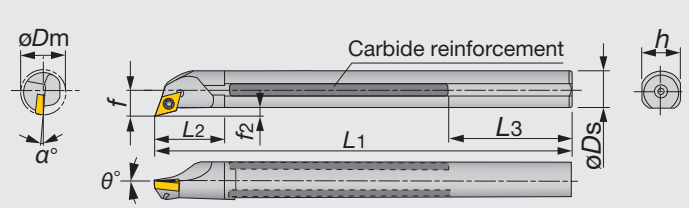
Designation	Clamping screw	Wrench
T25S-SVUCR16C	CSTB-3.5L	T-15F

T-SDQCR/L

Tsuppari-Ichiban, Screw-on boring bar, for positive 55° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	f2	θ°	α°	rε**	Insert	Torque*
T16Q-SDQCR/L07	TSUPPARI	20	-	16	11	180	27	59	15	3	0	-6	0.4	DC**0702...	1.2
T20R-SDQCR/L11C	TSUPPARI	25	Rc1/4	20	13	200	35	49	18	3	0	-6	0.8	DC**11T3...	3
T25S-SDQCR/L11C	TSUPPARI	32	Rc1/4	25	17	250	40	64	23	4.5	0	-4	0.8	DC**11T3...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: The hole of inserts conforms to ISO standard.
When using a right or left hand insert, the right hand insert (R) is used for left hand toolholders (L) and the left hand insert (L) is used for right hand toolholders (R).

SPARE PARTS

Designation	Clamping screw	Wrench
T16Q-SDQCR/L07	CSTB-2.5	T-8F
T20R-SDQCR/L11C	CSTB-4M	T-15F
T25S-SDQCR/L11C	CSTB-4	T-15F

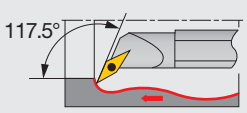
T-SVUBR: Inserts → **B142 -**, CBN → **B169 -**

T-SVUCR: Inserts → **B145 -**, CBN → **B169 -**, PCD → **B177 -**

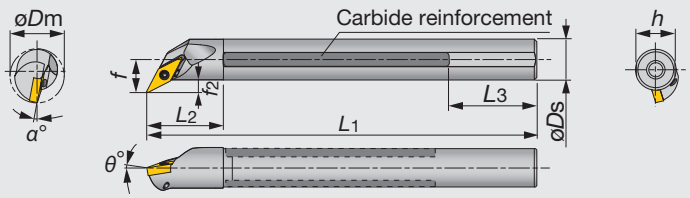
T-SDQCR/L: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

T-SVQBR

Tsuppari-Ichiban, Screw-on boring bar, for positive 35° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	f2	θ°	α°	rε**	Insert	Torque*
T20R-SVQBR11C	TSUPPARI	25	Rc1/4	20	14	200	30	59	18	4	-5	-7	0.4	VB**1103...	1.2

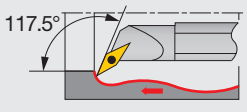
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: The hole of inserts conforms to ISO standard. When using a right or left hand insert, the right hand instert (R) is used for the left hand toolholders (L), and the left hand insert (L) is used for the right hand toolholders (R).

SPARE PARTS

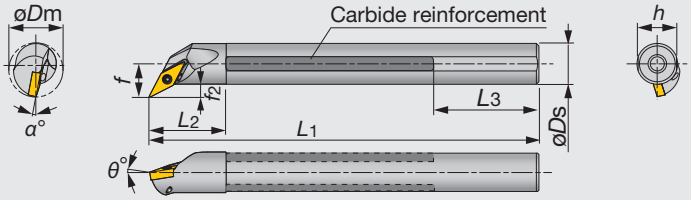
Designation	Clamping screw	Wrench
T20R-SVQBR11C	CSTB-2.5	T-8F

T-SVQCR

Tsuppari-Ichiban, Screw-on boring bar, for positive 35° rhombic inserts



Cutting edge style **Q**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	f2	θ°	α°	rε**	Insert	Torque*
T25S-SVQCR16C	TSUPPARI	32	Rc1/4	25	17	250	40	64	23	8	0	-5	0.8	VC**1604...	3

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: The hole of inserts conforms to ISO standard. When using a right or left hand insert, the right hand instert (R) is used for the left hand toolholders (L), and the left hand insert (L) is used for the right hand toolholders (R).

SPARE PARTS

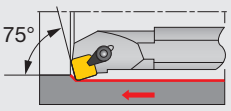
Designation	Clamping screw	Wrench
T25S-SVQCR16C	CSTB-3.5L	T-15F

T-SVQBR: Inserts → **B142 -**, CBN → **B169 -**

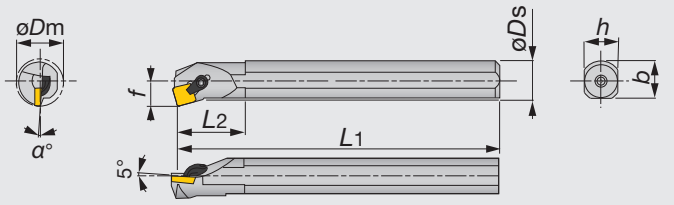
T-SVQCR: Inserts → **B145 -**, CBN → **B169 -**, PCD → **B177 -**

S-CSKPR/L

Clamp-on boring bar, for positive square inserts



Cutting edge style **K**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S16Q-CSKPR09	STEEL	20	16	11	180	30	15	15	-4	0.8	SP**0903...
S20R-CSKPR/L09	STEEL	25	20	13	200	40	18	18.5	-2	0.8	SP**0903...
S25S-CSKPR12	STEEL	32	25	17	250	45	23	22.5	0	0.8	SP**1203...

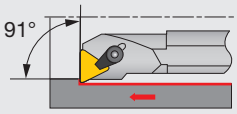
**rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for left hand toolholders (L) and the left hand insert (L) is used for right hand toolholders (R).

SPARE PARTS

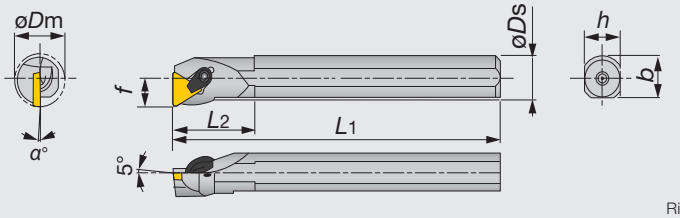
Designation	Clamp set	Wrench
S16Q-CSKPR09	CSG-5S	P-2.5
S20R-CSKPR/L09	CSG-5	P-2.5
S25S-CSKPR12	CSG-6	P-3

S/C-CTFPR/L

Clamp-on style boring bar, for positive triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S12M-CTFPR/L11	STEEL	16	12	9	150	25	11	11.5	-6	0.4	TP**1103...
S16Q-CTFPR/L11	STEEL	20	16	11	180	30	15	15	-4	0.4	TP**1103...
S20R-CTFPR/L16	STEEL	25	20	13	200	40	18	18.5	-2	0.8	TP**1603...
S25S-CTFPR/L16	STEEL	32	25	17	250	45	23	22.5	0	0.8	TP**1603...
S32T-CTFPR/L16	STEEL	40	32	22	300	50	30	29.5	0	0.8	TP**1603...
C12Q-CTFPR/L11	CARBIDE	16	12	9	180	-	11	-	-6	0.4	TP**1103...
C16R-CTFPR/L11	CARBIDE	20	16	11	200	-	15	-	-4	0.4	TP**1103...

**rε: Standard corner radius
Note: The hole of inserts conforms to ISO standard.
When using a right or left hand insert, the right hand insert (R) is used for left hand toolholders (L) and the left hand insert (L) is used for right hand toolholders (R).

SPARE PARTS

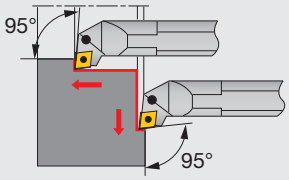
Designation	Clamp set	Wrench
S12M-CTFPR/L11	CSW-00	P-2.5
S16Q-CTFPR/L11	CSG-5S	P-2.5
S20R-CTFPR/L16	CSG-6S	P-3
S**-CTFPR/L16	CSG-6	P-3
C12Q-CTFPR/L11	CSW-00	P-2.5
C16R-CTFPR/L11	CSG-5S	P-2.5

S/C-CSKPR/L: Inserts → **B125**, CBN → **B168**, PCD → **B177**

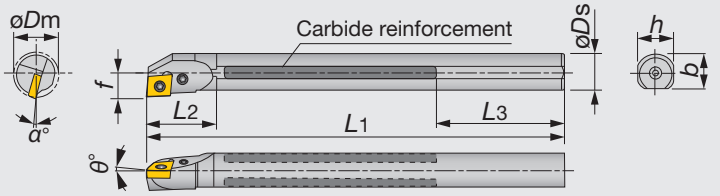
S/C-CTFPR/L: Inserts → **B139 -**, CBN → **B168 -**, PCD → **B178**

T-PCLNR

Lever-lock boring bar, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	θ°	α°	rε**	Insert	Torque*
T16Q-PCLNR09	TSUPPARI	20	-	16	11	180	27	59	15	-6	-14	0.8	CN**0903...	1.7
T20R-PCLNR09C	TSUPPARI	25	Rc1/4	20	13	200	35	49	18	-6	-12	0.8	CN**0903...	1.7
T25S-PCLNR09C	TSUPPARI	32	Rc1/4	25	17	250	40	64	23	-6	-11	0.8	CN**0903...	1.7
T32U-PCLNR12C	TSUPPARI	40	Rc1/2	32	22	350	50	103	30	-6	-11	0.8	CN**1204...	4.8
T40V-PCLNR12C	TSUPPARI	50	Rc1/2	40	27	400	55	88	37	-6	-10	0.8	CN**1204...	4.8
T50W-PCLNR12C	TSUPPARI	63	Rc1/2	50	35	450	65	63	47	-6	-8	0.8	CN**1204...	4.8

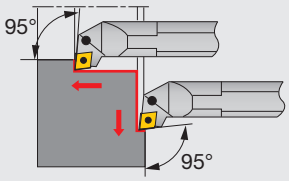
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

SPARE PARTS

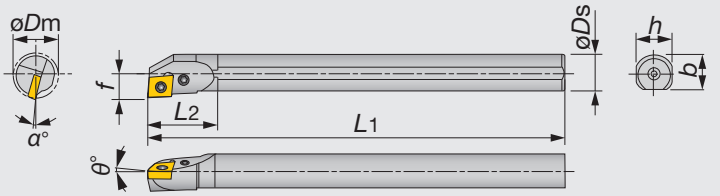
Designation	Shim	Clamping screw 1	Clamping screw 2	Wrench 1	Wrench 2	Spring	Lever
T**-PCLNR09...	-	LCS22A	-	P-2F	-	-	LCL32N
T**-PCLNR12C	LSC42BR	-	LCS4	-	P-3	LSP4	LCL4

S-PCLNR/L

Lever-lock boring bar, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	θ°	α°	rε**	Insert	Torque*
S16M-PCLNR/L09	STEEL	20	16	11	150	30	15	15.5	-6	-14	0.8	CN**0903...	1.7
S20Q-PCLNR/L09	STEEL	25	20	13	180	35	18	19	-6	-12	0.8	CN**0903...	1.7
S25R-PCLNR/L09	STEEL	32	25	17	200	40	23	24	-6	-11	0.8	CN**0903...	1.7
S32S-PCLNR/L12	STEEL	40	32	22	250	50	30	29.5	-6	-11	0.8	CN**1204...	4.8
S40T-PCLNR/L12	STEEL	50	40	27	300	55	37	37.5	-6	-10	0.8	CN**1204...	4.8
S50U-PCLNR/L12	STEEL	63	50	35	350	65	47	47.5	-6	-8	0.8	CN**1204...	4.8

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

SPARE PARTS

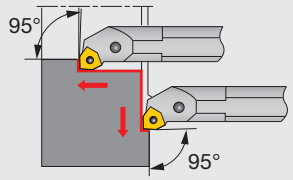
Designation	Shim	Clamping screw 1	Clamping screw 2	Wrench 1	Wrench 2	Spring	Lever
S**-PCLNR/L09	-	LCS22A	-	P-2F	-	-	LCL32N
S32S-PCLNR/L12	LSC42BR/L	-	LCS4	-	P-3	LSP4	LCL4
S40T-PCLNR/L12	LSC42BR/L	-	LCS4	-	P-3	LSP4	LCL4
S50U-PCLNR/L12	LSC42BR/L	-	LCS4	-	P-3	LSP4	LCL4

T-SVQBR: Inserts → **B142 -**, CBN → **B169 -**

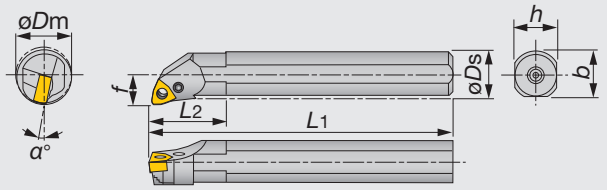
T-SVQCR/L: Inserts → **B145 -**, CBN → **B169 -**, PCD → **B177 -**

S-PWLNR/L

Lever-lock boring bar, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S16M-PWLNR/L06	STEEL	20	16	11	150	30	15	15.5	-17	0.8	WN**0604...
S20Q-PWLNR/L06	STEEL	25	20	13	180	35	18	19	-14	0.8	WN**0604...
S25R-PWLNR/L06	STEEL	32	25	17	200	40	23	24	-12	0.8	WN**0604...

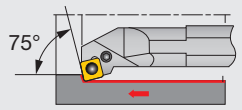
**rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

SPARE PARTS

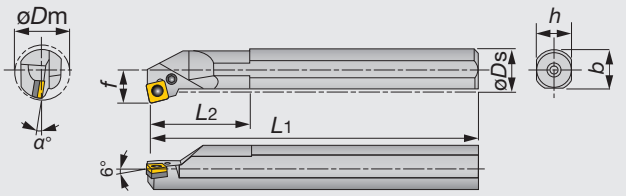
Designation	Shim	Clamping screw 1	Clamping screw 2	Wrench 1	Wrench 2	Spring	Lever
S**-PWLNR/L06	-	LCS33	-	P-2F	-	-	LCL33N
S25R-PWLNR06	LSW312BR	-	LCS3B	-	P-2.5	LSP3	LCL3
S25R-PWLNL06	LSW312BL	-	LCS3B	-	P-2.5	LSP3	LCL3

S-PSKNR

Lever-lock boring bar, for negative square inserts



Cutting edge style **K**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S32S-PSKNR12	STEEL	40	32	22	250	50	30	29.5	-10	0.8	SN**1204...
S40T-PSKNR12	STEEL	50	40	27	300	55	37	37.5	-10	0.8	SN**1204...
S50U-PSKNR12	STEEL	63	50	35	350	65	47	47.5	-8	0.8	SN**1204...

**rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

SPARE PARTS

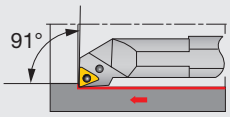
Designation	Shim	Clamping screw	Wrench	Spring	Lever
S**-PSKNR12	LSS42BR	LCS4	P-3	LSP4	LCL4

S-PWLNR/L: Inserts → **B090 -**, CBN → **B165**

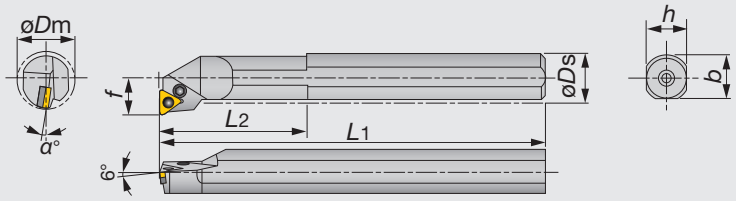
S-PSKNR: Inserts → **B070 -**, CBN → **B164 -**, PCD → **B176**

S-PTFNR/L

Lever lock type boring bar, for negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert	Torque*
S32S-PTFNR/L16	STEEL	40	32	22	250	50	30	29.5	-10	0.8	TN**1604...	2.7
S40T-PTFNR/L16	STEEL	50	40	27	300	55	37	37.5	-10	0.8	TN**1604...	2.7
S50U-PTFNR16	STEEL	63	50	35	350	65	47	47.5	-8	0.8	TN**1604...	2.7

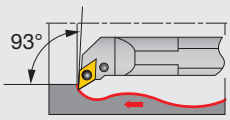
*Torque: Recommended torque (N·m) for clamping **r_ε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

SPARE PARTS

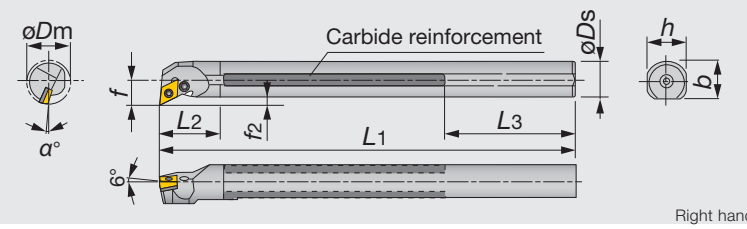
Designation	Shim	Clamping screw	Wrench	Spring	Lever
S32S-PTFNR16	LST317BR	LCS3	P-2.5	LSP3	LCL3
S32S-PTFNL16	LST317BL	LCS3	P-2.5	LSP3	LCL3
S40T-PTFNR16	LST317BR	LCS3	P-2.5	LSP3	LCL3
S40T-PTFNL16	LST317BL	LCS3	P-2.5	LSP3	LCL3
S50U-PTFNR16	LST317BR	LCS3	P-2.5	LSP3	LCL3

T-PDUNR

Lever-lock boring bar, for negative 55° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	f2	α°	rε**	Insert
T32U-PDUNR15C	TSUPPARI	40	Rc1/2	32	22	350	50	103	30	6	-13	0.8	DN**1504...
T40V-PDUNR15C	TSUPPARI	50	Rc1/2	40	27	400	55	88	37	7	-10	0.8	DN**1504...
T50W-PDUNR15C	TSUPPARI	63	Rc1/2	50	35	450	65	63	47	10	-8	0.8	DN**1504...

**r_ε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

SPARE PARTS

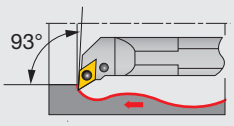
Designation	Shim	Clamping screw	Wrench	Spring	Lever
T**-PDUNR15C	LSD42BR	LCS4	P-3	LSP4	LCL4

S-PTFNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

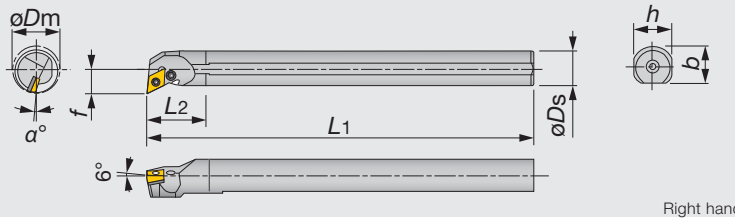
T-PDUNR: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

S-PDUNR/L

Lever-lock boring bar, for negative 55° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S20Q-PDUNR/L11	STEEL	25	20	13	180	35	18	19	-14	0.8	DN**1104...
S25R-PDUNR/L11	STEEL	32	25	17	200	40	23	24	-12	0.8	DN**1104...
S32S-PDUNR/L15	STEEL	40	32	22	250	50	30	29.5	-13	0.8	DN**1504...
S40T-PDUNR/L15	STEEL	50	40	27	300	55	37	37.5	-10	0.8	DN**1504...
S50U-PDUNR/L15	STEEL	63	50	35	350	65	47	47.5	-8	0.8	DN**1504...

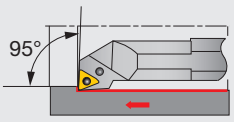
**rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

SPARE PARTS

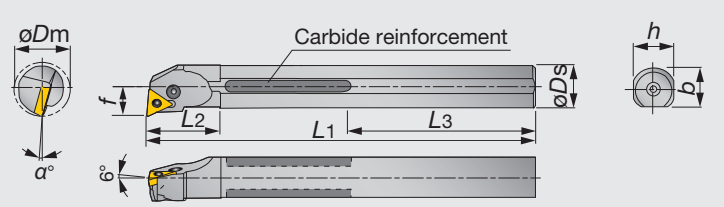
Designation	Shim	Clamping screw 1	Clamping screw 2	Wrench 1	Wrench 2	Spring	Lever
S20Q-PDUNR/L11	-	LCS22A	-	P-2F	-	-	LCL33NL
S25R-PDUNR11	ELSD317BR	-	LCS3	-	P-2.5	LSP3	LCL33L
S25R-PDUNL11	ELSD317BL	-	LCS3	-	P-2.5	LSP3	LCL33L
S32S-PDUNR15	LSD42BR	-	LCS4	-	P-3	LSP4	LCL4
S32S-PDUNL15	LSD42BL	-	LCS4	-	P-3	LSP4	LCL4
S40T-PDUNR15	LSD42BR	-	LCS4	-	P-3	LSP4	LCL4
S40T-PDUNL15	LSD42BL	-	LCS4	-	P-3	LSP4	LCL4
S50U-PDUNR15	LSD42BR	-	LCS4	-	P-3	LSP4	LCL4
S50U-PDUNL15	LSD42BL	-	LCS4	-	P-3	LSP4	LCL4

T-PTUNR

Lever-lock boring bar, for negative triangle inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	Oil hole	øDs	f	L1	L2	L3	h	α°	rε**	Insert	Torque*
T16Q-PTUNR11	TSUPPARI	20	-	16	11	180	27	59	15	-14	0.4	TN**1103...	1.7
T20R-PTUNR11C	TSUPPARI	25	Rc1/4	20	13	200	35	49	18	-12	0.4	TN**1103...	1.7
T25S-PTUNR16C	TSUPPARI	32	Rc1/4	25	17	250	40	64	23	-12	0.8	TN**1604...	2.7
T32U-PTUNR16C	TSUPPARI	40	Rc1/2	32	22	350	50	103	30	-10	0.8	TN**1604...	2.7
T40V-PTUNR16C	TSUPPARI	50	Rc1/2	40	27	400	55	88	37	-10	0.8	TN**1604...	2.7
T50W-PTUNR16C	TSUPPARI	63	Rc1/2	50	35	450	65	63	47	-8	0.8	TN**1604...	2.7

*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: • The hole of inserts conforms to ISO standard.
• Toolholder lengths do not always conform to ISO.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

SPARE PARTS

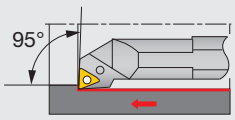
Designation	Shim	Clamping screw 1	Clamping screw 2	Wrench 1	Wrench 2	Spring	Lever
T**-PTUNR11...	-	LCS22A	-	P-2F	-	-	LCL22N
T25S-PTUNR16C	ELST317BR	-	LCS3	-	P-2.5	LSP3	LCL33
T**-PTUNR16C	LST317BR	-	LCS3	-	P-2.5	LSP3	LCL3

S-PDUNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

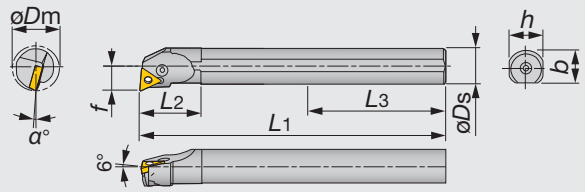
T-PTUNR: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

A/S-PTUNR/L

Lever lock type boring bar, for negative triangle inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert	Torque*
S16M-PTUNR/L11	STEEL	20	16	11	150	30	15	15.5	-14	0.4	TN**1103...	1.7
S20Q-PTUNR/L11	STEEL	25	20	13	180	35	18	19	-12	0.4	TN**1103...	1.7
S25R-PTUNR/L16	STEEL	32	25	17	200	40	23	24	-12	0.8	TN**1604...	2.7
A32S-PTUNR/L16	STEEL	40	32	22	250	50	30	29.5	-12	0.8	TN**1604...	2.7

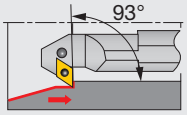
*Torque: Recommended torque (N·m) for clamping **rε: Standard corner radius
Note: • The hole of inserts conforms to ISO standard.
• Toolholder lengths do not always conform to ISO.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.

SPARE PARTS

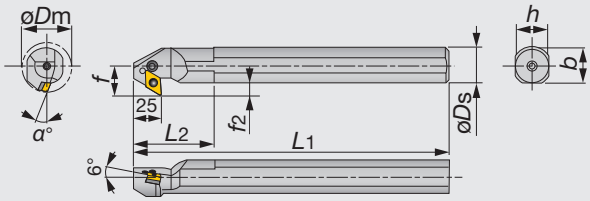
Designation	Shim	Clamping screw 1	Clamping screw 2	Wrench 1	Wrench 2	Spring	Lever	Oil supply attachment
S**-PTUNR/L11	-	LCS22A	-	P-2F	-	-	LCL22N	-
S25R-PTUNR16	ELST317BR	-	LCS3	-	P-2.5	LSP3	LCL33	-
S25R-PTUNL16	ELST317BL	-	LCS3	-	P-2.5	LSP3	LCL33	-
A32S-PTUNR16	LST317BR	-	LCS3	-	P-2.5	LSP3	LCL3	EA-32
A32S-PTUNL16	LST317BL	-	LCS3	-	P-2.5	LSP3	LCL3	EA-32

S-PDZNR/L

Lever-lock boring bar, for negative 55° rhombic inserts



Cutting edge style **Z**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	f2	b	α°	rε**	Insert
S32S-PDZNR/L15	STEEL	40	32	22	275	55	30	6	29.5	-13	0.8	DN**1504...
S40T-PDZNR15	STEEL	50	40	27	325	60	37	7	37.5	-10	0.8	DN**1504...
S50U-PDZNR15	STEEL	60	50	35	375	65	47	10	47.5	-8	0.8	DN**1504...

**rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert is used for right hand toolholders and the left hand insert is used for left hand toolholders.

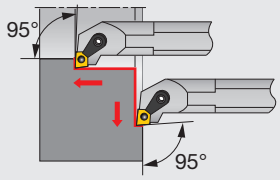
SPARE PARTS

Designation	Shim	Clamping screw	Wrench	Spring	Lever
S32S-PDZNR15	LSZ42BR	LCS4	P-3	LSP4	LCL4
S32S-PDZNL15	LSZ42BL	LCS4	P-3	LSP4	LCL4
S*0*-PDZNR15	LSZ42BR	LCS4	P-3	LSP4	LCL4

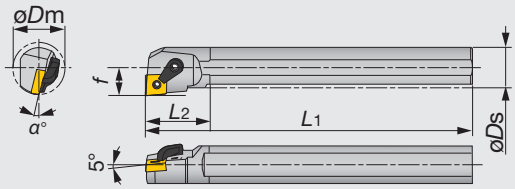
S-PTUNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**
S-PDZNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

S-MCLNR/L

Multi-clamp boring bar, for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S25R-MCLNR/L12	STEEL	32	25	17	200	40	23	22.5	-12	0.8	CN**1204...

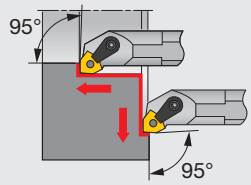
**rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (MCLNL** type), and the left hand insert (L) is used for the right hand toolholders (MCLNR** type).

SPARE PARTS

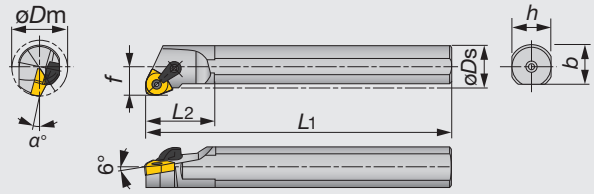
Designation	Clamp	Pin	Clamping screw	Wrench 1	Wrench 2
S25R-MCLNR/L12	MCPM-21	MLP44	MCS620-3	P-3	P-2.5F

S-MWLNR/L

Multi-clamp boring bar, for negative trigon inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S25R-MWLNR/L08	STEEL	32	25	17	200	40	23	22.5	-12	0.8	WN**0804...
S32S-MWLNR/L08	STEEL	44	32	22	250	50	30	29.5	-10	0.8	WN**0804...
S40T-MWLNR/L08	STEEL	54	40	27	300	60	37	37.5	-10	0.8	WN**0804...
S50U-MWLNR/L08	STEEL	70	50	35	350	75	47	47.5	-10	0.8	WN**0804...

**rε: Standard corner radius

SPARE PARTS

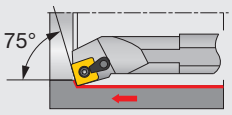
Designation	Clamp	Pin	Clamping screw	Shim	Wrench 1	Wrench 2
S25R-MWLNR/L08	MCPM-6	MLP44	MCS520-2.5	-	P-2.5	P-2.5F
S32S-MWLNR/L08	MCPM-6	MLP46	MCS520-2.5	MSW-432BR/L	P-2.5	P-2.5F
S40T-MWLNR/L08	MCPM-6	MLP46	MCS520-2.5	MSW-432BR/L	P-2.5	P-2.5F
S50U-MWLNR/L08	MCPM-6	MLP46	MCS520-2.5	MSW-432BR/L	P-2.5	P-2.5F

S-MCLNR/L: Inserts → **B050 -**, CBN → **B163 -**, PCD → **B176**

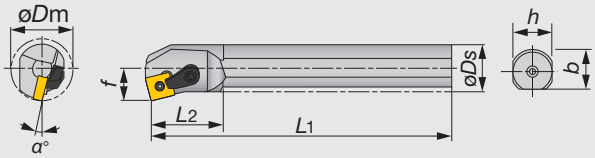
S-MWLNR/L: Inserts → **B090 -**, CBN → **B165**

S-MSKNR/L

Multi-clamp boring bar, for negative square inserts



Cutting edge style **K**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S25R-MSKNR/L12	STEEL	32	25	17	200	40	23	22.5	-12	0.8	SN**1204...

**rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (MSKNL** type), and the left hand insert (L) is used for the right hand toolholders (MSKNR** type).

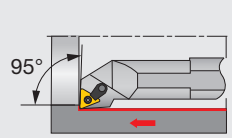
SPARE PARTS

Designation	Clamp	Pin	Clamping screw	Wrench 1	Wrench 2
S25R-MSKNR/L12	MCPM-21 MCL-6*	MLP44	MCS620-3	P-3	P-2.5F

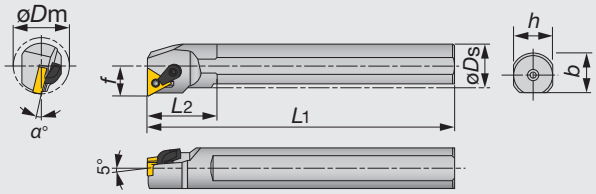
Note: * marked parts type No. in former type No.

S-MTFNR/L

Multi-clamp boring bar, for negative triangle inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S25R-MTFNR/L16	STEEL	32	25	17	200	40	23	22.5	-12	0.8	TN**1604...

**rε: Standard corner radius
Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (MTFNL** type), and the left hand insert (L) is used for the right hand toolholders (MTFNR** type).

SPARE PARTS

Designation	Clamp	Pin	Clamping screw	Wrench1	Wrench 2
S25R-MTFNR/L16	MCPM-6 MCL-5M*	MLP33L	MCS520-2.5	P-2.5	P-2F

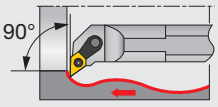
Note: * marked parts type No. in former type No.

S-MSKNR/L: Inserts → **B070 -**, CBN → **B164 -**, PCD → **B176**

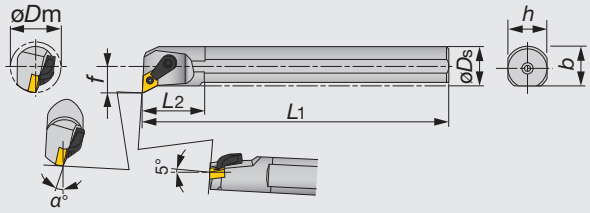
S-MTFNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176**

S-MDUNR/L

Multi-clamp boring bar, for negative 55° rhombic inserts



Cutting edge style **U**



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	h	b	α°	rε**	Insert
S25R-MDUNR/L11	STEEL	32	25	17	200	40	23	22.5	-12	0.8	DN**1104...

**rε: Standard corner radius

Note: When using a right or left hand insert, the right hand insert (R) is used for the left hand toolholders (MDUNL** type), and the left hand insert (L) is used for the right hand toolholders (MDUNR** type).

SPARE PARTS

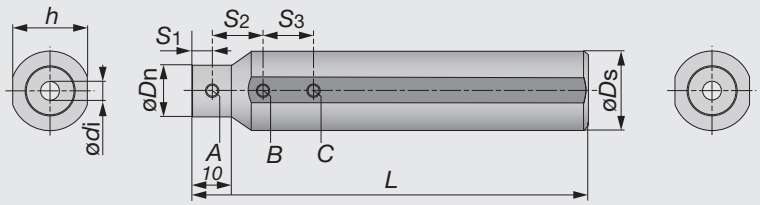
Designation	Clamp	Pin	Clamping screw	Wrench 1	Wrench 2
S25R-MDUNR/L11	MCPM-21 MCL-6*	MLP33L	MCS620-3	P-3	P-2F

Note: * marked parts type No. in former type No.

S-MDUNR/L: Inserts → **B061 -**, CBN → **B163 -**, PCD → **B176**

BLM sleeves

Standard Sleeves for SJB-Mini series with round shank



Designation	øDs	ødi	øDn	L	h	S1	S2	S3
BLM159-04	15.875	4	15	100	15	5	15	15
BLM159-05	15.875	5	15	100	15	5	15	15
BLM159-06	15.875	6	15	100	15	5	20	20
BLM159-07	15.875	7	15	100	15	5	20	20
BLM16-04	16	4	15	100	15	5	15	15
BLM16-05	16	5	15	100	15	5	15	15
BLM16-06	16	6	15	100	15	5	20	20
BLM16-07	16	7	15	100	15	5	20	20
BLM19-04	19.05	4	18	100	18	5	15	15
BLM19-05	19.05	5	18	100	18	5	15	15
BLM19-06	19.05	6	18	100	18	5	20	20
BLM19-07	19.05	7	18	100	18	5	20	20
BLM20-04	20	4	13	100	19	5	15	15
BLM20-05	20	5	14	100	19	5	15	15
BLM20-06	20	6	15	100	19	5	20	20
BLM20-07	20	7	16	100	19	5	20	20
BLM22-04	22	4	13	125	21	5	15	15
BLM22-05	22	5	14	125	21	5	15	15
BLM22-06	22	6	15	125	21	5	20	20
BLM22-07	22	7	16	125	21	5	20	20
BLM25-04	25	4	13	125	24	5	15	15
BLM25-05	25	5	14	125	24	5	15	15
BLM25-06	25	6	15	125	24	5	20	20
BLM25-07	25	7	16	125	24	5	20	20
BLM254-04	25.4	4	13	125	24	5	15	15
BLM254-05	25.4	5	14	125	24	5	15	15
BLM254-06	25.4	6	15	125	24	5	20	20
BLM254-07	25.4	7	16	125	24	5	20	20

SPARE PARTS



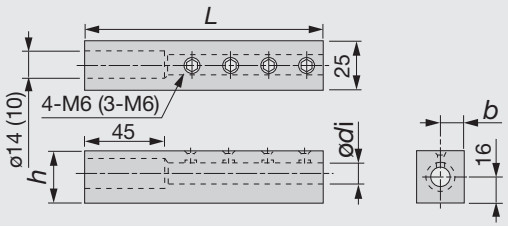



Designation	Clamping screw *A*	Clamping screw *B*, *C*	Wrench	Seal cap*(inner screw)
BLM159, 16...	SSHM4-4	SSHM4-4	P-2	CA-16(M6)
BLM19-04	SSHM4-4	SSHM4-6	P-2	CA-16(M6)
BLM19-05, 06, 07	SSHM4-4	SSHM4-4	P-2	CA-16(M6)
BLM20-04, 05	SSHM4-4	SSHM4-6	P-2	CA-16(M6)
BLM20-06, 07	SSHM4-4	SSHM4-4	P-2	CA-16(M6)
BLM22-...	SSHM4-4	SSHM4-6	P-2	CA-16(M6)
BLM25-04, 05	SSHM4-4	SSHM4-8	P-2	CA-16(M6)
BLM25-06	SSHM4-4	SSHM4-8	P-2	CA-16(M6)
BLM25-07	SSHM4-4	SSHM4-6	P-2	CA-16(M6)
BLM254-04, 05, 06	SSHM4-4	SSHM4-8	P-2	CA-16(M6)
BLM254-07	SSHM4-4	SSHM4-6	P-2	CA-16(M6)

*Optional

BLS sleeves

Sleeves for boring bars with square shank (regular length)



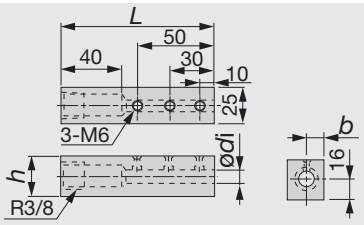
Designation	ødi	L	h	b
BLS16-08	8	125	28	12.5
BLS16-10	10	125	28	12.5
BLS16-12	12	125	28	12.5

SPARE PARTS

Designation	Wrench
BLS16-...	P-3

BLS-C sleeves

Sleeves for boring bars with square shank (short type)



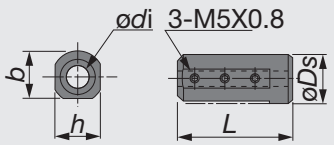
Designation	ødi	L	h	b
BLS16-08C	8	100	28	12.5
BLS16-10C	10	100	28	12.5
BLS16-12C	12	100	28	12.5

SPARE PARTS

Designation	Wrench
BLS16-**C	P-3

BLM sleeves

Sleeves for boring bars with round shank



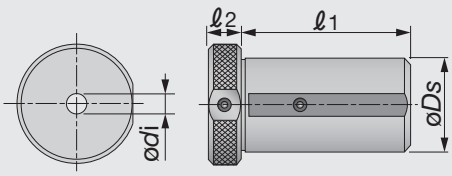
Designation	ødi	øDs	L	h	b
BLM19-08	8	19.05	100	18	18
BLM20-08	8	20	100	19	18
BLM22-08	8	22	125	21	21
BLM254-08	8	25.4	125	24	24
BLM25-08C	8	25	55	24	23
BLM25-10C	10	25	55	24	23
BLM25-12C	12	25	55	24	23

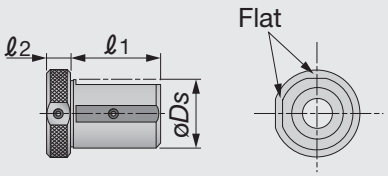
SPARE PARTS

Designation	Wrench
BLM...	P-2.5

BLC sleeves

Standard Sleeves for boring bars with round shank





Designation	ødi	ℓ1	ℓ2	øDs
BLC40-8	8	73	13	40
BLC40-10	10	73	13.	40
BLC40-12	12	73	13	40
BLC40-16	16	73	13	40
BLC32-8C	8	45	20	32
BLC32-10C	10	45	20	32
BLC32-12C	12	45	20	32
BLC40-8C	8	55	13	40
BLC40-10C	10	55	13	40
BLC40-12C	12	55	13	40
BLC40-16C	16	55	13	40

SPARE PARTS

Designation	Wrench
BLC40-8	P-3
BLC40-1...	P-4
BLC32-8C	P-3
BLC32-1*C	P-4
BLC40-8C	P-3
BLC40-1*C	P-4

MEMO



MINIFORCE TURN

B188, B268

Economical double-sided inserts with excellent sharpness



TETRAMINI CUT

C049

Unique insert geometry for highly precise grooving

W = 0.33 - 3.0 mm



TETRAFORCE CUT

C041

4-cornered inserts with good clamping rigidity for highly precise grooving and parting

W = 0.5 - 3.18 mm



DUOJUST CUT

C009

Innovative clamping system for stable parting operations

W = 1.0 - 2.0 mm



TUNGCUT

C053

Multi-functional tool series for various grooving operations

W = 1.4 - 8.0 mm

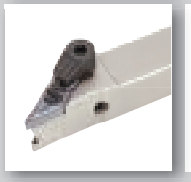


TUNGHEAVY GROOVE

C123

Highly rigid clamping system for wide grooving and profiling in one pass

W = 10 - 25 mm



J-SERIES

B328

Toolholders for small-part machining



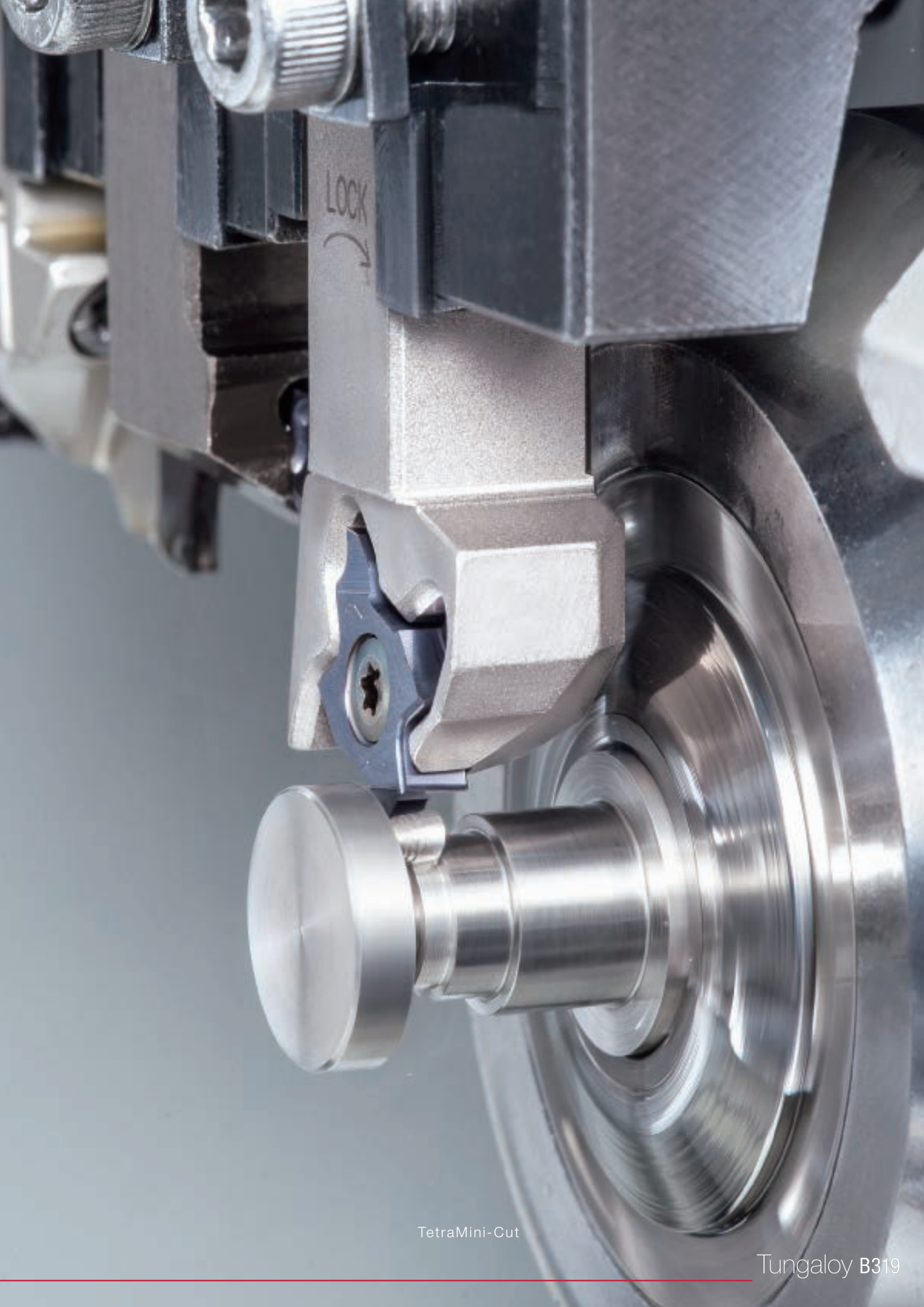
TINYMINI TURN

B352

Solid boring bars for turning small diameters with high precision

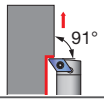
Other Tool for Miniature Machining

B375

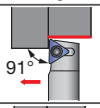
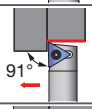
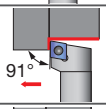
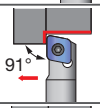
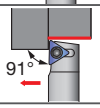

LOCK

Miniature External Turning - Quick Guide

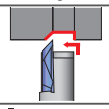
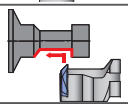
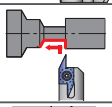
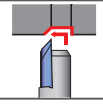
Facing

Style	Description	Type of insert		Shank Size	Clamping style	
		Positive	Negative			
	**JSDFCR/L** Cutting edge angle 91° Insert type: DC☐☐	✓		12 - 16 mm	Screw-on clamping with offset	B335

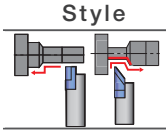
External Turning

Style	Description	Type of insert		Shank Size	Clamping style	
		Positive	Negative			
	**JTTACR/L** Cutting edge angle 91° Insert type: TC☐☐	✓		8 - 16 mm	Back side clamping without offset	B336
	**JSTACR/L** Cutting edge angle 91° Insert type: TC☐☐	✓		8 - 16 mm	Screw-on clamping without offset	B336
	**JSCGCR/L** Cutting edge angle 91° Insert type: CC☐☐	✓		12 - 16 mm	Screw-on clamping with offset	B331
	**JSCACL** Cutting edge angle 91° Insert type: CC☐☐	✓		10 - 12 mm	Screw-on clamping without offset	B330
	**JTTANR/L** Cutting edge angle 91° Insert type: TN☐☐		✓	12 - 16 mm	Back side clamping without offset	B343

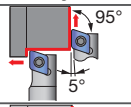
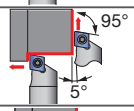
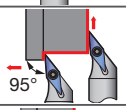
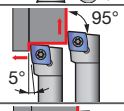
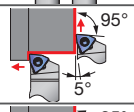
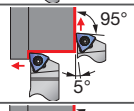
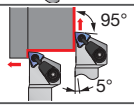
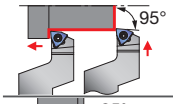
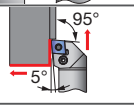
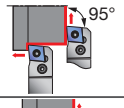
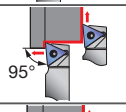
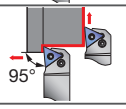
Back Turning

Style	Description	Type of insert		Shank Size	Clamping style	
		Positive	Negative			
	**JSTBR/L** Insert type: JTBR/L3☐☐	✓		10 - 16 mm	Screw-on clamping	B347
	**JS-TBL3** Insert type: JTBR3☐☐	✓		ø19.05 - 25.4 mm	Screw-on clamping	B347
	**JSEGR/L** Insert type: J10ER/L☐☐	✓		10 - 16 mm	Screw-on clamping	B349
	**JSXBR/L** Insert type: JXBR/L8☐☐	✓		10 - 25 mm	Screw-on clamping	B346

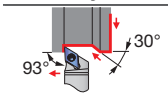
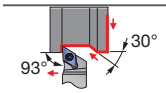
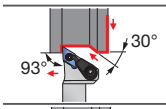
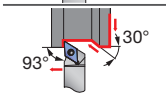
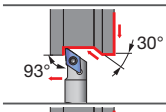
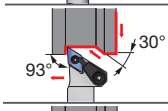
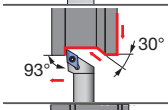
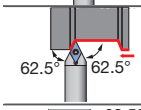
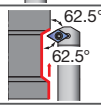
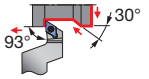
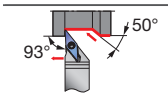
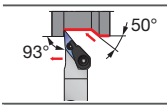
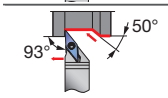
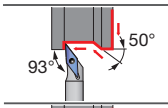
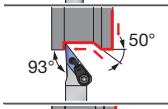
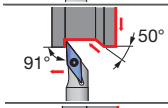
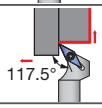
Front & Reverse Turning

Style	Description	Type of insert		Shank Size	Clamping style	
		Positive	Negative			
	**JSXGR/L** Insert type: JXFR/L8 JXRR/L8	✓		10 - 25 mm	Screw-on clamping	B345

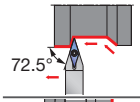
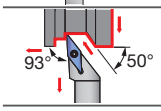
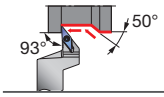
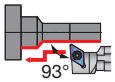
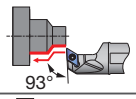
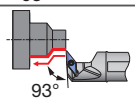
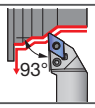
External Turning & Facing

Style	Description	Type of insert		Shank Size	Clamping style	
		Positive	Negative			
	**JTCL2CR/L** Cutting edge angle 95° Insert type: CC☐☐	✓		8 - 16 mm	Back side clamping without offset	B328
	**JSCL2CR/L** Cutting edge angle 95° Insert type: CC☐☐	✓		10 - 16 mm	Screw-on clamping without offset	B328
	**JSVL2PR/L** Cutting edge angle 95° Insert type: VP☐☐	✓		10 - 16 mm	Screw-on clamping without offset	B341
	**JSCLCR/L** Cutting edge angle 95° Insert type: CC☐☐	✓		8 - 16 mm	Screw-on clamping with offset	B329
	**JPWL2XR/L** Cutting edge angle 95° Insert type: WXGU	✓		10 - 16 mm	Side clamping without offset	B188
	**JSWL2XR/L** Cutting edge angle 95° Insert type: WXGU	✓		10 - 20 mm	Screw-on clamping without offset	B188
	**JSWL2XR/L-CHP** Cutting edge angle 95° Insert type: WXGU	✓		12 mm	Screw-on clamping without offset	B189
	**JSWLXR-F** Cutting edge angle 95° Insert type: WXGU	✓		10 - 16 mm	Screw-on clamping with offset	B189
	**PCLNR** Cutting edge angle 95° Insert type: CN☐☐		✓	20 mm	Lever-lock clamping with offset	B342
	**PCL2NR** Cutting edge angle 95° Insert type: CN☐☐		✓	20 mm	Lever-lock clamping without offset	B342
	**JTTLNR/L** Cutting edge angle 95° Insert type: TN☐☐		✓	12 - 16 mm	Back side clamping without offset	B343
	**PTL2NR/L** Cutting edge angle 95° Insert type: TN☐☐		✓	20 mm	Lever-lock clamping without offset	B344

External Turning & Profiling

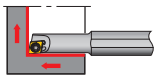
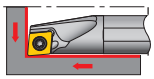
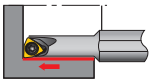
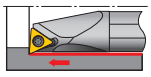
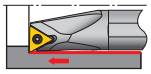
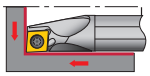
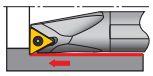
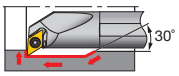
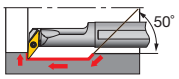
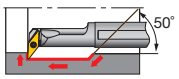
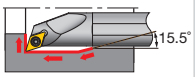
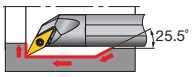
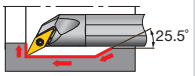
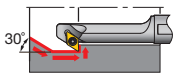
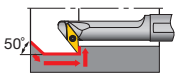
Style	Description	Type of insert		Shank Size	Clamping style	
		Positive	Negative			
	**JPDJ2XR/L** Cutting edge angle 93° Insert type: DXGU	✓		10 - 16 mm	Side clamping without offset	B190
	**JSDJ2XR/L** Cutting edge angle 93° Insert type: DXGU	✓		10 - 20 mm	Screw-on clamping without offset	B190
	**JSDJ2XR/L-CHP** Cutting edge angle 93° Insert type: DXGU	✓		12 mm	Screw-on clamping without offset	B191
	**JTDJ2CR/L** Cutting edge angle 93° Insert type: DC□□	✓		10 - 16 mm	Back side clamping without offset	B332
	**JSDJ2CR/L** Cutting edge angle 93° Insert type: DC□□	✓		8 - 16 mm	Screw-on clamping without offset	B331
	**JSDJ2CR/L-CHP** Cutting edge angle 93° Insert type: DC□□	✓		12 mm	Screw-on clamping without offset	B333
	**JSDJCR/L** Cutting edge angle 93° Insert type: DC□□	✓		8 - 16 mm	Screw-on clamping with offset	B333
	**JSDNCN** Cutting edge angle 62.5° Insert type: DC□□	✓		10 - 16 mm	Screw-on clamping with offset	B334
	**JSDN3CR/L** Cutting edge angle 62.5° Insert type: DC□□	✓		12 - 16 mm	Screw-on clamping with offset	B334
	**JSDJXR-F** Cutting edge angle 93° Insert type: DXGU	✓		10 - 16 mm	Screw-on clamping with offset	B191
	**JPVJ2XR/L** Cutting edge angle 93° Insert type: VXGU	✓		10 - 16 mm	Side clamping without offset	B192
	**JSVJ2XR/L-CHP** Cutting edge angle 93° Insert type: VXGU	✓		12 mm	Screw-on clamping without offset	B193
	**JSVJ2XR/L** Cutting edge angle 93° Insert type: VXGU	✓		10 - 20 mm	Screw-on clamping without offset	B192
	**JSVJ2BR/L** Cutting edge angle 93° Insert type: VB□□	✓		10 - 16 mm	Screw-on clamping without offset	B337
	**JSVJ2BR/L-CHP** Cutting edge angle 93° Insert type: VB□□	✓		12 mm	Screw-on clamping without offset	B338
	**JSVABR/L** Cutting edge angle 91° Insert type: VB□□	✓		10 - 16 mm	Screw-on clamping without offset	B338
	**JSVP2PR/L** Cutting edge angle 117.5° Insert type: VP□□	✓		10 - 16 mm	Screw-on clamping without offset	B341

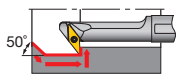
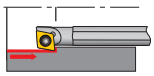
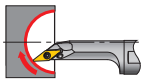
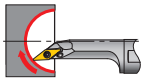
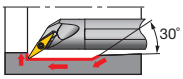
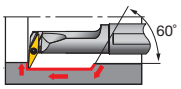
External Turning & Profiling

Style	Description	Type of insert		Shank Size	Clamping style	
		Positive	Negative			
	**JSVNBN** Cutting edge angle 72.5° Insert type: VB□□	✓		10 - 16 mm	Screw-on clamping with offset	B340
	**JSVJBR/L** Cutting edge angle 93° Insert type: VB□□	✓		10 - 16 mm	Screw-on clamping with offset	B337
	**JSVJXR-F** Cutting edge angle 93° Insert type: VXGU	✓		10 - 16 mm	Screw-on clamping with offset	B193
	**JS-SDUCL** Cutting edge angle 93° Insert type: DC□□	✓		ø19.05 - 25.4 mm	Screw-on clamping with offset	B335
	**JS-SDUXL** Cutting edge angle 93° Insert type: DXGU	✓		ø14 - 25.4 mm	Screw-on clamping with offset	B194
	**JS-SVUXL** Cutting edge angle 93° Insert type: VXGU	✓		ø15.875 - 25.4 mm	Screw-on clamping with offset	B194
	**PDJNR** Cutting edge angle 93° Insert type: DN□□		✓	20 mm	Lever-lock clamping with offset	B342

Miniature Internal Turning - Quick Guide

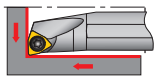
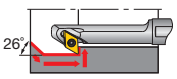
Positive type

Style	StreamJet-Bar Description & Application	ISO Insert	Y-Pro	Shank Type	Shank Ø	Min. bore diameter (mm) 0 10 20 30 40 50	
	**SEXPR/L** Boring & Internal facing Insert type: EP□□	✓		Steel Carbide	ø4 - ø8 ø4 - ø8	ø4.5 ø7 ø4.5 ø7	B279
	**SCLCR/L** Boring & internal facing Insert type: CC□□	✓		Steel Carbide	ø4 - ø25 ø4 - ø25	ø5 ø27 ø5 ø27	B278
	**SWUBR/L** Boring Insert type: WB□□	✓		Steel Carbide	ø5 - ø8 ø5 - ø8	ø6 ø8 ø6 ø8	B286
	**STUPR/L** Boring Insert type: TP□□	✓		Steel Carbide	ø7 - ø32 ø7 - ø25	ø8 ø34 ø8 ø27	B285
	**STFPR/L** Blind hole boring Insert type: TP□□	✓		Steel Carbide	ø8 - ø25 ø8 - ø20	ø10 ø27 ø10 ø22	B284
	**SCLPR/L** Boring & internal facing Insert type: CP□□	✓		Steel Carbide	ø8 - ø25 ø8 - ø16	ø10 ø27 ø10 ø20	B280
	**STFCR/L** Blind hole boring Insert type: TC□□	✓		Steel Carbide	ø10 - ø16 ø10 - ø16	ø12 ø18 ø12 ø18	B283
	**SDUCR/L** Boring & internal profiling Insert type: DC□□	✓		Steel Carbide	ø10 - ø25 ø10 - ø20	ø13 ø32 ø13 ø27	B287
	**SVUCR/L** Boring & internal profiling Insert type: VC□□	✓		Steel Carbide	ø12 - ø25 ø12 - ø25	ø16 ø32 ø18 ø32	B288
	**SVUBR/L** Boring & internal profiling Insert type: VB□□	✓		Steel Carbide	ø16 - ø25 ø16 - ø25	ø20 ø32 ø24.5 ø34	B287
	**SDQCR/L** Boring & internal profiling Insert type: DC□□	✓		Steel Carbide	ø10 - ø25 ø10 - ø20	ø13 ø30 ø13 ø25	B288
	**SVQCR/L** Boring & internal profiling Insert type: VC□□	✓		Steel Carbide	ø10 - ø16 ø10 - ø16	ø13.5 ø21.5 ø13.5 ø21.5	B289
	**SVQBR/L** Boring & internal profiling Insert type: VB□□	✓		Steel Carbide	ø12 - ø25 ø12 - ø25	ø17 ø30.5 ø17 ø30.5	B289
	**SDZCR/L** Internal retracting Insert type: DC□□	✓		Steel Carbide	ø12 - ø25 ø12 - ø16	ø14 ø25 ø18 ø22	B290
	**SVZCR/L** Internal retracting Insert type: VC□□	✓		Steel	ø12	ø16	B291

Style	StreamJet-Bar Description & Application	ISO Insert	Y-Pro	Shank Type	Shank Ø	Min. bore diameter (mm) 0 10 20 30 40 50	
	**SVZBR/L** Internal retracting Insert type: VB□□	✓		Steel	ø16 - ø32	ø20 ø40	B291
	**SEZPR/L** Internal retracting Insert type: EP□□	✓		Steel Carbide	ø4 - ø5 ø4 - ø5	ø5.5 ø6.5 ø5.5 ø6.5	B292
	**SVJCR/L** Internal sphere cutting Insert type: VC□□	✓		Steel	ø12 - ø16	ø16 ø20	B282
	**SVJBR/L** Internal sphere cutting Insert type: VB□□	✓		Steel	ø20 - ø25	ø25 ø30	B282
	**SYQBR/L** Internal undercut & profiling Insert type: YW□□		✓	Steel Carbide	ø12 - ø16 ø12 - ø16	ø17 ø21.5 ø17 ø21.5	B300
	**SYUBR/L** Boring & internal profiling Insert type: YW□□		✓	Steel Carbide	ø16 ø12 - ø16	ø20 ø20 ø24.5	B300

Miniature Internal Turning - Quick Guide

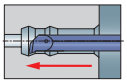
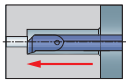
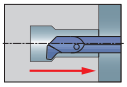
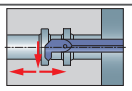
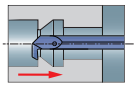
Double-sided insert with positive cutting edges

Style	MiniForce-Turn Description & Application	MiniForce -Turn	Shank Type	Shank Ø	Min. bore diameter (mm) 0 10 20 30 40 50	
	**SWLXR/L** Boring & facing Insert type: WXGU	✓	Steel Carbide	ø10 - ø20 ø10 - ø20	ø12 ø22 ø12 ø22	B268
	**SDXXR/L** Internal profiling Insert type: DXGU	✓	Steel Carbide	ø10 - ø20 ø10 - ø20	ø13 ø24 ø13 ø24	B268
	**SDZXR/L** Internal retracting Insert type: DXGU	✓	Steel Carbide	ø12 - ø20 ø12 - ø16	ø14 ø20 ø18 ø22	B269

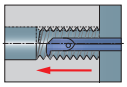
Miniature Internal Turning - Quick Guide

TinyMini-Turn - Solid carbide tools for small diameters turning

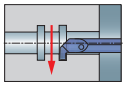
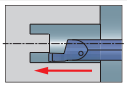
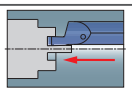
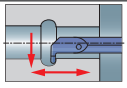
Boring, profiling, chamfering

Style	TinyMini-Turn Description & Application	Shank øDs	Min. bore diameter øDm (mm) 0 2 4 6 8 10	
	**JBT** Boring, profiling, & chamfering	ø4 & ø7	ø0.6 – ø7	B352
	**JBP** Boring & chamfering	ø4 & ø7	ø2.8 – ø5	B353
	**JBU** Back boring & chamfering	ø7	ø5	B353
	**JBC** Boring & 45° chamfering	ø7	ø5 – ø6.8	B353
	**JBB** Back boring	ø4 & ø7	ø3 – ø7	B354

Threading

Style	TinyMini-Turn Description & Application	Shank øDs	Min. bore diameter øDm (mm) 0 2 4 6 8 10	
	**JBI** Threading (Metric thread)	ø4 & ø7	ø4 – ø7	B354

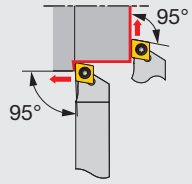
Grooving

Style	TinyMini-Turn Description & Application	Shank øDs	Groove width	Min. bore diameter øDm (mm) 0 2 4 6 8 10 12 14 15	
	**JBG** Grooving	ø4 & ø7	0.5 - 2	ø2 – ø6.8	B355
	**JBF** Face grooving	ø7	1 - 3	ø6 – ø15	B356
	**JBS** Face grooving (for shaft)	ø7	2	ø6	B356
	**JBR** Boring & profiling (full radius type)	ø7	1	ø5 – ø6.8	B357

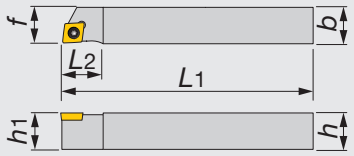
MEMO

J-SERIES
JSCL2CR/L

Screw-on toolholder without offset with 95° approach angle for positive 80° rhombic inserts



Cutting edge style **L2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSCL2CR/L1010X06	10	10	120	12	10	10	0.2	CC**0602...	1.2
JSCL2CR/L1212F06	12	12	85	12	12	12	0.2	CC**0602...	1.2
JSCL2CR/L1212X06	12	12	120	12	12	12	0.2	CC**0602...	1.2
JSCL2CL1212K06	12	12	125	12	12	12	0.4	CC**0602...	1.2
JSCL2CR/L1212F09	12	12	85	16	12	12	0.2	CC**09T3...	1.2
JSCL2CR/L1212X09	12	12	120	16	12	12	0.2	CC**09T3...	1.2
JSCL2CR/L1616X09	16	16	120	16	16	16	0.2	CC**09T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

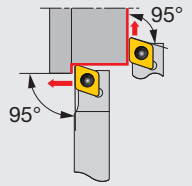
SPARE PARTS



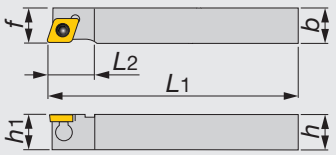

Designation	Clamping screw	Wrench
JSCL2CR/L**06	CSTB-2.5	T-8F
JSCL2CR/L**09	CSTB-4SD	T-8F

J-SERIES
JTCL2CR/L

Back clamp toolholder without offset with 95° approach angle for positive 80° rhombic inserts



Cutting edge style **L2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JTCL2CL0810K06	8	10	125	12	8	10	0.4	CC**0602...	0.9
JTCL2CR/L1010X06	10	10	120	12	10	10	0.2	CC**0602...	0.9
JTCL2CR/L1212F09	12	12	85	16	12	12	0.2	CC**09T3...	1.2
JTCL2CR/L1212X09	12	12	120	16	12	12	0.2	CC**09T3...	1.2
JTCL2CR/L1616X09	16	16	120	16	16	16	0.2	CC**09T3...	1.2
JTCL2CR1616M09	16	16	150	16	16	16	0.8	CC**09T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS



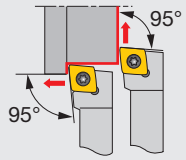


Designation	Clamp	Clamping screw	Wrench
JTCL2CR/L**06	JCP-2	JDS-3525	P-2F
JTCL2CR/L**09	JCP-3	JDS-5040	P-2.5F

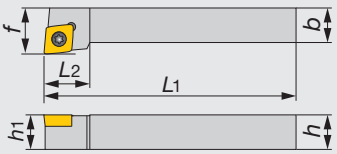
JSCL2CR/L, JTCL2CR/L: Inserts → **B104 -**, CBN → **B168 -**, PCD → **B177**

J-SERIES
JSCLCR/L

Screw-on toolholder with 95° approach angle for positive 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	r$_\varepsilon$**	Insert	Torque*
JSCLCR/L0808H06	8	8	100	12	8	10	0.4	CC**0602...	1.2
JSCLCR/L1010H06	10	10	100	12	10	12	0.4	CC**0602...	1.2
JSCLCR/L1212H09	12	12	100	16	12	16	0.8	CC**09T3...	1.2
JSCLCR/L1616H09	16	16	100	16	16	20	0.8	CC**09T3...	1.2

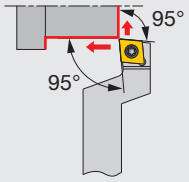
**r_ε: Standard corner radius

SPARE PARTS

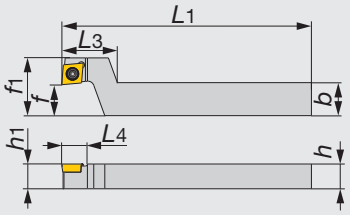
Designation	Clamping screw	Wrench
JSCLCR/L**H06	CSTB-2.5	T-8F
JSCLCR/L**H09	CSTB-4SD	T-8F

J-SERIES
JSCLCR-F

Screw-on stepped-head toolholder with 95° approach angle for positive 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*L*3	*L*4	*h*1	*f*	f1	r$_\varepsilon$**	Insert	Torque*
JSCLCR1216F09-F15	12	16	85	12	27	12.5	12	15	28	0.2	CC**09T3...	1.2
JSCLCR1216X09-F15	12	16	120	12	27	12.5	12	15	28	0.2	CC**09T3...	1.2
JSCLCR1620X09-F15	16	20	120	12	27	12.5	16	15	28	0.2	CC**09T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

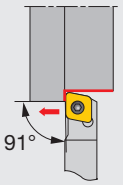
SPARE PARTS

Designation	Clamping screw	Wrench
JSCLCR**F15	CSTB-4SD	T-8F

JSCLCR/L, JSCLCR-F: Inserts → **B104 -**, CBN → **B168 -**, PCD → **B177**

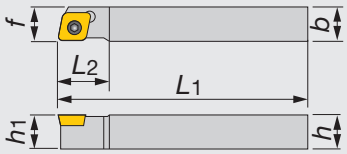
JSCACL

Screw-on toolholder without offset with 91° approach angle for positive 80° rhombic inserts



Cutting edge style **A**

Without offset



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert	Torque*
JSCACL1010H06	10	10	100	12	10	10	0.4	CC**0602...	1.2
JSCACL1212H09	12	12	100	16	12	12	0.8	CC**09T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

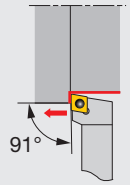



Designation	Clamping screw	Wrench
JSCACL1010H06	CSTB-2.5	T-8F
JSCACL1212H09	CSTB-4SD	T-8F

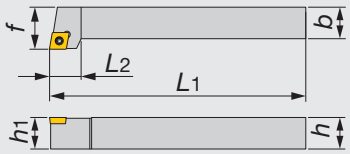
JSCACL: Inserts → **B104 -**, CBN → **B168 -**, PCD → **B177**

J-SERIES
JSCGCR/L

Screw-on toolholder with 91° approach angle for positive 80° rhombic inserts



Cutting edge style **G**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSCGCR/L1212H06	12	12	100	12	12	16	0.4	CC**0602...	1.2
JSCGCR/L1616H09	16	16	100	16	16	20	0.8	CC**09T3...	1.2

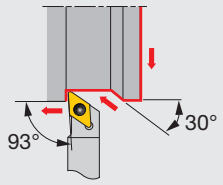
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

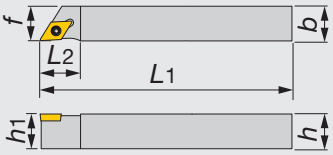
Designation	Clamping screw	Wrench
JSCGCR/L1212H06	CSTB-2.5	T-8F
JSCGCR/L1616H09	CSTB-4SD	T-8F

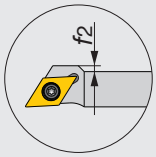
J-SERIES
JSDJ2CR/L

Screw-on toolholder without offset with 93° approach angle for positive 55° rhombic inserts



Cutting edge style **J2**





Without offset
JSDJ2CR/L1010X11
JSDJ2CR/L1212F11
JSDJ2CR/L1212X11

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSDJ2CR/L0808F07	8	8	85	14	8	8	-	0.2	DC**0702...	1.2
JSDJ2CR/L1010X07	10	10	120	14	10	10	-	0.2	DC**0702...	1.2
JSDJ2CR/L1010X11	10	10	120	20	10	10	4	0.2	DC**11T3...	1.2
JSDJ2CR/L1212F07	12	12	85	14	12	12	-	0.2	DC**0702...	1.2
JSDJ2CR/L1212F11	12	12	85	20	12	12	2	0.2	DC**11T3...	1.2
JSDJ2CR/L1212X07	12	12	120	14	12	12	-	0.2	DC**0702...	1.2
JSDJ2CL1212K07	12	12	125	14	12	12	-	0.4	DC**0702...	1.2
JSDJ2CR/L1212X11	12	12	120	20	12	12	2	0.2	DC**11T3...	1.2
JSDJ2CR/L1616X11	16	16	120	20	16	16	-	0.2	DC**11T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

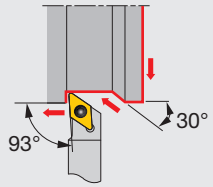
Designation	Clamping screw	Wrench
JSDJ2CR/L**07	CSTB-2.5	T-8F
JSDJ2CR/L**11	CSTB-4SD	T-8F

JSCGCR/L: Inserts → **B104 -**, CBN → **B168 -**, PCD → **B177**

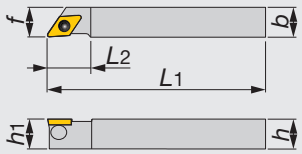
JSDJ2CR/L: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

J-SERIES
JTDJ2CR/L

Back clamp toolholder without offset with 93° approach angle for positive 55° rhombic inserts

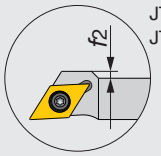


Cutting edge style **J2**



Without offset

JTDJ2CR/L1212F11
JTDJ2CR/L1212X11



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JTDJ2CR/L1010X07	10	10	120	14	10	10	-	0.2	DC**0702...	0.9
JTDJ2CR/L1212F07	12	12	85	14	12	12	-	0.2	DC**0702...	0.9
JTDJ2CR/L1212X07	12	12	120	14	12	12	-	0.2	DC**0702...	0.9
JTDJ2CR/L1212F11	12	12	85	20	12	12	2	0.2	DC**11T3...	1.2
JTDJ2CR/L1212X11	12	12	120	20	12	12	2	0.2	DC**11T3...	1.2
JTDJ2CL1212M11	12	12	150	20	12	12	-	0.8	DC**11T3...	1.2
JTDJ2CR/L1616X11	16	16	120	20	16	16	-	0.2	DC**11T3...	1.2

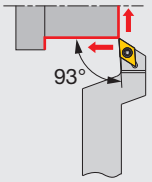
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

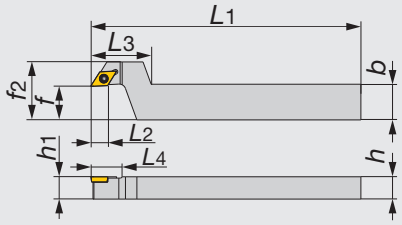
Designation	Clamp	Clamping screw	Wrench
JTDJ2CR/L**07	JCP-2	JDS-3525	P-2F
JTDJ2CR/L**11	JCP-3	JDS-5040	P-2.5F

J-SERIES
JSDJCR-F

Screw-on stepped-head toolholder with 93° approach angle for positive 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*L*3	*L*4	*h*1	*f*	f2	*r*ε**	Insert	Torque*
JSDJCR1016X07-F15	10	16	120	12.5	27	14	10	15	26	0.2	DC**0702...	1.2
JSDJCR1216F07-F15	12	16	85	12.5	27	14	12	15	26	0.2	DC**0702...	1.2
JSDJCR1216X07-F15	12	16	120	12.5	27	14	12	15	26	0.2	DC**0702...	1.2
JSDJCR1216F11-F15	12	16	85	12.5	27	20	12	15	28	0.2	DC**11T3...	1.2
JSDJCR1216X11-F15	12	16	120	12.5	27	20	12	15	28	0.2	DC**11T3...	1.2
JSDJCR1620X11-F15	16	20	120	12.5	27	20	16	15	28	0.2	DC**11T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

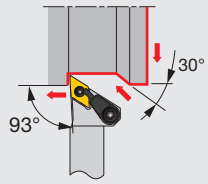
SPARE PARTS

Designation	Clamping screw	Wrench
JSDJCR**07-F15	CSTB-2.5	T-8F
JSDJCR**11-F15	CSTB-4SD	T-8F

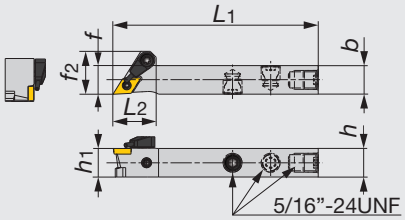
JTDJ2CR/L, JSDJCR-F: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

JSDJ2CR/L-CHP

Screw-on toolholder without offset with 93° approach angle for positive 55° rhombic inserts, with channels for high pressure coolant



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSDJ2CR/L1212F07-CHP	12	12	85	18	12	12	18	0.2	DC**0702...	1.2
JSDJ2CR/L1212F11-CHP	12	12	85	19	12	12	20.5	0.2	DC**11T3...	1.2

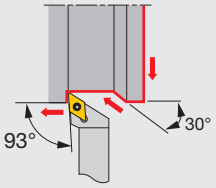
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

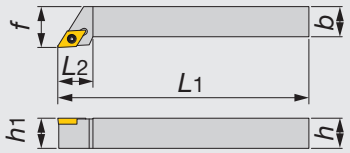
Designation	Clamping screw	Coolant unit	Wrench
JSDJ2CR/L1212F07-CHP	CSTB-2.5	S-CU-CHP	T-8F
JSDJ2CR/L1212F11-CHP	CSTB-4SD	S-CU-CHP	T-8F

JSDJCR/L

Screw-on toolholder with 93° approach angle for positive 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSDJCR/L0808H07	8	8	100	14	8	10	0.4	DC**0702...	1.2
JSDJCR/L1010H11	10	10	100	18	10	12	0.8	DC**11T3...	1.2
JSDJCR/L1212H07	12	12	100	14	12	16	0.4	DC**0702...	1.2
JSDJCR/L1212H11	12	12	100	18	12	16	0.8	DC**11T3...	1.2
JSDJCR/L1616H11	16	16	100	18	16	20	0.8	DC**11T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

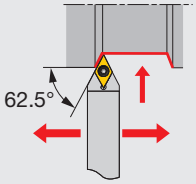
SPARE PARTS

Designation	Clamping screw	Wrench
JSDJC**H07	CSTB-2.5	T-8F
JSDJC**H11	CSTB-4SD	T-8F

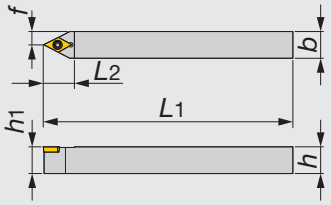
JSDJ2CR/L-CHP, JSDJCR/L: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

J-SERIES
JSDNCN

Screw-on toolholder with 62.5° approach angle for positive 55° rhombic inserts



Cutting edge style **N**



Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSDNCN1010X07	10	10	120	15	10	5	0.2	DC**0702...	1.2
JSDNCN1010X11	10	10	120	21	10	5	0.2	DC**11T3...	1.2
JSDNCN1212F07	12	12	85	15	12	6	0.2	DC**0702...	1.2
JSDNCN1212X07	12	12	120	15	12	6	0.2	DC**0702...	1.2
JSDNCN1212F11	12	12	85	21	12	6	0.2	DC**11T3...	1.2
JSDNCN1212H11	12	12	100	21	12	6	0.8	DC**11T3...	1.2
JSDNCN1212X11	12	12	120	21	12	6	0.2	DC**11T3...	1.2
JSDNCN1616X11	16	16	120	21	16	8	0.2	DC**11T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

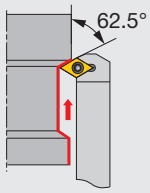
SPARE PARTS



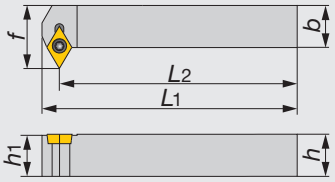

Designation	Clamping screw	Wrench
JSDNCN**07	CSTB-2.5	T-8F
JSDNCN**11	CSTB-4SD	T-8F

J-SERIES
JSDN3CR/L

Screw-on toolholder with 62.5° approach angle (N3-style) for positive 55° rhombic inserts



Cutting edge style **N3**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSDN3CR1212H07	12	12	105	100	12	18	0.4	DC**0702...	1.2
JSDN3CR1616H11	16	16	107	100	16	25	0.8	DC**11T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

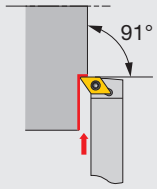



Designation	Clamping screw	Wrench
JSDN3CR1212H07	CSTB-2.5	T-8F
JSDN3CR1616H11	CSTB-4SD	T-8F

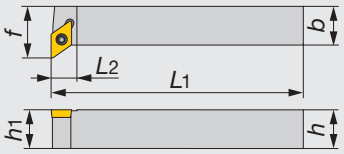
JSDNCN, JSDN3CR/L: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

J-SERIES
JSDFCR/L

Screw-on toolholder for facing with 91° approach angle for positive 55° rhombic inserts



Cutting edge style **F**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSDFCR/L1212H07	12	12	100	8	12	16	0.4	DC**0702...	1.2
JSDFCR/L1616H11	16	16	100	10.5	16	22	0.8	DC**11T3...	1.2

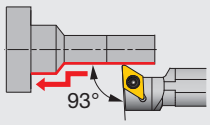
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Wrench
JSDFCR/L1212H07	CSTB-2.5	T-8F
JSDFCR/L1616H11	CSTB-4SD	T-8F

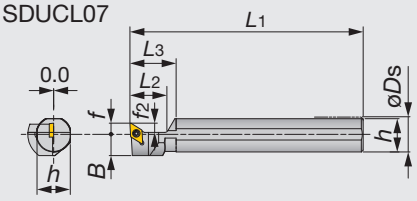
J-SERIES
JS-SDUCL

Screw-on toolholder with 93° approach angle for positive 55° rhombic inserts

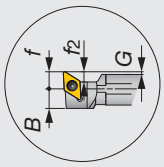


Cutting edge style **U**

SDUCL07



SDUCL11



Left hand (L) shown.

Designation	ø*D*s	*f*	*f*2	*L*1	*L*2	*L*3	*h*	B	G	*r*ε**	Insert	Torque*
JS19K-SDUCL07	19.05	6	5	125	20	25	18	11.5	-	0.4	DC**0702...	1.2
JS20K-SDUCL07	20	6	5	125	20	25	19	11.5	-	0.4	DC**0702...	1.2
JS22K-SDUCL07	22	6	5	125	20	25	21	11.5	-	0.4	DC**0702...	1.2
JS19K-SDUCL11	19.05	10	6	125	20	25	18	11.5	1.525	0.8	DC**11T3...	1.2
JS20K-SDUCL11	20	10	6	125	20	25	19	11.5	1	0.8	DC**11T3...	1.2
JS22K-SDUCL11	22	11	6	125	20	25	21	11.5	1	0.8	DC**11T3...	1.2
JS25K-SDUCL11	25.4	12	6	125	20	25	24	12.7	0.7	0.8	DC**11T3...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

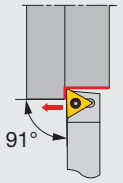
SPARE PARTS

Designation	Clamping screw	Wrench
JS**K-SDUCL07	CSTB-2.5	T-8F
JS**K-SDUCL11	CSTB-4SD	T-8F

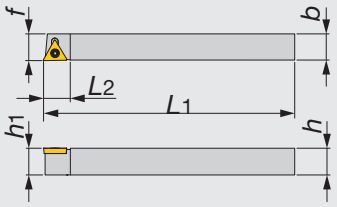
JSDFCR/L, JS-SDUCL: Inserts → **B114 -**, CBN → **B168 -**, PCD → **B177**

J-SERIES
JSTACR/L

Screw-on toolholder without offset with 91° approach angle for positive 60° triangle inserts



Cutting edge style **A**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert	Torque*
JSTACR/L0808K08	8	8	125	10	8	8	0.2	TC**0802...	0.6
JSTACR/L1010K08	10	10	125	10	10	10	0.2	TC**0802...	0.6
JSTACR/L1212K11	12	12	125	12	12	12	0.4	TC**1102...	1.2
JSTACR/L1616H11	16	16	100	12	16	16	0.4	TC**1102...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

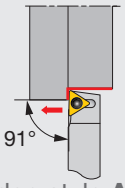
SPARE PARTS



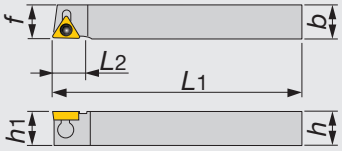

Designation	Clamping screw	Wrench
JSTACR/L**K08	CSTB-2L	T-6F
JSTACR/L**11	CSTB-2.5	T-8F

J-SERIES
JTTACR/L

Back clamp toolholder without offset with 91° approach angle for positive 60° triangle inserts



Cutting edge style **A**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert	Torque*
JTTACL0810K08	8	10	125	10	8	10	0.2	TC**0802...	0.9
JTTACR/L1212M11	12	12	150	12	12	12	0.4	TC**1102...	0.9
JTTACR/L1616M11	16	16	150	12	16	16	0.4	TC**1102...	0.9

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS



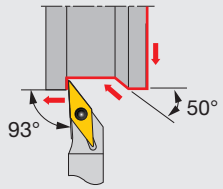


Designation	Clamp	Clamping screw	Wrench
JTTACL0810K08	JCP-1	JDS-3525	P-2F
JTTACR/L**M11	JCP-2	JDS-3525	P-2F

JSTACR/L, JTTACR/L: Inserts → **B126 -**, PCD → **B177**

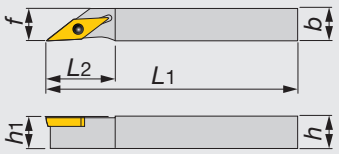
JSVJ2BR/L

Screw-on toolholder without offset with 93° approach angle for positive 35° rhombic inserts



Cutting edge style **J2**

Without offset



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSVJ2BR/L1010X11	10	10	120	21	10	10	0.2	VB**1103...	1.2
JSVJ2BL1010K11	10	10	125	21	10	10	0.2	VB**1103...	1.2
JSVJ2BR/L1212F11	12	12	85	21	12	12	0.2	VB**1103...	1.2
JSVJ2BR/L1212X11	12	12	120	21	12	12	0.2	VB**1103...	1.2
JSVJ2BR1212K11	12	12	125	21	12	12	0.2	VB**1103...	1.2
JSVJ2BR/L1616X11	16	16	120	21	16	16	0.2	VB**1103...	1.2

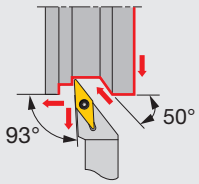
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

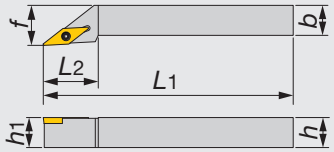
Designation	Clamping screw	Wrench
JSVJ2BR/L...	CSTB-2.5	T-8F

JSVJBR/L

Screw-on toolholder with 93° approach angle for positive 35° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSVJBR/L1010H11	10	10	100	20	10	12	0.4	VB**1103...	1.2
JSVJBR/L1212H11	12	12	100	22	12	16	0.4	VB**1103...	1.2
JSVJBR/L1616H11	16	16	100	22	16	20	0.4	VB**1103...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

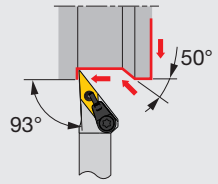
Designation	Clamping screw	Wrench
JSVJBR/L...	CSTB-2.5	T-8F

JSVJ2BR/L, JSVJBR/L: Inserts → **B142 -**, CBN → **B169 -**

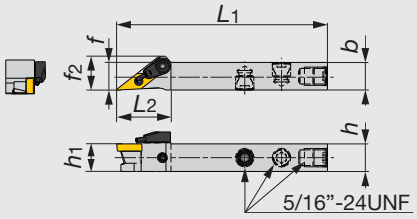
J-SERIES

JSVJ2BR/L-CHP

Screw-on toolholder without offset with 93° approach angle for positive 35° rhombic inserts, with channels for high pressure coolant



Cutting edge style **J2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSVJ2BR/L1212F11-CHP	12	12	85	23.6	12	12	14.7	0.2	VB**1103...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

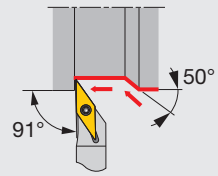
SPARE PARTS

Designation	Clamping screw	Coolant unit	Wrench
JSVJ2BR/L1212F11-CHP	CSTB-2.5	S-CU-CHP	T-8F

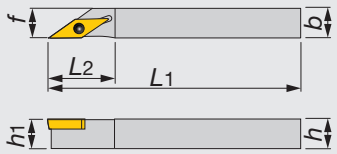
J-SERIES

JSVABR/L

Screw-on toolholder without offset with 91° approach angle for positive 35° rhombic inserts



Cutting edge style **A**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSVABR/L1010K11	10	10	125	21	10	10	0.2	VB**1103...	1.2
JSVABL1212K11	12	12	125	21	12	12	0.2	VB**1103...	1.2
JSVABL1616K11	16	16	125	21	16	16	0.2	VB**1103...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

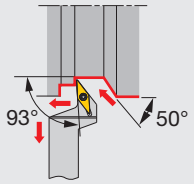
SPARE PARTS

Designation	Clamping screw	Wrench
JSVABR/L...	CSTB-2.5	T-8F

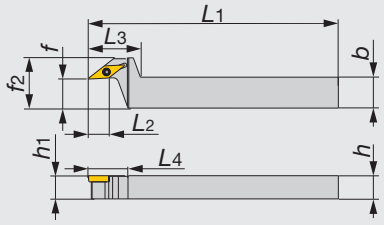
JSVJ2BR/L-CHP, JSVABR/L: Inserts → **B142 -**, CBN → **B169 -**

JSVJBR-F

Screw-on stepped-head toolholder with 93° approach angle for positive 35° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*L*3	*L*4	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSVJBR1216F11-F15	12	16	85	12.6	27	21	12	15	26	0.2	VB**1103...	1.2
JSVJBR1216X11-F15	12	16	120	12.6	27	21	12	15	26	0.2	VB**1103...	1.2
JSVJBR1620X11-F15	16	20	120	12.6	27	21	16	15	26	0.2	VB**1103...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

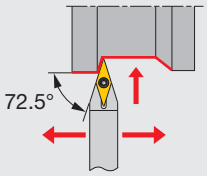



Designation	Clamping screw	Wrench
JSVJBR**-F15	CSTB-2.5	T-8F

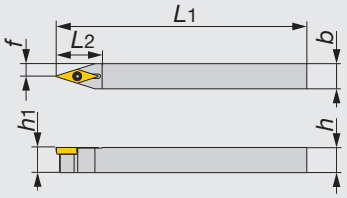
JSVJBR-F: Inserts → **B142 -**, CBN → **B169 -**

JSVNBN

Screw-on toolholder with 72.5° approach angle for positive 35° rhombic inserts



Cutting edge style **N**



Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert	Torque*
JSVNBN1010X11	10	10	120	22	10	5	0.2	VB**1103...	1.2
JSVNBN1212F11	12	12	85	22	12	6	0.2	VB**1103...	1.2
JSVNBN1212X11	12	12	120	22	12	6	0.2	VB**1103...	1.2
JSVNBN1616X11	16	16	120	22	16	8	0.2	VB**1103...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

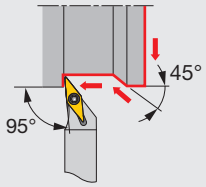
SPARE PARTS

Designation	Clamping screw	Wrench
JSVNBN...	CSTB-2.5	T-8F

JSVNBN: Inserts → **B142 -**, CBN → **B169 -**

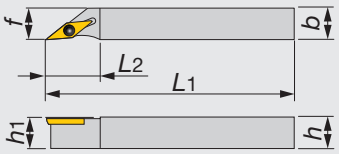
JSVL2PR/L

Screw-on toolholder without offset with 95° approach angle for positive 35° rhombic inserts



Cutting edge style **L2**

Without offset



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JSVL2PR/L1010X08	10	10	120	16	10	10	0.2	VP**0802...	0.6
JSVL2PR/L1010K08	10	10	125	16	10	10	0.2	VP**0802...	0.6
JSVL2PR/L1212F08	12	12	85	16	12	12	0.2	VP**0802...	0.6
JSVL2PR/L1212F11	12	12	85	21	12	12	0.2	VP**1103...	1.2
JSVL2PR/L1212X08	12	12	120	16	12	12	0.2	VP**0802...	0.6
JSVL2PR/L1212X11	12	12	120	21	12	12	0.2	VP**1103...	1.2
JSVL2PR/L1212K08	12	12	125	16	12	12	0.2	VP**0802...	0.6
JSVL2PR/L1616X08	16	16	120	16	16	16	0.2	VP**0802...	0.6
JSVL2PL1616K08	16	16	125	16	16	16	0.2	VP**0802...	0.6
JSVL2PR/L1616X11	16	16	120	21	16	16	0.2	VP**1103...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

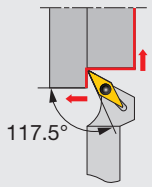
SPARE PARTS




Designation	Clamping screw	Wrench
JSVL2PR/L**08	CSTB-2L	T-6F
JSVL2PR/L**11	CSTB-2.5	T-8F

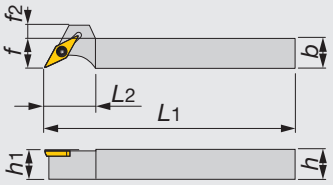
JSVP2PR/L

Screw-on toolholder without offset with 117.5° approach angle for positive 35° rhombic inserts



Cutting edge style **P2**

Without offset



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
JSVP2PR/L1010K08	10	10	125	16	10	10	4	0.2	VP**0802...	0.6
JSVP2PR/L1010K11	10	10	125	20	10	10	8	0.2	VP**1103...	1.2
JSVP2PR/L1212K08	12	12	125	16	12	12	2	0.2	VP**0802...	0.6
JSVP2PR/L1212K11	12	12	125	20	12	12	6	0.2	VP**1103...	1.2
JSVP2PR/L1616K08	16	16	125	16	16	16	2	0.2	VP**0802...	0.6
JSVP2PR/L1616K11	16	16	125	20	16	16	6	0.2	VP**1103...	1.2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

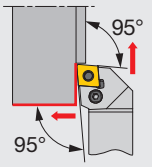



Designation	Clamping screw	Wrench
JSVP2PR/L**08	CSTB-2L	T-6F
JSVP2PR/L**11	CSTB-2.5	T-8F

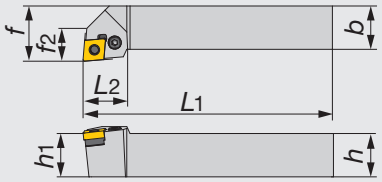
JSVL2PR/L, JSVP2PR/L: Inserts → **B147**

PCLNR

Lever lock type toolholder with 95° approach angle for negative 80° rhombic inserts



Cutting edge style **L**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
PCLNR2020H12	20	20	100	26	20	25	18	0.8	CN**1204...	3

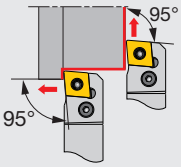
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

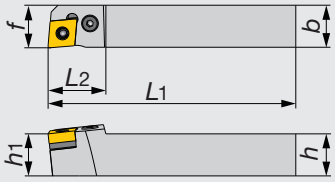
Designation	Shim	Clamping screw	Lever	Spring pin	Wrench
PCLNR2020H12	LSC42	LCS4	LCL4	LSP4	P-3

PCL2NR

Lever lock type toolholder without offset with 95° approach angle for negative 80° rhombic inserts



Cutting edge style **L2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
PCL2NR2020H12	20	20	100	26	20	20	0.8	CN**1204...	3

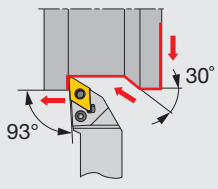
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

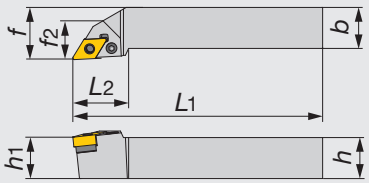
Designation	Shim	Clamping screw	Lever	Spring pin	Wrench
PCL2NR2020H12	LSC42	LCS4	LCL4	LSP4	P-3

PDJNR

Lever lock type toolholder with 93° approach angle for negative 55° rhombic inserts



Cutting edge style **J**



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*f*2	*r*ε**	Insert	Torque*
PDJNR2020H15	20	20	100	32	20	25	20	0.8	DN**1504...	3

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

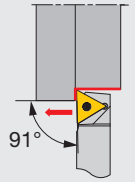
Designation	Shim	Clamping screw	Lever	Spring pin	Wrench
PDJNR2020H15	LSD42	LCS4	LCL4	LSP4	P-3

PCLNR, PCL2NR: Inserts → **B050 -**

PDJNR: Inserts → **B061 -**

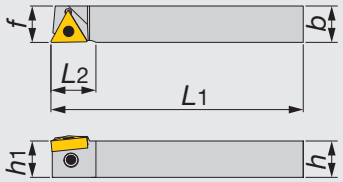
J-SERIES
JTTANR/L

Back clamp toolholder without offset with 91° approach angle for negative 60° triangular inserts



Cutting edge style **A**

Without offset



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JTTANR/L1216K16	12	16	125	19.8	12	16	0.4	TN**1604...	1.2
JTTANR/L1616K16	16	16	125	19.8	16	16	0.4	TN**1604...	1.2

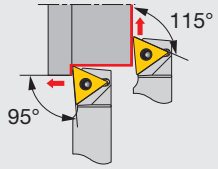
*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Clamp	Clamping screw	Wrench
JTTANR/L...	JCP-3N	JDS-5040	P-2.5F

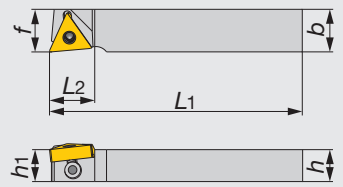
J-SERIES
JTTLNR/L

Back clamp toolholder without offset with 95° approach angle for negative 60° triangular inserts



Cutting edge style **L**

Without offset



Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*r*ε**	Insert	Torque*
JTTLNR/L1216F16	12	16	85	17	12	16	0.4	TN**1604...	1
JTTLNR/L1216X16	12	16	120	17	12	16	0.4	TN**1604...	1
JTTLNR/L1616X16	16	16	120	17	16	16	0.4	TN**1604...	1

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

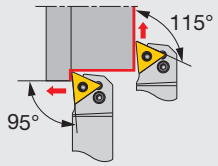
SPARE PARTS

Designation	Clamp	Clamping screw	Wrench
JTTLNR/L...	JCP-3N	JDS-5040	P-2.5F

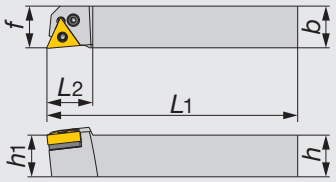
JTTANR/L, JTTLNR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176 -**

PTL2NR/L

Lever lock type toolholder without offset with 95° approach angle for negative 60° triangular inserts



Cutting edge style **L2**



Without offset

Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	*f*	r_ε**	Insert	Torque*
PTL2NR/L2020H16	20	20	100	22	20	20	0.4	TN**1604...	2

*Torque: Recommended torque (N·m) for clamping
**r_ε: Standard corner radius

SPARE PARTS

Designation	Shim	Clamping screw	Lever	Spring pin	Wrench
PTL2NR/L2020H16	LST317	LCS3	LCL3	LSP3	P-2.5

PARTS FOR COOLANT HOSE

Connecting hose

Fig. 1

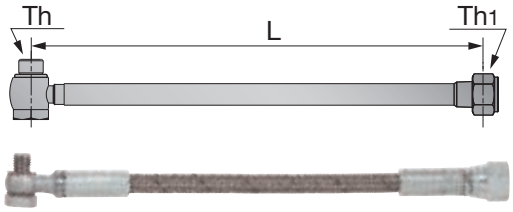
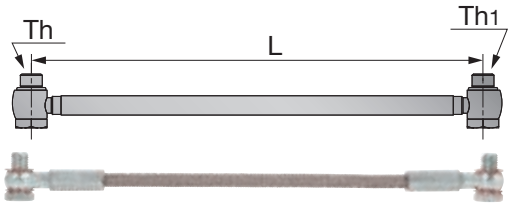
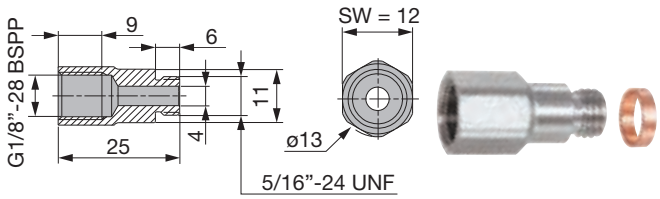


Fig. 2



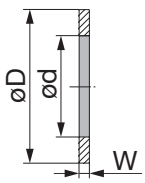
Designation	L	Th	Th1	Max. pressure (Mpa)	Fig.
CHP-HOSE-G1/8-7/16-200BS	200	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-G1/8-7/16-250BS	250	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-5/16-7/16-200BS	200	5/16"-24UNF	7/16"-20 UNF	20	1
CHP-HOSE-5/16-G1/8-200BS	200	5/16"-24UNF	G1/8"-28 BSPP	20	1
CHP-HOSE-G1/8-G1/8-200BB	200	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2
CHP-HOSE-G1/8-G1/8-250BB	250	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2

Connector for small lathe with seal washer



Designation
CHP-CONECTOR/5/16-G1/8

Seal washer



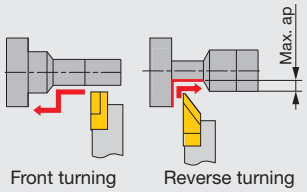


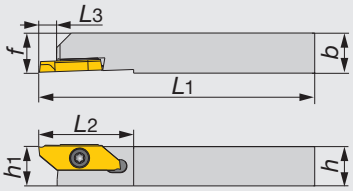
Designation	øD	ød	W
CHP-COPPER-SEAL1/8	15	10	1
CHP-COPPER-SEAL5/16	11	8	1
CHP-COPPER-SEAL5/16-2.5	11	8	2.5

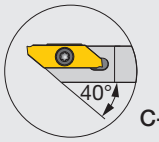
PTL2NR/L: Inserts → **B079 -**, CBN → **B164 -**, PCD → **B176 -**

JSXGR/L

Screw-on toolholder without offset for front / reverse turning & external grooving







Without offset

C-type

Right hand (R) shown.

Designation	h	b	L1	L2	L3	h1	f	Insert
JSXGR/L1010K8-C	10	10	125	29	6.7	10	10	JXFR/L8..., JXRR/L8...
JSXGR/L1212K8-C	12	12	125	29	6.7	12	12	JXFR/L8..., JXRR/L8...
JSXGR/L1616K8	16	16	125	29	6.5	16	16	JXFR/L8..., JXRR/L8...
JSXGR/L2020K8	20	20	125	29	6.5	20	20	JXFR/L8..., JXRR/L8...
JSXGR/L2525K8	25	25	125	29	6.5	25	25	JXFR/L8..., JXRR/L8...

- Can be wrenched also from the back with a double-head screw.
- This toolholders can be used for JXF insert (front-turning), JXR insert (reverse-turning), JXG insert (grooving)

SPARE PARTS

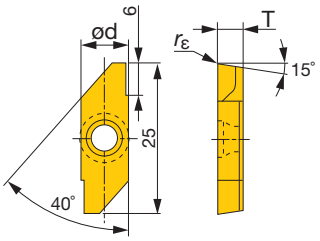
Designation	Clamping screw	Wrench	Wrench 1
JSXGR/L...	CSTB-4SD	T-8F	(T-8L)

*Optional

INSERT

JXF (front turning, sharp edge)





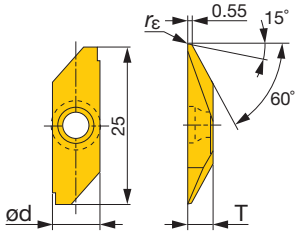
Right hand (R) shown.

Designation	rε	Coating J740 R	Coating J740 L	Uncoated TH10 R	Uncoated TH10 L	ød	T	Max. depth of cut
JXFR/L8000F	0.03	●		●		8	3.97	5.5
JXFR/L8010F	0.1	●		●		8	3.97	5.5

● : Line-up

JXR (reverse turning, sharp edge)





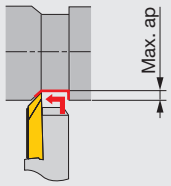
Right hand (R) shown.

Designation	rε	Coating J740 R	Coating J740 L	Uncoated TH10 R	Uncoated TH10 L	ød	T	Max. depth of cut
JXRR/L8000F	0.03	●		●		8	3.97	5.5
JXRR/L8010F	0.1	●		●		8	3.97	5.5

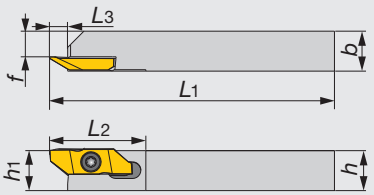
● : Line-up

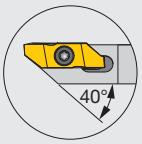
JSXBR/L

Screw-on toolholder for back turning and threading



Max. ap = 5.5 mm





C-type

Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	L_3	h_1	*f*	Insert
JSXBR/L1010K8-C	10	10	125	29	6.7	10	5.7	JXBR/L8..., JXT*R...
JSXBR/L1212K8-C	12	12	125	29	6.7	12	7.7	JXBR/L8..., JXT*R...
JSXBR/L1616K8	16	16	125	29	6.4	16	11.7	JXBR/L8..., JXT*R...
JSXBR/L2020K8	20	20	125	29	6.4	20	15.7	JXBR/L8..., JXT*R...
JSXBR/L2525K8	25	25	125	29	6.4	25	20.7	JXBR/L8..., JXT*R...

- Can be wrenched also from the back with a double-head screw.
- This toolholders can be used for JXB insert (back-turning), JXT insert (threading)

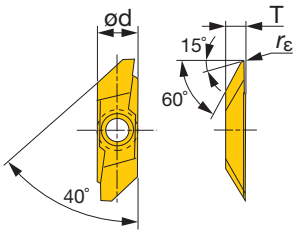
SPARE PARTS

Designation	Clamping screw	Wrench
JSXBR/L...	CSTB-4SD	T-8F

INSERT

JXB (sharp edge)





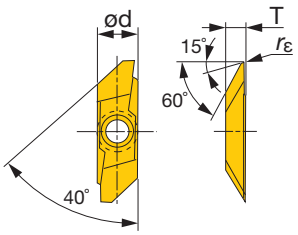
Right hand (R) shown.

Designation	rε	Coating J740 R	Coating J740 L	Uncoated TH10 R	Uncoated TH10 L	ød	T	Max. depth of cut
JXBR/L8000F	0.03	●	●	●	●	8	3.97	5.5
JXBR/L8005F	0.05	●	●	●	●	8	3.97	5.5
JXBR/L8010F	0.1	●	●	●	●	8	3.97	5.5
JXBR/L8015F	0.15	●	●	●	●	8	3.97	5.5

● : Line-up

JXB (with horning)



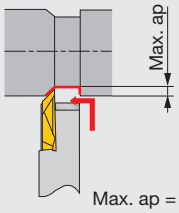


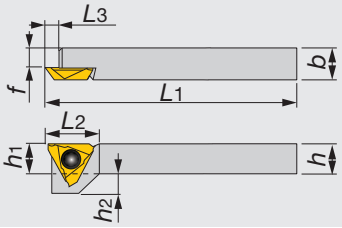
Right hand (R) shown.

Designation	rε	Coating J740 R	Coating J740 L	ød	T	Max. depth of cut
JXBR/L8005	0.05	●	●	8	3.97	5.5
JXBR/L8010	0.1	●	●	8	3.97	5.5
JXBR/L8015	0.15	●	●	8	3.97	5.5

● : Line-up

J-SERIES
JSTBR/L
Screw-on toolholder for back turning





Right hand (R) shown.

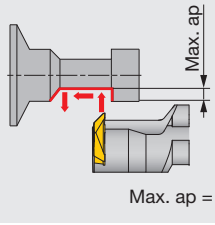
Designation	*h*	*b*	*L*1	*L*2	*L*3	*h*1	*f*	*h*2	Insert	Torque*
JSTBR/L1010X3	10	10	120	15	5	10	6	5	JTBR/L3...	1.2
JSTBL1010K3	10	10	125	15	5	10	6	5	JTBR/L3...	1.2
JSTBR/L1212F3	12	12	85	15	5	12	8	3	JTBR/L3...	1.2
JSTBR/L1212X3	12	12	120	15	5	12	8	3	JTBR/L3...	1.2
JSTBR/L1616X3	16	16	120	15	5	16	12	-	JTBR/L3...	1.2

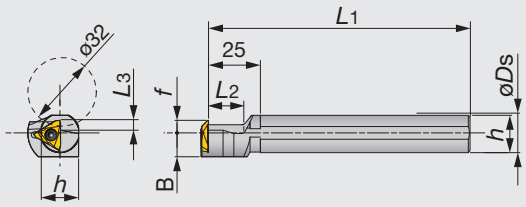
*Torque: Recommended torque (N·m) for clamping

SPARE PARTS

Designation	Clamping screw	Wrench
JSTBR/L...	CSTB-4SD	T-8F

J-SERIES
JS-TBL3
Screw-on toolholder for back turning





Designation	ø*D*s	*f*	*L*1	*L*2	*L*3	*h*	B	Insert	Torque*
JS19K-TBL3	19.05	6	125	17	4.5	18	11.5	JTBR3...	3
JS20K-TBL3	20	6	125	17	4.5	19	11.5	JTBR3...	3
JS22K-TBL3	22	6	125	17	4.5	21	11.5	JTBR3...	3
JS25K-TBL3	25.4	10	125	17	4.5	24	12.7	JTBR3...	3

*Torque: Recommended torque (N·m) for clamping

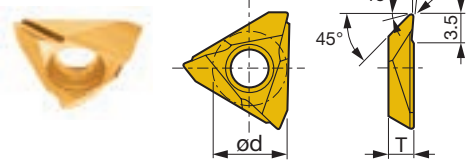
SPARE PARTS

Designation	Clamping screw	Wrench
JS**-TBL3	CSTB-4S	T-15F

JSTBR/L, JS-TBL3: Inserts → **B348**, Standard cutting conditions → **B348**

INSERT

JTB (sharp edge)

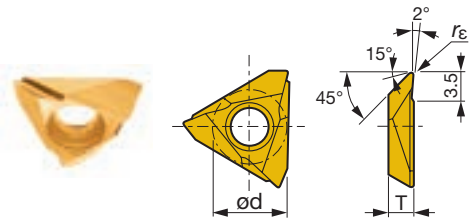


Right hand (R) shown.

Designation	rε	Coating				Cermet		Uncoated		ød	T	Max. depth of cut
		J740		SH725		NS9530		TH10				
		R	L	R	L	R	L	R	L			
JTBR/L3000F	0.03	●	●	●	●			●	●	9.438	3.18	2.5
JTBR/L3005F	0.05	●	●	●	●			●	●	9.438	3.18	2.5
JTBR/L3010F	0.1	●	●	●	●	●	●	●	●	9.438	3.18	2.5
JTBR/L3015F	0.15	●		●	●					9.438	3.18	2.5

● : Line-up

JTB (with horning)



Right hand (R) shown.

Designation	rε	Coating		Coated cermet		ød	T	Max. depth of cut
		J740		J9530				
		R	L	R	L			
JTBR/L3005	0.05	●	●	●		9.438	3.18	2.5
JTBR/L3010	0.1	●	●	●		9.438	3.18	2.5

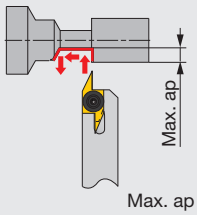
● : Line-up

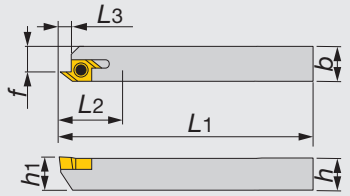
STANDARD CUTTING CONDITIONS (JTB type insert)

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	General steel (C45, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
		NS9530	50 - 150	0.01 - 0.1
		J9530	50 - 150	0.01 - 0.1
	Free-cutting steel (11SMn28, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
M	Stainless steel (X10CrNiS18-9, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
		NS9530	50 - 150	0.01 - 0.1
		J9530	50 - 150	0.01 - 0.1
N	Aluminium alloys, Brass (Si < 12%, C3604B / CW614N, etc.)	TH10	10 - 200	0.01 - 0.1
S	Difficult-to-machine material, Titanium alloys (Ti-6Al-4V, etc.)	TH10	10 - 30	0.01 - 0.1

JSEGR/L

Screw-on toolholder for back turning





Designation	*h*	*b*	L_1	L_2	L_3	h_1	*f*	Insert	Torque*
JSEGR/L1010K10	10	10	125	-	3.3	10	7.5	J10ER/L...	1.2
JSEGR/L1212K10	12	12	125	-	3.3	12	9.5	J10ER/L...	1.2
JSEGR/L1616K10	16	16	125	-	3.3	16	13.5	J10ER/L...	1.2

*Torque: Recommended torque (N·m) for clamping

SPARE PARTS



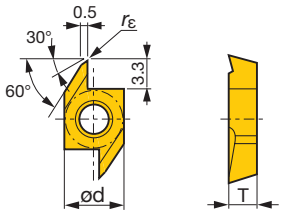


Designation	Clamping screw	Wrench
JSEGR/L...	CSTB-2.5	T-8F

INSERT

J10E (sharp edge)





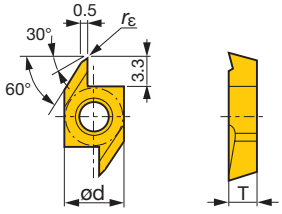
Right hand (R) shown.

Designation	rε	Coating				Cermet		Uncoated		ød	T	Max. depth of cut
		J740		SH725		NS9530		TH10				
		R	L	R	L	R	L	R	L			
J10ER/L005BF	0.05	●	●	●	●	●		●	●	6.35	3.18	3
J10ER/L010BF	0.1	●	●	●	●	●		●	●	6.35	3.18	3
J10ER/L015BF	0.15			●	●					6.35	3.18	3

● : Line-up

J10E (with horning)





Right hand (R) shown.

Designation	rε	Coating		Coated cermet		ød	T	Max. depth of cut
		J740		J9530				
		R	L	R	L			
J10ER/L005B	0.05	●	●	●		6.35	3.18	3
J10ER/L010B	0.1	●	●	●		6.35	3.18	3

● : Line-up

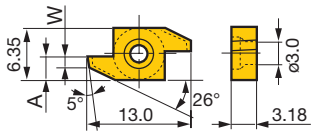
JSEGR/L: Inserts → **B349 -**, Standard cutting conditions → **B350**

STANDARD CUTTING CONDITIONS (J10E type insert)

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	General steel (C45, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
		NS9530	50 - 150	0.01 - 0.1
		J9530	50 - 150	0.01 - 0.1
	Free-cutting steel (11SMn28, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
M	Stainless steel (X10CrNiS18-9, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
		NS9530	50 - 150	0.01 - 0.1
		J9530	50 - 150	0.01 - 0.1
N	Aluminium alloys, Brass (Si < 12%, C3604B / CW614N, etc.)	TH10	10 - 200	0.01 - 0.1
S	Difficult-to-machine material, Titanium alloys (Ti-6Al-4V, etc.)	TH10	10 - 30	0.01 - 0.1

INSERT

10E (Insert blank)



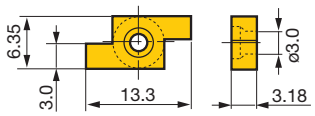
Right hand (R) shown.

Designation	Uncoated TH10 R	Uncoated TH10 L	W	A
10ER/L100B	●	●	1	2.5
10ER/L150B	●	●	1.5	3

● : Line-up

Note: Right hand holder (JSEGR...) use right hand insert (10ER...) and left hand holder (JSEGL...) use left hand insert (10EL...).

10E (Insert blank)



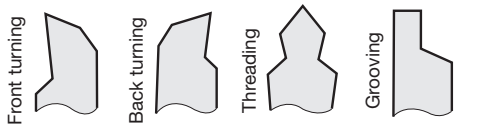
Right hand (R) shown.

Designation	Uncoated TH10 R	Uncoated TH10 L
10ER/L300	●	●

● : Line-up

Note: Right hand holder (JSEGR...) use right hand insert (10ER...) and left hand holder (JSEGL...) use left hand insert (10EL...).

Formed examples of insert blanks



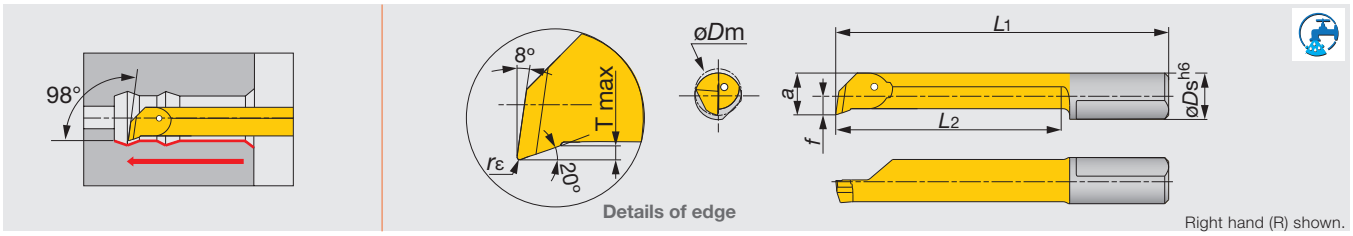
Notes:
- Front relief angle, side relief angle, edge width can be ground depending on the application.
- Insert blanks can be formed to a profiling tool which has a width up to 3 mm.

Standard cutting conditions

Operations	Workpiece material		Carbon steels	Stainless steels	Brass
Lateral feed (external turning)	Cutting speed (m/min)		~ 100	~ 50	~ 200
	Feed (mm/rev)	Roughing	~ 0.06	~ 0.03	~ 0.1
		Medium	~ 0.03	~ 0.025	~ 0.06
		Finishing	~ 0.02	~ 0.015	~ 0.04
Parting-off Grooving Forming	Cutting speed (m/min)		~ 80	~ 30	~ 150
	Feed (mm/rev)	Roughing	~ 0.02	~ 0.015	~ 0.05
		Medium	~ 0.015	~ 0.01	~ 0.03
		Finishing	~ 0.01	~ 0.008	~ 0.015

MEMO

Solid boring bars for boring, profiling & chamfering

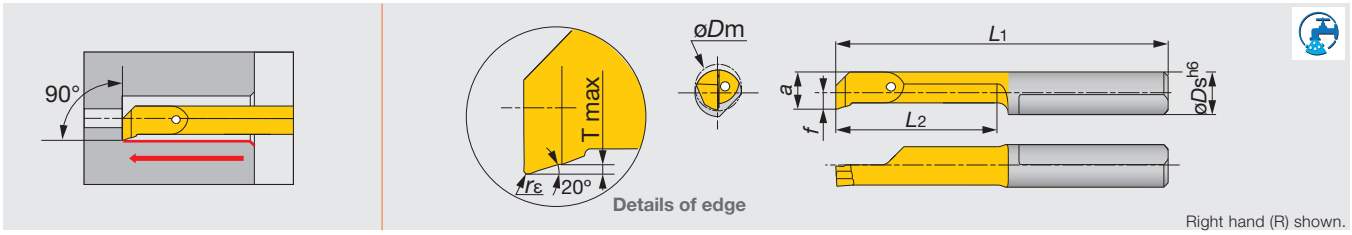


Designation	SH730	øDm	øDs	f	a	L1	L2	T max	rε +0.05 0
JBTR04020004-D006	●	0.6	4	-	0.5	18.5	2	0.08	0.04
JBTR04030004-D006	●	0.6	4	-	0.5	19.5	3	0.08	0.04
JBTR04045005-D010	●	1	4	-	0.9	21	4.5	0.1	0.05
JBTR04065005-D010	●	1	4	-	0.9	23	6.5	0.1	0.05
JBTR04040005-D020	●	2	4	-	1.7	20.5	4	0.1	0.05
JBTR04090005-D020	●	2	4	-	1.7	25.5	9	0.1	0.05
JBTR04140005-D020	●	2	4	-	1.7	30.5	14	0.1	0.05
JBTR/L04090010-D028	●	2.8	4	0.6	2.6	25.5	9	0.2	0.1
JBTR/L04150010-D028	●	2.8	4	0.6	2.6	31.5	15	0.2	0.1
JBTR/L04190010-D028	●	2.8	4	0.6	2.6	35.5	19	0.2	0.1
JBTR/L04090010-D040	●	4	4	1.5	3.5	25.5	9	0.3	0.1
JBTR/L04150010-D040	●	4	4	1.5	3.5	31.5	15	0.3	0.1
JBTR/L04190010-D040	●	4	4	1.5	3.5	35.5	19	0.3	0.1
JBTR04230010-D040	●	4	4	1.5	3.5	39.5	23	0.3	0.1
JBTR04270010-D040	●	4	4	1.5	3.5	43.5	27	0.3	0.1
JBTR/L07090015-D050	●	5	7	0.9	4.4	25	9	0.5	0.15
JBTR/L07140015-D050	●	5	7	0.9	4.4	30	14	0.5	0.15
JBTR/L07190015-D050	●	5	7	0.9	4.4	35	19	0.5	0.15
JBTR/L07240015-D050	●	5	7	0.9	4.4	40	24	0.5	0.15
JBTR/L07290015-D050	●	5	7	0.9	4.4	45	29	0.5	0.15
JBTR07340015-D050	●	5	7	0.9	4.4	50	34	0.5	0.15
JBTR/L07140015-D060	●	6	7	1.8	5.3	30	14	0.5	0.15
JBTR/L07210015-D060	●	6	7	1.8	5.3	37	21	0.5	0.15
JBTR/L07240015-D060	●	6	7	1.8	5.3	40	24	0.5	0.15
JBTR/L07290015-D060	●	6	7	1.8	5.3	45	29	0.5	0.15
JBTR07340015-D060	●	6	7	1.8	5.3	50	34	0.5	0.15
JBTR07410015-D060	●	6	7	1.8	5.3	57	41	0.5	0.15
JBTR/L07190015-D068	●	6.8	7	2.8	6.3	35	19	0.6	0.15
JBTR07240015-D068	●	6.8	7	2.8	6.3	40	24	0.6	0.15
JBTR/L07290015-D068	●	6.8	7	2.8	6.3	45	29	0.6	0.15
JBTR/L07340015-D070	●	7	7	2.8	6.3	50	34	0.6	0.15
JBTR07390015-D070	●	7	7	2.8	6.3	55	39	0.6	0.15
JBTR07440015-D070	●	7	7	2.8	6.3	60	44	0.6	0.15
JBTR07490015-D070	●	7	7	2.8	6.3	65	49	0.6	0.15

● : Line-up

Standard cutting conditions → **B359**

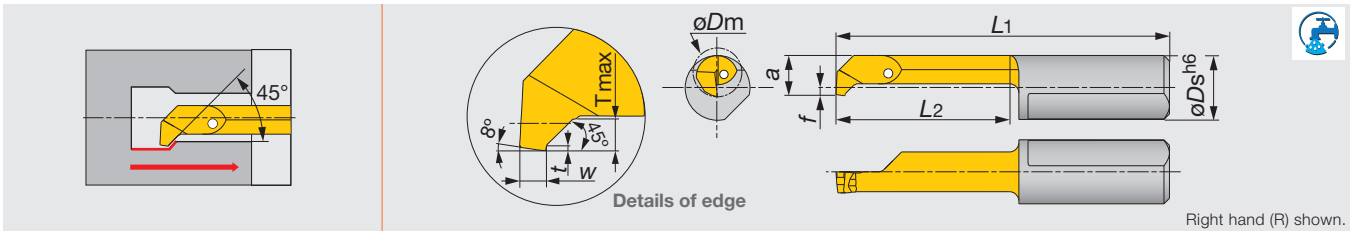
TINY MTURN
JBP R
Solid boring bars for boring & chamfering



Designation	SH730	øDm	øDs	f	a	L1	L2	T max	rε +0.05 0
JBPR04090010-D028	●	2.8	4	0.6	2.6	25.5	9	0.2	0.1
JBPR04150010-D028	●	2.8	4	0.6	2.6	31.5	15	0.2	0.1
JBPR04090010-D040	●	4	4	1.5	3.5	25.5	9	0.3	0.1
JBPR04150010-D040	●	4	4	1.5	3.5	31.5	15	0.3	0.1
JBPR07140015-D050	●	5	7	0.9	4.4	30	14	0.5	0.15
JBPR07190015-D050	●	5	7	0.9	4.4	35	19	0.5	0.15

● : Line-up

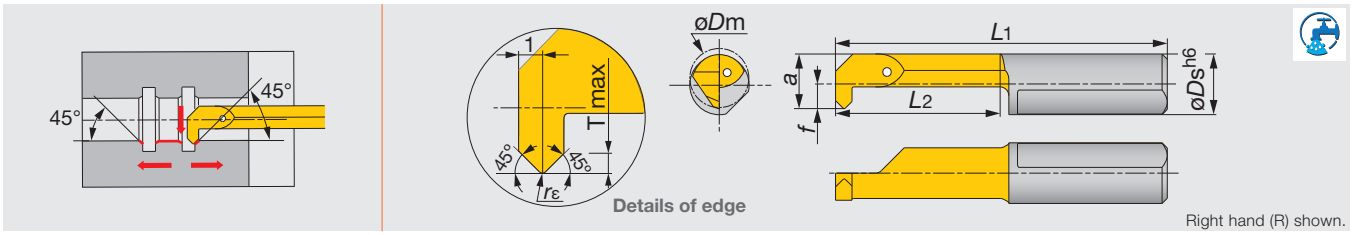
TINY MTURN
JBU R
Solid boring bars for back boring & chamfering



Designation	SH730	øDm	øDs	f	a	L1	L2	t	T max	W +0.05 0
JBUR07140010-D050	●	5	7	0.9	4.4	30	14	0.2	1	1
JBUR07190010-D050	●	5	7	0.9	4.4	35	19	0.2	1	1

● : Line-up

TINY MTURN
JBC R
Solid boring bars for Boring & 45° chamfering



Designation	SH730	øDm	øDs	f	a	L1	L2	T max	rε ±0.05
JBCR07140020-D050	●	5	7	0.9	4.4	30	14	0.7	0.2
JBCR07190020-D050	●	5	7	0.9	4.4	35	19	0.7	0.2
JBCR07190020-D068	●	6.8	7	2.8	6.3	35	19	0.7	0.2

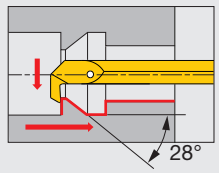
● : Line-up

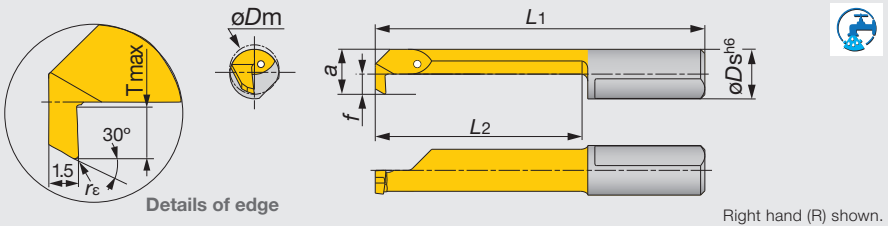
Standard cutting conditions → **B359**

TINY MTURN

JBB R

Solid boring bars for back boring





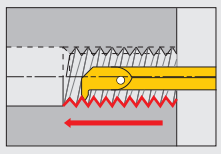
Designation	SH730	øDm	øDs	f	a	L1	L2	T max	rε+0.05
JBBR04140020-D030	●	3	4	0.6	2.6	30	14	0.5	0.2
JBBR04190020-D030	●	3	4	0.6	2.6	35	19	0.5	0.2
JBBR04140015-D040	●	4	4	1.5	3.5	30	14	0.8	0.15
JBBR04240015-D040	●	4	4	1.5	3.5	40	24	0.8	0.15
JBBR07190020-D050	●	5	7	0.9	4.4	35	19	1	0.2
JBBR07290020-D050	●	5	7	0.9	4.4	45	29	1	0.2
JBBR07190020-D060	●	6	7	1.8	5.3	35	19	1.8	0.2
JBBR07290020-D060	●	6	7	1.8	5.3	45	29	1.8	0.2
JBBR07190020-D070	●	7	7	2.8	6.3	35	19	2.5	0.2
JBBR07290020-D070	●	7	7	2.8	6.3	45	29	2.5	0.2

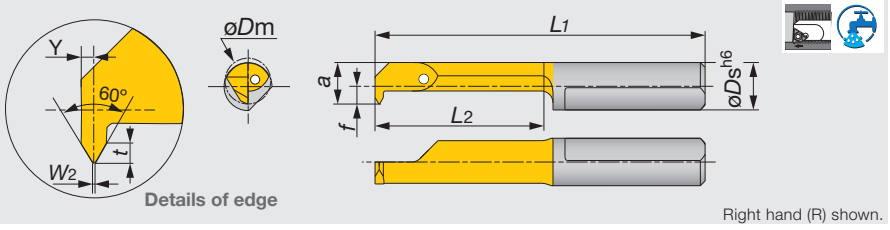
● : Line-up

TINY MTURN

JBI R

Solid boring bars for threading (metric)





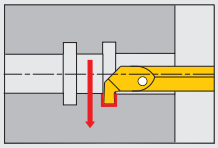
Designation	SH730	Pitch	øDm	W2-0 0.02	øDs	f	a	L1	L2	t	Y
JBIR04140050-D040	●	0.5	4	0.06	4	1.5	3.5	30	14	0.3	0.35
JBIR07140050-D050	●	0.5	5	0.06	7	0.9	4.4	30	14	0.3	0.35
JBIR07140075-D050	●	0.75	5	0.09	7	0.9	4.4	30	14	0.4	0.45
JBIR07140100-D048	●	1	4.8	0.12	7	0.9	4.4	30	14	0.6	0.55
JBIR07140100-D060	●	1	6	0.12	7	1.8	5.3	30	14	0.6	0.55
JBIR07140125-D060	●	1.25	6	0.15	7	1.8	5.3	30	14	0.7	0.65
JBIR07140150-D060	●	1.5	6	0.18	7	1.8	5.3	30	14	0.8	0.75
JBIR07140150-D070	●	1.5	7	0.18	7	2.8	6.3	30	14	0.8	0.75

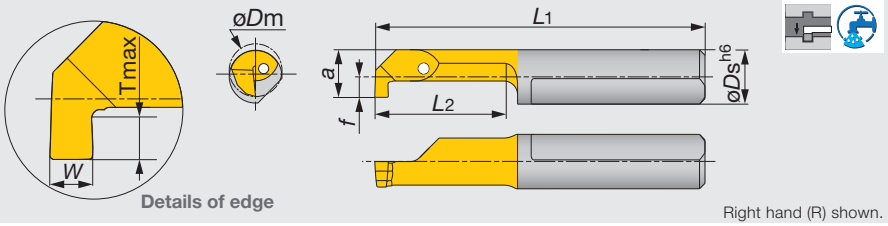
● : Line-up

Standard cutting conditions → **B359**

JBG R/L

Solid boring bars for internal grooving





Designation	SH730	$W^{+0.05}_{0}$	øDm	øDs	f	a	L1	L2	T max
JBGR04050050-D020	●	0.5	2	4	0.2	1.8	21	5	0.4
JBGR04100050-D020	●	0.5	2	4	0.2	1.8	26	10	0.4
JBGR04050070-D030	●	0.7	3	4	0.7	2.7	21	5	0.6
JBGR04100070-D030	●	0.7	3	4	0.7	2.7	26	10	0.6
JBGR04090100-D040	●	1	4	4	1.5	3.5	25.5	9	0.8
JBGR04150100-D040	●	1	4	4	1.5	3.5	31.5	15	0.8
JBGR07090100-D050	●	1	5	7	0.9	4.4	25	9	1
JBGR07140100-D050	●	1	5	7	0.9	4.4	30	14	1
JBGR07090150-D050	●	1.5	5	7	0.9	4.4	25	9	1
JBGR07140150-D050	●	1.5	5	7	0.9	4.4	30	14	1
JBGR07090200-D050	●	2	5	7	0.9	4.4	25	9	1
JBGR07190200-D050	●	2	5	7	0.9	4.4	35	19	1
JBGR/L07090100-D060	●	1	6	7	1.8	5.3	25	9	1.8
JBGR07140100-D060	●	1	6	7	1.8	5.3	30	14	1.8
JBGR07210100-D060	●	1	6	7	1.8	5.3	37	21	1.8
JBGR07290100-D060	●	1	6	7	1.8	5.3	45	29	1.8
JBGR/L07090150-D060	●	1.5	6	7	1.8	5.3	25	9	1.8
JBGR07140150-D060	●	1.5	6	7	1.8	5.3	30	14	1.8
JBGR07210150-D060	●	1.5	6	7	1.8	5.3	37	21	1.8
JBGR07240150-D060	●	1.5	6	7	1.8	5.3	40	24	1.8
JBGR07290150-D060	●	1.5	6	7	1.8	5.3	45	29	1.8
JBGR07090200-D060	●	2	6	7	1.8	5.3	25	9	1.8
JBGR07140200-D060	●	2	6	7	1.8	5.3	30	14	1.8
JBGR07210200-D060	●	2	6	7	1.8	5.3	37	21	1.8
JBGR07240200-D060	●	2	6	7	1.8	5.3	40	24	1.8
JBGR07290200-D060	●	2	6	7	1.8	5.3	45	29	1.8
JBGR07090100-D068	●	1	6.8	7	2.7	6.2	25	9	2.5
JBGR07140100-D068	●	1	6.8	7	2.7	6.2	30	14	2.5
JBGR07210100-D068	●	1	6.8	7	2.7	6.2	37	21	2.5
JBGR07090150-D068	●	1.5	6.8	7	2.7	6.2	25	9	2.5
JBGR07140150-D068	●	1.5	6.8	7	2.7	6.2	30	14	2.5
JBGR07210150-D068	●	1.5	6.8	7	2.7	6.2	37	21	2.5
JBGR07290150-D068	●	1.5	6.8	7	2.7	6.2	45	29	2.5
JBGR07090200-D068	●	2	6.8	7	2.7	6.2	25	9	2.5
JBGR/L07140200-D068	●	2	6.8	7	2.7	6.2	30	14	2.5
JBGR07210200-D068	●	2	6.8	7	2.7	6.2	37	21	2.5
JBGR07250200-D068	●	2	6.8	7	2.7	6.2	40	25	2.5
JBGR07290200-D068	●	2	6.8	7	2.7	6.2	45	29	2.5

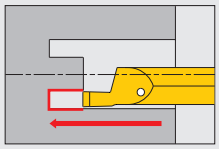
* Corner radius : less than 0.1 mm.

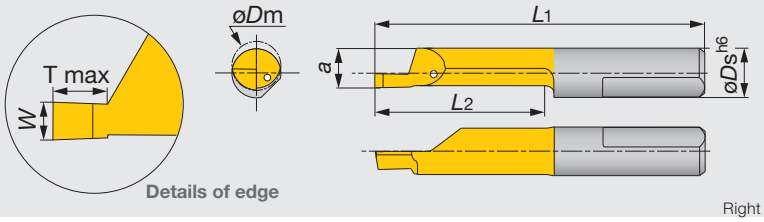
● : Line-up

Standard cutting conditions → **B360**

JBF R/L

Solid boring bars for face grooving





Right hand (R) shown.

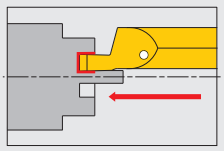
Designation	SH730	$W^{+0.05}_{0}$	øDm	øDs	a	L1	L2	T max
JBFR07110100-D060	●	1	6	7	5.2	26	10	1.5
JBFR07110150-D060	●	1.5	6	7	5.2	26	10	2
JBFR07110200-D060	●	2	6	7	5.2	26	10	3
JBFR07110100-D080	●	1	8	7	5.9	27	11	1.5
JBFR07110150-D080	●	1.5	8	7	5.9	27	11	2.5
JBFR07110200-D080	●	2	8	7	5.9	27	11	3
JBFR07110250-D080	●	2.5	8	7	5.9	27	11	3.5
JBFR07110300-D080	●	3	8	7	5.9	27	11	3.5
JBFR/L07210150-D080	●	1.5	8	7	5.9	36	21	2.5
JBFR07210200-D080	●	2	8	7	5.9	36	21	3
JBFR07210250-D080	●	2.5	8	7	5.9	36	21	3.5
JBFR07210300-D080	●	3	8	7	5.9	36	21	3.5
JBFR/L07300200-D080	●	2	8	7	5.9	46	30	3
JBFR07300300-D080	●	3	8	7	5.9	46	30	3.5
JBFR07200200-D080	●	2	8	7	5.9	36	20	3
JBFR07200250-D150	●	2.5	15	7	5.9	36	20	20
JBFR07200300-D150	●	3	15	7	5.9	36	20	20
JBFR07300300-D150	●	3	15	7	5.9	46	30	30

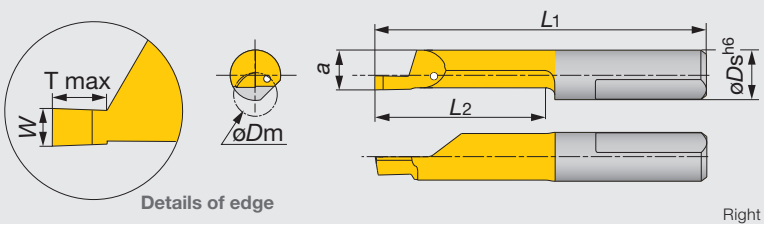
* Corner radius : less than 0.1 mm.

● : Line-up

JBS R

Solid boring bars for face grooving (for shaft machining)





Right hand (R) shown.

Designation	SH730	$W^{+0.05}_{0}$	øDm	øDs	a	L1	L2	T max
JBSR07200200-D060	●	2	6	7	5.2	36	20	4

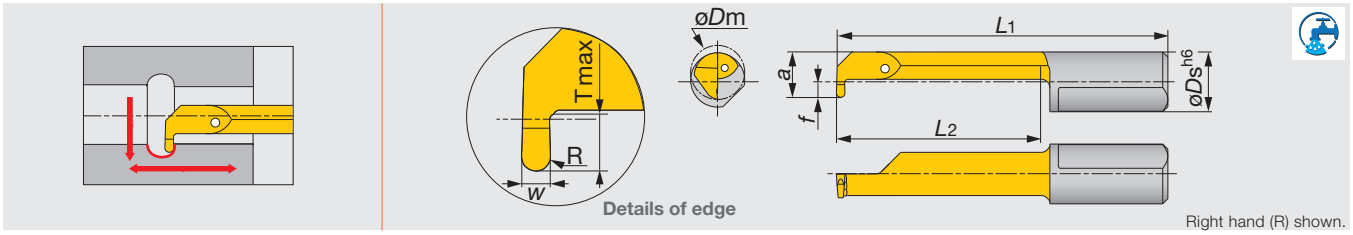
* Corner radius : less than 0.1 mm.

● : Line-up

Standard cutting conditions → **B360**

JBR R

Solid boring bars for Boring & profiling (full radius type)

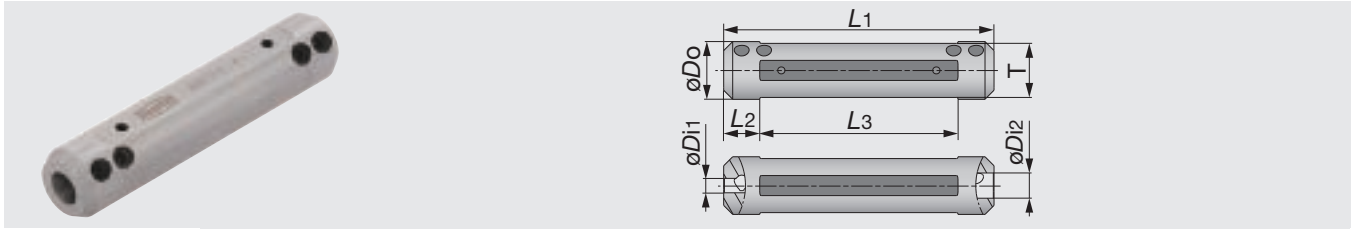


Designation	SH730	$W^{+0.05}_{0}$	øDm	øDs	f	a	L1	L2	T max	R
JBRR07190050-D050	●	1	5	7	0.9	4.4	35	19	1	0.5
JBRR07240050-D060	●	1	6	7	1.8	5.3	40	24	1.8	0.5
JBRR07290050-D068	●	1	6.8	7	2.8	6.3	45	29	2.5	0.5

● : Line-up

JBBS

Sleeve for external coolant supply



Designation	øDo	øDi1	øDi2	L1	L2	L3	T
JBBS12-4-4	12	4	4	75	10	55	10.3
JBBS127-4-4	12.7	4	4	76.2	10	56.2	11.6
JBBS14-4-4	14	4	4	75	10	55	12
JBBS159-4-7	15.875	4	7	76.2	10	56.2	14
JBBS16-4-7	16	4	7	75	10	55	15
JBBS19-4-7	19.05	4	7	89	10	69	17.2
JBBS20-4-7	20	4	7	90	10	70	18
JBBS22-4-7	22	4	7	90	10	70	20
JBBS25-4-7	25	4	7	100	10	80	23
JBBS254-4-7	25.4	4	7	90	10	70	23.4

SPARE PARTS

Designation	Clamping screw	Wrench
JBBS12-4-4	SSHM5-4PF-S	P-2.5
JBBS127-4-4	SSHM5-6PF-S	P-2.5
JBBS14-4-4	SSHM5-4PF-S	P-2.5
JBBS**-4-7	SSHM5-6PF-S	P-2.5

Standard cutting conditions → **B359**

JBBS-C

Sleeve for internal coolant supply



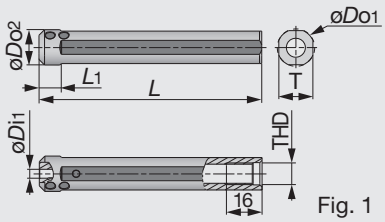


Fig. 1

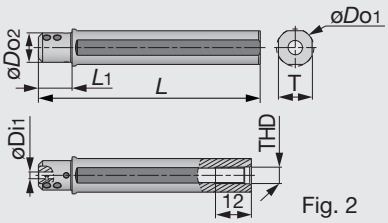


Fig. 2

Designation	ø*D*o1	ø*D*o2	ø*D*i1	*L*	*L*1	T	THD	Fig.
JBBS159-4-L100C	15.875	15.875	4	100	10	14.58	R1/8	1
JBBS159-7-L100C	15.875	15.875	7	100	10	14.58	R1/8	1
JBBS16-4-L100C	16	16	4	100	10	15	R1/8	1
JBBS16-7-L100C	16	16	7	100	10	15	R1/8	1
JBBS19-4-L100C	19.05	17.5	4	100	20	17.2	R1/8	2
JBBS19-7-L100C	19.05	17.5	7	100	20	17.2	R1/8	2
JBBS20-4-L100C	20	17.5	4	100	20	18	R1/8	2
JBBS20-7-L100C	20	17.5	7	100	20	18	R1/8	2
JBBS22-4-L100C	22	17.5	4	100	20	20	R1/8	2
JBBS22-7-L100C	22	17.5	7	100	20	20	R1/8	2
JBBS25-4-L100C	25	18	4	100	23	23	R1/8	2
JBBS25-7-L100C	25	18	7	100	23	23	R1/8	2
JBBS254-4-L100C	25.4	18	4	100	23	23.4	R1/8	2
JBBS254-7-L100C	25.4	18	7	100	23	23.4	R1/8	2

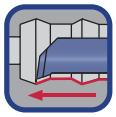
SPARE PARTS





Designation	Clamping screw	Wrench
JBBS**-4-L100C	SSHM5-6PF-S	P-2.5
JBBS**-7-L100C	SSHM5-4PF-S	P-2.5

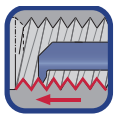
STANDARD CUTTING CONDITIONS



Boring, profiling, chamfering, back boring

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Low carbon steels (C15, C25 etc.)	SH730	40 - 140	0.01 - 0.08 *
P	Carbon steels, Alloy steels (C55, 42CrMoS4 etc.)	SH730	40 - 140	0.01 - 0.08 *
P	Prehardened steels (NAK80, PX5 etc.)	SH730	40 - 140	0.01 - 0.08 *
M	Stainless steels (X5CrNi18-9, X5CrNiMo17-12-2 etc)	SH730	40 - 140	0.01 - 0.08 *
K	Grey cast irons (250, 300 etc.)	SH730	30 - 100	0.01 - 0.08 *
K	Ductile cast irons (400-15, 600-3 etc.)	SH730	30 - 100	0.01 - 0.08 *
N	Aluminium alloys, copper alloys (Si < 12%)	SH730	90 - 200	0.01 - 0.08 *
S	Titanium alloys (Ti-6Al-4V, etc.)	SH730	30 - 100	0.01 - 0.08 *
S	Superalloys (Inconel718, etc.)	SH730	30 - 100	0.01 - 0.08 *

* JBTR/L04020004-D006, JBTR/L04030004-D006
Max. *f* = 0.01 mm/rev



Threading (metric thread)

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Number of passes Pitch (mm) 0.5	0.75	1	1.25	1.5
P	Low carbon steels (C15, C25 etc.)	SH730	40 - 140	6 - 8	8 - 10	10 - 12	12 - 15	15 - 18
P	Carbon steels, Alloy steels (C55, 42CrMoS4 etc.)	SH730	40 - 140	6 - 8	8 - 10	10 - 12	12 - 15	15 - 18
P	Prehardened steels (NAK80, PX5 etc.)	SH730	40 - 140	6 - 8	8 - 10	10 - 12	12 - 15	15 - 18
M	Stainless steels (X5CrNi18-9, X5CrNiMo17-12-2 etc)	SH730	40 - 140	8	10	12	15	18
K	Grey cast irons (250, 300 etc.)	SH730	30 - 100	7	9	12	14	17
K	Ductile cast irons (400-15, 600-3 etc.)	SH730	30 - 100	7	9	12	14	17
N	Aluminium alloys, copper alloys (Si < 12%)	SH730	90 - 200	6	8	10	12	15

STANDARD CUTTING CONDITIONS



Internal grooving

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Low carbon steels (C15, C25 etc.)	SH730	40 - 140	0.01 - 0.03
P	Carbon steels, Alloy steels (C55, 42CrMoS4 etc.)	SH730	40 - 140	0.01 - 0.03
P	Prehardened steels (NAK80, PX5 etc.)	SH730	40 - 140	0.01 - 0.03
M	Stainless steels (X5CrNi18-9, X5CrNiMo17-12-2 etc)	SH730	40 - 140	0.01 - 0.03
K	Grey cast irons (250, 300 etc.)	SH730	30 - 100	0.01 - 0.03
K	Ductile cast irons (400-15, 600-3 etc.)	SH730	30 - 100	0.01 - 0.03
N	Aluminium alloys, copper alloys (Si < 12%)	SH730	90 - 200	0.01 - 0.03
S	Titanium alloys (Ti-6Al-4V etc.)	SH730	30 - 100	0.01 - 0.03
S	Superalloys (Inconel718, etc.)	SH730	30 - 100	0.01 - 0.03



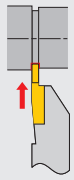
Face grooving

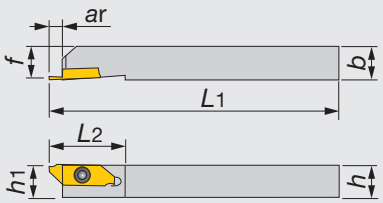
ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Low carbon steels (C15, C25 etc.)	SH730	40 - 140	0.01 - 0.05
P	Carbon steels, Alloy steels (C55, 42CrMoS4 etc.)	SH730	40 - 140	0.01 - 0.05
P	Prehardened steels (NAK80, PX5 etc.)	SH730	40 - 140	0.01 - 0.05
M	Stainless steels (X5CrNi18-9, X5CrNiMo17-12-2 etc)	SH730	40 - 140	0.01 - 0.05
K	Grey cast irons (250, 300 etc.)	SH730	30 - 100	0.01 - 0.05
K	Ductile cast irons (400-15, 600-3 etc.)	SH730	30 - 100	0.01 - 0.05
N	Aluminium alloys, copper alloys (Si < 12%)	SH730	90 - 200	0.01 - 0.05
S	Titanium alloys (Ti-6Al-4V etc.)	SH730	30 - 100	0.01 - 0.05
S	Superalloys (Inconel718, etc.)	SH730	30 - 100	0.01 - 0.05

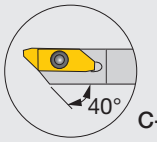
MEMO

JSXGR/L

Screw-on toolholder without offset for front / reverse turning & external grooving







C-type

Right hand (R) shown.

Designation	W	ar	h	b	L_1	L_2	h_1	f	Insert
JSXGR/L1010K8-C	0.7 - 2	6.7	10	10	125	29	10	10	JX*R/L8...
JSXGR/L1212K8-C	0.7 - 2	6.7	12	12	125	29	12	12	JX*R/L8...
JSXGR/L1616K8	0.7 - 2	6.5	16	16	125	29	16	16	JX*R/L8...
JSXGR/L2020K8	0.7 - 2	6.5	20	20	125	29	20	20	JX*R/L8...
JSXGR/L2525K8	0.7 - 2	6.5	25	25	125	29	25	25	JX*R/L8...

- Can be wrenched also from the back with a double-head screw.
- This toolholders can be used for JXG insert (grooving), JXF insert (front-turning), JXK insert (reverse-turning).

SPARE PARTS





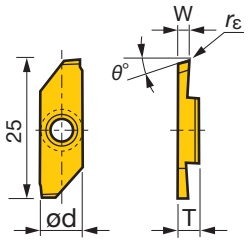
Designation	Clamping screw	Wrench	Wrench 1
JSXGR/L	CSTB-4SD	T-8F	(T-8L)

*Optional

INSERT

JXG (handed insert with sharp edge)





Right hand (R) shown.

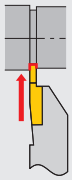
Designation	rε	Coating J740 R	Coating J740 L	Uncoated TH10 R	Uncoated TH10 L	ød	T	$W^{+0.05}_{0}$	θ°	Max. groove depth
JXGR/L8070FA	0	●	●	●	●	8	3.97	0.7	15	4.5
JXGR/L8070FA-005	0.05	●				8	3.97	0.7	15	4.5
JXGR/L8100FA	0	●	●	●	●	8	3.97	1	15	6
JXGR/L8100FA-005	0.05	●				8	3.97	1	15	6
JXGR/L8100FA45	0	●		●		8	3.97	1	15	4.5
JXGR/L8100FA45-005	0.05	●				8	3.97	1	15	4.5
JXGR/L8150FA	0	●	●	●	●	8	3.97	1.5	15	6
JXGR/L8150FA-005	0.05	●				8	3.97	1.5	15	6
JXGR/L8150FA50	0	●		●		8	3.97	1.5	15	5
JXGR/L8150FA50-005	0.05	●				8	3.97	1.5	15	5
JXGR/L8180FA	0	●		●		8	3.97	1.8	15	6
JXGR/L8180FA-005	0.05	●				8	3.97	1.8	15	6
JXGR/L8200FA	0	●	●	●	●	8	3.97	2	15	6
JXGR/L8200FA-005	0.05	●				8	3.97	2	15	6
JXGR/L8200FN	0	●	●	●	●	8	3.97	2	0	6
JXGR/L8200FN-005	0.05	●				8	3.97	2	0	6

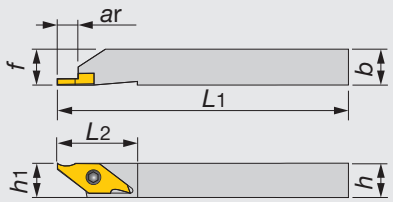
● : Line-up

Standard cutting conditions → **B364**

JSVGR/L

External grooving toolholders





C-type

Right hand (R) shown.

Designation	W	ar	h	b	L_1	L_2	h_1	f	Insert
JSVGR/L1010K-C	0.33 - 2	6.2	10	10	125	23	10	10	JVGR/L...
JSVGR/L1212K-C	0.33 - 2	6.2	12	12	125	23	12	12	JVGR/L...
JSVGR/L1616K	0.33 - 2	6.2	16	16	125	23	16	16	JVGR/L...

• Recommend clamping torque: 2.3 N·m

SPARE PARTS

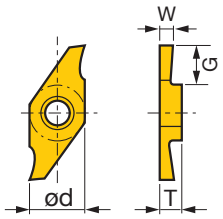
Designation	Clamping screw	Wrench	Wrench 1
JSVGR/L	CSTB-3S	T-9F	(T-8L)

*Optional

INSERT

JVG (handed insert with sharp edge)





Right hand (R) shown.

Designation	Coating				Cermet		Uncoated		ød	T	$W^{+0.05}_{0}$	G	Max. groove depth
	SH725		J740		NS9530		TH10						
	R	L	R	L	R	L	R	L					
JVGR/L033F	●	●	●				●		7.94	3.18	0.33	0.8	0.7
JVGR/L050F	●	●	●				●		7.94	3.18	0.5	1.2	1.1
JVGR/L075F	●	●	●				●		7.94	3.18	0.75	2	1.9
JVGR/L095F	●	●	●				●		7.94	3.18	0.95	2	1.9
JVGR/L100F	●	●	●		●	●	●	●	7.94	3.18	1	6	5.5
JVGR/L125F	●	●	●				●		7.94	3.18	1.25	5.5	5
JVGR/L150F	●	●	●		●	●	●	●	7.94	3.18	1.5	6	5.5
JVGR/L200F	●	●	●		●		●		7.94	3.18	2	6	5.5

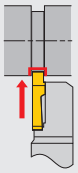
● : Line-up

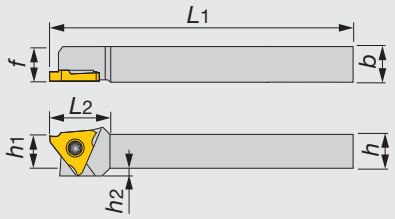
Standard cutting conditions → **B364**

STANDARD CUTTING CONDITIONS (JXG type, JVG type insert)

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	General steel (C45, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
		NS9530	50 - 150	0.01 - 0.1
	Free-cutting steel (11SMn28, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
M	Stainless steel (X10CrNiS18-9, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
		NS9530	50 - 150	0.01 - 0.1
N	Aluminium alloys, Brass (Si < 12%, C3604B / CW614N, etc.)	TH10	10 - 200	0.01 - 0.1
S	Difficult-to-machine material, Titanium alloys (Ti-6Al-4V, etc.)	TH10	10 - 30	0.01 - 0.1

J-SERIES
JSTGR/L
External grooving toolholders





Right hand (R) shown.

Designation	W	h	b	L1	L2	h1	f	h2	Insert
JSTGR/L1010X3	0.33 - 3	10	10	120	18.5	10	10	2	JTGR/L3...
JSTGR/L1212F3	0.33 - 3	12	12	85	18.5	12	12	-	JTGR/L3...
JSTGR/L1212X3	0.33 - 3	12	12	120	18.5	12	12	-	JTGR/L3...
JSTGR/L1616X3	0.33 - 3	16	16	120	18.5	16	16	-	JTGR/L3...
JSTGL1616K3	0.33 - 3	16	16	125	18.5	16	16	-	JTGR/L3...

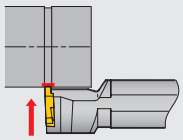
• Recommend clamping torque: 1.2 N·m

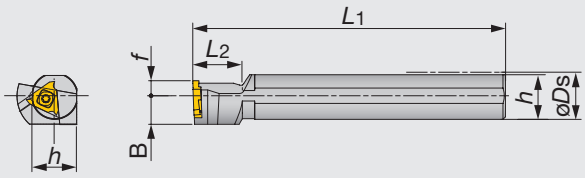
SPARE PARTS

Designation	Clamping screw	Wrench	Wrench 1
JSTGR/L...	CSTB-4SD	T-8F	(T-8L)

*Optional

J-SERIES
JS-TGL3
External grooving toolholders





Left hand (L) shown.

Designation	W	øDs	f	L1	L2	h	B	Insert
JS19K-TGL3	0.33 - 3	19.05	6	125	20	18	11.5	JTGR3...
JS20K-TGL3	0.33 - 3	20	6	125	20	19	11.5	JTGR3...
JS22K-TGL3	0.33 - 3	22	6	125	20	21	11.5	JTGR3...
JS25K-TGL3	0.33 - 3	25.4	10	125	20	24	12.7	JTGR3...

• Left hand toolholders (TGL3) are used with right hand inserts (JTGR3). • Recommend clamping torque: 3.0 N·m

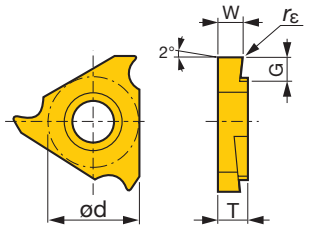
SPARE PARTS

Designation	Clamping screw	Wrench
JS**-TGL3	CSTB-4S	T-15F

JSTGR/L, JS-TGL3: Inserts → **B366 -**, Standard cutting conditions → **B367**

JTG (sharp edge)





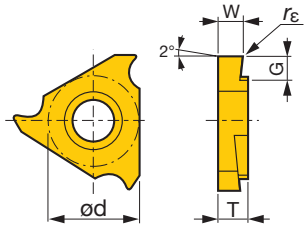
Right hand (R) shown.

Designation	rε	Coating				Cermet		Uncoated		ød	T	W$^{+0.05}_{0}$	G	Max. groove depth
		SH725		J740		NS9530		TH10						
		R	L	R	L	R	L	R	L					
JTGR/L3033F	0.03	●		●	●			●	●	9.525	3.18	0.33	0.8	0.7
JTGR/L3033F-005	0.05	●								9.525	3.18	0.33	0.8	0.7
JTGR/L3043F	0.03			●						9.525	3.18	0.43	1.2	1.1
JTGR/L3050F	0.03	●	●	●	●	●		●	●	9.525	3.18	0.5	1.2	1.1
JTGR/L3050F-005	0.05	●	●							9.525	3.18	0.5	1.2	1.1
JTGR/L3065F	0.03	●		●						9.525	3.18	0.65	2	1.9
JTGR/L3065F-010	0.1	●								9.525	3.18	0.65	2	1.9
JTGR/L3075F	0.03	●	●	●	●	●	●	●	●	9.525	3.18	0.75	2	1.9
JTGR/L3075F-010	0.1	●	●							9.525	3.18	0.75	2	1.9
JTGR/L3080F	0.03	●		●						9.525	3.18	0.8	2	1.9
JTGR/L3080F-010	0.1	●								9.525	3.18	0.8	2	1.9
JTGR/L3085F	0.03	●		●						9.525	3.18	0.85	2	1.9
JTGR/L3095F	0.03	●	●	●	●	●		●	●	9.525	3.18	0.95	2	1.9
JTGR/L3095F-010	0.1	●	●							9.525	3.18	0.95	2	1.9
JTGR/L3100F	0.05	●	●	●	●	●		●	●	9.525	3.18	1	2.2	2.1
JTGR/L3100F-010	0.1	●	●							9.525	3.18	1	2.2	2.1
JTGR/L3110F	0.05	●		●						9.525	3.18	1.1	2.2	2.1
JTGR/L3120F	0.05	●		●						9.525	3.18	1.2	2.2	2.1
JTGR/L3120F-010	0.1	●								9.525	3.18	1.2	2.2	2.1
JTGR/L3125F	0.05	●	●	●	●	●		●	●	9.525	3.18	1.25	2.2	2.1
JTGR/L3125F-010	0.1	●	●							9.525	3.18	1.25	2.2	2.1
JTGR/L3130F	0.05	●		●						9.525	3.18	1.3	2.2	2.1
JTGR/L3140F	0.05	●		●						9.525	3.18	1.4	2.2	2.1
JTGR/L3140F-010	0.1	●								9.525	3.18	1.4	2.2	2.1
JTGR/L3145F	0.05	●		●	●	●		●	●	9.525	3.18	1.45	2.2	2.1
JTGR/L3145F-010	0.1	●								9.525	3.18	1.45	2.2	2.1
JTGR/L3150F	0.05	●	●	●	●	●		●	●	9.525	3.18	1.5	2.2	2.1
JTGR/L3150F-010	0.1	●	●							9.525	3.18	1.5	2.2	2.1
JTGR/L3175F	0.05	●		●	●	●	●	●	●	9.525	3.18	1.75	2.2	2.1
JTGR/L3175F-010	0.1	●								9.525	3.18	1.75	2.2	2.1
JTGR/L3180F	0.05	●		●						9.525	3.18	1.8	2.2	2.1
JTGR/L3200F	0.05	●	●	●	●	●		●	●	9.525	3.18	2	2.7	2.6
JTGR/L3200F-010	0.1	●	●							9.525	3.18	2	2.7	2.6
JTGR/L3225F	0.05	●		●						9.525	3.18	2.25	2.7	2.6
JTGR/L3250F	0.05	●	●	●	●	●		●	●	9.525	3.18	2.5	2.7	2.6
JTGR/L3250F-010	0.1	●	●							9.525	3.18	2.5	2.7	2.6
JTGR/L3275F	0.05			●						9.525	3.18	2.75	2.7	2.6
JTGR/L3300F	0.05	●		●						9.525	3.18	3	2.7	2.6
JTGR/L3300F-010	0.1	●								9.525	3.18	3	2.7	2.6

● : Line-up

JTG (with horning)





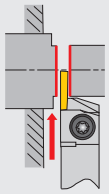
Right hand (R) shown.

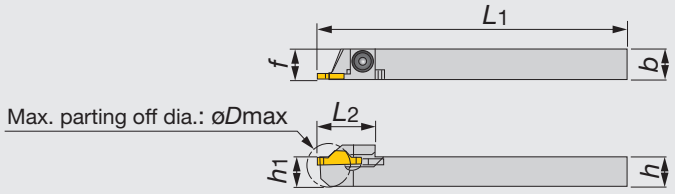
Designation	rε	Coated cermet J9530 R	Coated cermet J9530 L	ød	T	$W^{+0.05}_{0}$	G	Max. groove depth
JTGR/L3100	0.05	●		9.525	3.18	1	2.2	2.1
JTGR/L3125	0.05	●		9.525	3.18	1.25	2.2	2.1
JTGR/L3150	0.05	●		9.525	3.18	1.5	2.2	2.1
JTGR/L3200	0.05	●		9.525	3.18	2	2.7	2.6

● : Line-up

STANDARD CUTTING CONDITIONS (JTG type insert)

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	General steel (C45, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
		NS9530	50 - 150	0.01 - 0.1
		J9530	50 - 150	0.01 - 0.1
	Free-cutting steel (11SMn28, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
M	Stainless steel (X10CrNiS18-9, etc.)	SH725	50 - 200	0.01 - 0.1
		J740	10 - 100	0.01 - 0.1
		NS9530	50 - 150	0.01 - 0.1
		J9530	50 - 150	0.01 - 0.1
N	Aluminium alloys, Brass (Si < 12%, C3604B / CW614N, etc.)	TH10	10 - 200	0.01 - 0.1
S	Difficult-to-machine material, Titanium alloys (Ti-6Al-4V, etc.)	TH10	10 - 30	0.01 - 0.1





Right hand (R) shown.

Designation	W	øDmax	h	b	L1	L2	h1	f	Insert
JCCWSR/L1010K2	2	20	10	10	125	19	10	10	JCC*200F...
JCCWSR/L1212K2	2	20	12	12	125	19	12	12	JCC*200F...
JCCWSR/L1616K2	2	20	16	16	125	19	16	16	JCC*200F...
JCCWSR/L2020K2	2	20	20	20	125	19	20	20	JCC*200F...
JCCWSR/L2525K2	2	20	25	25	125	19	25	25	JCC*200F...

SPARE PARTS

Designation	Clamping screw	Wrench	Wrench1
JCCWSR/L...	CSTB-4S	T-15F	(T-15L)

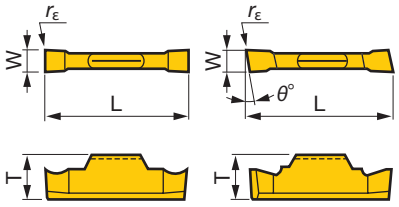
*Optional

INSERT

JCC (sharp edge)



Neutral (JCCN200F) / Handed insert (JCCR/L200F)



Right hand (R) shown.

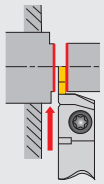
Designation	rε	Coating J740 R	Coating J740 N	Coating J740 L	Uncoated TH10 R	Uncoated TH10 N	Uncoated TH10 L	T	W	L	θ°
JCCN200F	0		●			●		4.8	2	15	-
JCCN200F-005	0.05		●					4.8	2	15	-
JCCR/L200F	0	●		●	●		●	4.8	2	15	15
JCCR/L200F-005	0.05	●		●				4.8	2	15	15

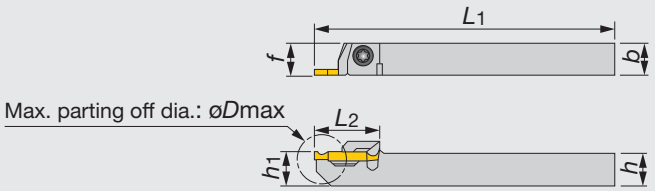
● : Line-up

Standard cutting conditions → **B369**

JCGWSR/L

External grooving & parting-off toolholders





Right hand (R) shown.

Designation	W	øDmax	h	b	L1	L2	h1	f	Insert
JCGWSR/L1010K2	2	20	10	10	125	20	10	10	JCGN200F...
JCGWSR/L1212K2	2	20	12	12	125	20	12	12	JCGN200F...
JCGWSR/L1616K2	2	20	16	16	125	20	16	16	JCGN200F...

SPARE PARTS

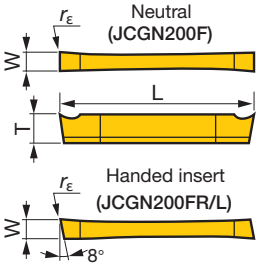
Designation	Clamping screw	Wrench	Wrench 1
JCGWSR/L...	CSTB-4S	T-15F	(T-15L)

*Optional

INSERT

JCG (sharp edge)





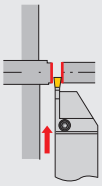
Right hand (R) shown.

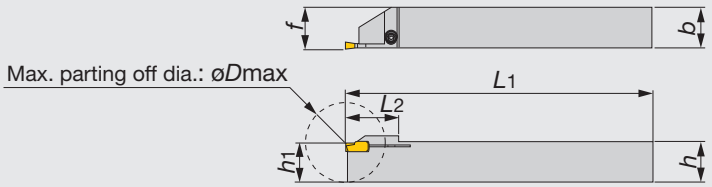
Designation	rε	Coating J740 R	Coating J740 N	Coating J740 L	Uncoated TH10 R	Uncoated TH10 N	Uncoated TH10 L	T	W	L
JCGN200F	0.05		●			●		3	2	20
JCGN200FR/L	0.05	●		●	●		●	3	2	20

● : Line-up

STANDARD CUTTING CONDITIONS (JCC type, JCG type insert)

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed f (mm/rev)
P	General steel (C45, etc.)	J740	10 - 100	0.01 - 0.1
P	Free-cutting steel (11SMn28, etc.)	J740	10 - 100	0.01 - 0.1
M	Stainless steel (X10CrNiS18-9, etc.)	J740	10 - 100	0.01 - 0.1
N	Aluminium alloys, Brass (Si < 12%, C3604B / CW614N, etc.)	TH10	10 - 200	0.01 - 0.1
S	Difficult-to-machine material, Titanium alloys (Ti-6Al-4V, etc.)	TH10	10 - 30	0.01 - 0.1





Right hand (R) shown.

Designation	W	øDmax	h	b	L1	L2	h1	f	Insert
JCGSSR/L1010-20	2	20	10	10	125	15	10	10.2	GE20...
JCGSSR/L1212-20	2	25	12	12	125	19	12	12.2	GE20...
JCGSSR/L1616-20	2	32	16	16	125	22.5	16	16.2	GE20...

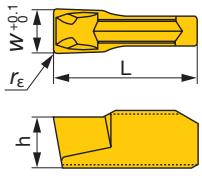
SPARE PARTS

Designation	Clamping screw	Wrench
JCGSSR/L...	CSTB-3	T-9F

INSERT

GE20



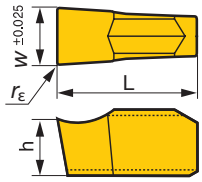


Designation	rε	Coating GH730	Cermet NS9530	W	L	h
GE20	0.2	●	●	2	10	3.5

● : Line-up

For aluminium and non-ferrous metals





Designation	rε	Uncoated KS05F	W	L	h
GE20-AL	0.2	●	2	10	3.5

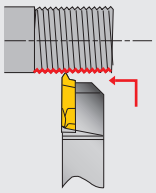
● : Line-up

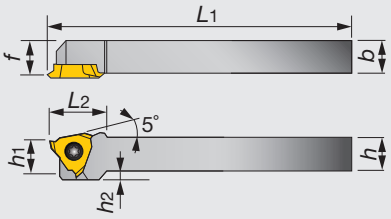
Standard cutting conditions → **B371**

STANDARD CUTTING CONDITIONS (GE type insert)

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Low carbon steels Alloy steels (~ 150HB)	NS9530	100 ~ 200	0.05 - 0.14
		GH730	50 ~ 180	0.05 - 0.14
	Medium carbon steels Alloy steels (150 ~ 250HB)	NS9530	80 ~ 180	0.05 - 0.14
		GH730	50 ~ 150	0.05 - 0.14
	High carbon steels Alloy steels (250HB ~)	NS9530	80 ~ 150	0.05 - 0.14
		GH730	50 ~ 120	0.05 - 0.14
M	Stainless steels	GH730	50 ~ 120	0.05 - 0.14
K	Gray and ductile cast irons	GH730	50 ~ 180	0.05 - 0.14
N	Aluminium alloys Non-ferrous metals	KS05F	200 ~ 300	0.03 - 0.1

J-SERIES
JSTTR/L
External threading toolholders





Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*h*2	Insert
JSTTR/L1010X3	10	10	120	18.5	10	9.5	2	JTTR/L3...
JSTTR/L1212F3	12	12	85	18.5	12	11.5	-	JTTR/L3...
JSTTR/L1212X3	12	12	120	18.5	12	11.5	-	JTTR/L3...
JSTTR/L1616X3	16	16	120	18.5	16	15.5	-	JTTR/L3...

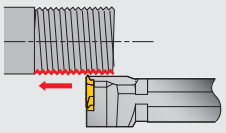
• Recommend clamping torque: 1.2 N·m

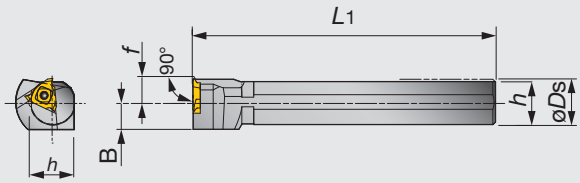
SPARE PARTS

Designation	Clamping screw	Wrench	Wrench 1
JSTTR/L...	CSTB-4SD	T-8F	(T-8L)

*Optional

J-SERIES
JS-TTL3
External threading toolholders





Left hand (L) shown.

Designation	ø*D*s	*f*	*L*1	*h*	B	Insert
JS19K-TTL3	19.05	10	125	18	11.5	JTTR30...
JS20K-TTL3	20	10	125	19	11.5	JTTR30...
JS22K-TTL3	22	10	125	21	11.5	JTTR30...
JS25K-TTL3	25.4	10	125	24	12.7	JTTR30...

• Recommend clamping torque: 3.5 N·m

SPARE PARTS

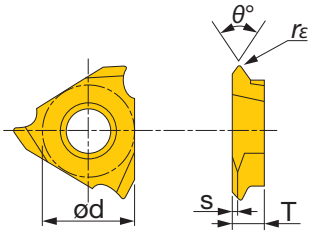
Designation	Clamping screw	Wrench
JS**-TTL3	CSTB-4S	T-15F

JSTTR/L, JS-TTL3: Inserts → **B373**

INSERT

JTT (sharp edge)





Right hand (R) shown.

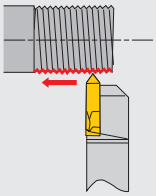
Designation	rε	Coating				Cermet		Uncoated		θ°	ød	T	s
		SH725		J740		NS9530		TH10					
		R	L	R	L	R	L	R	L				
JTTR/L3005F-55	0.05	●		●						55	9.525	3.18	0.6
JTTR/L3005F	0.05	●	●	●		●		●		60	9.525	3.18	0.9
JTTR/L3010F	0.1	●	●	●		●		●		60	9.525	3.18	0.9

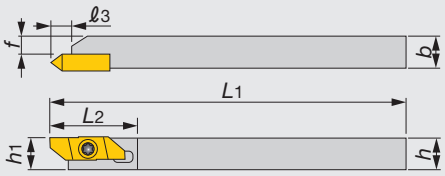
Machinable pitch range: 0.5 to 1 mm

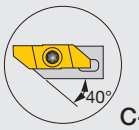
● : Line-up

JSXB R/L

External threading toolholders







C-type

Right hand (R) shown.

Designation	h	b	L1	L2	ℓ3	h1	f	Insert
JSXBR1010K8-C	10	10	125	29	6.4	10	5.7	JXT*R...
JSXBR1212K8-C	12	12	125	29	6.4	12	7.7	JXT*R...
JSXBR1616K8	16	16	125	29	6.4	16	11.7	JXT*R...
JSXBR2020K8	20	20	125	29	6.4	20	15.7	JXT*R...
JSXBR2525K8	25	25	125	29	6.4	25	20.7	JXT*R...

- Can be wrenched from back side with both end torx screw.
- This toolholder is compatible with JXB-type inserts and JXT-type inserts.

SPARE PARTS





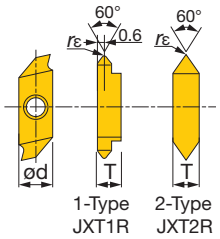
Designation	Clamping screw	Wrench	Wrench 1
JSXBR...	CSTB-4SD	T-8F	(T-8L)

*Optional

INSERT

JXT (sharp edge)



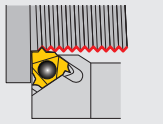


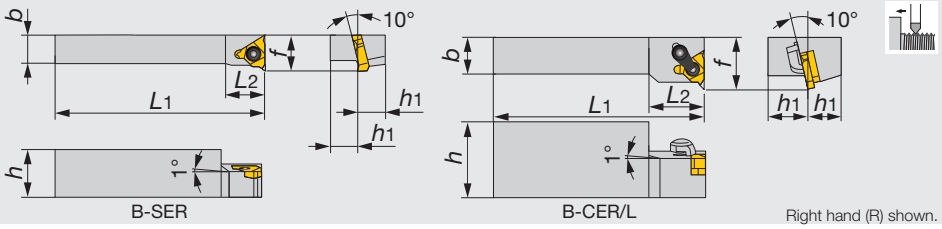
1-Type JXT1R 2-Type JXT2R

Designation	rε	Coating J740	Uncoated TH10	θ°	ød	T
JXT1R6000F	0.03	●	●	60	8	3.97
JXT2R6000F	0.03	●	●	60	8	3.97

Machinable pitch range: 0.5 to 1 mm

● : Line-up

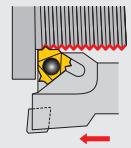


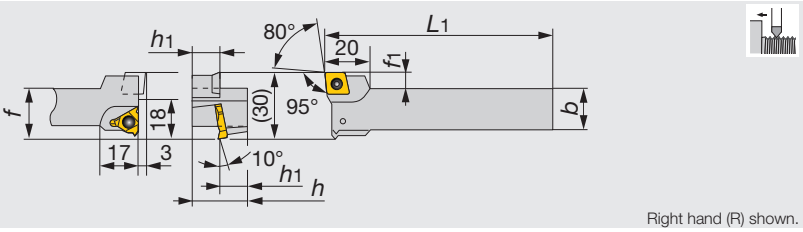


Designation	h	b	L1	L2	h1	f	Insert
B-SER10H16	20	10	100	15	10	16	16ER/L...
B-SER12K16	24	12	125	18	12	18	16ER/L...
B-CER/L16M16	32	16	150	24	16	22	16ER/L...

SPARE PARTS

Designation	Clamp set	Shim set	Clamping screw	Wrench
B-SER**16	-	-	CSTB-3.5	T-15F
B-CER/L16M16	CSP16	A16-1	-	T-15F



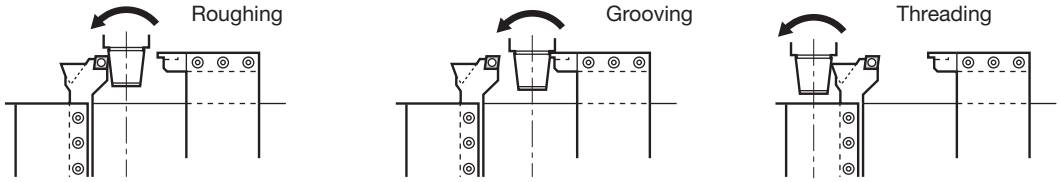


Designation	h	b	L1	h1	f	f1	Insert
BC-SER12K16	24	16	125	12	23	7	16ER/L..., CC*T09T3...

SPARE PARTS

Designation	Clamping screw	Wrench
BC-SER**16	CSTB-3.5	T-15F

● **Tooling examples using BC-type toolholders**



B-S/CER/L: Inserts → **B384 -**, Standard cutting conditions → **B382**

BC-SER/L: Inserts → **B104 -** (CC*T09T3...), **B384 -** (16ER/L...), PCD → **B177**, Standard cutting conditions → **B382**



TUNGTHREAD

Inserts and toolholders for threading

B384



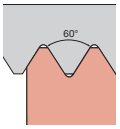
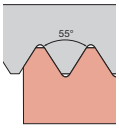
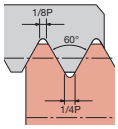
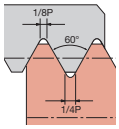
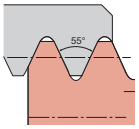
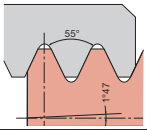
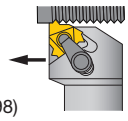
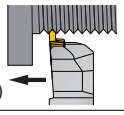
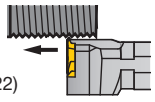
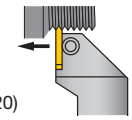
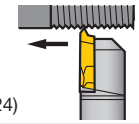
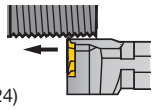
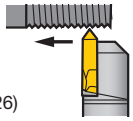
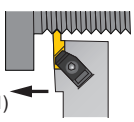
Threading Tool for Oil and Gas

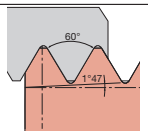
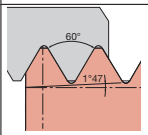
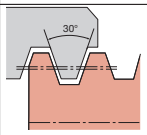
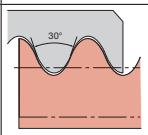
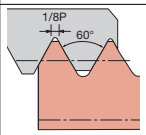
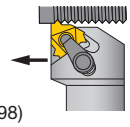
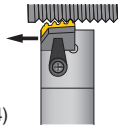
Tool series for threading oil well goods

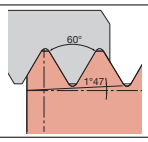
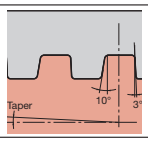
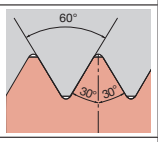
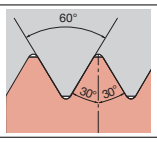
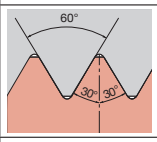
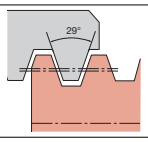
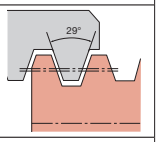
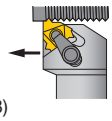
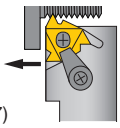
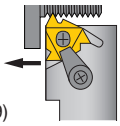
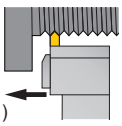
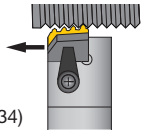
B427


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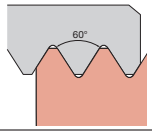
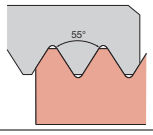
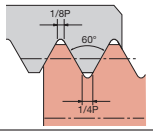
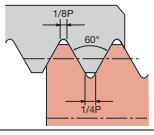
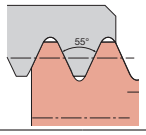
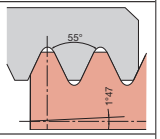
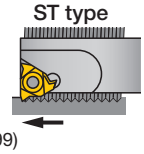
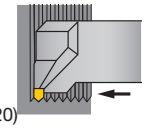
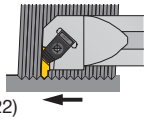
Applicable tool for each external thread type

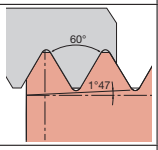
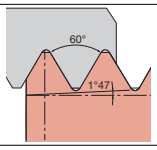
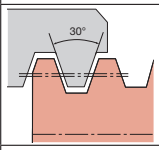
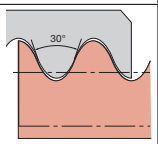
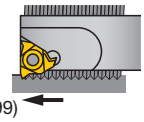
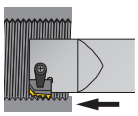
Thread type	Partial profile		Full profile				
	60°	55°	ISO metric	Unified	Whitworth	Parallel pipe thread	Taper pipe thread
	-	-	M	UNC, UNF UNEF	BSW, BSF W	G BSP, PF	R, PT, BSPT
Tool type \ Thread form							
ST type  (B398)	0.5 ~ 6 mm 48 ~ 4TPI (B384)	0.5 ~ 5 mm 48 ~ 5TPI (B385)	0.5 ~ 6 mm (B386)	32 ~ 5TPI (B388)	28 ~ 5TPI (B390)		28 ~ 11TPI (B391)
TETRAMCUT STCR/L-18  (B421)	0.8 ~ 3 mm 32 ~ 8TPI (B423)	—	—	—	—		—
TETRAMCUT JS-STCL18  (B422)	0.8 ~ 3 mm 32 ~ 8TPI (B423)	—	—	—	—		—
TT-R/L  (B420)	~ 3 mm ~ 8TPI (B419)	~ 3 mm ~ 8TPI (B419)	—	—	—		—
JSTTR/L  (B424)	0.5 ~ 1 mm 48 ~ 25TPI (B425)	0.5 ~ 1 mm 48 ~ 25TPI (B425)	—	—	—		—
JS-TTL3  (B424)	0.5 ~ 1 mm 48 ~ 25TPI (B425)	0.5 ~ 1 mm 48 ~ 25TPI (B425)	—	—	—		—
JSXBR/L  (B426)	0.5 ~ 1 mm 48 ~ 25TPI (B426)	—	—	—	—		—
TUNGT-CLAMP  (C021)	1.27 ~ 4.23 mm 20 ~ 6TPI (C023)	—	—	—	—		—

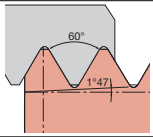
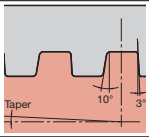
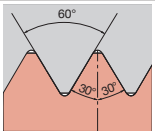
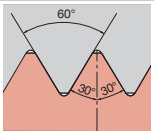
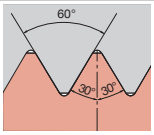
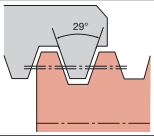
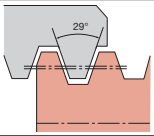
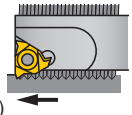
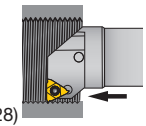
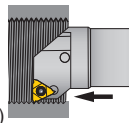
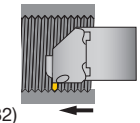
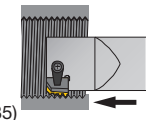
Thread type / Tool type	Full profile					
	National taper pipe		30° Trapezoidal	DIN 405 Round	UNJ	
	NPT	NPTF	TR	Rd	UNJC,UNJF	
Thread form						
ST type  (B398)	27 ~ 8TPI (B392)	27 ~ 8TPI (B393)	1.5 ~ 6 mm (B394)	8TPI, 6TPI (B396)	32 ~ 8TPI (B396)	
Chaser  (B434)	11.5TPI, 8TPI (B434)	——	——	——	——	

Thread type / Tool type	Full profile						
	API Tubing & Casing		API Rotary Shoulder Connection			ACME	STUB ACME
	Round	Buttress	V-0.038R	V-0.040	V-0.050		
Thread form							
ST type  (B398)	10TPI, 8TPI (B395)	5TPI (0.75TPF) (B395)	——	——	——	12 ~ 5TPI (B394)	——
Lay down (Single side)  (B427)	——	5TPI (0.75TPF) 5TPI (1TPF) (B428)	——	——	——	——	——
Lay down (Double side)  (B429)	——	——	4TPI (2TPF) 4TPI (3TPF) (B430)	5TPI (3TPF) (B430)	4TPI (2TPF) 4TPI (3TPF) (B430)	——	——
On edge  (B431)	10TPI, 8TPI (B433)	5TPI (0.75TPF) 5TPI (1TPF) (B433)	——	——	——	16 ~ 3TPI (B433)	16 ~ 3TPI (B433)
Chaser  (B434)	10TPI, 8TPI (B434)	5TPI (0.75TPF) (B434)	——	——	——	——	——

Applicable tool for each internal thread type

Thread type	Partial profile		Full profile				
	60°	55°	ISO metric	Unified	Whitworth	Parallel pipe thread	Taper pipe thread
	-	-	M	UNC, UNF UNEF	BSW, BSF W	G, Rp BSP, PF, PS	Rc, PT, BSPT
Thread form / Tool type							
ST type  (B399)	0.5 ~ 6 mm 48 ~ 4TPI (B384)	0.5 ~ 5 mm 48 ~ 5TPI (B385)	0.5 ~ 6 mm (B386)	32 ~ 5TPI (B388)	28 ~ 5TPI (B390)		19 ~ 11TPI (B391)
TT-R/L  (B420)	~ 3 mm ~ 8TPI (B419)	~ 3 mm ~ 8TPI (B419)	—	—	—		—
TUNGT-CLAMP  (C022)	2.11 ~ 5.08 mm 12 ~ 5TPI (C023)	—	—	—	—		—

Thread type	Full profile				
	National taper pipe		30° Trapezoidal	DIN 405 Round	
	NPT	NPTF	TR	Rd	
Thread form / Tool type					
ST type  (B399)	27 ~ 8TPI (B392)	14 ~ 8TPI (B393)	1.5 ~ 5 mm (B394)	6TPI (B396)	
Chaser  (B435)	11.5TPI, 8TPI (B435)	—	—	—	

Thread type	Full profile						
	API Tubing & Casing		API Rotary Shoulder Connection			ACME	STUB ACME
Thread form / Tool type	Round	Buttress	V-0.038R	V-0.040	V-0.050		
							
ST type  (B399)	10TPI, 8TPI (B395)	5TPI (0.75TPF) (B395)	—	—	—	12 ~ 5TPI (B394)	—
Lay down (Single side)  (B428)	—	5TPI (0.75TPF) 5TPI (1TPF) (B428)	—	—	—	—	—
Lay down (Double side)  (B430)	—	—	4TPI (2TPF) 4TPI (3TPF) (B430)	5TPI (3TPF) (B430)	4TPI (2TPF) 4TPI (3TPF) (B430)	—	—
On edge  (B432)	10TPI, 8TPI (B433)	5TPI (0.75TPF) 5TPI (1TPF) (B433)	—	—	—	—	—
Chaser  (B435)	10TPI, 8TPI (B435)	5TPI (0.75TPF) (B435)	—	—	—	—	—

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Cutting speed: *Vc* (m/min)			
			AH725	T313V	NS9530	TH10
P	Carbon steels	< 200HB	80 - 180	100 - 200	150 - 200	-
		> 200HB	60 - 160	100 - 150	100 - 170	-
M	Stainless steels	-	50 - 130	70 - 130	-	-
K	Cast irons	-	-	70 - 150	-	70 - 90
N	Non-ferrous metals	-	-	-	-	100 - 500
S	Heat-resisting alloys	-	-	-	-	10 - 40
H	Hard materials	50 ~ 60HRC	-	-	-	10 - 30

DESIGNATION SYSTEM FOR TAC INSERTS

16 I R 175 ISO - B

(1) (2) (3) (4) (5) (6)

(1) Insert size

Symbol	I. C. dia (mm)
06	-
11	6.35
16	9.525
22	12.7
27	15.875

(2) External or Internal

E	External
I	Internal

(3) Hand of insert

R	Right hand
L	Left hand

(4) Pitch (TPI)

Partial-profile inserts	
A	Pitch: 0.5 ~ 1.5 mm TPI: 48 ~ 16
AG	Pitch: 0.5 ~ 3 mm TPI: 48 ~ 8
G	Pitch: 1.75 ~ 3 mm TPI: 14 ~ 8
N	Pitch: 3.5 ~ 5 mm TPI: 7 ~ 5
Z	Pitch: 4 ~ 6 mm TPI: 6 ~ 4

Full-profile inserts

pitch (mm)×10 or 100
TPI (Thread Per Inch)
(Examples)
05: 0.5 mm pitch×10
175: 1.75 mm pitch×100
14: 14 TPI

(5) Thread type

Partial-profile inserts	
60°	60° thread angle
55°	55° thread angle
TR	30° trapezoidal
ACME	29° trapezoidal
Full-profile inserts	
ISO	Metric
UN	Unified
W	Whitworth
PT	Taper pipe
NPT	National taper pipe
NPTF	National taper pipe
RAPI	API round
RD	API round
BAPI	API buttress
RD	Round (DIN405)
UNJ	UNJ

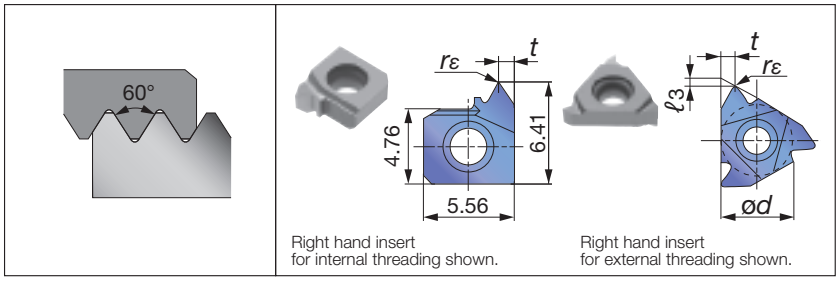
(6) Chipbreaker

B	With (Basic selection)
M	With
-	Without

Note: Please identify new designation system for internal inserts.
-i.e."N"→"I"
(Example) Conventional: 16NR15ISO
New: 16IR15ISO

MEMO

60° thread angle



Right hand insert for internal threading shown.

Right hand insert for external threading shown.

Applicable toolholders

Insert size	External	Internal
6		SNR/L000*K06SC... SNR/L000*H06...
11		SNR/L**11...
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...
22	CER/L**22...	TSNR/L**22 SNR/L**22... TCNR/L**22... CNR/L**22...
27	CER/L**27...	CNR/L**27...

Partial-profile insert

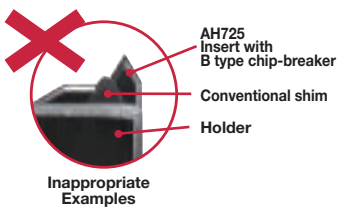
Insert size	Pitch	TPI	Hand of cut	External insert								Internal insert							
				Designation	Grade			ød	t	ℓ3	rε	Designation	Grade			ød	t	ℓ3	rε
					Coating		Un-coated						Coating		Un-coated				
					AH725	T313V	TH10						AH725	T313V	TH10				
6	0.5~1.5	48~16	R									6IRA60	●		●	-	0.9	-	0.04
11	0.5~1.5	48~16	R									11IRA60	●	●	●	6.35	0.9	0.7	0.04
11	0.5~1.5	48~16	L									11ILA60	●	●	●	6.35	0.9	0.7	0.04
16	0.5~1.5	48~16	R	16ERA60	●	●	●	9.525	0.9	0.7	0.06	16IRA60	●	●	●	9.525	0.9	0.7	0.04
16	0.5~1.5	48~16	L	16ELA60	●	●	●	9.525	0.9	0.7	0.06	16ILA60	●	●	●	9.525	0.9	0.7	0.04
16	0.5~3	48~8	R	16ERAG60	●	●		9.525	1.6	1.2	0.06	16IRAG60	●	●		9.525	1.6	1.2	0.04
16	1.75~3	14~8	R	16ERG60	●	●	●	9.525	1.6	1.2	0.22	16IRG60	●	●	●	9.525	1.6	1.2	0.12
16	1.75~3	14~8	L	16ELG60	●	●		9.525	1.6	1.2	0.22	16ILG60	●	●	●	9.525	1.6	1.2	0.12
22	3.5~5	7~5	R	22ERN60	●	●	●	12.7	2.5	1.7	0.44	22IRN60	●	●	●	12.7	2.5	1.7	0.25
22	3.5~5	7~5	L	22ELN60	●	●		12.7	2.5	1.7	0.44	22ILN60	●	●		12.7	2.5	1.7	0.25
27	4~6	6~4	R	27ERZ60	●	●		15.875	3.2	2.2	0.5	27IRZ60	●	●		15.875	3.2	2.2	0.28

Partial-profile insert with chipbreaker

Insert size	Pitch	TPI	Hand of cut	External insert							Internal insert							
				Designation	Grade		ød	t	ℓ3	rε	Designation	Grade		ød	t	ℓ3	rε
					Coating	Cermet						Coating	Cermet				
					AH725	NS9530						AH725	NS9530				
11	0.5~1.5	48~16	R								11IRA60-B	●		6.35	0.9	0.7	0.04
11	0.5~1.5	48~16	R								11IRA60-M		●	6.35	0.9	0.7	0.04
16	0.5~1.5	48~16	R	16ERA60-B	●*		9.525	0.9	0.8	0.05	16IRA60-B	●*		9.525	0.9	0.8	0.05
16	0.5~1.5	48~16	R	16ERA60-M		●	9.525	0.9	0.7	0.06	16IRA60-M		●	9.525	0.9	0.7	0.04
16	0.5~3	48~8	R	16ERAG60-B	●*		9.525	1.7	1.2	0.06	16IRAG60-B	●*		9.525	1.7	1.2	0.05
16	0.5~3	48~8	R	16ERAG60-M	●	●	9.525	1.6	1.2	0.06	16IRAG60-M	●	●	9.525	1.6	1.2	0.04
16	1.75~3	14~8	R	16ERG60-B	●*		9.525	1.7	1.2	0.17	16IRG60-B	●*		9.525	1.7	1.2	0.1
16	1.75~3	14~8	R	16ERG60-M		●	9.525	1.6	1.2	0.22	16IRG60-M		●	9.525	1.6	1.2	0.14
22	3.5~5	7~5	R	22ERN60-B	●*		12.7	2.5	1.7	0.32	22IRN60-B	●*		12.7	2.5	1.7	0.19

Note: ●* Please be aware of the different dimensions regarding "*t*" & "ℓ3".
Required to modify the position of the cutting edge.
Colored product needs to change the shim.

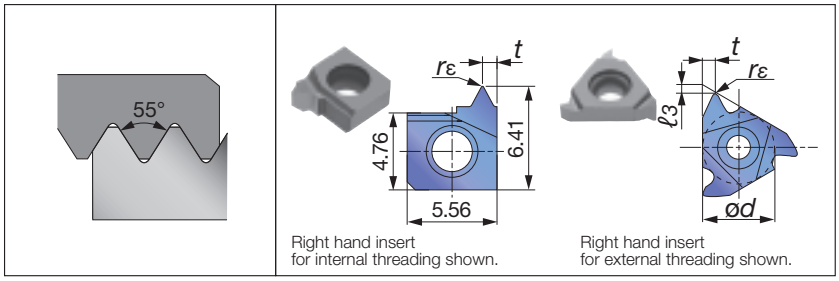
Please check the items used and replace shims if necessary (see page B397).



Inappropriate Examples

● : Line-up / Packing Quantity = 5 pcs.

55° thread angle



Right hand insert for internal threading shown.

Right hand insert for external threading shown.

Applicable toolholders

Insert size	External	Internal
6		SNR/L000*K06SC... SNR/L000*H06...
11		SNR/L**11...
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...
22	CER/L**22...	TSNR/L**22 SNR/L**22... TCNR/L**22... CNR/L**22...

Partial-profile insert

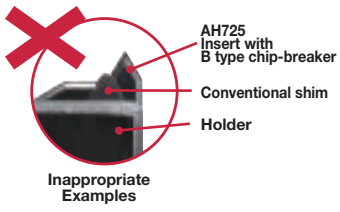
Insert size	Pitch	TPI	Hand of cut	External insert								Internal insert							
				Designation	Grade			ød	t	ℓ3	rε	Designation	Grade			ød	t	ℓ3	rε
					Coating		Un-coated						Coating		Un-coated				
					AH725	T313V	TH10						AH725	T313V	TH10				
6	0.5~1.5	48~16	R									6IRA55	●		●	-	0.9	-	0.07
11	0.5~1.5	48~16	R									11IRA55	●	●	●	6.35	0.9	0.7	0.07
16	0.5~1.5	48~16	R	16ERA55	●	●	●	9.525	0.9	0.7	0.07	16IRA55	●	●	●	9.525	0.9	0.7	0.07
16	0.5~3	48~8	R	16ERAG55	●			9.525	1.7	1.2	0.07	16IRAG55	●			9.525	1.7	1.2	0.07
16	1.75~3	14~8	R	16ERG55	●	●	●	9.525	1.6	1.2	0.25	16IRG55	●	●	●	9.525	1.7	1.2	0.25
22	3.5~5	7~5	R	22ERN55	●	●	●	12.7	2.5	1.7	0.5	22IRN55	●	●	●	12.7	2.5	1.7	0.5

Partial-profile insert with chipbreaker

Insert size	Pitch	TPI	Hand of cut	External insert						Internal insert						
				Designation	Grade	ød	t	ℓ3	rε	Designation	Grade	ød	t	ℓ3	rε
					Coating						Coating				
					AH725						AH725				
16	0.5~3	48~16	R	16ERAG55-B	●*	9.525	1.7	1.2	0.07	16IRAG55-B	●*	9.525	1.7	1.2	0.05
16	1.75~3	14~8	R	16ERG55-B	●*	9.525	1.7	1.2	0.23	16IRG55-B	●*	9.525	1.7	1.2	0.2

Note: ●* Please be aware of the different dimensions regarding "*t*" & "ℓ3".
Required to modify the position of the cutting edge.
Colored product needs to change the shim.

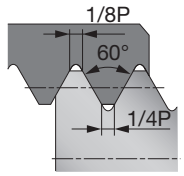
Please check the items used and replace shims if necessary (see page B397).

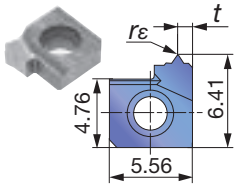


Inappropriate Examples

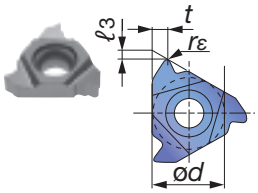
● : Line-up / Packing Quantity = 5 pcs.

ISO metric





Right hand insert
for internal threading shown.



Right hand insert
for external threading shown.

Applicable toolholders

Insert size	External	Internal
6		SNR/L000*K06SC... SNR/L000*H06...
11		SNR/L**11...
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...
22	CER/L**22...	TSNR/L**22 SNR/L**22... TCNR/L**22... CNR/L**22...
27	CER/L**27...	CNR/L**27...

Full-profile insert

Insert size	Pitch	TPI	Hand of cut	External insert: Designation	Grade: Coating AH725	Coating T313V	Un-coated TH10	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating AH725	Coating T313V	Un-coated TH10	ød	t	ℓ3	rε
6	0.75		R									6IR075ISO	●		●	-	0.5	-	0.05
6	1		R									6IR10ISO	●		●	-	0.9	-	0.07
6	1.25		R									6IR125ISO	●		●	-	0.9	-	0.09
6	1.5		R									6IR15ISO	●		●	-	0.9	-	0.11
6	1.75		R									6IR175ISO	●		●	-	0.9	-	0.12
6	2		R									6IR20ISO	●		●	-	0.9	-	0.14
11	0.5		R									11IR05ISO	●		●	6.35	0.5	1.2	0.04
11	0.75		R									11IR075ISO	●			6.35	0.5	1.2	0.05
11	1		R									11IR10ISO	●	●	●	6.35	0.9	0.7	0.07
11	1		L									11IL10ISO	●			6.35	0.9	0.7	0.07
11	1.25		R									11IR125ISO	●			6.35	0.9	0.7	0.09
11	1.25		L									11IL125ISO	●			6.35	0.9	0.7	0.09
11	1.5		R									11IR15ISO	●	●	●	6.35	0.9	0.7	0.11
11	1.5		L									11IL15ISO	●			6.35	0.9	0.7	0.11
11	1.75		R									11IR175ISO	●	●		6.35	0.9	0.7	0.12
11	1.75		L									11IL175ISO	●			6.35	0.9	0.7	0.12
11	2		R									11IR20ISO	●	●		6.35	0.9	0.7	0.14
11	2		L									11IL20ISO	●			6.35	0.9	0.7	0.14
16	0.5		R	16ER05ISO	●		●	9.525	0.5	1.2	0.06	16IR05ISO	●			9.525	0.5	1.2	0.04
16	0.75		R	16ER075ISO	●	●	●	9.525	0.5	1.2	0.09	16IR075ISO	●			9.525	0.5	1.2	0.05
16	1		R	16ER10ISO	●	●	●	9.525	0.9	0.7	0.13	16IR10ISO	●	●	●	9.525	0.9	0.7	0.07
16	1		L	16EL10ISO				9.525	0.9	0.7	0.13	16IL10ISO	●			9.525	0.9	0.7	0.07
16	1.25		R	16ER125ISO	●	●		9.525	0.9	0.7	0.16	16IR125ISO	●			9.525	0.9	0.7	0.09
16	1.25		L	16EL125ISO				9.525	0.9	0.7	0.16	16IL125ISO	●			9.525	0.9	0.7	0.09
16	1.5		R	16ER15ISO	●	●	●	9.525	0.9	0.7	0.19	16IR15ISO	●	●	●	9.525	0.9	0.7	0.11
16	1.5		L	16EL15ISO				9.525	0.9	0.7	0.19	16IL15ISO	●			9.525	0.9	0.7	0.11
16	1.75		R	16ER175ISO	●	●		9.525	1.6	1.2	0.22	16IR175ISO	●	●		9.525	1.6	1.2	0.12
16	2		R	16ER20ISO	●	●	●	9.525	1.6	1.2	0.25	16IR20ISO	●	●	●	9.525	1.6	1.2	0.14
16	2		L	16EL20ISO	●			9.525	1.6	1.2	0.25	16IL20ISO	●			9.525	1.6	1.2	0.14
16	2.5		R	16ER25ISO	●	●	●	9.525	1.6	1.2	0.31	16IR25ISO	●	●	●	9.525	1.6	1.2	0.18
16	3		R	16ER30ISO	●	●	●	9.525	1.6	1.2	0.38	16IR30ISO	●	●	●	9.525	1.6	1.2	0.21
16	3		L	16EL30ISO				9.525	1.6	1.2	0.38	16IL30ISO	●			9.525	1.6	1.2	0.21

● : Line-up / Packing Quantity = 5 pcs.

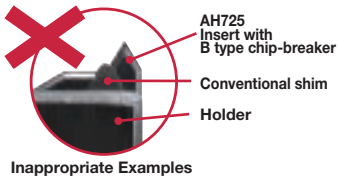
Insert size	Pitch	TPI	Hand of cut	External insert: Designation	Grade: Coating AH725	Grade: Coating T313V	Grade: Uncoated TH10	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating AH725	Grade: Coating T313V	Grade: Uncoated TH10	ød	t	ℓ3	rε
22	3.5		R	22ER35ISO	●	●		12.7	2.5	1.7	0.44	22IR35ISO	●	●		12.7	2.5	1.7	0.25
22	4		R	22ER40ISO	●	●		12.7	2.5	1.7	0.5	22IR40ISO	●	●		12.7	2.5	1.7	0.28
22	4.5		R	22ER45ISO	●			12.7	2.5	1.7	0.56	22IR45ISO	●			12.7	2.5	1.7	0.32
22	5		R	22ER50ISO	●	●		12.7	2.5	1.7	0.63	22IR50ISO	●	●		12.7	2.5	1.7	0.35
27	6		R	27ER60ISO	●	●		15.875	3.2	2.2	0.75	27IR60ISO	●	●		15.875	3.2	2.2	0.42

Full-profile insert with chipbreaker

Insert size	Pitch	TPI	Hand of cut	External insert: Designation	Grade: Coating AH725	Grade: Cermet NS9530	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating AH725	Grade: Cermet NS9530	ød	t	ℓ3	rε
11	0.5		R								11IR05ISO-B	●		6.35	0.5	1.2	0.04
11	0.5		R								11IR05ISO-M		●	6.35	0.5	1.2	0.04
11	0.75		R								11IR075ISO-B	●		6.35	0.5	1.2	0.05
11	0.75		R								11IR075ISO-M		●	6.35	0.5	1.2	0.05
11	1		R								11IR10ISO-B	●		6.35	0.9	0.7	0.08
11	1		R								11IR10ISO-M		●	6.35	0.9	0.7	0.08
11	1.25		R								11IR125ISO-B	●		6.35	0.9	0.7	0.1
11	1.25		R								11IR125ISO-M		●	6.35	0.9	0.7	0.1
11	1.5		R								11IR15ISO-B	●		6.35	0.9	0.7	0.12
11	1.5		R								11IR15ISO-M		●	6.35	0.9	0.7	0.12
11	1.75		R								11IR175ISO-B	●		6.35	0.9	0.7	0.12
11	1.75		R								11IR175ISO-M		●	6.35	0.9	0.7	0.12
11	2		R								11IR20ISO-B	●		6.35	0.9	0.7	0.14
11	2		R								11IR20ISO-M		●	6.35	0.9	0.7	0.14
16	0.5		R	16ER05ISO-M		●	9.525	0.5	1.2	0.06							
16	0.75		R	16ER075ISO-B	●*		9.525	0.6	0.6	0.08							
16	0.75		R	16ER075ISO-M		●	9.525	0.5	1.2	0.09							
16	1		R	16ER10ISO-B	●*		9.525	0.7	0.7	0.11	16IR10ISO-B	●*		9.525	0.7	0.6	0.05
16	1		R	16ER10ISO-M	●	●	9.525	0.9	0.7	0.13	16IR10ISO-M		●	9.525	0.9	0.7	0.08
16	1.25		R	16ER125ISO-B	●*		9.525	0.9	0.8	0.14	16IR125ISO-B	●*		9.525	0.9	0.8	0.07
16	1.25		R	16ER125ISO-M		●	9.525	0.9	0.7	0.16	16IR125ISO-M		●	9.525	0.9	0.7	0.1
16	1.5		R	16ER15ISO-B	●*		9.525	1	0.8	0.19	16IR15ISO-B	●*		9.525	1	0.8	0.08
16	1.5		R	16ER15ISO-M	●	●	9.525	0.9	0.7	0.19	16IR15ISO-M	●	●	9.525	0.9	0.7	0.12
16	1.75		R	16ER175ISO-B	●*		9.525	1.2	0.9	0.2	16IR175ISO-B	●*		9.525	1.2	0.9	0.10
16	1.75		R	16ER175ISO-M		●	9.525	1.6	1.2	0.22	16IR175ISO-M		●	9.525	1.6	1.2	0.14
16	2		R	16ER20ISO-B	●*		9.525	1.3	1	0.24	16IR20ISO-B	●*		9.525	1.3	1	0.11
16	2		R	16ER20ISO-M	●	●	9.525	1.6	1.2	0.25	16IR20ISO-M		●	9.525	1.6	1.2	0.14
16	2.5		R	16ER25ISO-B	●*		9.525	1.5	1.1	0.3	16IR25ISO-B	●*		9.525	1.5	1.1	0.14
16	2.5		R	16ER25ISO-M		●	9.525	1.6	1.2	0.31	16IR25ISO-M		●	9.525	1.6	1.2	0.18
16	3		R	16ER30ISO-B	●*		9.525	1.6	1.2	0.38	16IR30ISO-B	●*		9.525	1.5	1.1	0.18
16	3		R	16ER30ISO-M		●	9.525	1.6	1.2	0.38	16IR30ISO-M		●	9.525	1.6	1.2	0.21
22	3.5		R	22ER35ISO-B	●*		12.7	2.3	1.6	0.48							
22	4		R	22ER40ISO-B	●*		12.7	2.3	1.6	0.52							

Note: ●* Please be aware of the different dimensions regarding "*t*" & "ℓ3".
Required to modify the position of the cutting edge.
Colored product needs to change the shim.

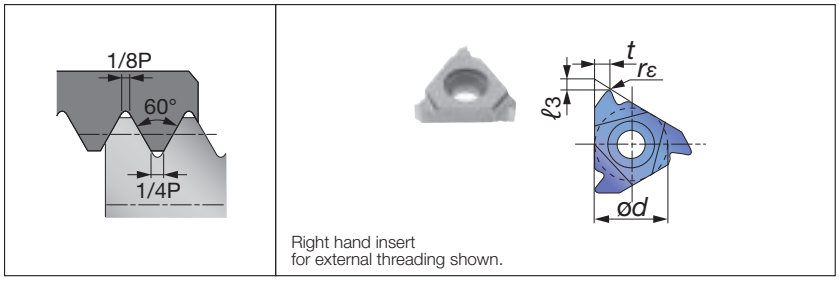
Please check the items used and replace shims if necessary(see page B397).



Inappropriate Examples

● : Line-up / Packing Quantity = 5 pcs.

Unified



Right hand insert
for external threading shown.

Applicable toolholders

Insert size	External	Internal
11		SNR/L**11...
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...
22	CER/L**22...	TSNR/L**22 SNR/L**22... TCNR/L**22... CNR/L**22...

Full-profile insert

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: Coating: AH725	Grade: Coating: T313V	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating: AH725	Grade: Coating: T313V	ød	t	ℓ3	rε
11	(0.794)	32	R								11IR32UN	●		6.35	0.5	1.2	0.06
11	(0.907)	28	R								11IR28UN	●		6.35	0.5	1.2	0.06
11	(1.058)	24	R								11IR24UN	●		6.35	0.9	0.7	0.07
11	(1.27)	20	R								11IR20UN	●		6.35	0.9	0.7	0.09
11	(1.411)	18	R								11IR18UN	●		6.35	0.9	0.7	0.1
11	(1.588)	16	R								11IR16UN	●		6.35	0.9	0.7	0.11
11	(1.814)	14	R								11IR14UN	●		6.35	0.9	0.7	0.13
16	(0.794)	32	R	16ER32UN	●		9.525	0.5	1.2	0.1	16IR32UN	●		9.525	0.5	1.2	0.06
16	(0.907)	28	R	16ER28UN	●		9.525	0.5	1.2	0.11	16IR28UN	●		9.525	0.5	1.2	0.06
16	(1.058)	24	R	16ER24UN	●		9.525	0.9	0.7	0.13	16IR24UN	●		9.525	0.9	0.7	0.07
16	(1.27)	20	R	16ER20UN	●		9.525	0.9	0.7	0.16	16IR20UN	●		9.525	0.9	0.7	0.09
16	(1.411)	18	R	16ER18UN	●		9.525	0.9	0.7	0.18	16IR18UN	●		9.525	0.9	0.7	0.1
16	(1.588)	16	R	16ER16UN	●	●	9.525	0.9	0.7	0.2	16IR16UN	●	●	9.525	0.9	0.7	0.11
16	(1.814)	14	R	16ER14UN	●	●	9.525	1.6	1.2	0.23	16IR14UN	●	●	9.525	1.6	1.2	0.13
16	(1.954)	13	R	16ER13UN	●		9.525	1.6	1.2	0.24	16IR13UN	●		9.525	1.6	1.2	0.14
16	(2.117)	12	R	16ER12UN	●	●	9.525	1.6	1.2	0.27	16IR12UN	●	●	9.525	1.6	1.2	0.15
16	(2.309)	11	R	16ER11UN	●		9.525	1.6	1.2	0.29	16IR11UN	●		9.525	1.6	1.2	0.16
16	(2.54)	10	R	16ER10UN	●		9.525	1.6	1.2	0.32	16IR10UN	●		9.525	1.6	1.2	0.18
16	(2.822)	9	R	16ER9UN	●		9.525	1.6	1.2	0.35	16IR9UN	●		9.525	1.6	1.2	0.2
16	(3.175)	8	R	16ER8UN	●	●	9.525	1.6	1.2	0.4	16IR8UN	●	●	9.525	1.6	1.2	0.22
22	(3.629)	7	R	22ER7UN	●		12.7	2.5	1.7	0.45	22IR7UN	●		12.7	2.5	1.7	0.25
22	(4.233)	6	R	22ER6UN	●		12.7	2.5	1.7	0.53	22IR6UN	●		12.7	2.5	1.7	0.3
22	(5.08)	5	R	22ER5UN	●		12.7	2.5	1.7	0.64	22IR5UN	●		12.7	2.5	1.7	0.36

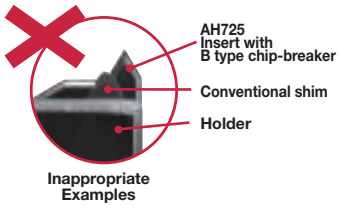
● : Line-up / Packing Quantity = 5 pcs.

Full-profile insert with chipbreaker

Insert size	Pitch	TPI	Hand of cut	External insert							Internal insert						
				Designation	Grade		ød	t	ℓ_3	rε	Designation	Grade		ød	t	ℓ_3	rε
					Coating AH725	Cermet NS9530						Coating AH725	Cermet NS9530				
16		24	R	**16ER24UN-B**	●*		9.525	0.8	0.7	0.11							
16		24	R	**16ER24UN-M**		●	9.525	0.9	0.7	0.13							
16		20	R	**16ER20UN-B**	●*		9.525	0.9	0.8	0.14	**16IR20UN-B**	●*		9.525	0.9	0.8	0.06
16		20	R	**16ER20UN-M**		●	9.525	0.9	0.7	0.16	**16IR20UN-M**		●	9.525	0.9	0.7	0.09
16		18	R	**16ER18UN-B**	●*		9.525	1	0.8	0.15	**16IR18UN-B**	●*		9.525	1	0.8	0.08
16		18	R	**16ER18UN-M**		●	9.525	0.9	0.7	0.18	**16IR18UN-M**		●	9.525	0.9	0.7	0.1
16		16	R	**16ER16UN-B**	●*		9.525	1.1	0.9	0.19	**16IR16UN-B**	●*		9.525	1.1	0.9	0.09
16		16	R	**16ER16UN-M**		●	9.525	0.9	0.7	0.2	**16IR16UN-M**		●	9.525	0.9	0.7	0.11
16		14	R	**16ER14UN-B**	●*		9.525	1.2	1	0.22	**16IR14UN-B**	●*		9.525	1.2	0.9	0.11
16		14	R	**16ER14UN-M**		●	9.525	1.6	1.2	0.23	**16IR14UN-M**		●	9.525	1.6	1.2	0.13
16		13	R	**16ER13UN-B**	●*		9.525	1.3	1	0.24							
16		12	R	**16ER12UN-B**	●*		9.525	1.4	1.1	0.25	**16IR12UN-B**	●*		9.525	1.4	1.1	0.12
16		12	R	**16ER12UN-M**		●	9.525	1.6	1.2	0.27	**16IR12UN-M**		●	9.525	1.6	1.2	0.15
16		8	R	**16ER8UN-B**	●*		9.525	1.6	1.2	0.41	**16IR8UN-B**	●*		9.525	1.5	1.1	0.19
16		8	R	**16ER8UN-M**		●	9.525	1.6	1.2	0.4	**16IR8UN-M**		●	9.525	1.6	1.2	0.22

Note: ●* Please be aware of the different dimensions regarding "*t*" & "ℓ_3".
Required to modify the position of the cutting edge.
Colored product needs to change the shim.

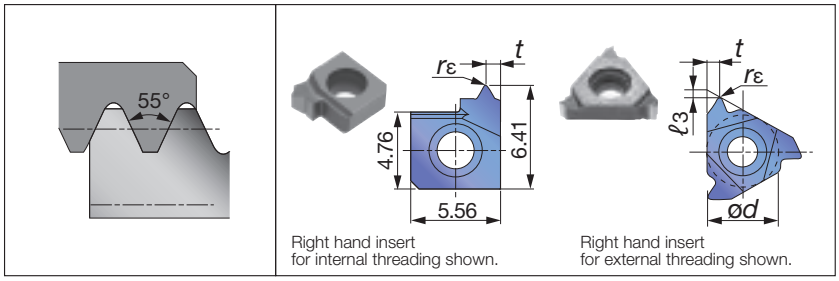
Please check the items used and replace shims if necessary (see page B397).



Inappropriate Examples

● : Line-up / Packing Quantity = 5 pcs.

Whitworth



Right hand insert for internal threading shown.

Right hand insert for external threading shown.

Applicable toolholders

Insert size	External	Internal
6		SNR/L000*K06SC... SNR/L000*H06...
11		SNR/L**11...
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...
22	CER/L**22...	TSNR/L**22 SNR/L**22... TCNR/L**22... CNR/L**22...

Full-profile insert

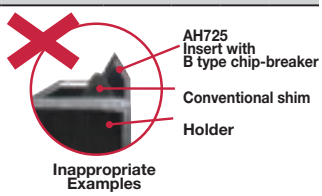
Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: Coating AH725	Grade: Coating T313V	Grade: Uncoated TH10	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating AH725	Grade: Coating T313V	Grade: Uncoated TH10	ød	t	ℓ3	rε
6	(1.337)	19	R									6IR19W	●		●	-	0.9	-	0.17
11	(1.337)	19	R									11IR19W	●	●	●	6.35	0.9	0.7	0.17
11	(1.814)	14	R									11IR14W	●	●	●	6.35	0.9	0.7	0.23
16	(0.907)	28	R	16ER28W	●	●		9.525	0.9	0.7	0.11	16IR28W	●			9.525	0.9	0.7	0.11
16	(0.97)	26	R	16ER26W	●			9.525	0.9	0.7	0.12	16IR26W	●			9.525	0.9	0.7	0.12
16	(1.27)	20	R	16ER20W	●			9.525	0.9	0.7	0.16	16IR20W	●			9.525	0.9	0.7	0.16
16	(1.337)	19	R	16ER19W	●	●		9.525	0.9	0.7	0.17	16IR19W	●			9.525	0.9	0.7	0.17
16	(1.411)	18	R	16ER18W	●			9.525	0.9	0.7	0.18	16IR18W	●			9.525	0.9	0.7	0.18
16	(1.588)	16	R	16ER16W	●	●		9.525	0.9	0.7	0.2	16IR16W	●	●		9.525	0.9	0.7	0.2
16	(1.814)	14	R	16ER14W	●	●	●	9.525	1.6	1.2	0.23	16IR14W	●	●	●	9.525	1.6	1.2	0.23
16	(1.814)	14	L	16EL14W	●			9.525	1.6	1.2	0.23								
16	(2.117)	12	R	16ER12W	●	●		9.525	1.6	1.2	0.27	16IR12W	●	●		9.525	1.6	1.2	0.27
16	(2.309)	11	R	16ER11W	●	●	●	9.525	1.6	1.2	0.29	16IR11W	●	●	●	9.525	1.6	1.2	0.29
16	(2.54)	10	R	16ER10W	●	●		9.525	1.6	1.2	0.32	16IR10W	●	●		9.525	1.6	1.2	0.32
16	(2.822)	9	R	16ER9W	●			9.525	1.6	1.2	0.35	16IR9W	●			9.525	1.6	1.2	0.35
16	(3.175)	8	R	16ER8W	●	●		9.525	1.6	1.2	0.4	16IR8W	●	●		9.525	1.6	1.2	0.4
22	(3.629)	7	R	22ER7W	●			12.7	2.5	1.7	0.45	22IR7W	●			12.7	2.5	1.7	0.45
22	(4.233)	6	R	22ER6W	●			12.7	2.5	1.7	0.53	22IR6W	●			12.7	2.5	1.7	0.53
22	(5.08)	5	R	22ER5W	●			12.7	2.5	1.7	0.64	22IR5W	●			12.7	2.5	1.7	0.64

Full-profile insert with chipbreaker

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: Coating AH725	Grade: Cermet NS9530	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating AH725	Grade: Cermet NS9530	ød	t	ℓ3	rε
16	(1.337)	19	R	16ER19W-B	●*		9.525	1	0.8	0.16							
16	(1.337)	19	R	16ER19W-M		●	9.525	0.9	0.7	0.17	16IR19W-M		●	9.525	0.9	0.7	0.17
16	(1.588)	16	R	16ER16W-B	●*		9.525	1.1	0.9	0.2	16IR16W-B	●*		9.525	1.1	0.9	0.18
16	(1.814)	14	R	16ER14W-B	●*		9.525	1.2	1	0.24	16IR14W-B	●*		9.525	1.2	1	0.21
16	(1.814)	14	R	16ER14W-M		●	9.525	1.6	1.2	0.23	16IR14W-M		●	9.525	1.6	1.2	0.23
16	(2.309)	11	R	16ER11W-B	●*		9.525	1.5	1.1	0.27	16IR11W-B	●*		9.525	1.5	1.1	0.27
16	(2.309)	11	R	16ER11W-M		●	9.525	1.6	1.2	0.29	16IR11W-M		●	9.525	1.6	1.2	0.29

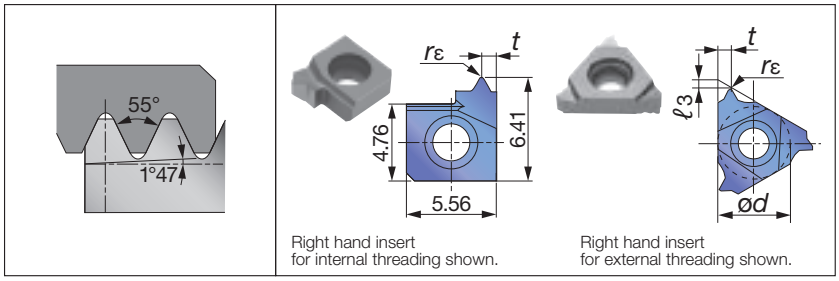
Note: ●* Please be aware of the different dimensions regarding "*t*" & "ℓ3".
Required to modify the position of the cutting edge.
Colored product needs to change the shim.

Please check the items used and replace shims if necessary (see page B397).



● : Line-up / Packing Quantity = 5 pcs.

Taper pipe



Right hand insert for internal threading shown.

Right hand insert for external threading shown.

Applicable toolholders

Insert size	External	Internal
6		SNR/L000*K06SC... SNR/L000*H06...
11		SNR/L**11...
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...

Full-profile insert

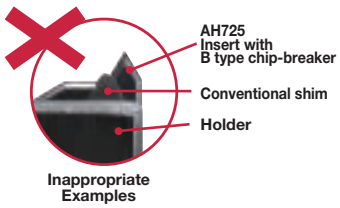
Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: Coating AH725	Grade: Coating T313V	Grade: Un-coated TH10	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating AH725	Grade: Coating T313V	Grade: Un-coated TH10	ød	t	ℓ3	rε
6	(1.337)	19	R									6IR19PT	●		●	-	0.9	-	0.14
11	(1.337)	19	R									11IR19PT	●	●	●	6.35	0.9	0.7	0.14
11	(1.814)	14	R									11IR14PT	●	●	●	6.35	0.9	0.7	0.16
16	(0.907)	28	R	16ER28PT	●	●		9.525	0.9	0.7	0.09								
16	(1.337)	19	R	16ER19PT	●	●		9.525	0.9	0.7	0.14	16IR19PT	●			9.525	0.9	0.7	0.14
16	(1.814)	14	R	16ER14PT	●	●		9.525	1.6	1.2	0.16	16IR14PT	●	●	●	9.525	1.6	1.2	0.16
16	(2.309)	11	R	16ER11PT	●	●		9.525	1.6	1.2	0.26	16IR11PT	●	●	●	9.525	1.6	1.2	0.26

Full-profile insert with chipbreaker

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: Coating AH725	Grade: Cermet NS9530	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating AH725	Grade: Cermet NS9530	ød	t	ℓ3	rε
16	(1.337)	19	R	16ER19PT-M		●	9.525	0.9	0.7	0.18	16IR19PT-M		●	9.525	0.9	0.7	0.18
16	(1.814)	14	R	16ER14PT-B	●*		9.525	1.2	1	0.21	16IR14PT-B	●*		9.525	1	1.2	0.21
16	(1.814)	14	R	16ER14PT-M		●	9.525	1.6	1.2	0.25	16IR14PT-M		●	9.525	1.6	1.2	0.25
16	(2.309)	11	R	16ER11PT-B	●*		9.525	1.5	1.1	0.28	16IR11PT-B	●*		9.525	1.5	1.1	0.28
16	(2.309)	11	R	16ER11PT-M		●	9.525	1.6	1.2	0.32	16IR11PT-M		●	9.525	1.6	1.2	0.32

Note: ●* Please be aware of the different dimensions regarding "*t*" & "ℓ3".
Required to modify the position of the cutting edge.
Colored product needs to change the shim.

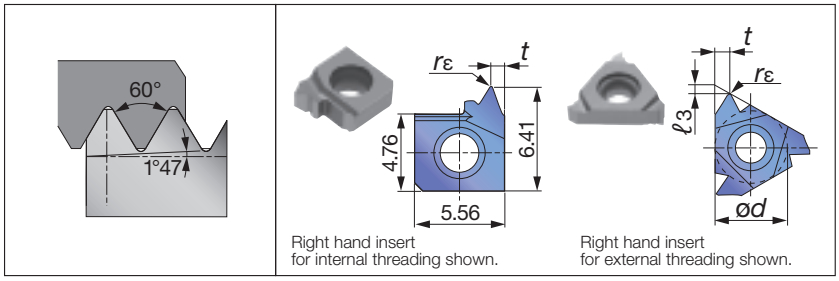
Please check the items used and replace shims if necessary (see page B397).



Inappropriate Examples

● : Line-up / Packing Quantity = 5 pcs.

NPT



Right hand insert for internal threading shown.

Right hand insert for external threading shown.

Applicable toolholders

Insert size	External	Internal
6		SNR/L000*K06SC... SNR/L000*H06...
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...

Full-profile insert

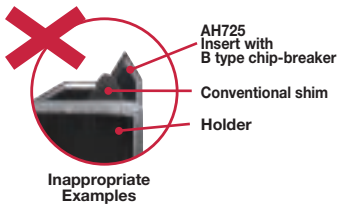
Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: Coating AH725	Grade: Coating T313V	Grade: Un-coated TH10	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating AH725	Grade: Coating T313V	Grade: Un-coated TH10	ød	t	ℓ3	rε
6	(1.411)	18	R									6IR18NPT	●		●	-	0.9	-	0.03
16	(0.941)	27	R	16ER27NPT	●			9.525	0.5	1.2	0.02	16IR27NPT	●			9.525	0.5	1.2	0.02
16	(1.411)	18	R	16ER18NPT	●	●		9.525	0.9	0.7	0.03	16IR18NPT	●			9.525	0.9	0.7	0.03
16	(1.814)	14	R	16ER14NPT	●			9.525	1.6	1.2	0.04	16IR14NPT	●		●	9.525	1.6	1.2	0.04
16	(2.209)	11.5	R	16ER115NPT	●			9.525	1.6	1.2	0.05	16IR115NPT	●		●	9.525	1.6	1.2	0.05
16	(3.175)	8	R	16ER8NPT	●			9.525	1.6	1.2	0.07	16IR8NPT	●		●	9.525	1.6	1.2	0.07

Full-profile insert with chipbreaker

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: Coating AH725	Grade: Cermet NS9530	ød	t	ℓ3	rε	Internal insert: Designation	Grade: Coating AH725	Grade: Cermet NS9530	ød	t	ℓ3	rε
16	(1.411)	18	R	16ER18NPT-B	●*		9.525	1	0.8	0.05							
16	(1.411)	18	R	16ER18NPT-M		●	9.525	0.9	0.7	0.07	16IR18NPT-M		●	9.525	0.9	0.7	0.07
16	(1.814)	14	R	16ER14NPT-B	●*		9.525	1.2	0.9	0.05	16IR14NPT-B	●*		9.525	1.2	0.9	0.05
16	(1.814)	14	R	16ER14NPT-M		●	9.525	1.6	1.2	0.08	16IR14NPT-M		●	9.525	1.6	1.2	0.08
16	(2.209)	11.5	R	16ER115NPT-B	●*		9.525	1.5	1.1	0.09	16IR115NPT-B	●*		9.525	1.5	1.1	0.09
16	(2.209)	11.5	R	16ER115NPT-M		●	9.525	1.6	1.2	0.09	16IR115NPT-M		●	9.525	1.6	1.2	0.09
16	(3.175)	8	R	16ER8NPT-B	●*		9.525	1.8	1.3	0.12	16IR8NPT-B	●*		9.525	1.8	1.3	0.12

Note: ●* Please be aware of the different dimensions regarding "*t*" & "ℓ3".
Required to modify the position of the cutting edge.
Colored product needs to change the shim.

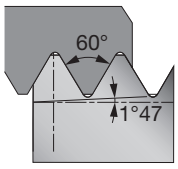
Please check the items used and replace shims if necessary (see page B397).

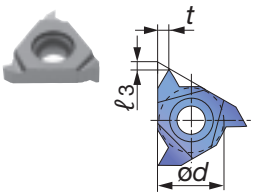


Inappropriate Examples

● : Line-up / Packing Quantity = 5 pcs.

NPTF





Right hand insert
for external threading shown.

Applicable toolholders

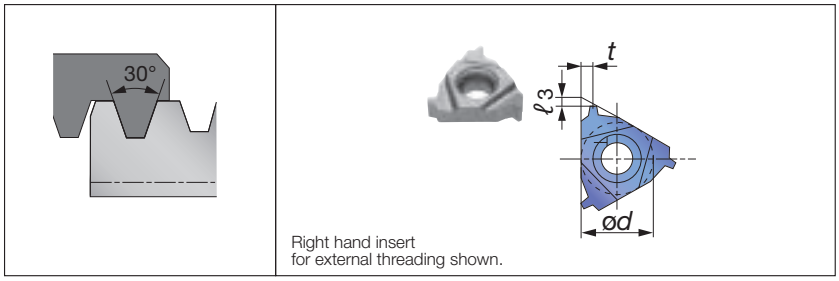
Insert size	External	Internal
16	CER/L**16...	TSNR/L**16
	B-SER/L**16	SNR/L**16...
	B-CER/L**16	TCNR/L**16...
	BC-SER/L**16	CNR/L**16...

Full-profile insert

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert						Internal insert					
				Designation	Grade / Coating / AH725	ød	t	ℓ3	rε	Designation	Grade / Coating / AH725	ød	t	ℓ3	rε
16	(0.941)	27	R	**16ER27NPTF**	●	9.525	0.5	1.2	-						
16	(1.411)	18	R	**16ER18NPTF**	●	9.525	0.9	0.7	-						
16	(1.814)	14	R	**16ER14NPTF**	●	9.525	1.6	1.2	-	**16IR14NPTF**	●	9.525	1.6	1.2	-
16	(2.209)	11.5	R	**16ER115NPTF**	●	9.525	1.6	1.2	-	**16IR115NPTF**	●	9.525	1.6	1.2	-
16	(3.175)	8	R	**16ER8NPTF**	●	9.525	1.6	1.2	-	**16IR8NPTF**	●	9.525	1.6	1.2	-

● : Line-up / Packing Quantity = 5 pcs.

30° Trapezoidal (DIN103)



Right hand insert
for external threading shown.

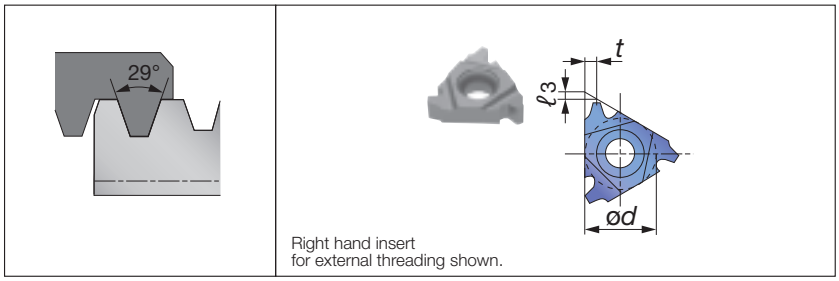
Applicable toolholders

Insert size	External	Internal
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...
22	CER/L**22...	TSNR/L**22 SNR/L**22... TCNR/L**22... CNR/L**22...
27	CER/L**27...	

Special full-profile insert (see page B403)

Insert size	Pitch	TPI	Hand of cut	External insert: Designation	Grade: Coating: AH725	Grade: Coating: T313V	ød	t	ℓ3	Internal insert: Designation	Grade: Coating: AH725	Grade: Coating: T313V	ød	t	ℓ3
16	1.5		R	**16ER15TR**	●		9.525	0.9	0.7	**16IR15TR**	●		9.525	0.9	0.7
16	2		R	**16ER20TR**	●	●	9.525	1.6	1.3	**16IR20TR**	●	●	9.525	1.6	1.3
16	3		R	**16ER30TR**	●	●	9.525	1.6	1.3	**16IR30TR**	●	●	9.525	1.6	1.3
22	4		R	**22ER40TR**	●	●	12.7	2.5	2	**22IR40TR**	●	●	12.7	2.5	2
22	5		R	**22ER50TR**	●	●	12.7	2.5	2	**22IR50TR**	●	●	12.7	2.5	2
27	6		R	**27ER60TR**	●	●	15.875	3.2	2.5						

29° Trapezoidal (ACME)



Right hand insert
for external threading shown.

Applicable toolholders

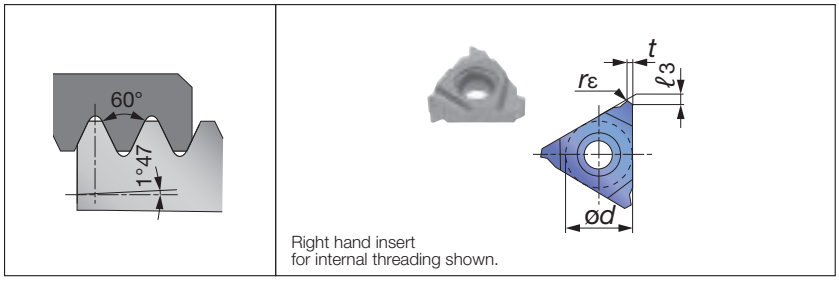
Insert size	External	Internal
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...
22	CER/L**22...	TSNR/L**22 SNR/L**22... TCNR/L**22... CNR/L**22...

Special full-profile insert (see page B403)

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: Coating: AH725	Grade: Coating: T313V	ød	t	ℓ3	Internal insert: Designation	Grade: Coating: AH725	Grade: Coating: T313V	ød	t	ℓ3
16	(2.117)	12	R	**16ER12ACME**	●		9.525	1.6	1.3	**16IR12ACME**	●		9.525	1.6	1.3
16	(2.540)	10	R	**16ER10ACME**	●		9.525	1.6	1.3	**16IR10ACME**	●		9.525	1.6	1.3
16	(3.175)	8	R	**16ER8ACME**	●	●	9.525	1.6	1.3	**16IR8ACME**	●	●	9.525	1.6	1.3
22	(4.233)	6	R	**22ER6ACME**	●	●	12.7	2.5	2	**22IR6ACME**	●	●	12.7	2.5	2
22	(5.080)	5	R	**22ER5ACME**	●	●	12.7	2.5	2	**22IR5ACME**	●	●	12.7	2.5	2

● : Line-up / Packing Quantity = 5 pcs.

API Round



Right hand insert
for internal threading shown.

Applicable toolholders

Insert size	External	Internal
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...

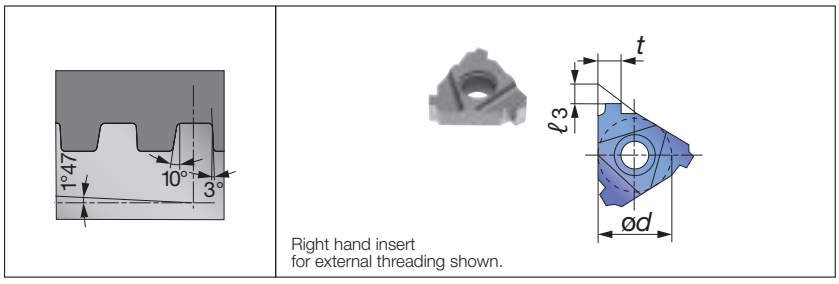
Full-profile insert

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: AH725	Grade: T313V	ød	t	ℓ3	rε	Internal insert: Designation	Grade: AH725	Grade: T313V	ød	t	ℓ3	rε
16	(2.54)	10	R	**16ER10RAPI**	●		9.525	1.6	1.2	0.36	**16IR10RAPI**	●	●	9.525	1.6	1.2	0.36
16	(3.175)	8	R	**16ER8RAPI**	●		9.525	1.6	1.2	0.43	**16IR8RAPI**	●	●	9.525	1.6	1.2	0.43

Full-profile insert with chipbreaker

Insert size	Pitch (Reference)	Number of threads	Hand of cut	External insert: Designation	Grade: AH725	ød	t	ℓ3	rε	Internal insert: Designation	Grade: AH725	ød	t	ℓ3	rε
16	(2.54)	10	R	**16ER10RD-CB**	●	9.525	1.2	1.5	0.36	**16IR10RD-CB**	●	9.525	1.2	1.5	0.36
16	(3.175)	8	R	**16ER8RD-CB**	●	9.525	1.3	1.5	0.43	**16IR8RD-CB**	●	9.525	1.3	1.5	0.43

API Buttress



Right hand insert
for external threading shown.

Applicable toolholders

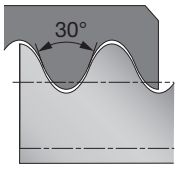
Insert size	External	Internal
22	CER/L**22...	TSNR/L**22 SNR/L**22... TCNR/L**22... CNR/L**22...

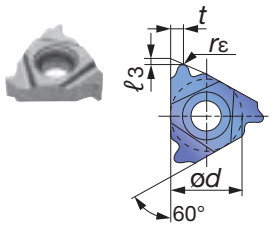
Full-profile insert

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert: Designation	Grade: AH725	ød	t	ℓ3	Internal insert: Designation	Grade: AH725	ød	t	ℓ3
22	(5.08)	5	R	**22ER5BAPI**	●	12.7	3.72	2.2	**22IR5BAPI**	●	12.7	3.45	2.2

● : Line-up / Packing Quantity = 5 pcs.

Round (DIN405)





Right hand insert
for external threading shown.

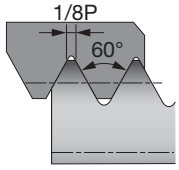
Applicable toolholders

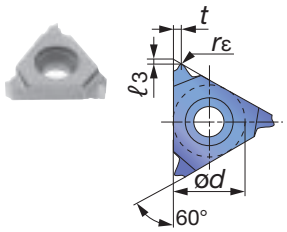
Insert size	External	Internal
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16	TSNR/L**16 SNR/L**16... TCNR/L**16... CNR/L**16...

Full-profile insert with chipbreaker

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert						Internal insert					
				Designation	Grade / Coating / AH725	ød	t	ℓ3	rε	Designation	Grade / Coating / AH725	ød	t	ℓ3	rε
16		8	R	**16ER8RD-B**	●	9.525	1.3	1.4	-						
16		6	R	**16ER6RD-B**	●	9.525	1.7	1.5	-	**16IR6RD-B**	●	9.525	1.5	1.4	-

UNJ (Aerospace)





Right hand (R) shown.

Applicable toolholders

Insert size	External
16	CER/L**16... B-SER/L**16 B-CER/L**16 BC-SER/L**16

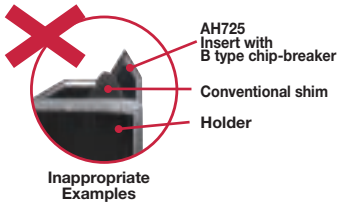
Full-profile insert

Insert size	Pitch (Reference)	TPI	Hand of cut	External insert					
				Designation	Grade / Coating / AH725	ød	t	ℓ3	rε
16		32	R	**16ER32UNJ**	●	9.525	0.5	1.2	0.13
16		28	R	**16ER28UNJ**	●	9.525	0.5	1.2	0.15
16		24	R	**16ER24UNJ**	●	9.525	0.9	0.7	0.18
16		20	R	**16ER20UNJ**	●	9.525	0.9	0.7	0.21
16		18	R	**16ER18UNJ**	●	9.525	0.9	0.7	0.24
16		16	R	**16ER16UNJ**	●	9.525	0.9	0.7	0.26
16		14	R	**16ER14UNJ**	●	9.525	1.6	1.2	0.3
16		12	R	**16ER12UNJ**	●	9.525	1.6	1.2	0.35
16		10	R	**16ER10UNJ**	●	9.525	1.6	1.2	0.42
16		8	R	**16ER8UNJ**	●	9.525	1.6	1.2	0.53

● : Line-up / Packing Quantity = 5 pcs.

IMPORTANT NOTICE - Replacement of shim sheet

Please check the items used and replace shims if necessary (see the following list).



List of interchangeable Shims (Size 16 · Insert).

Holder type	Lead Angle	External designation		Internal designation	
		① Conventional	❶ Standard (New)	② Conventional	❷ Standard (New)
Dual clamping methods of screw-on and clamp-on	4°	GXE16-4DT	AE16-4DT	GXN16-4DT	AN16-4DT
	3°	GXE16-3DT	AE16-3DT	GXN16-3DT	AN16-3DT
	2°	GXE16-2DT	AE16-2DT	GXN16-2DT	AN16-2DT
	1° (Standard)	GX16-1DT	A16-1DT	GX16-1DT	A16-1DT
	0°	GXE16-0DT	AE16-0DT	GXN16-0DT	AN16-0DT
	-1°	GXE16-99DT	AE16-99DT	GXN16-99DT	AN16-99DT
	-2°	GXE16-98DT	AE16-98DT	GXN16-98DT	AN16-98DT
Clamp-on	4°	GXE16-4	AE16-4	GXN16-4	AN16-4
	3°	GXE16-3	AE16-3	GXN16-3	AN16-3
	2°	GXE16-2	AE16-2	GXN16-2	AN16-2
	1° (Standard)	GXE16-1	A16-1	GXN16-1	A16-1
	0°	GXE16-0	AE16-0	GXN16-0	AN16-0
	-1°	GXE16-99	AE16-99	GXN16-99	AN16-99
	-2°	GXE16-98	AE16-98	GXN16-98	AN16-98

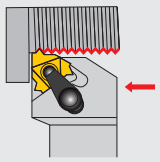
Target items for the replacement of shims (Size 16 · Insert).

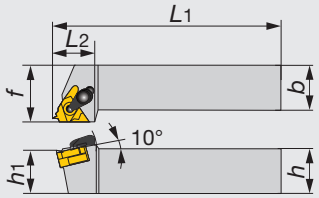
Thread type	External			Internal		
	Designation	Grade	Replacement	Designation	Grade	Replacement
ISO			① Conventional ↓ ❶ Standard (New)	16IR15ISO-B	AH725	② Conventional ↓ ❷ Standard (New)
				16IR175ISO-B	AH725	
				16IR20ISO-B	AH725	
55°	16ERAG55-B	AH725		16IRAG55-B	AH725	
				16IRG55-B	AH725	
60°	16ERA60-B	AH725		16IRAG60-B	AH725	
				16IRA60-B	AH725	
				16IRG60-B	AH725	
UN				16IR18UN-B	AH725	
				16IR16UN-B	AH725	
				16IR14UN-B	AH725	
W				16IR16W-B	AH725	
				16IR14W-B	AH725	
PT				16IR14PT-B	AH725	
NPT	16ER8NPT-B	AH725		16IR14NPT-B	AH725	
				16IR115NPT-B	AH725	

TUNGTHREAD

CER/L

External threading toolholders, Altanative clamping of screw-on or clamp-on (DT type only)





Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	Insert
CER/L1212H16DT	12	12	100	24	12	16	16ER/L...
CER/L1616H16DT	16	16	100	24	16	20	16ER/L...
CER/L2020K16DT	20	20	125	24	20	25	16ER/L...
CER/L2525M16DT	25	25	150	28	25	32	16ER/L...
CER/L2525M22DT	25	25	150	31.3	25	32	22ER/L...
CER3232P16T	32	32	170	32	32	40	16ER...
CER3232P22T	32	32	170	32	32	40	22ER...
CER2525M27T	25	25	150	34	25	32	27ER...
CER3232P27T	32	32	170	34	32	40	27ER...

Note: A clamp set for CER/L type consists of a clamp and a clamping screw. A shim set for CER/L type consists of a shim and a shim screw. Standard shims for CER/L type can be used for both left hand and right hand toolholders. Use either of the sides depending on the hand.

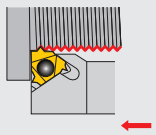
SPARE PARTS

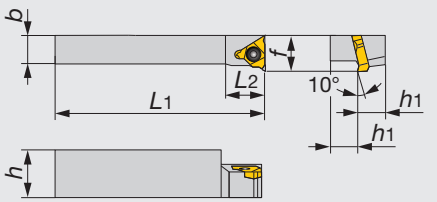
Designation	Clamp set	Clamping screw	Screw	Shim	Shim set	Wrench	Wrench 1	Wrench 2
CER/L**16DT	CSP16	CSTB-3.5ST	DTS5-3.5	A16-1DT	-	P-3.5	T-15F	-
CER/L2525M22DT	CSP22	CSTB-4ST	DTS6-4	GX22-1DT	-	P-4	T-15F	T-20F
CER3232P16T	CSP16	-	-	-	A16-1	-	T-15F	-
CER3232P22T	CSP22	-	-	-	NXE22-1	-	T-20F	-
CER**27T	CSP27	-	-	-	NXE27-1	P-4	-	-

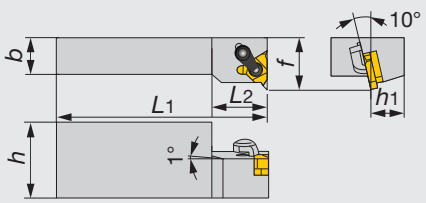
TUNGTHREAD

B-S/CER/L

External threading toolholders for small lathe







Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	Insert
B-SER10H16	20	10	100	15	10	16	16ER...
B-SER12K16	24	12	125	18	12	18	16ER...
B-CER/L16M16	32	16	150	24	16	22	16ER/L...

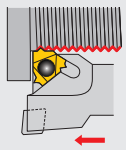
SPARE PARTS

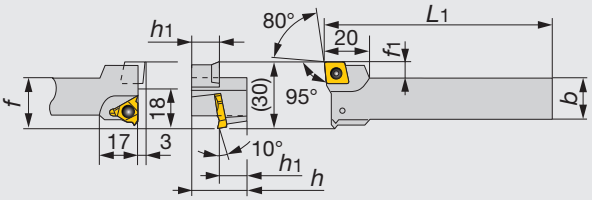
Designation	Clamp set	Shim set	Clamping screw	Wrench
B-SER**16	-	-	CSTB-3.5	T-15F
B-CER/L16M16	CSP16	A16-1	-	T-15F

CER/L, B-S/CER/L: Inserts → **B384 -**, Standard cutting conditions → **B382**

TUNGTHREAD
BC-SER/L

Multi functional external threading toolholders for small lathe





Right hand (R) shown.

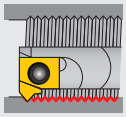
Designation	h	b	L1	h1	f	f1	Insert
BC-SER12K16	24	16	125	12	23	7	16ER..., CC*T09T3...

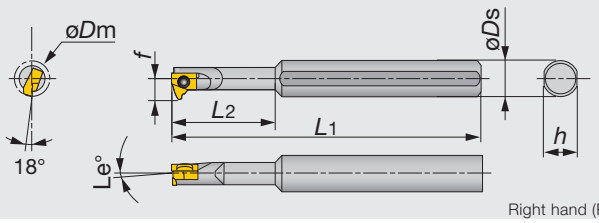
SPARE PARTS

Designation	Clamping screw	Wrench
BC-SER12K16	CSTB-3.5	T-15F

TUNGTHREAD
SNR/L-2/3

Small bars for internal threading, Screw-on clamp





Right hand (R) ,carbide shank type shown.

Designation	Material	øDm	øDs	f	L1	L2	h	Le°	Insert
SNR0006H06-2	STEEL	8	8	4.7	100	18	7	2	6IR...
SNR0006H06-3	STEEL	8	8	4.7	100	18	7	3	6IR...
SNR0008H06-2	STEEL	10	8	5.7	100	-	7	2	6IR...
SNR0008H06-3	STEEL	10	8	5.7	100	-	7	3	6IR...
SNR0006K06SC-2	CARBIDE	8	8	4.7	125	30	7	2	6IR...
SNR0006K06SC-3	CARBIDE	8	8	4.7	125	30	7	3	6IR...
SNR0008K06SC-2	CARBIDE	10	8	5.7	125	-	7	2	6IR...
SNR0008K06SC-3	CARBIDE	10	8	5.7	125	-	7	3	6IR...

Note: When using the right hand insert (6IR** type), is used for the right hand toolholders (SNR** type).

SPARE PARTS

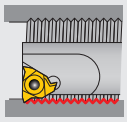
Designation	Clamping screw	Wrench
SNR0006H06...	CSTB-2L040	T-6F
SNR0008H06...	CSTB-2L	T-6F
SNR0006K06SC...	CSTB-2L040	T-6F
SNR0008K06SC...	CSTB-2L	T-6F

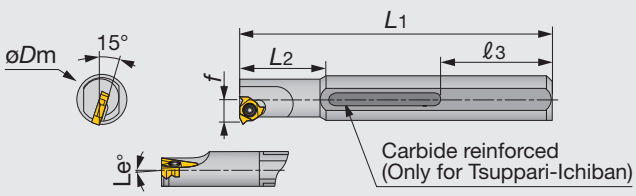
BC-SER/L: Inserts → **B104 -** (CC*T09T3...)**, B384 -** (16ER...),
Standard cutting conditions → **B382**

SNR/L-2/3: Inserts → **B384 -**, Standard cutting conditions → **B382**

SNR/L

Internal threading bars, Screw-on clamp





Right hand (R),
Tsuppari-Ichiban shank type shown.

Designation	Material	øDm	øDs	f	L1	L2	ℓ3	h	b	Le°	Insert
TSNR0016Q16	TSUPPARI	19	16	10.6	180	40	59	15	-	1	16IR...
TSNR0020R22	TSUPPARI	24	20	13.9	200	50	49	18	-	1	22IR...
SNR/L0010K11	STEEL	12	16	6.6	125	25	-	15	15.5	1	11IR/L...
SNR0010K11-2	STEEL	12	16	6.6	125	25	-	15	15.5	2	11IR...
SNR0010K11-3	STEEL	12	16	6.6	125	25	-	15	15.5	3	11IR...
SNR/L0013L11	STEEL	15	16	8.2	140	32.5	-	15	15.5	1	11IR/L...
SNR0013L11-2	STEEL	15	16	8.2	140	32.5	-	15	15.5	2	11IR...
SNR0013L11-3	STEEL	15	16	8.2	140	32.5	-	15	15.5	3	11IR...
SNR/L0016M16	STEEL	19	16	10.6	150	40	-	15	15.5	1	16IR/L...
SNR0016M16-2	STEEL	19	16	10.6	150	40	-	15	15.5	2	16IR...
SNR0016M16-3	STEEL	19	16	10.6	150	40	-	15	15.5	3	16IR...
SNR/L0020Q22	STEEL	24	20	13.9	180	50	-	18	19	1	22IR/L...
SNR0020Q22-2	STEEL	24	20	13.9	180	50	-	18	19	2	22IR...
SNR0020Q22-3	STEEL	24	20	13.9	180	50	-	18	19	3	22IR...
SNR0010M11SC	CARBIDE	13	10	7.4	150	24	-	9	-	1	11IR...
SNR0010M11SC-2	CARBIDE	13	10	7.4	150	24	-	9	-	2	11IR...
SNR0010M11SC-3	CARBIDE	13	10	7.4	150	24	-	9	-	3	11IR...
SNR0012P11SC	CARBIDE	15	12	8.5	170	28	-	11	-	1	11IR...
SNR0012P11SC-2	CARBIDE	15	12	8.5	170	28	-	11	-	2	11IR...
SNR0012P11SC-3	CARBIDE	15	12	8.5	170	28	-	11	-	3	11IR...
SNR/L0016R16SC	CARBIDE	20	16	11.9	200	35	-	15	-	1	16IR/L...
SNR0016R16SC-2	CARBIDE	20	16	11.9	200	35	-	15	-	2	16IR...

Note: When using a right or left hand insert, the right hand insert (**IR...type) is used for the right hand toolholders (SNR...type) and left hand insert (**IL...type) is used for the left hand toolholders (SNL...type).

SPARE PARTS

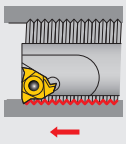


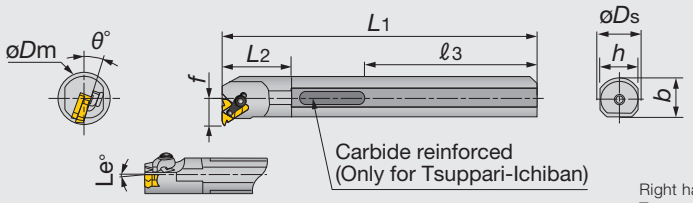

Designation	Clamping screw	Wrench
TSNR0016Q16	CSTB-3.5	T-15F
TSNR0020R22	CSTB-4	T-15F
SNR/L00**11...	CSTB-2.5	T-8F
SNR/L0016M16...	CSTB-3.5	T-15F
SNR/L0020Q22...	CSTB-4	T-15F
SNR00**11SC...	CSTB-2.5	T-8F
SNR/L0016R16SC...	CSTB-3.5	T-15F

SNR/L: Inserts → **B384 -**, Standard cutting conditions → **B382**

CNR/L

Internal threading bars, Alternative clamping of screw-on or clamp-on(DT type only)





Right hand (R),
Tsuppari-Ichiban shank type shown.

Designation	Material	øDm	øDs	f	L1	L2	ℓ3	h	b	θ°	Le°	Insert
TCNR0020R16DT	TSUPPARI	24	20	14	200	30	49	18	-	15	1	16IR...
TCNR0025S16DT	TSUPPARI	29	25	16.5	250	38	64	23	-	15	1	16IR...
TCNR0025S22DT	TSUPPARI	30	25	18.2	250	38	64	23	-	15	1	22IR...
CNR/L0020P16	STEEL	24	20	14	170	30	-	18	19	15	1	16IR/L...
CNR/L0025R16	STEEL	29	25	16.5	200	38	-	23	24	15	1	16IR/L...
CNR/L0032S16	STEEL	37	32	20.1	250	48	-	30	31	15	1	16IR/L...
CNR/L0025R22	STEEL	30	25	18.2	200	38	-	23	24	15	1	22IR/L...
CNR/L0032S22	STEEL	38	32	21.9	250	48	-	30	31	15	1	22IR/L...
CNR0040T27	STEEL	46	40	26.9	300	60	-	37	38.5	10	1	27IR...

Note: A clamp set for CNR/L type toolholders consists of a clamp and a clamping screw. A shim set for CNR/L type toolholders consists of a shim and a shim fixing screw. Standard shims for CNR/L type toolholders are commonly used for right and left hand toolholders. The right hand insert (IR) is used for the right hand toolholder (CNR...) and left hand insert (IL) is used for left hand toolholder (CNL...).

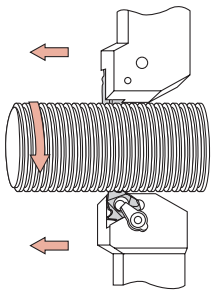
SPARE PARTS

Designation	Clamp set	Clamping screw	Screw	Shim	Shim set R	Shim set L	Wrench	Wrench 1	Wrench 2
TCNR002**16DT	CSP16	CSTB-3.5ST	DTS5-3.5	A16-1DT	-	-	P-3.5	T-15F	-
TCNR0025S22DT	CSP22	CSTB-4ST	DTS6-4	GX22-1DT	-	-	P-4	T-15F	T-20F
CNR/L**16	CSP16	-	-	-	A16-1	A16-1	-	T-15F	-
CNR/L**22	CSP22	-	-	-	NXN22-1	NXE22-1	-	T-20F	-
CNR0040T27	CSP27	-	-	-	NXN27-1	NXE27-1	P-4	-	-

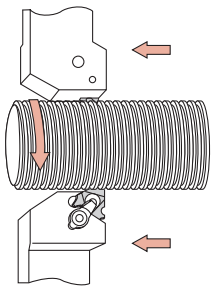
CNR/L: Inserts → **B384 -**, Standard cutting conditions → **B382**

External threading

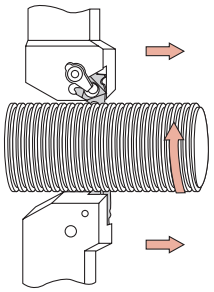
Right hand thread



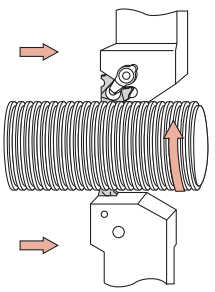
Work rotation	Regular
Feed direction	Push
Hand of toolholder	Right
Hand of insert	Right
Standard shim	①



Work rotation	Regular
Feed direction	Pull
Hand of toolholder	Left
Hand of insert	Left
Standard shim	④

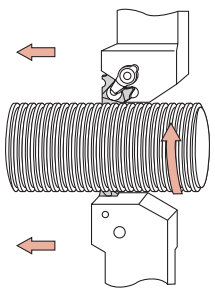


Work rotation	Reverse
Feed direction	Push
Hand of toolholder	Right
Hand of insert	Right
Standard shim	①

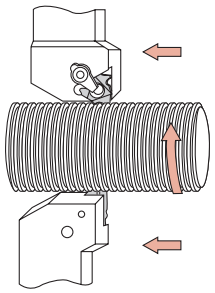


Work rotation	Reverse
Feed direction	Pull
Hand of toolholder	Left
Hand of insert	Left
Standard shim	④

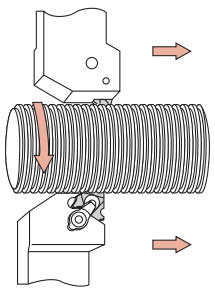
Left hand thread



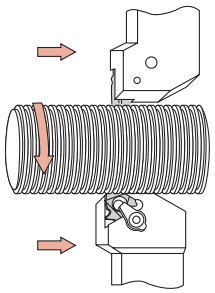
Work rotation	Reverse
Feed direction	Push
Hand of toolholder	Left
Hand of insert	Left
Standard shim	②



Work rotation	Reverse
Feed direction	Pull
Hand of toolholder	Right
Hand of insert	Right
Standard shim	③



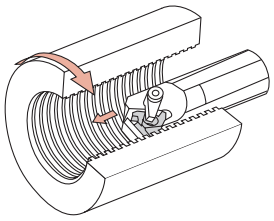
Work rotation	Regular
Feed direction	Push
Hand of toolholder	Left
Hand of insert	Left
Standard shim	②



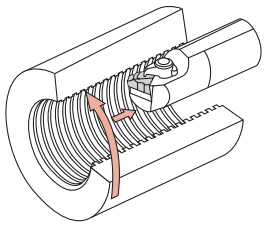
Work rotation	Regular
Feed direction	Pull
Hand of toolholder	Right
Hand of insert	Right
Standard shim	③

Internal threading

Right hand thread

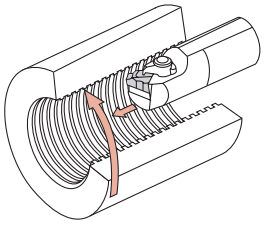


Work rotation	Regular
Feed direction	Push
Hand of toolholder	Right
Hand of insert	Right
Standard shim	②

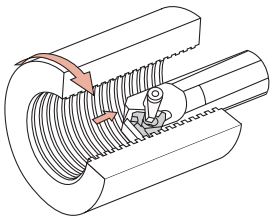


Work rotation	Reverse
Feed direction	Pull
Hand of toolholder	Left
Hand of insert	Left
Standard shim	③

Left hand thread



Work rotation	Reverse
Feed direction	Push
Hand of toolholder	Left
Hand of insert	Left
Standard shim	①



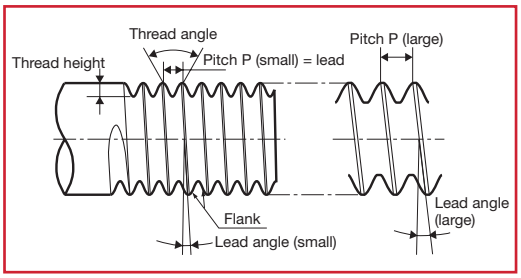
Work rotation	Regular
Feed direction	Pull
Hand of toolholder	Right
Hand of insert	Right
Standard shim	④

Standard shim

No.	New	No.	New
①	A16-1DT	②	A16-1DT
	A16-1		A16-1
	GX22-1DT		GX22-1DT
	NXE22-1		NXN22-1
	NXE27-1		NXN27-1
③	AE16-99DT	④	AN16-99DT
	AE16-99		AN16-99
	GXE22-99DT		GXN22-99DT
	NXE22-99		NXN22-99
	NXE27-99		NXN27-99

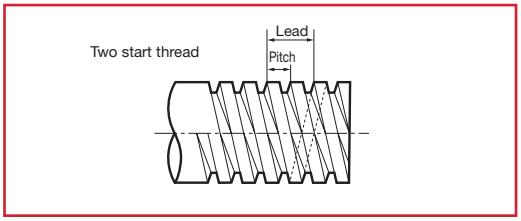
Relationship between lead, lead angle and pitch

1. Lead is the axial distance a screw advances in one rotation. In single start screw, the lead is equal to the pitch.
2. The inclination angle of a threaded groove is called lead angle. In screws of the same diameter, the lead angle increases as the pitch increases.
3. The side face of a completed thread groove is called flank. The distance between the crest and the root is called thread height.



Single and multi start thread

1. The single start thread has a single groove. Two start thread or three start thread has two grooves or three grooves respectively.
2. The pitch of multi start thread is the distance of adjoining groove.
3. When viewing the section of the multi start thread, the pitch is same as that of the single start thread. The lead of the two or three start thread is twice or three times the pitch. The multi start thread is mainly used for trapezoidal threads.



Tolerance class of threads

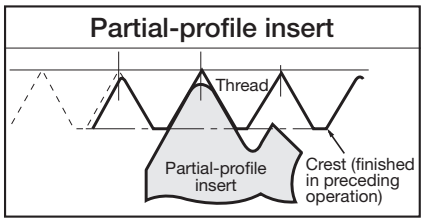
Tolerance classes of screw threads are expressed as follows:
Metric coarse external thread: 6h, 6g Metric coarse internal thread: 5H, 6H
These classes are ranked with tolerances of thread diameter, pitch, thread angle, etc. For fastening applications, 6H- and 6g-class (former JIS second class) threads, manufactured by cutting or rolling, are generally used. 5H- and 4h-class threads (former JIS first class) are generally finished by grinding.
For example, M8-6g means metric coarse external thread of 6g tolerance class.

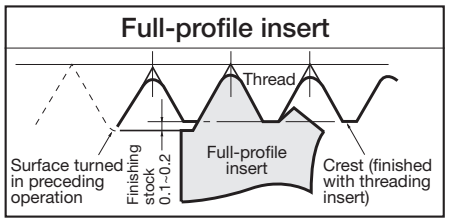
TAC threading insert

Difference between full-profile and partial-profile insert

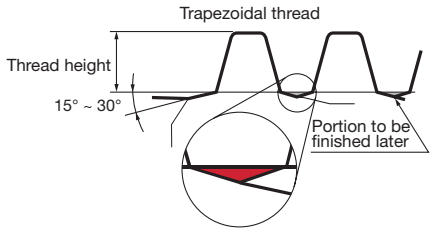
Full-profile insert

In the full-profile insert, the major diameter of the thread is finished by the profiled finishing edge as shown in Figure below. Therefore, about 0.1 mm of finishing stock must be left on the outer surface of the workpiece before threading. In trapezoidal threads, since slants of 15° to 30° are left on the crest of the thread as shown in Figure below, these portions must be finished by another tool later.
Full-profile insert could produce no burr and good thread by the profiled finishing edge.





When machining trapezoidal threads:



Partial-profile insert

Partial-profile inserts can not be used for finishing of the crest, but can be applied to a wide range of pitches.

For example

Designation	Pitch (mm)	TPI	Insert radius r_ε (mm)
16ERA60	0.5 ~ 1.5	48 ~ 16	0.06
16ERG60	1.75 ~ 3	14 ~ 8	0.22

Corner radii of inserts are fitted to the thread of the smallest pitch.

Difference between external and internal use inserts

In full-profile inserts for metric and unified threads, the corner radius and thread height differ from those for the external and internal use insert respectively. Therefore, the right hand insert for external use and the left hand insert for internal use are not the same tool.
Since the rake angles of toolholders are -10° for external toolholders and -15° for internal toolholders, the external / internal toolholders can not be used for machining internal / external thread.
In Whitworth thread, though the external thread and internal thread have the same thread form, the external and internal toolholders are incompatible because of the different rake angle.

For example

Designation	Applicable inserts	Insert radius r_ε (mm)	Thread hight h (mm)	Rake angle of holders
16ER20ISO	External	0.25	1.52	-10°
16IL20ISO	Internal	0.14	1.3	-15°

Compensation for the lead angle and tool relief angle

When the pitch is large or the screw diameter is small, the lead angle becomes large and the effective relief angle on the advance flank side β_2 becomes small. In particular, this will cause shorter life of the insert in the case of trapezoidal screw with small flank angle. It is ideal without any interference for the thread cutting insert to have an equal relief angle on both right and left. Replace the shim so that the rake face of insert faces the thread groove direction (that is, $\beta = \beta_3$).

Calculating the lead angle

The lead angle is calculated as follows:

$$\beta = \tan^{-1}(\ell / \pi d) = \tan^{-1}(nP/\pi d)$$

β : Lead angle
ℓ : Lead
n : No. of threads
P : Pitch
d : Pitch diameter

Calculating the relief angle

The relief angle β_1 is calculated as follows:

$$\beta_1 = \tan^{-1}(\tan\theta \cdot \tan\alpha)$$

The α of a standard toolholder is 10° for external threading and 15° for internal threading.

Included angle 2θ	θ	β_1	
		External threading tool	Internal threading tool
60°	30°	5.8°	8.8°
55°	27.5°	5.2°	7.9°
30°	15°	2.7°	4.1°
29°	14.5°	2.6°	4°

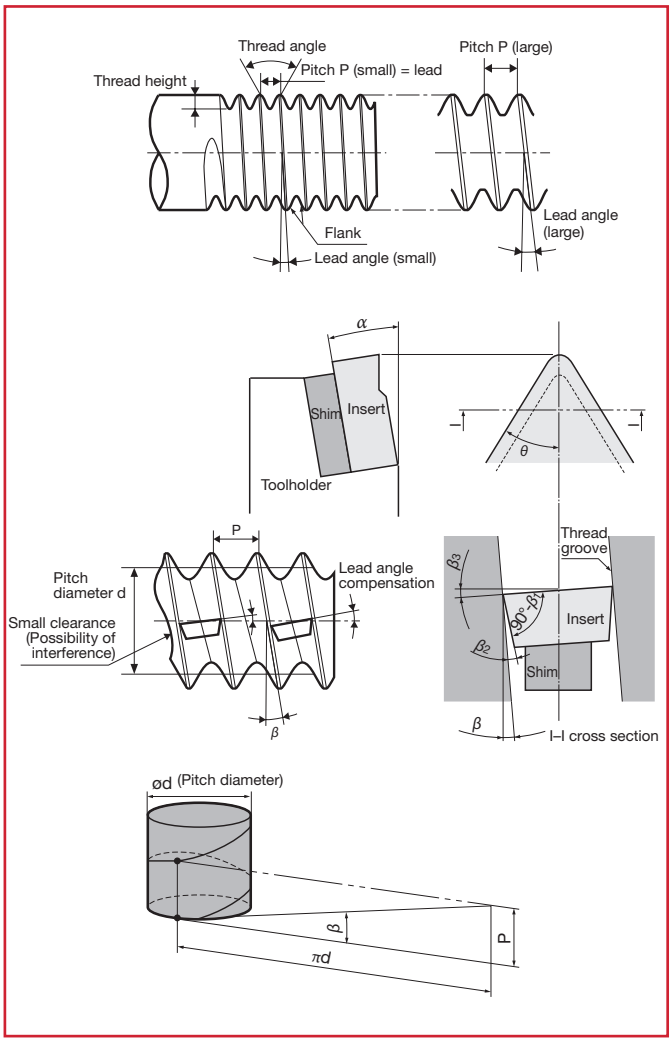
Accordingly, the effective relief angle is calculated as follows:

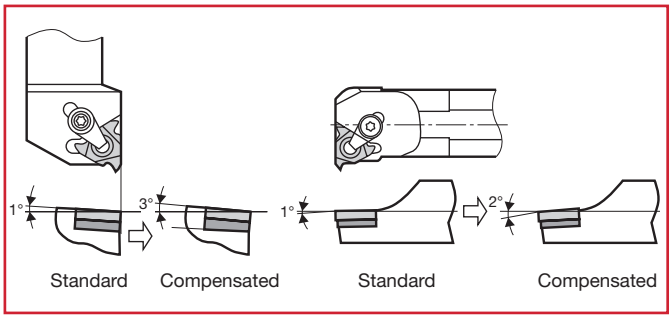
$$\beta_2 = \beta_1 + \beta_3 - \beta$$

β : Lead angle
β_2 : Effective relief angle
β_3 : Lead angle compensation value

In other words, $\beta_1 = \beta_2$ when the thread lead angle is equal to the compensation value. Namely, the relief angle of the tool itself is equal to the effective relief angle. If the wrong compensation value is used, $\beta_1 > \beta_2$. The effective relief angle becomes smaller and cause the interference between the frank side of insert and the thread groove. Therefore, carry out com-pensation of the lead angle so that the following range is obtained:

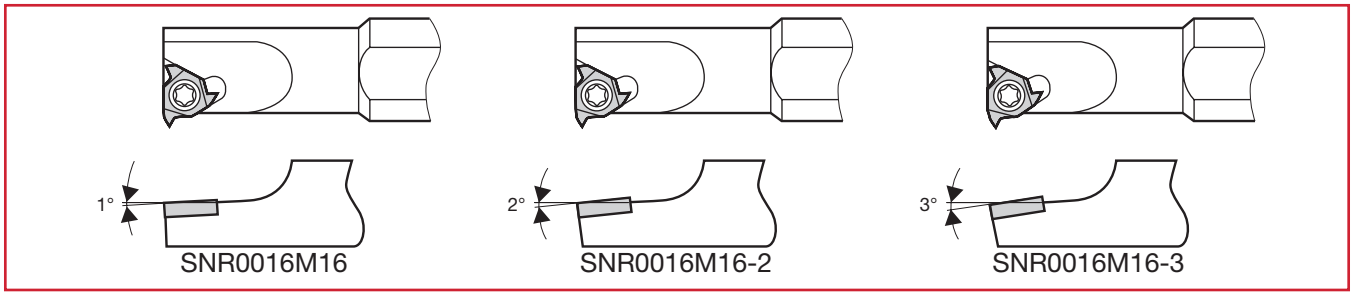
±1° when the thread angle is 60° and 55°
±30′ when the thread angle is 30° and 29°





Compensation of lead angle for shim less internal toolholders

When using internal threading toolholders without shim, the above-mentioned method can not be applied for lead angle compensation. Therefore, special toolholders for large lead angles are available as shown below. The final figure of the designation (-2 or -3) indicates 2° or 3° lead angle to be used respectively. The toolholders without these figures are for 1° lead angle.



Type of shim and the compensation value of lead angle

The designation of the shim and compensated lead angles are shown in the table.

Compensated lead angles	-2°	-1°	0°	1°	2°	3°	4°
Shim	□□□-98	□□□-99	□□□-0	□□□-1	□□□-2	□□□-3	□□□-4

Note: The last numeral of the shim designation is the compensated lead angle.

■ Toolholders and applicable shims

Screw-on / clamp-on dual toolholders

Toolholder designation	Shim	
	R	L
CER/L□□□□□16DT	AE16-□DT	AN16-□DT
CER/L□□□□□22DT	GXE22-□DT	GXN22-□DT
TCNR/L□□□□□16DT	AN16-□DT	AE16-□DT
TCNR/L□□□□□22DT	GXN22-□DT	GXE22-□DT

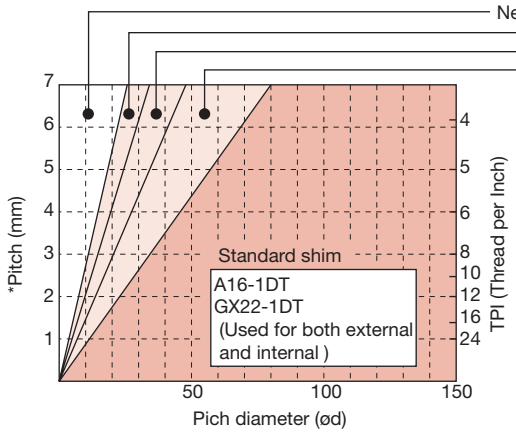
Note: Standard shim is AE16-1DT or GX22-1DT. Other types are optional.

Clamp-on type toolholders

Toolholder designation	Shim	
	R	L
CER/L□□□□□16-T	AE16-□	AN16-□
CER/L□□□□□22-T	NXE22-□	NXN22-□
CER/L□□□□□27-T	NXE27-□	NXN27-□
CNR/L□□□□□16	AN16-□	AE16-□
CNR/L□□□□□22	NXN22-□	NXE22-□
CNR/L□□□□□27	NXN27-□	NXE27-□
B-CER/L□□□16	AE16-□	AN16-□

Note: Standard shim is □□□□□-1. Other types are optional.

Shim selection guide for screw-on / clamp-on dual ST-type tools

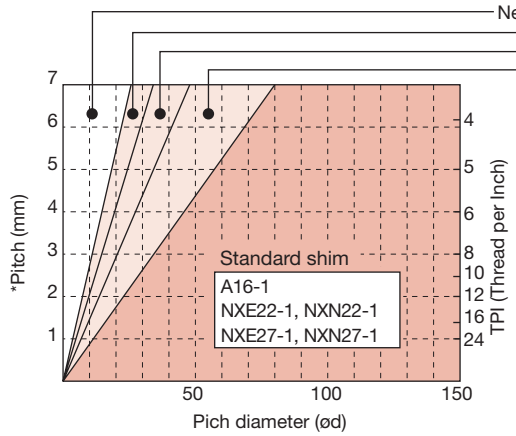


* For the multi start thread lead(multiplied by the pitch and No. of threads)

● List of exchangeable shims

	Designation	D30	Designation	D30	Designation	D30	Designation	D30
β3 = 4°	AE16-4DT	●	AN16-4DT	●	GXE22-4DT	●	GXN22-4DT	●
β3 = 3°	AE16-3DT	●	AN16-3DT	●	GXE22-3DT	●	GXN22-3DT	●
β3 = 2°	AE16-2DT	●	AN16-2DT	●	GXE22-2DT	●	GXN22-2DT	●
β3 = 1° Standard shim	A16-1DT	●	A16-1DT	●	GX22-1DT	●	GX22-1DT	●
β3 = 0°	AE16-0DT	●	AN16-0DT	●	GXE22-0DT	●	GXN22-0DT	●
β3 = -1°	AE16-99DT	●	AN16-99DT	●	GXE22-99DT	●	GXN22-99DT	●
β3 = -2°	AE16-98DT	●	AN16-98DT	●	GXE22-98DT	●	GXN22-98DT	●
Applicable toolholders	CER--16DT TCNL--16DT		CEL--16DT TCNR--16DT		CER--22DT TCNL--22DT		CEL--22DT TCNR--22DT	

Shim selection guide for clamp-on type ST-tools



* For the multi start thread lead(multiplied by the pitch and No. of threads)

● List of exchangeable shims

	Designation	D30	Designation	D30	Designation	D30	Designation	D30	Designation	D30	Designation	D30
β3 = 4°	AE16-4	●	AN16-4	●	NXE22-4	●	NXN22-4	●	NXE27-4		NXN27-4	
β3 = 3°	AE16-3	●	AN16-3	●	NXE22-3	●	NXN22-3	●	NXE27-3		NXN27-3	
β3 = 2°	AE16-2	●	AN16-2	●	NXE22-2	●	NXN22-2	●	NXE27-2		NXN27-2	
β3 = 1° Standard shim	A16-1	●	A16-1	●	NXE22-1	●	NXN22-1	●	NXE27-1	●	NXN27-1	●
β3 = 0°	AE16-0	●	AN16-0	●	NXE22-0	●	NXN22-0	●	NXE27-0		NXN27-0	
β3 = -1°	AE16-99	●	AN16-99	●	NXE22-99	●	NXN22-99	●	NXE27-99		NXN27-99	
β3 = -2°	AE16-98	●	AN16-98	●	NXE22-98	●	NXN22-98	●	NXE27-98		NXN27-98	
Applicable toolholders	CER--16T CNL--16 B-CER--16		CEL--16T CNR--16 B-CEL--16		CER--22T CNL--22		CEL--22T CNR--22		CER--27T CNL--27		CEL--27T CNR--27	

● : Line-up

Selection of internal threading toolholders

Relation between internal toolholders and machinable threads

In the tables starting from next page, the relationships between toolholders, inserts, threads to be machined, and shims to be replaced are shown. In these tables, the criteria are set as follows.

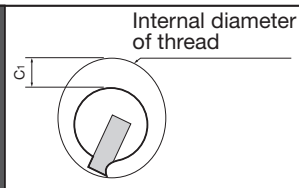
- **The minimum machining diameter.**
- **The L/D ratio of the toolholder.**
- **The lead angle of the thread.**
- **Cutting conditions**

Especially when machining near the minimum machining diameter, the compensation for the lead angle should be done carefully.
Moreover, in threading, because chips generally can not be broken into small pieces, the shank size should be selected in consideration of adequate clearance (C_1).

Symbols

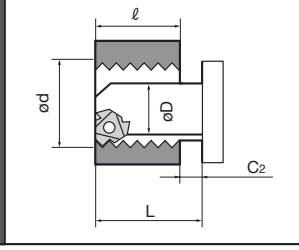
- ◯ Recommended
- • Usable
- 2 Needs replacing of the shim. "2" indicates "Change to the shim for 2° lead angle".
- Unusable

Clearance C_1

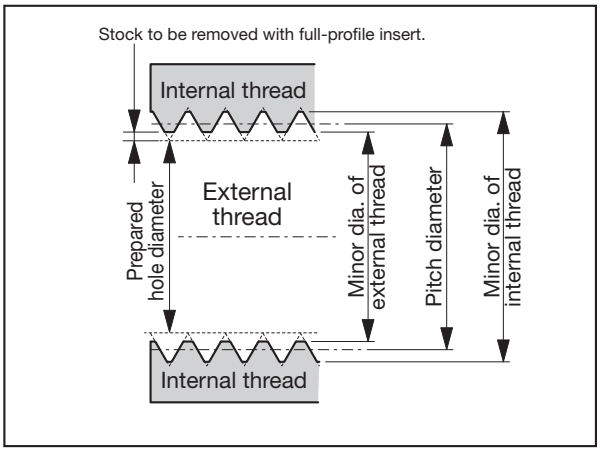


$C_1 \geq 3$ mm
(1 mm for 6IR insert holders)

Overhang ratio L/D



Steel shank	L/D ≤ 2→◯
Carbide shank	L/D ≤ 3→◯



How to use the tables

①Firstly, find the nominal thread diameter. Example: M35 X 1.5
②The table indicates that the lead angle is 0°48′.
③The Cat. No. of the insert to be used corresponds with IR15ISO.
④By following the row to the right, • and ◯ marks are found. The ◯ mark indicates the optimum toolholder type. The toolholders of • mark are usable, but less rigid because the shank diameter against the threading diameter is smaller than those of ◯ marked toolholder. In this example, CNR0025R16 and TCNR0020R16DT are the optimum toolholders. The insert Cat.No. is 16IR15ISO.
⑤In the case of M33 X 3 thread, the lead angle is 1°46′. By following the row to the right. 2 mark is found. This indicates that the shim should be replaced to 2° type. For calculation of the lead angle, refer to page B405.

Metric fine screw thread (ISO)

(For full size of this table, see page B409.)

Nominal size	Pitch	Effective diameter	Lead angle	Shank material	Steel shank															Carbide shank									"Tsuppari-Ichiban"					
				Insert size	6IR				11IR				16IR				22IR				6IR				11IR				16IR		16IR			22IR	
				Holder Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	SNR0020Q22	SNR0020Q22-2	CNR0025R22	CNR0032S22	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TSNR0020R22	TCNR0025S22DT
				Insert Cat. No.																															
M33×1.5	1.5	32.03	0°51′	IR15ISO					•		•		•		◯									•		•		•		•	◯				
M33×2	2	31.7	1°09′	IR20ISO	•		•		•		•		•		◯					•		•		•		•		•		•	◯				
M33×3	3	31.05	1°46′	IR30ISO											2																•	2				
M35×1.5	1.5	34.03	0°48′	IR15ISO					•		•		•		•	◯								•		•		•		•	◯				
M36×1.5	1.5	35.03	0°47′	IR15ISO					•		•		•		•	◯								•		•		•		•	◯				
M36×2	2	34.7	1°03′	IR20ISO											•	◯				•		•		•		•		•		•	◯				
M36×3	3	34.05	1°36′																												•	2				
M38×1.5	1.5	37																						•		•		•		•	•	◯			

Selection of Internal Toolholders—Relationship between thread sizes, toolholders, and inserts—Part 1

Metric coarse screw thread (ISO)

Nominal size	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank																Carbide shank								"Tsuppari-Ichiban"	
				Insert size	6IR				11IR				16IR		22IR				27IR		6IR				11IR		16IR		22IR	
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11-2	SNR0010K11-3	SNR0013L11-2	SNR0013L11-3	SNR0016M16-2	SNR0016M16-3	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	(CNR0040T22)	CNR0040T27	(CNR0050U27)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC-2	SNR0010M11SC-3	SNR0016R16SC-2	(SNR0016R16SC-3)	TCNR0025S22DT	(TCNR0032T22DT)
M10	1.5	9.03	3°02′	IR15ISO																										
M11	1.5	10.03	2°44′	IR15ISO		○																○								
M12	1.75	10.86	2°56′	IR175ISO		○																○								
M14	2	12.7	2°52′	IR20ISO		•		○														•		○						
M16	2	14.7	2°29′	IR20ISO	•		○														•		○							
M18	2.5	16.38	2°47′	IR25ISO																										
M20	2.5	18.38	2°29′	IR25ISO																										
M22	2.5	20.38	2°14′	IR25ISO																										
M24	3	22.05	2°29′	IR30ISO																										
M27	3	25.05	2°11′	IR30ISO									○														○			
M30	3.5	27.73	2°18′	IR35ISO																										
M33	3.5	30.73	2°05′	IR35ISO											○															
M36	4	33.4	2°11′	IR40ISO											○															
M39	4	36.4	2°00′	IR40ISO											•		2												2	
M42	4.5	39.08	2°06′	IR45ISO											•		2												2	
M45	4.5	42.08	1°57′	IR45ISO											•		2												2	
M48	5	44.75	2°02′	IR50ISO											•		2	2											2	2
M52	5	48.75	1°52′	IR50ISO											•		2	2											2	2
M56	5.5	52.43	1°55′	IR55ISO																										
M60	5.5	56.43	1°47′	IR55ISO															2											
M64	6	60.1	1°49′	IR60ISO															2											
M68	6	64.1	1°42′	IR60ISO															2	2										

2 : Change the shim to NXN22-2

2 : Change the shim to NXN27-2

2 : Change the shim to GXN22-2DT

Metric fine screw thread (ISO)

Nominal size	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank										Carbide shank									
				Insert size	6IR				11IR						6IR				11IR					
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0010K11-3	SNR0013L11	SNR0013L11-2	SNR0013L11-3	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0010M11SC-3	SNR0012P11SC	SNR0012P11SC-2	SNR0012P11SC-3
M9×0.75	0.75	8.51	1°36′	IR075ISO																				
M9×1	1	8.32	2°11′	IR10ISO																				
M10×0.75	0.75	9.51	1°26′	IR075ISO																				
M10×1	1	9.35	1°57′	IR10ISO	○										○									
M10×1.25	1.25	9.19	2°29′	IR125ISO																				
M11×0.75	0.75	10.51	1°18′	IR075ISO																				
M11×1	1	10.35	1°46′	IR10ISO	○										○									
M12×1	1	11.35	1°36′	IR10ISO	•		○								•		○							
M12×1.25	1.25	11.19	2°02′	IR125ISO	○										○									
M12×1.5	1.5	11.03	2°29′	IR15ISO	○										○									
M14×1	1	13.35	1°22′	IR10ISO																				
M14×1.25	1.25	13.19	1°44′	IR125ISO	•		○								•		○							
M14×1.5	1.5	13.03	2°06′	IR15ISO	•		○								•		○							
M15×1	1	14.35	1°16′	IR10ISO																				
M15×1.5	1.5	14.03	1°57′	IR15ISO	•		○								•		○							
M16×1	1	15.35	1°11′	IR10ISO					○															
M16×1.5	1.5	15.03	1°49′	IR15ISO	•		○								•		○							
M17×1	1	16.35	1°07′	IR10ISO					○										○					
M17×1.5	1.5	16.03	1°42′	IR15ISO	•		•			○					•		○							
M18×1	1	17.35	1°03′	IR10ISO					○										○					
M18×1.5	1.5	17.03	1°36′	IR15ISO	•		•			○					•		•			○				
M18×2	2	16.7	2°11′	IR20ISO	•		•			○					•		•			○				
M20×1	1	19.35	0°57′	IR10ISO					•			○							•			○		
M20×1.5	1.5	19.03	1°26′	IR15ISO					•			○							•			○		
M20×2	2	18.7	1°57′	IR20ISO	•		•			○					•		•			•			○	

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Metric fine screw thread (ISO)

Nominal size	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank												Carbide shank												"Tsuppari-Ichiban"	
				Insert size	6IR				11IR					16IR					6IR				11IR					16IR				16IR	
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0013L11-3	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0010M11SC-3	SNR0012P11SC	SNR0012P11SC-2	SNR0012P11SC-3	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT
M22×1	1	21.35	0°51′	IR10ISO					•		○											•			○						
M22×1.5	1.5	21.03	1°18′	IR15ISO	•		•		•		○							•		•		•			○						
M22×2	2	20.7	1°46′	IR20ISO	•		•			•		○						•		•			•			○						
M24×1	1	23.35	0°47′	IR10ISO							○			•								•			○					•	
M24×1.5	1.5	23.03	1°11′	IR15ISO	•		•				○			•				•		•		•			○					•	
M24×2	2	22.07	1°39′	IR20ISO	•		•			•		○						•		•			•			○						
M25×1	1	24.35	0°45′	IR10ISO					•		○			•											○				•		
M25×1.5	1.5	24.03	1°08	IR15ISO	•		•		•		○			•				•		•					○				•		
M25×2	2	23.7	1°32′	IR20ISO	•		•			•		○			•			•		•			•			○						
M26×1.5	1.5	25.03	1°06′	IR15ISO	•		•		•		•			○				•		•		•			•			•			○
M27×1	1	26.35	0°42′	IR10ISO					•		•			○								•			•			•			○
M27×1.5	1.5	26.03	1°03′	IR15ISO	•		•		•		•			○				•		•		•			•			•			○
M27×2	2	25.7	1°25′	IR20ISO	•		•		•		•			○				•		•		•			•			•			○
M28×1	1	27.35	0°40′	IR10ISO					•		•			○								•			•			•			○
M28×1.5	1.5	27.03	1°01′	IR15ISO	•		•		•		•			○				•		•		•			•			•			○
M28×2	2	26.7	1°22′	IR20ISO	•		•		•		•			○				•		•		•			•			•			○
M30×1	1	29.35	0°37′	IR10ISO					•		•			○								•			•			•			○
M30×1.5	1.5	29.03	0°57′	IR15ISO					•		•			○								•			•			•			○
M30×2	2	28.7	1°16′	IR20ISO	•		•		•		•			○				•		•		•			•			•			○
M30×3	3	28.05	1°57′	IR30ISO											○												○				
M32×1.5	1.5	31.03	0°53′	IR15ISO					•		•			○			○					•			•			•		○	
M32×2	2	30.07	1°11′	IR20ISO	•		•		•		•			○			○	•		•		•			•			•		○	

Metric fine screw thread (ISO)

Nominal size	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank															Carbide shank									"Tsuppari-Ichiban"					
				Insert size	6IR				11IR				16IR				22IR			6IR				11IR			16IR		16IR				22IR	
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	SNR0020Q22	SNR0020Q22-2	CNR0025R22	CNR0032S22	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TSNR0020R22	TCNR0025S22DT
M33×1.5	1.5	32.03	0°51′	IR15ISO					•		•		•		○										•		•		•		•	○			
M33×2	2	31.7	1°09′	IR20ISO	•		•		•		•		•		•	○					•		•		•		•		•		•	○			
M33×3	3	31.05	1°46′	IR30ISO											2																•	2			
M35×1.5	1.5	34.03	0°48′	IR15ISO					•		•		•		•	○									•		•		•		•	○			
M36×1.5	1.5	35.03	0°47′	IR15ISO					•		•		•		•	○									•		•		•		•	○			
M36×2	2	34.7	1°03′	IR20ISO	•		•		•		•		•		•	○					•		•		•		•		•		•	○			
M36×3	3	34.05	1°36′	IR30ISO											2																•	2			
M38×1.5	1.5	37.03	0°44′	IR15ISO					•		•		•		•	○									•		•		•		•	○	○		
M39×1.5	1.5	38.03	0°43′	IR15ISO					•		•		•		•	○									•		•		•		•	○	○		
M39×2	2	38.7	0°58′	IR20ISO					•		•		•		•	○									•		•		•		•	○	○		
M39×3	3	37.05	1°29′	IR30ISO									•		•	○													•		•	○	○		
M40×1.5	1.5	39.03	0°42′	IR15ISO					•		•		•		•	○									•		•		•		•	○	○		
M40×2	2	37.8	0°57′	IR20ISO					•		•		•		•	○									•		•		•		•	○	○		
M40×3	3	38.05	1°26′	IR30ISO									•		•	○													•		•	○	○		
M42×1.5	1.5	41.03	0°40′	IR15ISO					•		•		•		•	○									•		•		•		•	○	○		
M42×2	2	40.7	0°54′	IR20ISO					•		•		•		•	○									•		•		•		•	○	○		
M42×3	3	40.05	1°22′	IR30ISO									•		•	○													•		•	○	○		
M42×4	4	39.4	1°51′	IR40ISO														2																•	2
M45×1.5	1.5	44.03	0°37′	IR15ISO					•		•		•		•	•	○								•		•		•		•	○	○		
M45×2	2	43.7	0°50′	IR20ISO					•		•		•		•	•	○								•		•		•		•	○	○		
M45×3	3	43.05	1°16′	IR30ISO									•		•	•	○					•		•		•		•		•		•	○	○		
M45×4	4	42.4	1°43′	IR40ISO														2																•	2
M48×1.5	1.5	47.03	0°35′	IR15ISO					•		•		•		•	•	○								•		•		•		•	○	○		
M48×2	2	46.7	0°47′	IR20ISO					•		•		•		•	•	○								•		•		•		•	○	○		
M48×3	3	46.05	1°11′	IR30ISO									•		•	•	○												•		•	○	○		
M48×4	4	45.4	1°36′	IR40ISO															2															•	2

2 : Change the shim to AN16-2

2 : Change the shim to NXN22-2

2 : Change the shim to AN16-2DT

2 : Change the shim to GXN22-2DT

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Metric fine screw thread (ISO)

Nominal size	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank																	Carbide shank								"Tsuppari-Ichiban"					
				Insert size	6IR				11IR				16IR						22IR					6IR			11IR			16IR		16IR			22IR		
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	(CNR0040T16)	(CNR0050U16)	SNR0020Q22	SNR0020Q22-2	CNR0025R22	CNR0032S22	(CNR0040T22)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TSNR0020R22	TCNR0025S22DT	(TCNR0032T22DT)
M50×1.5	1.5	49.03	0°33′	IR15ISO					•		•		•		•	•	○	•														•	•	○	○			
M50×2	2	48.7	0°45′	IR20ISO					•		•		•		•	•	○															•	•	○	○			
M50×3	3	48.05	1°08′	IR30ISO									•		•	•	○															•	•	○	○			
M52×1.5	1.5	51.03	0°32′	IR15ISO					•		•		•		•	•	•	○														•	•	○	○			
M52×2	2	50.7	0°43′	IR20ISO					•		•		•		•	•	•	○														•	•	○	○			
M52×3	3	50.05	1°06′	IR30ISO									•		•	•	○	•														•	•	○	○			
M52×4	4	49.4	1°29′	IR40ISO															•	•	•	•														•	•	○
M55×1.5	1.5	54.03	0°30′	IR15ISO					•		•		•		•	•	○	•														•	•	○	○			
M55×2	2	53.7	0°41′	IR20ISO					•		•		•		•	•	•	○														•	•	○	○			
M55×3	3	53.05	1°02′	IR30ISO									•		•	•	•	○														•	•	○	○			
M55×4	4	52.4	1°24′	IR40ISO															•	•	•	•	○													•	•	○
M56×1.5	1.5	55.03	0°30′	IR15ISO					•		•		•		•	•	•	○														•	•	○	○			
M56×2	2	54.7	0°40′	IR20ISO					•		•		•		•	•	•	○														•	•	○	○			
M56×3	3	54.05	1°01′	IR30ISO									•		•	•	•	○														•	•	○	○			
M56×4	4	53.4	1°22′	IR40ISO															•	•	•	•	○													•	•	○
M58×1.5	1.5	57.03	0°29′	IR15ISO					•		•		•		•	•	•	○														•	•	○	○			
M58×2	2	56.7	0°39′	IR20ISO					•		•		•		•	•	•	○														•	•	○	○			
M58×3	3	56.05	0°59′	IR30ISO									•		•	•	•	○														•	•	○	○			
M58×4	4	55.4	1°19′	IR40ISO															•	•	•	•	○													•	•	○
M60×1.5	1.5	59.03	0°28′	IR15ISO					•		•		•		•	•	•	○														•	•	○	○			
M60×2	2	58.7	0°37′	IR20ISO					•		•		•		•	•	•	○														•	•	○	○			
M60×3	3	58.05	0°57′	IR30ISO									•		•	•	•	○														•	•	○	○			
M60×4	4	57.4	1°16′	IR40ISO															•	•	•	•	○													•	•	○

Unified coarse screw thread (UNC)

Nominal size	TPI	Pitch diameter	Lead angle	Shank material	Steel shank																		Carbide shank									"Tsuppari-Ichiban"	
				Insert size	11IR						16IR			22IR						27IR			11IR						16IR			22IR	
				Holder Cat. No. / Insert Cat. No.	SNR0010K11	SNR0010K11-2	SNR0010K11-3	SNR0013L11	SNR0013L11-2	SNR0013L11-3	SNR0016M16	SNR0016M16-2	SNR0016M16-3	SNR0020Q22	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	(CNR0040T22)	CNR0040T27	(CNR0050U27)	(CNR0063V27)	SNR0010M11SC	SNR0010M11SC-2	SNR0010M11SC-3	SNR0012P11SC	SNR0012P11SC-2	SNR0012P11SC-3	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TCNR0025S22DT	(TCNR0032T22DT)
7/16-14UNC	14	9.93	3°20′	(IR14UN)																													
1/2-13UNC	13	11.43	3°07′	(IR13UN)																													
9/16-12UNC	12	12.91	2°59′	IR12UN																													
5/8-11UNC	11	14.38	2°56′	(IR11UN)																													
3/4-10UNC	10	17.4	2°40′	(IR10UN)																													
7/8-9UNC	9	20.39	2°31′	IR9UN																													
1-8UNC	8	23.34	2°29′	IR8UN								○																					
1 1/8-7UNC	7	26.22	2°31′	(IR7UN)																													
1 1/4-7UNC	7	29.39	2°15′	(IR7UN)											○																		
1 3/8-6UNC	6	32.17	2°24′	(IR6UN)											○																		
1 1/2-6UNC	6	35.35	2°11′	(IR6UN)											○		2															2	
1 3/4-5UNC	5	41.15	2°15′	(IR5UN)											○		2															2	
2-4 1/2UNC	4.5	47.14	2°11′	(IR45UN)																													
2 1/4-4 1/2UNC	4.5	53.49	1°55′	(IR45UN)															2														
2 1/2-4UNC	4	59.38	1°57′	(IR4UN)															2														
2 3/4-4UNC	4	65.73	1°46′	(IR4UN)															2	2													
3-4UNC	4	72.08	1°36′	(IR4UN)															2	2													
3 1/4-4UNC	4	78.43	1°29′	(IR4UN)															•	•	○												
3 1/2-4UNC	4	84.78	1°22′	(IR4UN)															•	•	○												
3 3/4-4UNC	4	91.13	1°16′	(IR4UN)															•	•	○												
4-4UNC	4	97.48	1°11′	(IR4UN)															•	•	○												

2 : Change the shim to NXN22-2

2 : Change the shim to NXN27-2

2 : Change the shim to GXN22-2DT

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Unified fine screw thread (UNF)

Nominal size	TPI	Pitch diameter	Lead angle	Shank material	Steel shank										Carbide shank								"Tsuppari-Ichiban"		
				Insert size	6IR				11IR		16IR				6IR				11IR				16IR		16IR		
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11-2	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT
3/8-24UNF	24	8.84	2°11′	(IR24UN)																					
				IRA60																					
7/16-20UNF	20	10.29	2°15′	(IR20UN)																					
				IRA60	○										○										
1/2-20UNF	20	11.87	1°57′	(IR20UN)																					
				IRA60	•		○								•		○								
9/16-18UNF	18	13.37	1°55′	(IR18UN)																					
				IRA60	•		○								•		○								
5/8-18UNF	18	14.96	1°43′	(IR18UN)																					
				IRA60	•		○								•		○								
3/4-16UNF	16	18.02	1°36′	IR16UN					○											○					
7/8-14UNF	14	21.05	1°34′	IR14UN					•	○										•		○			
1-12UNF	12	24.03	1°36′	IR12UN								○											○		
1 1/8-12UNF	12	27.2	1°25′	IR12UN							○												○	○	
1 1/4-12UNF	12	30.38	1°16′	IR12UN							•		○										○	•	○	
1 3/8-12UNF	12	33.55	1°09′	IR12UN							•		•	○									○	•	•	○
1 1/2-12UNF	12	36.73	1°03′	IR12UN							•		•	○									○	•	•	○

Whitworth coarse screw thread (W)

Nominal size	TPI	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank									Carbide shank			"Tsuppari-Ichiban"	
					Insert size	16IR		22IR					27IR		16IR			22IR	
					Holder Cat. No. / Insert Cat. No.	SNR0016M16-2	SNR0016M16-3	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	(CNR0040T22)	CNR0040T27	(CNR0050U27)	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TCNR0025S22DT	(TCNR0032T22DT)
W7/16	14	1.81	9.95	3°19′	(IR14W)														
W1/2	12	2.12	11.35	3°24′	IR12W														
W9/16	12	2.12	12.93	2°59′	IR12W														
W5/8	11	2.31	14.4	2°55′	IR11W														
W3/4	10	2.54	17.42	2°39′	IR10W														
W7/8	9	2.82	20.42	2°31′	(IR9W)														
W1	8	3.18	23.37	2°29′	IR8W	○													
W1 1/8	7	3.63	26.25	2°31′	(IR7W)														
W1 1/4	7	3.63	29.43	2°15′	(IR7W)			○											
W1 3/8	6	4.23	32.21	2°24′	(IR6W)			○											
W1 1/2	6	4.23	35.39	2°11′	(IR6W)			○											
W1 5/8	5	5.08	38.02	2°26′	(IR5W)			•		2								2	
W1 3/4	5	5.08	41.2	2°15′	(IR5W)			•		2								2	
W1 7/8	4.5	5.64	44.01	2°20′	(IR45W)														
W2	4.5	5.64	47.19	2°11′	(IR45W)														
W2 1/4	4	6.35	53.08	2°11′	(IR4W)														
W2 1/2	4	6.35	59.43	1°57′	(IR4W)								2						

2 : Change the shim to NXN22-2

2 : Change the shim to NXN27-2

2 : Change the shim to GXN22-2DT

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Whitworth fine screw thread (W)

1/2

Nominal size	TPI	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank													Carbide shank				"Tsuppari-Ichiban"		
					Insert size	6IR				11IR				16IR					11IR		16IR		16IR		
					Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	SNR0010M11SC-2	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT
W13	16	1.588	11.98	2°25′	(IR16W)																				
W13.5	16	1.588	12.48	2°19′	(IR16W)																				
W14	16	1.588	12.98	2°14′	(IR16W)																				
W14.5	16	1.588	13.48	2°09′	(IR16W)																				
W15	16	1.588	13.98	2°04′	(IR16W)																				
W16	14	1.814	14.84	2°14′	(IR14W)																				
W17	14	1.814	15.84	2°05′	(IR14W)						○														
W18	14	1.814	16.84	1°58′	(IR14W)						○								○						
W19	12	2.117	17.65	2°11′	IR12W																				
W20	12	2.117	18.65	2°04′	IR12W																				
W21	12	2.117	19.65	1°58′	IR12W																				
W22	12	2.117	20.65	1°52′	IR12W																				
W23	10	2.54	21.37	2°10′	IR10W																				
W24	10	2.54	22.37	2°04′	IR10W																				
W25	10	2.54	23.37	1°59′	IR10W										○										
W26	10	2.54	24.37	1°54′	IR10W										○							○			
W28	9	2.822	26.19	1°58′	(IR9W)										○							○			
W30	9	2.822	28.19	1°50′	(IR9W)										○							○			
W32	9	2.822	30.19	1°42′	(IR9W)										•		[2]					•		[2]	
W34	8	3.175	31.97	1°49′	IR8W										•		[2]					•		[2]	
W35	8	3.175	32.97	1°45′	IR8W										•		[2]					•		[2]	
W36	8	3.175	33.97	1°42′	IR8W										•		2	[2]				•		2	[2]
W38	8	3.175	35.97	1°37′	IR8W										•		2	[2]				•		2	[2]
W40	8	3.175	37.97	1°31′	IR8W										•		2	[2]				•		2	[2]
W42	8	3.175	39.97	1°27′	IR8W												•	○			○			•	○

[2] : Change the shim to AN16-2

[2] : Change the shim to AN16-2DT

Whitworth fine screw thread (W)

2/2

Nominal size	TPI	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank									"Tsuppari-Ichiban"		
					Insert size	22IR							27IR			22IR	
					Holder Cat. No. / Insert Cat. No.	SNR0020Q22	SNR0020Q22-2	CNR0025R22	CNR0032S22	(CNR0040T22)	(CNR0050U22)	(CNR0063V22)	CNR0040T27	(CNR0050U27)	(CNR0063V27)	TSNR0020R22	TCNR0025S22DT	(TCNR0032T22DT)
W44	7	3.629	41.68	1°35′	(22IR7W)		•	[2]								•	[2]	
W45	7	3.629	42.68	1°33′	(22IR7W)		•	[2]								•	[2]	
W46	7	3.629	43.68	1°31′	(22IR7W)		•	[2]								•	[2]	
W48	7	3.629	45.68	1°27′	(22IR7W)	•		•	○							•	•	○
W50	7	3.629	47.68	1°23′	(22IR7W)	•		•	○							•	•	○
W52	7	3.629	49.68	1°20′	(22IR7W)	•		•	○							•	•	○
W55	6	4.233	52.29	1°29′	(22IR6W)	•		•	○							•	•	○
W58	6	4.233	55.29	1°24′	(22IR6W)	•		•	•	○						•	•	○
W60	6	4.233	57.29	1°21′	(22IR6W)	•		•	•	○						•	•	○
W62	6	4.233	59.29	1°18′	(22IR6W)	•		•	•	○						•	•	○
W65	6	4.233	62.29	1°14′	(22IR6W)	•		•	•	○						•	•	○
W68	6	4.233	65.29	1°11′	(22IR6W)	•		•	•	•	○					•	•	○
W70	6	4.233	67.29	1°09′	(22IR6W)	•		•	•	•	○					•	•	○
W72	6	4.233	69.29	1°07′	(22IR6W)	•		•	•	•	○					•	•	○
W75	5	5.08	71.75	1°17′	(22IR5W)	•		•	•	•	○					•	•	○
W78	5	5.08	74.75	1°14′	(22IR5W)	•		•	•	•	○					•	•	○
W80	5	5.08	76.75	1°12′	(22IR5W)	•		•	•	•	○					•	•	○
W82	5	5.08	78.75	1°11′	(22IR5W)	•		•	•	•	•	○				•	•	○
W85	5	5.08	81.75	1°08′	(22IR5W)	•		•	•	•	•	○				•	•	○
W88	5	5.08	84.75	1°06′	(22IR5W)	•		•	•	•	•	○				•	•	○
W90	5	5.08	86.75	1°04′	(22IR5W)	•		•	•	•	•	○				•	•	○
W92	5	5.08	88.75	1°03′	(22IR5W)	•		•	•	•	•	○				•	•	○
W95	5	5.08	91.75	1°01′	(22IR5W)	•		•	•	•	•	○				•	•	○
W98	5	5.08	94.75	0°59′	(22IR5W)	•		•	•	•	•	○				•	•	○
W100	5	5.08	96.75	0°57′	(22IR5W)	•		•	•	•	•	○				•	•	○
W105	5	5.08	101.75	0°55′	(22IR5W)	•		•	•	•	•	○				•	•	○
W110	4	6.35	105.93	0°52′	(27IR4W)								•	•	○			

[2] : Change the shim to NXN22-2

[2] : Change the shim to GXN22-2

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

30° trapezoidal thread (TR)

Nominal size	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank														Carbide shank			"Tsuppari-Ichiban"						
				Insert size	16IR						22IR					27IR			16IR			16IR				22IR		
				Holder Cat. No. / Insert Cat. No.	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	CNR0032S16	CNR0040T16	CNR0050U16	SNR0020Q22	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	CNR0040T27	(CNR0050U27)	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TSNR0020R22	TCNR0025S22DT	(TCNR0032T22DT)
TR22×3	3	20.5	2°40′	IR30TR																								
TR24×5	5	21.5	4°14′	IR50TR																								
TR24×3	3	22.5	2°26′	IR30TR																								
TR26×5	5	23.5	3°52′	IR50TR																								
TR26×3	3	24.5	2°14′	IR30TR		○																						
TR28×5	5	25.5	3°34′	IR50TR																								
TR28×3	3	26.5	2°04′	IR30TR		•														○								
TR30×6	6	27	4°03′	IR60TR																								
TR30×3	3	28.5	1°55′	IR30TR		•														○								
TR32×6	6	29	3°46′	IR60TR																								
TR32×3	3	30.5	1°48′	IR30TR		•		[2]												•				[2]				
TR34×6	6	31	3°32′	IR60TR																								
TR34×3	3	32.5	1°41′	IR30TR		•		[2]												•				[2]				
TR36×6	6	33	3°19′	IR60TR																								
TR36×3	3	34.5	1°35′	IR30TR		•		2	[2]											•				[2]	[2]			
TR38×3	3	36.5	1°30′	IR30TR		•		2	[2]											•				[2]	[2]			
TR40×3	3	38.5	1°25′	IR30TR	•			•	○										○				•	○				
TR42×3	3	40.5	1°21′	IR30TR	•			•	○										○				•	○				
TR44×3	3	42.5	1°17′	IR30TR	•			•	•	○									○				•	•	○			
TR46×3	3	44.5	1°14′	IR30TR	•			•	•	○									○				•	•	○			
TR48×3	3	46.5	1°11′	IR30TR	•			•	•	○									○				•	•	○			
TR50×3	3	48.5	1°08′	IR30TR	•			•	•	○									○				•	•	○			
TR52×3	3	50.5	1°05′	IR30TR	•			•	•	•	○								○				•	•	○			
TR55×3	3	53.5	1°01′	IR30TR	•			•	•	•	○								○				•	•	○			
TR60×3	3	58.5	0°56′	IR30TR	•			•	•	•	○								○				•	•	○			

[2] : Change the shim to AN16-2

[2] : Change the shim to AN16-2DT

30° trapezoidal thread (TR)

Nominal size	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank																Carbide shank			"Tsuppari-Ichiban"						
				Insert size	16IR						22IR							27IR			16IR			16IR				22IR		
				Holder Cat. No. / Insert Cat. No.	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	CNR0032S16	SNR0020Q22	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	(CNR0040T22)	(CNR0050U22)	(CNR0063V22)	CNR0040T27	(CNR0050U27)	(CNR0063V27)	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)	TSNR0020R22	TCNR0025S22DT	(TCNR0032T22DT)
TR65×4	4	63	1°09′	IR40TR							•			•	•	•	○										•	•	○
TR70×4	4	68	1°04′	IR40TR							•			•	•	•	○										•	•	○
TR75×4	4	73	1°00′	IR40TR							•			•	•	•	○										•	•	○
TR80×4	4	78	0°56′	IR40TR							•			•	•	•	•	○									•	•	○
TR85×4	4	83	0°53′	IR40TR							•			•	•	•	•	○									•	•	○
TR90×4	4	88	0°50′	IR40TR							•			•	•	•	•	○									•	•	○
TR95×4	4	93	0°47′	IR40TR							•			•	•	•	•	○									•	•	○
TR100×4	4	98	0°45′	IR40TR							•			•	•	•	•	○									•	•	○
TR105×4	4	103	0°42′	IR40TR							•			•	•	•	•	○									•	•	○
TR110×4	4	108	0°41′	IR40TR							•			•	•	•	•	○									•	•	○
TR115×6	6	112	0°59′	IR60TR															•	•	○								
TR120×6	6	117	0°56′	IR60TR															•	•	○								
TR125×6	6	122	0°54′	IR60TR															•	•	○								
TR130×6	6	127	0°52′	IR60TR															•	•	○								
TR135×6	6	132	0°50′	IR60TR															•	•	○								
TR140×6	6	137	0°48′	IR60TR															•	•	○								
TR145×6	6	142	0°46′	IR60TR															•	•	○								
TR150×6	6	147	0°45′	IR60TR															•	•	○								
TR155×6	6	152	0°43′	IR60TR															•	•	○								
TR160×6	6	157	0°42′	IR60TR															•	•	○								
TR165×6	6	162	0°41′	IR60TR															•	•	○								
TR170×6	6	167	0°39′	IR60TR															•	•	○								

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

Parallel pipe thread (G) This table is also applied to PF, Rp, and PS type threads.

Nominal size	TPI	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank												Carbide shank									"Tsuppari-Ichiban"			
					Insert size	6IR		11IR				16IR						6IR				11IR				16IR		16IR			
					Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0008H06-2	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	(CNR0040T16)	(CNR0050U16)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)
G1/4	19	1.34	12.30	1°59′	IR19W	•	○											•		○										
G3/8	19	1.34	15.81	1°33′	IR19W	•	•		○									•		○										
G1/2	14	1.81	19.79	1°40′	IR14W				•		○												•		○					
G5/8	14	1.81	21.75	1°31′	IR14W				•		○												•		○					
G3/4	14	1.81	25.28	1°18′	IR14W			•		•		○										•		•		○		○			
G7/8	14	1.81	29.04	1°08′	IR14W			•		•		•		○								•		•		○		•	○		
G1	11	2.31	31.77	1°20′	IR11W							•		○												○		•	○		
G1-1/8	11	2.31	36.42	1°09′	IR11W							•		•	○											○		•	•	○	
G1-1/4	11	2.31	40.43	1°02′	IR11W							•		•	○											○		•	•	○	
G1-1/2	11	2.31	46.32	0°55′	IR11W							•		•	•	○										○		•	•	•	○
G1-3/4	11	2.31	52.27	0°48′	IR11W							•		•	•	•	○									○		•	•	•	○
G2	11	2.31	58.14	0°43′	IR11W							•		•	•	•	○									○		•	•	•	○
G2-1/4	11	2.31	64.23	0°39′	IR11W							•		•	•	•	•	○								○		•	•	•	○
G2-1/2	11	2.31	73.71	0°34′	IR11W							•		•	•	•	•	○								○		•	•	•	○
G2-3/4	11	2.31	80.06	0°32′	IR11W							•		•	•	•	•	○								○		•	•	•	○
G3	11	2.31	86.41	0°29′	IR11W									0	0	0	0	0											0	0	0
G3-1/2	11	2.31	98.85	0°26′	IR11W									0	0	0	0	0											0	0	0
G4	11	2.31	111.55	0°23′	IR11W									0	0	0	0	0											0	0	0
G4-1/2	11	2.31	124.25	0°20′	IR11W									0	0	0	0	0											0	0	0
G5	11	2.31	136.95	0°18′	IR11W									0	0	0	0	0											0	0	0
G6	11	2.31	162.35	0°16′	IR11W									0	0	0	0	0											0	0	0

0 : Change the shim to AN16-0 ←

0 : Change the shim to AN16-0DT ←

Taper pipe thread (PT) This table is also applied to Rc type pipe thread.

Nominal size	TPI	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank													Carbide shank									"Tsuppari-Ichiban"			
					Insert size	6IR				11IR				16IR					6IR				11IR				16IR		16IR			
					Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0010K11	SNR0010K11-2	SNR0013L11	SNR0013L11-2	SNR0016M16	SNR0016M16-2	CNR0020P16	CNR0025R16	CNR0032S16	(CNR0040T16)	(CNR0050U16)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0010M11SC	SNR0010M11SC-2	SNR0012P11SC	SNR0012P11SC-2	SNR0016R16SC	SNR0016R16SC-2	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)
PT1/4	19	1.34	12.30	1°59′	IR19PT	○													○												
PT3/8	19	1.34	15.81	1°33′	IR19PT	•		○											•		○										
PT1/2	14	1.81	19.79	1°40′	IR14PT						○													•		○					
PT3/4	14	1.81	25.28	1°19′	IR14PT									○									•		•		○		○			
PT1	11	2.31	31.77	1°20′	IR11PT									•		○											○		•	○		
PT1 1/4	11	2.31	40.43	1°02′	IR11PT									•		•	○										○		•	•	○	
PT1 1/2	11	2.31	46.32	0°55′	IR11PT									•		•	•	○									○		•	•	•	○
PT2	11	2.31	58.14	0°43′	IR11PT									•		•	•	•	○								○		•	•	•	○
PT2 1/2	11	2.31	73.71	0°34′	IR11PT									•		•	•	•	•	○							○		•	•	•	○
PT3	11	2.31	86.41	0°29′	IR11PT											0	0	0	0	0									0	0	0
PT3 1/2	11	2.31	98.85	0°26′	IR11PT											0	0	0	0	0									0	0	0
PT4	11	2.31	111.55	0°23′	IR11PT											0	0	0	0	0									0	0	0
PT5	11	2.31	136.95	0°18′	IR11PT											0	0	0	0	0									0	0	0
PT6	11	2.31	162.35	0°16′	IR11PT											0	0	0	0	0									0	0	0
PT7	11	2.31	187.75	0°13′	IR11PT											0	0	0	0	0									0	0	0
PT8	11	2.31	213.15	0°12′	IR11PT											0	0	0	0	0									0	0	0
PT9	11	2.31	238.55	0°11′	IR11PT											0	0	0	0	0									0	0	0
PT10	11	2.31	263.95	0°10′	IR11PT											0	0	0	0	0									0	0	0
PT12	11	2.31	314.75	0°08′	IR11PT											0	0	0	0	0									0	0	0

0 : Change the shim to AN16-0 ←

0 : Change the shim to AN16-0DT ←

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

National taper pipe thread (NPT)

Nominal size	TPI	Pitch	Lead angle	Shank material	Steel shank											Carbide shank							"Tsuppari-Ichiban"			
				Insert size	6IR				16IR							6IR				16IR			16IR			
				Holder Cat. No. / Insert Cat. No.	SNR0006H06-2	SNR0006H06-3	SNR0008H06-2	SNR0008H06-3	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	CNR0032S16	(CNR0040T16)	(CNR0050U16)	SNR0006K06SC-2	SNR0006K06SC-3	SNR0008K06SC-2	SNR0008K06SC-3	SNR0016R16SC	SNR0016R16SC-2	(SNR0016R16SC-3)	TSNR0016Q16	TCNR0020R16DT	TCNR0025S16DT	(TCNR0032T16DT)
3/8NPT	18	1.41	1°37′	IR18NPT	•		○										•		○								
1/2NPT	14	1.81	1°40′	IR14NPT																							
3/4NPT	14	1.81	1°19′	IR14NPT					○												○			○			
1NPT	11.5	2.21	1°17′	IR115NPT					○			○									○			•	○		
1 1/4NPT	11.5	2.21	1°00′	IR115NPT					○			•	•	○							○			•	•	•	○
1 1/2NPT	11.5	2.21	0°52′	IR115NPT					○			•	•	○							○			•	•	•	○
2NPT	11.5	2.21	0°41′	IR115NPT					○			•	•	•	•	○					○			•	•	•	○
2 1/2NPT	8	3.175	0°50′	IR8NPT					○			•	•	•	•	○					○			•	•	•	○
3NPT	8	3.175	0°40′	IR8NPT					○			•	•	•	•	○					○			•	•	•	○
3 1/2NPT	8	3.175	0°35′	IR8NPT					○			•	•	•	•	○					○			•	•	•	○
4NPT	8	3.175	0°31′	IR8NPT					○			•	•	•	•	○					○			•	•	•	○
5NPT	8	3.175	0°25′	IR8NPT								0	0	0	0	0									0	0	0
6NPT	8	3.175	0°21′	IR8NPT								0	0	0	0	0									0	0	0
8NPT	8	3.175	0°16′	IR8NPT								0	0	0	0	0									0	0	0
10NPT	8	3.175	0°13′	IR8NPT								0	0	0	0	0									0	0	0
12NPT	8	3.175	0°11′	IR8NPT								0	0	0	0	0									0	0	0
14NPT	8	3.175	0°10′	IR8NPT								0	0	0	0	0									0	0	0
16NPT	8	3.175	0°09′	IR8NPT								0	0	0	0	0									0	0	0
18NPT	8	3.175	0°08′	IR8NPT								0	0	0	0	0									0	0	0
20NPT	8	3.175	0°07′	IR8NPT								0	0	0	0	0									0	0	0
24NPT	8	3.175	0°06′	IR8NPT								0	0	0	0	0									0	0	0

0 : Change the shim to AN16-0 ←

0 : Change the shim to AN16-0DT ←

29° trapezoidal thread (ACME)

Nominal size	TPI	Pitch	Pitch diameter	Lead angle	Shank material	Steel shank												Carbide shank			"Tsuppari-Ichiban"			
					Insert size	16IR						22IR					27IR		16IR			16IR		22IR	
					Holder Cat. No. / Insert Cat. No.	SNR0016M16	SNR0016M16-2	SNR0016M16-3	CNR0020P16	CNR0025R16	CNR0032S16	SNR0020Q22	SNR0020Q22-2	SNR0020Q22-3	CNR0025R22	CNR0032S22	CNR0040T27	(CNR0050U27)	SNR0016R16SC	SNR0016R16SC-2	SNR0016R16SC-3	TSNR0016Q16	TCNR0020R16DT	TCNR0025S22DT	(TCNR0032T22DT)
3/8	12	2.12	8.465	4°33′	IR12ACME																			
7/16	12	2.12	10.053	3°50′	IR12ACME																			
1/2	10	2.54	11.43	4°03′	IR10ACME																			
5/8	8	3.18	14.274	4°03′	IR8ACME																			
3/4	6	4.23	16.934	4°33′	IR6ACME																			
7/8	6	4.23	20.109	3°50′	IR6ACME																			
1	5	5.08	22.86	4°03′	IR5ACME																			
1-1/8	5	5.08	26.035	3°33′	IR5ACME																			
1-1/4	5	5.08	29.21	3°10′	IR5ACME																			
1-3/8	4	6.35	31.75	3°39′	IR4ACME																			
1-1/2	4	6.35	34.925	3°19′	IR4ACME																			
1-3/4	4	6.35	41.275	2°48′	IR4ACME																			
2	4	6.35	47.625	2°26′	IR4ACME																			

Because this thread standard is characterized with large pitch and small diameter, (that is a large lead angle) the standard inserts and toolholders can not be used for machining this thread type. The application is limited to outside of the standard.

Note : The above tables show correspondence of internal toolholders at the time of setting clearance between thread and toolholder to 3 mm (1 mm in case of SN type) and the finishing stock to 0.1 mm.

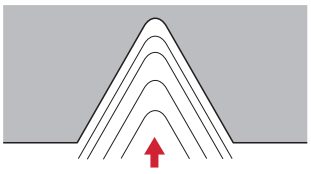
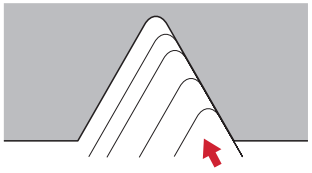
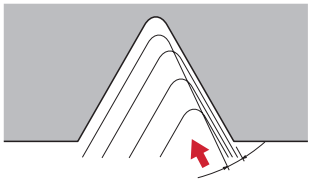
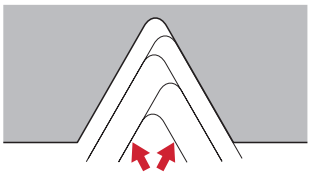
Threading guidelines

Determine the infeed per pass and number of threads whilst referring to the table and description below.

Pitch	0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5	5 ~
TPI	48	32	24	20	16	14	12	10	8	7	6	5.5	5 ~
No. of passes	4 ~ 6	4 ~ 7	4 ~ 8	5 ~ 9	6 ~ 10	7 ~ 12	7 ~ 12	8 ~ 14	10 ~ 16	11 ~ 18	11 ~ 18	11 ~ 19	12 ~ 24

Note:
- When using the full-profile insert, set the total infeed amount by taking the finish stock of 0.1mm into account.
- Set the first infeed to 150 ~ 200% of nose R and do not allow it to exceed 0.5 mm.
- The infeed amount during the final pass must be a minimum of 0.05 mm. No zero cuts should be made. (Extra small infeed or zero cutting of work hardened surfaces will reduce tool life.)
- The partial-profile insert or inside diameter insert has small nose R. Reduce the infeed per pass and increase the no. of passes.
- Regarding standard infeed per passes and no. of passes, please refer to our catalogue.

Infeed methods for threading tools

Infeed method	Features
 Straight infeed (radial infeed)	• Most simple and usual method Suitable for relatively small pitch threads of easily machinable material. • Chip contact length on right and left is longer, causing chattering, with increased load on the nose end. • When the half included angle is not symmetrical to the right and left, infeeding in the direction of 1/2 of the included angle will ensure equal machining with right and left cutting edges.
 Single edge infeed (flank infeed)	• Suitable for large pitch threads or easy to tear materials. Effectively prevents chattering. • Chips are discharged in one direction only. Satisfactory chip control. • Edge on the right (with zero infeed) tends to be worn heavily.
 Modified single-edge infeed (flank infeed)	• Suitable for large pitch threads or easy to tear materials. Effectively prevents chattering. • Chips are discharged in one direction only. Satisfactory chip control. • Edge on the right performs some cutting, therefore wear of this edge can thus be suppressed.
 Alternating flank infeed	• Suitable for large pitch threads or easy to tear material. Effectively prevents chattering. • Chips are discharged alternately in right and left directions, resulting possibly in entanglement. • Right and left edges are used alternately, ensuring uniform wear and extending tool life.

ISO metric full-profile inserts (for external)

Pitch		0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6
Height of thread		0.32	0.47	0.63	0.79	0.95	1.11	1.27	1.58	1.9	2.21	2.53	2.85	3.16	3.48	3.8
Total depth of cut		0.42	0.57	0.73	0.89	1.05	1.21	1.37	1.68	2	2.31	2.63	2.95	3.26	3.58	3.9
Number of passes	1	0.15	0.18	0.25	0.25	0.3	0.3	0.3	0.3	0.35	0.35	0.4	0.4	0.45	0.5	0.5
	2	0.12	0.12	0.2	0.2	0.25	0.25	0.25	0.25	0.3	0.3	0.35	0.35	0.35	0.35	0.4
	3	0.1	0.12	0.13	0.15	0.2	0.2	0.2	0.25	0.25	0.3	0.3	0.3	0.3	0.3	0.3
	4	0.05	0.1	0.1	0.14	0.15	0.16	0.2	0.23	0.2	0.25	0.25	0.25	0.25	0.25	0.25
	5		0.05	0.05	0.1	0.1	0.15	0.15	0.2	0.2	0.21	0.2	0.2	0.25	0.23	0.25
	6				0.05	0.05	0.1	0.12	0.15	0.15	0.2	0.2	0.2	0.2	0.2	0.2
	7						0.05	0.1	0.15	0.15	0.15	0.15	0.2	0.2	0.2	0.2
	8							0.05	0.1	0.15	0.15	0.15	0.15	0.18	0.15	0.15
	9								0.05	0.1	0.15	0.15	0.15	0.15	0.15	0.15
	10									0.1	0.1	0.13	0.15	0.15	0.15	0.15
	11									0.05	0.1	0.1	0.15	0.13	0.15	0.15
	12										0.05	0.1	0.1	0.1	0.15	0.15
	13											0.1	0.1	0.1	0.15	0.15
	14											0.05	0.1	0.1	0.1	0.15
	15												0.1	0.1	0.1	0.1
	16												0.05	0.1	0.1	0.1
	17													0.1	0.1	0.1
	18													0.05	0.1	0.1
	19														0.1	0.1
	20														0.05	0.1
	21															0.1
	22															0.05
	23															
	24															

ISO metric full-profile inserts (for internal)

Pitch		0.5	0.75	1	1.25	1.5	1.75	2	2.5	3	3.5	4	4.5	5	5.5	6
Height of thread		0.29	0.43	0.58	0.72	0.87	1.01	1.16	1.45	1.74	2.03	2.32	2.61	2.9	3.19	3.48
Total depth of cut		0.39	0.53	0.68	0.82	0.97	1.11	1.26	1.55	1.84	2.13	2.42	2.71	3	3.29	3.58
Number of passes	1	0.08	0.1	0.14	0.15	0.2	0.2	0.2	0.25	0.25	0.3	0.3	0.35	0.35	0.4	0.4
	2	0.07	0.09	0.13	0.13	0.16	0.18	0.18	0.22	0.22	0.25	0.25	0.25	0.25	0.25	0.25
	3	0.07	0.08	0.11	0.12	0.14	0.16	0.17	0.2	0.2	0.22	0.22	0.22	0.22	0.22	0.22
	4	0.06	0.08	0.1	0.11	0.12	0.14	0.16	0.18	0.18	0.2	0.2	0.2	0.2	0.2	0.2
	5	0.06	0.07	0.08	0.1	0.12	0.12	0.14	0.16	0.16	0.18	0.18	0.18	0.2	0.2	0.19
	6	0.05	0.06	0.07	0.09	0.1	0.1	0.12	0.15	0.15	0.16	0.18	0.18	0.18	0.18	0.18
	7		0.05	0.05	0.07	0.08	0.09	0.1	0.1	0.14	0.14	0.16	0.16	0.16	0.16	0.17
	8				0.05	0.05	0.07	0.08	0.1	0.13	0.13	0.14	0.14	0.14	0.14	0.16
	9						0.05	0.06	0.08	0.12	0.12	0.14	0.14	0.14	0.14	0.15
	10							0.05	0.06	0.1	0.11	0.12	0.12	0.13	0.13	0.14
	11								0.05	0.08	0.1	0.12	0.12	0.13	0.13	0.14
	12									0.06	0.1	0.1	0.12	0.12	0.13	0.13
	13									0.05	0.07	0.1	0.11	0.12	0.12	0.13
	14										0.05	0.09	0.1	0.12	0.12	0.13
	15											0.07	0.1	0.11	0.12	0.12
	16											0.05	0.09	0.1	0.12	0.12
	17												0.08	0.1	0.1	0.12
	18												0.05	0.1	0.1	0.1
	19													0.08	0.1	0.1
	20													0.05	0.1	0.1
	21														0.08	0.1
	22														0.05	0.1
	23															0.08
	24															0.05

Unified full-profile inserts

		For external							For internal						
TPI		24	20	18	16	14	12	8	24	20	18	16	14	12	8
Height of thread		0.67	0.8	0.89	1.01	1.15	1.34	2.01	0.61	0.74	0.82	0.92	1.05	1.23	1.84
Total depth of cut		0.77	0.9	0.99	1.11	1.25	1.44	2.11	0.71	0.84	0.92	1.02	1.15	1.33	1.94
Number of passes	1	0.25	0.25	0.28	0.3	0.3	0.3	0.35	0.2	0.2	0.2	0.2	0.25	0.25	0.3
	2	0.22	0.2	0.23	0.25	0.25	0.25	0.3	0.16	0.16	0.18	0.18	0.2	0.2	0.25
	3	0.15	0.16	0.18	0.18	0.23	0.21	0.25	0.12	0.13	0.15	0.16	0.18	0.18	0.22
	4	0.1	0.14	0.15	0.15	0.18	0.18	0.22	0.1	0.12	0.14	0.14	0.16	0.16	0.2
	5	0.05	0.1	0.1	0.1	0.14	0.15	0.2	0.08	0.1	0.1	0.11	0.13	0.13	0.18
	6		0.05	0.05	0.08	0.1	0.12	0.2	0.05	0.08	0.1	0.1	0.1	0.1	0.16
	7				0.05	0.05	0.1	0.16		0.05	0.05	0.08	0.08	0.1	0.14
	8						0.08	0.16				0.05	0.05	0.08	0.12
	9						0.05	0.12						0.08	0.12
	10							0.1						0.05	0.1
	11							0.05							0.1
	12														0.05
	13														
	14														

Whitworth full-profile inserts

		For external									For internal								
TPI		20	19	18	16	14	12	11	10	8	20	19	18	16	14	12	11	10	8
Height of thread		0.83	0.88	0.92	1.04	1.19	1.39	1.51	1.66	2.08	0.83	0.88	0.92	1.04	1.19	1.39	1.51	1.66	2.08
Total depth of cut		0.93	0.98	1.02	1.14	1.29	1.49	1.61	1.76	2.18	0.93	0.98	1.02	1.14	1.29	1.49	1.61	1.76	2.18
Number of passes	1	0.25	0.28	0.3	0.3	0.3	0.3	0.3	0.35	0.35	0.2	0.2	0.22	0.22	0.25	0.25	0.25	0.3	0.35
	2	0.2	0.22	0.24	0.25	0.25	0.25	0.25	0.3	0.3	0.18	0.18	0.18	0.18	0.21	0.21	0.21	0.25	0.3
	3	0.18	0.18	0.18	0.18	0.23	0.2	0.2	0.23	0.25	0.16	0.16	0.17	0.17	0.2	0.2	0.2	0.22	0.25
	4	0.15	0.15	0.15	0.14	0.2	0.18	0.18	0.2	0.23	0.14	0.16	0.16	0.16	0.18	0.18	0.18	0.2	0.22
	5	0.1	0.1	0.1	0.12	0.16	0.15	0.15	0.15	0.22	0.12	0.13	0.14	0.14	0.16	0.16	0.16	0.16	0.2
	6	0.05	0.05	0.05	0.1	0.1	0.14	0.14	0.14	0.2	0.08	0.1	0.1	0.12	0.14	0.14	0.14	0.14	0.18
	7				0.05	0.05	0.12	0.12	0.12	0.18	0.05	0.05	0.05	0.1	0.1	0.1	0.12	0.12	0.16
	8						0.1	0.12	0.12	0.16				0.05	0.05	0.1	0.1	0.12	0.14
	9						0.05	0.1	0.1	0.14						0.1	0.1	0.1	0.12
	10							0.05	0.05	0.1						0.05	0.1	0.1	0.11
	11									0.05							0.05	0.05	0.1
	12																		0.05
	13																		
	14																		
	15																		

30° Trapezoidal (TR) inserts

		For external					For internal				
Pitch		2	3	4	5	6	2	3	4	5	6
Height of thread		1.25	1.75	2.25	2.75	3.5	1.25	1.75	2.25	2.75	3.5
Total depth of cut		1.35	1.85	2.35	2.85	3.6	1.35	1.85	2.35	2.85	3.6
Number of passes	1	0.25	0.25	0.3	0.3	0.3	0.2	0.22	0.25	0.25	0.25
	2	0.2	0.22	0.25	0.25	0.25	0.18	0.2	0.22	0.22	0.22
	3	0.2	0.2	0.22	0.2	0.23	0.18	0.18	0.2	0.2	0.21
	4	0.18	0.18	0.2	0.2	0.2	0.16	0.16	0.2	0.18	0.2
	5	0.15	0.17	0.18	0.18	0.18	0.15	0.16	0.17	0.18	0.18
	6	0.12	0.16	0.16	0.16	0.18	0.13	0.16	0.16	0.16	0.18
	7	0.1	0.14	0.15	0.16	0.16	0.1	0.14	0.16	0.16	0.16
	8	0.1	0.14	0.14	0.15	0.16	0.1	0.14	0.14	0.15	0.16
	9	0.05	0.12	0.14	0.14	0.16	0.1	0.12	0.14	0.14	0.16
	10		0.12	0.12	0.14	0.16	0.05	0.12	0.12	0.14	0.16
	11		0.1	0.12	0.14	0.16		0.1	0.12	0.14	0.16
	12		0.05	0.12	0.12	0.15		0.1	0.12	0.12	0.15
	13			0.1	0.12	0.15		0.05	0.1	0.12	0.15
	14			0.1	0.12	0.15			0.1	0.12	0.15
	15			0.05	0.12	0.14			0.1	0.12	0.14
	16				0.1	0.14			0.05	0.1	0.14
	17				0.1	0.12				0.1	0.12
	18				0.1	0.12				0.1	0.12
	19				0.05	0.12				0.1	0.12
	20					0.12				0.05	0.12
	21					0.1					0.1
	22					0.1					0.1
	23					0.05					0.1
	24										0.05
	25										
	26										

29° Trapezoidal (TR) inserts

		For external			For internal		
TPI		8	6	5	8	6	5
Height of thread		1.88	2.41	2.92	1.88	2.41	2.92
Total depth of cut		1.98	2.51	3.02	1.98	2.51	3.02
Number of passes	1	0.25	0.25	0.25	0.22	0.22	0.22
	2	0.22	0.22	0.22	0.2	0.2	0.2
	3	0.2	0.2	0.2	0.18	0.18	0.18
	4	0.18	0.18	0.18	0.16	0.18	0.18
	5	0.16	0.17	0.18	0.16	0.16	0.16
	6	0.16	0.16	0.16	0.16	0.15	0.16
	7	0.16	0.16	0.16	0.15	0.15	0.15
	8	0.14	0.14	0.14	0.14	0.14	0.14
	9	0.14	0.14	0.14	0.14	0.14	0.14
	10	0.12	0.14	0.14	0.12	0.14	0.14
	11	0.1	0.14	0.14	0.1	0.14	0.14
	12	0.1	0.12	0.14	0.1	0.12	0.14
	13	0.05	0.12	0.12	0.1	0.12	0.12
	14		0.12	0.12	0.05	0.12	0.12
	15		0.1	0.12		0.1	0.12
	16		0.1	0.12		0.1	0.12
	17		0.05	0.12		0.1	0.12
	18			0.12		0.05	0.12
	19			0.1			0.1
	20			0.1			0.1
	21			0.05			0.1
	22						0.05
	23						
	24						
	25						
	26						

PT full-profile inserts

		For external				For internal		
TPI		28	19	14	11	19	14	11
Height of thread		0.6	0.86	1.16	1.48	0.86	1.16	1.48
Total depth of cut		0.7	0.96	1.26	1.58	0.96	1.26	1.58
Number of passes	1	0.25	0.28	0.3	0.3	0.22	0.25	0.25
	2	0.2	0.2	0.25	0.25	0.2	0.22	0.22
	3	0.1	0.18	0.2	0.22	0.18	0.18	0.18
	4	0.1	0.15	0.15	0.18	0.16	0.14	0.18
	5	0.05	0.1	0.11	0.15	0.1	0.12	0.15
	6		0.05	0.1	0.12	0.05	0.1	0.13
	7			0.1	0.11	0.05	0.1	0.12
	8			0.05	0.1		0.1	0.1
	9				0.1		0.05	0.1
	10				0.05			0.1
	11							0.05
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							

NPT full-profile inserts

		For external				For internal		
TPI		18	14	11.5	8	14	11.5	8
Height of thread		1.14	1.47	1.79	2.58	1.47	1.79	2.58
Total depth of cut		1.24	1.57	1.89	2.68	1.57	1.89	2.68
Number of passes	1	0.2	0.25	0.25	0.3	0.22	0.22	0.25
	2	0.18	0.22	0.22	0.25	0.2	0.2	0.2
	3	0.17	0.2	0.2	0.2	0.18	0.18	0.2
	4	0.16	0.18	0.18	0.2	0.18	0.18	0.2
	5	0.14	0.17	0.18	0.2	0.16	0.16	0.2
	6	0.12	0.16	0.17	0.2	0.14	0.16	0.2
	7	0.12	0.12	0.16	0.18	0.12	0.16	0.18
	8	0.1	0.12	0.14	0.18	0.12	0.14	0.18
	9	0.05	0.1	0.12	0.16	0.1	0.12	0.16
	10		0.05	0.12	0.16	0.1	0.12	0.16
	11			0.1	0.14	0.05	0.1	0.14
	12			0.05	0.14		0.1	0.14
	13				0.12		0.05	0.12
	14				0.1			0.1
	15				0.1			0.1
	16				0.05			0.1
	17							0.05
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							

Designation System for TAC Threading Tools (TT-type)

Insert

TT **R** **42** **M** **-005**

① Hand	
R	Right
L	Left

② Insert size (mm)	
Inscribed circle	12.7
Thickness	3.2

③ Thread type	
M	60° thread angle
W	55° thread angle

④ Corner radius (mm)	
Blank	0
-005	0.05

Toolholder

TT- **20** **20** **R** **E**

① Shank height (mm)

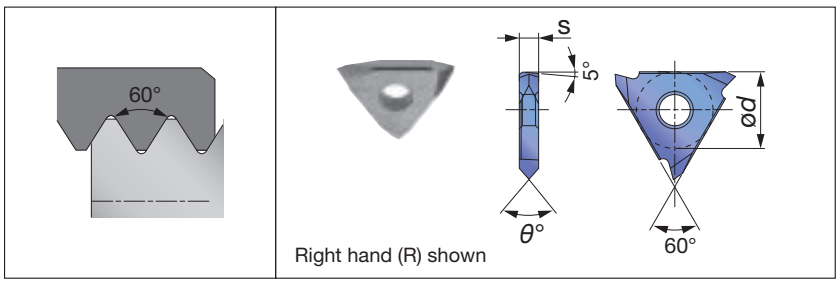
② Shank width (mm)

③ Hand	
R	Right
L	Left

④ External or Internal	
E	External
I	Internal

TT-type Insert

60° thread angle

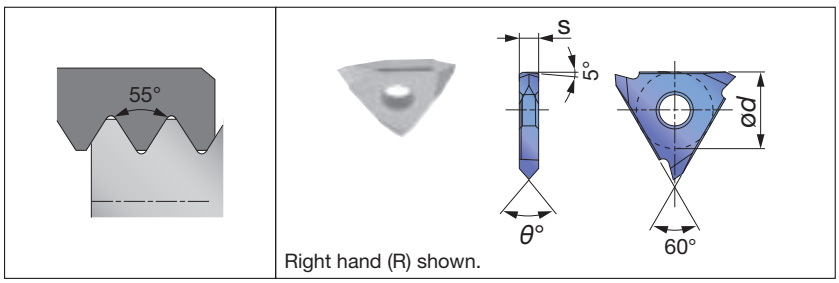


Partial-profile insert for external and internal threads

Pitch	TPI	Hand of cut	Designation	Grade		ød	s	θ°	Applicable toolholders
				Cermet	Uncoated				
				NS9530	TH10				
≤ 3	≥ 8	R	**TTR42M-005**	●	●	12.7	3.2	60	TT-****RE/LI
≤ 3	≥ 8	L	**TTL42M-005**	●	●	12.7	3.2	60	TT-****LE/RI

TT-type Insert

55° thread angle



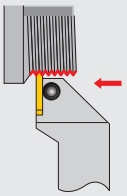
Partial-profile insert for external and internal threads

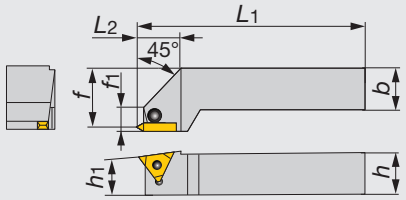
Pitch	TPI	Hand of cut	Designation	Grade		ød	s	θ°	Applicable toolholders
				Cermet	Uncoated				
				NS9530	TH10				
≤ 3	≥ 8	R	**TTR42W-005**	●	●	12.7	3.2	55	TT-****RE/LI
≤ 3	≥ 8	L	**TTL42W-005**	●	●	12.7	3.2	55	TT-****LE/RI

● : Line-up / Packing Quantity = 5 pcs.

TT-R/LE

"TT type"External threading toolholders, pin lock





Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	f1	Insert
TT-2525R/LE	25	25	150	25	25	32.	15	TTR/L42...

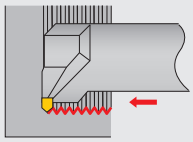
SPARE PARTS

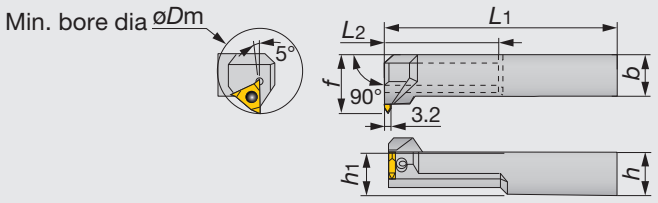
Designation	Clamp	Right-left screw	Wrench
TT-2525R/LE	CP91	DS-6	P-3

TUNGTHREAD

TT-R/LI

"TT type"Internal threading toolholders, pin lock





Right hand (R) shown.

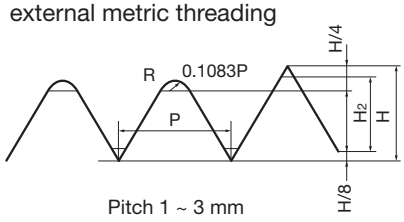
Designation	øDm	h	b	L1	L2	h1	f	Insert
TT-2525RI	50	25	25	200	70	25	35	TTL42...

Notes : The left hand insert is used for right hand toolholders.

SPARE PARTS

Designation	Clamp	Right-left screw	Wrench
TT-2525RI	CP91	DS-6	P-3

- Relationship between pitch, depth of cut and number of passes for external metric threading

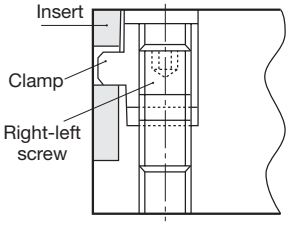


Pitch 1 ~ 3 mm

Note: Maximum machinable pitch is 3 mm.

	P	1	1.25	1.5	1.75	2	2.5	3
	H_2	0.6	0.76	0.92	1.09	1.25	1.57	1.9
	H	0.866	1.083	1.299	1.516	1.732	2.165	2.598
Number of passes	1	0.25	0.3	0.3	0.3	0.35	0.4	0.4
	2	0.15	0.2	0.25	0.25	0.25	0.3	0.35
	3	0.1	0.1	0.15	0.2	0.2	0.25	0.28
	4	0.05	0.06	0.1	0.1	0.16	0.2	0.2
	5	0.05	0.06	0.05	0.1	0.1	0.15	0.2
	6		0.06	0.05	0.07	0.07	0.1	0.13
	7			0.02	0.05	0.05	0.07	0.1
	8				0.02	0.02	0.05	0.1
	9					0.02	0.03	0.05
	10						0.02	0.05
	11							0.02
	12							0.02

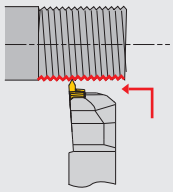
● Part assembly

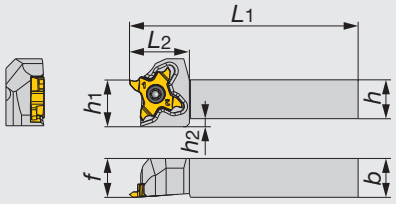


TT-R/LE, TT-R/LI: Inserts → **B419**

STCR/L-18

Precision threading tools with uniquely shaped insert for swiss type machine, automatic and general lathes





Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*h*2	Insert
STCR/L1010X18	10	10	120	18.5	10	10	4.5	TC*18...
STCR/L1212F18	12	12	85	18.5	12	12	2.5	TC*18...
STCR/L1212X18	12	12	120	18.5	12	12	2.5	TC*18...
STCR/L1616X18	16	16	120	18.5	16	16	-	TC*18...
STCR/L2020H18	20	20	100	18.5	20	20	-	TC*18...
STCR/L2020X18	20	20	120	23	20	25	-	TC*18...
STCR/L2525Z18	25	25	135	23	25	30	-	TC*18...

- The right hand insert (TCT18R...) is used for the right hand toolholders (STCR...), and the left hand insert (TCL18...) is used for the left hand toolholders (STCL...).

SPARE PARTS

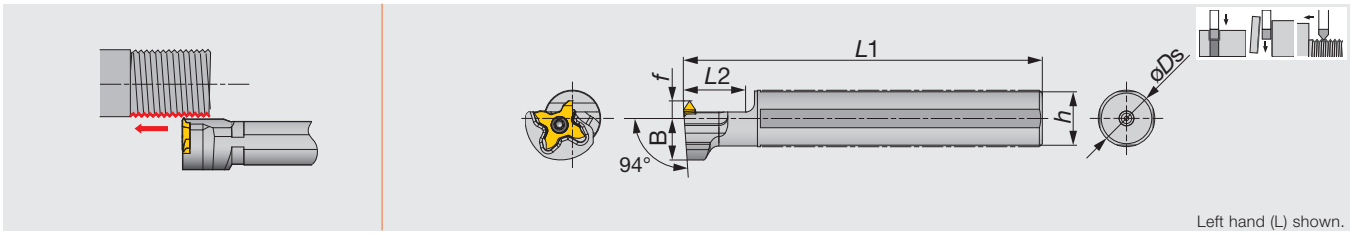



Designation	Clamping screw	Wrench
STCR...	CSTC-4L100DL	T-1008/5
STCL...	CSTC-4L100DR	T-1008/5

STCR/L-18: Inserts, Standard cutting conditions → **B423**

JS-STCL18

Precision threading tools with uniquely shaped insert for swiss type machine,automatic and general lathes



Left hand (L) shown.

Designation	øDs	L1	L2	h	B	f	Insert
JS14H-STCL18	14	100	20	13	14	6	TC*18R...
JS159F-STCL18	15.875	85	20	15	14	6	TC*18R...
JS16F-STCL18	16	85	20	15	14	6	TC*18R...
JS19G-STCL18	19.05	90	20	18	14	6	TC*18R...
JS19X-STCL18	19.05	120	20	18	14	6	TC*18R...
JS20G-STCL18	20	90	20	19	14	6	TC*18R...
JS20X-STCL18	20	120	20	19	14	6	TC*18R...
JS22X-STCL18	22	120	20	21	12.25	10	TC*18R...
JS25H-STCL18	25	100	20	24	12.25	10	TC*18R...
JS254X-STCL18	25.4	120	20	24	12.25	10	TC*18R...

- The right hand insert (TCT18R...) is used for the left hand toolholders (STCL...)

SPARE PARTS

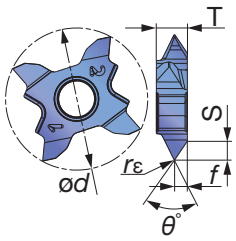



Designation	Clamping screw	Wrench
JS**STCL18	CSTC-4L100DL	T-1008/5

INSERT

TCT18R/L(For Threading)





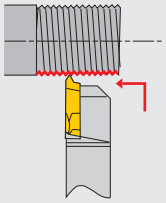
Designation	Coating AH725 R	L	Pitch min	Pitch max	*f*	S	*rε*	*θ°*	T	*ød*
TCT18R/L-60N-010	●	●	0.8	3	1.6	2.67	0.1	60	4	18
TCT18R/L-60N-020	●	●	1.5	3	1.6	2.57	0.2	60	4	18

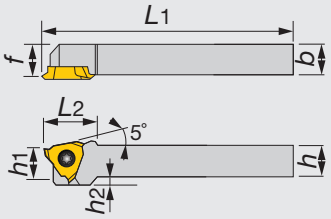
●:Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Pitch (mm)	TPI
P	Low carbon steels (C15, C20 etc.)	AH725	60 - 150	0.8 - 3	32 - 8
P	Carbon steels, Alloy steels (C55, 42CrMoS4 etc.)	AH725	60 - 150	0.8 - 3	32 - 8
P	Prehardened steels (NAK80, PX5 etc.)	AH725	60 - 150	0.8 - 3	32 - 8
M	Stainless steels (X5CrNi18-9, X5CrNiMo17-12-2 etc)	AH725	50 - 80	0.8 - 3	32 - 8
K	Grey cast irons (250, 300 etc.)	AH725	50 - 100	0.8 - 3	32 - 8
K	Ductile cast irons (400-15, 600-3 etc.)	AH725	50 - 100	0.8 - 3	32 - 8
S	Titanium alloys (Ti-6Al-4V, etc.)	AH725	30 - 100	0.8 - 3	32 - 8
S	Superalloys (Inconel718, etc.)	AH725	30 - 100	0.8 - 3	32 - 8

J-SERIES
JSTTR/L
External threading toolholders for small lathe





Right hand (R) shown.

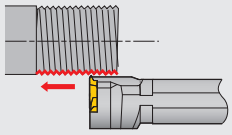
Designation	h	b	L1	L2	h1	f	h2	Insert
JSTTR/L1010X3	10	10	120	18.5	10	9.5	2	JTTR/L30...
JSTTR/L1212F3	12	12	85	18.5	12	11.5	-	JTTR/L30...
JSTTR/L1212X3	12	12	120	18.5	12	11.5	-	JTTR/L30...
JSTTR/L1616X3	16	16	120	16.5	16	15.5	-	JTTR/L30...

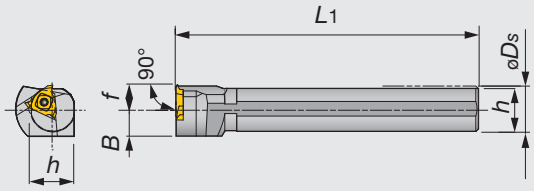
Recommend clamping torque: 1.2 N•m

SPARE PARTS

Designation	Clamping screw	Wrench
JSTTR/L...	CSTB-4SD	T-8F

J-SERIES
JS-TTL3
External threading toolholders for small lathe





Left hand (L) shown.

Designation	øDs	f	L1	h	B	Insert
JS19K-TTL3	19.05	10	125	18	11.5	JTTR30...
JS20K-TTL3	20	10	125	19	11.5	JTTR30...
JS22K-TTL3	22	10	125	21	11.5	JTTR30...
JS25K-TTL3	25.4	10	125	24	12.7	JTTR30...

Recommend clamping torque: 3.5 N•m

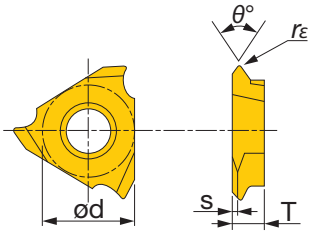
SPARE PARTS

Designation	Clamping screw	Wrench
JS**-TTL3	CSTB-4S	T-15F

INSERT

JTT (sharp edge)



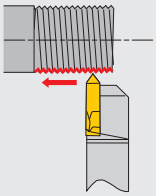


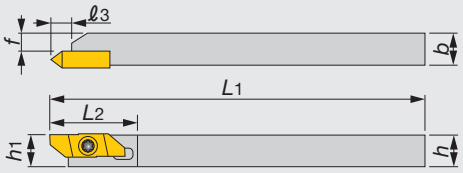
Right hand (R) shown.

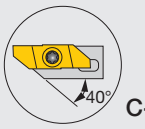
Designation	rε	Coating				Cermet		Uncoated		θ°	ød	T	s
		SH725		J740		NS9530		TH10					
		R	L	R	L	R	L	R	L				
JTTR/L3005F-55	0.05	●		●						55	9.525	3.18	0.6
JTTR/L3005F	0.05	●	●	●		●		●		60	9.525	3.18	0.9
JTTR/L3010F	0.1	●	●	●		●		●		60	9.525	3.18	0.9

Machinable pitch range: 0.5 to 1 mm.

● : Line-up







C-type

Right hand (R) shown.

Designation	h	b	L_1	L_2	ℓ_3	h_1	f	Insert
JSXBR1010K8-C	10	10	125	29	6.4	10	5.7	JXT*R...
JSXBR1212K8-C	12	12	125	29	6.4	12	7.7	JXT*R...
JSXBR1616K8	16	16	125	29	6.4	16	11.7	JXT*R...
JSXBR2020K8	20	20	125	29	6.4	20	15.7	JXT*R...
JSXBR2525K8	25	25	125	29	6.4	25	20.7	JXT*R...

- Can be wrenched from back side with both end torx screw.
- This toolholder is also compatible with JSXB-type insert for back turning.

SPARE PARTS





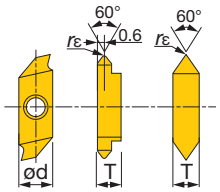
Designation	Clamping screw	Wrench	
JSXBR...	CSTB-4SD	T-8F	(T-8L)

T-8L is option part.

INSERT

JXT (sharp edge)





1-Type JXT1R　2-Type JXT2R

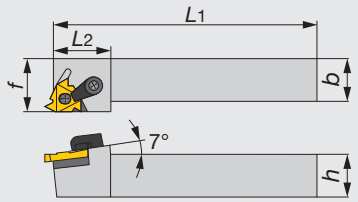
Designation	rε	Coating J740	Uncoated TH10	θ°	ød	T
JXT1R6000F	0.03	●	●	60	8	3.97
JXT2R6000F	0.03	●	●	60	8	3.97

Machinable pitch range: 0.5 to 1 mm

● : Line-up

MTVNR/L-5

"TungThread"External threading toolholders for laydown inserts



Right hand (R) shown.

Designation	*b*	*h*	L_1	L_2	*f*	Insert
MTVNR-2525M5	25	25	152	39	31.8	L53 5B**EXT-FC
MTVNR-3232M5	32	32	178	39	38.1	L53 5B**EXT-FC

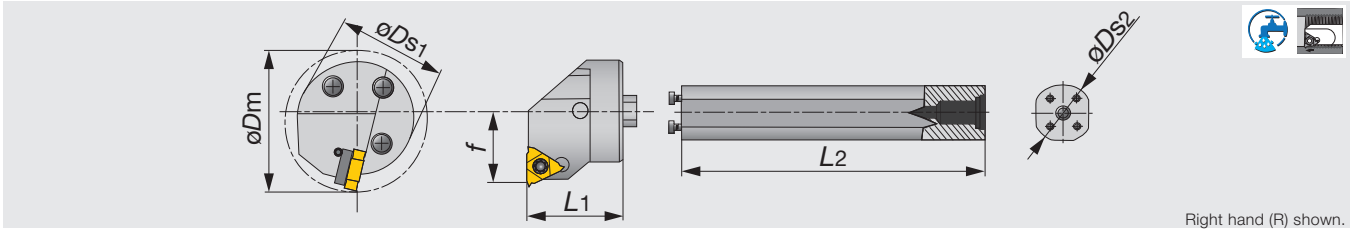
SPARE PARTS

Designation	Shim	Lock pin	Clamp	Clamping screw	Wrench
MTVNR...	LS53NOFORMEXT	NL-58	TC-250	STC-11	1/8HEX

MTVNR/L-5: Inserts → **B428**

HS-LNFR/L-53

Exchangeable internal threading heads for laydown inserts



Right hand (R) shown.

Designation	øDm	øDs1	f	L1	Insert
HS40-LNFR-53	50	40	28.7	41.3	L53 5B**INT-FC
HS50-LNFR-53	63	50	32.7	41.3	L53 5B**INT-FC

SPARE PARTS

Designation	Lock pin	Clamp	Clamping screw	Wrench
HS**-LNFR-53	NL-56	TC-250	STC-11	1/8HEX

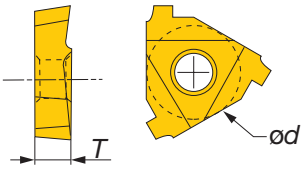
Shank

Designation	øDs2	L2
S-570-40M-40	40	273
S-570-50M-50	50	366

SPARE PARTS

Designation	Clamping screw	Wrench
S-570-40M-40	SS100	5/32HEX
S-570-50M-50	SS94	1/4EX

Full-profile insert (Single-sided)

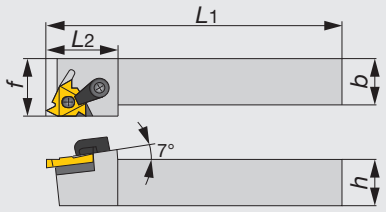


Connection	TPI	Taper		External insert				Internal insert			
		mm/mm	TPF	Designation	Grade / Coating / AH725	ød	T	Designation	Grade / Coating / AH725	ød	T
API Buttress	5	1/16	0.75	L53 5B75 EXT-FC	●	15.875	4.8	L53 5B75 INT-FC	●	15.875	4.8
	5	1/12	1	L53 5B1 EXT-FC	●	15.875	4.8	L53 5B1 INT-FC	●	15.875	4.8

● : Line-up

MTVNR/L-54

External threading toolholder for laydown double-side inserts



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	*f*	Insert
MTVNR-3232M54	32	32	178	39	38.1	LDS 54**FT-CB#...

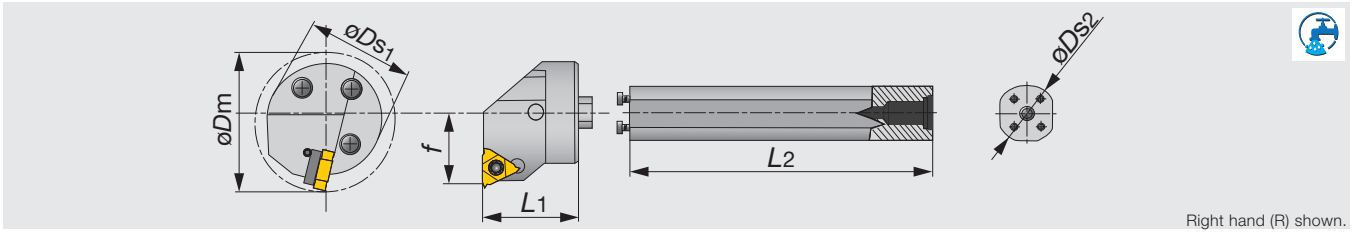
SPARE PARTS

Designation	Shim	Lock pin	Clamp	Clamping screw	Wrench
MTVNR-3232M54	LS53NOFORMEXT	NL-58	TC-250	STC-11	1/8HEX

MTVNR/L-54: Inserts → **B430**

HS-LNFR/L-54API

Exchangeable internal threading heads for laydown double-side inserts



Right hand (R) shown.

Designation	øDm	øDs1	f	L1	Insert
HS40-LNFR-54API	50	40	27	32	LDS 54**FT-CB#...
HS50-LNFR-54API	63	50	35	40	LDS 54**FT-CB#...

SPARE PARTS

Designation	Lock pin	Clamp	Clamping screw	Wrench
HS40-LNFR-54API	H410-1	TC-250	STC-11	1/8HEX
HS50-LNFR-54API	NL-56	TC-250	STC-11	1/8HEX

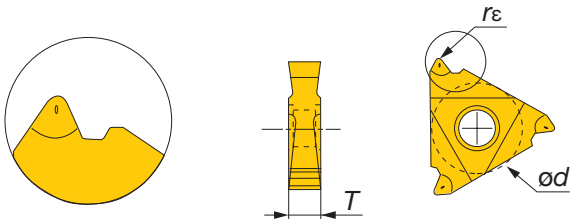
Shank

Designation	øDs2	L2
S-570-40M-40	40	273
S-570-50M-50	50	366

SPARE PARTS

Designation	Clamping screw	Wrench
S-570-40M-40	SS100	5/32HEX
S-570-50M-50	SS94	1/4EX

Full-profile insert (Double-sided)

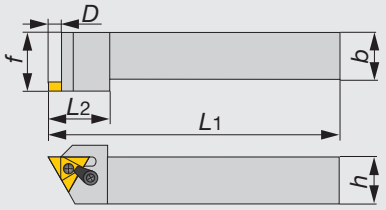


Connection	TPI	Thread form	Taper mm/mm	Taper TPF	Designation	Grade Coating AH725	ød	T	rε
API Rotary shoulder connection	5	V-0.040	1/4	3	**LDS 54 530 FT-CB #5**	●	15.875	6.4	0.51
	4	V-0.038R	1/6	2	**LDS 54 428 FT-CB #1**	●	15.875	6.4	0.97
	4	V-0.038R	1/4	3	**LDS 54 438 FT-CB #2**	●	15.875	6.4	0.97
	4	V-0.050	1/6	2	**LDS 54 425 FT-CB #3**	●	15.875	6.4	0.64
	4	V-0.050	1/4	3	**LDS 54 435 FT-CB #4**	●	15.875	6.4	0.64

● : Line-up

MTVOR/L

External multi-clamp toolholders for on edge inserts



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	*f*	D	Insert
MTVOR-2525M4	25	25	150	31	31.7	5.8	TNM*43...
MTVOR-3232M4	32	32	178	31	38.1	5.8	TNM*43...
MTVOR-2525M5	25	25	150	36	31.7	7.3	TNM*54...
MTVOR-3232M5	32	32	178	36	38.1	7.3	TNM*54...

Note: For TNMC inserts, STVOR/L toolholder is recommended. Also, M-Type toolholder is available.

SPARE PARTS

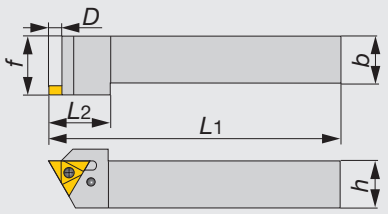
Designation	Lock pin	Clamp	Clamping screw	Wrench
MTVOR-**M4	NL-44	TC-190	STC-5	3/32HEX
MTVOR-**M5	NL-56	TC-250	STC-11	1/8HEX

MTVOR/L: Inserts → **B433**

TUNGTHREAD

STVOR/L

External screw-on toolholders for on edge inserts



Right hand (R) shown.

Designation	h	b	L1	L2	f	D	Insert
STVOR-2525M4	25	25	152	31	31.7	5.8	TNMC43...
STVOR-3232M4	32	32	178	31	38.1	5.8	TNMC43...
STVOR-2525M5	25	25	152	36	31.7	7.3	TNMC54...
STVOR-3232M5	32	32	178	36	38.1	7.3	TNMC54...

SPARE PARTS

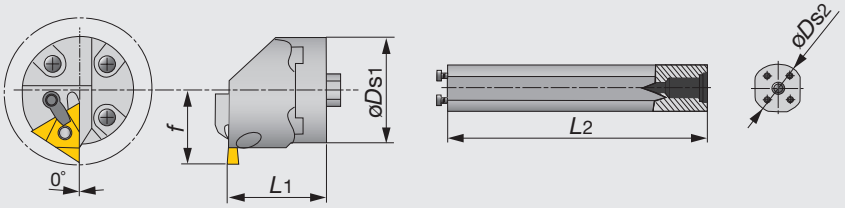
Designation	Clamping screw	Clamp	Clamping screw	Wrench	
STVOR-**M4	SD2	(TC-190)	(STC-9)	T20TORX	3/32HEX
STVOR-**M5	SD3	(TC-250)	(STC-11)	T20TORX	1/8HEX

Clamp and clamping screw are option parts.

TUNGTHREAD

HS-MTHOR/L

Exchangeable internal threading heads, for on edge insert, applicable on S-570 shanks



Right hand (R) shown.

Designation	øDm	øDs1	f	L1	Insert
HS40-MTHOR-4	66.7	40	30.6	32	TNM*43...
HS50-MTHOR-4	73	50	35.9	40	TNM*43...
HS40-MTHOR-5	81.3	40	30.6	32	TNM*54...
HS50-MTHOR-5	82.6	50	35.9	40	TNM*54...

SPARE PARTS

Designation	Lock pin	Clamp	Clamping screw	Wrench
HS**-MTHOR-4	NL-44	TC-190	STC-5	3/32HEX
HS**-MTHOR-5	NL-56	TC-250	STC-11	1/8HEX

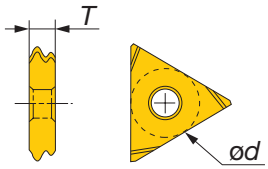
Shank

Designation	øDs2	L2
S-570-40M-40	40	273
S-570-50M-50	50	366

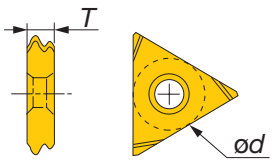
SPARE PARTS

Designation	Clamping screw	Wrench
S-570-40M-40	SS100	5/32HEX
S-570-50M-50	SS94	1/4EX

Full profile insert and partial topping insert



TNMA



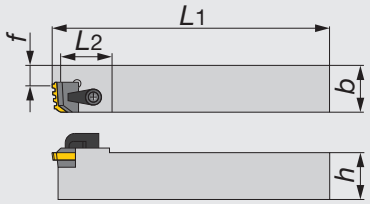
TNMC

Connection	TPI	Taper		External insert				Internal insert			
		mm/mm	TPF	Designation	Grade / Coating / AH725	ød	T	Designation	Grade / Coating / AH725	ød	T
API Round	10	1/16	0.75	**TNMA 43 10RD EXT**	●	12.7	4.8	**TNMA 43 10RD INT**	●	12.7	4.8
	8	1/16	0.75	**TNMA 43 8RD EXT**	●	12.7	4.8	**TNMA 43 8RD INT**	●	12.7	4.8
API Buttress	5	1/12	1	**TNMA 54 5B1 EXT-FC**	●	15.875	6.4	**TNMA 54 5B1 INT-FC**	●	15.875	6.4
	5	1/16	0.75	**TNMA 54 5B75 EXT-FC**	●	15.875	6.4	**TNMA 54 5B75 INT-FC**	●	15.875	6.4
ACME (29° Trapezoid)	16	-	-	**TNMA43NT16PEXT-PT**	●	12.7	4.8	-	-	-	-
	14	-	-	**TNMA43NT14PEXT-PT**	●	12.7	4.8	-	-	-	-
	12	-	-	**TNMA43NT12PEXT-PT**	●	12.7	4.8	-	-	-	-
	10	-	-	**TNMA43NT10PEXT-PT**	●	12.7	4.8	-	-	-	-
	8	-	-	**TNMA43NT8PEXT-PT**	●	12.7	4.8	-	-	-	-
	6	-	-	**TNMA43NT6PEXT-PT**	●	12.7	4.8	-	-	-	-
	5	-	-	**TNMA54NT5PEXT-PT**	●	15.875	6.4	-	-	-	-
	4	-	-	**TNMA54NT4PEXT-PT**	●	15.875	6.4	-	-	-	-
	3	-	-	**TNMA54NT3PEXT-PT**	●	15.875	6.4	-	-	-	-
STUB ACME (29° Trapezoid)	16	-	-	**TNMA43NT16PSTUBE-PT**	●	12.7	4.6	-	-	-	-
	14	-	-	**TNMA43NT14PSTUBE-PT**	●	12.7	4.6	-	-	-	-
	12	-	-	**TNMA43NT12PSTUBE-PT**	●	12.7	4.6	-	-	-	-
	10	-	-	**TNMA43NT10PSTUBE-PT**	●	12.7	4.6	-	-	-	-
	8	-	-	**TNMA43NT8PSTUBE-PT**	●	12.7	4.6	-	-	-	-
	6	-	-	**TNMA43NT6PSTUBE-PT**	●	12.7	4.6	-	-	-	-
	5	-	-	**TNMA54NT5PSTUBE-PT**	●	15.875	6.4	-	-	-	-
	4	-	-	**TNMA54NT4PSTUBE-PT**	●	15.875	6.4	-	-	-	-
	3	-	-	**TNMA54NT3PSTUBE-PT**	●	15.875	6.4	-	-	-	-
API Round	10	1/16	0.75	**TNMC 43 10RD EXT**	●	12.7	4.8	**TNMC 43 10RD INT**	●	12.7	4.8
	8	1/16	0.75	**TNMC 43 8RD EXT**	●	12.7	4.8	**TNMC 43 8RD INT**	●	12.7	4.8
API Buttress	5	1/12	1	**TNMC 54 5B1 EXT-FC**	●	15.875	6.4	**TNMC 54 5B1 INT-FC**	●	15.875	6.4
	5	1/16	0.75	**TNMC 54 5B75 EXT-FC**	●	15.875	6.4	**TNMC 54 5B75 INT-FC**	●	15.875	6.4
ACME (29° Trapezoid)	16	-	-	**TNMC43NT16PEXT-PT**	●	12.7	4.8	-	-	-	-
	14	-	-	**TNMC43NT14PEXT-PT**	●	12.7	4.8	-	-	-	-
	12	-	-	**TNMC43NT12PEXT-PT**	●	12.7	4.8	-	-	-	-
	10	-	-	**TNMC43NT10PEXT-PT**	●	12.7	4.8	-	-	-	-
	8	-	-	**TNMC43NT8PEXT-PT**	●	12.7	4.8	-	-	-	-
	6	-	-	**TNMC43NT6PEXT-PT**	●	12.7	4.8	-	-	-	-
	5	-	-	**TNMC54NT5PEXT-PT**	●	15.875	6.4	-	-	-	-
	4	-	-	**TNMC54NT4PEXT-PT**	●	15.875	6.4	-	-	-	-
	3	-	-	**TNMC54NT3PEXT-PT**	●	15.875	6.4	-	-	-	-
STUB ACME (29° Trapezoid)	16	-	-	**TNMC43NT16PSTUBE-PT**	●	12.7	4.8	-	-	-	-
	14	-	-	**TNMC43NT14PSTUBE-PT**	●	12.7	4.8	-	-	-	-
	12	-	-	**TNMC43NT12PSTUBE-PT**	●	12.7	4.8	-	-	-	-
	10	-	-	**TNMC43NT10PSTUBE-PT**	●	12.7	4.8	-	-	-	-
	8	-	-	**TNMC43NT8PSTUBE-PT**	●	12.7	4.8	-	-	-	-
	6	-	-	**TNMC43NT6PSTUBE-PT**	●	12.7	4.8	-	-	-	-
	5	-	-	**TNMC54NT5PSTUBE-PT**	●	15.875	6.4	-	-	-	-
	4	-	-	**TNMC54NT4PSTUBE-PT**	●	15.875	6.4	-	-	-	-
	3	-	-	**TNMC54NT3PSTUBE-PT**	●	15.875	6.4	-	-	-	-

• For ACME and STUB-ACME inserts can cut crest radius. Crest flat of ACME and STUB-ACME have to cut by another tool.

● : Line-up

TUNGTHREAD
CLVOR
External toolholders for the chaser inserts



Right-hand (R) shown.

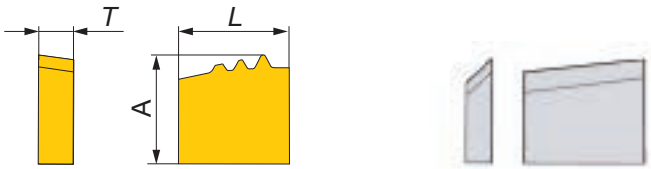
Designation	f	L1	L2	h	b	Insert
CLVOR-25M6	16.1	177.8	32	25	25	CR-8R/10R/11.5NPT/8NPT-3E/4E
CLVOR-32M6	16.1	177.8	32	32	32	CR-8R/10R/11.5NPT/8NPT-3E/4E
CLVOR-40M8	29.8	179.1	32	40	40	CR-5B75-4E

SPARE PARTS



Designation	Shim	Shim screw	Clamp	Clamping screw	Wrench	
CLVOR-25M6	TF1207	SF80	TC-311	STC-4	T-25TORX	5/32HEX
CLVOR-32M6	TF1207	SF85	TC-311	STC-4	T-25TORX	5/32HEX
CLVOR-40M8	TF8132-E	SF60	TC-311	STC-4	T-20TORX	5/32HEX

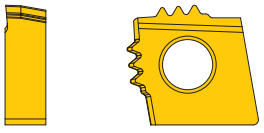
Full profile insert (chaser)



Connection	TPI	Taper		Designation	AH725	L	A	T	Breakerpiece
		mm/mm	TPF						
API Round	8	1/16	0.75	**CR-8R-3E**	●	16	15	5.2	CR-8R / 10R-3E / 4E-CB
	10	1/16	0.75	**CR-10R-3E**	●	16	15.9	5.2	CR-8R / 10R-3E / 4E-CB
API Buttress	5	1/16	0.75	**CR-5B75-4E**	●	20.4	15.9	5.1	CR-5B75 / 5BI-4E-CB
NPT	11.5	1/16	0.75	**CR-11.5NPT-4E**	●	15.9	15.7	4.76	CR-8R / 10R-3E / 4E-CB
	8	1/16	0.75	**CR-8NPT-4E**	●	15.9	15.7	5.2	CR-8R / 10R-3E / 4E-CB

TUNGTHREAD
CNGA-3E
API Round & buttress chaser insert with 2 corners for turning

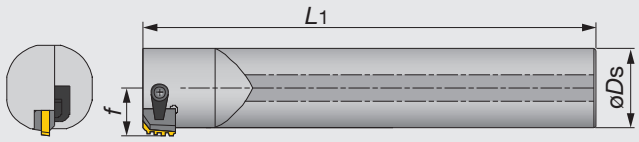
Full profile insert (chaser)



Connection	TPI	Taper		Designation	AH725
		mm/mm	TPF		
API Round	10	1/16	0.75	**CNGA-10R-3E**	●
	8	1/16	0.75	**CNGA-8R-3E**	●
API Buttress	5	1/16	0.75	**CNGA-5B75-3E**	●

Note: Toolholder should be designed and ordered individualy.

● : Line-up



Right-hand (R) shown.

Designation	øDm	øDs	f	L1	Insert
SI-CLHOR-40M6	50.8	40	23.16	400	CR-**I

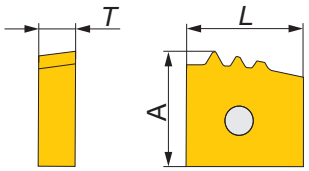
SPARE PARTS

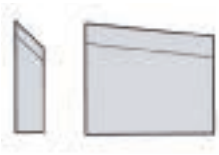




Designation	Clamp	Clamping screw	Wrench
SI-CLHOR-40M6	TC-311	STC-8	5/32HEX

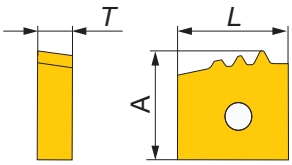
Full profile insert (chaser)



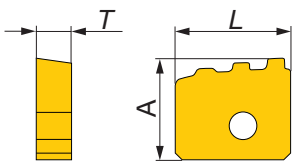


Connection	TPI	Taper		Designation	AH725	L	A	T	Breakerpiece
		mm/mm	TPF						
API Round	8	1/16	0.75	**CR-8R-3I**	●	16	15	5.2	CR-8R / 10R-3I / 4I-CB
	10	1/16	0.75	**CR-10R-3I**	●	16	15.9	5.2	CR-8R / 10R-3I / 4I-CB
API Buttress	5	1/16	0.75	**CR-5B75-3I**	●	16	14.7	5.2	CR-8R / 10R-3I / 4I-CB
NPT	11.5	1/16	0.75	**CR-11.5NPT-4I**	●	15.9	15.7	4.76	CR-8R / 10R-3I / 4I-CB
	8	1/16	0.75	**CR-8NPT-4I**	●	15.9	15.7	5.2	CR-8R / 10R-3I / 4I-CB

● : Line-up



API Round



API Buttress

Connection	TPI	Taper		Designation	AH725	*L*	A	*T*	Breakerpiece
		mm/mm	TPF						
API Round	8	1/16	0.75	**CR-8R-3E #1**	●	16	14.7	5.2	TD39318R-1-CBW/CAVITY
	8	1/16	0.75	**CR-8R-3E #2**	●	16	14.9	5.2	TD39328R-2-CBW/CAVITY
	8	1/16	0.75	**CR-8R-3E #3**	●	16	15	5.2	TD39338R-3-CBW/CAVITY
API Buttress	5	1/16	0.75	**CR-5B75-3E #1**	●	17	14.6	5.2	TD46015B75-1-CBW/CAVITY
	5	1/16	0.75	**CR-5B75-3E #2**	●	17	14.8	5.2	TD46025B75-2-CBW/CAVITY
	5	1/16	0.75	**CR-5B75-3E #3**	●	17	15	5.2	TD46035B75-3-CBW/CAVITY

● : Line-up

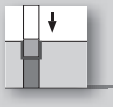
MEMO

GrooveLine



PARTING, GROOVING & GROOVE-TURN SYSTEM

Member IMC Group Tungaloy



Parting, Grooving & Groove-Turn System C002

GrooveLine - Parting, Grooving & Groove-Turn System



TETRAFORCECUT

C041

4-cornered inserts with good clamping rigidity for highly precise grooving and parting

W = 0.5 - 3.18 mm



TETRAMINICUT

C049

Unique insert geometry for highly precise grooving

W = 0.33 - 3.0 mm



DUOJUSTCUT

C009

Innovative clamping system for stable parting operations

W = 1.0 - 2.0 mm



EASYMULTICUT

C111

Multi-functional tool series for parting, grooving, and turning

W = 4.0 - 6.0 mm

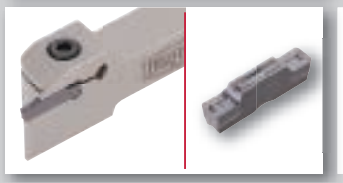


TUNGHEAVYGROOVE

C123

Highly rigid clamping system for wide grooving and profiling in one pass

W = 10 - 25 mm



TUNGCUT

C053

Multi-functional tool series for various grooving operations

W = 1.4 - 8.0 mm



MY-T SERIES

C086

Variety tool series for a wide range of grooving and parting operations

W = 2.0 - 8.0 mm

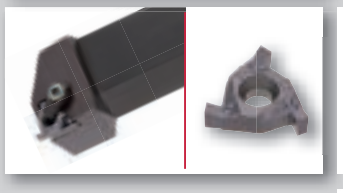


TUNGT-CLAMP

C021

G-class inserts with precisely designed chipbreaker for grooving

W = 1.0 - 3.0 mm



GTGNTYPE

C038

3-cornered inserts for grooving

W = 1.0 - 2.25 mm

Other Grooving & Parting Tool

C014

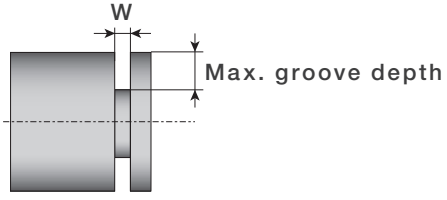
TetraForce-Cut

External Grooving - Quick Guide

Max. groove depth: 6.4 mm

Series	W (mm)	Max. groove depth (mm)	
		1 2 3 4 5 6	
TetraMini-Cut	0.33	0.8	C049
	0.43 - 0.5	1.2	
	0.75 - 1.75	2	
	2 - 3	2.5	
JTGR/L	0.33	0.7	C019
	0.43 - 0.5	1.1	
	0.65 - 0.95	1.9	
	1 - 1.8	2.1	
	2 - 3	2.6	
GBR/L32	0.33	0.8	C035
	0.5	1.2	
	0.75 - 1.5	2	
	2 - 2.5	2.5	
GBR/L43	1.25 - 1.45	2	C035
	1.5 - 2.3	3.5	
	2.5 - 4.5	5	
GX-R/LE	1	1.5	C030
	1.5	2.3	
	2	3	
	2.5	3.8	
	3	4.5	
	3.5	5.3	
	4 - 4.5	6	
TetraForce-Cut	0.5 - 0.75	2.5	C041
	0.8	1.6	
	1 - 1.25	3.5	
	1.4	2	
	1.47	2.5	
	1.5	5.7	
	1.57 - 1.96	3	
	2	6.4	
	2.22 - 2.3	3.5	
	2.39 - 2.5	5.7	
	2.7 - 2.87	6.2	
	3 - 3.18	6.4	

Recommendation
Available

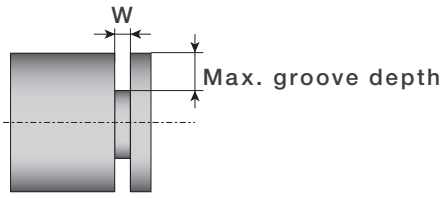


External Grooving - Quick Guide

Max. groove depth: 50 mm

Series	W (mm)	Max. groove depth (mm)	
		10 20 30 40 50	
MY-T FLEX	3	10	C104
	4	12	
	5	14	
CTD	3 - 4	14	C106
	5	20	
MY-T CGD	2	16	C102
	3 - 8	21.6	
MY-T G series	2	16	C086
	3	22	
	4 - 5	25	
TungCut	1.4	16	C053
	2	17	
	3 - 4	25	
	5 - 6	25 / 32	
	8	35	
EasyMulti-Cut	4	25 / 30	C111
	5	25 / 32	
	6	25 / 35	
TungHeavy Groove	10	36	C123
	15	40	
	20	40	
	25	50	

Recommendation
Available

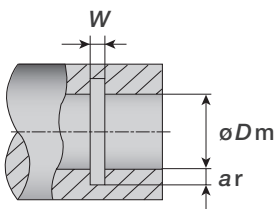


Grooving Tool

Internal Grooving - Quick Guide

Series	W (mm)	ar (mm)	øDm (mm) 10 20 30 40 50	
SNG	1 - 2	1.5	8 – 25	C025
	1.5 - 3.5	2	14 – 25	
	1.5 - 3.5	3	20 – 25	
EasyMulti-Cut	4	6	20 – 25	C111
		9	25	
		11	32	
	5	11	40	
	6	11	40	
TungCut	2	6	25	C053
		8	25	
	3	6	25	
		5.1	25	
		8	32	
		10	40	
	4	6	25	
		8	32	
		4	31	
		10	40	
	5	5	31	
		10	40	
	6	4	31	
		10	40	
	8	5	37	
		5.8	42	
MY-T G series	3	3.5	25	C086
		5	32	
	4	5	32	
		6	40	
	5	5	32	
		6	40	
GBR/L32	0.33	0.8	32	C034
	0.5	1.2	32	
	0.75 - 2.5	2	32	

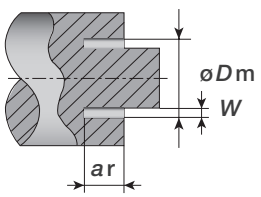
Recommendation
Available



Face Grooving - Quick Guide

Series	W (mm)	ar (mm)	øD (mm) 50 100 150 200 250 300 400 500	
FGC	3	10	30 – 120	C128
	4	10	30 – 120	
		20	30 – 120	
	5	12	30 – 120	
		22	30 – 120	
	6	14	40 – 120	
	8	16	60 – 120	
TungCut	3	10	30 – 50	C053
		12	46 – 200	
		15	50 – 100	
	4	10	30 – 36	
		12	30 – 40	
		16	58 – 250	
		20	36 – 200	
	5	20	60 – ∞	
		25	60 – 200	
	6	20	60 – 250	
		25	60 – 400	
MY-T G series	3	10	30 – 500	C086
		14	30 – 500	
	4	14	35 – 500	
		22	35 – 500	
	5	14	35 – 500	
		22	35 – 500	
EasyMulti-Cut	4	50	30 – 75	C111
		65	75 – 500	
	5	50	35 – 75	
		65	75 – 500	
	6	50	45 – 75	
		65	75 – 500	
GX-F	1	1.5	55 – ∞	C032
	1.5	2.3	55 – ∞	
	2	3	55 – ∞	
	2.5	3.8	55 – ∞	
	3	4.5	55 – ∞	
	3.5	5.3	55 – ∞	
	4 - 4.5	6	55 – ∞	

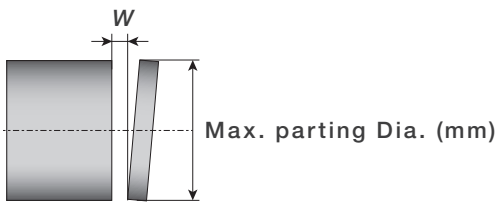
Recommendation
Available



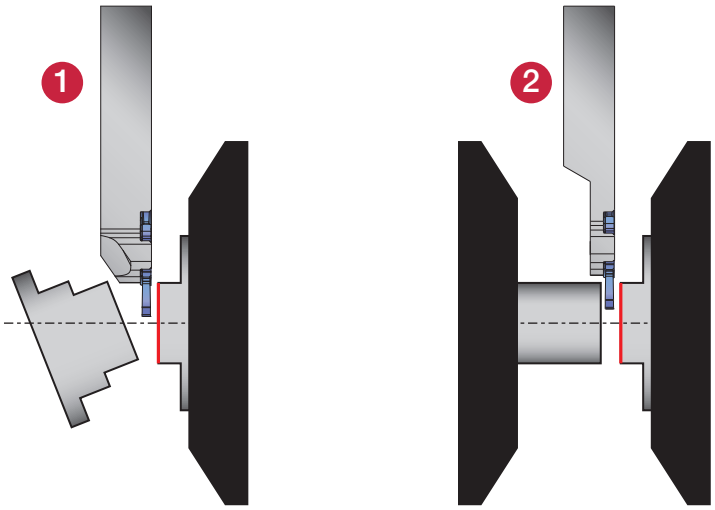
Parting off - Quick Guide

Series	W (mm)	Max. parting Dia. (mm)	
		10 20 40 60 80 100 200	
TetraForce-Cut	0.5 - 0.75	5	C041
	0.8	3.2	
	1 - 1.25	5	
	1.4	4	
	1.47	5	
	1.5	11.4	
	1.57 - 1.96	6	
	2	12.8	
	2.2 - 2.3	7	
	2.39 - 2.5	11.4	
	2.7 - 2.87	12.4	
	3 - 3.18	12.8	
DuoJust-Cut	1	6	C009
	1.5	16	
	2	16	
MY-T	2	50	C086
	3	100	
	4	100	
	5	120	
TungCut	1.4	29	C053
	2	12.8 50	
	3	12.8 100	
	4	50 120	
	5	50 120	
	6	50 120	
	8	80	
EasyMulti-Cut	4	50 100	C111
	5	50 120	
	6	50 120	

Recommendation
Available



Great cutting performance in **various parting-off operations**



1 JSXXR/L
W = 1 - 2 mm
Max. parting Dia.:
16 mm
Shank size:
10 - 20 mm
C010

2 JSXXR/L - S
W = 1 - 2 mm
Max. parting Dia.:
16 mm
Shank size:
10 - 12 mm
C010

3 types of inserts that are available for different parting-off diameters can be mounted **on the same pocket of the toolholder.**

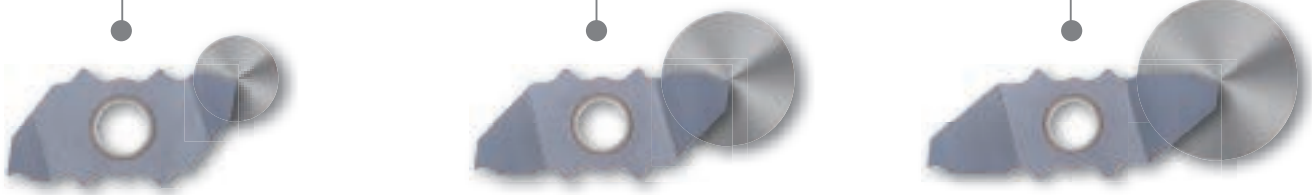
- Optimized overhang length for **stable machining**

Regular-type toolholder



Toolholder for sub-spindle





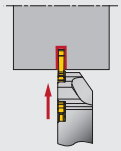
JXPG06
Max. parting-off dia.
ø6 mm

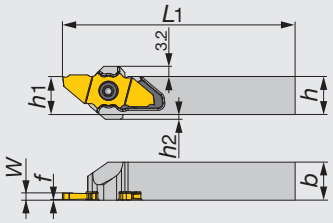
JXPG12
Max. parting-off dia.
ø12 mm

JXPG16
Max. parting-off dia.
ø16 mm

JSXXR/L

Parting off tool for swiss lathes





Right hand (R) shown.

Designation	W	h	b	f	L1*	h1	h2	Insert
JSXXR/L1010X09	1 - 2	10	10	0.2	≤120	10	3	JXPG06...,12...,16...
JSXXR/L1212F09	1 - 2	12	12	0.2	≤85	12	1.5	JXPG06...,12...,16...
JSXXR/L1212X09	1 - 2	12	12	0.2	≤120	12	1.5	JXPG06...,12...,16...
JSXXR/L1616X09	1 - 2	16	16	0.2	≤120	16	-	JXPG06...,12...,16...
JSXXR/L2020H09	1 - 2	20	20	0.2	≤100	20	-	JXPG06...,12...,16...

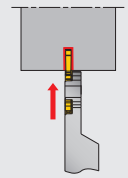
* "*L*1" is calculated with JXPG16*** insert. When JXPG12*** insert is used, "*L*1" is shorter 2 mm.
When JXPG06*** insert is used, "*L*1" is shorter 4 mm.
Note: The right hand insert (JXPG**R***) is used for the right hand toolholders (JSXXR***), and the left hand insert (JXPG**L***) is used for the left hand toolholders (JSXXL***).

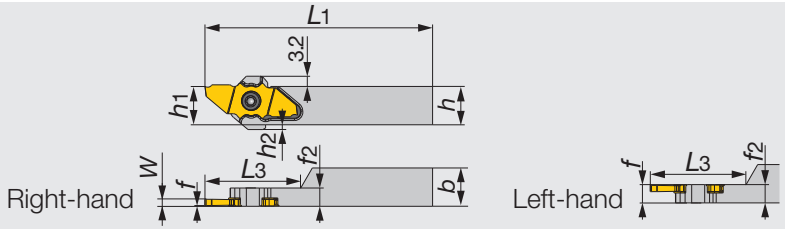
SPARE PARTS

Designation	Clamping screw	Wrench
JSXXR...	CSTC-4L100DL	T-1008/5
JSXXL...	CSTC-4L100DR	T-1008/5

JSXXR/L-S

Parting off tool for sub spindle in swiss lathes





Designation	W	h	b	f	L1*	L3*	h1	h2	f2	Insert
JSXXR/L1010X09-S	1 - 2	10	10	0.2/5.5	≤120	≤26	10	3	5.7	JXPG06...,12...,16...
JSXXR/L1212F09-S	1 - 2	12	12	0.2/5.5	≤85	≤26	12	1.5	5.7	JXPG06...,12...,16...
JSXXR/L1212X09-S	1 - 2	12	12	0.2/5.5	≤120	≤30	12	1.5	5.7	JXPG06...,12...,16...

* "*L*1" and "*L*3" are calculated with JXPG16*** insert. When JXPG12*** insert is used, "*L*1" and "*L*3" are 2 mm shorter.
When JXPG06*** insert is used, "*L*1" and "*L*3" are 4 mm shorter.
Note: The right-hand insert (JXPG**R***) is used for the right-hand toolholder (JSXXR***), and the left-hand insert (JXPG**L***) is used for the left-hand toolholder (JSXXL***).

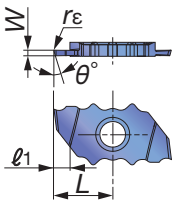
SPARE PARTS

Designation	Clamping screw	Wrench
JSXXR*****-S	CSTC-4L055DL	T-1008/5
JSXXL*****-S	CSTC-4L055DR	T-1008/5

INSERT

JXPG06R/L-F (sharp edge)





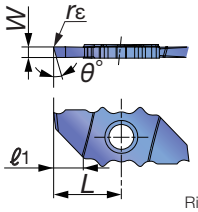
Right hand (R) shown.

Designation	W±0.025	rε	SH725 R	SH725 L	Dmax	L	θ°	ℓ1
JXPG06R/L10F	1	0.05	●	●	6	10.5	0	2.65
JXPG06R/L15F	1.5	0.05	●	●	6	10.5	0	2.65
JXPG06R/L10F-15	1	0.05	●	●	6	10.5	15	2.65
JXPG06R/L15F-15	1.5	0.05	●	●	6	10.5	15	2.65

● : Line-up
*D*max: Max. parting off dia

JXPG12R/L-F (sharp edge)





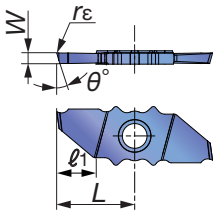
Right hand (R) shown.

Designation	W±0.025	rε	SH725 R	SH725 L	Dmax	L	θ°	ℓ1
JXPG12R/L15F	1.5	0.05	●	●	12	12.5	0	5.23
JXPG12R/L20F	2	0.05	●	●	12	12.5	0	5.23
JXPG12R/L15F-15	1.5	0.05	●	●	12	12.5	15	5.23
JXPG12R/L20F-15	2	0.05	●	●	12	12.5	15	5.23

● : Line-up
*D*max: Max. parting off dia

JXPG16R/L-F (sharp edge)





Right hand (R) shown.

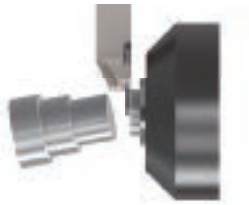
Designation	W±0.025	rε	SH725 R	SH725 L	Dmax	L	θ°	ℓ1
JXPG16R/L15F	1.5	0.05	●	●	16	14.5	0	6.96
JXPG16R/L20F	2	0.05	●	●	16	14.5	0	6.96
JXPG16R/L15F-15	1.5	0.05	●	●	16	14.5	15	6.96
JXPG16R/L20F-15	2	0.05	●	●	16	14.5	15	6.96

● : Line-up
*D*max: Max. parting off dia

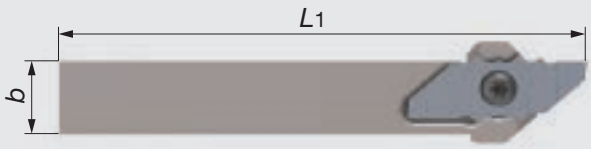
STANDARD CUTTING CONDITIONS

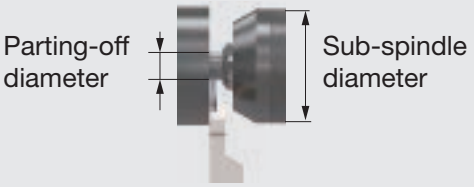
ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Low carbon steels C15, C20, etc.	SH725	50 - 200	0.01 - 0.05
P	Carbon steels, Alloy steels C55, 42CrMoS4, etc.	SH725	50 - 200	0.01 - 0.05
P	Free cutting steels X50CrSi8 2, etc.	SH725	50 - 200	0.01 - 0.05
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	SH725	50 - 200	0.01 - 0.05
N	Aluminium alloys	SH725	150 - 200	0.01 - 0.05
N	Copper alloy	SH725	100 - 200	0.01 - 0.05
S	Titanium alloys Ti-6Al-4V, etc.	SH725	30 - 80	0.01 - 0.05
S	Superalloys Inconel718, etc.	SH725	30 - 80	0.01 - 0.05

HOW TO SELECT TOOLS

	Large-diameter machining of workpiece with rigitity		Small-diameter machining of workpiece with short overhang	
	Main-spindle tooling	Sub-spindle tooling	Sub-spindle tooling	
			Workpiece with long overhang at the side of sub-spindle for the process after parting-off	Short workpiece with low rigitity
Application	 Main spindle	 Sub-spindle Main spindle	 Sub-spindle Main spindle	 Sub-spindle Main spindle
	Position of parting-off is at the side of the main spindle	Position of parting-off is at the side of the sub-spindle	Position of parting-off is at the side of the main spindle	Position of parting-off is at the side of the sub-spindle
Toolholder	R-hand (JSXXR type)	L-hand (JSXXL type)	R-hand (JSXXR-S type)	L-hand (JSXXL-S type)
Insert	Right-hand insert with lead angle to remove center core (JXPG**R***-15 type)	Left-hand insert (JXPG**L*** type)	Right-hand insert (JXPG**R*** type)	Left-hand insert (JXPG**L*** type)

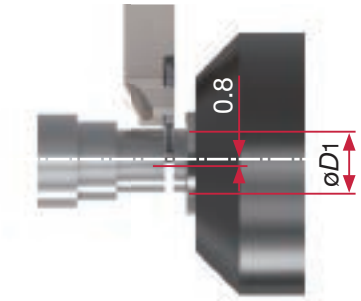
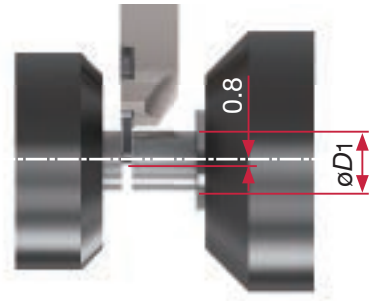
HOW TO SELECT TOOLHOLDERS FOR SUB-SPINDLE



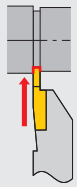


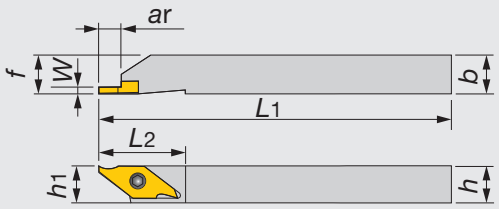
Sub-spindle dia.	Max parting-off dia.	Shank size b	Tool length L_1	Insert	Toolholder
ø40	~ ø6	10	116	JXPG06...	JSXXR/L1010X09-S
ø40	~ ø6	12	81	JXPG06...	JSXXR/L1212F09-S
ø40	~ ø12	10	118	JXPG12...	JSXXR/L1010X09-S
ø40	~ ø12	12	83	JXPG12...	JSXXR/L1212F09-S
ø40	~ ø16	10	120	JXPG16...	JSXXR/L1010X09-S
ø40	~ ø16	12	85	JXPG16...	JSXXR/L1212F09-S
ø50	~ ø6	12	116	JXPG06...	JSXXR/L1212X09-S
ø50	~ ø12	12	118	JXPG12...	JSXXR/L1212X09-S
ø50	~ ø16	12	85	JXPG16...	JSXXR/L1212F09-S
ø50	~ ø16	12	120	JXPG16...	JSXXR/L1212X09-S

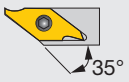
MAX. PARTING-OFF DIA. & DEPTH

Main-spindle tooling	Sub-spindle tooling
	
Main spindle	Sub-spindle Main spindle

The cutting edge reaches 0.8 mm beyond the center line in parting-off.
øD_1 = Max. parting-off dia.







Right hand (R) shown.

Designation	W	ar	h	b	L_1	L_2	h_1	f	Insert
JSVGR/L1010K-C	0.33 - 2	0.7 - 5.5	10	10	125	23	10	10	JVGR/L...
JSVGR/L1212K-C	0.33 - 2	0.7 - 5.5	12	12	125	23	12	12	JVGR/L...
JSVGR/L1616K	0.33 - 2	0.7 - 5.5	16	16	125	23	16	16	JVGR/L...

• Recommend clamping torque: 2.3 N•m.

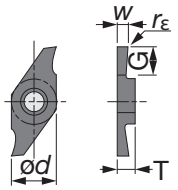
Designation	Applicable insert
JSVGR/L1010K-C	JVGR/L...
JSVGR/L1212K-C	JVGR/L...
JSVGR/L1616K	JVGR/L...

SPARE PARTS

Designation	Clamping screw	Wrench
JSVGR/L...	CSTB-3S	T-9F(Optional T-9L)

APPLICABLE INSERT

JVG-type (sharp edge)



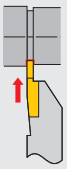
Right hand (R) shown.

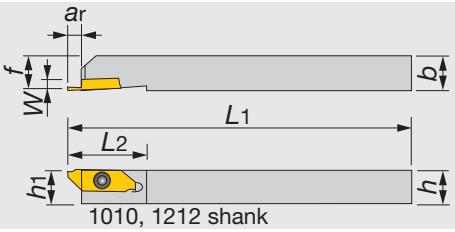
Designation	$W^{+0.05}_{0}$	r_ε	Coating				Cermet		Uncoated		ød	T	G
			J740		SH725		NS9530		TH10				
			R	L	R	L	R	L	R	L			
JVGR/L033F	0.33	0	●		●	●			●		7.94	3.18	0.7
JVGR/L050F	0.5	0	●		●	●			●		7.94	3.18	1.1
JVGR/L075F	0.75	0	●		●	●			●		7.94	3.18	1.9
JVGR/L095F	0.95	0	●		●	●			●		7.94	3.18	1.9
JVGR/L100F	1	0	●		●	●	●	●	●	●	7.94	3.18	5.5
JVGR/L125F	1.25	0	●		●	●			●		7.94	3.18	5
JVGR/L150F	1.5	0	●		●	●	●	●	●	●	7.94	3.18	5.5
JVGR/L200F	2	0	●		●	●	●		●		7.94	3.18	5.5

● : Line-up

JSXGR/L

No-offset screw-on toolholder for front & reverseturning & external grooving





without offset



1616, 2020, 2525 shank

Right hand (R) shown.

Designation	W	ar	h	b	L_1	L_2	h_1	f	Insert
JSXGR/L1010K8-C	0.7 - 2	4.5 - 6	10	10	125	29	10	9.9	JXG...
JSXGR/L1212K8-C	0.7 - 2	4.5 - 6	12	12	125	29	12	11.9	JXG...
JSXGR/L1616K8	0.7 - 2	4.5 - 6	16	16	125	29	16	15.9	JXG...
JSXGR/L2020K8	0.7 - 2	4.5 - 6	20	20	125	29	20	19.9	JXG...
JSXGR/L2525K8	0.7 - 2	4.5 - 6	25	25	125	29	25	24.9	JXG...

• Can be wrenched from back side with double socket torx screw. •JSXGR/L-type toolholders are used for JXG-type grooving inserts, JXF-type front-turning inserts and JXR-type reverse-turning inserts.

SPARE PARTS

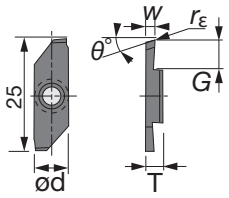




Designation	Clamping screw	Wrench
JSXGR/L...	CSTB-4SD	T-8F

APPLICABLE INSERT

JXG-type (with hand and sharp edge)



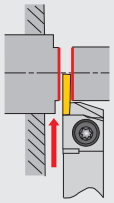
Right hand (R) shown.

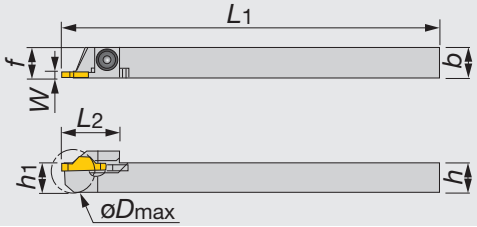
Designation	W±0.025	rε	Coating J740 R	Coating J740 L	Uncoated TH10 R	Uncoated TH10 L	ød	T	θ°	G
JXGR/L8070FA	0.7	0	●	●	●	●	8	3.97	15	4.5
JXGR/L8070FA-005	0.7	0.05	●				8	3.97	15	4.5
JXGR/L8100FA	1	0	●	●	●	●	8	3.97	15	6
JXGR/L8100FA-005	1	0.05	●				8	3.97	15	6
JXGR/L8100FA45	1	0	●		●		8	3.97	15	4.5
JXGR/L8100FA45-005	1	0.05	●				8	3.97	15	4.5
JXGR/L8150FA	1.5	0	●	●	●	●	8	3.97	15	6
JXGR/L8150FA-005	1.5	0.05	●				8	3.97	15	6
JXGR/L8150FA50	1.5	0	●		●		8	3.97	15	5
JXGR/L8150FA50-005	1.5	0.05	●				8	3.97	15	5
JXGR/L8180FA	1.8	0	●		●		8	3.97	15	6
JXGR/L8180FA-005	1.8	0.05	●				8	3.97	15	6
JXGR/L8200FA	2	0	●	●	●	●	8	3.97	15	6
JXGR/L8200FA-005	2	0.05	●				8	3.97	15	6
JXGR/L8200FN	2	0	●	●	●	●	8	3.97	0	6
JXGR/L8200FN-005	2	0.05	●				8	3.97	0	6

● : Line-up

JCCWSR/L

External parting toolholders for swiss lathes





Right hand (R) shown.

Designation	W	øDmax	h	b	L1	L2	h1	f	Insert
JCCWSR/L1010K2	2	20	10	10	125	19	10	10	JCC*200...
JCCWSR/L1212K2	2	20	12	12	125	19	12	12	JCC*200...
JCCWSR/L1616K2	2	20	16	16	125	19	16	16	JCC*200...
JCCWSR/L2020K2	2	20	20	20	125	19	20	20	JCC*200...
JCCWSR/L2525K2	2	20	25	25	125	19	25	25	JCC*200...

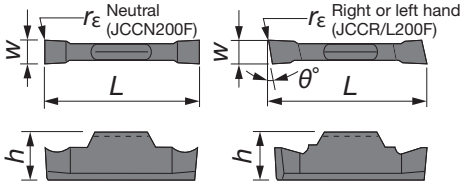
øDmax: Max. parting off dia.

SPARE PARTS

Designation	Clamping screw	Wrench
JCCWSR/L...	CSTB-4S	T-15F

APPLICABLE INSERT

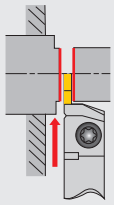
JCC-type (sharp edge)



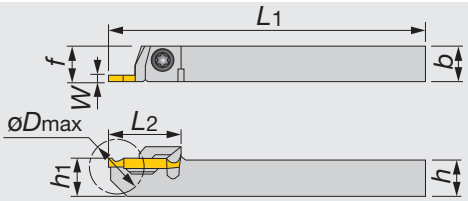
Right hand (R) shown.

Designation	W±0.025	rε	Coating J740 R	Coating J740 L	Uncoated TH10 R	Uncoated TH10 L	h	L	θ°
JCCN200F	2	0	●		●		4.8	15	0
JCCN200F-005	2	0.05	●				4.8	15	0
JCCR/L200F	2	0	●	●	●	●	4.8	15	15
JCCR/L200F-005	2	0.05	●	●			4.8	15	15

● : Line-up



(Two corners type)



Right hand (R) shown.

Designation	W	øDmax	h	b	L1	L2	h1	f	Insert
JCGWSR/L1010K2	2	20	10	10	125	20	10	10	JCGN200F...
JCGWSR/L1212K2	2	20	12	12	125	20	12	12	JCGN200F...
JCGWSR/L1616K2	2	20	16	16	125	20	16	16	JCGN200F...

øDmax: Max. parting off dia.

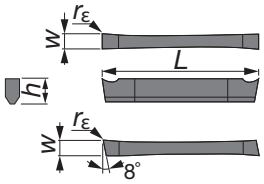
SPARE PARTS




Designation	Clamping screw	Wrench
JCGWSR/L...	CSTB-4S	T-15F

APPLICABLE INSERT

JCG-type (sharp edge)



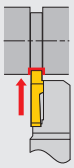
Right hand (R) shown.

Designation	W±0.025	rε	Coating J740 R	Coating J740 L	Uncoated TH10 R	Uncoated TH10 L	h	L
JCGN200F	2	0.05	●		●		3	20
JCGN200FR/L	2	0.05	●	●	●	●	3	20

● : Line-up

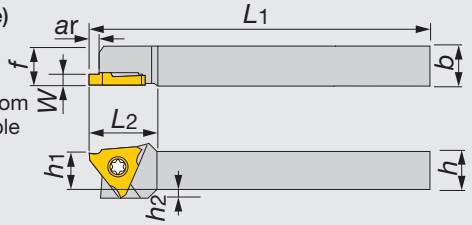
JSTGR/L

External grooving toolholders for swiss lathes



(Three corners type)

Can be wrenched from back side with double socket torx screw.



Right hand (R) shown.

Designation	W	ar	h	b	L1	L2	h1	f	h2	Insert
JSTGR/L1010X3	0.33 - 3	0.7 - 2.6	10	10	120	18.5	10	10	2	JTGR/L3...
JSTGR/L1212F3	0.33 - 3	0.7 - 2.6	12	12	85	18.5	12	12	-	JTGR/L3...
JSTGR/L1212X3	0.33 - 3	0.7 - 2.6	12	12	120	18.5	12	12	-	JTGR/L3...
JSTGR/L1616X3	0.33 - 3	0.7 - 2.6	16	16	120	18.5	16	16	-	JTGR/L3...
JSTGL1616K3	0.33 - 3	0.7 - 2.6	16	16	125	18.5	16	16	-	JTGR/L3...

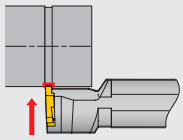
• Recommend clamping torque: 1.2 N·m.

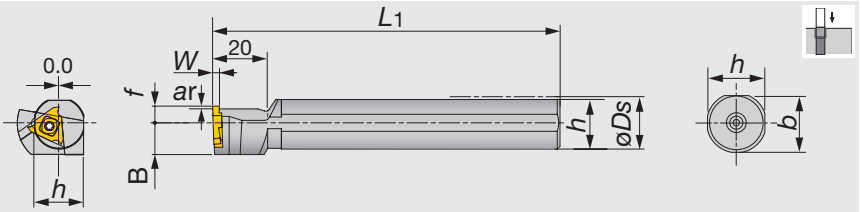
SPARE PARTS

Designation	Clamping screw	Wrench
JSTGR/L...	CSTB-4SD	T-8F

JS-TGL3

External grooving toolholders for swiss lathe, perpendicularly mounted inserts





Left hand (L) shown.

Designation	W	ar	øDs	f	L1	h	b	B	Insert
JS19K-TGL3	0.33 - 3	0.7 - 2.6	19.05	6	125	18	18	11.5	JTGR3...
JS20K-TGL3	0.33 - 3	0.7 - 2.6	20	6	125	19	19	11.5	JTGR3...
JS22K-TGL3	0.33 - 3	0.7 - 2.6	22	6	125	21	21	11.5	JTGR3...
JS25K-TGL3	0.33 - 3	0.7 - 2.6	25.4	10	125	24	24	12.7	JTGR3...

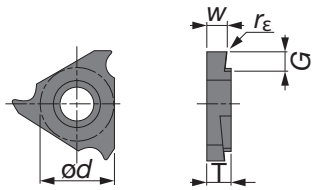
• Left hand toolholders (TGL3) are used with right hand inserts (JTGR3). • Recommend clamping torque: 3.0 Nm-ft.

SPARE PARTS

Designation	Clamping screw	Wrench
JS***-TGL3	CSTB-4S	T-15F

APPLICABLE INSERT

JTG-type (sharp edge)



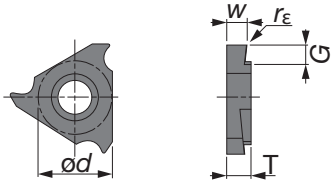
Right hand (R) shown.

Designation	W +0.05 0	rε	Coating				Cermet		Uncoated		ød	T	G
			SH725		J740		NS9530		TH10				
			R	L	R	L	R	L	R	L			
JTGR/L3033F	0.33	0.03	●		●	●			●	●	9.525	3.18	0.7
JTGR/L3033F-005	0.33	0.05	●								9.525	3.18	0.7
JTGR/L3043F	0.43	0.03			●						9.525	3.18	1.1
JTGR/L3050F	0.5	0.03	●	●	●	●	●		●	●	9.525	3.18	1.1
JTGR/L3050F-005	0.5	0.05	●	●							9.525	3.18	1.1
JTGR/L3065F	0.65	0.03	●		●						9.525	3.18	1.9
JTGR/L3065F-010	0.65	0.1	●								9.525	3.18	1.9
JTGR/L3075F	0.75	0.03	●	●	●	●	●	●	●	●	9.525	3.18	1.9
JTGR/L3075F-010	0.75	0.1	●	●							9.525	3.18	1.9
JTGR/L3080F	0.8	0.03	●		●						9.525	3.18	1.9
JTGR/L3080F-010	0.8	0.1	●								9.525	3.18	1.9
JTGR/L3085F	0.85	0.03	●		●						9.525	3.18	1.9
JTGR/L3095F	0.95	0.03	●	●	●	●	●		●	●	9.525	3.18	1.9
JTGR/L3095F-010	0.95	0.1	●	●							9.525	3.18	1.9
JTGR/L3100F	1	0.05	●	●	●	●	●		●	●	9.525	3.18	2.1
JTGR/L3100F-010	1	0.1	●	●							9.525	3.18	2.1
JTGR/L3110F	1.1	0.05	●		●						9.525	3.18	2.1
JTGR/L3120F	1.2	0.05	●		●						9.525	3.18	2.1
JTGR/L3120F-010	1.2	0.1	●								9.525	3.18	2.1
JTGR/L3125F	1.25	0.05	●	●	●	●	●		●	●	9.525	3.18	2.1
JTGR/L3125F-010	1.25	0.1	●	●							9.525	3.18	2.1
JTGR/L3130F	1.3	0.05	●		●						9.525	3.18	2.1
JTGR/L3140F	1.4	0.05	●		●						9.525	3.18	2.1
JTGR/L3140F-010	1.4	0.1	●								9.525	3.18	2.1
JTGR/L3145F	1.45	0.05	●		●	●	●		●	●	9.525	3.18	2.1
JTGR/L3145F-010	1.45	0.1	●								9.525	3.18	2.1
JTGR/L3150F	1.5	0.05	●	●	●	●	●		●	●	9.525	3.18	2.1
JTGR/L3150F-010	1.5	0.1	●	●							9.525	3.18	2.1
JTGR/L3175F	1.75	0.05	●		●	●	●	●	●	●	9.525	3.18	2.1
JTGR/L3175F-010	1.75	0.1	●								9.525	3.18	2.1
JTGR/L3180F	1.8	0.05	●		●						9.525	3.18	2.1
JTGR/L3200F	2	0.05	●	●	●	●	●		●	●	9.525	3.18	2.6
JTGR/L3200F-010	2	0.1	●	●							9.525	3.18	2.6
JTGR/L3225F	2.25	0.05	●		●						9.525	3.18	2.6
JTGR/L3250F	2.5	0.05	●	●	●	●	●		●	●	9.525	3.18	2.6
JTGR/L3250F-010	2.5	0.1	●	●							9.525	3.18	2.6
JTGR/L3275F	2.75	0.05			●						9.525	3.18	2.6
JTGR/L3300F	3	0.05	●		●						9.525	3.18	2.6
JTGR/L3300F-010	3	0.1	●								9.525	3.18	2.6

● : Line-up

APPLICABLE INSERT

JTG-type (with honed edge)



Right hand (R) shown.

Designation	$W^{+0.05}_{0}$	rε	J9530		ød	T	G
			R	L			
JTGR/L3100	1	0.05	●		9.525	3.18	2.1
JTGR/L3125	1.25	0.05	●		9.525	3.18	2.1
JTGR/L3150	1.5	0.05	●		9.525	3.18	2.1
JTGR/L3200	2	0.05	●		9.525	3.18	2.6

● : Line-up

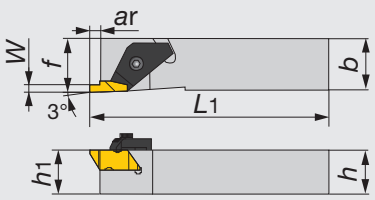
STANDARD CUTTING CONDITIONS FOR J SERIES GROOVING TOOLS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	General steels, Free-cutting steels, etc.	J740	10 - 100	0.01 - 0.1
		SH725	50 - 150	0.01 - 0.1
		NS9530	50 - 150	0.01 - 0.1
		J9530	50 - 150	0.01 - 0.1
M	Stainless steels, etc.	J740	10 - 100	0.01 - 0.1
		SH725	50 - 150	0.01 - 0.1
N	Aluminium alloys, copper alloys, etc.	TH10	10 - 200	0.01 - 0.1
S	Difficult-to-cut materials, titanium alloys, etc.	TH10	10 - 30	0.01 - 0.1

TUNGT-CLAMP

FLASR/L

External grooving & threading toolholders for swiss lathes



Right hand (R) shown.

Designation	W	a_r	h_1	h	b	L_1	f	Insert
FLASR/L-1616M3	1 - 3	4.81	16	16	16	125	16	FL*-3**R/L...

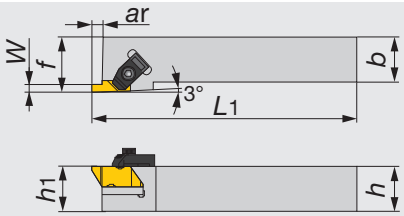
SPARE PARTS

Designation	Clamp	Clamping screw	Wrench
FLASR-1616M3	TF-184	S-412	5/32HEX
FLASL-1616M3	TF-185	S-412	5/32HEX

TUNGT-CLAMP

FLSR/L

External toolholders for grooving & threading



Right hand (R) shown.

Designation	W	a_r	h_1	h	b	L_1	f	Insert
FLSR/L-2020M3	1 - 3	4.5	20	20	20	125	32	FL*-3**R/L...
FLSR/L-2525M3	1 - 3	4.5	25	25	25	150	32	FL*-3**R/L...

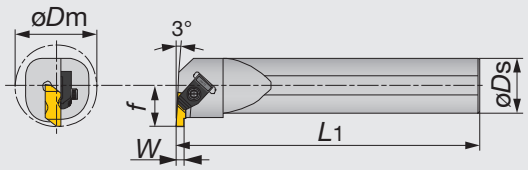
SPARE PARTS

Designation	Clamp	Clamping screw	Wrench
FLSR-****M3	TF-72	S-412	5/32HEX
FLSL-****M3	TF-73	S-412	5/32HEX

TUNGT-CLAMP

A_M-FLER/L

Internal toolholders for grooving & threading



Right hand (R) shown.

Designation	W	øDm	øDs	L1	f	Insert
A25M-FLER/L3	1 - 3	34.9	25	300	17.7	FL*-3**L/R...
A32M-FLER/L3	1 - 3	44.5	32	350	22.1	FL*-3**L/R...
A40M-FLER3	1 - 3	50.8	40	350	24.5	FL*-3**L...

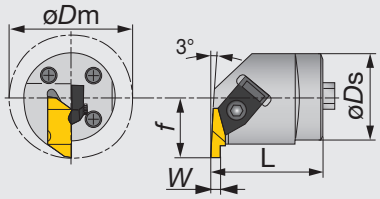
SPARE PARTS

Designation	Clamp	Clamping screw	Wrench
A**M-FLER3	TF-73	S-412	5/32HEX
A**M-FLEL3	TF-72	S-412	5/32HEX

TUNGT-CLAMP

HS-FLER/L

Exchangeable heads for internal grooving & threading, applicable on S-570 shanks



Right hand (R) shown.

Designation	W	øDm	øDs	L	f	Insert
HS40-FLER3W	1 - 3	56.1	40	40.1	28	FL*-3**L...
HS50-FLER3W	1 - 3	70.1	50	41.9	35	FL*-3**L...

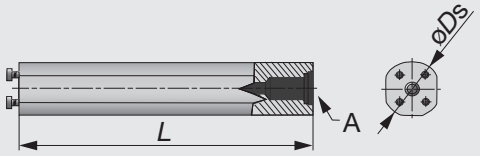
SPARE PARTS

Designation	Clamp	Clamping screw	Wrench
HS40-FLER3W	TF-73	S-412	5/32HEX
HS50-FLER3W	TF-73	S-412	5/32HEX

TUNGT-CLAMP

S-570

Steel shanks for exchangeable head



Designation	øDs	L	A
S-570-40M-40	40	273	1/2-14NPT
S-570-50M-50	50	366	1/2-14NPT

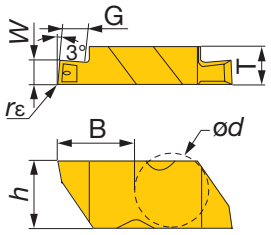
SPARE PARTS




Designation	Clamping screw	Wrench
S-570-40M-40	SS100	5/32HEX
S-570-50M-50	SS94	1/4HEX

INSERT

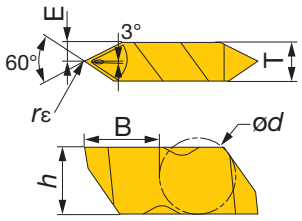
FLG-CB (For grooving)



Designation	W±0.025	rε	AH110 R	AH110 L	G	ød	T	h	B
FLG-3M100R/L-CB	1	0.13 - 0.25	●	●	1.4	9.525	4.95	8.74	10.29
FLG-3M150R/L-CB	1.5	0.13 - 0.25	●	●	2.55	9.525	4.95	8.74	10.29
FLG-3M200R/L-CB	2	0.13 - 0.25	●	●	2.55	9.525	4.95	8.74	10.29
FLG-3M250R/L-CB	2.5	0.13 - 0.25	●	●	4.07	9.525	4.95	8.74	10.29
FLG-3M300R/L-CB	3	0.13 - 0.25	●	●	4.07	9.525	4.95	8.74	10.29

● : Line-up

FLT-CB (For threading)



Designation	rε	AH725 R	AH725 L	Pitch Internal	Pitch External	ød	E	T	h	B
FLT-3R/L-HCB	0.13 - 0.2	●	●	2.11 - 5.08	1.27 - 4.23	9.525	2.49	4.95	8.74	10.16
FLT-3R/LC-HCB	0.31 - 0.38	●	●	4.23 - 5.08	2.31 - 4.23	9.525	2.49	4.95	8.74	10.16
FLT-3R/L-CB	0.13 - 0.2	●	●	2.11 - 3.175	1.27 - 3.175	9.525	2.49	4.95	8.74	10.16

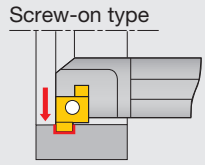
● : Line-up

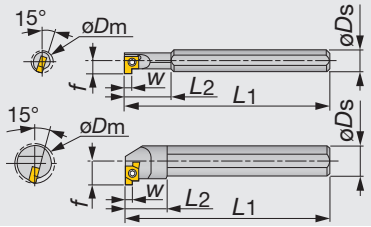
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Application	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	High carbon steel C45, etc.	AH110	Grooving	100 - 200	0.12 - 0.35
		AH725	Threading	80 - 180	-
	Alloy steel 34CrMo4, etc.	AH110	Grooving	50 - 80	0.12 - 0.3
		AH725	Threading	60 - 160	-
M	Stainless steel X5CrNi18-9, etc.	AH110	Grooving	50 - 150	0.1 - 0.2
		AH725	Threading	50 - 130	-
K	Gray cast iron 250, etc.	AH110	Grooving	50 - 180	0.1 - 0.25
		AH725	Threading	-	-
	Ductile cast iron 400-15S, etc.	AH110	Grooving	50 - 120	0.1 - 0.25
		AH725	Threading	-	-

SNGR/L

Toolholders for internal grooving







Applicable inserts
6GR/L
7GR/L



Applicable inserts
8GR/L
9GR/L

Right hand (R) shown.

Designation	Material	W	øDm	ar	øDs	f	L1	L2	h	Insert
SNGR/L08H06	STEEL	1 - 2	8	1.5	8	4.7	100	18	7	6GR/L...
SNGR/L08H07	STEEL	1 - 2	10	1.5	8	5.8	100	23	7	7GR/L...
SNGR/L10K07	STEEL	1 - 2	12	1.5	10	6.8	125	29	9	7GR/L...
SNGR/L10K08	STEEL	1.5 - 3.5	14	2	10	7.6	125	15	9	8GR/L...
SNGR/L12M08	STEEL	1.5 - 3.5	16	2	12	8.6	150	18	11	8GR/L...
SNGR/L16Q09	STEEL	1.5 - 3.5	20	3	16	11.6	180	20	15	9GR/L...
SNGR/L20R09	STEEL	1.5 - 3.5	24	3	20	13.6	200	25	18	9GR/L...
SNGR/L08K06SC	CARBIDE	1.5 - 3.5	8	1.5	8	4.7	125	28	7	6GR/L...
SNGR/L08K07SC	CARBIDE	1.5 - 3.5	10	1.5	8	5.8	125	35	7	7GR/L...
SNGR/L10M07SC	CARBIDE	1.5 - 3.5	12	1.5	10	6.8	150	45	9	7GR/L...
SNGR/L10M08SC	CARBIDE	1.5 - 3.5	14	2	10	7.6	150	45	9	8GR/L...
SNGR/L12Q08SC	CARBIDE	1.5 - 3.5	16	2	12	8.6	180	-	11	8GR/L...
SNGR/L16R09SC	CARBIDE	1.5 - 3.5	20	3	16	11.6	200	-	15	9GR/L...

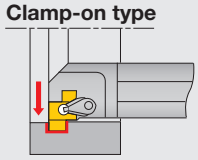
SPARE PARTS

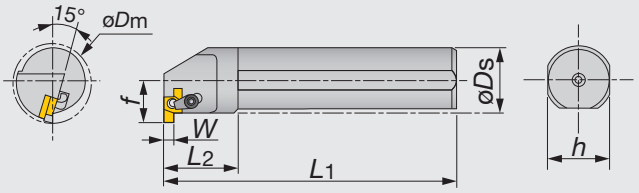




Designation	Clamping screw	Wrench
SNGR/L***06	CSTB-2L040	T-6F
SNGR/L***07	CSTB-2.2S	T-7F
SNGR/L***08	CSTB-2.2	T-7F
SNGR/L***09	CSTB-2.5L080	T-8F
SNGR/L***06SC	CSTB-2L040	T-6F
SNGR/L***07SC	CSTB-2.2S	T-7F
SNGR/L***08SC	CSTB-2.2	T-7F
SNGR/L***09SC	CSTB-2.5L080	T-8F

Clamp-on type





Right hand (R) shown.

Designation	W	øDm	ar	øDs	f	L1	L2	h	Insert
CNGR/L25S15	2 - 5	32	5	25	18.1	250	30	23	15GR/L...
CNGR/L32T15	2 - 5	40	5	32	22.1	300	35	30	15GR/L...
CNGR/L40U15	2 - 5	48	5	40	26.1	350	45	38	15GR/L...

SPARE PARTS

Designation	Clamp set	Screw	Shim	Wrench
CNGR...	CSP22	DTS5-3.5	SGSR151	T-20F
CNGL...	CSP22	DTS5-3.5	SGSL151	T-20F

Optional parts for CNG type toolholders

When using as a screw-on type, use the following parts.

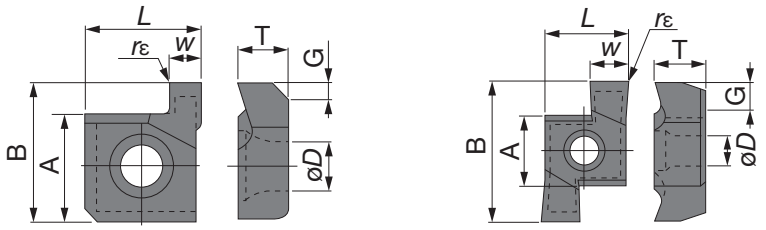


Designation	Clamping screw	Wrench
CNGR/L...	CSTB-3.5L	T-15F

Grooving Tool

INSERT

**GR/L



Right hand (R) shown.

Designation	W±0.025	rε	Cermet NS9530 R	Cermet NS9530 L	Uncoated TH10 R	Uncoated TH10 L	Uncoated UX30 R	Uncoated UX30 L	A	B	T	øD	L	G
6GR/L100	1	0.2	●		●		●	●	4.76	6.44	2.34	2.3	5.56	1.5
6GR/L150	1.5	0.2	●		●	●	●	●	4.76	6.44	2.34	2.3	5.56	1.5
6GR/L200	2	0.2	●		●	●	●	●	4.76	6.44	2.34	2.3	5.56	1.5
7GR/L100	1	0.2	●		●		●		5.56	7.36	3.08	2.58	5.56	1.5
7GR/L150	1.5	0.2	●		●		●		5.56	7.36	3.08	2.58	5.56	1.5
7GR/L200	2	0.2	●		●	●	●	●	5.56	7.36	3.08	2.58	5.56	1.5
8GR/L150	1.5	0.2	●		●		●		5.56	10.16	3.87	2.58	6.15	2
8GR/L200	2	0.2	●		●	●	●		5.56	10.16	3.87	2.58	6.15	2
8GR/L250	2.5	0.2	●		●	●	●	●	5.56	10.16	3.87	2.58	6.15	2
8GR/L300	3	0.2	●		●	●	●	●	5.56	10.16	3.87	2.58	6.15	2
8GR/L350	3.5	0.2			●		●		5.56	10.16	3.87	2.58	6.15	2
9GR/L150	1.5	0.2	●	●	●		●	●	6.35	12.95	4.66	2.86	7.74	2
9GR/L200	2	0.2	●	●	●	●	●	●	6.35	12.95	4.66	2.86	7.74	3
9GR/L250	2.5	0.2	●	●	●		●	●	6.35	12.95	4.66	2.86	7.74	3
9GR/L300	3	0.2	●	●	●	●	●	●	6.35	12.95	4.66	2.86	7.74	3
9GR/L350	3.5	0.2	●	●	●		●	●	6.35	12.95	4.66	2.86	7.74	3
15GR/L200	2	0.2	●		●		●		9.2	20.8	5.1	4.8	10.8	3
15GR/L250	2.5	0.2	●		●		●		9.2	20.8	5.1	4.8	10.8	3
15GR/L300	3	0.2	●		●		●	●	9.2	20.8	5.1	4.8	10.8	3
15GR/L350	3.5	0.2	●		●		●		9.2	20.8	5.1	4.8	10.8	3
15GR/L400	4	0.2	●		●		●		9.2	20.8	5.1	4.8	10.8	4
15GR/L450	4.5	0.2			●	●	●		9.2	20.8	5.1	4.8	10.8	4
15GR/L500	5	0.2			●		●		9.2	20.8	5.1	4.8	10.8	5

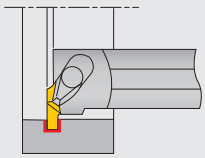
Note:
When using a right or left hand insert, the right hand insert is used with right hand toolholder and the left hand insert is used with left hand toolholder.

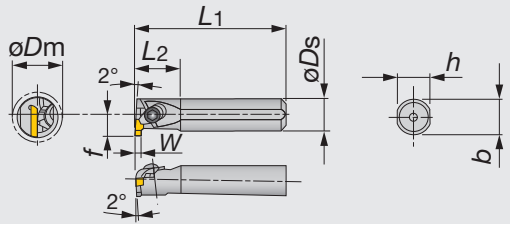
● : Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Medium carbon steels	40 - 150	0.05 - 0.15
K	Cast irons, Light alloys	60 - 200	0.05 - 0.15

Notes:
- Cutting conditions shown above are a guideline only.
- When grooving close to the minimum bore diameter or with long reach conditions, reduce the conditions shown above by approximately 50%.
- To help chip evacuation, use water-soluble cutting fluid. The fluid should be applied sufficiently to the cutting point.
- When using without cutting fluid, reduce both the cutting speeds and feeds shown on the above by 50% at least.





Right hand (R) shown.

Designation	Material	W	øDm	ar	øDs	f	L1	L2	h	b	Insert
CGXR/L0016	STEEL	1 - 3	20	3	16	11.3	150	24	15	15.5	GIR/L52...
CGXR/L0020	STEEL	1 - 3	24	3	20	13.3	180	30	18	19	GIR/L52...
CGXR/L0025	STEEL	1 - 5	32	5.3	25	18	200	38	23	24	GIR/L63...
CGXR/L0032	STEEL	1 - 5	40	5.3	32	23	250	48	30	31	GIR/L63...
CGXR/L0040	STEEL	1 - 5	48	5.3	40	27	300	60	37	38.5	GIR/L63...
CGXR/L16SC	CARBIDE	1 - 3	20	3	16	11.3	200	24	15	-	GIR/L52...

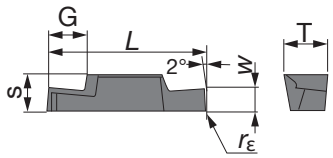
• When using a right or left hand insert, the right hand insert (GIR) is used for the right hand toolholders (CGXR) , and the left hand insert (GIL) is used for the left hand toolholders (CGXL).

SPARE PARTS

Designation	Clamp set	Wrench 1	Wrench 2
CGXR/L0016/20	CSW-0	-	P-2.5T
CGXR/L0025/32/40	CSW-2	P-4	-
CGXR/L16SC	CSW-0	-	P-2.5T

INSERT

GIR/L



Right hand (R) shown.

Designation	W±0.05	r_ε	Cermet NS9530		Uncoated TH10		S	T	L	G
			R	L	R	L				
GIR/L5210-02	1	0.2	●	●	●	●	3.5	4.4	15	1.5
GIR/L5215-02	1.5	0.2	●	●	●	●	3.5	4.4	15	2.3
GIR/L5220-02	2	0.2	●	●	●	●	3.5	4.4	15	3
GIR/L5225-02	2.5	0.2	●		●	●	3.5	4.4	15	3
GIR/L5230-02	3	0.2	●		●	●	3.5	4.4	15	3
GIR/L6310-02	1	0.2	●		●	●	5.5	6.4	24	1.5
GIR/L6315-02	1.5	0.2	●	●	●	●	5.5	6.4	24	2.3
GIR/L6320-02	2	0.2	●	●	●	●	5.5	6.4	24	3
GIR/L6325-02	2.5	0.2	●	●	●	●	5.5	6.4	24	3.8
GIR/L6330-02	3	0.2	●	●	●	●	5.5	6.4	24	4.5
GIR/L6335-02	3.5	0.2	●	●	●	●	5.5	6.4	24	5.3
GIR/L6340-02	4.0	0.2	●	●	●	●	5.5	6.4	24	5.3
GIR/L6345-02	4.5	0.2	●		●	●	5.5	6.4	24	5.3
GIR/L6350-02	5	0.2	●		●	●	5.5	6.4	24	5.3

● : Line-up

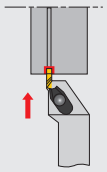
Note:
When using a right or left hand insert, the right hand insert is used with right hand toolholder and the left hand insert is used with left hand toolholder.

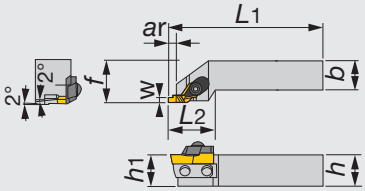
STANDARD CUTTING CONDITIONS (EXTERNAL & INTERNAL GROOVING)

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed f (mm/rev)		
				W < 2 mm	W = 2 ~ 4 mm	W > 4 mm
P	Carbon steels	NS9530	80 - 150	0.05 - 0.1	0.08 - 0.15	0.08 - 0.2
K	Cast irons, Light alloys	TH10	60 - 150	0.05 - 0.1	0.08 - 0.15	0.08 - 0.2

GX-R/LE

External toolholders for grooving, with double-ended inserts





Right hand (R) shown.

Designation	W	ar	h	b	L1	L2	h1	f	Insert
GX-2020R/LE	1 - 4.5	1.5 - 6	20	20	125	35	20	25	XGR/L63...
GX-2525R/LE	1 - 4.5	1.5 - 6	25	25	150	35	25	32	XGR/L63...

• When using a right or left hand insert, the right hand insert (XGR) is used for the right hand toolholders (GX-****RE) , and the left hand insert (XGL) is used for the left hand toolholders (GX-****LE).

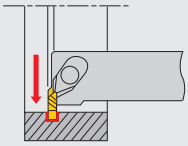
SPARE PARTS

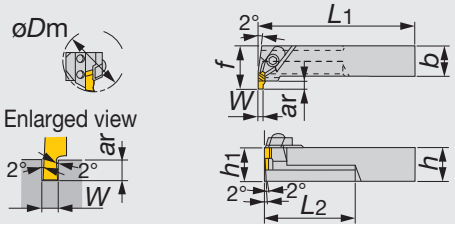
Designation	Clamp	Clamp screw	Shim	Shim screw	Wrench
GX-2020RE	CP81A	RT-1	SL-6R	BHM4-8	P-4
GX-2020LE	CP81A	RT-1	SL-6L	BHM4-8	P-4
GX-2525RE	CP81A	RT-1	SL-1R	BHM4-8	P-4
GX-2525LE	CP81A	RT-1	SL-1L	BHM4-8	P-4

Note:
Max.groove width and max. groove depth shown in the above table are the values when the insert having the largest cutting edge width is used.

GX-R/LI

Toolholders for internal grooving





Right hand (R) shown.

Designation	W	øDm	ar	h	b	L1	L2	h1	f	Insert
GX-2525R/LI	1 - 4.5	55	1.5 - 6	25	25	200	70	25	35	XGL/R63...

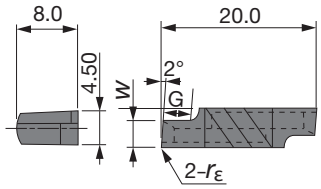
• When using a right or left hand insert, the right hand insert (XGR) is used for the left hand toolholders (GX-****LI) , and the left hand insert (XGL) is used for the right hand toolholders (GX-****RI).

SPARE PARTS

Designation	Clamp	Clamp screw	Shim	Shim screw	Wrench
GX-2525RI	CP81B	RT-1	SL-2R	BHM3-8	P-4
GX-2525LI	CP81B	RT-1	SL-2L	BHM3-8	P-4

INSERT

XGR/L



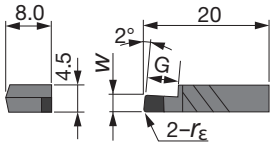
Right hand (R) shown.

Designation	W±0.05	rε	Cermet NS9530 R	Cermet NS9530 L	Uncoated TH10 R	Uncoated TH10 L	Uncoated UX30 R	Uncoated UX30 L	G
XGR/L6310-02	1	0.2	●	●	●	●	●	●	1.5
XGR/L6315-02	1.5	0.2	●	●	●	●	●	●	2.3
XGR/L6320-02	2	0.2	●	●	●	●	●	●	3
XGR/L6325-02	2.5	0.2	●	●	●	●	●	●	3.8
XGR/L6330-02	3	0.2	●	●	●	●	●	●	4.5
XGR/L6335-02	3.5	0.2	●	●	●	●	●	●	5.3
XGR/L6340-02	4	0.2	●	●	●	●	●	●	6
XGR/L6345-02	4.5	0.2	●	●	●	●	●	●	6

● : Line-up

Note;
For internal machining, use right-hand toolholder (GX-****RI) with left-hand insert (XGL****), and use left-hand toolholder (GX-****LI) with right-hand insert (XGR****).
For external machining, use right-hand toolholder (GX-****RE) with right-hand insert (XGR****), and use left-hand toolholder (GX-****LE) with left-hand insert (XGL****).

XGR/L-QBN



Right hand (R) shown.

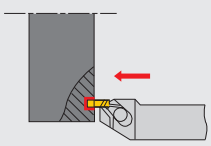
Designation	W±0.05	rε	T-CBN BX360 R	T-CBN BX360 L	G
XGR/L6315S-QBN	1.5	0.2	●		2.3
XGR/L6320S-QBN	2	0.2	●		3
XGR/L6325S-QBN	2.5	0.2	●		3.8
XGR/L6330S-QBN	3	0.2	●		4.5
XGR/L6335S-QBN	3.5	0.2	●		5.3
XGR/L6340S-QBN	4	0.2	●		6
XGR/L6345S-QBN	4.5	0.2	●		6

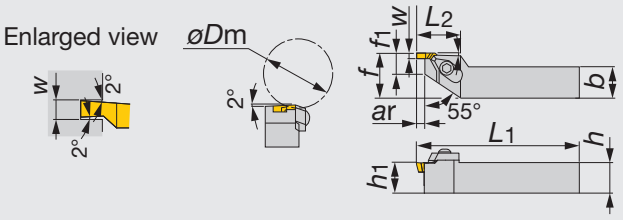
● : Line-up

Note;
For internal machining, use right-hand toolholder (GX-****RI) with left-hand insert (XGL****), and use left-hand toolholder (GX-****LI) with right-hand insert (XGR****).
For external machining, use right-hand toolholder (GX-****RE) with right-hand insert (XGR****), and use left-hand toolholder (GX-****LE) with left-hand insert (XGL****).

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed v_c (m/min)	Feed f (mm/rev) W < 2 mm	Feed f (mm/rev) W = 2 ~ 4 mm	Feed f (mm/rev) W > 4 mm
P	Carbon steels	NS9530	80 - 200	0.05 - 0.1	0.08 - 0.2	0.08 - 0.25
		TX10S	60 - 150	0.05 - 0.1	0.08 - 0.2	0.08 - 0.25
		UX30	60 - 150	0.05 - 0.1	0.08 - 0.2	0.08 - 0.25
K	Cast irons , Light alloys	TH10	60 - 150	0.05 - 0.1	0.08 - 0.2	0.08 - 0.25
H	Hardened steels	BX360	50 - 180	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15





Right hand (R) shown.

Designation	W	øDm	ar	h	b	L1	L2	h1	f	f1	Insert
GX-2525R/LF	1 - 4.5	55	1.5 - 6	25	25	150	35	25	32	15	XNL/R63...

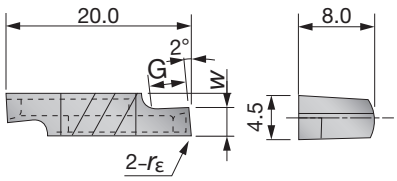
• When using a right or left hand insert, the right hand insert (XNR) is used for the left hand toolholders (GX-...LF) , and the left hand insert (XNL) is used for the right hand toolholders (GX-...RF).

SPARE PARTS

Designation	Clamp set	Clamping screw	Shim	Shim screw	Wrench
GX-2525RF	CP81A	RT-1	SL-3R	BHM4-8	P-4
GX-2525LF	CP81A	RT-1	SL-3L	BHM4-8	P-4

INSERT

XNR/L



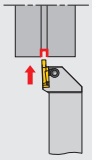
Left hand (L) shown.

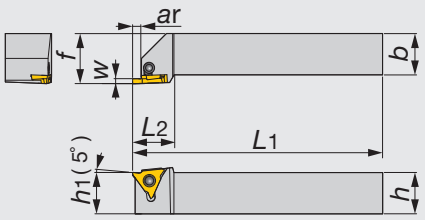
Designation	W±0.05	rε	Cermet NS9530 R	Cermet NS9530 L	Uncoated TH10 R	Uncoated TH10 L	G
XNR/L6310-02	1	0.2	●	●	●	●	1.5
XNR/L6315-02	1.5	0.2	●	●	●	●	2.3
XNR/L6320-02	2	0.2	●	●	●	●	3
XNR/L6325-02	2.5	0.2	●	●	●	●	3.8
XNR/L6330-02	3	0.2	●	●	●	●	4.5
XNR/L6335-02	3.5	0.2	●	●	●	●	5.3
XNR/L6340-02	4	0.2	●	●	●	●	6
XNR/L6345-02	4.5	0.2	●	●	●	●	6

● : Line-up

TGTSR/L

External toolholders for grooving, with triple corner insert





Right hand (R) shown.

Designation	W	ar	h	b	L_1	L_2	h_1	f
TGTSR/L2020K16	0.33 - 2.5	2.5	20	20	125	25	20	25
TGTSR/L2525M16	0.33 - 2.5	2.5	25	25	150	25	25	30
TGTSR/L2020K22-1	1 - 1.45	2	20	20	125	25	20	25
TGTSR/L2020K22-2	1.5 - 2.3	3.5	20	20	125	25	20	25
TGTSR/L2020K22-3	2.5 - 4.5	5	20	20	125	25	20	25
TGTSR/L2525M22-1	1 - 1.45	2	25	25	150	25	25	30
TGTSR/L2525M22-2	1.5 - 2.3	3.5	25	25	150	25	25	30
TGTSR/L2525M22-3	2.5 - 4.5	5	25	25	150	25	25	30

• See Applicable insert table. • The right hand insert (GBR) is used for the right hand toolholders (TGTSR), and the left hand insert (GBL) is used for the left hand toolholders (TGTSL).

Designation	Applicable insert
TGTSR/L2020K16	GBR/L32...
TGTSR/L2525M16	GBR/L32...
TGTSR/L2020K22-1	GBR/L43125 ~ 145 GBR/L43050R
TGTSR/L2020K22-2	GBR/L43150 ~ 230 GBR/L43075R ~ 100R
TGTSR/L2020K22-3	GBR/L43250 ~ 450 GBR/L43125R ~ 200R
TGTSR/L2525M22-1	GBR/L43125 ~ 145 GBR/L43050R
TGTSR/L2525M22-2	GBR/L43150 ~ 230 GBR/L43075R ~ 100R
TGTSR/L2525M22-3	GBR/L43250 ~ 450 GBR/L43125R ~ 200R

SPARE PARTS

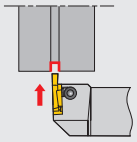


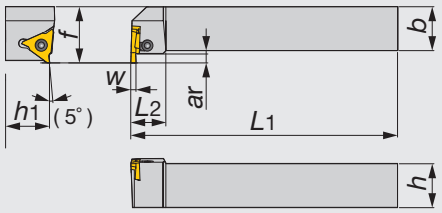


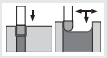
Designation	Clamp	Clamping screw	Wrench
TGTSR/L*****16	CP900	MCS520-2.5	P-2.5
TGTSR/L*****22...	CP910	MCS520-2.5	P-2.5

TGTTR/L

Perpendicular toolholders for external grooving, with triple corner inserts







Right hand (R) shown.

Designation	W	ar	h	b	L1	L2	h1	f
TGTTR/L2020K16	0.33 - 2.5	2.5	20	20	125	20	20	27
TGTTR/L2525M16	0.33 - 2.5	2.5	25	25	150	20	25	32
TGTTR/L2020K22-1	1 - 1.45	2	20	20	125	20	20	27
TGTTR/L2020K22-2	1.5 - 2.3	3.5	20	20	125	20	20	27
TGTTR/L2020K22-3	2.5 - 4.5	5	20	20	125	20	20	27
TGTTR/L2525M22-1	1 - 2.3	2	25	25	150	20	25	32
TGTTR/L2525M22-2	1.5 - 2.3	3.5	25	25	150	20	25	32
TGTTR/L2525M22-3	2.5 - 4.5	5	25	25	150	20	25	32

• See Applicable insert table. • The left hand insert (GBL) is used for the right hand toolholders (TGTTR), and the right hand insert (GBR) is used for the left hand toolholders (TGTTL).

Designation	Applicable insert
TGTTR/L2020K16	GBL/R32...
TGTTR/L2525M16	GBL/R32...
TGTTR/L2020K22-1	GBL/R43125 ~ 145 GBL/R43050R
TGTTR/L2020K22-2	GBL/R43150 ~ 230 GBL/R43075R ~ 100R
TGTTR/L2020K22-3	GBL/R43250 ~ 450 GBL/R43125R ~ 200R
TGTTR/L2525M22-1	GBL/R43125 ~ 145 GBL/R43050R
TGTTR/L2525M22-2	GBL/R43150 ~ 230 GBL/R43075R ~ 100R
TGTTR/L2525M22-3	GBL/R43250 ~ 450 GBL/R43125R ~ 200R

SPARE PARTS

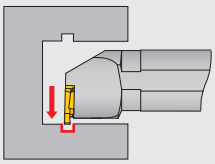


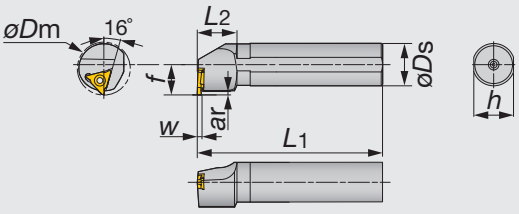


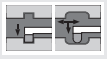
Designation	Clamp	Clamping screw	Wrench
TGTTR/L*****16	CP900	MCS520-2.5	P-2.5
TGTTR/L*****22...	CP910	MCS520-2.5	P-2.5

S-SGTR/L

Toolholders for internal grooving







Right hand (R) shown.

Designation	W	øDm	ar	øDs	f	L1	L2	h	Insert
S25R-SGTR/L16	0.33 - 2.5	35	2	25	17.5	200	30	23	GBL/R32...
S32S-SGTR/L22	1.25 - 4.5	40	2.5	32	23	250	30	30	GBL/R43...

• When using a right or left hand insert, the right hand insert (GBR) is used for the left hand toolholders (SGTL) , and the left hand insert (GBL) is used for the right hand toolholders (SGTR).

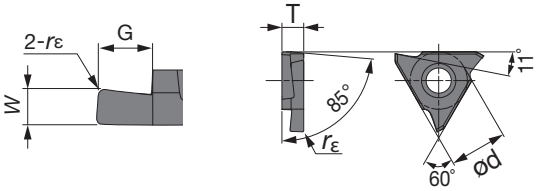
SPARE PARTS




Designation	Clamping screw	Wrench
S25R-SGTR/L16	CSTB-4S	T-15F
S32S-SGTR/L22	CSTB-5S	T-20F

APPLICABLE INSERT

GBR/L32

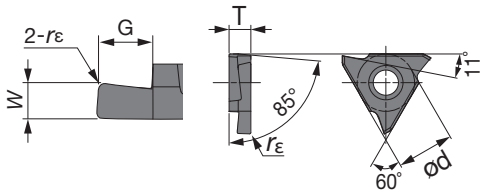


Right hand (R) shown.

Designation	W±0.025	rε	Coating AH710		Cermet NS9530		Uncoated KS05F		G	ød	T
			R	L	R	L	R	L			
GBR/L32033	0.33	0.03	●	●	●		●		0.8	9.525	3.18
GBR/L32050	0.5	0.05	●	●	●		●		1.2	9.525	3.18
GBR/L32075	0.75	0.05	●	●	●	●	●		2	9.525	3.18
GBR/L32095	0.95	0.05	●	●	●	●	●		2	9.525	3.18
GBR/L32100	1	0.05	●	●	●	●	●		2	9.525	3.18
GBR/L32125	1.25	0.2	●	●	●	●	●		2	9.525	3.18
GBR/L32145	1.45	0.2	●	●	●		●		2	9.525	3.18
GBR/L32150	1.5	0.2	●	●	●		●		2	9.525	3.18
GBR/L32200	2	0.2	●	●	●		●		2.5	9.525	3.18
GBR/L32250	2.5	0.2	●	●	●		●		2.5	9.525	3.18

● : Line-up

GBR/L43



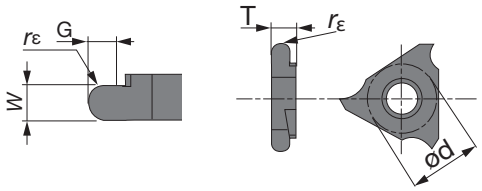
Right hand (R) shown.

Designation	W±0.025	rε	Coating AH710		Cermet NS9530		Uncoated KS05F		G	ød	T
			R	L	R	L	R	L			
GBR/L43125	1.25	0.2	●	●	●		●		2	12.7	4.76
GBR/L43145	1.45	0.2	●	●	●		●		2	12.7	4.76
GBR/L43150	1.5	0.2	●	●	●	●	●		3.5	12.7	4.76
GBR/L43175	1.75	0.2	●	●	●	●	●		3.5	12.7	4.76
GBR/L43185	1.85	0.2	●	●	●	●	●		3.5	12.7	4.76
GBR/L43200	2	0.2	●	●	●	●	●		3.5	12.7	4.76
GBR/L43230	2.3	0.2	●	●	●	●	●		3.5	12.7	4.76
GBR/L43250	2.5	0.3	●	●	●		●		5	12.7	4.76
GBR/L43265	2.65	0.3	●	●	●		●		5	12.7	4.76
GBR/L43280	2.8	0.3	●	●	●		●		5	12.7	4.76
GBR/L43300	3	0.3	●	●	●		●		5	12.7	4.76
GBR/L43330	3.3	0.3	●	●	●		●		5	12.7	4.76
GBR/L43350	3.5	0.3	●	●	●		●		5	12.7	4.76
GBR/L43400	4	0.4	●	●	●		●		5	12.7	4.76
GBR/L43430	4.3	0.4	●	●	●		●		5	12.7	4.76
GBR/L43450	4.5	0.4	●	●	●		●		5	12.7	4.76

● : Line-up

APPLICABLE INSERT

GBR/L43-R (Radius)



Right hand (R) shown.

Designation	W±0.025	rε	Coating AH710 R	Coating AH710 L	Cermet NS9530 R	Cermet NS9530 L	Uncoated KS05F R	Uncoated KS05F L	G	ød	T
GBR/L43050R	1	0.5	●	●	●		●	●	2	12.7	4.76
GBR/L43075R	1.5	0.75	●	●	●		●	●	3.5	12.7	4.76
GBR/L43100R	2	1	●	●	●		●	●	3.5	12.7	4.76
GBR/L43125R	2.5	1.25	●	●	●		●	●	5	12.7	4.76
GBR/L43150R	3	1.5	●	●	●		●	●	5	12.7	4.76
GBR/L43200R	4	2	●	●	●		●	●	5	12.7	4.76

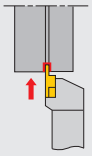
● : Line-up

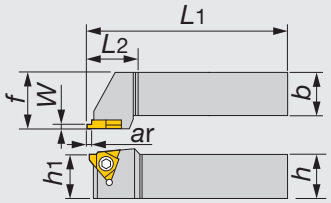
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Grade	Cutting speed Vc (m/min)	Feed f (mm/rev)
P	Carbon steels, Alloy steels C45, 18CrMo4, etc.	150 - 240HB	NS9530	100 - 200	0.02 - 0.25
		150 - 240HB	AH710	60 - 150	0.05 - 0.25
M	Stainless steels X5CrNi18-9, etc.	≤ 240HB	AH710	60 - 150	0.05 - 0.15
K	Cast irons 250, etc.	Tensile strength ≤ 350 N/mm^2	AH710	60 - 150	0.05 - 0.15
N	Non-ferrous metals Aluminium, etc.	-	KS05F	200 - 300	0.05 - 0.15

SGTR/L

External toolholders for grooving, with triple corner inserts





Right hand (R) shown.

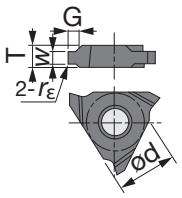
Designation	W	ar	h	b	L1	L2	h1	f	Insert
SGTR1616-3	1.15 - 2.7	1.5 - 3	16	16	100	20	16	20	GLR/L3...
SGTR/L2020-3	1.15 - 2.7	1.5 - 3	20	20	125	20	20	25	GLR/L3...
SGTR/L2525-3	1.15 - 2.7	1.5 - 3	25	25	150	20	25	32	GLR/L3...
SGTR/L2020-4	1.15 - 4.2	1.5 - 4	20	20	125	30	20	25	GLR/L4...,GOR/L4...
SGTR/L2525-4	1.15 - 4.2	1.5 - 4	25	25	150	30	25	32	GLR/L4...,GOR/L4...

SPARE PARTS

Designation	Clamping screw	Wrench
SGTR/L****-3	CSTB-4	T-15F
SGTR/L****-4	CSTB-5	T-20F

APPLICABLE INSERT

GOR/L (O-ring)

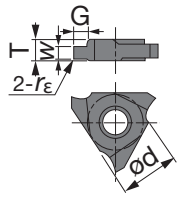


Right hand (R) shown.

Designation	$W^{+0.1}_{+0.05}$	rε	Cermet NS9530		Uncoated UX30		G	ød	T
			R	L	R	L			
GOR/L4190	2.5	0.4	●		●		1.5	12.7	4.76
GOR/L4240	3.2	0.4	●		●		2	12.7	4.76
GOR/L4310	4.1	0.7	●		●		2.5	12.7	4.76

● : Line-up

GLR/L (Lock-ring)



Right hand (R) shown.

Designation	$W^{+0.1}_{+0.05}$	rε	Cermet NS9530		Uncoated UX30		G	ød	T
			R	L	R	L			
GLR/L3115	1.15	0.1	●	●	●	●	1.5	9.525	3.18
GLR/L3135	1.35	0.1	●	●	●		1.5	9.525	3.18
GLR/L3165	1.65	0.1	●	●	●		2	9.525	3.18
GLR/L3175	1.75	0.1	●	●	●	●	2	9.525	3.18
GLR/L3195	1.95	0.1	●	●	●	●	2.5	9.525	3.18
GLR/L3220	2.2	0.1	●		●	●	3	9.525	3.18
GLR/L3270	2.7	0.1	●		●	●	3	9.525	3.18
GLR/L4115	1.15	0.1	●		●		1.5	12.7	4.76
GLR/L4135	1.35	0.1	●		●		1.5	12.7	4.76
GLR/L4165	1.65	0.1	●		●		2	12.7	4.76
GLR/L4175	1.75	0.1	●		●		2	12.7	4.76
GLR/L4190	1.9	0.1	●				2.5	12.7	4.76
GLR/L4195	1.95	0.1	●		●		2.5	12.7	4.76
GLR/L4220	2.2	0.1	●		●	●	3.5	12.7	4.76
GLR/L4270	2.7	0.1	●		●		3.5	12.7	4.76
GLR/L4320	3.2	0.1	●		●	●	4	12.7	4.76
GLR/L4420	4.2	0.1	●		●	●	4	12.7	4.76

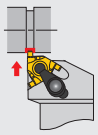
● : Line-up

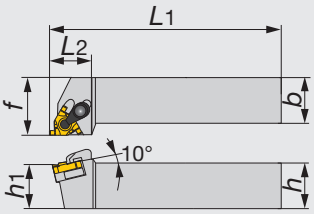
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed f (mm/rev)		
				W < 2 mm	W = 2 ~ 4 mm	W > 4 mm
P	Carbon steels	NS9530	80 - 200	0.05 - 0.1	0.08 - 0.2	0.08 - 0.25
		UX30	60 - 150	0.05 - 0.1	0.08 - 0.2	0.08 - 0.25

CER/L

External grooving toolholders, alternative clamping of screw-on or clamp-on(DT type only)





Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	Insert
CER/L1212H16DT	12	12	100	24	12	16	GTGN16...
CER/L1616H16DT	16	16	100	24	16	20	GTGN16...
CER/L2020K16DT	20	20	125	24	20	25	GTGN16...
CER/L2525M16DT	25	25	150	28	25	32	GTGN16...
CER3232P16T	32	32	170	32	32	40	GTGN16...

• A clamp set for CER/L type consists of a clamp and a clamping screw. • A shim set for CER/L type consists of a shim and a shim screw.
• Standard shims for CER/L type can be used for both left hand and right hand toolholders. Use either of the sides depending on the hand.
• When using the GTGN insert, the exclusive shim must be used. Exclusive shim should be ordered separately.

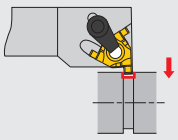
SPARE PARTS

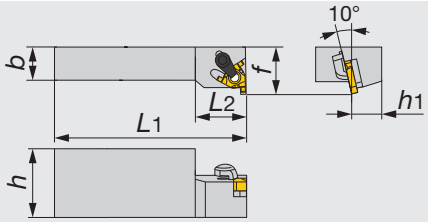
Designation	Clamp set	Clamping screw	Shim screw	Shim *	Wrench	Wrench 1
CER*****16DT	CSP16	CSTB-3.5ST	DTS5-3.5	G16ER/IL-DT	P-3.5	T-15F
CEL*****16DT	CSP16	CSTB-3.5ST	DTS5-3.5	G16EL/IR-DT	P-3.5	T-15F
CER3232P16T	CSP16	-	-	G16ER/IR-S	-	T-15F

* Option: Shim for Grooving

B-S/CER/L

External threading toolholders for swiss lathes





Right hand (R) shown.

Designation	h	b	L1	L2	h1	f	Insert
B-CER/L16M16	32	16	150	24	16	22	GTGN16...

• When using the GTGN insert, the exclusive shim must be used. Exclusive shim should be ordered separately.

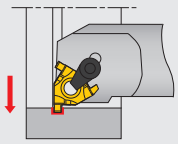
SPARE PARTS

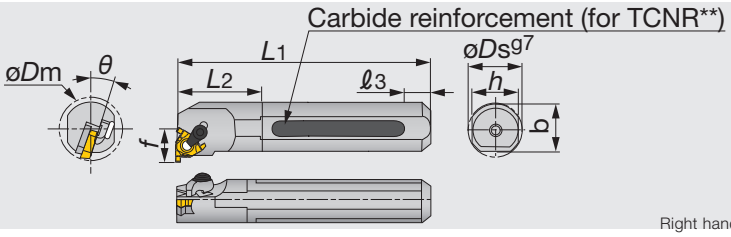
Designation	Clamp set	Clamping screw	Wrench	Shim *
B-CER16M16	CSP16	-	T-15F	G16ER/IL-S
B-CEL16M16	CSP16	-	T-15F	G16EL/IR-S

* Option: Shim for Grooving

CNR/L

Internal grooving bars, alternative clamping of screw-on or clamp-on (DT type only)





Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	ℓ3	h	b	θ°	Insert
TCNR0020R16DT	TSUPPARI	24	20	14	200	30	49	18	-	15	GTGN-16...
TCNR0025S16DT	TSUPPARI	29	25	16.5	250	38	64	23	-	15	GTGN-16...
CNR/L0020P16	STEEL	24	20	14	170	30	-	18	19	15	GTGN-16...
CNR/L0025R16	STEEL	29	25	16.5	200	38	-	23	24	15	GTGN-16...
CNR/L0032S16	STEEL	37	32	20.1	250	48	-	30	31	15	GTGN-16...

- shim is used for both right and left hand foolholders.
- A clamp set for CNR/L type toolholders consists of a clamp and a clamping screw. • A shim set for CNR/L type toolholders consists of a shim and a shim fixing screw.
- Standard shims for CNR/L type toolholders are commonly used for right and left hand toolholders.
- When using the GTGN insert, the exclusive shim must be used. Exclusive shim should be ordered separately.

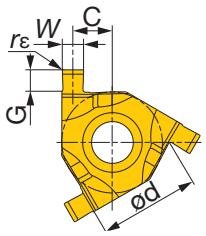
SPARE PARTS

Designation	Clamp set	Clamping screw	Shim screw	Shim *	Wrench	Wrench 1
TCNR002**16DT	CSP16	CSTB-3.5ST	DTS5-3.5	G16EL/IR-DT	P-3.5	T-15F
CNR00***16	CSP16	-	-	G16EL/IR-S	-	T-15F
CNL00***16	CSP16	-	-	G16ER/IL-S	-	T-15F

* Option: Shim for Grooving

INSERT

GTGN16



Right hand (R) shown.

Designation	W±0.03	rε	SH730	Insert size	ød	G	C	Shim: Dual method clamp type; Screw-on/ Clamp-on	Shim: Clamp-on type
GTGN-16ER/IL100	1	0.1	●	16	9.525	1.25	4.22	G16ER/IL-DT	G16ER/IL-S
GTGN-16ER/IL120	1.2	0.1	●	16	9.525	1.3	4.12	G16ER/IL-DT	G16ER/IL-S
GTGN-16ER/IL140	1.4	0.1	●	16	9.525	1.5	4.02	G16ER/IL-DT	G16ER/IL-S
GTGN-16ER/IL170	1.7	0.1	●	16	9.525	1.7	3.87	G16ER/IL-DT	G16ER/IL-S
GTGN-16ER/IL195	1.95	0.1	●	16	9.525	1.7	3.75	G16ER/IL-DT	G16ER/IL-S
GTGN-16ER/IL225	2.25	0.1	●	16	9.525	1.8	3.6	G16ER/IL-DT	G16ER/IL-S
GTGN-16EL/IR100	1	0.1	●	16	9.525	1.25	4.22	G16EL/IR-DT	G16EL/IR-S
GTGN-16EL/IR120	1.2	0.1	●	16	9.525	1.3	4.12	G16EL/IR-DT	G16EL/IR-S
GTGN-16EL/IR140	1.4	0.1	●	16	9.525	1.5	4.02	G16EL/IR-DT	G16EL/IR-S
GTGN-16EL/IR170	1.7	0.1	●	16	9.525	1.7	3.87	G16EL/IR-DT	G16EL/IR-S
GTGN-16EL/IR195	1.95	0.1	●	16	9.525	1.7	3.75	G16EL/IR-DT	G16EL/IR-S
GTGN-16EL/IR225	2.25	0.1	●	16	9.525	1.8	3.6	G16EL/IR-DT	G16EL/IR-S

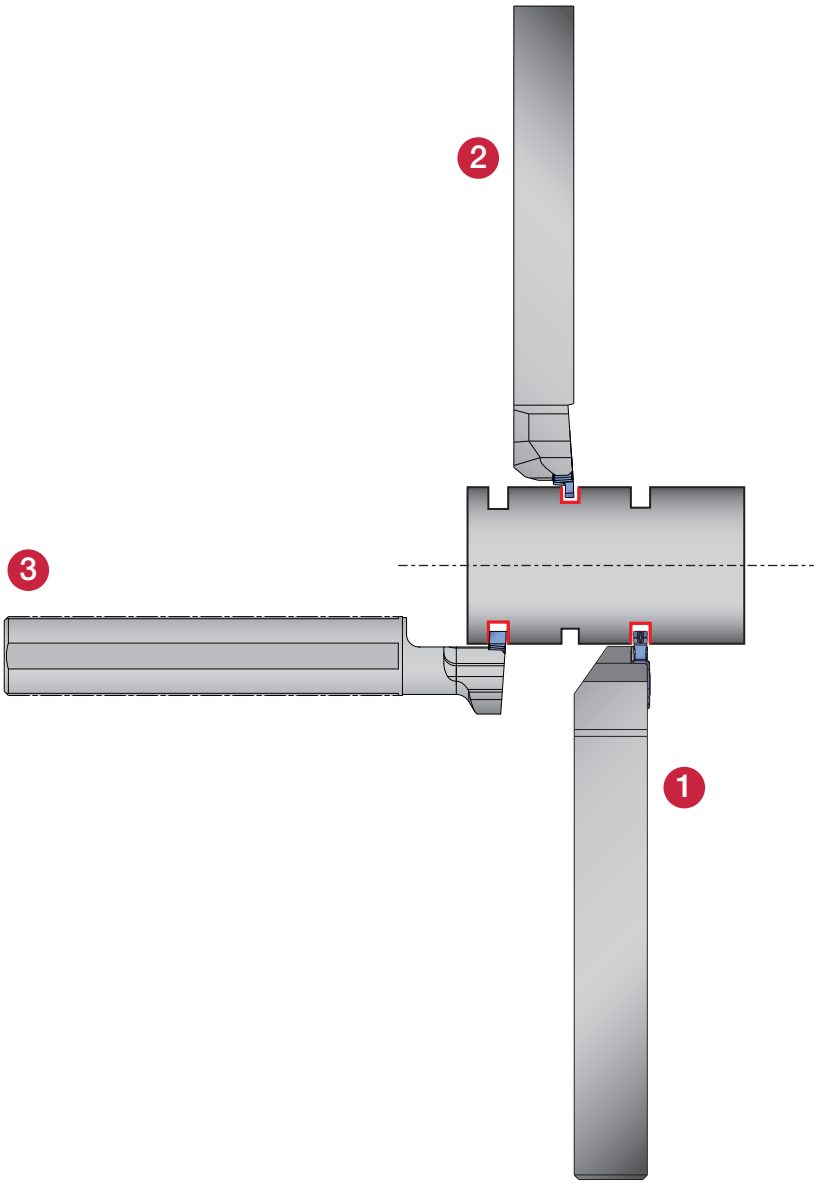
Note:
GTGN insert is applicable for both external and internal grooving, but the hand of tool is opposite in external and internal machining.
Shim for GTGN is exclusive to each type of toolholders

Package quantity = 10 pcs

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Steels C45, 42CrMo4, etc.	SH730	50 - 150	0.05 - 0.1
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	SH730	30 - 150	0.05 - 0.1
S	Heat-resistant alloys, Titanium alloys etc. Ti-6Al-4V, etc.	SH730	30 - 100	0.05 - 0.1

Multi-purpose grooving line with economical insert containing **4 cutting edges**



1 STCR/L -27
W = 0.5 - 3.18 mm
ar = 1.6 - 6.4 mm
Shank size:
10 - 25 mm
C042

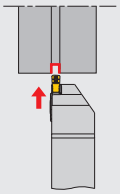
2 STCR/L -18
W = 0.33 - 3 mm
ar = 0.8 - 2.5 mm
Shank size:
10 - 25 mm
C049

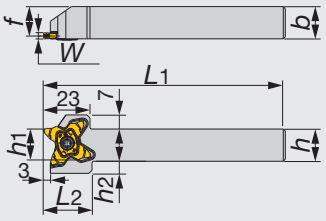
3 JS-STCL18
W = 0.33 - 3 mm
ar = 0.8 - 2.5 mm
Shank size:
ø14 - ø25.4 mm
C050

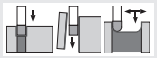
STCR/L -27-CHP
W = 0.5 - 3.18 mm
ar = 1.6 - 6.4 mm
Shank size:
25 mm
C042

STCR/L-27

Precision external grooving tools with uniquely shaped insert with 4 cutting edges







Right hand (R) shown.

Designation	W	h1	b	h	L1	f	h2	L2	Insert
STCR/L1010-27	0.5 - 3.18	10	10	10	120	8.5	9.5	24	TC*27...
STCR/L1212-27	0.5 - 3.18	12	12	12	120	10.5	8	24	TC*27...
STCR/L1616-27	0.5 - 3.18	16	16	16	120	14.5	6	24	TC*27...
STCR/L2020-27	0.5 - 3.18	20	20	20	120	18.5	2	24	TC*27...
STCR/L2525-27	0.5 - 3.18	25	25	25	135	23.5	-	-	TC*27...

SPARE PARTS

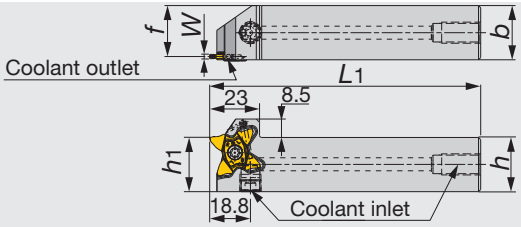


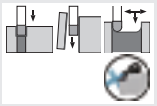


Designation	Screw	Wrench
STCR****-27	SR16-212-01397L	T-2010/5
STCL****-27	SR16-212-01397	T-2010/5

STCR/L-CHP

Precision external grooving tools with uniquely shaped insert, with channels for high pressure coolant.





Right hand (R) shown.

Designation	W	h1	b	h	L1	f	Insert
STCR/L2525-27-CHP	0.5 - 3.18	25	25	25	125	23.5	TC*27...

SPARE PARTS





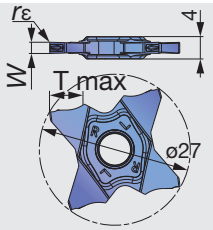
Designation	Screw	Wrench
STCR****-27-CHP	SR16-212-01397L	T-2010/5
STCL****-27-CHP	SR16-212-01397	T-2010/5

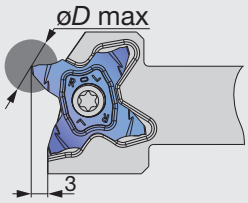
STANDARD CUTTING CONDITIONS

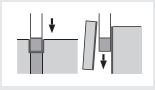
ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed: f (mm/rev)					Depth of cut for profiling (with full radius insert)
				Grooving, parting off		Parting off (with hand)	Profiling (with full radius insert)		
				TCS	TCM	TCS	TCS	TCM	
P	Carbon steel C45, etc.	AH725	100 - 200	0.05 - 0.15	0.05 - 0.25	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
	Alloy steel 34CrMo4, etc.	AH725	50 -180	0.05 - 0.15	0.05 - 0.25	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
M	Stainless steel X5CrNi18-9, etc.	AH725	100 - 150	0.05 - 0.15	0.05 - 0.2	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
K	Grey cast iron 250, etc.	AH725	50 - 180	0.05 - 0.15	0.05 - 0.25	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
	Ductile cast iron 400-15, etc.	AH725	50 - 120	0.05 - 0.15	0.05 - 0.2	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
S	Titanium alloys Ti-6Al-4V, etc.	AH725	30 - 60	0.05 - 0.15	0.05 - 0.15	0.04 - 0.12	0.05 - 0.1	0.05 - 0.1	0.5

INSERT - FOR GROOVING AND PARTING OFF

TCS27







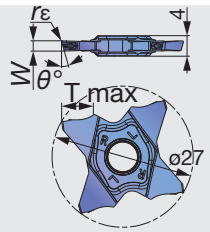
Designation	W ± 0.02	rε	AH725	T max	øD max	Relation of groove depth (T) and Max. diameter (øD max)											
						T≤1	T≤2	T≤3	T≤3.5	T≤4	T≤4.5	T≤5	T≤5.5	T≤5.7	T≤6	T≤6.2	T≤6.4
TCS27-050-000	0.5	0	●	1	2	∞	-	-	-	-	-	-	-	-	-	-	-
TCS27-050-004	0.5	0.04	●	2.5	5	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-075-010	0.75	0.1	●	2.5	5	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-080-000	0.8	0	●	1.6	3.2	∞	-	-	-	-	-	-	-	-	-	-	-
TCS27-100-006	1	0.06	●	3.5	7	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-100-010	1	0.1	●	3.5	7	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-104-000	1.04	0	●	2	4	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-120-000	1.2	0	●	2	4	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-125-010	1.25	0.1	●	3.5	7	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-125-020	1.25	0.2	●	3.5	7	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-140-000	1.4	0	●	2	4	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-147-000	1.47	0	●	2.5	5	∞	∞	-	-	-	-	-	-	-	-	-	-
TCS27-150-010	1.5	0.1	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-150-020	1.5	0.2	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-157-015	1.57	0.15	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-170-010	1.7	0.1	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-175-010	1.75	0.1	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-175-020	1.75	0.2	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-178-018	1.78	0.18	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-185-020	1.85	0.2	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-196-015	1.96	0.15	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-200-010	2	0.1	●	6.4	12.8	∞	∞	∞	600	280	180	130	105	85	60	50	30
TCS27-200-020	2	0.2	●	6.4	12.8	∞	∞	∞	600	280	180	130	105	85	60	50	30
TCS27-222-015	2.22	0.15	●	3.5	7	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-230-020	2.3	0.2	●	3.5	7.	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCS27-239-015	2.39	0.15	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-247-020	2.47	0.2	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-250-010	2.5	0.1	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-250-030	2.5	0.3	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-270-010	2.7	0.1	●	6.2	12.4	∞	∞	∞	600	280	180	135	105	95	85	78	-
TCS27-287-020	2.87	0.2	●	6.2	12.4	∞	∞	∞	600	280	180	135	105	95	85	78	-
TCS27-300-000	3	0	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCS27-300-020	3	0.2	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCS27-300-030	3	0.3	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCS27-300-040	3	0.4	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCS27-315-015	3.15	0.15	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	68
TCS27-318-020	3.18	0.2	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	68

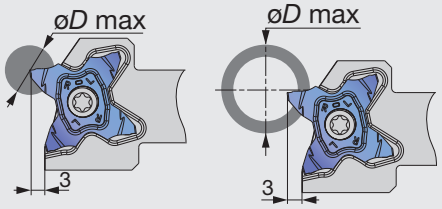
Package Quantity = 5 pcs.

● : Line-up

INSERT - FOR PARTING OFF

TCS27-R/L







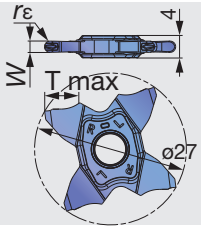
Right hand (R) shown.

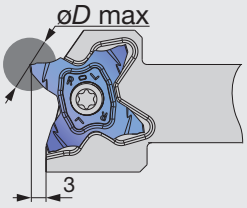
Designation	W ± 0.02	rε	AH725		T max	θ°	Max. parting off dia. øD max	
			R	L			Solid bar	Tube
TCS27-100-15R/L	1	0.06	●	●	3.5	15	7	600
TCS27-150-6R/L	1.5	0.06	●	●	5.7	6	11.4	35
TCS27-150-15R/L	1.5	0.06	●	●	5.7	15	11.4	35
TCS27-200-6R/L	2	0.1	●	●	6.4	6	12.8	30
TCS27-200-15R/L	2	0.1	●	●	6.4	15	12.8	30

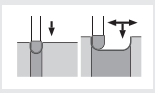
Package Quantity = 5 pcs.
● : Line-up

INSERT - FOR GROOVING AND PROFILING

TCS27-Full R







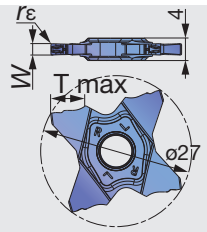
Designation	W ± 0.02	rε	AH725	T max	Relation of groove depth (T) and Max. diameter (øD max)											
					T≤1	T≤2	T≤3	T≤3.5	T≤4	T≤4.5	T≤5	T≤5.5	T≤5.7	T≤6	T≤6.2	T≤6.4
TCS27-157-079	1.57	0.79	●	3	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-200-100	2	1	●	3	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCS27-239-120	2.39	1.2	●	5.7	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCS27-300-150	3	1.5	●	6.4	∞	∞	∞	600	280	180	135	105	95	85	78	55

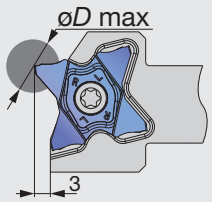
Package Quantity = 5 pcs.

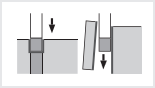
● : Line-up

INSERT - FOR GROOVING AND PARTING OFF

TCM27







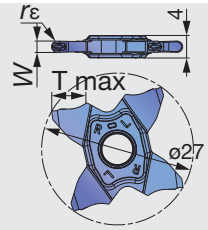
Designation	W ± 0.02	rε	AH725	T max	øD max	Relation of groove depth (T) and Max. diameter (øD max)											
						T≤1	T≤2	T≤3	T≤3.5	T≤4	T≤4.5	T≤5	T≤5.5	T≤5.7	T≤6	T≤6.2	T≤6.4
TCM27-150-010	1.5	0.1	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCM27-150-020	1.5	0.2	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCM27-157-015	1.57	0.15	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCM27-170-010	1.7	0.1	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCM27-175-010	1.75	0.1	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCM27-175-020	1.75	0.2	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCM27-178-018	1.78	0.18	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCM27-185-020	1.85	0.2	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCM27-196-015	1.96	0.15	●	3	6	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCM27-200-010	2	0.1	●	6.4	12.8	∞	∞	∞	600	280	180	130	105	85	60	50	30
TCM27-200-020	2	0.2	●	6.4	12.8	∞	∞	∞	600	280	180	130	105	85	60	50	30
TCM27-222-015	2.22	0.15	●	3.5	7	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCM27-230-020	2.3	0.2	●	3.5	7	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCM27-239-015	2.39	0.15	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCM27-247-020	2.47	0.2	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCM27-250-010	2.5	0.1	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCM27-250-030	2.5	0.3	●	5.7	11.4	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCM27-270-010	2.7	0.1	●	6.2	12.4	∞	∞	∞	600	280	180	135	105	95	85	78	-
TCM27-287-020	2.87	0.2	●	6.2	12.4	∞	∞	∞	600	280	180	135	105	95	85	78	-
TCM27-300-000	3	0	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCM27-300-020	3	0.2	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCM27-300-030	3	0.3	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCM27-300-040	3	0.4	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	55
TCM27-315-015	3.15	0.15	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	68
TCM27-318-020	3.18	0.2	●	6.4	12.8	∞	∞	∞	600	280	180	135	105	95	85	78	68

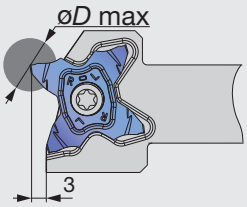
Package Quantity = 5 pcs.

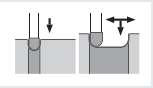
● : Line-up

INSERT - FOR GROOVING AND PROFILING

TCM27-Full R





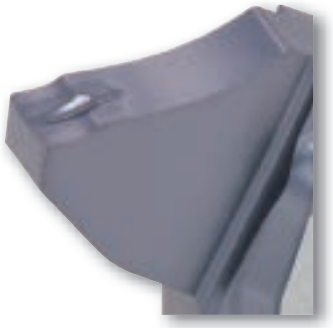


Designation	W ± 0.02	rε	AH725	T max	Relation of groove depth (T) and Max. diameter (øD max)											
					T≤1	T≤2	T≤3	T≤3.5	T≤4	T≤4.5	T≤5	T≤5.5	T≤5.7	T≤6	T≤6.2	T≤6.4
TCM27-157-079	1.57	0.79	●	3	∞	∞	∞	-	-	-	-	-	-	-	-	-
TCM27-200-100	2	1	●	3.5	∞	∞	∞	600	-	-	-	-	-	-	-	-
TCM27-239-120	2.39	1.2	●	5.7	∞	∞	∞	600	280	180	130	50	35	-	-	-
TCM27-300-150	3	1.5	●	6.4	∞	∞	∞	600	280	180	135	105	95	85	78	55

Package Quantity = 5 pcs.
● : Line-up

CHIPBREAKER

TCS27



W = 0.5 mm – 3.18 mm
For general machining
Lower cutting force and superior sharpness

TCM27



W = 1.5 mm – 3.18 mm
For high feed machining
Well-designed edge with high strength

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed: *f* (mm/rev)					Depth of cut for profiling (with full radius insert)
				Grooving, parting-off		Parting-off (with hand)	Profiling (with full radius insert)		
				TCS	TCM	TCS	TCS	TCM	
P	Carbon steel C45, etc.	AH725	100 - 200	0.05 - 0.15	0.05 - 0.25	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
P	Alloy steel 34CrMo4, etc.	AH725	50 -180	0.05 - 0.15	0.05 - 0.25	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
M	Stainless steel X5CrNi18-9, etc.	AH725	100 - 150	0.05 - 0.15	0.05 - 0.2	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
K	Grey cast iron 250, etc.	AH725	50 - 180	0.05 - 0.15	0.05 - 0.25	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
K	Ductile cast iron 400-15, etc.	AH725	50 - 120	0.05 - 0.15	0.05 - 0.2	0.04 - 0.12	0.05 - 0.1	0.05 - 0.15	0.5
S	Titanium alloys Ti-6Al-4V, etc.	AH725	30 - 60	0.05 - 0.15	0.05 - 0.15	0.04 - 0.12	0.05 - 0.1	0.05 - 0.1	0.5

PARTS FOR COOLANT HOSE

Connecting hose

Fig. 1

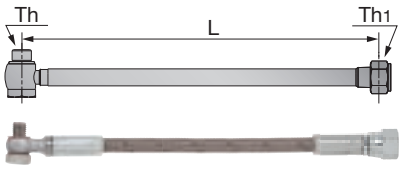
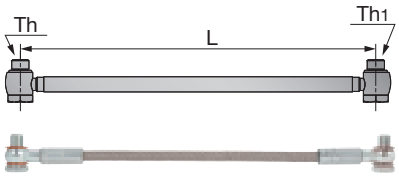
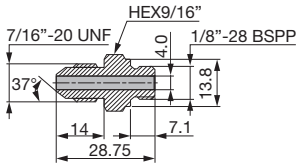


Fig. 2



Designation	Length L	Threading size Th	Threading size Th1	Max. pressure (MPa)	Fig.
CHP-HOSE-G1/8-7/16-200BS	200	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-G1/8-7/16-250BS	250	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-G1/8-G1/8-200BB	200	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2
CHP-HOSE-G1/8-G1/8-250BB	250	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2

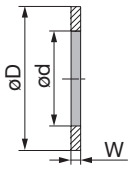
Connector





Designation
CHP-NIPPLE-G1/8-7/16UNF

Seal washer

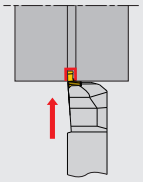


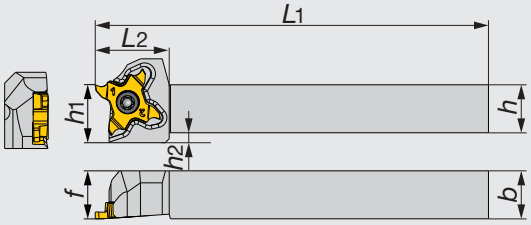


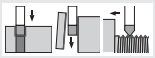
Designation	øD	ød	W
CHP-COPPER-SEAL1/8	15	10	1

STCR/L-18

Precision external grooving and threading tools with uniquely shaped insert for swiss lathes







Right hand (R) shown.

Designation	*h*	*b*	*L*1	*L*2	*h*1	*f*	*h*2	Insert
STCR/L1010X18	10	10	120	18.5	10	10	4.5	TC*18...
STCR/L1212F18	12	12	85	18.5	12	12	2.5	TC*18...
STCR/L1212X18	12	12	120	18.5	12	12	2.5	TC*18...
STCR/L1616X18	16	16	120	18.5	16	16	-	TC*18...
STCR/L2020H18	20	20	100	18.5	20	20	-	TC*18...
STCR/L2020X18	20	20	120	23	20	25	-	TC*18...
STCR/L2525Z18	25	25	135	23	25	30	-	TC*18...

• The right hand insert (TC*18R***) is used for the right hand toolholders (STCR***), and the left hand insert (TC*18L***) is used for the left hand toolholders (STCL***).

SPARE PARTS

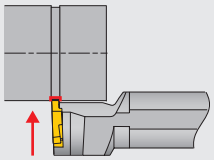


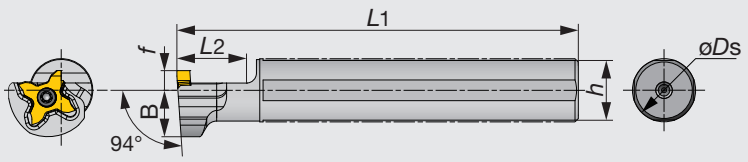


Designation	Clamping screw	Wrench
STCR*****18	CSTC-4L100DL	T-1008/5
STCL*****18	CSTC-4L100DR	T-1008/5

JS-STCL18

Precision grooving tools with uniquely shaped insert for swiss lathes





Left hand (L) shown.

Designation	øDs	L1	L2	h	B	f	Insert
JS14H-STCL18	14	100	20	13	14	6	TC*18...
JS159F-STCL18	15.875	85	20	15	14	6	TC*18...
JS16F-STCL18	16	85	20	15	14	6	TC*18...
JS19G-STCL18	19.05	90	20	18	14	6	TC*18...
JS19X-STCL18	19.05	120	20	18	14	6	TC*18...
JS20G-STCL18	20	90	20	19	14	6	TC*18...
JS20X-STCL18	20	120	20	19	14	6	TC*18...
JS22X-STCL18	22	120	20	21	12.25	10	TC*18...
JS25H-STCL18	25	100	20	24	12.25	10	TC*18...
JS254X-STCL18	25.4	120	20	24	12.25	10	TC*18...

• The right hand insert (TC*18R***) is used for the left hand toolholders (STCL***).

SPARE PARTS





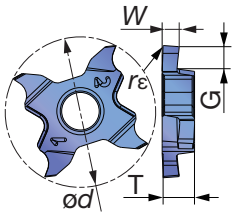
Designation	Clamping screw	Wrench
JS****-STCL18	CSTC-4L100DL	T-1008/5

Grooving Tool

INSERT

TCP18R/L-F (sharp edge)



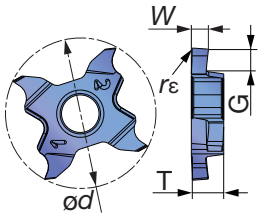


Designation	W±0.02	rε	SH725 R	SH725 L	G	T	ød
TCP18R/L033F-005	0.33	0.05	●	●	0.8	4	18
TCP18R/L043F-005	0.43	0.05	●	●	1.2	4	18
TCP18R/L050F-005	0.5	0.05	●	●	1.2	4	18
TCP18R/L075F-005	0.75	0.05	●	●	2	4	18
TCP18R/L095F-005	0.95	0.05	●	●	2	4	18
TCP18R/L100F-010	1	0.1	●	●	2	4	18
TCP18R/L120F-010	1.2	0.1	●	●	2	4	18
TCP18R/L125F-010	1.25	0.1	●	●	2	4	18
TCP18R/L145F-010	1.45	0.1	●	●	2	4	18
TCP18R/L150F-010	1.5	0.1	●	●	2	4	18
TCP18R/L175F-010	1.75	0.1	●	●	2	4	18
TCP18R/L200F-010	2	0.1	●	●	2.5	4	18
TCP18R/L250F-010	2.5	0.1	●	●	2.5	4	18
TCP18R/L300F-010	3	0.1	●	●	2.5	4	18

● : Line-up

TCP18R/L(honed edge)





Designation	W±0.02	rε	AH725		G	T	ød
			R	L			
TCP18R/L033-005	0.33	0.05	●	●	0.8	4	18
TCP18R/L043-005	0.43	0.05	●	●	1.2	4	18
TCP18R/L050-005	0.5	0.05	●	●	1.2	4	18
TCP18R/L075-005	0.75	0.05	●	●	2	4	18
TCP18R/L095-005	0.95	0.05	●	●	2	4	18
TCP18R/L100-010	1	0.1	●	●	2	4	18
TCP18R/L120-010	1.2	0.1	●	●	2	4	18
TCP18R/L125-010	1.25	0.1	●	●	2	4	18
TCP18R/L145-010	1.45	0.1	●	●	2	4	18
TCP18R/L150-010	1.5	0.1	●	●	2	4	18
TCP18R/L175-010	1.75	0.1	●	●	2	4	18
TCP18R/L200-010	2	0.1	●	●	2.5	4	18
TCP18R/L250-010	2.5	0.1	●	●	2.5	4	18
TCP18R/L300-010	3	0.1	●	●	2.5	4	18

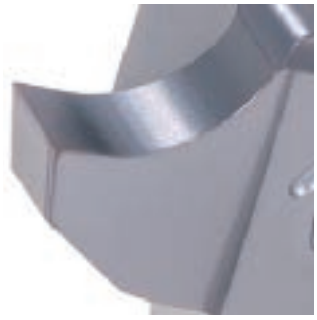
● : Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Priority	Grade	Cutting speed Vc (m/min)	Feed f (mm/rev)
P	Low carbon steels (C15, C20 etc.)	First choice	SH725	80 - 180	0.03 - 0.1
		Toughness	AH725	80 - 180	0.03 - 0.1
	Carbon steels, Alloy steels (C55, 42CrMoS4 etc.)	First choice	SH725	80 - 180	0.03 - 0.1
		Toughness	AH725	80 - 180	0.03 - 0.1
	Prehardened steels (NAK80, PX5 etc.)	First choice	SH725	80 - 180	0.03 - 0.1
		Toughness	AH725	80 - 180	0.03 - 0.1
M	Stainless steels (X5CrNi18-9, X5CrNiMo17-12-2 etc)	First choice	SH725	50 - 120	0.03 - 0.1
		Toughness	AH725	50 - 120	0.03 - 0.1
K	Grey cast irons (250, 300 etc.)	First choice	AH725	50 - 180	0.03 - 0.1
		Sharpness	SH725	50 - 180	0.03 - 0.1
	Ductile cast irons (400-15, 600-3 etc.)	First choice	AH725	50 - 180	0.03 - 0.1
		Sharpness	SH725	50 - 180	0.03 - 0.1
S	Titanium alloys (Ti-6Al-4V, etc.)	First choice	SH725	20 - 80	0.03 - 0.1
		Toughness	AH725	20 - 80	0.03 - 0.1
	Superalloys (Inconel718, etc.)	First choice	SH725	20 - 80	0.03 - 0.1
		Toughness	AH725	20 - 80	0.03 - 0.1

CHIPBREAKER

TCP18

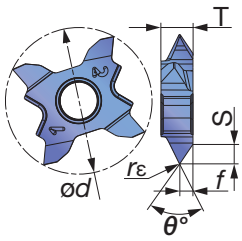


W = 0.33 mm – 3 mm
Suitable for small parts on swiss lathe
Low cutting force with large rake angle

INSERT

TCT18R/L (For Threading)





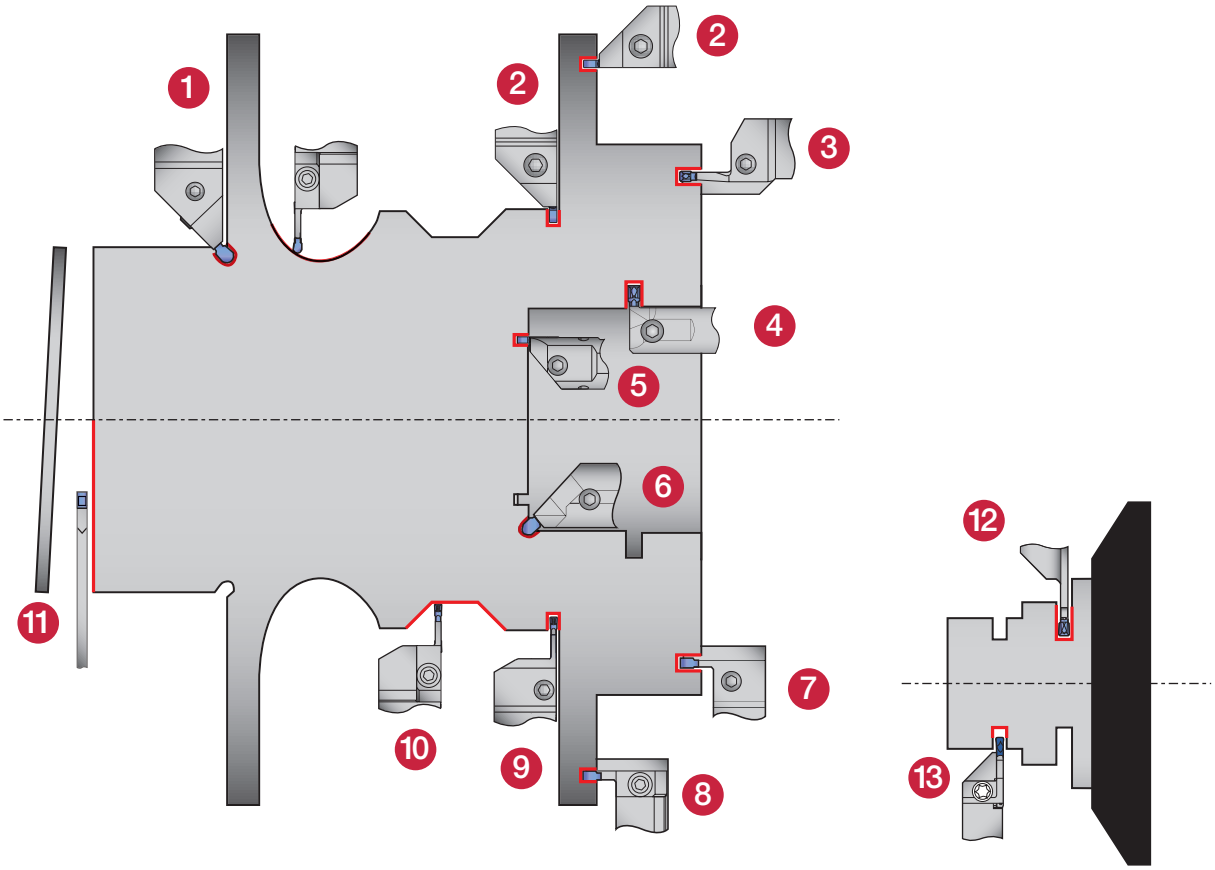
Designation	rε	AH725		pitch min	pitch max	f	S	θ°	T	ød
		R	L							
TCT18R/L-60N-010	0.1	●	●	0.8	3	1.6	2.67	60	4	18
TCT18R/L-60N-020	0.2	●	●	1.5	3	1.6	2.57	60	4	18

● : Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Pitch (mm)	TPI
P	Low carbon steels (C15, C20 etc.)	AH725	60 - 150	0.8 - 3	32 - 8
P	Carbon steels, Alloy steels (C55, 42CrMoS4 etc.)	AH725	60 - 150	0.8 - 3	32 - 8
P	Prehardened steels (NAK80, PX5 etc.)	AH725	60 - 150	0.8 - 3	32 - 8
M	Stainless steels (X5CrNi18-9, X5CrNiMo17-12-2 etc)	AH725	50 - 80	0.8 - 3	32 - 8
K	Grey cast irons (250, 300 etc.)	AH725	50 - 100	0.8 - 3	32 - 8
K	Ductile cast irons (400-15, 600-3 etc.)	AH725	50 - 100	0.8 - 3	32 - 8
S	Titanium alloys (Ti-6Al-4V, etc.)	AH725	30 - 100	0.8 - 3	32 - 8
S	Superalloys (Inconel718, etc.)	AH725	30 - 100	0.8 - 3	32 - 8

Multi-functional tool reduces tool cost and shortens set-up time



1 CGEUR/L
Monoblock type
W = 3 - 6 mm
ar = 2.8 - 3.4 mm
Shank size:
16 - 25 mm
C063

2 CTEFR/L
Monoblock type
W = 2 - 6 mm
ar = 4.8 mm
Shank size:
20 - 25 mm
C057

3 CTFR/L
Monoblock type
W = 3 - 6 mm
ar = 10 - 25 mm
Shank size:
25 mm
C066

4 CTIR/L
Monoblock type
W = 2 - 8 mm
ar = 4 - 10 mm
Shank size:
ø16 - ø40 mm
C064

5 CTIFR/L
Monoblock type
W = 3 - 6 mm
ar = 5.5 mm
Shank size:
ø25 - ø32 mm
C071

6 CGIUR/L
Monoblock type
W = 3 - 6 mm
ar = 2.8 mm
Shank size:
ø20 - ø25 mm
C065

7 CTFVR/L
Monoblock type
W = 3 - 6 mm
ar = 10 - 20 mm
Shank size:
25 mm
C067

8 CAFR/L
Adaptor type
W = 3 - 6 mm
ar = 12 - 25 mm
Shank size:
20 - 32 mm
C068

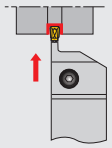
9 CTER/L
Monoblock type
W = 2 - 8 mm
ar = 8 - 36 mm
Shank size:
16 - 32 mm
C054

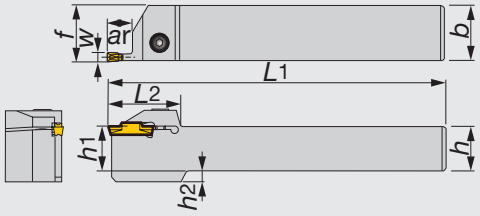
10 CAER/L
Adaptor type
W = 3 - 6 mm
ar = 16 - 20 mm
Shank size:
20 - 32 mm
C058

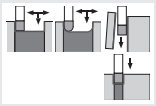
11 CGP
Blade type
W = 1.4 - 8 mm
Max. parting Dia.:
ø120 mm
Shank size:
ø20 - ø25 mm
C061

12 CGER/L
Monoblock type
W = 1.4 - 4 mm
ar = 10 - 16 mm
Shank size:
12 - 20 mm
C057

13 JCTER/L
Monoblock type
W = 1.4 - 3 mm
ar = 10 - 16 mm
Shank size:
10 - 20 mm
C056







Insert:
DGM, SGM, DGS, SGS, DGG, DTX, DTE, DTR, DTA, SGN

Right hand (R) shown.

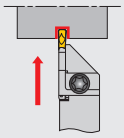
Designation	W	Seat size	ar	h	b	L_1	L_2	h_1	f(1)	h_2
CTER/L1616-2T08	2	2	8	16	16	110	33	16	16.1	4
CTER/L2020-2T08	2	2	8	20	20	125	33	20	20.1	-
CTER/L2525-2T08	2	2	8	25	25	150	33	25	25.1	-
CTER/L1616-2T12	2	2	12	16	16	110	32	16	16.1	4
CTER/L2020-2T12	2	2	12	20	20	125	32	20	20.1	-
CTER/L2525-2T12	2	2	12	25	25	150	32	25	25.1	-
CTER/L1616-2T17	2	2	17	16	16	110	37	16	16.1	4
CTER/L2020-2T17	2	2	17	20	20	125	37	20	20.1	-
CTER/L2525-2T17	2	2	17	25	25	150	37	25	25.1	-
CTER/L1616-3T09	3	3	9	16	16	110	32	16	16.3	4
CTER/L2020-3T09	3	3	9	20	20	125	32	20	20.3	-
CTER/L2525-3T09	3	3	9	25	25	150	32	25	25.3	-
CTER/L2020-3T12	3	3	12	20	20	125	32	20	20.3	-
CTER/L2525-3T12	3	3	12	25	25	150	32	25	25.3	-
CTER/L1616-3T20	3	3	20	16	16	110	38.5	16	16.3	4
CTER/L2020-3T20	3	3	20	20	20	125	38.5	20	20.3	-
CTER/L2525-3T20	3	3	20	25	25	150	38.5	25	25.3	-
CTER/L2525-3T25	3	3	25	25	25	150	44.5	25	25.3	-
CTER/L1616-4T10	4	4	10	16	16	110	32	16	16.5	4
CTER/L2020-4T10	4	4	10	20	20	125	32	20	20.5	-
CTER/L2525-4T10	4	4	10	25	25	150	32	25	25.5	-
CTER/L2020-4T15	4	4	15	20	20	125	33	20	20.5	-
CTER/L2525-4T15	4	4	15	25	25	150	33	25	25.5	-
CTER/L1616-4T25	4	4	25	16	16	110	45	16	16.5	4
CTER/L2020-4T25	4	4	25	20	20	125	45	20	20.5	-
CTER/L2525-4T25	4	4	25	25	25	150	45	25	25.5	-
CTER/L3232-4T25	4	4	25	32	32	170	45	32	32.5	-
CTER/L2020-5T12	5	5	12	20	20	125	37	20	20.6	-
CTER/L2525-5T12	5	5	12	25	25	150	37	25	25.6	-
CTER/L2525-5T20	5	5	20	25	25	150	37	25	25.6	-
CTER/L2525-5T32	5	5	32	25	25	150	56	25	25.6	-
CTER/L3232-5T32	5	5	32	32	32	170	56	32	32.6	-
CTER/L2020-6T12	6	6	12	20	20	125	37	20	20.6	-
CTER/L2525-6T12	6	6	12	25	25	150	37	25	25.6	7
CTER/L2525-6T20	6	6	20	25	25	150	41	25	25.6	-
CTER/L2525-6T32	6	6	32	25	25	150	56	25	25.6	7
CTER/L3232-6T32	6	6	32	32	32	170	56	32	32.6	-
CTER/L2525-8T16	8	8	16	25	25	150	47	25	26.1	7
CTER/L2525-8T25	8	8	25	25	25	150	47	25	26.1	7
CTER/L3232-8T25	8	8	25	32	32	170	47	32	33.1	-
CTER/L2525-8T36	8	8	36	25	25	150	60	25	26.1	7
CTER/L3232-8T36	8	8	36	32	32	170	60	32	33.1	-

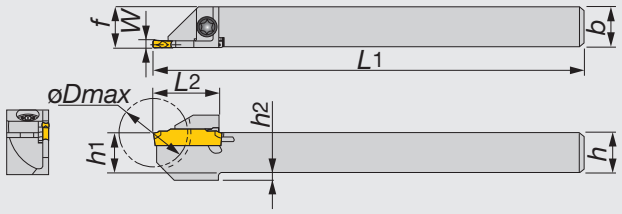
• When depth is deeper than (insert length - 1.5 mm), 1 corner type is recommended.
(1) "*f*" value is calculated with groove width "*W*" shown in the table.
• For Applicable insert, see page C073 - C085.

SPARE PARTS




Designation	Clamping screw	Wrench
CTER/L1616-2T08	CM5X0.8X16-A	P-4
CTER/L2020-2T08	CM5X0.8X20-A	P-4
CTELR/L2525-2T08	CM5X0.8X25-A	P-4
CTER/L1616-2T12	CM5X0.8X16-A	P-4
CTER/L2020-2T12	CM5X0.8X20-A	P-4
CTER/L2525-2T12	CM5X0.8X25-A	P-4
CTER/L1616-2T17	CM5X0.8X16-A	P-4
CTER/L2020-2T17	CM5X0.8X20-A	P-4
CTER/L2525-2T17	CM5X0.8X25-A	P-4
CTER/L1616-3T09	CM5X0.8X16-A	P-4
CTER/L2020-3T09	CM5X0.8X20-A	P-4
CTER/L2525-3T09	CM5X0.8X25-A	P-4
CTER/L2020-3T12	CM5X0.8X20-A	P-4
CTER/L2525-3T12	CM5X0.8X25-A	P-4
CTER/L1616-3T20	CM5X0.8X16-A	P-4
CTER/L2020-3T20	CM5X0.8X20-A	P-4
CTER/L2525-3T20.25	CM5X0.8X25-A	P-4
CTER/L1616-4T10	CM6X1X16-A	P-5
CTER/L2020-4T10	CM6X1X20-A	P-5
CTER/L2525-4T10	CM6X1X25-A	P-5
CTER/L2020-4T15	CM6X1X20-A	P-5
CTER/L2525-4T15	CM6X1X25-A	P-5
CTER/L1616-4T25	CM6X1X16-A	P-5
CTER/L2020-4T25	CM6X1X20-A	P-5
CTER/L2525-4T25	CM6X1X25-A	P-5
CTER/L3232-4T25	CM6X1X25-A	P-5
CTER/L2020-5T12	CM6X1X20-A	P-5
CTER/L2525-5T20	CM6X1X25-A	P-5
CTER/L2525, 3232-5T32	CM6X1X25-A	P-5
CTER/L2020-6T12	CM8X1.25X20-A	P-6
CTER/L2525-6T12	CM8X1.25X25-A	P-6
CTER/L2525-6T20	CM8X1.25X25-A	P-6
CTER/L2525, 3232-6T32	CM8X1.25X25-A	P-6
CTER/L2525-8T16	CM8X1.25X25-A	P-6
CTER/L2525, 3232-8T25	CM8X1.25X25-A	P-6
CTER/L2525, 3232-8T36	CM8X1.25X25-A	P-6







Insert:
Seat size 1 = DGS1.4-016
Seat size 2, 3, = DGM, SGM, DGS, SGS, DGE, DTE, DGG

Right hand (R) shown.

Designation	*W*	Seat size	*øDmax*	*h*	*b*	*L1*	*L2*	*h1*	*f*(1)	*h2*
JCTER/L1010X1.4T10	1.4	1	20	10	10	120	18	10	10.2	-
JCTER/L1010-1.4T10	1.4	1	20	10	10	125	18	10	10.2	-
JCTER/L1212F1.4T12	1.4	1	24	12	12	85	19.5	12	12.2	-
JCTER/L1212X1.4T12	1.4	1	24	12	12	120	19.5	12	12.2	-
JCTER/L1212-1.4T12	1.4	1	24	12	12	125	19.5	12	12.2	-
JCTER/L1414-1.4T12	1.4	1	24	14	14	125	19.5	14	14.2	-
JCTER/L1616X1.4T16	1.4	1	32	16	16	120	24	16	16.2	-
JCTER/L1616-1.4T16	1.4	1	32	16	16	125	24	16.	16.2	-
JCTER/L1010X2T10	2	2	20	10	10	120	19	10	10.1	2
JCTER/L1010-2T10	2	2	20	10	10	125	19	10	10.1	2
JCTER/L1212F2T12	2	2	24	12	12	85	19	12	12.1	2
JCTER/L1212X2T12	2	2	24	12	12	120	19	12	12.1	2
JCTER/L1212-2T12	2	2	24	12	12	125	19	12	12.1	2
JCTER/L1414-2T12	2	2	24	14	14	125	19	14	14.1	-
JCTER/L1616X2T16	2	2	32	16	16	120	24	16	16.1	-
JCTER/L1616-2T16	2	2	32	16	16	125	24	16	16.1	-
JCTER/L1212F3T12	3	3	24	12	12	85	19	12	12.3	2
JCTER/L1212X3T12	3	3	24	12	12	120	19	12	12.3	2
JCTER/L1212-3T12	3	3	24	12	12	125	19	12	12.3	2
JCTER/L1616X3T16	3	3	32	16	16	120	24	16	16.3	-
JCTER/L1616-3T16	3	3	32	16	16	125	24	16	16.3	-
JCTER/L2020H3T16	3	3	32	20	20	100	24	20	20.3	-
JCTER/L2020-3T16	3	3	32	20	20	125	24	20	20.3	-

(1) "*f*" value is calculated with groove width "*W*" shown in the table. • *øD*max: Max. parting off dia.
• For Applicable insert, see page C073 - C085.

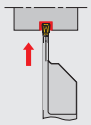
SPARE PARTS

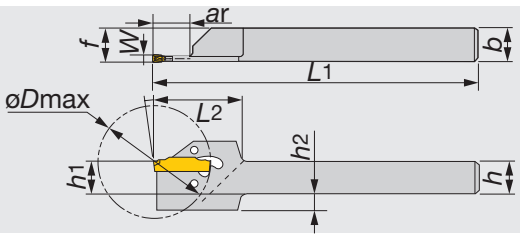




Designation	Clamping screw	Wrench
JCTER/L...	CSHB-4-A	T-15F

TUNGCUT
CGER/L
External deep grooving & parting toolholders for swiss lathes







Insert:
Seat size 1 = DGS1.4-016
Seat size 2, 3, 4, = DGM, SGM, DGS, SGS, SGN, DGG

Right hand (R) shown.

Designation	W	Seat size	øDmax(1)	ar	h	b	L1	L2	h1	f(2)	h2
CGER/L2020-1.4T14	1.4	1	29/29	9.7	20	20	125	30	20	20.2	-
CGER/L1212-2T17	2	2	35/35	11.8	12	12	150	30	12	12.1	6
CGER/L1616-2T17	2	2	35/35	11.8	16	16	150	30	16	16.1	2
CGER/L2020-2T17	2	2	35/35	9.8	20	20	125	30	20	20.1	-
CGER/L1212-3T19	3	3	38/40	12	12	12	150	30	12	12.3	6
CGER/L1616-3T19	3	3	38/45	14.9	16	16	150	30	16	16.3	2
CGER/L2020-3T19	3	3	38/45	13.2	20	20	125	30	20	20.3	-
CGER/L2020-4T19	4	4	38/55	20.3	20	20	125	32	20	20.4	-

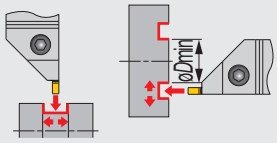
• Wrench, CRW**, should be ordered separately. Insert is clamped by the elastic deformation of upper jaw. (1) DG*/SG* Maximum diameter of parting off Dmax defer by using the inserts. (2) "f" value is calculated with groove width "W" shown in the table. • øDmax: Max. parting off dia. • For Applicable insert, see page C073 - C085.

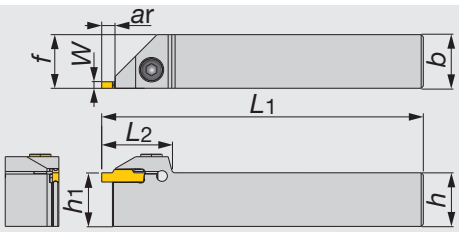
SPARE PARTS

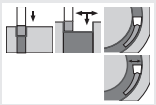


Designation	Wrench
CGER/L2020-1.4T14	CRW23
CGER/L****-2T17 - 4T19	CRW33

TUNGCUT
CTEFR/L
Toolholders for External / Face grooving & turning







Insert:
DGM, SGM, DGS, SGS, DTE, DGG, DTX, DTR, DTF, SGN

Right hand (R) shown.

Designation	W	Seat size	ar	h1	b	h	L1	f1	L2
CTEFR/L2020-4T04	4	2, 3, 4	4.8	20	20	20	125	20.5	33
CTEFR/L2525-4T04	4	2, 3, 4	4.8	25	25	25	150	25.5	33
CTEFR/L2020-6T04	6	5, 6	4.8	20	20	20	125	20.6	37
CTEFR/L2525-6T04	6	5, 6	4.8	25	25	25	150	25.6	37

(1) "f" value is calculated with groove width "W" shown in the table. • For Applicable insert, see page C073 - C085.

SPARE PARTS





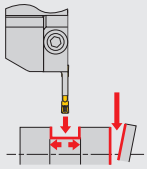
Designation	Clamping screw	Wrench
CTEFR/L2020-4T04	CM6X1X20-A	P-5
CTEFR/L2525-4T04	CM6X1X25-A	P-5
CTEFR/L2020-6T04	CM6X1X20-A	P-5
CTEFR/L2525-6T04	CM6X1X25-A	P-5

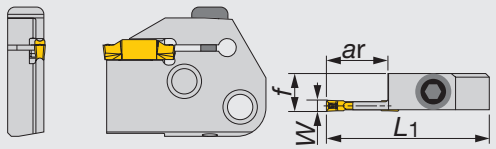
Insert	Groove width W	Min. dia. for face grooving øDmin
DGM / DGS / SGN	2	295
DGM / DGS / SGN	3	92
DGM / DGS / SGN	4	37
DGM / DGS	5	60
DGM / DGS	6	57
DTE / DGG	3	62
DTE / DGG	4	42
DTE / DGG	5	64
DTE / DGG	6	61

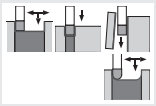
Insert	Groove width W	Min. dia. for face grooving øDmin
DTR	3	44
DTR	4	32
DTR	5	48
DTR	6	48
DTX	3	19
DTX	4	20
DTX	5	20
DTX	6	23
DTF	3	19
DTF	4	20

CAER/L

Blades for external grooving & turning







Insert:
DGS, SGS, DGM,
SGM, DTX, DTE,
DGG, DTR, SGN

Right hand (R) shown.

Designation	W	Seat size	ar	L_1	f	Shank
CAER/L-3T16	3	3	16	45	10.4	CHFVL/R...,CHSR/L...
CAER/L-4T16	4	4	16	45	10.5	CHFVL/R...,CHSR/L...
CAER/L-5T20	5	5	20	49	10.5	CHFVL/R...,CHSR/L...
CAER/L-6T20	6	6	20	49	10.5	CHFVL/R...,CHSR/L...

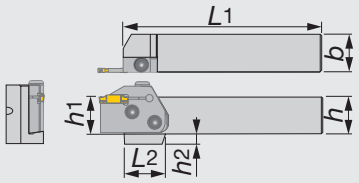
• For Applicable insert, see page C073 - C085.

SPARE PARTS

Designation	Clamping screw	Wrench
CAER/L...	BHM6-20-A	P-4

CHSR/L

Shank of toolholders for CAER/L & CAFR/L blades



Right hand (R) shown.

Designation	h	b	L_1	L_2	h_1	h_2	Blade
CHSR/L2020	20	20	133	35	20	12	CAER/L...,CAFL/R...
CHSR/L2525	25	25	133	28	25	7	CAER/L...,CAFL/R...
CHSR/L3232	32	32	153	28	32	-	CAER/L...,CAFL/R...

SPARE PARTS

Designation	Clamping screw	Wrench
CHSR/L...	CSHB-6-A	P-4

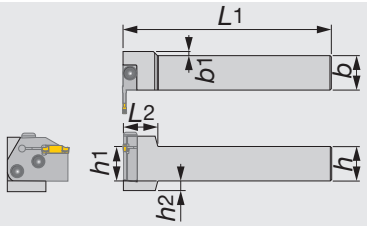
Combination of blade and toolholder

Toolholders	Blade			
	CAER...	CAEL...	CAFR...	CAFL...
CHSR...	●			●
CHSL...		●	●	

● : Correspondence

CHFVR/L

Shank of perpendicular toolholders for CAER/L & CAFR/L blades



Right hand (R) shown.

Designation	*h*	*b*	L_1	L_2	h_1	h_2	b_1	Blade
CHFVR/L2020	20	20	150	25	20	12	8	CAEL/R...,CAFR/L...
CHFVR/L2525	25	25	150	25	25	7	3	CAEL/R...,CAFR/L...
CHFVR/L3232	32	32	170	25	32	-	-	CAEL/R...,CAFR/L...

SPARE PARTS




Designation	Clamping screw	Wrench
CHFVR/L...	CSHB-6-A	P-4

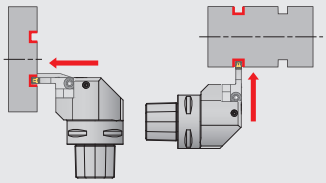
Combination of blade and toolholder

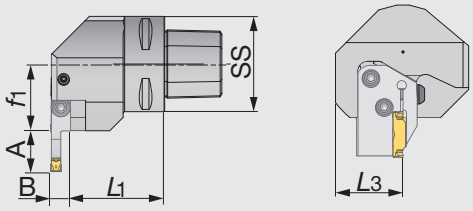
Toolholders	Blade			
	CAER...	CAEL...	CAFR...	CAFL...
CHFVR...		●	●	
CHFVL...	●			●

● : Correspondence

C-CHFVR/L

TungCut shank of perpendicular toolholders for CAER/L & CAFR/L blades





Right hand (R) shown.

Designation	SS	L_1	L_3	f_1
C4CHFVR/L27050N	40	42.5	36	27
C5CHFVR/L35060N	50	49.5	36	35
C6CHFVR/L45065	63	54.5	41	45
C6CHFVR/L45065N	63	54.5	41	45

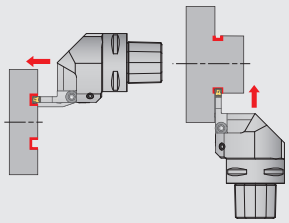
• The last character of designation is "N": Capable for 7 Mpa coolant pressure.

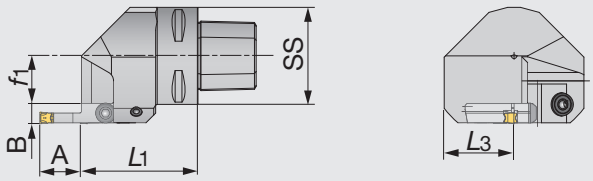
SPARE PARTS

Designation	Coolant parts	Coolant parts 1	Plug	Clamping screw	Wrench
C4CHFVR/L27050N	SATZ-M8X1-M3	-	SSHM4-4	CSHB-6-A	P-4
C5CHFVR/L35060N	SATZ-M10X1-M5	-	SSHM4-4	CSHB-6-A	P-4
C6CHFVR/L45065	CNZ125	PNZ5	-	CSHB-6-A	P-4
C6CHFVR/L45065N	SATZ-M10X1-M5	-	SSHM4-4	CSHB-6-A	P-4

C-CHSR/L

TungCut shank of toolholders for CAER/L & CAFR/L blades





Right hand (R) shown.

Designation	SS	L_1	L_3	f_1
C4CHSR/L27050N	40	50	36	16.5
C5CHSR/L35060	50	60	36	24.5
C5CHSR/L35060N	50	60	36	24.5
C6CHSR/L45065N	63	65	41	34.5

• The last character of designation is "N": Capable for 7 Mpa coolant pressure.

SPARE PARTS

Designation	Coolant parts	Coolant parts 1	Plug	Clamping screw	Wrench
C4CHSR/L27050N	SATZ-M8X1-M3	-	SSHM4-4	CSHB-6-A	P-4
C5CHSR/L35060	CNZ125	PNZ5	-	CSHB-6-A	P-4
C5CHSR/L35060N	SATZ-M10X1-M5	-	SSHM4-4	CSHB-6-A	P-4
C6CHSR/L45065N	SATE-M10X1-M5	-	SSHM4-4	CSHB-6-A	P-4

Combination of blade and toolholder

Toolholders	Blade			
	CAER...	CAEL...	CAFR...	CAFL...
C*CHFVR...		●	●	
C*CHFVL...	●			●
C*CHSR...	●			●
C*CHSL...		●	●	

● : Correspondence

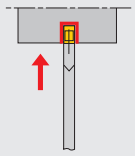


Fig.1

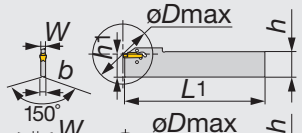


Fig.2

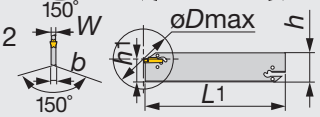
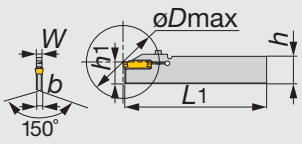


Fig.3





Insert:
Seat size 1:DGS1.4-016
Seat size 2-6:SGM, SGS, DGM, DGS, DTX, DGG
Seat size 8:DGM8, 040

Designation	*W*	Seat size	ø*D*max	*h*1	*b*	*h*	*L*1	Fig
CGP26-1.4S	1.4	1	26	21.4	1	26	150	1
CGP32-1.4D	1.4	1	26	24.8	1	32	150	2
CGP26-2S	2	2	40	21.4	1.8	26	150	1
CGP32-2D	2	2	50	24.8	1.8	32	150	2
CGP26-3S	3	3	50	21.4	2.4	26	150	1
CGP32-3D	3	3	100	24.8	2.4	32	150	2
CGP26-4S	4	4	80	21.4	3.2	26	150	1
CGP32-4D	4	4	100	24.9	3.2	32	150	2
CGP45-4D	4	4	120	38.1	3.2	45	150	2
CGP32-5D	5	5	120	24.9	4	32	150	2
CGP32-6D	6	6	120	24.9	5.2	32	150	2
CGP32-8S-CL	8	8	80	24.9	6.2	32	150	3

- When depth is deeper than (insert length - 1.5 mm), 1 corner type is recommended. • Wrench (CRW**) should be ordered separately.
- Max groove depth is 28.5 mm.
- ø*D*max: Max. parting off dia.
- For Applicable insert, see page C073 - C085.

SPARE PARTS



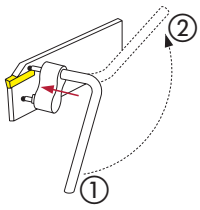


Designation	Clamping screw	Wrench
CGP**-1.4*	-	CRW23
CGP**-2/3/4/5/6	-	CRW33
CGP32-8S-CL	CM4X0.7X20-M0-A	P-3

Caution

Newly developed wrench

Insert is clamped by the elastic deformation of upper jaw.
Low clamping stress increases the stability and tool life.



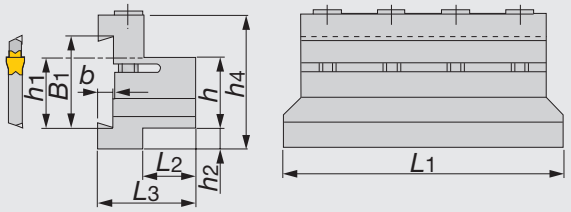


①→②: unclamp
②→①: clamp

TUNGCUT

CTBF

Tool block for CGP blades(fixed clamp)



Right hand (R) shown.

Designation	*h*	B_1	L_2	L_1	*b*	h_1	h_2	h_4	L_3	Blade
CTBF25-45	25	45	22	110	5.5	38.1	25	66	40	CGP45...
CTBF32-45	32	45	28	120	5.5	38.1	18	66	45	CGP45...

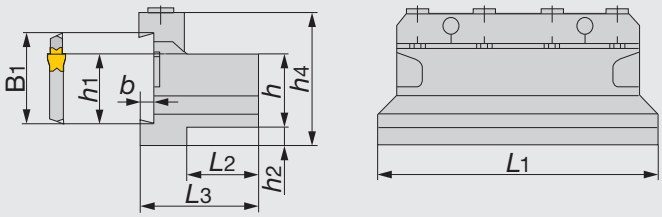
SPARE PARTS

Designation	Clamping screw	Wrench
CTBF...	CM6X1.0X40-A	P-5

TUNGCUT

CTBU

Tool block for CGP and EGP blades



Right hand (R) shown.

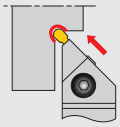
Designation	h_1	*b*	B_1	L_1	*h*	h_2	h_4	L_2	L_3	Blade
CTBU20-26	21.4	4	26	86	20	9	43	21	38	CGP26...
CTBU25-26	21.4	4	26	110	25	5	45	23	42	CGP26...
CTBU20-32	24.8	5.3	32	100	20	13	50	19	38	CGP32...
CTBU25-32	24.8	5.3	32	110	25	8	50	23	42	CGP32...
CTBU32-32	24.8	5.3	32	110	32	5	54	29	48	CGP32...

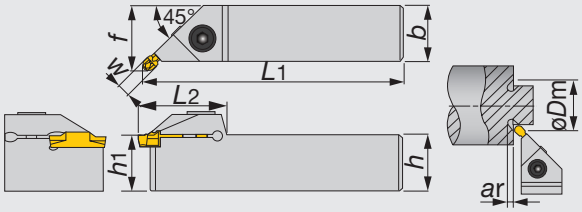
SPARE PARTS

Designation	Clamp	Clamping screw	Wrench
CTBU20-26	CT-86	CM6X30-S	P-5
CTBU25-26	CT-105	CM6X30-S	P-5
CTBU20-32	CT-100	CM6X30-S	P-5
CTBU25-32	CT-110	CM6X30-S	P-5
CTBU32-32	CT-110	CM6X30-S	P-5

CGEUR/L

External 45° toolholders for undercutting





Right hand (R) shown.

Designation	W	øDm	Seat size	ar	h	b	L1	L2	h1	f (1)	Insert
CGEUR/L1616-3T02	3	32	3	2.8	16	16	110	30	16	19.3	DTIU...
CGEUR/L2020-3T02	3	32	3	2.8	20	20	125	30	20	23.3	DTIU...
CGEUR/L2525-3T02	3	32	3	2.8	25	25	150	30	25	28.3	DTIU...
CGEUR/L1616-4T02	4	32	4	2.8	16	16	110	31	16	19.5	DTIU...
CGEUR/L2020-4T02	4	32	4	2.8	20	20	125	31	20	23.5	DTIU...
CGEUR/L2525-4T02	4	32	4	2.8	25	25	150	31	25	28.5	DTIU...
CGEUR/L2525-6T03	6	34	5, 6	3.4	25	25	150	35	25	28.9	DTIU...

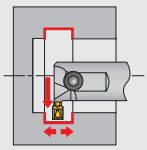
(1) "*f*" value is calculated with groove width "*W*" shown in the table.
• For Applicable insert, see page C073 - C085.

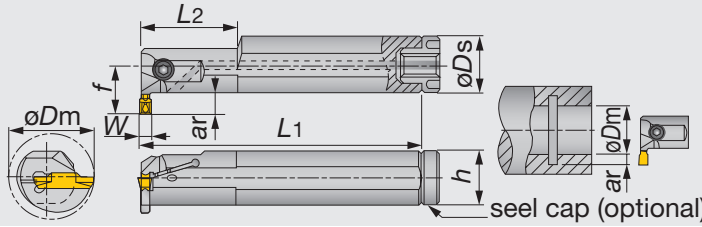
SPARE PARTS





Designation	Clamping screw	Wrench
CGEUR/L****-3T02	CM5X0.8X16-A	P-4
CGEUR/L1616-4T02	CM6X1X16-A	P-5
CGEUR/L2020-4T02	CM6X1X20-A	P-5
CGEUR/L2525-4T02/6T03	CM6X1X25-A	P-5





Insert:
Seat size 2:DGIM, DGIS
Seat size 3-8:DTI, DTX

Right hand (R) shown.

Designation	*W*	*øD_m*	Seat size	*ar*	*øD_s*	*f*	*L_1*	*L_2*	*h*	Insert
CTIR/L16-2T08-D250	2	25	2	8	16	16.5	125	-	14	DGIM..., DGIS...
CTIR/L20-2T06-D250	2	25	2	6	20	15.8	160	-	18	DGIM..., DGIS...
CTIR/L20-3T06-D250	3	25	3	6	20	15.8	160	40	18	DTI..., DTX...
CTIR/L25-3T05-D250	3	25	3	5.1	25	17.5	200	40	23	DTI..., DTX...
CTIR/L25-3T08-D320	3	32	3	8	25	21.5	200	40	23	DTI..., DTX...
CTIR/L32-3T10-D400	3	40	3	10	32	27	250	60	30	DTI..., DTX...
CTIR/L20-4T06-D250	4	25	4	6	20	15.8	160	40	18	DTI..., DTX...
CTIR/L25-4T08-D320	4	32	4	8	25	21.5	200	40	23	DTI..., DTX...
CTIR/L32-4T04-D310	4	31	4	4	32	20.8	250	60	30	DTI..., DTX...
CTIR/L32-4T10-D400	4	40	4	10	32	27	250	60	30	DTI..., DTX...
CTIR/L25-5T05-D310	5	31	5	5	25	17.3	200	60	23	DTI..., DTX...
CTIR/L32-5T10-D400	5	40	5	10	32	27	250	60	30	DTI..., DTX...
CTIR/L32-6T04-D310	6	31	6	4	32	20.8	250	60	30	DTI..., DTX...
CTIR/L32-6T10-D400	6	40	6	10	32	27	250	60	30	DTI..., DTX...
CTIR/L32-8T05-D370	8	37	8	5	32	21.3	250	60	30	DTI..., DTX...
CTIR/L40-8T05-D420	8	42	8	5.8	40	25.8	300	65	38	DTI..., DTX...

(1) "*L*1" value is calculated with groove width "*W*" shown in the table.
• For applicable Insert, see page C073 - C085.

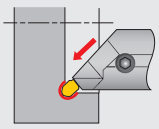
SPARE PARTS

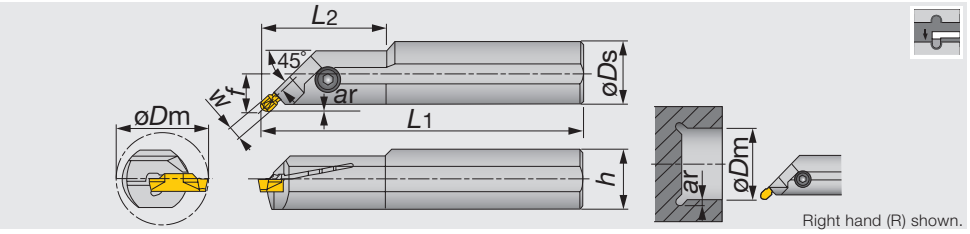


Designation	Clamping screw	Wrench	Seal cap	Thread type tor connection
CTIR/L16-2T08-D250	CM5X0.8X10-A	P-4	CA-16	M6
CTIR/L20-2T06-D250	CM5X0.8X12-A	P-4	CA-20	M6
CTIR/L20-3T06-D250	CM5X0.8X12-A	P-4	CA-20	M6
CTIR/L25-3T05-D250	CM5X0.8X16-A	P-4	CA-25	R1/8"
CTIR/L25-3T08-D320	CM5X0.8X16-A	P-4	CA-25	R1/8"
CTIR/L32-3T10-D400	CM5X0.8X16-A	P-4	CA-32	R1/8"
CTIR/L20-4T06-D250	CM5X0.8X12-A	P-4	CA-20	M6
CTIR/L25-4T08-D320	CM5X0.8X16-A	P-4	CA-25	R1/8"
CTIR/L32-4T04-D310	CM5X0.8X16-A	P-4	CA-32	R1/8"
CTIR/L32-4T10-D400	CM5X0.8X16-A	P-4	CA-32	R1/8"
CTIR/L25-5T05-D310	CM6X1X16-A	P-5	CA-25	R1/8"
CTIR/L32-5T10-D400	CM6X1X20-A	P-5	CA-32	R1/8"
CTIR/L32-6T04-D310	CM6X1X20-A	P-5	CA-32	R1/8"
CTIR/L32-6T10-D400	CM6X1X20-A	P-5	CA-32	R1/8"
CTIR/L32-8T05-D370	CM6X1X25-A	P-5	CA-32	R1/8"
CTIR/L40-8T05-D420	CM6X1X25-A	P-5	CA-40	R1/8"

CGIUR/L

Boring bars for internal undercutting





Right hand (R) shown.

Designation	W	øDm	Seat size	ar	øDs	f (1)	L1	L2	h	Insert
CGIUR/L20-3T02-D380	3	38	3	2.8	20	12.8	160	-	19	DTIU...
CGIUR/L25-3T02-D380	3	38	3	2.8	25	14.8	200	40	23	DTIU...
CGIUR/L20-4T02-D380	4	38	4	2.8	20	12.9	160	-	19	DTIU...
CGIUR/L25-4T02-D460	4	46	4	2.8	25	14.9	200	40	23	DTIU...
CGIUR/L25-6T02-D460	6	46	5, 6	2.8	25	15.2	200	-	23	DTIU...

(1) "*f*" value is calculated with groove width "*W*" shown in the table.

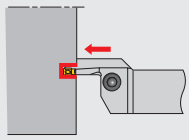
• For applicable Insert, see page C073 - C085.

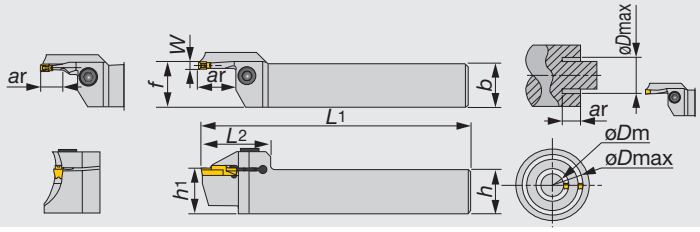
SPARE PARTS





Designation	Clamping screw	Wrench
CGIUR/L20-3T02-D380	CM5X0.8X12-A	P-4
CGIUR/L25-3T02-D380	CM5X0.8X16-A	P-4
CGIUR/L**-4T02-D...	CM5X0.8X16-A	P-4
CGIUR/L25-6T02-D460	CM6X1X25-A	P-5





Right hand (R) shown.

Designation	*W*	ø*D*m	ø*D*max	Seat size	*ar*	*h*	*b*	*L*1	*L*2	*h*1	*f*(1)
CTFR/L2525-3T10-024035	3	24	35	3	10	25	25	150	38	25	25.5
CTFR/L2525-3T10-029040	3	29	40	3	10	25	25	150	38	25	25.5
CTFR/L2525-3T10-034050	3	34	50	3	10	25	25	150	38	25	25.5
CTFR/L2525-3T15-044070	3	44	70	3	15	25	25	150	38	25	25.5
CTFR/L2525-3T15-064100	3	64	100	3	15	25	25	150	38	25	25.5
CTFR/L2525-4T10-022036	4	22	36	4	10	25	25	150	39	25	25.6
CTFR/L2525-4T20-028042	4	28	42	4	20	25	25	150	39	25	25.6
CTFR/L2525-4T20-034050	4	34	50	4	20	25	25	150	39	25	25.6
CTFR/L2525-4T20-042070	4	42	70	4	20	25	25	150	39	25	25.6
CTFR/L2525-4T20-062120	4	62	120	4	20	25	25	150	39	25	25.6
CTFR/L2525-4T20-112200	4	112	200	4	20	25	25	150	39	25	25.6
CTFR/L2525-5T25-050080	5	50	80	5	25	25	25	150	49	25	25.6
CTFR/L2525-5T25-070110	5	70	110	5	25	25	25	150	49	25	25.6
CTFR/L2525-5T25-100150	5	100	150	5	25	25	25	150	49	25	25.6
CTFR/L2525-5T25-140200	5	140	200	5	25	25	25	150	49	25	25.6
CTFR/L2525-6T25-048070	6	48	70	6	25	25	25	150	49	25	25.6
CTFR/L2525-6T25-058100	6	58	100	6	25	25	25	150	49	25	25.6
CTFR/L2525-6T25-088180	6	88	180	6	25	25	25	150	49	25	25.6
CTFR/L2525-6T25-168400	6	168	400	6	25	25	25	150	49	25	25.6

• When depth is deeper than (insert length - 1.5 mm), 1 corner type is recommended.
(1) "*f*" value is calculated with groove width "*W*" shown in the table.
• When DTF insert is installed, Max "ar" should be 15 mm.
• For applicable Insert, see page C073 - C085.

SPARE PARTS



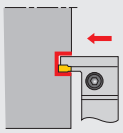

Designation	Clamping screw	Wrench
CTFR/L2525-3T - 4T...	CM6X1X25-A	P-5
CTFR/L2525-5T - 6T...	CM8X1.25X25-A	P-6

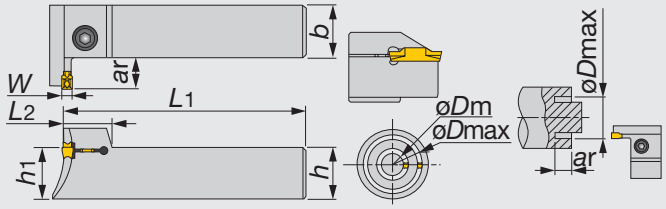
INSERT

Designation	Insert seat size	Insert
CTFR/L2525-3T10-024035	3	DTF, DTX
CTFR/L2525-3T10-029040	3	DTF, DTX
CTFR/L2525-3T10-034050	3	DTF, DTX
CTFR/L2525-3T15-044070	3	DTF, DTX, DTE, DTR
CTFR/L2525-3T15-064100	3	DTF, DTX, DTE, DGG, DGM, DGS, DTR
CTFR/L2525-4T10-022036	4	DTF, DTX
CTFR/L2525-4T20-028042	4	DTF, DTX
CTFR/L2525-4T20-034050	4	DTF, DTX
CTFR/L2525-4T20-042070	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR
CTFR/L2525-4T20-062120	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR
CTFR/L2525-4T20-112200	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR
CTFR/L2525-5T25-...	5	DTX, DTE, DGG, DGM, DGS, DTR
CTFR/L2525-6T25-...	6	DTX, DTE, DGG, DGM, DGS, DTR

CTFVR/L

Perpendicular toolholders for face grooving and turning





Right hand (R) shown.

Designation	W	øDm	øDmax	Seat size	ar	h	b	L1	L2	h1
CTFVR/L2525-3T10-024035	3	24	35	3	10	25	25	150	18	25
CTFVR/L2525-3T10-029040	3	29	40	3	10	25	25	150	18	25
CTFVR/L2525-3T10-034050	3	34	50	3	10	25	25	150	18	25
CTFVR/L2525-3T15-044060	3	44	60	3	15	25	25	150	18	25
CTFVR/L2525-3T15-054085	3	54	85	3	15	25	25	150	18	25
CTFVR/L2525-4T12-022040	4	22	40	4	12	25	25	150	18.5	25
CTFVR/L2525-4T15-032050	4	32	50	4	15	25	25	150	18.5	25
CTFVR/L2525-4T15-042060	4	42	60	4	15	25	25	150	18.5	25
CTFVR/L2525-4T15-052085	4	52	85	4	15	25	25	150	18.5	25
CTFVR/L2525-5T20-050080	5	50	80	5	20	25	25	150	22	25
CTFVR/L2525-5T20-070110	5	70	110	5	20	25	25	150	22	25
CTFVR/L2525-5T20-100150	5	100	150	5	20	25	25	150	22	25
CTFVR/L2525-5T20-140200	5	140	200	5	20	25	25	150	22	25
CTFVR/L2525-6T20-048085	6	48	85	6	20	25	25	150	22	25
CTFVR/L2525-6T20-073150	6	73	150	6	20	25.	25	150	22	25
CTFVR/L2525-6T20-138250	6	138	250	6	20	25	25	150	22	25

- When depth is deeper than (insert length - 1.5 mm), 1 corner type is recommended.
- For applicable Insert, see page C073 - C085.

SPARE PARTS





Designation	Clamping screw	Wrench
CTFVR/L2525-3T...	CM5X0.8X25-A	P-4
CTFVR/L2525-4T...	CM6X1X25-A	P-5
CTFVR/L2525-5T..., 6T...	CM8X1.25X25-A	P-6

INSERT

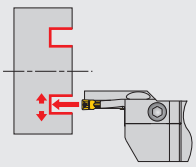
Designation	Insert seat size	Insert
CTFVR/L2525-3T10-024035	3	DTF, DTX
CTFVR/L2525-3T10-029040	3	DTF, DTX
CTFVR/L2525-3T10-034050	3	DTF, DTX, DTR
CTFVR/L2525-3T15-044060	3	DTF, DTX, DTE, DTR
CTFVR/L2525-3T15-054085	3	DTF, DTX, DTE, DGG, DGM, DGS, DTR
CTFVR/L2525-4T12-022040	4	DTF, DTX
CTFVR/L2525-4T15-032050	4	DTF, DTX
CTFVR/L2525-4T15-042060	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR
CTFVR/L2525-4T15-052085	4	DTF, DTX, DTE, DGG, DGM, DGS, DTR
CTFVR/L2525-5T20-...	5	DTX, DTE, DGG, DGM, DGS, DTR
CTFVR/L2525-6T20-...	6	DTX, DTE, DGG, DGM, DGS, DTR

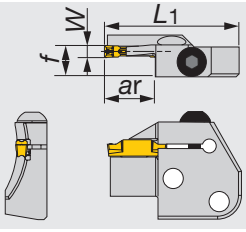
(1) Min. diameter ø*D*m of DTE, DGS and DGM insert

Insert	øDm	Note
DTE3 / DGS3 / DGM3	ø92	When diameter is smaller than ø*D*m, DTF or DTX type insert is recommended.
DTE4 / DGS4 / DGM4	ø42	

CAFR/L

Blades for face grooving & turning







Insert:
CAFR/L-3T12-040055:DTF
Seat size 3(2)-6:DTF(3), DTE, DGG, DTX, DGS, DGM, DTR
Shank:
CHFVR/L, CHSR/L
Right hand (R) shown.

Designation	*W*	ø*D*m	ø*D*max	Seat size	*ar*	*L*1	*f*(1)
CAFR/L-3T12-040055	3	40	55	3	12	45	10.4
CAFR/L-3T12-055075	3	55	75	3	12	45	10.4
CAFR/L-3T12-075100	3	75	100	3	12	45	10.4
CAFR/L-3T12-100140	3	100	140	3	12	45	10.4
CAFR/L-3T12-140200	3	140	200	3	12	45	10.4
CAFR/L-4T16-050070	4	50	70	4	16	45	10.5
CAFR/L-4T16-070100	4	70	100	4	16	45	10.5
CAFR/L-4T16-100150	4	100	150	4	16	45	10.5
CAFR/L-4T16-150250	4	150	250	4	16	45	10.5
CAFR/L-5T20-055080	5	55	80	5	20	49	10.5
CAFR/L-5T20-080120	5	80	120	5	20	49	10.5
CAFR/L-5T20-120180	5	120	180	5	20	49	10.5
CAFR/L-5T20-180300	5	180	300	5	20	49	10.5
CAFR/L-5T20-300000	5	300	∞	5	20	49	10.5
CAFR/L-6T25-060090	6	60	90	6	25	55	10.5
CAFR/L-6T25-090150	6	90	150	6	25	55	10.5
CAFR/L-6T25-150250	6	150	250	6	25	55	10.5
CAFR/L-6T25-250400	6	250	400	6	25	55	10.5

• When depth is deeper than (insert length - 1.5 mm), 1 corner type is recommended.
(1) "*f*" value is calculated with groove width "*W*" shown in the table.
(2) Not applicable for CAFR/L-3T12-040055
(3) Seat sizes of DTF are Only 3 and 4
• For applicable Insert, see page C073 - C085.

SPARE PARTS





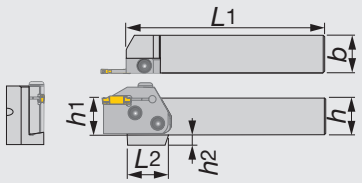
Designation	Clamping screw	Wrench
CAFR/L...	BHM6-20-A	P-4

Min. diameter ø*D*m of DTE, DGS and DGM insert

Insert	ø*D*m	Note
DTE 3 / DGS 3 / DGM 3	ø92	When diameter is smaller than ø*D*m, DTF or DTX type insert is recommended.
DTE 4 / DGS 4 / DGM 4	ø42	
DTE 5 / DGS 5 / DGM 5	ø64	
DTE 6 / DGS 6 / DGM 6	ø61	

TUNGCUT CHSR/L

Shank of toolholders for CAER/L & CAFR/L blades



Right hand (R) shown.

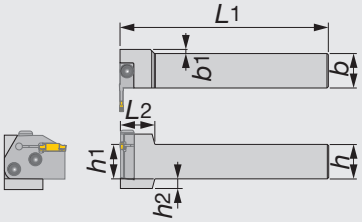
Designation	h	b	L_1	L_2	h_1	h_2	Blade
CHSR/L2020	20	20	133	35	20	12	CAER/L...,CAFL/R...
CHSR/L2525	25	25	133	28	25	7	CAER/L...,CAFL/R...
CHSR/L3232	32	32	153	28	32	-	CAER/L...,CAFL/R...

SPARE PARTS

Designation	Clamping screw	Wrench
CHSR/L...	CSHB-6-A	P-4

TUNGCUT CHFVR/L

Shank of perpendicular toolholders for CAER/L & CAFR/L blades



Right hand (R) shown.

Designation	h	b	L_1	L_2	h_1	h_2	b_1	Blade
CHFVR/L2020	20	20	150	25	20	12	8	CAEL/R...,CAFR/L...
CHFVR/L2525	25	25	150	25	25	7	3	CAEL/R...,CAFR/L...
CHFVR/L3232	32	32	170	25	32	-	-	CAEL/R...,CAFR/L...

SPARE PARTS

Designation	Clamping screw	Wrench
CHFVR/L...	CSHB-6-A	P-4

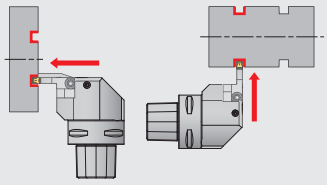
Combination of blade and toolholder

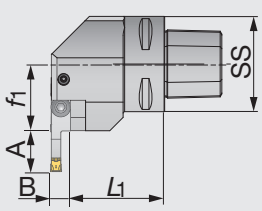
Toolholders	Blade			
	CAER...	CAEL...	CAFR...	CAFL...
CHSR...	●			●
CHSL...		●	●	
CHFVR...		●	●	
CHFVL...	●			●

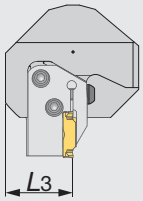
● : Correspondence

C-CHFVR/L

TungCut shank of perpendicular toolholders for CAER/L & CAFR/L blades







Right hand (R) shown.

Designation	SS	L_1	L_3	f_1	Blade
C4CHFVR/L27050N	40	42.5	36	27	CAEL/R..., CAFR/L...
C5CHFVR/L35060N	50	49.5	36	35	CAEL/R..., CAFR/L...
C6CHFVR/L45065	63	54.5	41	45	CAEL/R..., CAFR/L...
C6CHFVR/L45065N	63	54.5	41	45	CAEL/R..., CAFR/L...

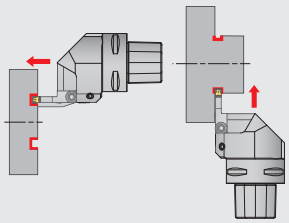
• The last character of designation is "N":Capable for 7Mpa, coolant pressure.

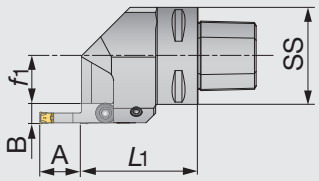
SPARE PARTS

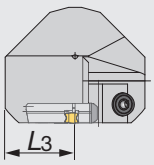
Designation	Coolant parts	Coolant parts 1	Clamping screw	Wrench
C4CHFVR/L27050N	SATZ-M8X1-M3	-	CSHB-6-A	P-4
C5CHFVR/L35060N	SATZ-M10X1-M5	-	CSHB-6-A	P-4
C6CHFVR/L45065	CNZ125	PNZ5	CSHB-6-A	P-4
C6CHFVR/L45065N	SATZ-M10X1-M5	-	CSHB-6-A	P-4

C-CHSR/L

TungCut shank of toolholders for CAER/L & CAFR/L blades







Right hand (R) shown.

Designation	SS	L_1	L_3	f_1	Blade
C4CHSR/L27050N	40	50	36	16.5	CAER/L..., CAFL/R...
C5CHSR/L35060	50	60	36	24.5	CAER/L..., CAFL/R...
C5CHSR/L35060N	50	60	36	24.5	CAER/L..., CAFL/R...
C6CHSR/L45065N	63	65	41	34.5	CAER/L..., CAFL/R...

• The last character of designation is "N":Capable for 7Mpa, coolant pressure.

SPARE PARTS

Designation	Coolant parts	Coolant parts 1	Clamping screw	Wrench
C4CHSR/L27050N	SATZ-M8X1-M3	-	CSHB-6-A	P-4
C5CHSR/L35060	CNZ125	PNZ5	CSHB-6-A	P-4
C5CHSR/L3506N	SATZ-M10X1-M5	-	CSHB-6-A	P-4
C6CHSR/L45065N	SATZ-M10X1-M5	-	CSHB-6-A	P-4

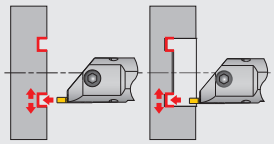
Combination of blade and toolholder

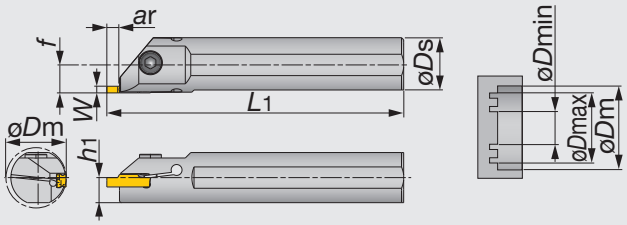
Toolholders	Blade			
	CAER...	CAEL...	CAFR...	CAFL...
C*CHFVR...	●			●
C*CHFVL...		●	●	
C*CHSR...		●	●	
C*CHSL...	●			●

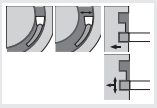
● : Correspondence

CTIFR/L

Toolholders for face / internal face grooving & turning







Insert:
DGM, DGS,
DGG, DTE,
DTF, DTX, DTR

Right hand (R) shown.

Designation	W	Seat size	ar	øDs	h1	L1(1)	f
CTIFR/L25-4T05-D270	4	3, 4	5.5	25	11.5	200	13.3
CTIFR/L32-4T05-D340	4	3, 4	5.5	32	15	250	16.8
CTIFR/L25-5T05-D270	6	5, 6	5.5	25	11.5	200	13.3
CTIFR/L32-5T05-D340	6	5, 6	5.5	32	15	250	16.8

(1) "f" value is calculated with groove width "W" shown in the table.**
• For applicable Insert, see page C073 - C085.

SPARE PARTS





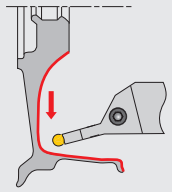
Designation	Clamping screw	Wrench
CTIFR/L25-4T05-D270	CM6X1X16-A	P-5
CTIFR/L32-4T05-D340	CM6X1X20-A	P-5
CTIFR/L25-5T05-D270	CM6X1X16-A	P-5
CTIFR/L32-5T05-D340	CM6X1X20-A	P-5

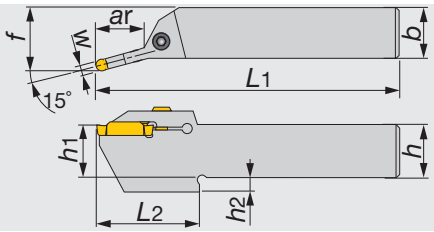
Insert seat size	Min. bore dia. øDm	
	øDs = 25 mm	øDs = 32 mm
3	26.3	33.3
4	26.8	33.8
5	26.3	33.3
6	26.8	33.8

Insert seat size	øDmin				øDmax
	DGM, DGS, DGG	DTE	DTF / DTX	DTR	
3	92	62	19	44	∞
4	37	42	20	32	∞
5	60	64	20	48	∞
6	57	61	23	48	∞

TUNGCUT
CTER/L-15A

Toolholders for machining aluminum wheel, square shank





Right hand (R) shown.

Designation	W	Seat size	ar	h	b	L1	f	L2	h1	h2	Insert
CTER/L2525-6T25-15A	6	6	25	25	25	150	32.2	50.5	25	7	DTA...
CTER/L2525-8T30-15A	8	8	30	25	25	150	32.9	55	25	7	DTA...

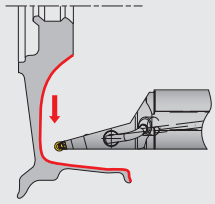
• For applicable Insert, see page C073 - C085.

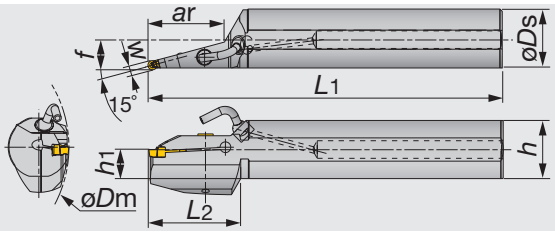
SPARE PARTS

Designation	Clamping screw	Wrench
CTER/L2525-****-15A	CM6X1X25-A	P-5

TUNGCUT
CGIUR/L-15A

Boring bars for machining aluminum wheel





Right hand (R) shown.

Designation	W	øDm	Seat size	ar	øDs	f	L1	L2	h	h1	Insert
CGIUR/L40-6T50-D160-15A	6	160	6	50	40	19.7	320	60	38.5	19	DTA...
CGIUR/L40-8T83-D160-15A	8	160	8	83	40	20.5	320	85	38.5	19	DTA...
CGIUR/L50-6T85-D200-15A	6	200	6	85	50	25.2	350	85	48.5	23.5	DTA...
CGIUR/L50-8T85-D200-15A	8	200	8	85	50	25.9	350	85	48.5	23.5	DTA...

• For applicable Insert, see page C073 - C085.

SPARE PARTS

Designation	Clamping screw	Wrench
CGIUR/L**-15A	CM6X1X25-A	P-5

Nozzle parts

Coolant pipe	Coolant nozzle
PNZ5	CNZ125

External grooving and parting

DGM type (2 corners) SGM type (1 corner)



C077

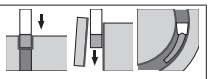
1st choice for external grooving and parting off

Smooth chip evacuation

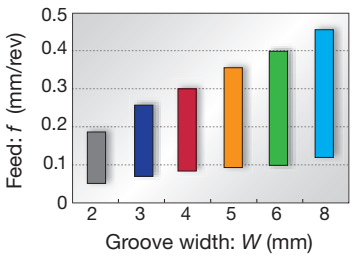
Well-designed edge with high strength

Handed insert available

W = 2 - 8 mm



■ Standard feed



DGS type (2 corners) SGS type (1 corner)



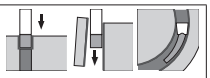
C078, C079

Lower cutting force and superior sharpness

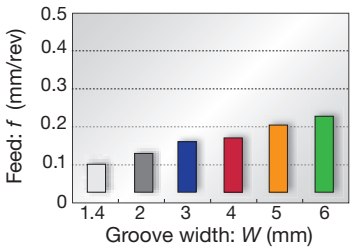
Unique-designed edge and chipbreaker

Handed insert available

W = 1.4 - 6 mm



■ Standard feed



Grooving Tool

External and face grooving, and turning

DTE type (2 corners)



C080, C081

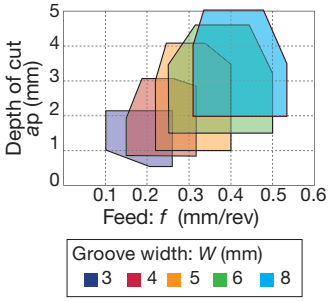
For general purpose

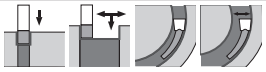
Unique chipbreaker makes chips shorter

Molded and ground insert available

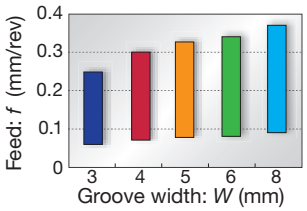
W = 3 - 8 mm

■ Standard feed and DoC





■ Standard feed



External and face grooving

DGG type (2 corners)



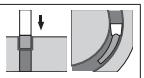
C081

For non-ferrous materials and titanium

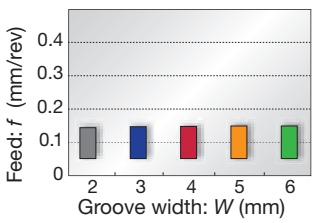
Chipbreaker with low cutting force

Sharp cutting edge that prevents vibration and delivers fine surface finish

W = 2 - 6 mm



■ Standard feed



External, internal and face grooving, and turning

DTX type (2 corners)



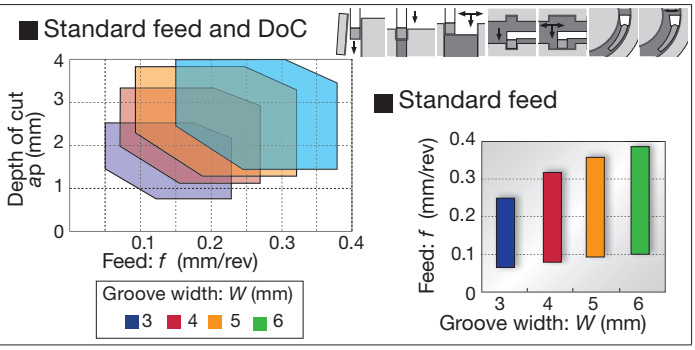
C081

Multi-functional type

Well balanced sharpness and strength

Multi functional insert

W = 3 - 6 mm



External grooving

DGE type (2 corners)

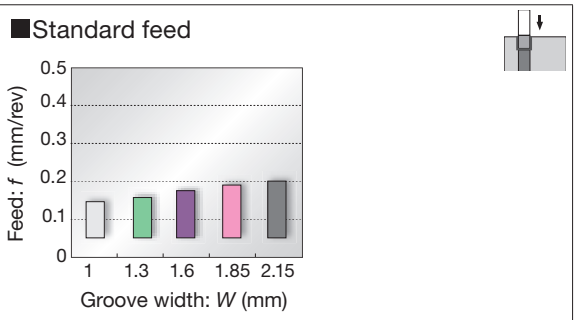


C080

For high accurate and shallow groove

Excellent chip control

W = 1 - 2.15 mm



Profiling and undercutting

DTR type (2 corners)

Molded



Ground



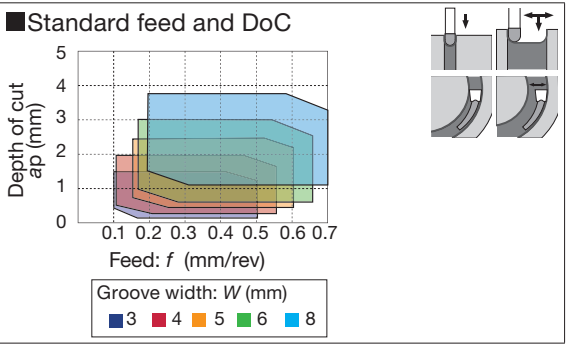
C083, C084

Full radius type

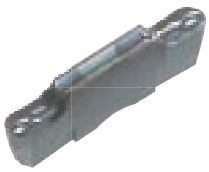
Excellent chip control

Molded and ground insert available

W = 3 - 8 mm



DTIU type (2 corners)



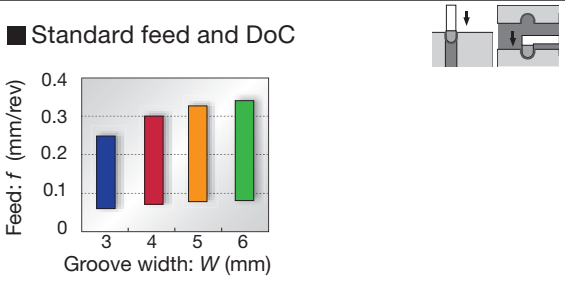
C084

Full radius type

Excellent chip control

For undercutting

W = 3 - 6 mm



Grooving Tool

Internal grooving and turning

DTI type (2 corners)



C082

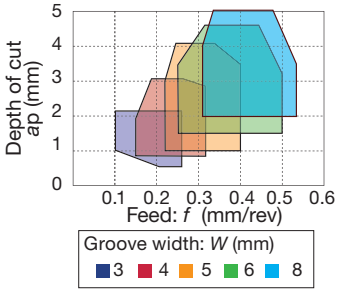
1st choice for internal grooving

Unique chipbreaker makes chips shorter

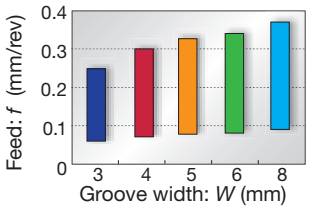
Molded and ground insert available

W = 3 - 8 mm

■ Standard feed and DoC



■ Standard feed



Small diameter internal grooving

DGIM type (2 corners)



C083

2 mm insert width only (For general purpose)

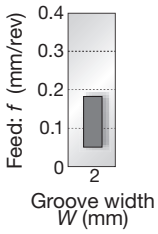
Unique chipbreaker for excellent chip control

Excellent fracture resistance due to optimum land on the cutting edge

For general applications on steels & stainless steels

W = 2 mm

■ Standard feed



DGIS type (2 corners)



C083

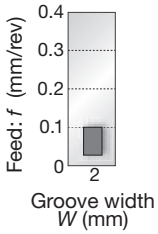
2 mm insert width only (Lower cutting force)

Low cutting force due to a unique land geometry

Applicable for low carbon steels & stainless steels

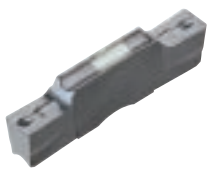
W = 2 mm

■ Standard feed



Face grooving and turning

DTF type (2 corners)



C082

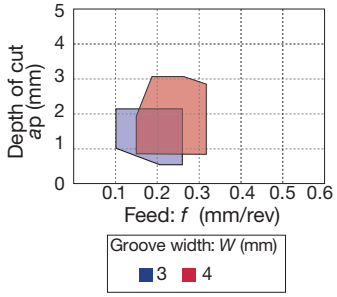
1st choice for face grooving

Unique chipbreaker makes chips shorter

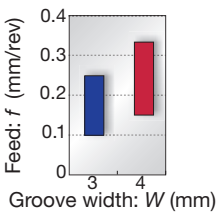
Handed insert

W = 3 - 4 mm

■ Standard feed and DoC



■ Standard feed



Aluminium wheel machining

DTA type (2 corners)



C084

Full radius type

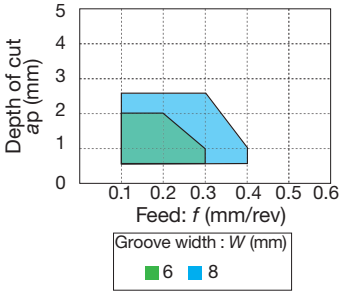
Excellent chip control

For aluminium wheel profiling

Ground insert

W = 6 - 8 mm

■ Standard feed and DoC





External grooving of hardened steels

SGN-CBN type (1 corner)



C085

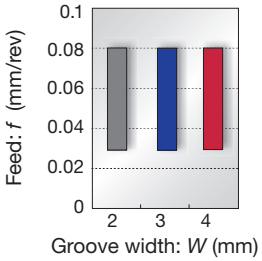
For hardened steel cutting

Optimum cutting edge shape for grooving of hardened steels

High tolerance width for finishing (*W* = ±0.025 mm)

W = 2 - 4 mm

■ Standard feed

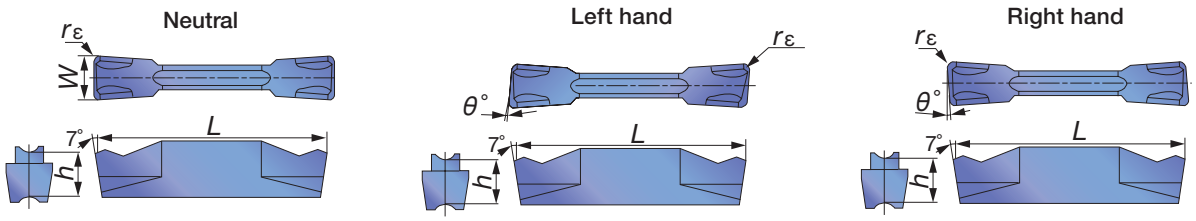




Grooving Tool

DGM

External grooving and parting off, 2 corner

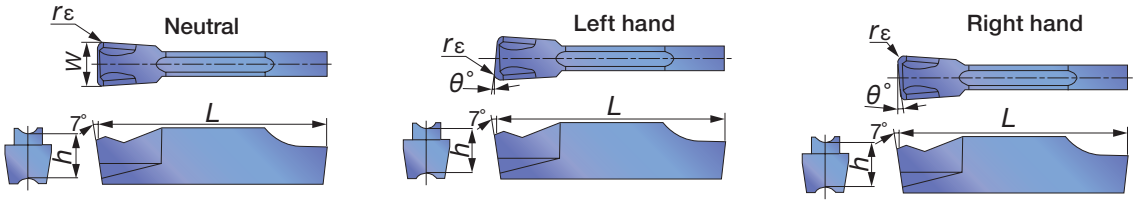


Designation	Insert seat size	W±0.05	rε	Coating										Cermet		L	h	θ°
				T9125		AH7025		AH725		AH905		GH130		NS9530				
				R	L	R	L	R	L	R	L	R	L	R	L			
DGM2-020	2	2	0.2	●		●		●				●		●		20	5	0
DGM2-020-6R/L	2	2	0.2					●	●			●	●			19.8	5	6
DGM2-020-8R/L	2	2	0.2					●	●			●	●			19.8	5	8
DGM2-020-15R/L	2	2	0.2					●	●			●	●			19.8	5	15
DGM2-002-15R/L	2	2	0.02					●	●			●	●			19.35	5	15
DGM3-020	3	3	0.2	●		●		●		●		●		●		20	5	0
DGM3-020-6R/L	3	3	0.2					●	●			●	●			19.9	5	6
DGM3-002-6R/L	3	3	0.02					●	●			●	●			19.45	5	6
DGM3-020-15R/L	3	3	0.2					●	●			●	●			19.9	5	15
DGM4-030	4	4	0.3	●		●		●		●		●		●		20	5	0
DGM4-030-4R/L	4	4	0.3					●	●			●	●			19.8	5	4
DGM4-030-15R/L	4	4	0.3					●	●			●	●			19.8	5	15
DGM5-030	5	5	0.3	●		●		●		●		●		●		25	5.5	0
DGM5-030-4R	5	5	0.3					●				●				24.9	5.5	4
DGM6-030	6	6	0.3	●		●		●		●		●				25	5.5	0
DGM8-040	8	8	0.4	●				●				●				30	6.7	0

● : Line-up

SGM

External deep grooving and parting off, 1 corner

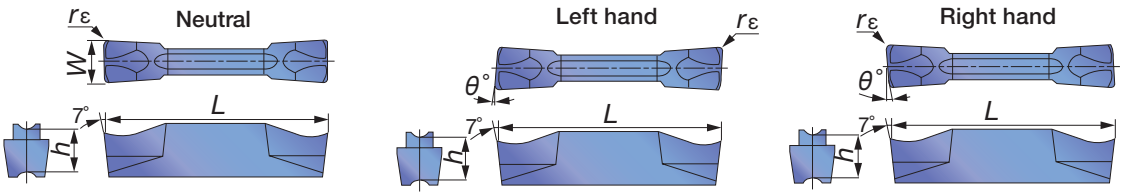


Designation	Insert seat size	W±0.05	rε	Coating				L	h	θ°
				AH725		GH130				
				R	L	R	L			
SGM2-020	2	2	0.2		●		●	20	5	0
SGM2-020-6R/L	2	2	0.2	●	●	●	●	19.8	5	6
SGM3-020	3	3	0.2		●		●	20	5	0
SGM3-020-6R/L	3	3	0.2	●	●	●	●	19.6	5	6
SGM3-020-15R/L	3	3	0.2	●	●	●	●	19.6	5	15
SGM4-030	4	4	0.3		●		●	20	5	0
SGM4-030-4R/L	4	4	0.3	●	●	●	●	19.65	5	4
SGM5-030	5	5	0.3		●		●	25	5.5	0
SGM6-030	6	6	0.3		●		●	25	5.5	0

● : Line-up

DGS

External grooving and parting off, 2 corner



Designation	Insert seat size	W±0.05	rε	Coating								Cermet				
				T9125		AH7025		AH725		GH130		NS9530				
				R	L	R	L	R	L	R	L	R	L	L	h	θ°
DGS1.4-016	1	1.4	0.16					●		●				16	4.3	0
DGS2-020	2	2	0.2	●		●		●		●		●		20	5	0
DGS2-020-6R/L	2	2	0.2					●	●	●	●			19.95	5	6
DGS2-002-6R/L	2	2	0.02					●	●	●	●			19.8	5	6
DGS2-020-15R/L	2	2	0.2					●	●	●	●			19.95	5	15
DGS2-002-15R/L	2	2	0.02					●	●	●	●			19.8	5	15
DGS3-020	3	3	0.2	●		●		●		●		●		20	5	0
DGS3-020-6R/L	3	3	0.2					●	●	●	●			19.9	5	6
DGS3-002-6R/L	3	3	0.02					●	●	●	●			19.6	5	6
DGS3-020-15R/L	3	3	0.2					●	●	●	●			19.9	5	15
DGS3-002-15R/L	3	3	0.02					●	●	●	●			19.45	5	15
DGS4-030	4	4	0.3	●		●		●		●		●		20	5	0
DGS4-030-4R/L	4	4	0.3					●	●	●	●			19.8	5	4
DGS5-030	5	5	0.3	●				●		●		●		25	5.5	0
DGS6-030	6	6	0.3	●				●		●				25	5.5	0

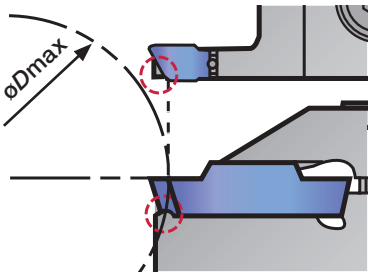
● : Line-up

Caution

Designation	øDmax (mm)
DGM2-002-15R/L	28
DGM3-002-15R/L	29
DGM4-030-15R/L	30
SGM3-020-15R/L	103

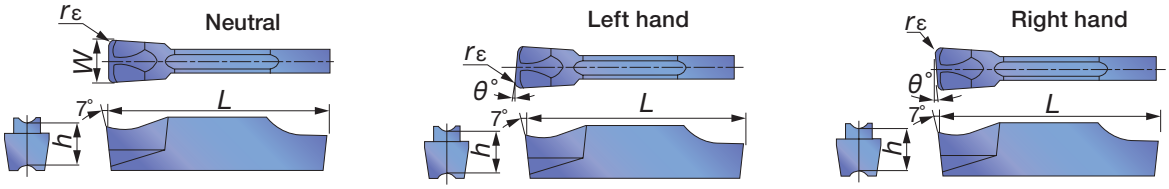
Designation	øDmax (mm)
DGS2-002-15R/L	28
DGS3-002-15R/L	29
SGS3-020-15R/L	103
SGS3-002-15R/L	34

The tool will interfere with the workpiece when grooving larger diameter than øDmax.



SGS

External deep grooving and parting off, 1 corner

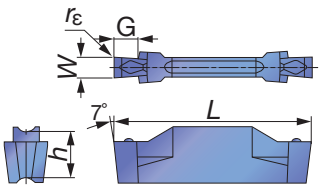


Designation	Insert seat size	W±0.05	rε	Coating				L	h	θ°
				AH725		GH130				
				R	L	R	L			
SGS2-020	2	2	0.2		●		●	20	5	0
SGS2-020-6R/L	2	2	0.2	●	●	●	●	19.8	5	6
SGS2-020-15R/L	2	2	0.2	●	●	●	●	19.8	5	15
SGS3-020	3	3	0.2		●		●	20	5	0
SGS3-020-6R/L	3	3	0.2	●	●	●	●	19.64	5	6
SGS3-002-6R/L	3	3	0.02	●	●	●	●	19.8	5	6
SGS3-020-15R/L	3	3	0.2	●	●	●	●	19.64	5	15
SGS3-002-15R/L	3	3	0.02	●	●	●	●	19.8	5	15
SGS4-030	4	4	0.3		●		●	20	5	0
SGS5-030	5	5	0.3		●		●	25	5.5	0
SGS6-030	6	6	0.3		●		●	25	5.5	0

● : Line-up

DGE

External grooving



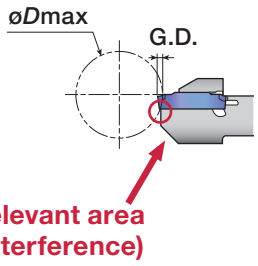
Designation	Insert seat size	W±0.02	rε	Coating		Cermet	G	L	h
				AH725	GH130	NS9530			
DGE100-000	2	1	0	●	●	●	2.5	20	5
DGE130-000	2	1.3	0	●	●	●	2.5	20	5
DGE160-010	2	1.6	0.1	●	●	●	2.5	20	5
DGE185-010	2	1.85	0.1	●	●	●	3.5	20	5
DGE215-015	2	2.15	0.15	●	●	●	3.5	20	5

● : Line-up

Caution

*ø*Dmax is limited as shown in the picture to the right according to the groove depth, G.D. Please refer to the following table.

G.D = Groove depth

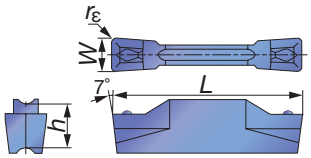


Designation	Max. groove depth (mm)	øDmax (mm)				
		G.D. = 1	G.D. = 1.5	G.D. = 2	G.D. = 2.5	G.D. = 3
DGE100-000	2	∞	18.6	11.5	-	-
DGE130-000						
DGE160-010						
DGE185-010	3				8.8	7
DGE215-015						

DTE

External, grooving and turning

Ground

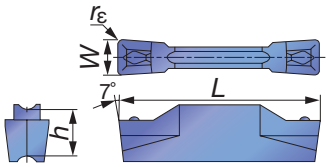


Designation	Insert seat size	W±0.02	rε	Coating				Cermet	L	h
				T9125	AH7025	AH725	GH130	NS9530		
DTE265-015	3	2.65	0.15	●	●	●	●	●	20	5
DTE300-020	3	3	0.2	●	●	●	●	●	20	5
DTE300-040	3	3	0.4	●		●	●	●	20	5
DTE315-015	3	3.15	0.15	●		●	●	●	20	5
DTE400-040	4	4	0.4	●		●	●	●	20	5
DTE400-080	4	4	0.8	●	●	●	●	●	20	5
DTE415-015	4	4.15	0.15	●		●	●	●	20	5
DTE478-055	5	4.78	0.55	●		●	●	●	25	5.5
DTE500-040	5	5	0.4	●		●	●	●	25	5.5
DTE500-080	5	5	0.8	●	●	●	●	●	25	5.5
DTE515-015	5	5.15	0.15	●		●	●		25	5.5
DTE600-080	6	6	0.8	●	●	●	●		25	5.5
DTE600-120	6	6	1.2	●		●	●		25	5.5
DTE800-080	8	8	0.8	●		●	●		30	6.7
DTE800-120	8	8	1.2	●		●	●		30	6.7

● : Line-up

DTE

External, grooving and turning
Molded

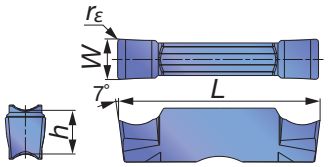


Designation	Insert seat size	W±0.05	rε	Coating				Cermet	L	h
				T9125	AH7025	AH725	GH130	NS9530		
DTE3-040	3	3	0.4	●	●	●	●	●	20	5
DTE4-040	4	4	0.4	●	●	●	●	●	20	5

● : Line-up

DGG

External and face grooving

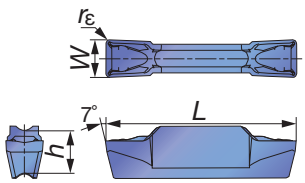


Designation	Insert seat size	W±0.02	rε	Cermet	Uncoated	L	h
				NS9530	KS05F		
DGG200-020	2	2	0.2	●	●	20	5
DGG300-020	3	3	0.2	●	●	20	5
DGG400-040	4	4	0.4	●	●	20	5
DGG500-040	5	5	0.4	●	●	25	5.5
DGG600-040	6	6	0.4	●	●	25	5.5

● : Line-up

DTX

External, internal, face grooving and turning

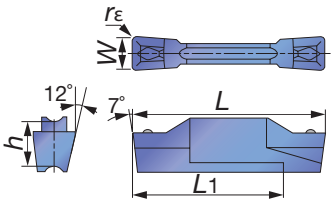


Designation	Insert seat size	W±0.05	rε	Coating				Cermet	L	h
				T9125	AH7025	AH725	GH130	NS9530		
DTX3-030	3	3	0.3	●	●	●	●	●	20	5
DTX4-040	4	4	0.4	●	●	●	●	●	20	5
DTX5-040	5	5	0.4	●	●	●	●	●	25	5.5
DTX6-080	6	6	0.8			●	●		25	5.5

● : Line-up

DTF

Face grooving and turning



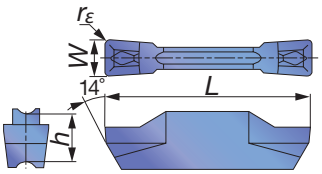
Designation	Insert seat size	W±0.05	rε	Coating						Cermet		L	h	L1
				T9125		AH725		GH130		NS9530				
				R	L	R	L	R	L	R	L			
DTF3-040-R/L	3	3	0.4	●	●	●	●	●	●	●	●	20	5	16
DTF4-040-R/L	4	4	0.4	●	●	●	●	●	●	●	●	20	5	16

● : Line-up

Grooving Tool

DTI

Internal grooving and turning
Ground

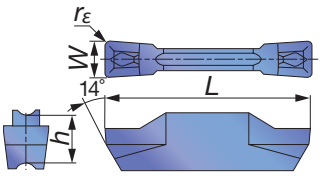


Designation	Insert seat size	W±0.02	rε	Coating			Cermet	L	h
				T9125	AH725	GH130	NS9530		
DTI300-040	3	3	0.4	●	●	●	●	20	5
DTI400-040	4	4	0.4	●	●	●	●	20	5
DTI400-080	4	4	0.8	●	●	●	●	20	5
DTI500-040	5	5	0.4	●	●	●	●	25	5.5
DTI500-080	5	5	0.8	●	●	●	●	25	5.5
DTI600-080	6	6	0.8	●	●	●		25	5.5
DTI600-120	6	6	1.2	●	●	●		25	5.5
DTI800-080	8	8	0.8	●	●	●		30	6.7
DTI800-120	8	8	1.2	●	●	●		30	6.7

● : Line-up

DTI

Internal grooving and turning
Molded

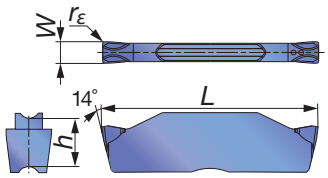


Designation	Insert seat size	W±0.05	rε	Coating				Cermet	L	h
				T9125	AH7025	AH725	GH130	NS9530		
DTI3-040	3	3	0.4	●	●	●	●	●	20	5
DTI4-040	4	4	0.4	●		●	●	●	20	5

● : Line-up

DGIM

Small diameter internal grooving

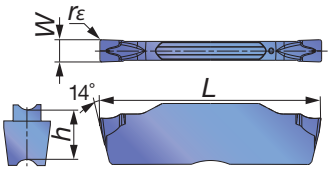


Designation	Insert seat size	W±0.05	rε	Coating			Cermet	L	h
				T9125	AH725	GH130	NS9530		
DGIM2-020	2	2	0.2	●	●	●	●	20	5

● : Line-up

DGIS

Small diameter internal grooving

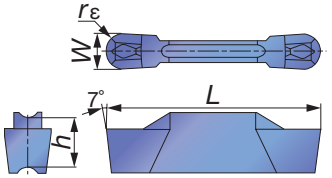


Designation	Insert seat size	W±0.05	rε	Coating			Cermet	L	h
				T9125	AH725	GH130	NS9530		
DGIS2-020	2	2	0.2	●	●	●	●	20	5

● : Line-up

DTR

Profiling and undercutting
Ground

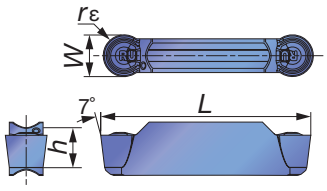


Designation	Insert seat size	W±0.02	rε	Coating			Cermet	L	h
				T9125	AH725	GH130	NS9530		
DTR300-150	3	3	1.5	●	●	●	●	20	5
DTR400-200	4	4	2	●	●	●	●	20	5
DTR478-239	5	4.78	2.39	●	●	●	●	25	5.5
DTR500-250	5	5	2.5	●	●	●	●	25	5.5
DTR600-300	6	6	3	●	●	●		25	5.5

● : Line-up

DTR

Profiling and undercutting
Molded

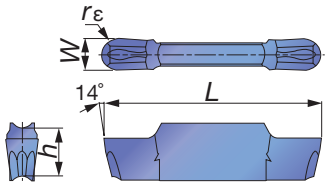


Designation	Insert seat size	W±0.05	rε	Coating					Cermet	L	h
				T9125	AH7025	AH725	AH905	GH130	NS9530		
DTR3-150	3	3	1.5	●	●	●	●	●	●	20	5
DTR4-200	4	4	2	●	●	●	●	●	●	20	5
DTR5-250	5	5	2.5	●	●	●	●	●	●	25	5.5
DTR6-300	6	6	3	●	●	●		●		25	5.5
DTR8-400	8	8	4	●		●		●		30	6.7

● : Line-up

DTIU

Profiling and undercutting
Ground

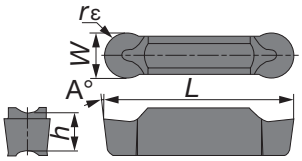


Designation	Insert seat size	W±0.02	rε	Coating		L	h
				AH725	GH130		
DTIU300-150	3	3	1.5	●	●	20	5
DTIU400-200	4	4	2	●	●	20	5
DTIU500-250	5	5	2.5	●	●	25	5.5
DTIU600-300	6	6	3	●	●	25	5.5

● : Line-up

DTA

Aluminium wheel machining
Ground

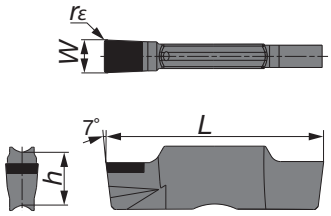


Designation	Insert seat size	W±0.02	rε	Uncoated	L	h	A°
				TH10			
DTA600-300	6	6	3	●	25	5.5	7
DTA800-400	8	8	4	●	30	6.7	10

● : Line-up

SGN

External grooving of hardened steels



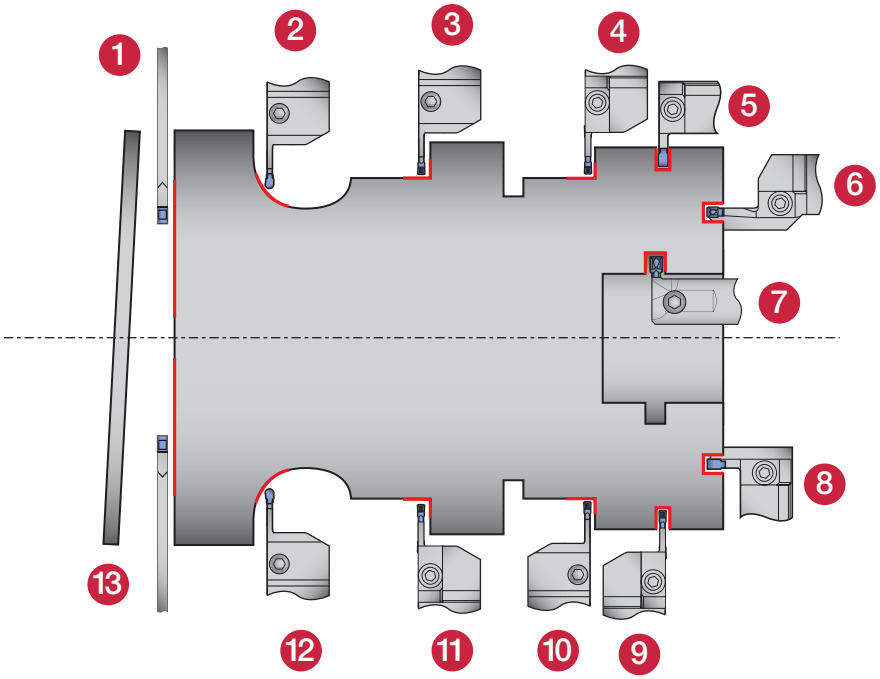
Designation	Insert seat size	W±0.025	rε	CBN BX360	L	h
SGN200-020	2	2	0.2	●	20	5
SGN300-020	3	3	0.2	●	20	5
SGN400-020	4	4	0.2	●	20	5

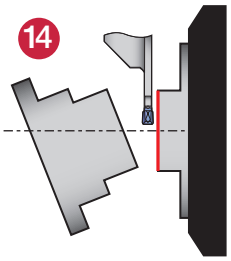
● : Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed Vc (m/min)
P	Steels (C45, 34CrMo4, etc.)	< 300 HB	First choice	AH7025, AH725	50 - 180
		< 300 HB	Priority for wear resistance	T9125	80 - 200
		< 300 HB	Priority for impact resistance	GH130	50 - 120
		< 300 HB	Priority for surface finish	NS9530	80 - 220
M	Stainless steels (X10CrNiS18-9, etc.)	< 200 HB	First choice	AH7025, AH725	50 - 120
		< 200 HB	Priority for impact resistance	GH130	50 - 120
K	Grey cast irons (GG25, 250, etc.)	-	First choice	GH130	50 - 180
	Ductile cast irons (GGG45, 450-10S, etc.)	-	First choice	GH130	50 - 120
N	Aluminium alloys (Si < 12%)	-	First choice	TH10	100 - 500
S	Titanium alloys (Ti-6Al-4V, etc.)	< HRC 40	First choice	AH905	20 - 80
		< HRC 40	Priority for impact resistance	AH7025, AH725	20 - 80
H	Hardened steels (34CrMo4, etc.)	> HRC 50	First choice	BX360	80 - 150

Wide variety of tools dramatically reduce set up time





1 CCH
1 corner
W = 3 - 5 mm
Max. parting Dia.:
120 mm
Shank size:
20 - 32 mm
C094

2 CGSSR/L-D
1 corner
Monoblock type
W = 3 - 5 mm
ar = 22 - 25 mm
Shank size:
16 - 25 mm
C093

3 CGSSR/L
1 corner
Monoblock type
W = 2 - 5 mm
ar = 12 - 16 mm
Shank size:
16 - 25 mm
C093

4 CGWSR/L-G
1 corner
Adaptor type
W = 2 - 5 mm
ar = 12 mm
Shank size:
20 - 25 mm
C092

5 CGWTR/L-G
1 corner
Adaptor type
W = 2 - 5 mm
ar = 12 mm
Shank size:
20 - 25 mm
C092

6 CGWSR/L *S/D*L/R
1 corner
Adaptor type
W = 3 - 5 mm
ar = 10 - 22 mm
Shank size:
20 - 25 mm
C095

7 CGTR/L
1 corner
Monoblock type
W = 3 - 5 mm
ar = 3.5 - 6 mm
Shank size:
ø25 - ø40 mm
C097

8 CGWTR/L *S/D*L/R
1 corner
Adaptor type
W = 3 - 5 mm
ar = 10 - 22 mm
Shank size:
20 - 25 mm
C096

9 CGWSR/L-WG
2 corner
Adaptor type
W = 3 - 5 mm
ar = 12 - 13 mm
Shank size:
20 - 25 mm
C088

10 CGWSR/L-W
2 corner
Monoblock type
W = 3 - 5 mm
ar = 12 - 13 mm
Shank size:
16 - 25 mm
C087

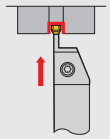
11 CGWSR/L -WG-L
2 corner
Adaptor type
W = 2 - 5 mm
ar = 15 - 21.5 mm
Shank size:
20 - 25 mm
C088

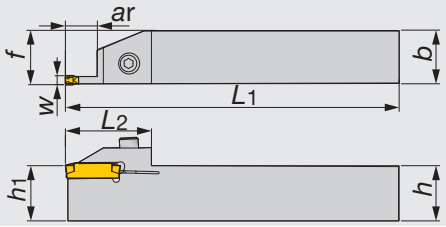
12 CGWSR/L -W-L
2 corner
Monoblock type
W = 3 - 5 mm
ar = 15 - 21.5 mm
Shank size:
16 - 25 mm
C087

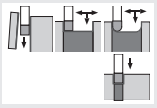
13 CCH-W
2 corner
W = 2 - 5 mm
Max. parting Dia.:
42 mm
Shank size:
20 - 32 mm
C089

14 JCGSSR/L
1 corner
For swiss type machine
W = 2 mm
Max. parting Dia.:
32 mm
Shank size:
10 - 16 mm
C094

MY-T SERIES
CGWSR/L-W
External toolholders for grooving & turning







Right hand (R) shown.

Designation	W	ar	h	b	L1	L2	h1	f	Insert
CGWSR/L1616-W30	3	12	16	16	125	34	16	16.4	WG*30, WGE30R/L
CGWSR/L2020-W30	3	12	20	20	150	34	20	20.4	WG*30, WGE30R/L
CGWSR/L2525-W30	3	12	25	25	150	34	25	25.4	WG*30, WGE30R/L
CGWSR/L2020-W40	4	13	20	20	150	39	20	20.4	WG*40, WGE40R/L
CGWSR/L2525-W40	4	13	25	25	150	39	25	25.4	WG*40, WGE40R/L
CGWSR/L2020-W50	5	13	20	20	150	39	20	20.4	WG*50, WGE50R/L
CGWSR/L2525-W50	5	13	25	25	150	39	25	25.4	WG*50, WGE50R/L

• For applicable Insert, see page C090 - C091.

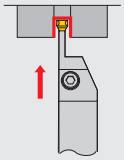
SPARE PARTS

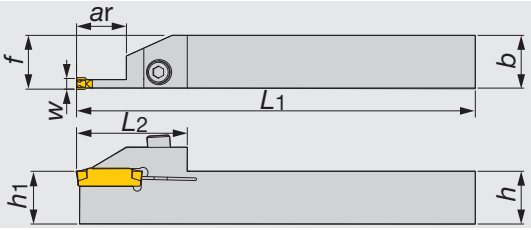


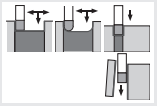


Designation	Clamping screw	Wrench
CGWSR/L****-W...	CHHM5-18	P-4

MY-T SERIES
CGWSR/L-W-L
External toolholders for deep grooving & turning







Right hand (R) shown.

Designation	W	ar	h	b	L1	L2	h1	f	Insert
CGWSR/L1616-W20-L	2	15	16	16	125	37	16	16.2	WGE20, WGE20R/L
CGWSR/L2020-W20-L	2	15	20	20	150	37	20	20.2	WGE20, WGE20R/L
CGWSR/L2525-W20-L	2	15	25	25	150	37	25	25.2	WGE20, WGE20R/L
CGWSR/L1616-W30-L	3	16.5, 17.5	16	16	125	37	16	16.4	WG*30, WGE30R/L
CGWSR/L2020-W30-L	3	16.5, 17.5	20	20	150	37	20	20.4	WG*30, WGE30R/L
CGWSR/L2525-W30-L	3	16.5, 17.5	25	25	150	37	25	25.4	WG*30, WGE30R/L
CGWSR/L2020-W40-L	4	21, 21.5	20	20	150	42	20	20.4	WG*40, WGE40R/L
CGWSR/L2525-W40-L	4	21, 21.5	25	25	150	42	25	25.4	WG*40, WGE40R/L
CGWSR/L2020-W50-L	5	21	20	20	150	42	20	20.4	WG*50, WGE50R/L
CGWSR/L2525-W50-L	5	21	25	25	150	42	25	25.4	WG*50, WGE50R/L

• For applicable Insert, see page C090 - C091.

SPARE PARTS



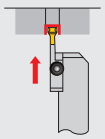


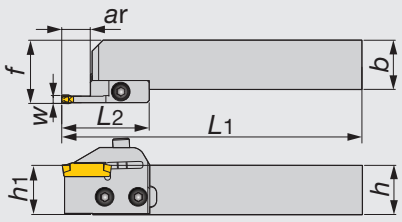
Designation	Clamping screw	Wrench
CGWSR/L****-W**-L	CHHM5-18	P-4

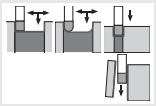
MY-T SERIES

CGWSR/L-WG

External toolholders for grooving & turning







Right hand (R) shown.

Designation	W	ar	h	b	L1	L2	h1	f	Insert	Shank	Blade
CGWSR/L2020-W30GR/L	3	12	20	20	150.5	43.5	20	26.9	WG*30, WGE30R/L	CGWSR/L2020	W30GR/L
CGWSR/L2525-W30GR/L	3	12	25	25	150.5	43.5	25	31.9	WG*30, WGE30R/L	CGWSR/L2525	W30GR/L
CGWSR/L2020-W40GR/L	4	13	20	20	151.5	44.5	20	26.9	WG*40, WGE40R/L	CGWSR/L2020	W40GR/L
CGWSR/L2525-W40GR/L	4	13	25	25	151.5	44.5	25	31.9	WG*40, WGE40R/L	CGWSR/L2525	W40GR/L
CGWSR/L2020-W50GR/L	5	13	20	20	151.5	44.5	20	26.9	WG*50, WGE50R/L	CGWSR/L2020	W50GR/L
CGWSR/L2525-W50GR/L	5	13	25	25	151.5	44.5	25	31.9	WG*50, WGE50R/L	CGWSR/L2525	W50GR/L

- When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.
- For Applicable insert, see page C090 - C091.

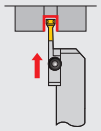
SPARE PARTS

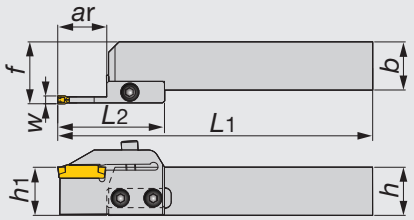
Designation	Clamping screw	Blade screw	Wrench
CGWSR/L****-W**GR/L	CHHM5-18	CSHB-6	P-4

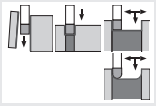
MY-T SERIES

CGWSR/L-WG-L

External toolholders for deep grooving & turning







Right hand (R) shown.

Designation	W	ar	h	b	L1	L2	h1	f	Insert	Shank	Blade
CGWSR/L2020-W20GR/L-L	2	15	20	20	153.5	46.5	20	26.7	WGE20, WGE20R/L	CGWSR/L2020	W20GR/L-L
CGWSR/L2525-W20GR/L-L	2	15	25	25	153.5	46.5	25	31.7	WGE20, WGE20R/L	CGWSR/L2525	W20GR/L-L
CGWSR/L2020-W30GR/L-L	3	16.5 - 17.5	20	20	157.5	50.5	20	26.9	WG*30, WGE30R/L	CGWSR/L2020	W30GR/L-L
CGWSR/L2525-W30GR/L-L	3	16.5 - 17.5	25	25	157.5	50.5	25	31.9	WG*30, WGE30R/L	CGWSR/L2525	W30GR/L-L
CGWSR/L2020-W40GR/L-L	4	21 - 21.5	20	20	162.5	55.5	20	26.9	WG*40, WGE40R/L	CGWSR/L2020	W40GR/L-L
CGWSR/L2525-W40GR/L-L	4	21 - 21.5	25	25	162.5	55.5	25	31.9	WG*40, WGE40R/L	CGWSR/L2525	W40GR/L-L
CGWSR/L2020-W50GR/L-L	5	21	20	20	162.5	55.5	20	26.9	WG*50, WGE50R/L	CGWSR/L2020	W50GR/L-L
CGWSR/L2525-W50GR/L-L	5	21	25	25	162.5	55.5	25	31.9	WG*50, WGE50R/L	CGWSR/L2525	W50GR/L-L

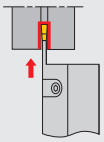
- When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.
- For Applicable insert, see page C090 - C091.

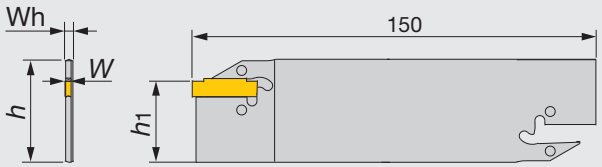
SPARE PARTS

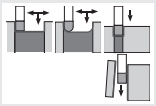
Designation	Clamping screw	Blade screw	Wrench
CGWSR/L****-W**GR/L-L	CHHM5-18	CSHB-6	P-4

CCH-W

Blades for parting off (2 corner)





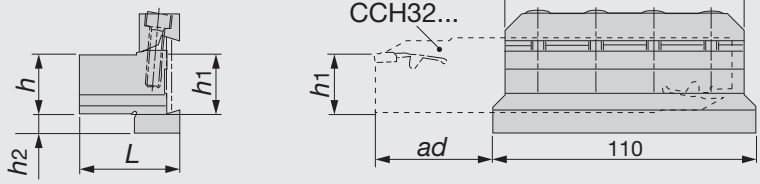


Designation	W	Applicable insert	Max. parting off dia.	Wh	h1	h
CCH32-W20	2	WGE20, WGE20R/L	33	1.6	24.6	(32)
CCH32-W30	3	WG*30, WGE30R/L	33	2.2	24.6	(32)
CCH32-W40	4	WG*40, WGE40R/L	42	3.2	24.5	(32)
CCH32-W50	5	WG*50, WGE50R/L	42	4.2	24.3	(32)

• For Applicable insert, see page C090 - C091.

CCBS-32

Tool block for CCH blades



Designation	h	h1	h2	L	Blade
CCBS20-32	20	20	13	38	CCH32...
CCBS25-32	25	25	8	42	CCH32...
CCBS32-32	32	32	5	42	CCH32...

SPARE PARTS



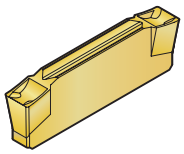


Designation	Clamp	Screw	Wrench
CCBS**-32	CC-32	CM6X25	P-5

2 corner inserts

External grooving and parting off

WGE

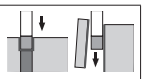


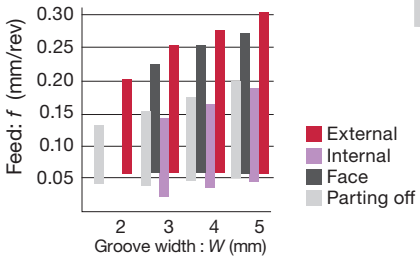
C091

1st choice for external grooving and parting

Excellent chip control for grooving

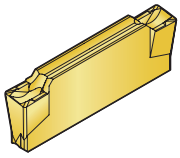
W = 2 - 5 mm





Parting off

WGE R/L



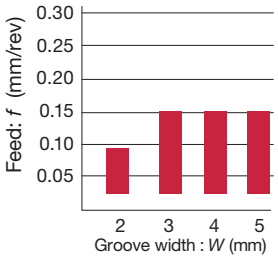
C091

Handed insert

Minimize burr generation when workpiece is cut off

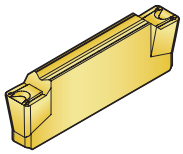
W = 2 - 5 mm





External grooving and travesing

WGT

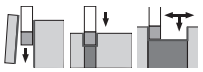


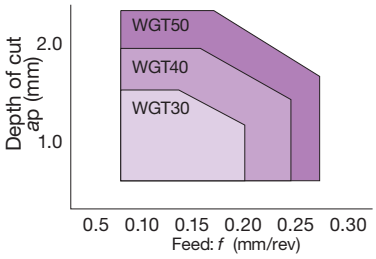
C091

1st choice for traversing

Low cutting force and good chip control for traversing

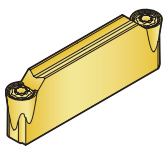
W = 3 - 5 mm





Profiling

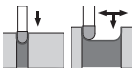
WGR

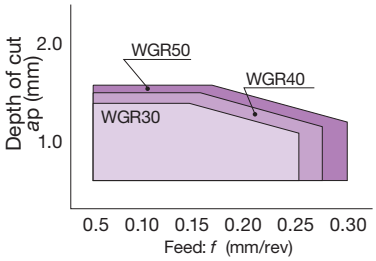


C091

Low cutting force and good chip control for profiling

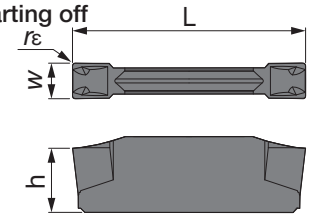
W = 3 - 5 mm





WGE

For general parting off and grooving

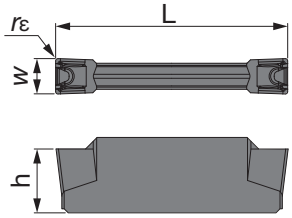


Designation	$W^{+0.1}_{0}$	rε	Coating		Cermet	L	h
			T9125	GH730	NS9530		
WGE20	2	0.2	●	●	●	20	4.7
WGE30	3	0.2	●	●	●	20	5.5
WGE40	4	0.2	●	●	●	25	5.7
WGE50	5	0.2	●	●	●	25	5.9

● : Line-up

WGT

For traversing

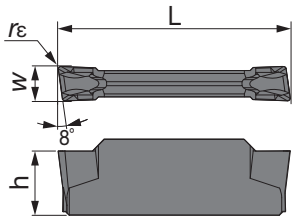


Designation	$W^{+0.1}_{0}$	rε	Coating		Cermet	L	h
			T9125	GH730	NS9530		
WGT30	3	0.4	●	●	●	20	5.5
WGT40	4	0.4	●	●	●	25	5.7
WGT50	5	0.4	●	●	●	25	5.9

● : Line-up

WGER/L

For parting off (with hand)



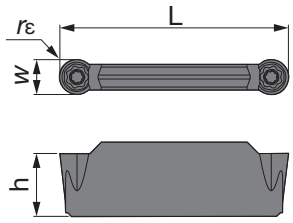
Right hand (R) shown.

Designation	$W^{+0.1}_{0}$	rε	Coating		L	h
			GH730			
			R	L		
WGE20R/L	2	0.2	●	●	20	4.7
WGE30R/L	3	0.2	●	●	20	5.5
WGE40R/L	4	0.2	●	●	25	5.7
WGE50R/L	5	0.2	●	●	25	5.9

● : Line-up

WGR

For profiling



Designation	$W^{+0.1}_{0}$	rε	Coating		Cermet	L	h
			T9125	GH730	NS9530		
WGR30	3	1.5	●	●	●	20	5.5
WGR40	4	2	●	●	●	25	5.7
WGR50	5	2.5		●	●	25	5.9

● : Line-up

STANDARD CUTTING CONDITIONS

Workpiece material	Recommended grade	Cutting speed v_C (m/min)
Low carbon steels Alloy steels (~ HB150)	T9125	80 ~ 200
	NS9530	100 ~ 200
	GH730	50 ~ 180
Medium carbon steels Alloy steels (HB150 ~ 250)	T9125	80 ~ 180
	NS9530	80 ~ 180
	GH730	50 ~ 150
High carbon steels Alloy steels (HB250 ~)	T9125	80 ~ 150
	NS9530	80 ~ 150
	GH730	50 ~ 120
Stainless steels	T9125	80 ~ 150
	GH730	50 ~ 120
Grey and ductile cast irons	T9125	80 ~ 200
	GH730	50 ~ 180

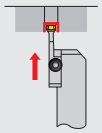
Operation	Feed: *f* (mm/rev) Groove width: *W* (mm)			
	2	3	4	5
Grooving (WGE□□)	0.06 ~ 0.20	0.06 ~ 0.25	0.07 ~ 0.27	0.07 ~ 0.30
Parting off (WGE□□R/L)	0.04 ~ 0.10	0.04 ~ 0.14	0.04 ~ 0.14	0.04 ~ 0.14
Traversing (WGT□□)	-	*ap* = 0.5 ~ 1.5 *f* = 0.06 ~ 0.2	*ap* = 0.5 ~ 2.0 *f* = 0.06 ~ 0.25	*ap* = 0.5 ~ 2.5 *f* = 0.06 ~ 0.27
Profiling (WGR□□)	-	*ap* = 0.5 ~ 1.4 *f* = 0.05 ~ 0.25	*ap* = 0.5 ~ 1.5 *f* = 0.05 ~ 0.26	*ap* = 0.5 ~ 1.6 *f* = 0.05 ~ 0.3

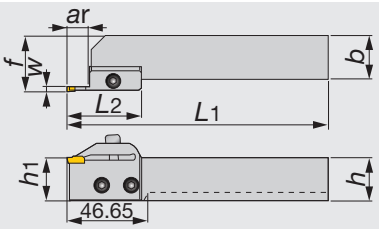
Note: For diameter compensation values in traversing, see page **C104**.

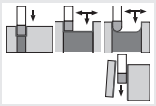
MY-T SERIES

CGWSR/L-G

External toolholders for grooving & turning







Right hand (R) shown.
The dashed line shows
20 mm-square shank tools.

Designation	W	ar	h	b	L1	L2	h1	f	Insert	Shank	Blade
CGWSR/L2020-20GR/L	2	12	20	20	150.2	43.15	20	26.8	GE20, GE20-AL	CGWSR/L2020	20GR/L
CGWSR/L2525-20GR/L	2	12	25	25	150.2	43.15	25	31.8	GE20, GE20-AL	CGWSR/L2525	20GR/L
CGWSR/L2020-30GR/L	3	12	20	20	150.2	43.15	20	27	G*30,GE30R/L,GE30-AL	CGWSR/L2020	30GR/L
CGWSR/L2525-30GR/L	3	12	25	25	150.2	43.15	25	32	G*30,GE30R/L,GE30-AL	CGWSR/L2525	30GR/L
CGWSR/L2020-40GR/L	4	12	20	20	150.2	43.15	20	27.1	G*40,GE40R/L,GE40-AL	CGWSR/L2020	40GR/L
CGWSR/L2525-40GR/L	4	12	25	25	150.2	43.15	25	32.1	G*40,GE40R/L,GE40-AL	CGWSR/L2525	40GR/L
CGWSR/L2020-50GR/L	5	12	20	20	150.2	43.15	20	27.2	G*50,GE50R	CGWSR/L2020	50GR

Note: For diameter compensation values in traversing, see page C104.
When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.
For Applicable insert, see page C098 - C101.

SPARE PARTS





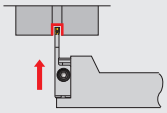
Designation	Clamping screw	Blade screw	Wrench
CGWSR/L****-**GR/L	CHHM5-18	CSHB-6	P-4

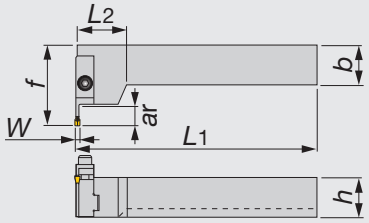
Grooving Tool

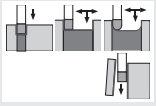
MY-T SERIES

CGWTR/L-G

External toolholders for grooving & turning







Right hand (R) shown.
The dashed line shows
20 mm-square shank tools.

Designation	W	ar	h	b	L1	L2	f	Insert	Shank	Blade
CGWTR/L2020-30GL/R	3	12	20	20	150	12.9	49.9	G*30,GE30R/L,GE30-AL	CGWTR/L2020	30GL/R
CGWTR/L2525-30GL/R	3	12	25	25	150	12.9	49.9	G*30,GE30R/L,GE30-AL	CGWTR/L2525	30GL/R
CGWTR/L2020-40GL/R	4	12	20	20	150.1	12.9	49.9	G*40,GE40R/L,GE40-AL	CGWTR/L2020	40GL/R
CGWTR/L2525-40GL/R	4	12	25	25	150.1	12.9	49.9	G*40,GE40R/L,GE40-AL	CGWTR/L2525	40GL/R
CGWTR/L2020-50GL/R	5	12	20	20	150.2	12.9	49.9	G*50,GE50R/L,GE50-AL	CGWTR/L2020	50GL/R
CGWTR/L2525-50GL/R	5	12	25	25	150.2	12.9	49.9	G*50,GE50R/L,GE50-AL	CGWTR/L2525	50GL/R

Note: For diameter compensation values in traversing, see page C104.
When using a right or left hand blade set, the right hand blade set is used with left hand shank and the left hand blade set is used with right hand shank.
For Applicable insert, see page C098 - C101.

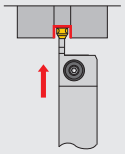
SPARE PARTS

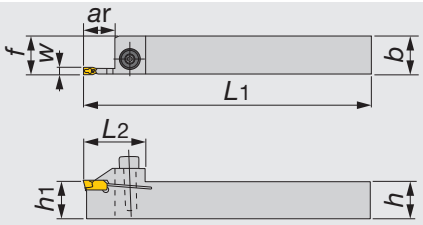


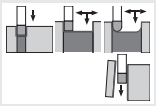


Designation	Clamping screw	Blade screw	Wrench
CGWTR/L****-**GL/R	CHHM5-18	CSHB-6	P-4

MY-T SERIES
CGSSR/L
External toolholders for grooving & turning







Right hand (R) shown.

Designation	W	ar	h	b	L1	L2	h1	f	Insert
CGSSR/L1616-20	2	16	16	16	125	27	16	16.2	GE20, GE20-AL
CGSSR/L2020-20	2	16	20	20	150	27	20	20.2	GE20, GE20-AL
CGSSR/L2525-20	2	16	25	25	150	27	25	25.2	GE20, GE20-AL
CGSSR/L1616-30	3	12	16	16	125	27	16	16.5	G*30,GE30R/L,GE30-AL
CGSSR/L2020-30	3	12	20	20	150	27	20	20.5	G*30,GE30R/L,GE30-AL
CGSSR/L2525-30	3	12	25	25	150	27	25	25.5	G*30,GE30R/L,GE30-AL
CGSSR/L2020-40	4	12	20	20	150	27	20	20.6	G*40,GE40R/L,GE40-AL
CGSSR/L2525-40	4	12	25	25	150	27	25	25.6	G*40,GE40R/L,GE40-AL
CGSSR/L2020-50	5	12	20	20	150	27	20	20.7	G*50,GE50R/L,GE50-AL
CGSSR/L2525-50	5	12	25	25	150	27	25	25.7	G*50,GE50R/L,GE50-AL

Note: For Applicable insert, see page C098 - C101.

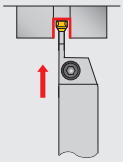
SPARE PARTS

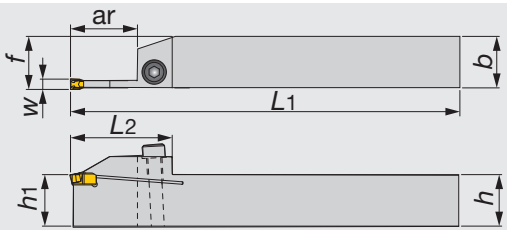


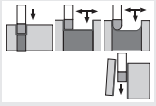


Designation	Clamping screw	Wrench
CGSSR/L...	CHHM5-18	P-4

MY-T SERIES
CGSSR/L-D
External toolholders for deep grooving & turning







Right hand (R) shown.

Designation	W	ar	h	b	L1	L2	h1	f	Insert
CGSSR/L1616-30D	3	22	16	16	125	36.2	16	16.5	G*30,GE30R/L,GE30-AL
CGSSR/L2020-30D	3	22	20	20	150	36.2	20	20.5	G*30,GE30R/L,GE30-AL
CGSSR/L2525-30D	3	22	25	25	150	36.2	25	25.5	G*30,GE30R/L,GE30-AL
CGSSR/L2020-40D	4	25	20	20	150	39.5	20	20.6	G*40,GE40R/L,GE40-AL
CGSSR/L2525-40D	4	25	25	25	150	39.5	25	25.6	G*40,GE40R/L,GE40-AL
CGSSR/L2020-50D	5	25	20	20	150	39.5	20	20.7	G*50,GE50R/L
CGSSR/L2525-50D	5	25	25	25	150	39.5	25	25.7	G*50,GE50R/L

Note: For Applicable insert, see page C098 - C101.

SPARE PARTS



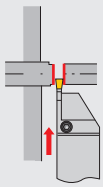


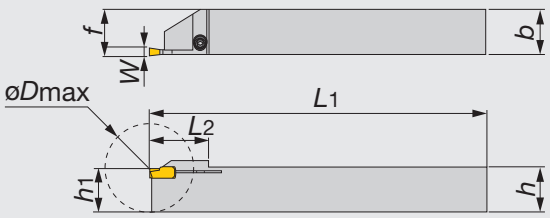
Designation	Clamping screw	Wrench
CGSSR/L****-**D	CHHM5-18	P-4

MY-T SERIES

JCGSSR/L

External grooving toolholders for swiss lathe





Right hand (R) shown.

Designation	W	øDmax	h	b	L1	L2	h1	f	Insert
JCGSSR/L1010-20	2	20	10	10	125	15	10	10.2	GE20, GE20-AL
JCGSSR/L1212-20	2	25	12	12	125	19	12	12.2	GE20, GE20-AL
JCGSSR/L1616-20	2	32	16	16	125	22.5	16	16.2	GE20, GE20-AL

• øDmax: Max. parting off diameter • For Applicable insert, see page C098 - C101.

SPARE PARTS

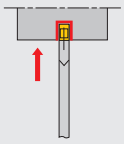
Designation	Clamping screw	Wrench
JCGSSR/L...	CSTB-3	T-9F

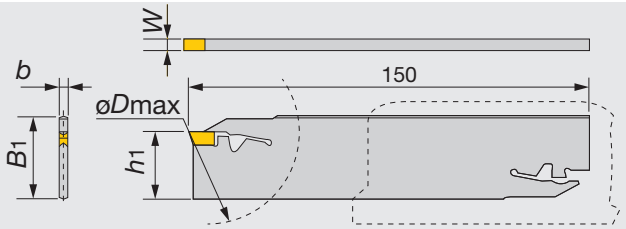
Grooving Tool

MY-T SERIES

CCH

Blades for parting off (for 1 corner insert)





Designation	W	øDmax	b	h1	B1	Insert
CCH32-30	3	100	2.2	24.6	31.31	GE30,GE30R/L,GE30-AL
CCH32-40	4	100	3.2	24.5	31.04	GE40,GE40R/L,GE40-AL
CCH32-50	5	120	4.2	24.3	30.77	GE50,GE50R/L,GE50-AL

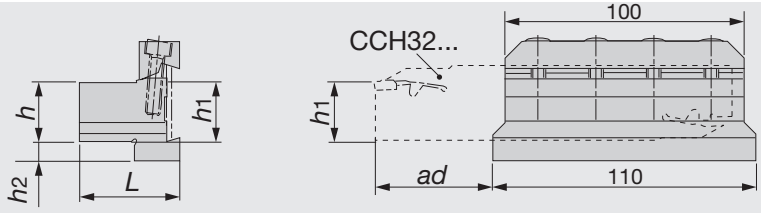
• øDmax: Max. parting off diameter • For Applicable insert, see page C098 - C101.

SPARE PARTS

Designation	Wrench
CCH...	CTL-2

CCBS-32

Tool block for CCH blades



Designation	h	h1	h2	L	Blade
CCBS20-32	20	20	13	38	CCH32...
CCBS25-32	25	25	8	42	CCH32...
CCBS32-32	32	32	5	42	CCH32...

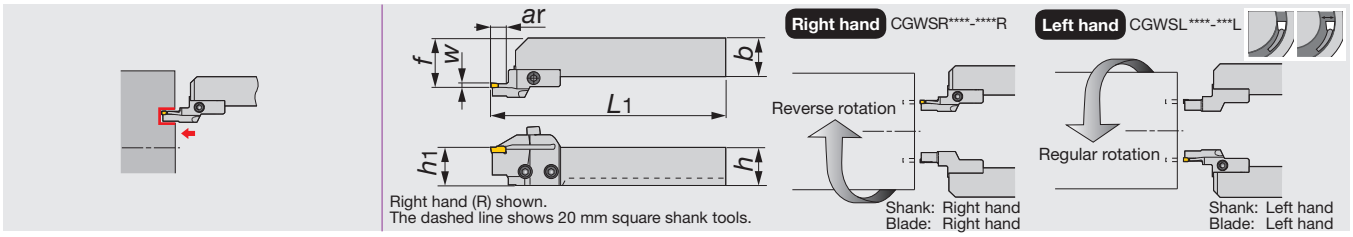
SPARE PARTS

Designation	Clamp	Screw	Wrench
CCBS**-32	CC-32	CM6X25	P-5

MY-T SERIES

#S/D##R/L+CGWSR/L

Blades of "My-T" toolholders CGWSR/L-#S/D & CGWTR/L-#S/D for face grooving & turning



Designation	W	øDm	øDmax	ar	h	b	L1	h1	f	Insert	Shank
30S3040R/L	3	30	40	10	20/25	20/25	152.5	20/25	27/32	G*30, GE30-AL	CGWSR/L...
30S4050R/L	3	40	50	10	20/25	20/25	152.5	20/25	27/32	G*30, GE30-AL	CGWSR/L...
30S5065R/L	3	50	65	10	20/25	20/25	152.5	20/25	27/32	G*30, GE30-AL	CGWSR/L...
30S6590R/L	3	65	90	10	20/25	20/25	152.5	20/25	27/32	G*30, GE30-AL	CGWSR/L...
30S90150R/L	3	90	150	10	20/25	20/25	152.5	20/25	27/32	G*30, GE30-AL	CGWSR/L...
30S150500R/L	3	150	500	10	20/25	20/25	152.5	20/25	27/32	G*30, GE30-AL	CGWSR/L...
40S3545R/L	4	35	45	14	20/25	20/25	152.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
40S4555R/L	4	45	55	14	20/25	20/25	152.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
40S5580R/L	4	55	80	14	20/25	20/25	152.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
40S80140R/L	4	80	140	14	20/25	20/25	152.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
40S140500R/L	4	140	500	14	20/25	20/25	152.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
40D3545R/L	4	35	45	22	20/25	20/25	160.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
40D4555R/L	4	45	55	22	20/25	20/25	160.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
40D5580R/L	4	55	80	22	20/25	20/25	160.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
40D80140R/L	4	80	140	22	20/25	20/25	160.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
40D140500R/L	4	140	500	22	20/25	20/25	160.5	20/25	27/32	G*40, GE40-AL	CGWSR/L...
50S3545R/L	5	35	45	14	20/25	20/25	152.5	20/25	27/32	G*50	CGWSR/L...
50S4555R/L	5	45	55	14	20/25	20/25	152.5	20/25	27/32	G*50	CGWSR/L...
50S5575R/L	5	55	75	14	20/25	20/25	152.5	20/25	27/32	G*50	CGWSR/L...
50S75130R/L	5	75	130	14	20/25	20/25	152.5	20/25	27/32	G*50	CGWSR/L...
50S130500R/L	5	130	500	14	20/25	20/25	152.5	20/25	27/32	G*50	CGWSR/L...
50D3545R/L	5	35	45	22	20/25	20/25	160.5	20/25	27/32	G*50	CGWSR/L...
50D4555R/L	5	45	55	22	20/25	20/25	160.5	20/25	27/32	G*50	CGWSR/L...
50D5575R/L	5	55	75	22	20/25	20/25	160.5	20/25	27/32	G*50	CGWSR/L...
50D75130R/L	5	75	130	22	20/25	20/25	160.5	20/25	27/32	G*50	CGWSR/L...
50D130500R/L	5	130	500	22	20/25	20/25	160.5	20/25	27/32	G*50	CGWSR/L...

- There are 2 shank type of CGWSR/L and CGWTR/L.
- CGWSR/L Shank : The right hand blade set(...R) is used with right hand shank(CGWSR...) and the left hand blade set(...L) is used with left hand shank(CGWSL...).
- CGWTR/L Shank : The left hand blade set(...L)is used with right hand shank(CGWTR...) and the right hand blade set(...R)is used with left hand shank(CGWTL...).
- For Applicable insert, see page C098 - C101.

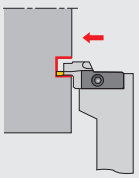
SPARE PARTS

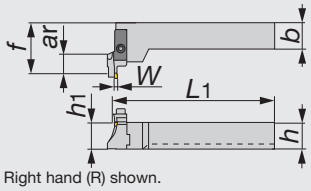
Designation	Clamping screw	Blade screw	Wrench
30S...	CHHM5-18	CSHB-6	P-4
40D...	CM5X0.8X16	CSHB-6	P-4
50S...	CHHM5-18	CSHB-6	P-4
50D...	CM5X0.8X16	CSHB-6	P-4

MY-T SERIES

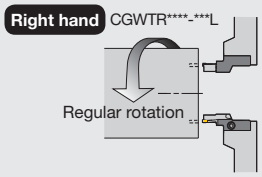
#S/D##R/L+CGWTR/L

Blades of "My-T" toolholders CGWSR/L-#S/D & CGWTR/L-#S/D for face grooving & turning

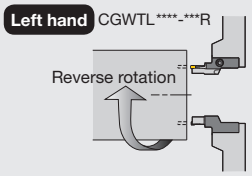




Right hand (R) shown.
The dashed line shows 20 mm square shank tools.



Shank: Right hand
Blade: Left hand



Shank: Left hand
Blade: Right hand

Designation	W	øDm	øDmax	ar	h	b	L1	h1	f	Insert	Shank
30S3040R/L	3	30	40	10	20/25	20/25	150	20/25	52.25	G*30, GE30-AL	CGWTL/R...
30S4050R/L	3	40	50	10	20/25	20/25	150	20/25	52.25	G*30, GE30-AL	CGWTL/R...
30S5065R/L	3	50	65	10	20/25	20/25	150	20/25	52.25	G*30, GE30-AL	CGWTL/R...
30S6590R/L	3	65	90	10	20/25	20/25	150	20/25	52.25	G*30, GE30-AL	CGWTL/R...
30S90150R/L	3	90	150	10	20/25	20/25	150	20/25	52.25	G*30, GE30-AL	CGWTL/R...
30S150500R/L	3	150	500	10	20/25	20/25	150	20/25	52.25	G*30, GE30-AL	CGWTL/R...
40S3545R/L	4	35	45	14	20/25	20/25	150	20/25	52.25	G*40, GE40-AL	CGWTL/R...
40S4555R/L	4	45	55	14	20/25	20/25	150	20/25	52.25	G*40, GE40-AL	CGWTL/R...
40S5580R/L	4	55	80	14	20/25	20/25	150	20/25	52.25	G*40, GE40-AL	CGWTL/R...
40S80140R/L	4	80	140	14	20/25	20/25	150	20/25	52.25	G*40, GE40-AL	CGWTL/R...
40S140500R/L	4	140	500	14	20/25	20/25	150	20/25	52.25	G*40, GE40-AL	CGWTL/R...
40D3545R/L	4	35	45	22	20/25	20/25	150	20/25	60.25	G*40, GE40-AL	CGWTL/R...
40D4555R/L	4	45	55	22	20/25	20/25	150	20/25	60.25	G*40, GE40-AL	CGWTL/R...
40D5580R/L	4	55	80	22	20/25	20/25	150	20/25	60.25	G*40, GE40-AL	CGWTL/R...
40D80140R/L	4	80	140	22	20/25	20/25	150	20/25	60.25	G*40, GE40-AL	CGWTL/R...
40D140500R/L	4	140	500	22	20/25	20/25	150	20/25	60.25	G*40, GE40-AL	CGWTL/R...
50S3545R/L	5	35	45	14	20/25	20/25	150	20/25	52.25	G*50	CGWTL/R...
50S4555R/L	5	45	55	14	20/25	20/25	150	20/25	52.25	G*50	CGWTL/R...
50S5575R/L	5	55	75	14	20/25	20/25	150	20/25	52.25	G*50	CGWTL/R...
50S75130R/L	5	75	130	14	20/25	20/25	150	20/25	52.25	G*50	CGWTL/R...
50S130500R/L	5	130	500	14	20/25	20/25	150	20/25	52.25	G*50	CGWTL/R...
50D3545R/L	5	35	45	22	20/25	20/25	150	20/25	60.25	G*50	CGWTL/R...
50D4555R/L	5	45	55	22	20/25	20/25	150	20/25	60.25	G*50	CGWTL/R...
50D5575R/L	5	55	75	22	20/25	20/25	150	20/25	60.25	G*50	CGWTL/R...
50D75130R/L	5	75	130	22	20/25	20/25	150	20/25	60.25	G*50	CGWTL/R...
50D130500R/L	5	130	500	22	20/25	20/25	150	20/25	60.25	G*50	CGWTL/R...

- There are 2 shank type of CGWSR/L and CGWTR/L.
- CGWSR/L Shank : The right hand blade set(...R) is used with right hand shank(CGWSR...) and the left hand blade set(...L) is used with left hand shank(CGWSL...).
- CGWTR/L Shank : The left hand blade set(...L)is used with right hand shank(CGWTR...) and the right hand blade set(...R)is used with left hand shank(CGWTL...).
- For Applicable insert, see page C098 - C101.

SPARE PARTS

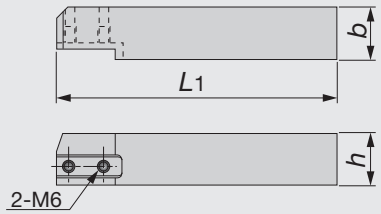




Designation	Clamping screw	Blade screw	Wrench
30S...	CHHM5-18	CSHB-6	P-4
40D...	CM5X0.8X16	CSHB-6	P-4
50S...	CHHM5-18	CSHB-6	P-4
50D...	CM5X0.8X16	CSHB-6	P-4

MY-T SERIES
CGWSR/L

Shank of toolholders CGWSR/L-WG, -WG-L, -G, -CGD, -FL-G/TP & -#S/D



Right hand (R) shown.

Designation	h	b	L1
CGWSR/L2020	20	20	137
CGWSR/L2525	25	25	137

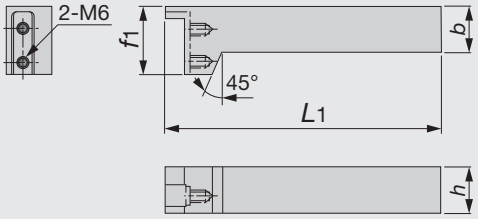
SPARE PARTS



Designation	Blade screw
CGWSR/L...	CSHB-6

MY-T SERIES
CGWTR/L

Shank of perpendicular toolholders CGWTR/L-G, -CGD, -FL & -#S/D



Right hand (R) shown.

Designation	h	b	L1	f1
CGWTR/L2020	20	20	150	37
CGWTR/L2525	25	25	150	37

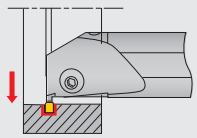
SPARE PARTS

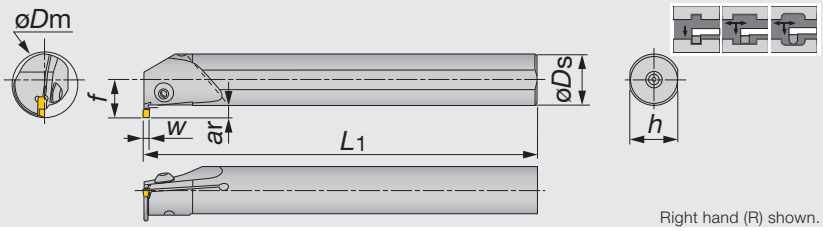


Designation	Blade screw
CGWTR/L...	CSHB-6

MY-T SERIES
CGTR/L

Toolholders for internal grooving





Right hand (R) shown.

Designation	W	øDm	ar	øDs	f	L1	h	Insert
S20Q-CGTR/L30	3	25	3.5	20	14.5	180	18	G*30, GE30-AL
S25R-CGTR/L30	3	32	5	25	18.5	200	23	G*30, GE30-AL
S25R-CGTR/L40	4	32	5	25	18.5	200	23	G*40, GE40-AL
S32S-CGTR/L40	4	40	6	32	23	250	30	G*40, GE40-AL
S25R-CGTR/L50	5	32	5	25	18.5	200	23	G*50
S32S-CGTR/L50	5	40	6	32	23	250	30	G*50

• For Applicable insert, see page C098 - C101.

SPARE PARTS

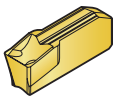



Designation	Clamping screw	Wrench
S***-CGTR/L...	BHM5-14	P-3

1 corner inserts

External grooving and parting off

GE

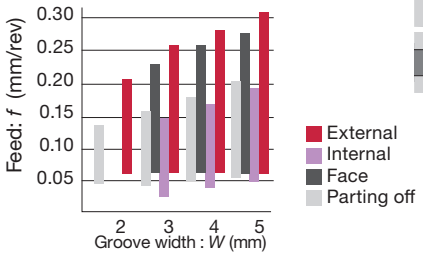


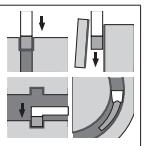
C100

1st choice for external grooving and parting

Excellent chip control for grooving

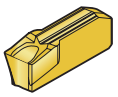
W = 2 - 5 mm





Parting off

GE R/L

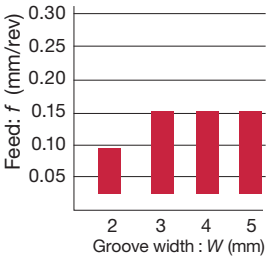


C100

Handed insert

Minimize burr generation when workpiece is cut off

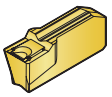
W = 3 - 5 mm





Grooving and travesing

GT

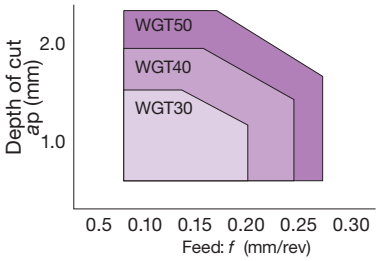


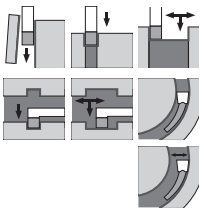
C100

1st choice for traversing

Low cutting force and good chip control for traversing

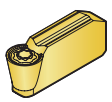
W = 3 - 5 mm





Profiling

GR

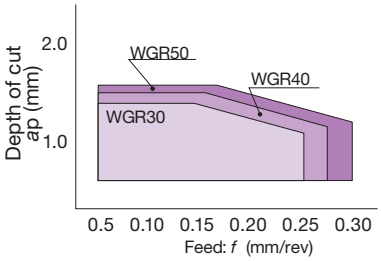


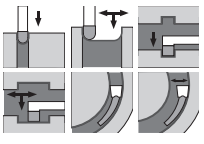
C100

Full radius type

Low cutting force and good chip control for profiling

W = 3 - 5 mm

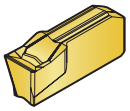




1 corner inserts

Face grooving

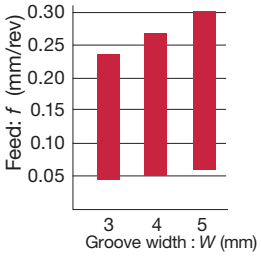
GF

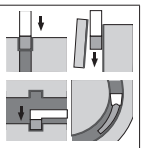


C100

1st choice for face grooving

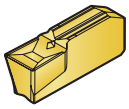
Low cutting force and good chip control for face grooving
W = 3 - 5 mm





Internal grooving

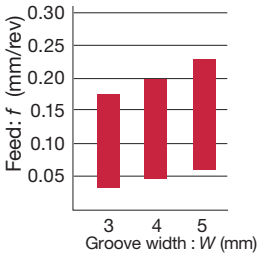
GN

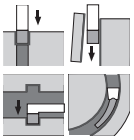


C100

1st choice for internal grooving

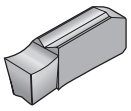
Low cutting force and good chip control for internal grooving
W = 3 - 5 mm





For non-ferrous materials

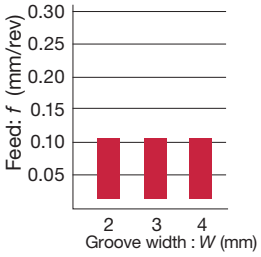
GE-AL

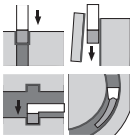


C100

Reduce cutting force and welding due to sharp chipbreaker

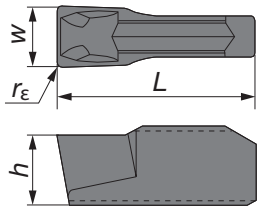
W = 2 - 4 mm





GE

For general grooving

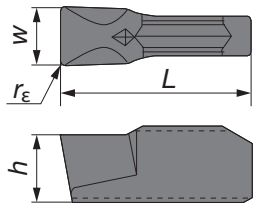


Designation	$W^{+0.1}_{0}$	rε	Coating		Cermet	L	h
			T9125	GH730	NS9530		
GE20	2	0.2		●	●	10	3.5
GE30	3	0.2	●	●	●	10	3.5
GE40	4	0.2	●	●	●	10	4
GE50	5	0.2	●	●	●	12	4.5

● : Line-up

GN

For internal grooving

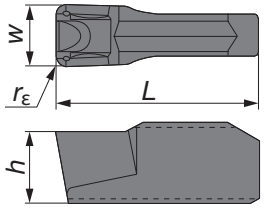


Designation	$W^{+0.1}_{0}$	rε	Coating	L	h
			GH730		
GN30	3	0.2	●	10	3.5
GN40	4	0.2	●	10	4
GN50	5	0.2	●	12	4.5

● : Line-up

GT

For traversing

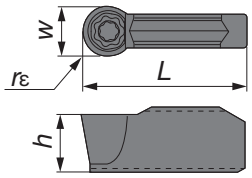


Designation	$W^{+0.1}_{0}$	rε	Coating		Cermet	L	h
			T9125	GH730	NS9530		
GT30	3	0.4		●	●	10	3.5
GT40	4	0.4		●	●	10	4
GT50	5	0.4	●	●	●	12	4.5

● : Line-up

GR

For profiling

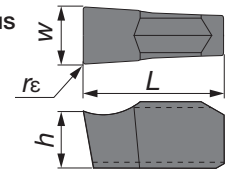


Designation	$W^{+0.1}_{0}$	rε	Coating		Cermet	L	h
			T9125	GH730	NS9530		
GR30	3	1.5		●	●	10	3.5
GR40	4	2.0	●	●	●	10	4
GR50	5	2.5	●	●	●	12	4.5

● : Line-up

GE-AL

For aluminium and non-ferrous metals

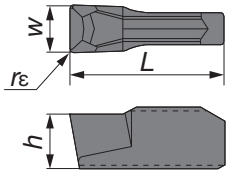


Designation	$W^{\pm 0.025}$	rε	Uncoated	L	h
			KS05F		
GE20-AL	2	0.2	●	10	3.5
GE30-AL	3	0.2	●	10	3.5
GE40-AL	4	0.2	●	10	4

● : Line-up

GF

For face grooving (Improved chip control)

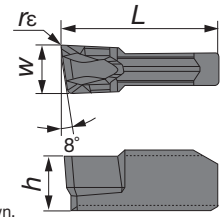


Designation	$W^{+0.1}_{0}$	rε	Coating	Cermet	L	h
			GH730	NS9530		
GF30	3	0.2	●	●	10	3.5
GF40	4	0.2	●	●	10	4
GF50	5	0.2	●	●	12	4.5

● : Line-up

GE-R/L

For parting off (handed insert)



Right hand (R) shown.

Designation	$W^{+0.1}_{0}$	rε	Coating	L	h
			GH730		
GE30R/L	3	0.2	●	10	3.5
GE40R/L	4	0.2	●	10	4
GE50R/L	5	0.2	●	12	4.5

● : Line-up

STANDARD CUTTING CONDITIONS

Workpiece material	Recommended grade	Cutting speed v_c (m/min)
Low carbon steels Alloy steels (~ HB150)	T9125	80 - 200
	NS9530	100 - 200
	GH730	50 - 180
Medium carbon steels Alloy steels (HB150 ~ 250)	T9125	80 - 180
	NS9530	80 - 180
	GH730	50 - 150
High carbon steels Alloy steels (HB250 ~)	T9125	80 - 150
	NS9530	80 - 150
	GH730	50 - 120
Stainless steels	T9125	80 - 150
	GH730	50 - 120
Grey and ductile cast irons	T9125	80 - 200
	GH730	50 - 180
Aluminium alloys, Non-ferrous metals	KS05F	200 - 300

For External

Operation	Feed: *f* (mm/rev) Groove width: *W* (mm)			
	2	3	4	5
Grooving (GE**)	0.06 - 0.2	0.06 - 0.25	0.07 - 0.27	0.07 - 0.3
Parting off (GE**R/L)	0.04 - 0.1	0.04 - 0.14	0.04 - 0.14	0.04 - 0.14
Traversing (GT**)	-	Depth of cut *ap* = 0.5 - 1.5 *f* = 0.06 - 0.2	Depth of cut *ap* = 0.5 - 2 *f* = 0.06 - 0.25	Depth of cut *ap* = 0.5 - 2.5 *f* = 0.06 - 0.27
Profi ling (GR**)	-	Depth of cut *ap* = 0.5 - 1.4 *f* = 0.05 - 0.25	Depth of cut *ap* = 0.5 - 1.5 *f* = 0.05 - 0.26	Depth of cut *ap* = 0.5 - 1.6 *f* = 0.05 - 0.3
Grooving for Aluminium alloys (GE**-AL)	0.03 - 0.1	0.03 - 0.1	0.03 - 0.1	-

Note: For diameter compensation values in traversing, see page **C104**.

For Face

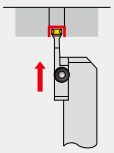
Operation	Feed: *f* (mm/rev) Groove width: *W* (mm)		
	3	4	5
Face grooving (GE**)	0.06 - 0.22	0.06 - 0.24	0.07 - 0.26
Face grooving (GF**)	0.04 - 0.25	0.05 ~ 0.26	0.05 - 0.30
Face traversing (GT**)	Depth of cut *ap* = 0.5 - 1.5 *f* = 0.06 - 0.2	Depth of cut *ap* = 0.5 - 2 *f* = 0.06 - 0.25	Depth of cut *ap* = 0.5 - 2.5 *f* = 0.06 - 0.27
Face traversing (GR**)	Depth of cut ap = 0.5 - 1.4 *f* = 0.05 - 0.25	Depth of cut ap = 0.5 - 1.5 *f* = 0.05 - 0.26	Depth of cut ap = 0.5 - 1.6 *f* = 0.05 - 0.3
Face grooving for aluminium alloys (GE**-AL)	0.03 - 0.1	0.03 - 0.1	-

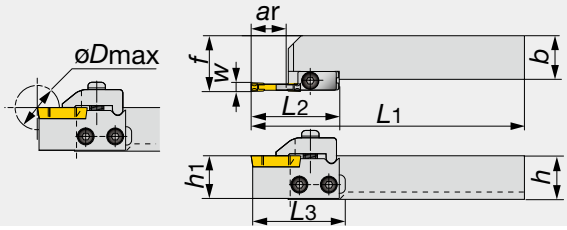
Notes:
- For diameter compensation values in traversing, see page **C104**.
- For occurrence of vibrations in face traversing, set the feed to the lower side of the values show in the above table.

For Internal

Operation	Feed: *f* (mm/rev) Groove width: *W* (mm)		
	3	4	5
Face grooving (GE**)	0.04 - 0.14	0.05 - 0.15	0.05 - 0.16
Face grooving (GN**)	0.04 - 0.16	0.05 - 0.18	0.05 - 0.2
Face traversing (GT**)	*ap* = 0.5 - 1.5 *f* = 0.06 - 0.2	*ap* = 0.5 - 2 *f* = 0.06 - 0.25	*ap* = 0.5 - 2.5 *f* = 0.06 - 0.27
Face traversing (GR**)	*ap* = 0.5 - 1.4 *f* = 0.05 - 0.25	*ap* = 0.5 - 1.5 *f* = 0.05 - 0.26	*ap* = 0.5 - 1.6 *f* = 0.05 - 0.3
Face grooving for aluminium alloys (GE**-AL)	0.03 ~ 0.1	0.03 ~ 0.1	-

Notes:
- For diameter compensation values in traversing, see page **C104**.
- For occurrence of vibrations in face traversing, set the feed to the lower side of the values show in the above table.







Right hand (R) shown.
The dashed line shows
20 mm-square shank tools.

Designation	W	øDmax	ar	h	b	L1	L2	L3	h1	f	Insert	Shank	Blade
CGWSR/L2020-CGDR/L2	2	35	16	20	20	152	45	48.5	20	26.45	CGD200	CGWSR/L2020	CGDR/L2
CGWSR/L2525-CGDR/L2	2	35	16	25	25	152	45	-	25	31.45	CGD200	CGWSR/L2525	CGDR/L2
CGWSR/L2020-CGDR/L3	3	46	21.6	20	20	157.6	50.6	54.1	20	26.45	CGD300	CGWSR/L2020	CGDR/L3
CGWSR/L2525-CGDR/L3	3	46	21.6	25	25	157.6	50.6	-	25	31.45	CGD300	CGWSR/L2525	CGDR/L3
CGWSR/L2020-CGDR/L4	4	46	21.6	20	20	157.6	50.6	54.1	20	26.65	CGD400	CGWSR/L2020	CGDR/L4
CGWSR/L2525-CGDR/L4	4	46	21.6	25	25	157.6	50.6	-	25	31.65	CGD400	CGWSR/L2525	CGDR/L4
CGWSR/L2020-CGDR/L5	5	46	21.6	20	20	157.6	50.6	54.1	20	26.95	CGD500	CGWSR/L2020	CGDR/L5
CGWSR/L2525-CGDR/L5	5	46	21.6	25	25	157.6	50.6	-	25.	31.95	CGD500	CGWSR/L2525	CGDR/L5
CGWSR/L2020-CGDR/L6	6	46	21.6	20	20	157.6	50.6	54.1	20	27.1	CGD600	CGWSR/L2020	CGDR/L6
CGWSR/L2525-CGDR/L6	6	46	21.6	25	25	157.6	50.6	-	25	32.1	CGD600	CGWSR/L2525	CGDR/L6
CGWSR2525-8	7 / 8	50	21.6	25	25	150	-	-	25	26.35	CGD700, CGD800	-	-
CGWSR3232-8	7 / 8	50	21.6	32	32	170	-	-	32	33.35	CGD700, CGD800	-	-

When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.

SPARE PARTS



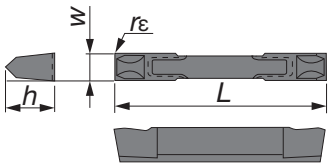




Designation	Blade	Clamp	Clamping screw	Blade screw	Spring pin	Spring	Wrench
CGWSR****-CGDR2	TCR2	CCR2	RT-1	CSHB-6	-	BP-9	P-4
CGWSL****-CGDL2	TCL2	CCL2	RT-1	CSHB-6	-	BP-9	P-4
CGWSR****-CGDR3	TCR3	CCR3	RT-1	CSHB-6	-	BP-9	P-4
CGWSL****-CGDL3	TCL3	CCL3	RT-1	CSHB-6	-	BP-9	P-4
CGWSR****-CGDR4	TCR4	CCR4	RT-1	CSHB-6	-	BP-9	P-4
CGWSL****-CGDL4	TCL4	CCL4	RT-1	CSHB-6	-	BP-9	P-4
CGWSR****-CGDR5	TCR5	CCR5	RT-1	CSHB-6	-	BP-9	P-4
CGWSL****-CGDL5	TCL5	CCL5	RT-1	CSHB-6	-	BP-9	P-4
CGWSR****-CGDR6	TCR6	CCR6	RT-1	CSHB-6	-	BP-9	P-4
CGWSR****-CGDL6	TCL6	CCL6	RT-1	CSHB-6	-	BP-9	P-4
CGWSR****-8	-	CCR/L-8	CHHM6-20	-	5X14AW	BP-9	P-5

INSERT

CGD

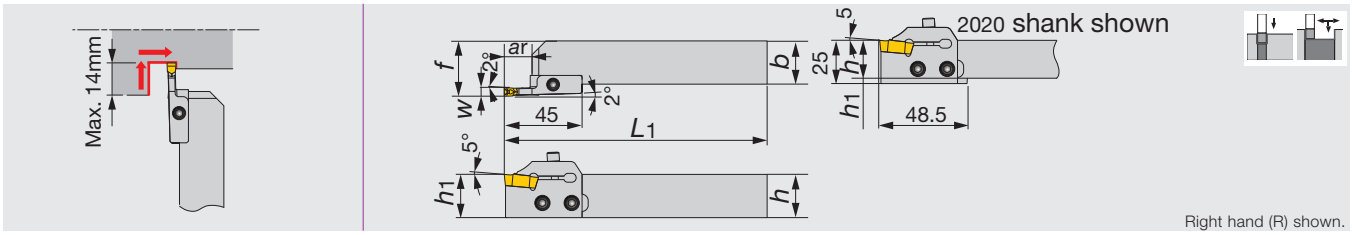


Designation	W±0.025	rε	Coating	Cermet	Uncoated	L	h
			GH330	NS9530	UX30		
CGD200	2	0.2	●	●	●	20	3.25
CGD300	3	0.2	●	●	●	28.6	6.3
CGD400	4	0.2	●	●	●	28.6	6.3
CGD500	5	0.2	●	●	●	28.6	6.3
CGD600	6	0.2	●	●	●	28.6	8.5
CGD700	7	0.2	●		●	28.6	8.5
CGD800	8	0.2	●		●	28.6	8.5

● : Line-up

STANDARD CUTTING CONDITIONS

Operation	Cutting speed v_c (m/min)	Groove width: W (mm) / Feed: f (mm/rev)						
		2	3	4	5	6	7	8
Grooving: Low carbon steels	100 ~ 200	0.08 ~ 0.20	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25
Grooving: Medium carbon steels				0.08 ~ 0.30	0.08 ~ 0.30	0.08 ~ 0.30	0.08 ~ 0.30	0.08 ~ 0.30
Parting off	100 ~ 150	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15	0.08 ~ 0.15



Right hand (R) shown.

Designation	W	ar	h	b	L1	h1	f	Insert	Shank	Blade
CGWSR/L2020-FLR/L3GP	3	10	20	20	152	20	27	FLEX30R/L	CGWSR/L2020	FLR/L3GP
CGWSR/L2525-FLR/L3GP	3	10	25	25	152	25	32	FLEX30R/L	CGWSR/L2525	FLR/L3GP
CGWSR/L2020-FLR/L4GP	4	12	20	20	152	20	27	FLEX40R/L	CGWSR/L2020	FLR/L4GP
CGWSR/L2525-FLR/L4GP	4	12	25	25	152	25	32	FLEX40R/L	CGWSR/L2525	FLR/L4GP
CGWSR/L2020-FLR/L5GP	5	14	20	20	152	20	27	FLEX50R/L	CGWSR/L2020	FLR/L5GP
CGWSR/L2525-FLR/L5GP	5	14	25	25	152	25	32	FLEX50R/L	CGWSR/L2525	FLR/L5GP

- When ordering, shank and blade ass'y Cat. No. or shank and blade-set are required.
- When using a right or left hand blade-set, the right hand blade-set is used with right hand shank and the left hand blade-set is used with left hand shank.

Grooving Tool

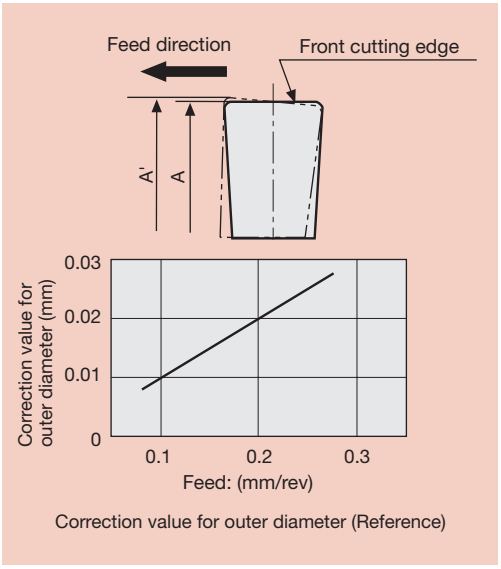
SPARE PARTS

Designation	Clamping screw	Blade screw	Wrench
CGWSR/L****-FLR/L*GP	CHHM5-18	CSHB-6	P-4

Cautionary Notes

When performing OD machining, the tool point must be set at a right angle to the axial direction of the work.

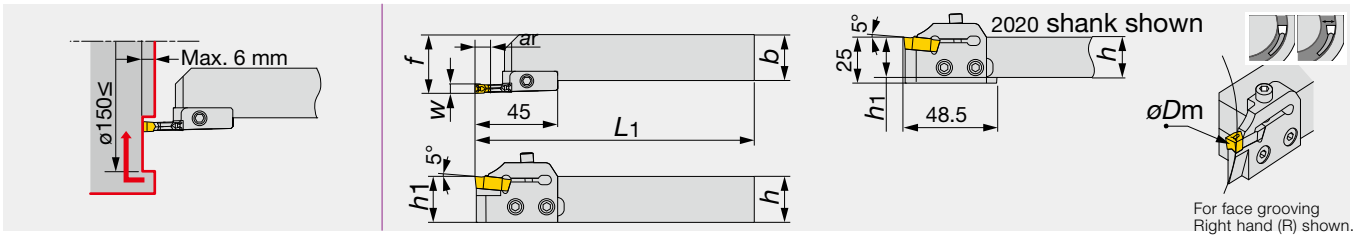
- When replacing an insert, the replacement should be made only after completely removing any chips or other foreign matter from the tool clamping area on the holder by using compressed air, etc.
- Never tighten the insert mounting screws when an insert has not been installed since doing so can deform the screws and prevent the future installation of an insert.
- Flex-Tool has mechanism in which the end cutting edge angle is formed by accepting a cutting force. In external grooving, there is a possibility that if the cutting conditions (feed and depth of cut) are set too high, the programmed diameter will not be achieved. To prevent this problem, it is necessary to perform a compensation in the program by an amount that is equal to the amount A'-A that is shown in the drawing on the right. The values of compensation corresponding to the feeds are also shown in the graph.



Correction value for outer diameter (Reference)

The length of blade for 5mm width is shortened 2mm compared from the old type blade. Please notice and read the instruction manual packaged in the box.

MY-T SERIES
CGWSR/L-FLR/L5TP
Toolholders for face grooving & turning



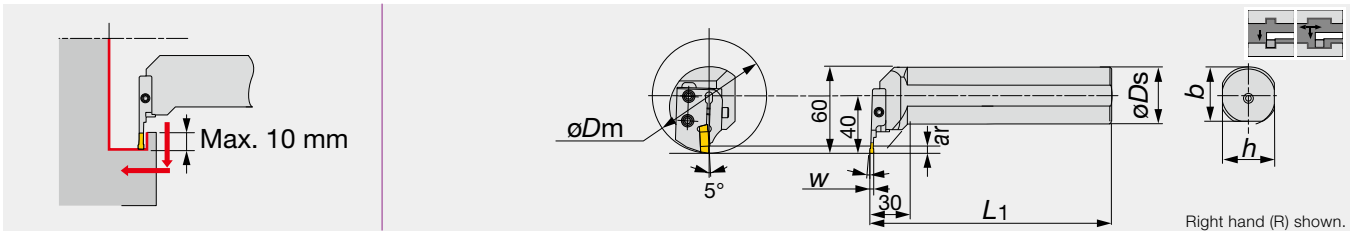
Designation	W	øDm	ar	h	b	L1	h1	f	Insert	Shank	Blade
CGWSR/L2020-FLR/L5TP	5	150	6	20	20	152	20	27	FLEX50R/L	CGWSR/L2020	FLR/L5TP
CGWSR/L2525-FLR/L5TP	5	150	6	25	25	152	25	32	FLEX50R/L	CGWSR/L2525	FLR/L5TP

• When ordering, shank and blade ass'y Cat. No. or shank and blade set are required.
• When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.

SPARE PARTS

Designation	Clamping screw	Blade screw	Wrench
CGWSR/L****-FLR/L5TP	CHHM5-18	CSHB-6	P-4

MY-T SERIES
CGWTR/L0040-FLL/R3NP
Toolholders for internal grooving & turning



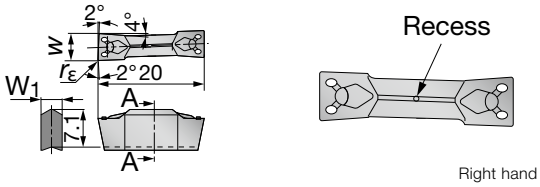
Designation	W	øDm	ar	øDs	L1	h	b	Insert	Shank	Blade
CGWTR/L0040-FLL/R3NP	3	80	10	40	180	37.5	37	FLEX30L/R	CGWTR/L0040	FLL/R3NP

• When ordering, shank and blade ass'y Cat. No. or shank and blade set are required.
• When using a right or left hand blade set, the right hand blade set is used with left hand shank and the left hand blade set is used with right hand shank.

SPARE PARTS

Designation	Clamping screw	Blade screw	Wrench
CGWTR/L0040-FLL/R3NP	CHHM5-18	CSHB-6	P-4

APPLICABLE INSERT
FLEX(R/L)

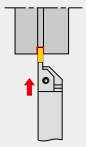


Right hand (R) shown.

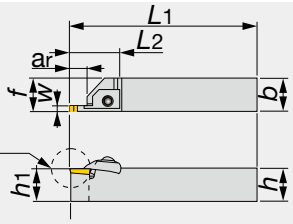
Designation	W±0.05	rε	Coating	Cermet	Uncoated	W1
			T9125	NS9530	UX30	
FLEX30R/L	3	0.4		●		2.15
FLEX40R/L	4	0.4		●		3.1
FLEX50R/L	5	0.4	●	●	●	4

● : Line-up

External toolholders for grooving & parting, with double-ended inserts



Max. parting dia.
øDmax for solid bar





Right hand (R) shown.

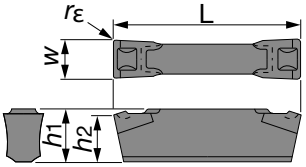
Designation	W	øDmax	ar	h	b	L1	L2	h1	f	Insert
CTWR/L2020-3	3	32	14	20	20	150	41	20	20.25	CTD3
CTWR/L2525-3	3	32	14	25	25	150	41	25	25.25	CTD3
CTWR/L2020-4	4	32	14	20	20	150	41	20	20.25	CTD4
CTWR/L2525-4	4	32	14	25	25	150	41	25	25.25	CTD4
CTWR/L2525-5	5	42	20	25	25	150	46	25	25.25	CTD5

SPARE PARTS

Designation	Clamp	Pin	Clamping screw	Washer	Wrench
CTWR2020-3	CTC-3R	BP-360	CTS-M6	CDW6	P-4
CTWL2020-3	CTC-3L	BP-360	CTS-M6	CDW6	P-4
CTWR2525-3	CTC-3R	BP-360	CTS-M6	CDW6	P-4
CTWL2525-3	CTC-3L	BP-360	CTS-M6	CDW6	P-4
CTWR2020-4	CTC-4R	BP-360	CTS-M6	CDW6	P-4
CTWL2020-4	CTC-4L	BP-360	CTS-M6	CDW6	P-4
CTWR2525-4	CTC-4R	BP-360	CTS-M6	CDW6	P-4
CTWL2525-4	CTC-4L	BP-360	CTS-M6	CDW6	P-4
CTWR2525-5	CTC-5R	BP-360	CTS-M6	CDW6	P-4
CTWL2525-5	CTC-5L	BP-360	CTS-M6	CDW6	P-4

APPLICABLE INSERT

CTD

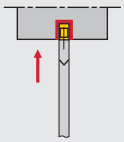


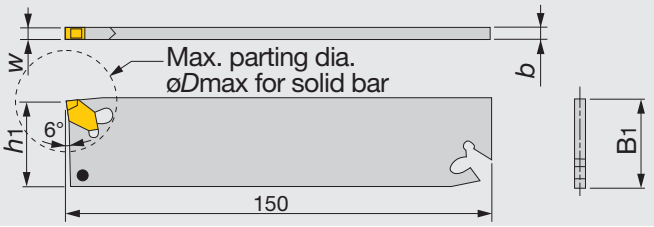
Designation	W±0.1	rε	AH725	L	h1	h2
CTD3	3	0.2	●	20	4.3	4
CTD4	4	0.2	●	20	5.3	5
CTD5	5	0.2	●	25	6.3	6

● : Line-up

STANDARD CUTTING CONDITIONS

Operation (Workpiece material)		Cutting speed v_c (m/min)	Feed: f (mm/rev)		
			CTD3	CTD4	CTD5
Grooving	Low carbon steels	100 ~ 150	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25
	Medium carbon steels		0.08 ~ 0.25	0.08 ~ 0.3	0.08 ~ 0.3
Parting off		100 ~ 150	0.08 ~ 0.15		





Designation	W	øDmax	b	h1	B1	Insert
CTH32-3	3	100	2.2	30.27	32.24	CT*3...
CTH32-4	4	100	3.2	30.13	31.97	CT*4...
CTH32-5	5	100	4.2	30	31.7	CT*5...
CTH32-6	6	100	5.2	29.87	31.44	CT*6...

• For Applicable insert, see page C110.

SPARE PARTS



Designation	Wrench
CTH...	CTL-2

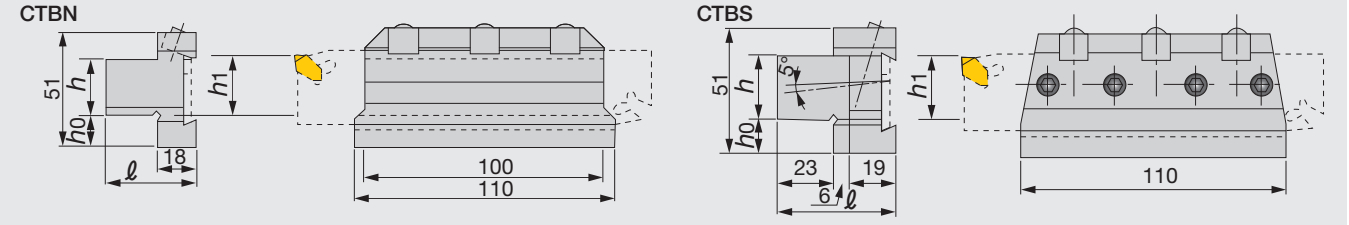
STANDARD CUTTING CONDITIONS FOR CTH, CTS

Operation / Workpiece material		Cutting speed v_c (m/min)	Feed: f (mm/rev)					
			CTN3	CTN4	CTN5	CTN6	CTR/L□	CT□□K
Grooving	Low carbon steels	100 ~ 150	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.25	0.08 ~ 0.3	-	-
	Medium carbon steels			0.08 ~ 0.3	0.08 ~ 0.3			
	Cast irons, Light alloys	100 ~ 200	-	-	-	-		0.1 ~ 0.3
Parting off	Low carbon steels	100 ~ 150	0.08 ~ 0.2	0.08 ~ 0.2	0.08 ~ 0.2	0.08 ~ 0.2	0.08 ~ 0.15	-
	Medium carbon steels							
	Cast irons, Light alloys	100 ~ 200	-	-	-	-	-	0.1 ~ 0.3

Note: When using CTS type (blade type) toolholders, reduce the values given in the table by 80 %.

CTBN/S-32

Tool block for CTH blades



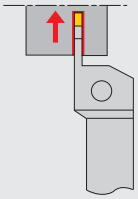
Designation	*h*	h_1	h_0	*ℓ*	Blade
CTBN20-32	2	20.2	19.6	38	CTH32...
CTBN25-32	2	25.2	14.6	38	CTH32...
CTBN32-32	3	32.2	7.6	43	CTH32...
CTBS20-32	2	20.2	19.4	48	CTH32...
CTBS25-32	2	25.2	14.4	48	CTH32...
CTBS32-32	32	32.2	7.4	48	CTH32...

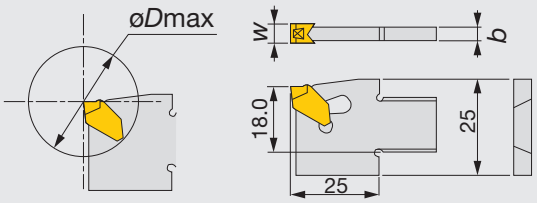
SPARE PARTS

Designation	Wedge clamping screw	Wedge	Wrench
CTBN**-32	NDS-8S	CTW-2	P-4
CTBS**-32	DS-8	CTW-2	P-4

CTSR/L

Blades of CTS for parting





Right hand (R) shown.

Designation	W	øDmax	b	Insert
CTSR/L25-3	3	50	2.2	CT*3...
CTSR/L25-4	4	50	3.2	CT*4...
CTSR25-5	5	50	4.2	CT*5...
CTSR25-6	6	50	5.2	CT*6...

- Refer to the assembly drawing of "CTBR/L" regarding the dimensions.
- For Applicable insert, see page C110.

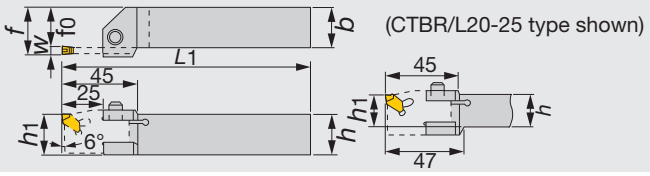
SPARE PARTS



Designation	Wrench
CTSR/L...	CTL-2

TOOLHOLDER

CTBR/L



(CTBR/L20-25 type shown)

Right hand (R) shown.

W	Designation	Blade	ar	h1	h	b	L1	f0	f
3,4	CTBR/L20-25	CTSR/L25-3/4	Max.25Max.cut off dia.ø50	20.2	20	25	150	19.6	22.6/23.6
3,4,5,6	CTBR/L25-25	CTSR/L25-3/4/5/6	Max.25Max.cut off dia.ø50	25.2	25	25	150	24.6	27.6/28.6/29.6/30.6

When using a right or left hand blade set, the right hand blade set is used with right hand shank and the left hand blade set is used with left hand shank.

SPARE PARTS



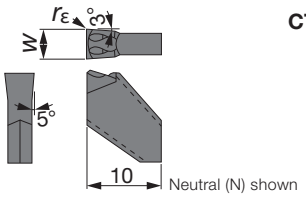


Designation	Clamping Screw	Wrench
CTBR/L...	M6×20	P-5

INSERT for CTH, CTS TYPE PARTING OFF TOOLHOLDER

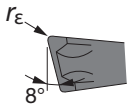
CTN/CTR/CTL

CTN



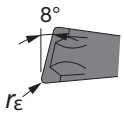
Neutral (N) shown

CTR



Right hand (R)

CTL

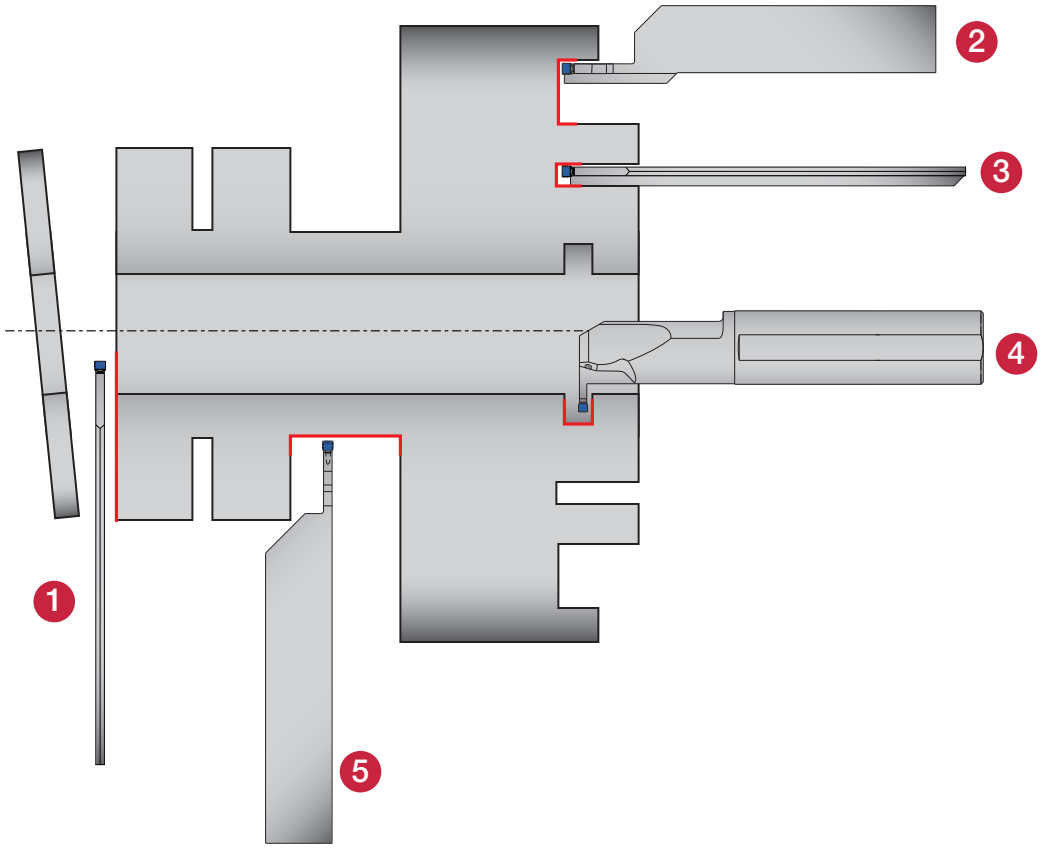


Left hand (L)

Designation	W±0.2	rε	Coating T313W			Uncoated TH10		
			N	R	L	N	R	L
CTN3	3	0.2	●					
CTR/L3	3	0.2		●	●			
CTN3K	3	0.2				●		
CTR/L3K	3	0.2					●	●
CTN4	4	0.2	●					
CTR/L4	4	0.2		●	●			
CTN4K	4	0.2				●		
CTR/L4K	4	0.2					●	●
CTN5	5	0.3	●					
CTR/L5	5	0.3		●				
CTN5K	5	0.3				●		
CTR/L5K	5	0.3					●	
CTN6	6	0.3	●					
CTN6K	6	0.3				●		

● : Line-up

The insert's secure & unique clamping guarantees reliable machining in grooving and turning



1 EGP
Blade type
W = 4 - 6 mm
Max. parting Dia.:
120 mm
Shank size:
20 - 32 mm
C113

EGP-CHP
Blade type
W = 4 - 6 mm
Max. parting Dia.:
120 mm
Shank size:
20 - 32 mm
C114

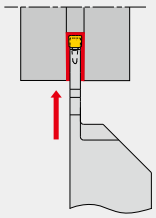
2 ETFR/L
W = 4 - 6 mm
ar = 15 - 32 mm
Shank size:
20 - 25 mm
C116

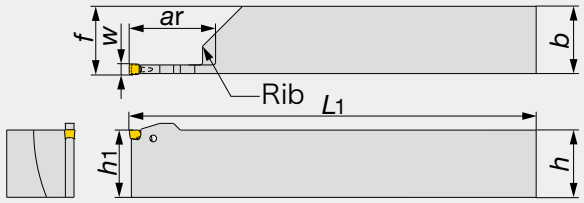
ETFR-CHP
W = 4 mm
ar = 15 - 32 mm
Shank size:
25 mm
C117

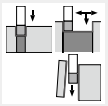
3 EFPR/L
Blade type
W = 4 - 6 mm
ar = Max. 65 mm
Shank size:
25 mm
C118

4 ETIR/L
W = 4 - 6 mm
ar = 6 - 11 mm
Shank size:
ø16 - ø32 mm
C115

5 ETER/L
W = 4 - 6 mm
ar = 25 - 35 mm
Shank size:
20 - 32 mm
C112







Right hand (R) shown.

Designation	W	ar	h1	b	h	L1	f	Insert	Rib
ETER/L2020-4T25	4	25	20	20	20	125	20.4	E**4...	Without
ETER/L2525-4T25	4	25	25	25	25	150	25.4	E**4...	Without
ETER/L3232-4T30	4	30	32	32	32	170	32.4	E**4...	Without
ETER/L2020-5T25	5	25	20	20	20	125	20.4	ETX5...	Without
ETER/L2525-5T32	5	32	25	25	25	150	25.4	ETX5...	Without
ETER/L3232-5T32	5	32	32	32	32	170	32.4	ETX5...	Without
ETER/L2525-6T35	6	35*	25	25	25	150	25.4	ETX6...	With
ETER/L3232-6T35	6	35**	32	32	32	170	32.4	ETX6...	With

* Max. ø170
**Max. ø340

• For Applicable insert, see page C120 - C121.



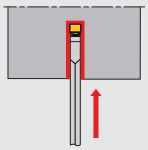
SPARE PARTS

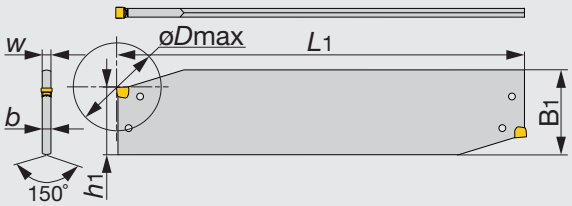
Designation	Wrench*
ETER/L2020-4T25	ECW-456EF
ETER/L2525-4T25	ECW-456EF
ETER/L3232-4T30	ECW-456EF
ETER/L2020-5T25	ECW-456EF
ETER/L2525-5T32	ECW-456EF
ETER/L3232-5T32	ECW-456EF
ETER/L2525-6T35	ECW-456EF
ETER/L3232-6T35	ECW-456EF

*Optional parts

EGP

Blades for external deep grooving & parting





Designation	W	øDmax	h1	b	B1	L1	Insert
EGP26-4D	4	80	21.4	3.2	26	150	E**4...
EGP32-4D	4	100	24.9	3.2	32	150	E**4...
EGP32-5D	5	120	24.9	4.0	32	150	ETX5...
EGP32-6D	6	120	24.9	5.2	32	150	ETX6...

- øDmax: Max. parting off diameter
- For Applicable insert, see page C120 - C121.

SPARE PARTS



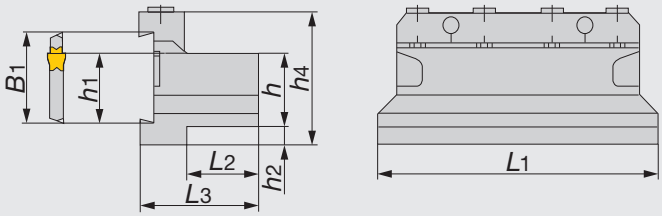
Designation	Wrench*
EGP26-4D	ECW-456EF
EGP32-*D	ECW-456EF

*Optional parts

EASYMCUT ULTI

CTBU

Tool block for CGP and EGP blades



Designation	h1	B1	L1	h	h2	h4	L2	L3	Blade
CTBU20-26	21.4	26	86	20	9	43	21	38	EGP26...
CTBU25-26	21.4	26	110	25	5	45	23	42	EGP26...
CTBU20-32	24.8	32	100	20	13	50	19	38	EGP32...
CTBU25-32	24.8	32	110	25	8	50	23	42	EGP32...
CTBU32-32	24.8	32	110	32	5	54	29	48	EGP32...

SPARE PARTS

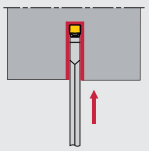


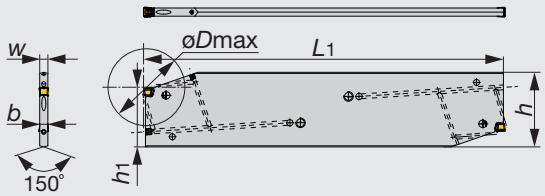


Designation	Clamp	Clamping screw	Wrench
CTBU20-26	CT-86	CM6X30-S	P-5
CTBU25-26	CT-105	CM6X30-S	P-5
CTBU20-32	CT-100	CM6X30-S	P-5
CTBU25, 32-32	CT-110	CM6X30-S	P-5

EGP-CHP

Blades for external deep grooving & parting, with channels for high pressure coolant.





Designation	W	øDmax	ar	h1	b	L1	h1	Insert
EGP32-4D-CHP	4	100	50	32	3.4	150	24.9	E**4...
EGP32-5D-CHP	5	120	60	32	4.2	160	24.9	ETX5...
EGP32-6D-CHP	6	120	60	32	5.2	160	24.9	ETX6...

- øDmax: Max. parting off diameter
- For Applicable insert, see page C120 - C121.

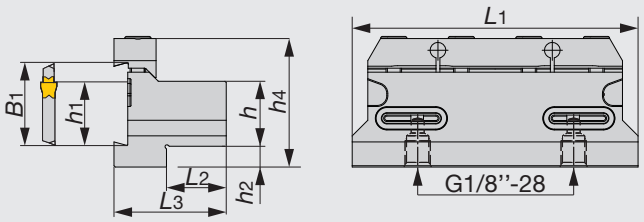
SPARE PARTS

Designation	Sealing screw	Wrench*
EGP32-*D-CHP	SGC340	ECW-456EF

*Optional parts

CTBU-CHP

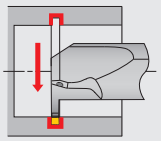
Tool blocks for external deep parting and grooving blades with channels for high pressure coolant

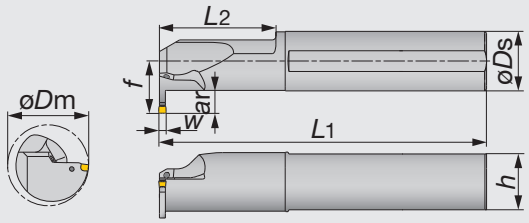


Designation	h	B1	L2	L1	h1	h2	h4	L3	Blade
CTBU25-32-CHP	25	32	23	110	24.8	8	49.4	43.2	EGP32-*D-CHP

SPARE PARTS

Designation	Sealing screw	Clamp	Wrench	O-ring
CTBU25-32-CHP	SRM6X16DIN912-12.9	CT-110	P-5	OR14X2.5NN





Right hand (R) shown.

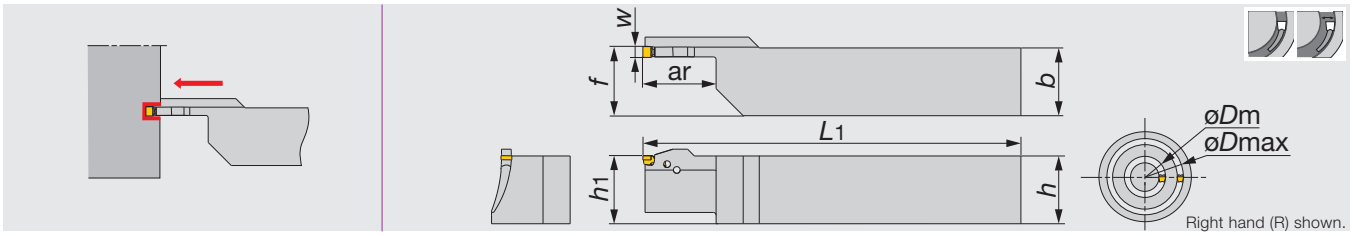
Designation	W	øDm	ar	øDs	h	L1	f	L2	Insert
ETIR/L16-4T06-D200	4	20	6	16	15	160	15	40	E**4...
ETIR/L20-4T06-D250	4	25	6	20	18	160	17	40	E**4...
ETIR/L25-4T09-D320	4	32	9	25	23	200	22.5	40	E**4...
ETIR/L32-4T11-D400	4	40	11	32	30	250	28	60	E**4...
ETIR/L32-5T11-D400	5	40	11	32	30	250	28	60	ETX5...
ETIR/L32-6T11-D400	6	40	11	32	30	250	28	60	ETX6...

- Wrench should be ordered separately.
- For Applicable insert, see page C120 - C121.

SPARE PARTS

Designation	Seal cap (internal screw)	Wrench*
ETIR/L16-4T06-D200	CA-16(M6)	ECW-456I
ETIR/L20-4T06-D250	CA-20(M6)	ECW-456I
ETIR/L25-4T09-D320	CA-25(R1/8")	ECW-456EF
ETIR/L32...	CA-32(R1/8")	ECW-456EF

*Optional parts



Designation	W	øDm	øDmax	ar	h	b	L1	h1	f	Insert
ETFR/L2020-4T15-030035	4	30	35	15	20	20	125	20	20.5	E**4...
ETFR/L2525-4T15-030035	4	30	35	15	25	25	150	25	25.5	E**4...
ETFR/L2020-4T22-035045	4	35	45	22	20	20	125	20	20.5	E**4...
ETFR/L2525-4T22-035045	4	35	45	22	25	25	150	25	25.5	E**4...
ETFR/L2020-4T25-045055	4	45	55	25	20	20	125	20	20.5	E**4...
ETFR/L2525-4T25-045055	4	45	55	25	25	25	150	25	25.5	E**4...
ETFR/L2020-4T25-055075	4	55	75	25	20	20	125	20	20.5	E**4...
ETFR/L2525-4T25-055075	4	55	75	25	25	25	150	25	25.5	E**4...
ETFR/L2020-4T25-075120	4	75	120	25	20	20	125	20	20.5	E**4...
ETFR/L2525-4T25-075120	4	75	120	25	25	25	150	25	25.5	E**4...
ETFR/L2525-4T25-120200	4	120	200	25	25	25	150	25	25.5	E**4...
ETFR/L2525-4T25-200500	4	200	500	25	25	25	150	25	25.5	E**4...
ETFR/L2525-5T25-035045	5	35	45	25	25	25	150	25	25.5	ETX5...
ETFR/L2525-5T25-045055	5	45	55	25	25	25	150	25	25.5	ETX5...
ETFR/L2525-5T25-055075	5	55	75	25	25	25	150	25	25.5	ETX5...
ETFR/L2525-5T32-075120	5	75	120	32	25	25	150	25	25.5	ETX5...
ETFR/L2525-5T32-120200	5	120	200	32	25	25	150	25	25.5	ETX5...
ETFR/L2525-5T32-200500	5	200	500	32	25	25	150	25	25.5	ETX5...
ETFR/L2525-6T25-040055	6	40	55	25	25	25	150	25	25.5	ETX6...
ETFR/L2525-6T25-055075	6	55	75	25	25	25	150	25	25.5	ETX6...
ETFR/L2525-6T32-075120	6	75	120	32	25	25	150	25	25.5	ETX6...
ETFR/L2525-6T32-120200	6	120	200	32	25	25	150	25	25.5	ETX6...
ETFR/L2525-6T32-200500	6	200	500	32	25	25	150	25	25.5	ETX6...

• For Applicable insert, see page C120 - C121.

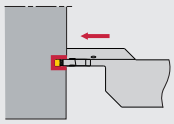
SPARE PARTS

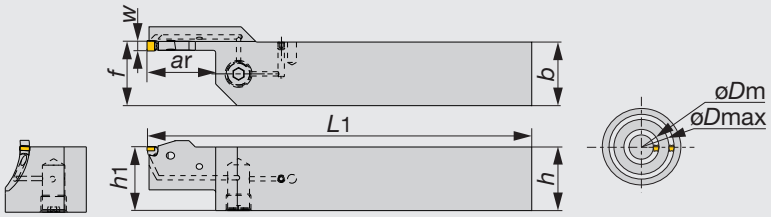
Designation	Wrench*
ETFR/L...	ECW-456EF

*Optional parts

ETFR-CHP

Toolholders for face grooving & turning, with channels for high pressure coolant.





Right hand (R) shown.

Designation	W	øDm	øDmax	ar	h	b	L1	h1	f	Insert
ETFR2525-4T15-030035-CHP	4	30	35	15	25	25	150	25	25.5	E**4...
ETFR2525-4T22-035045-CHP	4	35	45	22	25	25	150	25	25.5	E**4...
ETFR2525-4T25-045055-CHP	4	45	55	25	25	25	150	25	25.5	E**4...
ETFR2525-4T25-055075-CHP	4	55	75	25	25	25	150	25	25.5	E**4...
ETFR2525-4T25-075120-CHP	4	75	120	25	25	25	150	25	25.5	E**4...
ETFR2525-4T25-120200-CHP	4	120	200	25	25	25	150	25	25.5	E**4...
ETFR2525-4T25-200500-CHP	4	200	500	25	25	25	150	25	25.5	E**4...

• For Applicable insert, see page C120 - C121.

SPARE PARTS

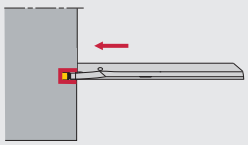


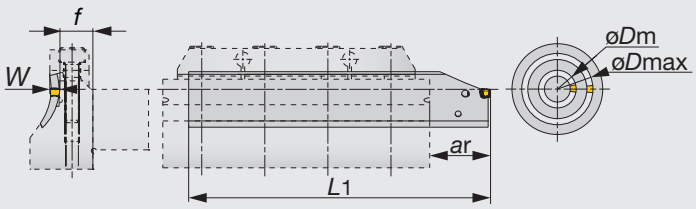
Designation	Wrench*
ETFR****-CHP	ECW-456EF

*Optional parts

EFPR/L

Face grooving blade







Right hand (R) shown

Designation	W	øDm	øDmax	f	L1	min ar	max ar	Insert
EFPR/L-4-030035	4	30	35	13.6	125	18	50	E**4...
EFPR-4-035045	4	35	45	13.6	125	18	50	E**4...
EFPR-4-045055	4	45	55	13.6	125	18	50	E**4...
EFPR-4-055075	4	55	75	13.6	125	18	50	E**4...
EFPR-4-075120	4	75	120	13.6	140	18	65	E**4...
EFPR-4-120200	4	120	200	13.6	140	18	65	E**4...
EFPR-4-200500	4	200	500	13.6	140	18	65	E**4...
EFPR-5-035045	5	35	45	13.6	125	19	50	ETX5...
EFPR-5-045055	5	45	55	13.6	125	19	50	ETX5...
EFPR-5-055075	5	55	75	13.6	125	19	50	ETX5...
EFPR-5-075120	5	75	120	13.6	140	19	65	ETX5...
EFPR-5-120200	5	120	200	13.6	140	19	65	ETX5...
EFPR-5-200500	5	200	500	13.6	140	19	65	ETX5...
EFPR-6-045055	6	45	55	13.6	125	20	50	ETX6...
EFPR-6-055075	6	55	75	13.6	125	20	50	ETX6...
EFPR-6-075120	6	75.	120	13.6	140	20	65	ETX6...
EFPR-6-120200	6	120	200	13.6	140	20	65	ETX6...
EFPR/L-6-200500	6	200	500	13.6	140	20	65	ETX6...

• For Applicable insert, see page C120 - C121.

SPARE PARTS

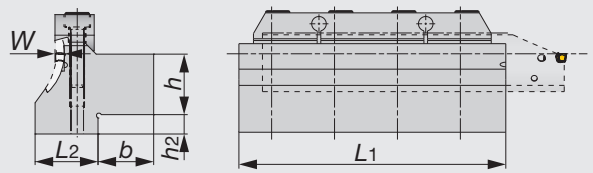


Designation	Wrench*
EFPR/L...	ECW-456I

*Optional parts

CTBU-CHP for EFPR/L

Tool block for EFP blades, with channels for high pressure coolant.



Designation	W	øDm	h	b	h2	L2	L1	Blade
CTBU25-030-4-CHP	4	30	25	23	7.6	26	110	EFPR/L-4-030035
CTBU25-035-4/5-CHP	4, 5	35	25	23	7.6	26	110	EFPR-4/5-035045
CTBU25-045-4/5-CHP	4, 5	45	25	23	7.6	26	110	EFPR-4/5-045055
CTBU25-055-4/5-CHP	4, 5	55	25	23	7.6	24	110	EFPR-4/5-055075
CTBU25-075-4/5-CHP	4, 5	75	25	23	7.6	22	110	EFPR-4/5-075120
CTBU25-120-4/5-CHP	4, 5	120	25	23	7.6	21	110	EFPR-4/5-120200
CTBU25-200-4/5-CHP	4, 5	200	25	23	7.6	18.5	110	EFPR-4/5-200500
CTBU25-045-6-CHP	6	45	25	23	7.6	28	110	EFPR-6-045055
CTBU25-055-6-CHP	6	55	25	23	7.6	26	110	EFPR-6-055075
CTBU25-075-6-CHP	6	75	25	23	7.6	24	110	EFPR-6-075120
CTBU25-120-6-CHP	6	120	25	23	7.6	23	110	EFPR-6-120200
CTBU25-200-6-CHP	6	200	25	23	7.6	20.5	110	EFPR/L-6-200500

SPARE PARTS

Designation	Clamp	Clamping screw	Wrench
CTBU25-***-*-CHP	CT-110	CM6X30-S	P-5

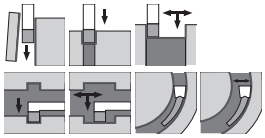
ETX type



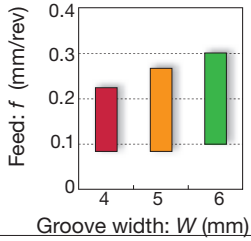
C121

Multi-functional insert
Well-balanced sharpness and strength

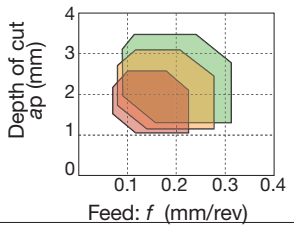
W = 4 - 6 mm



■ Standard feed for grooving



■ Standard feed and depth of cut for turning



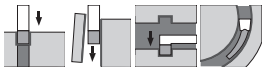
EGM type



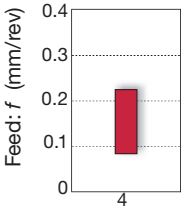
C121

First choice for parting off
Well-designed edge with high strength

W = 4 mm



■ Standard feed for grooving

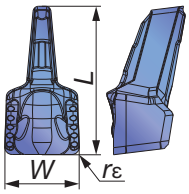




INSERT

ETX



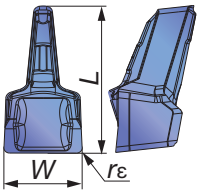


Designation	W±0.05	rε	AH725	L
ETX4-040	4	0.4	●	8
ETX5-040	5	0.4	●	10
ETX6-040	6	0.4	●	12

● : Line-up

EGM





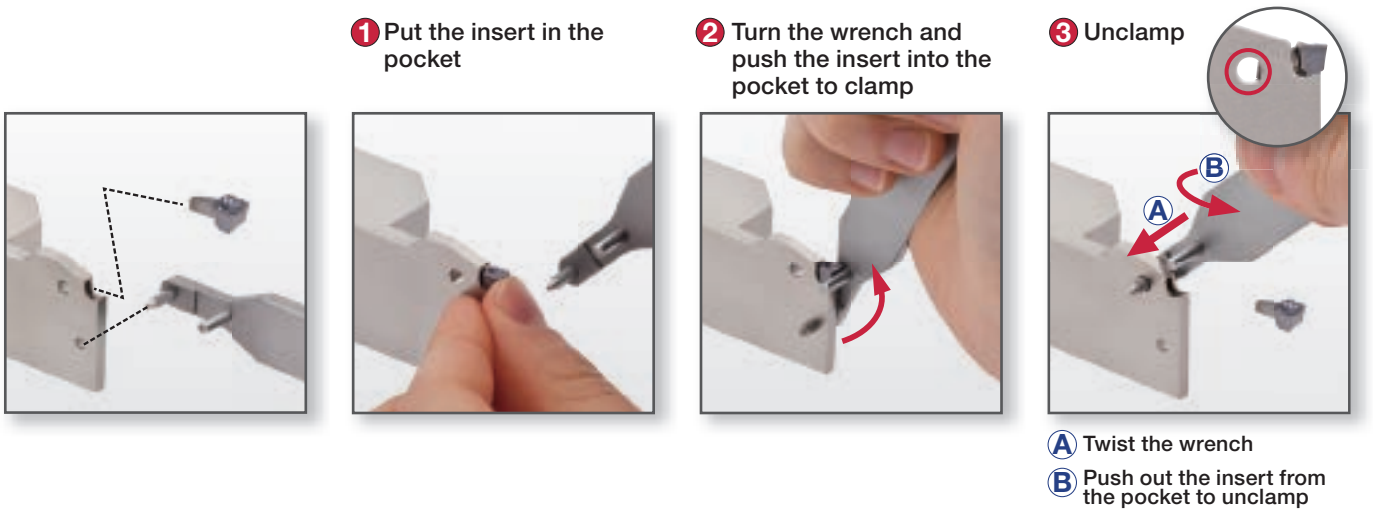
Designation	W±0.05	rε	AH725	L
EGM4-030	4	0.3	●	8

● : Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Grades	Chip-breaker	Cutting speed Vc (m/min)
P	Low carbon steel (C15, C20, etc.)	- 300 HB	AH725	ETX	80 - 180
		- 300 HB	AH725	EGM	80 - 180
	Carbon steel, Alloy steel (C55, 42CrMoS4, etc.)	- 300 HB	AH725	ETX	80 - 180
		- 300 HB	AH725	EGM	80 - 180
	Prehardened steel (NAK80, PX5, etc.)	- 300 HB	AH725	ETX	80 - 180
		- 300 HB	AH725	EGM	80 - 180
M	Stainless steel (X5CrNi18-9, X5CrNiMo17-12-2, etc)	-	AH725	ETX	50 - 120
		-	AH725	EGM	50 - 120

PROCEDURE TO CLAMP AND UNCLAMP INSERT



A Twist the wrench

B Push out the insert from the pocket to unclamp

PARTS FOR COOLANT HOSE

Connecting hose

Fig. 1

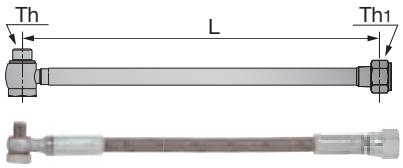
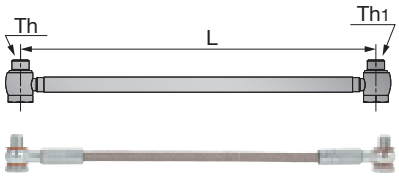
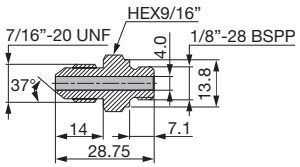


Fig. 2



Designation	Length	Threading size		Max. pressure	Fig.
	L	Th	Th1	(MPa)	
CHP-HOSE-G1/8-7/16-200BS	200	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-G1/8-7/16-250BS	250	G1/8"-28 BSPP	7/16"-20 UNF	26	1
CHP-HOSE-5/16-7/16-200BS	200	5/16"-24UNF	7/16"-20 UNF	20	1
CHP-HOSE-5/16-G1/8-200BS	200	5/16"-24UNF	G1/8"-28 BSPP	20	1
CHP-HOSE-G1/8-G1/8-200BB	200	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2
CHP-HOSE-G1/8-G1/8-250BB	250	G1/8"-28 BSPP	G1/8"-28 BSPP	26	2

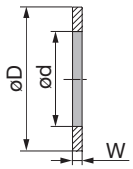
Connector





Designation
CHP-NIPPLE-G1/8-7/16UNF

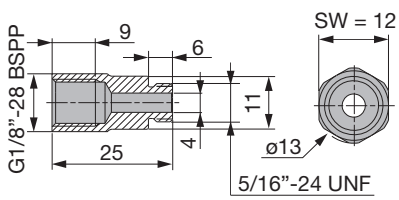
Seal washer





Designation	øD	ød	W
CHP-COPPER-SEAL1/8	15	10	1
CHP-COPPER-SEAL5/16	11	8	1
CHP-COPPER-SEAL5/16-2.5	11	8	2.5

Connector for small lathe with seal washer

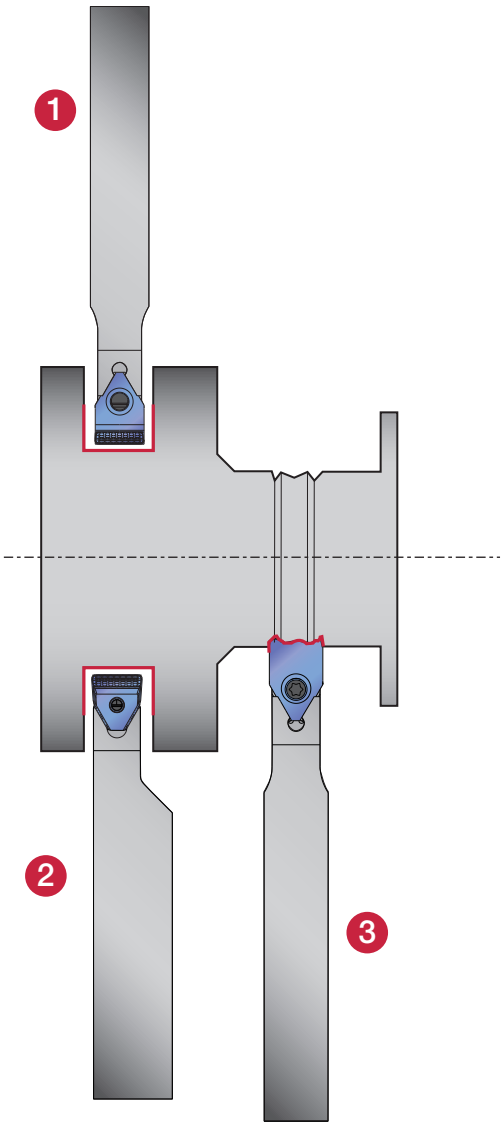




Designation
CHP-CONECTOR/5/16-G1/8

Efficiently **reduces machining time** of wide width grooving and forming!

Effectively reduces the number of passes or machining time of complex profiles!



1 FPGN

Lever lock type
W = 10 - 25 mm
ar = 20 - 36 mm
Shank size:
12 - 25 mm

C125

2 FPGR

Lever lock type
W = 10 - 25 mm
ar = 20 - 50 mm
Shank size:
25 - 40 mm

C124

3 SPGN

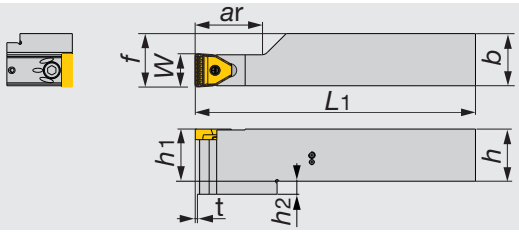
Screw clamp type
W = 10 - 25 mm
ar = 20 - 36 mm
Shank size:
12 - 25 mm

C125

FPGR/L

Lever lock type for external wide grooving and profiling





Designation	W	ar PSGB	ar PSGM	h1	b	h	L1 PSGB	L1 PSGM	f	h2	t PSGB	t PSGM	Insert(1)
FPGR2525M-10T20	10	25	20	25	25	25	155	150	25.5	-	5.5	0.5	PSG*10...
FPGR3232P-10T36	10	41	36	32	32	32	175	170	32.5	-	5.5	0.5	PSG*10...
FPGR2525M-15T20	15	25	20	25	25	25	155	150	25.5	-	5.5	0.5	PSG*15...
FPGR3232P-15T40	15	45	40	32	32	32	175	170	32.5	-	5.5	0.4	PSG*15...
FPGR3232P-20T40	20	45	40	32	32	32	175	170	32.5	8	5.5	0.4	PSG*20...
FPGR4040R-20T50	20	55	50	40	40	40	205	200	40.5	8	5.5	0.4	PSG*20...
FPGR3232P-25T40	25	45	40	32	32	32	175	170	32.5	8	5.5	0.4	PSG*25...
FPGR4040R-25T50	25	55	50	40	40	40	205	200	40.5	8	5.5	0.4	PSG*25...

(1) Can be used with both wide grooving and profile grooving inserts

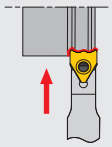
SPARE PARTS

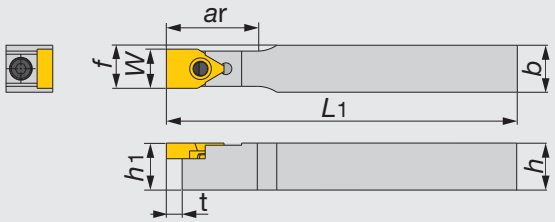


Designation	Lever	Clamping screw	Spring	Wrench
FPGR*****-10T..., 15T...	FCL4	FCS3	BP-5	P-2.5
FPGR*****-20T..., 25T...	FCL8	FCS6	BP-9	P-5

FPGN

Lever lock type for external wide grooving and profiling





Designation	W	ar PSGB	ar PSGM	h1	b	h	L1 PSGB	L1 PSGM	f	t PSGB	t PSGM	Insert(1)
FPGN1212X-10T20	10	25	20	12	12	12	125	120	11	5.5	0.5	PSG*10...
FPGN1616X-10T20	10	25	20	16	16	16	125	120	13	5.5	0.5	PSG*10...
FPGN2020K-10T20	10	25	20	20	20	20	130	125	15	5.5	0.5	PSG*10...
FPGN1616X-15T25	15	30	25	16	16	16	125	120	15.5	5.5	0.4	PSG*15...
FPGN2020K-15T25	15	30	25	20	20	20	130	125	17.5	5.5	0.4	PSG*15...
FPGN2020K-20T32	20	37	32	20	20	20	130	125	20	5.5	0.4	PSG*20...
FPGN2525M-20T32	20	37	32	25	25	25	155	150	22.5	5.5	0.4	PSG*20...
FPGN2525M-25T36	25	41	36	25	25	25	155	150	25	5.5	0.4	PSG*25...

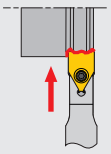
• We can make special shape with forming insert (PSGB type) responding to customer's request.(1) Can be used with both wide grooving and profile grooving inserts

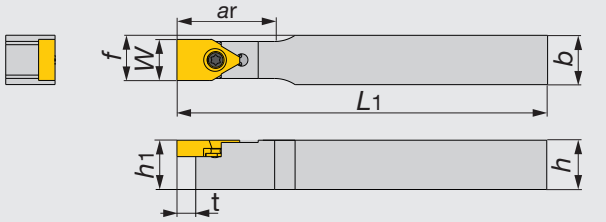
SPARE PARTS

Designation	Lever	Clamping screw	Spring	Wrench
FPGN*****-10T..., 15T...	FCL4	FCS3	BP-5	P-2.5
FPGN*****-20T..., 25T...	FCL8	FCS6	BP-9	P-5

SPGN

Screw-on type, for external wide grooving and profiling





Designation	W	ar	h1	b	h	L1	f	t	Insert(1)
SPGN1212X-10T20	10	25	12	12	12	125	11	5.5	PSGB10
SPGN1616X-10T20	10	25	16	16	16	125	13	5.5	PSGB10
SPGN2020K-10T20	10	25	20	20	20	130	15	5.5	PSGB10
SPGN1616X-15T25	15	30	16	16	16	125	15.5	5.5	PSGB15
SPGN2020K-15T25	15	30	20	20	20	130	17.5	5.5	PSGB15
SPGN2020K-20T32	20	37	20	20	20	130	20	5.5	PSGB20
SPGN2525M-20T32	20	37	25	25	25	155	22.5	5.5	PSGB20
SPGN2525M-25T36	25	41	25	25	25	155	25	5.5	PSGB25

• We can make special shape with forming insert (PSGB type) responding to customer's request.(1) Can be used with profile grooving inserts, only

SPARE PARTS

Designation	Clamping screw	Wrench
SPGN*****-10T20	CSTB-3L081	T-8F
SPGN*****-15T25	CSTB-4	T-15F
SPGN*****-20T..., 25T...	CSTB-5	T-20F

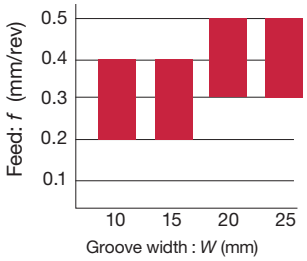
PSGM



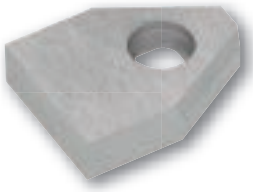
C127

For wide grooving
Excellent chip control

W = 10 - 25 mm



PSGB

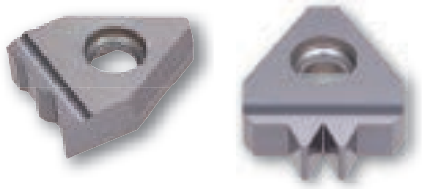


C127

Blank for profiling shape

W = 10 - 25 mm

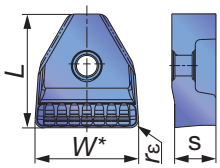
Specially tailored profile inserts





INSERT

For wide grooving

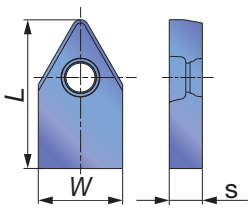


Designation	W*	rε	Coating AH725	L	s
PSGM10-08	10	0.8	●	11	4
PSGM15-15	15	1.5	●	15	5
PSGM20-20	20	2	●	22	6.5
PSGM25-20	25	2	●	22	6.5

*: Tolerance *W* ± 0.08 (*W* = 10 mm), ± 0.1 (*W* ≥ 15 mm)

● : Line-up

Blanks for wide profile grooving*

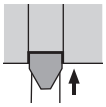


Designation	W ± 0.025	Uncoated UX30	Uncoated TH10	L	s
PSGB10	10.2	●	●	18	4
PSGB15	15.2	●	●	20	5
PSGB20	20.2	●	●	27	6.5
PSGB25	25.2	●	●	27	6.5

● : Line-up

*Stocked products are blanks (semi-finished) for formed inserts

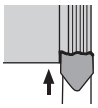
STANDARD CUTTING CONDITIONS



Wide grooving

ISO	Workpiece material	Hardness (HB)	Grade	Cutting speed Vc (m/min)
P	Alloy steel 42CrMo4, etc.	< 300	AH725	50 - 180
P	Alloy steel 42CrMo4, etc.	< 300	UX30	50 - 120

PSGM type insert	Groove width: W (mm) 10	15	20	25
Feed: f (mm/rev)	0.2 - 0.4	0.2 - 0.4	0.3 - 0.5	0.3 - 0.5

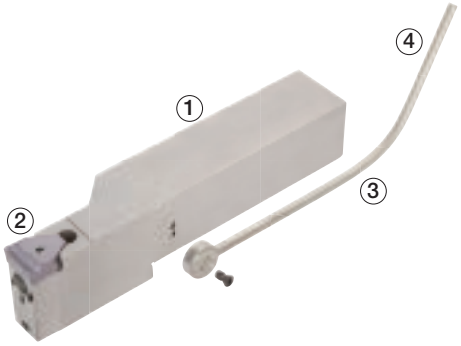


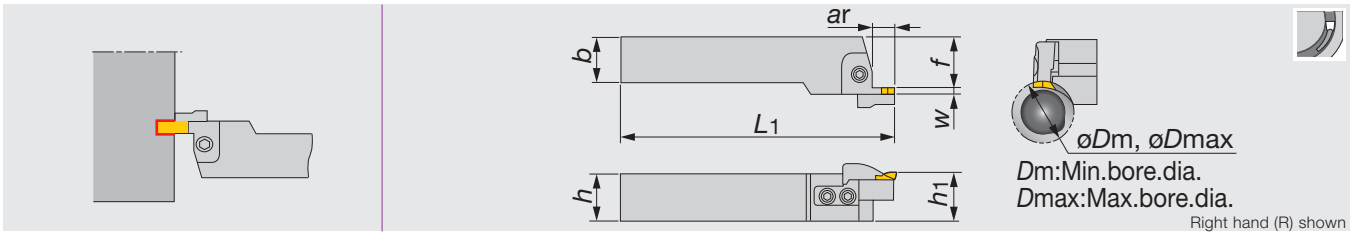
Forming

ISO	Workpiece material	Hardness (HB)	Grade	Cutting speed Vc (m/min)
P	Steel C45, etc.	< 200	UX30	50 - 150
P	Alloy steel 42CrMo4, etc.	< 300	UX30	50 - 120
M	Stainless steel X10CrNiS18-9, etc.	< 200	UX30	50 - 120
K	Grey cast iron 250, etc.	-	TH10	50 - 150
K	Ductile cast iron 450-10S, etc.	-	TH10	50 - 120
N	Aluminium alloy Si < 12%, etc.	-	TH10	100 - 500

■ Spare parts for internal coolant supply attachment (Order separately)

No.	Parts name	Designation	Note
①	Body	FPGR...	-
②	Insert	PSGM...	-
③	Coolant supply attachment	SGCU-341	-
④	Connector	Commercial items can be used	G 1/8 thread
			NPT 1/8 thread





Designation	W	øDm	øDmax	ar	h	b	L1	h1	f	Insert
CFGSR/L2020-3SA	3	30	40	10	20	20	125	21	22	FGC3
CFGSR/L2020-3SB	3	40	50	10	20	20	125	21	22	FGC3
CFGSR/L2020-3SC	3	50	60	10	20	20	125	21	22	FGC3
CFGSR/L2020-3SD	3	60	80	10	20	20	125	20.5	22	FGC3
CFGSR/L2020-3SE	3	80	120	10	20	20	125	20.5	22	FGC3
CFGSR/L2525-3SA	3	30	40	10	25	25	150	26	29	FGC3
CFGSR/L2525-3SB	3	40	50	10	25	25	150	26	29	FGC3
CFGSR/L2525-3SC	3	50	60	10	25	25	150	26	29	FGC3
CFGSR/L2525-3SD	3	60	80	10	25	25	150	25.5	29	FGC3
CFGSR/L2525-3SE	3	80	120	10	25	25	150	25.5	29	FGC3
CFGSR/L2020-4SA	4	30	40	10	20	20	125	21	21	FGC4
CFGSR/L2020-4SB	4	40	50	10	20	20	125	21	21	FGC4
CFGSR/L2020-4SC	4	50	60	10	20	20	125	21	21	FGC4
CFGSR/L2020-4SD	4	60	80	10	20	20	125	20.5	21	FGC4
CFGSR/L2020-4SE	4	80	120	10	20	20	125	20.5	21	FGC4
CFGSR/L2525-4SA	4	30	40	10	25	25	150	26	28	FGC4
CFGSR/L2525-4SB	4	40	50	10	25	25	150	26	28	FGC4
CFGSR/L2525-4SC	4	50	60	10	25	25	150	26	28	FGC4
CFGSR/L2525-4SD	4	60	80	10	25	25	150	25.5	28	FGC4
CFGSR/L2525-4SE	4	80	120	10	25	25	150	25.5	28	FGC4
CFGSR/L2525-4DA	4	30	40	20	25	25	160	26	28	FGC4
CFGSR/L2525-4DB	4	40	50	20	25	25	160	26	28	FGC4
CFGSR/L2525-4DC	4	50	60	20	25	25	160	26	28	FGC4
CFGSR/L2525-4DD	4	60	80	20	25	25	160	25.5	28	FGC4
CFGSR/L2525-4DE	4	80	120	20	25	25	160	25.5	28	FGC4
CFGSR/L2020-5SA	5	30	40	12	20	20	127	21	20	FGC5
CFGSR/L2020-5SB	5	40	50	12	20	20	127	21	20	FGC5
CFGSR/L2020-5SC	5	50	60	12	20	20	127	21	20	FGC5
CFGSR/L2020-5SD	5	60	80	12	20	20	127	20.5	20	FGC5
CFGSR/L2020-5SE	5	80	120	12	20	20	127	20.5	20	FGC5
CFGSR/L2525-5SA	5	30	40	12	25	25	152	26	27	FGC5
CFGSR/L2525-5SB	5	40	50	12	25	25	152	26	27	FGC5
CFGSR/L2525-5SC	5	50	60	12	25	25	152	26	27	FGC5
CFGSR/L2525-5SD	5	60	80	12	25	25	152	25.5	27	FGC5
CFGSR/L2525-5SE	5	80	120	12	25	25	152	25.5	27	FGC5
CFGSR/L2525-5DA	5	30	40	22	25	25	162	26	27	FGC5
CFGSR/L2525-5DB	5	40	50	22	25	25	162	26	27	FGC5
CFGSR/L2525-5DC	5	50	60	22	25	25	162	26	27	FGC5
CFGSR/L2525-5DD	5	60	80	22	25	25	162	25.5	27	FGC5
CFGSR/L2525-5DE	5	80	120	22	25	25	162	25.5	27	FGC5
CFGSR2525-6SB	6	40	50	14	25	25	154	26	26	FGC6
CFGSR/L2525-6SC	6	50	60	14	25	25	154	26	26	FGC6
CFGSR/L2525-6SD	6	60	80	14	25	25	154	25.5	26	FGC6
CFGSR/L2525-6SE	6	80	120	14	25	25	154	25.5	26	FGC6
CFGSR/L3232-8SD	8	60	80	16	32	32	170	32.5	24.5	FGC8
CFGSR/L3232-8SE	8	80	120	16	32	32	170	32.5	24.5	FGC8

- Right hand toolholders are used in regular rotation. Left hand toolholders are used in reverse rotation.
- Each toolholder set includes all components.
- The right hand blade and clamp are used with the right hand shank, the left hand blade and clamp are used with the left hand shank.

Designation	Shank	Blade	Clamp
CFGSR/L2020-3SA	CFGSR/L2020	FBR/L25-3SA	CFG-3SR/L
CFGSR/L2020-3SB	CFGSR/L2020	FBR/L25-3SB	CFG-3SR/L
CFGSR/L2020-3SC	CFGSR/L2020	FBR/L25-3SC	CFG-3SR/L
CFGSR/L2020-3SD	CFGSR/L2020	FBR/L25-3SD	CFG-3SR/L
CFGSR/L2020-3SE	CFGSR/L2020	FBR/L25-3SE	CFG-3SR/L
CFGSR/L2525-3SA	CFGSR/L2525	FBR/L25-3SA	CFG-3SR/L
CFGSR/L2525-3SB	CFGSR/L2525	FBR/L25-3SB	CFG-3SR/L
CFGSR/L2525-3SC	CFGSR/L2525	FBR/L25-3SC	CFG-3SR/L
CFGSR/L2525-3SD	CFGSR/L2525	FBR/L25-3SD	CFG-3SR/L
CFGSR/L2525-3SE	CFGSR/L2525	FBR/L25-3SE	CFG-3SR/L
CFGSR/L2020-4SA	CFGSR/L2020	FBR/L25-4SA	CFG-4SR/L
CFGSR/L2020-4SB	CFGSR/L2020	FBR/L25-4SB	CFG-4SR/L
CFGSR/L2020-4SC	CFGSR/L2020	FBR/L25-4SC	CFG-4SR/L
CFGSR/L2020-4SD	CFGSR/L2020	FBR/L25-4SD	CFG-4SR/L
CFGSR/L2020-4SE	CFGSR/L2020	FBR/L25-4SE	CFG-4SR/L
CFGSR/L2525-4SA	CFGSR/L2525	FBR/L25-4SA	CFG-4SR/L
CFGSR/L2525-4SB	CFGSR/L2525	FBR/L25-4SB	CFG-4SR/L
CFGSR/L2525-4SC	CFGSR/L2525	FBR/L25-4SC	CFG-4SR/L
CFGSR/L2525-4SD	CFGSR/L2525	FBR/L25-4SD	CFG-4SR/L
CFGSR/L2525-4SE	CFGSR/L2525	FBR/L25-4SE	CFG-4SR/L
CFGSR/L2525-4DA	CFGSR/L2525	FBR/L25-4DA	CFG-4DR/L
CFGSR/L2525-4DB	CFGSR/L2525	FBR/L25-4DB	CFG-4DR/L
CFGSR/L2525-4DC	CFGSR/L2525	FBR/L25-4DC	CFG-4DR/L
CFGSR/L2525-4DD	CFGSR/L2525	FBR/L25-4DD	CFG-4DR/L
CFGSR/L2525-4DE	CFGSR/L2525	FBR/L25-4DE	CFG-4DR/L
CFGSR/L2020-5SA	CFGSR/L2020	FBR/L25-5SA	CFG-5SR/L
CFGSR/L2020-5SB	CFGSR/L2020	FBR/L25-5SB	CFG-5SR/L
CFGSR/L2020-5SC	CFGSR/L2020	FBR/L25-5SC	CFG-5SR/L
CFGSR/L2020-5SD	CFGSR/L2020	FBR/L25-5SD	CFG-5SR/L
CFGSR/L2020-5SE	CFGSR/L2020	FBR/L25-5SE	CFG-5SR/L
CFGSR/L2525-5SA	CFGSR/L2525	FBR/L25-5SA	CFG-5SR/L
CFGSR/L2525-5SB	CFGSR/L2525	FBR/L25-5SB	CFG-5SR/L
CFGSR/L2525-5SC	CFGSR/L2525	FBR/L25-5SC	CFG-5SR/L
CFGSR/L2525-5SD	CFGSR/L2525	FBR/L25-5SD	CFG-5SR/L
CFGSR/L2525-5SE	CFGSR/L2525	FBR/L25-5SE	CFG-5SR/L
CFGSR/L2525-5DA	CFGSR/L2525	FBR/L25-5DA	CFG-5DR/L
CFGSR/L2525-5DB	CFGSR/L2525	FBR/L25-5DB	CFG-5DR/L
CFGSR/L2525-5DC	CFGSR/L2525	FBR/L25-5DC	CFG-5DR/L
CFGSR/L2525-5DD	CFGSR/L2525	FBR/L25-5DD	CFG-5DR/L
CFGSR/L2525-5DE	CFGSR/L2525	FBR/L25-5DE	CFG-5DR/L
CFGSR2525-6SB	CFGSR2525	FBR25-6SB	CFG-6SR
CFGSR/L2525-6SC	CFGSR/L2525	FBR/L25-6SC	CFG-6SR/L
CFGSR/L2525-6SD	CFGSR/L2525	FBR/L25-6SD	CFG-6SR/L
CFGSR/L2525-6SE	CFGSR/L2525	FBR/L25-6SE	CFG-6SR/L
CFGSR/L3232-8SD	CFGSR/L3232	FBR/L32-8SD	CFG-8SR/L
CFGSR/L3232-8SE	CFGSR/L3232	FBR/L32-8SE	CFG-8SR/L

SPARE PARTS



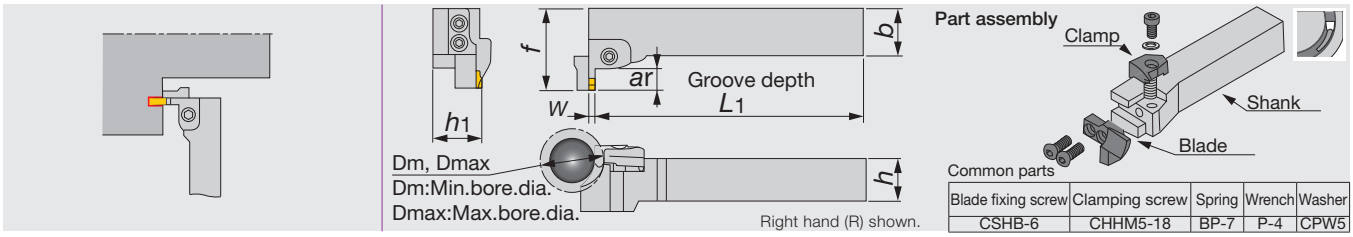





Designation	Clamp	Clamping screw	Blade screw	Spring	Washer	Wrench
CFGSR/L2020-3SA	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-3SB	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-3SC	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-3SD	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-3SE	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-3SA	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-3SB	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-3SC	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-3SD	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-3SE	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-4SA	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-4SB	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-4SC	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-4SD	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-4SE	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4SA	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4SB	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4SC	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4SD	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4SE	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4DA	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4DB	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4DC	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4DD	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-4DE	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-5SA	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-5SB	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-5SC	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-5SD	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2020-5SE	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5SA	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5SB	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5SC	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5SD	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5SE	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5DA	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5DB	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5DC	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5DD	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-5DE	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-6SB	CFG-6SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-6SC	CFG-6SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-6SD	CFG-6SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L2525-6SE	CFG-6SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L3232-8SD	CFG-8SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGSR/L3232-8SE	CFG-8SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4

MEMO

Perpendicular toolholders for face grooving



Blade fixing screw	Clamping screw	Spring	Wrench	Washer
CSHB-6	CHHM5-18	BP-7	P-4	CPW5

Designation	W	øDm	øDmax	ar	h	b	L1	h1	f	Insert
CFGTR/L2020-3SA	3	30	40	10	20	20	122	21	44	FGC3
CFGTR/L2020-3SB	3	40	50	10	20	20	122	21	44	FGC3
CFGTR/L2020-3SC	3	50	60	10	20	20	122	21	44	FGC3
CFGTR/L2020-3SD	3	60	80	10	20	20	122	20.5	44	FGC3
CFGTR/L2020-3SE	3	80	120	10	20	20	122	20.5	44	FGC3
CFGTR/L2525-3SA	3	30	40	10	25	25	147	26	44	FGC3
CFGTR/L2525-3SB	3	40	50	10	25	25	147	26	44	FGC3
CFGTR/L2525-3SC	3	50	60	10	25	25	147	26	44	FGC3
CFGTR/L2525-3SD	3	60	80	10	25	25	147	25.5	44	FGC3
CFGTR/L2525-3SE	3	80	120	10	25	25	147	25.5	44	FGC3
CFGTR/L2020-4SA	4	30	40	10	20	20	121	21	44.	FGC4
CFGTR/L2020-4SB	4	40	50	10	20	20	121	21	44	FGC4
CFGTR/L2020-4SC	4	50	60	10	20	20	121	21	44	FGC4
CFGTR/L2020-4SD	4	60	80	10	20	20	121	20.5	44	FGC4
CFGTR/L2020-4SE	4	80	120	10	20	20	121	20.5	44.	FGC4
CFGTR/L2525-4SA	4	30	40	10	25	25	146	26	44	FGC4
CFGTR/L2525-4SB	4	40	50	10	25	25	146	26	44	FGC4
CFGTR/L2525-4SC	4	50	60	10	25	25	146	26	44	FGC4
CFGTR/L2525-4SD	4	60	80	10	25	25	146	25.5	44	FGC4
CFGTR/L2525-4SE	4	80	120	10	25	25	146	25.5	44	FGC4
CFGTR/L2525-4DA	4	30	40	20	25	25	146	26	54	FGC4
CFGTR/L2525-4DB	4	40	50	20	25	25	146	26	54	FGC4
CFGTR/L2525-4DC	4	50	60	20	25	25	146	26	54	FGC4
CFGTR/L2525-4DD	4	60	80	20	25	25	146	25.5	54	FGC4
CFGTR/L2525-4DE	4	80	120	20	25	25	146	25.5	54	FGC4
CFGTR/L2020-5SA	5	30	40	12	20	20	120	21	46	FGC5
CFGTR/L2020-5SB	5	40	50	12	20	20	120	21	46	FGC5
CFGTR/L2020-5SC	5	50	60	12	20	20	120	21	46	FGC5
CFGTR/L2020-5SD	5	60	80	12	20	20	120	20.5	46	FGC5
CFGTR/L2020-5SE	5	80	120	12	20	20	120	20.5	46	FGC5
CFGTR/L2525-5SA	5	30	40	12	25	25	145	26	46	FGC5
CFGTR/L2525-5SB	5	40	50	12	25	25	145	26	46	FGC5
CFGTR/L2525-5SC	5	50	60	12	25	25	145	26	46	FGC5
CFGTR/L2525-5SD	5	60	80	12	25	25	145	25.5	46	FGC5
CFGTR/L2525-5SE	5	80	120	12	25	25	145	25.5	46	FGC5
CFGTR/L2525-5DA	5	30	40	22	25	25	145	26	56	FGC5
CFGTR/L2525-5DB	5	40	50	22	25	25	145	26	56	FGC5
CFGTR/L2525-5DC	5	50	60	22	25	25	145	26	56	FGC5
CFGTR/L2525-5DD	5	60	80	22	25	25	145	25.5	56	FGC5
CFGTR/L2525-5DE	5	80	120	22	25	25	145	25.5	56	FGC5
CFGTR/L2525-6SB	6	40	50	14	25	25	144	26.	48	FGC6
CFGTR2525-6SC	6	50	60	14	25	25	144	26	48	FGC6
CFGTR2525-6SD	6	60	80	14	25	25	144	25.5	48	FGC6
CFGTR/L2525-6SE	6	80	120	14	25	25	144	25.5	48	FGC6
CFGTR3232-8SD	8	60	80	16	32	32	162	32.5	50	FGC8
CFGTR/L3232-8SE	8	80	120	16	32	32	162	32.5	50	FGC8

- When using these face grooving toolholders, right hand ones use a right hand bladeset and left hand ones are left hand bladeset.
- Each toolholder set includes all components.
- The right hand blade and clamp are used with the right hand shank, the left hand blade and clamp are used with the left hand shank.

Designation	Shank	Blade	Clamp
CFGTR/L2020-3SA	CFGTR/L2020	FBR/L25-3SA	CFG-3SR/L
CFGTR/L2020-3SB	CFGTR/L2020	FBR/L25-3SB	CFG-3SR/L
CFGTR/L2020-3SC	CFGTR/L2020	FBR/L25-3SC	CFG-3SR/L
CFGTR/L2020-3SD	CFGTR/L2020	FBR/L25-3SD	CFG-3SR/L
CFGTR/L2020-3SE	CFGTR/L2020	FBR/L25-3SE	CFG-3SR/L
CFGTR/L2525-3SA	CFGTR/L2525	FBR/L25-3SA	CFG-3SR/L
CFGTR/L2525-3SB	CFGTR/L2525	FBR/L25-3SB	CFG-3SR/L
CFGTR/L2525-3SC	CFGTR/L2525	FBR/L25-3SC	CFG-3SR/L
CFGTR/L2525-3SD	CFGTR/L2525	FBR/L25-3SD	CFG-3SR/L
CFGTR/L2525-3SE	CFGTR/L2525	FBR/L25-3SE	CFG-3SR/L
CFGTR/L2020-4SA	CFGTR/L2020	FBR/L25-4SA	CFG-4SR/L
CFGTR/L2020-4SB	CFGTR/L2020	FBR/L25-4SB	CFG-4SR/L
CFGTR/L2020-4SC	CFGTR/L2020	FBR/L25-4SC	CFG-4SR/L
CFGTR/L2020-4SD	CFGTR/L2020	FBR/L25-4SD	CFG-4SR/L
CFGTR/L2020-4SE	CFGTR/L2020	FBR/L25-4SE	CFG-4SR/L
CFGTR/L2525-4SA	CFGTR/L2525	FBR/L25-4SA	CFG-4SR/L
CFGTR/L2525-4SB	CFGTR/L2525	FBR/L25-4SB	CFG-4SR/L
CFGTR/L2525-4SC	CFGTR/L2525	FBR/L25-4SC	CFG-4SR/L
CFGTR/L2525-4SD	CFGTR/L2525	FBR/L25-4SD	CFG-4SR/L
CFGTR/L2525-4SE	CFGTR/L2525	FBR/L25-4SE	CFG-4SR/L
CFGTR/L2525-4DA	CFGTR/L2525	FBR/L25-4DA	CFG-4DR/L
CFGTR/L2525-4DB	CFGTR/L2525	FBR/L25-4DB	CFG-4DR/L
CFGTR/L2525-4DC	CFGTR/L2525	FBR/L25-4DC	CFG-4DR/L
CFGTR/L2525-4DD	CFGTR/L2525	FBR/L25-4DD	CFG-4DR/L
CFGTR/L2525-4DE	CFGTR/L2525	FBR/L25-4DE	CFG-4DR/L
CFGTR/L2020-5SA	CFGTR/L2020	FBR/L25-5SA	CFG-5SR/L
CFGTR/L2020-5SB	CFGTR/L2020	FBR/L25-5SB	CFG-5SR/L
CFGTR/L2020-5SC	CFGTR/L2020	FBR/L25-5SC	CFG-5SR/L
CFGTR/L2020-5SD	CFGTR/L2020	FBR/L25-5SD	CFG-5SR/L
CFGTR/L2020-5SE	CFGTR/L2020	FBR/L25-5SE	CFG-5SR/L
CFGTR/L2525-5SA	CFGTR/L2525	FBR/L25-5SA	CFG-5SR/L
CFGTR/L2525-5SB	CFGTR/L2525	FBR/L25-5SB	CFG-5SR/L
CFGTR/L2525-5SC	CFGTR/L2525	FBR/L25-5SC	CFG-5SR/L
CFGTR/L2525-5SD	CFGTR/L2525	FBR/L25-5SD	CFG-5SR/L
CFGTR/L2525-5SE	CFGTR/L2525	FBR/L25-5SE	CFG-5SR/L
CFGTR/L2525-5DA	CFGTR/L2525	FBR/L25-5DA	CFG-5DR/L
CFGTR/L2525-5DB	CFGTR/L2525	FBR/L25-5DB	CFG-5DR/L
CFGTR/L2525-5DC	CFGTR/L2525	FBR/L25-5DC	CFG-5DR/L
CFGTR/L2525-5DD	CFGTR/L2525	FBR/L25-5DD	CFG-5DR/L
CFGTR/L2525-5DE	CFGTR/L2525	FBR/L25-5DE	CFG-5DR/L
CFGTR/L2525-6SB	CFGTR/L2525	FBR/L25-6SB	CFG-6SR/L
CFGTR2525-6SC	CFGTR2525	FBR25-6SC	CFG-6SR
CFGTR2525-6SD	CFGTR2525	FBR25-6SD	CFG-6SR
CFGTR/L2525-6SE	CFGTR/L2525	FBR/L25-6SE	CFG-6SR/L
CFGTR3232-8SD	CFGTR3232	FBR32-8SD	CFG-8SR
CFGTR/L3232-8SE	CFGTR/L3232	FBR/L32-8SE	CFG-8SR/L

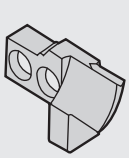
SPARE PARTS

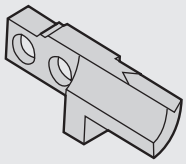
Designation	Clamp	Clamping screw	Blade screw	Spring	Washer	Wrench
CFGTR/L2020-3SA	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-3SB	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-3SC	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-3SD	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-3SE	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-3SA	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-3SB	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-3SC	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-3SD	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-3SE	CFG-3SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-4SA	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-4SB	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-4SC	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-4SD	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-4SE	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4SA	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4SB	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4SC	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4SD	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4SE	CFG-4SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4DA	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4DB	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4DC	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4DD	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-4DE	CFG-4DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-5SA	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-5SB	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-5SC	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-5SD	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2020-5SE	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5SA	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5SB	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5SC	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5SD	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5SE	CFG-5SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5DA	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5DB	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5DC	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5DD	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-5DE	CFG-5DR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-6SB	CFG-6SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR2525-6SC	CFG-6SR	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR2525-6SD	CFG-6SR	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L2525-6SE	CFG-6SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR3232-8SD	CFG-8SR	CHHM5-18	CSHB-6	BP-7	CPW5	P-4
CFGTR/L3232-8SE	CFG-8SR/L	CHHM5-18	CSHB-6	BP-7	CPW5	P-4

FBR/L-#S/D

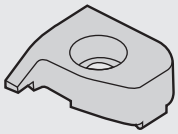
Blades of toolholder CFGSR/L-#S/D & CFGTR/L-#S/D for face grooving

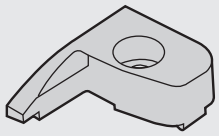
Blade
Shallow groove type (FBR/L□-□S□) Deep groove type (FBR/L□□-□D□)





Clamp
Shallow groove type (CFG-□SR/L)
Deep groove type (CFG-□DR/L)





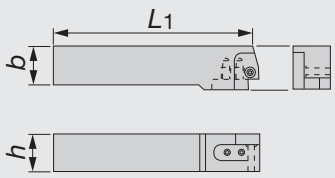
Right hand (R) shown.

Blade	Min. bore dia. ø*D*m	*ar*	*W*	Clamp
FBR/L25-3SA	30 - 40	10	3	CFG-3SR/L
FBR/L25-3SB	40 - 50	10	3	CFG-3SR/L
FBR/L25-3SC	50 - 60	10	3	CFG-3SR/L
FBR/L25-3SD	60 - 80	10	3	CFG-3SR/L
FBR/L25-3SE	80 - 120	10	3	CFG-3SR/L
FBR/L25-4SA	30 - 40	10	4	CFG-4SR/L
FBR/L25-4SB	40 - 50	10	4	CFG-4SR/L
FBR/L25-4SC	50 - 60	10	4	CFG-4SR/L
FBR/L25-4SD	60 - 80	10	4	CFG-4SR/L
FBR/L25-4SE	80 - 120	10	4	CFG-4SR/L
FBR/L25-4DA	30 - 40	20	4	CFG-4DR/L
FBR/L25-4DB	40 - 50	20	4	CFG-4DR/L
FBR/L25-4DC	50 - 60	20	4	CFG-4DR/L
FBR/L25-4DD	60 - 80	20	4	CFG-4DR/L
FBR/L25-4DE	80 - 120	20	4	CFG-4DR/L
FBR/L25-5SA	30 - 40	12	5	CFG-5SR/L
FBR/L25-5SB	40 - 50	12	5	CFG-5SR/L
FBR/L25-5SC	50 - 60	12	5	CFG-5SR/L
FBR/L25-5SD	60 - 80	12	5	CFG-5SR/L
FBR/L25-5SE	80 - 120	12	5	CFG-5SR/L

Blade	Min. bore dia. ø*D*m	*ar*	*W*	Clamp
FBR/L25-5DA	30 - 40	22	5	CFG-5DR/L
FBR/L25-5DB	40 - 50	22	5	CFG-5DR/L
FBR/L25-5DC	50 - 60	22	5	CFG-5DR/L
FBR/L25-5DD	60 - 80	22	5	CFG-5DR/L
FBR/L25-5DE	80 - 120	22	5	CFG-5DR/L
FBR/L25-6SB	40 - 50	14	6	CFG-6SR/L
FBR/L25-6SC	50 - 60	14	6	CFG-6SR/L
FBR/L25-6SD	60 - 80	14	6	CFG-6SR/L
FBR/L25-6SE	80 - 120	14	6	CFG-6SR/L
FBR25-6DB	40 - 50	24	6	CFG-6DR
FBR/L25-6DC	50 - 60	24	6	CFG-6DR/L
FBR/L25-6DD	60 - 80	24	6	CFG-6DR/L
FBR/L25-6DE	80 - 120	24	6	CFG-6DR/L
FBR32-8SD	60 - 80	16	8	CFG-8SR
FBR32-8SE	80 - 120	16	8	CFG-8SR
FBR32-8DD	60 - 80	26	8	CFG-8DR
FBR32-8DE	80 - 120	26	8	CFG-8DR

CFGSR/L

Shank of toolholder CFGSR/L-#S/D for face grooving



Right hand (R) shown.

Designation	h	b	L1
CFGSR/L2020	20	20	114.3
CFGSR/L2525	25	25	139.3
CFGSR3232	32	32	153.3

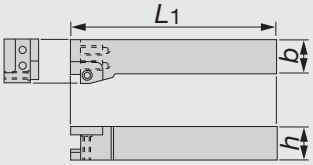
SPARE PARTS



Designation	Clamping screw	Blade screw	Spring	Washer	Wrench
CFGSR/L...	CHHM5-18	CSHB-6	BP-7	CPW5	P-4

CFGTR/L

Shank of perpendicular toolholder CFGTR/L-#S/D for face grooving



Right hand (R) shown.

Designation	h	b	L1
CFGTR/L2020	20	20	125.8
CFGTR/L2525	25	25	150.8
CFGTR/L3232	32	32	170.8

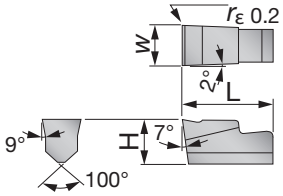
SPARE PARTS



Designation	Clamping screw	Blade screw	Spring	Washer	Wrench
CFGTR/L...	CHHM5-18	CSHB-6	BP-7	CPW5	P-4

INSERT

FGC



Right hand (R) shown.

Designation	W±0.1	Coating	Cermet	Uncoated	L	H
		T313V	NS9530	UX30		
FGC3	3	●	●		10	4.29
FGC4	4	●	●		10	4.5
FGC5	5	●	●		12	5.5
FGC6	6			●	14	6.5
FGC8	8			●	16	8

● : Line-up

Grade selection guide

Grades	Main applications	P group				K group			
		01	10	20	30	01	10	20	30
UX30	Low to medium speed cutting of steel, cast steel, cast iron and stainless steel		■	■	■		■	■	■
NS9530	Medium to high speed cutting of steel and alloy steel, with satisfactory surface finish		■	■					
T313V	Low to high speed cutting of steel, cast steel, cast iron and stainless steel Standard cutting conditions		■	■			■	■	

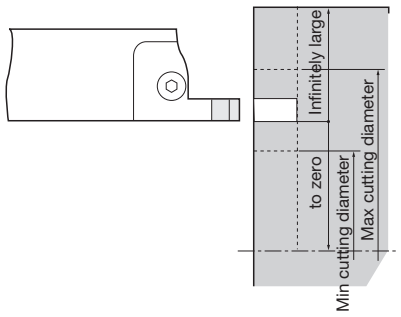
STANDARD CUTTING CONDITIONS

Workpiece material: General carbon steel, C45 Cutting fluid: Water soluble cutting fluid	Groove width: *W* (mm)				
	3	4	5	6	8
Cutting speed v_c (m/min)	70 ~ 150	70 ~ 150	70 ~ 120	70 ~ 120	50 ~ 100
Feed *f* (mm/rev)	0.05 ~ 0.15	0.05 ~ 0.2	0.05 ~ 0.15	0.05 ~ 0.15	0.05 ~ 0.1

Notes:
- Above cutting conditions are applied to the shallow groove type (groove depth 10 ~ 16 mm).
- In the case of a deep groove type (groove depth 20 ~ 26 mm), apply 60 ~ 70% of above cutting conditions.
- The use of water soluble cutting fluid is recommended to discharge chips, protect the finished surface, and prevent chipping.

Notes on cutting diameter

- SA~SG types can widen the groove outward infinitely after grooving from the minimum to maximum diameter.
- SF and SG types can widen the groove inward to minimum zero after grooving from the minimum to maximum diameter. (See the figure)
- SA~SE types can not be used to widen the groove more inward from the minimum diameter.



MillLine



MILLING

 High-Feed Milling D002

 Shoulder Milling D032

 Face Milling D118

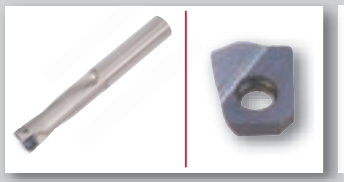
 Slot Milling D172

 Profile Milling D188

 Multi-Functional Milling D224

 Milling Insert D316





HYBRIDTACMILL

D004

High-feed endmills

20° ø10 - ø16 mm
max. ap 0.8 mm

P M K N



DOFEED

D008

Super high-feed milling cutters with 4-cornered double-sided inserts

15° ø16 - ø200 mm
max. ap 1.5 mm

P M K S H



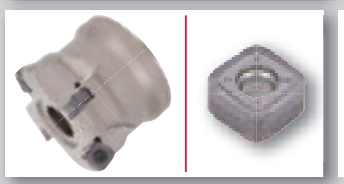
DO TWIST BALL

D016

Super high-feed cutters for profile milling with rigid clamping

20° ø20 - ø50 mm
max. ap 1.3 mm

P M K S H



DOFEEDQUAD

D021

Super high-feed cutters for face milling with 8-cornered double-sided inserts

13° ø50 - ø125 mm
max. ap 2 mm

P M K S H



MILLQUADFEED

D024

Super high-feed milling cutters for large depths of cut

14° ø50 - ø160 mm
max. ap 2.5 mm

P M K S H



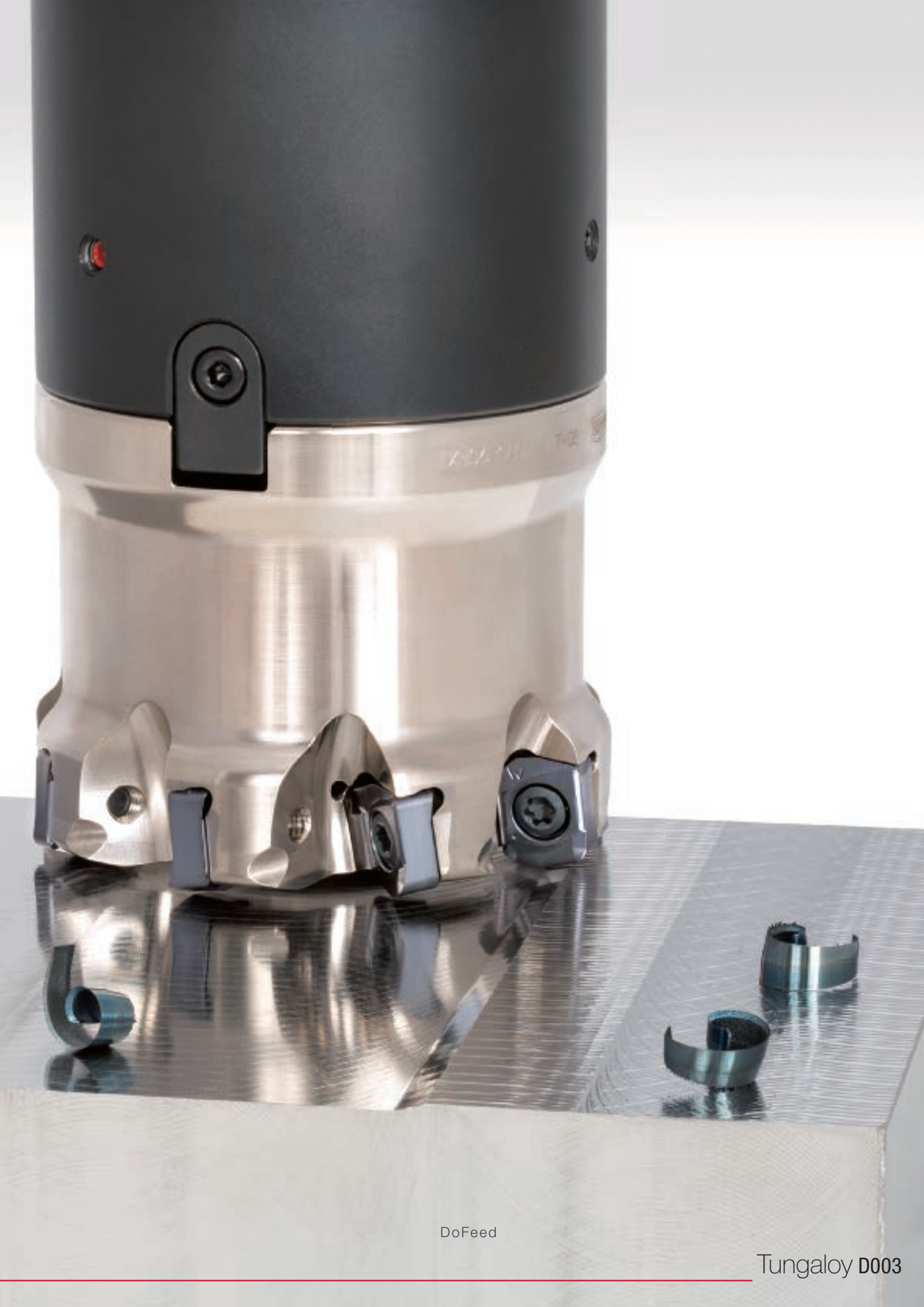
MILLFEED

D026

High-feed milling cutters with single-sided inserts

10°-20° ø20 - ø125 mm
max. ap 3 mm

P M K H



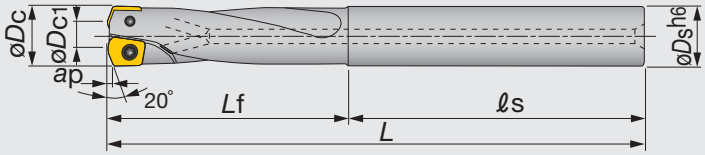
DoFeed

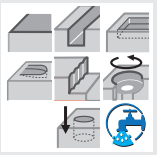
HYBRIDTACMILL
EXH

Super high feed milling endmills with center cutting edge

A.R. = +20°, R.R. = +12°





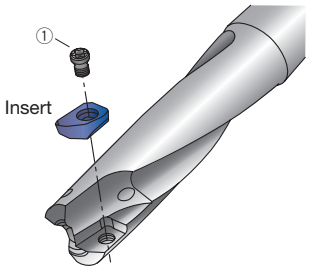


Right hand (R) shown.

Designation	Max. *ap*	ø*D*c	z	ø*D*c1	ø*D*s	*L*	*L*f	ℓs	Insert
EXH06R010M10.0-02	0.6	10	2	5	10	90	40	50	XXGT06H2...
EXH07R012M12.0-02	0.6	12	2	7	12	98	48	50	XXGT07X3...
EXH09R016M16.0-02	0.8	16	2	10	16	124	64	60	XXGT09X4...

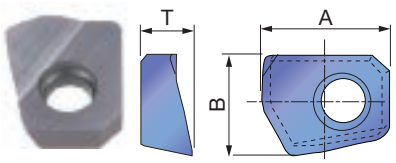
SPARE PARTS

Designation	①Clamping screw	Lubricant	Wrench	Wrench 1
EXH06R010M10.0-02	CSPD-1.8S	M-1000	-	IP-6F
EXH07R012M12.0-02	CSPB-2H	M-1000	-	IP-6F
EXH09R016M16.0-02	CSPB-2.5S	M-1000	IP-8D	-

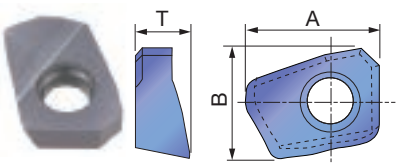


INSERT

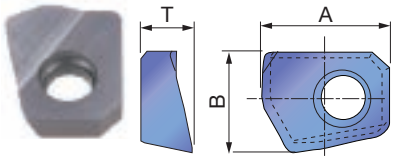
XXGT EC-MJ (Center cutting edge)



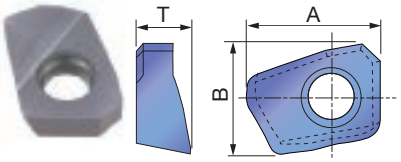
XXGT EP-MJ (Peripheral cutting edge)



XXGT FC-AJ (Center cutting edge)



XXGT FP-AJ (Peripheral cutting edge)



		AH730	DS1200
P	Steel	★	
M	Stainless	★	
K	Cast iron	★	
N	Non-ferrous		★
S	Superalloys		
H	Hard materials		

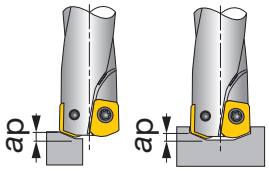
★ : First choice
☆ : Second choice

Designation	Max. ap	Coating AH730	Coating DS1200	A	B	T
XXGT06H205EC-MJ	0.6	●		6.2	4.9	2.5
XXGT07X305EC-MJ	0.6	●		7	5.9	3
XXGT09X408EC-MJ	0.8	●		8.9	7.9	4
XXGT06H205FC-AJ	0.6		●	6.2	4.9	2.5
XXGT07X305FC-AJ	0.6		●	7	5.9	3
XXGT09X408FC-AJ	0.8		●	8.9	7.9	4
XXGT06H205EP-MJ	0.6	●		6.2	5.1	2.5
XXGT07X305EP-MJ	0.6	●		7	6.3	3
XXGT09X408EP-MJ	0.8	●		8.9	8	4
XXGT06H205FP-AJ	0.6		●	6.2	5.1	2.5
XXGT07X305FP-AJ	0.6		●	7	6.3	3
XXGT09X408FP-AJ	0.8		●	8.9	8	4

●: Line-up

STANDARD CUTTING CONDITIONS

●Shoulder milling, Slotting

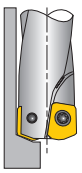


Side cutting Slotting

ap: Axial depth of cut

Workpiece material		Carbon steels and alloy steels		Alloy steels and prehardened steelst		Stainless steels		Cast irons		Aluminium alloys (Si < 13%)		Aluminium alloys (Si ≥ 13%)	
Hardness		< 30HRC		30 ~ 40HRC		< 250HB		–		–		–	
Cutting speed		Vc = 100 ~ 300 m/min		Vc = 100 ~ 250 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 500 m/min		Vc = 100 ~ 300 m/min	
Conditions		No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min
Tool dia. (mm)	ø10	4770	1430	3820	760	4770	1430	6360	2540	9550	5730	6360	3180
	ø12	3980	1190	3180	630	3980	1190	5300	2120	7950	4770	5300	2650
	ø16	2980	890	2380	470	2980	890	3970	1580	5960	3570	3970	1980
Depth of cut	ø10	ap < 0.6		ap < 0.5		ap < 0.6		ap < 0.6		ap < 0.6		ap < 0.6	
	ø12	ap < 0.6		ap < 0.5		ap < 0.6		ap < 0.6		ap < 0.6		ap < 0.6	
	ø16	ap < 0.8		ap < 0.6		ap < 0.8		ap < 0.8		ap < 0.8		ap < 0.8	

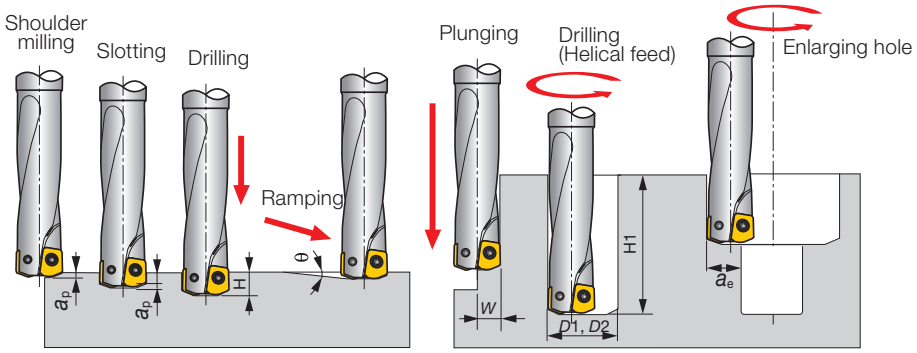
●Plunging



Workpiece material		Carbon steels and alloy steels		Alloy steels and prehardened steelst		Stainless steels		Cast irons		Aluminium alloys (Si < 13%)		Aluminium alloys (Si ≥ 13%)	
Hardness		< 30HRC		30 ~ 40HRC		< 250HB		–		–		–	
Cutting speed		Vc = 100 ~ 300 m/min		Vc = 100 ~ 250 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 300 m/min		Vc = 100 ~ 500 m/min		Vc = 100 ~ 300 m/min	
Conditions		No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min	No. of rev. n min⁻¹	Feed speed Vf mm/min
Tool dia. (mm)	ø10	4770	240	3820	150	4770	240	6360	440	9550	760	6360	440
	ø12	3980	200	3180	130	3980	200	5300	370	7950	640	5300	370
	ø16	2980	150	2380	95	2980	150	3970	280	5960	480	3970	280

Note:
- In slotting or pocketing where chips tend to stay in the cutting zone, use an air blast to remove chips for preventing chip recutting.
- When chips tend to weld excessively on the cutting edge such as in machining aluminium alloys, use a water soluble cutting fluid.
- In the case of cutting a casting skin or a heavily interrupted work surface, decrease the feed per tooth and the maximum depth of cut to 1/2 to 2/3 times the values shown in the table.
- Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.
- Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually whilst making sure that the machine is running normally.

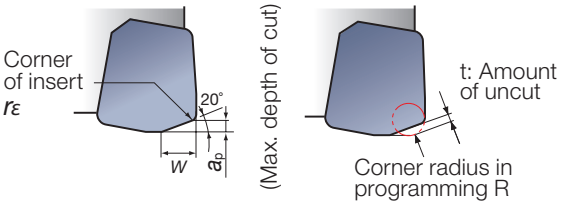
APPLICATION RANGE



Designation	Tool dia. øDc	Max. depth of cut ap	Max.depth of drilling H	Max. cutting width in plunging W	Max. ramping angle θ°	Min. machinable hole dia. D1	Max. machinable hole dia. D2	Max. cutting width in enlarging hole ae	Max.depth of boring H1
EXH06R010M10.0-02	10	0.6	5	5	5	12	19	7	30
EXH07R012M12.0-02	12	0.6	6	6	5	14	23	9	36
EXH09R016M16.0-02	16	0.8	8	8	5	18	31	12.5	48

TOOL GEOMETRY ON PROGRAM

When using CAD/CAM, please program it as for radius cutter.
The following table shows actual cutting edge geometry and amount of unfinished work cut.



Designation	øDc	Max. depth of cut ap	Corner of insert rε	Wide of tooth W	Amount of uncut t	Corner radius in programming R
EXH06R010M10.0-02	10	0.6	0.5	2.5	0.7 0.6	R0.5 R1.0
EXH07R012M12.0-02	12	0.6	0.5	2.5	0.7 0.6	R0.5 R1.0
EXH09R016M16.0-02	16	0.8	0.8	3	0.8 0.7 0.6	R0.5 R1.0 R1.5

MEMO

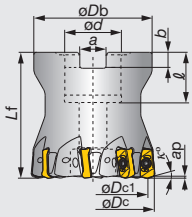
DOFEED

TXN03

Super high feed milling cutters with double sided inserts with 4 edges

A.R. = +6°, R.R. = +12° ~ 13°







Designation	Max. *ap*	ø*Dc*	z	ø*Dc1*	ø*Db*	ø*d*	*ℓ*	*Lf*	*b*	*a*	*κ°*	Kg	Air hole	Insert
TXN03R040M16.0E05	1	40	5	33.6	35	16	18	40	5.6	8.4	17	0.2	with	LNMU03...
TXN03R040M16.0E06	1	40	6	33.6	35	16	18	40	5.6	8.4	17	0.2	with	LNMU03...
TXN03R050M22.0E05	1	50	5	43.6	47	22	20	50	6.3	10.4	17	0.5	with	LNMU03...
TXN03R050M22.0E08	1	50	8	43.6	47	22	20	50	6.3	10.4	17	0.5	with	LNMU03...

SPARE PARTS






Designation	Clamping screw	Lubricant	Shell locking bolt	Wrench
TXN03R04...	CSPB-2.5	M-1000	CM8X30H	IP-8D
TXN03R05...	CSPB-2.5	M-1000	CM10X30H	IP-8D

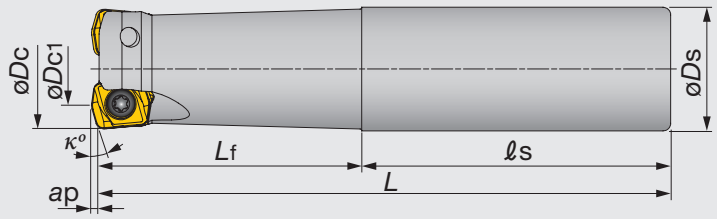
DOFEED

EXN03

Super high feed milling endmills with double sided inserts with 4 edges

A.R. = +6°, R.R. = +5° ~ +11°







Designation	Max. *ap*	ø*Dc*	z	ø*Dc1*	ø*Ds*	*L*	*Lf*	*ℓs*	*κ°*	Kg	Air hole	Insert
EXN03R016M16.0-02	1	16	2	9.6	16	100	30	70	15	0.2	with	LNMU03...
EXN03R016M16.0-02L	1	16	2	9.6	16	150	50	100	15	0.2	with	LNMU03...
EXN03R018M16.0-02	1	18	2	11.5	16	100	30	70	17	0.2	with	LNMU03...
EXN03R018M16.0-02L	1	18	2	11.5	16	150	25	125	17	0.2	with	LNMU03...
EXN03R020M20.0-03	1	20	3	13.5	20	130	50	80	17	0.3	with	LNMU03...
EXN03R020M20.0-03L	1	20	3	13.5	20	160	80	80	17	0.3	with	LNMU03...
EXN03R020M20.0-04	1	20	4	13.5	20	130	50	80	17	0.3	with	LNMU03...
EXN03R022M20.0-03	1	22	3	15.5	20	130	50	80	17	0.3	with	LNMU03...
EXN03R022M20.0-03L	1	22	3	15.5	20	160	30	130	17	0.4	with	LNMU03...
EXN03R022M20.0-04	1	22	4	15.5	20	130	50	80	17	0.3	with	LNMU03...
EXN03R025M25.0-04	1	25	4	18.5	25	140	60	80	17	0.5	with	LNMU03...
EXN03R025M25.0-04L	1	25	4	18.5	25	180	100	80	17	0.6	with	LNMU03...
EXN03R025M25.0-05	1	25	5	18.5	25	140	60	80	17	0.5	with	LNMU03...
EXN03R028M25.0-04	1	28	4	21.5	25	140	60	80	17	0.5	with	LNMU03...
EXN03R028M25.0-04L	1	28	4	21.5	25	180	35	145	17	0.7	with	LNMU03...
EXN03R028M25.0-05	1	28	5	21.5	25	140	60	80	17	0.5	with	LNMU03...
EXN03R030M32.0-04	1	30	4	23.5	32	150	70	80	17	0.8	with	LNMU03...
EXN03R030M32.0-04L	1	30	4	23.5	32	200	120	80	17	0.9	with	LNMU03...
EXN03R030M32.0-05	1	30	5	23.5	32	150	70	80	17	0.8	with	LNMU03...
EXN03R032M32.0-05	1	32	5	25.5	32	150	70	80	17	0.8	with	LNMU03...
EXN03R032M32.0-05L	1	32	5	25.5	32	200	120	80	17	1.1	with	LNMU03...
EXN03R032M32.0-06	1	32	6	25.5	32	150	70	80	17	0.9	with	LNMU03...
EXN03R035M32.0-05	1	35	5	28.5	32	150	35	115	17	0.9	with	LNMU03...
EXN03R035M32.0-05L	1	35	5	28.5	32	200	35	165	17	1.2	with	LNMU03...
EXN03R035M32.0-06	1	35	6	28.5	32	150	35	115	17	0.9	with	LNMU03...

SPARE PARTS





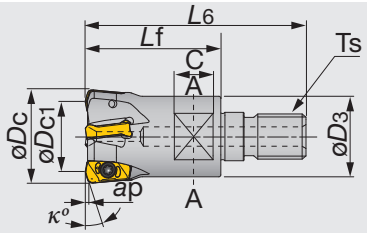
Designation	Clamping screw	Lubricant	Wrench
EXN03...	CSPB-2.5	M-1000	IP-8D

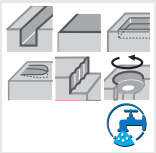
HXN03-M

Super high feed milling endmills (Dofeed) with TungFlex

A.R. = +6°, R.R. = +5° ~ +11°







Designation	Max. ap	øDc	z	øDc1	L6	Lf	C	T	øD3	κ°	Ts	Kg	Air hole	Insert
HXN03R016MM08-02	1	16	2	9.5	42	25	8	10	12.8	15	M8	0.03	with	LNMU03...
HXN03R018MM08-02	1	18	2	11.5	42	25	8	10	14.5	17	M8	0.04	with	LNMU03...
HXN03R020MM10-03	1	20	3	13.5	49	30	10	15	17.8	17	M10	0.06	with	LNMU03...
HXN03R020MM10-04	1	20	4	13.5	49	30	10	15	17.8	17	M10	0.06	with	LNMU03...
HXN03R022MM10-03	1	22	3	15.5	49	30	10	15	17.8	17	M10	0.06	with	LNMU03...
HXN03R022MM10-04	1	22	4	15.5	49	30	10	15	17.8	17	M10	0.07	with	LNMU03...
HXN03R025MM12-04	1	25	4	18.5	57	35	10	17	20.8	17	M12	0.1	with	LNMU03...
HXN03R025MM12-05	1	25	5	18.5	57	35	10	17	20.8	17	M12	0.11	with	LNMU03...
HXN03R028MM12-04	1	28	4	21.5	57	35	10	17	23	17	M12	0.12	with	LNMU03...
HXN03R028MM12-05	1	28	5	21.5	57	35	10	17	23	17	M12	0.12	with	LNMU03...
HXN03R030MM16-04	1	30	4	23.5	63	40	12	22	28.8	17	M16	0.19	with	LNMU03...
HXN03R030MM16-05	1	30	5	23.5	63	40	12	22	28.8	17	M16	0.2	with	LNMU03...
HXN03R032MM16-05	1	32	5	25.5	63	40	12	22	28.8	17	M16	0.2	with	LNMU03...
HXN03R032MM16-06	1	32	6	25.5	63	40	12	22	28.8	17	M16	0.21	with	LNMU03...

SPARE PARTS



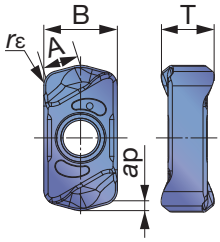


Designation	Clamping screw	Lubricant	Wrench
HXN03...	CSPB-2.5	M-1000	IP-8D

INSERT

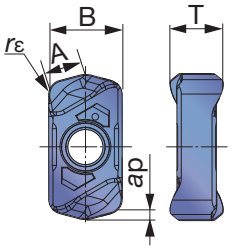
LNMU03-MJ(for general purpose)





LNMU03-ML(for low cutting force)





P	Steel		★	★
M	Stainless	★	☆	☆
K	Cast iron		☆	
N	Non-ferrous			
S	Superalloys	☆	★	
H	Hard materials		★	★

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH130	Coating AH725	Coating AH3035	A	B	T
LNMU0303ZER-MJ	1.2	1	●	●	●	3.2	6	4.3
LNMU0303ZER-ML	1.2	1	●	●	●	3.2	6	4.3

●: Line-up

STANDARD CUTTING CONDITIONS TXN03/EXN03/HXN03

ISO	Workpiece material	Hard-ness	Priority	Grade	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t) Tool dia.: ø*Dc* (mm) ø16 ~ ø22	ø25 ~ ø50	Plung-ing	ø16, z = 2 *n*	*Vf*	ø18, z = 2 *n*	*Vf*	ø20 *n*	*Vf* z = 3	z = 4
P	Carbon steel C45, C55, etc.	~ 300HB	First choice	AH725	MJ	100 - 300	0.5 - 1.2	0.5 - 1.5	0.1	3,980	6,370	3,540	5,660	3,180	7,630	10,180
										Vc = 200 m/min, *fz* = 0.8 mm/t						
		~ 300HB	For low cutting force	AH725	ML	100 - 300	0.5 - 0.7	0.5 - 1	0.1	3,980	4,780	3,540	4,250	3,180	5,720	7,630
										Vc = 200 m/min, *fz* = 0.6 mm/t						
		~ 300HB	For impact resistance	AH3035	MJ	100 - 300	0.5 - 1.2	0.5 - 1.5	0.1	3,980	6,370	3,540	5,660	3,180	7,630	10,180
										Vc = 200 m/min, *fz* = 0.8 mm/t						
	Alloy steel 42CrMo4, 17Cr3, etc.	~ 300HB	First choice	AH725	MJ	100 - 200	0.5 - 1.2	0.5 - 1.5	0.1	2,980	4,770	2,650	4,240	2,390	5,740	7,650
										Vc = 150 m/min, *fz* = 0.8 mm/t						
		~ 300HB	For low cutting force	AH725	ML	100 - 200	0.5 - 0.7	0.5 - 1	0.1	2,980	3,580	2,650	3,180	2,390	4,300	5,740
										Vc = 150 m/min, *fz* = 0.6 mm/t						
		~ 300HB	For impact resistance	AH3035	MJ	100 - 200	0.5 - 1.2	0.5 - 1.5	0.1	2,980	4,770	2,650	4,240	2,390	5,740	7,650
										Vc = 150 m/min, *fz* = 0.8 mm/t						
	Prehardened steel NAK80, PX5, etc.	30 ~ 40HRC	-	AH3035	ML	100 - 200	0.5 - 0.7	0.5 - 1	0.1	2,980	3,580	2,650	3,180	2,390	4,300	5,740
										Vc = 150 m/min, *fz* = 0.6 mm/t						
M	Stainless steel X5CrNi18-10, X5CrNiMo17-12-2, etc.	~ 200HB	First choice	AH130	ML	100 - 150	0.3 - 0.5	0.3 - 0.7	0.08	2,390	1,910	2,120	1,700	1,910	2,290	3,060
										Vc = 120 m/min, *fz* = 0.4 mm/t						
		~ 200HB	For impact resistance	AH130	MJ	100 - 150	0.3 - 0.8	0.3 - 0.8	0.08	2,390	2,390	2,120	2,120	1,910	2,870	3,820
										Vc = 120 m/min, *fz* = 0.5 mm/t						
K	Grey cast iron GG25, GGG30, etc.	150 ~ 250HB	First choice	AH725	MJ	100 - 300	0.5 - 1.2	0.5 - 1.5	0.1	3,980	6,370	3,540	5,660	3,180	7,630	10,180
										Vc = 200 m/min, *fz* = 0.8 mm/t						
		150 ~ 250HB	For low cutting force	AH725	ML	100 - 300	0.5 - 0.7	0.5 - 1	0.1	3,980	4,780	3,540	4,250	3,180	5,720	7,630
										Vc = 200 m/min, *fz* = 0.6 mm/t						
	Ductile cast iron GGG40, etc.	150 ~ 250HB	First choice	AH725	MJ	80 - 200	0.5 - 1.2	0.5 - 1.5	0.1	2,980	4,770	2,650	4,240	2,390	5,740	7,650
										Vc = 150 m/min, *fz* = 0.8 mm/t						
		150 ~ 250HB	For low cutting force	AH725	ML	80 - 200	0.5 - 0.7	0.5 - 1	0.1	2,980	3,580	2,650	3,180	2,390	4,300	5,740
										Vc = 150 m/min, *fz* = 0.6 mm/t						
S	Titanium alloys Ti-6Al-4V, etc.	~ 40HRC	-	AH725	ML	30 - 60	0.3 - 0.5	0.3 - 0.7	0.08	800	640	710	570	640	770	1,020
										Vc = 40 m/min, *fz* = 0.4 mm/t						
	Heat-resistant alloys Inconel, Hastelloy, etc.	~ 40HRC	-	AH725	MJ	20 - 50	0.1 - 0.2	0.1 - 0.3	0.05	600	180	530	160	480	216	290
										Vc = 30 m/min, *fz* = 0.15 mm/t						
H	Hardened steel X40CrMoV5-1, etc.	40 ~ 50HRC	First choice	AH3035	MJ	80 - 130	0.1 - 0.2	0.1 - 0.3	0.05	1,990	600	1,770	530	1,590	720	950
			For wear resistance	AH725						*Vc* = 100 m/min, *fz* = 0.15 mm/t						
	Hardened steel X153CrMoV12, etc.	50 ~ 60HRC	First choice	AH725	MJ	50 - 70	0.03 - 0.05	0.03 - 0.07	0.03	1,190	100	1,060	80	950	114	150
			For impact resistance	AH3035						*Vc* = 60 m/min, *fz* = 0.04 mm/t						

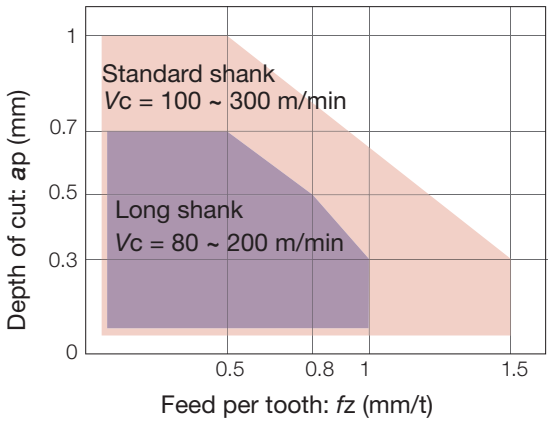
When chips stay in the cutting zone during slotting or pocketing, use air blast to remove chips from the work area.

Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.

CAUTIONARY POINTS IN USE

The use of a standard or long shank

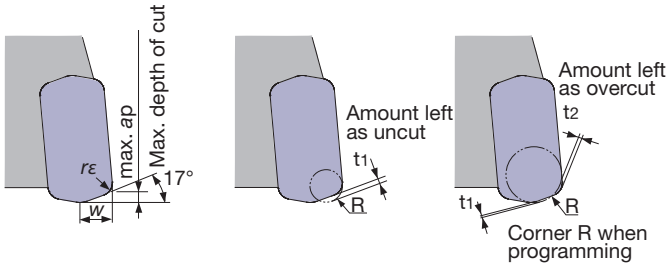
When using a long shank, please lower the cutting conditions (*Vc*, *fz*, *ap*) to 70% of the maximum conditions for the standard shank.



Tool dia.: ø*Dc* = ø16 ~ 35 mm
Workpiece material: C55 (200HB)
L/D ratio of overhang
Standard shank: L/D ≤ 3
Long shank: L/D = 4

Tool geometry on program

When programming for CAM, the tool should be considered as a radius cutters. Usually, the corner radius should be set as R = 1.5 mm. If a larger radius is used, overcutting will occur. The following table shows the amount left as uncut (t_1) and overcut (t_2).



Max. depth of cut max. *ap*	Corner radius *rε*	*W* (mm)	Corner R when program-ming	Amount left as uncut t_1	Amount left as overcut t_2
1	1.2	3	1	0.6	-
			1.5	0.5	-
			2	0.25	0.08
			2.5	0.14	0.26

Each value in table is calculated theoretically at the maximum condition.

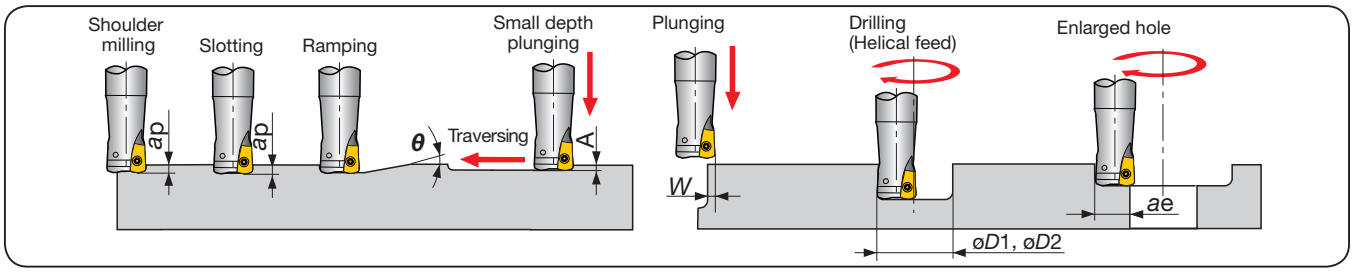
Tool dia.: ø*Dc* (mm), Number of revolutions: *n* (min^{-1}), Feed speed: *Vf* (mm/min), Max. depth of cut: *ap* = 1.0 mm

ø22			ø25			ø28			ø30			ø32			ø35			ø40			ø50		
n	*Vf*		*n*	*Vf*		*n*	*Vf*		*n*	*Vf*		*n*	*Vf*		*n*	*Vf*		*n*	*Vf*		*n*	*Vf*	
	z = 3	z = 4		z = 4	z = 5		z = 4	z = 5		z = 4	z = 5		z = 5	z = 6		z = 5	z = 6		z = 5	z = 6		z = 5	z = 8
2,890	6,940	9,250	2,550	10,200	12,750	2,270	9,080	11,350	2,120	8,480	10,600	1,990	9,950	11,940	1,820	9,100	10,920	1,590	7,950	9,540	1,270	6,350	10,160
			Vc = 200 m/min, *fz* = 1 mm/t																				
2,890	5,200	6,940	2,550	8,160	10,200	2,270	7,260	9,080	2,120	6,780	8,480	1,990	7,960	9,550	1,820	7,280	8,740	1,590	6,360	7,630	1,270	5,080	8,130
			Vc = 200 m/min, *fz* = 0.8 mm/t																				
2,890	6,940	9,250	2,550	10,200	12,750	2,270	9,080	11,350	2,120	8,480	10,600	1,990	9,950	11,940	1,820	9,100	10,920	1,590	7,950	9,540	1,270	6,350	10,160
			Vc = 200 m/min, *fz* = 1 mm/t																				
2,170	5,210	6,940	1,910	7,640	9,550	1,710	6,840	8,550	1,590	6,360	7,950	1,490	7,450	8,940	1,360	6,800	8,160	1,190	5,950	7,140	950	4,750	5,700
			Vc = 150 m/min, *fz* = 1 mm/t																				
2,170	3,910	5,210	1,910	6,110	7,640	1,710	5,470	6,840	1,590	5,090	6,360	1,490	5,960	7,150	1,360	5,440	6,530	1,190	4,760	5,710	950	3,800	4,560
			Vc = 150 m/min, *fz* = 0.8 mm/t																				
2,170	5,210	6,940	1,910	7,640	9,550	1,710	6,840	8,550	1,590	6,360	7,950	1,490	7,450	8,940	1,360	6,800	8,160	1,190	5,950	7,140	950	4,750	5,700
			Vc = 150 m/min, *fz* = 1 mm/t																				
2,170	3,910	5,210	1,910	6,110	7,640	1,710	5,470	6,840	1,590	5,090	6,360	1,490	5,960	7,150	1,360	5,440	6,530	1,190	4,760	5,710	950	3,800	4,560
			Vc = 150 m/min, *fz* = 0.8 mm/t																				
1,740	2,090	2,780	1,530	3,060	3,830	1,360	2,720	3,400	1,270	2,540	3,180	1,190	2,980	3,570	1,090	2,730	3,270	950	2,380	2,850	760	1,900	3,040
			Vc = 120 m/min, *fz* = 0.5 mm/t																				
1,740	2,610	3,480	1,530	3,670	4,590	1,360	3,264	4,080	1,270	3,050	3,810	1,190	3,570	4,280	1,090	3,270	3,920	950	2,850	3,420	760	2,280	3,650
			Vc = 120 m/min, *fz* = 0.6 mm/t																				
2,890	6,940	9,250	2,550	10,200	12,750	2,270	9,080	11,350	2,120	8,480	10,600	1,990	9,950	11,940	1,820	9,100	10,920	1,590	7,950	9,540	1,270	6,350	10,160
			Vc = 200 m/min, *fz* = 1 mm/t																				
2,890	5,200	6,940	2,550	8,160	10,200	2,270	7,260	9,080	2,120	6,780	8,480	1,990	7,960	9,550	1,820	7,280	8,740	1,590	6,360	7,630	1,270	5,080	8,130
			Vc = 200 m/min, *fz* = 0.8 mm/t																				
2,170	5,210	6,940	1,910	7,640	9,550	1,710	6,840	8,550	1,590	6,360	7,950	1,490	7,450	8,940	1,360	6,800	8,160	1,190	5,950	7,140	950	4,750	5,700
			Vc = 150 m/min, *fz* = 1 mm/t																				
2,170	3,910	5,210	1,910	6,110	7,640	1,710	5,470	6,840	1,590	5,090	6,360	1,490	5,960	7,150	1,360	5,440	6,530	1,190	4,760	5,710	950	3,800	4,560
			Vc = 150 m/min, *fz* = 0.8 mm/t																				
580	700	930	510	1,020	1,280	450	900	1,130	420	840	1,050	400	1,000	1,200	360	900	1,080	320	800	960	250	630	1,000
			Vc = 40 m/min, *fz* = 0.5 mm/t																				
430	190	260	380	300	290	340	270	260	320	260	240	300	300	270	270	270	240	240	240	220	190	190	230
			Vc = 30 m/min, *fz* = 0.2 mm/t																				
1,450	650	870	1,270	1,020	1,270	1,140	910	1,140	1,060	850	1,060	990	990	1,190	910	910	1,090	800	800	960	640	640	1,020
			Vc = 100 m/min, *fz* = 0.2 mm/t																				
870	100	140	760	150	190	680	140	170	640	130	160	600	150	180	550	140	170	480	120	140	380	100	150
			Vc = 60 m/min, *fz* = 0.05 mm/t																				

The above table shows the conditions for standard shank type cutters. When using long shank type cutters, the number of teeth may be different. In this case, the cutting conditions should be changed by referring to: “The usage of standard and long shanks” shown in previous page.

Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually while making sure the machine is running normally.

APPLICATION RANGE



Designation	Tool dia. ø*Dc*	Max. depth of cut Max *ap*	Max. ramping angle *θ*°	Max. plunging depth A	Max. cutting width in plunging *W*	Min.machinable hole dia. ø*D1*	Max.machinable hole dia. ø*D2*	Max. cutting width in enlarged hole *ae*
E/HXN03R016M...	ø16	1	2.1	0.3	3.5	22	30	12.5
E/HXN03R018M...	ø18	1	1.7	0.3	3.5	26	34	14.5
E/HXN03R020M...	ø20	1	1.4	0.3	3.5	30	38	16.5
E/HXN03R022M...	ø22	1	1.2	0.3	3.5	34	42	18.5
E/HXN03R025M...	ø25	1	1.0	0.3	3.5	40	48	21.5
E/HXN03R028M...	ø28	1	0.8	0.3	3.5	46	54	24.5
E/HXN03R030M...	ø30	1	0.7	0.3	3.5	50	58	26.5
E/HXN03R032M...	ø32	1	0.7	0.3	3.5	54	62	28.5
EXN03R035M...	ø35	1	0.6	0.3	3.5	60	68	31.5
TXN03R040M...	ø40	1	0.5	0.3	3.5	70	78	36.5
TXN03R050M...	ø50	1	0.4	0.3	3.5	90	98	46.5

· For ø*Dc* above 33 mm, slot milling, ramping or contouring is not recommended as chips may be re-cut.

TXN06

Super high feed milling cutters with double sided inserts with 4 edges

A.R. = +10°, R.R. = +2° ~ +6°



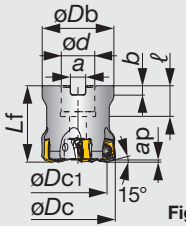


Fig.1

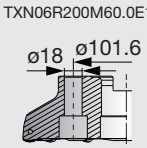


Fig.2



Designation	Max. *ap*	ø*Dc*	z	ø*Dc1*	ø*Db*	*Lf*	ø*d*	*ℓ*	*a*	*b*	Kg	Air hole	Insert	Fig.
TXN06R050M22.0E04	1.5	50	4	37.6	47	50	22	20	10.4	6.3	0.4	with	LN*U06...	1
TXN06R050M22.0E05	1.5	50	5	37.6	47	50	22	20	10.4	6.3	0.4	with	LN*U06...	1
TXN06R052M22.0E04	1.5	52	4	39.6	49	50	22	20	10.4	6.3	0.5	with	LN*U06...	1
TXN06R052M22.0E05	1.5	52	5	39.6	49	50	22	20	10.4	6.3	0.5	with	LN*U06...	1
TXN06R063M22.0E04	1.5	63	4	50.6	59	50	22	20	10.4	6.3	0.8	with	LN*U06...	1
TXN06R063M22.0E06	1.5	63	6	50.6	59	50	22	20	10.4	6.3	0.8	with	LN*U06...	1
TXN06R066M27.0E04	1.5	66	4	53.6	63	50	27	22	12.4	7	0.8	with	LN*U06...	1
TXN06R066M27.0E06	1.5	66	6	53.6	63	50	27	22	12.4	7	0.8	with	LN*U06...	1
TXN06R080M27.0E05	1.5	80	5	67.6	76	63	27	22	12.4	7	1.6	with	LN*U06...	1
TXN06R080M27.0E08	1.5	80	8	67.6	76	63	27	22	12.4	7	1.6	with	LN*U06...	1
TXN06R100M32.0E06	1.5	100	6	87.6	96	63	32	25	14.4	8	2.2	with	LN*U06...	1
TXN06R125M40.0E08	1.5	125	8	112.6	100	63	40	37	16.4	9	3	with	LN*U06...	1
TXN06R160M40.0E10	1.5	160	10	147.6	100	63	40	37	16.4	9	5	with	LN*U06...	1
TXN06R200M60.0E12	1.5	200	12	187.6	130	63	60	38	25.7	14	7.2	without	LN*U06...	2

SPARE PARTS







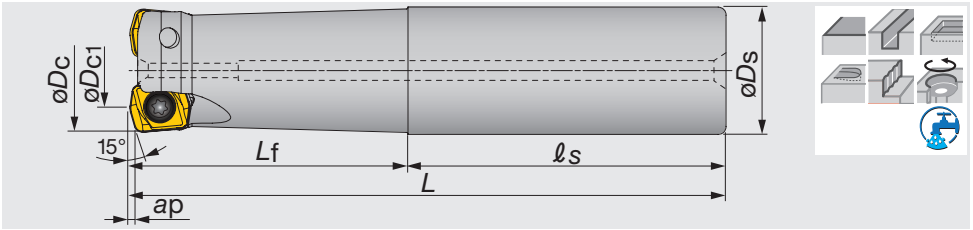

Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Shell locking bolt 1	Torx bit
TXN06R050M22.0...	CSPB-5	H-TB2W	M-1000	-	FSHM10-40H	BLDIP20/S7
TXN06R052M22.0...	CSPB-5	H-TB2W	M-1000	-	FSHM10-40H	BLDIP20/S7
TXN06R063M...	CSPB-5	H-TB2W	M-1000	-	CM10X30H	BLDIP20/S7
TXN06R066,080M27.0...	CSPB-5	H-TB2W	M-1000	-	CM12X30H	BLDIP20/S7
TXN06R100M...	CSPB-5	H-TB2W	M-1000	-	CM16X40H	BLDIP20/S7
TXN06R125M...	CSPB-5	H-TB2W	M-1000	TMBA-M20H	-	BLDIP20/S7
TXN06R160M40.0...	CSPB-5	H-TB2W	M-1000	TMBA-M20H	-	BLDIP20/M7
TXN06R200M60.0...	CSPB-5	H-TB2W	M-1000	-	-	BLDIP20/M7

EXN06

Super high feed milling endmills with double sided inserts with 4 edges

A.R. = +10°, R.R. = -2° ~ +6°





Designation	Max. ap	øDc	z	øDc1	øDs	L	Lf	ℓs	Kg	Air hole	Insert
EXN06R032M32.0-02	1.5	32	2	19.7	32	150	70	80	0.8	with	LN*U06...
EXN06R032M32.0-02L	1.5	32	2	19.7	32	200	120	80	1.1	with	LN*U06...
EXN06R035M32.0-02	1.5	35	2	22.7	32	150	45	105	0.9	with	LN*U06...
EXN06R035M32.0-02L	1.5	35	2	22.7	32	200	45	155	1.2	with	LN*U06...
EXN06R040M32.0-03	1.5	40	3	27.6	32	150	45	105	0.9	with	LN*U06...
EXN06R040M32.0-03L	1.5	40	3	27.6	32	220	45	175	1.3	with	LN*U06...

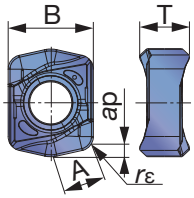
SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
EXN06	CSPB-5	M-1000	IP-20D

INSERT

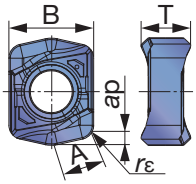
LNMU06-MJ





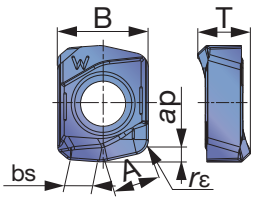
LNMU06-ML





LNGU06-W (2 cutting edges)





P	Steel	☆		★	★	
M	Stainless		★	☆	☆	
K	Cast iron	★		☆		
N	Non-ferrous					
S	Superalloys	★	☆	★		
H	Hard materials			★	★	

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH120	AH130	AH725	AH3035	A	B	T	bs
LNMU06X5ZER-MJ	2	1.5	●	●	●	●	6	12	7	-
LNMU06X5ZER-ML	2	1.5	●	●	●	●	6	12	7	-
LNGU06X5ZER-W	2	1.5			●		6	12	7	3.6

●: Line-up

STANDARD CUTTING CONDITIONS TXN06 / EXN06

ISO	Workpiece material	Hardness	Priority	Grade	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t) Tool dia.: *øDc* (mm) ø32 ~ ø200	Feed per tooth: *fz* (mm/t) Plunging	ø32, z = 2 *n*	ø32, z = 2 *Vf*	ø35, z = 2 *n*	ø35, z = 2 *Vf*	ø40, z = 3 *n*	ø40, z = 3 *Vf*
P	Carbon steel C45, C55, etc.	~ 300HB	First choice	AH725	MJ	100 - 300	0.5 - 1.5	0.15	1,990	3,980	1,820	3,640	1,590	4,770
			For wear resistance	AH120					*Vc* = 200 m/min, *fz* = 1 mm/t					
			For impact resistance	AH3035										
	Alloy steel 42CrMo4, 17Cr3, etc.	~ 300HB	First choice	AH725	MJ	100 - 200	0.5 - 1.5	0.15	1,490	2,980	1,360	2,720	1,190	3,570
			For wear resistance	AH120					*Vc* = 150 m/min, *fz* = 1 mm/t					
			For impact resistance	AH3035										
	Prehardened steel NAK80, PX5, etc.	30 ~ 40HRC	-	AH3035	ML	100 - 200	0.5 - 1	0.15	1,490	2,380	1,360	2,180	1,190	2,860
									Vc = 150 m/min, *fz* = 0.8 mm/t					
M	Stainless steel X5CrNi18-10, X5CrNiMo17-12-2, etc.	~ 200HB	First choice	AH130	ML	100 - 150	0.3 - 0.7	0.1	1,190	1,190	1,090	1,090	950	1,430
									Vc = 120 m/min, *fz* = 0.5 mm/t					
		~ 200HB	For impact resistance	AH130	MJ	100 - 150	0.3 - 0.8	0.1	1,190	1,430	1,090	1,310	950	1,710
									Vc = 120 m/min, *fz* = 0.6 mm/t					
K	Grey cast iron GG25, GGG30, etc.	150 ~ 250HB	First choice	AH120	MJ	100 - 300	0.5 - 1.5	0.15	1,990	3,980	1,820	3,640	1,590	4,770
									Vc = 200 m/min, *fz* = 1 mm/t					
		150 ~ 250HB	For low cutting force	AH120	ML	100 - 300	0.5 - 1	0.15	1,990	3,180	1,820	2,910	1,590	3,820
									Vc = 200 m/min, *fz* = 0.8 mm/t					
	Ductile cast iron GGG40, etc.	150 ~ 250HB	First choice	AH120	MJ	80 - 200	0.5 - 1.5	0.15	1,490	2,980	1,360	2,720	1,190	3,570
									Vc = 150 m/min, *fz* = 1 mm/t					
		150 ~ 250HB	For low cutting force	AH120	ML	80 - 200	0.5 - 1	0.15	1,490	2,380	1,360	2,180	1,190	2,860
									Vc = 150 m/min, *fz* = 0.8 mm/t					
S	Titanium alloys Ti-6Al-4V, etc.	~ 40HRC	-	AH725	ML	30 - 60	0.3 - 0.7	0.08	400	400	360	360	320	480
									Vc = 40 m/min, *fz* = 0.5 mm/t					
	Heat-resistant alloys Inconel, Hastelloy, etc.	~ 40HRC	-	AH725	MJ	20 - 50	0.1 - 0.3	0.05	300	120	270	110	240	140
									Vc = 30 m/min, *fz* = 0.2 mm/t					
H	Hardened steel X40CrMoV5-1, etc.	40 ~ 50HRC	First choice	AH3035	MJ	80 - 130	0.1 - 0.3	0.05	990	400	910	360	800	480
			For wear resistance	AH725					*Vc* = 100 m/min, *fz* = 0.2 mm/t					
	Hardened steel X153CrMoV12, etc.	50 ~ 60HRC	First choice	AH725	MJ	50 - 70	0.03 - 0.07	0.03	600	60	550	60	480	70
			For impact resistance	AH3035					*Vc* = 60 m/min, *fz* = 0.05 mm/t					

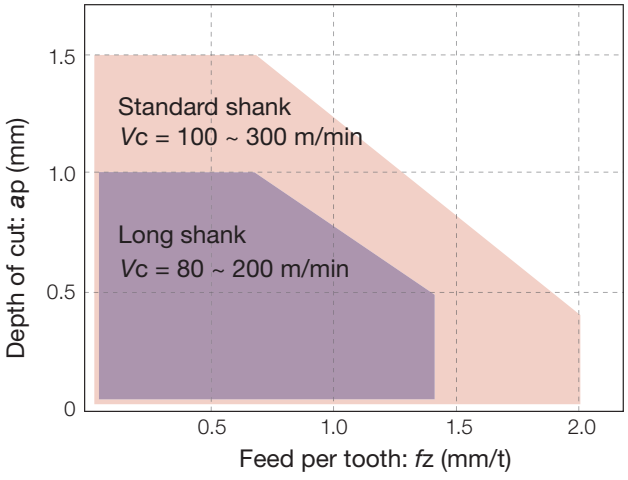
When chips stay in the cutting zone during slotting or pocketing, use air blast to remove chips from the work area.

Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.

CAUTIONARY POINTS IN USE

The usage of a standard & long shank

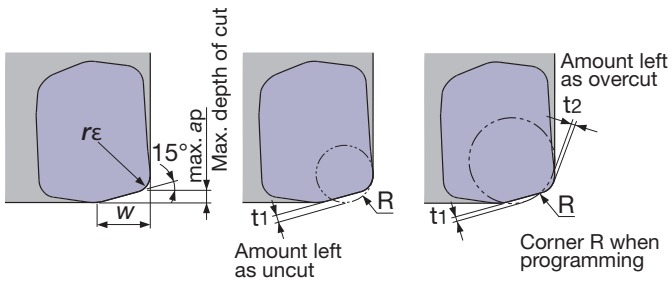
When using a long shank, please lower the cutting conditions (*Vc*, *fz*, *ap*) to 70% of the maximum conditions for the standard shank.



Tool dia.: *øDc* = ø32 ~ 40 mm
Workpiece material: C55 (200HB)
L/D ratio of overhang
Standard shank: L/D ≤ 3
Long shank: L/D = 4

Tool geometry on program

When programming for CAM, the tool should be considered as a radius cutters. Usually, the corner radius should be set as R = 3 mm. If a larger radius is used, overcutting will occur. The following table shows the amount left as uncut (t_1) and overcut (t_2).



Max. depth of cut max. ap(mm)	Corner radius *r*ε	*W* (mm)	Corner R when programming	Amount left as uncut t_1	Amount left as overcut t_2
1.5	2	6	2	1	-
			3	0.77	-
			4	0.54	0.26

Each value in table is calculated theoretically at the maximum condition.

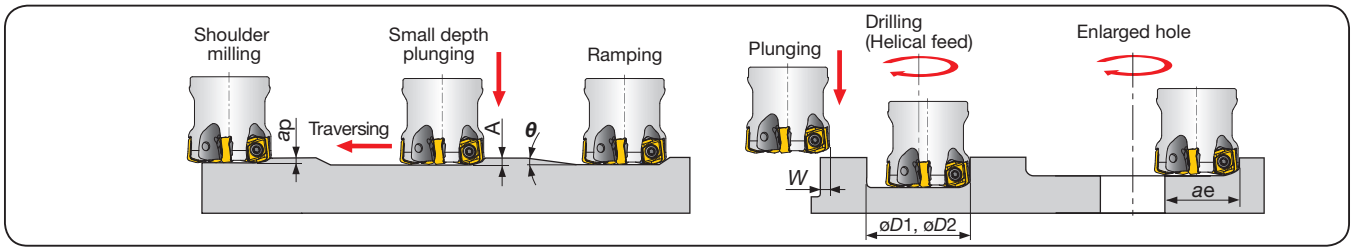
Tool dia.: ø*Dc* (mm), Number of revolutions: *n* (min^{-1}), Feed speed: *Vf* (mm/min), Max. depth of cut: *ap* = 1.5 mm, No. of inserts: z

ø50			ø52			ø63			ø66			ø80			ø100, z = 6		ø125, z = 8		ø160, z = 10		ø200, z = 12	
n	*Vf*		*n*	*Vf*		*n*	*Vf*		*n*	*Vf*		*n*	*Vf*		*n*	*Vf*	*n*	*Vf*	*n*	*Vf*	*n*	*Vf*
	z = 4	z = 5		z = 4	z = 5		z = 4	z = 6		z = 4	z = 6		z = 5	z = 8								
1,270	5,080	6,350	1,220	4,880	6,100	1,010	4,040	6,060	960	3,840	5,760	800	4,000	6,400	637	3,822	510	4,076	398	3,981	318	3,822
Vc = 200 m/min, *fz* = 1 mm/t																						
950	3,800	4,750	920	3,680	4,600	760	3,040	4,560	720	2,880	4,320	600	3,000	4,800	478	2,866	382	3,057	299	2,986	239	2,866
Vc = 150 m/min, *fz* = 1 mm/t																						
950	3,040	3,800	920	2,940	3,680	760	2,430	3,650	720	2,300	3,460	600	2,400	3,840	478	2,293	382	2,446	299	2,389	239	2,293
Vc = 150 m/min, *fz* = 0.8 mm/t																						
760	1,520	1,900	730	1,460	1,830	610	1,220	1,830	580	1,160	1,740	480	1,200	1,920	382	1,146	306	1,223	239	1,194	191	1,146
Vc = 120 m/min, *fz* = 0.5 mm/t																						
760	1,820	2,280	730	1,750	2,190	610	1,470	2,200	580	1,390	2,090	480	1,440	2,300	382	1,376	306	1,468	239	1,433	191	1,376
Vc = 120 m/min, *fz* = 0.6 mm/t																						
1,270	5,080	6,350	1,220	4,880	6,100	1,010	4,040	6,060	960	3,840	5,760	800	4,000	6,400	637	3,822	510	4,076	398	3,981	318	3,822
Vc = 200 m/min, *fz* = 1 mm/t																						
1,270	4,060	5,080	1,220	3,900	4,880	1,010	3,230	4,850	960	3,070	4,610	800	3,200	5,120	637	3,057	510	3,261	398	3,185	318	3,057
Vc = 200 m/min, *fz* = 0.8 mm/t																						
950	3,800	4,750	920	3,680	4,600	760	3,040	4,560	720	2,880	4,320	600	3,000	4,800	478	2,866	382	3,057	299	2,986	239	2,866
Vc = 150 m/min, *fz* = 1 mm/t																						
950	3,040	3,800	920	2,940	3,680	760	2,430	3,650	720	2,300	3,460	600	2,400	3,840	478	2,293	382	2,446	299	2,389	239	2,293
Vc = 150 m/min, *fz* = 0.8 mm/t																						
250	500	630	240	480	600	200	400	600	190	380	570	160	400	640	127	382	102	408	80	398	64	382
Vc = 40 m/min, *fz* = 0.5 mm/t																						
190	150	190	180	140	180	150	120	180	140	110	170	120	120	190	96	115	76	122	60	119	48	115
Vc = 30 m/min, *fz* = 0.2 mm/t																						
640	510	640	610	490	610	510	410	610	480	380	580	400	400	640	318	382	255	408	199	398	159	382
Vc = 100 m/min, *fz* = 0.2 mm/t																						
380	80	100	370	75	90	300	60	90	290	60	85	240	60	100	191	57	153	61	119	60	96	57
Vc = 60 m/min, *fz* = 0.05 mm/t																						

The above table shows the conditions for standard shank type cutters. When using long shank type cutters, the number of teeth may be different. In this case, the cutting conditions should be changed by referring to: “The usage of standard and long shanks” shown in previous page.

Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually while making sure the machine is running normally.

APPLICATION RANGE



Designation	Tool dia. ø*Dc*	Max. depth of cut Max. *ap*	Max. ramping angle *θ*°	Max. plunging depth A	Max. cutting width in plunging *W*	Min.machinable hole dia. ø*D1*	Max.machinable hole dia. ø*D2*	Max. cutting width in enlarged hole *ae*
EXN06R032M...	ø32	1.5	2	0.5	6	47	59	25
EXN06R035M...	ø35	1.5	1.7	0.5	6	53	65	28
EXN06R040M...	ø40	1.5	1.3	0.5	6	63	75	33
TXN06R050M...	ø50	1.5	0.9	0.5	6	83	95	43
TXN06R052M...	ø52	1.5	0.8	0.5	6	87	99	45
TXN06R063M...	ø63	1.5	0.6	0.5	6	109	121	56
TXN06R066M...	ø66	1.5	0.5	0.5	6	115	127	59
TXN06R080M...	ø80	1.5	0.5	0.5	6	143	155	73
TXN06R100M...	ø100	1.5	0.34	0.5	6	183	195	93
TXN06R125M...	ø120	1.5	0.26	0.5	6	223	235	108
TXN06R160M...	ø160	1.5	0.2	0.5	6	303	315	153
TXN06R200M...	ø200	1.5	0.15	0.5	6	383	395	193

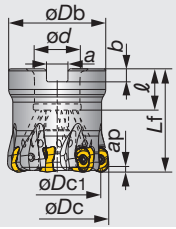
· For ø*Dc* above 100 mm, slot milling, ramping or contouring is not recommended as chips may be re-cut.

DOTWIST BALL
TXLN

Radius cutter with double-sided insert with 4 edges

A.R. = +3°, R.R. = -13°







Designation	Max. ap	øDc	z	øDc1	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TXLN04M040B16.0R06	4	40	6	32	35	40	16	18	8.4	5.6	0.35	with	LNMX04...
TXLN04M050B22.0R07	4	50	7	42	47	50	22	20	10.4	6.3	0.45	with	LNMX04...

SPARE PARTS







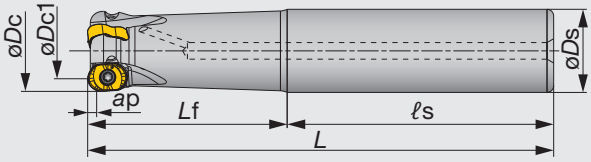
Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Torx bit
TXLN04M040B16.0R06	CSPD-3	SW6-SD	M-1000	FSHM8-30H	BLD IP10/S7
TXLN04M050B22.0R07	CSPD-3	SW6-SD	M-1000	CM10X30H	BLD IP10/S7

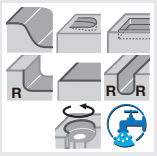
DOTWIST BALL
EXLN

Radius cutter with double-sided insert with 4 edges

A.R. = +3°, R.R. = -12° ~ -14°







Designation	Max. ap	øDc	z	øDc1	øDs	ℓs	Lf	L	Kg	Air hole	Insert
EXLN04M020C20.0R02	4	20	2	12	20	80	50	130	0.28	with	LNMX04...
EXLN04M025C25.0R03	4	25	3	17	25	80	60	140	0.46	with	LNMX04...
EXLN04M032C32.0R04	4	32	4	24	32	80	70	150	0.83	with	LNMX04...
EXLN04M032C32.0R05	4	32	5	24	32	80	70	150	0.83	with	LNMX04...

SPARE PARTS



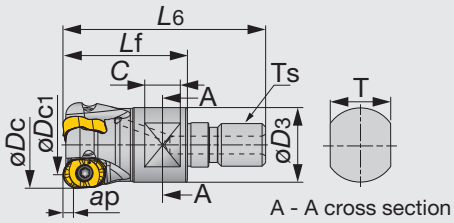

Designation	Clamping screw	Mono block type wrench
EXLN04...	CSPD-3	IP-10D

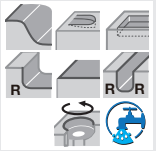
HXLN04-M

Radius cutter with double-sided insert with 4 edges, Modular head with metric threaded adaptation

A.R. = +3°, R.R. = -12° ~ -14°







Designation	Max. ap	øDc	z	øDc1	L6	Lf	C	T	øD3	Ts	Kg	Air hole	Insert
HXLN04M020M10R02	4	20	2	12	49	30	10	15	18	M10	0.07	with	LNMX04...
HXLN04M025M12R03	4	25	3	17	57	35	10	17	21	M12	0.16	with	LNMX04...
HXLN04M032M16R04	4	32	4	24	63	40	12	22	29	M16	0.2	with	LNMX04...

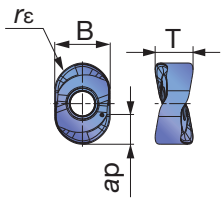
SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
HXLN04...	CSPD-3	M-1000	IP-10D

INSERT

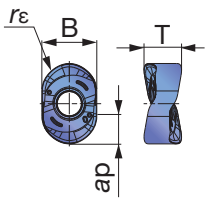
LNMX-MJ





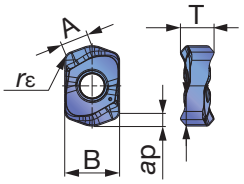
LNMX-ML





LNMX-HJ





P	Steel	☆	★
M	Stainless		★
K	Cast iron	★	
N	Non-ferrous		
S	Superalloys	★	☆
H	Hard materials	★	★

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH120	Coating AH3135	A	B	T
LNMX0405R4-MJ	4	4	●	●	-	8.2	5.6
LNMX0405R4-ML	4	4	●	●	-	8.2	5.6
LNMX0405ZER-HJ	1.3	1.3	●	●	4.3	8.2	5

●: Line-up

STANDARD CUTTING CONDITIONS

For MJ, ML type

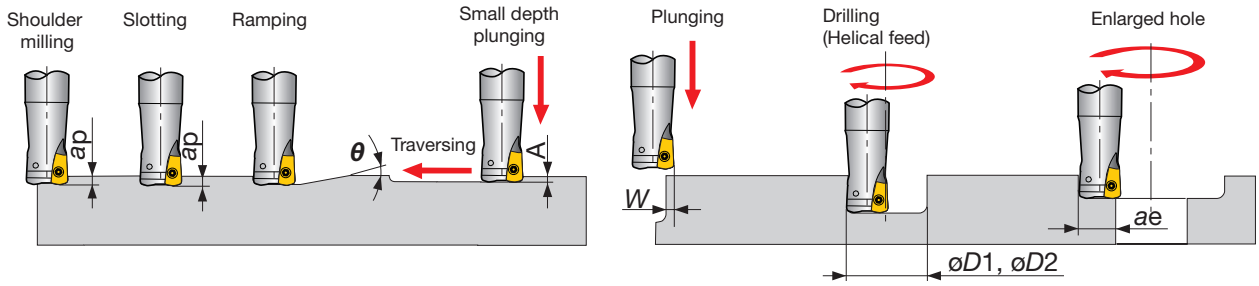
ISO	Workpiece material		Hardness	Priority	Grade	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steels C15, C20, etc.		- 300 HB	First choice	AH3135	MJ	150 - 250	0.2 - 0.6
			- 300 HB	Second choice	AH3135	ML	150 - 250	0.2 - 0.6
	Carbon steels, Alloy steels C55, 42CrMoS4, etc.		- 300 HB	First choice	AH3135	MJ	150 - 250	0.2 - 0.6
			- 300 HB	Second choice	AH3135	ML	150 - 250	0.2 - 0.6
	Prehardened steels NAK80, PX5, etc.		30 - 40 HRC	First choice	AH3135	MJ	100 - 200	0.15 - 0.4
			30 - 40 HRC	Second choice	AH3135	ML	100 - 200	0.15 - 0.4
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc		- 200 HB	First choice	AH3135	MJ	100 - 200	0.2 - 0.6
			- 200 HB	Second choice	AH3135	ML	100 - 200	0.2 - 0.6
	Stainless steels X12Cr113, X20Cr13, etc		- 200 HB	First choice	AH3135	MJ	100 - 300	0.2 - 0.6
			- 200 HB	Second choice	AH3135	ML	100 - 300	0.2 - 0.6
K	Grey cast irons 250, 300, etc.		150 - 250 HB	First choice	AH120	MJ	150 - 250	0.2 - 0.6
			150 - 250 HB	Second choice	AH120	ML	150 - 250	0.2 - 0.6
	Ductile cast irons 400-15, 600-3, etc.		150 - 250 HB	First choice	AH120	MJ	150 - 250	0.2 - 0.6
			150 - 250 HB	Second choice	AH120	ML	150 - 250	0.2 - 0.6
H	Hardened steel	X40CrMoV5-1, etc	40 - 50 HRC	First choice	AH3135	MJ	50 - 150	0.1 - 0.3
			40 - 50 HRC	Second choice	AH3135	ML	50 - 150	0.1 - 0.3
		X153CrMoV12, etc	50 - 60 HRC	First choice	AH120	MJ	50 - 70	0.05 - 0.15
			50 - 60 HRC	Second choice	AH120	ML	50 - 70	0.05 - 0.15

For HJ type

ISO	Workpiece material		Hardness	Priority	Grade	Chipbreaker	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steels C15, C20, etc.		- 300 HB	First choice	AH3135	HJ	150 - 250	0.5 - 1.3
				Second choice	AH120	HJ	150 - 250	0.5 - 1.3
	Carbon steels, Alloy steels C55, 42CrMoS4, etc.		- 300 HB	First choice	AH3135	HJ	150 - 250	0.5 - 1.3
				Second choice	AH120	HJ	150 - 250	0.5 - 1.3
	Prehardened steels NAK80, PX5, etc.		30 - 40 HRC	First choice	AH3135	HJ	100 - 200	0.3 - 0.7
				Second choice	AH120	HJ	100 - 200	0.3 - 0.7
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc		- 200 HB	First choice	AH3135	HJ	100 - 200	0.3 - 0.7
			- 200 HB	First choice	AH3135	HJ	100 - 300	0.3 - 0.7
K	Grey cast irons 250, 300, etc.		150 - 250 HB	First choice	AH120	HJ	150 - 250	0.5 - 1.3
	Ductile cast irons 400-15, 600-3, etc.		150 - 250 HB	First choice	AH120	HJ	150 - 250	0.5 - 1.3
H	Hardened steel	X40CrMoV5-1, etc	40 - 50 HRC	First choice	AH3135	HJ	50 - 150	0.1 - 0.5
				Second choice	AH120	HJ	50 - 150	0.1 - 0.5
		X153CrMoV12, etc	50 - 60 HRC	First choice	AH120	HJ	50 - 70	0.05 - 0.2

Note: Recommended cutting conditions are just for reference in general machining.

APPLICATION RANGE



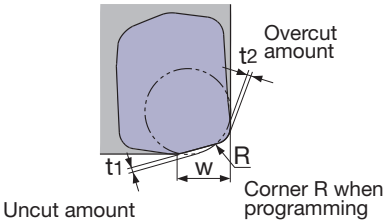
For MJ, ML type

Designation	Tool dia. øDc	øDc1	Max. depth of cut ap	Max. ramping angle θ°	Max. plunging depth A	Max. cutting width in plunging W	Min. machining øD1	Max. machining øD2	Max. cutting width in enlarging ae
EXLN04M020C20.0R02	20	12	4	4.7	0.8	4	28	38	15
EXLN04M025C25.0R03	25	17	4	3	0.8	4	38	48	20
EXLN04M032C32.0R04	32	24	4	2	0.8	4	50	62	27
EXLN04M032C32.0R05	32	24	4	1.7	0.7	4	50	62	27
TXLN04M040B16.0R06	40	32	4	1.3	0.7	4	68	78	36
TXLN04M050B22.0R07	50	42	4	1	0.7	4	88	98	46
HXLN04M020M10R02	20	12	4	4.7	0.8	4	28	38	15
HXLN04M025M12R03	25	17	4	3	0.8	4	38	48	20
HXLN04M032M16R04	32	24	4	2	0.8	4	50	62	27

For HJ type

Designation	Tool dia. øDc	øDc1	Max. depth of cut ap	Max. ramping angle θ°	Max. plunging depth A	Max. cutting width in plunging W	Min. machining øD1	Max. machining øD2	Max. cutting width in enlarging ae
EXLN04M020C20.0R02	20	12	1.3	4.9	0.75	4.1	27	38	15.5
EXLN04M025C25.0R03	25	17	1.3	3	0.75	4.1	37	48	20.5
EXLN04M032C32.0R04	32	24	1.3	2	0.75	4.1	51	62	27.5
EXLN04M032C32.0R05	32	24	1.3	2	0.75	4.1	51	62	27.5
TXLN04M040B16.0R06	40	32	1.3	1.4	0.75	4.1	67	78	35.5
TXLN04M050B22.0R07	50	42	1.3	1	0.75	4.1	87	98	45.5
HXLN04M020M10R02	20	12	1.3	4.9	0.75	4.1	27	38	15.5
HXLN04M025M12R03	25	17	1.3	3	0.75	4.1	37	48	20.5
HXLN04M032M16R04	32	24	1.3	2	0.75	4.1	51	62	27.5

TOOL GEOMETRY ON PROGRAM



Max. depth of cut max. ap (mm)	W (mm)	Programmed corner R (mm)	Amount left uncut t1 (mm)	Amount left overcut t2 (mm)
1.3	4.1	R1.5	0.8	0
1.3	4.1	R2.0	0.65	0
1.3	4.1	R2.5	0.5	0.05
1.3	4.1	R3.0	0.36	0.2

MEMO

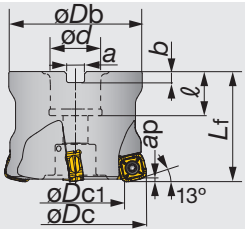
DOFEEDQUAD

TXQ

High feed cutter for face milling

A.R. = +7°, R.R. = -8° ~ -4.5°





Designation	Max. ap	øDc	z	øDc1	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TXQ12R050M22.0E03	2	50	3	33.8	47	50	22	20	10.4	6.3	0.4	with	SQMU1206ZSR-MJ
TXQ12R052M22.0E03	2	52	3	35.8	49	50	22	20	10.4	6.3	0.5	with	SQMU1206ZSR-MJ
TXQ12R063M22.0E04	2	63	4	46.8	59	50	22	20	10.4	6.3	0.8	with	SQMU1206ZSR-MJ
TXQ12R066M27.0E04	2	66	4	49.8	63	50	27	22	12.4	7	0.9	with	SQMU1206ZSR-MJ
TXQ12R080M27.0E05	2	80	5	63.8	76	63	27	22	12.4	7	1.6	with	SQMU1206ZSR-MJ
TXQ12R100M32.0E06	2	100	6	83.8	96	63	32	25	14.4	8	3	with	SQMU1206ZSR-MJ
TXQ12R125M40.0E07	2	125	7	108.8	98	63	40	32	16.4	9	3.2	with	SQMU1206ZSR-MJ

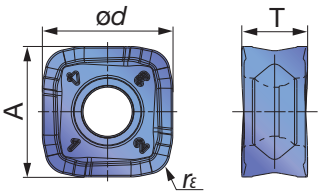
SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Shell locking bolt 1	Torx bit
TXQ12R050, 052M22.0...	CSPB-4	H-TBS	M-1000	-	FSHM10-40H	BLDIP15/S7
TXQ12R063M22.0E04	CSPB-4	H-TBS	M-1000	-	CM10X30H	BLDIP15/S7
TXQ12R066, 080M27.0...	CSPB-4	H-TBS	M-1000	-	CM12X30H	BLDIP15/S7
TXQ12R100M32.0E06	CSPB-4	H-TBS	M-1000	-	CM16X40H	BLDIP15/S7
TXQ12R125M40.0E07	CSPB-4	H-TBS	M-1000	TMBA-M20H	-	BLDIP15/S7

INSERT

SQMU-MJ





P	Steel	☆		★	☆		
M	Stainless		★	☆			
K	Cast iron	★		☆			
N	Non-ferrous						
S	Superalloys	★	☆	★			
H	Hard materials			★			

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH120	AH130	AH725	T3130	A	T	ød
SQMU1206ZSR-MJ	2	2	●	●	●	●	11.7	6	11.7

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	High carbon steels C45, etc.	~ 300HB	First choice	AH725	100 - 300	0.5 - 2
			For wear resistance	T3130	100 - 300	0.5 - 2
			For impact resistance	AH130	100 - 300	0.5 - 2
	Alloyed steels 42CrMo4, etc.	~ 300HB	First choice	AH725	100 - 200	0.5 - 1.5
			For wear resistance	T3130	100 - 200	0.5 - 1.5
			For impact resistance	AH130	100 - 200	0.5 - 1.5
	Prehardened steels PX5, NAK80, etc.	30 ~ 40HRC	-	AH725	100 - 200	0.5 - 1
M	Stainless steel X5CrNi18-9, etc.	~ 200HB	-	AH130	100 - 150	0.3 - 0.8
K	Grey cast iron 250, etc.	-	-	AH120	100 - 300	0.5 - 2
	Ductile cast irons 600-3, etc.	-	-	AH120	80 - 200	0.5 - 2
S	Titanium alloy Ti-6Al-4V, etc.	~ 40HRC	-	AH725	30 - 60	0.3 - 0.7
H	Hardened steels X40CrMoV5-1, etc.	40 ~ 50HRC	-	AH725	80 - 130	0.1 - 0.3
		50 ~ 60HRC	-	AH725	50 - 70	0.03 - 0.07

· Slot or pocket milling is not recommended, since the chip re-cutting easily occurs.
· Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.

· Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually while making sure the machine is running normally.

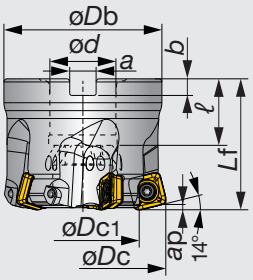
Tool dia.: ø*D*c (mm), Number of revolutions: *n* (min^{-1}), Feed speed: *V*f (mm/min), Max. depth of cut: *a*p = 2 mm

ø50		ø63		ø80		ø100		ø125	
n	***V*f**	***n***	***V*f**	***n***	***V*f**	***n***	***V*f**	***n***	***V*f**
1,270	4,570	1,010	4,850	790	4,740	630	4,540	500	4,200
				*V*c = 200 m/min, *f*z = 1.2 mm/t					
950	2,850	750	3,000	590	2,950	470	2,820	380	2,660
				*V*c = 150 m/min, *f*z = 1.0 mm/t					
950	2,280	750	2,400	590	2,360	470	2,260	380	2,130
				*V*c = 150 m/min, *f*z = 0.8 mm/t					
760	1,140	600	1,200	470	1,180	380	1,140	300	1,050
				*V*c = 120 m/min, *f*z = 0.5 mm/t					
1,270	4,570	1,010	4,850	790	4,740	630	4,540	500	4,200
				*V*c = 200 m/min, *f*z = 1.2 mm/t					
950	3,420	750	3,600	590	3,540	470	3,380	380	3,190
				*V*c = 150 m/min, *f*z = 1.2 mm/t					
250	370	200	400	150	380	120	360	100	350
				*V*c = 40 m/min, *f*z = 0.5 mm/t					
630	380	500	400	390	390	310	370	250	350
				*V*c = 100 m/min, *f*z = 0.2 mm/t					
380	60	300	60	235	60	190	60	150	50
				*V*c = 60 m/min, *f*z = 0.05 mm/t					

Super high-feed miling cutter with large depth of cut; Bore type

A.R. = +5°, R.R. = 0°





Designation	Max. ap	øDc	z	øDc1	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TXSW15M050B22.0R03	2.5	50	3	24.1	47	50	22	20	10.4	6.3	0.4	with	SWMT15...
TXSW15M063B22.0R04	2.5	63	4	37.1	59	50	22	20	10.4	6.3	0.66	with	SWMT15...
TXSW15M080B27.0R05	2.5	80	5	54.1	76	63	27	22	12.4	7	1.41	with	SWMT15...
TXSW15M100B32.0R06	2.5	100	6	74.1	96	63	32	25	14.4	8	2.26	with	SWMT15...
TXSW15M125B40.0R07	2.5	125	7	99.1	100	63	40	32	16.4	9	2.83	with	SWMT15...
TXSW15M160B40.0R08	2.5	160	8	134.1	100	63	40	32	16.4	9	4.23	with	SWMT15...

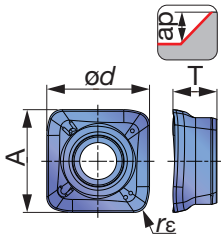
SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Shell locking bolt 1	Torx bit
TXSW15M050B22.0R03	TS50115I	H-TB2W	M-1000	-	SR PS 118-0273	BT20S
TXSW15M063B22.0R04	TS50115I	H-TB2W	M-1000	-	FSHM10-40H	BT20S
TXSW15M080B27.0R05	TS50115I	H-TB2W	M-1000	-	CM12X30H	BT20S
TXSW15M100B32.0R06	TS50115I	H-TB2W	M-1000	-	CM16X40H	BT20S
TXSW15M125B40.0R07	TS50115I	H-TB2W	M-1000	TMBA-M20H	-	BT20M
TXSW15M160B40.0R08	TS50115I	H-TB2W	M-1000	TMBA-M20H	-	BT20M

INSERT

SWMT-MJ





P	Steel	☆	★
M	Stainless		★
K	Cast iron	★	
N	Non-ferrous		
S	Superalloys	★	☆
H	Hard materials	★	★

★ : First choice
☆ : Second choice

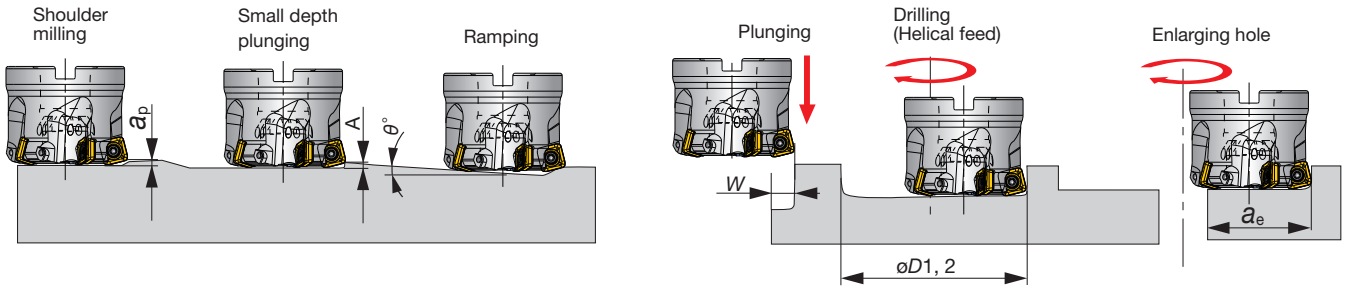
Designation	rε	Max. ap	Coating AH120	Coating AH3135	A	ød	T
SWMT1506ZER-MJ	2	2.5	●	●	15.9	15.9	6.8

●: Line-up

STANDARD CUTTING CONDITIONS

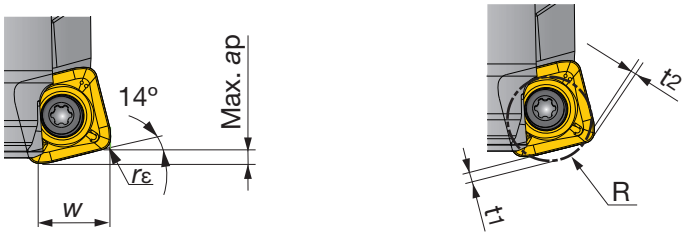
ISO	Workpiece material		Hardness	Priority	Grade	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steel C15E4, E275A, etc.		- 300 HB	First choice	AH3135	MJ	100 - 300	0.5 - 2
			- 300 HB	Second choice	AH120	MJ	100 - 300	0.5 - 2
	Carbon steel and alloy steel C55, 42CrMo4, etc.		- 300 HB	First choice	AH3135	MJ	100 - 200	0.5 - 2
			- 300 HB	Second choice	AH120	MJ	100 - 200	0.5 - 2
	Prehardened steel NAK80, PX5, etc.		30 - 40 HRC	First choice	AH3135	MJ	100 - 200	0.5 - 1.5
			30 - 40 HRC	Second choice	AH120	MJ	100 - 200	0.5 - 1.5
M	Stainless steel X5CrNi18-9, X5CrNiMo17-12-3, etc.		- 200 HB	First choice	AH3135	MJ	100 - 150	0.3 - 1
K	Grey cast iron 250,300, etc.		150 -250 HB	First choice	AH120	MJ	100 - 300	0.5 - 2
	Ductile cast iron 600-3, etc.		150 -250 HB	First choice	AH120	MJ	80 - 200	0.5 - 2
S	Titanium alloys Ti-6Al-4V, etc.		- 40 HRC	First choice	AH3135	MJ	30 - 60	0.3 - 0.7
	Superalloys Inconel718, etc.		- 40 HRC	First choice	AH120	MJ	20 - 50	0.1 - 0.3
H	Hardened steel	X40CrMoV5-1, etc.	40 - 50 HRC	First choice	AH3135	MJ	80 - 130	0.1 - 0.3
		X153CrMoV12, etc.	50 - 60 HRC	First choice	AH120	MJ	50 - 70	0.03 - 0.07

APPLICATION RANGE



Designation	Tool dia. øDc	Max. depth of cut ap	Max. plunging depth A	Max. ramping angle θ°	Max. cutting width in plunging W	Min. machining dia. øD1	Max. machining dia. øD2	Max. cutting width in enlarging ae
TXSW15M050B...	50	2.5	0.7	4.8	15	70	95	36
TXSW15M063B...	63	2.5	0.7	2.9	15	96	121	49
TXSW15M080B...	80	2.5	0.7	2	15	130	155	66
TXSW15M100B...	100	2.5	0.7	1.4	15	170	195	86
TXSW15M125B...	125	2.5	0.7	1	15	220	245	111
TXSW15M160B...	160	2.5	0.7	0.7	15	290	315	146

TOOL GEOMETRY ON PROGRAM



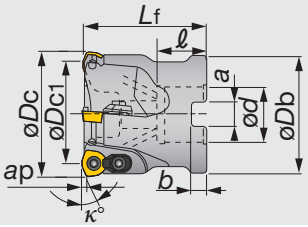
Max. ap (mm)	Actual corner radius rε (mm)	W (mm)	Programmed corner radius R (mm)	Uncut amount t1 (mm)	Overcut amount t2 (mm)
2.5	2	12.7	4	1.99	-
2.5	2	12.7	4.5	1.88	-
2.5	2	12.7	5	1.78	0.01

- When programming for CAM, the tool should be considered as a radius cutter. Usually, the corner radius should be set in R = 4.5 mm.
If a larger radius is used, overcutting may occur. The above table shows the uncut (t1) and overcut (t2) amounts for the programmed corner radius.

MILLFEED
TXP05/06/08/09
Super high feed milling cutter

A.R. = +5°, R.R. = -4° ~ -6°







Designation	Max. *ap*	ø*Dc*	z	ø*Dc1*	ø*Db*	*Lf*	ø*d*	*ℓ*	*a*	*b*	*κ°*	Kg	Air hole	Insert
TXP05063RB-E	1.5	63	6	55.4	59	50	22	20	10.4	6.3	15	0.8	with	WPM*05...
TXP05080RB-E	1.5	80	7	72.4	76	63	27	22	12.4	7	15	1.7	with	WPM*05...
TXP06063RB-E	1.5	63	5	54.4	59	50	22	20	10.4	6.3	20	0.7	with	WPM*06...
TXP06080RB-E	1.5	80	6	71.4	76	63	27	22	12.4	7	20	1.6	with	WPM*06...
TXP08050R-E	1.5	50	3	38.6	47	50	22	20	10.4	6.3	10	0.4	without	WPMT08...
TXP08052R-E	1.5	52	3	40.6	50	50	22	20	10.4	6.3	10	0.5	without	WPMT08...
TXP08063R-E	1.5	63	4	51.6	59	50	22	20	10.4	6.3	10	0.7	without	WPMT08...
TXP08066R-E	1.5	66	4	54.6	63	50	27	22	12.4	7	10	0.8	without	WPMT08...
TXP08080R-E	1.5	80	5	68.6	76	63	27	22	12.4	7	10	1.5	without	WPMT08...
TXP08100R-E	1.5	100	6	88.6	96	63	32	25	14.4	8	10	2.5	without	WPMT08...
TXP09063R-E	3	63	3	49.4	59	50	22	20	10.4	6.3	20	0.6	without	WPMT09...
TXP09080R-E	3	80	4	66.4	76	63	27	22	12.4	7	20	1.3	without	WPMT09...
TXP09100R-E	3	100	5	86.4	96	63	32	25	14.4	8	20	2.4	without	WPMT09...
TXP09125R-E	3	125	6	111.4	98	63	40	32	16.4	9	20	2.9	without	WPMT09...

SPARE PARTS

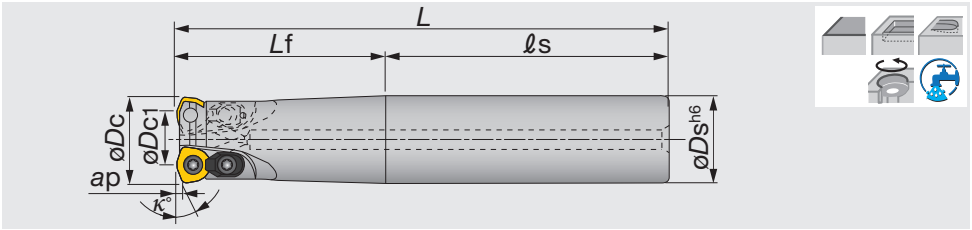
Designation	Clamp set	Clamping screw	Lubricant	Shell locking bolt	Shell locking bolt 1	Shell locking bolt 2	Wrench	Wrench 1
TXP05063RB-E	CSY-15	CSPB-3.5S	M-1000	-	CM10X30H	-	IP-15D	-
TXP05080RB-E	CSY-15	CSPB-3.5S	M-1000	-	-	CAP-CM12X1.75X30	IP-15D	-
TXP06063RB-E	CSY-15	CSPB-4S	M-1000	-	CM10X30H	-	IP-15D	-
TXP06080RB-E	CSY-15	CSPB-4S	M-1000	-	CM12X30H	-	IP-15D	-
TXP08050, 052R-E	CSX20	CSTB-5	M-1000	-	-	FSHM10-40	-	T-20T
TXP08063, 066R-E	CSX20	CSTB-5	M-1000	-	-	-	-	T-20T
TXP08080R-E	CSX20	CSTB-5	M-1000	-	-	-	-	T-20T
TXP08100R-E	CSX20	CSTB-5	M-1000	-	-	-	-	T-20T
TXP09063R-E	CSY-20	CSPB-5	M-1000	-	-	-	-	IP-20T
TXP09080R-E	CSY-20	CSPB-5	M-1000	-	-	-	-	IP-20T
TXP09100R-E	CSY-20	CSPB-5	M-1000	-	-	-	-	IP-20T
TXP09125R-E	CSY-20	CSPB-5	M-1000	-	-	-	-	IP-20T

EXP05/06/08/09

Super high feed endmill

A.R. = +5°, R.R. = -6°





Designation	Max. *ap*	ø*D*c	z	ø*D*c1	ø*D*s	*L*	*L*f	ℓs	κ°	Air hole	Insert	shank
EXP05020RL	1.5	20	2	12.4	20	180	100	80	15	with	WPM*05...	Cylindrical
EXP05020RLL	1.5	20	2	12.4	20	250	130	120	15	with	WPM*05...	Cylindrical
EXP05020RS	1.5	20	2	12.4	20	130	50	80	15	with	WPM*05...	Cylindrical
EXP05021RL	1.5	21	2	13.4	20	180	100	80	15	with	WPM*05...	Cylindrical
EXP05021RLL	1.5	21	2	13.4	20	250	50	200	15	with	WPM*05...	Cylindrical
EXP05021RS	1.5	21	2	13.4	20	130	50	80	15	with	WPM*05...	Cylindrical
EXP06025RL	1.5	25	2	16.4	25	200	120	80	20	with	WPM*06...	Cylindrical
EXP06025RLL	1.5	25	2	16.4	25	300	180	120	20	with	WPM*06...	Cylindrical
EXP06025RS	1.5	25	2	16.4	25	140	60	80	20	with	WPM*06...	Cylindrical
EXP06026RL	1.5	26	2	17.4	25	200	120	80	20	with	WPM*06...	Cylindrical
EXP06026RLL	1.5	26	2	17.4	25	300	60	240	20	with	WPM*06...	Cylindrical
EXP06026RS	1.5	26	2	17.4	25	140	60	80	20	with	WPM*06...	Cylindrical
EXP06032RL	1.5	32	2	23.4	32	200	120	80	20	with	WPM*06...	Cylindrical
EXP06032RLB	1.5	32	3	23.4	32	200	120	80	20	with	WPM*06...	Cylindrical
EXP06032RLL	1.5	32	2	23.4	32	300	180	120	20	with	WPM*06...	Cylindrical
EXP06032RS	1.5	32	2	23.4	32	150	70	80	20	with	WPM*06...	Cylindrical
EXP06032RSB	1.5	32	3	23.4	32	150	70	80	20	with	WPM*06...	Cylindrical
EXP06033RL	1.5	33	2	24.4	32	200	120	80	20	with	WPM*06...	Cylindrical
EXP06033RLB	1.5	33	3	24.4	32	200	120	80	20	with	WPM*06...	Cylindrical
EXP06033RLL	1.5	33	2	24.4	32	300	70	230	20	with	WPM*06...	Cylindrical
EXP06033RS	1.5	33	2	24.4	32	150	70	80	20	with	WPM*06...	Cylindrical
EXP06033RSB	1.5	33	3	24.4	32	150	70	80	20	with	WPM*06...	Cylindrical
EXP06040RL	1.5	40	3	31.4	32	250	50	200	20	with	WPM*06...	Cylindrical
EXP06040RLL	1.5	40	3	31.4	32	300	50	250	20	with	WPM*06...	Cylindrical
EXP06040RLS42	1.5	40	3	31.4	42	250	50	200	20	with	WPM*06...	Cylindrical
EXP06040RS	1.5	40	3	31.4	32	150	50	100	20	with	WPM*06...	Cylindrical
EXP08040RLA	1.5	40	2	28.6	32	250	50	200	10	with	WPMT08...	Cylindrical
EXP08040RLL	1.5	40	2	28.6	32	300	50	250	10	with	WPMT08...	Cylindrical
EXP08040RSA	1.5	40	2	28.6	32	150	50	100	10	with	WPMT08...	Cylindrical
EXP09050RS	3	50	2	36.4	42	150	50	100	20	with	WPMT09...	Cylindrical
EXP09050RL	3	50	2	36.4	42	250	50	200	20	with	WPMT09...	Cylindrical

SPARE PARTS



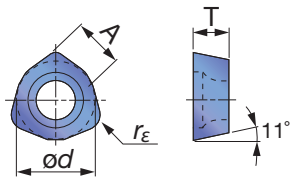




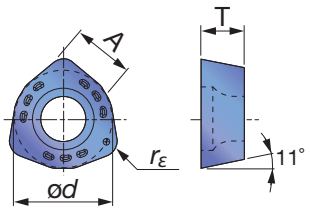
Designation	Clamp set	Clamping screw	Lubricant	Wrench	Wrench 1
EXP050...	-	CSPB-3.5S	M-1000	IP-15D	-
EXP060...	CSY-15	CSPB-4S	M-1000	IP-15D	-
EXP080...	CSX20	CSTB-5	M-1000	-	T-20T
EXP090...	CSY-20	CSPB-5	M-1000	-	IP-20T

INSERT

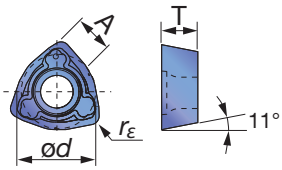
WPMW05/06



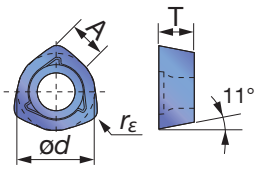
WPMT08/09



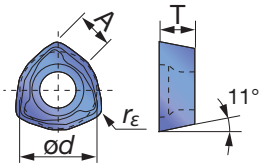
WPMT05/06/08/09-ML



WPMT05/06/08/09-MH



WPMT05/06/08/09-DML



		AH120	AH130	AH140	AH730	T3130
P	Steel	★				★
M	Stainless		★	★		
K	Cast iron	★				
N	Non-ferrous					
S	Superalloys	★	☆			
H	Hard materials				★	

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	AH120	AH130	AH140	AH730	T3130	A	ød	T
WPMW05H315ZPR	1.5	1.5	●		●		●	5	7.94	3.5
WPMT05H315ZPR-ML	1.5	1.5	●		●		●	5	7.94	3.5
WPMT05H315ZPR-MH	1.5	1.5	●		●			5	7.94	3.5
WPMT05H315ZPR-DML	1.5	1.5				●		5	7.94	3.5
WPMW06X415ZPR	1.5	1.5	●		●		●	6	9.525	4.2
WPMT06X415ZPR-ML	1.5	1.5	●	●	●		●	6	9.525	4.2
WPMT06X415ZPR-MH	1.5	1.5	●		●			6	9.525	4.2
WPMT06X415ZPR-DML	1.5	1.5				●		6	9.525	4.2
WPMT080615ZSR	1.5	1.5	●	●	●		●	8	12.87	6.35
WPMT080615ZPR-ML	1.5	1.5	●	●	●		●	8	12.87	6.35
WPMT080615ZSR-MH	1.5	1.5	●		●			8	12.87	6.35
WPMT080615ZPR-DML	1.5	1.5				●		8	12.87	6.35
WPMT090725ZSR	2.5	3	●		●		●	9	15	7
WPMT090725ZPR-ML	2.5	3	●	●	●		●	9	15	7
WPMT090725ZSR-MH	2.5	3	●	●	●			9	15	7
WPMT090725ZPR-DML	2.5	3				●		9	15	7

●: Line-up

STANDARD CUTTING CONDITIONS

05·06 type

ISO	Workpiece material	Insert grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	ø20, 21 (z = 2)	ø25, 26 (z = 2)	ø32, 33 (z = 2, 3)	ø40 (z = 3)	ø63 (z = 5, 6)	ø80 (z = 6, 7)
P	Carbon Steels C50, etc. < 300HB	AH120 (T3130)	100 ~ 250	0.5 ~ 2	*Vc* = 150 m/min, *fz* = 0.8 mm/t *ap* =1 mm, *ae* = 1D mm	*Vc* = 150 m/min, *fz* = 1 mm/t *ap* = 1 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.2 mm/t					
	Alloy steels 42CrMo4etc, etc. < 300 HB	AH120 (T3130)	100 ~ 200	0.5 ~ 2	*Vc* = 130 m/min, *fz* = 0.8 mm/t *ap* = 1 mm, *ae* = 1D mm	*Vc* = 130 m/min, *fz* = 1 mm/t *ap* = 1 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.2 mm/t					
	Prehardened steels NAK80, PX5, X96CrMoV12, etc. 30 ~ 40HRC	AH120 (T3130)	80 ~ 150	0.5 ~ 1	*Vc* = 100 m/min, *fz* = 0.5 mm/t *ap* = 1 mm, *ae* = 1D mm	*Vc* = 100 m/min, *fz* = 0.5 mm/t *ap* = 1 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.1 mm/t					
M	Stainless steels X5CrNi18 9, etc.	AH130 AH140	100 ~ 200	0.5 ~ 2	*Vc* = 130 m/min, *fz* = 0.8 mm/t *ap* = 1 mm, *ae* = 1D mm	*Vc* = 130 m/min, *fz* = 1 mm/t *ap* = 1 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.2 mm/t					
K	Cast irons 250, etc.	AH120	100 ~ 250	0.8 ~ 2.5	*Vc* = 150 m/min, *fz* = 1 mm/t *ap* = 1 mm, *ae* = 1D mm	*Vc* = 180 m/min, *fz* = 1.5 mm/t *ap* = 1 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.2 mm/t					
H	Hard materials X153CrMoV12, etc. 40 ~ 50HRC	AH730	50 ~ 80	0.5 ~ 1	*Vc* = 70 m/min, *fz* = 0.7 mm/t, *ap* = 0.7 mm, *ae* = 1D mm					
					When plunging in small depth: *fz* = 0.1 mm/t					

08 type

ISO	Workpiece material	Insert grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	ø40 (z = 2)	ø50 (z = 3)	ø63 (z = 4)	ø80 (z = 5)	ø100 (z = 6)
P	Carbon Steels C50, etc. < 300HB	AH120 (T3130)	100 ~ 250	0.5 ~ 2	*Vc* = 180 m/min, *fz* = 1 mm/t *ap* = 1 mm, *ae* = 40 mm	*Vc* = 200 m/min, *fz* = 1.5 mm/t *ap* = 1 mm, *ae* = 1D mm			
					When plunging in small depth: *fz* = 0.2 mm/t				
	Alloy steels 42CrMo4, etc. < 300 HB	AH120 (T3130)	100 ~ 200	0.5 ~ 2	*Vc* = 130 m/min, *fz* = 1 mm/t *ap* = 1 mm, *ae* = 40 mm	*Vc* = 150 m/min, *fz* = 1.5 mm/t *ap* = 1 mm, *ae* = 1D mm			
					When plunging in small depth: *fz* = 0.2 mm/t				
	Prehardened steels NAK80, PX5, X96CrMoV12, etc. 30 ~ 40HRC	AH120 (T3130)	80 ~ 150	0.5 ~ 1	*Vc* = 100 m/min, *fz* = 0.5 mm/t *ap* = 1 mm, *ae* = 40 mm	*Vc* = 120 m/min, *fz* = 0.8 mm/t *ap* = 1 mm, *ae* = 1D mm			
					When plunging in small depth: *fz* = 0.1 mm/t				
M	Stainless steels X5CrNi18 9, etc.	AH130 AH140	100 ~ 200	0.5 ~ 2	*Vc* = 130 m/min, *fz* = 1 mm/t *ap* = 1 mm, *ae* = 40 mm	*Vc* = 150 m/min, *fz* = 1.5 mm/t *ap* = 1 mm, *ae* = 1D mm			
					When plunging in small depth: *fz* = 0.2 mm/t				
K	Cast irons 250, etc.	AH120	150 ~ 250	0.8 ~ 2.5	*Vc* = 180 m/min, *fz* = 1.5 mm/t *ap* = 1 mm, *ae* = 40 mm	*Vc* = 200 m/min, *fz* = 2 mm/t *ap* = 1 mm, *ae* = 1D mm			
					When plunging in small depth: *fz* = 0.2 mm/t				
H	Hard materials X153CrMoV12, etc. 40 ~ 50HRC	AH730	50 ~ 80	0.5 ~ 1	*Vc* = 70 m/min, *fz* = 0.7 mm/t, *ap* = 0.7 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.1 mm/t				

Note: • The above values of cutting speed show the standard speed when overhang length of tool is below 3D. The cutting speed and the feed rate should be set at the lower limit values when overhang length of tool exceeds 3D.
• Thick and heavy chips are discharged by these TAC mills. Use internal air supply or air-blowing in order to prevent tool failure.

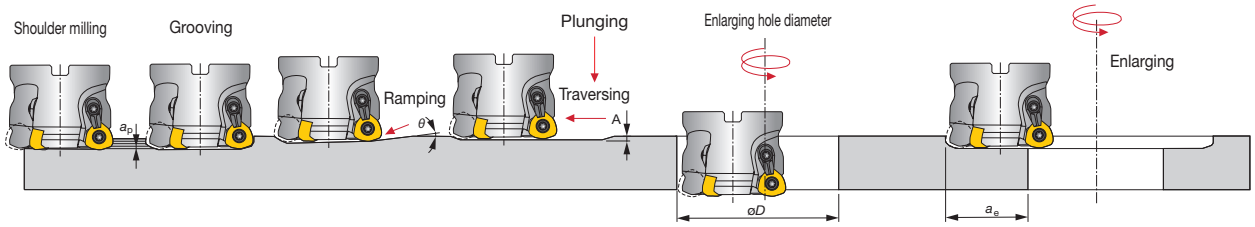
STANDARD CUTTING CONDITIONS

09 type

ISO	Workpiece material	Insert grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	ø50 (z = 2)	ø63 (z = 3)	ø80 (z = 4)	ø100 (z = 5)	ø125 (z = 6)
P	Carbon Steels C50, etc. < 300HB	AH120 (T3130)	100 ~ 250	0.5 ~ 2	*Vc* = 200 m/min, *fz* = 1.5 mm/t, *ap* = 2 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.2 mm/t				
	Alloy steels 42CrMo4etc, etc. < 300 HB	AH120 (T3130)	100 ~ 200	0.5 ~ 2	*Vc* = 150 m/min, *fz* = 1.5 mm/t, *ap* = 2 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.2 mm/t				
	Prehardened steels NAK80, PX5, X96CrMoV12, etc. 30 ~ 40HRC	AH120 (T3130)	80 ~ 150	0.5 ~ 1	*Vc* = 120 m/min, *fz* = 0.8 mm/t, *ap* = 2 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.1 mm/t				
M	Stainless steels X5CrNi18 9, etc.	AH130 AH140	100 ~ 200	0.5 ~ 2	*Vc* = 150 m/min, *fz* = 1.5 mm/t, *ap* = 2 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.2 mm/t				
K	Cast irons 250, etc.	AH120	150 ~ 250	0.8 ~ 2.5	*Vc* = 200 m/min, *fz* = 2 mm/t, *ap* = 2 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.2 mm/t				
H	Hard materials X153CrMoV12, etc. 40 ~ 50HRC	AH730	60 ~ 100	0.5 ~ 1	*Vc* = 70 m/min, *fz* = 0.7 mm/t, *ap* = 0.7 mm, *ae* = 1D mm				
					When plunging in small depth: *fz* = 0.1 mm/t				

Notes : The cutting speed and feed should be set to 70 to 80 % of the value shown in the above table when overhang length of tool exceeds 3D.

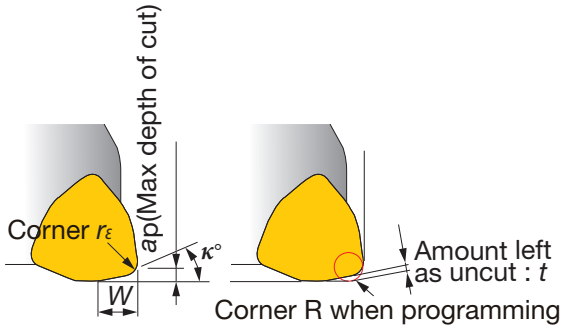
APPLICATION RANGE



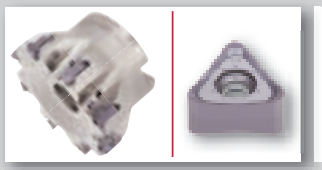
Designation	øDc	Max. depth of cut ap	Max. ramping angle θ°	Max. plunging depth A	Min. machining hole dia. øD	Max. machining hole dia. øD	Max. cutting width in enlarging hole ae
EXP05020RS/L	20	1.5	3	0.5	30	37	16
EXP05021RS/L	21	1.5	2.5	0.5	32	39	17
TXP05063RB-E	63	1.5	1	0.5	116	123	59
TXP05080RB-E	80	1.5	0.5	0.5	150	157	76
E/HXP06025...	25	1.5	5	1	33	47	20
E/HXP06026...	26	1.5	4.5	1	35	49	21
E/HXP06032...	32	1.5	3.5	1	47	61	27
E/HXP06033...	33	1.5	3	1	49	63	28
E/HXP06040...	40	1.5	2	1	63	77	35
HXP06050R...	50	1.5	1.5	1	83	97	45
TXP06063RB-E	63	1.5	1	1	109	123	58
TXP06080RB-E	80	1.5	0.5	1	143	157	75
E/HXP08040R/L	40	1.5	6	1	53	77	34
T/HXP08050...	50	1.5	4	1	72	97	44
TXP08052R-E	52	1.5	4	1	76	101	46
TXP08063...	63	1.5	2.5	1	98	123	57
TXP08066R-E	66	1.5	2.5	1	104	129	60
TXP08080...	80	1.5	1.5	1	132	157	74
TXP08100...	100	1.5	1	1	172	197	94
EXP09050RS/L	50	3	1.5	0.8	76	97	43
HXP09050R...	50	3	1.5	0.8	76	97	43
TXP09063R...	63	3	2	1.5	98	123	56
TXP09080R...	80	3	1.5	1.5	132	157	73
TXP09100R...	100	3	1	1.5	172	197	93
TXP09125R...	125	3	0.75	1.5	222	247	118

TOOL GEOMETRY ON PROGRAM

When programming for CAD/CAM, the tool should be assumed to be a radius cutter shown in below table. In the case, the amount left as uncut (t) is shown below.



TXP	Max. depth of cut ap	Corner of insert rε	Cutting edge angle κ°	W	t	Corner R when programming
05	1.5	1.5	15	3.8	0.5	R2
06	1.5	1.5	20	4.3	0.7	R2.5
08	1.5	1.5	10	5.7	0.7	R2
09	3	2.5	20	6.8	1.4	R3
09	3	2.5	20	6.8	1.2	R4

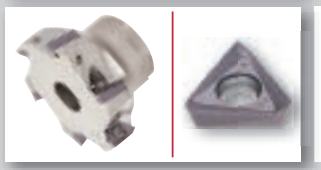


DO-FORCE TRI — D034

Economical and versatile shoulder mills with double-sided triangular inserts

90° ø32 - ø125 mm
max. ap 11 mm

P M K S

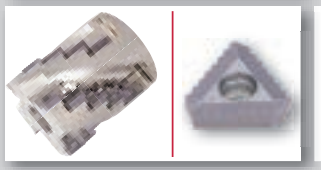


TUNG-TRI — D038

High-precision shoulder mills with single-sided triangular inserts

90° ø12 - ø160 mm
max. ap 15 mm

P M K S



TUNG-TRI SHRED — D047

Square shoulder milling cutters for roughing to produce shredded chips

90° ø50 - ø100 mm
max. ap 16 mm

P M K S



TUNG-FORCE REC — D050

Mini square shoulder milling cutters for high productivity

90° ø8 - ø16 mm
max. ap 6 mm

P M K N S H



TUNGREC — D054

Excellent surface finish and wall accuracy in shoulder milling

90° ø12 - ø160 mm
max. ap 16.7 mm

P M K N S



TUNGQUAD — D070

Ideal tool for milling small parts on small machines

90° ø12 - ø40 mm
max. ap 4 mm

P M K N

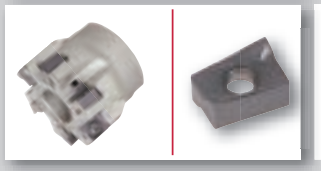


TUNGMILL — D074

Single-sided inserts with low cutting force for shoulder milling

90° ø50 - ø125 mm
max. ap 10 mm

P M K N



DOREC — D080

Shoulder milling cutters for general purpose with 4-cornered double-sided inserts

90° ø25 - ø160 mm
max. ap 16 mm

P M K S

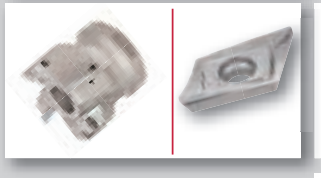


TECMILL — D084

Shoulder milling cutters for heavy duty with 4-cornered tangentially mounted inserts

90° ø32 - ø125 mm
max. ap 15.1 mm

P M K S



TUNG-ALUMILL — D086

Highly polished and positive routing cutters for aluminium and non-ferrous metals

90° ø25 - ø125 mm
max. ap 16 mm

N

Other Shoulder Milling Tools — D089

EPH, ELP, EPE, T/EPS17, PES, ESD, TPP, TSE3000/4000, DEB1000



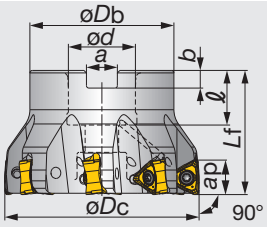
DoForce-Tri

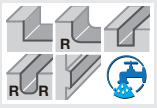
TPTN12

Square Shoulder milling cutters with double-sided triangular insert

A.R. = +4.2°~ +4.7°, R.R. = -15.4°~ -11.2°







Designation	Max. *ap*	*øDc*	z	*øDb*	*Lf*	*ød*	*ℓ*	*a*	*b*	Kg	Air hole	C.bolt	Insert
TPTN12M050B22.0R04	11	50	4	47	40	22	20	10.4	6.3	0.4	with	CM10X30H	TN*U12...
TPTN12M050B22.0R05	11	50	5	47	40	22	20	10.4	6.3	0.4	with	CM10X30H	TN*U12...
TPTN12M063B22.0R05	11	63	5	47	40	22	20	10.4	6.3	0.6	with	CM10X30H	TN*U12...
TPTN12M063B22.0R06	11	63	6	47	40	22	20	10.4	6.3	0.6	with	CM10X30H	TN*U12...
TPTN12M080B27.0R06	11	80	6	58	50	27	22	12.4	7	1.1	with	CM12X30H	TN*U12...
TPTN12M080B27.0R08	11	80	8	58	50	27	22	12.4	7	1.1	with	CM12X30H	TN*U12...
TPTN12M100B32.0R07	11	100	7	67	50	32	28.5	14.4	8	1.4	with	TMBA-M16H	TN*U12...
TPTN12M100B32.0R10	11	100	10	67	50	32	28.5	14.4	8	1.4	with	TMBA-M16H	TN*U12...
TPTN12M125B40.0R08	11	125	8	71	63	40	32	16.4	9	2.3	with	TMBA-M20H	TN*U12...
TPTN12M125B40.0R12	11	125	12	71	63	40	32	16.4	9	2.4	with	TMBA-M20H	TN*U12...

SPARE PARTS







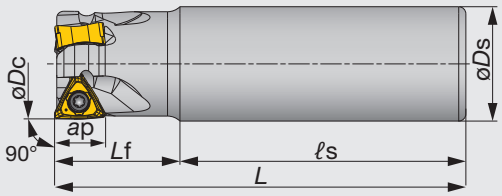

Designation	Clamping screw	Grip	Torx bit	Lubricant	Shell locking bolt	Shell locking bolt 1
TPTN12M050, 063B...	CSPB-3.5	H-TB2W	BLDIP15/S7	M-1000	-	CM10X30H
TPTN12*080B...	CSPB-3.5	H-TB2W	BLDIP15/S7	M-1000	-	CM12X30H
TPTN12*100B...	CSPB-3.5	H-TB2W	BLDIP15/S7	M-1000	TMBA-M16H	-
TPTN12*125B...	CSPB-3.5	H-TB2W	BLDIP15/S7	M-1000	TMBA-M20H	-

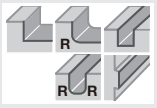
EPTN12

Square Shoulder milling endmills with double-sided triangular insert

A.R. = +4.2°~ +4.7°, R.R. = -15.4°~ -11.2°







Designation	Max. *ap*	*øDc*	z	*øDs*	*ℓs*	*Lf*	*L*	Kg	Air hole	Insert
EPTN12M032C32.0R02N	11	32	2	32	80	35	115	0.7	without	TN*U12...
EPTN12M032C32.0R03N	11	32	3	32	80	35	115	0.7	without	TN*U12...
EPTN12M040C32.0R03N	11	40	3	32	80	35	115	0.8	without	TN*U12...
EPTN12M040C32.0R04N	11	40	4	32	80	35	115	0.8	without	TN*U12...

SPARE PARTS



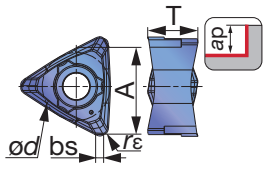



Designation	Clamping screw	Grip	Torx bit	Lubricant
EPTN12...	CSPB-3.5	H-TB2W	BLDIP15/S7	M-1000

INSERT

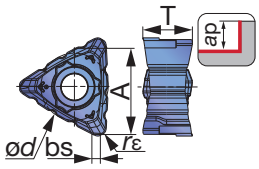
TNGU-MJ





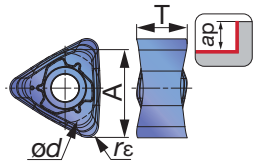
TNGU-NMJ





TNMU-R-MJ





P	Steel	☆	★
M	Stainless		★
K	Cast iron	★	
N	Non-ferrous		
S	Superalloys	★	☆
H	Hard materials		

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH120	Coating AH3135	A	ød	T	bs
TNGU120708PER-MJ	0.8	11	●	●	12	9.525	7.04	1.16
TNGU120708PER-NMJ	0.8	11	●	●	12	9.525	7.04	1.16
TNMU1207R16PER-MJ	1.6	11	●	●	12	9.525	7.04	-

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Priority	Grade	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steel C15E4, E275A, etc.	- 300 HB	First choice	AH3135	MJ	100 - 250	0.08 - 0.3
		- 300 HB	For low cutting force	AH3135	NMJ	100 - 250	0.08 - 0.14
	Carbon steel and alloy steel C55, 42CrMo4, etc.	- 300 HB	First choice	AH3135	MJ	100 - 230	0.08 - 0.3
		- 300 HB	For low cutting force	AH3135	NMJ	100 - 230	0.08 - 0.14
	Prehardened steel NAK80, PX5, etc.	30 - 40 HRC	First choice	AH3135	MJ	100 - 180	0.08 - 0.25
		30 - 40 HRC	For low cutting force	AH3135	NMJ	100 - 180	0.08 - 0.14
M	Stainless steel X5CrNi18-9, X5CrNiMo17-12-3, etc.	-	First choice	AH3135	MJ	90 - 200	0.08 - 0.25
		-	For low cutting force	AH3135	NMJ	90 - 200	0.08 - 0.14
K	Grey cast iron 250, 300, etc.	150 - 250 HB	First choice	AH120	MJ	140 - 250	0.08 - 0.3
		150 - 250 HB	For low cutting force	AH120	NMJ	140 - 250	0.08 - 0.14
	Ductile cast iron 600-3, etc.	150 - 250 HB	First choice	AH120	MJ	110 - 200	0.08 - 0.25
		150 - 250 HB	For low cutting force	AH120	NMJ	110 - 200	0.08 - 0.14
S	Titanium alloys Ti-6Al-4V, etc.	-	First choice	AH120	MJ	20 - 60	0.08 - 0.2
		-	For low cutting force	AH120	NMJ	20 - 60	0.08 - 0.14
	Heat-resistant alloys Inconel718, etc.	-	First choice	AH120	MJ	20 - 40	0.07 - 0.18
		-	For low cutting force	AH120	NMJ	20 - 40	0.07 - 0.14

Note: When you use the NMJ chipbreaker, please set up the feed less than 0.15 mm/t.

MEMO

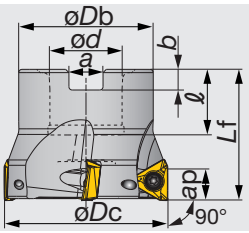
TUNG-TRI

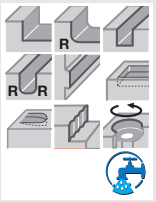
TPA06

High precision square shoulder milling cutters with triangular inserts

A.R. = +8.5°~ +11.5°, R.R. = -5.5°~ -12.5°







Designation	Max. *ap*	*øDc*	z	*øDb*	*ød*	*ℓ*	*Lf*	*b*	*a*	Kg	Air hole	Insert
TPA06R032M16.0E05	6	32	5	30	16	18	40	5.6	8.4	0.14	with	TOMT06...
TPA06R040M16.0E06	6	40	6	35	16	18	40	5.6	8.4	0.22	with	TOMT06...
TPA06R050M22.0E08	6	50	8	41	22	20	40	6.3	10.4	0.31	with	TOMT06...

SPARE PARTS

Designation	Clamping screw	Lubricant	Shell locking bolt	Wrench
TPA06R032M16.0E05	CSTB-2.5	M-1000	FSHM8-30H	T-8D
TPA06R040M16.0E06	CSTB-2.5	M-1000	CM8X30H	T-8D
TPA06R050M22.0E08	CSTB-2.5	M-1000	CM10X30H	T-8D

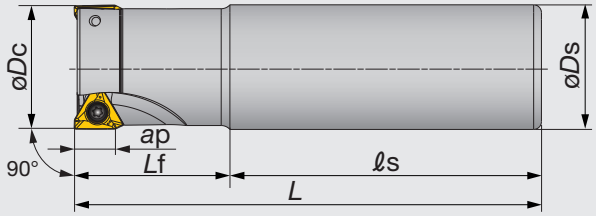
TUNG-TRI

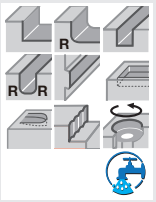
EPA06

High precision square shoulder milling endmills with triangular inserts

A.R. = +8.5°~ +11.5°, R.R. = -5.5°~ -12.5°







Designation	Max. *ap*	*øDc*	z	*øDs*	*ℓs*	*Lf*	*L*	Kg	Air hole	Insert
EPA06R012M16.0-01N	6	12	1	16	50	18	68	0.09	without	TOMT06...
EPA06R016M16.0-02N	6	16	2	16	60	24	84	0.12	without	TOMT06...
EPA06R016M16.0-02L	6	16	2	16	105	40	145	0.2	with	TOMT06...
EPA06R018M16.0-02N	6	18	2	16	60	24	84	0.13	without	TOMT06...
EPA06R018M16.0-02L	6	18	2	16	115	30	145	0.21	with	TOMT06...
EPA06R020M16.0-02N	6	20	2	16	60	30	90	0.14	without	TOMT06...
EPA06R020M20.0-02N	6	20	2	20	70	30	100	0.23	without	TOMT06...
EPA06R020M20.0-03N	6	20	3	20	70	30	100	0.22	without	TOMT06...
EPA06R020M20.0-02L	6	20	2	20	135	50	185	0.41	with	TOMT06...
EPA06R022M20.0-02N	6	22	2	20	70	30	100	0.23	without	TOMT06...
EPA06R022M20.0-03N	6	22	3	20	70	30	100	0.23	without	TOMT06...
EPA06R022M20.0-02L	6	22	2	20	145	40	185	0.42	with	TOMT06...
EPA06R025M25.0-03N	6	25	3	25	80	35	115	0.41	without	TOMT06...
EPA06R025M25.0-04N	6	25	4	25	80	35	115	0.41	without	TOMT06...
EPA06R025M25.0-02L	6	25	2	25	150	70	220	0.78	with	TOMT06...
EPA06R028M25.0-03N	6	28	3	25	80	35	115	0.42	without	TOMT06...
EPA06R028M25.0-04N	6	28	4	25	80	35	115	0.42	without	TOMT06...
EPA06R028M25.0-02L	6	28	2	25	180	40	220	0.8	with	TOMT06...

SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
EPA06R012 - 018M...	CSTB-2.5S	M-1000	T-8D
EPA06R020 - 028M...	CSTB-2.5	M-1000	T-8D

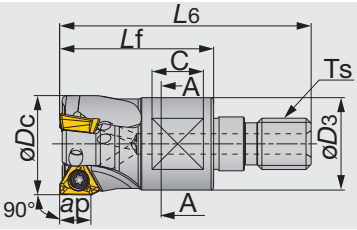
TUNG-TRI

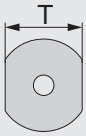
HPA06-M

High precision square shoulder milling endmills with triangular inserts

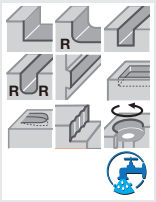
A.R. = +8.5°~ +11.5°, R.R. = -12.5°~ -5.5°







A-A cross section



Designation	Max. ap	øDc	z	L6	Lf	C	T	øD3	Ts	Kg	Air hole	Insert
HPA06R016MM08-02	6	16	2	42	25	8	10	13	M8	0.03	with	TOMT06...
HPA06R020MM10-03	6	20	3	49	30	10	15	18	M10	0.06	with	TOMT06...
HPA06R025MM12-04	6	25	4	57	35	10	17	21	M12	0.1	with	TOMT06...
HPA06R032MM16-05	6	32	5	63	40	12	22	29	M16	0.20	with	TOMT06...

SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
HPA06R016MM08-02	CSTB-2.5S	M-1000	T-8D
HPA06R020 - 032MM...	CSTB-2.5	M-1000	T-8D

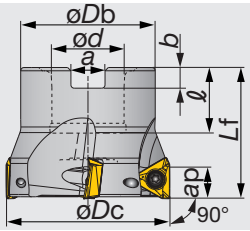
TUNG-TRI

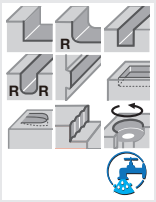
TPA10

High precision square shoulder milling cutters with triangular inserts

A.R. = +9.5°~ +11°, R.R. = -4.5°~ -0.5°







Designation	Max. ap	øDc	z	øDb	ød	ℓ	Lf	b	a	Kg	Air hole	Insert
TPA10R040M16.0E04	10	40	4	35	16	18	40	5.6	8.4	0.2	with	TOMT10...
TPA10R050M22.0E04	10	50	4	41	22	20	40	6.3	10.4	0.31	with	TOMT10...
TPA10R063M22.0E06	10	63	6	41	22	20	40	6.3	10.4	0.51	with	TOMT10...
TPA10R080M27.0E07	10	80	7	58	27	22	50	7	12.4	1.04	with	TOMT10...
TPA10R100M32.0E08	10	100	8	60	32	28.5	50	8	14.4	2.02	with	TOMT10...

SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Torx bit
TPA10R040M16.0E04	SR14-562/S	SW6-SD	M-1000	CM8X30H	BLDT10/S7
TPA10R050, 063M...	SR14-562/S	SW6-SD	M-1000	CM10X30H	BLDT10/S7
TPA10R080M...	SR14-562/S	SW6-SD	M-1000	CM12X30H	BLDT10/S7
TPA10R100M...	SR14-562/S	SW6-SD	M-1000	CM16X40H	BLDT10/S7

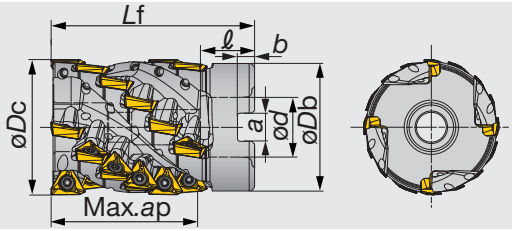
TUNG-TRI

TLA10

Extended Flute square shoulder mills for roughing with triangular inserts

A.R. = +9.5°~ +11°, R.R. = -4.5°~ -0.5°







Designation	Max. *ap*	ø*Dc*	Z eff	z	ø*Db*	ø*d*	*ℓ*	*Lf*	*b*	*a*	Kg	Air hole	Insert
TLA10R050L054M22.0E04	54	50	4	24	47	22	20	75	6.3	10.4	0.64	with	TOMT10...
TLA10R063L054M27.0E04	54	63	4	24	60	27	22	80	7	12.4	1.25	with	TOMT10...

SPARE PARTS

Designation	Clamping screw	Lubricant	Shell locking bolt	Shell locking bolt 1	Wrench
TLA10R050L054M22.0E04	SR14-562	M-1000	CAP-CM10X1.5X55-H	-	T-10D
TLA10R063L054M27.0E04	SR14-562	M-1000	-	CAP-CM12X1.75X50	T-10D

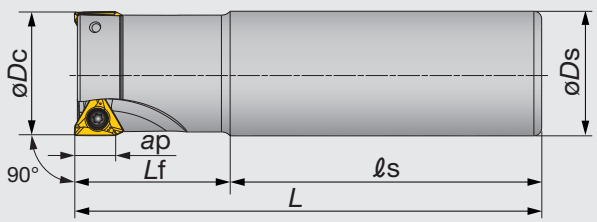
TUNG-TRI

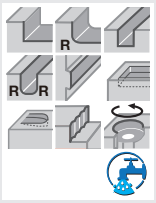
EPA10

High precision square shoulder milling endmills with triangular inserts

A.R. = +9.5°~ +11°, R.R. = -4.5°~ -0.5°







Designation	Max. *ap*	ø*Dc*	z	ø*Ds*	*ℓs*	*Lf*	*L*	Kg	Air hole	Insert
EPA10R025M25.0-02N	10	25	2	25	80	35	115	0.38	without	TOMT10...
EPA10R025M25.0-02L	10	25	2	25	150	70	220	0.75	with	TOMT10...
EPA10R028M25.0-02N	10	28	2	25	80	35	115	0.39	without	TOMT10...
EPA10R028M25.0-02L	10	28	2	25	185	35	220	0.78	with	TOMT10...
EPA10R032M32.0-02N	10	32	2	32	80	40	120	0.66	without	TOMT10...
EPA10R032M32.0-03N	10	32	3	32	80	40	120	0.65	without	TOMT10...
EPA10R032M32.0-02L	10	32	2	32	175	80	255	1.46	with	TOMT10...
EPA10R035M32.0-02N	10	35	2	32	80	40	120	0.7	without	TOMT10...
EPA10R035M32.0-03N	10	35	3	32	80	40	120	0.68	without	TOMT10...
EPA10R035M32.0-02L	10	35	2	32	215	40	255	1.52	with	TOMT10...
EPA10R040M32.0-03N	10	40	3	32	80	40	120	0.72	without	TOMT10...
EPA10R040M32.0-04N	10	40	4	32	80	40	120	0.73	without	TOMT10...
EPA10R040M32.0-02L	10	40	2	32	205	50	255	1.57	with	TOMT10...

SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Torx bit
EPA10...	SR14-562/S	SW6-SD	M-1000	BLDT10/S7

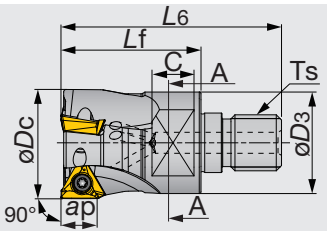
TUNG-TRI

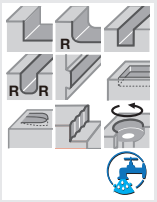
HPA10-M

High precision square shoulder milling endmills with triangular inserts

A.R. = +9.5°~ +11°, R.R. = -4.5°~ -0.5°







Designation	Max. ap	øDc	z	L6	Lf	C	T	øD3	Ts	Kg	Air hole	Insert
HPA10R025MM12-02	10	25	2	57	35	10	17	21	M8	0.08	with	TOMT10...
HPA10R032MM16-03	10	32	3	63	40	12	22	29	M10	0.18	with	TOMT10...

SPARE PARTS






Designation	Clamping screw	Grip	Lubricant	Torx bit
HPA10...	SR14-562/S	SW6-SD	M-1000	BLDT10/S7

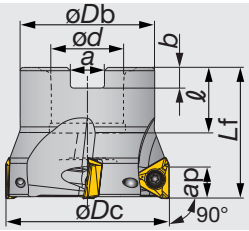
TUNG-TRI

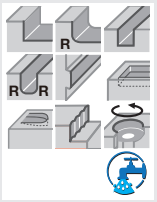
TPA15

High precision square shoulder milling cutters with triangular inserts

A.R. = +12°~ +13.5°, R.R. = -6°~ -3.5°







Designation	Max. ap	øDc	z	øDb	ød	ℓ	Lf	b	a	Kg	Air hole	Insert
TPA15R050M22.0E04	15	50	4	41	22	20	40	6.3	10.4	0.27	with	TOMT15...
TPA15R063M22.0E05	15	63	5	41	22	20	40	6.3	10.4	0.41	with	TOMT15...
TPA15R080M27.0E06	15	80	6	50	27	22	50	7	12.4	0.86	with	TOMT15...
TPA15R100M32.0E07	15	100	7	60	32	28.5	50	8	14.4	1.27	with	TOMT15...
TPA15R125M40.0E08	15	125	8	71	40	32	63	9	16.4	2.47	with	TOMT15...
TPA15R160M40.0E10N	15	160	10	100	40	32	63	9	16.4	4.77	without	TOMT15...

SPARE PARTS








Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Shell locking bolt 1	Torx bit
TPA15R050M22.0E04	TS45120I	H-TB2W	M-1000	-	FSHM10-40H	BT20S
TPA15R063M22.0E05	TS45120I	H-TB2W	M-1000	-	CM10X30H	BT20S
TPA15R080M27.0E06	TS45120I	H-TB2W	M-1000	-	CM12X30H	BT20S
TPA15R100M32.0E07	TS45120I	H-TB2W	M-1000	TMBA-M16H	-	BT20S
TPA15R125M40.0E08	TS45120I	H-TB2W	M-1000	TMBA-M20H	-	BT20M
TPA15R160M40.0E10N	TS45120I	H-TB2W	M-1000	-	-	BT20M

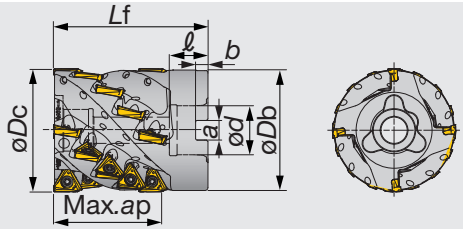
TUNG-TRI

TLA15-M

Extended Flute square shoulder mills for roughing with triangular inserts

A.R. = +12°~ +13.5°, R.R. = -6°~ -3.5°







Designation	Max. *ap*	ø*D*c	Z eff	z	ø*D*b	ø*d*	ℓ	*L*f	*b*	*a*	Kg	Air hole	Insert
TLA15R080L070M32.0E04M	70	80	4	20	78	32	25	100	8	14.4	2.38	with	TOMT15...
TLA15R100L083M40.0E05M	83	100	5	30	98	40	32	110	9.	16.4	4.26	with	TOMT15...

SPARE PARTS







Designation	Clamping screw	Grip	Torx bit	Lubricant	Shell locking bolt
TLA15R080L070M32.0E04M	TS45120I	H-TB2W	BT20S	M-1000	CM16X75
TLA15R100L083M40.0E05M	TS45120I	H-TB2W	BT20S	M-1000	CM20X80

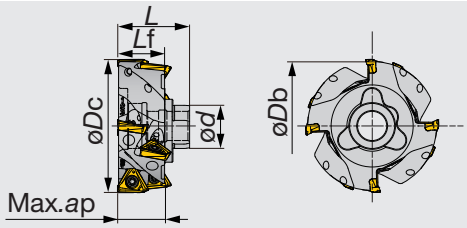
TUNG-TRI

TLA15-S

Sub unit to mount on TLA15-M type for longer Max. ap reach

A.R. = +12°~ +13.5°, R.R. = -6°~ -3.5°







Designation	Max. *ap*	ø*D*c	Z eff	z	ø*D*b	ø*d*	*L*	*L*f	Kg	Air hole	Insert
TLA15R080L028-04S	28	80	4	8	77.6	27	43	28.2	0.65	with	TOMT15…
TLA15R100L028-05S	28	100	5	10	97.2	33	46	28	1.05	with	TOMT15…

SPARE PARTS






Designation	Clamping screw	Grip	Lubricant	Torx bit
TLA15...	TS45120I	H-TB2W	M-1000	BT20S

CENTER BOLT

*Optional parts



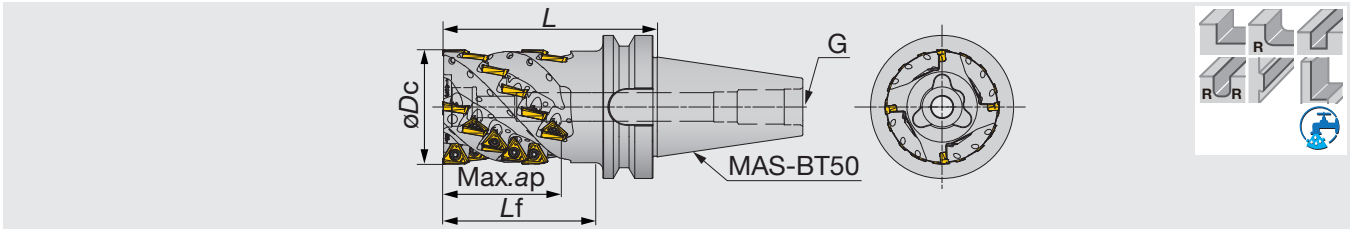

No.of sub-units	1	2
TLA15R080L028-04S	CM16x120	CM16x140
TLA15R100L028-05S	CM20x120	CM20x150

TUNG-TRI

TLA15-BT

Square shoulder mills for roughing with TOMT15 inserts, Main unit with BT tapered shanks

A.R. = +12°~ +13.5°, R.R. = -6°~ -3.5°



Designation	Max. *ap*	ø*Dc*	Z eff	z	*L*	*Lf*	Kg	Air hole	G	Insert
TLA15R080L083BT50-04M	83	80	4	24	150	107	6.29	with	M24	TOMT15...
TLA15R100L097BT50-05M	97	100	5	35	165	126.5	8.92	with	M24	TOMT15...

SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Torx bit	Shell locking bolt
TLA15R080L083BT50-04M	TS45120I	H-TB2W	M-1000	BT20S	CAP-CM16×2.0×55
TLA15R100L097BT50-05M	TS45120I	H-TB2W	M-1000	BT20S	CAP-CM20×2.5×50

CENTER BOLT

*Optional parts

No.of sub-units	1	2
TLA15R080L083BT50-04M	CAP-CM16×2.0×55	CM16x120
TLA15R100L097BT50-05M	CAP-CM20×2.5×50	CM20x80

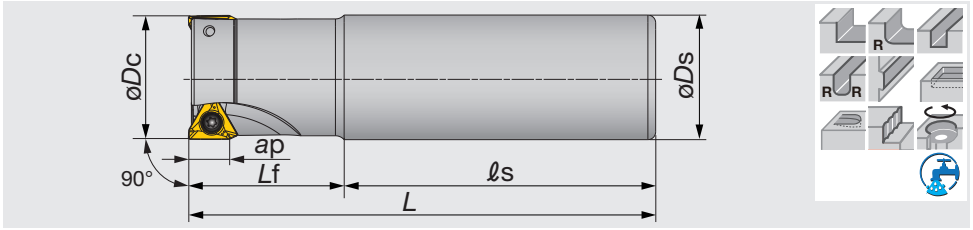
TUNG-TRI

EPA15

High precision square shoulder milling endmills with triangular inserts

A.R. = +12°~ +13.5°, R.R. = -6°~ -3.5°





Designation	Max. *ap*	ø*Dc*	z	ø*Ds*	*ℓs*	*Lf*	*L*	Kg	Air hole	Insert
EPA15R040M32.0-03N	15	40	3	32	80	40	120	0.73	without	TOMT15...
EPA15R040M32.0-02L	15	40	2	32	205	50	255	1.56	with	TOMT15...
EPA15R050M32.0-04N	15	50	4	32	80	40	120	0.83	without	TOMT15...
EPA15R050M42.0-02L	15	50	2	42	310	50	360	3.84	with	TOMT15...

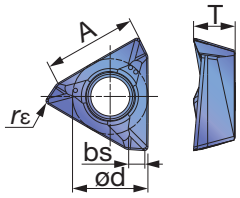
SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Torx bit
EPA15...	TS45120I	H-TB2W	M-1000	BT20S

INSERT

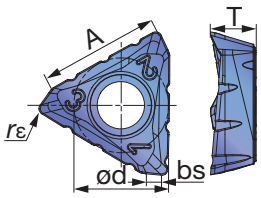
TOMT-MJ





TOMT-NMJ





P	Steel	☆	★	
M	Stainless		★	
K	Cast iron	★		★
N	Non-ferrous			
S	Superalloys	★	☆	
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating			A	ød	T	bs
			AH120	AH3135	T1215				
TOMT060302PDER-MJ	0.2	6	●	●		6.2	5.6	3.2	1.4
TOMT060304PDER-MJ	0.4	6	●	●		6.2	5.6	3.2	1.2
TOMT060308PDER-MJ	0.8	6	●	●	●	6.2	5.6	3.2	0.8
TOMT100404PDER-MJ	0.4	10	●	●		10.5	8.6	4.7	1.5
TOMT100408PDER-MJ	0.8	10	●	●	●	10.5	8.6	4.7	1.1
TOMT100416PDER-MJ	1.6	10	●	●		10.5	8.6	4.7	0.2
TOMT150604PDER-MJ	0.4	15	●	●		15.7	12.7	6	2.2
TOMT150608PDER-MJ	0.8	15	●	●	●	15.7	12.7	6	1.9
TOMT150616PDER-MJ	1.6	15	●	●		15.7	12.7	6	1.1
TOMT150620PDER-MJ	2	15	●	●		15.7	12.7	6	0.7
TOMT150608PDER-NMJ	0.8	15	●	●		15.7	12.7	6	1.9

●: Line-up

STANDARD CUTTING CONDITIONS

TPA/EPA/HPA

ISO	Workpiece material	Hardness	Grade	Cutting speed: *Vc* (m/min)			Feed per tooth: *fz* (mm/t)		
				T/E/HPA06	T/E/HPA10	T/E/HPA15	T/E/HPA06	T/E/HPA10	T/EPA15
P	Low carbon steel E275A, C15E4, etc.	- 200 HB	AH3135	100 - 220	100 - 250	100 - 250	0.05 - 0.15	0.08 - 0.2	0.08 - 0.25
P	High carbon steel C45, etc.	200 - 300 HB	AH3135	100 - 170	100 - 200	100 - 230	0.05 - 0.12	0.08 - 0.15	0.08 - 0.2
P	Alloy steel 42CrMo4, etc.	200 - 300 HB	AH3135	100 - 170	100 - 200	100 - 230	0.05 - 0.12	0.08 - 0.15	0.08 - 0.2
P	Tool steel X40CrMoV5-1, etc.	30 - 40 HRC	AH3135	100 - 120	100 -150	100 - 180	0.05 - 0.12	0.08 - 0.15	0.08 - 0.2
M	Stainless steel X5CrNi18-9, etc.	-	AH3135	80 - 150	80 - 200	90 - 200	0.05 - 0.15	0.08 - 0.2	0.08 - 0.2
K	Grey cast iron 250, etc.	150 - 250 HB	AH120 T1215	100 - 200 150 - 250	100 - 250 150 - 300	140 - 250 200 - 300	0.05 - 0.15	0.08 - 0.2	0.08 - 0.25
K	Ductile cast iron 450-10S, etc.	150 - 250 HB	AH120 T1215	80 - 150 100 - 200	80 - 200 130 - 250	110 - 200 150 - 250	0.05 - 0.15	0.08 - 0.2	0.08 - 0.25
S	Titanium alloys Ti-6Al-4V, etc.	-	AH120	20 - 50	20 - 60	20 - 60	0.05 - 0.1	0.08 - 0.15	0.08 - 0.18
S	Heat-resistant alloys Inconel 718, etc.	-	AH120	20 - 35	20 - 40	20 - 40	0.03 - 0.08	0.05 - 0.13	0.07 - 0.15

Note: When you use the NMJ chipbreaker, please set up the feed less than 0.15 mm/t.

- Remove excessive chip accumulation with an air blast.
- For the operation with depth of cut which varies (ex.casting skin) and machining of workpiece materials with interrupted surface, the feed per tooth (*fz*) should be set to the lower recommended value shown in the above table.
- Cutting conditions maybe limited depending on machine power, workpiece rigidity, and spindle output. When the cutting width, depth, or overhang length is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

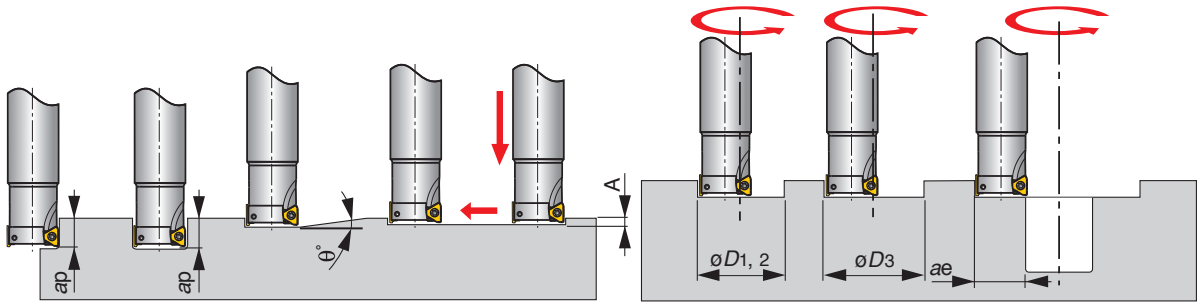
STANDARD CUTTING CONDITIONS

TLA (Roughing type)

ISO	Workpiece material	Hardness	Grade	Cutting speed: *Vc* (m/min)		Feed per tooth: *fz* (mm/t)	
				TLA10	TLA15	TLA10	TLA15
P	Low carbon steel E275A, C15E4, etc.	- 200 HB	AH3135	100 - 250	100 - 250	0.08 - 0.18	0.08 - 0.22
P	High carbon steel C45, etc.	200 - 300 HB	AH3135	100 - 200	100 - 270	0.08 - 0.14	0.08 - 0.18
P	Alloy steel 42CrMo4, etc.	200 - 300 HB	AH3135	100 - 150	100 - 180	0.08 - 0.14	0.08 - 0.18
M	Stainless steel X5CrNi18-9, etc.	-	AH3135	80 - 200	90 - 200	0.08 - 0.15	0.08 - 0.18
K	Grey cast iron 250, etc.	150 - 250 HB	AH120 T1215	100 - 250 150 - 250	140 - 250 150 - 250	0.10 - 0.18	0.08 - 0.22
K	Ductile cast iron 450-10S, etc.	150 - 250 HB	AH120 T1215	80 - 200 150 - 250	110 - 200 150 - 250	0.10 - 0.18	0.08 - 0.22
S	Titanium alloys Ti-6Al-4V, etc.	-	AH120	20 - 60	20 - 60	0.00 - 0.14	0.06 - 0.15
S	Heat-resistant alloys Inconel 718, etc.	-	AH120	20 - 40	20 - 40	0.05 - 0.12	0.06 - 0.13

Note: When you use the NMJ chipbreaker, please set up the feed less than 0.15 mm/t.

APPLICATION RANGE



Designation	Tool dia. øDc	Max. depth of cut ap	Max. ramping angle θ°	Max. plunging depth A	Min. machining depth øD1	Max. machining diameter øD2	Max. machining diameter øD3 *	Max. cutting width in enlarging ae
EPA06R012…	12	6	5	0.6	18	23.6	21	11.5
E/HPA06R016…	16	6	4.3	0.6	25	31.6	29	15.5
EPA06R018…	18	6	3.5	0.6	29.5	35.6	33	17.5
E/HPA06R020…	20	6	2.8	0.6	33.5	39.6	37	19.5
EPA06R022…	22	6	2.5	0.6	37.5	43.6	41	21.5
E/HPA06R025…	25	6	2	0.6	43.5	49.6	47	24.5
E/HPA10R025…	25	10	2	0.6	42.1	49.6	47	24.5
EPA06R028…	28	6	1.8	0.6	49.5	55.6	53	27.5
EPA10R028…	28	10	2	0.6	48.1	55.6	53	27.5
H/TPA06R032…	32	6	1.5	0.6	57.5	63.6	61	31.5
E/HPA10R032…	32	10	2	0.6	56.1	63.6	61	31.5
EPA10R035…	35	10	1.7	0.6	62.1	69.6	67	34.5
TPA06R040…	40	6	1	0.6	73.5	79.6	77	39.5
E/TPA10R040…	40	10	1.4	0.6	72.1	79.6	77	39.5
EPA15R040…	40	15	2.3	0.8	68.5	79.2	75.5	39
TPA06R050…	50	6	0.7	0.6	94	99.6	97	49.5
TPA10R050…	50	10	0.9	0.6	92.1	99.6	97	49.5
E/TPA15R050…	50	15	1.7	0.8	88.5	99.2	95.5	49
TPA10R063…	63	10	0.8	0.6	118.1	125.6	123	62.5
TPA15R063…	63	15	1.4	0.8	114.5	125.2	121.5	62
TPA10R080…	80	10	0.6	0.6	152.1	159.6	157	79.5
TPA15R080…	80	15	1	0.8	148.5	159.2	155.5	79
TPA10R100…	100	10	0.5	0.6	192.1	199.6	197	99.5
TPA15R100…	100	15	0.8	0.8	188.5	199.2	195.5	99
TPA15R125…	125	15	0.6	0.8	238.5	249.2	245.5	124
TPA15R160…	160	15	0.5	0.8	308.5	319.2	315.5	159

*Flat bottom hole

Note: Corner *r*ε for dimensions of ø*D*1, ø*D*2 and ø*D*3: *r*ε = 0.4 for E/TPA06, E/TPA10 and *r*ε = 0.8 for E/TPA15.

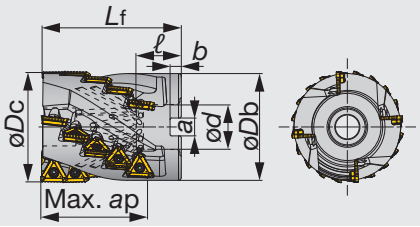
TUNG-TRISHRED

LPTC16

Square shoulder milling cutters for roughing with shred insert

A.R. = +5.5°~ +6.5°, R.R. = -11.5°~ -11.3°





Designation	Max. ap	øDc	Z eff	z	øDb	Lf	ød	ℓ	a	b	Kg	Insert
LPTC16M063B27.0L061R03	61	63	3	12	59	85	27	22	12.4	7	1.24	TC*T16...
LPTC16M080B32.0L076R04	76	80	4	20	76	100	32	25	14.4	8	2.46	TC*T16...

SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Torx bit
LPTC16M063B27.0L061R03	TS 40B100I	H-TB2W	M-1000	CAP-CM12X1.75X50	BT15S
LPTC16M080B32.0L076R04	TS 40B100I	H-TB2W	M-1000	CM16X75	BT15S

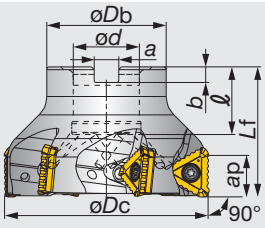
TUNG-TRISHRED

TPTC16

Square shoulder milling cutters with shred insert

A.R. = +5.5°~ +6.5°, R.R. = -11.5°~ -11.3°





Designation	Max. ap	øDc	z	øDb	Lf	ød	ℓ	a	b	Kg	Insert
TPTC16M050B22.0R04	16	50	4	41	40	22	20	10.4	6.3	0.29	TC*T16...
TPTC16M063B22.0R05	16	63	5	41	40	22	20	10.4	6.3	0.44	TC*T16...
TPTC16M080B27.0R06	16	80	6	50	50	27	22	12.4	7	0.9	TC*T16...
TPTC16M100B32.0R07	16	100	7	60	50	32	28.5	14.4	8	1.35	TC*T16...

SPARE PARTS

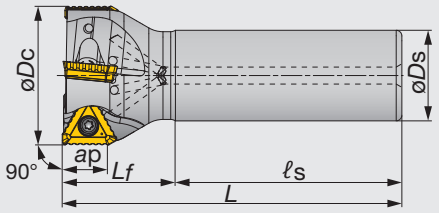
Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Shell locking bolt 1	Torx bit
TPTC16M050B22.0R04	TS 40B100I	H-TB2W	M-1000	-	FSHM10-40H	BT15S
TPTC16M063B22.0R05	TS 40B100I	H-TB2W	M-1000	-	CM10X30H	BT15S
TPTC16M080B27.0R06	TS 40B100I	H-TB2W	M-1000	-	CM12X30H	BT15S
TPTC16M100B32.0R07	TS 40B100I	H-TB2W	M-1000	TMBA-M16H	-	BT15S

EPTC16

Square Shoulder milling cutters with shred insert

A.R. = +5.5°~ +6.5°, R.R. = -11.5°~ -11.3°





Designation	Max. *ap*	*øDc*	z	*øDs*	*ℓs*	*Lf*	*L*	Kg	Insert
EPTC16M050C32.0R04	16	50	4	32	80	40	120	0.8	TC*T16...
EPTC16M050C42.0R02L	16	50	2	42	310	50	360	3.8	TC*T16...

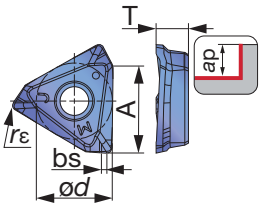
SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Torx bit
EPTC16...	TS 40B100I	H-TB2W	M-1000	BT15S

INSERT

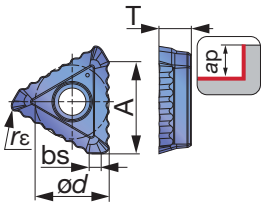
TCGT-MJ





TCMT-NMJ





P	Steel	☆	★
M	Stainless		★
K	Cast iron	★	
N	Non-ferrous		
S	Superalloys	★	☆
H	Hard materials		

★ : First choice
☆ : Second choice

Designation	*rε*	Max. ap	Coating AH120	Coating AH3135	A	*ød*	T	bs
TCGT160608PDER-MJ	0.8	16	●	●	16	13.7	5.8	1
TCMT160620PDER-NMJ	2	16	●	●	16	13.3	5.8	2

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Priority	Grade	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steel C15, C20, etc.	- 300 HB	First choice	AH3135	NMJ*	100 - 250	0.08 - 0.15
		- 300 HB	For finishing	AH3135	MJ	100 - 250	0.08 - 0.2
	Carbon steel and alloy steel C55, 42CrMo4, etc.	- 300 HB	First choice	AH3135	NMJ*	100 - 230	0.08 - 015
		- 300 HB	For finishing	AH3135	MJ	100 - 230	0.08 - 0.2
	Prehardened steel NAK80, PX5, etc.	30 - 40 HRC	First choice	AH3135	NMJ*	100 - 180	0.08 - 0.15
		30 - 40 HRC	For finishing	AH3135	MJ	100 - 180	0.08 - 0.2
M	Stainless steel X5CrNi18-9, X5CrNiMo17-12-3, etc.	-	First choice	AH3135	NMJ*	90 - 200	0.08 - 0.15
		-	For finishing	AH3135	MJ	90 - 200	0.08 - 0.2
K	Grey cast iron 250, 300, etc.	150 - 250 HB	First choice	AH120	NMJ*	140 - 250	0.08 - 0.15
		150 - 250 HB	For finishing	AH120	MJ	140 - 250	0.08 - 0.25
	Ductile cast iron 400-15,600-3, etc.	150 - 250 HB	First choice	AH120	NMJ*	140 - 250	0.08 - 0.15
		150 - 250 HB	For finishing	AH120	MJ	140 - 250	0.08 - 0.25
S	Titanium alloys Ti-6Al-4V, etc.	-	First choice	AH120	NMJ*	20 - 60	0.08 - 0.15
		-	For finishing	AH120	MJ	20 - 60	0.08 - 0.18
	Heat-resistant alloys Inconel718, etc.	-	First choice	AH120	NMJ*	20 - 40	0.08 - 0.13
		-	For finishing	AH120	MJ	20 - 40	0.08 - 0.15

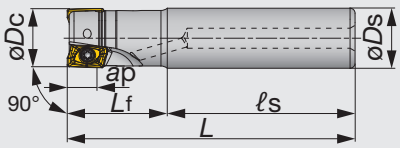
* When you use the NMJ chipbreaker, please set up the feed less than 0.15 mm/t.

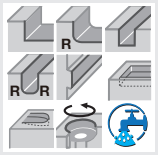
EPAV06

Square shoulder milling endmills in small diameter

A.R. = +6.0°~ +7.6°, R.R. = -37.1°~ -32.4°







Designation	Max. *ap*	ø*D*c	z	ø*D*s	*ℓ*s	*L*f	*L*	Kg	Insert
EPAV06M008C10.0R01	6	8	1	10	60	20	80	0.04	AVGT06...
EPAV06M010C10.0R02	6	10	2	10	60	20	80	0.04	AVGT06...
EPAV06M010C10.0R02L	6	10	2	10	65	35	100	0.06	AVGT06...
EPAV06M012C12.0R02	6	12	2	12	60	20	80	0.06	AVGT06...
EPAV06M012C12.0R03	6	12	3	12	60	20	80	0.06	AVGT06...
EPAV06M012C12.0R02L	6	12	2	12	85	35	120	0.09	AVGT06...
EPAV06M016C16.0R03	6	16	3	16	70	20	90	0.12	AVGT06...
EPAV06M016C16.0R04	6	16	4	16	70	20	90	0.12	AVGT06...
EPAV06M016C16.0R03L	6	16	3	16	105	35	140	0.2	AVGT06...

SPARE PARTS





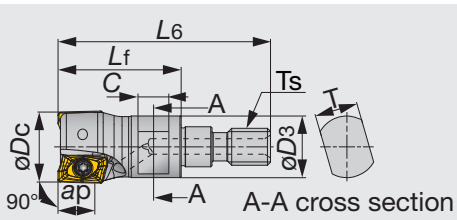
Designation	Clamping screw	Lubricant	Wrench
EPAV06M...	CSPB-2H	M-1000	IP-6DB

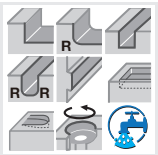
HPAV06-M

Square shoulder milling endmills in small diameter; Modular head with TungFlex threaded adaptation

A.R. = +6.0°~ +7.6°, R.R. = -37.1°~ -32.4°







Designation	Max. *ap*	ø*D*c	z	*L*6	*L*f	C	T	ø*D*3	Ts	Kg	Insert
HPAV06M010M06R02	6	10	2	34.5	20	5	7	9.5	M6	0.01	AVGT06...
HPAV06M012M06R02	6	12	2	34.5	20	5	7	10	M6	0.01	AVGT06...
HPAV06M012M06R03	6	12	3	34.5	20	5	7	10	M6	0.01	AVGT06...
HPAV06M016M08R03	6	16	3	42	25	8	10	13	M8	0.03	AVGT06...
HPAV06M016M08R04	6	16	4	42	25	8	10	13	M8	0.03	AVGT06...

SPARE PARTS





Designation	Clamping screw	Lubricant	Wrench
HPAV06M...	CSPB-2H	M-1000	IP-6DB

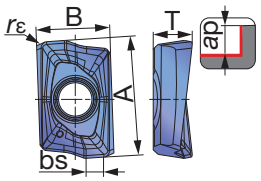
INSERT

AVGT-MJ



AVGT-AJ





P	Steel	★	★
M	Stainless		★
K	Cast iron	★	
N	Non-ferrous		
S	Superalloys	★	☆
H	Hard materials	★	

★ : First choice
☆ : Second choice

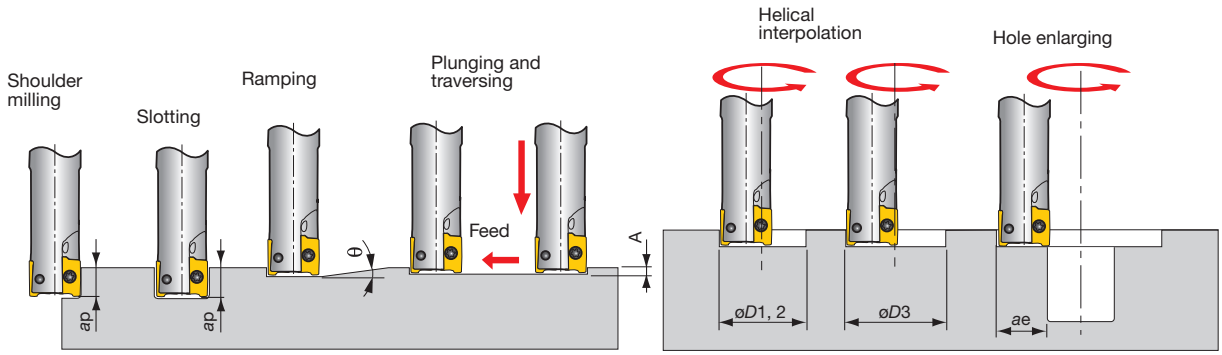
Designation	rε	Max. ap	Coating AH120	Coating AH3135	Un-coated KS05F	A	B	T	bs
AVGT060302PBER-MJ	0.2	6	●	●		8	5	2.7	1.5
AVGT060304PBER-MJ	0.4	6	●	●		8	5	2.7	1.3
AVGT060308PBER-MJ	0.8	6	●	●		8	5	2.6	0.9
AVGT060302PBFR-AJ	0.2	6			●	8	5	2.7	1.5
AVGT060304PBFR-AJ	0.4	6			●	8	5	2.7	1.3
AVGT060308PBFR-AJ	0.8	6			●	8	5	2.6	0.9

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material		Hardness	Priority	Grade	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Low carbon steel C15E4, E275A, etc.		- 300 HB	First choice	AH3135	MJ	230 - 430	0.07 - 0.12
P	Carbon steel and alloy steel C55, 42CrMo4, etc.		- 300 HB	First choice	AH3135	MJ	150 - 350	0.07 - 0.12
P	Prehardened steel NAK80, PX5, etc.		30 - 40 HRC	First choice	AH120	MJ	100 - 230	0.07 - 0.12
M	Stainless steel X5CrNi18-9, X5CrNiMo17-12-3, etc.		-	First choice	AH3135	MJ	150 - 220	0.06 - 0.1
K	Grey cast iron 250, 300, etc.		150 - 250 HB	First choice	AH120	MJ	200 - 330	0.07 - 0.12
K	Ductile cast iron 600-3, etc.		150 - 250 HB	First choice	AH120	MJ	150 - 240	0.07 - 0.12
N	Aluminium alloys Si < 13%		-	First choice	KS05F	AJ	650 - 1000	0.07 - 0.12
S	Titanium alloys Ti-6Al-4V, etc.		-	First choice	AH120	MJ	70 - 90	0.06 - 0.1
S	Superalloys nconel718, etc.		-	First choice	AH120	MJ	45 - 65	0.06 - 0.09
H	Hardened steel	X40CrMoV5-1, etc.	40 - 50 HRC	First choice	AH120	MJ	45 - 70	0.05 - 0.08
H	Hardened steel	X153CrMoV12, etc.	50 - 60 HRC	First choice	AH120	MJ	40 - 65	0.04 - 0.06

APPLICATION RANGE



Designation	Tool dia. øDc	Max. depth of cut ap	Max. ramping angle θ	Max. plunging depth A	Min. machining øD1	Max. machining øD2	Max. machining øD3*	Max. cutting width in enlarging ae
EPAV06_008…	8	6	-	-	-	-	-	-
EPAV/HPAV06_010…	10	6	3°	0.3	15	19	18	9.5
EPAV/HPAV06_012…	12	6	3°	0.5	18	23	22	11.5
EPAV/HPAV06_016…	16	6	2.5°	0.6	25	31	30	15.5

*Flat bottom hole

MEMO

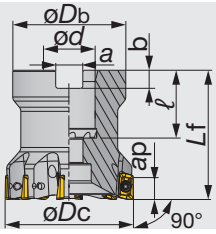
TUNGREC

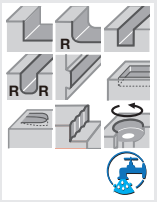
TPO07

High precision shoulder square mills with AOMT/AOGT07 inserts

A.R. = +7°, R.R. = +13°~ +18°







Designation	øDc	z	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TPO07R032M16.0E08	32	8	30	40	16	21	8.4	5.6	0.1	with	AO*T0702...
TPO07R040M16.0E10	40	10	35	40	16	21	8.4	5.6	0.2	with	AO*T0702...
TPO07R050M22.0E12	50	12	41	40	22	22	10.4	6.3	0.3	with	AO*T0702...

SPARE PARTS

Designation	Clamping screw	Shell locking bolt	Wrench
TPO07R032, 040...	CSTB-2.5L046	CM8X30H	T-7DB
TPO07R050M22.0E12	CSTB-2.5L046	CM10X30H	T-7DB

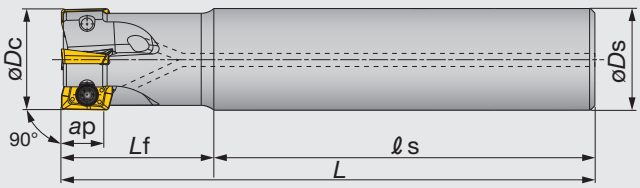
TUNGREC

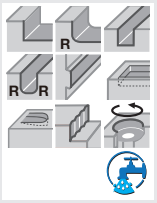
EPO07

High precision shoulder square endmills with AOMT/AOGT07 inserts

A.R. = +7°, R.R. = +13°~ +18°







Designation	øDc	z	øDs	ℓs	Lf	L	Kg	Air hole	Insert
EPO07R012M12.0-02	12	2	12	50	18	68	0.1	with	AO*T0702...
EPO07R012M12.0-02L	12	2	12	95	30	125	0.1	with	AO*T0702...
EPO07R016M12.0-02	16	2	12	50	20	70	0.1	with	AO*T0702...
EPO07R016M16.0-02L	16	2	16	105	40	145	0.2	with	AO*T0702...
EPO07R016M16.0-04	16	4	16	60	24	84	0.1	with	AO*T0702...
EPO07R018M16.0-02L	18	2	16	105	40	145	0.2	with	AO*T0702...
EPO07R018M16.0-04	18	4	16	60	24	84	0.1	with	AO*T0702...
EPO07R020M16.0-03	20	3	16	60	30	90	0.1	with	AO*T0702...
EPO07R020M20.0-03L	20	3	20	135	50	185	0.4	with	AO*T0702...
EPO07R020M20.0-05	20	5	20	70	30	100	0.2	with	AO*T0702...
EPO07R022M20.0-03L	22	3	20	135	50	185	0.4	with	AO*T0702...
EPO07R022M20.0-05	22	5	20	70	30	100	0.2	with	AO*T0702...
EPO07R025M20.0-03	25	3	20	60	35	95	0.3	with	AO*T0702...
EPO07R025M25.0-03L	25	3	25	150	70	220	0.7	with	AO*T0702...
EPO07R025M25.0-07	25	7	25	80	35	115	0.4	with	AO*T0702...
EPO07R028M25.0-03L	28	3	25	150	70	220	0.7	with	AO*T0702...
EPO07R028M25.0-07	28	7	25	80	35	115	0.4	with	AO*T0702...

*The *øDc* in the above table shows the diameter when MJ and AJ chipbreakers are used. When HJ chipbreaker is used, the tool diameter is equal to the above shown *øDc* + 0.6 mm.

**The *Lf* and *L* in the above table show the lengths when MJ chipbreaker is used. When AJ chipbreaker is used, the lengths are equal to *Lf*, *L* + 0.1 mm. When HJ chipbreaker is used, the lengths are equal to *Lf*, *L* + 0.5 mm.

SPARE PARTS

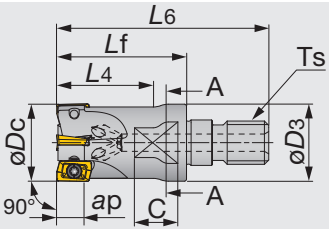
Designation	Clamping screw	Wrench
EPO07R012...	SR-10503833-S	T-7DB
EPO07R016 - 028...	CSTB-2.5L046	T-7DB

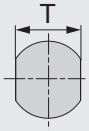
HPO07-M

High precision shoulder square endmills (TungRec) with TungFlex, carrying AOMT/AOGT07 inserts

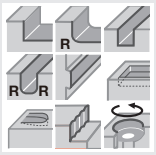
A.R. = +7°, R.R. = +13°~ +18°







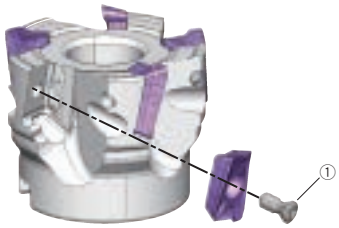
A-A cross section



Designation	øDc	z	L6	Lf	L4	C	T	øD3	Ts	Kg	Air hole	Insert
HPO07R012MM06-02	12	2	39.5	25	-	5	7	9.8	M6	0.01	with	AO*T0702...
HPO07R012MM08-02	12	2	42	25	20	8	10	12.8	M8	0.02	with	AO*T0702...
HPO07R016MM08-04	16	4	42	25	-	8	10	12.8	M8	0.03	with	AO*T0702...
HPO07R016MM10-04	16	4	49	30	20	10	15	17.8	M10	0.05	with	AO*T0702...
HPO07R020MM10-05	20	5	49	30	-	10	15	17.8	M10	0.06	with	AO*T0702...
HPO07R025MM12-07	25	7	57	35	-	10	17	20.8	M12	0.1	with	AO*T0702...

SPARE PARTS

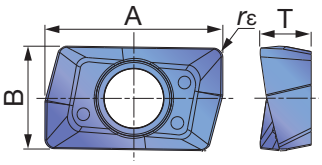
Designation	①Clamping screw	Lubricant	Wrench
HPO07R012MM0*-02	SR-10503833-S	M-1000	T-7DB
HPO07R016 - 025...	CSTB-2.5L046	M-1000	T-7DB



INSERT

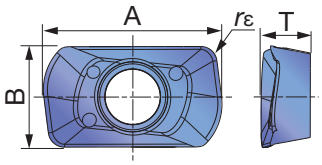
AOMT07-MJ





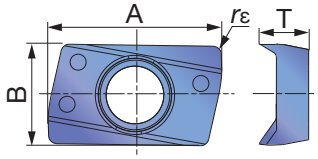
AOMT07-HJ





AOGT07-AJ





		Coating		Un-coated
		AH140	AH725	KS15F
P	Steel		★	
M	Stainless	★	☆	
K	Cast iron		★	
N	Non-ferrous			★
S	Superalloys		★	
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	AH140	AH725	KS15F	A	B	T
AOMT070202PDPR-MJ	0.2	7	●	●		8	4.7	2.3
AOMT070204PDPR-MJ	0.4	7	●	●		8	4.7	2.3
AOMT070208PDPR-MJ	0.8	7	●	●		8	4.7	2.3
AOMT070216PDPR-MJ	1.6	7	●	●		8	4.7	2.3
AOMT070208PDPR-HJ	0.8	0.8	●	●		8.8	4.9	2.4
AOGT070204PDFR-AJ	0.4	6.4			●	8.1	4.7	2.3

●: Line-up

STANDARD CUTTING CONDITIONS

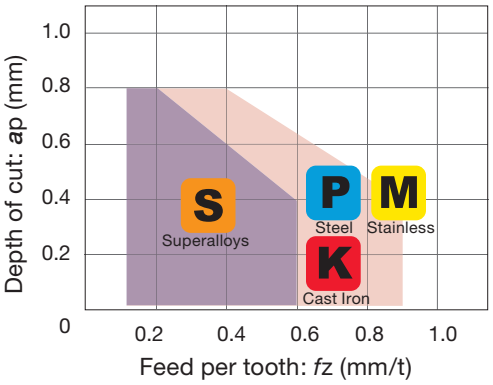
ISO	Workpiece material	Hardness HB	Grade	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t) MJ	HJ	AJ
P	Low carbon steel C15E4, etc.	< 200	AH725	90 - 200	0.05 - 0.1	0.4 - 0.9	-
P	High carbon steel and alloy steel C55, 42CrMo4, etc.	200 - 300	AH725	90 - 150	0.05 - 0.1	0.4 - 0.9	-
P	Tool steel X153CrMoV12, etc.	150 - 300	AH725	80 - 120	0.05 - 0.1	0.4 - 0.9	-
M	Stainless steel X5CrNi18-9, etc.	-	AH140	90 - 150	0.05 - 0.1	0.4 - 0.9	-
K	Grey cast irons 250, etc.	150 - 250	AH725	100 - 180	0.05 - 0.1	0.4 - 0.9	-
K	Ductile cast irons 450-10S, etc.	150 - 250	AH725	80 - 150	0.05 - 0.1	0.4 - 0.9	-
N	Aluminium alloys Si < 13%	-	KS15F	300 - 1000	-	-	0.08 - 0.2
N	Aluminium alloys Si ≥ 13%	-	KS15F	100 - 200	-	-	0.08 - 0.2
S	Titanium alloys Ti-6Al-4V, etc.	-	AH725	20 - 50	0.05 - 0.1	0.4 - 0.9	-
S	Superalloys Inconel 718, etc.	-	AH725	20 - 35	0.05 - 0.08	0.2 - 0.6	-

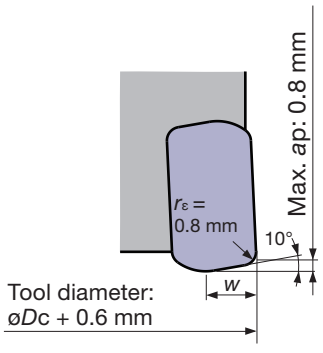
· To remove excessive chip accumulation use an air blast.
· To avoid build up edge on the cutting edges (aluminium machining), use a water soluble coolant.
· When cutting an interrupted surface or a casted skin, the feed per tooth (*fz*) should be reduced to the lower recommended value shown in the above table.
· Cutting conditions are limited by machine power, workpiece rigidity, and spindle output. When the cutting width, depth, or overhang length is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

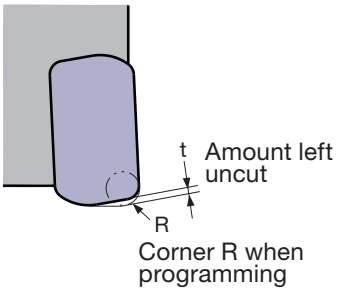
CAUTIONARY POINTS WHEN USING HJ INSERTS

HJ type inserts are designed for high feed machining.
Please note the following when using HJ inserts:
1. The shape of HJ insert differs from that of other inserts (MJ, AJ). However the same insert pocket can be used.
2. When using HJ inserts, all the inserts on the cutter body must be HJ type. Do not use other types of inserts (MJ and AJ types) with HJ inserts on the same cutter body.
3. When using CAD/CAM, please program it as a radius cutter. The table below shows the corner R when programming and the uncut area (t).
4. With HJ inserts, the tool diameter increases by 0.6 mm over the diameter ø*D*c shown in the table.

TungRec 07 type HJ inserts Standard conditions







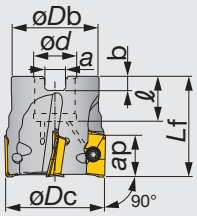
Max. depth of cut max ap (mm)	Main cutting edge length *W* (mm)	Corner R when programming	Amount left uncut t (mm)
0.8	3	R 0.5	0.4
		R 1	0.3

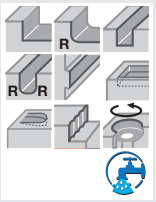
MEMO

TUNGREC
TPO11
High precision shoulder square mills with ASMT/ASGT11 inserts

A.R. = +8.7°~ +18°, R.R. = –5.3°~ –19.4°







Designation	Max. ap	øDc	z	øDb	ød	ℓ	Lf	b	a	Kg	Air hole	Insert
TPO11R040M16.0E06	10.6	40	6	35	16	18	40	5.6	8.4	0.21	with	AS*T11T3...
TPO11R050M22.0E07	10.6	50	7	45	22	20	40	6.3	10.4	0.35	with	AS*T11T3...
TPO11R063M22.0E08	10.6	63	8	47	22	20	45	6.3	10.4	0.59	with	AS*T11T3...
TPO11R080M27.0E10	10.6	80	10	58	27	22	50	7	12.4	1.05	with	AS*T11T3...
TPO11R100M32.0E11	10.6	100	11	70	32	25	63	8	14.4	2.01	with	AS*T11T3...

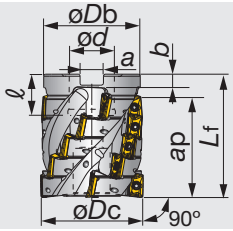
SPARE PARTS

Designation	Clamping screw	Lubricant	Shell locking bolt	Wrench
TPO11R040M16.0E06	CSPB-2.5	M-1000	CM8X30H	IP-8D
TPO11R050, 063...	CSPB-2.5	M-1000	CM10X30H	IP-8D
TPO11R080M27.0E10	CSPB-2.5	M-1000	CM12X30H	IP-8D
TPO11R100M32.0E11	CSPB-2.5	M-1000	CM16X40H	IP-8D

TUNGREC
TLS11
Highly productive shoulder square mills for roughing with ASMT/ASGT11 inserts

A.R. = +8.7°~ +18°, R.R. = –5.3°~ –19.4°







Designation	Max. ap	øDc	Z eff	z	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TLS11R050M22.0E04	48.8	50	4	20	47	60	22	20	10.4	6.3	0.5	with	AS*T11T3...

SPARE PARTS

Designation	Clamping screw	Lubricant	Shell locking bolt	Wrench
TLS11R050M22.0E04	CSPB-2.5	M-1000	CM10X40H	IP-8D

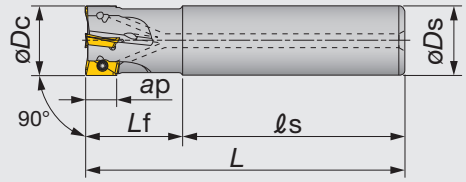
TUNGREC

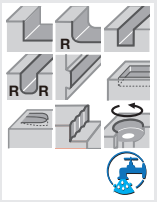
EPO11

High precision shoulder square endmills with ASMT/ASGT11 inserts

A.R. = +8.7°~ +18°, R.R. = –5.3°~ –19.4°







Designation	Max. ap	øDc	z	øDs	ℓs	Lf	L	Kg	Air hole	Insert
EPO11R012M16.0-01	10.6	12	1	16	60	25	85	0.11	with	AS*T11T3...
EPO11R012M16.0-01L	10.6	12	1	16	95	30	125	0.16	with	AS*T11T3...
EPO11R016M16.0-02	10.6	16	2	16	60	25	85	0.12	with	AS*T11T3...
EPO11R016M16.0-02L	10.6	16	2	16	105	40	145	0.2	with	AS*T11T3...
EPO11R018M16.0-02	10.6	18	2	16	60	25	85	0.12	with	AS*T11T3...
EPO11R018M16.0-02L	10.6	18	2	16	105	40	145	0.21	with	AS*T11T3...
EPO11R020M20.0-02	10.6	20	2	20	70	30	100	0.22	with	AS*T11T3...
EPO11R020M20.0-02L	10.6	20	2	20	135	50	185	0.41	with	AS*T11T3...
EPO11R020M20.0-03	10.6	20	3	20	70	30	100	0.21	with	AS*T11T3...
EPO11R022M20.0-02	10.6	22	2	20	70	30	100	0.22	with	AS*T11T3...
EPO11R022M20.0-02L	10.6	22	2	20	155	30	185	0.42	with	AS*T11T3...
EPO11R022M20.0-03	10.6	22	3	20	70	30	100	0.22	with	AS*T11T3...
EPO11R025M25.0-02L	10.6	25	2	25	150	70	220	0.76	with	AS*T11T3...
EPO11R025M25.0-03	10.6	25	3	25	80	35	115	0.39	with	AS*T11T3...
EPO11R025M25.0-04	10.6	25	4	25	80	35	115	0.38	with	AS*T11T3...
EPO11R028M25.0-02L	10.6	28	2	25	185	35	220	0.8	with	AS*T11T3...
EPO11R028M25.0-03	10.6	28	3	25	80	35	115	0.4	with	AS*T11T3...
EPO11R028M25.0-04	10.6	28	4	25	80	35	115	0.39	with	AS*T11T3...
EPO11R030M25.0-02L	10.6	30	2	25	180	40	220	0.8	with	AS*T11T3...
EPO11R030M25.0-03	10.6	30	3	25	80	40	120	0.43	with	AS*T11T3...
EPO11R030M25.0-04	10.6	30	4	25	80	40	120	0.42	with	AS*T11T3...
EPO11R032M32.0-02L	10.6	32	2	32	175	80	255	1.48	with	AS*T11T3...
EPO11R032M32.0-03	10.6	32	3	32	80	40	120	0.68	with	AS*T11T3...
EPO11R032M32.0-05	10.6	32	5	32	80	40	120	0.67	with	AS*T11T3...
EPO11R035M32.0-02L	10.6	35	2	32	215	40	255	1.49	with	AS*T11T3...
EPO11R035M32.0-03	10.6	35	3	32	80	40	120	0.69	with	AS*T11T3...
EPO11R035M32.0-05	10.6	35	5	32	80	40	120	0.67	with	AS*T11T3...
EPO11R040M32.0-02L	10.6	40	2	32	205	50	255	1.53	with	AS*T11T3...
EPO11R040M32.0-04	10.6	40	4	32	80	40	120	0.72	with	AS*T11T3...
EPO11R040M32.0-06	10.6	40	6	32	80	40	120	0.71	with	AS*T11T3...
EPO11R050M32.0-05	10.6	50	5	32	80	40	120	0.83	with	AS*T11T3...
EPO11R050M32.0-07	10.6	50	7	32	80	40	120	0.82	with	AS*T11T3...
EPO11R050M42.0-03L	10.6	50	3	42	310	50	360	3.78	with	AS*T11T3...

SPARE PARTS





Designation	Clamping screw	Lubricant	Wrench
EPO11R012 - 022...	CSPB-2.5S	M-1000	IP-8D
EPO11R025 - 050...	CSPB-2.5	M-1000	IP-8D

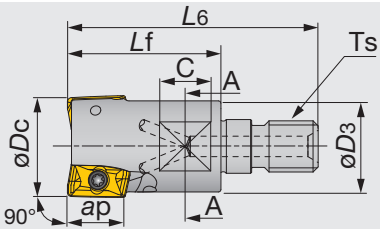
TUNGREC

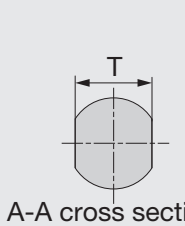
HPO11-M

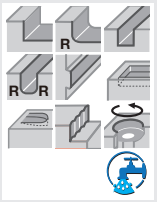
High precision shoulder square endmills (TungRec) with TungFlex, carrying ASMT/ASGT11 inserts

A.R. = +8.7° ~ +18°, R.R. = -5.3° ~ -19.4°









Designation	Max. *ap*	ø*Dc*	z	*L*6	*L*f	C	T	ø*D*3	Ts	Kg	Air hole	Insert
HPO11R020MM10-02	10.6	20	2	49	30	10	15	17.8	M10	0.06	with	AS*T11T3...
HPO11R025MM12-03	10.6	25	3	57	35	10	17	20.8	M12	0.1	with	AS*T11T3...
HPO11R032MM16-03	10.6	32	3	63	40	12	22	28.8	M16	0.2	with	AS*T11T3...

SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
HPO11R020MM10-02	CSPB-2.5S	M-1000	IP-8D
HPO11R025, 032...	CSPB-2.5	M-1000	IP-8D

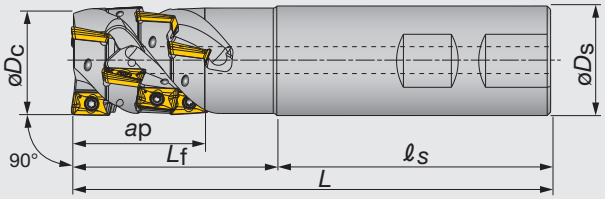
TUNGREC

ELS11

Highly productive endmills for roughing with ASMT/ASGT11 inserts

A.R. = +8.7° ~ +18°, R.R. = -5.3° ~ -19.4°







Designation	Max. *ap*	ø*Dc*	Z eff	z	ø*Ds*	ℓs	*L*f	*L*	Kg	Air hole	Insert
ELS11R025M25.0W02	30.4	25	2	6	25	80	40	120	0.4	with	AS*T11T3...
ELS11R032M32.0W03	39.4	32	3	12	32	80	60	140	0.8	with	AS*T11T3...
ELS11R040M42.0W03	40	40	3	12	42	90	60	150	1.4	with	AS*T11T3...

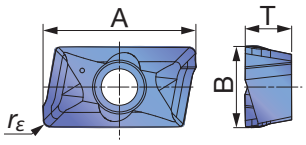
SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
ELS11...	CSPB-2.5	M-1000	IP-8D

INSERT

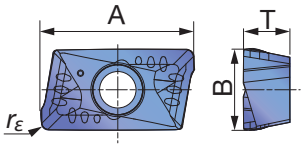
ASMT11-MJ



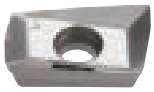


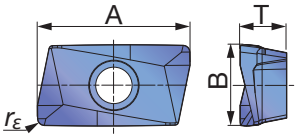
ASMT11-MS





ASGT11-AJ





P	Steel	☆			★			★		★				
M	Stainless		★	★	☆									
K	Cast iron	★			☆	☆	★							
N	Non-ferrous								★			★		
S	Superalloys	★	★		★									
H	Hard materials													

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating								Cermet		Un-coated		A	B	T
			AH120	AH130	AH140	AH725	T1115	T1215	T3130	DS1100	NS740		KS05F				
ASMT11T304PDPR-MJ	0.4	10.6	●			●	●		●		●				12.3	6.7	3.7
ASMT11T308PDPR-MJ	0.8	10.6	●			●	●	●	●		●				12.3	6.7	3.7
ASMT11T312PDPR-MJ	1.2	10.6	●			●			●						12.3	6.7	3.7
ASMT11T316PDPR-MJ	1.6	10.6	●			●			●		●				12.3	6.7	3.7
ASMT11T320PDPR-MJ	2	10.6	●												12.3	6.7	3.7
ASMT11T330PDPR-MJ	3	10.6	●												12.3	6.7	3.7
ASMT11T304PDPR-MS	0.4	10.6		●	●										12.3	6.7	3.7
ASGT11T304PDFR-AJ	0.4	10.6								●			●		12.3	6.7	3.7
ASGT11T308PDFR-AJ	0.8	10.6								●			●		12.3	6.7	3.7

●: Line-up

STANDARD CUTTING CONDITIONS

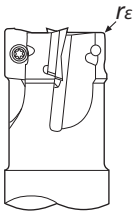
TPO11/EPO11/HPO11 type

ISO	Workpiece material	Brinell hardness HB	Priority	Grade	Cutting speed: *Vc* (m/min)	Feed per tooth: *fz* (mm/t)		
						MJ	MS	AJ
P	Low carbon steel C15E4, etc.	~ 200	First choice	AH725	100 - 250	0.1 - 0.2	-	-
		~ 200	For wear resistance	T3130	100 - 250	0.1 - 0.2	-	-
		~ 200	For surface appearance	NS740	100 - 250	0.05 - 0.15	-	-
	High carbon steel and alloy steel C55, 42CrMo4, etc.	200 ~ 300	First choice	AH725	100 - 200	0.1 - 0.15	-	-
		200 ~ 300	For wear resistance	T3130	100 - 200	0.1 - 0.15	-	-
		200 ~ 300	For surface appearance	NS740	100 - 200	0.05 - 0.12	-	-
	Tool steel X153CrMoV12, etc.	150 ~ 300	First choice	AH725	100 - 150	0.1 - 0.15	-	-
		150 ~ 300	For wear resistance	T3130	100 - 150	0.1 - 0.15	-	-
M	Stainless steel X5CrNi18-9, etc.	-	-	AH130	80 - 200	-	0.08 - 0.2	-
K	Grey cast irons 250, etc.	150 ~ 250	First choice	AH120	100 - 250	0.12 - 0.2	-	-
		150 ~ 250	For wear resistance	T1215 T1115	100 - 250	0.12 - 0.2	-	-
	Ductile cast irons 450-10S, etc.	150 ~ 250	First choice	AH120	80 - 200	0.12 - 0.2	-	-
		150 ~ 250	For wear resistance	T1215 T1115	80 - 200	0.12 - 0.2	-	-
N	Aluminium alloys Si < 13%	-	-	DS1100	300 - 1000	-	-	0.05 - 0.2
	Aluminium alloys Si ≥ 13%	-	-	DS1100	100 - 200	-	-	0.05 - 0.2
	Copper alloys	-	-	KS05F	200 - 500	-	-	0.05 - 0.2
S	Titanium alloys Ti-6Al-4V, etc.	-	-	AH130	20 - 60	-	0.08 - 0.15	-
	Superalloys Inconel 718, etc.	-	-	AH725	20 - 40	0.08 - 0.13	-	-

CAUTIONARY POINT IN MODIFYING CUTTER BODIES

When using inserts with corner radius $r_\varepsilon \geq$ 2.0 mm, standard cutter bodies have to be modified “R”. (Only for TPS11, EPS11, TLS11, ELS11, HPO11, EPO11)

- From 2nd row onwards, please use insert with r_ε = 0.4 or 0.8 mm



Corner radius r_ε (mm)	The dimension of modifying (mm)
0.4 ~ 1.6	Unnecessary
2.0 ~ 3.2	2

STANDARD CUTTING CONDITIONS

Roughing type TLS11 / ELS11

ISO	Workpiece material	Brinell hardness HB	Priority	Grade	Cutting speed: *Vc* (m/min)	Feed per tooth: *fz* (mm/t)		
						MJ	MS	AJ
P	Low carbon steel C15E4, etc.	~ 200	First choice	AH725	100 - 250	0.10 - 0.18	-	-
		~ 200	For wear resistance	T3130	100 - 250	0.10 - 0.18	-	-
	High carbon steel and alloy steel C55, 42CrMo4, etc.	200 ~ 300	First choice	AH725	100 - 200	0.08 - 0.14	-	-
		200 ~ 300	For wear resistance	T3130	100 - 200	0.08 - 0.14	-	-
	Tool steel X153CrMoV12, etc.	150 ~ 300	First choice	AH725	100 - 200	0.08 - 0.14	-	-
		150 ~ 300	For wear resistance	T3130	100 - 200	0.08 - 0.14	-	-
M	Stainless steel X5CrNi18-9, etc.	-	-	AH130	100 - 150	-	0.08 - 0.15	-
K	Grey cast irons 250, etc.	150 ~ 250	First choice	AH120	100 - 250	0.10 - 0.18	-	-
		150 ~ 250	For wear resistance	T1215 T1115	100 - 250	0.10 - 0.18	-	-
	Ductile cast irons 450-10S, etc.	150 ~ 250	First choice	AH120	80 - 200	0.10 - 0.18	-	-
		150 ~ 250	For wear resistance	T1215 T1115	80 - 200	0.10 - 0.18	-	-
N	Aluminium alloys Si < 13%	-	-	DS1100	200 - 500	-	-	0.05 - 0.18
	Aluminium alloys Si ≥ 13%	-	-	DS1100	100 - 200	-	-	0.05 - 0.18
S	Titanium alloys Ti-6Al-4V, etc.	-	-	AH130	20 - 60	-	0.08 - 0.14	-
	Superalloys Inconel718, etc.	-	-	AH725	20 - 40	0.06 - 0.12	-	-

· To remove excessive chip accumulation use an air blast.
· To avoid build up edge on the cutting edges (aluminium machining), use a water soluble coolant.
· When cutting an interrupted surface or a casted skin, the feed per tooth (*fz*) should be reduced to the lower recommended value shown in the above table.
· Cutting conditions are limited by machine power, workpiece rigidity, and spindle output. When the cutting width, depth, or overhang length is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

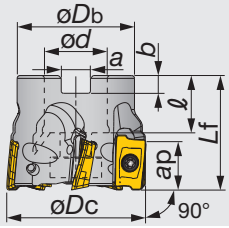
MEMO

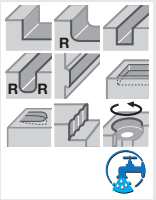
TPO18

High precision shoulder square milling cutters with AOMT/AOGT18 inserts

A.R. = +14° ~ +17°, R.R. = +22° ~ +31°







Designation	Max. ap	øDc	z	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TPO18R040M16.0E04	16.7	40	4	35	40	16	18	8.4	5.6	0.2	with	AO*T1805...
TPO18R050M22.0E05	16.7	50	5	41	40	22	20	10.4	6.3	0.3	with	AO*T1805...
TPO18R063M22.0E06	16.7	63	6	41	40	22	20	10.4	6.3	0.5	with	AO*T1805...
TPO18R080M27.0E07	16.7	80	7	50	50	27	22	12.4	70	10	with	AO*T1805...
TPO18R100M32.0E08	16.7	100	8	60	50	32	28.5	14.4	80	1.4	with	AO*T1805...
TPO18R125M40.0E09	16.7	125	9	71	63	40	32	16.4	90	2.8	with	AO*T1805...
TPO18R160M40.0E10	16.7	160	10	100	63	40	29	16.4	90	4.9	without	AO*T1805...

SPARE PARTS

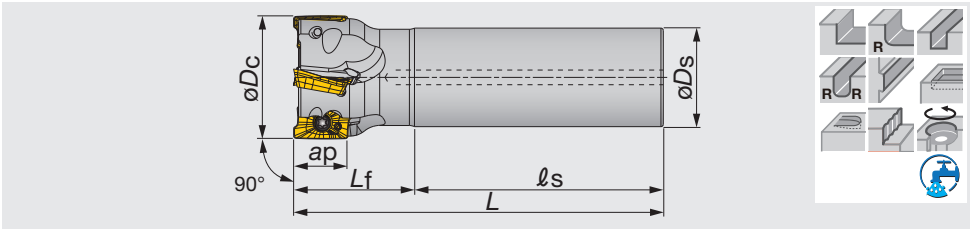
Designation	Clamping screw	Grip	Shell locking bolt	Shell locking bolt 1	Torx bit
TPO18R040M16.0E04	CSTB-4L093	H-TBS	-	FSHM8-30H	BT15M
TPO18R050M22.0E05	CSTB-4L093	H-TBS	-	CM10X30H	BT15M
TPO18R063M22.0E06	CSTB-4L093	H-TBS	-	CM10X30H	BT15M
TPO18R080M27.0E07	CSTB-4L120	H-TBS	-	CM12X30H	BT15M
TPO18R100M32.0E08	CSTB-4L120	H-TBS	TMBA-M16H	-	BT15M
TPO18R125M40.0E09	CSTB-4L120	H-TBS	TMBA-M20H	-	BT15M
TPO18R160M40.0E10	CSTB-4L120	H-TBS	-	-	BT15M

EPO18

High precision shoulder square endmills with AOMT/AOGT18 inserts

A.R. = +14° ~ +17°, R.R. = +22° ~ +31°





Designation	Max. *ap*	ø*Dc*	z	ø*Ds*	*ℓs*	*Lf*	*L*	Kg	Air hole	Insert
EPO18R025M25.0-02	16.7	25	2	25	80	35	115	0.4	with	AO*T1805...
EPO18R025M25.0-02L	16.7	25	2	25	150	70	220	0.8	with	AO*T1805...
EPO18R028M25.0-02	16.7	28	2	25	80	35	115	0.4	with	AO*T1805...
EPO18R028M25.0-02L	16.7	28	2	25	150	70	220	0.8	with	AO*T1805...
EPO18R030M32.0-02	16.7	30	2	32	80	40	120	0.6	with	AO*T1805...
EPO18R030M32.0-02L	16.7	30	2	32	175	80	255	1.4	with	AO*T1805...
EPO18R030M32.0-03	16.7	30	3	32	80	40	120	0.6	with	AO*T1805...
EPO18R032M32.0-02	16.7	32	2	32	80	40	120	0.7	with	AO*T1805...
EPO18R032M32.0-02L	16.7	32	2	32	175	80	255	1.5	with	AO*T1805...
EPO18R032M32.0-03	16.7	32	3	32	80	40	120	0.6	with	AO*T1805...
EPO18R035M32.0-02	16.7	35	2	32	80	40	120	0.7	with	AO*T1805...
EPO18R035M32.0-02L	16.7	35	2	32	175	80	255	1.5	with	AO*T1805...
EPO18R035M32.0-03	16.7	35	3	32	80	40	120	0.7	with	AO*T1805...
EPO18R040M32.0-02L	16.7	40	2	32	205	50	255	1.6	with	AO*T1805...
EPO18R040M32.0-03	16.7	40	3	32	80	40	120	0.7	with	AO*T1805...
EPO18R040M32.0-04	16.7	40	4	32	80	40	120	0.7	with	AO*T1805...
EPO18R040M42.0-02L	16.7	40	2	42	210	100	310	3	with	AO*T1805...
EPO18R050M32.0-03	16.7	50	3	32	80	40	120	0.8	with	AO*T1805...
EPO18R050M32.0-05	16.7	50	5	32	80	40	120	0.8	with	AO*T1805...
EPO18R050M42.0-03L	16.7	50	3	42	310	50	360	3.8	with	AO*T1805...
EPO18R063M32.0-04	16.7	63	4	32	80	45	125	1	with	AO*T1805...
EPO18R063M32.0-06	16.7	63	6	32	80	45	125	1.1	with	AO*T1805...
EPO18R063M42.0-03L	16.7	63	3	42	310	50	360	4	with	AO*T1805...

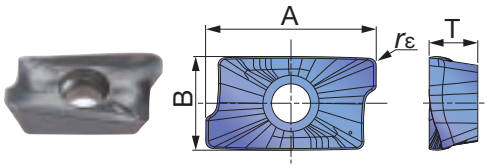
SPARE PARTS



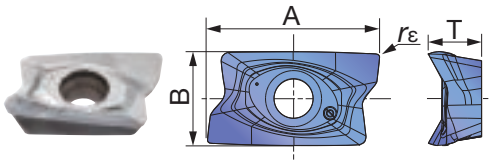

Designation	Clamping screw	Wrench
EPO18R025 - 030...	CSTB-4L085	T-15DB
EPO18R032 - 050...	CSTB-4L093	T-15DB
EPO18R063M...	CSTB-4L120	T-15DB

INSERT

AOMT18-MJ



AOGT18-AJ



P	Steel		★			
M	Stainless	★	☆			
K	Cast iron		★			
N	Non-ferrous			★		
S	Superalloys		★			
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH140	Coating AH725	Un-coated KS15F	A	B	T
AOMT180508PDPR-MJ	0.8	16.7	●	●		19.5	10.7	5.6
AOMT180516PDPR-MJ	1.6	16.7	●	●		19.5	10.7	5.6
AOMT180524PDPR-MJ	2.4	16.7	●	●		19.5	10.7	5.6
AOMT180532PDPR-MJ	3.2	16.7	●	●		19.5	10.7	5.6
AOGT180504PDFR-AJ	0.4	16.7			●	19.8	10.8	6.1
AOGT180508PDFR-AJ	0.8	16.7			●	19.8	10.8	6.1

●: Line-up

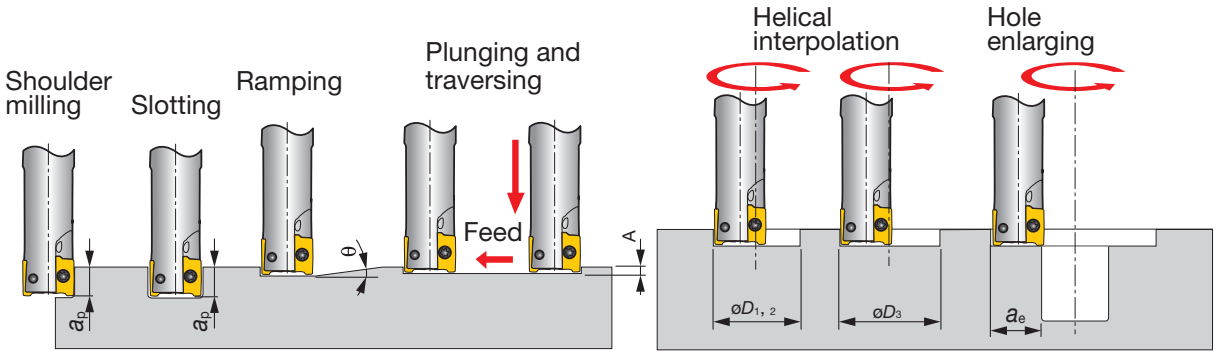
STANDARD CUTTING CONDITIONS

TPO18/EPO18 type

ISO	Workpiece material	Brinell hardness HB	Grade	Cutting speed Vc (m/min)	Feed per tooth: fz (mm/t) MJ	Feed per tooth: fz (mm/t) AJ
P	Low carbon steel C15E4, etc.	~ 200	AH725	100 - 250	0.08 - 0.25	-
P	High carbon steel and alloy steel C55, 42CrMo4, etc.	200 ~ 300	AH725	100 - 230	0.08 - 0.2	-
P	Tool steel X153CrMoV12, etc.	150 ~ 300	AH725	100 - 180	0.08 - 0.2	-
M	Stainless steel X5CrNi18-9, etc.	-	AH140	90 - 200	0.08 - 0.2	-
K	Grey cast irons 250, etc.	150 ~ 250	AH725	140 - 250	0.08 - 0.25	-
K	Ductile cast irons 450-10S, etc.	150 ~ 250	AH725	110 - 200	0.08 - 0.25	-
N	Aluminium alloys Si < 13%	-	KS15F	300 - 1000	-	0.05 - 0.25
N	Aluminium alloys Si ≥ 13%	-	KS15F	100 - 200	-	0.05 - 0.25
S	Titanium alloys Ti-6Al-4V, etc.	-	AH725	20 - 60	0.08 - 0.18	-
S	Superalloys Inconel718, etc.	-	AH725	20 - 40	0.08 - 0.15	-

· To remove excessive chip accumulation use an air blast.
· To avoid build up edge on the cutting edges (aluminium machining), use a water soluble coolant.
· When cutting an interrupted surface or a casted skin, the feed per tooth (fz) should be reduced to the lower recommended value shown in the above table.
· Cutting conditions are limited by machine power, workpiece rigidity, and spindle output. When the cutting width, depth, or overhang length is large, set Vc and fz to the lower recommended values and check the machine power and vibration.

APPLICATION RANGE



Designation	Tool dia. øDc	Chipbreaker	Max. depth of cut ap	Max. ramping angle θ°	Max. plunging depth A	Min. machining øD1	Max. machining øD2	Max. machining øD3*	Max. cutting width in enlarging ae
E/HPO07R012…	12	MJ	7	8	0.5	16	23	20.5	11.5
E/HPO07R016…	16	MJ	7	5	0.5	24	31	28.5	15.5
EPO07R018...	18	MJ	7	4	0.5	28	35	32.5	17.5
E/HPO07R020...	20	MJ	7	3.5	0.5	32	39	36.5	19.5
EPO07R022...	22	MJ	7	3	0.5	36	43	40.5	21.5
E/HPO07R025...	25	MJ	7	2.5	0.5	42	49	46.5	24.5
EPO07R028...	28	MJ	7	2	0.5	48	55	52.5	27.5
TPO07R032…	32	MJ	7	1.8	0.5	56	63	60.5	31.5
TPO07R040	40	MJ	7	1.2	0.5	72	79	76.5	39.5
TPO07R050…	50	MJ	7	0.9	0.5	92	99	96.5	49.5
E/HPO07R012…	12	AJ	6.4	8	0.5	16	23	20.5	11.5
E/HPO07R016…	16	AJ	6.4	5	0.5	24	31	28.5	15.5
EPO07R018...	18	AJ	6.4	4	0.5	28	35	32.5	17.5
E/HPO07R020...	20	AJ	6.4	3.5	0.5	32	39	36.5	19.5
EPO07R022...	22	AJ	6.4	3	0.5	36	43	40.5	21.5
E/HPO07R025...	25	AJ	6.4	2.5	0.5	42	49	46.5	24.5
EPO07R028...	28	AJ	6.4	2	0.5	48	55	52.5	27.5
TPO07R032…	32	AJ	6.4	1.8	0.5	56	63	60.5	31.5
TPO07R040	40	AJ	6.4	1.2	0.5	72	79	76.5	39.5
TPO07R050…	50	AJ	6.4	0.9	0.5	92	99	96.5	49.5
E/HPO07R012…	12.6	HJ	0.8	5	0.5	17	24	-	9.6
E/HPO07R016…	16.6	HJ	0.8	3	0.5	25	32	-	13.6
EPO07R018...	18.6	HJ	0.8	2.5	0.5	29	36	-	15.6
E/HPO07R020...	20.6	HJ	0.8	2.1	0.5	33	40	-	17.6
EPO07R022...	22.6	HJ	0.8	1.9	0.5	37	44	-	19.6
E/HPO07R025...	25.6	HJ	0.8	1.6	0.5	43	50	-	22.6
EPO07R028...	28.6	HJ	0.8	1.3	0.5	49	56	-	25.6
TPO07R032…	32.6	HJ	0.8	1.1	0.5	57	64	-	29.6
TPO07R040	40.6	HJ	0.8	0.8	0.5	73	80	-	37.6
TPO07R050…	50.6	HJ	0.8	0.6	0.5	93	100	-	47.6
EPO11R012…	12	MJ, MS, AJ	10.6	6	0.5	15	23	21	11.5
EPO11R016…	16	MJ, MS, AJ	10.6	5	0.5	20	31	29	15.5
EPO11R018…	18	MJ, MS, AJ	10.6	4	0.5	26	35	33	17.5
E/HPO11R020…	20	MJ, MS, AJ	10.6	3	0.5	28	39	37	19.5
EPO11R022...	22	MJ, MS, AJ	10.6	2.5	0.5	31	43	41	21.5

Designation	Tool-ø	Chipbreaker	Max. depth of cut	Max. ramping angle	Max. plunging depth	Min. machining	Max. machining		Max. cutting width in enlarging
	*ø*Dc		*a*p	*θ*°	A	*ø*D1	*ø*D2	*ø*D3*	*a*e
E/HPO11R025…	25	MJ, MS, AJ	10.6	2	0.5	38	49	47	24.5
EPO11R028...	28	MJ, MS, AJ	10.6	1.5	0.5	42	53	51	27.5
EPO11R030…	30	MJ, MS, AJ	10.6	1.5	0.5	48	55	53	29.5
E/HPO11R032…	32	MJ, MS, AJ	10.6	1.5	0.5	52	59	57	31.5
EPO11R035…	35	MJ, MS, AJ	10.6	1	0.5	56	67	65	34.5
E/TPO11R040…	40	MJ, MS, AJ	10.6	1	0.5	68	79	77	39.5
TPO11R050…	50	MJ, MS, AJ	10.6	0.7	0.5	68	99	97	49.5
TPO11R063…	63	MJ, MS, AJ	10.6	0.5	0.5	114	125	123	62.5
TPO11R080…	80	MJ, MS, AJ	10.6	0.4	0.5	148	159	157	79.5
TPO11R100…	100	MJ, MS, AJ	10.6	0.3	0.5	188	199	197	99.5
EPO18R025...	25	MJ, AJ	16.7	6	1	32	48	44	24
EPO18R028...	28	MJ, AJ	16.7	4.5	1	38	54	50	27
EPO18R030…	30	MJ, AJ	16.7	4	1	42	58	54	29
EPO18R032…	32	MJ, AJ	16.7	3.5	1	46	62	58	31
EPO18R035…	35	MJ, AJ	16.7	3	1	52	68	64	34
E/TPO18R040…	40	MJ, AJ	16.7	2.5	1	62	78	74	39
E/TPO18R050…	50	MJ, AJ	16.7	1.9	1	82	98	94	49
E/TPO18R063	63	MJ, AJ	16.7	1.4	1	108	124	120	62
TPO18R080…	80	MJ, AJ	16.7	1	1	142	158	154	79
TPO18R100…	100	MJ, AJ	16.7	0.8	1	182	198	194	99
TPO18R125…	125	MJ, AJ	16.7	0.6	1	232	248	244	124
TPO18R160…	160	MJ, AJ	16.7	0.4	1	302	318	314	159

*Flat bottom hole

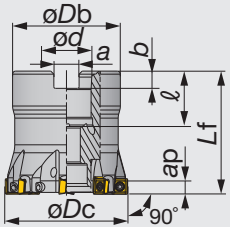
Note: Corner r_ε for dimensions of *ø*D_1, *ø*D_2, and *ø*D_3: r_ε = 0.4 for EPO07 / EPS11 and r_ε = 0.8 for EPO18.

TPD05

Highly dense shoulder square mills with small SDMT/SDHT05 inserts

A.R. = +5°, R.R. = -7° ~ +12°





Right hand (R) shown.

Designation	Max. ap	øDc	z	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TPD05R032M16.0E06	4	32	6	30	32	16	20	8.4	5.6	0.1	with	SD*T0502...
TPD05R040M22.0E08	4	40	8	38	40	22	22	10.4	6.3	0.2	with	SD*T0502...

SPARE PARTS

Designation	Clamping screw	Shell locking bolt	Wrench
TPD05R032M16.0E06	CSPB-2L043	CM8X30H	IP-6DB
TPD05R040M22.0E08	CSPB-2L043	CM10X30H	IP-6DB

EPD05

Highly dense shoulder square endmills with small SDMT/SDHT05 inserts

A.R. = +5°, R.R. = -7° ~ +12°



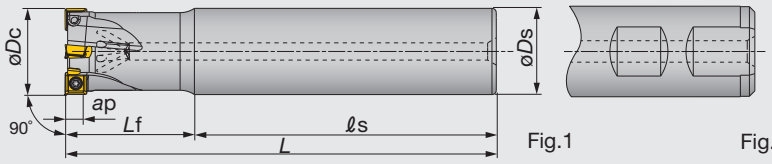


Fig.1 Fig.2

Right hand (R) shown.

Designation	Max. ap	øDc	z	øDs	ℓs	Lf	L	Kg	Air hole	shank	Insert	shank type
EPD05R012M12.0-02	4	12	2	12	62	18	80	0.1	with	Straight	SD*T0502...	Fig.1
EPD05R016M16.0-03	4	16	3	16	90	20	110	0.2	with	Straight	SD*T0502...	Fig.1
EPD05R020M20.0W04	4	20	4	20	80	25	105	0.2	with	Weldon	SD*T0502...	Fig.2
EPD05R025M20.0W05	4	25	5	20	90	25	115	0.3	with	Weldon	SD*T0502...	Fig.2
EPD05R032M25.0W06	4	32	6	25	98	32	130	0.5	with	Weldon	SD*T0502...	Fig.2
EPD05R040M32.0W08	4	40	8	32	100	40	140	0.8	with	Weldon	SD*T0502...	Fig.2

SPARE PARTS

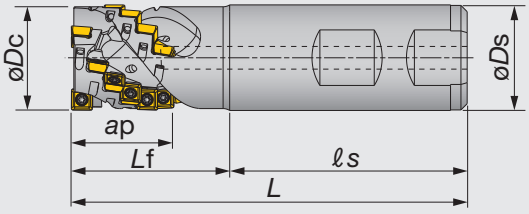
Designation	Clamping screw	Wrench
EPD05...	CSPB-2L043	IP-6DB

ELD05

Highly dense shoulder square endmills for roughing with small SDMT/SDHT05 inserts

A.R. = +5°, R.R. = -3°





Designation	Max. ap	øDc	Z eff	z	øDs	ℓs	Lf	L	Kg	Air hole	Insert
ELD05R020M20.0W02	20.3	20	2	10	20	53	32	85	0.2	with	SD*T0502...
ELD05R025M25.0W03	24.2	25	3	18	25	59	36	95	0.3	with	SD*T0502...

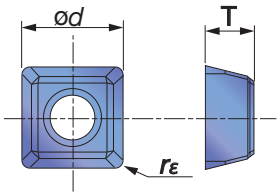
SPARE PARTS

Designation	Clamping screw	Wrench
ELD05...	CSPB-2L043	IP-6DB

INSERT

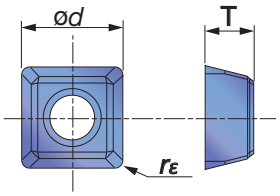
SDMT05-MJ





SDHT05-AJ





P	Steel		★
M	Stainless	★	☆
K	Cast iron		★
N	Non-ferrous		★
S	Superalloys		★
H	Hard materials		

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH140	Coating AH725	Un-coated TH10	T	ød
SDMT050204PN-MJ	0.4	4	●	●		2.38	5.09
SDHT050204FN-AJ	0.4	4			●	2.39	5.09

●: Line-up

STANDARD CUTTING CONDITIONS

Bore, shank type TPD05/EPD05

ISO	Workpiece material	Brinell hardness HB	Grade	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Low carbon steels C15E4, etc.	~ 200	AH725	230 - 320	0.04 - 0.1
	High carbon steels C45, etc.	200 ~ 300	AH725	150 - 230	0.04 - 0.1
	Alloyed steels 42CrMo4, etc.	150 ~ 300	AH725	150 - 230	0.04 - 0.1
	Tool steels X153CrMoV12, etc.	~ 300	AH725	110 - 130	0.03 - 0.09
M	Stainless steels X5CrNi18-9, etc.	-	AH140	100 - 200	0.03 - 0.09
K	Grey cast irons 250, etc.	150 ~ 250	AH725	200 - 300	0.05 - 0.12
	Ductile cast irons 450-10S, etc.	150 ~ 250	AH725	160 - 240	0.05 - 0.12
N	Aluminium alloys Si < 13%	-	TH10	350 - 500	0.05 - 0.15
	Aluminium alloys Si ≥ 13%	-	TH10	100 - 200	0.05 - 0.15

* For deep and wide cutting, set the *Vc* and *fz* to the lower recommended limits and check the vibration and spindle load of the machine.

STANDARD CUTTING CONDITIONS

Roughing type ELD05

ISO	Workpiece material	Brinell hardness HB	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steels C15E4, etc.	~ 200	AH725	100 - 250	0.04 - 0.1
P	High carbon steels C45, etc.	200 ~ 300	AH725	100 - 200	0.04 - 0.1
P	Alloyed steels 42CrMo4, etc.	150 ~ 300	AH725	100 - 200	0.04 - 0.1
P	Tool steels X153CrMoV12, etc.	~ 300	AH725	100 - 130	0.03 - 0.09
M	Stainless steels X5CrNi18-9, etc.	-	AH140	100 - 150	0.03 - 0.09
K	Grey cast irons 250, etc.	150 ~ 250	AH725	100 - 250	0.05 - 0.12
K	Ductile cast irons 450-10S, etc.	150 ~ 250	AH725	80 - 200	0.05 - 0.12
N	Aluminium alloys Si < 13%	-	TH10	200 - 500	0.05 - 0.15
N	Aluminium alloys Si ≥ 13%	-	TH10	100 - 200	0.05 - 0.15

MEMO

TPW13

Square shoulder mills with screw clamped SWMT/SWGT13 inserts

A.R. = +11.5°, R.R. = -13° ~ -10.5°



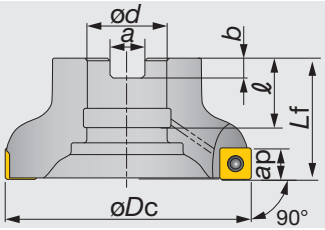


Fig.1

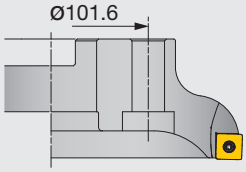


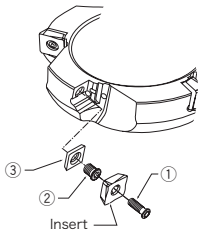
Fig.2

Right hand (R) shown.

Designation	Max. *ap*	*øDc*	z	*Lf*	*ød*	*ℓ*	*a*	*b*	Kg	Airhole	Insert	Style
TPW13R050M22.0E04	10	50	4	40	22	20	10.4	6.3	0.3	with	SW*T1304...	Fig.1
TPW13R050M22.0E05	10	50	5	40	22	20	10.4	6.3	0.3	with	SW*T1304...	Fig.1
TPW13R063M22.0E05	10	63	5	40	22	20	10.4	6.3	0.4	with	SW*T1304...	Fig.1
TPW13R063M22.0E06	10	63	6	40	22	20	10.4	6.3	0.4	with	SW*T1304...	Fig.1
TPW13R080M27.0E06	10	80	6	50	27	22	12.4	7	0.8	with	SW*T1304...	Fig.1
TPW13R080M27.0E08	10	80	8	50	27	22	12.4	7	0.8	with	SW*T1304...	Fig.1
TPW13R100M32.0E07	10	100	7	50	32	28.5	14.4	8	1.2	with	SW*T1304...	Fig.1
TPW13R100M32.0E10	10	100	10	50	32	28.5	14.4	8	1.2	with	SW*T1304...	Fig.1
TPW13R125M40.0E08	10	125	8	63	40	32	16.4	9	2.4	with	SW*T1304...	Fig.1
TPW13R125M40.0E12	10	125	12	63	40	32	16.4	9	2.5	with	SW*T1304...	Fig.1

SPARE PARTS

Designation	①Clamping screw	Lubricant	②Screw	Shell locking bolt	Shell locking bolt 1	③Shim	Wrench for ①	Wrench for ②
TPW13R050, 063...	CSPB-3.5	M-1000	DTS5-3.5SS	-	CM10X30H	FSSP1102	IP-15D	P-3.5
TPW13R080M...	CSPB-3.5	M-1000	DTS5-3.5SS	-	CM12X30H	FSSP1102	IP-15D	P-3.5
TPW13R100M...	CSPB-3.5	M-1000	DTS5-3.5SS	TMBA-M16H	-	FSSP1102	IP-15D	P-3.5
TPW13R125M...	CSPB-3.5	M-1000	DTS5-3.5SS	TMBA-M20H	-	FSSP1102	IP-15D	P-3.5

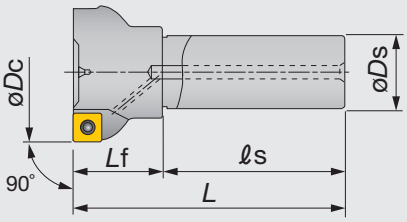


EPW13

Square shoulder endmills with screw clamped SWMT/SWGT13 inserts

A.R. = +11.5°, R.R. = -13° ~ -10.5°



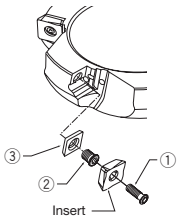


Right hand (R) shown.

Designation	Max. *ap*	ø*Dc*	z	ø*Ds*	*ℓs*	*Lf*	*L*	Kg	Air hole	Insert
EPW13R032M32.0-02	10	32	2	32	80	35	115	0.6	with	SW*T1304...
EPW13R040M32.0-03	10	40	3	32	80	35	115	0.7	with	SW*T1304...
EPW13R050M32.0-03	10	50	3	32	80	40	120	0.9	with	SW*T1304...
EPW13R050M32.0-04	10	50	4	32	80	40	120	0.9	with	SW*T1304...
EPW13R063M32.0-04	10	63	4	32	80	40	120	1	with	SW*T1304...
EPW13R063M32.0-05	10	63	5	32	80	40	120	1	with	SW*T1304...
EPW13R080M32.0-04	10	80	4	32	80	40	120	1.3	with	SW*T1304...
EPW13R080M32.0-06	10	80	6	32	80	40	120	0.8	with	SW*T1304...

SPARE PARTS

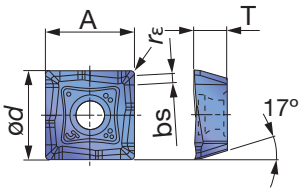
Designation	①Clamping screw	Lubricant	②Screw	③Shim	Wrench for ①	Wrench for ②
EPW13R032, 040...	CSPB-3.5	M-1000	-	-	IP-15D	-
EPW13R050 - 080...	CSPB-3.5	M-1000	DTS5-3.5SS	FSSP1102	IP-15D	P-3.5



INSERT

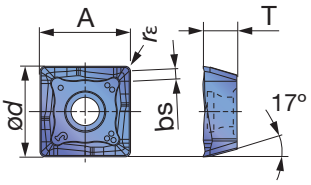
SWGT1304-MJ





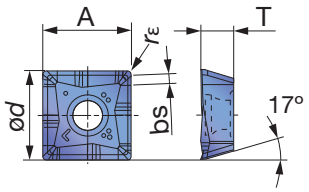
SWMT1304-MJ





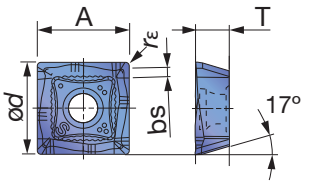
SWMT1304-ML





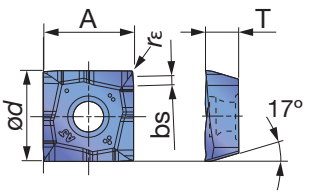
SWMT1304-MS





SWGT1304-AJ





P	Steel	★					★		★			
M	Stainless		★	★								
K	Cast iron	★			★	★						
N	Non-ferrous							★			★	
S	Superalloys	★	☆									
H	Hard materials											

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating							Cermet		Un-coated		A	ød	T	bs
			AH120	AH130	AH140	T1115	T1215	T3130	DS1100	NS740		KS05F					
SWGT1304PDPR-MJ	0.8	10	●							●				13.6	13.6	5	1.4
SWMT1304PDPR-MJ	0.8	10	●	●	●	●	●	●		●				13.6	13.6	5	1.4
SWMT1304PDER-ML	0.8	10	●											13.6	13.6	5	1.4
SWMT1304PDPR-MS	0.8	10		●	●									13.6	13.6	5	1.4
SWGT1304PDFR-AJ	0	10							●			●		13.6	13.6	5	1.6

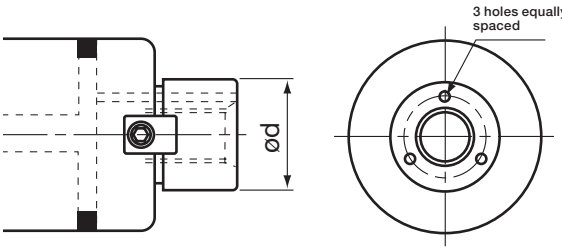
●: Line-up

STANDARD CUTTING CONDITIONS TPW / EPW13 TYPE

ISO	Workpiece material	Recommended insert grade	Cutting speed *Vc* (m/min)	Roughing (Depth of cut: ap ≥ 1.0 mm) Feed per tooth: *fz* (mm/t)				Light cutting to finishing (Depth of cut: ap ≤ 1.0 mm) Feed per tooth: *fz* (mm/t)			
				MJ	ML	MS	AJ	MJ	ML	MS	AJ
P	Mild steels Low carbon steels < 180HB	AH120 (First choice)	100 - 270	0.05 - 0.25	0.05 - 0.2	-	-	0.05 - 0.2	0.05 - 0.18	-	-
		T3130 (Priority on wear resistance)	150 - 300	0.05 - 0.25	-	-	-	0.05 - 0.2	-	-	-
		AH130 / AH140 (Priority on impact resistance)	80 - 180	0.05 - 0.25	-	0.05 - 0.2	-	0.05 - 0.2	-	0.05 - 0.18	-
		NS740 (Priority on surface finish)	100 - 300	0.05 - 0.15	-	-	-	0.05 - 0.12	-	-	-
	Carbon steels Alloy steels < 300HB	AH120 (First choice)	100 - 230	0.05 - 0.2	0.05 - 0.15	-	-	0.05 - 0.18	0.05 - 0.12	-	-
		T3130 (Priority on wear resistance)	150 - 280	0.05 - 0.2	-	-	-	0.05 - 0.18	-	-	-
		AH130 / AH140 (Priority on impact resistance)	80 - 150	0.05 - 0.2	-	-	-	0.05 - 0.18	-	-	-
		NS740 (Priority on surface finish)	100 - 230	0.05 - 0.15	-	-	-	0.05 - 0.12	-	-	-
	Die steels < 30HRC	AH120 (First choice)	100 - 180	0.05 - 0.15	0.05 - 0.12	-	-	0.05 - 0.12	0.05 - 0.1	-	-
		T3130 (Priority on wear resistance)	100 - 180	0.05 - 0.15	-	-	-	0.05 - 0.12	-	-	-
M	Stainless steels < 50HB	AH130 / AH140 (First choice)	80 - 200	0.05 - 0.2	-	0.05 - 0.18	-	0.05 - 0.18	-	0.05 - 0.15	-
		AH120 (Priority on wear resistance)	150 - 250	0.05 - 0.2	0.05 - 0.15	-	-	0.05 - 0.18	0.05 - 0.12	-	-
K	Grey cast irons Ductile cast irons	T1215 (First choice)	100 - 250	0.05 - 0.2	-	-	-	0.05 - 0.18	-	-	-
		AH120 (Priority on impact resistance)	100 - 250	0.05 - 0.2	0.05 - 0.15	-	-	0.05 - 0.18	0.05 - 0.12	-	-
N	Aluminium alloys Si < 13 %	DS1100 / KS05F (First choice)	300 - 1000	-	-	-	0.05 - 0.2	-	-	-	0.05 - 0.2
	Aluminium alloys Si ≥ 13 %	DS1100 / KS05F (First choice)	80 - 300	-	-	-	0.05 - 0.2	-	-	-	0.05 - 0.2
	Copper alloys	DS1100 / KS05F (First choice)	200 - 500	-	-	-	0.05 - 0.2	-	-	-	0.05 - 0.2

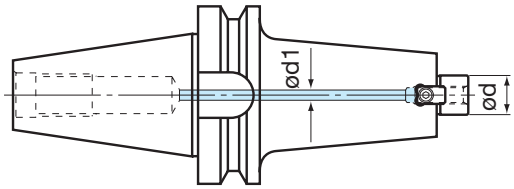
Notes:
- When machining at large depth of cut or large cutting width, *Vc* and *fz* should be reduced.
- As a rule, dry machining (including air blow) is recommended. But, for excessive chip welding, such as when machining stainless steels, use a water soluble cutting fluid. In this case, use AH140 and set the cutting speed to *Vc* ≤ 100 m/min.
- When machining mild steel, carbon steel or alloy steel in wet conditions the T3130 is recommended. In this case, *Vc* and *fz* should be reduced.
- TPW13 type can not be used for ramping, plunging and drilling.

Face mill arbors with center through-coolant hole



Cutter diameter ø*D* (mm)	50/63	80	100	125	160
Nominal diameter ø*d* (mm)	22	25.4	31.75	38.1	50.8
Arbor type	FMH22	FMH25.4	FMH31.75	FMH38.1	FMH50.8

Notes on arbors: when using TAW13 or TPW13 type, use through center air.



Nominal diameter ø*d* (mm)	16	22	25.4	31.75	38.1	50.8
Applicable arbor types	SMA SM1	FMC SM1	FMA FMC	FMA SMB	FMA	FMA
Through hole diameter ø*d*1 (mm)	4 ~ 6	5 ~ 8	6 ~ 9	10 ~ 13	10 ~ 15	10 ~ 15

When using the TAW13 or TPW13 type with through center air (coolant or mist), the correct arbor must be used with through center air supplying.

Cautionary notes in use

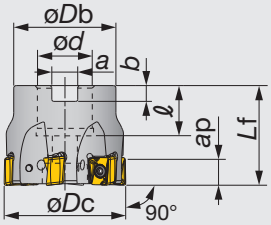
- In slotting or pocketing, when chips are likely to remain in the cutting zone, internal air supplying or air blow is recommended to prevent chip recutting.
- Use of inserts other than those specified, can result in poor cutting and cause damage to the cutter body. Therefore, specified inserts from the Tungaloy catalogue must be used.
- Before changing or indexing the inserts, remove chips or other foreign matter from the insert, insert pocket and cutter body by using an air blast or cloth.
- The inserts should be clamped by using the wrench supplied with the TAC Mill.
- After a long period of use, the clamping screws and wrench may become deformed or damaged. These elements must be replaced as soon as possible.

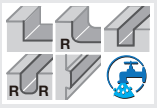
MEMO

Square shoulder mills with LQMU type double sided tough inserts with 4edges

A.R. = +4° ~ +5°, R.R. = +13° ~ +15°







Right hand (R) shown.

Designation	Max. ap	øDc	z	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TPQ11R040M16.0E04	9	40	4	35	40	16	20	8.4	5.6	0.2	with	LQMU1107...
TPQ11R050M22.0E06	9	50	6	41	40	22	20	10.4	6.3	0.4	with	LQMU1107...
TPQ11R063M22.0E07	9	63	7	47	40	22	20	10.4	6.3	0.5	with	LQMU1107...
TPQ11R080M27.0E10	9	80	10	58	50	27	26	12.4	7	1	with	LQMU1107...
TPQ11R100M32.0E12	9	100	12	66	50	32	32	14.4	8	1.6	with	LQMU1107...
TPQ18R050M22.0E03	14	50	3	47	40	22	20	10.4	6.3	0.4	with	LQMU1808...
TPQ18R063M27.0E04	16	63	4	58	50	27	26	12.4	7	0.5	with	LQMU1808...
TPQ18R080M27.0E05	16	80	5	58	50	27	26	12.4	7	0.9	with	LQMU1808...
TPQ18R100M32.0E06	16	100	6	66	50	32	32	14.4	8	1.4	with	LQMU1808...
TPQ18R125M40.0E08	16	125	8	82	63	40	38	16.4	9	2.9	with	LQMU1808...
TPQ18R160M40.0E09	16	160	9	100	63	40	38	16.4	9	4.1	without	LQMU1808...

SPARE PARTS







Designation	Clamping screw	Grip	Grip 1	Torx bit	Center bolt
TPQ11R040M16.0E04	CSTB-3.5L115	SW6-SD	-	BLDT10/S7	CM8×30H
TPQ11R050M22.0E06	CSTB-3.5L115	SW6-SD	-	BLDT10/S7	CM10×30H
TPQ11R063M22.0E07	CSTB-3.5L115	SW6-SD	-	BLDT10/S7	CM10×30H
TPQ11R080M27.0E10	CSTB-3.5L115	SW6-SD	-	BLDT10/S7	CM12×30H
TPQ11R100M32.0E12	CSTB-3.5L115	SW6-SD	-	BLDT10/S7	TMBA-M16H
TPQ18R050M22.0E03	SR14-591	-	H-TB	BT20M	CM10×30H
TPQ18R063M27.0E04	SR14-591	-	H-TB	BT20M	CM12×30H
TPQ18R080M27.0E05	SR14-591	-	H-TB	BT20M	CM12×30H
TPQ18R100M32.0E06	SR14-591	-	H-TB	BT20M	TMBA-M16H
TPQ18R125M40.0E08	SR14-591	-	H-TB	BT20M	TMBA-M20H
TPQ18R160M40.0E09	SR14-591	-	H-TB	BT20M	-

Square shoulder endmills with LQMU type double sided tough inserts with 4 edges

A.R. = +4° ~ +5°, R.R. = +13° ~ +15°



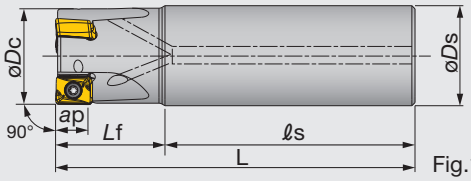


Fig.1

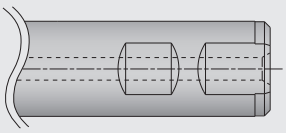
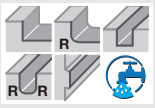


Fig.2



Right hand (R) shown.

Designation	Max. ap	øDc	z	øDs	ℓs	Lf	L	Kg	Air hole	Insert	Shank style
EPQ11R025M25.0-02	9	25	2	25	70	30	100	0.3	with	LQMU1107...	Fig.1
EPQ11R032M32.0-03	9	32	3	32	80	35	115	0.7	with	LQMU1107...	Fig.1
EPQ11R040M32.0-04	9	40	4	32	80	35	115	0.8	with	LQMU1107...	Fig.1
EPQ11R050M32.0-05	9	50	5	32	80	40	120	0.9	with	LQMU1107...	Fig.1
EPQ11R063M32.0-06	9	63	6	32	80	40	120	1.1	with	LQMU1107...	Fig.1
EPQ11R080M32.0-07	9	80	7	32	80	40	120	1.4	with	LQMU1107...	Fig.1
EPQ18R040M32.0W03	14	40	3	32	75	35	110	0.7	with	LQMU1808...	Fig.2
EPQ18R050M32.0W04	14	50	4	32	75	40	115	0.9	with	LQMU1808...	Fig.2

SPARE PARTS





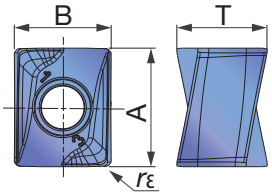


Designation	Clamping screw	Grip	Grip 1	Torx bit	Wrench
EPQ11...	CSTB-3.5L115	SW6-SD	-	BLDT10/S7	T-10D
EPQ18...	SR14-591	-	H-TB	BT20M	T-20D

INSERT

LQMU11/18-MJ





P	Steel	☆		★
M	Stainless		★	☆
K	Cast iron	★		☆
N	Non-ferrous			
S	Superalloys	★		★
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH120	Coating AH140	Coating AH725	A	T	B
LQMU110704PNER-MJ	0.4	9	●	●	●	11	8.3	9
LQMU110708PNER-MJ	0.8	9	●	●	●	11	8.3	9
LQMU110716PNER-MJ	1.6	9	●	●	●	11	8.3	9
LQMU110720PNER-MJ	2	9	●			11	8.3	9
LQMU180804PNER-MJ	0.4	16	●	●	●	17.5	10.9	11.5
LQMU180808PNER-MJ	0.8	16	●	●	●	17.5	10.9	11.5
LQMU180816PNER-MJ	1.6	16	●	●	●	17.5	10.9	11.5
LQMU180824PNER-MJ	2.4	16	●	●	●	17.5	10.9	11.5

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness HB	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steel C15E, etc.	- 200	AH725	100 - 250	0.1 - 0.25
	High carbon steel C45, C55, etc.	200 - 300	AH725	100 - 230	0.1 - 0.2
	Alloy steel 42CrMo4, etc.	150 - 300	AH725	100 - 230	0.1 - 0.2
	Tool steel X153CrMoV12, etc.	- 300	AH725	100 - 180	0.1 - 0.2
M	Stainless steel X5CrNi18-9, etc.	-	AH140	90 - 180	0.1 - 0.25
K	Grey cast iron 250, etc.	150 - 250	AH120	140 - 250	0.1 - 0.25
	Ductile cast iron 450-10S, etc.	150 - 250	AH120	110 - 200	0.1 - 0.25
S	Superalloys Inconel 718, Ti-6Al-4V, etc.	-	AH725	20 - 50	0.08 - 0.2

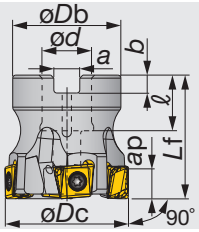
· To remove excessive chip accumulation use an air blast.
· When cutting an interrupted surface or a casted skin, the feed per tooth (*fz*) should be reduced to the lower recommended value shown in the above table.
· Cutting conditions are limited by machine power, work piece rigidity and spindle output. When the cutting width, depth or over hang length is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

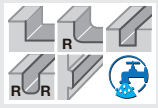
MEMO

TECMILL
TPM11,16
Square shoulder mills with LMMU type tangential clamped insert with 4 edges

A.R. = +5° ~ +6°, R.R. = +9° ~ +13°

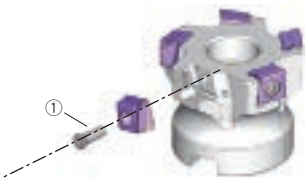






Right hand (R) shown.

Designation	Max. ap	øDc	z	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TPM11R050M22.0E05	9.7	50	5	41	40	22	20	10.4	6.3	0.3	with	LMMU1107...
TPM11R063M22.0E06	9.7	63	6	41	40	22	20	10.4	6.3	0.5	with	LMMU1107...
TPM11R080M27.0E07	9.7	80	7	50	50	27	22	12.4	7	1	with	LMMU1107...
TPM11R080M27.0E09	9.7	80	9	50	50	27	22	12.4	7	1	with	LMMU1107...
TPM11R100M32.0E08	9.7	100	8	60	50	32	28.5	14.4	8	1.4	with	LMMU1107...
TPM11R100M32.0E11	9.7	100	11	60	50	32	28.5	14.4	8	1.5	with	LMMU1107...
TPM16R080M27.0E05	15.1	80	5	50	50	27	22	12.4	7	1	with	LMMU1609...
TPM16R100M32.0E06	15.1	100	6	60	50	32	28.5	14.4	8	1.5	with	LMMU1609...
TPM16R125M40.0E07	15.1	125	7	71	63	40	32	16.4	9	2.7	with	LMMU1609...



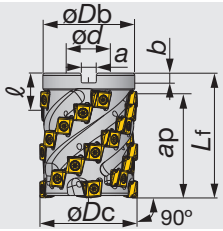
SPARE PARTS

Designation	①Clamping screw	Grip	Shell locking bolt	Shell locking bolt 1	Torx bit
TPM11R050, 063...	CSTB-3.5L110	H-TB	-	CM10X30H	BT15S
TPM11R080M...	CSTB-3.5L110	H-TB	-	CM12X30H	BT15S
TPM11R100M...	CSTB-3.5L110	H-TB	TMBA-M16H	-	BT15S
TPM16R080M27.0E05	CSTB-5L159	H-TB	-	CM12X30H	BT20S
TPM16R100M32.0E06	CSTB-5L159	H-TB	TMBA-M16H	-	BT20S
TPM16R125M40.0E07	CSTB-5L159	H-TB	TMBA-M20H	-	BT20S

TECMILL
TLM11
Square shoulder mills for roughing with LMMU type tangential clamped insert with 4 edges

A.R. = +5° ~ +6°, R.R. = +9° ~ +13°







Designation	Max. ap	øDc	Z eff	z	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TLM11R050M22.0E03	58.5	50	3	21	47	70	22	20	10.4	6.3	0.8	with	LMMU1107...
TLM11R063M27.0E04	66.9	63	4	32	59	80	27	22	12.4	7	1.4	with	LMMU1107...

SPARE PARTS

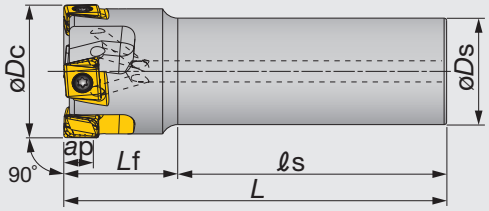
Designation	Clamping screw	Grip	Shell locking bolt	Torx bit
TLM11R050M22.0E03	CSTB-3.5L110	H-TB	SD06-A3	BT15S
TLM11R063M27.0E04	CSTB-3.5L110	H-TB	SD08-98	BT15S

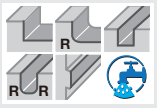
EPM11

Square shoulder endmills with LMMU type tangential clamped insert with4 edges

A.R. = +5° ~ +6°, R.R. = +9° ~ +13°







Right hand (R) shown.

Designation	Max. ap	øDc	z	øDs	ℓs	Lf	L	Kg	Air hole	Insert
EPM11R032M32.0-03	9.7	32	3	32	80	35	115	0.6	with	LMMU1107...
EPM11R040M32.0-04	9.7	40	4	32	80	35	115	0.7	with	LMMU1107...
EPM11R050M32.0-04	9.7	50	4	32	80	40	120	0.9	with	LMMU1107...
EPM11R063M32.0-06	9.7	63	6	32	80	40	120	1.2	with	LMMU1107...
EPM11R080M32.0-07	9.7	80	7	32	80	40	120	1.6	with	LMMU1107...

SPARE PARTS



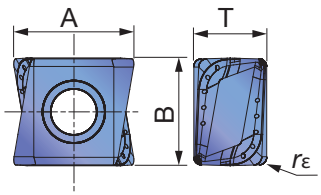


Designation	Clamping screw	Wrench
EPM11...	CSTB-3.5L110	T-15DB

INSERT

LMMU11/16-MJ





P	Steel	☆		★		☆	
M	Stainless		★	☆			
K	Cast iron	★		☆	☆		
N	Non-ferrous						
S	Superalloys	★		★			
H	Hard materials						

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH120	AH140	AH725	T1115	T3130	A	B	T
LMMU110708PNER-MJ	0.8	9.7	●	●	●	●	●	11.7	10.5	7.1
LMMU110716PNER-MJ	1.6	9.7	●	●	●	●	●	11.5	10.5	7.1
LMMU110724PNER-MJ	2.4	9.7	●	●	●	●	●	11.3	10.5	7.1
LMMU110732PNER-MJ	3.2	9.7	●	●	●	●	●	11.1	10.5	7.1
LMMU160908PNER-MJ	0.8	15.1	●	●	●	●	●	17.3	16	9.5
LMMU160916PNER-MJ	1.6	15.1	●	●	●	●	●	17.1	16	9.5
LMMU160924PNER-MJ	2.4	15.1	●	●	●	●		16.9	16	9.5
LMMU160932PNER-MJ	3.2	15.1	●	●	●	●		16.8	16	9.5

●: Line-up

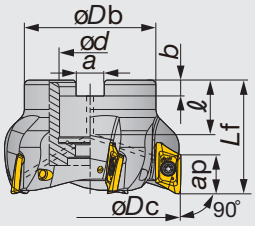
TUNG-ALUMILL

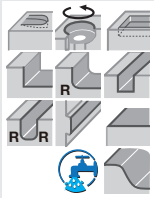
TPV16

90° shoulder milling shellmills with screw clamped XVCT16 inserts for aluminum machining

A.R. = +10° ~ +11°, R.R. = -9° ~ -5.5°







Designation	øDc	z	øDb	ød	ℓ	Lf	b	a	Kg	Air hole	Max. RPM (min-1)	Insert
TPV16R040M16.0E03	40	3	38	16	20	50	5.6	8.4	0.23	with	30,000	XVCT1605...
TPV16R050M22.0E04	50	4	45	22	22	50	6.3	10.4	0.33	with	27,000	XVCT1605...
TPV16R063M22.0E05	63	5	47	22	22	50	6.3	10.4	0.54	with	24,000	XVCT1605...
TPV16R080M27.0E05	80	5	58	27	28	50	7	12.4	0.86	with	21,000	XVCT1605...
TPV16R100M32.0E06	100	6	66	32	26	63	8	14.4	1.55	with	19,000	XVCT1605...
TPV16R125M40.0E07	125	7	85	40	32	63	9	16.4	2.53	with	17,000	XVCT1605...

SPARE PARTS

Designation	Clamping screw	Grip	Shell locking bolt	Torx bit
TPV16R040M16.0E03	TS40093I/HG	H-TBS	SHM8X1.25X35-C	BT15S
TPV16R050 - 063...	TS40093I/HG	H-TBS	SHM10X1.5X30-C	BT15S
TPV16R080M27.0E05	TS40093I/HG	H-TBS	LHM12X1.75X30-C	BT15S
TPV16R100M32.0E06	TS40093I/HG	H-TBS	SHM16X2X35-C	BT15S
TPV16R125M40.0E07	TS40093I/HG	H-TBS	SHM20X2.5X40-C	BT15S

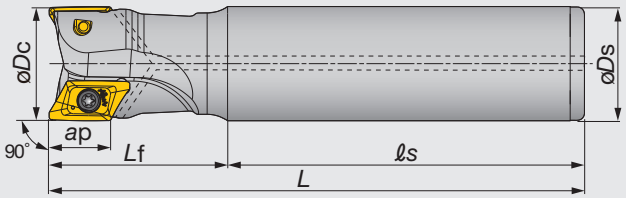
TUNG-ALUMILL

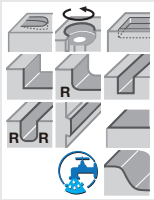
EPV16

90° endmills with screw clamped XVCT16 inserts for aluminum machining

A.R. = +6° ~ +10°, R.R. = -12° ~ -9°







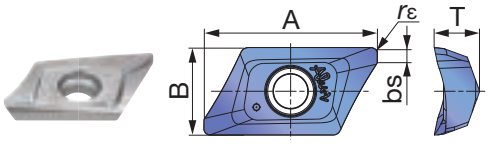
Designation	øDc	z	øDs	ℓs	Lf	L	Kg	Air hole	Max. RPM (min-1)	Insert
EPV16R025M25.0-02	25	2	25	70	55	125	0.37	with	38,000	XVCT1605...
EPV16R025M25.0-02L	25	2	25	100	70	170	0.53	with	38,000	XVCT1605...
EPV16R032M32.0-02	32	2	32	100	50	150	0.77	with	34,000	XVCT1605...
EPV16R032M32.0-02L	32	2	32	120	80	200	1.03	with	34,000	XVCT1605...
EPV16R032M32.0-03	32	3	32	100	50	150	0.76	with	34,000	XVCT1605...
EPV16R032M32.0-03L	32	3	32	120	80	200	1.03	with	34,000	XVCT1605...
EPV16R040M32.0-03	40	3	32	120	50	170	0.94	with	30,000	XVCT1605...
EPV16R040M32.0-03L	40	3	32	195	55	250	1.43	with	30,000	XVCT1605...

SPARE PARTS

Designation	Clamping screw	Grip	Torx bit
EPV16R025M...	TS40085I/HG	H-TBS	BT15S
EPV16R032M...	TS40093I/HG	H-TBS	BT15S
EPV16R040M...	TS40093I/HG	H-TBS	BT15S

INSERT

XVCT16-AJ



P	Steel	
M	Stainless	
K	Cast iron	
N	Non-ferrous	★
S	Superalloys	
H	Hard materials	

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Un-coated TH10	A	B	T	bs
XVCT160504R-AJ	0.4	16	●	22.2	11.2	5.9	1.3
XVCT160508R-AJ	0.8	16	●	22.2	11.2	5.9	1
XVCT160512R-AJ	1.2	15.5	●	21.7	11.2	5.8	1
XVCT160516R-AJ	1.6	15	●	21.2	11.2	5.75	1
XVCT160520R-AJ	2	14.5	●	20.8	11.2	5.75	1
XVCT160530R-AJ	3	14	●	19.5	11.2	5.6	1
XVCT160532R-AJ	3.2	14	●	19.2	11.2	5.6	1
XVCT160540R-AJ	4	13	●	18.4	11.2	5.5	1.2
XVCT160550R-AJ	5	13	●	18.4	11.2	5.4	0.4

●: Line-up

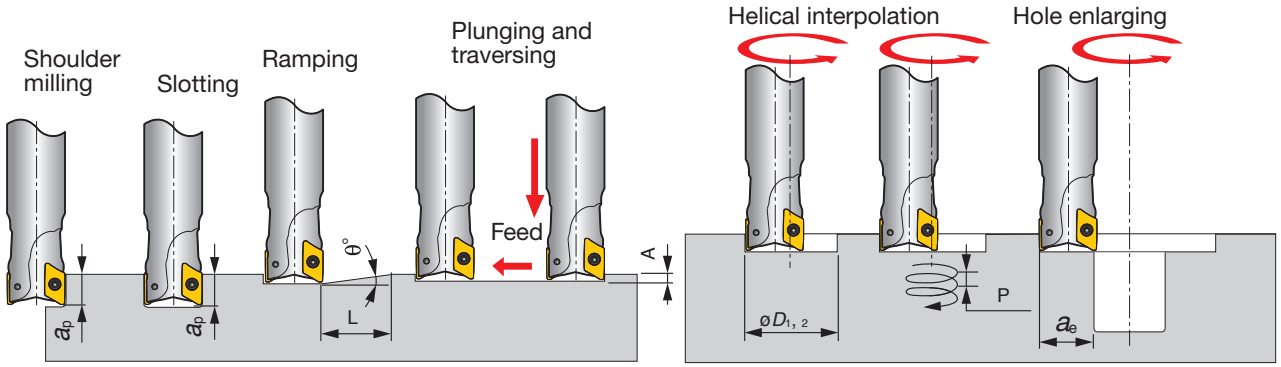
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness HB	Grade	Chip-breaker	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
N	Aluminium alloy	60	TH10	AJ	300 - 5000	0.15 - 0.35
		100	TH10	AJ	200 - 2000	0.1 - 0.25
	Cast aluminium alloy Si ≤ 12%	75	TH10	AJ	200 - 2000	0.15 - 0.3
		90	TH10	AJ	200 - 1500	0.1 - 0.25
	Cast aluminium alloy Si > 12%	130	TH10	AJ	200 - 1000	0.07 - 0.15
	Copper alloys Pb > 1%	110	TH10	AJ	200 - 800	0.07 - 0.15
	Copper alloys	90	TH10	AJ	300 - 1000	0.1 - 0.15
		100	TH10	AJ	300 - 800	0.1 - 0.15
	Duroplastics, fiber plastics	-	TH10	AJ	100 - 500	0.1 - 0.15
	Hard rubber	-	TH10	AJ	100 - 300	0.1 - 0.15

Safety guidelines

1. Use only the original inserts, cutters and spare parts.
2. Insert pocket must be cleaned before clamping the insert.
3. Clamp torque of screw should be 4.5 N·m.
4. For safety reasons, use a new screw when changing the insert.
5. Maximum RPM values are determined based on the burst test. Using RPM beyond maximum values may cause insert breakage, machine damage or personal injury.
6. XVCT insert has sharp cutting edges. Always wear gloves for protection from injury when handling.

APPLICATION RANGE



				Straight ramp down		Step down		Helical ramp down				Hole enlarging
	Tool	Corner radius	Max. depth of cut	Max. ramping angle	Min. length	Max. plunging depth	Min. machining	Min. pitch/rev	Max. machining	Max. pitch/rev	Max. width
Designation	øDc	rε	ap	θ°	L	A	øD1	P	øD2	P	ae
EPV16R025...	25	0.4, 0.8	16	22	40	4.2	29.1	4.4	50	13.6	22.5
EPV16R025...	25	1.2	15.5	22	40	4.2	29.1	4.4	50	13.6	22.5
EPV16R025...	25	1.6	15	22	38	3.7	29.1	4.4	50	13.2	22.5
EPV16R025...	25	2	14.5	22	38	3.7	29.1	4.4	50	13.2	22.5
EPV16R025...	25	3, 3.2	14	21	38	2.5	29.1	4.2	50	12.3	22.5
EPV16R025...	25	4, 5	13	18.5	40	2.3	29.1	3.7	50	12.3	22.5
EPV16R032...	32	0.4, 0.8	16	16.5	54	4	43.1	8.8	64	13.6	28.8
EPV16R032...	32	1.2	15.5	16.5	54	4	43.1	8.8	64	13.6	28.8
EPV16R032...	32	1.6	15	16	54	3.5	43.1	8.5	64	13.2	28.8
EPV16R032...	32	2	14.5	16	54	3.5	43.1	8.5	64	13.2	28.8
EPV16R032...	32	3, 3.2	14	15	54	3	43.1	7.9	64	12.3	28.8
EPV16R032...	32	4, 5	13	13.5	56	2.5	43.1	7.1	64	12.3	28.8
T/EPV16R040...	40	0.4, 0.8	16	11.5	79	4	59.1	10.4	80	13.6	36
T/EPV16R040...	40	1.2	15.5	11.5	79	4	59.1	10.4	80	13.6	36
T/EPV16R040...	40	1.6	15	11	80	3.5	59.1	9.9	80	13.2	36
T/EPV16R040...	40	2	14.5	11	80	3.5	59.1	9.9	80	13.2	36
T/EPV16R040...	40	3, 3.2	14	10	82	3	59.1	9	80	12.3	36
T/EPV16R040...	40	4, 5	13	8.5	90	2.5	59.1	7.6	80	12.3	36
TPV16R050...	50	0.4, 0.8	16	9.5	96	4	79.1	13	100	13.6	45
TPV16R050...	50	1.2	15.5	9.5	96	4	79.1	13	100	13.6	45
TPV16R050...	50	1.6	15	9	98	3.5	79.1	12.3	100	13.2	45
TPV16R050...	50	2	14.5	9	98	3.5	79.1	12.3	100	13.2	45
TPV16R050...	50	3.0, 3.2	14	8	103	3	79.1	10.9	100	12.3	45
TPV16R050...	50	4, 5	13	7	110	2.5	79.1	9.5	100	12.3	45
TPV16R063...	63	0.4, 0.8	16	7	130	4	105.1	13.6	126	13.6	56.7
TPV16R063...	63	1.2	15.5	7	130	4	105.1	13.6	126	13.6	56.7
TPV16R063...	63	1.6	15	6.5	136	3.5	105.1	12.8	126	13.2	56.7
TPV16R063...	63	2	14.5	6.5	136	3.5	105.1	12.8	126	13.2	56.7
TPV16R063...	63	3.0, 3.2	14	6	136	3	105.1	11.8	126	12.3	56.7
TPV16R063...	63	4, 5	13	5.5	140	2.5	105.1	10.8	126	12.3	56.7
TPV16R080...	80	0.4, 0.8	16	5	183	4	139.1	13.6	160	13.6	72
TPV16R080...	80	1.2	15.5	5	183	4	139.1	13.6	160	13.6	72
TPV16R080...	80	1.6	15	4.5	197	3.5	139.1	12.4	160	13.2	72
TPV16R080...	80	2	14.5	4.5	197	3.5	139.1	12.4	160	13.2	72
TPV16R080...	80	3, 3.2	14	4	207	3	139.1	11	160	12.3	72
TPV16R080...	80	4, 5	13	3.5	221	2.5	139.1	9.6	160	12.3	72
TPV16R100...	100	0.4, 0.8	16	3.5	262	4	179.1	12.9	200	13.6	90
TPV16R100...	100	1.2	15.5	3.5	262	4	179.1	12.9	200	13.6	90
TPV16R100...	100	1.6	15	3	296	3.5	179.1	11.1	200	13.2	90
TPV16R100...	100	2	14.5	3	296	3.5	179.1	11.1	200	13.2	90
TPV16R100...	100	3, 3.2	14	2.5	332	3	179.1	9.2	200	12.3	90
TPV16R100...	100	4, 5	13	2.5	309	2.5	179.1	9.2	200	11.6	90
TPV16R125...	125	0.4, 0.8	16	2.5	367	4	229.1	12.1	125	13.6	112.5
TPV16R125...	125	1.2	15.5	2.5	367	4	229.1	12.1	125	13.6	112.5
TPV16R125...	125	1.6	15	2	444	3.5	229.1	9.7	125	13.2	112.5
TPV16R125...	125	2	14.5	2	444	3.5	229.1	9.7	125	13.2	112.5
TPV16R125...	125	3, 3.2	14	1.5	554	3	229.1	7.3	125	8.7	112.5
TPV16R125...	125	4, 5	13	1.5	516	2.5	229.1	7.3	125	8.7	112.5

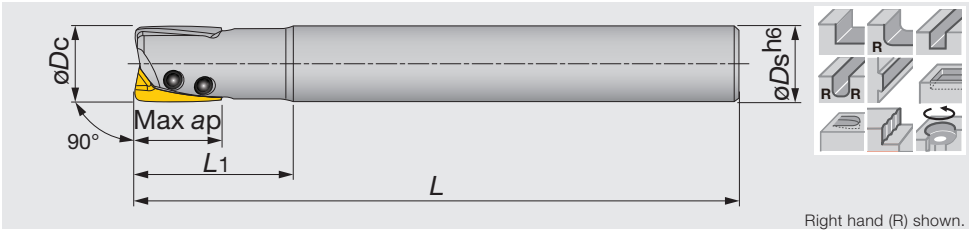
HYBRIDTACMILL

EPH

High precision shoulder square endmills in small diameter with XHGR type insert

A.R. = +14.7° ~ +19.5°, R.R. = -14.9° ~ -17.8°



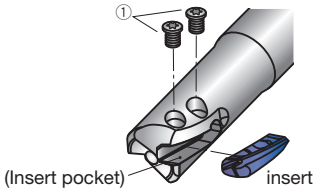


Right hand (R) shown.

Designation	Max. *ap*	ø*D*c	z	ø*D*s	*L*	*L*1	Insert
EPH11R010M10.0-2	10	10	2	10	80	21	XHGR1102...
EPH11R010M10.0-2L	10	10	2	10	100	36	XHGR1102...
EPH13R012M12.0-2	12	12	2	12	80	25	XHGR1302...
EPH13R012M12.0-2L	12	12	2	12	110	43	XHGR1302...
EPH13R013M12.0-2	12	13	2	12	110	25	XHGR1302...
EPH13R014M12.0-2	12	14	2	12	110	25	XHGR1302...
EPH18R016M16.0-2	16	16	2	16	100	33	XHGR18T2...
EPH18R016M16.0-2L	16	16	2	16	130	56	XHGR18T2...
EPH18R016M16.0-3	16	16	3	16	100	33	XHGR18T2...
EPH18R016M16.0-3L	16	16	3	16	130	56	XHGR18T2...
EPH18R017M16.0-3	16	17	3	16	130	33	XHGR18T2...
EPH18R018M16.0-3	16	18	3	16	130	33	XHGR18T2...
EPH18R020M20.0-3	16	20	3	20	110	41	XHGR18T2...
EPH18R020M20.0-3L	16	20	3	20	140	71	XHGR18T2...
EPH18R021M20.0-3	16	21	3	20	140	41	XHGR18T2...
EPH18R025M25.0-4	16	25	4	25	120	51	XHGR18T2...
EPH18R025M25.0-4L	16	25	4	25	160	88.5	XHGR18T2...
EPH18R026M25.0-4	16	26	4	25	160	51	XHGR18T2...

SPARE PARTS

Designation	①Clamping screw	Wrench	Wrench 1
EPH11R...	CSP-2L033	-	IP-6F
EPH13R...	CSPB-2.2SH	IP-7D	-
EPH18R...	CSPB-2.5SH	IP-7D	-

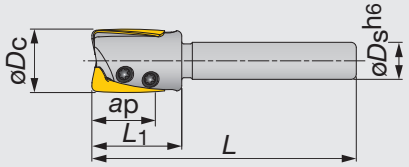


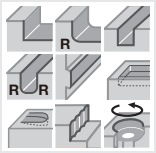
EPH with slim shank

High precision shoulder square endmills with XHGR type insert slimed shank for small lathes

A.R. = +14.7° ~ +19.5°, R.R. = -14.9° ~ -17.8°







Designation	Max.ap	øDc	z	øDs	L	L1	Insert
EPH11R010M06.0-2	10	10	2	6	50	15	XHGR1102...
EPH13R012M07.0-2	12	12	2	7	50	17	XHGR1302...
EPH18R016M10.0-3	16	16	3	10	60	22	XHGR18T2...
EPH18R020M10.0-3	16	20	3	10	60	22	XHGR18T2...

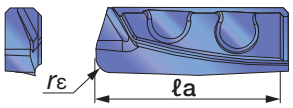
SPARE PARTS

Designation	Clamping screw	Wrench	Wrench 1
EPH11R010M06.0-2	CSP-2L033	-	IP-6F
EPH13R012M07.0-2	CSPB-2.2SH	IP-7D	-
EPH18R0**M10.0-3	CSPB-2.5SH	IP-7D	-

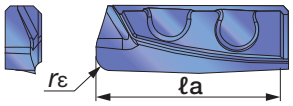
INSERT

XHGR11/13/18-AJ





XHGR11/13/18-MJ



P	Steel	★	
M	Stainless	★	
K	Cast iron	★	
N	Non-ferrous		★
S	Superalloys		
H	Hard materials		

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH730	Coating DS1200	ℓa
XHGR110202ER-MJ	0.2	10	●		11
XHGR110204ER-MJ	0.4	10	●		11
XHGR110205ER-MJ	0.5	10	●		11
XHGR110208ER-MJ	0.8	10	●		11
XHGR110210ER-MJ	1	10	●		11
XHGR110212ER-MJ	1.2	10	●		11
XHGR110215ER-MJ	1.5	10	●		11
XHGR110216ER-MJ	1.6	10	●		11
XHGR110220ER-MJ	2	10	●		11
XHGR130202ER-MJ	0.2	12	●		13
XHGR130204ER-MJ	0.4	12	●		13
XHGR130205ER-MJ	0.5	12	●		13
XHGR130208ER-MJ	0.8	12	●		13
XHGR130210ER-MJ	1	12	●		13
XHGR130212ER-MJ	1.2	12	●		13
XHGR130215ER-MJ	1.5	12	●		13
XHGR130216ER-MJ	1.6	12	●		13
XHGR130220ER-MJ	2	12	●		13
XHGR18T202ER-MJ	0.2	16	●		18
XHGR18T204ER-MJ	0.4	16	●		18
XHGR18T205ER-MJ	0.5	16	●		18
XHGR18T208ER-MJ	0.8	16	●		18
XHGR18T210ER-MJ	1	16	●		18
XHGR18T212ER-MJ	1.2	16	●		18
XHGR18T215ER-MJ	1.5	16	●		18

●: Line-up

P	Steel	★		
M	Stainless	★		
K	Cast iron	★		
N	Non-ferrous		★	
S	Superalloys			
H	Hard materials			

★ : First choice
☆ : Second choice

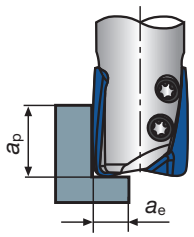
Designation	rε	Max. ap	Coating		ℓa
			AH730	DS1200	
XHGR18T216ER-MJ	1.6	16	●		18
XHGR18T220ER-MJ	2	16	●		18
XHGR110200FR-AJ	0	10		●	11
XHGR110202FR-AJ	0.2	10		●	11
XHGR110204FR-AJ	0.4	10		●	11
XHGR110205FR-AJ	0.5	10		●	11
XHGR110208FR-AJ	0.8	10		●	11
XHGR110210FR-AJ	1	10		●	11
XHGR110212FR-AJ	1.2	10		●	11
XHGR110215FR-AJ	1.5	10		●	11
XHGR110216FR-AJ	1.6	10		●	11
XHGR110220FR-AJ	2	10		●	11
XHGR130200FR-AJ	0	12		●	13
XHGR130202FR-AJ	0.2	12		●	13
XHGR130204FR-AJ	0.4	12		●	13
XHGR130205FR-AJ	0.5	12		●	13
XHGR130208FR-AJ	0.8	12		●	13
XHGR130210FR-AJ	1	12		●	13
XHGR130212FR-AJ	1.2	12		●	13
XHGR130215FR-AJ	1.5	12		●	13
XHGR130216FR-AJ	1.6	12		●	13
XHGR130220FR-AJ	2	12		●	13
XHGR18T200FR-AJ	0	16		●	18
XHGR18T202FR-AJ	0.2	16		●	18
XHGR18T204FR-AJ	0.4	16		●	18
XHGR18T205FR-AJ	0.5	16		●	18
XHGR18T208FR-AJ	0.8	16		●	18
XHGR18T210FR-AJ	1	16		●	18
XHGR18T212FR-AJ	1.2	16		●	18
XHGR18T215FR-AJ	1.5	16		●	18
XHGR18T216FR-AJ	1.6	16		●	18
XHGR18T220FR-AJ	2	16		●	18

Note: When using inserts with a corner radius in excess of 1mm,additional work to the cutter body is needed.

●: Line-up

STANDARD CUTTING CONDITIONS

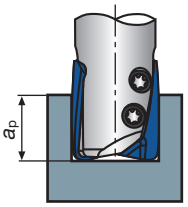
● Shoulder milling



ap: Axial depth of cut
ae: Radial depth of cut

ISO	Workpiece material	Cutting speed *Vc* (m/min)	Feed rate *fz* (mm/t)	Cutting conditions ø10 ≤ ø*Dc* < ø12	ø12 ≤ ø*Dc* < ø16	ø16 ≤ ø*Dc* ≤ ø26
P	Carbon steels Alloy steels < 30HRC	60 ~ 180	0.03 ~ 0.1	*Vc* = 120 m/mim, *fz* = 0.08 mm/t		
				ap 7.5 mm	ap 9 mm	ap 12 mm
				ae 1.5 mm	ae 1.5 mm	ae 2 mm
	Alloy steels prehardened steels 30 ~ 40HRC	50 ~ 150	0.03 ~ 0.08	*Vc* = 100 m/min, *fz* = 0.05 mm/t		
				ap 5.5 mm	ap 6.5 mm	ap 9 mm
				ae 1.5 mm	ae 1.5 mm	ae 2 mm
M	Stainless steels < 250HB	50 ~ 150	0.03 ~ 0.06	*Vc* = 100 m/min, *fz* = 0.04 mm/t		
				ap 4.5 mm	ap 5.5 mm	ap 7.5 mm
				ae 1.5 mm	ae 1.5 mm	ae 2 mm
K	Cast irons	80 ~ 200	0.03 ~ 0.1	*Vc* = 140 m/min, *fz* = 0.08 mm/t		
				ap 9.5 mm	ap 11.5 mm	ap 15.5 mm
				ae 2 mm	ae 2 mm	ae 3 mm
N	Aluminium alloys Si < 12%	100 ~ 300	0.03 ~ 0.1	*Vc* = 200 m/min, *fz* = 0.07 mm/t		
				ap 9.5 mm	ap 11.5 mm	ap 15.5 mm
				ae 2 mm	ae 2 mm	ae 3 mm
	Aluminium alloys Si > 13%	80 ~ 180	0.03 ~ 0.08	*Vc* = 130 m/min, *fz* = 0.06 mm/t		
				ap 9.5 mm	ap 11.5 mm	ap 15.5 mm
				ae 2 mm	ae 2 mm	ae 3 mm

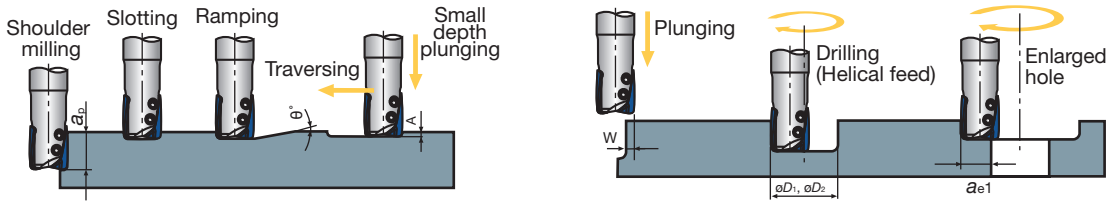
● Slotting



ISO	Workpiece material	Cutting speed *Vc* (m/min)	Feed rate *fz* (mm/t)	Cutting conditions ø10 ≤ ø*Dc* < ø12	ø12 ≤ ø*Dc* < ø16	ø16 ≤ ø*Dc* ≤ ø18	ø18 < ø*Dc* ≤ ø21	ø21 < ø*Dc* ≤ ø26
P	Carbon steels Alloy steels < 30HRC	60 ~ 180	0.03 ~ 0.1	*Vc* = 100 m/mim, *fz* = 0.06 mm/t				
				ap 1.5 mm	ap 2 mm	ap 3 mm	ap 2.5 mm	ap 2.5 mm
	Alloy steels prehardened steels 30 ~ 40HRC	50 ~ 150	0.03 ~ 0.08	*Vc* = 70 m/min, *fz* = 0.05 mm/t				
				ap 1 mm	ap 1.5 mm	ap 2 mm	ap 1.5 mm	ap 1.5 mm
M	Stainless steels < 250HB	50 ~ 150	0.03 ~ 0.06	*Vc* = 70 m/min, *fz* = 0.04 mm/t				
				ap 1 mm	ap 1 mm	ap 1.5 mm	ap 1.5 mm	ap 1.5 mm
K	Cast irons	80 ~ 200	0.03 ~ 0.1	*Vc* = 120 m/min, *fz* = 0.07 mm/t				
				ap 3.5 mm	ap 4 mm	ap 4.5 mm	ap 3.5 mm	ap 3 mm
N	Aluminium alloys Si < 12%	100 ~ 300	0.03 ~ 0.1	*Vc* = 150 m/min, *fz* = 0.07 mm/t				
				ap 3.5 mm	ap 4 mm	ap 4.5 mm	ap 3.5 mm	ap 3 mm
	Aluminium alloys Si > 13%	80 ~ 180	0.03 ~ 0.08	*Vc* = 110 m/min, *fz* = 0.06 mm/t				
				ap 3.5 mm	ap 4 mm	ap 4.5 mm	ap 3.5 mm	ap 3 mm

Notes:
- When slotting, use a rigid machine.
- When chips stay in the cutting zone during slotting or pocketing, use air to remove chips from the work area.
- If chips tend to stick to the cutting edge (such as aluminium alloy machining), use a water soluble cutting fluid.
- If cutting a casting skin or heavily interrupted work surface, decrease the feed per tooth and maximum depth of cut to 1/2 to 2/3 times the values shown in the table.
- Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.
- Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually while making sure the machine is running normally.

APPLICATION RANGE

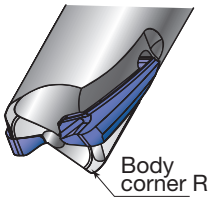


type	Designation	Tool ø øDc	Max. depth of cut ap	Max. ramping angle θ°	Max. plunging depth A	Max. cutting width in plunging W	Min. machinable hole ø øD1	Max. machinable hole ø øD2*	Max. cutting width in enlarged hole a_{e1}*
Straight	EPH11R010M10.0-2	10	10	3	0.3	3	13	19.5	9.7
	EPH13R012M12.0-2	12	12	3.5	0.3	3	16	23.5	11.7
	EPH18R016M16.0-2	16	16	3.5	0.3	4	22	31.5	15.7
	EPH18R016M16.0-3	16	16	3.5	0.3	4	22	31.5	15.7
	EPH18R020M20.0-3	20	16	2	0.3	4	29	39.5	19.7
	EPH18R025M25.0-4	25	16	1.5	0.3	4	39	49.5	24.7
Long	EPH11R010M10.0-2L	10	10	3	0.3	3	13	19.5	9.7
	EPH13R012M12.0-2L	12	12	3.5	0.3	3	16	23.5	11.7
	EPH18R016M16.0-2L	16	16	3.5	0.3	4	22	31.5	15.7
	EPH18R016M16.0-3L	16	16	3.5	0.3	4	22	31.5	15.7
	EPH18R020M20.0-3L	20	16	2	0.3	4	29	39.5	19.7
	EPH18R025M25.0-4L	25	16	1.5	0.3	4	39	49.5	24.7
Undercut	EPH13R013M12.0-2	13	12	2	0.3	3	17	25.5	12.7
	EPH13R014M12.0-2	14	12	1.5	0.3	3	19	27.5	13.7
	EPH18R017M16.0-3	17	16	3	0.3	4	23	33.5	16.7
	EPH18R018M16.0-3	18	16	2.5	0.3	4	25	35.5	17.7
	EPH18R021M20.0-3	21	16	2	0.3	4	31	41.5	20.7
	EPH18R026M25.0-4	26	16	1.5	0.3	4	41	51.5	25.7
For small lathes	EPH11R010M06.0-2	10	10	3	0.3	3	13	19.5	9.7
	EPH13R012M07.0-2	12	12	3.5	0.3	3	16	23.5	11.7
	EPH18R016M10.0-3	16	16	3.5	0.3	4	22	31.5	15.7
	EPH18R020M10.0-3	20	16	2	0.3	4	29	39.5	19.7

*Where the insert corner radius ≤ 0.2 mm

Notes on using large radius inserts

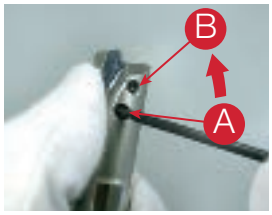
When using the inserts which have a large corner radius in excess of 1.0 mm, additional work is needed to the corner of the body.



Insert corner radius r_ε (mm)	Required rework to body corner R (mm)
$0 \leq r_\varepsilon \leq 1.0$	No additional work
$1.0 < r_\varepsilon \leq 2.0$	R2.0

Insert mounting procedure (EPH-type)

Fasten the inserts in order of Ⓐ to Ⓑ

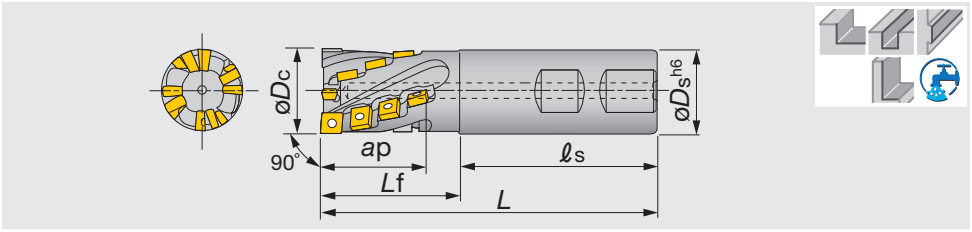


① After loosening the clamping screws, insert the insert in the insert pocket of the body whilst pushing it with your finger.
② Lightly fasten the clamping screws in order of A and B.
③ For all the inserts, carry out the above steps ① and ②.
④ Securely tighten the clamping screws in order of Ⓐ and Ⓑ.
(Refer to the standard tightening torque values.)
⑤ For all the inserts, carry out the above step ④.
⑥ Check the condition of insert seating, clearance between the insert and insert pocket, the tool diameter, and the peripheral edge runout.

ELP

Square shoulder endmills with long cutting edge for roughingoperation





Designation	ap	øDc	z eff	øDs	ℓs	Lf	L	Air hole	End cutting edge inserts	Both end and peripheral edge inserts
ELP07032R-A	38	32	2	32	80	60	140	with	ACMT0603... (2)	APMT0703... (14)
ELP07032R	38	32	2	32	80	60	140	without	ACMT0603... (2)	APMT0703... (14)
ELP07040R-A	44	40	2	42	80	70	150	with	ACMT0603... (2)	APMT0703... (16)
ELP07040R	44	40	2	42	80	70	150	without	ACMT0603... (2)	APMT0703... (16)
ELP09040R-A	48	40	2	42	80	70	150	with	ACMT07T3... (2)	APMT09T3... (14)
ELP09040R	48	40	2	42	80	70	150	without	ACMT07T3... (2)	APMT09T3... (14)
ELP09050R-A	56	50	2	42	80	80	160	with	ACMT07T3... (2)	APMT09T3... (16)
ELP09050R	56	50	2	42	80	80	160	without	ACMT07T3... (2)	APMT09T3... (16)
ELP12050R-A	58	50	2	42	80	80	160	with	ACMT1004... (2)	APMT1204... (12)
ELP12050R	58	50	2	42	80	80	160	without	ACMT1004... (2)	APMT1204... (12)
ELP12063R-A	68	63	2	42	80	90	170	with	ACMT1004... (2)	APMT1204... (14)
ELP12063R	68	63	2	42	80	90	170	without	ACMT1004... (2)	APMT1204... (14)

● () is the number of used insert

SPARE PARTS




Designation	Clamping screw	Wrench
ELP07...	CSTB-2.5	T-8D
ELP09...	CSTB-3	T-9D
ELP12...	CSTB-4M	T-15D

ELP**RA

Designation	ap	øDc	z eff	øDs	ℓs	Lf	L	Air hole	End cutting edge inserts	Both end and peripheral edge inserts
ELP13025RA-A	28	25	2	25	90	40	130	with	ADMT1303... (1)	APMT0703... (4)
ELP13025RA	28	25	2	25	90	40	130	without	ADMT1303... (1)	APMT0703... (4)
ELP17032RA-A	35	32	2	32	90	50	140	with	ADMT17T3... (1)	APMT09T3... (4)
ELP17032RA	35	32	2	32	90	50	140	without	ADMT17T3... (1)	APMT09T3... (4)
ELP21040RA-A	44	40	2	42	90	60	150	with	ADMT2104... (1)	APMT1204... (4)
ELP21040RA	44	42	2	40	90	60	150	without	ADMT2104... (1)	APMT1204... (4)

● () is the number of used insert

SPARE PARTS



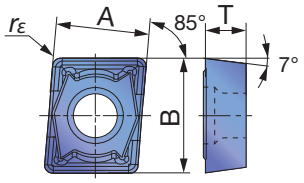




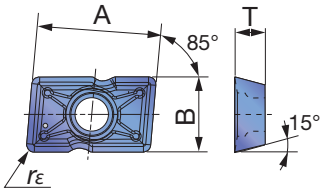
Designation	Clamping screw	Clamping screw 1	Lubricant	Wrench	Wrench 1
ELP13...	CSPD-3	CSPB-2.5	M-1000	IP-10D	IP-8D
ELP17...	CSPD-3	CSPB-4S	M-1000	IP-10D	IP-15D
ELP21...	CSTB-5	CSPB-4	M-1000	IP-15D	T-20D

INSERT

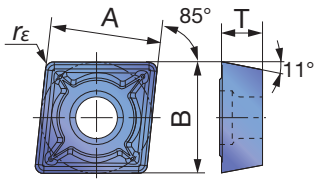
ACMT06/07/10-MJ



ADMT13/17/21-MJ



APMT07/09/12-MJ



P	Steel	★		☆	★	
M	Stainless		★			
K	Cast iron	★				
N	Non-ferrous					
S	Superalloys	★				
H	Hard materials					

★ : First choice
☆ : Second choice

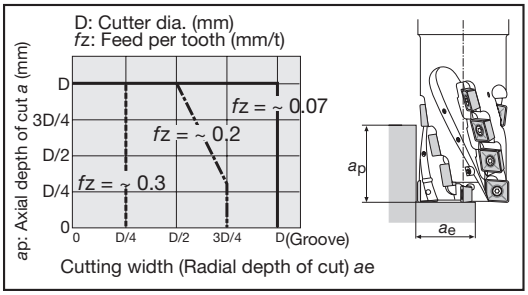
Designation	rε	Coating				A	B	T
		AH120	AH140	GH330	T3130			
ACMT060308PR-MJ	0.8	●	●	●	●	6	7.8	3.18
ACMT07T308PR-MJ	0.8	●	●	●	●	7.5	9.5	3.97
ACMT100408PR-MJ	0.8	●	●	●	●	10	12.7	4.76
ADMT130308PR-MJ	0.8	●	●		●	13.1	8	3.18
ADMT17T308PR-MJ	0.8	●	●		●	16.6	9.5	3.97
ADMT210408PR-MJ	0.8	●	●		●	20.6	12.7	4.76
APMT070308PN-MJ	0.8	●	●	●	●	7.9	7.9	3.18
APMT09T308PN-MJ	0.8	●	●	●	●	9.5	9.5	3.97
APMT120408PN-MJ	0.8	●	●	●	●	12.7	12.7	4.76

●: Line-up

STANDARD CUTTING CONDITIONS

ELP type

ISO	Workpiece material	Grade	Cutter diameter (mm) ø32 Vc (m/min)	ø32 fz (mm/t)	ø40 Vc (m/min)	ø40 fz (mm/t)	ø50 Vc (m/min)	ø50 fz (mm/t)	ø63 Vc (m/min)	ø63 fz (mm/t)
P	Mild steels, Low carbon steels E275A, C15E4, etc.	T3130 (AH120)	60 ~ 150	0.1 ~ 0.3	70 ~ 150	0.1 ~ 0.3	70 ~ 150	0.1 ~ 0.3	70 ~ 150	0.1 ~ 0.3
P	High carbon steels, Alloy steels C55, 42CrMo4, etc.	T3130 (AH120)	60 ~ 120	0.1 ~ 0.3	60 ~ 120	0.1 ~ 0.3	60 ~ 150	0.1 ~ 0.3	60 ~ 150	0.1 ~ 0.3
P	Die steels X153CrMoV12, etc.	T3130 (AH120)	60 ~ 100	0.1 ~ 0.3	60 ~ 100	0.1 ~ 0.3	60 ~ 120	0.1 ~ 0.3	60 ~ 120	0.1 ~ 0.3
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-3, etc.	AH140	70 ~ 120	0.1 ~ 0.3	60 ~ 120	0.1 ~ 0.3	60 ~ 120	0.1 ~ 0.3	60 ~ 120	0.1 ~ 0.3
K	Cast irons 250, 450-10S, etc.	AH120	60 ~ 150	0.1 ~ 0.3	60 ~ 150	0.1 ~ 0.3	60 ~ 150	0.1 ~ 0.3	60 ~ 150	0.1 ~ 0.3



- *Vc*: Cutting speed
- *fz*: Feed per tooth (Feed per revolution is *fz* × 2 as effective number of teeth is equal to two)

Notes :
- Dry cutting (or air-blowing) is generally recommended. When chips tend to adhere to the cutting edges such as in milling stainless steel, use a water-soluble cutting fluid.
- When the cutting width is larger than a half of the cutter diameter or chips tend to stay in the cutting area, use an air blast to remove chips.
- To get the best of the tool performance, use of a high-accuracy, side-lock type toolholder or milling chuck which has a high gripping force is recommended. Excessive tool overhang from the toolholder should be avoided to prevent chatter.

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

ELP**RA type

ISO	Workpiece material	Grade	Cutter diameter (mm) ø25 Vc (m/min)	ø25 fz (mm/t)	ø32 Vc (m/min)	ø32 fz (mm/t)	ø40 Vc (m/min)	ø40 fz (mm/t)
P	Mild steels, Low carbon steels E275A, C15E4, etc.	T3130 (AH120)	60 ~ 150	0.08 ~ 0.2	60 ~ 150	0.1 ~ 0.3	60 ~ 150	0.1 ~ 0.3
P	High carbon steels, Alloy steels C55, 42CrMo4, etc.	T3130 (AH120)	60 ~ 120	0.08 ~ 0.2	60 ~ 120	0.1 ~ 0.3	60 ~ 120	0.1 ~ 0.3
P	Die steels X153CrMoV12, etc.	T3130 (AH120)	60 ~ 100	0.08 ~ 0.2	60 ~ 100	0.1 ~ 0.3	60 ~ 100	0.1 ~ 0.3
M	Stainless steels X5CrNi18-9, etc.	AH140	70 ~ 120	0.08 ~ 0.2	70 ~ 120	0.1 ~ 0.3	70 ~ 120	0.1 ~ 0.3
K	Cast irons 250, 450-10S, etc.	AH120	60 ~ 150	0.08 ~ 0.2	60 ~ 150	0.1 ~ 0.3	60 ~ 150	0.1 ~ 0.3

- *Vc*: Cutting speed
- *fz*: Feed per tooth (Feed per revolution is *fz* × 2 as effective number of teeth is equal to two)

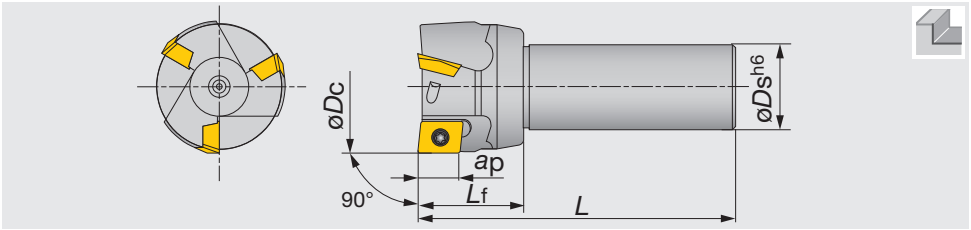
Notes :
- To get the best of the tool's performance, use of a high-accuracy, side-lock type toolholder or milling chuck which has a high gripping force is recommended.
- Excessive tool overhang from the toolholder should be avoided to prevent chatter.

EPE4000,5000,6000

High precision shoulder square endmills with AECW inserts

A.R. = +12° ~ +17°, R.R. = -10° ~ 0°





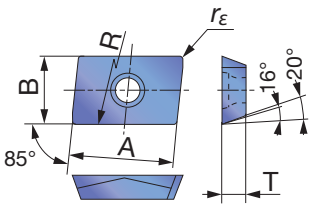
Designation	Max. *ap*	ø*D*c	z	ø*D*s	*L*f	*L*	Insert
EPE4020R	12	20	1	20	30	100	AE*W14...
EPE4025R	12	25	2	25	35	115	AE*W14...
EPE5030R	14	30	2	32	40	120	AE*W16...
EPE5035R	14	35	2	32	40	120	AE*W16...
EPE5040R	14	40	2	32	40	120	AE*W16...
EPE6050R	16	50	3	32	40	120	AE*W18...
EPE6063R	16	63	4	32	45	125	AE*W18...

SPARE PARTS

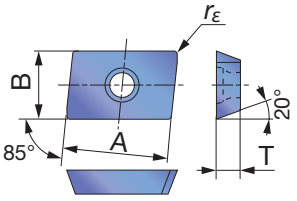
Designation	Clamping screw	Wrench
EPE402*R	CSTB-3S	T-9D
EPE50**R	CSTB-4S	T-15D
EPE60**R	CSTB-4M	T-15D

INSERT

AECW14/16/18



AEMW14/16/18



P	Steel	★	★		★		☆		
M	Stainless	★	★						
K	Cast iron	★	★						
N	Non-ferrous							★	
S	Superalloys	★							
H	Hard materials								

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating		Cermet	Uncoated		A	B	T
			AH120	GH330	NS740	UX30	TH10			
AECW1403PEFR	0.4	12					●	14	9	3.18
AECW1403PESR	0.4	12	●	●	●	●		14	9	3.18
AECW16T3PEFR	0.4	14					●	16	12	3.97
AECW16T3PESR	0.4	14	●	●	●	●		16	12	3.97
AECW1804PEFR	0.4	16					●	18	12	4.76
AECW1804PESR	0.4	16	●	●	●	●		18	12	4.76
AEMW1403PEFR	0.4	12					●	14	8.9	3.18
AEMW1403PETR	0.4	12		●	●	●		14	8.9	3.18
AEMW16T3PEFR	0.4	14					●	16	11.9	3.97
AEMW16T3PETR	0.4	14		●	●	●		16	11.9	3.97
AEMW1804PEFR	0.4	16					●	18	11.9	4.76
AEMW1804PETR	0.4	16		●	●	●		18	11.9	4.76

●: Line-up

STANDARD CUTTING CONDITIONS

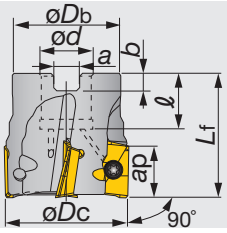
ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)		Feed per tooth *fz* (mm/t)
			ø20 ~ 35 mm	ø40 ~ 63 mm	
P	Mild steels·Unhardened steels < 180 HB C15E4, E275A, etc.	AH120 · GH330	80 ~ 150	130 ~ 230	0.1 ~ 0.2
		NS740	100 ~ 150	130 ~ 180	0.1 ~ 0.15
		UX30	80 ~ 150	100 ~ 150	0.1 ~ 0.2
	Carbon steels, Alloy steels < 300HB C55, 42CrMo4, etc.	AH120 · GH330	80 ~ 100	100 ~ 200	0.1 ~ 0.2
		NS740	80 ~ 100	100 ~ 150	0.1 ~ 0.15
		UX30	80 ~ 100	80 ~ 120	0.1 ~ 0.2
	Die steels < 300HB	AH120 · GH330 NS740	80 ~ 100	100 ~ 120	0.1 ~ 0.15
M	Stainless steels X5CrNi18-9, etc.	AH120 · GH330	100 ~ 200	120 ~ 200	0.1 ~ 0.2
K	Cast irons Ductile cast irons	TH10	80 ~ 100	80 ~ 100	0.1 ~ 0.15
		AH120	80 ~ 150	80 ~ 150	0.1 ~ 0.2
N	Aluminium alloys Si < 13%	TH10	200 ~ 300	300 ~ 500	0.1 ~ 0.25

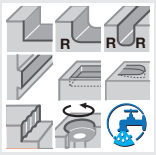
MEMO

TPS17

Shoulder square mills with ASMT/ASGT17 inserts, suitable formulti perpose machining







Right hand (R) shown.

Designation	Max. *ap*	*øDc*	z	*Lf*	*ød*	*ℓ*	*a*	*b*	Kg	Air hole	Insert
TPS17040RB-E	16.2	40	4	40	16	19	8.4	5.6	0.2	without	AS*T1705...
TPS17050RB-E	16.1	50	5	40	22	20	10.4	6.3	0.3	without	AS*T1705...
TPS17063RB-E	16	63	6	45	22	20	10.4	6.3	0.6	without	AS*T1705...

SPARE PARTS

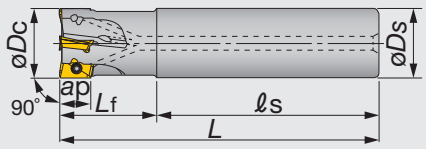
Designation	Clamping screw	Lubricant	Shell locking bolt	Shell locking bolt 1	Shell locking bolt 2	Wrench
TPS17040RB-E	CSPB-4S	M-1000	-	-	FSHM8-30	IP-15D
TPS17050RB-E	CSPB-4S	M-1000	-	-	CAP-CM10X1.5X30	IP-15D
TPS17063RB-E	CSPB-4S	M-1000	-	-	CAP-CM10X1.5X30	IP-15D

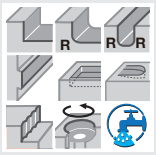
EPS17

Shoulder square endmills with ASMT/ASGT17 inserts

A.R. = +9°~ +17° ,R.R. = -20°~ -7°







Right hand (R) shown.

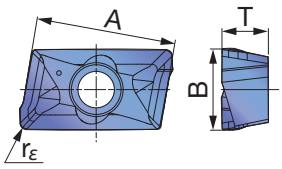
Designation	Max. *ap*	*øDc*	z	*øDs*	*ℓs*	*Lf*	*L*	Air hole	Insert
EPS17025RS	16.3	25	2	25	80	35	115	with	AS*T1705...
EPS17025RL	16.3	25	2	25	150	70	220	with	AS*T1705...
EPS17026RS	16.3	26	2	25	80	35	115	with	AS*T1705...
EPS17026RL	16.3	26	2	25	150	70	220	with	AS*T1705...
EPS17030RS	16.2	30	2	25	80	35	115	with	AS*T1705...
EPS17030RSB	16.2	30	3	25	80	35	115	with	AS*T1705...
EPS17030RL	16.2	30	2	25	150	70	220	with	AS*T1705...
EPS17032RSB-E	16.2	32	3	32	70	40	110	with	AS*T1705...
EPS17032RS	16.2	32	2	32	80	40	120	with	AS*T1705...
EPS17032RSB	16.2	32	3	32	80	40	120	with	AS*T1705...
EPS17032RL	16.2	32	2	32	175	80	255	with	AS*T1705...
EPS17033RS	16.2	33	2	32	80	40	120	with	AS*T1705...
EPS17033RSB	16.2	33	3	32	80	40	120	with	AS*T1705...
EPS17033RL	16.2	33	2	32	175	80	255	with	AS*T1705...
EPS17040RS	16.2	40	3	32	80	40	120	with	AS*T1705...
EPS17040RSB	16.2	40	4	32	80	40	120	with	AS*T1705...
EPS17040RL	16.2	40	2	32	205	50	255	with	AS*T1705...
EPS17040RLS42	16.2	40	2	42	210	100	310	with	AS*T1705...
EPS17050RSB	16.1	50	5	32	80	40	120	with	AS*T1705...
EPS17050RL	16.1	50	3	42	310	50	360	with	AS*T1705...
EPS17063RSB	16	63	6	32	80	45	125	with	AS*T1705...
EPS17063RL	16	63	3	42	310	50	360	with	AS*T1705...

SPARE PARTS

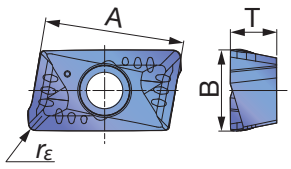
Designation	Clamping screw	Lubricant	Wrench
EPS17	CSPB-4S	M-1000	IP-15D

INSERT

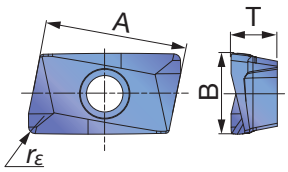
ASMT17-MJ



ASMT17-MS



ASGT17-AJ



P	Steel	★				★			★			
M	Stainless		★	★								
K	Cast iron	★			★							
N	Non-ferrous						★				★	
S	Superalloys	★	★									
H	Hard materials											

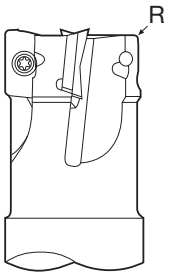
★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating							Cermet		Un-coated								A	B	T
			AH120	AH130	AH140	T1115	T3130	DS1100		NS740		KS05F										
ASMT170504PDPR-MJ	0.4	16	●			●	●			●										16.9	9.8	5.6
ASMT170508PDPR-MJ	0.8	16	●			●	●			●										16.9	9.8	5.6
ASMT170512PDPR-MJ	1.2	16	●				●													16.9	9.8	5.6
ASMT170516PDPR-MJ	1.6	16	●				●			●										16.9	9.8	5.6
ASMT170520PDPR-MJ	2	16	●																	16.9	9.8	5.6
ASMT170530PDPR-MJ	3	16	●																	16.9	9.8	5.6
ASMT170532PDPR-MJ	3.2	16	●				●			●										16.9	9.8	5.6
ASMT170508PDPR-MS	0.8	16		●	●															16.9	9.8	5.6
ASGT170504PDFR-AJ	0.4	16						●				●								16.9	9.8	5.6
ASGT170508PDFR-AJ	0.8	16						●				●								16.9	9.8	5.6

●: Line-up

CAUTIONARY POINT IN MODIFYING CUTTER BODIES

When using inserts with corner radius $r_\varepsilon \geq 2.0$ mm, standard cutter bodies have to be modified "R".



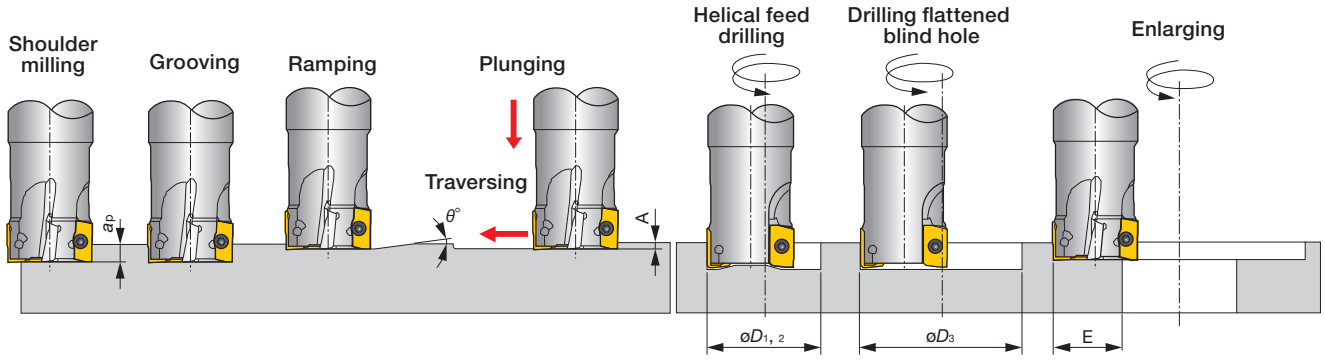
Corner radius r_ε (mm)	The dimension of modifying (mm)
0.4 ~ 1.6	Unnecessary
2.0 ~ 3.2	2

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Chip-breaker	Cutting speed *Vc* (m/min)			Feed per tooth *fz* (mm/t)		
				Cutter dia. ø12	Cutter dia. ø16, ø20	Cutter dia. > ø25	Cutter dia. ø12	Cutter dia. ø16, ø20	Cutter dia. > ø25
P	Mild steel, Low Carbon steels C10, E275A, etc. < 180HB	NS740	MJ	80 ~ 100	100 ~ 120	100 ~ 150	0.05 ~ 0.08	0.05 ~ 0.12	0.05 ~ 0.15
		AH120	MJ	80 ~ 100	100 ~ 150	100 ~ 150	0.05 ~ 0.1	0.12 ~ 0.2	0.12 ~ 0.2
	Carbon steels, Alloy steels C55, 42CrMo4, etc. < 300HB	NS740	MJ	80 ~ 100	80 ~ 100	80 ~ 120	0.05 ~ 0.08	0.05 ~ 0.08	0.05 ~ 0.1
		T3130	MJ	80 ~ 100	80 ~ 120	100 ~ 200	0.05 ~ 0.1	0.10 ~ 0.15	0.1 ~ 0.2
	Die steels X96CrMoV12, etc. < 300HB	T3130	MJ	80 ~ 100	80 ~ 120	100 ~ 150	0.05 ~ 0.1	0.1 ~ 0.15	0.12 ~ 0.2
M	Stainless steels X5CrNi18-9, etc. < 250HB	AH130	MS	80 ~ 100	100 ~ 150	100 ~ 200	0.05 ~ 0.1	0.12 ~ 0.15	0.12 ~ 0.2
K	Grey Cast irons, DuctileCast irons etc. 250, 400-15S, etc.	T1115	MJ	80 ~ 100	100 ~ 150	100 ~ 200	0.08 ~ 0.12	0.12 ~ 0.2	0.15 ~ 0.25
N	Aluminium alloys Si < 13%	DS1100	AJ	300 ~ 1000	300 ~ 1000	300 ~ 1000	0.05 ~ 0.2	0.05 ~ 0.2	0.05 ~ 0.2
	Aluminium alloys Si ≥ 13%	DS1100	AJ	100 ~ 200	100 ~ 200	100 ~ 200	0.05 ~ 0.2	0.05 ~ 0.2	0.05 ~ 0.2
	Copper alloys	KS05F	AJ	200 ~ 500	200 ~ 500	200 ~ 500	0.05 ~ 0.2	0.05 ~ 0.2	0.05 ~ 0.2

Notes:
- When using at L/D ≥ 4, machining at the lower feed rate.
- This TAC mill is not designed to cope with the centrifugal force and dynamic balance at high speeds over 1000 m/min. Therefore, the cutting speed in the outer diameter of the mill should not exceed 1000 m/min.

APPLICATION RANGE



Designation	Tool ø	Max. depth of cut ap (mm)	Max. ramping angle θ°	Max. plunging depth A (mm)	Min. machining hole dia. øD1 (mm)*	Max. machining hole dia. øD2 (mm)*	Hole dia. in drilling (Blind hole) øD3 (mm)*	Max. cutting width in enlarging hole E (mm)
EPS17025RS/L	25	16.3	5	1	32	48	46 ~ 48	24
EPS17026RS/L	26	16.3	5	1	34	51	49 ~ 51	25.5
EPS17030RS/B/L	30	16.2	4	1	42	59	57 ~ 59	29.5
EPS17032RS/B/L	32	16.2	3.5	1	46	62	60 ~ 62	31
EPS17033RS/B/L	33	16.2	3.5	1	48	65	63 ~ 65	32.5
E/TPS17040RS/B/L	40	16.2	2.5	1	62	78	76 ~ 78	39
EPS17040RLS42	40	16.2	2.5	1	62	78	76 ~ 78	39
E/TPS17050RS/B/L	50	16.1	1.5	1	82	98	96 ~ 98	49
E/TPS17063RS/B/L	63	16	1	1	108	124	122 ~ 124	62

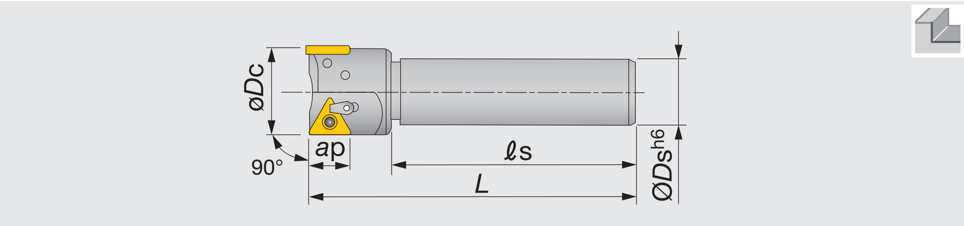
Notes : Corner t_ε for dimensions of øD1, øD2, and øD3: $r_\varepsilon = 0.8$

PES1500

Square shoulder endmills with triangle inserts

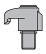
A.R. = +3°~ +5°, R.R. = -8°~ 0°





Designation	Max. ap	øDc	z	øDs	ℓs	L	Insert
PES1535R	19	35	2	32	120	160	TP*A43...
PES1540R	19	40	2	32	120	160	TP*A43...
PES1550R	19	50	3	32	120	160	TP*A43...

SPARE PARTS





Designation	Clamp set	Clamping screw	Wrench
PES15...	CSG-5T	CSTA-4	T-15D

INSERT

TPCA/TPMA

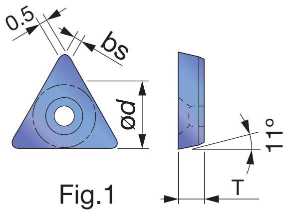


Fig.1

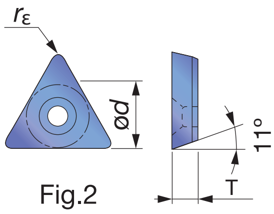


Fig.2

ISO	Workpiece	NS740		UX30	TH10
P	Steel	★		★	
M	Stainless				
K	Cast iron				
N	Non-ferrous				★
S	Superalloys				
H	Hard materials				

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Cermet NS740		Uncoated UX30	Uncoated TH10	ød	T	bs	Fig.
TPCA43ZTRW1	-	19				●	12.7	4.76	1	1
TPMA432TNW1	0.8	19	●		●	●	12.7	4.76	-	2

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (m/min)
P	Mild steels	UX30	100 ~ 150	0.1 ~ 0.3
P	Carbon steels	UX30	100 ~ 120	0.1 ~ 0.25
P	Alloy steels	UX30	80 ~ 100	0.1 ~ 0.2
P	Die steels 20 ~ 30HRC	UX30	50 ~ 70	0.1 ~ 0.2
K	Cast irons	TH10	70 ~ 90	0.1 ~ 0.3
N	Non-ferrous metals	TH10	200 ~ 500	0.05 ~ 0.2

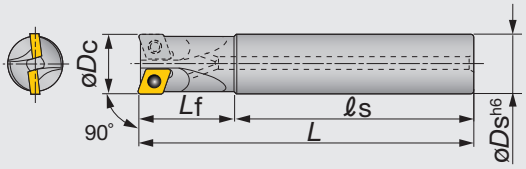
- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

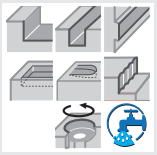
ESD10,17

Multi purpose square endmills

ESD10 A.R.=+8.5°~+10°,R.R.=-10°~-5°
ESD17 A.R.=+10°,R.R.=-5°~-3°







Designation	Max. *ap*	*øDc*	z	*øDs*	*ℓs*	*Lf*	*L*	Air hole	Insert
ESD10020RSA	9	20	1	20	90	30	120	with	GD*T10...
ESD10020RS	9	20	1	20	90	30	120	without	GD*T10...
ESD10020RLA	9	20	1	20	135	50	185	with	GD*T10...
ESD10020RL	9	20	1	20	135	50	185	without	GD*T10...
ESD10025RSA	9	25	2	25	100	40	140	with	GD*T10...
ESD10025RS	9	25	2	25	100	40	140	without	GD*T10...
ESD10025RLA	9	25	2	25	150	70	220	with	GD*T10...
ESD10025RL	9	25	2	25	150	70	220	without	GD*T10...
ESD10032RSA	9	32	2	32	110	50	160	with	GD*T10...
ESD10032RS	9	32	2	32	110	50	160	without	GD*T10...
ESD10032RLA	9	32	2	32	175	80	255	with	GD*T10...
ESD10032RL	9	32	2	32	175	80	255	without	GD*T10...
ESD17040RSA	15	40	2	42	120	60	180	with	GD*T17...
ESD17040RS	15	40	2	42	120	60	180	without	GD*T17...
ESD17040RLA	15	40	2	42	210	100	310	with	GD*T17...
ESD17040RL	15	40	2	42	210	100	310	without	GD*T17...
ESD17050RSA	15	50	2	42	160	50	210	with	GD*T17...
ESD17050RS	15	50	2	42	160	50	210	without	GD*T17...
ESD17050RLA	15	50	2	42	310	50	360	with	GD*T17...
ESD17050RL	15	50	2	42	310	50	360	without	GD*T17...
ESD17063RSA	15	63	3	42	190	50	240	with	GD*T17...
ESD17063RS	15	63	3	42	190	50	240	without	GD*T17...
ESD17063RLA	15	63	3	42	310	50	360	with	GD*T17...
ESD17063RL	15	63	3	42	310	50	360	without	GD*T17...

SPARE PARTS

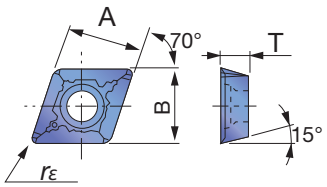




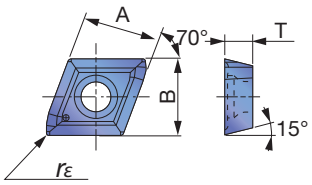
Designation	Clamping screw	Lubricant	Wrench
ESD100**R**	CSTB-3.5H	M-1000	T-15D
ESD170**R**	CSTB-5	M-1000	T-20D

INSERT

GDMT10/17-MJ



GDGT10/17-AJ



P	Steel	★		★	★			☆		
M	Stainless		★							
K	Cast iron	★								
N	Non-ferrous					★			★	
S	Superalloys	★								
H	Hard materials									

★ : First choice
☆ : Second choice

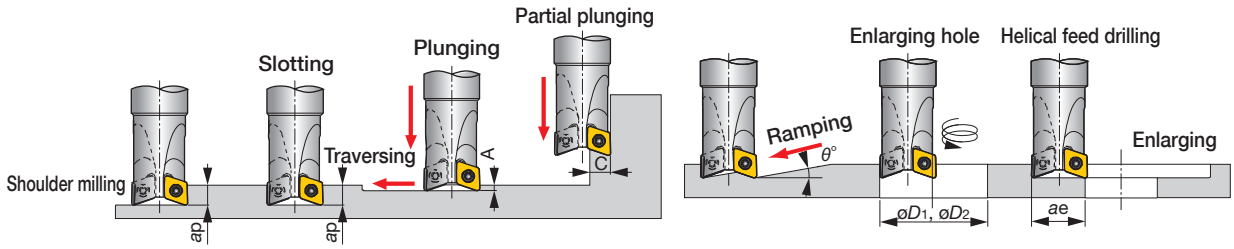
Designation	rε	Max. ap	Coating					Uncoated		A	B	T
			AH120	AH140	AH330	T3130	DS1100	UX30	TH10			
GDMT10H3PDPR-MJ	0.8	9	●	●	●	●		●		10	10	3.5
GDMT17X6PDPR-MJ	1.2	15	●	●	●	●		●		16	16	6
GDGT10H3PDFR-AJ	0.4	9					●		●	10	10	3.5
GDGT17X6PDFR-AJ	0.8	15					●		●	16	16	6

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	ESD (ø20 ~ 32 mm)			T/ESD (ø40 ~ 80 mm)		
			Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)		Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	
				Shouldering, grooving, Z-feed milling	Partial plunging		Shouldering, grooving, Z-feed milling	Partial plunging
P	Carbon steels C50, etc. < 300 HB	AH120	100 ~ 180	0.05 ~ 0.2	0.03 ~ 0.1	120 ~ 200	0.08 ~ 0.25	0.03 ~ 0.1
		AH330	120 ~ 230	0.05 ~ 0.15	0.03 ~ 0.08	150 ~ 250	0.05 ~ 0.2	0.03 ~ 0.08
		UX30	80 ~ 130	0.05 ~ 0.15	0.03 ~ 0.08	100 ~ 130	0.05 ~ 0.2	0.03 ~ 0.08
		T3130	100 ~ 180	0.05 ~ 0.2	0.03 ~ 0.1	120 ~ 200	0.08 ~ 0.25	0.03 ~ 0.1
	Alloy steels 42CrMo4, etc. < 300 HB	AH120	80 ~ 160	0.05 ~ 0.15	0.03 ~ 0.08	100 ~ 180	0.08 ~ 0.2	0.03 ~ 0.08
		AH330	100 ~ 200	0.05 ~ 0.13	0.03 ~ 0.06	120 ~ 230	0.05 ~ 0.15	0.03 ~ 0.06
		UX30	80 ~ 120	0.05 ~ 0.13	0.03 ~ 0.06	100 ~ 120	0.05 ~ 0.15	0.03 ~ 0.06
		T3130	80 ~ 160	0.05 ~ 0.15	0.03 ~ 0.08	100 ~ 180	0.08 ~ 0.2	0.03 ~ 0.08
	Die steels X96CrMoV12, etc. < 300 HB	AH120	60 ~ 120	0.05 ~ 0.13	0.03 ~ 0.06	80 ~ 150	0.08 ~ 0.15	0.03 ~ 0.06
		AH330	80 ~ 160	0.05 ~ 0.1	0.03 ~ 0.05	100 ~ 200	0.05 ~ 0.13	0.03 ~ 0.05
		UX30	60 ~ 100	0.05 ~ 0.1	0.03 ~ 0.05	80 ~ 120	0.05 ~ 0.13	0.03 ~ 0.05
		T3130	60 ~ 120	0.05 ~ 0.13	0.03 ~ 0.06	80 ~ 150	0.08 ~ 0.15	0.03 ~ 0.06
M	Stainless steels X5CrNi18-9, etc.	AH140	80 ~ 160	0.05 ~ 0.15	0.03 ~ 0.08	100 ~ 180	0.08 ~ 0.2	0.03 ~ 0.08
K	Cast irons 250, etc.	AH120	100 ~ 180	0.05 ~ 0.25	0.03 ~ 0.1	120 ~ 200	0.08 ~ 0.25	0.03 ~ 0.1
		AH330	120 ~ 230	0.05 ~ 0.2	0.03 ~ 0.08	150 ~ 250	0.05 ~ 0.2	0.03 ~ 0.08
		UX30	80 ~ 130	0.05 ~ 0.2	0.03 ~ 0.08	100 ~ 130	0.05 ~ 0.2	0.03 ~ 0.08
N	Aluminium alloys	DS1100	200 ~ 1000	0.05 ~ 0.25	0.05 ~ 0.15	200 ~ 1000	0.05 ~ 0.25	0.05 ~ 0.15
	Copper alloys	TH10	200 ~ 400	0.05 ~ 0.25	0.05 ~ 0.15	200 ~ 400	0.05 ~ 0.25	0.05 ~ 0.15

APPLICATION RANGE



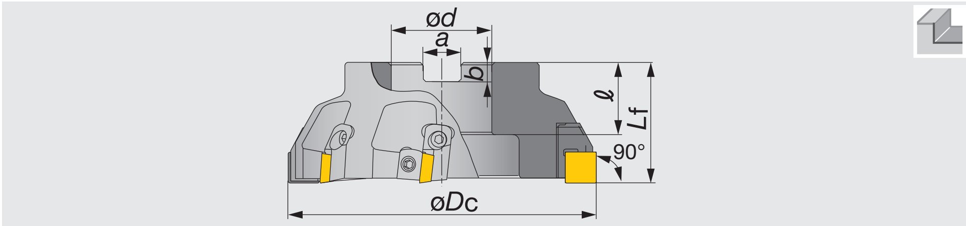
Designation	Tool øDc (mm)	Max. depth of cut ap (mm)	Max. plunging depth A (mm)	Max. plunging width C (mm)	Max. ramping angle θ°	Min. machinable hole dia. øD1 (mm)	Max. machinable hole dia. øD2 (mm)	Max. cutting width in enlarging hole ae (mm)
ESD10020R...	20	9	2.5	8	10	24	38	18
ESD10025R...	25	9	2.5	9	10	32	48	23
ESD10032R...	32	9	2.5	9	6.5	46	62	30
ESD17040RS/L (A)	40	15	4.5	15	10	50	77	38
ESD17050RS/L (A)	50	15	4.5	15	8	70	97	48
ESD17063RS/L (A)	63	15	4.5	15	5.5	96	123	61

TPP16

Square shoulder mills with wedge clamped SPMR16 inserts in large depth of cut.

A.R.=+6°,R.R.=-8°

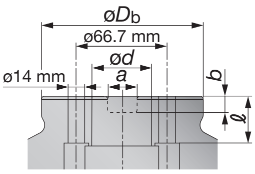




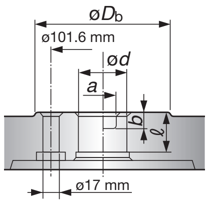
Designation	Max. ap	øDc	z	Lf	ød	ℓ	a	b	Kg	Insert
TPP16080RI-E	12	80	4	50	27	26	12.4	7	1	SPMR1605...
TPP16100RI-E	12	100	5	63	32	32	14.4	8	1.8	SPMR1605...
TPP16125RI-E	12	125	6	63	40	32	16.4	9	2.8	SPMR1605...
TPP16160RI-E	12	160	8	63	40	29	16.4	9	4.6	SPMR1605...
TPP16200RI-E	12	200	10	63	60	38	25.7	14	6.9	SPMR1605...
TPP16250RI-E	12	250	12	63	60	38	25.7	14	13	SPMR1605...
TPP16315RI-E	12	315	14	63	60	38	25.7	14	22.2	SPMR1605...

Arbor type

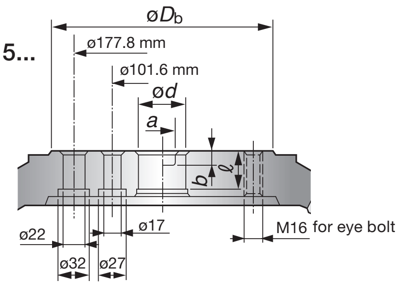
TPP16160...



TPP16200/250...

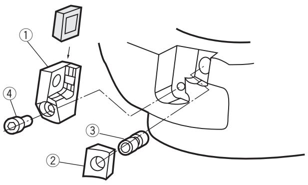


TPP16315...



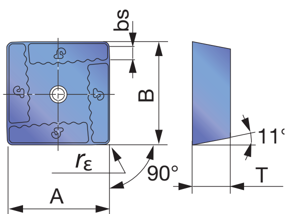
SPARE PARTS

Designation	①Locator	②Wedge	③Right-left screw	④Locator fixing screw	Wrench
TPP16080, 100RI-E	LPP16R	WPP16R	FDS-8SS	CM5X0.8X12	TP-4
TPP16125 - 315RI-E	LPP16R	WPP16R	FDS-8S	CM5X0.8X12	TP-4

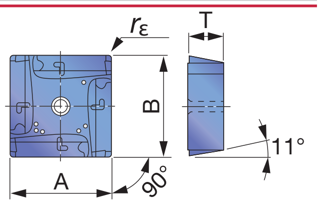


INSERT

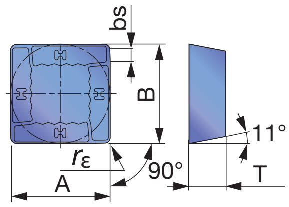
SPMR16-MJ



SPMR16-ML



SPMR16-MH



		GH330	T1115	T3130	UX30
P	Steel	★		★	☆
M	Stainless				
K	Cast iron		★		
N	Non-ferrous				
S	Superalloys				
H	Hard materials				

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating GH330	Coating T1115	Coating T3130	Un-coated UX30	A	B	T	bs
SPMR1605PPTR-MJ	0.8	12	●	●	●	●	16	16	5.56	2
SPMR1605PPPR-ML	0.8	12	●				16	16	5.56	-
SPMR1605PPTR-MH	0.8	12	●		●	●	16	16	5.56	2

●: Line-up

STANDARD CUTTING CONDITIONS

For MJ-chipbreaker inserts (General purpose)

ISO	Workpiece material	Grade	Roughing (Depth of cut: *ap* > 1.5 mm)		Finishing (Depth of cut: *ap* = 0.3 ~ 0.7 mm)	
			Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	GH330	100 ~ 230	0.1 ~ 0.25	130 ~ 250	0.1 ~ 0.3
		T3130	130 ~ 300	0.1 ~ 0.28	180 ~ 300	0.1 ~ 0.3
		UX30	100 ~ 180	0.1 ~ 0.25	130 ~ 200	0.1 ~ 0.3
	Carbon steels Alloy steels < 300 HB	GH330	100 ~ 180	0.1 ~ 0.2	130 ~ 200	0.1 ~ 0.28
		T3130	130 ~ 280	0.1 ~ 0.25	180 ~ 280	0.1 ~ 0.28
		UX30	80 ~ 130	0.1 ~ 0.2	100 ~ 150	0.1 ~ 0.28
	Die steels < 30 HRC	GH330	100 ~ 150	0.1 ~ 0.18	100 ~ 150	0.1 ~ 0.2
		UX30	80 ~ 130	0.1 ~ 0.18	80 ~ 130	0.1 ~ 0.2
M	Stainless steels < 250 HB	GH330	150 ~ 200	0.15 ~ 0.23	200 ~ 250	0.15 ~ 0.25
K	Cast irons Ductile cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
		UX30	80 ~ 130	0.1 ~ 0.2	80 ~ 130	0.1 ~ 0.25

For ML-chipbreaker inserts (Sharpness-priority)

ISO	Workpiece material	Grade	Roughing (Depth of cut: *ap* > 1.5 mm)		Finishing (Depth of cut: *ap* = 0.3 ~ 0.7 mm)	
			Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	GH330	130 ~ 230	0.05 ~ 0.17	150 ~ 250	0.05 ~ 0.2
		AH330	130 ~ 370	0.05 ~ 0.17	150 ~ 400	0.05 ~ 0.2
	Carbon steels Alloy steels < 300 HB	GH330	150 ~ 180	0.05 ~ 0.12	150 ~ 200	0.05 ~ 0.15
M	Stainless steels < 250 HB	GH330	150 ~ 200	0.05 ~ 0.12	200 ~ 250	0.05 ~ 0.15

For MH-chipbreaker inserts (Toughness-priority)

ISO	Workpiece material	Grade	Roughing (Depth of cut: *ap* > 1.5 mm)		Finishing (Depth of cut: *ap* = 0.3 ~ 0.7 mm)	
			Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	GH330	100 ~ 230	0.15 ~ 0.3	130 ~ 250	0.15 ~ 0.35
		T3130	130 ~ 300	0.15 ~ 0.33	180 ~ 300	0.15 ~ 0.38
		UX30	100 ~ 180	0.15 ~ 0.3	130 ~ 200	0.15 ~ 0.35
	Carbon steels Alloy steels < 300 HB	GH330	100 ~ 180	0.15 ~ 0.24	130 ~ 200	0.15 ~ 0.35
		T3130	130 ~ 280	0.15 ~ 0.3	180 ~ 280	0.15 ~ 0.35
		UX30	80 ~ 130	0.15 ~ 0.24	100 ~ 150	0.15 ~ 0.35
	Die steels < 30 HRC	GH330	100 ~ 150	0.15 ~ 0.22	100 ~ 150	0.15 ~ 0.28
		UX30	80 ~ 130	0.15 ~ 0.22	80 ~ 130	0.15 ~ 0.28
K	Cast irons Ductile cast irons	T1115	100 ~ 200	0.15 ~ 0.24	100 ~ 200	0.15 ~ 0.3
		UX30	80 ~ 130	0.15 ~ 0.24	80 ~ 130	0.15 ~ 0.3

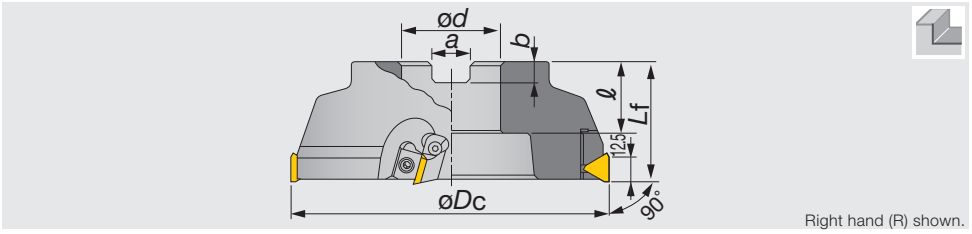
Notes:
- As a rule, dry cutting (or air-blowing) is generally recommended.
- If a cutting fluid is used, the cutting speed should be set to the lower side of the values shown in the above table.
- When being used in square shoulder milling, climb milling is recommended.
- In square shoulder milling of stainless steel, when chips tend to be recut during cutting, change to up-milling mode.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

TSE3000R

Shoulder square mills with wedge clamped high-posi triangle inserts

A.R.= +17°, R.R.= +5°





Right hand (R) shown.

Designation	Max. ap	øDc	z	Lf	ød	ℓ	a	b	Kg	Insert
TSE3050R-E	8	50	3	40	22	20	10.4	6.3	0.3	TE*N32/TEKR1603...
TSE3063R-E	8	63	3	40	22	20	10.4	6.3	0.5	TE*N32/TEKR1603...
TSE3003RIA-E	8	80	4	50	27	26	12.4	7	1	TE*N32/TEKR1603...
TSE3004RIA-E	8	100	6	63	32	32	14.4	8	2	TE*N32/TEKR1603...

Note: TSE3050R-E and TSE3063R-E are not irregular pitch spec.

SPARE PARTS

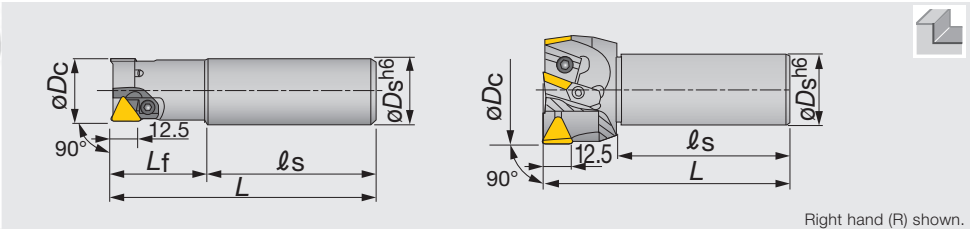
Designation	①Clamp set	②Locator	③Screw	④Wedge	⑤Right-left screw	Wrench	Wrench 1
TSE3050R..., 63R...	CSL-4	-	-	-	-	-	P-3
TSE300*RIA-E	-	LE303R	CM4X0.7X12	WF330R	FDS-8S	TP-4	-

ESE3000R

Shoulder square endmills with wedge clamped high-posi triangle inserts

A.R.= +17°, R.R.= +5°





Right hand (R) shown.

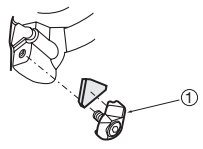
Designation	Max.ap	øDc	z	øDs	ℓs	Lf	L	Insert
ESE3020R	8	20	1	20	70	30	100	TE*N32/TEKR1603...
ESE3025R	8	25	1	25	80	35	115	TE*N32/TEKR1603...
ESE3030R	8	30	2	32	80	45	125	TE*N32/TEKR1603...
ESE3035R	8	35	2	32	80	45	125	TE*N32/TEKR1603...
ESE3040R	8	40	2	32	80	45	125	TE*N32/TEKR1603...
ESE3050R	8	50	3	32	80	-	115	TE*N32/TEKR1603...
ESE3063R	8	63	4	32	80	-	115	TE*N32/TEKR1603...

Note: The TAC Endmills shown above are not irregular pitch spec.

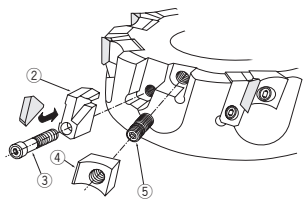
SPARE PARTS

Designation	Clamp set	Locator	Right-left screw	Shell locking bolt	Wedge	Wrench	Wrench 1
ESE3020 - 50R	CSL-4	-	-	-	-	-	P-3
ESE3063R	-	LE302R	DS-8S	SHCM4-10	WP302R	TP-4	-

TSE3050R ~ 3063R-E
ESE3020R ~ 3040R

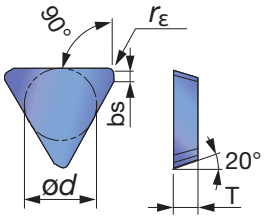


TSE3003RIA-E, 3004RIA-E
ESE3050R ~ 3063R

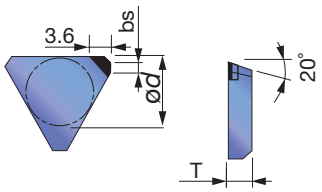


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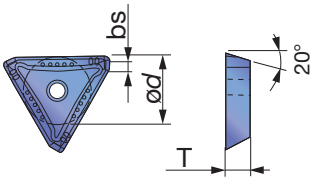
TECN/TEEN 32Z



TECN32ZFR-DIA



TEKR16-MS



		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140
P	Steel	★			☆	☆		★	★	★	☆		
M	Stainless		★	★									
K	Cast iron	★					★						
N	Non-ferrous											★	★
S	Superalloys	★	☆										
H	Hard materials												

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating							Cermet		Uncoated		PCD	ød	T	bs
			AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140			
TECN32ZFR	-	8											●		9.525	3.18	1.37
TECN32ZTR	0.8	8								●	●	●			9.525	3.18	1
TEEN32ZFR	-	8											●		9.525	3.18	1.37
TEEN32ZTR	0.8	8	●	●	●	●	●	●	●	●	●	●			9.525	3.18	1
TECN32ZFR-DIA	-	2.5												●	9.525	3.18	1.37
TEKR1603PEPR-MS	-	8			●										9.525	3.18	1.49

Note: T-DIA is trade name for Tungaloy's PCD grade. Available in one-corner type.

●: Line-up
DX140 : Packing Quantity = 1 pc.

STANDARD CUTTING CONDITIONS

Applied to cutter dia. ≤ ø40 mm

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	T3130	60 ~ 180	0.05 ~ 0.2
		NS740 · N308	60 ~ 150	0.05 ~ 0.15
		AH130 · GH330 · UX30	60 ~ 130	0.05 ~ 0.2
	Carbon steels Alloy steels < 300 HB	T3130	60 ~ 150	0.05 ~ 0.18
		UX30 · AH120	60 ~ 130	0.05 ~ 0.18
		NS740 · N308	60 ~ 130	0.05 ~ 0.15
	Die steels < 30 HRC	T3130 · UX30 · AH120	80 ~ 130	0.05 ~ 0.2
		NS740 · N308	60 ~ 130	0.05 ~ 0.15
M	Stainless steels < 250 HB	AH130 · AH140	100 ~ 180	0.08 ~ 0.2
		AH120 · GH330	100 ~ 200	0.08 ~ 0.2
		TU40	80 ~ 130	0.08 ~ 0.2
K	Cast irons	T1115	100 ~ 150	0.05 ~ 0.2
N	Aluminium alloys	TH10	200 ~ 400	0.05 ~ 0.2

Applied to cutter dia. ≥ ø50 mm

ISO	Workpiece material	Grade	Roughing (Depth of cut: > 1.5 mm)		Finishing (Depth of cut: 0.3 ~ 0.7 mm)	
			Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	AH120 · GH330	130 ~ 230	0.1 ~ 0.2	130 ~ 250	0.1 ~ 0.23
		T3130	130 ~ 300	0.1 ~ 0.23	150 ~ 300	0.1 ~ 0.25
		NS740 · N308	130 ~ 200	0.1 ~ 0.18	150 ~ 250	0.1 ~ 0.2
		UX30 · AH130	100 ~ 180	0.1 ~ 0.2	130 ~ 200	0.1 ~ 0.23
	Carbon steels Alloy steels < 300 HB	AH120 · GH330	100 ~ 200	0.1 ~ 0.18	130 ~ 230	0.1 ~ 0.2
		T3130	130 ~ 280	0.1 ~ 0.2	180 ~ 280	0.1 ~ 0.23
		NS740 · N308	100 ~ 150	0.1 ~ 0.15	150 ~ 200	0.1 ~ 0.18
		UX30	80 ~ 130	0.1 ~ 0.18	100 ~ 150	0.1 ~ 0.2
	Die steels < 30 HRC	T3130 · AH120	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2
		UX30	80 ~ 130	0.1 ~ 0.15	80 ~ 130	0.1 ~ 0.2
M	Stainless steels < 250 HB	AH130 · AH140	80 ~ 180	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
		AH120 · GH330	150 ~ 200	0.1 ~ 0.18	200 ~ 250	0.1 ~ 0.25
K	Cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.2
		TH10	80 ~ 130	0.1 ~ 0.2	80 ~ 130	0.1 ~ 0.25
N	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.25	350 ~ 1000	0.1 ~ 0.25
		DX140	200 ~ 1000	0.05 ~ 0.15	350 ~ 1000	0.1 ~ 0.2
	Copper alloys	TH10	200 ~ 500	0.1 ~ 0.15	200 ~ 500	0.1 ~ 0.2

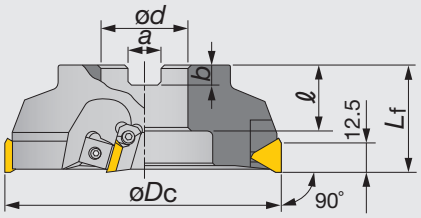
Note:
- Dry cutting is recommended except for aluminium alloys
- Maximum depth of cut for TECN32ZFR-DIA is 2.5 mm.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

TSE4000RIA

Shoulder square mills with wedge clamped high-posi triangle inserts

A.R. = +17°, R.R. = +5°



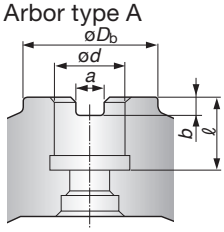


Right hand (R) shown.

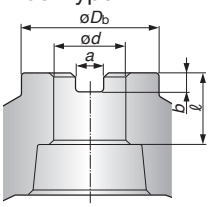
Designation	Max. ap	øDc	z	Lf	ød	ℓ	a	b	Kg	Arbor type
TSE4003RIAE	10	80	4	50	27	26	12.4	70	1	A
TSE4004RIAE	10	100	6	63	32	32	14.4	80	1.9	A
TSE4005RIAE	10	125	6	63	40	32	16.4	90	2.9	B
TSE4006RIAE	10	160	8	63	40	29	16.4	90	4.9	B

Arbor type

Arbor type A

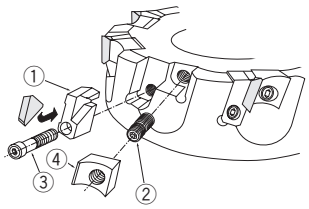


Arbor type B



SPARE PARTS

Designation	①Locator	②Right-left screw	③Locator fixing screw	Shell locking bolt	④Wedge	Wrench
TSE4003RIAE	LE403R	FDS-8S	CM4X0.7X14	-	WF330N	TP-4
TSE4004RIAE	LE403R	FDS-8S	CM4X0.7X14	-	WF330N	TP-4
TSE4005RIAE	LE405R	FDS-8S	CM4X0.7X14	-	WF500R	TP-4
TSE4006RIAE	LE405R	FDS-8S	CM4X0.7X14	-	WF500R	TP-4

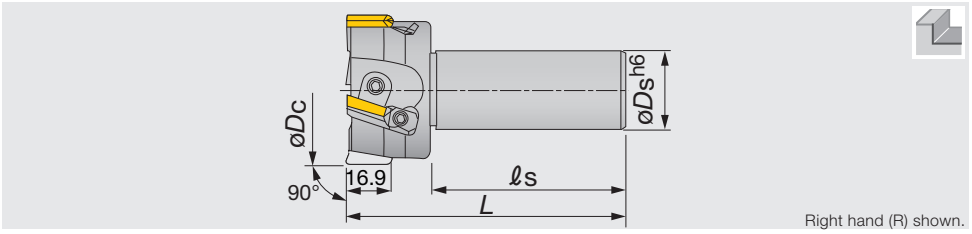


ESE4000R

Shoulder square endmills with wedge clamped high-posi triangle inserts

A.R. = +17°, R.R. = +1° ~ +4°





Right hand (R) shown.

Designation	Max. *ap*	ø*Dc*	z	ø*Ds*	*ℓs*	*L*	Insert
ESE4050RA	10	50	3	32	80	115	TE*N43/TEKR2204...
ESE4063RA	10	63	4	32	80	115	TE*N43/TEKR2204...
ESE4003RIA-S32	10	80	4	32	80	120	TE*N43/TEKR2204...

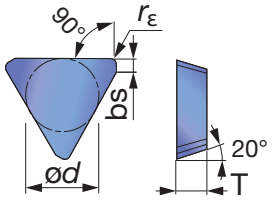
Note: TSE4050RA and TSE4063RA are not irregular pitch spec.

SPARE PARTS

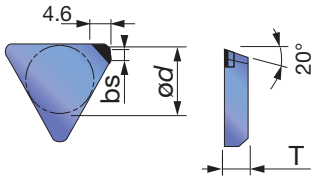
Designation	Locator	Right-left screw	Locator fixing screw	Shell locking bolt	Wedge	Wrench
ESE4050RA	LE402AR	DS-8S	-	SHCM4-10	WT402R	TP-4
ESE4063RA	LE402AR	DS-8	-	SHCM4-10	WT402R	TP-4
ESE4003RIA-S32	LE403R	FDS-8S	CM4X0.7X14	-	WF330N	TP-4

INSERT

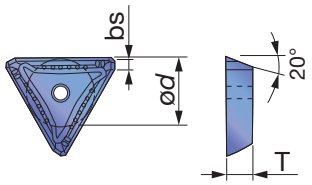
TECN/TEEN 43Z



TECN43ZFR-DIA



TEKR22-MS



		Coating							Cermet		Uncoated		PCD		
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140		
P	Steel	★			☆	☆		★	★	★		☆			
M	Stainless		★	★											
K	Cast iron	★					★								
N	Non-ferrous											★	★		
S	Superalloys	★	☆												
H	Hard materials														

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating							Cermet		Uncoated		PCD		ød	T	bs
			AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140				
TECN43ZFR	1	10											●			12.7	4.76	2
TECN43ZTR	1	10								●	●	●				12.7	4.76	1.31
TEEN43ZFR	1	10											●			12.7	4.76	2
TEEN43ZTR	1	10	●	●	●	●	●	●	●	●	●	●				12.7	4.76	1.31
TECN43ZFR-DIA	-	3.5												●		12.7	4.76	2
TEKR2204PEPR-MS	-	10			●											12.7	4.76	1.8

Note: T-DIA is trade name for Tungaloy's PCD grade. Available in one-corner type

●: Line-up
DX140 : Packing Quantity = 1 pc.

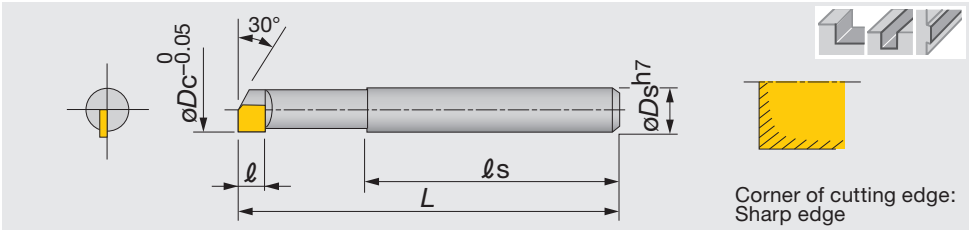
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Roughing (Depth of cut *ap*: > 1.5 mm)		Finishing (Depth of cut *ap*: 0.3 ~ 0.7 mm)	
			Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	AH330	130 ~ 370	0.1 ~ 0.2	150 ~ 400	0.1 ~ 0.23
		AH120 · GH330	130 ~ 230	0.1 ~ 0.2	150 ~ 250	0.1 ~ 0.23
		T3130	130 ~ 300	0.1 ~ 0.23	180 ~ 300	0.1 ~ 0.25
		NS740 · N308	130 ~ 200	0.1 ~ 0.18	150 ~ 250	0.1 ~ 0.2
		UX30 · AH140	100 ~ 180	0.1 ~ 0.2	130 ~ 200	0.1 ~ 0.23
	Carbon steels Alloy steels < 300 HB	AH330	100 ~ 300	0.1 ~ 0.18	150 ~ 320	0.1 ~ 0.2
		AH120 · GH330	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.2
		T3130	130 ~ 280	0.1 ~ 0.2	180 ~ 280	0.1 ~ 0.23
		AH140	80 ~ 130	0.1 ~ 0.18	100 ~ 200	0.1 ~ 0.18
		NS740 · N308	100 ~ 150	0.1 ~ 0.15	150 ~ 200	0.1 ~ 0.18
		UX30	80 ~ 130	0.1 ~ 0.18	100 ~ 150	0.1 ~ 0.2
	Die steels < 30 HRC	AH330	100 ~ 250	0.1 ~ 0.15	100 ~ 250	0.1 ~ 0.2
		T3130 · AH120 · GH330	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2
		UX30	80 ~ 130	0.1 ~ 0.15	80 ~ 130	0.1 ~ 0.2
M	Stainless steels < 250 HB	AH130 · AH140	80 ~ 180	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
		AH120	150 ~ 200	0.1 ~ 0.18	200 ~ 250	0.1 ~ 0.25
K	Cast irons Ductile cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
		TH10	80 ~ 130	0.1 ~ 0.2	80 ~ 130	0.1 ~ 0.25
N	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.25	350 ~ 1000	0.1 ~ 0.25
		DX140	200 ~ 1000	0.05 ~ 0.15	350 ~ 1000	0.1 ~ 0.2
	Copper alloys	TH10	200 ~ 500	0.1 ~ 0.15	200 ~ 500	0.1 ~ 0.2

Note:
- Dry cutting is recommended for all materials except for aluminium alloys.
- Maximum depth of cut for TECN43ZFR-DIA is 3.5 mm.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts





Designation	DX140	Z	øDc	øDs	ℓ	ℓs	L
DEB1040	●	1	4	6	3.5	32	45
DEB1050	●	1	5	6	3.5	35	50
DEB1060	●	1	6	6	3.5	35	50
DEB1080	●	1	8	8	5	37	55
DEB1100	●	1	10	10	5	40	60
DEB1120	●	1	12	12	5	45	65

Notes:
●: Line-up
• As cutting edge is very sharp, please handle carefully.
• Please keep the overhang length from milling chuck of tool as short as possible.

STANDARD CUTTING CONDITIONS

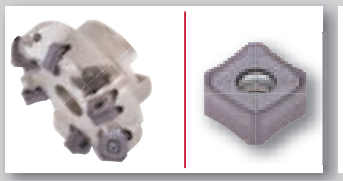
DEB1000

For side milling $a_p \leq 3D$, $a_e = 0.1$ mm

ISO	Workpiece material	Mill dia. (mm)	Cutting Speed *Vc* (m/min)	No. of revolutions *n* (min^{-1})	Table feed *Vf* (mm/min)
N	Aluminium alloys, Copper alloys	ø4	120 - 180	12,000	120
		ø5	120 - 180	9,600	120
		ø6	120 - 180	8,000	120
		ø8	120 - 180	6,000	120
		ø10	120 - 180	4,800	120
		ø12	120 - 180	4,000	100

- Set the protrusion length as short as possible. Reduce number of revolutions and table feed in order to prevent chattering when the protrusion length is long.
- Use the machine with high rigidity.
- Adjust the number of revolutions and the table feed according to the situation of use. (depth of cut or machine rigidity etc.)

MEMO

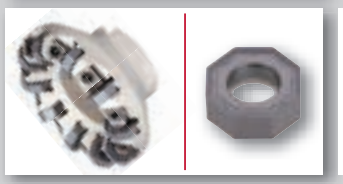


DO TRIPLE MILL — D120

Face milling cutters with double-sided square, octagonal, and round inserts

45° ø50 - ø160 mm
max. ap 6 mm

P M K S H



DOOCTO / DOQUAD — D123

Face milling cutters with screw-on and wedge clamping systems featuring 4 options of the inserts for a broader application range

45° ø63 - ø315 mm
max. ap 7.5 mm

P M K S H



DOPENT — D129

Economical, double-sided inserts with 10 cutting edges for general-purpose milling

70° ø32 - ø160 mm
max. ap 6.4 mm

P M K N S

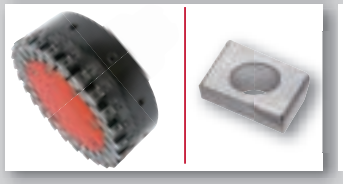


TUNGMILL — D133

Single-sided inserts with low cutting force for face milling

45° ø25 - ø160 mm
max. ap 5 mm

P M K N



TUNGSPEED MILL — D138

Incredibly productive high-speed machining with PCD inserts

90° ø25 - ø125 mm
max. ap 11 mm

N

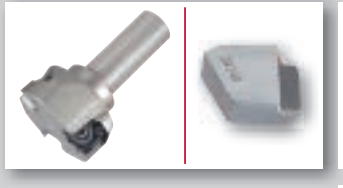


EFE — D140

Lightweight cutters with screw clamping system suitable for low-rigid machines

85° ø50 mm
max. ap 8 mm

P M K N



EDPD — D143

Lightweight cutters in wedge clamping design with PCD inserts

90° ø63 mm
max. ap 8 mm

N

ISO Milling — D146

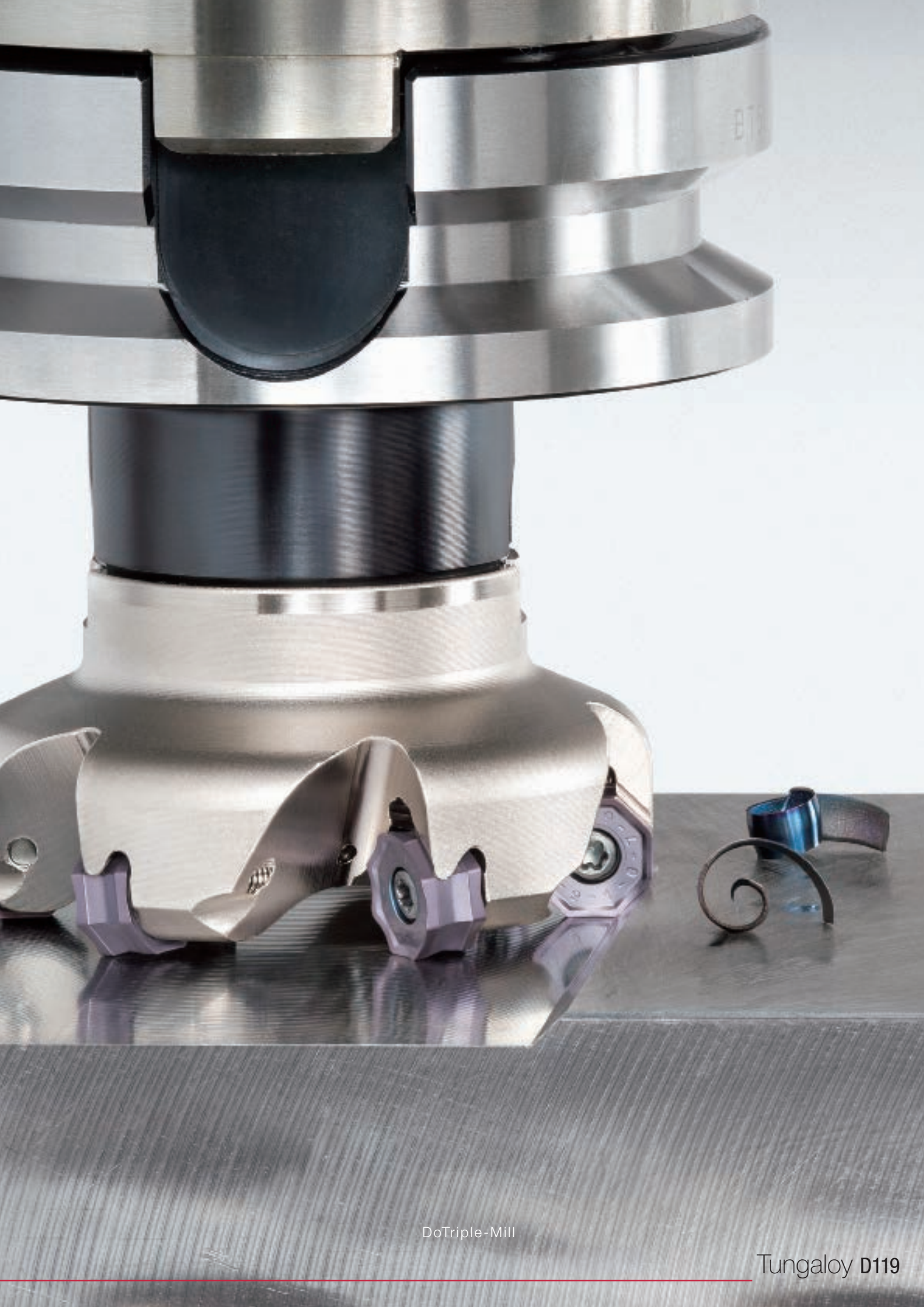
45° - T/EME4400, EMD4400, TMD5400, EGD
75° - TGP4100, TGN4200-A
Clamping systems - S-TAQ, QC

Milling Tools with Round Inserts — D165

ERD6000, T/ERF6000

Milling Tools for Finishing — D169

EMS, S/EFP4000



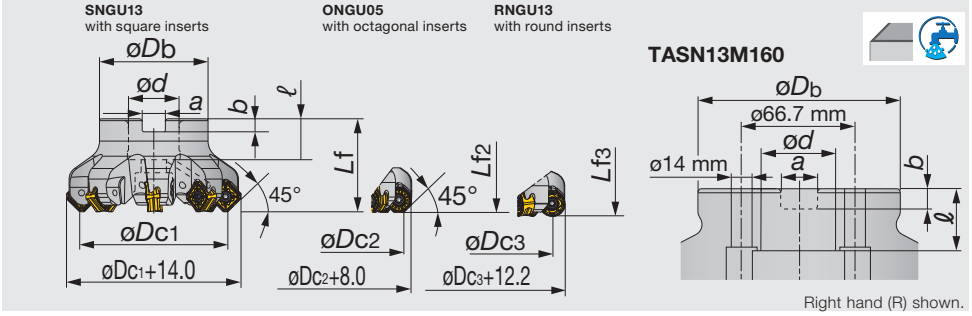
DoTriple-Mill

TASN13

45° face milling cutter to seat double sided square, octagonal, round insert

A.R.=+6.0°,R.R.=-6.8°~-6.3°





Right hand (R) shown.

Designation	øDc1	øDc2	øDc3	z	øDb	Lf1	Lf2	Lf3	ød	ℓ	a	b	Kg	Air hole
TASN13M050B22.0R04	50	53	48.7	4	41	40	38.5	38.5	22	20	10.4	6.3	0.4	with
TASN13M050B22.0R05	50	53	48.7	5	41	40	38.5	38.5	22	20	10.4	6.3	0.4	with
TASN13M063B22.0R05	63	66	61.7	5	47	40	38.5	38.5	22	20	10.4	6.3	0.7	with
TASN13M063B22.0R06	63	66	61.7	6	47	40	38.5	38.5	22	20	10.4	6.3	0.6	with
TASN13M063B22.0R08	63	66	61.7	8	47	40	38.5	38.5	22	20	10.4	6.3	0.6	with
TASN13M080B27.0R05	80	83	78.7	5	58	50	48.5	48.5	27	22	12.4	7	1.1	with
TASN13M080B27.0R08	80	83	78.7	8	58	50	48.5	48.5	27	22	12.4	7	1.1	with
TASN13M080B27.0R10	80	83	78.7	10	58	50	48.5	48.5	27	22	12.4	7	1.2	with
TASN13M100B32.0R06	100	103	98.7	6	60	50	48.5	48.5	32	28.5	14.4	8	1.4	with
TASN13M100B32.0R08	100	103	98.7	8	60	50	48.5	48.5	32	28.5	14.4	8	1.4	with
TASN13M100B32.0R12	100	103	98.7	12	60	50	48.5	48.5	32	28.5	14.4	8	1.4	with
TASN13M125B40.0R07	125	128	123.7	7	71	63	61.5	61.5	40	32	16.4	9	2.2	with
TASN13M125B40.0R10	125	128	123.7	10	71	63	61.5	61.5	40	32	16.4	9	2.3	with
TASN13M125B40.0R14	125	128	123.7	14	71	63	61.5	61.5	40	32	16.4	9	2.5	with
TASN13M160B40.0R08	160	163	158.7	8	100	63	61.5	61.5	40	29	16.4	9	4.1	without
TASN13M160B40.0R12	160	163	158.7	12	100	63	61.5	61.5	40	29	16.4	9	4.2	without

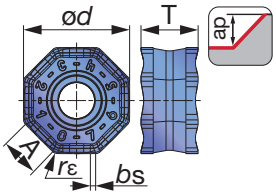
SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Shell locking bolt 1	Torx bit
TASN13M0**B22.0R...	CSPB-4	H-TB2W	M-1000	-	CM10X30H	BLDIP15/S7
TASN13M080B27.0R...	CSPB-4	H-TB2W	M-1000	-	CM12X30H	BLDIP15/S7
TASN13M100B32.0R...	CSPB-4	H-TB2W	M-1000	TMBA-M16H	-	BLDIP15/S7
TASN13M125B40.0R...	CSPB-4	H-TB2W	M-1000	TMBA-M20H	-	BLDIP15/S7
TASN13M160B40.0R...	CSPB-4	H-TB2W	M-1000	-	-	BLDIP15/M7

INSERT

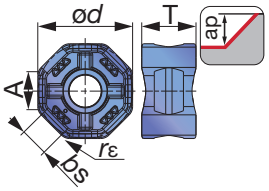
ONGU-MJ





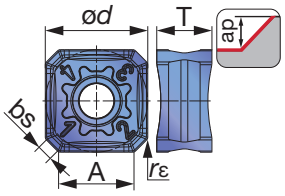
ONGU-W





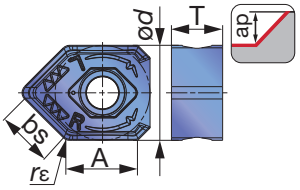
SNGU-MJ





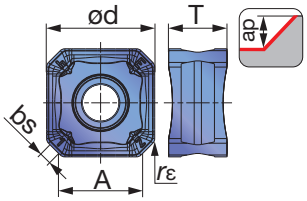
SNGU-W





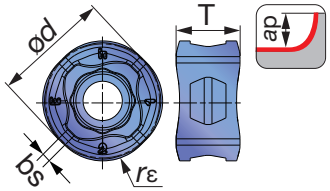
SNGU-MH





RNGU-MJ





P	Steel	☆	★	★
M	Stainless		★	★
K	Cast iron	★		
N	Non-ferrous			
S	Superalloys	★	☆	
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating			A	ød	T	bs
			AH120	AH3135	T3225				
ONGU0507ANEN-MJ	0.8	3.4	●	●	●	4.9	13	7	0.7
ONGU0507ANEN-W	1.6	3.4	●	●		5	13	7.44	3.9
SNGU1307ANEN-MJ	0.5	6	●	●	●	9.4	13	7	2
SNGU1307ANEN-W	1.2	6	●	●		9.6	13	7	7.5
SNGU1307ANEN-MH	0.8	6			●	9	13	7	2
RNGU1307ZNER-MJ	6	6	●	●		-	13	7.1	1

●: Line-up

STANDARD CUTTING CONDITIONS

SNGU13/ONGU05

ISO	Workpiece material		Hardness	Priority	Grade	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steel C15, etc.		200 - 300 HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.5
			200 - 300 HB	For wear resistance	T3225	MJ	200 - 350	0.1 - 0.4
	High carbon and alloy steel C55, 42CrMo4, etc.		150 - 300 HB	First choice	AH3135	MJ	100 - 250	0.1 - 0.4
			150 - 300 HB	For wear resistance	T3225	MJ	180 - 300	0.1 - 0.4
	Prehardened steel NAK80, PX5, etc.		30 - 40 HRC	First choice	AH3135	MJ	100 - 200	0.1 - 0.4
			30 - 40 HRC	For wear resistance	T3225	MJ	150 - 250	0.1 - 0.4
M	Stainless steel X5CrNi18-9, X5CrNiMo17-12-3, etc.		~ 200 HB	First choice	AH3135	MJ	100 - 200	0.1 - 0.35
			~ 200 HB	For wear resistance	T3225	MJ	100 - 250	0.1 - 0.3
	Stainless cast steel GX40NiCrSiNb38-19, etc.		-	First choice	T3225	MH	60 - 120	0.1 - 0.3
			-	Second choice	AH3135	MJ	60 - 120	0.1 - 0.3
K	Gray cast iron 250, etc.		150 - 250 HB	First choice	AH120	MJ	100 - 250	0.1 - 0.5
	Ductile cast iron 400-15, 600-3, etc.		150 - 250 HB	First choice	AH120	MJ	80 - 200	0.1 - 0.5
S	Titanium alloys Ti-6Al-4V, etc.		~ 40 HRC	First choice	AH3135	MJ	30 - 60	0.1 - 0.3
	Heat-resistant alloys Inconel718, etc.		~ 40 HRC	First choice	AH120	MJ	10 - 40	0.05 - 0.15
H	Hardened steel	X40CrMoV5-1, etc.	40 - 50 HRC	First choice	AH3135	MJ	80 - 130	0.1 - 0.2
		X153CrMoV12, etc.	50 - 60 HRC	First choice	AH120	MJ	50 - 70	0.03 - 0.1

RNGU13

ISO	Workpiece material		Hardness	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Carbon steel C45, C55, etc.		200 - 300 HB	AH3135	100 - 250	ap = 6 mm : 0.1 - 0.3 ap = 2 mm : 0.4 - 0.8 ap = 1 mm : 0.8 - 1.5
	Alloy steel 42CrMo4, SCr145, etc.		150 - 300 HB	AH3135	100 - 250	ap = 6 mm : 0.1 - 0.3 ap = 2 mm : 0.4 - 0.8 ap = 1 mm : 0.8 - 1.5
	Prehardened steel NAK80, PX5, etc.		30 - 40 HRC	AH3135	100 - 200	ap = 6 mm : 0.1 - 0.3 ap = 2 mm : 0.4 - 0.8 ap = 1 mm : 0.8 - 1.5
M	Stainless steel X5CrNi18-9, X5CrNiMo17-12-3, etc.		- 200 HB	AH3135	100 - 200	ap = 6 mm : 0.1 - 0.25 ap = 2 mm : 0.3 - 0.7 ap = 1 mm : 0.6 - 1.3
K	Gray cast iron 250, etc.		150 - 250 HB	AH120	100 - 250	ap = 6 mm : 0.1 - 0.3 ap = 2 mm : 0.4 - 0.8 ap = 1 mm : 0.8 - 1.5
	Ductile cast iron 400-15, 600-3, etc.		150 - 250 HB	AH120	80 - 200	ap = 6 mm : 0.1 - 0.3 ap = 2 mm : 0.4 - 0.8 ap = 1 mm : 0.8 - 1.5
S	Titanium alloys Ti-6Al-4V, etc.		- 40 HRC	AH3135	30 - 60	ap = 1 mm : 0.15 - 0.8
	Heat-resistant alloys Inconel718, etc.		- 40 HRC	AH120	10 - 40	ap = 1 mm : 0.05 - 0.3
H	Hardened steel	X40CrMoV5-1, etc.	40 - 50 HRC	AH3135	80 - 130	ap = 1 mm : 0.1 - 0.25
		X153CrMoV12, etc.	50 - 60 HRC	AH120	50 - 70	ap = 0.5 mm : 0.03 - 0.1

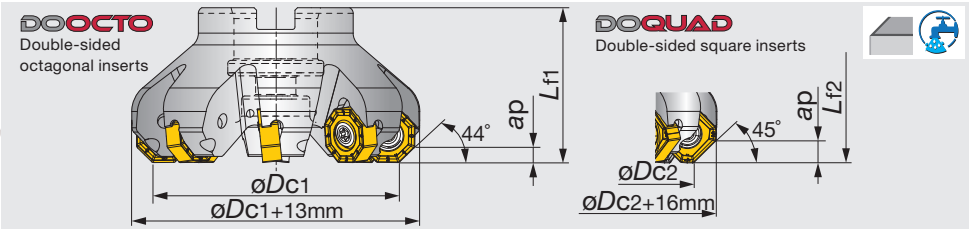
DOOCTO DOQUAD

TAN07

45° screw clamp type face mills with double sided octagonal or square inserts

A.R.=-6°,R.R.=+15.5°

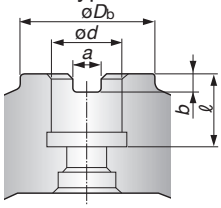




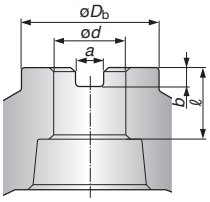
Designation	øDc1	øDc2	z	øDb	Lf1	Lf2	ød	ℓ	a	b	Kg	Air hole	Insert	Arbor type
TAN07R063M22.0E05	63	60.3	5	41	40	41.4	22	20	10.4	6.3	0.5	with	SN*U/ON*U/OWMT	A
TAN07R063M22.0E06	63	60.3	6	41	40	41.4	22	20	10.4	6.3	0.5	with	SN*U/ON*U/OWMT	A
TAN07R080M27.0E06	80	77.3	6	50	50	51.4	27	22	12.4	7	1	with	SN*U/ON*U/OWMT	A
TAN07R080M27.0E08	80	77.3	8	50	50	51.4	27	22	12.4	7	1	with	SN*U/ON*U/OWMT	A
TAN07R100M32.0E07	100	97.3	7	60	50	51.4	32	28.5	14.4	8	1.5	with	SN*U/ON*U/OWMT	B
TAN07R100M32.0E10	100	97.3	10	60	50	51.4	32	28.5	14.4	8	1.5	with	SN*U/ON*U/OWMT	B
TAN07R125M40.0E08	125	122.3	8	71	63	64.4	40	29	16.4	9	2.5	with	SN*U/ON*U/OWMT	B
TAN07R125M40.0E12	125	122.3	12	71	63	64.4	40	29	16.4	9	2.5	with	SN*U/ON*U/OWMT	B
TAN07R160M40.0E10	160	157.3	10	100	63	64.4	40	29	16.4	9	4	without	SN*U/ON*U/OWMT	D
TAN07R160M40.0E15	160	157.3	15	100	63	64.4	40	29	16.4	9	4	without	SN*U/ON*U/OWMT	D
TAN07R200M60.0E12	200	197.3	12	135	63	64.4	60	38	25.7	14	6.5	without	SN*U/ON*U/OWMT	C
TAN07R200M60.0E18	200	197.3	18	135	63	64.4	60	38	25.7	14	6.5	without	SN*U/ON*U/OWMT	C
TAN07R250M60.0E15	250	247.3	15	130	63	64.4	60	38	25.7	14	9	without	SN*U/ON*U/OWMT	C
TAN07R250M60.0E21	250	247.3	21	130	63	64.4	60	38	25.7	14	9	without	SN*U/ON*U/OWMT	C
TAN07R315M60.0E18	315	312.3	18	220	80	81.4	60	38	25.7	14	18	without	SN*U/ON*U/OWMT	E
TAN07R315M60.0E24	315	312.3	24	220	80	81.4	60	38	25.7	14	18	without	SN*U/ON*U/OWMT	E

Arbor type

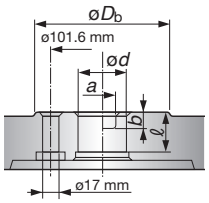
Arbor type A



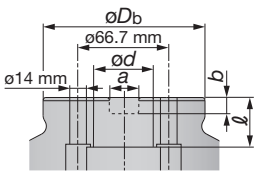
Arbor type B



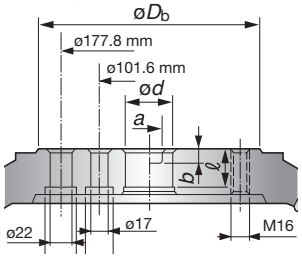
Arbor type C



Arbor type D



Arbor type E



SPARE PARTS

Designation	Clamping screw	Grip	Shell locking bolt	Shell locking bolt 1	Torx bit
TAN07R063M22.0...	SRM5X0.8IP20X+ACROLYTE	H-TB	-	CM10X30H	BLDIP20/S7
TAN07R080M27.0...	SRM5X0.8IP20X+ACROLYTE	H-TB	-	CM12X30H	BLDIP20/S7
TAN07R100M32.0...	SRM5X0.8IP20X+ACROLYTE	H-TB	TMBA-M16H	-	BLDIP20/S7
TAN07R125M40.0...	SRM5X0.8IP20X+ACROLYTE	H-TB	TMBA-M20H	-	BLDIP20/S7
TAN07R160 - 315...	SRM5X0.8IP20X+ACROLYTE	H-TB	-	-	BLDIP20/M7

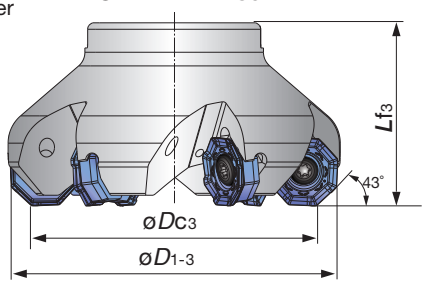


Screw-on type

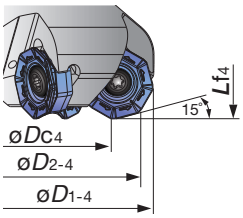
DOOCTO

Single-sided octagonal inserts
- Cutter diamerter and height

OWMT-ML insert



OWMT-HJ insert



ap = 3.5 mm

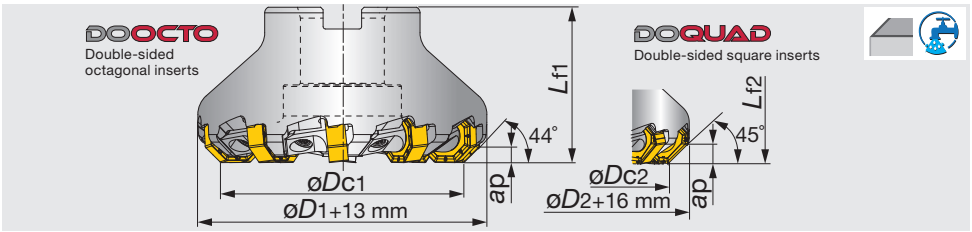
ap = 1.5 mm (7.5 mm, with double corner use)

Designation	Dimensions (mm)						
	øDc3	øD1-3	øDc4	øD2-4	øD1-4	Lf3	Lf4
TAN07R063M...	63.5	76	55.7	67.2	76.4	41	41.4
TAN07R080M...	80.5	93	72.7	84.2	93.4	51	51.4
TAN07R100M...	100.5	113	92.7	104.2	113.4	51	51.4
TAN07R125M...	125.5	138	117.7	129.2	138.4	64	64.4
TAN07R160M...	160.5	173	152.7	164.2	173.4	64	64.4
TAN07R200M...	200.5	213	192.7	204.2	213.4	64	64.4
TAN07R250M...	250.5	263	242.7	252.2	263.4	64	64.4
TAN07R315M...	315.5	328	307.7	319.2	328.4	64	64.4

TAN07-W

45° wedge clamp type face mills with double sided octagonal or square inserts.

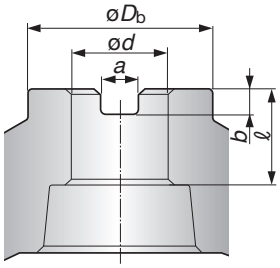




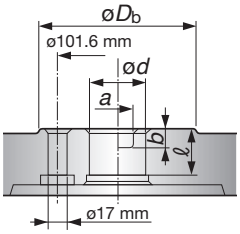
Designation	øDc1	øDc2	z	øDb	Lf1	Lf2	ød	ℓ	a	b	Kg	Air hole	Insert	Arbor type
TAN07R063M22.0E08W	63	60.3	8	41	40	41.4	22	20	10.4	6.3	0.6	without	SN*U/ON*U/OWMT	B
TAN07R080M27.0E10W	80	77.3	10	50	50	51.4	27	25	12.4	7	1.1	without	SN*U/ON*U/OWMT	B
TAN07R100M32.0E14W	100	97.3	14	60	50	51.4	32	28.5	14.4	8	1.6	without	SN*U/ON*U/OWMT	B
TAN07R125M40.0E18W	125	122.3	18	71	63	64.4	40	29	16.4	9	2.5	without	SN*U/ON*U/OWMT	B
TAN07R160M40.0E22W	160	157.3	22	100	63	64.4	40	29	16.4	9	3.6	without	SN*U/ON*U/OWMT	D
TAN07R200M60.0E28W	200	197.3	28	135	63	64.4	60	39	25.7	14	5.8	without	SN*U/ON*U/OWMT	C

Arbor type

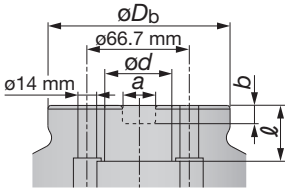
Arbor type B



Arbor type C



Arbor type D



SPARE PARTS

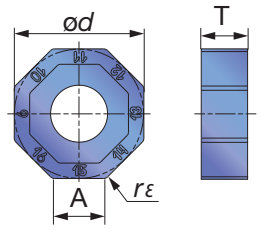
Designation	Grip	Locator	Clamping screw	Torx bit
TAN07-W	H-TBS	CLARM-10-TUNG1	DS-6P	BLDIP15/S7



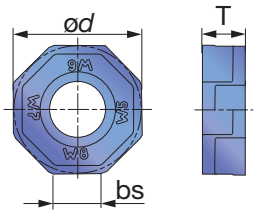
Face Milling

INSERT

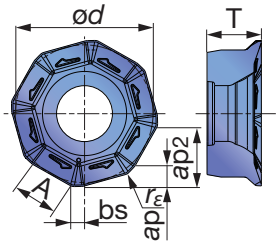
ONMU/ONHU0705-MJ / -ML



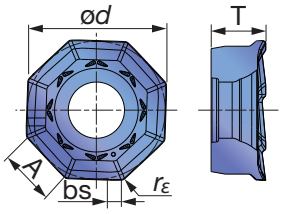
ONHU0705-W



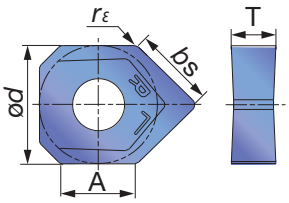
OWMT0807-HJ



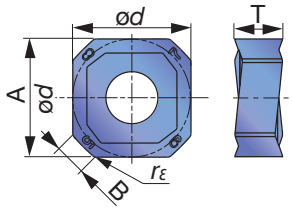
OWMT0807-ML



SNHU1706-W



SNMU/SNHU1706 -MJ / -ML



P	Steel	☆			★	★			
M	Stainless		★	☆	☆	★			
K	Cast iron	★			☆		★	★	
N	Non-ferrous								
S	Superalloys	★	☆		★	☆			
H	Hard materials								

★ : First choice
☆ : Second choice

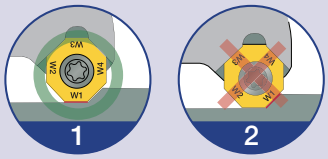
Designation	rε	Max. ap	Coating								ød	T	B	ød	bs	Max. ap2.
			AH120	AH130	AH140	AH725	AH3135	T1115	T1215							
ONMU0705ANPN-MJ	0.8	4.75			●	●	●	●	●		7.2	6.2	-	17.3	-	-
ONHU0705ANPN-MJ	0.8	4.75			●	●					7.2	6.2	-	17.3	-	-
ONMU0705ANPN-ML	0.8	4.75	●				●				7.2	6.2	-	17.3	-	-
ONHU0705ANTN-ML	0.8	4.75	●		●	●					7.2	6.2	-	17.3	-	-
ONHU0705ANPR-W *	-	4.75	●								7.2	5.8	-	17.5	6.4	-
OWMT0807ZNER-HJ	1.2	1.5					●				-	7.4	-	19	1	7.5
OWMT0807AAER-ML	0.8	3.5		●			●				5.2	7.4	-	-	1.2	-
SNMU1706ANPR-MJ	0.8	7.5			●	●	●		●		11	6.98	4.4	17.3	1.8	-
SNHU1706ANPR-MJ	0.8	7.5			●	●					11	6.98	4.4	17.3	1.8	-
SNMU1706ANTR-ML	0.8	7.5	●				●				11	6.98	4.4	17.3	1.8	-
SNHU1706ANTR-ML	0.8	7.5	●								11	6.98	4.4	17.3	1.8	-
SNHU1706ANFN-W *	0.4	7.5	●								17.3	6.5	-	17.3	11	-

* Pay attention to the wiper insert installation procedure below.

●: Line-up

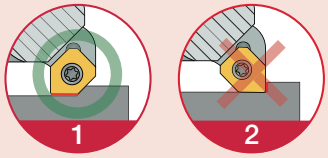
Attention for wiper inserts

DOOCTO



Attach only one wiper insert on the cutter and make sure the wiper edge faces the machining surface.
Feed rate: *f* < 5.5 mm/rev

DOQUAD



Attach only one wiper insert on the cutter and make sure the wiper edge faces the machining surface.
Feed rate: *f* < 9.5 mm/rev

STANDARD CUTTING CONDITIONS

Double-sided inserts

ISO	Workpiece material	Hardness	Priority	Recommendation		Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
				Grade	Chipbreaker		
P	Low carbon steel C15E, etc.	- 200 HB	First choice	AH3135	ML	100 - 300	0.2 - 0.5
		- 200 HB	For wear resistance	AH725	ML	100 - 300	0.2 - 0.5
		- 200 HB	For fracture resistance	AH140	MJ	80 - 180	0.2 - 0.5
	High carbon steel C45E, C55E, etc.	200 - 300 HB	First choice	AH3135	MJ	100 - 230	0.2 - 0.4
		200 - 300 HB	For wear resistance	AH725	MJ	100 - 230	0.2 - 0.4
		200 - 300 HB	For fracture resistance	AH140	MJ	80 - 180	0.2 - 0.4
	Alloy steel 42CrMo4, 17Cr3, etc.	150 - 330 HB	First choice	AH3135	MJ	100 - 200	0.2 - 0.4
		150 - 330 HB	For wear resistance	AH725	MJ	100 - 200	0.2 - 0.4
		150 - 330 HB	For fracture resistance	AH140	MJ	80 - 150	0.2 - 0.4
M	Stainless steel X5CrNi18-9, etc.	- 200 HB	First choice	AH3135	ML	100 - 150	0.1 - 0.3
K	Grey cast iron 250, 300, etc.	150 - 250 HB	First choice	AH120	ML	100 - 250	0.1 - 0.5
		150 - 250 HB	For fracture resistance	AH725	MJ	100 - 250	0.1 - 0.5
		150 - 250 HB	For wear resistance	T1215	MJ	150 - 300	0.1 - 0.5
	Ductile cast iron 600-3, etc.	150 - 300HB	First choice	AH120	ML	80 - 200	0.1 - 0.4
		150 - 300 HB	For fracture resistance	AH725	MJ	80 - 200	0.1 - 0.4
		150 - 300 HB	For wear resistance	T1215	MJ	100 - 250	0.1 - 0.4
H	Hardened steel	HRC 40 - 50	First choice	AH3135	MJ	80 - 130	0.1 - 0.2
		HRC 50 - 60	First choice	AH3135	MJ	50 - 70	0.05 - 0.1

Single-sided inserts

ISO	Workpiece material	Hardness	Priority	Grade	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t)	
						ML	HJ*
P	Low carbon steel C15E, etc.	- 200	First choice	AH3135	100 - 300	0.1 - 0.5	0.5 - 2.0
		- 200	For fracture resistance	AH130	100 - 300	0.1 - 0.5	-
	High carbon steel C45E, C55E, etc.	200 - 300 HB	First choice	AH3135	100 - 230	0.1 - 0.4	0.5 - 1.5
		200 - 300 HB	For fracture resistance	AH130	100 - 230	0.1 - 0.4	-
	Alloy steel 42CrMo4, 17Cr3, etc.	150 - 330 HB	First choice	AH3135	100 - 200	0.1 - 0.4	0.5 - 1.5
		150 - 330 HB	For fracture resistance	AH130	100 - 200	0.1 - 0.4	-
M	Stainless steel X5CrNi18-9, etc.	- 200 HB	First choice	AH3135	100 - 150	0.1 - 0.3	0.3 - 0.7
		- 200 HB	For fracture resistance	AH130	100 - 150	0.1 - 0.3	-
K	Grey cast iron 250, 300, etc.	150 - 250 HB	First choice	AH3135	100 - 250	0.1 - 0.5	0.5 - 2.0
		150 - 250 HB	For fracture resistance	AH130	100 - 250	0.1 - 0.5	-
	Ductile cast iron 600-3, etc.	150 - 250 HB	First choice	AH3135	80 - 200	0.1 - 0.4	0.5 - 1.5
		150 - 250 HB	For fracture resistance	AH130	80 - 200	0.1 - 0.4	-
S	Titanium alloy Ti-6Al-4V, etc.	- HRC 40	First choice	AH3135	30 - 60	0.1 - 0.3	0.3 - 0.7
		- HRC 40	For fracture resistance	AH130	30 - 60	0.1 - 0.3	-
	Heat resistant alloy Inconel718, etc.	- HRC 40	First choice	AH3135	10 - 40	0.05 - 0.15	0.1 - 0.3
		- HRC 40	For fracture resistance	AH130	10 - 40	0.05 - 0.15	-
H	Hardened steel	HRC 40 - 50	First choice	AH3135	80 - 130	-	0.1 - 0.3
		HRC 50 - 60	First choice	AH3135	50 - 70	-	0.03 - 0.07

* Apply 20% of recommended feed when using HJ insert with ap over 1.5 mm.

MEMO

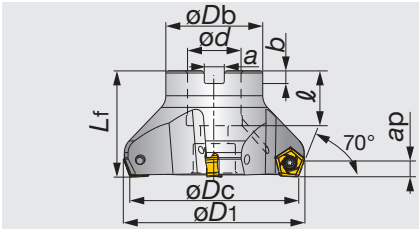
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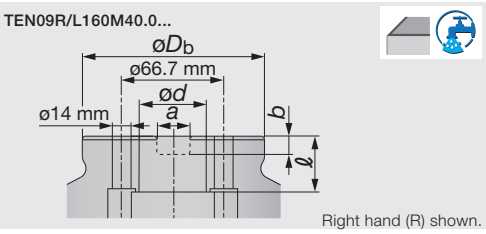
TEN09R/L

70° face mills with double sided pentagonal inserts.

A.R.=-6°,R.R.=-10°~-2°







Right hand (R) shown.

Designation	Max. *ap*	ø*D*c	z	ø*D*1	ø*D*b	*L*f	ø*d*	*ℓ*	*a*	*b*	Kg	Air hole	Insert
TEN09R050M22.0E04	6.4	50	4	56	41	40	22	20	10.4	6.3	0.3	with	PN*U0905...
TEN09R050M22.0E06	6.4	50	6	56	41	40	22	20	10.4	6.3	0.3	with	PN*U0905...
TEN09R063M22.0E06	6.4	63	6	69	41	40	22	20	10.4	6.3	0.5	with	PN*U0905...
TEN09R063M22.0E08	6.4	63	8	69	41	40	22	20	10.4	6.3	0.5	with	PN*U0905...
TEN09R080M27.0E07	6.4	80	7	86	50	50	27	22	12.4	7	0.9	with	PN*U0905...
TEN09R080M27.0E10	6.4	80	10	86	50	50	27	22	12.4	7	1	with	PN*U0905...
TEN09R/L100M32.0E08*	6.4	100	8	106	60	50	32	28.5	14.4	8	1.3	with	PN*U0905...
TEN09R100M32.0E12	6.4	100	12	106	60	50	32	28.5	14.4	8	1.4	with	PN*U0905...
TEN09R/L125M40.0E10*	6.4	125	10	131	71	63	40	32	16.4	9	2.3	with	PN*U0905...
TEN09R125M40.0E16	6.4	125	16	131	71	63	40	32	16.4	9	2.5	with	PN*U0905...
TEN09R/L160M40.0E12*	6.4	160	12	166	100	63	40	29	16.4	9	4	without	PN*U0905...
TEN09R160M40.0E20	6.4	160	20	166	100	63	40	29	16.4	9	4.3	without	PN*U0905...

* For TEN09L (left-hand cutter), use the neutral-hand inserts.

SPARE PARTS

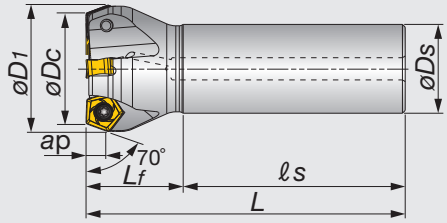
Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Shell locking bolt 1	Torx bit
TEN09R050 - 063...	CSTR-4L100	H-TBS	M-1000	-	CM10X30H	BT15S
TEN09R080...	CSTR-4L100	H-TBS	M-1000	-	CM12X30H	BT15S
TEN09R/L100...	CSTR-4L100	H-TBS	M-1000	TMBA-M16H	-	BT15S
TEN09R/L125M...10	CSTR-4L100	H-TBS	M-1000	TMBA-M20H	-	BT15M
TEN09R125M...16	CSTR-4L100	H-TBS	M-1000	TMBA-M20H	-	BT15S
TEN09R/L160M...12	CSTR-4L100	H-TBS	M-1000	-	-	BT15M
TEN09R160M...20	CSTR-4L100	H-TBS	M-1000	-	-	BT15S

EEN09

70° endmills with double sided pentagonal inserts.

A.R.=-6°,R.R.=-2°~-10°

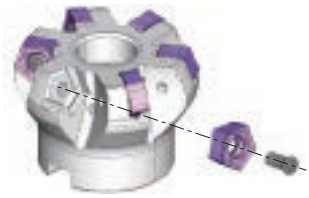




Designation	Max. ap	øDc	z	øD1	øDs	ℓs	Lf	L	Kg	Air hole	Insert
EEN09R032M32.0-03	6.4	32	3	38	32	80	35	115	0.7	with	PN*U0905...
EEN09R040M32.0-04	6.4	40	4	46	32	80	35	115	0.7	with	PN*U0905...
EEN09R050M32.0-04	6.4	50	4	56	32	80	40	120	0.9	with	PN*U0905...
EEN09R063M32.0-06	6.4	63	6	69	32	80	40	120	1	with	PN*U0905...
EEN09R080M32.0-07	6.4	80	7	86	32	80	40	120	1.3	with	PN*U0905...

SPARE PARTS

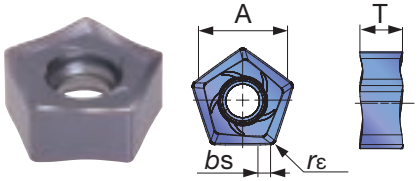
Designation	Clamping screw	Lubricant	Wrench
EEN09	CSTR-4L100	M-1000	T-15D



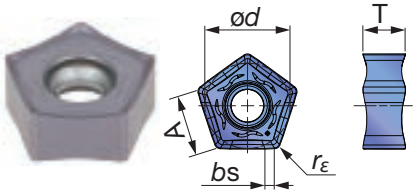
Face Milling

INSERT

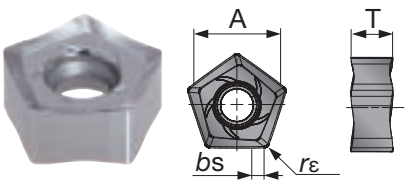
PNCU0905-MJ (Right-hand)



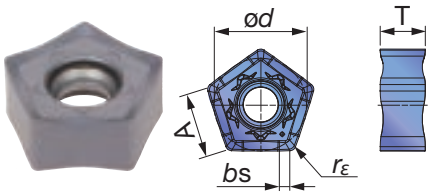
PNCU0905-ML (Neutral-hand)



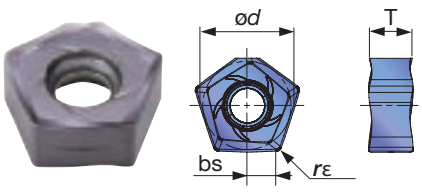
PNCU0905-AJ (Right-hand)



PNMU0905-MJ (Neutral-hand)



PNCU0905-W (Right-hand)



		AH120	AH140	AH725	AH3135	T1115	T1215	T3130	NS740	TH10
P	Steel	☆		★	★			☆	★	
M	Stainless		☆	☆	★					
K	Cast iron	★		☆		★	★			
N	Non-ferrous									★
S	Superalloys	☆		★	☆					
H	Hard materials									

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating							Cermet	Un-coated	A	T	ød	bs
			AH120	AH140	AH725	AH3135	T1115	T1215	T3130	NS740	TH10				
PNCU0905GNER-MJ	0.8	6.4	●	●	●		●		●	●		8.9	5.93	12.2	1.4
PNCU0905GNEN-ML	0.8	6.4				●						8.9	5.96	12.2	1.4
PNCU0905GNFR-AJ	0.8	6.4									●	8.9	6.25	12.2	1.4
PNMU0905GNEN-MJ	0.8	6.4	●			●		●				8.9	6	12.2	1.4
PNCU0905GNER-W	0.8	2			●							-	5.93	12.2	3.8

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness HB	Selection criteria	Recommended grade	Chip-breaker	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steel C15, etc.	- 200	First choice	AH3135, AH725	MJ	100 - 250	0.1 - 0.6
		- 200	Low cutting force	AH3135	ML	100 - 250	0.1- 0.5
		- 200	Priority on wear resistance	T3130	MJ	120 - 250	0.1 - 0.6
		- 200	Priority on surface quality	NS740	MJ	100 - 250	0.1 - 0.5
	High carbon steel C45, etc.	200 - 300	First choice	AH3135, AH725	MJ	100 - 230	0.1 - 0.5
		200 - 300	Low cutting force	AH3135	ML	100 - 230	0.1- 0.4
		200 - 300	Priority on wear resistance	T3130	MJ	120 - 250	0.1 - 0.5
		200 - 300	Priority on surface quality	NS740	MJ	100 - 250	0.1 - 0.4
	Alloyed steel 42CrMo4, etc.	150 - 300	First choice	AH3135, AH725	MJ	100 - 230	0.1 - 0.5
		150 - 300	Low cutting force	AH3135	ML	100 - 230	0.1- 0.4
		150 - 300	Priority on wear resistance	T3130	MJ	120 - 250	0.1 - 0.5
		150 - 300	Priority on fracture resistance	NS740	MJ	100 - 250	0.1 - 0.4
	Tool steel X153CrMoV12, etc.	- 300	First choice	AH3135, AH725	MJ	100 - 180	0.1 - 0.5
		- 300	Low cutting force	AH3135	ML	100 - 180	0.1- 0.4
		- 300	Priority on wear resistance	T3130	MJ	120 - 180	0.1 - 0.5
M	Stainless steel X5CrNi18-9, etc.	-	First choice	AH3135	ML	90 - 180	0.1 - 0.4
		-	Priority on fracture resistance	AH3135, AH140	MJ	90 - 180	0.1 - 0.45
K	Grey cast irons 250, etc.	-	First choice	AH120	MJ	140 - 250	0.1 - 0.6
		-	Priority on wear resistance	T1215	MJ	150 - 280	0.1 - 0.6
	Ductile cast iron 400-15S, etc.	-	First choice	AH120	MJ	100 - 200	0.1 - 0.6
		-	Priority on wear resistance	T1215	MJ	120 - 220	0.1 - 0.6
N	Aluminium alloys Si < 13%	-	First choice	TH10	AJ	500 - 1500	0.1 - 0.5
	Aluminium alloys Si ≥ 13%	-	First choice	TH10	AJ	150 - 500	0.1 - 0.5
S	Titanium alloys Ti-6Al-4V, etc.	-	First choice	AH3135	ML	30 - 60	0.1 - 0.4
		-	Priority on fracture resistance	AH3135	MJ	30 - 60	0.1 - 0.4
	Heat-resistance alloys Inconel 718, etc.	-	First choice	AH725	MJ	20 - 50	0.04 - 0.1

· Remove excessive chip with an air blast to prevent chip jamming.
· Use water-soluble coolant to avoid built-up edge in case extreme welding occurs on cutting edges. (ex. aluminium machining).
· For the operation with depth of cut which varies (ex. casting skin) and machining of workpiece materials with interrupted surface, the feed (*fz*) should be set to the lower recommened value shown in the above table.
· Cutting conditions may be limited depending on machine power, workpiece rigidity, and spindle output. When the cutting width, depth or overhang length is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

Installation of the extra close pitch cutter inserts

- The extra close pitch cutter has a slanted screw.
- Locate insert and then fasten the screw. (Fig. A)
- Appropriate torque is 3.5 N·m.
- After fastening the screw, please ensure there is no space between the cutter body and insert. (Fig. B)

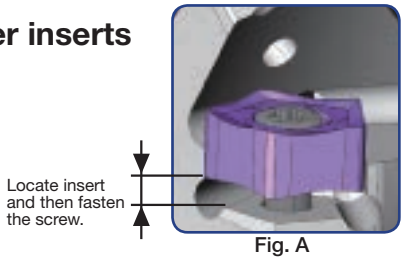
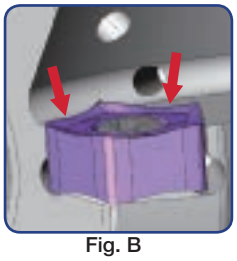


Fig. A


Fig. B

NOTES ON USE OF WIPER INSERT

- To achieve a good surface finish, a wiper insert is recommended. (PNCU0905GNER-W)
- When using the wiper insert, install the insert as shown in Fig. C. Ensure that the groove is at the front as shown in Fig. D.
- The wiper insert has two wiping corners. (Fig. D)
- Do not use the other corners. It may break the tool body.

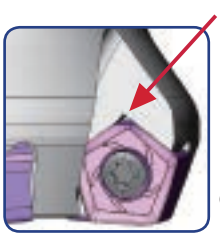


Fig. C

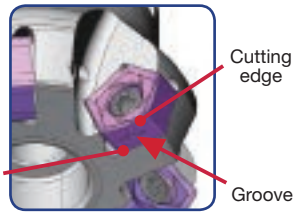


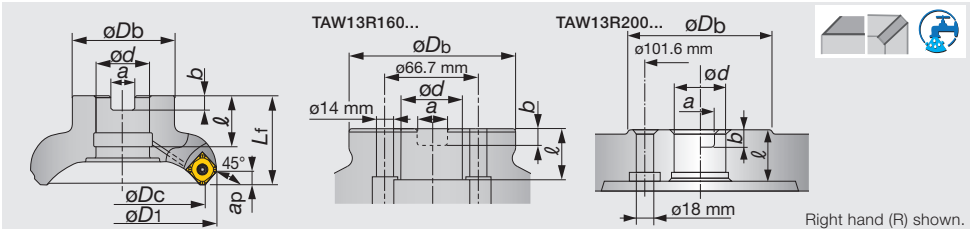
Fig. D

TAW13

30°~ 45° face mills with screw clamped SWMT/SWGT13 inserts

A.R.=+17°~+20°,R.R.=-16°~-11°



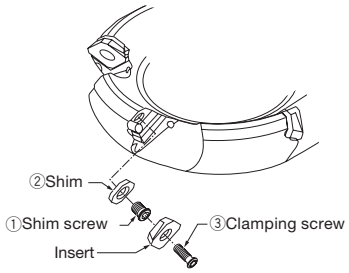


Right hand (R) shown.

Designation	øDc	z	øD1	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TAW13R050M22.0E04	50	4	63	40	22	20	10.4	6.3	0.4	with	SW*T13/WWCW13...
TAW13R050M22.0E05	50	5	63	40	22	20	10.4	6.3	0.4	with	SW*T13/WWCW13...
TAW13R063M22.0E05	63	5	76	40	22	20	10.4	6.3	0.6	with	SW*T13/WWCW13...
TAW13R063M22.0E06	63	6	76	40	22	20	10.4	6.3	0.6	with	SW*T13/WWCW13...
TAW13R080M27.0E06	80	6	94	50	27	22	12.4	7	1	with	SW*T13/WWCW13...
TAW13R080M27.0E08	80	8	94	50	27	22	12.4	7	1	with	SW*T13/WWCW13...
TAW13R100M32.0E07	100	7	114	50	32	28.5	14.4	8	1.5	with	SW*T13/WWCW13...
TAW13R100M32.0E10	100	10	114	50	32	28.5	14.4	8	1.5	with	SW*T13/WWCW13...
TAW13R125M40.0E08	125	8	139	63	40	32	16.4	9	2.7	with	SW*T13/WWCW13...
TAW13R125M40.0E12	125	12	139	63	40	32	16.4	9	3	with	SW*T13/WWCW13...
TAW13R160M40.0E10	160	10	174	63	40	29	16.4	9	4.4	without	SW*T13/WWCW13...
TAW13R160M40.0E16	160	16	174	63	40	29	16.4	9	4.4	without	SW*T13/WWCW13...

SPARE PARTS

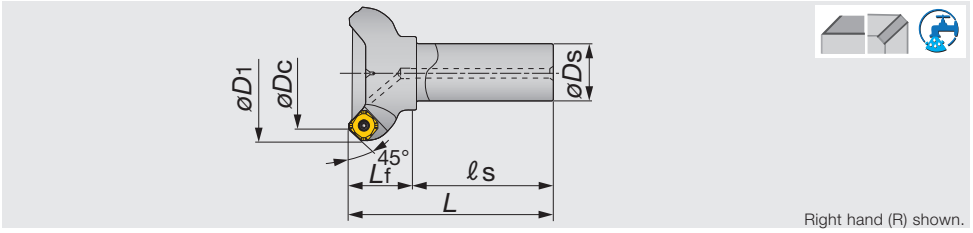
Designation	③Clamping screw	Lubricant	①Shim screw	Shell locking bolt	Shell locking bolt 1	②Shim	Wrench	Wrench 1
TAW13R050 - 063...	CSPB-3.5	M-1000	DTS5-3.5SS	-	CM10X30H	FSSA1102	IP-15D	P-3.5
TAW13R080...	CSPB-3.5	M-1000	DTS5-3.5SS	-	CM12X30H	FSSA1102	IP-15D	P-3.5
TAW13R100...	CSPB-3.5	M-1000	DTS5-3.5SS	TMBA-M16H	-	FSSA1102	IP-15D	P-3.5
TAW13R125...	CSPB-3.5	M-1000	DTS5-3.5SS	TMBA-M20H	-	FSSA1102	IP-15D	P-3.5
TAW13R160...	CSPB-3.5	M-1000	DTS5-3.5SS	-	-	FSSA1102	IP-15D	P-3.5



30°~ 45° endmills with screw crlamped SWMT/SWGT13 inserts

A.R.=+17°~+20°,R.R.=-16°~-11°



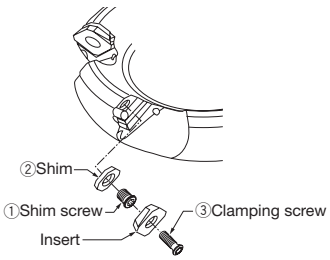


Right hand (R) shown.

Designation	øDc	z	øD1	øDs	ℓs	Lf	L	Kg	Air hole	Insert
EAW13R025M25.0-02	25	2	39	25	80	35	115	0.4	with	SW*T13/WWCW13...
EAW13R032M32.0-02	32	2	46	32	80	35	115	0.7	with	SW*T13/WWCW13...
EAW13R040M32.0-03	40	3	54	32	80	35	115	0.8	with	SW*T13/WWCW13...
EAW13R050M32.0-03	50	3	63	32	80	40	120	1	with	SW*T13/WWCW13...
EAW13R050M32.0-04	50	4	63	32	80	40	120	0.9	with	SW*T13/WWCW13...
EAW13R063M32.0-04	63	4	76	32	80	40	120	1.1	with	SW*T13/WWCW13...
EAW13R063M32.0-05	63	5	76	32	80	40	120	1.1	with	SW*T13/WWCW13...
EAW13R080M32.0-04	80	4	94	32	80	40	120	1.5	with	SW*T13/WWCW13...
EAW13R080M32.0-06	80	6	94	32	80	40	120	1.4	with	SW*T13/WWCW13...

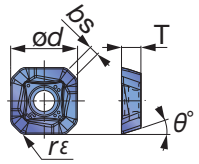
SPARE PARTS

Designation	③Clamping screw	Lubricant	①Shim screw	②Shim	Wrench	Wrench 1
EAW13R025**~040**	CSPB-3.5	M-1000	-	-	IP-15D	-
EAW13R050**~080**	CSPB-3.5	M-1000	DTS5-3.5SS	FSSA1102	IP-15D	P-3.5

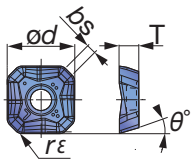


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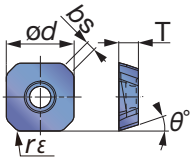
SWMT13T3-MJ



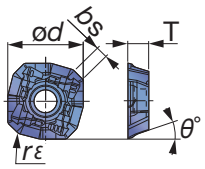
SWMT13T3-ML



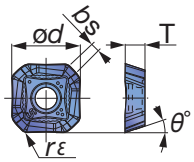
SWMW13T3



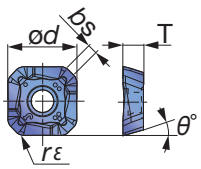
SWMT13T3-HJ



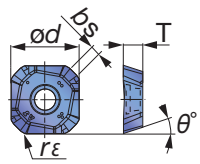
SWMT13T3-MS



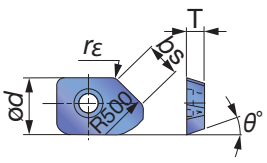
SWGT13T3-MJ



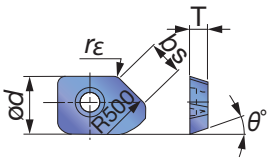
SWGT13T3-AJ



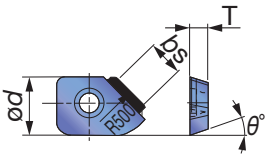
WWCW13T3AFER-WS



WWCW13T3AFFR-WS



WWCW13T3AFFR-WD



P	Steel	☆			★				★				★				
M	Stainless		★	☆	★												
K	Cast iron	★				★	★	★									
N	Non-ferrous									★				★		★	
S	Superalloys	★	☆		☆												
H	Hard materials																

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating										Cermet		Un-coated		PCD		ød	T	θ°	bs
			AH120	AH130	AH140	AH3135	GH110	T1115	T1215	T3130	DS1100		NS740		KS05F		DX140					
SWMT13T3AFPR-MJ	1.5	4	●	●	●	●		●	●	●			●						13.9	4	18.5	2
SWMT13T3AFER-ML	1.5	2.5	●																13.9	4	18.5	2
SWMW13T3AFTR	1.5	5	●					●	●	●			●						13.9	4	18.5	2
SWMT13T3AFPR-HJ	1.5	2	●	●	●			●	●	●									14.7	4	18.5	2.3
SWMT13T3AFPR-MS	1	4		●	●	●													14.1	4	18.5	2
SWGT13T3AFPR-MJ	1.5	4	●										●						13.9	4	18.5	2
SWGT13T3AFFR-AJ	1.3	4									●				●				14.1	4	18.5	2
WWCW13T3AFER-WS	1.5	-					●						●						12.8	4	18.5	7.8
WWCW13T3AFFR-WS	1.5	-									●				●				12.8	4	18.5	7.8
WWCW13T3AFFR-WD	-	-															●		12.8	4	18.5	7.8

●: Line-up
DX140 : Packing Quantity = 1 pc.

STANDARD CUTTING CONDITIONS

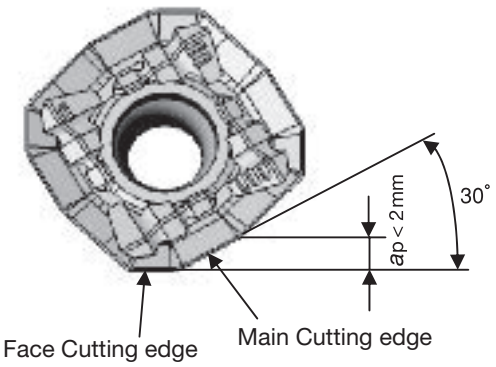
ISO	Workpiece material	Priority	Grade	Cutting speed *vc* (m/min)	Roughing (Depth of cut: > 1.0 mm) Feed per tooth: *fz* (mm/t) MJ	ML	HJ	MS	Flat	AJ
P	Mild and low carbon steels E275A, etc. < 180 HB	First choice	AH3135 AH120	100 - 270	0.05 - 0.3	0.05 - 0.25	0.2 - 0.6	0.1 - 0.25	0.05 - 0.3	-
		Priority on wear resistance	T3130	150 - 300	0.05 - 0.3	-	0.2 - 0.6	-	0.05 - 0.3	-
		Priority on surface quality	NS740	100 - 300	0.05 - 0.23	-	-	-	0.05 - 0.23	-
	Carbon and alloy steels C45, 42CrMo4, etc. < 300 HB	First choice	AH3135 AH120	100 - 230	0.05 - 0.25	0.05 - 0.2	0.2 - 0.5	-	0.05 - 0.25	-
		Priority on wear resistance	T3130	150 - 280	0.05 - 0.25	-	0.2 - 0.5	-	0.05 - 0.25	-
		Priority on surface quality	NS740	100 - 230	0.05 - 0.2	-	-	-	0.05 - 0.2	-
	Die steels X96CrMoV12, etc. < 30 HRC	First choice	AH3135 AH120	100 - 180	0.05 - 0.2	0.05 - 0.2	0.2 - 0.4	-	0.05 - 0.2	-
		Priority on wear resistance	T3130	100 - 180	0.05 - 0.2	-	0.2 - 0.4	-	0.05 - 0.2	-
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc. < 250 HB	First choice	AH3135 AH130	80 - 200	0.1 - 0.25	-	0.2 - 0.5	0.1 - 0.2	-	-
		Priority on wear resistance	AH120	150 - 250	0.1 - 0.25	0.1 - 0.2	0.2 - 0.5	-	0.1 - 0.25	-
K	Grey cast irons 250, 300, etc.	First choice	T1215	180 - 300	0.05 - 0.25	-	0.2 - 0.6	-	0.05 - 0.25	-
		Priority on impact resistance	AH120	150 - 250	0.05 - 0.25	0.05 - 0.2	0.2 - 0.6	-	0.05 - 0.25	-
	Ductile cast irons 400-15S, 600-3, etc.	First choice	T1215	120 - 200	0.05 - 0.25	-	0.2 - 0.6	-	0.05 - 0.25	-
		Priority on impact resistance	AH120	100 - 180	0.05 - 0.25	0.05 - 0.2	0.2 - 0.6	-	0.05 - 0.25	-
N	Aluminium alloys Si < 13 %	-	DS1100 KS05F	300 - 1000	-	-	-	-	-	0.05 - 0.2
	Aluminium alloys Si ≥ 13%	-	DS1100 KS05F	80 - 300	-	-	-	-	-	0.05 - 0.2
	Copper alloys	-	DS1100 KS05F	200 - 500	-	-	-	-	-	0.05 - 0.2

Notes for use of HJ-type inserts

HJ-type inserts can be used for high feed machining.

When using the insert, care should be taken with the following:

- The maximum depth of cut is *ap* = 2 mm. Select feeds within the above value.
- Do not use the HJ-type inserts with other types (such as MJ- and MS-types) in the same body.
- The outer shape of the HJ-type insert is different from those of other types (such as MJ- and MS-types), but the insert can be held in the same insert pocket.



Notes on use of wiper insert

- When requiring good surface finishes, use of a wiper insert (WWCW13T3AF_ R-W_) is recommended. In general, installing one wiper insert delivers superior surface finishes.
- When using the wiper insert, install the insert as shown in Fig. 1. If the insert is installed as shown in Fig. 2, breakage of the insert is inevitable and normal surface finish can not be obtained.
- The wiper insert must not be used together with HJ-type inserts
- The wiper insert has one wiping corner.
- The peripheral cutting edge of the wiper insert is retracted from the edge of the normal inserts. Therefore, the feed per tooth (*fz* mm/t) of the normal insert following

the wiper insert is double that of other inserts.

- When using the wiper insert, depth of cut (*ap*) less than 1 mm is recommended.

Fig. A

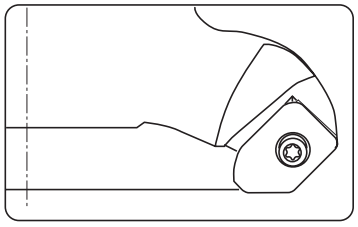
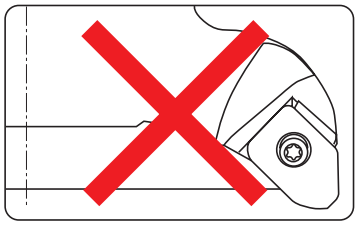


Fig. B



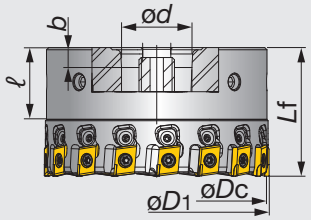
ISO	Workpiece material	Priority	Grade	Cutting speed *vc* (m/min)	Light cutting to finishing (Depth of cut: ≤ 1.0 mm) Feed per tooth: *fz* (mm/t) MJ	ML	HJ	MS	Flat	AJ
P	Mild and low carbon steels E275, etc. < 180 HB	First choice	AH3135 AH120	100 - 270	0.05 - 0.25	0.05 - 0.2	0.2 - 0.6	0.1 - 0.2	0.05 - 0.25	-
		Priority on wear resistance	T3130	150 - 300	0.05 - 0.25	-	0.2 - 0.6	-	0.05 - 0.25	-
		Priority on surface quality	NS740	100 - 300	0.05 - 0.2	-	-	-	0.05 - 0.2	-
	Carbon and alloy steels C45, 42CrMo4, etc. < 300 HB	First choice	AH3135 AH120	100 - 230	0.05 - 0.2	0.05 - 0.15	0.2 - 0.5	-	0.05 - 0.2	-
		Priority on wear resistance	T3130	150 - 280	0.05 - 0.2	-	0.2 - 0.5	-	0.05 - 0.2	-
		Priority on surface quality	NS740	100 - 230	0.05 - 0.18	-	-	-	0.05 - 0.18	-
	Die steels X96CrMoV12, etc. < 30 HRC	First choice	AH3135 AH120	100 - 180	0.05 - 0.18	0.05 - 0.12	0.2 - 0.4	-	0.05 - 0.18	-
		Priority on wear resistance	T3130	100 - 180	0.05 - 0.18	-	0.2 - 0.4	-	0.05 - 0.18	-
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc. < 250 HB	First choice	AH3135 AH130	80 - 200	0.1 - 0.2	-	0.2 - 0.5	0.1 - 0.18	-	-
		Priority on wear resistance	AH120	150 - 250	0.1 - 0.2	0.1 - 0.18	0.2 - 0.5	-	0.1 - 0.2	-
K	Grey cast irons 250, 300, etc.	First choice	T1215	180 - 300	0.1 - 0.2	-	0.2 - 0.6	-	0.1 - 0.2	-
		Priority on impact resistance	AH120	150 - 250	0.1 - 0.2	0.05 - 0.18	0.2 - 0.6	-	0.1 - 0.2	-
	Ductile cast irons 400-15S, 600-3, etc.	First choice	T1215	120 - 200	0.1 - 0.2	-	0.2 - 0.6	-	0.1 - 0.2	-
		Priority on impact resistance	AH120	100 - 180	0.1 - 0.2	0.05 - 0.18	0.2 - 0.6	-	0.1 - 0.2	-
N	Aluminium alloys Si < 13 %	-	DS1100 KS05F	300 - 1000	-	-	-	-	-	0.05 - 0.2
	Aluminium alloys Si ≥ 13%	-	DS1100 KS05F	80 - 300	-	-	-	-	-	0.05 - 0.2
	Copper alloys	-	DS1100 KS05F	200 - 500	-	-	-	-	-	0.05 - 0.2

Notes:
- When cutting at a large depth of cut or a large cutting width, the cutting speed (*vc*) and feed (*fz*) should be set to the lower side of the values shown in the above table.
- Dry cutting (or air-blowing) is generally recommended. However, when chips tend to excessively adhere to the cutting edges when machining stainless steel, use a water soluble cutting fluid. In this case, use the AH140 grade at speeds lower than *vc* = 100 m/min.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.
- TAW13 type TAC mills cannot be used for axial-feed cutting such as ramping, plunging and drilling.

TPYP12

High speed milling cutter with PCD insert for non ferrous materials





Designation	øDc	øD1	z	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TPYP12M050B22.0R08	50	51.4	8	55	22	20	10.4	6.3	0.9	with	YPEB12X3-*P...
TPYP12M063B22.0R10	63	64.4	10	55	22	20	10.4	6.3	1.3	with	YPEB12X3-*A...
TPYP12M080B27.0R12	80	81.4	12	58	27	22	12.4	7	2.2	with	YPEB12X3-*A...
TPYP12M100B32.0R16	100	101.4	16	58	32	25	14.4	8	1.9	with	YPEB12X3-*A...
TPYP12M125B40.0R20	125	126.4	20	58	40	28	16.4	9	2.9	with	YPEB12X3-*A...

*D1: Outside diameter
Dc: diameter with 01 type insert

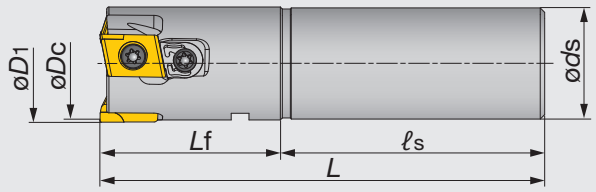
SPARE PARTS

Designation	Clamping screw	Wrench	Locator fixing screw	Locator	Wrench	Cover	Center bolt
TPYP12M050B22.0R08	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	-	RSFTS-050M
TPYP12M063B22.0R10	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6063M	VC004762I10035F
TPYP12M080B27.0R12	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6080	VC00TEDI12040F
TPYP12M100B32.0R16	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6100	VC00TANG16040F
TPYP12M125B40.0R20	VX040024A	T-15F	RSRGR5M40	RSFTC1008	T-8F	RSFTS6125	VC00TEDI20040F

EPYP12

High speed milling endmill with PCD insert for non ferrous materials





Designation	øDc	øD1	z	øDs	L	Lf	ℓs	Kg	Air hole	Insert
EPYP12M025C25.0R03	25	26.4	3	25	100	50	50	0.4	with	YPEB12X3-*P...
EPYP12M032C25.0R05	32	33.4	5	25	100	45	55	0.5	with	YPEB12X3-*P...

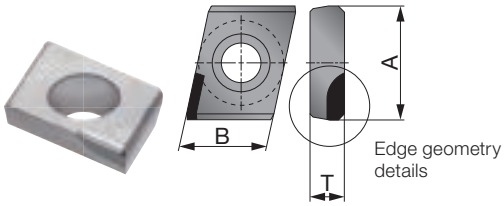
*D1: Outside diameter
Dc: diameter with 01 type insert

SPARE PARTS

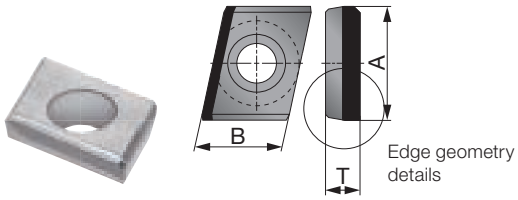
Designation	Clamping screw	Wrench	Locator fixing screw	Locator	Wrench
EPYP12M025C25.0R03	VX040024A	T-15F	VX040028A	RSFTC1011	T-8F
EPYP12M032C25.0R05	VX040024A	T-15F	RSRGR5M40	RSFTC1009	T-8F

INSERT

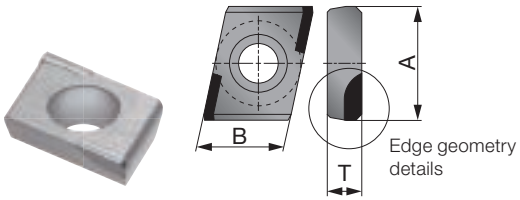
YPEB12X3-1A/P



YPEB12X-FP



YPEB12X3-2A/P



Edge geometry details

01R-D

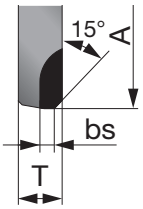


Fig.1

02R-D

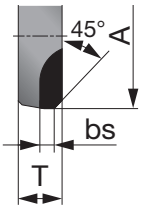


Fig.2

07R-D

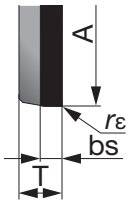


Fig.3

P	Steel	
M	Stainless	
K	Cast iron	
N	Non-ferrous	★
S	Superalloys	
H	Hard materials	

★ : First choice
☆ : Second choice

Designation	No. of corner	rε	Max. ap	PCD DX160	A	B	T	bs	Applicable cutter diameters	Fig.
YPEB12X3-1A01R-D	1	-	4	●	12.77	9.525	3.85	1.59	Dc>ϕ50mm	1
YPEB12X3-1A02R-D	1	-	4	●	12.756	9.525	3.85	1.29	Dc>ϕ50mm	2
YPEB12X3-1A07R-D	1	0.4	4	●	12.756	9.525	3.85	1.34	Dc>ϕ50mm	3
YPEB12X3-1P02R-D	1	-	4	●	12.817	9.525	3.85	1.37	Dc≤ϕ50mm	2
YPEB12X3-1P07R-D	1	0.4	4	●	12.817	9.525	3.85	1.37	Dc≤ϕ50mm	3
YPEB12X3-FP02R-D	1	-	11	●	12.817	9.525	3.85	1.37	Dc≤ϕ50mm	2
YPEB12X3-FP07R-D	1	0.4	11	●	12.817	9.525	3.85	1.37	Dc≤ϕ50mm	3
YPEB12X3-2A01R-D	2	-	4	●	12.8	9.525	3.868	1.59	Dc>ϕ50mm	1
YPEB12X3-2A02R-D	2	-	4	●	12.8	9.525	3.868	2.07	Dc>ϕ50mm	2
YPEB12X3-2A07R-D	2	0.4	4	●	12.8	9.525	3.868	2.07	Dc>ϕ50mm	3
YPEB12X3-2P07R-D	2	0.4	4	●	12.876	9.525	3.85	2.07	Dc≤ϕ50mm	3

●: Line-up

Package quantity : 2pcs.

STANDARD CUTTING CONDITIONS

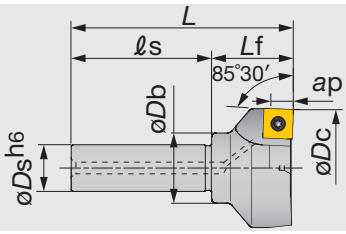
ISO	Workpiece material	Grade	Cutting Speed Vc (m/min)	Feed per tooth fz (mm/z)
N	Aluminum cast Si<13%	DX160	≤6000	0.05 - 0.25
	Aluminum cast Si≥13%	DX160	≤1500	0.05 - 0.25
	Copper, brass, etc	DX160	≤2000	0.05 - 0.25
	Non metalic material	DX160	≤3000	0.05 - 0.25

EFE12R

86° endmills with screw clamped inserts for aluminum machining

A.R. = +13°, R.R. = +7°



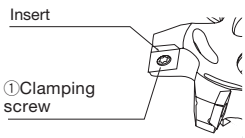


Air through type

Designation	Max. *ap*	ø*D*c	z	ø*D*s	ø*D*b	ℓs	*L*f	*L*	Kg	Air hole	Insert
EFE12050R	8	50	3	20	30	60	35	95	0.37	with	SEG*12X4...

SPARE PARTS

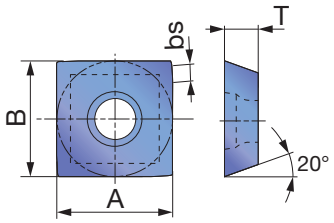
Designation	① Clamping screw	Lubricant	Wrench
EFE12000R	CSPB-4S	M-1000	IP-15D



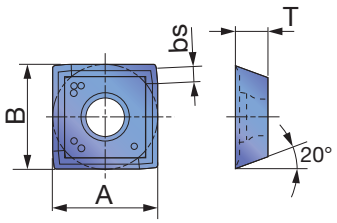
Face Milling

INSERT

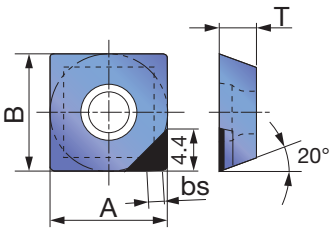
SEGW12X4ZEPR / ZEFR



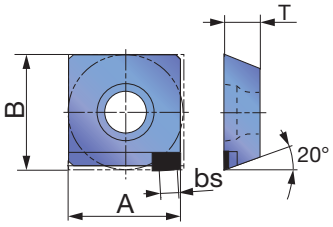
SEGT12X4-AJ



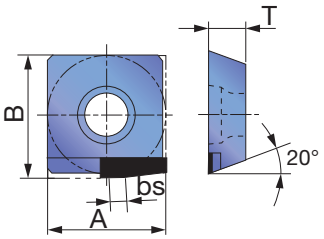
SEGW12X4ZEFR-D



SEGW12X4ZEFR-WD



SEGW12X4ZEFR-BD



P	Steel	★			★				
M	Stainless		★						
K	Cast iron	★							
N	Non-ferrous			★			★		★
S	Superalloys	★							
H	Hard materials								

★ : First choice
☆ : Second choice

Designation	Max. ap	Coating			Cermet	Un-coated	PCD	A	B	T	bs
		AH120	AH140	DS1100	NS740	KS05F	DX140				
SEGW12X4ZEFR	8					●		12.7	12.7	4	1.8
SEGW12X4ZEPR	8	●	●		●			12.7	12.7	4	1.4
SEGT12X4ZEFR-AJ	8			●		●		12.7	12.7	4	1.8
SEGW12X4ZEFR-D	3.5						●	12.7	12.7	4	1.8
SEGW12X4ZEFR-WD	-						●	12.4	12.8	4	2
SEGW12X4ZEFR-BD	-						●	12.4	13.1	4	1.8

●: Line-up

DX140 : Package quantity = 1pc.

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Designation	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Carbon steels and alloy steels < 300HB	AH120	SEGW12X4ZEPR	100 ~ 180	0.03 ~ 0.15
		NS740	SEGW12X4ZEPR	100 ~ 180	0.03 ~ 0.15
M	Stainless steels < 250HB	AH140	SEGW12X4ZEPR	80 ~ 180	0.03 ~ 0.15
K	Grey and ductile cast irons	AH120	SEGW12X4ZEPR	100 ~ 200	0.03 ~ 0.15
N	Cast aluminium alloy / Die-cast Si < 13%	KS05F	SEGT12X4ZEFR-AJ	200 ~ 1500	0.05 ~ 0.2
		DX140	SEGW12X4ZEFR-D	200 ~ 1500	0.05 ~ 0.2
	Cast aluminium alloy / Die-cast Si ≥ 13%	KS05F	SEGT12X4ZEFR-AJ	80 ~ 200	0.05 ~ 0.2
		DX140	SEGW12X4ZEFR-D	200 ~ 500	0.05 ~ 0.2
	Aluminium alloy Tensile strength < 350 N/mm^2	KS05F	SEGT12X4ZEFR-AJ	200 ~ 1500	0.05 ~ 0.2
		DX140	SEGW12X4ZEFR-D	200 ~ 1500	0.05 ~ 0.2
	Aluminium alloy Tensile strength > 350 N/mm^2	KS05F	SEGW12X4ZEFR	200 ~ 1500	0.05 ~ 0.2
		DX140	SEGW12X4ZEFR-D	200 ~ 1500	0.05 ~ 0.2
	Copper alloy	KS05F	SEGT12X4ZEFR-AJ	200 ~ 500	0.05 ~ 0.2
		DX140	SEGW12X4ZEFR-D	200 ~ 500	0.05 ~ 0.2

Notes:

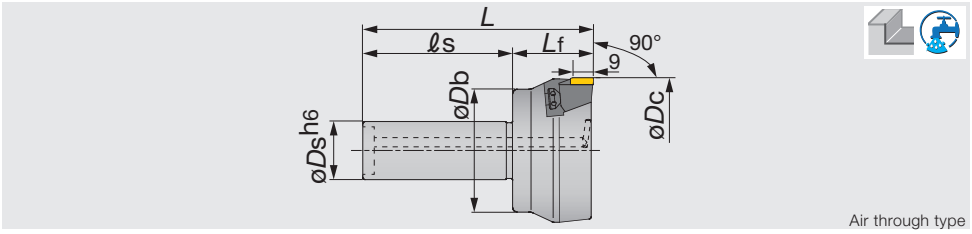
- In milling aluminium and copper alloys:
  (1) For improved surface finish, use together with wiper insert SEGW12X4ZEFR-WD
  (2) For reducing burr occurrence, use together with deburring inserts SEGW12X4ZEFR-BD
- When milling aluminium and copper alloys, use of a water soluble cutting fluid is recommended. When milling steels, cast irons, and stainless steels, dry cutting is recommended.
- When the length-to-diameter overhang ratio of the tool (L/D) exceeds 3, reduce cutting speed and feed to 70 to 80% of the values given in the table.

EDPD09

Light weight square endmills with PCD inserts for alminum machining

A.R. = +8.5°, R.R. = +3°



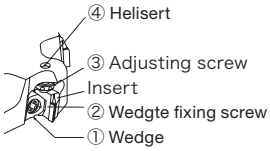


Air through type

Designation	Max. ap	øDc	z	øDs	øDb	ℓs	Lf	L	Kg	Air hole	Insert
EDPD09063R	8	63	3	25	37	60	40	100	0.75	with	YDEN0905...

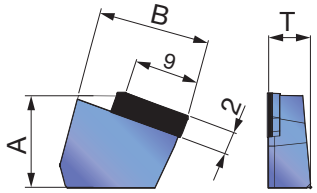
SPARE PARTS

Designation	① Wedge	② Wedgte fixing screw	③ Adjusting screw	④ Helisert	Wrench	Wrench 1
EDPD09063R	FW-304R-T	FDS-8SST	AJM5	LM5-0.8X1DNS	T-27T	T-7F

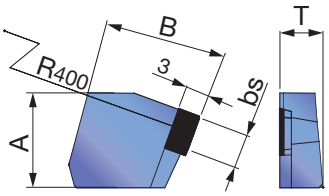


INSERT

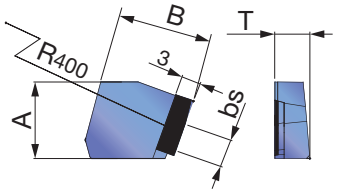
YDEN0905PDFR-D



YDEN0905PDFR-WD



YDEN0905PDFR-BD



P	Steel			
M	Stainless			
K	Cast iron			
N	Non-ferrous	★		
S	Superalloys			
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	Max. ap	PCD DX140	A	B	T	bs
YDEN0905PDFR-D	8	●	12.4	15.1	5.7	-
YDEN0905PDFR-WD	-	●	12.4	15.2	5.7	4.5
YDEN0905PDFR-BD	-	●	12.4	15.2	5.7	4.5

Note: As a principle, our company re-grinds these inserts.

●: Line-up

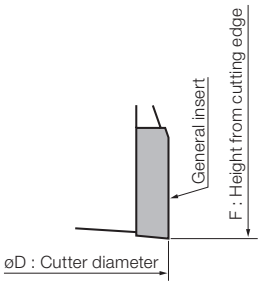
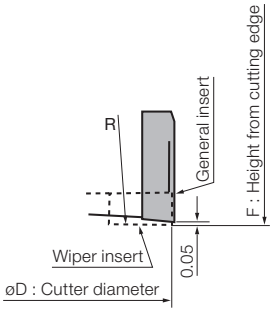
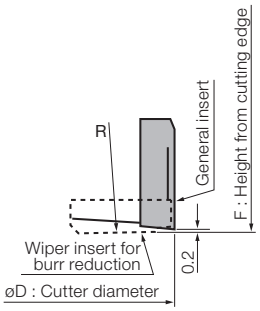
Package quantity = 1pc.

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Designation	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
N	Aluminium alloy castings & die castings Si < 13%	DX140	YDEN0905PDFR-D	500 ~ 4000	0.05 ~ 0.2
	Aluminium alloy castings & die castings Si ≥ 13%	DX140	YDEN0905PDFR-D	200 ~ 500	0.05 ~ 0.2
	Rolled aluminium alloys	DX140	YDEN0905PDFR-D	500 ~ 4000	0.05 ~ 0.2
	Copper alloys	DX140	YDEN0905PDFR-D	200 ~ 500	0.05 ~ 0.2

Notes:
(1) When requiring improved surface finish, use the wiper insert together with regular inserts YDEN0905PDFR-WD.
(2) When requiring reduced burr occurrence, use the deburring inserts together with regular inserts YDEN0905PDFR-BD.
(3) When using the cutter at speeds over 1500m/min, use an arbor or tool-holder balanced to within G16.
(4) Wet cutting, using a water soluble cutting fluid, is recommended.
(5) When the length-to-diameter overhang ratio of the tool (L/D) exceeds 3, reduce cutting speed and feed to 70 to 80% of the values given in the table.

HOW TO PUT EACH INSERT TOGETHER

			For general	Accuracy of machining surface priority	Burr reduction priority
Applicable insert	General insert	YDEN0905PDFR-D	◎	◎	◎
	Wiper insert	YDEN0905PDFR-WD	–	◎	–
	Wiper insert for burr reduction	YDEN0905PDFR-BD	–	–	◎
	Number of Inserts by type		All general	1 or 2 wiper inserts in cutter body	General insert : Burr wiper insert = 1 : 1
Specification of insert setting					
Accuracy of machining surface (roughness and undulation)			△	◎	○
Burr of machining surface			△	○	◎

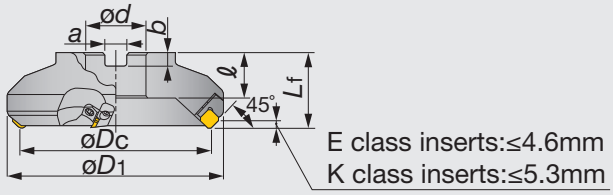
MEMO

TME4400RI

45˚ face mills with wedge clamped high-posi square inserts

A.R. = +24˚, R.R. = -8˚ ~ -6˚





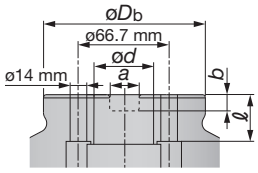
Right hand (R) shown.

Designation	Max. ap	øDc	z	øD1	Lf	ød	ℓ	a	b	Kg	Insert
TME4403RI-E	4	80	4	101.5	50	27	26	12.4	7	1.43	SE*N1203
TME4404RI-E	4	100	5	120.2	63	32	32	14.4	8	2.74	SE*N1203
TME4405RI-E	4	125	6	145.2	63	40	32	16.4	9	4.04	SE*N1203
TME4406RI-E	4	160	8	181.2	63	40	29	16.4	9	5.82	SE*N1203

Note: Cutting edge height (*Lf*) is for when SEEN1203AG*N type inserts are used.

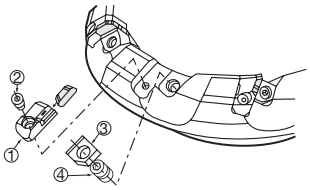
Arbor type

TME4406RI-E



SPARE PARTS

Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
TME4403RI-E	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4404RI-E	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4405RI-E	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4
TME4406RI-E	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4

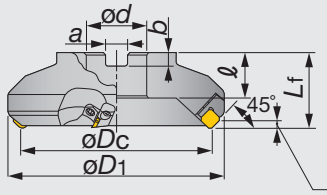


TME4400RB

45˚ high dense face mills with wedg clamped high-posi square inserts

A.R. = +24˚, R.R. = -8˚ ~ -6˚





E class inserts:<4.6mm
K class inserts:<5.3mm

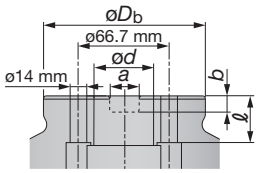
Right hand (R) shown.

Designation	Max. ap	øDc	z	øD1	Lf	ød	ℓ	a	b	Kg	Insert
TME4463RB-E	4	63	5	87.2	40	22	20	10.4	6.3	1.0	SE*N1203
TME4403RB-E	4	80	6	101.5	50	27	26	12.4	7	1.43	SE*N1203
TME4404RB-E	4	100	7	120.2	63	32	32	14.4	8	2.77	SE*N1203
TME4405RB-E	4	125	9	145.2	63	40	32	16.4	9	4.06	SE*N1203
TME4406RB-E	4	160	12	181.2	63	40	29	16.4	9	5.86	SE*N1203

Note: Cutting edge height (*Lf*) is for when SEEN1203AG*N type inserts are used.

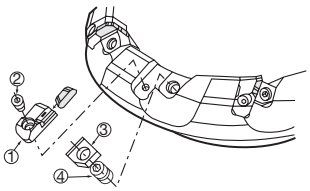
Arbor type

TME4406RB-E



SPARE PARTS

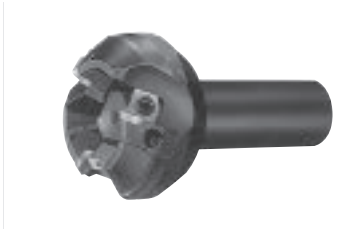
Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
TME4463RB-E	LE444R	DS-8	CM4X0.7X14	WT402R	TP-4
TME4403-06RB-E	LE446R	FDS-8S	CM4X0.7X14	WF444R	TP-4

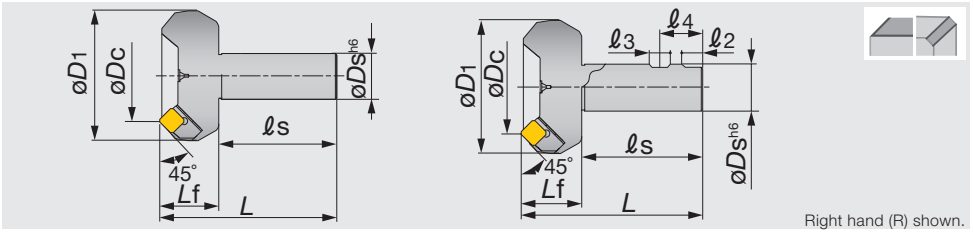


EME4400

45° endmills with wedg clamped high-posi square inserts

A.R. = +24°, R.R. = -13° ~ -8°



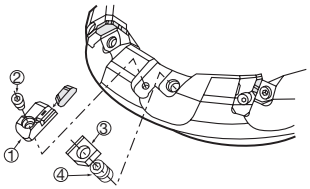


Right hand (R) shown.

Designation	Max. *ap*	ø*D*c	z	ø*D*1	ø*D*s	ℓs	*L*f	*L*	ℓ2	ℓ3	ℓ4	Insert
EME4450R	4	50	3	73.4	32	80	40	120	-	-	-	SE*N1203...
EME4463R	4	63	4	87.2	32	80	40	120	-	-	-	SE*N1203...
EME4403RI	4	80	5	101.5	32	80	40	120	19	14	36	SE*N1203...
EME4404RI	4	100	5	120.2	32	80	40	120	19	14	36	SE*N1203...

SPARE PARTS

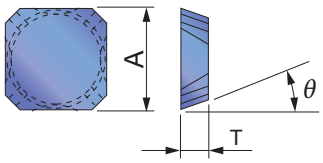
Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
EME4400	LE444R	FDS-8S	CM4X0.7X14	WF444R	TP-4



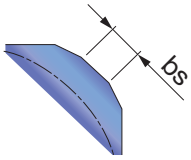
INSERT

SECN/SEEN/SEKN 1203

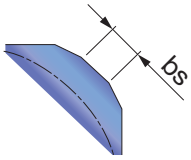
SE*N1203AG*N (-T)



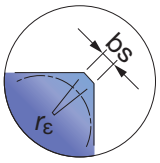
SEE/CN 1203AG*N



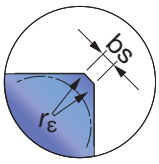
SEE/CN 1203AG*N



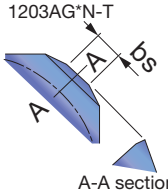
SEEN 1203AGTNCR



SEEN 1203AGTNCR-14

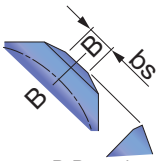


SEKN 1203AG*N-T



A-A section

SEEN 1203AG*N-T

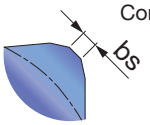


B-B section

SEKR1203-MJ

SEKR1203AGSR-MJ
SEKR1203AGPN-MS

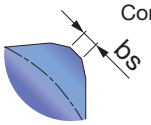
Corner detalls



SEKR1203-MS

SEKR1203AGSR-MJ
SEKR1203AGPN-MS

Corner detalls



		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	UX30	TH10
P	Steel	☆			★	☆		★	★	☆	
M	Stainless		★	☆	☆	☆					
K	Cast iron	★					★				
N	Non-ferrous										★
S	Superalloys	★	☆								
H	Hard materials										

★ : First choice
☆ : Second choice

Designation	Max. ap	Coating							Cermet	Uncoated		A	T	θ°	bs
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	UX30	TH10				
SECN1203AGFN	4										●	12.7	3.18	20	2.4
SEEN1203AGFN	4										●	12.7	3.18	20	2.4
SEEN1203AGTN	4	●	●	●		●	●		●	●		12.7	3.18	20	2.4
SEEN1203AGTN-T	4							●	●	●		12.7	3.18	20	2.4
SEEN1203AGTNCR	4	●	●	●	●			●				12.7	3.18	20	1.6
SEEN1203AGTNCR-14	4								●			12.7	3.18	20	1.4
SEKN1203AGFN-T	4										●	12.7	3.18	20	1.6
SEKN1203AGTN	4	●	●	●	●	●		●	●	●		12.7	3.18	20	1.6
SEKN1203AGTN-T	4					●	●	●	●	●		12.7	3.18	20	1.6
SEKN1203AGTNCR	4								●			12.7	3.18	20	1.6
SEKR1203AGSR-MJ	4	●			●	●		●				12.7	3.18	20	1.6
SEKR1203AGPN-MS	4		●	●								12.7	3.18	20	1.6

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Roughing (Depth of cut: *ap* 1.5 ~ 4 mm)		Finishing (Depth of cut: *ap* 0.3 ~ 0.7 mm)	
			Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	NS740	150 ~ 250	0.1 ~ 0.2	150 ~ 250	0.1 ~ 0.25
		AH330	150 ~ 400	0.1 ~ 0.25	150 ~ 400	0.1 ~ 0.28
		AH120	150 ~ 250	0.1 ~ 0.25	150 ~ 250	0.1 ~ 0.28
		T3130	150 ~ 300	0.1 ~ 0.28	180 ~ 300	0.1 ~ 0.3
		AH130 · AH140	100 ~ 180	0.1 ~ 0.28	130 ~ 200	0.1 ~ 0.3
	Carbon steels Alloy steels < 300 HB	T3130	150 ~ 280	0.1 ~ 0.25	180 ~ 280	0.1 ~ 0.28
		NS740	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
		AH330	100 ~ 320	0.1 ~ 0.23	150 ~ 320	0.1 ~ 0.25
		AH120	100 ~ 200	0.1 ~ 0.23	150 ~ 200	0.1 ~ 0.25
	Die steels < 30 HRC	AH120 · T3130	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2
		AH330	100 ~ 250	0.1 ~ 0.15	100 ~ 250	0.1 ~ 0.2
M	Stainless steels < 250 HB	AH130 · AH140	80 ~ 180	0.15 ~ 0.25	100 ~ 200	0.15 ~ 0.28
		AH120 · GH330	150 ~ 230	0.15 ~ 0.23	200 ~ 250	0.15 ~ 0.25
K	Cast irons Ductile cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
		AH120	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
N	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.2	350 ~ 1000	0.1 ~ 0.3
	Copper alloy	TH10	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25

Notes:
- Dry cutting is recommended for all materials except for aluminium alloys.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.
- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
- Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

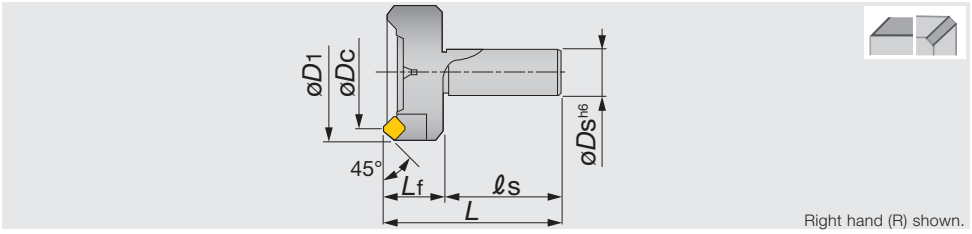
MEMO

EMD4400RI

45° endmills with wedge clamped square inserts

A.R. = +15°, R.R. = -3°



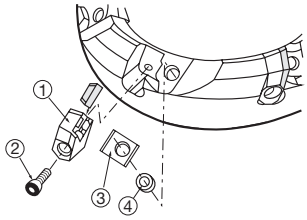


Right hand (R) shown.

Designation	Max. ap	øDc	z	øD1	øDs	ℓs	Lf	L	Kg	Insert
EMD4403RI-S32	4	80	4	95	32	80	40	120	2	SD*N42.../SD*R1203.../ WDCN42ZFR-DIA

SPARE PARTS

Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
EMD4403RI-S32	LD440R	FDS-8S	CM4X0.7X14	WP440R	TP-4

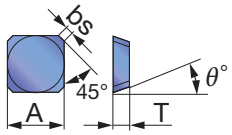


Face Milling

INSERT

SDCN/SDEN/SDKN 42Z

General inserts
SD*N42Z*N



Corner details
SDKN42ZTN16



SD*N42ZTN20

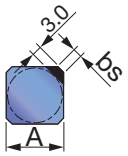


SDKN42ZTNCR
SDEN42ZTNCR



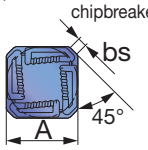
SDCN42ZFN-DIA

SDCN42ZFN-DIA

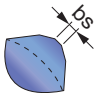


SDKR42Z-MJ

SDKR42ZSR-MJ
(With 3-dimensional chipbreaker)

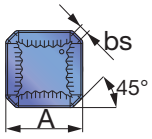


Corner details

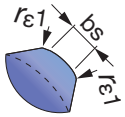


SDMR/SDKR 1203-MJ

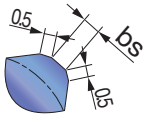
SD*R1203AETN-MJ
(With 3-dimensional chipbreaker)



Corner details
SDMR1203AETN-MJ

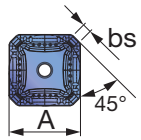


SDKR1203AETN-MJ

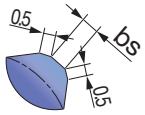


SDKR42Z-MS

SDKR42ZPN-MS

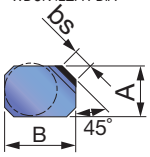


Corner details



WDCN42ZFR-DIA

Wiper inserts
WDCN42ZFR-DIA



		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140
P	Steel	★			★	☆		★	★	☆	☆		
M	Stainless		★	☆									
K	Cast iron	★					★						
N	Non-ferrous											★	★
S	Superalloys	★	☆										
H	Hard materials												

★ : First choice
☆ : Second choice

Designation	Max. ap	Coating							Cermet		Uncoated		PCD	A	B	T	θ°	bs
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140					
SDCN42ZFN	4											●		12.7	-	3.18	15	1.2
SDCN42ZTN	4								●	●	●			12.7	-	3.18	15	1.2
SDCN42ZTN20	4								●					12.7	-	3.18	15	2
SDEN42ZFN	4											●		12.7	-	3.18	15	1.2
SDEN42ZTN	4	●		●		●	●		●	●	●			12.7	-	3.18	15	1.2
SDEN42ZTNCR	4	●		●	●				●					12.7	-	3.18	15	1.6
SDEN42ZTN20	4							●						12.7	-	3.18	15	2
SDKN42ZFN	4											●		12.7	-	3.18	15	1.2
SDKN42ZTN	4	●	●	●	●	●	●		●	●	●			12.7	-	3.18	15	1.2
SDKN42ZTNCR	4								●					12.7	-	3.18	15	1.6
SDKN42ZTN16	4							●						12.7	-	3.18	15	1.6
SDCN42ZFN-DIA	2												●	12.7	-	3.18	15	1.2
SDKR42ZSR-MJ	4	●			●	●		●						12.7	-	3.18	15	1.6
SDMR1203AETN-MJ	4								●					12.7	-	3.18	15	1.6
SDKR1203AETN-MJ	4								●					12.7	-	3.18	15	1.6
SDKR42ZPN-MS	4		●	●										12.7	-	3.18	15	1.6
WDCN42ZFR-DIA	0.5												●	12.2	15.64	3.18	15	4.9

●: Line-up
DX140 : Package quantity = 1pc.

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Roughing (Depth of cut: *ap* 1.5 ~ 4 mm)		Finishing (Depth of cut: *ap* 0.3 ~ 0.7 mm)	
			Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	NS740	150 ~ 250	0.1 ~ 0.2	150 ~ 250	0.1 ~ 0.25
		AH330	150 ~ 400	0.1 ~ 0.25	150 ~ 400	0.1 ~ 0.28
		AH120	150 ~ 250	0.1 ~ 0.25	150 ~ 250	0.1 ~ 0.28
		T3130	150 ~ 300	0.1 ~ 0.28	180 ~ 300	0.1 ~ 0.3
		AH130 · AH140	100 ~ 180	0.1 ~ 0.28	130 ~ 200	0.1 ~ 0.3
	Carbon steels Alloy steels < 300 HB	T3130	150 ~ 280	0.1 ~ 0.25	180 ~ 280	0.1 ~ 0.28
		NS740 · N308	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
		AH330	100 ~ 320	0.1 ~ 0.23	150 ~ 320	0.1 ~ 0.25
		AH120	100 ~ 200	0.1 ~ 0.23	150 ~ 200	0.1 ~ 0.25
		UX30	80 ~ 130	0.1 ~ 0.25	100 ~ 150	0.1 ~ 0.28
	Die steels < 30 HRC	AH120 · T3130	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2
		AH330	100 ~ 250	0.1 ~ 0.15	100 ~ 250	0.1 ~ 0.2
M	Stainless steels < 250 HB	AH130 · AH140	80 ~ 180	0.15 ~ 0.25	100 ~ 200	0.15 ~ 0.28
		AH120 · GH330	150 ~ 230	0.15 ~ 0.23	200 ~ 250	0.15 ~ 0.25
K	Cast irons Ductile cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
		AH120	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
N	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.2	350 ~ 1000	0.1 ~ 0.3
		DX140	200 ~ 1000	0.05 ~ 0.18	350 ~ 1000	0.1 ~ 0.2
	Copper alloy	TH10	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25

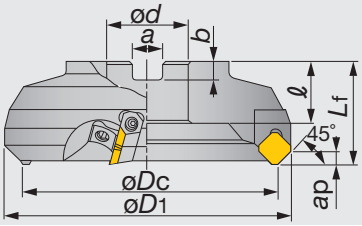
Note: • Dry cutting is recommended for all materials except for aluminium alloys.
• Maximum depth of cut for DX140 SDCN42ZFN-DIA is 2 mm.
• When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

TMD5400RI

45° face mills with wedge clamped square inserts

A.R. = +15°, R.R. = -3°



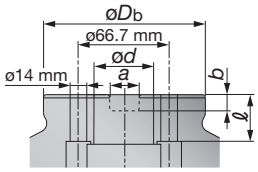


Right hand (R) shown.

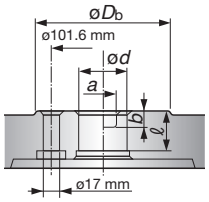
Designation	Max. ap	øDc	z	øD1	Lf	ød	ℓ	a	b	Kg	Insert
TMD5404RI-E	6	100	4	118	63	32	32	14.4	8	2.5	SD*N53Z...
TMD5405RI-E	6	125	6	142	63	40	32	16.4	9	3.7	SD*N53Z...
TMD5406RI-E	6	160	6	176	63	40	29	16.4	9	5.8	SD*N53Z...
TMD5408RI-E	6	200	8	216	63	60	38	25.7	14	9	SD*N53Z...
TMD5410RI-E	6	250	10	265	63	60	38	25.7	14	16.3	SD*N53Z...
TMD5412RI-E	6	315	12	330	63	60	38	25.7	14	25.2	SD*N53Z...

Arbor type

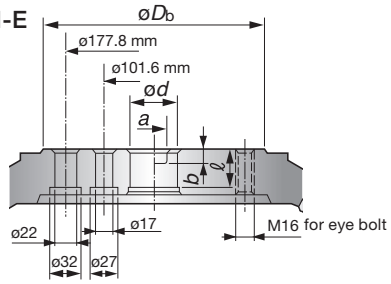
TMD5406RI-E



TMD5408/10...

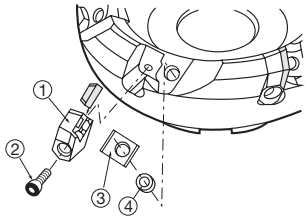


TMD5412RI-E



SPARE PARTS

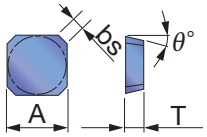
Designation	① Locator	④ Wedge fixing screw	② Locator fixing screw	③ Wedge	Wrench
TMD54**RI*	LD540R	FDS-8S	CM4X0.7X20	WF500R	TP-4



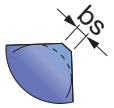
INSERT

SDCN/SDEN 53Z

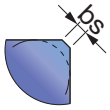
SD*N53Z*N



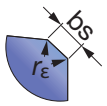
SDEN53ZTN20
Corner details



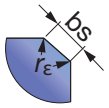
SDKN53ZTN16
Corner details



SDEN53ZTNCR
Corner details

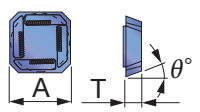


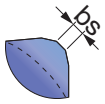
SDKN53ZTNCR
Corner details



SDKR53-MJ

SDKR53ZSR-MJ
(With 3-dimensionalchipbreaker)





		AH120	AH130	AH140	GH330	T3130	NS740	N308	UX30	TH10
P	Steel	☆			☆	★	★	☆	☆	
M	Stainless		★	☆						
K	Cast iron	★								
N	Non-ferrous									★
S	Superalloys	★	☆							
H	Hard materials									

★ : First choice
☆ : Second choice

Designation	Max. ap	A	T	θ°	bs
SDCN53ZTN	6	15.875	4.76	15	1.2
SDEN53ZFN	6	15.875	4.76	15	1.2
SDEN53ZTN	6	15.875	4.76	15	1.2
SDEN53ZTNCR	6	15.875	4.76	15	1.4
SDEN53ZTN20	6	15.875	4.76	15	2
SDKN53ZFN	6	15.875	4.76	15	1.2
SDKN53ZTN	6	15.875	4.76	15	1.2
SDKN53ZTNCR	6	15.875	4.76	15	1.6
SDKN53ZTN16	6	15.875	4.76	15	1.6
SDKR53ZSR-MJ	6	15.875	4.76	15	2

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Roughing (Depth of cut: ap 1.5 ~ 6 mm)		Finishing (Depth of cut: ap 0.3 ~ 0.7 mm)	
			Cutting speed vc (m/min)	Feed per tooth fz (mm/t)	Cutting speed vc (m/min)	Feed per tooth fz (mm/t)
P	Mild steels Unhardened steels < 180 HB	NS740	150 ~ 250	0.1 ~ 0.25	150 ~ 250	0.1 ~ 0.3
		AH120	150 ~ 250	0.1 ~ 0.35	150 ~ 250	0.1 ~ 0.35
		T3130	150 ~ 300	0.1 ~ 0.35	180 ~ 300	0.1 ~ 0.35
		AH130	100 ~ 180	0.1 ~ 0.35	130 ~ 200	0.1 ~ 0.35
	Carbon steels Alloy steels < 300 HB	T3130	150 ~ 280	0.1 ~ 0.35	180 ~ 280	0.1 ~ 0.35
		NS740	100 ~ 180	0.1 ~ 0.25	150 ~ 200	0.1 ~ 0.3
		AH120	100 ~ 200	0.1 ~ 0.3	150 ~ 200	0.1 ~ 0.35
	Die steels < 30 HRC	T3130 · AH120	100 ~ 150	0.1 ~ 0.2	100 ~ 150	0.1 ~ 0.2
M	Stainless steels < 250 HB	AH130 · AH140	80 ~ 180	0.15 ~ 0.3	100 ~ 200	0.15 ~ 0.33
		AH120 · GH330	150 ~ 230	0.15 ~ 0.3	200 ~ 250	0.15 ~ 0.3
K	Cast irons, Ductile cast irons	AH120	100 ~ 200	0.1 ~ 0.3	100 ~ 200	0.1 ~ 0.3
N	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.3	350 ~ 1000	0.1 ~ 0.3
	Copper alloys	TH10	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25

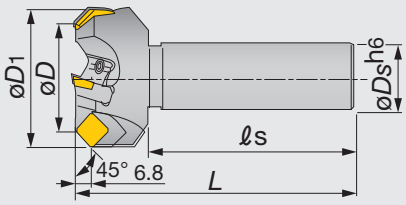
Notes: • Dry cutting is recommended for all materials except for aluminium alloys.
• When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

EGD4400

45° endmills with wedge clamped square inserts

A.R. = +15°, R.R. = -3°

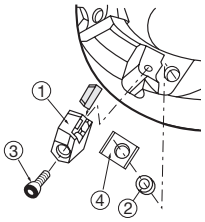




Designation	Max. ap	øDc	z	øD1	øDs	ℓs	Lf	L	Kg	Insert
EGD4450R	4	50	4	67	32	80	35	115	1.1	SD*N42.../SD*R1203.../ WDCN42ZFR-DIA
EGD4463R	4	63	4	79	32	80	35	115	1.4	SD*N42.../SD*R1203.../ WDCN42ZFR-DIA

SPARE PARTS

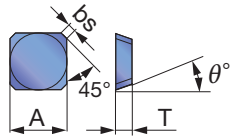
Designation	① Locator	② Wedge fixing screw	③ Screw	④ Wedge	Wrench
EGD4400	LD442R	DS-8	BM3X0.5X6	WP193TR	TP-4



Face Milling

SDCN/SDEN/SDKN 42Z

General inserts
SD*N42Z*N



Corner details
SDKN42ZTN16



SD*N42ZTN20

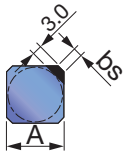


SDKN42ZTNCR
SDEN42ZTNCR



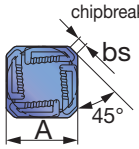
SDCN42ZFN-DIA

SDCN42ZFN-DIA



SDKR42Z-MJ

SDKR42ZSR-MJ
(With 3-dimensional chipbreaker)

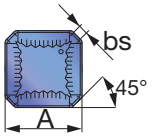


Corner details

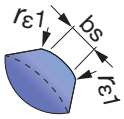


SDMR/SDKR 1203-MJ

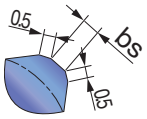
SD*R1203AETN-MJ
(With 3-dimensional chipbreaker)



Corner details
SDMR1203AETN-MJ

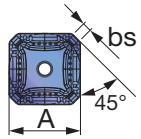


SDKR1203AETN-MJ

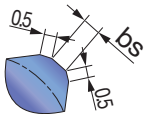


SDKR42Z-MS

SDKR42ZPN-MS

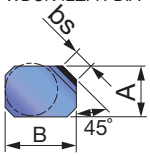


Corner details



WDCN42ZFR-DIA

Wiper inserts
WDCN42ZFR-DIA



		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140
P	Steel	★			★	☆		★	★	☆		☆	
M	Stainless		★	☆									
K	Cast iron	★					★						
N	Non-ferrous											★	★
S	Superalloys	★	☆										
H	Hard materials												

★ : First choice
☆ : Second choice

Designation	Max. ap	Coating							Cermet		Uncoated		PCD	A	B	T	θ°	bs
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140					
SDCN42ZFN	4											●		12.7	-	3.18	15	1.2
SDCN42ZTN	4								●	●	●			12.7	-	3.18	15	1.2
SDCN42ZTN20	4								●					12.7	-	3.18	15	2
SDEN42ZFN	4											●		12.7	-	3.18	15	1.2
SDEN42ZTN	4	●		●		●	●		●	●	●			12.7	-	3.18	15	1.2
SDEN42ZTNCR	4	●		●	●				●					12.7	-	3.18	15	1.6
SDEN42ZTN20	4							●						12.7	-	3.18	15	2
SDKN42ZFN	4											●		12.7	-	3.18	15	1.2
SDKN42ZTN	4	●	●	●	●	●	●		●	●	●			12.7	-	3.18	15	1.2
SDKN42ZTNCR	4								●					12.7	-	3.18	15	1.6
SDKN42ZTN16	4							●						12.7	-	3.18	15	1.6
SDCN42ZFN-DIA	2												●	12.7	-	3.18	15	1.2
SDKR42ZSR-MJ	4	●			●	●		●						12.7	-	3.18	15	1.6
SDMR1203AETN-MJ	4								●					12.7	-	3.18	15	1.6
SDKR1203AETN-MJ	4								●					12.7	-	3.18	15	1.6
SDKR42ZPN-MS	4		●	●										12.7	-	3.18	15	1.6
WDCN42ZFR-DIA	0.5												●	12.2	15.64	3.18	15	4.9

●: Line-up
DX140 : Package quantity = 1pc.

STANDARD CUTTING CONDITIONS

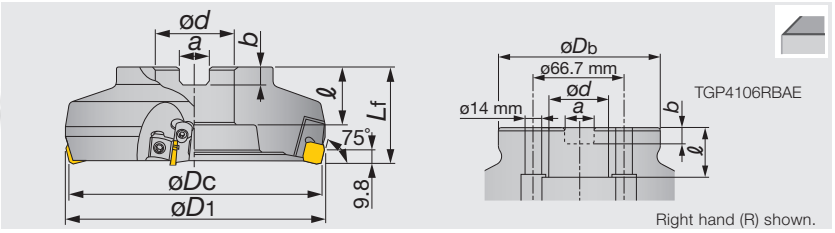
ISO	Workpiece material	Grade	Roughing (Depth of cut: *ap* 1.5 ~ 4 mm)		Finishing (Depth of cut: *ap* 0.3 ~ 0.7 mm)	
			Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	NS740	150 ~ 300	0.1 ~ 0.2	150 ~ 300	0.1 ~ 0.25
		AH330	150 ~ 400	0.1 ~ 0.25	150 ~ 400	0.1 ~ 0.28
		AH120	150 ~ 250	0.1 ~ 0.25	150 ~ 250	0.1 ~ 0.28
		T3130	150 ~ 280	0.1 ~ 0.28	180 ~ 300	0.1 ~ 0.3
		AH130 · AH140	100 ~ 180	0.1 ~ 0.28	130 ~ 200	0.1 ~ 0.3
	Carbon steels Alloy steels < 300 HB	T3130	150 ~ 230	0.1 ~ 0.25	180 ~ 280	0.1 ~ 0.28
		NS740	100 ~ 230	0.1 ~ 0.18	150 ~ 230	0.1 ~ 0.23
		AH330	100 ~ 320	0.1 ~ 0.23	150 ~ 320	0.1 ~ 0.25
		AH120	100 ~ 200	0.1 ~ 0.23	150 ~ 200	0.1 ~ 0.25
	Die steels < 30 HRC	AH120	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2
		AH330	100 ~ 250	0.1 ~ 0.15	100 ~ 250	0.1 ~ 0.2
M	Stainless steels < 250 HB	AH130 · AH140	80 ~ 180	0.15 ~ 0.25	100 ~ 200	0.15 ~ 0.28
		AH120	150 ~ 230	0.15 ~ 0.23	200 ~ 250	0.15 ~ 0.25
K	Cast irons Ductile cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
		AH120	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
N	Aluminium alloys Si < 13%	TH10	200 ~ 1000	0.05 ~ 0.2	350 ~ 1000	0.1 ~ 0.3
		DX140	200 ~ 1000	0.05 ~ 0.18	350 ~ 1000	0.1 ~ 0.2
	Copper alloy	TH10	200 ~ 500	0.1 ~ 0.2	200 ~ 500	0.1 ~ 0.25

Note: • Dry cutting is recommended for all materials except for aluminium alloys.
• Maximum depth of cut for DX140 SDCN42ZFN-DIA is 2 mm.
• When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.
• No. of revolutions (min^{-1}) = Cutting speed 3 1000 ÷ 3.14 ÷ Cutter diameter
• Table feed (mm/min) = No. of revolutions 3 Feed per tooth 3 No. of inserts

TGP4100RBAE

75° face mills with wedge clamped square inserts

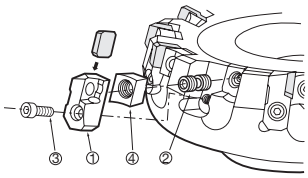




Designation	Max. ap	øDc	z	øD1	Lf	ød	ℓ	a	b	Kg	Insert
TGP4104RBAE	7	100	8	108	63	32	25	14.4	8	2.4	SP*N42/WPAN42...
TGP4105RBAE	7	125	10	132	63	40	32	16.4	9	3.6	SP*N42/WPAN42...
TGP4106RBAE	7	160	12	167	63	40	29	16.4	9	5.8	SP*N42/WPAN42...

SPARE PARTS

Designation	①Locator	②Wedge fixing screw	③Locator fixing screw	④Wedge	Wrench
TGP41**RBAE	LP413R	FDS-8S	CM4X0.7X14	WF310R	TP-4



Face Milling

INSERT

SPCN/SPEN/SPKN 42S

SP*N42S*R/L

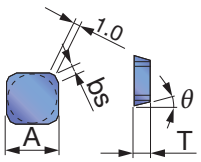


Fig.1

SPEN423*N
Corner details

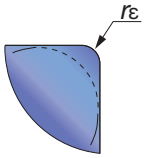


Fig.2

SPKR42SSR-MJ
(With 3-dimensional chipbreaker)

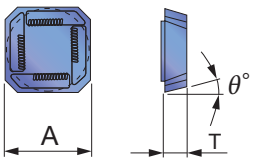
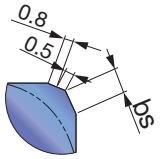


Fig.3

Corner details



WPAN42SFRS
Wiper insert one-corner type

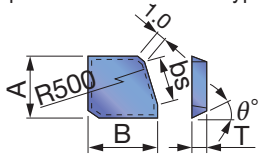


Fig.4

WPAN42SFR
Two-corner type

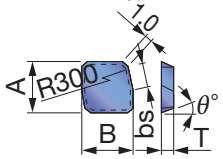


Fig.5

Right hand (R) shown.

		Coating					Cermet		Ceramic	Uncoated										
	Designation	rε	Max. ap	AH120	AH140	GH330	T1115	T3130	NS740	N308	FX105	UX30	TH10	A	B	T	θ°	bs	Fig.
P	SPCN42STR	0	7						●	●		●		12.7	-	3.18	11	1.4	1
P	SPCN42SFR	0	7										●	12.7	-	3.18	11	1.4	1
P	SPEN42STR	0	7						●					12.7	-	3.18	11	1.4	1
P	SPKN42STR	0	7	●	●	●	●	●	●	●	●*	●		12.7	-	3.18	11	1.4	1
P	SPKN42STL	0	7						●			●		12.7	-	3.18	11	1.4	1
P	SPKN42SFR	0	7										●	12.7	-	3.18	11	1.4	1
P	SPKN42SFL	0	7										●	12.7	-	3.18	11	1.4	1
P	SPKR42SSR-MJ	0	7			●	●	●						12.7	-	3.18	11	0	3
P	WPAN42SFR	0	-							●			●	12.4	14.9	3.18	11	5.2	5
P	WPAN42SFRS	0	-										●	12.4	13.8	3.18	11	9.6	4
P	SPGN120312TN	1.2	7								●*			12.7	-	3.18	11	-	2
P	SPEN423TN	1.2	7					●	●			●		12.7	-	3.18	11	-	2
P	SPEN423FN	1.2	7										●	12.7	-	3.18	11	-	2

P	Steel	★		☆		★		★	☆			☆								
M	Stainless		★																	
K	Cast iron	★			★						★									
N	Non-ferrous												★							
S	Superalloys	★																		
H	Hard materials																			

★ : First choice
☆ : Second choice

Note: * marked inserts should not be used with wiper inserts.

●: Line-up

STANDARD CUTTING CONDITIONS

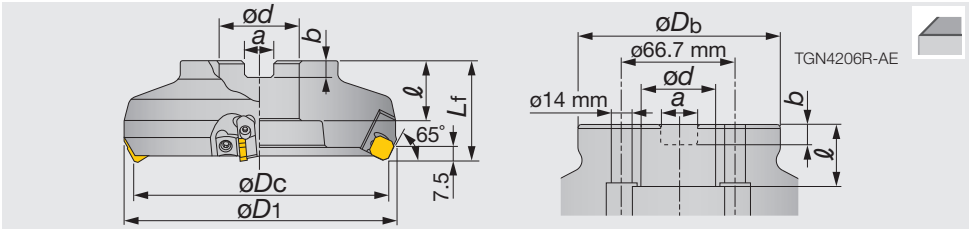
ISO	Workpiece material	Grade	Roughing (Depth of cut: *ap* 1.5 ~ 4 mm)		Finishing (Depth of cut: *ap* 0.3 ~ 0.7 mm)	
			Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *vc* (m/min)	Feed per tooth *fz* (mm/t)
K	Cast irons Ductile cast irons	T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.23
		TH10 · UX30	80 ~ 130	0.1 ~ 0.2	80 ~ 130	0.1 ~ 0.23
		FX105	200 ~ 500	0.1 ~ 0.2	200 ~ 600	0.1 ~ 0.3
P	Mild steels Unhardened steels < 180 HB	NS740 · N308	150 ~ 250	0.1 ~ 0.18	150 ~ 250	0.1 ~ 0.23
		AH120 · GH330	150 ~ 250	0.1 ~ 0.23	150 ~ 250	0.1 ~ 0.25
		T3130	150 ~ 300	0.1 ~ 0.25	180 ~ 300	0.1 ~ 0.28
		UX30	100 ~ 180	0.1 ~ 0.25	130 ~ 200	0.1 ~ 0.28
	Carbon steels Alloy steels < 300 HB	T3130	150 ~ 280	0.1 ~ 0.23	180 ~ 280	0.1 ~ 0.25
		NS740 · N308	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
		AH330 · AH120	100 ~ 200	0.1 ~ 0.2	150 ~ 200	0.1 ~ 0.23
		UX30	80 ~ 130	0.1 ~ 0.23	100 ~ 150	0.1 ~ 0.25
	Carbon steels Alloy steels > 300 HB	T3130 · GH330	150 ~ 230	0.1 ~ 0.23	180 ~ 280	0.1 ~ 0.25
		NS740 · N308	100 ~ 180	0.1 ~ 0.18	150 ~ 200	0.1 ~ 0.23
		UX30	80 ~ 130	0.1 ~ 0.23	100 ~ 150	0.1 ~ 0.25
	Die steels < 30 HRC	T3130	100 ~ 150	0.1 ~ 0.15	100 ~ 150	0.1 ~ 0.2
		UX30	80 ~ 130	0.1 ~ 0.15	80 ~ 130	0.1 ~ 0.2
M	Stainless steels < 250 HB	AH120 · AH140	150 ~ 230	0.15 ~ 0.2	200 ~ 250	0.15 ~ 0.23
		UX30	150 ~ 180	0.15 ~ 0.2	180 ~ 200	0.15 ~ 0.23

Notes: • Dry cutting is recommended for above materials.
• When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.
• No. of revolutions (min^{-1}) = Cutting speed 3 1000 ÷ 3.14 ÷ Cutter diameter
• Table feed (mm/min) = No. of revolutions 3 Feed per tooth 3 No. of inserts

TGN4200R-A

65° wedge type face mill with negative square insert





Designation	Max. ap	øDc	z	øD1	Lf	ød	ℓ	a	b	Kg	Insert
TGN4203R-AE	6	80	5	92	50	27	22	12.4	7	1.5	SN*N43Z*/SNMN1204...
TGN4204R-AE	6	100	6	112	63	32	32	14.4	8	2.4	SN*N43Z*/SNMN1204...
TGN4205R-AE	6	125	8	136	63	40	32	16.4	9	3.9	SN*N43Z*/SNMN1204...
TGN4206R-AE	6	160	10	171	63	40	29	16.4	9	6.1	SN*N43Z*/SNMN1204...

SPARE PARTS

Designation	Locator	Right-left screw	Screw	Wedge	Wrench
TGN42...	LN423R	FDS-8S	CM4X0.7X14	WP440R	TP-4

INSERT

SNCN/SNKN43Z

SN*N43Z*N

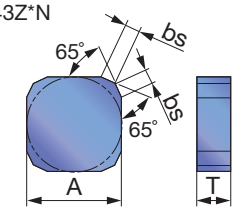


Fig.1

SNMN1204-TN

SN*N43Z*N

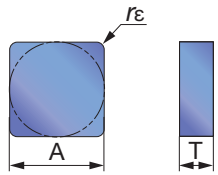


Fig.2

SNKF43Z

SNKF43Z*N

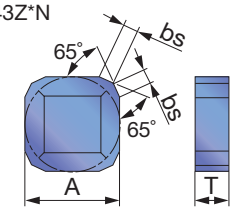


Fig.3

		Coating				Cermet				Ceramic				Uncoated							
P	Steel		★			★	☆							☆							
M	Stainless																				
K	Cast iron	★								★											
N	Non-ferrous														★						
S	Superalloys																				
H	Hard materials																				

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	T1115	T3130	NS740	N308	FX105	UX30	TH10	A	T	bs	Fig.
SNCN43ZFN	-	6							●	12.7	4.76	2	1
SNCN43ZTN	-	6			●	●		●		12.7	4.76	2	1
SNKF43ZFN	-	6							●	12.7	4.76	2	3
SNKF43ZTN	-	6	●					●		12.7	4.76	2	3
SNKN43ZTN	-	6	●	●	●		●	●		12.7	4.76	2	1
SNMN120408TN	0.8	6					●			12.7	4.76	-	2
SNMN120412TN	1.2	6	●	●			●	●		12.7	4.76	-	2
SNMN120416TN	1.6	6					●			12.7	4.76	-	2
SNMN120420TN	2	6					●			12.7	4.76	-	2
SNMN120424TN	2.4	6					●			12.7	4.76	-	2

Notes: Inserts can be used for former PS-series TAC mills.

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Roughing (Depth of cut: 1.5 ~ 4 mm)		Finishing (Depth of cut: 0.3 ~ 0.7 mm)	
			Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Mild steels Unhardened steels < 180 HB	T3130	150 ~ 250	0.1 ~ 0.3	180 ~ 250	0.1 ~ 0.3
		NS740 · N308	100 ~ 200	0.1 ~ 0.2	150 ~ 250	0.1 ~ 0.25
		UX30	100 ~ 180	0.1 ~ 0.3	130 ~ 200	0.1 ~ 0.3
	Carbon steels Alloy steels < 300 HB	T3130	130 ~ 250	0.1 ~ 0.3	150 ~ 250	0.1 ~ 0.3
		NS740 · N308	100 ~ 180	0.1 ~ 0.2	150 ~ 200	0.1 ~ 0.25
		UX30	80 ~ 130	0.1 ~ 0.3	100 ~ 150	0.1 ~ 0.3
K	Cast irons Ductile cast irons	TH10 · UX30	80 ~ 130	0.1 ~ 0.25	80 ~ 130	0.1 ~ 0.3
		T1115	100 ~ 200	0.1 ~ 0.2	100 ~ 200	0.1 ~ 0.25
		FX105	200 ~ 500	0.1 ~ 0.35	200 ~ 600	0.1 ~ 0.4

Notes:
- Dry cutting is recommended for above materials.
- When wet machining mild steels, carbon steels and alloy steels, use T3130 at lower cutting conditions.

The world's highest level repeatability

S-TAQ System



● Improved surface quality and increased tool life

- Two-face restricted (1/10 short taper and flange face) coupling.
- High-level coupling performance contributes to high accuracy and excellent rigidity.
- Excellent dynamic balance reduces vibration, chatter, and cutting noise at high speeds.

● Improved productivity

- High speed machining can reduce machining time.
- High repeatability can eliminate trial cut.

● Labor-saving tool change

- Can eliminate detaching the toolholder from the main spindle.
- Can eliminate the brakes for the main spindle.
- Labor-saving clamping by only one T-wrench.

Performance

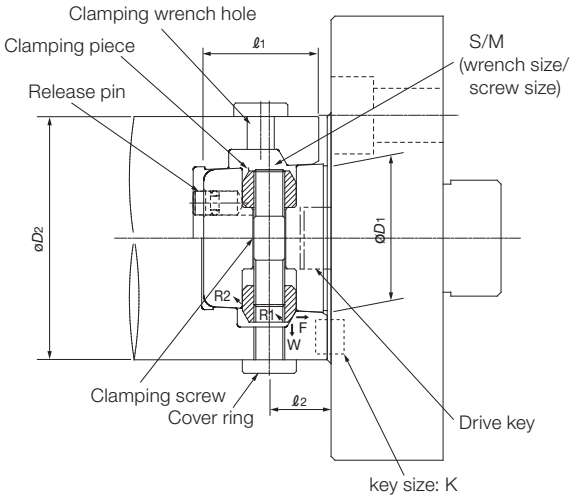
Original clamp system provides high rigidity, accuracy and operating speed.

● Clamping force (Strong clamp system)

· Lubricant coating on clamping piece.
· 4-points balancing clamp.
· Sufficient clamping for the smaller diameter part of taper.

Designation	Dimensions (mm) øD1	øD2	ℓ1	ℓ2	S/M	K	Recommend clamping torque (N·m)	Clamping force (N)
TAQ32	19	32	18	8.5	3/M6	8	3	4×10^3
TAQ40	24	40	21	10	3/M6	1 0	5	5.5×10^3
TAQ50	30	50	25	12	4/M8	12	8	9×10^3
TAQ63	38	63	32	15	4/M8	16	10	12×10^3
TAQ80	48	80	40	18	5/M10	18	20	18×10^3
TAQ100	60	100	50	22	6/M12	20	30	23×10^3

Part assembly



W: Driving force by clamping screw
F: Clamping force
R1 = R2: Receiving force of clamping piece

DATA

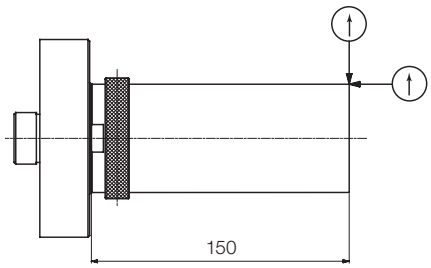
Comparison of clamping force

	Taper	Taper dia.(mm)/holder dia.(mm)	Recommend clamping torque (N/m)	Draw-in force (N)	Draw-in force / Torque (m-1)
TAQ63	1 / 10	38 / 63	10	12×10^3	1200
QC adapter	10°	35 / 70	20	9.8×10^3	490
Other makes A	4°	35 / 62	22.5	9.8×10^3	436

●Repeatability for accuracy

Radial run out	Within 0.003 mm
Axial run out	Within 0.002 mm

Note: Measured at 150 mm far from end face.

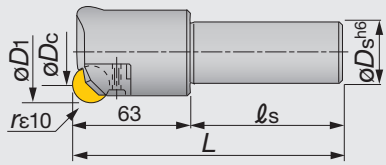


ERD6000

Indexable endmill with 20mm button insert

A.R. = +8°,R.R. = -2°~ +3°





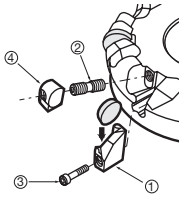
Right hand (R) shown.

Designation	Max. *ap*	*øD*1	z	*øD*c	*øD*s	*ℓ*s	*L*	Insert
ERD6050RA	10	50	3	30	32	80	143	RD**2004...
ERD6063RA	10	63	3	43	32	80	143	RD**2004...

SPARE PARTS

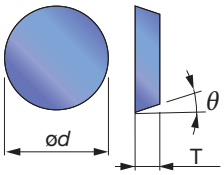
Designation	①Locator	②Wedge fixing screw	③Locator fixing screw	④Wedge	Wrench
ERD60...	LR602R	FDS-6Z	SHCM4-16	WR602R	TP-3A

Note: Plunging up to 4mm depth is possible.



INSERT

RDCN/RDCA/RDKN2004



P	Steel	★		☆		
M	Stainless					
K	Cast iron	★				
N	Non-ferrous				★	
S	Superalloys	★				
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	Max. *ap*	Coating		Uncoated		A	T	*θ*°
		AH120		UX30	TH10			
RDCA2004TN	10			●		20	4.76	15
RDCN2004TN	10			●		20	4.76	15
RDKN2004FN	10				●	20	4.76	15
RDKN2004TN	10	●		●		20	4.76	15

The above figure shows RD*N-type insert.
• RDCA type inserts have a hole.
Note: The inserts can be used for the former PS series.

●: Line-up

Face Milling

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Depth of cut: 0.4 ~ 1 Feed per tooth *fz* (mm/t)	Depth of cut: 1.5 ~ 3 Feed per tooth *fz* (mm/t)	Depth of cut: 4 ~ 6 Feed per tooth *fz* (mm/t)
P	Carbon steels, alloy steels < 300HB	AH120	150 ~ 250	0.3 ~ 0.5	0.2 ~ 0.3	0.1 ~ 0.2
		UX30	80 ~ 150	0.3 ~ 0.6	0.2 ~ 0.3	0.1 ~ 0.2
	Die steels < 30HRC	AH120	100 ~ 150	0.2 ~ 0.4	0.15 ~ 0.3	0.1 ~ 0.2
		UX30	80 ~ 130	0.25 ~ 0.5	0.15 ~ 0.3	0.1 ~ 0.2
K	Grey cast irons, ductile cast irons	AH120	100 ~ 150	0.3 ~ 0.6	0.2 ~ 0.4	0.1 ~ 0.25
		TH10	80 ~ 130	0.3 ~ 0.6	0.2 ~ 0.4	0.1 ~ 0.25
H	Hardened steels 40 ~ 55HRC	AH120	20 ~ 60	0.1 ~ 0.2	0.05 ~ 0.2	-
		UX30	20 ~ 60	0.1 ~ 0.2	0.05 ~ 0.2	-

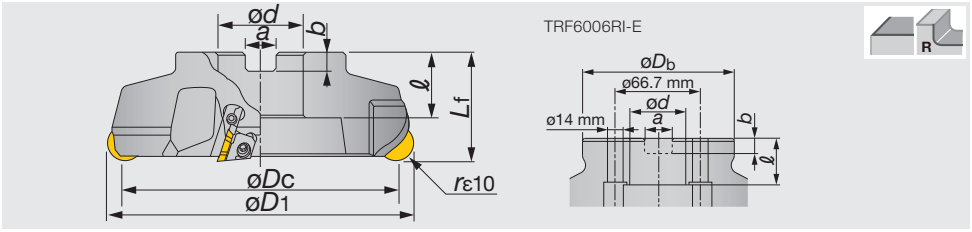
Note: Feed rate should be inversely proportional to depth of cut and selected depending on machine rigidity.

TRF6000

Face mill with 20mm high posi-rake button insert

A.R. = +19°,R.R. = +3°





Designation	Max. ap	øDc	z	øD1	Lf	ød	ℓ	a	b	Kg	Insert
TRF6003RI-E	10	80	4	100	50	27	26	12.4	7	1.4	RFEN2004...
TRF6004RI-E	10	100	5	120	63	32	32	14.4	8	2.5	RFEN2004...
TRF6005RI-E	10	125	6	145	63	40	32	16.4	9	3.9	RFEN2004...
TRF6006RI-E	10	160	8	180	63	40	29	16.4	9	5.8	RFEN2004...

SPARE PARTS

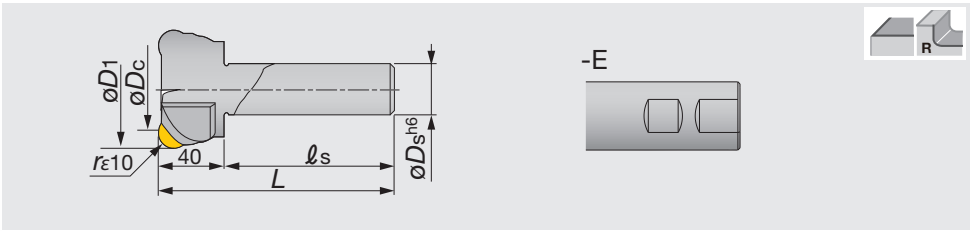
Designation	①Locator	②Wedge fixing screw	③Locator fixing screw	④Wedge	Wrench
TRF60...	LF602R	FDS-8S	CM4X0.7X20	WF603R	TP-4

ERF6000

Indexable endmill with 20mm high posi-rake button insert for difficult-to-cut material

A.R. = +19°,R.R. = +3°



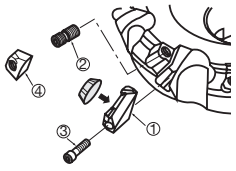


Designation	øDc	z	øD1	øDs	ℓs	L	Insert
ERF6050R	50	3	70	32	80	120	RFEN2004...
ERF6063R	63	4	83	32	80	120	RFEN2004...
ERF6050R-E	50	3	70	32	80	120	RFEN2004...
ERF6063R-E	63	4	83	32	80	120	RFEN2004...

SPARE PARTS

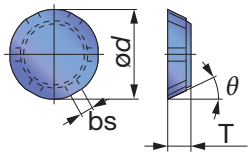
Designation	①Locator	②Wedge fixing screw	③Locator fixing screw	④Wedge	Wrench
ERF60...	LF602R	FDS-6Z	CM4X0.7X20	WF602R	TP-3A

Note: The above TAC Endmills are not irregular pitch spec.

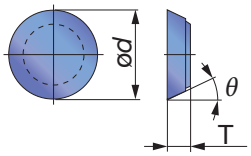


INSERT

RFEN2004



RFEN2004M0TN



P	Steel	☆	☆		☆		
M	Stainless	★	★		☆		
K	Cast iron	★					
N	Non-ferrous						
S	Superalloys	★				★	
H	Hard materials					★	

★ : First choice
☆ : Second choice

Designation	Max. ap	Coating AH120	Coating GH330	Uncoated UX30	Uncoated KS20	ød	T	θ°	bs
RFEN2004ZFTN	3	●	●	●	●	20	4.76	25	2.8
RFEN2004M0TN	10		●	●	●	20	4.76	25	-

●: Line-up

Note: • RFEN2004M0TN type inserts should not be used for finishing requiring surface finish better than 12s.
• RFEN2004ZFTN type inserts can be used both finishing and roughing at depth of cut up to 3mm.
• RFEN2004M0TN does not have flattened flanks.

STANDARD CUTTING CONDITIONS

ISO	Workpiece material		Grade	Depth of cut = 1 ~ 3 mm: Cutting speed *vc*(m/min)	Depth of cut = 1 ~ 3 mm: Feed per tooth *fz* (mm/t)	Depth of cut = 0.4 ~ 1 mm: Cutting speed *vc*(m/min)	Depth of cut = 0.4 ~ 1 mm: Feed per tooth *fz* (mm/t)	Cutting fluid
M	Stainless steels	Austenitic, Ferritic SUS304, X5CrNi18-9 < 300HB	AH120 · GH330	150 ~ 250	0.20 ~ 0.35	180 ~ 250	0.2 ~ 0.5	Dry cutting
			UX30	150 ~ 230	0.20 ~ 0.35	180 ~ 250	0.2 ~ 0.5	Dry cutting
		Precipitatio hardening SUS630, X5CrNiCuNb16-4 < 35HRC	AH120 · GH330	150 ~ 200	0.15 ~ 0.3	180 ~ 250	0.2 ~ 0.4	Dry cutting
			UX30	130 ~ 180	0.15 ~ 0.3	150 ~ 200	0.2 ~ 0.4	Dry cutting
S	Superalloys Inconel, Hastelloy etc.		KS20	20 ~ 30	0.10 ~ 0.15	20 ~ 50	0.2 ~ 0.4	Water insoluble type
	Titanium alloys Ti-6Al-4V etc.		KS20	40 ~ 50	0.15 ~ 0.35	40 ~ 60	0.2 ~ 0.5	Water soluble type or dry cutting
H	Hard materials 40 ~ 50HRC		KS20	20 ~ 50	0.05 ~ 0.1	20 ~ 50	0.05 ~ 0.2	Water insoluble type

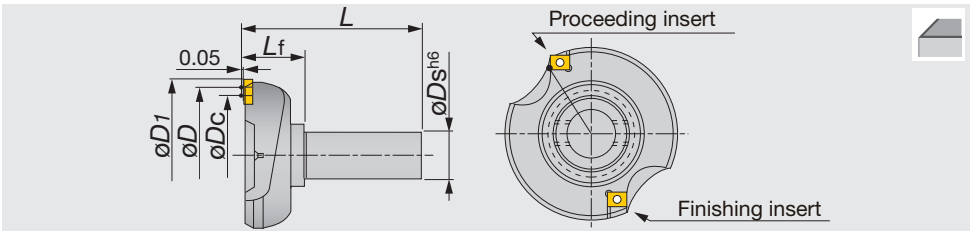
Note: Cutting width should be within 60 to 70 % of effective cutter diameter.
• No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
• Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts

EMS09

Endmill with negative rectangle insert for highly precision finishing

A.R. = +10°, R.R. = -30°





Designation	Max. *ap*	ø*Dc*	z	ø*D*	ø*D1*	ø*Ds*	*Lf*	*L*	Insert
EMS09080R	0.2	80	2	92	100.7	32	40	120	LNCQ0906...

SPARE PARTS

Designation	Clamping screw	Wrench
EMS09080R	CSTB-4	T-15D

INSERT

LNCQ0906N-100(50)L

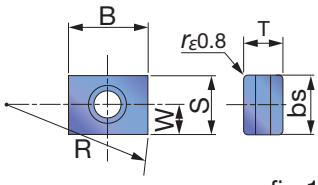


fig.1

LNCQ0906-50S

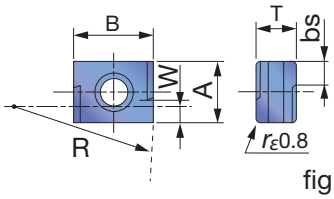


fig.2

		Coating		Cermet										
	Designation	Max. *ap*	AH120	GH110	NS740	A	B	T	R	W	bs	fig
P	Steel		☆		★									
M	Stainless		★		★									
K	Cast iron		★	★										
N	Non-ferrous													
S	Superalloys		★											
H	Hard materials													
	LNCQ0906N-100L	0.2	●	●	●	9.525	12.7	6.35	100	4.763	7.9	1		
	LNCQ0906N-50L	0.2	●	●	●	9.525	12.7	6.35	50	4.763	7.9	1		
	LNCQ0906R-50S	0.2	●	●	●	-	12.7	6.35	50	2.3	4	2		

★ : First choice
☆ : Second choice

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *vc* (m/min)	LNCQ0906N-100(50)L		LNCQ0906R-50S	
				Depth of cut *ap* (mm)	Feed per tooth *f* (mm/rev)	Depth of cut *ap* (mm)	Feed per tooth *f* (mm/rev)
P	Mild steels E275A, etc. < 180 HB	NS740	200 ~ 300	< 0.2	2 ~ 6	≤0.2	1 ~ 2.5
P	Carbon steels C55, etc. < 300 HB	NS740	150 ~ 250				
P	Alloy steels 42CrMo4, etc. < 300 HB	NS740	120 ~ 200				
P	Die steels X40CrMoV5-1, etc. < 300 HB	NS740	100 ~ 150				
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-3, etc.	AH120 NS740	150 ~ 220	< 0.2	2 ~ 6	≤0.2	1 ~ 2.5
K	Cast irons 250, etc.	GH110 AH120	120 ~ 200	< 0.2	2 ~ 6	≤0.2	1 ~ 2.5

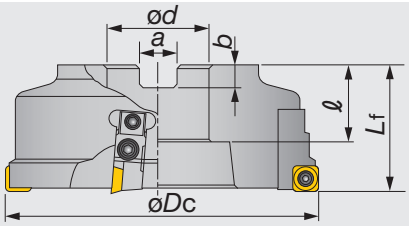
Face Milling

SFP4000R

Face mills with adjustable structure for super finishing

A.R. = +5°,R.R. = -20°





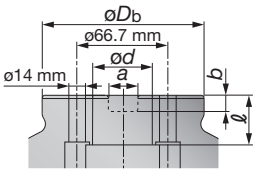
Designation	Max. ap	øDc	z	Lf	ød	ℓ	a	b	Kg	Insert
SFP4004R-E	0.1	100	2	63	32	32	14.4	8	2.3	SPHA435FNW
SFP4005R-E	0.1	125	2	63	40	32	16.4	9	3.5	SPHA435FNW
SFP4006R-E	0.1	160	4	63	40	29	16.4	9	5.8	SPHA435FNW

SPARE PARTS

Designation	Clamping screw	Locator	Right-left screw	Locator fixing screw	Socket-head screw	Wedge	Wrench	Washer	Washer 1	Wrench 1
SFP40...	CSTA-5S	LW400R	FDS-8S	CM5X0.8X16	CM5X0.8X8	FW-305	T-15D	5S	L5	P-4

Arbor type

SFP4006R-E

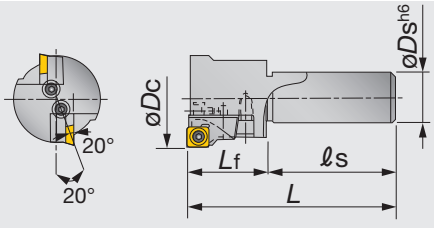


EFP4000R

Endmills with adjustable structure for super finishing

A.R. = +5°, R.R. = -20°





Designation	Max. ap	øDc	z	øDs	ℓs	L	Lf	Insert
EFP4050R	0.1	50	1	32	80	120	40	SPHA435FNW
EFP4063R	0.1	63	2	32	80	130	50	SPHA435FNW

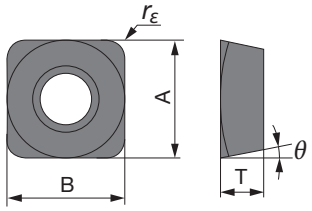
・EFP4050R doesn't have adjustable system.

SPARE PARTS

Designation	Clamping Screw	Locator	Right-left screw	Locator fixing screw	Socket-head screw	Wedge	Wrench	Washer	Washer 1	Wrench 1
EFP4050R	CSTA-5S	LW402R	-	CM5X0.8X16	-	-	T-15D	-	-	-
EFP4063R	CSTA-5S	LW400R	FDS-8S	CM5X0.8X16	CM5X0.8X18	FW-305	T-15D	5S	L5	P-4

INSERT

SPHA435



P	Steel	★	
M	Stainless	★	
K	Cast iron		★
N	Non-ferrous		★
S	Superalloys		
H	Hard materials		

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Cermet N308	Un-coated TH10	A	B	T	θ°
SPHA435FNW	2	0.1	●	●	12.7	12.7	4.76	11

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed per revolution f (mm/rev) SFP	Feed per revolution f (mm/rev) EFP	Depth of cut ap (mm)
P	Mild steels	N308	180 ~ 250	≤6	≤4	≤0.1
P	Carbon steels	N308	150 ~ 200	≤6	≤4	≤0.1
P	Alloy steels	N308	150 ~ 200	≤6	≤4	≤0.1
M	Stainless steels	N308	160 ~ 200	≤4	≤3	≤0.1
K	Cast irons	TH10	100 ~ 150	≤5	≤3	≤0.2
N	Non-ferrous metals	TH10	200 ~ 500	≤6	≤4	≤0.1

Note:
Under above conditions, attainable surface roughness is 3 to 4 μm *Rz*JIS for steels and 6 ~ 12 μm *Rz*JIS for cast irons.
• No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Cutter diameter
• Table feed (mm/min) = No. of revolutions × Feed per tooth × No. of inserts



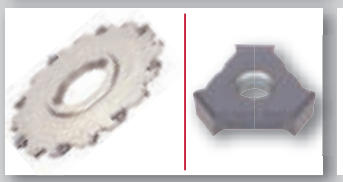
TUNGMINISLIT

D174

Thin width slitting cutter with self-clamping insert

ø63 - ø125 mm
Slot width 1.6 - 4.1 mm

P M K



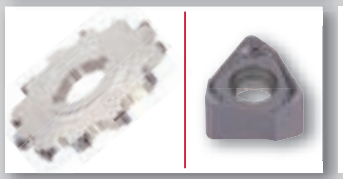
TUNGTHINSLIT

D177

Slot milling cutters available in axial drive type working with 6-cornered tangentially mounted inserts

ø80 - ø200 mm
Slot width 4 - 8 mm

P M K S



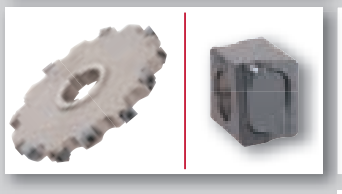
TUNGUNIVERSALSLOT

D179

Axial and radial drive type slot milling cutters with 6-cornered radially mounted inserts

ø80 - ø160 mm
Slot width 9 - 16 mm

P M K S



TECTANGENTIALSLOT

D182

Axial and radial drive type slot milling cutters for wider slots with tangentially mounted inserts

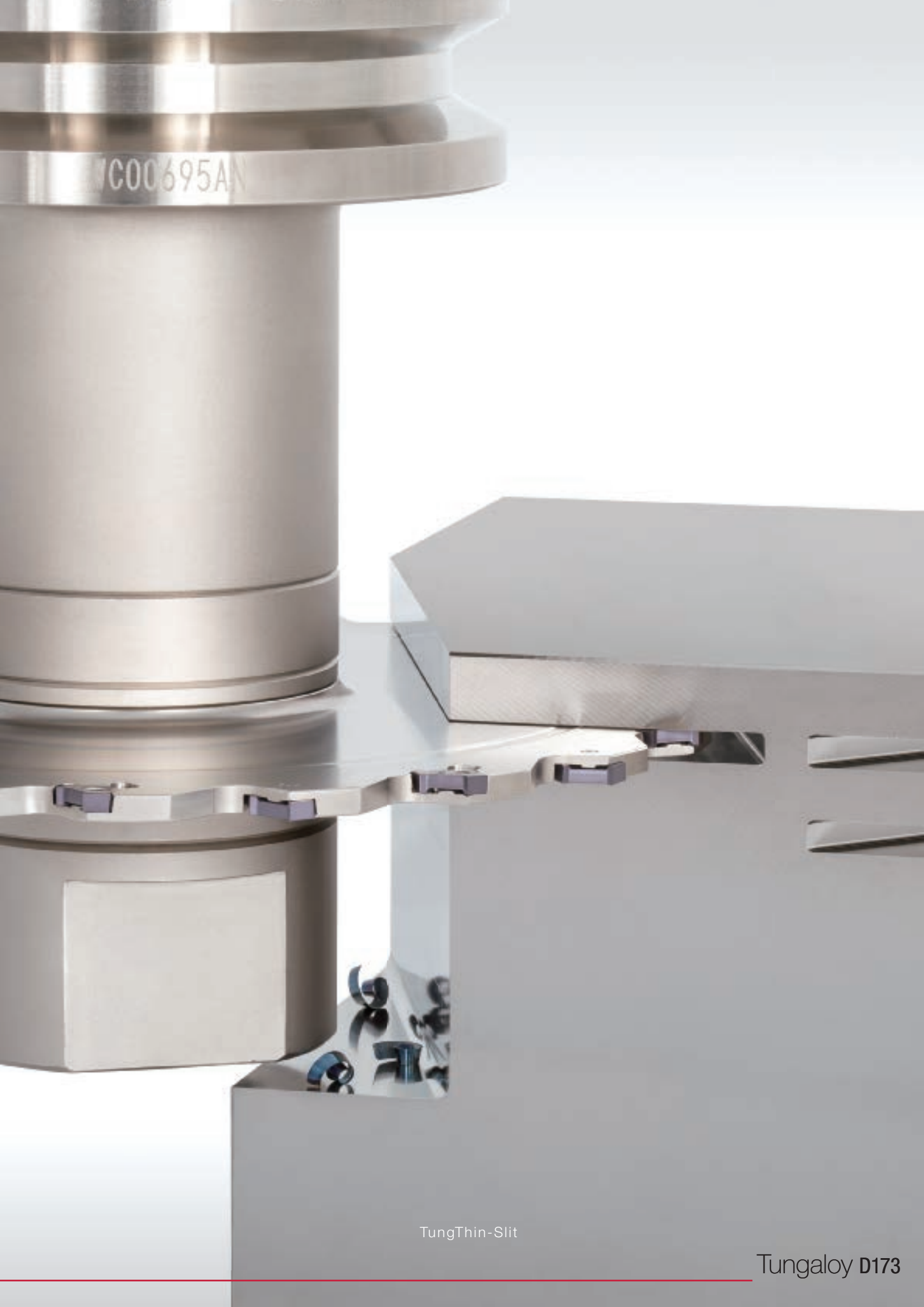
ø100 - ø250 mm
Slot width 16 - 25 mm

P M K S

Other Slot Milling Tools

D185

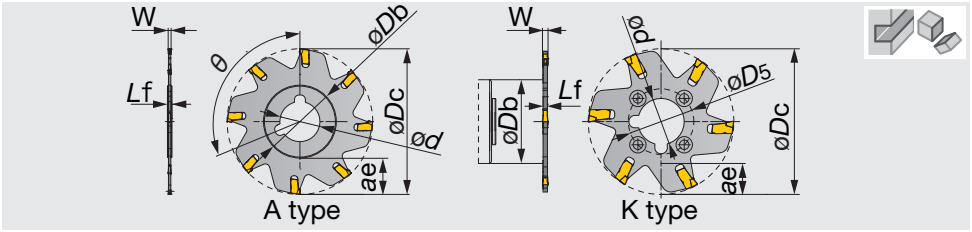
SVN4000



TungThin-Slit

Side cutter for thin slitting and cutting off





Designation	W min	W max	øDc	z	øDb	ød	øD5	Lf	Max. ae	θ°	SS	SS	Drive flange	type	Insert
SSG01R063-E1.6	1.6	1.6	63	6	32	10	22	2.4	14	0	SW25-32	SW1.00-32	-	K	SSS16N
ASG01N080-E1.6	1.6	1.6	80	8	39	22	-	2.4	16	112.5	-	-	-	A	SSS16N
ASG01N100-E1.6	1.6	1.6	100	10	39	22	-	2.4	30	90	-	-	-	A	SSS16N
ASG01N125-E1.6	1.6	1.6	125	12	64	27	-	2.4	30	75	-	-	-	A	SSS16N
SSG02R063-E2	1.85	2.5	63	6	32	10	22	2.4	15	0	SW25-32	SW1.00-32	-	K	SS*22N
ASG02N080-E2	1.85	2.5	80	8	39	22	-	2.4	20	112.5	-	-	-	A	SS*22N
ASG02N100-E2	1.85	2.5	100	10	39	22	-	2.4	30	90	-	-	-	A	SS*22N
ASG02N125-E2	1.85	2.5	125	12	60	27	-	2.4	32	75	-	-	-	A	SS*22N
SSG03R063-E3	2.65	3.5	63	5	32	10	22	2.4	15	0	SW25-32	SW1.00-32	-	K	SS*31N
SSG03R080-E3	2.65	3.5	80	6	40(1)	22	32	2.4	19(2)	0	SW32-40	-	R22-46	K	SS*31N
SSG03R100-E3	2.65	3.5	100	6	40(1)	22	32	2.4	29(3)	0	SW32-40	-	R22-46	K	SS*31N
SSG03R125-E3	2.65	3.5	125	8	55	32	45	2.4	34	0	SW32-55	-	R32-55	K	SS*31N
SSG04R063-E4	4	4.5	63	5	32	10	22	3.2	15	0	SW25-32	SW1.00-32	-	K	SS*41N
SSG04R080-E4	4	4.5	80	6	40(1)	22	32	3.2	19(2)	0	SW32-40	-	R22-46	K	SS*41N
SSG04R100-E4	4	4.5	100	6	40(1)	22	32	3.2	29(3)	0	SW32-40	-	R22-46	K	SS*41N
SSG04R125-E4	4	4.5	125	8	55	32	45	3.2	34	0	S32-55	-	R32-55	K	SS*41N

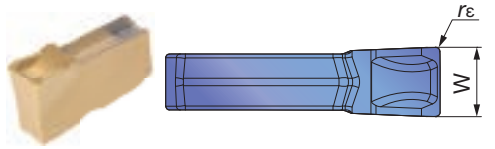
(1) When using a drive flange, øDb = 46 mm
(2) When using a drive flange, Max. ae = 16 mm
(3) When using a drive flange, Max. ae = 26 mm

SPARE PARTS

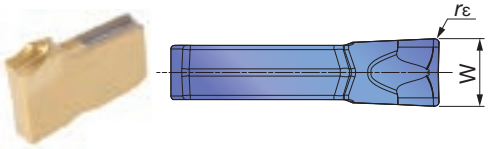
Designation	Extractor	Grip
SSG01/02...	ESG0.5	-
ASG01/02...	ESG0.5	-
SSG03/04...	-	ESG1

INSERT

SSM



SSS



P	Steel	★
M	Stainless	★
K	Cast iron	★
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

★ : First choice
☆ : Second choice

Designation	rε	Coating GH130	W±0.04
SSM22N	0.2	●	2.2
SSM31N	0.2	●	3.1
SSM41N	0.25	●	4.1
SSS16N	0.16	●	1.6
SSS22N	0.2	●	2.2
SSS31N	0.2	●	3.1
SSS41N	0.25	●	4.1

●: Line-up

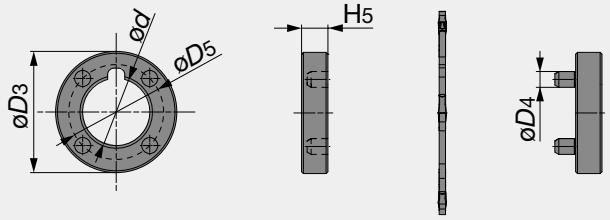
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness (HB)	Insert	Cutting speed *Vc* (m/min)	Chip thickness t (mm)
P	Low carbon steel E275A, C15E4, etc.	- 200	SSM...	150 - 230	0.05 - 0.15
	High carbon steel E355D, C55, etc.	200 - 300	SSM...	100 - 170	0.04 - 0.13
	Alloy steels 42CrMo4, 20Cr4, etc.	150 - 300	SSM...	90 - 160	0.04 - 0.13
	Tool steel X153CrMoV12, X40CrMoV5-1, etc.	- 300	SSM...	70 - 120	0.04 - 0.13
M	Stainless steel X5CrNi18-9, X5CrNiMo17-12-3, etc.	-	SSS...	90 - 200	0.04 - 0.13
K	Grey cast iron 250, 300, etc.	150 - 250	SSM...	100 - 200	0.05 - 0.15
	Ductile cast iron 400-15S, etc.	150 - 250	SSM...	80 - 130	0.05 - 0.15

R (drive flange set)

Drive flange set for side cutters



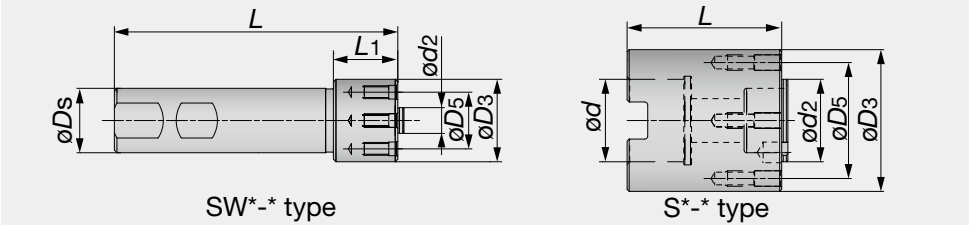


Designation	ød	øD3	øD4	øD5	H5
R22-46	22	46	6	32	10
R32-55	32	55	6	45	10

SW/S

Drive shanks for side cutters





Designation	øDs	ød	ød2	øD3	øD5	L1	L
SW25-32	25	-	10	32	22	25	110
SW32-40	32	-	22	40	32	30	120
S32-55	-	32	32	55	45	-	60

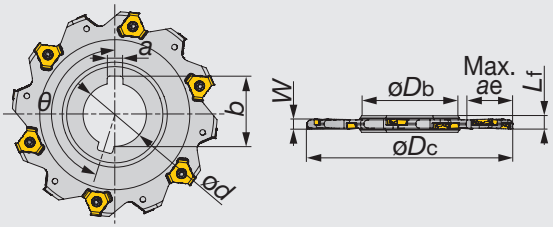
SPARE PARTS

Designation	Screw	Wrench		
		Mono block type	Torx bit	Handle
SW25-32	SR76-961	SETT-15/5	-	-
SW32-40	SR76-963	SETT-15/5	-	-
S32-55	SR76-943	-	BT20M	H-TB

ASV 02/03/04/05

Axial drive type slot milling cutter with tangentially mounted inserts





Designation	*W*	*øDc*	Edge/Z	*øDb*	*ød*	*Lf*	*b*	*a*	Max. *ae*	*θ°*	Insert
ASV02N080-E4	4	80	5/10	41	27	6	29.8	7	15	162	TVKX0202...
ASV02N100-E4	4	100	6/12	47	32	6	34.8	8	20	165	TVKX0202...
ASV02N125-E4	4	125	8/16	55	40	6	43.5	10	30	168.75	TVKX0202...
ASV02N160-E4	4	160	10/20	55	40	6	43.5	10	45	171	TVKX0202...
ASV03N080-E5	5	80	5/10	41	27	6.5	29.8	7	15	162	TVKX03X3...
ASV03N100-E5	5	100	6/12	47	32	6.5	34.8	8	20	165	TVKX03X3...
ASV03N125-E5	5	125	8/16	55	40	6.5	43.5	10	30	168.75	TVKX03X3...
ASV03N160-E5	5	160	10/20	55	40	6.5	43.5	10	45	171	TVKX03X3...
ASV04N080-E6	6	80	4/8	41	27	8	29.8	7	17	157.5	TVKX04H3...
ASV04N100-E6	6	100	5/10	47	32	8	34.8	8	23.5	162	TVKX04H3...
ASV04N125-E6	6	125	6/12	55	40	8	43.5	10	32.5	165	TVKX04H3...
ASV04N160-E6	6	160	8/16	55	40	8	43.5	10	50	168.75	TVKX04H3...
ASV04N200-E6	6	200	10/20	69	50	8	53.5	12	63	171	TVKX04H3...
ASV05N080-E8	8	80	4/8	41	27	10	29.8	7	17	157.5	TVKX0504...
ASV05N100-E8	8	100	5/10	47	32	10	34.8	8	23.5	162	TVKX0504...
ASV05N125-E8	8	125	6/12	55	40	10	43.5	10	32.5	165	TVKX0504...
ASV05N160-E8	8	160	8/16	55	40	10	43.5	10	50	168.75	TVKX0504...
ASV05N200-E8	8	200	10/20	69	50	10	53.5	12	63	171	TVKX0504...

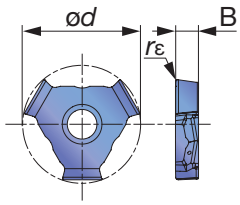
SPARE PARTS

Designation	Clamping screw	Grip	Lubricant	Torx bit	Wrench
ASV02/03N...	SR114-018-L3.40	-	M-1000	-	T-6D
ASV04N...	SR14-500/L5.1	H-TB2W	M-1000	BT15S	-
ASV05N...	SR14-500-L7.0	H-TB2W	M-1000	BT15S	-

INSERT

TVKX-MJ





P	Steel	☆		★
M	Stainless		★	☆
K	Cast iron	★		☆
N	Non-ferrous			
S	Superalloys	★	☆	★
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	rε	Coating			B	ød
		AH120	AH130	AH725		
TVKX020202TN-MJ	0.2	●		●	2.4	9.4
TVKX020204TN-MJ	0.4	●		●	2.4	9.4
TVKX03X302TN-MJ	0.2	●		●	3.2	9.4
TVKX03X304TN-MJ	0.4	●		●	3.2	9.4
TVKX04H304TN-MJ	0.4	●	●	●	3.5	16.9
TVKX04H308TN-MJ	0.8	●	●	●	3.5	16.9
TVKX050404TN-MJ	0.4	●	●	●	4.5	16.9
TVKX050408TN-MJ	0.8	●	●	●	4.5	16.9

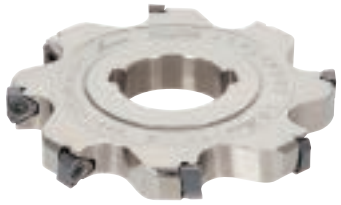
●: Line-up

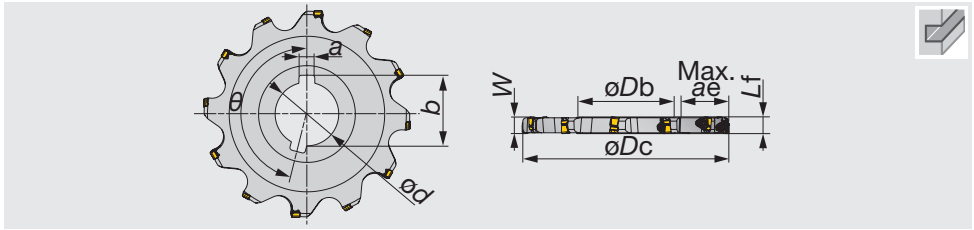
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness (HB)	Priority	Grade	Cutting speed Vc (m/min)	Feed per edge line: fz (mm/t) ASV ae / øDc (mm) 10%	ASV ae / øDc (mm) 20%	ASV ae / øDc (mm) 30%	ASV ae / øDc (mm) ≤ 50%
P	Low carbon steels E275A, etc.	- 200	First choice	AH725	90 - 180	0.08 - 0.25	0.06 - 0.19	0.05 - 0.16	0.05 - 0.15
		- 200	For impact resistance	AH130	90 - 180	0.08 - 0.25	0.06 - 0.19	0.05 - 0.16	0.05 - 0.15
	High carbon steels C45, etc.	200 - 300	First choice	AH725	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
		200 - 300	For impact resistance	AH130	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
	Alloy steels 42CrMo4, etc.	150 - 300	First choice	AH725	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
		150 - 300	For impact resistance	AH130	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
	Tool steels X40CrMoV5-1, etc.	- 300	First choice	AH725	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
		- 300	For impact resistance	AH130	90 - 180	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
M	Stainless steel X5CrNi18-9, etc.	-	-	AH130	90 - 200	0.07 - 0.22	0.05 - 0.16	0.04 - 0.14	0.04 - 0.13
K	Grey cast irons 250, etc.	150 - 250	-	AH120	120 - 230	0.08 - 0.25	0.06 - 0.19	0.05 - 0.16	0.05 - 0.15
	Ductile cast irons 400-15S, etc.	150 - 250	-	AH120	90 - 150	0.08 - 0.25	0.06 - 0.19	0.05 - 0.16	0.05 - 0.15
S	Titanium alloys Ti-6Al-4V, etc.	-	First choice	AH725	30 - 40	0.07 - 0.12	0.05 - 0.09	0.04 - 0.07	0.04 - 0.07
		-	For impact resistance	AH130	30 - 40	0.07 - 0.12	0.05 - 0.09	0.04 - 0.07	0.04 - 0.07
	Nickel-based alloys Inconel 718, etc.	-	First choice	AH725	20 - 35	0.07 - 0.12	0.05 - 0.09	0.04 - 0.07	0.04 - 0.07
		-	For impact resistance	AH130	20 - 35	0.07 - 0.12	0.05 - 0.09	0.04 - 0.07	0.04 - 0.07

ASW 06/07/09

Axial drive type slot milling cutter





Designation	W	øDc	Edge/Z	øDb	ød	Lf	b	a	Max. ae	θ°	Insert
ASW06N080-E10	10	80	4/8	41	27	10	29.8	7	18.5	157.5	WNGU0603...
ASW06N100-E10	10	100	5/10	47	32	10	34.8	8	25.5	162	WNGU0603...
ASW06N125-E10	10	125	6/12	55	40	10	43.5	10	34	165	WNGU0603...
ASW06N160-E10	10	160	7/14	55	40	10	43.5	10	51.5	167.14	WNGU0603...
ASW07N100-E12	12	100	5/10	47	32	12	34.8	8	25.5	162	WNGU07T3...
ASW07N125-E12	12	125	6/12	55	40	12	43.5	10	34	165	WNGU07T3...
ASW07N160-E12	12	160	7/14	55	40	12	43.5	10	51.5	167.14	WNGU07T3...
ASW09N100-E14	14	100	5/10	47	32	14	34.8	8	25.5	162	WNGU0904...
ASW09N160-E14	14	160	7/14	55	40	14	43.5	10	51.5	167.14	WNGU0904...
ASW09N160-E16	16	160	7/14	55	40	16	43.5	10	51.5	167.14	WNGU0904...

SPARE PARTS







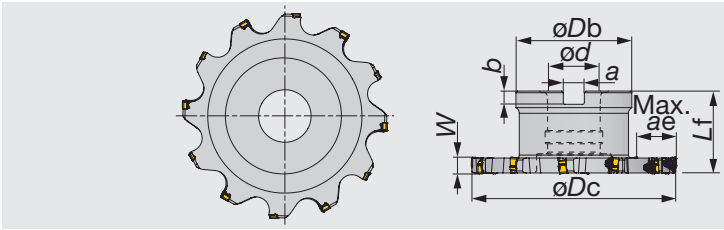


Designation	Clamping screw	Clamping screw 1	Grip	Grip 1	Lubricant	Torx bit	Wrench
ASW06N...	-	CSPB-2.5	-	-	M-1000	-	IP-8D
ASW07N100/125-...	-	CSPD-3	-	SW6-SD	M-1000	BLD IP10/S7	-
ASW07N160-...	-	CSPD-3	-	-	M-1000	-	IP-10D
ASW09N100-...	CSPB-3.5	-	H-TB2W	-	M-1000	BLDIP15/S7	-
ASW09N160-...	CSPB-3.5	-	-	-	M-1000	-	IP-15D

TSW 06/07/09

Radial drive type slot milling cutter





Designation	W	øDc	Edge/Z	øDb	ød	Lf	b	a	Max. ae	Insert
TSW06R100-E10	10	100	5/10	58	27	50	7	12.4	20	WNGU0603...
TSW06R125-E10	10	125	6/12	66	32	50	8	14.4	28.5	WNGU0603...
TSW06R160-E10	10	160	7/14	82	40	63	9	16.4	38	WNGU0603...
TSW07R100-E12	12	100	5/10	58	27	50	7	12.4	20	WNGU07T3...
TSW07R125-E12	12	125	6/12	66	32	50	8	14.4	28.5	WNGU07T3...
TSW07R160-E12	12	160	7/14	82	40	63	9	16.4	38	WNGU07T3...
TSW09R160-E16	16	160	7/14	82	40	63	9	16.4	38	WNGU0904...

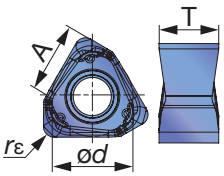
SPARE PARTS

Designation	Clamping screw	Clamping screw 1	Grip	Lubricant	Torx bit	Wrench
TSW06R...	-	CSPB-2.5	-	M-1000	-	IP-8D
TSW07R100/125-...	-	CSPD-3	SW6-SD	M-1000	BLD IP10/S7	-
TSW07R160-...	-	CSPD-3	-	M-1000	-	IP-10D
TSW09R160-...	CSPB-3.5	-	-	M-1000	-	IP-15D

INSERT

WNGU-MJ





P	Steel	☆		★
M	Stainless		★	☆
K	Cast iron	★		☆
N	Non-ferrous			
S	Superalloys	★	☆	★
H	Hard materials			

★ : First choice
☆ : Second choice

Designation	rε	Coating AH120	Coating AH130	Coating AH725	A	ød	T
WNGU060308TN-MJ	0.8	●	●	●	5.6	6.1	4.4
WNGU060316TN-MJ	1.6	●	●	●	5.6	6.1	4.4
WNGU07T308TN-MJ	0.8	●	●	●	6.8	7.4	5.5
WNGU07T316TN-MJ	1.6	●	●	●	6.8	7.4	5.5
WNGU090408TN-MJ	0.8	●	●	●	8.5	8.6	6.5
WNGU090416TN-MJ	1.6	●	●	●	8.5	8.6	6.5

●: Line-up

STANDARD CUTTING CONDITIONS

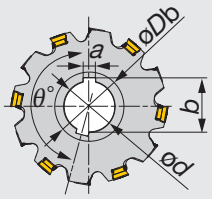
ISO	Workpiece material	Hardness (HB)	Priority	Grade	Cutting speed *Vc* (m/min)	Feed per edge line: *fz* (mm/t) TSW / ASW ae / ø*Dc* (mm) 10%	20%	30%	≤ 50%
P	Low carbon steels E275A, etc.	- 200	First choice	AH725	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
		- 200	For impact resistance	AH130	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
	High carbon steels C45, etc.	200 - 300	First choice	AH725	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
		200 - 300	For impact resistance	AH130	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
	Alloy steels 42CrMo4, etc.	150 - 300	First choice	AH725	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
		150 - 300	For impact resistance	AH130	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
	Tool steels X40CrMoV5-1, etc.	- 300	First choice	AH725	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
		- 300	For impact resistance	AH130	90 - 180	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
M	Stainless steel X5CrNi18-9, etc.	-	-	AH130	90 - 200	0.12 - 0.33	0.09 - 0.25	0.07 - 0.21	0.07 - 0.2
K	Grey cast irons 250, etc.	150 - 250	-	AH120	120 - 230	0.12 - 0.42	0.09 - 0.31	0.07 - 0.27	0.07 - 0.25
	Ductile cast irons 400-15S, etc.	150 - 250	-	AH120	90 - 150	0.12 - 0.42	0.09 - 0.31	0.07 - 0.27	0.07 - 0.25
S	Titanium alloys Ti-6Al-4V, etc.	-	First choice	AH725	30 - 40	0.1 - 0.17	0.08 - 0.13	0.06 - 0.11	0.06 - 0.1
		-	For impact resistance	AH130	30 - 40	0.1 - 0.17	0.08 - 0.13	0.06 - 0.11	0.06 - 0.1
	Nickel-based alloys Inconel 718, etc.	-	First choice	AH725	20 - 35	0.1 - 0.17	0.08 - 0.13	0.06 - 0.11	0.06 - 0.1
		-	For impact resistance	AH130	20 - 35	0.1 - 0.17	0.08 - 0.13	0.06 - 0.11	0.06 - 0.1

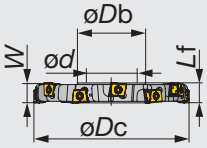
TANGENTIAL TECTSLOT

ASN 10/12/15

Axial drive type slot milling cutter with tangentially mounted inserts







Designation	W	øDc	Z eff	z	øDb	ød	Lf	b	a	Max. ae	θ°	Insert
ASN10R100M32.0E16-05	16	100	5	10	47	32	16	34.8	8	25.5	162	LMEU1008**ZNEN-MJ
ASN10R125M40.0E16-06	16	125	6	12	55	40	16	43.5	10	34	165	LMEU1008**ZNEN-MJ
ASN10R160M40.0E16-07	16	160	7	14	55	40	16	43.5	10	51.5	167.14	LMEU1008**ZNEN-MJ
ASN10R200M50.0E16-08	16	200	8	16	69	50	16	53.6	12	64.5	168.75	LMEU1008**ZNEN-MJ
ASN12R100M32.0E19-05	19	100	5	10	47	32	19	34.8	8	25.5	162	LMEU1208**ZNEN-MJ
ASN12R125M40.0E19-06	19	125	6	12	55	40	19	43.5	10	34	165	LMEU1208**ZNEN-MJ
ASN12R160M40.0E19-07	19	160	7	14	55	40	19	43.5	10	51.5	167.14	LMEU1208**ZNEN-MJ
ASN12R200M50.0E19-08	19	200	8	16	69	50	19	53.6	12	64.5	168.75	LMEU1208**ZNEN-MJ
ASN12R250M50.0E19-09	19	250	9	18	84	50	19	53.6	12	82	170	LMEU1208**ZNEN-MJ
ASN15R125M40.0E25-05	25	125	5	10	55	40	25	43.5	10	34	165	LMEU1509**ZNEN-MJ
ASN15R160M40.0E25-06	25	160	6	12	55	40	25	43.5	10	51.5	167.14	LMEU1509**ZNEN-MJ
ASN15R200M50.0E25-07	25	200	7	14	69	50	25	53.6	12	64.5	168.75	LMEU1509**ZNEN-MJ
ASN15R250M50.0E25-08	25	250	8	16	84	50	25	53.6	12	82	170	LMEU1509**ZNEN-MJ

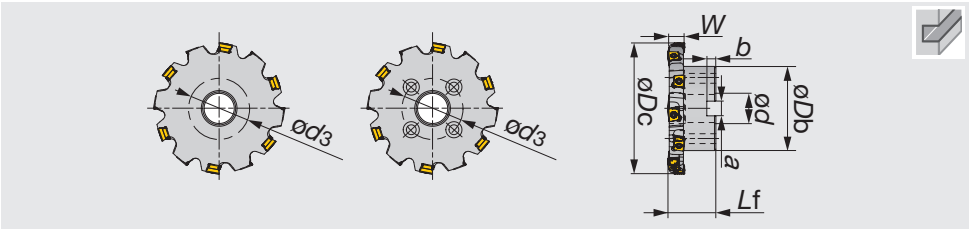
SPARE PARTS

Designation	Clamping screw	Grip	Torx bit
ASN10/12R...	SM40-143-H0	H-TB	BT15S
ASN15R...	CSTB-5L159	H-TB	BT20S

TSN

Radial drive type slot milling cutter with tangentially mounted inserts





Designation	W	øDc	Z eff	z	øDb	ød	Lf	b	a	Max. ae	ød3	Insert
TSN10R100M27.0E16-05	16	100	5	10	58	27	50	7	12.4	20	-	LMEU1008**ZNEN-MJ
TSN10R125M32.0E16-06	16	125	6	12	66	32	50	8	14.4	28.5	-	LMEU1008**ZNEN-MJ
TSN10R160M40.0E16-07	16	160	7	14	82	40	63	9	16.4	38	-	LMEU1008**ZNEN-MJ
TSN10R200M40.0E16-08	16	200	8	16	95	40	63	9	16.4	55	66.7	LMEU1008**ZNEN-MJ
TSN12R100M27.0E19-05	19	100	5	10	58	27	50	7	12.4	20	-	LMEU1208**ZNEN-MJ
TSN12R125M32.0E19-06	19	125	6	12	66	32	50	8	14.4	28.5	-	LMEU1208**ZNEN-MJ
TSN12R160M40.0E19-07	19	160	7	14	82	40	63	9	16.4	38	-	LMEU1208**ZNEN-MJ
TSN12R200M40.0E19-08	19	200	8	16	95	40	63	9	16.4	55	66.7	LMEU1208**ZNEN-MJ
TSN12R250M60.0E19-09	19	250	9	18	135	60	63	14	25.7	60	101.6	LMEU1208**ZNEN-MJ
TSN15R125M32.0E25-05	25	125	5	10	66	32	50	8	14.4	28.5	-	LMEU1509**ZNEN-MJ
TSN15R160M40.0E25-06	25	160	6	12	82	40	63	9	16.4	38	-	LMEU1509**ZNEN-MJ
TSN15R200M40.0E25-07	25	200	7	14	95	40	63	9	16.4	55	66.7	LMEU1509**ZNEN-MJ
TSN15R250M60.0E25-08	25	250	8	16	135	60	63	14	25.7	60	101.6	LMEU1509**ZNEN-MJ

SPARE PARTS



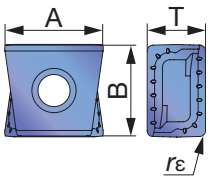


Designation	Clamping screw	Grip	Torx bit
TSN10/12R...	SM40-143-H0	H-TB	BT15S
TSN15R...	CSTB-5L159	H-TB	BT20S

INSERT

LMEU-MJ





P	Steel	☆		★	
M	Stainless		★	☆	
K	Cast iron	★		☆	
N	Non-ferrous				
S	Superalloys	★		★	
H	Hard materials				

★ : First choice
☆ : Second choice

Designation	rε	Coating			A	B	T
		AH120	AH140	AH725			
LMEU100808ZNEN-MJ	0.8	●	●	●	12.7	10.5	8
LMEU100816ZNEN-MJ	1.6	●	●	●	12.5	10.5	8
LMEU100824ZNEN-MJ	2.4	●	●	●	12.4	10.5	8
LMEU100832ZNEN-MJ	3.2	●	●	●	12.2	10.5	8
LMEU120808ZNEN-MJ	0.8	●	●	●	13.6	12.7	8
LMEU120816ZNEN-MJ	1.6	●	●	●	13.4	12.7	8
LMEU120824ZNEN-MJ	2.4	●	●	●	13.2	12.7	8
LMEU120832ZNEN-MJ	3.2	●	●	●	13.1	12.7	8
LMEU150908ZNEN-MJ	0.8	●	●	●	15.6	15	9.5
LMEU150916ZNEN-MJ	1.6	●	●	●	15.4	15	9.5
LMEU150924ZNEN-MJ	2.4	●	●	●	15.3	15	9.5
LMEU150932ZNEN-MJ	3.2	●	●	●	15.1	15	9.5

●: Line-up

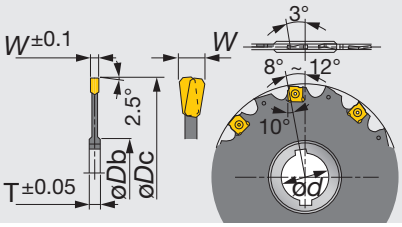
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness (HB)	Priority	Grade	Cutting speed *Vc* (m/min)	Feed per edge line: *fz* (mm/t) TSN / ASN ae / ø*Dc* (mm) 10%	20%	30%	≤ 50%
P	Low carbon steels E275A, etc.	- 200	First choice	AH725	90 - 180	0.22 - 0.42	0.16 - 0.31	0.14 - 0.27	0.13 - 0.25
		- 200	For impact resistance	AH140	90 - 180	0.22 - 0.42	0.16 - 0.31	0.14 - 0.27	0.13 - 0.25
	High carbon steels C45, etc.	200 - 300	First choice	AH725	90 - 180	0.22 - 0.42	0.16 - 0.31	0.14 - 0.27	0.13 - 0.25
		200 - 300	For impact resistance	AH140	90 - 180	0.22 - 0.42	0.16 - 0.31	0.14 - 0.27	0.13 - 0.25
	Alloy steels 42CrMo4, etc.	150 - 300	First choice	AH725	90 - 180	0.22 - 0.42	0.16 - 0.31	0.14 - 0.27	0.13 - 0.25
		150 - 300	For impact resistance	AH140	90 - 180	0.22 - 0.42	0.16 - 0.31	0.14 - 0.27	0.13 - 0.25
	Tool steels X40CrMoV5-1, etc.	- 300	First choice	AH725	90 - 180	0.22 - 0.42	0.16 - 0.31	0.14 - 0.27	0.13 - 0.25
		- 300	For impact resistance	AH140	90 - 180	0.22 - 0.42	0.16 - 0.31	0.14 - 0.27	0.13 - 0.25
M	Stainless steel X5CrNi18-9, etc.	-	-	AH140	90 - 200	0.22 - 0.42	0.16 - 0.31	0.14 - 0.27	0.13 - 0.25
K	Grey cast irons 250, etc.	150 - 250	-	AH120	120 - 230	0.22 - 0.5	0.16 - 0.38	0.14 - 0.32	0.13 - 0.3
	Ductile cast irons 400-15S, etc.	150 - 250	-	AH120	90 - 150	0.22 - 0.33	0.16 - 0.25	0.14 - 0.21	0.13 - 0.2
S	Titanium alloys Ti-6Al-4V, etc.	-	First choice	AH725	30 - 40	0.12 - 0.22	0.09 - 0.16	0.07 - 0.14	0.07 - 0.13
	Nickel-based alloys Inconel 718, etc.	-	First choice	AH725	20 - 35	0.12 - 0.22	0.09 - 0.16	0.07 - 0.14	0.07 - 0.13

SVN4000

Indexable side slotting cutter for 5 - 8 mm width





Designation	øDc	W	Edge/z	ød	øDb	T	Insert
SVN4100-5M	100	5	2/10	32	48	8	SNEN12T2...
SVN4100-6M	100	6	2/10	32	48	10	SNEN1233...
SVN4100-8M	100	8	4/8	32	48	12	SNEN1233...
SVN4125-5M	125	5	2/12	32	48	8	SNEN12T2...
SVN4125-6M	125	6	2/12	32	48	10	SNEN1233...
SVN4125-8M	125	8	4/12	32	48	12	SNEN1233...
SVN4160-5M	160	5	2/16	40	58	8	SNEN12T2...
SVN4160-6M	160	6	2/16	40	58	10	SNEN1233...
SVN4160-8M	160	8	4/16	40	58	12	SNEN1233...
SVN4200-5M	200	5	2/20	40	68	8	SNEN12T2...
SVN4200-6M	200	6	2/20	40	68	10	SNEN1233...
SVN4200-8M	200	8	4/20	40	68	12	SNEN1233...

SPARE PARTS

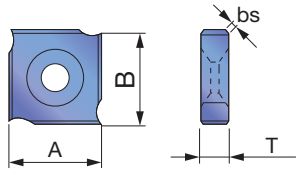



Designation	Clamping screw	Wrench
SVN4100-5M	CST-3.5S	T-9D
SVN4100-6/8M	CST-3.5	T-9D
SVN4125-5M	CST-3.5S	T-9D
SVN4125-6/8M	CST-3.5	T-9D
SVN4160-5M	CST-3.5S	T-9D
SVN4160-6/8M	CST-3.5	T-9D
SVN4200-5M	CST-3.5S	T-9D
SVN4200-6/8M	CST-3.5	T-9D

● Notes on specifications of specials made to order
① The cutter widths (ℓ) are available in a range from 5 mm to 12 mm.
② The maximum cutter diameter available is ø960 mm.
③ Special mounting specifications are also available on request.

INSERT

SNEN12



		UX30	TH10		A	B	T	bs	Honing
P	Steel	★							
M	Stainless								
K	Cast iron		★						
N	Non-ferrous		★						
S	Superalloys								
H	Hard materials								
Designation		Uncoated							
SNEN12T2ZFN			●		12.7	12.7	2.8	0.15	without
SNEN12T2ZTN		●			12.7	12.7	2.8	0.15	with
SNEN1233ZFN			●		12.7	12.7	3.3	0.15	without
SNEN1233ZTN		●			12.7	12.7	3.3	0.15	with

★ : First choice
☆ : Second choice

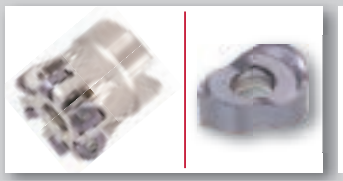
●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)
P	Carbon steels < 300 HB	UX30	80 ~ 120
	Die steels < 300 HB	UX30	60 ~ 80
K	Cast irons	TH10	80 ~ 100
N	Aluminium alloys	TH10	600 ~ 1000

Note: SVN4000 type TAC mills should be used only for roughing. Attainable accuracy of groove width is ±0.1 mm.
- No. of revolutions n (min^{-1}) = Cutting speed Vc (m/min) × 1000 ÷ 3.14 ÷ Cutter ø (mm)
- Feed speed Vf (mm/min) = n (min^{-1}) × Feed per tooth fz (mm/t) × z (No. of inserts)

MEMO

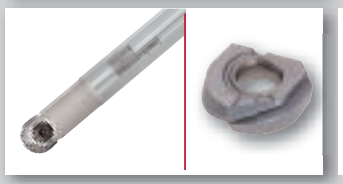


DO TWIST BALL
D016

Radius cutters with double-sided inserts with rigid clamping

ø20 - ø50 mm
max. ap 4 mm

P M K N S H

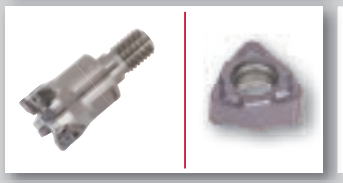


BALL FINISH NOSE
D190

Indexable endmill for high-precision finishing with 2 effective cutting edges

ø8 - ø32 mm

P M K N H



DO M INI MILL
D195

Double-sided positive inserts for finishing to semi-finishing in profiling operations

ø16 - ø25 mm
max. ap 1 mm

P H

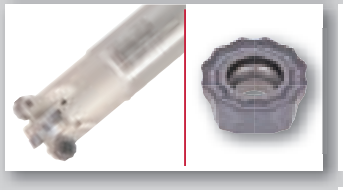


FIXR MILL
D196

Radius cutters with single-sided inserts for profile milling of complex parts

ø20 - ø66 mm
max. ap 8 mm

P M K H



ROUNDSPLIT
D201

Radius cutters featuring single-sided inserts with serrated cutting edges for anti-chatter

ø32 - ø125 mm
max. ap 8 mm

P M K N S

Other radius mills
D206

T/ERD12/16, E/HWD

P M K H

Single Effective Tools - Ball Cutters
D212

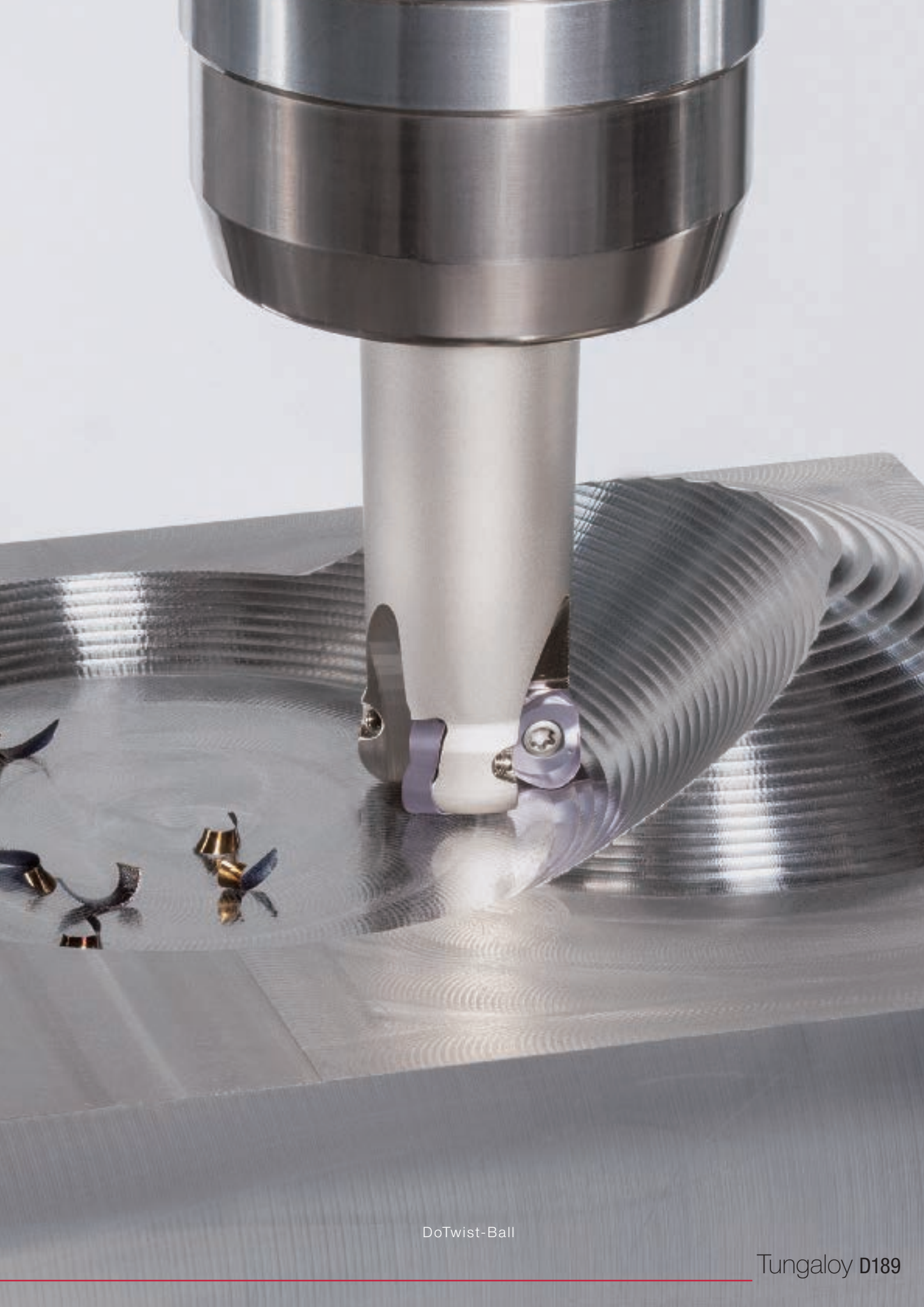
TBN1000, EBP, EBB, EBD, BBB

P K H

Z-FEEDMILL
D220

Z-direction plunging tools for high metal removal

P K H



DoTwist-Ball

EBFM

Indexable endmills for high precision finish



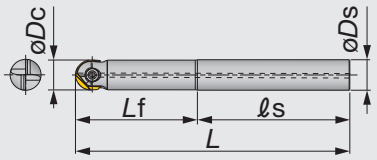


Fig. 1

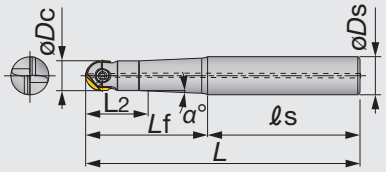
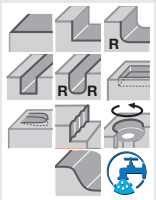


Fig. 2



Designation	Material	øDc	øDs	ℓs	Lf	L	L2	α°	Air hole	Fig	Insert
EBFM08T12S100	Steel	8	12	80	20	100	10	9.5	with	2	ZF*M080...
EBFM08S08C100	Carbide	8	8	70	30	100	-	-	without	1	ZF*M080...
EBFM08S08C140	Carbide	8	8	75	65	140	-	-	without	1	ZF*M080...
EBFM10T12S100	Steel	10	12	75	25	100	15	5	with	2	ZF*M100...
EBFM10S10C140	Carbide	10	10	65	75	140	-	-	without	1	ZF*M100...
EBFM10S10C220	Carbide	10	10	80	140	220	-	-	without	1	ZF*M100...
EBFM12S12S110	Steel	12	12	80	30	110	-	-	with	1	ZF*M120...
EBFM12S12C160	Carbide	12	12	70	90	160	-	-	without	1	ZF*M120...
EBFM12S12C220	Carbide	12	12	70	150	220	-	-	without	1	ZF*M120...
EBFM16T20S130	Steel	16	20	80	50	130	15.5	1.5	with	2	ZF*M160...
EBFM16S16C160	Carbide	16	16	80	80	160	-	-	without	1	ZF*M160...
EBFM16S16C220	Carbide	16	16	70	150	220	-	-	without	1	ZF*M160...
EBFM20T25S180	Steel	20	25	100	80	180	24	2.5	with	2	ZF*M200...
EBFM20S20C220	Carbide	20	20	100	120	220	-	-	without	1	ZF*M200...
EBFM20S20C300	Carbide	20	20	80	220	300	-	-	without	1	ZF*M200...
EBFM25T32S200	Steel	25	32	100	100	200	32	1.5	with	2	ZF*M250...
EBFM25S25C220	Carbide	25	25	100	120	220	-	-	without	1	ZF*M250...
EBFM25S25C300	Carbide	25	25	80	220	300	-	-	without	1	ZF*M250...
EBFM30T32S220	Steel	30	32	120	100	220	35	0.5	with	2	ZF*M300...
EBFM30S32C250	Carbide	30	32	100	150	250	-	-	without	1	ZF*M300...
EBFM30S32C350	Carbide	30	32	100	250	350	-	-	without	1	ZF*M300...
EBFM32S32S250	Steel	32	32	150	100	250	-	-	with	1	ZF*M320...
EBFM32S32C300	Carbide	32	32	80	220	300	-	-	without	1	ZF*M320...

SPARE PARTS

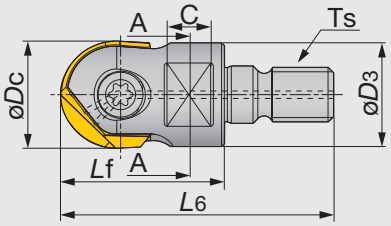
Designation	Clamping screw	Torx bit	Grip	Wrench
EBFM08...	TS 25F080A	-	-	T-8D
EBFM10...	TS 30F100A	-	-	T-10D
EBFM12...	TS 40F120A	-	-	T-15D
EBFM16...	TS 50F160A	BT20S	H-TB2W	-
EBFM20...	TS 60F200A	BLDT25/M7	H-TB2W	-
EBFM25...	TS 70F250A	BLDT25/M7	H-TB2W	-
EBFM30...	TS 80F300A	-	-	T-T30
EBFM32...	TS 80F300A	-	-	T-T30

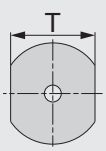
BALL FINISH NOSE

HBFM

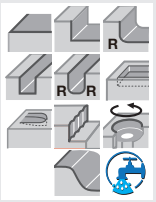
Indexable endmills with TungFlex threaded adaptation for high precision finish







A - A cross section



Designation	øDc	L6	Lf	C	T	øD3	Ts	Air hole	Insert
HBFM10M06	10	34.5	20	5	7	9.7	M6	with	ZF*M100...
HBFM12M06	12	37.5	23	5	7	11.5	M6	with	ZF*M120...
HBFM12M08	12	40	23	8	10	13	M8	with	ZF*M120...
HBFM16M08	16	47	30	8	10	13	M8	with	ZF*M160...
HBFM20M10	20	49	30	10	15	19	M10	with	ZF*M200...
HBFM25M12	25	57	35	10	17	24	M12	with	ZF*M250...
HBFM30M16	30	66	43	12	22	29	M16	with	ZF*M300...
HBFM32M16	32	66	43	12	22	29.5	M16	with	ZF*M320...

SPARE PARTS



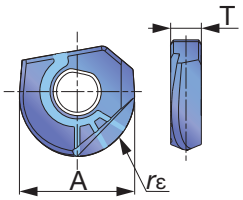



Designation	Clamping screw	Torx bit	Grip	Wrench
HBFM10...	TS 30F100A	-	-	T-10D
HBFM12...	TS 40F120A	-	-	T-15D
HBFM16...	TS 50F160A	BT20S	H-TB2W	-
HBFM20...	TS 60F200A	BLDT25/M7	H-TB2W	-
HBFM25...	TS 70F250A	BLDT25/M7	H-TB2W	-
HBFM30...	TS 80F300A	-	-	T-T30
HBFM32...	TS 80F300A	-	-	T-T30

INSERT

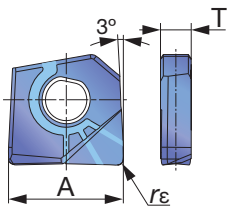
ZFBM-MJ





ZFRM-MJ





P	Steel	☆	★
M	Stainless		☆
K	Cast iron	★	☆
N	Non-ferrous		☆
S	Superalloys		★
H	Hard materials	★	☆

★ : First choice
☆ : Second choice

Designation	rε	Coating		A	T
		AH710	AH725		
ZFBM080R00-MJ	4	●	●	8	2.4
ZFBM100R00-MJ	5	●	●	10	2.9
ZFBM120R00-MJ	6	●	●	12	3.4
ZFBM160R00-MJ	8	●	●	16	4.4
ZFBM200R00-MJ	10	●	●	20	5.4
ZFBM250R00-MJ	12.5	●	●	25	6.4
ZFBM300R00-MJ	15	●	●	30	7.4
ZFBM320R00-MJ	16	●	●	32	7.4
ZFRM120R05-MJ	0.5	●	●	12	3.4
ZFRM120R10-MJ	1	●	●	12	3.4
ZFRM160R05-MJ	0.5	●	●	16	4.4
ZFRM160R10-MJ	1	●	●	16	4.4
ZFRM160R15-MJ	1.5	●	●	16	4.4
ZFRM200R10-MJ	1	●	●	20	5.4
ZFRM200R15-MJ	1.5	●	●	20	5.4

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Priority	Grade	Max. depth of cut (mm)	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t)							
							D8	D10	D12	D16	D20	D25	D30	D32
P	Low carbon steel, alloy steel	85 - 180 HB	First choice	AH725	≤ 0.04D	180 - 260	0.15	0.2	0.2	0.25	0.25	0.3	0.35	0.35
		85 - 180 HB	For wear resistance	AH710	≤ 0.04D	180 - 260	0.15	0.2	0.2	0.25	0.25	0.3	0.35	0.35
	High carbon steel, alloy steel	180 - 280 HB	First choice	AH725	≤ 0.03D	150 - 230	0.15	0.2	0.2	0.25	0.25	0.3	0.35	0.35
		180 - 280 HB	For wear resistance	AH710	≤ 0.03D	180 - 230	0.15	0.2	0.2	0.25	0.25	0.3	0.35	0.35
	Prehardened steel Die & mold tool steel	40 - 48 HRC	First choice	AH710	≤ 0.03D	180 - 300	0.15	0.15	0.2	0.2	0.25	0.25	0.3	0.3
		40 - 48 HRC	For fracture resistance	AH725	≤ 0.03D	180 - 300	0.15	0.15	0.2	0.2	0.25	0.25	0.3	0.3
M	Stainless steel	135 - 200 HB	First choice	AH725	≤ 0.03D	100 - 250	0.1	0.15	0.2	0.2	0.25	0.25	0.3	0.3
K	Cast iron	150 - 240 HB	First choice	AH710	≤ 0.04D	90 - 350	0.2	0.2	0.25	0.3	0.3	0.35	0.4	0.4
		150 - 240 HB	For fracture resistance	AH725	≤ 0.04D	90 - 350	0.2	0.2	0.25	0.3	0.3	0.35	0.4	0.4
N	Aluminium	-	First choice	AH725	≤ 0.03D	200 - 400	0.25	0.25	0.35	0.35	0.35	0.4	0.4	0.45
H	High hardened steel	48 - 65 HRC	First choice	AH710	≤ 0.02D	100 - 350	0.08	0.08	0.1	0.13	0.15	0.2	0.2	0.25

· Remove excessive chip accumulation with an air blast.
· For the operation with depth of cut which varies (ex.casting skin) and machining of workpiece materials with interrupted surface, the feed per tooth (*fz*) should be set to the lower recommended value shown in the above table.
· Cutting conditions maybe limited depending on machine power, workpiece rigidity, and spindle output. When the cutting width, depth, or overhang length is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

How to clamp the insert

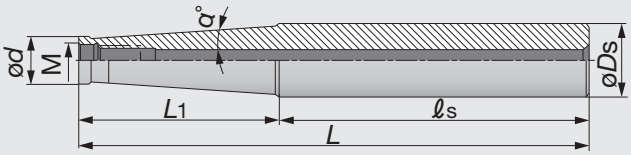
1. Clear chips and dust from the pocket.
2. Place the insert in the pocket. The insert can be placed only in one direction.
3. Tighten the screw while pressing the insert into the pocket.

How to check the run-out

1. Clamp the insert on the shank.
2. Clamp the shank on a high-precision arbor.
3. Measure the run-out on tool presetter or by dial gauge.

Notes:
1. Due to the helical cutting edge, it is important that the run-out is inspected with the insert clamped on the shank.
2. Do not use micrometer or caliper to inspect the insert diameter as inaccurate dimensions may be provided.



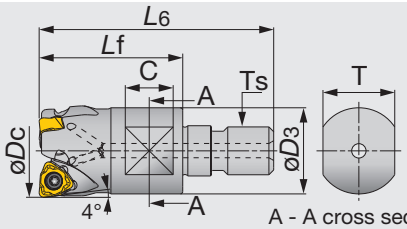


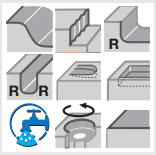
Designation	øDs	L	ℓs	L1	ød	M	α°	Shank type
SM06-L60C10	10	60	40	20	9.7	M6	0	Cylindrical
SM06-L125-C12	12	105	45	60	9.7	M6	1.2	Cylindrical
SM06-L125-C16	16	125	65	60	9.7	M6	3.3	Cylindrical
SM08-L73C16	16	73	48	25	13	M8	0	Cylindrical
SM08-L128-C16	16	128	48	80	13	M8	0.9	Cylindrical
SM08-L170-C20	20	170	103.2	66.8	13	M8	3.3	Cylindrical
SM10-L80-C20	20	80	50	30	18	M10	0	Cylindrical
SM10-L130-C20	20	130	50	80	18	M10	0.6	Cylindrical
SM10-L200-C25	25	200	142.8	57.2	19	M10	3.3	Cylindrical
SM12-L86-C25	25	86	56	30	21	M12	5.1	Cylindrical
SM12-L200-C32	32	200	122	78	21	M12	4.4	Cylindrical
SM16-L95-C32	32	95	60	35	29	M16	1.7	Cylindrical
SM16-L230-C32	32	230	180	50	29	M16	1.8	Cylindrical

HFWX04-M

Small-radius cutter for finishing operation; Modular head with TungFlex threaded adaptation







Designation	øDc	z	L6	Lf	C	T	øD3	Ts	Kg	Air hole	Insert
HFWX04M016M08R02	16	2	42	25	8	10	13	M8	0.03	with	WXHU04...
HFWX04M020M10R03	20	3	49	30	10	15	18	M10	0.05	with	WXHU04...
HFWX04M025M12R04	25	4	52	30	10	17	21	M12	0.09	with	WXHU04...

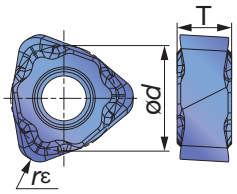
SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
HFWX04M...	SR34-514	M-1000	T-7F

INSERT

WXHU-MJ





P	Steel	★	
M	Stainless		
K	Cast iron		
N	Non-ferrous		
S	Superalloys		
H	Hard materials	★	

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH110	ød	T
WXHU040305R-MJ	0.5	0.5	●	6.35	3.18
WXHU040310R-MJ	1	1	●	6.35	3.18

* For plunging, width up to 2 mm is possible.

●: Line-up

STANDARD CUTTING CONDITIONS

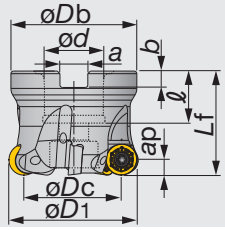
ISO	Workpiece material		Hardness	Grade	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	High carbon steel C45, C55, etc.		200 - 300 HB	AH110	100 - 300	0.1 - 0.3
P	Alloy steel 42CrMo4, SCr145, etc.		150 - 300 HB	AH110	100 - 300	0.1 - 0.3
P	Prehardened steel NAK80, PX5, etc.		30 - 40 HRC	AH110	100 - 300	0.05 - 0.3
H	Hardened steel	X40CrMoV5-1, etc.	40 - 50 HRC	AH110	80 - 130	0.1 - 0.3
H	Hardened steel	X153CrMoV12, etc.	50 - 60 HRC	AH110	50 - 100	0.05 - 0.15

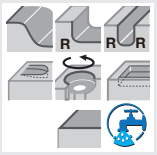
FIXRMILL
TRP10/12/16

Radius cutter series bore type with anti-rotation system

A.R. = +4°, R.R. = -4°







Designation	Max. ap	øDc	z	øD1	øDb	ød	ℓ	Lf	b	a	Kg	Air hole	Insert
TRP10R040M16.0E05	5	30	5	40	35	16	18	40	5.6	8.4	0.2	with	RPMT10T3...
TRP12R050M22.0E05	6	38	5	50	47	22	20	40	6.3	10.4	0.3	with	RPMT1204...
TRP12R052M22.0E05	6	40	5	52	49	22	20	40	6.3	10.4	0.3	with	RPMT1204...
TRP12R063M22.0E06	6	51	6	63	59	22	20	40	6.3	10.4	0.6	with	RPMT1204...
TRP12R066M27.0E06	6	54	6	66	62	27	22	40	7	12.4	0.6	with	RPMT1204...
TRP16R063M22.0E05	8	47	5	63	59	22	20	40	6.3	10.4	0.6	with	RPMT1606...
TRP16R066M27.0E05	8	50	5	66	62	27	22	40	7	12.4	0.7	with	RPMT1606...

SPARE PARTS

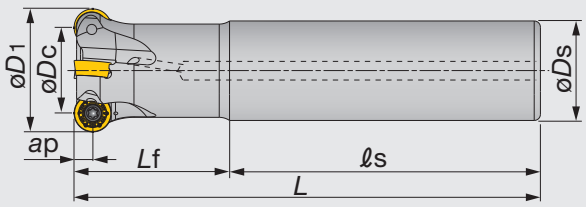
Designation	Clamping screw	Grip	Lubricant	Shell locking bolt	Torx bit
TRP10R040M16.0E05	CSPB-3.5S	H-TBS	M-1000	FSHM8-30H	BLDIP15/S7
TRP12R050 - 063M22.0...	CSTR-4L100	H-TBS	M-1000	CM10X30H	BT15S
TRP12R066M27.0E06	CSTR-4L100	H-TBS	M-1000	CM12X30H	BT15S
TRP16R063M22.0E05	CSPB-5	H-TBS	M-1000	CM10X30H	BLDIP20/S7
TRP16R066M27.0E05	CSPB-5	H-TBS	M-1000	CM12X30H	BLDIP20/S7

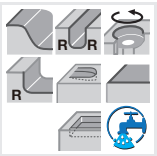
FIXRMILL
ERP10/12/16

Radius cutter series shank type with anti-rotation system

A.R. = +10°~ +4°, R.R. = -2°~ -8.5°







Designation	Max. ap	øDc	z	øD1	øDs	ℓs	Lf	L	Air hole	Insert
ERP10R020M20.0-02	5	10	2	20	20	100	50	150	with	RPMT10T3...
ERP10R025M25.0-02	5	15	2	25	25	90	60	150	with	RPMT10T3...
ERP10R032M32.0-04	5	22	4	32	32	80	70	150	with	RPMT10T3...
ERP10R035M32.0-04	5	25	4	35	32	100	50	150	with	RPMT10T3...
ERP12R025M25.0-02	6	13	2	25	25	100	50	150	with	RPMT1204...
ERP12R032M32.0-03	6	20	3	32	32	100	50	150	with	RPMT1204...
ERP12R040M32.0-04	6	28	4	40	32	100	50	150	with	RPMT1204...
ERP16R040M32.0-02	8	24	2	40	32	100	50	150	with	RPMT1606...

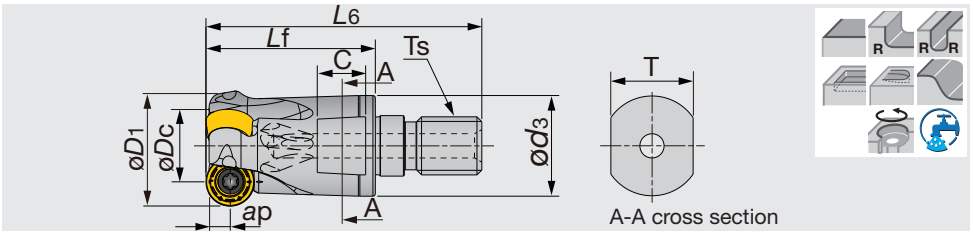
SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
ERP10R...	CSPB-3.5S	M-1000	IP-15D
ERP12R...	CSTR-4L100	M-1000	T-15DB
ERP16R...	CSPB-5	M-1000	IP-20D

Radius cutter series modular type (TungFlex) with anti-rotation system

A.R. = 1°~ 4°, R.R. = -8.5°~ 2°





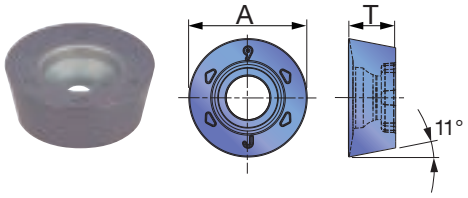
Designation	Max. ap	øDc	z	øD1	L6	Lf	C	T	øD3	Ts	Kg	Air hole	Insert
HRP10R020MM10-02	5	10	2	20	49	30	10	15	17.8	M10	0.1	with	RPMT10T3...
HRP10R025MM12-02	5	15	2	25	57	35	10	17	20.8	M12	0.1	with	RPMT10T3...
HRP10R032MM16-04	5	22	4	32	63	40	12	22	28.8	M16	0.2	with	RPMT10T3...
HRP12R025MM12-02	6	13	2	25	57	35	10	17	20.8	M12	0.2	with	RPMT1204...
HRP12R032MM16-03	6	20	3	32	63	40	12	22	28.8	M16	0.2	with	RPMT1204...

SPARE PARTS

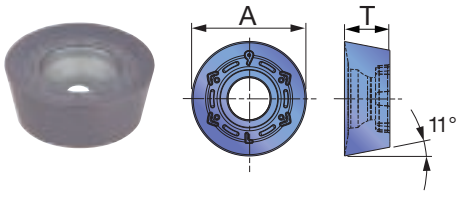
Designation	Clamping screw	Lubricant	Wrench	
			Bit	Grip
HRP10R...	CSPB-3.5S	M-1000	BLD IP15/S7	H-TBS
HRP12R...	CSTR-4L100	M-1000	BT15S	H-TBS

INSERT

RPMT-MJ



RPMT-ML



P	Steel		★			
M	Stainless	★	☆	★		
K	Cast iron		☆			
N	Non-ferrous					
S	Superalloys	☆	★			
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	Max. ap	Coating			A	T
		AH130	AH725	AH4035		
RPMT10T3EN-MJ	5	●	●	●	10	3.97
RPMT10T3EN-ML	5	●	●	●	10	3.97
RPMT1204EN-MJ	6	●	●	●	12	4.76
RPMT1204EN-ML	6	●	●	●	12	4.76
RPMT1606EN-MJ	8	●	●	●	16	6.35
RPMT1606EN-ML	8	●	●	●	16	6.35

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness	Priority	Grade	Chip-breaker	Cutting speed	Feed per tooth
P	Carbon steels C45, C55, etc.	< 300 HB	First choice	AH725	MJ	120 - 250	0.3 - 0.7
		< 300 HB	for impact resistance	AH130	MJ	120 - 250	0.3 - 0.7
	Alloy steels 42CrMo4, 17Cr3, etc.	150 - 300 HB	First choice	AH725	MJ	100 - 250	0.2 - 0.6
		150 - 300 HB	for impact resistance	AH130	MJ	100 - 250	0.2 - 0.6
	Tool steels X153CrMoV12, etc.	< 300 HB		AH725	ML	80 - 180	0.2 - 0.4
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-3, etc.	< 200 HB	First choice	AH130	ML	100 - 250	0.2 - 0.6
		< 200 HB	for impact resistance	AH130	MJ	100 - 250	0.2 - 0.6
	Stainless steels X6Cr17, etc.	< 200 HB	First choice	AH4035	ML	100 - 300	0.2 - 0.6
		< 200 HB	for impact resistance	AH4035	MJ	100 - 300	0.2 - 0.6
K	Grey cast irons 250, etc.	150 - 250 HB	-	AH725	ML	120 - 250	0.3 - 0.7
	Ductile cast irons 400-15S, etc.	150 - 250 HB	-	AH725	ML	100 - 200	0.3 - 0.7
H	Hardened steels X40CrMoV5-1, etc.	40 - 50 HRC	-	AH725	MJ	60 - 140	0.1 - 0.3
	Hardened steels X153CrMoV12, etc.	50 - 60 HRC	-	AH725	MJ	20 - 60	0.05 - 0.2

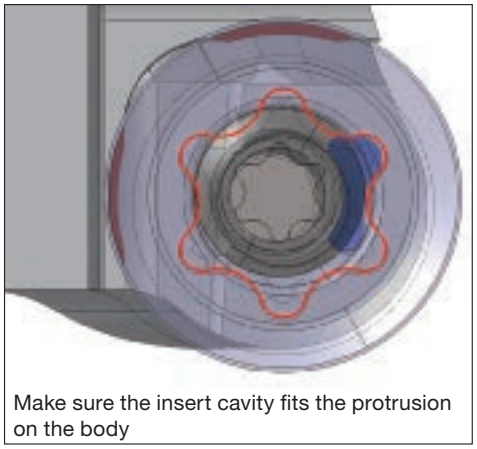
· Use air blast to remove chips from the work area in slot milling or pocketing operation.
· When machining at high cutting speeds of more than *Vc* = 1000 m/min, the dynamic balance of the tools must be adjusted.
· Cutting conditions are limited by machine power, workpiece rigidity and spindle output. When the cutting width or depth is large, set *Vc* and *fz* to the lower recommended values and check the machine power and vibration.

Tool dia.: ø*D*c (mm), Number of revolutions: *n* (min^{-1}), Feed speed: *V*f (mm/min), Depth of cut: ap = 2.0 mm

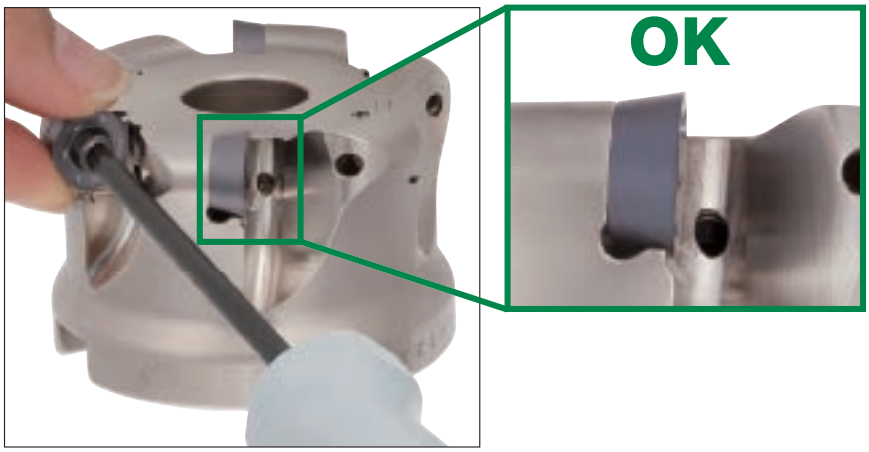
ø20		ø25		ø32			ø35		ø40				ø50		ø63	
n	*V*f	*n*	*V*f	*n*	*V*f		*n*	*V*f	*n*	*V*f			*n*	*V*f	*n*	*V*f	
	E/HRP10		E/HRP10, E/HRP12		E/HRP10	E/HRP12		ERP10		TRP10	ERP12	ERP16		ERP12		TRP12	TRP16
2870	2870	2290	2290	1790	3580	2690	1640	3280	1430	3580	2860	1430	1150	2880	910	2730	2280
Vc = 180 m/min, *fz* = 0.5 mm/t																	
2870	2870	2290	2290	1790	3580	2690	1640	3280	1430	3580	2860	1430	1150	2880	910	2730	2280
Vc = 180 m/min, *fz* = 0.5 mm/t																	
2710	2160	2170	1740	1690	2700	2030	1550	2480	1350	2700	2160	1080	1080	2160	860	2060	1720
Vc = 170 m/min, *fz* = 0.4 mm/t																	
2710	2160	2170	1740	1690	2700	2030	1550	2480	1350	2700	2160	1080	1080	2160	860	2060	1720
Vc = 170 m/min, *fz* = 0.4 mm/t																	
2070	1240	1660	1000	1290	1550	1160	1180	1420	1030	1550	1240	620	830	1250	660	1190	990
Vc = 130 m/min, *fz* = 0.3 mm/t																	
2710	2160	2170	1740	1690	2700	2030	1550	2480	1350	2700	2160	1080	1080	2160	860	2060	1720
Vc = 170 m/min, *fz* = 0.4 mm/t																	
2710	2160	2170	1740	1690	2700	2030	1550	2480	1350	2700	2160	1080	1080	2160	860	2060	1720
Vc = 170 m/min, *fz* = 0.4 mm/t																	
3180	2540	2550	2040	1990	3180	2390	1820	2910	1590	3180	2540	1270	1270	2540	1010	2420	2020
Vc = 200 m/min, *fz* = 0.4 mm/t																	
3180	2540	2550	2040	1990	3180	2390	1820	2910	1590	3180	2540	1270	1270	2540	1010	2420	2020
Vc = 200 m/min, *fz* = 0.4 mm/t																	
2870	2870	2290	2290	1790	3580	2690	1640	3280	1430	3580	2860	1430	1150	2880	910	2730	2280
Vc = 180 m/min, *fz* = 0.5 mm/t																	
2390	2390	1910	1910	1490	2980	2240	1360	2720	1190	2980	2380	1190	950	2380	760	2280	1900
Vc = 150 m/min, *fz* = 0.5 mm/t																	
1590	630	1270	510	990	790	590	910	730	800	800	640	320	640	640	510	610	510
Vc = 100 m/min, *fz* = 0.2 mm/t																	
640	150	510	120	400	190	140	360	170	320	190	150	75	250	150	200	140	120
Vc = 40 m/min, *fz* = 0.12 mm/t																	

■ Notification for clamping

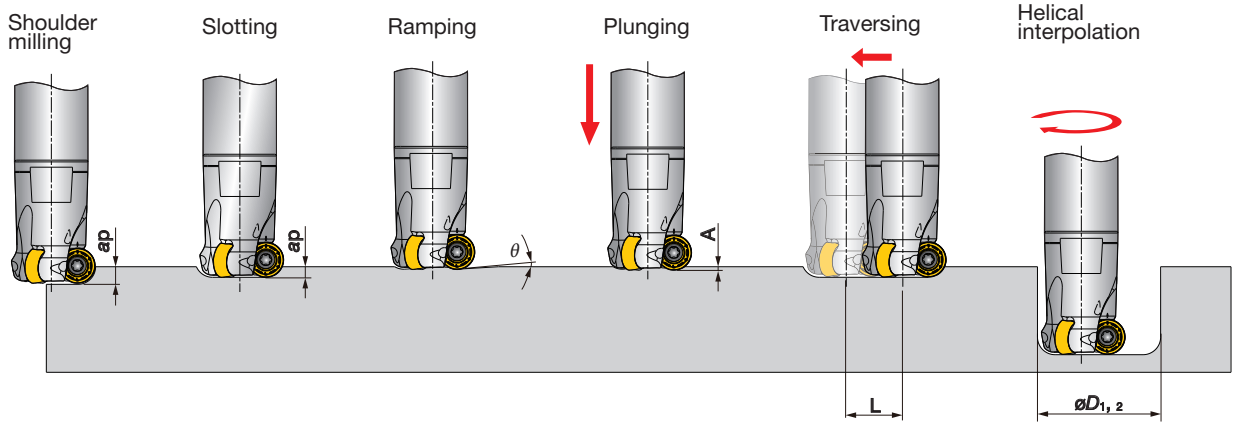
· When installing the insert, please carefully locate the insert in the seat and fasten the screw.



Make sure the insert cavity fits the protrusion on the body



APPLICATION RANGE



Designation	Tool-ø øDc (mm)	Max. depth of cut ap (mm)	Max. ramping angle θ°	Max. plunging depth A (mm)	Machining length for removing uncut portion L (mm)	Min.machining øD1(mm)	*Max. machining øD2 (mm)
ERP10R020M20.0-02	20	5	2.2	0.3	12	27	39
HRP10R020MM10-02	20	5	2.2	0.3	12	27	39
ERP10R025M25.0-02	25	5	3.4	0.7	16	35	49
HRP10R025MM12-02	25	5	3.4	0.7	16	35	49
ERP12R025M25.0-02	25	6	4.4	0.7	14	33	49
HRP12R025MM12-02	25	6	4.4	0.7	14	33	49
ERP10R032M32.0-04	32	5	8	2.5	23	46	63
HRP10R032MM16-04	32	5	8	2.5	23	46	63
ERP10R035M32.0-04	35	5	8.2	3	26	51	69
ERP12R032M32.0-03	32	6	10	2.7	21	53	63
HRP12R032MM16-03	32	6	10	2.7	21	53	63
ERP12R040M32.0-04	40	6	6.6	2.7	29	59	79
ERP16R040M32.0-02	40	8	8.4	2.7	25	53	79
TRP10R040M16.0E05	40	5	6.5	3	31	61	79
TRP12R050M22.0E05	50	6	4.5	2.7	39	79	99
TRP12R052M22.0E05	52	6	4	2.7	41	83	103
TRP12R063M22.0E06	63	6	3.3	2.7	52	105	125
TRP12R066M27.0E06	66	6	3	2.7	55	111	131
TRP16R063M22.0E05	63	8	3.6	2.7	48	99	125
TRP16R066M27.0E05	66	8	3.4	2.7	51	105	131

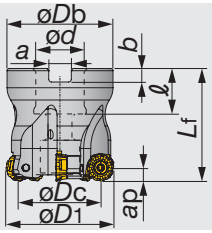
*For flat bottom hole

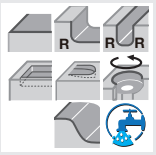
ROUNDSPLIT
TRC12/16

Face mills with button insert of 6mm or 8mm radius

A.R. = +0°, R.R. = -1°~ -5°







Designation	Max. ap	øDc	z	øD1	øDb	Lf	ød	ℓ	a	b	Kg	Air hole	Insert
TRC12R040M16.0E04	6	28	4	40	35	40	16	19	8.4	5.6	0.2	with	RCMT1204...
TRC12R050M22.0E05	6	38	5	50	47	50	22	20	10.4	6.3	0.4	with	RCMT1204...
TRC12R052M22.0E05	6	40	5	52	49	50	22	20	10.4	6.3	0.4	with	RCMT1204...
TRC12R063M22.0E06	6	51	6	63	59	50	22	20	10.4	6.3	0.7	with	RCMT1204...
TRC12R066M22.0E06	6	54	6	66	62	50	22	20	10.4	6.3	0.7	with	RCMT1204...
TRC12R080M27.0E07	6	68	7	80	76	50	27	22	12.4	7	1.1	with	RCMT1204...
TRC16R050M22.0E04	8	34	4	50	47	50	22	20	10.4	6.3	0.3	with	RCMT1606...
TRC16R052M22.0E04	8	36	4	52	49	50	22	20	10.4	6.3	0.4	with	RCMT1606...
TRC16R063M22.0E05	8	47	5	63	59	50	22	20	10.4	6.3	0.6	with	RCMT1606...
TRC16R066M22.0E05	8	50	5	66	62	50	22	20	10.4	6.3	0.7	with	RCMT1606...
TRC16R080M27.0E06	8	64	6	80	76	50	27	22	12.4	7	1	with	RCMT1606...
TRC16R100M32.0E07	8	84	7	100	96	63	32	25	14.4	8	2.4	with	RCMT1606...
TRC16R125M40.0E08	8	109	8	125	98	63	40	32	16.4	9	3	with	RCMT1606...

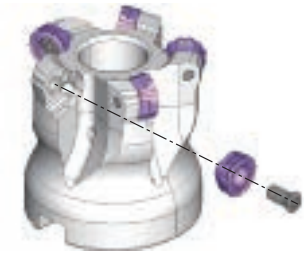
SPARE PARTS







Designation	Clamping screw	Grip	Shell locking bolt	Shell locking bolt 1	Torx bit
TRC12R040...	CSTB-4L090	H-TBS	-	FSHM8-30H	BT15S
TRC12R050 - 066...	CSTB-4L090	H-TBS	-	CM10X30H	BT15S
TRC12R080M27.0E07	CSTB-4L090	H-TBS	-	CM12X30H	BT15S
TRC16R050 - 052...	CSTB-5L120	H-TB	-	FSHM10-40H	BT20S
TRC16R063 - 066...	CSTB-5L120	H-TB	-	CM10X30H	BT20S
TRC16R080M27.0E06	CSTB-5L120	H-TB	-	CM12X30H	BT20S
TRC16R100...	CSTB-5L120	H-TB	-	CM16X40H	BT20S
TRC16R125...	CSTB-5L120	H-TB	TMBA-M20H	-	BT20M

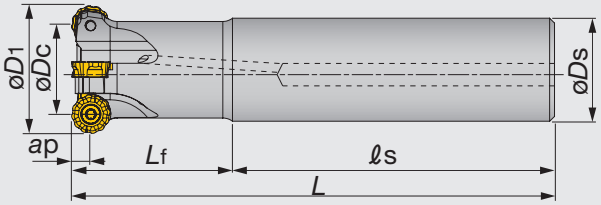


ROUNDSPLIT
ERC12/16

Indexable endmills with button insert of 6mm or 8mm radius

A.R. = +0°, R.R. = -1°~ -5°







Designation	Max. ap	øDc	z	øD1	øDs	L	Lf	ℓs	Kg	Air hole	Insert
ERC12R032M32.0-03	6	20	3	32	32	150	70	80	0.8	with	RCMT1204...
ERC12R032M32.0-03L	6	20	3	32	32	250	150	100	1.3	with	RCMT1204...
ERC12R032M32.0-03LL	6	20	3	32	32	300	180	120	1.6	with	RCMT1204...
ERC12R033M32.0-03	6	21	3	33	32	150	70	80	0.8	with	RCMT1204...
ERC12R033M32.0-03L	6	21	3	33	32	250	150	100	1.4	with	RCMT1204...
ERC12R033M32.0-03LL	6	21	3	33	32	300	70	230	1.7	with	RCMT1204...
ERC12R040M32.0-04	6	28	4	40	32	150	50	100	0.8	with	RCMT1204...
ERC12R040M32.0-04L	6	28	4	40	32	250	50	200	1.5	with	RCMT1204...
ERC12R040M32.0-04LL	6	28	4	40	32	300	50	250	1.8	with	RCMT1204...
ERC12R050M42.0-05	6	38	5	50	42	150	50	100	1.5	with	RCMT1204...
ERC12R050M42.0-05L	6	38	5	50	42	250	50	200	2.6	with	RCMT1204...
ERC12R050M42.0-05LL	6	38	5	50	42	300	50	250	3	with	RCMT1204...
ERC16R040M32.0-02	8	24	2	40	32	150	50	100	0.8	with	RCMT1606...
ERC16R040M32.0-02L	8	24	2	40	32	250	50	200	1.4	with	RCMT1606...
ERC16R040M32.0-02LL	8	24	2	40	32	300	50	250	1.7	with	RCMT1606...
ERC16R050M42.0-03	8	34	3	50	42	150	50	100	1.4	with	RCMT1606...
ERC16R050M42.0-03L	8	34	3	50	42	250	50	200	2.4	with	RCMT1606...
ERC16R050M42.0-03LL	8	34	3	50	42	300	50	250	3	with	RCMT1606...

SPARE PARTS

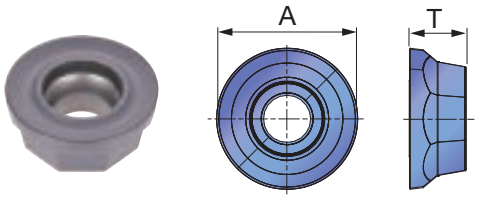




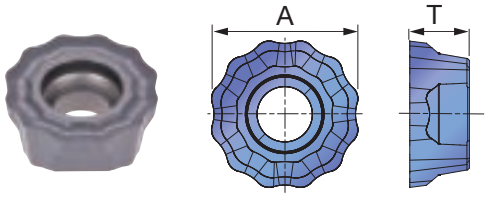
Designation	Clamping screw	Wrench
ERC12R...	CSTB-4L090	T-15DB
ERC16R040...	CSTB-5L105	T-20DB
ERC16R050...	CSTB-5L120	T-20DB

INSERT

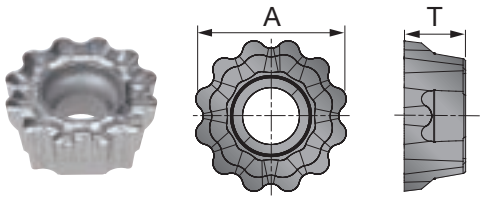
RCMT-MJ



RCMT-NMJ



RCMT-NAJ



P	Steel	☆		★		
M	Stainless		★	☆		
K	Cast iron	★		☆		
N	Non-ferrous				★	
S	Superalloys	★		★		
H	Hard materials					

★ : First choice
☆ : Second choice

Designation	Max. ap	Coating			Un-coated	A	T
		AH120	AH140	AH725	KS15F		
RCMT1204EN-MJ	6	●	●	●		12	4.8
RCMT1204EN-NMJ	6	●	●	●		12	4.8
RCMT1204FN-NAJ	6				●	12	4.8
RCMT1606EN-MJ	8	●	●	●		16	6.5
RCMT1606EN-NMJ	8	●	●	●		16	6.5
RCMT1606FN-NAJ	8				●	16	6.5

●: Line-up

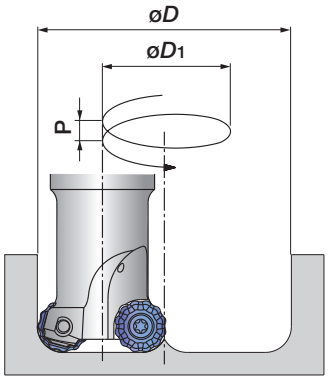
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Hardness HB	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t) each chipbreaker		
					MJ	NMJ	NAJ
P	Low carbon steels C15E4, E275A, etc.	~ 200	AH725	100 - 220	0.2 - 0.7	0.17 - 0.3	-
P	High carbon steels C45, C55, etc.	200 ~ 300	AH725	100 - 200	0.2 - 0.7	0.17 - 0.25	-
P	Alloyed steels 42CrMo4, 20Cr4, etc.	150 ~ 300	AH725	100 - 200	0.2 - 0.7	0.17 - 0.25	-
P	Tool steels X40CrMoV5-1, etc.	~ 300	AH725	100 - 180	0.2 - 0.7	0.17 - 0.25	-
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-3, etc.	-	AH140	90 - 180	0.2 - 0.6	0.15 - 0.25	-
K	Grey cast irons 250, 300, etc.	150 ~ 250	AH120	140 - 250	0.2 - 0.7	0.17 - 0.3	-
K	Ductile cast irons 400-15S, etc.	150 ~ 250	AH120	140 - 250	0.2 - 0.7	0.17 - 0.3	-
N	Aluminium alloys Si < 13%	-	KS15F	500 - 1200	-	-	0.1 - 0.3
N	Aluminium alloys Si ≥ 13%	-	KS15F	100 - 300	-	-	0.1 - 0.3
S	Heat-resisting alloy Inconel 718, Ti-6Al-4V, etc.	-	AH725	20 - 50	0.2 - 0.6	0.15 - 0.25	-

· To remove excessive chip accumulation use an air blast.
· When chips stick to the cutting edges (aluminium machining), use a water soluble cutting fluid.

· Cutting conditions are limited by machine power and material rigidity. When the cutting width or depth is large, set Vc and fz below the recommended values and check the machine vibration and spindle load.

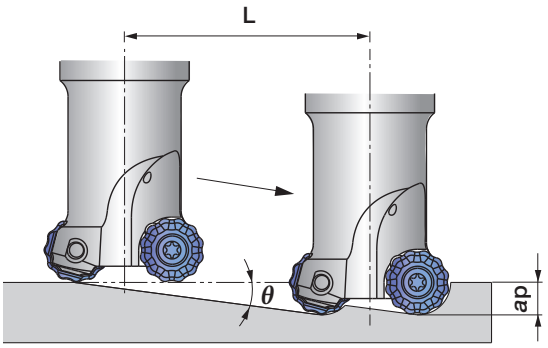
Holemaking with helical feed



Designation	Tool ø øDc (mm)	Min. machining diameter (mm)		Max. machining diameter (mm)		Pitch P (mm)
		øD	øD1	øD	øD1	
ERC12R032…	ø32	52	20	62	30	< 6
ERC12R033…	ø33	54	21	64	31	< 6
T/ERC12R040…	ø40	68	28	78	38	< 6
T/ERC12R050…	ø50	88	38	98	48	< 6
TRC12R063…	ø63	114	51	124	61	< 6
TRC12R080…	ø80	148	68	158	78	< 6
ERC16R040…	ø40	64	24	78	38	< 8
T/ERC16R050…	ø50	84	34	98	48	< 8
TRC16R063…	ø63	110	47	124	61	< 8
TRC16R080…	ø80	144	64	158	78	< 8
TRC16R100…	ø100	184	84	198	98	< 8
TRC16R125…	ø125	234	109	248	123	< 8

When holemaking with a helical feed, the pitch (P) needs to be set at lower values than that shown above.

Ramping



Designation	Tool ø øDc (mm)	Max. ramping angle θ°	L: tool pass length when ramping angle is 2 degrees				
			ap (mm)				
			2	3	4	6	8
ERC12R032…	ø32	10	57	85	114	171	–
ERC12R033…	ø33	9	57	85	114	171	–
T/ERC12R040…	ø40	6	57	85	114	171	–
T/ERC12R050…	ø50	4	57	85	114	171	–
TRC12R063…	ø63	3	57	85	114	171	–
TRC12R080…	ø80	2.3	57	85	114	171	–
ERC16R040…	ø40	12	57	85	114	171	229
T/ERC16R050…	ø50	7.4	57	85	114	171	229
TRC16R063…	ø63	6	57	85	114	171	229
TRC16R080…	ø80	4.3	57	85	114	171	229
TRC16R100…	ø100	3	57	85	114	171	229
TRC16R125…	ø125	2.4	57	85	114	171	229

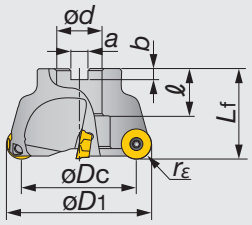
Tool pass length: L = ap / tan θ, Ramping angle needs to be set at smaller than 2 degrees in order to prevent chips from getting tangled.

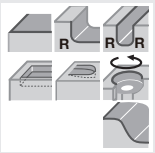
TRD12/16

Face mills with button insert of 6 mm or 8 mm radius

A.R. = +10°, R.R. = -6°~ 0°







Designation	Max. ap	øDc	z	øD1	Lf	ød	ℓ	a	b	rε	Kg	Insert
TRD12050R-E	6	38	4	50	40	22	20	10.4	6.3	6	0.3	RDM*1204...
TRD12052R-E	6	40	4	52	40	22	20	10.4	6.3	6	0.3	RDM*1204...
TRD12063R-E	6	51	5	63	40	22	20	10.4	6.3	6	0.4	RDM*1204...
TRD12066R-E	6	54	5	66	40	22	20	12.4	7	6	0.5	RDM*1204...
TRD12080R-E	6	68	6	80	50	27	22	12.4	7	6	0.8	RDM*1204...
TRD12100R-E	6	88	6	100	50	32	26	14.4	8	6	1.4	RDM*1204...
TRD16063R-E	8	47	4	63	40	22	20	10.4	6.3	8	0.4	RDM*1606...
TRD16066R-E	8	50	4	66	50	27	22	12.4	7	8	0.5	RDM*1606...
TRD16080R-E	8	64	5	80	50	27	22	12.4	7	8	0.7	RDM*1606...
TRD16100R-E	8	84	6	100	50	32	26	14.4	8	8	1.1	RDM*1606...

SPARE PARTS





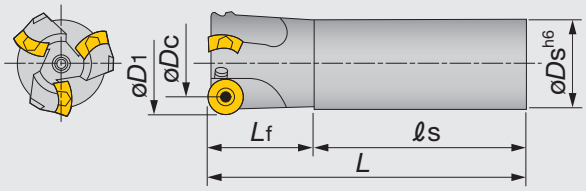

Designation	Clamp screw	Lubricant	Shell locking bolt	Wrench
TRD12...-E	CSTB-3.5	M-1000	-	T-15D
TRD16...-E	CSTB-5	M-1000	-	T-20D

ERD12/16

Indexable endmills with button insert of 6 mm or 8 mm radius

A.R. = +8°~ 10°, R.R. = -6°~ -2°





Designation	Max. ap	øDc	z	øD1	øDs	L	Lf	ℓs	Insert
ERD12032RS	6	20	2	32	32	150	50	100	RDM*1204...
ERD12032RL	6	20	2	32	32	250	50	200	RDM*1204...
ERD12040RS	6	28	3	40	32	150	50	100	RDM*1204...
ERD12040RL	6	28	3	40	32	250	50	200	RDM*1204...
ERD12050RS	6	38	4	50	42	150	50	100	RDM*1204...
ERD12050RL	6	38	4	50	42	250	50	200	RDM*1204...
ERD12063RS	6	51	4	63	42	150	50	100	RDM*1204...
ERD12063RL	6	51	4	63	42	250	50	200	RDM*1204...
ERD16040RS	8	24	2	40	32	150	50	100	RDM*1606...
ERD16040RL	8	24	2	40	32	250	50	200	RDM*1606...
ERD16050RS	8	34	3	50	42	150	50	100	RDM*1606...
ERD16050RL	8	34	3	50	42	250	50	200	RDM*1606...
ERD16063RS	8	47	3	63	42	150	50	100	RDM*1606...
ERD16063RL	8	47	3	63	42	250	50	200	RDM*1606...

SPARE PARTS



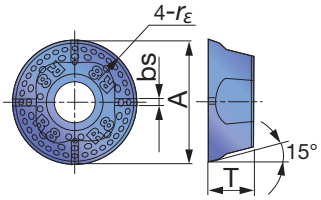


Designation	Clamp screw	Lubricant	Wrench
ERD120**R*	CSTB-3.5	M-1000	T-15D
ERD160**R*	CSTB-5	M-1000	T-20D

INSERT

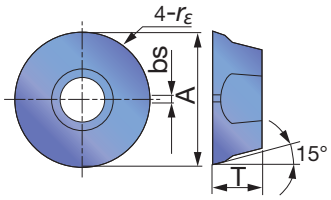
RDMT12/16-MJ

Button insert with pressed MJ chipbreaker



RDMW12/16

Flat-top button insert with 6 mm or 8 mm radius



		AH120	AH130	AH140	AH330	T3130	UX30
P	Steel	☆			★	★	☆
M	Stainless		★	☆			
K	Cast iron	★					
N	Non-ferrous						
S	Superalloys	★	☆				
H	Hard materials						

★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating					Un-coated	A	T	bs
			AH120	AH130	AH140	AH330	T3130	UX30			
RDMT1204ZDPN-MJ	6	6	●		●	●	●	●	12.8	4.76	0.8
RDMW1204ZDSN	6	6	●		●		●		12.8	4.8	0.8
RDMT1606ZDPN-MJ	8	8	●	●	●	●	●	●	16.8	6.35	0.8
RDMW1606ZDSN	8	8	●		●		●		16.8	6.4	0.8

●: Line-up

STANDARD CUTTING CONDITIONS

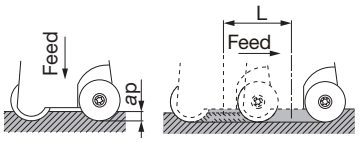
ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed per tooth f (mm/t)	
				T/ERD12	T/ERD16
P	Carbon steels C50, etc. < 300 HB	AH120	170 (120 ~ 220)	0.3 ~ 0.5	0.3 ~ 0.6
		AH330	190 (140 ~ 240)	0.2 ~ 0.4	0.2 ~ 0.5
		UX30	100 (80 ~ 120)	0.2 ~ 0.4	0.2 ~ 0.5
	Alloy steels 42CrMo4, 17Cr3, etc. < 300 HB	AH120	150 (100 ~ 200)	0.2 ~ 0.45	0.2 ~ 0.5
		AH330	170 (120 ~ 220)	0.15 ~ 0.35	0.15 ~ 0.4
		UX30	90 (60 ~ 120)	0.15 ~ 0.35	0.15 ~ 0.4
	Die steels X96CrMoV12, etc. < 300 HB	AH120	130 (80 ~ 180)	0.2 ~ 0.35	0.25 ~ 0.45
		AH330	150 (100 ~ 200)	0.1 ~ 0.3	0.1 ~ 0.4
M	Stainless steels X5CrNi18 9, etc.	AH130·AH140	150 (100 ~ 200)	0.2 ~ 0.3	0.2 ~ 0.4
K	Grey Cast irons 250, etc.	AH120	180 (120 ~ 240)	0.3 ~ 0.5	0.3 ~ 0.6
		AH330	200 (150 ~ 250)	0.2 ~ 0.4	0.2 ~ 0.5
H	Hard materials < 45 HRC	AH120	100 (60 ~ 140)	0.08 ~ 0.25	0.1 ~ 0.3

Note: When the depth of cut is smaller than 2 mm, use the higher limit of feed values shown above. When larger than 3 mm, use the lower limit of the feed values.

Plunging + traverse feed milling (Unit: mm)

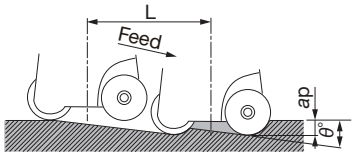
Plunging

Traverse feed milling

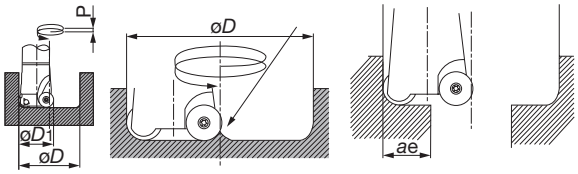


Unit: mm

Ramping



Helical feed drilling



Designation	ø*D*1	Max. plunging depth *ap*	Max. ramping angle *θ*°	Min. traverse length to flatten the bottom surface L	Min. machining diameter ø*D*	Max. machining diameter ø*D*	Pitch P	ø*D*c-ra *ae*
TRD12050R...	50	4	6	ø*D*1 - 11	88	98	< 6	44
TRD12052R-E	52	4	5.5	ø*D*1 - 11	92	102	< 6	46
TRD12063R...	63	4	4	ø*D*1 - 11	114	124	< 6	57
TRD12066R...	66	4	4	ø*D*1 - 11	120	130	< 6	60
TRD12080R...	80	4	2.5	ø*D*1 - 11	148	158	< 6	74
TRD12100R...	100	4	1.5	ø*D*1 - 11	188	198	< 6	94
TRD16063R...	63	5.5	6	ø*D*1 - 15	110	124	< 8	55
TRD16066R...	66	5.5	6	ø*D*1 - 15	120	130	< 8	58
TRD16080R...	80	5.5	4	ø*D*1 - 15	144	158	< 8	72
TRD16100R...	100	5.5	3	ø*D*1 - 15	184	198	< 8	92
ERD12032RS/L	32	4	16	ø*D*1 - 11	52	62	< 6	26
ERD12040RS/L	40	4	8	ø*D*1 - 11	68	78	< 6	34
ERD12050RS/L	50	4	6	ø*D*1 - 11	88	98	< 6	44
ERD12063RS/L	63	4	4	ø*D*1 - 11	114	124	< 6	57
ERD16040RS/L	40	5.5	20	ø*D*1 - 15	64	78	< 8	32
ERD16050RS/L	50	5.5	10	ø*D*1 - 15	84	98	< 8	42
ERD16063RS/L	63	5.5	6	ø*D*1 - 15	110	124	< 8	55

ø*D*1 : Tool diameter
ø*D* : Drilling diameter
P : Z-axis feed per one round of tool pass (Pitch of helical cycle)

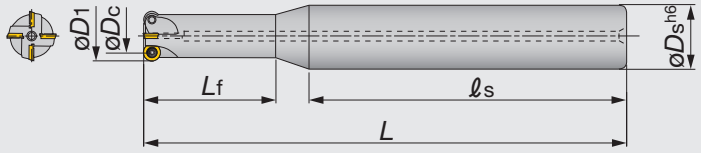
Notes:
- In plunging, the maximum plunging depth is limited as shown in the above table.
- In plunging, set the Z-axis feed in a range of 0.05 to 0.1 mm/t.
- When plunging, use peck-feed every 1 mm (or smaller than 1 mm) to break chips.
- tan*θ* = depth of cut: *a*p / length of tool pass: L
- In ramping, the ramping angle should be set within the maximum ramping angle.
- In helical feed hole machining, the machinable hole diameters are limited by the tool diameter as shown in the above tables.
- When machining between the minimum and maximum machining diameters, a projection remains in the center of the bottom surface of the hole as shown in the Figure at right. Remove it by traverse feed milling.

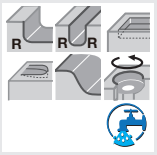
MEMO

EWD05/07/10

Indexable endmills with buttom inserts of 2.5, 3.5, and 5 mm radius







Designation	Max. ap	øDc	z	øD1	øDs	ℓs	Lf	L	Air hole	Insert
EWD05010R	2.5	5	2	10	20	80	20	130	with	RDMW05...
EWD05012R	2.5	7	3	12	20	80	20	130	with	RDMW05...
EWD07015R	3.5	8	3	15	20	100	40	150	with	RDMW07...
EWD05015R	2.5	10	4	15	20	100	40	150	with	RDMW05...
EWD10020R	5.0	10	2	20	25	120	40	170	with	RDMW10...
EWD07020R	3.5	13	4	20	25	120	40	170	with	RDMW07...
EWD05020R	2.5	15	5	20	25	120	40	170	with	RDMW05...
EWD10025R	5.0	15	3	25	32	125	45	195	with	RDMW10...
EWD07025R	3.5	18	5	25	32	125	45	195	with	RDMW07...

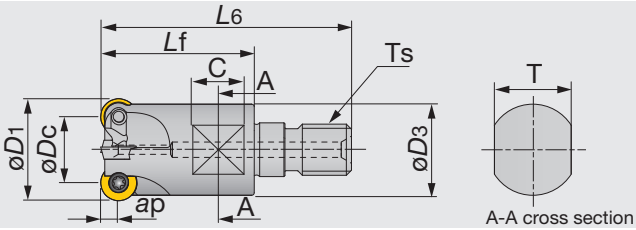
SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
EWD050**R	CSTD-1.8	M-1000	T-6D
EWD070**R	CSTB-2.5S	M-1000	T-8D
EWD100**R	CSTB-3.5H	M-1000	T-15D

HWD07-M

Indexable endmills with TungFlex, carrying buttom inserts of 3.5 mm radius







Designation	Max. ap	øDc	z	øD1	L6	Lf	C	T	øD3	Ts	Kg	Air hole
HWD07R015MM08-03	3.5	8	3	15	42	25	8	10	12.8	M8	0.03	with
HWD07R020MM10-04	3.5	13	4	20	49	30	10	15	17.8	M10	0.06	with
HWD07R025MM12-05	3.5	18	5	25	57	35	10	17	20.8	M12	0.1	with
HWD07R030MM16-05	3.5	23	5	30	63	40	12	22	28.8	M16	0.2	with

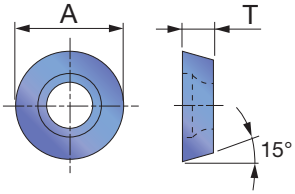
SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench
HWD07-M...	CSTB-2.5S	M-1000	T-8D

INSERT

RDMW05/07/10





P	Steel	★	
M	Stainless		
K	Cast iron	★	
N	Non-ferrous		
S	Superalloys	★	
H	Hard materials		

★ : First choice
☆ : Second choice

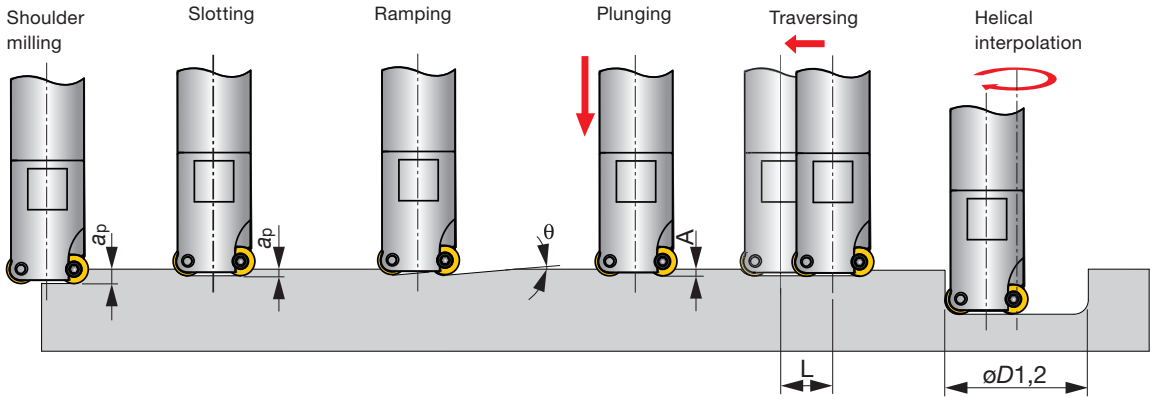
Designation	Max. ap	Coating AH120	A	T
RDMW0501M0	2.5	●	5	1.4
RDMW0702M0	3.5	●	7	2.38
RDMW1003M0	5.0	●	10	3.18

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)		
					Cutter dia. ø10, 12	Cutter dia. ø15, 20	Cutter dia. ø25
P	Carbon steels C45, etc. < 300 HB	AH120	200 ~ 500	0.15 ~ 0.45	~ 0.5	~ 0.7	~ 1
P	Alloy steels 42CrMo4 etc. < 300 HB	AH120	120 ~ 350	0.15 ~ 0.35	~ 0.5	~ 0.7	~ 1
P	Die steels X40CrMoV5-1 etc. < 300 HB	AH120	100 ~ 300	0.1 ~ 0.3	~ 0.5	~ 0.7	~ 1
K	Cast irons 250, etc.	AH120	200 ~ 500	0.2 ~ 0.5	~ 0.5	~ 0.7	~ 1
H	Hardened steels, Prehardened steels < 40HRC	AH120	70 ~ 200	0.1 ~ 0.25	~ 0.5	~ 0.7	~ 1

APPLICATION RANGE



Designation	Tool-ø	Max. depth of cut	Max. ramping	Max. plunging depth	Machining length for removing uncut portion	Max. machining	*Max. machining
	øDc	*ap*	*θ*°	A	L	*øD1*	*øD2*
HWD07R015MM08-03	15	3.5	25	2	*ø*Dc - 6	23	28
HWD07R020MM10-04	20	3.5	11	2	*ø*Dc - 6	33	38
HWD07R025MM12-05	25	3.5	7	2	*ø*Dc - 6	43	48
HWD07R030MM16-05	30	3.5	5.5	2	*ø*Dc - 6	53	58

*For flat bottom hole



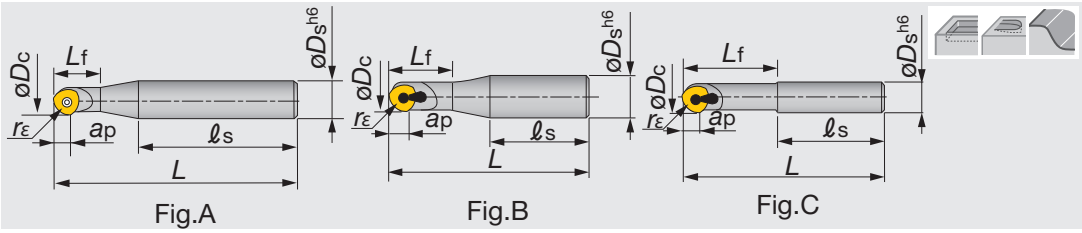


Fig.A Fig.B Fig.C

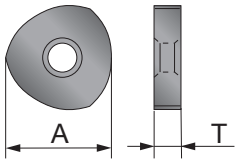
Designation	Max. *ap*	*øDc*	z	*øDs*	*ℓs*	*Lf*	*L*	*rε*	Insert	Fig.
TBN1100S	5	10	1	16	60	15	90	5	ZNCA1002FN2	A
TBN1120S	6	12	1	16	70	20	110	6	ZNCA1203FN	A
TBN1160S	8	16	1	20	85	25	130	8	ZNCA1603FN	A
TBN1200S	10	20	1	25	100	35	160	10	ZN**2004...	A
TBN1250S	12.5	25	1	32	100	45	175	12.5	ZN**2505...	B
TBN1300S	15	30	1	32	100	90	190	15	ZN**3005...	C

SPARE PARTS

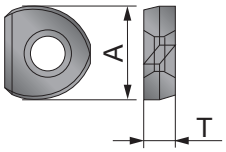
Designation	Clamping screw	Clamp	Right-left screw	Wrench
TBN1100S	CSTB-2.5B	-	-	T-8D
TBN1120S	CSTB-3S	-	-	T-9D
TBN1160S	CSTB-4S	-	-	T-15D
TBN1200S	CSTA-5SS	-	-	T-15D
TBN1250S, 1300S	CSTA-5S	CP536	DS-6T	T-15D

INSERT

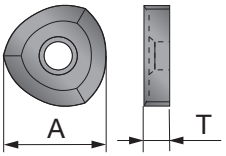
ZNCA-FN



ZNCA-FN2



ZNMM-EN



		UX30	TH10	A	T
		Uncoated			
P	Steel	★			
M	Stainless				
K	Cast iron		★		
N	Non-ferrous		★		
S	Superalloys				
H	Hard materials				
Designation					
ZNCA1002FN2		●	●	7.958	2.5
ZNCA1203FN		●	●	9.735	3
ZNCA1603FN		●	●	12.772	3.5
ZNCA2004FN		●	●	15.862	4
ZNCA2505FN		●	●	19.826	5
ZNCA3005FN		●	●	23.618	5
ZNMM2004EN		●		15.862	4
ZNMM2505EN		●		19.826	5
ZNMM3005EN		●		23.618	5.5

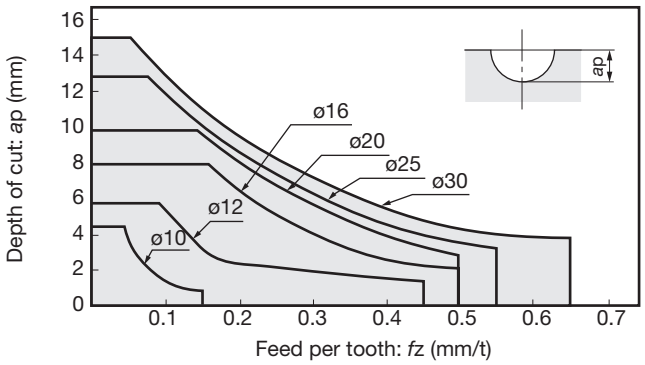
★ : First choice
☆ : Second choice
●: Line-up

STANDARD CUTTING CONDITIONS

For finishing

ISO	Workpiece material	Grade	Cutting Speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Pick feed *Pf* (mm)
P	High carbon steel C45, C55, etc.	UX30	80 - 120	0.1 - 0.3	0.3 - 0.5
P	Tool steel X153CrMoV12, etc.	UX30	60 - 100	0.08 - 0.25	0.3 - 0.5
K	Cast iron 250, 400-15S, etc.	TH10	80 - 120	0.1 - 0.5	0.3 - 0.5

GUIDELINES FOR SELECTING DEPTH OF CUT AND FEED

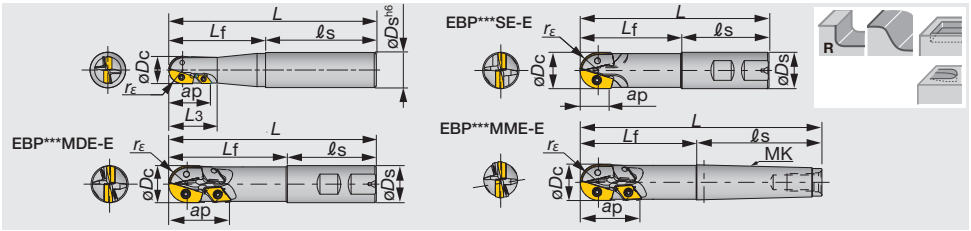


Workpiece material: Carbon steel (JIS S55C)
Insert grade: UX30
Machine power: ø10 ~ ø16: 7.5 kW
ø20 ~ ø30: 22.5 kW
No. of revolutions: ø10 ~ ø16: 2000 min^{-1}
ø20 ~ ø30: 1500 min^{-1}

EBP

Indexable ball-nose endmill for semi-finishing





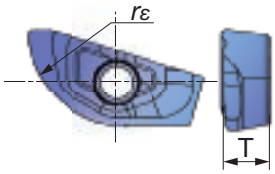
Designation	Max. *ap*	øDc	z	øDs	ℓs	Lf	L	L3	rε	MK	Insert 1	Insert 2
EBP020SD-E	16	20	2	20	56	60	116	-	10	-	ZPET2004-MJ	-
EBP020SS	16	20	2	25	80	60	140	30	10	-	ZPET2004-MJ	-
EBP020MDE-E	29.5	20	2 (4)	20	56	70	126	-	10	-	ZPET2004-MJ	DCMW070204TN
EBP020MME-E	29.5	20	2 (4)	-	69	70	139	-	10	MK2	ZPET2004-MJ	DCMW070204TN
EBP020MSE	29.5	20	2 (4)	25	80	70	150	35	10	-	ZPET2004-MJ	DCMW070204TN
EBP020LSE	29.5	20	2 (4)	25	180	70	250	35	10	-	ZPET2004-MJ	DCMW070204TN
EBP025SD-E	21	25	2	25	60	70	130	-	12.5	-	ZPET2505-MJ	-
EBP025SS	21	25	2	32	80	70	150	35	12.5	-	ZPET2505-MJ	-
EBP025MDE-E	41	25	2 (4)	25	60	80	140	-	12.5	-	ZPET2505-MJ	DCMW11T304TN
EBP025MME-E	41	25	2 (4)	-	86	-	166	-	12.5	MK3	ZPET2505-MJ	DCMW11T304TN
EBP025MSE	41	25	2 (4)	32	100	80	180	50	12.5		ZPET2505-MJ	DCMW11T304TN
EBP025LSE	41	25	2 (4)	32	220	80	300	50	12.5	-	ZPET2505-MJ	DCMW11T304TN
EBP030SS	24	30	2	32	80	80	160	40	15	-	ZPET3006-MJ	-
EBP030MSE	45	30	2 (4)	32	100	100	200	55	15	-	ZPET3006-MJ	DCMW11T304TN
EBP030LSE	45	30	2 (4)	32	250	100	350	55	15	-	ZPET3006-MJ	DCMW11T304TN
EBP032SD-E	25	32	2	32	60		140	-	16	-	ZPET3206-MJ	-
EBP032MDE-E	46	32	2 (4)	32	60	100	160	-	16	-	ZPET3206-MJ	DCMW11T304TN
EBP032MME-E	46	32	2 (4)	-	109	100	209	-	16	MK4	ZPET3206-MJ	DCMW11T304TN

SPARE PARTS

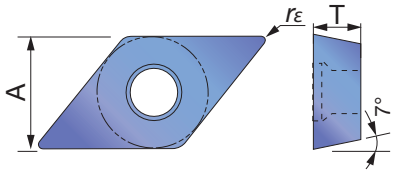
Designation	Clamping screw for Insert 1	Clamping screw for Insert 2	Lubricant	Wrench for Insert 1	Wrench 1 for Insert 1
EBP020SS/SD-E	CSTD-3T	-	M-1000	T-10D	-
EBP025SS/SD-E	CSTB-4S	-	M-1000	T-15D	-
EBP030SS/032SD-E	CSTB-5S	-	M-1000	T-20D	-
EBP020*SE/M*E-E	CSTB-2.5S	CSTD-3T	M-1000	T-10D	T-8D
EBP025*SE/M*E-E	CSTB-4S	-	M-1000	T-15D	-
EBP030*SE/032M*E-E	CSTB-4S	CSTB-5S	M-1000	T-15D	T-20D

INSERT

ZPET-MJ (for Radius)



DCMW-TN (for Peripheral)



		AH120	AH330
P	Steel	☆	★
M	Stainless		★
K	Cast iron	★	
N	Non-ferrous		
S	Superalloys	★	
H	Hard materials		

★ : First choice
☆ : Second choice

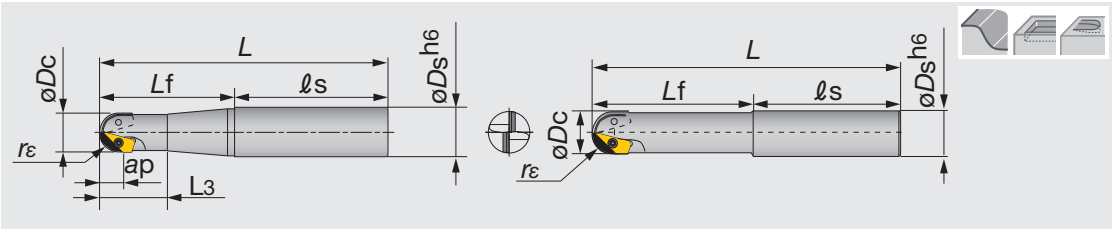
Designation	rε	Coating AH120	Coating AH330	A	T
ZPET2004-MJ	10	●	●	-	4.5
ZPET2505-MJ	12.5	●	●	-	4.63
ZPET3006-MJ	15	●	●	-	6.75
ZPET3206-MJ	16	●	●	-	6.75
DCMW070204TN	0.4	●	●	6.4	2.4
DCMW11T304TN	0.4	●	●	9.5	4

●: Line-up

EBB

Indexable ball-nose endmill for semi-finishing with CBN insert





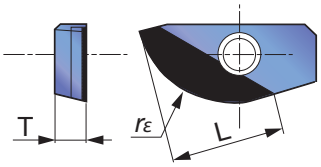
Designation	Max. *ap*	*ø*D*c*	z	*ø*D*s*	*ℓ*s	*L*f	*L*	*L*3	*r*ε	Insert
EBB020MS	12	20	2	25	80	70	150	35	10	ZPCW2003-QBN
EBB025MS	15.5	25	2	32	100	80	180	50	12.5	ZPCW25H3-QBN
EBB030MS	18	30	2	32	100	100	200	-	15	ZPCW30T3-QBN
EBB040MS	23	40	2	42	100	150	250	-	20	ZPCW4004-QBN
EBB050MS	28	50	2	50	100	150	250	-	25	ZPCW5004-QBN

SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench	Clamp set
EBB020MS	CSTB-3S	M-1000	T-9D	-
EBB025MS	CSTB-3.5	M-1000	T-15D	-
EBB030MS	CSTB-4S	M-1000	T-15D	-
EBB040MS	CSTB-5	M-1000	T-20D	CSP22
EBB050MS	CSTB-5	M-1000	T-20D	CSP22

INSERT

ZPCW-QBN



P	Steel	
M	Stainless	
K	Cast iron	★
N	Non-ferrous	
S	Superalloys	
H	Hard materials	

★ : First choice
☆ : Second choice

Designation	*r*ε	CBN BX950	T	L
ZPCW2003-QBN	10	●	3.18	12
ZPCW25H3-QBN	12.5	●	3.5	15.5
ZPCW30T3-QBN	15	●	3.97	18
ZPCW4004-QBN	20	●	4.76	23
ZPCW5004-QBN	25	●	4.76	28

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	No. of revolutions *n* (min^{-1})	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)	Pick feed *Pf* (mm)
K	Cast irons 250, etc.	5,000 ~ 15,000	0.2 ~ 0.5	~ 1	~ 3
	Ductile cast irons 600-3, etc.	5,000 ~ 15,000	0.2 ~ 0.5	~ 1	~ 3

EBD

Indexable ball-nose endmill for roughing

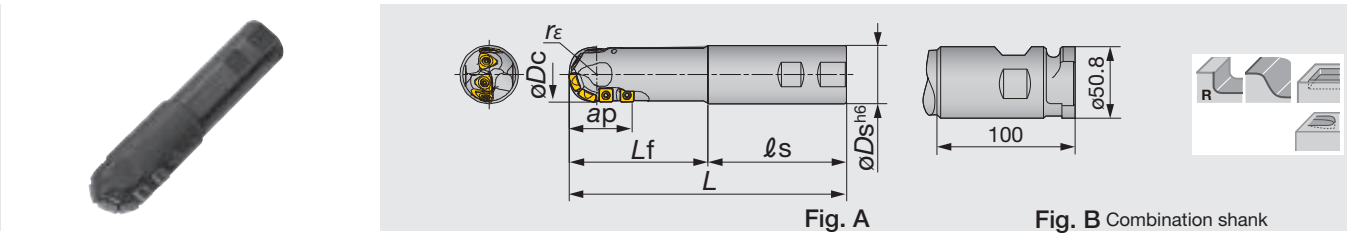


Fig. A

Fig. B Combination shank

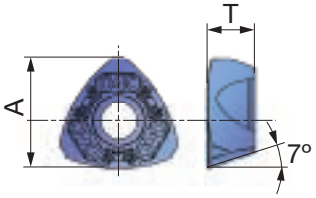
Designation	Max. *ap*	ø*Dc*	z	ø*Ds*	*ℓs*	*Lf*	*L*	*rε*	Fig.	Insert for R	Insert for P
EBD040SSE	45	40	4 (7)	42	100	100	200	20	A	ZDMT4005-MJ	SCMT09T308-23
EBD040MSE	45	40	4 (7)	42	100	150	250	20	A	ZDMT4005-MJ	SCMT09T308-23
EBD050SSE	59	50	4 (7)	42	100	100	200	25	A	ZDMT5006-MJ	SCMT120408-23
EBD050MSE	59	50	4 (7)	42	100	150	250	25	A	ZDMT5006-MJ	SCMT120408-23
EBD050SCE	59	50	4 (7)	50.8	100	100	200	25	B	ZDMT5006-MJ	SCMT120408-23
EBD050MCE	59	50	4 (7)	50.8	100	150	250	25	B	ZDMT5006-MJ	SCMT120408-23

SPARE PARTS

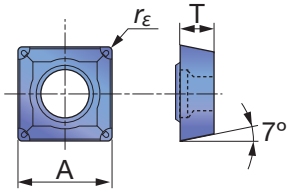
Designation	Clamping screw	Lubricant	Wrench
EBD040*SE	CSTB-4M	M-1000	T-15T
EBD050**E	CSTB-5	M-1000	T-20T

INSERT

ZDMT-MJ (For R-edge)



SCMT-23 (For peripheral edge)



P	Steel	☆
M	Stainless	
K	Cast iron	★
N	Non-ferrous	
S	Superalloys	★
H	Hard materials	☆

★ : First choice
☆ : Second choice

Designation	*rε*	Coating AH120	A	T
ZDMT4005-MJ	-	●	13	5.5
ZDMT5006-MJ	-	●	16.2	6.5
SCMT09T308-23	0.8	●	9.525	3.97
SCMT120408-23	0.8	●	12.7	4.76

●: Line-up

STANDARD CUTTING CONDITIONS

EBP

ISO	Workpiece material	Grade	Machining type	Cutting speed *Vc* (m/min)	Table feed *vf* (mm/min) Tool dia. ø20	Tool dia. ø25	Tool dia. ø30
P	Carbon steels C55, etc. < 300 HB	AH120	(1)	200 (170 ~ 230)	760 (610 ~ 910)	610 (460 ~ 760)	510 (360 ~ 660)
		AH120	(2)	230 (200 ~ 260)	1100 (900 ~ 1300)	880 (680 ~ 1080)	730 (530 ~ 930)
		AH120	(3)	180 (150 ~ 200)	570 (420 ~ 350)	460 (310 ~ 610)	380 (230 ~ 530)
	Alloy steels 42CrMo4, etc. < 300 HB	AH120	(1)	180 (150 ~ 210)	680 (530 ~ 830)	550 (400 ~ 700)	450 (300 ~ 600)
		AH120	(2)	210 (180 ~ 240)	1000 (800 ~ 1200)	800 (600 ~ 400)	670 (470 ~ 870)
		AH120	(3)	160 (130 ~ 180)	510 (360 ~ 660)	400 (250 ~ 550)	340 (190 ~ 490)
	Die steels X96CrMoV12, etc. < 300 HB	AH330	(1)	150 (120 ~ 180)	570 (420 ~ 720)	460 (310 ~ 610)	380 (230 ~ 530)
		AH330	(2)	180 (150 ~ 210)	860 (660 ~ 1060)	690 (490 ~ 890)	570 (370 ~ 770)
		AH330	(3)	130 (100 ~ 150)	410 (260 ~ 560)	330 (180 ~ 480)	280 (130 ~ 430)
K	Cast irons 250, etc.	AH120	(1)	200 (170 ~ 230)	950 (800 ~ 1100)	760 (610 ~ 910)	640 (490 ~ 790)
		AH120	(2)	230 (200 ~ 260)	1200 (900 ~ 1400)	1000 (700 ~ 1200)	830 (530 ~ 1030)
		AH120	(3)	180 (150 ~ 200)	570 (420 ~ 720)	460 (310 ~ 610)	380 (230 ~ 530)
H	Hardened steels Prehardened steels < 45 HRC	AH120	(1)	80 (60 ~ 100)	250 (150 ~ 350)	200 (100 ~ 300)	160 (100 ~ 260)
		AH120	(2)	100 (70 ~ 130)	310 (160 ~ 460)	250 (100 ~ 400)	210 (100 ~ 360)
		AH120	(3)	60 (40 ~ 80)	190 (140 ~ 240)	150 (100 ~ 200)	130 (80 ~ 180)

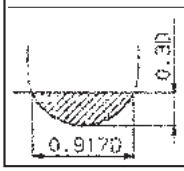
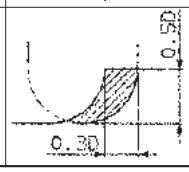
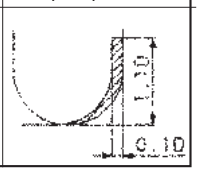
Notes:
- Cutting speeds shown in the left table are of the most outer diameter of the tool.
- The values of the cutting speeds and feeds shown in the table are of under general cutting conditions. The values should be modified depending on the power and rigidity of the machine to be used, and work holding conditions.
- When using the long shank type, the depth of cut, pick feed, cutting speed, and table feed should be reduced to 70 %-90 % of the values shown in the tables.

EBD

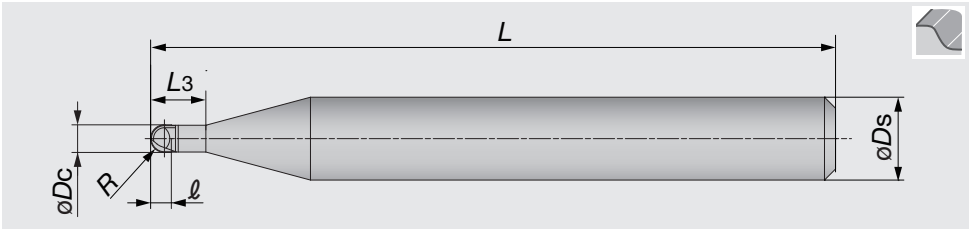
ISO	Workpiece material	Grade	Machining type	Cutting speed *Vc* (m/min)	Table feed *vf* (mm/min) Tool dia. ø40	Tool dia. ø50
P	Carbon steels C55, etc. < 300 HB	AH120	(1)	180 (150 ~ 210)	490 (400 ~ 570)	390 (330 ~ 460)
		AH120	(2)	200 (170 ~ 230)	480 (410 ~ 550)	380 (330 ~ 440)
		AH120	(3)	160 (130 ~ 190)	260 (210 ~ 300)	200 (160 ~ 240)
	Alloy steels 42CrMo4, etc. < 300 HB	AH120	(1)	160 (130 ~ 190)	430 (350 ~ 510)	350 (280 ~ 410)
		AH120	(2)	180 (150 ~ 210)	430 (360 ~ 500)	340 (290 ~ 400)
		AH120	(3)	140 (110 ~ 170)	220 (180 ~ 270)	180 (140 ~ 220)
	Die steels X96CrMoV12, etc. < 300 HB	AH120	(1)	140 (110 ~ 170)	380 (300 ~ 460)	300 (240 ~ 370)
		AH120	(2)	160 (130 ~ 190)	380 (310 ~ 460)	310 (250 ~ 360)
		AH120	(3)	120 (90 ~ 150)	190 (140 ~ 240)	150 (120 ~ 190)
K	Cast irons 250, etc.	AH120	(1)	200 (170 ~ 230)	640 (510 ~ 680)	510 (410 ~ 540)
		AH120	(2)	220 (190 ~ 250)	600 (510 ~ 680)	480 (410 ~ 540)
		AH120	(3)	180 (150 ~ 210)	340 (290 ~ 400)	280 (230 ~ 320)
H	Hardened steels Prehardened steels < 45 HRC	AH120	(1)	90 (70 ~ 110)	210 (160 ~ 260)	170 (130 ~ 210)
		AH120	(2)	100 (80 ~ 120)	200 (160 ~ 250)	160 (130 ~ 200)
		AH120	(3)	60 (50 ~ 90)	100 (80 ~ 140)	80 (60 ~ 120)

Notes:
- Cutting speeds shown in the left table are of the most outer diameter of the tool.
- The values of the cutting speeds and feeds shown in the table are of under general cutting conditions. The values should be modified depending on the power and rigidity of the machine to be used, and work holding conditions.
- When using the long shank type, the depth of cut, pick feed, cutting speed, and table feed should be reduced to 70 %-90 % of the values shown in the tables.

Machining types

(1) Grooving	(2) Shouldering at shallow depth of cut	(3) Shouldering at deep depth of cut
		





Designation	BX850	z	R	øDc	ℓ	L3	L	øDs
BBB2006	●	2	0.3	0.6	0.5	1.2	50	6
BBB2008	●	2	0.4	0.8	0.6	1.6	50	6
BBB2010	●	2	0.5	1	0.7	2	50	6
BBB2020	●	2	1	2	1.5	4	50	6

●: Line-up

Tolerance (BBB2000)

Mill dia.	Tolerance on dia.	Tolerance on shank
0.3 ~ 1.0	±0.005	h6

●BBB2000 (T-CBN Ball Endmills)

Workpiece material	Prehardened steels (NAK80, etc.) Die steels (JIS SKD61, etc.)			Die steels (JIS SKD11, DRM1 & 2, etc.)			High speed steel and die steel (JIS SKH, DRM3, etc.)			Inclined angle of workpiece (θ1)/ Effective neck length (Z)			
Hardness	~ 52 HRC			~ 62 HRC			~ 70 HRC						
Ball radius (R)	Depth of cut ap ~ pf (mm)	Feed rate (mm/min)	No. of revolutions n (min-1)	Depth of cut ap ~ pf (mm)	Feed rate (mm/min)	No. of revolutions n (min-1)	Depth of cut ap ~ pf (mm)	Feed rate (mm/min)	No. of revolutions n (min-1)				
0.3	0.02×0.03	2,000	50,000	0.01×0.02	2,000	50,000	0.01×0.02	1,500	50,000	0°30′/1.25	1°/1.30	2°/1.35	3°/1.45
0.4	0.03×0.05	2,000		0.02×0.03	2,000		0.01×0.03	1,500		0°30′/1.65	1°/1.70	2°/1.80	3°/1.90
0.5	0.05×0.05	3,000		0.03×0.05	3,000		0.02×0.03	2,000		0°30′/2.05	1°/2.10	2°/2.25	3°/2.40
1.0	0.10×0.10	5,000		0.05×0.05	5,000		0.03×0.05	3,000		0°30′/4.15	1°/4.25	2°/4.50	3°/4.80

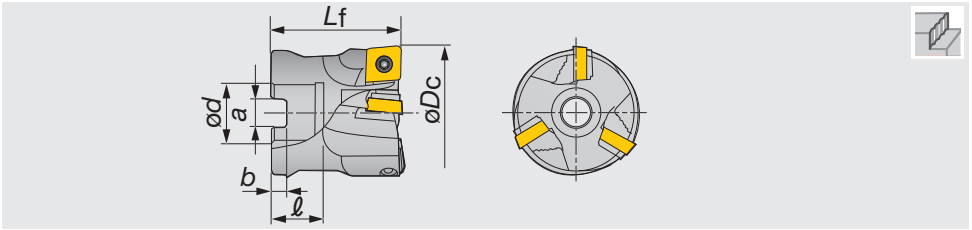
Notes:
- Depths of cut (*ap*) shown in the table are the allowable maximum values.
- Mist cooling or air blow is recommended.
- The maximum number of revolutions of the machine to be used is lower than 50,000 min^{-1}, the revolutions and feed rate should be modified at same rate.
- Use smallest possible overhang.

MEMO

TZP12

Plunging cutter for roughing operation with screw clamp

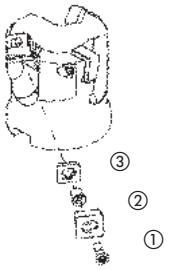




Designation	øDc	z	ød	ℓ	Lf	b	a	Kg	Insert
TZP12050R-E	50	3	22	20	50	6.3	10.4	0.38	APMT120416PR-MJ
TZP12063R-E	63	3	22	20	50	6.3	10.4	0.72	APMT120416PR-MJ

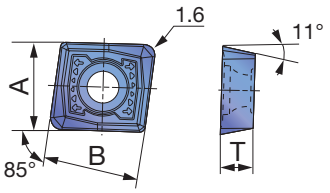
SPARE PARTS

Designation	①Clamping screw	Lubricant	②Shim screw	③Shim	Wrench (①)	Wrench 1 (②)
TZP12	CSTB-3.5T	M-1000	DTS5-3.5SS	ZSA1102	T-20D	P-3.5



INSERT

APMT120416-MJ



P	Steel	☆	★
M	Stainless		
K	Cast iron	★	
N	Non-ferrous		
S	Superalloys	★	
H	Hard materials		

★ : First choice
☆ : Second choice

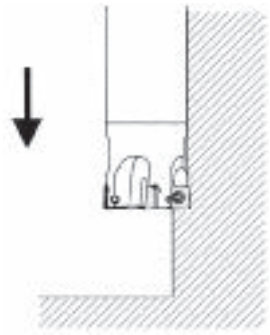
Designation	rε	Max. ap	Coating AH120	Coating T3130	A	B	T
APMT120416PR-MJ	1.6	10	●	●	12.7	13.5	4.76

●: Line-up

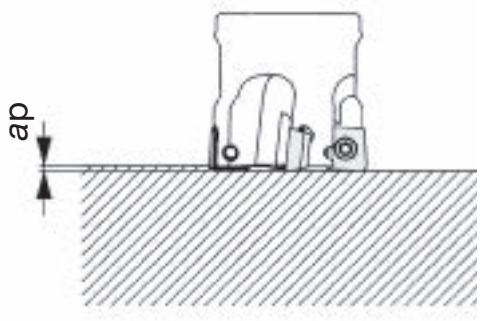
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Carbon steels, Alloy steels	AH120	100 ~ 200	0.1 ~ 0.3
		T3130	150 ~ 250	0.1 ~ 0.25
	Die steels < 300 HB	AH120	100 ~ 200	0.1 ~ 0.3
		T3130	150 ~ 250	0.1 ~ 0.25
	Prehardened steels < 45 HRC	AH120	60 ~ 120	0.1 ~ 0.2
K	Cast irons	AH120	100 ~ 200	0.1 ~ 0.3

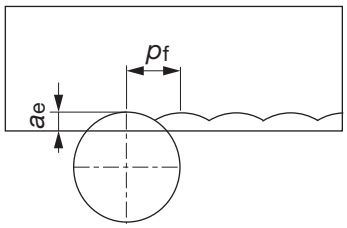
Z-feed milling



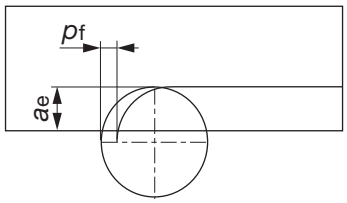
Traverse feed milling



Machining method (1)



Machining method (2)



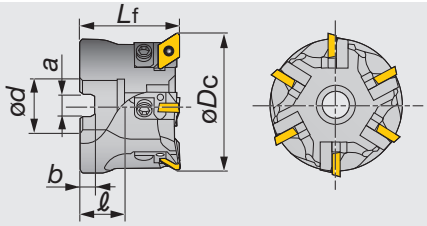
Machining method	Z-feed milling		Traverse feed milling
	Pick feed p_f (mm)	Radial depth of cut *ae* (mm)	Depth of cut *ap* (mm)
(1)	Tool dia. øD/2	Within effective cutting edge length	~ 0.5
(2)	Within effective cutting edge length	Tool dia. øD/2	

Note: In Z-feed milling, select either of the machining method (1) or (2) and decide the depth of cut according to the application.

TZF11

Plunging cutter for finishing operation

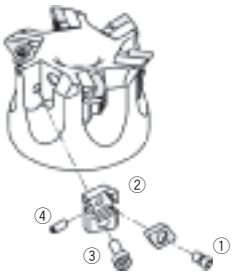




Designation	z	øDc	ød	ℓ	Lf	b	a	Kg	Insert
TZF11050R-E	4	50	22	20	45	6.3	10.4	0.38	DPCW11T3ZFR
TZF11063R-E	6	63	22	20	45	6.3	10.4	0.72	DPCW11T3ZFR

SPARE PARTS

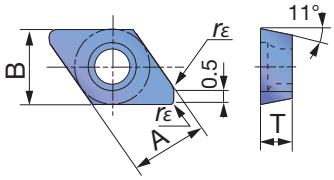
Designation	①Clamping screw	②Locator	Lubricant	③Cartridge fixing screw	④Cartridge fixing screw	Shell locking bolt	Wrench (①)	Wrench 1 (④)	Wrench 2 (③)
TZF11050R*	CSTB-4S	SDUPR09CZ-11	M-1000	CM4X0.7X12	SSHM3-10	FSHM10-40	T-15D	P-1.5	P-3
TZF11063R*	CSTB-4S	SDUPR09CZ-11	M-1000	CM4X0.7X12	SSHM3-10	-	T-15D	P-1.5	P-3



INSERT

DPCW11T3

Precious ground insert for finishing with plunging tool



P	Steel	☆	☆		★	
M	Stainless		★			
K	Cast iron	★				
N	Non-ferrous					
S	Superalloys					
H	Hard materials				☆	

★ : First choice
☆ : Second choice

Designation	rε	Coating			Cermet		A	B	T
		AH120	AH740		NS740				
DPCW11T3ZFR	1	●	●		●		9.5	9.5	4

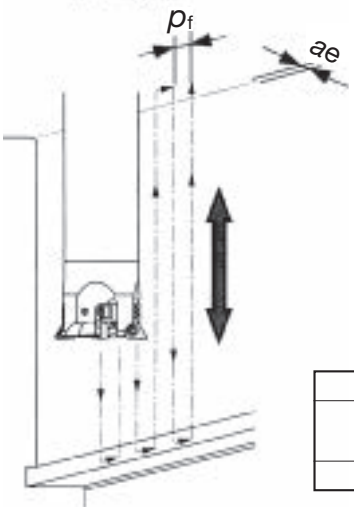
●: Line-up

STANDARD CUTTING CONDITIONS

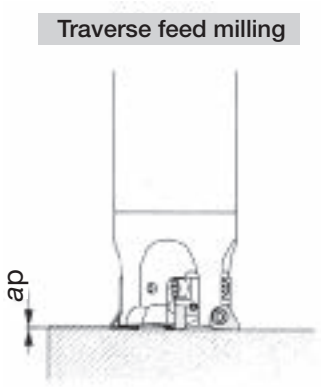
ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Carbon steels, Alloy steels < 300 HB	NS740	300 (150 ~ 400)	0.15 (0.05 ~ 0.2)
		AH740	250 (150 ~ 350)	0.15 (0.05 ~ 0.2)
K	Cast irons 250, etc.	AH740	300 (200 ~ 500)	0.15 (0.05 ~ 0.2)
	Ductile cast irons 600-3, etc.	AH740	250 (150 ~ 350)	0.15 (0.05 ~ 0.2)
H	Prehardened steels, Hard materials 40-55 HRC	AH740	150 (100 ~ 200)	0.1 (0.05 ~ 0.15)

- Dry cutting (or air blow) at a depth of cut up *ae* to 0.3 mm (allowable max. 0.5 mm) and a pick feed *pf* from 0.5 to 1.0 mm is recommended.
- TZF11 type cutters are not designed to adjust dynamic balance. Therefore, when the tool's overhang ratio (cutter diameter-to-length) exceeds 6:1, special care should be taken with the revolution speed. (At first, start the machining at 50 % of the speed shown in the table of the standard cutting conditions, and then gradually increase the speed whilst confirming safety.)
- To produce highly accurate surface finish, use the cutter on a machine with sufficient rigidity.

Z-feed milling



Traverse feed milling



Z-feed milling		Traverse feed milling
Pick feed p_f (mm)	Radial depth of cut *ae* (mm)	Depth of cut *ap* (mm)
0.5 ~ 1	~ 0.5	~ 0.5

●Cautionary points in use

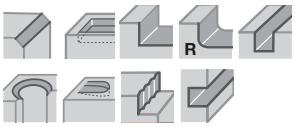
- Use the cutter for finish milling of vertical wall surfaces requiring long tool-overhang of L/D > 6.
- Radial cutting edge run-out should be adjusted within 0.01 mm.
- In addition to Z-feed milling, TZF11 type cutters can be also used for traverse feed milling. (*ap* ≤ 0.5 mm)



TUNGMEISTER

Endmills with exchangeable heads for reduced tool change time

ø6 mm - ø25 mm



D226

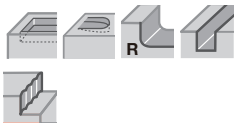
P M K N S H



HYBRIDTACMILL

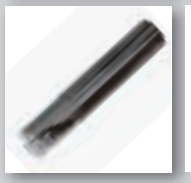
Multi-functional endmills

ø10 mm - ø16 mm / max. ap 8 mm



D254

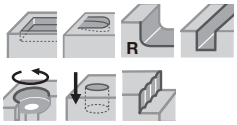
P M K N



EVX

Multi-functional endmills in larger diameters

ø16 mm - ø63 mm / max. ap 15 mm



D257

P M K



ECC

Chamfering endmills for large lengths

ø34 mm - ø55 mm



D260

P M K



ECP

Chamfering endmills for small lengths

ø10 mm - ø36 mm



D262

P K



TCB

Counter boring tool for flat bottom finish

ø14 mm - ø43 mm



D263

P M K



Thread Milling

Threading tool with a single indexable insert

M28 - M90



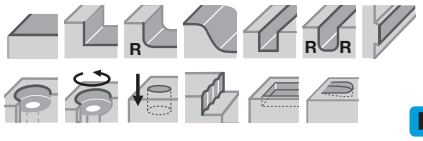
D265

P M



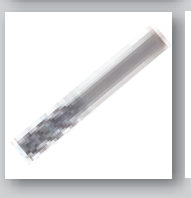
TMS

High rigidity modular system



D267

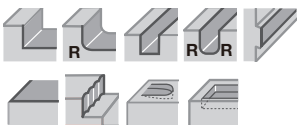
P M K N H



Solid Endmill

Solid carbide endmills for various applications

ø0.4 mm - ø25 mm



D274

P M K N S H



TUNGMEISTER

Designation system

Shank

V	SS	D10	L070	S	06	-	W	-	A
①	②	③	④	⑤	⑥		⑦		⑧

① Series	
V	TungMeister

② Shank type	
SS	Straight neck
TS	Taper neck
SC	Slotting
ST	for T-Slotting
AD	TungFlex adapter

③ Shank diameter (mm)	
D08	ø8
D10	ø10
D12	ø12
D16	ø16
D20	ø20
D25	ø25
D32	ø32
VSC, VAD type	
100	ø10
120	ø12
130	ø13
180	ø18
210	ø21

④ Length (mm)	
L070	70

⑤ Shape of shank	
S	Cylindrical
W	Weldon

⑥ Connection screw size	
05	S05
06	S06
08	S08
10	S10
12	S12
15	S15

⑦ Shank material	
S	Steel
C	Carbide
W	Tungsten

⑧ Additional feature	
A	with coolant hole
M	Thread size (TungFlex adapters)

Head

● Square endmill

V	E	E	080	L05.0	R00	-	03	S05
①	②	③	④	⑤	⑥	⑦	⑧	⑨

● Ball nose endmill

V	B	D	200	L15.0	-	BG	-	04	S12
①	②	③	④	⑤		⑥	⑦	⑧	⑨

① Series	
V	TungMeister

② Cutting edge	
E	Square
B	Ball
R	Radius
FX	for high feed
CA	for chamfering
CP	Spot drilling
CW	for chamfering (front and back)
CR	for R chamfering
GC	for counter boring
DP	for center drilling
S	for slotting
T	for T-slot milling

③ Helix angle / Rake face	
B	0°
C	15°
D	30°
E	38° ~ 50°
F	60°
T	Land

④ Diameter (mm)	
060	ø6
200	ø20

⑤ Cutting edge length (mm)	
Length	
L07.0	7
L15.0	15
Groove width	
W1.50	1.5
W1.57	1.57
W10.0	10

⑥ Corner shape / Angle	
Nose radius	
R00	Sharp edge
R005	R0.05
R01	R0.1
R05	R0.5
R10	R1.0
Chamfer type	
C15	0.15 x 45°
C30	0.3 x 45°
C60	0.6 x 45°
Chamfering head	
A30	30°
A60	60°
R chamfering head	
R10	R1.0
R16	R1.6
Ball nose	
SG	Sphere / high precision
BM	Ball / general purpose
BG	Ball / high precision

⑦ Additional feature	
I	Irregular pitch
A	for aluminium
R	for roughing
C	Combined edge

⑧ The number of flutes	
General	
02	2
06	6
Grooving head VST type	
3	3
4	4

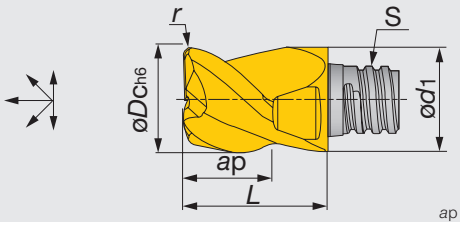
⑨ Connection screw size	
S05	S05
S06	S06
S08	S08
S10	S10
S12	S12
S15	S15

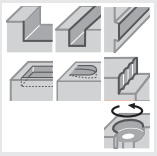
TUNGMEISTER

VEE**-03...

TungMeister square head with 3 flutes for general purpose







ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	r	S	L	Wrench	Torque*
VEE080L05.0R00-03S05	●	3	45°	8	7.7	5	-	S05	10	KEYV-S05	7
VEE100L07.0R00-03S06	●	3	45°	10	9.7	7	-	S06	13	KEYV-S06	10
VEE120L09.0R00-03S08	●	3	45°	12	11.70	9	-	S08	16.5	KEYV-S08	15

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

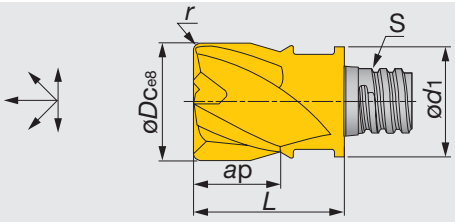
●: Line-up

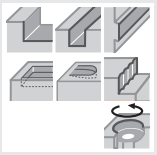
TUNGMEISTER

VED**-04..., VEE**-04...

TungMeister square head with 4 flutes for general purposes







ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	r	S	L	Wrench	Torque*
VEE060L05.0R00-04S05	●	4	45°	6	8	5	-	S05	10	KEYV-S05	7
VEE080L05.0R00-04S05	●	4	45°	8	7.7	5	-	S05	10	KEYV-S05	7
VED080L05.0R05-04S05	●	4	30°	8	7.7	5	0.5	S05	10	KEYV-S05	7
VED080L05.0R10-04S05	●	4	30°	8	7.7	5	1	S05	10	KEYV-S05	7
VED080L05.0R15-04S05	●	4	30°	8	7.7	5	1.5	S05	10	KEYV-S05	7
VEE100L07.0R00-04S06	●	4	45°	10	9.7	7	-	S06	13	KEYV-S06	10
VED100L07.0R05-04S06	●	4	30°	10	9.7	7	0.5	S06	13	KEYV-S06	10
VEE100L07.0R05-04S06	●	4	45°	10	9.7	7	0.5	S06	13	KEYV-S06	10
VED100L07.0R10-04S06	●	4	30°	10	9.7	7	1	S06	13	KEYV-S06	10
VEE100L07.0R10-04S06	●	4	45°	10	9.7	7	1	S06	13	KEYV-S06	10
VEE120L09.0R00-04S08	●	4	45°	12	11.7	9	-	S08	16.5	KEYV-S08	15
VED120L09.0R05-04S08	●	4	30°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15
VEE120L09.0R05-04S08	●	4	45°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15
VED120L09.0R10-04S08	●	4	30°	12	11.7	9	1	S08	16.5	KEYV-S08	15
VEE120L09.0R10-04S08	●	4	45°	12	11.7	9	1	S08	16.5	KEYV-S08	15
VEE160L12.0R00-04S10	●	4	45°	16	15.3	12	-	S10	20.5	KEYV-S10	28
VED160L12.0R05-04S10	●	4	30°	16	15.3	12	0.5	S10	20.5	KEYV-S10	28
VEE160L12.0R05-04S10	●	4	45°	16	15.3	12	0.5	S10	20.5	KEYV-S10	28
VED160L12.0R10-04S10	●	4	30°	16	15.3	12	1	S10	20.5	KEYV-S10	28
VEE160L12.0R10-04S10	●	4	45°	16	15.3	12	1	S10	20.5	KEYV-S10	28
VED160L12.0R15-04S10	●	4	30°	16	15.3	12	1.5	S10	20.5	KEYV-S10	28
VEE160L12.0R15-04S10	●	4	45°	16	15.3	12	1.5	S10	20.5	KEYV-S10	28
VED160L12.0R20-04S10	●	4	30°	16	15.3	12	2	S10	20.5	KEYV-S10	28
VEE160L12.0R20-04S10	●	4	45°	16	15.3	12	2	S10	20.5	KEYV-S10	28
VED160L12.0R30-04S10	●	4	30°	16	15.3	12	3	S10	20.5	KEYV-S10	28
VEE160L12.0R30-04S10	●	4	45°	16	15.3	12	3	S10	20.5	KEYV-S10	28
VED160L12.0R40-04S10	●	4	30°	16	15.3	12	4	S10	20.5	KEYV-S10	28
VEE160L12.0R40-04S10	●	4	45°	16	15.3	12	4	S10	20.5	KEYV-S10	28
VEE200L15.0R00-04S12	●	4	45°	20	18.3	15	-	S12	25.5	KEYV-S12	28
VED200L15.0R05-04S12	●	4	30°	20	18.3	15	0.5	S12	25.5	KEYV-S12	28
VED200L15.0R10-04S12	●	4	30°	20	18.3	15	1	S12	25.5	KEYV-S12	28
VED200L15.0R20-04S12	●	4	30°	20	18.3	15	2	S12	25.5	KEYV-S12	28
VED200L15.0R30-04S12	●	4	30°	20	18.3	15	3	S12	25.5	KEYV-S12	28

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

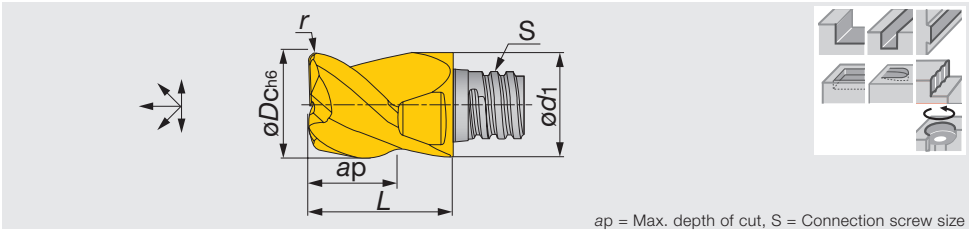
●: Line-up

TUNGMEISTER

VEE**-03...

TungMeister square head with 3 flutes for key way





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	r	S	L	Wrench	Torque*
VEE077L04.0R02-03S05	●	3	38°	7.7	7.7	4	0.2	S05	10	KEYV-S05	7
VEE097L05.0R03-03S06	●	3	38°	9.7	9.7	5	0.3	S06	13	KEYV-S06	10
VEE117L07.0R03-03S08	●	3	38°	11.7	11.7	7	0.3	S08	16.5	KEYV-S08	15
VEE157L08.0R03-03S10	●	3	38°	15.7	15.3	8	0.3	S10	20.5	KEYV-S10	28
VEE197L12.0R04-03S12	●	3	38°	19.7	18.3	12	0.4	S12	25.5	KEYV-S12	28

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs

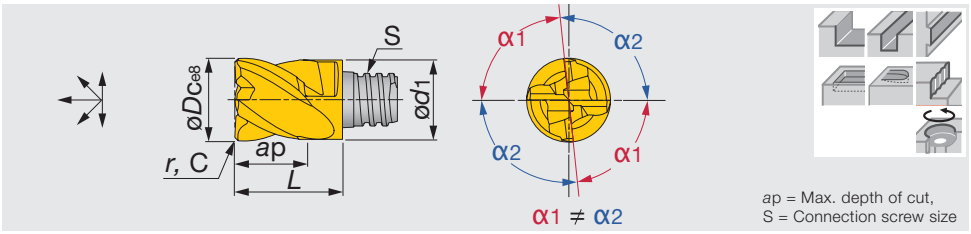
●: Line-up

TUNGMEISTER

VEE**I...

TungMeister square head with irregular pitch flute for chatter free cutting





ap = Max. depth of cut,
S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	r	C	S	L	Wrench	Torque*
VEE080L05.0C30I04S05	●	4	38°	8	7.7	5	-	0.3	S05	10	KEYV-S05	7
VEE100L07.0C40I04S06	●	4	38°	10	9.7	7	-	0.4	S06	13	KEYV-S06	10
VEE120L09.0C50I04S08	●	4	38°	12	11.7	9	-	0.5	S08	16.5	KEYV-S08	15
VEE160L12.0C60I04S10	●	4	38°	16	15.3	12	-	0.6	S10	20.5	KEYV-S10	28
VEE200L15.0C60I04S12	●	4	38°	20	18.3	15	-	0.6	S12	25.5	KEYV-S12	28
VEE250L22.0C60I04S15	●	4	38°	25	23.9	22	-	0.6	S15	37	KEYV-W20	40
VEE250L22.0R00I04S15	●	4	38°	25	23.9	22	-	-	S15	37	KEYV-W20	40
VEE250L22.0R05I04S15	●	4	38°	25	23.9	22	0.5	-	S15	37	KEYV-W20	40
VEE250L22.0R10I04S15	●	4	38°	25	23.9	22	1	-	S15	37	KEYV-W20	40
VEE250L22.0R20I04S15	●	4	38°	25	23.9	22	2	-	S15	37	KEYV-W20	40
VEE250L22.0R30I04S15	●	4	38°	25	23.9	22	3	-	S15	37	KEYV-W20	40

*Torque: Recommended torque (N.m) for clamping.
VEE080 ~ VEE200: Packing quantity = 2 pcs
VEE250: Packing quantity = 1pc

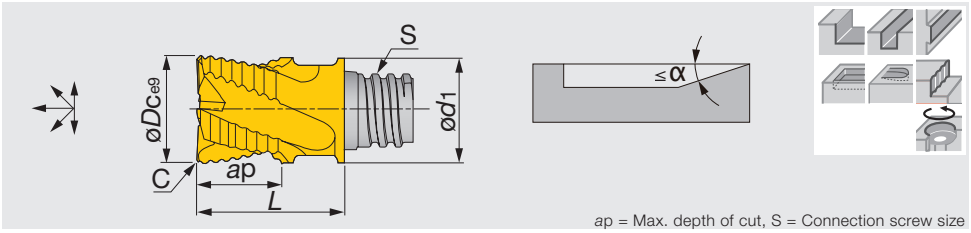
●: Line-up

TUNGMEISTER

VEE**R...

TungMeister square head with serated edges for roughing





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	C	S	L	α°	Wrench	Torque*
VEE080L05.0C25R04S05	●	4	45°	8	7.7	5	0.25	S05	10	90	KEYV-S05	7
VEE100L07.0C30R04S06	●	4	45°	10	9.7	7	0.3	S06	13	90	KEYV-S06	10
VEE120L09.0C35R04S08	●	4	45°	12	11.7	9	0.35	S08	16.5	90	KEYV-S08	15
VEE160L12.0C40R05S10	●	5	45°	16	15.3	12	0.4	S10	20.5	7	KEYV-S10	28
VEE200L15.0C40R06S12	●	6	45°	20	18.3	15	0.4	S12	25.5	3	KEYV-S12	28
VEE250L22.0C50R06S15	●	6	45°	25	23.9	22	0.5	S15	37	3	KEYV-W20	40

●: Line-up

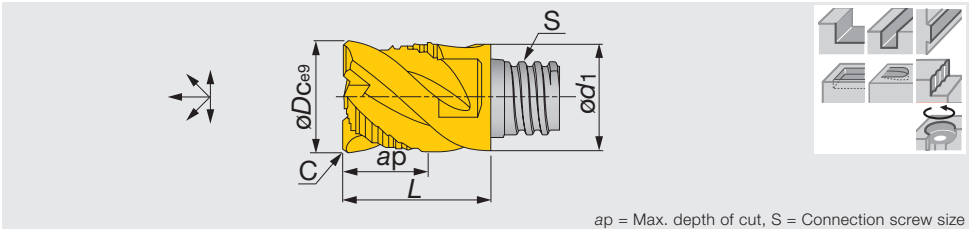
*Torque: Recommended torque (N.m) for clamping.
VEE080 ~ VEE200: Packing quantity = 2 pcs
VEE250: Packing quantity = 1pc

TUNGMEISTER

VEE**C...

TungMeister square head with combined edges of finish and serated





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	C	S	L	Wrench	Torque*
VEE080L05.0C30C04S05	●	4	45°	8	7.7	5	0.3	S05	10	KEYV-S05	7
VEE100L07.0C30C04S06	●	4	45°	10	9.7	7	0.3	S06	13	KEYV-S06	10
VEE120L09.0C40C04S08	●	4	45°	12	11.7	9	0.4	S08	16.5	KEYV-S08	15
VEE160L12.0C60C04S10	●	4	45°	16	15.3	12	0.6	S10	20.5	KEYV-S10	28
VEE200L15.0C60C04S12	●	4	45°	20	18.3	15	0.6	S12	25.5	KEYV-S12	28
VEE250L22.0C60C04S15	●	4	45°	25	23.9	22	0.6	S15	37	KEYV-W20	40

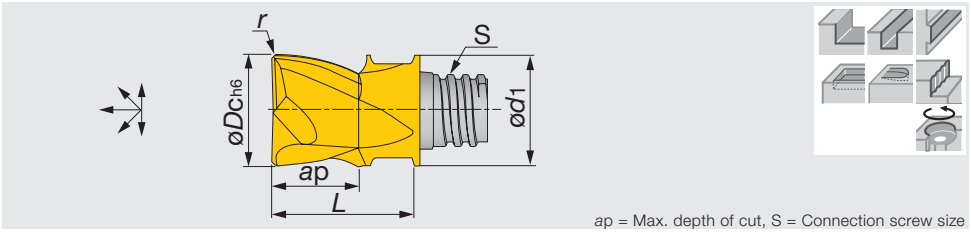
●: Line-up

*Torque: Recommended torque (N.m) for clamping.
VEE080 ~ VEE200: Packing quantity = 2 pcs
VEE250: Packing quantity = 1pc

VEE**A02...

TungMeister square head with 2 flutes for aluminium machining





ap = Max. depth of cut, S = Connection screw size

Designation	KS15F	z	Helx	øDc	ød1	Max. ap	r	S	L	Wrench	Torque*
VEE100L07.0R05A02S06	●	2	45°	10	9.7	7	0.5	S06	13	KEYV-S06	10
VEE100L07.0R10A02S06	●	2	45°	10	9.7	7	1	S06	13	KEYV-S06	10
VEE120L09.0R05A02S08	●	2	45°	12	11.7	9	0.5	S08	16.5	KEYV-S08	15

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

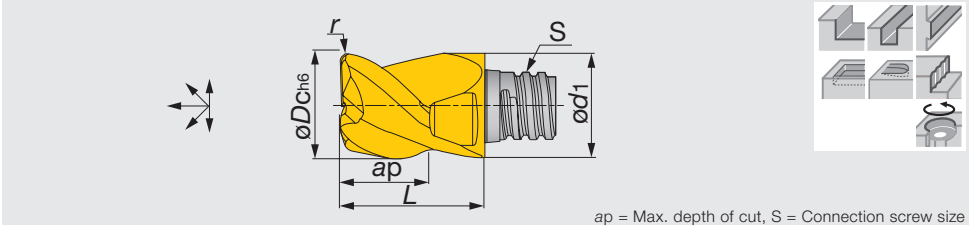
●: Line-up

TUNGMEISTER

VEE**A03...

TungMeister square head with 3 flutes for aluminium machining





ap = Max. depth of cut, S = Connection screw size

Designation	KS15F	z	Helx	øDc	ød1	Max. ap	r	S	L	Wrench	Torque*
VEE080L05.0R05A03S05	●	3	45°	8	7.7	5	0.5	S05	10	KEYV-S05	7
VEE100L06.0R05A03S06	●	3	45°	10	9.7	6	0.5	S06	13	KEYV-S06	10
VEE100L06.0R10A03S06	●	3	45°	10	9.7	6	1	S06	13	KEYV-S06	10
VEE120L08.0R05A03S08	●	3	45°	12	11.7	8	0.5	S08	16.5	KEYV-S08	15
VEE120L08.0R10A03S08	●	3	45°	12	11.7	8	1	S08	16.5	KEYV-S08	15
VEE160L10.0R00A03S10	●	3	45°	16	15.3	10	-	S10	20.5	KEYV-S10	28
VEE160L10.0R10A03S10	●	3	45°	16	15.3	10	1	S10	20.5	KEYV-S10	28
VEE160L10.0R20A03S10	●	3	45°	16	15.3	10	2	S10	20.5	KEYV-S10	28
VEE200L12.0R05A03S12	●	3	45°	20	18.3	12	0.5	S12	25.5	KEYV-S12	28
VEE200L12.0R10A03S12	●	3	45°	20	18.3	12	1	S12	25.5	KEYV-S12	28
VEE200L12.0R20A03S12	●	3	45°	20	18.3	12	2	S12	25.5	KEYV-S12	28

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

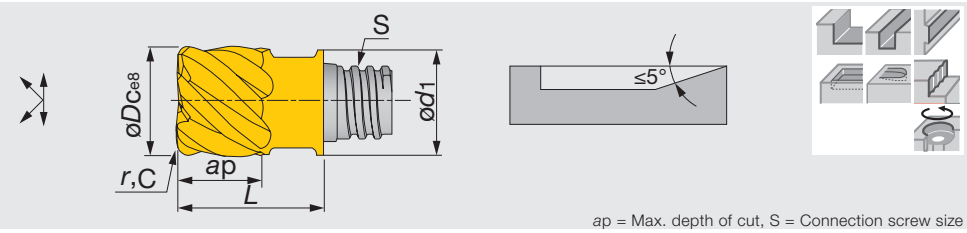
●: Line-up

TUNGMEISTER

VED**-06..., VEE**-06...

TungMeister square head with 6 flutes for difficult-to-cut material machining





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	AH750	z	Helx	øDc	ød1	Max. ap	r	C	S	L	Wrench	Torque*
VEE080L05.0R05-06S05	●		6	45°	8	7.7	5	0.5	-	S05	10	KEYV-S05	7
VEE080L05.0R10-06S05	●		6	45°	8	7.7	5	1	-	S05	10	KEYV-S05	7
VEE080L05.0R15-06S05	●		6	45°	8	7.7	5	1.5	-	S05	10	KEYV-S05	7
VEE080L05.0C10-06S05		●	6	50°	8	7.7	5	-	0.1	S05	10	KEYV-S05	7
VEE100L07.0R00-06S06	●		6	45°	10	9.7	7	-	-	S06	13	KEYV-S06	10
VED100L07.0R05-06S06	●		6	30°	10	9.7	7	0.5	-	S06	13	KEYV-S06	10
VEE100L07.0R05-06S06	●		6	45°	10	9.7	7	0.5	-	S06	13	KEYV-S06	10
VED100L07.0R10-06S06	●		6	30°	10	9.7	7	1	-	S06	13	KEYV-S06	10
VEE100L07.0R10-06S06	●		6	45°	10	9.7	7	1	-	S06	13	KEYV-S06	10
VED100L07.0R15-06S06	●		6	30°	10	9.7	7	1.5	-	S06	13	KEYV-S06	10
VEE100L07.0R15-06S06	●		6	45°	10	9.7	7	1.5	-	S06	13	KEYV-S06	10
VEE100L07.0C10-06S06		●	6	50°	10	9.7	7	-	0.1	S06	13	KEYV-S06	10
VEE120L09.0R00-06S08	●		6	45°	12	11.7	9	-	-	S08	16.5	KEYV-S08	15
VED120L09.0R05-06S08	●		6	30°	12	11.7	9	0.5	-	S08	16.5	KEYV-S08	15
VED120L09.0R10-06S08	●		6	30°	12	11.7	9	1	-	S08	16.5	KEYV-S08	15
VEE120L09.0R10-06S08	●		6	45°	12	11.7	9	1	-	S08	16.5	KEYV-S08	15
VEE120L09.0R15-06S08	●		6	45°	12	11.7	9	1.5	-	S08	16.5	KEYV-S08	15
VEE120L09.0C10-06S08		●	6	50°	12	11.7	9	-	0.1	S08	16.5	KEYV-S08	15

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

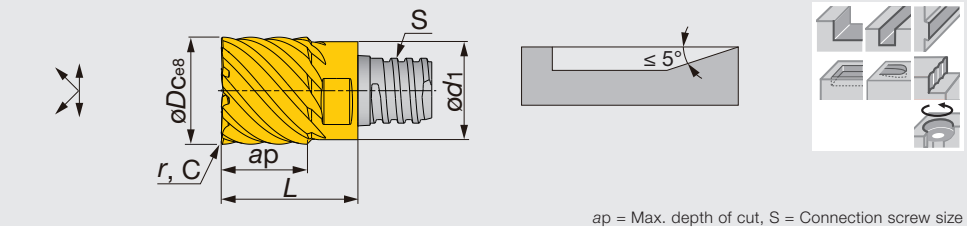
●: Line-up

TUNGMEISTER

VED**-08,10..., VEE**-08,10...

TungMeister square head with 8, 10 flutes for difficult-to-cut material machining





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	AH750	z	Helx	øDc	ød1	Max. ap	r	C	S	L	Wrench	Torque*
VED160L12.0R05-08S10	●		8	30°	16	15.3	12	0.5	-	S10	20.5	KEYV-S10	28
VED160L12.0R10-08S10	●		8	30°	16	15.3	12	1	-	S10	20.5	KEYV-S10	28
VED160L12.0R16-08S10	●		8	30°	16	15.3	12	1.6	-	S10	20.5	KEYV-S10	28
VED160L12.0R20-08S10	●		8	30°	16	15.3	12	2	-	S10	20.5	KEYV-S10	28
VEE160L12.0C20-08S10		●	8	50°	16	15.3	12	-	0.2	S10	20.5	KEYV-S10	28
VED200L15.0R10-10S12	●		10	30°	20	18.3	15	1	-	S12	25.5	KEYV-S12	28
VED200L15.0R20-10S12	●		10	30°	20	18.3	15	2	-	S12	25.5	KEYV-S12	28
VEE200L15.0C20-10S12		●	10	50°	20	18.3	15	-	0.2	S12	25.5	KEYV-S12	28
VED250L22.0R10-10S15	●		10	30°	25	23.9	22	1	-	S15	37	KEYV-W20	40
VED250L22.0R20-10S15	●		10	30°	25	23.9	22	2	-	S15	37	KEYV-W20	40

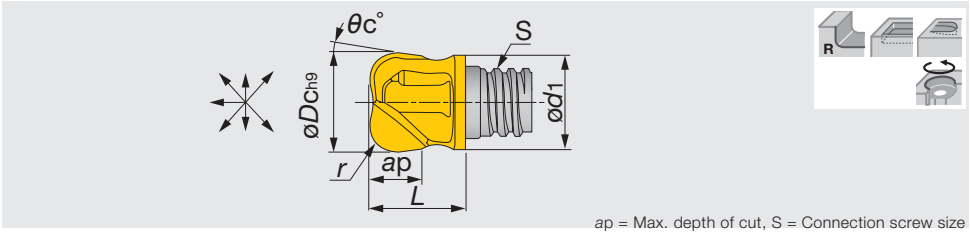
*Torque: Recommended torque (N.m) for clamping.
VEE / VED160 - 200: Packing quantity = 2 pcs.
VED250: Packing quantity = 1pc.

●: Line-up

VRB**-02...,VRC**-02...

TungMeister radius head with 2 pressed flutes





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	r	θc°	S	L	Wrench	Torque*
VRC100L07.0R05-02S06	●	2	15°	10	9.5	7	0.5	5	S06	12.4	KEYV-S06	10
VRC100L07.0R10-02S06	●	2	15°	10	9.5	7	1	5	S06	12.4	KEYV-S06	10
VRB100L06.0R20-02S06	●	2	0°	10	9.2	6	2	7	S06	12.4	KEYV-S06	10
VRB120L05.7R30-02S06	●	2	0°	12	9.5	5.7	3	7	S06	9.1	**KEYV-S08	10
VRB120L05.4R40-02S06	●	2	0°	12	9.5	5.4	4	7	S06	9.1	**KEYV-S08	10
VRB120L06.3R16-02S08	●	2	0°	12	11.5	5.9	1.6	7	S08	11.1	KEYV-S08	15
VRB120L06.2R20-02S08	●	2	0°	12	11.5	6.2	2	7	S08	11.1	KEYV-S08	15
VRB120L06.1R25-02S08	●	2	0°	12	11.5	5.8	2.5	7	S08	11.1	KEYV-S08	15
VRB120L06.1R30-02S08	●	2	0°	12	11.5	5.7	3	7	S08	11.1	KEYV-S08	15
VRB120L05.9R40-02S08	●	2	0°	12	11.5	5.5	4	7	S08	11.1	KEYV-S08	15
VRB160L08.0R50-02S10	●	2	0°	16	15.2	8	5	7	S10	20.2	KEYV-S10	28
VRB200L11.1R30-02S12	●	2	0°	20	18.3	11	3	7	S12	17	KEYV-S12	28
VRB200L11.5R40-02S12	●	2	0°	20	18.3	11.3	4	7	S12	17.3	KEYV-S12	28
VRB200L11.5R50-02S12	●	2	0°	20	18.3	11.3	5	7	S12	17.3	KEYV-S12	28
VRB200L11.4R60-02S12	●	2	0°	20	18.3	11.2	6	7	S12	17.3	KEYV-S12	28
VRB200L11.3R80-02S12	●	2	0°	20	18.3	11.1	8	7	S12	17.3	KEYV-S12	28

●: Line-up

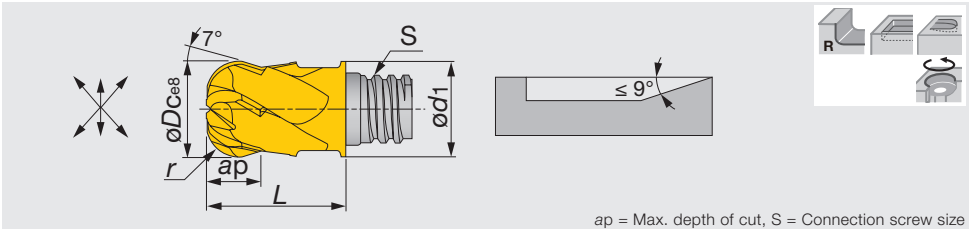
Note: Suitable for contouring operation. Some heads require different size of wrench.
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

TUNGMEISTER

VRD**-06...

TungMeister radius head with 6 ground flutes





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	r	S	L	Wrench	Torque*
VRD080L04.0R20-06S05	●	6	30°	8	7.7	4	2	S05	10	KEYV-S05	7
VRD100L05.0R30-06S06	●	6	30°	10	9.7	5	3	S06	13	KEYV-S06	10
VRD120L07.0R40-06S08	●	6	30°	12	11.7	7	4	S08	16.5	KEYV-S08	15
VRD160L09.0R50-06S10	●	6	30°	16	15.3	9	5	S10	20.5	KEYV-S10	28

●: Line-up

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

STANDARD CUTTING CONDITIONS

Shoulder milling (VEE: 3 flutes, VED/VEE: 4 flutes, VEE-A, VEE-I, VEE-R, VEE-C, VRB, VRC, VRD)

ISO	Workpiece material	Hard-ness	Cutting speed	Feed per tooth: *fz* (mm/t)							Depth of cut	Pick feed
				Tool diameter: ø*Dc* (mm)								
			Vc (m/min)	6	8	10	12	16	20	25	*ap* (mm)	*Pf* (mm)
P	Low carbon steels C45, C55, etc.	- 300 HB	80 - 180	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.25 x ø*Dc*
	High carbon steels 42CrMo4, 15Cr3, etc.	- 300 HB	60 - 140	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.25 x ø*Dc*
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	60 - 120	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.25 x ø*Dc*
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	- 200 HB	40 - 100	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.25 x ø*Dc*
K	Grey cast irons 250, 300, etc.	150 - 250 HB	80 - 200	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.25 x ø*Dc*
	Ductile cast irons 400-15S, etc.	150 - 250 HB	80 - 200	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x *Dc*	0.25 x ø*Dc*
N	Aluminium alloys Si < 13%	-	200 - 700	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.25 x ø*Dc*
	Aluminium alloys Si ≥13%	-	100 - 300	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.25 x ø*Dc*
S	Titanium alloys Ti-6Al-4V, etc.	-	40 - 80	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.05 x ø*Dc*
	Heat-resistant alloys Inconel 718, etc.	-	20 - 40	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.10 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.05 x ø*Dc*
H	Hardened steel X40CrMoV5 1, 55NiCrMoV6, etc.	40 - 50 HRC	40 - 80	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.05 x ø*Dc*
	Hardened steel X153CrMoV12, HS18-0-1, etc.	50 - 60 HRC	20 - 60	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.05 x ø*Dc*

Slot milling (VEE: 3 flutes, VED/VEE: 4 flutes, VEE-A, VEE-I, VEE-R, VEE-C, VRB, VRC, VRD)

ISO	Workpiece material	Hardness	Cutting speed	Feed per tooth: *fz* (mm/t)							Depth of cut
				Tool diameter: ø*Dc* (mm)							
			Vc (m/min)	6	8	10	12	16	20	25	*ap* (mm)
P	Low carbon steels C45, C55, etc.	- 300 HB	80 - 180	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.5 x ø*Dc*
	High carbon steels 42CrMo4, 15Cr3, etc.	- 300 HB	60 - 140	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.5 x ø*Dc*
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	60 - 120	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.5 x ø*Dc*
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	- 200 HB	40 - 100	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.5 x ø*Dc*
K	Grey cast irons 250, 300, etc.	150 - 250 HB	80 - 200	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.5 x ø*Dc*
	Ductile cast irons 400-15S, etc.	150 - 250 HB	80 - 200	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.10	0.5 x ø*Dc*
N	Aluminium alloys Si < 13%	-	200 - 700	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.5 x ø*Dc*
	Aluminium alloys Si ≥13%	-	100 - 300	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.5 x ø*Dc*
S	Titanium alloys Ti-6Al-4V, etc.	-	40 - 80	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.5 x ø*Dc*
	Heat-resistant alloys Inconel 718, etc.	-	20 - 40	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.5 x ø*Dc*
H	Hardened steel X40CrMoV5 1, 55NiCrMoV6, etc.	40 - 50 HRC	40 - 80	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.2 x ø*Dc*
	Hardened steel X153CrMoV12, HS18-0-1, etc.	50 - 60 HRC	20 - 60	0.03 - 0.07	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.07 - 0.1	0.2 x ø*Dc*

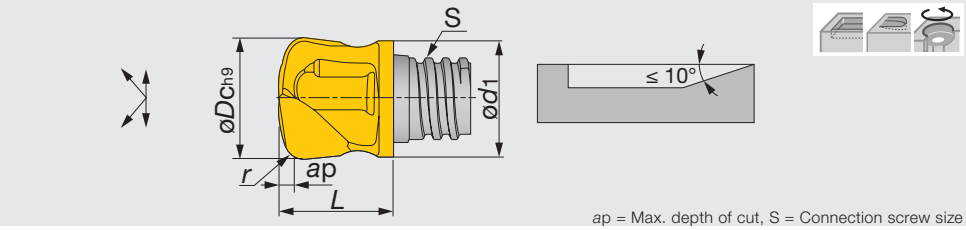
STANDARD CUTTING CONDITIONS

Shoulder milling (VED / VEE: 6 flutes, VED / VEE: 8, 10 flutes)

ISO	Workpiece material	Hard-ness	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t) Tool diameter: ø*Dc* (mm) 8	10	12	16	20	25	Depth of cut *ap* (mm)	Pick feed *Pf* (mm)
S	Titanium alloys Ti-6Al-4V, etc.	-	60 - 120	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.02 x ø*Dc*
	Heat-resistant alloys Inconel 718, etc.	-	30 - 60	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.02 x ø*Dc*
H	Hardened steel X40CrMoV5 1, 55NiCrMoV6, etc.	40 - 50 HRC	80 - 160	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.02 x ø*Dc*
	Hardened steel X153CrMoV12, HS18-0-1, etc.	50 - 60 HRC	40 - 90	0.05 - 0.09	0.07 - 0.12	0.08 - 0.13	0.09 - 0.15	0.1 - 0.17	0.1 - 0.17	0.6 x ø*Dc*	0.02 x ø*Dc*

TungMeister radius head for super high-feed milling





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	ø*Dc*	ø*d*1	Max. *ap*	r(1)	S	*L*	Wrench	Torque*
VFX100L00.6R20-02S06	●	2	0°	10	9.6	0.6	2	S06	12.5	KEYV-S06	10
VFX120L01.0R25-02S08	●	2	0°	12	11.5	1.0	2.5	S08	11.1	KEYV-S08	15
VFX160L01.1R30-02S10	●	2	0°	16	15.2	1.1	3	S10	20	KEYV-S10	28
VFX200L01.5R33-02S12	●	2	0°	20	18.3	1.5	3.3	S12	17.5	KEYV-S12	28

●: Line-up

(1) Corner radius for CAM programing
Note: For VFX head, taper neck shank or Tungsten shank should be recommended.
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

STANDARD CUTTING CONDITIONS

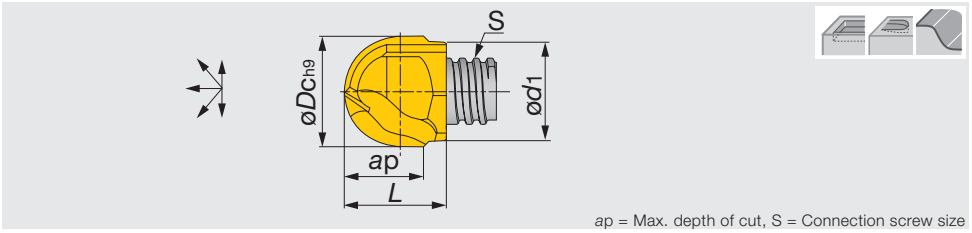
High feed milling (VFX)

ISO	Workpiece material	Hardness	Cutting speed *Vc* (m/min)	ø10a		ø12		ø16		ø20		Width of cut *ae* (mm)
				Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)	Feed per tooth *fz* (mm/t)	Depth of cut *ap* (mm)	
P	Low carbon steels C45, C55, etc.	- 300 HB	100 - 200	0.3 - 0.7	0.5	0.4 - 0.8	0.5	0.5 - 0.9	0.75	0.6 - 1	1	0.6 x ø*Dc*
	High carbon steels 42CrMo4, 15Cr3, etc.	- 300 HB	80 - 180	0.2 - 0.6	0.5	0.3 - 0.7	0.5	0.4 - 0.8	0.75	0.5 - 0.9	1	0.6 x ø*Dc*
	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	80 - 160	0.2 - 0.5	0.4	0.2 - 0.5	0.4	0.3 - 0.6	0.5	0.3 - 0.6	0.75	0.6 x ø*Dc*
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	- 200 HB	60 - 100	0.2 - 0.6	0.4	0.2 - 0.6	0.4	0.3 - 0.7	0.5	0.3 - 0.7	0.75	0.6 x ø*Dc*
K	Grey cast irons 250, 300, etc.	150 - 250 HB	100 - 220	0.3 - 0.7	0.5	0.4 - 0.8	0.75	0.5 - 0.9	0.75	0.6 - 1	1	0.6 x ø*Dc*
	Ductile cast irons 400-15S, etc.	150 - 250 HB	100 - 220	0.2 - 0.6	0.5	0.3 - 0.7	0.75	0.4 - 0.8	0.75	0.5 - 0.9	1	0.6 x ø*Dc*
S	Titanium alloys Ti-6Al-4V, etc.	-	40 - 80	0.2 - 0.5	0.4	0.2 - 0.5	0.4	0.2 - 0.6	0.5	0.2 - 0.6	0.5	0.25 x ø*Dc*
	Heat-resistant alloys Inconel 718, etc.	-	20 - 40	0.1 - 0.3	0.3	0.1 - 0.3	0.3	0.1 - 0.3	0.4	0.1 - 0.3	0.4	0.25 x ø*Dc*
H	Hardened steel X40CrMoV5 1, 55NiCrMoV6, etc.	40 - 50 HRC	40 - 80	0.2 - 0.4	0.3	0.2 - 0.4	0.3	0.3 - 0.5	0.4	0.3 - 0.5	0.4	0.45 x ø*Dc*
	Hardened steel X153CrMoV12, HS18-0-1, etc.	50 - 60 HRC	20 - 60	0.1 - 0.2	0.2	0.1 - 0.2	0.2	0.1 - 0.3	0.3	0.1 - 0.3	0.3	0.25 x ø*Dc*

TUNGMEISTER
VBB**-BM...

TungMeister ball nose head with pressed edge for roughing





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	S	L	Wrench	Torque*
VBB080L08.0-BM-02S05	●	2	0°	8	7.6	8	S05	10	KEYV-S05	7
VBB100L10.0-BM-02S06	●	2	0°	10	9.5	10	S06	12.4	KEYV-S06	10
VBB120L12.0-BM-02S08	●	2	0°	12	11.5	11.5	S08	15.3	KEYV-S08	15
VBB160L16.0-BM-02S10	●	2	0°	16	15.2	16	S10	19.1	KEYV-S10	28

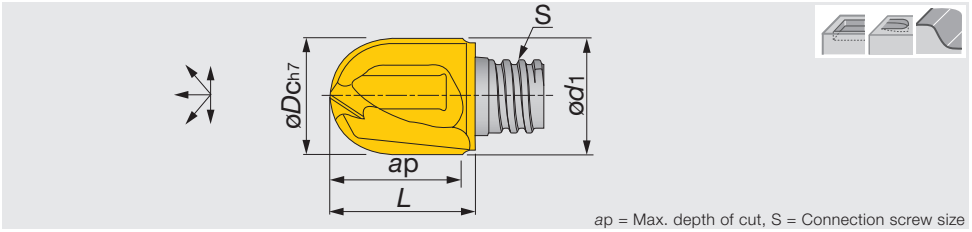
●: Line-up

• For roughing
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

TUNGMEISTER
VBB**-BG...

TungMeister ball nose head with ground edge for semi-finishing





ap = Max. depth of cut, S = Connection screw size

Designation	AH750	z	Helx	øDc	ød1	Max. ap	S	L	Wrench	Torque*
VBB080L08.0-BG-02S05	●	2	0°	8	7.6	8	S05	10	KEYV-S05	7
VBB100L10.0-BG-02S06	●	2	0°	10	9.6	10	S06	12.4	KEYV-S06	10
VBB120L12.0-BG-02S08	●	2	0°	12	11.5	12	S08	15.3	KEYV-S08	15
VBB160L16.0-BG-02S10	●	2	0°	16	15.2	16	S10	19.1	KEYV-S10	28

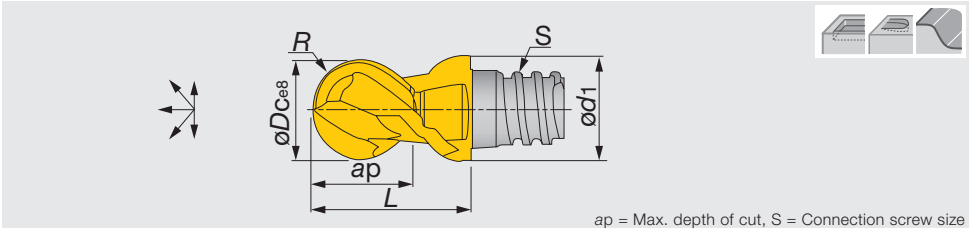
●: Line-up

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

TUNGMEISTER
VBD**-BG...

TungMeister ball nose head with 2 flutes and helical ground edge for finishing





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	R	S	L	Wrench	Torque*
VBD080L05.0-BG-02S05	●	2	30°	8	7.7	5	3.982(1)	S05	10	KEYV-S05	7
VBD100L07.0-BG-02S06	●	2	30°	10	9.7	7	4.982(1)	S06	13.0	KEYV-S06	10
VBD120L09.0-BG-02S08	●	2	30°	12	11.7	9	5.978(2)	S08	16.5	KEYV-S08	15
VBD160L09.5-BG-02S10	●	2	30°	16	15.3	9	7.978(2)	S10	20.5	KEYV-S10	28

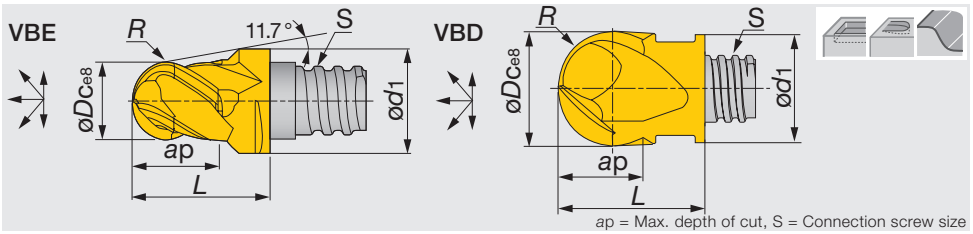
●: Line-up

• The tolerance of R : (1) ± 0.01 (2) ± 0.012
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

TUNGMEISTER
VBD**-BG..., VBE**-BG...

TungMeister ball nose head with 4 flutes and helical ground edge for finishing





Designation	AH725	z	Helx	øDc	ød1	Max. ap	R	S	L	Wrench	Torque*
VBE060L05.5-BG-04S05	●	4	38°	6	8	5.5	2.987(1)	S05	10	KEYV-S05	7
VBD080L05.0-BG-04S05	●	4	30°	8	7.7	5	3.982(1)	S05	10	KEYV-S05	7
VBD100L07.0-BG-04S06	●	4	30°	10	9.7	7	4.982(1)	S06	13	KEYV-S06	10
VBD120L09.0-BG-04S08	●	4	30°	12	11.7	9	5.978(2)	S08	16.5	KEYV-S08	15
VBD160L12.0-BG-04S10	●	4	30°	16	15.3	12	7.978(2)	S10	20.5	KEYV-S10	28
VBD200L15.0-BG-04S12	●	4	30°	20	18.3	15	9.972(2)	S12	25.5	KEYV-S12	28
VBD250L22.0-BG-04S15	●	4	30°	25	23.9	22	12.470(3)	S15	37	KEYV-W20	40

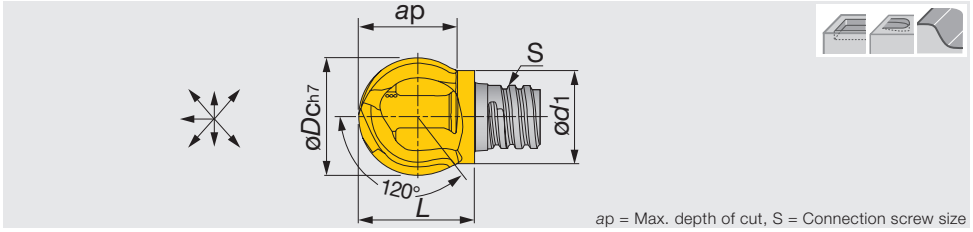
• The tolerance of R : (1) ± 0.01 (2) ± 0.012 (3) ± 0.02
*Torque: Recommended torque (N.m) for clamping.
VBE060/VBD080 ~ VBD200: Packing quantity = 2 pcs.
VBD250: Packing quantity = 1pc.

●: Line-up

TUNGMEISTER
VBB**-SG...

TungMeister ball nose head with spherical designed edge,available for pull-cutting on the wall





Designation	AH725	z	Helx	øDc	ød1	Max. ap	S	L	Wrench	Torque**
VBB100L08.0-SG-02S05	●	2	0°	10	7.6	7.5	S05	10	KEYV-S05	7
VBB120L09.6-SG-02S06	●	2	0°	12	9.5	9	S06	11.6	*KEYV-S08	10
VBB160L12.9-SG-02S08	●	2	0°	16	12.2	12	S08	15.4	*KEYV-S10	15
VBB200L16.1-SG-02S10	●	2	0°	20	15.2	15	S10	18.4	KEYV-S10	28

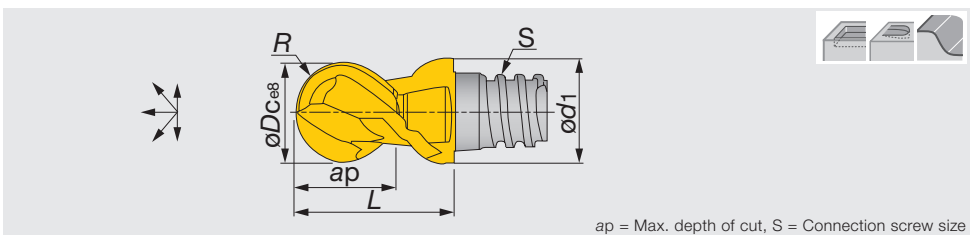
• For pull-cutting on the vertical wall
* Some heads require different size of wrench.
**Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

●: Line-up

TUNGMEISTER
VBE**-BGA...

TungMeister ball nose head with 2 flutes and helical ground edge for Al machining





Designation	KS15F	z	Helx	øDc	ød1	Max. ap	R	S	L	Wrench	Torque*
VBE080L05.0-BGA02S05	●	2	45°	8	7.7	5	3.982(1)	S05	10	KEYV-S05	7
VBE100L07.0-BGA02S06	●	2	45°	10	9.7	7	4.982(1)	S06	13	KEYV-S06	10
VBE120L09.0-BGA02S08	●	2	45°	12	11.7	9	5.987(2)	S08	16.5	KEYV-S08	15
VBE160L12.0-BGA02S10	●	2	45°	16	15.3	12	7.978(2)	S10	20.5	KEYV-S10	28
VBE200L15.0-BGA02S12	●	2	45°	20	18.3	15	9.972(2)	S12	25.5	KEYV-S12	28

• The tolerance of R : (1) ± 0.01 (2) ± 0.012
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

●: Line-up

Standard cutting conditions: Profiling for roughing (VBB-BM / BG / SG, VBD-BG, VBE-BGA)

ISO	Workpiece material	Hard-ness	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t) — Tool diameter: *øDc* (mm) 6	8	10	12	16	20	25	Depth of cut *ap* (mm)	Pick feed *Pf* (mm)
P	Low carbon steels C45, C55, etc.	- 300 HB	100 - 200	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.4 x *øDc*
P	High carbon steels 42CrMo4, 15Cr3, etc.	- 300 HB	80 - 180	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.4 x *øDc*
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	80 - 160	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.4 x *øDc*
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	- 200 HB	60 - 100	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.4 x *øDc*
K	Grey cast irons 250, 300, etc.	150 - 250 HB	100 - 220	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.4 x *øDc*
K	Ductile cast irons 400-15S, etc.	150 - 250 HB	100 - 220	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.4 x *øDc*
N	Aluminium alloys Si < 13%	-	200 - 700	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.4 x *øDc*
N	Aluminium alloys Si ≥13%	-	100 - 300	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.4 x *øDc*
S	Titanium alloys Ti-6Al-4V, etc.	-	40 - 80	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.2 x *øDc*
S	Heat-resistant alloys Inconel 718, etc.	50 - 60 HRC	20 - 40	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.2 x *øDc*
H	Hardened steel X40CrMoV5 1, 55NiCrMoV6, etc.	-	40 - 80	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.2 x *øDc*
H	Hardened steel X153CrMoV12, HS18-0-1, etc.	50 - 60 HRC	20 - 60	0.03 - 0.07	0.04 - 0.08	0.05 - 0.10	0.06 - 0.11	0.07 - 0.13	0.08 - 0.15	0.08 - 0.15	0.3 x *øDc*	0.2 x *øDc*

Standard cutting conditions: Profiling for semi-finishing and finishing (VBB-BM / BG / SG, VBD-BG, VBE-BGA)

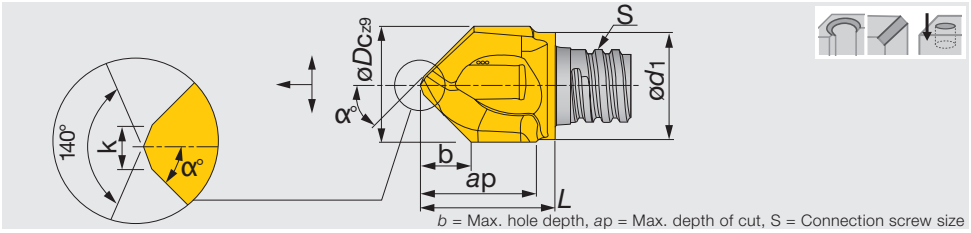
ISO	Workpiece material	Hard-ness	Cutting speed *Vc* (m/min)	Feed per tooth: *fz* (mm/t) — Tool diameter: *øDc* (mm) 6	8	10	12	16	20	25	Depth of cut *ap* (mm)	Pick feed *Pf* (mm)
P	Low carbon steels C45, C55, etc.	- 300 HB	120 - 250	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.1 x *øDc*	0.15 x *øDc*
P	High carbon steels 42CrMo4, 15Cr3, etc.	- 300 HB	100 - 220	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.1 x *øDc*	0.15 x *øDc*
P	Prehardened steel PX5, NAK80, etc.	30 - 40 HRC	100 - 200	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.1 x *øDc*	0.15 x *øDc*
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	- 200 HB	80 - 120	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.1 x *øDc*	0.15 x *øDc*
K	Grey cast irons 250, 300, etc.	150 - 250 HB	120 - 280	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.1 x *øDc*	0.15 x *øDc*
K	Ductile cast irons 400-15S, etc.	150 - 250 HB	120 - 280	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.1 x *øDc*	0.15 x *øDc*
N	Aluminium alloys Si < 13%	-	300 - 1000	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.1 x *øDc*	0.15 x *øDc*
N	Aluminium alloys Si ≥13%	-	150 - 400	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.1 x *øDc*	0.15 x *øDc*
S	Titanium alloys Ti-6Al-4V, etc.	-	50 - 100	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.08 x *øDc*	0.1 x *øDc*
S	Heat-resistant alloys Inconel 718, etc.	50 - 60 HRC	30 - 50	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.08 x *øDc*	0.1 x *øDc*
H	Hardened steel X40CrMoV5 1, 55NiCrMoV6, etc.	-	50 - 100	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.08 x *øDc*	0.1 x *øDc*
H	Hardened steel X153CrMoV12, HS18-0-1, etc.	50 - 60 HRC	30 - 80	0.04 - 0.09	0.06 - 0.11	0.07 - 0.12	0.08 - 0.13	0.09 - 0.16	0.1 - 0.18	0.1 - 0.18	0.08 x *øDc*	0.1 x *øDc*

TUNGMEISTER

VCP**-02...

TungMeister head with 2 pressed flutes for spot drilling and chamfering





b = Max. hole depth, *ap* = Max. depth of cut, S = Connection screw size

Designation	AH725	P angl	z	Helx	ø*Dc*	ø*d*1	Max. *ap*	*b*	S	*L*	k	α°	Wrench	Torque*
VCP100L09.5A30-02S06	●	60	2	0°	10	9.5	8.5	7.5	S06	11.75	1.5	30	KEYV-S06	10
VCP120L12.0A30-02S08	●	60	2	0°	12	11.5	11	9.2	S08	15.4	1.5	30	KEYV-S08	15
VCP160L15.0A30-02S10	●	60	2	0°	16	15.2	16	12	S10	20.2	2.5	30	KEYV-S10	28
VCP080L07.7A45-02S05	●	90	2	0°	8	7.6	7.5	3.7	S05	9.75	1	45	KEYV-S05	7
VCP083L07.9A45-02S05	●	90	2	0°	8.3	7.6	7.5	3.8	S05	10	1	45	KEYV-S05	7
VCP100L09.0A45-02S06	●	90	2	0°	10	9.5	9.5	4.4	S06	11.75	1.5	45	KEYV-S06	10
VCP104L09.0A45-02S06	●	90	2	0°	10.4	9.5	9.5	4.6	S06	11.75	1.5	45	KEYV-S06	10
VCP120L12.0A45-02S08	●	90	2	0°	12	11.5	11.5	5.4	S08	15.4	1.5	45	KEYV-S08	15
VCP124L12.0A45-02S08	●	90	2	0°	12.4	11.5	11.5	5.6	S08	15.4	1.5	45	KEYV-S08	15
VCP160L15.0A45-02S10	●	90	2	0°	16	15.2	15	7.1	S10	18.8	1.5	45	KEYV-S10	28
VCP165L15.0A45-02S10	●	90	2	0°	16.5	15.2	15	7.1	S10	18.8	1.5	45	KEYV-S10	28
VCP100L09.5A60-02S06	●	120	2	0°	10	9.5	9.5	2.7	S06	12.7	1.5	60	KEYV-S06	10
VCP120L12.0A60-02S08	●	120	2	0°	12	11.5	11.5	3.3	S08	15.2	1.5	60	KEYV-S08	15
VCP160L15.5A60-02S10	●	120	2	0°	16	15.2	16	4.4	S10	19.9	1.5	60	KEYV-S10	28

●: Line-up

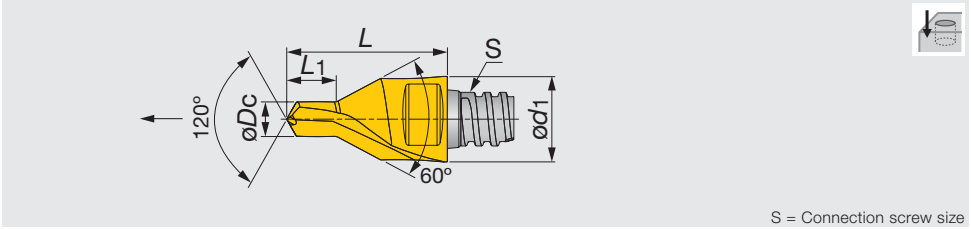
• Min. chamfering: ø1.5 mm
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

TUNGMEISTER

VDP**-02...

TungMeister head for center drilling





S = Connection screw size

Designation	AH725	z	Helx	ø*Dc*	ø*d*1	*L*1	S	*L*	Wrench	Torque*
VDP328L04.6A30-02S05	●	2	0°	3.28	8	4.6	S05	15	KEYV-S05	7
VDP412L05.9A30-02S06	●	2	0°	4.12	10	5.9	S06	19	KEYV-S06	10
VDP513L07.2A30-02S08	●	2	0°	5.13	12	7.2	S08	23	KEYV-S08	15
VDP646L08.9A30-02S10	●	2	0°	6.46	16	8.9	S10	28	KEYV-S10	28

●: Line-up

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

STANDARD CUTTING CONDITIONS

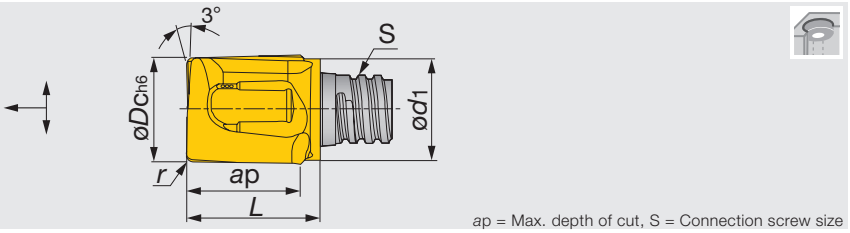
Drilling (VCP, VDP)

ISO	Workpiece material		Hardness	Cutting speed *Vc* (m/min)	Feed: *f* (mm/rev)				
					VDP328	VDP412	VDP513	VDP646	VCP
P	Low carbon steels C45, C55, etc.		- 300 HB	40 - 80	0.04 - 0.08	0.05 - 0.10	0.05 - 0.10	0.06 - 0.12	0.06 - 0.12
P	High carbon steels 42CrMo4, 15Cr3, etc.		- 300 HB	30 - 50	0.04 - 0.08	0.05 - 0.10	0.05 - 0.10	0.06 - 0.12	0.06 - 0.12
P	Prehardened steel PX5, NAK80, etc.		30 - 40 HRC	20 - 30	0.04 - 0.08	0.05 - 0.10	0.05 - 0.10	0.06 - 0.12	0.06 - 0.12
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.		- 200 HB	15 - 25	0.04 - 0.08	0.05 - 0.10	0.05 - 0.10	0.06 - 0.12	0.06 - 0.12
K	Grey cast irons 250, 300, etc.		150 - 250 HB	60 - 100	0.05 - 0.09	0.07 - 0.12	0.07 - 0.12	0.12 - 0.18	0.12 - 0.18
K	Ductile cast irons 400-15S, etc.		150 - 250 HB	60 - 100	0.04 - 0.08	0.05 - 0.10	0.05 - 0.10	0.10 - 0.15	0.10 - 0.15
S	Titanium alloys Ti-6Al-4V, etc.		-	15 - 25	0.04 - 0.07	0.04 - 0.07	0.04 - 0.07	0.04 - 0.07	0.04 - 0.07
S	Heat-resistant alloys Inconel 718, etc.		-	10 - 20	0.03 - 0.06	0.03 - 0.06	0.03 - 0.06	0.03 - 0.06	0.03 - 0.06
H	Hardened steel	X40CrMoV5 1, 55NiCrMoV6, etc.	40 - 50 HRC	15 - 25	0.04 - 0.07	0.04 - 0.07	0.04 - 0.07	0.04 - 0.07	0.04 - 0.07
H	Hardened steel	X153CrMoV12, HS18-0-1, etc.	50 - 60 HRC	10 - 20	0.03 - 0.06	0.03 - 0.06	0.03 - 0.06	0.03 - 0.06	0.03 - 0.06

VGC**-02...

TungMeister head for counter boring





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	r	S	L	Wrench	Torque*
VGC078L08.0R02-02S05	●	2	10°	7.8	7.60	8.0	0.20	S05	10.0	KEYV-S05	7.0
VGC080L08.0R04-02S05	●	2	10°	8	7.60	8.0	0.40	S05	10.0	KEYV-S05	7.0
VGC080L08.0R10-02S05	●	2	10°	8	7.60	8.0	1.00	S05	10.0	KEYV-S05	7.0
VGC080L08.0R20-02S05	●	2	10°	8	7.60	8.0	2.00	S05	10.0	KEYV-S05	7.0
VGC098L09.0R03-02S06	●	2	10°	9.8	9.50	9.5	0.30	S06	12.4	KEYV-S06	10.0
VGC100L09.0R04-02S06	●	2	10°	10	9.50	9.5	0.40	S06	12.4	KEYV-S06	10.0
VGC100L09.0R10-02S06	●	2	10°	10	9.50	9.5	1.00	S06	12.4	KEYV-S06	10.0
VGC100L09.0R20-02S06	●	2	10°	10	9.50	9.5	2.00	S06	12.4	KEYV-S06	10.0
VGC117L10.0R03-02S08	●	2	10°	11.7	11.50	10.0	0.30	S08	14.2	KEYV-S08	15.0
VGC120L10.0R04-02S08	●	2	10°	12	11.50	10.0	0.40	S08	14.2	KEYV-S08	15.0
VGC120L10.0R10-02S08	●	2	10°	12	11.50	10.0	1.00	S08	14.2	KEYV-S08	15.0
VGC120L10.0R20-02S08	●	2	10°	12	11.50	10.0	2.00	S08	14.2	KEYV-S08	15.0
VGC157L15.0R03-02S10	●	2	10°	15.7	15.20	15.0	0.30	S10	19.0	KEYV-S10	28.0
VGC160L15.0R04-02S10	●	2	10°	16	15.20	15.0	0.40	S10	19.0	KEYV-S10	28.0
VGC160L15.0R08-02S10	●	2	10°	16	15.20	15.0	0.80	S10	19.0	KEYV-S10	28.0

• Can drill with step feed
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

●: Line-up

STANDARD CUTTING CONDITIONS

Counter boring (VGC)

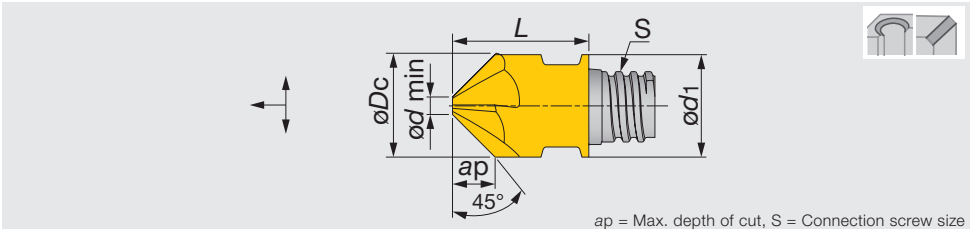
ISO	Workpiece material		Hardness	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Low carbon steels C45, C55, etc.		- 300 HB	40 - 80	0.04 - 0.08
	High carbon steels 42CrMo4, 15Cr3, etc.		- 300 HB	30 - 50	0.04 - 0.08
	Prehardened steel PX5, NAK80, etc.		30 - 40 HRC	20 - 30	0.04 - 0.08
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.		- 200 HB	15 - 25	0.04 - 0.08
K	Grey cast irons 250, 300, etc.		150 - 250 HB	60 - 100	0.05 - 0.09
	Ductile cast irons 400-15S, etc.		150 - 250 HB	60 - 100	0.04 - 0.08
S	Titanium alloys Ti-6Al-4V, etc.		-	15 - 25	0.04 - 0.07
	Heat-resistant alloys Inconel 718, etc.		-	10 - 20	0.03 - 0.06
H	Hardened steel	X40CrMoV5 1, 55NiCrMoV6, etc.	40 - 50 HRC	15 - 25	0.04 - 0.07
		X153CrMoV12, HS18-0-1, etc.	50 - 60 HRC	10 - 20	0.03 - 0.06

・ When drilling, the step feed (woodpeckering feed) operation should be applied with the depth of 0.3 - 0.5 mm per step.
・ Apply the same cutting conditions as the VEE type head when conducting shoulder milling or slotting operations.

TUNGMEISTER
VCA**-04,06...

TungMeister head with 4 or 6 flutes for countersinking and chamfering





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	Max. ap	ød min	S	L	Wrench	Torque**
VCA100L04.0A45-04S06	●	4	0°	10	10	4	1.95	S06	13	KEYV-S06	10
VCA120L05.0A45-04S08	●	4	0°	12	12	5	1.95	S08	16.5	KEYV-S08	15
VCA127L05.3A45-04S08	●	4	0°	12.7	12.7	5.3	1.98	S08	16.5	KEYV-S08	15
VCA160L06.5A45-06S10	●	6	0°	16	16	6.5	3	S10	20.3	KEYV-S10	28
VCA200L07.5A45-06S12	●	6	0°	20	18.3	7.5	5	S12	25.5	KEYV-S12	28

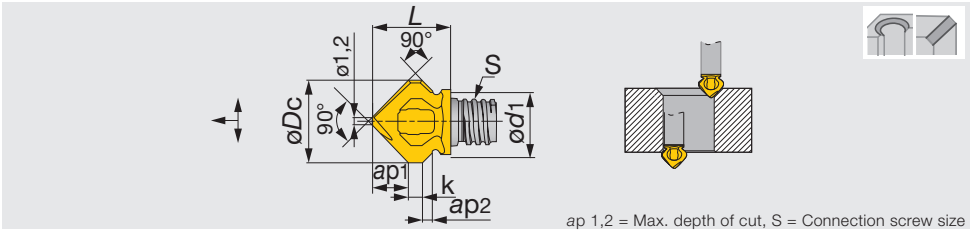
**Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

●: Line-up

TUNGMEISTER
VCW**-02...

TungMeister head for countersinking, top and bottom chamfering





ap 1,2 = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	ap1	ap2	k	S	L	Wrench	Torque**
VCW118L05.0A45-02S06	●	2	0°	11.8	9.3	5	1.2	2	S06	11.2	KEYV-S08	10

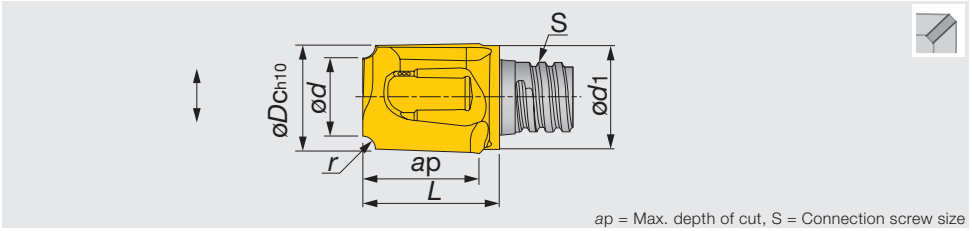
• Available for chamfering of reverse side
* Some heads require different size of wrench.
**Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

●: Line-up

TUNGMEISTER
VCR**-02...

TungMeister head with 2 pressed flutes for concave raidus chamfering





ap = Max. depth of cut, S = Connection screw size

Designation	AH725	z	Helx	øDc	ød1	ød	Max. ap	r	S	L	Wrench	Torque**
VCR080L07.5R10-02S05	●	2	0°	8	7.6	5.8	7.5	1	S05	10.5	KEYV-S05	7
VCR100L09.5R16-02S06	●	2	0°	10	9.5	6.8	9.5	1.6	S06	12.5	KEYV-S06	10
VCR100L09.5R25-02S06	●	2	0°	10	9.5	5.1	9.5	2.5	S06	12.5	KEYV-S06	10
VCR127L12.0R30-02S08	●	2	0°	12.7	12.2	6.5	12.0	3	S08	15.6	KEYV-S08	15
VCR127L12.0R40-02S08	●	2	0°	12.7	12.2	4.7	12.0	4	S08	15.6	KEYV-S08	15
VCR160L15.0R50-02S10	●	2	0°	16	15.2	6.2	15.0	5	S10	19.1	KEYV-S10	28
VCR200L07.0R60-02S12	●	2	0°	20	18.3	8	7.0	6	S12	17.4	KEYV-S12	28

**Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

●: Line-up

STANDARD CUTTING CONDITIONS

Chamfering and countersinking (VCA, VCW, VCR, VCP)

ISO	Workpiece material		Hardness	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Low carbon steels C45, C55, etc.		- 300 HB	60 - 100	0.06 - 0.12
P	High carbon steels 42CrMo4, 15Cr3, etc.		- 300 HB	50 - 80	0.06 - 0.12
P	Prehardened steel PX5, NAK80, etc.		30 - 40 HRC	40 - 70	0.06 - 0.12
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.		- 200 HB	30 - 50	0.06 - 0.12
K	Grey cast irons 250, 300, etc.		150 - 250 HB	80 - 120	0.06 - 0.12
K	Ductile cast irons 400-15S, etc.		150 - 250 HB	80 - 120	0.06 - 0.12
N	Aluminium alloys		-	100 - 200	0.08 - 0.15
S	Titanium alloys Ti-6Al-4V, etc.		-	30 - 50	0.05 - 0.1
S	Heat-resistant alloys Inconel 718, etc.		-	20 - 40	0.04 - 0.08
H	Hardened steel	X40CrMoV5 1, 55NiCrMoV6, etc.	40 - 50 HRC	30 - 50	0.05 - 0.1
H	Hardened steel	X153CrMoV12, HS18-0-1, etc.	50 - 60 HRC	20 - 40	0.04 - 0.08

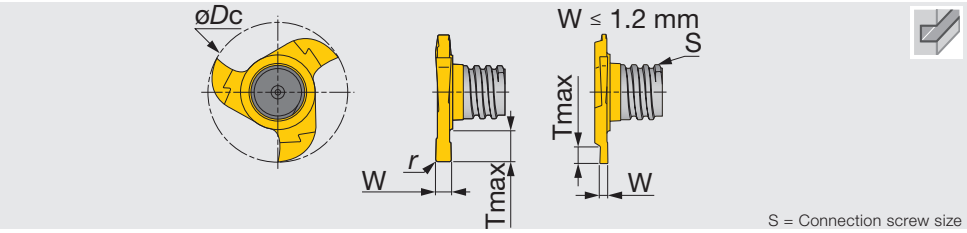
TOLERANCE OF TOOL DIAMETER

Basic dimensions (mm)		Permissible dimensional deviations (μm)						
>	≤	e8	e9	h6	h7	h9	h10	z9
6	10	-25 -47	-25 -61	0 -9	0 -15	0 -36	0 -58	+78 +42
10	14	-32 -59	-32 -75	0 -11	0 -18	0 -43	0 -70	+93 +50
14	18	-32 -59	-32 -75	0 -11	0 -18	0 -43	0 -70	+103 +60
18	30	-40 -73	-40 -92	0 -13	0 -21	0 -52	0 -84	-

● JISB0401-2: 1998 (ISO286-2: 1988) extract

TungMeister head for slotting of 1.5 - 3.17mm width with 3 teeth





S = Connection screw size

Designation	GH130	z	Helx	øDc	W± 0.02	r	S	T max	Wrench	Torque*
VST157W1.50R010-3S06	●	3	0	15.7	1.5	0.1	S06	2.8	KEYV-177	10
VST157W1.57R020-3S06	●	3	0	15.7	1.57	0.2	S06	2.8	KEYV-177	10
VST157W2.00R020-3S06	●	3	0	15.7	2	0.2	S06	2.8	KEYV-177	10
VST157W2.39R020-3S06	●	3	0	15.7	2.39	0.2	S06	2.8	KEYV-177	10
VST157W2.50R020-3S06	●	3	0	15.7	2.5	0.2	S06	2.8	KEYV-177	10
VST157W3.00R020-3S06	●	3	0	15.7	3	0.2	S06	2.8	KEYV-177	10
VST157W3.17R020-3S06	●	3	0	15.7	3.17	0.2	S06	2.8	KEYV-177	10
VST177W1.20R005-3S06	●	3	0	17.7	1.2(1)	0.05	S06	3.8	KEYV-177	10
VST177W1.40R005-3S06	●	3	0	17.7	1.4(1)	0.05	S06	3.8	KEYV-177	10
VST177W1.50R010-3S06	●	3	0	17.7	1.5	0.1	S06	3.8	KEYV-177	10
VST177W1.57R020-3S06	●	3	0	17.7	1.57	0.2	S06	3.8	KEYV-177	10
VST177W1.70R005-3S06	●	3	0	17.7	1.7(1)	0.05	S06	3.8	KEYV-177	10
VST177W2.00R020-3S06	●	3	0	17.7	2	0.2	S06	3.8	KEYV-177	10
VST177W2.20R110-3S06	●	3	0	17.7	2.20	1.1	S06	3.8	KEYV-177	10
VST177W2.39R020-3S06	●	3	0	17.7	2.39	0.2	S06	3.8	KEYV-177	10
VST177W2.50R020-3S06	●	3	0	17.7	2.5	0.2	S06	3.8	KEYV-177	10
VST177W3.00R020-3S06	●	3	0	17.7	3	0.2	S06	3.8	KEYV-177	10
VST177W3.17R020-3S06	●	3	0	17.7	3.17	0.2	S06	3.8	KEYV-177	10

(1) W is based on DIN471 / 472
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

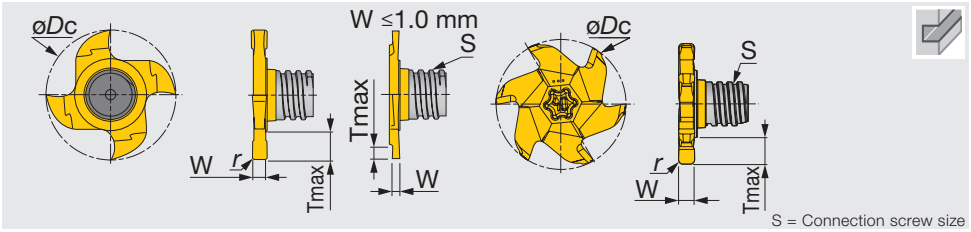
●: Line-up

TUNGMEISTER

VST**-4,6...

TungMeister head for slotting of 0.76 - 10mm width with 4, 6 teeth





Designation	GH130	Helx	z	øDc	W ± 0.02	r	S	T max	Wrench	Torque*
VST217W0.76R000-4S08	●	0	4	21.7	0.76(1)	-	S08	1.5	KEYV-217	15
VST217W0.86R000-4S08	●	0	4	21.7	0.86(1)	-	S08	1.7	KEYV-217	15
VST217W0.96R000-4S08	●	0	4	21.7	0.96(1)	-	S08	1.9	KEYV-217	15
VST217W1.00R005-4S08	●	0	4	21.7	1	0.05	S08	2	KEYV-217	15
VST217W1.20R005-4S08	●	0	4	21.7	1.2(1)	0.05	S08	4.5	KEYV-217	15
VST217W1.40R005-4S08	●	0	4	21.7	1.4(1)	0.05	S08	4.5	KEYV-217	15
VST217W1.57R000-4S08	●	0	4	21.7	1.57	-	S08	4.5	KEYV-217	15
VST217W1.70R010-4S08	●	0	4	21.7	1.7(1)	0.1	S08	4.5	KEYV-217	15
VST217W1.95R020-4S08	●	0	4	21.7	1.95(1)	0.2	S08	4.5	KEYV-217	15
VST217W2.00R020-4S08	●	0	4	21.7	2	0.2	S08	4.5	KEYV-217	15
VST217W2.25R020-4S08	●	0	4	21.7	2.25(1)	0.2	S08	4.5	KEYV-217	15
VST217W2.39R020-4S08	●	0	4	21.7	2.39	0.2	S08	4.5	KEYV-217	15
VST217W2.50R020-4S08	●	0	4	21.7	2.5	0.2	S08	4.5	KEYV-217	15
VST217W2.75R020-4S08	●	0	4	21.7	2.75(1)	0.2	S08	4.5	KEYV-217	15
VST217W3.00R020-4S08	●	0	4	21.7	3	0.2	S08	4.5	KEYV-217	15
VST217W3.17R020-4S08	●	0	4	21.70	3.17	0.2	S08	4.5	KEYV-217	15
VST217W3.25R020-4S08	●	0	4	21.7	3.25(1)	0.2	S08	4.5	KEYV-217	15
VST217W4.00R020-4S08	●	0	4	21.7	4	0.2	S08	4.5	KEYV-217	15
VST217W4.25R020-4S08	●	0	4	21.7	4.25(1)	0.2	S08	4.5	KEYV-217	15
VST217W4.75R020-4S08	●	0	4	21.7	4.75	0.2	S08	4.5	KEYV-217	15
VST217W5.25R020-4S08	●	0	4	21.7	5.25(1)	0.2	S08	4.5	KEYV-217	15
VST277W2.50R020-6S10	●	0	6	27.7	2.5	0.2	S10	6	KEYV-T40L	28
VST277W5.25R020-6S10	●	0	6	27.7	5.25	0.2	S10	6	KEYV-T40L	28
VST277W10.0R020-6S10	●	0	6	27.7	10	0.2	S10	6	KEYV-T40L	28

(1) W is based on DIN471 / 472
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

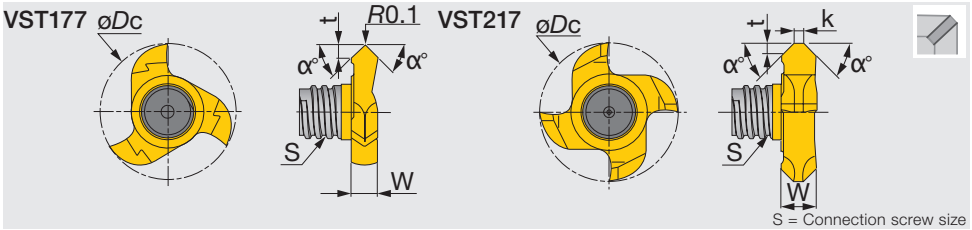
●: Line-up

TUNGMEISTER

VST**-A45...

TungMeister head for chamfering on slots





Designation	GH130	z	Helx	øDc	W	α°	S	t	k	Wrench	Torque*
VST177L01.40A45-3S06	●	3	0	17.7	3.4	45	S06	1.4	-	KEYV-177	10
VST217L01.70A45-4S08	●	4	0	21.7	5.5	45	S08	1.7	1.5	KEYV-217	15

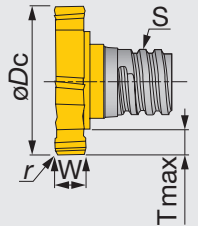
*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

●: Line-up

VTB**-06...

TungMeister head for T-slotting of 3 - 8mm width





S = Connection screw size

Designation	GH130	z	Helx	øDc -0 -0.05	W± 0.02	T max	S	r	Wrench	Torque*
VTB135W3.00R04-06S05	●	6	0°	13.5	3	2.65	S05	0.4	KEYV-T20	7
VTB135W4.00R04-06S05	●	6	0°	13.5	4	2.65	S05	0.4	KEYV-T20	7
VTB160W2.00R04-06S06	●	6	0°	16	2	2.9	S06	0.4	KEYV-T20	10
VTB160W3.00R04-06S06	●	6	0°	16	3	2.9	S06	0.4	KEYV-T25	10
VTB160W4.00R04-06S06	●	6	0°	16	4	2.9	S06	0.4	KEYV-T25	10
VTB165W2.00R04-06S06	●	6	0°	16.5	2	3.15	S06	0.4	KEYV-T20	10
VTB165W3.00R04-06S06	●	6	0°	16.5	3	3.15	S06	0.4	KEYV-T25	10
VTB165W4.00R04-06S06	●	6	0°	16.5	4	3.15	S06	0.4	KEYV-T25	10
VTB195W4.00R04-06S08	●	6	0°	19.5	4	3.45	S08	0.4	KEYV-T30L	15
VTB195W5.00R04-06S08	●	6	0°	19.5	5	3.45	S08	0.4	KEYV-T30L	15
VTB195W6.00R04-06S08	●	6	0°	19.5	6	3.45	S08	0.4	KEYV-T30L	15
VTB225W5.00R04-06S08	●	6	0°	22.5	5	4.95	S08	0.4	KEYV-T40L	15
VTB225W6.00R04-06S08	●	6	0°	22.5	6	4.95	S08	0.4	KEYV-T40L	15
VTB225W8.00R04-06S08	●	6	0°	22.5	8	4.95	S08	0.4	KEYV-T40L	15
VTB250W6.00R04-06S08	●	6	0°	25	6	5.9	S08	0.4	KEYV-T50L	15
VTB250W8.00R04-06S08	●	6	0°	25	8	5.9	S08	0.4	KEYV-T50L	15
VTB250W5.00R04-06S10	●	6	0°	25	5	4.3	S10	0.4	KEYV-T50L	28
VTB250W6.00R04-06S10	●	6	0°	25	6	4.3	S10	0.4	KEYV-T50L	28
VTB250W8.00R04-06S10	●	6	0°	25	8	4.3	S10	0.4	KEYV-T50L	28

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

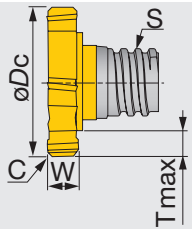
●: Line-up

TUNGMEISTER

VTB**C15...

TungMeister head for T-slotting of 2 mm width with chamfered edges





S = Connection screw size

Designation	GH130	z	Helx	øDc -0 -0.05	W± 0.05	T max	S	C	Wrench	Torque*
VTB135W2.00C15-06S05	●	6	0°	13.5	2	2.65	S05	0.15	KEYV-T20	7

*Torque: Recommended torque (Nm) for clamping.
Packing quantity = 2 pcs.

●: Line-up

STANDARD CUTTING CONDITIONS

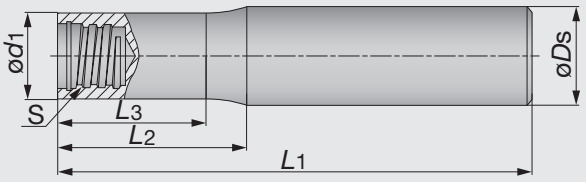
Slotting (VST, VTB)

ISO	Workpiece material	Hardness HB	VST type		VTB type	
			Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)	Cutting speed *Vc* (m/min)	Feed per tooth *fz* (mm/t)
P	Low carbon steels C45, C55, etc.	- 300	80 - 180	0.05 - 0.15	80 - 180	0.08 - 0.18
P	High carbon steels 42CrMo4, 15Cr3, etc.	- 300	60 - 120	0.04 - 0.12	60 - 120	0.05 - 0.15
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	- 200	50 - 120	0.04 - 0.12	50 - 120	0.05 - 0.15
K	Grey cast irons 250, 300, etc.	150 - 250	100 - 200	0.05 - 0.15	100 - 200	0.08 - 0.18
K	Ductile cast irons 400-15S, etc.	150 - 250	100 - 200	0.04 - 0.12	100 - 200	0.05 - 0.15
N	Aluminium alloys Si < 13%	-	200 - 600	0.05 - 0.15	200 - 600	0.08 - 0.18
N	Aluminium alloys Si ≥13%	-	100 - 300	0.03 - 0.13	100 - 300	0.05 - 0.15
S	Titanium alloys Ti-6Al-4V, etc.	-	40 - 60	0.04 - 0.12	40 - 60	0.05 - 0.15
S	Heat-resistant alloys Inconel 718, etc.	-	15 - 35	0.02 - 0.1	15 - 35	0.02 - 0.1

VSSD type

TungMeister, straight neck and cylindrical shank





S = Connection screw size

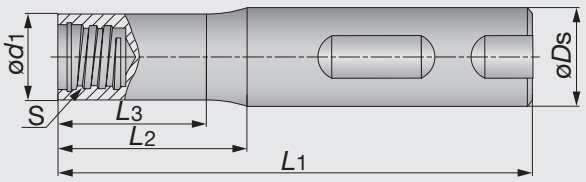
Designation	øDs	ød1	L1	L2	L3	S	Type	Material
VSSD08L060S05-S	8	7.6	60	15	12.80	S05	CYLINDRICAL	STEEL
VSSD08L070S05-C	8	7.6	70	20	19	S05	CYLINDRICAL	CARBIDE
VSSD08L090S05-C	8	7.6	90	40	39	S05	CYLINDRICAL	CARBIDE
VSSD08L110S05-C	8	7.6	110	60	59	S05	CYLINDRICAL	CARBIDE
VSSD10L070S06-C	10	9.6	70	20	18.5	S06	CYLINDRICAL	CARBIDE
VSSD10L075S06-S	10	9.6	75	20	17.7	S06	CYLINDRICAL	STEEL
VSSD10L090S06-C	10	9.6	90	40	38.5	S06	CYLINDRICAL	CARBIDE
VSSD10L110S06-C	10	9.6	110	60	58.5	S06	CYLINDRICAL	CARBIDE
VSSD10L150S06-C	10	9.6	150	100	98.5	S06	CYLINDRICAL	CARBIDE
VSSD12L070S08-C	12	11.5	70	20	17	S08	CYLINDRICAL	CARBIDE
VSSD12L090S08-C	12	11.5	90	40	37	S08	CYLINDRICAL	CARBIDE
VSSD12L090S08-S	12	11.5	90	16	13.6	S08	CYLINDRICAL	STEEL
VSSD12L110S08-C	12	11.5	110	60	57	S08	CYLINDRICAL	CARBIDE
VSSD12L130S08-C	12	11.5	130	80	77	S08	CYLINDRICAL	CARBIDE
VSSD16L090S10-C	16	15.2	90	40	38	S10	CYLINDRICAL	CARBIDE
VSSD16L100S10-S	16	15.2	100	20	18	S10	CYLINDRICAL	STEEL
VSSD16L110S10-C	16	15.2	110	60	58	S10	CYLINDRICAL	CARBIDE
VSSD16L130S10-C	16	15.2	130	80	78	S10	CYLINDRICAL	CARBIDE
VSSD16L150S10-C	16	15.2	150	100	98	S10	CYLINDRICAL	CARBIDE
VSSD20L090S12-C	20	18.3	90	40	37	S12	CYLINDRICAL	CARBIDE
VSSD20L120S12-S	20	18.3	120	25	20.5	S12	CYLINDRICAL	STEEL
VSSD20L130S12-C	20	18.3	130	80	77	S12	CYLINDRICAL	CARBIDE
VSSD20L200S12-C	20	18.3	200	120	117	S12	CYLINDRICAL	CARBIDE
VSSD25L120S15-C	25	23.9	120	60	58	S15	CYLINDRICAL	CARBIDE
VSSD25L135S15-S	25	23.9	135	35	33	S15	CYLINDRICAL	STEEL
VSSD25L170S15-C	25	23.9	170	100	98	S15	CYLINDRICAL	CARBIDE
VSSD25L250S15-C	25	23.9	250	150	148	S15	CYLINDRICAL	CARBIDE

TUNGMEISTER

VSSD-W type

TungMeister, straight neck and weldon shank





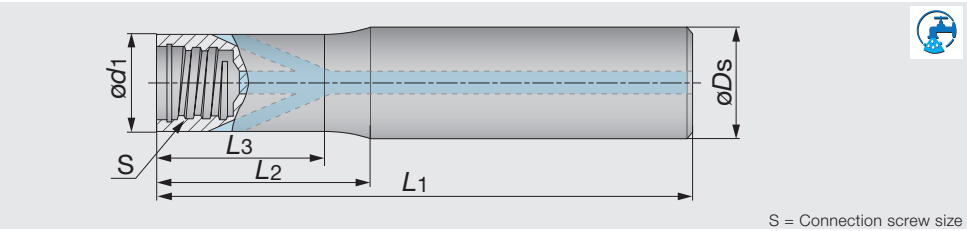
S = Connection screw size

Designation	øDs	ød1	L1	L2	L3	S	Shank	Material
VSSD12L055W05-S	12	7.6	55	3.8	-	S05	WELDON	STEEL
VSSD16L065W06-S	16	9.6	65	6	-	S06	WELDON	STEEL
VSSD16L065W08-S	16	11.5	65	4	-	S08	WELDON	STEEL
VSSD20L070W10-S	20	15.2	70	4	-	S10	WELDON	STEEL
VSSD25L075W12-S	25	18.3	75	6	-	S12	WELDON	STEEL

VSSD-W-A type

TungMeister, straight shank and neck with coolant hole





S = Connection screw size

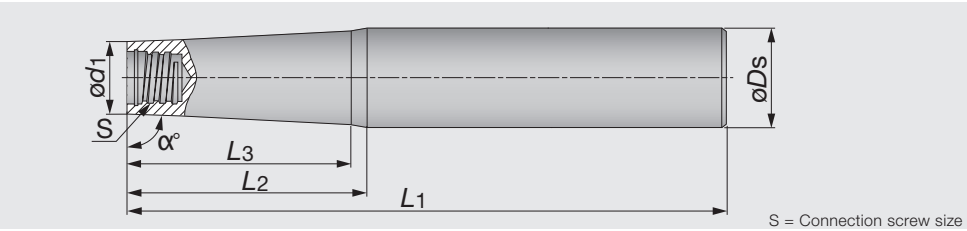
Designation	øDs	ød1	L1	L2	L3	S	Material
VSSD10L070S06-W-A	10	9.6	70	20	19	S06	TUNGSTEN
VSSD10L090S06-W-A	10	9.6	90	40	39	S06	TUNGSTEN
VSSD10L110S06-W-A	10	9.6	110	60	59	S06	TUNGSTEN
VSSD12L070S08-W-A	12	11.5	70	20	19	S08	TUNGSTEN
VSSD12L090S08-W-A	12	11.5	90	40	39	S08	TUNGSTEN
VSSD12L110S08-W-A	12	11.5	110	60	59	S08	TUNGSTEN
VSSD12L130S08-W-A	12	11.5	130	80	79	S08	TUNGSTEN
VSSD16L070S10-W-A	16	15.2	70	20	18.5	S10	TUNGSTEN
VSSD16L090S10-W-A	16	15.2	90	40	36.5	S10	TUNGSTEN
VSSD16L110S10-W-A	16	15.2	110	60	58.5	S10	TUNGSTEN
VSSD16L130S10-W-A	16	15.2	130	80	78.5	S10	TUNGSTEN
VSSD20L090S12-W-A	20	18.3	90	40	37	S12	TUNGSTEN
VSSD20L130S12-W-A	20	18.3	130	80	77	S12	TUNGSTEN

TUNGMEISTER

VTSD type

TungMeister, straight shank and taper neck





S = Connection screw size

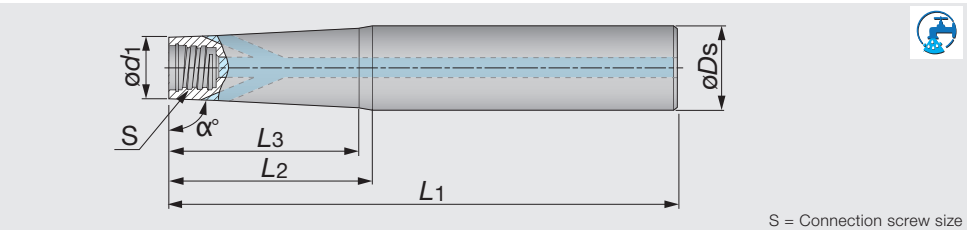
Designation	α°	øDs	ød1	L1	L2	L3	S	Material
VTSD12L080S05-S	85	12	7.6	80	25	-	S05	STEEL
VTSD12L100S05-S	89	12	7.6	100	35	31	S05	STEEL
VTSD12L110S05-C	89	12	7.6	110	60	58	S05	CARBIDE
VTSD12L130S05-C	89	12	7.6	130	80	79	S05	CARBIDE
VTSD16L125S06-S	85	16	9.6	125	34	31.6	S06	STEEL
VTSD16L130S08-C	89	16	11.5	130	80	78.8	S08	CARBIDE
VTSD16L140S08-S	85	16	11.5	140	22	19.3	S08	STEEL
VTSD16L150S05-C	89	16	7.6	150	100	96	S05	CARBIDE
VTSD16L150S06-C	89	16	9.6	150	100	98	S06	CARBIDE
VTSD16L150S08-C	89	16	11.5	150	100	-	S08	CARBIDE
VTSD16L160S06-S	89	16	9.6	160	55	45.9	S06	STEEL
VTSD16L170S06-C	89	16	9.6	170	120	119	S06	CARBIDE
VTSD20L140S10-S	85	20	15.2	140	27.5	-	S10	STEEL
VTSD20L170S08-C	89	20	11.5	170	120	117	S08	CARBIDE
VTSD20L170S08-S	89	20	11.5	170	80	68.6	S08	STEEL
VTSD20L170S10-C	89	20	15.2	170	120	-	S10	CARBIDE
VTSD20L190S10-C	89	20	15.2	190	140	-	S10	CARBIDE
VTSD20L190S10-S	89	20	15.2	190	80	73	S10	STEEL
VTSD20L210S10-C	89	20	15.2	210	160	-	S10	CARBIDE
VTSD25L160S12-S	85	25	18.3	160	40	-	S12	STEEL
VTSD25L170S10-S	85	25	15.2	170	56	-	S10	STEEL
VTSD25L180S12-C	89	25	18.3	180	120	-	S12	CARBIDE
VTSD25L210S12-S	89	25	18.3	210	100	91	S12	STEEL
VTSD25L250S12-C	89	25	18.3	250	140	-	S12	CARBIDE
VTSD32L155S15-S	85	32	23.9	155	45	40	S15	STEEL
VTSD32L190S12-S	85	32	18.3	190	80	-	S12	STEEL
VTSD32L220S15-S	85	32	23.9	220	100	-	S15	STEEL
VTSD32L250S15-C	89	32	23.9	250	150	-	S15	CARBIDE
VTSD32L300S15-C	89	32	23.9	300	200	-	S15	CARBIDE

TUNGMEISTER

VTSD-W-A type

TungMeister, straight shank and taper neck with coolant hole



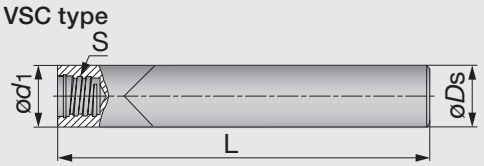


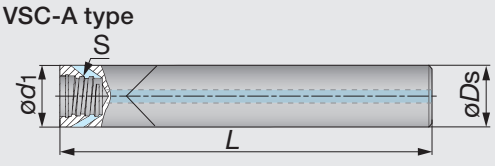
S = Connection screw size

Designation	α°	øDs	ød1	L1	L2	L3	S	Material
VTSD12L110S06-W-A	89	12	9.6	110	60	59	S06	TUNGSTEN
VTSD16L170S06-W-A	89	16	9.6	170	120	116	S06	TUNGSTEN

TUNGMEISTER
VSC type

TungMeister, straight shank for VST type slotting heads





S = Connection screw size

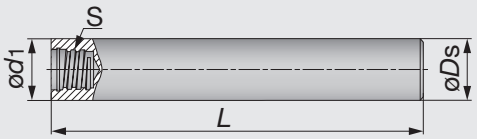
Designation	øDs	ød1	L	S	Air hole	Material
VSC100L100S06-C	10	10	100	S06	without	CARBIDE
VSC120L100S08-C-A	12	12	100	S08	with	CARBIDE

Note: • For VSC-C type shank, just VST slotting head is recommended.
If other heads are used on the VSC-C shank, the depth of cut must be smaller than the max. ap in each head.
The VSC-C type shank does not have external clearance, so the shank may interfere with the work piece.

TUNGMEISTER
VSTD type

TungMeister, straight shank for VTB type slotting heads





S = Connection screw size

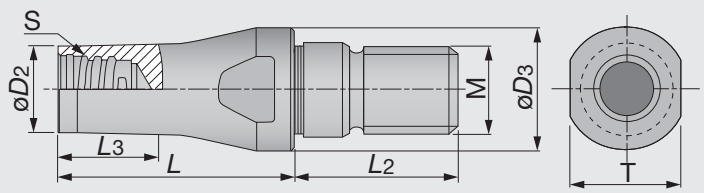
Designation	øDs	ød1	L	S	Material
VSTD08L070S05-S	8	8	70	S05	STEEL
VSTD10L080S06-S	10	10	80	S06	STEEL
VSTD12L090S08-S	12	12	90	S08	STEEL
VSTD16L100S10-S	16	16	100	S10	STEEL

Note: • For VSTD type shank, just VTB grooving head is recommended.
If other heads are used on the VSTD shank, the depth of cut must be smaller than the max. ap in each head.
The VSTD type shank does not have external clearance, so the shank may interfere with the work piece.

TUNGHOLD TUNGFLEX
VAD-M adaptor

TungFlex conversion adaptor with TungMeister





S = Connection screw size

Designation	øD2	øD3	L	L2	L3	S	M	T
VAD130L016S08-S-M8	11.7	13	16	17.5	6	S08	M8	11
VAD130L025S08-S-M8	11.7	13	25	17.5	20	S08	M8	11
VAD180L020S08-S-M10	11.7	18	20	20	12	S08	M10	13
VAD180L025S08-S-M10	11.7	18	25	20	15	S08	M10	11
VAD210L020S08-S-M12	11.7	21	20	20	10	S08	M12	12.75
VAD210L025S08-S-M12	11.7	21	25	20	13	S08	M12	12.75

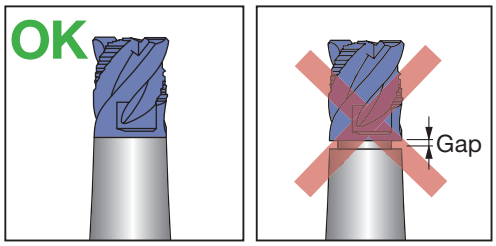
WRENCH

Appearance	Designation	Connection screw size	Torque (N·m)	Applicable head
	KEYV-S05	S05	7	Square Ball Radius Drilling Chamfering Counter boring
	KEYV-S06	S06	10	
	KEYV-S08	S08	15	
	KEYV-S10	S10	28	
	KEYV-S12	S12	28	
	KEYV-W20	S15	40	
	KEYV-177	S06	10	Slotting VST type
	KEYV-217	S08	15	
	KEYV-T40L	S08	15	Slotting VST, VTB type
		S10	28	
	KEYV-T20	S05	7	Slotting VTB type
		S06	10	
	KEYV-T25	S06	10	
	KEYV-T30L	S08	15	
	KEYV-T50L	S08	15	
		S10	28	

Note: Optional parts

CAUTIONARY POINTS IN USE

· The cutting heads specified by Tungaloy must be used. Avoid using alternate heads that are not Tungaloy products as this will damage the shank and can cause severe accident or injury.
· Before setting the head, clean the connection screw with an air blast or a wiping cloth to remove chips and other foreign matter that may remain.
· Do not apply the lubricant to the connection screw.
· Please use the correct “Wrench” with the correct cutting head. Tighten the head slowly until the face of the head contacts the shank. (Please refer to the picture shown on the right.) Re-tightening or over-tightening is not required. Excessive tightening may cause the cutting head to break.
· Do not apply excessive force or a hammer when tightening or exchanging the cutting heads.



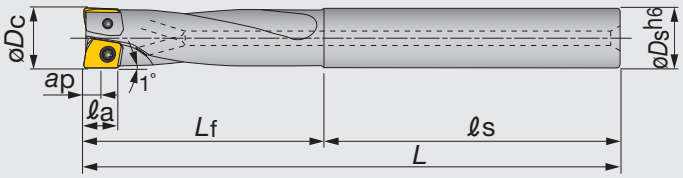
MEMO

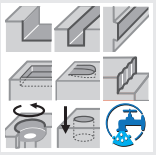
HYBRIDTACMILL
EVH

Multi purpose endmills with center edge in small diameter

A.R. = +20, R.R. = +12





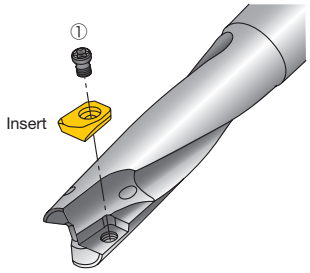


Right hand (R) shown.

Designation	Max. *ap*	ø*D*c	z	ø*D*s	ℓs	*L*f	ℓa	*L*	Insert
EVH06R010M10.0-02	3	10	2	10	50	40	5	90	XVGT06H20...
EVH07R012M12.0-02	3.5	12	2	12	50	48	6	98	XVGT07X30...
EVH09R016M16.0-02	4.5	16	2	16	60	64	8	124	XVGT09X40...

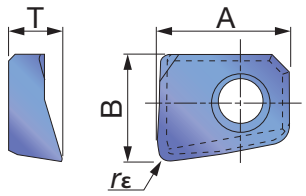
SPARE PARTS

Designation	① Clamping screw	Lubricant	Wrench	Wrench 1
EVH06R010M10.0-02	CSPD-1.8S	M-1000	-	IP-6F
EVH07R012M12.0-02	CSPB-2H	M-1000	-	IP-6F
EVH09R016M16.0-02	CSPB-2.5S	M-1000	IP-8D	-

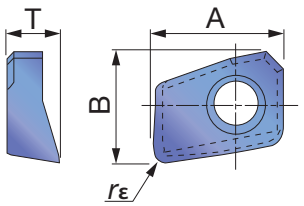


INSERT

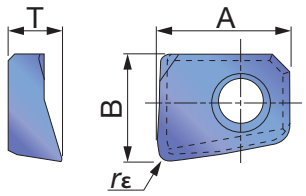
XVGT EC-MJ (Central)



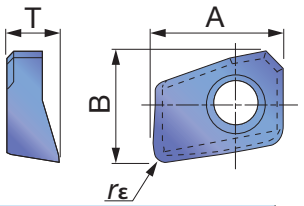
XVGT EP-MJ (Peripheral)



XVGT FC-AJ (Central)



XVGT FP-AJ (Peripheral)



		AH730	DS1200
P	Steel	★	
M	Stainless	★	
K	Cast iron	★	
N	Non-ferrous		★
S	Superalloys		
H	Hard materials		

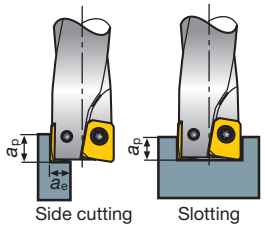
★ : First choice
☆ : Second choice

Designation	rε	Max. ap	Coating AH730	Coating DS1200	A	B	T
XVGT06H205EC-MJ	0.5	3	●		6.2	5	2.5
XVGT07X305EC-MJ	0.5	3.5	●		7.1	6.1	3
XVGT09X405EC-MJ	0.5	4.5	●		9	8.2	4
XVGT06H205EP-MJ	0.5	3	●		6.2	5.3	2.5
XVGT07X305EP-MJ	0.5	3.5	●		7.1	6.4	3
XVGT09X405EP-MJ	0.5	4.5	●		9	8.2	4
XVGT06H205FC-AJ	0.5	3		●	6.2	5	2.5
XVGT07X305FC-AJ	0.5	3.5		●	7.1	6.1	3
XVGT09X405FC-AJ	0.5	4.5		●	9	8.2	4
XVGT06H205FP-AJ	0.5	3		●	6.2	5.3	2.5
XVGT07X305FP-AJ	0.5	3.5		●	7.1	6.4	3
XVGT09X405FP-AJ	0.5	4.5		●	9	8.2	4

●: Line-up

STANDARD CUTTING CONDITIONS

●Shoulder milling, Slotting

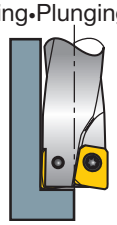


Side cutting Slotting

a_p: Axial depth of cut
a_e: Radial depth of cut

Workpiece material		Carbon steels and alloy steels		Alloy steels and prehardened steelst		Stainless steels		Cast irons		Aluminium alloys (Si < 13%)		Aluminium alloys (Si ≥ 13%)	
Hardness		< 30HRC		30 ~ 40HRC		< 250HB		–		–		–	
Cutting speed		V_c = 50 ~ 120 m/min		V_c = 30 ~ 100 m/min		V_c = 50 ~ 120 m/min		V_c = 60 ~ 140 m/min		V_c = 100 ~ 300 m/min		V_c = 100 ~ 200 m/min	
Conditions		No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min
Tool dia. (mm)	ø10	2550	380	1910	190	2550	380	3180	510	6370	1020	4770	670
	ø12	2120	320	1590	160	2120	320	2650	420	5300	850	3980	560
	ø16	1590	240	1190	120	1590	240	1990	320	3980	640	2980	420
Depth of cut	Side cutting	a_p < 0.25D a_e < 0.2D		a_p < 0.25D a_e < 0.2D		a_p < 0.25D a_e < 0.2D		a_p < 0.25D a_e < 0.3D		a_p < 0.25D a_e < 0.3D		a_p < 0.25D a_e < 0.3D	
	Slotting	a_p < 0.1D		a_p < 0.1D		a_p < 0.1D		a_p < 0.15D		a_p < 0.2D		a_p < 0.2D	

●Drilling•Plunging

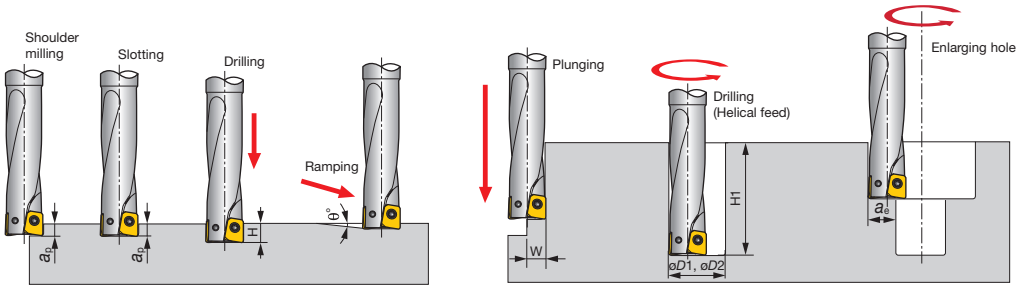


Workpiece material		Carbon steels and alloy steels		Alloy steels and prehardened steelst		Stainless steels		Cast irons		Aluminium alloys (Si < 13%)		Aluminium alloys (Si ≥ 13%)	
Hardness		< 30HRC		30 ~ 40HRC		< 250HB		–		–		–	
Cutting speed		V_c = 50 ~ 120 m/min		V_c = 30 ~ 100 m/min		V_c = 50 ~ 120 m/min		V_c = 60 ~ 140 m/min		V_c = 100 ~ 300 m/min		V_c = 100 ~ 300 m/min	
Conditions		No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min	No. of rev. n min^{-1}	Feed speed V_f mm/min
Tool dia. (mm)	ø10	2550	130	1910	80	2550	130	3180	190	6370	450	4770	290
	ø12	2120	110	1590	65	2120	110	2650	160	5300	370	3980	240
	ø16	1590	80	1190	50	1590	80	1990	120	3980	280	2980	180

Note:

- In slotting or pocketing where chips tend to stay in the cutting zone, use an air blast to remove chips to prevent chip recutting.
- When chips tend to weld excessively on the cutting edge such as in machining aluminium alloys, use a water soluble cutting fluid.
- In the case of cutting a casting skin or a heavily interrupted work surface, decrease the feed per tooth and the maximum depth of cut to 1/2 to 2/3 times the values shown in the table.
- Tool overhang length must be as short as possible to avoid chatter. When the tool overhang length is long, decrease the number of revolutions and feed.
- Cutting conditions are generally limited by the rigidity and power of the machine and the rigidity of the workpiece. When setting the conditions, start from half of the values of the standard cutting conditions and then increase the value gradually whilst making sure that the machine is running normally.

APPLICATION RANGE



Designation	Tool dia.	Max. depth of cut ap (mm)	Max.drilling depth H (mm)	Max.cutting width in plunging W (mm)	Max. ramping angle θ°	Min. machinable hole dia. øD1(mm)	Min. machinable hole dia. øD2 (mm)	Max. cutting width in enlarging hole ae (mm)	Max.depth of boring H1 (mm)
EVH06R010M10.0-02	ø10	3	5	5	5	12	19	9	30
EVH07R012M12.0-02	ø12	3.5	6	6	5	14	23	11	36
EVH09R016M16.0-02	ø16	4.5	8	8	5	18	31	15	48

EVX

Multi purpose endmills with center edge in medium diameter

Standard type A.R. = +2˚~ +5˚, R.R. = -10˚~ -3.5˚
Long type A.R. = +5˚, R.R. = -4˚~ -2˚



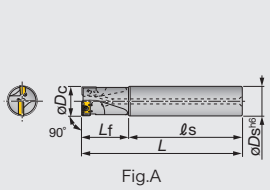


Fig.A

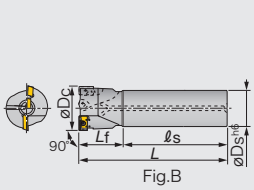


Fig.B

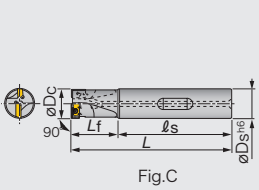
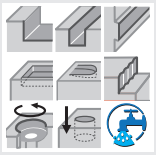


Fig.C



Designation	Max. *ap*	*øDc*	z	*øDs*	*ℓs*	*Lf*	*L*	Air hole	Fig.	Insert
EVX08016RSA-E	7	16	2	16	55	30	85	with	C	XXMU08...
EVX08016RLA-E	7	16	2	16	55	50	105	with	C	XXMU08...
EVX08016RSA	7	16	2	16	90	30	120	with	A	XXMU08...
EVX08016RS	7	16	2	16	90	30	120	without	A	XXMU08...
EVX08016RLA	7	16	2	16	135	40	175	with	A	XXMU08...
EVX08016RL	7	16	2	16	135	40	175	without	A	XXMU08...
EVX10020RSA-E	9	20	2	20	60	30	90	with	C	XXMU10...
EVX10020RSA	9	20	2	20	90	30	120	with	A	XXMU10...
EVX10020RS	9	20	2	20	90	30	120	without	A	XXMU10...
EVX10020RLA-E	9	20	2	20	60	60	120	with	C	XXMU10...
EVX10020RLA	9	20	2	20	135	50	185	with	A	XXMU10...
EVX10020RL	9	20	2	20	135	50	185	without	A	XXMU10...
EVX12025RSA-E	11.5	25	2	25	60	40	100	with	C	XXMU12...
EVX12025RLA-E	11.5	25	2	25	60	75	135	with	C	XXMU12...
EVX12025RSA	11.5	25	2	25	100	40	140	with	A	XXMU12...
EVX12025RS	11.5	25	2	25	100	40	140	without	A	XXMU12...
EVX12025RLA	11.5	25	2	25	150	70	220	with	A	XXMU12...
EVX12025RL	11.5	25	2	25	150	70	220	without	A	XXMU16
EVX16032RSA-E	15	32	2	25	60	50	110	with	C	XXMU16...
EVX16032RLA-E	15	32	2	25	60	95	155	with	C	XXMU16...
EVX16032RSA	15	32	2	32	110	50	160	with	A	XXMU16...
EVX16032RS	15	32	2	32	110	50	160	without	A	XXMU16...
EVX16032RLA	15	32	2	32	175	80	255	with	A	XXMU16...
EVX16032RL	15	32	2	32	175	80	255	without	A	XXMU16...
EVX12040RSA	11.5	40	2	42	120	60	180	with	B	XXMU12, WCMT05...
EVX12040RS	11.5	40	2	42	120	60	180	without	B	XXMU12, WCMT05...
EVX12040RLA	11.5	40	2	42	210	100	310	with	B	XXMU12, WCMT05...
EVX12040RL	11.5	40	2	42	210	100	310	without	B	XXMU12, WCMT05...
EVX16050RSA	15	50	2	42	160	50	210	with	B	XXMU16, WCMT06...
EVX16050RS	15	50	2	42	160	50	210	without	B	XXMU16, WCMT06...
EVX16050RLA	15	50	2	42	310	50	360	with	B	XXMU16, WCMT06...
EVX16050RL	15	50	2	42	310	50	360	without	B	XXMU16, WCMT06...
EVX16063RSA	15	63	2	42	190	50	240	with	B	XXMU16, WCMT06...
EVX16063RS	15	63	2	42	190	50	240	without	B	XXMU16, WCMT06...
EVX16063RLA	15	63	2	42	310	50	360	with	B	XXMU16, WCMT06...
EVX16063RL	15	63	2	42	310	50	360	without	B	XXMU16, WCMT06...

SPARE PARTS



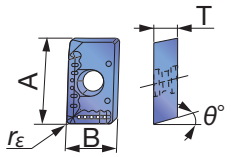




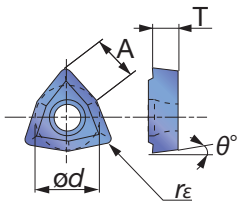
Designation	Clamping screw	Clamping screw 1	Lubricant	Wrench	Wrench 1
EVX08016R...	-	CSPB-2.2	M-1000	IP-7D	-
EVX10020R...	-	CSPB-2.5	M-1000	IP-8D	-
EVX12025R...	-	CSPD-3	M-1000	IP-10D	-
EVX16032R...	CSPB-3.5	-	M-1000	IP-15D	-
EVX12040R...	-	CSPD-3	M-1000	IP-10D	-
EVX16050, 63R...	CSPB-3.5	CSTB-3.5D	M-1000	IP-15D	T-9D

INSERT

XXMU-MJ



WCMT-D4



P	Steel	★		
M	Stainless		★	
K	Cast iron	★		
N	Non-ferrous			
S	Superalloys			
H	Hard materials			

★ : First choice
☆ : Second choice

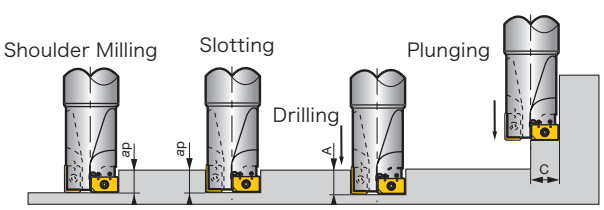
Designation	rε	Coating		A	ød	T	θ°	B
		AH120	AH140					
XXMU08T204PR-MJ	0.4	●	●	8.2	-	2.78	10	5.6
XXMU10H308PR-MJ	0.8	●	●	10.6	-	3.5	11	6.8
XXMU12X408PR-MJ	0.8	●	●	13.2	-	4.2	11	7.9
XXMU16X508PR-MJ	0.8	●	●	16.8	-	5	11	11.1
WCMT050308-D4	0.8	●	●	5.4	7.94	3.18	7	-
WCMT06T308-D4	0.8	●	●	6.5	9.525	3.97	7	-

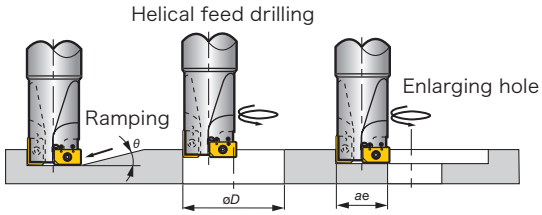
●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	øD: ø16 ~ ø20 mm			øD: ø25 ~ ø63 mm		
			Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)		Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)	
				Shouldering·Grooving	Drilling		Shouldering·Grooving	Drilling
P	Carbon steels C55, etc. < 300 HB	AH120	100 ~ 180	0.05 ~ 0.2	0.03 ~ 0.08	120 ~ 200	0.08 ~ 0.25	0.05 ~ 0.1
P	Alloy steels 42CrMo4, etc. < 300 HB	AH120	80 ~ 160	0.05 ~ 0.15	0.03 ~ 0.08	100 ~ 180	0.08 ~ 0.2	0.05 ~ 0.1
P	Die steels X96CrMoV12, etc. < 300 HB	AH120	60 ~ 120	0.05 ~ 0.13	0.03 ~ 0.06	80 ~ 150	0.08 ~ 0.15	0.03 ~ 0.08
M	Stainless steels X5CrNi18 9, etc.	AH140	70 ~ 140	0.05 ~ 0.15	0.03 ~ 0.08	90 ~ 160	0.08 ~ 0.2	0.03 ~ 0.08
K	Cast irons 250, etc.	AH120	100 ~ 180	0.05 ~ 0.25	0.03 ~ 0.1	120 ~ 200	0.08 ~ 0.25	0.05 ~ 0.1

APPLICATION RANGE



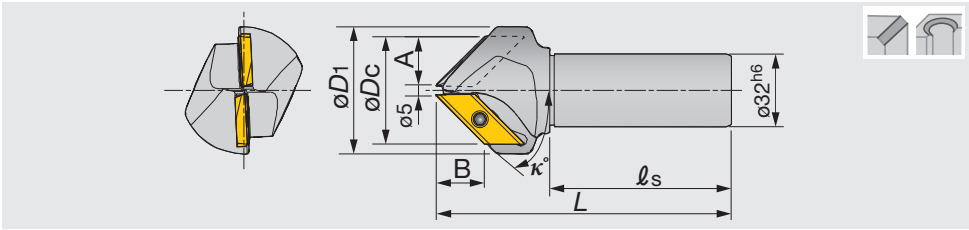


	Designation	Tool diameter ø*D*c	Max. depth of cut (*a*p)	Max. drilling depth (A)	Max. cutting width in plunging (C)	Max. ramping angle (D)	Min. machining hole dia. (ø*D*min)	Max. machining hole dia. (ø*D*max)	Max. cutting width in enlarging hole (*a*e)
Standard type / Long type	EVX08016R...	16	7	8	8	3°	19.2	30	14
	EVX10020R...	20	9	10	10	3°	24	38	18
	EVX12025R...	25	11.5	12.5	12.5	3°	30	48	23
	EVX16032R...	32	15	16	16	3°	38.4	62	30
	EVX12040RS/L (A)	40	11.5	20	20	3°	48	78	38
	EVX16050RS/L (A)	50	15	25	25	3°	60	98	48
	EVX16063RS/L (A)	63	15	31.5	31.5	3°	75.6	124	61

ECC31

Indexable chamfering cutter with large parallelogram insert





Designation	øDc	z	κ°	øD1	A	B	øDs	ℓs	L	Insert
ECC31005R-30	34	1	30	40	14.5	25.5	32	80	130.2	XCET3104...
ECC31005R-45	46	2	45	56	20.5	20.5	32	80	130.1	XCET3104...
ECC31005R-60	55	2	60	72	25.5	14.5	32	80	130.1	XCET3104...

SPARE PARTS

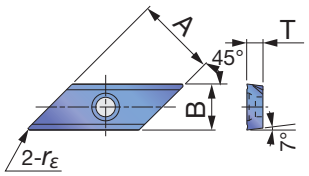




Designation	Clamping screw	Lubricant	Wrench
ECC31...	CSTB-5S	M-1000	T-20D

INSERT

XCET31



		Coating	Cermet	Un-coated
P	Steel	☆	★	☆
M	Stainless	★		
K	Cast iron	★		
N	Non-ferrous			
S	Superalloys			
H	Hard meterials			

★ : First choice
☆ : Second choice

Designation	rε	AH330	NS740	UX30	A	B	T
XCET310404ER	0.4	●	●	●	22	12.7	4.5

●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	No. of revolutions: *n* (min^{-1})	Feed per tooth: *fz* (mm/t)
P	Carbon steels C55, etc. Alloy steels 42CrMo4, etc. < 300 HB	NS740	1000 - 3000 - 7000	0.1 - 0.25
		UX30	700 - 2000 - 4900	0.1 - 0.25
	Die steels X40CrMoV5-1, etc. < 300 HB	AH330	1000 - 3000 - 7000	0.1 - 0.2
M	Stainless steels X5CrNi18-10, etc. < 250 HB	AH330	1000 - 3000 - 7000	0.1 - 0.25
K	Cast irons 250, etc.	AH330	1000 - 3000 - 7000	0.1 - 0.25

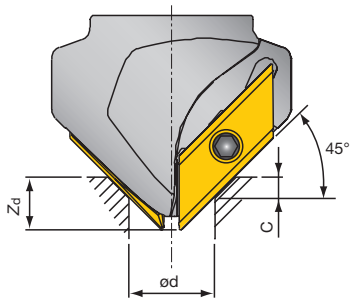
Notes:

- When the hole diameter to be chamfered is small or the cutting edges near the front end of tool are used, use at higher side of the revolution range shown in the Table.
  In contrast, when the hole diameter to be chamfered is large or the cutting edges far from the tool's front end are used, use the lower side of the revolution range shown in the Table.
- When chamfering a small diameter hole (smaller than ø10 mm) in a plunge-milling mode, peck-feeding should not be used.
- When the hole diameter to be chamfered is smaller than ø10 mm or the cutting edges near the tool's front end are used, the feed should be set within 0.15 mm/t.

Guidelines for programming

Z-axis plunging depth Z_d (mm) in 45° chamfering of hole

Hole dia. ød (mm)	Size of chamfering C (mm)						
	0.5	1	1.5	2	3	4	5
5	0.7	1.2	1.7	2.2	3.2	-	-
6	1.2	1.7	2.2	2.7	3.7	-	-
6.8	1.6	2.1	2.6	3.1	4.1	-	-
8	2.2	2.7	3.2	3.7	4.7	-	-
8.5	2.4	2.9	3.4	3.9	4.9	-	-
10	3.2	3.7	4.2	4.7	5.7	6.7	7.7
10.2	3.3	3.8	4.3	4.8	5.8	6.8	7.8
12	4.2	4.7	5.2	5.7	6.7	7.7	8.7
14	5.2	5.7	6.2	6.7	7.7	8.7	9.7
16	6.2	6.7	7.2	7.7	8.7	9.7	10.7
17.5	6.9	7.4	7.9	8.4	9.4	10.4	11.4
20	8.2	8.7	9.2	9.7	10.7	11.7	12.7
21	8.7	9.2	9.7	10.2	11.2	12.2	13.2
24	10.2	10.7	11.2	11.7	12.7	13.7	14.7
30	13.2	13.7	14.2	14.7	15.7	16.7	17.7
33	14.7	15.2	15.7	16.2	17.2	18.2	19.2
36	16.2	16.7	17.2	17.7	18.7	19.7	-
42	19.2	19.7	20.2	-	-	-	-

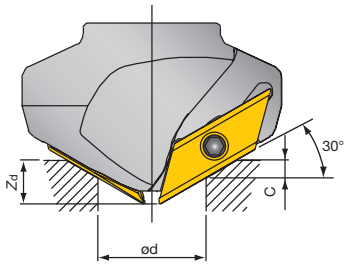


Tool: ECC31005R-45

Note: When the hole depth is smaller than the Z-axis plunging depth (Zd), special care should be taken to avoid an interference between the tool's front end and the bottom of the hole.

Z-axis plunging depth Z_d (mm) in 30° chamfering of hole

Hole dia. ød (mm)	Size of chamfering C (mm)						
	0.5	1	1.5	2	2.5	3	3.5
5	0.6	1.1	1.6	2.1	-	-	-
6	0.9	1.4	1.9	2.4	-	-	-
6.8	1.1	1.6	2.1	2.6	-	-	-
8	1.4	1.9	2.4	2.9	-	-	-
8.5	1.6	2.1	2.6	3.1	-	-	-
10	2	2.5	3	3.5	4	4.5	5
10.2	2.1	2.6	3.1	3.6	4.1	4.6	5.1
12	2.6	3.1	3.6	4.1	4.6	5.1	5.6
16	3.7	4.2	4.7	5.2	5.7	6.2	6.7
17.5	4.2	4.7	5.2	5.7	6.2	6.7	7.2
20	4.9	5.4	5.9	6.4	6.9	7.4	7.9
21	5.2	5.7	6.2	6.7	7.2	7.7	8.2
24	6.1	6.6	7.1	7.6	8.1	8.6	9.1
30	7.8	8.3	8.8	9.3	9.8	10.3	10.8
33	8.7	9.2	9.7	10.2	10.7	11.2	11.7
36	9.5	10	10.5	11	11.5	12	12.5
38	10.1	10.6	11.1	11.6	12.1	12.6	13.1
42	11.2	11.7	12.2	12.7	13.2	13.7	14.2
46	12.4	12.9	13.4	13.9	14.4	-	-
48	13	13.5	14	14.5	-	-	-
52	14.1	-	-	-	-	-	-

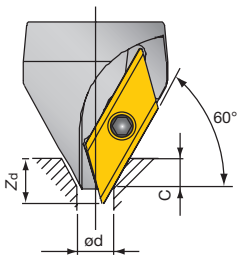


Tool: ECC31005R-60

Note: When the hole depth is smaller than the Z-axis plunging depth (Zd), special care should be taken to avoid an interference between the tool's front end and the bottom of the hole.

Z-axis plunging depth Z_d (mm) in 60° chamfering of hole

Hole dia. ød (mm)	Size of chamfering C (mm)							
	0.5	1	1.5	2	2.5	3	3.5	4
5	0.8	1.3	1.8	2.3	2.8	-	-	-
6	1.7	2.2	2.7	3.2	3.7	-	-	-
6.8	2.4	2.9	3.4	3.9	4.4	-	-	-
8	3.4	3.9	4.4	4.9	5.4	-	-	-
8.5	3.8	4.3	4.8	5.3	5.8	-	-	-
10	5.1	5.6	6.1	6.6	7.1	7.6	8.1	8.6
10.2	5.3	5.8	6.3	6.8	7.3	7.8	8.3	8.8
12	6.9	7.4	7.9	8.4	8.9	9.4	9.9	10.4
16	10.3	10.8	11.3	11.8	12.3	12.8	13.3	13.8
17.5	11.6	12.1	12.6	13.1	13.6	14.1	14.6	15.1
20	13.7	14.2	14.7	15.2	15.7	16.2	16.7	17.2
21	14.6	15.1	15.6	16.1	16.6	17.1	17.6	18.1
24	17.2	17.7	18.2	18.7	19.2	19.7	20.2	20.7
30	22.4	22.9	23.4	23.9	24.4	24.9	25.4	-
33	24.9	25.4	-	-	-	-	-	-



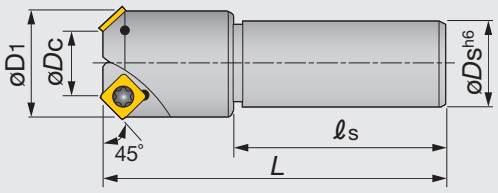
Tool: ECC31005R-30

Note: When the hole depth is smaller than the Z-axis plunging depth (Zd), special care should be taken to avoid an interference between the tool's front end and the bottom of the hole.

ECP4400R

Indexable chamfering cutter with square insert





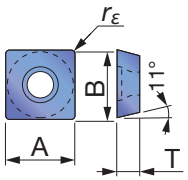
Designation	øDc	z	øD1	øDs	L	ℓs	Insert
ECP440AR	10	1	27.5	32	130	80	SPMA422*N
ECP4423R	23	2	40.3	32	130	80	SPMA422*N
ECP4436R	36	3	53.3	32	130	80	SPMA422*N

SPARE PARTS

Designation	Clamping screw	Wrench
ECP44...	CSTA-4	T-15D

INSERT

SPMA42



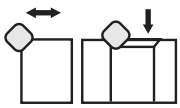
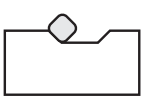
		Cermet			Uncoated														
P	Steel	★	☆		☆														
M	Stainless																		
K	Cast iron					★													
N	Non-ferrous																		
S	Superalloys																		
H	Hard meterials																		

★ : First choice
☆ : Second choice

Designation	rε	NS740	N308	UX30	TH10	A	B	T
SPMA422TN	0.8	●	●	●		12.7	12.7	3.18
SPMA422FN	0.8				●	12.7	12.7	3.18

●: Line-up

STANDARD CUTTING CONDITIONS

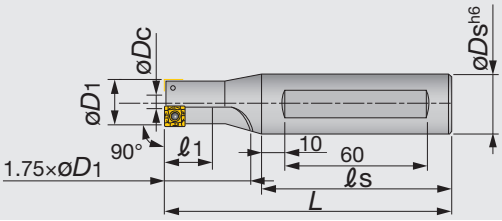
Operations		Workpiece material	Grade	Cutting speed Vc (m/min)	Maximum depth of cut ap (mm)	Feed per tooth fz (mm/t)
Single or double chamfering hole chamfering 	P	Carbon steels, Alloy steels < 300HB	NS740 · N308 UX30	100 - 150	-	0.2 - 0.5
	P	Die steels < 30HRC	NS740 · N308 UX30	50 - 70	-	0.15 - 0.4
	K	Cast irons	TH10	90 - 110	-	0.2 - 0.6
Facing Grooving 	P	Carbon steels, Alloy steels < 300HB	NS740 · N308 UX30	100 - 150	3	0.1 - 0.15
	P	Die steels < 30HRC	UX30	50 - 70	2	0.1 - 0.15
	K	Cast irons	TH10	90 - 110	3	0.1 - 0.15

Notes:
- When chamfering stainless steel, down-milling is recommended. Conventional milling may cause edge chipping.
- When chamfering above C3.0, the feed per tooth should be set up the lower side of the value shown in the above table.

TCB

Indexable counter boring endmill





Designation	øDc	z	øD1	ℓ1	L	ℓs	øDs	Insert
TCB-140	4	1	14	18	117	80	25	SPMP831DS
TCB-175	7.1	2	17.5	22	115	80	25	SPMP831DS
TCB-200	8.2	2	20	25	120	80	25	SPMP042ERD
TCB-230	11	2	23	29	126	80	25	SPMP042ERD
TCB-260	14	2	26	33	132	80	32	SPMP042ERD
TCB-290	14	2	29	30	138	80	32	SPMM322ERD
TCB-320	16.9	2	32	-	144	80	32	SPMM322ERD
TCB-350	14	2	35	-	150	80	32	SPMM432ERD
TCB-390	17.9	2	39	-	158	80	32	SPMM432ERD
TCB-430	21.7	2	43	-	171	85	42	SPMM432ERD

SPARE PARTS

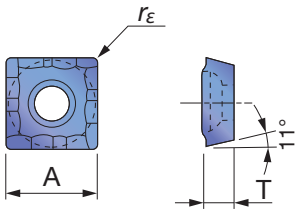




Designation	Clamping screw	Wrench
TCB-140	CSTB-2.2S	T-7D
TCB-175	CSTB-2.2	T-7D
TCB-200 - 260	CSTA-NO3	T-9D
TCB-290, 320	CSTA-NO5	T-9D
TCB-350 - 430	CSTA-4	T-15D

INSERT

SPMP/SPMM



P	Steel	★	
M	Stainless	★	
K	Cast iron	★	
N	Non-ferrous		
S	Superalloys		
H	Hard meterials		

★ : First choice
☆ : Second choice

Designation	rε	Coating T313W	A	T
SPMP831DS	0.4	●	6.35	2.38
SPMP042ERD	0.8	●	7.938	3.18
SPMM322ERD	0.8	●	9.525	3.18
SPMM432ERD	0.8	●	12.7	4.76

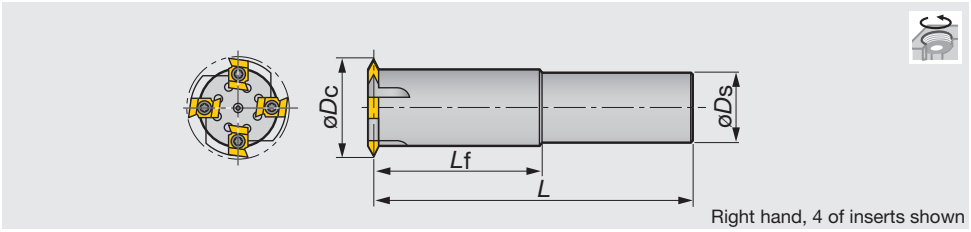
●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)	Cutting fluid
P	Carbon steels	T313W	80 - 150	0.12 - 0.24	Water soluble type
M	Stainless steels, Mild steels	T313W	150 - 200	0.05 - 0.12	Water soluble type
K	Cast irons	T313W	70 - 130	0.2 - 0.4	Water soluble type or dry cutting

Notes :
- For cutters under 20 mm diameter, be sure to use a cutting fluid and select lower cutting speeds than shown above.
- For TCB-140 type, reduce the feeds to 1/2 of the values shown in the table.





Right hand, 4 of inserts shown

Designation	øDc	z	øDs	Lf	L	Range of internal thread	Insert
D23-D25-45R	23	1	25	45	115	M28 - M30	T1-R...
D25-D25-45R	25	1	25	45	115	M32 - M42	T1-R...
D38-D32-85R	38	2	32	85	165	M45 - M56	T1-R...
D50-D42-100R	50	4	42	100	190	M58 - M68	T1-R...
D55-D42-100R	55	4	42	100	190	M64 - M85	T2-R...
D60-D42-100R	60	4	42	100	190	M70 - M85	T2-R...
D80-D42-100R	80	6	42	100	190	M90 -	T2-R...

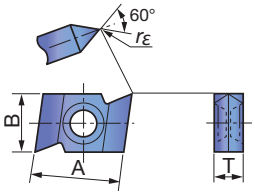
SPARE PARTS




Designation	Clamping screw	Wrench
D23-D25... - D50-D42...	CSTB-4	T-15F
D55-D42... - D80-D42...	CSTB-5	T-20F

INSERT

T*-R...



P	Steel	★
M	Stainless	★
K	Cast iron	
N	Non-ferrous	
S	Superalloys	
H	Hard meterials	

★ : First choice
☆ : Second choice

Designation	rε	Coating GH330	A	B	T
T1-R14	0.14	●	14.4	9.525	4.76
T1-R28	0.28	●	14.4	9.525	4.76
T2-R14	0.14	●	17.8	12.7	6.35
T2-R28	0.28	●	17.8	12.7	6.35

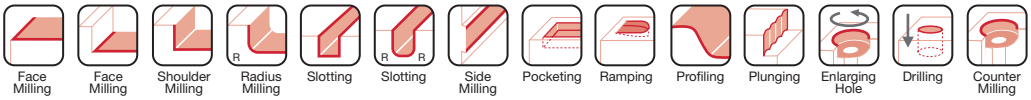
●: Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Grade	Cutting speed Vc (m/min)	Feed per tooth fz (mm/t)
P	Mild steels / Unharded steels < 200HB	GH330	150 ~ 200	0.3 ~ 0.4
P	Carbon steels / Alloy steels < 300HB	GH330	150 ~ 200	0.17 ~ 0.26
P	Die steels < 50HRC	GH330	30 ~ 50	0.14 ~ 0.2
M	Stainless steels < 300HB.	GH330	150 - 200	0.05 - 0.12

- Climb milling is recommended.
- When threading a blind hole, use the right hand cutter in right-hand rotation. Cut up from the bottom to prevent chip recutting.
- When machining internal threads from the mouth, use the left-hand cutter in left-hand rotation.

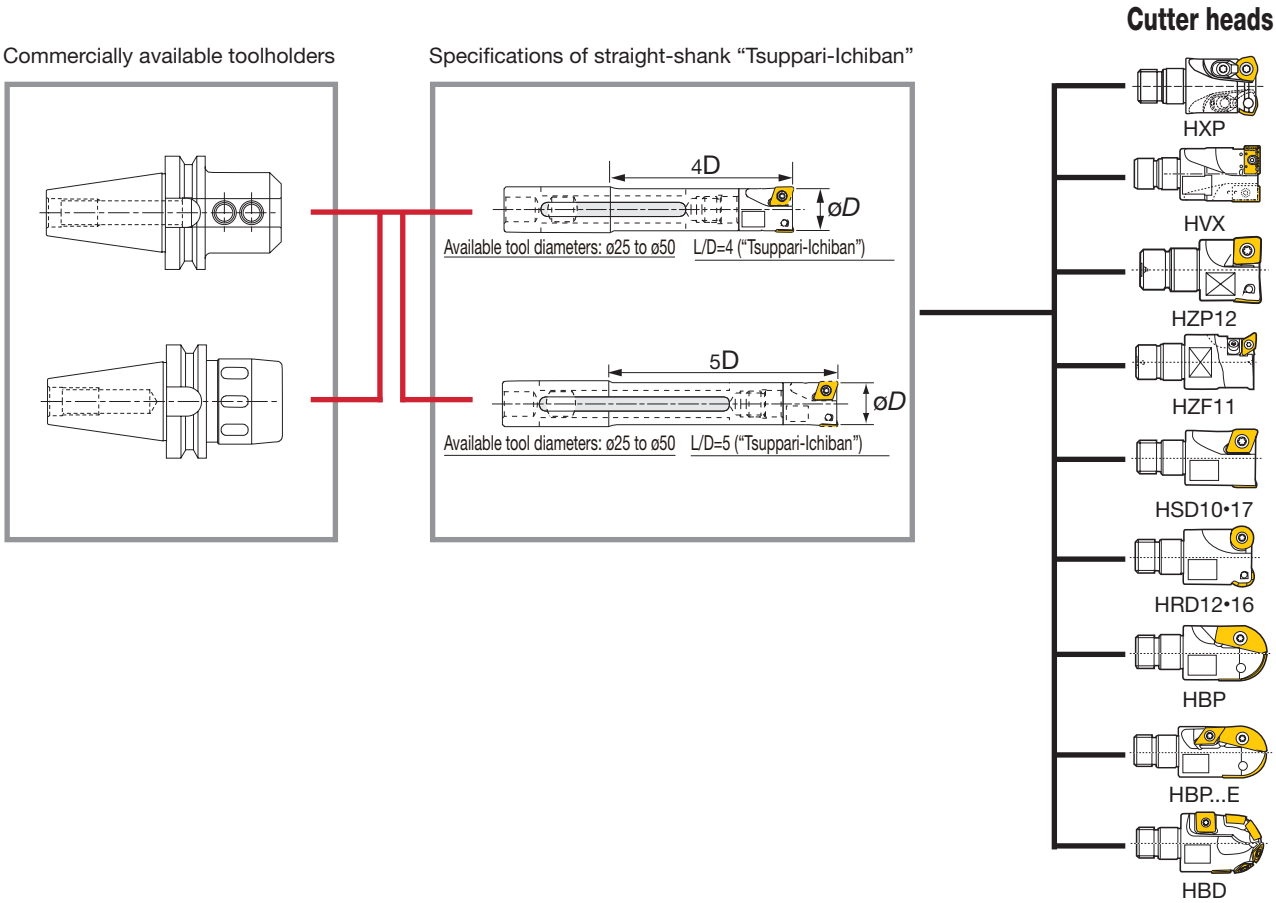
MEMO





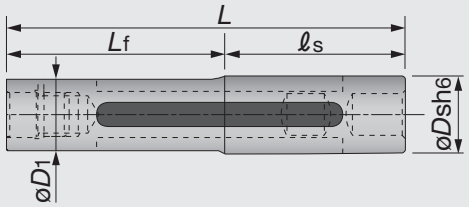
- **Interchangeable head design allows easy tool management and helps select an optimum tool.**
- **"Tsuppari-Ichiban" shank performs high efficiency machining even in long-reach applications.**

Modular straight shank system



TMS straight shank

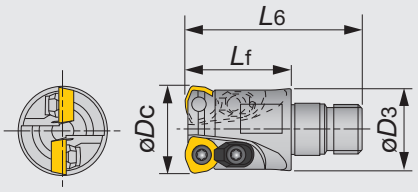
T-Bar Modular System (TMS) with straight shank

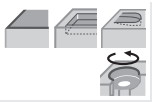


Designation	øDs	øD1	L	ℓs	Lf	Cutter
HD02525L128T	25	23	128	58	70	H...25
HD02525L153T	25	23	153	58	95	H...25
HD03032L145T	32	28	145	65	80	HBP030
HD03032L175T	32	28	175	65	110	HBP030
HD03232L163T	32	30	163	65	98	H...32
HD03232L195T	32	30	195	65	130	H...32
HD04042L182T	42	38	182	72	110	H...40
HD04042L222T	42	38	222	72	150	H...40
HD05042L222T	42	42	222	150	72	H...50
HD05042L272T	42	42	272	150	122	H...50

HXP

Super high feed endmills with T-Bar Modular System (TMS)





Designation	øDc	z	L6	Lf	øD3	Insert	(Option) Wrench
HXP06025R	25	2	50	30	23	WPM*06X415ZP...	KS-21
HXP06026R	26	2	50	30	23	WPM*06X415ZP...	KS-21
HXP06032R	32	2	64	35	30	WPM*06X415ZP...	KS-27
HXP06032RB	32	3	64	35	30	WPM*06X415ZP...	KS-27
HXP06033R	33	2	64	35	30	WPM*06X415ZP...	KS-27
HXP06033RB	33	3	64	35	30	WPM*06X415ZP...	KS-27
HXP06040R	40	3	84	50	38	WPM*06X415ZP...	KS-32
HXP08040R	40	2	84	50	38	WPMT080615Z*R...	KS-32
HXP06050R	50	4	88	50	42	WPM*06X415ZP...	KS-36
HXP08050R	50	3	88	50	42	WPMT080615Z*R...	KS-36
HXP09050R	50	2	88	50	42	WPMT090725Z*R...	KS-36

SPARE PARTS





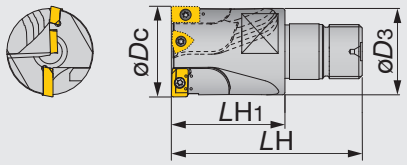


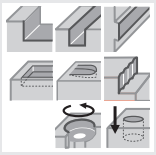
Designation	Clamping screw	Lubricant	Clamp set	Wrench	Wrench 1
HXP06025R - HXP06050R	CSPB-4S	M-1000	CSY-15	IP-15D	-
HXP08040R, HXP08050R	CSTB-5	M-1000	CSX20	-	T-20T
HXP09050R	CSPB-5	M-1000	CSY-20	-	IP-20T

HXP: Inserts → **D028**, Standard cutting conditions → **D029 -**

HVX

Multi purpose endmills with center edge in medium diameter, with T-Bar Modular System (TMS)





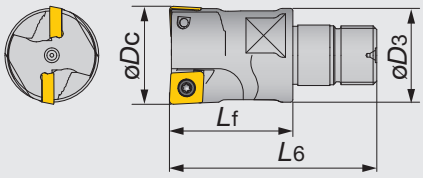
Designation	øDc	z	LH	LH1	øD3	Shank	Insert 1	Insert 2
HVX12025R	25	2	55	35	23	HD..., HBT...	XXMU12X408PR-MJ	-
HVX16032R	32	2	69	40	30	HD..., HBT...	XXMU16X508PR-MJ	-
HVX12040R	40	2	84	50	38	HD..., HBT...	XXMU12X408PR-MJ	WCMT050308-D4
HVX16050R	50	2	88	50	42	HD..., HBT...	XXMU16X508PR-MJ	WCMT06T308-D4

SPARE PARTS

Designation	Clamping screw	Clamping screw 1	Lubricant	Wrench	Wrench 1	WRENCH 2
HVX12025R	-	CSPD-3	M-1000	IP-10D	-	KS-21
HVX16032R	CSPB-3.5	-	M-1000	IP-15D	-	KS-27
HVX12040R	-	CSPD-3	M-1000	IP-10D	-	KS-32
HVX16050R	CSPB-3.5	CSTB-3.5D	M-1000	IP-15D	T-9D	KS-36

HZP

"Z-feed" plunging cutter for roughing operation with screw clamp, with T-Bar Modular System (TMS)





Designation	øDc	z	L6	Lf	øD3	Shank	Insert
HZP12032R	32	2	59	30	30	HD..., HBT...	APMT120416PR-MJ
HZP12040R	40	2	84	50	38	HD..., HBT...	APMT120416PR-MJ

SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench	WRENCH 1
HZP12032R	CSTB-3.5T	M-1000	T-20D	KS-27
HZP12040R	CSTB-3.5T	M-1000	T-20D	KS-32

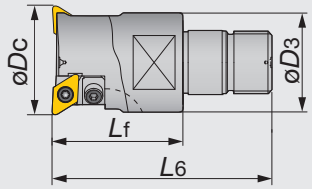
HVX: Inserts, Standard cutting conditions → **D258**

HZP: Inserts → **D220**, Standard cutting conditions → **D221**

HZF

"Z-feed" plunging endmill for finishing operation, with T-Bar Modular System (TMS)





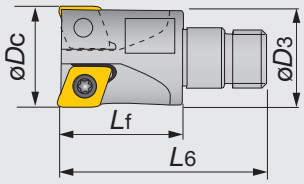
Designation	øDc	z	L6	Lf	øD3	Shank	Insert
HZF11032R	32	2	59	30	30	HD..., HBT...	DPCW11T3ZFR
HZF11040R	40	3	84	50	38	HD..., HBT...	DPCW11T3ZFR

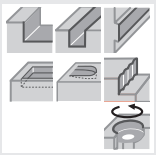
SPARE PARTS

Designation	Clamping screw	Adjusting screw	Lubricant	Cartridge clamping screw	Wrench	Wrench 1	Wrench 2	Wrench 3	Locator
HZF11032R	CSTB-4S	-	M-1000	-	T-15D	-	-	KS-27	SDUPR09CZ-11
HZF11040R	CSTB-4S	SSHM3-10	M-1000	CM4X0.7X12	T-15D	P-1.5	P-3	KS-32	SDUPR09CZ-11

HSD

Multi purpose square endmills, with T-Bar Modular System (TMS)





Designation	øDc	z	L6	Lf	øD3	Shank	Insert
HSD10025R	25	2	50	30	23	HD..., HBT...	GD*T10H3PD...
HSD10032R	32	2	59	50	30	HD..., HBT...	GD*T10H3PD...
HSD10040R	40	3	84	50	38	HD..., HBT...	GD*T10H3PD...
HSD17040R	40	2	84	50	38	HD..., HBT...	GD*T17X6PD...
HSD10050R	50	3	88	50	42	HD..., HBT...	GD*T10H3PD...
HSD17050R	50	2	88	50	42	HD..., HBT...	GD*T17X6PD...

SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench	Wrench 1
HSD10025R	CSTB-3.5H	M-1000	T-15D	KS-21
HSD10032R	CSTB-3.5H	M-1000	T-15D	KS-27
HSD10040R	CSTB-3.5H	M-1000	T-15D	KS-32
HSD17040R	CSTB-5	M-1000	T-20D	KS-32
HSD10050R	CSTB-3.5H	M-1000	T-15D	KS-36
HSD17050R	CSTB-5	M-1000	T-20D	KS-36

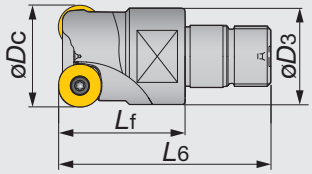
HZF: Inserts → **D222**, Standard cutting conditions → **D223**

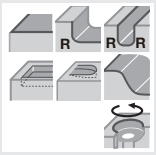
HSD: Inserts, Standard cutting conditions → **D106**

HRD

Indexable endmills with button insert of 6 mm or 8 mm radius, with T-Bar Modular System (TMS)







Designation	øDc	z	L6	Lf	øD3	Shank	Insert
HRD12032R	32	2	59	30	30	HD..., HBT...	RDM*1204ZD*N(-MJ)
HRD12040R	40	3	84	50	38	HD..., HBT...	RDM*1204ZD*N(-MJ)
HRD16040R	40	2	84	50	38	HD..., HBT...	RDM*1606ZD*N(-MJ)
HRD12050R	50	4	88	50	42	HD..., HBT...	RDM*1204ZD*N(-MJ)
HRD16050R	50	3	88	50	42	HD..., HBT...	RDM*1606ZD*N(-MJ)

SPARE PARTS



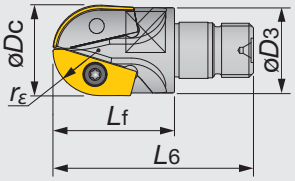


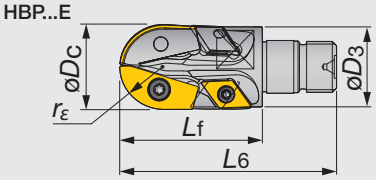

Designation	Clamping screw	Lubricant	Wrench	Wrench 1
HRD12032R	CSTB-3.5	M-1000	T-15D	KS-27
HRD12040R	CSTB-3.5	M-1000	T-15D	KS-32
HRD16040R	CSTB-5	M-1000	T-20D	KS-32
HRD12050R	CSTB-3.5	M-1000	T-15D	KS-36
HRD16050R	CSTB-5	M-1000	T-20D	KS-36

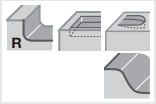
HBP

Indexable ball-nose endmill for semi-finishing, with T-Bar Modular System (TMS)









Designation	øDc	z	L6	Lf	øD3	Shank	Insert 1	Insert 2
HBP025	25	2	55	35	23	HD..., HBT...	ZPET2505-MJ	-
HBP025E	25	2 (4)	65	45	23	HD..., HBT...	ZPET2505-MJ	DCMW11T304TN
HBP030	30	2	66	40	28	HD..., HBT...	ZPET3006-MJ	-
HBP030E	30	2 (4)	76	50	28	HD..., HBT...	ZPET3006-MJ	DCMW11T304TN

SPARE PARTS







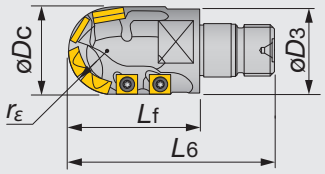

Designation	Clamping screw	Clamping screw 1	Lubricant	Wrench	Wrench 1	Wrench 2
HBP025*	CSTB-4S	-	M-1000	T-15D	-	KS-21
HBP030	CSTB-5S	-	M-1000	T-20D	-	KS-24
HBP030E	CSTB-4S	CSTB-5S	M-1000	T-15D	T-20D	KS-24

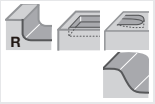
HRD: Inserts → **D207**, Standard cutting conditions → **D208**

HBP: Inserts → **D214**, Standard cutting conditions → **D217**

HBD

Indexable ball-nose endmill for roughing, with T-Bar Modular System (TMS)





Designation	øDc	z	L6	Lf	øD3	Shank	Insert 1	Insert 2
HBD040E	40	2(7)	94	60	38	HD..., HBT...	ZDMT4005-MJ	SCMT09T308-23
HBD050E	50	2(7)	113	75	42	HD..., HBT...	ZDMT5006-MJ	SCMT120408-23

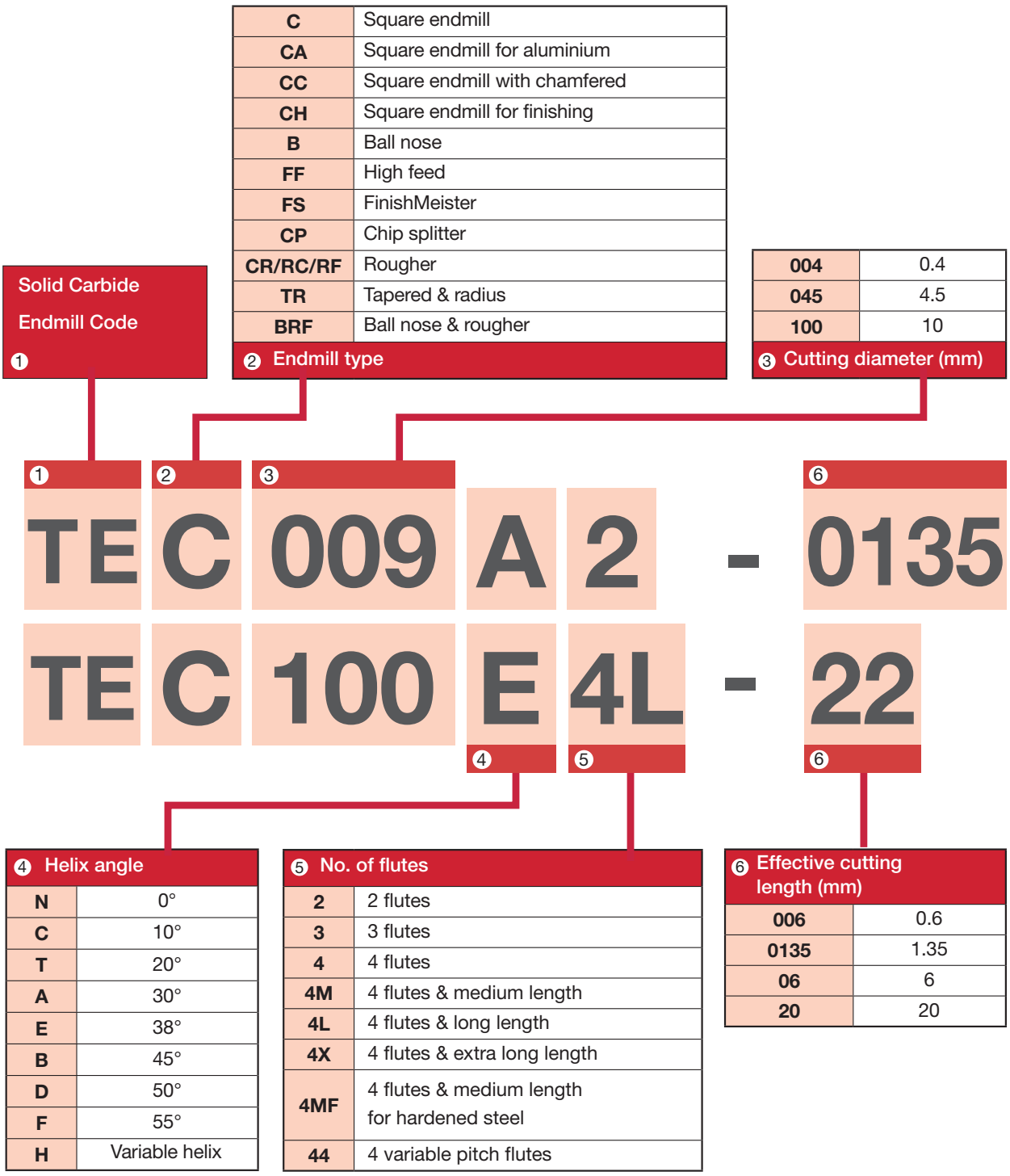
SPARE PARTS

Designation	Clamping screw	Lubricant	Wrench	Wrench 1
HBD040E	CSTB-4M	M-1000	T-15T	KS-32
HBD050E	CSTB-5	M-1000	T-20T	KS-36

HBD: Inserts → **D216**, Standard cutting conditions → **D217**

MEMO

Designation



Tungaloy Premium PVD Coated Grades

Tungaloy has achieved remarkable gains in metal removal rates and tool life with solid carbide endmills with a PVD coating, on a very tough submicron substrate.
These new materials provide high toughness and resistance to micro-cracks and chipping.

* TiAlN on a submicron substrate = AH725
* TiAlN on ultra-fine grain substrate = AH750

Diameter range	Cutting diameter $\varnothing D^{e8}$	Shank $\varnothing d^{h6}$
< 3	-0.014 - 0.028	0 - 0.007
3 - 6	-0.02 - 0.038	0 - 0.008
6 - 10	-0.025 - 0.047	0 - 0.009
10 - 18	-0.032 - 0.059	0 - 0.011
18 - 30	-0.04 - 0.073	0 - 0.013

/04	4
/10 /1.5	10 / 1.5°
/14	14

⑦ Length of neck / Angle neck (mm)

C	Cylindrical
W	Weldon

⑧ Shank type

055	5.5
08	8
4	4

⑨ Shank diameter (mm)

⑦	⑧	⑨		
/06	C	4	M	E66
/32	C	10	CF-	72

	⑩
	CF-

	⑪
	72

⑩ Workpiece material / Additional feature

-	General
S	Stainless steel
M	Steel medium hardness ≤ 55 HRC
H	Steel high hardness ≥ 55 HRC
R02A	Aluminium
CF	VARIABLEMEISTER
R16	Corner radius: 1.6

⑪ Overall length / Corner radius

66	66 mm
180	180 mm
E**	Eco type
M	Medium
R08	Corner radius: 0.8

AH725

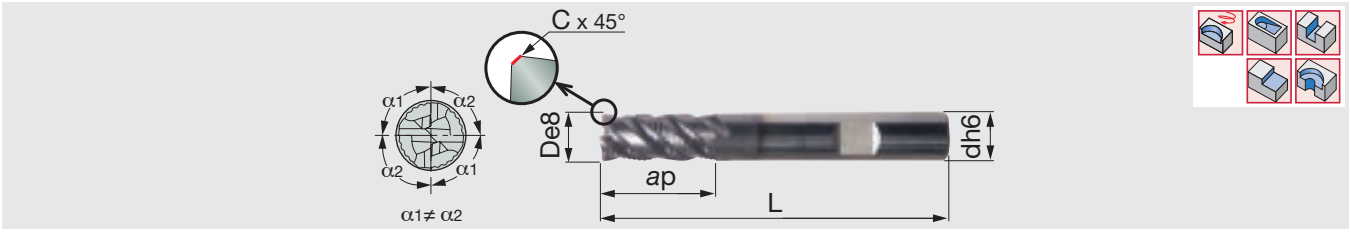
- High thermal and chemical stability.
- High hardness 3500 HV makes higher speeds, machining of harder materials, and dry machining possible. The TiAlN coating can be applied at 800° C.
- Recommended for hardened steel, high-temperature and steel alloys.
- Improves and expedites finishing on dies and molds.
- Longer tool life in high speed machining.

AH750

- Excellent for machining hard steel up to 70 HRC and high temperature alloys.
- The small grain size improves cutting edge strength and tends to chip less.

TEFS**E44-**CF...

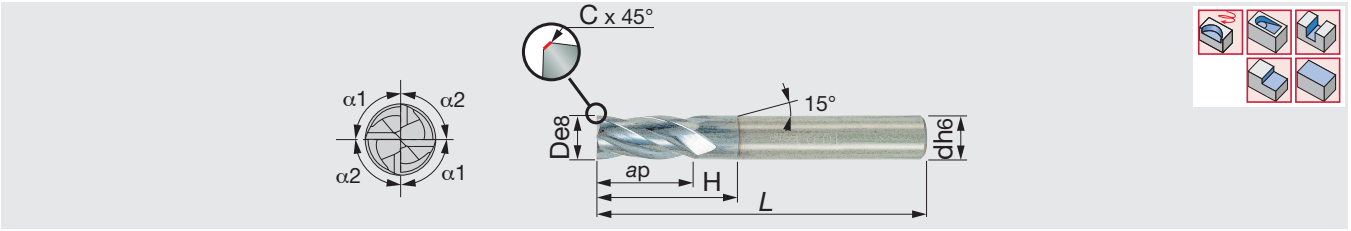
4 flutes, 38° helix, variable pitch, combination, medium length



Designation	AH725	D	d	C	ap	L	Shank
TEFS060E44-14W06CF-57	●	6	6	0.25	14	57	Weldon
TEFS080E44-18W08CF-63	●	8	8	0.3	18	63	Weldon
TEFS100E44-22W10CF-72	●	10	10	0.4	22	72	Weldon
TEFS120E44-26W12CF-83	●	12	12	0.5	26	83	Weldon
TEFS140E44-30W14CF-83	●	14	14	0.5	30	83	Weldon
TEFS160E44-34W16CF-92	●	16	16	0.6	34	92	Weldon
TEFS200E44-42W20CF-104	●	20	20	0.6	42	104	Weldon
TEFS250E44-52W25CF-121	●	25	25	0.6	52	121	Weldon

TEC**E*L-**CF...

4 flutes endmill, 38° helix, variable pitch for chatter dampening



Designation	AH725	D	d	C	ap	H	L	Shank
TEC030E4L-8/11C06CF-57	●	3	6	0.1	8	11	57	Cylindrical
TEC040E4L-10/14C06CF-57	●	4	6	0.15	10	14	57	Cylindrical
TEC050E4L-12/17C06CF-57	●	5	6	0.18	12	17	57	Cylindrical
TEC060E4L-14/20C06CF-57	●	6	6	0.25	14	20	57	Cylindrical
TEC080E4L-18/26C08CF-63	●	8	8	0.3	18	26	63	Cylindrical
TEC100E4L-22/32C10CF-72	●	10	10	0.4	22	32	72	Cylindrical
TEC120E4L-26/38C12CF-83	●	12	12	0.5	26	38	83	Cylindrical
TEC160E4L-34/50C16CF-100	●	16	16	0.6	34	50	100	Cylindrical
TEC200E4L-42/60C20CF-125	●	20	20	0.6	42	60	125	Cylindrical
TEC250E4L-52/65C25CF-121	●	25	25	0.6	52	65	121	Cylindrical

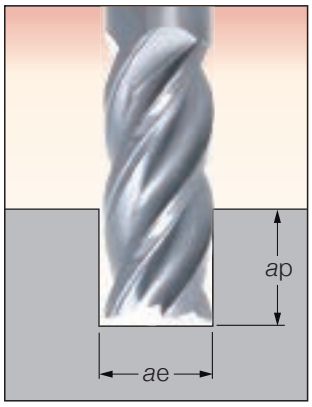
5 flutes endmill, 38° helix, variable pitch for chatter danpening, medium length endmills

Designation	AH725	D	d	C	ap	H	L	Shank
TEC060E5L-15C06CF-57	●	6	6	0.2	15	-	57	Cylindrical
TEC080E5L-20C08CF-63	●	8	8	0.25	20	-	63	Cylindrical
TEC100E5L-25C10CF-72	●	10	10	0.3	25	-	72	Cylindrical
TEC120E5L-30C12CF-83	●	12	12	0.4	30	-	83	Cylindrical
TEC160E5L-40C16CF-100	●	16	16	0.5	40	-	100	Cylindrical
TEC200E5L-50C20CF-125	●	20	20	0.5	50	-	125	Cylindrical

For recommended feed, see next page.

●: Line-up

Recommended feed - VariableMeister solid carbide endmills



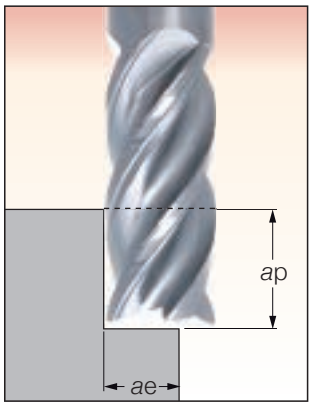
*a*e = D

*a*p = D × 0.5 ~ 1

ø*D*	Min. *fz*	Max. *fz*
6	0.025	0.06
8	0.03	0.08
10	0.03	0.09
12	0.035	0.1
16	0.05	0.12
20	0.05	0.15
25	0.05	0.15

*a*p = D × 1 ~ 2

ø*D*	Min. *fz*	Max. *fz*
6	0.025	0.05
8	0.03	0.05
10	0.03	0.05
12	0.035	0.06
16	0.04	0.07
20	0.05	0.08
25	0.05	0.08



*a*e = D × 45 ~ 75 %

*a*p = D × 0.5 ~ 1

ø*D*	Min. *fz*	Max. *fz*
6	0.025	0.07
8	0.03	0.09
10	0.03	0.1
12	0.035	0.11
16	0.05	0.13
20	0.05	0.17
25	0.05	0.17

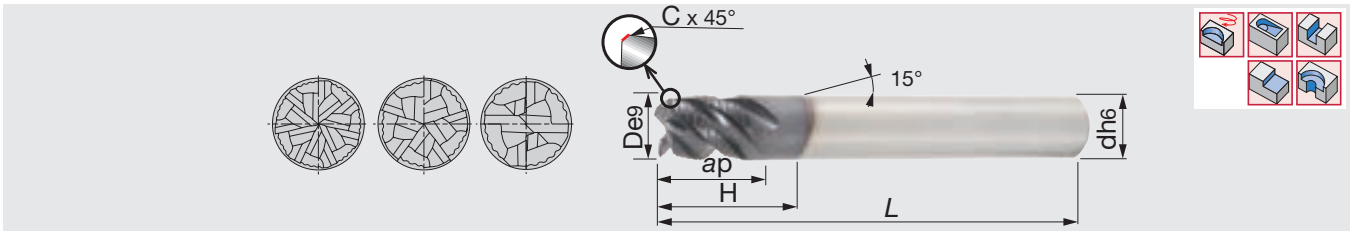
*a*p = D × 1 ~ 2

ø*D*	Min. *fz*	Max. *fz*
6	0.025	0.06
8	0.03	0.08
10	0.03	0.09
12	0.035	0.1
16	0.05	0.11
20	0.05	0.11
25	0.05	0.11

• For the cutting conditions, please see D310.

TECR**B*S...

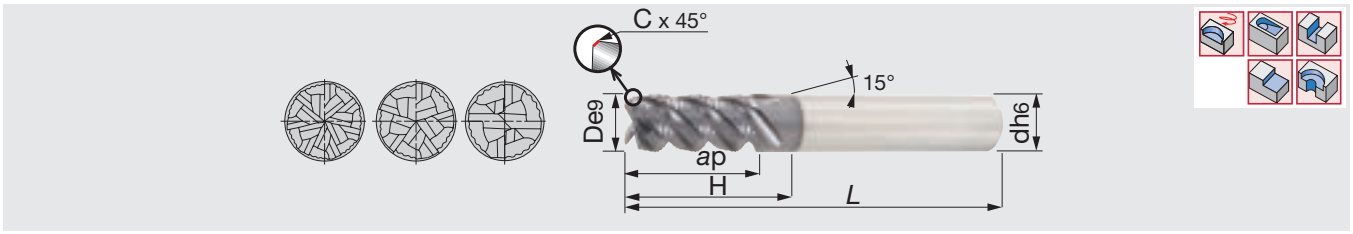
4 - 7 flutes rougher, 45° helix, short length (1xD)



Designation	AH725	D	*d*	C	*ap*	H	*L*	z		Shank
TECR050B4S-05W06-57	●	5	6	0.2	5	10	57	4	●	Weldon
TECR060B4S-06W06-57	●	6	6	0.25	6	-	57	4	●	Weldon
TECR080B4S-08W08-63	●	8	8	0.25	8	-	63	4	●	Weldon
TECR100B4S-10W10-72	●	10	10	0.3	10	-	72	4	●	Weldon
TECR120B4S-12W12-83	●	12	12	0.35	12	-	83	4	●	Weldon
TECR160B5S-16W16-92	●	16	16	0.4	16	-	92	5		Weldon
TECR200B7S-20W20-104	●	20	20	0.4	20	-	104	7		Weldon

TECR**B*M...

4 - 7 flutes rougher, 45° helix, medium length (2xD)



Designation	AH725	D	*d*	C	*ap*	H	*L*	z		Shank
TECR050B4M-10W06-57	●	5	6	0.2	10	15	57	4	●	Weldon
TECR060B4M-12W06-57	●	6	6	0.25	12	-	57	4	●	Weldon
TECR080B4M-16W08-63	●	8	8	0.25	16	-	63	4	●	Weldon
TECR100B4M-20W10-72	●	10	10	0.3	20	-	72	4	●	Weldon
TECR120B4M-24W12-83	●	12	12	0.35	24	-	83	4	●	Weldon
TECR160B5M-32W16-92	●	16	16	0.4	32	-	92	5		Weldon
TECR200B7M-40W20-104	●	20	20	0.4	40	-	104	7		Weldon

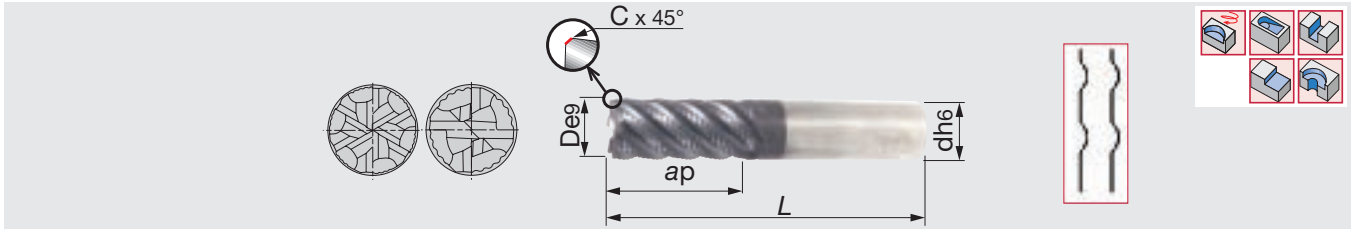
First choice in roughing applications.

●: Line-up

SHREDMEISTER

TECR**B*MF...

4, 6 flutes rougher, 45° helix, medium length,for machining hardened steel and titanium alloys



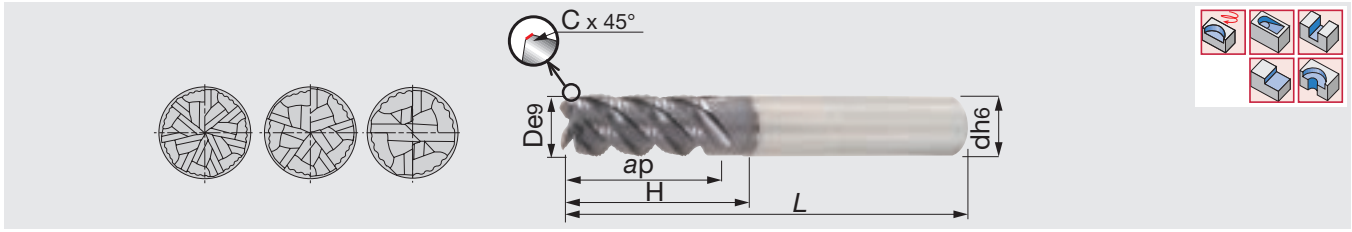
Designation	AH725	D	d	C	ap	L	z	Shank
TECR060B4MF-14W06-57	●	6	6	0.25	14	57	4	Weldon
TECR080B4MF-18W08-63	●	8	8	0.3	18	63	4	Weldon
TECR100B4MF-22W10-72	●	10	10	0.3	22	72	4	Weldon
TECR120B4MF-26W12-83	●	12	12	0.4	26	83	4	Weldon
TECR140B4MF-30W14-83	●	14	14	0.4	30	83	4	Weldon
TECR160B6MF-34W16-92	●	16	16	0.5	34	92	6	Weldon
TECR200B6MF-42W20-104	●	20	20	0.7	42	104	6	Weldon
TECR250B6MF-52W25-121	●	25	25	0.9	52	121	6	Weldon

The rougher's cutting edge profile has shallow serrations. This is a very durable design which leaves only a small amount of material for the finishing cut.

SHREDMEISTER

TECR**B*L...

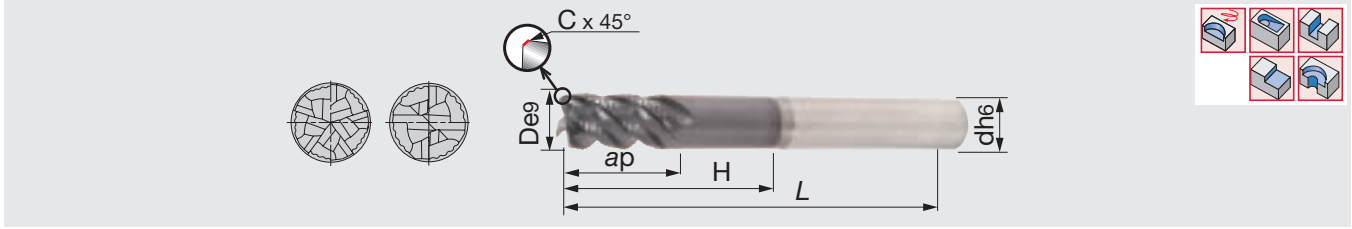
4 - 7 flutes rougher, 45° helix, long reach (3xD)



Designation	AH725	D	d	C	ap	H	L	z		Shank
TECR060B4L-12/18W06-57	●	6	6	0.25	12	18	57	4	●	Weldon
TECR080B4L-16/24W08-63	●	8	8	0.25	16	24	63	4	●	Weldon
TECR100B4L-20/30W10-72	●	10	10	0.3	20	30	72	4	●	Weldon
TECR120B4L-24/36W12-83	●	12	12	0.35	24	36	83	4	●	Weldon
TECR160B5L-32/48W16-100	●	16	16	0.4	32	48	100	5		Weldon
TECR200B7L-40/60W20-110	●	20	20	0.4	40	60	110	7		Weldon

TECR**B*X...

4 - 5 flutes rougher, 45° helix, extra long reach (4xD)



Designation	AH725	D	d	C	ap	H	L	z		Shank
TECR080B4X-12/32W08-68	●	8	8	0.25	12	32	68	4	●	Weldon
TECR100B4X-15/40W10-80	●	10	10	0.3	15	40	80	4	●	Weldon
TECR120B4X-18/48W12-100	●	12	12	0.35	18	48	100	4	●	Weldon
TECR160B5X-24/64W16-115	●	16	16	0.4	24	64	115	5		Weldon

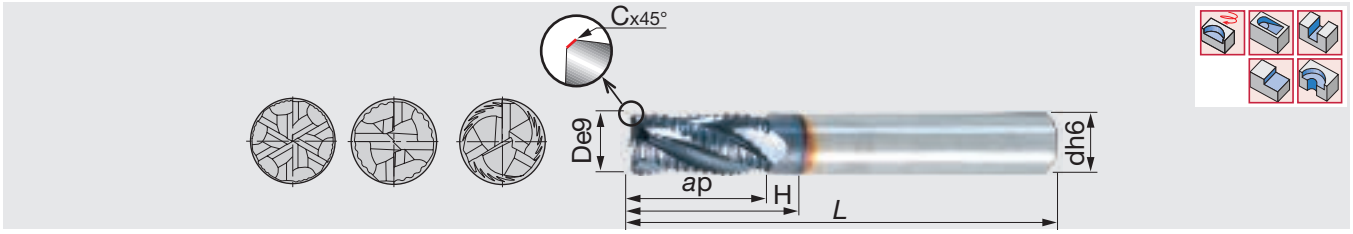
First choice in roughing applications.

●: Line-up

Multi Function

TERF**A..., TERF**E...

3 - 6 flutes rougher, 30° and 38° helix, medium length fine pitch for alloy steel, stainless steel

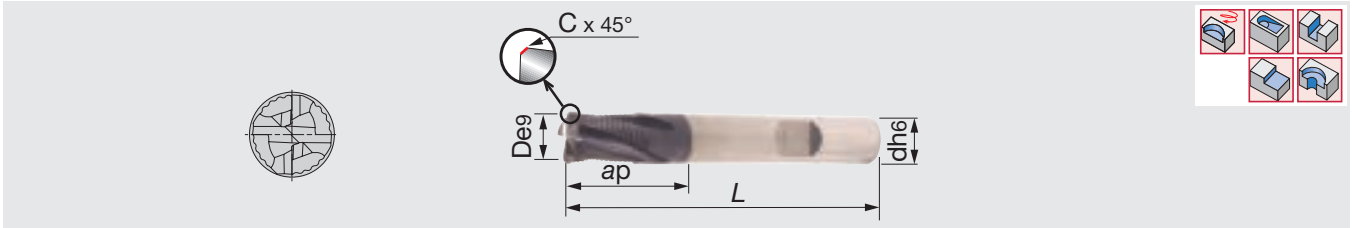


Designation	AH725	D	*d*	C	*ap*	H	*L*	Helix	z	Shank
TERF040E3-08C06-57	●	4	6	0.25	8	13	57	38°	3	Cylindrical
TERF050E3-10C06-57	●	5	6	0.3	10	17	57	38°	3	Cylindrical
TERF060E3-13C06-57	●	6	6	0.3	13	21	57	38°	3	Cylindrical
TERF070E3-20C08-63	●	7	8	0.3	20	26	63	38°	3	Cylindrical
TERF080E3-20C08-63	●	8	8	0.3	20	28	63	38°	3	Cylindrical
TERF090A4-22C10-72	●	9	10	0.3	22	30	72	30°	4	Cylindrical
TERF100A4-22C10-72	●	10	10	0.3	22	30	72	30°	4	Cylindrical
TERF110A4-25C12-83	●	11	12	0.3	25	32	83	30°	4	Cylindrical
TERF120A4-25C12-83	●	12	12	0.4	25	37	83	30°	4	Cylindrical
TERF140A4-25C14-83	●	14	14	0.5	25	37	83	30°	4	Cylindrical
TERF160A4-32C16-92	●	16	16	0.5	32	44	92	30°	4	Cylindrical
TERF180A4-32C18-92	●	18	18	0.5	32	44	92	30°	4	Cylindrical
TERF200A4-38C20-104	●	20	20	0.6	38	55	104	30°	4	Cylindrical
TERF250A6-45C25-121	●	25	25	0.6	45	64	121	30°	6	Cylindrical

Multi Function

TECR**T4M...

4 flutes rougher, 20° helix, medium length



Designation	AH725	D	*d*	C	*ap*	*L*	z	Shank
TECR060T4M-10W06-57	●	6	6	0.3	10	57	4	Weldon
TECR080T4M-16W08-63	●	8	8	0.4	16	63	4	Weldon
TECR100T4M-20W10-72	●	10	10	0.4	20	72	4	Weldon
TECR120T4M-24W12-83	●	12	12	0.4	24	83	4	Weldon
TECR160T4M-32W16-92	●	16	16	0.5	32	92	4	Weldon
TECR200T4M-40W20-104	●	20	20	0.5	40	104	4	Weldon

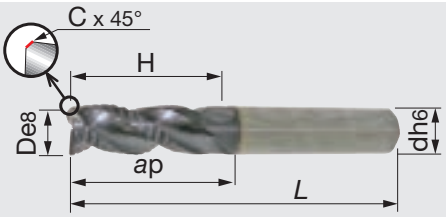
For maximum metal removal.

●: Line-up

TECP**E*L...

3 flutes chip splitter rougher, 38° helix, medium length

M
Stainless



Designation	AH725	D	*d*	C	*ap*	H	*L*	Shank
TECP050E3L-12/17W06S57	●	5	6	0.3	12	17	57	Weldon
TECP060E3L-14/20W06S57	●	6	6	0.4	14	20	57	Weldon
TECP080E3L-18/26W08S63	●	8	8	0.4	18	26	63	Weldon
TECP100E3L-22/32W10S72	●	10	10	0.4	22	32	72	Weldon
TECP120E3L-26/38W12S83	●	12	12	0.4	26	38	83	Weldon
TECP140E3L-30/44W14S100	●	14	14	0.6	30	44	100	Weldon
TECP160E3L-34/50W16S100	●	16	16	0.5	34	50	100	Weldon
TECP200E3L-42/62W20S125	●	20	20	0.5	42	62	125	Weldon

4 flutes chip splitter rougher, 38° helix, medium length

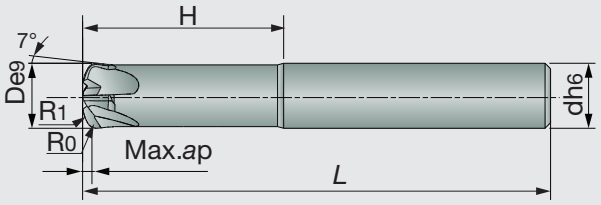
Designation	AH725	D	*d*	C	*ap*	H	*L*	Shank
TECP050E4L-12/17W06S57	●	5	6	0.3	12	17	57	Weldon
TECP060E4L-14/20W06S57	●	6	6	0.4	14	20	57	Weldon
TECP080E4L-18/26W08S63	●	8	8	0.4	18	26	63	Weldon
TECP100E4L-22/32W10S72	●	10	10	0.4	22	32	72	Weldon
TECP120E4L-26/38W12S83	●	12	12	0.4	26	38	83	Weldon
TECP140E4L-30/44W14S100	●	14	14	0.6	30	44	100	Weldon
TECP160E4L-34/50W16S100	●	16	16	0.5	34	50	100	Weldon
TECP200E4L-42/62W20S125	●	20	20	0.5	42	62	125	Weldon

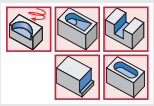
Most recommended for machining stainless steel.

●: Line-up

TEFF**N4...

High feed, 4 flutes solid carbide endmills





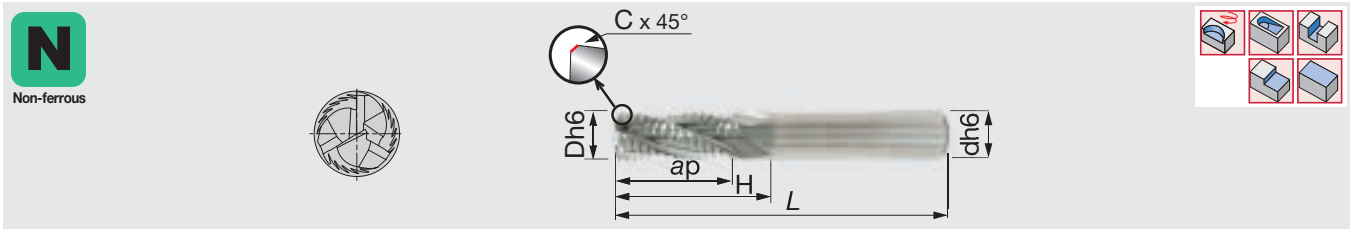
Designation	AH750	D	*d*	R0(1)	R1	Max. *a*p	H	L	Max. fz mm/t
TEFF060N4-030/20C06R1M	●	6	6	1	5.3	0.3	20	57	0.3
TEFF080N4-040/26C08R13M	●	8	8	1.3	7	0.4	26	63	0.4
TEFF100N4-050/30C10R16M	●	10	10	1.6	8.8	0.5	30	72	0.5
TEFF120N4-060/34C12R2M	●	12	12	2	10.6	0.6	34	83	0.5
TEFF160N4-080/42C16R26M	●	16	16	2.6	14	0.8	42	92	0.6
TEFF200N4-100/46C20R32M	●	20	20	3.2	17.7	1	46	104	0.7

(1) R0 should be used for programming.

●: Line-up

TERC**E3...

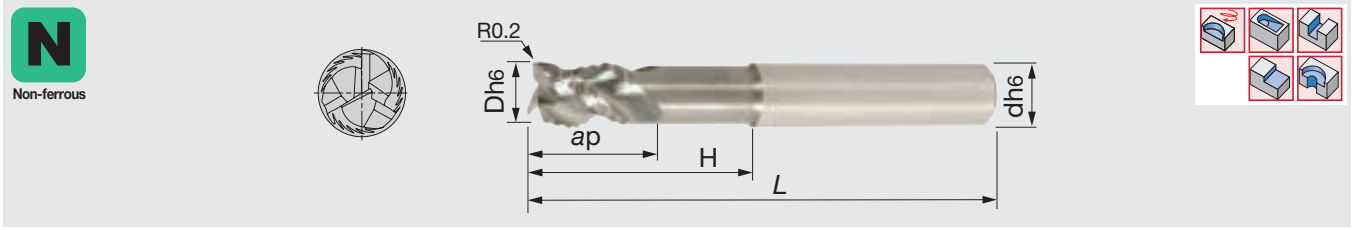
3 flutes rougher, 38° helix, medium length for maximum stock removal in aluminium.
Coarse pitch for aluminium and nonferrous materials.



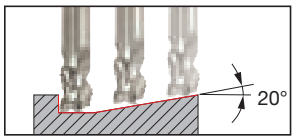
Designation	KS15F	D	*d*	C	*ap*	H	*L*	Shank
TERC060E3-13C06-57	●	6	6	0.5	13	21	57	Cylindrical
TERC080E3-20C08-63	●	8	8	0.5	20	28	63	Cylindrical
TERC100E3-22C10-72	●	10	10	0.6	22	30	72	Cylindrical
TERC120E3-25C12-83	●	12	12	0.6	25	37	83	Cylindrical
TERC140E3-25C14-83	●	14	14	0.6	25	37	83	Cylindrical
TERC160E3-32C16-92	●	16	16	0.6	32	44	92	Cylindrical
TERC200E3-38C20-104	●	20	20	0.7	38	55	104	Cylindrical

TECR**B3...

3 flutes rougher for aluminium, 45° helix, medium length



Designation	KS15F	D	*d*	*ap*	H	*L*	Shank
TECR060B3-09/21C06R02A57	●	6	6	9	21	57	Cylindrical
TECR080B3-12/27C08R02A63	●	8	8	12	27	63	Cylindrical
TECR100B3-12/31C10R02A72	●	10	10	12	31	72	Cylindrical
TECR120B3-12/37C12R02A83	●	12	12	12	37	83	Cylindrical
TECR160B3-14/43C16R02A92	●	16	16	14	43	92	Cylindrical
TECR200B3-17/53C20R02A104	●	20	20	17	53	104	Cylindrical



Rampdown angle

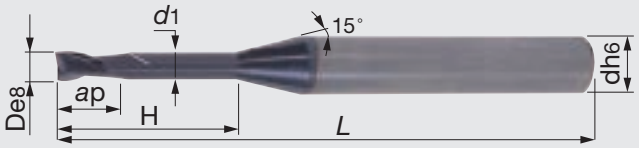
●: Line-up

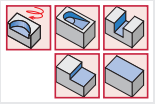
TEC**A2-**C*M...

2 flutes endmill for rib processing, 30° helix for materials up to 65 HRC

H
Hard Materials







Designation	AH750	D	d	d1	ap	H	L	Shank
TEC004A2-006/02C4M45	●	0.4	4	0.37	0.6	2	45	Cylindrical
TEC004A2-006/04C4M45	●	0.4	4	0.37	0.6	4	45	Cylindrical
TEC005A2-007/02C4M45	●	0.5	4	0.45	0.7	2	45	Cylindrical
TEC005A2-007/04C4M45	●	0.5	4	0.45	0.7	4	45	Cylindrical
TEC005A2-007/06C4M45	●	0.5	4	0.45	0.7	6	45	Cylindrical
TEC006A2-009/02C4M45	●	0.6	4	0.55	0.9	2	45	Cylindrical
TEC006A2-009/04C4M45	●	0.6	4	0.55	0.9	4	45	Cylindrical
TEC006A2-009/06C4M45	●	0.6	4	0.55	0.9	6	45	Cylindrical
TEC007A2-010/02C4M45	●	0.7	4	0.65	1	2	45	Cylindrical
TEC007A2-010/04C4M45	●	0.7	4	0.65	1	4	45	Cylindrical
TEC007A2-010/06C4M45	●	0.7	4	0.65	1	6	45	Cylindrical
TEC008A2-012/04C4M45	●	0.8	4	0.75	1.2	4	45	Cylindrical
TEC008A2-012/06C4M45	●	0.8	4	0.75	1.2	6	45	Cylindrical
TEC008A2-012/08C4M45	●	0.8	4	0.75	1.2	8	45	Cylindrical
TEC009A2-0135/06C4M45	●	0.9	4	0.85	1.35	6	45	Cylindrical
TEC009A2-0135/08C4M45	●	0.9	4	0.85	1.35	8	45	Cylindrical
TEC009A2-0135/10C4M45	●	0.9	4	0.85	1.35	10	45	Cylindrical
TEC010A2-015/04C4M45	●	1	4	0.97	1.5	4	45	Cylindrical
TEC010A2-015/06C4M45	●	1	4	0.97	1.5	6	45	Cylindrical
TEC010A2-015/08C4M45	●	1	4	0.95	1.5	8	45	Cylindrical
TEC010A2-015/10C4M45	●	1	4	0.95	1.5	10	45	Cylindrical
TEC010A2-015/12C4M45	●	1	4	0.93	1.5	12	45	Cylindrical
TEC010A2-015/16C4M50	●	1	4	0.93	1.5	16	50	Cylindrical
TEC012A2-018/06C4M45	●	1.2	4	1.17	1.8	6	45	Cylindrical
TEC012A2-018/08C4M45	●	1.2	4	1.15	1.8	8	45	Cylindrical
TEC012A2-018/10C4M45	●	1.2	4	1.15	1.8	10	45	Cylindrical
TEC012A2-018/12C4M45	●	1.2	4	1.13	1.8	12	45	Cylindrical
TEC012A2-018/16C4M50	●	1.2	4	1.13	1.8	16	50	Cylindrical
TEC014A2-021/06C4M45	●	1.4	4	1.35	2.1	6	45	Cylindrical
TEC014A2-021/08C4M45	●	1.4	4	1.35	2.1	8	45	Cylindrical
TEC014A2-021/10C4M45	●	1.4	4	1.35	2.1	10	45	Cylindrical
TEC014A2-021/12C4M45	●	1.4	4	1.33	2.1	12	45	Cylindrical
TEC014A2-021/16C4M50	●	1.4	4	1.31	2.1	16	50	Cylindrical
TEC015A2-023/06C4M45	●	1.5	4	1.47	2.3	6	45	Cylindrical
TEC015A2-023/08C4M45	●	1.5	4	1.45	2.3	8	45	Cylindrical
TEC015A2-023/10C4M45	●	1.5	4	1.45	2.3	10	45	Cylindrical
TEC015A2-023/12C4M45	●	1.5	4	1.43	2.3	12	45	Cylindrical
TEC015A2-023/16C4M50	●	1.5	4	1.41	2.3	16	50	Cylindrical

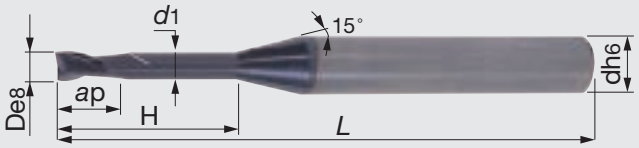
●: Line-up

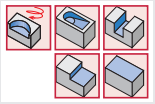
TEC**A2-**C*M...

2 flutes endmill for rib processing, 30° helix for materials up to 65 HRC

H
Hard Materials





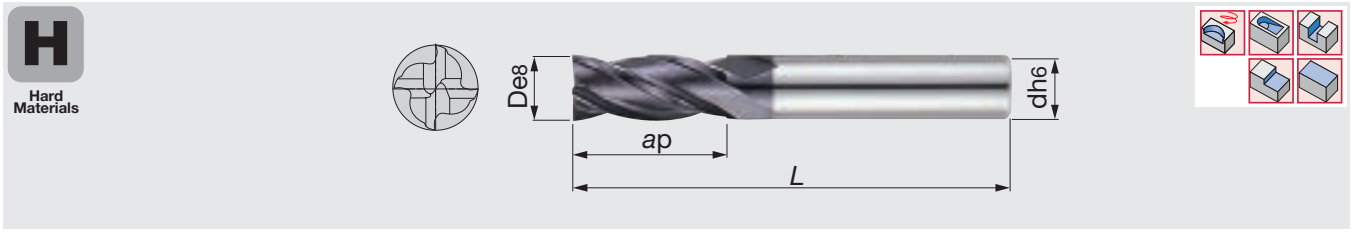


Designation	AH750	D	d	d1	ap	H	L	Shank
TEC015A2-023/18C4M55	●	1.5	4	1.41	2.3	18	55	Cylindrical
TEC015A2-023/20C4M55	●	1.5	4	1.41	2.3	20	55	Cylindrical
TEC016A2-024/06C4M45	●	1.6	4	1.57	2.4	6	45	Cylindrical
TEC016A2-024/08C4M45	●	1.6	4	1.55	2.4	8	45	Cylindrical
TEC016A2-024/10C4M45	●	1.6	4	1.55	2.4	10	45	Cylindrical
TEC016A2-024/12C4M45	●	1.6	4	1.53	2.4	12	45	Cylindrical
TEC016A2-024/16C4M50	●	1.6	4	1.53	2.4	16	50	Cylindrical
TEC016A2-024/18C4M55	●	1.6	4	1.53	2.4	18	55	Cylindrical
TEC016A2-024/20C4M55	●	1.6	4	1.53	2.4	20	55	Cylindrical
TEC016A2-024/26C4M60	●	1.6	4	1.53	2.4	26	60	Cylindrical
TEC018A2-027/06C4M45	●	1.8	4	1.77	2.7	6	45	Cylindrical
TEC018A2-027/08C4M45	●	1.8	4	1.75	2.7	8	45	Cylindrical
TEC018A2-027/10C4M45	●	1.8	4	1.75	2.7	10	45	Cylindrical
TEC018A2-027/12C4M45	●	1.8	4	1.73	2.7	12	45	Cylindrical
TEC018A2-027/16C4M50	●	1.8	4	1.71	2.7	16	50	Cylindrical
TEC018A2-027/18C4M55	●	1.8	4	1.71	2.7	18	55	Cylindrical
TEC018A2-027/20C4M55	●	1.8	4	1.69	2.7	20	55	Cylindrical
TEC020A2-030/06C4M45	●	2	4	1.97	3	6	45	Cylindrical
TEC020A2-030/08C4M45	●	2	4	1.95	3	8	45	Cylindrical
TEC020A2-030/10C4M45	●	2	4	1.95	3	10	45	Cylindrical
TEC020A2-030/12C4M45	●	2	4	1.93	3	12	45	Cylindrical
TEC020A2-030/16C4M50	●	2	4	1.91	3	16	50	Cylindrical
TEC020A2-030/20C4M55	●	2	4	1.89	3	20	55	Cylindrical
TEC020A2-030/30C4M70	●	2	4	1.89	3	30	70	Cylindrical
TEC025A2-037/08C4M45	●	2.5	4	2.4	3.7	8	45	Cylindrical
TEC025A2-037/10C4M45	●	2.5	4	2.4	3.7	10	45	Cylindrical
TEC025A2-037/12C4M45	●	2.5	4	2.4	3.7	12	45	Cylindrical
TEC025A2-037/16C4M55	●	2.5	4	2.4	3.7	16	55	Cylindrical
TEC025A2-037/20C4M60	●	2.5	4	2.4	3.7	20	60	Cylindrical
TEC025A2-037/30C4M80	●	2.5	4	2.4	3.7	30	80	Cylindrical
TEC030A2-045/08C6M45	●	3	6	2.85	4.5	8	45	Cylindrical
TEC030A2-045/10C6M45	●	3	6	2.85	4.5	10	45	Cylindrical
TEC030A2-045/12C6M45	●	3	6	2.85	4.5	12	45	Cylindrical
TEC030A2-045/16C6M55	●	3	6	2.85	4.5	16	55	Cylindrical
TEC030A2-045/20C6M60	●	3	6	2.85	4.5	20	60	Cylindrical
TEC030A2-045/30C6M70	●	3	6	2.85	4.5	30	70	Cylindrical
TEC030A2-045/40C6M90	●	3	6	2.85	4.5	40	90	Cylindrical

●: Line-up

TEC**A4-**C...

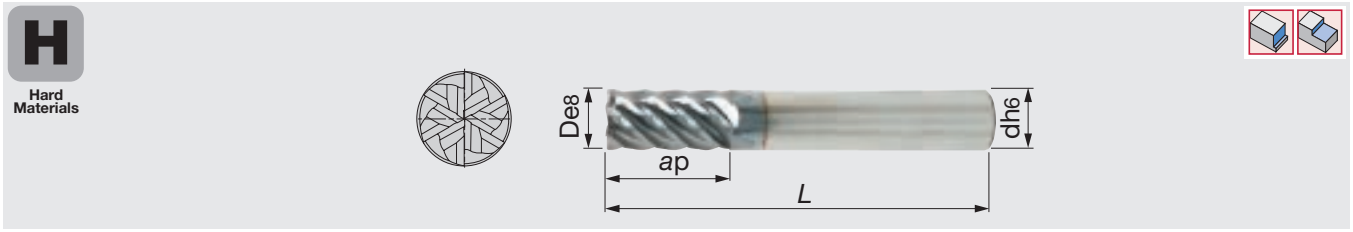
4 flutes, 30° helix, medium length for materials up to 65 HRC



Designation	AH750	D	*d*	*ap*	*L*	Shank
TEC040A4-11C06-45	●	4	6	11	45	Cylindrical
TEC050A4-13C06-50	●	5	6	13	50	Cylindrical
TEC060A4-13C06-50	●	6	6	13	50	Cylindrical
TEC070A4-16C08-60	●	7	8	16	60	Cylindrical
TEC080A4-19C08-60	●	8	8	19	60	Cylindrical
TEC090A4-19C10-70	●	9	10	19	70	Cylindrical
TEC100A4-22C10-70	●	10	10	22	70	Cylindrical
TEC120A4-26C12-75	●	12	12	26	75	Cylindrical
TEC140A4-26C14-85	●	14	14	26	85	Cylindrical
TEC160A4-32C16-100	●	16	16	32	100	Cylindrical
TEC180A4-32C18-100	●	18	18	32	100	Cylindrical
TEC200A4-38C20-105	●	20	20	38	105	Cylindrical

TECH**B6...

6 flutes endmill, 45° helix, medium length for finishing hardened steels, for materials up to 65 HRC



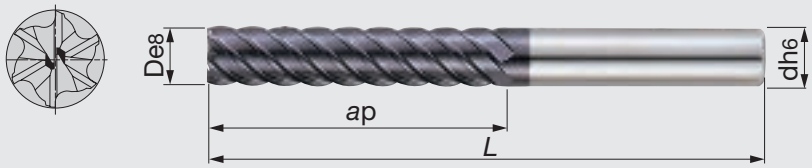
Designation	AH750	D	*d*	*ap*	*L*	Shank
TECH060B6-16C06-57	●	6	6	16	57	Cylindrical
TECH080B6-20C08-63	●	8	8	20	63	Cylindrical
TECH100B6-22C10-72	●	10	10	22	72	Cylindrical
TECH120B6-25C12-83	●	12	12	25	83	Cylindrical
TECH160B6-32C16-92	●	16	16	32	92	Cylindrical
TECH200B6-38C20-104	●	20	20	38	104	Cylindrical

●: Line-up

TEC**B6...

6 flutes, 45° helix, extra long length, for materials up to 65 HRC

H Hard Materials

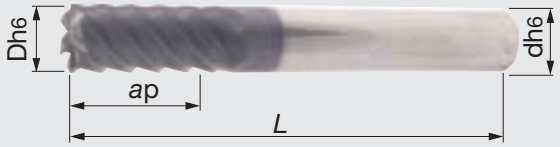


Designation	AH750	D	*d*	*ap*	*L*	Shank
TEC060B6-26C06-70	●	6	6	26	70	Cylindrical
TEC080B6-36C08-90	●	8	8	36	90	Cylindrical
TEC100B6-46C10-100	●	10	10	46	100	Cylindrical
TEC120B6-56C12-110	●	12	12	56	110	Cylindrical
TEC160B6-66C16-130	●	16	16	66	130	Cylindrical
TEC200B6-76C20-140	●	20	20	76	140	Cylindrical
TEC250B6-92C25-180	●	25	25	92	180	Cylindrical

TEC**D6...

6 flutes endmill, 50° helix, medium length, for materials up to 65 HRC

H Hard Materials

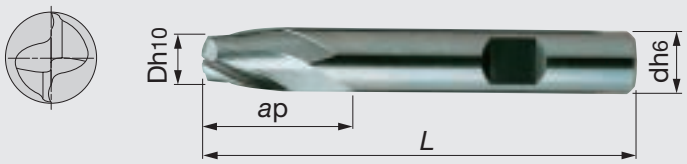


Designation	AH750	D	*d*	*ap*	*L*	Shank
TEC060D6-13C06H57	●	6	6	13	57	Cylindrical
TEC080D6-20C08H63	●	8	8	20	63	Cylindrical
TEC100D6-22C10H72	●	10	10	22	72	Cylindrical
TEC120D6-25C12H83	●	12	12	25	83	Cylindrical
TEC140D6-30C14H83	●	14	14	30	83	Cylindrical
TEC160D6-32C16H92	●	16	16	32	92	Cylindrical
TEC200D6-38C20H104	●	20	20	38	104	Cylindrical

●: Line-up

TEC**A2...

2 flutes, 30° helix, short cutting length

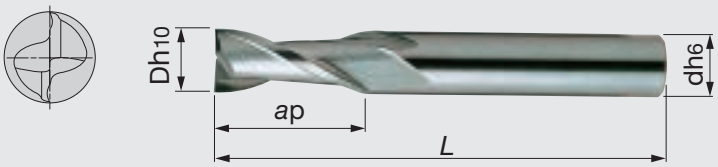


Designation	AH725	D	*d*	*ap*	*L*	Shank
TEC020A2-03W06-E50	●	2	6	3	50	Weldon
TEC030A2-04W06-E50	●	3	6	4	50	Weldon
TEC035A2-04W06-E50	●	3.5	6	4	50	Weldon
TEC040A2-05W06-E54	●	4	6	5	54	Weldon
TEC045A2-05W06-E54	●	4.5	6	5	54	Weldon
TEC050A2-06W06-E54	●	5	6	6	54	Weldon
TEC060A2-07W06-E54	●	6	6	7	54	Weldon
TEC070A2-08W08-E58	●	7	8	8	58	Weldon
TEC080A2-09W08-E58	●	8	8	9	58	Weldon
TEC090A2-10W10-E66	●	9	10	10	66	Weldon
TEC100A2-11W10-E66	●	10	10	11	66	Weldon
TEC120A2-12W12-E73	●	12	12	12	73	Weldon
TEC140A2-14W14-E75	●	14	14	14	75	Weldon
TEC160A2-16W16-E82	●	16	16	16	82	Weldon
TEC180A2-18W18-E84	●	18	18	18	84	Weldon
TEC200A2-20W20-E92	●	20	20	20	92	Weldon

●: Line-up

TEC**A2...

2 flutes, medium length, 30° helix

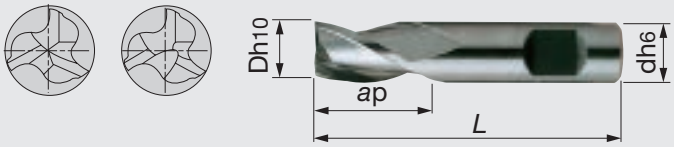


Designation	AH725	D	*d*	*ap*	*L*	Shank
TEC010A2-03C04-E50	●	1	4	3	50	Cylindrical
TEC015A2-045C04-E50	●	1.5	4	4.5	50	Cylindrical
TEC020A2-08C02-E32	●	2	2	8	32	Cylindrical
TEC025A2-08C025-E32	●	2.5	2.5	8	32	Cylindrical
TEC030A2-12C03-E38	●	3	3	12	38	Cylindrical
TEC035A2-12C035-E32	●	3.5	3.5	12	32	Cylindrical
TEC040A2-12C04-E50	●	4	4	12	50	Cylindrical
TEC045A2-14C045-E50	●	4.5	4.5	14	50	Cylindrical
TEC050A2-14C05-E50	●	5	5	14	50	Cylindrical
TEC055A2-16C055-E50	●	5.5	5.5	16	50	Cylindrical
TEC060A2-16C06-E50	●	6	6	16	50	Cylindrical
TEC070A2-20C07-E60	●	7	7	20	60	Cylindrical
TEC080A2-20C08-E63	●	8	8	20	63	Cylindrical
TEC090A2-20C09-E60	●	9	9	20	60	Cylindrical
TEC100A2-22C10-E72	●	10	10	22	72	Cylindrical
TEC120A2-22C12-E70	●	12	12	22	70	Cylindrical
TEC140A2-25C14-E75	●	14	14	25	75	Cylindrical
TEC160A2-25C16-E75	●	16	16	25	75	Cylindrical
TEC200A2-32C20-E100	●	20	20	32	100	Cylindrical

●: Line-up

TEC**A3..., TEC**E3...

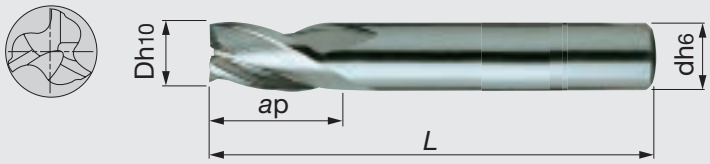
3 flutes, 30° and 38° helix, short length



Designation	AH725	D	*d*	a_p	*L*	Helix	Shank
TEC020E3-04C06-E35	●	2	6	4	35	38	Cylindrical
TEC025E3-05C06-E36	●	2.5	6	5	36	38	Cylindrical
TEC030E3-05C06-E36	●	3	6	5	36	38	Cylindrical
TEC035A3-06W06-E37	●	3.5	6	6	37	30	Weldon
TEC040E3-07C06-E38	●	4	6	7	38	38	Cylindrical
TEC045A3-08W06-E38	●	4.5	6	8	38	30	Weldon
TEC050A3-08C06-E39	●	5	6	8	39	30	Cylindrical
TEC055A3-08W06-E39	●	5.5	6	8	39	30	Weldon
TEC060E3-08C06-E39	●	6	6	8	39	38	Cylindrical
TEC070A3-10W08-E42	●	7	8	10	42	30	Weldon
TEC080E3-11C08-E43	●	8	8	11	43	38	Cylindrical
TEC090A3-11W10-E48	●	9	10	11	48	30	Weldon
TEC100E3-13C10-E50	●	10	10	13	50	38	Cylindrical
TEC120A3-15C12-E55	●	12	12	15	55	30	Cylindrical

TEC**A3..., TEC**E3...

3 flutes, 30° and 38° helix, medium length

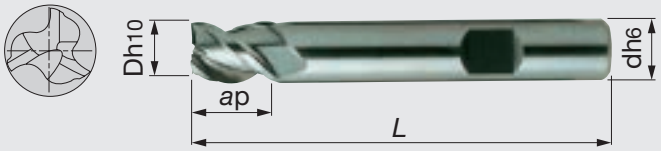


Designation	AH725	D	*d*	a_p	*L*	Helix	Shank
TEC020E3-08C02-E32	●	2	2	8	32	38	Cylindrical
TEC030E3-12C03-E38	●	3	3	12	38	38	Cylindrical
TEC040E3-12C04-E50	●	4	4	12	50	38	Cylindrical
TEC050E3-14C05-E50	●	5	5	14	50	38	Cylindrical
TEC060E3-16C06-E50	●	6	6	16	50	38	Cylindrical
TEC070E3-20C07-E60	●	7	7	20	60	38	Cylindrical
TEC080E3-20C08-E63	●	8	8	20	63	38	Cylindrical
TEC090A3-20C09-E60	●	9	9	20	60	30	Cylindrical
TEC100E3-22C10-E72	●	10	10	22	72	38	Cylindrical
TEC120E3-22C12-E73	●	12	12	22	73	38	Cylindrical
TEC140A3-25C14-E75	●	14	14	25	75	30	Cylindrical
TEC160A3-25C16-E75	●	16	16	25	75	30	Cylindrical
TEC200E3-32C20-E104	●	20	20	32	104	38	Cylindrical

●: Line-up

TEC**B3-**W...

3 flutes, 45° helix, short length

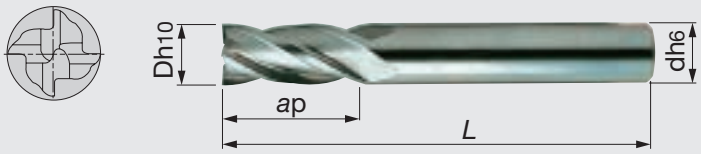


Designation	AH725	D	*d*	a_p	*L*	Shank
TEC020B3-03W06-50	●	2	6	3	50	Weldon
TEC030B3-04W06-50	●	3	6	4	50	Weldon
TEC040B3-05W06-54	●	4	6	5	54	Weldon
TEC050B3-06W06-54	●	5	6	6	54	Weldon
TEC060B3-07W06-54	●	6	6	7	54	Weldon
TEC080B3-09W08-58	●	8	8	9	58	Weldon
TEC100B3-11W10-66	●	10	10	11	66	Weldon
TEC120B3-12W12-73	●	12	12	12	73	Weldon
TEC140B3-14W14-75	●	14	14	14	75	Weldon
TEC160B3-16W16-82	●	16	16	16	82	Weldon
TEC180B3-18W18-84	●	18	18	18	84	Weldon
TEC200B3-20W20-92	●	20	20	20	92	Weldon

●: Line-up

TEC**A4-**C**-E...

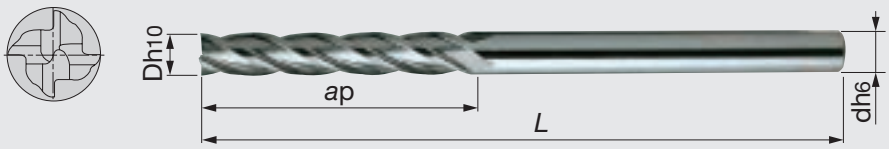
4 flutes, 30° helix, medium length



Designation	AH725	D	*d*	a_p	*L*	Shank
TEC020A4-08C02-E32	●	2	2	8	32	Cylindrical
TEC025A4-08C025-E32	●	2.5	2.5	8	32	Cylindrical
TEC030A4-12C03-E32	●	3	3	12	32	Cylindrical
TEC035A4-12C035-E32	●	3.5	3.5	12	32	Cylindrical
TEC040A4-12C04-E50	●	4	4	12	50	Cylindrical
TEC045A4-14C045-E50	●	4.5	4.5	14	50	Cylindrical
TEC050A4-14C05-E50	●	5	5	14	50	Cylindrical
TEC055A4-16C055-E50	●	5.5	5.5	16	50	Cylindrical
TEC060A4-16C06-E50	●	6	6	16	50	Cylindrical
TEC070A4-20C07-E60	●	7	7	20	60	Cylindrical
TEC080A4-20C08-E60	●	8	8	20	60	Cylindrical
TEC090A4-20C09-E60	●	9	9	20	60	Cylindrical
TEC100A4-22C10-E72	●	10	10	22	72	Cylindrical
TEC120A4-22C12-E70	●	12	12	22	70	Cylindrical
TEC140A4-25C14-E75	●	14	14	25	75	Cylindrical
TEC160A4-25C16-E75	●	16	16	25	75	Cylindrical
TEC200A4-32C20-E100	●	20	20	32	100	Cylindrical

TEC**A4-**C**-E...

4 flutes, 30° helix, extra long



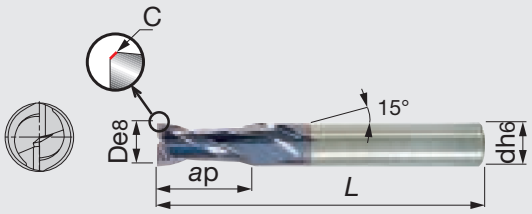
Designation	AH725	D	*d*	a_p	*L*	Shank
TEC030A4-30C03-E75	●	3	3	30	75	Cylindrical
TEC040A4-30C04-E75	●	4	4	30	75	Cylindrical
TEC050A4-40C05-E100	●	5	5	40	100	Cylindrical
TEC060A4-50C06-E150	●	6	6	50	150	Cylindrical
TEC080A4-50C08-E150	●	8	8	50	150	Cylindrical
TEC100A4-60C10-E150	●	10	10	60	150	Cylindrical
TEC120A4-75C12-E150	●	12	12	75	150	Cylindrical
TEC140A4-65C14-E150	●	14	14	65	150	Cylindrical
TEC160A4-65C16-E150	●	16	16	65	150	Cylindrical
TEC200A4-65C20-E150	●	20	20	65	150	Cylindrical

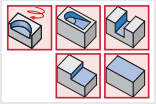
●: Line-up

TECC**A2..., TECC**B2...

2 flutes slot drill, 30° and 45° helix, medium length

øD	C
D≤4	0.1x45°
4< D≤10	0.15x45°
10< D	0.25x45°



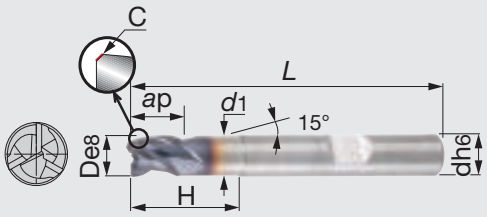


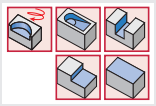
Designation	AH725	D	*d*	a_p	*L*	Helix	Shank
TECC020B2-07C03-38	●	2	3	7	38	45°	Cylindrical
TECC030A2-10C03-38	●	3	3	10	38	30°	Cylindrical
TECC040A2-12C04-50	●	4	4	12	50	30°	Cylindrical
TECC050A2-14C05-50	●	5	5	14	50	30°	Cylindrical
TECC060A2-16C06-57	●	6	6	16	57	30°	Cylindrical
TECC080A2-20C08-63	●	8	8	20	63	30°	Cylindrical
TECC100A2-22C10-72	●	10	10	22	72	30°	Cylindrical
TECC120A2-25C12-83	●	12	12	25	83	30°	Cylindrical
TECC160A2-32C16-92	●	16	16	32	92	30°	Cylindrical
TECC200A2-38C20-104	●	20	20	38	104	30°	Cylindrical

TECS**E3..., TECCS**E3...

3 flutes slot drill, 38° helix, short length

øD	C
D≤4	0.1x45°
4< D≤10	0.15x45°
D>10	0.25x45°





Designation	AH725	D	*d*	d_1	a_p	H	*L*	Shank
TECS020E3-03W06-57	●	2	6	1.9	3	7	57	Weldon
TECS030E3-04W06-57	●	3	6	2.9	4	10	57	Weldon
TECS040E3-05W06-57	●	4	6	3.9	5	12	57	Weldon
TECS050E3-06W06-57	●	5	6	4.9	6	14	57	Weldon
TECCS060E3-07W06-57	●	6	6	5.9	7	16	57	Weldon
TECCS080E3-09W08-63	●	8	8	7.6	9	20	63	Weldon
TECCS100E3-11W10-72	●	10	10	9.5	11	22	72	Weldon
TECCS120E3-12W12-83	●	12	12	11.3	12	25	83	Weldon
TECCS160E3-16W16-92	●	16	16	15.2	16	32	92	Weldon
TECCS200E3-20W20-104	●	20	20	19	20	38	104	Weldon

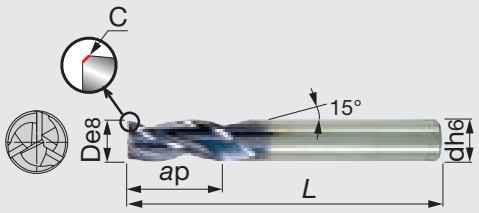
Due to short and stable design, feed can be increased by 25%.

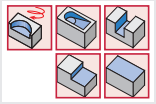
●: Line-up

TECC**B3..., TECC**E3...

3 flutes slot drill, 38° and 45° helix, medium length

øD	C
D≤4	0.1x45°
4< D≤10	0.15x45°
10< D	0.25x45°





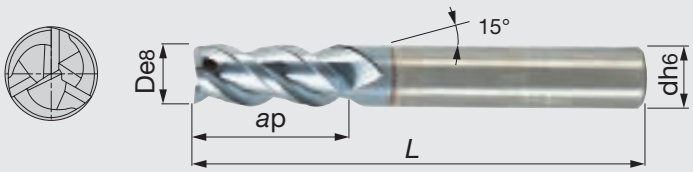
Designation	AH725	D	*d*	a_p	*L*	Helix	Shank
TECC020B3-07C03-38	●	2	3	7	38	45°	Cylindrical
TECC030E3-10C03-38	●	3	3	10	38	38°	Cylindrical
TECC040E3-12C04-50	●	4	4	12	50	38°	Cylindrical
TECC050E3-14C05-50	●	5	5	14	50	38°	Cylindrical
TECC060E3-16C06-57	●	6	6	16	57	38°	Cylindrical
TECC080E3-20C08-63	●	8	8	20	63	38°	Cylindrical
TECC100E3-22C10-72	●	10	10	22	72	38°	Cylindrical
TECC120E3-25C12-83	●	12	12	25	83	38°	Cylindrical
TECC160E3-32C16-92	●	16	16	32	92	38°	Cylindrical
TECC200E3-38C20-104	●	20	20	38	104	38°	Cylindrical

Multi-purpose endmills.
Also suitable for deep slotting.

●: Line-up

TEC**B3-**C...

3 flutes slot drill, 45° helix, medium length



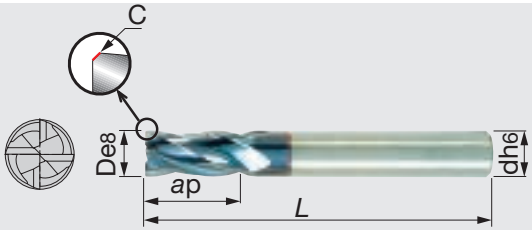
Designation	AH725	D	d	ap	L	Shank
TEC020B3-07C06-57	●	2	6	7	57	Cylindrical
TEC030B3-10C06-57	●	3	6	10	57	Cylindrical
TEC040B3-12C06-57	●	4	6	12	57	Cylindrical
TEC050B3-14C06-57	●	5	6	14	57	Cylindrical
TEC060B3-16C06-57	●	6	6	16	57	Cylindrical
TEC070B3-16C07-60	●	7	7	16	60	Cylindrical
TEC080B3-20C08-63	●	8	8	20	63	Cylindrical
TEC090B3-20C09-67	●	9	9	20	67	Cylindrical
TEC100B3-22C10-72	●	10	10	22	72	Cylindrical
TEC120B3-25C12-83	●	12	12	25	83	Cylindrical
TEC140B3-25C14-75	●	14	14	25	75	Cylindrical
TEC160B3-32C16-92	●	16	16	32	92	Cylindrical
TEC180B3-32C18-92	●	18	18	32	92	Cylindrical
TEC200B3-38C20-104	●	20	20	38	104	Cylindrical

Excellent for deep slotting and shoulder milling.

TECC**A4..., TECC**B4...

4 flutes endmill, 30° and 45° helix, medium length

øD	C
D≤4	0.1x45°
4< D≤10	0.15x45°
10< D	0.25x45°

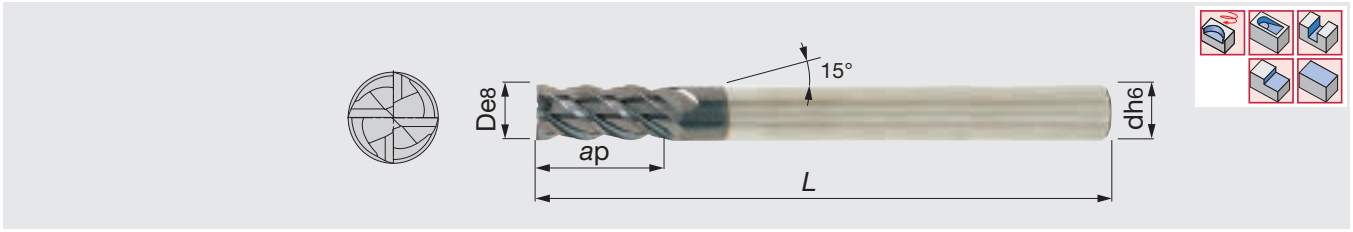


Designation	AH725	D	d	ap	L	Helix	Shank
TECC020B4-07C03-38	●	2	3	7	38	45	Cylindrical
TECC030A4-10C03-38	●	3	3	10	38	30	Cylindrical
TECC040A4-12C04-50	●	4	4	12	50	30	Cylindrical
TECC050A4-14C05-50	●	5	5	14	50	30	Cylindrical
TECC060A4-16C06-57	●	6	6	16	57	30	Cylindrical
TECC080A4-20C08-63	●	8	8	20	63	30	Cylindrical
TECC100A4-22C10-72	●	10	10	22	72	30	Cylindrical
TECC120A4-25C12-83	●	12	12	25	83	30	Cylindrical
TECC160A4-32C16-92	●	16	16	32	92	30	Cylindrical
TECC200A4-38C20-104	●	20	20	38	104	30	Cylindrical

●: Line-up

TEC**B4...

4 flutes endmill, 45° helix, medium length

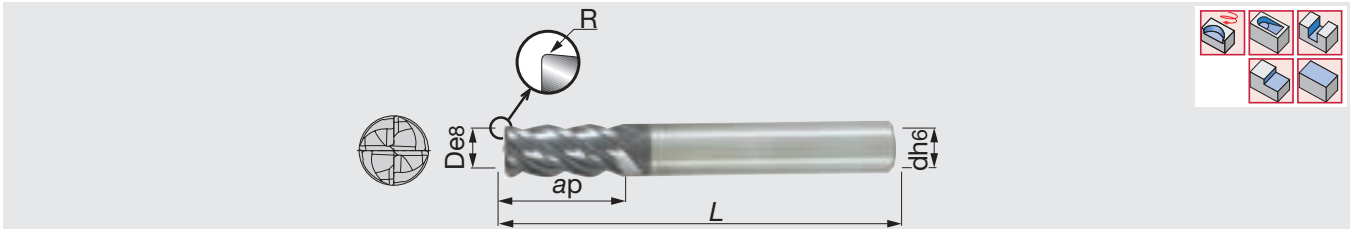


Designation	AH725	D	*d*	a_p	*L*	Shank
TEC020B4-07C06-57	●	2	6	7	57	Cylindrical
TEC030B4-10C06-57	●	3	6	10	57	Cylindrical
TEC040B4-12C06-57	●	4	6	12	57	Cylindrical
TEC050B4-14C06-57	●	5	6	14	57	Cylindrical
TEC060B4-16C06-57	●	6	6	16	57	Cylindrical
TEC080B4-20C08-63	●	8	8	20	63	Cylindrical
TEC100B4-22C10-72	●	10	10	22	72	Cylindrical
TEC120B4-25C12-83	●	12	12	25	83	Cylindrical
TEC140B4-25C14-83	●	14	14	25	83	Cylindrical
TEC160B4-32C16-92	●	16	16	32	92	Cylindrical
TEC180B4-32C18-92	●	18	18	32	92	Cylindrical
TEC200B4-38C20-104	●	20	20	38	104	Cylindrical

●: Line-up

TEC**B4-**R...

4 flutes endmill with radius corner, 45° helix, medium length



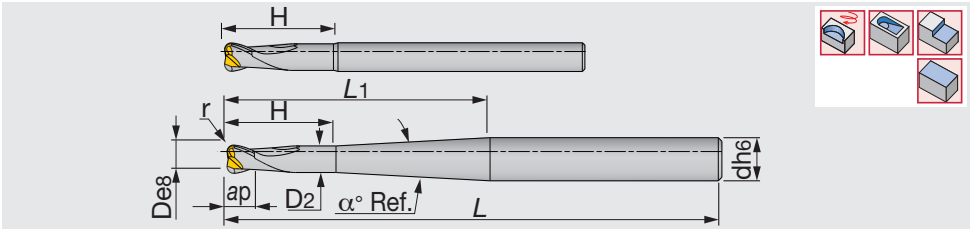
Designation	AH725	D	*d*	R	*ap*	*L*	Shank
TEC060B4-16C06R05-57	●	6	6	0.5	16	57	Cylindrical
TEC060B4-16C06R1-57	●	6	6	1	16	57	Cylindrical
TEC080B4-20C08R05-63	●	8	8	0.5	20	63	Cylindrical
TEC080B4-20C08R1-63	●	8	8	1	20	63	Cylindrical
TEC080B4-20C08R15-63	●	8	8	1.5	20	63	Cylindrical
TEC080B4-20C08R2-63	●	8	8	2	20	63	Cylindrical
TEC100B4-22C10R05-72	●	10	10	0.5	22	72	Cylindrical
TEC100B4-22C10R1-72	●	10	10	1	22	72	Cylindrical
TEC100B4-22C10R15-72	●	10	10	1.5	22	72	Cylindrical
TEC100B4-22C10R2-72	●	10	10	2	22	72	Cylindrical
TEC100B4-22C10R3-72	●	10	10	3	22	72	Cylindrical
TEC120B4-25C12R05-83	●	12	12	0.5	25	83	Cylindrical
TEC120B4-25C12R1-83	●	12	12	1	25	83	Cylindrical
TEC120B4-25C12R15-83	●	12	12	1.5	25	83	Cylindrical
TEC120B4-25C12R2-83	●	12	12	2	25	83	Cylindrical
TEC120B4-25C12R3-83	●	12	12	3	25	83	Cylindrical
TEC160B4-32C16R05-92	●	16	16	0.5	32	92	Cylindrical
TEC160B4-32C16R1-92	●	16	16	1	32	92	Cylindrical
TEC160B4-32C16R2-92	●	16	16	2	32	92	Cylindrical
TEC160B4-32C16R3-92	●	16	16	3	32	92	Cylindrical
TEC200B4-38C20R05-104	●	20	20	0.5	38	104	Cylindrical
TEC200B4-38C20R1-104	●	20	20	1	38	104	Cylindrical
TEC200B4-38C20R2-104	●	20	20	2	38	104	Cylindrical
TEC200B4-38C20R3-104	●	20	20	3	38	104	Cylindrical
TEC200B4-38C20R4-104	●	20	20	4	38	104	Cylindrical

●: Line-up

TETR**A2-**R...

2 flutes toroidal endmills



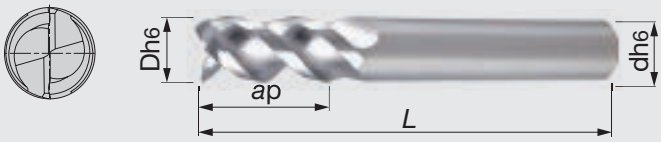


Designation	AH725	D	*d*	*D*2	r	*a*p	H	*L*1	α°	L	Shank
TETR020A2-2/08C06R05M80	●	2	6	1.9	0.5	2	8	40	3.6	80	Cylindrical
TETR030A2-2/12C06R05M80	●	3	6	2.8	0.5	2	12	40	3.3	80	Cylindrical
TETR040A2-3/16C06R1M80	●	4	6	3.7	1	3	16	40	2.8	80	Cylindrical
TETR060A2-4/25C06R2M80	●	6	6	5.6	2	4	25	-	0	80	Cylindrical
TETR060A2-4/25C08R2M100	●	6	8	5.6	2	4	25	66	2.0	100	Cylindrical
TETR080A2-4/32C08R2M100	●	7	8	7.6	2	4	32	-	0	100	Cylindrical
TETR080A2-4/32C10R2M120	●	7	10	7.6	2	4	32	66	2.0	120	Cylindrical
TETR100A2-6/40C10R3M120	●	10	10	9.6	3	6	40	-	0	120	Cylindrical
TETR100A2-6/40C12R3M158	●	10	12	9.6	3	6	40	110	1.0	158	Cylindrical

TECA**B2...

2 flutes aluminium slot drill, 45° helix, medium length

N
Non-ferrous



Designation	KS15F	D	*d*	*a*p	*L*	Shank
TECA040B2-12C06-57	●	4	6	12	57	Cylindrical
TECA050B2-14C06-57	●	5	6	14	57	Cylindrical
TECA060B2-16C06-57	●	6	6	16	57	Cylindrical
TECA080B2-20C08-63	●	8	8	20	63	Cylindrical
TECA100B2-22C10-72	●	10	10	22	72	Cylindrical
TECA120B2-25C12-83	●	12	12	25	83	Cylindrical
TECA160B2-32C16-92	●	16	16	32	92	Cylindrical
TECA200B2-38C20-104	●	20	20	38	104	Cylindrical

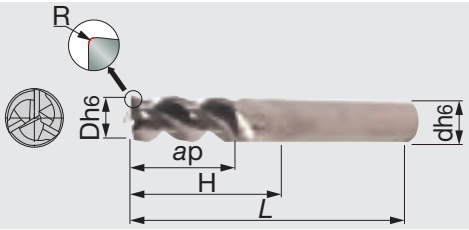
Special design for aluminium

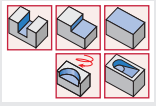
●: Line-up

TECA**H3-**CF-R...

Solid carbide endmills for aluminium, center cutting, 3 flutes, 39 - 41° variable helix for chatter dampening

N
Non-ferrous





Designation	KS15F	D	*d*	R	*ap*	H	*L*	Shank
TECA030H3-07/12C06CF-R01	●	3	6	0.1	7	12	57	Cylindrical
TECA040H3-10/16C06CF-R02	●	4	6	0.2	10	16	57	Cylindrical
TECA050H3-12/20C06CF-R02	●	5	6	0.2	12	20	57	Cylindrical
TECA060H3-09/18C06CF-R02	●	6	6	0.2	9	18	57	Cylindrical
TECA060H3-09/18C06CF-R04	●	6	6	0.4	9	18	57	Cylindrical
TECA060H3-09/18C06CF-R08	●	6	6	0.8	9	18	57	Cylindrical
TECA080H3-12/24C08CF-R02	●	8	8	0.2	12	24	63	Cylindrical
TECA080H3-12/24C08CF-R04	●	8	8	0.4	12	24	63	Cylindrical
TECA080H3-12/24C08CF-R08	●	8	8	0.8	12	24	63	Cylindrical
TECA100H3-15/30C10CF-R02	●	10	10	0.2	15	30	72	Cylindrical
TECA100H3-15/30C10CF-R04	●	10	10	0.4	15	30	72	Cylindrical
TECA100H3-15/30C10CF-R08	●	10	10	0.8	15	30	72	Cylindrical
TECA120H3-18/36C12CF-R02	●	12	12	0.2	18	36	83	Cylindrical
TECA120H3-18/36C12CF-R04	●	12	12	0.4	18	36	83	Cylindrical
TECA120H3-18/36C12CF-R08	●	12	12	0.8	18	36	83	Cylindrical
TECA120H3-18/36C12CF-R16	●	12	12	1.6	18	36	83	Cylindrical
TECA160H3-24/48C16CF-R02	●	16	16	0.2	24	48	92	Cylindrical
TECA160H3-24/48C16CF-R04	●	16	16	0.4	24	48	92	Cylindrical
TECA160H3-24/48C16CF-R08	●	16	16	0.8	24	48	92	Cylindrical
TECA160H3-24/48C16CF-R16	●	16	16	1.6	24	48	92	Cylindrical
TECA160H3-24/48C16CF-R20	●	16	16	2	24	48	92	Cylindrical
TECA200H3-30/60C20CF-R04	●	20	20	0.4	30	60	110	Cylindrical
TECA200H3-30/60C20CF-R08	●	20	20	0.8	30	60	110	Cylindrical
TECA200H3-30/60C20CF-R16	●	20	20	1.6	30	60	110	Cylindrical
TECA200H3-30/60C20CF-R20	●	20	20	2	30	60	110	Cylindrical

●: Line-up

TEBRF**T*-...

3, 4 flutes roughing ball nose, 20° helix long length for materials up to 55 HRC

H
Hard Materials



Designation	AH750	D	*d*	R	a_p	*L*	z	Shank
TEBRF060T3-16C06M57	●	6	6	3	16	57	3	Cylindrical
TEBRF080T3-16C08M63	●	8	8	4	16	63	3	Cylindrical
TEBRF100T4-22C10M72	●	10	10	5	22	72	4	Cylindrical
TEBRF120T4-26C12M83	●	12	12	6	26	83	4	Cylindrical
TEBRF140T4-26C14M83	●	14	14	7	26	83	4	Cylindrical
TEBRF160T4-32C16M92	●	16	16	8	32	92	4	Cylindrical
TEBRF180T4-32C18M92	●	18	18	9	32	92	4	Cylindrical
TEBRF200T4-38C20M104	●	20	20	10	38	104	4	Cylindrical

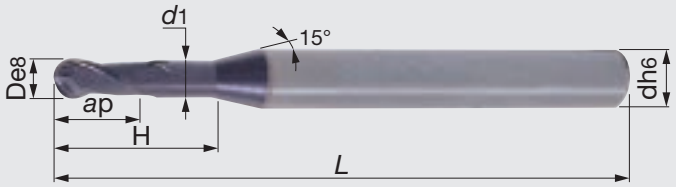
●: Line-up

TEB**A2-**C**M...

2 flutes ball nose for rib processing, 30° helix for materials up to 65 HRC

H
Hard Materials





Designation	AH750	D	d	d1	ap	H	L	Shank
TEB004A2-006/02C4M45	●	0.4	4	0.36	0.6	2	45	Cylindrical
TEB004A2-006/03C4M45	●	0.4	4	0.36	0.6	3	45	Cylindrical
TEB005A2-007/02C4M45	●	0.5	4	0.45	0.7	2	45	Cylindrical
TEB005A2-007/04C4M45	●	0.5	4	0.45	0.7	4	45	Cylindrical
TEB005A2-007/06C4M45	●	0.5	4	0.45	0.7	6	45	Cylindrical
TEB006A2-009/02C4M45	●	0.6	4	0.55	0.9	2	45	Cylindrical
TEB006A2-009/04C4M45	●	0.6	4	0.55	0.9	4	45	Cylindrical
TEB006A2-009/06C4M45	●	0.6	4	0.55	0.9	6	45	Cylindrical
TEB008A2-012/04C4M45	●	0.8	4	0.75	1.2	4	45	Cylindrical
TEB008A2-012/06C4M45	●	0.8	4	0.75	1.2	6	45	Cylindrical
TEB008A2-012/08C4M45	●	0.8	4	0.75	1.2	8	45	Cylindrical
TEB010A2-015/04C4M45	●	1	4	0.97	1.5	4	45	Cylindrical
TEB010A2-015/06C4M45	●	1	4	0.97	1.5	6	45	Cylindrical
TEB010A2-015/08C4M45	●	1	4	0.95	1.5	8	45	Cylindrical
TEB010A2-015/10C4M45	●	1	4	0.95	1.5	10	45	Cylindrical
TEB010A2-015/12C4M45	●	1	4	0.93	1.5	12	45	Cylindrical
TEB010A2-015/16C4M50	●	1	4	0.93	1.5	16	50	Cylindrical
TEB012A2-018/08C4M45	●	1.2	4	1.17	1.8	8	45	Cylindrical
TEB012A2-018/12C4M45	●	1.2	4	1.13	1.8	12	45	Cylindrical
TEB014A2-021/08C4M45	●	1.4	4	1.35	2.1	8	45	Cylindrical
TEB014A2-021/12C4M45	●	1.4	4	1.33	2.1	12	45	Cylindrical
TEB014A2-021/16C4M50	●	1.4	4	1.31	2.1	16	50	Cylindrical
TEB015A2-023/06C4M45	●	1.5	4	1.47	2.3	6	45	Cylindrical
TEB015A2-023/08C4M45	●	1.5	4	1.45	2.3	8	45	Cylindrical
TEB015A2-023/10C4M45	●	1.5	4	1.45	2.3	10	45	Cylindrical
TEB015A2-023/12C4M45	●	1.5	4	1.43	2.3	12	45	Cylindrical
TEB015A2-023/16C4M50	●	1.5	4	1.41	2.3	16	50	Cylindrical
TEB015A2-023/20C4M55	●	1.5	4	1.39	2.3	20	55	Cylindrical
TEB016A2-024/08C4M45	●	1.6	4	1.55	2.4	8	45	Cylindrical
TEB016A2-024/12C4M45	●	1.6	4	1.53	2.4	12	45	Cylindrical
TEB016A2-024/16C4M50	●	1.6	4	1.51	2.4	16	50	Cylindrical
TEB016A2-024/20C4M55	●	1.6	4	1.49	2.4	20	55	Cylindrical

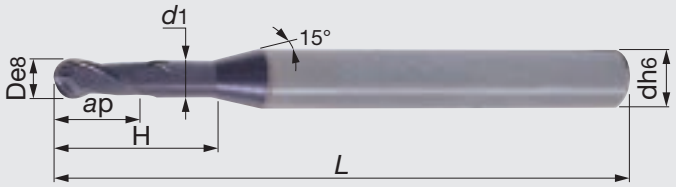
●: Line-up

TEB**A2-**C**M...

2 flutes ball nose for rib processing, 30° helix for materials up to 65 HRC

H
Hard Materials





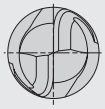
Designation	AH750	D	d	d_1	a_p	H	L	Shank
TEB018A2-027/08C4M45	●	1.8	4	1.75	2.7	8	45	Cylindrical
TEB018A2-027/12C4M45	●	1.8	4	1.73	2.7	12	45	Cylindrical
TEB018A2-027/16C4M50	●	1.8	4	1.71	2.7	16	50	Cylindrical
TEB018A2-027/20C4M55	●	1.8	4	1.69	2.7	20	55	Cylindrical
TEB020A2-030/06C4M45	●	2	4	1.97	3	6	45	Cylindrical
TEB020A2-030/10C4M45	●	2	4	1.93	3	10	45	Cylindrical
TEB020A2-030/12C4M50	●	2	4	1.93	3	12	50	Cylindrical
TEB020A2-030/16C4M50	●	2	4	1.91	3	16	50	Cylindrical
TEB020A2-030/20C4M55	●	2	4	1.89	3	20	55	Cylindrical
TEB020A2-030/30C4M70	●	2	4	1.89	3	30	70	Cylindrical
TEB030A2-045/08C6M50	●	3	6	2.85	4.5	8	50	Cylindrical
TEB030A2-045/10C6M50	●	3	6	2.85	4.5	10	50	Cylindrical
TEB030A2-045/12C6M50	●	3	6	2.85	4.5	12	50	Cylindrical
TEB030A2-045/16C6M55	●	3	6	2.85	4.5	16	55	Cylindrical
TEB030A2-045/20C6M60	●	3	6	2.85	4.5	20	60	Cylindrical
TEB030A2-045/30C6M70	●	3	6	2.85	4.5	30	70	Cylindrical

●: Line-up

TEB**A2-**C**H...

2 flutes ball nose, 30° helix, stub cut length for materials up to 55 - 70 HRC

H
Hard Materials



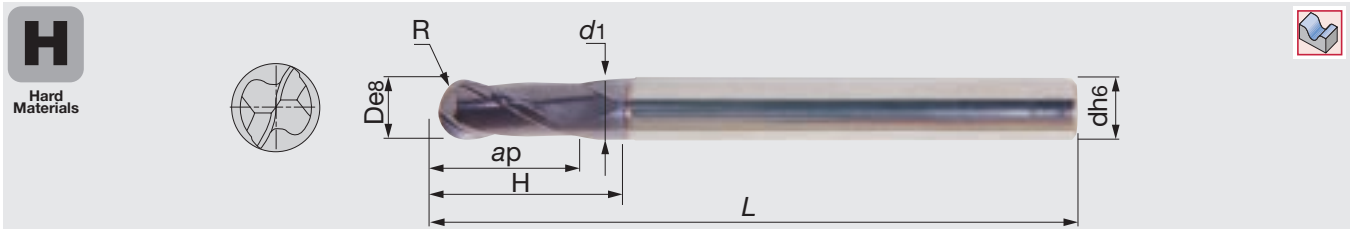


Designation	AH750	D	d	d_1	$R^{\pm 0.01}$	a_p	H	L	Shank
TEB010A2-01/02C04H50	●	1	4	0.95	0.5	1	2.2	50	Cylindrical
TEB020A2-02/04C06H50	●	2	6	1.9	1	2	4	50	Cylindrical
TEB030A2-03/06C06H60	●	3	6	2.9	1.5	3	6	60	Cylindrical
TEB040A2-04/08C06H70	●	4	6	3.9	2	4	8	70	Cylindrical
TEB050A2-05/10C06H80	●	5	6	4.9	2.5	5	10	80	Cylindrical
TEB060A2-06/12C06H90	●	6	6	5.9	3	6	12	90	Cylindrical
TEB080A2-08/16C08H100	●	8	8	7.9	4	8	16	100	Cylindrical
TEB100A2-10/20C10H100	●	10	10	9.9	5	10	20	100	Cylindrical
TEB120A2-12/24C12H110	●	12	12	11.9	6	12	24	110	Cylindrical
TEB160A2-16/32C16H140	●	16	16	15.8	8	16	32	140	Cylindrical
TEB200A2-20/40C20H160	●	20	20	19.8	10	20	40	160	Cylindrical

●: Line-up

TEB**A2-**C**M...

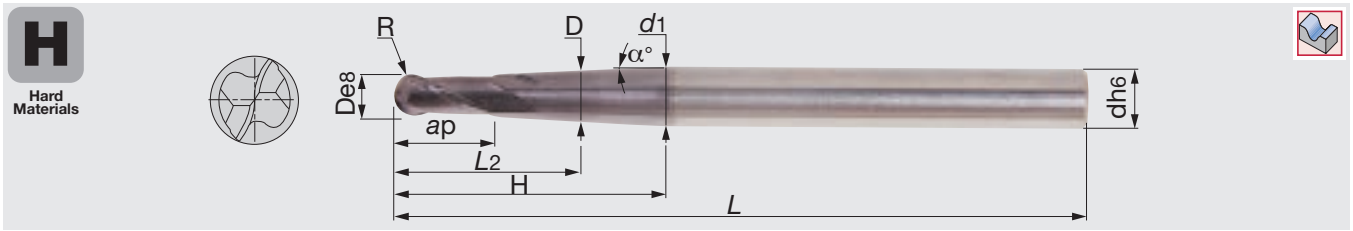
2 flutes long ball nose with neck, 30° helix for materials up to 65 HRC



Designation	AH750	D	d	d1	R	ap	H	L	Shank
TEB030A2-08C06M70	●	3	6	-	1.5	8	-	70	Cylindrical
TEB040A2-08C06M70	●	4	6	-	2	8	-	70	Cylindrical
TEB050A2-12C06M80	●	5	6	-	2.5	12	-	80	Cylindrical
TEB060A2-12/22C06M80	●	6	6	5.8	3	12	22	80	Cylindrical
TEB080A2-14/27C08M90	●	8	8	7.8	4	14	27	90	Cylindrical
TEB100A2-18/31C10M100	●	10	10	9.8	5	18	31	100	Cylindrical
TEB120A2-22/35C12M110	●	12	12	11.8	6	22	35	110	Cylindrical
TEB160A2-30/50C16M140	●	16	16	15.8	8	30	50	140	Cylindrical
TEB200A2-38/58C20M160	●	20	20	19.8	10	38	58	160	Cylindrical

TEB**A2-**C**M...

2 flutes ball nose, tapered neck for materials up to 65 HRC

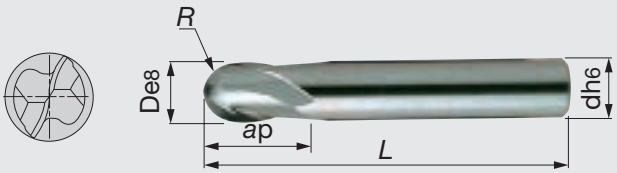


Designation	AH750	D	d	d1	R±0.01	ap	L2	H	α°	L	Shank
TEB010A2-02/04/3.0C06M80	●	1	6	5	0.5	2	4	42	3	80	Cylindrical
TEB020A2-04/06/3.0C06M80	●	2	6	5.7	1	4	6	41	3	80	Cylindrical
TEB030A2-06/08/3.0C06M70	●	3	6	5.6	1.5	6	8	32	3	70	Cylindrical
TEB040A2-08/10/1.5C06M90	●	4	6	6	2	8	10	49	1.5	90	Cylindrical
TEB050A2-10/12/1.5C08M110	●	5	8	7.6	2.5	10	12	61	1.5	110	Cylindrical
TEB060A2-12/15/1.5C08M110	●	6	8	8	3	12	15	53	1.5	110	Cylindrical
TEB080A2-14/17/1.5C10M120	●	8	10	10	4	14	17	55	1.5	120	Cylindrical
TEB100A2-18/21/1.5C12M130	●	10	12	12	5	18	21	59	1.5	130	Cylindrical
TEB120A2-22/25/1.5C16M160	●	12	16	15	6	22	25	83	1.5	160	Cylindrical

●: Line-up

TEB**A2-**C**-E...

2 flutes ball nose, 30° helix, short length



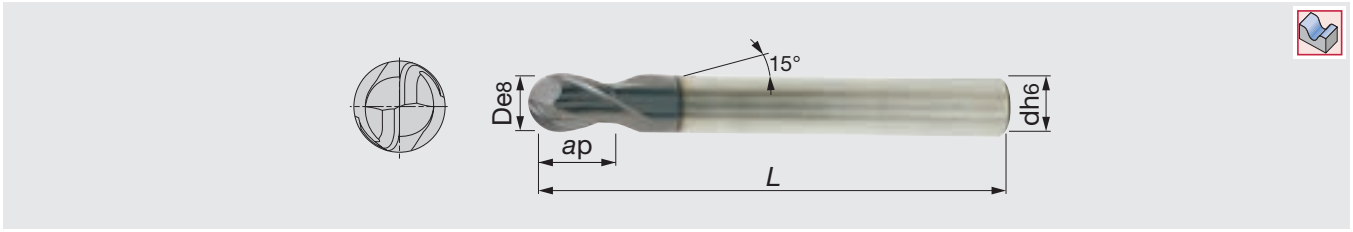
Designation	AH725	D	*d*	R	*ap*	*L*	Shank
TEB020A2-06C03-E38	●	2	3	1	6	38	Cylindrical
TEB020A2-04C06-E48	●	2	6	1	4	48	Cylindrical
TEB025A2-04C06-E48	●	2.5	6	1.3	4	48	Cylindrical
TEB030A2-04C06-E48	●	3	6	1.5	4	48	Cylindrical
TEB040A2-06C06-E50	●	4	6	2	6	50	Cylindrical
TEB050A2-07C06-E51	●	5	6	2.5	7	51	Cylindrical
TEB060A2-07C06-E51	●	6	6	3	7	51	Cylindrical
TEB080A2-09C08-E59	●	8	8	4	9	59	Cylindrical
TEB100A2-10C10-E60	●	10	10	5	10	60	Cylindrical
TEB120A2-14C12-E71	●	12	12	6	14	71	Cylindrical
TEB140A2-14C14-E71	●	14	14	7	14	71	Cylindrical
TEB160A2-16C16-E76	●	16	16	8	16	76	Cylindrical
TEB180A2-18C18-E76	●	18	18	9	18	76	Cylindrical
TEB200A2-20C20-E82	●	20	20	10	20	82	Cylindrical

●: Line-up

SOLIDMEISTER TUNGALOY

TEB**A2-**C**-...

2 flutes ball nose, 30° helix, short length



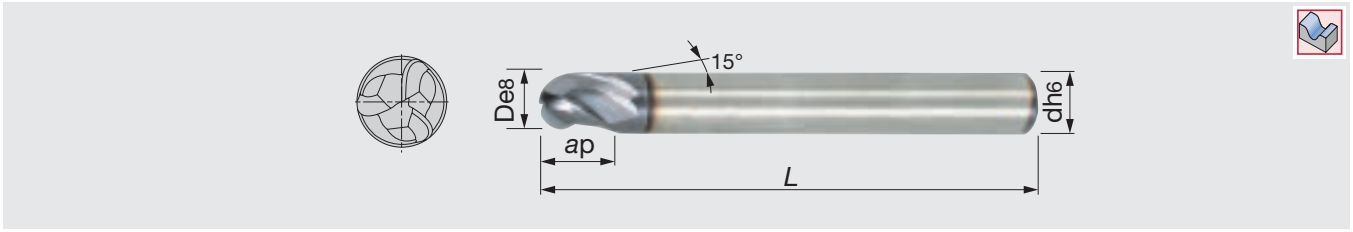
Designation	AH725	D	*d*	a_p	*L*	Shank
TEB030A2-05C06-57	●	3	6	5	57	Cylindrical
TEB040A2-07C06-57	●	4	6	7	57	Cylindrical
TEB050A2-08C06-57	●	5	6	8	57	Cylindrical
TEB060A2-08C06-57	●	6	6	8	57	Cylindrical
TEB080A2-11C08-63	●	8	8	11	63	Cylindrical
TEB100A2-13C10-72	●	10	10	13	72	Cylindrical
TEB120A2-14C12-83	●	12	12	14	83	Cylindrical
TEB160A2-16C16-92	●	16	16	16	92	Cylindrical
TEB200A2-20C20-104	●	20	20	20	104	Cylindrical

Short and stable design for profiling (roughing).

SOLIDMEISTER TUNGALOY

TEB**A3...

3 flutes ball nose, 30° helix, short length



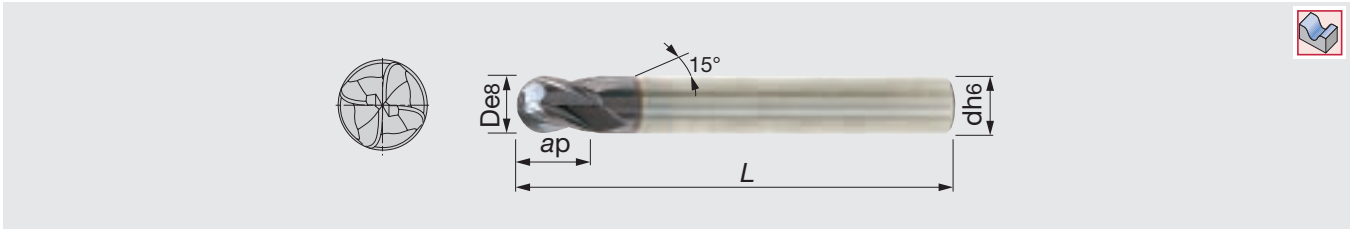
Designation	AH725	D	*d*	a_p	*L*	Shank
TEB030A3-05C06-57	●	3	6	5	57	Cylindrical
TEB040A3-07C06-57	●	4	6	7	57	Cylindrical
TEB050A3-08C06-57	●	5	6	8	57	Cylindrical
TEB060A3-08C06-57	●	6	6	9	57	Cylindrical
TEB080A3-11C08-63	●	8	8	11	63	Cylindrical
TEB100A3-13C10-72	●	10	10	13	72	Cylindrical
TEB120A3-14C12-83	●	12	12	14	83	Cylindrical
TEB160A3-16C16-92	●	16	16	16	92	Cylindrical
TEB200A3-20C20-104	●	20	20	20	104	Cylindrical

Short and stable design for contouring (roughing).

●: Line-up

TEB**A4...

4 flutes ball nose, 30° helix, short length



Designation	AH725	D	*d*	a_p	*L*	Shank
TEB030A4-05C06-57	●	3	6	5	57	Cylindrical
TEB040A4-07C06-50	●	4	6	7	50	Cylindrical
TEB050A4-08C06-57	●	5	6	8	57	Cylindrical
TEB060A4-08C06-57	●	6	6	9	57	Cylindrical
TEB080A4-11C08-63	●	8	8	11	63	Cylindrical
TEB100A4-13C10-72	●	10	10	13	72	Cylindrical
TEB120A4-14C12-83	●	12	12	14	83	Cylindrical
TEB160A4-16C16-92	●	16	16	16	92	Cylindrical
TEB200A4-20C20-104	●	20	20	20	104	Cylindrical

Short and stable design for profiling (finishing).

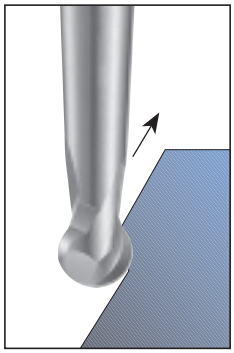
●: Line-up

Ball Nose Characteristics

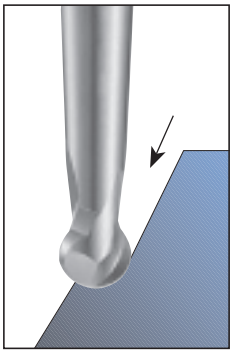
- Die & mold making, turbine manufacturing and aircraft industry, etc.
- Useful for intricate-shaped surfaces.
- Profiling of up to 70 HRC high hardened steels and alloy steels, nickel based alloys, titanium alloys.
- Ultra-fine grain carbide which increases both toughness and hardness.
- Suitable for dry and high speed cutting.
- Special sphere shaped tool geometry provides increased tool life and enables higher speed and feed operations.

Milling Features

- Operating angle 208° - 212°
- Excellent surface roughness and high milling process.
- Enables milling with high speed and feed in back milling mode.



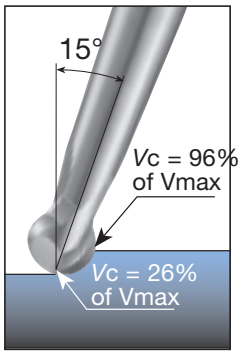
Favorable Back Milling ✓



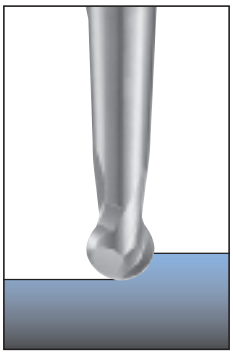
Unfavorable Drilling

Operating Recommendations

- It is recommended to machine with the tool inclined at a 15° angle. This technique eliminates cutting at nearly zero speed at the tool axis. Cutting is more efficient, and tool life substantially improves.
- Decreased cutting force.
- Excellent surface roughness and brightness.



Favorable Profiling ✓



Unfavorable Profiling

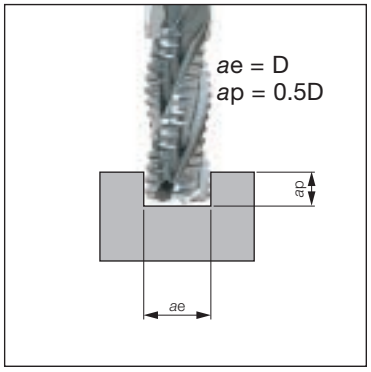
MEMO

MACHINING DATA FOR SHREDMEISTER ROUGHER ENDMILLS

ISO	Material		Condition	Tensile Strength (N/mm2)	Hardness HB	Cutting speed: *Vc* (m/min) min	max
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	260	280
		≥ 0.25 %C	Annealed	650	190	200	230
		< 0.55 %C	Quenched and tempered	850	250	160	190
		≥ 0.55 %C	Annealed	750	220	160	180
		≥ 0.55 %C	Quenched and tempered	1000	300	140	160
	Low alloy steel and cast steel (less than 5% all elements)		Annealed	600	200	160	190
			Quenched and tempered	930	275	120	140
			Quenched and tempered	1000	300	130	150
			Quenched and tempered	1200	350	140	160
	High alloy steel, cast steel, and tool steel		Annealed	680	200	130	160
			Quenched and tempered	1100	325	70	90
M	Stainless steel and cast steel		Ferritic / martensitic	680	200	110	200
			Martensitic	820	240	60	180
			Austenitic	600	180	80	120
K	Cast iron nodular (GGG)		Ferritic / pearlitic	-	180	80	260
			Pearlitic	-	260	130	240
	Grey cast iron (GG)		Ferritic	-	160	150	280
			Pearlitic	-	250	90	280
	Malleable cast iron		Ferritic	-	130	150	280
			Pearlitic	-	230	140	240
N	Aluminium-wrought alloy		Not cureable	-	60	810	840
			Cured	-	100	730	830
	Aluminium-cast, alloyed	≤ 12% Si	Not cureable	-	75	800	840
			Cured	-	90	730	830
		> 12% Si	High temperature	-	130	320	340
	Copper alloys	> 1% Pb	Free cutting	-	110	400	430
			Brass	-	90	400	430
			Electrolitic copper	-	100	270	300
	Non-metallic		Duroplastics, fiber plastics	-	-	-	-
			Hard rubber	-	-	-	-
S	High temp. alloys	Fe based	Annealed	-	200	20	40
		Fe based	Cured	-	280	20	30
		Ni or Co based	Annealed	-	250	20	30
		Ni or Co based	Cured	-	350	20	30
		Ni or Co based	Cast	-	320	30	70
	Titanium and Ti alloys			RM 400	-	30	70
			Alpha + beta alloys cured	RM 1050	-	30	70
H	Hardened steel		Hardened	-	55 HRC	30	50
			Hardened	-	60 HRC	30	40
	Chilled cast iron		Cast	-	400	60	80
	Cast iron		Hardened	-	55 HRC	30	50

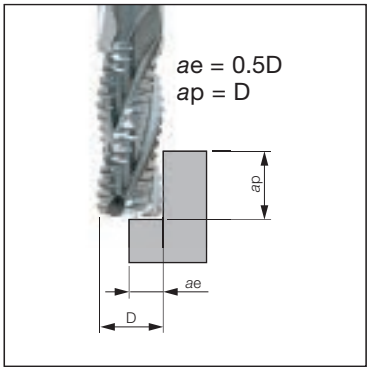
Recommended Feeds

Slotting



D (mm)	Min. *fz*	Max. *fz*
1	0.006	0.01
1.3	0.006	0.02
1.5	0.006	0.04
1.8	0.01	0.05
2	0.01	0.06
2.3	0.01	0.06
2.5	0.01	0.06
2.8	0.02	0.07
3	0.02	0.08
3.3	0.02	0.08
4	0.03	0.09
4.3	0.03	0.09
5	0.04	0.1
6	0.05	0.12
7	0.06	0.14
8	0.06	0.16
9	0.06	0.16
10	0.06	0.18
12	0.07	0.2
14	0.08	0.22
16	0.1	0.24
18	0.1	0.26
20	0.1	0.3
25	0.12	0.3

Shoulder milling



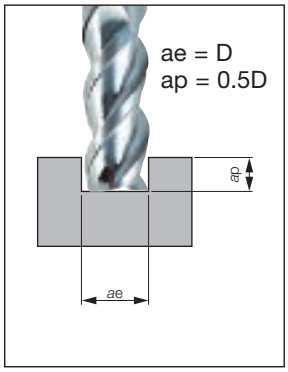
D (mm)	Min. *fz*	Max. *fz*
1	0.006	0.014
1.3	0.006	0.024
1.5	0.006	0.044
1.8	0.01	0.056
2	0.01	0.066
2.3	0.01	0.066
2.5	0.01	0.066
2.8	0.02	0.076
3	0.02	0.088
3.3	0.02	0.088
4	0.03	0.098
4.3	0.03	0.098
5	0.04	0.11
6	0.05	0.132
7	0.06	0.154
8	0.06	0.176
9	0.06	0.176
10	0.06	0.196
12	0.07	0.216
14	0.08	0.238
16	0.1	0.26
18	0.1	0.28
20	0.1	0.34
25	0.12	0.36

MACHINING DATA FOR SOLID CARBIDE ENDMILLS

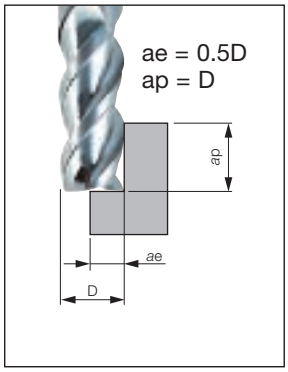
ISO	Material		Condition	Tensile Strength (N/mm2)	Hardness HB	Cutting speed: *Vc* (m/min) min	max
P	Non-alloy steel and cast steel, free cutting steel	< 0.25 %C	Annealed	420	125	220	230
		≥ 0.25 %C	Annealed	650	190	170	190
		< 0.55 %C	Quenched and tempered	850	250	140	150
		≥ 0.55 %C	Annealed	750	220	140	150
		≥ 0.55 %C	Quenched and tempered	1000	300	120	130
	Low alloy steel and cast steel (less than 5% all elements)		Annealed	600	200	140	150
			Quenched and tempered	930	275	100	110
			Quenched and tempered	1000	300	110	120
			Quenched and tempered	1200	350	120	130
	High alloy steel, cast steel, and tool steel		Annealed	680	200	110	130
			Quenched and tempered	1100	325	60	70
M	Stainless steel and cast steel		Ferritic / martensitic	680	200	100	170
			Martensitic	820	240	60	150
			Austenitic	600	180	70	100
K	Cast iron nodular (GGG)		Ferritic / pearlitic	-	180	70	220
			Pearlitic	-	260	110	200
	Grey cast iron (GG)		Ferritic	-	160	130	230
			Pearlitic	-	250	70	230
	Malleable cast iron		Ferritic	-	130	130	230
			Pearlitic	-	230	110	200
N	Aluminium-wrought alloy		Not cureable	-	60	670	700
			Cured	-	100	610	690
	Aluminium-cast, alloyed	≤ 12% Si	Not cureable	-	75	670	700
			Cured	-	90	610	690
		> 12% Si	High temperature	-	130	270	280
	Copper alloys	> 1% Pb	Free cutting	-	110	330	350
			Brass	-	90	330	350
			Electrolitic copper	-	100	230	250
	Non-metallic		Duroplastics, fiber plastics	-	-	-	-
			Hard rubber	-	-	-	-
S	High temp. alloys	Fe based	Annealed	-	200	20	30
		Fe based	Cured	-	280	20	20
		Ni or Co based	Annealed	-	250	20	20
		Ni or Co based	Cured	-	350	20	20
		Ni or Co based	Cast	-	320	30	60
	Titanium and Ti alloys			RM 400	-	30	60
			Alpha + beta alloys cured	RM 1050	-	30	60
H	Hardened steel		Hardened	-	55 HRC	30	40
			Hardened	-	60 HRC	30	30
	Chilled cast iron		Cast	-	400	50	60
	Cast iron		Hardened	-	55 HRC	30	40

Recommended Feeds

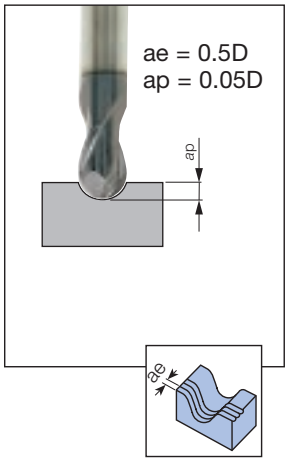
Slotting



Shoulder milling



Profiling



Slotting			Shoulder milling / Profiling	
D (mm)	Min. *fz*	Max. *fz*	Min. *fz*	Max. *fz*
1	0.003	0.005	0.003	0.007
1.3	0.003	0.01	0.003	0.012
1.5	0.003	0.02	0.003	0.022
1.8	0.005	0.025	0.005	0.028
2	0.005	0.03	0.005	0.033
2.3	0.005	0.03	0.005	0.033
2.5	0.005	0.03	0.005	0.03
2.8	0.01	0.035	0.01	0.038
3	0.01	0.04	0.01	0.044
3.3	0.015	0.04	0.01	0.044
4	0.015	0.045	0.015	0.049
4.3	0.020	0.045	0.015	0.049
5	0.025	0.05	0.02	0.055
6	0.03	0.06	0.025	0.066
7	0.03	0.07	0.03	0.077
8	0.03	0.08	0.03	0.088
9	0.03	0.08	0.03	0.088
10	0.035	0.09	0.03	0.098
12	0.04	0.1	0.035	0.108
14	0.05	0.11	0.04	0.119
16	0.05	0.12	0.05	0.13
18	0.05	0.13	0.05	0.14
20	0.05	0.15	0.05	0.17
25	0.06	0.15	0.06	0.18

1. For Slotting — M type materials — *ap* max = 0.5D
   S type materials — *ap* max = 0.25D
2. For Finishing — P type materials — *ap* max = 1.5D
3. For Roughing — *ap* max = 1.5D
   V = 1.25 x *Vc*

High speed cutting on Hard materials (up to 60 HRC):
Apply small depth of cut: *ap* (0.1 - 0.3 mm) at *Vc* 80 - 160 m/min

GRADE PRIORITIES FOR SOLID CARBIDE ENDMILLS

In most cases the best performance can be attained without using coolant for specific grades. However, it should be noted that if for any reason coolant must be used, it could possibly affect tool life and sometimes cause insert failure, due to thermal shock.

Material Groups	ISO P Steel	ISO H Hard Materials	ISO M Stainless	ISO S Superalloys	ISO K Cast Iron	ISO N Non-ferrous
	Harder AH750 **AH725** Tougher	Harder **AH750** AH725 Tougher	Harder **AH725** Tougher	Harder AH750 **AH725** KS15F Tougher	Harder AH750 **AH725** Tougher	Harder AH725 **KS15F** Tougher

■ First choice

MEMO

Milling Insert

● ACMT**PR-MJ

Shape	Designation	Coating				Applicable mills
		AH120	AH140	GH330	T3130	
	ACMT060308PR-MJ	●	●	●	●	ELP07/09/12... Page D094
	ACMT07T308PR-MJ	●	●	●	●	
	ACMT100408PR-MJ	●	●	●	●	

● ADMT**PR-MJ

Shape	Designation	Coating			Applicable mills
		AH120	AH140	T3130	
	ADMT130308PR-MJ	●	●	●	ELP13/17/21... Page D094
	ADMT17T308PR-MJ	●	●	●	
	ADMT210408PR-MJ	●	●	●	

● AECW**PEFR, AECW**PESR, AEMW**PEFR, AEMW**PETR

Shape	Designation	Coating		Cermet	Uncoated		Applicable mills
		AH120	GH330	NS740	UX30	TH10	
	AECW1403PEFR					●	EPE4000/5000/6000... Page D097
	AECW1403PESR	●	●	●	●		
	AECW16T3PEFR					●	
	AECW16T3PESR	●	●	●	●		
	AECW1804PEFR					●	
	AECW1804PESR	●	●	●	●		
	AEMW1403PEFR					●	
	AEMW1403PETR		●	●	●		
	AEMW16T3PEFR					●	
	AEMW16T3PETR		●	●	●		
	AEMW1804PEFR					●	
	AEMW1804PETR		●	●	●		

● ANEA542TN, ANEA642TN

Shape	Designation	Uncoated	Applicable mills
		UX30	
	ANEA542TN	●	VSN... (Former products)
	ANEA642TN	●	

●: Line-up

Milling Insert

● ANMT**PPPR-MJ, ANMT**PPPR-ML

Shape	Designation	Coating			Applicable mills
		AH120	GH330	T3130	
 -MJ	ANMT09T3PPPR-MJ	●	●	●	EPN09 (Former products)
	ANMT09T3PPPR-ML	●			
	ANMT1404PPPR-MJ	●	●	●	EPN14... TPN14... (Former products)
 -ML	ANMT1404PPPR-ML	●			

● AOMT**PDPR-MJ, AOGT**PDFR-AJ, AOMT070208PDPR-HJ

Shape	Designation	Coating		Uncoated	Applicable mills
		AH140	AH725	KS15F	
 AOMT-MJ	AOMT070202PDPR-MJ	●	●		TUNGREC TPO07... Page D054 EPO07... Page D054 HPO07... Page D055
	AOMT070204PDPR-MJ	●	●		
	AOMT070208PDPR-MJ	●	●		
	AOMT070216PDPR-MJ	●	●		
 AOMT-HJ	AOMT070208PDPR-HJ	●	●		
	AOGT070204PDFR-AJ			●	
 AOGT-AJ					

● AOMT**PDPR-MJ, AOGT**PDFR-AJ

Shape	Designation	Coating		Uncoated	Applicable mills
		AH140	AH725	KS15F	
 -MJ	AOMT180508PDPR-MJ	●	●		TUNGREC TPO18... Page D065 EPO18... Page D066
	AOMT180516PDPR-MJ	●	●		
	AOMT180524PDPR-MJ	●	●		
	AOMT180532PDPR-MJ	●	●		
 -AJ	AOGT180504PDFR-AJ			●	
	AOGT180508PDFR-AJ			●	

Insert

● : Line-up

Milling Insert

● APMT**PN-MJ

Shape	Designation	Coating				Applicable mills
		AH120	AH140	GH330	T3130	
	APMT070308PN-MJ	●	●	●	●	ELP07/09/12... Page D094
	APMT09T308PN-MJ	●	●	●	●	
	APMT120408PN-MJ	●	●	●	●	

● APMT120416PR-MJ

Shape	Designation	Coating		Applicable mills
		AH120	T3130	
	APMT120416PR-MJ	●	●	TZP12... Page D220 HZP12... Page D269

● ASMT**PDPR-MJ, ASGT11**PDFR-AJ, ASMT304PDPR-MS

Shape	Designation	Coating							Cermet	Uncoated	Applicable mills
		AH120	AH130	AH140	AH725	T1115	T1215	T3130	DS1100	NS740	KS05F	
 ASMT-MJ	ASMT11T304PDPR-MJ	●			●	●		●		●		TUNGREC TPO11... Page D058
	ASMT11T308PDPR-MJ	●			●	●	●	●		●		
	ASMT11T312PDPR-MJ	●			●			●				
	ASMT11T316PDPR-MJ	●			●			●		●		TLS11... Page D058
 ASMT-MS	ASMT11T320PDPR-MJ	●										
	ASMT11T330PDPR-MJ	●										EPO11... Page D059
	ASMT11T304PDPR-MS		●	●								
 ASGT-AJ	ASGT11T304PDFR-AJ								●		●	HPO11... Page D060
	ASGT11T308PDFR-AJ								●		●	
												ELS11... Page D060

Insert

● : Line-up

Milling Insert

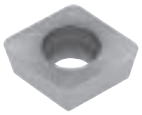
● ASMT17**PDPR-MJ, ASGT17**PDFR-AJ, ASMT170508PDPR-MS

Shape	Designation	Coating						Cermet			Uncoated		Applicable mills
		AH120	AH130	AH140	T1115	T3130	DS1100	NS740			KS05F		
 -MJ	ASMT170504PDPR-MJ	●			●	●		●					TPS17... Page D100
	ASMT170508PDPR-MJ	●			●	●		●					EPS17... Page D100
	ASMT170512PDPR-MJ	●				●							
	ASMT170516PDPR-MJ	●				●		●					
 -MS	ASMT170520PDPR-MJ	●											
	ASMT170530PDPR-MJ	●											
	ASMT170532PDPR-MJ	●				●		●					
	ASMT170508PDPR-MS		●	●									
 -AJ	ASGT170504PDFR-AJ						●				●		
	ASGT170508PDFR-AJ						●				●		

● AVGT**PBER-MJ, AVGT**PBFR-AJ

Shape	Designation	Coating			Uncoated						Applicable mills
		AH120	AH3135		KS05F						
 -MJ	AVGT060302PBER-MJ	●	●								TUNGFREC EPAV... Page D050 HPAV06... Page D050
	AVGT060304PBER-MJ	●	●								
	AVGT060308PBER-MJ	●	●								
	AVGT060302PBFR-AJ				●						
	AVGT060304PBFR-AJ				●						
 -AJ	AVGT060308PBFR-AJ				●						

● CPMW**-EN, CPMT**-EN

Shape	Designation	Coating			Uncoated						Applicable mills
		GH330			UX30						
	CPMW050208EN	●			●						EVP1000 (Former products)
	CPMW06T208EN	●			●						
	CPMT080308EN	●			●						

Insert

● : Line-up

Milling Insert

● DCMW**TN

Shape	Designation	Coating									Applicable mills
		AH120	AH330								
	DCMW070204TN	●	●								EBP... Page D214
	DCMW11T304TN	●	●								HBP... Page D271

● DPCW11T3ZFR

Shape	Designation	Coating		Cermet							Applicable mills
		AH120	AH740	NS740							
	DPCW11T3ZFR	●	●	●							TZF11... Page D222
											HZF11... Page D270

● EDKW53ZTR

Shape	Designation	Coating		Uncoated							Applicable mills
		GH330		UX30							
	EDKW53ZTR	●		●							ESD5000 (Former products)

● ENEQ**TN-T

Shape	Designation	Coating									Applicable mills
		AH120									
	ENEQ090508TN-T	●									VSNE09... (Former products)
	ENEQ100508TN-T	●									VSNE10... (Former products)
	ENEQ130608TN-T	●									VSNE13... (Former products)
	ENEQ160608TN-T	●									VSNE16... (Former products)

Insert

● : Line-up

Milling Insert

● GDMT**PDPR-MJ, GDGT**PDFR-AJ

Shape	Designation	Coating					Uncoated					Applicable mills
		AH120	AH140	AH330	T3130	DS1100	UX30	TH10				
 -MJ	**GDMT10H3PDPR-MJ**	●	●	●	●		●					ESD10/17... Page D105
	GDMT17X6PDPR-MJ	●	●	●	●		●					
	GDGT10H3PDFR-AJ					●		●				HSD10/17... Page D270
 -AJ	**GDGT17X6PDFR-AJ**					●		●				

● HEHN532FN

Shape	Designation	Uncoated										Applicable mills
		TH10										
	**HEHN532FN**	●										QYE5300 (Former products)

● HPKN532FN

Shape	Designation	Uncoated										Applicable mills
		TH10										
	**HPKN532FN**	●										QYP5300 (Former products)

● : Line-up

Milling Insert

● LMEU**ZNEN-MJ

Shape	Designation	Coating			Applicable mills
		AH120	AH140	AH725	
	LMEU100808ZNEN-MJ	●	●	●	TECTSLOT ASN 10/12/15... Page D182 TSN 10/12/15... Page D183
	LMEU100816ZNEN-MJ	●	●	●	
	LMEU100824ZNEN-MJ	●	●	●	
	LMEU100832ZNEN-MJ	●	●	●	
	LMEU120808ZNEN-MJ	●	●	●	
	LMEU120816ZNEN-MJ	●	●	●	
	LMEU120824ZNEN-MJ	●	●	●	
	LMEU120832ZNEN-MJ	●	●	●	
	LMEU150908ZNEN-MJ	●	●	●	
	LMEU150916ZNEN-MJ	●	●	●	
	LMEU150924ZNEN-MJ	●	●	●	
	LMEU150932ZNEN-MJ	●	●	●	

● LMMU**PNER-MJ

Shape	Designation	Coating					Applicable mills
		AH120	AH140	AH725	T1115	T3130	
	LMMU110708PNER-MJ	●	●	●	●	●	TECMILL TPM11/16... Page D084 TLM11... Page D084 EPM11... Page D085
	LMMU110716PNER-MJ	●	●	●	●	●	
	LMMU110724PNER-MJ	●	●	●	●	●	
	LMMU110732PNER-MJ	●	●	●	●	●	
	LMMU160908PNER-MJ	●	●	●	●	●	
	LMMU160916PNER-MJ	●	●	●	●	●	
	LMMU160924PNER-MJ	●	●	●	●		
	LMMU160932PNER-MJ	●	●	●	●		

● LNCA64ZTR

Shape	Designation	Coating	Uncoated	Applicable mills
		T3130	UX30	
	LNCA64ZTR	●	●	VSN6000I (Former products)

● : Line-up

Milling Insert

● LNCQ0906N-**L, LNCQ0906R-50S

Shape	Designation	Coating			Cermet							Applicable mills
		AH120	GH110		NS740							
	LNCQ0906N-100L	●	●		●							EMS09... Page D169
	LNCQ0906N-50L	●	●		●							
	LNCQ0906R-50S	●	●		●							

● LNMU0303ZER-MJ, LNMU0303ZER-ML

Shape	Designation	Coating										Applicable mills
		AH130	AH725	AH3035								
 -MJ  -ML	LNMU0303ZER-MJ	●	●	●								DOFEED TXN03... Page D008 EXN03... Page D008 HXN03... Page D009
	LNMU0303ZER-ML	●	●	●								

● LNMU06X5ZER-MJ, LNMU06X5ZER-ML, LNGU06X5ZER-W

Shape	Designation	Coating										Applicable mills
		AH120	AH130	AH725	AH3035							
 -MJ  -ML  -W	LNMU06X5ZER-MJ	●	●	●	●							DOFEED TXN06... Page D012 EXN06... Page D013
	LNMU06X5ZER-ML	●	●	●	●							
	LNGU06X5ZER-W			●								

● : Line-up

Milling Insert

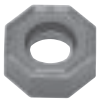
● LNMX0405R4-MJ, LNMX0405R4-ML, LNMX0405R4-HJ

Shape	Designation	Coating		Applicable mills
		AH120	AH3135	
 -MJ	LNMX0405R4-MJ	●	●	DOTWIST BALL TXLN... Page D016 EXLN... Page D016 HXLN... Page D017
 -ML	LNMX0405R4-ML	●	●	
 -HJ	LNMX0405ZER-HJ	●	●	

● LQMU**PNER-MJ

Shape	Designation	Coating			Applicable mills
		AH120	AH140	AH725	
	LQMU110704PNER-MJ	●	●	●	DOREC TPQ11/18... Page D080 EPQ11/18... Page D081
	LQMU110708PNER-MJ	●	●	●	
	LQMU110716PNER-MJ	●	●	●	
	LQMU110720PNER-MJ	●			
	LQMU180804PNER-MJ	●	●	●	
	LQMU180808PNER-MJ	●	●	●	
	LQMU180816PNER-MJ	●	●	●	
	LQMU180824PNER-MJ	●	●	●	

● ONMU0705ANPN-MJ, ONHU0705ANPN-MJ, ONMU0705ANPN-ML, ONHU0705ANTN-ML, ONHU0705ANPR-W

Shape	Designation	Coating						Applicable mills
		AH120	AH140	AH725	AH3135	T1115	T1215	
 -ML	ONMU0705ANPN-MJ		●	●	●	●	●	DOOCTO DOQUAD TAN07... Page D123
 -MJ	ONHU0705ANPN-MJ		●	●				
	ONMU0705ANPN-ML	●			●			
	ONHU0705ANTN-ML	●	●	●				
 -W	ONHU0705ANPR-W	●						

●: Line-up

Milling Insert

● ONGU0507ANEN-MJ, ONGU0507ANEN-W

Shape	Designation	Coating									Applicable mills
		AH120	AH3135	T3225							
 -MJ	**ONGU0507ANEN-MJ**	●	●	●							DOTMILL TASN13... Page D120
	ONGU0507ANEN-W	●	●								
 -W											

● OWMT0807ZNER-HJ, OWMT0807AAER-ML

Shape	Designation	Coating									Applicable mills
		AH130	AH3135								
 -HJ	**OWMT0807ZNER-HJ**		●								DOOCTO DOQUAD TAN07... Page D123
	OWMT0807AAER-ML	●	●								
 -ML											

● : Line-up

Milling Insert

● **PNCU0905GNER-MJ, PNCU0905GNEN-ML, PNCU0905GNFR-AJ, PNMU0905GNEN-MJ, PNCU0905GNER-W**

Shape	Designation	Coating							Cermet		Uncoated		Applicable mills
		AH120	AH140	AH725	AH3135	T1115	T1215	T3130	NS740		TH10		
 -MJ	**PNCU0905GNER-MJ**	●	●	●		●		●	●				DOPENT TEN09R/L... Page D129 EEN09... Page D130
	PNCU0905GNEN-ML				●								
	PNCU0905GNFR-AJ										●		
	PNMU0905GNEN-MJ	●			●		●						
	PNCU0905GNER-W			●									
 -ML													
 -AJ													
 PNMU0905-MJ													
 -W													

●: Line-up

Milling Insert

● RCMT**EN-MJ, RCMT**EN-NMJ, RCMT**FN-NAJ

Shape	Designation	Coating			Uncoated						Applicable mills
		AH120	AH140	AH725	KS15F						
 -MJ	RCMT1204EN-MJ	●	●	●							ROUNDSPLIT TRC12/16... Page D201 ERC12/16... Page D202
	RCMT1204EN-NMJ	●	●	●							
	RCMT1204FN-NAJ				●						
	RCMT1606EN-MJ	●	●	●							
	RCMT1606EN-NMJ	●	●	●							
	RCMT1606FN-NAJ				●						
 -NMJ											
 -NAJ											

● RDCA2004TN, RDCN2004TN, RDKN2004...

Shape	Designation	Coating			Uncoated						Applicable mills
		AH120			UX30	TH10					
	RDCA2004TN				●						ERD6000 Page D165
	RDCN2004TN				●						
	RDKN2004FN					●					
	RDKN2004TN	●			●						

● RDCM1203TN, RDMA1203TN

Shape	Designation	Uncoated									Applicable mills
		UX30									
	RDCM1203TN	●									ERD4000 (Former products)
	RDMA1203TN	●									

Insert

● : Line-up

Milling Insert

● RDMT**ZDPN-MJ, RDMW**ZDSN

Shape	Designation	Coating					Uncoated						Applicable mills
		AH120	AH130	AH140	AH330	T3130	UX30						
 - MJ 	RDMT1204ZDPN-MJ	●		●	●	●	●						TRD12/16... Page D206
	RDMW1204ZDSN	●		●		●							
	RDMT1606ZDPN-MJ	●	●	●	●	●	●						ERD12/16... Page D206
	RDMW1606ZDSN	●		●		●							

● RDMW**M0

Shape	Designation	Coating											Applicable mills
		AH120											
	RDMW0501M0	●											EWD05/09/10... Page D210
	RDMW0702M0	●											
	RDMW1003M0	●											HWD07... Page D210

● RFEN2004ZFTN, RFEN2004M0TN

Shape	Designation	Coating			Uncoated						Applicable mills
		AH120	GH330		UX30	KS20					
	RFEN2004ZFTN	●	●		●	●					TRF6000 Page D167
	RFEN2004M0TN		●		●	●					ERF6000 Page D167

● RNGU1307ZNER-MJ

Shape	Designation	Coating									Applicable mills
		AH120	AH3135								
	RNGU1307ZNER-MJ	●	●								DOTMILL TASN13... Page D120

● : Line-up

Milling Inserts

● RPMT**EN-MJ, RPMT**EN-ML

Shape	Designation	Coating			Applicable mills
		AH130	AH725	AH4035	
 -MJ	RPMT10T3EN-MJ	●	●	●	FIXRMILL TRP10/12/16... Page D196
	RPMT10T3EN-ML	●	●	●	
	RPMT1204EN-MJ	●	●	●	
	RPMT1204EN-ML	●	●	●	ERP10/12/16... Page D196
	RPMT1606EN-MJ	●	●	●	
 -ML	RPMT1606EN-ML	●	●	●	HRP10/12... Page D197

● SCMT**-23

Shape	Designation	Coating	Applicable mills
		AH120	
	SCMT09T308-23	●	EBD... Page D216
	SCMT120408-23	●	HBD... Page D272

● SDCN42HTR, SDKN42HTR

Shape	Designation	Coating	Applicable mills
		GH330	
	SDCN42HTR	●	EUD4600 (Former products)
	SDKN42HTR	●	

● SDKN42EF..., SDEN42EFTR24

Shape	Designation	Coating	Cermet	Uncoated		Applicable mills
		T3130	NS740	TH10	UX30	
	SDKN42EFTR	●	●			TMD4100I (Former products)
	SDKN42EFFR			●		
	SDEN42EFTR24		●		●	

●: Line-up

Milling Insert

● **SDCN42Z..., SDEN42Z..., SDKN42Z..., SDCN42ZFN-DIA, SDKR42ZSR-MJ, SDMR1203AETN-MJ, SDKR1203AETN-MJ, SDKR42ZPN-MS**

Shape	Designation	Coating							Cermet		Uncoated		PCD		Applicable mills
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140		
	**SDCN42ZFN**											●			EMD4400RI Page D152
	SDCN42ZTN								●	●	●				
	SDCN42ZTN20								●						EGD4400 Page D157
	SDEN42ZFN											●			
	SDEN42ZTN	●		●		●	●		●	●	●				
	SDEN42ZTNCR	●		●	●				●						
	SDEN42ZTN20							●							
	**SDKN42ZFN**											●			
	SDKN42ZTN	●	●	●	●	●	●		●	●	●				
	SDKN42ZTNCR								●						
-MJ	**SDKN42ZTN16**							●							
	SDCN42ZFN-DIA												●		
	SDKR42ZSR-MJ	●			●	●		●							
	SDMR1203AETN-MJ								●						
	SDKR1203AETN-MJ								●						
	SDKR42ZPN-MS		●	●											

DX140：Packing quantity = 1pc.

●**SDCN53HTR, SDKN53HTR**

Shape	Designation	Coating											Applicable mills
		GH330											
	**SDCN53HTR**	●											TUD5600 (Former products)
	SDKN53HTR	●											

● **SDCN53ZTN, SDEN53Z..., SDKN53Z..., SDKR53ZSR-MJ**

Shape	Designation	Coating					Cermet			Uncoated		Applicable mills
		AH120	AH130	AH140	GH330	T3130	NS740	N308		UX30	TH10	
	**SDCN53ZTN**						●	●				TMD5400RI Page D155
	SDEN53ZFN										●	
	SDEN53ZTN				●		●			●		
	SDEN53ZTNCR						●					
	SDEN53ZTN20					●						
	**SDKN53ZFN**										●	
	SDKN53ZTN	●	●	●	●		●	●		●		
	SDKN53ZTNCR						●					
- MJ	**SDKN53ZTN16**					●						
	SDKR53ZSR-MJ				●	●						

●：Line-up

Milling Insert

● SDMT050204PN-MJ, SDHT050204FN-AJ

Shape	Designation	Coating			Uncoated						Applicable mills
		AH140	AH725		TH10						
 -MJ	SDMT050204PN-MJ	●	●								TUNGQUAD TPD05... Page D070 EPD05... Page D070 ELD05... Page D070
	SDHT050204FN-AJ				●						
 -AJ											

● SDMT1204AFPN-MJ, SDMT1204AFTN-MJ, SDMT1204AFPN-ML, SDMT1204AFPN-MS, SDGT1204AFTN-MJ, SDGT1204AFFN-AJ

Shape	Designation	Coating					Cermet			Uncoated		Applicable mills
		AH120	AH140	AH330	GH330	T3130	NS740			TH10		
 -MJ	SDMT1204AFPN-MJ	●	●	●	●	●						TAD12... EAD12... (Former products)
	SDMT1204AFTN-MJ						●					
	SDMT1204AFPN-ML	●		●								
	SDMT1204AFPN-MS		●									
 -AJ	SDGT1204AFTN-MJ	●		●			●					
	SDGT1204AFFN-AJ									●		

● SDMT1204PDSR-MJ, SDMT1204PDTR-MJ, SDMT1204PDPR-ML, SDMT1204PDPR-MS SDGT1204PDTR-MJ, SDGT1204PDFR-AJ

Shape	Designation	Coating					Cermet			Uncoated		Applicable mills
		AH120	AH140	AH330	GH330	T3130	NS740			TH10		
 -MJ	SDMT1204PDSR-MJ	●	●	●	●	●						TPD12... EPD12... (Former products)
	SDMT1204PDTR-MJ						●					
	SDMT1204PDPR-ML	●		●								
	SDMT1204PDPR-MS		●									
 -AJ	SDGT1204PDTR-MJ	●		●			●					
	SDGT1204PDFR-AJ									●		

● : Line-up

Milling Insert

● SDMW090308TN, SDMW120408TN

Shape	Designation	Uncoated										Applicable mills
		UX30										
	SDMW090308TN	●										ELD3000
	SDMW120408TN	●										ELD4000 (Former products)

● SECN1203AGFN, SEEN1203AG..., SEKN1203AG..., SEKR1203AGSR-MJ, SEKR1203AGPN-MS

Shape	Designation	Coating							Cermet		Uncoated		Applicable mills
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740		UX30	TH10	
	SECN1203AGFN											●	TME4400R/LI Page D146
	SEEN1203AGFN											●	
	SEEN1203AGTN	●	●	●		●	●		●		●		TME4400RB Page D147
	SEEN1203AGTN-T							●	●		●		
	SEEN1203AGTNCR	●	●	●	●			●					EME4400 Page D148
	SEEN1203AGTNCR-14								●				
	SEKN1203AGFN-T											●	
	SEKN1203AGTN	●	●	●	●	●		●	●		●		
-MJ	SEKN1203AGTN-T					●	●	●	●		●		
	SEKN1203AGTNCR								●				
	SEKR1203AGSR-MJ	●			●	●		●					
	SEKR1203AGPN-MS		●	●									
-MS													

● SECN422TN, SECN422FN, SEEN422TN, SEEN422FN, SECN422FN-DIA

Shape	Designation	ISO designation (Metric)	Cermet				Uncoated			PCD				Applicable mills
			NS740	N308			UX30	TH10		DX140				
	SECN422TN	SECN120308TN	●	●			●							EGE4000 (Former products)
	SECN422FN	SECN120308FN						●						
	SEEN422TN	SEEN120308TN	●	●			●							QHE4000
	SEEN422FN	SEEN120308FN						●						
	SECN422FN-DIA	SECN120308FN-D								●				
-DIA														

DX140: Packing quantity = 1pc.

●: Line-up

Milling Insert

● **SEEN1203AFTNCR-14, SEKN42AFTN, SEKN42AFFN, SEKN42AFTN16, SEKR42AFSR-MJ, SEKR1203AFPN-MS, SEKR1203AFTN-MJ, SEMR1203AFTN-MJ**

Shape	Designation	ISO designation (Metric)	Coating					Cermet	Uncoated		Applicable mills
			AH120	AH130	AH140	GH330	T3130	NS740	TH10	UX30	
	**SEEN1203AFTNCR-14**							●			TGE4400I
	SEKN42AFTN	**SEKN1203AFTN**	●	●	●	●				●	EGE4400
	SEKN42AFFN	**SEKN1203AFFN**							●		(Former products)
 SEKR-MJ	**SEKN42AFTN16**	**SEKN1203AFTN-16**					●	●			
	SEKR42AFSR-MJ	**SEKR1203AFSR-MJ**				●	●				
	SEKR1203AFPN-MS				●						
	SEKR1203AFTN-MJ							●			
 SEMR-MJ	**SEMR1203AFTN-MJ**							●			

● **SECN42EFTRCR, SEEN42EFTRCR, SEKN42EFTR, SEKN42EFFR**

Shape	Designation	ISO designation (Metric)	Coating			Cermet			Uncoated				Applicable mills
			GH330	T3130		NS740			UX30	TH10			
	**SECN42EFTRCR**	**SECN1203EFTR**				●							EGE4100
	SEEN42EFTRCR	**SEEN1203EFTR**				●							(Former products)
	SEKN42EFTR	**SEKN1203EFTR**	●	●		●							
	SEKN42EFFR	**SEKN1203EFFR**								●			

Insert

●: Line-up

Milling Insert

● **SEGW12X4ZEFR, SEGW12X4ZEPR, SEGT12X4ZEFR-AJ, SEGW12X4ZEFR-D, SEGW12X4ZEFR-WD, SEGW12X4ZEFR-BD**

Shape	Designation	Coating			Cermet		Uncoated		PCD		Applicable mills
		AH120	AH140	DS1100	NS740		KS05F		DX140		
	**SEGW12X4ZEFR**						●				EFE12R... Page D140
	SEGW12X4ZEPR	●	●		●						
 -AJ	**SEGT12X4ZEFR-AJ**			●			●				
	SEGW12X4ZEFR-D								●		
 -D (General insert)	**SEGW12X4ZEFR-WD**								●		
	SEGW12X4ZEFR-BD								●		
 -WD (Wiper insert)											
 -BD (Wiper insert)											

DX140: Packing quantity = 1pc.

●**SEKR1504AFSR-MJ**

Shape	Designation	Coating				Applicable mills
		T3130				
	**SEKR1504AFSR-MJ**	●				(Former products)

●: Line-up

Milling Insert

● **SNCN43Z..., SNKF43Z..., SNKN43ZTN**

Shape	Designation	Coating			Cermet			Ceramic		Uncoated			Applicable mills
		T1115	T3130		NS740	N308		FX105		UX30	TH10		
	**SNCN43ZFN**										●		TGN4200R-A Page D162
	SNCN43ZTN				●	●				●			
	SNKF43ZFN										●		
	SNKF43ZTN	●								●			
	SNKN43ZTN	●	●		●			●		●			

● **SNMU1706ANPR-MJ, SNHU1706ANPR-MJ, SNMU1706ANTR-ML, SNHU1706ANTR-ML, SNHU1706ANFN-W**

Shape	Designation	Coating											Applicable mills
		AH120	AH140	AH725	AH3135	T1215							
 -ML	**SNMU1706ANPR-MJ**		●	●	●	●							DOOCTO DOQUAD TAN07... Page D123
	SNHU1706ANPR-MJ		●	●									
	SNMU1706ANTR-ML	●			●								
 -MJ	**SNHU1706ANTR-ML**	●											
	SNHU1706ANFN-W	●											

● **SNEN12**Z...**

Shape	Designation	Uncoated											Applicable mills
		UX30	TH10										
	**SNEN12T2ZFN**		●										SVN4000 Page D185
	SNEN12T2ZTN	●											
	SNEN1233ZFN		●										
	SNEN1233ZTN	●											

● : Line-up

Milling Insert

● SNGU1307ANEN-MJ, SNGU1307ANEN-W, SNGU1307ANEN-MH

Shape	Designation	Coating										Applicable mills
		AH120	AH3135	T3225								
 -MJ	SNGU1307ANEN-MJ	●	●	●								DOTMILL TASN13... Page D120
	SNGU1307ANEN-W	●	●									
 -W	SNGU1307ANEN-MH			●								
 -MH												

● SNMN1204**TN

Shape	Designation	Coating			Ceramic		Uncoated				Applicable mills
		AH120	T1115	T3130	FX105		UX30				
	SNMN120408TN				●						TGN4200R-A Page D162
	SNMN120412TN	●	●	●	●		●				
	SNMN120416TN				●						
	SNMN120420TN				●						
	SNMN120424TN				●						

● SPCN42..., SPEN42..., SPKN42..., SPKR42SSR-MJ, SPGN120312TN

Shape	Designation	Coating					Cermet		Ceramic	Uncoated		Applicable mills
		AH120	AH140	GH330	T1115	T3130	NS740	N308	FX105	UX30	TH10	
	SPCN42STR						●	●		●		TGP4100RBAE Page D160
	SPCN42SFR										●	
	SPEN42STR						●					
	SPKN42STR	●	●	●	●	●	●	●	●	●		
	SPKN42STL						●			●		
	SPKN42SFR										●	
	SPKN42SFL										●	
	SPKR42SSR-MJ			●	●	●						
	SPGN120312TN								●			
 -MJ	SPEN423TN					●	●			●		
	SPEN423FN										●	

●: Line-up

Milling Insert

● SPGN120412TN

Shape	Designation	Coating	Ceramic		Applicable mills
		T1115	FX105		
	SPGN120412TN	●	●		QFP4000 (Former products)

● SPHA**FNW

Shape	Designation	Cermet	Uncoated		Applicable mills
		N308	TH10		
	SPHA431FNW	●	●		SFP4000R Page D170
	SPHA435FNW	●	●		EFP4000R Page D170

● SPMA422...

Shape	Designation	Cermet		Uncoated			Applicable mills
		NS740	N308	UX30	TH10		
	SPMA422TN	●	●	●			ECP4400R Page D262
	SPMA422FN				●		

● SPMP..., SPMM**ERD

Shape	Designation	Coating					Applicable mills
		T313W					
	SPMP831DS	●					TCB... Page D263
	SPMP042ERD	●					
	SPMM322ERD	●					
	SPMM432ERD	●					

● : Line-up

Milling Insert

● SPMR1605PPTR-MJ, SPMR1605PPPR-ML, SPMR1605PPTR-MH

Shape	Designation	Coating			Uncoated		Applicable mills
		GH330	T1115	T3130	UX30		
 -MJ	**SPMR1605PPTR-MJ**	●	●	●	●		TPP16... Page D108
	SPMR1605PPPR-ML	●					
 -ML	**SPMR1605PPTR-MH**	●		●	●		

● SQMU1206ZSR-MJ

Shape	Designation	Coating				Applicable mills
		AH120	AH130	AH725	T3130	
	**SQMU1206ZSR-MJ**	●	●	●	●	DOFEEDQUAD TXQ... Page D021

● SSM..., SSS...

Shape	Designation	Coating	Applicable mills
		GH130	
 SSM	**SSM22N**	●	TUNGMILL S/ASG... Page D174
	SSM31N	●	
	SSM41N	●	
	SSS16N	●	
	SSS22N	●	
	SSS31N	●	
 SSS	**SSS41N**	●	

●: Line-up

Milling Insert

● **SWMT13T3AFPR-MJ, SWMT13T3AFER-ML, SWMW13T3AFTR, SWMT13T3AFPR-HJ, SWMT13T3AFPR-MS, SWGT13T3AFPR-MJ, SWGT13T3AFFR-AJ**

Shape	Designation	Coating									Cermet		Uncoated		Applicable mills
		AH120	AH130	AH140	AH3135	T1115	T1215	T3130	DS1100		NS740		KS05F		
 -MJ	**SWMT13T3AFPR-MJ**	●	●	●	●	●	●	●			●				TUNGMILL
	SWMT13T3AFER-ML	●													TAW13... Page D133
	SWMW13T3AFTR	●				●	●	●			●				EAW13... Page D134
	SWMT13T3AFPR-HJ	●	●	●		●	●	●							
 -ML	**SWMT13T3AFPR-MS**		●	●	●										
	SWGT13T3AFPR-MJ	●									●				
	SWGT13T3AFFR-AJ								●				●		
 -FL															
 -HJ															
 -MS															
 -AJ															
 SWGT-MJ															

●: Line-up

Milling Insert

● **SWMT1304PDPR-MJ, SWMT1304PDER-ML, SWMT1304PDPR-MS, SWGT1304PDPR-MJ, SWGT1304PDFR-AJ**

Shape	Designation	Coating							Cermet		Uncoated		Applicable mills
		AH120	AH130	AH140	T1115	T1215	T3130	DS1100	NS740		KS05F		
 SWMT1304-MJ	**SWMT1304PDPR-MJ**	●	●	●	●	●	●		●				TUNGMILL TPW13... Page D074
	SWMT1304PDER-ML	●											
	SWMT1304PDPR-MS		●	●									
	SWGT1304PDPR-MJ	●							●				EPW13... Page D075
	SWGT1304PDFR-AJ							●			●		
 SWMT1304-ML													
 SWMT1304-MS													
 SWGT1304-MJ													
 SWGT1304-AJ													

● **SWMT1506ZER-MJ**

Shape	Designation	Coating			Applicable mills
		AH120	AH3135		
	**SWMT1506ZER-MJ**	●	●		MILLQFEED TXSW... Page D024

● **T*-R...**

Shape	Designation	Coating			Applicable mills
		GH330			
	**T1-R14**	●			Single tooth threading mills Page D265
	T1-R28	●			
	T2-R14	●			
	T2-R28	●			

●: Line-up

Milling Insert

● TCGT160608PDER-MJ, TCMT160620PDER-NMJ

Shape	Designation	Coating											Applicable mills
		AH120	AH3135										
 -MJ	TCGT160608PDER-MJ	●	●										TUNG-TRISHRED LPTC16... Page D047 TPTC16... Page D047 EPTC16... Page D048
	TCMT160620PDER-NMJ	●	●										
 -NMJ													

●TDMN**N

Shape	Designation	Cermet			Uncoated								Applicable mills
		NS740			TH10	UX30							
	TDMN110304TN	●				●							ESD2000 (Former products)
	TDMN110304FN				●								
	TDMN110308TN	●				●							

● TECN32...,TEEN32..., TECN32ZFR-DIA, TEKR1603PEPR-MS

Shape	Designation	Coating							Cermet		Uncoated		PCD		Applicable mills
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140		
	TECN32ZFR											●			TSE3000R Page D110
	TECN32ZTR								●	●	●				ESE3000R Page D110
	TEEN32ZFR											●			
	TEEN32ZTR	●	●	●	●	●	●	●	●	●	●				
 -DIA	TECN32ZFR-DIA												●		
	TEKR1603PEPR-MS			●											
 -MS															

DX140: Packing quantity = 1pc.

●: Line-up

Milling Insert

● TECN43..., TEEN43..., TECN43ZFR-DIA, TEKR2204PEPR-MS

Shape	Designation	Coating							Cermet		Uncoated		PCD		Applicable mills
		AH120	AH130	AH140	AH330	GH330	T1115	T3130	NS740	N308	UX30	TH10	DX140		
	**TECN43ZFR**											●			TSE4000RIA Page D113
	TECN43ZTR								●	●	●				
	TEEN43ZFR											●			ESE4000R Page D114
	TEEN43ZTR	●	●	●	●	●	●	●	●	●	●				
 -DIA	**TECN43ZFR-DIA**												●		
	TEKR2204PEPR-MS			●											
 -MS															

DX140: Packing quantity = 1pc.

● TNGU120708PER-MJ, TNGU120708PER-NMJ, TNMU1207R16PER-MJ

Shape	Designation	Coating											Applicable mills
		AH120	AH3135										
 TNGU-MJ	**TNGU120708PER-MJ**	●	●										DOFTRI TPTN12... Page D034
 TNGU-NMJ	**TNGU120708PER-NMJ**	●	●										EPTN12... Page D034
 TNMU-MJ	**TNMU1207R16PER-MJ**	●	●										

● : Line-up

Milling Insert

●TNKF64ZTR

Shape	Designation	Uncoated	Applicable mills
		UX30	
	**TNKF64ZTR**	●	TPN6400I (Former products)

●TNMN43ZENS

Shape	Designation	Uncoated	Applicable mills
		UX30	
	**TNMN43ZENS**	●	TSN4000 ESN4000 (Former products)

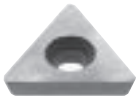
● TOMT**PDER-MJ, TOMT150608PDER-NMJ

Shape	Designation	Coating			Applicable mills
		AH120	AH3135	T1215	
 -MJ	**TOMT060302PDER-MJ**	●	●		TUNG-TRI
	TOMT060304PDER-MJ	●	●		TPA06... Page D038
	TOMT060308PDER-MJ	●	●	●	EPA06... Page D038
	TOMT100404PDER-MJ	●	●		HPA06... Page D039
	TOMT100408PDER-MJ	●	●	●	TPA10... Page D039
	TOMT100416PDER-MJ	●	●		TLA10... Page D040
	TOMT150604PDER-MJ	●	●		EPA10... Page D040
 -NMJ	**TOMT150608PDER-MJ**	●	●	●	HPA10... Page D041
	TOMT150616PDER-MJ	●	●		TPA15... Page D041
	TOMT150620PDER-MJ	●	●		TLA15... Page D042
	TOMT150608PDER-NMJ	●	●		EPA15... Page D043

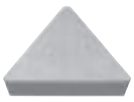
●: Line-up

Milling Insert

● TPCA43ZTRW1, TPMA432TNW1

Shape	Designation	Cermet			Uncoated						Applicable mills
		NS740			UX30	TH10					
	TPCA43ZTRW1					●					PES1500... Page D104
	TPMA432TNW1	●			●	●					

●TPMN**TN

Shape	Designation	Cermet									Applicable mills
		NS740									
	TPMN110304TN	●									(Former products)
	TPMN110308TN	●									
	TPMN160308TN	●									
	TPMN160312TN	●									
	TPMN220408TN	●									
	TPMN220412TN	●									

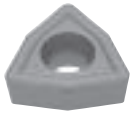
● TVKX**TN-MJ

Shape	Designation	Coating									Applicable mills
		AH120	AH130	AH725							
	TVKX020202TN-MJ	●		●							TUNGTSLIT ASV 02/03/04/05... Page D177
	TVKX020204TN-MJ	●		●							
	TVKX03X302TN-MJ	●		●							
	TVKX03X304TN-MJ	●		●							
	TVKX04H304TN-MJ	●	●	●							
	TVKX04H308TN-MJ	●	●	●							
	TVKX050404TN-MJ	●	●	●							
	TVKX050408TN-MJ	●	●	●							

●: Line-up

Milling Insert

● WCMT**-D4

Shape	Designation	Coating		Applicable mills
		AH120	AH140	
	WCMT050308-D4	●	●	EVX... Page D257
	WCMT06T308-D4	●	●	HVX... Page D269

● WDCN42ZFR-DIA

Shape	Designation	PCD	Applicable mills
		DX140	
 Wiper insert	WDCN42ZFR-DIA	●	TMD4400R/LI EMD4400RI Page D152 TGD4400-A EGD4400 Page D157

DX140: Packing quantity = 1pc.

● WNGU**TN-MJ

Shape	Designation	Coating			Applicable mills
		AH120	AH130	AH725	
	WNGU060308TN-MJ	●	●	●	TUNGUSLOT ASW 06/07/09... Page D179 TSW 06/07/09... Page D180
	WNGU060316TN-MJ	●	●	●	
	WNGU07T308TN-MJ	●	●	●	
	WNGU07T316TN-MJ	●	●	●	
	WNGU090408TN-MJ	●	●	●	
	WNGU090416TN-MJ	●	●	●	

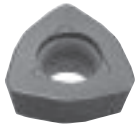
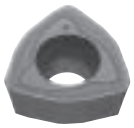
● : Line-up

Milling Insert

● **WPAN42...**

Shape	Designation	Cermet			Uncoated						Applicable mills
		N308			TH10						
 Wiper insert (Two corner type)	**WPAN42SFR**	●			●						TGP4100RBAE Page D160
	WPAN42SFRS				●						
 Wiper insert (One corner type)											

● **WPMT**ZPR..., WPMT**ZPR-ML, WPMT**-MH, WPMT**-DML, WPMW**-ZSR**

Shape	Designation	Coating									Applicable mills
		AH120	AH130	AH140	AH730	T3130					
	**WPMW05H315ZPR**	●		●		●					MILLFEED TXP05/06/08/09... Page D026 EXP05/06/08/09... Page D027
	WPMT05H315ZPR-ML	●		●		●					
	WPMT05H315ZPR-MH	●		●							
	WPMT05H315ZPR-DML				●						
	WPMW06X415ZPR	●		●		●					
 -ML	**WPMT06X415ZPR-ML**	●	●	●		●					
	WPMT06X415ZPR-MH	●		●							
	WPMT06X415ZPR-DML				●						
	WPMT080615ZSR	●	●	●		●					HXP... Page D268
	WPMT080615ZPR-ML	●	●	●		●					
 -MH	**WPMT080615ZSR-MH**	●		●							
	WPMT080615ZPR-DML				●						
	WPMT090725ZSR	●		●		●					
	WPMT090725ZPR-ML	●	●	●		●					
	WPMT090725ZSR-MH	●	●	●							
 -DML	**WPMT090725ZPR-DML**				●						

●: Line-up

Milling Insert

● WWCW13T3AFER-WS, WWCW13T3AFFR-WS, WWCW13T3AFFR-WD

Shape	Designation	Coating			Cermet			Uncoated			PCD			Applicable mills
		GH110	DS1100		NS740			KS05F			DX140			
  -WD	WWCW13T3AFER-WS	●			●									TUNGMILL TAW13... Page D133 EAW13... Page D134
	WWCW13T3AFFR-WS		●					●						
	WWCW13T3AFFR-WD										●			

DX140: Packing quantity = 1pc.

● WXHU**R-MJ

Shape	Designation	Coating												Applicable mills
		AH110												
	WXHU040305R-MJ	●												DOMMILL HFWX04... Page D195
	WXHU040310R-MJ	●												

Insert

●: Line-up

Milling Insert

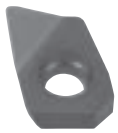
● **XCET310404ER**

Shape	Designation	Coating			Cermet			Uncoated				Applicable mills
		AH330			NS740			UX30				
	**XCET310404ER**	●			●			●				ECC31... Page D260

● **XVCT16**R-AJ**

Shape	Designation	Uncoated										Applicable mills
		TH10										
	**XVCT160504R-AJ**	●										TUNG-ALUMILL TPV16... Page D086 EPV16... Page D086
	XVCT160508R-AJ	●										
	XVCT160512R-AJ	●										
	XVCT160516R-AJ	●										
	XVCT160520R-AJ	●										
	XVCT160530R-AJ	●										
	XVCT160532R-AJ	●										
	XVCT160540R-AJ	●										
	XVCT160550R-AJ	●										

● **XVGT**EC-MJ, XVGT**FP-MJ, XVGT**FC-AJ, XVGT**FP-AJ**

Shape	Designation	Coating										Applicable mills
		AH730	DS1200									
 Center edge insert	**XVGT06H205EC-MJ**	●										HYBRIDTACMILL EVH... Page D254
	XVGT07X305EC-MJ	●										
	XVGT09X405EC-MJ	●										
	XVGT06H205EP-MJ	●										
	XVGT07X305EP-MJ	●										
	XVGT09X405EP-MJ	●										
 Peripheral edge insert	**XVGT06H205FC-AJ**		●									
	XVGT07X305FC-AJ		●									
	XVGT09X405FC-AJ		●									
	XVGT06H205FP-AJ		●									
	XVGT07X305FP-AJ		●									
	XVGT09X405FP-AJ		●									

●: Line-up

Milling Insert

● **XHGR**ER-MJ, XHGR**FR-AJ**

Shape	Designation	Coating AH730	Coating DS1200	Applicable mills
	XHGR110202ER-MJ	●		HYBRIDTACMILL EPH11/13/18... Page D089
	XHGR110204ER-MJ	●		
	XHGR110205ER-MJ	●		
	XHGR110208ER-MJ	●		
	XHGR110210ER-MJ	●		
	XHGR110212ER-MJ	●		
	XHGR110215ER-MJ	●		
	XHGR110216ER-MJ	●		
	XHGR110220ER-MJ	●		
	XHGR130202ER-MJ	●		
	XHGR130204ER-MJ	●		
	XHGR130205ER-MJ	●		
	XHGR130208ER-MJ	●		
	XHGR130210ER-MJ	●		
	XHGR130212ER-MJ	●		
	XHGR130215ER-MJ	●		
	XHGR130216ER-MJ	●		
	XHGR130220ER-MJ	●		
	XHGR18T202ER-MJ	●		
	XHGR18T204ER-MJ	●		
	XHGR18T205ER-MJ	●		
	XHGR18T208ER-MJ	●		
	XHGR18T210ER-MJ	●		
	XHGR18T212ER-MJ	●		
	XHGR18T215ER-MJ	●		
	XHGR18T216ER-MJ	●		
	XHGR18T220ER-MJ	●		
	XHGR110200FR-AJ		●	
	XHGR110202FR-AJ		●	
	XHGR110204FR-AJ		●	
	XHGR110205FR-AJ		●	
	XHGR110208FR-AJ		●	
	XHGR110210FR-AJ		●	
	XHGR110212FR-AJ		●	
	XHGR110215FR-AJ		●	
	XHGR110216FR-AJ		●	
	XHGR110220FR-AJ		●	
	XHGR130200FR-AJ		●	
	XHGR130202FR-AJ		●	
	XHGR130204FR-AJ		●	
	XHGR130205FR-AJ		●	
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	XHGR130210FR-AJ		●	
	XHGR130212FR-AJ		●	
	XHGR130215FR-AJ		●	
	XHGR130216FR-AJ		●	
	XHGR130220FR-AJ		●	
	XHGR18T200FR-AJ		●	
	XHGR18T202FR-AJ		●	
	XHGR18T204FR-AJ		●	
	XHGR18T205FR-AJ		●	
	XHGR18T208FR-AJ		●	
	XHGR18T210FR-AJ		●	
	XHGR18T212FR-AJ		●	
	XHGR18T215FR-AJ		●	
	XHGR18T216FR-AJ		●	
	XHGR18T220FR-AJ		●	

Insert

●: Line-up

Milling Insert

● **XXGT**EC-MJ, XXGT**EP-MJ, XXGT**FC-AJ, XXGT**FP-AJ**

Shape	Designation	Coating			Applicable mills
		AH730	DS1200		
 EC-MJ, FC-AJ	XXGT06H205EC-MJ	●			HYBRIDTACMILL EXH... Page D004
	XXGT07X305EC-MJ	●			
	XXGT09X408EC-MJ	●			
	XXGT06H205FC-AJ		●		
	XXGT07X305FC-AJ		●		
	XXGT09X408FC-AJ		●		
 EP-MJ, FP-AJ	XXGT06H205EP-MJ	●			
	XXGT07X305EP-MJ	●			
	XXGT09X408EP-MJ	●			
	XXGT06H205FP-AJ		●		
	XXGT07X305FP-AJ		●		
	XXGT09X408FP-AJ		●		

● **XXMU**PR-MJ**

Shape	Designation	Coating			Applicable mills
		AH120	AH140		
	XXMU08T204PR-MJ	●	●		EVX... Page D257
	XXMU10H308PR-MJ	●	●		HVX... Page D269
	XXMU12X408PR-MJ	●	●		
	XXMU16X508PR-MJ	●	●		

●: Line-up

Milling Insert

● YDEN0905PDFR-D, YDEN0905PDFR-WD, YDEN0905PDFR-BD

Shape	Designation	PCD								Applicable mills
		DX140								
 General insert	YDEN0905PDFR-D	●								EDPD09... Page D143
	YDEN0905PDFR-WD	●								
	YDEN0905PDFR-BD	●								
 Wiper insert										
 Wiper insert										

DX140: Packing quantity = 1pc.

● YDEN1505PDFR-D, YDEN1505PDFR-WD

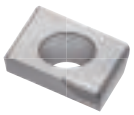
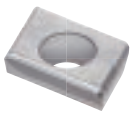
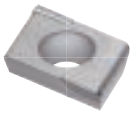
Shape	Designation	PCD								Applicable mills
		DX140								
 General insert	YDEN1505PDFR-D	●								EDPD15...
	YDEN1505PDFR-WD	●								
 Wiper insert										

DX140: Packing quantity = 1pc.

●: Line-up

Milling Insert

● **YPEB12X3-1A**-D, YPEB12X3-1P**-D, YPEB12X3-2A**-D, YPEB12X3-FP**-D, YPEB12X3-2P07R-D**

Shape	Designation	PCD								Applicable mills
		DX160								
 -1A/P	**YPEB12X3-1A01R-D**	●								TUNGSMILL TPYP12... Page D138 EPYP12... Page D138
	YPEB12X3-1A02R-D	●								
	YPEB12X3-1A07R-D	●								
	YPEB12X3-1P02R-D	●								
	YPEB12X3-1P07R-D	●								
 -FP	**YPEB12X3-FP02R-D**	●								
	YPEB12X3-FP07R-D	●								
	YPEB12X3-2A01R-D	●								
	YPEB12X3-2A02R-D	●								
	YPEB12X3-2A07R-D	●								
 -2A/P	**YPEB12X3-2P07R-D**	●								

DX160: Packing quantity = 2pcs.

●: Line-up

Milling Insert

●ZDCA**TN

Shape	Designation	Uncoated		Applicable mills
		UX30		
	ZDCA0804TN	●		TBF1000 (Former products)
	ZDCA1105TN	●		

● ZDMT**-MJ

Shape	Designation	Coating	Applicable mills
		AH120	
	ZDMT4005-MJ	●	EBD... Page D216
	ZDMT5006-MJ	●	HBD... Page D272

● ZFBM**-MJ, ZFRM**-MJ

Shape	Designation	Coating		Applicable mills
		AH710	AH725	
 ZFBM-MJ	ZFBM080R00-MJ	●	●	BALL FNOSE
	ZFBM100R00-MJ	●	●	EBFM... Page D190
	ZFBM120R00-MJ	●	●	HBFM... Page D191
	ZFBM160R00-MJ	●	●	
	ZFBM200R00-MJ	●	●	
	ZFBM250R00-MJ	●	●	
	ZFBM300R00-MJ	●	●	
	ZFBM320R00-MJ	●	●	
 ZFRM-MJ	ZFRM120R05-MJ	●	●	
	ZFRM120R10-MJ	●	●	
	ZFRM160R05-MJ	●	●	
	ZFRM160R10-MJ	●	●	
	ZFRM160R15-MJ	●	●	
	ZFRM200R10-MJ	●	●	
	ZFRM200R15-MJ	●	●	

●: Line-up

Milling Insert

● ZNCA**FN, ZNMM**EN, ZNCA1002FN2

Shape	Designation	Uncoated									Applicable mills
		UX30	TH10								
	ZNCA1002FN2	●	●								TBN1000 Page D212
	ZNCA1203FN	●	●								
	ZNCA1603FN	●	●								
	ZNCA2004FN	●	●								
	ZNCA2505FN	●	●								
	ZNCA3005FN	●	●								
	ZNMM2004EN	●									
	ZNMM2505EN	●									
	ZNMM3005EN	●									

● ZPET**-MJ

Shape	Designation	Coating									Applicable mills
		AH120	AH330								
	ZPET2004-MJ	●	●								EBP... Page D214
	ZPET2505-MJ	●	●								HBP... Page D271
	ZPET3006-MJ	●	●								
	ZPET3206-MJ	●	●								

● ZPCW**-QBN

Shape	Designation	T-CBN									Applicable mills
		BX950									
	ZPCW2003-QBN	●									EBB... Page D215
	ZPCW25H3-QBN	●									
	ZPCW30T3-QBN	●									
	ZPCW4004-QBN	●									
	ZPCW5004-QBN	●									

BX950: Packing quantity = 1pc.

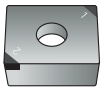
●: Line-up

Milling Insert CBN

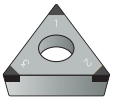
● **2QP-SNGN..**

Shape	Designation	CBN	Applicable mills
		BX910	
	**2QP-SNGN090308**	●	
	2QP-SNGN090312	●	

● **2QP-SPGW..., 2QP-SPGN...**

Shape	Designation	CBN	Applicable mills
		BX910	
 2QP-SPGW	**2QP-SPGW09T308**	●	
	2QP-SPGW09T312	●	
	2QP-SPGW120408	●	
	2QP-SPGW120412	●	
	2QP-SPGW120416	●	
 2QP-SPGN	**2QP-SPGN090308**	●	
	2QP-SPGN090312	●	

● **3QP-TPGW..., 3QP-TPGN...**

Shape	Designation	CBN	Applicable mills
		BX910	
 3QP-TPGW	**3QP-TPGW110308**	●	
	3QP-TPGN110308	●	
	3QP-TPGN110312	●	
 3QP-TPGN			

● : Line-up

Milling Insert CBN

● **S-CNGN..., S-RNGN..., S-SNGN..., S-TNGN...**

Shape	Designation	CBN								Applicable mills
		BXC90								
 S-CNGN	**S-CNGN090308**	●								
	S-CNGN090312	●								
	S-CNGN120408	●								
	S-CNGN120412	●								
 S-RNGN	**S-RNGN090300**	●								
	S-RNGN120400	●								
 S-SNGN	**S-SNGN090308**	●								
	S-SNGN090312	●								
	S-SNGN120308	●								
	S-SNGN120312	●								
	S-SNGN120408	●								
	S-SNGN120412	●								
 S-TNGN	**S-TNGN110308**	●								
	S-TNGN110312	●								
	S-TNGN160408	●								
	S-TNGN160412	●								

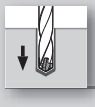
●: Line-up

MEMO

DrillLine



DRILLING

 2 Effective Drill E004

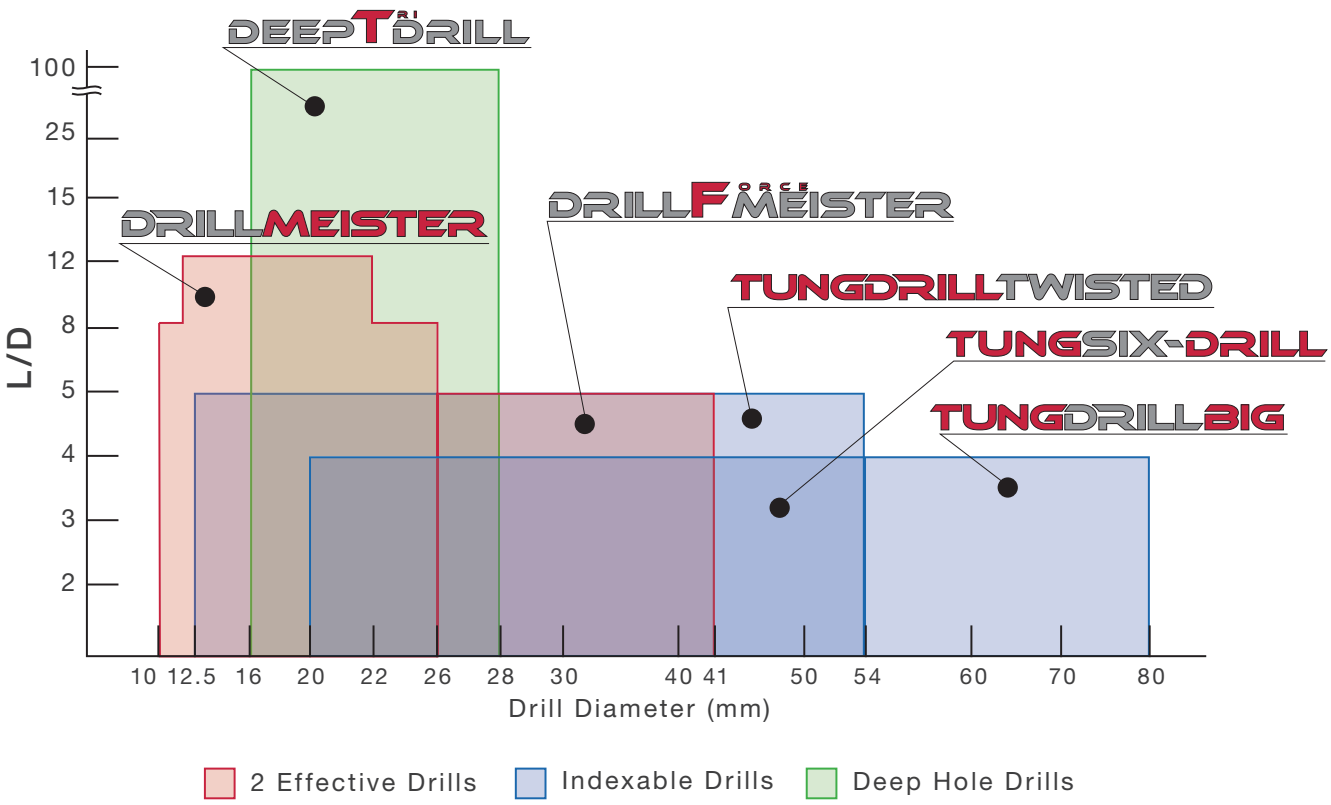
 Indexable Drill E070

 Deep Hole Drill E102

Basic Selection of Drilling Tools

Application ranges of drilling tools

Indexable & Head-Changeable Drills



Hole diameter tolerance*

TUNGSIX-DRILL

L/D	Tool diameter	Hole diameter tolerance*
2	ø20 - ø27	+ 0.25 / 0
	ø28 - ø54	+ 0.3 / 0
3	ø20 - ø27	+ 0.25 / 0
	ø28 - ø54	+ 0.3 / 0
4	ø20 - ø27	+ 0.3 / 0
	ø28 - ø54	+ 0.35 / 0

TUNGDRILL TWISTED

L/D	Tool diameter	Hole diameter tolerance*
2	ø12.5 - ø17	+ 0.25 / 0
	ø17.5 - ø54	+ 0.3 / 0
3	ø12.5 - ø17	+ 0.25 / 0
	ø17.5 - ø54	+ 0.3 / 0
4	ø12.5 - ø17	+ 0.4 / 0
	ø17.5 - ø54	+ 0.45 / 0
5	ø12.5 - ø17	+ 0.4 / 0
	ø17.5 - ø54	+ 0.45 / 0

DRILLMEISTER

L/D	Tool diameter	Hole diameter tolerance*
TID 1.5	ø10 - ø25.9	+ 0.05 / 0
TID 3	ø10 - ø25.9	+ 0.05 / 0
TID 5	ø10 - ø17.9	+ 0.06 / 0
	ø18 - ø25.9	+ 0.065 / 0
TID 8	ø10 - ø17.9	+ 0.07 / 0
	ø18 - ø25.9	+ 0.085 / 0
TID 12	ø12 - ø17.9	+ 0.08 / 0
	ø18 - ø25.9	+ 0.095 / 0
TIDC 3	ø10 - ø19.9	+ 0.05 / 0
TIDC 5	ø10 - ø19.9	+ 0.05 / 0

DRILL FORCE MEISTER

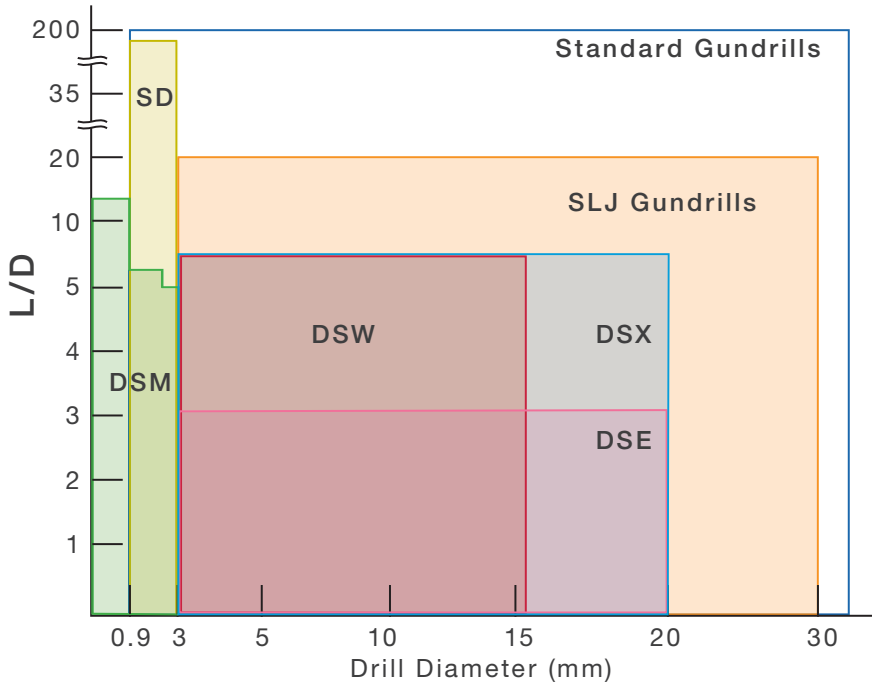
L/D	Tool diameter	Hole diameter tolerance*
3	ø26 - ø29.9	+ 0.05 / 0
	ø30 - ø41	+ 0.06 / 0
5	ø26 - ø29.9	+ 0.08 / 0
	ø30 - ø41	+ 0.09 / 0

DEEP T-DRILL

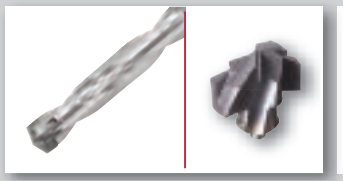
L/D	Tool diameter	Hole diameter tolerance*
10	ø16 - ø28	+ 0.05 / - 0.1
15	ø16 - ø28	+ 0.05 / - 0.1
25	ø16 - ø28	+ 0.05 / - 0.1

* Just for reference

Solid Drills, Brazed Carbide Drills



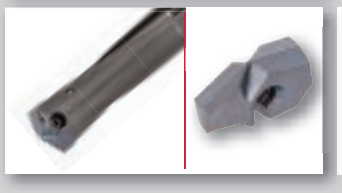
Head-Changeable Drill



DRILLMEISTER E006

Drills with head-changeable system

ø10 mm - ø25.9 mm / L/D = 1.5, 3, 5, 8, 12 ※ L/D =12 : ø12 ~ ø22.9



DRILLFORCE MEISTER E020

Drills featuring indexable inserts with 2-effective cutting edges for large diameter drilling

ø26 mm - ø41 mm / L/D = 3, 5

Solid Drill



SOLIDDRILL E025

Solid carbide drills for excellent performance

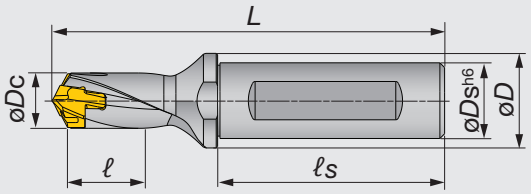


DrillForce-Meister

TID L/D=1.5

Indexable head drill





Designation	øDc	øDs	øD	ℓ	ℓs	L	Pocket size	Head
TID100F16-1.5	10 - 10.9	16	20	15	48	79.2	10	DMP100 - DMP109
TID110F16-1.5	11 - 11.9	16	20	17	48	81.1	11	DMP110 - DMP119
TID120F16-1.5	12 - 12.9	16	20	18	48	83	12	DMP120 - DMP129
TID130F16-1.5	13 - 13.9	16	20	20	48	85.1	13	DMP130 - DMP139
TID140F16-1.5	14 - 14.9	16	20	21	48	89.1	14	DMP140 - DMP149
TID150F20-1.5	15 - 15.9	20	25	23	50	96.2	15	DMP150 - DMP159
TID160F20-1.5	16 - 16.9	20	25	24	50	99.3	16	DMP160 - DMP169
TID170F20-1.5	17 - 17.9	20	25	26	50	102.4	17	DMP170 - DMP179
TID180F25-1.5	18 - 18.9	25	32	27	56	111.5	18	DMP180 - DMP189
TID190F25-1.5	19 - 19.9	25	32	29	56	114.5	19	DMP190 - DMP199
TID200F25-1.5	20 - 20.9	25	32	30	56	117.6	20	DMP200 - DMP209
TID210F25-1.5	21 - 21.9	25	32	32	56	120.7	21	DMP210 - DMP219
TID220F25-1.5	22 - 22.9	25	32	33	56	123.8	22	DMP220 - DMP229
TID230F32-1.5	23 - 23.9	32	42	35	60	130.8	23	DMP230 - DMP239
TID240F32-1.5	24 - 24.9	32	42	36	60	133.9	24	DMP240 - DMP249
TID250F32-1.5	25 - 25.9	32	42	38	60	137	25	DMP250 - DMP259

Tool diameter	Hole diameter tolerance*
ø10 - ø25.9	+0.05 / 0

*Just for reference

SPARE PARTS



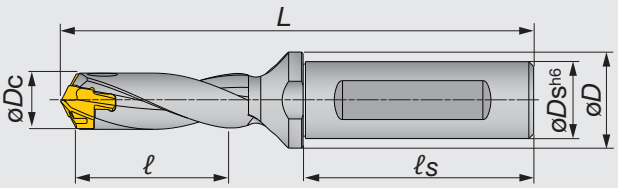
Designation	Clamping key
TID100-190	K-TID10-19.99
TID200-250	K-TID20-26.99

DRILLMEISTER

TID L/D=3

Indexable head drill





Designation	øDc	øDs	øD	ℓ	ℓs	L	Pocket size	Head
TID100F16-3	10 - 10.4	16	20	30	48	94.2	10	DMP100 - DMP104
TID105F16-3	10.5 - 10.9	16	20	32	48	95.7	10	DMP105 - DMP109
TID110F16-3	11 - 11.4	16	20	33	48	97.6	11	DMP110 - DMP114
TID115F16-3	11.5 - 11.9	16	20	35	48	99.1	11	DMP115 - DMP119
TID120F16-3	12 - 12.4	16	20	36	48	101	12	DMP120 - DMP124
TID125F16-3	12.5 - 12.9	16	20	37	48	102.5	12	DMP125 - DMP129
TID130F16-3	13 - 13.4	16	20	39	48	104.6	13	DMP130 - DMP134
TID135F16-3	13.5 - 13.9	16	20	41	48	106.1	13	DMP135 - DMP139
TID140F16-3	14 - 14.4	16	20	42	48	110.1	14	DMP140 - DMP144
TID145F16-3	14.5 - 14.9	16	20	44	48	111.6	14	DMP145 - DMP149
TID150F20-3	15 - 15.9	20	25	45	50	118.7	15	DMP150 - DMP159
TID160F20-3	16 - 16.9	20	25	48	50	123.3	16	DMP160 - DMP169
TID170F20-3	17 - 17.9	20	25	51	50	127.9	17	DMP170 - DMP179
TID180F25-3	18 - 18.9	25	32	54	56	138.5	18	DMP180 - DMP189
TID190F25-3	19 - 19.9	25	32	57	56	143	19	DMP190 - DMP199
TID200F25-3	20 - 20.9	25	32	60	56	147.6	20	DMP200 - DMP209
TID210F25-3	21 - 21.9	25	32	63	56	152.2	21	DMP210 - DMP219
TID220F25-3	22 - 22.9	25	32	66	56	156.8	22	DMP220 - DMP229
TID230F32-3	23 - 23.9	32	42	69	60	165.3	23	DMP230 - DMP239
TID240F32-3	24 - 24.9	32	42	72	60	169.9	24	DMP240 - DMP249
TID250F32-3	25 - 25.9	32	42	75	60	174.5	25	DMP250 - DMP259

Tool diameter	Hole diameter tolerance*
ø10 - ø25.9	+0.05 / 0

*Just for reference

SPARE PARTS

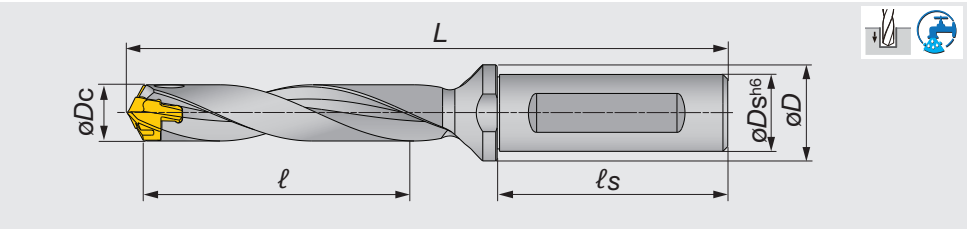


Designation	Clamping key
TID100-190	K-TID10-19.99
TID200-250	K-TID20-26.99

TID L/D=5

Indexable head drill





Designation	øDc	øDs	øD	ℓ	ℓs	L	Pocket size	Head
TID100F16-5	10 - 10.4	16	20	50	48	114.2	10	DMP100 - DMP104
TID105F16-5	10.5 - 10.9	16	20	53	48	116.7	10	DMP105 - DMP109
TID110F16-5	11 - 11.4	16	20	55	48	119.6	11	DMP110 - DMP114
TID115F16-5	11.5 - 11.9	16	20	58	48	122.1	11	DMP115 - DMP119
TID120F16-5	12 - 12.4	16	20	60	48	125	12	DMP120 - DMP124
TID125F16-5	12.5 - 12.9	16	20	62	48	127.5	12	DMP125 - DMP129
TID130F16-5	13 - 13.4	16	20	65	48	130.6	13	DMP130 - DMP134
TID135F16-5	13.5 - 13.9	16	20	68	48	133.1	13	DMP135 - DMP139
TID140F16-5	14 - 14.4	16	20	70	48	138.2	14	DMP140 - DMP144
TID145F16-5	14.5 - 14.9	16	20	73	48	140.7	14	DMP145 - DMP149
TID150F20-5	15 - 15.9	20	25	75	50	148.7	15	DMP150 - DMP159
TID160F20-5	16 - 16.9	20	25	80	50	155.3	16	DMP160 - DMP169
TID170F20-5	17 - 17.9	20	25	85	50	161.9	17	DMP170 - DMP179
TID180F25-5	18 - 18.9	25	32	90	56	174.5	18	DMP180 - DMP189
TID190F25-5	19 - 19.9	25	32	95	56	181	19	DMP190 - DMP199
TID200F25-5	20 - 20.9	25	32	100	56	187.6	20	DMP200 - DMP209
TID210F25-5	21 - 21.9	25	32	105	56	194.2	21	DMP210 - DMP219
TID220F25-5	22 - 22.9	25	32	110	56	200.8	22	DMP220 - DMP229
TID230F32-5	23 - 23.9	32	42	115	60	211.3	23	DMP230 - DMP239
TID240F32-5	24 - 24.9	32	42	120	60	217.9	24	DMP240 - DMP249
TID250F32-5	25 - 25.9	32	42	125	60	224.5	25	DMP250 - DMP259

Tool diameter	Hole diameter tolerance*
ø10 - ø17.9	+0.06 / 0
ø18 - ø25.9	+0.065 / 0

*Just for reference

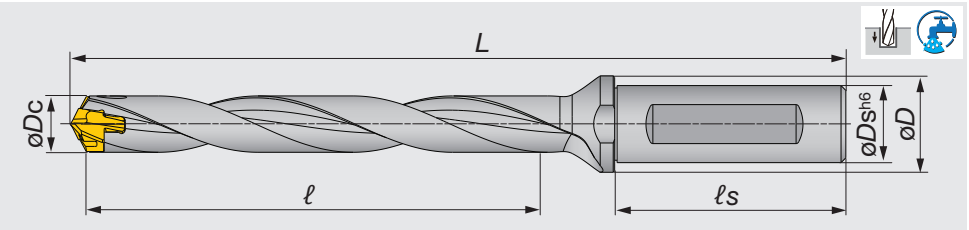
SPARE PARTS

Designation	Clamping key
TID100-190	K-TID10-19.99
TID200-250	K-TID20-26.99

TID L/D=8

Indexable head drill





Designation	øDc	øDs	øD	ℓ	ℓs	L	Pocket size	Head
TID100F16-8	10 - 10.4	16	20	80	48	144.2	10	DMP100 - DMP104
TID105F16-8	10.5 - 10.9	16	20	84	48	148.2	10	DMP105 - DMP109
TID110F16-8	11 - 11.4	16	20	88	48	152.6	11	DMP110 - DMP114
TID115F16-8	11.5 - 11.9	16	20	92	48	156.6	11	DMP115 - DMP119
TID120F16-8	12 - 12.4	16	20	96	48	161	12	DMP120 - DMP124
TID125F16-8	12.5 - 12.9	16	20	100	48	165	12	DMP125 - DMP129
TID130F16-8	13 - 13.4	16	20	104	48	169.6	13	DMP130 - DMP134
TID135F16-8	13.5 - 13.9	16	20	108	48	173.6	13	DMP135 - DMP139
TID140F16-8	14 - 14.4	16	20	112	48	180.1	14	DMP140 - DMP144
TID145F16-8	14.5 - 14.9	16	20	116	48	184.2	14	DMP145 - DMP149
TID150F20-8	15 - 15.9	20	25	120	50	193.7	15	DMP150 - DMP159
TID160F20-8	16 - 16.9	20	25	128	50	203.3	16	DMP160 - DMP169
TID170F20-8	17 - 17.9	20	25	136	50	212.9	17	DMP170 - DMP179
TID180F25-8	18 - 18.9	25	32	144	56	228.5	18	DMP180 - DMP189
TID190F25-8	19 - 19.9	25	32	152	56	238	19	DMP190 - DMP199
TID200F25-8	20 - 20.9	25	32	160	56	247.6	20	DMP200 - DMP209
TID210F25-8	21 - 21.9	25	32	168	56	257.2	21	DMP210 - DMP219
TID220F25-8	22 - 22.9	25	32	176	56	266.8	22	DMP220 - DMP229
TID230F32-8	23 - 23.9	32	42	184	60	280.3	23	DMP230 - DMP239
TID240F32-8	24 - 24.9	32	42	192	60	289.9	24	DMP240 - DMP249
TID250F32-8	25 - 25.9	32	42	200	60	299.5	25	DMP250 - DMP259

Tool diameter	Hole diameter tolerance*
ø10 - ø17.9	+0.07 / 0
ø18 - ø25.9	+0.085 / 0

*Just for reference

SPARE PARTS

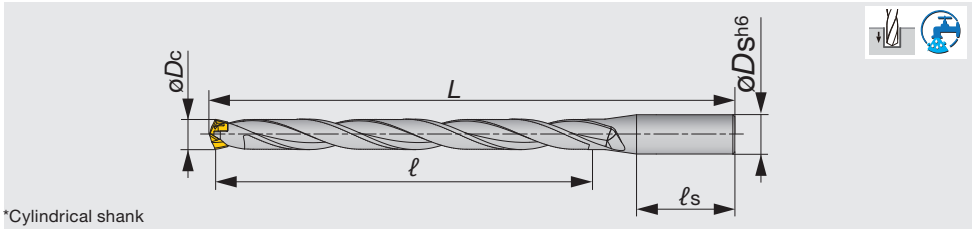


Designation	Clamping key
TID100-190	K-TID10-19.99
TID200-250	K-TID20-26.99

TID L/D=12

Indexable head drill





*Cylindrical shank

Designation	øDc	øDs	ℓ	ℓs	L	Pocket size	Head
TID120R16-12	12 - 12.4	16	144	48	209	12	DMP120 - 124
TID125R16-12	12.5 - 12.9	16	150	48	215	12	DMP125 - 129
TID130R16-12	13 - 13.4	16	156	48	221.6	13	DMP130 - 134
TID135R16-12	13.5 - 13.9	16	162	48	227.6	13	DMP135 - 139
TID140R16-12	14 - 14.4	16	168	48	236.2	14	DMP140 - 144
TID145R16-12	14.5 - 14.9	16	174	48	242.2	14	DMP145 - 149
TID150R20-12	15 - 15.9	20	180	50	253.7	15	DMP150 - 159
TID160R20-12	16 - 16.9	20	192	50	267.3	16	DMP160 - 169
TID170R20-12	17 - 17.9	20	204	50	280.9	17	DMP170 - 179
TID180R25-12	18 - 18.9	25	216	56	300.5	18	DMP180 - 189
TID190R25-12	19 - 19.9	25	228	56	314	19	DMP190 - 199
TID200R25-12	20 - 20.9	25	240	56	327.6	20	DMP200 - 209
TID210R25-12	21 - 21.9	25	252	56	341.2	21	DMP210 - 219
TID220R25-12	22 - 22.9	25	264	56	354.8	22	DMP220 - 229

Tool diameter	Hole diameter tolerance*
ø12 - ø17.9	+0.08 / 0
ø18 - ø25.9	+0.095 / 0

*Just for reference

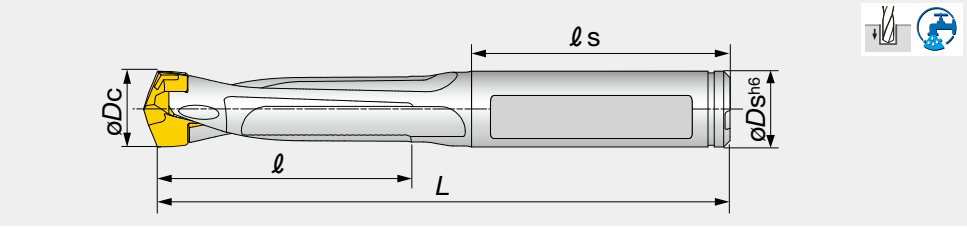
SPARE PARTS

Designation	Clamping key
TID100-190	K-TID10-19.99
TID200-220	K-TID20-26.99

TIDC L/D=3

Indexable head drill





Designation	øDc	øDs	ℓ	ℓs	L	Pocket size	Head
TIDC100C10-3	10 - 10.4	10	30	41	86.1	10	DMP100 - DMP104
TIDC105C11-3	10.5 - 10.9	11	31.5	41	87.6	10	DMP105 - DMP109
TIDC110C11-3	11 - 11.4	11	33	41	89.5	11	DMP110 - DMP114
TIDC115C12-3	11.5 - 11.9	12	34.5	41	91	11	DMP115 - DMP119
TIDC120C12-3	12 - 12.4	12	36	41	92.8	12	DMP120 - DMP124
TIDC125C13-3	12.5 - 12.9	13	37.5	46	98.3	12	DMP125 - DMP129
TIDC130C13-3	13 - 13.4	13	39	47	102.4	13	DMP130 - DMP134
TIDC135C14-3	13.5 - 13.9	14	40.5	43	99.9	13	DMP135 - DMP139
TIDC140C14-3	14 - 14.4	14	42	44	103	14	DMP140 - DMP144
TIDC145C15-3	14.5 - 14.9	15	43.5	45	105.5	14	DMP145 - DMP149
TIDC150C15-3	15 - 15.9	15	45	45	107.5	15	DMP150 - DMP159
TIDC160C16-3	16 - 16.9	16	48	48	117.5	16	DMP160 - DMP169
TIDC170C17-3	17 - 17.9	17	51	48	119.7	17	DMP170 - DMP179
TIDC180C18-3	18 - 18.9	18	54	48	123.3	18	DMP180 - DMP189
TIDC190C19-3	19 - 19.9	19	57	54	132.4	19	DMP190 - DMP199

Tool diameter	Hole diameter tolerance*
ø10 - ø19.9	+0.05 / 0

*Just for reference

SPARE PARTS

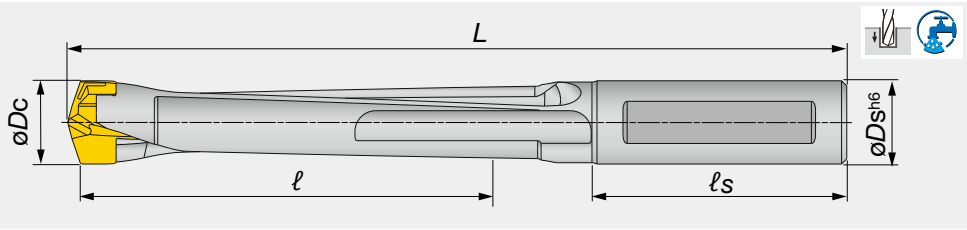


Designation	Clamping key
TIDC100-190	K-TID10-19.99

TIDC L/D=5

Indexable head drill





Designation	øDc	øDs	ℓ	ℓs	L	Pocket size	Head
TIDC100C10-5	10 - 10.4	10	50	41	106.1	10	DMP100 - DMP104
TIDC105C11-5	10.5 - 10.9	11	52.5	41	108.6	10	DMP105 - DMP109
TIDC110C11-5	11 - 11.4	11	55	41	111.5	11	DMP110 - DMP114
TIDC115C12-5	11.5 - 11.9	12	57.5	41	114	11	DMP115 - DMP119
TIDC120C12-5	12 - 12.4	12	60	41	116.8	12	DMP120 - DMP124
TIDC125C13-5	12.5 - 12.9	13	62.5	46	124.3	12	DMP125 - DMP129
TIDC130C13-5	13 - 13.4	13	65	47	128.4	13	DMP130 - DMP134
TIDC135C14-5	13.5 - 13.9	14	67.5	43	126.9	13	DMP135 - DMP139
TIDC140C14-5	14 - 14.4	14	70	44	131	14	DMP140 - DMP144
TIDC145C15-5	14.5 - 14.9	15	72.5	45	134.5	14	DMP145 - DMP149
TIDC150C15-5	15 - 15.9	15	75	45	137.5	15	DMP150 - DMP159
TIDC160C16-5	16 - 16.9	16	80	48	149.5	16	DMP160 - DMP169
TIDC170C17-5	17 - 17.9	17	85	48	153.7	17	DMP170 - DMP179
TIDC180C18-5	18 - 18.9	18	90	48	159.3	18	DMP180 - DMP189
TIDC190C19-5	19 - 19.9	19	95	54	170.4	19	DMP190 - DMP199

Tool diameter	Hole diameter tolerance*
ø10 - ø19.9	+0.05 / 0

*Just for reference

SPARE PARTS

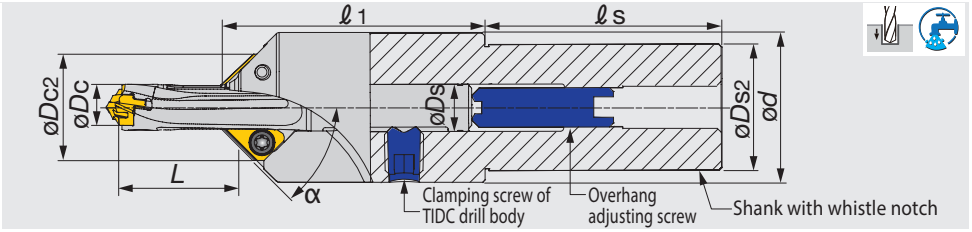


Designation	Clamping key
TIDC100-190	K-TID10-19.99

TIDCF

Chamfering adapter





Designation	øDc	øDs2	ød	øDc2	ℓ1	ℓs	L* L/D = 3	L* L/D = 5	Drill body	øDs
TIDCF100-W32	10 - 10.4	32	38	24.9	67.3	60	14.5 - 31.8	31.7 - 51.8	TIDC100C10-...	10
TIDCF110-W32	10.5 - 10.9	32	38	25.9	67.3	60	15.7 - 33.3	31.2 - 54.2	TIDC105C11-...	11
TIDCF110-W32	11 - 11.4	32	38	25.9	67.3	60	16.2 - 35.3	34.1 - 57.3	TIDC110C11-...	11
TIDCF120-W32	11.5 - 11.9	32	38	26.9	67.3	60	15.1 - 36.7	33.8 - 59.4	TIDC115C12-...	12
TIDCF120-W32	12 - 12.4	32	38	26.9	67.3	60	16.5 - 37.7	36.6 - 61.6	TIDC120C12-...	12
TIDCF130-W32	12.5 - 12.9	32	38	27.9	67.3	60	16.1 - 39.6	39.7 - 64.8	TIDC125C13-...	13
TIDCF130-W32	13 - 13.4	32	38	27.9	67.3	60	17.5 - 41.5	42.7 - 68	TIDC130C13-...	13
TIDCF140-W32	13.5 - 13.9	32	38	28.4	67.3	60	17.7 - 42.9	41.4 - 70.3	TIDC135C14-...	14
TIDCF140-W32	14 - 14.4	32	38	28.4	67.3	60	18.1 - 45	44.8 - 73.1	TIDC140C14-...	14
TIDCF150-W32	14.5 - 14.9	32	38	29.4	67.3	60	19.2 - 44.6	44 - 73.9	TIDC145C15-...	15
TIDCF150-W32	15 - 15.9	32	38	29.4	67.3	60	19.7 - 47.4	47.6 - 80.7	TIDC150C15-...	15
TIDCF160-W32	16 - 16.9	32	38	30.4	67.3	60	19.5 - 55.3	57 - 87.5	TIDC160C16-...	16
TIDCF170-W32	17 - 17.9	32	38	31.4	67.3	60	21.4 - 54.9	55.9 - 88.5	TIDC170C17-...	17
TIDCF180-W32	18 - 18.9	32	38	32.4	67.3	60	24.2 - 65.2	60 - 93	TIDC180C18-...	18
TIDCF190-W32	19 - 19.9	32	38	33.4	75	60	28.5 - 62.3	67 - 100	TIDC190C19-...	19

• *L** is the dimension when using 45° chamfering insert.

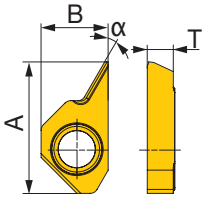
SPARE PARTS

Designation	Insert screw	Grip	Overhang adjusting screw	Clamping screw of TIDC drill body	Torx bit	Wrench
TIDCF	SR14-544/S	SW6-SD	SRM10X10DIN916	SRM10X1.5S	BT15S	HW5.0

CHAMFERING INSERT

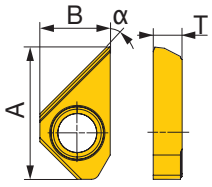
XHGT-30A





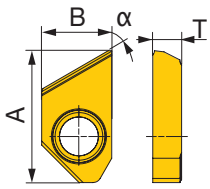
XHGR-45A





XHGR-60A





Designation	GH730	A	B	T	Chamfering angle α°	Maximum width of chamfer **
XHGT090300-30A	●	16	8.5	3.3	30	1.5
XHGR090300-45A	●	16	8.5	3.3	45	6
XHGR090300-60A	●	16	8.5	3.3	60	3.5

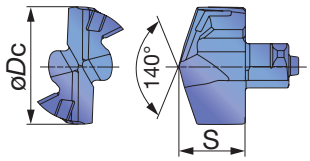
**Please reduce the feed rate to half when chamfering over 60% of maximum width of chamfer

● : Line-up
Package quantity = 2 pcs.

DRILL HEAD

DMP





Designation	øDc	AH725	S	Pocket size	Body
DMP100	10	●	6.05	10	TID*100...
DMP101	10.1	●	6.05	10	TID*100...
DMP102	10.2	●	6.05	10	TID*100...
DMP103	10.3	●	6.05	10	TID*100...
DMP104	10.4	●	6.05	10	TID*100...
DMP105	10.5	●	6.05	10	TID*105...
DMP106	10.6	●	6.05	10	TID*105...
DMP107	10.7	●	6.05	10	TID*105...
DMP108	10.8	●	6.05	10	TID*105...
DMP109	10.9	●	6.05	10	TID*105...
DMP110	11	●	6.45	11	TID*110...
DMP111	11.1	●	6.45	11	TID*110...
DMP112	11.2	●	6.45	11	TID*110...
DMP113	11.3	●	6.45	11	TID*110...
DMP114	11.4	●	6.45	11	TID*110...
DMP115	11.5	●	6.45	11	TID*115...
DMP116	11.6	●	6.45	11	TID*115...
DMP117	11.7	●	6.45	11	TID*115...
DMP118	11.8	●	6.45	11	TID*115...
DMP119	11.9	●	6.45	11	TID*115...
DMP120	12	●	6.8	12	TID*120...
DMP121	12.1	●	6.8	12	TID*120...
DMP122	12.2	●	6.8	12	TID*120...
DMP123	12.3	●	6.8	12	TID*120...
DMP124	12.4	●	6.8	12	TID*120...
DMP125	12.5	●	6.8	12	TID*125...
DMP126	12.6	●	6.8	12	TID*125...
DMP127	12.7	●	6.8	12	TID*125...
DMP128	12.8	●	6.8	12	TID*125...
DMP129	12.9	●	6.8	12	TID*125...
DMP130	13	●	7.4	13	TID*130...
DMP131	13.1	●	7.4	13	TID*130...
DMP132	13.2	●	7.4	13	TID*130...
DMP133	13.3	●	7.4	13	TID*130...
DMP134	13.4	●	7.4	13	TID*130...
DMP135	13.5	●	7.4	13	TID*135...
DMP136	13.6	●	7.4	13	TID*135...
DMP137	13.7	●	7.4	13	TID*135...
DMP138	13.8	●	7.4	13	TID*135...
DMP139	13.9	●	7.4	13	TID*135...
DMP140	14	●	7.95	14	TID*140...
DMP141	14.1	●	7.95	14	TID*140...
DMP142	14.2	●	7.95	14	TID*140...
DMP143	14.3	●	7.95	14	TID*140...
DMP144	14.4	●	7.95	14	TID*140...
DMP145	14.5	●	7.95	14	TID*145...
DMP146	14.6	●	7.95	14	TID*145...
DMP147	14.7	●	7.95	14	TID*145...
DMP148	14.8	●	7.95	14	TID*145...
DMP149	14.9	●	7.95	14	TID*145...
DMP150	15	●	8.53	15	TID*150...
DMP151	15.1	●	8.53	15	TID*150...
DMP152	15.2	●	8.53	15	TID*150...
DMP153	15.3	●	8.53	15	TID*150...
DMP154	15.4	●	8.53	15	TID*150...
DMP155	15.5	●	8.53	15	TID*150...
DMP156	15.6	●	8.53	15	TID*150...
DMP157	15.7	●	8.53	15	TID*150...
DMP158	15.8	●	8.53	15	TID*150...
DMP159	15.9	●	8.53	15	TID*150...
DMP160	16	●	9.1	16	TID*160...
DMP161	16.1	●	9.1	16	TID*160...
DMP162	16.2	●	9.1	16	TID*160...
DMP163	16.3	●	9.1	16	TID*160...
DMP164	16.4	●	9.1	16	TID*160...
DMP165	16.5	●	9.1	16	TID*160...
DMP166	16.6	●	9.1	16	TID*160...
DMP167	16.7	●	9.1	16	TID*160...
DMP168	16.8	●	9.1	16	TID*160...
DMP169	16.9	●	9.1	16	TID*160...
DMP170	17	●	9.7	17	TID*170...
DMP171	17.1	●	9.7	17	TID*170...
DMP172	17.2	●	9.7	17	TID*170...
DMP173	17.3	●	9.7	17	TID*170...
DMP174	17.4	●	9.7	17	TID*170...
DMP175	17.5	●	9.7	17	TID*170...
DMP176	17.6	●	9.7	17	TID*170...
DMP177	17.7	●	9.7	17	TID*170...
DMP178	17.8	●	9.7	17	TID*170...
DMP179	17.9	●	9.7	17	TID*170...
DMP180	18	●	10.3	18	TID*180...
DMP181	18.1	●	10.3	18	TID*180...
DMP182	18.2	●	10.3	18	TID*180...
DMP183	18.3	●	10.3	18	TID*180...
DMP184	18.4	●	10.3	18	TID*180...
DMP185	18.5	●	10.3	18	TID*180...
DMP186	18.6	●	10.3	18	TID*180...
DMP187	18.7	●	10.3	18	TID*180...
DMP188	18.8	●	10.3	18	TID*180...
DMP189	18.9	●	10.3	18	TID*180...
DMP190	19	●	10.8	19	TID*190...
DMP191	19.1	●	10.8	19	TID*190...
DMP192	19.2	●	10.8	19	TID*190...
DMP193	19.3	●	10.8	19	TID*190...
DMP194	19.4	●	10.8	19	TID*190...
DMP195	19.5	●	10.8	19	TID*190...
DMP196	19.6	●	10.8	19	TID*190...
DMP197	19.7	●	10.8	19	TID*190...
DMP198	19.8	●	10.8	19	TID*190...
DMP199	19.9	●	10.8	19	TID*190...
DMP200	20	●	11.4	20	TID*200...
DMP201	20.1	●	11.4	20	TID*200...
DMP202	20.2	●	11.4	20	TID*200...
DMP203	20.3	●	11.4	20	TID*200...
DMP204	20.4	●	11.4	20	TID*200...
DMP205	20.5	●	11.4	20	TID*200...
DMP206	20.6	●	11.4	20	TID*200...
DMP207	20.7	●	11.4	20	TID*200...

Designation	øDc	AH725	S	Pocket size	Body
DMP208	20.8	●	11.4	20	TID*200...
DMP209	20.9	●	11.4	20	TID*200...
DMP210	21	●	11.98	21	TID*210...
DMP211	21.1	●	11.98	21	TID*210...
DMP212	21.2	●	11.98	21	TID*210...
DMP213	21.3	●	11.98	21	TID*210...
DMP214	21.4	●	11.98	21	TID*210...
DMP215	21.5	●	11.98	21	TID*210...
DMP216	21.6	●	11.98	21	TID*210...
DMP217	21.7	●	11.98	21	TID*210...
DMP218	21.8	●	11.98	21	TID*210...
DMP219	21.9	●	11.98	21	TID*210...
DMP220	22	●	12.56	22	TID*220...
DMP221	22.1	●	12.56	22	TID*220...
DMP222	22.2	●	12.56	22	TID*220...
DMP223	22.3	●	12.56	22	TID*220...
DMP224	22.4	●	12.56	22	TID*220...
DMP225	22.5	●	12.56	22	TID*220...
DMP226	22.6	●	12.56	22	TID*220...
DMP227	22.7	●	12.56	22	TID*220...
DMP228	22.8	●	12.56	22	TID*220...
DMP229	22.9	●	12.56	22	TID*220...
DMP230	23	●	13.13	23	TID*230...
DMP231	23.1	●	13.13	23	TID*230...
DMP232	23.2	●	13.13	23	TID*230...
DMP233	23.3	●	13.13	23	TID*230...
DMP234	23.4	●	13.13	23	TID*230...
DMP235	23.5	●	13.13	23	TID*230...
DMP236	23.6	●	13.13	23	TID*230...
DMP237	23.7	●	13.13	23	TID*230...
DMP238	23.8	●	13.13	23	TID*230...
DMP239	23.9	●	13.13	23	TID*230...
DMP240	24	●	13.7	24	TID*240...
DMP241	24.1	●	13.7	24	TID*240...
DMP242	24.2	●	13.7	24	TID*240...
DMP243	24.3	●	13.7	24	TID*240...
DMP244	24.4	●	13.7	24	TID*240...
DMP245	24.5	●	13.7	24	TID*240...
DMP246	24.6	●	13.7	24	TID*240...
DMP247	24.7	●	13.7	24	TID*240...
DMP248	24.8	●	13.7	24	TID*240...
DMP249	24.9	●	13.7	24	TID*240...
DMP250	25	●	14.3	25	TID*250...
DMP251	25.1	●	14.3	25	TID*250...
DMP252	25.2	●	14.3	25	TID*250...
DMP253	25.3	●	14.3	25	TID*250...
DMP254	25.4	●	14.3	25	TID*250...
DMP255	25.5	●	14.3	25	TID*250...
DMP256	25.6	●	14.3	25	TID*250...
DMP257	25.7	●	14.3	25	TID*250...
DMP258	25.8	●	14.3	25	TID*250...
DMP259	25.9	●	14.3	25	TID*250...

Head diameter	Head diameter tolerance
ø10 - ø17.9	+0.018 / 0
ø18 - ø25.9	+0.021 / 0

● : Line-up
Package Quantity: ø10 - ø19.9 = 2 pcs.
ø20 - ø25.9 = 1 pc.

STANDARD CUTTING CONDITIONS

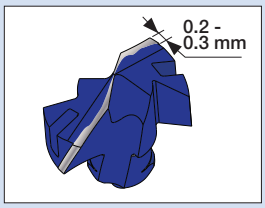
ISO	Workpiece material	Cutting speed	Feed: *f* (mm/rev)				
			øDc (mm)				
		*V*c (m/min)	ø10 - ø11.9	ø12 - ø13.9	ø14 - ø15.9	ø16 - ø19.9	ø20 - ø25.9
P	Low carbon steels (C < 0.3) E275A, E355D, C25, etc.	80 - 140	0.15 - 0.28	0.18 - 0.3	0.2 - 0.35	0.25 - 0.45	0.25 - 0.45
P	High carbon steels (C > 0.3) C45, C55, etc.	70 - 120	0.15 - 0.28	0.18 - 0.3	0.2 - 0.35	0.25 - 0.45	0.25 - 0.45
P	Low alloy steels 18CrMo4, etc.	70 - 120	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.4	0.25 - 0.45
P	Alloy steels 42CrMo4, 20Cr4, etc.	40 - 90	0.14 - 0.28	0.16 - 0.32	0.18 - 0.35	0.23 - 0.4	0.25 - 0.45
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc.	30 - 70	0.12 - 0.18	0.14 - 0.2	0.16 - 0.24	0.16 - 0.26	0.18 - 0.3
K	Grey cast irons 250, etc.	80 - 180	0.2 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55	0.35 - 0.6
K	Ductile cast irons 600-3, etc.	80 - 140	0.2 - 0.35	0.25 - 0.4	0.3 - 0.45	0.35 - 0.55	0.35 - 0.6
N	Aluminium alloys AlSi11Cu3, etc.	80 - 220	0.25 - 0.4	0.3 - 0.45	0.35 - 0.5	0.4 - 0.60	0.5 - 0.75
S	Titanium alloys Ti-6Al-4V, etc.	20 - 50	0.08 - 0.15	0.1 - 0.28	0.12 - 0.2	0.14 - 0.22	0.18 - 0.27
S	Nickel-based alloys	20 - 50	0.08 - 0.13	0.1 - 0.15	0.12 - 0.18	0.12 - 0.22	0.14 - 0.22

- Cutting conditions in the above table show standard cutting conditions.
- Cutting conditions may change due to the rigidity and power of the machine and the workpiece material.
- Machined hole diameter may change depending upon the rigidity of the machine tool or cutting conditions.
- In case of L/D = 8,12 drill, the recommended range of cutting speeds and feeds is between the minimum and median values listed above.

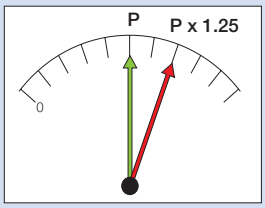
TECHNICAL GUIDELINES

When to change drill heads (Criteria for the end of tool life)

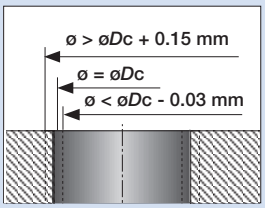
The criteria to identify the time for tool change are as follows:



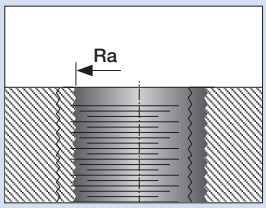
Width of corner wear reaches 0.2 – 0.3 mm.



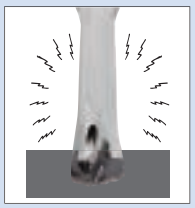
Spindle load exceeds 125% of the normal value.



Hole diameter is 0.15 mm larger or 0.03 mm smaller than the drill diameter.



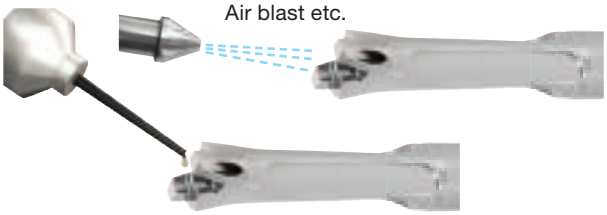
Surface roughness deteriorates.



Vibration or unusual noise occurs.

● How to clamp the drill head

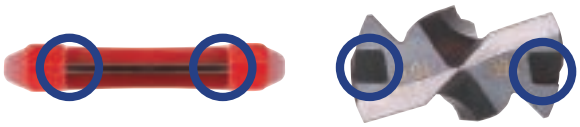
① Clean and lubricate the pocket.



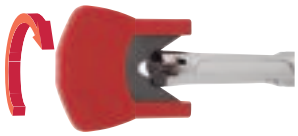
② Set the drill head into the pocket.



③ Set the clamping key on the drill head



④ Clamp

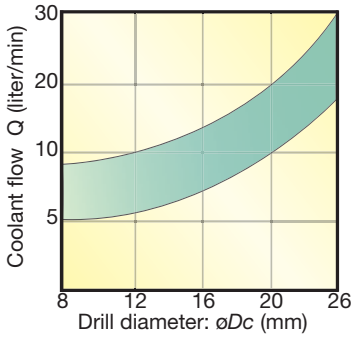


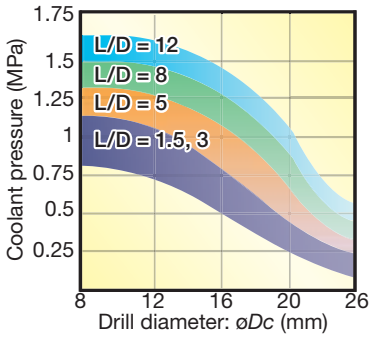
● Coolant supply

Internal coolant supply is recommended.

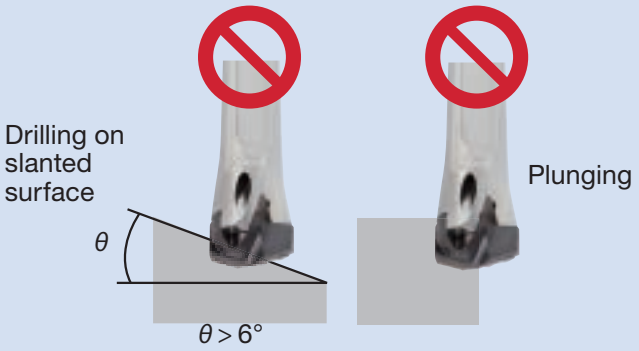


■ The required coolant flow and pressure



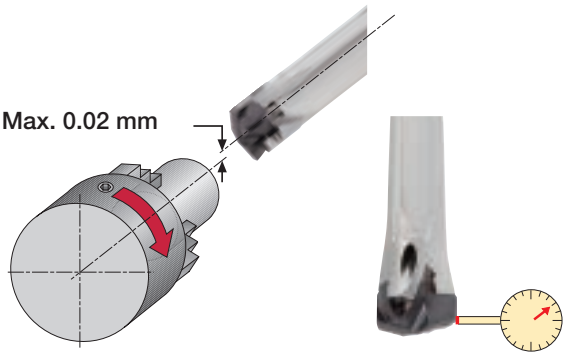


● Applications that are not recommended



● Run-out

Run-out should be less than 0.02 mm.



Ideal : ≤ 0.02 mm
Acceptable : ≤ 0.05 mm
Not acceptable: > 0.05 mm

INSTRUCTION OF CLAMPING HEAD



Fig. #1



Fig. #2



Fig. #3

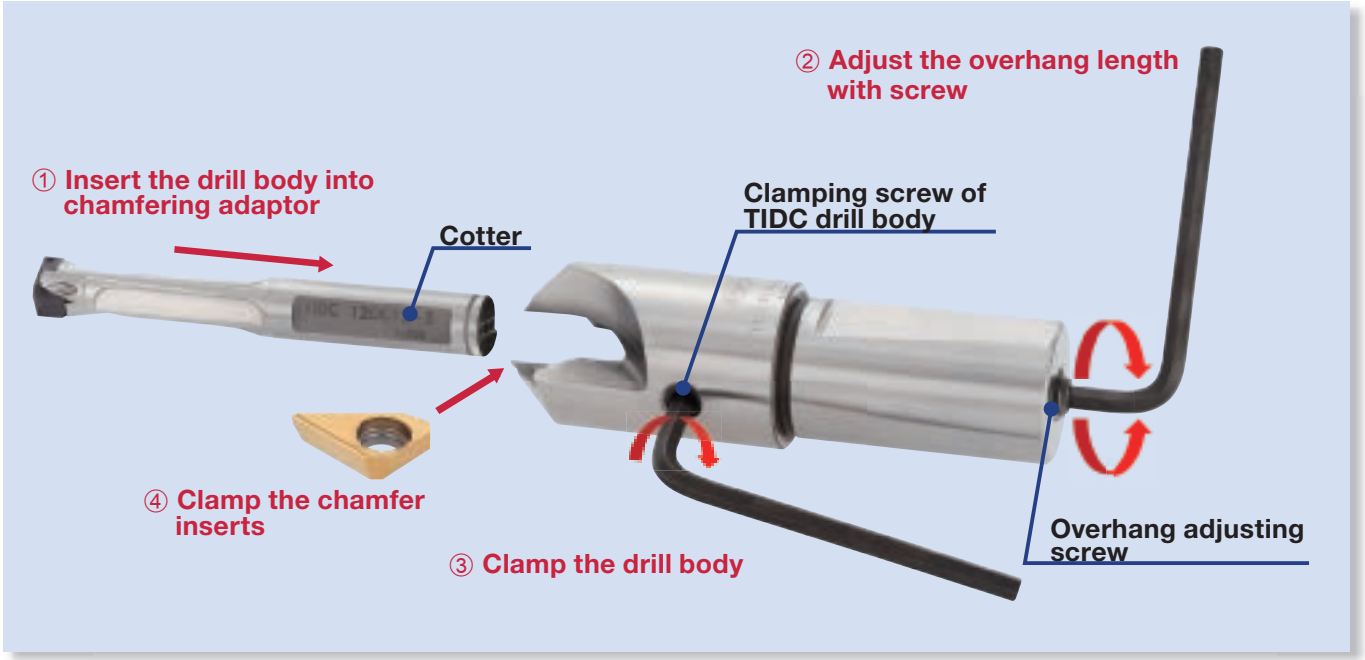
Procedure

① Clean the clamping areas on the drill body and the head with an air blast, lubricate them, and put the drill head in the pocket.
② Set the clamping key in the groove on the drill head. Push the head toward the pocket with equal torque on the right and the left sides, and turn the clamping key to clamp the head completely. (Fig. #1)
③ Be sure that there is no gap between the bottom of the head and the drill body. A shim in the thickness of around 0.01 mm is useful to check the gap. (Fig. #2)
④ If there is a gap thicker than 0.01 mm, unclamp the head and return to the procedure No. ①
⑤ Check the run-out at the margin of the drill head. Run-out must be less than 0.05 mm. (Fig. #3) (Recommended value: less than 0.02 mm)
If the run-out exceeds 0.05 mm, unclamp the head and return to the procedure No. ① .

Note #1: If the clamping torque is not equally applied on the right and the left sides of the drill head, there may be a gap between the head and the body, which increases the run-out of the head.
Note #2: The low accuracy in holding the drill body may affect the run-out. If the run-out is large, check the accuracy in holding the drill body.

HOW TO MOUNT THE TIDC DRILL BODY INTO THE CHAMFER ADAPTOR

The overhang length of the drill can be changed by the adjusting screw at the bottom of the adaptor.
The rear end of the drill body must be in contact with the adjusting screw as the screw supports the drill against thrust force when drilling.



Procedure

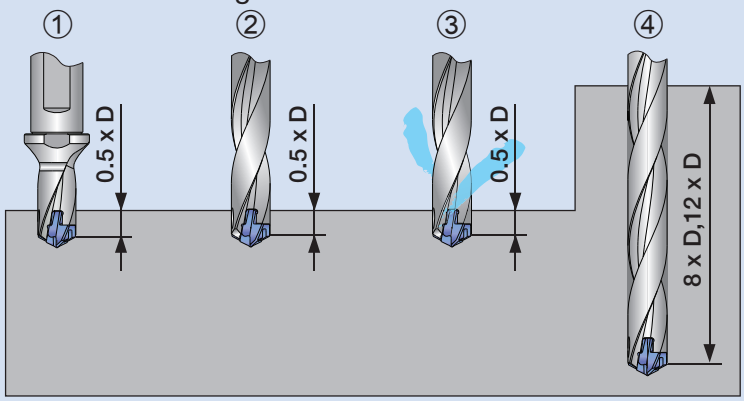
① Place the TIDC drill body into the chamfer adaptor without chamfer inserts.
② Adjust the overhang length of the drill body with the adjusting screw at the bottom of the adaptor.
③ Adjust the position of the drill body so that the drill body is fixed at the cotter and tighten the clamping screw of the drill body. This aligns the flutes of the TIDC drill body with the chamfer inserts.
④ To clamp the chamfer inserts, tighten the clamping screw of the insert while pushing the insert into the insert pocket.

Notice

Before removing the drill body from the adaptor, chamfer inserts must be unclamped.
The overhang adjusting screw can be handled from the top of the adaptor with flat-blade screwdriver. In this way, the overhang length of the drill body can be adjusted after the adaptor is positioned on the drill shank.

CAUTION FOR USING DRILLS WITH L/D = 8, 12

Prior to using the drill with L/D = 8, 12 a pilot hole should be drilled with a short or centering drill.

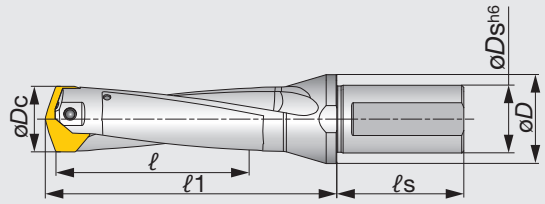


① Drill a pilot hole in the depth of 0.5 x D.
② Rotate the drill at a low speed, such as 100 min^{-1}, and feed it slowly into the pilot hole until the drill reaches several millimeters from the bottom.
③ Supply the coolant and rotate the drill at the recommended speed.
④ Drill the required depth under the recommended cutting conditions.

TIS L/D=3

Head indexable large drill





Designation	øDc	øDs	øD	ℓ	ℓ1	ℓs	Pocket size	Head
TIS260F32-3	26 - 26.9	32	40	78	117	60	26	SMP26*
TIS270F32-3	27 - 27.9	32	40	81	120	60	27	SMP27*
TIS280F32-3	28 - 28.9	32	40	84	128.4	60	28	SMP28*
TIS290F32-3	29 - 29.9	32	40	87	131.4	60	29	SMP29*
TIS300F32-3	30 - 30.9	32	42	90	134.7	60	30	SMP30*
TIS310F32-3	31 - 31.9	32	42	93	137.7	60	31	SMP31*
TIS320F40-3	32 - 32.9	40	48	96	143	68	32	SMP32*
TIS330F40-3	33 - 33.9	40	48	99	146	68	33	SMP33*
TIS340F40-3	34 - 34.9	40	48	102	149	68	34	SMP34*
TIS350F40-3	35 - 35.9	40	48	105	152.4	68	35	SMP35*
TIS360F40-3	36 - 36.9	40	48	108	155.4	68	36	SMP36*
TIS370F40-3	37 - 37.9	40	48	111	158.4	68	37	SMP37*
TIS380F40-3	38 - 38.9	40	50	114	166.9	68	38	SMP38*
TIS390F40-3	39 - 39.9	40	50	117	169.9	68	39	SMP39*
TIS400F40-3	40 - 41	40	50	120	172.9	68	40	SMP40*

Tool diameter	Hole diameter tolerance*
ø26 - ø29.9	+0.05 / 0
ø30 - ø41	+0.06 / 0

*Just for reference

SPARE PARTS



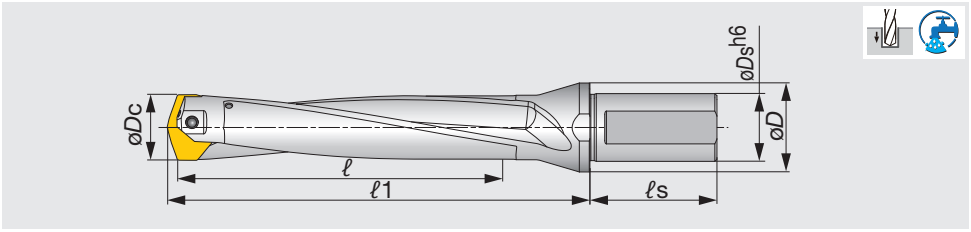


Designation	Clamping screw	Wrench	
		Torx Bit	Grip
TIS260F32-*	TS50230D3	BLDT20/S7	H-TB2W
TIS270F32-*	TS50230D3	BLDT20/S7	H-TB2W
TIS280F32-*	TS50250D35	BLDT25/S7	H-TB2W
TIS290F32-*	TS50250D35	BLDT25/S7	H-TB2W
TIS300F32-*	TS60265D4	BLDT25/S7	H-TB2W
TIS310F32-*	TS60265D4	BLDT25/S7	H-TB2W
TIS320F40-*	TS60285D42	BLDT25/S7	H-TB2W
TIS330F40-*	TS60285D42	BLDT25/S7	H-TB2W
TIS340F40-*	TS60285D42	BLDT25/S7	H-TB2W
TIS350F40-*	TS60320D5	BLDT25/S7	H-TB2W
TIS360F40-*	TS60320D5	BLDT25/S7	H-TB2W
TIS370F40-*	TS60320D5	BLDT25/S7	H-TB2W
TIS380F40-*	TS80340D6	BLDT25/S7	H-TB2W
TIS390F40-*	TS80340D6	BLDT25/S7	H-TB2W
TIS400F40-*	TS80340D6	BLDT25/S7	H-TB2W

TIS L/D=5

Head indexable large drill





Designation	øDc	øDs	øD	ℓ	ℓ1	ℓs	Pocket size	Head
TIS260F32-5	26 - 26.9	32	40	130	169	60	26	SMP26*
TIS270F32-5	27 - 27.9	32	40	135	174	60	27	SMP27*
TIS280F32-5	28 - 28.9	32	40	140	184.4	60	28	SMP28*
TIS290F32-5	29 - 29.9	32	40	145	189.4	60	29	SMP29*
TIS300F32-5	30 - 30.9	32	42	150	194.7	60	30	SMP30*
TIS310F32-5	31 - 31.9	32	42	155	199.7	60	31	SMP31*
TIS320F40-5	32 - 32.9	40	48	160	207	68	32	SMP32*
TIS330F40-5	33 - 33.9	40	48	165	212	68	33	SMP33*
TIS340F40-5	34 - 34.9	40	48	170	217	68	34	SMP34*
TIS350F40-5	35 - 35.9	40	48	175	222.4	68	35	SMP35*
TIS360F40-5	36 - 36.9	40	48	180	227.4	68	36	SMP36*
TIS370F40-5	37 - 37.9	40	48	185	232.4	68	37	SMP37*
TIS380F40-5	38 - 38.9	40	50	190	242.9	68	38	SMP38*
TIS390F40-5	39 - 39.9	40	50	195	247.9	68	39	SMP39*
TIS400F40-5	40 - 41	40	50	200	252.9	68	40	SMP40*

Tool diameter	Hole diameter tolerance*
ø26 - ø29.9	+0.08 / 0
ø30 - ø41	+0.09 / 0

*Just for reference

SPARE PARTS

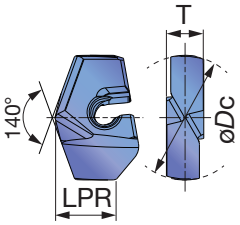




Designation	Clamping screw	Wrench	
		Torx Bit	Grip
TIS260F32-*	TS50230D3	BLDT20/S7	H-TB2W
TIS270F32-*	TS50230D3	BLDT20/S7	H-TB2W
TIS280F32-*	TS50250D35	BLDT25/S7	H-TB2W
TIS290F32-*	TS50250D35	BLDT25/S7	H-TB2W
TIS300F32-*	TS60265D4	BLDT25/S7	H-TB2W
TIS310F32-*	TS60265D4	BLDT25/S7	H-TB2W
TIS320F40-*	TS60285D42	BLDT25/S7	H-TB2W
TIS330F40-*	TS60285D42	BLDT25/S7	H-TB2W
TIS340F40-*	TS60285D42	BLDT25/S7	H-TB2W
TIS350F40-*	TS60320D5	BLDT25/S7	H-TB2W
TIS360F40-*	TS60320D5	BLDT25/S7	H-TB2W
TIS370F40-*	TS60320D5	BLDT25/S7	H-TB2W
TIS380F40-*	TS80340D6	BLDT25/S7	H-TB2W
TIS390F40-*	TS80340D6	BLDT25/S7	H-TB2W
TIS400F40-*	TS80340D6	BLDT25/S7	H-TB2W

SMP





Designation	øDc	AH725	T	LPR	Pocket size	Body
SMP260	26	●	7.5	11.6	26	TIS260F32-*
SMP261	26.1	●	7.5	11.6	26	TIS260F32-*
SMP265	26.5	●	7.5	11.6	26	TIS260F32-*
SMP267	26.7	●	7.5	11.6	26	TIS260F32-*
SMP270	27	●	7.5	11.1	27	TIS270F32-*
SMP271	27.1	●	7.5	11.1	27	TIS270F32-*
SMP272	27.2	●	7.5	11.1	27	TIS270F32-*
SMP275	27.5	●	7.5	11.1	27	TIS270F32-*
SMP280	28	●	8	11.7	28	TIS280F32-*
SMP281	28.1	●	8	11.7	28	TIS280F32-*
SMP285	28.5	●	8	11.7	28	TIS280F32-*
SMP286	28.6	●	8	11.7	28	TIS280F32-*
SMP290	29	●	8	11.3	29	TIS290F32-*
SMP291	29.1	●	8	11.3	29	TIS290F32-*
SMP295	29.5	●	8	11.3	29	TIS290F32-*
SMP296	29.6	●	8	11.3	29	TIS290F32-*
SMP300	30	●	8.5	14.1	30	TIS300F32-*
SMP301	30.1	●	8.5	14.1	30	TIS300F32-*
SMP302	30.2	●	8.5	14.1	30	TIS300F32-*
SMP303	30.3	●	8.5	14.1	30	TIS300F32-*
SMP305	30.5	●	8.5	14.1	30	TIS300F32-*
SMP308	30.8	●	8.5	14.1	30	TIS300F32-*
SMP310	31	●	8.5	13.7	31	TIS310F32-*
SMP311	31.1	●	8.5	13.7	31	TIS310F32-*
SMP315	31.5	●	8.5	13.7	31	TIS310F32-*
SMP318	31.8	●	8.5	13.7	31	TIS310F32-*
SMP320	32	●	9	14.5	32	TIS320F40-*
SMP321	32.1	●	9	14.5	32	TIS320F40-*
SMP325	32.5	●	9	14.5	32	TIS320F40-*
SMP328	32.8	●	9	14.5	32	TIS320F40-*
SMP330	33	●	9	14.1	33	TIS330F40-*
SMP331	33.1	●	9	14.1	33	TIS330F40-*
SMP333	33.3	●	9	14.1	33	TIS330F40-*
SMP335	33.5	●	9	14.1	33	TIS330F40-*
SMP340	34	●	9	13.7	34	TIS340F40-*
SMP341	34.1	●	9	13.7	34	TIS340F40-*
SMP345	34.5	●	9	13.7	34	TIS340F40-*
SMP349	34.9	●	9	13.7	34	TIS340F40-*
SMP350	35	●	10	16.6	35	TIS350F40-*
SMP351	35.1	●	10	16.6	35	TIS350F40-*
SMP355	35.5	●	10	16.6	35	TIS350F40-*
SMP360	36	●	10	16.1	36	TIS360F40-*
SMP361	36.1	●	10	16.1	36	TIS360F40-*
SMP365	36.5	●	10	16.1	36	TIS360F40-*
SMP366	36.6	●	10	16.1	36	TIS360F40-*
SMP370	37	●	10	15.7	37	TIS370F40-*
SMP371	37.1	●	10	15.7	37	TIS370F40-*
SMP375	37.5	●	10	15.7	37	TIS370F40-*
SMP380	38	●	10.5	17	38	TIS380F40-*
SMP381	38.1	●	10.5	17	38	TIS380F40-*
SMP385	38.5	●	10.5	17	38	TIS380F40-*
SMP388	38.8	●	10.5	17	38	TIS380F40-*
SMP390	39	●	10.5	16.6	39	TIS390F40-*
SMP391	39.1	●	10.5	16.6	39	TIS390F40-*

Designation	øDc	AH725	T	LPR	Pocket size	Body
SMP395	39.5	●	10.5	16.6	39	TIS390F40-*
SMP397	39.7	●	10.5	16.6	39	TIS390F40-*
SMP398	39.8	●	10.5	16.6	39	TIS390F40-*
SMP400	40	●	10.5	16.2	40	TIS400F40-*
SMP401	40.1	●	10.5	16.2	40	TIS400F40-*
SMP405	40.5	●	10.5	16.2	40	TIS400F40-*
SMP410	41	●	10.5	16.2	40	TIS400F40-*

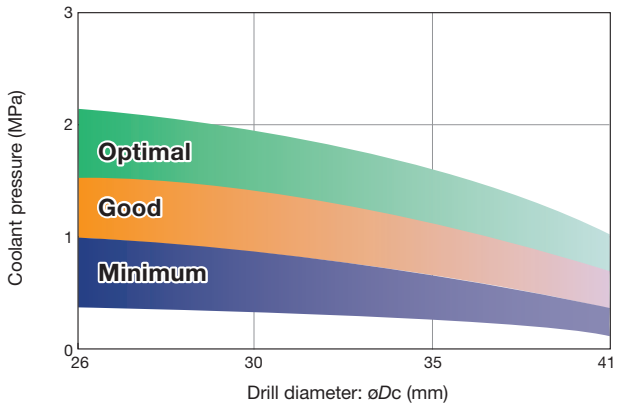
Tool diameter	Head diameter tolerance
ø26 - ø29.9	-0.006 / -0.026
ø30 - ø41	-0.006 / -0.031

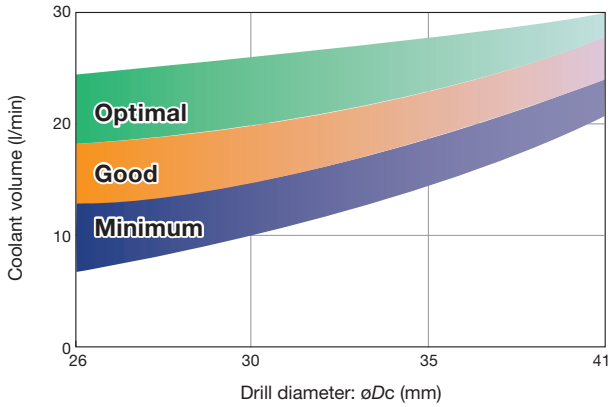
● : Line-up
Package quantity =1pc

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Cutting speed *Vc* (m/min)	Feed: *f* (mm/rev)		
			øDc (mm)		
			ø26 - ø29.9	ø30 - ø35.9	ø36 - ø41
P	Low carbon steels C15, C20, etc.	80 - 140	0.2 - 0.5	0.2 - 0.5	0.2 - 0.55
P	Carbon steels, Alloy steels C55, 42CrMoS4, etc.	80 - 130	0.2 - 0.5	0.2 - 0.5	0.2 - 0.55
P	Prehardened steels NAK80, PX5, etc.	50 - 100	0.2 - 0.5	0.2 - 0.5	0.2 - 0.55
M	Stainless steels X5CrNi18-9, X5CrNiMo17-12-2, etc	40 - 80	0.15 - 0.3	0.15 - 0.3	0.2 - 0.35
K	Grey cast irons 250, 300, etc.	80 - 180	0.25 - 0.55	0.25 - 0.55	0.3 - 0.6
K	Ductile cast irons 400-15, 600-3, etc.	80 - 140	0.25 - 0.55	0.25 - 0.55	0.3 - 0.6
N	Non ferrous materials	100 - 200	0.4 - 0.6	0.4 - 0.6	0.5 - 0.7
S	Heat-resistant alloy Inconel718, etc.	20 - 50	0.1 - 0.2	0.1 - 0.2	0.1 - 0.25
S	Titanium alloys Ti-6Al-4V, etc.	30 - 60	0.1 - 0.3	0.1 - 0.3	0.1 - 0.35
H	Hardened materials	20 - 60	0.1 - 0.2	0.1 - 0.2	0.1 - 0.25

RECOMMENDED COOLANT PRESSURE AND VOLUME

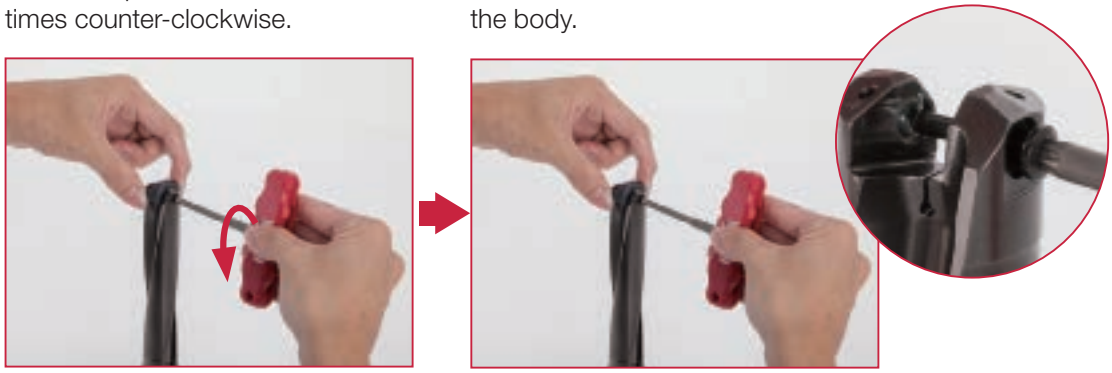




HOW TO CHANGE DRILL HEAD

To unclamp rotate the screw 3-5 times counter-clockwise.

No need to remove the screw from the body.



- Please change the screw to new one when the screw does not rotate smoothly

MEMO

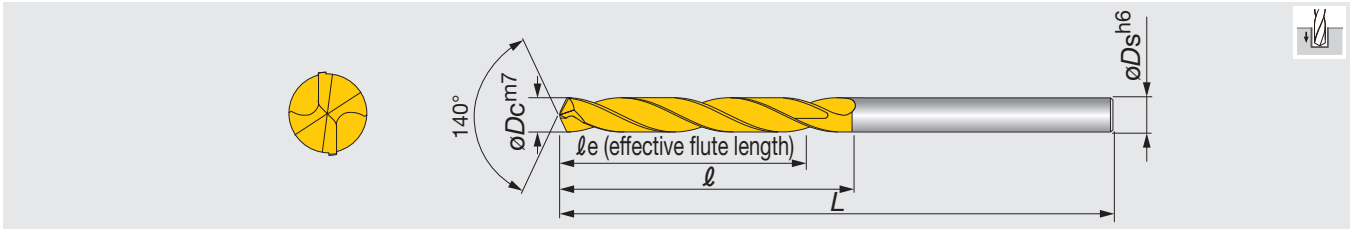
SOLIDDRILL Quick Guide

Series	ød (mm)	L/D	Point Angle	Oil Hole	Coating	Un coated	Description	P	M	K	N	S	H	
DSM DSM-CP	ø0.1 - ø3	5, 10, 15	140 90 & 140		●		Micro solid drill with ø3 mm shanks DSM-CP: Centering drill for DSM	●	●	●	●	●	●	E048 - E051
DSW	ø3 - ø16	3, 5, 8	140	With, Without	●		Shank size: DIN	●	●	●	●	●	●	E026 - E034
DSX	ø3 - ø20	3, 5, 8	130	With	●		Shank size: 1.0 mm increments	●	●	●	●	●	●	E038 - E043
DSE	ø3 - ø16	2, 3	140		●		For drilling thin plates with low cutting force Shank size: Same as the drill diameter	●	●	●	●	●	●	E044 - E047
DMX	ø3 - ø16	2, 3	130		●		Shank size: Same as the drill diameter	●	●	●	●	●	●	E052 - E055
DMD-S	ø6 - ø13	3	135			●	Helix angle 15°						●	E056, E057
DMX-F	ø3 - ø20	3, 5	130			●	Shank size: Same as the drill diameter			●	●			E058 - E062
FDS	ø2.57 - ø11	3	135			●	Drills for reaming pre-tap holes with straight flute			●	●			E063
FDC	ø5 - ø16	5, 8	135	With		●	Drills for reaming at high feed with straight flute			●	●			E064, E065
CDS	ø0.4 - ø13	5 - 12	120			●	Shank size: Same as the drill diameter Hole depth: Up to L/D 12			●	●			E066 - E068

SOLIDDRILL

DSW-DE3

Soliddrill with 140° point angle without oil hole & DIN shank, L/D = 3, dia = ø3 - ø16 mm



Designation	øDc	AH725	øDs	ℓe	ℓ	L	Designation	øDc	AH725	øDs	ℓe	ℓ	L
DSW030-014-06DE3	3	●	6	14	20	62	DSW082-035-10DE3	8.2	●	10	35	47	89
DSW031-014-06DE3	3.1	●	6	14	20	62	DSW083-035-10DE3	8.3	●	10	35	47	89
DSW032-014-06DE3	3.2	●	6	14	20	62	DSW084-035-10DE3	8.4	●	10	35	47	89
DSW033-014-06DE3	3.3	●	6	14	20	62	DSW085-035-10DE3	8.5	●	10	35	47	89
DSW034-014-06DE3	3.4	●	6	14	20	62	DSW086-035-10DE3	8.6	●	10	35	47	89
DSW035-014-06DE3	3.5	●	6	14	20	62	DSW087-035-10DE3	8.7	●	10	35	47	89
DSW036-014-06DE3	3.6	●	6	14	20	62	DSW088-035-10DE3	8.8	●	10	35	47	89
DSW037-014-06DE3	3.7	●	6	14	20	62	DSW089-035-10DE3	8.9	●	10	35	47	89
DSW038-017-06DE3	3.8	●	6	17	24	66	DSW090-035-10DE3	9	●	10	35	47	89
DSW039-017-06DE3	3.9	●	6	17	24	66	DSW091-035-10DE3	9.1	●	10	35	47	89
DSW040-017-06DE3	4	●	6	17	24	66	DSW092-035-10DE3	9.2	●	10	35	47	89
DSW041-017-06DE3	4.1	●	6	17	24	66	DSW093-035-10DE3	9.3	●	10	35	47	89
DSW042-017-06DE3	4.2	●	6	17	24	66	DSW094-035-10DE3	9.4	●	10	35	47	89
DSW043-017-06DE3	4.3	●	6	17	24	66	DSW095-035-10DE3	9.5	●	10	35	47	89
DSW044-017-06DE3	4.4	●	6	17	24	66	DSW096-035-10DE3	9.6	●	10	35	47	89
DSW045-017-06DE3	4.5	●	6	17	24	66	DSW097-035-10DE3	9.7	●	10	35	47	89
DSW046-017-06DE3	4.6	●	6	17	24	66	DSW098-035-10DE3	9.8	●	10	35	47	89
DSW047-017-06DE3	4.7	●	6	17	24	66	DSW099-035-10DE3	9.9	●	10	35	47	89
DSW048-020-06DE3	4.8	●	6	20	28	66	DSW100-035-10DE3	10	●	10	35	47	89
DSW049-020-06DE3	4.9	●	6	20	28	66	DSW101-040-12DE3	10.1	●	12	40	55	102
DSW050-020-06DE3	5	●	6	20	28	66	DSW102-040-12DE3	10.2	●	12	40	55	102
DSW051-020-06DE3	5.1	●	6	20	28	66	DSW103-040-12DE3	10.3	●	12	40	55	102
DSW052-020-06DE3	5.2	●	6	20	28	66	DSW104-040-12DE3	10.4	●	12	40	55	102
DSW053-020-06DE3	5.3	●	6	20	28	66	DSW105-040-12DE3	10.5	●	12	40	55	102
DSW054-020-06DE3	5.4	●	6	20	28	66	DSW106-040-12DE3	10.6	●	12	40	55	102
DSW055-020-06DE3	5.5	●	6	20	28	66	DSW107-040-12DE3	10.7	●	12	40	55	102
DSW056-020-06DE3	5.6	●	6	20	28	66	DSW108-040-12DE3	10.8	●	12	40	55	102
DSW057-020-06DE3	5.7	●	6	20	28	66	DSW109-040-12DE3	10.9	●	12	40	55	102
DSW058-020-06DE3	5.8	●	6	20	28	66	DSW110-040-12DE3	11	●	12	40	55	102
DSW059-020-06DE3	5.9	●	6	20	28	66	DSW111-040-12DE3	11.1	●	12	40	55	102
DSW060-020-06DE3	6	●	6	20	28	66	DSW112-040-12DE3	11.2	●	12	40	55	102
DSW061-024-08DE3	6.1	●	8	24	34	79	DSW113-040-12DE3	11.3	●	12	40	55	102
DSW062-024-08DE3	6.2	●	8	24	34	79	DSW114-040-12DE3	11.4	●	12	40	55	102
DSW063-024-08DE3	6.3	●	8	24	34	79	DSW115-040-12DE3	11.5	●	12	40	55	102
DSW064-024-08DE3	6.4	●	8	24	34	79	DSW116-040-12DE3	11.6	●	12	40	55	102
DSW065-024-08DE3	6.5	●	8	24	34	79	DSW117-040-12DE3	11.7	●	12	40	55	102
DSW066-024-08DE3	6.6	●	8	24	34	79	DSW118-040-12DE3	11.8	●	12	40	55	102
DSW067-024-08DE3	6.7	●	8	24	34	79	DSW119-040-12DE3	11.9	●	12	40	55	102
DSW068-024-08DE3	6.8	●	8	24	34	79	DSW120-040-12DE3	12	●	12	40	55	102
DSW069-024-08DE3	6.9	●	8	24	34	79	DSW121-043-14DE3	12.1	●	14	43	60	107
DSW070-024-08DE3	7	●	8	24	34	79	DSW122-043-14DE3	12.2	●	14	43	60	107
DSW071-029-08DE3	7.1	●	8	29	41	79	DSW123-043-14DE3	12.3	●	14	43	60	107
DSW072-029-08DE3	7.2	●	8	29	41	79	DSW124-043-14DE3	12.4	●	14	43	60	107
DSW073-029-08DE3	7.3	●	8	29	41	79	DSW125-043-14DE3	12.5	●	14	43	60	107
DSW074-029-08DE3	7.4	●	8	29	41	79	DSW126-043-14DE3	12.6	●	14	43	60	107
DSW075-029-08DE3	7.5	●	8	29	41	79	DSW127-043-14DE3	12.7	●	14	43	60	107
DSW076-029-08DE3	7.6	●	8	29	41	79	DSW128-043-14DE3	12.8	●	14	43	60	107
DSW077-029-08DE3	7.7	●	8	29	41	79	DSW129-043-14DE3	12.9	●	14	43	60	107
DSW078-029-08DE3	7.8	●	8	29	41	79	DSW130-043-14DE3	13	●	14	43	60	107
DSW079-029-08DE3	7.9	●	8	29	41	79	DSW131-043-14DE3	13.1	●	14	43	60	107
DSW080-029-08DE3	8	●	8	29	41	79	DSW132-043-14DE3	13.2	●	14	43	60	107
DSW081-035-10DE3	8.1	●	10	35	47	89	DSW133-043-14DE3	13.3	●	14	43	60	107

● : Line-up

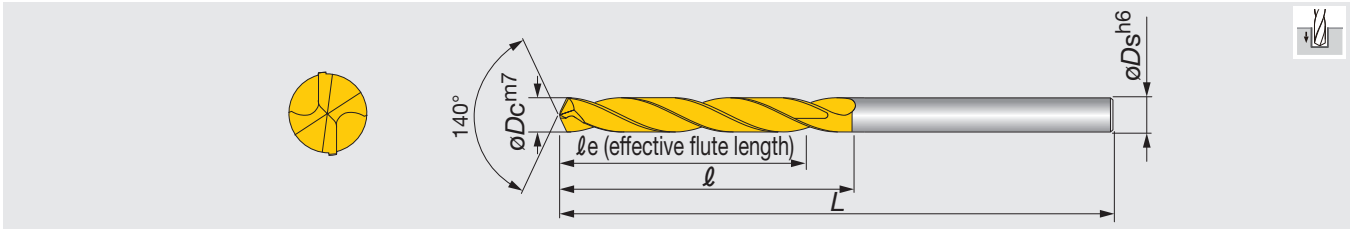
Designation	øDc	AH725	øDs	ℓe	ℓ	L
DSW134-043-14DE3	13.4	●	14	43	60	107
DSW135-043-14DE3	13.5	●	14	43	60	107
DSW136-043-14DE3	13.6	●	14	43	60	107
DSW137-043-14DE3	13.7	●	14	43	60	107
DSW138-043-14DE3	13.8	●	14	43	60	107
DSW139-043-14DE3	13.9	●	14	43	60	107
DSW140-043-14DE3	14	●	14	43	60	107
DSW141-045-16DE3	14.1	●	16	45	65	115
DSW142-045-16DE3	14.2	●	16	45	65	115
DSW143-045-16DE3	14.3	●	16	45	65	115
DSW144-045-16DE3	14.4	●	16	45	65	115
DSW145-045-16DE3	14.5	●	16	45	65	115
DSW146-045-16DE3	14.6	●	16	45	65	115
DSW147-045-16DE3	14.7	●	16	45	65	115
DSW148-045-16DE3	14.8	●	16	45	65	115
DSW149-045-16DE3	14.9	●	16	45	65	115
DSW150-045-16DE3	15	●	16	45	65	115
DSW151-045-16DE3	15.1	●	16	45	65	115
DSW152-045-16DE3	15.2	●	16	45	65	115
DSW153-045-16DE3	15.3	●	16	45	65	115
DSW154-045-16DE3	15.4	●	16	45	65	115
DSW155-045-16DE3	15.5	●	16	45	65	115
DSW156-045-16DE3	15.6	●	16	45	65	115
DSW157-045-16DE3	15.7	●	16	45	65	115
DSW158-045-16DE3	15.8	●	16	45	65	115
DSW159-045-16DE3	15.9	●	16	45	65	115
DSW160-045-16DE3	16	●	16	45	65	115

● : Line-up

SOLIDDRILL

DSW-DE5

Soliddrill with 140° point angle without oil hole & DIN shank, L/D = 5, dia = ø3 - ø16 mm



Designation	øDc	AH725	øDs	ℓe	ℓ	L	Designation	øDc	AH725	øDs	ℓe	ℓ	L
DSW030-023-06DE5	3	●	6	23	28	66	DSW082-049-10DE5	8.2	●	10	49	61	103
DSW031-023-06DE5	3.1	●	6	23	28	66	DSW083-049-10DE5	8.3	●	10	49	61	103
DSW032-023-06DE5	3.2	●	6	23	28	66	DSW084-049-10DE5	8.4	●	10	49	61	103
DSW033-023-06DE5	3.3	●	6	23	28	66	DSW085-049-10DE5	8.5	●	10	49	61	103
DSW034-023-06DE5	3.4	●	6	23	28	66	DSW086-049-10DE5	8.6	●	10	49	61	103
DSW035-023-06DE5	3.5	●	6	23	28	66	DSW087-049-10DE5	8.7	●	10	49	61	103
DSW036-023-06DE5	3.6	●	6	23	28	66	DSW088-049-10DE5	8.8	●	10	49	61	103
DSW037-023-06DE5	3.7	●	6	23	28	66	DSW089-049-10DE5	8.9	●	10	49	61	103
DSW038-029-06DE5	3.8	●	6	29	36	74	DSW090-049-10DE5	9	●	10	49	61	103
DSW039-029-06DE5	3.9	●	6	29	36	74	DSW091-049-10DE5	9.1	●	10	49	61	103
DSW040-029-06DE5	4	●	6	29	36	74	DSW092-049-10DE5	9.2	●	10	49	61	103
DSW041-029-06DE5	4.1	●	6	29	36	74	DSW093-049-10DE5	9.3	●	10	49	61	103
DSW042-029-06DE5	4.2	●	6	29	36	74	DSW094-049-10DE5	9.4	●	10	49	61	103
DSW043-029-06DE5	4.3	●	6	29	36	74	DSW095-049-10DE5	9.5	●	10	49	61	103
DSW044-029-06DE5	4.4	●	6	29	36	74	DSW096-049-10DE5	9.6	●	10	49	61	103
DSW045-029-06DE5	4.5	●	6	29	36	74	DSW097-049-10DE5	9.7	●	10	49	61	103
DSW046-029-06DE5	4.6	●	6	29	36	74	DSW098-049-10DE5	9.8	●	10	49	61	103
DSW047-029-06DE5	4.7	●	6	29	36	74	DSW099-049-10DE5	9.9	●	10	49	61	103
DSW048-035-06DE5	4.8	●	6	35	44	82	DSW100-049-10DE5	10	●	10	49	61	103
DSW049-035-06DE5	4.9	●	6	35	44	82	DSW101-056-12DE5	10.1	●	12	56	71	118
DSW050-035-06DE5	5	●	6	35	44	82	DSW102-056-12DE5	10.2	●	12	56	71	118
DSW051-035-06DE5	5.1	●	6	35	44	82	DSW103-056-12DE5	10.3	●	12	56	71	118
DSW052-035-06DE5	5.2	●	6	35	44	82	DSW104-056-12DE5	10.4	●	12	56	71	118
DSW053-035-06DE5	5.3	●	6	35	44	82	DSW105-056-12DE5	10.5	●	12	56	71	118
DSW054-035-06DE5	5.4	●	6	35	44	82	DSW106-056-12DE5	10.6	●	12	56	71	118
DSW055-035-06DE5	5.5	●	6	35	44	82	DSW107-056-12DE5	10.7	●	12	56	71	118
DSW056-035-06DE5	5.6	●	6	35	44	82	DSW108-056-12DE5	10.8	●	12	56	71	118
DSW057-035-06DE5	5.7	●	6	35	44	82	DSW109-056-12DE5	10.9	●	12	56	71	118
DSW058-035-06DE5	5.8	●	6	35	44	82	DSW110-056-12DE5	11	●	12	56	71	118
DSW059-035-06DE5	5.9	●	6	35	44	82	DSW111-056-12DE5	11.1	●	12	56	71	118
DSW060-035-06DE5	6	●	6	35	44	82	DSW112-056-12DE5	11.2	●	12	56	71	118
DSW061-043-08DE5	6.1	●	8	43	53	91	DSW113-056-12DE5	11.3	●	12	56	71	118
DSW062-043-08DE5	6.2	●	8	43	53	91	DSW114-056-12DE5	11.4	●	12	56	71	118
DSW063-043-08DE5	6.3	●	8	43	53	91	DSW115-056-12DE5	11.5	●	12	56	71	118
DSW064-043-08DE5	6.4	●	8	43	53	91	DSW116-056-12DE5	11.6	●	12	56	71	118
DSW065-043-08DE5	6.5	●	8	43	53	91	DSW117-056-12DE5	11.7	●	12	56	71	118
DSW066-043-08DE5	6.6	●	8	43	53	91	DSW118-056-12DE5	11.8	●	12	56	71	118
DSW067-043-08DE5	6.7	●	8	43	53	91	DSW119-056-12DE5	11.9	●	12	56	71	118
DSW068-043-08DE5	6.8	●	8	43	53	91	DSW120-056-12DE5	12	●	12	56	71	118
DSW069-043-08DE5	6.9	●	8	43	53	91	DSW121-060-14DE5	12.1	●	14	60	77	124
DSW070-043-08DE5	7	●	8	43	53	91	DSW122-060-14DE5	12.2	●	14	60	77	124
DSW071-043-08DE5	7.1	●	8	43	53	91	DSW123-060-14DE5	12.3	●	14	60	77	124
DSW072-043-08DE5	7.2	●	8	43	53	91	DSW124-060-14DE5	12.4	●	14	60	77	124
DSW073-043-08DE5	7.3	●	8	43	53	91	DSW125-060-14DE5	12.5	●	14	60	77	124
DSW074-043-08DE5	7.4	●	8	43	53	91	DSW126-060-14DE5	12.6	●	14	60	77	124
DSW075-043-08DE5	7.5	●	8	43	53	91	DSW127-060-14DE5	12.7	●	14	60	77	124
DSW076-043-08DE5	7.6	●	8	43	53	91	DSW128-060-14DE5	12.8	●	14	60	77	124
DSW077-043-08DE5	7.7	●	8	43	53	91	DSW129-060-14DE5	12.9	●	14	60	77	124
DSW078-043-08DE5	7.8	●	8	43	53	91	DSW130-060-14DE5	13	●	14	60	77	124
DSW079-043-08DE5	7.9	●	8	43	53	91	DSW131-060-14DE5	13.1	●	14	60	77	124
DSW080-043-08DE5	8	●	8	43	53	91	DSW132-060-14DE5	13.2	●	14	60	77	124
DSW081-049-10DE5	8.1	●	10	49	61	103	DSW133-060-14DE5	13.3	●	14	60	77	124

● : Line-up

2-effective Drill

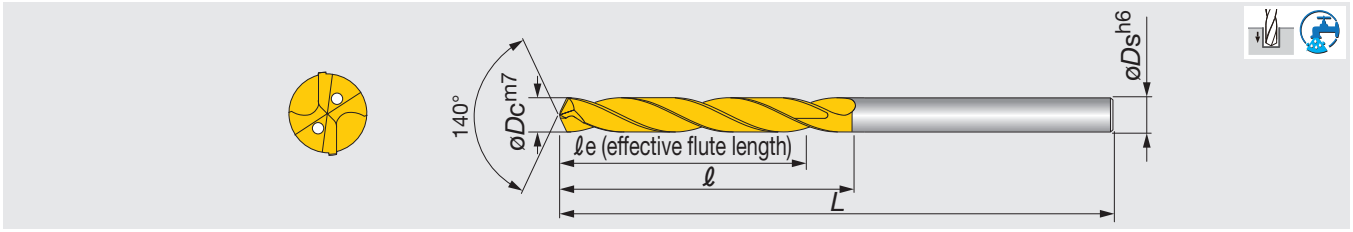
Designation	øDc	AH725	øDs	ℓe	ℓ	L
DSW134-060-14DE5	13.4	●	14	60	77	124
DSW135-060-14DE5	13.5	●	14	60	77	124
DSW136-060-14DE5	13.6	●	14	60	77	124
DSW137-060-14DE5	13.7	●	14	60	77	124
DSW138-060-14DE5	13.8	●	14	60	77	124
DSW139-060-14DE5	13.9	●	14	60	77	124
DSW140-060-14DE5	14	●	14	60	77	124
DSW141-063-16DE5	14.1	●	16	63	83	133
DSW142-063-16DE5	14.2	●	16	63	83	133
DSW143-063-16DE5	14.3	●	16	63	83	133
DSW144-063-16DE5	14.4	●	16	63	83	133
DSW145-063-16DE5	14.5	●	16	63	83	133
DSW146-063-16DE5	14.6	●	16	63	83	133
DSW147-063-16DE5	14.7	●	16	63	83	133
DSW148-063-16DE5	14.8	●	16	63	83	133
DSW149-063-16DE5	14.9	●	16	63	83	133
DSW150-063-16DE5	15	●	16	63	83	133
DSW151-063-16DE5	15.1	●	16	63	83	133
DSW152-063-16DE5	15.2	●	16	63	83	133
DSW153-063-16DE5	15.3	●	16	63	83	133
DSW154-063-16DE5	15.4	●	16	63	83	133
DSW155-063-16DE5	15.5	●	16	63	83	133
DSW156-063-16DE5	15.6	●	16	63	83	133
DSW157-063-16DE5	15.7	●	16	63	83	133
DSW158-063-16DE5	15.8	●	16	63	83	133
DSW159-063-16DE5	15.9	●	16	63	83	133
DSW160-063-16DE5	16	●	16	63	83	133

● : Line-up

SOLIDDRILL

DSW-DI5

Soliddrill with 140° point angle with oil hole & DIN shank, L/D = 5, dia = ø3 - ø16 mm



Designation	øDc	AH725	øDs	ℓe	ℓ	L	Designation	øDc	AH725	øDs	ℓe	ℓ	L
DSW030-023-06DI5	3	●	6	23	28	66	DSW082-049-10DI5	8.2	●	10	49	61	103
DSW031-023-06DI5	3.1	●	6	23	28	66	DSW083-049-10DI5	8.3	●	10	49	61	103
DSW032-023-06DI5	3.2	●	6	23	28	66	DSW084-049-10DI5	8.4	●	10	49	61	103
DSW033-023-06DI5	3.3	●	6	23	28	66	DSW085-049-10DI5	8.5	●	10	49	61	103
DSW034-023-06DI5	3.4	●	6	23	28	66	DSW086-049-10DI5	8.6	●	10	49	61	103
DSW035-023-06DI5	3.5	●	6	23	28	66	DSW087-049-10DI5	8.7	●	10	49	61	103
DSW036-023-06DI5	3.6	●	6	23	28	66	DSW088-049-10DI5	8.8	●	10	49	61	103
DSW037-023-06DI5	3.7	●	6	23	28	66	DSW089-049-10DI5	8.9	●	10	49	61	103
DSW038-029-06DI5	3.8	●	6	29	36	74	DSW090-049-10DI5	9	●	10	49	61	103
DSW039-029-06DI5	3.9	●	6	29	36	74	DSW091-049-10DI5	9.1	●	10	49	61	103
DSW040-029-06DI5	4	●	6	29	36	74	DSW092-049-10DI5	9.2	●	10	49	61	103
DSW041-029-06DI5	4.1	●	6	29	36	74	DSW093-049-10DI5	9.3	●	10	49	61	103
DSW042-029-06DI5	4.2	●	6	29	36	74	DSW094-049-10DI5	9.4	●	10	49	61	103
DSW043-029-06DI5	4.3	●	6	29	36	74	DSW095-049-10DI5	9.5	●	10	49	61	103
DSW044-029-06DI5	4.4	●	6	29	36	74	DSW096-049-10DI5	9.6	●	10	49	61	103
DSW045-029-06DI5	4.5	●	6	29	36	74	DSW097-049-10DI5	9.7	●	10	49	61	103
DSW046-029-06DI5	4.6	●	6	29	36	74	DSW098-049-10DI5	9.8	●	10	49	61	103
DSW047-029-06DI5	4.7	●	6	29	36	74	DSW099-049-10DI5	9.9	●	10	49	61	103
DSW048-035-06DI5	4.8	●	6	35	44	82	DSW100-049-10DI5	10	●	10	49	61	103
DSW049-035-06DI5	4.9	●	6	35	44	82	DSW101-056-12DI5	10.1	●	12	56	71	118
DSW050-035-06DI5	5	●	6	35	44	82	DSW102-056-12DI5	10.2	●	12	56	71	118
DSW051-035-06DI5	5.1	●	6	35	44	82	DSW103-056-12DI5	10.3	●	12	56	71	118
DSW052-035-06DI5	5.2	●	6	35	44	82	DSW104-056-12DI5	10.4	●	12	56	71	118
DSW053-035-06DI5	5.3	●	6	35	44	82	DSW105-056-12DI5	10.5	●	12	56	71	118
DSW054-035-06DI5	5.4	●	6	35	44	82	DSW106-056-12DI5	10.6	●	12	56	71	118
DSW055-035-06DI5	5.5	●	6	35	44	82	DSW107-056-12DI5	10.7	●	12	56	71	118
DSW056-035-06DI5	5.6	●	6	35	44	82	DSW108-056-12DI5	10.8	●	12	56	71	118
DSW057-035-06DI5	5.7	●	6	35	44	82	DSW109-056-12DI5	10.9	●	12	56	71	118
DSW058-035-06DI5	5.8	●	6	35	44	82	DSW110-056-12DI5	11	●	12	56	71	118
DSW059-035-06DI5	5.9	●	6	35	44	82	DSW111-056-12DI5	11.1	●	12	56	71	118
DSW060-035-06DI5	6	●	6	35	44	82	DSW112-056-12DI5	11.2	●	12	56	71	118
DSW061-043-08DI5	6.1	●	8	43	53	91	DSW113-056-12DI5	11.3	●	12	56	71	118
DSW062-043-08DI5	6.2	●	8	43	53	91	DSW114-056-12DI5	11.4	●	12	56	71	118
DSW063-043-08DI5	6.3	●	8	43	53	91	DSW115-056-12DI5	11.5	●	12	56	71	118
DSW064-043-08DI5	6.4	●	8	43	53	91	DSW116-056-12DI5	11.6	●	12	56	71	118
DSW065-043-08DI5	6.5	●	8	43	53	91	DSW117-056-12DI5	11.7	●	12	56	71	118
DSW066-043-08DI5	6.6	●	8	43	53	91	DSW118-056-12DI5	11.8	●	12	56	71	118
DSW067-043-08DI5	6.7	●	8	43	53	91	DSW119-056-12DI5	11.9	●	12	56	71	118
DSW068-043-08DI5	6.8	●	8	43	53	91	DSW120-056-12DI5	12	●	12	56	71	118
DSW069-043-08DI5	6.9	●	8	43	53	91	DSW121-060-14DI5	12.1	●	14	60	77	124
DSW070-043-08DI5	7	●	8	43	53	91	DSW122-060-14DI5	12.2	●	14	60	77	124
DSW071-043-08DI5	7.1	●	8	43	53	91	DSW123-060-14DI5	12.3	●	14	60	77	124
DSW072-043-08DI5	7.2	●	8	43	53	91	DSW124-060-14DI5	12.4	●	14	60	77	124
DSW073-043-08DI5	7.3	●	8	43	53	91	DSW125-060-14DI5	12.5	●	14	60	77	124
DSW074-043-08DI5	7.4	●	8	43	53	91	DSW126-060-14DI5	12.6	●	14	60	77	124
DSW075-043-08DI5	7.5	●	8	43	53	91	DSW127-060-14DI5	12.7	●	14	60	77	124
DSW076-043-08DI5	7.6	●	8	43	53	91	DSW128-060-14DI5	12.8	●	14	60	77	124
DSW077-043-08DI5	7.7	●	8	43	53	91	DSW129-060-14DI5	12.9	●	14	60	77	124
DSW078-043-08DI5	7.8	●	8	43	53	91	DSW130-060-14DI5	13	●	14	60	77	124
DSW079-043-08DI5	7.9	●	8	43	53	91	DSW131-060-14DI5	13.1	●	14	60	77	124
DSW080-043-08DI5	8	●	8	43	53	91	DSW132-060-14DI5	13.2	●	14	60	77	124
DSW081-049-10DI5	8.1	●	10	49	61	103	DSW133-060-14DI5	13.3	●	14	60	77	124

● : Line-up

2-effective Drill

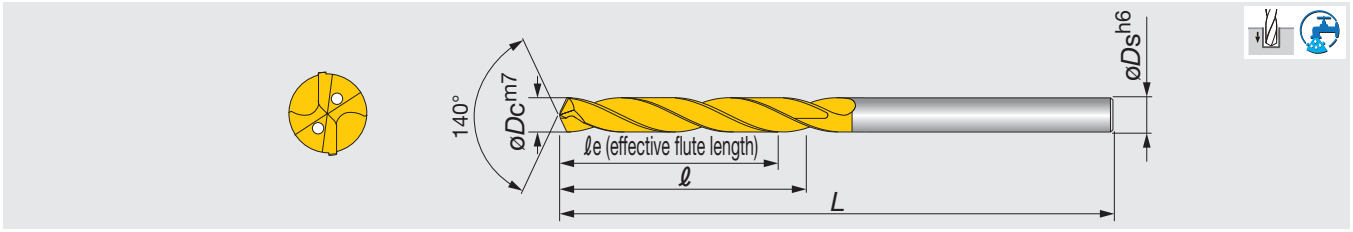
Designation	øDc	AH725	øDs	ℓe	ℓ	L
DSW134-060-14DI5	13.4	●	14	60	77	124
DSW135-060-14DI5	13.5	●	14	60	77	124
DSW136-060-14DI5	13.6	●	14	60	77	124
DSW137-060-14DI5	13.7	●	14	60	77	124
DSW138-060-14DI5	13.8	●	14	60	77	124
DSW139-060-14DI5	13.9	●	14	60	77	124
DSW140-060-14DI5	14	●	14	60	77	124
DSW141-063-16DI5	14.1	●	16	63	83	133
DSW142-063-16DI5	14.2	●	16	63	83	133
DSW143-063-16DI5	14.3	●	16	63	83	133
DSW144-063-16DI5	14.4	●	16	63	83	133
DSW145-063-16DI5	14.5	●	16	63	83	133
DSW146-063-16DI5	14.6	●	16	63	83	133
DSW147-063-16DI5	14.7	●	16	63	83	133
DSW148-063-16DI5	14.8	●	16	63	83	133
DSW149-063-16DI5	14.9	●	16	63	83	133
DSW150-063-16DI5	15	●	16	63	83	133
DSW151-063-16DI5	15.1	●	16	63	83	133
DSW152-063-16DI5	15.2	●	16	63	83	133
DSW153-063-16DI5	15.3	●	16	63	83	133
DSW154-063-16DI5	15.4	●	16	63	83	133
DSW155-063-16DI5	15.5	●	16	63	83	133
DSW156-063-16DI5	15.6	●	16	63	83	133
DSW157-063-16DI5	15.7	●	16	63	83	133
DSW158-063-16DI5	15.8	●	16	63	83	133
DSW159-063-16DI5	15.9	●	16	63	83	133
DSW160-063-16DI5	16	●	16	63	83	133

● : Line-up

SOLIDDRILL

DSW-DI8

Soliddrill with 140° point angle with oil hole & DIN shank, L/D = 8, dia = ø3 - ø10 mm



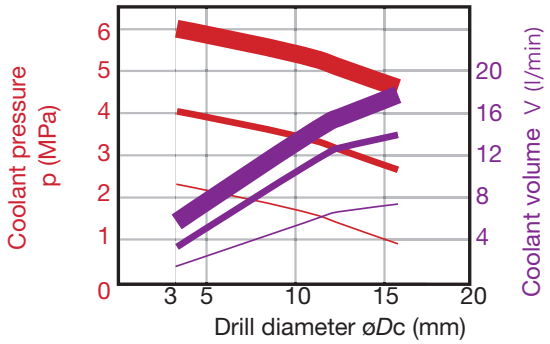
Designation	øDc	AH725	øDs	ℓe	ℓ	L
DSW030-029-06DI8	3	●	6	29	34	72
DSW031-029-06DI8	3.1	●	6	29	34	72
DSW032-029-06DI8	3.2	●	6	29	34	72
DSW033-029-06DI8	3.3	●	6	29	34	72
DSW034-029-06DI8	3.4	●	6	29	34	72
DSW035-029-06DI8	3.5	●	6	29	34	72
DSW036-029-06DI8	3.6	●	6	29	34	72
DSW037-029-06DI8	3.7	●	6	29	34	72
DSW038-036-06DI8	3.8	●	6	36	43	81
DSW039-036-06DI8	3.9	●	6	36	43	81
DSW040-036-06DI8	4	●	6	36	43	81
DSW041-036-06DI8	4.1	●	6	36	43	81
DSW042-036-06DI8	4.2	●	6	36	43	81
DSW043-036-06DI8	4.3	●	6	36	43	81
DSW044-036-06DI8	4.4	●	6	36	43	81
DSW045-036-06DI8	4.5	●	6	36	43	81
DSW046-036-06DI8	4.6	●	6	36	43	81
DSW047-036-06DI8	4.7	●	6	36	43	81
DSW048-048-06DI8	4.8	●	6	48	57	95
DSW049-048-06DI8	4.9	●	6	48	57	95
DSW050-048-06DI8	5	●	6	48	57	95
DSW051-048-06DI8	5.1	●	6	48	57	95
DSW052-048-06DI8	5.2	●	6	48	57	95
DSW053-048-06DI8	5.3	●	6	48	57	95
DSW054-048-06DI8	5.4	●	6	48	57	95
DSW055-048-06DI8	5.5	●	6	48	57	95
DSW056-048-06DI8	5.6	●	6	48	57	95
DSW057-048-06DI8	5.7	●	6	48	57	95
DSW058-048-06DI8	5.8	●	6	48	57	95
DSW059-048-06DI8	5.9	●	6	48	57	95
DSW060-048-06DI8	6	●	6	48	57	95
DSW061-064-08DI8	6.1	●	8	64	76	114
DSW062-064-08DI8	6.2	●	8	64	76	114
DSW063-064-08DI8	6.3	●	8	64	76	114
DSW064-064-08DI8	6.4	●	8	64	76	114
DSW065-064-08DI8	6.5	●	8	64	76	114
DSW066-064-08DI8	6.6	●	8	64	76	114
DSW067-064-08DI8	6.7	●	8	64	76	114
DSW068-064-08DI8	6.8	●	8	64	76	114
DSW069-064-08DI8	6.9	●	8	64	76	114
DSW070-064-08DI8	7	●	8	64	76	114
DSW071-064-08DI8	7.1	●	8	64	76	114
DSW072-064-08DI8	7.2	●	8	64	76	114
DSW073-064-08DI8	7.3	●	8	64	76	114
DSW074-064-08DI8	7.4	●	8	64	76	114
DSW075-064-08DI8	7.5	●	8	64	76	114
DSW076-064-08DI8	7.6	●	8	64	76	114
DSW077-064-08DI8	7.7	●	8	64	76	114
DSW078-064-08DI8	7.8	●	8	64	76	114
DSW079-064-08DI8	7.9	●	8	64	76	114
DSW080-064-08DI8	8	●	8	64	76	114
DSW081-080-10DI8	8.1	●	10	80	95	142

Designation	øDc	AH725	øDs	ℓe	ℓ	L
DSW082-080-10DI8	8.2	●	10	80	95	142
DSW083-080-10DI8	8.3	●	10	80	95	142
DSW084-080-10DI8	8.4	●	10	80	95	142
DSW085-080-10DI8	8.5	●	10	80	95	142
DSW086-080-10DI8	8.6	●	10	80	95	142
DSW087-080-10DI8	8.7	●	10	80	95	142
DSW088-080-10DI8	8.8	●	10	80	95	142
DSW089-080-10DI8	8.9	●	10	80	95	142
DSW090-080-10DI8	9	●	10	80	95	142
DSW091-080-10DI8	9.1	●	10	80	95	142
DSW092-080-10DI8	9.2	●	10	80	95	142
DSW093-080-10DI8	9.3	●	10	80	95	142
DSW094-080-10DI8	9.4	●	10	80	95	142
DSW095-080-10DI8	9.5	●	10	80	95	142
DSW096-080-10DI8	9.6	●	10	80	95	142
DSW097-080-10DI8	9.7	●	10	80	95	142
DSW098-080-10DI8	9.8	●	10	80	95	142
DSW099-080-10DI8	9.9	●	10	80	95	142
DSW100-080-10DI8	10	●	10	80	95	142

● : Line-up

Recommended coolant pressure and volume for internal coolant supply:

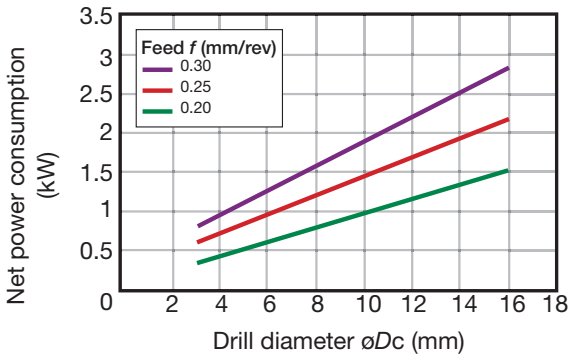
The following graph is a reference guide for pressure and volume. Values should be adjusted according to work material and actual chip evacuation.



: Ideal pressure
: Enough pressure
: Minimum pressure
: Ideal volume
: Enough volume
: Minimum volume

Reference for required spindle power:

The required spindle power may vary depending on the type of work material or hardness. A spindle with sufficient power should be used when referring to the below graph.



Work material : Alloy steel (SNCM439)
Cutting speed : *Vc* = 100 m/min

Designation system

DSW ① **088** ② - **035** ③ - **10** ④ - **D** ⑤ **E** ⑥ **3** ⑦

① Series	
DSW	Series name of solid drill

② Drill dia. ø*Dc* (mm)	
088	ø8.8

③ Effective flute length ℓe (mm)	
035	35

④ Shank diameter ø*Ds* (mm)	
10	ø10

⑤ DIN 6535 - Form HA

⑥ Coolant Supply	
E	External (without coolant hole)
I	Internal (with coolant hole)

⑦ Drilling depth
Approximate value of L/D ratio. Caution: Code may be different from the actual length. This is dependent upon the tool diameter.

Caution: "Effective flute length" shows the maximum flute length for effective chip evacuation. The actual drilling depth may be shorter than described depending on the work material or cutting conditions.

STANDARD CUTTING CONDITIONS

DSW-DE (External supply)

ISO	Workpiece material	Brinell hardness (HB)	Cutting speed: *Vc* (m/min)			Feed: *f* (mm/rev)		
			ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16
P	Low carbon steels (C < 0.3) C15E4, E275A, E355D, etc.	~ 180	40 - 100	60 - 120	60 - 130	0.15 - 0.3	0.15 - 0.35	0.2 - 0.5
P	Carbon steels (C > 0.3) C45, C55, etc.	180 ~ 300	40 - 90	50 - 120	60 - 130	0.15 - 0.3	0.15 - 0.35	0.2 - 0.4
P	High alloy steels 42CrMo4, etc.	250 ~ 350	40 - 80	50 - 100	50 - 100	0.1 - 0.2	0.15 - 0.3	0.15 - 0.35
M	Stainless steels X5CrNi18-9, etc.	~ 200	20 - 40	30 - 50	30 - 60	0.05 - 0.2	0.1 - 0.25	0.1 - 0.3
K	Grey cast irons 250, etc.	~ 200	40 - 90	50 - 95	50 - 100	0.15 - 0.3	0.2 - 0.4	0.2 - 0.5
K	Ductile cast irons 450-10S, etc.	~ 300	30 - 80	40 - 90	45 - 90	0.1 - 0.3	0.2 - 0.4	0.2 - 0.4
N	Aluminium alloys AlSi11Cu3, etc.	-	40 - 90	50 - 100	50 - 100	0.15 - 0.3	0.2 - 0.4	0.2 - 0.5
S	Titanium alloys Ti-6Al-4V, etc.	-	20 - 40	20 - 40	20 - 40	0.1 - 0.2	0.15 - 0.25	0.15 - 0.4
S	Heat-resistant alloys, Inconel Inconel 718, etc.	250 ~	10 - 30	10 - 30	10 - 30	0.03 - 0.07	0.05 - 0.1	0.07 - 0.12
H	High hardened steels X153CrMoV12, etc.	~ 40HRC	20 - 40	20 - 40	20 - 40	0.05 - 0.15	0.05 - 0.15	0.05 - 0.2

· The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges.
· When using the smaller diameter tools in each range, set the feed "*f*" to the lower recommended values.
· The coolant supply is critical for the provision of stable machining conditions and enhanced tool life. A large coolant volume should be supplied, especially when drilling difficult-to-cut materials.
· When drilling stainless steel with low machinability such as austenitic stainless steel with a depth deeper than L/D = 3, a pecking cycle or internal coolant supply is recommended.

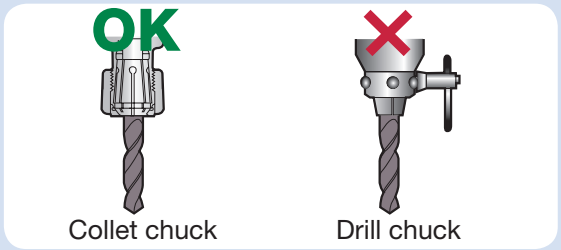
DSW-DI (Internal supply)

ISO	Workpiece material	Brinell hardness (HB)	Cutting speed: *Vc* (m/min)			Feed: *f* (mm/rev)		
			ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø16
P	Low carbon steels (C < 0.3) C15E4, E275A, E355D, etc.	~ 180	70 - 140	80 - 160	90 - 190	0.15 - 0.3	0.15 - 0.35	0.2 - 0.5
P	Carbon steels (C > 0.3) C45, C55, etc.	180 ~ 300	50 - 130	70 - 160	80 - 170	0.15 - 0.3	0.15 - 0.35	0.2 - 0.4
P	High alloy steels 42CrMo4, etc.	250 ~ 350	40 - 100	60 - 140	60 - 160	0.1 - 0.2	0.15 - 0.3	0.15 - 0.35
M	Stainless steels X5CrNi18-9, etc.	~ 200	25 - 75	50 - 100	50 - 120	0.05 - 0.2	0.1 - 0.25	0.1 - 0.3
K	Grey cast irons 250, etc.	~ 200	80 - 140	100 - 160	100 - 180	0.15 - 0.3	0.2 - 0.4	0.2 - 0.5
K	Ductile cast irons 450-10S, etc.	~ 300	70 - 140	80 - 150	80 - 170	0.1 - 0.3	0.2 - 0.4	0.2 - 0.45
N	Aluminium alloys AlSi11Cu3, etc.	-	60 - 200	60 - 200	60 - 200	0.15 - 0.3	0.2 - 0.4	0.2 - 0.5
S	Titanium alloys Ti-6Al-4V, etc.	-	20 - 60	30 - 80	30 - 80	0.1 - 0.2	0.1 - 0.25	0.15 - 0.4
S	Heat-resistant alloys, Inconel Inconel 718, etc.	250 ~	10 - 30	10 - 40	10 - 40	0.03 - 0.07	0.05 - 0.1	0.07 - 0.15
H	High hardened steels X153CrMoV12, etc.	~ 40HRC	20 - 50	30 - 60	30 - 60	0.05 - 0.15	0.05 - 0.15	0.05 - 0.2

· The cutting parameters shown in the table are merely a starting guideline for general machining. Values should be varied depending on the power or rigidity of the machine to be used. Optimum conditions should be selected depending on the actual chip control or damage on edges.
· When using the smaller diameter tools in each range, set the feed "*f*" to the lower recommended values.
· Oil holes that become blocked may cause drill breakages. A filter to prevent the circulation of chips must be used on the coolant supply system.

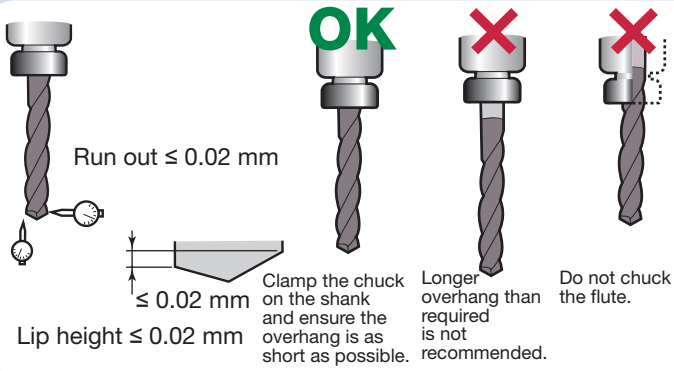
●Holders for solid carbide drills:

A collet chuck holder is recommended for use with carbide drills. When using a milling chuck holder, a collet chuck with a straight shank or straight collet should be used.



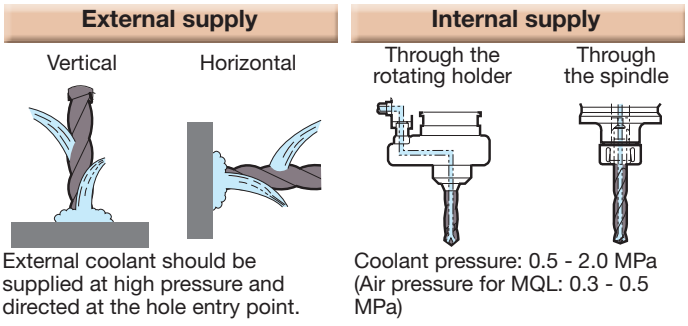
●Chucking drills:

- Radial run out and lip height should be less than 0.02mm. If run out or lip height is larger (close to 0.05mm), machining is possible. However, less accurate holes or short tool life may be a result.
- Overhang length should be as short as possible.



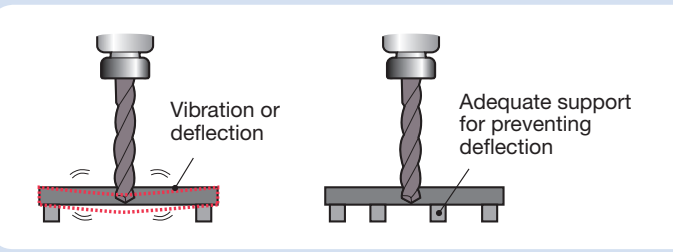
●Coolant Supply:

When using a drill without a coolant hole, such as the DSW-DE type, coolant should always be directed to the entrance of the hole. Maintaining this supplying is very important for stable drilling performance.



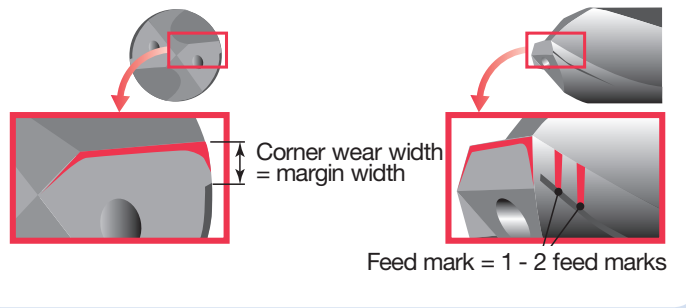
●Clamping workpieces:

As solid carbide drills have a higher thrust force, machining with low rigidity or inadequate support can cause fractures or breakages through vibration. It is important the workpiece is rigidly clamped and has adequate support.



●The criteria of tool life:

- Corner wear width: equal to margin width
- Feed mark: 1 - 2 feed marks on the margin
- Spindle load increase: 30% higher than starting level
- Irregular situation: worse chip control, hole diameter change, worse surface finish, larger burrs, bigger sound.



Regrinding Procedures

Regrinding method [Applied to DSW]

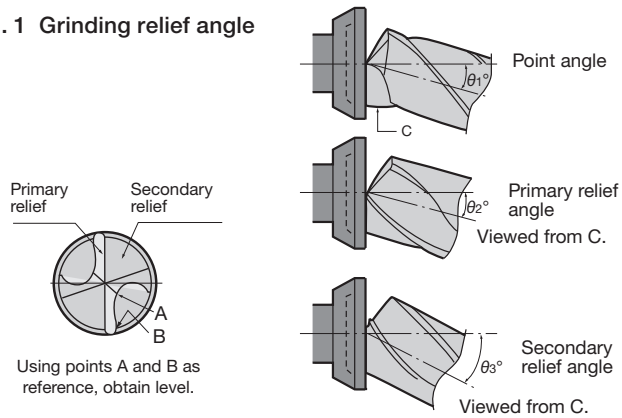
Before regrinding
Check the cutting edge for damage and wear. If any large fracture is found, remove with a silicon carbide wheel.

(1) Grinding the flank

● Use a 280 to 400 grit diamond cup type wheel of 100 ~ 200 mm in diameter.

1) Grind the relief surface so that primary relief angle (θ) of 2° can be formed as shown in Fig.1. After grinding the other side likewise, do sparkout grinding so that the difference of the lip height will be kept within 0.02 mm.
2) In the cases of DSW types: After grinding the primary relief angle (θ) 2°, without rotating the drill, grind the secondary relief surface so that the relief angle (θ) of 3° can be formed. In the same way as 2), take care to bring the ridge line formed between the primary and secondary relief surfaces to the drill center. (Values (θ) of 1° ~ 3° are shown in Table 1)

Fig. 1 Grinding relief angle



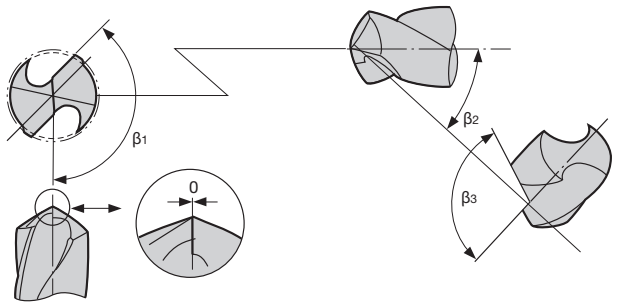
(2) Thinning

- Use a 280 ~ 400 grit diamond straight-type wheel of 100 ~ 200 mm in diameter.
- Conduct thinning in the same manner as cross thinning (X-type).
- Values of β1 to β3 written in the figures are given in the Table 2.

Table 1	θ1 (Point angle)	θ2 (Primary relief angle)	θ3 (Secondary relief angle)
DSW	–20°	–6° ~ –12°	–23° ~ –27°

Table 2	β1	β2	β3
DSW	147° ~ 153°	30° ~ 42°	95° ~ 110°

Fig. 2



(3) Honing

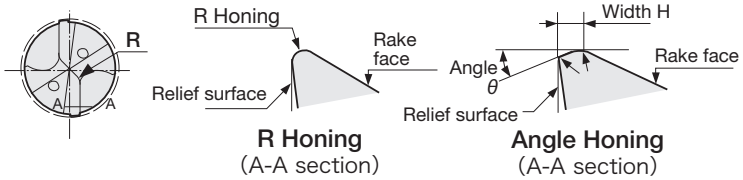
- The honing angle θ and width H should be varied depending on the drill type, diameter, and work material. Recommended honing specifications are given in the Table below.
- Honing procedures (refer to Fig.3)
  (1) Round the R portion shown in Fig.3 in large.
  (2) Then, roughly hone the cutting edge lines by using an electro-deposited diamond file of around 170 grit.
  (3) Carry out finish honing by using a diamond hand stick of 400 to 600 grit.
- The honing width should be changed depending on the drill diameter. For smaller side of diameters, the width should be in smaller side of values given in the Table.

• Angle honing

	~ ø6 mm	ø6 ~ ø10 mm	ø10 ~ ø16 mm
θ	- 20°	- 20°	- 20°
H	0.03 ~ 0.05	0.05 ~ 0.08	0.08 ~ 0.1

• R Honing

Dimensions (mm)	R Honing R (mm)
ø*D*c ≤ ø6	0.02 ~ 0.04
ø6 < ø*D*c ≤ ø16	0.03 ~ 0.05



After regrinding, check the following before use.

- The difference of the lip height is kept within 0.02 mm.
- Any damaged portion on the cutting edges is not left.
- Cutting edges are properly honed.
- Any grinding burr is not left.

Notes:
- For more details on regrinding, consult the nearest Tungaloy sales office.

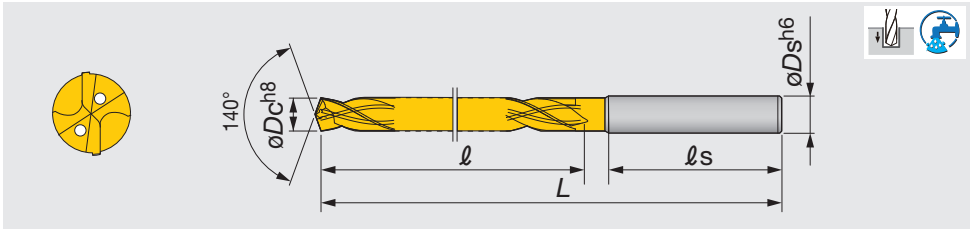
MEMO

GIGA JETDRILL

DSX-F03

Soliddrill with 140° point angle with oil hole & shank size to nearest mm, L/D = 3, dia = ø3 - ø20 mm





Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSX0300F03	3	●	3	15	48	68
DSX0310F03	3.1	●	4	18	48	71
DSX0320F03	3.2	●	4	18	48	71
DSX0330F03	3.3	●	4	18	48	71
DSX0340F03	3.4	●	4	18	48	71
DSX0350F03	3.5	●	4	18	48	71
DSX0360F03	3.6	●	4	20	48	73
DSX0370F03	3.7	●	4	20	48	73
DSX0380F03	3.8	●	4	20	48	73
DSX0390F03	3.9	●	4	20	48	73
DSX0400F03	4	●	4	20	48	73
DSX0410F03	4.1	●	5	23	50	78
DSX0420F03	4.2	●	5	23	50	78
DSX0430F03	4.3	●	5	23	50	78
DSX0440F03	4.4	●	5	23	50	78
DSX0450F03	4.5	●	5	23	50	78
DSX0460F03	4.6	●	5	25	50	80
DSX0470F03	4.7	●	5	25	50	80
DSX0480F03	4.8	●	5	25	50	80
DSX0490F03	4.9	●	5	25	50	80
DSX0500F03	5	●	5	25	50	80
DSX0510F03	5.1	●	6	28	52	82
DSX0520F03	5.2	●	6	28	52	82
DSX0530F03	5.3	●	6	28	52	82
DSX0540F03	5.4	●	6	28	52	82
DSX0550F03	5.5	●	6	28	52	82
DSX0560F03	5.6	●	6	30	52	82
DSX0570F03	5.7	●	6	30	52	82
DSX0580F03	5.8	●	6	30	52	82
DSX0590F03	5.9	●	6	30	52	82
DSX0600F03	6	●	6	30	52	82
DSX0610F03	6.1	●	7	33	53	86
DSX0620F03	6.2	●	7	33	53	86
DSX0630F03	6.3	●	7	33	53	86
DSX0640F03	6.4	●	7	33	53	86
DSX0650F03	6.5	●	7	33	53	86
DSX0660F03	6.6	●	7	35	53	88
DSX0670F03	6.7	●	7	35	53	88
DSX0680F03	6.8	●	7	35	53	88
DSX0690F03	6.9	●	7	35	53	88
DSX0700F03	7	●	7	35	53	88
DSX0710F03	7.1	●	8	38	54	92
DSX0720F03	7.2	●	8	38	54	92
DSX0730F03	7.3	●	8	38	54	92
DSX0740F03	7.4	●	8	38	54	92
DSX0750F03	7.5	●	8	38	54	92
DSX0760F03	7.6	●	8	40	54	94
DSX0770F03	7.7	●	8	40	54	94
DSX0780F03	7.8	●	8	40	54	94
DSX0790F03	7.9	●	8	40	54	94
DSX0800F03	8	●	8	40	54	94
DSX0810F03	8.1	●	9	43	55	100
DSX0820F03	8.2	●	9	43	55	100
DSX0830F03	8.3	●	9	43	55	100
DSX0840F03	8.4	●	9	43	55	100
DSX0850F03	8.5	●	9	43	55	100
DSX0860F03	8.6	●	9	45	55	100
DSX0870F03	8.7	●	9	45	55	100
DSX0880F03	8.8	●	9	45	55	100
DSX0890F03	8.9	●	9	45	55	100
DSX0900F03	9	●	9	45	55	100
DSX0910F03	9.1	●	10	48	56	106
DSX0920F03	9.2	●	10	48	56	106

Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSX0930F03	9.3	●	10	48	56	106
DSX0940F03	9.4	●	10	48	56	106
DSX0950F03	9.5	●	10	48	56	106
DSX0960F03	9.6	●	10	50	56	106
DSX0970F03	9.7	●	10	50	56	106
DSX0980F03	9.8	●	10	50	56	106
DSX0990F03	9.9	●	10	50	56	106
DSX1000F03	10	●	10	50	56	106
DSX1010F03	10.1	●	11	53	61	116
DSX1020F03	10.2	●	11	53	61	116
DSX1030F03	10.3	●	11	53	61	116
DSX1040F03	10.4	●	11	53	61	116
DSX1050F03	10.5	●	11	53	61	116
DSX1060F03	10.6	●	11	55	61	116
DSX1070F03	10.7	●	11	55	61	116
DSX1080F03	10.8	●	11	55	61	116
DSX1090F03	10.9	●	11	55	61	116
DSX1100F03	11	●	11	55	61	116
DSX1110F03	11.1	●	12	58	62	122
DSX1120F03	11.2	●	12	58	62	122
DSX1130F03	11.3	●	12	58	62	122
DSX1140F03	11.4	●	12	58	62	122
DSX1150F03	11.5	●	12	58	62	122
DSX1160F03	11.6	●	12	60	62	122
DSX1170F03	11.7	●	12	60	62	122
DSX1180F03	11.8	●	12	60	62	122
DSX1190F03	11.9	●	12	60	62	122
DSX1200F03	12	●	12	60	62	122
DSX1210F03	12.1	●	13	65	63	128
DSX1220F03	12.2	●	13	65	63	128
DSX1230F03	12.3	●	13	65	63	128
DSX1240F03	12.4	●	13	65	63	128
DSX1250F03	12.5	●	13	65	63	128
DSX1260F03	12.6	●	13	65	63	128
DSX1270F03	12.7	●	13	65	63	128
DSX1280F03	12.8	●	13	65	63	128
DSX1290F03	12.9	●	13	65	63	128
DSX1300F03	13	●	13	65	63	128
DSX1310F03	13.1	●	14	70	64	134
DSX1320F03	13.2	●	14	70	64	134
DSX1330F03	13.3	●	14	70	64	134
DSX1340F03	13.4	●	14	70	64	134
DSX1350F03	13.5	●	14	70	64	134
DSX1360F03	13.6	●	14	70	64	134
DSX1370F03	13.7	●	14	70	64	134
DSX1380F03	13.8	●	14	70	64	134
DSX1390F03	13.9	●	14	70	64	134
DSX1400F03	14	●	14	70	64	134
DSX1410F03	14.1	●	15	75	65	140
DSX1420F03	14.2	●	15	75	65	140
DSX1430F03	14.3	●	15	75	65	140
DSX1440F03	14.4	●	15	75	65	140
DSX1450F03	14.5	●	15	75	65	140
DSX1460F03	14.6	●	15	75	65	140
DSX1470F03	14.7	●	15	75	65	140
DSX1480F03	14.8	●	15	75	65	140
DSX1490F03	14.9	●	15	75	65	140
DSX1500F03	15	●	15	75	65	140
DSX1510F03	15.1	●	16	80	66	146
DSX1520F03	15.2	●	16	80	66	146
DSX1530F03	15.3	●	16	80	66	146
DSX1540F03	15.4	●	16	80	66	146
DSX1550F03	15.5	●	16	80	66	146

● : Line-up

Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSX1560F03	15.6	●	16	80	66	146
DSX1570F03	15.7	●	16	80	66	146
DSX1580F03	15.8	●	16	80	66	146
DSX1590F03	15.9	●	16	80	66	146
DSX1600F03	16	●	16	80	66	146
DSX1650F03	16.5	●	17	85	67	152
DSX1700F03	17	●	17	85	67	152
DSX1750F03	17.5	●	18	90	68	158
DSX1800F03	18	●	18	90	68	158
DSX1850F03	18.5	●	19	95	69	164
DSX1900F03	19	●	19	95	69	164
DSX1950F03	19.5	●	20	100	70	170
DSX2000F03	20	●	20	100	70	170

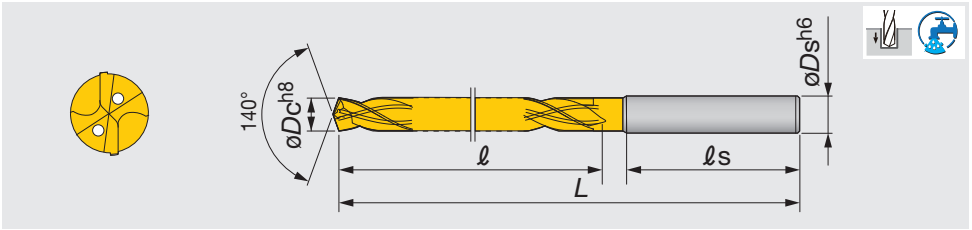
● : Line-up

GIGA JETDRILL

DSX-F05

Soliddrill with 140° point angle with oil hole & shank size to nearest mm, L/D = 5, dia = ø3 - ø20 mm





Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSX0300F05	3	●	3	24	48	77
DSX0310F05	3.1	●	4	28	48	81
DSX0320F05	3.2	●	4	28	48	81
DSX0330F05	3.3	●	4	28	48	81
DSX0340F05	3.4	●	4	28	48	81
DSX0350F05	3.5	●	4	28	48	81
DSX0360F05	3.6	●	4	32	48	85
DSX0370F05	3.7	●	4	32	48	85
DSX0380F05	3.8	●	4	32	48	85
DSX0390F05	3.9	●	4	32	48	85
DSX0400F05	4	●	4	32	48	85
DSX0410F05	4.1	●	5	36	50	91
DSX0420F05	4.2	●	5	36	50	91
DSX0430F05	4.3	●	5	36	50	91
DSX0440F05	4.4	●	5	36	50	91
DSX0450F05	4.5	●	5	36	50	91
DSX0460F05	4.6	●	5	40	50	94
DSX0470F05	4.7	●	5	40	50	94
DSX0480F05	4.8	●	5	40	50	94
DSX0490F05	4.9	●	5	40	50	94
DSX0500F05	5	●	5	40	50	94
DSX0510F05	5.1	●	6	44	52	96
DSX0520F05	5.2	●	6	44	52	96
DSX0530F05	5.3	●	6	44	52	96
DSX0540F05	5.4	●	6	44	52	96
DSX0550F05	5.5	●	6	44	52	96
DSX0560F05	5.6	●	6	48	52	100
DSX0570F05	5.7	●	6	48	52	100
DSX0580F05	5.8	●	6	48	52	100
DSX0590F05	5.9	●	6	48	52	100
DSX0600F05	6	●	6	48	52	100
DSX0610F05	6.1	●	7	52	53	105
DSX0620F05	6.2	●	7	52	53	105
DSX0630F05	6.3	●	7	52	53	105
DSX0640F05	6.4	●	7	52	53	105
DSX0650F05	6.5	●	7	52	53	105
DSX0660F05	6.6	●	7	56	53	109
DSX0670F05	6.7	●	7	56	53	109
DSX0680F05	6.8	●	7	56	53	109
DSX0690F05	6.9	●	7	56	53	109
DSX0700F05	7	●	7	56	53	109
DSX0710F05	7.1	●	8	60	54	114
DSX0720F05	7.2	●	8	60	54	114
DSX0730F05	7.3	●	8	60	54	114
DSX0740F05	7.4	●	8	60	54	114
DSX0750F05	7.5	●	8	60	54	114
DSX0760F05	7.6	●	8	64	54	118
DSX0770F05	7.7	●	8	64	54	118
DSX0780F05	7.8	●	8	64	54	118
DSX0790F05	7.9	●	8	64	54	118
DSX0800F05	8	●	8	64	54	118
DSX0810F05	8.1	●	9	68	55	127
DSX0820F05	8.2	●	9	68	55	127
DSX0830F05	8.3	●	9	68	55	127
DSX0840F05	8.4	●	9	68	55	127
DSX0850F05	8.5	●	9	68	55	127
DSX0860F05	8.6	●	9	72	55	127
DSX0870F05	8.7	●	9	72	55	127
DSX0880F05	8.8	●	9	72	55	127
DSX0890F05	8.9	●	9	72	55	127
DSX0900F05	9	●	9	72	55	127
DSX0910F05	9.1	●	10	76	56	136
DSX0920F05	9.2	●	10	76	56	136

Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSX0930F05	9.3	●	10	76	56	136
DSX0940F05	9.4	●	10	76	56	136
DSX0950F05	9.5	●	10	76	56	136
DSX0960F05	9.6	●	10	80	56	136
DSX0970F05	9.7	●	10	80	56	136
DSX0980F05	9.8	●	10	80	56	136
DSX0990F05	9.9	●	10	80	56	136
DSX1000F05	10	●	10	80	56	136
DSX1010F05	10.1	●	11	84	61	149
DSX1020F05	10.2	●	11	84	61	149
DSX1030F05	10.3	●	11	84	61	149
DSX1040F05	10.4	●	11	84	61	149
DSX1050F05	10.5	●	11	84	61	149
DSX1060F05	10.6	●	11	88	61	149
DSX1070F05	10.7	●	11	88	61	149
DSX1080F05	10.8	●	11	88	61	149
DSX1090F05	10.9	●	11	88	61	149
DSX1100F05	11	●	11	88	61	149
DSX1110F05	11.1	●	12	92	62	158
DSX1120F05	11.2	●	12	92	62	158
DSX1130F05	11.3	●	12	92	62	158
DSX1140F05	11.4	●	12	92	62	158
DSX1150F05	11.5	●	12	92	62	158
DSX1160F05	11.6	●	12	96	62	158
DSX1170F05	11.7	●	12	96	62	158
DSX1180F05	11.8	●	12	96	62	158
DSX1190F05	11.9	●	12	96	62	158
DSX1200F05	12	●	12	96	62	158
DSX1210F05	12.1	●	13	104	63	167
DSX1220F05	12.2	●	13	104	63	167
DSX1230F05	12.3	●	13	104	63	167
DSX1240F05	12.4	●	13	104	63	167
DSX1250F05	12.5	●	13	104	63	167
DSX1260F05	12.6	●	13	104	63	167
DSX1270F05	12.7	●	13	104	63	167
DSX1280F05	12.8	●	13	104	63	167
DSX1290F05	12.9	●	13	104	63	167
DSX1300F05	13	●	13	104	63	167
DSX1310F05	13.1	●	14	112	64	176
DSX1320F05	13.2	●	14	112	64	176
DSX1330F05	13.3	●	14	112	64	176
DSX1340F05	13.4	●	14	112	64	176
DSX1350F05	13.5	●	14	112	64	176
DSX1360F05	13.6	●	14	112	64	176
DSX1370F05	13.7	●	14	112	64	176
DSX1380F05	13.8	●	14	112	64	176
DSX1390F05	13.9	●	14	112	64	176
DSX1400F05	14	●	14	112	64	176
DSX1410F05	14.1	●	15	120	65	185
DSX1420F05	14.2	●	15	120	65	185
DSX1430F05	14.3	●	15	120	65	185
DSX1440F05	14.4	●	15	120	65	185
DSX1450F05	14.5	●	15	120	65	185
DSX1460F05	14.6	●	15	120	65	185
DSX1470F05	14.7	●	15	120	65	185
DSX1480F05	14.8	●	15	120	65	185
DSX1490F05	14.9	●	15	120	65	185
DSX1500F05	15	●	15	120	65	185
DSX1510F05	15.1	●	16	128	66	194
DSX1520F05	15.2	●	16	128	66	194
DSX1530F05	15.3	●	16	128	66	194
DSX1540F05	15.4	●	16	128	66	194
DSX1550F05	15.5	●	16	128	66	194

● : Line-up

Designation	øD_C	AH180	øD_S	ℓ	ℓ_S	L
DSX1560F05	15.6	●	16	128	66	194
DSX1570F05	15.7	●	16	128	66	194
DSX1580F05	15.8	●	16	128	66	194
DSX1590F05	15.9	●	16	128	66	194
DSX1600F05	16	●	16	128	66	194
DSX1650F05	16.5	●	17	136	67	203
DSX1700F05	17	●	17	136	67	203
DSX1750F05	17.5	●	18	144	68	212
DSX1800F05	18	●	18	144	68	212
DSX1850F05	18.5	●	19	152	69	221
DSX1900F05	19	●	19	152	69	221
DSX1950F05	19.5	●	20	160	70	230
DSX2000F05	20	●	20	160	70	230

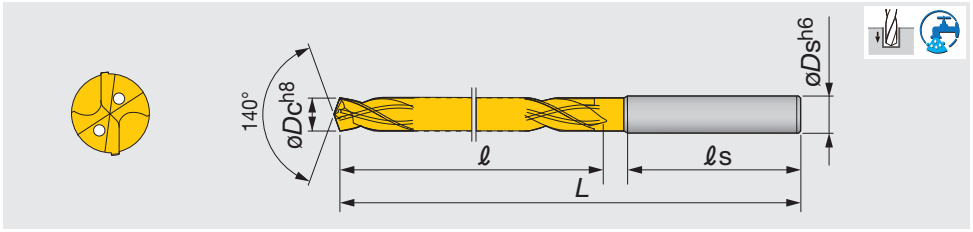
● : Line-up

GIGA JETDRILL

DSX-F08

Soliddrill with 140° point angle with oil hole & shank size to nearest mm, L/D = 8, dia = ø3 - ø16 mm





Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSX0300F08	3	●	3	33	48	86
DSX0310F08	3.1		4	39	48	92
DSX0320F08	3.2		4	39	48	92
DSX0330F08	3.3		4	39	48	92
DSX0340F08	3.4		4	39	48	92
DSX0350F08	3.5	●	4	39	48	92
DSX0360F08	3.6		4	44	48	97
DSX0370F08	3.7		4	44	48	97
DSX0380F08	3.8		4	44	48	97
DSX0390F08	3.9		4	44	48	97
DSX0400F08	4	●	4	44	48	97
DSX0410F08	4.1		5	50	50	105
DSX0420F08	4.2		5	50	50	105
DSX0430F08	4.3		5	50	50	105
DSX0440F08	4.4		5	50	50	105
DSX0450F08	4.5	●	5	50	50	105
DSX0460F08	4.6		5	55	50	110
DSX0470F08	4.7		5	55	50	110
DSX0480F08	4.8		5	55	50	110
DSX0490F08	4.9		5	55	50	110
DSX0500F08	5	●	5	55	50	110
DSX0510F08	5.1	●	6	61	52	113
DSX0520F08	5.2		6	61	52	113
DSX0530F08	5.3		6	61	52	113
DSX0540F08	5.4		6	61	52	113
DSX0550F08	5.5	●	6	61	52	113
DSX0560F08	5.6		6	66	52	118
DSX0570F08	5.7		6	66	52	118
DSX0580F08	5.8		6	66	52	118
DSX0590F08	5.9		6	66	52	118
DSX0600F08	6	●	6	66	52	118
DSX0610F08	6.1		7	72	53	125
DSX0620F08	6.2		7	72	53	125
DSX0630F08	6.3		7	72	53	125
DSX0640F08	6.4		7	72	53	125
DSX0650F08	6.5	●	7	72	53	125
DSX0660F08	6.6		7	77	53	130
DSX0670F08	6.7		7	77	53	130
DSX0680F08	6.8		7	77	53	130
DSX0690F08	6.9		7	77	53	130
DSX0700F08	7	●	7	77	53	130
DSX0710F08	7.1		8	83	54	137
DSX0720F08	7.2		8	83	54	137
DSX0730F08	7.3		8	83	54	137
DSX0740F08	7.4		8	83	54	137
DSX0750F08	7.5	●	8	83	54	137
DSX0760F08	7.6		8	88	54	142
DSX0770F08	7.7		8	88	54	142
DSX0780F08	7.8		8	88	54	142
DSX0790F08	7.9		8	88	54	142
DSX0800F08	8	●	8	88	54	142
DSX0810F08	8.1		9	94	55	154
DSX0820F08	8.2		9	94	55	154
DSX0830F08	8.3	●	9	94	55	154
DSX0840F08	8.4		9	94	55	154
DSX0850F08	8.5	●	9	94	55	154
DSX0860F08	8.6		9	99	55	154
DSX0870F08	8.7		9	99	55	154
DSX0880F08	8.8		9	99	55	154
DSX0890F08	8.9		9	99	55	154
DSX0900F08	9	●	9	99	55	154
DSX0910F08	9.1		10	105	56	166
DSX0920F08	9.2		10	105	56	166

Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSX0930F08	9.3		10	105	56	166
DSX0940F08	9.4		10	105	56	166
DSX0950F08	9.5	●	10	105	56	166
DSX0960F08	9.6		10	110	56	166
DSX0970F08	9.7		10	110	56	166
DSX0980F08	9.8		10	110	56	166
DSX0990F08	9.9		10	110	56	166
DSX1000F08	10	●	10	110	56	166
DSX1010F08	10.1		11	116	61	182
DSX1020F08	10.2		11	116	61	182
DSX1030F08	10.3		11	116	61	182
DSX1040F08	10.4		11	116	61	182
DSX1050F08	10.5	●	11	116	61	182
DSX1060F08	10.6		11	121	61	182
DSX1070F08	10.7		11	121	61	182
DSX1080F08	10.8		11	121	61	182
DSX1090F08	10.9		11	121	61	182
DSX1100F08	11	●	11	121	61	182
DSX1110F08	11.1		12	127	62	194
DSX1120F08	11.2		12	127	62	194
DSX1130F08	11.3		12	127	62	194
DSX1140F08	11.4		12	127	62	194
DSX1150F08	11.5	●	12	127	62	194
DSX1160F08	11.6		12	132	62	194
DSX1170F08	11.7		12	132	62	194
DSX1180F08	11.8		12	132	62	194
DSX1190F08	11.9		12	132	62	194
DSX1200F08	12	●	12	132	62	194
DSX1210F08	12.1		13	143	63	206
DSX1220F08	12.2		13	143	63	206
DSX1230F08	12.3		13	143	63	206
DSX1240F08	12.4		13	143	63	206
DSX1250F08	12.5	●	13	143	63	206
DSX1260F08	12.6		13	143	63	206
DSX1270F08	12.7		13	143	63	206
DSX1280F08	12.8		13	143	63	206
DSX1290F08	12.9		13	143	63	206
DSX1300F08	13	●	13	143	63	206
DSX1310F08	13.1		14	154	64	218
DSX1320F08	13.2		14	154	64	218
DSX1330F08	13.3		14	154	64	218
DSX1340F08	13.4		14	154	64	218
DSX1350F08	13.5	●	14	154	64	218
DSX1360F08	13.6		14	154	64	218
DSX1370F08	13.7		14	154	64	218
DSX1380F08	13.8		14	154	64	218
DSX1390F08	13.9		14	154	64	218
DSX1400F08	14	●	14	154	64	218
DSX1410F08	14.1		15	165	65	230
DSX1420F08	14.2		15	165	65	230
DSX1430F08	14.3		15	165	65	230
DSX1440F08	14.4		15	165	65	230
DSX1450F08	14.5	●	15	165	65	230
DSX1460F08	14.6		15	165	65	230
DSX1470F08	14.7		15	165	65	230
DSX1480F08	14.8		15	165	65	230
DSX1490F08	14.9		15	165	65	230
DSX1500F08	15	●	15	165	65	230
DSX1510F08	15.1		16	176	66	242
DSX1520F08	15.2		16	176	66	242
DSX1530F08	15.3		16	176	66	242
DSX1540F08	15.4		16	176	66	242
DSX1550F08	15.5	●	16	176	66	242

● : Line-up

Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSX1560F08	15.6		16	176	66	242
DSX1570F08	15.7		16	176	66	242
DSX1580F08	15.8		16	176	66	242
DSX1590F08	15.9		16	176	66	242
DSX1600F08	16	●	16	176	66	242

● : Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Examples JIS (ISO)	Hardness	Cutting speed: *Vc* (m/min)			Feed: *f* (mm/rev)		
				ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø20	ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø20
P	Mild steels, Low carbon steels	C15E4, E275A	< 180HB	70 - 140	80 - 160	90 - 190	0.15 - 0.25	0.2 - 0.35	0.25 - 0.4
P	Carbon steels, Alloy steels	C45, 42CrMo4	180 ~ 300HB	50 - 130	70 - 160	80 - 170	0.15 - 0.25	0.2 - 0.35	0.25 - 0.4
P	High alloy steels etc.	42CrMoS4	250 ~ 350HB	40 - 100	60 - 140	60 - 160	0.1 - 0.2	0.15 - 0.3	0.15 - 0.3
M	Stainless steels	X5CrNi18-9	< 200HB	30 - 70	50 - 100	50 - 120	0.1 - 0.2	0.1 - 0.25	0.15 - 0.35
K	Grey cast irons	250	< 200HB	80 - 140	100 - 160	100 - 180	0.15 - 0.35	0.2 - 0.4	0.25 - 0.5
K	Ductile cast irons	450-10S	< 300HB	70 - 140	80 - 150	80 - 170	0.15 - 0.35	0.2 - 0.4	0.25 - 0.45
N	Aluminium alloys	AlSi11Cu3	-	80 - 160	100 - 180	100 - 190	0.15 - 0.35	0.2 - 0.45	0.25 - 0.6
S	Titanium alloys	Ti-6Al-4V	-	25 - 60	30 - 80	30 - 80	0.1 - 0.2	0.1 - 0.25	0.15 - 0.35
S	Heat-resistant alloys	Inconel	250HB <	10 - 30	10 - 40	10 - 40	0.02 - 0.1	0.05 - 0.15	0.1 - 0.25
H	High hardened steels	X153CrMoV12	< 40HRC	20 - 50	30 - 60	30 - 60	0.08 - 0.1	0.1 - 0.15	0.12 - 0.2

Note: • The cutting parameters shown in the table are merely a starting guideline for general machining.
• Values should be varied depending on the power or rigidity of the machine to be used. For the smaller side of drill diameters, select lower feeds.

• No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Tool diameter
• Table feed (mm/min) = No. of revolutions × Feed per revolution

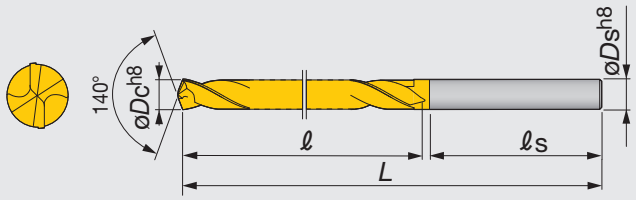
• Chip packing in the oil holes may cause drill breakage. A filter preventing the circulation of chips should be used on coolant supply.
• Inconel is trademark of Huntington Alloys, Inc.

GIGAPOWERDRILL

DSE-F02

Soliddrill with 140° point angle without oil hole & shank size same as diameter, L/D = 2, dia = ø3 -ø16 mm





Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSE0300F02	3	●	3	16	30	46
DSE0310F02	3.1		3.1	18	31	49
DSE0320F02	3.2	●	3.2	18	31	49
DSE0330F02	3.3		3.3	18	31	49
DSE0340F02	3.4	●	3.4	20	32	52
DSE0350F02	3.5	●	3.5	20	32	52
DSE0360F02	3.6		3.6	20	32	52
DSE0370F02	3.7		3.7	20	32	52
DSE0380F02	3.8		3.8	22	33	55
DSE0390F02	3.9		3.9	22	33	55
DSE0400F02	4	●	4	22	33	55
DSE0410F02	4.1		4.1	22	33	55
DSE0420F02	4.2		4.2	22	33	55
DSE0430F02	4.3	●	4.3	24	34	58
DSE0440F02	4.4		4.4	24	34	58
DSE0450F02	4.5	●	4.5	24	34	58
DSE0460F02	4.6		4.6	24	34	58
DSE0470F02	4.7		4.7	24	34	58
DSE0480F02	4.8		4.8	26	36	62
DSE0490F02	4.9		4.9	26	36	62
DSE0500F02	5	●	5	26	36	62
DSE0510F02	5.1	●	5.1	26	36	62
DSE0520F02	5.2		5.2	26	36	62
DSE0530F02	5.3		5.3	26	36	62
DSE0540F02	5.4		5.4	28	38	66
DSE0550F02	5.5	●	5.5	28	38	66
DSE0560F02	5.6	●	5.6	28	38	66
DSE0570F02	5.7		5.7	28	38	66
DSE0580F02	5.8		5.8	28	38	66
DSE0590F02	5.9		5.9	28	38	66
DSE0600F02	6	●	6	28	38	66
DSE0610F02	6.1		6.1	31	39	70
DSE0620F02	6.2		6.2	31	39	70
DSE0630F02	6.3		6.3	31	39	70
DSE0640F02	6.4	●	6.4	31	39	70
DSE0650F02	6.5	●	6.5	31	39	70
DSE0660F02	6.6		6.6	31	39	70
DSE0670F02	6.7		6.7	31	39	70
DSE0680F02	6.8	●	6.8	34	40	74
DSE0690F02	6.9		6.9	34	40	74
DSE0700F02	7	●	7	34	40	74
DSE0710F02	7.1		7.1	34	40	74
DSE0720F02	7.2		7.2	34	40	74
DSE0730F02	7.3		7.3	34	40	74
DSE0740F02	7.4		7.4	34	40	74
DSE0750F02	7.5	●	7.5	34	40	74
DSE0760F02	7.6		7.6	37	42	79
DSE0770F02	7.7		7.7	37	42	79
DSE0780F02	7.8		7.8	37	42	79
DSE0790F02	7.9		7.9	37	42	79
DSE0800F02	8	●	8	37	42	79
DSE0810F02	8.1		8.1	37	42	79

Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSE0820F02	8.2		8.2	37	42	79
DSE0830F02	8.3		8.3	37	42	79
DSE0840F02	8.4		8.4	37	42	79
DSE0850F02	8.5	●	8.5	37	42	79
DSE0860F02	8.6		8.6	40	44	84
DSE0870F02	8.7		8.7	40	44	84
DSE0880F02	8.8		8.8	40	44	84
DSE0890F02	8.9		8.9	40	44	84
DSE0900F02	9	●	9	40	44	84
DSE0910F02	9.1		9.1	40	44	84
DSE0920F02	9.2		9.2	40	44	84
DSE0930F02	9.3		9.3	40	44	84
DSE0940F02	9.4		9.4	40	44	84
DSE0950F02	9.5	●	9.5	40	44	84
DSE0960F02	9.6		9.6	43	46	89
DSE0970F02	9.7		9.7	43	46	89
DSE0980F02	9.8		9.8	43	46	89
DSE0990F02	9.9		9.9	43	46	89
DSE1000F02	10	●	10	43	46	89
DSE1010F02	10.1		10.1	43	46	89
DSE1020F02	10.2		10.2	43	46	89
DSE1030F02	10.3	●	10.3	43	46	89
DSE1040F02	10.4		10.4	43	46	89
DSE1050F02	10.5	●	10.5	43	46	89
DSE1060F02	10.6		10.6	43	46	89
DSE1070F02	10.7		10.7	47	48	95
DSE1080F02	10.8		10.8	47	48	95
DSE1090F02	10.9		10.9	47	48	95
DSE1100F02	11	●	11	47	48	95
DSE1110F02	11.1		11.1	47	48	95
DSE1120F02	11.2		11.2	47	48	95
DSE1130F02	11.3		11.3	47	48	95
DSE1140F02	11.4		11.4	47	48	95
DSE1150F02	11.5	●	11.5	47	48	95
DSE1160F02	11.6		11.6	47	48	95
DSE1170F02	11.7		11.7	47	48	95
DSE1180F02	11.8		11.8	47	48	95
DSE1190F02	11.9		11.9	51	51	102
DSE1200F02	12	●	12	51	51	102
DSE1210F02	12.1		12.1	51	51	102
DSE1220F02	12.2		12.2	51	51	102
DSE1230F02	12.3		12.3	51	51	102
DSE1240F02	12.4		12.4	51	51	102
DSE1250F02	12.5	●	12.5	51	51	102
DSE1260F02	12.6		12.6	51	51	102
DSE1270F02	12.7		12.7	51	51	102
DSE1280F02	12.8		12.8	51	51	102
DSE1290F02	12.9		12.9	51	51	102
DSE1300F02	13	●	13	51	51	102
DSE1310F02	13.1		13.1	51	51	102
DSE1320F02	13.2		13.2	51	51	102
DSE1330F02	13.3		13.3	54	53	107

● : Line-up

Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSE1340F02	13.4		13.4	54	53	107
DSE1350F02	13.5	●	13.5	54	53	107
DSE1360F02	13.6		13.6	54	53	107
DSE1370F02	13.7		13.7	54	53	107
DSE1380F02	13.8		13.8	54	53	107
DSE1390F02	13.9		13.9	54	53	107
DSE1400F02	14	●	14	54	53	107
DSE1410F02	14.1		14.1	56	55	111
DSE1420F02	14.2		14.2	56	55	111
DSE1430F02	14.3		14.3	56	55	111
DSE1440F02	14.4		14.4	56	55	111
DSE1450F02	14.5	●	14.5	56	55	111
DSE1460F02	14.6		14.6	56	55	111
DSE1470F02	14.7		14.7	56	55	111
DSE1480F02	14.8		14.8	56	55	111
DSE1490F02	14.9		14.9	56	55	111
DSE1500F02	15	●	15	56	55	111
DSE1510F02	15.1		15.1	58	57	115
DSE1520F02	15.2		15.2	58	57	115
DSE1530F02	15.3		15.3	58	57	115
DSE1540F02	15.4		15.4	58	57	115
DSE1550F02	15.5	●	15.5	58	57	115
DSE1560F02	15.6		15.6	58	57	115
DSE1570F02	15.7		15.7	58	57	115
DSE1580F02	15.8		15.8	58	57	115
DSE1590F02	15.9		15.9	58	57	115
DSE1600F02	16	●	16	58	57	115

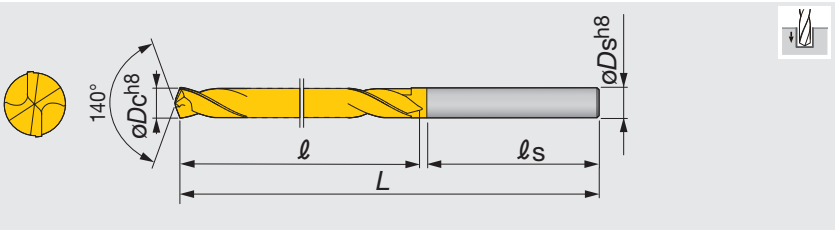
● : Line-up

GIGAPOWERDRILL

DSE-F03

Soliddrill with 140° point angle without oil hole & shank size same as diameter, L/D = 3, dia = ø3 -ø16 mm





Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSE0300F03	3	●	3	21	39	60
DSE0310F03	3.1		3.1	24	36	60
DSE0320F03	3.2	●	3.2	24	36	60
DSE0330F03	3.3		3.3	24	36	60
DSE0340F03	3.4	●	3.4	24	36	60
DSE0350F03	3.5	●	3.5	24	36	60
DSE0360F03	3.6		3.6	27	33	60
DSE0370F03	3.7		3.7	27	33	60
DSE0380F03	3.8		3.8	27	33	60
DSE0390F03	3.9		3.9	27	33	60
DSE0400F03	4	●	4	27	33	60
DSE0410F03	4.1		4.1	29	34	63
DSE0420F03	4.2		4.2	29	34	63
DSE0430F03	4.3	●	4.3	29	34	63
DSE0440F03	4.4		4.4	29	34	63
DSE0450F03	4.5	●	4.5	29	34	63
DSE0460F03	4.6		4.6	32	36	68
DSE0470F03	4.7		4.7	32	36	68
DSE0480F03	4.8		4.8	32	36	68
DSE0490F03	4.9		4.9	32	36	68
DSE0500F03	5	●	5	32	36	68
DSE0510F03	5.1	●	5.1	34	38	72
DSE0520F03	5.2		5.2	34	38	72
DSE0530F03	5.3		5.3	34	38	72
DSE0540F03	5.4		5.4	34	38	72
DSE0550F03	5.5	●	5.5	34	38	72
DSE0560F03	5.6		5.6	36	38	74
DSE0570F03	5.7		5.7	36	38	74
DSE0580F03	5.8		5.8	36	38	74
DSE0590F03	5.9		5.9	36	38	74
DSE0600F03	6	●	6	41	40	81
DSE0610F03	6.1		6.1	41	40	81
DSE0620F03	6.2		6.2	41	40	81
DSE0630F03	6.3		6.3	41	40	81
DSE0640F03	6.4		6.4	41	40	81
DSE0650F03	6.5	●	6.5	41	40	81
DSE0660F03	6.6		6.6	43	40	83
DSE0670F03	6.7		6.7	43	40	83
DSE0680F03	6.8	●	6.8	43	40	83
DSE0690F03	6.9		6.9	43	40	83
DSE0700F03	7	●	7	43	40	83
DSE0710F03	7.1		7.1	45	42	87
DSE0720F03	7.2		7.2	45	42	87
DSE0730F03	7.3		7.3	45	42	87
DSE0740F03	7.4	●	7.4	45	42	87
DSE0750F03	7.5	●	7.5	45	42	87
DSE0760F03	7.6		7.6	48	42	90
DSE0770F03	7.7		7.7	48	42	90
DSE0780F03	7.8		7.8	48	42	90
DSE0790F03	7.9		7.9	48	42	90
DSE0800F03	8	●	8	48	42	90
DSE0810F03	8.1		8.1	53	43	96
DSE0820F03	8.2		8.2	53	43	96
DSE0830F03	8.3		8.3	53	43	96
DSE0840F03	8.4		8.4	53	43	96
DSE0850F03	8.5	●	8.5	53	43	96
DSE0860F03	8.6	●	8.6	55	43	98
DSE0870F03	8.7		8.7	55	43	98
DSE0880F03	8.8		8.8	55	43	98
DSE0890F03	8.9		8.9	55	43	98
DSE0900F03	9	●	9	55	43	98
DSE0910F03	9.1		9.1	58	44	102
DSE0920F03	9.2		9.2	58	44	102

Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSE0930F03	9.3		9.3	58	44	102
DSE0940F03	9.4		9.4	58	44	102
DSE0950F03	9.5	●	9.5	58	44	102
DSE0960F03	9.6		9.6	60	45	105
DSE0970F03	9.7		9.7	60	45	105
DSE0980F03	9.8		9.8	60	45	105
DSE0990F03	9.9		9.9	60	45	105
DSE1000F03	10	●	10	60	45	105
DSE1010F03	10.1		10.1	66	46	112
DSE1020F03	10.2		10.2	66	46	112
DSE1030F03	10.3	●	10.3	66	46	112
DSE1040F03	10.4		10.4	66	46	112
DSE1050F03	10.5	●	10.5	66	46	112
DSE1060F03	10.6		10.6	68	46	114
DSE1070F03	10.7		10.7	68	46	114
DSE1080F03	10.8		10.8	68	46	114
DSE1090F03	10.9		10.9	68	46	114
DSE1100F03	11	●	11	68	46	114
DSE1110F03	11.1		11.1	71	47	118
DSE1120F03	11.2		11.2	71	47	118
DSE1130F03	11.3		11.3	71	47	118
DSE1140F03	11.4		11.4	71	47	118
DSE1150F03	11.5	●	11.5	71	47	118
DSE1160F03	11.6		11.6	73	48	121
DSE1170F03	11.7		11.7	73	48	121
DSE1180F03	11.8		11.8	73	48	121
DSE1190F03	11.9		11.9	73	48	121
DSE1200F03	12	●	12	73	48	121
DSE1210F03	12.1		12.1	76	59	135
DSE1220F03	12.2		12.2	76	59	135
DSE1230F03	12.3		12.3	76	59	135
DSE1240F03	12.4		12.4	76	59	135
DSE1250F03	12.5	●	12.5	76	59	135
DSE1260F03	12.6		12.6	78	59	137
DSE1270F03	12.7		12.7	78	59	137
DSE1280F03	12.8		12.8	78	59	137
DSE1290F03	12.9		12.9	78	59	137
DSE1300F03	13	●	13	78	59	137
DSE1310F03	13.1		13.1	84	60	144
DSE1320F03	13.2		13.2	84	60	144
DSE1330F03	13.3		13.3	84	60	144
DSE1340F03	13.4		13.4	84	60	144
DSE1350F03	13.5	●	13.5	84	60	144
DSE1360F03	13.6		13.6	86	61	147
DSE1370F03	13.7		13.7	86	61	147
DSE1380F03	13.8		13.8	86	61	147
DSE1390F03	13.9		13.9	86	61	147
DSE1400F03	14	●	14	86	61	147
DSE1410F03	14.1		14.1	89	62	151
DSE1420F03	14.2		14.2	89	62	151
DSE1430F03	14.3		14.3	89	62	151
DSE1440F03	14.4		14.4	89	62	151
DSE1450F03	14.5	●	14.5	89	62	151
DSE1460F03	14.6		14.6	91	62	153
DSE1470F03	14.7		14.7	91	62	153
DSE1480F03	14.8		14.8	91	62	153
DSE1490F03	14.9		14.9	91	62	153
DSE1500F03	15	●	15	91	62	153
DSE1510F03	15.1		15.1	94	63	157
DSE1520F03	15.2		15.2	94	63	157
DSE1530F03	15.3		15.3	94	63	157
DSE1540F03	15.4		15.4	94	63	157
DSE1550F03	15.5	●	15.5	94	63	157

● : Line-up

Designation	øDc	AH180	øDs	ℓ	ℓs	L
DSE1560F03	15.6		15.6	96	64	160
DSE1570F03	15.7		15.7	96	64	160
DSE1580F03	15.8		15.8	96	64	160
DSE1590F03	15.9		15.9	96	64	160
DSE1600F03	16	●	16	96	64	160

● : Line-up

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Examples	Hardness	Cutting speed: *Vc* (m/min)			Feed: *f* (mm/rev)		
				ø3 ~ ø6	ø6 ~ ø10	ø10 ~ ø20	ø3 ~ ø6	ø5 ~ ø10	ø10 ~ ø20
P	Mild steels, Low carbon steels	E275A	< 180HB	40 - 100	60 - 120	60 - 130	0.15 - 0.3	0.15 - 0.35	0.2 - 0.5
	Carbon steels, Alloy steels	C45	180 ~ 300HB	40 - 90	50 - 120	60 - 130	0.15 - 0.3	0.15 - 0.35	0.15 - 0.4
	High alloy steels etc.	42CrMo4	250 ~ 350HB	40 - 80	50 - 100	50 - 100	0.1 - 0.2	0.15 - 0.25	0.15 - 0.35
M	Stainless steels	X5CrNi18-9	< 200HB	10 - 20	10 - 20	10 - 20	0.05 - 0.15	0.05 - 0.15	0.05 - 0.15
K	Grey cast irons	300	< 200HB	40 - 90	50 - 95	50 - 100	0.15 - 0.3	0.2 - 0.4	0.2 - 0.4
	Ductile cast irons	600-3	< 300HB	35 - 80	40 - 85	45 - 90	0.15 - 0.3	0.2 - 0.4	0.2 - 0.4
S	Titanium alloys	Ti-6Al-4V		20 - 40	20 - 40	20 - 40	0.1 - 0.2	0.15 - 0.25	0.15 - 0.4
	Heat-resistant alloys	Inconel718	250HB <	10 - 30	10 - 30	10 - 30	0.03 - 0.07	0.05 - 0.1	0.07 - 0.12
H	High hardened steels	X153CrMoV12	< 40HRC	20 - 40	20 - 40	20 - 40	0.05 - 0.15	0.05 - 0.15	0.07 - 0.2

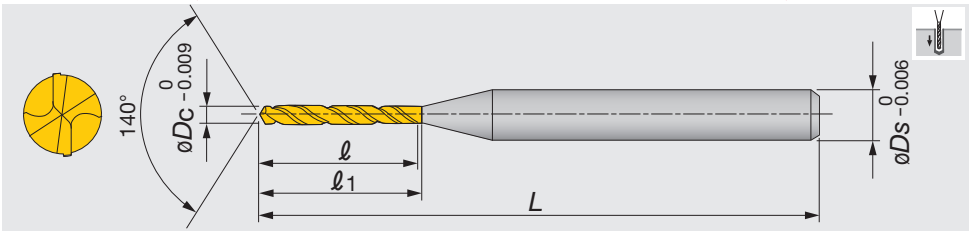
Notes:
- Because the cutting conditions may be changed depending on the material type, hardness, machinability, machine tool, and coolant, the most appropriate conditions must be decided whilst referring the chip control condition and tool failure mode.
- When using the smaller side of the diameter range, the feed rate should be set lower.
- When drilling difficult-to-cut materials, coolant supplying conditions are critical for successful drilling. So, the use of constant and flood coolant is highly recommended.
- For the standard DSE-type drills, somewhat large honing width intended for drilling of general steels is applied. But, when drilling difficult-to-cut materials having high hardness, requiring lowering the feed rate, the honing width should be modified.
- The drills with special honing specification are made to order on request.
- Inconel is trademark of Huntington Alloys, Inc.

GIGAMINIDRILL

DSM

Micro soliddrill with std. shank size of ø3 mm, without coolant hole, dia.= ø0.1 mm - ø3 mm, L/D = 5 -15





Designation	øDc	Coating YH170	Coating YH180	øDs	ℓ	ℓ1	L
DSM0010G10	0.1	●		3	1.15	1.4	38
DSM0011G10	0.11	●		3	1.25	1.5	38
DSM0012G10	0.12	●		3	1.35	1.6	38
DSM0013G10	0.13	●		3	1.55	1.8	38
DSM0014G10	0.14	●		3	1.65	1.9	38
DSM0015G10	0.15	●		3	1.75	2	38
DSM0016G10	0.16	●		3	1.85	2.1	38
DSM0017G10	0.17	●		3	1.95	2.2	38
DSM0018G10	0.18	●		3	2.15	2.4	38
DSM0019G10	0.19	●		3	2.25	2.5	38
DSM0020G10	0.2	●		3	2.35	2.6	38
DSM0021G10	0.21	●		3	2.45	2.7	38
DSM0022G10	0.22	●		3	2.55	2.8	38
DSM0023G10	0.23	●		3	2.75	3	38
DSM0024G10	0.24	●		3	2.85	3.1	38
DSM0025G10	0.25	●		3	3	3.3	38
DSM0026G10	0.26	●		3	3.1	3.4	38
DSM0027G10	0.27	●		3	3.2	3.5	38
DSM0028G10	0.28	●		3	3.4	3.7	38
DSM0029G10	0.29	●		3	3.5	3.8	38
DSM0030G10	0.3	●		3	3.9	4.2	38
DSM0031G15	0.31	●		3	5.6	5.9	38
DSM0032G15	0.32	●		3	5.6	5.9	38
DSM0033G15	0.33	●		3	5.6	5.9	38
DSM0034G15	0.34	●		3	5.6	5.9	38
DSM0035G15	0.35	●		3	5.6	5.9	38
DSM0036G15	0.36	●		3	6.5	6.8	38
DSM0037G15	0.37	●		3	6.5	6.8	38
DSM0038G15	0.38	●		3	6.5	6.8	38
DSM0039G15	0.39	●		3	6.5	6.8	38
DSM0040G15	0.4	●		3	6.5	6.8	38
DSM0041G15	0.41	●		3	7.4	7.7	38
DSM0042G15	0.42	●		3	7.4	7.7	38
DSM0043G15	0.43	●		3	7.4	7.7	38
DSM0044G15	0.44	●		3	7.4	7.7	38
DSM0045G15	0.45	●		3	7.4	7.7	38
DSM0046G15	0.46	●		3	8.1	8.7	38
DSM0047G15	0.47	●		3	8.1	8.7	38
DSM0048G15	0.48	●		3	8.1	8.7	38
DSM0049G15	0.49	●		3	8.1	8.7	38
DSM0050G15	0.5	●		3	8.1	8.7	38
DSM0051G10	0.51			3	6.6	7.2	38
DSM0052G10	0.52			3	6.6	7.2	38
DSM0053G10	0.53			3	6.6	7.2	38
DSM0054G10	0.54			3	6.6	7.2	38
DSM0055G10	0.55	●		3	6.6	7.2	38
DSM0056G10	0.56			3	7.3	7.9	38
DSM0057G10	0.57			3	7.3	7.9	38
DSM0058G10	0.58			3	7.3	7.9	38
DSM0059G10	0.59			3	7.3	7.9	38
DSM0060G10	0.6	●		3	7.3	7.9	38
DSM0061G10	0.61			3	7.9	8.5	38
DSM0062G10	0.62			3	7.9	8.5	38
DSM0063G10	0.63			3	7.9	8.5	38
DSM0064G10	0.64			3	7.9	8.5	38
DSM0065G10	0.65	●		3	7.9	8.5	38
DSM0066G10	0.66			3	8.6	9.2	38
DSM0067G10	0.67			3	8.6	9.2	38
DSM0068G10	0.68			3	8.6	9.2	38
DSM0069G10	0.69			3	8.6	9.2	38
DSM0070G10	0.7	●		3	8.6	9.2	38
DSM0071G10	0.71			3	9.2	9.8	38
DSM0072G10	0.72			3	9.2	9.8	38
DSM0073G10	0.73			3	9.2	9.8	38
DSM0074G10	0.74			3	9.2	9.8	38

Designation	øDc	Coating YH170	Coating YH180	øDs	ℓ	ℓ1	L
DSM0075G10	0.75	●		3	9.2	9.8	38
DSM0076G10	0.76			3	9.9	10.5	38
DSM0077G10	0.77			3	9.9	10.5	38
DSM0078G10	0.78			3	9.9	10.5	38
DSM0079G10	0.79			3	9.9	10.5	38
DSM0080G10	0.8	●		3	9.9	10.5	38
DSM0081G10	0.81			3	10.5	11.1	38
DSM0082G10	0.82			3	10.5	11.1	38
DSM0083G10	0.83			3	10.5	11.1	38
DSM0084G10	0.84			3	10.5	11.1	38
DSM0085G10	0.85			3	10.5	11.1	38
DSM0086G10	0.86			3	9.9	10.5	38
DSM0087G10	0.87			3	9.9	10.5	38
DSM0088G10	0.88	●		3	9.9	10.5	38
DSM0089G10	0.89			3	9.9	10.5	38
DSM0090G10	0.9	●		3	9.9	10.5	38
DSM0091G10	0.91			3	10.5	11.1	38
DSM0092G10	0.92			3	10.5	11.1	38
DSM0093G10	0.93			3	10.5	11.1	38
DSM0094G10	0.94			3	10.5	11.1	38
DSM0095G10	0.95			3	10.5	11.1	38
DSM0096G10	0.96			3	11	11.6	38
DSM0097G10	0.97	●		3	11	11.6	38
DSM0098G10	0.98			3	11	11.6	38
DSM0099G10	0.99			3	11	11.6	38
DSM0100G10	1	●		3	11.5	12.1	38
DSM0101G05	1.01			3	8	8.6	38
DSM0102G05	1.02			3	8	8.6	38
DSM0103G05	1.03			3	8	8.6	38
DSM0104G05	1.04			3	8	8.6	38
DSM0105G05	1.05			3	8	8.6	38
DSM0106G05	1.06			3	8	8.6	38
DSM0107G05	1.07			3	8	8.6	38
DSM0108G05	1.08	●		3	8	8.6	38
DSM0109G05	1.09			3	8	8.6	38
DSM0110G05	1.1	●		3	8	8.6	38
DSM0111G05	1.11			3	8.9	9.5	38
DSM0112G05	1.12			3	8.9	9.5	38
DSM0113G05	1.13			3	8.9	9.5	38
DSM0114G05	1.14			3	8.9	9.5	38
DSM0115G05	1.15			3	8.9	9.5	38
DSM0116G05	1.16			3	8.9	9.5	38
DSM0117G05	1.17			3	8.9	9.5	38
DSM0118G05	1.18			3	8.9	9.5	38
DSM0119G05	1.19			3	8.9	9.5	38
DSM0120G05	1.2	●		3	8.9	9.5	38
DSM0121G05	1.21			3	9.7	10.3	38
DSM0122G05	1.22			3	9.7	10.3	38
DSM0123G05	1.23			3	9.7	10.3	38
DSM0124G05	1.24			3	9.7	10.3	38
DSM0125G05	1.25			3	9.7	10.3	38
DSM0126G05	1.26			3	9.7	10.3	38
DSM0127G05	1.27			3	9.7	10.3	38
DSM0128G05	1.28			3	9.7	10.3	38
DSM0129G05	1.29			3	9.7	10.3	38
DSM0130G05	1.3	●		3	9.7	10.3	38
DSM0131G05	1.31			3	10.5	11.1	38
DSM0132G05	1.32			3	10.5	11.1	38
DSM0133G05	1.33			3	10.5	11.1	38
DSM0134G05	1.34			3	10.5	11.1	38
DSM0135G05	1.35			3	10.5	11.1	38
DSM0136G05	1.36			3	10.5	11.1	38
DSM0137G05	1.37			3	10.5	11.1	38
DSM0138G05	1.38			3	10.5	11.1	38
DSM0139G05	1.39			3	10.5	11.1	38

● : Line-up

Designation	øDc	Coating YH170	Coating YH180	øDs	ℓ	ℓ1	L
DSM0140G05	1.4	●		3	10.5	11.1	38
DSM0141G05	1.41			3	11.3	11.9	38
DSM0142G05	1.42			3	11.3	11.9	38
DSM0143G05	1.43			3	11.3	11.9	38
DSM0144G05	1.44			3	11.3	11.9	38
DSM0145G05	1.45	●		3	11.3	11.9	38
DSM0146G05	1.46			3	11.3	11.9	38
DSM0147G05	1.47			3	11.3	11.9	38
DSM0148G05	1.48			3	11.3	11.9	38
DSM0149G05	1.49			3	11.3	11.9	38
DSM0150G05	1.5	●		3	11.3	11.9	38
DSM0151G05	1.51			3	12.1	12.7	45
DSM0152G05	1.52			3	12.1	12.7	45
DSM0153G05	1.53	●		3	12.1	12.7	45
DSM0154G05	1.54			3	12.1	12.7	45
DSM0155G05	1.55	●		3	12.1	12.7	45
DSM0156G05	1.56			3	12.1	12.7	45
DSM0157G05	1.57			3	12.1	12.7	45
DSM0158G05	1.58			3	12.1	12.7	45
DSM0159G05	1.59			3	12.1	12.7	45
DSM0160G05	1.6	●		3	12.1	12.7	45
DSM0161G05	1.61			3	12.9	13.6	45
DSM0162G05	1.62			3	12.9	13.6	45
DSM0163G05	1.63			3	12.9	13.6	45
DSM0164G05	1.64			3	12.9	13.6	45
DSM0165G05	1.65	●		3	12.9	13.6	45
DSM0166G05	1.66			3	12.9	13.6	45
DSM0167G05	1.67			3	12.9	13.6	45
DSM0168G05	1.68			3	12.9	13.6	45
DSM0169G05	1.69			3	12.9	13.6	45
DSM0170G05	1.7	●		3	12.9	13.6	45
DSM0171G05	1.71			3	13.7	14.3	45
DSM0172G05	1.72			3	13.7	14.3	45
DSM0173G05	1.73			3	13.7	14.3	45
DSM0174G05	1.74			3	13.7	14.3	45
DSM0175G05	1.75			3	13.7	14.3	45
DSM0176G05	1.76			3	13.7	14.3	45
DSM0177G05	1.77			3	13.7	14.3	45
DSM0178G05	1.78			3	13.7	14.3	45
DSM0179G05	1.79			3	13.7	14.3	45
DSM0180G05	1.8	●		3	13.7	14.3	45
DSM0181G05	1.81			3	14.5	15.1	45
DSM0182G05	1.82	●		3	14.5	15.1	45
DSM0183G05	1.83			3	14.5	15.1	45
DSM0184G05	1.84			3	14.5	15.1	45
DSM0185G05	1.85	●		3	14.5	15.1	45
DSM0186G05	1.86			3	14.5	15.1	45
DSM0187G05	1.87			3	14.5	15.1	45
DSM0188G05	1.88			3	14.5	15.1	45
DSM0189G05	1.89			3	14.5	15.1	45
DSM0190G05	1.9	●		3	14.5	15.1	45
DSM0191G05	1.91			3	15.3	15.9	45
DSM0192G05	1.92			3	15.3	15.9	45
DSM0193G05	1.93			3	15.3	15.9	45
DSM0194G05	1.94			3	15.3	15.9	45
DSM0195G05	1.95	●		3	15.3	15.9	45
DSM0196G05	1.96			3	15.3	15.9	45
DSM0197G05	1.97			3	15.3	15.9	45
DSM0198G05	1.98			3	15.3	15.9	45
DSM0199G05	1.99			3	15.3	15.9	45
DSM0200G05	2		●	3	15.3	15.9	45
DSM0201G05	2.01			3	16.1	16.7	45
DSM0202G05	2.02			3	16.1	16.7	45
DSM0203G05	2.03		●	3	16.1	16.7	45
DSM0204G05	2.04			3	16.1	16.7	45
DSM0205G05	2.05			3	16.1	16.7	45
DSM0206G05	2.06			3	16.1	16.7	45
DSM0207G05	2.07			3	16.1	16.7	45
DSM0208G05	2.08			3	16.1	16.7	45
DSM0209G05	2.09			3	16.1	16.7	45
DSM0210G05	2.1		●	3	16.1	16.7	45
DSM0211G05	2.11			3	16.9	17.5	45
DSM0212G05	2.12			3	16.9	17.5	45
DSM0213G05	2.13			3	16.9	17.5	45
DSM0214G05	2.14			3	16.9	17.5	45
DSM0215G05	2.15			3	16.9	17.5	45
DSM0216G05	2.16			3	16.9	17.5	45
DSM0217G05	2.17			3	16.9	17.5	45
DSM0218G05	2.18			3	16.9	17.5	45
DSM0219G05	2.19			3	16.9	17.5	45
DSM0220G05	2.2		●	3	16.9	17.5	45

Designation	øDc	Coating YH170	Coating YH180	øDs	ℓ	ℓ1	L
DSM0221G05	2.21			3	17.7	18.3	45
DSM0222G05	2.22			3	17.7	18.3	45
DSM0223G05	2.23			3	17.7	18.3	45
DSM0224G05	2.24			3	17.7	18.3	45
DSM0225G05	2.25			3	17.7	18.3	45
DSM0226G05	2.26			3	17.7	18.3	45
DSM0227G05	2.27			3	17.7	18.3	45
DSM0228G05	2.28			3	17.7	18.3	45
DSM0229G05	2.29			3	17.7	18.3	45
DSM0230G05	2.3		●	3	17.7	18.3	45
DSM0231G05	2.31			3	18.5	19.1	55
DSM0232G05	2.32			3	18.5	19.1	55
DSM0233G05	2.33			3	18.5	19.1	55
DSM0234G05	2.34			3	18.5	19.1	55
DSM0235G05	2.35			3	18.5	19.1	55
DSM0236G05	2.36			3	18.5	19.1	55
DSM0237G05	2.37			3	18.5	19.1	55
DSM0238G05	2.38			3	18.5	19.1	55
DSM0239G05	2.39			3	18.5	19.1	55
DSM0240G05	2.4		●	3	18.5	19.1	55
DSM0241G05	2.41			3	19.3	19.9	55
DSM0242G05	2.42			3	19.3	19.9	55
DSM0243G05	2.43			3	19.3	19.9	55
DSM0244G05	2.44			3	19.3	19.9	55
DSM0245G05	2.45			3	19.3	19.9	55
DSM0246G05	2.46			3	19.3	19.9	55
DSM0247G05	2.47			3	19.3	19.9	55
DSM0248G05	2.48			3	19.3	19.9	55
DSM0249G05	2.49			3	19.3	19.9	55
DSM0250G05	2.5		●	3	19.3	19.9	55
DSM0251G05	2.51			3	20.1	20.7	55
DSM0252G05	2.52			3	20.1	20.7	55
DSM0253G05	2.53			3	20.1	20.7	55
DSM0254G05	2.54			3	20.1	20.7	55
DSM0255G05	2.55			3	20.1	20.7	55
DSM0256G05	2.56		●	3	20.1	20.7	55
DSM0257G05	2.57			3	20.1	20.7	55
DSM0258G05	2.58			3	20.1	20.7	55
DSM0259G05	2.59			3	20.1	20.7	55
DSM0260G05	2.6		●	3	20.1	20.7	55
DSM0261G05	2.61			3	20.9	21.5	55
DSM0262G05	2.62			3	20.9	21.5	55
DSM0263G05	2.63			3	20.9	21.5	55
DSM0264G05	2.64			3	20.9	21.5	55
DSM0265G05	2.65			3	20.9	21.5	55
DSM0266G05	2.66			3	20.9	21.5	55
DSM0267G05	2.67			3	20.9	21.5	55
DSM0268G05	2.68			3	20.9	21.5	55
DSM0269G05	2.69			3	20.9	21.5	55
DSM0270G05	2.7		●	3	20.9	21.5	55
DSM0271G05	2.71			3	21.7	22.3	55
DSM0272G05	2.72			3	21.7	22.3	55
DSM0273G05	2.73			3	21.7	22.3	55
DSM0274G05	2.74			3	21.7	22.3	55
DSM0275G05	2.75			3	21.7	22.3	55
DSM0276G05	2.76			3	21.7	22.3	55
DSM0277G05	2.77			3	21.7	22.3	55
DSM0278G05	2.78			3	21.7	22.3	55
DSM0279G05	2.79			3	21.7	22.3	55
DSM0280G05	2.8		●	3	21.7	22.3	55
DSM0281G05	2.81			3	22.5	23.1	55
DSM0282G05	2.82			3	22.5	23.1	55
DSM0283G05	2.83			3	22.5	23.1	55
DSM0284G05	2.84			3	22.5	23.1	55
DSM0285G05	2.85			3	22.5	23.1	55
DSM0286G05	2.86			3	22.5	23.1	55
DSM0287G05	2.87			3	22.5	23.1	55
DSM0288G05	2.88			3	22.5	23.1	55
DSM0289G05	2.89			3	22.5	23.1	55
DSM0290G05	2.9		●	3	22.5	23.1	55
DSM0291G05	2.91			3	23.3	23.9	55
DSM0292G05	2.92			3	23.3	23.9	55
DSM0293G05	2.93			3	23.3	23.9	55
DSM0294G05	2.94			3	23.3	23.9	55
DSM0295G05	2.95			3	23.3	23.9	55
DSM0296G05	2.96			3	23.3	23.9	55
DSM0297G05	2.97			3	23.3	23.9	55
DSM0298G05	2.98			3	23.3	23.9	55
DSM0299G05	2.99			3	23.3	23.9	55
DSM0300G05	3		●	3	23.3	23.9	55

STANDARD CUTTING CONDITIONS

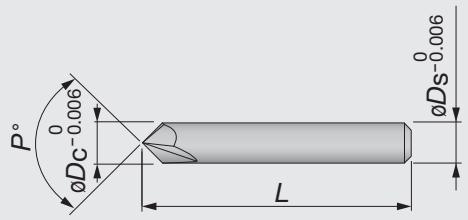
ISO	Workpiece material	Cutting speed: *Vc* (m/min)			Feed: *f* (mm/rev)				
		ø0.1 ~ ø0.3	ø0.3 ~ ø0.5	ø0.5 ~ ø3	ø0.1 ~ ø0.3	ø0.3 ~ ø0.5	ø0.5 ~ ø1	ø1 ~ ø2	ø2 ~ ø3
P	Carbon and alloy steels	5 - 20	15 - 30	25 - 60	0.001 - 0.004	0.002 - 0.01	0.005 - 0.05	0.03 - 0.09	0.05 - 0.1
M	Stainless steels	2 - 12	6 - 18	10 - 20	0.0005 - 0.004	0.002 - 0.008	0.005 - 0.03	0.01 - 0.04	0.02 - 0.05
K	Grey cast irons	5 - 15	10 - 25	20 - 50	0.0005 - 0.004	0.002- 0.012	0.005 - 0.03	0.01 - 0.06	0.03 - 0.12
	Ductile cast irons	5 - 15	10 - 25	20 - 50	0.001 - 0.003	0.002 - 0.01	0.005 - 0.02	0.01 - 0.05	0.03 - 0.1
N	Aluminium alloys	10 - 20	10 - 30	20 - 50	0.001 - 0.01	0.005 - 0.03	0.01 - 0.05	0.04 - 0.15	0.06 - 0.2
	Copper / Brass	10 - 20	10 - 30	20 - 50	0.001 - 0.01	0.005 - 0.03	0.01 - 0.05	0.04 - 0.15	0.06 - 0.2
S	Heat-resistant alloys	2 - 6	5 - 10	8 - 20	0.0005 - 0.003	0.002 - 0.004	0.002 - 0.004	0.002 - 0.004	Not recommended
H	High hardened steels	4 - 8	6 - 10	6 - 16	0.0005 - 0.002	0.001 - 0.005	0.005 - 0.02	0.01 - 0.03	0.02 - 0.06

Note:
- When the drilling depth is deeper than L/D = 5, use drill pecking every 10 to 50% of the drill diameter.
- The above cutting conditions are applied to when a water soluble cutting fluid is used. For drilling a hole smaller than ø0.3 mm, use of a starting drill is recommended.
- When setting the drill, the drill run out should be within 0.002 mm on the taper. (Especially for the drill diameter smaller than ø0.5 mm)

GIGAMINIDRILL

DSM-CP

Centering drill for DSM



Designation	øDc	YH170	øDs	L	P°
DSM-CP90	3	●	3	38.1	90
DSM-CP140	3	●	3	38.1	140

● : Line-up

STANDARD CUTTING CONDITIONS

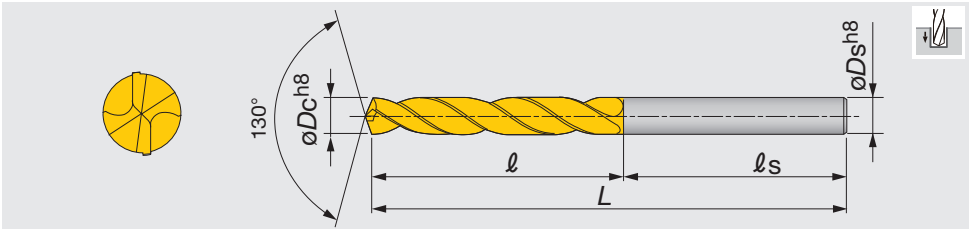
ISO	Workpiece material	Cutting speed: Vc (m/min)	Feed: f (mm/rev)	
			DSM-CP90	DSM-CP140
P	Carbon, Mild and Alloy steels	30 - 80	0.01 - 0.06	0.03 - 0.08
K	Grey and ductile cast irons	30 - 80	0.02 - 0.06	0.05 - 0.1
N	Aluminium alloys	60 - 120	0.02 - 0.1	0.05 - 0.15
M	Stainless steels	15 - 40	0.01 - 0.03	0.02 - 0.06
H	High hardened steels (~45HRC)	10 - 40	Not recommended	0.01 - 0.05

Notes: • For hard materials and stainless steels which have work-hardening nature, DSM-CP140 is recommended.
• Above cutting conditions are of using a water-soluble cutting fluid. When using a water-insoluble type, set the cutting speed to lower side.

DMX L/D=2 (S type)

Soliddrill with 130° point angle without oil hole & shank size as diameter, L/D = 2, dia = ø3 - ø20 mm





Designation	øDc	AH170	øDs	ℓ	ℓs	L
DMX030S	3	●	3	16	30	46
DMX031S	3.1	●	3.1	18	31	49
DMX032S	3.2	●	3.2	18	31	49
DMX033S	3.3	●	3.3	18	31	49
DMX034S	3.4	●	3.4	20	32	52
DMX035S	3.5	●	3.5	20	32	52
DMX036S	3.6	●	3.6	20	32	52
DMX037S	3.7	●	3.7	20	32	52
DMX038S	3.8	●	3.8	22	33	55
DMX039S	3.9	●	3.9	22	33	55
DMX040S	4	●	4	22	33	55
DMX041S	4.1	●	4.1	22	33	55
DMX042S	4.2	●	4.2	22	33	55
DMX043S	4.3	●	4.3	24	34	58
DMX044S	4.4	●	4.4	24	34	58
DMX045S	4.5	●	4.5	24	34	58
DMX046S	4.6	●	4.6	24	34	58
DMX047S	4.7	●	4.7	24	34	58
DMX048S	4.8	●	4.8	26	36	62
DMX049S	4.9	●	4.9	26	36	62
DMX050S	5	●	5	26	36	62
DMX051S	5.1	●	5.1	26	36	62
DMX052S	5.2	●	5.2	26	36	62
DMX053S	5.3	●	5.3	26	36	62
DMX054S	5.4	●	5.4	28	38	66
DMX055S	5.5	●	5.5	28	38	66
DMX056S	5.6	●	5.6	28	38	66
DMX057S	5.7	●	5.7	28	38	66
DMX058S	5.8	●	5.8	28	38	66
DMX059S	5.9	●	5.9	28	38	66
DMX060S	6	●	6	28	38	66
DMX061S	6.1	●	6.1	31	39	70
DMX062S	6.2	●	6.2	31	39	70
DMX063S	6.3	●	6.3	31	39	70
DMX064S	6.4	●	6.4	31	39	70
DMX065S	6.5	●	6.5	31	39	70
DMX066S	6.6	●	6.6	31	39	70
DMX067S	6.7	●	6.7	31	39	70
DMX068S	6.8	●	6.8	34	40	74
DMX069S	6.9	●	6.9	34	40	74
DMX070S	7	●	7	34	40	74
DMX071S	7.1	●	7.1	34	40	74
DMX072S	7.2	●	7.2	34	40	74
DMX073S	7.3	●	7.3	34	40	74
DMX074S	7.4	●	7.4	34	40	74
DMX075S	7.5	●	7.5	34	40	74
DMX076S	7.6	●	7.6	37	42	79
DMX077S	7.7	●	7.7	37	42	79
DMX078S	7.8	●	7.8	37	42	79
DMX079S	7.9	●	7.9	37	42	79
DMX080S	8	●	8	37	42	79
DMX081S	8.1	●	8.1	37	42	79
DMX082S	8.2	●	8.2	37	42	79
DMX083S	8.3	●	8.3	37	42	79
DMX084S	8.4	●	8.4	37	42	79
DMX085S	8.5	●	8.5	37	42	79
DMX086S	8.6	●	8.6	40	44	84
DMX087S	8.7	●	8.7	40	44	84
DMX088S	8.8	●	8.8	40	44	84
DMX089S	8.9	●	8.9	40	44	84
DMX090S	9	●	9	40	44	84
DMX091S	9.1	●	9.1	40	44	84
DMX092S	9.2	●	9.2	40	44	84

Designation	øDc	AH170	øDs	ℓ	ℓs	L
DMX093S	9.3	●	9.3	40	44	84
DMX094S	9.4	●	9.4	40	44	84
DMX095S	9.5	●	9.5	40	44	84
DMX096S	9.6	●	9.6	43	46	89
DMX097S	9.7	●	9.7	43	46	89
DMX098S	9.8	●	9.8	43	46	89
DMX099S	9.9	●	9.9	43	46	89
DMX100S	10	●	10	43	46	89
DMX101S	10.1	●	10.1	43	46	89
DMX102S	10.2	●	10.2	43	46	89
DMX103S	10.3	●	10.3	43	46	89
DMX104S	10.4	●	10.4	43	46	89
DMX105S	10.5	●	10.5	43	46	89
DMX106S	10.6	●	10.6	43	46	89
DMX107S	10.7	●	10.7	47	48	95
DMX108S	10.8	●	10.8	47	48	95
DMX109S	10.9	●	10.9	47	48	95
DMX110S	11	●	11	47	48	95
DMX111S	11.1	●	11.1	47	48	95
DMX112S	11.2	●	11.2	47	48	95
DMX113S	11.3	●	11.3	47	48	95
DMX114S	11.4	●	11.4	47	48	95
DMX115S	11.5	●	11.5	47	48	95
DMX116S	11.6	●	11.6	47	48	95
DMX117S	11.7	●	11.7	47	48	95
DMX118S	11.8	●	11.8	47	48	95
DMX119S	11.9	●	11.9	51	51	102
DMX120S	12	●	12	51	51	102
DMX121S	12.1	●	12.1	51	51	102
DMX122S	12.2	●	12.2	51	51	102
DMX123S	12.3	●	12.3	51	51	102
DMX124S	12.4	●	12.4	51	51	102
DMX125S	12.5	●	12.5	51	51	102
DMX126S	12.6	●	12.6	51	51	102
DMX127S	12.7	●	12.7	51	51	102
DMX128S	12.8	●	12.8	51	51	102
DMX129S	12.9	●	12.9	51	51	102
DMX130S	13	●	13	51	51	102
DMX131S	13.1	●	13.1	51	51	102
DMX132S	13.2	●	13.2	51	51	102
DMX133S	13.3	●	13.3	54	53	107
DMX134S	13.4	●	13.4	54	53	107
DMX135S	13.5	●	13.5	54	53	107
DMX136S	13.6	●	13.6	54	53	107
DMX137S	13.7	●	13.7	54	53	107
DMX138S	13.8	●	13.8	54	53	107
DMX139S	13.9	●	13.9	54	53	107
DMX140S	14	●	14	54	53	107
DMX141S	14.1	●	14.1	56	55	111
DMX142S	14.2	●	14.2	56	55	111
DMX143S	14.3	●	14.3	56	55	111
DMX144S	14.4	●	14.4	56	55	111
DMX145S	14.5	●	14.5	56	55	111
DMX146S	14.6	●	14.6	56	55	111
DMX147S	14.7	●	14.7	56	55	111
DMX148S	14.8	●	14.8	56	55	111
DMX149S	14.9	●	14.9	56	55	111
DMX150S	15	●	15	56	55	111
DMX151S	15.1	●	15.1	58	57	115
DMX152S	15.2	●	15.2	58	57	115
DMX153S	15.3	●	15.3	58	57	115
DMX154S	15.4	●	15.4	58	57	115
DMX155S	15.5	●	15.5	58	57	115

● : Line-up

Designation	øDc	AH170	øDs	ℓ	ℓs	L
DMX156S	15.6	●	15.6	58	57	115
DMX157S	15.7	●	15.7	58	57	115
DMX158S	15.8	●	15.8	58	57	115
DMX159S	15.9	●	15.9	58	57	115
DMX160S	16	●	16	58	57	115
DMX165S	16.5	●	16.5	60	59	119
DMX170S	17	●	17	60	59	119
DMX175S	17.5	●	17.5	62	61	123
DMX180S	18	●	18	62	61	123
DMX185S	18.5	●	18.5	64	63	127
DMX190S	19	●	19	64	63	127
DMX195S	19.5	●	19.5	66	65	131
DMX200S	20	●	20	66	65	131

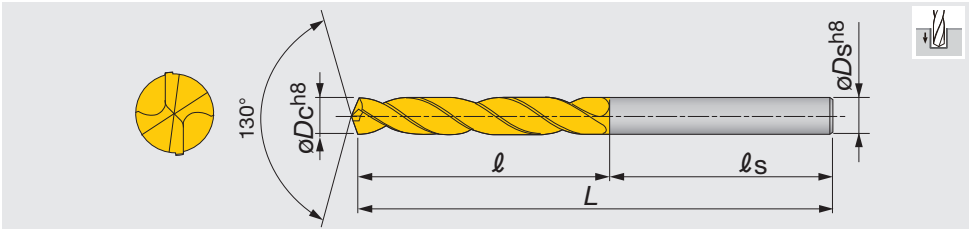
• Cutting fluid should be sufficiently supplied to the drill point and the entrance of the hole.
• Use a water-soluble cutting fluid.

● : Line-up

DMX L/D=3 (M type)

Soliddrill with 130° point angle without oil hole & shank size same as diameter, L/D = 3, dia = ø3 - ø20 mm





Designation	øDc	AH170	øDs	ℓ	ℓs	L
DMX030M	3	●	3	21	39	60
DMX031M	3.1	●	3.1	24	36	60
DMX032M	3.2	●	3.2	24	36	60
DMX033M	3.3	●	3.3	24	36	60
DMX034M	3.4	●	3.4	24	36	60
DMX035M	3.5	●	3.5	24	36	60
DMX036M	3.6	●	3.6	27	33	60
DMX037M	3.7	●	3.7	27	33	60
DMX038M	3.8	●	3.8	27	33	60
DMX039M	3.9	●	3.9	27	33	60
DMX040M	4	●	4	27	33	60
DMX041M	4.1	●	4.1	29	34	63
DMX042M	4.2	●	4.2	29	34	63
DMX043M	4.3	●	4.3	29	34	63
DMX044M	4.4	●	4.4	29	34	63
DMX045M	4.5	●	4.5	29	34	63
DMX046M	4.6	●	4.6	32	36	68
DMX047M	4.7	●	4.7	32	36	68
DMX048M	4.8	●	4.8	32	36	68
DMX049M	4.9	●	4.9	32	36	68
DMX050M	5	●	5	32	36	68
DMX051M	5.1	●	5.1	34	38	72
DMX052M	5.2	●	5.2	34	38	72
DMX053M	5.3	●	5.3	34	38	72
DMX054M	5.4	●	5.4	34	38	72
DMX055M	5.5	●	5.5	34	38	72
DMX056M	5.6	●	5.6	36	38	74
DMX057M	5.7	●	5.7	36	38	74
DMX058M	5.8	●	5.8	36	38	74
DMX059M	5.9	●	5.9	36	38	74
DMX060M	6	●	6	41	40	81
DMX061M	6.1	●	6.1	41	40	81
DMX062M	6.2	●	6.2	41	40	81
DMX063M	6.3	●	6.3	41	40	81
DMX064M	6.4	●	6.4	41	40	81
DMX065M	6.5	●	6.5	41	40	81
DMX066M	6.6	●	6.6	43	40	83
DMX067M	6.7	●	6.7	43	40	83
DMX068M	6.8	●	6.8	43	40	83
DMX069M	6.9	●	6.9	43	40	83
DMX070M	7	●	7	43	40	83
DMX071M	7.1	●	7.1	45	42	87
DMX072M	7.2	●	7.2	45	42	87
DMX073M	7.3	●	7.3	45	42	87
DMX074M	7.4	●	7.4	45	42	87
DMX075M	7.5	●	7.5	45	42	87
DMX076M	7.6	●	7.6	48	42	90
DMX077M	7.7	●	7.7	48	42	90
DMX078M	7.8	●	7.8	48	42	90
DMX079M	7.9	●	7.9	48	42	90
DMX080M	8	●	8	48	42	90
DMX081M	8.1	●	8.1	53	43	96
DMX082M	8.2	●	8.2	53	43	96
DMX083M	8.3	●	8.3	53	43	96
DMX084M	8.4	●	8.4	53	43	96
DMX085M	8.5	●	8.5	53	43	96
DMX086M	8.6	●	8.6	55	43	98
DMX087M	8.7	●	8.7	55	43	98
DMX088M	8.8	●	8.8	55	43	98
DMX089M	8.9	●	8.9	55	43	98
DMX090M	9	●	9	55	43	98
DMX091M	9.1	●	9.1	58	44	102
DMX092M	9.2	●	9.2	58	44	102

Designation	øDc	AH170	øDs	ℓ	ℓs	L
DMX093M	9.3	●	9.3	58	44	102
DMX094M	9.4	●	9.4	58	44	102
DMX095M	9.5	●	9.5	58	44	102
DMX096M	9.6	●	9.6	60	45	105
DMX097M	9.7	●	9.7	60	45	105
DMX098M	9.8	●	9.8	60	45	105
DMX099M	9.9	●	9.9	60	45	105
DMX100M	10	●	10	60	45	105
DMX101M	10.1	●	10.1	66	46	112
DMX102M	10.2	●	10.2	66	46	112
DMX103M	10.3	●	10.3	66	46	112
DMX104M	10.4	●	10.4	66	46	112
DMX105M	10.5	●	10.5	66	46	112
DMX106M	10.6	●	10.6	68	46	114
DMX107M	10.7	●	10.7	68	46	114
DMX108M	10.8	●	10.8	68	46	114
DMX109M	10.9	●	10.9	68	46	114
DMX110M	11	●	11	68	46	114
DMX111M	11.1	●	11.1	71	47	118
DMX112M	11.2	●	11.2	71	47	118
DMX113M	11.3	●	11.3	71	47	118
DMX114M	11.4	●	11.4	71	47	118
DMX115M	11.5	●	11.5	71	47	118
DMX116M	11.6	●	11.6	73	48	121
DMX117M	11.7	●	11.7	73	48	121
DMX118M	11.8	●	11.8	73	48	121
DMX119M	11.9	●	11.9	73	48	121
DMX120M	12	●	12	73	48	121
DMX121M	12.1	●	12.1	76	59	135
DMX122M	12.2	●	12.2	76	59	135
DMX123M	12.3	●	12.3	76	59	135
DMX124M	12.4	●	12.4	76	59	135
DMX125M	12.5	●	12.5	76	59	135
DMX126M	12.6	●	12.6	78	59	137
DMX127M	12.7	●	12.7	78	59	137
DMX128M	12.8	●	12.8	78	59	137
DMX129M	12.9	●	12.9	78	59	137
DMX130M	13	●	13	78	59	137
DMX131M	13.1	●	13.1	84	60	144
DMX132M	13.2	●	13.2	84	60	144
DMX133M	13.3	●	13.3	84	60	144
DMX134M	13.4	●	13.4	84	60	144
DMX135M	13.5	●	13.5	84	60	144
DMX136M	13.6	●	13.6	86	61	147
DMX137M	13.7	●	13.7	86	61	147
DMX138M	13.8	●	13.8	86	61	147
DMX139M	13.9	●	13.9	86	61	147
DMX140M	14	●	14	86	61	147
DMX141M	14.1	●	14.1	89	62	151
DMX142M	14.2	●	14.2	89	62	151
DMX143M	14.3	●	14.3	89	62	151
DMX144M	14.4	●	14.4	89	62	151
DMX145M	14.5	●	14.5	89	62	151
DMX146M	14.6	●	14.6	91	62	153
DMX147M	14.7	●	14.7	91	62	153
DMX148M	14.8	●	14.8	91	62	153
DMX149M	14.9	●	14.9	91	62	153
DMX150M	15	●	15	91	62	153
DMX151M	15.1	●	15.1	94	63	157
DMX152M	15.2	●	15.2	94	63	157
DMX153M	15.3	●	15.3	94	63	157
DMX154M	15.4	●	15.4	94	63	157
DMX155M	15.5	●	15.5	94	63	157

● : Line-up

Designation	øDc	AH170	øDs	ℓ	ℓs	L
DMX156M	15.6	●	15.6	96	64	160
DMX157M	15.7	●	15.7	96	64	160
DMX158M	15.8	●	15.8	96	64	160
DMX159M	15.9	●	15.9	96	64	160
DMX160M	16	●	16	96	64	160
DMX165M	16.5	●	16.5	102	65	167
DMX170M	17	●	17	102	65	167
DMX175M	17.5	●	17.5	102	65	167
DMX180M	18	●	18	102	65	167
DMX185M	18.5	●	18.5	114	65	179
DMX190M	19	●	19	114	65	179
DMX195M	19.5	●	19.5	114	65	179
DMX200M	20	●	20	114	65	179

• Cutting fluid should be sufficiently supplied to the drill point and the entrance of the hole.
• Use a water-soluble cutting fluid.
● : Line-up

STANDARD CUTTING CONDITIONS

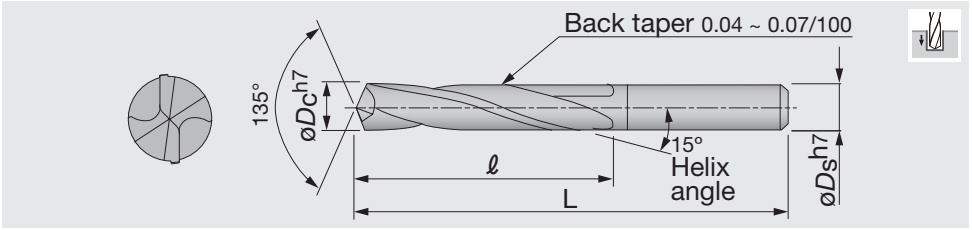
ISO	Workpiece material	Examples (JIS)	Hardness	Cutting speed Vc (m/min)	Feed: f (mm/rev) ø3 ~ ø5	ø5 ~ ø10	ø10 ~ ø16	ø16 ~ ø20
P	Mild steels· Low Carbon steels	E275A	< 180HB	40 - 80	0.15 - 0.25	0.15 - 0.3	0.2 - 0.4	0.25 - 0.5
P	Carbon steels · Alloy steels	C55	180 ~ 300HB	40 - 80	0.15 - 0.25	0.15 - 0.3	0.2 - 0.4	0.25 - 0.5
P	High alloy steets etc.	42CrMo4	250 ~ 350HB	40 - 70	0.1 - 0.2	0.15 - 0.25	0.15 - 0.3	0.2 - 0.4
M	Stainless steels	X5CrNi18-9	< 200HB	20 - 40	0.05 - 0.2	0.1 - 0.25	0.1 - 0.3	0.15 - 0.3
K	Grey cast irons	300	< 300HB	40 - 80	0.15 - 0.35	0.25 - 0.45	0.3 - 0.6	0.35 - 0.65
K	Ductile cast irons	600-3	< 300HB	40 - 80	0.15 - 0.3	0.2 - 0.4	0.25 - 0.5	0.3 - 0.6
S	Titanium alloys	Ti-6Al-4V		20 - 40	0.1- 0.2	0.15 - 0.25	0.15 - 0.3	0.2 - 0.4
S	Heat-resistant alloys	Inconel	250HB <	10 - 30	0.03 - 0.07	0.05 - 0.1	0.07 - 0.12	0.07 - 0.12
H	High hardened steels	X153CrMoV12	< 45HRC	10 - 30	0.03 - 0.07	0.05 - 0.1	0.07 - 0.12	0.07 - 0.12

Note:
• Because the cutting conditions may be changed depending on the material type, hardness, machinability, machine tool, and coolant, the most appropriate conditions must be decided whilst referring the chip control condition and tool failure mode.
• When using the smaller side of the diameter range, the feed rate should be set lower.
• When drilling difficult-to-cut materials, coolant supplying conditions are critical for successful drilling. So, the use of constant and flood coolant is highly recommended.
• For the standard DMX-type drills, somewhat large honing width intended for drilling of general steels is applied. But, when drilling difficult-to-cut materials having high hardness, requiring lowering the feed rate, the honing width should be modified.
• The drills with special honing specification are made to order on request.
• Inconel is trademark of Huntington Alloys, Inc.

DMD-S

For hardened material drilling soliddrill with 135° point angle and 15° helix angle, without oil hole





L/D = 3

Designation	øDc	EM10	ℓ	L
DMD-006S	0.6		5	40
DMD-007S	0.7		6	40
DMD-008S	0.8		6	40
DMD-009S	0.9	●	6	40
DMD-010S	1	●	6	40
DMD-011S	1.1		6	40
DMD-012S	1.2		8	40
DMD-013S	1.3		8	40
DMD-014S	1.4		9	40
DMD-015S	1.5		9	40
DMD-016S	1.6		10	50
DMD-017S	1.7		10	50
DMD-018S	1.8		11	50
DMD-019S	1.9		11	50
DMD-020S	2		12	50
DMD-021S	2.1		12	50
DMD-022S	2.2		13	50
DMD-023S	2.3		13	50
DMD-024S	2.4		14	50
DMD-025S	2.5		14	50
DMD-026S	2.6		14	50
DMD-027S	2.7		16	50
DMD-028S	2.8		16	50
DMD-029S	2.9		16	50
DMD-030S	3	●	16	50
DMD-031S	3.1		18	55
DMD-032S	3.2		18	55
DMD-033S	3.3		18	55
DMD-034S	3.4		20	55
DMD-035S	3.5		20	55
DMD-036S	3.6		20	55
DMD-037S	3.7		22	55
DMD-038S	3.8		22	55
DMD-039S	3.9		22	55
DMD-040S	4		22	55
DMD-041S	4.1		23	60
DMD-042S	4.2		23	60
DMD-043S	4.3		23	60
DMD-044S	4.4		23	60
DMD-045S	4.5		25	60
DMD-046S	4.6		25	60
DMD-047S	4.7		25	60
DMD-048S	4.8		27	60
DMD-049S	4.9		27	60
DMD-050S	5		27	60
DMD-051S	5.1		28	65
DMD-052S	5.2		28	65
DMD-053S	5.3		28	65
DMD-054S	5.4		30	65
DMD-055S	5.5		30	65
DMD-056S	5.6		32	65
DMD-057S	5.7		32	65
DMD-058S	5.8		35	65
DMD-059S	5.9		35	65
DMD-060S	6		35	65
DMD-061S	6.1		38	70
DMD-062S	6.2		38	70
DMD-063S	6.3		38	70
DMD-064S	6.4		38	70
DMD-065S	6.5		38	70
DMD-066S	6.6		38	70
DMD-067S	6.7		38	70
DMD-068S	6.8		38	70

Designation	øDc	EM10	ℓ	L
DMD-069S	6.9		38	70
DMD-070S	7		38	70
DMD-071S	7.1		40	75
DMD-072S	7.2		40	75
DMD-073S	7.3		40	75
DMD-074S	7.4		40	75
DMD-075S	7.5		40	75
DMD-076S	7.6		45	80
DMD-077S	7.7		45	80
DMD-078S	7.8		45	80
DMD-079S	7.9		45	80
DMD-080S	8		45	80
DMD-081S	8.1		50	85
DMD-082S	8.2		50	85
DMD-083S	8.3		50	85
DMD-084S	8.4		50	85
DMD-085S	8.5		50	85
DMD-086S	8.6		50	85
DMD-087S	8.7		50	85
DMD-088S	8.8		50	85
DMD-089S	8.9		50	85
DMD-090S	9		55	90
DMD-091S	9.1		55	90
DMD-092S	9.2		55	90
DMD-093S	9.3		55	90
DMD-094S	9.4		55	90
DMD-095S	9.5		55	90
DMD-096S	9.6		55	90
DMD-097S	9.7		55	90
DMD-098S	9.8		55	90
DMD-099S	9.9		55	90
DMD-100S	10		60	100
DMD-101S	10.1		60	100
DMD-102S	10.2		60	100
DMD-103S	10.3		60	100
DMD-104S	10.4		60	100
DMD-105S	10.5		60	100
DMD-106S	10.6		60	100
DMD-107S	10.7		60	100
DMD-108S	10.8		60	100
DMD-109S	10.9		60	100
DMD-110S	11		70	110
DMD-111S	11.1		70	110
DMD-112S	11.2		70	110
DMD-113S	11.3		70	110
DMD-114S	11.4		70	110
DMD-115S	11.5		70	110
DMD-116S	11.6		70	110
DMD-117S	11.7		70	110
DMD-118S	11.8		70	110
DMD-119S	11.9		70	110
DMD-120S	12		80	120
DMD-121S	12.1		80	120
DMD-122S	12.2		80	120
DMD-123S	12.3		80	120
DMD-124S	12.4		80	120
DMD-125S	12.5		80	120
DMD-126S	12.6		80	120
DMD-127S	12.7		80	120
DMD-128S	12.8		80	120
DMD-129S	12.9		80	120
DMD-130S	13		90	130

● : Line-up

øDc	Tool diameter tolerance h7(mm)
øDc ≤ 3	0 ~ -0.01
3 < øDc ≤ 6	0 ~ -0.012
6 < øDc ≤ 10	0 ~ -0.015
10 < øDc ≤ 13	0 ~ -0.018

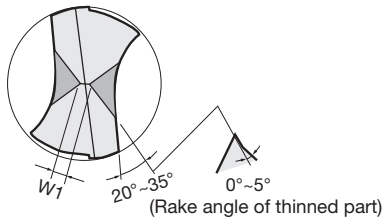
CAUTIONARY POINTS IN USE

- The standard cutting conditions are only the general guidelines. When using on a low rigidity drilling machine, using a small diameter drill, or drilling a hard material, the cutting speed and feed rate should be set lower.
- Cutting edges should be honed as follows:
  Honing width: 0.02 to 0.05 mm
  Honing angle: - 20° to - 30°

CAUTIONARY POINTS IN REGRINDING

- Regrinding must be carried out before the corner wear reaches the same as the margin width.
- Use of a diamond wheel (#200 to #400) is recommended. Avoid use of a silicon carbide wheel and hand grinding.
- Thin the drill point. Cross thinning shown in the figure below is recommended. The recommended thinning width (W1) is 1/3 to 1/4 times the web thickness. In this case, too sharp thinned edge may cause drill breakage.

Thinning for DMD-S drills



(Rake angle of thinned part)

STANDARD CUTTING CONDITIONS

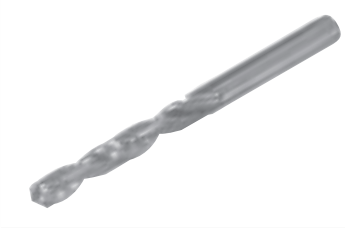
ISO	Workpiece material	Cutting speed: *Vc* (m/min)	Feed: *f* (mm/rev)
H	Hardened steels (< 50HRC)	8 - 18	0.02 - 0.1
H	Hardened steels (> 50HRC)	3 - 9	0.01 - 0.06
P	High-manganese steels	8 - 12	0.03 - 0.1
S	Inconel	10 - 20	0.02 - 0.08
K	Chilld cast irons	8 - 12	0.02 - 0.08

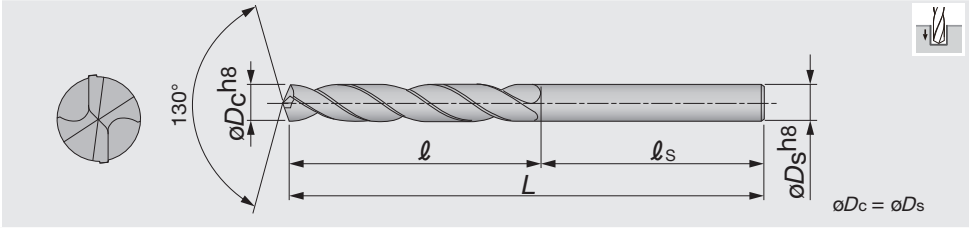
• No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Tool diameter
• Table feed (mm/min) = No. of revolutions × Feed per revolution

DMX-F

Soliddrill for aluminum and cast iron drilling, without oil hole & shank size same as diameter

L/D = 2 (S type)





Designation	øDc	MD20	ℓ	ℓs	L
DMX0300FS	3	●	16	30	46
DMX0310FS	3.1		18	31	49
DMX0320FS	3.2		18	31	49
DMX0330FS	3.3		18	31	49
DMX0340FS	3.4	●	20	32	52
DMX0350FS	3.5	●	20	32	52
DMX0360FS	3.6		20	32	52
DMX0370FS	3.7		20	32	52
DMX0380FS	3.8		22	33	55
DMX0390FS	3.9		22	33	55
DMX0400FS	4	●	22	33	55
DMX0410FS	4.1		22	33	55
DMX0420FS	4.2		22	33	55
DMX0430FS	4.3	●	24	34	58
DMX0440FS	4.4		24	34	58
DMX0450FS	4.5	●	24	34	58
DMX0460FS	4.6		24	34	58
DMX0470FS	4.7		24	34	58
DMX0480FS	4.8		26	34	62
DMX0490FS	4.9		26	34	62
DMX0500FS	5	●	26	34	62
DMX0510FS	5.1	●	26	34	62
DMX0520FS	5.2		26	34	62
DMX0530FS	5.3		26	34	62
DMX0540FS	5.4		28	38	66
DMX0550FS	5.5	●	28	38	66
DMX0560FS	5.6		28	38	66
DMX0570FS	5.7		28	38	66
DMX0580FS	5.8		28	38	66
DMX0590FS	5.9		28	38	66
DMX0600FS	6	●	28	38	66
DMX0610FS	6.1		31	39	70
DMX0620FS	6.2		31	39	70
DMX0630FS	6.3		31	39	70
DMX0640FS	6.4		31	39	70
DMX0650FS	6.5	●	31	39	70
DMX0660FS	6.6		31	39	70
DMX0670FS	6.7		31	39	70
DMX0680FS	6.8	●	34	40	74
DMX0690FS	6.9		34	40	74
DMX0700FS	7	●	34	40	74
DMX0710FS	7.1		34	40	74
DMX0720FS	7.2		34	40	74
DMX0730FS	7.3	●	34	40	74
DMX0740FS	7.4		34	40	74
DMX0750FS	7.5	●	34	40	74
DMX0760FS	7.6		37	42	79
DMX0770FS	7.7		37	42	79
DMX0780FS	7.8		37	42	79
DMX0790FS	7.9		37	42	79
DMX0800FS	8	●	37	42	79
DMX0810FS	8.1		37	42	79
DMX0820FS	8.2		37	42	79

Designation	øDc	MD20	ℓ	ℓs	L
DMX0830FS	8.3		37	42	79
DMX0840FS	8.4		37	42	79
DMX0850FS	8.5	●	37	42	79
DMX0860FS	8.6	●	40	44	84
DMX0870FS	8.7		40	44	84
DMX0880FS	8.8	●	40	44	84
DMX0890FS	8.9		40	44	84
DMX0900FS	9	●	40	44	84
DMX0910FS	9.1		40	44	84
DMX0920FS	9.2		40	44	84
DMX0930FS	9.3		40	44	84
DMX0940FS	9.4		40	44	84
DMX0950FS	9.5	●	40	44	84
DMX0960FS	9.6	●	43	46	89
DMX0970FS	9.7		43	46	89
DMX0980FS	9.8		43	46	89
DMX0990FS	9.9		43	46	89
DMX1000FS	10	●	43	46	89
DMX1010FS	10.1		43	46	89
DMX1020FS	10.2		43	46	89
DMX1030FS	10.3	●	43	46	89
DMX1040FS	10.4		43	46	89
DMX1050FS	10.5	●	43	46	89
DMX1060FS	10.6		43	46	89
DMX1070FS	10.7		47	48	95
DMX1080FS	10.8		47	48	95
DMX1090FS	10.9		47	48	95
DMX1100FS	11	●	47	48	95
DMX1110FS	11.1		47	48	95
DMX1120FS	11.2		47	48	95
DMX1130FS	11.3		47	48	95
DMX1140FS	11.4		47	48	95
DMX1150FS	11.5	●	47	48	95
DMX1160FS	11.6		47	48	95
DMX1170FS	11.7		47	48	95
DMX1180FS	11.8		47	48	95
DMX1190FS	11.9		51	51	102
DMX1200FS	12	●	51	51	102
DMX1210FS	12.1		51	51	102
DMX1220FS	12.2		51	51	102
DMX1230FS	12.3		51	51	102
DMX1240FS	12.4		51	51	102
DMX1250FS	12.5	●	51	51	102
DMX1260FS	12.6		51	51	102
DMX1270FS	12.7		51	51	102
DMX1280FS	12.8		51	51	102
DMX1290FS	12.9		51	51	102
DMX1300FS	13	●	51	51	102
DMX1310FS	13.1		51	51	102
DMX1320FS	13.2		51	51	102
DMX1330FS	13.3		54	53	107
DMX1340FS	13.4		54	53	107
DMX1350FS	13.5	●	54	53	107

● : Line-up

L/D = 2 (S type)

Designation	øDc	MD20	ℓ	ℓs	L
DMX1360FS	13.6		54	53	107
DMX1370FS	13.7		54	53	107
DMX1380FS	13.8		54	53	107
DMX1390FS	13.9		54	53	107
DMX1400FS	14	●	54	53	107

øDc	Tool diameter tolerance h8(mm)
øDc ≤ 3	0 ~ -0.014
3 < øDc ≤ 6	0 ~ -0.018
6 < øDc ≤ 10	0 ~ -0.022
10 < øDc ≤ 18	0 ~ -0.027
18 < øDc ≤ 20	0 ~ -0.033

L/D = 3 (M type)

Designation	øDc	MD20	ℓ	ℓs	L
DMX0300FM	3	●	21	39	60
DMX0310FM	3.1		24	36	60
DMX0320FM	3.2		24	36	60
DMX0330FM	3.3		24	36	60
DMX0340FM	3.4	●	24	36	60
DMX0350FM	3.5	●	24	36	60
DMX0360FM	3.6		27	33	60
DMX0370FM	3.7		27	33	60
DMX0380FM	3.8		27	33	60
DMX0390FM	3.9		27	33	60
DMX0400FM	4	●	27	33	60
DMX0410FM	4.1		29	34	63
DMX0420FM	4.2		29	34	63
DMX0430FM	4.3	●	29	34	63
DMX0440FM	4.4		29	34	63
DMX0450FM	4.5	●	29	34	63
DMX0460FM	4.6		32	36	68
DMX0470FM	4.7		32	36	68
DMX0480FM	4.8		32	36	68
DMX0490FM	4.9		32	36	68
DMX0500FM	5	●	32	36	68
DMX0510FM	5.1	●	34	38	72
DMX0520FM	5.2		34	38	72
DMX0530FM	5.3		34	38	72
DMX0540FM	5.4		34	38	72
DMX0550FM	5.5	●	34	38	72
DMX0560FM	5.6		36	38	74
DMX0570FM	5.7		36	38	74
DMX0580FM	5.8		36	38	74
DMX0590FM	5.9		36	38	74
DMX0600FM	6	●	41	40	81
DMX0610FM	6.1		41	40	81
DMX0620FM	6.2		41	40	81
DMX0630FM	6.3		41	40	81
DMX0640FM	6.4		41	40	81
DMX0650FM	6.5	●	41	40	81
DMX0660FM	6.6		43	40	83
DMX0670FM	6.7		43	40	83
DMX0680FM	6.8	●	43	40	83
DMX0690FM	6.9		43	40	83
DMX0700FM	7	●	43	40	83
DMX0710FM	7.1		45	42	87
DMX0720FM	7.2		45	42	87
DMX0730FM	7.3		45	42	87
DMX0740FM	7.4		45	42	87
DMX0750FM	7.5	●	45	42	87
DMX0760FM	7.6		48	42	90
DMX0770FM	7.7		48	42	90
DMX0780FM	7.8		48	42	90
DMX0790FM	7.9		48	42	90
DMX0800FM	8	●	48	42	90
DMX0810FM	8.1		53	43	96
DMX0820FM	8.2		53	43	96
DMX0830FM	8.3		53	43	96
DMX0840FM	8.4		53	43	96
DMX0850FM	8.5	●	53	43	96
DMX0860FM	8.6	●	55	43	98
DMX0870FM	8.7		55	43	98
DMX0880FM	8.8		55	43	98
DMX0890FM	8.9		55	43	98
DMX0900FM	9	●	55	43	98

● : Line-up

L/D = 5 (L type)

Designation	øDc	MD20	ℓ	ℓs	L
DMX0910FM	9.1		58	44	102
DMX0920FM	9.2		58	44	102
DMX0930FM	9.3		58	44	102
DMX0940FM	9.4		58	44	102
DMX0950FM	9.5	●	58	44	102
DMX0960FM	9.6		60	45	105
DMX0970FM	9.7		60	45	105
DMX0980FM	9.8		60	45	105
DMX0990FM	9.9		60	45	105
DMX1000FM	10	●	60	45	105
DMX1010FM	10.1		66	46	112
DMX1020FM	10.2		66	46	112
DMX1030FM	10.3	●	66	46	112
DMX1040FM	10.4		66	46	112
DMX1050FM	10.5	●	66	46	112
DMX1060FM	10.6		68	46	114
DMX1070FM	10.7		68	46	114
DMX1080FM	10.8		68	46	114
DMX1090FM	10.9		68	46	114
DMX1100FM	11	●	68	46	114
DMX1110FM	11.1		71	47	118
DMX1120FM	11.2		71	47	118
DMX1130FM	11.3		71	47	118
DMX1140FM	11.4		71	47	118
DMX1150FM	11.5	●	71	47	118
DMX1160FM	11.6		73	48	121
DMX1170FM	11.7		73	48	121
DMX1180FM	11.8		73	48	121
DMX1190FM	11.9		73	48	121
DMX1200FM	12	●	73	48	121
DMX1210FM	12.1		76	59	135
DMX1220FM	12.2		76	59	135
DMX1230FM	12.3		76	59	135
DMX1240FM	12.4		76	59	135
DMX1250FM	12.5	●	76	59	135
DMX1260FM	12.6		78	59	137
DMX1270FM	12.7		78	59	137
DMX1280FM	12.8		78	59	137
DMX1290FM	12.9		78	59	137
DMX1300FM	13	●	78	59	137
DMX1310FM	13.1		84	60	144
DMX1320FM	13.2		84	60	144
DMX1330FM	13.3		84	60	144
DMX1340FM	13.4		84	60	144
DMX1350FM	13.5	●	84	60	144
DMX1360FM	13.6		86	61	147
DMX1370FM	13.7		86	61	147
DMX1380FM	13.8		86	61	147
DMX1390FM	13.9		86	61	147
DMX1400FM	14	●	86	61	147

øDc	Tool diameter tolerance h8(mm)
øDc ≤ 3	0 ~ -0.014
3 < øDc ≤ 6	0 ~ -0.018
6 < øDc ≤ 10	0 ~ -0.022
10 < øDc ≤ 18	0 ~ -0.027
18 < øDc ≤ 20	0 ~ -0.033

Designation	øDc	MD20	ℓ	ℓs	L
DMX0300FL	3	●	27	39	66
DMX0310FL	3.1		31	36	67
DMX0320FL	3.2		31	36	67
DMX0330FL	3.3	●	31	36	67
DMX0340FL	3.4	●	31	36	67
DMX0350FL	3.5	●	31	36	67
DMX0360FL	3.6		35	33	68
DMX0370FL	3.7		35	33	68
DMX0380FL	3.8		35	33	68
DMX0390FL	3.9		35	33	68
DMX0400FL	4	●	35	33	68
DMX0410FL	4.1		38	34	72
DMX0420FL	4.2	●	38	34	72
DMX0430FL	4.3	●	38	34	72
DMX0440FL	4.4		38	34	72
DMX0450FL	4.5	●	38	34	72
DMX0460FL	4.6		42	36	78
DMX0470FL	4.7		42	36	78
DMX0480FL	4.8		42	36	78
DMX0490FL	4.9		42	36	78
DMX0500FL	5	●	42	36	78
DMX0510FL	5.1	●	45	38	83
DMX0520FL	5.2		45	38	83
DMX0530FL	5.3		45	38	83
DMX0540FL	5.4		45	38	83
DMX0550FL	5.5	●	45	38	83
DMX0560FL	5.6		48	38	86
DMX0570FL	5.7		48	38	86
DMX0580FL	5.8		48	38	86
DMX0590FL	5.9		48	38	86
DMX0600FL	6	●	54	40	94
DMX0610FL	6.1		54	40	94
DMX0620FL	6.2		54	40	94
DMX0630FL	6.3	●	54	40	94
DMX0640FL	6.4		54	40	94
DMX0650FL	6.5	●	54	40	94
DMX0660FL	6.6		57	40	97
DMX0670FL	6.7		57	40	97
DMX0680FL	6.8	●	57	40	97
DMX0690FL	6.9		57	40	97
DMX0700FL	7	●	57	40	97
DMX0710FL	7.1		60	42	102
DMX0720FL	7.2		60	42	102
DMX0730FL	7.3		60	42	102
DMX0740FL	7.4		60	42	102
DMX0750FL	7.5	●	60	42	102
DMX0760FL	7.6		64	42	106
DMX0770FL	7.7		64	42	106
DMX0780FL	7.8		64	42	106
DMX0790FL	7.9		64	42	106
DMX0800FL	8	●	64	42	106
DMX0810FL	8.1		70	43	113
DMX0820FL	8.2		70	43	113
DMX0830FL	8.3		70	43	113
DMX0840FL	8.4		70	43	113
DMX0850FL	8.5	●	70	43	113
DMX0860FL	8.6	●	73	43	116
DMX0870FL	8.7		73	43	116
DMX0880FL	8.8		73	43	116
DMX0890FL	8.9		73	43	116
DMX0900FL	9	●	73	43	116

● : Line-up

L/D = 5 (L type)

Designation	øDc	MD20	ℓ	ℓs	L
DMX0910FL	9.1		77	44	121
DMX0920FL	9.2		77	44	121
DMX0930FL	9.3		77	44	121
DMX0940FL	9.4		77	44	121
DMX0950FL	9.5	●	77	44	121
DMX0960FL	9.6		80	45	125
DMX0970FL	9.7	●	80	45	125
DMX0980FL	9.8		80	45	125
DMX0990FL	9.9		80	45	125
DMX1000FL	10	●	80	45	125
DMX1010FL	10.1		87	46	133
DMX1020FL	10.2		87	46	133
DMX1030FL	10.3	●	87	46	133
DMX1040FL	10.4		87	46	133
DMX1050FL	10.5	●	87	46	133
DMX1060FL	10.6		90	46	136
DMX1070FL	10.7		90	46	136
DMX1080FL	10.8		90	46	136
DMX1090FL	10.9		90	46	136
DMX1100FL	11	●	90	46	136
DMX1110FL	11.1		94	47	141
DMX1120FL	11.2		94	47	141
DMX1130FL	11.3		94	47	141
DMX1140FL	11.4		94	47	141
DMX1150FL	11.5	●	94	47	141
DMX1160FL	11.6		97	48	145
DMX1170FL	11.7		97	48	145
DMX1180FL	11.8		97	48	145
DMX1190FL	11.9		97	48	145
DMX1200FL	12	●	97	48	145
DMX1210FL	12.1		101	59	160
DMX1220FL	12.2		101	59	160
DMX1230FL	12.3		101	59	160
DMX1240FL	12.4		101	59	160
DMX1250FL	12.5	●	101	59	160
DMX1260FL	12.6		104	59	163
DMX1270FL	12.7		104	59	163
DMX1280FL	12.8		104	59	163
DMX1290FL	12.9		104	59	163
DMX1300FL	13	●	104	59	163
DMX1310FL	13.1		111	60	171
DMX1320FL	13.2		111	60	171
DMX1330FL	13.3		111	60	171
DMX1340FL	13.4		111	60	171
DMX1350FL	13.5	●	111	60	171
DMX1360FL	13.6		114	61	175
DMX1370FL	13.7		114	61	175
DMX1380FL	13.8		114	61	175
DMX1390FL	13.9		114	61	175
DMX1400FL	14	●	114	61	175
DMX1410FL	14.1		118	62	180
DMX1420FL	14.2	●	118	62	180
DMX1430FL	14.3		118	62	180
DMX1440FL	14.4		118	62	180
DMX1450FL	14.5		118	62	180
DMX1460FL	14.6		121	62	183
DMX1470FL	14.7		121	62	183
DMX1480FL	14.8		121	62	183
DMX1490FL	14.9		121	62	183
DMX1500FL	15		121	62	183

Designation	øDc	MD20	ℓ	ℓs	L
DMX1510FL	15.1		125	63	188
DMX1520FL	15.2		125	63	188
DMX1530FL	15.3		125	63	188
DMX1540FL	15.4		125	63	188
DMX1550FL	15.5		125	63	188
DMX1560FL	15.6		128	64	192
DMX1570FL	15.7		128	64	192
DMX1580FL	15.8		128	64	192
DMX1590FL	15.9		128	64	192
DMX1600FL	16		128	64	192
DMX1650FL	16.5		136	65	201
DMX1700FL	17		136	65	201
DMX1750FL	17.5		136	65	201
DMX1800FL	18		136	65	201
DMX1850FL	18.5		152	65	217
DMX1900FL	19		152	65	217
DMX1950FL	19.5		152	65	217
DMX2000FL	20		152	65	217

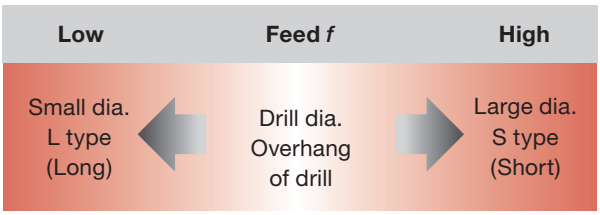
øDc	Tool diameter tolerance h8(mm)
øDc ≤ 3	0 ~ -0.014
3 < øDc ≤ 6	0 ~ -0.018
6 < øDc ≤ 10	0 ~ -0.022
10 < øDc ≤ 18	0 ~ -0.027
18 < øDc ≤ 20	0 ~ -0.033

● : Line-up

STANDARD DRILLING CONDITIONS

ISO	Workpiece material	Cutting speed: *Vc* (m/min)	Feed: *f* (mm/rev) ø3 ~ ø5	ø5 ~ ø10	ø10 ~ ø16	ø16 ~ ø20
N	Aluminium alloys	60 - 120	0.2 - 0.4	0.3 - 0.5	0.4 - 0.6	0.5 - 0.7
K	Grey cast irons	40 - 80	0.15 - 0.35	0.25 - 0.45	0.3 - 0.6	0.35 - 0.65
	Ductile cast irons	30 - 70	0.15 - 0.3	0.2 - 0.4	0.25 - 0.5	0.3 - 0.6

Notes:
- The above table shows standard and typical cutting conditions for DMX - FM type drills.
- Because the cutting conditions may be changed depending on the material type, hardness, machinability, machine tool, and coolant, the most appropriate conditions must be decided whilst referring the chip control condition and tool failure mode.
- When using the smaller side of the diameter range, the feed rate should be set lower.
- When working with long overhang or using "L" type drills, the feed rate should be set lower.



NOTE ON CUTTING FLUID

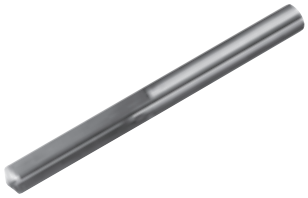
- Cutting fluid should be sufficiently supplied to the drill point and the entrance of the hole.
- Use a water soluble cutting fluid containing relatively high content of extreme pressure additive for heavy duty cutting or use a water insoluble cutting fluid.

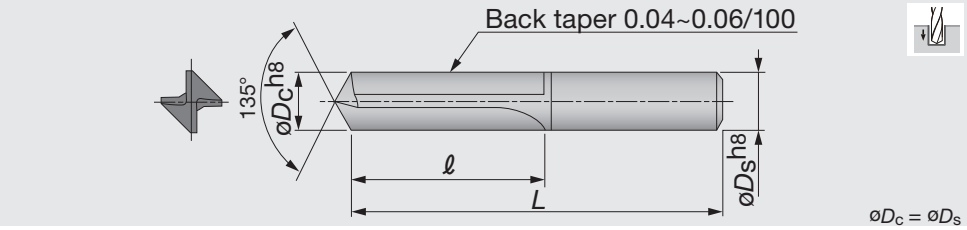
- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Tool diameter
- Table feed (mm/min) = No. of revolutions × Feed per revolution

FDS

Straight flute soliddrill for pre-tap hole drilling of aluminum, without oil hole

L/D = 2 (S type)





For tupped holes

Designation	øDc	Tolerance	G1F	ℓ	L	Application
FDS0257	2.57	0 - 0.014	●	18	60	M3
FDS0337	3.37	0 - 0.018	●	18	60	M4
FDS0429	4.29	0 - 0.018	●	23	70	M5
FDS0511	5.11	0 - 0.018	●	28	80	M6
FDS0683	6.83	0 - 0.022	●	36	90	M8
FDS0860	8.6	0 - 0.022	●	46	110	M10

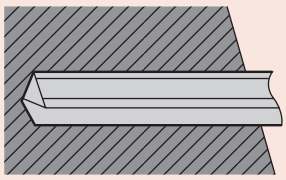
For bolt holes

Designation	øDc	Tolerance	G1F	ℓ	L	Application
FDS0340	3.4	0 - 0.018	●	18	60	M3
FDS0450	4.5	0 - 0.018	●	23	70	M4
FDS0550	5.5	0 - 0.018		28	80	M5
FDS0660	6.6	0 - 0.022	●	36	90	M6
FDS0900	9	0 - 0.022		46	110	M8
FDS1100	11	0 - 0.027	●	55	120	M10

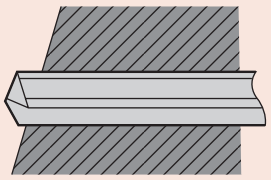
● : Line-up

Notes: • Other sized drills and step type drills can be made to order.
• When ordering, specify the diameter, overall length, shank specifications of the drill, the work material to be drilled, and the drilling depth.

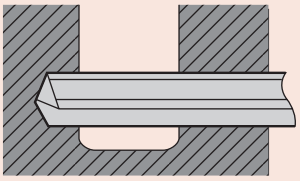
APPLICATION EXAMPLES OF FD DRILLS (EFFECTIVE FOR FOLLOWING OPERATIONS)



Drilling into angled face



Drilling through angled face



Interrupted drilling

STANDARD CUTTING CONDIOTIONS

ISO	Workpiece material	Cutting speed: Vc (m/min)	Feed: f (mm/rev)
N	Aluminium alloys (Brittle)	50 - 80	0.1 - 0.3
	Aluminium alloys (Sticky)	40 - 60	0.1 - 0.2
K	Grey cast irons	40 - 60	0.1 - 0.3
	Ductile cast irons	30 - 50	0.08 - 0.2

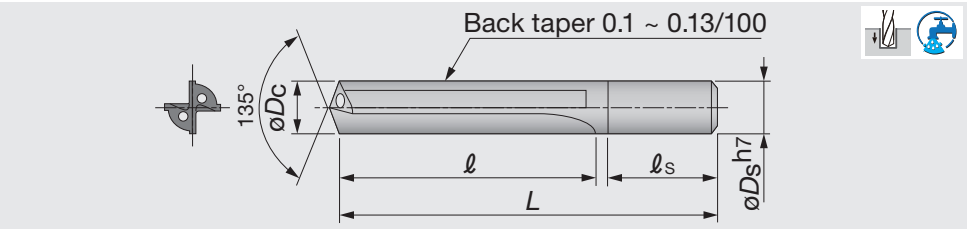
Note : Use a water soluble emulsion type cutting fluid.
Excessive run out as mounted on the machine may affect drilled hole accuracies and tool life.
(Holding with a scroll chuck is not recommended.)

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Tool diameter
- Table feed (mm/min) = No. of revolutions × Feed per revolution

FDC

Straight flute soliddrill for high feed drilling of aluminum and cast iron, with oil hole





L/D = 5 (S type)

Designation	øDc	G1F	øDs	ℓ	ℓs	L
FDC0500S	5		5	40	38	80
FDC0510S	5.1	●	6	44	40	85
FDC0520S	5.2		6	44	40	85
FDC0530S	5.3		6	44	40	85
FDC0540S	5.4		6	44	40	85
FDC0550S	5.5		6	44	40	85
FDC0560S	5.6		6	48	40	90
FDC0570S	5.7		6	48	40	90
FDC0580S	5.8		6	48	40	90
FDC0590S	5.9		6	48	40	90
FDC0600S	6	●	6	48	40	90
FDC0610S	6.1		7	52	40	95
FDC0620S	6.2		7	52	40	95
FDC0630S	6.3		7	52	40	95
FDC0640S	6.4		7	52	40	95
FDC0650S	6.5		7	52	40	95
FDC0660S	6.6		7	56	40	100
FDC0670S	6.7		7	56	40	100
FDC0680S	6.8		7	56	40	100
FDC0690S	6.9		7	56	40	100
FDC0700S	7		7	56	40	100
FDC0710S	7.1		8	60	42	105
FDC0720S	7.2		8	60	42	105
FDC0730S	7.3		8	60	42	105
FDC0740S	7.4		8	60	42	105
FDC0750S	7.5		8	60	42	105
FDC0760S	7.6		8	64	42	110
FDC0770S	7.7		8	64	42	110
FDC0780S	7.8		8	64	42	110
FDC0790S	7.9		8	64	42	110
FDC0800S	8		8	64	42	110
FDC0810S	8.1		9	68	44	115
FDC0820S	8.2		9	68	44	115
FDC0830S	8.3		9	68	44	115
FDC0840S	8.4	●	9	68	44	115
FDC0850S	8.5		9	68	44	115
FDC0860S	8.6	●	9	72	44	120
FDC0870S	8.7		9	72	44	120
FDC0880S	8.8		9	72	44	120
FDC0890S	8.9		9	72	44	120
FDC0900S	9		9	72	44	120
FDC0910S	9.1		10	76	44	125
FDC0920S	9.2		10	76	44	125
FDC0930S	9.3		10	76	44	125
FDC0940S	9.4		10	76	44	125
FDC0950S	9.5		10	76	44	125
FDC0960S	9.6		10	80	46	130
FDC0970S	9.7		10	80	46	130
FDC0980S	9.8		10	80	46	130
FDC0990S	9.9		10	80	46	130
FDC1000S	10		10	80	46	130

Designation	øDc	G1F	øDs	ℓ	ℓs	L
FDC1050S	10.5	●	11	84	46	140
FDC1100S	11	●	11	88	46	140
FDC1150S	11.5	●	12	92	48	150
FDC1200S	12	●	12	96	48	150
FDC1250S	12.5	●	13	100	50	160
FDC1300S	13	●	13	104	50	160
FDC1350S	13.5	●	14	108	52	170
FDC1400S	14	●	14	112	52	170
FDC1450S	14.5	●	15	116	54	180
FDC1500S	15	●	15	120	54	180
FDC1550S	15.5	●	16	124	56	190
FDC1600S	16	●	16	128	56	190

øDc	Tool diameter tolerance(mm)
5 ≤ øDc ≤ 6	+0.02 ~ +0.01
6 < øDc ≤ 16	+0.025 ~ +0.015

● : Line-up

L/D = 8 (L type)

Designation	øDc	G1F	øDs	ℓ	ℓs	L
FDC0500L	5	●	5	55	38	95
FDC0510L	5.1		6	61	40	105
FDC0520L	5.2		6	61	40	105
FDC0530L	5.3		6	61	40	105
FDC0540L	5.4		6	61	40	105
FDC0550L	5.5	●	6	61	40	105
FDC0560L	5.6		6	66	40	110
FDC0570L	5.7		6	66	40	110
FDC0580L	5.8		6	66	40	110
FDC0590L	5.9		6	66	40	110
FDC0600L	6	●	6	66	40	110
FDC0610L	6.1		7	72	40	115
FDC0620L	6.2	●	7	72	40	115
FDC0630L	6.3		7	72	40	115
FDC0640L	6.4		7	72	40	115
FDC0650L	6.5	●	7	72	40	115
FDC0660L	6.6		7	77	40	120
FDC0670L	6.7		7	77	40	120
FDC0680L	6.8	●	7	77	40	120
FDC0690L	6.9		7	77	40	120
FDC0700L	7	●	7	77	40	120
FDC0710L	7.1		8	83	42	125
FDC0720L	7.2		8	83	42	125
FDC0730L	7.3		8	83	42	125
FDC0740L	7.4		8	83	42	125
FDC0750L	7.5	●	8	83	42	125

Designation	øDc	G1F	øDs	ℓ	ℓs	L
FDC0760L	7.6		8	88	42	130
FDC0770L	7.7		8	88	42	130
FDC0780L	7.8	●	8	88	42	130
FDC0790L	7.9		8	88	42	130
FDC0800L	8	●	8	88	42	130
FDC0810L	8.1		9	94	44	140
FDC0820L	8.2		9	94	44	140
FDC0830L	8.3		9	94	44	140
FDC0840L	8.4		9	94	44	140
FDC0850L	8.5	●	9	94	44	140
FDC0860L	8.6	●	9	99	44	145
FDC0870L	8.7		9	99	44	145
FDC0880L	8.8		9	99	44	145
FDC0890L	8.9		9	99	44	145
FDC0900L	9	●	9	99	44	145
FDC0910L	9.1		10	105	44	150
FDC0920L	9.2		10	105	44	150
FDC0930L	9.3		10	105	44	150
FDC0940L	9.4		10	105	44	150
FDC0950L	9.5	●	10	105	44	150
FDC0960L	9.6		10	110	46	160
FDC0970L	9.7		10	110	46	160
FDC0980L	9.8		10	110	46	160
FDC0990L	9.9		10	110	46	160
FDC1000L	10	●	10	110	46	160

● : Line-up

øDc	Tool diameter tolerance (mm)
5 ≤ øDc ≤ 6	+0.02 ~ +0.01
6 < øDc ≤ 10	+0.025 ~ +0.015

Cutting fluid

- Supply the cutting fluid through the drill.
- The required fluid pressure is 0.5 to 1.0 MPa
- Use a water soluble cutting fluid containing a large amount of extreme pressure additive.

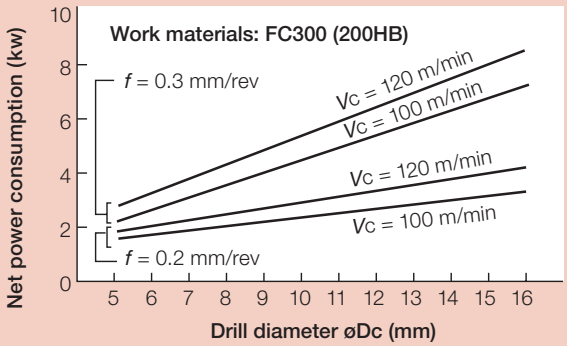
STANDARD CUTTING CONDITIONS

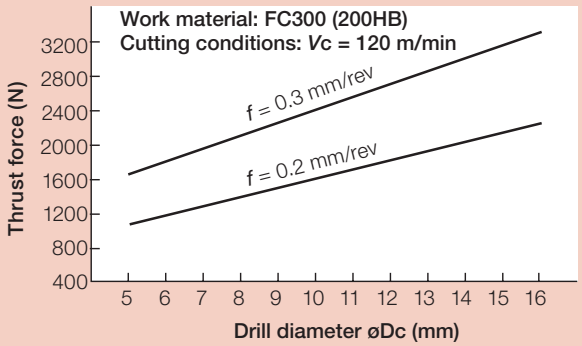
ISO	Workpiece material	Cutting speed: Vc (m/min) ø5 ~ ø8	ø8 ~ ø12	ø12 ~ ø16	Feed: f (mm/rev) ø5 ~ ø8	ø8 ~ ø12	ø12 ~ ø16
N	Aluminium alloys	100 - 140	120 - 160	140 - 180	0.1 - 0.25	0.15 - 0.3	0.15 - 0.3
K	Grey Cast irons	90 - 120	110 - 140	130 - 160	0.1 - 0.25	0.2 - 0.3	0.2 - 0.30
	Ductile cast irons	60 - 80	70 - 90	70 - 100	0.1 - 0.25	0.15 - 0.3	0.15 - 0.3

Caution:
When changing a tool, completely clean the chips which may be clogging in the collet or adapter.

Note:
The cutting conditions shown left may vary depending on the work material, coolant dilution ratio and coolant supply pressure used.

CUTTING PERFORMANCE

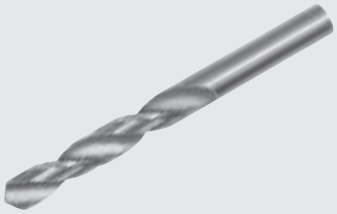


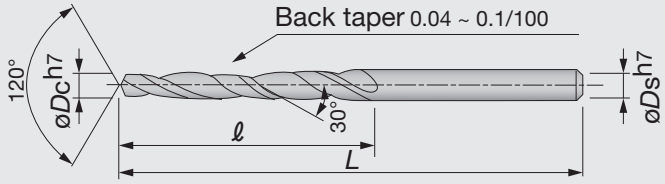


- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Tool diameter
- Table feed (mm/min) = No. of revolutions × Feed per revolution

CDS

Soliddrill for aluminum and cast iron with 120° point angle, without oil hole and shank size as diameter for hole depths up to L/D 12





øDc = øDs

Designation	øDc	UM	ℓ	L
CDS-004	0.4	●	6	30
CDS-0045	0.45		6	30
CDS-005	0.5	●	6	30
CDS-0055	0.55		6	30
CDS-006	0.6	●	6	30
CDS-0065	0.65		6	30
CDS-007	0.7	●	6	30
CDS-0075	0.75		6	30
CDS-008	0.8	●	8	30
CDS-0085	0.85		8	30
CDS-009	0.9	●	8	30
CDS-0095	0.95		10	38
CDS-010	1	●	10	38
CDS-0105	1.05		10	38
CDS-011	1.1	●	10	38
CDS-0115	1.15		10	38
CDS-012	1.2	●	10	38
CDS-0125	1.25		10	38
CDS-013	1.3	●	10	38
CDS-0135	1.35		10	38
CDS-014	1.4	●	10	38
CDS-0145	1.45		10	38
CDS-015	1.5	●	10	38
CDS-0155	1.55		22	45
CDS-016	1.6	●	22	45
CDS-0165	1.65		22	45
CDS-017	1.7	●	22	45
CDS-0175	1.75		22	45
CDS-018	1.8	●	22	45
CDS-0185	1.85		22	45
CDS-019	1.9	●	22	45
CDS-0195	1.95		22	45
CDS-020	2	●	22	45
CDS-0205	2.05		22	45
CDS-021	2.1	●	22	45
CDS-0215	2.15		22	45
CDS-022	2.2	●	22	45
CDS-0225	2.25		22	45
CDS-023	2.3	●	22	45
CDS-0235	2.35		22	45
CDS-024	2.4	●	22	45
CDS-0245	2.45		22	45
CDS-025	2.5	●	22	45
CDS-0255	2.55	●	22	45
CDS-026	2.6	●	22	45
CDS-0265	2.65		25	45
CDS-027	2.7	●	25	45
CDS-0275	2.75		25	45
CDS-028	2.8	●	25	45
CDS-0285	2.85		25	45
CDS-029	2.9	●	25	45
CDS-0295	2.95		25	45
CDS-030	3	●	25	45

Designation	øDc	UM	ℓ	L
CDS-0305	3.05		27	50
CDS-031	3.1	●	27	50
CDS-0315	3.15		27	50
CDS-032	3.2	●	27	50
CDS-0325	3.25		27	50
CDS-033	3.3	●	27	50
CDS-0335	3.35		27	50
CDS-034	3.4	●	27	50
CDS-0345	3.45		27	50
CDS-035	3.5	●	27	55
CDS-0355	3.55		30	55
CDS-036	3.6	●	30	55
CDS-0365	3.65		30	55
CDS-037	3.7	●	30	55
CDS-0375	3.75		30	55
CDS-038	3.8	●	30	55
CDS-0385	3.85		30	55
CDS-039	3.9	●	30	55
CDS-0395	3.95		30	55
CDS-040	4	●	30	55
CDS-0405	4.05		34	60
CDS-041	4.1	●	34	60
CDS-0415	4.15		34	60
CDS-042	4.2	●	34	60
CDS-0425	4.25		34	60
CDS-043	4.3	●	34	60
CDS-0435	4.35		34	60
CDS-044	4.4	●	34	60
CDS-0445	4.45		34	60
CDS-045	4.5	●	34	60
CDS-0455	4.55		34	60
CDS-046	4.6	●	34	60
CDS-0465	4.65		34	60
CDS-047	4.7	●	34	60
CDS-0475	4.75		34	60
CDS-048	4.8	●	34	60
CDS-0485	4.85		34	60
CDS-049	4.9	●	34	60
CDS-0495	4.95		34	60
CDS-050	5	●	34	60
CDS-0505	5.05		38	65
CDS-051	5.1	●	38	65
CDS-0515	5.15		38	65
CDS-052	5.2	●	38	65
CDS-0525	5.25		38	65
CDS-053	5.3	●	38	65
CDS-0535	5.35		38	65
CDS-054	5.4	●	38	65
CDS-0545	5.45		38	65
CDS-055	5.5	●	38	65
CDS-0555	5.55		40	70
CDS-056	5.6	●	40	70
CDS-0565	5.65		40	70

● : Line-up

Designation	øDc	UM	ℓ	L
CDS-057	5.7	●	40	70
CDS-0575	5.75		40	70
CDS-058	5.8	●	40	70
CDS-0585	5.85		40	70
CDS-059	5.9	●	40	70
CDS-0595	5.95		40	70
CDS-060	6	●	40	70
CDS-0605	6.05		43	75
CDS-0610	6.1		43	75
CDS-0615	6.15		43	75
CDS-062	6.2	●	43	75
CDS-0625	6.25		43	75
CDS-0630	6.3		43	75
CDS-0635	6.35		43	75
CDS-064	6.4	●	43	75
CDS-0645	6.45		43	75
CDS-065	6.5	●	43	75
CDS-0655	6.55		46	80
CDS-066	6.6	●	46	80
CDS-0665	6.65		46	80
CDS-0670	6.7		46	80
CDS-0675	6.75		46	80
CDS-068	6.8	●	46	80
CDS-0685	6.85		46	80
CDS-0690	6.9		46	80
CDS-0695	6.95		46	80
CDS-070	7	●	46	80
CDS-0705	7.05		46	80
CDS-0710	7.1		46	80
CDS-0715	7.15		46	80
CDS-072	7.2	●	46	80
CDS-0725	7.25		46	80
CDS-0730	7.3		46	80
CDS-0735	7.35		46	80
CDS-074	7.4	●	46	80
CDS-0745	7.45		46	80
CDS-075	7.5	●	46	80
CDS-0755	7.55		50	85
CDS-076	7.6	●	50	85
CDS-0765	7.65		50	85
CDS-0770	7.7		50	85
CDS-0775	7.75		50	85
CDS-078	7.8	●	50	85
CDS-0785	7.85		50	85
CDS-0790	7.9		50	85
CDS-0795	7.95		50	85
CDS-080	8	●	50	85
CDS-0805	8.05		53	85
CDS-0810	8.1		53	85
CDS-0815	8.15		53	85
CDS-0820	8.2		53	85
CDS-0825	8.25		53	85
CDS-0830	8.3		53	85
CDS-0835	8.35		53	85
CDS-0840	8.4		53	85
CDS-0845	8.45		53	85
CDS-085	8.5	●	53	85
CDS-0855	8.55		53	85
CDS-0860	8.6		53	85
CDS-0865	8.65		53	85
CDS-0870	8.7		53	85
CDS-0875	8.75		53	85
CDS-0880	8.8		53	85
CDS-0885	8.85		53	85
CDS-0890	8.9		53	85
CDS-0895	8.95		53	85
CDS-090	9	●	53	85
CDS-0905	9.05		60	90
CDS-0910	9.1		60	90
CDS-0915	9.15		60	90
CDS-0920	9.2		60	90
CDS-0925	9.25		60	90
CDS-0930	9.3		60	90
CDS-0935	9.35		60	90
CDS-0940	9.4		60	90
CDS-0945	9.45		60	90
CDS-095	9.5	●	60	90
CDS-0955	9.55		60	90
CDS-0960	9.6		60	90
CDS-0965	9.65		60	90
CDS-0970	9.7		60	90
CDS-0975	9.75		60	90
CDS-0980	9.8		60	90
CDS-0985	9.85		60	90
CDS-0990	9.9		60	90
CDS-0995	9.95		60	90
CDS-100	10	●	60	90
CDS-1010	10.1		80	120
CDS-1020	10.2		80	120
CDS-1030	10.3		80	120
CDS-1040	10.4		80	120
CDS-1050	10.5		80	120
CDS-1060	10.6		80	120
CDS-1070	10.7		80	120
CDS-1080	10.8		80	120
CDS-1090	10.9		80	120
CDS-1100	11		80	120
CDS-1110	11.1		80	120
CDS-1120	11.2		80	120
CDS-1130	11.3		80	120
CDS-1140	11.4		80	120
CDS-1150	11.5		80	120
CDS-1160	11.6		80	120
CDS-1170	11.7		80	120
CDS-1180	11.8		80	120
CDS-1190	11.9		80	120
CDS-1200	12		80	120
CDS-1210	12.1		80	120
CDS-1220	12.2		80	120
CDS-1230	12.3		80	120
CDS-1240	12.4		80	120
CDS-1250	12.5		80	120
CDS-1260	12.6		80	120
CDS-1270	12.7		80	120
CDS-1280	12.8		80	120
CDS-1290	12.9		80	120
CDS-1300	13		80	120

øDc	Tool diameter tolerance h7(mm)
øDc ≤ 3	0 ~ -0.01
3 < øDc ≤ 6	0 ~ -0.012
6 < øDc ≤ 10	0 ~ -0.015
10 < øDc ≤ 13	0 ~ -0.018

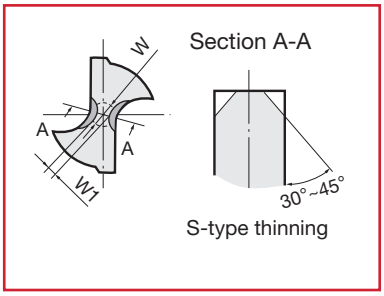
● : Line-up

CAUTIONARY NOTES

- To prevent edge chipping, hone cutting edges as follows: Honing width: 0.02 ~ 0.05 mm Honing angle: -20˚ to -30˚. Chipping is likely to occur on edges whilst drilling hard materials, a larger honing width is recommended.
- When drilling into an inclined surface, special care should be taken to prevent drill breakage. Use of drill bushing is recommended for such case.

REGRINDING

- Carry out regrinding when corner wear reaches the margin width.
- Avoid using silicon carbide grinding wheels or hand grinding whenever possible.Use diamond grinding wheels of 200 to 400 mesh.
- Apply web thinning for the drill above ø6 mm. S-type thinning shown in figure at right is recommended. Preferable thinning width (W1) is about 1/2 to 1/3 of web thickness (W).

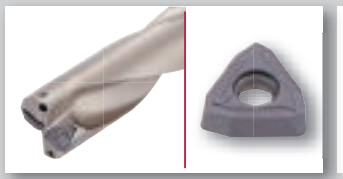


STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Cutting speed: *Vc* (m/min) ø0.4 ~ ø2	ø2 ~ ø13	Feed: *f* (mm/rev) ø0.4 ~ ø1	ø1 ~ ø2	ø2 ~ ø3	ø3 ~ ø5	ø5 ~ ø13
K	Grey cast irons (200HB)	20 - 40	30 - 50	0.005 - 0.03	0.01 - 0.06	0.03 - 0.12	0.05 - 0.15	0.1 - 0.4
K	Ductile cast irons (300HB)	20 - 40	30 - 50	0.005 - 0.02	0.01 - 0.05	0.03 - 0.1	0.03 - 0.1	0.07 - 0.25
N	Aluminium alloys	20 - 50	30 - 50	0.01 - 0.05	0.04 - 0.15	0.06 - 0.2	0.1 - 0.25	0.15 - 0.5
N	Copper alloys	20 - 50	30 - 50	0.01 - 0.05	0.04 - 0.15	0.06 - 0.2	0.1 - 0.25	0.15 - 0.5
N	Reinforced plastics	20 - 40	30 - 50	0.01 - 0.05	0.04 - 0.15	0.06 - 0.2	0.1 - 0.25	0.15 - 0.5

- No. of revolutions (min^{-1}) = Cutting speed × 1000 ÷ 3.14 ÷ Tool diameter
- Table feed (mm/min) = No. of revolutions × Feed per revolution

MEMO

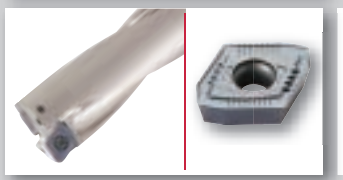


TUNGSIX-DRILL

E072

Indexable drill with 6-cutting-edged insert for high productivity

ø20 mm - ø54 mm / L/D = 2, 3, 4



TUNGDRILLTWISTED

E080

Indexable drills with 4-cornered inserts for various drilling applications

ø12.5 mm - ø54 mm / L/D = 2, 3, 4, 5



TUNGDRILLBIG

E092

Large-diameter drills with cartridges applicable for both the TungSix-Drill or TungDrill-Twisted inserts

ø55 mm - ø80 mm / L/D = 2.5

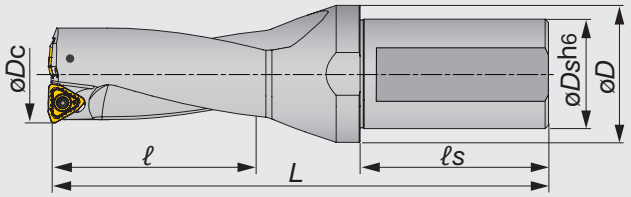


TUNGSIX-DRILL

TDS-F L/D=2

L/D = 2, Flat cotter, Tool dia. ø20 - ø54 mm





Designation	øDc	øDs	øD	ℓ	ℓs	L	Max. offset (radial)	Kg	Insert
TDS200F25-2	20	25	32	40	54	115	1	0.3	WWMU05X205R-D*
TDS205F25-2	20.5	25	32	41	54	116.5	0.9	0.3	WWMU05X205R-D*
TDS210F25-2	21	25	32	42	54	118	0.8	0.3	WWMU05X205R-D*
TDS215F25-2	21.5	25	32	43	54	119	0.6	0.3	WWMU05X205R-D*
TDS220F25-2	22	25	32	44	54	120	0.5	0.3	WWMU05X205R-D*
TDS225F25-2	22.5	25	37	45	54	121.5	0.4	0.3	WWMU05X205R-D*
TDS230F25-2	23	25	37	46	54	123	0.3	0.4	WWMU05X205R-D*
TDS235F25-2	23.5	25	37	47	54	124	0.2	0.4	WWMU05X205R-D*
TDS240F25-2	24	25	37	48	54	125	1.2	0.4	WWMU060306R-D*
TDS245F25-2	24.5	25	37	49	54	126.5	1	0.4	WWMU060306R-D*
TDS250F25-2	25	25	37	50	54	128	0.8	0.4	WWMU060306R-D*
TDS255F25-2	25.5	25	37	51	54	129.5	0.6	0.4	WWMU060306R-D*
TDS260F25-2	26	25	37	52	54	131	0.5	0.4	WWMU060306R-D*
TDS270F32-2	27	32	40	54	59	138	0.3	0.6	WWMU060306R-D*
TDS280F32-2	28	32	40	56	59	141	1.3	0.6	WWMU08X408R-D*
TDS290F32-2	29	32	40	58	59	143	1.1	0.7	WWMU08X408R-D*
TDS300F32-2	30	32	40	60	59	146	0.8	0.7	WWMU08X408R-D*
TDS310F32-2	31	32	40	62	59	149	0.5	0.7	WWMU08X408R-D*
TDS320F32-2	32	32	40	64	59	151	0.2	0.8	WWMU08X408R-D*
TDS330F40-2	33	40	50	66	69	164	1.7	1.2	WWMU09X510R-D*
TDS340F40-2	34	40	50	68	69	167	1.4	1.2	WWMU09X510R-D*
TDS350F40-2	35	40	50	70	69	170	1.2	1.2	WWMU09X510R-D*
TDS360F40-2	36	40	50	72	69	173	0.9	1.3	WWMU09X510R-D*
TDS370F40-2	37	40	50	74	69	174	0.7	1.3	WWMU09X510R-D*
TDS380F40-2	38	40	50	76	69	177	0.4	1.3	WWMU09X510R-D*
TDS390F40-2	39	40	50	78	69	179	2.2	1.4	WWMU11X512R-D*
TDS400F40-2	40	40	50	80	69	182	1.9	1.4	WWMU11X512R-D*
TDS410F40-2	41	40	50	82	69	186	1.7	1.5	WWMU11X512R-D*
TDS420F40-2	42	40	55	84	69	188	1.5	1.6	WWMU11X512R-D*
TDS430F40-2	43	40	55	86	69	191	1.3	1.6	WWMU11X512R-D*
TDS440F40-2	44	40	55	88	69	193	1	1.7	WWMU11X512R-D*
TDS450F40-2	45	40	55	90	69	196	0.7	1.7	WWMU11X512R-D*
TDS460F40-2	46	40	55	92	69	199	0.4	1.8	WWMU11X512R-D*
TDS470F40-2	47	40	55	94	69	201	2.6	1.9	WWMU13X512R-D*
TDS480F40-2	48	40	55	96	69	204	2.4	1.9	WWMU13X512R-D*
TDS490F40-2	49	40	55	98	69	206	2.2	1.9	WWMU13X512R-D*
TDS500F40-2	50	40	55	100	69	209	2	2	WWMU13X512R-D*
TDS510F40-2	51	40	55	102	69	213	1.7	2.1	WWMU13X512R-D*
TDS520F40-2	52	40	55	104	69	215	1.5	2.2	WWMU13X512R-D*
TDS530F40-2	53	40	55	106	69	218	1.3	2.3	WWMU13X512R-D*
TDS540F40-2	54	40	55	108	69	220	1	2.4	WWMU13X512R-D*

SPARE PARTS





Designation	Clamping screw	Wrench
TDS200... - TDS235...	CSPB-2.2	IP-7D
TDS240... - TDS270...	CSPB-2.5	IP-8D
TDS280... - TDS320...	CSTB-3	T-9D
TDS330... - TDS380...	CSTB-4	T-15D
TDS390... - TDS540...	CSTB-5	T-20D

Tool diameter	Tool diameter tolerance	Hole diameter tolerance*
ø20 - ø27	+ 0.2 / 0	+ 0.25 / 0
ø28 - ø54	+ 0.2 / 0	+ 0.3 / 0

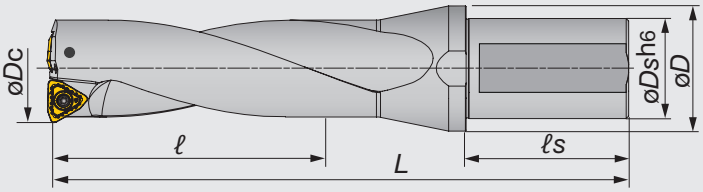
*Just for reference

TUNGSIX-DRILL

TDS-F L/D=3

L/D = 3, Flat cotter, Tool dia. ø20 - ø54 mm





Designation	øDc	øDs	øD	ℓ	ℓs	L	Max. offset (radial)	Kg	Insert
TDS200F25-3	20	25	32	60	54	135	1	0.3	WWMU05X205R-D*
TDS205F25-3	20.5	25	32	61.5	54	136	0.9	0.3	WWMU05X205R-D*
TDS209F25-3 (1)	20.9	25	32	62.7	54	138	0.8	0.3	WWMU05X205R-D*
TDS210F25-3	21	25	32	63	54	138	0.8	0.4	WWMU05X205R-D*
TDS215F25-3	21.5	25	32	64.5	54	140	0.6	0.4	WWMU05X205R-D*
TDS220F25-3	22	25	32	66	54	141	0.5	0.4	WWMU05X205R-D*
TDSU0875F25-3 (2)	22.2	25	32	66	54	141	0.4	0.4	WWMU05X205R-D*
TDS225F25-3	22.5	25	37	67.5	54	144	0.4	0.4	WWMU05X205R-D*
TDS230F25-3	23	25	37	69	54	145	0.3	0.4	WWMU05X205R-D*
TDS235F25-3	23.5	25	37	70.5	54	147	0.2	0.4	WWMU05X205R-D*
TDS239F25-3 (1)	23.9	25	37	71.7	54	149	1.2	0.4	WWMU060306R-D*
TDS240F25-3	24	25	37	72	54	149	1.2	0.4	WWMU060306R-D*
TDS245F25-3	24.5	25	37	73.5	54	151	1	0.5	WWMU060306R-D*
TDS250F25-3	25	25	37	75	54	153	0.8	0.5	WWMU060306R-D*
TDS255F25-3	25.5	25	37	76.5	54	154	0.6	0.5	WWMU060306R-D*
TDS260F25-3 (1)	26	25	37	78	54	156	0.5	0.5	WWMU060306R-D*
TDS264F32-3	26.4	32	40	79.2	59	162.5	0.4	0.6	WWMU060306R-D*
TDS265F32-3	26.5	32	40	79.5	59	162.5	0.4	0.6	WWMU060306R-D*
TDS270F32-3	27	32	40	81	59	164	0.3	0.6	WWMU060306R-D*
TDS275F32-3	27.5	32	40	82	59	167	0	0.6	WWMU08X408R-D*
TDS280F32-3	28	32	40	84	59	168	1.3	0.7	WWMU08X408R-D*
TDS285F32-3	28.5	32	40	85	59	170	1.1	0.7	WWMU08X408R-D*
TDSU1125F32-3 (2)	28.6	32	40	86	59	171	1.1	0.7	WWMU08X408R-D*
TDS290F32-3	29	32	40	87	59	171	1.1	0.7	WWMU08X408R-D*
TDS295F32-3	29.5	32	40	88	59	175	0.8	0.7	WWMU08X408R-D*
TDS300F32-3	30	32	40	90	59	176	0.8	0.8	WWMU08X408R-D*
TDS305F32-3	30.5	32	40	91	59	180	0.5	0.8	WWMU08X408R-D*
TDS310F32-3	31	32	40	93	59	180	0.5	0.8	WWMU08X408R-D*
TDSU1250F32-3 (2)	31.8	32	40	95	59	183	0.2	0.8	WWMU08X408R-D*
TDS320F32-3	32	32	40	96	59	183	0.2	0.9	WWMU08X408R-D*
TDS330F40-3	33	40	50	99	69	197	1.7	1.3	WWMU09X510R-D*
TDS340F40-3	34	40	50	102	69	200	1.4	1.3	WWMU09X510R-D*
TDS350F40-3	35	40	50	105	69	204	1.2	1.3	WWMU09X510R-D*
TDS360F40-3	36	40	50	108	69	208	0.9	1.4	WWMU09X510R-D*
TDS370F40-3	37	40	50	111	69	211	0.7	1.4	WWMU09X510R-D*
TDS380F40-3	38	40	50	114	69	215	0.4	1.5	WWMU09X510R-D*
TDS390F40-3	39	40	50	117	69	218	2.2	1.6	WWMU11X512R-D*
TDS400F40-3	40	40	50	120	69	222	1.9	1.6	WWMU11X512R-D*
TDS410F40-3	41	40	50	123	69	226	1.7	1.7	WWMU11X512R-D*
TDS420F40-3	42	40	55	126	69	229	1.5	1.8	WWMU11X512R-D*
TDS430F40-3	43	40	55	129	69	233	1.3	1.8	WWMU11X512R-D*
TDS440F40-3	44	40	55	132	69	236	1	1.9	WWMU11X512R-D*
TDS450F40-3	45	40	55	135	69	241	0.7	2	WWMU11X512R-D*
TDS460F40-3	46	40	55	138	69	245	0.4	2.1	WWMU11X512R-D*
TDS470F40-3	47	40	55	141	69	248	2.6	2.2	WWMU13X512R-D*
TDS480F40-3	48	40	55	144	69	252	2.4	2.3	WWMU13X512R-D*
TDS490F40-3	49	40	55	147	69	255	2.2	2.3	WWMU13X512R-D*
TDS500F40-3	50	40	55	150	69	259	2	2.4	WWMU13X512R-D*
TDS510F40-3	51	40	55	153	69	263	1.7	2.5	WWMU13X512R-D*
TDS520F40-3	52	40	55	156	69	266	1.5	2.6	WWMU13X512R-D*
TDS530F40-3	53	40	55	159	69	270	1.3	2.7	WWMU13X512R-D*
TDS540F40-3	54	40	55	162	69	273	1	2.9	WWMU13X512R-D*

(1) For pre thread hole (mm): øDc = 20.9 mm: M24x3, øDc = 23.9 mm: M27x3, øDc = 26.4 mm: M30x3.5
(2) For inch size: øDc: 22.2 mm = 0.875", øDc: 28.6 mm = 1.125", øDc: 31.8 mm = 1.250"

SPARE PARTS





Designation	Clamping screw	Wrench
TDS200... - TDS235...	CSPB-2.2	IP-7D
TDS240... - TDS270...	CSPB-2.5	IP-8D
TDS280... - TDS320...	CSTB-3	T-9D
TDS330... - TDS380...	CSTB-4	T-15D
TDS390... - TDS540...	CSTB-5	T-20D

Tool diameter	Tool diameter tolerance	Hole diameter tolerance*
ø20 - ø27	+ 0.2 / 0	+ 0.25 / 0
ø28 - ø54	+ 0.2 / 0	+ 0.3 / 0

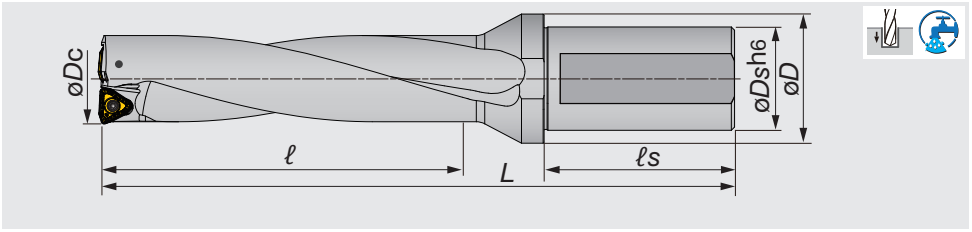
*Just for reference

TUNGSIX-DRILL

TDS-F L/D=4

L/D = 4, Flat cotter, Tool dia. ø20 - ø54 mm





Designation	øDc	øDs	øD	ℓ	ℓs	L	Max. offset (radial)	Kg	Insert
TDS200F25-4	20	25	32	80	54	155	1	0.4	WWMU05X205R-D*
TDS205F25-4	20.5	25	32	82	54	157	0.9	0.4	WWMU05X205R-D*
TDS210F25-4	21	25	32	84	54	159	0.8	0.4	WWMU05X205R-D*
TDS215F25-4	21.5	25	32	86	54	161	0.6	0.4	WWMU05X205R-D*
TDS220F25-4	22	25	32	88	54	163	0.5	0.4	WWMU05X205R-D*
TDS225F25-4	22.5	25	37	90	54	165.5	0.4	0.4	WWMU05X205R-D*
TDS230F25-4	23	25	37	92	54	168	0.3	0.4	WWMU05X205R-D*
TDS235F25-4	23.5	25	37	94	54	170.5	0.2	0.5	WWMU05X205R-D*
TDS240F25-4	24	25	37	96	54	173	1.2	0.5	WWMU060306R-D*
TDS245F25-4	24.5	25	37	98	54	175.5	1	0.5	WWMU060306R-D*
TDS250F25-4	25	25	37	100	54	178	0.8	0.5	WWMU060306R-D*
TDS255F25-4	25.5	25	37	102	54	180	0.6	0.6	WWMU060306R-D*
TDS260F25-4	26	25	37	104	54	182	0.5	0.5	WWMU060306R-D*
TDS270F32-4	27	32	40	108	59	191	0.3	0.7	WWMU060306R-D*
TDS280F32-4	28	32	40	112	59	196	1.3	0.8	WWMU08X408R-D*
TDS290F32-4	29	32	40	116	59	200	1.1	0.8	WWMU08X408R-D*
TDS300F32-4	30	32	40	120	59	206	0.8	0.9	WWMU08X408R-D*
TDS310F32-4	31	32	40	124	59	211	0.5	0.9	WWMU08X408R-D*
TDS320F32-4	32	32	40	128	59	215	0.2	1	WWMU08X408R-D*
TDS330F40-4	33	40	50	132	69	230	1.7	1.4	WWMU09X510R-D*
TDS340F40-4	34	40	50	136	69	234	1.4	1.4	WWMU09X510R-D*
TDS350F40-4	35	40	50	140	69	239	1.2	1.4	WWMU09X510R-D*
TDS360F40-4	36	40	50	144	69	244	0.9	1.5	WWMU09X510R-D*
TDS370F40-4	37	40	50	148	69	248	0.7	1.5	WWMU09X510R-D*
TDS380F40-4	38	40	50	152	69	253	0.4	1.7	WWMU09X510R-D*
TDS390F40-4	39	40	50	156	69	257.5	2.2	1.8	WWMU11X512R-D*
TDS400F40-4	40	40	50	160	69	262.5	1.9	1.8	WWMU11X512R-D*
TDS410F40-4	41	40	50	164	69	267.5	1.7	1.9	WWMU11X512R-D*
TDS420F40-4	42	40	55	168	69	271.5	1.5	2	WWMU11X512R-D*
TDS430F40-4	43	40	55	172	69	276.5	1.3	2	WWMU11X512R-D*
TDS440F40-4	44	40	55	176	69	280.5	1	2.1	WWMU11X512R-D*
TDS450F40-4	45	40	55	180	69	286.5	0.7	2.3	WWMU11X512R-D*
TDS460F40-4	46	40	55	184	69	291.5	0.4	2.4	WWMU11X512R-D*
TDS470F40-4	47	40	55	188	69	295.5	2.6	2.5	WWMU13X512R-D*
TDS480F40-4	48	40	55	192	69	300.5	2.4	2.7	WWMU13X512R-D*
TDS490F40-4	49	40	55	196	69	304.5	2.2	2.7	WWMU13X512R-D*
TDS500F40-4	50	40	55	200	69	309.5	2	2.8	WWMU13X512R-D*
TDS510F40-4	51	40	55	204	69	314.5	1.7	2.9	WWMU13X512R-D*
TDS520F40-4	52	40	55	208	69	318.5	1.5	3	WWMU13X512R-D*
TDS530F40-4	53	40	55	212	69	323.5	1.3	3.1	WWMU13X512R-D*
TDS540F40-4	54	40	55	216	69	327.5	1	3.4	WWMU13X512R-D*

SPARE PARTS




Designation	Clamping screw	Wrench
TDS200... - TDS235...	CSPB-2.2	IP-7D
TDS240... - TDS270...	CSPB-2.5	IP-8D
TDS280... - TDS320...	CSTB-3	T-9D
TDS330... - TDS380...	CSTB-4	T-15D
TDS390... - TDS540...	CSTB-5	T-20D

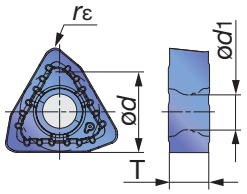
Tool diameter	Tool diameter tolerance	Hole diameter tolerance *
ø20 - ø27	+ 0.2 / 0	+ 0.3 / 0
ø28 - ø54	+ 0.2 / 0	+ 0.35 / 0

*Just for reference

INSERT

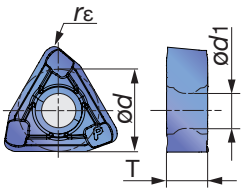
DJ





DS



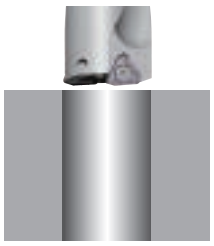
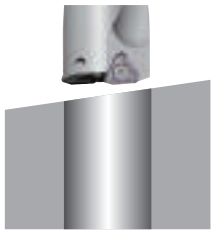
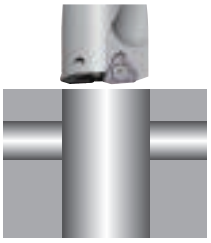
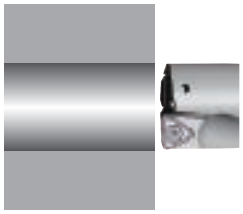
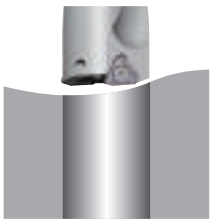
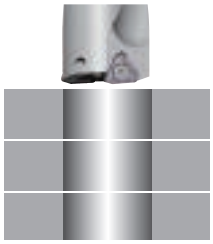


Designation	Coating		ød	T	ød1	rε	øDc
	AH9030	AH6030					
WWMU05X205R-DJ	●		5.8	2.4	2.5	0.5	ø20 - ø23.5
WWMU060306R-DJ	●		6.7	2.9	3	0.6	ø23.9 - ø27
WWMU08X408R-DJ	●		8	3.9	3.4	0.8	ø28 - ø32
WWMU09X510R-DJ	●		9.7	4.9	4.4	1	ø33 - ø38
WWMU11X512R-DJ	●		11.3	5.7	5.5	1.2	ø39 - ø46
WWMU13X512R-DJ	●		13	5.7	5.5	1.2	ø47 - ø54
WWMU05X205R-DS		●	5.8	2.4	2.5	0.5	ø20 - ø23.5
WWMU060306R-DS		●	6.7	2.9	3	0.6	ø23.9 - ø27
WWMU08X408R-DS		●	8	3.9	3.4	0.8	ø28 - ø32
WWMU09X510R-DS		●	9.7	4.9	4.4	1	ø33 - ø38
WWMU11X512R-DS		●	11.3	5.7	5.5	1.2	ø39 - ø46
WWMU13X512R-DS		●	13	5.7	5.5	1.2	ø47 - ø54

● : Line-up

APPLICATION RANGE

*In case of Interrupted cutting, feed should be decreased.

Feed f (mm/rev)	*	0.05	0.05	0.05
Application	OK Plane surface 	OK Slant surface 	OK Cross hole 	OK Plunging 
Feed f (mm/rev)	**0.1**	**0.05**	**Disapprove**	**Disapprove**
Application	OK Boring 	OK Round surface 	✕ Stacked plate 	✕ Back boring 

*Please see the next page for cutting conditions.

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Selection criteria	Chip-breaker	Grades	Cutting speed *Vc* (m/min)
P	Low carbon steels (C < 0.3) E275A, E355D, C25, etc.	First choice	DS	AH6030	160 - 250
		Priority on wear resistance	DJ	AH9030	160 - 320
	Carbon steels (C > 0.3) C45, C55, etc.	First choice	DJ	AH9030	80 - 250
		Priority on impact resistance	DS	AH6030	80 - 250
	Low alloy steels 18CrMo4, etc.	First choice	DS	AH6030	160 - 250
		Priority on wear resistance	DJ	AH9030	160 - 250
	Alloy steels 42CrMo4, 20Cr4, etc.	First choice	DJ	AH9030	80 - 200
		Priority on impact resistance	DS	AH6030	80 - 200
M	Stainless steels (Austenitic) X5CrNi18-9, X5CrNiMo17-12-2, etc.	First choice	DS	AH6030	100 - 200
		-	DJ	AH9030	100 - 200
	Stainless steels (Martensitic and ferritic) X6Cr17, X20Cr13, etc.	First choice	DS	AH6030	100 - 200
		-	DJ	AH9030	100 - 200
	Stainless steels (Precipitation hardening) X5CrNiCuNb16-4, etc.	First choice	DS	AH6030	80 - 120
		-	DJ	AH9030	80 - 120
K	Grey cast irons 250, etc.	First choice	DJ	AH9030	80 - 250
		Priority on impact resistance	DS	AH6030	80 - 200
	Ductile cast irons 600-3, etc.	First choice	DJ	AH9030	80 - 200
		Priority on impact resistance	DS	AH6030	80 - 150
N	Aluminium alloys	First choice	DS	AH6030	200 - 400
		-	DJ	AH9030	200 - 400
S	High-resistant alloys Inconel718, etc.	First choice	DS	AH6030	20 - 60
		-	DJ	AH9030	20 - 60
	Titanium alloys Ti-6Al-4V, etc.	First choice	DS	AH6030	40 - 120
		-	DJ	AH9030	40 - 120
H	High hardened steels Over 40HRC	First choice	DJ	AH9030	50 - 100
		Priority on impact resistance	DS	AH6030	40 - 80

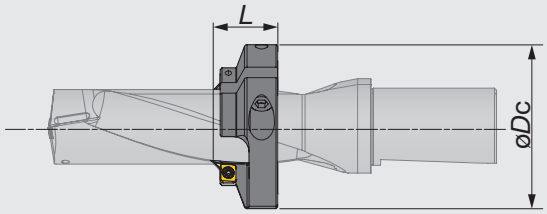
Feed: *f* (mm/rev)

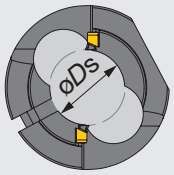
L/D = 2, 3			L/D = 4		
ø*D*c (mm)			ø*D*c (mm)		
ø20 - ø27.5	ø28 - ø38	ø39 - ø54	ø20 - ø27	ø28 - ø38	ø39 - ø54
0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04- 0.1	0.04 - 0.1	0.04 - 0.1
0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
0.06 - 0.15	0.06 - 0.16	0.08 - 0.18	0.06 - 0.15	0.06 - 0.15	0.08 - 0.17
0.04 - 0.12	0.04 - 0.13	0.04 - 0.15	0.04 - 0.12	0.04 - 0.13	0.04 - 0.15
0.04 - 0.12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
0.06 - 0.12	0.06 - 0.14	0.06 - 0.14	0.06 - 0.12	0.06 - 0.14	0.06 - 0.14
0.06 - 0.15	0.06 - 0.16	0.08 - 0.18	0.06 - 0.15	0.06 - 0.15	0.08 - 0.17
0.04 - 0.12	0.04 - 0.13	0.04 - 0.15	0.04 - 0.12	0.04 - 0.13	0.04 - 0.15
0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
0.04 - 0.1	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
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0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
0.04 - 0.1	0.04 - 0.10	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
0.06 - 0.15	0.06 - 0.18	0.08 - 0.2	0.06 - 0.15	0.06 - 0.16	0.08 - 0.18
0.06 - 0.13	0.06 - 0.16	0.08 - 0.18	0.06 - 0.13	0.06 - 0.16	0.08 - 0.18
0.06 - 0.15	0.06 - 0.18	0.08 - 0.2	0.06 - 0.15	0.06 - 0.16	0.08 - 0.18
0.06 - 0.13	0.06 - 0.16	0.08 - 0.18	0.06 - 0.13	0.06 - 0.16	0.08 - 0.18
0.10 - 0.18	0.1 - 0.2	0.1 - 0.25	0.1 - 0.18	0.1 - 0.2	0.1 - 0.2
0.10 - 0.18	0.1 - 0.2	0.1 - 0.25	0.1 - 0.18	0.1 - 0.2	0.1 - 0.2
0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
0.06 - 0.1	0.06 - 0.12	0.06 - 0.14	0.06 - 0.14	0.06 - 0.14	0.06 - 0.14
0.06 - 0.1	0.06 - 0.12	0.06 - 0.14	0.06 - 0.14	0.06 - 0.14	0.06 - 0.14
0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08
0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08

TDXCF chamfering tool

Chamfering tool for "TungDrillTwisted" & "TungSix-Drill"

For flat cotter





Designation	øDs	øDc	L	Drill	L/D = 2	L/D = 3	L/D = 4
TDXCF200L25	19.1	49	25	TDS200*25-*	24.5	44.5	64.5
TDXCF210L25	20.1	49	25	TDS205*25-*	25.7	46.2	66.7
TDXCF210L25	20.1	49	25	TDS210*25-*	26.8	47.8	68.8
TDXCF220L25	21.1	49	25	TDS215*25-*	28	49.5	71
TDXCF220L25	21.1	49	25	TDS220*25-*	29.1	51.1	73.1
TDXCF230L25	22.1	49	25	TDS225*25-*	30.3	52.8	75.3
TDXCF230L25	22.1	49	25	TDS230*25-*	31.4	54.4	77.4
TDXCF240L25	23.1	49	25	TDS235*25-*	32.6	56.1	79.6
TDXCF240L25	23.1	49	25	TDS240*25-*	33.7	57.7	81.7
TDXCF250L25	23.95	49	25	TDS245*25-*	34.9	59.4	83.9
TDXCF250L25	23.95	49	25	TDS250*25-*	36	61	86
TDXCF260L30	24.95	64	30	TDS255*25-*	32.2	57.7	83.2
TDXCF260L30	24.95	64	30	TDS260*25-*	33.3	59.3	85.3
TDXCF270L30	25.9	64	30	TDS270*32-*	35.6	62.6	89.6
TDXCF280L30	26.9	64	30	TDS280*32-*	37.9	65.9	93.9
TDXCF290L30	27.9	64	30	TDS290*32-*	40.2	69.2	98.2
TDXCF300L30	28.9	64	30	TDS300*32-*	42.5	72.5	102.5
TDXCF310L30	29.9	64	30	TDS310*32-*	44.8	75.8	106.8
TDXCF320L30	30.9	64	30	TDS320*32-*	47.1	79.1	111.1

SPARE PARTS

Designation	Screw for insert	Screw for ring	Wrench for insert	Wrench for ring
TDXCF130 - 230	CSPB-4S	CM6X16	IP-15D	P-5
TDXCF260 - 540	CSPB-4S	CM8X1.25X20-A	IP-15D	P-6

INSERT

XHGX-45A



Designation	GH130	Torque (N·m)
XHGX090700R-45A	●	3.5

Caution in mounting the chamfering tool on the drill body

① Place the ring on the drill body and match the positions of flutes on drill and ring. Temporarily clamp the ring with the ring screw tightened lightly.

② Place the inserts, and tighten the insert screw lightly.

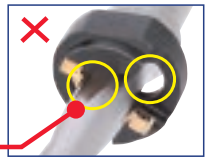
③ Adjust the ring position with a presetter, height gauge, or Vernier caliper, and securely tighten the ring screw, then the insert screw.



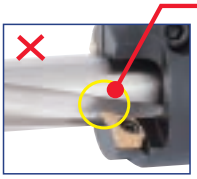
Match the positions of flutes on drill and ring.

(Inserts will be automatically set to the right positions.)

The cutting edge of the insert is in the ring flute.



The flutes on drill and ring do not match.

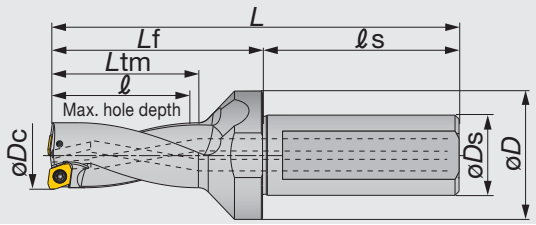


MEMO

TDX-F L/D=2

L/D = 2, Flat cotter, Tool dia. ø12.5 - ø54.0 mm





Designation	øDc	øDs	øD	ℓ	ℓs	Ltm	Lf	L	Max. offset (radial)	Kg	Insert
TDX125F20-2	12.5	20	25	25	49	28	41	90	0.8	0.2	XPMT040104R-D*
TDX130F20-2	13	20	25	26	49	29	42	91	0.7	0.2	XPMT040104R-D*
TDX135F20-2	13.5	20	25	27	49	30	43	92	0.6	0.2	XPMT040104R-D*
TDX140F20-2	14	20	25	28	49	31	44	93	0.5	0.2	XPMT040104R-D*
TDX145F20-2	14.5	20	25	29	49	32	46	95	0.4	0.2	XPMT040104R-D*
TDX150F20-2	15	20	25	30	49	33	47	96	0.9	0.2	XPMT050204R-D*
TDX155F20-2	15.5	20	32	31	49	34	49	98	0.8	0.2	XPMT050204R-D*
TDX160F20-2	16	20	32	32	49	35	51	100	0.6	0.2	XPMT050204R-D*
TDX165F20-2	16.5	20	32	33	49	36	52	101	0.5	0.2	XPMT050204R-D*
TDX170F20-2	17	20	32	34	49	37	53	102	0.4	0.2	XPMT050204R-D*
TDX175F25-2	17.5	25	32	35	54	38	55	109	1.2	0.3	XPMT06X308R-D*
TDX180F25-2	18	25	32	36	54	39	56	110	1.1	0.3	XPMT06X308R-D*
TDX185F25-2	18.5	25	32	37	54	40	57	111	0.9	0.3	XPMT06X308R-D*
TDX190F25-2	19	25	32	38	54	41	58	112	0.8	0.3	XPMT06X308R-D*
TDX195F25-2	19.5	25	32	39	54	42	60	114	0.7	0.3	XPMT06X308R-D*
TDX200F25-2	20	25	32	40	54	45	61	115	0.5	0.3	XPMT06X308R-D*
TDX205F25-2	20.5	25	32	41	54	46	62.5	116.5	0.4	0.3	XPMT06X308R-D*
TDX210F25-2	21	25	32	42	54	47	64	118	0.3	0.3	XPMT06X308R-D*
TDX215F25-2	21.5	25	32	43	54	48	65	119	0.2	0.3	XPMT06X308R-D*
TDX220F25-2	22	25	32	44	54	49	66	120	1.2	0.3	XPMT07H308R-D*
TDX225F25-2	22.5	25	37	45	54	50	67.5	121.5	1.1	0.3	XPMT07H308R-D*
TDX230F25-2	23	25	37	46	54	51	69	123	0.9	0.4	XPMT07H308R-D*
TDX235F25-2	23.5	25	37	47	54	52	70	124	0.8	0.4	XPMT07H308R-D*
TDX240F25-2	24	25	37	48	54	53	71	125	0.7	0.4	XPMT07H308R-D*
TDX245F25-2	24.5	25	37	49	54	54	72.5	126.5	0.5	0.4	XPMT07H308R-D*
TDX250F25-2	25	25	37	50	54	55	74	128	0.4	0.4	XPMT07H308R-D*
TDX255F25-2	25.5	25	37	51	54	56	75.5	129.5	0.3	0.4	XPMT07H308R-D*
TDX260F25-2	26	25	37	52	54	57	77	131	0.2	0.4	XPMT07H308R-D*
TDX270F32-2	27	32	40	54	59	59	79	138	1.5	0.6	XPMT08T308R-D*
TDX280F32-2	28	32	40	56	59	60.3	82.3	141.3	1.2	0.6	XPMT08T308R-D*
TDX290F32-2	29	32	40	58	59	62.3	84.3	143.3	1	0.7	XPMT08T308R-D*
TDX300F32-2	30	32	40	60	59	64.3	87.3	146.3	0.7	0.7	XPMT08T308R-D*
TDX310F32-2	31	32	40	62	59	66.3	90.3	149.3	0.4	0.7	XPMT08T308R-D*
TDX320F32-2	32	32	40	64	59	68.3	92.3	151.3	0.2	0.8	XPMT08T308R-D*
TDX330F40-2	33	40	50	66	69	70.6	95.6	164.6	2.3	1.2	XPMT110412R-D*
TDX340F40-2	34	40	50	68	69	72.6	98.6	167.6	2.1	1.2	XPMT110412R-D*
TDX350F40-2	35	40	50	70	69	74.6	101.6	170.6	1.8	1.2	XPMT110412R-D*
TDX360F40-2	36	40	50	72	69	76.6	104.6	173.6	1.5	1.3	XPMT110412R-D*
TDX370F40-2	37	40	50	74	69	78.6	105.6	174.6	1.3	1.3	XPMT110412R-D*
TDX380F40-2	38	40	50	76	69	80.6	108.6	177.6	1	1.3	XPMT110412R-D*
TDX390F40-2	39	40	50	78	69	82.6	110.6	179.6	0.7	1.4	XPMT110412R-D*
TDX400F40-2	40	40	50	80	69	84.6	113.6	182.6	0.5	1.4	XPMT110412R-D*
TDX410F40-2	41	40	50	82	69	86.6	117.6	186.6	0.2	1.5	XPMT110412R-D*
TDX420F40-2	42	40	55	84	69	89	120	189	3.1	1.6	XPMT150512R-D*
TDX430F40-2	43	40	55	86	69	91	123	192	2.9	1.6	XPMT150512R-D*
TDX440F40-2	44	40	55	88	69	93	125	194	2.6	1.7	XPMT150512R-D*
TDX450F40-2	45	40	55	90	69	95	128	197	2.3	1.7	XPMT150512R-D*
TDX460F40-2	46	40	55	92	69	97	131	200	2.1	1.8	XPMT150512R-D*
TDX470F40-2	47	40	55	94	69	99	133	202	1.8	1.9	XPMT150512R-D*
TDX480F40-2	48	40	55	96	69	101	136	205	1.5	1.9	XPMT150512R-D*
TDX490F40-2	49	40	55	98	69	103	138	207	1.3	1.9	XPMT150512R-D*
TDX500F40-2	50	40	55	100	69	105	141	210	1	2	XPMT150512R-D*
TDX510F40-2	51	40	55	102	69	107	145	214	0.7	2.1	XPMT150512R-D*

Designation	øDc	øDs	øD	ℓ	ℓs	Ltm	Lf	L	Max. offset (radial)	Kg	Insert
TDX520F40-2	52	40	55	104	69	109	147	216	0.5	2.2	XPMT150512R-D*
TDX530F40-2	53	40	55	106	69	111	150	219	-	2.3	XPMT150512R-D*
TDX540F40-2	54	40	55	108	69	113	152	221	-	2.4	XPMT150512R-D*

Tool diameter	Tool diameter tolerance	Hole diameter tolerance*
ø12.5 - ø17	+ 0.1 / 0	+ 0.25 / 0
ø17.5 - ø54	+ 0.2 / 0	+ 0.3 / 0

*Just for reference

SPARE PARTS



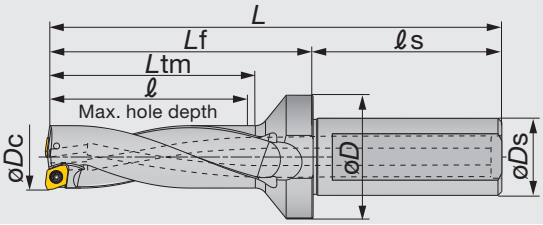


Designation	Clamping screw	Wrench
TDX125 - 145	CSPB-2H	IP-6DB
TDX150 - 170	CSPB-2L043	IP-6DB
TDX175 - 215	CSPB-2.2	IP-7D
TDX220 - 260	CSPB-2.5	IP-8D
TDX270 - 320	CSTB-3	T-9D
TDX330 - 410	CSTB-4	T-15D
TDX420 - 540	CSTB-5	T-20D

TDX-F L/D=3

L/D = 3, Flat cotter, Tool dia. ø12.5 - ø54 mm





Designation	øDc	øDs	øD	ℓ	ℓs	Ltm	Lf	L	Max. offset (radial)	Kg	Insert
TDX125F20-3	12.5	20	25	37.5	49	40.5	53	102	0.8	0.2	XPMT040104R-D*
TDX130F20-3	13	20	25	39	49	42	55	104	0.7	0.2	XPMT040104R-D*
TDX135F20-3	13.5	20	25	40.5	49	43.5	56	105	0.6	0.2	XPMT040104R-D*
TDX140F20-3	14	20	25	42	49	45	58	107	0.5	0.2	XPMT040104R-D*
TDX145F20-3	14.5	20	25	43.5	49	46.5	60	109	0.4	0.2	XPMT040104R-D*
TDX150F20-3	15	20	25	45	49	48	62	111	0.9	0.2	XPMT050204R-D*
TDX155F20-3	15.5	20	32	46.5	49	49.5	64	113	0.8	0.2	XPMT050204R-D*
TDX160F20-3	16	20	32	48	49	51	66	115	0.6	0.2	XPMT050204R-D*
TDX165F20-3	16.5	20	32	49.5	49	52.5	68	117	0.5	0.2	XPMT050204R-D*
TDX170F20-3	17	20	32	51	49	54	69	118	0.4	0.2	XPMT050204R-D*
TDX175F25-3	17.5	25	32	52.5	54	55.5	72	126	1.2	0.3	XPMT06X308R-D*
TDX180F25-3	18	25	32	54	54	57	73	127	1.1	0.3	XPMT06X308R-D*
TDX185F25-3	18.5	25	32	55.5	54	58.5	75	129	0.9	0.3	XPMT06X308R-D*
TDX190F25-3	19	25	32	57	54	60	76	130	0.8	0.3	XPMT06X308R-D*
TDX195F25-3	19.5	25	32	58.5	54	61.5	79	133	0.7	0.3	XPMT06X308R-D*
TDX200F25-3	20	25	32	60	54	65	81	135	0.5	0.3	XPMT06X308R-D*
TDX205F25-3	20.5	25	32	61.5	54	66.5	82	136	0.4	0.3	XPMT06X308R-D*
TDX210F25-3	21	25	32	63	54	68	84	138	0.3	0.3	XPMT06X308R-D*
TDX215F25-3	21.5	25	32	64.5	54	69.5	86	140	0.2	0.4	XPMT06X308R-D*
TDX220F25-3	22	25	32	66	54	71	87	141	1.2	0.4	XPMT07H308R-D*
TDX225F25-3	22.5	25	37	67.5	54	72.5	90	144	1.1	0.4	XPMT07H308R-D*
TDX230F25-3	23	25	37	69	54	74	91	145	0.9	0.4	XPMT07H308R-D*
TDX235F25-3	23.5	25	37	70.5	54	75.5	93	147	0.8	0.4	XPMT07H308R-D*
TDX240F25-3	24	25	37	72	54	77	95	149	0.7	0.4	XPMT07H308R-D*
TDX245F25-3	24.5	25	37	73.5	54	78.5	97	151	0.5	0.5	XPMT07H308R-D*
TDX250F25-3	25	25	37	75	54	80	99	153	0.4	0.5	XPMT07H308R-D*
TDX255F25-3	25.5	25	37	76.5	54	81.5	100	154	0.3	0.5	XPMT07H308R-D*
TDX260F25-3	26	25	37	78	54	83	102	156	0.2	0.5	XPMT07H308R-D*
TDX270F32-3	27	32	40	81	59	86	105	164	1.5	0.6	XPMT08T308R-D*
TDX280F32-3	28	32	40	84	59	88.3	109.3	168.3	1.2	0.7	XPMT08T308R-D*
TDX290F32-3	29	32	40	87	59	91.3	112.3	171.3	1	0.7	XPMT08T308R-D*
TDX300F32-3	30	32	40	90	59	94.3	117.3	176.3	0.7	0.8	XPMT08T308R-D*
TDX310F32-3	31	32	40	93	59	97.3	121.3	180.3	0.4	0.8	XPMT08T308R-D*
TDX320F32-3	32	32	40	96	59	100.3	124.3	183.3	0.2	0.9	XPMT08T308R-D*
TDX330F40-3	33	40	50	99	69	103.6	128.6	197.6	2.3	1.3	XPMT110412R-D*
TDX340F40-3	34	40	50	102	69	106.6	131.6	200.6	2.1	1.3	XPMT110412R-D*
TDX350F40-3	35	40	50	105	69	109.6	135.6	204.6	1.8	1.3	XPMT110412R-D*
TDX360F40-3	36	40	50	108	69	112.6	139.6	208.6	1.5	1.4	XPMT110412R-D*
TDX370F40-3	37	40	50	111	69	115.6	142.6	211.6	1.3	1.4	XPMT110412R-D*
TDX380F40-3	38	40	50	114	69	118.6	146.6	215.6	1	1.5	XPMT110412R-D*
TDX390F40-3	39	40	50	117	69	121.6	149.6	218.6	0.7	1.6	XPMT110412R-D*
TDX400F40-3	40	40	50	120	69	124.6	153.6	222.6	0.5	1.6	XPMT110412R-D*
TDX410F40-3	41	40	50	123	69	127.6	157.6	226.6	0.2	1.7	XPMT110412R-D*
TDX420F40-3	42	40	55	126	69	131	161	230	3.1	1.8	XPMT150512R-D*
TDX430F40-3	43	40	55	129	69	134	165	234	2.9	1.8	XPMT150512R-D*
TDX440F40-3	44	40	55	132	69	137	168	237	2.6	1.9	XPMT150512R-D*
TDX450F40-3	45	40	55	135	69	140	173	242	2.3	2	XPMT150512R-D*
TDX460F40-3	46	40	55	138	69	143	177	246	2.1	2.1	XPMT150512R-D*
TDX470F40-3	47	40	55	141	69	146	180	249	1.8	2.2	XPMT150512R-D*
TDX480F40-3	48	40	55	144	69	149	184	253	1.5	2.3	XPMT150512R-D*
TDX490F40-3	49	40	55	147	69	152	187	256	1.3	2.3	XPMT150512R-D*
TDX500F40-3	50	40	55	150	69	155	191	260	1	2.4	XPMT150512R-D*

Designation	$øD_C$	$øD_S$	$øD$	ℓ	ℓ_S	Ltm	L_f	L	Max. offset (radial)	Kg	Insert
TDX510F40-3	51	40	55	153	69	158	195	264	0.7	2.5	XPMT150512R-D*
TDX520F40-3	52	40	55	156	69	161	198	267	0.5	2.6	XPMT150512R-D*
TDX530F40-3	53	40	55	159	69	164	202	271	-	2.7	XPMT150512R-D*
TDX540F40-3	54	40	55	162	69	167	205	274	-	2.9	XPMT150512R-D*

Tool diameter	Tool diameter tolerance	Hole diameter tolerance*
ø12.5 - ø17.0	+ 0.1 / 0	+ 0.25 / 0
ø17.5 - ø54.0	+ 0.2 / 0	+ 0.3 / 0

*Just for reference

SPARE PARTS



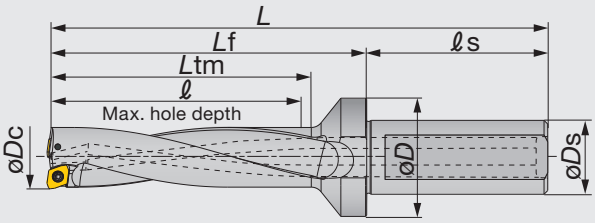


Designation	Clamping screw	Wrench
TDX125 - 145	CSPB-2H	IP-6DB
TDX150 - 170	CSPB-2L043	IP-6DB
TDX175 - 215	CSPB-2.2	IP-7D
TDX220 - 260	CSPB-2.5	IP-8D
TDX270 - 320	CSTB-3	T-9D
TDX330 - 410	CSTB-4	T-15D
TDX420 - 540	CSTB-5	T-20D

TDX-F L/D=4

L/D = 4, Flat cotter, Tool dia. ø12.5 - ø54 mm





Designation	øDc	øDs	øD	ℓ	ℓs	Ltm	Lf	L	Max. offset (radial)	Kg	Insert
TDX125F20-4	12.5	20	25	50	49	53	66	115	0.8	0.2	XPMT040104R-D*
TDX130F20-4	13	20	25	52	49	55	68	117	0.7	0.2	XPMT040104R-D*
TDX135F20-4	13.5	20	25	54	49	57	70	119	0.6	0.2	XPMT040104R-D*
TDX140F20-4	14	20	25	56	49	59	72	121	0.5	0.2	XPMT040104R-D*
TDX145F20-4	14.5	20	25	58	49	61	75	124	0.4	0.2	XPMT040104R-D*
TDX150F20-4	15	20	25	60	49	63	77	126	0.9	0.2	XPMT050204R-D*
TDX155F20-4	15.5	20	32	62	49	65	79	128	0.8	0.2	XPMT050204R-D*
TDX160F20-4	16	20	32	64	49	67	82	131	0.6	0.2	XPMT050204R-D*
TDX165F20-4	16.5	20	32	66	49	69	84	133	0.5	0.2	XPMT050204R-D*
TDX170F20-4	17	20	32	68	49	71	86	135	0.4	0.2	XPMT050204R-D*
TDX175F25-4	17.5	25	32	70	54	73	89	143	1.2	0.3	XPMT06X308R-D*
TDX180F25-4	18	25	32	72	54	75	91	145	1.1	0.3	XPMT06X308R-D*
TDX185F25-4	18.5	25	32	74	54	77	93	147	0.9	0.3	XPMT06X308R-D*
TDX190F25-4	19	25	32	76	54	79	95	149	0.8	0.3	XPMT06X308R-D*
TDX195F25-4	19.5	25	32	78	54	81	99	153	0.7	0.4	XPMT06X308R-D*
TDX200F25-4	20	25	32	80	54	84	101	155	0.5	0.4	XPMT06X308R-D*
TDX205F25-4	20.5	25	32	82	54	86	103	157	0.4	0.4	XPMT06X308R-D*
TDX210F25-4	21	25	32	84	54	88	105	159	0.3	0.4	XPMT06X308R-D*
TDX215F25-4	21.5	25	32	86	54	90	107	161	0.2	0.4	XPMT06X308R-D*
TDX220F25-4	22	25	32	88	54	92	109	163	1.2	0.5	XPMT07H308R-D*
TDX225F25-4	22.5	25	37	90	54	94	111.5	165.5	1.1	0.5	XPMT07H308R-D*
TDX230F25-4	23	25	37	92	54	96	114	168	0.9	0.4	XPMT07H308R-D*
TDX235F25-4	23.5	25	37	94	54	98	116.5	170.5	0.8	0.4	XPMT07H308R-D*
TDX240F25-4	24	25	37	96	54	100	119	173	0.7	0.4	XPMT07H308R-D*
TDX245F25-4	24.5	25	37	98	54	102	121.5	175.5	0.5	0.6	XPMT07H308R-D*
TDX250F25-4	25	25	37	100	54	104	124	178	0.4	0.6	XPMT07H308R-D*
TDX255F25-4	25.5	25	37	102	54	106	126	180	0.3	0.6	XPMT07H308R-D*
TDX260F25-4	26	25	37	104	54	108	128	182	0.2	0.6	XPMT07H308R-D*
TDX270F32-4	27	32	40	108	59	112	132	191	1.5	0.6	XPMT08T308R-D*
TDX280F32-4	28	32	40	112	59	116	137	196	1.2	0.8	XPMT08T308R-D*
TDX290F32-4	29	32	40	116	59	120	141	200	1	0.7	XPMT08T308R-D*
TDX300F32-4	30	32	40	120	59	124	147	206	0.7	0.9	XPMT08T308R-D*
TDX310F32-4	31	32	40	124	59	128	152	211	0.4	0.9	XPMT08T308R-D*
TDX320F32-4	32	32	40	128	59	132	156	215	0.2	1	XPMT08T308R-D*
TDX330F40-4	33	40	50	132	69	136	161	230	2.3	1.4	XPMT110412R-D*
TDX340F40-4	34	40	50	136	69	140	165	234	2.1	1.4	XPMT110412R-D*
TDX350F40-4	35	40	50	140	69	144	170	239	1.8	1.4	XPMT110412R-D*
TDX360F40-4	36	40	50	144	69	148	175	244	1.5	1.5	XPMT110412R-D*
TDX370F40-4	37	40	50	148	69	152	179	248	1.3	1.5	XPMT110412R-D*
TDX380F40-4	38	40	50	152	69	156	184	253	1	1.7	XPMT110412R-D*
TDX390F40-4	39	40	50	156	69	160	188	257	0.7	1.8	XPMT110412R-D*
TDX400F40-4	40	40	50	160	69	164	193	262	0.5	1.8	XPMT110412R-D*
TDX410F40-4	41	40	50	164	69	168	198	267	0.2	1.9	XPMT110412R-D*
TDX420F40-4	42	40	55	168	69	172	202	271	3.1	2	XPMT150512R-D*
TDX430F40-4	43	40	55	172	69	176	207	276	2.9	2	XPMT150512R-D*
TDX440F40-4	44	40	55	176	69	180	211	280	2.6	2.1	XPMT150512R-D*
TDX450F40-4	45	40	55	180	69	184	217	286	2.3	2.3	XPMT150512R-D*
TDX460F40-4	46	40	55	184	69	188	222	291	2.1	2.4	XPMT150512R-D*
TDX470F40-4	47	40	55	188	69	192	226	295	1.8	2.5	XPMT150512R-D*
TDX480F40-4	48	40	55	192	69	196	231	300	1.5	2.7	XPMT150512R-D*
TDX490F40-4	49	40	55	196	69	200	235	304	1.3	2.7	XPMT150512R-D*
TDX500F40-4	50	40	55	200	69	204	240	309	1	2.8	XPMT150512R-D*
TDX510F40-4	51	40	55	204	69	208	245	314	0.7	2.9	XPMT150512R-D*

Designation	øDc	øDs	øD	ℓ	ℓs	Ltm	Lf	L	Max. offset (radial)	Kg	Insert
TDX520F40-4	52	40	55	208	69	212	249	318	0.5	3	XPMT150512R-D*
TDX530F40-4	53	40	55	212	69	216	254	323	-	3.1	XPMT150512R-D*
TDX540F40-4	54	40	55	216	69	220	258	327	-	3.4	XPMT150512R-D*

Tool diameter	Tool diameter tolerance	Hole diameter tolerance*
ø12.5 - ø17	+ 0.1 / 0	+ 0.4 / 0
ø17.5 - ø54	+ 0.2 / 0	+ 0.45 / 0

*Just for reference

SPARE PARTS



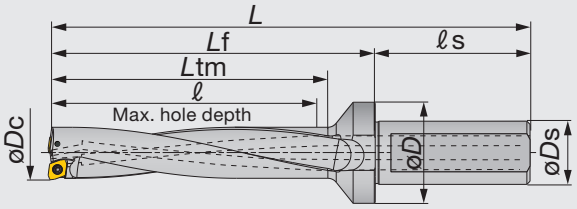


Designation	Clamping screw	Wrench
TDX125 - 145	CSPB-2H	IP-6DB
TDX150 - 170	CSPB-2L043	IP-6DB
TDX175 - 215	CSPB-2.2	IP-7D
TDX220 - 260	CSPB-2.5	IP-8D
TDX270 - 320	CSTB-3	T-9D
TDX330 - 410	CSTB-4	T-15D
TDX420 - 540	CSTB-5	T-20D

TDX-F L/D=5

L/D = 5, Flat cotter, Tool dia. ø12.5 - ø54 mm





Designation	øDc	øDs	øD	ℓ	ℓs	Ltm	Lf	L	Max. offset (radial)	Kg	Insert
TDX125F20-5	12.5	20	25	62.5	49	65.5	78.5	127.5	0.8	0.2	XPMT040104R-D*
TDX130F20-5	13	20	25	65	49	68	81	130	0.7	0.2	XPMT040104R-D*
TDX135F20-5	13.5	20	25	67.5	49	70.5	83.5	132.5	0.6	0.2	XPMT040104R-D*
TDX140F20-5	14	20	25	70	49	73	86	135	0.5	0.2	XPMT040104R-D*
TDX145F20-5	14.5	20	25	72.5	49	75.5	89.5	138.5	0.4	0.2	XPMT040104R-D*
TDX150F20-5	15	20	25	75	49	78	92	141	0.9	0.2	XPMT050204R-D*
TDX155F20-5	15.5	20	32	77.5	49	80.5	94.5	143.5	0.8	0.2	XPMT050204R-D*
TDX160F20-5	16	20	32	80	49	83	98	147	0.6	0.2	XPMT050204R-D*
TDX165F20-5	16.5	20	32	82.5	49	85.5	100.5	149.5	0.5	0.2	XPMT050204R-D*
TDX170F20-5	17	20	32	85	49	88	103	152	0.4	0.2	XPMT050204R-D*
TDX175F25-5	17.5	25	32	87.5	54	90.5	106.5	160.5	1.2	0.3	XPMT06X308R-D*
TDX180F25-5	18	25	32	90	54	93	109	163	1.1	0.3	XPMT06X308R-D*
TDX185F25-5	18.5	25	32	92.5	54	95.5	111.5	165.5	0.9	0.4	XPMT06X308R-D*
TDX190F25-5	19	25	32	95	54	98	114	168	0.8	0.4	XPMT06X308R-D*
TDX195F25-5	19.5	25	32	97.5	54	100.5	118.5	172.5	0.7	0.4	XPMT06X308R-D*
TDX200F25-5	20	25	32	100	54	104	121	175	0.5	0.4	XPMT06X308R-D*
TDX205F25-5	20.5	25	32	102.5	54	106.5	123.5	177.5	0.4	0.4	XPMT06X308R-D*
TDX210F25-5	21	25	32	105	54	109	126	180	0.3	0.4	XPMT06X308R-D*
TDX215F25-5	21.5	25	32	107.5	54	111.5	128.5	182.5	0.2	0.4	XPMT06X308R-D*
TDX220F25-5	22	25	32	110	54	114	131	185	1.2	0.6	XPMT07H308R-D*
TDX225F25-5	22.5	25	37	112.5	54	116.5	134	188	1.1	0.6	XPMT07H308R-D*
TDX230F25-5	23	25	37	115	54	119	137	191	0.9	0.4	XPMT07H308R-D*
TDX235F25-5	23.5	25	37	117.5	54	121.5	140	194	0.8	0.4	XPMT07H308R-D*
TDX240F25-5	24	25	37	120	54	124	143	197	0.7	0.4	XPMT07H308R-D*
TDX245F25-5	24.5	25	37	122.5	54	126.5	146	200	0.5	0.7	XPMT07H308R-D*
TDX250F25-5	25	25	37	125	54	129	149	203	0.4	0.7	XPMT07H308R-D*
TDX255F25-5	25.5	25	37	127.5	54	131.5	151.5	205.5	0.3	0.7	XPMT07H308R-D*
TDX260F25-5	26	25	37	130	54	134	154	208	0.2	0.7	XPMT07H308R-D*
TDX270F32-5	27	32	40	135	59	139	159	218	1.5	0.6	XPMT08T308R-D*
TDX280F32-5	28	32	40	140	59	144	165	224	1.2	0.9	XPMT08T308R-D*
TDX290F32-5	29	32	40	145	59	149	170	229	1	0.7	XPMT08T308R-D*
TDX300F32-5	30	32	40	150	59	154	177	236	0.7	1	XPMT08T308R-D*
TDX310F32-5	31	32	40	155	59	159	183	242	0.4	1	XPMT08T308R-D*
TDX320F32-5	32	32	40	160	59	164	188	247	0.2	1.1	XPMT08T308R-D*
TDX330F40-5	33	40	50	165	69	169	194	263	2.3	1.5	XPMT110412R-D*
TDX340F40-5	34	40	50	170	69	174	199	268	2.1	1.5	XPMT110412R-D*
TDX350F40-5	35	40	50	175	69	179	205	274	1.8	1.5	XPMT110412R-D*
TDX360F40-5	36	40	50	180	69	184	211	280	1.5	1.6	XPMT110412R-D*
TDX370F40-5	37	40	50	185	69	189	216	285	1.3	1.6	XPMT110412R-D*
TDX380F40-5	38	40	50	190	69	194	222	291	1	1.9	XPMT110412R-D*
TDX390F40-5	39	40	50	195	69	199	227	296	0.7	2	XPMT110412R-D*
TDX400F40-5	40	40	50	200	69	204	233	302	0.5	2	XPMT110412R-D*
TDX410F40-5	41	40	50	205	69	209	239	308	0.2	2.1	XPMT110412R-D*
TDX420F40-5	42	40	55	210	69	214	244	313	3.1	2.2	XPMT150512R-D*
TDX430F40-5	43	40	55	215	69	219	250	319	2.9	2.2	XPMT150512R-D*
TDX440F40-5	44	40	55	220	69	224	255	324	2.6	2.3	XPMT150512R-D*
TDX450F40-5	45	40	55	225	69	229	262	331	2.3	2.6	XPMT150512R-D*
TDX460F40-5	46	40	55	230	69	234	268	337	2.1	2.7	XPMT150512R-D*
TDX470F40-5	47	40	55	235	69	239	273	342	1.8	2.8	XPMT150512R-D*
TDX480F40-5	48	40	55	240	69	244	279	348	1.5	3.1	XPMT150512R-D*
TDX490F40-5	49	40	55	245	69	249	284	353	1.3	3.1	XPMT150512R-D*
TDX500F40-5	50	40	55	250	69	254	290	359	1	3.2	XPMT150512R-D*
TDX510F40-5	51	40	55	255	69	259	296	365	0.7	3.3	XPMT150512R-D*

Designation	øDc	øDs	øD	ℓ	ℓs	Ltm	Lf	L	Max. offset (radial)	Kg	Insert
TDX520F40-5	52	40	55	260	69	264	301	370	0.5	3.4	XPMT150512R-D*
TDX530F40-5	53	40	55	265	69	269	307	376	-	3.5	XPMT150512R-D*
TDX540F40-5	54	40	55	270	69	274	312	381	-	3.9	XPMT150512R-D*

Tool diameter	Tool diameter tolerance	Hole diameter tolerance*
ø12.5 - ø17	+ 0.1 / 0	+ 0.4 / 0
ø17.5 - ø54	+ 0.2 / 0	+ 0.45 / 0

*Just for reference

SPARE PARTS

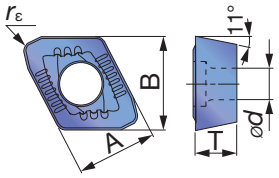




Designation	Clamping screw	Wrench
TDX125 - 145	CSPB-2H	IP-6DB
TDX150 - 170	CSPB-2L043	IP-6DB
TDX175 - 215	CSPB-2.2	IP-7D
TDX220 - 260	CSPB-2.5	IP-8D
TDX270 - 320	CSTB-3	T-9D
TDX330 - 410	CSTB-4	T-15D
TDX420 - 540	CSTB-5	T-20D

DJ

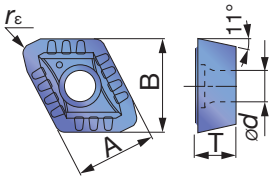




Designation	Coating				A	B	T	ød	rε	øDc
	AH9030	AH6030	AH725	T1115						
XPMT040104R-DJ	●	●	●	●	4.3	4.5	1.59	2.3	0.4	ø12.5 - ø14.5
XPMT050204R-DJ	●	●	●	●	5.2	5.4	2.38	2.3	0.4	ø15 - ø17
XPMT06X308R-DJ	●	●	●	●	6	7	3.15	2.5	0.8	ø17.5 - ø21.5
XPMT07H308R-DJ	●	●	●	●	7	8.2	3.6	2.8	0.8	ø22 - ø26
XPMT08T308R-DJ	●	●	●	●	8.5	9.9	3.97	3.4	0.8	ø27 - ø32
XPMT110412R-DJ	●	●	●	●	11.2	12.5	4.76	4.4	1.2	ø33 - ø41
XPMT150512R-DJ	●	●	●	●	15	16.1	5.56	5.5	1.2	ø42 - ø54

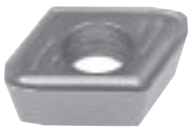
DS

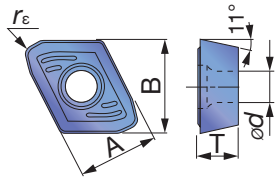




Designation	Coating		A	B	T	ød	rε	øDc
	AH6030	AH725						
XPMT040104R-DS	●	●	4.3	4.5	1.59	2.3	0.4	ø12.5 - ø14.5
XPMT050204R-DS	●	●	5.2	5.4	2.38	2.3	0.4	ø15 - ø17
XPMT06X308R-DS	●	●	6	7	3.15	2.5	0.8	ø17.5 - ø21.5
XPMT07H308R-DS	●	●	7	8.2	3.6	2.8	0.8	ø22 - ø26
XPMT08T308R-DS	●	●	8.5	9.9	3.97	3.4	0.8	ø27 - ø32
XPMT110412R-DS	●	●	11.2	12.5	4.76	4.4	1.2	ø33 - ø41
XPMT150512R-DS	●	●	15	16.1	5.56	5.5	1.2	ø42 - ø54

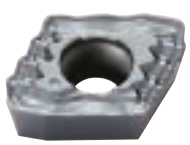
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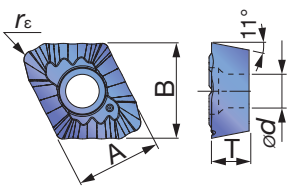




Designation	Coating			A	B	T	ød	rε	øDc
	AH9030	AH6030	AH725						
XPMT040104R-DW	●	●	●	4.3	4.5	1.59	2.3	0.4	ø12.5 - ø14.5
XPMT050204R-DW	●	●	●	5.2	5.4	2.38	2.3	0.4	ø15 - ø17
XPMT06X308R-DW	●	●	●	6	7	3.15	2.5	0.8	ø17.5 - ø21.5
XPMT07H308R-DW	●	●	●	7	8.2	3.6	2.8	0.8	ø22 - ø26
XPMT08T308R-DW	●	●	●	8.5	9.9	3.97	3.4	0.8	ø27 - ø32
XPMT110412R-DW	●	●	●	11.2	12.5	4.76	4.4	1.2	ø33 - ø41
XPMT150512R-DW	●	●	●	15	16.1	5.56	5.5	1.2	ø42 - ø54

DG





Designation	Coating	A	B	T	ød	rε	øDc
	AH725						
XPMT08T308R-DG	●	8.5	9.9	3.97	3.4	0.8	ø27 - ø32
XPMT110412R-DG	●	11.2	12.5	4.76	4.4	1.2	ø33 - ø41
XPMT150512R-DG	●	15	16.1	5.56	5.5	1.2	ø42 - ø54

● : Line - up

RECOMMENDED INSERT

ISO	Workpiece material	First choice	High feed	High speed	Troubleshooting			
					Chipping resistance	Wear resistance	Surface finish	Chip control
P	Low carbon steel (C ≤ 0.3%)	DS, AH6030	-	-	DS, AH725	-	DW, AH6030	DG, AH725
P	Carbon steel (C > 0.3%) Alloy steels	DJ, AH6030	DW, AH6030	DJ, AH9030	DW, AH725	DJ, AH9030	DW, AH6030	-
P	Low alloy steel	DS, AH6030	-	-	DS, AH725	-	DW, AH6030	-
M	Stainless steel	DS, AH6030	-	-	DS, AH725	-	DW, AH6030	DG, AH725
K	Grey cast iron	DJ, AH9030	DW, AH9030	DJ, T1115	DW, AH725	-	DW, AH9030	-
K	Ductile cast iron	DJ, AH9030	DW, AH9030	-	DW, AH725	-	DW, AH9030	-
N	Aluminium alloys	DJ, AH725	DW, AH725	DS, AH6030	-	-	DW, AH725	DG, AH725
S	Titanium alloys Heat-resistant alloys	DS, AH6030	-	-	DW, AH725	-	DW, AH725	DG, AH725
H	Hardened steel	DJ, AH9030	DW, AH9030	-	DW, AH725	-	DW, AH9030	-

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Cutting speed *Vc* (m/min)	Series L/D	Feed: *f* (mm/rev)				
				ø12.5 ~ ø14.5	ø15 ~ ø17	ø17.5 ~ ø26	ø27 ~ ø32	ø33 ~ ø54
P	Low carbon steels (C < 0.3) C15E4, E275A, E355D, etc.	160 - 320	2D, 3D	0.02 - 0.06	0.02 - 0.06	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
			4D, 5D	0.02 - 0.06	0.02 - 0.06	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
P	Carbon steels (C > 0.3) C45, C55, etc.	80 - 250	2D, 3D	0.04 - 0.1	0.04 - 0.12	0.06 - 0.13	0.06 - 0.15	0.08 - 0.18
			4D, 5D	0.04 - 0.08	0.04- 0.08	0.06 - 0.1	0.06 - 0.12	0.08 - 0.14
P	Low alloy steels 18CrMo4, etc.	160 - 250	2D, 3D	0.04 - 0.08	0.04 - 0.08	0.06 - 0.12	0.06 - 0.12	0.06 - 0.14
			4D, 5D	0.04 - 0.08	0.04 - 0.08	0.06 - 0.12	0.06 - 0.12	0.06 - 0.14
P	Alloy steels 42CrMo4, 20Cr4, etc.	80 - 200	2D, 3D	0.04 - 0.1	0.04 - 0.12	0.06 - 0.13	0.06 - 0.15	0.08 - 0.18
			4D, 5D	0.04 - 0.08	0.04 - 0.08	0.06 - 0.1	0.06 - 0.12	0.08 - 0.14
M	Stainless steels (Austenitic) X5CrNi18-9, X5CrNiMo17-12-2, etc.	100 - 200	2D, 3D	0.02 - 0.08	0.02 - 0.08	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12
			4D, 5D	0.02 - 0.08	0.02 - 0.08	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12
M	Stainless steels (Martensitic and ferritic) X5CrNi18-9, X5CrNiMo17-12-2, etc.	100 - 220	2D, 3D	0.02 - 0.08	0.02 - 0.08	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12
			4D, 5D	0.02 - 0.08	0.02 - 0.08	0.04 - 0.1	0.04 - 0.12	0.04 - 0.12
M	Stainless steels (Precipitation hardening) X5CrNiCuNb16-4, etc.	80 - 120	2D, 3D	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.06 - 0.1
			4D, 5D	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.06 - 0.1
K	Grey cast irons 250, etc.	80 - 250	2D, 3D	0.06 - 0.12	0.06 - 0.12	0.06 - 0.15	0.06 - 0.18	0.08 - 0.2
			4D, 5D	0.06 - 0.1	0.06 - 0.1	0.06 - 0.12	0.06 - 0.14	0.08 - 0.16
K	Ductile cast irons 600-3, etc.	80 - 200	2D, 3D	0.04 - 0.12	0.04 - 0.12	0.06 - 0.15	0.06 - 0.18	0.08 - 0.2
			4D, 5D	0.04 - 0.1	0.04 - 0.1	0.06 - 0.12	0.06 - 0.14	0.08 - 0.16
N	Aluminium alloys AlCu4SiMg, AlSi11Cu3, etc.	200 - 400	2D, 3D	0.1 - 0.12	0.1 - 0.15	0.15 - 0.2	0.15 - 0.2	0.15 - 0.25
			4D, 5D	0.08 - 0.12	0.08 - 0.12	0.12 - 0.16	0.12 - 0.16	0.12 - 0.2
S	Heat-resistant alloys Inconel 718, etc.	20 - 60	2D, 3D	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
		20 - 60	4D, 5D	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
S	Titanium alloys Ti-6Al-4V, etc.	40 - 120	2D, 3D	0.06 - 0.1	0.06 - 0.1	0.06 - 0.12	0.06 - 0.12	0.06 - 0.12
		40 - 120	4D, 5D	0.06 - 0.08	0.06 - 0.08	0.06 - 0.1	0.06 - 0.1	0.06 - 0.1
H	Hardened steel ≥ 40HRC	40 - 100	2D, 3D	0.04 - 0.08	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
		40 - 100	4D, 5D	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08	0.04 - 0.08

Standard cutting conditions for DG type chipbreaker

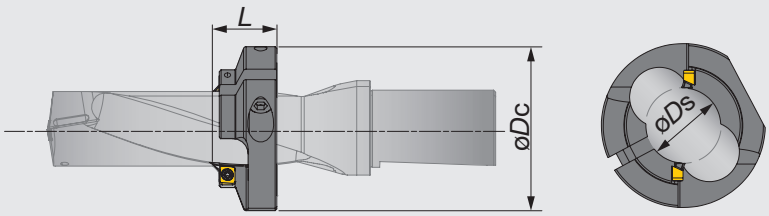
ISO	Workpiece material	Cutting speed *Vc* (m/min)	Series L/D	Feed: *f* (mm/rev)	
				ø27 ~ ø32	ø33 ~ ø54
P	Low carbon steels (C < 0.3) C15E4, E275A, E355D, etc.	60 - 180	2D, 3D 4D, 5D	0.04 - 0.1	

- When using the smaller side of the diameter range, the feed rate should be set lower.
- When using DW insert for work materials of 40 HRC, the feed rate should be set below 50%.
- For difficult-to-cut materials (heat-resistant alloys, etc.), the cutting speed should be set 25% below that of carbon steels.
- For high-feed machining, apply a feed rate that is approximately 1.5 times the standard feed conditions.
- High speed machining means cutting speeds over 150 m/min.
- When using DW insert for troubleshooting, use it within the range of standard cutting conditions.
- DG type chipbreaker is suitable for heavy machines that have low-rpm spindles. If chatter occurs, a lower feed rate is recommended.

TUNGDRILLTWISTED

TDXCF chamfering tool

Chamfering tool for "TungDrillTwisted" & "TungSix-Drill"



Designation	øDs	øDc	L	Drill	L/D = 2		L/D = 3		L/D = 4		L/D = 5	
					TDX***F	TDX***W	TDX***F	TDX***W	TDX***F	TDX***W	TDX***F	TDX***W
TDXCF180L25	17.3	49	25	TDX175*25-*	13	18.8	30.5	36.3	48	53.8	65.5	71.3
TDXCF180L25	17.3	49	25	TDX180*25-*	14	19.9	32	37.9	50	55.9	68	73.9
TDXCF190L25	18.1	49	25	TDX185*25-*	15	21.1	33.5	39.6	52	58.1	70.5	76.6
TDXCF190L25	18.1	49	25	TDX190*25-*	16	22.2	35	41.2	54	60.2	73	79.2
TDXCF200L25	19.1	49	25	TDX195*25-*	17	23.4	36.5	42.9	56	62.4	75.5	81.9
TDXCF200L25	19.1	49	25	TDX200*25-*	20	24.5	40	44.5	59	64.5	79	84.5
TDXCF210L25	20.1	49	25	TDX205*25-*	21	25.7	41.5	46.2	61	66.7	81.5	87.2
TDXCF210L25	20.1	49	25	TDX210*25-*	22	26.8	43	47.8	63	68.8	84	89.8
TDXCF220L25	21.1	49	25	TDX215*25-*	23	28	44.5	49.5	65	71	86.5	92.5
TDXCF220L25	21.1	49	25	TDX220*25-*	24	29.1	46	51.1	67	73.1	89	95.1
TDXCF230L25	22.1	49	25	TDX225*25-*	25	30.3	47.5	52.8	69	75.3	91.5	97.8
TDXCF230L25	22.1	49	25	TDX230*25-*	26	31.4	49	54.4	71	77.4	94	100.4
TDXCF240L25	23.1	49	25	TDX235*25-*	27	32.6	50.5	56.1	73	79.6	96.5	103.1
TDXCF240L25	23.1	49	25	TDX240*25-*	28	33.7	52	57.7	75	81.7	99	105.7
TDXCF250L25	23.95	49	25	TDX245*25-*	29	34.9	53.5	59.4	77	83.9	101.5	108.4
TDXCF250L25	23.95	49	25	TDX250*25-*	30	36	55	61	79	86	104	111
TDXCF260L30	24.95	64	30	TDX255*25-*	26	32.2	51.5	57.7	76	83.2	101.5	108.7
TDXCF260L30	24.95	64	30	TDX260*25-*	27	33.3	53	59.3	78	85.3	104	111.3
TDXCF270L30	25.9	64	30	TDX270*32-*	29	35.6	56	62.6	82	89.6	109	116.6
TDXCF280L30	26.9	64	30	TDX280*32-*	30.3	37.9	58.3	65.9	86	93.9	114	121.9
TDXCF290L30	27.9	64	30	TDX290*32-*	32.3	40.2	61.3	69.2	90	98.2	119	127.2
TDXCF300L30	28.9	64	30	TDX300*32-*	34.3	42.5	64.3	72.5	94	102.5	124	132.5
TDXCF310L30	29.9	64	30	TDX310*32-*	36.3	44.8	67.3	75.8	98	106.8	129	137.8
TDXCF320L30	30.9	64	30	TDX320*32-*	38.3	47.1	70.3	79.1	102	111.1	134	143.1

SPARE PARTS

Designation	Screw for insert	Screw for ring	Wrench for insert	Wrench for ring
TDXCF130 - 250	CSPB-4S	CM6X16	IP-15D	P-5
TDXCF260 - 540	CSPB-4S	CM8X1.25X20-A	IP-15D	P-6

INSERT

XHGX-45A



Designation	GH130	Torgue (N·m)
XHGX090700R-45A	●	3.5

Caution in mounting the chamfering tool on the drill body

① Place the ring on the drill body and match the positions of flutes on drill and ring. Temporarily clamp the ring with the ring screw tightened lightly.

② Place the inserts, and tighten the insert screw lightly.

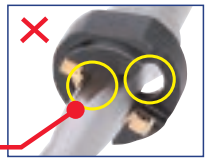
③ Adjust the ring position with a presetter, height gauge, or Vernier caliper, and securely tighten the ring screw, then the insert screw.



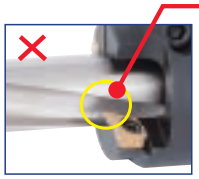
Match the positions of flutes on drill and ring.

(Inserts will be automatically set to the right positions.)

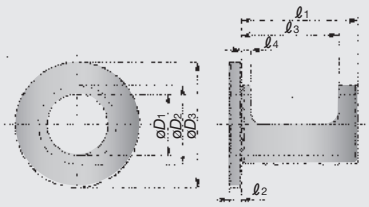
The cutting edge of the insert is in the ring flute.



The flutes on drill and ring do not match.



Eccentric sleeves for "TungDrillTwisted" & "TungSix-Drill"



Designation	øD1	øD2	øD3	ℓ1	ℓ2	ℓ3	ℓ4
EZ2025	20	25	46	49	5	32.5	4
EZ2532	25	32	51	52	5	38	4
EZ3240	32	40	54	62	5	43	4
EZ4050	40	50	69	63	5	55	4

SPARE PARTS

Designation	Wrench
EZ...	P-2.5

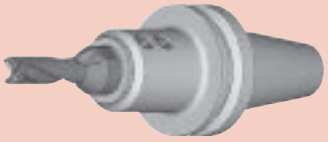
Use EZ sleeves for the following purposes

Hole diameter adjustment on the milling machine

Adjusting the finishing diameter when milling

Adjusting the finishing diameter in tool-rotating applications such as on machining centres and milling machines:

By using EZ sleeve, the finishing diameter can be adjusted in the range from +0.6 mm to -0.2 mm.



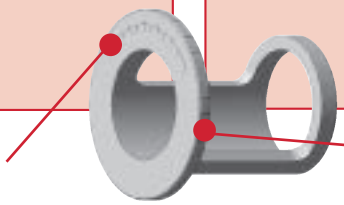
Adjusting cutting edge height on lathe

Lathe

Adjusting of the cutting edge height in work rotating applications such as on lathes:

By using EZ sleeve, the cutting edge height can be adjusted in the range from +0.3 mm to -0.2 mm. It results in eliminating troubles caused by improper cutting-edge height.





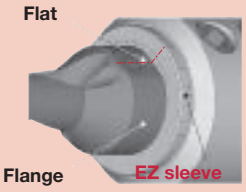
Scale for adjusting finishing diameter in milling (Periphery of sleeve)

Scale for adjusting cutting edge height in turning (Front face of sleeve)

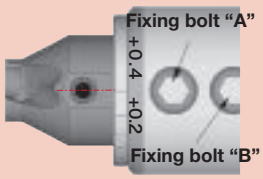
Setting of EZ sleeve

Adjusting finishing diameter in milling

As shown in the Figure below, set the EZ sleeve between the drill shank and the toolholder.

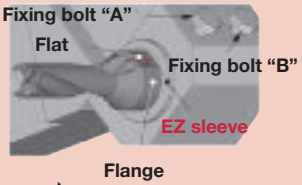


Align the graduated scale on the periphery of the EZ sleeve with the center of the flat of the drill flange.
In the Figure shown below, the sleeve is set so that the finishing diameter will be increased by 0.4 mm.



Adjusting cutting edge height on lathe

As shown in the Figure below, set the EZ sleeve between the drill shank and the toolblock.



Align the graduated scale on the front face of the Esleeve with the center of the flat of the drill flange.
In the Figure shown below, the sleeve is set so that the center of the drill will shift by 0.1 mm to the plus (+) direction.



When rotating the EZ sleeve, insert the wrench into the hole at the flange periphery and rotate the EZ sleeve.
Screws A + B have to be loosened.
Secure the drill by screw A. Secure the EZ sleeve by lightly tightening screw B.
Tighten screw B only lightly otherwise EZ sleeve can be damaged!

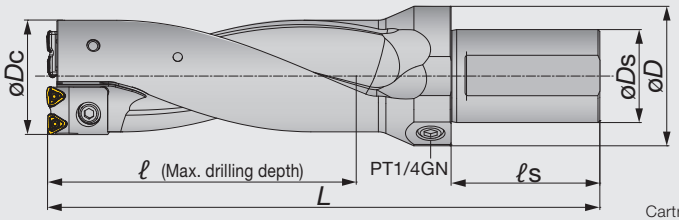
Cautious points

- Can not be used for collect chuck holders.
- Over L/D 4 or bigger adjustment, please reduce feed.
- For smaller adjustment, the drill itself will interfere with the hole diameter. It is recommended that hole diameter should be adjusted to a larger diameter than the drill diameter.

TDB, TDS cartridge set

L/D = 2.5, dia. ø55 - ø80mm, diameter adjustable with setting plate





Cartridge set is sold separately.

Body Designation	Cartridge set Designation	øDc	øDs	øD	ℓ	ℓs	L	kg	Setting plate Designation	(mm)	Insert
TDB55-56F50-2.5	TDSCA55-56	55	50	75	140	80	262	3.2	-	-	WWMU08X408R-D*
TDB55-56F50-2.5	TDSCA55-56	56	50	75	140	80	262	3.2	AP0801	0.5	WWMU08X408R-D*
TDB57-62F50-2.5	TDSCA57-62	57	50	75	155	80	282	3.6	-	-	WWMU08X408R-D*
TDB57-62F50-2.5	TDSCA57-62	58	50	75	155	80	282	3.6	AP0801	0.5	WWMU08X408R-D*
TDB57-62F50-2.5	TDSCA57-62	59	50	75	155	80	282	3.6	AP0802	1	WWMU08X408R-D*
TDB57-62F50-2.5	TDSCA57-62	60	50	75	155	80	282	3.6	AP0803	1.5	WWMU08X408R-D*
TDB57-62F50-2.5	TDSCA57-62	61	50	75	155	80	282	3.6	AP0804	2	WWMU08X408R-D*
TDB57-62F50-2.5	TDSCA57-62	62	50	75	155	80	282	3.6	AP0805	2.5	WWMU08X408R-D*
TDB63-66F50-2.5	TDSCA63-66	63	50	75	165	80	297	4.2	-	-	WWMU08X408R-D*
TDB63-66F50-2.5	TDSCA63-66	64	50	75	165	80	297	4.2	AP0801	0.5	WWMU08X408R-D*
TDB63-66F50-2.5	TDSCA63-66	65	50	75	165	80	297	4.2	AP0802	1	WWMU08X408R-D*
TDB63-66F50-2.5	TDSCA63-66	66	50	75	165	80	297	4.2	AP0803	1.5	WWMU08X408R-D*
TDB67-73F50-2.5	TDSCA67-73	67	50	75	183	80	322	5	-	-	WWMU09X510R-D*
TDB67-73F50-2.5	TDSCA67-73	68	50	75	183	80	322	5	AP1101	0.5	WWMU09X510R-D*
TDB67-73F50-2.5	TDSCA67-73	69	50	75	183	80	322	5	AP1102	1	WWMU09X510R-D*
TDB67-73F50-2.5	TDSCA67-73	70	50	75	183	80	322	5	AP1103	1.5	WWMU09X510R-D*
TDB67-73F50-2.5	TDSCA67-73	71	50	75	183	80	322	5	AP1104	2	WWMU09X510R-D*
TDB67-73F50-2.5	TDSCA67-73	72	50	75	183	80	322	5	AP1105	2.5	WWMU09X510R-D*
TDB67-73F50-2.5	TDSCA67-73	73	50	75	183	80	322	5	AP1106	3	WWMU09X510R-D*
TDB74-80F50-2.5	TDSCA74-80	74	50	75	200	80	333	5.7	-	-	WWMU11X512R-D*
TDB74-80F50-2.5	TDSCA74-80	75	50	75	200	80	333	5.7	AP1101	0.5	WWMU11X512R-D*
TDB74-80F50-2.5	TDSCA74-80	76	50	75	200	80	333	5.7	AP1102	1	WWMU11X512R-D*
TDB74-80F50-2.5	TDSCA74-80	77	50	75	200	80	333	5.7	AP1103	1.5	WWMU11X512R-D*
TDB74-80F50-2.5	TDSCA74-80	78	50	75	200	80	333	5.7	AP1104	2	WWMU11X512R-D*
TDB74-80F50-2.5	TDSCA74-80	79	50	75	200	80	333	5.7	AP1105	2.5	WWMU11X512R-D*
TDB74-80F50-2.5	TDSCA74-80	80	50	75	200	80	333	5.7	AP1106	3	WWMU11X512R-D*

Body

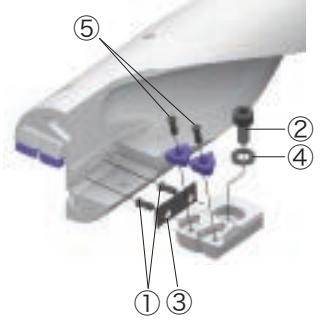
SPARE PARTS

Designation	① Setting plate screw	Plug	② Cartridge screw	③ Setting plate	③ Setting plate 1	③ Setting plate 2	③ Setting plate 3	③ Setting plate 4	③ Setting plate 5	Wrench for setting plate	Wrench for cartridge	Wrench for plug	④ Washer
TDB55-56F50-2.5	CSTB-3	PT1/4GN	CM5X0.8X12	AP0801	-	-	-	-	-	T-9D	P-4	P-6	5.3X10X1
TDB57-62F50-2.5	CSTB-3	PT1/4GN	CM5X0.8X12	AP0801	AP0802	AP0803	AP0804	AP0805	-	T-9D	P-4	P-6	5.3X10X1
TDB63-66F50-2.5	CSTB-3	PT1/4GN	CHHM6-15	AP0801	AP0802	AP0803	-	-	-	T-9D	P-5	P-6	6.4X12.5X1.6
TDB67-73F50-2.5	CSTB-3	PT1/4GN	CM6X16	AP1101	AP1102	AP1103	AP1104	AP1105	AP1106	T-9D	P-5	P-6	6.4X12.5X1.6
TDB74-80F50-2.5	CSTB-3	PT1/4GN	CM6X16	AP1101	AP1102	AP1103	AP1104	AP1105	AP1106	T-9D	P-5	P-6	6.4X12.5X1.6

Cartridge set

SPARE PARTS

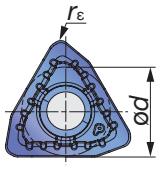
Designation	⑤ Insert screw	Wrench
TDSCA55 - 56	CSTB-3	T-9F
TDSCA57 - 62	CSTB-3	T-9F
TDSCA63 - 66	CSTB-3	T-9F
TDSCA67 - 73	CSTB-4	T-15F
TDSCA74 - 80	CSTB-5	T-20F

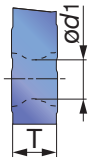


INSERT

DJ



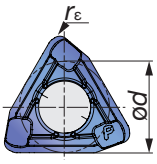


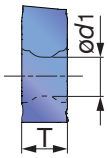


Designation	AH9030	ød	T	ød1	rε	øDc
WWMU08X408R-DJ	●	8	3.9	3.4	0.8	ø55 - ø66
WWMU09X510R-DJ	●	9.7	4.9	4.4	1	ø67 - ø73
WWMU11X512R-DJ	●	11.3	5.7	5.5	1.2	ø74 - ø80

DS







Designation	AH6030	ød	T	ød1	rε	øDc
WWMU08X408R-DS	●	8	3.9	3.4	0.8	ø55 - ø66
WWMU09X510R-DS	●	9.7	4.9	4.4	1	ø67 - ø73
WWMU11X512R-DS	●	11.3	5.7	5.5	1.2	ø74 - ø80

● : Line-up

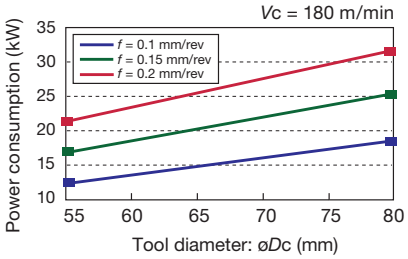
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Selection criteria	Chip-breaker	Grade	Cutting speed	Feed: *f* (mm/rev) øDc (mm)		
					Vc (m/min)	ø55 - 56	ø57 - 73	ø74 - 80
P	Low carbon steels (C<0.3) C15E4, E275A, E355D, etc.	First choice	DS	AH6030	160 - 250	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
		For wear resistance	DJ	AH9030	160 - 320	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
	Carbon steels (C>0.3) C45, C55, etc.	First choice	DJ	AH9030	80 - 250	0.06 - 0.16	0.06 - 0.18	0.08 - 0.2
		For impact resistance	DS	AH6030	80 - 250	0.04 - 0.13	0.04 - 0.15	0.04 - 0.16
	Low alloy steels 18CrMo4, etc.	First choice	DS	AH6030	160 - 250	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
		For wear resistance	DJ	AH9030	160 -250	0.06 - 0.14	0.06 - 0.14	0.06 - 0.14
	Alloy steels 42CrMo4, 20Cr4, etc.	First choice	DJ	AH9030	80 - 200	0.06 - 0.16	0.06 - 0.18	0.08 - 0.2
		For impact resistance	DS	AH6030	80 - 200	0.04 - 0.13	0.04 - 0.14	0.04 - 0.15
M	Stainless steels (Austenitic) X5CrNi189, X5CrNiMo17-12-2, etc.	First choice	DS	AH6030	100 - 200	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
		—	DJ	AH9030	100 - 200	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
	Stainless steels (Martensitic and ferritic) X6Cr17, X12CrS13, etc.	First choice	DS	AH6030	100 - 200	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
		—	DJ	AH9030	100 - 200	0.04 - 0.12	0.04 - 0.12	0.04 - 0.12
	Stainless steels (Precipitation hardening) X5CrNiCuNb16-4, etc.	First choice	DS	AH6030	80 - 120	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
		—	DJ	AH9030	80 - 120	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
K	Grey cast irons 250, etc.	First choice	DJ	AH9030	80 - 250	0.06 - 0.18	0.08 - 0.2	0.08 - 0.22
		For impact resistance	DS	AH6030	80 - 200	0.06 - 0.15	0.08 - 0.16	0.08 - 0.18
	Ductile cast irons 700-2, etc.	First choice	DJ	AH9030	80 - 200	0.06 - 0.16	0.06 - 0.18	0.08 - 0.2
		For impact resistance	DS	AH6030	80 - 150	0.06 - 0.15	0.08 - 0.16	0.08 - 0.18
N	Aluminium alloys	First choice	DS	AH6030	200 - 400	0.1 - 0.2	0.1 - 0.23	0.1 - 0.25
		—	DJ	AH9030	200 - 400	0.1 - 0.2	0.1 - 0.23	0.1 - 0.25
S	High temperature alloys Innconel718, etc.	First choice	DS	AH6030	20 - 60	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1
		—	DJ	AH9030	20 - 60	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1
	Titanium alloys Ti-6Al-4V, etc.	First choice	DS	AH6030	40 - 120	0.06 - 0.12	0.06 - 0.14	0.06 - 0.14
		—	DJ	AH9030	40 - 120	0.06 - 0.12	0.06 - 0.14	0.06 - 0.14
H	High hardened steels < 40HRC	First choice	DJ	AH9030	50 - 100	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1
		For impact resistance	DS	AH6030	40 - 80	0.04 - 0.08	0.04 - 0.1	0.04 - 0.1

Caution

Machine

- Use drills on a fully covered machine to maintain safety.
- Use drills on a high powered machine such as a BT50.
- Figure on right shows reference of required machine power.



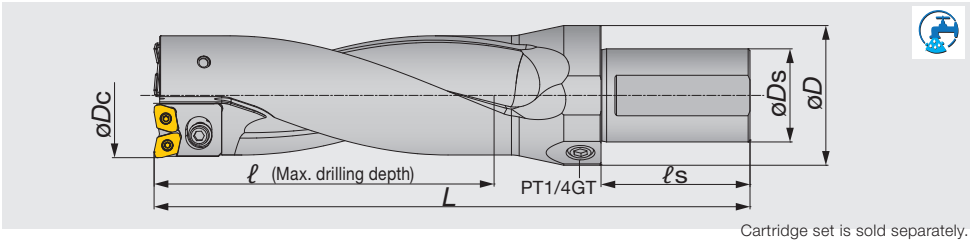
Cutting coolant

- Use water soluble type coolant
- with internal supply.
- Coolant pressure higher than 1MPa is essential.

TDB, TDX cartridge set

L/D = 2.5, dia. ø55 - ø80 mm, diameter adjustable with setting plate





Cartridge set is sold separately.

Body Designation	Cartridge set Designation	øDc	øDs	øD	ℓ	ℓs	L	kg	Setting plate Designation	(mm)	Insert
TDB55-56F50-2.5	TDXCA55-56	55	50	75	140	80	260	3.2	-	-	XPMT08T308R-D*
TDB55-56F50-2.5	TDXCA55-56	56	50	75	140	80	260	3.2	AP0801	0.5	XPMT08T308R-D*
TDB57-62F50-2.5	TDXCA57-62	57	50	75	155	80	280	3.6	-	-	XPMT08T308R-D*
TDB57-62F50-2.5	TDXCA57-62	58	50	75	155	80	280	3.6	AP0801	0.5	XPMT08T308R-D*
TDB57-62F50-2.5	TDXCA57-62	59	50	75	155	80	280	3.6	AP0802	1	XPMT08T308R-D*
TDB57-62F50-2.5	TDXCA57-62	60	50	75	155	80	280	3.6	AP0803	1.5	XPMT08T308R-D*
TDB57-62F50-2.5	TDXCA57-62	61	50	75	155	80	280	3.6	AP0804	2	XPMT08T308R-D*
TDB57-62F50-2.5	TDXCA57-62	62	50	75	155	80	280	3.6	AP0805	2.5	XPMT08T308R-D*
TDB63-66F50-2.5	TDXCA63-66	63	50	75	165	80	295	4.2	-	-	XPMT08T308R-D*
TDB63-66F50-2.5	TDXCA63-66	64	50	75	165	80	295	4.2	AP0801	0.5	XPMT08T308R-D*
TDB63-66F50-2.5	TDXCA63-66	65	50	75	165	80	295	4.2	AP0802	1	XPMT08T308R-D*
TDB63-66F50-2.5	TDXCA63-66	66	50	75	165	80	295	4.2	AP0803	1.5	XPMT08T308R-D*
TDB67-73F50-2.5	TDXCA67-73	67	50	75	183	80	320	5	-	-	XPMT110412R-D*
TDB67-73F50-2.5	TDXCA67-73	68	50	75	183	80	320	5	AP1101	0.5	XPMT110412R-D*
TDB67-73F50-2.5	TDXCA67-73	69	50	75	183	80	320	5	AP1102	1	XPMT110412R-D*
TDB67-73F50-2.5	TDXCA67-73	70	50	75	183	80	320	5	AP1103	1.5	XPMT110412R-D*
TDB67-73F50-2.5	TDXCA67-73	71	50	75	183	80	320	5	AP1104	2	XPMT110412R-D*
TDB67-73F50-2.5	TDXCA67-73	72	50	75	183	80	320	5	AP1105	2.5	XPMT110412R-D*
TDB67-73F50-2.5	TDXCA67-73	73	50	75	183	80	320	5	AP1106	3	XPMT110412R-D*
TDB74-80F50-2.5	TDXCA74-80	74	50	75	200	80	330	5.7	-	-	XPMT110412R-D*
TDB74-80F50-2.5	TDXCA74-80	75	50	75	200	80	330	5.7	AP1101	0.5	XPMT110412R-D*
TDB74-80F50-2.5	TDXCA74-80	76	50	75	200	80	330	5.7	AP1102	1	XPMT110412R-D*
TDB74-80F50-2.5	TDXCA74-80	77	50	75	200	80	330	5.7	AP1103	1.5	XPMT110412R-D*
TDB74-80F50-2.5	TDXCA74-80	78	50	75	200	80	330	5.7	AP1104	2	XPMT110412R-D*
TDB74-80F50-2.5	TDXCA74-80	79	50	75	200	80	330	5.7	AP1105	2.5	XPMT110412R-D*
TDB74-80F50-2.5	TDXCA74-80	80	50	75	200	80	330	5.7	AP1106	3	XPMT110412R-D*

Body

SPARE PARTS



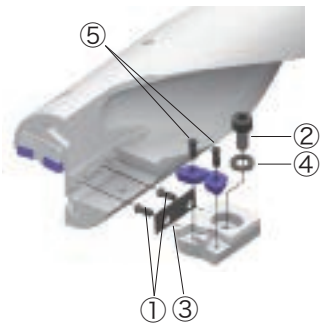
Designation	① Setting plate screw	Plug	② Cartridge screw	③ Setting plate	③ Setting plate 1	③ Setting plate 2	③ Setting plate 3	③ Setting plate 4	③ Setting plate 5	Wrench for setting plate	Wrench for cartridge	Wrench for plug	④ Washer
TDB55-56F50-2.5	CSTB-3	PT1/4GN	CM5X0.8X12	AP0801	-	-	-	-	-	T-9D	P-4	P-6	5.3X10X1
TDB57-62F50-2.5	CSTB-3	PT1/4GN	CM5X0.8X12	AP0801	AP0802	AP0803	AP0804	AP0805	-	T-9D	P-4	P-6	5.3X10X1
TDB63-66F50-2.5	CSTB-3	PT1/4GN	CHHM6-15	AP0801	AP0802	AP0803	-	-	-	T-9D	P-5	P-6	6.4X12.5X1.6
TDB67-73F50-2.5	CSTB-3	PT1/4GN	CM6X16	AP1101	AP1102	AP1103	AP1104	AP1105	AP1106	T-9D	P-5	P-6	6.4X12.5X1.6
TDB74-80F50-2.5	CSTB-3	PT1/4GN	CM6X16	AP1101	AP1102	AP1103	AP1104	AP1105	AP1106	T-9D	P-5	P-6	6.4X12.5X1.6

Cartridge set

SPARE PARTS



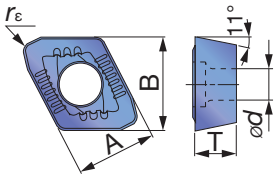
Designation	⑤ Insert screw	Wrench
TDXCA55 - 56	CSTB-3	T-9F
TDXCA57 - 62	CSTB-3	T-9F
TDXCA63 - 66	CSTB-3	T-9F
TDXCA67 - 73	CSTB-4	T-15F
TDXCA74 - 80	CSTB-4	T-15F



INSERT

DJ

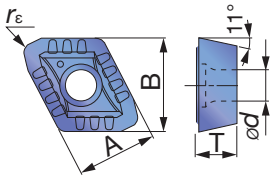




Designation	Coating				A	B	T	ød	rε	øDc
	AH9030	AH6030	AH725	T1115						
XPMT08T308R-DJ	●	●	●	●	8.5	9.9	3.97	3.4	0.8	ø55 - ø66
XPMT110412R-DJ	●	●	●	●	11.2	12.5	4.76	4.4	1.2	ø67 - ø80

DS

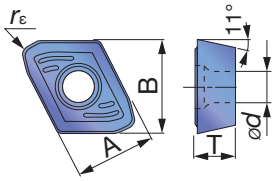




Designation	Coating		A	B	T	ød	rε	øDc
	AH6030	AH725						
XPMT08T308R-DS	●	●	8.5	9.9	3.97	3.4	0.8	ø55 - ø66
XPMT110412R-DS	●	●	11.2	12.5	4.76	4.4	1.2	ø67 - ø80

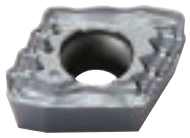
DW

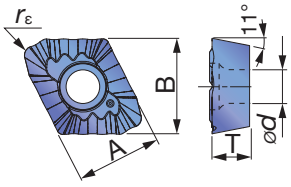




Designation	Coating			A	B	T	ød	rε	øDc
	AH9030	AH6030	AH725						
XPMT08T308R-DW	●	●	●	8.5	9.9	3.97	3.4	0.8	ø55 - ø66
XPMT110412R-DW	●	●	●	11.2	12.5	4.76	4.4	1.2	ø67 - ø80

DG





Designation	Coating	A	B	T	ød	rε	øDc
	AH725						
XPMT08T308R-DG	●	8.5	9.9	3.97	3.4	0.8	ø55 - ø66
XPMT110412R-DG	●	11.2	12.5	4.76	4.4	1.2	ø67 - ø80

● : Line - up

INSERTS RECOMMENDATION

ISO	Workpiece material	First choice	High feed	High speed	Troubleshooting: Chipping resistance	Troubleshooting: Wear resistance	Troubleshooting: Surface finish	Troubleshooting: Chip control
P	Low carbon steel (C ≤ 0.3%)	DS, AH6030	-	-	DS, AH725	-	DW, AH6030	DG, AH725
P	Carbon steel (C > 0.3%) Alloy steels	DJ, AH6030	DW, AH6030	DJ, AH9030	DW, AH725	DJ, AH9030	DW, AH6030	-
P	Low alloy steel	DS, AH6030	-	-	DS, AH725	-	DW, AH6030	-
M	Stainless steel	DS, AH6030	-	-	DS, AH725	-	DW, AH6030	DG, AH725
K	Grey cast iron	DJ, AH9030	DW, AH9030	DJ, T1115	DW, AH725	-	DW, AH9030	-
K	Ductile cast iron	DJ, AH9030	DW, AH9030	-	DW, AH725	-	DW, AH9030	-
N	Aluminium alloys	DJ, AH725	DW, AH725	DS, AH6030		-	DW, AH725	DG, AH725
S	Titanium alloys Heat-resistant alloys	DS, AH6030	-	-	DW, AH725	-	DW, AH725	DG, AH725
H	High hardened steels	DJ, AH9030	DW, AH9030	-	DW, AH725	-	DW, AH9030	-

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Cutting speed *Vc* (m/min)	Feed: *f* (mm/rev) ø55 ~ ø62	ø63 ~ ø73	ø74 ~ ø80
P	Low carbon steels (C < 0.3) C15E4, E275A, E355D, etc.	160 - 320	0.04 - 0.1	0.04 - 0.1	0.04 - 0.1
P	Carbon steels (C > 0.3) C45, C55, etc.	80 - 250	0.08 - 0.18	0.08 - 0.18	0.1 - 0.2
P	Low alloy steels 15CrMo5, etc.	160 - 250	0.04 - 0.16	0.04 - 0.16	0.04 - 0.16
P	Alloy steels 42CrMo4, 20Cr4, etc.	80 - 200	0.08 - 0.18	0.08 - 0.18	0.08 - 0.2
M	Stainless steels (Austenitic) X5CrNi18-9, X5CrNiMo17-12-2, etc.	100 - 200	0.04 - 0.12	0.04 - 0.12	0.06 - 0.14
M	Stainless steels (Martensitic and ferritic) X5CrNi18-9, X5CrNiMo17-12-2, etc.	100 - 200	0.04 - 0.12	0.04 - 0.12	0.06 - 0.14
M	Stainless steels (Precipitation hardening) SUS630 etc. (X5CrNiCuNb16-4, etc.)	80 - 120	0.04 - 0.1	0.04 - 0.1	0.06 - 0.12
K	Grey cast irons 250, etc.	80 - 250	0.08 - 0.2	0.08 - 0.2	0.1 - 0.22
K	Ductile cast irons 600-3, etc.	80 - 200	0.08 - 0.2	0.08 - 0.2	0.1 - 0.22
N	Aluminium alloys AlCu4SiMg, AlSi11Cu3, etc.	200 - 400	0.15 - 0.25	0.15 - 0.25	0.18 - 0.28

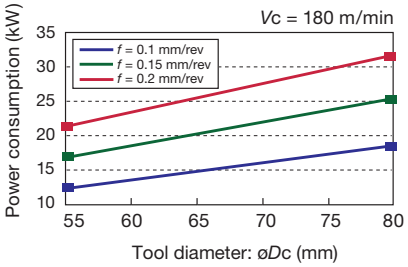
STANDARD CUTTING CONDITIONS FOR DG CHIPBREAKER

ISO	Workpiece material	Cutting speed *Vc* (m/min)	Series L/D	Feed: *f* (mm/rev) ø27 ~ ø32	ø33 ~ ø54
P	Low carbon steels (C < 0.3) C15E4, E275A, E355D, etc.	60 - 180	2D, 3D	0.04 - 0.1	
			4D, 5D		

Caution

Machine

- Use drills on a fully covered machine to maintain safety.
- Use drills on a high powered machine such as a BT50.
- Figure on right shows reference of required machine power.



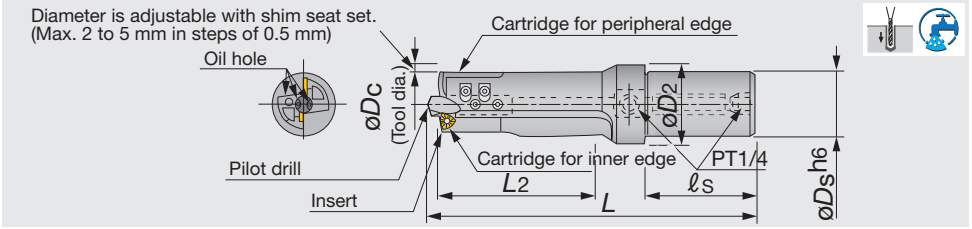
Cutting coolant

- Use water soluble type coolant with internal supply.
- Coolant pressure higher than 1MPa is essential.

TDP L/D=5

Indexable drills with pilot drill for deep hole drilling





Designation	øDc	øDs	øD2	L	L2	ℓs	Insert	Pilot drill (included in the package)
TDP30-32	30 ~ 32	32	40	248	150	60	WPMT040208-D3	DP08 (ø8)
TDP37-40	37 ~ 40	40	50	295	185	70	WPMT050308-D3	DP10 (ø10)
TDP40-45	40 ~ 45	40	50	310	200	70	WPMT050308-D3	DP12 (ø12)
TDP45-50	45 ~ 50	40	50	347	225	70	WPMT06T308-D3	DP12 (ø12)
TDP60-65	60 ~ 65	50	58.5	470	300	120	WPMT080412-D3	DP12 (ø12)

Note: Diameter is adjustable with shim seat set

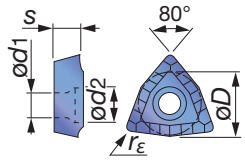
Note: L/D = Hole depth / Drill diameter

SPARE PARTS

Designation	Cartridge		Clamping screw			Oil hole plug screw	Wrenches			Oil hole plug screw	Shim seat set
	For peripheral edge	For inner edge	For inserts	For Cartridge	For pilot drill		For inserts	For Cartridge	For pilot drill		
TDP30-32	CW04A	CW04B	CSTB-2.5S	BHM4-8	SSHM5-10	PT1/4GN	T-8D	P-2.5	Same for cartridge	P-6	SW04
TDP37-40	CW05A	CW05B	CSTB-3S	BHM4-10	SSHM5-10	PT1/4GN	T-9D	P-2.5	Same for cartridge	P-6	SW05
TDP40-45	CW05A	CW05B	CSTB-3S	BHM4-10	SSHM6-12	PT1/4GN	T-9D	P-2.5	P-3	P-6	SW05
TDP45-50	CW06A	CW06B	CSTB-3.5D	BHM5-14	SSHM6-12	PT1/4GN	T-9D	P-3	Same for cartridge	P-6	SW06
TDP60-65	CW08A	CW08B	CSTB-4M	CHHM5-18 (CM5×0.8×18)	SSHM6-20	PT1/4GN	T-15D	P-4	P-3	P-6	SW08

INSERT

WPMT04/05/06/08-D3

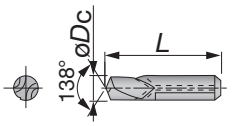


Designation	T313W	øD	s	rε	ød1	ød2
WPMT040208-D3	●	6.35	2.38	0.8	2.86	3.75
WPMT050308-D3	●	7.938	3.18	0.8	3.4	4.5
WPMT06T308-D3	●	9.525	3.97	0.8	3.9	5.1
WPMT080412-D3	●	12.7	4.76	1.2	4.4	6

Note: the appearance of WPMT040208-D3 type insert differs from the drawing above.

PILOT DRILL

DP08/10/12



Designation	HSS	øDc	L
DP08	●	8	42
DP10	●	10	48
DP12	●	12	55

Note : DP08 type drill does not have oil hole.

Package quantity: 1pc

● : Line - up

Indexable Drill

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Carbon steel	60 - 70	0.07 - 0.17
	Alloy steel	60 - 70	0.07 - 0.17
K	Cast iron	70 - 100	0.1 - 0.2

Note: ø*Dc* ≦ ø37 mm, feed should be set less than 0.13 mm/rev for steel, 0.15 mm/rev for cast iron.

Number of revolutions *n* (min-1) = Cutting speed *Vc* ×1000×3.14÷Tool diameter ø*Dc*
Feed speed *Vf* (mm/min) = No. of revolutions *n* (min-1) ×Feed per revolution *f* (mm/rev)

Cautionary points in use

- When drilling steel, a water soluble coolant should be used. Coolant pressure of 1 MPa or higher and quantity of 10 litter/min or more are essential.
- For tool-rotating applications with TDP60-65 65-70, please check the availability of holders. Since its shank dia is 50mm.
- Drilling into stacked plates is not recommended.
- Not suitable for low carbon steels and stainless steels, because of chip control issues.

Drilling Inserts

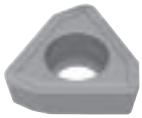
● LPMT03X206R-D4, LPMT05X204-D4

Shape	Designation	Coating					Applicable drill diameter	Applicable drill
		T313W						
	LPMT03X206R-D4	●					ø14.0 ~ ø17.5	TDJ (Former products)
	LPMT05X204-D4	●					ø14.0 ~ ø17.5	

● SPMP831DS, SPMP/M**2ERD

Shape	Designation	ISO Metric Designation	Coating					Applicable drill diameter	Applicable drill
			T313W						
	SPMP831DS	SPMT060204-DS	●					ø18.0 ~ ø19.5	TDR (Former products)
	SPMP042ERD	SPMP080308ER-D	●					ø20.0 ~ ø28.5	
	SPMM322ERD	SPMT090308ER-D	●					ø29.0 ~ ø34.5	
	SPMM432ERD	SPMT120408ER-D	●					ø35.0 ~ ø49.0	

● TPMP**ZDS, TPMP**ZERD, TPMM**ZERD

Shape	Designation	Coating					Applicable drill diameter	Applicable drill
		T313W						
	TPMP83ZDS	●					ø18.0 ~ ø19.5	TDR (Former products)
	TPMP04ZERD	●					ø18.0 ~ ø19.5	
	TPMM32ZERD	●					ø29.0 ~ ø34.5	
	TPMM43ZERD	●					ø35.0 ~ ø54.0	

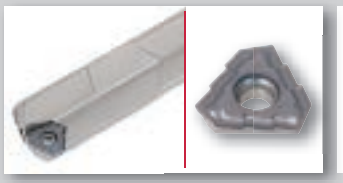
● WCMT**-D...

Shape	Designation	Coating									Applicable drill
		AH120	AH140	T313W							
	WCMT050308-DC			●							For boring and Drills (Former products)
	WCMT050308-D4	●	●	●							
	WCMT06T308-DC			●							
	WCMT06T308-D4	●	●	●							
	WCMT080412-DC			●							
	WCMT080412-D4			●							

● : Line - up

MEMO

DrillLine - Deep Hole Drill



DEEP TRI DRILL

E104

Excellent productivity and stability in deep hole drilling

ø16 mm - ø28 mm / L/D = 10, 15, 25: for Machining centers
OAL < 1500 mm: for Gundrill machines (Standard line-ups)



GUNDRILL

E114

Brazed gundrills suitable for small and deep hole drilling

Tool dia.: ø3 mm - ø12.2 mm
OAL ≤ 1650 mm (Standard line-ups)



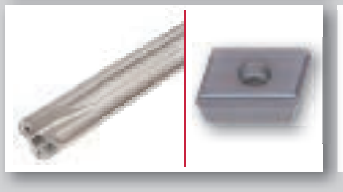
BTA tools for deep hole drilling

E117

Single and Double tube type. New solution for deep hole drilling

ø8 mm - ø249 mm

TAILOREDTOOL



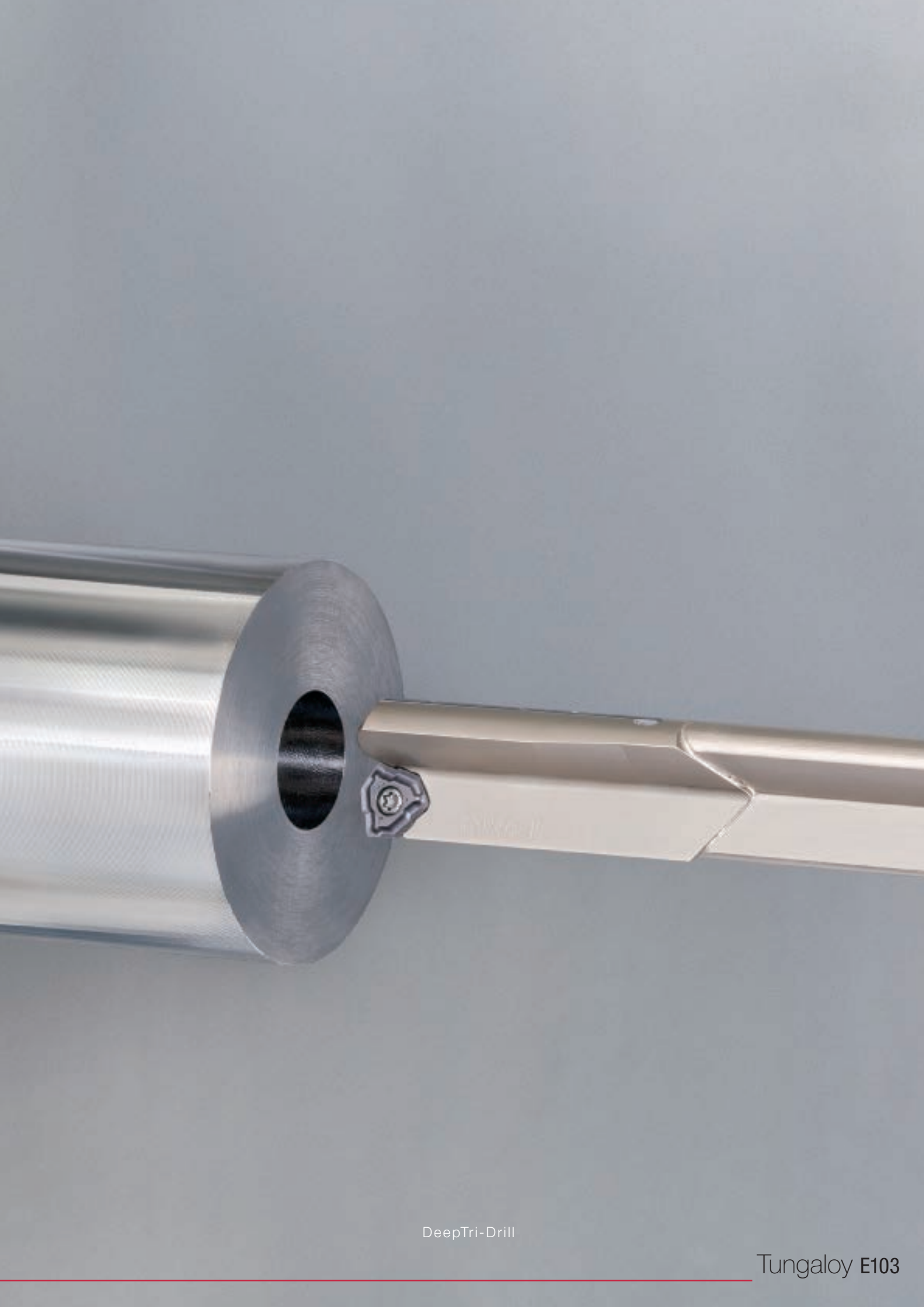
HF drills for deep hole drilling

E119

Indexable deep hole drills for large diameter with high productivity drilling

ø30 mm - ø69 mm / Drilling depth: L/D ≤ 14

TAILOREDTOOL

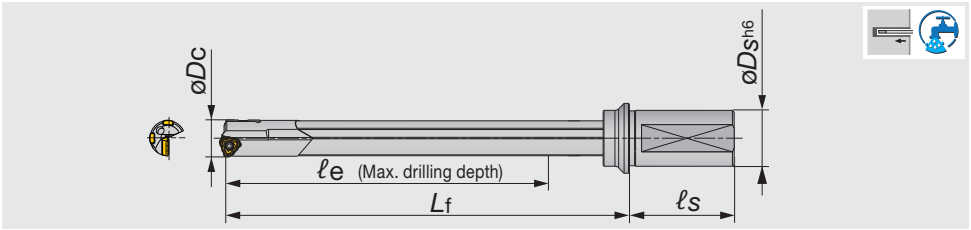


DeepTri-Drill

MCTR L/D=10

Drill body for lathes and machining centers, L/D = 10, Tool dia. ø16 - ø28 mm





Designation	øDc	øDs	ℓe	ℓs	Lf	Insert	Guide pad
MCTR16.00XM25-10	16	25	170	56	209	TOHT08...	GP06-075
MCTR16.50XM25-10	16.5	25	170	56	209	TOHT08...	GP06-075
MCTR17.00XM25-10	17	25	180	56	220	TOHT08...	GP06-075
MCTR18.00XM25-10	18	25	190	56	232	TOHT08...	GP06-075
MCTR19.00XM25-10	19	25	200	56	243	TOHT09...	GP06-085
MCTR20.00XM32-10	20	32	210	60	255	TOHT09...	GP06-085
MCTR21.00XM32-10	21	32	220	60	266	TOHT10...	GP06-085
MCTR22.00XM32-10	22	32	230	60	278	TOHT11...	GP06-100
MCTR23.00XM32-10	23	32	240	60	289	TOHT11...	GP06-100
MCTR24.00XM32-10	24	32	250	60	301	TOHT11...	GP06-100
MCTR25.00XM32-10	25	32	260	60	312	TOHT11...	GP06-100
MCTR26.00XM40-10	26	40	270	70	324	TOHT12...	GP06
MCTR27.00XM40-10	27	40	280	70	335	TOHT12...	GP06
MCTR28.00XM40-10	28	40	280	70	337	TOHT12...	GP06

øDc	Tool diameter tolerance	Hole diameter tolerance*
ø16 - ø28	0 / - 0.07	+ 0.05 / - 0.1

*Just for reference

SPARE PARTS



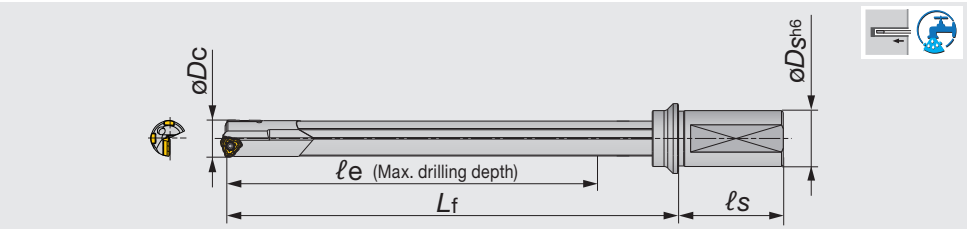



Designation	Insert		Guide pad	
	Screw	Wrench	Screw	Wrench
MCTR16... - MCTR18...	CSTB2.5S	T-8F	SR34-508	T-7F
MCTR19... - MCTR20...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR21...	SR34-506	T-9F	SR34-508	T-7F
MCTR22... - MCTR25...	SR14-571/S	T-10/5	SR34-508	T-7F
MCTR26... - MCTR28...	SR14-506	T-15F	SR34-508	T-7F

MCTR L/D=15

Drill body for lathes and machining centers, L/D = 15, Tool dia. ø16 - ø28 mm





Designation	øDc	øDs	ℓe	ℓs	Lf	Insert	Guide pad
MCTR16.00XM25-15	16	25	255	56	294	TOHT08...	GP06-075
MCTR16.50XM25-15	16.5	25	255	56	294	TOHT08...	GP06-075
MCTR17.00XM25-15	17	25	270	56	310	TOHT08...	GP06-075
MCTR17.50XM25-15	17.5	25	270	56	310	TOHT08...	GP06-075
MCTR18.00XM25-15	18	25	285	56	327	TOHT08...	GP06-075
MCTR18.50XM25-15	18.5	25	285	56	327	TOHT09...	GP06-085
MCTR19.00XM25-15	19	25	300	56	343	TOHT09...	GP06-085
MCTR19.50XM25-15	19.5	25	300	56	343	TOHT09...	GP06-085
MCTR20.00XM32-15	20	32	315	60	360	TOHT09...	GP06-085
MCTR21.00XM32-15	21	32	330	60	376	TOHT10...	GP06-085
MCTR22.00XM32-15	22	32	345	60	393	TOHT11...	GP06-100
MCTR23.00XM32-15	23	32	360	60	409	TOHT11...	GP06-100
MCTR24.00XM32-15	24	32	375	60	426	TOHT11...	GP06-100
MCTR25.00XM32-15	25	32	390	60	442	TOHT11...	GP06-100
MCTR26.00XM40-15	26	40	405	70	459	TOHT12...	GP06
MCTR27.00XM40-15	27	40	420	70	475	TOHT12...	GP06
MCTR28.00XM40-15	28	40	420	70	477	TOHT12...	GP06

øDc	Tool diameter tolerance	Hole diameter tolerance*
ø16 - ø28	0 / - 0.07	+ 0.05 / - 0.1

*Just for reference

SPARE PARTS



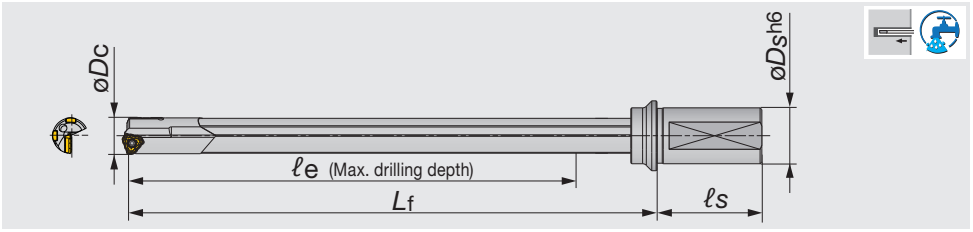



Designation	Insert		Guide pad	
	Screw	Wrench	Screw	Wrench
MCTR16... - MCTR18.0...	CSTB2.5S	T-8F	SR34-508	T-7F
MCTR18.5... - MCTR20...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR21...	SR34-506	T-9F	SR34-508	T-7F
MCTR22... - MCTR25...	SR14-571/S	T-10/5	SR34-508	T-7F
MCTR26... - MCTR28...	SR14-506	T-15F	SR34-508	T-7F

MCTR L/D=25

Drill body for lathes and machining centers, L/D = 25, Tool dia. ø16 - ø28 mm





Designation	øDc	øDs	ℓe	ℓs	Lf	Insert	Guide pad
MCTR16.00XM25-25	16	25	425	56	464	TOHT08...	GP06-075
MCTR16.50XM25-25	16.5	25	425	56	464	TOHT08...	GP06-075
MCTR17.00XM25-25	17	25	450	56	490	TOHT08...	GP06-075
MCTR17.50XM25-25	17.5	25	450	56	490	TOHT08...	GP06-075
MCTR18.00XM25-25	18	25	475	56	517	TOHT08...	GP06-075
MCTR18.50XM25-25	18.5	25	475	56	517	TOHT09...	GP06-085
MCTR19.00XM25-25	19	25	500	56	543	TOHT09...	GP06-085
MCTR19.50XM25-25	19.5	25	500	56	543	TOHT09...	GP06-085
MCTR20.00XM32-25	20	32	525	60	570	TOHT09...	GP06-085
MCTR21.00XM32-25	21	32	550	60	596	TOHT10...	GP06-085
MCTR22.00XM32-25	22	32	575	60	623	TOHT11...	GP06-100
MCTR23.00XM32-25	23	32	600	60	649	TOHT11...	GP06-100
MCTR24.00XM32-25	24	32	625	60	676	TOHT11...	GP06-100
MCTR25.00XM32-25	25	32	650	60	702	TOHT11...	GP06-100
MCTR26.00XM40-25	26	40	675	70	729	TOHT12...	GP06
MCTR27.00XM40-25	27	40	700	70	755	TOHT12...	GP06
MCTR28.00XM40-25	28	40	700	70	757	TOHT12...	GP06

øDc	Tool diameter tolerance	Hole diameter tolerance*
ø16 - ø28	0 / - 0.07	+ 0.05 / - 0.1

*Just for reference

SPARE PARTS






Designation	Insert		Guide pad	
	Screw	Wrench	Screw	Wrench
MCTR16... - MCTR18.0...	CSTB2.5S	T-8F	SR34-508	T-7F
MCTR18.5... - MCTR20...	SR14-560/S	T-8F	SR34-508	T-7F
MCTR21...	SR34-506	T-9F	SR34-508	T-7F
MCTR22... - MCTR25...	SR14-571/S	T-10/5	SR34-508	T-7F
MCTR26... - MCTR28...	SR14-506	T-15F	SR34-508	T-7F

DESIGNATION FOR TAILOR MADE TOOLS

When a specially designed tool is needed, use the below guide line to make the designation (Cat. No).

MCTR	16.50	XM	25	-	22
①	②		③		④

① Series	
MCTR	DeepTriDrill (For machining centers and lathes)

② Drill dia. *øDc* (mm)	
16.50	ø16.50

③ Driver dia. *øDs* (mm)	
25	ø25

④ L/D ratio

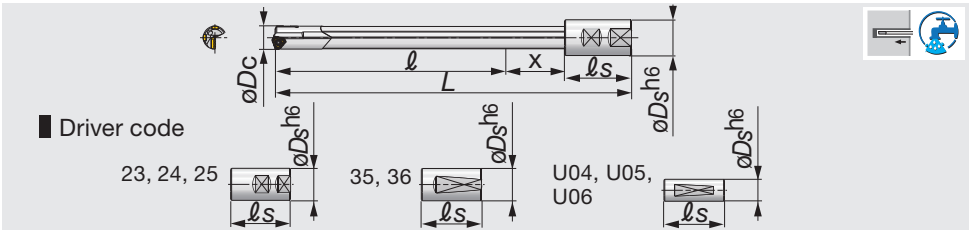
AVAILABLE RANGE OF TAILOR MADE DRILL BODIES

øDc	*øDs*	*ℓe*	*ℓs*	*ℓ1*
16 - 16.79	25	136 - 425	56	175 - 464
16.8 - 17.69	25	144 - 450	56	184 - 490
17.7 - 18.69	25	152 - 475	56	194 - 517
18.7 - 19.69	25	160 - 500	56	203 - 543
19.7 - 20.69	32	168 - 525	60	213 - 570
20.7 - 21.69	32	176 - 550	60	222 - 596
21.7 - 22.69	32	184 - 575	60	232 - 623
22.7 - 23.69	32	192 - 600	60	241 - 649
23.7 - 24.69	32	200 - 625	60	251 - 676
24.7 - 25.69	32	208 - 650	60	260 - 702
25.7 - 26.69	40	216 - 675	70	270 - 719
26.7 - 27.69	40	224 - 700	70	279 - 745
27.7 - 28	40	224 - 700	70	281 - 747

TRLG

Drill body for gun drill machine, Tool dia. ø16 - ø28 mm





Designation	øDc	L	øDs	ℓ	ℓs	x	Driver code	Insert	Guide pad
TRLG16.00X800-23	16	800	25	720	56	24	23	TOHT08...	GP06-075
TRLG16.00X800-U04	16	800	25.4	706	70	24	U04	TOHT08...	GP06-075
TRLG16.00X1000-23	16	1000	25	920	56	24	23	TOHT08...	GP06-075
TRLG16.00X1000-U04	16	1000	25.4	906	70	24	U04	TOHT08...	GP06-075
TRLG16.00X1500-U04	16	1500	25.4	1406	70	24	U04	TOHT08...	GP06-075
TRLG16.00X1500-23	16	1500	25	1420	56	24	23	TOHT08...	GP06-075
TRLG17.00X800-23	17	800	25	719	56	25	23	TOHT08...	GP06-075
TRLG17.00X800-U04	17	800	25.4	705	70	25	U04	TOHT08...	GP06-075
TRLG17.00X1000-23	17	1000	25	919	56	25	23	TOHT08...	GP06-075
TRLG17.00X1000-U04	17	1000	25.4	905	70	25	U04	TOHT08...	GP06-075
TRLG18.00X800-23	18	800	25	717	56	27	23	TOHT08...	GP06-075
TRLG18.00X800-U04	18	800	25.4	703	70	27	U04	TOHT08...	GP06-075
TRLG18.00X1000-23	18	1000	25	917	56	27	23	TOHT08...	GP06-075
TRLG18.00X1000-U04	18	1000	25.4	903	70	27	U04	TOHT08...	GP06-075
TRLG18.00X1500-U04	18	1500	25.4	1403	70	27	U04	TOHT08...	GP06-075
TRLG18.00X1500-23	18	1500	25	1417	56	27	23	TOHT08...	GP06-075
TRLG18.50X1500-U04	18.5	1500	25.4	1417	70	27	U04	TOHT09...	GP06-085
TRLG18.50X1500-23	18.5	1500	25	1417	56	27	23	TOHT09...	GP06-085
TRLG19.00X800-23	19	800	25	716	56	28	23	TOHT09...	GP06-085
TRLG19.00X800-U04	19	800	25.4	702	70	28	U04	TOHT09...	GP06-085
TRLG19.00X1000-23	19	1000	25	916	56	28	23	TOHT09...	GP06-085
TRLG19.00X1000-U04	19	1000	25.4	902	70	28	U04	TOHT09...	GP06-085
TRLG20.00X800-24	20	800	32	710	60	30	24	TOHT09...	GP06-085
TRLG20.00X800-U05	20	800	31.75	700	70	30	U05	TOHT09...	GP06-085
TRLG20.00X1000-24	20	1000	32	910	60	30	24	TOHT09...	GP06-085
TRLG20.00X1000-U05	20	1000	31.75	900	70	30	U05	TOHT09...	GP06-085
TRLG21.00X1000-24	21	1000	32	909	60	31	24	TOHT10...	GP06-085
TRLG21.00X1000-U05	21	1000	31.75	899	70	31	U05	TOHT10...	GP06-085
TRLG22.00X1000-24	22	1000	32	907	60	33	24	TOHT11...	GP06-100
TRLG22.00X1000-U05	22	1000	31.75	897	70	33	U05	TOHT11...	GP06-100
TRLG22.00X1500-24	22	1500	32	1407	60	33	24	TOHT11...	GP06-100
TRLG22.00X1500-U05	22	1500	31.75	1397	70	33	U05	TOHT11...	GP06-100
TRLG23.00X1000-24	23	1000	32	906	60	34	24	TOHT11...	GP06-100
TRLG23.00X1000-U05	23	1000	31.75	896	70	34	U05	TOHT11...	GP06-100
TRLG23.00X1500-24	23	1500	32	1406	60	34	24	TOHT11...	GP06-100
TRLG23.00X1500-U05	23	1500	31.75	1396	70	34	U05	TOHT11...	GP06-100
TRLG24.00X1000-24	24	1000	32	904	60	36	24	TOHT11...	GP06-100
TRLG24.00X1000-U05	24	1000	31.75	894	70	36	U05	TOHT11...	GP06-100
TRLG24.00X1500-24	24	1500	32	1404	60	36	24	TOHT11...	GP06-100
TRLG24.00X1500-U05	24	1500	31.75	1394	70	36	U05	TOHT11...	GP06-100
TRLG25.00X1000-24	25	1000	32	903	60	37	24	TOHT11...	GP06-100
TRLG25.00X1000-U05	25	1000	31.75	893	70	37	U05	TOHT11...	GP06-100
TRLG26.00X1000-25	26	1000	40	891	70	39	25	TOHT12...	GP06
TRLG26.00X1000-U06	26	1000	38.1	891	70	39	U06	TOHT12...	GP06
TRLG27.00X1000-25	27	1000	40	890	70	40	25	TOHT12...	GP06
TRLG27.00X1000-U06	27	1000	38.1	890	70	40	U06	TOHT12...	GP06
TRLG28.00X1000-25	28	1000	40	888	70	42	25	TOHT12...	GP06
TRLG28.00X1000-U06	28	1000	38.1	888	70	42	U06	TOHT12...	GP06

øDc	Tool diameter tolerance	Hole diameter tolerance*
ø16 - ø28	0 / - 0.07	+ 0.05 / - 0.1

*Just for reference

SPARE PARTS

Designation	Insert		Guide pad	
	Screw	Wrench	Screw	Wrench
TRLG16... - TRLG18...	CSTB2.5S	T-8F	SR34-508	T-7F
TRLG18.5... - TRLG20...	SR14-560/S	T-8F	SR34-508	T-7F
TRLG21...	SR34-506	T-9F	SR34-508	T-7F
TRLG22... - TRLG25...	SR14-571/S	T-10/5	SR34-508	T-7F
TRLG26... - TRLG28...	SR14-506	T-15F	SR34-508	T-7F

DESIGNATION FOR TAILOR MADE TOOLS

When a specially designed tool is needed, use the below guide line to make the designation (Cat. No).

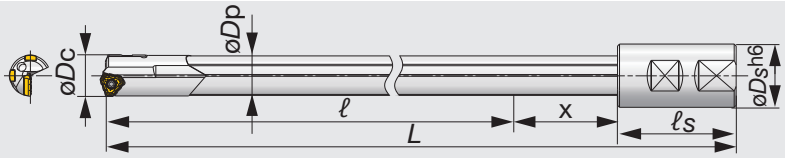
TRLG ① **16.50** ② **X** **900** ③ **-** **23** ④

① Series	
TRLG	DeepTriDrill (For gun drill machine)

② Drill dia. *øDc* (mm)	
16.50	ø16.50

③ Overall length: *L* (mm)	
900	900

④ Driver code	
23	23



AVAILABLE RANGE OF TAILOR MADE DRILL BODIES

øDc	*L*	x
16 - 16.79	400 - 2400	24
16.8 - 17.69	400 - 2400	25
17.7 - 18.69	400 - 2400	27
18.7 - 19.69	400 - 2400	28
19.7 - 20.69	400 - 2400	30
20.7 - 21.69	400 - 2400	31
21.7 - 22.69	400 - 2400	33

øDc	*L*	x
22.7 - 23.69	400 - 2400	34
23.7 - 24.69	400 - 2400	36
24.7 - 25.69	400 - 2400	37
25.7 - 26.69	400 - 2400	39
26.7 - 27.69	400 - 2400	40
27.7 - 28	400 - 2400	42

Please provide the driver shape depending on your request

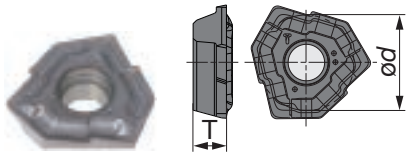
TUBE DIAMETER

øDc	*øDp*
16 - 16.79	15.5
16.8 - 17.69	16.2
17.7 - 18.69	17.2
18.7 - 19.69	18.2
19.7 - 20.69	19
20.7 - 21.69	20
21.70 - 22.69	21

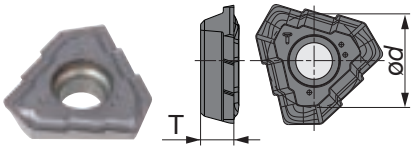
øDc	*øDp*
22.7 - 23.69	22
23.7 - 24.69	23
24.7 - 25.69	24
25.7 - 26.69	25
26.7 - 27.69	26
27.7 - 28	27

INSERT

TOHT-NDJ (080...)



TOHT-NDJ (090... - 120...)



NDJ chipbreaker



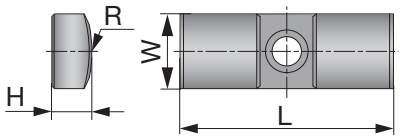
- Low cutting force
- For general purpose

Designation	øDc	AH725	ød	T
TOHT080305R-NDJ	16 - 18	●	8.55	2.8
TOHT090305R-NDJ	18.01 - 20	●	8.32	3
TOHT100305R-NDJ	20.01 - 21.99	●	9.23	3.3
TOHT110405R-NDJ	22 - 25	●	10.4	3.8
TOHT120405R-NDJ	25.01 - 28	●	11.59	4.3

● : Line - up
Package quantity = 10 pcs.

GUIDE PAD

GP06



Designation	øDc	F1122	F2122	W	L	H	R
GP06-075	16 - 18	●	●	6	20	3	7.5
GP06-085	18.01 - 21	●	●	6	20	3	8.5
GP06-100	21.01 - 25	●	●	6	20	3	10
GP06	25.01 - 28	●	●	6	20	3	12

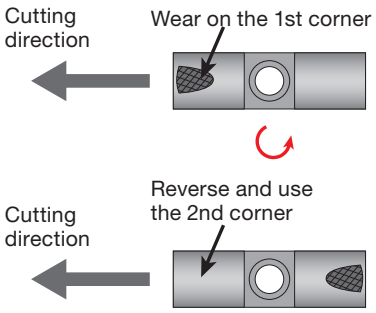
● : Line - up
Package quantity = 5 pcs.

Replacing guide pads

Guide pads are subject to wear, like inserts

- Each guide pad has 2 corners.
- When the width of wear on the 1st corner reaches 70% of the width of guide pad, reverse the guide pad and use the 2nd corner.
- Replace the guide pad with a new one when the 2nd corner shows the same wear as on the 1st corner.





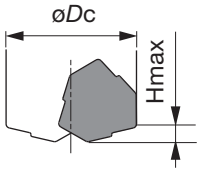
STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Low carbon steel (C < 0.3) E275A, E355D, C25, etc.	80 - 140	0.05 - 0.1
	Carbon steel (C > 0.3) C45, C55, etc.	80 - 140	0.05 - 0.2
	Low alloy steel (C < 0.3) 18CrMo4, etc.	80 - 140	0.05 - 0.2
	Alloy steel (C > 0.3) 42CrMo4, 20Cr4, etc.	80 - 120	0.05 - 0.2
M	Stainless steel (Austenitic) X5CrNi18-9, X5CrNiMo17-12-3, etc.	60 - 100	0.05 - 0.1
	Stainless steel (Martensitic, Ferritic) X6Cr17, X12CrS13, etc.	60 - 100	0.05 - 0.1
	Stainless steel (Precipitation hardening) X5CrNiCuNb16-4, etc.	60 - 100	0.05 - 0.1
K	Grey cast iron 250, etc.	80 - 140	0.05 - 0.3
	Ductile cast iron 600-3, etc.	80 - 140	0.05 - 0.3
N	Aluminium alloys	100 - 200	0.05 - 0.2
S	Heat-resistant alloys Inconel 718, etc.	20 - 50	0.04 - 0.1
	Titanium alloys Ti-6Al-4V, etc.	30 - 60	0.05 - 0.15
H	Hardened steel ≥ 40HRC	50 - 100	0.04 - 0.1

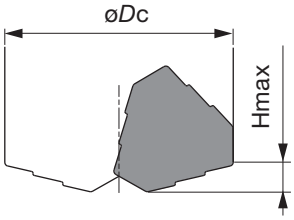
SHAPES OF THE HOLE BOTTOM

øDc	Insert	Maximum difference Hmax
16 - 18	TOHT08	2.166
18.01 - 20	TOHT09	2.965
20.01 - 21.99	TOHT10	3.158
22 - 25	TOHT11	3.383
25.01 - 28	TOHT12	3.63

TOHT08...

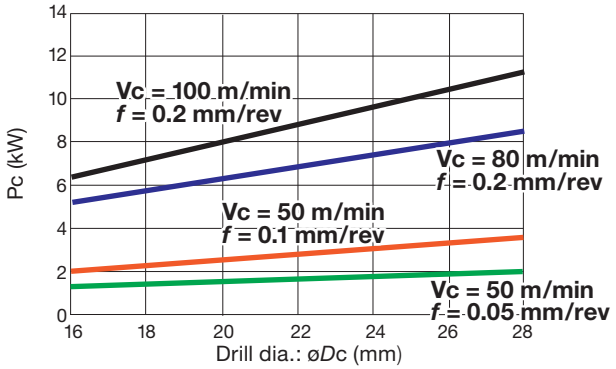


TOHT09... - TOHT12...

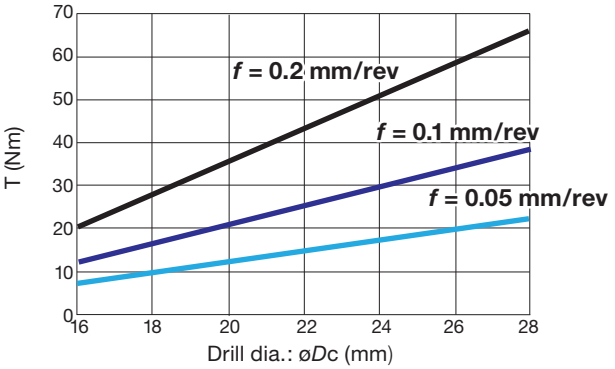


REQUIRED SPINDLE POWER AND COOLANT PRESSURE

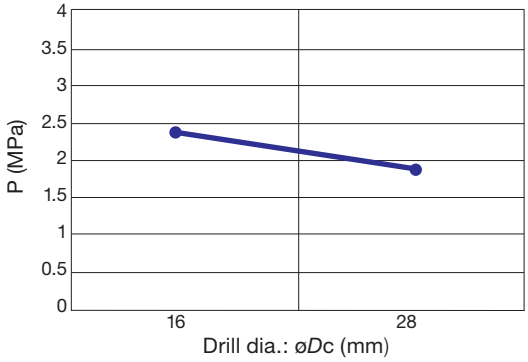
Net power



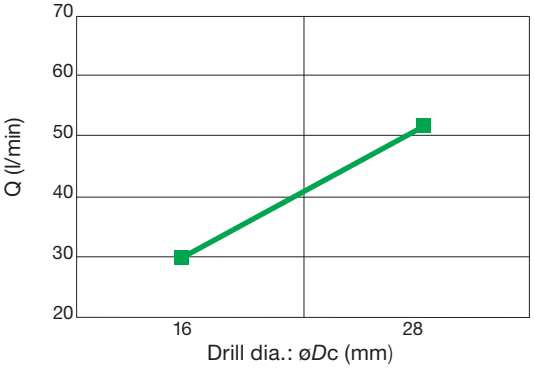
Torque



Coolant pressure (Recommended value)

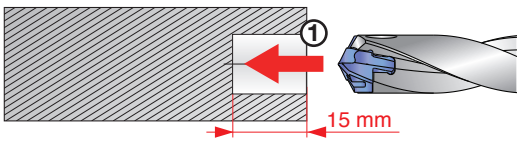


Coolant flow rate (Recommended value)



DRILLING PROCEDURE ON MACHINING CENTERS AND LATHES

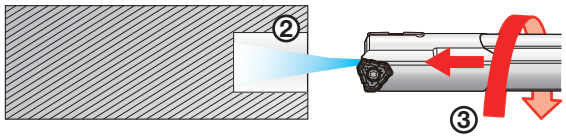
Proceed as instructed below in order to maximize the tool performance safely.



① Drill the guide hole

Hole diameter tolerance: +0.01 - +0.1 mm
Hole depth: H = 15 mm

Please use DrillMeister or TDX + EZ sleeve to make a guide hole

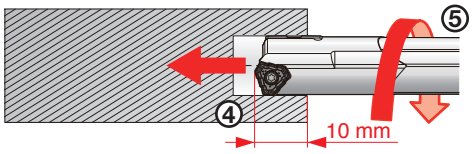


② Start coolant

③ Slowly insert DeepTriDrill into the guide hole

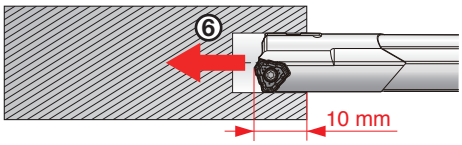
No. of revolution: n = 50 - 100 min^{-1}
Feed speed: Vf = 100 - 300 mm/min

Caution: Do not rotate the drill at machining speed outside the hole



④ Stop the drill at 10 mm depth

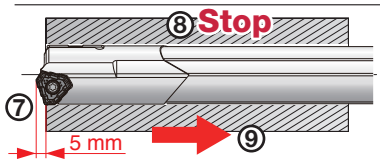
⑤ Start rotating at machining speed



⑥ Start feed

At the entrance (H = 10 - 15 mm)
→ Feed: f = 80% of programmed feed

Hole depth: H ≥ 15 mm → Feed: f = 100%



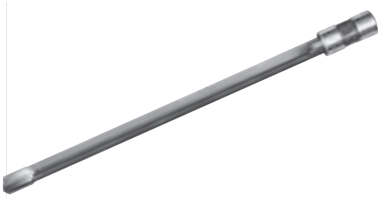
⑦ For through hole

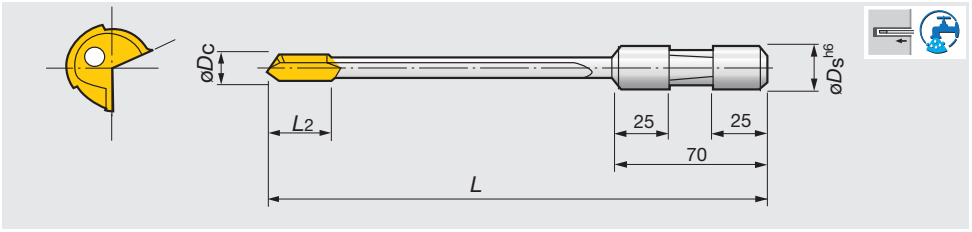
Continue drilling until the drill head passes through the workpiece by 5 mm

⑧ Stop the rotation and coolant

⑨ Return the drill (Head back to the starting position)

MEMO





Designation	øDc	øDs	L2	L
SLJ0300L0400NA	3	12.7	15	400
SLJ0300L0600NA	3	12.7	15	600
SLJ0500L0600NA	5	12.7	25	600
SLJ0550L0600NA	5.5	19.05	25	600
SLJ0600L0600NA	6	19.05	25	600
SLJ0700L0600NA	7	19.05	25	600
SLJ0800L0600NA	8	19.05	25	600
SLJ1000L0600NA	10	19.05	30	600
SLJ0500L1000NA	5	12.7	25	1000
SLJ0600L1000NA	6	19.05	25	1000
SLJ0700L1000NA	7	19.05	25	1000
SLJ0800L1000NA	8	19.05	25	1000
SLJ1000L1000NA	10	19.05	30	1000
SLJ0600L1250NA	6	19.05	25	1250
SLJ0610L1250NA	6.1	19.05	25	1250
SLJ0620L1250NA	6.2	19.05	25	1250
SLJ0700L1250NA	7	19.05	25	1250
SLJ0800L1250NA	8	19.05	25	1250
SLJ0810L1250NA	8.1	19.05	25	1250
SLJ0820L1250NA	8.2	19.05	25	1250
SLJ1000L1250NA	10	19.05	30	1250
SLJ1010L1250NA	10.1	19.05	30	1250
SLJ1020L1250NA	10.2	19.05	30	1250
SLJ1200L1250NA	12	19.05	30	1250
SLJ1210L1250NA	12.1	19.05	30	1250
SLJ1220L1250NA	12.2	19.05	30	1250
SLJ0600L1650NA	6	19.05	25	1650
SLJ0610L1650NA	6.1	19.05	25	1650
SLJ0620L1650NA	6.2	19.05	25	1650
SLJ0700L1650NA	7	19.05	25	1650
SLJ0800L1650NA	8	19.05	25	1650
SLJ0810L1650NA	8.1	19.05	25	1650
SLJ0820L1650NA	8.2	19.05	25	1650
SLJ1000L1650NA	10	19.05	30	1650
SLJ1010L1650NA	10.1	19.05	30	1650
SLJ1020L1650NA	10.2	19.05	30	1650
SLJ1200L1650NA	12	19.05	30	1650
SLJ1210L1650NA	12.1	19.05	30	1650
SLJ1220L1650NA	12.2	19.05	30	1650

TUBE DIAMETER

øDc	øDp
3 - 3.19	2.9
3.2 - 3.39	3.1
3.4 - 3.59	3.3
3.6 - 3.89	3.5
3.9 - 4.09	3.7
4.1 - 4.29	3.9
4.3 - 4.49	4.1
4.5 - 4.89	4.3
4.9 - 5.19	4.7

øDc	øDp
5.2 - 5.49	5
5.5 - 5.79	5.3
5.8 - 5.99	5.6
6 - 6.19	5.8
6.2 - 6.59	5.9
6.6 - 7.09	6.4
7.1 - 7.59	6.9
7.6 - 8.09	7.4
8.1 - 8.69	7.9

øDc	øDp
8.7 - 9.19	8.5
9.2 - 9.69	9
9.7 - 10.39	9.5
10.4 - 10.89	10
10.9 - 11.39	10.6
11.4 - 11.99	11.1
12 - 12.2	11.7

STANDARD CUTTING CONDITIONS

ISO	Workpiece material	Heat treatment	Hardness HB	Hardness HRC	Cutting speed *Vc* (m/min)	Feed *f* (mm/rev)
P	Free-cutting carbon steels		160 - 190	(5) - (11)	130	Refer to Fig. 1
	C10C ~ C15	Cold drawn				
	C30 ~ C50	Cold drawn	200 - 230	(12) - 20	100	
	C30 ~ C50	Hardened and tempered	250 - 300	25 - 32	80	
	Carbon steels		110 ~ 120		130	
	C10 ~ C30	Annealed				
	C10 ~ C50	Annealed	120 ~ 185	~ (9)	120	
	C50 ~	Annealed	170 ~ 200	(5) ~ (13)	100	
	C20 ~ C30	Hardened and tempered	210 ~ 250	(16) ~ 24	90	Refer to Fig. 2
	C30 ~ C55	Hardened and tempered	260 ~ 310	26 ~ 33	70	
	C50 ~	Hardened and tempered	320 ~ 375	34 ~ 40	50	
	C55 ~	Hardened and tempered	380 ~ 440	41 ~ 47	40	
	Alloy steels	Annealed	150 ~ 230	~ (20)	90	Refer to Fig. 2
		Annealed or Hardened and tempered	240 ~ 310	23 ~ 33	70	Refer to Fig. 2
			315 ~ 370	34 ~ 40	50	Refer to Fig. 3
			380 ~ 440	40 ~ 47	40	
			450 ~ 500	48 ~ 51	30	
	Cast steels	Annealed	140 ~ 180	~ (8)	100	Refer to Fig. 2
		Annealed	190 ~ 240	(11) ~ 22	90	
	Tool steels	Annealed	150 ~ 200	~ (13)	70	Refer to Fig. 3
		Annealed	210 ~ 300	(16) ~ 32	50	
M	Stainless steels Ferritic X6Cr17	Annealed	150 ~ 200	~ (13)	70	Refer to Fig. 3
	Austenitic X5CrNi18-9	Annealed	160 ~ 220	~ (18)	50	
	Martensitic X12Cr13	Hardened and tempered	160 ~ 220	~ (18)	70	
			300 ~ 350	32 ~ 38	50	
K	Grey cast irons		110 ~ 180		90	Refer to Fig. 4
			190 ~ 220		80	
			220 ~ 260		70	
	Ductile cast irons		120 ~ 170		80	Refer to Fig. 5
			180 ~ 240		65	
			240 ~ 280		55	
			260 ~ 320		40	
	Malleable cast irons		110 ~ 180		90	
			190 ~ 220		80	
			220 ~ 260		70	
N	Cast aluminium alloys Aluminium die cast alloys	Annealed	5000load		180	Refer to Fig. 4
			40 ~ 100			
	Copper alloys	Annealed	120 ~ 160		< 150	Refer to Fig. 4
			160 ~ 205		< 150	Refer to Fig. 5
H	Bearing steels		150 ~ 210		70	Refer to Fig. 3
	High-resistant steels				20	
	High speed steels		210 ~ 285	(16) ~ 30	50	

- No. of revolutions: *n* (min^{-1}) = Cutting speed: *Vc* (m/min) × 1000 ÷ 3.14 ÷ Tool diameter: ø*Dc* (mm)
- Feed speed: *Vf* (mm/min) = No. of revolutions: *n* × Feed: *f* (mm/rev)

Fig. 1 Carbon steels

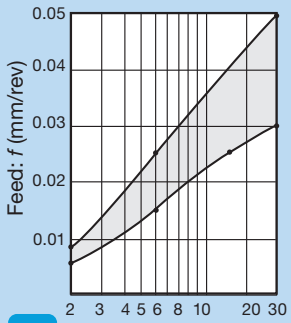
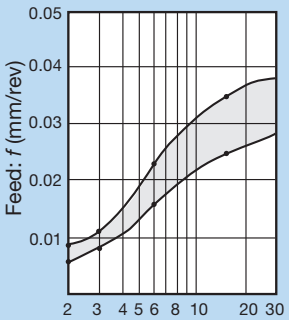
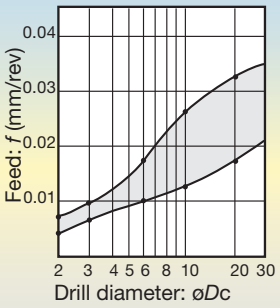


Fig. 2 Alloy steels



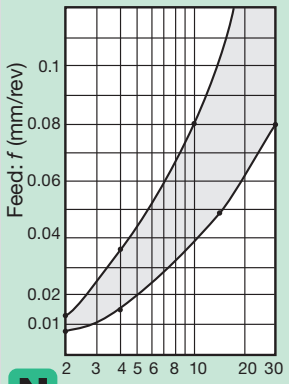
P

Fig. 3 Tool steels and other special steels



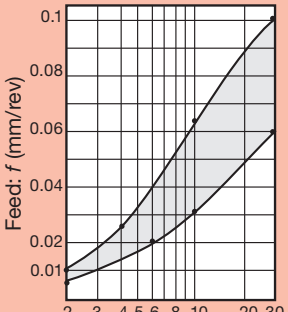
P M H

Fig. 4 Cast irons, aluminium alloys



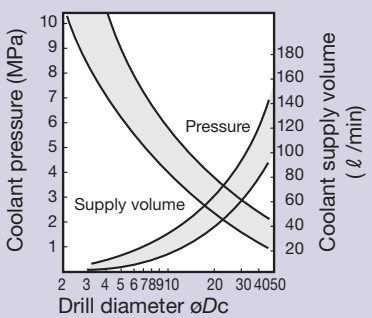
N

Fig. 5 Ductile and malleable cast irons



K

Coolant supply pressure and volume



Deep Hole Drill

Guidelines for attainable accuracies

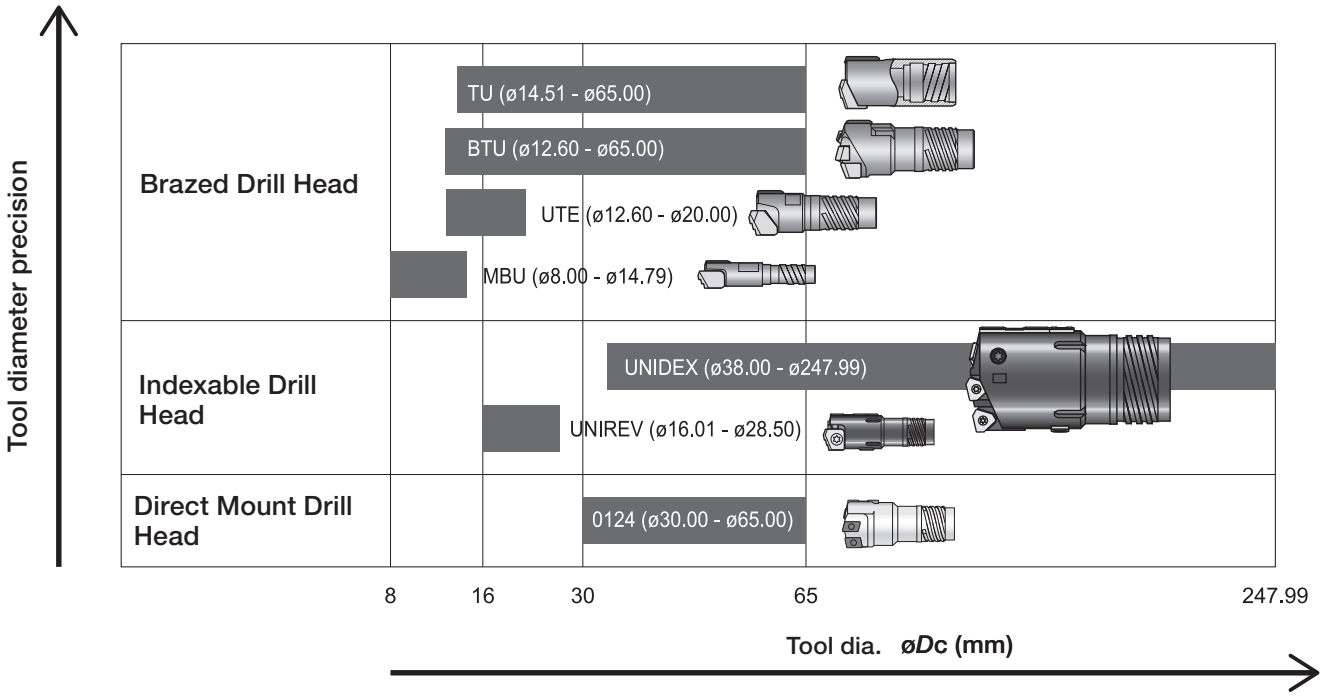
Workpiece material	Surface roughness (µm)	Roundness (µm)	Cylindricity (µm)	Over size (µm)
Carbon and alloy steels	6 ~ 25	5 ~ 10	10 ~ 15	- 5 ~ 30
Cast irons	3 ~ 15	3 ~ 5	5 ~ 10	- 5 ~ 15
Aluminium alloys, Copper alloys	0.3 ~ 6	3 ~ 5	5 ~ 10	- 10 ~ 5

Note: Over size values given in the table are based on the drill diameter.

Cutting fluid

A water-insoluble fluid is recommended in machining by gun drills. When using water soluble fluid, use the fluid for heavy duty cutting in higher concentration.

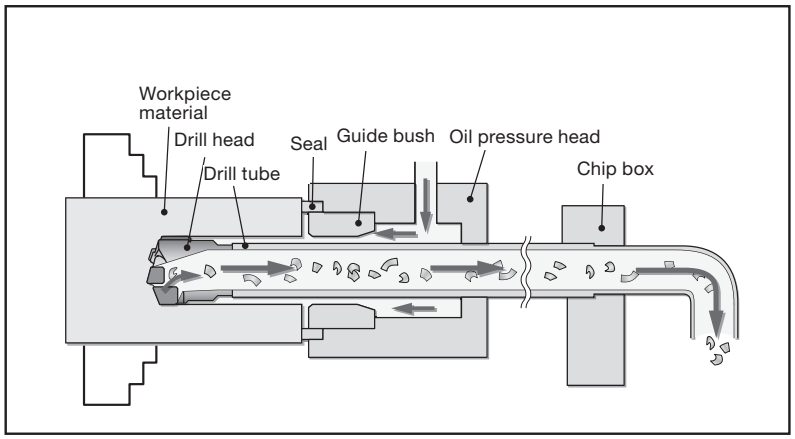
BTA tool product map



Single Tube System (STS) and Double Tube System (DTS)

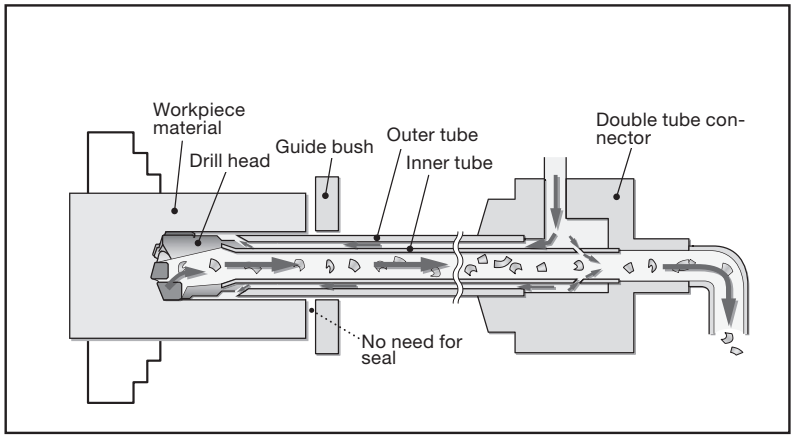
Single Tube System (STS)

The STS may also be referred to as the BTA system in the deep hole drilling process.
A large volume of coolant is pumped under high pressure to the cutting area in the workpiece. Chips are then forced out through the drill tube at the back and they do not touch workpiece allowing super surface finish. STS is a very good method to obtain holes of high productivity and high accuracy by using a dedicated drilling machine and a sealing with the workpiece.



Double Tube System (DTS)

The DTS is characterized by its two tube construction and is therefore known as the double tube system. A sealing system and pressure head, which is required in the Single Tube System (STS) is not necessary for the DTS and it is therefore suitable for conventional general purpose machines such as lathes or machining centers.
In general, because of less efficient chip evacuation than the STS the recommended max drilling depth is 1000mm. However, the unique DTC-R tube connector that is capable of supplying high pressure coolant can successfully achieve drilling depths of up to 2000mm.



Single Tube System

Solid Drilling Tools

Mounting screw type	Code	Appearance	Diameter range øDc (mm)	Hole tolerance	Surface finish Ra (µm)	Drill head type	Feature
Outer Thread	**MBU**		8 - 14.79	IT9	2	Brazed Drill Head	- Higher productivity and better surface finish than gundrill. - Good chip breaking with 3 step cutting edge design.
	UTE		12.6 - 20	IT9	2		- Higher productivity and better surface finish than gundrill. - Good chip breaking with 3 step cutting edge design. - First recommendation for dia. ø12.60 - 15.59.
	BTU		12.6 - 65	IT9	2		- First recommendation for dia. ø15.60 or more. - Good chip breaking with 3 cutting edges. (ø12.60 - 15.59mm has 2 cutting edges) - Covers all materials with various carbide grade combinations.
	KUSTS		38 - 247.99	IT10	3	Indexable Drill Head	- Cartridge type - Diameter finely adjustable - Multiple options to cover various cutting condition.
	0124		30 - 65	IT11	3		- No diameter setting necessary. - For highly efficient and stable deep hole drilling
Inner Thread	**KUSTS**		38 - 245.99	IT10	3	Indexable Drill Head	- High productivity & High accuracy. - Covers a wide application area with various options
	0124		30 - 65	IT11	3		- No diameter setting necessary. - For highly efficient and stable deep hole drilling

Counterboring Tools

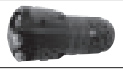
Mounting screw type	Code	Appearance	Diameter range øDc (mm)	Hole tolerance	Surface finish Ra (µm)	Drill head type	Feature
Outer Thread	**KUSTR**		25 - 291.99	IT10	1 - 2	Indexable Drill Head	- High productivity & High accuracy. - Covers a wide application area with various options
Inner Thread	**KUSTR**		25 - 293.99	IT10	1 - 2		- High productivity & High accuracy. - Covers a wide application area with various options

Trepanning Tools

Mounting screw type	Code	Appearance	Diameter range øDc (mm)	Hole tolerance	Surface finish Ra (µm)	Drill head type	Feature
Outer Thread	**UTT**		100 -	IT10	1 - 2	Indexable Drill Head	- High productivity & High accuracy. - Covers a wide application area with various options
Inner Thread	**UTT**		100 -	IT10	1 - 2		- High productivity & High accuracy. - Covers a wide application area with various options

Double Tube System

Solid Drilling

Mounting screw type	Code	Appearance	Diameter range øDc (mm)	Hole tolerance	Surface finish Ra (µm)	Drill head type	Feature
Outer Thread	**ETU**		18.4 - 65	IT9	2	Brazed Drill Head	- Good chip breaking with 3-step cutting edges - Covers all materials with various carbide grade combinations
	KUDTS		18.4 - 183.99	IT10	3	Indexable Drill Head	- Cartridge type with adjustable diameter - Covers a wide application area with various options
	0124		30 - 65	IT11	3		- Direct-mounting type avoid diameter setting - For highly efficient and stable deep hole drilling

Counterboring

Mounting screw type	Code	Appearance	Diameter range øDc (mm)	Hole tolerance	Surface finish Ra (µm)	Drill head type	Feature
Outer Thread	**KUDTR**		25 - 183.99	IT10	1 - 2	Indexable Drill Head	- Cartridge type with adjustable diameter - Covers a wide application area with various options

- The above values may change depending on the machining conditions, materials, etc.
* Special designed tools are available as Tailor-made.

Economical for middle r range deep hole drilling

- Diameter range 30 - 69 mm *
- Drilling depth 6xD - 14xD
- Shortened drilling time when using conventional machine

* Other diameters are available upon request.

Effective machining on conventional machines

- Recommended for use on Horizontal M/C
- Can also be used on turning machine

Good chip evacuation

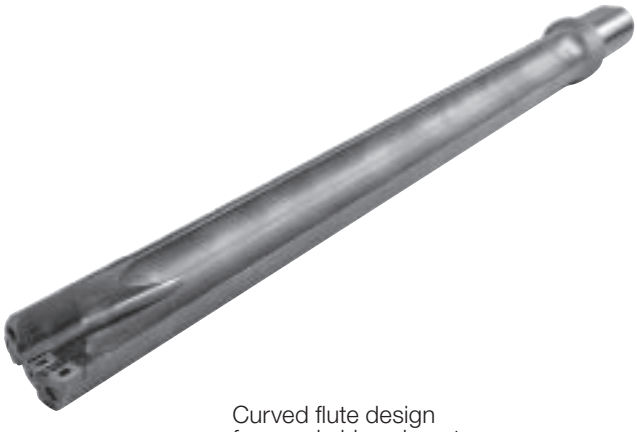
- Inserts enable best chip control
- Unique head design eliminates chip jamming
- Curved flute design ensures good chip evacuation

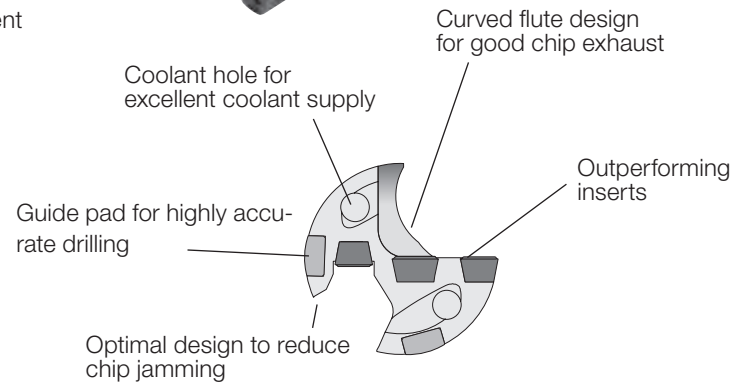
Easy to use, rigid drill body

- Direct mount inserts, no diameter adjustment necessary
- Heat treated tool steel body

High quality surface finish

- Burnishing effect improves surface finish
- Possible to eliminate finish process





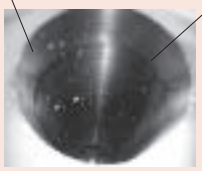
Actual result

Cutting conditions

Tool diameter ø*Dc* :	ø30 mm
Drilling depth :	200 mm
Workpiece material :	C45
Cutting speed *Vc* :	100 m/min
Spindle speed *f* :	0.1mm/rev
Machine :	BT50 M/C

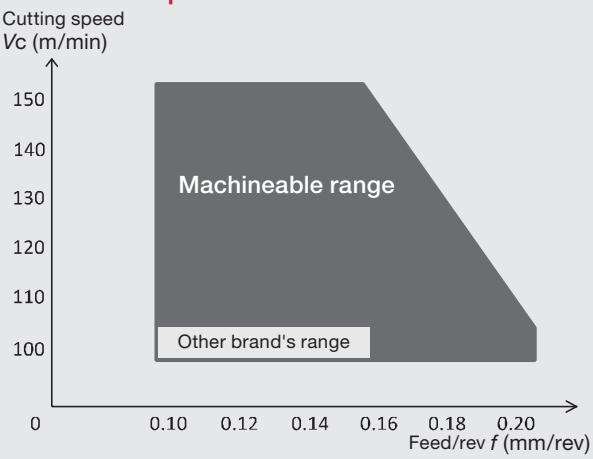
No spiral marks caused by chips

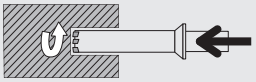
Guide pads burnishing effect improves surface finish



BT50 M/C Machining data

Excellent chip control ensures stable M/C machining





Coolant
Type: Emulsion
Pressure: 1.5MPa
Supply: Through spindle
(for ISO50)

Tool dia ø*Dc* :	ø30 mm
Drilling depth :	200 mm
Material :	C45
Cutting speed *Vc* :	100 ~ 150 m/min
Feed/rev *f* :	0.1 ~ 0.2 mm/rev
Machine :	ISO50 Horizontal M/C (Max 11 KW)

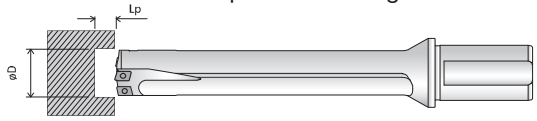
Deep Hole Drill

Note:

To start the tool, a pilot hole is required.
(torelance: + 0.1 to 0.15 mm)

Tool dia. ø*Dc* (mm)	Pilot hole length Lp (mm)
ø30 ~ ø39	over 10
ø39.01 ~ ø45	over 12.5
ø45.01 ~ ø57	over 15
ø57.01 ~ ø69	over 17.5

- The pilot hole should ideally have a flat bottom, but generally a throw-away drill is
acceptable to create a pilot hole if the inner insert touches the bottom last.
- TDX drills are recommended for pre-hole drilling.



ToolLine



Tooling System

F002

ToolLine - Tooling System



TUNGCAP

Quick change system with polygon PSC coupling tooling

F046



TUNGHOLD

Tooling system for holders with unique functions in wide varieties

DIN69871 - **F006** HSK A/E - **F020**

F004



SPINJET

Coolant-driven high-speed spindles for small-diameter tools

F128



BEAMWRENCH

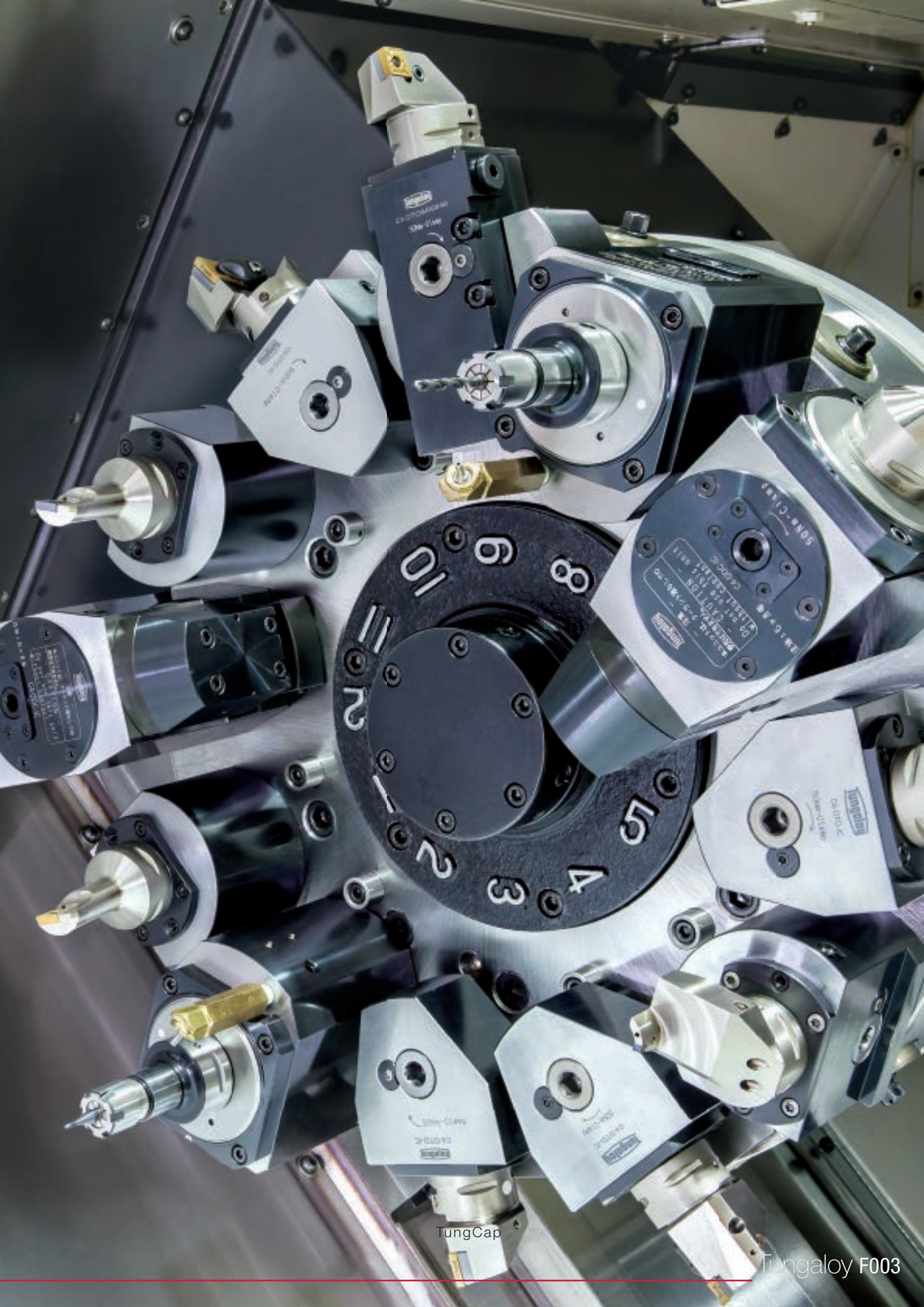
Easy operation with correct clamping torque

F134

Other Tooling System

F136

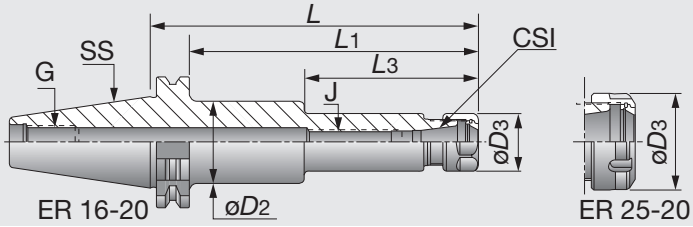
Boring System - F136
Top Borer Tool - F173
Boring Bar Tool - F170
Cartridge - F152



TungCap

DIN69871-ER (Collet chuck holder)

ER collet chucks with DIN69871 shank



Designation	SS	CSI	Range	L	L1	L3	øD3	øD2	J	G
DIN6987130ER16X63 (1)	30	ER16	0.5-10	63	43.9	28	28	-	M10	M12
DIN6987140ER16X63	40	ER16	0.5-10	63	43.9	-	28	-	M12	M16
DIN6987140ER16X63B	40	ER16	0.5-10	63	43.9	-	28	-	M12	M16
DIN6987140ER16X100	40	ER16	0.5-10	100	80.9	-	28	-	M12	M16
DIN6987140ER16X100B	40	ER16	0.5-10	100	80.9	-	28	-	M12	M16
DIN6987140ER16X160	40	ER16	0.5-10	160	140.9	85	28	40	M12	M16
DIN6987140ER16X160B	40	ER16	0.5-10	160	140.9	85	28	40	M12	M16
DIN6987140ER20X63	40	ER20	1-13	63	43.9	-	34	-	M12	M16
DIN6987140ER20X63B	40	ER20	1-13	63	43.9	-	34	-	M12	M16
DIN6987140ER20X100	40	ER20	1-13	100	80.9	-	34	-	M12	M16
DIN6987140ER20X100B	40	ER20	1-13	100	80.9	-	34	-	M12	M16
DIN6987140ER20X160	40	ER20	1-13	160	140.9	91	34	44	M12	M16
DIN6987150ER16X100 (1)	50	ER16	0.5-10	100	80.9	-	28	-	M12	M24
DIN6987150ER16X100B	50	ER16	0.5-10	100	80.9	-	28	-	M12	M24
DIN6987150ER16X160 (1)	50	ER16	0.5-10	160	140.9	85	28	40	M12	M24
DIN6987150ER16X160B	50	ER16	0.5-10	160	140.9	85	28	40	M12	M24
DIN6987150ER16X200 (1)	50	ER16	0.5-10	200	180.9	110	28	40	M10	M24
DIN6987150ER16X200B	50	ER16	0.5-10	200	180.9	110	28	40	M10	M24
DIN6987150ER20X100 (1)	50	ER20	1-13	100	80.9	-	34	-	M12	M24
DIN6987150ER20X100B	50	ER20	1-13	100	80.9	-	34	-	M12	M24
DIN6987150ER20X160 (1)	50	ER20	1-13	160	140.9	86	34	45	M12	M24
DIN6987150ER20X160B	50	ER20	1-13	160	140.9	86	34	45	M12	M24
DIN6987130ER32X65 (1)	30	ER32	2-20	65	45.9	32	50	40.4	M18x1.5	M12
DIN6987140ER25X65	40	ER25	1-16	65	45.9	28	42	32.4	M16x2	M16
DIN6987140ER25X65B	40	ER25	1-16	65	45.9	28	42	32.4	M16X2	M16
DIN6987140ER25X100	40	ER25	1-16	100	80.9	-	42	-	M16x2	M16
DIN6987140ER25X100B	40	ER25	1-16	100	80.9	-	42	-	M16X2	M16
DIN6987140ER25X150	40	ER25	1-16	150	130.9	-	42	-	M16x2	M16
DIN6987140ER25X150B	40	ER25	1-16	150	130.9	-	42	-	M16X2	M16
DIN6987140ER32X65	40	ER32	2-20	65	45.9	32	50	40.4	M22x1.5	M16
DIN6987140ER32X65B	40	ER32	2-20	65	45.9	32	50	40.4	M22X1.5	M16
DIN6987140ER32X100	40	ER32	2-20	100	80.9	35	50	49	M22x1.5	M16
DIN6987140ER32X100B	40	ER32	2-20	100	80.9	35	50	49	M22X1.5	M16
DIN6987140ER32X150	40	ER32	2-20	150	130.9	35	50	49	M22x1.5	M16
DIN6987140ER32X150B	40	ER32	2-20	150	130.9	35	50	49	M22X1.5	M16
DIN6987140ER40X70	40	ER40	3-26	70	50.9	32	63	50.4	M28x1.5	M16
DIN6987140ER40X70B	40	ER40	3-26	70	50.9	32	63	50.4	M28X1.5	M16
DIN6987140ER40X100	40	ER40	3-26	100	80.9	32	63	50.4	M28x1.5	M16
DIN6987140ER40X100B	40	ER40	3-26	100	80.9	32	63	50.4	M28X1.5	M16
DIN6987150ER25X100 (1)	50	ER25	1-16	100	80.9	-	42	-	M16x2	M24
DIN6987150ER25X100B	50	ER25	1-16	100	80.9	-	42	-	M16X2	M24
DIN6987150ER25X150 (1)	50	ER25	1-16	150	130.9	80.9	42	50	M16x2	M24
DIN6987150ER25X150B	50	ER25	1-16	150	130.9	80.9	42	50	M16X2	M24
DIN6987150ER25X200 (1)	50	ER25	1-16	200	180.9	85	42	55	M16x2	M24
DIN6987150ER25X200B	50	ER25	1-16	200	180.9	85	42	55	M16X2	M24
DIN6987150ER32X100 (1)	50	ER32	2-20	100	80.9	-	50	-	M22x1.5	M24
DIN6987150ER32X100B	50	ER32	2-20	100	80.9	-	50	-	M22X1.5	M24
DIN6987150ER32X150 (1)	50	ER32	2-20	150	130.9	-	50	-	M22x1.5	M24
DIN6987150ER32X150B	50	ER32	2-20	150	130.9	-	50	-	M22X1.5	M24
DIN6987150ER32X200 (1)	50	ER32	2-20	200	180.9	-	50	-	M22x1.5	M24
DIN6987150ER32X200B	50	ER32	2-20	200	180.9	-	50	-	M22X1.5	M24
DIN6987150ER40X100 (1)	50	ER40	3-26	100	80.9	-	63	-	M28x1.5	M24
DIN6987150ER40X100B	50	ER40	3-26	100	80.9	-	63	-	M28X1.5	M24
DIN6987150ER40X150 (1)	50	ER40	3-26	150	130.9	-	63	-	M28x1.5	M24
DIN6987150ER40X200 (1)	50	ER40	3-26	200	180.9	-	63	-	M28x1.5	M24
DIN6987150ER40X200B	50	ER40	3-26	200	180.9	-	63	-	M28X1.5	M24
DIN6987150ER50X100 (1)	50	ER50	10-34	100	80.9	-	78	-	M36x1.5	M24
DIN6987150ER50X100B	50	ER50	10-34	100	80.9	-	78	-	M36X1.5	M24
DIN6987150ER50X150 (1)	50	ER50	10-34	150	130.9	-	78	-	M36x1.5	M24

• Add B for coolant through the flange. (1) Balanced to G6.3 12,000 min^{-1}.

(Option:Wrench for ER collet)

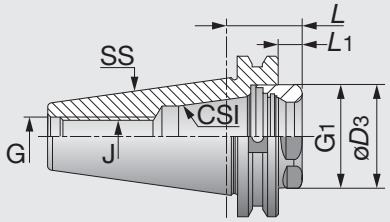
Tooling System

ER-collet F095 | Nut F119 | Wrench F121 | Preset screws F122 | Pull stud F118

TUNGBALANCE

DIN69871-ER-SHORT (Collet chuck holder for short overhang)

TungShort collet chucks with DIN69871 shank



Designation	SS	CSI	Range	*L*	*L*1	ø*D*3	J	G	G1
DIN6987140ER32SHORT	40	ER32	2-20	28.6	9.5	40	M16	M16	M40x1.5
DIN6987150ER32SHORT	50	ER32	2-20	28.6	9.5	40	M22x1.5	M24	M40x1.5
DIN6987150ER40SHORT	50	ER40	3-26	28.6	9.5	50	M28x1.5	M24	M50x1.5

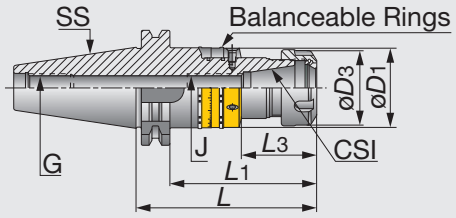
• Add B for coolant through the flange.

(Option:Wrench for ER collet)

TUNGBALANC

DIN69871-ER BIN (Collet chuck holder)

TungBalance adjustable dynamic balance collet chuck holder with DIN69871 shank



Designation	SS	CSI	Range	*L*	*L*1	*L*3	ø*D*3	ø*D*1	J	G
DIN6987140ER16X100BIN	40	ER16	0.5-10	100	80.9	44	28	44	M10	M16
DIN6987140ER20X100BIN	40	ER20	1.0-13	100	80.9	51	34	44	M12	M16
DIN6987140ER20X160BIN	40	ER20	1.0-13	160	140.9	87	34	44	M12	M16
DIN6987140ER25X100BIN	40	ER25	1.0-16	100	80.9	51	42	44	M16x1.5	M16
DIN6987140ER25X160BIN	40	ER25	1.0-16	160	140.9	88	42	44	M16x1.5	M16
DIN6987140ER32X100BIN	40	ER32	2.0-20	100	80.9	36	50	60	M22x1.5	M16
DIN6987140ER40X100BIN	40	ER40	3.0-26	100	80.9	36	63	60	M28x1.5	M16

• Balanced to G2.5 20,000 min^{-1}.

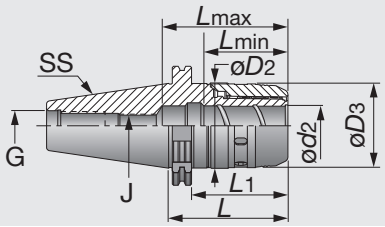
(Option:Wrench for ER collet)

Tooling System

ER Collet F095 | Nut F119 | Wrench F121 | Preset screws F122 | Pull stud F118

DIN69871-TUNGMAX (Power chuck holder)

TungMax endmill chuck holders with DIN69871 shank



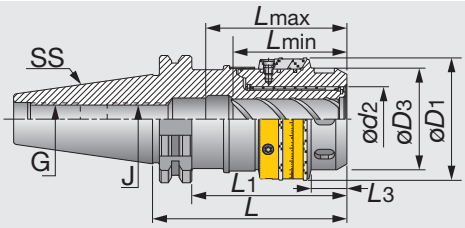
Designation	SS	ød2	Range	L	L1	Lmin	Lmax	øD3	øD2	J	G
DIN6987140MAXIN20X95	40	20	6-20	95	76	56	69	51	53	M16	M16
DIN6987140MAXIN32X106	40	32	6-32	106	87	70	83	69	70	M16	M16
DIN6987150MAXIN20X105 (1)	50	20	6-20	105	86	56	69	51	53	M16	M24
DIN6987150MAXIN20X105B	50	20	6-20	105	86	56	69	51	53	M16	M24
DIN6987150MAXIN32X100 (1)	50	32	6-32	100	81	70	84	69	70	M20x2	M24
DIN6987150MAXIN32X100B	50	32	6-32	100	81	70	84	69	70	M20X2	M24
DIN6987150MAXIN32X135 (1)	50	32	6-32	135	116	71	85	69	70	M20x2	M24

• Add B for coolant through the flange. (1) Balanced to G6.3 8,000 min^{-1}.

(Option:Wrench for TungMax collet)

DIN69871-TUNGMAX BIN (Power chuck holder)

TungMax balancable endmill chuck holders with DIN69871 shank



Designation	SS	ød2	Range	øD3	øD1	L	L1	L3	Lmin	Lmax	J	G
DIN6987140MAXIN20X95BIN (1)	40	20	6-20	50.5	60.8	95	76	17.5	56	69	M16	M16
DIN6987140MAXI32X106BIN (1)	40	32	6-32	68.5	79.8	106	87	24.9	70	83	M16	M16
DIN6987150MAXIN20X105BIN (1)	50	20	6-20	50.5	60.8	105	86	17.5	56	69	M16	M24
DIN6987150MAXIN32X100BIN (2)	50	32	6-32	68.5	79.8	100	81	24.9	70	84	M20X2	M24

(1) Chucks with taper size 40 can be balanced by the balancing ring up to G2.5 at 20,000 min^{-1}.
(2) Chucks with taper size 50 can be balanced by the balancing ring up to G2.5 at 18,000 min^{-1}.

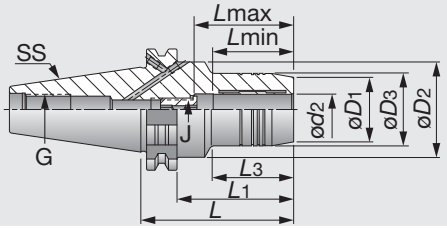
(Option:Wrench for TungMax collet)

Straight collet F105
Pull stud F118

TUNGHYDRO

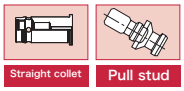
DIN69871-HYDRO (Hydro chuck holder)

TungHydro hydraulic endmill chuck holders with DIN69871 shank



Designation	SS	ød2	øD1	øD3	øD2	L	L1	L3	Lmin	Lmax	J	G
DIN6987130HYDRO6X60	30	6	23	26.	45	60	41	25	27	37	M5	M12
DIN6987130HYDRO16X90	30	16	34	38	45	90	71	43	42	52	M12x1	M12
DIN6987130HYDRO20X90	30	20	38	42	42	90	71	-	42	52	M12x1	M12
DIN6987140HYDRO6X68	40	6	23	26	50	68	49	33	27	37	M5	M16
DIN6987140HYDRO8X68	40	8	25	28	50	68	49	33	27	37	M6	M16
DIN6987140HYDRO10X72	40	10	27	30	50	72	53	37	32	42	M8x1	M16
DIN6987140HYDRO12X77	40	12	29	32	50	77	58	42	37	47	M10x1	M16
DIN6987140HYDRO14X77	40	14	30	34	50	77	58	42	37	47	M10x1	M16
DIN6987140HYDRO16X80	40	16	34	38	50	80	61	43	42	52	M12x1	M16
DIN6987140HYDRO18X80	40	18	36	40	50	80	61	43	42	52	M12x1	M16
DIN6987140HYDRO20X82	40	20	38	42	50	82	63	47	42	52	M12x1	M16
DIN6987140HYDRO25X117	40	25	46	50	63	117	98	51	48	58	M16x1	M16
DIN6987140HYDRO32X117	40	32	56	60	63	117	98	56	52	62	M16x1	M16
DIN6987150HYDRO6X68	50	6	23	26	80	68	49	33	27	37	M5	M24
DIN6987150HYDRO8X68	50	8	25	28	80	68	49	33	27	37	M6	M24
DIN6987150HYDRO10X72	50	10	27	30	80	72	53	37	32	42	M8x1	M24
DIN6987150HYDRO12X77	50	12	29	32	80	77	58	42	37	47	M10x1	M24
DIN6987150HYDRO14X77	50	14	30	34	80	77	58	42	37	47	M10x1	M24
DIN6987150HYDRO16X80	50	16	34	38	80	80	61	45	42	52	M12x1	M24
DIN6987150HYDRO18X80	50	18	36	40	80	80	61	45	42	52	M12x1	M24
DIN6987150HYDRO20X82	50	20	38	42	80	82	63	47	42	52	M16x1	M24
DIN6987150HYDRO25X87	50	25	46	50	80	87	68	52	48	58	M16x1	M24
DIN6987150HYDRO32X91	50	32	56	60	80	91	72	56	54	64	M16x1	M24
DIN6987140HYDRO20X64.5 (1)	40	20	40	49.5	-	64.5	45	-	42	52	M16x1	M16
DIN6987150HYDRO32X81 (1)	50	32	56	72	-	81	62	-	54	64	M16x1	M24

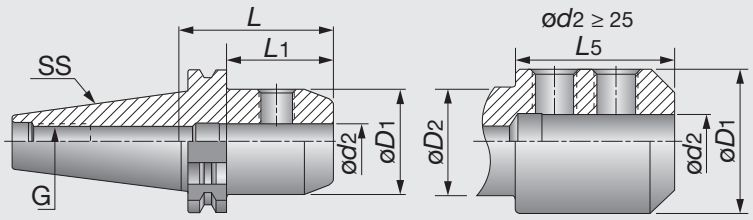
• Clamping wrench (wrench HYDRO HEX 4) should be ordered separately. • Note: Available are reduction sleeves for 12, 20, 25 and 32 mm bore diameters.
• Chucking forces will significantly reduce if reduction sleeves are used (ordered separately).
(1) Holders for heavy duty.



F107 F118

DIN69871-EM (Endmill holder)

Screw locking endmill holders with DIN69871 shank



Designation	SS	ød2	øD1	øD2	L	L1	L5	G
DIN6987130EM6X50	30	6	26	-	50	30.9	-	M12
DIN6987130EM8X50	30	8	28	-	50	30.9	-	M12
DIN6987130EM10X50	30	10	35	-	50	30.9	-	M12
DIN6987130EM14X63	30	14	44	-	63	43.9	-	M12
DIN6987130EM16X63	30	16	48	44.9	63	43.9	28	M12
DIN6987130EM18X72	30	18	50	44.9	72	52.9	37	M12
DIN6987130EM20X72	30	20	52	44	72	52.9	37	M12
DIN6987140EM6X50	40	6	25	-	50	30.9	-	M16
DIN6987140EM6X50B	40	6	25	-	50	30.9	-	M16
DIN6987140EM8X50	40	8	28	-	50	30.9	-	M16
DIN6987140EM8X50B	40	8	28	-	50	30.9	-	M16
DIN6987140EM10X50	40	10	35	-	50	30.9	-	M16
DIN6987140EM12X50	40	12	42	-	50	30.9	-	M16
DIN6987140EM12X50B	40	12	42	-	50	30.9	-	M16
DIN6987140EM14X63	40	14	44	-	63	43.9	-	M16
DIN6987140EM16X63	40	16	48	-	63	43.9	-	M16
DIN6987140EM16X63B	40	16	48	-	63	43.9	-	M16
DIN6987140EM18X63	40	18	50	49	63	43.9	28.5	M16
DIN6987140EM18X63B	40	18	50	49	63	43.9	28.5	M16
DIN6987140EM20X63	40	20	52	49	63	43.9	28.5	M16
DIN6987140EM20X63B	40	20	52	49	63	43.9	28.5	M16
DIN6987140EM25X100	40	25	65	49	100	80.9	65	M16
DIN6987140EM25X100B	40	25	65	49	100	80.9	65	M16
DIN6987140EM32X100	40	32	71	49	100	80.9	65	M16
DIN6987140EM32X100B	40	32	71	49	100	80.9	65	M16
DIN6987150EM6X63	50	6	25	-	63	43.9	-	M24
DIN6987150EM8X63	50	8	28	-	63	43.9	-	M24
DIN6987150EM8X63B	50	8	28	-	63	43.9	-	M24
DIN6987150EM10X63	50	10	35	-	63	43.9	-	M24
DIN6987150EM10X63B	50	10	35	-	63	43.9	-	M24
DIN6987150EM12X63	50	12	42	-	63	43.9	-	M24
DIN6987150EM12X63B	50	12	42	-	63	43.9	-	M24
DIN6987150EM14X63	50	14	44	-	63	43.9	-	M24
DIN6987150EM14X63B	50	14	44	-	63	43.9	-	M24
DIN6987150EM16X63	50	16	48	-	63	43.9	-	M24
DIN6987150EM16X63B	50	16	48	-	63	43.9	-	M24
DIN6987150EM18X63	50	18	50	-	63	43.9	-	M24
DIN6987150EM18X63B	50	18	50	-	63	43.9	-	M24
DIN6987150EM20X63	50	20	52	-	63	43.9	-	M24
DIN6987150EM20X63B	50	20	52	-	63	43.9	-	M24
DIN6987150EM25X80	50	25	65	-	80	60.9	-	M24
DIN6987150EM25X80B	50	25	65	-	80	60.9	-	M24
DIN6987150EM32X100	50	32	72	-	100	80.9	-	M24
DIN6987150EM32X100B	50	32	72	-	100	80.9	-	M24
DIN6987150EM40X100	50	40	90	79.9	100	80.9	43	M24
DIN6987150EM40X100B	50	40	90	79.9	100	80.9	43	M24
DIN6987150EM50X125	50	50	98	79.9	125	105.9	90	M24
DIN6987150EM50X125B	50	50	98	79.9	125	105.9	90	M24
DIN6987140EM10X45 (1)	40	10	35	-	45	25.9	-	M16
DIN6987140EM12X45 (1)	40	12	42	-	45	25.9	-	M16
DIN6987140EM14X45 (1)	40	14	44	-	45	25.9	-	M16
DIN6987140EM14X45B (1)	40	14	44	-	45	25.9	-	M16
DIN6987140EM16X45 (1)	40	16	48	-	45	25.9	-	M16
DIN6987140EM18X45 (1)	40	18	49	-	45	25.9	-	M16
DIN6987140EM20X45 (1)	40	20	49	-	45	25.9	-	M16
DIN6987140EM25X45 (1)	40	25	49	-	45	25.9	-	M16

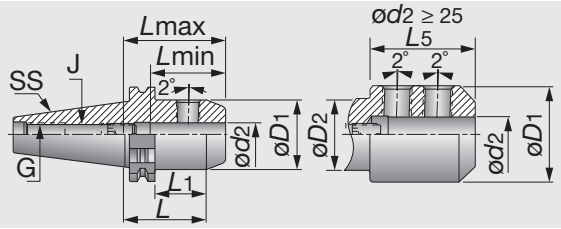
• Add B for coolant through the flange.
(1) Short emdmill holder.

Clamping screw F124
Pull stud F118

TUNGHOLD

DIN69871-EM E(Endmill holder with whistle notch)

Screw locking endmill holders for whistle notch with DIN69871 shank



Designation	SS	ød2	øD1	øD2	L	L1	L5	Lmin	Lmax	J(1)	G	key
DIN6987140EM8X50E	40	8	28	-	50	30.9	-	35	45	M6	M16	3
DIN6987140EM10X50E	40	10	35	-	50	30.9	-	39	49	M8	M16	4
DIN6987140EM12X50E	40	12	42	-	50	30.9	-	44	54	M10	M16	5
DIN6987140EM14X63E	40	14	44	-	63	43.9	-	44	54	M10	M16	5
DIN6987140EM16X63E	40	16	48	-	63	43.9	-	47	57	M12	M16	6
DIN6987140EM18X63E	40	18	50	49	63	43.9	28.5	47	57	M12	M16	6
DIN6987140EM20X63E	40	20	52	49	63	43.9	29	49	59	M16	M16	8
DIN6987140EM20X63EB	40	20	52	49	63	43.9	29	49	59	M16	M16	8
DIN6987140EM25X100E	40	25	65	49	100	80.9	65	54	64	M20X1.5	M16	10
DIN6987140EM25X100EB	40	25	65	49	100	80.9	65	54	64	M20X1.5	M16	10
DIN6987140EM32X100E	40	32	72	49	100	80.9	65	58	68	M20X1.5	M16	10
DIN6987150EM8X63E	50	8	28	-	63	43.9	-	35	45	M6	M24	3
DIN6987150EM10X63E	50	10	35	-	63	43.9	-	39	49	M8	M24	4
DIN6987150EM12X63E	50	12	42	-	63	43.9	-	44	54	M10	M24	5
DIN6987150EM14X63E	50	14	44	-	63	43.9	-	44	54	M10	M24	5
DIN6987150EM16X63E	50	16	48	-	63	43.9	-	47	57	M12	M24	6
DIN6987150EM18X63E	50	18	50	-	63	43.9	-	47	57	M12	M24	6
DIN6987150EM20X63E	50	20	52	-	63	43.9	-	49	49	M16	M24	8
DIN6987150EM20X63EB	50	20	52	-	63	43.9	-	49	49	M16	M24	8
DIN6987150EM25X80E	50	25	65	-	80	60.9	-	54	64	M20X1.5	M24	10
DIN6987150EM25X80EB	50	25	65	-	80	60.9	-	54	64	M20X1.5	M24	10
DIN6987150EM32X100E	50	32	72	-	100	80.9	-	58	68	M20X1.5	M24	10
DIN6987150EM32X100EB	50	32	72	-	100	80.9	-	58	68	M20X1.5	M24	10
DIN6987150EM40X100E	50	40	90	79.9	100	80.9	43	68	78	M20X1.5	M24	10
DIN6987150EM40X100EB	50	40	90	79.9	100	80.9	43	68	78	M20X1.5	M24	10
DIN6987150EM50X125EB	50	50	98	79.9	125	105.9	68	78	88	M20X1.5	M24	10

• Add B for coolant through the flange. (1) The adjustment screw has an internal coolant hole.

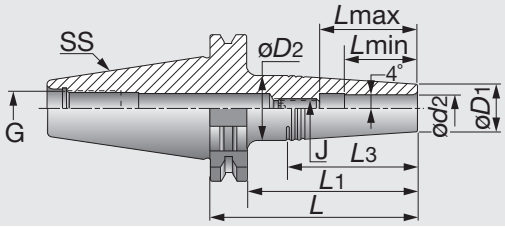
Tooling System

Clamping screw F124
Pull stud F118

TUNGSHRINK

DIN69871-SRK (Shrink holder)

TungShrink thermal shrinking holder for carbide shank with DIN69871 shank



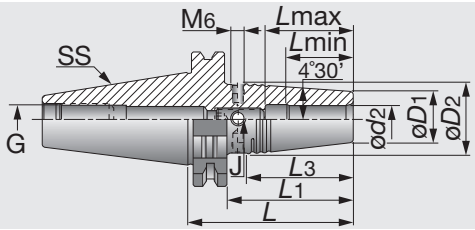
Designation	SS	ød2	øD1	øD2	L	L1	L3	Lmin	Lmax	J	G	key
DIN6987140SRK3X50	40	3	10	15	69.1	50	35.55	10	16	M6	M16	3
DIN6987140SRK3X85	40	3	10	19	104.1	85	64.15	10	16	M6	M16	3
DIN6987140SRK4X50	40	4	10	15	69.1	50	35.55	12	18	M6	M16	3
DIN6987140SRK4X85	40	4	10	19	104.1	85	64.15	12	18	M6	M16	3
DIN6987140SRK5X50	40	5	10	15	69.1	50	35.55	15	21	M6	M16	3
DIN6987140SRK5X85	40	5	10	19	104.1	85	64.15	12	18	M6	M16	3
DIN6987140SRK6X50	40	6	11	16	69.1	50	35.55	18	24	M8	M16	4
DIN6987140SRK6X85	40	6	11	20	104.1	85	64.1	18	24	M8	M16	4
DIN6987140SRK8X50	40	8	14	20	69.1	50	42.5	25	31	M10	M16	5
DIN6987140SRK8X85	40	8	14	23	104.1	85	63.95	25	31	M10	M16	5
DIN6987140SRK10X50	40	10	16	22	69.1	50	42.4	30	36	M12	M16	6
DIN6987140SRK10X85	40	10	16	24.5	104.1	85	60.28	30	36	M12	M16	6
DIN6987140SRK12X50	40	12	20	26	69.1	50	42.3	32	42	M10	M16	5
DIN6987140SRK12X85	40	12	20	28	104.1	85	56.6	32	42	M10	M16	5

Pull stud F118
Induction heating unit F113
Heating unit F113
Preset screws F124

TUNGSHRINK

DIN69871-SRKIN (Shrink holder)

TungShrink thermal shrinking holder for carbide and HSS with DIN69871 shank



Designation	SS	ød2	øD1	øD2	L	L1	L3	Lmin	Lmax	J	G	key
DIN6987140SRKIN6X80	40	6	21	27	80	60.9	38	25	36	M5	M16	2.5
DIN6987140SRKIN8X80	40	8	21	27	80	60.9	38	25	36	M6	M16	3
DIN6987140SRKIN10X80	40	10	24	32	80	60.9	50.5	31	42	M8	M16	4
DIN6987140SRKIN12X80	40	12	24	32	80	60.9	50.5	31	47	M10	M16	5
DIN6987140SRKIN14X80	40	14	27	34	80	60.9	44.2	36	47	M10	M16	5
DIN6987140SRKIN16X80	40	16	27	34	80	60.9	44.2	39	50	M12	M16	6
DIN6987140SRKIN18X80	40	18	33	42	80	60.9	57	39	50	M12	M16	6
DIN6987140SRKIN20X80	40	20	33	42	80	60.9	57	41	52	M16	M16	8
DIN6987140SRKIN25X100	40	25	44	53	100	80.9	57	47	58	M16	M16	8
DIN6987150SRKIN6X80 (1)	50	6	21	27	80	60.9	38	25	36	M5	M24	2.5
DIN6987150SRKIN8X80 (1)	50	8	21	27	80	60.9	38	25	36	M6	M24	3
DIN6987150SRKIN10X80 (1)	50	10	24	32	80	60.9	51	31	42	M8	M24	4
DIN6987150SRKIN12X80 (1)	50	12	24	32	80	60.9	51	36	47	M10	M24	5
DIN6987150SRKIN14X80 (1)	50	14	27	34	80	60.9	44.5	36	47	M10	M24	5
DIN6987150SRKIN16X80 (1)	50	16	27	34	80	60.9	44.5	39	50	M12	M24	6
DIN6987150SRKIN18X80 (1)	50	18	33	42	80	60.9	57	39	50	M12	M24	6
DIN6987150SRKIN20X80 (1)	50	20	33	42	80	60.9	57	41	52	M16	M24	8
DIN6987150SRKIN25X100 (1)	50	25	44	53	100	80.9	57	47	58	M16	M24	8
DIN6987150SRKIN32X100 (1)	50	32	44	53	100	80.9	57	47	58	M16	M24	8

• Use only inductive heating device for SRKIN holders. (1) Balanced to G2.5 20,000 min^{-1}

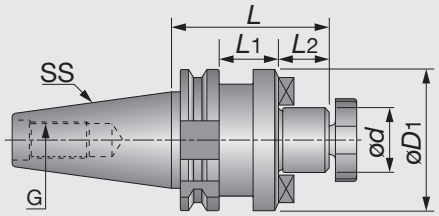
Tooling System

Pull stud F118
Induction heating unit F113
Heating unit F113
Preset screws F124

TUNGHOLD

DIN69871-SEM (Shell mill holder)

Shell mill holder with DIN69871 shank



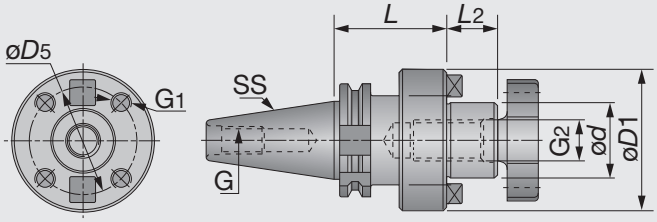
Designation	SS	ød	L2	øD1	L	L1	G
DIN6987130SEM16X35	30	16	17	38	35	15.9	M12
DIN6987130SEM22X50	30	22	19	47	50	30.9	M12
DIN6987130SEM27X50	30	27	21	58	50	30.9	M12
DIN6987140SEM16X35	40	16	17	38	35	15.9	M16
DIN6987140SEM22X35	40	22	19	47	35	15.9	M16
DIN6987140SEM27X60	40	27	21	58	60	40.9	M16
DIN6987140SEM32X60	40	32	24	66	60	40.9	M16
DIN6987140SEM40X60	40	40	27	82	60	40.9	M16
DIN6987150SEM16X35	50	16	17	38	35	15.9	M24
DIN6987150SEM22X35	50	22	19	47	35	15.9	M24
DIN6987150SEM22X50X200	50	22	19	50	200	180.9	M24
DIN6987150SEM27X35	50	27	21	58	35	15.9	M24
DIN6987150SEM32X35	50	32	24	66	35	15.9	M24
DIN6987150SEM32X78X370	50	32	24	78	370	350.9	M24
DIN6987150SEM40X50	50	40	27	82	50	30.9	M24
DIN6987150SEM50X60	50	50	30	95	60	40.9	M24

• (Option:Wrench for lock screw)

TUNGHOLD

DIN69871-FM (Face mill holder)

Face mill holder with DIN69871 shank



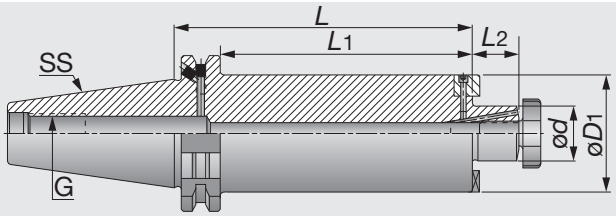
Designation	SS	ød	L2	øD1	L	G2	øD5	G1	G
DIN6987140FM40	40	40	27	88	60	M20	66.7	M12	M16
DIN6987150FM40	50	40	27	88	70	M20	66.7	M12	M24
DIN6987150FM60	50	60	40	128	70	-	101.6	M16	M24

Pull stud F118
Clamping screw F123
Wrench F125

TUNGHOLD

DIN69871-SEM (Shell mill holder with extra long)

Extra long type shell mill holder with coolant hole with DIN69871 shank



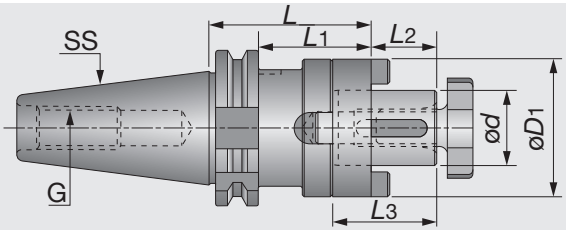
Designation	SS	ød	L2	øD1	L	L1	G
DIN6987150SEM22X48X200C	50	22	19	48	200	181	M24
DIN6987150SEM22X61X300C	50	22	19	61	300	281	M24
DIN6987150SEM27X61X300C	50	27	21	61	300	281	M24
DIN6987150SEM32X78X370C	50	32	24	78	370	351	M24

• If the "B type" option is required, the plug screw must the removed from the flange cooling hole. (use a 2 mm hex key.) (Option:Wrench for lock screw)

TUNGHOLD

DIN69871-SEMC (Combination holder for slot mill & shell mill)

Combination holder with DIN69871 shank



Designation	SS	ød	L2	øD1	L	L1	L3	G
DIN6987130SEMC16X50	30	16	17	32	50	30.9	27	M12
DIN6987130SEMC22X50	30	22	19	40	50	30.9	31	M12
DIN6987130SEMC32X60	30	32	24	58	60	40.9	38	M12
DIN6987140SEMC16X55	40	16	17	32	55	35.9	27	M16
DIN6987140SEMC16X100	40	16	17	32	100	80.9	27	M16
DIN6987140SEMC22X55	40	22	19	40	55	35.9	31	M16
DIN6987140SEMC22X100	40	22	19	40	100	80.9	31	M16
DIN6987140SEMC27X55	40	27	21	48	55	35.9	33	M16
DIN6987140SEMC27X100	40	27	21	48	100	80.9	33	M16
DIN6987140SEMC32X60	40	32	24	58	60	45.9	38	M16
DIN6987140SEMC32X100	40	32	24	58	100	80.9	38	M16
DIN6987140SEMC40X60	40	40	27	70	60	40.9	41	M16
DIN6987150SEMC16X55	50	16	17	32	55	35.9	27	M24
DIN6987150SEMC16X100	50	16	17	32	100	80.9	27	M24
DIN6987150SEMC22X55	50	22	19	40	55	35.9	31	M24
DIN6987150SEMC22X100	50	22	19	40	100	80.9	31	M24
DIN6987150SEMC27X55	50	27	21	48	55	35.9	33	M24
DIN6987150SEMC27X100	50	27	21	48	100	80.9	33	M24
DIN6987150SEMC32X55	50	32	24	58	55	35.9	38	M24
DIN6987150SEMC32X100	50	32	24	58	100	80.9	38	M24
DIN6987150SEMC40X55	50	40	27	70	55	35.9	41	M24
DIN6987150SEMC40X100	50	40	27	70	100	80.9	41	M24
DIN6987150SEMC50X70	50	50	30	90	70	50.9	46	M24

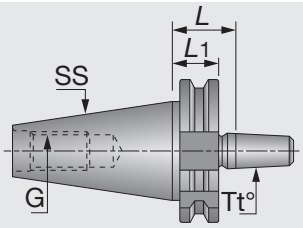
• If the "B type" option is required, the plug screw must the removed from the flange cooling hole. (use a 2 mm hex key.) (Option:Wrench for lock screw)

Tooling System

Pull stud F118
Clamping screw F123
Wrench F125

DIN69871-DC (Jacobs taper holder)

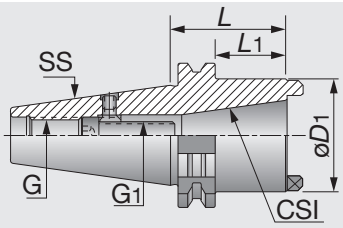
Jacobs taper holder wih DIN69871 shank



Designation	SS	Tt°	L	L1	G
DIN6987130DCB12X26	30	B12	26	19.1	M12
DIN6987140DCB12X26	40	B12	26	19.1	M16
DIN6987140DCB16X26	40	B16	26	19.1	M16
DIN6987140DCB18X26	40	B18	26	19.1	M16
DIN6987150DCB12X26	50	B12	26	19.1	M24
DIN6987150DCB16X26	50	B16	26	19.1	M24
DIN6987150DCB18X26	50	B18	26	19.1	M24

DIN69871 AD(Conversion adaptor)

Conversion adaptor for DIN69871 system

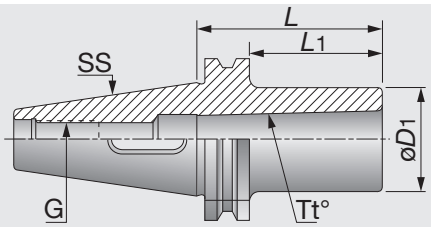


Designation	SS	CSI	L	øD1	L1	G1	G
DIN6987140ADDIN208030	40	DIN2080 30	50	50	30.9	M12	M16
DIN6987150ADBT/SK40	50	BT/SK 40	70	66	50.9	M16	M24

Pull stud
F118

TUNGHOLD
DIN69871-MT(Holder for Morse taper)

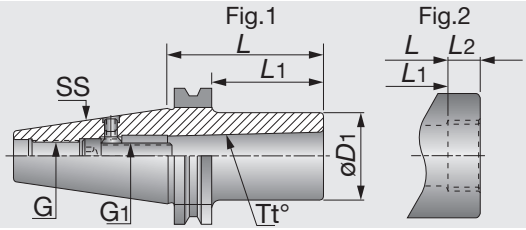
Morse taper holder with DIN69871 shank



Designation	SS	Tt°	L	øD1	L1	G
DIN6987130MT3X75	30	MT3	75	40	55.9	M12
DIN6987140MT1X50	40	MT1	50	25	30.9	M16
DIN6987140MT2X50	40	MT2	50	32	30.9	M16
DIN6987140MT3X70	40	MT3	70	40	50.9	M16
DIN6987140MT4X95	40	MT4	95	48	75.9	M16
DIN6987150MT1X45	50	MT1	45	25	25.9	M24
DIN6987150MT2X60	50	MT2	60	32	40.9	M24
DIN6987150MT3X65	50	MT3	65	40	45.9	M24
DIN6987150MT4X95	50	MT4	95	48	75.9	M24
DIN6987150MT5X105	50	MT5	105	63	85.9	M24

TUNGHOLD
DIN69871-MT DRW (Holder for draw bar)

Morse taper holder with draw bar for DIN69871



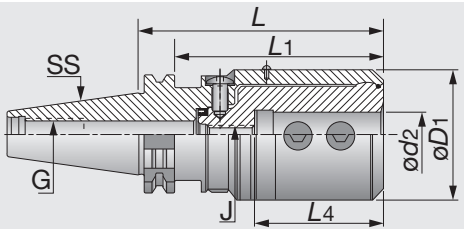
Designation	SS	Tt°	L	øD1	L1	L2	G1	G	Fig.
DIN6987140MT1DRW	40	MT1	50	25	30.9	-	M6	M16	1
DIN6987140MT2DRW	40	MT2	50	32	30.9	-	M10	M16	1
DIN6987140MT3DRW	40	MT3	70	40	50.9	-	M12	M16	1
DIN6987140MT4DRW (1)	40	MT4	95	63	75.9	15	M16	M16	2
DIN6987150MT1DRW	50	MT1	45	25	25.9	-	M6	M24	1
DIN6987150MT2DRW	50	MT2	60	32	40.9	-	M10	M24	1
DIN6987150MT3DRW	50	MT3	65	40	45.9	-	M12	M24	1
DIN6987150MT4DRW (1)	50	MT4	70	63	50.9	15	M16	M24	2
DIN6987150MT5DRW (1)	50	MT5	100	78	80.9	18	M20	M24	2

(1) DIN 2201.

TUNGBORE

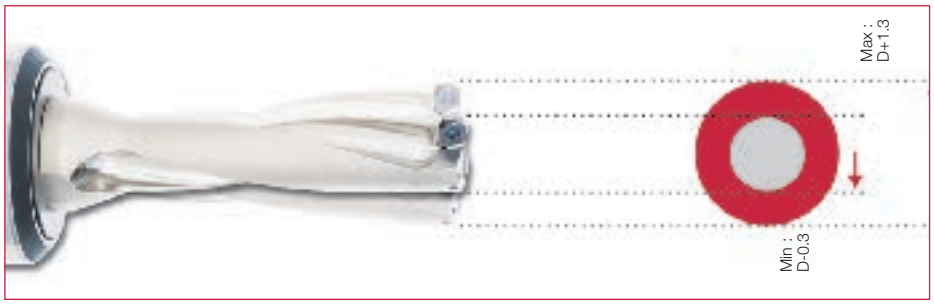
TUNGBORE-DIN69871 (Adjustable holder for indexable drill)

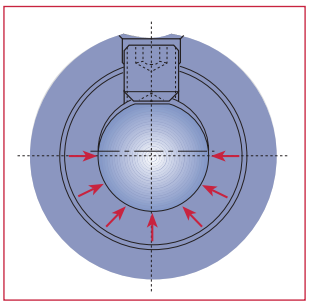
TungBore adjustable drilling dia. holder with DIN69871 shank



Designation	SS	ød2	øD1	L	L1	L4	J	G
TUNGBORE-SKA40EM16ADB	40	16	72	135.6	116.5	71	M10	M16
TUNGBORE-SKA40EM20ADB	40	20	72	135.6	116.5	71	M10	M16
TUNGBORE-SKA40EM25ADB	40	25	72	135.6	116.5	71	M10	M16
TUNGBORE-SKA40EM32ADB	40	32	72	135.6	116.5	71	M10	M16
TUNGBORE-SKA40EM40ADB	40	40	72	135.6	116.5	71	M10	M16
TUNGBORE-SKA50EM16ADB	50	16	72	115.6	96.5	71	M10	M24
TUNGBORE-SKA50EM20ADB	50	20	72	115.6	96.5	71	M10	M24
TUNGBORE-SKA50EM25ADB	50	25	72	115.6	96.5	71	M10	M24
TUNGBORE-SKA50EM32ADB	50	32	72	115.6	96.5	71	M10	M24
TUNGBORE-SKA50EM40ADB	50	40	72	115.6	96.5	71	M10	M24

• The items that include "ADB" in the description are coolant through spindle & flange type.





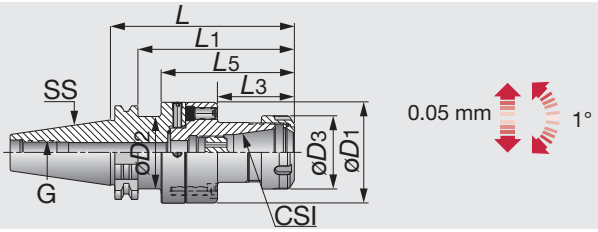
The bore's section is actually made from two shifted circular sections. The clamping screw pushes the drill shank through a narrowed opening, forcing elastic deformation of the holder. Contact is made around more than 180°, providing a high clamping force.

Tooling System

Pull stud
F118

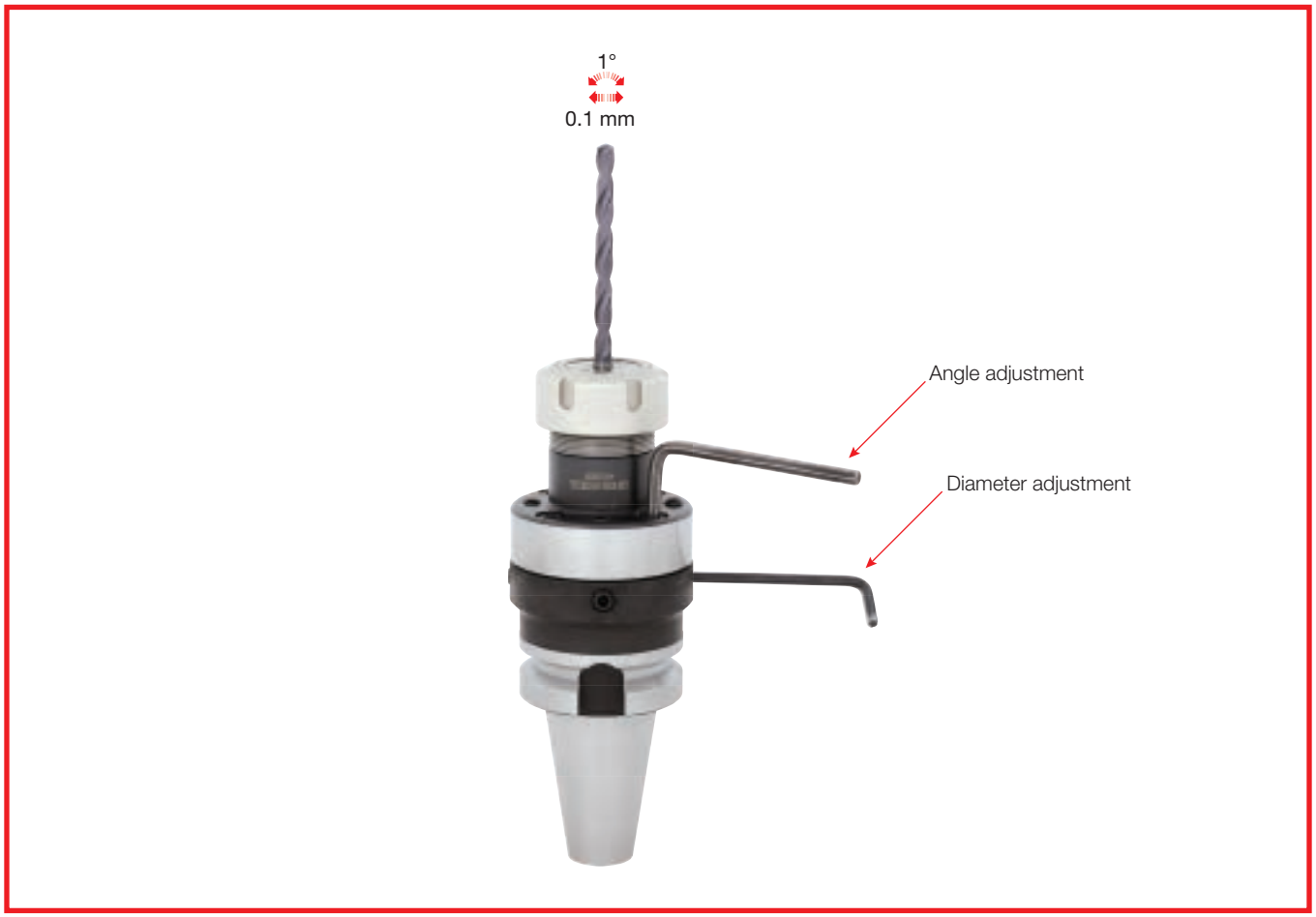
ADJ DIN69871-ER collet (Collet chuck holder)

ER Collet chucks with center alignment and DIN69871 shanks



Designation	SS	CSI	Range	*L*	*L*1	*L*5	*L*3	ø*D*3	ø*D*1	ø*D*2	G
ADJDIN6987140D70ER32	40	ER32	2-20	124.5	105.4	89.5	52.5	50	70	46	M16
ADJDIN6987150D70ER32	50	ER32	2-20	124.5	105.4	-	52.5	50	70	-	M24

(Option:Wrench for ER collet)



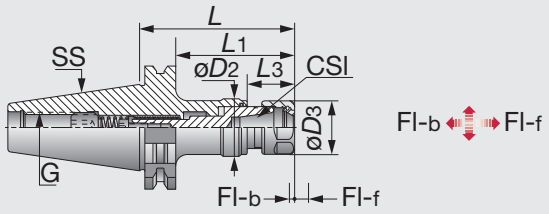
Tooling System

ER Collet F095
Nut F119
Wrench F121
Preset screws F122
Pull stud F118

TUNGGTI

GTI-DIN69871-ER tapping (Tapping holder)

TungGTI tapping attachment with DIN69871 shank



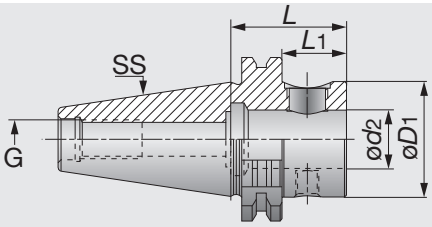
Designation	SS	CSI	Tap min	Tap max	Range	L	L1	L3	øD3	øD2	Fl-f	Fl-b	G
GTIDIN6987140ER16	40	ER16	M3	M10	0.5-10	81.2	62.1	24.6	28	29.5	8	3	M16
GTIDIN6987150ER16	50	ER16	M3	M10	0.5-10	106.8	87.7	24.6	28	29.5	8	3	M24
GTIDIN6987140ER32	40	ER32	M6	M20	2-20	112.6	93.5	33	50	56.5	9	4	M16
GTIDIN6987150ER32	50	ER32	M6	M20	2-20	115.3	96.2	33	50	56.5	9	4	M24
GTIDIN6987140ER40	40	ER40	M6	M28	3-26	130.6	111.5	51	63	56.5	9	4	M16
GTIDIN6987150ER40	50	ER40	M6	M28	3-26	133.3	114.2	51	63	56.5	9	4	M24

(Option : Wrench for ER-Collet)

TUNGFIT

DIN69871-CF (Quick change holder)

TungFit quick change style modular tooling system with DIN69871 shank



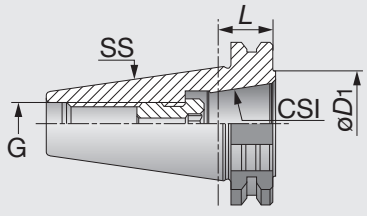
Designation	SS	ød2	øD1	L	L1	G
DIN6987140CF4-S	40	25	44.5	44.1	25	M16
DIN6987140CF4-SB	40	25	44.5	44.1	25	M16
DIN6987140CF4-L	40	25	44.5	100	80.9	M16
DIN6987150CF4-S	50	25	44.5	44.1	25	M24
DIN6987150CF4-SB	50	25	44.5	44.1	25	M24
DIN6987150CF4-L	50	25	44.5	100	80.9	M24
DIN6987150CF4-LB	50	25	44.5	100	80.9	M24

• Tightening torque: 58.8 N·m. • Add B for coolant through the flange.

TUNGCLICK

DIN69871-ER-CLICK (Quick change holder)

TungClick quick change tooling system with DIN69871 shank



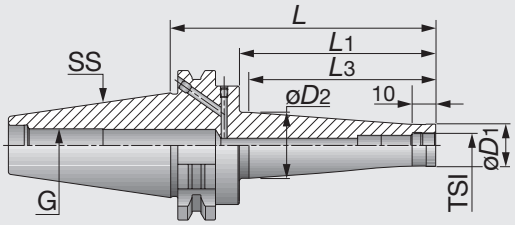
Designation	SS	CSI	øD1	L	G
DIN6987140ER32CLICK-IN	40	ER32	41	20.1	M16
DIN6987150ER32CLICK-IN	50	ER32	41	20.1	M24

• Tightening torque: 235 N·m

ER Collet F095 | Nut F119 | Wrench F121 | Preset screws F122 | Pull stud F118

DIN69871-ODP (Screw clamp holder for modular cutting heads)

TungFlex modular tooling system with DIN69871 shank



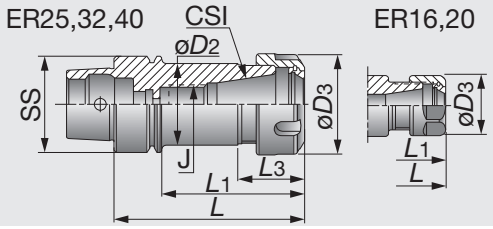
Designation	SS	TSI	øD1	øD2	L	L1	L3	G
DIN6987140ODP6X58	40	M6	9.8	13	58	38.9	32	M16
DIN6987140ODP6X98	40	M6	9.8	23	98	78.9	74	M16
DIN6987140ODP8X58	40	M8	13.1	15	58	38.9	32	M16
DIN6987140ODP8X98	40	M8	13.1	23	98	78.9	74	M16
DIN6987140ODP10X58	40	M10	18	20	58	38.9	32	M16
DIN6987140ODP10X98	40	M10	18	28	98	78.9	74	M16
DIN6987140ODP12X58	40	M12	21	24	58	38.9	34	M16
DIN6987140ODP12X98	40	M12	21	31	98	78.9	75	M16
DIN6987140ODP16X58	40	M16	29	28.6	58	38.9	33	M16
DIN6987140ODP16X98	40	M16	29	34	98	78.9	75	M16
DIN6987150ODP12X78 (1)	50	M12	23	30	78	58.9	50	M24
DIN6987150ODP12X128 (1)	50	M12	23	40	128	108.9	100	M24
DIN6987150ODP12X178 (1)	50	M12	23	40	178	158.9	150	M24
DIN6987150ODP12X228 (1)	50	M12	23	46	228	208.9	200	M24
DIN6987150ODP16X78 (1)	50	M16	29	34	78	58.9	50	M24
DIN6987150ODP16X128 (1)	50	M16	29	40	128	108.9	100	M24
DIN6987150ODP16X178 (1)	50	M16	29	55	178	158.9	150	M24
DIN6987150ODP16X228 (1)	50	M16	29	55	228	208.9	200	M24

(1) Balanced to G6.3 12,000 min^{-1}.

Pull stud
F118

HSK E-ER (Collet chuck holder)

ER collet chucks with HSK-E shank



Designation	SS	CSI	Range	*L*	*L*1	*L*3	ø*D*3	ø*D*2	J
HSKE32ER16X60	32	ER16	0.5-10	60	40	21.5	28	22.4	-
HSKE32ER20X60	32	ER20	1-13	6	40	26	34	25.4	-
HSKE32ER25X65	32	ER25	1-16	65	45	30	42	25.8	-
HSKE40ER16X60	40	ER16	0.5-10	60	40	-	28	-	-
HSKE40ER16X80	40	ER16	0.5-10	80	60	-	28	-	M10
HSKE40ER20X80	40	ER20	1-13	80	60	-	34	-	M12
HSKE40ER25X80	40	ER25	1-16	80	60	28	42	34	M18X1.5
HSKE40ER32X80	40	ER32	2-20	80	60	31	50	40.1	M22X1.5
HSKE50ER16X100 (1)	50	ER16	0.5-10	100	74	-	28	-	M10
HSKE50ER16X100M (1)(3)	50	ER16	0.5-10	100	74	-	22	-	M10
HSKE50ER16X80 (1)	50	ER16	0.5-10	80	54	-	28	-	M10
HSKE50ER20X80 (1)	50	ER20	1-13	80	54	-	34	-	M10
HSKE50ER25X80 (1)	50	ER25	1-16	80	54	28	42	32.4	-
HSKE50ER32X80 (1)	50	ER32	2-20	80	54	31	50	40.4	-
HSKE50ER32X100 (1)	50	ER32	2-20	100	74	31	50	40.4	M22X1.5
HSKE63ER16X80 (2)	63	ER16	0.5-10	80	54	-	28	-	M10
HSKE63ER16X100 (2)	63	ER16	0.5-10	100	74	-	28	-	M10
HSKE63ER20X75 (2)	63	ER20	1-13	75	49	-	34	-	-
HSKE63ER32X80 (2)	63	ER32	2-20	80	54	31	50	40.4	-
HSKE63ER32X100 (2)	63	ER32	2-20	100	75	-	50	-	M22X1.5
HSKE63ER40X80 (2)	63	ER40	3-26	80	54	34	63	-	-

(1) Balanced to G2.5 35,000 min^{-1}. (2) Balanced to G2.5 35,000 min^{-1}. (3) Balanced to G2.5 30,000 min^{-1}.

(Option:Wrench for ER collet)

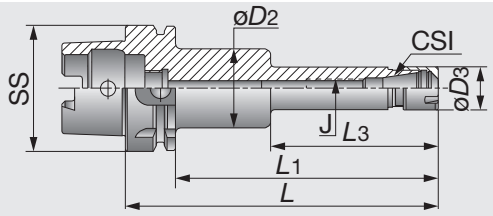
- Equipped with nut ER 16 MINI.

Tooling System

ER Colllet F095
Nut F119
Preset screws F122
Wrench F121, F126
Cooling tube F125

HSK A-ER M (Mini collet chuck holder)

ER Mini-collet chucks with HSK-A shank



Designation	SS	CSI	Range	*L*	L_1	L_3	øD_3	øD_2	J
HSKA50ER16X100M	50	ER16	0.5-10	100	74	-	22	-	M10
HSKA50ER16X120M	50	ER16	0.5-10	120	94	-	22	-	M10
HSKA50ER20X100M	50	ER20	1-13	100	74	-	28	-	M12
HSKA50ER20X120M	50	ER20	1-13	120	94	-	28	-	M12
HSKA63ER16X100M	63	ER16	0.5-10	100	74	-	22	-	M10
HSKA63ER16X120M	63	ER16	0.5-10	120	94	78	22	40	M10
HSKA63ER16X160M	63	ER16	0.5-10	160	134	85	22	40	M10
HSKA63ER20X100M	63	ER20	1-13	100	74	-	28	-	M12
HSKA63ER20X120M	63	ER20	1-13	120	94	-	28	-	M12
HSKA63ER20X160M	63	ER20	1-13	160	134	85	28	45	M12
HSKA100ER16X100M (1)	100	ER16	0.5-10	100	71	-	22	-	M10
HSKA100ER16X160M (1)	100	ER16	0.5-10	160	131	85	22	40	M10
HSKA100ER20X100M (1)	100	ER20	1-13	100	71	-	28	-	M12
HSKA100ER20X160M (1)	100	ER20	1-13	160	131	85	28	45	M12

(1) Balance to G6.3 12,000 min^{-1}.

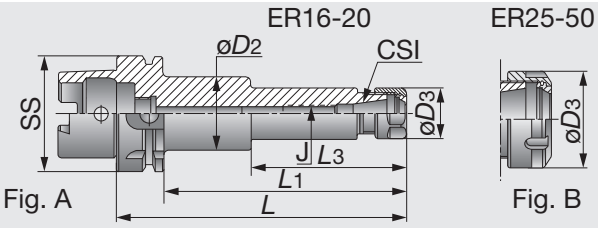
(Option:Wrench for ER collet)

Tooling System

ER Colllet F095 | Nut F119 | Preset screws F122 | Wrench F121, F126 | Cooling tube F125

HSK A-ER (Collet chuck holder)

ER collet chucks with HSK-A shank



Designation	SS	CSI	Range	*L*	*L*1	*L*3	ø*D*3	ø*D*2	J	Fig.
HSKA40ER16X60	40	ER16	0.5-10	60	40	-	28	-	M10	A
HSKA40ER16X80	40	ER16	0.5-10	80	60	-	28	-	M10	A
HSKA40ER16X100	40	ER16	0.5-10	100	80	-	28	-	M10	A
HSKA50ER16X100	50	ER16	0.5-10	100	74	-	28	-	M10	A
HSKA50ER16X120	50	ER16	0.5-10	120	94	-	28	-	M10	A
HSKA50ER20X100	50	ER20	1-13	100	74	-	34	-	M12	A
HSKA50ER20X120	50	ER20	1-13	120	94	-	34	-	M12	A
HSKA63ER16X100	63	ER16	0.5-10	100	74	-	28	-	M10	A
HSKA63ER16X120	63	ER16	0.5-10	120	94	-	28	-	M10	A
HSKA63ER16X160	63	ER16	0.5-10	160	134	85.6	28	40	M10	A
HSKA63ER20X100	63	ER20	1-13	100	74	-	34	-	M12	A
HSKA63ER20X120	63	ER20	1-13	120	94	-	34	-	M12	A
HSKA63ER20X160	63	ER20	1-13	160	134	85.0	34	45	M12	A
HSKA100ER16X100 (1)	100	ER16	0.5-10	100	71	-	28	-	M10	A
HSKA100ER16X160 (1)	100	ER16	0.5-10	160	131	85	28	40	M10	A
HSKA100ER20X100 (1)	100	ER20	1-13	100	71	-	34	-	M12	A
HSKA100ER20X160 (1)	100	ER20	1-13	160	131	85	34	45	M12	A
HSKA40ER25X80	40	ER25	1-16	80	60	28	42	32.4	M18x1.5	B
HSKA40ER25X100	40	ER25	1-16	100	80	28	42	32.4	M16	B
HSKA40ER32X100	40	ER32	2-20	100	80	31	50	40.4	M22x1.5	B
HSKA50ER25X80	50	ER25	1-16	80	54	28	42	32.4	M16	B
HSKA50ER25X100	50	ER25	1-16	100	74	28.5	42	41.8	M16	B
HSKA50ER32X100	50	ER32	2-20	100	74	31	50	40.4	M22x1.5	B
HSKA50ER32X120	50	ER32	2-20	120	94	35	50	41.8	M22x1.5	B
HSKA63ER25X80	63	ER25	1-16	80	54	-	42	-	M16	B
HSKA63ER25X100	63	ER25	1-16	100	74	-	42	-	M16	B
HSKA63ER25X120	63	ER25	1-16	120	94	-	42	-	M16	B
HSKA63ER25X160	63	ER25	1-16	160	134	-	42	-	M16	B
HSKA63ER32X80	63	ER32	2-20	80	54	31	50	40.4	M22x1.5	B
HSKA63ER32X100	63	ER32	2-20	100	74	-	50	-	M22x1.5	B
HSKA63ER32X120	63	ER32	2-20	120	94	-	50	-	M22x1.5	B
HSKA63ER32X140	63	ER32	2-20	140	114	-	50	-	M22x1.5	B
HSKA63ER32X160	63	ER32	2-20	160	134	-	50	-	M22x1.5	B
HSKA63ER40X80	63	ER40	3-26	80	54	34	63	50.4	-	B
HSKA63ER40X100	63	ER40	3-26	100	74	34	63	50.4	M28x1.5	B
HSKA63ER40X120	63	ER40	3-26	120	94	34	63	50.4	M28x1.5	B
HSKA100ER25X100	100	ER25	1-16	100	71	-	42	-	M16	B
HSKA100ER25X120	100	ER25	1-16	120	91	-	42	-	M16	B
HSKA100ER25X160	100	ER25	1-16	160	134	-	42	-	M16	B
HSKA100ER32X100	100	ER32	2-20	100	71	-	50	-	M22x1.5	B
HSKA100ER32X120	100	ER32	2-20	120	91	-	50	-	M22x1.5	B
HSKA100ER32X160	100	ER32	2-20	160	131	-	50	-	M22x1.5	B
HSKA100ER40X100	100	ER40	3-26	100	71	-	63	-	M28x1.5	B
HSKA100ER40X120	100	ER40	3-26	120	91	-	63	-	M28x1.5	B
HSKA100ER40X160	100	ER40	3-26	160	131	-	63	-	M28x1.5	B
HSKA100ER50X100	100	ER50	10-34	100	71	-	78	-	-	B

(1) Balanced to G6.3 12,000 min^{-1}.

(Option:Wrench for ER collet)

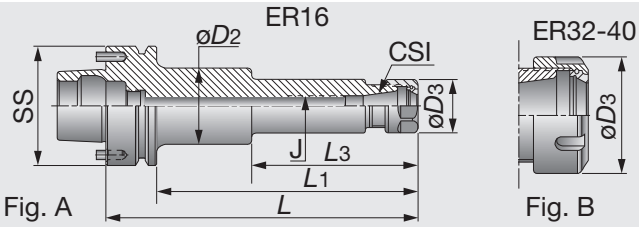
Tooling System

ER Colllet F095 | Nut F119 | Preset screws F122 | Wrench F121, F126 | Cooling tube F125

TUNGHOLD

HSK FM-ER (Collet chuck holder)

ER collet chucks with HSK-FM shank



Designation	SS	CSI	Range	*L*	*L*1	*L*3	ø*D*3	ø*D*2	J	Fig.
HSKFM63ER16X80	63	ER16	0.5-10	80	54	-	28	-	M10	A
HSKFM63ER16X100	63	ER16	0.5-10	100	74	-	28	-	M10	A
HSKFM63ER16X120	63	ER16	0.5-10	120	94	-	28	-	M10	A
HSKFM63ER16X160	63	ER16	0.5-10	160	134	85.6	28	40	M10	A
HSKFM63ER32X80	63	ER32	2-20	80	54	-	50	-	-	B
HSKFM63ER32X100	63	ER32	2-20	100	74	-	50	-	M22x1.5	B
HSKFM63ER40X80	63	ER40	3-26	80	54	32	63	50	-	B
HSKFM63ER40X100	63	ER40	3-26	100	74	32	63	50	M28x1.5	B

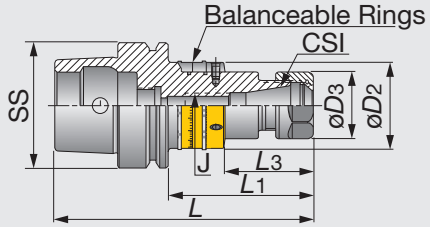
• The driving pins can be removed, turning the toolholder into a standard HSK "F63" type.

(Option:Wrench for ER collet)

TUNGBALANCE

HSK E-ER BIN (Collet chuck holder)

TungBalance adjustable dynamic balance collet chuck holder with HSK-E shank



Designation	SS	CSI	Range	*L*	*L*1	*L*3	ø*D*3	ø*D*2	J
HSKE63ER16X100BIN	63	ER16	0.5-10	100	74	45	28	44	M10
HSKE63ER20X100BIN	63	ER20	1-13	100	74	45.1	34	44	M12
HSKE63ER25X100BIN	63	ER25	1-16	100	74	45.2	42	44	M16
HSKE63ER32X120BIN	63	ER32	2-20	120	94	48	50	60	M22x1.5

• Balanced to G2.5 20,000 min^{-1}.

(Option:Wrench for ER collet

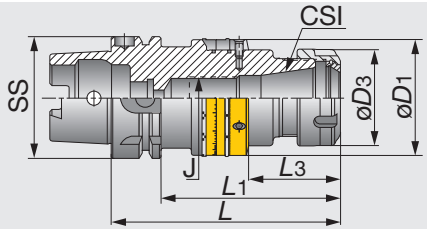
Tooling System

ER Colllet F095 | Nut F119 | Preset screws F122 | Wrench F121, F126 | Cooling tube F125

TUNGBALANCE

HSK A-ER BIN (Collet chuck holder)

TungBalance adjustable dynamic balance collet chuck holder with HSK-A shank



Designation	SS	CSI	Range	*L*	*L*1	*L*3	ø*D*3	ø*D*1	J
HSKA63ER16X100BIN	63	ER16	0.5-10	100	74	45	28	44	M10
HSKA63ER16X160BIN	63	ER16	0.5-10	160	134	75	28	44	M10
HSKA63ER20X100BIN	63	ER20	1-13	100	74	45.1	34	44	M12
HSKA63ER20X160BIN	63	ER20	1-13	160	134	86.1	34	44	M12
HSKA63ER25X100BIN	63	ER25	1-16	100	74	45.2	42	44	M16
HSKA63ER25X160BIN	63	ER25	1-16	160	134	86.2	42	44	M16
HSKA63ER32X120BIN	63	ER32	2-20	120	94	48	50	60	M22x1.5
HSKA63ER32X160BIN	63	ER32	2-20	160	134	85	50	60	M22x1.5

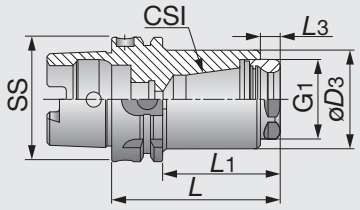
• Balanced to G2.5 20,000 min^{-1}.

(Option:Wrench for ER collet)

TUNGSHORT

HSK A-SHORT (Collet chuck holder for short overhang)

TungShort collet chucks with HSK-A shank



Designation	SS	CSI	Range	*L*	*L*1	*L*3	ø*D*3	G1
HSKA63ER32SHORT	63	ER32	2-20	84.5	56.1	9.5	50	M40x1.5
HSKA100ER32SHORT	100	ER32	2-20	89.5	60.5	9.5	50	M40x1.5
HSKA100ER40SHORT	100	ER40	3-26	104.5	75.5	9.5	70	M50x1.5

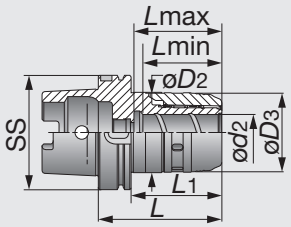
• Balanced to G6.3 8,000 min^{-1}.

(Option:Wrench for ER collet)

TUNGMAX

HSK A-TUNGMAX (Power chuck holder)

TungMax endmill chuck holders with HSK-A shank



Designation	SS	ø*d*2	Range	*L*	*L*1	*L*min	*L*max	ø*D*3	ø*D*2
HSKA63MAXIN20X95	63	20	6-20	95	69	56	66	51	53
HSKA63MAXIN32X113	63	32	6-32	113	87	70	85	69	70
HSKA100MAXIN20X115 (1)	100	20	6-20	115	86	56	69	51	53
HSKA100MAXIN32X135 (1)	100	32	6-32	135	106	71	87	69	70

(1) Balanced to G6.3 8,000 min^{-1}.

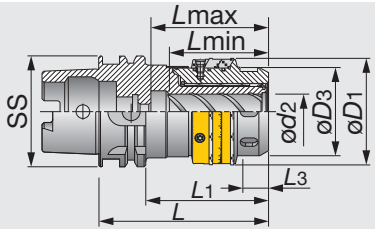
(Option:Wrench for TungMax collet)

ER Colllet F095 | Nut F119 | Preset screws F122 | Wrench F121, F126 | Cooling tube F125 | Straight collet F105

TUNGBALANCE

HSK A-TUNGMAX BIN (Power chuck holder)

TungMax adjustable dynamic balancable endmill chuck holders with HSK-A shank



Designation	SS	ød2	Range	L	L1	L3	Lmin	Lmax	øD3	øD1
HSKA63MAXIN20X95BIN (1)	63	20	6-20	95	69	17.5	56	66	51	61
HSKA63MAXIN32X113BIN (1)	63	32	6-32	113	87	24.9	70	85	69	80
HSKA100MAXIN20X115BIN (2)	100	20	6-20	115	86	17.5	56	69	51	61
HSKA100MAXIN32X110BIN (2)	100	32	6-32	110	81	24.9	70	78	69	80

(1) Chucks with taper size HSK A63 can be balanced by the balancing ring up to G2.5 at 20,000 min^{-1}.
(2) Chucks with taper size HSK A100 can be balanced by the balancing ring up to G2.5 at 18,000 min^{-1}.

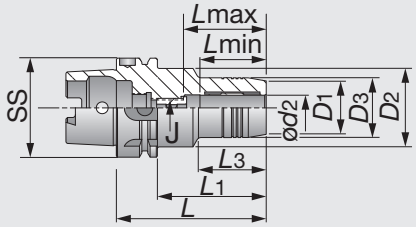
(Option:Wrench for TungMax collet)

Tooling System

Straight collet F105
Cooling tube F125
Wrench F121, F126

HSK A-HYDRO (Hydro chuck holder)

TungHydro hydraulic endmill chuck holders with HSK-A shank



Designation	SS	ød2	øD3	øD1	øD2	L	L1	L3	Lmin	Lmax	J
HSKA50HYDRO6X80	50	6	26	23	42	80	54	35	27	37	M5
HSKA50HYDRO8X80	50	8	28	25	42	80	54	36	27	37	M6
HSKA50HYDRO16X95	50	16	38	34	42	95	69	52	42	52	M12x1
HSKA50HYDRO20X100	50	20	42	38	42	100	74	74	42	52	M16x1
HSKA63HYDRO6X80	63	6	26	23	50	80	54	33	27	37	M5
HSKA63HYDRO8X80	63	8	28	25	50	80	54	33	27	37	M6
HSKA63HYDRO10X85	63	10	30	27	50	85	59	39	32	42	M8x1
HSKA63HYDRO12X90	63	12	32	29	50	90	64	44	37	47	M10x1
HSKA63HYDRO14X90	63	14	34	30	50	90	64	46	37	47	M10x1
HSKA63HYDRO16X95	63	16	38	34	50	95	69	52	42	52	M12x1
HSKA63HYDRO18X95	63	18	40	36	50	95	69	52	42	52	M12x1
HSKA63HYDRO20X100	63	20	42	38	50	100	74	58	42	52	M16x1
HSKA63HYDRO25X120	63	25	50	46	50	120	94	94	48	58	M16x1
HSKA63HYDRO32X125	63	32	60	56	50	125	99	83	52	62	M16x1
HSKA80HYDRO6X85	80	6	26	23	50	85	59	37	27	37	M5
HSKA80HYDRO10X90	80	10	30	27	50	90	64	42	32	42	M8x1
HSKA80HYDRO14X95	80	14	34	30	50	95	69	47	37	47	M10x1
HSKA80HYDRO16X100	80	16	38	34	50	100	74	52	42	52	M12x1
HSKA80HYDRO18X100	80	18	40	36	50	100	74	52	42	52	M12x1
HSKA80HYDRO20X105	80	20	42	38	50	105	79	52	42	52	M16x1
HSKA80HYDRO25X115	80	25	50	46	50	115	89	58	48	58	M16x1
HSKA100HYDRO6X85	100	6	26	23	63	85	56	29	27	37	M5
HSKA100HYDRO8X85	100	8	28	25	63	85	56	29	27	37	M6
HSKA100HYDRO10X90	100	10	30	27	63	90	61	35	32	42	M8x1
HSKA100HYDRO12X95	100	12	32	29	63	95	66	40	37	47	M10x1
HSKA100HYDRO14X95	100	14	34	30	63	95	66	42	37	47	M10x1
HSKA100HYDRO16X100	100	16	38	34	63	100	71	47	42	52	M12x1
HSKA100HYDRO18X100	100	18	40	36	63	100	71	48	42	52	M12x1
HSKA100HYDRO20X105	100	20	42	38	63	105	76	54	42	52	M16x1
HSKA100HYDRO25X115	100	25	50	46	63	115	86	51	48	58	M16x1
HSKA100HYDRO32X120	100	32	60	56	63	120	91	59	52	62	M16x1

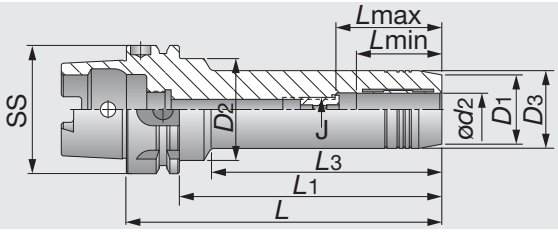
- Clamping Wrench (wrench HYDRO HEX 4) should be ordered separately.
- Note: Available are reduction sleeves for 12, 20, 25 and 32 mm bore diameters.
- Chucking forces will significantly reduce if reduction sleeves are used (ordered separately).

Straight collet F107
Cooling tube F125
Wrench F121, F126

TUNGHYDRO

HSK A-HYDRO (Hydro chuck holder for long overhang)

TungHydro long projection hydraulic endmill chuck holders with HSK-A shank



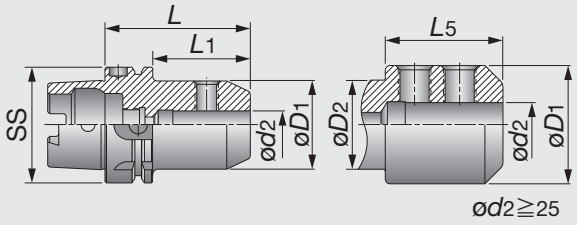
Designation	SS	ød2	øD3	øD1	øD2	L	L1	L3	Lmin	Lmax	J
HSKA63HYDRO6X150	63	6	26	23	50	150	124	103	27	37	M5
HSKA63HYDRO6X200	63	6	26	23	50	200	174	153	27	37	M5
HSKA63HYDRO8X150	63	8	28	25	50	150	124	104	27	37	M6
HSKA63HYDRO10X150	63	10	30	27	50	150	124	104	32	42	M8x1
HSKA63HYDRO10X200	63	10	30	27	50	200	174	154	32	42	M8x1
HSKA63HYDRO12X150	63	12	32	29	50	150	124	105	37	47	M10x1
HSKA63HYDRO12X200	63	12	32	29	50	200	174	155	37	47	M10x1
HSKA63HYDRO14X150	63	14	34	30	50	150	124	105	37	47	M10x1
HSKA63HYDRO16X150	63	16	38	34	50	150	124	106.5	42	52	M12x1
HSKA63HYDRO16X200	63	16	38	34	50	200	174	156.5	42	52	M12x1
HSKA63HYDRO20X150	63	20	42	38	50	150	124	108	42	52	M12x1
HSKA63HYDRO20X200	63	20	42	38	50	200	174	158	42	52	M12x1
HSKA63HYDRO25X150	63	25	50	46	50	150	124	-	48	58	M16x1
HSKA63HYDRO25X200	63	25	50	46	50	200	174	-	48	58	M16x1
HSKA100HYDRO6X150	100	6	26	23	50	150	124	94	27	37	M6
HSKA100HYDRO6X200	100	6	26	23	50	200	174	144	27	37	M6
HSKA100HYDRO8X150	100	8	28	25	50	150	124	94.5	27	37	M6
HSKA100HYDRO8X200	100	8	28	25	50	200	174	144.5	27	37	M6
HSKA100HYDRO10X150	100	10	30	27	50	150	124	95	32	42	M8x1
HSKA100HYDRO10X200	100	10	30	27	50	200	174	145	32	42	M8x1
HSKA100HYDRO12X150	100	12	32	29	50	150	124	95.5	37	47	M10x1
HSKA100HYDRO12X200	100	12	32	29	50	200	174	145.5	37	47	M10x1
HSKA100HYDRO14X150	100	14	34	30	50	150	124	97	37	47	M10x1
HSKA100HYDRO14X200	100	14	34	30	50	200	174	147	37	47	M10x1
HSKA100HYDRO16X150	100	16	38	34	50	150	124	97.5	42	52	M12x1
HSKA100HYDRO16X200	100	16	38	34	50	200	174	147.5	42	52	M12x1
HSKA100HYDRO18X150	100	18	40	36	50	150	124	98	42	52	M12x1
HSKA100HYDRO18X200	100	18	40	36	50	200	174	148	42	52	M12x1
HSKA100HYDRO20X150	100	20	42	38	50	150	124	99	42	52	M12x1
HSKA100HYDRO20X200	100	20	42	38	50	200	174	149	42	52	M12x1
HSKA100HYDRO25X200	100	25	50	46	50	200	174	-	48	58	M16x1
HSKA100HYDRO32X200	100	32	60	56	60	200	174	-	52	62	M16x1

- Clamping Wrench (wrench HYDRO HEX 4) should be ordered separately.
- Note: Available are reduction sleeves for 12, 20, 25 and 32 mm bore diameters.
- Chucking forces will significantly reduce if reduction sleeves are used (ordered separately).

Straight collet F107
Cooling tube F125
Wrench F121, F126

HSK A-EM (Endmill holder)

Screw locking endmill holders with HSK-A shank



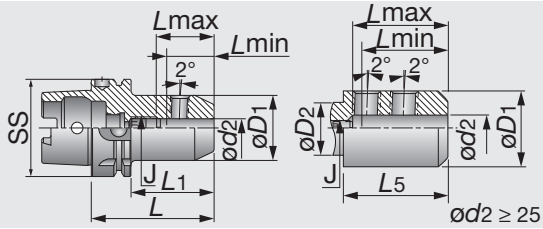
Designation	SS	ød2	øD1	øD2	L	L1	L5
HSKA50EM6X65	50	6	25	-	65	39	-
HSKA50EM8X65	50	8	28	-	65	39	-
HSKA50EM10X65	50	10	35	-	65	39	-
HSKA50EM14X80	50	14	44	41.8	80	54	38
HSKA50EM16X80	50	16	48	41.8	80	54	38
HSKA50EM18X80	50	18	50	41.8	80	54	38
HSKA50EM20X80	50	20	52	41.8	80	54	38
HSKA63EM6X65	63	6	25	-	65	39	-
HSKA63EM8X65	63	8	28	-	65	39	-
HSKA63EM10X65	63	10	35	-	65	39	-
HSKA63EM12X80	63	12	42	-	80	54	-
HSKA63EM14X80	63	14	44	-	80	54	-
HSKA63EM16X80	63	16	48	-	80	54	-
HSKA63EM18X80	63	18	50	-	80	54	-
HSKA63EM20X80	63	20	52	-	80	54	-
HSKA63EM25X110	63	25	65	52	110	84	65.5
HSKA63EM32X110	63	32	72	52	110	84	65.5
HSKA100EM6X80	100	6	25	-	80	51	-
HSKA100EM8X80	100	8	28	-	80	51	-
HSKA100EM10X80	100	10	35	-	80	51	-
HSKA100EM12X80	100	12	42	-	80	51	-
HSKA100EM14X80	100	14	44	-	80	51	-
HSKA100EM16X100	100	16	48	-	100	71	-
HSKA100EM18X100	100	18	50	-	100	71	-
HSKA100EM20X100	100	20	52	-	100	71	-
HSKA100EM25X100	100	25	65	-	100	71	-
HSKA100EM32X100	100	32	72	-	100	71	-

Wrench F126
Cooling tube F125

TUNGHOLD

HSK A-EM E (Endmill holder with whistle notch)

Screw locking endmill holders for whistle notch with HSK-A shank



Designation	SS	ød2	øD1	øD2	L	L1	L5	Lmin	Lmax	J	key
HSKA50EM6X80E	50	6	25	-	80	54	-	30	38	M5	2.5
HSKA50EM8X80E	50	8	28	-	80	54	-	35	40	M6	3
HSKA50EM10X80E	50	10	35	-	80	54	-	39	44	M8	4
HSKA50EM12X90E	50	12	42	41.8	90	64	48	44	49	M10	5
HSKA50EM14X90E	50	14	44	41.8	90	64	48	44	49	M10	5
HSKA50EM16X90E	50	16	48	41.8	90	64	48	47	52	M12	6
HSKA50EM18X90E	50	18	50	41.8	90	64	48	47	52	M12	6
HSKA50EM20X100E	50	20	52	41.8	100	74	58	49	54	M16	8
HSKA63EM6X80E	63	6	25	-	80	54	-	32	40	M5	2
HSKA63EM8X80E	63	8	28	-	80	54	-	35	40	M6	3
HSKA63EM10X80E	63	10	35	-	80	54	-	39	44	M8	4
HSKA63EM12X90E	63	12	42	-	90	64	-	44	49	M10	5
HSKA63EM14X90E	63	14	44	-	90	64	-	44	49	M10	5
HSKA63EM16X100E	63	16	48	-	100	74	-	47	52	M12	6
HSKA63EM18X100E	63	18	50	-	100	74	-	47	55	M12	6
HSKA63EM20X100E	63	20	52	-	100	74	-	49	54	M16	8
HSKA63EM25X110E	63	25	65	52	110	84	65.5	54	61	M16	8
HSKA63EM32X110E	63	32	72	52	110	84	65.5	58	63	M20X1.5	10
HSKA100EM6X90E	100	6	25	-	90	61	-	35	40	M5	2.5
HSKA100EM8X90E	100	8	28	-	90	61	-	35	40	M6	3
HSKA100EM10X90E	100	10	35	-	90	61	-	39	44	M8	4
HSKA100EM12X100E	100	12	42	-	100	71	-	44	54	M10	5
HSKA100EM14X100E	100	14	44	-	100	71	-	44	54	M10	5
HSKA100EM16X100E	100	16	48	-	100	71	-	47	52	M12	6
HSKA100EM18X100E	100	18	50	-	100	71	-	47	52	M12	6
HSKA100EM20X110E	100	20	52	-	110	81	-	49	54	M16	8
HSKA100EM25X120E	100	25	65	-	120	91	-	54	61	M20X1.5	10
HSKA100EM32X120E	100	32	72	-	120	91	-	58	63	M20X1.5	10

(1) The adjustment screw has an internal coolant hole.

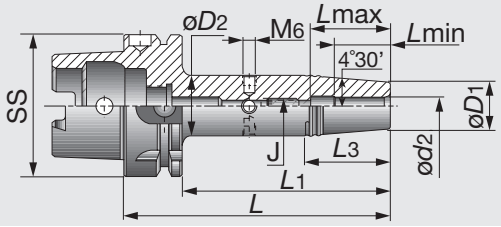
Tooling System

Wrench F126
Cooling tube F125

TUNGSHRINK

HSK A-SRKIN (Shrink holder)

TungShrink thermal shrinking holder for carbide and HSS with HSK-A shank



Designation	SS	ød2	øD1	øD2	L	L1	L3	Lmin	Lmax	J	key
HSKA63SRKIN6X80	63	6	21	27	80	54	38	25	36	M5	2.5
HSKA63SRKIN6X120	63	6	21	27	120	94	38	25	36	M5	2.5
HSKA63SRKIN6X160	63	6	21	27	160	134	38	25	36	M5	2.5
HSKA63SRKIN8X80	63	8	21	27	80	54	38	25	36	M6	3
HSKA63SRKIN8X120	63	8	21	27	120	94	38	25	36	M6	3
HSKA63SRKIN8X160	63	8	21	27	160	134	38	25	36	M6	3
HSKA63SRKIN10X85	63	10	24	32	85	59	51	31	42	M8	4
HSKA63SRKIN10X120	63	10	24	32	120	94	51	31	42	M8	4
HSKA63SRKIN10X160	63	10	24	32	160	134	51	31	42	M8	4
HSKA63SRKIN12X90	63	12	24	32	90	64	51	36	42	M8	4
HSKA63SRKIN12X120	63	12	24	32	120	94	51	36	47	M10	5
HSKA63SRKIN12X160	63	12	24	32	160	134	51	36	47	M10	5
HSKA63SRKIN14X90	63	14	27	34	90	64	45	36	47	M10	5
HSKA63SRKIN14X120	63	14	27	34	120	94	45	36	47	M10	5
HSKA63SRKIN14X160	63	14	27	34	160	134	45	36	47	M10	5
HSKA63SRKIN16X75	63	16	27	34	75	49	-	39	50	-	-
HSKA63SRKIN16X95	63	16	27	34	95	69	44	39	50	M12	6
HSKA63SRKIN16X120	63	16	27	34	120	94	44	39	50	M12	6
HSKA63SRKIN16X160	63	16	27	34	160	134	44	39	50	M12	6
HSKA63SRKIN18X95	63	18	33	42	95	69	57	39	50	M12	6
HSKA63SRKIN18X120	63	18	33	42	120	94	57	39	50	M12	6
HSKA63SRKIN18X160	63	18	33	42	160	134	57	39	50	M12	6
HSKA63SRKIN20X75	63	20	33	41	75	49	-	41	50	-	-
HSKA63SRKIN20X100	63	20	33	42	100	74	57	41	52	M16	8
HSKA63SRKIN20X120	63	20	33	42	120	94	57	41	52	M16	8
HSKA63SRKIN20X160	63	20	33	42	160	134	57	41	52	M16	8
HSKA63SRKIN25X85	63	25	44	53	85	59	-	47	58	-	-
HSKA63SRKIN25X115	63	25	44	53	115	89	55	47	58	M16	8
HSKA63SRKIN32X85	63	32	44	53	85	59	-	47	58	-	-
HSKA63SRKIN32X120	63	32	44	53	120	94	55	47	58	M16	8
HSKA100SRKIN6X85	100	6	21	27	85	56	38	25	36	M5	2.5
HSKA100SRKIN6X120	100	6	21	27	120	91	38	25	36	M5	2.5
HSKA100SRKIN6X160	100	6	21	27	160	131	38	25	36	M6	3
HSKA100SRKIN8X85	100	8	21	27	85	56	38	25	36	M6	3
HSKA100SRKIN8X120	100	8	21	27	120	91	38	25	36	M6	3
HSKA100SRKIN8X160	100	8	21	27	160	131	38	25	36	M6	3
HSKA100SRKIN10X90	100	10	24	32	90	61	51	31	42	M8	4
HSKA100SRKIN10X120	100	10	24	32	120	91	51	31	42	M8	4
HSKA100SRKIN10X160	100	10	24	32	160	131	51	31	42	M8	4
HSKA100SRKIN12X95	100	12	24	32	95	66	51	36	47	M10	5
HSKA100SRKIN12X120	100	12	24	32	120	91	51	36	47	M10	5
HSKA100SRKIN12X160	100	12	24	32	160	131	51	36	47	M10	5
HSKA100SRKIN14X95	100	14	27	34	95	66	45	36	47	M10	5
HSKA100SRKIN14X120	100	14	27	34	120	91	45	36	47	M10	5
HSKA100SRKIN14X160	100	14	27	34	160	131	45	36	47	M10	5
HSKA100SRKIN16X100	100	16	27	34	100	71	45	39	50	M12	6
HSKA100SRKIN16X120	100	16	27	34	120	91	45	39	50	M12	6
HSKA100SRKIN16X160	100	16	27	34	160	131	45	39	50	M12	6
HSKA100SRKIN18X100	100	18	33	42	100	71	57	39	50	M12	6
HSKA100SRKIN18X160	100	18	33	42	160	131	57	39	50	M12	6
HSKA100SRKIN20X105	100	20	33	42	105	76	57	41	52	M16	8
HSKA100SRKIN20X160	100	20	33	42	160	131	57	41	52	M16	8
HSKA100SRKIN25X115	100	25	44	53	115	86	57	47	58	M16	8
HSKA100SRKIN32X120	100	32	44	53	120	91	57	47	58	M16	8

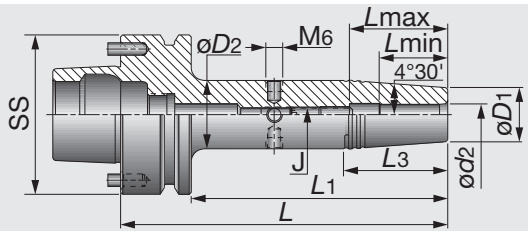
• Use only inductive heating device for SRKIN holders.

Induction heating unit F113
Heating unit F113
Preset screws F124
Wrench F126
Cooling tube F125

TUNGSHRINK

HSK FM-SRKIN (Shrink holder)

TungShrink thermal shrinking holder for carbide and HSS with HSK-FM shank



Designation	SS	ød2	øD1	øD2	L	L1	L3	Lmin	Lmax	J	key
HSKFM63SRKIN6X80	63	6	21	27	80	54	38	25	36	M5	2.5
HSKFM63SRKIN8X80	63	8	21	27	80	54	38	25	36	M6	3
HSKFM63SRKIN10X85	63	10	24	32	85	59	50.5	31	42	M8	4
HSKFM63SRKIN12X90	63	12	24	32	90	64	50.5	36	47	M10	5
HSKFM63SRKIN14X90	63	14	27	34	90	64	44.5	36	47	M10	5
HSKFM63SRKIN16X95	63	16	27	34	95	69	44.5	39	50	M12	6
HSKFM63SRKIN18X95	63	18	33	42	95	69	57	39	50	M12	6
HSKFM63SRKIN20X100	63	20	33	42	100	74	57	41	52	M16	8
HSKFM63SRKIN25X115	63	25	44	52.7	115	89	55	47	58	M16	8
HSKFM63SRKIN32X120	63	32	44	52.7	120	94	55	47	58	M16	8

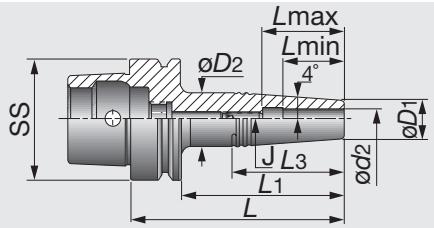
• The driving pins can be removed, turning the toolholder into a standard HSKF63 type. • Use only inductive heating device for SRKIN holders.

Induction heating unit F113
Heating unit F113
Preset screws F124
Wrench F126
Cooling tube F125

TUNGSHRINK

HSK E-SRK (Shrink holder)

TungShrink thermal shrinking holder for carbide shank with HSK-E shank



Designation	SS	ød2	øD1	øD2	L	L1	L3	Lmin	Lmax	J	key
HSKE32SRK3X45	32	3	10	13	65	45	30	10	16	M4	2
HSKE32SRK4X45	32	4	10	15	65	45	35	12	18	M4	2
HSKE32SRK5X45	32	5	10	15	65	45	35	15	25	M4	2
HSKE32SRK6X45	32	6	11	16	65	45	35	18	28	M4	2
HSKE32SRK8X45	32	8	14	20	65	45	42	25	35	M4	2
HSKE32SRK10X45	32	10	16	22	65	45	42	30	40	M4	2
HSKE32SRK12X45	32	12	20	25	65	45	35.6	32	40	M4	2
HSKE40SRK3X45	40	3	10	13	65	45	30	10	16	M5	2.5
HSKE40SRK3X80	40	3	10	19	100	80	64	10	16	M5	2.5
HSKE40SRK4X45	40	4	10	15	65	45	35	12	18	M5	2.5
HSKE40SRK4X80	40	4	10	19	100	80	64	12	18	M5	2.5
HSKE40SRK5X45	40	5	10	15	65	45	35	15	25	M4	2
HSKE40SRK5X80	40	5	10	19	100	80	64	15	25	M4	2
HSKE40SRK6X45	40	6	11	16	65	45	35	18	28	M5	2.5
HSKE40SRK6X80	40	6	11	20	100	80	64	18	28	M5	2.5
HSKE40SRK8X45	40	8	14	20	65	45	42	25	35	M5	2.5
HSKE40SRK8X80	40	8	14	23	100	80	64	25	35	M6	3
HSKE40SRK10X45	40	10	16	22	65	45	42	30	40	M5	2.5
HSKE40SRK10X80	40	10	16	24.5	100	80	60	30	40	M8	4
HSKE40SRK12X45	40	12	20	26	65	45	42	32	42	M5	2.5
HSKE40SRK12X80	40	12	20	28	100	80	56	32	42	M10	5
HSKE50SRK3X45 (1)	50	3	10	15	71	45	36	10	16	M5	2.5
HSKE50SRK3X80 (1)	50	3	10	19	106	80	64	10	16	M5	2.5
HSKE50SRK4X45 (1)	50	4	10	15	71	45	36	12	18	M5	2.5
HSKE50SRK4X80 (1)	50	4	10	19	106	80	64	12	18	M5	2.5
HSKE50SRK5X45 (1)	50	5	10	15	71	45	36	15	21	M6	3
HSKE50SRK5X80	50	5	10	19	106	80	64	15	21	M6	3
HSKE50SRK6X45 (1)	50	6	11	16	71	45	36	18	28	M5	2.5
HSKE50SRK6X80 (1)	50	6	11	20	106	80	64	18	28	M5	2.5
HSKE50SRK8X45 (1)	50	8	14	20	71	45	43	25	35	M6	3
HSKE50SRK8X80 (1)	50	8	14	23	106	80	64	25	35	M6	3
HSKE50SRK10X45 (1)	50	10	16	22	71	45	42	30	37	M6	3
HSKE50SRK10X80 (1)	50	10	16	24.5	106	80	60	30	40	M8	4
HSKE50SRK12X45 (1)	50	12	20	26	71	45	42	32	39	M6	3
HSKE50SRK12X80 (1)	50	12	20	28	106	80	57	32	42	M10	5
HSKE63SRK3X50	63	3	10	17	76	50	48	10	16	M6	3
HSKE63SRK3X80	63	3	10	19	106	80	64	10	16	M6	3
HSKE63SRK4X50	63	4	10	17	76	50	48	12	18	M6	3
HSKE63SRK4X80	63	4	10	19	106	80	64	12	18	M6	3
HSKE63SRK5X45	63	5	10	15	71	45	36	15	21	M6	3
HSKE63SRK5X80	63	5	10	19	106	80	64	15	21	M6	3
HSKE63SRK6X50	63	6	11	18	76	50	48	18	24	M8	4
HSKE63SRK6X80	63	6	11	20	106	80	64	18	24	M8	4
HSKE63SRK8X50	63	8	14	21	76	50	48	25	35	M6	3
HSKE63SRK8X80	63	8	14	23	106	80	64	25	35	M6	3
HSKE63SRK10X50	63	10	16	23	76	50	48	30	40	M8	4
HSKE63SRK10X80	63	10	16	24.5	106	80	60	30	40	M8	4
HSKE63SRK12X50	63	12	20	27	76	50	48	32	42	M8	4
HSKE63SRK12X80	63	12	20	28	106	80	57	32	42	M10	5
HSKE63SRK12X90	63	12	20	28	116	90	57	32	43	M10	5

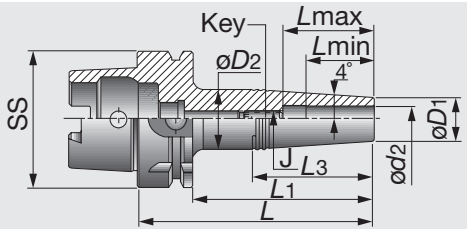
(1) Balanced to G2.5 35,000 min^{-1}.

Induction heating unit F113
Heating unit F113
Preset screws F124
Wrench F126
Cooling tube F125

TUNGSHRINK

HSK A-SRK (Shrink holder)

TungShrink thermal shrinking holder for carbide shank with HSK-A shank

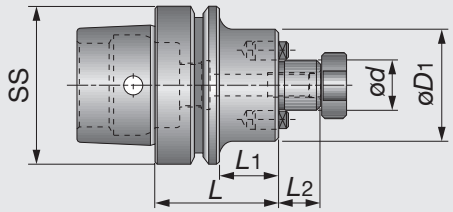


Designation	SS	ød2	øD1	øD2	L	L1	L3	Lmin	Lmax	J	key
HSKA63SRK3X50	63	3	10	17	76	50	-	10	16	M6	3
HSKA63SRK3X85	63	3	10	21	111	85	79	10	16	M6	3
HSKA63SRK4X50	63	4	10	17	76	50	-	12	18	M6	3
HSKA63SRK4X85	63	4	10	21	111	85	79	12	18	M6	3
HSKA63SRK5X50	63	5	10	17	76	50	-	15	21	M6	3
HSKA63SRK5X85	63	5	10	21	111	85	79	15	21	M6	3
HSKA63SRK6X50	63	6	11	18	76	50	-	18	24	M8	4
HSKA63SRK6X85	63	6	11	22	111	85	79	18	24	M8	4
HSKA63SRK8X50	63	8	14	20	76	50	43	25	36	M6	3
HSKA63SRK8X85	63	8	14	23	111	85	64	25	36	M6	3
HSKA63SRK10X50	63	10	16	23	76	50	-	30	41	M8	4
HSKA63SRK10X85	63	10	16	26	111	85	72	30	41	M8	4
HSKA63SRK12X50	63	12	20	27	76	50	-	32	43	M8	4
HSKA63SRK12X85	63	12	20	30	111	85	72	32	43	M8	4

TUNGHOLD

HSK E-SEM (Shell mill holder)

Shell mill holder with HSK-E shank



Designation	SS	ød	L2	øD1	L	L1
HSKE40SEM16X50	40	16	17	38	50	30
HSKE40SEM22X50	40	22	19	47	50	30
HSKE50SEM22X60	50	22	19	47	60	34
HSKE63SEM16X50	63	16	17	38	50	24
HSKE63SEM22X50	63	22	19	47	50	24
HSKE32SEM3/4X2	32	19.05	17	44.5	50.8	30.8
HSKE40SEM3/4X2.000	40	19.05	17	45	50.8	30.8
HSKE50SEM3/4X2.375	50	19.05	17	45	60.3	34.3
HSKE63SEM3/4X2.375	63	19.05	17	45	60.3	34.3
HSKE63SEM1X2.375	63	25.4	17	52.8	60.3	34.3

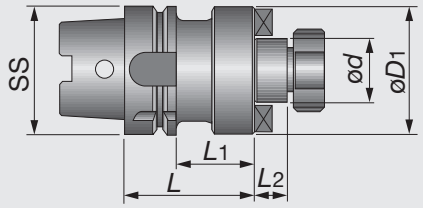
(Option:Wrench for lock screw)

Induction heating unit F113
Heating unit F113
Clamping screw F123
Preset screws F124
Wrench F125, F126
Cooling tube F125

TUNGHOLD

HSK A-SEM (Shell mill holder)

Shell mill holder with HSK-A shank



Designation	SS	ød	L2	øD1	L	L1
HSKA40SEM22	40	22	30	47	50	19
HSKA40SEM27	40	27	35	58	55	21
HSKA50SEM16X50	50	16	24	50	38	17
HSKA50SEM22X60	50	22	34	60	47	19
HSKA50SEM27X60	50	27	34	60	58	21
HSKA63SEM16X50	63	16	24	50	38	17
HSKA63SEM22X50	63	22	24	50	47	19
HSKA63SEM27X60	63	27	34	60	58	21
HSKA63SEM32X60	63	32	34	60	66	24
HSKA63SEM40X60	63	40	34	60	82	27
HSKA100SEM22X50 (1)	100	22	21	50	47	19
HSKA100SEM27X50 (1)	100	27	21	50	58	21
HSKA100SEM32X50 (1)	100	32	21	50	66	24
HSKA100SEM40X60 (1)	100	40	31	60	82	27
HSKA100SEM50X70 (1)	100	50	41	70	95	30

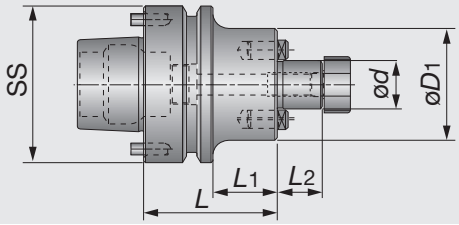
(1) Balanced to G6.3 12,000 min^{-1}.

(Option:Wrench for lock screw)

TUNGHOLD

HSK FM-SEM (Shell mill holder)

Shell mill holder with HSK-FM shank



Designation	SS	ød	L2	øD1	L	L1
HSKFM63SEM22X60	63	22	19	47	60	34
HSKFM63SEM27X60	63	27	21	58	60	34
HSKFM63SEM32X60	63	32	24	66	60	34
HSKFM63SEM3/4X3.00	63	19.05	17	45	76.2	50.2
HSKFM63SEM3/4X4.50	63	19.05	17	45	114.3	88.3
HSKFM63SEM1X2.375	63	25.4	17	52.8	60.3	34.3

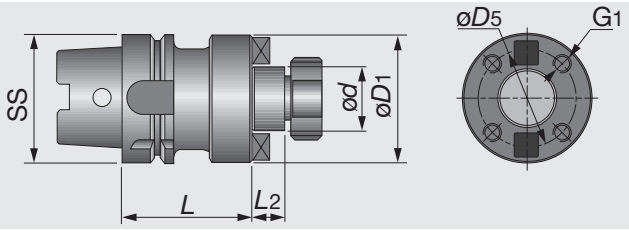
• These tools are based on the HSK63F type. • With two drive pins which improve torque transmission.

(Option:Wrench for lock screw)

Clamping screw F123
Wrench F125
Wrench F126
Cooling tube F125

HSK A-FM (Face mill holder)

Face mill holder with HSK-A shank

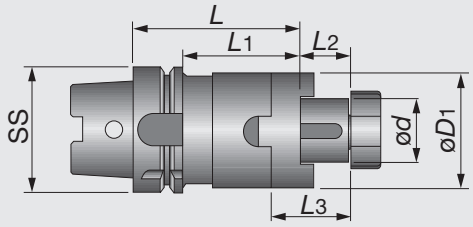


Designation	SS	ød	L2	øD1	L	øD5	G1
HSKA100FM60X70	100	60	40	128	70	101.6	M16

(Option:Wrench for lock Screw)

HSK A-SEMC (Combination holder for slot mill & shell mill)

Combination holder with HSK-A shank



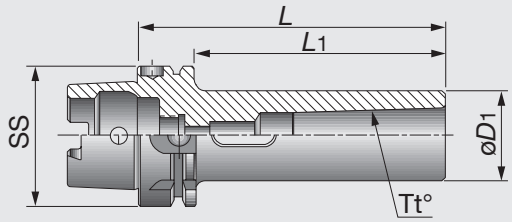
Designation	SS	ød	L2	øD1	L	L1	L3
HSKA50SEMC16X50	50	16	17	32	50	24	27
HSKA50SEMC27X65	50	27	21	48	65	39	33
HSKA63SEMC16X60	63	16	17	32	60	34	21
HSKA63SEMC22X60	63	22	19	40	60	34	31
HSKA63SEMC27X60	63	27	21	48	60	34	33
HSKA63SEMC32X60	63	32	24	58	60	34	38
HSKA63SEMC40X70	63	40	27	70	70	44	41
HSKA100SEMC16X60	100	16	17	32	60	31	27
HSKA100SEMC22X60	100	22	19	40	60	31	31
HSKA100SEMC27X60	100	27	21	48	60	31	33
HSKA100SEMC32X60	100	32	24	58	60	31	38
HSKA100SEMC40X70	100	40	27	70	70	41	41
HSKA100SEMC50X80	100	50	30	90	80	51	46

(Option:Wrench for lock Screw)

Clamping screw F123
Wrench F125
Wrench F126
Cooling tube F125

HSK A-MT (Holder for morse taper)

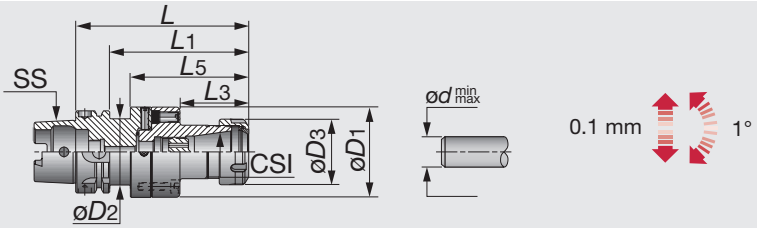
Morse taper holder with HSK-A shank



Designation	SS	Tt°	L	øD1	L1
HSKA50MT1X100	50	MT1	100	25	74
HSKA50MT2X120	50	MT2	120	32	94
HSKA50MT3X140	50	MT3	140	40	114
HSKA63MT1X110	63	MT1	110	25	84
HSKA63MT2X120	63	MT2	120	32	94
HSKA63MT3X140	63	MT3	140	40	114
HSKA63MT4X160	63	MT4	160	48	134
HSKA100MT1X110	100	MT1	110	25	81
HSKA100MT2X120	100	MT2	120	32	91
HSKA100MT3X150	100	MT3	150	40	121
HSKA100MT4X170	100	MT4	170	48	141
HSKA100MT5X200	100	MT5	200	63	171

ADJ HSK A-ER (Collet chuck holder)

ER Collet Chucks with Center Alignment for HSK-A Shanks



Designation	SS	CSI	Range	L	L1	L5	L3	øD3	øD1	øD2
ADJHSKA63D70ER32	63	ER32	2-20	134.5	108.5	82.5	52.5	50	70	46
ADJHSKA100D70ER32	100	ER32	2-20	129.5	108.5	-	52.5	50	70	-

(Option:Wrench for ER Collet)

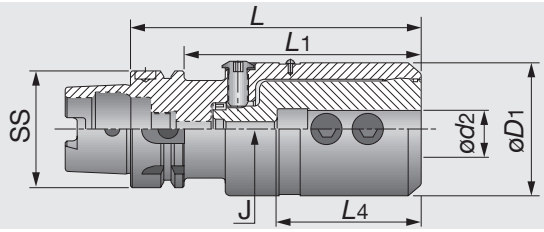
Tooling System

ER Collet F095 | Nut F119 | Preset screws F122 | Wrench F121, F126 | Cooling tube F125

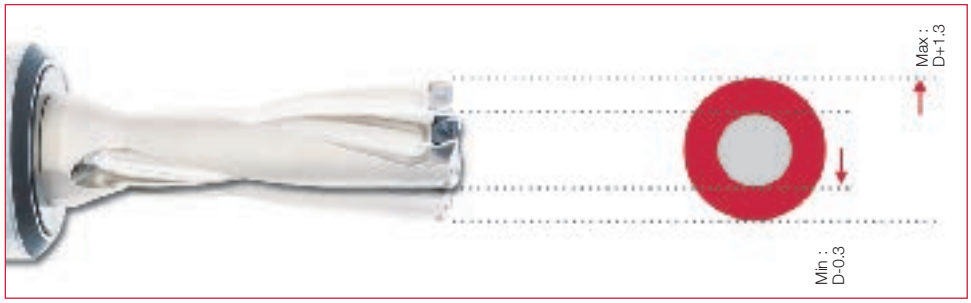
TUNGBORE

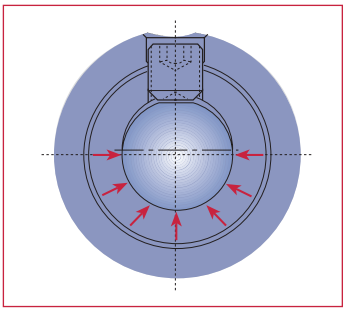
TUNGBORE-HSK A (Adjustable holder for indexable drill)

TungBore adjustable drilling dia. holder with HSK-A shank



Designation	SS	ød2	øD1	L	L1	L4	J
TUNGBOREHSKA63EM25	63	25	72	142	116	71	M10
TUNGBOREHSKA63EM32	63	32	72	142	116	71	M10
TUNGBOREHSKA63EM40	63	40	72	142	116	71	M10



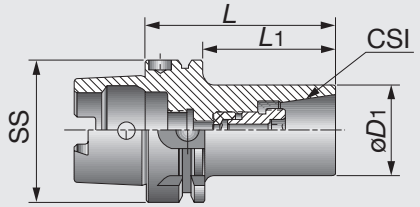


The bore's section is actually made from two shifted circular sections. The clamping screw pushes the drill shank through a narrowed opening, forcing elastic deformation of the holder. Contact is made around more than 180°, providing a high clamping force.

TUNGCLICK

HSK A-CLICKIN (Qiuck change holder)

TungClick quick change tooling system with HSK-A shank



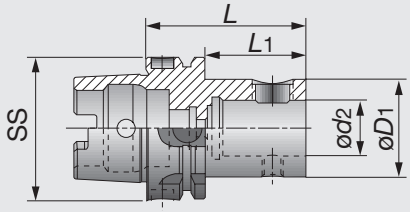
Designation	SS	CSI	øD1	L	L1
HSKA63ER32CLICK-IN	63	32SRF	41	85	59
HSKA100ER32CLICK-IN	100	32SRF	41	90	61

• Tightening torque: 235 N·m

TUNGFIT

HSK A-CF (Qiuck change holder)

TungFit quick change style modular tooling system with HSK-A shank



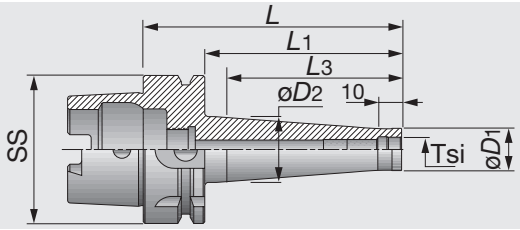
Designation	SS	ød2	øD1	L	L1
HSKA63CF4-S	63	25	44.5	70	44
HSKA80CF4-S	80	25	44.5	73	47
HSKA100CF4-S	100	25	44.5	76	47

• Tightening torque: 58.8 N·m

Wrench F126
Cooling tube F125

TUNGFLEX
HSK A-ODP (Screw clamping head holder)

TungFlex modular tooling system with HSK-A shank

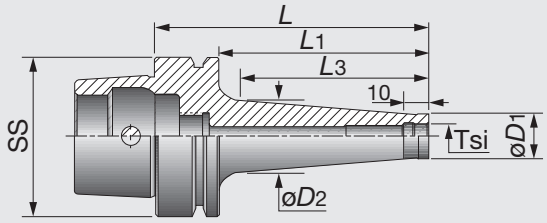


Designation	SS	Tsi	øD1	øD2	L	L1	L3
HSKA63ODP6X59	63	M6	9.7	10	59	33	25
HSKA63ODP6X109	63	M6	9.8	23	109	83	75
HSKA63ODP8X59	63	M8	13.1	15	59	33	25
HSKA63ODP8X109	63	M8	13.1	23	109	83	75
HSKA63ODP10X59	63	M10	18	20	59	33	25
HSKA63ODP10X109	63	M10	18	28	109	83	75
HSKA63ODP12X59	63	M12	21	24	59	33	25
HSKA63ODP12X109	63	M12	21	31	109	83	75
HSKA63ODP16X59	63	M16	29	34	59	33	25
HSKA63ODP16X109	63	M16	29	34	109	83	75
HSKA100ODP12X87 (1)	100	M12	23	30	87	58	50
HSKA100ODP12X137 (1)	100	M12	23	30	137	108	100
HSKA100ODP12X187 (1)	100	M12	23	40	187	158	150
HSKA100ODP12X237 (1)	100	M12	23	46	237	208	200
HSKA100ODP16X87 (1)	100	M12	29	31.5	87	58	50
HSKA100ODP16X137 (1)	100	M12	29.	41.5	137	108	100
HSKA100ODP16X187 (1)	100	M12	29	55	187	158	150
HSKA100ODP16X237 (1)	100	M12	29	55	237	208	200

(1) Balanced to G6.5 12,000 min^{-1}.

TUNGFLEX
HSK E-ODP (Screw clamping head holder)

TungFlex modular tooling system with HSK-E shank

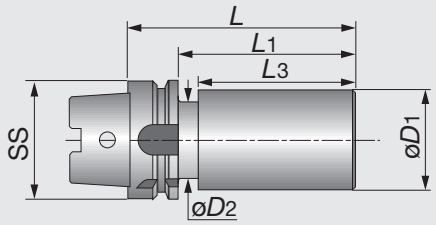


Designation	SS	Tsi	øD1	øD2	L	L1	L3
HSKE40ODP10X53	40	M10	18	20	53	33	25
HSKE40ODP10X103	40	M10	18	28	103	83	75
HSKE40ODP12X53	40	M12	21	24	53	33	25
HSKE40ODP12X103	40	M12	21	31	103	83	75
HSKE50ODP10X59 (1)	50	M10	18	20	59	33	25
HSKE50ODP10X109 (1)	50	M10	18	28	109	83	75
HSKE50ODP12X59 (1)	50	M12	21	24	59	33	25
HSKE50ODP12X109 (1)	50	M12	21	31	109	83	75
HSKE50ODP16X59 (1)	50	M16	29	34	59	33	25
HSKE50ODP16X109 (1)	50	M16	29	34	109	83	75
HSKE63ODP10X59 (2)	63	M10	18	20	59	33	25
HSKE63ODP10X109 (2)	63	M10	18	28	109	83	75
HSKE63ODP12X59 (2)	63	M12	21	24	59	33	25
HSKE63ODP12X109 (2)	63	M12	21	31	109	83	75
HSKE63ODP16X109 (2)	63	M16	29	34	109	83	75

(1) Balanced to G2.5 35.000 min^{-1}. (2) Balanced to G2.5 30.000 min^{-1}.

Wrench F126
Cooling tube F125

Blanks for holders with HSK shank



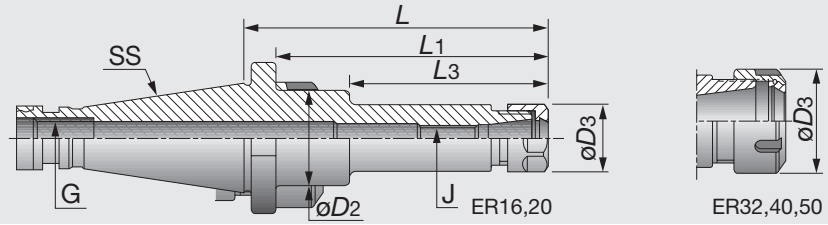
Designation	SS	øD1	øD2	L	L1	L3
HSKA50B16MN100	50	53	41.8	100	74	58
HSKA50B16MN200	50	53	41.8	200	174	158
HSKA63B16MN100	63	63	52.8	100	74	55.5
HSKA63B16MN200	63	63	52.8	200	174	155.5
HSKA100B16MN100	100	102	85	100	71	54.8
HSKA100B16MN200	100	102	85	200	171	154.8

• Material: Case hardened allov steel. • Shank hardness 58 HRc minimum. • Nose hardness 35-37 HRc.

Wrench F126
Cooling tube F126

DIN2080-ER (Collet chuck holder)

ER collet chucks with DIN2080 shank



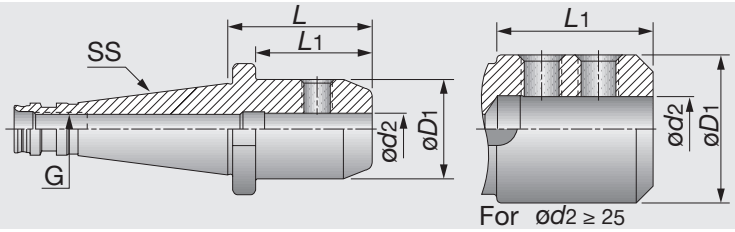
Designation	SS	CSI	Range	*L*	*L*1	*L*3	ø*D*3	ø*D*2	J	G
DIN208030ER16X75	30	ER16	0.5-10	75	65.4	-	28	-	M10	M12
DIN208030ER32X55	30	ER32	2-20	55	45.4	-	50	-	M18X1.5	M12
DIN208030ER40X83	30	ER40	3-26	83	69.4	-	63	-	M22X1.5	M12
DIN208040ER16X63	40	ER16	0.5-10	63	51.4	-	28	-	M12	M16
DIN208040ER16X100	40	ER16	0.5-10	100	88.4	-	28	-	M12	M16
DIN208040ER25X50	40	ER25	1-16	50	38.4	-	42	-	M16X1.5	M16
DIN208040ER32X50	40	ER32	2-20	50	38.4	-	50	-	M22X1.5	M16
DIN208040ER40X55	40	ER40	3-26	55	43.4	-	63	-	M22X1.5	M16
DIN208040ER20X63	40	ER20	1-13	63	51.4	-	34	-	M12	M16
DIN208040ER20X100	40	ER20	1-13	100	88.4	-	34	-	M12	M16
DIN208050ER16X100	50	ER16	0.5-10	100	84.8	-	28	-	M12	M24
DIN208050ER16X160	50	ER16	0.5-10	160	144.8	95	28	40	M12	M24
DIN208050ER20X100	50	ER20	1-13	100	84.8	-	34	-	M16	M24
DIN208050ER20X160	50	ER20	1-13	160	144.8	-	34	-	M12	M24
DIN208050ER40X58	50	ER40	3-26	58	42.8	-	63	-	M28X1.5	M24
DIN208050ER50X63	50	ER50	10-34	63	47.8	-	78	-	M36X1.5	M24

(Option：wrench for ER collet)

ER Colllet F095
Nut F119
Wrench F121
Preset screws F122
Pull stud F118

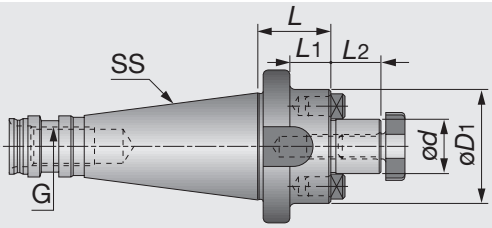
DIN2080-EM (Endmill holder)

Screw locking endmill holders with DIN2080 shank



Designation	SS	ød2	øD1	L	L1	G
DIN208030EM6X40	30	6	25	40	30.4	M12
DIN208030EM8X40	30	8	28	40	30.4	M12
DIN208030EM10X40	30	10	35	40	30.4	M12
DIN208030EM20X63	30	20	52	63	53.4	M12
DIN208040EM6X50	40	6	25	50	38.4	M16
DIN208040EM8X50	40	8	28	50	38.4	M16
DIN208040EM10X50	40	10	35	50	38.4	M16
DIN208040EM12X50	40	12	42	50	38.4	M16
DIN208040EM16X63	40	16	48	63	51.4	M16
DIN208040EM20X63	40	20	52	63	51.4	M16
DIN208040EM25X80	40	25	65	80	68.4	M16
DIN208040EM32X80	40	32	71	80	68.4	M16
DIN208050EM6X63	50	6	25	63	47.8	M24
DIN208050EM8X63	50	8	28	63	47.8	M24
DIN208050EM10X63	50	10	35	63	47.8	M24
DIN208050EM12X63	50	12	42	63	47.8	M24
DIN208050EM16X63	50	16	48	63	47.8	M24
DIN208050EM20X63	50	20	52	63	47.8	M24
DIN208050EM25X80	50	25	65	80	64.8	M24
DIN208050EM32X80	50	32	72	80	64.8	M24
DIN208050EM40X90	50	40	90	90	74.8	M24
DIN208050EM50X100	50	50	100	100	84.8	M24

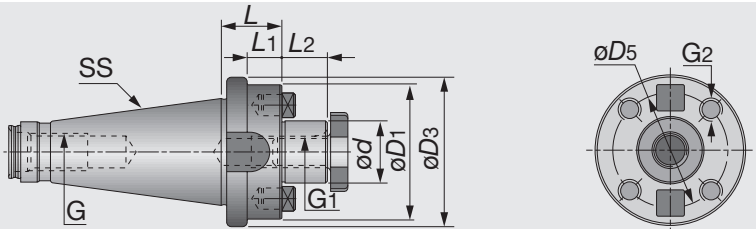
TUNGHOLD
DIN2080-SEM (Shell mill holder)
Shell mill holder with DIN2080 shank



Designation	SS	ød	L2	øD1	L	L1	G
DIN208030SEM16X28	30	16	17	38	28	18.4	M12
DIN208030SEM22X28	30	22	19	47	28	18.4	M12
DIN208030SEM27X32	30	27	21	58	32	22.4	M12
DIN208030SEM32X32	30	32	24	66	32	22.4	M12
DIN208040SEM16X28	40	16	17	38	28	16.4	M16
DIN208040SEM22X27	40	22	19	47	27	15.4	M16
DIN208040SEM27X26	40	27	21	58	26	14.4	M16
DIN208040SEM32X23	40	32	24	66	23	11.4	M16
DIN208040SEM40X34	40	40	27	82	34	22.4	M16
DIN208050SEM16X38	50	16	17	38	38	22.8	M24
DIN208050SEM22X38	50	22	19	47	38	22.8	M24
DIN208050SEM27X38	50	27	21	58	38	22.8	M24
DIN208050SEM32X36	50	32	24	66	36	20.8	M24
DIN208050SEM40X40	50	40	27	82	40	24.8	M24

(Option:Wrench for lock Screw)

TUNGHOLD
DIN2080-FM (Face mill holder)
Face mill holder with DIN2080 shank



Designation	SS	ød	L2	øD1	øD3	L1	L	G2	øD5	G1	G
DIN208040FM40	40	40	27	88	-	-	20	M12	66.7	M20	M16
DIN208050FM40	50	40	27	97.5	88	20.8	36	M12	66.7	M20	M24
DIN208050FM60	50	60	40	128	-	-	35.8	M16	101.6	-	M24

(Option:Wrench for lock Screw)

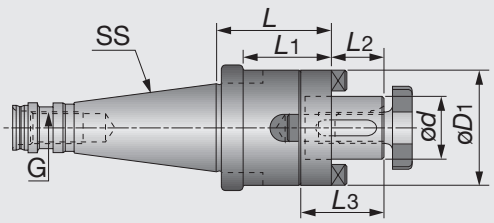
Tooling System

Pull stud F118
Clamping screw F123
Wrench F125

TUNGHOLD

DIN2080-SEMC (Combination holder for slot mill & shell mill)

Combination holder with DIN2080 shank

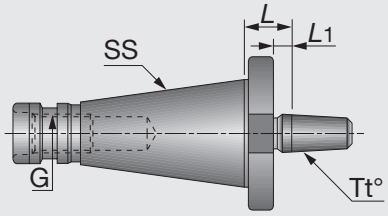


Designation	SS	ød	L2	øD1	L	L1	L3	G
DIN208030SEMC16X35	30	16	17	32	35	25.4	27	M12
DIN208030SEMC22X35	30	22	19	40	35	25.4	31	M12
DIN208030SEMC27X35	30	27	21	48	35	25.4	33	M12
DIN208030SEMC32X50	30	32	24	58	50	40.4	38	M12
DIN208040SEMC22X52	40	22	19	40	52	40.4	31	M16
DIN208040SEMC27X52	40	27	21	48	52	40.4	33	M16
DIN208040SEMC32X52	40	32	24	58	52	40.4	38	M16
DIN208040SEMC40X52	40	40	27	70	52	40.4	41	M16
DIN208050SEMC16X55	50	16	17	32	55	39.8	27	M24
DIN208050SEMC22X55	50	22	19	40	55	39.8	31	M24
DIN208050SEMC27X55	50	27	21	48	55	39.8	33	M24
DIN208050SEMC32X55	50	32	24	58	55	39.8	38.	M24
DIN208050SEMC40X55	50	40	27	70	55	39.8	41	M24
DIN208050SEMC50X55	50	50	30	90	55	39.8	46	M24

TUNGHOLD

DIN2080-DC (Jacobs taper holder)

Jacobs taper holder with DIN2080 shank

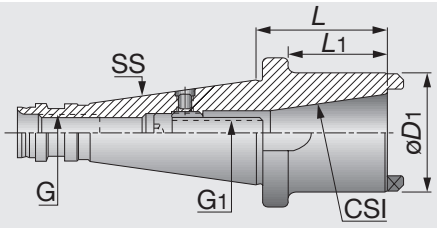


Designation	SS	Tt°	L	L1	G
DIN208030DCB16X20	30	B16	20	5.4	M12
DIN208040DCB16X22	40	B16	22	10.4	M16
DIN208040DCB18X25	40	B18	25	13.4	M16
DIN208050DCB16X25	50	B16	25	9.8	M24
DIN208050DCB18X25	50	B18	25	9.8	M24

Pull stud F118
Clamping screw F123
Wrench F125

TUNGHOLD
DIN2080 AD (Conversion adaptor)

Conversion adaptor for DIN2080 system



Designation	SS	CSI	L	øD1	L1	G1	G
DIN208050AD40	50	DIN2080	50	63	34.8	M16	M24

TUNGHOLD
DIN2080-MT DRW (Hoder for draw bar)

Morse taper holder with draw bar for DIN2080

Fig. 1

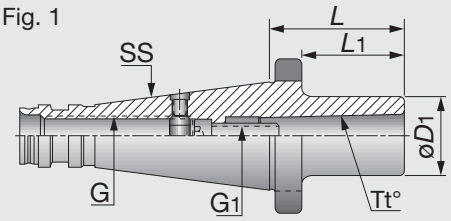
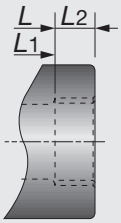


Fig. 2(1)



Designation	SS	Tt°	L	øD1	L1	L2	G1	G	Fig.
DIN208040MT1DRW	40	MT1	50	25	38.4	-	M6	M16	1
DIN208040MT2DRW	40	MT2	50	32	38.4	-	M10	M16	1
DIN208040MT3DRW	40	MT3	65	40	53.4	-	M12	M16	1
DIN208040MT4DRW	40	MT4	95	63	-	15	M16	M16	2
DIN208050MT1DRW	50	MT1	60	25	44.8	-	M6	M24	1
DIN208050MT2DRW	50	MT2	60	32	44.8	-	M10	M24	1
DIN208050MT3DRW	50	MT3	65	40	49.8	-	M12	M24	1
DIN208050MT4DRW	50	MT4	65	63	49.8	15	M16	M24	2
DIN208050MT5DRW	50	MT5	100	78	84.4	18	M20	M24	2

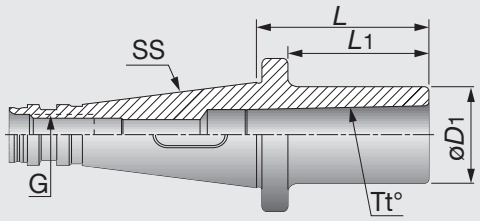
(1) DIN2201.

Pull stud
F118

TUNGHOLD

DIN2080-MT (Holder for morse taper)

Morse taper holder with DIN2080 shank

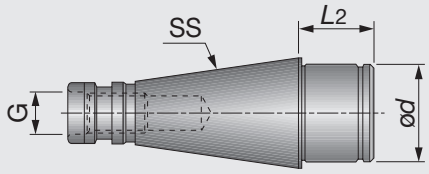


Designation	SS	Tt°	L	øD1	L1	G
DIN208030MT2X50	30	MT2	50	32	40.4	M12
DIN208030MT3X70	30	MT3	70	40	60.4	M12
DIN208040MT1X50	40	MT1	50	25	38.4	M16
DIN208040MT2X50	40	MT2	50	32	38.4	M16
DIN208040MT3X65	40	MT3	65	40	53.4	M16
DIN208040MT4X95	40	MT4	95	48	83.4	M16
DIN208050MT1X45	50	MT1	45	25	29.8	M24
DIN208050MT2X60	50	MT2	60	32	44.8	M24
DIN208050MT3X65	50	MT3	65	40	49.8	M24
DIN208050MT4X70	50	MT4	70	48	54.8	M24
DIN208050MT5X105	50	MT5	105	63.5	89.2	M24

TUNGHOLD

DIN2080-CP(Center plug holder)

Center plugs for DIN2080 shank



Designation	SS	ød	L2	G
DIN208040CP40	40	40	29	M16
DIN208050CP60	50	60	39	M24

Turning tool

CN**1204 CN**0904	TUNGTJET C*PCLNR/L*****-**-CHP	C*PCLNR/L*****-12N	C*ACLNR/L*****-**N	TUNGTJET C6PCMNN**-CHP	C*ACLNN00***-**N C*ACLNN00***V-**N	Cutting head for external turning & facing
DN**1504** (DN**1506**)	TUNGTJET C*PDJNR/L*****-**-CHP	C*PDJNR/L*****-15N	C*ADJNR/L*****-**N	TUNGTJET C6PDMNL**-CHP	C*ADNNN00***-15N	
WN**0804 WN**0604	TUNGTJET C*PWLNR/L*****-**-CHP	C*AWLNR/L*****-**N	VN**1604**	TUNGTJET C*PVJNR/L*****-16-CHP	C*AVJNR/L*****-16N	
TN**1604 TN**1104	C4PTJNR/L 27050-1104N	C4ATJNR/L 27050-16N	VC**1604**	C*SVJCR/L*****-16N	C*SVVCN00***-16N	
DN**1104	C4PDUNR/L-11	DN**1504	C*ADUNR/L*****-15	CN**1204 CN**0904	C4PCLNR/L*****-**	Cutting head for internal turning
WX**0403**L-**	C4SWLXR11070-04	DX**0703**L-**	C4SDXXR*****-07	VB**1103** VB**1604**	C4SVQBR*****-**	
DRILLMEISTER TUNGDRILL TUNGSIX-DRILL	Side-lock holder (For weldon-shank) C*EM**X** Side-lock holder (For whistle-notch shank) C*EM**X**E		Boring bar	Sleeve SC******	Adaptor for boring bar C*ABB**-** C*ADI**	
					TungDrill Twisted C*TDX***L***-3	
	16ER/L***	C*CER/L*****-16ERN				Cutting head for threading
DGS, SGS, DGM, SGM, DTX, DTE, DGG, DTR, SGN	Blade	Adaptor for parting-off blade	TUNGCUT C*CHSR/L*****N	TUNGCUT C*CHFVR/L*****N		Cutting head for grooving
Toolholder for external turning	C*ADES-20	C*ASHR/L**-45	C*ASHR/L***	C*ASHA20	C*ADE-**R/L	Adaptor for toolholder with square shank

Tooling System

System for Multi-Tasking Machine

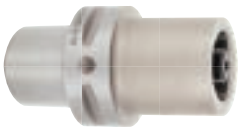
TOOLING SYSTEM

Tool spindle



Extension adaptor

C*EX-**



Reduction adaptor

C*-C*RE-***

Adaptor for C4 or C5 coupling

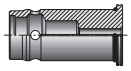
Tool spindle

Endmill holder



C*MAXIN**X***

Straight collet for endmill holder



SC*******



Side-lock holder (For weldon-shank)



C*EM**X**



Side-lock holder (For whistle-notch shank)



C*EM**X**E



ER-collet chuck holder



C*ER**X***
C*ER**X***M

ER-collet



ER******



Collet chuck holder with adjusting alignment

TUNGFINE



ADJC*ER32

ER-collet



ER******



Shrink holder

TUNGSHRINK



C*SRKIN*X**



Arbor for face mill



C*SEM**X**C



Arbor for slot mill



C*FM**X**



Holder for modular tool

TUNGFIX



C*ODP**X**



High speed spindle

SPINJET



TJS**KC*L/R

Tung-Tri shoulder cutter



C*EPA**M***R**L***

Tung-Tri shoulder cutter



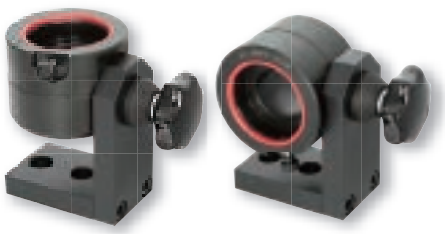
C6TLA15M***R**L***

TungDrill Twistedドリル



C*TDX***L***-3

Tool clamp

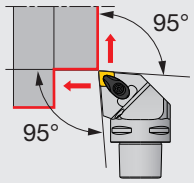


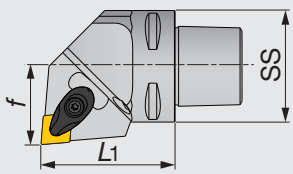
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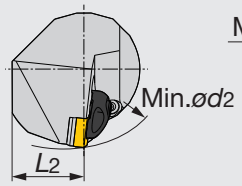
Tooling System

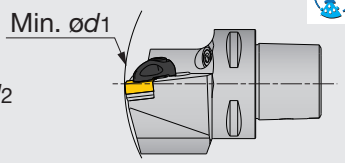
C-ACLNR/L

TurningA double-clamp toolholder with 95° approach angle, for negative 80° rhombic inserts









Right hand (R) shown.

Designation	SS	L_1	L_2	f	Min ød1	Min ød2	rε	Insert
C4ACLNR/L27050-12N(2)	40	50	25	27	140	110	0.8	CN**1204...
C5ACLNR/L35060-12N(2)	50	60	32	35	165	110	0.8	CN**1204...
C6ACLNR45065-12(1)	63	65	41	45	-	-	0.8	CN**1204...
C6ACLNR/L45065-12N(2)	63	65	41	45	190	125	0.8	CN**1204...
C6ACLNR/L45065-16N(2)	63	65	41	45	190	125	1.2	CN**1604...

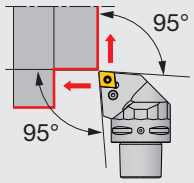
(1) Applicable for normal pressure coolant. (2) Applicable for 7 MPa pressure coolant.

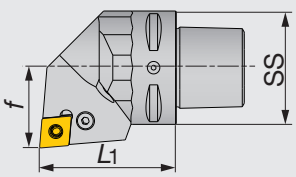
SPARE PARTS

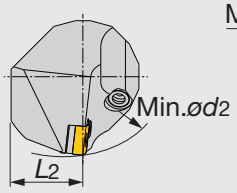
Designation	Clamp	Clamping screw	Coolant parts	Shim	Shim screw	Spring	Spring 1	Wrench	Wrench 1
C4ACLN*27050-12N	ACP4S	ACS-5W	SATZ-M8X1-M3	ASC422	CSTB-3.5	BP-7	SP-2.5	-	T-15F
C5ACLN*35060-12N	ACP4S	ACS-5W	SATZ-M8X1-M3	ASC422	CSTB-3.5	BP-7	SP-2.5	-	T-15F
C6ACLNR45065-12	ACP4S	ACS-5W	EZ83	ASC422	CSTB-3.5	BP-7	SP-2.5	-	T-15F
C6ACLN*45065-12N	ACP4S	ACS-5W	SATZ-M8X1-M3	ASC422	CSTB-3.5	BP-7	SP-2.5	-	T-15F
C6ACLN*45065-16N	ACP5S	ACS-6W	SATZ-M8X1-M3	ASC533	CSTB-5	BP-8.8	SP-2.5	KEYV-T20	-

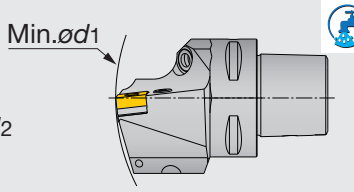
C-PCLNR/L

Lever lock type toolholder with 95° approach angle, for negative 80° rhombic inserts









Right hand (R) shown.

Designation	SS	L_1	L_2	f	Min ød1	Min ød2	rε	Insert
C5PCLNR/L35060-12(1)	50	60	32	35	-	-	0.8	CN**1204...
C5PCLNR/L35060-12N(2)	50	60	32	35	165	110	0.8	CN**1204...
C6PCLNR/L45065-12N(2)	63	65	41	45	190	125	0.8	CN**1204...

(1) Applicable for normal pressure coolant. (2) Applicable for 7 MPa pressure coolant.

SPARE PARTS

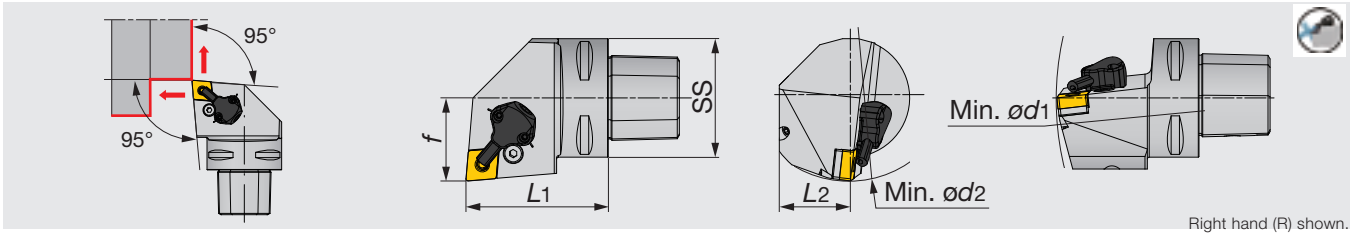
Designation	Coolant parts	Lever	Screw	Shim	Spring	Wrench
C5PCLN*35060-12	EZ104	LCL4	LCS4	LSC42	LSP4	P-3
C*PCLN**506*-12N	SATZ-M10X1-M5	LCL4	LCS4	LSC42	LSP4	P-3

Tooling System

Inserts for C-ACLNR/L, C-PCLNR/L → **B050 -,** CBN → **B163 -,** PCD → **B176**

C-PCLNR/L-CHP

Lever lock type toolholder with 95° approach angle, for negative 80° rhombic inserts



Right hand (R) shown.

Designation	SS	L_1	L_2	f	Min ød1	Min ød2	rε	Insert
C4PCLNR/L27050-0904-CHP	40	50	25	27	140	110	0.8	CN**0904...
C4PCLNR/L27050-12-CHP	40	50	25	27	140	110	0.8	CN**1204...
C5PCLNR/L35060-12-CHP	50	60	32	35	165	110	0.8	CN**1204...
C6PCLNR/L45065-0904-CHP	63	65	41	45	190	125	0.8	CN**0904...
C6PCLNR/L45065-12-CHP	63	65	41	45	190	125	0.8	CN**1204...

Applicable for 14 MPa pressure coolant

SPARE PARTS FOR P-TYPE

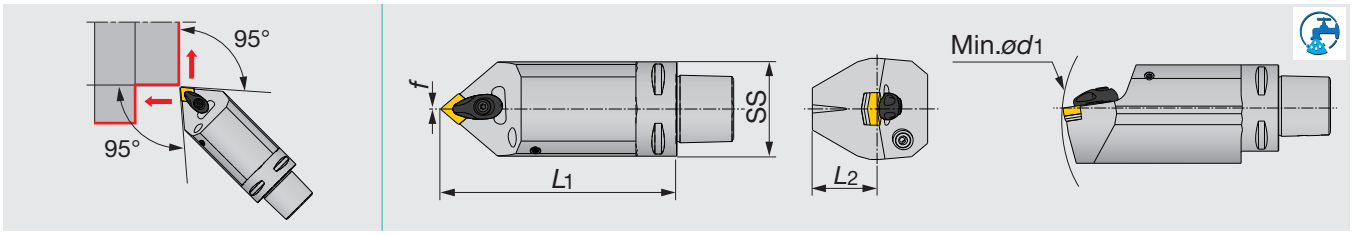
Designation	Shim	Clamping screw	Wrench 1	Spring pin	Lever
C*PCLNR/L**-12-CHP	LSC42	LCS4	P-3	LSP4	LCL4
C*PCLNR/L**0904-CHP	LSC317	LCS3	P-2.5	LSP3	LCL33

COOLANT SET

Designation	Coolant unit	Mounting screw	Wrench 2	O-ring
C*PCLNR/L**-CHP	CU-CW-CHP	SRM3	T-8F	OR6.4X0.9N

C-ACLNN

TurningA double-clamp toolholder with 95° approach angle, for negative 80° rhombic inserts



Designation	SS	L_1	L_2	f	Min ød1	rε	Insert
C5ACLNN00090-12(1)	50	90	32	0	-	0.8	CN**1204...
C5ACLNN00090-12N(2)	50	90	32	0	165	0.8	CN**1204...
C5ACLNN00125-12(1)	50	125	32	0	-	0.8	CN**1204...
C5ACLNN00125-12N(2)	50	125	32	0	165	0.8	CN**1204...
C6ACLNN00100-12N(2)	63	100	37.5	0	190	0.8	CN**1204...
C6ACLNN00140-12N(2)	63	140	37.5	0	190	0.8	CN**1204...

(1) Applicable for normal pressure coolant. (2) Applicable for 7 MPa pressure coolant.

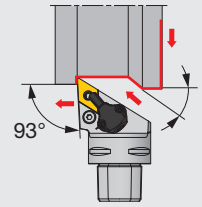
SPARE PARTS

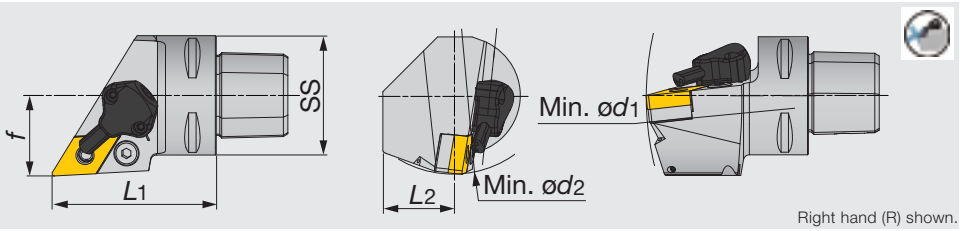
Designation	Clamp	Clamping screw	Coolant parts	Shim	Shim screw	Spring	Spring 1	Wrench
C5ACLNN00090-12	ACP4S	ACS-5W	EZ83	ASC422	CSTB-3.5	BP-7	SP-2.5	T-15F
C5ACLNN00090-12N	ACP4S	ACS-5W	SATZ-M8X1-M3	ASC422	CSTB-3.5	BP-7	SP-2.5	T-15F
C5ACLNN00125-12	ACP4S	ACS-5W	EZ83	ASC422	CSTB-3.5	BP-7	SP-2.5	T-15F
C*ACLNN001**-12N	ACP4S	ACS-5W	SATZ-M8X1-M3	ASC422	CSTB-3.5	BP-7	SP-2.5	T-15F

Inserts for C-PCLNR/L-CHP, C-ACLNN → **B050 -,** CBN → **B163 -,** PCD → **B176**

C-PDJNR/L-CHP

Lever lock type toolholder with TungCap connection, for negative inserts, D 55° rhombic with channels for high pressure coolant





Right hand (R) shown.

Designation	SS	L_1	L_2	f	Min ød1	Min ød2	rε	Insert
C4PDJNR/L27050-1104-CHP	40	50	25	27	140	110	0.8	DN**1104...
C4PDJNR/L27050-15-CHP	40	50	25	27	140	110	0.8	DN**1504(06)...
C5PDJNR/L35060-15-CHP	50	60	32	35	165	110	0.8	DN**1504(06)...
C6PDJNR/L45065-1104-CHP	63	65	41	45	190	110	0.8	DN**1104...
C6PDJNR/L45065-15-CHP	63	65	41	45	190	110	0.8	DN**1504(06)...

Applicable for 14 MPa pressure coolant

SPARE PARTS FOR P-TYPE

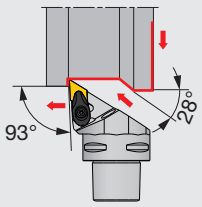
Designation	Shim	Clamping screw	Wrench 1	Spring pin	Lever
C*PDJNR/L**-15-CHP	LSD43A	LCS4	P-3	LSP4	LCL4
C*PDJNR/L**1104-CHP	ELSD32	LCS3	P-2.5	LSP3	LCL33L

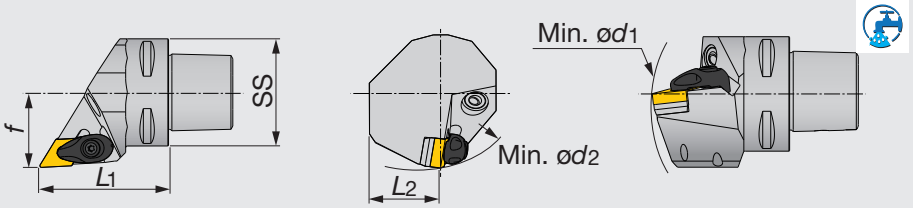
COOLANT SET

Designation	Coolant unit	Mounting screw	Wrench 2	O-ring
C*PDJLNR/L**-CHP	CU-D-CHP	SRM3	T-8F	OR6.4X0.9N

C-ADJNR/L

TurningA double-clamp toolholder with 93° approach angle, for negative 55° rhombic inserts





Right hand (R) shown.

Designation	SS	L_1	L_2	f	Min ød1	Min ød2	rε	Insert
C4ADJNR/L27050-15N(2)	40	50	25	27	145	110	0.8	DN**15...
C5ADJNR/L35060-15N(2)	50	60	32	35	165	110	0.8	DN**15...
C6ADJNR/L45065-15(1)	63	65	41	45	-	-	0.8	DN**15...
C6ADJNR/L45065-15N(2)	63	65	41	45	190	110	0.8	DN**15...
C6ADJNR/L45135-15N(2)	63	135	41	45	190	110	0.8	DN**15...

(1) Applicable for normal pressure coolant (2) Applicable for 7 MPa pressure coolant

SPARE PARTS

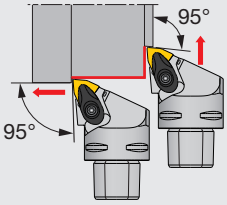
Designation	Clamp	Clamping screw	Coolant parts	Shim	Shim screw	Spring	Spring 1	Wrench
C4ADJN*27050-15N	ACP4S	ACS-5W	SATZ-M10X1-M5	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C5ADJN*35060-15N	ACP4S	ACS-5W	SATZ-M10X1-M5	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C6ADJNL45065-15	ACP4S	ACS-5W	EZ104	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C6ADJN*45065-15N	ACP4S	ACS-5W	SATZ-M10X1-M5	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C6ADJN*45135-15N	ACP4S	ACS-5W	SATZ-M10X1-M5	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F

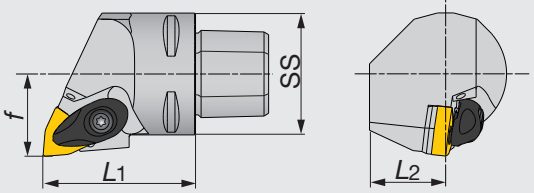
Option: ASD423 (Shim for DN**1506**)

Inserts for C-ADJNR/L, C-PDJNR/L-CHP → **B061 -,** CBN → **B163 -,** PCD → **B176**

TUNGCAP
C-AWLNR/L

TurningA double-clamp toolholder with 95° approach angle, for negative trigon inserts





Right hand (R) shown.

Designation	SS	L_1	L_2	f	r_ε	Insert
C4AWLNR/L27050-08N	40	50	25	27	0.8	WN**0804...

Applicable for 7 MPa pressure coolant.

SPARE PARTS

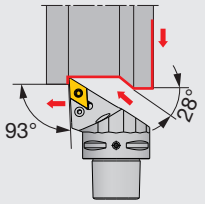
Designation	Clamp	Clamping screw	Screw	Shim	Spring	Spring 1	Wrench
C-AWLNR/L	ACP4S	CSTB-3.5	ACS-5W	ASW422	BP-7	SP-2.5	T-15F

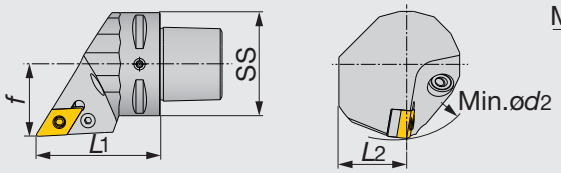
Tooling System

Inserts for C-AWLNR/L → **B090 -,** CBN → **B165**

C-PDJNR/L

Lever lock type toolholder with 93° approach angle, for negative 55° rhombic inserts





Right hand (R) shown.

Designation	SS	L_1	L_2	f	Min ød1	Min ød2	rε	Insert
C5PDJNR/L35060-15N	50	60	32	35	165	110	0.8	DN**15...
C6PDJNR/L45065-15N	63	65	41	45	195	95	0.8	DN**15...

Applicable for 7 MPa pressure coolant.

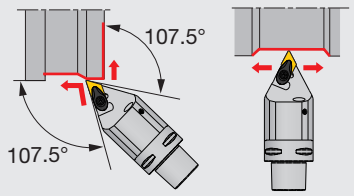
SPARE PARTS

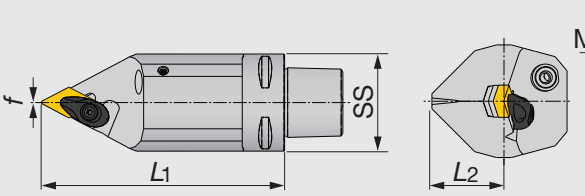
Designation	Coolant parts	Lever	Screw	Screw 1	Spring	Wrench
C5PDJN*35060-15N	SATZ-M10X1-M5	LCL4	LCS4	SSHM4-4	LSP4(04)	P-3
C6PDJN*45065-15N	SATZ-M10X1-M5	LCL4	LCS4	SSHM4-4	LSP4S(09)	P-3

option: ASD423 (Shim for DN**1506**)

C-ADNNN

TurningA double-clamp toolholder with 63° approach angle, for negative 55° rhombic inserts





Designation	SS	L_1	L_2	f	Min ød1	rε	Insert
C5ADNNN00090-15(1)	50	90	32	0	-	0.8	DN**15...
C5ADNNN00090-15N(2)	50	90	32	0	165	0.8	DN**15...
C5ADNNN00125-15(1)	50	125	32	0	-	0.8	DN**15...
C5ADNNN00125-15N(2)	50	125	32	0	165	0.8	DN**15...
C6ADNNN00100-15(1)	63	100	37.5	0	-	0.8	DN**15...
C6ADNNN00100-15N(2)	63	100	37.5	0	190	0.8	DN**15...
C6ADNNN00140-15(1)	63	140	37.5	0	-	0.8	DN**15...
C6ADNNN00140-15N(2)	63	140	37.5	0	190	0.8	DN**15...

(1) Applicable for normal pressure coolant. (2) Applicable for 7 MPa pressure coolant.

SPARE PARTS

Designation	Clamp	Clamping screw	Coolant parts	Shim	Shim screw	Spring	Spring 1	Wrench
C5ADNNN00090-15	ACP4S	ACS-5W	EZ104	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C5ADNNN00090-15N	ACP4S	ACS-5W	SATZ-M10X1-M5	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C5ADNNN00125-15	ACP4S	ACS-5W	EZ104	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C5ADNNN00125-15N	ACP4S	ACS-5W	SATZ-M10X1-M5	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C6ADNNN00100-15	ACP4S	ACS-5W	EZ104	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C6ADNNN00100-15N	ACP4S	ACS-5W	SATZ-M10X1-M5	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C6ADNNN00140-15	ACP4S	ACS-5W	EZ104	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F
C6ADNNN00140-15N	ACP4S	ACS-5W	SATZ-M10X1-M5	ASD432	CSTB-3.5	BP-7	SP-2.5	T-15F

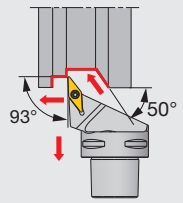
option: ASD423 (Shim for DN**1506**)

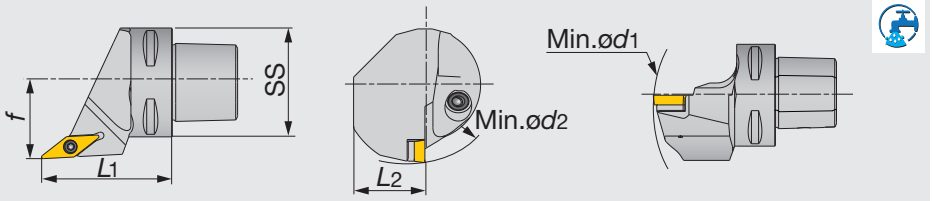
Tooling System

Inserts for C-PDJNR/L, C-ADNNN → **B061 -**, CBN → **B163 -**, PCD → **B176**

C-SVJCR/L

Screw-on clamp toolholder with 93° approach angle, for positive 35° rhombic inserts





Right hand (R) shown.

Designation	SS	L_1	L_2	f	Min ød_1	Min ød_2	r_ε	Insert
C5SVJCR/L35060-16(1)	50	60	32	35	-	-	0.8	VC**1604...
C5SVJCR/L35060-16N(2)	50	60	32	35	170	160	0.8	VC**1604...
C6SVJCR/L45065-16(1)	63	65	41	45	-	-	0.8	VC**1604...
C6SVJCR/L45065-16N(2)	63	65	41	45	170	190	0.8	VC**1604...

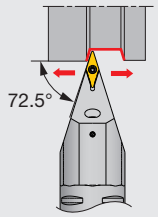
(1) Applicable for normal pressure coolant. (2) Applicable for 7 MPa pressure coolant.

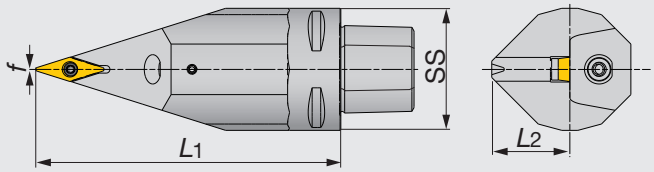
SPARE PARTS

Designation	Clamping screw	Coolant parts	Shim	Shim screw	Wrench	Wrench 1
C5SVJC*35060-16	CSTB-3.5L	EZ104	SSV32	DTS5-3.5	P-3.5	T-15F
C5SVJC*35060-16N	CSTB-3.5L	SATZ-M10X1-M5	SSV32	DTS5-3.5	P-3.5	T-15F
C6SVJC*45065-16	CSTB-3.5L	EZ104	SSV32	DTS5-3.5	P-3.5	T-15F
C6SVJC*45065-16N	CSTB-3.5L	SATZ-M10X1-M5	SSV32	DTS5-3.5	P-3.5	T-15F

C-SVVCN

Screw-on clamp toolholder with 72.5° approach angle, for positive 35° rhombic inserts





Designation	SS	L_1	L_2	f	r_ε	Insert
C5SVVCN00090-16(1)	50	90	32	0	0.8	VC**1604...
C5SVVCN00090-16N(2)	50	90	32	0	0.8	VC**1604...
C5SVVCN00125-16(1)	50	125	32	0	0.8	VC**1604...
C5SVVCN00125-16N(2)	50	125	32	0	0.8	VC**1604...
C6SVVCN00100-16(1)	63	100	37.5	0	0.8	VC**1604...
C6SVVCN00100-16N(2)	63	100	37.5	0	0.8	VC**1604...
C6SVVCN00140-16(1)	63	140	37.5	0	0.8	VC**1604...
C6SVVCN00140-16N(2)	63	140	37.5	0	0.8	VC**1604...

(1) Applicable for normal pressure coolant. (2) Applicable for 7 MPa pressure coolant.

SPARE PARTS

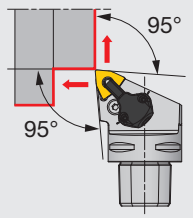
Designation	Clamping screw	Coolant parts	Shim screw	Shim	Wrench	Wrench 1
C5SVVCN00090-16	CSTB-3.5L	EZ104	DTS5-3.5	SSV32	P-3.5	T-15F
C5SVVCN00090-16N	CSTB-3.5L	SATZ-M10X1-M5	DTS5-3.5	SSV32	P-3.5	T-15F
C5SVVCN00125-16	CSTB-3.5L	EZ104	DTS5-3.5	SSV32	P-3.5	T-15F
C5SVVCN00125-16N	CSTB-3.5L	SATZ-M10X1-M5	DTS5-3.5	SSV32	P-3.5	T-15F
C6SVVCN00100-16	CSTB-3.5L	EZ104	DTS5-3.5	SSV32	P-3.5	T-15F
C6SVVCN00100-16N	CSTB-3.5L	SATZ-M10X1-M5	DTS5-3.5	SSV32	P-3.5	T-15F
C6SVVCN00140-16	CSTB-3.5L	EZ104	DTS5-3.5	SSV32	P-3.5	T-15F
C6SVVCN00140-16N	CSTB-3.5L	SATZ-M10X1-M5	DTS5-3.5	SSV32	P-3.5	T-15F

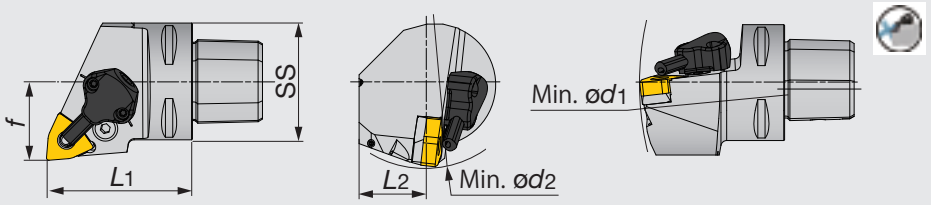
Tooling System

Inserts for C-SVJCR/L, C-SVVCN → **B145 -,** CBN → **B169 -,** PCD → **B177 -**

C-PWLNR/L-CHP

Lever lock type toolholder with TungCap connection, for negative inserts, W 80° trigon with channels for high pressure coolant





Right hand (R) shown.

Designation	SS	L_1	L_2	f	Min ød1	Min ød2	rε	Insert
C4PWLNR/L27050-0604-CHP	40	50	25	27	140	110	0.8	WN**0604...
C4PWLNR/L27050-08-CHP	40	50	25	27	140	110	0.8	WN**0804...
C6PWLNR/L45065-08-CHP	63	65	41	45	190	125	0.8	WN**0804...

Applicable for 14 MPa pressure coolant

SPARE PARTS FOR P-TYPE

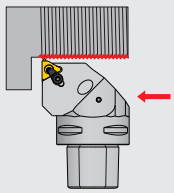
Designation	Shim	Clamping screw	Wrench 1	Spring pin	Lever
C*PWLNR/L**-08-CHP	LSW42BL	LCS4	P-3	LSP4	LCL4
C*PWLNR/L**0604-CHP	LSW312	LCS3	P-2.5	LSP3	LCL3

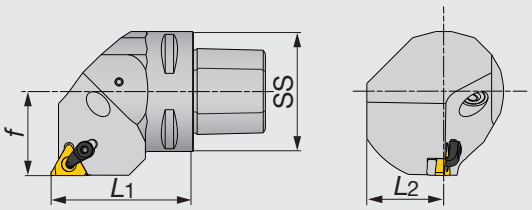
COOLANT SET

Designation	Coolant unit	Mounting screw	Wrench 2	O-ring
C*PWLNR/L**-CHP	CU-CW-CHP	SRM3	T-8F	OR6.4X0.9N

C-CER/L

TungThread external threading toolholders, altanative clamping of screw-on or clamp-on





Right hand (R) shown.

Designation	SS	L_1	L_2	f	rε	Insert
C4CER/L27050-16ERN(2)	40	50	25	27	0.8	16ER/L...
C5CER/L35060-16ER(1)	50	60	32	35	0.8	16ER/L...
C5CER/L35060-16ERN(2)	50	60	32	35	0.8	16ER/L...
C6CER/L45065-16ER(1)	63	65	41	45	0.8	16ER/L...
C6CER/L45065-16ERN(2)	63	65	41	45	0.8	16ER/L...

(1) Applicable for normal pressure coolant. (2) Applicable for 7 MPa pressure coolant.

SPARE PARTS

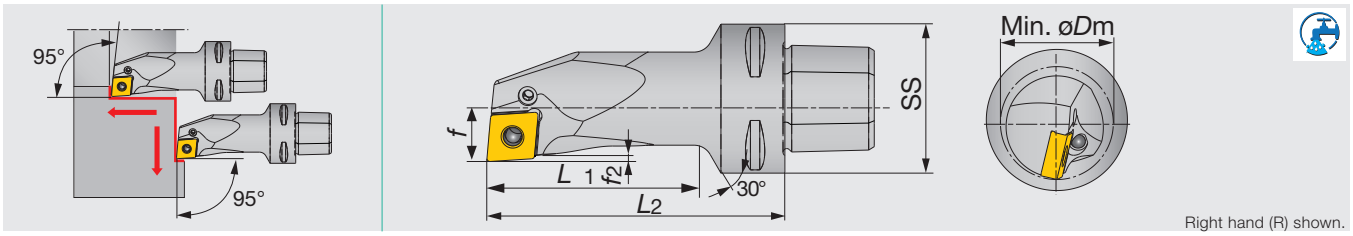
Designation	Clamp set	Clamping screw	Coolant parts	Shim screw	Shim	Wrench	Wrench 1
C5CE*35060-16ER	CSP16	CSTB-3.5ST	EZ104	DTS5-3.5	A16-1DT	P-3.5	T-15F
C5CE*35060-16ERN	CSP16	CSTB-3.5ST	SATZ-M10X1-M5	DTS5-3.5	A16-1DT	P-3.5	T-15F
C6CE*45065-16ER	CSP16	CSTB-3.5ST	EZ104	DTS5-3.5	A16-1DT	P-3.5	T-15F
C6CE*45065-16ERN	CSP16	CSTB-3.5ST	SATZ-M10X1-M5	DTS5-3.5	A16-1DT	P-3.5	T-15F

Inserts for C-PWLNR/L-CHP → **B090 -**, CBN → **B165**

Inserts for C-CER/L → **B384 -**

C-PCLNR/L-IN

Lever lock type boring bar, for negative 80° rhombic inserts



Right hand (R) shown.

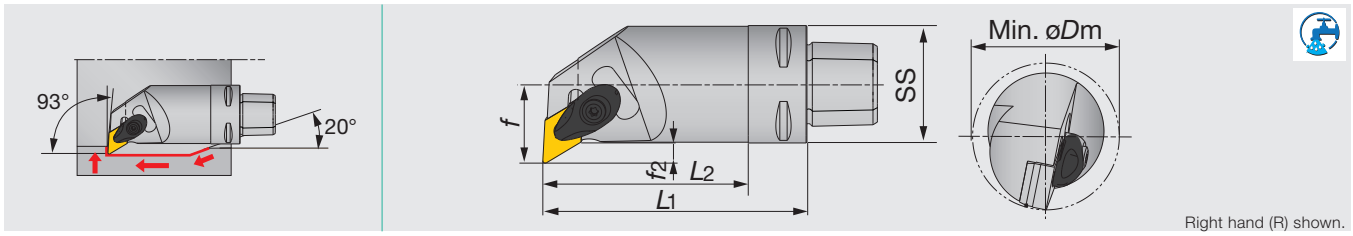
Designation	øDm	SS	L2	L1	f	f2	rε	Insert
C4PCLNR/L17080-12	32	40	80	58.5	17	1.6	0.8	CN**1204...

SPARE PARTS

Designation	Lever	Screw	Wrench
C-PCLNR/L-IN	LCL43N	LCS43	P-2.5

C-ADUNR/L

TurningA double-clamp boring bar, for negative 55° rhombic inserts



Right hand (R) shown.

Designation	øDm	SS	L1	L2	f	f2	rε	Insert
C4ADUNR20070-15	38	40	70	50	20	5	0.8	DN**1504...
C4ADUNR27090-15	50	40	90	-	27	7	0.8	DN**1504...

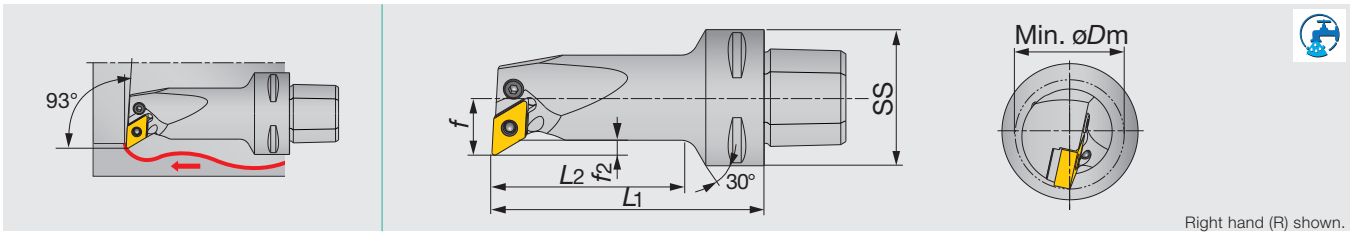
SPARE PARTS

Designation	Clamp	Clamping screw	Screw	Shim	Spring	Spring 1	Wrench
C-ADUNR/L	ACP4S	CSTB-3.5	ACS-5W	ASD423(04)	BP-7	SP-2.5	T-15F

option : ASD423 (Shim for DN**1506**)

C-PDUNR/L

Lever lock type boring bar, for negative 55° rhombic inserts



Right hand (R) shown.

Designation	øDm	SS	L1	L2	f	f2	rε	Insert
C4PDUNR/L17080-11	32	40	80	58.5	17	4.4	0.8	DN**1104...

SPARE PARTS

Designation	Lever	Screw	Shim	Spring	Wrench
C4PDUNR17080-11	LCL33L	LCS3	ELSD317BR	LSP3	P-2.5
C4PDUNL17080-11	LCL33L	LCS3	ELSD317BL	LSP3	P-2.5

Inserts for C-PCLNR/L-IN → **B050 -**, CBN → **B163 -**, PCD → **B176**

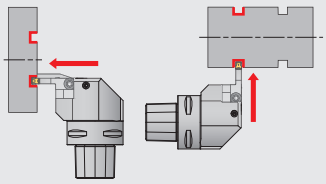
Inserts for C-ADUNR/L → **B061 -**, CBN → **B163 -**, PCD → **B176**

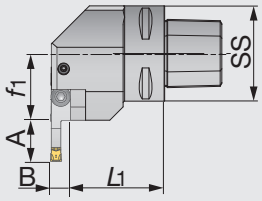
Inserts for C-PDUNR/L → **B061 -**

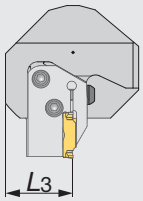
TUNGCAP

C-CHFVR/L

TungCut shank of perpendicular toolholders for CAER/L & CAFR/L blades







Right hand (R) shown.

Designation	SS	L_1	L_3	f_1	A	B
C4CHFVR/L27050N(2)	40	42.5	36	27	Table*	Table*
C5CHFVR/L35060N(2)	50	49.5	36	35	Table*	Table*
C6CHFVR/L45065(1)	63	54.5	41	45	Table*	Table*
C6CHFVR/L45065N(2)	63	54.5	41	45	Table*	Table*

(1) Applicable for normal pressure coolant. (2) Applicable for 7 MPa pressure coolant.
*See the below table for offset dimensions

SPARE PARTS

Designation	Coolant parts	Coolant parts 1	Clamping screw	Wrench
C5CHFV*35060N	SATZ-M10X1-M5	-	CSHB-6-A	P-4
C6CHFV*45065	CNZ125	PNZ5	CSHB-6-A	P-4
C6CHFV*45065N	SATZ-M10X1-M5	-	CSHB-6-A	P-4

Combination of blade and toolholder

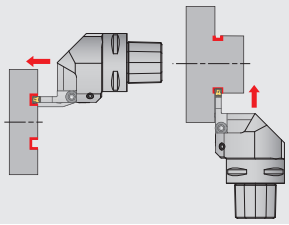
Toolholder	Blade			
	CAER...	CAEL...	CAFR...	CAFL...
CHFVR...		●	●	
CHFVL...	●			●

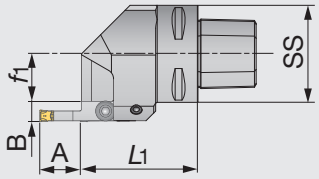
● : Correspondence

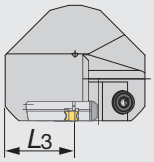
TUNGCAP

C-CHSR/L

TungCut shank of toolholders for CAER/L & CAFR/L blades







Right hand (R) shown.

Designation	SS	L_1	L_3	f_1	A	B
C4CHSR/L27050N(2)	40	50	36	16.5	Table*	Table*
C5CHSR/L35060(1)	50	60	36	24.5	Table*	Table*
C5CHSR/L35060N(2)	50	60	36	24.5	Table*	Table*
C6CHSR/L45065N(2)	63	65	41	34.5	Table*	Table*

(1) Applicable for normal pressure coolant. (2) Applicable for 7 MPa pressure coolant.
*See the below table for offset dimensions

SPARE PARTS

Designation	Coolant parts	Coolant parts 1	Clamping screw	Wrench
C4CHS*27050N	SATZ-M8X1-M3	-	CSHB-6-A	P-4
C5CHS*35060	CNZ125	PNZ5	CSHB-6-A	P-4
C*CHS**506*N	SATZ-M10X1-M5	-	CSHB-6-A	P-4

Combination of blade and toolholder

Toolholder	Blade			
	CAER...	CAEL...	CAFR...	CAFL...
CHSR...	●			●
CHSL...		●	●	

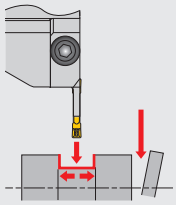
● : Correspondence

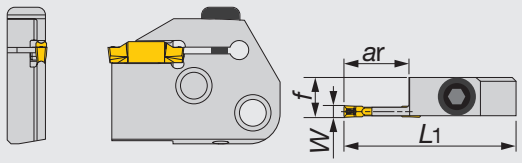
*Table: Offset dimensions for blade

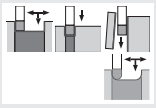
Application	Blade	A	B
For external grooving	CAER/L-3T16	16	10.4
	CAER/L-4T16	16	10.5
	CAER/L-5T20	20	10.5
	CAER/L-6T20	20	10.5
For face grooving	CAFR/L-3T12-*	12	10.4
	CAFR/L-4T16-*	16	10.5
	CAFR/L-5T20-*	20	10.5
	CAFR/L-6T20-*	25	10.5

CAER/L

blades for external grooving & turning







Inserts:
DGS, SGS, DGM, SGM, DTX, DTE, DGG, DTR, SGN

Right hand (R) shown.

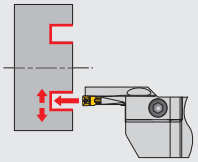
Designation	Seat size	*ar*	*L*1	*f*	Shank
CAER/L-3T16	3	16	45	10.4	CHSR/L, CHRVL/R
CAER/L-4T16	4	16	45	10.5	CHSR/L, CHRVL/R
CAER/L-5T20	5	20	49	10.5	CHSR/L, CHRVL/R
CAER/L-6T20	6	20	49	10.5	CHSR/L, CHRVL/R

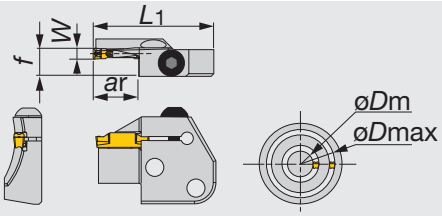
SPARE PARTS

Designation	Screw	Wrench
CAER/L	BHM6-20-A	P-4

CAFR/L

blades for face grooving & turning







Inserts[5]
CAFR/L-3T12-040055: DTF
Shanks: CHFVR/L, CHSR/L

Right hand (R) shown.

Designation	Seat size	*ø*Dm	*ø*Dmax	*ar*	*L*1	*f*
CAFR/L-3T12-040055	3	40	55	12	45	10.4
CAFR/L-3T12-055075	3	55	75	12	45	10.4
CAFR/L-3T12-075100	3	75	100	12	45	10.4
CAFR/L-3T12-100140	3	100	140	12	45	10.4
CAFR/L-3T12-140200	3	140	200	12	45	10.4
CAFR/L-4T16-050070	4	50	70	16	45	10.5
CAFR/L-4T16-070100	4	70	100	16	45	10.5
CAFR/L-4T16-100150	4	100	150	16	45	10.5
CAFR/L-4T16-150250	4	150	250	16	45	10.5
CAFR/L-5T20-055080	5	55	80	20	49	10.5
CAFR/L-5T20-080120	5	80	120	20	49	10.5
CAFR/L-5T20-120180	5	120	180	20	49	10.5
CAFR/L-5T20-180300	5	180	300	20	49	10.5
CAFR/L-5T20-300000	5	300	∞	20	49	10.5
CAFR/L-6T25-060090	6	60	90	25[1]	55	10.5
CAFR/L-6T25-090150	6	90	150	25[1]	55	10.5
CAFR/L-6T25-150250	6	150	250	25[1]	55	10.5
CAFR/L-6T25-250400	6	250	400	25[1]	55	10.5

(1) When groove depth is beyond the value of insert full length -1.5 mm, 1-conered insert is recommended.
(2) The value "*f*" is the dimension when the insert with groove width (W) in the above table is attached.
(3) Not applicable for CAFR/L-3T12-040055.
(4) Seat sizes of DTF are only 3 and 4.
(5) Min. diameter *ø*Dm of DTE, DGS and DGM insert.

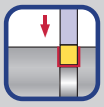
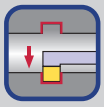
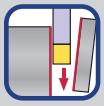
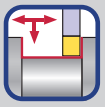
SPARE PARTS

Designation	Screw	Wrench
CAFR/L	BHM6-20-A	P-4

Tooling System

Inserts for CAER/L, CAFR/L → **C077 -**

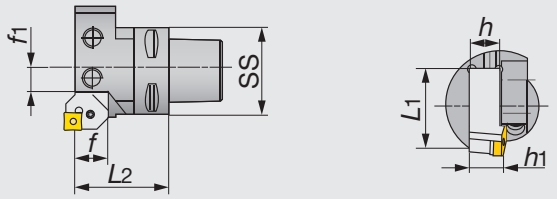
INSERT APPLICATION

Insert	Application						
	Grooving			Parting	Turning		
	External	Internal	Face		External	Internal	Face
							
DGM / SGM	●		●	●			
DGS / SGS	●		●	●			
DTE	●		●		●		●
DGG	●		●				
DGE	●						
DTX	●	●	●	●	●	●	●
DTI		●				●	
DGIM / DGIS		●					
DTF			●				●
DTR	●		●		●		●
DTIU	● Undercutting	● Undercutting					
DTA					● Al wheel machining	● Al wheel machining	
SGN	●						

TUNGCAP

C-ADER/L

Adapter for square shank toolholders

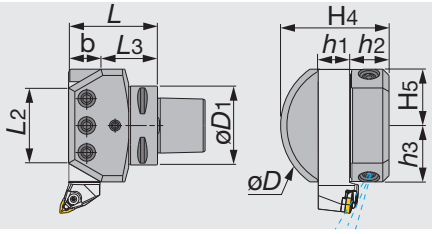


Left hand (L) shown.

Designation	SS	f_1	L_2	f	h_1	h	L_1
C4ADE-20R/L	40	8	49.2	20	20	20	57
C5ADE-20R/L	50	8	55.2	20	20	20	57

C-ASHA

Adapters for square shank toolholders

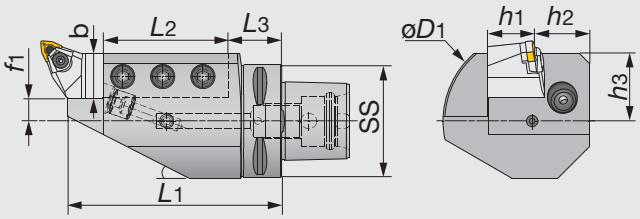


Designation	$øD_1$	h_1	b	L	L_2	L_3	h_3	H_5	h_2	H_4	$øD$
C5ASHA20	50	20	20	58	46	38	38	38	31.5	76.5	90
C6ASHA20	63	20	20	60	46	40	38	38	31.5	76.5	90
C6ASHA25	63	25	25	71	61	46	45	45	31.6	86.5	110

TUNGCAP

C-ASHR/L

Adapter for square shank toolholders

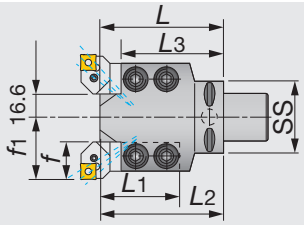


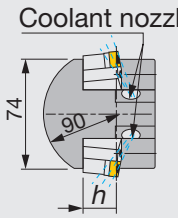
Left hand (L) shown.

Designation	SS	L_1	L_2	L_3	f_1	h_1	b	h_2	h_3	$øD_1$
C5ASHR/L201	50	98	63.5	24.5	10	20	20	33	30	90
C6ASHR251-J	63	120	82	38	-	25	25	31.5	29.5	90
C6ASHL251	63	120	70	30	13	25	25	32	38	100
C8ASHR/L32-1	80	140	95	35	8	32	32	32	40	110

C-ADES

Adapters for square shank toolholders

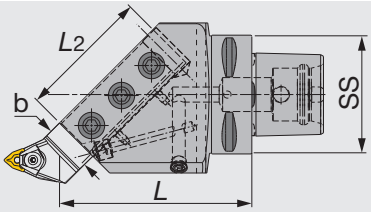


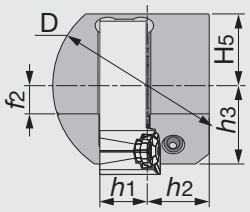


Designation	SS	f_1	L_2	L	L_3	h	f	L_1
C4ADES-20	40	41.6	98	85	71	20	25	67
C5ADES-20	50	41.6	98	85	71	20	25	67

C-ASHR/L-45

Adapters for square shank toolholder with 45° slanted





Left hand (L) shown.

Designation	SS	h_1	b	L_2	L	h_2	h_3	H_5	f_2	D
C5ASHR/L20-45	50	20	20	-	127	26	36	31.5	15	72
C6ASHR/L20-45	63	20	20	70	102	33	41.6	38	15	72
C6ASHR/L25-45	63	25	25	70	102	33	41.6	38	15	100

C-ABB

Adaptors for boring bars with sleeves

Fig. 1

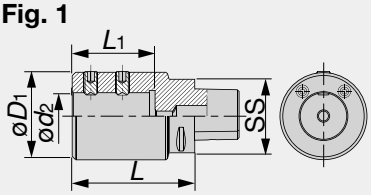


Fig. 2

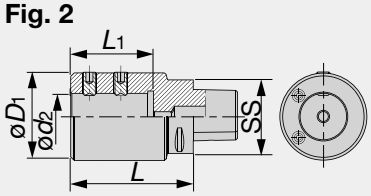
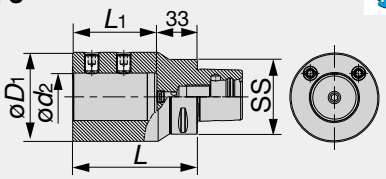


Fig. 3



Designation	SS	ød2	øD1	L	L1	Fig.
C5ABB-25-60	50	25	63	100	60	2
C6ABB-25-60C*	63	25	63	95	60	1
C6ABB-40-70C*	63	40	75	105	71	3
C8ABB25-60	80	25	63	100	60	2
C8ABB40-72	80	40	75	105	71	2

* Use the appropriate outlet screw according to the tool setup.
Applicable for 7 MPa pressure coolant

SPARE PARTS

Designation	Clamp screw		Coolant outlet screw for internal supply	Coolant outlet screw for external supply
	Used on A-type sleeves	Used on B-type sleeves		
C...ABB-25-60/C	SRM10X20DIN915	SRM10X12DIN1835-B	SRM10X6DIN913	SRM6X8DIN913
C6ABB-40-70/C	SRM12X20DIN915	SRM12X16DIN1835-B	SRM10X6DIN913	SRM6X8DIN913
C8ABB25-60	SRM10X20DIN915	SRM10X12DIN1835-B	SRM10X6DIN913	-
C8ABB40-72	SRM12X20DIN915	SRM12X16DIN1835-B	SRM10X6DIN913	-

SC

Sleeves for C-ABB adaptors

Fig. A

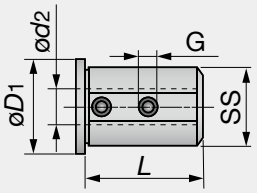
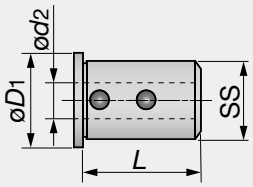


Fig. B

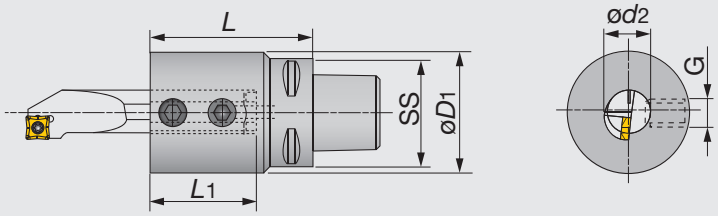


Designation	SS	ød2	øD1	L	G	Fig.
SC25T6A	25	6	31	56	M6	A
SC25T8A	25	8	31	56	M8	A
SC25T10A	25	10	31	56	M8	A
SC25T12A	25	12	31	56	M8	A
SC25T16B	25	16	31	56	-	B
SC25T20B	25	20	31	56	-	B
SC40T6A	40	6	46	58	M6	A
SC40T8A	40	8	46	58	M6	A
SC40T10A	40	10	46	58	M8	A
SC40T12A	40	12	46	58	M8	A
SC40T16B	40	16	46	58	-	B
SC40T20B	40	20	46	58	-	B
SC40T25B	40	25	46	58	-	B
SC40T32B	40	32	46	58	-	B

TUNGCAP

C-ADI

Adaptors for boring bars

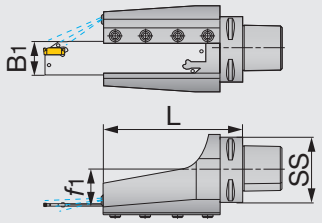


Designation	SS	*L*	L_1	$ød_2$	$øD_1$	G
C4ADI10	40	50	20	10	36	M6
C4ADI12	40	50	24	12	36	M8
C4ADI16	40	50	32	16	36	M8
C4ADI20	40	60	35	20	36	M10
C4ADI25	40	70	45	25	54	M12
C5ADI10	50	60	26	10	36	M6
C5ADI12	50	60	26	12	36	M8
C5ADI16	50	60	32	16	36	M8
C5ADI20	50	75	49	20	55	M12
C5ADI25	50	85	60	25	60	M12
C5ADI32	50	100	76	32	68	M12
C6ADI12	60	65	36	12	36	M8
C6ADI16	60	65	36	16	36	M8
C6ADI20	60	65	40	20	36	M10
C6ADI25	60	76	51	25	54	M12
C6ADI32	60	100	76	32	68	M12
C6ADI40	60	100	76	40	98	M12
C6ADI50	60	115	76	50	98	M12
C8ADI12	80	70	36	12	36	M8
C8ADI16	80	70	36	16	36	M8
C8ADI20	80	70	40	20	36	M10
C8ADI25	80	80	51	25	54	M12
C8ADI32	80	110	86	32	68	M12
C8ADI40	80	115	86	40	98	M12
C8ADI50	80	115	86	50	98	M12

TUNGCUT

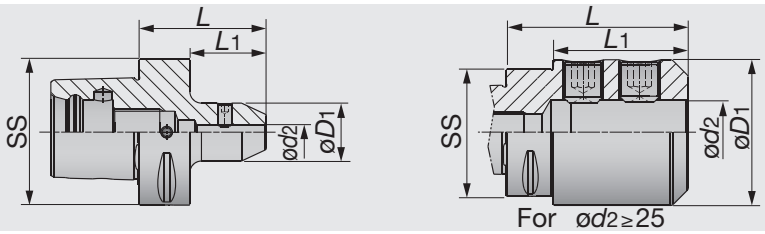
C-TBK-R/L

Adaptors for parting and grooving blades



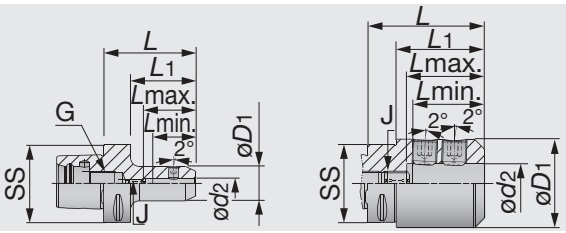
Designation	SS	f1	*L*	B_1
C6TBK-32R/L	63	32	138	32
C8TBK-32R	80	40.5	147	32
C8TBK-52R	80	40.5	161	52

Weldon endmill holders (DIN1835 Form B)



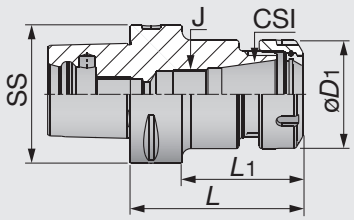
Designation	SS	ød2	øD1	L	L1
C4EM06X50	40	6	25	50	30
C4EM08X50	40	8	28	50	30
C4EM10X50	40	10	35	50	30
C4EM12X55	40	12	42	55	35
C4EM14X55	40	14	44	55	35
C4EM16X60	40	16	48	60	40
C5EM06X50	50	6	25	50	30
C5EM08X50	50	8	28	50	30
C5EM10X55	50	10	35	55	35
C5EM12X60	50	12	42	60	40
C5EM14X60	50	14	44	60	40
C5EM16X60	50	16	48	60	40
C5EM18X60	50	18	50	60	40
C5EM20X60	50	20	52	60	40
C5EM25X85	50	25	65	85	65
C6EM6X55	63	6	25	55	33
C6EM8X55	63	8	28	55	33
C6EM10X60	63	10	35	60	38
C6EM12X60	63	12	42	60	38
C6EM14X60	63	14	44	60	38
C6EM16X65	63	16	48	65	43
C6EM18X65	63	18	50	65	43
C6EM20X65	63	20	52	65	43
C6EM25X80	63	25	65	80	58
C6EM32X90	63	32	72	90	68
C6EM40X100	63	40	90	100	78
C8EM06X70	80	6	25	70	40
C8EM08X70	80	8	28	70	40
C8EM10X70	80	10	35	70	40
C8EM12X70	80	12	42	70	40
C8EM14X70	80	14	44	70	40
C8EM16X70	80	16	48	70	40
C8EM18X70	80	18	50	70	40
C8EM20X70	80	20	52	70	40
C8EM25X90	80	25	65	90	60
C8EM32X95	80	32	72	95	65
C8EM40X110	80	40	90	110	80
C8EM50X120	80	50	98	120	90

Drill holders (DIN1835 Form E - whistle notch)



Designation	SS	ød2	øD1	L	Lmin	Lmax	L1	J	G
C4EM06X70E	40	6	25	70	30	35	50	M5	M14
C4EM08X70E	40	8	28	70	35	43	50	M6	M14
C4EM10X70E	40	10	35	70	39	45	50	M8	M14
C4EM12X75E	40	12	42	75	44	49	55	M10	M14
C4EM14X75E	40	14	44	75	44	49	55	M10	M14
C5EM06X70E	50	6	25	70	30	35	50	M5	M16
C5EM08X70E	50	8	28	70	35	43	50	M6	M16
C5EM10X70E	50	10	35	70	39	45	50	M8	M16
C5EM12X75E	50	12	42	75	44	49	55	M10	M16
C5EM14X75E	50	14	44	75	44	49	55	M10	M16
C5EM16X80E	50	16	48	80	47	52	60	M12	M16
C5EM18X80E	50	18	50	80	47	52	60	M12	M16
C5EM20X85E	50	20	52	85	49	55	65	M16	M16
C6EM06X75E	63	6	25	75	30	36	53	M5	M20
C6EM08X75E	63	8	28	75	35	43	53	M6	M20
C6EM10X75E	63	10	35	75	39	46	53	M8	M20
C6EM12X80E	63	12	42	80	44	49	58	M10	M20
C6EM14X80E	63	14	44	80	44	49	58	M10	M20
C6EM16X85E	63	16	48	85	47	52	63	M12	M20
C6EM18X85E	63	18	50	85	47	52	63	M12	M20
C6EM20X85E	63	20	52	85	49	55	63	M16	M20
C6EM25X90E	63	25	65	90	54	60	68	M20	M20
C6EM32X95E	63	32	72	95	58	63	73	M20	M20
C8EM06X65E	80	6	25	65	30	36	35	M5	M20
C8EM08X65E	80	8	28	65	35	43	35	M6	M20
C8EM10X65E	80	10	35	65	39	46	35	M8	M20
C8EM12X70E	80	12	42	70	44	49	40	M10	M20
C8EM14X70E	80	14	44	70	44	49	40	M10	M20
C8EM16X75E	80	16	48	75	47	52	45	M12	M20
C8EM18X75E	80	18	50	75	47	52	45	M12	M20
C8EM20X80E	80	20	52	80	49	57	50	M16	M20
C8EM25X90E	80	25	65	90	54	60	60	M20	M20
C8EM32X95E	80	32	72	95	58	64	65	M20	M20

ER collet chucks holders (DIN 6499)



Designation	Range	SS	CSI	øD1	L	L1	J
C4ER16X70	1-10	40	ER16	28	70	50	M10
C4ER20X35*	1-13	40	ER20	34	35	27	-
C4ER20X52	1-13	40	ER20	34	52	32	-
C4ER25X38*	1-16	40	ER25	42	38	30	-
C4ER25X52	1-16	40	ER25	42	52	32	-
C4ER32X54	2-20	40	ER32	50	54	34	-
C5ER16X100	1-10	50	ER16	28	100	80	M10
C5ER16X130	1-10	50	ER16	28	130	120	M10
C5ER20X055	1-13	50	ER20	34	55	35	-
C5ER20X100	1-13	50	ER20	34	100	80	M12
C5ER20X130	1-13	50	ER20	34	130	120	M12
C5ER25X055	1-16	50	ER25	42	55	35	-
C5ER25X100	1-16	50	ER25	42	100	80	M16
C5ER32X057	2-20	50	ER32	50	57	36	-
C5ER32X100	2-20	50	ER32	50	100	80	M22X1.5
C6ER16X100	1-10	63	ER16	28	100	78	M10
C6ER16X130	1-10	63	ER16	28	130	108	M10
C6ER16X160	1-10	63	ER16	28	160	138	M10
C6ER20X060	1-13	63	ER20	34	60	38	-
C6ER20X100	1-13	63	ER20	34	100	78	M12
C6ER20X130	1-13	63	ER20	34	130	108	M12
C6ER20X160	1-13	63	ER20	34	160	138	M12
C6ER25X060	1-16	63	ER25	42	60	38	-
C6ER25X100	1-16	63	ER25	42	100	78	M16
C6ER25X130	1-16	63	ER25	42	130	108	M16
C6ER25X160	1-16	63	ER25	42	160	138	M16
C6ER32X060	2-20	63	ER32	50	60	36	-
C6ER32X100	2-20	63	ER32	50	100	78	M22X1.5
C6ER32X130	2-20	63	ER32	50	130	108	M22X1.5
C6ER32X160	2-20	63	ER32	50	160	138	M22X1.5
C6ER40X065	3-26	63	ER40	63	65	37	-
C6ER40X100	3-26	63	ER40	63	100	78	M28X1.5
C6ER40X130	3-26	63	ER40	63	130	108	M28X1.5
C8ER32X70	2-20	80	ER32	50	70	40	-
C8ER32X100	2-20	80	ER32	50	100	70	M22X1.5
C8ER32X160	2-20	80	ER32	50	160	130	M22X1.5
C8ER40X70	3-26	80	ER40	63	70	40	-
C8ER40X100	3-26	80	ER40	63	100	70	M28X1.5
C8ER40X160	3-26	80	ER40	63	160	130	M28X1.5

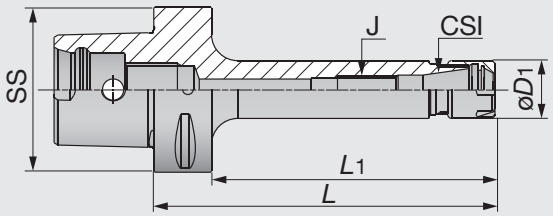
Wrench is not included.
*Without V grooves, for manual use only.

(Option:Wrench for ER collet)

TUNGCAP

C-ER-M

Mini ER collet chucks holders (DIN 6499)



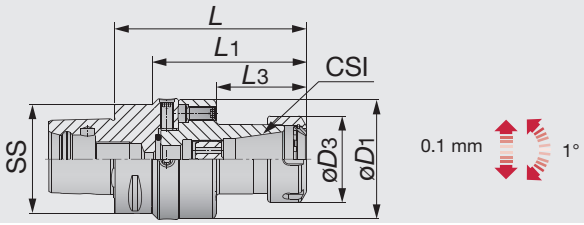
Designation	Range	SS	CSI	øD1	L	L1	J
C4ER16X70M	0.5-10	40	ER16	22	70	50	M10
C5ER16X100M	0.5-10	50	ER16	22	100	80	M10
C5ER16X130M	0.5-10	50	ER16	22	130	120	M10
C6ER16X100M	0.5-10	63	ER16	22	100	78	M10
C6ER16X130M	0.5-10	63	ER16	22	130	108	M10
C6ER16X160M	0.5-10	63	ER16	22	160	138	M10

(Option:Wrench for ER collet)

TUNGCAP

ADJ C-ER

ER collet chucks with center alignment



Designation	SS	CSI	Range	øD1	øD3	L	L1	L3
ADJC5ER32	50	ER32	2-20	70	50	115	95	52.5
ADJC6ER32	63	ER32	2-20	70	50	111.5	89.5	52.5

(Option:Wrench for ER collet)

WRENCH-ER / ER DIN 6499

Fig. 1

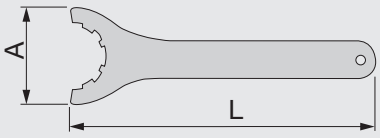


Fig. 2

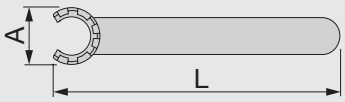
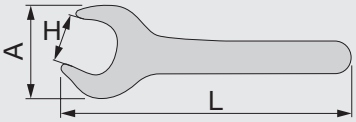


Fig. 3



Designation	A	H	L	Fig.
WRENCHER11MINI	16.8	-	95	2
WRENCHER11	32	17	95	3
WRENCHER16MINI	22.5	-	117	2
WRENCHER16	42.8	25	143	3
WRENCHER20MINI	28	-	128	2
WRENCHER20	53.5	30	172	3
WRENCHER25MINI	29	-	120	2
WRENCHER25	70	-	207	1
WRENCHER32	78	-	255	1
WRENCHER40	95	-	285	1
WRENCHER50	110	-	350	1
WRENCHER20SHORTRING22	48	22	260	3
WRENCHER32SHORT	75	36	303	3
WRENCHER40SHORT	94	46	378	3

PRESET ER-JET (Preset screws)

Fig. 1

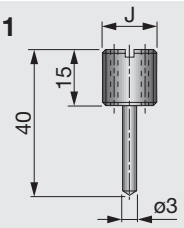
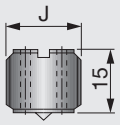
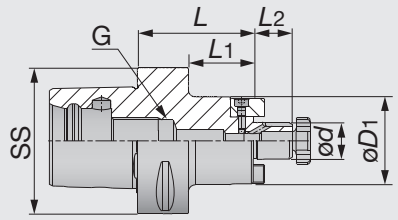


Fig. 2



Designation	J	Fig.
PRESETER-JET8X1	M8X1.0	2
PRESETER-JET8X1.25	M8X1.25	2
PRESETER-JET10X1.5	M10X1.5	2
PRESETER-JET12X1	M12X1.0	2
PRESETER-JET12X1.75L	M12X1.75	1
PRESETER-JET12X1.75	M12X1.75	2
PRESETER-JET14X1	M14X1.0	2
PRESETER-JET16X2	M16X2	2
PRESETER-JET16X2L	M16X2	1
PRESETER-JET18X1	M18X1.0	2
PRESETER-JET18X1.5	M18X1.5	2
PRESETER-JET18X1.5L	M18X1.5	1
PRESETER-JET22X1.5	M22X1.5	2
PRESETER-JET22X1.5L	M22X1.5	1
PRESETER-JET28X1.5	M28X1.5	2

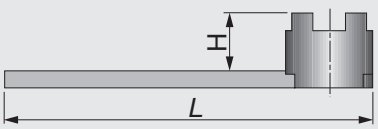
Shell mill holders (with coolant nozzle)



Designation	SS	ød	øD1	L	L2	L1	G
C4SEM16X32C	40	16	38	32	12	17	M14
C4SEM16X55C	40	16	38	55	35	17	M14
C4SEM22X40C	40	22	47	40	20	19	M14
C4SEM22X55C	40	22	47	55	35	19	M14
C5SEM16X35C	50	16	38	35	17	15	M16
C5SEM16X70C	50	16	38	70	17	50	M16
C5SEM22X35C	50	22	47	35	19	15	M16
C5SEM22X70C	50	22	47	70	19	50	M16
C5SEM25.4X37C	50	25.4	50	37	22	-	M16
C5SEM27X40C	50	27	58	40	21	20	M16
C5SEM31.75X60C	50	31.75	64	60	30	-	M16
C5SEM32X40C	50	32	63	40	24	20	M16
C6SEM16X50C	63	16	38	50	17	28	M20
C6SEM16X100C	63	16	38	100	17	78	M20
C6SEM22X50C	63	22	47	50	19	28	M20
C6SEM22X100C	63	22	47	100	19	78	M20
C6SEM25.4X37C	63	25.4	50	37	22	-	M20
C6SEM27X60C	63	27	58	60	21	38	M20
C6SEM27X100C	63	27	58	100	21	78	M20
C6SEM31.75X60C	63	31.75	64	60	30	-	M20
C6SEM32X60C	63	32	66	60	24	38	M20
C6SEM38.1X60C	63	38.1	80	60	34	-	M20
C6SEM40X60C	63	40	82	60	27	38	M20
C8SEM16X50C	80	16	38	50	20	17	M20
C8SEM16X100C	80	16	38	100	70	17	M20
C8SEM22X50C	80	22	47	50	20	19	M20
C8SEM22X100C	80	22	47	100	70	19	M20
C8SEM25.4X50C	80	25.4	50	50	22	20	M20
C8SEM27X50C	80	27	58	50	20	21	M20
C8SEM27X100C	80	27	58	100	70	21	M20
C8SEM31.75X50C	80	31.75	64	50	30	20	M20
C8SEM32X50C	80	32	66	50	20	24	M20
C8SEM32X100C	80	32	66	100	70	24	M20
C8SEM38.1X50C	80	38.1	80	50	34	-	M20
C8SEM40X60C	80	40	82	60	30	27	M20

(Option:Wrench for lock Screw)

WRENCH SEM / DIN6368

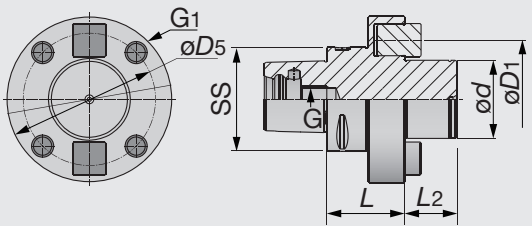


Designation	Inner diameter of cutter body ø	Screw size	H	L
WRENCHM8SEMC16	16	M8	20	180
WRENCHM10SEMC22	22	M10	25	200
WRENCHM12SEMC27	25.4 / 27	M12	32	225
WRENCHM16SEMC32	31.75 / 32	M16	36	250
WRENCHM20SEMC40	38.1 / 40	M20	40	280
WRENCHM24SEMC50	50	M24	50	315

TUNGCAP

C-FM

Face mill holders

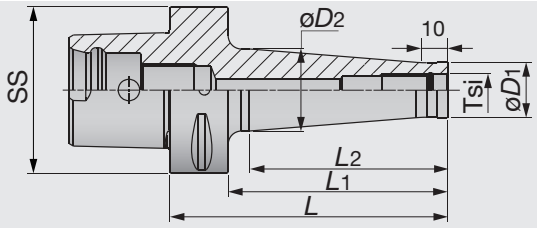


Designation	SS	ød	L2	L	øD1	øD5	G1	G
C8FM60X60	80	60	20	40	128	101.6	M16	M20

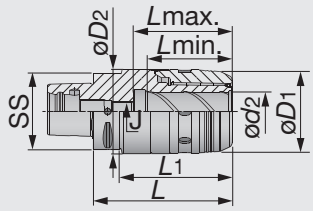
TUNGFLEX

C-ODP

TungFlex modular tooling system (Screw clamping head holder)



Designation	Tsi	SS	øD1	øD2	L	L1	L3
C4ODP10X53	M10	40	18	23	53	33	23
C4ODP12X53	M12	40	21	26	53	33	23
C4ODP16X53	M16	40	29	34	53	33	23
C5ODP10X53	M10	50	18	19.5	53	33	25
C5ODP10X103	M10	50	18	28	103	83	75
C5ODP12X53	M12	50	21	23.5	53	33	25
C5ODP12X103	M12	50	21	31	103	83	75
C5ODP16X53	M16	50	29	34	53	33	25
C5ODP16X103	M16	50	29	36	103	83	75
C6ODP10X55	M10	63	18	19.5	55	33	25
C6ODP10X105	M10	63	18	28	105	83	75
C6ODP10X130	M10	63	18	32	130	108	100
C6ODP12X55	M12	63	21	23.5	55	33	25
C6ODP12X105	M12	63	21	31	105	83	75
C6ODP12X130	M12	63	21	36	130	108	100
C6ODP16X55	M16	63	29	34	55	33	25
C6ODP16X105	M16	63	29	34	105	83	75
C6ODP16X130	M16	63	29	41	130	108	100

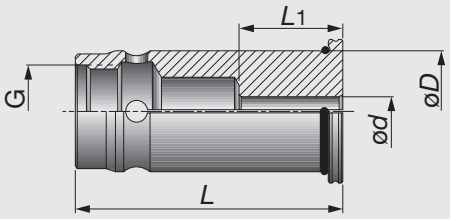


Designation	SS	Range	ød2	øD1	øD2	L	L1	Lmin	Lmax	J
C5MAXIN20X100	50	6-20	20	51	53	100	75	55	67	M16
C6MAXIN20X95	63	6-20	20	51	53	95	73	55	67	M16
C6MAXIN32X115	63	6-32	32	69	70	115	93	70	82	M16
C8MAXIN20X95	80	6-20	20	51	53	95	65	55	67	M16
C8MAXIN32X115	80	6-32	32	69	70	115	85	70	82	M16

(Option : Wrench for TungMax collet)

SC-SEAL

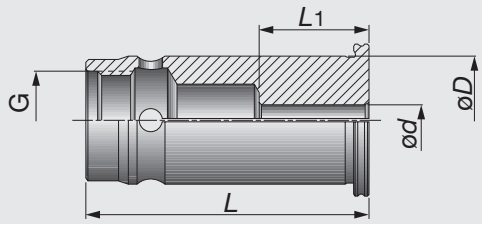
SC sealed straight collets - metric



Designation	ød	øD	L	L1	G
SC20SEAL6	6	20	60	28	M16
SC20SEAL8	8	20	60	28	M16
SC20SEAL10	10	20	60	35	M16
SC20SEAL12	12	20	60	40	M16
SC20SEAL14	14	20	60	40	M16
SC20SEAL15	15	20	60	40	M16
SC20SEAL16	16	20	60	39	M16
SC32SEAL6	6	32	72	28	M24x1.5
SC32SEAL8	8	32	72	28	M24x1.5
SC32SEAL10	10	32	72	35	M24x1.5
SC32SEAL12	12	32	72	40	M24x1.5
SC32SEAL14	14	32	72	40	M24x1.5
SC32SEAL15	15	32	72	40	M24x1.5
SC32SEAL16	16	32	72	44	M24x1.5
SC32SEAL18	18	32	72	44	M24x1.5
SC32SEAL19	19	32	72	44	M24x1.5
SC32SEAL20	20	32	72	46	M24x1.5
SC32SEAL24	24	32	72	46	M24x1.5
SC32SEAL25	25	32	72	51	M24x1.5

SC-SPR

SC straight collets - metric



Designation	ød	øD	L	L1	G
SC20SPR6	6	20	60	28	M16
SC20SPR8	8	20	60	28	M16
SC20SPR10	10	20	60	35	M16
SC20SPR12	12	20	60	40	M16
SC20SPR14	14	20	60	40	M16
SC20SPR15	15	20	60	40	M16
SC20SPR16	16	20	60	39	M16
SC32SPR6	6	32	72	28	M24x1.5
SC32SPR8	8	32	72	28	M24x1.5
SC32SPR10	10	32	72	35	M24x1.5
SC32SPR12	12	32	72	40	M24x1.5
SC32SPR14	14	32	72	40	M24x1.5
SC32SPR15	15	32	72	40	M24x1.5
SC32SPR16	16	32	72	44	M24x1.5
SC32SPR18	18	32	72	44	M24x1.5
SC32SPR19	19	32	72	44	M24x1.5
SC32SPR20	20	32	72	46	M24x1.5
SC32SPR24	84	32	72	45	M24x1.5
SC32SPR25	25	32	72	51	M24x1.5

PRESET SC CAP

Preset screw for SC collets

Fig. 1

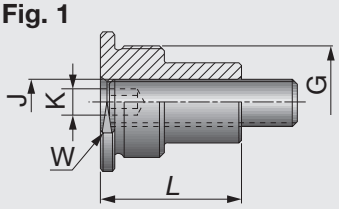
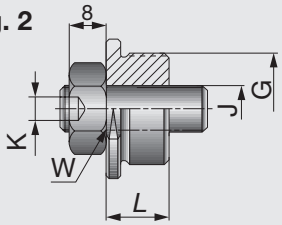
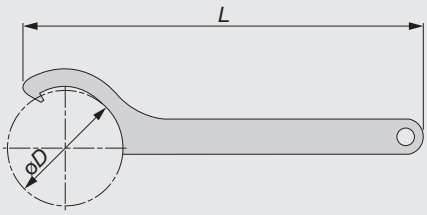


Fig. 2



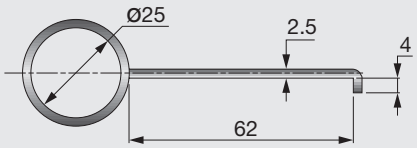
Designation	L	W	J	G	Fig	Range	key	CSI
PRESETSCCAP8x1.25L	28	16	M8X25	M16	1	6-8	4	SC20
PRESETSCCAP8x1.25	15	16	M8X25	M16	2	10-16	4	SC20
PRESETSCCAP10x1.5L	30	27	M10X30	M24X1.5	1	6-14	5	SC32
PRESETSCCAP10x1.5	13.5	27	M10X30	M24X1.5	2	16-25	5	SC32

Wrench



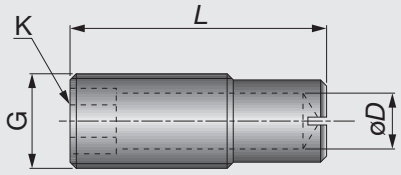
Designation	øD	L
WRENCHMAXIN20HOOK	26	16
WRENCHMAXIN32HOOK	68	16

SC collet extracting hook



Designation
EXTRACTORSCCOLLETS

Preset screws

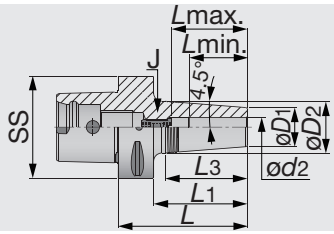


Designation	G	L	øD	K
PRESETMAXIN16X30	M16	30	8	8
PRESETMAXIN16X44	M16	44	8	8
PRESETMAXIN20X55	M20	55	12	12

TUNGSHRINK

C-SRKIN

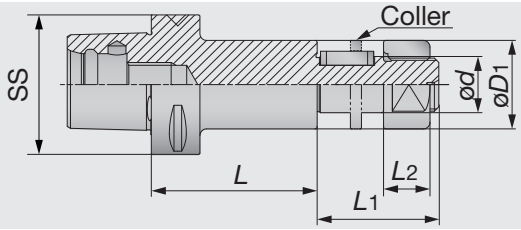
Thermal shrinking holders



Designation	SS	ød2	øD1	øD2	L	L1	L3	Lmin	Lmax	J
C4SRKIN6X75	40	6	21	27	75	55	38.1	25	36	M5
C4SRKIN8X75	40	8	21	27	75	55	38.1	25	36	M6
C4SRKIN10X75	40	10	24	32	75	55	50.8	31	42	M8
C4SRKIN12X75	40	12	24	32	75	55	50.8	36	47	M10
C4SRKIN14X80	40	14	27	34	80	60	44.5	36	47	M10
C4SRKIN16X80	40	16	27	34	80	60	44.5	39	50	M12
C4SRKIN18X80	40	18	33	42	80	60	57.2	39	50	M12
C4SRKIN20X85	40	20	33	42	85	65	57.2	41	52	M16
C5SRKIN6X75	50	6	21	27	75	55	38.1	25	36	M5
C5SRKIN8X75	50	8	21	27	75	55	38.1	25	36	M6
C5SRKIN10X75	50	10	24	32	75	55	51.3	31	42	M8
C5SRKIN12X75	50	12	24	32	75	55	51.3	36	47	M10
C5SRKIN14X80	50	14	27	34	80	60	44.5	36	47	M10
C5SRKIN16X80	50	16	27	34	80	60	44.5	39	50	M12
C5SRKIN18X80	50	18	33	42	80	60	57.2	39	50	M12
C5SRKIN20X85	50	20	33	42	85	65	57.2	41	52	M16
C5SRKIN25X90	50	25	44	53	90	70	57.2	47	58	M16
C6SRKIN6X80	63	6	21	27	80	58	38.1	25	36	M5
C6SRKIN8X80	63	8	21	27	80	58	38.1	25	36	M6
C6SRKIN10X80	63	10	24	32	80	58	50.8	31	42	M8
C6SRKIN12X80	63	12	24	32	80	58	50.8	36	47	M10
C6SRKIN14X85	63	14	27	34	85	63	44.5	36	47	M10
C6SRKIN16X85	63	16	27	34	85	63	44.5	39	50	M12
C6SRKIN18X85	63	18	33	42	85	63	57.2	39	50	M12
C6SRKIN20X85	63	20	33	42	85	63	57.2	41	52	M16
C6SRKIN25X90	63	25	44	53	90	68	57.2	47	58	M16
C6SRKIN32X95	63	32	44	53	95	73	57.2	47	58	M16

C-SCA

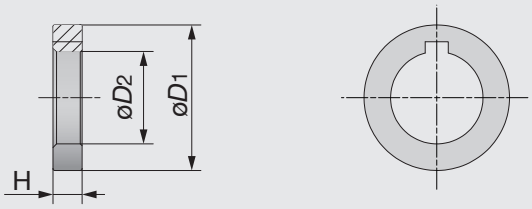
Slot milling holders



Designation	SS	ød	L	øD1	L1	L2
C6SCA25.4-075	63	25.4	75	40	55	21
C6SCA31.75-075	63	31.75	75	46	60	26
C8SCA25.4-090	80	25.4	90	40	55	21
C8SCA31.75-090	80	31.75	90	46	60	26

SCA

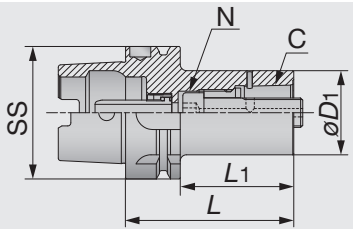
Coller for slot milling holder



Designation	øD1	øD2	H
SCA25.4-02	40	25.4	3,5,7,8,10,12,14
SCA31.75-02	46	31.75	3,5,7,8,10,12,14

HSK-A-C/-T

Basic holders HSK shank

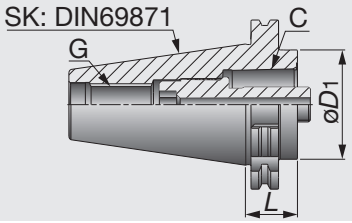


Designation	SS	C	øD1	L	L1	N*
HSK63A-C4-080T	63	C4	40	80	54	55
HSK63A-C5-090T	63	C5	50	90	64	95
HSK63A-C6-110T	63	C6	63	110	74	170
HSK100A-C6-110	100	C6	63	110	81	170
HSK100A-C8-120	100	C8	80	120	91	170

*Recommended torque (N·m) for clamping

C-ADSKA

Basic holders for DIN 69871 form AD / ADB tapered shanks

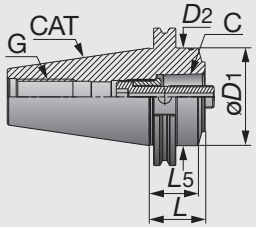


Designation	C	SK	øD1	L	G	N*
C4ADSKA40X30	C4	40	40	30	M16	55
C5ADSKA40X30	C5	40	50	30	M16	95
C5ADSKA50X30ADB	C5	50	50	30	M24	95
C6ADSKA50X30	C6	50	63	30	M24	170
C8ADSKA50X70ADB	C8	50	80	70	M24	170

*Recommended torque (N·m) for clamping

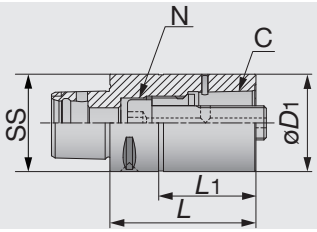
C-ADCAT

Basic holders for caterpillar AD / ADB tapered shanks



Designation	C	CAT	øD1	D2	L	L5	G	N*
C4ADCATI40X40ADB	C4	40	40	44.5	40	35	5/8X11	55
C5ADCATI40X90ADB	C5	40	50	45.2	90	35	5/8X11	95
C5ADCATI50X40ADB	C5	50	50	69.9	40	35	1-8	95
C6ADCATI50X50	C6	50	63	69.85	50	37	1-8	170
C8ADCATI50X100ADB	C8	50	80	70.1	100	35	1-8	170

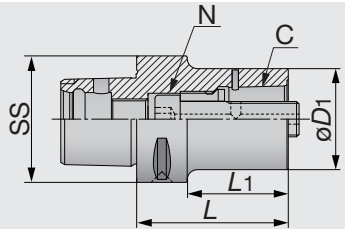
*Recommended torque (N·m) for clamping



Designation	C	SS	øD1	L	L1	N*
C4EX-060	C4	40	40	60	80	65
C4EX-080	C4	40	40	80	60	65
C5EX-080	C5	50	50	80	60	95
C5EX-100	C5	50	50	100	80	95
C6EX-100	C6	63	63	100	78	170
C6EX-140	C6	63	63	140	118	170
C8EX-100	C8	80	80	100	70	170
C8EX-160	C8	80	80	160	130	170

*Recommended torque (N·m) for clamping

Reduction adapters

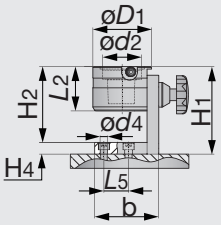


Designation	C	SS	øD1	L	L1	N*
C5-C4RE-060	C4	50	40	60	40	55
C5-C4RE-080	C4	50	40	80	60	55
C6-C4RE-080	C4	63	40	80	58	55
C6-C5RE-080	C5	63	50	80	58	95
C6-C5RE-120	C5	63	50	120	98	95
C8-C4RE-070	C4	80	40	70	40	55
C8-C5RE-080	C5	80	50	80	50	95
C8-C6RE-080	C6	80	63	80	50	170
C8-C6RE-120	C6	80	63	120	90	170

*Recommended torque (N·m) for clamping

MULTI CLAMP (TungCap)

Multi-clamp fixture for TungCap



Designation	CSI	ød2	øD1	L2	H1	H2	H4	b	L5	ød4
MULTICLAMPC4	40	40.4	78	67	137.5	118.5	19	104	40	12.5
MULTICLAMPC5	50	50	85	72	142	123	19	104	40	12.5
MULTICLAMPC6	60	63	95	72	142	123	19	104	40	12.5
MULTICLAMPC8	80	80	130	90	178	159	19	144	85	12.5

MEMO

Designation for clamping units

Fixed-type clamping unit

	For external (Tool setting direction cross X)	For internal (Tool setting direction straight Z)
Turning Unit	C□-DTO-□C-****-R/L	C□-DTI-□C-****-R/L
		
Driving Unit	C□-DDC-□C-****	C□-DDS-□C-****
		

Description of clamping unit for turning

C3 - D T I - IC - *** - R**

❶ PSC size	❷ Device	❸ Turning
C*	D	T

❹ Application	
O	External
I	Internal

❺ Coolant	
IC	Internal
OC	External
WC	Double

❻ Unit number
*****

❼ Hand	
R	Right
L	Left

Description of clamping unit for driving

C6 - D D C - OC - ***

❶ PSC size	❷ Device	❸ Drive
C*	D	D

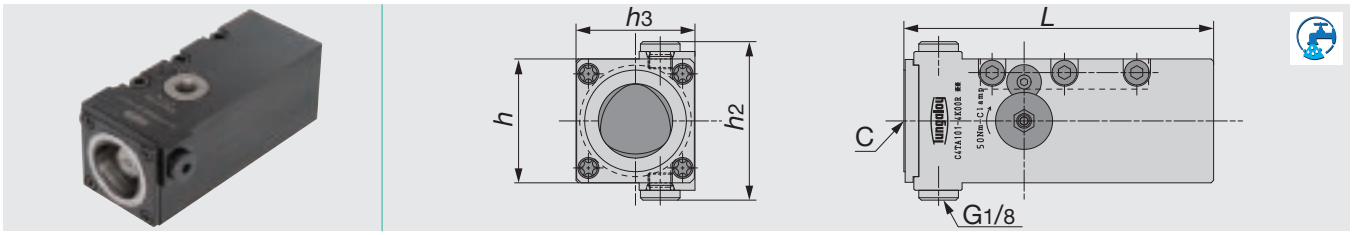
❹ Tool setting direction	
S	Straight: Z
C	Cross: X
X	Other

❺ Coolant	
IC	Internal
OC	External
WC	Double

❻ Unit number
*****

C-DTOSR/L

Manual clamping unit; Square shank



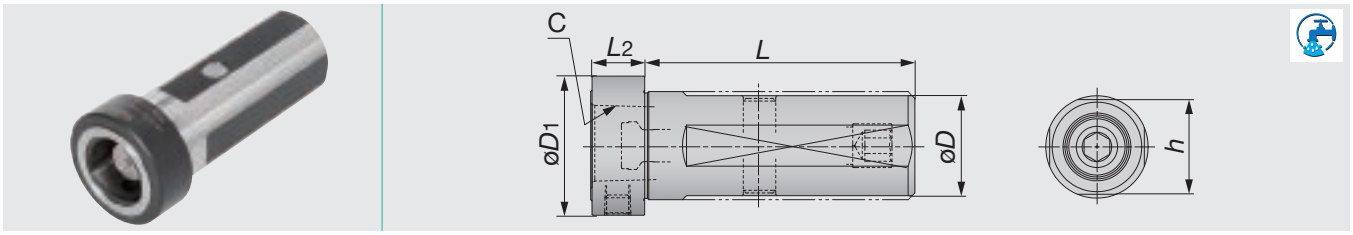
Designation	C	Turret size h	h3	h2	L	N*(N·m)
C3-DTOS4038R/L	C3	40	38	62	95	35
C4-DTOS5048R/L	C4	50	48	64	125	50
C5-DTOS6464R/L	C5	60	64	68	145	70

Items for special order.

* Recommend clamping torque.

C-DTIR

Manual clamping unit; Round shank



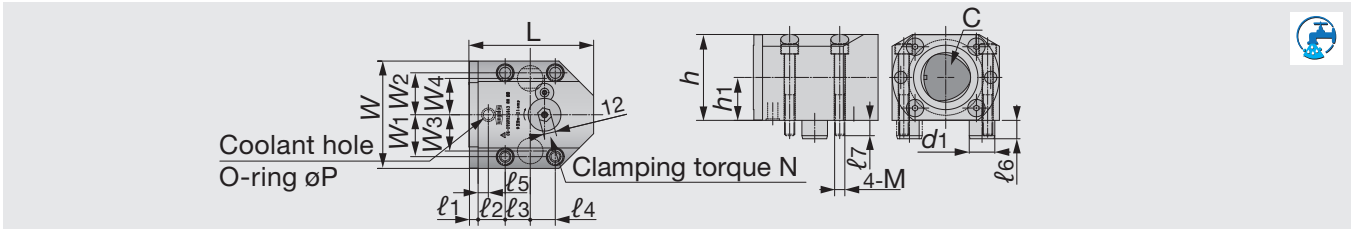
Designation	C	øD	øD1	h	L	L2	N*(N·m)
C3-DTIR-08018-D32	C3	32	46	30	80	18	35
C4-DTIR-10020-D40	C4	40	52	38	100	20	50
C4-DTIR-12020-D50	C4	50	52	48	120	20	50
C5-DTIR-12024-D50	C5	50	62	48	120	24	70

Items for special order.

* Recommend clamping torque.

C-DTOFR/L

Manual clamping unit; Fixed type



Designation	C	h	h1	L	W	W1 W2	W3 W4	ℓ1	ℓ2	ℓ3 ℓ4	ℓ5	ℓ6	ℓ7	d1(f6*)	P	M	N*(N·m)
C5-DTOFR/L32048	C5	64	32	100	92	35	31	8	19	21	7	11	15	20	P8	M10	70
C6-DTOFR/L42060	C6	84	42	122	105	41	35.5	9	26.5	24.5	10	18	15	25	P10	M10	90
C8-DTOFR/L50088	C8	100	50	146	133	55	46	12	33	43	13	19	20	32	P11	M12	130

Items for special order.

* f6 tolerance: d20 & 25 = -0.022 / -0.033, d32 = 0.025 / -0.041.

* Recommend clamping torque.

Selection for External turning

Fig. 1

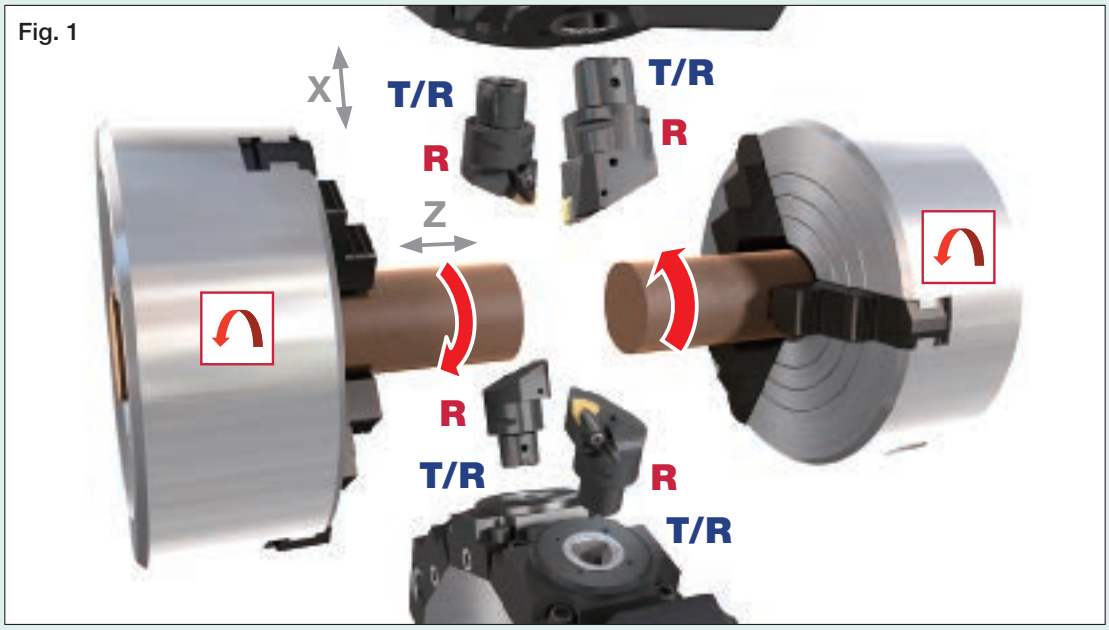
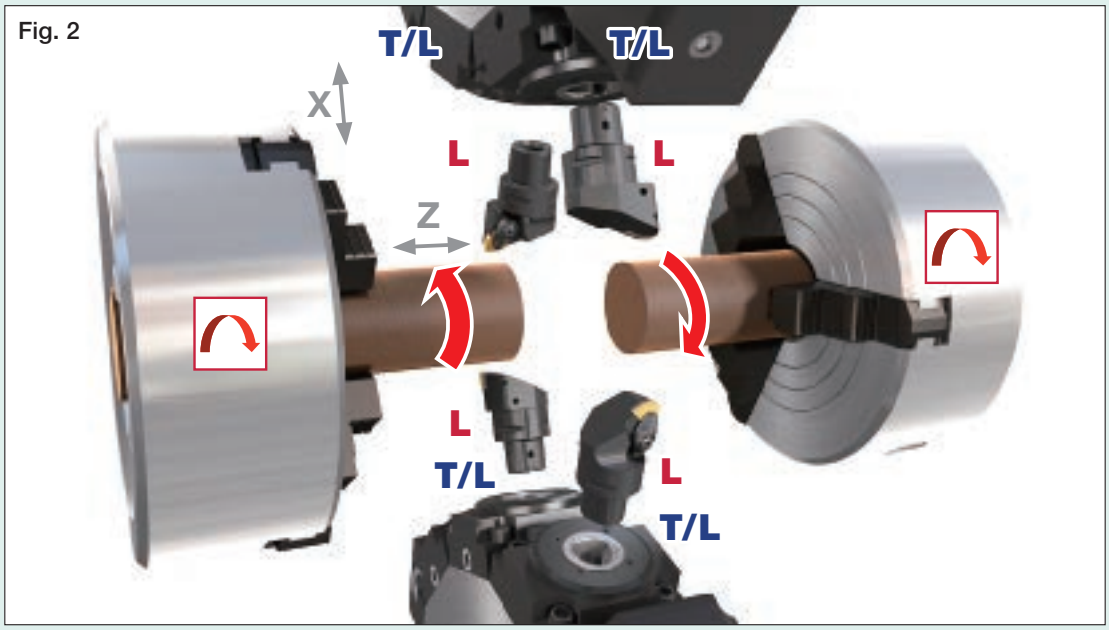


Fig. 2



R: Rigth hand cutting tool, **L:** Left hand cutting tool
T/R: Right hand clamping unit, **T/L:** Left hand clamping unit

■ Spindle rotation

: Clockwise : Counterclockwise

Spindle	Rotation	Hand		Fig.
		Clamping Unit	Cutting Head	
Left side	Counterclockwise	L	L	1
Right side	Counterclockwise	L	L	1
Left side	Clockwise	R	R	2
Right side	Clockwise	R	R	2

Clamping units & tools for CNC lathes

Selection for Internal turning

Fig. 1

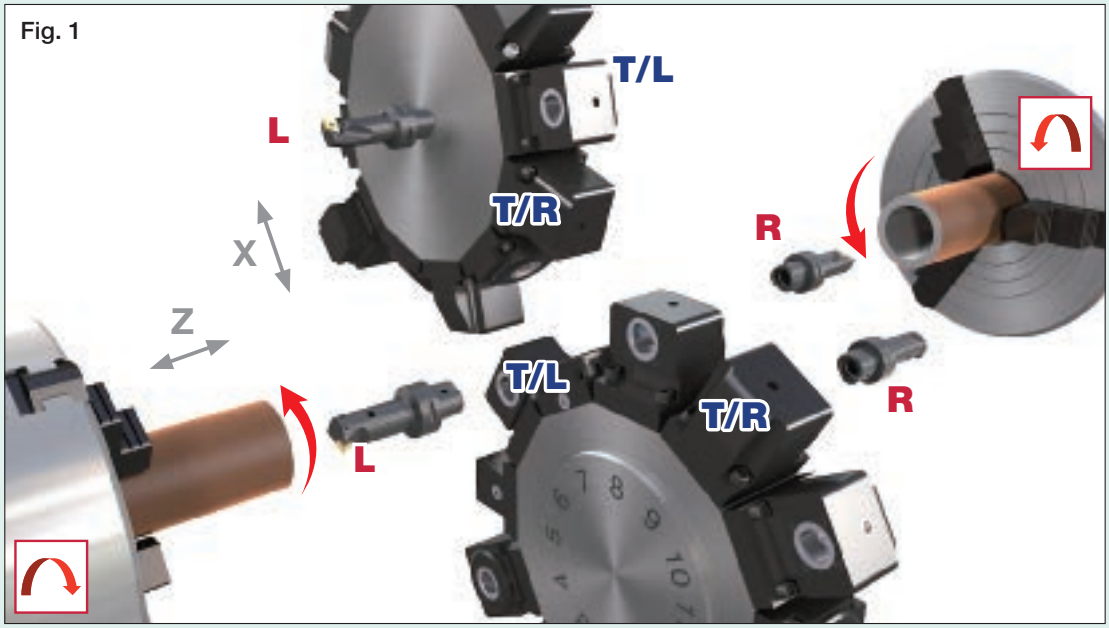
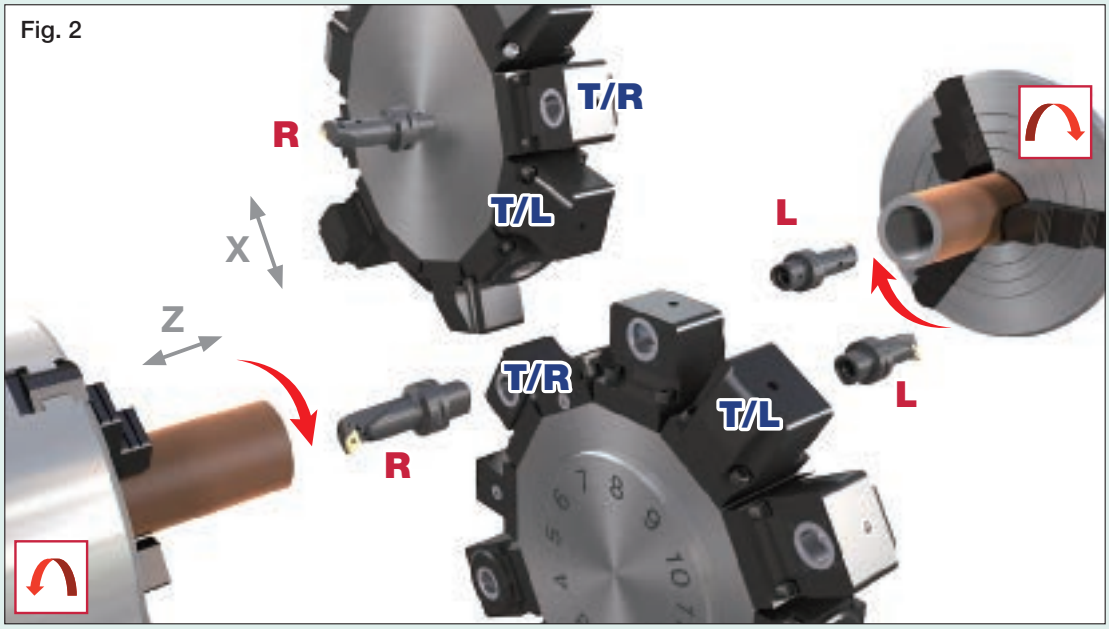


Fig. 2



R: Rigth hand cutting tool, **L:** Left hand cutting tool
T/R: Right hand clamping unit, **T/L:** Left hand clamping unit

■ Spindle rotation

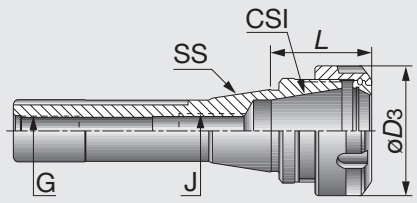
: Clockwise : Counterclockwise

Spindle	Rotation	Hand		Fig.
		Clamping unit	Cutting head	
Left side	Clockwise	L	L	1
Right side	Counterclockwise	R	R	1
Left side	Counterclockwise	R	R	2
Right side	Clockwise	L	L	2

TUNGHOLD

R-8 ER (Collet chuck)

ER collet chucks with R-8 Bridgeport shank



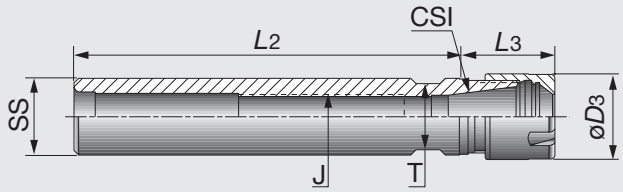
Designation	SS	CSI	Range	*L*	*øD3*	J	G
R-8ER16X38	R-8	ER16	0.5-10	38	28	M10	7/16-20
R-8ER32X40	R-8	ER32	2-20	40	50	M12	7/16-20
R-8ER40X72	R-8	ER40	3-26	72	63	M12	7/16-20

(Option:Wrench for ER collet)

TUNGHOLD

ST-ER-M (Mini collet)

ER Mini-collet chucks with Straight shank



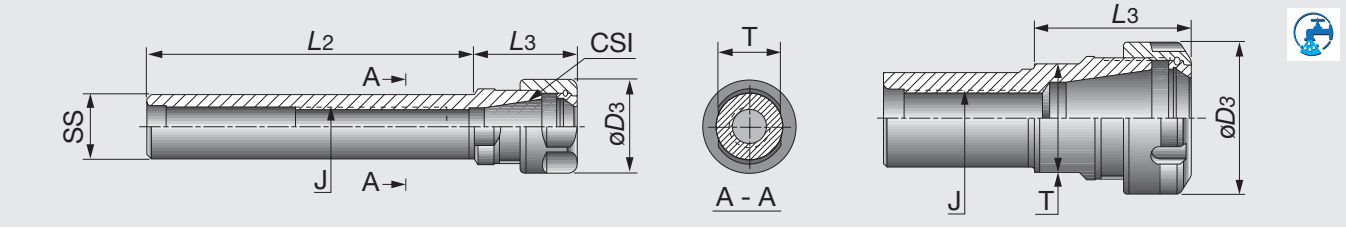
Designation	SS	CSI	Range	*L2*	*L3*	J	*øD3*	T
ST12X80ER11M	12	ER11	0.5-7	80	26.5	-	16	11
ST16X50ER11MF	16	ER11	0.5-7	50	18.5	M8	16	13
ST16X100ER11M	16	ER11	0.5-7	100	18.5	M8	16	13
ST16X150ER11M	16	ER11	0.5-7	150	18.5	M8	16	13
ST12X80ER16M	12	ER16	0.5-10	80	36.5	-	22	17
ST20X100ER16M	20	ER16	0.5-10	100	25	M12	22	17
ST20X150ER16M	20	ER16	0.5-10	150	25	M12	22	17
ST20X100ER20M	20	ER20	1-13	100	40	M12	28	21
ST20X150ER20M	20	ER20	1-13	150	40	M12	28	21

• F indicates a flat on the shank.

(Option:Wrench for ER collet)

ST-ER (Collet chuck)

ER collet chucks with Straight shank



Designation	SS	CSI	Range	*L2*	*L3*	J	*øD3*	T
ST16X50ER11F	16	ER11	0.5-7	50	18.5	M8	19	13
ST20X50ER11F	20	ER11	0.5-7	50	18.5	M10	19	17
ST20X100ER11	20	ER11	0.5-7	100	18.5	M10	19	17
ST20X150ER11	20	ER11	0.5-7	150	18.5	M10	19	17
ST20X50ER16F	20	ER16	0.5-10	50	32.3	M12	28	19
ST20X100ER16	20	ER16	0.5-10	100	30	M12	28	19
ST20X150ER16	20	ER16	0.5-10	150	30	M12	28	19
ST20X50ER20F	20	ER20	1-13	50	42.5	M12	34	22
ST25X100ER20	25	ER20	1-13	100	36	M16	34	22
ST25X150ER20	25	ER20	1-13	150	36	M16	34	22
ST20X50ER25F	20	ER25	1-16	50	46	M12	42	28
ST20X100ER25	20	ER25	1-16	100	46	M12	42	28
ST20X50ER32F	20	ER32	2-20	50	54	M12	50	36
ST20X100ER32	20	ER32	2-20	100	54	M12	50	36
ST25X50ER25F	25	ER25	1-16	50	46	M16	42	28
ST25X100ER25	25	ER25	1-16	100	46	M16	42	28
ST25X50ER32F	25	ER32	2-20	50	52	M16x2	50	36
ST25X50ER40F	25	ER40	3-26	50	60	M16x2	63	45
ST30X50ER32F	30	ER32	2-20	50	52	M18x1.5	50	36
ST30X50ER40F	30	ER40	3-26	50	60	M18x1.5	63	45
ST32X50ER32F	32	ER32	2-20	50	52	M18x1.5	50	36
ST32X150ER32	32	ER32	2-20	150	52	M18x1.5	50	36
ST32X50ER40F	32	ER40	3-26	50	60	M18x1.5	63	45
ST40X75ER32F	40	ER32	2-20	75	46	M22x1.5	50	44
ST40X75ER40F	40	ER40	3-26	75	55	M22x1.5	63	45
ST50X80ER40F	50	ER40	3-26	80	60	M28x1.5	63	54
ST50X80ER50F	50	ER50	10-34	80	77	M36x1.5	78	58

• F indicates a flat on the shank.

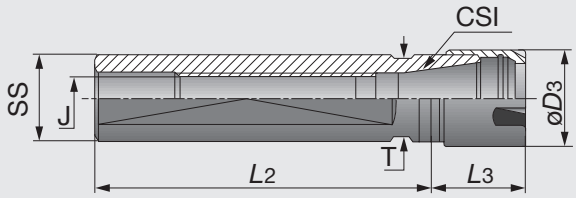
(Option:Wrench for ER collet)

Tooling System

TUNGHOLD

ST-ER-MF

ER Mini-collet chucks with flat cotter for SWISS type machines



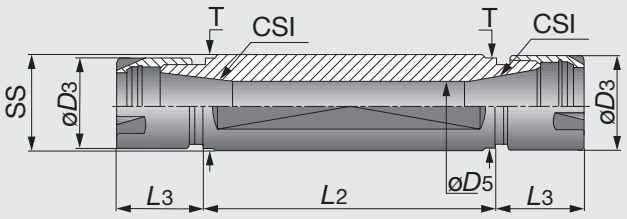
Designation	SS	CSI	Range	*L2*	*L3*	J	*øD3*	T	Machine
ST16X35ER16MF	16	ER16	0.5-10	35	36	M8X1	22	17	Star
ST16X38ER11MF	16	ER11	0.5-7	38	18.5	M8X1	16	14	Star
ST16X140ER11MF	16	ER11	0.5-7	140	18.5	M8X1	16	14	-
ST20X70ER16MF	20	ER16	0.5-10	70	26	M12X1	22	17	Citizen
ST20X120ER16MF	20	ER16	0.5-10	120	26	M12X1	22	17	Citizen
ST20X140ER16MF	20	ER16	0.5-10	140	26	M12X1	22	17	Citizen
ST22X38ER16MF	22	ER16	0.5-10	38	26	M12X1	22	19	Citizen
ST22X70ER16MF	22	ER16	0.5-10	70	26	M12X1	22	19	Star
ST22X70ER25MF	22	ER25	1-16	70	47	M12X1	35	27	Star
ST22X80ER20MF	22	ER20	1-13	80	39	M12X1	28	21	Star
ST22X100ER16MF	22	ER16	0.5-10	100	28	M12X1	22	19	Star
ST25X65ER16MF	25	ER16	0.5-10	65	28	M12X1	22	22	-
ST25X75ER25MF	25	ER25	1-16	75	48	M14X1	35	27	Manurhin
ST25X100ER20MF	25	ER20	1-13	100	28	M14X1	28	22	Tornos
ST25X145ER25MF	25	ER25	1-16	145	36	M14X1	35	27	Tornos
ST25X154ER20MF	25	ER20	1-13	154	28	M14X1	28	22	Tornos
ST32X70ER25MF	32	ER25	1-16	70	30	M18X1	35	27	Schuette

(Option = Wrench for ER collet)

TUNGHOLD

ST-ER-MF-D

Double ended Mini-collet chucks with flat cotter



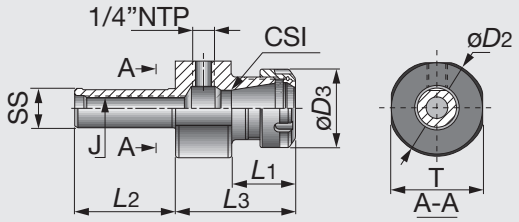
Designation	SS	CSI	Range	*L2*	*L3*	*øD3*	*ød5*	T	Machine
ST16X50ER11MFD	16	ER11	0.5-7	50	18.5	16	7.5	14	-
ST20X30ER11MFD	20	ER11	0.5-7	30	18.5	16	7.5	17	Citizen
ST20X50ER11MFD	20	ER11	0.5-7	50	18.5	16	7.5	17	Citizen
ST20X55ER16MFD	20	ER16	0.5-10	55	25	22	10.5	17	Citizen
ST22X55ER16MFD	22	ER16	0.5-10	55	28	22	10.5	19	Star
ST22X75ER16MFD	22	ER16	0.5-10	75	28	22	10.5	19	Star
ST25X62ER16MFD	25	ER16	0.5-10	62	28	22	10.5	22	-
ST32X55ER20MFD	32	ER20	1-13	55	28	28	13.5	27	Star
ST32X75ER20MFD	32	ER20	1-13	75	28	28	13.5	27	Star

(Option = Wrench for ER collet)

TUNGHOLD

ST-ER-S

ER collet chucks with internal coolant



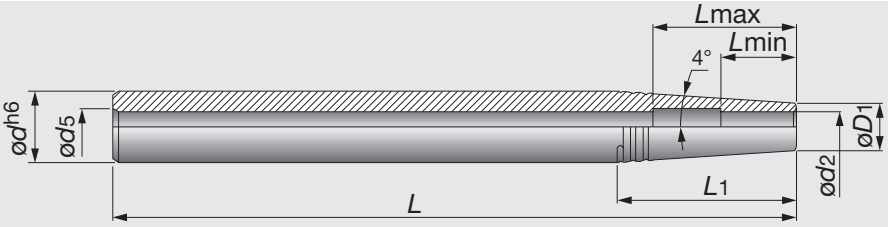
Designation	SS	CSI	Range	L_2	L_3	L_1	J	$øD_3$	$øD_2$	T
ST20X65ER16S	20	ER16	0.5-10	65	54	29.6	M12	28	40	34
ST20X65ER20S	20	ER20	1-13	65	63	31	M12	34	40	34
ST20X65ER25S	20	ER25	1-16	65	72	32	M12	42	54	51
ST20X65ER32S	20	ER32	2-20	65	77	41	M12	50	63	59
ST25X65ER25S	25	ER25	1-16	65	72	32	M12	42	54	50
ST25X65ER32S	25	ER32	2-20	65	77	41	M16	50	63	59
ST32X65ER32S	32	ER32	2-20	65	77	41	M18x1.5	50	63	59
ST40X75ER32S	40	ER32	2-20	75	77	41	M22x1.5	50	63	59

(Option = Wrench for ER collet)

TUNGSHRINK

ST-SRK

TungShrink thermal shrinking holder for carbide shank with Straight shank



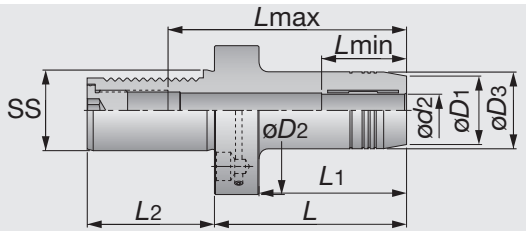
Designation	ød	ød2	øD1	ød5	L	L1	Lmin	Lmax
ST12X160SRK3	12	3	10	4	160	14.3	10	-
ST12X160SRK4	12	4	10	4	160	14.3	12	27
ST16X160SRK3	16	3	10	6	160	43	10	-
ST16X160SRK4	16	4	10	6	160	43	12	-
ST16X160SRK5	16	5	10	6	160	43	15	-
ST16X160SRK6	16	6	11	6	160	35.5	18	35
ST20X200SRK5	20	5	10	6	200	71.5	15	-
ST20X200SRK6	20	6	11	6	200	64.5	18	40
ST20X200SRK8	20	8	14	6	200	43	25	40
ST25X200SRK6	25	6	11	8	200	100	18	35
ST25X200SRK8	25	8	14	8	200	78.6	25	40
ST25X200SRK10	25	10	16	8	200	64.3	30	50
ST25X200SRK12	25	12	20	8	200	35.7	32	52

(Option = Wrench for ER collet)

TUNGHYDRO

DIN69880-HYDRO

Hydraulic chuck hodlers with DIN698880 shank



(Unit: mm)

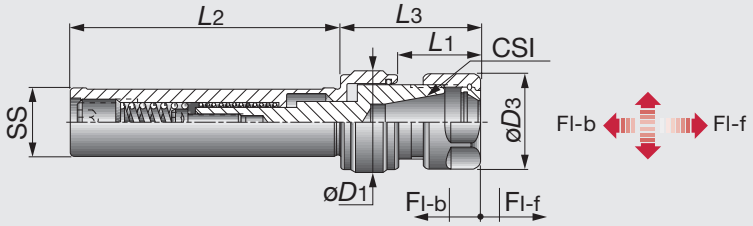
Designation	ød	øD1	øD3	øD2	ød2	L2	L	L1	Lmin	Lmax
DIN69880 30 HYDRO 20X89	20	38	42	68	30	55	89	73	48	85
DIN69880 30 HYDRO 25X100	25	46	50	68	30	55	100	78	54	85
DIN69880 30 HYDRO 32X100	32	56	60	68	30	55	100	78	58	90
DIN69880 40 HYDRO 20X95	20	38	42	83	40	63	95	73	48	130
DIN69880 40 HYDRO 25X95	25	46	50	83	40	63	95	73	54	130
DIN69880 40 HYDRO 32X95	32	56	60	83	40	63	95	78	58	90

Clamping wrench (wrench HYDRO HEX 4) should be ordered separately.
Note: Available are reduction sleeves for 12, 20, 25 and 32 mm bore diameters. Chucking forces will significantly reduce if reduction sleeves are used (ordered separately).

TUNGGTI

GTI-ER-ST

TungGTI tapping attachment with straight shank



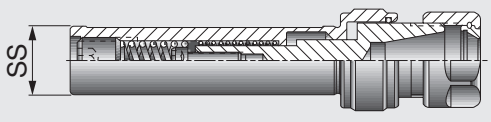
Designation	SS	CSI	Tap min	Tap max	Range	øD3	øD1	L1	L3	L2	Fl-f	Fl-b
GTIER11ST16X150M	16	ER11	M2	M7	0.5-7	16	-	19	-	150	6	3
GTIER16ST20X80	20	ER16	M3	M10	0.5-10	28	29.5	24.6	41.6	80	8	3
GTIER20ST20X80	20	ER20	M4	M14	1-13	34	33.5	28	49	80	8	3
GTIER25ST25X80	25	ER25	M5	M16	1-16	42	40.5	32	53	80	9	4
GTIER32ST25X80	25	ER32	M6	M20	1-16	50	56.5	32	77.2	80	9	4
GTIER40ST32X80	32	ER40	M6	M27	2-20	63	56.5	51	95.2	80	9	4

• Wrench is not included.

(Option = Wrench for ER collet)

KIT GTI-ER-ST

The Kit contains a DIN 6499 ER tapping attachment with straight shank and a set of spring collets in various bore sizes



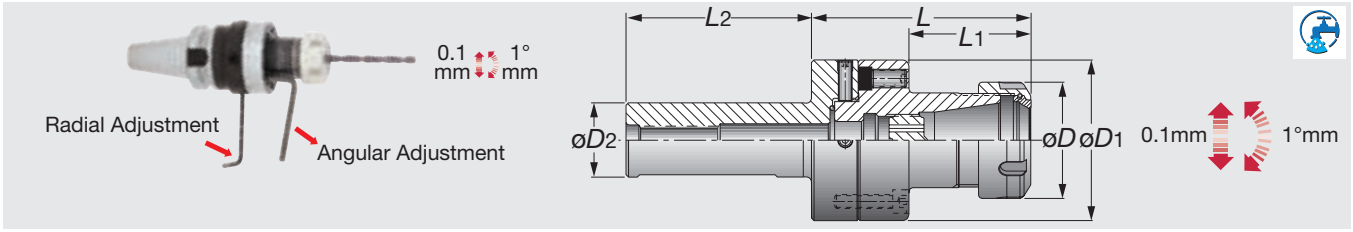


Designation	SS	Qty	Range
KITGTIER11ST16X1504M	ER11	4	3,4,5,6
KITGTIER16ST20X804	ER16	4	4,5,6,7
KITGTIER20ST20X804	ER20	4	5,6,7,8
KITGTIER25ST25X805	ER25	5	6,7,9,11,12
KITGTIER32ST25X806	ER32	6	6,7,9,11,12,16
KITGTIER40ST32X806	ER40	6	9,11,14,16,18,20

• Includes GTI, collets & wrench

TUNGHOLD
ADJ ST-ER

ER collet chuck with center alignment

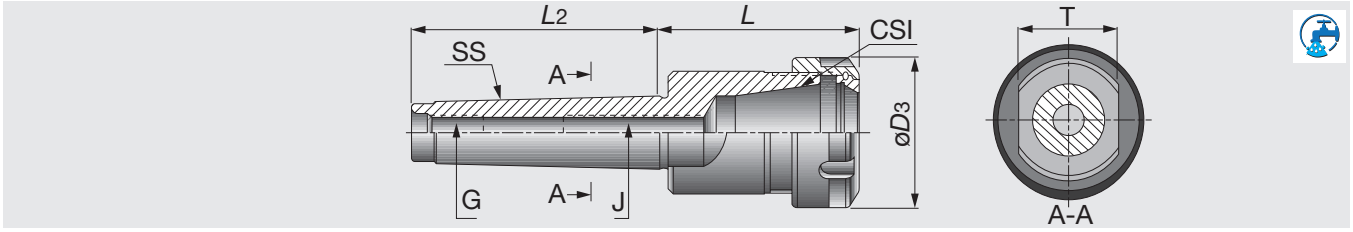


Designation	Range	L	L1	L2	øD	øD1	øD2
ADJST25D70ER32	2-20	94.5	52.5	80	50	70	25
ADJST32D70ER32	2-20	94.5	52.5	80	50	70	32

(Option = Wrench for ER collet)

TUNGHOLD
MT-ER

ER collet chucks with morse taper

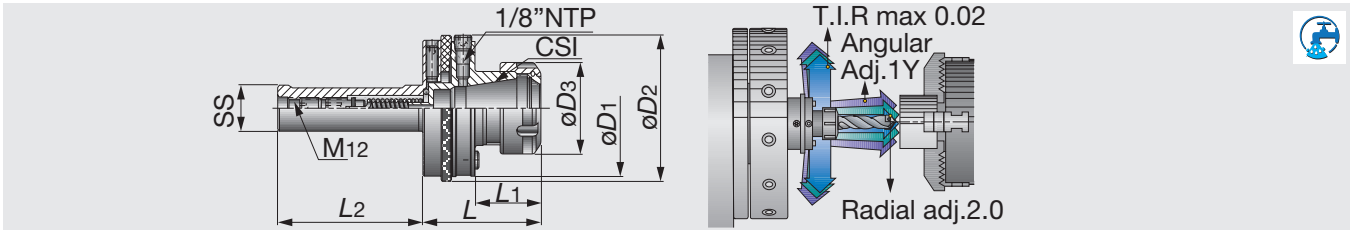


Designation	SS	CSI	Range	L	L2	øD3	J	G	T
MT2ER20X48.5	MT 2	ER20	1-13	48.5	64	34	M10	M10	22
MT2ER25X52	MT 2	ER25	1-16	52	64	42	M10	M10	28
MT3ER32X69	MT 3	ER32	2-20	69	81	50	M12	M12	24
MT3ER40X79	MT 3	ER40	3-26	79	81	63	M12	M12	24
MT4ER32X61	MT 4	ER32	2-20	60.5	102.5	50	M16	M16	32
MT4ER40X82	MT 4	ER40	3-26	81.5	102.5	63	M16	M16	32
MT4ER50X108	MT 4	ER50	10-34	107.5	102.5	78	M16	M16	32
MT5ER40X82	MT 5	ER40	3-26	82	129.5	63	M28x1.5	M20	45
MT5ER50X85	MT 5	ER50	10-34	85	129.5	78	M28x1.5	M20	45

(Option = Wrench for ER collet)

TUNGGYRO
GYRO ST-ER

Center alignment collet chuck holder for lathe



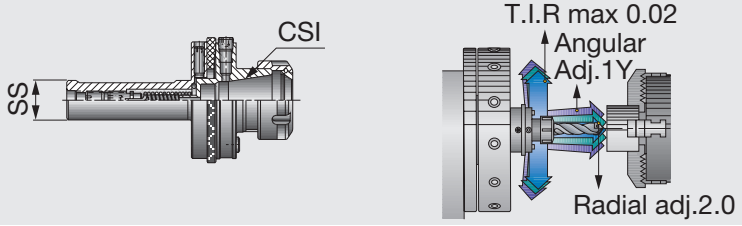
Designation	SS	CSI	Range	L	L1	L2	øD3	øD1	øD2
GYROST20ER20	20	ER20	1-13	58.8	28.5	80	34	57	63
GYROST20ER25	20	ER25	1-16	58.8	28.5	80	34	57	63
GYROST25ER25	25	ER25	1-16	65.65	35.5	80	42	74	79
GYROST25ER32	25	ER32	2-20	66.65	36.5	80	50	74	79
GYROST32ER32	32	ER32	2-20	66.65	36.5	80	50	74	79
GYROST40ER32	40	ER32	2-20	66.65	36.5	80	50	74	79

• First-time users should buy a GYRO kit which includes a test bar and a bushing for performing the alignment procedure.

(Option = Wrench for ER collet)

KIT GYRO-ST-ER

The Kit contains 1 center alignment collet chuck and a centering bushing



Designation	SS	CSI	Range
KITGYROST20ER20	20	ER20	1-13
KITGYROST20ER25	20	ER25	1-16
KITGYROST25ER25	25	ER25	1-16
KITGYROST25ER32	25	ER32	2-20
KITGYROST32ER32	32	ER32	2-20
KITGYROST40ER32	40	ER32	2-20

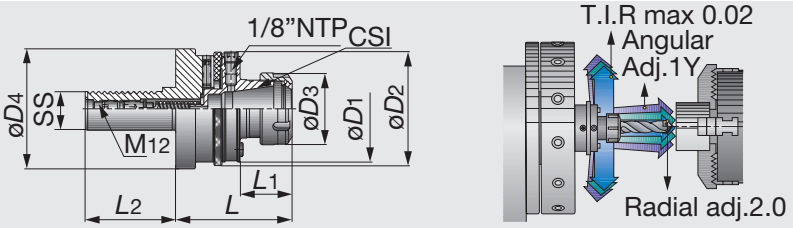
• Kit includes: GYRO, test bar and bushing.

(Option = Wrench for ER collet)

TUNGGYRO

GYRO DIN69880-ER

Center alignment collet chuck holder for lathe



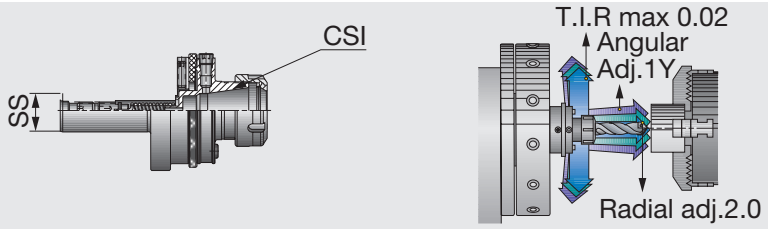
Designation	SS	CSI	Range	*L*	*L*1	*L*2	ø*D*3	ø*D*1	ø*D*2	ø*D*4
GYRODIN6988030ER25	30	ER25	1-16	80.65	35.5	55	42	74	79	68
GYRODIN6988030ER32	30	ER32	2-20	81.65	36.5	55	50	74	79	68
GYRODIN6988040ER32	40	ER32	2-20	81.65	36.5	63	50	74	79	83.2
GYRODIN6988050ER32	50	ER32	2-20	81.65	36.5	78	50	74	79	98

• First-time users should buy a GYRO kit which includes a test bar and a bushing for performing the alignment procedure.

(Option = Wrench for ER collet)

KIT GYRO-DIN69880-ER

The Kit contains 1 center alignment ER collet chuck with VDI DIN69880 shank and a centering bushing



Designation	SS	CSI	Range
KITGYRO30D69880ER25	30	ER25	1-16
KITGYRO30D69880ER32	30	ER32	2-20
KITGYRO40D69880ER32	40	ER32	2-20
KITGYRO50D69880ER32	50	ER32	2-20

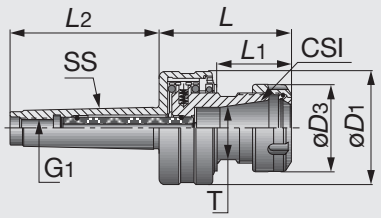
• Kit includes: GYRO, test bar and bushing.

(Option = Wrench for ER collet)

TUNGGFI

GFI-MT-ER

Floating reamer collet chuck



Designation	SS	CSI	Range	L2	L	L1	øD3	øD1	Radial Float	T	G1
GFIMT2ER20	MT 2	ER20	1-13	64	60.5	34.5	34	50	1	22	M10
GFIMT3ER32	MT 3	ER32	2-20	81	81.9	45.9	50	65	1.6	36	M12

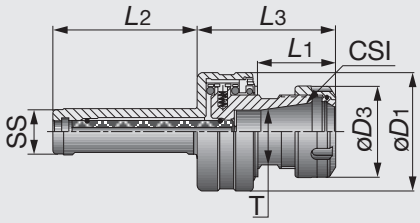
• Maximum 2000 min^{-1}.

Option (Wrench for ER collet)

TUNGGFI

GFI-ST-ER

Floating reamer collet chuck



Designation	SS	CSI	Range	L2	L3	L1	øD3	øD1	Radial Floa	T
GFIST20ER20	20	ER20	1-13	65	55.5	34.5	34	50	1	22
GFIST25ER32	25	ER32	2-20	80	76.9	45.9	50	65	1.6	36

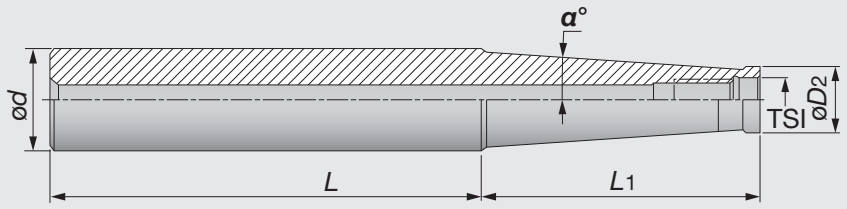
• Maximum 2000 min^{-1}.

Option (Wrench for ER collet)

TUNGFLEX

S M TungFlex-straight shank

TungFlex modular tooling system with straight shank (Screw clamp holder for modular cutting heads)



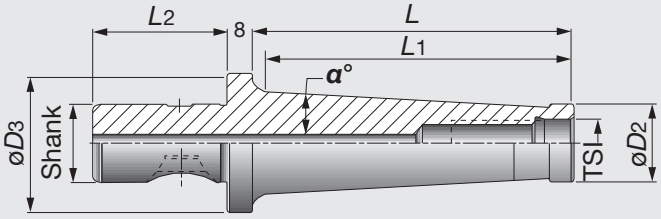
Designation	ød	øD2	L	L1	α°	TSI
SM06-L60C10	10	9.7	60	20	0	M6
SM06-L105-C12	12	9.7	105	60	1.2	M6
SM06-L125-C16	16	9.7	125	60	3.3	M6
SM08-L73C16	16	13	73	25	0	M8
SM08-L128-C16	16	13	128	80	0.9	M8
SM08-L170-C20	20	13	170	66.8	3.3	M8
SM10-L80C20	20	18	80	30	0	M10
SM10-L130-C20	20	18	130	80	0.6	M10
SM10-L200-C25	25	19	200	57.2	3.3	M10
SM12-L86-C25	25	21	86	30	5.1	M12
SM12-L200-C32	32	21	200	78	4.4	M12
SM16-L95-C32	32	29	95	35	1.7	M16
SM16-L230-C32	32	29	230	50	1.8	M16

• All of the shanks have a coolant holes.

TUNGFIT TUNGFLEX

S M-CF4 TungFit adaptor

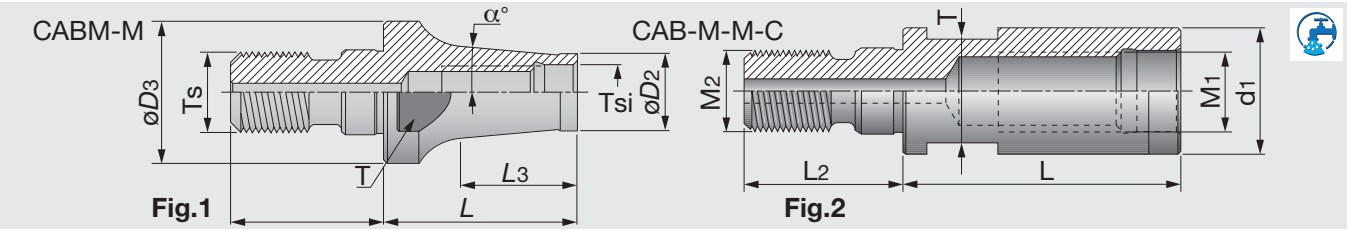
TungFlex cobversion adaptor with TungFit



Designation	øD2	L	L1	α°	shank	øD3	L2	TSI
SM12-L85/3.30-CF4	21	93	81.3	4.4	CF4	44	42	M12
SM16-L130/5.11-CF4	29	138	126.8	2.6	CF4	44	42	M16
SM12-L140/5.50-CF4	21	148	139.1	4.4	CF4	44	42	M12
SM16-L170/6.70-CF4	29	178	168.6	2	CF4	44	42	M16

TUNGFLEX
CAB M-M extension

TungFlex reducer and extensions

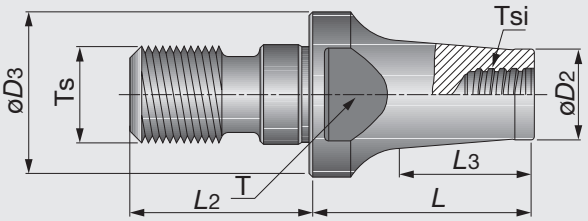


Designation	Ts	α°	øD2	L	L3	øD3	L2	T	Tsi
CABM06M08	M8	5.7	9.7	30	24.8	13	17.5	9.5	M6
CABM08M08-C (1)	M8	0	13	30	-	-	17.5	9.6	M8
CABM08M10	M10	5.2	13	40	33.4	18	20	15	M8
CABM10M10-C (1)	M10	0	18	35	-	-	20	15	M10
CABM10M12	M12	2.5	18	45	36.4	21	22	17	M10
CABM12M12-C (1)	M12	0	21	40	-	-	22	17	M12
CABM12M16	M16	6.3	21	50	42.5	29	25	25	M12
CABM16M16-C (1)	M16	0	29	40	-	-	25	25	M16

(1) With coolant holes

TUNGFLEX
VAD-M

TungFlex cobversion adaptor with TungMeister



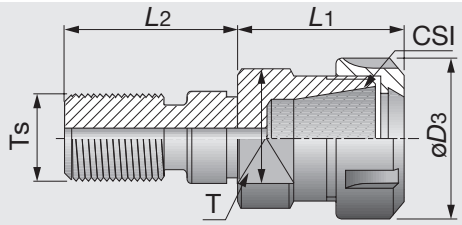
S = Connection screw size

Designation	øD2	øD3	L	L2	L3	Tsi	Ts	T
VAD130L016S08-S-M8	11.7	13	16	17.5	6	S08	M8	11
VAD130L025S08-S-M8	11.7	13	25	17.5	20	S08	M8	11
VAD180L020S08-S-M10	11.7	18	20	20	12	S08	M10	13
VAD180L025S08-S-M10	11.7	18	25	20	15	S08	M10	11
VAD210L020S08-S-M12	11.7	21	20	20	10	S08	M12	12.75
VAD210L025S08-S-M12	11.7	21	25	20	13	S08	M12	12.75

• Wrench size, used on flats for tightening (not supplied). • Do not apply lubricant to the threaded connection.

TUNGFLEX
CDP-ER-M

TungFlex adaptor with ER collet chucks

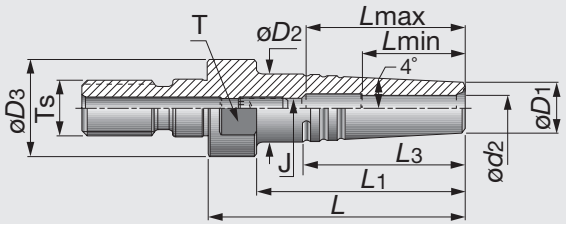


Designation	Ts	CSI	Range	L_1	L_2	$øD_3$	T
CDPER11M10M	M10	ER11	0.5-7	27	20	16	15
CDPER16M10M	M10	ER16	0.5-10	38.1	20	22	17
CDPER11M12M	M12	ER11	0.5-7	27	22	16	17
CDPER16M12M	M12	ER16	0.5-10	37.1	22	22	17
CDPER16M16	M16	ER16	0.5-10	36.6	25	28	25
CDPER20M16	M16	ER20	1-13	45.5	25	34	25
CDPER25M16	M16	ER25	1-16	44.5	25	42	28

Option (Wrench for ER collet)

TUNGFLEX
CDP-M-SRK

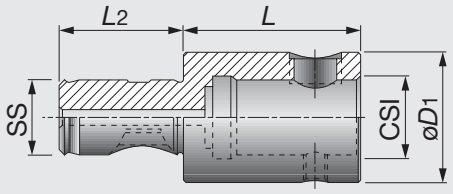
TungFlex adaptor with shrinking holder for carbide shank



Designation	Ts	$øD_3$	$ød_2$	$øD_1$	$øD_2$	L	L_1	L_3	Lmin	Lmax	J	T	key
CDPM10SRK3X40	M10	18	3	10	14	40	31.5	28.4	10	16	M4	15	2
CDPM10SRK4X40	M10	18	4	10	14	40	31.5	28.4	12	19	M4	15	2
CDPM10SRK5X40	M10	18	5	10	14	40	31.5	28.4	15	25	M4	15	2
CDPM12SRK3X45	M12	21	3	10	14	45	36.5	28.8	10	16	M5	18	2.5
CDPM12SRK4X45	M12	21	4	10	14	45	36.5	28.8	12	18	M5	18	2.5
CDPM12SRK5X45	M12	21	5	10	14	45	36.5	28.8	15	25	M5	18	2.5
CDPM12SRK6X45	M12	21	6	11	15	45	36.5	28.4	18	28	M5	18	2.5
CDPM12SRK8X45	M12	21	8	14	18	45	36.5	28.8	25	35	M5	18	2.5
CDPM12SRK10X45	M12	21	10	16	21	45	-	35.6	30	40	M5	18	2.5
CDPM12SRK12X45	M12	21	12	20	25	45	-	36.0	32	42	M5	18	2.5

TUNGFIT
EX-CF extension

TungFit extension adaptor

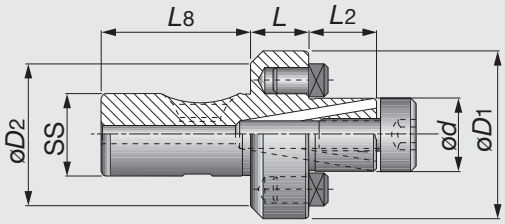


Designation	SS	L2	L	CSI	øD1
EXCF4-S	CF4	42	60	CF4	44
EXCF4-L	CF4	42	100	CF4	44

• Tightening torque: 58.8 N·m.

TUNGFIT
SEM-CF

TungFit shell mill adaptor



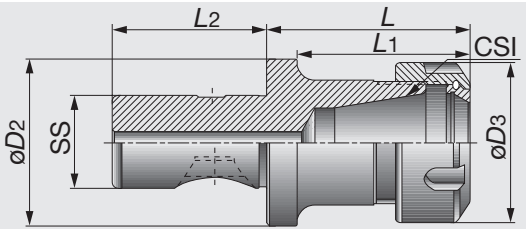
Designation	SS	ød	øD2	øD1	L	L2	L8
SEM22CF4C	CF4	22	44	47	16	19	42

• Tightening torque: 58.8 N·m.

(Option Wrench for Lock Screw)

TUNGFIT
ER-CF

TungFit collet chuck adaptor



Designation	SS	CSI	Range	L	L1	L2	øD3	øD2
ER11CF4-S	CF4	ER11	0.5-7	55	47	42	19	44
ER16CF4-L	CF4	ER16	0.5-10	100	92	42	28	44
ER16CF4-S	CF4	ER16	0.5-10	55	47	42	28	44
ER20CF4-S	CF4	ER20	1-13	55	92	42	34	44
ER25CF4-S	CF4	ER25	1-16	55	47	42	42	44
ER32CF4-L	CF4	ER32	2-20	100	92	42	50	44
ER32CF4-S	CF4	ER32	2-20	55	47	42	50	44

• Tightening torque: 58.8 N·m.

(Option Wrench for ER collet)

Shanks

DIN69871



ST Straight Shank



MT Morse Taper



Collet Options

ER-SPR (ER Spring Collet)



ER-SEAL
(ER SEAL Collet for Internal coolant)



ER-SEAL JET2
(ER SEAL Collet for External coolant)



ER-SRK
(ER Collet with SHRINK Holder)

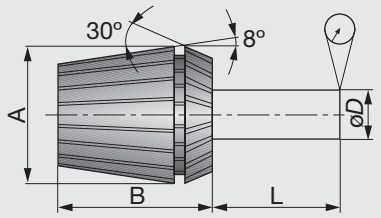


ER32 GTIN
(ER Collet with Tapping Holder)



ER32 ODP
(ER Collet with Indexable Modular System)





Designation	A	B	L	øD	T.I.R Precision Standard type	T.I.R Precision "AA" Ultra Precision type
ER-11	11.5	18	6	1-1.6	0.01	0.005
ER-16	17	27	10	1.6-3	0.01	0.005
ER-20	21	31	16	3-6	0.01	0.005
ER-25	26	35	25	6-10	0.01	0.005
ER-32	33	40	40	10-18	0.01	0.005
ER-40	41	46	50	18-26	0.01	0.005
ER-50	52	60	60	26-34	0.01	-

ER 50 DIN6499

ER - Coolit Sealed Collet



Sealed Collet Jet

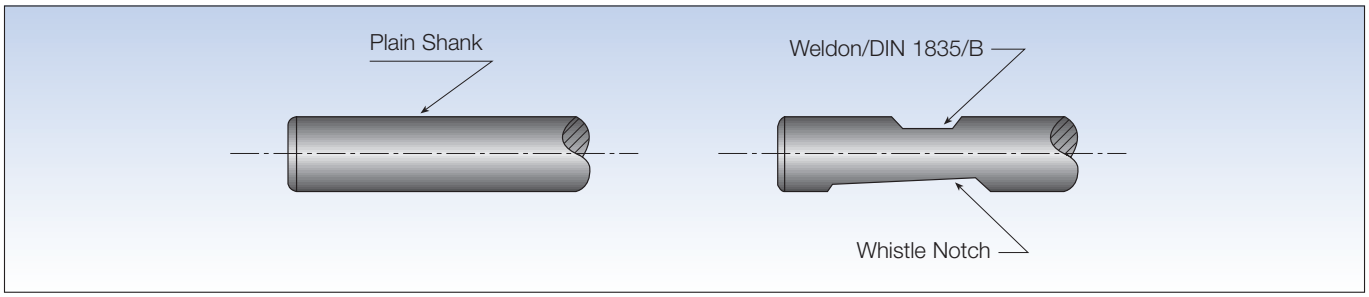
For straight shank cutting tools with internal coolant supply.



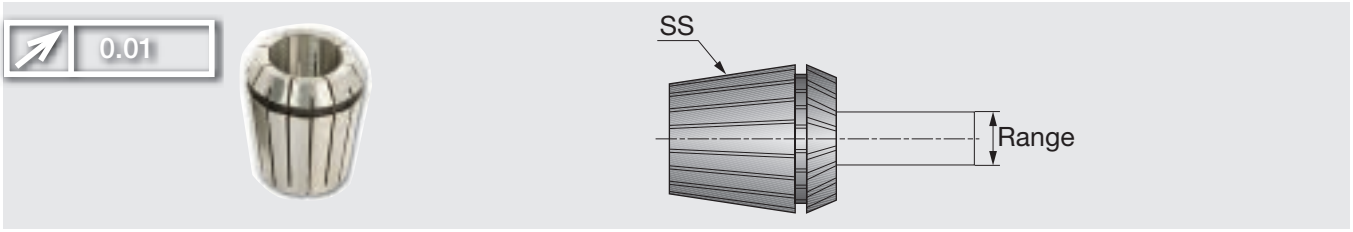
Sealed Collet JET2

With angular double nozzles. Coolant flow is direct to the cutting edge - for use with standard straight shank cutting tools (without coolant hole).

Standard Shank which can be used in Sealed Collets



Note: The front end of the sealed collet should be located beyond weldon or the whistle notch.

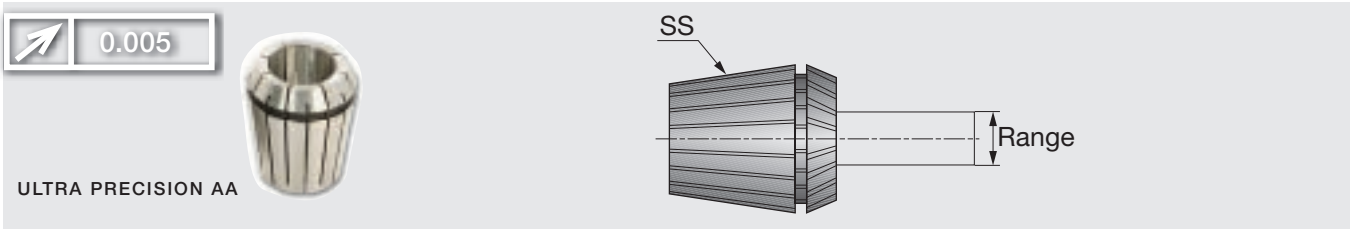


Designation	SS	Range
ER11SPR0.5-1	ER11	0.5-1
ER11SPR1-2	ER11	1-2
ER11SPR2-3	ER11	2-3
ER11SPR3-4	ER11	3-4
ER11SPR4-5	ER11	4-5
ER11SPR5-6	ER11	5-6
ER11SPR6-7	ER11	6-7
ER16SPR0.5-1	ER16	0.5-1
ER16SPR1-2	ER16	1-2
ER16SPR2-3	ER16	2-3
ER16SPR3-4	ER16	3
ER16SPR4-5	ER16	4-5
ER16SPR5-6	ER16	5-6
ER16SPR6-7	ER16	6-7
ER16SPR7-8	ER16	7-8
ER16SPR8-9	ER16	8-9
ER16SPR9-10	ER16	9-10
ER20SPR1-2	ER20	1-2
ER20SPR2-3	ER20	2-3
ER20SPR3-4	ER20	3-4
ER20SPR4-5	ER20	4-5
ER20SPR5-6	ER20	5-6
ER20SPR6-7	ER20	6-7
ER20SPR7-8	ER20	7-8
ER20SPR8-9	ER20	8-9
ER20SPR9-10	ER20	9-10
ER20SPR10-11	ER20	10-11
ER20SPR11-12	ER20	11-12
ER20SPR12-13	ER20	12-13
ER25SPR1-2	ER25	1-2
ER25SPR2-3	ER25	2-3
ER25SPR3-4	ER25	3-4
ER25SPR4-5	ER25	4-5
ER25SPR5-6	ER25	5-6
ER25SPR6-7	ER25	6-7
ER25SPR7-8	ER25	7-8
ER25SPR8-9	ER25	8-9
ER25SPR9-10	ER25	9-10
ER25SPR10-11	ER25	10-11
ER25SPR11-12	ER25	11-12
ER25SPR12-13	ER25	12-13
ER25SPR13-14	ER25	13-14
ER25SPR14-15	ER25	14-15
ER25SPR15-16	ER25	15-16
ER32SPR2-3	ER32	2-3
ER32SPR3-4	ER32	3-4
ER32SPR4-5	ER32	4-5
ER32SPR5-6	ER32	5-6
ER32SPR6-7	ER32	6-7
ER32SPR7-8	ER32	7-8
ER32SPR8-9	ER32	8-9
ER32SPR9-10	ER32	9-10
ER32SPR10-11	ER32	10-11

Designation	SS	Range
ER32SPR11-12	ER32	11-12
ER32SPR12-13	ER32	12-13
ER32SPR13-14	ER32	13-14
ER32SPR14-15	ER32	14-15
ER32SPR15-16	ER32	15-16
ER32SPR16-17	ER32	16-17
ER32SPR17-18	ER32	17-18
ER32SPR18-19	ER32	18-19
ER32SPR19-20	ER32	19-20
ER40SPR3-4	ER40	3-4
ER40SPR4-5	ER40	4-5
ER40SPR5-6	ER40	5-6
ER40SPR6-7	ER40	6-7
ER40SPR7-8	ER40	7-8
ER40SPR8-9	ER40	8-9
ER40SPR9-10	ER40	9-10
ER40SPR10-11	ER40	10-11
ER40SPR11-12	ER40	11-12
ER40SPR12-13	ER40	12-13
ER40SPR13-14	ER40	13-14
ER40SPR14-15	ER40	14-15
ER40SPR15-16	ER40	15-16
ER40SPR16-17	ER40	16-17
ER40SPR17-18	ER40	17-18
ER40SPR18-19	ER40	18-19
ER40SPR19-20	ER40	19-20
ER40SPR20-21	ER40	20-21
ER40SPR21-22	ER40	21-22
ER40SPR22-23	ER40	22-23
ER40SPR23-24	ER40	23-24
ER40SPR24-25	ER40	24-25
ER40SPR25-26	ER40	25-26
ER50SPR10-12	ER50	10-12
ER50SPR12-14	ER50	12-14
ER50SPR14-16	ER50	14-16
ER50SPR16-18	ER50	16-18
ER50SPR18-20	ER50	18-20
ER50SPR20-22	ER50	20-22
ER50SPR22-24	ER50	22-24
ER50SPR24-26	ER50	24-26
ER50SPR26-28	ER50	26-28
ER50SPR28-30	ER50	28-30
ER50SPR30-32	ER50	30-32
ER50SPR32-34	ER50	32-34

ER-SPR-AA

DIN 6499 'AA' Ultra Precise ER Spring Collets

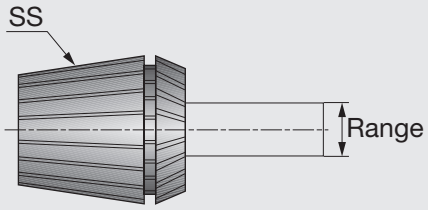


Designation	SS	Range
ER11SPR0.5-1AA	ER11	0.5-1
ER11SPR1-2AA	ER11	1-2
ER11SPR2-3AA	ER11	2-3
ER11SPR3-4AA	ER11	3-4
ER11SPR4-5AA	ER11	4-5
ER11SPR5-6AA	ER11	5-6
ER11SPR6-7AA	ER11	6-7
ER16SPR0.5-1AA	ER16	0.5-1
ER16SPR1-2AA	ER16	1-2
ER16SPR2-3AA	ER16	2-3
ER16SPR3-4AA	ER16	3-4
ER16SPR4-5AA	ER16	4-5
ER16SPR5-6AA	ER16	5-6
ER16SPR6-7AA	ER16	6-7
ER16SPR7-8AA	ER16	7-8
ER16SPR8-9AA	ER16	8-9
ER16SPR9-10AA	ER16	9-10
ER20SPR12-13AA	ER20	12-13
ER20SPR2-3AA	ER20	2-3
ER20SPR3-4AA	ER20	3-4
ER20SPR4-5AA	ER20	4-5
ER20SPR5-6AA	ER20	5-6
ER20SPR6-7AA	ER20	6-7
ER20SPR7-8AA	ER20	7-8
ER20SPR8-9AA	ER20	8-9
ER20SPR9-10AA	ER20	9-10
ER20SPR1-2AA	ER20	1-2
ER20SPR10-11AA	ER20	10-11
ER20SPR11-12AA	ER20	11-12
ER25SPR12-13AA	ER25	12-13
ER25SPR2-3AA	ER25	2-3
ER25SPR3-4AA	ER25	3-4
ER25SPR4-5AA	ER25	4-5
ER25SPR5-6AA	ER25	5-6
ER25SPR6-7AA	ER25	6-7
ER25SPR7-8AA	ER25	7-8
ER25SPR8-9AA	ER25	8-9
ER25SPR9-10AA	ER25	9-10
ER25SPR1-2AA	ER25	1-2
ER25SPR10-11AA	ER25	10-11
ER25SPR11-12AA	ER25	11-12
ER25SPR13-14AA	ER25	13-14
ER25SPR14-15AA	ER25	14-15
ER25SPR15-16AA	ER25	15-16
ER32SPR2-3AA	ER32	2-3
ER32SPR3-4AA	ER32	3-4
ER32SPR4-5AA	ER32	4-5
ER32SPR5-6AA	ER32	5-6
ER32SPR6-7AA	ER32	6-7
ER32SPR7-8AA	ER32	7-8
ER32SPR8-9AA	ER32	8-9
ER32SPR9-10AA	ER32	9-10
ER32SPR10-11AA	ER32	10-11

Designation	SS	Range
ER32SPR11-12AA	ER32	11-12
ER32SPR12-13AA	ER32	12-13
ER32SPR13-14AA	ER32	13-14
ER32SPR14-15AA	ER32	14-15
ER32SPR15-16AA	ER32	15-16
ER32SPR16-17AA	ER32	16-17
ER32SPR17-18AA	ER32	17-18
ER32SPR18-19AA	ER32	18-19
ER32SPR19-20AA	ER32	19-20
ER40SPR3-4AA	ER40	3-4
ER40SPR4-5AA	ER40	4-5
ER40SPR5-6AA	ER40	5-6
ER40SPR6-7AA	ER40	6-7
ER40SPR7-8AA	ER40	7-8
ER40SPR8-9AA	ER40	8-9
ER40SPR9-10AA	ER40	9-10
ER40SPR10-11AA	ER40	10-11
ER40SPR11-12AA	ER40	11-12
ER40SPR12-13AA	ER40	12-13
ER40SPR13-14AA	ER40	13-14
ER40SPR14-15AA	ER40	14-15
ER40SPR15-16AA	ER40	15-16
ER40SPR16-17AA	ER40	16-17
ER40SPR17-18AA	ER40	17-18
ER40SPR18-19AA	ER40	18-19
ER40SPR19-20AA	ER40	19-20
ER40SPR20-21AA	ER40	20-21
ER40SPR21-22AA	ER40	21-22
ER40SPR22-23AA	ER40	22-23
ER40SPR23-24AA	ER40	23-24
ER40SPR24-25AA	ER40	24-25
ER40SPR25-26AA	ER40	25-26

DIN 6499 ER COOLIT, Sealed Spring Collets



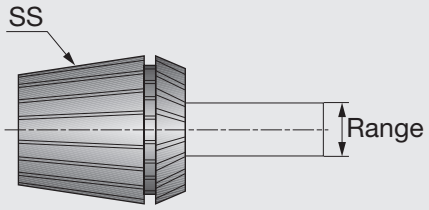


Designation	SS	Range
ER16SEAL3-4	ER16	3-4
ER16SEAL4-5	ER16	4-5
ER16SEAL5-6	ER16	5-6
ER16SEAL6-7	ER16	6-7
ER16SEAL7-8	ER16	7-8
ER16SEAL8-9	ER16	8-9
ER16SEAL9-10	ER16	9-10
ER20SEAL3-4	ER20	3-4
ER20SEAL4-5	ER20	4-5
ER20SEAL5-6	ER20	5-6
ER20SEAL6-7	ER20	6-7
ER20SEAL7-8	ER20	7-8
ER20SEAL8-9	ER20	8-9
ER20SEAL9-10	ER20	9-10
ER20SEAL10-11	ER20	10-11
ER20SEAL11-12	ER20	11-12
ER20SEAL12-13	ER20	12-13
ER25SEAL3-4	ER25	3-4
ER25SEAL4-5	ER25	4-5
ER25SEAL5-6	ER25	5-6
ER25SEAL6-7	ER25	6-7
ER25SEAL7-8	ER25	7-8
ER25SEAL8-9	ER25	8-9
ER25SEAL9-10	ER25	9-10
ER25SEAL10-11	ER25	10-11
ER25SEAL11-12	ER25	11-12
ER25SEAL12-13	ER25	12-13
ER25SEAL13-14	ER25	13-14
ER25SEAL14-15	ER25	14-15
ER25SEAL15-16	ER25	15-16
ER32SEAL3-4	ER32	3-4
ER32SEAL4-5	ER32	4-5
ER32SEAL5-6	ER32	5-6
ER32SEAL6-7	ER32	6-7
ER32SEAL7-8	ER32	7-8
ER32SEAL8-9	ER32	8-9
ER32SEAL9-10	ER32	9-10
ER32SEAL10-11	ER32	10-11
ER32SEAL11-12	ER32	11-12
ER32SEAL12-13	ER32	12-13
ER32SEAL13-14	ER32	13-14
ER32SEAL14-15	ER32	14-15
ER32SEAL15-16	ER32	15-16
ER32SEAL16-17	ER32	16-17
ER32SEAL17-18	ER32	17-18
ER32SEAL18-19	ER32	18-19
ER32SEAL19-20	ER32	19-20
ER40SEAL3-4	ER40	3-4
ER40SEAL4-5	ER40	4-5
ER40SEAL5-6	ER40	5-6
ER40SEAL6-7	ER40	6-7
ER40SEAL7-8	ER40	7-8
ER40SEAL8-9	ER40	8-9

Designation	SS	Range
ER40SEAL9-10	ER40	9-10
ER40SEAL10-11	ER40	10-11
ER40SEAL11-12	ER40	11-12
ER40SEAL12-13	ER40	12-13
ER40SEAL13-14	ER40	13-14
ER40SEAL14-15	ER40	14-15
ER40SEAL15-16	ER40	15-16
ER40SEAL16-17	ER40	16-17
ER40SEAL17-18	ER40	17-18
ER40SEAL18-19	ER40	18-19
ER40SEAL19-20	ER40	19-20
ER40SEAL20-21	ER40	20-21
ER40SEAL21-22	ER40	21-22
ER40SEAL22-23	ER40	22-23
ER40SEAL23-24	ER40	23-24
ER40SEAL24-25	ER40	24-25
ER40SEAL25-26	ER40	25-26

DIN 6499 ER COOLIT, Sealed Collets with Cooling Jets





Designation	SS	Range
ER16SEAL3-4JET2	ER16	3-4
ER16SEAL4-5JET2	ER16	4-5
ER16SEAL5-6JET2	ER16	5-6
ER16SEAL6-7JET2	ER16	6-7
ER16SEAL7-8JET2	ER16	7-8
ER16SEAL8-9JET2	ER16	8-9
ER16SEAL9-10JET2	ER16	9-10
ER20SEAL3-4JET2	ER20	3-4
ER20SEAL4-5JET2	ER20	4-5
ER20SEAL5-6JET2	ER20	5-6
ER20SEAL6-7JET2	ER20	6-7
ER20SEAL7-8JET2	ER20	7-8
ER20SEAL8-9JET2	ER20	8-9
ER20SEAL9-10JET2	ER20	9-10
ER20SEAL10-11JET2	ER20	10-11
ER20SEAL11-12JET2	ER20	11-12
ER20SEAL12-13JET2	ER20	12-13
ER25SEAL3-4JET2	ER25	3-4
ER25SEAL4-5JET2	ER25	4-5
ER25SEAL5-6JET2	ER25	5-6
ER25SEAL6-7JET2	ER25	6-7
ER25SEAL7-8JET2	ER25	7-8
ER25SEAL8-9JET2	ER25	8-9
ER25SEAL9-10JET2	ER25	9-10
ER25SEAL10-11JET2	ER25	10-11
ER25SEAL11-12JET2	ER25	11-12
ER25SEAL12-13JET2	ER25	12-13
ER25SEAL13-14JET2	ER25	13-14
ER25SEAL14-15JET2	ER25	14-15
ER25SEAL15-16JET2	ER25	15-16
ER32SEAL3-4JET2	ER32	3-4
ER32SEAL4-5JET2	ER32	4-5
ER32SEAL5-6JET2	ER32	5-6
ER32SEAL6-7JET2	ER32	6-7
ER32SEAL7-8JET2	ER32	7-8
ER32SEAL8-9JET2	ER32	8-9
ER32SEAL9-10JET2	ER32	9-10
ER32SEAL10-11JET2	ER32	10-11
ER32SEAL11-12JET2	ER32	11-12
ER32SEAL12-13JET2	ER32	12-13
ER32SEAL13-14JET2	ER32	13-14
ER32SEAL14-15JET2	ER32	14-15
ER32SEAL15-16JET2	ER32	15-16
ER32SEAL16-17JET2	ER32	16-17
ER32SEAL17-18JET2	ER32	17-18
ER32SEAL18-19JET2	ER32	18-19
ER32SEAL19-20JET2	ER32	19-20
ER40SEAL3-4JET2	ER40	3-4
ER40SEAL4-5JET2	ER40	4-5
ER40SEAL5-6JET2	ER40	5-6
ER40SEAL6-7JET2	ER40	6-7
ER40SEAL7-8JET2	ER40	7-8
ER40SEAL8-9JET2	ER40	8-9

Designation	SS	Range
ER40SEAL9-10JET2	ER40	9-10
ER40SEAL10-11JET2	ER40	10-11
ER40SEAL11-12JET2	ER40	11-12
ER40SEAL12-13JET2	ER40	12-13
ER40SEAL13-14JET2	ER40	13-14
ER40SEAL14-15JET2	ER40	14-15
ER40SEAL15-16JET2	ER40	15-16
ER40SEAL16-17JET2	ER40	16-17
ER40SEAL17-18JET2	ER40	17-18
ER40SEAL18-19JET2	ER40	18-19
ER40SEAL19-20JET2	ER40	19-20
ER40SEAL20-21JET2	ER40	20-21
ER40SEAL21-22JET2	ER40	21-22
ER40SEAL22-23JET2	ER40	22-23
ER40SEAL23-24JET2	ER40	23-24
ER40SEAL24-25JET2	ER40	24-25
ER40SEAL25-26JET2	ER40	25-26

TUNGHOLD
SET ER-SPR

Sets of DIN 6499 ER spring collets with hard touch coating



Designation	SS	Qty	Range
SETER11SPR7	ER11	7	0.5-7
SETER16SPR10	ER16	10	0.5-10
SETER20SPR12	ER20	12	1-13
SETER25SPR15	ER25	15	1-16
SETER32SPR18	ER32	18	2-20
SETER40SPR23	ER40	23	3-26
SETER50SPR12	ER50	12	10-34

TUNGHOLD
SET ER-SPR-AA

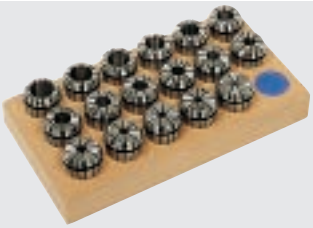
Sets of DIN 6499 ER 'AA' ultra precise spring collets with hard touch coating



Designation	SS	Qty	Range
SETER11SPR7AA	ER11	7	0.5-7
SETER16SPR10AA	ER16	10	0.5-10
SETER20SPR12AA	ER20	12	1-13
SETER25SPR15AA	ER25	15	1-16
SETER32SPR18AA	ER32	18	2-20
SETER40SPR23AA	ER40	23	3-26

TUNGHOLD
SET ER-SEAL

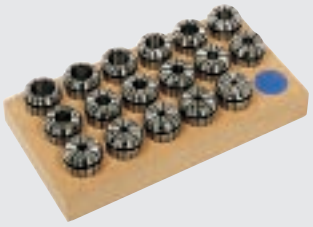
Sets of DIN 6499 ER coolit collets with hard touch coating, sealed for 100 bar



Designation	SS	Qty	Range
SETER16SEAL7	ER16	7	3-10
SETER20SEAL10	ER20	10	3-13
SETER25SEAL13	ER25	13	3-16
SETER32SEAL17	ER32	17	3-20
SETER40SEAL23	ER40	23	3-26

TUNGHOLD
SET ER-SEAL-JET2

Sets of ER collet, sealed for 1450 PSI collets with hard touch coating. sealed for 100 bar



Designation	SS	Qty	Range
SETER16SEAL7JET2	ER16	7	3-13
SETER25SEAL13JET2	ER25	13	3-20
SETER32SEAL17JET2	ER32	17	3-26
SETER40SEAL23JET2	ER40	23	3-26

TUNGHOLD
SET ER SPR-EM(1)

Sets of ER spring collets DIN 6499 with hard touch coating



Designation	SS	Qty	Range
SETER16SPR8EM	ER16	8	3,4,5,6,7,8,9,10
SETER20SPR5EM	ER20	5	4,6,8,10,12
SETER25SPR6EM	ER25	6	4,6,8,10,12,16
SETER32SPR6EM	ER32	6	6,8,10,12,16,20
SETER40SPR7EM	ER40	7	6,8,10,12,16,20,25

(1) Contains popular endmill sizes only.

TUNGHOLD
SET-ER SEAL-EM(1)

A Set of ER collet, JET collets, sealed for up to 100 bap.the hard touch coating, sealed for 100 bar

Designation	SS	Qty	Range
SETER16SEAL5EM	ER16	5	4,5,6,8,10
SETER20SEAL5EM	ER20	5	4,6,8,10,12
SETER25SEAL6EM	ER25	6	4,6,8,10,12,16
SETER32SEAL6EM	ER32	6	6,8,10,12,16,20
SETER40SEAL7EM	ER40	7	6,8,10,12,16,20,25

(1) Contains popular endmill sizes only.

TUNGHOLD
SET ER-SEAL-EM JET2(1)

A set of ER collet, JET2 collets, sealed for up to 100 bar

Designation	SS	Qty	Range
SETER25SEAL6EMJET2	ER25	6	4,6,8,10,12,16
SETER32SEAL6EMJET2	ER32	6	6,8,10,12,16,20
SETER40SEAL7EMJET2	ER40	7	6,8,10,12,16,20,25

(1) Contains popular endmill sizes only.

TUNGHOLD
KIT R-8-ER

The Kit contains ER collet chuck with a bridgeport shank and a set of collets in various bore sizes



Designation	SS	Qty	Range
KITR-810ER16	ER16	10	0.5-10
KITR-818ER32	ER32	18	2-20

• Each kit contains one collet chuck, a full set of ER collets and a Wrench.

TUNGHOLD
KIT DIN2080-ER

The Kit contains 1 DIN 2080 taper shank with ER collet chuck and a set of ER spring collets



Designation	SS	Qty	Range
KITDIN20803018ER32	ER32	18	2-20
KITDIN20804018ER32	ER32	18	2-20
KITDIN20804023ER40	ER40	23	3-26
KITDIN20805023ER40	ER40	23	3-26

• Each kit contains one collet chuck, a full set of ER collets and a Wrench.

TUNGHOLD

KIT MT-ER

The Kit contains ER collet chuck with a morse taper shank and a set of collets in various bore sizes



Designation	SS	Qty	Range
KITMT318ER32	ER32	18	2-20
KITMT423ER40	ER40	23	3-26

• Each kit contains one collet chuck, a full set of ER collets and a Wrench.

TUNGHOLD

KIT ST-ER-Mini

The Kits contains ER Mini collet chuck with a cylindrical shank and a set of collets in various bore sizes



Designation	SS	Qty	Range
KITST12X807ER11M	ER11	7	0.5-7
KITST12X8010ER16M	ER16	10	0.5-10
KITST16X507ER11MF	ER11	7	0.5-7
KITST16X1007ER11M	ER11	7	0.5-7
KITST16X1507ER11M	ER11	7	0.5-7
KITST20X10010ER16M	ER16	10	0.5-10
KITST20X15010ER16M	ER16	10	0.5-10
KITST20X10012ER20M	ER20	12	1-12
KITST20X15012ER20M	ER20	12	1-12

• Each kit contains one collet chuck, a full set of ER collets and a Wrench. • F indicates a flat on the shank.

TUNGHOLD

KIT ST-ER

Contains 1 ER collet chuck with a cylindrical shank and a set of collets in various bore sizes



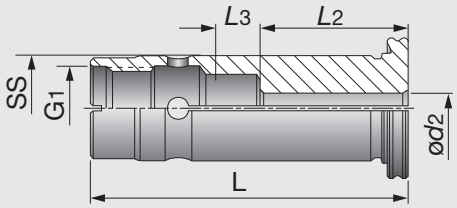
Designation	SS	Qty	Range
KITST16X507ER11F	ER11	7	0.5-7
KITST20X1007ER11	ER11	7	0.5-7
KITST20X1507ER11	ER11	7	0.5-7
KITST20X5010ER16F	ER16	10	0.5-10
KITST20X10010ER16	ER16	10	0.5-10
KITST20X15010ER16	ER16	10	0.5-10
KITST20X5012ER20F	ER20	12	1-12
KITST25X10012ER20	ER20	12	1-12

• Each kit contains one collet chuck, a full set of ER collets and a Wrench. • F indicates a flat on the shank.

TUNGMAX

SC-SPR

SC straight collets for tungMax power chucks

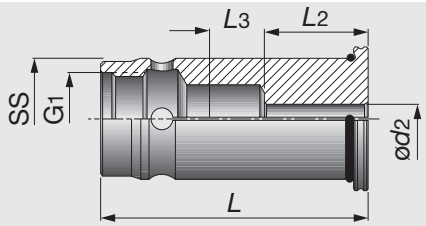


Designation	ød2	SS	L	L2	L3	G1
SC20SPR6	6	20	60	28	7	M16
SC20SPR8	8	20	60	28	7	M16
SC20SPR10	10	20	60	35	13	M16
SC20SPR12	12	20	60	40	8	M16
SC20SPR14	14	20	60	40	8	M16
SC20SPR15	15	20	60	40	8	M16
SC20SPR16	16	20	60	39	9	M16
SC32SPR6	6	32	72	28	17	M24X1.5
SC32SPR8	8	32	72	28	17	M24X1.5
SC32SPR10	10	32	72	35	13	M24X1.5
SC32SPR12	12	32	72	40	5	M24X1.5
SC32SPR14	14	32	72	40	5	M24X1.5
SC32SPR15	15	32	72	40	19.5	M24X1.5
SC32SPR16	16	32	72	44	17.5	M24X1.5
SC32SPR18	18	32	72	44	17.5	M24X1.5
SC32SPR19	19	32	72	44	17.5	M24X1.5
SC32SPR20	20	32	72	46	15.5	M24X1.5
SC32SPR24	24	32	72	45	10.5	M24X1.5
SC32SPR25	25	32	72	51	10.5	M24X1.5

TUNGMAX

SC-SEAL

Sealed collets for TungMax power chucks

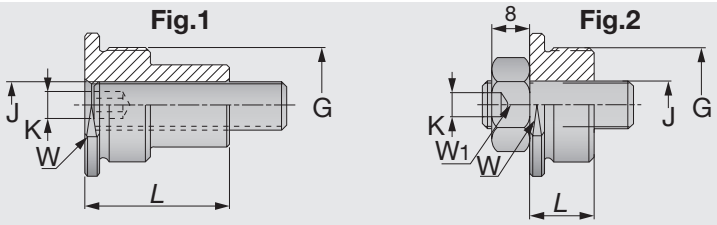


Designation	ød2	SS	L	L2	L3	G1
SC20SEAL6	6	20	60	28	7	M16
SC20SEAL8	8	20	60	28	7	M16
SC20SEAL10	10	20	60	35	13	M16
SC20SEAL12	12	20	60	40	8	M16
SC20SEAL14	14	20	60	40	8	M16
SC20SEAL15	15	20	60	40	8	M16
SC20SEAL16	16	20	60	39	9	M16
SC32SEAL6	6	32	72	28	17	M24X1.5
SC32SEAL8	8	32	72	28	17	M24X1.5
SC32SEAL10	10	32	72	35	13	M24X1.5
SC32SEAL12	12	32	72	40	5	M24X1.5
SC32SEAL14	14	32	72	40	5	M24X1.5
SC32SEAL15	15	32	72	40	5	M24X1.5
SC32SEAL16	16	32	72	44	17.5	M24X1.5
SC32SEAL18	18	32	72	44	17.5	M24X1.5
SC32SEAL19	19	32	72	44	17.5	M24X1.5
SC32SEAL20	20	32	72	46	15.5	M24X1.5
SC32SEAL24	24	32	72	46	15.5	M24X1.5
SC32SEAL25	25	32	72	51	10.5	M24X1.5

TUNGMAX

PRESET SC-CAP

Preset screw housing for SC-SPR TungMax collets



Designation	L	W	J	G	Fig	Range	key	CSI
PRESETSCCAP8x1.25L	28	16	M8X25	M16	1	6-8	4	SC20
PRESETSCCAP8x1.25	15	16	M8X25	M16	2	10-16	4	SC20
PRESETSCCAP10x1.5L	30	27	M10X30	M24X1.5	1	6-14	5	SC32
PRESETSCCAP10x1.5	13.5	27	M10X30	M24X1.5	2	16-25	5	SC32

TUNGHYDRO
KIT BT-HYDRO

Hydraulic chuck kits with MAS-BT Form A/B Shanks



Designation	SS	ød2	Qty	Range
KITBT40HYDRO20X73	40	20	5	8,10,12,14,16
KITBT40HYDRO32X110	40	32	7	6,8,10,12,16,20,25

• Each kit contains one HYDROFIT chuck, a set of SC...HYDRO sealed reducers and a clamping wrench.

TUNGHYDRO
KIT DIN69871-HYDRO

Contains a hydraulic chuck with a DIN69781 tapered shank and a set of collets in various bore sizes



Designation	SS	ød2	Qty	Range
KITDIN6987140HYDRO20X65	40	20	5	8,10,12,14,16
KITDIN6987140HYDRO32X117	40	32	7	6,8,10,12,16,20,25

• Each kit contains one HYDROFIT chuck, a set of SC...HYDRO sealed reducers and a clamping wrench.

TUNGHYDRO
KIT HSK A-HYDRO

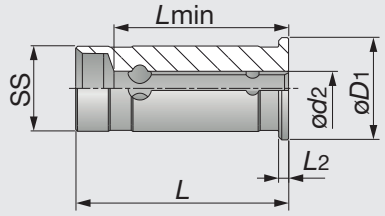
Contains a hydraulic chuck with HSK tapered shank and a set of collets in various bore sizes



Designation	SS	ød2	Qty	Range
KITHSKA63HYDRO20X100	63	20	5	8,10,12,14,16
KITHSKA63HYDRO32X125	63	32	7	6,8,10,12,16,20,25

• Each kit contains one HYDROFIT chuck, a set of SC...HYDRO sealed reducers and a clamping wrench.

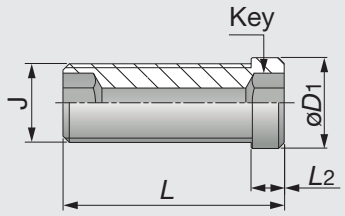
Sealed reduction sleeves for hydraulic chucks



Designation	SS	ød2	Lmin	L	øD1	L2
SC12SHYDRO3	12	3	19	46.5	16	2
SC12SHYDRO4	12	4	24	46.5	16	2
SC12SHYDRO5	12	5	28	46.5	16	2
SC12SHYDRO6	12	6	33	46.5	16	2
SC12SHYDRO8	12	8	39	46.5	16	2
SC20SHYDRO3	20	3	20	53	24	2
SC20SHYDRO4	20	4	25	53	24	2
SC20SHYDRO5	20	5	27	53	24	2
SC20SHYDRO6	20	6	34	53	24	2
SC20SHYDRO8	20	8	39	53	24	2
SC20SHYDRO10	20	10	40	53	24	2
SC20SHYDRO12	20	12	41	53	24	2
SC20SHYDRO14	20	14	44	53	24	2
SC20SHYDRO16	20	16	44	53	24	2
SC25SHYDRO6	25	6	37	60	30	4
SC25SHYDRO8	25	8	37	60	30	4
SC25SHYDRO10	25	10	40	60	30	4
SC25SHYDRO12	25	12	44	60	30	4
SC25SHYDRO14	25	14	46	60	30	4
SC25SHYDRO16	25	16	48	60	30	4
SC25SHYDRO18	25	18	50	60	30	4
SC25SHYDRO20	25	20	50	60	30	4
SC32SHYDRO6	32	6	33	66	40	4
SC32SHYDRO8	32	8	38	66	40	4
SC32SHYDRO10	32	10	39	66	40	4
SC32SHYDRO12	32	12	42	66	40	4
SC32SHYDRO14	32	14	44	66	40	4
SC32SHYDRO16	32	16	44	66	40	4
SC32SHYDRO18	32	18	44	66	40	4
SC32SHYDRO20	32	20	49	66	40	4
SC32SHYDRO25	32	25	66	66	40	4

TUNGHYDRO
PRESET SCREW HYDRO

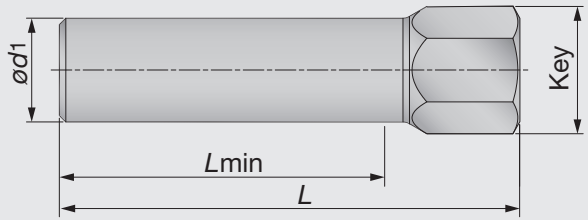
Tool stopper preset screws for the HYDRO collet chucks



Designation	SS	øD1	J	L	L2	key
PRESETSCREWHYDROM5	6	5	M5	14	1	2.5
PRESETSCREWHYDROM6	8	6	M6	14	1.5	3
PRESETSCREWHYDROM8	10	8	M8X1	14	2	4
PRESETSCREWHYDROM10	12,14	10	M10X1	17	2	5
PRESETSCREWHYDROM16	20,25,32	14	M16X1	20	2	8

TUNGHYDRO
TEST BAR HYDRO

Torque test bars for hydraulic chucks



Designation	ød	L	key	Lmin(1)	Torque*
TESTBARHYDRO6	6	53	10	27	15
TESTBARHYDRO8	8	53	10	27	25
TESTBARHYDRO10	10	56	10	32	50
TESTBARHYDRO12	12	62	10	37	110
TESTBARHYDRO14	14	62	10	37	120
TESTBARHYDRO16	16	71	17	37	180
TESTBARHYDRO18	18	71	17	42	230
TESTBARHYDRO20	20	71	17	42	250
TESTBARHYDRO25	25	79	17	48	310
TESTBARHYDRO32	32	87	17	52	450

*Torque: Recommended torque (Nm) for clamping. (1) Minimum holding length.

TUNGMAX
KIT SK-TUNGMAX

Contains a DIN 69871 holder with TUNGMAX power chuck and a set of collets with various bore sizes



Designation	SS	ød2	Qty	Range
KITSK40MAXIN20X956	40	20	6	6,8,10,12,14,16
KITSK40MAXIN32X1067	40	32	7	6,8,10,12,16,20,25
KITSK50MAXIN32X1007	50	32	7	6,8,10,12,16,20,25

• Each kit contains one power chuck, a set of SC-SPR collets, extraction hookand wrench.

KIT HSK A-TUNGMAX

Contains a power chuck with an HSK taper shank and a set of collets in various bore sizes



Designation	SS	ød2	Qty	Range
KITHSKA100MAXIN20X1156	40	20	6	6,8,10,12,14,16
KITHSKA63MAXIN20X956	50	20	6	6,8,10,12,14,16
KITHSKA63MAXIN32X1137	50	32	7	6,8,10,12,16,20,25

• Each kit contains one power chuck, a set of SC-SPR collets, extraction hookand wrench.

KIT BT-TUNGMAX

Contains a power chuck with a BT tapered shank and a set of collets in various bore sizes



Designation	SS	ød2	Qty	Range
KITBT40MAXIN20X856	40	20	6	6,8,10,12,14,16
KITBT40MAXIN32X1087	40	32	7	6,8,10,12,16,20,25
KITBT50MAXIN20X1056	50	20	6	6,8,10,12,14,16
KITBT50MAXIN32X1067	50	32	7	6,8,10,12,16,20,25

• Each kit contains one power chuck, a set of SC-SPR collets, extraction hookand wrench.

SET SC-SPR

Sets of SC straight collets for TUNGMAX power chucks



Designation	SS	Qty	Range
SETSC20SPR6	20	6	6,8,10,12,14,16
SETSC32SPR9	32	9	6,8,10,12,14,16,18,20,25

TUNGMAX
SET SC-SEAL

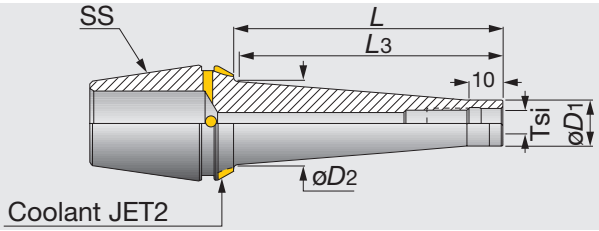
Sets of SC straight collets with coolant holes for TUNGMAX power chuck



Designation	SS	Qty	Range
SETSC20SEAL6	20	6	6,8,10,12,14,16
SETSC32SEAL9	32	9	6,8,10,12,14,16,18,20,25

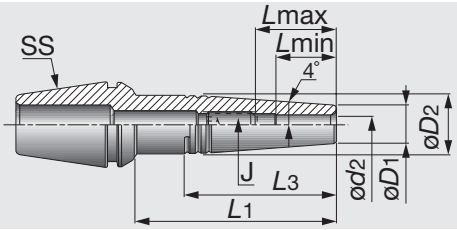
TUNGFLEX
ER-ODP

TungFlex threaded adaptation with integral ER collet for ER collet chucks



Designation	Tsi	SS	øD1	øD2	L	L3
ER32ODPM6X25	M6	ER32	9.8	14	25	22
ER32ODPM6X50	M6	ER32	9.8	20	50	48
ER32ODPM6X75	M6	ER32	9.8	23	75	74
ER32ODPM8X25	M8	ER32	13.1	15	25	22
ER32ODPM8X50	M8	ER32	13.1	23	50	49
ER32ODPM8X75	M8	ER32	13.1	23	75	74
ER32ODPM10X25	M10	ER32	18	20	25	23
ER32ODPM10X50	M10	ER32	18	24	50	49
ER32ODPM12X25	M12	ER32	21	24	25	24
ER32ODPM12X50	M12	ER32	21	24	50	49

TUNGSHRINK
ER-SRK
TungShrink ER collet type



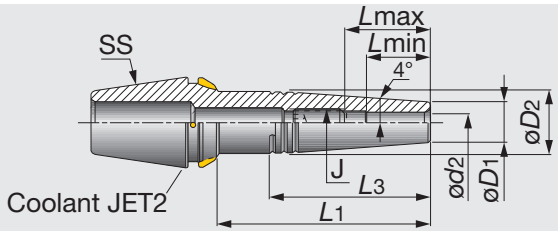
Designation	SS	ød2	øD1	øD2	L1	L3	Lmin	Lmax	J	key
ER11SRK3X10 (1)	ER11	3	7.6	8.5	10	-	9.5	-	-	-
ER11SRK3X25 (1)	ER11	3	7.6	8.5	25	-	11.5	-	-	-
ER11SRK4X10 (1)	ER11	4	7.6	8.5	10	-	9.5	-	-	-
ER11SRK4X25 (1)	ER11	4	7.6	8.5	25	-	11.5	-	-	-
ER20SRK3X35	ER20	3	10	13.5	35	24	10	16	M6	3
ER20SRK3X60	ER20	3	10	13.5	60	24	10	16	M6	3
ER20SRK4X35	ER20	4	10	13.5	35	24	12	18	M6	3
ER20SRK4X60	ER20	4	10	13.5	60	24	12	18	M6	3
ER20SRK5X35	ER20	5	10	13.5	35	24	15	21	M6	3
ER20SRK5X60	ER20	5	10	13.5	60	24	15	21	M6	3
ER20SRK6X35	ER20	6	11	14.7	35	25	18	24	M8	4
ER20SRK6X60	ER20	6	11	15.2	60	29	18	24	M8	4
ER25SRK3X35	ER25	3	10	13.5	35	24	10	16	M6	3
ER25SRK3X60	ER25	3	10	16.3	60	44	10	16	M6	3
ER25SRK4X35	ER25	4	10	13.5	35	24	12	18	M6	3
ER25SRK4X60	ER25	4	10	16.3	60	44	12	18	M6	3
ER25SRK5X35	ER25	5	10	13.5	35	24	15	21	M6	3
ER25SRK5X60	ER25	5	10	16.3	60	44	15	21	M6	3
ER25SRK6X35	ER25	6	11	14.7	35	26	18	24	M8	4
ER25SRK6X60	ER25	6	11	17.3	60	44	18	24	M8	4
ER25SRK8X35	ER25	8	14	17.8	35	26	25	30	M10	5
ER25SRK8X60	ER25	8	14	19.7	60	39	25	31	M10	5
ER32SRK3X35	ER32	3	10	13.2	35	22	10	16	M6	3
ER32SRK3X60	ER32	3	10	16.3	60	44	10	16	M6	3
ER32SRK3X85	ER32	3	10	19.8	85	70	10	16	M6	3
ER32SRK4X35	ER32	4	10	13.4	35	23	12	18	M6	3
ER32SRK4X60	ER32	4	10	16.3	60	44	12	18	M6	3
ER32SRK4X85	ER32	4	10	19.8	85	70	12	18	M6	3
ER32SRK5X35	ER32	5	10	13.5	35	24	15	21	M6	3
ER32SRK5X60	ER32	5	10	16.3	60	44	15	21	M6	3
ER32SRK5X85	ER32	5	10	19.8	85	70	15	21	M6	3
ER32SRK6X35	ER32	6	11	14.7	35	25	18	24	M8	4
ER32SRK6X60	ER32	6	11	17.3	60	45	18	24	M8	4
ER32SRK6X85	ER32	6	11	20.8	85	69	18	26	M8	4
ER32SRK8X35	ER32	8	14	18.8	35	33	25	31	M10	5
ER32SRK8X60	ER32	8	14	20.4	60	45	25	31	M10	5
ER32SRK8X85	ER32	8	14	23.2	85	65	25	31	M10	5
ER32SRK10X35	ER32	10	16	20.8	35	34	30	35	M12	6
ER32SRK10X60	ER32	10	16	22.4	60	44	30	36	M12	6
ER32SRK10X85	ER32	10	16	23	85	49	30	36	M12	6
ER32SRK12X35	ER32	12	20	24	35	28	32	-	-	-
ER32SRK12X60	ER32	12	20	24	60	28	32	38	M14	6
ER32SRK12X85	ER32	12	20	24	85	28	32	38	M14	6

(1) To be used only for SpinJet spindles

TUNGSHRINK

ER-SRK JET2

TungShrink ER collet type with JET2 external coolant supply system

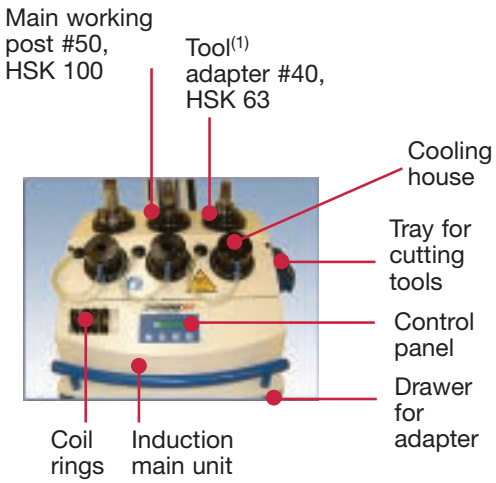


Designation	SS	ød2	øD1	øD2	L1	L3	Lmin	Lmax	J	key
ER20SRK3X35JET2	ER20	3	10	13.5	35	24.5	10	16	M6	3
ER20SRK5X35JET2	ER20	5	10	13.5	35	24.5	15	21	M6	3
ER20SRK6X35JET2	ER20	6	11	14.7	35	25.5	18	24	M8	4
ER20SRK6X60JET2	ER20	6	11	15.2	60	29.5	18	24	M8	4
ER25SRK3X35JET2	ER25	3	10	13.5	35	24.5	10	16	M6	3
ER25SRK3X60JET2	ER25	3	10	16.3	60	44.5	10	16	M6	3
ER25SRK4X35JET2	ER25	4	10	13.5	35	24.5	12	18	M6	3
ER25SRK4X60JET2	ER25	4	10	16.3	60	44.5	12	18	M6	3
ER25SRK5X35JET2	ER25	5	10	13.5	35	24.5	15	21	M6	3
ER25SRK5X60JET2	ER25	5	10	16.3	60	44.5	15	21	M6	3
ER25SRK6X35JET2	ER25	6	11	14.7	35	26	18	24	M8	4
ER25SRK6X60JET2	ER25	6	11	17.3	60	44.5	18	24	M8	4
ER25SRK8X35JET2	ER25	8	14	17.8	35	26.5	25	30	M10	5
ER25SRK8X60JET2	ER25	8	14	19.7	60	39.5	25	31	M10	5
ER32SRK3X35JET2	ER32	3	10	13.2	35	22.5	10	16	M6	3
ER32SRK3X60JET2	ER32	3	10	16.3	60	44.5	10	16	M6	3
ER32SRK3X85JET2	ER32	3	10	19.8	85	70	10	16	M6	3
ER32SRK4X35JET2	ER32	4	10	13.4	35	23.5	12	18	M6	3
ER32SRK4X60JET2	ER32	4	10	16.3	60	44.5	12	18	M6	3
ER32SRK4X85JET2	ER32	4	10	19.8	85	70	12	18	M6	3
ER32SRK5X35JET2	ER32	5	10	13.5	35	24.5	15	21	M6	3
ER32SRK5X60JET2	ER32	5	10	16.3	60	44.5	15	21	M6	3
ER32SRK5X85JET2	ER32	5	10	19.8	85	70	15	21	M6	3
ER32SRK6X35JET2	ER32	6	11	14.7	35	25.5	18	24	M8	4
ER32SRK6X60JET2	ER32	6	11	17.3	60	45	18	24	M8	4
ER32SRK6X85JET2	ER32	6	11	20.8	85	69.5	18	26	M8	4
ER32SRK8X35JET2	ER32	8	14	18.8	35	33	25	31	M10	5
ER32SRK8X60JET2	ER32	8	14	20.4	60	45	25	31	M10	5
ER32SRK8X85JET2	ER32	8	14	23.2	85	65	25	31	M10	5
ER32SRK10X35JET2	ER32	10	16	20.8	35	34	30	35	M12	6
ER32SRK10X60JET2	ER32	10	16	22.4	60	44.5	30	36	M12	6
ER32SRK10X85JET2	ER32	10	16	23	85	49.5	30	36	M12	6
ER32SRK12X35JET2	ER32	12	20	24	35	28	32	-	-	-
ER32SRK12X60JET2	ER32	12	20	24	60	28	32	38	M14	6
ER32SRK12X85JET2	ER32	12	20	24	85	28	32	38	M14	6

TUNGSHRINK
IND SHRINKIN UNIT

SHRINKIN Induction heating unit for shrink tool chucking





Designation	Machine
IND SHRINK IN UNIT EUR	3-380-500V 50/60HZ

TUNGSHRINK
IND SHRINK START UNIT

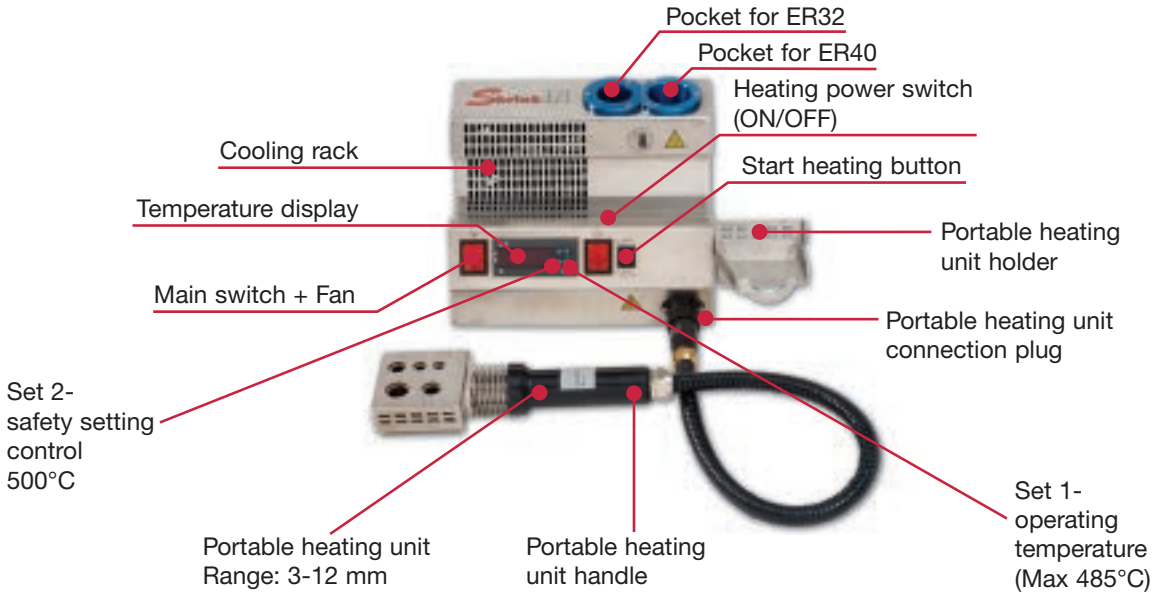
SHRINKIN Induction heating unit for shrink tool chucking



Designation	Machine
IND SHRINK START UNIT EUR	3-380-500V 50/60HZ

TUNGSHRINK
SHRINKIN UNIT V2

SHRINKIN Thermal shrink heating unit for shrink tool chucking



Designation	Machine
SHRINKIN UNIT V2 EUR	220V 50/60HZ

TUNGSHRINK

SET ER-SRK

A set of ER collets with thermal shrink chucks and various bore sizes



Designation	SS	Qty	Range
SETER32SRKL6EUR	32	6	4,5,6,8,10,12
SETER32SRKM6EUR	32	6	4,5,6,8,10,12
SETER32SRKS6EUR	32	6	4,5,6,8,10,12

KIT SHRINKIN-V2 EUR

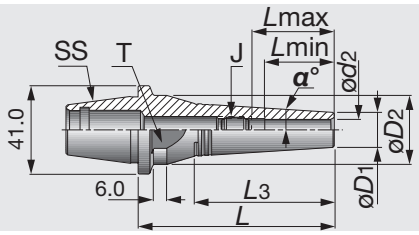
The KIT includes a thermal shrink heating unit and 6 ER32 SRK thermal collets



Designation	SS	CSI	Qty	Range
KITSHRINKINMV2EUR	SHRINKIN UNIT V2	SET ER32 SRK M	6	4,5,6,8,10,12
KITSHRINKINSV2EUR	SHRINKIN UNIT V2	SET ER32 SRK S	6	4,5,6,8,10,12

TUNGCLICK
ER-SRF

TungShrink quick change collet type

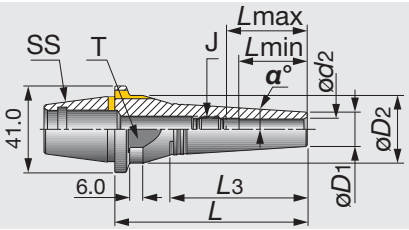


Designation	SS	ød2	øD1	øD2	L	L3	J	key	α°	T	Lmin	Lmax
ER32SRF3X50	32 SRF	3	10	32	50	31	M6	3	4	27	10	16
ER32SRF3X85	32 SRF	3	10	32	85	60.5	M6	3	4	27	10	16
ER32SRF4X50	32 SRF	4	10	32	50	31	M6	3	4	27	12	18
ER32SRF4X85	32 SRF	4	10	32	85	60.5	M6	3	4	27	12	18
ER32SRF5X50	32 SRF	5	10	32	50	31	M6	3	4	27	15	21
ER32SRF5X85	32 SRF	5	10	32	85	60.5	M6	3	4	27	15	21
ER32SRF6X50	32 SRF	6	11	32	50	31	M8	4	4	27	18	24
ER32SRF6X85	32 SRF	6	11	32	85	60.5	M8	4	4	27	18	24
ER32SRF8X50	32 SRF	8	14	32	50	33	M10	5	4	27	25	31
ER32SRF8X85	32 SRF	8	14	32	85	60.5	M10	5	4	27	25	31
ER32SRF10X50	32 SRF	10	16	32	50	35	M12	6	4	27	30	35
ER32SRF10X85	32 SRF	10	16	32	85	60.5	M12	6	4	27	30	36
ER32SRF12X50	32 SRF	12	20	32	50	35	M14	6	4	27	32	37
ER32SRF12X85	32 SRF	12	20	32	85	50	M14	6	4	27	32	38

- Tightening torque: 235 N·m.

TUNGCLICK
ER-SRF JET2

TungClick quick change system with coolant supply and TungShrink thermal shrink holder

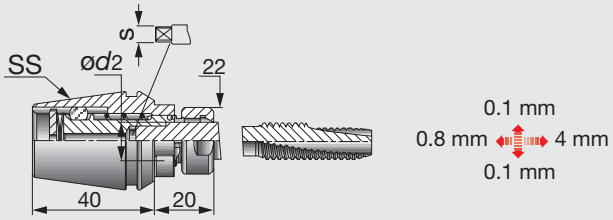


Designation	SS	ød2	øD1	øD2	L	L3	J	key	α°	T	Lmin	Lmax
ER32SRF3X50JET2	32 SRF	3	10	32	50	31	M6	3	4	27	10	16
ER32SRF3X85JET2	32 SRF	3	10	32	85	60	M6	3	4	27	10	16
ER32SRF4X50JET2	32 SRF	4	10	32	50	31	M6	3	4	27	12	18
ER32SRF4X85JET2	32 SRF	4	10	32	85	60	M6	3	4	27	12	18
ER32SRF5X85JET2	32 SRF	5	10	32	85	60	M6	3	4	27	15	21
ER32SRF6X50JET2	32 SRF	6	11	32	50	31	M8	4	4	27	18	24
ER32SRF6X85JET2	32 SRF	6	11	32	85	60	M8	4	4	27	18	24
ER32SRF8X50JET2	32 SRF	8	14	32	50	33	M10	5	4	27	25	31
ER32SRF8X85JET2	32 SRF	8	14	32	85	60	M10	5	4	27	25	31
ER32SRF10X50JET2	32 SRF	10	16	32	50	35	M12	6	4	27	30	35
ER32SRF10X85JET2	32 SRF	10	16	32	85	60	M12	6	4	27	30	36
ER32SRF12X50JET2	32 SRF	12	20	32	50	35	M14	6	4	27	32	37
ER32SRF12X85JET2	32 SRF	12	20	32	85	50	M14	6	4	27	32	38

- Tightening torque : 235 N·m.

GTIN ER-ISO

ER collet tapping attachments, tension and compression ISO type used for CNC milling and turret lathe machines.

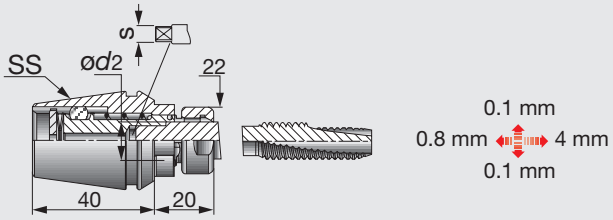


Designation	SS	ød2	S	Tap min	Tap max	T
GTINER32ISO2.24X1.80	ER32	2.24	1.8	M3	M3	20
GTINER32ISO2.50X2.00	ER32	2.5	2	M3.5	M3.5	20
GTINER32ISO2.80X2.24	ER32	2.80	2.24	M2.2	M2.5	20
GTINER32ISO3.15X2.50	ER32	3.15	2.5	M3	M4	20
GTINER32ISO3.55X2.80	ER32	3.55	2.8	M3.5	M4.5	20
GTINER32ISO4.00X3.15	ER32	4	3.15	M4	M5	20
GTINER32ISO4.50X3.55	ER32	4.5	3.55	M6	M6	20
GTINER32ISO5.00X4.00	ER32	5	4	M5	M5	20
GTINER32ISO5.60X4.50	ER32	5.6	4.5	UNC#12-24	UNC#12-24	20
GTINER32ISO6.30X5.00	ER32	6.3	5	M6	M8	20
GTINER32ISO7.10X5.60	ER32	7.1	5.6	UNC#-3/8-16	UNC#-3/8-16	20
GTINER32ISO8.00X6.30	ER32	8	6.3	M8	M10	20
GTINER32ISO9.00X7.10	ER32	9	7.1	M12	M12	20
GTINER32ISO10.00X8.00	ER32	10	8	M10	M10	20
GTINER32ISO11.20X9.00	ER32	11.2	9	M14	M14	20
GTINER32ISO12.50X10.00	ER32	12.5	10	M16	M16	20

No coolant should be induced through the tapping collet, as it will cause malfunctioning of the mechanism.

GTIN ER-DIN

ER collet tapping attachments, tension and compression DIN type used for CNC milling and turret lathe machines.

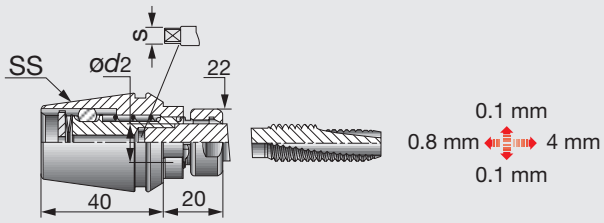


Designation	SS	ød2	S	Tap min	Tap max	T
GTINER32DIN2.50X2.10	ER32	2.5	2.1	M1	M1.8	20
GTINER32DIN2.80X2.10	ER32	2.8	2.1	M2	M4	20
GTINER32DIN3.50X2.70	ER32	3.5	2.7	M3	M5	20
GTINER32DIN4.00X3.00	ER32	4	3	M3	M5	20
GTINER32DIN4.50X3.40	ER32	4.5	3.4	M4	M6	20
GTINER32DIN6.00X4.90	ER32	6	4.9	M5	M8	20
GTINER32DIN7.00X5.50	ER32	7	5.5	M10	M10	20
GTINER32DIN8.00X6.20	ER32	8	6.2	M8	M8	20
GTINER32DIN9.00X7.00	ER32	9	7	M12	M12	20
GTINER32DIN10.00X8.00	ER32	10	8	M10	M10	20
GTINER32DIN11.00X9.00	ER32	11	9	M14	M14	20
GTINER32DIN12.00X9.00	ER32	12	9	M16	M16	20

No coolant should be induced through the tapping collet, as it will cause malfunctioning of the mechanism.

GTIN ER-JIS

ER collet tapping attachments, tension and compression JIS type used for CNC milling and turret lathe machines.



Designation	SS	ød2	S	Tap min	Tap max	T
GTINER32JIS3.00X2.50	ER32	3	2.5	M1	M2.6	20
GTINER32JIS4.00X3.20	ER32	4	3.2	M3	M3.5	20
GTINER32JIS5.00X4.00	ER32	5	4	M4	M4	20
GTINER32JIS6.00X4.50	ER32	6	4.5	M6	M6	20
GTINER32JIS6.20X5.00	ER32	6.2	5	M8	M8	20
GTINER32JIS7.00X5.50	ER32	7	5.5	M10	M10	20
GTINER32JIS8.50X6.50	ER32	8.5	6.5	M12	M12	20
GTINER32JIS10.50X8.00	ER32	10.5	8	M14	M14	20
GTINER32JIS12.50X10.00	ER32	12.5	10	M16	M16	20

• No coolant should be induced through the tapping collet, as it will cause malfunctioning of the mechanism.

DIN 69872 Pull Stud with JIS 63398 Retention Knob

Fig.1

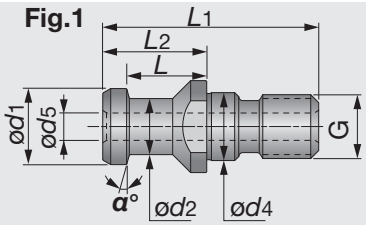


Fig.2

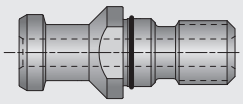
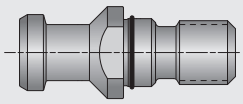


Fig.3



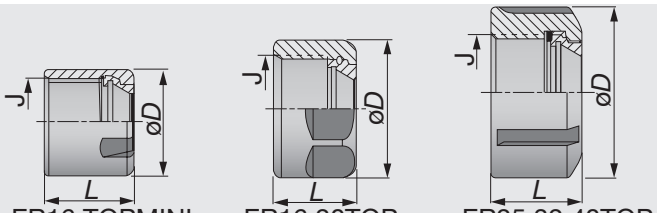
• Fig.1: Coolant holes only in items with a B suffix. • Fig.2: Without or with coolant holes and external O-ring.

Designation	SS	G	ød1	ød2	ød4	ød5	L	L1	L2	α°	Fig
PSSK3015M12DIN	30	M12	13	9	13	-	19	44	24	15	1
PSSK4015M16DIN	40	M16	19	14	17	-	20	54	26	15	1
PSSK4015M16DINO	40	M16	19	14	17	-	20	54	26	15	3
PSSK4015M16DINB	40	M16	19	14	17	7	20	54	26	15	1
PSSK4015M16DINOB	40	M16	19	14	17	7	20	54	26	15	2
PSSK5015M24DIN	50	M24	28	21	25.	-	25	74	34	15	1
PSSK5015M24DINO	50	M24	28	21	25	-	25	74	34	15	3
PSSK5015M24DINB	50	M24	28	21	25	11.5	25	74	34	15	1

TUNGHOLD

NUT ER-TOP

DIN 6499 Nut for ER collet



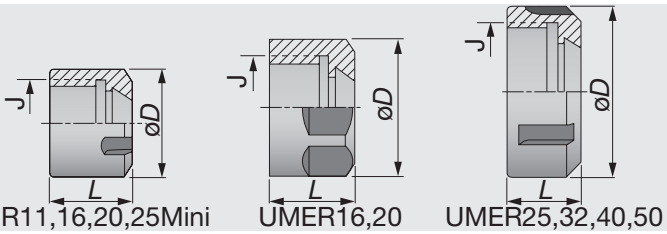
Designation	øD	L	J	Torque*
NUTER16TOP	28	17	M22X1.5	68.7
NUTER20TOP	34	19	M25X1.5	117.7
NUTER25TOP	42	20	M32X1.5	196.1
NUTER32TOP	50	22	M40X1.5	215.7
NUTER40TOP	63	25	M50X1.5	245.1

*Torque: Recommended torque (Nm) for clamping

TUNGHOLD

NUT ER-UM/MINI

Clamping Nuts for DIN 6499 ER Collet Chucks

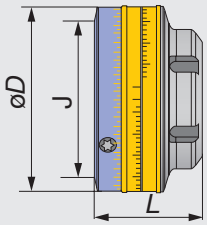


Designation	øD	L	J	Torque*
NUTER11GHS (1)	16	11.5	M13X0.75	-
NUTER11MINI	16	10.8	M13X0.75	29.4
NUTER11UM	19	11.3	M14X0.75	49
NUTER16MINI	22	18	M19X1.0	39.2
NUTER16UM	28	17	M22X1.5	68.7
NUTER20MINI	28	19	M24X1.0	78.5
NUTER20UM	34	19	M25X1.5	117.7
NUTER25MINI	35	20	M30X10	98
NUTER25UM	42	20	M32X1.5	196.1
NUTER32UM	50	22	M40X1.5	215.7
NUTER40UM	63	25	M50X1.5	245.1
NUTER50UM	78	35	M64X2.0	343.2

*Torque: Recommended torque (Nm) for clamping(1) To be used only for SpinJet spindles

TUNGBALANCE
NUT ER-BALANCE

BALANCIN Balanceable ER TOP DIN 6499 Nuts

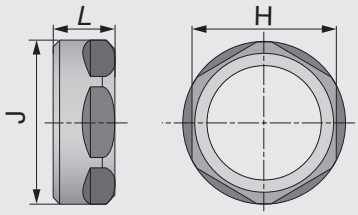


Designation	øD	L	J	Torque*
NUTER16TOPBIN	36	44	M22X1.5	68.7
NUTER25TOPBIN	37.5	58	M32X1.5	196.1
NUTER32TOPBIN	38	66	M40X1.5	215.7

*Torque: Recommended torque (Nm) for clamping

TUNGSHORT
NUT ER-SHORT

Nuts for TungShort ER Collet Chucks



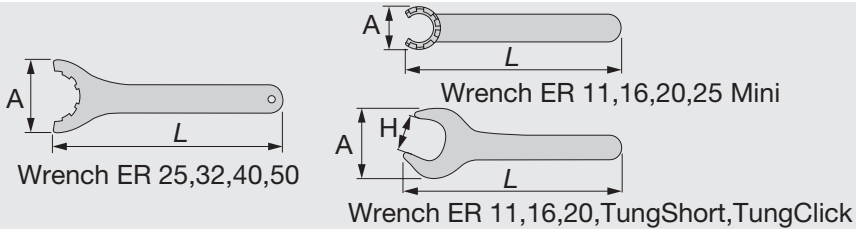
Designation	H	L	J	Torque*
NUTER20SHORT	22	10.7	M25X1.5	117.7
NUTER32SHORT	36	15	M40X1.5	215.7
NUTER40SHORT	46	16	M50X1.5	245.1

*Torque: Recommended torque (Nm) for clamping

TUNGHOLD

WRENCH ER

Wrench for ER DIN 6499 Clamping Nut



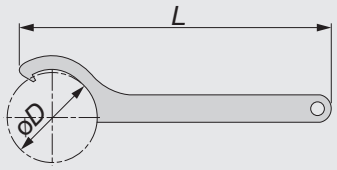
Designation	A	H	L
WRENCHER11SMS (1)	16	-	95
WRENCHER11MINI	16.8	-	95
WRENCHER11	32	17	95
WRENCHER16MINI	22.5	-	117
WRENCHER16	42.5	25	143
WRENCHER20MINI	28	-	128
WRENCHER20	53.5	30	172
WRENCHER25MINI	29	-	120
WRENCHER25	70	-	207
WRENCHER32	78	-	255
WRENCHER40	95	-	285
WRENCHER50	110	-	350
WRENCHER20SHORTRING22	48	22	260
WRENCHER32SHORT	75	36	303
WRENCHER40SHORT	94	46	378
WRENCHER32CLICKIN27	57	27	239
WRENCHER32CLICKIN32	67	32	273

(1) To be used only for SpinJet spindles

TUNGMAX

Wrench

Wrench for TungMax collets

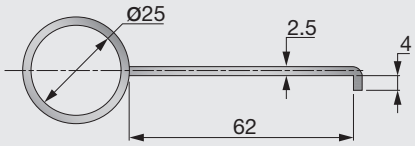


Designation	øD	L
WRENCHMAXIN20HOOK	26	205
WRENCHMAXIN32HOOK	68	240

TUNGHOLD

SC

SC Collet Extraction Hook



Designation	collet
EXTRACTOR SC COLLETS	SC straight collets

TUNGHOLD

PRESET ER-JET

Preset Screws with Oil Holes for ER Sealed Collets

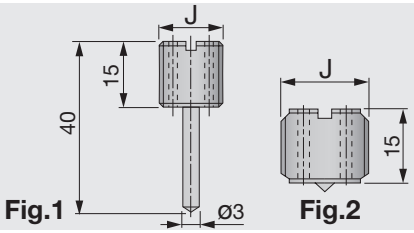
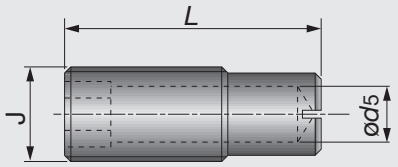


Fig.1 Fig.2

Designation	J	Fig
PRESETER-JET8X1	M8X1.0	2
PRESETER-JET8X1.25	M8X1.25	2
PRESETER-JET10X1.5	M10X1.5	2
PRESETER-JET12X1	M12X1.0	2
PRESETER-JET12X1.75L	M12X1.75	1
PRESETER-JET12X1.75	M12X1.75	2
PRESETER-JET14X1	M14X1.0	2
PRESETER-JET16X2	M16X2	2
PRESETER-JET16X2L	M16X2	1
PRESETER-JET18X1	M18X1.0	2
PRESETER-JET18X1.5	M18X1.5	2
PRESETER-JET18X1.5L	M18X1.5	1
PRESETER-JET22X1.5	M22X1.5	2
PRESETER-JET22X1.5L	M22X1.5	1
PRESETER-JET28X1.5	M28X1.5	2

TUNGMAX
Preset Screw

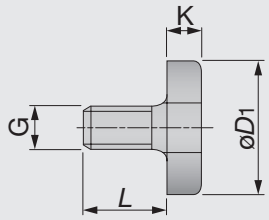
Preset Screw for TungMax chuck



Designation	J	L	ød5	key
PRESETMAXIN16X30	M16	30	8	8
PRESETMAXIN16X44	M16	44	8	8
PRESETMAXIN20X55	M20	55	12	12

TUNGHOLD
SCREW-SEM

Lock Screw for Shell Mill Holder

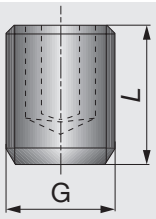


Designation	G	øD1	K	L
M8CLAMPSCREWSEM16	M8	20	6	16
M10CLAMPSCREWSEM22	M10	28	7	18
M12CLAMPSCREWSEM27	M12	35	8	22
M16CLAMPSCREWSEM32	M16	42	9	26
M20CLAMPSCREWSEM40	M20	52	10	30
M24CLAMPSCREWSEM50	M24	63	12	36

TUNGHOLD

SCREW-EM

Lock Screw for Endmill Holder

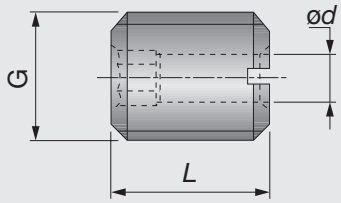


Designation	G	L	For dia
SRM6X10DIN1835B	M6	10	6
SRM8X10DIN1835-B	M8	10	8
SRM10X12DIN1835-B	M10	12	10
SRM12X16DIN1835-B	M12	16	12,14
SRM14X16DIN1835-B	M14	16	14,16
SRM16X16DIN1835-B	M16	16	20
SRM18X2X20DIN1835-B	M18X2	20	25,32
SRM20X2X20DIN1835-B	M20X2	20	40
SRM24X2X25DIN1835-B	M24X2	25	50
SRM16X10.3EMSHORT	M16	10.3	20
SRM18X2X10EMSHORT	M18X2	10	2

TUNGHOLD

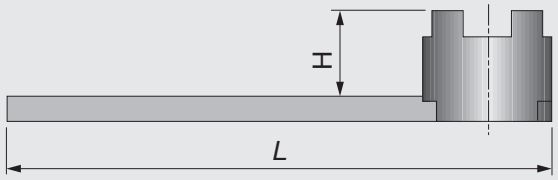
PRESET SCREW

Preset Screw for EME/SRKIN Holder with coolant hole



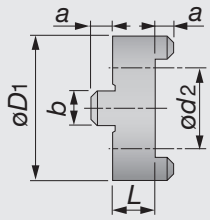
Designation	G	L	ød	For Shanks	key
PRESETSCREWM6X20B	M6X1	20	2.5	EME/SRKIN	3
PRESETSCREWM8X20B	M8X1.25	20	3.5	EME/SRKIN	4
PRESETSCREWM10X18B	M10X1.5	18	4.5	EME/SRKIN	5
PRESETSCREWM12X18B	M12X1.75	18	5.5	EME/SRKIN	6
PRESETSCREWM16X20B	M16X2	20	7.5	EME/SRKIN	6
PRESETSCREWM16X25B	M16X2	25	7.5	SRKIN	6

TUNGHOLD
WRENCH SEMC
Wrench DIN 6368 for Face and COMBI Shell Endmill Holders



Designation	SMC	G	H	L
WRENCHM8SEMC16	16	M8	20	180
WRENCHM10SEMC22	22	M10	25	200
WRENCHM12SEMC27	25.4,27	M12	32	225
WRENCHM16SEMC32	31.75,32	M16	36	250
WRENCHM20SEMC40	38.1,40	M20	40	280
WRENCHM24SEMC50	50,50.8	M24	50	315

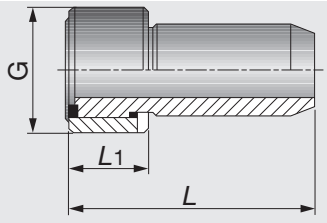
TUNGHOLD
DRIVING RING SEMC
Driving Ring DIN 6366/1 for COMBI Shell and Mill Holder



Designation	ød2	øD1	L	a	b
16D.RINGSEMC	16	32	10	8	5
22D.RINGSEMC	22	40	12	10	6
27D.RINGSEMC	27	48	12	12	6.3
32D.RINGSEMC	32	58	14	14	7
40D.RINGSEMC	40	70	14	16	8
50D.RINGSEMC	50	90	16	18	9

• Use's with "WRENCH SEMC"

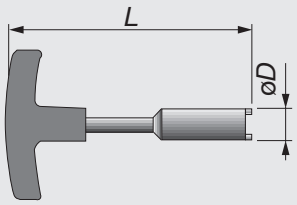
TUNGHOLD
COOLING TUBE-HSK
Cooling Tube for HSK



Designation	SS	L	L1	G
COOLINGTUBEHSKA40	40	29.1	7.5	M12X1
COOLINGTUBEHSKA50	50	32.7	9.5	M16X1
COOLINGTUBEHSKA63	63	36	11.5	M18X1
COOLINGTUBEHSKA80	80	36.6	13.5	M20X1.5
COOLINGTUBEHSKA100	100	43.6	15.5	M24X1.5

TUNGHOLD
WRENCH

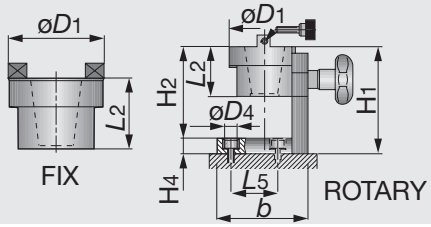
Wrench for HSK cooling tube



Designation	SS	øD	L
WRENCHCOOLTUBEHSK40	40	11	120
WRENCHCOOLTUBEHSK50	50	15	120
WRENCHCOOLTUBEHSK63	63	17	122
WRENCHCOOLTUBEHSK80	80	18.5	186
WRENCHCOOLTUBEHSK100	100	22	141

TUNGHOLD
TOOL CLAMP

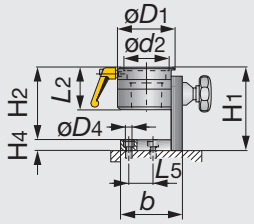
Tool clamp fixture for ISO, DIN 69871 and BT MAS-403 tool shanks



Designation	CSI	øD1	L2	H1	H2	H4	b	L5	øD4
TOOLCLAMP30ROTARY	ROTARY	70	56	128	109	19	104	40	12.5
TOOLCLAMP40ROTARY	ROTARY	82	56	128	109	19	104	40	12.5
TOOLCLAMP50ROTARY	ROTARY	103	71	170	151	19	144	85	12.5
TOOLCLAMP30FIX	FIX	82	58	-	-	-	-	-	-
TOOLCLAMP40FIX	FIX	82	58	-	-	-	-	-	-
TOOLCLAMP50FIX	FIX	103	71	-	-	-	-	-	-

TUNGHOLD
MULTI CLAMP (HSK)

Multi-clamp rotary fixture for HSK shanks



Designation	CSI	ød2	øD1	L2	H1	H2	H4	b	L5	øD4
MULTICLAMP32E/F	HSK A/C50	32	113.2	70	133	114	19	144	40	12.5
MULTICLAMP40E/F	HSK A/C63	40	113.2	70	133	114	19	144	40	12.5
MULTICLAMP50E/F	HSK A/C100	50	113.2	70	133	114	19	144	40	12.5
MULTICLAMP63E/F	HSK E/F32	63	113.2	70	133	114	19	144	40	12.5
MULTICLAMP50A/C	HSK E/F40	50	82	72	142	123	19	104	40	12.5
MULTICLAMP63A/C	HSK E/F50	63	95	72	142	123	19	104	40	12.5
MULTICLAMP100A/C	HSK E/F63	100	130	90	178	159	19	144	85	12.5

EASYLOCK

EASY LOCK

Electrical Nut-Clamp Torque Control Device



Choose the correct wrench size. Mount it on the wrench holder.

Place the wrench on the collet chuck nut.

Mount the collet chuck into the unit spindle.

Ensure that main power switch is on and that the power supply cable is connected.

To clamp - Push and hold in the “clamp” button until the bottom light goes off.

Torque selector **NEW**

Power lamp

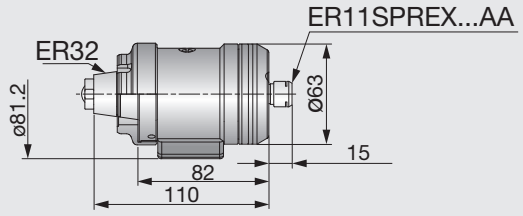
To unclamp - Push and hold in the “unclamp” button until the collet chuck is totally open.

Note: Assemble the collet and cutting tool. By hand, place the nut onto the collet chuck.

Designation	Machine
EASYLOCKT.CEU	200/240V 50/60 HZ

TJS-ER32

Coolant driven high speed compact spindles for ER32 collet chuck



Description	Designation
Display*	TJSTSDDISPLAY
Nut	NUTER11GHS
Wrench for nut	WRENCHER11SMS
Wrench for setting	WRENCHDIA3.2X45

*Option

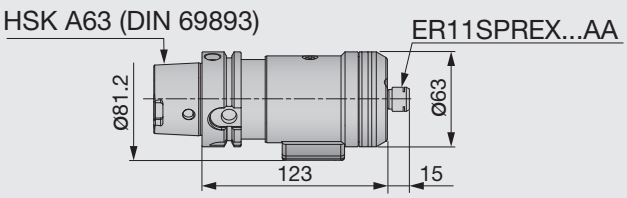
Designation	Max. tool diameter ø*Dc*	Weight (kg)	Direction of tool rotation
TJS20KER32L	3.5	1.1	L
TJS20KER32R	3.5	1.1	R
TJS30KER32L	2.5	1.1	L
TJS30KER32R	2.5	1.1	R
TJS40KER32L	1.5	1.1	L
TJS40KER32R	1.5	1.1	R

- Max. tool shank diameter: ø6.0 mm
- Coolant pressure through machine spindle: Min. 2 MPa / Max. 4 MPa
- Min. flow rate: 12 l/min

SPINJET

TJS-HSK A63

Coolant driven high speed compact spindles with HSK A63 shanks



Description	Designation
Display*	TJSTSDDISPLAY
Nut	NUTER11GHS
Wrench for nut	WRENCHER11SMS
Wrench for setting	WRENCHDIA3.2X45

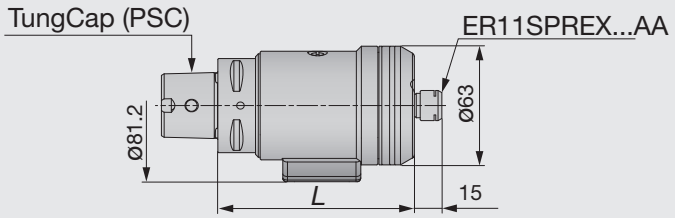
*Option

Designation	Max. tool diameter øD_C	Weight (kg)	Direction of tool rotation
TJS20KHSKA63L	3.5	1.6	L
TJS20KHSKA63R	3.5	1.6	R
TJS30KHSKA63L	2.5	1.6	L
TJS30KHSKA63R	2.5	1.6	R
TJS40KHSKA63L	1.5	1.6	L
TJS40KHSKA63R	1.5	1.6	R

- Max. tool shank diameter: ø6.0 mm
- Coolant pressure through machine spindle: Min. 2 MPa / Max. 4 MPa
- Min. flow rate: 12 l/min

TJS-C

Coolant driven high speed compact spindles with TungCap PSC ISO 26623-1 shanks



Description	Designation
Display*	TJSTSDDISPLAY
Nut	NUTER11GHS
Wrench for nut	WRENCHER11SMS
Wrench for setting	WRENCHDIA3.2X45

*Option

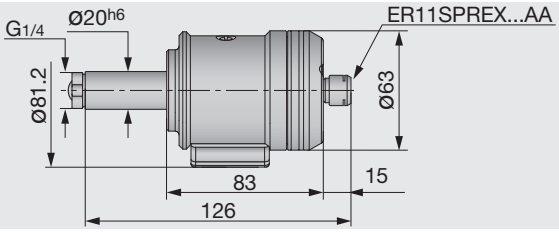
Designation	SS	*L*	Max. tool diameter øD_C	Weight (kg)	Direction of tool rotation
TJS20KC5L	C5	104	3.5	1.5	L
TJS20KC5R	C5	104	3.5	1.5	R
TJS30KC5L	C5	104	2.5	1.5	L
TJS30KC5R	C5	104	2.5	1.5	R
TJS40KC5L	C5	104	1.5	1.5	L
TJS40KC5R	C5	104	1.5	1.5	R
TJS20KC6L	C6	106	3.5	1.65	L
TJS20KC6R	C6	106	3.5	1.65	R
TJS30KC6L	C6	106	2.5	1.65	L
TJS30KC6R	C6	106	2.5	1.65	R
TJS40KC6L	C6	106	1.5	1.65	L
TJS40KC6R	C6	106	1.5	1.65	R

- Max. tool shank diameter: ø6 mm
- Coolant pressure through machine spindle: Min. 2 MPa / Max. 4 MPa
- Min. flow rate: 12 l/min

SPINJET

TJS-ST

Coolant driven high speed compact spindles with straight (Cyrindrical) shanks



Descriptions	Designation
Display*	TJSTSDDISPLAY
Nut	NUTER11GHS
Wrench for nut	WRENCHER11SMS
Wrench for setting	WRENCHDIA3.2X45

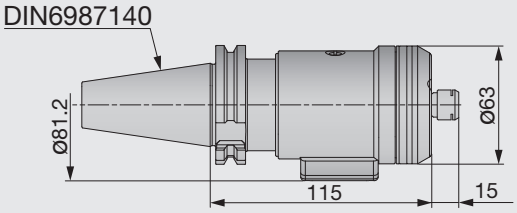
*Option

Designation	Max. tool diameter ø*Dc*	Weight (kg)	Direction of tool rotation
TJS20KST20L	3.5	1.1	L
TJS20KST20R	3.5	1.1	R
TJS30KST20L	2.5	1.1	L
TJS30KST20R	2.5	1.1	R
TJS40KST20L	1.5	1.1	L
TJS40KST20R	1.5	1.1	R

- Max. tool shank diameter: ø6 mm
- Coolant pressure through machine spindle: Min. 2 MPa / Max. 4 MPa
- Min. flow rate: 12 l/min

TJS-DIN69871

Coolant driven high speed compact spindles with DIN69871 shanks



Description	Designation
Display*	TJSTSDDISPLAY
Nut	NUTER11GHS
Wrench for nut	WRENCHER11SMS
Wrench for setting	WRENCHDIA3.2X45

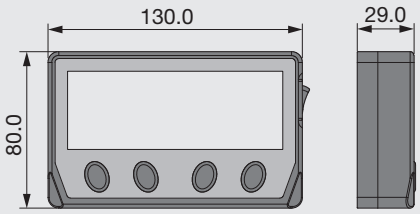
*Option

Designation	Max. tool diameter ø*Dc*	Weight (kg)	Direction of tool rotation
TJS20KDIN6987140L	ø3.5	1.6	L
TJS20KDIN6987140R	ø3.5	1.6	R
TJS30KDIN6987140L	ø2.5	1.6	L
TJS30KDIN6987140R	ø2.5	1.6	R
TJS40KDIN6987140L	ø1.5	1.6	L
TJS40KDIN6987140R	ø1.5	1.6	R

- Max. tool shank diameter: ø6 mm
- Coolant pressure through machine spindle: Min. 2 MPa / Max. 4 MPa
- Min. flow rate: 12 l/min

SPINJET
Wireless RPM speed display

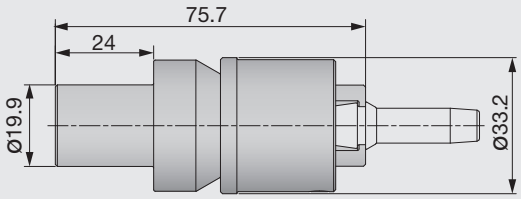
RPM speed display for SPINJET high speed spindles



Designation	Machine
TJSTSDDISPLAY	TJS spindles

ER-SRK Shrink collet adapter

ER 11 shrink collet adapter for induction heating device

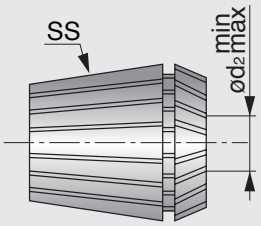


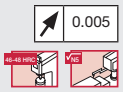
Designation	Machine
INDER11TOOLADAPTER	TJS spindles

ER-SPR-AA

ER 11 AA collet





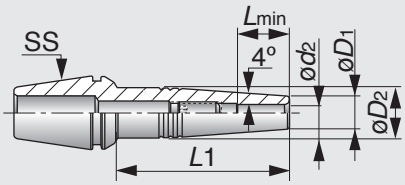


Designation	SS	ød2 min	ød2 max
ER11SPR0.5-1AA	ER11	0.5	1
ER11SPR1-2AA	ER11	1	2
ER11SPR2-3AA	ER11	2	3
ER11SPR3-4AA	ER11	3	4
ER11SPR4-5AA	ER11	4	5
ER11SPR5-6AA	ER11	5	6
ER11SPR6-7AA	ER11	6	7

AA collet run-out: 0.005 mm

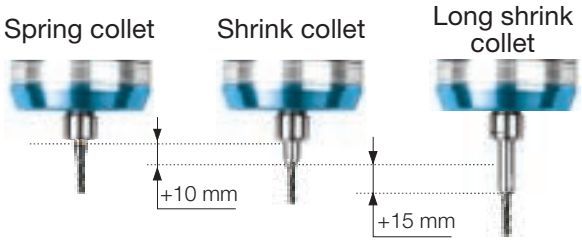
ER-SRK Shrink collet

ER 11 shrink collet for induction heating device

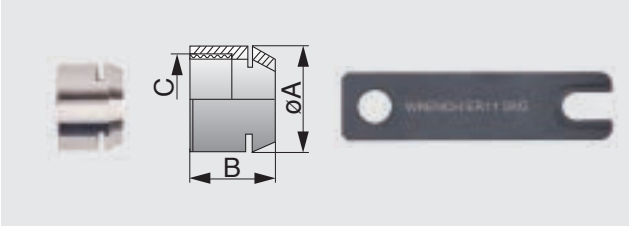


Designation	SS	ød2	L1	Lmin	øD2	øD1
ER11SRK3X10	ER11	3	10	9.5	8.5	7.6
ER11SRK3X25	ER11	3	25	11.5	8.5	7.6
ER11SRK4X10	ER11	4	10	9.5	8.5	7.6
ER11SRK4X25	ER11	4	25	11.5	8.5	7.6

• For carbide tools only

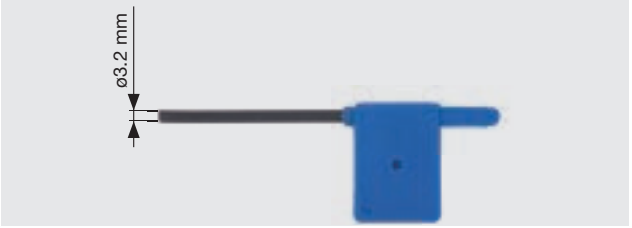


Nut and wrench for collets



Designation	øA	B	C	Wrench
NUTER11GHS	16	11.5	M13X0.75	WRENCHER11SMS

Wrench for setting



Designation
WRENCHDIA3.2x45

Ring colour	Blue	Red	Yellow
Shape			
No. of revolutions: n (RPM)	40,000	30,000	20,000
Designation	TJS40K...	TJS30K	TJS20K
Coolant pressure: (MPa)	2	2	2
Min. flow rate: (l/min)	12	12	12
Max. shank dia: øDs (mm)	6	6	6
Tool dia: øDc (mm)	0.2 - 1.5	1.6 - 2.5	2.6 - 3.5

Speed vs. pressure

Jet spindle type / n (RPM)	Coolant pressure		
	2 MPa	3 MPa	4 MPa
TJS20K-ER32	20000	30000	40000
TJS30K-ER32	30000	40000	50000
TJS40K-ER32	40000	50000	60000

These are approximate RPM values, and they depend on coolant pressure, flow rate, and type.

MEMO

Complete Tightening & Rigid Clamping



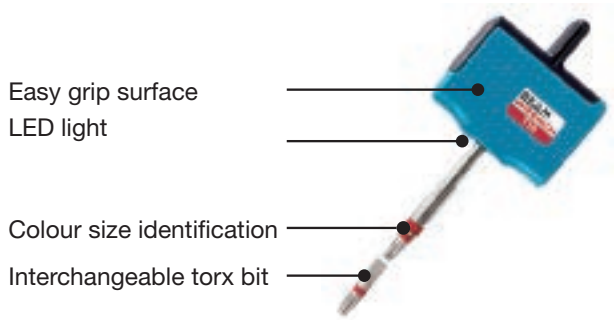
Features

LED illuminates at correct torque!

- When reaching the required clamping force, the LED will be activated.
- Enables the operator to set the insert correctly.
- Provides stable and correct clamping forces in any position.

Available various kinds of torque size!

- 5 Torx sizes are available.
- Hardened steel enhances the life of bit.



How to exchange a bit.

Unlock the used bit

- Pull the sleeve to loosen the bit



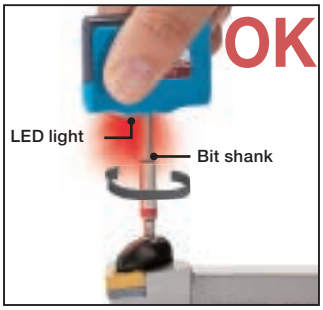
Lock the new bit

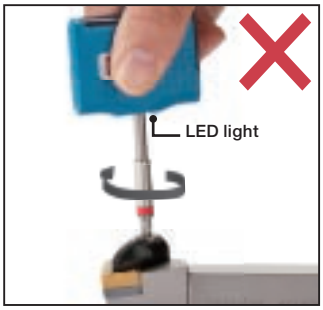
- After placing the bit in the correct position, push the sleeve to lock the bit.



Attention when tightening:

- Hold the grip in a position, so the LED can be seen on the left side of bit shank. (See the picture below) Tighten the screw clockwise.





BEAMWRENCH set

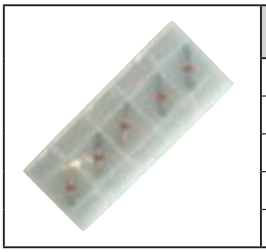


Shape	Designation	Torx Size	Torque (N·m)	Colour
Single flag	**BW-SF6**	T 6	0.6	White
	BW-SF7	T 7	0.9	Black
	BW-SF8	T 8	1.2	Green
	BW-SF9	T 9	1.4	Blue



Shape	Designation	Torx Size	Torque (N·m)	Colour
Double flag	**BW-DF8**	T 8	1.2	Green
	BW-DF9	T 9	1.4	Blue
	BW-DF15	T 15	3.0	Red

BEAMWRENCH torx bits set



Bit Designation	Torx Size	Torque (N·m)	Colour
BW-TX6SET5	T 6	0.6	White
BW-TX7SET5	T 7	0.9	Black
BW-TX8SET5	T 8	1.2	Green
BW-TX9SET5	T 9	1.4	Blue
BW-TX15SET5	T 15	3.0	Red

Purchase the Torx bit set with same colour of your BeamWrench using. Torx bits set: Packing Quantity = 5 pcs.

MEMO

PINZBOHR® Boring System

Features

● Highly economical modular tool system

Tools are functionally classified and combined with arbor heads available in a wide variety of shapes and sizes to make up various boring tools. When used in diversified machining processes, this will help reduce the tooling costs considerably.



● Applicable to a wide range of bore diameters from minimum ø5.5 to maximum ø500 mm

The head, for small diameter finish and applicable down to ø5.5 mm. The heads for roughing and finishing can cope with wide-ranging diameters from ø24 ~ ø500 mm when the head is changed and combined with fine adjustment function.

● High rigidity and accuracy

The head and arbor are connected firmly with two tapered threads and drive key, ensuring high rigidity and superior repetition accuracy.

● One action adjustment

The heads for rough boring can be adjusted in terms of two edge dimensions quickly in one action. The adjusting screw is protected with the damage prevention function.

● Abundant insert variation

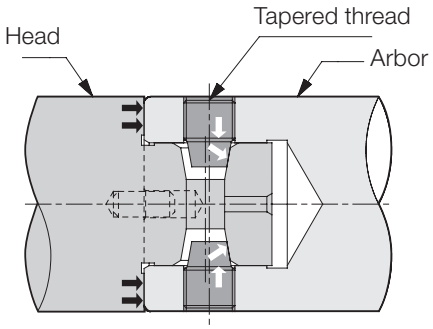
The inserts used are standard products complying with ISO. Insert grades and chipbreakers applied to various work materials and machining conditions are available in a wide range of shapes and sizes.

● Variety of cartridges

The rough boring heads of ø80 mm or more in diameter are available with various inserts and step machining cartridges.

Part assembly

Coupling System



Strong rigid connection between Boring Head and Arbor.

Adjusting of Finishing Heads



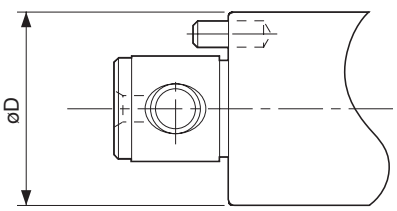
Adjusting Accuracy ø0.002 mm

Connection diameter

Arbor Designation

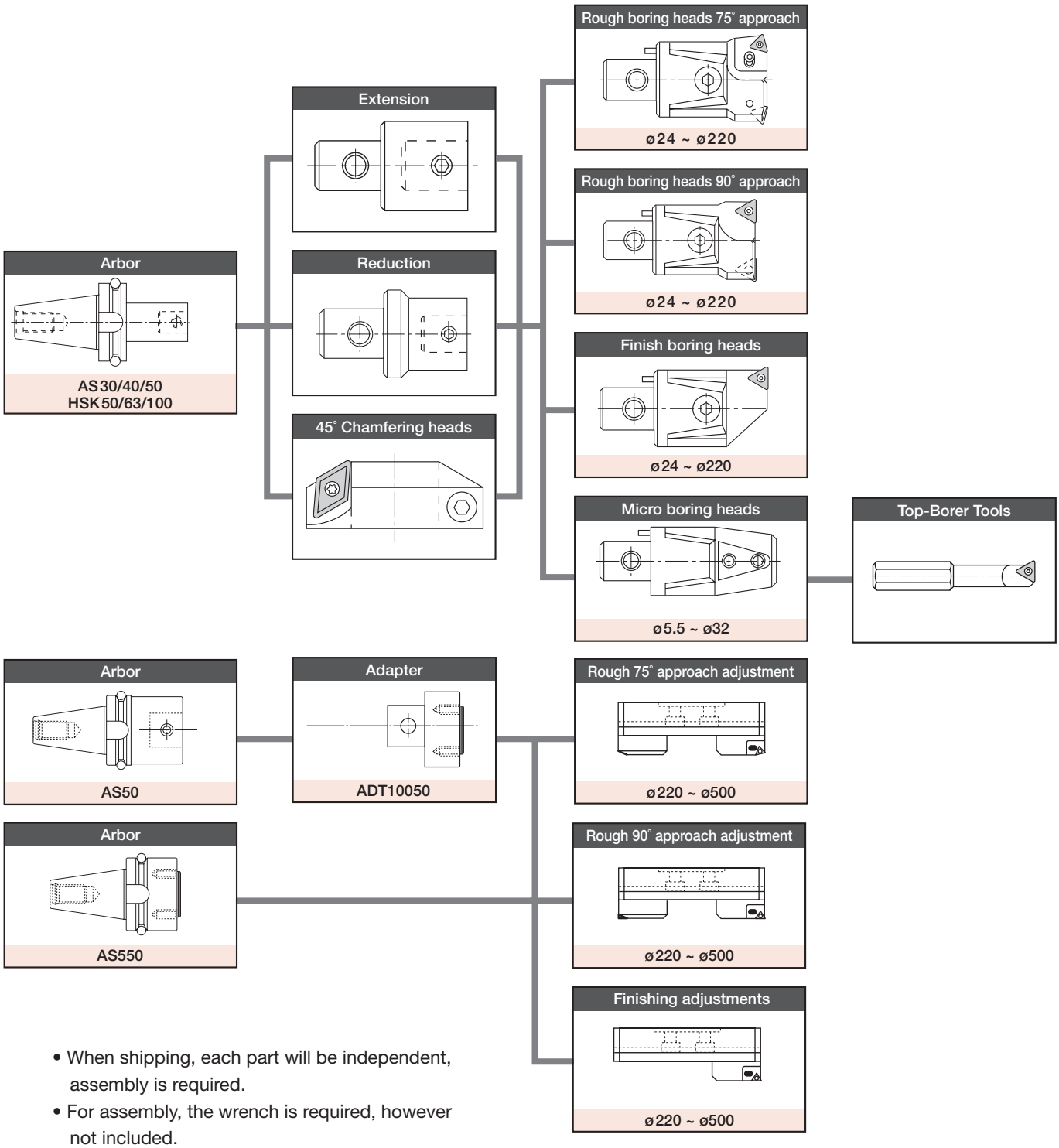
Ex) BT35042160

└ øD



PINZBOHR® Boring System is a tie-up product with MYFHE, S. A.

System



- When shipping, each part will be independent, assembly is required.
- For assembly, the wrench is required, however not included.
- Pull-stud bolt is not included.
- The insert is not included and should be purchased separately.

PINZBOHR® Boring System is a tie-up product with MYFHE, S. A.

Designation System for PINZBOHR®

Boring Heads

A	Finish boring heads
D	Rough boring heads

① For use

75° / 90°
③ Approach angle

2CT / 3CT
④ Cartridge Size
(When cartridge required)

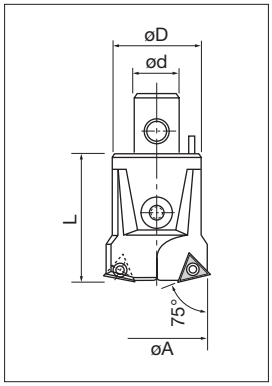
Example ① **A** ② **85** ③ **90** ④ **3CT** ⑤ **300**

② Head Size (øD)

øD	Dia. øA	øD	Dia. øA
22	ø24 ~ 30	85	ø100 ~ 125
27	ø29 ~ 40	100	ø125 ~ 160
32	ø39 ~ 50	200	ø160 ~ 220
42	ø49 ~ 65	300	ø220 ~ 320
54	ø63 ~ 82	400	ø290 ~ 400
68	ø80 ~ 102	500	ø370 ~ 500

⑤ Insert Size

300	TC□□16T3□□
400	CC□□0602□□
402N	CN□□1204□□
409	CC□□09T3□□



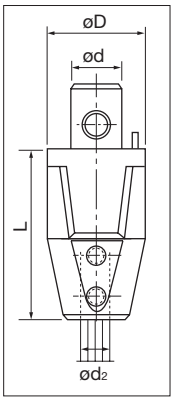
Micro Boring Heads

Example ① **A** ② **32** ③ **010**

① For use	
A	Finish boring heads

② Head Size: øD

③ Diameter of setting Boring Bars: ød2



Arbors

Example ① **AS** ② **340** ③ **22** ④ **50**

① Shank type: AS (MAS AS 403)

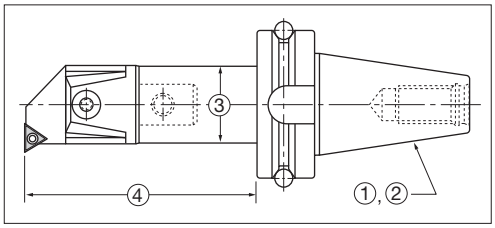
② Taper size

340	AS40
350	AS50
550	AS50 (For large boring head)

③ Shank: øD

④ Effective boring depth

50	130
55	160
60	200
75	260
80	320
100	–



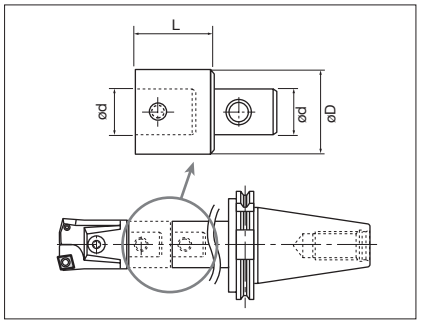
Extensions

Example ① **P** ② **22** ③ **20**

① Extension

② Shank ø: øD

③ Extension length: L



Reductions

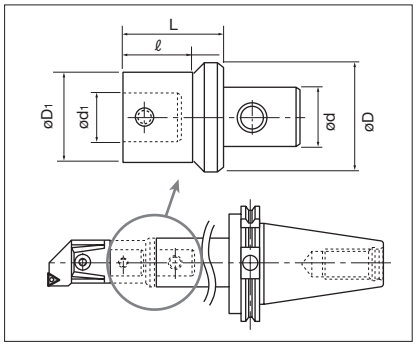
Example ① **R** ② **27** ③ **22** ④ **36**

① Reduction

② Shank ø: Connection øD

② Shank ø: Reduction øD1

④ Reduction length: L

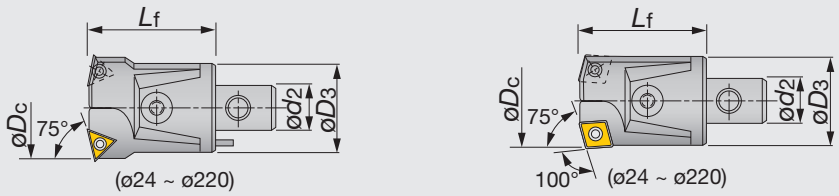


PINZBOHR® Boring System is a tie-up product with MYFHE, S. A.

Tooling System

D##75

Roughing-Head with 75° approach for dia 24 - 82mm

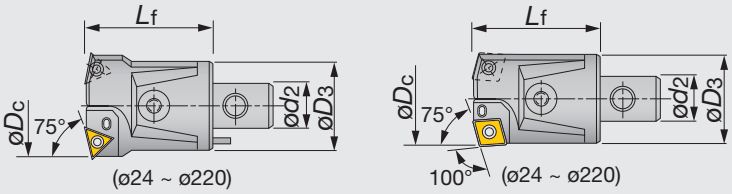


Designation	øDc min	øDc max	øD3	ød2	Lf	Weight (kg)	Insert
D2275400	24	30	22	12	34	0.1	CC**0602...
D2775409	29	40	27	15	42	0.18	CC**09T3...
D3275409	39	50	32	20	45	0.26	CC**09T3...
D4275300	49	65	42	24	56	0.6	TC**16T3...
D4275402N	53	65	42	24	56	0.6	CN**1204...
D5475300	63	82	54	28	66	1.1	TC**16T3...
D5475402N	63	82	54	28	66	1.1	CN**1204...

• 100° corner of CC**0602, CC**09T3 and CN**1204 are used.

D##75_CT

Roughing-Head with 75° approach for dia 80 - 220mm, with cartridge

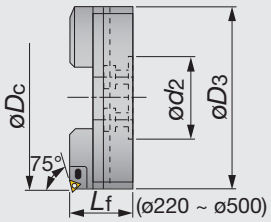


Designation	øDc min	øDc max	øD3	ød2	Lf	Weight (kg)	Insert
D68752CT300	80	102	68	36	86	2.3	TC**16T3...
D68752CT402N	80	102	68	36	86	2.3	CN**1204...
D85753CT300	100	125	85	50	100	4.3	TC**16T3...
D85753CT402N	100	125	85	50	100	4.3	CN**1204...
D100753CT300	125	160	110	60	100	6.8	TC**16T3...
D100753CT402N	125	160	110	60	100	6.8	CN**1204...
D200753CT300	160	220	145	60	100	9	TC**16T3...
D200753CT402N	160	220	145	60	100	9	CN**1204...

• 100° corner of CN**1204 is used.

D##75_CT-Large

Roughing-Head with 75° approach for dia 220 - 320mm, with cartridge

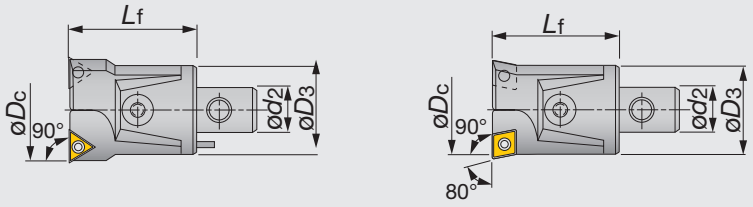


Designation	øDc min	øDc max	øD3	ød2	Lf	Weight (kg)	Insert
D300753CT300	220	320	202	60	90	10.1	TC**16T3...
D300753CT402N	220	320	202	60	90	10.1	CN**1204...

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D##90

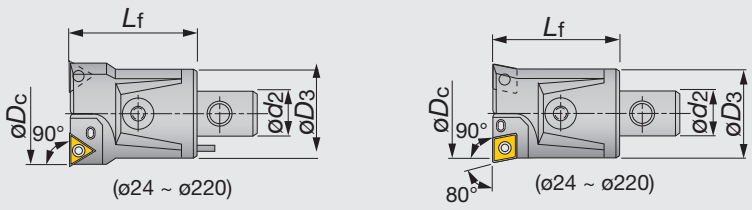
Roughing-Head with 90° approach for dia 24 - 82mm



Designation	øDc min	øDc max	øD3	ød2	Lf	Weight (kg)	Insert
D2290400	24	30	22	12	34	0.1	CC**0602...
D2790409	29	40	27	15	42	0.18	CC**09T3...
D3290409	39	50	32	20	45	0.26	CC**09T3...
D4290300	49	65	42	24	56	0.6	TC**16T3...
D4290402N	53	65	42	24	56	0.6	CN**1204...
D5490300	63	82	54	28	66	1.1	TC**16T3...
D5490402N	63	82	54	28	66.	1.1	CN**1204...

D##90_CT

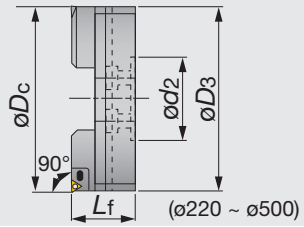
Roughing-Head with 90° approach for dia 80 - 220mm, with cartridge



Designation	øDc min	øDc max	øD3	ød2	Lf	Weight (kg)	Insert
D68902CT300	80	102	68	36	86	2.3	TC**16T3...
D68902CT402N	80	102	68	36	86	2.3	CN**1204...
D85903CT300	100	125	85	50	100	4.3	TC**16T3...
D85903CT402N	100	125	85	50	100	4.3	CN**1204...
D100903CT300	125	160	110	60	100	6.8	TC**16T3...
D100903CT402N	125	160	110	60	100	6.8	CN**1204...
D200903CT300	160	220	145	60	100	9	TC**16T3...
D200903CT402N	160	220	145	60	100	9	CN**1204...

D##90_CT-Large

Roughing-Head with 90° approach for dia 220 - 320mm, with cartridge



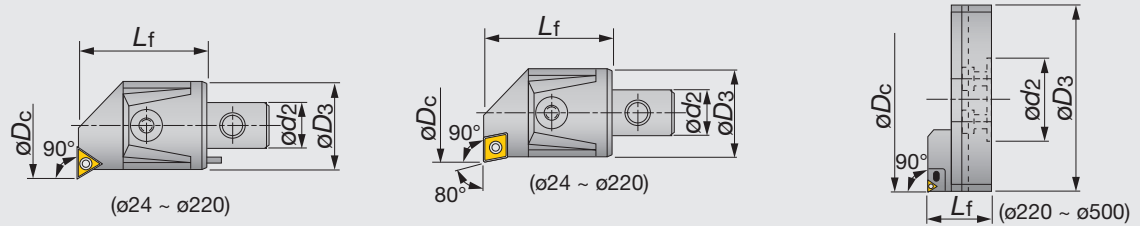
Designation	øDc min	øDc max	øD3	ød2	Lf	Weight (kg)	Insert
D300903CT300	220	320	202	60	90	10.1	TC**16T3...
D300903CT402N	220	320	202	60	90	10.1	CN**1204...

Tooling System

PINZBORE® Boring System is a product of MYFHE, S. A.

A##90

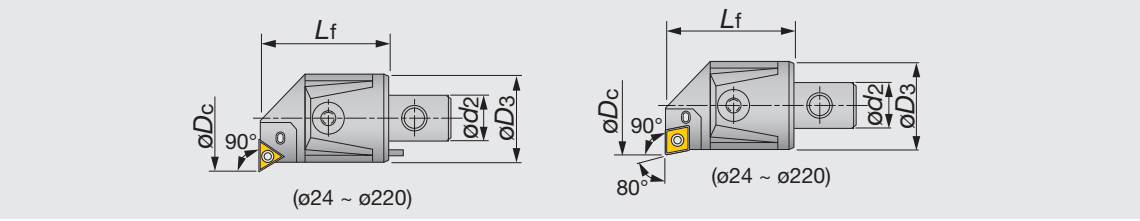
Finishing-Head with 90° approach for dia 24 - 82mm



Designation	øDc min	øDc max	øD3	ød2	Lf	Weight (kg)	Insert
A2290400	24	30	22	12	34	0.08	CC**0602...
A2790409	29	40	27	15	42	0.18	CC**09T3...
A3290409	39	50	32	20	45	0.25	CC**09T3...
A4290300	49	65	42	24	56	0.58	TC**16T3...
A4290402N	53	65	42	24	56	0.58	CN**1204...
A5490300	63	82	54	28	66	1.05	TC**16T3...
A5490402N	63	82	54	28	66	1.05	CN**1204...

A##90_CT

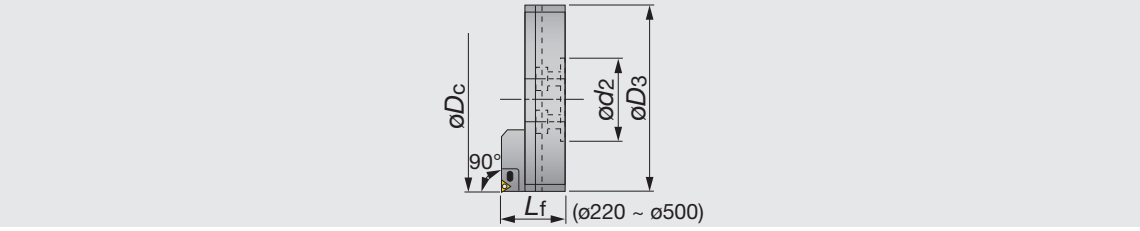
Finishing-Head with 90° approach for dia 80 - 220mm, with cartridge



Designation	øDc min	øDc max	øD3	ød2	Lf	Weight (kg)	Insert
A68902CT300	80	102	68	36	86	2.18	TC**16T3...
A68902CT402N	80	102	68	36	86	2.18	CN**1204...
A85903CT300	100	125	85	50	100	4.2	TC**16T3...
A85903CT402N	100	125	85	50	100	4.2	CN**1204...
A100903CT300	125	160	110	60	100	6.6	TC**16T3...
A100903CT402N	125	160	110	60	100	6.6	CN**1204...
A200903CT300	160	220	145	60	100	8.96	TC**16T3...
A200903CT402N	160	220	145	60	100	8.96	CN**1204...

A##90_CT-Large

Finishing-Head with 90° approach for dia 220 - 320mm, with cartridge



Designation	øDc min	øDc max	øD3	ød2	Lf	Weight (kg)	Insert
A300903CT300	220	320	202	60	90	9.3	TC**16T3...
A300903CT402N	220	320	202	60	90	9.3	CN**1204...

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#CT75

Cartridges with 75° approach

Fig. A

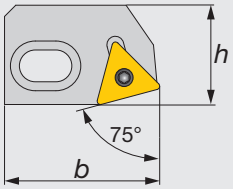
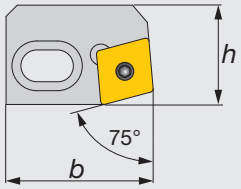


Fig. B



Designation	*b*	*h*	Insert	Fig
2CT75300	35	22.5	TC**16T3...	A
2CT75402N	35	22.5	CN**1204...	B
3CT75300	39	28	TC**16T3...	A
3CT75402N	39	28	CN**1204...	B

#CT90

Cartridges with 90° approach

Fig. A

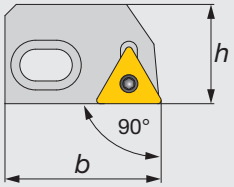
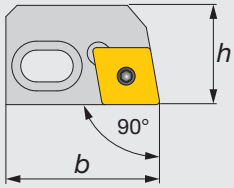


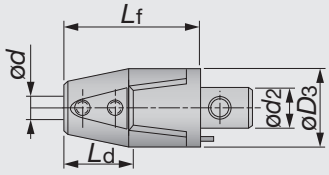
Fig. B



Designation	*b*	*h*	Insert	Fig
2CT90300	35	22.5	TC**16T3...	A
2CT90402N	35	22.5	CN**1204...	B
3CT90300	39	28	TC**16T3...	A
3CT90402N	39	28	CN**1204...	B

A##_Small

Finishing-Head for dia 5.5 - 38mm, with Top-Borer boring bars

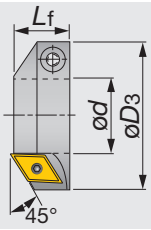


Designation	ø*D*c min	ø*D*c max	ø*d*	L*d*	ø*D*3	ø*d*2	L*f*	Weight (kg)
A27008	5.5	21	8	24	27	15	50	0.18
A32010	5.5	24	10	29	32	20	58	0.37
A42012	5.5	32	12	37	42	24	70	0.69
A42016	5.5	38	16	37	42	24	70	0.69

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CH##

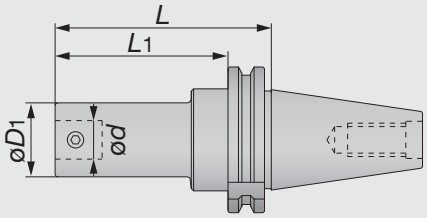
Chamfering tools



Designation	øD3	ød	Lf	Weight (kg)	Parts				Insert
					Screw for inserts	Driver	Wrench	Clamping Screw	
CH22	43	22	24	0.1	CSTB-4	T15	P-4	M5×20	DC**11T3...
CH27	48	27	24	0.18	CSTB-4	T15	P-4	M5×20	DC**11T3...
CH32	62	32	30	0.26	CSTB-4	T15	P-5	M6×30	DC**11T3...
CH42	72	42	30	0.33	CSTB-4	T15	P-5	M6×35	DC**11T3...
CH54	94	54	40	0.77	CSTB-5	T20	P-6	M8×45	DC**1504...
CH68	110	68	40	1.02	CSTB-5	T20	P-8	M10×50	DC**1504...
CH85	145	85	55	2.34	CSTB-5	T20	P-10	M12×70	DC**1504...

AS30

Arbor with DIN69871 taper

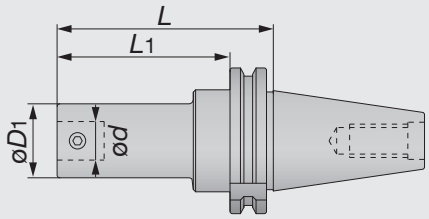


Designation	øD1	ød	L	L1	Weight (kg)	Parts Taper Screw
AS 330 022 100	22	12	104	66	0.7	2268
AS 330 027 055	27	15	48	13	0.6	27610
AS 330 027 100	27	15	96	58	0.7	27610
AS 330 032 060	32	20	51	15	0.6	32810
AS 330 032 100	32	20	93	55	0.8	32810

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AS40

Arbor with DIN69871 taper

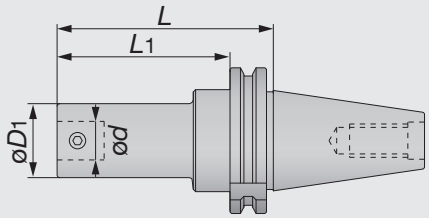


Designation	øD_1	ød	L	L_1	Weight (kg)	Parts Taper Screw
AS 340 022 080	22	12	84	46	1.23	2268
AS 340 022 100	22	12	104	66	1.3	2268
AS 340 027 055	27	15	48	13	1.13	27610
AS 340 027 100	27	15	96	58	1.35	27610
AS 340 027 130	27	15	126	88	1.49	27610
AS 340 032 060	32	20	51	15	1.14	32810
AS 340 032 100	32	20	93	55	1.4	32810
AS 340 032 130	32	20	123	85	1.59	32810
AS 340 042 075	42	24	56	19	1.2	421014
AS 340 042 160	42	24	126	104	1.98	421014
AS 340 042 200	42	24	166	144	2.46	421014
AS 340 054 120	54	28	76	54	1.63	541220
AS 340 054 160	54	28	116	94	2.36	541220
AS 340 054 200	54	28	156	134	3.11	541220
AS 340 068 160	68	36	97	74	2.48	681624
AS 340 068 200	68	36	137	114	3.63	681624
AS 340 085 200	85	50	124	100	4.24	851630
AS 340 100 200	100	60	124	100	5.16	1002035

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AS50

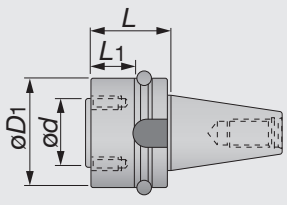
Arbor with DIN69871 taper



Designation	øD1	ød	L	L1	Weight (kg)	Parts Taper Screw
AS 350 022 080	22	12	84	46	3.45	2268
AS 350 022 100	22	12	104	66	3.5	2268
AS 350 027 055	27	15	48	13	3.3	27610
AS 350 027 100	27	15	96	58	3.55	27610
AS 350 027 130	27	15	126	88	3.68	27610
AS 350 032 060	32	20	51	15	3.31	32810
AS 350 032 130	32	20	123	85	3.79	32810
AS 350 032 160	32	20	153	115	3.98	32810
AS 350 042 075	42	24	56	19	3.39	421014
AS 350 042 160	42	24	142	104	4.36	421014
AS 350 042 200	42	24	182	144	4.86	421014
AS 350 054 090	54	28	62	24	3.57	541220
AS 350 054 160	54	28	132	94	4.85	541220
AS 350 054 200	54	28	172	134	5.57	541220
AS 350 068 115	68	36	65	29	3.74	681624
AS 350 068 200	68	36	137	114	5.8	681624
AS 350 068 260	68	36	197	174	7.6	681624
AS 350 085 200	85	50	124	100	6.3	851630
AS 350 085 260	85	50	184	160	9.04	851630
AS 350 085 320	85	50	244	220	11.7	851630
AS 350 100 190	100	60	114	90	6.6	1002035
AS 350 100 260	100	60	184	160	11	1002035
AS 350 100 320	100	60	244	220	14.66	1002035

AS550

Arbor with DIN69871 for large diameter

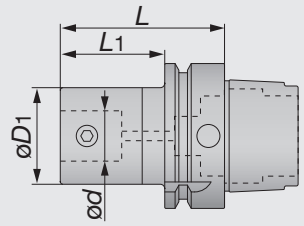


Designation	øD1	ød	L	L1	Weight (kg)	Parts Taper Screw
AS 550 160	100	60	70	35	5.65	M12×40

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HSK50

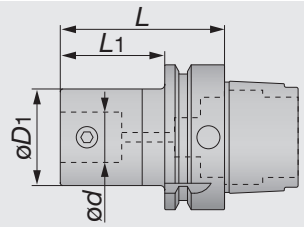
Arbor with HSK A taper



Designation	øD1	ød	L	L1	Weight (kg)	Parts Taper Screw
HSK 050A 022 055	22	12	47	21	0.49	2268
HSK 050A 027 065	27	15	49	23	0.57	27610
HSK 050A 032 075	32	20	56	30	0.66	32810
HSK 050A 042 090	42	24	60	34	0.73	421014

HSK63

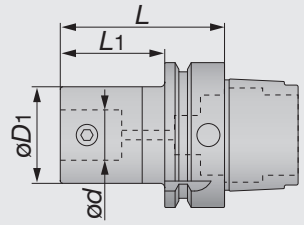
Arbor with HSK A taper



Designation	øD1	ød	L	L1	Weight (kg)	Parts Taper Screw
HSK 063A 022 055	22	12	47	21	0.75	2268
HSK 063A 027 065	27	15	49	23	0.78	27610
HSK 063A 032 075	32	20	56	30	0.84	32810
HSK 063A 042 090	42	24	60	34	0.98	421014
HSK 063A 054 110	54	28	70	44	1.3	541220
HSK 063A 068 145	68	36	85	59	1.85	681624

HSK100

Arbor with HSK A taper

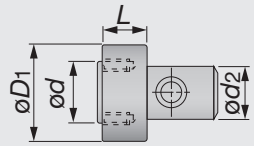


Designation	øD1	ød	L	L1	Weight (kg)	Parts Taper Screw
HSK 100A 022 055	22	12	55	21	2.28	2268
HSK 100A 027 065	27	15	57	23	2.35	27610
HSK 100A 032 075	32	20	59	30	2.33	32810
HSK 100A 042 090	42	24	63	34	2.47	421014
HSK 100A 054 110	54	28	73	44	2.8	541220
HSK 100A 068 145	68	36	88	59	3.51	681624
HSK 100A 085 165	85	50	94	65	4.15	851630
HSK 100A 100 185	100	60	114	85	5.67	1002035
HSK 550 160	100	60	80	50	5.24	M12×40

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ADT

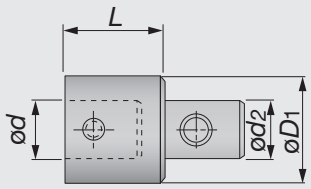
Adaptors for Large dia head



Designation	øD1	ød	ød2	L	Weight (kg)
ADT10050	100	60	60	50	4.6

P##

Adaptors / Extension For extending overhang length

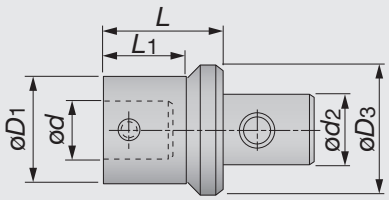


Designation	øD1	ød	ød2	L	Weight (kg)	Parts Taper Screw
P2220	22	12	12	20	0.1	22 68
P2230	22	12	12	30	0.14	22 68
P2730	27	15	15	30	0.18	27 610
P2745	27	15	15	45	0.25	27 610
P3235	32	20	20	35	0.26	32 810
P3252	32	20	20	52	0.38	32 810
P4240	42	24	24	40	0.48	42 1014
P4260	42	24	24	60	0.7	42 1014
P5450	54	28	28	50	0.95	54 1220
P5475	54	28	28	75	1.4	54 1220
P6860	68	36	36	60	1.8	68 1624
P6890	68	36	36	90	2.6	68 1624
P8570	85	50	50	70	3.05	85 1630
P85105	85	50	50	105	4.45	85 1630
P10080	100	60	60	80	4.6	100 2035
P100120	100	60	60	120	7.1	100 2035

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R##

Adaptors / Reducer For using small dia head on large size arbor.



Designation	øD1	ød	ød2	L	L1	øD3	Weight (kg)	Parts Taper Screw
R272236	22	12	15	36	26	27	0.2	22 68
R322240	22	12	20	40	30	32	0.25	22 68
R422258	22	12	24	58	48	42	0.35	22 68
R542286	22	12	28	86	76	54	0.65	22 68
R6822102	22	12	36	102	90	68	1.05	22 68
R322734	27	15	20	34	24	32	0.25	27 610
R422750	27	15	24	50	40	42	0.4	27 610
R542780	27	15	28	80	70	54	0.7	27 610
R682795	27	15	36	95	83	68	1.05	27 610
R423246	32	20	24	46	36	42	0.45	32 810
R543276	32	20	28	76	66	54	0.75	32 810
R683290	32	20	36	90	78	68	1.2	32 810
R544270	42	24	28	70	60	54	0.95	42 1014
R684282	42	24	36	82	70	68	1.4	42 1014
R854295	42	24	50	95	83	85	2.05	42 1014
R685472	54	28	36	72	60	68	1.65	54 1220
R855490	54	28	50	90	78	85	2.5	54 1220
R8568100	68	36	50	100	88	85	3.35	68 1624

PINZBORE® Boring System is a product of MYFHE, S. A.

Roughing boring heads 75° approach

(Designation is written with spaces.)

Shape	Designation	Screw for insert	Driver	Wrench	Clamping screw	Cartridge			
							Adjusting screw	Clamping screw	Washer
	D22 75 400	CSTB-2.5	T8	P-3, P-2	D22 21	–	–	–	–
	D27 75 409	CSTB-4M	T15	P-4, P-2	D27 21	–			
	D32 75 409	CSTB-4M	T15	P-4, P-2.5	D32 21	–			
	D42 75 300	CSTB-4M	T15	P-5, P-3	D42 21	–			
	D42 75 402N	MLP44	P-2.5	P-5, P-3	D42 21	–			
	D54 75 300	CSTB-4M	T15	P-6, P-3	D54 21	–			
	D54 75 402N	MLP44	P-2.5	P-6, P-3	D54 21	–			
	D68 75 2CT 300	CSTB-4M	T15	P-8, P-5, 4, 2	D68 21	2CT 75 300	D68 29	D68 27	D68 28
	D68 75 2CT 402N	MLP44	P-2.5	P-8, P-5, 4, 2	D68 21	2CT 75 402N			
	D85 75 3CT 300	CSTB-4	T15	P-8, P-5, 3	D85 21	3CT 75 300	D85 29	D68 27	D85 28
	D85 75 3CT 402N	MLP44	P-2.5	P-8, P-5, 3	D85 21	3CT 75 402N			
	D100 75 3CT 300	CSTB-4	T15	P-8, P-5, 3	D100 21	3CT 75 300			
	D100 75 3CT 402N	MLP44	P-2.5	P-8, P-5, 3	D100 21	3CT 75 402N			
	D200 75 3CT 300	CSTB-4	T15	P-8, P-5, 3	D100 21	3CT 75 300			
	D200 75 3CT 402N	MLP44	P-2.5	P-8, P-5, 3	D100 21	3CT 75 402N			
	D300 75 3CT 300	CSTB-4	T15	P-5, P-4, 3	D300 58	3CT 75 300			
	D300 75 3CT 402N	MLP44	P-2.5	P-5, P-4, 3	D300 58	3CT 75 402N			
	D400 75 3CT 300	CSTB-4	T15	P-5, P-4, 3	D300 58	3CT 75 300			
	D400 75 3CT 402N	MLP44	P-2.5	P-5, P-4, 3	D300 58	3CT 75 402N			
	D500 75 3CT 300	CSTB-4	T15	P-5, P-4, 3	D300 58	3CT 75 300			
	D500 75 3CT 402N	MLP44	P-2.5	P-5, P-4, 3	D300 58	3CT 75 402N			

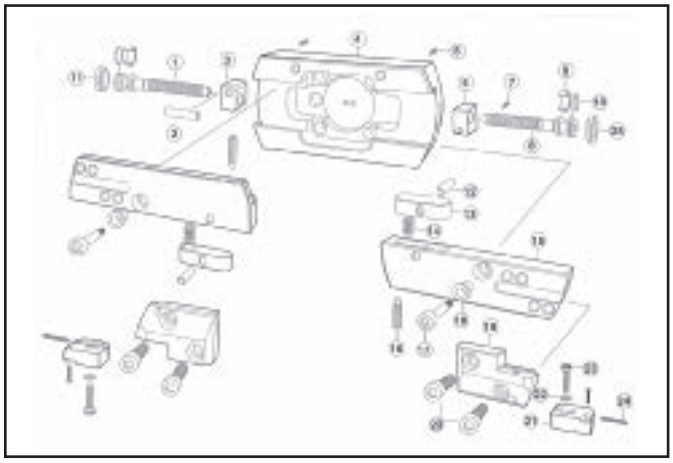
Roughing boring heads 90° approach

(Designation is written with spaces.)

Shape	Designation	Screw for insert	Driver	Wrench	Clamping screw	Cartridge			
							Adjusting screw	Clamping screw	Washer
	D22 90 400	CSTB-2.5	T8	P-3, P-2	D22 21	–	–	–	–
	D27 90 409	CSTB-4M	T15	P-4, P-2	D27 21	–			
	D32 90 409	CSTB-4M	T15	P-4, P-2.5	D32 21	–			
	D42 90 300	CSTB-4M	T15	P-5, P-3	D42 21	–			
	D42 90 402N	MLP44	P-2.5	P-5, P-3	D42 21	–			
	D54 90 300	CSTB-4M	T15	P-6, P-3	D54 21	–			
	D54 90 402N	MLP44	P-2.5	P-6, P-3	D54 21	–			
	D68 90 2CT 300	CSTB-4M	T15	P-8, P-5, 4, 2	D68 21	2CT 90 300	D68 29	D68 27	D68 28
	D68 90 2CT 402N	MLP44	P-2.5	P-8, P-5, 4, 2	D68 21	2CT 90 402N			
	D85 90 3CT 300	CSTB-4	T15	P-8, P-5, 3	D85 21	3CT 90 300	D85 29	D68 27	D85 28
	D85 90 3CT 402N	MLP44	P-2.5	P-8, P-5, 3	D85 21	3CT 90 402N			
	D100 90 3CT 300	CSTB-4	T15	P-8, P-5, 3	D100 21	3CT 90 300			
	D100 90 3CT 402N	MLP44	P-2.5	P-8, P-5, 3	D100 21	3CT 90 402N			
	D200 90 3CT 300	CSTB-4	T15	P-8, P-5, 3	D100 21	3CT 90 300			
	D200 90 3CT 402N	MLP44	P-2.5	P-8, P-5, 3	D100 21	3CT 90 402N			
	D300 90 3CT 300	CSTB-4	T15	P-5, P-4, 3	D300 58	3CT 90 300			
	D300 90 3CT 402N	MLP44	P-2.5	P-5, P-4, 3	D300 58	3CT 90 402N			
	D400 90 3CT 300	CSTB-4	T15	P-5, P-4, 3	D300 58	3CT 90 300			
	D400 90 3CT 402N	MLP44	P-2.5	P-5, P-4, 3	D300 58	3CT 90 402N			
	D500 90 3CT 300	CSTB-4	T15	P-5, P-4, 3	D300 58	3CT 90 300			
	D500 90 3CT 402N	MLP44	P-2.5	P-5, P-4, 3	D300 58	3CT 90 402N			

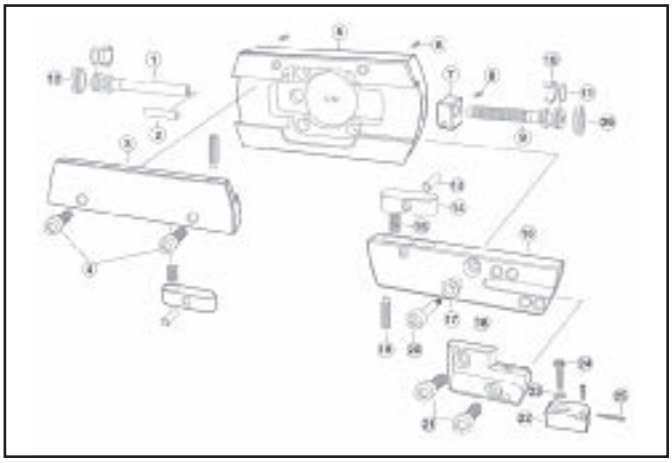
PINZBOHR® Boring System is a tie-up product with MYFHE, S. A.

Large boring heads (Roughing)



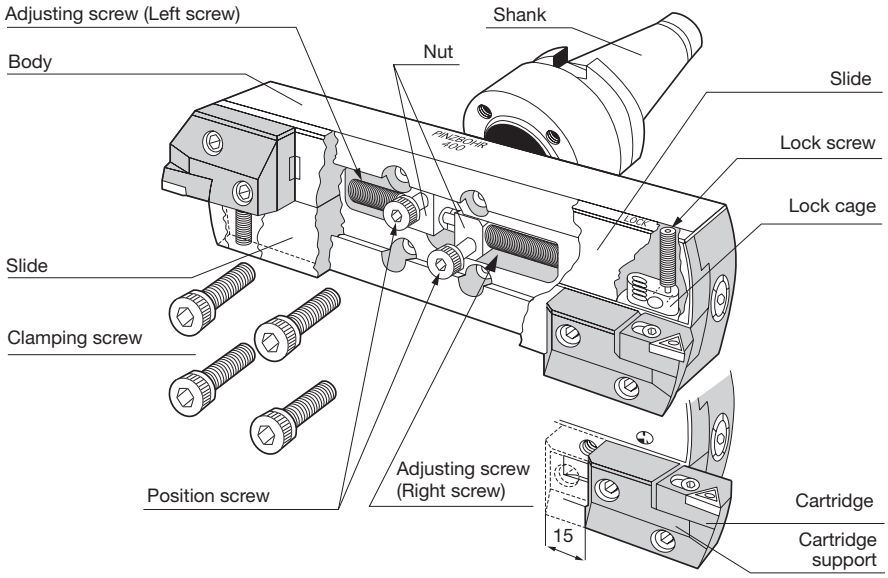
size	D300□□ □□□ □□□	D400□□ □□□ □□□	D500□□ □□□ □□□
①	D300 51	D400 51	D500 51
②	D300 66	D300 66	D300 66
③	D300 55	D300 55	D300 55
④	D300 03	D400 03	D500 03
⑤	D68 23	D68 23	D68 23
⑥	D300 54	D300 54	D300 54
⑦	D300 65	D300 65	D300 65
⑧	D300 50	D400 50	D500 50
⑨	A68 16	A68 16	A68 16
⑩	A68 25	A68 25	A68 25
⑪	A68 15	A68 15	A68 15
⑫	D300 60	D300 60	D300 60
⑬	D300 56	D300 56	D300 56
⑭	D300 59	D300 59	D300 59
⑮	D300 01	D400 01	D500 01
⑯	D300 58	D300 58	D300 58
⑰	D300 57	D300 57	D300 57
⑱	D300 62	D300 62	D300 62
⑲	D300 49	D300 49	D300 49
⑳	D300 61	D300 61	D300 61
㉑	3CT□□ □□□	3CT□□ □□□	3CT□□ □□□
㉒	D68 28	D68 28	D68 28
㉓	D85 27	D85 27	D85 27
㉔	D85 29	D85 29	D85 29
㉕	D300 15	D300 15	D300 15

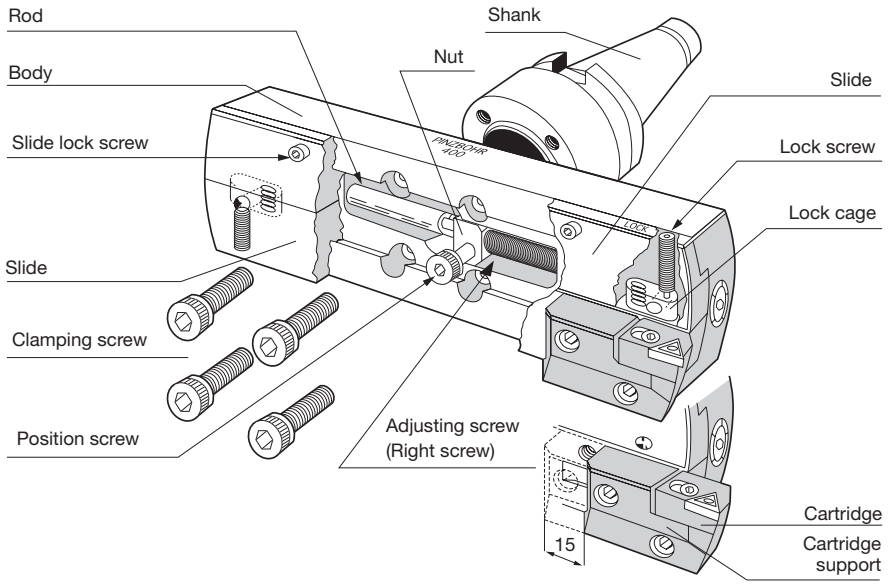
Large boring heads (Finishing)



size	D300□□ □□□ □□□	D400□□ □□□ □□□	D500□□ □□□ □□□
①	A300 52	A400 52	A500 52
②	D300 66	D300 66	D300 66
③	A300 02	A400 02	A500 02
④	A300 63	A300 63	A300 63
⑤	D300 03	D400 03	D500 03
⑥	D68 23	D68 23	D68 23
⑦	D300 54	D300 54	D300 54
⑧	D300 65	D300 65	D300 65
⑨	D300 50	D400 50	D500 50
⑩	A68 16	A68 16	A68 16
⑪	A68 25	A68 25	A68 25
⑫	A68 15	A68 15	A68 15
⑬	D300 60	D300 60	D300 60
⑭	D300 56	D300 56	D300 56
⑮	D300 59	D300 59	D300 59
⑯	D300 01	D400 01	D500 01
⑰	D300 62	D300 62	D300 62
⑱	D300 49	D300 49	D300 49
⑲	D300 58	D300 58	D300 58
⑳	D300 57	D300 57	D300 57
㉑	D300 61	D300 61	D300 61
㉒	3CT□□ □□□	3CT□□ □□□	3CT□□ □□□
㉓	D68 28	D68 28	D68 28
㉔	D85 27	D85 27	D85 27
㉕	D85 29	D85 29	D85 29
㉖	D300 15	D300 15	D300 15

PINZBOHR® Boring System is a tie-up product with MYFHE, S. A.

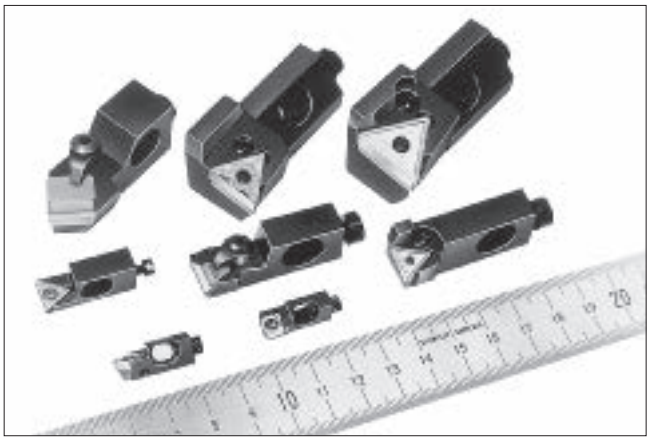




PINZBOHR® Boring System is a tie-up product with MYFHE, S. A.

Cartridge

Features of Cartridges



- **Available in a wide range of shank sizes. (06CA ~ 20CA)**
- **Variety of types and sizes for a wide range of boring operations.**

PN Pin-lock type, negative rake cartridges excel in tooling economy.

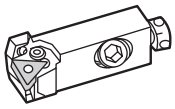
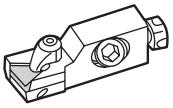
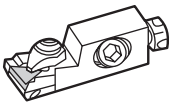
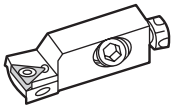
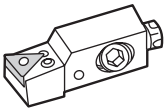
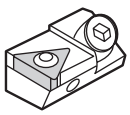
SP Screw-on type, positive rake cartridges featuring more free cutting action and machining accuracy.

CP Clamp-on type, positive rake cartridges featuring a variety of styles and sizes.

CE Clamp-on type, highly positive rake cartridges provide free cutting action and used for machining non-ferrous metals.

PNE Pin-lock type, negative rake cartridges used only for external machining.

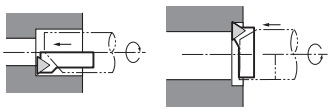
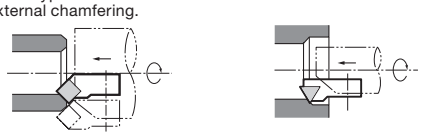
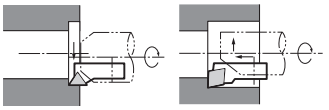
List of Cartridges

Type	Appearance	Size	Min. bore dia ø (mm)	Cutting edge height (mm)	Rake angle	Applicable Insert		Clamping mechanism	No. of items	Features and notes
						Relief angle	Hole			
PN		10CA	40	10	Negative	0°	With ISO hole	Pin-lock	12	• Excellent in economy
		12CA	50	12					14	
		16CA	60	16					14	
		20CA	70	20					10	
CP		10CA	40	10	Positive	11°	Without	Clamp-on	16	• Tough insert • Variety of styles and sizes
		12CA	50	12					16	
		16CA	60	16					16	
		20CA	70	20					2	
CE		10CA	40	10	Positive	20°	Without	Clamp-on	16	• More free cutting action • Best suitable for machining non-ferrous metals
		12CA	50	12					16	
SP		06CA	20	6	Positive	11°	With ISO hole	Screw-on	10	• Provides free cutting action • Good chip control
		08CA	25	8					10	
		10CA	40	10					16	
		12CA	50	12					16	
PNE		10CA	–	10	Negative	0°	With ISO hole	Pin-lock	8	• For external use • Made to order
		12CA	–	12					10	
A		(09CA) (Corresponds to 09CA	32	9	Positive	11°	With Tungaloy's standard hole	Screw-on	12	• Mini-cartridge

Note: Min. bore diameters shown above are for axial mounting.

Tooling System

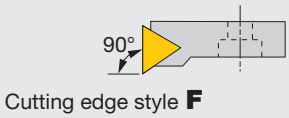
List of ISO Standard Cartridges by Application

Type	Boring		Chamfering and boring			Facing and boring	
			External and internal 45-chamfering Note: PSSN type can not be used for external chamfering. 				
PN	Cutting edge angle 85° Style Y 85° **PSYN** F167	Cutting edge angle 75° Style K 75° **PSKN** F158	Cutting edge angle 30° Style T 30° **PTTN** F165	Cutting edge angle 45° Style S 45° **PSSN** F162		Cutting edge angle 0° Style G 90° **PTGN** F156	Cutting edge angle 5° 5° Style L 5° **PCLN** F160
	Cutting edge angle 90° Style F 90° **PTFN** F154	Cutting edge angle 0° Style G 90° **PTGN** F156					
CP	Cutting edge angle 85° Style Y 85° **CSYP** F168	Cutting edge angle 75° Style K 75° **CSKP** F158	Cutting edge angle 30° Style T 30° **CTTP** F166	Cutting edge angle 45° Style S (Square insert) 45° **CSSP** F162 **CTSP** F164	Cutting edge angle 60° Style W 60° **CTWP** F161	Cutting edge angle 0° Style G 90° **CTGP** F156	
	Cutting edge angle 90° Style F 90° **CTFP** F154	Cutting edge angle 0° Style G 90° **CTGP** F156					
CE	Cutting edge angle 75° Style K 75° **CSKE** F159		Cutting edge angle 30° Style T 30° **CTTE** F167	Cutting edge angle 45° Style S (Square insert) 45° **CSSE** F163 **CTSE** F178		Cutting edge angle 0° Style G 90° **CTGE** F157	
	Cutting edge angle 90° Style F 90° **CTFE** F155	Cutting edge angle 0° Style G 90° **CTGE** F157					
SP	Cutting edge angle 85° Style Y 85° **SSYP** F168	Cutting edge angle 75° Style K 75° **SSKP** F159	Cutting edge angle 30° Style T (80° rhombic only for 06CA) 30° **STTP** F167 **SCTP** F167 (06CA)	Cutting edge angle 45° Style S (Square insert) (80° rhombic only for 06CA) 45° **SSSP** F163 **STSP** F165 **SCSP** F165 (06CA)	Cutting edge angle 60° Style W 60° **STWP** F161	Cutting edge angle 0° Style G 90° **STGP** F157	Cutting edge angle 5° 5° Style L 5° **SCLP** F160 (06CA)
	Cutting edge angle 90° Style F (80° rhombic only for 06CA) 90° **STFP** F155 **SCFP** F155 (06CA)	Cutting edge angle 0° Style G 90° **STGP** F157					

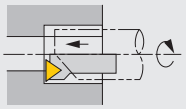
Tooling System

PN PTFN-CA

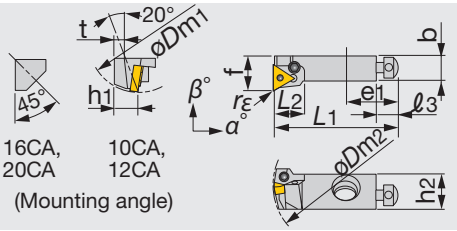
Lever lock cartridge with 90° approach angle for negative triangule insert



Cutting edge style **F**



Main application
Shoulder boring



16CA, 20CA 10CA, 12CA

(Mounting angle)

Right hand (R) shown. 80° rhombic insert used for 06CA.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
PTFNR/L10CA-11	40	55	0.4	14	50	12	10	14.5	10	20	8	-6	-8	5	TN**1103...
PTFNR/L12CA-16	50	75	0.8	20	55	16	12	19.5	15	20	8	-6	-8	6	TN**1604...
PTFNR/L16CA	55	-	0.8	25	63	23	16	16	17	25	8	-6	-8	0	TN**1604...
PTFNR/L20CA	70	-	0.8	25	70	28	20	20	19	30	10	-6	-7	0	TN**2204...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand toolholders and the left hand insert is used for right hand toolholders.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

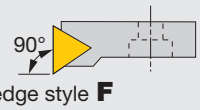
SPARE PARTS

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Shim retainer	Sizing plate (1)	Sizing plate ass'y (1)
PTFNR/L10CA-11	-	LCL22N	LCS22	ASM54	SSHM4-4	CHHM6-15	P-2F,P-5	-	-	PSTR/L10
PTFNR/L12CA-16	-	LCL33N	LCS33	ASM54	SSHM4-4	CHHM6-25	P-2F,P-5	-	-	PSTR/L12
PTFNR/L16CA	LST317CA	LCL3	LCS3	ASM6	SSHM5-6	BHM8-25U	P-2.5,P-5	LSP3	S0816B/S1016B	-
PTFNR/L20CA	LST42CA	LCL4	LCS4	ASM6	SSHM5-6	BHM8-30U	P-2.5,P-3,P-5	LSP4	S0820B/S1020B	-

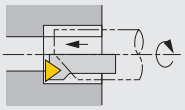
(1) Optional

CP CTFP-CA

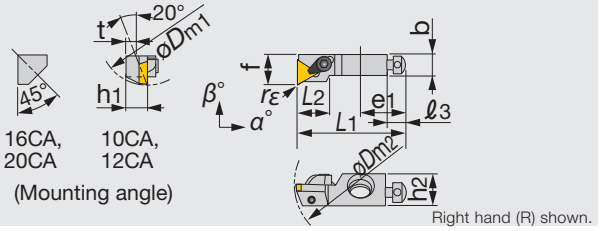
Clamp on cartridge with 90° approach angle for 11° clearance triangle insert



Cutting edge style **F**



Main application
Shoulder boring



16CA, 20CA 10CA, 12CA

(Mounting angle)

Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CTFPR/L10CA-11	40	55	0.4	14	50	15	10	14.5	10	20	8	4	0	5	TP**1103...
CTFPR/L12CA-16	50	75	0.8	20	55	17	12	19.5	15	20	8	5	2	6	TP**1603...
CTFPR/L16CA	55	-	0.8	25	63	23	16	16	17	25	8	5	0	0	TP**1603...
CTFPR/L20CA	70	-	0.8	25	70	22	20	20	19	30	10	5	0	0	TP**2204...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Chipbreaker piece	Shim retainer	Sizing plate ass'y
CTFPR/L10CA-11	-	-	CSG-5 (CSG-5S)	ASM54	SSHM4-10	CHHM6-15	P-2,P-2.5,P-5	CBT-2M	-	PSTR/L10
CTFPR/L12CA-16	-	-	CSG-6 (CSG-6S)	ASM54	SSHM4-14	CHHM6-25	P-2,P-3,P-5	CBT-3M	-	PSTR/L12
CTFPR/L16CA	PAT-32	SM3X0.5X8	CSG-8S	ASM6	SSHM5-16	BHM8-25U	P-2.5,P-4	-	S0816B/S1016B	-
CTFPR/L20CA	PAT-42	SM3X0.5X8	CSG-8	ASM6	SSHM6-16	BHM8-30U	P-3,P-4	-	S0820B/S1020B	-

Notes : Cartridges of K-style cutting edge uses S0816A or S1016A,whilst ones of S-style uses S0816C or S1016B (*marked).
When not using Chipbreaker piece, clamping screw in ( ) should be used.

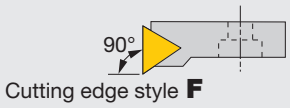
(1) Optional

Inserts for PN PTFN-CA → **B079 -**, CBN → **B164 -**, PCD → **B176**

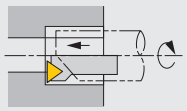
Inserts for CP CTFP-CA → **B131 -**, CBN → **B168 -**, PCD → **B178**

CE CTFE-CA

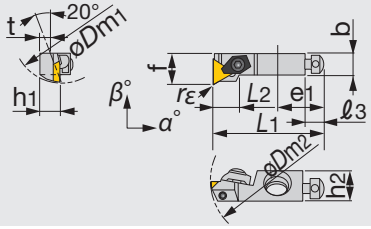
Clamp on cartridge with 90° approach angle for 20° clearance triangle insert



Cutting edge style **F**



Main application
Shoulder boring



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CTFER/L10CA-11	40	55	0.4	14	50	12	10	14.5	10	20	8	10	5	5	TE**1103...
CTFER12CA-16	50	75	0.8	20	55	18	12	19.5	15	20	8	10.	5	6	TE**1603...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
- When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
- The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
- **rε: Standard corner radius

SPARE PARTS

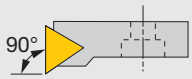
Designation	Clamp set	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Chipbreaker piece	Sizing plate ass'y (1)
CTFER/L10CA-11	CSW-40	ASM54	SSHM4-8	CHHM6-15	P-2,P-2.5,P-5	CBT-2M	PSTR/L10
CTFER/L12CA-16	CSW-50	ASM54	SSHM4-14	CHHM6-25	P-2,P-3,P-5	CBT-3M	PSTR/L12

(1) Optional

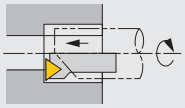
SP STFP-CA / SCFP-CA

Screw on cartridge with 90° approach angle for 11° clearance triangle insert / rhombic insert

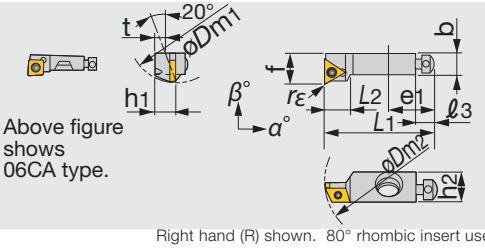
80° rhombic for 06CA only



Cutting edge style **F**



Main application
Shoulder boring



Above figure shows 06CA type.

Right hand (R) shown. 80° rhombic insert used for 06CA.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
SCFPR/L06CA-05	20	30	0.4	8	25	8.5	6	7.5	5.5	12	4.5	0	0	3.5	CP**0502...
STFPR/L08CA-09	25	35	0.4	10	32	10	8	11.5	7.5	17	6	4	0	4.5	TP**0902...
STFPR/L10CA-11	40	55	0.4	14	50	12	10	14.5	10	20	8	4	0	5	TP**1102...
STFPR/L12CA-16	50	75	0.8	20	55	17	12	19.5	15	20	8	5	2	6	TP**16T3...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
- When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
- The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
- **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Torx wrench	Sizing plate ass'y (1)
SCFPR/L06CA-05	CSTB-2.2S	ASM34S	SSHM3-6	CHHM3.5-10	P-1.5,P-3	T-7F	PT06
STFPR/L08CA-09	CSTB-2.2S	ASM34L	SSHM3-6	CHHM4-10	P-1.5,P-3	T-7F	PSTR/L08
STFPR/L10CA-11	CSTB-2.5	ASM54	SSHM4-10	CHHM6-15	P-2,P-5	T-8F	PSTR/L10
STFPR/L12CA-16	CSTB-4S	ASM54	SSHM4-14	CHHM6-25	P-2,P-5	T-15F	PSTR/L12

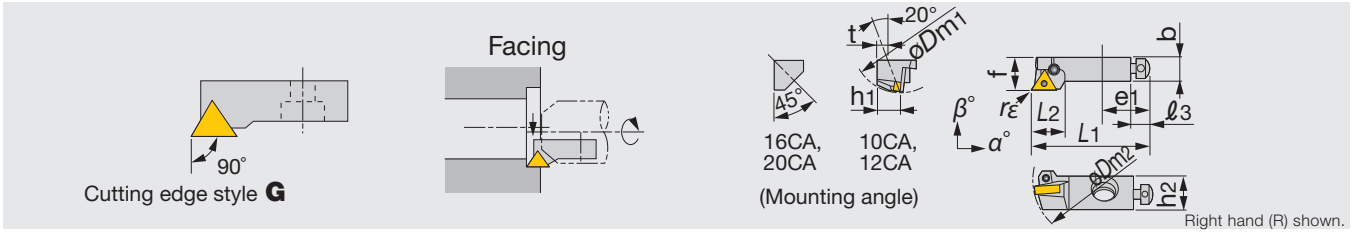
(1) Optional

Inserts for CE CTFE-CA → **Special**

Inserts for SP STFP-CA → **B112** (CP**), **B131 -** (TP**), CBN → **B168 -**, PCD → **B178**

PN PTGN-CA

Lever lock cartridge with 90° approach angle for negative triangule inserts



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
PTGNR/L10CA-11	40	55	0.4	14	50	14	10	14.5	10	20	8	-6	-8	5	TN**1103...
PTGNR/L12CA-16	50	75	0.8	20	55	20	12	19.5	15	20	8	-6	-8	5	TN**1604...
PTGNR/L16CA	60	75	0.8	25	63	23	16	16	17	25	8	-6	-10	0	TN**1604...
PTGNR20CA	70	90	0.8	25	70	28	20	20	19	30	10	-6	-8	0	TN**2204...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• **rε: Standard corner radius

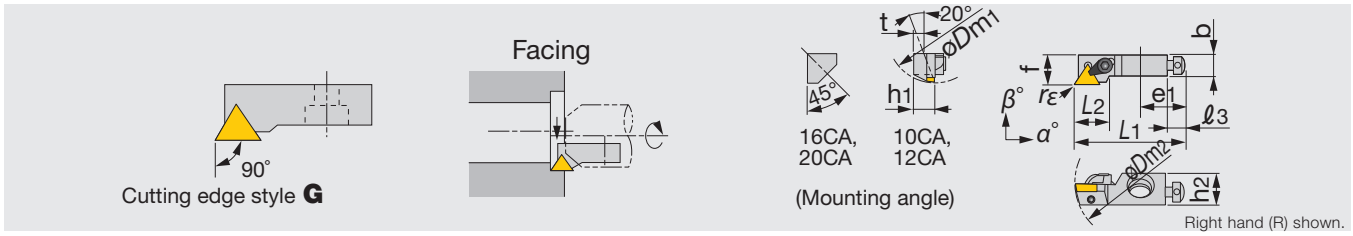
SPARE PARTS

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Shim retainer	Sizing plate (1)	Sizing plate ass'y (1)
PTGNR/L10CA-11	-	LCL22N	LCS22	ASM54	SSHM4-4	CHHM6-15	P-2F,P-5	-	-	PSTR/L10
PTGNR/L12CA-16	-	LCL33N	LCS33	ASM54	SSHM4-4	CHHM6-25	P-2F,P-5	-	-	PSTR/L12
PTGNR/L16CA	LST317CA	LCL3	LCS3	ASM6	SSHM5-6	BHM8-25U	P-2.5,P-5	LSP3	S0816B/S1016B	-
PTGNR/L20CA	LST42CA	LCL4	LCS4	ASM6	SSHM5-6	BHM8-30U	P-2.5,P-3,P-5	LSP4	S0820B/S1020B	-

(1) Optional

CP CTGP-CA

Clamp on cartridge with 90° approach angle for 11° clearance triangle insert



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CTGPR/L10CA-11	40	55	0.4	14	50	16	10	14.5	10	20	8	4	0	5	TP**1103...
CTGPR/L12CA-16	50	75	0.8	20	55	21	12	19.5	15	20	8	3	2	5	TP**1603...
CTGPL16CA	55	75	0.8	25	63	25	16	16	17	25	8	0	0	0	TP**1603...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• **rε: Standard corner radius

SPARE PARTS

Designation	Shim	Lever	Clamp set	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Chipbreaker piece	Shim retainer (1)	Sizing plate ass'y (1)
CTGPR/L10CA-11	-	-	CSG-5 (CSG-5S)	ASM54	SSHM4-10	CHHM6-15	P-2,P-2.5,P-5	CBT-2M	-	PSTR/L10
CTGPR/L12CA-16	-	-	CSG-6 (CSG-6S)	ASM54	SSHM4-14	CHHM6-25	P-2,P-3,P-5	CBT-3M	-	PSTR/L12
CTGPR/L16CA	PAT-32	SM3X0.5X8	CSG-8S	ASM6	SSHM5-16	BHM8-25U	P-2.5,P-4	-	S0816B/S1016B	-

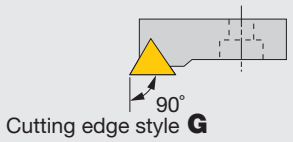
(1) Optional

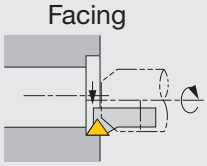
Inserts for PN PTGN-CA → **B079 -,** CBN → **B164 -,** PCD → **B176**

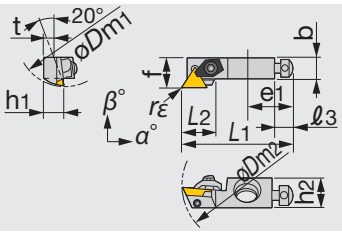
Inserts for CP CTGP-CA → **B131 -,** CBN → **B168 -,** PCD → **B178**

CE CTGE-CA

Clamp on cartridge with 90° approach angle for 20° clearance triangle insert







Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CTGER/L10CA-11	40	55	0.4	14	50	15	10	14.5	10	20	8	5	10	5	TE**1103...
CTGER/L12CA-16	50	75	0.8	20	55	20	12	19.5	15	20	8	5	10	6	TE**1603...

**rε: Standard corner radius

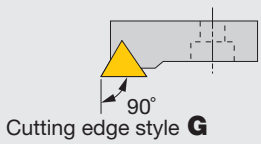
SPARE PARTS

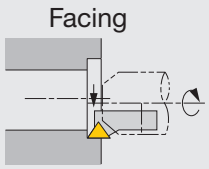
Designation	Clamp set	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Chipbreaker piece	Sizing plate ass'y
CTGER/L10CA-11	CSW-40	ASM54	SSHM4-8	CHHM6-15	P-2,P-2.5,P-5	CBT-2M	PSTR/L10
CTGER/L12CA-16	CSW-50	ASM54	SSHM4-14	CHHM6-25	P-2,P-3,P-5	CBT-3M	PSTR/L12

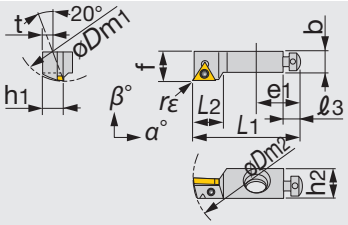
(1) Optional

SP STGP-CA

Screw on cartridge with 90° approach angle for 11° clearance triangle insert







Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
STGPR/L08CA-09	25	35	0.4	10	32	10.9	8	11.5	7.5	17	6	4	0	6	TP**0902...
STGPR/L10CA-11	40	55	0.4	14	50	14	10	14.5	10	20	8	4	0	8	TP**1102...
STGPL12CA-16	50	75	0.8	20	55	19	12	19.5	15	20	8	5	2	8	TP**16T3...

**rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Torx wrench	Sizing plate ass'y
STGPR/L08CA-09	CSTB-2.2S	ASM34L	SSHM3-6	CHHM4-10	P-1.5,P-3	T-7F	PSTR/L08
STGPR/L10CA-11	CSTB-2.5	ASM54	SSHM4-10	CHHM6-15	P-2,P-5	T-8F	PSTR/L10
STGPR/L12CA-16	CSTB-4S	ASM54	SSHM4-14	CHHM6-25	P-2,P-5	T-15F	PSTR/L12

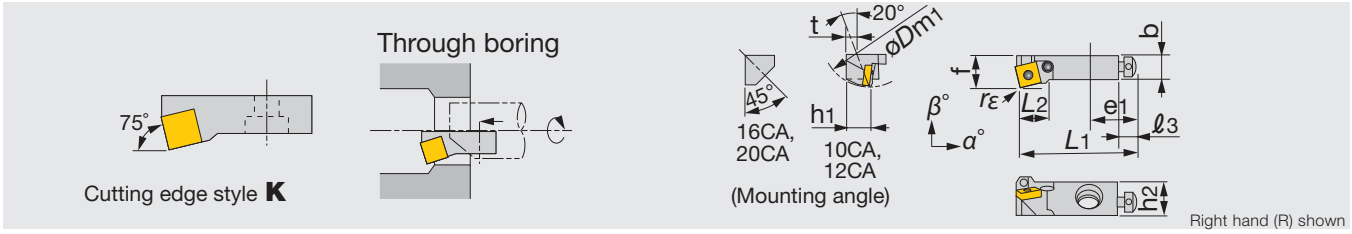
(1) Optional

Inserts for CE CTGE-CA → **Special**

Inserts for CP STGP-CA → **B131 -,** CBN → **B168 -,** PCD → **B178**

PN PSKN-CA

Lever lock cartridge with 75° approach angle for negative square insert



Designation	øDm1	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
PSKNR10CA-09	40	0.8	14	50	12	10	14.5	10	20	8.	-6	-8	5	SN**0903...
PSKNR/L12CA-12	50	0.8	20	55	16	12	19.5	15	20	8	-6	-8	5	SN**1204...
PSKNR/L16CA	55	0.8	25	63	23	16	16	17	25	8	-6	-8	0	SN**1204...
PSKNR20CA	70	1.2	25	70	28	20	20	19	30	10	-6	-7	0	SN**1506...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

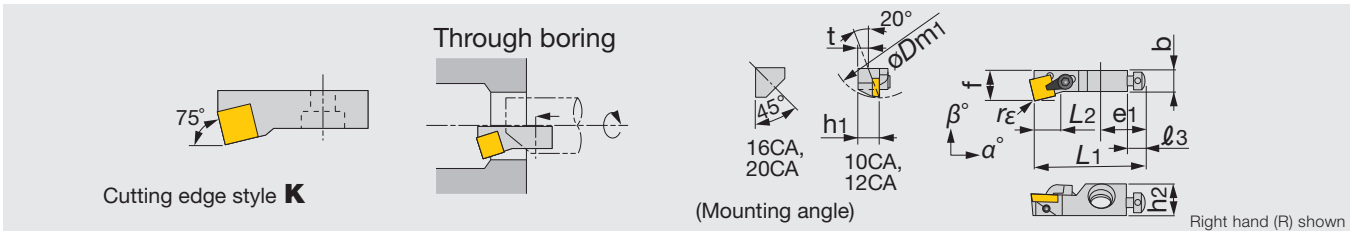
SPARE PARTS

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Shim retainer	Sizing plate (1)	Sizing plate ass'y (1)
PSKNR/L10CA-09	-	LCL32N	LCS22	ASM54	SSHM4-4	CHHM4-4	P-2F,P-5	-	-	PSTR/L10
PSKNR/L12CA-12	-	LCL43N	LCS43	ASM54	SSHM4-4	CHHM6-25	P-2,P-2.5,P-5	-	-	PSTR/L12
PSKNR/L16CA	LSS42CA	LCL4	LCS4CA	ASM6	SSHM5-6	BHM8-25U	P-2.5,P-3,P-5	LSP4	S0816B/S1016B	-
PSKNR/L20CA	LSS53CA	LCL5	LCS5CA	ASM6	SSHM5-6	BHM8-30U	P-2.5,P-3,P-5	LSP5	S0820B/S1020B	-

(1) Optional

CP CSKP-CA

Clamp on cartridge with 75° approach angle for 11° clearance square insert



Designation	øDm1	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CSKPR/L10CA-09	40	0.8	14	50	12	10	14.5	10	20	8	5	0	5	SP**0903...
CSKPR/L12CA-12	50	0.8	20	55	17	12	19.5	15	20	8	5	2	6	SP**1203...
CSKPR/L16CA	55	0.8	25	63	22	16	16	17	25	8	5	0	0	SP**1203...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Chipbreaker piece	Shim retainer (1)	Sizing plate ass'y (1)
CSKPR/L10CA-09	-	-	CSG-5 (CSG-5S)	ASM54	SSHM4-10	CHHM6-15	P-2,P-2.5,P-5	CBS-3M	-	PSTR/L10
CSKPR/L12CA-12	-	-	CSG-6 (CSG-6S)	ASM54	SSHM4-14	CHHM6-25	P-2,P-3,P-5	CBS-4M	-	PSTR/L12
CSKPR/L16CA	PAS-42	SM3X0.5X8	CSG-8S	ASM6	SSHM5-16	BHM8-25U	P-2.5,P-4	-	*	-

(1) Optional

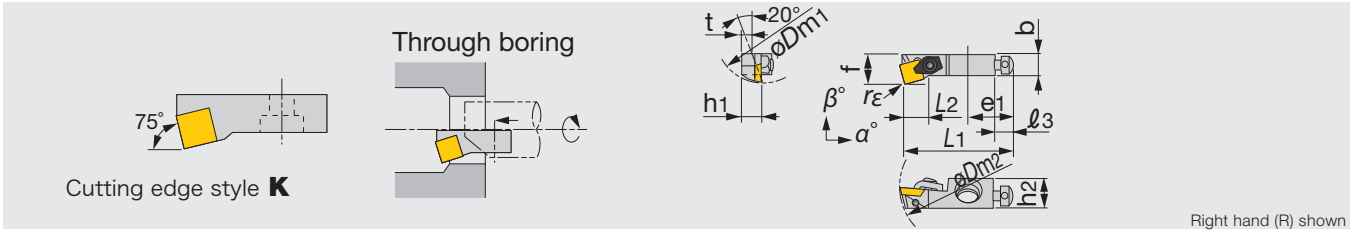
Tooling System

Inserts for PN PSKN-CA → **B070 -,** CBN → **B164 -,** PCD → **B176**

Inserts for CP CSKP-CA → **B123 -,** CBN → **B168 -,** PCD → **B177**

CE CSKE-CA

Clamp on cartridge with 75° approach angle for 20° clearance square insert



Right hand (R) shown

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CSKER10CA-09	40	55	0.8	14	50	11.3	10	14.5	10	20	8	10	5	8	SE**0903...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

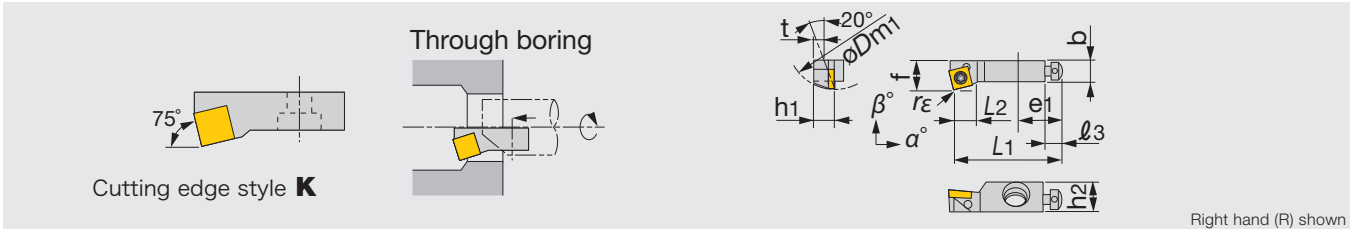
Designation	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
CSKER10CA-09	CHHM6-15	P-2	P-2.5	P-5

Designation	Clamp set	Axial adjusting screw	Radial adjusting screw	Chipbreaker piece	Sizing plate ass'y (1)
CSKER10CA-09	CSW-40	ASM54	SSHM4-8	CBS-3M	PSTR/L10

(1) Optional

SP SSKP-CA

Screw on cartridge with 75° approach angle for 11° clearance square insert



Right hand (R) shown

Designation	øDm1	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
SSKPR10CA-09	40	0.8	14	50	12.7	10	14.5	10	20	8	5	0	8	SP**0903...
SSKPR12CA-12	50	0.8	20	55	16	12	19.5	15	20	8	5	2	8	SP**1204...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
SSKPR10CA-09	CSTB-4S	CHHM6-15	P-2	T-15F	P-5
SSKPR12CA-12	CSTB-5S	CHHM6-25	P-2	T-20F	P-5

Designation	Axial adjusting screw	Radial adjusting screw	Sizing plate ass'y (1)
SSKPR10CA-09	ASM54	SSHM4-10	PSTR/L10
SSKPR12CA-12	ASM54	SSHM4-14	PSTR/L12

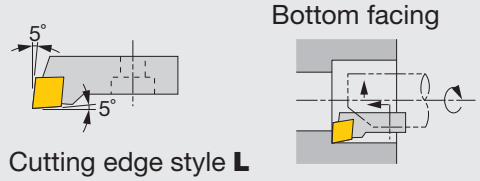
(1) Optional

Inserts for CE CSKE-CA → **Special**

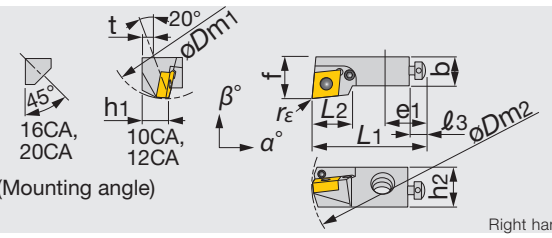
Inserts for SP SSKP-CA → **B123 -,** CBN → **B168**

PN PCLN-CA

Lever lock cartridge with 95° approach angle for negative rhombic insert



Cutting edge style **L**



(Mounting angle)

Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
PCLNR/L12CA-12	50	75	0.8	20	55	19	12	19.5	15	20	8	-6	-8	6	CN**1204...
PCLNR/L16CA	55	75	0.8	25	63	28	16	16	17	25	8	-6	-8	0	CN**1204...
PCLNR/L20CA	70	90	1.2	25	70	31	20	20	19	30	10	-6	-8	0	CN**1606...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

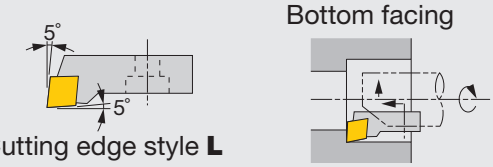
Designation	Cartridge setting screw	Cartridge setting screw 1	Sizing plate	Sizing plate 1	Wrench	Wrench 1	Wrench 2
PCLNR/L12CA-12	-	CHHM6-25	-	-	P-2	P-2.5	P-5
PCLNR/L16CA	BHM8-25U	-	S0816B	S1016B	P-2.5	P-3	P-5
PCLNR/L20CA	-	-	-	-	P-2.5	P-3	P-5

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Shim retainer	Sizing plate ass'y (1)
PCLNR/L12CA-12	-	LCL43N	LCS43	ASM54	SSHM4-4	-	PSTR/L12
PCLNR/L16CA	LSC 42CA	LCL4	LCS4CA	ASM6	SSHM5-6	LSP4	-
PCLNR/L20CA	LSC 53CA	LCL5	LCS5CA	ASM6	SSHM5-6	LSP5	-

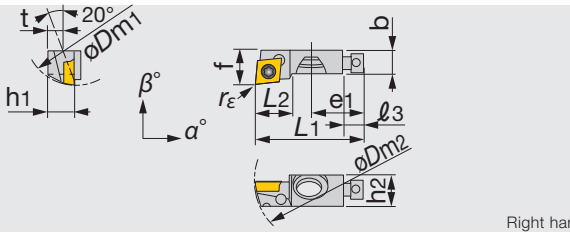
(1) Optional

SP SCLP-CA

Screw on cartridge with 95° approach angle for 11° clearance rhombic insert



Cutting edge style **L**



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
SCLPR/L06CA-05	20	30	0.4	8	25	8.5	6	7.5	5.5	12	4.5	0	0	3.5	CP**0502...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
SCLPR/L06CA-05	CSTB-2.2S	CHHM3.5-10	P-1.5	T-7F	P-3

Designation	Axial adjusting screw	Radial adjusting screw	Sizing plate ass'y (1)
SCLPR/L06CA-05	ASM34S	SSHM3-6	PT06

(1) Optional

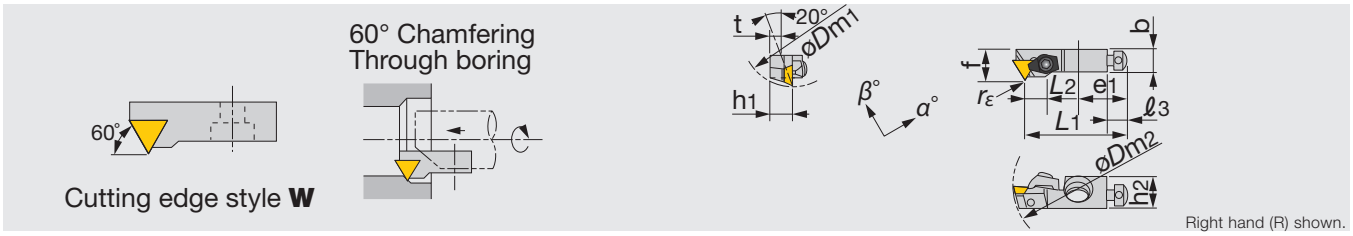
Inserts for PN PCLN-CA → **B050 -,** CBN → **B163 -,** PCD → **B176**

Inserts for SP SCLP-CA → **B112**

Tooling System

CP CTWP-CA

Clamp on cartridge with 60° approach angle for 11° clearance triangle insert



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CTWPR10CA-11	40	55	0.4	14	44	13	10	14.5	10	20	8	4	0	5	TP**1103...
CTWPR/L12CA-16	50	75	0.8	20	47	11	12	19.5	15	20	8	4	0	6	TP**1603...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• Hand of the insert to be used should be selected depending on the application.
• **rε: Standard corner radius

SPARE PARTS

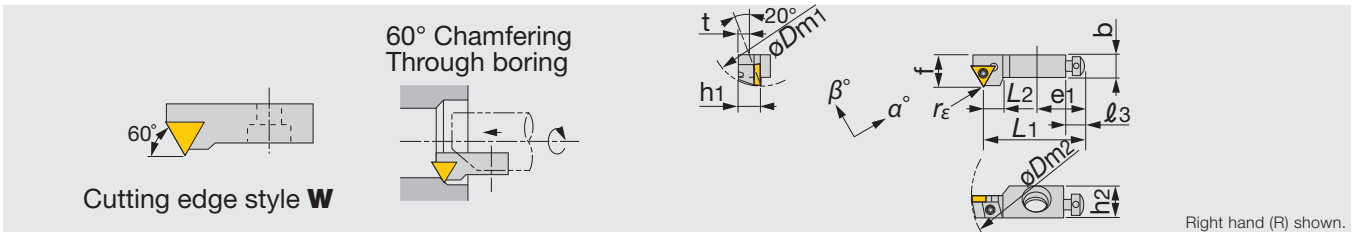
Designation	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
CTWPR10CA-11	CHHM6-15	P-2	P-2.5	P-5
CTWPR/L12CA-16	CHHM6-25	P-2	P-3	P-5

Designation	Clamping screw	Axial adjusting screw	Radial adjusting screw	Chipbreaker piece	Sizing plate ass'y
CTWPR/L10CA-11	CSG-5 (CSG-5S)	ASM54	SSHM4-10	CBT-2M	PSTR/L10
CTWPR/L12CA-16	CSG-6 (CSG-6S)	ASM54	SSHM4-14	CBT-3M	PSTR/L12

Notes : • Cartridges of K-style cutting edge uses S0816A or S1016A,whilst ones of S-style uses S0816C or S1016B (*marked).
• When not using Chipbreaker piece, clamping screw in ( ) should be used.
• Hand of the insert should be selected according to the application.

SP STWP-CA

Screw on cartridge with 60° approach angle for 11° clearance triangle insert



Right hand (R) shown.

Designation	øDm1	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
STWPR08CA-09	25	0.4	10	28	6	8	11.5	7.5	17	6	4	0	6	TP**0902...
STWPR/L10CA-11	40	0.4	14	44	9	10	14.5	10	20	8	4	0	8	TP**1102...
STWPR12CA-16	50	0.8	20	47	9	12	19.5	15	20	8	4	0	8	TP**16T3...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• Hand of the insert to be used should be selected depending on the application.
• **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
STWPR08CA-09	CSTB-2.2S	CHHM4-10	P-1.5	T-7F	P-3
STWPR/L10CA-11	CSTB-2.5	CHHM6-15	P-2	T-8F	P-5
STWPR12CA-16	CSTB-4S	CHHM6-25	P-2	T-15F	P-5

Designation	Axial adjusting screw	Radial adjusting screw	Sizing plate ass'y (1)
STWPR08CA-09	ASM34L	SSHM3-6	PSTR/L08
STWPR/L10CA-11	ASM54	SSHM4-10	PSTR/L10
STWPR12CA-16	ASM54	SSHM4-14	PSTR/L12

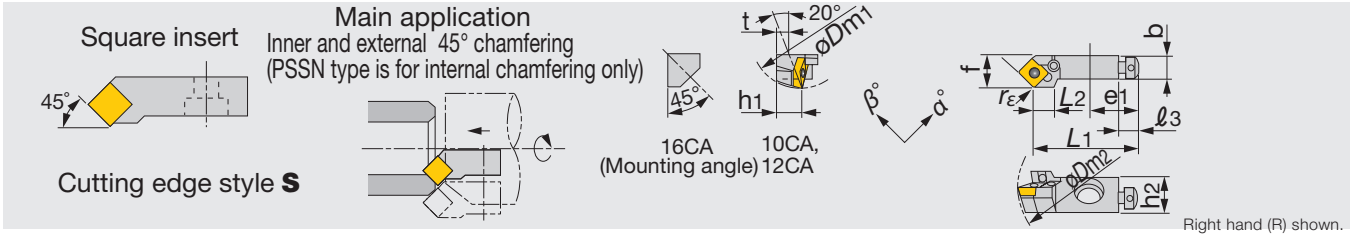
(1) Optional

Inserts for CP CTWP-CA → **B131 -,** CBN → **B168 -,** PCD → **B178**

Inserts for SP STWP-CA → **B131 -,** CBN → **B168 -,** PCD → **B178**

PN PSSN-CA

Lever lock cartridge with 45° approach angle for negative square insert



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
PSSNR/L10CA-09	40	55	0.8	14	44	10	10	14.5	10	20	8	-12	0	5	SN**0903...
PSSNR/L12CA-12	50	75	0.8	20	47	12	12	19.5	15	20	8	-12	0	6	SN**1204...
PSSNR/L16CA	55	75	0.8	25	53	28	16	16	17	25	8	-11	0	0	SN**1204...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• Hand of the insert to be used should be selected depending on the application.
• **rε: Standard corner radius

SPARE PARTS

Designation	Cartridge setting screw	Cartridge setting screw 1	Wrench	Wrench 1	Wrench 2	Radial adjusting screw
PSSNR/L10CA-09	-	CHHM4-4	P-5	P-2F	-	SSHM4-4
PSSNR/L12CA-12	-	CHHM6-25	P-2	P-2.5	P-5	SSHM4-4
PSSNR/L16CA	BHM8-25U	CHHM6-25	P-2.5	P-3	P-5	SSHM5-6

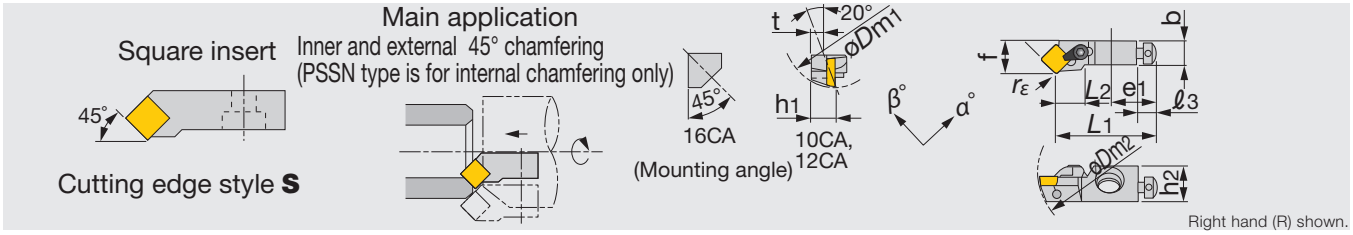
Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Shim retainer	Sizing plate (1)	Sizing plate ass'y (1)
PSSNR/L10CA-09	-	LCL32N	LCS22	ASM54	-	-	PSTR/L10
PSSNR/L12CA-12	-	LCL43N	LCS43	ASM54	-	-	PSTR/L12
PSSNR/L16CA	LSS42CA	LCL4	LCS4CA	ASM6	LSP4	S0816B/S1016B	-

Notes : Cartridges of K-style cutting edge uses S0816A or S1016A,whilst ones of S-style uses S0816C or S1016B (*marked).

(1) Optional

CP CSSP-CA

Clamp on cartridge with 45° approach angle for 11° clearance square insert



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CSSPR/L10CA-09	40	55	0.8	14	44	11	10	14.5	10	20	8	3	0	5	SP**0903...
CSSPR/L12CA-12	50	75	0.8	20	47	13	12	19.5	15	20	8	4	0	6	SP**1203...
CSSPR16CA	55	75	0.8	25	53	15	16	16	17	25	8	0	0	0	SP**1203...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• Hand of the insert to be used should be selected depending on the application.
• **rε: Standard corner radius

SPARE PARTS

Designation	Cartridge setting screw	Cartridge setting screw 1	Wrench	Wrench 1	Wrench 2	Radial adjusting screw
CSSPR/L10CA-09	-	CHHM6-15	P-2	P-2.5	P-5	SSHM4-10
CSSPR/L12CA-12	-	CHHM6-25	P-2	P-3	P-5	SSHM4-14
CSSPR16CA	BHM8-25U		P-2.5	P-4	-	SSHM5-16

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Chipbreaker piece	Sizing plate ass'y (1)
CSSPR/L10CA-09	-	-	CSG-5 (CSG-5S)	ASM54	SSHM4-10	CBS-3M	PSTR/L10
CSSPR/L12CA-12	-	-	CSG-6 (CSG-6S)	ASM54	SSHM4-14	CBS-4M	PSTR/L12
CSSPR16CA	PAS-42	SM3X0.5X8	CSG-8S	ASM6	SSHM5-16	-	-

Notes : Cartridges of K-style cutting edge uses S0816A or S1016A,whilst ones of S-style uses S0816C or S1016B (*marked).
When not using Chipbreaker piece, clamping screw in ( ) should be used.

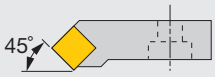
(1) Optional

Tooling System

CE CSSE-CA

Clamp on cartridge with 45° approach angle for 20° clearance square insert

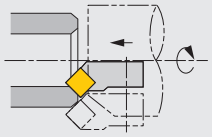
Square insert

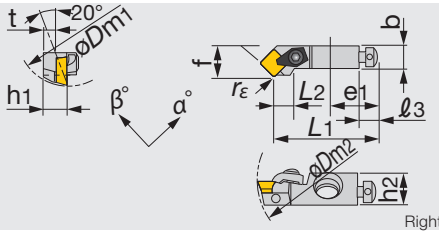


Cutting edge style **S**

Main application

Inner and external 45° chamfering
(PSSN type is for internal chamfering only)





Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CSSER12CA-12	50	75	0.8	20	47	12	12	19.5	15	20	8	10	0	6	SE**1203...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• Hand of the insert to be used should be selected depending on the application.
• **rε: Standard corner radius

SPARE PARTS






Designation	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
CSSER12CA-12	CHHM6-25	P-2	P-3	P-5






(1)

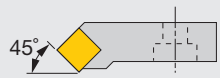
Designation	Clamping screw	Axial adjusting screw	Radial adjusting screw	Chipbreaker piece	Sizing plate ass'y
CSSER12CA-12	CSW-50	ASM54	SSHM4-14	CBS-4M	PSTR/L12

(1) Optional

SP SSSP-CA

Screw on cartridge with 45° approach angle for 11° clearance square insert

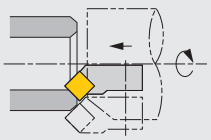
Square insert

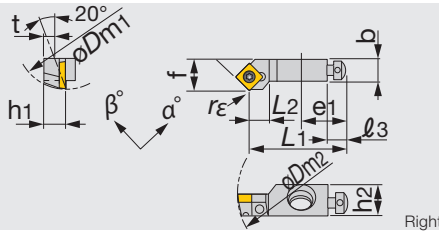


Cutting edge style **S**

Main application

Inner and external 45° chamfering
(PSSN type is for internal chamfering only)





Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
SSSPR/L10CA-09	40	55	0.8	14	44	9	10	14.5	10	20	8	3	0	8	SP**0903...
SSSPR/L12CA-12	50	75	0.8	20	47	13	12	19.5	15	20	8	4	0	8	SP**1204...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• Hand of the insert to be used should be selected depending on the application.
• **rε: Standard corner radius

SPARE PARTS







Designation	Clamping screw	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
SSSPR/L10CA-09	CSTB-4S	CHHM6-15	P-2	T-15F	P-5
SSSPR/L12CA-12	CSTB-5S	CHHM6-25	P-2	T-20F	P-5




(1)

Designation	Axial adjusting screw	Radial adjusting screw	Sizing plate ass'y
SSSPR/L10CA-09	ASM54	SSHM4-10	PSTR/L10
SSSPR/L12CA-12	ASM54	SSHM4-14	PSTR/L12

(1) Optional

Inserts for PN PSSN-CA → **B070 -,** CBN → **B164 -,** PCD → **B176**

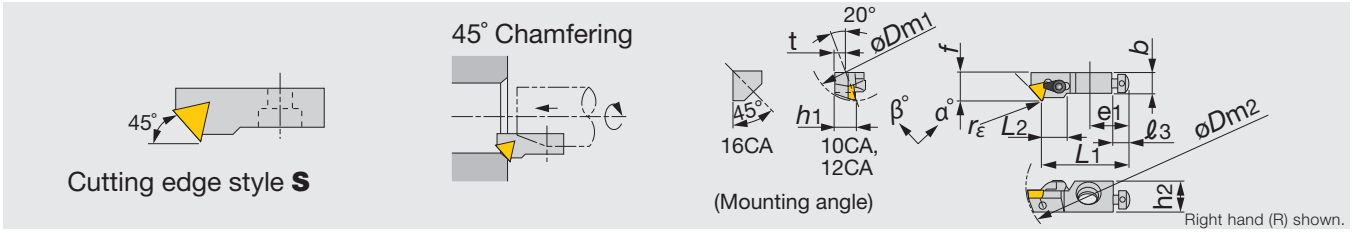
Inserts for CP CSSP-CA → **B123 -,** CBN → **B168 -,** PCD → **B177**

Inserts for CE CSSE-CA → **Special**

Inserts for SP SSSP-CA → **B123 -,** CBN → **B170,** PCD → **B177**

CP CTSP-CA

Clamp on cartridge with 45° approach angle for 11° clearance triangle insert



Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CTSPR/L10CA-11	40	55	0.4	14	44	12	10	14.5	10	20	8	3	0	5	TP**1103...
CTSPR/L12CA-16	50	75	0.8	20	47	11	12	19.5	15	20	8	4	0	6	TP**1603...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

Designation	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
CTSPR/L10CA-11	CHHM6-15	P-2	P-2.5	P-5
CTSPR/L12CA-16	CHHM6-25	P-2	P-3	P-5

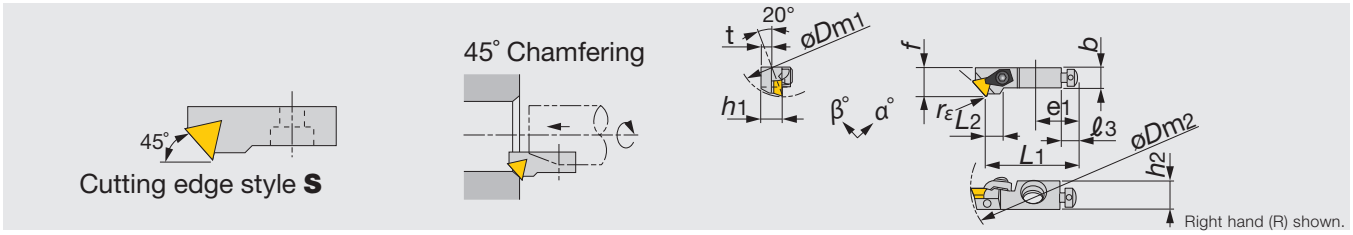
Designation	Clamping screw	Axial adjusting screw	Radial adjusting screw	Chipbreaker piece	Sizing plate ass'y (1)
CTSPR/L10CA-11	CSG-5 (CSG-5S)	ASM54	SSHM4-10	CBT-2M	PSTR/L10
CTSPR/L12CA-16	CSG-6 (CSG-6S)	ASM54	SSHM4-14	CBT-3M	PSTR/L12

(1) Optional

Notes : Cartridges of K-style cutting edge uses S0816A or S1016A,whilst ones of S-style uses S0816C or S1016B (*marked). When not using Chipbreaker piece, clamping screw in ( ) should be used.

CE CTSE-CA

Clamp on cartridge with 45° approach angle for 20° clearance triangle insert



Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CTSER10CA-11	40	55	0.4	14	44	8	10	14.5	10	20	8	10	0	5	TE**1103...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

Designation	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
CTSER10CA-11	CHHM6-15	P-2	P-2.5	P-5

Designation	Clamp set	Axial adjusting screw	Radial adjusting screw	Chipbreaker piece	Sizing plate ass'y (1)
CTSER10CA-11	CSW-40	ASM54	SSHM4-8	CBT-2M	PSTR/L10

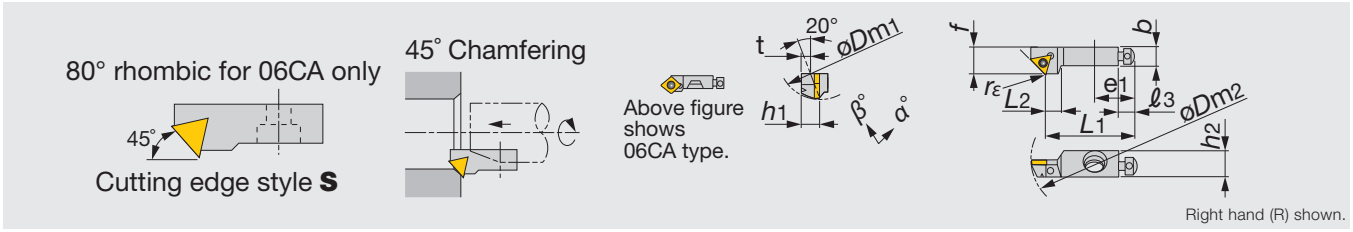
(1) Optional

Inserts for CP CTSP-CA → **B131 -**, CBN → **B168 -**, PCD → **B178**

Inserts for CE CTSE-CA → **Special**

SP STSP-CA / SCSP-CA

Screw on cartridge with 45° approach angle for 11° clearance triangle insert / rhombic insert



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
SCSPR/L06CA-05	20	30	0.4	8	22	6	6	7.5	5.5	12	4.5	0	0	3.5	CP**0502...
STSPR/L08CA-09	25	35	0.4	10	28	5.2	8	11.5	7.5	17	6	0	0	4.5	TP**0902...
STSPR/L10CA-11	40	55	0.4	14	44	9	10	14.5	10	20	8	3	0	5	TP**1102...
STSPR/L12CA-16	50	75	0.8	20	47	11	12	19.5	15	20	8	4	0	6	TP**16T3...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

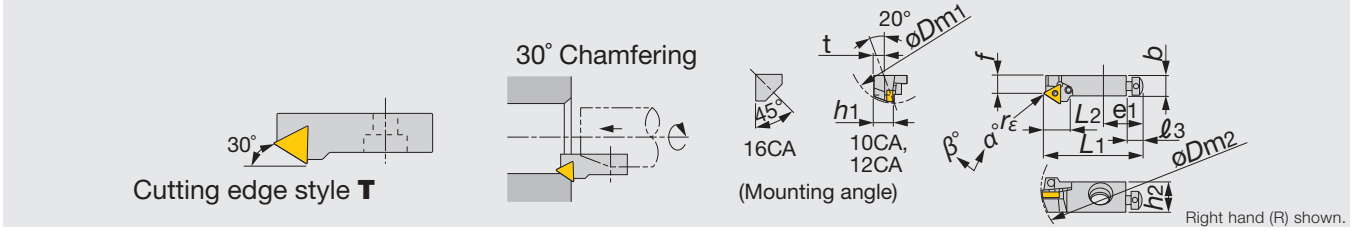
Designation	Clamping screw	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
SCSPR/L06CA-05	CSTB-2.2S	CHHM3.5-10	P-1.5	T-7F	P-3
STSPR/L08CA-09	CSTB-2.2S	CHHM4-10	P-1.5	T-7F	P-3
STSPR/L10CA-11	CSTB-2.5	CHHM6-15	P-2	T-8F	P-5
STSPR/L12CA-16	CSTB-4S	CHHM6-25	P-2	T-15F	P-5

Designation	Axial adjusting screw	Radial adjusting screw	Sizing plate ass'y (1)
SCSPR/L06CA-05	ASM34S	SSHM3-6	PT06
STSPR/L08CA-09	ASM34L	SSHM3-6	PSTR/L08
STSPR/L10CA-11	ASM54	SSHM4-10	PSTR/L10
STSPR/L12CA-16	ASM54	SSHM4-14	PSTR/L12

(1) Optional

PN PTTN-CA

Lever lock cartridge with 30° approach angle for negative triangule insert



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
PTTNR/L10CA-11	40	55	0.4	9	50	13	10	14.5	10	20	8	-10	0	5	TN**1103...
PTTNR/L12CA-16	50	75	0.8	13	55	19	12	19.5	15	20	8	-10	0	6	TN**1604...
PTTNR/L16CA	60	75	0.8	15	63	22	16	16	17	25	8	-10	-2	0	TN**1604...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

Designation	Cartridge setting screw	Sizing plate	Sizing plate 1	Wrench	Wrench 1
PTTNR/L10CA-11	CHHM6-15	-	-	P-5	P-2F
PTTNR/L12CA-16	CHHM6-25	-	-	P-5	P-2F
PTTNR/L16CA	BHM8-25U	S0816B	S1016B	P-2.5	P-5

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Shim retainer	Sizing plate ass'y (1)
PTTNR/L10CA-11	-	LCL22N	LCS22	ASM54	SSHM4-4	-	PSTR/L10
PTTNR/L12CA-16	-	LCL33N	LCS33	ASM54	SSHM4-4	-	PSTR/L12
PTTNR/L16CA	LST317CA	LCL3	LCS3	ASM6	SSHM5-6	LSP3	-

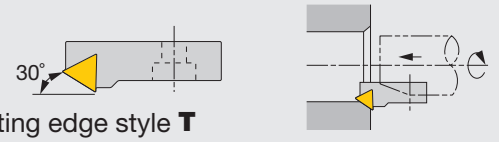
(1) Optional

Inserts for SP STSP-CA → **B112** (CP**), **B131 -** (TP**), CBN → **B168 -**, PCD → **B178**

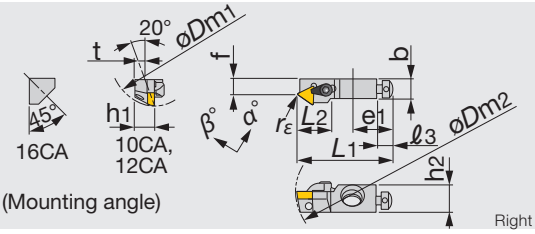
Inserts for PN PTTN-CA → **B079 -**, CBN → **B164 -**, PCD → **B176**

CP CTTP-CA

Clamp on cartridge with 30° approach angle for 11° clearance triangle insert



Cutting edge style **T**



(Mounting angle)

Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CTTPR/L10CA-11	40	55	0.4	9	50	18	10	14.5	10	20	8	0	0	5	TP**1103...
CTTPR12CA-16	50	75	0.8	13	55	22	12	19.5	15	20	8	4	0	6	TP**1603...
CTTPL16CA	55	75	0.8	15	63	23	16	16	17	25	8	0	0	0	TP**1603...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

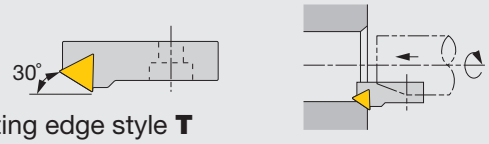
Designation	Cartridge setting screw	Sizing plate	Sizing plate 1	Wrench	Wrench 1	Wrench 2
CTTPL10CA-11	CHHM6-15	-	-	P-2	P-2.5	P-5
CTTPR/L12CA-16	CHHM6-25	-	-	P-2	P-3	P-5
CTTPL16CA	BHM8-25U	S0816B	S1016B	P-2.5	P-4	-

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Sizing plate ass'y (1)	Chipbreaker piece
CTTPR/L10CA-11	-	-	CSG-5 (CSG-5S)	ASM54	SSHM4-10	PSTR/L10	CBT-2M
CTTPR12-16	-	-	CSG-6 (CSG-6S)	ASM54	SSHM4-14	PSTR12	CBT-3M
CTTPL10CA	PAT-32	SM3X0.5X8	CSG-8S	ASM6	SSHM5-16	-	-

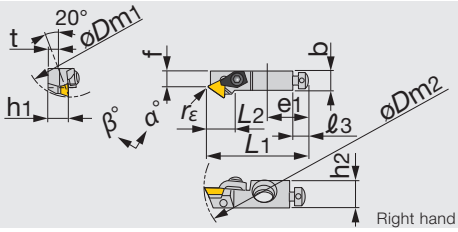
(1) Optional

CE CTTE-CA

Clamp on cartridge with 30° approach angle for 20° clearance triangle insert



Cutting edge style **T**



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CTTER10CA-11	40	55	0.4	9	50	14	10	14.5	10	20	8	10	0	5	TE**1103...
CTTER12CA-16	50	75	0.8	13	55	18	12	19.5	15	20	8	10	0	6	TE**1603...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

Designation	Cartridge setting screw	Wrench	Wrench 1	Wrench 2
CTTER10CA-11	CHHM6-15	P-2	P-2.5	P-5
CTTER12CA-16	CHHM6-25	P-2	P-3	P-5

Designation	Clamp set	Axial adjusting screw	Radial adjusting screw	Chipbreaker piece	Sizing plate ass'y (1)
CTTER10CA-11	CSW-40	ASM54	SSHM4-8	CBT-2M	PSTR10
CTTER12CA-16	CSW-50	ASM54	SSHM4-14	CBT-3M	PSTR12

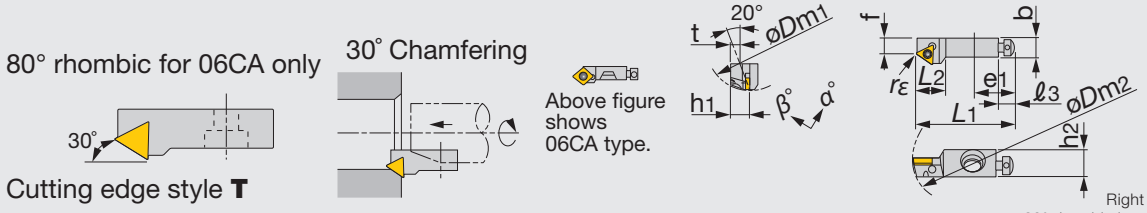
(1) Optional

Inserts for CP CTTP-CA → **B131 -**, CBN → **B168 -**, PCD → **B178**

Inserts for CE CTTE-CA → **Special**

SP STTP-CA / SCTP-CA

Screw on cartridge with 30° approach angle for 11° clearance triangle insert



Right hand (R) shown.
80° rhombic insert used for 06CA

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
SCTPR06CA-05	20	30	0.4	5.4	25	9	6	7.5	5.5	12	4.5	0	0	3.5	CP**0502...
STTPR/L08CA-09	25	35	0.4	6	32	10	8	11.5	7.5	17	6	0	0	4.5	TP**0902...
STTPR10CA-11	40	55	0.4	9	50	15	10	14.5	10	20	8	0	0	5	TP**1102...

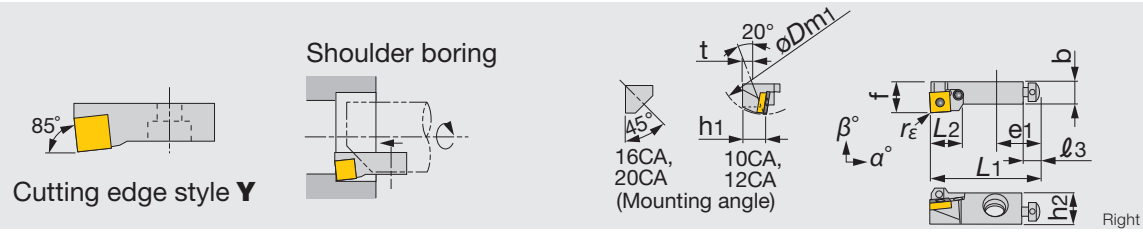
SPARE PARTS

Designation	Clamping screw	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Torx wrench	Sizing plate ass'y (1)
SCTPR/L06CA-05	CSTB-2.2S	ASM34S	SSHM3-6	CHHM3.5-10	P-1.5,P-3	T-7F	PT06
STTPR/L08CA-09	CSTB-2.2S	ASM34L	SSHM3-6	CHHM4-10	P-1.5,P-3	T-7F	PSTR/L08
STTPR/L10CA-11	CSTB-2.5	ASM54	SSHM4-10	CHHM6-15	P-2,P-5	T-8F	PSTR/L10

(1) Optional

PN PSYN-CA

Lever lock cartridge with 85° approach angle for negative square insert



Right hand (R) shown.

Designation	øDm1	øDm2	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
PSYNR10CA-09	40	-	0.8	14	50	14	10	14.5	10	20	8	-6	-8	5	SN**0903...
PSYNR12CA-12	50	-	0.8	20	55	18	12	19.5	15	20	8	-6	-8	6	SN**1204...
PSYNR16CA	55	-	0.8	25	63	26	16	16	17	25	8	-6	-8	0	SN**1204...
PSYNR20CA	70	-	1.2	25	70	30	20	20	19	30	10	-6	-7	0	SN**1506...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.
• The left hand insert is used for the right hand cartridge and right hand insert is used for left hand cartridge.
• **rε: Standard corner radius

SPARE PARTS

Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Wrench	Shim retainer	Sizing plate	Sizing plate ass'y (1)
PSYNR10CA-09	-	LCL32N	LCS22	ASM54	SSHM4-4	CHHM4-4	P-2F,P-5	-	-	PSTR/L10
PSYNR12CA-12	-	LCL43N	LCS43	ASM54	SSHM4-4	CHHM6-25	P-2,P-2.5,P-5	-	-	PSTR/L12
PSYNR16CA	LSS42CA	LCL4	LCS4CA	ASM6	SSHM5-6	BHM8-25U	P-2.5,P-3,P-5	LSP4	S0816B/S1016B	-
PSYNR20CA	LSS53CA	LCL5	LCS5CA	ASM6	SSHM5-6	BHM8-30U	P-2.5,P-3,P-5	LSP5	S0820B/S1020B	-

(1) Optional

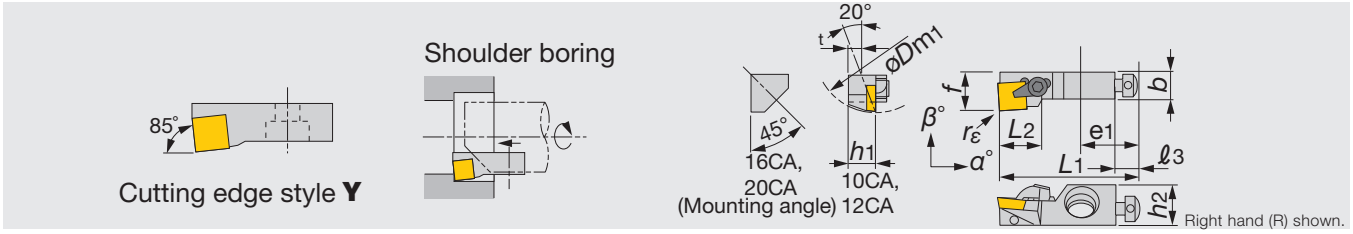
Tooling System

Inserts for SP STTP-CA → **B112** (CP**), **B131 -** (TP**), CBN → **B168 -**, PCD → **B178**

Inserts for PN PSYN-CA → **B070 -**, CBN → **B164 -**, PCD → **B176**

CP CSYP-CA

Clamp on cartridge with 85° approach angle for 11° clearance square insert



Right hand (R) shown.

Designation	øDm1	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
CSYPR/L10CA-09	40	0.8	14	50	15	10	14.5	10	20	8	5	0	5	SP**0903...
CSYPR12CA-12	50	0.8	20	55	19	12	19.5	15	20	8	5	2	6	SP**1203...
CSYPR16CA	55	0.8	25	63	23	16	16	17	25	8	5	0	0	SP**1203...

Note: • In above table, øDm1 is min. bore dia. for axial mounting and øDm2 is for radial mounting.
• When using a right or left hand insert, the right hand insert is used for left hand cartridge and the left hand insert is used for right hand cartridge.

SPARE PARTS

Designation	Cartridge setting screw	Sizing plate	Sizing plate 1	Wrench	Wrench 1	Wrench 2
CSYPR/L10CA-09	CHHM6-15	-	-	P-2	P-2.5	P-5
CSYPR12CA-12	CHHM6-25	-	-	P-2	P-3	P-5
CSYPR16CA	BHM8-25U	-	-	P-2.5	P-4	-

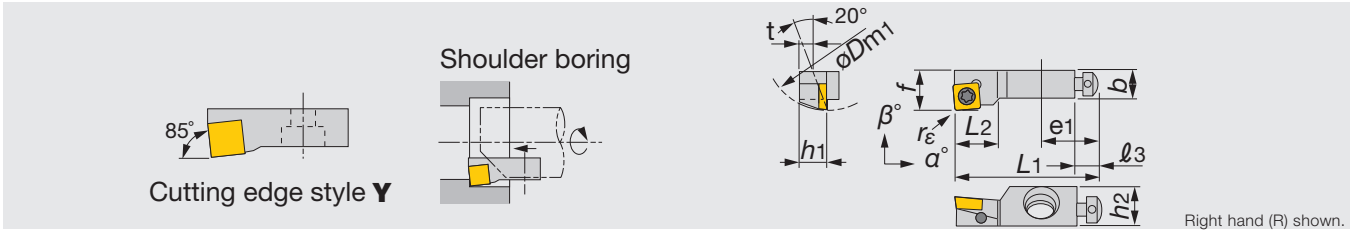
Designation	Shim	Lever	Clamping screw	Axial adjusting screw	Radial adjusting screw	Chipbreaker piece	Sizing plate ass'y (1)
CSYPR/L10CA-09	-	-	CSG-5 (CSG-5S)	ASM54	SSHM4-10	CBS-3M	PSTR/L10
CSYPR12CA-12	-	-	CSG-6 (CSG-6S)	ASM54	SSHM4-14	CBS-4M	PSTR/L12
CSYPR16CA	PAS-42	SM3X0.5X8	CSG-8S	ASM6	SSHM5-16	-	-

Notes : Cartridges of K-style cutting edge uses S0816A or S1016A,whilst ones of S-style uses S0816C or S1016B (*marked).
When not using Chipbreaker piece, clamping screw in ( ) should be used.

(1) Optional

SP SSYP-CA

Screw on cartridge with 85° approach angle for 11° clearance square insert



Right hand (R) shown.

Designation	øDm1	rε**	f	L1	L2	h1	h2	b	e1	ℓ3	β°	α°	t	Insert
SSYPR10CA-09	40	0.8	14	50	15	10	14.5	10	20	8	5	0	5	SP**0903...

• The left hand insert is used for the right hand cartridge and right hand insertis used for left hand cartridge
• **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Wrench	Wrench 1	Wrench 2
SSYPR10CA-09	CSTB-4S	P-2	T-15F	P-5

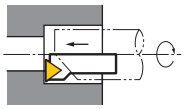
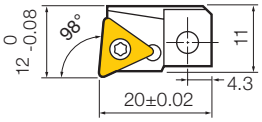
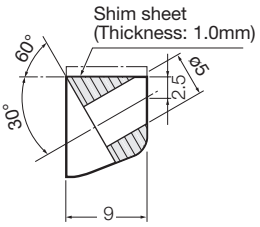
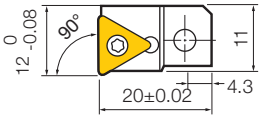
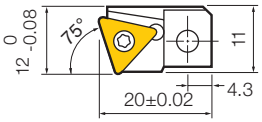
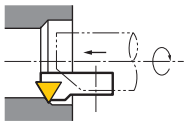
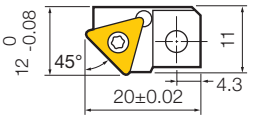
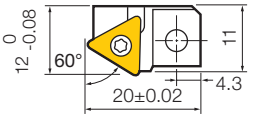
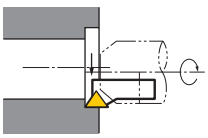
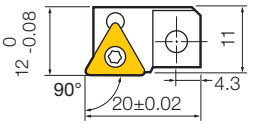
Designation	Axial adjusting screw	Radial adjusting screw	Cartridge setting screw	Sizing plate ass'y (1)
SSYPR10CA-09	ASM54	SSHM4-10	CHHM6-15	PSTR/L10

(1) Optional

Inserts for CP CSYP-CA → **B123 -**, CBN → **B168 -**, PCD → **B177**

Inserts for SP SSYP-CA → **B123 -**, CBN → **B168**

A-type (Positive rake, compact type)

Application		Shape	Designation	Specification
Boring			**ATX-0 R/L**	●Applicable inserts TP□□1103□□ (With Tungaloy's standard hole) **B131-, B168** ●Min. bore diameter ø32 ●Cutting edge height 9 mm ●Dimension for mounting 
			**ATF-0 R/L**	
			**ATK-0 R/L**	
Chamfering			**ATS-0 R/L**	
			**ATT-0 R/L**	
Facing			**ATG-0 L**	

Note: Right hand (R) shown.

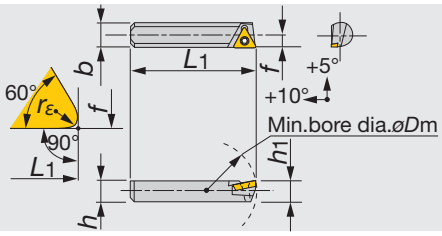
SPARE PARTS

Designation	Mounting screw	Adjusting screw (axial direction)	Insert clamping screw	Shim sheet	Wrench
For all products	M4×15	M3×0.5×8	CSTA-NO2L	SM-00	P-1.5, T-8F

Boring bar tool

TBS1

90° approarch angle with square shank



TBS1**T** shown.

Designation	øDm	f	h1	L2	b	h	L1	rε**	Insert
TBS108T08	25	7.8	7.8	9	8	8	40	0.4	TP**0802...
TBS110T09	38	9.8	9.8	10	10	10	50	0.4	TP**0902...
TBS113T11	50	12.8	12.8	12	13	13	60	0.4	TP**1102...
TBS116C12	62	15.8	15.8	18	16	16	80	0.8	CP**1204...
TBS119C12	72	18.8	18.8	18	19	19	95	0.8	CP**1204...
TBS125C16	82	24.8	24.8	22	25	25	125	1.2	CP**1605...

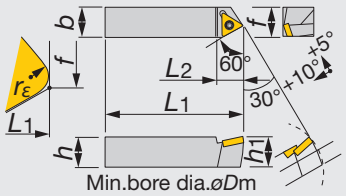
Note: • Figures shown above are of 16 mm or larger square shank types used for normal direction of rotation.
• For the tools used for reverse direction of rotation, letter "H" is added in the last position of the Cat. No. (Example: TBS308T08H)
• TBS116C12 TBS316C12 and TBS416C12 are without-shim types.
• For the tools for normal direction of rotation, use a left hand insert, and for reverse direction of rotation, use a right hand insert.
• **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Shim screw	Shim	Wrench	Wrench 1
TBS108T08	CSTB-2L	-	-	-	T-6F
TBS110T09	CSTB-2.2	-	-	-	T-7F
TBS113T11	CSTB-2.5	-	-	-	T-8F
TBS116C12	CSTB-5	-	-	-	T-20F
TBS119C12	CSTB-4F	DTS6-4	SSC4T3-P	P-4	T-15F
TBS125C16	CSTB-4F	DTS6-4	SSC54-P	P-4	T-15F

TBS3

30° approarch angle with square shank



TBS3**T** shown.

Designation	øDm	f	h1	L2	b	h	L1	rε**	Insert
TBS308T08	25	4.7	7.8	8	8	8	40	0.4	TP**0802...
TBS310T09	38	6	9.8	11	10	10	50	0.4	TP**0902...
TBS313T11	50	8.3	12.8	12	13	13	60	0.4	TP**1102...
TBS316C12	62	9.7	15.8	21	16	16	80	0.8	CP**1204...
TBS319C12	72	12.7	18.8	21	19	19	95	0.8	CP**1204...

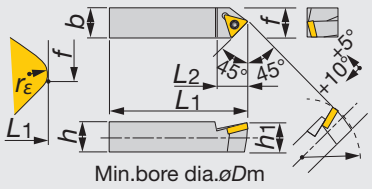
Note: • Figures shown above are of 16 mm or larger square shank types used for normal direction of rotation.
• For the tools used for reverse direction of rotation, letter "H" is added in the last position of the Cat. No. (Example: TBS308T08H)
• TBS116C12 TBS316C12 and TBS416C12 are without-shim types.
• For the tools for normal direction of rotation, use a left hand insert, and for reverse direction of rotation, use a right hand insert.
• **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Shim screw	Shim	Wrench	Wrench 1
TBS308T08	CSTB-2L	-	-	-	T-6F
TBS310T09	CSTB-2.2	-	-	-	T-7F
TBS313T11	CSTB-2.5	-	-	-	T-8F
TBS316C12	CSTB-5	-	-	-	T-20F
TBS319C12	CSTB-4F	DTS6-4	SSC4T3-P	P-4	T-15F

TBS4

45° approarch angle with square shank



TBS4**T** shown.

Designation	øDm	f	h1	L2	b	h	L1	rε**	Insert
TBS408T08	25	3.2	7.8	9	8	8	40	0.4	TP**0802...
TBS410T09	38	4.2	9.8	10	10	10	50	0.4	TP**0902...
TBS413T11	50	6.2	12.8	14	13	13	60	0.4	TP**1102...
TBS416C12	62	7.3	15.8	22	16	16	80	0.8	CP**1204...
TBS419C12	72	10.3	18.8	22	19	19	95	0.8	CP**1204...
TBS425C16	82	14.2	24.8	26	25	25	125	1.2	CP**1605...

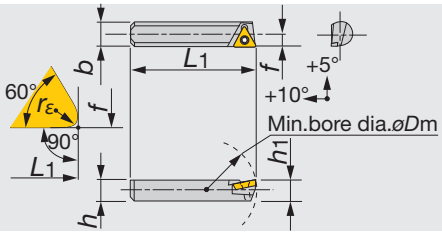
Note: • Figures shown above are of 16 mm or larger square shank types used for normal direction of rotation.
• For the tools used for reverse direction of rotation, letter "H" is added in the last position of the Cat. No. (Example: TBS308T08H)
• TBS116C12 TBS316C12 and TBS416C12 are without-shim types.
• For the tools for normal direction of rotation, use a left hand insert, and for reverse direction of rotation, use a right hand insert.
• **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Shim screw	Shim	Wrench	Wrench 1
TBS408T08	CSTB-2L	-	-	-	T-6F
TBS410T09	CSTB-2.2	-	-	-	T-7F
TBS413T11	CSTB-2.5	-	-	-	T-8F
TBS416C12	CSTB-5	-	-	-	T-20F
TBS419C12	CSTB-4F	DTS6-4	SSC4T3-P	P-4	T-15F
TBS425C16	CSTB-4F	DTS6-4	SSC54-P	P-4	T-15F

TBR1

90° approarch angle with round shank



TBR1**T** shown.

Designation	øDm	f	h1	h	øDs	L1	rε**	Insert
TBR108T08	30	4	7	7	8	35	0.2	TP**0802...
TBR110T09	40	5	8.5	8.5	10	50	0.2	TP**0902...
TBR112T11	50	6	10.5	10.5	12	60	0.2	TP**1102...

Note: • Figures shown above are of 6 mm or smaller diameter shank used for normal direction of rotation.
• For the tools used for reverse direction of rotation, letter "H" is added in the last position of the Cat. No. (Example: TBR105E04H)
• For the tools for normal direction of rotation, use a left hand insert, and for reverse direction of rotation, use a right hand insert.
• **rε: Standard corner radius

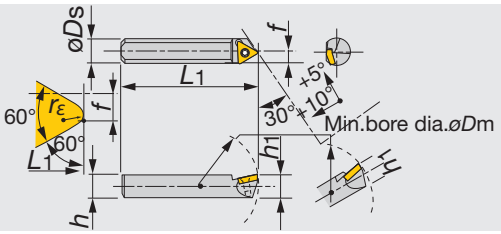
SPARE PARTS

Designation	Clamping screw	Wrench
TBR108T08	CSTB-2L	T-6F
TBR110T09	CSTB-2.2	T-7F
TBR112T11	CSTB-2.5	T-8F

Inserts for TBS1, TBS3, TBS4, TBR1 →
B131 - (TP**), **B111** (CP**), CBN → **B168 -**, PCD → **B178**

TBR3

30° approarch angle with round shank



TBR3**T** shown.

Designation	øDm	f	h1	h	øDs	L1	rε**	Insert
TBR305E04	19	0.5	4	4	5	20	0.2	EP**0401...
TBR308T08	30	0.5	7	7	8	35	0.2	TP**0802...
TBR312T11	50	1	10.5	10.5	12	60	0.4	TP**1102...
TBR316T16	60	1.5	14	14	16	80	0.8	TP**16T3...

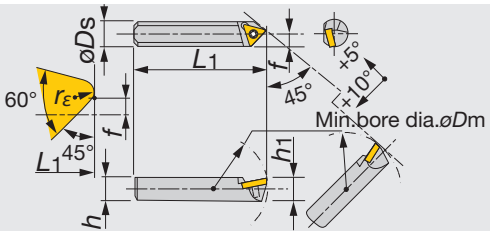
Note: • Figures shown above are of 6 mm or smaller diameter shank used for normal direction of rotation.
• For the tools used for reverse direction of rotation, letter "H" is added in the last position of the Cat. No. (Example: TBR105E04H)
• For the tools for normal direction of rotation, use a left hand insert, and for reverse direction of rotation, use a right hand insert.
• **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Wrench
TBR305E04	CSTB-2	T-6F
TBR308T08	CSTB-2L	T-6F
TBR312T11	CSTB-2.5	T-8F
TBR316T16	CSTB-4	T-15F

TBR4

45° approarch angle with round shank



TBR4**T** shown.

Designation	øDm	f	h1	h	øDs	L1	rε**	Insert
TBR406E04	24	0	5	5	6	25	0.2	EP**0401...
TBR408T08	30	0.5	7	7	8	35	0.2	TP**0802...
TBR410T09	40	1	8.5	8.5	10	50	0.2	TP**0902...
TBR412T11	50	1	10.5	10.5	12	60	0.4	TP**1102...
TBR416T16	60	1.5	14	14	16	80	0.8	TP**16T3...

Note: • Figures shown above are of 6 mm or smaller diameter shank used for normal direction of rotation.
• For the tools used for reverse direction of rotation, letter "H" is added in the last position of the Cat. No. (Example: TBR105E04H)
• For the tools for normal direction of rotation, use a left hand insert, and for reverse direction of rotation, use a right hand insert.
• **rε: Standard corner radius

SPARE PARTS

Designation	Clamping screw	Wrench
TBR406E04	CSTB-2	T-6F
TBR408T08	CSTB-2L	T-6F
TBR410T09	CSTB-2.2	T-7F
TBR412T11	CSTB-2.5	T-8F
TBR416T16	CSTB-4	T-15F

Inserts for TBR3, TBR4 →
B120 - (EP**), **B131 -** (TP**), CBN → **B168 -**, PCD → **B178**

Top-Borer Tool

Features

- Indexable insert jig boring tools usable for commercially available adjustable boring heads.
- Minimum bore diameter ø5.5 mm.
- Available in three types of SEXP, SWUB and STUP.



Applicable for PINZBOHR small diameter finish boring heads.
(F142)

Applications by Type

SEXP 	• Minimum bore diameter: ø5.5 mm. • A 75° rhombic insert is used. Stable insert holding assures precision boring.
SWUB 	• Available in two sizes of minimum bore diameters of ø7 and ø8 mm. • Uses an economical trigon insert.
STUP 	• Available in five sizes of minimum bore diameters of ø10, ø12, ø14, ø16 and ø18 mm. • Many standard items make them applicable for a wide range of applications.

Designation system for Top-Borer Tools

Symbol	Material
S	Steel
C	Carbide

① Shank material

Symbol	Min. bore diameter øD_m
055	5.5
07	7
08	8
10	10

③ Min. bore dia.

Symbol	Insert type
04	EPGT0401□□
03	WBGT0301□□
08	TPGT0802□□
11	TPGT1102□□

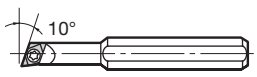
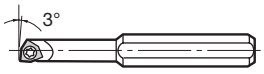
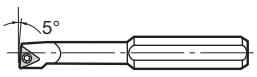
⑥ Applicable insert

S ① **08** ② **055** ③ **SEXP** ④ **R** ⑤ **04** ⑥

② Shank size

Symbol	Shank diameter (mm)
08	8
10	10
12	12
16	16

④ Tool shape

Symbol	Shape
SEXP	
SWUB	
STUP	

⑤ Hand of cartridge

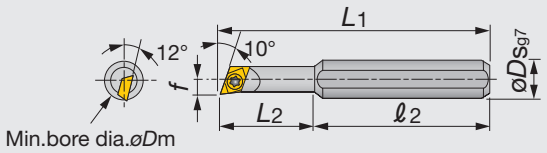
Symbol	Hand
R	Right
L	Left
N	Neutral

Avilable holders are supplied from tooling manufactures.

Top-borer tool

S/C-SEXPR/L

Top-Borer Tools, for posi 75° rhombic insert with 11° clearance



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	ℓ2	rε**	Insert
S08055-SEXPR04	STEEL	5.5	8	2.8	45	19	26	0.4	EP**0401...
S10055-SEXPR04	STEEL	5.5	10	2.8	51	19	32	0.4	EP**0401...
S12055-SEXPR04	STEEL	5.5	12	2.8	51	19	32	0.4	EP**0401...
C10055-SEXPR04	CARBIDE	5.5	10	2.8	62	30	32	0.4	EP**0401...
C12055-SEXPR04	CARBIDE	5.5	12	2.8	62	30	32	0.4	EP**0401...

Note: • When using an insert with hand, right hand (R) holders use a left hand (L) insert.
• Left hand (L) holders use a right hand (R) insert.
• **rε: Standard corner radius

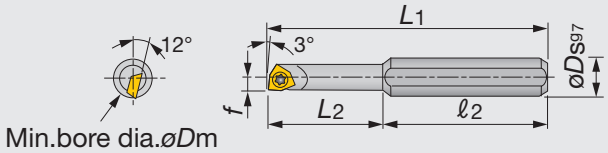
SPARE PARTS




Designation	Clamping screw	Wrench
S/C-SEXPR	CSTB-2	T-6F

S/C-SWUBR/L

Top-Borer Tools, for posi trigon insert with 5° clearance



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	ℓ2	rε**	Insert
S1008-SWUBR03	STEEL	8	10	4.1	60	28	32	0.4	WBGT0301...
S1208-SWUBR03	STEEL	8	12	4.1	60	28	32	0.4	WBGT0301...
C1008-SWUBR03	CARBIDE	8	10	4.1	76	44	32	0.4	WBGT0301...
C1208-SWUBR03	CARBIDE	8	12	4.1	76	44	32	0.4	WBGT0301...

Note: • The hole of inserts conforms to ISO standard. When using an insert with hand, right hand (R) holders use a left hand (L) insert.
• Left hand (L) holders use a right hand (R) insert.
• **rε: Standard corner radius

SPARE PARTS



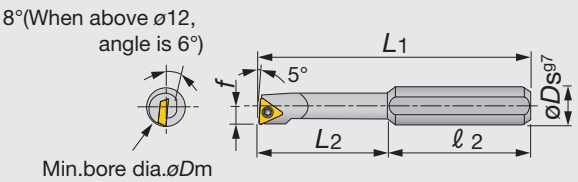

Designation	Clamping screw	Wrench
S/C-SWUBR	CSTB-2	T-6F

Inserts for S/C-SEXPR/L → **B120 -,** CBN → **B171,** PCD → **B178**

Inserts for S/C-SWUBR/L → **B141**

S/C-STUPR/L

Top-Borer Tools, for posi triangle insert with 11° clearance



Right hand (R) shown.

Designation	Material	øDm	øDs	f	L1	L2	ℓ2	rε**	Insert
S0810-STUPR08	STEEL	10	8	5	61	-	-	0.4	TPGT0802...
S1010-STUPR08	STEEL	10	10	5	67	35	32	0.4	TPGT0802...
S1210-STUPR08	STEEL	10	12	5	67	35	32	0.4	TPGT0802...
S1212-STUPR08	STEEL	12	12	6	74	42	32	0.4	TPGT0802...
S1212-STUPR11	STEEL	12	12	6	74	42	32	0.4	TPGT1102...
S1214-STUPR11	STEEL	14	12	7	81	-	-	0.4	TPGT1102...
C1010-STUPR08	CARBIDE	10	10	5	87	55	32	0.4	TPG*0802...
C1210-STUPR08	CARBIDE	10	12	5	87	55	32	0.4	TPG*0802...
C1212-STUPR11	CARBIDE	12	12	6	98	66	32	0.4	TPG*1102...
C1214-STUPR11	CARBIDE	14	12	7	109	84	25	0.4	TPG*1102...

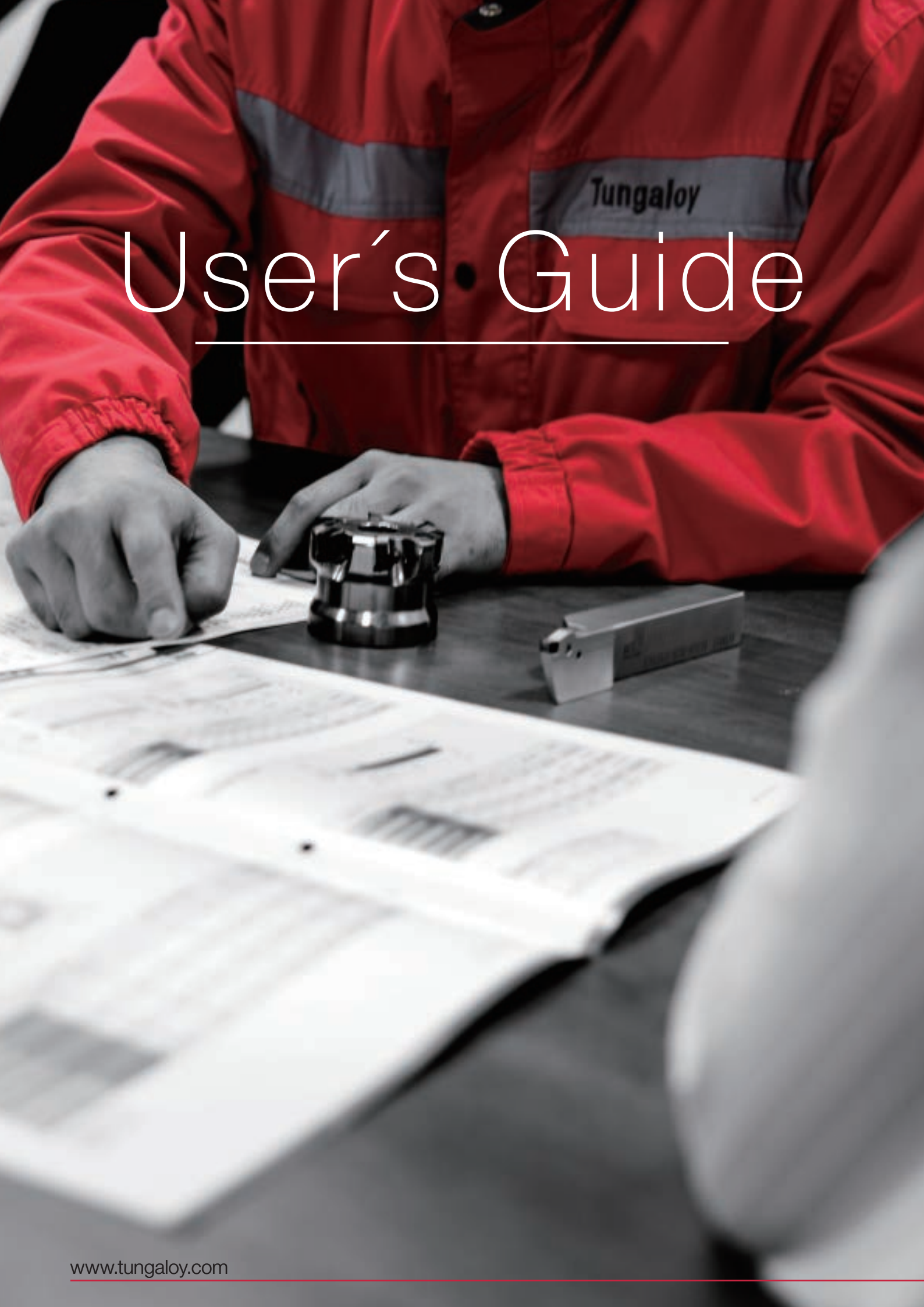
Note: • When using an insert with hand, right hand (R) holders use a left hand (L) insert.
• Left hand (L) holders use a right hand (R) insert.
• **rε: Standard corner radius

SPARE PARTS




Designation	Clamping screw	Wrench
S**10-STUPR08	CSTB-2L040	T-6F
S1212-STUPR08	CSTB-2L	T-6F
S121*-STUPR11	CSTB-2.5	T-8F
C1*10-STUPR08	CSTB-2L040	T-6F
C121*-STUPR11	CSTB-2.5	T-8F

Inserts for S/C-STUPR/L → **B131 -,** CBN → **B168 -,** PCD → **B178**



User´s Guide

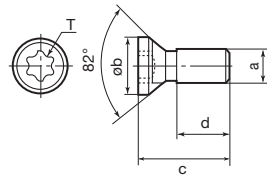
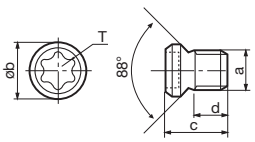
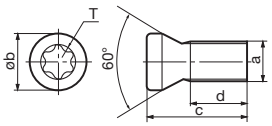
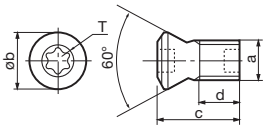
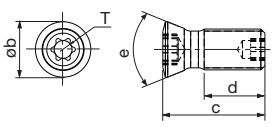
USER´S GUIDE

Parts for Tool G002

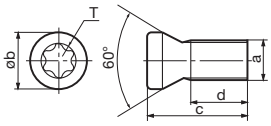
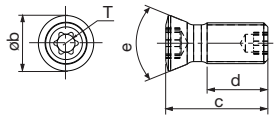
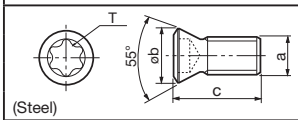
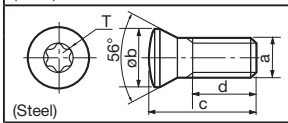
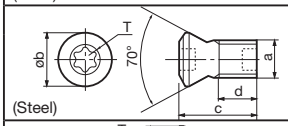
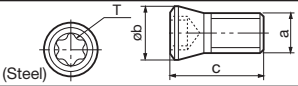
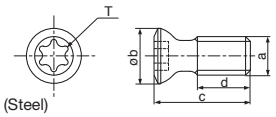
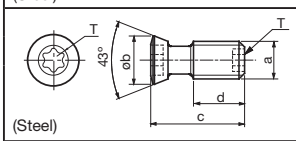
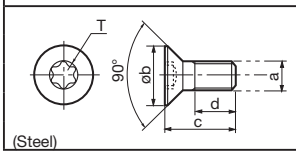
Technical Reference G029

Alphanumeric Index G084

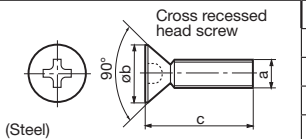
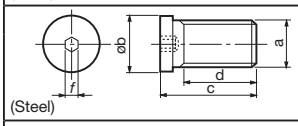
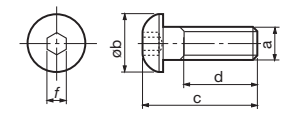
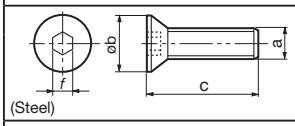
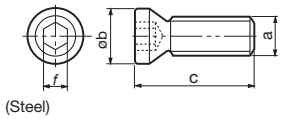
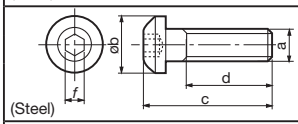
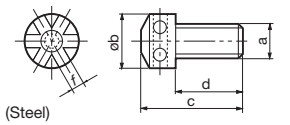
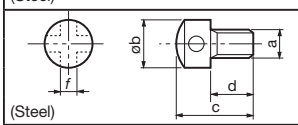
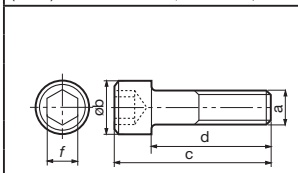
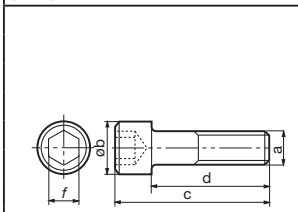
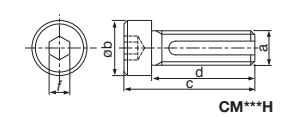
Screws

Shape	Designation	Dimension (mm)						Torque (N·m)
		a	øb	c	d	e	T / f	
 (Steel)	**CSTA-NO2**	#2-56UNC	4	6	4	82	T8	1.3
	CSTA-NO2S			5	3			
	CSTA-NO2L			8	6			
	CSTA-NO3	#3-48UNC	4.3	7	4		T9	2.3
	CSTA-NO5	#5-40UNC	5	8	5			
	CSTA-1.6	M1.6x0.35	2.5	3.1	0.9		T6	0.6
	CSTA-4	M4x0.7	7	10	7.7		T15	3.5
	CSTA-5	M5x0.8	7.2	15	11			
	CSTA-5S			12	8			
	CSTA-5SS			9.5	5.5			
	CSTA-5ST25			12	8		T25	5
	CSPA-5IP15		7.1	15	11		15IP	3.5
	CSPA-5SIP15			12	8			
	CSPA-5IP20			15	11		20IP	5
	CSPA-5SIP20			12	8			
 CSP-2L033 type shown	**CSP-2L033**	M2x0.4	2.6	3.3	1.9	88	6IP	0.7
	CSTB-2		2.7	3.3	1.4	60	T6	0.7
	CSTB-2L			5.2	3.3			
	CSTB-2L040			4	2.1			
	CSTB-2.2	M2.2x0.45	3.5	6.1	3.5		T7	1
	CSTB-2.2L038			3.8	2.2			
	CSTB-2.2S			4.6	2			
	CSTB-2.2R		3.1	6.1	3.7			
	CSTB-2.5	M2.5x0.45	3.5	6	3.4		T8	1.3
	CSTB-2.5L080			8	5.4			
	CSTB-2.5B			5.5	2.6			
	CSTB-2.5S			4.8	2.2			
	**CSTB-3**	M3x0.5	4.1	8	4.5		T9	2.3
	CSTB-3L042			4.2	0.7			
	CSTB-3L050			5	2			
	CSTB-3L081		4.2	8.1	4.7		T8	
	CSTB-3S		4.1	6	2.5		T9	
 CSTB-4SD type shown	**CSTB-3.5ST**	M3.5x0.6	5.5	12.5	4		T15	3.5
	CSTB-3.5H		5.2	6.5	3.1			
	CSTB-3.5		5.5	8.4	4.3			
	CSTB-3.5T		6.5	10	5.5		T20	5
	CSTB-3.5TS			8.5	4			
	CSTB-3.5D		4.7	8.4	4.9		T9	2.3
	CSTB-3.5L110		5.5	11	7.5		T15	3.5
	CSTB-3.5L115		4.8	11.5	7		T10	2.5
	CSTB-3.5L115-S		4.8	11.5	6.5			3.5
 CSTC-4L type shown	**CSTB-3.5L**	M4x0.7	5.5	12.5	8.4		T15	3.5
	CSTB-4			11.4	7.4			
	CSTB-4L060			6	2			
	CSTB-4L085			8.48	3.48			
	CSTB-4L090		5.7	9	5.5			
	CSTB-4L115-S		5.5	11.5	6.5			5.5
	CSTB-4S		5.5	8	4			3.5
	CSTB-4ST	M4x0.5	6.4	14.7				
	CSTB-4SD	M4x0.7	5.5	8			T8	1.3
	CSTB-4M			9.5	5.5		T15	3.5
	CSTB-4F	M4x0.5	7	14.7	8.7			
	CSTB-4TS	M4x0.7	6.5	9	4.5		T20	5
	CSTB-5	M5x0.8	7	12	7.5			
	CSTB-5S			9.5	5			
	CSTB-5L105			10.5	6.1			
	CSTB-5L120			12	6.5			
	CSTB-5L159		7.2	15.9	11.2			
	CSTB-5L163-S		6.9	16.3	11.3			6
	CSTC-4L055DR	M4x0.5	5.42	5.5	2	44	T8/T10	1.3/2.5
	CSTC-4L055DL	M4x0.5	5.42	5.5	2		T8/T10	1.3/2.5
	CSTC-4L100DR	M4x0.7	5.42	10	5.95		T8/T10	1.3/2.5
	CSTC-4L100DL	M4x0.7	5.42	10	5.95		T8/T10	1.3/2.5
(Steel)	**CSPB-2L043**	M2x0.4	2.7	4.3	2.5	60	6IP	0.7
	CSPB-2H		2.6	3.4	1.6			

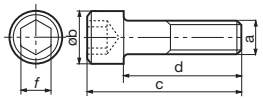
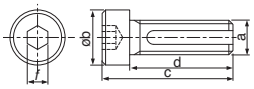
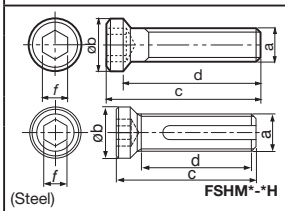
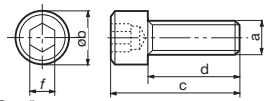
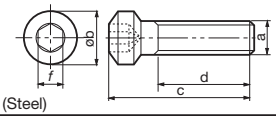
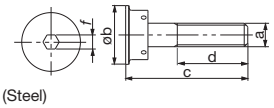
Screws

Shape	Designation	Dimension (mm)						Torque (N·m)
		a	øb	c	d	e	T / f	
	**CSPB-2.2**	M2.2x0.45	3	6	3.9		7IP	1
	CSPB-2.2SH			4	2			1.1
	CSPB-2.5	M2.5x0.45	3.5	6	3.5		8IP	1.3
	CSPB-2.5S			4.2	1.7			
	CSPB-2.5SH		3.3	5.2	3.3		7IP	1.1
	CSPB-3.5	M3.5x0.6	5.2	9	5.6		15IP	3.5
	CSPB-3.5S			6.5	3.1			
	CSPB-4	M4x0.7	5.5	11.6	7.4			
	CSPB-4S			8.2	4			
	CSPB-5	M5x0.8	7	12	7.5		20IP	5
 SCREW TORX M4 L=9.5MM type shown	**VX040024A**	M4	5.45	9	6	60	T15	4.5
	VX040028A	M4	5.2	9.7	4.7	44	T15	4.5
	SR14-500/L5.1	M4	5.5	5.1	2.3		T15	3.5
	SR14-500-L7.0	M4	5.5	7	4.2		T15	3.5
	SR14-562	M3.5	4.8	8.75	5.55		T10	2.5
	SR14-562/S	M3.5	4.8	6.5	3.3	60	T10	2.5
	SR14-591	M5x0.8	6.6	13.5	7.6		T20	5
	SR34-508	M2.2x0.45	3.15	4.6	2.67		T7	0.9
	SR34-514	M2.5x0.45	3.3	5.2	3.2		T7	0.9
	SR76-943	M6	9.6	20	10	90	T20	5
	SR76-961	M5	6.6	13.5	7.35	61	T15	3.5
	SR76-963	M5	8.6	20	9.6	91	T15	3.5
	SR114-018-L3.40	M2.5	3.6	3.35	2	56	T6	0.7
	SM40-143-H0	M4X0.7	5.6	14.3	8.4	61	T15	3.5
	TS25F080A	M2.25X0.35	3.7	6.9	2.1		T8	1.3
	TS30F100A	M3X0.35	4.6	8.3	2.2	60	T10	2.5
	TS40085I/HG	M4	5.7	8.5	4.5		T15	3.5
	TS40093I/HG	M4	5.7	9.3	4.3		T15	3.5
	TS40B100I	M4	6	10	6	R3.0	T15	3.5
	TS40F120A	M4X0.5	6	10.6	3	60	T15	3.5
	TS45120I	M4.5	6.9	12	7.5	R3.5	T20	5
	TS50115I	M5	7	11.35	6.4		T20	5
	TS50F160A	M5X0.5	7	13.9	3.5		T20	5
	TS60F200A	M6X0.75	8.2	16.7	4.5	60	T20	7
	TS70F250A	M7X0.75	10	21	5.6		T25	7
(Steel)	**TS80F300A**	M8X1.0	12	25	7.3		T30	10
 (Steel)	**CSPD-1.8S**	M1.8x0.35	2.4	3.3	1.4		6IP	0.7
	CSTD-3T	M3x0.5	4.3	7	4.5	55	T10	2.5
	CSPD-3				4.2		10IP	2.5
 (Steel)	**CSTB-4.5L110P**	M4.5X0.75	6.6	11.7	7	56	T15	3.5
 (Steel)	**SRM5X0.8IP20X+ACROLYTE**	M5X0.8	9.2	15	9.8	70	20IP	7.5
 (Steel)	**CSTC-2**	M2x0.4	3.1	5.1	-		T6	0.7
 (Steel)	**CSTR-4L100**	M4x0.7	5.7	10	5.5		T15	3.5
 (Steel)	**SR16-212-01397**	M5x0.8	6.4	12.5	6.8	43	T20/T10	2.5
	SR16-212-01397L							
 (Steel)	**CST-3.5**	M3.5X0.6	6	4.8	-		T9	2.3
	CST-3.5S			3.5	-			
	CST-5	M5x0.8	10	18	13	90	T25	5
	CST-5S			12	7			
	CSTF-2L055-S	M2x0.4	2.7	5.5	3.8		T6	0.7

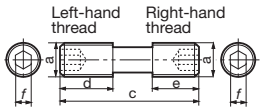
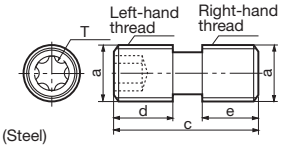
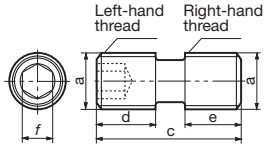
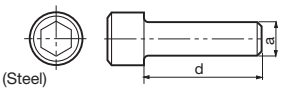
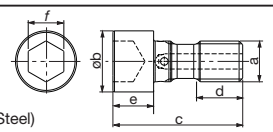
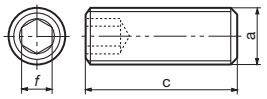
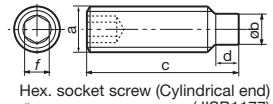
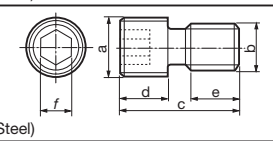
Screws

Shape	Designation	Dimension (mm)						Torque (N·m)
		a	øb	c	d	T / f		
 Cross recessed head screw (Steel)	**SM2.5×0.45×8**	M2.5x0.45	5	8	-	-		-
	SM2.5×0.5×8	M2.5x0.5	5	8	-	-		-
	SM3×0.5×6	M3x0.5	6	6	-	-		-
	SM3×0.5×8			8	-	-		-
	SM3×0.5×10			10	-	-		-
 (Steel)	**MSP-5**	M5x0.8	6.1	7.9	4.9	2		1.5
	MSP-6.3	M6.3x1	7.7	12.7	9.9	2.5		3
 (Steel)	**BHM3-8**	M3x0.5	5.5	10	8	2		1.5
	BHM4-8	M4x0.7	7	10.6		2.5		2.2
	BHM4-10			12.6	10			
	BHM5-14	M5x0.8	9	17.6	14	3		3
	BHM6-20-A	M6x1.0	10.5	24	20	4		5
	BHM8-25U	M8	14	29.3	25	5		8.5
	BHM8-30U			34.3	30			
 (Steel)	**CSHM-3-8**	M3	6	8	-	2		1.5
 (Steel)	**CSHB-4-A**	M4	5.5	11		T15		2
	CSHB-6	M6	8.5	19	-	4		5
	CSHB-6-A	M6	8.5	19				5
 (Steel)	**RT-1**	M6	10	22.5	14	4		5
	RT-2	M8	13	31	20	5		8.5
 (Steel)	**ASM6**	M6	10	18	12	3		-
	AJM5F	M5x0.5	9	13	8	2		-
	AJM5	M5x0.8	9	13	8	2		-
 (Steel)	**ASM34S**	M3	4.8	8	5	2		-
	ASM34L			11	8			-
	ASM54	M5x0.8	9	14	9	3		-
 (Steel)	**CHHM3.5-10**	M3.5x0.6	6	13.5	10	3		3
	CHHM4-10	M4x0.7	7	14				
	CHHM5-14	M5x0.8	8.5	19	14	4		5
	CHHM5-18			23	18			
	CHHM6-15	M6	10	21	15	5		8.5
	CHHM6-20			–	20			
	CHHM6-25			31	25			
 Hex. socket head screw (JISB1176)	**CM3X0.5X6**	M3x0.5	5.5	9	6	2.5		2.2
	CM3X0.5X10			13	10			
	CM4X0.7X10	M4x0.7	7	14		3		3
	CM4X0.7X12			16	12			
	CM4X0.7X14			18	14			
	CM4X0.7X15			19	15			
	CM4X0.7X20			24	20			
	CM4X0.7X20-M0-A		6	24	20			
 **CM***H** (Steel)	**CM5X0.8X8**	M5x0.8	8.5	13	8	4		5
	CM5X0.8X10-A			15	10			
	CM5X0.8X12			17	12			
	CM5X0.8X12-A			17	12			
	CM5X0.8X14			18	14			
	CM5X0.8X16			21	16			
	CM5X0.8X16-A			21	16			
	CM5X0.8X18			23	18			
	CM5X0.8X20-A			25	20			
	CM5X0.8X25-A			30	25			
	CM5X15	M5		20	15			

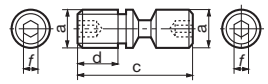
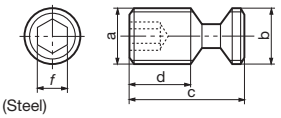
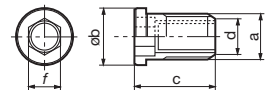
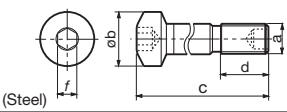
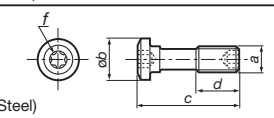
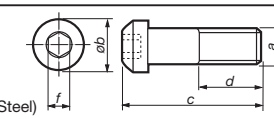
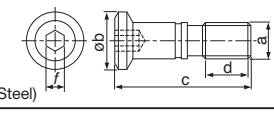
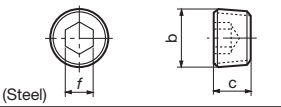
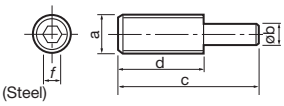
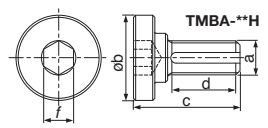
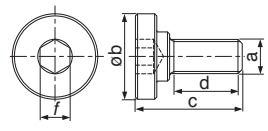
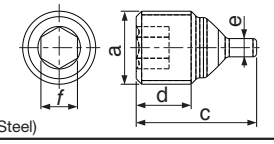
Screws

Shape	Designation	Dimension (mm)							Torque (N·m)
		a	øb	c	d	e	f	g	
 Hex. socket head screw (JISB1176)	CM6X1X16-A	M6x1.0	10	22	16		5		8.5
	CM6X1X20-A			26	20				
	CM6X1X25-A			31	25				
	CM6X1.0X40-A			46	40				
	CM6X10	M6		16	10				
	CM6X15			21	15				
	CM6X16			22	16				
	CM6X20			26	20				
	CM6X25			31	25				
	CM6X30-S	M6x1.0	10	35.7	28				
	CM8X1.25X20-A	M8x1.25	13	28	20		6		25
	CM8X1.25X25-A			33	25				
	CM8X30H			36	30		5		
	CM10X30	M10x1.5	16	30	20		8		40
	CM10X30H		16	38	30		6		40
	CM12X30H	M12x1.75	18	40			8		70
	CM16X40H	M16x2	24	54	40		10		100
	CM16x75	M16	24	75	51		14		100
	CM16x120	M16	24	120	96		14		100
	CM16x140	M16	24	140	116		14		100
 CM***H	CM20x80	M20	30	80	50		17		150
	CM20x120	M20	30	120	90		17		150
	CM20x150	M20	30	150	120		17		150
	CAP-CM12x1.75x50	M12	18	50	38		10		70
	CAP-CM16X2.0X55	M16	24	55	39		14		40
	CAP-CM20X2.5X50	M20	30	50	30		17		100
	C0.375X1.125H	3/8-24UNF	14.27	38.11	28.58		5.55		35
	C0.500X1.375H	1/2-20UNF	19.05	47.63	34.93		7.94		70
	SD06-A3	M10x1.5	16	70	60		8		40
	SRM6X16DIN912-12.9	M6x1	10	22	14.1		5		
	VC00TEDI12040F	M12	26	51	40		8		60
	VC00TEDI20040F	M20	49	50	34.5		12		150
	VC00TANG16040F	M16	46	46.5	33		10		60
	SD08-98	M12x1.75	18	77	65		10		70
	LHM12x1.75x30-C	M12	18	36.9	30		8		70
	VC004762I10035F	M10	16	45	34.5		8		60
(Steel)	FCS3	M3x0.5	5.5	16	12		2.5		
	FCS6	M6x1	10	26	20		5		
 (Steel) FSHM*-*H	FSHM8-30	M8x1.25	11	30	27		5		25
	FSHM8-30H								25
	FSHM10-40	M10	14	40	36.5		6		40
	FSHM10-40H								40
 (Steel)	SHCM4-10	M4x0.7	6	14	10		3		3
	SHCM4-12			16	12				
	SHCM4-16			20	16				
 (Steel)	CTS-M6	M6x1	10	25	16.4		4		5
 (Steel)	RSFTS-050M	M10	25	52	42.5		6		

Screws

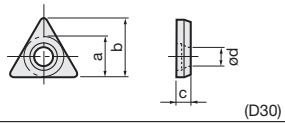
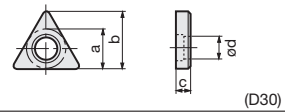
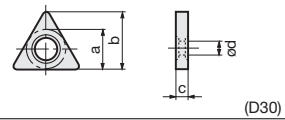
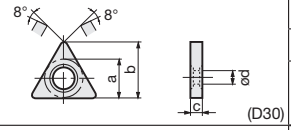
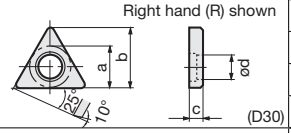
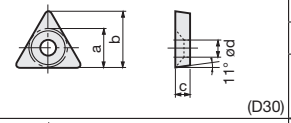
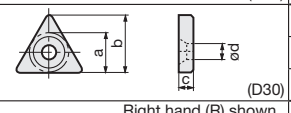
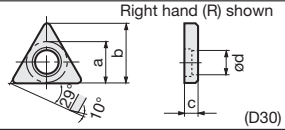
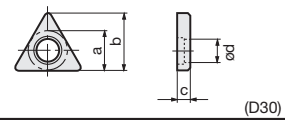
Shape	Designation	Dimension (mm)						Torque (N·m)
		a	øb	c	d	e	T / f	
 (Steel)	**MCS520-2.5**	M5×0.8		20	7	6	2.5	3
	MCS620-3	M6×1				7	3	6
	MCS625-3			25	10	8		
	MCS825-4	M8×1			12.5	6.5	4	8
	MCS828-4			28.5	12	10.5		
	NDS-8A			30	11.5	11.5		
	NDS-8S	M8×1.25		20	8	8		
	RSRGR5M40	M4		9	3.67	4.17	T8	
	SR PS 118-0273	M10		40	16.5	15	5	40
 (Steel)	**DS-6T**	M6		15	6	6		3.5
	DS-6P	M6×1		21	7	7	15IP	6
	FDS-8ST	M8×1		20	8	8	T27	10
	FDS-8ST-18			18		6		
 (Steel)	**DS-6**	M6×1		15	6	6	3	6
	DS-8	M8×1.25		16	7	7	4	8
	DS-8S			13	5.5	5.5		
	DS-10	M10×1.5		26	10	12	5	8
	FDS-6Z	M6×0.75		20.5		5.5	3	6
	FDS-8	M8×1		26		10	4	8
	FDS-8S			20	8	8		
	FDS-8SS			18.5		6.5		
 (Steel)	**SS100**	1/4-20			19.05			
	S-412	10-32			19.05			
 (Steel)	**SHM8x1.25x35-C**	M8	13	43	23	8	6	25
	SHM10x1.5x30-C	M10	16	40	17	10	8	40
	SHM16x2x35-C	M16	24	51	18	16	14	100
	SHM20x2.5x40-C	M20	30	58	20	18	17	150
Hex. socket screw (Flat end)(JISB1177) 	**SSHM2.5-3**	M2.5		3			1.5	1
	SSHM3-3	M3		3				
	SSHM3-4			4				
	SSHM3-6			6				
	SSHM4-4	M4		4			2	1.5
	SSHM4-5			5				
	SSHM4-6			6				
	SSHM4-8			8				
	SSHM4-10			10				
	SSHM4-14			14				
	SSHM5-6	M5		6			2.5	2
	SSHM5-10			10				
	SSHM5-16			16				
	SSHM6-12	M6		12			3	3
	SSHM6-16			16				
	SSHM6-18			18				
	SSHM6-20			20				
	SSHM8-8	M8		8			4	5
	SSHM8-10			10				
	SSHM8-12			12				
	SSHM8-14			14				
	SSHM8-16			16				
(Steel)	**SSHM8-18**			18		14		
 Hex. socket screw (Cylindrical end) (Steel) (JISB1177)	**M5×7**	M5	3.5	7	1.25	-	2.5	2
	M5×8			8		-		
	M5×10			10		-		
	M6×30	M6	4	30	1.5	-	3	3
 (Steel)	**JDS-3525**	M3.5x0.35	M2.5 x0.45	7.5	3	2.5	2	1
	JDS-5040	M5x0.5	M4 x0.7	10	4	4	2.5	1

Screws

Shape	Designation	Dimension (mm)						Torque (N·m)
		a	b	c	d	e	T / f	
 LCS2 has a hex. socket in threaded end only.	LCS2	M5	5	14	6.5		2	1.5
	LCS3	M6	6	17			2.5	2
	LCS3B			15				
	LCS4	M8	8	21			3	3
	LCS4K				9.6			
	LCS4CA			17.5	6.5			
	LCS5			25	8.5			
	LCS5CA			20.5				
(Steel)	LCS6	M10	9.8	27.2	9.9		4	5
	LCS8	M12	11.8	36	12.8		5	8
	LCS8C	M10	9.8	30.2	13.3		4	5
 (Steel)	LCS22	M5	M5	10	4.7		2	1.5
	LCS22A	M6	M6	10.7				
	LCS23A	M5	M5	13.1	5.1		2.5	2
	LCS33	M5	M5	12	6.2		2	1.5
	LCS43	M6	M6	13.5	7.3		2.5	2
 (Steel)	DTS5-3.5	M5	6.3	8.65	M3.5		3.5	4
	DTS5-3.5SS			6.8				
	DTS5-3.5S			7				
	DTS6-4	M6	7.7	10.2	M4		4	5
	DTS6-4.5		7.5	10	M4.5		4.5	5
 (Steel)	DLCS33	M5	9	31.5	10		3	3
	DLCS43	M6	12	34	9.5		4	5
	DLCS54	M8x1	14	41	11			7
	DLCS64	M10x1	16	50	15		5	8
 (Steel)	ACS-5W	M5	8	20	8.5		T15	4
	ACS-6W	M6	10	26	12.1		T20	6.4
 (Steel)	ACS3	M5x0.8	7.5	25.6	12-15		3	4
	ACS4	M6x1	9	27.7	14-17		4	7
 (Steel)	WCS3	M6	9.5	22.5	8		3	3
 (Steel)	PT1/4GN		13.175	10	-		6	9.5
	1/8-28		9.728	7	-		5	8
 (Steel)	LS-8	M8	6	33	20		4	5
(Steel)	CCS4-A							
	BH5-10-A							
	BH4-10-A							
	BH-40050-A							
 TMBA-**H  (Steel)	TMBA-M10	M10x1.5	27	30	21		8	40
	TMBA-M12	M12x1.75	33	36	26		10	70
	TMBA-M12H	M12x1.75		34.5			8	
	TMBA-M16	M16x2	40	50	40		14	100
	TMBA-M16H	M16x2						
	TMBA-M20	M20x2.5	50	56	42		17	150
	TMBA-M20H	M20x2.5						
	TMBA-M24	M24x3	65	69	55		19	150
	TMBA-M24H	M24x3						
	TMBA-0.500H	1/2-20UNF	33	33.9	25.4		7.94	70
	TMBA-0.750H	3/4-16UNF	50	58.28	47.28		12.7	150
 (Steel)	SR-10400611	M4X0.5		6.6	3	1	2	

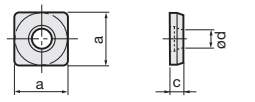
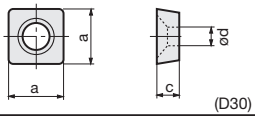
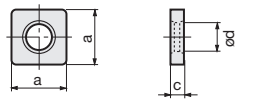
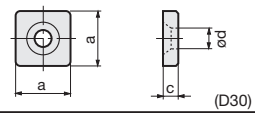
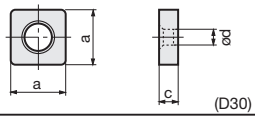
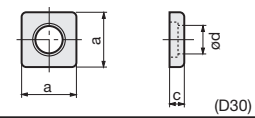
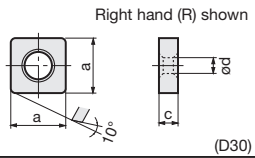
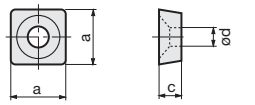
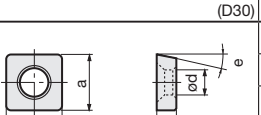
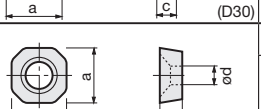
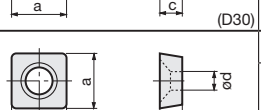
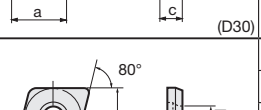
User's Guide- Parts for Tool

Shims

Shape	Designation	Dimension (mm)				
		a	b	c	ød	
 (D30)	**AST322**	9.3	13.2	3.2	4.4	
	AST422	12.5	18	3.2	4.4	
 (D30)	**MST-322**	9.1	12.9	3.24	5.8	
	MST-432	12.5	17.9	4.8	7.3	
	MST-533	15.6	22.2		9.7	
	MST-644	18.8	26.6	6.4	11.3	
 (D30)	**LST317**	9.3	13.2	2.7	5	
	LST42	12.5	18	3.2	6.7	
	LST53	15.7	22.3	4.8	7.7	
	LST42K	10.9	15.6	3.2	6.7	
 (D30)	**LST317CA**	9.3	13.2	2.7	5	
	LST42CA	12.5	18	3.2	6.7	
Right hand (R) shown  (D30)	**ELST42**	11.5	16.5	3.2	6.5	
	ELST317	8.5	12	2.7	4.9	
	ELST317BR					
	ELST317BL					
 (D30)	**PAT-32**	8.2	11.7	3.2	3.5	
	PAT-53*	13.4	19.8	4.8	5	
 (D30)	**NAT-32**	9.5	13.4	3.2	3.5	
	NAT-42E	12.4	17.8	3.2	3.1	
Right hand (R) shown  (D30)	**LST317BR**	9.3	13.2	2.7	5	
	LST317BL					
 (D30)	**SST32**	8.5	11.9	3.2	5.4	

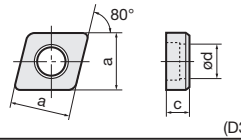
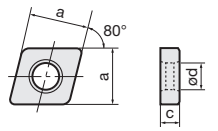
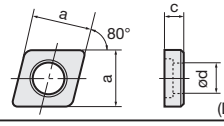
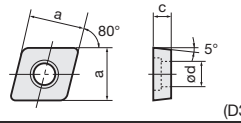
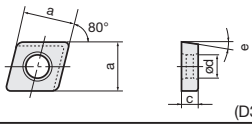
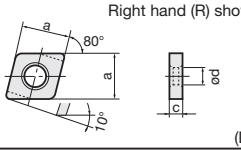
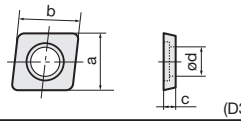
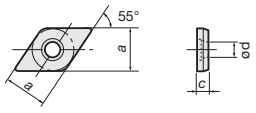
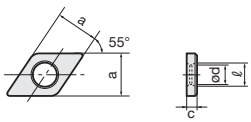
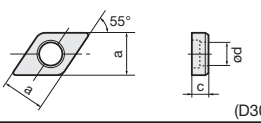
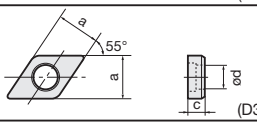
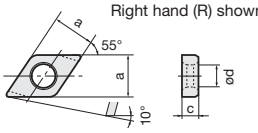
Note: * marked shims are made of steel.

Shims

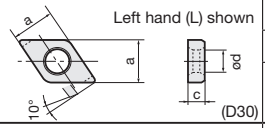
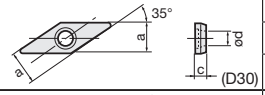
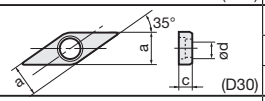
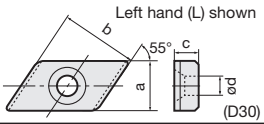
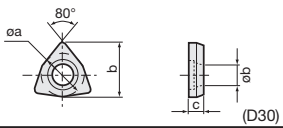
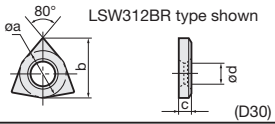
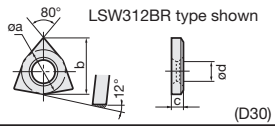
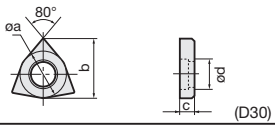
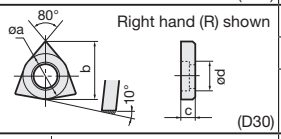
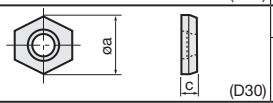
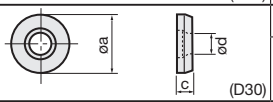
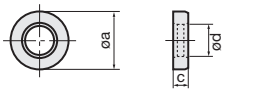
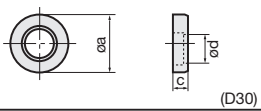
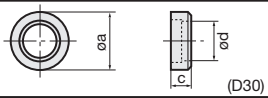
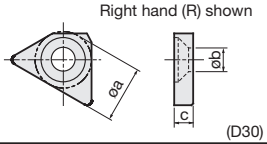
Shape	Designation	Dimension (mm)				
		a	b	c	ød	e
 (D30)	**ASS422**	12.5		3.2	4.4	
	CS44-A	12.5		4.7		
 (D30)	**ASS533**	15.7		4.8	5.5	
	ASS634	18.9				
 (D30)	**ELSS32**	8.5		3.2	4.9	
	LSS33	9.3		4.3	5	
	ELSS42	11.7		3.2	6.5	
	LSS42	12.5		3.2	6.7	
	ELSS53	14.7		4.8	8	
	LSS53	15.7			7.7	
	ELSS63	17.9			9.7	
	LSS63	18.9				
	ELSS84	24.2		6.4	12.9	
	LSS84	25.2		6.4	13.1	
 (D30)	**NAS-42**	12.7		3.2	3.5	
	NAS-04	31.5		6.4	9.1	
 (D30)	**MSS-432**	12.5		4.8	7.3	
	MSS-442			6.4		
 (D30)	**SSS32**	8.5		3.2	5.4	
Right hand (R) shown  (D30)	**LSS42BR**	12.5		3.2	6.7	
	LSS42BL					
 (D30)	**PAS-32**	8.2		3.2	3	
	PAS-42	11.4			3.5	
	PAS-63*	17		4.8	5	
 (D30)	**LSS42CA**	12.5		3.2	6.7	8°
	LSS53CA	15.7		4.8	7.7	10°
 (D30)	**FSSA1102**	11.6		2	5.5	13°
 (D30)	**FSSP1102**	11		2	5.5	17°
 (D30)	**ASC322**	9.3		3.2	4.4	
	ASC422	12.5		3.2	4.4	
	ASC533	15.7		4.8	5.5	
	ASC634	18.9				
	CC44-A	12.5		4.7		

Note: * marked shims are made of steel.

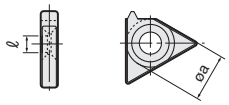
Shims

Shape	Designation	Dimension (mm)				
		a	b	c	ød	e
 (D30)	**MSC-432**	12.5		4.8	7.3	
	MSC-442			6.4		
	MSC-533	15.6		4.8	9.7	
	MSC-543			6.4		
	MSC-634	18.8			11.3	
 (D30)	**ELSC32**	8.5		3.2	6.2	
	LSC42	12.5			6.5	
	ELSC42	11.7				
	LSC53	15.7		4.8	7.7	
	ELSC53	14.7			8.1	
	ELSC63	17.9			9.7	
	LSC63	18.9				
	LSC317	9.3		2.7	5	
 (D30)	**SSC32**	8.5		3.2	5.4	
	SSC4T3	11.4		4	6.6	
 (D30)	**SSC4T3-P**	11.4		4	6.6	
	SSC54-P	13.4				
 (D30)	**LSC42CA**	12.5		3.2	6.7	8°
	LSC53CA	15.7		4.8	7.7	10°
Right hand (R) shown  (D30)	**LSC42BR**	12.5		3.2	6.7	
	LSC42BL					
 (D30)	**ZSA1102**	10.5	11	2	5.475	
	ZSA1502	15.6	12.4		6	
 (D30)	**ASD322**	9.3		3.2	4.4	
	ASD423	12.5		3.2	4.4	
	ASD432	12.5		4.8	4.4	
	CD44-A	12.5		4.7		
 (D30)	**ELSD32**	8.5		3.2	4.9	
	ELSD42	11.7			6.5	
	LSD42	12.5			6.7	
	LSD42A					
	LSD43			4.8		
	LSD43A					
 (D30)	**MSD-322**	9.3		3.2	5.8	
	MSD-432	12.5		4.8	7.3	
	MSD-442			6.4		
 (D30)	**SSD32**	8.5		3.2	5.4	
Right hand (R) shown  (D30)	**ELSD317BR**	8.5		2.7	4.9	
	ELSD317BL					
	LSD42BR	12.5		3.2	6.7	
	LSD42BL					

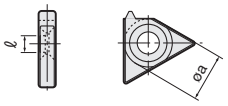
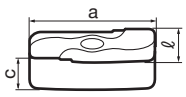
Shims

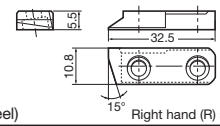
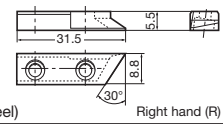
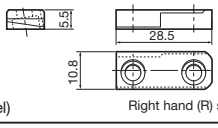
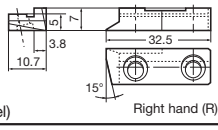
Shape	Designation	Dimension (mm)				
		øa	b	c	ød	
 Left hand (L) shown (D30)	**LSZ42BR**	12.5		3.2	6.7	
	LSZ42BL					
 (D30)	**ASV322**	9.3		3.2	4.4	
	CV34-A	9.3		4.7		
 (D30)	**MSV-322**	9.26		3.2	5.8	
	SSV32	8.4			5.4	
	SSV42	11			6.3	
 Left hand (L) shown (D30)	**CSK54R**	9.4	14.8	4.8	3.5	
	CSK54L					
 (D30)	**ASW322**	9.33	11.5	3.2	4.4	
	ASW422	12.5	15.2			
 LSW312BR type shown (D30)	**LSW312**	9.33	11.5	2.7	5	
	LSW42	12.5	15.5	3.2	6.7	
 LSW312BR type shown (D30)	**LSW312BR**	9.33	11.5	2.7	5	
	LSW312BL					
 (D30)	**MSW-432**	12.8	15.8	4.8	7.3	
	MSW-533	16	19.7		9.7	
	MSW-633	19.2	23.7		11.3	
 Right hand (R) shown (D30)	**MSW-432BR**	12.8	15.8	4.8	7.3	
	MSW-432BL					
 (D30)	**CH44-A**	12.5		4.7		
 (D30)	**ASR420**	12.5		3.2	4.4	
 (D30)	**LSR32**	8.9		3.2	5	
	LSR32C	8.4				
	LSR42	12.1			6.7	
	LSR42C	9.9			5	
	LSR53C	14		4.8	6.7	
	LSR63C	17.2			8.2	
	LSR84C	21.9		6.4	9.7	
 (D30)	**MSR-43**	12.5		4.8	7.3	
	MSR-44			6.4		
 (D30)	**SSR32**	8.7		3.18	5.2	
Right hand (R) shown  (D30)	**G16EL/IR**	9.5	-	3.2	4	
	G16ER/IL			3.2		
	G16EL/IR-DT			3.97	5.4	
	G16ER/IL-DT			3.97		

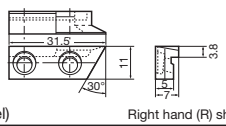
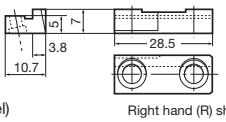
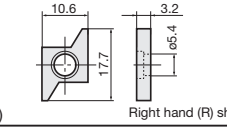
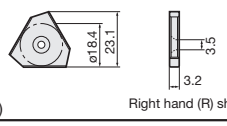
Shims

Shape	Designation	Dimension (mm)		
		øa	ød	Lead angle
	AE16-4DT	9.5	5.4	4°
	AE16-3DT		5.4	3°
	AE16-2DT		5.4	2°
	A16-1DT		5.4	1°
	AE16-0DT		5.4	0°
	AE16-99DT		5.4	-1°
	AE16-98DT		5.4	-2°
	AE16-4		4	4°
	AE16-3		4	3°
	AE16-2		4	2°
	A16-1		4.3	1°
	AE16-0		4	0°
	AE16-99		4	-1°
	AE16-98		4	-2°
	AN16-4DT	9.5	5.4	4°
	AN16-3DT		5.4	3°
	AN16-2DT		5.4	2°
	AN16-0DT		5.4	0°
	AN16-99DT		5.4	-1°
	AN16-98DT		5.4	-2°
	AN16-4		4	4°
	AN16-3		4	3°
	AN16-2		4	2°
	AN16-0		4	0°
	AN16-99		4	-1°
	AN16-98		4	-2°
	GXE16-98	9.5	4	-2°
	GXE16-98DT		5.4	-2°
	GXE16-99		4	-1°
	GXE16-99DT		5.4	-1°
	GXE16-0		4	0°
	GXE16-0DT		5.4	0°
	GXE16-1		4.3	1°
	GX16-1DT		5.4	1°
	GXE16-2		4	2°
	GXE16-2DT		5.4	2°
	GXE16-3		4	3°
	GXE16-3DT		5.4	3°
	GXE16-4		4	4°
	GXE16-4DT		5.4	4°
	GXE22-98DT	12.7	6.6	-2°
	GXE22-99DT			-1°
	GXE22-0DT			0°
	GX22-1DT			1°
	GXE22-2DT			2°
	GXE22-3DT			3°
	GXE22-4DT			4°
	GXN16-98	9.5	4	-2°
	GXN16-98DT		5.4	-2°
	GXN16-99		4	-1°
	GXN16-99DT		5.4	-1°
	GXN16-0		4	0°
	GXN16-0DT		5.4	0°
	GXN16-1		4.3	1°
	GXN16-2		4	2°
	GXN16-2DT		5.4	2°
	GXN16-3		4	3°
	GXN16-3DT		5.4	3°
	GXN16-4		4	4°
	GXN16-4DT		5.4	4°
	GXN22-98DT	12.7	6.6	-2°
	GXN22-99DT			-1°
	GXN22-0DT			0°
	GXN22-2DT			2°
	GXN22-3DT			3°
(D30)	GXN22-4DT			4°

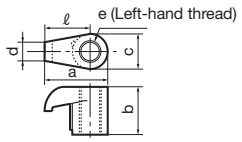
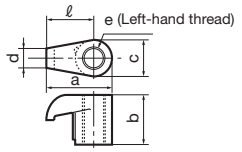
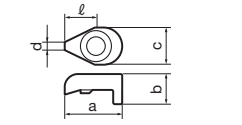
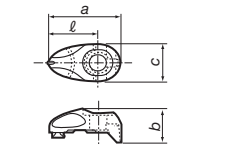
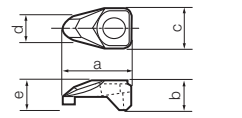
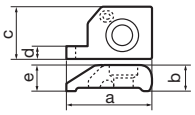
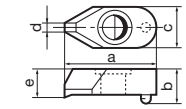
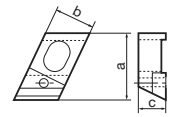
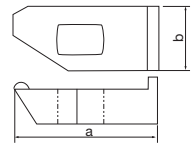
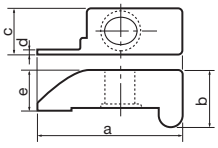
Shims

Shape	Designation	Dimension (mm)		
		a	ℓ	Lead angle
	NXE22-98	12.7	4	-2°
	NXE22-99			-1°
	NXE22-0			0°
	NXE22-1		4.5	1°
	NXE22-2		4	2°
	NXE22-3			3°
	NXE22-4			4°
	NXE27-98	15.9	4	-2°
	NXE27-99			-1°
	NXE27-0			0°
	NXE27-1		4.5	1°
	NXE27-2		4	2°
	NXE27-3			3°
	NXE27-4			4°
	NXN22-98	12.7	4	-2°
	NXN22-99			-1°
	NXN22-0			0°
	NXN22-1		4.5	1°
	NXN22-2		4	2°
	NXN22-3			3°
	NXN22-4			4°
	NXN27-98	15.9	4	-2°
	NXN27-99			-1°
	NXN27-0			0°
	NXN27-1		4.5	1°
	NXN27-2		4	2°
	NXN27-3			3°
(D30)	NXN27-4			4°
	TSL12R	12	4.7	4.5°
	TSL12L	12	4.7	4.5°
	TSL16R	15.9	6.4	5°
	TSL16L	15.9	6.4	5°
	TSL24R	23.8	9.4	7°
	TSL24L	23.8	9.4	7°
	TSL12RI	10.7	4.7	4.5°
	TSL12LI	10.7	4.7	4.5°
	TSL16RI	18.8	6.4	5°
(D30)	TSL16LI	18.8	6.4	5°

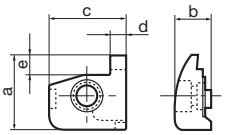
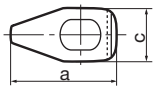
Shape	Designation
 (Steel) Right hand (R) shown	SL-1R
	SL-1L
 (Steel) Right hand (R) shown	SL-2R
	SL-2L
 (Steel) Right hand (R) shown	SL-3R
	SL-3L
 (Steel) Right hand (R) shown	SL-6R
	SL-6L

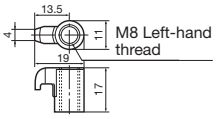
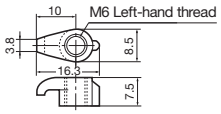
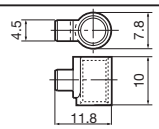
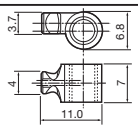
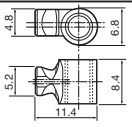
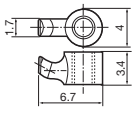
Shape	Designation
 (Steel) Right hand (R) shown	SL-7R
	SL-7L
 (Steel) Right hand (R) shown	SL-8R
	SL-8L
 (D30) Right hand (R) shown	SGSR151
	SGSL151
 (D30) Right hand (R) shown	STN62R
	STN62L

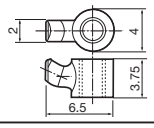
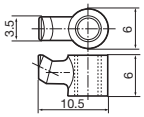
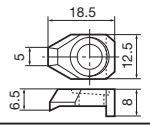
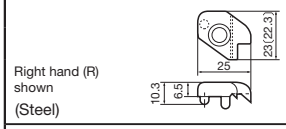
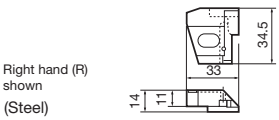
Clamps

Shape	Designation	Dimension (mm)					
		a	b	c	d	e	ℓ
 e (Left-hand thread) (Steel)	**MCL-5M**	14.7	11	7.8	4	M5	10.8
	MCL-6	18.6	11.5	9.5		M6	13.8
	MCL-8S	19.1	13.5	10.9	5	M8	13.6
	MCL-8M	22.5					17
	MCL-8L	25.5	14.5		4		20
 e (Left-hand thread) (Steel)	**MCPM-6**	14.7	11.2	7.9	4	M5	10.8
	MCPM-9	19.1	16.8	10.9	5	M8×1	13.6
	MCPM-12	22.5					17
	MCPM-20	18.6	9.5	9.5	4	M6	13.8
	MCPM-21		12.2				
	MCPM-22	21.5	13.2				16.7
	MCPM-30	25.5	16.8	10.9	5	M8×1	20
 (Steel)	**DCPM-33**	16	9.3	10.5	2.4		8.5
	DCPM-43	21.2	11.5	13.5	3		13.2
	DCPM-54	25.8	15.25	14	3.5		
	DCPM-64	28.4	15.5	16	4		
 (Steel)	**ACP3S**	22.8	9.5	10			15
	ACP3S-E	21.7	9.5	10			13.9
	ACP4S	25.7	12	13			17.7
	ACP5S	30.1	12.9	15	-	-	20.7
	ACP6S	33.4	12.8	16.5	-	-	24
 (Steel)	**ACP3**	17.9	10	10	6.5	6.3	
	ACP4	25.9	13.9	12	7	10.8	
 Right hand (R) shown (Steel)	**CTC-3R**	29	8.8	16	2.2	8	
	CTC-3L						
	CTC-4R			17	3.2		
	CTC-4L						
	CTC-5R			18	4.2		
	CTC-5L						
 (Steel)	**CP81A**	28	10.5	12	3.5	8	
	CP81B						
 TC-3 type shown, TC-4 : Left-hand thread (Steel)	**TC-3**	19	12.5	8.3	–	–	–
	TC-4	21.6		8			
 (Steel)	**TF-72**	22	5.78				
	TF-73	22	11.3				
	TF-184	22	11.3				
 (Steel)	**CCR2**	34.7	14.9	10.7	1.2	10.5	
	CCL2						
	CCR3				2.2		
	CCL3						
	CCR4				2.8		
	CCL4						
	CCR5				3.2		
	CCL5						
	CCR6				3.9		
	CCL6						
	CCR8				4.9		
	CCL8						

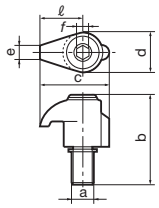
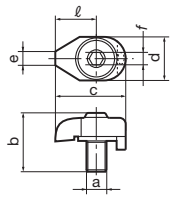
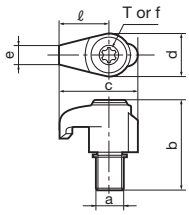
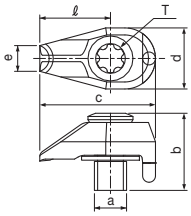
Clamps

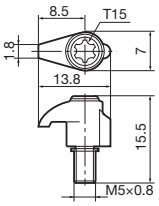
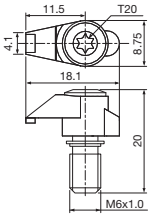
Shape	Designation	Dimension (mm)					
		a	b	c	d	e	
 Right hand (R) shown	CFG-3SR	22	11	23.1	2	6	
	CFG-3SL						
	CFG-4SR				3		
	CFG-4SL						
	CFG-4DR	32				16	
	CFG-4DL						
	CFG-5SR	22			4	6	
	CFG-5SL						
	CFG-5DR	32				16	
	CFG-5DL						
	CFG-6SR	23			5	7	
	CFG-6SL						
	CFG-6DR	33				17	
	CFG-6DL						
	CFG-8SR	28		27.1	7	8	
	CFG-8SL						
	CFG-8DR	38				18	
(Steel)	CFG-8DL						
 (Steel)	CCP4-A	29.1		14			

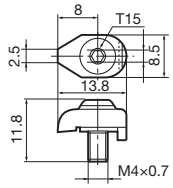
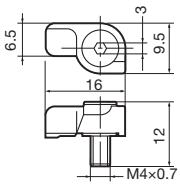
Shape	Designation
 (Steel)	NF-84A
 (Steel)	CP536
 (Steel)	CP91
 (Steel)	CP900
 (Steel)	CP910
 (Steel)	JCP-1

Shape	Designation
 (Steel)	JCP-2
 (Steel)	JCP-3 JCP-3N
 (Steel)	CQ-1
 Right hand (R) shown (Steel)	CPK5R CPK5L
 Right hand (R) shown (Steel)	C11R-5 C11L-5

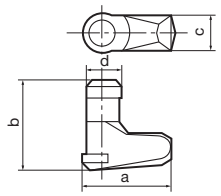
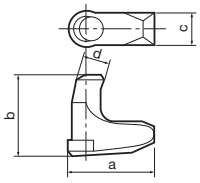
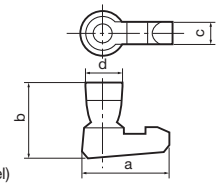
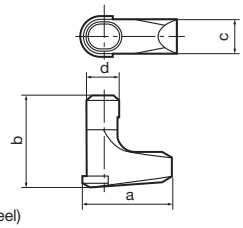
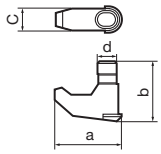
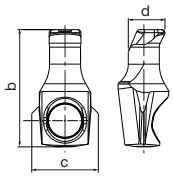
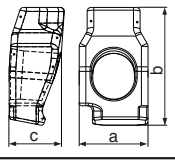
Clamp Sets

Shape	Designation	Dimension (mm)						
		a	b	c	d	e	ℓ	T / f
 (Steel)	**CSG-5S**	M5×0.8	13.5	13.8	7	1.8	8.5	2.5
	CSG-5		15.5					
	CSG-6S	M6×1		16.3	8.5	2.5	10	3
	CSG-6		18					
	CSG-6L		21.5					
	CSG-8S	M8×1	21	20.5	11	3.5	12.5	4
	CSG-8		23.5					
 (Steel)	**CSW-00**	M4×0.7	11.5	12	8	2	7.5	2.5
	CSW-1	M5×0.8	16.5	16.5	9.5	4	10	3
	CSW-0	M4×0.7	11.5	13.8	8.5	2.5	8	2.5
	CSW-2	M6×1	20	20.5	11	6	13	4
	CSW-40	M4×0.7	12	13.2	8	2	7.5	2.5
	CSW-50	M5×0.8	15	16.9	10		9.5	3
 (Steel)	**CSP 16**	M5×0.8	15.5	14.4	6.9	3.2	9.1	T15
	CSP 22	M6×1	20	18.1	8.9	4.2	11.5	T20
	CSP 27	M8×1	23.5	24.4	11.9	3.9	15.6	4
 (Steel)	**CSY-15**	M4×0.7	11.6	11.5	7	3	6	15IP
	CSY-20	M5×0.8	12	18	9.5	4	11	20IP

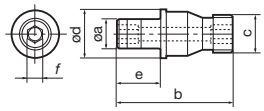
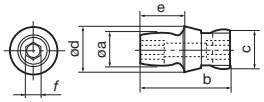
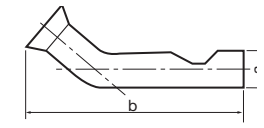
Shape	Designation
 (Steel)	**CSG-5T**
 (Steel)	**CSX20**

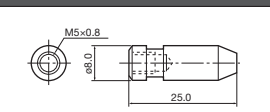
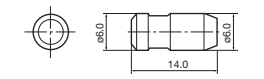
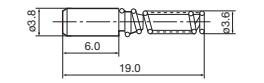
Shape	Designation
 (Steel)	**CSW-0T**
 (Steel)	**CSL-4**

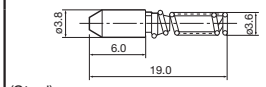
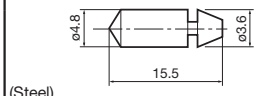
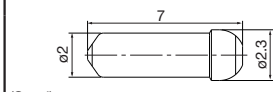
Levers

Shape	Designation	Dimensions (mm)				
		a	b	c	d	
 (Steel)	**LCL3**	10	12	3.7	3.6	
	LCL4	14.6	14	4.7	4.7	
	LCL5	17.1	17	6	6	
	LCL6	20.5	21	7.5	7.5	
	LCL8	25.4	25.4	8.6	8.6	
 (Steel)	**LCL3C**	10.8	11.8	3.4	3	
	LCL4C	13	13.4	3.7	3.4	
	LCL5C	18.6	17.7	4.7	4.5	
	LCL6C	20.5	19	6	5.7	
	LCL8C	24.2	23.5	7.5	6.2	
 (Steel)	**LCL22N**	7.5	6.5	2.6	2.06	
	LCL32N	10	7.8	3.2	3.2	
	LCL33NL	11.5	9.5	3.1	3.6	
	LCL33N	10	9.4	3.2	3.2	
	LCL43N	13.4	10	4.7	4.7	
 (Steel)	**LCL23**	7.8	8.5	2.6	2.1	
	LCL33	10.1	12.1	3.6	3.7	
	LCL33L	12	11.5	3.1	3.6	
	LCL43S	13.5	13.2	4.7	4.7	
	LCL43M					
	LCL44	16.1	14.6	4.7	4.7	
	LCL54	16.5	17.2	6.1	6	
 (Steel)	**DLCL43**	15.55	14	5	4.7	
	DLCL54	19.1	19.1	6.1	6	
	DLCL64	21.5	21	7.5	7.5	
 (Steel)	**SLLV-1**		7.75	3.4	2.43	
	SLLV-2		7.75	3.4	2.75	
 (Steel)	**FCL4**	5	7.78	3.81		
	FCL8	10	14.3	5.39		

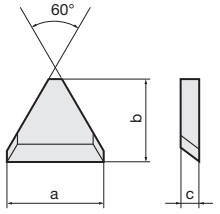
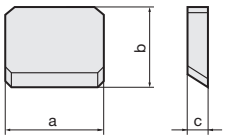
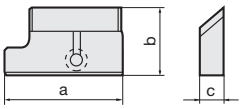
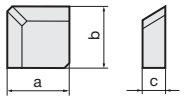
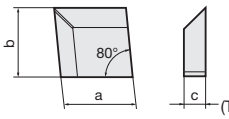
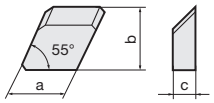
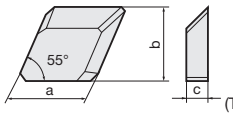
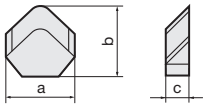
Pins

Shape	Designation	Dimension (mm)					
		øa	b	øc	ød	e	f
 (Steel)	**MLP32L**	3.9	8.8	M5×0.8	5.6	3.5	2
	MLP33	3.7					
	MLP34L	3.7	13.1		6.2	5	
	MLP46	5	17.2	M6.3×1	7.8	5.5	2.5
	MLP46L		18.6			6.9	
	MLP58	6.2	21.9	M8×1	10.3		3
	MLP68	7.8		M10×1	11.9		4
	MLP68L		24.1			9.1	
 (Steel)	**MLP44**	5	13.2	M6.3×1	7.1	5.5	2.5
	MLP33L	3.7	10.4	M5×0.8	5.6	5.1	2
 (Steel)	**SW99**	8	47.5				

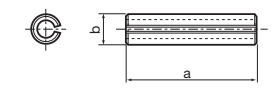
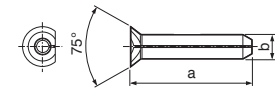
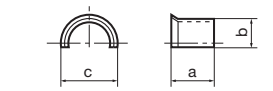
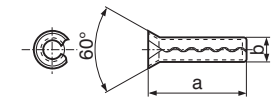
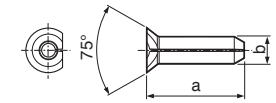
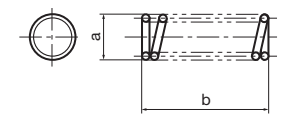
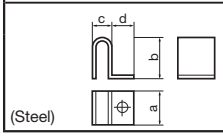
Shape	Designation
 (Steel)	**SP-8**
 (Steel)	**SP-6**
 (Steel)	**BP-3**

Shape	Designation
 (Steel)	**BP-360**
 (Steel)	**BP-490**
 (Steel)	**SL-PI-2**

Chipbreaker Pieces

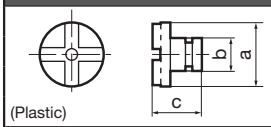
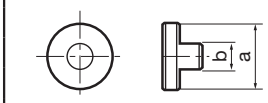
Shape	Designation	Dimension (mm)				
		a	b	c		
 (TX30)	**CBT-2S**	8.8	7.6	2		
	CBT-2M	7.4	6.6			
	CBT-3S	13.3	12.1	2.5		
	CBT-3M	12.3	11.1			
	CBT-3L	11.3	10.1			
	CBT-4S	18.8	16.9			
	CBT-4M	17.8	15.9			
	CBT-4L	16.8	14.4			
	NCT-2S	14.2	11.8			
	NCT-2M	13	10.8			
	NCT-2L	11.9	9.8			
 (TX30)	**CBS-3S**	9.5	8.3	2		
	CBS-3M		7.3			
	CBS-4S	12.7	11.6	2.5		
	CBS-4SN					
	CBS-4M		10.6			
	CBS-4L		9.1			
	NCS-3S		11.2			
	NCS-3M		10.2			
	NCS-3L		8.7			
 Right hand (R) shown (TX30)	**B11 R-5**	24	13	5		
	B11 L-5					
 (TX30)	**CBS-4SN**	11.5	11.5	2.5		
	CBS-4MN	10.5	10.5			
	CBS-4LN	9	9			
	NCS-3SN	11.2	11.2			
	NCS-3MN	10.2	10.2			
	NCS-3LN	8.7	8.7			
 (TX30)	**CBC-4SN**	11.5	11.5	2.5		
	CBC-4MN	10.5	10.5			
	CBC-4LN	9.5	9.5			
 Right hand (R) shown (TX30)	**CBD-4SR**	12.7	11.5	2.5		
	CBD-4MR		10.5			
	CBD-4ML					
	CBD-4LR		9.5			
 (TX30)	**CBD-4SN**	11.5	11.5	2.5		
	CBD-4MN	10.5	10.5			
 (TX30)	**CBR-4SN**	12.7	11.9	2.5		
	CBR-4MN		10.9			

Springs (Springs for Shims)

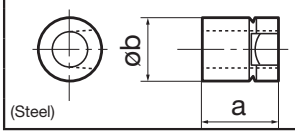
Shape	Designation	Dimension (mm)					
		a	b	c	d		
 (Steel)	**SP-2.5**	12	2.7				
 (Steel)	**SP-16-L14**	13.6	2.85				
 (Steel)	**LSP3**	5.5	3	5.9			
	LSP3L	7					
	LSP4		4	7.6			
	LSP4S	6					
	LSP5	8.5	4.5	8.8			
	LSP6	11	5.9	10.9			
	LSP6C	8.5	4.8	9.3			
	LSP8	12	10	15.4			
 (Steel)	**PSP-2.5**	10	2.7				
	PSP-4.0	16	4.2				
	PSP301	7.6	3				
 (Steel)	**PSP-16**	9.75	2.85				
 (Steel)	**BP-0**	3.6	13				
	BP-5-A						
	BP-7	7	11				
	BP-8.8	8.8	10				
	BP-9	8.3					
	BP-10	9.1					
	SP913	9	13				
 (Steel)	**BSP-1**	7.8	7.5	4.8	6		

User's Guide- Parts for Tool

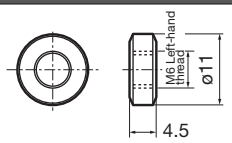
Coolant Supply Attachment

Shape	Designation	Dimension (mm)					
		a	b	c	Thread		
 (Plastic)	**EA-20**	20	10	15			
	EA-25	25					
	EA-32	32	16				
 (Plastic)	**CA-16**	16	8		M6		
	CA-20	20	8.5		M6		
	CA-25	25	11.5		R1/8		
	CA-32	32	11.5		R1/8		
	CA-40	40	11.5		R1/8		

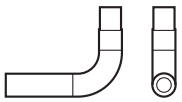
Pistons

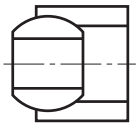
Shape	Designation	Dimension (mm)				
		a	øb			
 (Steel)	**DPIS33**	12.6	9			
	DPIS43	11.8	10			
	DPIS44	13.4	10			
	DPIS54	16	13			
	DPIS64		15			

Nuts

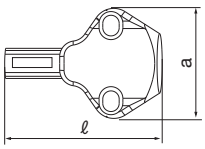
Shape	Designation
	**SRW11**

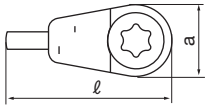
Coolant Pipe & Nozzle

Shape	Designation
	**PNZ5**

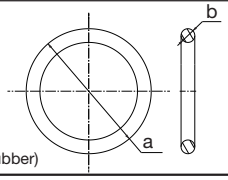
Shape	Designation
	**CNZ125**

Coolant unit

Shape	Designation	Dimension (mm)	
		a	ℓ
	**CU-CW-CHP**	20.8	29.7
	CU-D-CHP	20.8	29.6
	CU-V-CHP	20.8	30

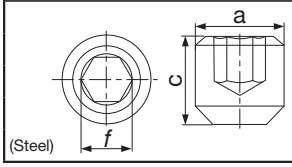
Shape	Designation	Dimension (mm)	
		a	ℓ
	**S-CU-CHP**	7	16.2

O-ring for TungTurn-Jet

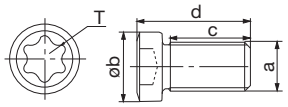
Shape	Designation	Dimension (mm)				
		a	øb			
 (Rubber)	**OR6.4X0.9N**	8.2	0.9			
	OR14X2.5NN	19	2.5			

User's Guide- Parts for Tool

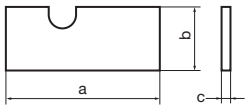
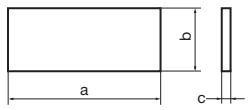
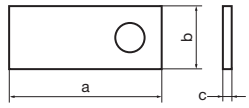
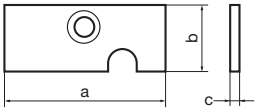
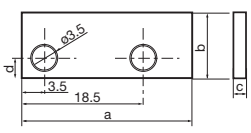
Coolant screw for TungTurn-Jet

Shape	Designation	Dimension (mm)				
		a	c			T / *f*
 (Steel)	**SRM4X4 TL360**	M4	4			2

Mounting screw for TungTurn-Jet

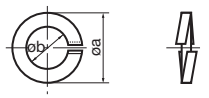
Shape	Designation	Dimension (mm)				
		a	øb	c	d	T / *f*
 (Steel)	**SR M3**	M3X0.5	4.2	7	4.9	T8

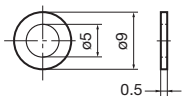
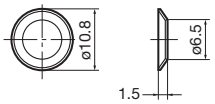
Sizing Plates

Shape	Designation	Dimension (mm)					
		a	b	c	d		
 (Steel)	**S0816A**	55	15.5	0.8			
	S1016A			1			
	S0816B	50		0.8			
	S1016B			1			
	S0816C	45		0.8			
	S1016C			1			
	S0820A	61	19.5	0.8			
	S1020A			1			
	S0820B	54.5		0.8			
	S1020B			1			
	SM-00	18	8	1			
 (Steel)	**SW04**	25.5	5.8	0.25			
				0.5			
				1			
	SW05	37	8.3	0.25			
	SW06	36	10.8	0.5			
				1			
	SW08	35.5	12.3	2			
 (Steel)	**S0810**	40	11	0.8			
	S1010			1			
 Attached with fix screw and wrench. (Steel)	**PSTR08**	24	11	1.5			
	PSTL08						
	PSTR10	42	16.5	2			
	PSTL10						
	PSTR12	47	19	2			
	PSTL12						
 (Steel)	**AP0801**	26	9.5	0.5	3		
	AP0802			1			
	AP0803			1.5			
	AP0804			2			
	AP0805			2.5			
	AP1101	30	11.5	0.5	5		
	AP1102			1			
	AP1103			1.5			
	AP1104			2			
	AP1105			2.5			
	AP1106			3			

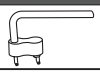
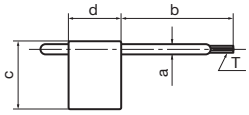
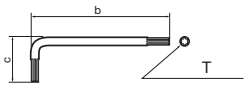
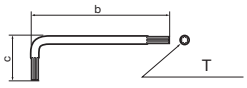
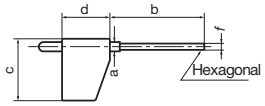
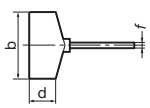
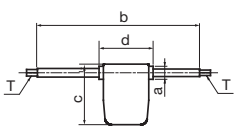
SW04 is composed of three plates and SW05 to SW08 are composed of four plates.
Note on fixing screws: PSTR/L08 is attached with CSSM2-4 and other types are attached with CSHM3-8.

Washers

Shape	Designation	Dimension (mm)					
		øa	øb				
	**VA4**						
	VA5						
	VA6	10.5	6.1				

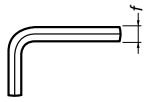
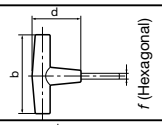
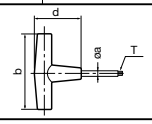
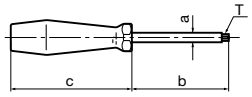
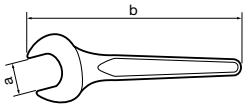
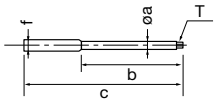
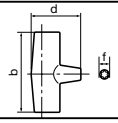
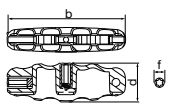
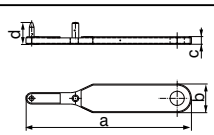
Shape	Designation
	**CPW5**
	**CDW6**

Wrenches and Drivers

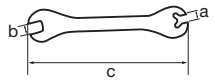
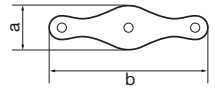
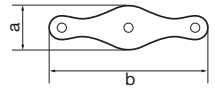
Shape	Designation	Dimension (mm)					
		a	b	c	d	*f*	T
	**CRW23**						
	CRW33						
	**T-6F**	1.7	34.5	15	15		T6
	T-7F	2		19	19		T7
	T-8F	2.3	39				T8
	T-9F	2.5	42.5				T9
	T-15F	3.3	45	27	22		T15
	T-20F	3.9	49	30			T20
	IP-6F	1.7	34.5	15	15		6IP
	SET T-15/5	4	38		15		
	**T-6L**		48	16			T6
	T-8L						T8
	T-9L						T9
	T-15L		59	22			T15
	**KEYV-T20**		60	22			T20
	KEYV-T25		65	23			T25
	KEYV-T30L		190	37			T30
	KEYV-T40L		208	43			T40
	KEYV-T50L		232	48			T50
	**P-2F**	4	44	20	12.5	2	
	P-2.5F	5	45	25	20	2.5	
	HW2.0/5RED	3	38	15	15	2	
	**P-2.5T**		42		15	2.5	
	**T-1008/5**	6.5	85	28	25	-	T10/T8
	T-2010/5	6.5	85	28	25	-	T10/ T20

User's Guide- Parts for Tool

Wrenches, Drivers and Lubricant

Shape	Designation	Dimension (mm)					
		a	b	c	d	*f*	T
	**1/4HEX**					6.35	
	5/32HEX					3.96	
	P-2					2	
	P-2.5					2.5	
	P-3					3	
	P-3.5					3.5	
	P-4					4	
	P-4.5					4.5	
	P-5					5	
	P-6					6	
	**TP-3A**		70		45.5	3	
	TP-4		85		53	4	
	TP-5					5	
	**T-15T**	5	65		45		T15
	T-20T						T20
	T-27T		85		42		T27
	IP-20T	5	80		45		20IP
 Handle shape somewhat varies depending on the type number from the above figure.	**T-6D**	2.5	45	70			T6
	T-7D	2					T7
	T-8D	2.6	61	67.5			T8
	T-9D	3	65	80			T9
	T-10D	3.3	70	90			T10
	T-15D	3.65	71	100			T15
	T-20D	4.6	90				T20
	T-25D	4.4	87	86			T25
	IP-6DB		45	70			6IP
	IP-7D	2.6	45	70			7IP
	IP-8D	2.8	56	69			8IP
	IP-10D	3.3	71	89			10IP
	IP-15D	3.9	70	100			15IP
	IP-20D	4.6	90	100			20IP
	**KS-21**	21	195				
	KS-24	24	215				
	KS-27	27	235				
	KS-32	32	275				
	KS-36	36	305				
	**M-1000**						
	**BT15S**	3.9	50	90		6	T15
	BT15M	3.9	50	118		6	T15
	BT20S	4.6	50	90		6	T20
	BT20M	4.6	50	118		6	T20
	BLD IP15/S7	3.9	50	90		6	15IP
	BLD IP15/M7	3.9	50	118		6	15IP
	BLD IP20/S7	4.6	50	90		6	20IP
	BLD IP20/M7	4.6	50	118		6	20IP
	BLD T10/S7						
	**H-TB**		100		37	6	
	H-TBS		75		37	6	
	**H-TB2W**		95		31.4	6	
	**ECW-456EF**	87	15	4	11.5		
	ECW-456I	80.5	22	4	10.5		

Wrenches and Drivers

Shape	Designation	Dimension (mm)					
		a	b	c	d	*f*	T
	**KEYV-S05**	4	5.5	100			
	KEYV-S06	5.4	8	125			
	KEYV-S08	6.6	10	150			
	KEYV-S10	7.7	13	175			
	KEYV-S12	9.4	16	250			
	KEYV-W20						
	**KEYV-177**	29	110				
	KEYV-217	29	110				
	**KGDT-100**	32	108.5				
	KGDT-110	32	108.5				
	KGDT-120	32	108.5				
	KGDT-130	32	108.5				
	KGDT-140	32	108.5				
	KGDT-150	32	108.5				

Locators

Designation	Applicable Tool
LD150R	TXD15125R ~ TXD15315R
LD440R/L	TMD44 TGD4400R/L-A TFD44
LD442R/L	EGD4400R
LD540R/L	TMD54
LE302R	ESE3050R (RS**) ~ 3063R (RS**)
LE303R/L	TSE3003R/LIA ~ 3006R/LIA
LE402AR	ESE4050RA ESE4063RA
LE403R/L	TSE4003R/LIA TSE4004R/LIA ESE4003RIA-S32
LE405R/L	TSE4005R/LIA ~ 4012R/LIA
LE413R/L	THE40
LE444R/L	TME4403R/LI ~ 4405R/LI TME4403R/LB ~ 4405R/LB EME4405R ~ 4404RI
LE446R/L	TME4406R/LI ~ 4412R/LI TME4406R/LB ~ 4412R/LB
LE540R/L	TME54
LF440R/L	THF44
LF540R/L	THF54
LF602R	ERF6050R ~ ERF6063R
LF602R/L	TRF6003R/LI ~ TRF6006R/LI TRF6008R/LI ~ TRF6012R/LI
LMS56R/L	MS08R/L ~ MS12R/L
LN423R/L	TGN42
LN645R/L	TPN64
LP403R/L	TSP4003R/LIA ~ TSP4004R/LIA TFP4004R/LIA
LP405R/L	TSP4005R/LIA ~ TSP4012R/LIA TFP4005R/LIA ~ TFP4012R/LIA
LP413R/L	TGP41 TGP42
LP514R/L	TGP51
LPP16R	TPP16
LR602R/L	ERD6050RA ~ ERD6063RA
LR603R/L	TRD6003R/L TRD6004R/L ~ TRD6008R/L
LV525R/L	VSN 1
LV530R/L	VSN 2
LV556R/L	VSN60
LW400R	EFP4063R
LW400R/L	TFD44 TFP4000 SFP4000
LW402R	EFP4050R

Insert locking wedges

Designation	Applicable Tool
FDS-8SST	EDPD09063R EDPD09063RB
FDS-8ST-18	EDP09080R EDPD09080RB DPD09100R~DPD09160R DPD09100RB~DPD09160RB
FW-242R/L	ø63
FW-243R/L	ø80~100
FW-245R/L	ø125 ~
FW304R/L-D	DAD15 DPD15 EDPD15 QPP15
LE302R	ESE3050R (RS**) ~ 3063R (RS**)
WF150R	TXD15125R ~ TXD15315R
WF310R/L	TGP4100BA TGP4103R/LIA
WF330N	TSE4003R/LIA TSE4004R/LIA ESE4003RIA-S32 TSP4003R/LIA ~ TSP4004R/LIA TFP4004R/LIA
WF330R/L	TSE3003R/LIA ~ 3006R/LIA
WF444R/L	TME4403R/LI ~ 4405R/LI TME4403R/LB ~ 4405R/LB EME4405R ~ 4404RI TME4406R/LI ~ 4412R/LI TME4406R/LB ~ 4412R/LB
WF500R	TSE4005R/LIA ~ 4012R/LIA TSP4005R/LIA ~ TSP4012R/LIA TFP4005R/LIA ~ TFP4012R/LIA
WF500R/L	TMD54 TGP51 THF54
WF50R/L	TME54
WF602R	ERF6050R ~ ERF6063R
WF603R/L	TRF6003R/LI ~ TRF600R/LI
WF608R/L	TRF6008R/LI ~ TRF6012R/LI
WN645R/L	TPN64
WP193TR/L	EGD4400R
WP440R/L	TMD44 TGD4400R/L-A TFD44 TGP4100IA ~ TGP4112R/LIA TGP42 THF44 THE40
WR602R/LW	ERD6050RA ~ ERD6063RA
WR603R/L	TRD6003R/L TRD6004R/L ~ TRD6008R/L
WT402R	ESE4050RA ESE4063RA
WT402R/L	EME4450RB ~ 4404RB

Locator adjusting wedges

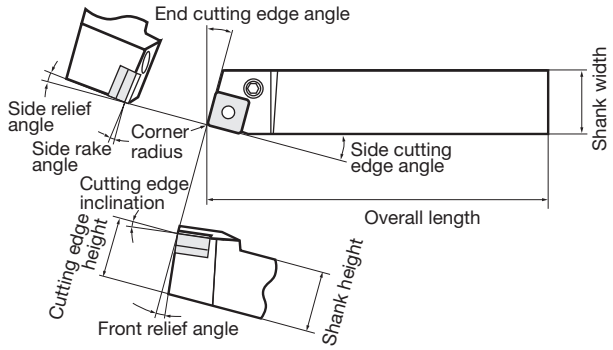
Designation	Applicable Tool
FW-305	TFD44 TFP40 SFP4000 EFP4063
FW325R/L-D	DAD15 QPP15 DPD15 EDPD15

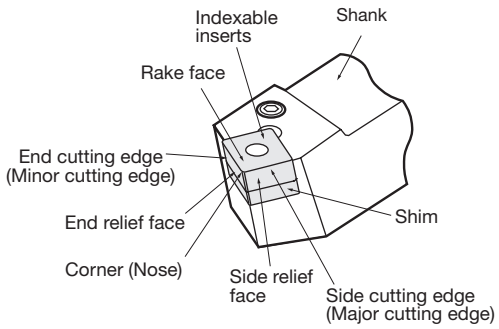
Fine adjusting screws

Designation	Applicable Tool
AJM5	DPD09 EDPD09
ASM34L	DPD24

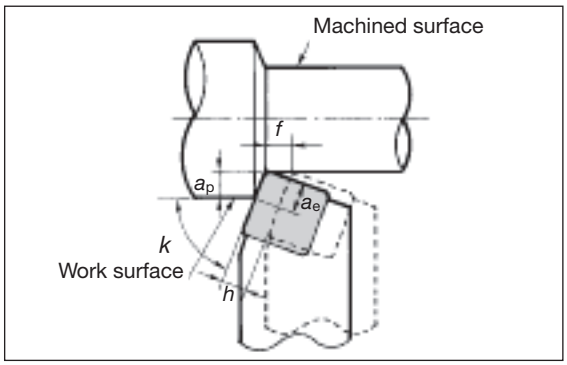
Turning Tools

Name of tools parts



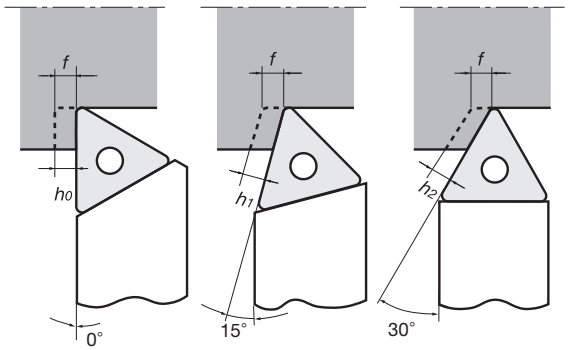


Relating angles between tool and workpiece



a_p … Depth of cut (Distance between work surface and machined surface)
a_e … Length of cutting edge engaging in cutting.
κ … Cutting edge angle (Angle to be made by cutting edge and work surface)
f … Feed per revolution
h … Thickness to be cut per revolution
Machined surface … Workpiece surface after having machined.
Work surface … Workpiece surface to be cut.

●Effect of side cutting edge angle



In the cutting of same feed, as the side cutting edge angle increases, the chip thickness decreases.

$h_0 > h_1 > h_2$

●Honing

TAC indexable inserts of steel cutting grades are honed.
Honing specifications are shown in the following table.

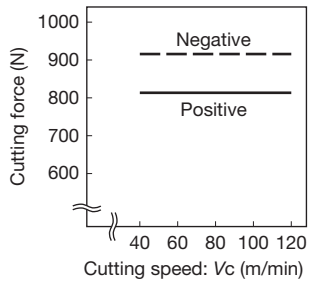
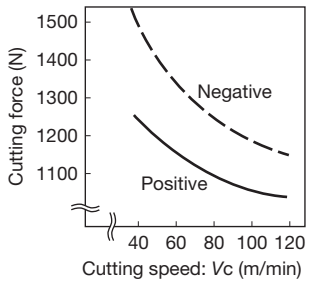
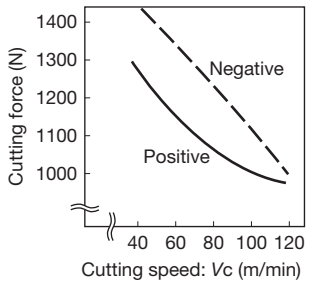
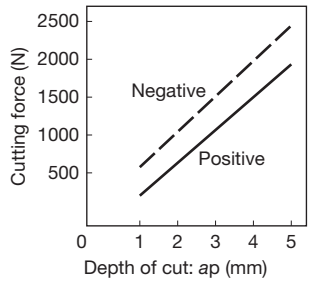
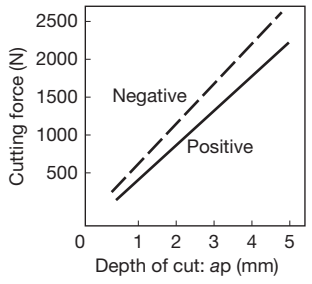
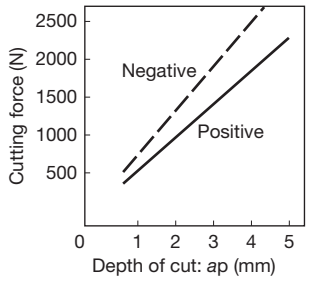
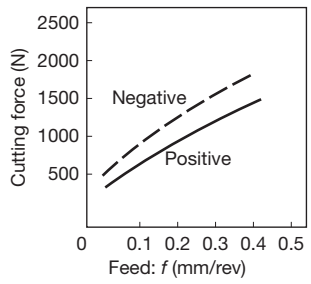
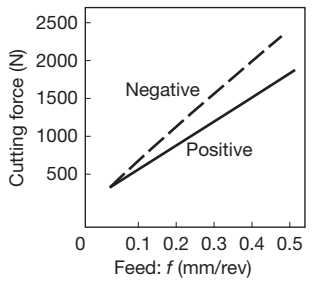
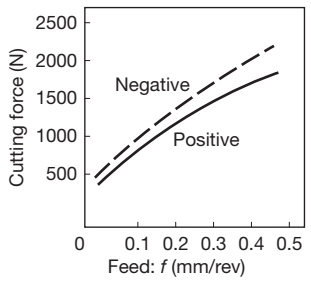
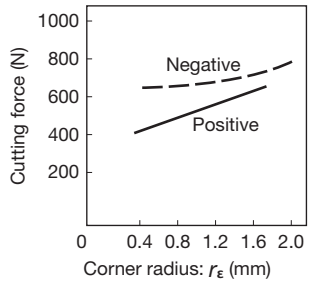
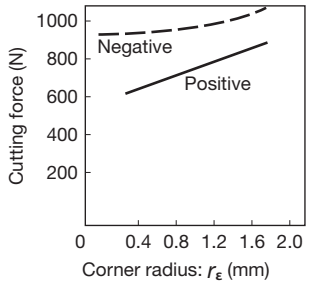
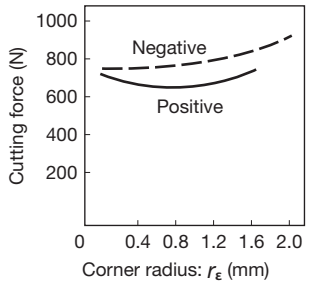
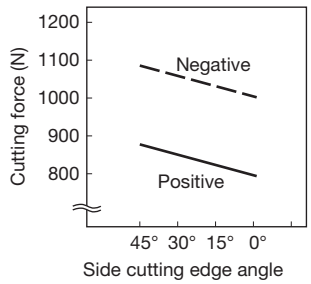
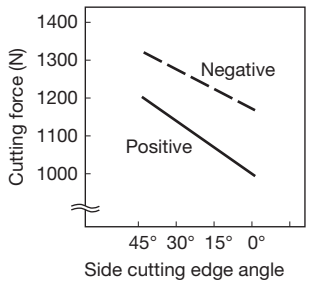
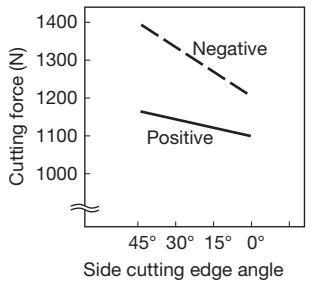
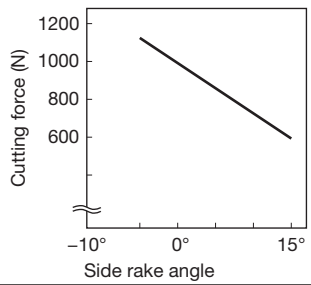
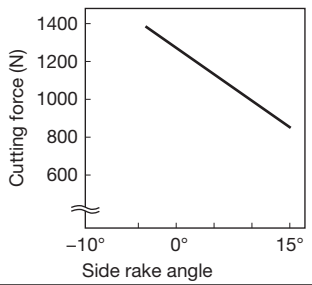
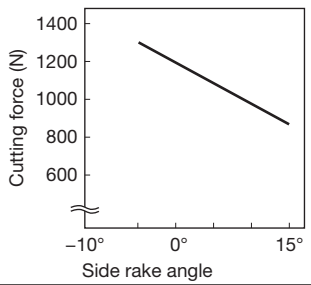
Edge condition	Shape
Sharp edge	
Round honing	
Chamfered honing	

●Effects of tool geometry on cutting phenomena

Increasing \ Phenomena	Flank wear	Crater wear	Edge strength	Cutting force	Surface finish	Chattering	Cutting edge temperature	Chip shape and flow
Cutting edge inclination	–	Decrease	Lower	Radial force decrease	–	Less tendency	Lower	Effect on flow direction
Side rake angle	–	Decrease	Lower	Decrease	–	–	Lower	Effect on shape
Relief angle	Decrease	–	Lower	Decrease	–	Likely to occur	Lower	–
End cutting edge angle	Decrease	–	Lower	Radial force decrease	Roughen	Less tendency	Lower	–
Side cutting edge angle	Decrease	Decrease	Increase	Radial force decrease	–	Likely to occur	Increase	Decrease thickness
Nose radius	Decrease to some level		Increase	Increase	Improve	Likely to occur	Increase	Effect on flow direction
Honing width	Increase	–	Increase	Increase	–	Likely to occur	Increase	–

Turning Tools

Relations between cutting force and cutting conditions or cutting phenomena

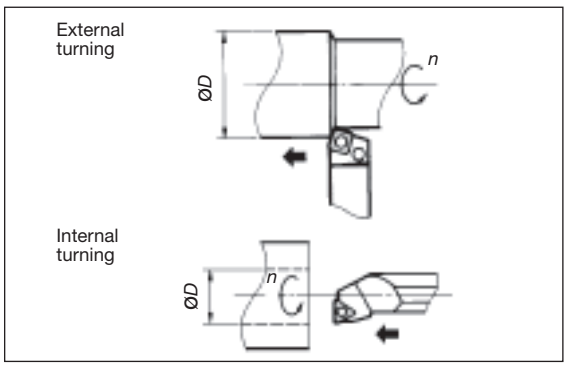
Condition	Grey cast iron (HB130)	Stainless steel (HB145)	Carbon steel (HB230)
Cutting speed and cutting force f = 0.2 mm/rev a_p = 2 mm Side cutting edge angle 0° Corner radius r_ε 0.4			
Depth of cut and cutting force V_c = 100 m/min f = 0.2 mm/rev Side cutting edge angle 0° Corner radius r_ε 0.4			
Feed and cutting force V_c = 100 m/min a_p = 2 mm Side cutting edge angle 0° Corner radius r_ε 0.4			
Corner radius and cutting force V_c = 100 m/min f = 0.2 mm/rev a_p = 1.2 mm Side cutting edge angle 0°			
Side cutting edge angle and cutting force V_c = 100 m/min f = 0.2 mm/rev a_p = 2 mm Corner radius r_ε 0.4			
Side rake angle and cutting force V_c = 100 m/min f = 0.2 mm/rev a_p = 2 mm Side cutting edge angle 0° Corner radius r_ε 0.2			

* 9.8N = 1kgf

Turning Tools

Calculation formulas for turning

●Cutting speed



When calculating cutting speed from number of revolutions:

$$Vc = \frac{\pi \times \varnothing D \times n}{1000}$$

V_c : Cutting speed (m/min)
n : Number of revolution (min^{-1})
$\varnothing D$: Diameter of workpiece (mm)
$\pi \approx 3.14$

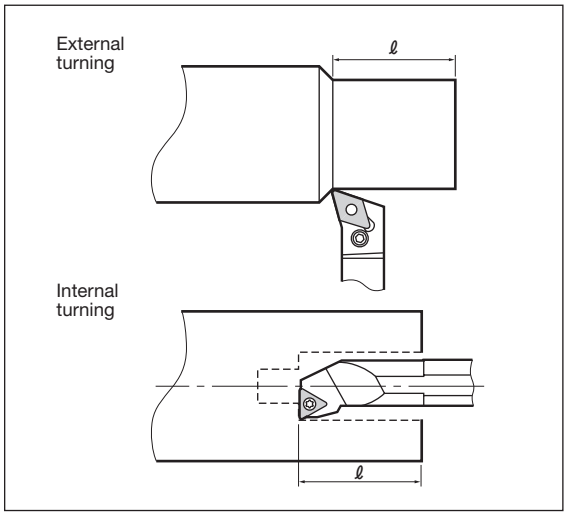
When calculating required number of revolutions from cutting speed:

$$n = \frac{Vc \times 1000}{\pi \times \varnothing D}$$

Example : Calculating the cutting speed when turning a ø150 mm-diameter workpiece at 250 min^{-1}

$$V_c = \frac{3.14 \times 150 \times 250}{1000} = 117 \text{ m/min}$$

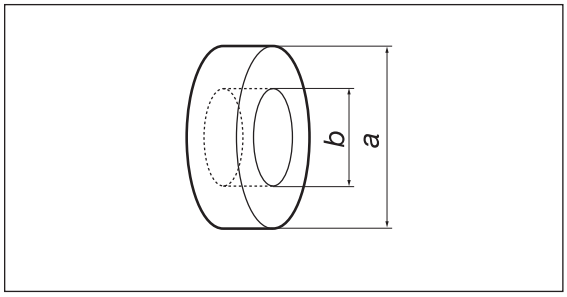
●Cutting time on external and internal turning



$$T_{(min)} = \frac{\ell}{f \times n}$$

T : Cutting time (min)
ℓ : Cutting length (mm)
f : Feed (mm/rev)
n : Number of revolution (min^{-1})

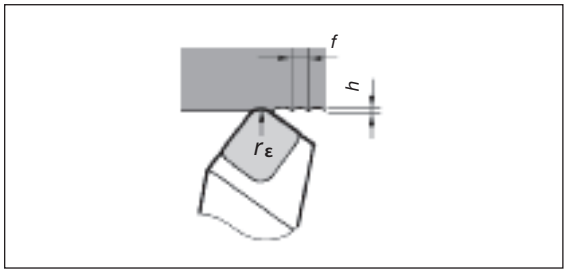
●Cutting time on face turning



$$T_{(min)} = \frac{\pi \times (a^2 - b^2)}{4000 \times v_c \times f}$$

V_c : Cutting speed (m/min)
f : Feed (mm/rev)
T : Cutting Time (min)

●Theoretical surface roughness



$$h_{(\mu m)} = \frac{f^2}{8 r_\varepsilon} \times 1000$$

h : Surface roughness (μm)
f : Feed (mm/rev)
r_ε : Nose radius (mm)

●Calculation of power consumption (kW)

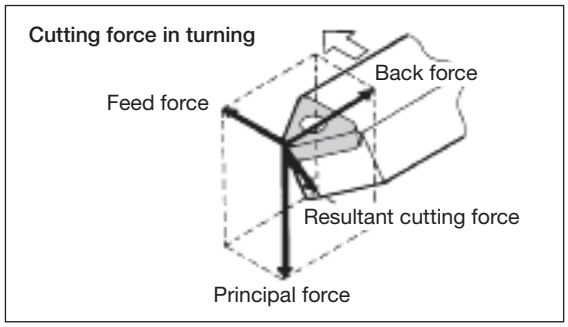
$$P_{c(kW)} = \frac{F \times v_c}{60000}$$

P_c : Power requirement (kW)
F : Cutting force (N)
V_c : Cutting speed (m/min)

Turning Tools

●Cutting forces

(1) Finding from the diagram based on experimental data.
(2) In case determining by simplified equation:



$$F = k_c \times a_p \times f \quad (\mathrm{N})$$

F : Cutting force (N)
k_c : Specific cutting force (N/mm²)
[Refer to the Table below]
a_p : Depth of cut (mm)
f : Feed (mm/rev)

Example :
Calculating the cutting force when cutting a high carbon steel (ISO C55) at f = 0.2 mm/rev and ap = 3 mm.
F = 3430 × 3 × 0.2 = 2058N

●Calculating power requirement

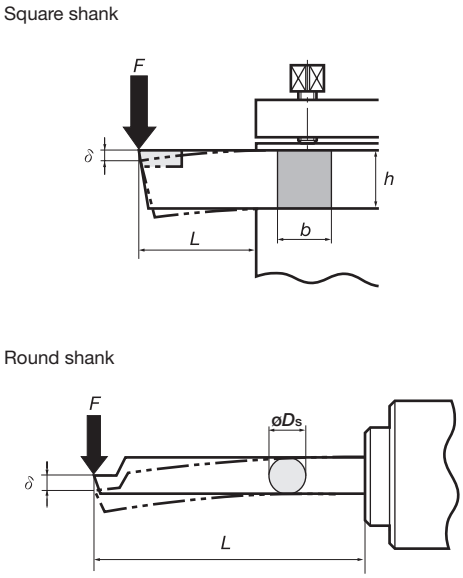
$$P_c = \frac{k_c \times a_p \times v_c \times f}{60 \times 1000} \quad (\mathrm{kW})$$

P_c : Net power requirement (kW)
k_c : Specific cutting force (N/mm²)
[Refer to the Table below]
v_c : Cutting speed (m/min)
a_p : Depth of cutting (mm)
f : Feed (mm/rev)

Value of specific cutting force (k_c)

Workpiece material (JIS)	Tensile strength (MPa)	Hardness (HB)	Value of specific cutting force on feed k_c (N/mm²)				
			0.04 (mm/rev)	0.1 (mm/rev)	0.2 (mm/rev)	0.4 (mm/rev)	1.0 (mm/rev)
SS400, S15C	390	100	3430	2840	2450	2080	1700
S35C, S40C	590	170	4220	3490	2940	2500	2080
S50C, SCr430	785	230	4900	4020	3430	2940	2400
SCM440, SNCM439	980	300	5390	4410	3780	3240	2650
SDK	1765 (56HRC)	56HRC	8390	6870	5880	5000	4120
FC200	(160HB)	160	2550	1960	1630	1340	1030
FCD600	(200HB)	200	3330	2550	2110	1750	1340
Aluminium alloy	(89HB)	89	1350	1130	950	810	670
Aluminium			1050	870	740	640	520
Magnesium alloy			390	390	390	390	390
Brass			1080	1080	1080	1080	1080

●Bending stress and tool deflection



Bending stress

(1) Square shank

$$S = \frac{6 \times F \times L}{b \times h^2} \quad (\mathrm{MPa})$$

(2) Round shank

$$S = \frac{32 \times F \times L}{\pi \times \varnothing D_s^3} \quad (\mathrm{MPa})$$

S : Bending stress in shank (MPa)
F : Cutting force (N)
L : Overhang length of tool (mm)
b : Shank width (mm)
h : Shank height (mm)
$\varnothing D_s$: Shank diameter (mm)
E : Modulus of elasticity of shank material (MPa)

Tool defection (mm)

(1) Square shank

$$\delta = \frac{4 \times F \times L^3}{E \times b \times h^3} \quad (\mathrm{mm})$$

(2) Round shank

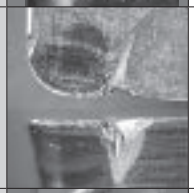
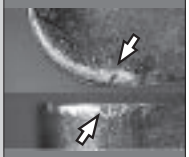
$$\delta = \frac{64 \times F \times L^3}{3 \times \pi \times E \times \varnothing D_s^4} \quad (\mathrm{mm})$$

(Ref.) Values of E

Material	MPa (N/mm²)	{kgf/mm²}
Steel	210,000	21,000
Cemented Carbide	560,000~620,000	56,000~62,000

Turning Tools

Troubleshooting in turning

Typical tool failure		Countermeasure		
		Tool grade	Cutting conditions	Tool geometry
Flank wear		• Change to more wear resistant grades **P, M, K30 → 20 → 10**	• Reduce cutting speed • Change to appropriate feed • Change to wet cutting	• Decrease honing width • Increase relief angle • Increase end cutting edge angle • Increase corner radius • Select free-cutting chipbreaker • Increase rake angle
Crater wear		• Change to more wear resistant grades **P, M, K30 → 20 → 10**	• Reduce cutting speed • Reduce feed • Reduce depth of cut • Change to wet cutting	• Increase rake angle • Select an appropriate chipbreaker • Increase side cutting edge angle • Increase corner radius
Notch wear		• Change to more wear resistant grades **P, M, K30 → 20 → 10**	• Reduce cutting speed • Reduce feed	• Increase rake angle • Increase side cutting edge angle
Fracture		• Change to tougher grades • Change to thermal-shock resistant grades **P, M, K10 → 20 → 30**	• Reduce feed • Reduce depth of cut • Improve holding rigidity of work and tool • Reduce overhang length of toolholder • Improve looseness in machine	• Reduce rake angle • Select a chipbreaker with high edge strength • Increase honing width • Increase side cutting edge angle • Select larger shank size • Increase corner radius
Chipping		• Change to tougher grades **P, M, K10 → 20 → 30**	• Reduce cutting speed • Reduce feed • Reduce depth of cut • Improve holding rigidity of work and tool • Reduce overhang length of toolholder • Improve looseness in machine	• Reduce rake angle • Select a chipbreaker with high edge strength • Increase honing width • Increase side cutting edge angle • Select larger shank size
Flaking		• Change to tougher grades **P, M, K10 → 20 → 30**	• Reduce cutting speed • Reduce feed	• Reduce rake angle • Increase corner radius • Increase honing width
Plastic deformation		• Change to more wear resistant grade **P, M, K30 → 20 → 10**	• Reduce cutting speed • Change to appropriate feed • Reduce depth of cut • Supply cutting fluid in adequate volume	• Increase relief angle • Increase rake angle • Reduce corner radius • Reduce side cutting edge angle • Select a free-cutting chipbreaker
Chip welding		• Use a grade which has a low tendency to adhere to Workpiece material **Cemented carbide → Coated carbide or cermet**	• Increase cutting speed • Increase feed • Change to water-insoluble cutting fluid • Change to wet cutting	• Increase rake angle • Select a free-cutting chipbreaker • Decrease honing width
Built-up edge				
Thermal cracking		• Change to tougher grades • Change to thermal-shock resistant grades **P, M, K10 → 20 → 30**	• Reduce cutting speed • Reduce feed • Change to dry cutting • Supply cutting fluid in adequate volume • Reduce depth of cut • Change to water-insoluble cutting fluid	• Increase rake angle • Select a free-cutting chipbreaker • Decrease honing width

Turning Tools

Problem	Cause	Countermeasure	
		Tool	Cutting conditions and others
Deteriorated surface roughness	• Increased tool wear	• Select a more wear resistant grade • Use an insert with a larger rake angle • Use an insert with a larger nose radius • Use a more lightly honed insert • Use an insert of closer tolerance (from M class to G class)	• Select a proper feed • Decrease the cutting speed • Select a freer-cutting chipbreaker type • Use a cutting fluid
	• Edge chipping	• Use a tougher grade • Select a chipbreaker with strong cutting edges • Use a largely honed insert • Increase the side cutting edge angle • Use a larger shank size	• Decrease the depth of cut • Decrease the feed • Use a more rigid machine • Improve the holding rigidity of the tool and workpiece • Shorten the overhang of the toolholder • Improve the machine looseness
	• Chip welding • Built-up-edge	• Select a grade with less affinity with the Workpiece material • Use an insert with a larger rake angle • Select a freer-cutting chipbreaker type • Use a more lightly honed insert • Use an insert of closer tolerance (from M class to G class)	• Increase the cutting speed • Increase the feed • Use a water-insoluble cutting fluid • Use a cutting fluid
	• Vibration and chatter	• Use a tougher grade • Use an insert with a larger rake angle • Select a freer-cutting chipbreaker type • Use an insert with a smaller nose radius • Decrease the side cutting edge angle • Use a more lightly honed insert • Use a larger shank size	• Use a proper cutting speed • Decrease the feed • Decrease the depth of cut • Improve the holding rigidity of the tool and workpiece • Shorten the overhang of the toolholder • Improve the machine looseness
Deteriorated dimensional accuracy	• Improper insert accuracy	• Use an insert of closer tolerance (from M class to G class)	
	• Incomplete engagement of tool and workpiece	• Use an insert with a larger rake angle • Select a freer-cutting chipbreaker type • Use an insert with a smaller nose radius • Use a more lightly honed insert	• Improve the holding rigidity of the tool and workpiece • Shorten the overhang of the toolholder • Improve the machine looseness
Burr occurrence	• Unsuitable cutting speed		• Decrease the cutting speed • Increase the feed • Use a cutting fluid
	• Worn tool or improper cutting edge geometry	• Use a harder grade • Use an insert with a larger rake angle • Select a freer-cutting chipbreaker type • Increase the relief angle • Use an insert with a smaller nose radius • Decrease the side cutting edge angle • Use a more lightly honed insert	
Edge breakout	• Improper cutting speed		• Decrease the feed • Decrease the depth of cut
	• Worn tool or improper cutting edge geometry	• Use a harder grade • Use an insert with a larger rake angle • Select a freer-cutting chipbreaker type • Increase the side cutting edge angle • Use an insert with a larger nose radius • Use a more lightly honed insert • Use a larger shank size	• Improve the holding rigidity of the tool and workpiece • Shorten the overhang of the toolholder • Improve the machine looseness
Fuzzy surface finish	• Improper cutting conditions		• Increase the cutting speed • Select a proper feed • Use a water-insoluble cutting fluid • Use a cutting fluid
	• Worn tool or improper cutting edge geometry	• Use a harder grade. • Select a grade with less affinity with the Workpiece material • Use an insert with a larger rake angle • Select a freer-cutting chipbreaker type • Use a more lightly honed insert	

Chipbreakers

Chip controllability

Necessity of chip control

①Why is chip control needed?
②Effect of improper chip control

Necessity of chip control (Problems and effects)

Problems	Effects
1. Scattering of chips and coolant. 2. Wrapping around the workpiece and the tool. 3. Accumulation on the tool, jig, and machining facilities.	1. Disturbs unmanned and automated machining. 2. Disturbs high-speed and high-efficiency machining. 3. Degrades finished surface. 4. Threatens operator's safety. 5. Reduced operation rate.

Additional problems when chips are not properly controlled

①Why is chip control needed?

What is chip?

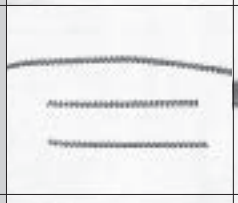
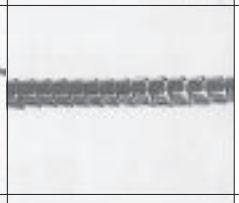
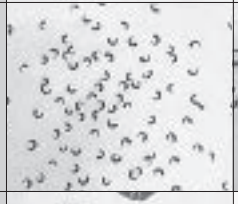
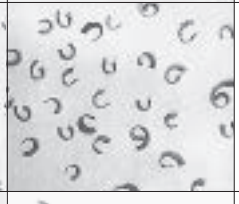
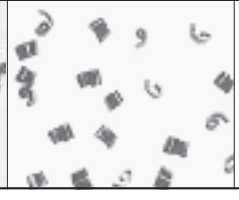
For making a product from a workpiece, removed objects produced by a tool which is set to cut to a specified depth with the relative motion of the tool and the workpiece.

Problems when chips are not properly controlled

②Effect of improper chip control

- Effects on quality → • Defective work. • Defective surface finish • Chip entangling
- Effects on operation → • Increased number of man-hours for handling. • Increased tool costs. • Troublesome chip handling. • Machine stoppage and reduced operation rate.
- Effect on safety and health. → • Stain and damage on machine caused from improper carrying-out of chips. • Dangerous effects on the human body. (Injury and burns on hand, etc.)

Effective measures → **"Chipbreaker"**

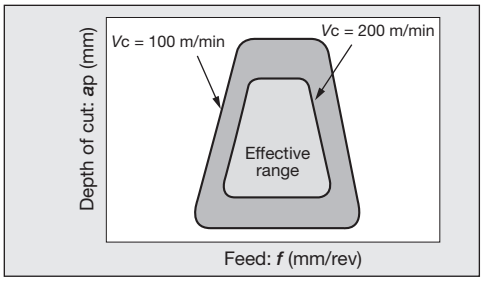
Classi-fication	Chip shape: Depth of cut: small	Chip shape: Depth of cut: large	Description of chip shape	Acceptability	Effect
Shape A			Chips irregularly entangled	Not acceptable	• Wrapping around the tool or workpiece or accumulation around the cutting point, hindering cutting • Possible damage to the machined surface
Shape B			Long continuous spiral chips $\ell > 50$ mm	Acceptable	• Bulky during transport in the automatic line • May be preferred when one operator handles one machine
Shape C			Short spiral chips $\ell < 50$ mm	Acceptable	• Smooth chip flow • Difficult to scatter • Favorable shape
Shape D			"C" or "9" shaped chips (Around one coiling)	Acceptable	• Favorable shape if not scattering • Not bulky and easy to transport
Shape E			Excessively broken chips. Thin pieces or connected in a form of wave as shown in the figure left	Not acceptable	• Readily scattering. If scattering is the only trouble, it may be acceptable because the chip cover, etc. may be used. • Tend to cause chatter, causing harm on the finished surface roughness or tool life.

Chipbreakers

Factors affecting chip control

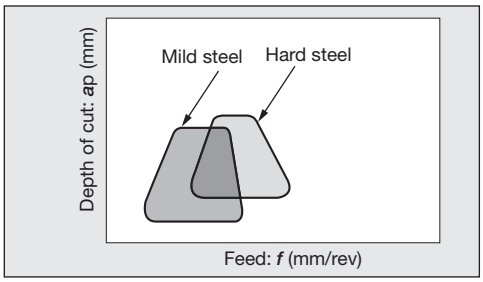
(1) Cutting conditions
1 Feed
2 Depth of cut
3 Cutting speed

- Of these, feed has the greatest effect followed by depth of cut and cutting speed in order listed.
- Feed is proportionate to the thickness of chips.
- Depth of cut is proportionate to the width of chips.
- There are optimum values (effective range) in feed and depth of cut.
- Cutting speed is in inverse proportion to chip thickness. Effective range becomes narrow at high speed.



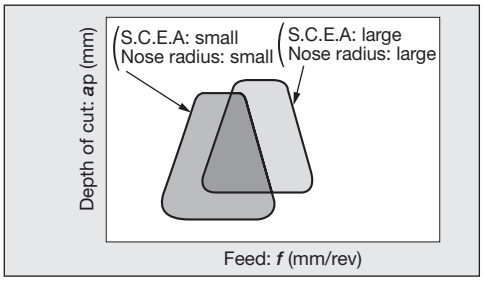
(2) Workpiece material
1 Alloy element
2 Hardness
3 Heat treatment condition

- These are related to thickness of chips and ease of curling.
- Mild steel chips are thicker than those of hard steel.
- Hard steel chips are liable to curl more than those of mild steel.
- Chips that do not curl are thin. As an exception, in case of mild steel even if thick, may not curl.



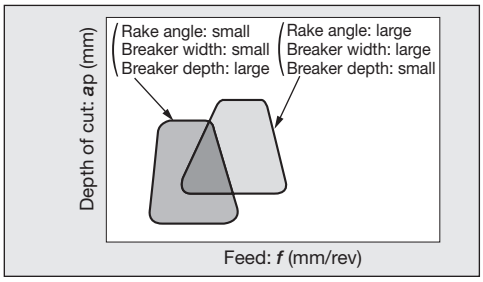
(3) Tool geometry
1 Side cutting edge angle
2 Nose radius

- Side cutting edge angle is relative to chip thickness and width
- Side cutting edge angle is preferably small.
- Nose radius is relative to thickness and width and the direction of flowing out.
- In finishing, small nose radius, whilst for rough cutting, large nose radius is better.



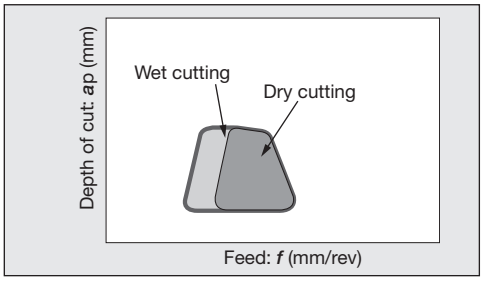
(4) Shape of chipbreaker
1 Rake angle
2 Chipbreaker width
3 Chipbreaker depth

- Rake angle is in inverse proportion to chip thickness.
- Depending on the Workpiece material, there is an optimum value.
- Chipbreaker width is selected proportionately to feed.
- Narrow at low feed and wide at high feed.
- Chipbreaker depth is to be selected so as to be inversely proportionate to feed.
- Deep at low feed and shallow at high feed.



(5) Coolant

- Effective range is wider with wet cutting.
- Especially at low feed range is liable to curl.

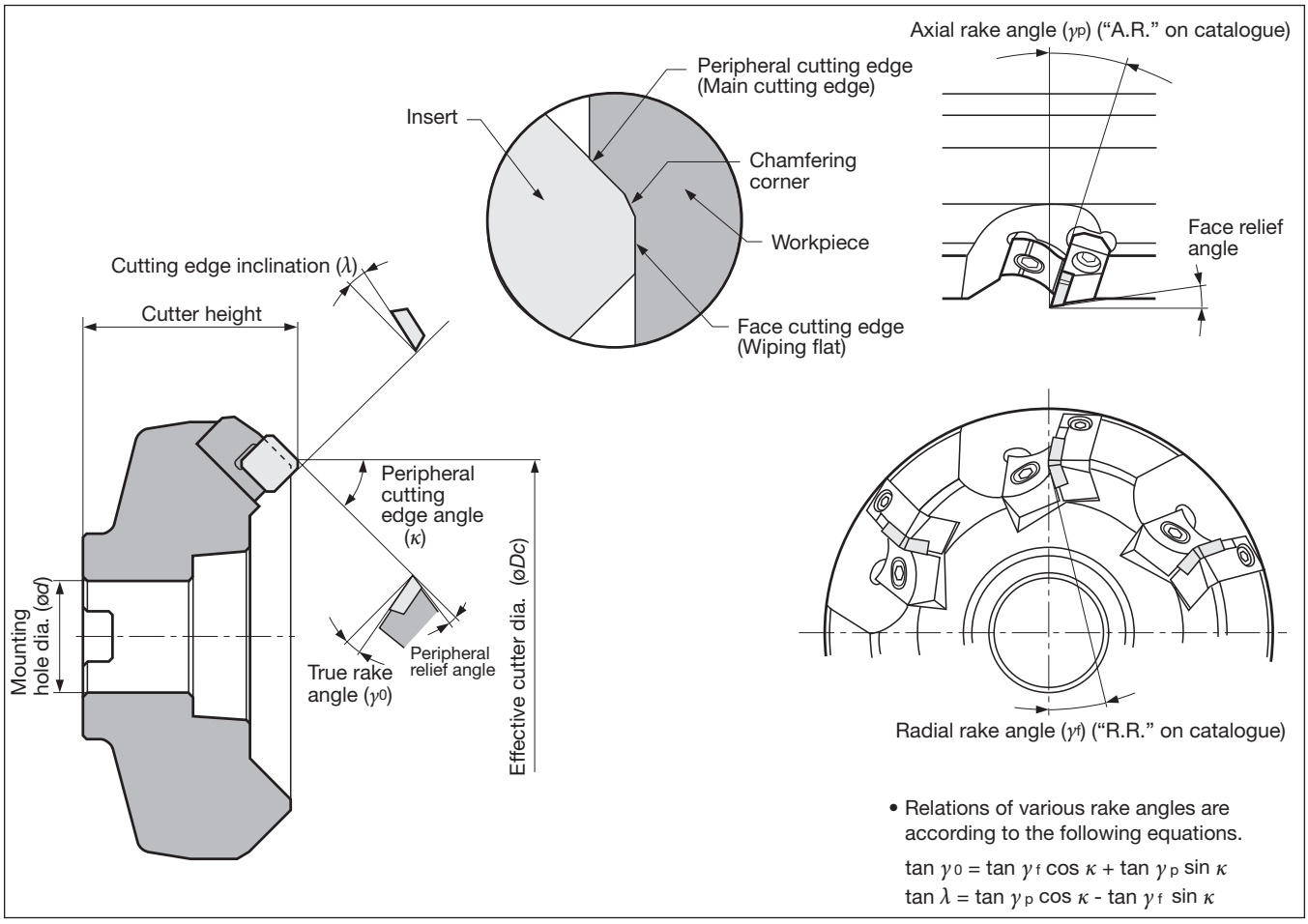


(6) Machine
1 Rigidity
2 Power limit

- The machine has enough power and mechanical strength.
- Select the machine consistent with the size of Workpiece material to be used.

Milling tools

Nomenclature for face milling cutter



- Relations of various rake angles are according to the following equations.

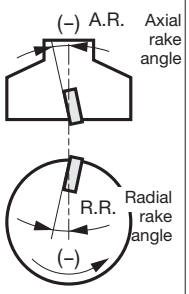
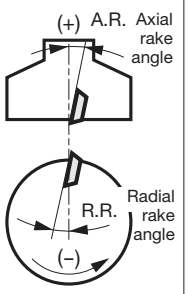
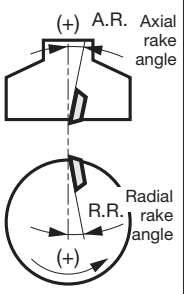
$\tan \gamma_0 = \tan \gamma_f \cos \kappa + \tan \gamma_p \sin \kappa$

$\tan \lambda = \tan \gamma_p \cos \kappa - \tan \gamma_f \sin \kappa$

Cutter geometry and applications

Condition		Rake angle combination and applicability		
		Negative-Negative	Negative-Positive	Positive-Positive
Shapes of cutting edge	γp (A.R.)	-	+	+
	γf (R.R.)	-	-	+
	γo	-	+	+
Workpiece material	Carbon steels, alloy steels (< 300HB)	△	◎	◎
	Stainless steels (< 300HB)	×	◎	○
	Die steels (< 300HB)	△	◎	○
	Cast irons Ductile cast irons	◎	○	○
	Aluminium alloys	×	○	◎
	Copper and its alloys	×	○	◎
	Titanium and its alloys	×	○	○
	Hardened steels (40 ~ 55HRC)	○	○	×
Features		· Higher cutting edge strength · Many usable corners of inserts	· Excellent chip removal · Higher cutting edge strength and Freer cutting action	· Most excellent cutting action
Typical examples of mills		TGN4200 DoPent	TAW13 TME4400 TMD4400	THF4000 THE4000

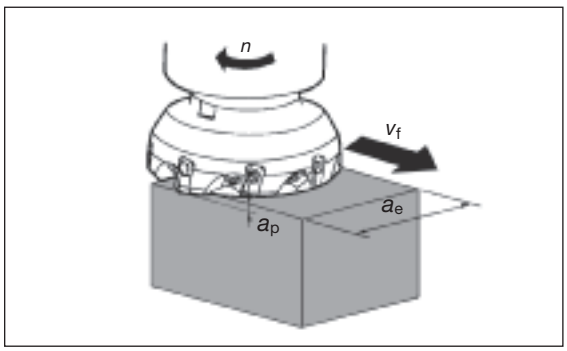
Rake angle combination

Negative type (Negative-Negative)	Negative-Positive type	Positive type (Positive-Positive)
		

Milling tools

Calculation formulas for milling

●Cutting speed



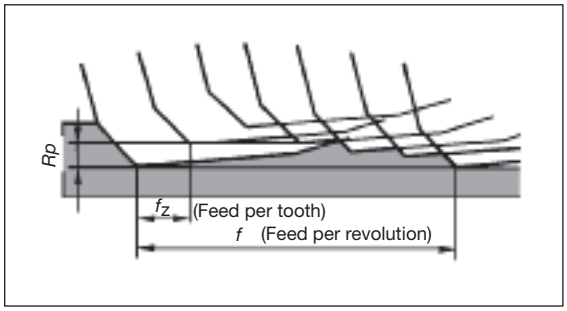
●**Cutting speed** (Calculated from number of revolutions)

$$v_c\ (\text{m/min}) = \frac{\pi \times \varnothing D_c \times n}{1000}$$

v_c : Cutting speed (m/min)
$\varnothing D_c$: Effective diameter (mm)
n : Number of revolutions (min^{-1})
$\pi \approx 3.14$

●**Number of revolution** (Calculated from cutting speed)

$$n\ (\text{min}^{-1}) = \frac{1000 \times v_c}{\pi \times \varnothing D_c}$$



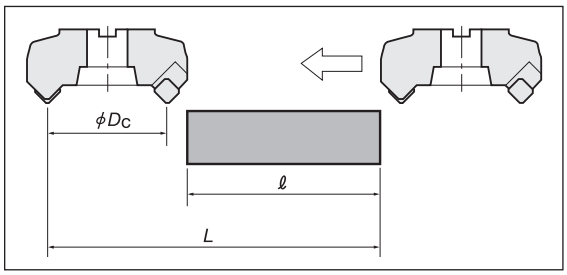
●**Feed speed and feed per tooth**

$$v_f\ (\text{mm/min}) = f_z \times z \times n$$

v_f : Feed speed (mm/min)
f_z : Feed per tooth (mm/t)
z : No. of teeth of the cutter
n : Number of revolutions (min^{-1})

Feed speed is relative speed of cutter and Workpiece material and in the normal milling machine, it is the table speed.
In milling, the feed per tooth is very important. The recommended cutting condition is expressed by v_c and f_z and using the above equation calculate n and v_f and input in the machine.

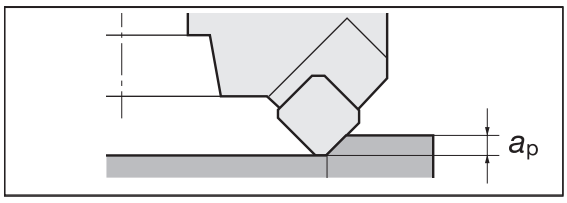
●Cutting time on face milling



$$T\ (\text{min}) = \frac{L}{v_f}$$

T : Cutting time (min)
L : Total table feed length.
(ℓ : Workpieces length (mm) + $\varnothing D_c$: Effective cutter diameter (mm))
v_f : Feed speed (mm/min)

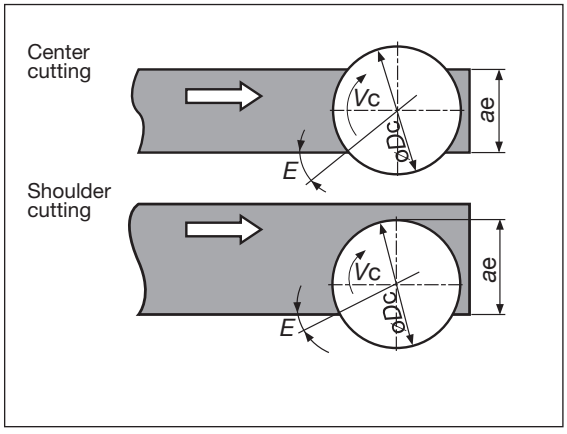
Depth of cut and width of cut



●**Depth of cut**

Determine by required allowance for machining and capacity of the machine. In case of mill, there are cutting limits according to shape and size of the insert. Please see spec on the catalogue.

a_p : Depth of cut (mm)



●**Width of cut and engagement angle**

There is an appropriate engage angle depending on the cutter diameter, cutting position, Workpiece material, etc., and ordinarily the values in the table below are used as a guide.

$\varnothing D_c$: Cutter diameter (mm)
E: Engage angle
a_e: Width of cut (mm)

Center cutting

Workpiece material	Appropriate E	Cutter dia. and a_e
Steel	~ 42°	$a_e \approx \frac{2}{3}\ \varnothing D_c$
Cast iron	~ 53°	$a_e \approx \frac{4}{5}\ \varnothing D_c$

Shoulder cutting

Workpiece material	Appropriate E	Cutter dia. and a_e
Steel	~ 30°	$a_e \approx \frac{3}{5}\ \varnothing D_c$
Cast iron	~ 40°	$a_e \approx \frac{3}{4}\ \varnothing D_c$

Milling tools

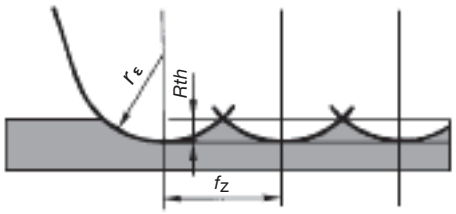
Roughness of finished surface

(1) Theoretical surface roughness

Theoretical roughness as shown below, is the same as for single point turning

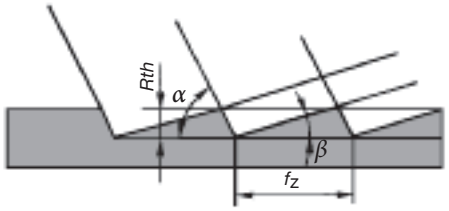
●With corner radius r_ε

$$Rth = \frac{fz^2}{8r_\varepsilon} \times 1000$$

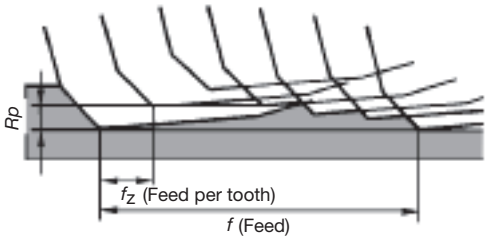


●Without corner radius r_ε

$$Rth = fz\left(\frac{\tan\alpha \cdot \tan\beta}{\tan\alpha + \tan\beta}\right) \times 1000$$



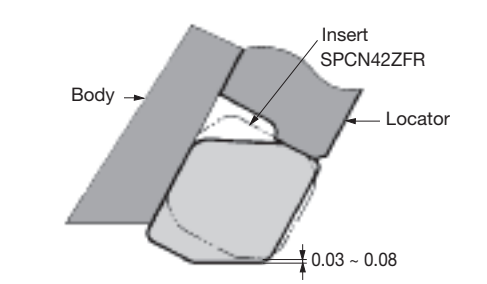
Rth : Theoretical roughness (μm)
f_z : Feed per tooth (mm/t)
r_ε : Corner radius (mm)
α : Corner angle
β : Face cutting edge angle



(2) Practical surface roughness

In case of practical milling, there are many teeth and natural differences in levels of edges occur. The maximum difference is called "run out". (*Rp*)
In the actual face milling, finished surface roughness, as shown left, is worse than the single point cutting. If only one tooth is projecting, it will be similar to the single point shown above but of a large value substituting *f* (mm/rev) for *fz* (mm/t).

Improving surface roughness



Face run out must be minimized and a low feed and high speed should be used. Also, in order to attain good finished surface at high efficiency, there are the following methods:

(1) In case of ordinary mill
Use wiper insert as shown in the figure at left.

(2) Use of super finish mill for finishing.
- Use of combination mills with finishing insert such as TFD4400-A and TFP4000Ⅰ A (a_p < 1.0 mm).
- Use of supe finish mill for finishing such as NMS cutters and SFP4000 etc.

Milling Tools

Calculating power requirement

$$P_c = \frac{k_c \times a_p \times a_e \times v_f}{60 \times 1000 \times 1000} \quad (kW)$$

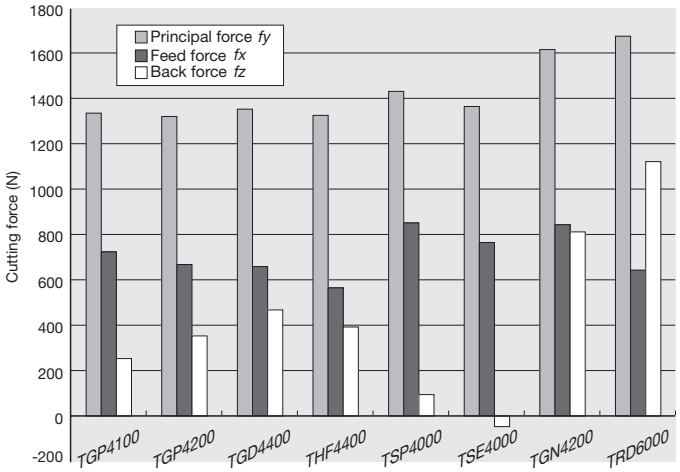
Because practical power requirements depend on the type of mill (proportional to the true rake angle) and the motor efficiency of the machine used, the result calculated from the above formula should be considered as a rough guide.

P_c : Net power requirement (kW)
k_c : Specific cutting force (N/mm²)
[Refer to the Table below]
a_p : Depth of cut (mm)
a_e : Width of cut (mm)
v_f : Feed speed (mm/min)

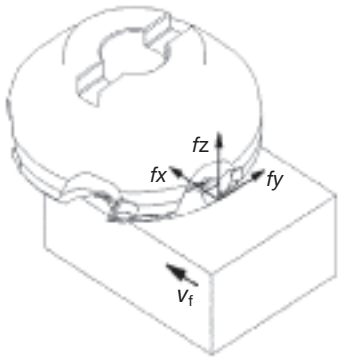
●Values of specific cutting force (k_c)

Workpiece material (JIS)	Tensile strength	Value of specific cutting force on feed per tooth k_c (N/mm²)				
	MPa	0.1 (mm/t)	0.15 (mm/t)	0.2 (mm/t)	0.3 (mm/t)	0.4 (mm/t)
SS400	520	2150	2000	1900	1750	1650
S55C	770	1970	1860	1800	1760	1620
SCM435	730	2450	2350	2200	1980	1710
SKT4	(HB352)	2030	2010	1810	1680	1590
SC450	520	2710	2530	2410	2240	2120
FC250	(HB200)	1660	1450	1320	1150	1030
Al (Si)	200	660	580	522	460	410
Brass	500	1090	960	877	760	680

●Values of cutting force (k_c)



Workpiece material : S50C (210HB), Diameter of mill : ø160 mm
Cutting speed : V_c = 150 m/min, Feed per tooth: f_z = 0.20 mm/t
Depth of cut: a_p = 3 mm, Cutting by a single edge, dry



●Conversion from cutting speed to number of revolutions

(unit : min⁻¹)

Cutter diameter $ØD_c$ (mm)	Cutting speed (v_c) m/min												
	10	30	50	100	125	150	200	300	500	800	1,000	2,000	4,000
10	318	955	1,592	3,184	3,980	4,777	6,369	9,554	15,923	25,477	31,847	63,694	127,388
12	265	796	1,326	2,653	3,317	3,980	5,307	7,961	13,269	21,231	26,539	53,078	106,157
16	199	597	995	1,990	2,488	2,985	3,980	5,971	9,952	15,923	19,904	39,808	79,617
20	159	477	796	1,592	1,990	2,388	3,184	4,777	7,961	12,738	15,923	31,847	63,694
25	127	382	636	1,273	1,592	1,910	2,547	3,821	6,369	10,191	12,738	25,477	50,955
30	106	318	530	1,061	1,326	1,592	2,123	3,184	5,307	8,492	10,615	21,231	42,462
32	99	298	497	995	1,244	1,492	1,990	2,985	4,976	7,961	9,952	19,904	39,808
35	90	272	454	909	1,137	1,364	1,819	2,729	4,549	7,279	9,099	18,198	36,396
40	79	238	398	796	995	1,194	1,592	2,388	3,980	6,369	7,961	15,923	31,847
50	63	191	318	636	796	955	1,273	1,910	3,184	5,095	6,369	12,738	25,477
63	50	151	252	505	631	758	1,011	1,516	2,527	4,044	5,055	10,110	20,220
80	39	119	199	398	497	597	796	1,194	1,990	3,184	3,980	7,961	15,923
100	31	95	159	318	398	477	636	955	1,592	2,547	3,184	6,369	12,738
125	25	76	127	254	318	382	509	764	1,273	2,038	2,547	5,095	10,191
160	19	59	99	199	248	298	398	597	995	1,592	1,990	3,980	7,961
200	15	47	79	159	199	238	318	477	796	1,273	1,592	3,184	6,369
250	12	38	63	127	159	191	254	382	636	1,019	1,273	2,547	5,095
315	10	30	50	101	126	151	202	303	505	808	1,011	2,022	4,044

Note: In this table, the effects of centrifugal force on the rotating balance of the tool and the toolholder, flying risk of cutter parts, and limited value of toolholder destruction are not considered. Therefore, when using the tool at high speeds, be sure to observe the specified condition range.

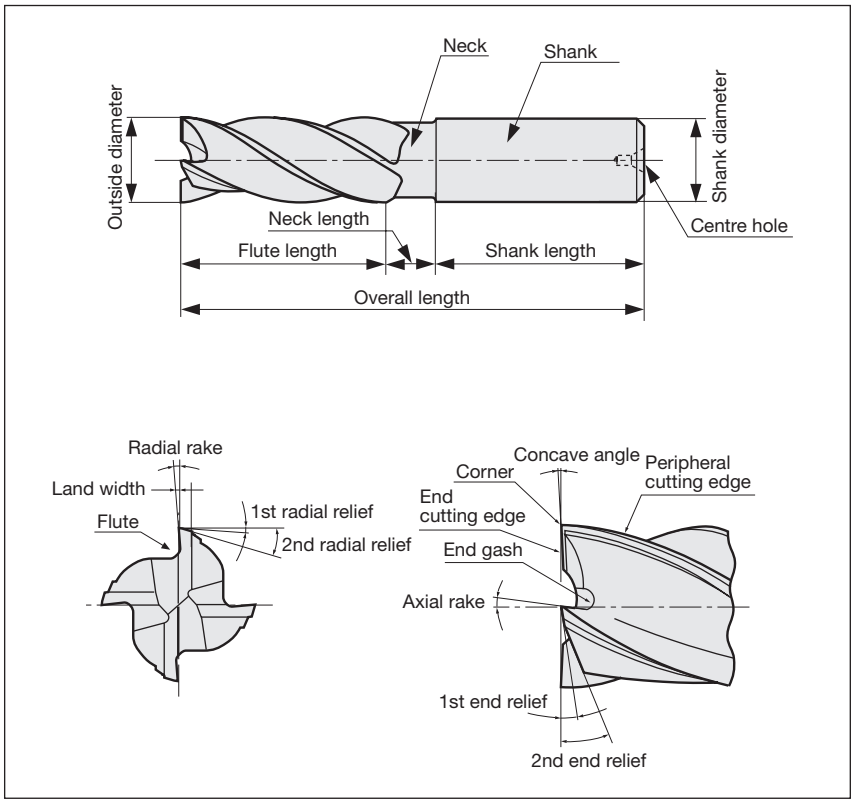
Milling Tools

Trouble shooting in face milling

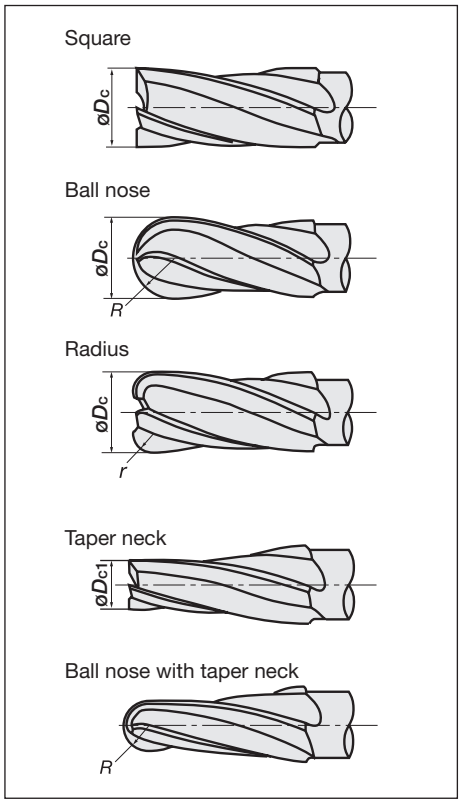
Trouble	Possible causes	Countermeasures
Rapid wear of cutting edge	• Improper insert grade selection (Insufficient wear resistance)	• P30 (Cemented carbide) → Cermet, coated grade (For steels) • K10 (Cemented carbide) → Coated grade (For cast irons)
	• Excessive cutting speed	• Select cutting speed suited for Workpiece material and insert grade
	• Inadequate feed	• Use standard cutting condition in catalog as guide
Rapid chipping of cutting edge	• Improper Insert grade selection (Insufficient toughness)	• Cermet → P30 (For steels), K10 → K20 (For cast irons)
	• Cutting hard material and unfavorable surface condition	• Decrease cutting speed • Use cutter with strong cutting edge
	• Excessive feed	• Proper selection of feed conditions, using recommended cutting conditions in catalog as guide
	• Excessive pressure applied on cutting edge	• Proper selection of engaging angle
	• Machining superalloys	• Use a negative-positive type cutter with large corner angle
Fracturing	• Cracking due to thermal shock	• Select insert grade of stronger thermal shock resistance • Decrease cutting speed
	• Continuous use of excessively worn insert	• Shorten replacement standard time of insert
	• Cutting hard material	• Use cutter with stronger cutting edge • Use cutter of larger corner angle
	• Obstruction to chip flow • Recutting of chips after chip welding	• Use cutter with better chip expulsion • Select insert grades difficult for chips to adhere Cemented carbides → cermets, coated grades • Use air blow
	• Excessively slow cutting, too fine feed	• Select cutting speed and feed optimized for insert grade and Workpiece material
Excessive chip welding or build-up on cutting edge	• Cutting soft material such as aluminium, copper, mild steel	• Use cutter with large rake angle
	• Cutting stainless steel	• P30 → coated grades (AH130、AH3135)
	• Use of cutter with negative rake or too small rake angle	• Use cutter with large rake angle
Rough finish	• Effect of built-up edge	• Increase cutting speed • Appropriate cutting depth (finish allowance) • Change insert grade For steels : P → coated → cermet For cast irons : K → coated
	• Effect of face cutting edge run out	• Proper installing of inserts • Use insert of high dimensional accuracy • Cleaning of insert pocket
	• Continuous use of excessively worn insert	• Shorten replacement standard time of insert
	• Remarkable feed marks	• Feed per revolution to be set within flatland width • Use wiper insert type cutter such as T/EAW13 • Use cutter exclusively for finishing
Chattering	• Unstable clamping of workpiece	• Check clamping method of workpiece
	• Cutting of welded construction of thin steel plate	• Adopt cutter of large rake angle and small corner angle
	• Excessive cutting condition	• Re-examine allowable chip removal rate according to motor HP
	• Face milling of narrow width workpiece	• Use cutter of small cutter diameter and with many teeth
	• Too many simultaneous cutting teeth engagement	• Reduce No. of teeth or adopt irregular pitch cutter

Solid Carbide Endmills

Part details

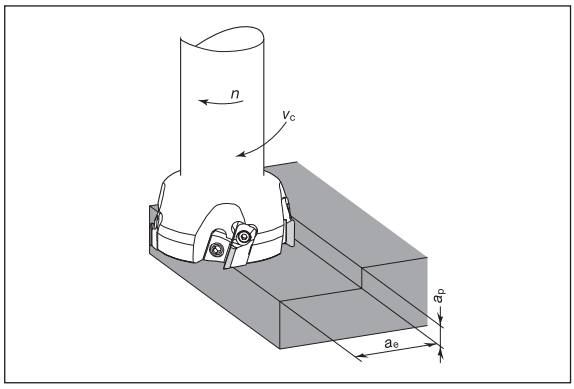


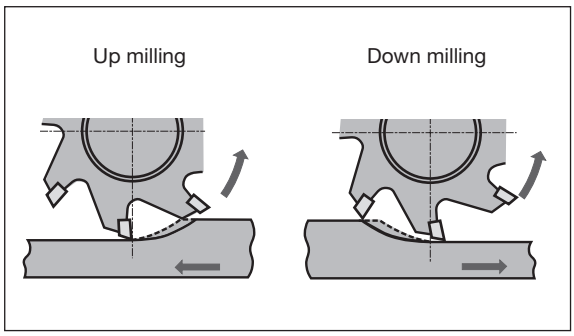
Types



Cutting condition of Endmills

● Cutting speed





● **Cutting speed** (Calculated from number of revolutions)

$$v_c = \frac{\pi \times \varnothing D_c \times n}{1000} \quad (\text{m/min})$$

v_c : Cutting speed (m/min)
$\varnothing D_c$: Effective diameter (mm)
n : Number of revolutions (min^{-1})
$\pi \approx 3.14$

● **Number of revolution** (Calculated from cutting speed)

$$n = \frac{1000 \times v_c}{\pi \times \varnothing D_c} \quad (\text{min}^{-1})$$

● **Feed speed and feed per tooth**

$$v_f = f_z \times z \times n \quad (\text{mm/min})$$

v_f : Feed speed (mm/min)
f_z : Feed per tooth (mm/t)
z : No. of teeth of the endmills
n : Number of revolutions (min^{-1})

● **Cutting**

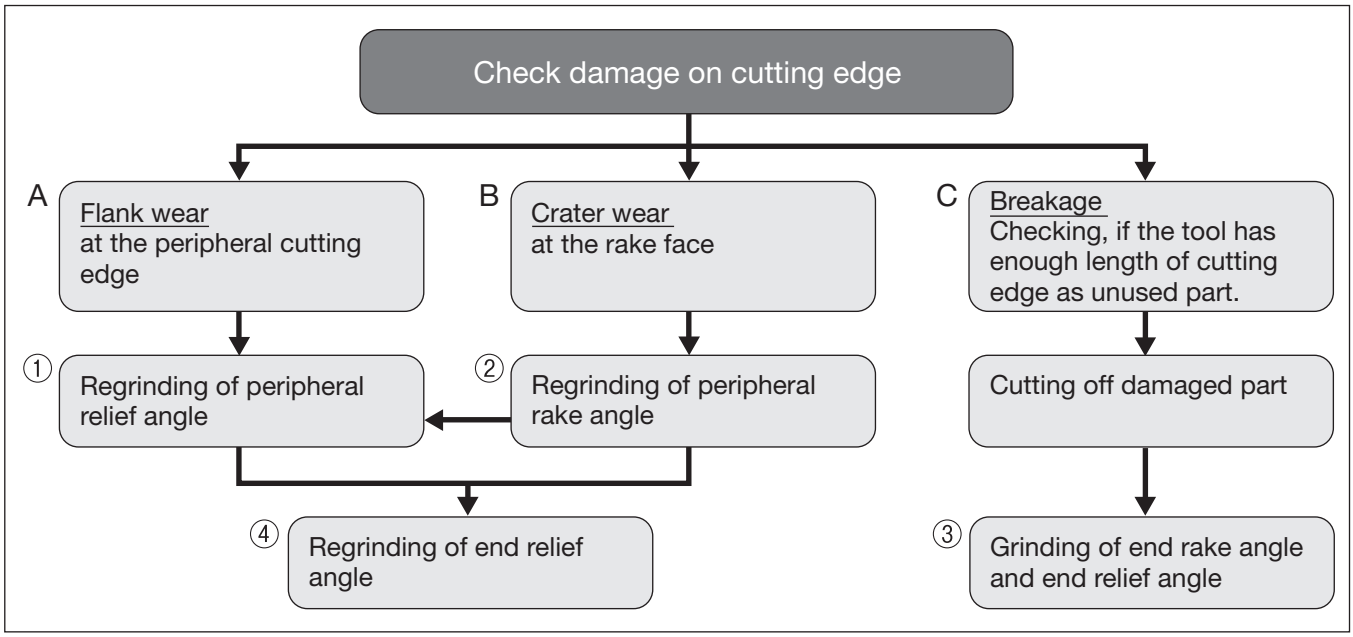
The necessary capacity of the machine is limited by the length of cut edge of the endmill.

● **Up milling and down milling**

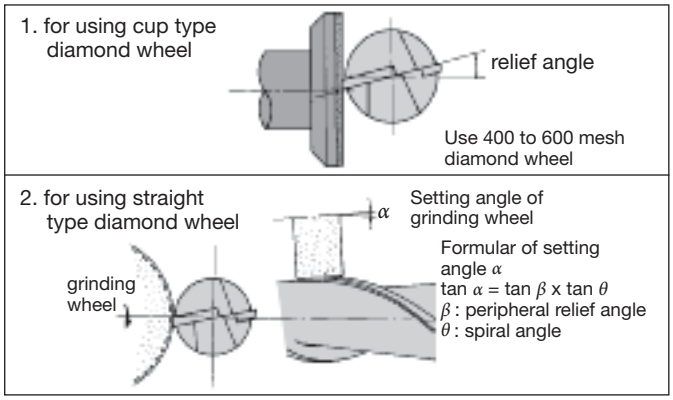
Down milling generally produces better tool life and surface roughness.
In case of cast iron sand inclusion or welding surface, up milling is recommended.

Solid Carbide Endmills

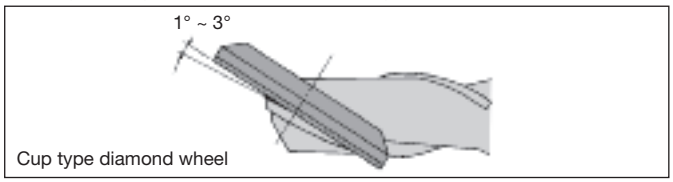
Regrinding procedures of solid carbide endmill



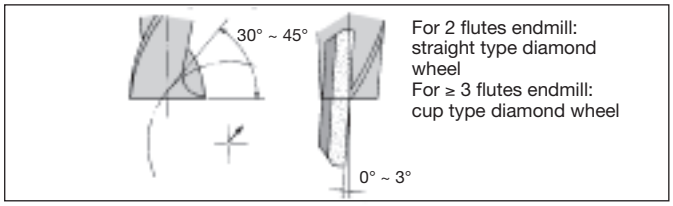
1 Regrinding of end relief angle



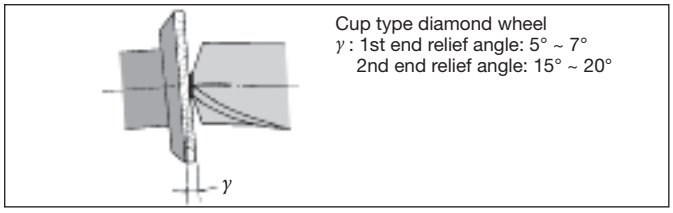
2 Regrinding of peripheral rake angle



3 Regrinding of end rake angle (End gash)



4 Regrinding of end relief angle



Notice of regrinding

(1) If, after checking the damage of the cutting edge, the damage is as case "A" or "B" of the flow chart, the tool must be reground.
Too much damage of the cutting edge requires too much stock removal and thus reduces tool life.

(2) Please use diamond grinding wheel.

(3) Peripheral relief angle must be ground between 18° and 10°.
Relief angle of small diameter cutters for aluminium machining must be a large degree.

(4) First check if "C" in flow chart can be adapted for the case of coated endmill or not.
If procedure "C" can be adapted for regrinding, tool life after the grinding would be more improved than new one. The reason is remaining coated layer of cutting edge and shorter tool length will keep much higher rigidity of the tool than before regrinding.

(5) Please check run out of peripheral cutting edge, face cutting edge, with Vee block after regrinding.
The value of the run out must be controlled within 0.01 mm.

Notice for regrinding of ball nose endmill

- Regrinding of relief angle only is available. The dimension of nose radius will be smaller after grinding.
- Honing of cutting edge is necessary after regrinding.

Solid Carbide Endmills

Trouble shooting in Endmilling

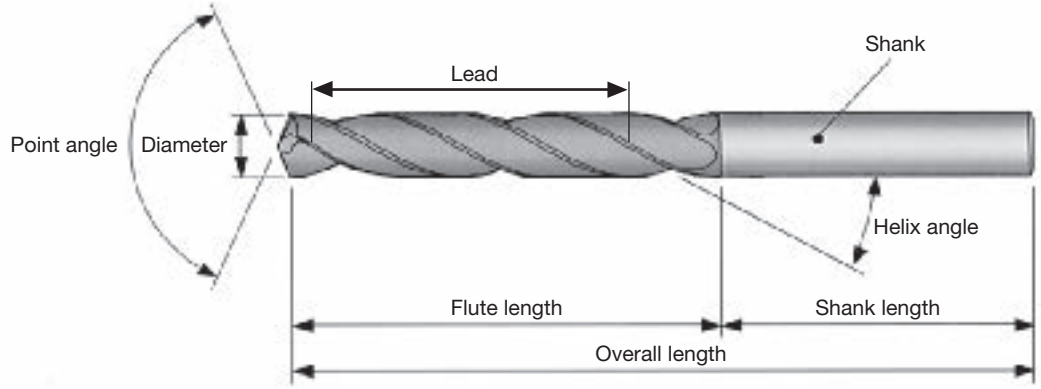
Trouble	Possible causes	Countermeasures
Breakage (In case of solid carbide endmill and brazed endmill with small diameter)	● At the start of machining ● At the end of machining	● Reduce feed. ● Reduce tool overhang length. ● Exchange to short cutting edge tool.
	When usual machining	● Reduce feed. ● Managing tool life → Exchange in shorter time. ● Replace chuck or collet to new one. ● Reduce tool overhang length. ● Make optimum honing on the edge. ● Reduce flutes. E.g. 4 flutes → 3flutes, or 2flutes. ● Use enough coolant. Change direction of supplying coolant.
	When change the direction of feed	● Use the circular interpolation in NC machine. Stop feed shortly before changing. ● Lower feed around changing part. ● Replace chuck or collet to new one.
Fracture on cutting edge	Chipping on corner edge	● Chamfer the corner with hand-stick grinder. ● Down cutting ⇒ Upward milling.
	Chipping on boundary part	● Change cutting direction, Down cutting → Upward milling. ● Reduce cutting speed.
	Chipping on central part or all edges.	● Make slight honing on the edge. Or make honing bigger. ● Change spindle revolution number. ● Increase cutting speed. ● If chattering, increase feed. ● Use coolant or air blast. ● Replace chuck or collet to new one. ● Decrease cutting speed.
	Fracture on cutting edge	● Decrease feed. ● Reduce flutes. E.g. 4 flutes → 3flutes, or 2flutes. ● Make slight honing on the edge. Or make honing bigger. ● Replace chuck or collet to new one. **【For Solid carbide endmill】** ● Decrease cutting speed. ● Use enough coolant. Change direction of supplying coolant.
Large wear in short time		● Decrease cutting speed. ● Change cutting direction, Upward milling → down cutting. ● Increase feed. ● Use coolant or air blast. ● In reground tool, grind flank face with FINER wheel.

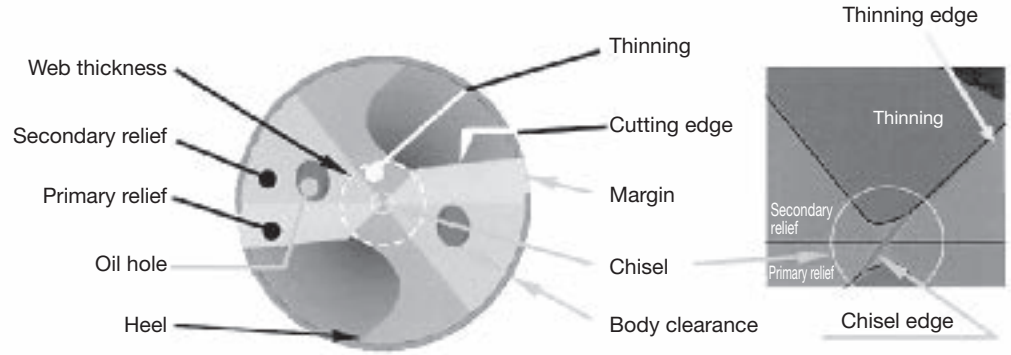
(Continued on next page)

Trouble	Possible causes	Countermeasures
Poor surface finish	Bright, but Wavy surface	● Reduce feed per tooth. ● Increase flutes; E.g. 2 flutes → 3flutes, or 4flutes.
	Small chips are welded on surface.	● Increase cutting speed. ● Use coolant or air blast, or increase coolant. ● Make slight honing on the edge. ● Upward milling → Down cutting. ● Increase feed per tooth. Increase Depth of Cut.
	Scratches on the surface	● Make slight honing on the edge. ● Use non-water soluble coolant. ● Down cutting → Upward milling.
	Poor surface by over cutting	● Reduce depth of cut. ● Increase cutting speed. ● Reduce feed per tooth.
Poor accuracy	Finish size becomes a minus tendency.	● Upward milling → Down cutting. ● Reduce depth of cut. ● Replace chuck or collet to new one. ● Reduce overhang length. ● Increase cutting speed.
	Poor straightness	● Reduce depth of cut. ● Replace chuck or collet to new one. ● Reduce overhang length. ● Increase cutting speed. ● Increase flutes; E.g. 2 flutes → 4flutes. ● Reduce feed per tooth. ● Check the edge. Change tool, when needed.
Chattering		● Increase feed per tooth. Reduce feed per tooth, when current feed is more than 0.07 mm/t. ● Change cutting speed. ● Replace chuck or collet to new one. ● Reduce overhang length. ● Use 2 flutes tool in roughing. Use 4 flutes tool in finishing. ● Down cutting → Upward milling.

Drilling Tools

Nomenclature for solid carbide drills





Cutting forces and power requirement

● **Twist drill**

Power requirement

$$P_C = K \varnothing D_C^2 n \quad (0.647 + 17.29f) \times 10^{-6} \ \text{(kW)}$$

Thrust force

$$T_C = 570 K \varnothing D_C f^{0.85} \ \text{(N)}$$

Torque

$$M_C = \frac{K \varnothing D_C^2 (0.630 + 16.84f)}{100} \ \text{(N·m)}$$

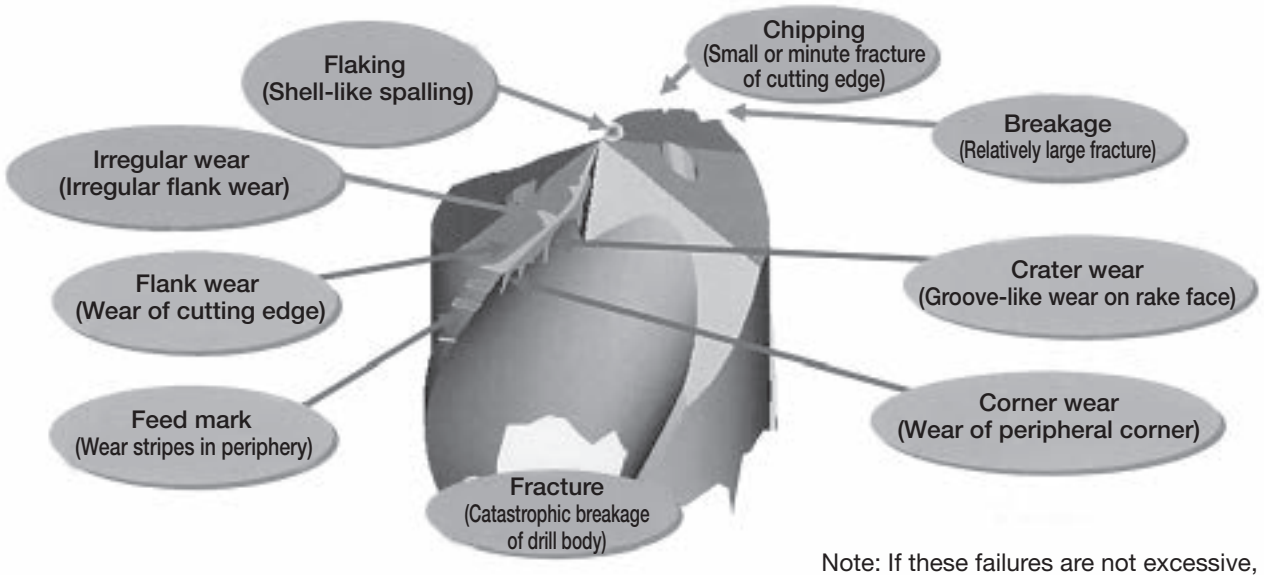
P_C : Power requirement (kW)
T_C : Thrust force (N)
M_C : Torque (N·m)
$\varnothing D_C$: Drill diameter (mm)
f : Feed (mm/rev)
n : No. of revolutions (min^{-1})
K : Material constant···· Refer to the Table at right

●Material constant compensating for power requirement and thrust force

Workpiece material	Tensile strength		Brinell hardness (HB)	Material constant (*K*)
	MPa (N/mm²)	Kgf/mm²		
Cast iron	210	21	177	1.00
Cast iron	280	28	198	1.39
Cast iron	350	35	224	1.88
Aluminium	250	25	100	1.01
Low carbon steel (JIS S20C)	550	55	160	2.22
Free cutting steel (JIS SUM32)	620	62	183	1.42
Manganese steel (JIS SMn438)	630	63	197	1.45
Nickel chromium steel (JIS SNC236)	690	69	174	2.02
4115 steel Cr0.5, Mo0.11, Mn0.8	630	63	167	1.62
Chromium molybdenum steel (JIS SCM430)	770	77	229	2.10
Chromium molybdenum steel (JIS SCM440)	940	94	269	2.41
Nickel chromium molybdenum steel (JIS SNCM420)	750	75	212	2.12
Nickel chromium molybdenum steel (JIS SNCM625)	1,400	140	390	3.44
Chromium vanadium steel				
Cr0.6, Mn0.6, V0.12	580	58	174	2.08
Cr0.8, Mn0.8, V0.1	800	80	255	2.22

Drilling Tools

Cutting edge failure of solid carbide drills



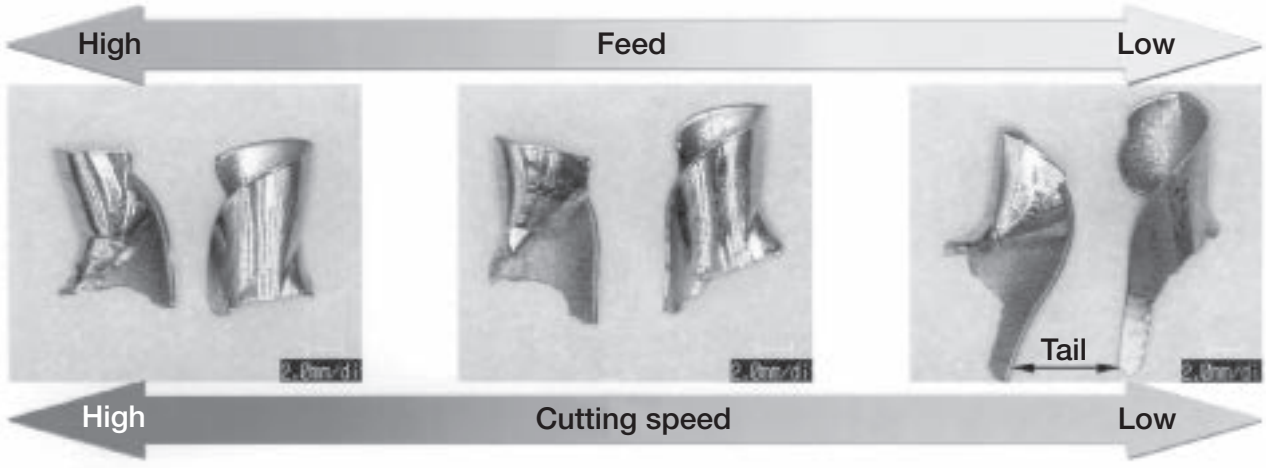
Note: If these failures are not excessive, the tool is in a normal condition.

Change of chip shapes in drilling

● Change of chip shapes relating to cutting conditions

Photographs below show the change of chip shapes relating to change of the feed and the cutting speed. These chip shapes are all well controlled in a proper condition range.

When the speed and feed are low, the chip shows whitish colour and the tail of the chip tends to lengthen gradually. In contrast, as the speed or the feed increases, the chip tends to increase in brightness and becomes a compact shape with a short tail. These changes in the shape depend on the cutting temperature. As the temperature increases, chips tend to be broken.



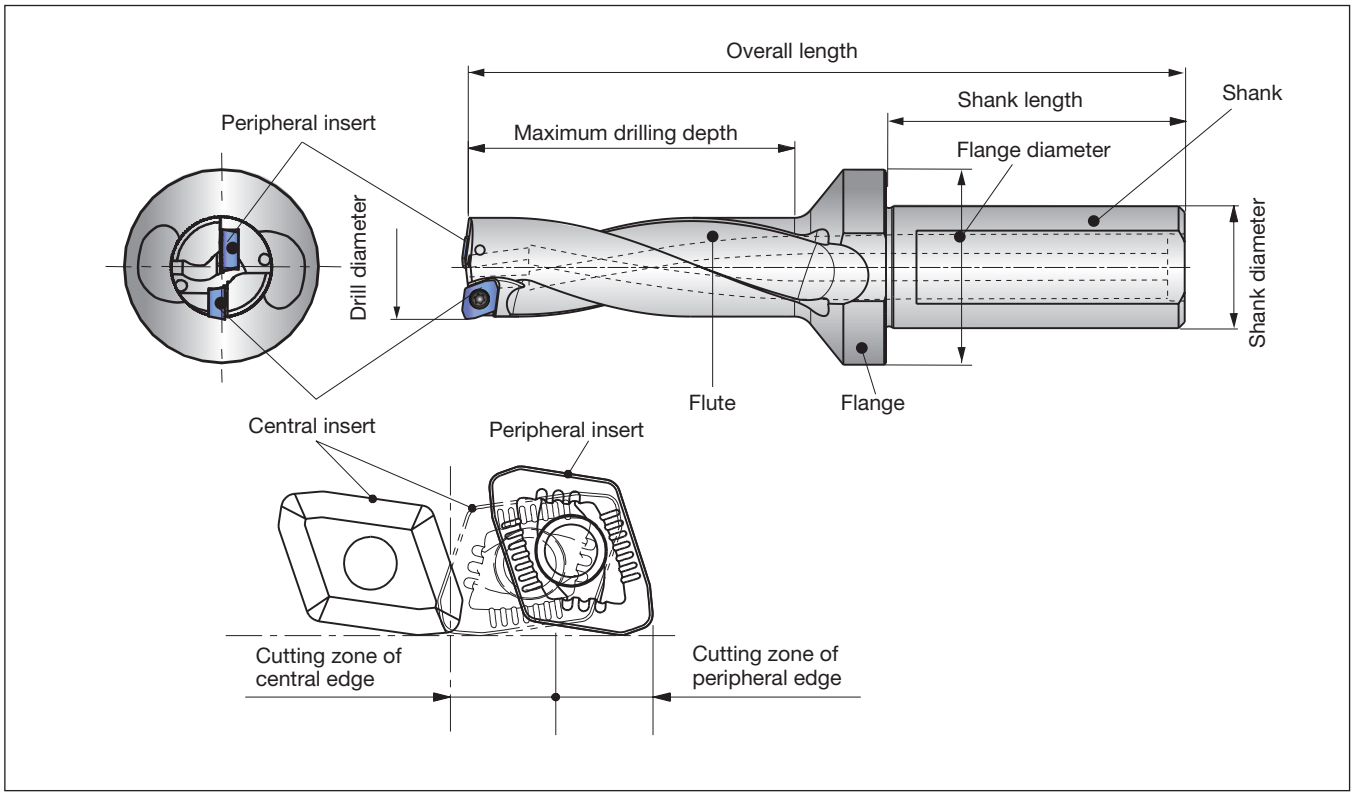
Drilling Tools

Troubleshooting for solid carbide drills

Problem		Cause	Countermeasure
Abnormal wear	Relief surface	Inappropriate cutting speed	•Increase the cutting speed by 10 % within standard conditions if abnormal wear is around center. •Lower the cutting speed by 10 % within standard conditions if abnormal wear is on the periphery.
		Inappropriate cutting fluid	•Check the filter. •Use the cutting fluid superior in lubricity. (Increase the dilution rate)
	Margin	Inappropriate cutting speed	•Lower the cutting speed by 10 %.
		Regrinding timing, insufficient reground amount	•Shorten the regrinding timing.
		Insufficient rigidity of the machine and workpiece	•Change the clamp method to the one with rigidity.
		Insufficient drill rigidity	•Use smallest possible overhang.
		Inappropriate cutting fluid	•Check the filter. •Use the cutting fluid superior in lubricity. (increase the dilution rate)
		Intermittent cutting when entering	•Avoid interruption at entry and exit. •Lower the feed by about 50 % during entering into and leaving from the workpiece.
Chipping and fracture	Chisel section (center of drill cutting edge)	Insufficient rigidity of the drill	•Reduce the drill overhang as much as possible. •Increase the feed at entry when the low speed feed is selected in standard cutting condition range. •Use a bushing or a center drill.
		Insufficient rigidity of the machine and workpiece	•Change the clamp method to the one with rigidity.
		Inappropriate entry into the workpiece	•Avoid interruption at entry into the workpiece. •Lower the feed by 10 % at entry.
		High workpiece hardness	•Lower the feed by 10 %.
		Inappropriate honing	•Check if honing has been made to the center of cutting edge.
	Peripheral cutting edge	Insufficient drill rigidity	•Lower the cutting speed by 10 %. •Increase the feed at entry when the low speed feed is selected in standard cutting condition range.
		Inappropriate drill mounting accuracy	•Check the run out accuracy after drill installation. (0.03 mm or less)
		Insufficient machinery and workpiece rigidity	•Change the clamp method to the one with rigidity. •Lower the feed during entering into and leaving from the workpiece.
		Inappropriate honing	•Check if honing has been made to the cutting edge periphery.
	Margin	Insufficient machine and workpiece rigidity	•Change the clamp method to the one with rigidity.
		Insufficient drill rigidity	•Use smallest possible overhang. •Use a bushing or center drill.
		Regrinding timing and insufficient amount of reground stock	•Shorten the regrinding timing.
		Intermittent cutting when entering or exiting the cut	•Avoid interruption at entry and exit. •Lower the feed by about 50 % during entering into and leaving from the workpiece.
Breakage		Tendency to cause chipping or develop abnormal wear	•Check the failure mode condition before breakage and find out the wear and chip countermeasures.
		Chip packing in the drill flutes	•Review the cutting conditions. •For internal coolant supply, raise the supply pressure of cutting fluid. •Use peck feed for deep holes.
		Insufficient machine output	•Review the cutting conditions. •Use the machine with high power.
Insufficient hole accuracy		Insufficient rigidity of the machinery and workpiece	•Change to the clamp method with rigidity
		Inappropriate drill installation accuracy	•Check the run out accuracy of drill mounting. (0.03 mm or less)
		Chip packing in the flutes.	•Review the cutting conditions. •Raise the cutting oil supply pressure. •Use peck-feed for deep holes.
		Inappropriate edge sharpening accuracy	•Check the edge shape accuracy.
Prolonged chips		Inappropriate cutting conditions	•Increase the feed by 10 % within standard conditions.
		Inappropriate honing	•Provide the appropriate honing.
		Cutting edge with chipping or breakage	•Lower the cutting speed by 10 %.

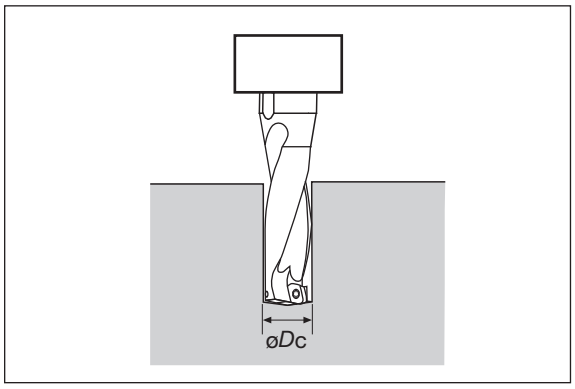
Drilling Tools

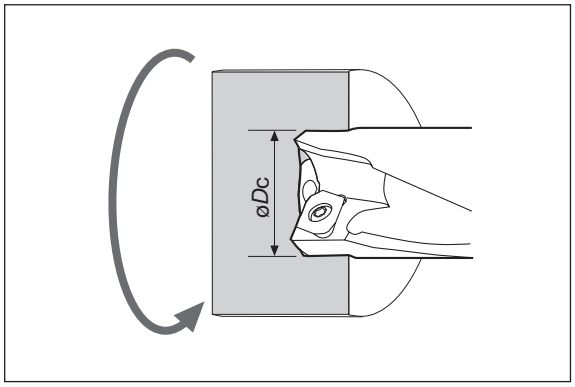
Nomenclature for Indexable drill



Calculation formulas for Indexable drill

●Cutting speed





●When calculating cutting speed from number of revolutions: (Drilling formulas)

$$v_c\ (\text{m/min}) = \frac{\pi \times \varnothing D_c \times n}{1000}$$

v_c : Cutting speed (m/min)
$\varnothing D_c$: Drill diameter (mm)
n : Number of revolution (min^{-1})
$\pi \approx 3.14$

●When calculating required number of revolutions from cutting speed: (Drilling formulas)

$$n\ (\text{min}^{-1}) = \frac{1000 \times v_c}{\pi \times \varnothing D_c}$$

●When calculating cutting speed from number of revolutions: (Where the workpiece rotates.)

$$v_c\ (\text{m/min}) = \frac{\pi \times \varnothing D_c \times n}{1000}$$

v_c : Cutting speed (m/min)
$\varnothing D_c$: Drilling diameter (mm)
n : Number of revolution (min^{-1})
$\pi \approx 3.14$

●When calculating required number of revolutions from cutting speed: (Where the workpiece rotates.)

$$n\ (\text{min}^{-1}) = \frac{1000 \times v_c}{\pi \times \varnothing D_c}$$

●Calculation of feed speed

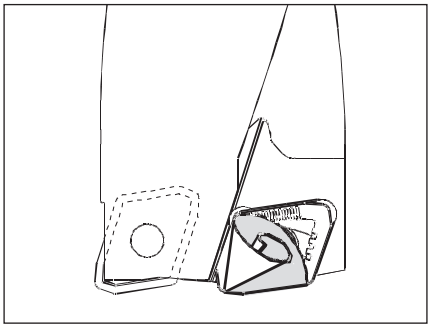
$$v_f\ (\text{mm/min}) = f \times n$$

v_f : Feed speed (mm/min)
f : Feed (mm/rev)
n : Number of revolution (min^{-1})

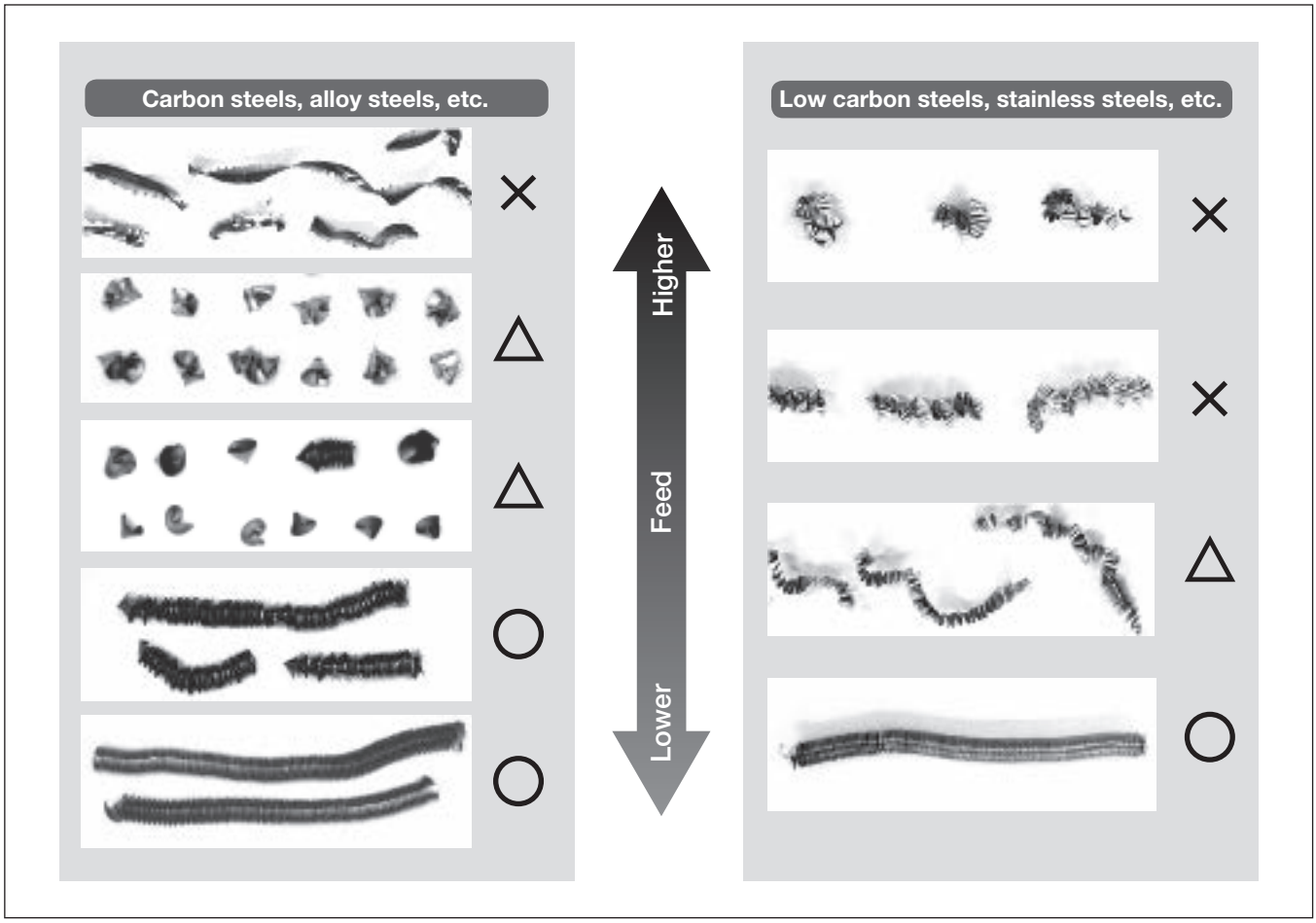
Chip shapes

● Chip shape produced with central insert

- A conical coil shape whose apex point coincides with the rotating center of the drill is the basic shape. The chips are broken into small sections with increases in feed. However, excessively high feed causes the chip to increase in thickness and develops vibration which disturbs stable machining.
- In TDX drills, ○ marked chips shown below are the most preferable shapes. This type of chip is broken into adequate lengths by centrifugal forces when used in tool-rotating condition. On the other hand, when used in work-rotating condition such as on a lathe, a continuously long chip is often produced without entangling.

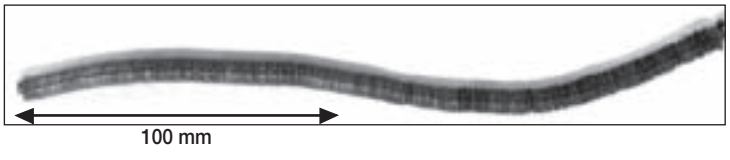


● Relation between chip shapes and feeds (In the case of central insert)



● Example of chip shape in work-rotating applications (In the case of central insert)

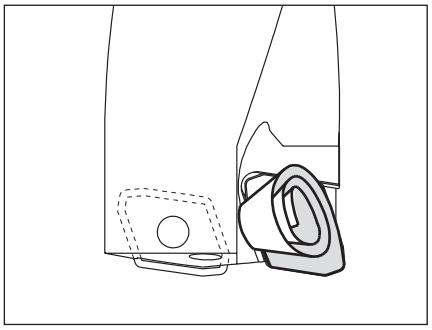
(ø26, S45C, V_c = 100 m/min, f = 0.1 mm/rev)



Drilling Tools

● Chip shape produced with peripheral insert

- Chip problems such as entangling are mainly caused by chips produced with the peripheral insert. These problems are dependent on the types of Workpiece material and the cutting conditions.
- As shown below, when the feed is extremely low, the chips jump over the chipbreaker groove and the continuously long chips may wrap around the drill body.
- When the feed is too high, the chips increase in thickness and can not be curled.
- Therefore, it is important to select proper cutting conditions to suit the machining so that well controlled chips will be formed.



Medium to high carbon steels, alloy steels, etc.

As shown below, several turns of coil are an ideal shape.
As the feed increases, the curl radius and the number of turns tend to decrease.

● Typical chip shapes of general steels



● Variation of chip shapes relating to feeds

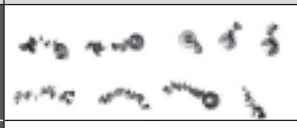
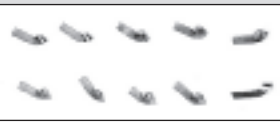
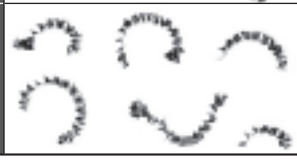


f = 0.07 mm/rev　　*f* = 0.1 mm/rev　　*f* = 0.13 mm/rev

Stainless steels, low-carbon steels, low-alloy steels, etc.

- When machining long-chip materials such as stainless steels and mild steels, the wrong selection of cutting conditions results in chip entangling and tool breakage at worst. Therefore, cutting conditions should be carefully selected.
- "C" shaped, continuous coils of several to ten turns having adequately divided lengths are the ideal shape.

● Ideal chip shapes

	Stainless steel (JIS SUS 304) (ø22, *Vc* = 100 m/min, *f* = 0.1 mm/rev)	Mild steel (JIS SS400) (ø22, *Vc* = 160 m/min, *f* = 0.08 mm/rev)
DS chipbreaker		
DJ chipbreaker		

For machining stainless steels or low carbon steels, DS chipbreaker is recommended.
When using a TDX drill in tool-rotating condition, DS chipbreaker produces compact chips and allows more stable machining than DJ chipbreaker. When using it in work-rotating condition, DS chipbreaker provides outstanding affect on chip control.

Drilling Tools

● Chip shapes which tend to entangle and remedies against them

① Apple-peel-like chips

These chips are often produced in machining mild steels or low-carbon steels at low-speeds and low-feeds.

Remedies

Increase the cutting speed in stages by 20% within the range of standard cutting conditions. If there is no effect, increase the feed by about 10 % as the cutting speed is raised by 20%.



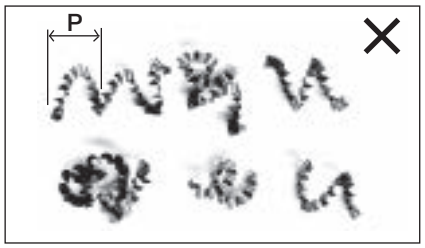
Apple-peel-like chips (Without curling)

② Short-lead chips

These chips are often produced in machining stainless steels at low-feeds and tend to entangle to the tool in spite of short length.

Remedies

Increase the feed by about 10 %. If there is no effect, increase the cutting speed in stages by 10% within the range of standard cutting conditions.



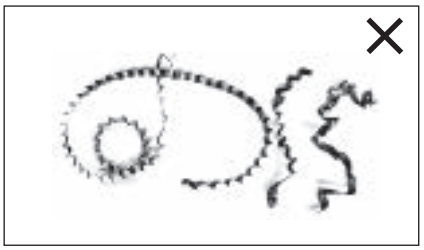
Continuously curled "C" shape chips with short lead (P).

③ Very long chips

Often produced in machining mild steels or low-carbon steels under improper cutting conditions.

Remedies

Increase the cutting speed in stages by 20% within the range of standard cutting conditions. If there is no effect, decrease the feed by about 10 % as the cutting speed is raised by 20%.

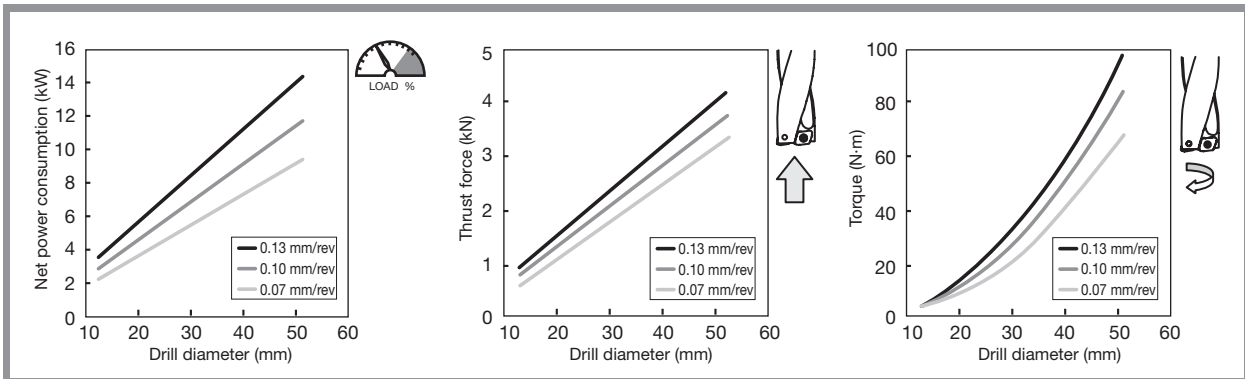


Continuously coiled long chips

Cutting forces

The charts below show a guideline for cutting forces. Use TDX drills on a machine with ample power and sufficient rigidity.

● Guidelines for cutting forces



Cutting speed: V_c = 100 m/min
Workpiece material: Alloy steel (JIS SCM440), 240HB
Cutting fluid: Used

Drilling Tools

Troubleshooting for indexable drills

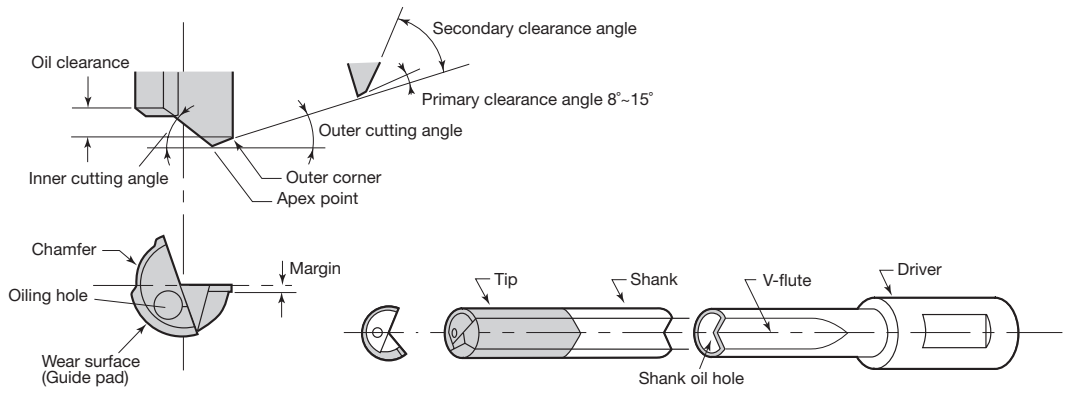
Problem			Cause	Countermeasure
Abnormal wear	Central cutting edge	Relief surface	Inappropriate cutting conditions	● Increase the cutting speed by 10 % within standard conditions. ● Lower the feed by 10 %.
	Peripheral cutting edge	Relief surface	Inappropriate cutting conditions	● Increase the cutting speed by 10 % within standard conditions. ● When the feed is extremely low or high, set up it within standard conditions.
	Common	Relief surface	Varieties and supply of cutting fluid	● Confirm that the cutting fluid flow is higher than 7 liter/min. ● The concentration of cutting fluid must be higher than 5 %. ● Use the cutting fluid superior in lubricity. ● Change to internal cutting fluid supply from external one.
			Vibration in drilling	● Change to the machine with higher torque. ● Change to the clamp method with rigidity. ● Change the drill setting method.
			Unsuitable for selection of grade	● Change the grade to high wear resistant.
			Looseness of screws	● Tighten the screw.
		Crater	Cutting heat is too high	● Change to internal cutting fluid supply from external one. ● Increase the supply rate of the cutting fluid. (Higher than 10 liter/min.) ● Lower the feed by 20 % within standard conditions. ● Lower the cutting speed by 20 % within standard conditions.
			Excessive chip welding	● Lower the feed by 20 % within standard conditions. ● Lower the cutting speed by 20 % within standard conditions.
		Chipbreaker	Chip packing	● Increase the cutting speed by 20% and lower the feed by 20% within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
Chipping and fracture	Central cutting edge	The rotation center of drill	Misalignment for workpiece rotation	● Set the misalignment to 0 ~ 0.2 mm.
			Large offset	● Check the manual and use the tool in the allowable offset range.
			No flatness of machined surface	● Flatten the entry surface in pre-machining. ● Set the feed for lower than 0.05 mm/rev in rough surface area.
			High feed	● Lower the feed by 20 ~ 50 % within standard conditions.
			Using a chipping corner	● Confirm the corner when exchanging inserts.
	Peripheral cutting edge	Peripheral corner area	Using inserts in excess of tool-life	● Exchange the corner or the insert before the nose wear reaches 0.3 mm.
			No flatness of machined surface	● Flatten the entry surface in pre-machining. ● Set the feed for lower than 0.05 mm/rev at rough surface area.
			The existence of interrupted area	● Set the feed for lower than 0.05 mm/rev in interrupted area.
			Using a chipped corner	● Confirm the corner when exchanging inserts.
	Common	The unused corner area and cutting edge	High hardness of workpiece	● Increase the cutting speed by 20 % and lower the feed by 20 % within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
			Chip packing	● Lower the feed by 20 % within standard conditions.
			Machinery impact	● Change to continuous feed in case of pick feeding.
		Contact boundary	Using inserts in excess of tool-life	● Exchange the corner or the insert before the nose wear reaches 0.3 mm.
			Vibration in drilling	● Change to the machine with higher rigidity. ● Change to the clamp method with rigidity. ● Change the drill setting method.
		Flaking	High hardness of workpiece	● Set the feed for lower than 0.05 mm/rev.
			Thermal impact	● Change to internal cutting fluid supply from external one. ● Lower the feed by 20 % within standard conditions.
		Common	Unsuitable for selection of grade	● Change the grade to toughress.
			Looseness of screws	● Tighten the screw.

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Problem		Cause	Countermeasure
Scratch marks on the tool	The tool periphery	Misalignment of workpiece rotation	● Set the misalignment to 0 ~ 0.2 mm.
		Offset machining in excess of allowable range	● Use the tool in the allowable offset range.
		Offset direction reduced diameter of workpiece	● Set offset direction extended diameter of workpiece
		No flatness of the entry surface	● Flatten the entry surface in pre-machining. ● Set the feed for lower than 0.05 mm/rev in rough surface area.
		Chipping of peripheral cutting edge	● Exchange the insert.
		Bend of workpiece	● Change to the clamp method with rigidity.
		Chip packing	● Increase the cutting speed by 20 % and lower the feed by 20 % within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
Inappropriate hole accuracy	Hole diameter	Misalignment for workpiece rotation	● Set the misalignment to 0 ~ 0.2 mm.
		Inappropriate offset contents	● Adjust offset contents.
		No flatness of the entry surface	● Flatten the entry surface in pre-machining. ● Set the feed for lower than 0.05 mm/rev at rough surface area.
		Bend of workpiece	● Change to the clamp method with rigidity.
	Roughness	Varieties and supply of cutting fluid	● The concentration of cutting fluid must be higher than 5 %. ● Use the cutting fluid superior in lubricity. ● Change to internal cutting fluid supply from external one.
		Inappropriate cutting conditions	● Increase the cutting speed by 20 % within standard conditions. ● Lower the feed by 20 % within standard conditions.
	Common	Failures of inserts	● Exchange the insert.
		Chip packing	● Increase the cutting speed by 20 % and lower the feed by 20 % within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
		Looseness of screws	● Tighten the screw.
Chip control	Prolonged and twisted of chips	Inappropriate cutting conditions	● Work within standard conditions. ● Increase the cutting speed by 10 % within standard conditions. ● Increase the feed by 10 % within standard conditions.
		Failures of inserts	● Exchange inserts.
		Machining by external fluid supply	● Change to internal cutting fluid supply from external one. ● Work by step feed. ● Use dwell function for 0.1 sec approximately.
		Chips around the central cutting edge	● There is a tendency to shorten the chips when shifting to higher speed and feed.
	Chip packing	Fluid supply	● Change to internal cutting fluid supply from external one. ● Raise the fluid pressure (for higher than 1.5 MPa).
		Inappropriate cutting conditions	● Increase the cutting speed by 20 % and lower the feed by 20 % within standard conditions. ● Raise the fluid pressure (for higher than 1.5 MPa).
	Common	Large failure of drill holders	● Exchange the drill holder.
		Looseness of screws	● Tighten the screw.
Others	Chatter	Inappropriate cutting conditionss	● Lower the cutting speed by 20 % within standard conditions. ● Increase the feed by 10 % within standard conditions.
		Large wear of inserts	● Exchange the insert.
		Vibration in drilling	● Change to the machine with higher torque rigidity. ● Change to the clamp method with rigidity. ● Change the drill setting method.
		Looseness of screws	● Tighten the screw.
	Machine stop	Insufficient machine power and torque	● Use the range of number of revolutions suited machine spec. Lower the feed by 20 ~ 50%.
		Burned inserts	● Exchange inserts before the failure becomes larger. ● Check the oil-hole plug screw is tightly screwed in place. ● Check that the fluid flows powerfully from the drill. ● Lower the cutting speed and the feed by 20 % within standard conditions.
	Large burr	Failures of inserts	● Exchange the insert.
		Inappropriate cutting conditions	● Lower the feed by 20 ~ 50% just before leaving from the workpiece.

Drilling Tools

Nomenclature for gun drill



Troubleshooting in gun drilling

Problem		Cause		Countermeasure
Breaking of drill	At entry into workpiece	Machine	Clamping the workpiece is unstable.	Clamp the workpiece firmly.
			The guide bush is apart from the workpiece surface at the entry.	Contact the guide bush closely with the workpiece.
			The machine's rapid feed is used.	Use cutting feed.
			Whipping effect occurs.	Place a whip guide at the appropriate position.
			The shape of the guide bush is not suitable.	Use the guide bush in the shape suitable for the workpiece.
		Drill	The drill is not set properly.	Set the drill with an appropriate torque, hydraulic pressure, etc.
			Regrinding is in poor quality.	Make sure no damage is left on the drill and that the cutting edge geometry is not changed.
		Cutting condition	The feed (*f*) is too high.	Use low feed.
		Workpiece	The workpiece surface is slanted.	Use low feed.
	During drilling	Machine	Clamping the workpiece is unstable.	Clamp the workpiece firmly.
			The shape of the guide bush is not suitable.	Modify the shape of the guide bush. See "Chip packing" for the details.
			The feed speed (*Vf*) varies.	Use mechanical feed.
			The number of revolutions varies (decreases).	Increase the machine power or adjust the cutting conditions.
		Drill	Abnormal damage occurs.	See "Short tool life" for the details.
		Cutting condition	The feed (*f*) is not suitable.	Use an appropriate feed.
		Workpiece	Interrupted or cross drilling is required.	Change the tool to a standard gundrill.
		Others	Chip packing occurs.	See "Chip packing" for the details.
	At exit from workpiece	Drill	The tip is too long.	Make the tip length short.
			The selection of the guide pads is not suitable.	Use 2 guide pads instead of 3.
			The clearance of the coolant hole is too large.	Reduce the clearance of the coolant hole.
		Cutting condition	The feed (*f*) is too high.	Use low feed.
		Workpiece	The workpiece surface is slanted.	Use low feed.
	During retracting	Machine	Clamping the workpiece is unstable.	Clamp the workpiece firmly.
		Cutting condition	Burnishing torque (cutting power) is increased due to reduced hole diameter.	Reduce cutting speed (*Vc*).

Drilling Tools

Troubleshooting in gun drilling

Problem		Cause		Countermeasure
Hole accuracy	Rough surface finish	Machine	Clamping the workpiece is unstable.	Clamp the workpiece firmly.
			The type of coolant is not appropriate.	Use water-insoluble coolant.
			Foreign material is in the coolant.	Thoroughly filtrate the coolant (Use a filter with the filtration accuracy in 10μm or less).
			The run-out of the spindle is too large.	Minimize the run-out of the spindle.
			The clearance between the guide bush and the drill is not appropriate.	Replace the guide bush (The clearance should be between +0.003 and +0.008).
			The feed speed (*Vf*) varies.	Use mechanical feed.
			The number of revolutions varies (decreases).	Increase the machine power or adjust the cutting conditions.
		Drill	Abnormal damage occurs.	See "Short tool life" for the details.
			Regrinding is in poor quality.	Make sure no damage is left on the drill and that the cutting edge geometry is not changed.
		Cutting condition	The feed (*f*) is too high.	Reduce the feed.
		Others	Chip packing occurs.	See "Chip packing" for the details.
	Unacceptable circularity, cyndricity, and oversize	Machine	The clearance between the guide bush and the drill is not appropriate.	Replace the guide bush (The clearance should be between +0.003 and +0.008).
			The guide bush is apart from the workpiece surface at the entry.	Contact the guide bush closely with the workpiece.
			The type of coolant is not appropriate.	Use water-insoluble coolant.
			The concentricity of the guide bush and the spindle is too large.	Decrease the concentricity of the guide bush and the spindle.
		Drill	Abnormal damage occurs.	See "Short tool life" for the details.
			Regrinding is in poor quality.	Make sure no damage is left on the drill and that the cutting edge geometry is not changed.
		Cutting condition	The feed (*f*) is not suitable.	Use an appropriate feed.
		Workpiece	Interrupted or cross drilling is required.	Change the tool to a standard gundrill.
		Others	Chip packing occurs.	See "Chip packing" for the details.
	Bending of hole	Machine	Clamping the workpiece is unstable.	Clamp the workpiece firmly.
			The guide bush is apart from the workpiece surface at the entry.	Contact the guide bush closely with the workpiece.
			The concentricity of the guide bush and the spindle is too large.	Decrease the concentricity of the guide bush and the spindle.
			The clearance between the guide bush and the drill is not appropriate.	Replace the guide bush (The clearance should be between +0.003 and +0.008).
		Drill	The selection of the guide pads is not suitable.	Use 2 guide pads instead of 3.
			Regrinding is in poor quality.	Make sure no damage is left on the drill and that the cutting edge geometry is not changed.
		Cutting condition	The feed (*f*) is too high.	Reduce the feed.
		Workpiece	The workpiece has blow holes or unevenness.	Use the workpiece without defect.
			The workpiece surface is slanted at the entry.	Use low feed.
			Interrupted or cross drilling is required.	Change the tool to a standard gundrill.

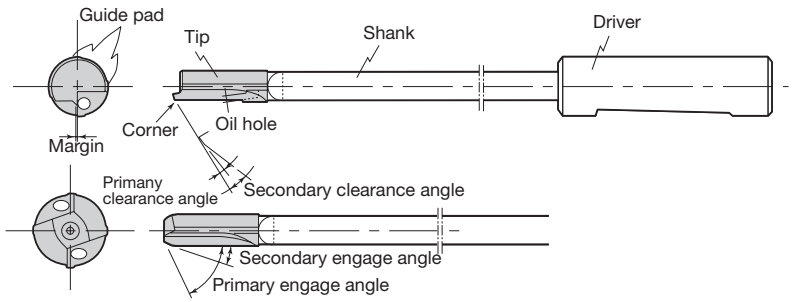
Drilling Tools

Troubleshooting in gun drilling

Problem		Cause		Countermeasure
Short tool life	Abnormal wear	Machine	The type of coolant is not appropriate.	Use water-insoluble coolant.
			Foreign material is in the coolant.	Thoroughly filtrate the coolant (Use a filter with the filtration accuracy in 10μm or less).
			The clearance between the guide bush and the drill is not appropriate.	Replace the guide bush (The clearance should be between +0.003 and +0.008).
			Whipping effect occurs.	Place a whip guide at the appropriate position.
			The concentricity of the guide bush and the spindle is too large.	Decrease the concentricity of the guide bush and the spindle.
			The coolant temperature is too high.	Increase the capacity of the tank.
		Drill	The selection of the guide pads is not suitable.	Use 2 guide pads instead of 3.
			Regrinding is in poor quality.	Make sure no damage is left on the drill and that the cutting edge geometry is not changed.
			The drill's overall length is excessive.	Reduce the drill's overall length.
			Excessive wear occurs and the chip shape changes.	Regrind the gundrill (ease the tool life criteria).
		Cutting condition	The cutting speed (*Vc*) is too high.	Reduce the cutting speed.
			The feed (*f*) is too high.	Reduce the feed.
			The coolant pressure is not high enough.	Increase the coolant pressure.
		Workpiece	The material quality varies.	Reduce the cutting speed (*Vc*).
Chip control	Chip packing	Machine	The shape of the guide bush is not suitable.	Modify the tip of the guide bush to match the shape of the workpiece surface at the entry.
			The number of revolutions varies (decreases).	Increase the machine power or adjust the cutting conditions.
			The chip box is too small for smooth chip evacuation.	Enlarge the chip box.
		Cutting condition	The feed (*f*) is not suitable.	Use an appropriate feed.
			The coolant pressure is not high enough.	Increase the coolant pressure.
		Workpiece	Interrupted or cross drilling is required.	Change the tool to a standard gundrill.
			The operation is for stacked plates.	Change the cutting edge shape so that the cores become small.
			The material quality varies.	Increase the feed.
	Chip entanglement	Drill	The cutting edge is fractured or chipped.	See "Breakage" for the details.
			Wear on the outer corner is excessive.	Regrind the gundrill (ease the tool life criteria).
		Cutting condition	The feed (*f*) is too low.	Increase the feed.
		Workpiece	Drilling a center hole is required.	Make the center hole as small as the drill diameter and increase the coolant pressure.

Drilling Tools

Nomenclature for gun reamer



Troubleshooting in gun reaming

Trouble		Possible cause		Countermeasure
Breaking of reamer		Increased burnishing torque due to excessively small stock allowance	● Chamfer angle small	● Enlarge chamfer angle and increase stock allowance
			● Excessive wear in peripheral cutting edge.	● Reduce cutting speed to prevent peripheral wear of edge ● Increase lubricity of cutting fluid
		Sticking	● Faulty filtering of cutting fluid ● Incorrect selection of cutting fluid ● Insufficient cutting fluid pressure	● Improve filtering accuracy ● Change to fluid with higher lubricity ● Increase fluid pressure
		Mechanical trouble		● Repair electrical system ● Improve clamping method of workpiece
Faulty machining accuracy	Unacceptable surface roughness Too large and inconsistent over size	Excessive feed rate per tooth		● Reduce fluid pressure ● Increase number of teeth
		Improper tool specifications	● Excessive chamfer angle ● Excessive back taper ● Peripheral run out excessive	● Reduce chamfer angle ● Reduce back taper ● Improve run out accuracy
		Faulty regrinding	● Cutting edge run out is large ● Residual damage of preceding process	● Improve run out accuracy ● Remove residual damage completely
		Improper cutting fluid	● Excessive fluid pressure ● Improper selection of cutting fluid	● Reduce fluid pressure ● Increase activity and lubricity of the fluid
		Faulty machine accuracy		● Correct spindle run out and bushing clearance and alignment
		Faulty clamping of workpiece	● Clamping position wrong ● Clamping force inadequate	● Improper clamping position ● Increase clamping force
	Defective out-of-roundness	Faulty machine accuracy	● Excessive bushing clearance ● Faulty spindle run out and alignment	● Correct bushing clearance ● Correct spindle run out and alignment
		Improper tool specifications	● Outer run out of reamer large ● Insufficient reamer rigidity	● Correct peripheral run out ● Increase reamer rigidity
		Faulty clamping position of workpiece		● Change clamping position
		Unevenness in wall thickness of workpiece		● Reduce reamer guide width (margin width)
	Insufficient oversize allowance	Chamfer angle small		● Increase chamfer angle
		Excessive wear in peripheral cutting edge	● Too high cutting speed ● Faulty lubricity of cutting fluid	● Decrease cutting speed ● Increase lubricating capacity
		Faulty regrinding (residual damage)		● Increase regrinding stock amount

International Tolerance (IT Grade)

International Tolerance (IT Grade)

IT grades shows a tolerance allowable for difference of the diameters of a hole and a shaft. As the number added after IT increases, the tolerance becomes rough. Depending on the basic size, the tolerance value in each grade varies.
In the catalog, IT grades are shown as a guide of dimensional dispersion in the diameters of holes machined with the drill. For information, H8 tolerance for a ø8.0 hole is 0 to + 0.022 mm, the width of the value is the same as that of IT 8.
In the Table shown below, tolerance areas attainable with typical drilling tools are distinguished by using different colours. Solid drills are generally used for machining holes of IT 9 to 12. For machining a hole of better than IT 8, finishing process such as reaming is required. For a hole better than IT 5, high-precision finishing is required. Above description is based on machining of general steel. In practice, the IT grade attained with the tool varies widely depending on the hardness and the composition of the work material.

● IT (International Tolerance) Grades

Basic size (mm)		International tolerance grade																
		IT1	IT2	IT3	IT4	IT5	IT6	IT7	IT8	IT9	IT10	IT11	IT12	IT13	IT14	IT15	IT16	IT17	IT18
>	≤						(μm)									(mm)			
-	3	0.8	1.2	2	3	4	6	10	14	25	40	60	0.1	0.14	0.25	0.4	0.6	1	1.4
3	6	1	1.5	2.5	4	5	8	12	18	30	48	75	0.12	0.18	0.3	0.48	0.75	1.2	1.8
6	10	1	1.5	2.5	4	6	9	15	22	36	58	90	0.15	0.22	0.36	0.58	0.9	1.5	2.2
10	18	1.2	2	3	5	8	11	18	27	43	70	110	0.18	0.27	0.43	0.7	1.1	1.8	2.7
18	30	1.5	2.5	4	6	9	13	21	33	52	84	130	0.21	0.33	0.52	0.84	1.3	2.1	3.3
30	50	1.5	2.5	4	7	11	16	25	39	62	100	160	0.25	0.39	0.62	1	1.6	2.5	3.9
50	80	2	3	5	8	13	19	30	46	74	120	190	0.3	0.46	0.74	1.2	1.9	3	4.6
80	120	2.5	4	6	10	15	22	35	54	87	140	220	0.35	0.54	0.87	1.4	2.2	3.5	5.4
120	180	3.5	5	8	12	18	25	40	63	100	160	250	0.4	0.63	1	1.6	2.5	4	6.3
180	250	4.5	7	10	14	20	29	46	72	115	185	290	0.46	0.72	1.15	1.85	2.9	4.6	7.2
250	315	6	8	12	16	23	32	52	81	130	210	320	0.52	0.81	1.3	2.1	3.2	5.2	8.1
315	400	7	9	13	18	25	36	57	89	140	230	360	0.57	0.89	1.4	2.3	3.6	5.7	8.9
400	500	8	10	15	20	27	40	63	97	155	250	400	0.63	0.97	1.55	2.5	4	6.3	9.7
500	630	9	11	16	22	32	44	70	110	175	280	440	0.7	1.1	1.75	2.8	4.4	7	11
630	800	10	13	18	25	36	50	80	125	200	320	500	0.8	1.25	2	3.2	5	8	12.5
800	1000	11	15	21	28	40	56	90	140	230	360	560	0.9	1.4	2.3	3.6	5.6	9	14
1000	1250	13	18	24	33	47	66	105	165	260	420	660	1.05	1.65	2.6	4.2	6.6	10.5	16.5
1250	1600	15	21	29	39	55	73	125	195	310	500	780	1.25	1.95	3.1	5	7.8	12.5	19.5
1600	2000	18	25	35	46	65	92	150	230	370	600	920	1.5	2.3	3.7	6	9.2	15	23
2000	2500	22	30	41	55	78	110	175	280	440	700	1100	1.75	2.8	4.4	7	11	17.5	28
2500	3150	26	36	50	68	96	135	210	330	540	860	1350	2.1	3.3	5.4	8.6	13.5	21	33

Tolerance area requiring finishing process such as with a reamer.

Tolerance area attainable with a solid drill.

Tolerance area attainable with an indexable drill.

Deviations of Shafts to be Used in Commonly Used Fits

Deviations of Shafts to be Used in Commonly Used Fits (JIS B0401 extrac)

Basic size step (mm)		Tolerance zone class of shaft (μm)															
>	≤	e9	f6	f7	f8	g5	g6	h5	h6	h7	h8	h9	js5	js6	js7	k5	k6
–	3	−14 −39	−6 −12	−6 −16	−6 −20	−2 −6	−2 −8	0 −4	0 −6	0 −10	0 −14	0 −25	±2	±3	±5	+4 0	+6 0
3	6	−20 −50	−10 −18	−10 −22	−10 −28	−4 −9	−4 −12	0 −5	0 −8	0 −12	0 −18	0 −30	±2.5	±4	±6	+6 +1	+9 +1
6	10	−25 −61	−13 −22	−13 −28	−13 −35	−5 −11	−5 −14	0 −6	0 −9	0 −15	0 −22	0 −36	±3	±4.5	±7	+7 +1	+10 +1
10	14	−32 −75	−16 −27	−16 −34	−16 −43	−6 −14	−6 −17	0 −8	0 −11	0 −18	0 −27	0 −43	±4	±5.5	±9	+9 +1	+12 +1
14	18																
18	24	−40 −92	−20 −33	−20 −41	−20 −53	−7 −16	−7 −20	0 −9	0 −13	0 −21	0 −33	0 −52	±4.5	±6.5	±10	+11 +2	+15 +2
24	30																
30	40	−50 −112	−25 −41	−25 −50	−25 −64	−9 −20	−9 −25	0 −11	0 −16	0 −25	0 −39	0 −62	±5.5	±8	±12	+13 +2	+18 +2
40	50																
50	65	−60 −134	−30 −49	−30 −60	−30 −76	−10 −23	−10 −29	0 −13	0 −19	0 −30	0 −46	0 −74	±6.5	±9.5	±15	+15 +2	+21 +2
65	80																
80	100	−72 −159	−36 −58	−36 −71	−36 −90	−12 −27	−12 −34	0 −15	0 −22	0 −35	0 −54	0 −87	±7.5	±11	±17	+18 +3	+25 +3
100	120																

In every step given in the table, the value on the upper side shows the upper deviation and the value on the lower side, the lower deviation.

Deviations of Holes to be Used in Commonly Used Fits. (JIS B0401 extrac)

Basic size step (mm)		Tolerance zone class of hole (μm)															
>	≤	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10	JS6	JS7	K6	K7
–	3	+24 +14	+28 +14	+39 +14	+12 +6	+16 +6	+20 +6	+8 +2	+12 +2	+6 0	+10 0	+14 0	+25 0	+40 0	±3	±5	0 −6	0 −10
3	6	+32 +20	+38 +20	+50 +20	+18 +10	+22 +10	+28 +10	+12 +4	+16 +4	+8 0	+12 0	+18 0	+30 0	+48 0	±4	±6	+2 −6	+3 −9
6	10	+40 +25	+47 +25	+61 +25	+22 +13	+28 +13	+35 +13	+14 +5	+20 +5	+9 0	+15 0	+22 0	+36 0	+58 0	±4.5	±7	+2 −7	+5 −10
10	14	+50 +32	+59 +32	+75 +32	+27 +16	+34 +16	+43 +16	+17 +6	+24 +6	+11 0	+18 0	+27 0	+43 0	+70 0	±5.5	±9	+2 −9	+6 −12
14	18																	
18	24	+61 +40	+73 +40	+92 +40	+33 +20	+41 +20	+53 +20	+20 +7	+28 +7	+13 0	+21 0	+33 0	+52 0	+84 0	±6.5	±10	+2 −11	+6 −15
24	30																	
30	40	+75 +50	+89 +50	+112 +50	+41 +25	+50 +25	+64 +25	+25 +9	+34 +9	+16 0	+25 0	+39 0	+62 0	+100 0	±8	±12	+3 −13	+7 −18
40	50																	
50	65	+90 +60	+106 +60	+134 +60	+49 +30	+60 +30	+76 +30	+29 +10	+40 +10	+19 0	+30 0	+46 0	+74 0	+120 0	±9.5	±15	+4 −15	+9 −21
65	80																	
80	100	+107 +72	+126 +72	+159 +72	+58 +36	+71 +36	+90 +36	+34 +12	+47 +12	+22 0	+35 0	+54 0	+87 0	+140 0	±11	±17	+4 −18	+10 −25
100	120																	

In every step given in the table, the value on the upper side shows the upper deviation and the value on the lower side, the lower deviation.

Symbols of Metals

● Carbon steel and alloy steel for structural use

Type	Japan	International	Other countries				
			U.S.A.	Great Britain	Germany	France	Russia
	JIS	ISO	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Carbon steel	S10C	C10	1010	C10 C10E C10R	C10E C10R	C10E C10R	–
	S15C	C15E4 C15M2	1015	C15 C15E C15R	C15E C15R	C15E C15R	–
	S20C	–	1020	C22, C22E C22R	C22 C22E C22R	C22 C22E C22R	–
	S25C	C25 C25E4 C25M2	1025	C25 C25E C25R	C25 C25E C25R	C25 C25E C25R	–
	S30C	C30 C30E4 C30M2	1030	C30 C30E C30R	C30 C30E C30R	C30 C30E C30R	30Г
	S35C	C35 C35E4 C35M2	1035	C35 C35E C35R	C35 C35E C35R	C35 C35E C35R	35Г
	S40C	C40 C40E4 C40M2	1039 1040	C40 C40E C40R	C40 C40E C40R	C40 C40E C40R	40Г
	S43C	–	1042 1043	080A42	–	–	40Г
	S45C	C45 C45E4 C45M2	1045 1046	C45 C45E C45R	C45 C45E C45R	C45 C45E C45R	45Г
	S48C	–	–	–	–	–	45Г
	S50C	C50 C50E4 C50M2	1049	C50 C50E C50R	C50 C50E C50R	C50 C50E C50R	50Г
	S53C	–	1050 1053	–	–	–	50Г
	S55C	C55 C55E4 C55M2	1055	C55 C55E C55R	C55 C55E C55R	C55 C55E C55R	–
	S58C	C60 C60E4 C60M2	1059 1060	C60 C60E C60R	C60 C60E C60R	C60 C60E C60R	60Г

Type		Japan	International	Other countries				
				U.S.A.	Great Britain	Germany	France	Russia
		JIS	ISO	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Alloy steel	Nickel chromium steel	SNC236	–	–	–	–	–	40XH
		SNC415(H)	–	–	–	–	–	–
		SNC631(H)	–	–	–	–	–	30XH3A
		SNC815(H)	15NiCr13	–	15NiCr13	15NiCr13	15NiCr13	–
		SNC836	–	–	–	–	–	–
	Nickel chromium molybdenum steel	SNCM220	20NiCrMo2 20NiCrMoS2	8615 8617(H) 8620(H) 8622(H)	20NiCrMo2-2 20NiCrMoS2-2	20NiCrMo2-2 20NiCrMoS2-2	20NiCrMo2-2 20NiCrMoS2-2	–
		SNCM240	41CrNiMo2 41CrNiMoS2	8637 8640	–	–	–	–
		SNCM415	–	–	–	–	–	–
		SNCM420(H)	–	4320(H)	–	–	–	20XH2M(20XHM)
		SNCM431	–	–	–	–	–	–
		SNCM439	–	4340	–	–	–	–
		SNCM447	–	–	–	–	–	–
		SNCM616	–	–	–	–	–	–
		SNCM625	–	–	–	–	–	–
		SNCM630	–	–	–	–	–	–
		SNCM815	–	–	–	–	–	–

Note: The above chart is based on published data and not authorized by each manufacturer.

Symbols of Metals

● Alloy steel

Type		Japan	International	Other countries				
				U.S.A.	Great Britain	Germany	France	Russia
		JIS	ISO	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Alloy steel	Chromium steel	SCr415(H)	–	–	17Cr3 17CrS3	17Cr3 17CrS3	17Cr3 17CrS3	15X 15XA
		SCr420(H)	20Cr4(H) 20CrS4	5120(H)	–	–	–	20X
		SCr430(H)	34Cr4 34CrS4	5130(H) 5132(H)	34Cr4 34CrS4	34Cr4 34CrS4	34Cr4 34CrS4	30X
		SCr435(H)	34Cr4 34CrS4 37Cr4 37CrS4	5132	37Cr4 37CrS4	37Cr4 37CrS4	37Cr4 37CrS4	35X
		SCr440(H)	37Cr4 37CrS4 41Cr4 41CrS4	5140(H)	530M40 41Cr4 41CrS4	41Cr4 41CrS4	41Cr4 41CrS4	40X
		SCr445(H)	–	–	–	–	–	45X
	Chromium molybdenum steel	SCM415(H)	–	–	–	–	–	–
		SCM418(H)	18CrMo4 18CrMoS4	–	18CrMo4 18CrMoS4	18CrMo4 18CrMoS4	18CrMo4 18CrMoS4	20XM
		SCM420(H)	–	–	708M20(708H20)	–	–	20XM
		SCM430	–	4130	–	–	–	30XM 30XMA
		SCM432	–	–	–	–	–	–
		SCM435(H)	34CrMo4 34CrMoS4	4137(H)	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	35XM
		SCM440(H)	42CrMo4 42CrMoS4	4140(H) 4142(H)	42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	–
		SCM445(H)	–	4145(H) 4147(H)	–	–	–	–
	Manganese steel and manganese chromium steel	SMn420(H)	22Mn6(H)	1522(H)		–	–	–
		SMn433(H)	–	1534	–	–	–	30Г2 35Г2
		SMn438(H)	36Mn6(H)	1541(H)	–	–	–	35Г2 40Г2
		SMn443(H)	42Mn6(H)	1541(H)	–	–	–	40Г2 45Г2
		SMnC420(H)	–	–	–	–	–	–
		SMnC443(H)	–	–	–	–	–	–
	Aluminium chromium molybdenum steel	SACM645	41CrAlMo74	–	–	–	–	–

● Stainless steel

Type		Japan	International	Other countries					
				U.S.A.		Great Britain	Germany	France	Russia
		JIS	ISO	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Stainless steel	Austenitic	SUS201	X12CrMnNiN17-7-5	S20100	201			Z12CMN17-07Az	
		SUS202	X12CrMnNiN18-9-5	S20200	202	284S16			12Х17Г9АН4
		SUS301	X10CrNi18-8	S30100	301	301S21	X12CrNi17-7	Z11CN17-08	07Х16Н6
		SUS301L	X2CrNiN18-7				X2CrNiN18-7		
		SUS301J1					X12CrNi17-7		
		SUS302		S30200	302	302S25		Z12CN18-09	12Х18Н9
		SUS302B	X12CrNiSi18-9-3	S30215	302B				
		SUS303	X10CrNiS18-9	S30300	303	303S21	X10CrNiS18-9	Z8CNF18-09	
		SUS303Se		S30323	303Se	303S41			12Х18Н10Е
		SUS303Cu							
		SUS304	X5CrNi18-9	S30400	304	304S31	X5CrNi18-10	Z7CN18-09	08Х18Н10
		SUS304L	X2CrNi18-9	S30403	304L	304S11	X2CrNi19-11	Z3CN19-11	03Х18Н11
		SUS304N1	X5CrNiN18-8	S30451	304N			Z6CN19-09Az	
		SUS304N2		S30452					
		SUS304LN	X2CrNiN18-9	S30453	304LN		X2CrNiN18-10	Z3CN18-10Az	
		SUS304J1							
		SUS304J2							
		SUS304J3		S30431	S30431				
		SUS305	X6CrNi18-12	S30500	305	305S19	X5CrNi18-12	Z8CN18-12	06Х18Н11

Note: The above chart is based on published data and not authorized by each manufacturer.

Symbols of Metals

● Stainless steel

Type		Japan	International	Other countries					
				U.S.A.		Great Britain	Germany	France	Russia
		JIS	ISO	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Stainless steel	Austenitic	SUS305J1							
		SUS309S		S30908	309S			Z10CN24-13	
		SUS310S	X6CrNi25-21	S31008	310S	310S31		Z8CN25-20	10X23H18
		SUS315J1							
		SUS315J2							
		SUS316	X5CrNiMo17-12-2 X3CrNiMo17-12-3	S31600	316	316S31	X5CrNiMo17-12-2 X5CrNiMo17-13-3	Z7CND17-12-02 Z6CND18-12-03	
		SUS316F							
		SUS316L	X2CrNiMo17-12-2 X2CrNiMo17-12-3 X2CrNiMo18-14-3	S31603	316L	316S11	X2CrNiMo17-13-2 X2CrNiMo17-14-3	Z3CND17-12-02 Z3CND17-12-03	03X17H14M3
		SUS316N		S31651	316N				
		SUS316LN	X2CrNiMoN17-11-2 X2CrNiMoN17-12-3	S31653	316LN		X2CrNiMoN17-12-2 X2CrNiMoN17-13-3	Z3CND17-11Az Z3CND17-12Az	
		SUS316Ti	X6CrNiMoTi17-12-2	S31635			X6CrNiMoTi17-12-2	Z6CNDT17-12	08X17H13M2T
		SUS316J1							
		SUS316J1L							
		SUS317		S31700	317	317S16			
		SUS317L	X2CrNiMo19-14-4	S31703	317L	317S12	X2CrNiMo18-16-4	Z3CND19-15-04	
		SUS317LN	X2CrNiMoN18-12-4	S31753				Z3CND19-14Az	
		SUS317J1							
		SUS317J2							
		SUS317J3L							
		SUS836L		N08367					
		SUS890L	X1CrNiMoCu25-20-5	N08904	N08904	904S14		Z2NCDU25-20	
		SUS321	X6CrNiTi18-10	S32100	321	321S31	X6CrNiTi18-10	Z6CNT18-10	08X18H10T
		SUS347	X6CrNiNb18-10	S34700	347	347S31	X6CrNiNb18-10	Z6CNNb18-10	08X18H12Б
		SUS384	X3NiCr18-16	S38400	384			Z6CN18-16	
		SUSXM7	X3CrNiCu18-9-4	S30430	304Cu	394S17		Z2CNU18-10	
		SUSXM15J1		S38100				Z15CNS20-12	
	Austenitic Ferritic	SUS329J1		S32900	329				
		SUS329J3L	X2CrNiMoN22-5-3	S31803	31803			Z3CNDU22-05Az	08X21H6M2T
		SUS329J4L	X2CrNiMoCuN25-6-3	S32250	32250			Z3CNDU25-07Az	
	Ferritic	SUS405	X6CrAl13	S40500	405	405S17	X6CrAl13	Z8CA12	
		SUS410L						Z3C14	
		SUS429		S42900	429				
		SUS430	X6Cr17	S43000	430	430S17	X6Cr17	Z8C17	12X17
		SUS430F	X7CrS17	S43020	430F		X7CrS18	Z8CF17	
		SUS430LX	X3CrTi17 X3CrNb17	S43035			X6CrTi17	Z4CT17	
		SUS430J1L	X2CrTi17				X6CrNb17	Z4CNb17	
		SUS434	X6CrMo17-1	S43400	434	434S17	X6CrMo17-1	Z8CD17-01	
		SUS436L	X1CrMoTi16-1	S43600	436				
		SUS436J1L							
		SUS444	X2CrMoTi18-2	S44400	444			Z3CDT18-02	
		SUS445J1							
		SUS445J2							
		SUS447J1		S44700					
		SUSXM27		S44627				Z1CD26-01	
	Martensitic	SUS403		S40300	403				
		SUS410	X12Cr13	S41000	410	410S21	X10Cr13	Z13C13	
		SUS410S	X6Cr13	S41008	410S	403S17	X6Cr13	Z8C12	08X13
		SUS410F2							
		SUS410J1		S41025					
		SUS416	X12CrS13	S41600	416	416S21		Z11CF13	
		SUS420J1	X20Cr13	S42000	420	420S29	X20Cr13	Z20C13	20X13
		SUS420J2	X30Cr13	S42000	420	420S37	X30Cr13	Z33C13	30X13
		SUS420F	X29CrS13	S42020	420F			Z30CF13	
		SUS420F2							
		SUS429J1							
		SUS431	X19CrNi16-2	S43100	431	431S29	X20CrNi17-2	Z15CN16-02	20X17H2
		SUS440A	X70CrMo15	S44002	440A			Z70C15	
		SUS440B		S44003	440B				
		SUS440C	X105CrMo17	S44004	440C			Z100CD17	95X18
		SUS440F		S44020	S44020				
	Precipitation hardening type	SUS630	X5CrNiCuNb16-4	S17400	S17400			Z6CNU17-04	
		SUS631	X7CrNiAl17-7	S17700	S17700		X7CrNiAl17-7	Z9CNA17-07	09X17H7Ю
		SUS631J1							

Note: The above chart is based on published data and not authorized by each manufacturer.

Symbols of Metals

● Heat resistant steel

Type		Japan	International	Other countries					
				U.S.A.		Great Britain	Germany	France	Russia
		JIS	ISO	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Heat resistant steel	Austenitic	SUH31				331S42		Z35CNWS14-14	45X14H14B2M
		SUH35		S63008		349S52		Z52CMN21-09Az	
		SUH36				349S54	X53CrMnNi21-9	Z55CMN21-09Az	55X20Г9 AH4
		SUH37		S63017		381S34			
		SUH38							
		SUH309		S30900	309	309S24		Z15CN24-13	
		SUH310		S31000	310	310S24	CrNi2520	Z15CN25-20	20X25H20C2
		SUH330		N08330	N08330			Z12NCS35-16	
		SUH660		S66286				Z6NCTV25-20	
		SUH661		R30155					
	Ferritic	SUH21					CrAl1205		
		SUH409	X6CrTi12	S40900	409	409S19	X6CrTi12	Z6CT12	
		SUH409L	X2CrTi12					Z3CT12	
		SUH446		S44600	446			Z12C25	15X28
	Martensitic	SUH1		S65007		401S45	X45CrSi9-3	Z45CS9	
		SUH3						Z40CSD10	40X10C2M
		SUH4				443S65		Z80CSN20-02	
		SUH11							40X9C2
		SUH600							20X12ВНМБФР
		SUH616		S42200					

● Tool steel

Type	Japan	International	U.S.A.
	JIS	ISO	AISI ASTM
Carbon tool steel	SK140	–	–
	SK120	C120U	W1-11 1/2
	SK105	C105U	W1-10
	SK95	–	W1-9
	SK90	C90U	–
	SK85	–	W1-8
	SK80	C80U	–
	SK75	–	–
	SK70	C70U	–
	SK65	–	–
	SK60	–	–
High speed steel	SKH2	HS18-0-1	T1
	SKH3	–	T4
	SKH4	–	T5
	SKH10	–	T15
	SKH40	HS6-5-3-8	–
	SKH50	HS1-8-1	–
	SKH51	HS6-5-2	M2
	SKH52	HS6-6-2	M3-1
	SKH53	HS6-5-3	M3-2
	SKH54	HS6-5-4	M4
	SKH55	HS6-5-2-5	–
	SKH56	–	M36
	SKH57	HS10-4-3-10	–
	SKH58	HS2-9-2	M7
	SKH59	HS2-9-1-8	M42
Alloy tool steel	SKS11	–	F2
	SKS2	–	–
	SKS21	–	–

Type	Japan	International	U.S.A.
	JIS	ISO	AISI ASTM
Alloy tool steel	SKS5	–	–
	SKS51	–	L6
	SKS7	–	–
	SKS81	–	–
	SKS8	–	–
	SKS4	–	–
	SKS41	–	–
	SKS43	105V	W2-9 1/2
	SKS44	–	W2-8 1/2
	SKS3	–	–
	SKS31	–	–
	SKS93	–	–
	SKS94	–	–
	SKS95	–	–
	SKD1	X210Cr12	D3
	SKD2	X210CrW12	–
	SKD10	X153CrMoV12	–
	SKD11	–	D2
	SKD12	X100CrMoV5	A2
	SKD4	–	–
	SKD5	X30WCrV9-3	H21
	SKD6	–	H11
	SKD61	X40CrMoV5-1	H13
	SKD62	X35CrWMoV5	H12
	SKD7	32CrMoV12-28	H10
	SKD8	38CrCoWV18-17-17	H19
	SKT3	–	–
	SKT4	55NiCrMoV7	–
	SKT6	45NiCrMo16	–

● Special use steel

Type	Japan	International	U.S.A.
	JIS	ISO	AISI ASTM
Free cutting carbon steels	SUM11	–	1110
	SUM12	–	1109
	SUM21	9S20	1212
	SUM22	11SMn28	1213
	SUM22L	11SMnPb28	–
	SUM23	–	1215
	SUM23L	–	–
	SUM24L	11SMnPb28	12L14
	SUM25	12SMn35	–
	SUM31	–	1117
	SUM31L	–	–

Type	Japan	International	U.S.A.
	JIS	ISO	AISI ASTM
Free cutting carbon steels	SUM32	–	–
	SUM41	–	1137
	SUM42	–	1141
	SUM43	44SMn28	1144
High carbon chromium	SUJ1	–	–
	SUJ2	B1	52100
	SUJ3	B2	ASTM A 485 Grade 1
	SUJ4	–	–
	SUJ5	–	–

Note: The above chart is based on published data and not authorized by each manufacturer.

Symbols of Metals

● Casting or forging steel

Type		Japan	International	Other countries				
				U.S.A.	Great Britain	Germany	France	Russia
		JIS	ISO	AISI ASTM	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Casting steel	Carbon steel casting	SC	200-400, 230-450, 270-480	U-	A1, A2	GS-	GE230, GE280, GE320	–
	Steel casting for welded structure	SCW	200-400W, 230-450W, 270-480W, 340-550W	WCA, WCB, WCC	A4	–	GE230, GE280	–
	Heat resisting steel casting	SCH	GX40CrSi24, GX40CrNiSi22-10, GX40NiCrSi38-19	Grade HC, HD, HF	309C30, 310C45, 330C12	–	GX40NiCrNb45-35, GX50NiCrCoW35-25-15-5	–
	Steel casting for high temperature and high pressure service	SCPH	–	Grade WC1, WC6, WC9	A1, A2, B1, B2, B3, B4, B5, B7	G20Mo5, G17CrMo5-5, G17CrMo5-10	G17CrMo9-10, GX15CrMo5, GP240GH, GP280GH	–
	Steel casting for low temperature and high pressure service	SCPL	–	Grade LCB, LC1, LC2, LC3	AL1, BL2	–	FB-M, FC1-M, FC2-M,FC3-M	–
Casting iron	Grey iron casting	FC	100,150,200,250, 300,350	No.20,25,30,35, 40,45,50	EN-GJL-	EN-GJL-	EN-GJL-	–
	Spheroidal graphite iron casting	FCD	700-2, 600-3, 500-7, 450-10, 400-15, 400-18, 350-22	60-40-18, 65-45-12, 8-55-06, 100-70-03, 120-90-02	EN-GJS-	EN-GJS-	EN-GJS-	ВЧ
	Austempered spheroidal graphite iron casting	FCAD	–	–	EN-GJS-	EN-GJS-	EN-GJS-	–
	Austenitic iron casting	FCA- FCDA-	L-, S-	Type 1, 2, Type D-2, D-3A Class 1, 2	F1, F2, S2W, S5S	GGL-, GGG-	L-, S-	–
Forging steel	Carbon steel forging for general use	SF	–	Class A, B, C, D, E, F	C22, C25, C30, C35, C40, C45, C50, C55, C60	P285, P355	P245, P280, P305	–
	Chromium molybdenum steel forgings for general use	SFCM	–	Class E, F, G, I Grade 3A, 4 Class G, J, K, L, M	–	–	–	–
	Nickel Chromium molybdenum steel forgings for general use	SFNCM	–	Class G, H, I, J Class 3A, 4, 5, 6 Class K, L, M	–	–	–	–

● Non-ferrous alloy

Type		Japan	International	Other countries			
				U.S.A.		Great Britain	Germany
		JIS	ISO	ASTM SAE		BS BS/EN	DIN DIN/EN
Copper alloy, Nickel alloy	Copper alloy casting	CAC101	–	–	–	–	
		CAC102	–	–	–	Cu-C(CC040AgrodeC)	
		CAC103	–	–	–	Cu-C(CC040AgrodeA,B)	
	Brass casting	CAC201	–	–	–	CuZn15As-C(CC760S)	
		CAC202	–	C85400	–	CuZn33Pb2-C(CC750S)	
		CAC203	–	C85700	–	CuZn39Pb1-C(CC754S)	
	High strength brass casting	CAC301	–	C86500	–	CuZn35Mn2Al1Fe-C(CC765S)	
		CAC302	–	C86400	–	CuZn34Mn3Al2Fe1-C(CC764S)	
		CAC303	–	C86200	–	CuZn25Al5Mn4Fe3-C(CC762S)	
		CAC304	–	C86300	–	CuZn25Al5Mn4Fe3-C(CC762S)	
	Bronze casting	CAC401	–	C84400	–	CuSn3Zn8Pb5-C(CC490K)	
		CAC402	–	C90300	–	–	
		CAC403	–	C90500	–	–	
		CAC406	–	C83600	–	CuSn5Zn5Pb5-C(CC490K)	
		CAC407	–	C92200	–	–	
	Phosphor bronze casting	CAC502A	–	C90700 C90800	–	CuSn10-C(CC480K) CuSn12-C(CC483K)	
		CAC502B	–		–		
		CAC503A	–		–		
		CAC503B	–		–		
	Aluminium bronze casting	CAC701	–	C95200	–	CuAl10Fe2-C(CC331G)	
		CAC702	–	C95400	–	CuAl10Ni3Fe2-C(CC332G)	
			–	C95410	–		
		CAC703	–	C95800	–	CuAl10Fe5Ni5-C(CC333G)	
		CAC704	–	C95700	–	–	
	Silicon bronze castings	CAC801	–	–	–	–	
		CAC802	–	C87500	–	–	
		CAC803	–	C87400	–	CuZn16Si4-C(CC761S)	

Note: The above chart is based on published data and not authorized by each manufacturer.

Symbols of Metals

● Non-ferrous alloy

Type		Japan	International	Other countries			
				U.S.A.	Great Britain	Germany	France
		JIS	ISO	ASTM SAE	BS BS/EN	DIN DIN/EN	NF NF/EN
Aluminium alloy	Aluminium alloy ingots for casting	AC1B	Al-Cu4MgTi	204.0	EN AC-2100		
		AC2A	–	–	–		
		AC2B	–	319.0	–		
		AC3A	–	–	EN AC-44100		
		AC4A	–	–	–		
		AC4B	Al-Si8Cu3	333.0	EN AC-46200		
		AC4C	Al-Si7Mg(Fe)	356.0	EN AC-42000		
		AC4CH	Al-Si7Mg0.3	A356.0	EN AC-42100		
		AC4D	–	355.0	EN AC-45300		
		AC5A	Al-Cu4Ni2Mg2	242.0	–		
		AC7A	–	514.0	–		
		AC8A	Al-Si12CuNiMg	–	EN AC-48000		
		AC8B	–	–	–		
		AC8C	–	332.0	–		
		AC9A	–	–	–		
		AC9B	–	–	–		
	Aluminium alloy die casting	ADC1	–	A413.0	–		
		ADC3	–	A360.0	–		
		ADC5	–	518.0	–		
		ADC6	–	–	–		
		ADC10	–	–	–		
		ADC10Z	–	A380.0	–		
		ADC12	–	–	–		
		ADC12Z	–	383.0	–		
		ADC14	–	B390.0	–		
Magnesium alloy	Magnesium alloy casting	MC5	–	AM100A	–		
		MC6	–	ZK51A	–		
		MC7	–	ZK61A	–		
		MC8	MgRE3Zn2Zr	EZ33A	EN MC65120		
		MC9	MgAg3RE2Zr	QE22A	EN MC65210		
		MC10	MgZn4RE1Zr	ZE41A	EN MC35110		
	Magnesium alloy die casting	MD1A	–	AZ91A	G-A9Z1Y4		
		MDC1B	–	AZ91B	–		
		MDC1D	MgAl9Zn1(A)	AZ91D	EN MC21120		
		MDC2B	MgAl6Mn	AM60B	EN MC21320		

Type		Japan	International	Other countries			
				U.S.A.	Great Britain	Germany	France
		JIS	ISO	ASTM AA	BS BS/EN	DIN DIN/EN	NF NF/EN
Aluminium alloy	Aluminium alloy extruded shapes	A5052S	–	5052	EN AW-5052		
		A5454S	–	5454	EN AW-5454		
		A5083S	AlMg4.5Mn0.7	5083	EN AW-5083		
		A5086S	–	5086	EN AW-5086		
		A6061S	AlMg1SiCu	6061	EN AW-6061		
		A6063S	AlMg0.7Si	6063	EN AW-6063		
		A7003S	–	–	EN AW-7003		
		A7N01S	–	–	–		
		A7075S	AlZn5.5MgCu	7075	EN AW-7075		

Note: The above chart is based on published data and not authorized by each manufacturer.

Approximate Conversion Table of Hardness

● Approximate conversion value for Brinell hardness. *1

(The source: JIS HB Ferrous Materials and Metallurgy I -2005)

HB		HV	Rockwell *3				HS	Approx. tensile strength (MPa) *2
Brinell, 10mm ball, Load 3000kg		Vickers	HRA	HRB	HRC	HRD	Shore	
Standard ball	Tungsten carbide ball		A Scale, Load 60kg, Brale Diamond	B Scale, Load 100kg, Diameter 1/16 in. Steel ball	C Scale, Load 150kg, brale diamond	D Scale, Load 100kg, Brale Diamond		
–	–	940	85.6	–	68.0	76.9	97	–
–	–	920	85.3	–	67.5	76.5	96	–
–	–	900	85.0	–	67.0	76.1	95	–
–	(767)	880	84.7	–	66.4	75.7	93	–
–	(757)	860	84.4	–	65.9	75.3	92	–
–	(745)	840	84.1	–	65.3	74.8	91	–
–	(733)	820	83.8	–	64.7	74.3	90	–
–	(722)	800	83.4	–	64.0	73.8	88	–
–	(712)	–	–	–	–	–	–	–
–	(710)	780	83.0	–	63.3	73.3	87	–
–	(698)	760	82.6	–	62.5	72.6	86	–
–	(684)	740	82.2	–	61.8	72.1	–	–
–	(682)	737	82.2	–	61.7	72.0	84	–
–	(670)	720	81.8	–	61.0	71.5	83	–
–	(656)	700	81.3	–	60.1	70.8	–	–
–	(653)	697	81.2	–	60.0	70.7	81	–
–	(647)	690	81.1	–	59.7	70.5	–	–
–	(638)	680	80.8	–	59.2	70.1	80	–
–	630	670	80.6	–	58.8	69.8	–	–
–	627	667	80.5	–	58.7	69.7	79	–
–	–	677	80.7	–	59.1	70.0	–	–
–	601	640	79.8	–	57.3	68.7	77	–
–	–	640	79.8	–	57.3	68.7	–	–
–	578	615	79.1	–	56.0	67.7	75	–
–	–	607	78.8	–	55.6	67.4	–	–
–	555	591	78.4	–	54.7	66.7	73	2055
–	–	579	78.0	–	54.0	66.1	–	2015
–	534	569	77.8	–	53.5	65.8	71	1985
–	–	553	77.1	–	52.5	65.0	–	1915
–	514	547	76.9	–	52.1	64.7	70	1890
(495)	–	539	76.7	–	51.6	64.3	–	1855
–	–	530	76.4	–	51.1	63.9	–	1825
–	495	528	76.3	–	51.0	63.8	68	1820
(477)	–	516	75.9	–	50.3	63.2	–	1780
–	–	508	75.6	–	49.6	62.7	–	1740
–	477	508	75.6	–	49.6	62.7	66	1740
(461)	–	495	75.1	–	48.8	61.9	–	1680
–	–	491	74.9	–	48.5	61.7	–	1670
–	461	491	74.9	–	48.5	61.7	65	1670
444	–	474	74.3	–	47.2	61.0	–	1595
–	–	472	74.2	–	47.1	60.8	–	1585
–	444	472	74.2	–	47.1	60.8	63	1585

HB		HV	Rockwell *3				HS	Approx. tensile strength (MPa) *2
Brinell, 10mm ball, Load 3000kg		Vickers	HRA	HRB	HRC	HRD	Shore	
Standard ball	Tungsten carbide ball		A Scale, Load 60kg, Brale Diamond	B Scale, Load 100kg, Diameter 1/16 in. Steel ball	C Scale, Load 150kg, brale diamond	D Scale, Load 100kg, Brale Diamond		
429	429	455	73.4	–	45.7	59.7	61	1510
415	415	440	72.8	–	44.5	58.8	59	1460
401	401	425	72.0	–	43.1	57.8	58	1390
388	388	410	71.4	–	41.8	56.8	56	1330
375	375	396	70.6	–	40.4	55.7	54	1270
363	363	383	70.0	–	39.1	54.6	52	1220
352	352	372	69.3	(110.0)	37.9	53.8	51	1180
341	341	360	68.7	(109.0)	36.6	52.8	50	1130
331	331	350	68.1	(108.5)	35.5	51.9	48	1095
321	321	339	67.5	(108.0)	34.3	51.0	47	1060
311	311	328	66.9	(107.5)	33.1	50.0	46	1025
302	302	319	66.3	(107.0)	32.1	49.3	45	1005
293	293	309	65.7	(106.0)	30.9	48.3	43	970
285	285	301	65.3	(105.5)	29.9	47.6	–	950
277	277	292	64.6	(104.5)	28.8	46.7	41	925
269	269	284	64.1	(104.0)	27.6	45.9	40	895
262	262	276	63.6	(103.0)	26.6	45.0	39	875
255	255	269	63.0	(102.0)	25.4	44.2	38	850
248	248	261	62.5	(101.0)	24.2	43.2	37	825
241	241	253	61.8	100.0	22.8	42.0	36	800
235	235	247	61.4	99.0	21.7	41.4	35	785
229	229	241	60.8	98.2	20.5	40.5	34	765
223	223	234	–	97.3	(18.8)	–	–	–
217	217	228	–	96.4	(17.5)	–	33	725
212	212	222	–	95.5	(16.0)	–	–	705
207	207	218	–	94.6	(15.2)	–	32	690
201	201	212	–	93.8	(13.8)	–	31	675
197	197	207	–	92.8	(12.7)	–	30	655
192	192	202	–	91.9	(11.5)	–	29	640
187	187	196	–	90.7	(10.0)	–	–	620
183	183	192	–	90.0	(9.0)	–	28	615
179	179	188	–	89.0	(8.0)	–	27	600
174	174	182	–	87.8	(6.4)	–	–	585
170	170	178	–	86.8	(5.4)	–	26	570
167	167	175	–	86.0	(4.4)	–	–	560
163	163	171	–	85.0	(3.3)	–	25	545
156	156	163	–	82.9	(0.9)	–	–	525
149	149	156	–	80.8	–	–	23	505
143	143	150	–	78.7	–	–	22	490
137	137	143	–	76.4	–	–	21	460
131	131	137	–	74.0	–	–	–	450
126	126	132	–	72.0	–	–	20	435
121	121	127	–	69.8	–	–	19	415
116	116	122	–	67.6	–	–	18	400
111	111	117	–	65.7	–	–	15	385

Note :

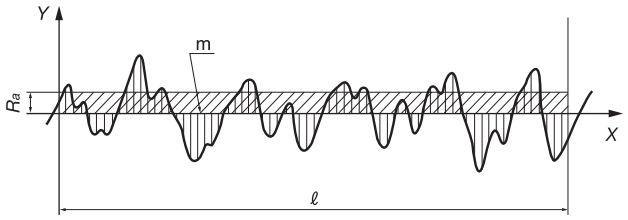
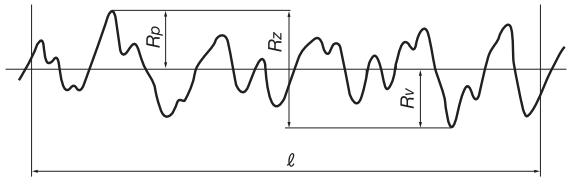
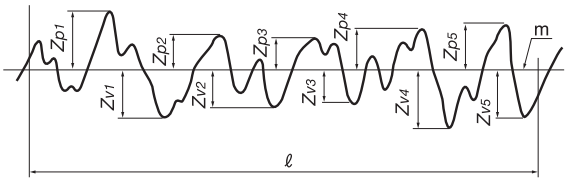
*1: This table is based on AMS Metals Handbook, the 8th Edition, Volume 1, and includes some information added to "Approx. tensile strength (MPa)," such as the values calculated in metric; and Brinell hardness that exceeds recommended values.

*2: 1 MPa = 1 N/mm^2

*3: Figures in ( ) are not commonly used. It's just reference.

Surface Roughness

(According to JIS B 0601, 2001 and its explanation.)

Type	Symbol	How to determine	Example (Fig.)
Arithmetic mean roughness	***Ra***	*Ra* means the value obtained by the following formula and expressed in micrometer (μm) when sampling only the reference length from the roughness curve in the direction of mean line, taking X-axis in the direction of mean line and Y-axis in the direction of longitudinal magnification of this sampled part and the roughness curve is expressed by *y- f (x)*: $Ra = \frac{1}{\ell}\int_0^{\ell} \lvert f(x) \rvert dx$ where, ℓ : reference length	
Maximum height	***Rz***	*Rz* shall be that only the reference length is sampled from the roughness curve in the direction of mean line, the distance between the top of profile peak line and the bottom of profile valley line on this sampled portion is measured in the longitudinal magnification direction of roughness curve and the obtained value is expressed in micrometer (μm). $Rz = Rp + Rv$	
Ten point mean roughness	***RzJIS***	*RzJIS* shall be that only the reference length is sampled from the roughness curve in the direction of its mean line, the sum of the average value of absolute values of the heights of five highest profile peaks (*Zp*) and the depths of five deepest profile valleys (*Zv*) measured in the vertical magnification direction from the mean line of this sampled portion and this sum is expressed in micrometer (μm) $RzJIS = \frac{\lvert Zp1+Zp2+Zp3+Zp4+Zp5 \rvert + \lvert Zv1+Zv2+Zv3+Zv4+Zv5 \rvert}{5}$	 where, $Zp_1, Zp_2, Zp_3, Zp_4, Zp_5$: altitudes of the heights of five highest profile peaks of the sampled portion corresponding to the reference length ℓ where, $Zv_1, Zv_2, Zv_3, Zv_4, Zv_5$: altitudes of the depths of five deepest profile valleys of the sampled portion corresponding to the reference length ℓ

Grade Comparison Chart

●CVD Coated Grades for Turning

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	TaeguTec	Widia	Walter	Ceratizit
Classification	Symbol															
P	P01	**T9105**	UE6105	AC810P	GC4205 GC4305	CA5505 CA510	HG8010	JC110V		TP0500 TP0501	KC9105 KCP05	IC8150 IC9150 IC9015	TT8115	TN10P TN20K	WPP01 WPP05 WPP05S	
	P10	**T9105** **T9115**	UE6105 UE6110	AC810P AC820P	GC4205 GC4215 GC4305 GC4315	CA5515 CA515	HG8010 GM8020	JC110V JC215V	CP7 CP5	TP0500 TP1500 TP0501 TP1501	KC9110 KC9105 KCP10	IC8150 IC9150 IC8080 IC9080 IC9015	TT8115	TN10P TN20K WP15CT	WPP05 WPP10 WAK20 WPP05S WPP10S	CTC3110 CTCK120
	P20	**T9115** **T9125**	UE6110 UE6020 MC6025	AC820P AC830P AC8025P	GC4215 GC4315 GC4225 GC4325	CA5515 CA515 CA5525 CA525	HG8025 GM8020 GM25	JC110V JC215V	CP7 CP5	TP1500 TP2500 TP1501 TP2501	KC9215 KC9225 KC9325 KCP25	IC8150 IC9150 IC9015 IC8250 IC9250	TT8125 TT5100	TN10P TN15M WP25CT	WPP20 WPP20S	CTCP115 CTCP125 CTC1425
	P30	**T9125** **T9135** **T6130**	MC6025 UE6035	AC8025P AC830P	GC4225 GC4235 GC4325	CA5525 CA5535 CA530	HG8025 GM8035 GM25	JC215V JC325V		TP2500 TP3500 TP2501	KC9140 KC9240 KCP30	IC8080 IC656 IC9350	TT8125 TT5100 TT8135	TN30P TN30M WP35CT	WPP30 WAK30 WPP30S	CTCP125 CTC1425 CTC1135 CTC1435 CTC2135
	P40	**T9135** **T6130**	UE6035 UH6400	AC830P AC630M	GC4235	CA5535 CA530	GM8035 GX30	JC325V		TP3500	KC9140 KC9240 KCP40	IC9350 IC635	TT8135 TT7100	TN30P TN30M	WPP30 WAK30 WPP30S	CTC1135 CTC1435 CTC2135
M	M10	**T9115**	MC7015	AC610M	GC2015	CA6515		JC110V			KCM15	IC9250 IC520M	TT9215	TN15M WM15CT		CTCP115
	M20	**T6120** **T9125**	MC7015 US7020 MC7025	AC6030M	GC2015 GC2025	CA6525	HG8025 GM25	JC110V		TM2000	KCM15 KCM25	IC9025 IC9350 IC4050	TT9215 TT9225	TN15M WM25CT		CTC1425 CTCP125 CTC1135
	M30	**T6130**	MC7025 US735	AC6030M AC630M	GC2025 GC235		GM8035 GM25 GX30	JC215V		TM2000 TM4000	KCM25 KCM35	IC9350 IC4050 IC635	TT9225 TT9235	TN30M WM35CT		CTC1435 CTC2135
	M40		US735		GC235		GX30			TM4000	KCM35 KCP40	IC635	TT9235			
K	K01	**T5105** **T515**	MC5005 UC5105	AC405K	GC3205	CA4505	HX3505	JC050W JC105V	CP1	TK1001 TK1000	KCK05	IC8080		WK05CT	WAK10 WPP01	
	K10	**T5105** **T5115**	MC5015 UC5115	AC415K	GC3210	CA4515	HX3515 GM10 HG8010	JC105V JC110V	CP1	TK1001 TK1000	KCK05 KCK15	IC9150 IC5100 IC4100	TT7005	WK05CT	WAK10 WPP10 WKK10S	CTC3110 CTC1425
	K20	**T515** **T5115** **T5125**	MC5015 UC5115	AC420K	GC3215	CA4515	HX3515 GM8020	JC110V JC215V	CP1	TK2000 TK2001	KCK15 KCK20	IC9150 IC5100 IC4100 IC9080	TT7310	WK20CT	WAK20 WPP20 WKK20S	CTC1435 CTCK120 CTCP115
	K30	**T5125** **T9115**					HG8025	JC215V			KCP25	IC520M IC4050			WAK30 WKP30S	CTCP125

Note: The above table is selected from a publication. We have not obtained approval from each company.

Grade Comparison Chart

●PVD Coated Grade for Turning

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	TaeguTec	Widia	Walter	Ceratizit
Classification	Symbol															
P	P01					PR1005									WXN10	
	P10	**AH710**	VP10RT		GC1525	PR930 PR1005 PR1115 PR1215 PR1425	IP2000	JC5003 JC5030	VM1 DT4 DM4	TS2000 CP200	KC5010 KC5510 KCU10	IC507 IC807 IC907		WS10PT	WSM10 WSM21	
	P20	**AH120 AH725 AH730 SH725 SH730 J740**	VP10RT VP15TF VP20MF VP20RT UP20M	AC520U	GC1525 GC1125	PR930 PR1025 PR1115 PR1215 PR1425 PR1225	IP2000 IP3000	JC5030 JC5040	VM1 DT4 DM4	TS2500 CP200	KC5025 KC5525 KCU25	IC507 IC807 IC907	TT9030	WS10PT WS25PT	WSM20 WSM21	
	P30	**AH120 AH725 SH725 AH730 SH730 GH730 GH330 J740**	VP15TF VP20MF VP20RT UP20M	AC530U	GC1125	PR1025 PR1225	IP3000	JC5040	DT4 DM4 QM3	CP500	KC5025 KC5525 KCU25	IC328 IC928 IC3028	TT9030 TT8020	WS25PT	WSM30	CTP1235 CTP1625 CTP2235
	P40	**AH120 AH725 AH645**		AC530U						CP500		IC328 IC3028	TT8020			CTP1235 CTP2235
M	M01											IC520			WXM10	
	M10	**AH630**	VP10RT		GC1105 GC1115 GC1525	PR1025 PR1215	IP100S IP050S	JC5003 JC8015	TM4 ZM3	TS2000 TS2500 CP200	KC5010 KC5510 KCU10	IC520 IC507 IC807 IC907		WS10PT	WSM10 WSM10S	
	M20	**AH630 AH120 AH725 SH725 SH730**	VP10RT VP15TF VP20MF VP20RT UP20M	AC520U	GC1115 GC1125 GC1525	PR930 PR1025 PR1125 PR1215 PR1425 PR1225	IP100S IP050S	JC5015 JC5030 JC8015	TM4 ZM3 DT4 DM4	TS2500 CP200 CP500	KC5025 KC5525 KCU25	IC520 IC507 IC807 IC907 IC308 IC3028	TT9030 TT8010	WS10PT WS25PT	WSM20 WSM21 WSM20S	CTP1235 CTP2120
	M30	**AH645 AH120 AH725 SH725 SH730 J740**	VP15TF VP20MF VP20RT UP20M MP7035	AC530U AC6040M	GC1125 GC2035	PR1125	IP100S	JC5015 JC5030 JC5040	TM4 ZM3 DT4 DM4	CP500	KC5025 KC5525 KCU25	IC3028 IC308 IC908 IC928	TT8020	WS25PT	WSM30 WSM30S	CTP1235 CTP2120 CTP2235 CTP1625
	M40	**AH645**	MP7035	AC530U AC6040M	GC2035							IC228 IC328				
K	K01	**AH110**										IC910				
	K10	**GH110 AH110**	VP10RT	AC510U		PR905 PR1215		JC5003 JC5015		TS2000 CP200	KC5010 KC5510 KCU10	IC910 IC308 IC508	TT9030	WS10PT		CTP6215
	K20	**AH120**	VP10RT VP20RT VP15TF			PR905 PR1215		JC5015		TS2500 CP200 CP250	KC5025 KC5525 KCU25	IC910 IC308 IC508 IC928 IC1008	TT9030	WS10PT WS25PT		CTP6215
	K30	**AH120 GH130**	VP20RT VP15TF							CP500		IC928 IC1008	TT9030	WS25PT		CTP1625
S	S01	**AH8005**	VP05RT MP9005					JC8003							WSM10	
	S10	**AH8005 AH8015**	VP10RT MP9015	AC510U AC520U	GC1105	PR1305 PR1310		JC8015 JC5015	DT4 DM4	TS2000 TS2500 CP200 CP500	KC5010 KC5510 KCU10	IC507 IC807 IC808 IC907 IC908	TT8010	WS10PT	WSM10 WSM10S	CTP2235
	S20	**AH8015**	VP15TF MP9015 VP20RT	AC520U	GC1115 GC1125	PR1310		JC8015 JC5015	DT4 DM4	TS2000 TS2500 CP200 CP500	KC5025 KC5525 KCU25	IC507 IC807 IC808 IC907 IC908	TT8020	WS10PT WS25PT	WSM20 WSM21 WSM20S	CTP2235
	S30	**AH630 AH7025**	VP15TF VP20RT	AC520U	GC1125	PR1325						IC830 IC928		WS25PT	WSM30 WSM30S	

Note: The above table is selected from a publication. We have not obtained approval from each company.

Grade Comparison Chart

●Cermet for Turning

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	TaeguTec	Widia	Walter	Ceratizit
Classifi-cation	Symbol															
P	P01	**NS520**	AP25N VP25N	T110A T1000A		TN30 PV30 TN6010 PV7010		LN10	Q15 C7Z		KT1120		PV3010 CT3000			
	P10	**GT9530** **J9530**	AP25N VP25N NX2525	T1500Z T2000Z T1200A T1500A	CT5015	TN60 TN6010 PV7010 TN610 PV710	CZ25	CX50 PX75	C7Z Z15	TP1020 C15M	KT315	IC30N IC530N	PV3010 CT3000	TTI15	WCE10	TCC410 TCM10 TCM407
	P20	**GT9530** **NS9530** **J9530**	AP25N VP25N VP45N NX2525 NX3025	T1200A T1500A T1500Z T2000Z	CT5015 GC1525	TN90 TN6020 PV7020 PV7025 TN620 PV720	CZ25 CH550	CX75 PX75 PX90	C7Z T15	TP1020 TP1030 C15M	KT5020	IC30N IC530N	PV3010 CT3000	TTI15	WCE10	TCC410 TCM10
	P30	**NS9530**	VP45N NX4545	T3000Z	GC1525			PX90	N40 C7X							
M	M10	**NS520**	AP25N VP25N NX2525	T1000A T2000Z	CT5015	TN60 TN6020 PV7020 PV7025		LN10 CX50	C7Z C7X	TP1020 TP1030	KT315 KT5020		PV3010 CT3000	TTI15		TCC410 TCM10 TCM407
	M20	**GT9530** **NS9530** **J9530**	NX2525 AP25N VP25N	T1500A T2000Z	GC1525	TN90 TN6020 PV7020 PV7025	CZ25 CH550	CX75	C7Z C7X	C15M	KT5020	IC30N IC530N	PV3010 CT3000			
	M30	**NS9530**	NX4545	T3000Z												
K	K01	**NS520**	AP25N VP25N	T1000A		TN30 PV30 PV7005		LN10					PV3010 CT3000			TCC410
	K10	**GT9530** **NS9530** **J9530**	AP25N VP25N NX2525	T1500A T2000Z	CT5015	TN60 TN6010 PV7005 PV7010	CZ25 CH550	LN10 CX75			KT315 KT5020	IC30N IC530N	CT3000	TTI15		TCC410 TCM10 TCM407
	K20	**NS9530**	AP25N VP25N NX2525	T3000Z				CX75			KT5020					TCM407

Note: The above table is selected from a publication. We have not obtained approval from each company.

Grade Comparison Chart

●Cemented Carbide for Turning

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
Classification	Symbol																
P	P01																
	P10	**TH10**		ST10P			WS10	SRT			P10	IC70		P10	TN15U		
	P20	**KS20**	UTi20T	ST20E	SMA H10F		EX35	SRT SR20	KM1	S10M	K125M TTM	IC70	P40	P20	TN15U		
	P30	**KS15F** **UX30**	UTi20T	A30 A30N	SM30 H10F	PW30	EX40	DX30 SR30	KM3	S25M	GK K600 TTR	IC28 IC54	P40	P30			S40T
	P40	**TX40**		ST40E			EX45	SR30		S60M	G13	IC28 IC54		P40			S40T
M	M01																
	M10	**TH10**		U10E EH510	H10A		WA10B	UMN	KM1	890	K313	IC20		M10	TN15U WU10HT		
	M20	**KS20**	UTi20T	U2 EH520	H13A		EX35	DX25 UMS		HX 883	K68 KMF K125M TTM	IC20	IN30M	M20	TN15U WU10HT		CTW7120 H210T
	M30	**UX30**	UTi20T	A30 A30N	H10F SM30		EX45	UMS			GK K600 TTR	IC28	IN30M				
	M40	**TU40**						UM40			G13	IC28	IN30M	M40			S40T
K	K01	**KS05F**	HTi05T	H2 H1			WH01 WH05	KG03			K605			UF1	TN15U WU10HT		
	K10	**TH10**	HTi10	H1 EH10 EH510	H10	KW10	WH10	KG10 KT9 CR1	KM1	890	K313 K110M THM THM-U	IC20 IC09T	IN05S	K10	TN15U WU10HT		H210T H216T H10T
	K20	**KS15F** **KS20**	UTi20T	G10E EH20 EH520	H13A H10F	KW10 GW15	WH20	KT9 CR1 KG20 FB15		890 HX 883	K715 KMF K600	IC20 IC09T	IN05S IN10K IN15K IN30M	K20	TN15U WU10HT		CTW7120 H210T H216T H10T
	K30		UTi20T	G10E	H13A H10F	GW25		KG30		883	THR	IC28	IN10K IN15K IN30M	K30			
	K40										G13		IN30M				
N	N01	**KS05F**		H1	H10	KW10					K605	IC20					
	N10	**TH10**	HTi10	H1	H10 H10F	GW15	WH10	KT9 CR1	KM1	890 HX KX H15	K313 K110M THM THM-U	IC20 IC28	IN05S IN10K	K10	TN15U WU10HT	WK1 WK10	H210T H216T H10T
	N20	**KS15F**			H10F H13A		WH20	KT9 CR1	KM1	890 HX KX 883	K715 KMF K600	IC20 IC28	IN10K IN15K	K20	TN15U WU10HT	WK1 WK10	CTW7120 H210T H216T H10T
	N30									883 H25	G13 THR		IN15K IN30M			WK40 WMG40	
S	S01		RT9005									IC20					
	S10	**KS05F** **TH10**	RT9005 RT9010	EH510	H10 H10A	KW10	WH10	KG10	KM1	890 883	K10 K313 THM	IC20	IN05S IN10K	K10	TN15U WU10HT	WK1	H210T H216T H10T
	S20	**KS15F** **KS20**	RT9010 TF15	EH520	H10F H13A	GW25	WH20	KG20	KM1	890 883 H25	K715 KMF	IC20 IC28	IN10K IN15K	K20	TN15U WU10HT	WK1 WMG40	CTW7120 H210T H216T H10T
	S30		TF15							883	G13 K600 THR		IN15K IN30M			WMG40	
H	H01							KG03				IC20					
	H10	**TH10**			H13A			FZ05				IC20	IN10K	K10			
	H20							FZ15		890 HX 883			IN15K				

Note: The above table is selected from a publication. We have not obtained approval from each company.

Grade Comparison Chart

●PCBN and PCD for Turning

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Dijet	NTK	Seco Tools	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
Classifi-cation	Symbol															
K	K01	**BX930 BX910 BX870**	MB710 MB730 MB5015	BN500 BNC500	CB7525 CB7050 CB50	KBN60M		B52		KB9610 KD120 KB1630	IB10K		KB90	WBH10C	WCB80	TA100 CTL3215
	K10	**BX470 BX480 BX950**	MB710 MB730	BN7000 BN7500 BN500 BNC500	CB7050 CB7925 CB50	KBN60M	JBN795	B23 B30 B52	CBN200 CBN300 CBN400C CBN010	KB9640 KD120 KB1630	IB05S IB10S		KB90A	WBK40U	WCB80 WCB50	TA120 TA201 CTL3215
	K20	**BXC90 BX90S**	MB730 MBS140	BNS800	CB7050	KBN900		B23 B30 B52	CBN300 CBN500 CBN600 CBN010	KB1340 KB1345	IB90 IB25KD			WBK45U	WCB80	CTL3215
	K30	**BXC90 BX90S**	MBS140	BNS800		KBN900		B16	CBN500 CBN600	KB1340 KB1345						
S	S01	**M714B**	MB730	BN350			JBN795	JP2	CBN170				KB90			
	S10	**BX470 BX480 BX950**	MB4020	BN7500	CB7050	KBN65B KBN65M		B23 B30	CBN200	KB1630	IB05S IB10S		KB90A	WBK45U	WCB80	TA201
H	H01	**BXM10 BX310**	BC8110 MBC010 MB810	BNC100 BNC160 BNC2010 BNX10 BN1000	CB20	KBN510 KBN10C KBN05M KBN10M		B52 B5K	CBN10 CBN100 CBN160C CBN050C	KB1610 KB5610	IB05H IB10HC		KB50	WBH10C	WCB30	
	H10	**BXM10 BX330 BX530**	BC8110 MBC020 MB8025	BNC160 BNC200 BNC2020 BN250 BN1000	CB7015 CB7025 CB20 CB50	KBN525 KBN05M KBN10M KBN25M	JBN245	B36 B52 B6K	CBN150 CBN200 CBN300 CBN060K CBN050C CBN160C CBN300P CBN400C	KB9610 KB1610 KB5610	IB50 IB55 IB10H IB10HC IB20H IB25HA		KB50 TB650	WBH10C WBH10P WBH10U	WCB30 WCB50	CTL3215 TA100
	H20	**BXM20 BXA20 BX360**	MBC020 BC8120 MB8025 MB825	BNC200 BNC2020 BN250 BNX20 BNX25 BN2000	CB7025 CB20 CB7035	KBN525 KBN05M KBN10M KBN25M	JBN300 JBN330	B22 B36 B40 B6K	CBN150 CBN200 CBN300 CBN060K CBN160C CBN300P CBN400C	KB5625 KB1625	IB20H IB20HC IB25HA IB25HC		TB650	WBH25P	WCB50 WCB80	CTL3215 TA120
	H30	**BXC50 BX380**	MB835	BNC300 BN350 BNX25	CB7525	KBN35M KBN900	JBN300 JBN330	B22 B40	CBN500	KB1630 KB9640	IB25HC			WBH40C		TA201
N	N01	**DX160 DX180**	MD205	DA90	CD10	KPD001	JDA30 JDA735			KD1400 KD1405 KD100	ID5				WCD10	CTD4125
	N10	**DX140**	MD205 MD220	DA150	CD10	KPD001 KPD010 KPD230	JDA715	PD1	PCD05 PCD10	KD100 KD1400 KD1425	ID5	IN90D	KP500	WDN25U	WCD10	CTD4125 CTD4110
	N20	**DX120**	MD220 MD230	DA2200 DA1000	CD10	KPD001 KPD010 KPD230	JDA715	PD1	PCD05 PCD20	KD1425		IN90D	KP300	WDN25U	WCD10	CTD4205
	N30	**DX110**	MD230	DA2200 DA1000			JDA10		OVD20 PCD30 PCD30M				KP100			

Note: The above table is selected from a publication. We have not obtained approval from each company.

Grade Comparison Chart

●Ceramics for Turning

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
Classifi-cation	Symbol																
K	K01	**LX11** **LX21**		NB90S NB90M	CC6190 CC650	KA30 A65 KT66 PT600M			HC1 HW2 SE1 HC2		KY1310 KY1615			AW20 AB30 AS10	CW2015		CTN3105 CTS3105
	K10	**CX710** **FX105**			CC6190 CC650	A65 KT66 A66N PT600M			HC1 HW2 SE1 WA1 WA5		KY1310 KY1320 KY1615 KY3400		IN70N	AB30 AS10	CW2015 CW5025	WSN10	CTN3105 CTM3110 CTI3105 CTN3110 CTS3105
	K20	**FX105** **CX710**			CC6190	KS6000			SP9 SX1 SX8 SX9		KY1320 KY3400 KY3500 KY4300		IN70N	AS10	CW5025	WSN10	CTM3110 CTN3110
S	S01								JX1		KY1525 KY2100						
	S10	**WG300**		WX120	CC670 CC6060 CC6065	CF1			WA1 WA5 SX9		KY1525 KY1540 KY2100 KY4300			AS20 TC430	CW3020		
H	H01	**LX11**		NB100C	CC6050 CC650	A65 KT66 A66N PT600M			ZC4 ZC7		KY4300			AW20	CW2015		CTS3105
	H10	**WG300**		NB100C	CC6050 CC670 CC6190	A65 KT66 A66N PT600M			HC4 HC7 WA1		KY1615 KY4400			AB2010 AB20 AB30	CW2015		CTS3105

Note: The above table is selected from a publication. We have not obtained approval from each company.

Grade Comparison Chart

●CVD Coated Grade for Milling

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
Classifi-cation	Symbol																
P	P01											IC9015 IC5400 IC8080 IC9080			TN2510		
	P10		FH7020	ACP100	GC4220 GC4230			JC730U		MP1500	KCPM20	IC9015 IC5400 IC8080 IC9080 IC4100 IC5100			TN2510 TN7525	WKP25	GM226+
	P20	**T3225**	FH7020 F7030	ACP100	GC4220 GC4230		GX2140 GX2160	JC730U		MP1500 MP2500 T25M	KCPM20 KCPK30 KCPM30 KC927M	IC8080 IC9080 IC4100 IC5100 IC9250 IC520M	IN6530	TT7800	TN7525 TN7535	WKP25 WKP35 WKP35S	GM226+
	P30	**T3130** **T3225**	F7030	ACP100	GC4230 GC4240 GC2040		GX2140 GX2160			MP1500 MP2500 T350M T25M	KCPK30 KCPM30 KC927M	IC9250 IC520M IC4050 IC635	IN6530	TT7800	TN7525 TN7535	WKP25 WKP35 WKP35S	GM226+ GM246 GM43+
	P40				GC4230 GC4240 GC2040		GX2160			MM4500 T350M	KCPK30 KCPM30	IC4050 IC635	IN6530	TT7800	TN7535	WKP35 WKP35S	GM246 GM43+
M	M10			ACM200	GC2015			JC730U			KCPM20	IC9250 IC520M IC9350			TN7525		
	M20	**T3225**	F7030	ACM200	GC4230	CA6535		JC730U		MP2500 T350M T25M	KCPM20 KCPM30 KC927M	IC9250 IC520M IC9350 IC4050 IC635	IN6530	TT7800	TN7525 TN7535		CTC5235 GM226+
	M30	**T3225** **T3130**	F7030	ACM200	GC2040 GC4230 GC4240 S40T	CA6535	GX2160	JC730U		MP2500 T350M T25M	KCPM30 KC927M	IC9350 IC4050 IC635	IN6530	TT7800	TN7525 TN7535		CTC5235 CTC5240 GM226+ GM246 GM43+
	M40				GC2040 GC4240 S40T	CA6535	GX2160			MM4500 T350M		IC635	IN6530		TN7535		CTC5235 CTC5240 GM246 GM43+
K	K01		MC5020	ACK200		CA420M		JC605W			KC907M	IC8080 IC4100 IC5100 IC9150			TN2510 TN5505	WKP15	CTC3215
	K10	**T1215** **T1115**	MC5020	ACK200	GC3220	CA420M	GX2120	JC605W JC608X JC610		MK1500	KC907M KC914M KC917M KC924M KCK15	IC8080 IC4100 IC5100 IC9150 IC9080 IC520M		TT6800	TN2510 TN5505 TN5515 TN5520	WKP15 WKP25	CTC3215 SR216 SR226+
	K20	**T1215**	MC5020	ACK200	GC3220 GC3330 GC3040 GC4220 GC4230	CA420M	GX2120 GX2140	JC605W JC608X JC610		MK1500 MP1500	KC917M KC924M KCK15 KCPM20 KCPK30 KC927M	IC5100 IC9150 IC9080 IC520M IC4050	IN6515 IN6530	TT6800	TN5515 TN5520	WKP15 WKP25 WKP35 WKP35S	SR216 SR226+
	K30		MC5020		GC3330 GC3040 GC4220 GC4230 GC4240		GX2140	JC610		MK1500 MP1500	KCPM20 KCPK30 KC927M	IC520M IC4050	IN6515 IN6530			WKP25 WKP35 WKP35S	

Note: The above table is selected from a publication. We have not obtained approval from each company.

Grade Comparison Chart

●PVD Coated Grade for Milling

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
Classification	Symbol																
P	P01	**AH710 AH110**			GC1010		ATH80D JP4105	JC8003			KC505M KC510M KC515M	IC903		TT2510 TT5505	TN2505 TN6505		
	P10	**AH120 AH725**	MP6120 VP15TF	ACP200	GC1010 GC1025	PR830 PR1225 PR1230 PR1525	ATH80D PN08M ATH10E PN15M JP4105 JP4115 JP4120	JC8003 JC8015 JC5015 JC5118	DM4		KC505M KC510M KC515M KC610M KC715M	IC903 IC907 IC950 IC908 IC910 IC380 IC900	IN2505	TT2510 TT5505 TT5515 TT7080	TN2505 TN2525 TN6425 TN6505	WHH15 WXM15	
	P20	**AH120 AH725 AH3135 AH9030**	MP6120 VP15TF MP6130 UP20M VP20RT	ACP200 ACP300	GC1025 GC1030 GC2030	PR830 PR1225 PR1230 PR1525	JP4120 JS4045 CY250	JC8015 JC5015 JC5118 JC5040		MP3000 F25M	KC522M KC525M KC527M KC530M KC610M KC620M KC635M KC715M KC720M KC730M	IC907 IC950 IC908 IC910 IC380 IC900 IC830 IC928 IC1008	IN2040 IN2505 IN4005 IN4030	TT2510 TT5505 TT5525 TT7080 TT9030 TT9080	TN2525 TN6425 TN6430 TN6525	WHH15 WXM15	CTP1235 CTP1625
	P30	**AH120 AH725 AH3135 AH130 AH6030**	MP6120 VP15TF MP6130 UP20M VP20RT VP30RT	ACP200 ACP300	GC1025 GC1030 GC2030	PR830 PR1225 PR1230 PR1525	JS4045 CY250 JM4160	JC5118 JC5040 JC8050 JC7560		MP3000 F25M F30M F40M	KC525M KC527M KC530M KC537M KC610M KC620M KC720M KC725M KC730M KC735M	IC907 IC950 IC908 IC910 IC380 IC900 IC830 IC928 IC1008	IN2040 IN2505 IN2530 IN4005 IN4030	TT5525 TT7080 TT8020 TT8080 TT9030 TT9080	TN6430 TN6525 TN6540	WSP45 WSP46	CTP1235 CTP1625 CTP2235
	P40	**AH140**	VP30RT	ACP300	GC1030 GC2030		JM4160	JC5118 JC5040 JC8050 JC7560		MP3000 F40M T60M	KC537M KC720M KC725M KC735M	IC830 IC928 IC1008	IN2040 IN2530 IN4005 IN4030	TT8020	TN6540	WSP45 WSP46	CTP1235 CTP2235
M	M01			ACM100 ACK300	GC1010		PCS08M		DM4			IC907 IC903					
	M10	**AH725**	VP15TF	ACM100 ACK300 ACP300	GC1010 GC1025 GC1030 GC2030	PR830 PR1225 PR1525 PR1535	PCS08M CY150		DM4		KC515M KC610M KC635M KC720M	IC907 IC903	IN2505	TT5525 TT9030 TT9080	TN6425 TN6525	WXM15	
	M20	**AH725 AH3135 AH130 AH6030**	VP15TF MP7130 MP7030 UP20M VP20RT	ACM300 ACP300	GC1025 GC1030 GC1040 GC2030	PR830 PR1225 PR1525 PR1535	CY150 CY250	JC8015 JC5015 JC5118	DM4	MP3000 MS2050 F25M F30M	KC522M KC525M KC530M KC610M KC635M KC720M KC730M	IC380 IC900 IC908 IC928 IC1008	IN2005 IN2505 IN2530 IN4005	TT8020 TT8080	TN6425 TN6525	WXM15 WSM35 WSM36	CTP1235 CTP1625
	M30	**AH3135 AH130**	VP15TF MP7130 MP7030 UP20M VP20RT MP7140 VP30RT	ACM300	GC1040 GC2030	PR830 PR1225 PR1525 PR1535	CY250 JM4160	JC8015 JC5015 JC5118 JC8050 JC7560		MP3000 MS2050 F30M F40M	KC522M KC525M KC530M KC537M KC725M KC730M KC735M	IC380 IC900 IC908 IC928 IC1008 IC328 IC330	IN2005 IN2505 IN2530 IN4005 IN4030	TT8020 TT8080	TN6540	WSM35 WSM36 WSP45 WSP46	CTP1235 CTP2235
	M40	**AH140**	MP7140 VP30RT	ACM300	GC1040	PR1225 PR1525 PR1535	JM4160	JC5015 JC5118 JC8050 JC7560		MS2050 F40M	KC725M	IC1008 IC328 IC330	IN2005 IN2530 IN4005 IN4030	TT8020	TN6540	WSM35 WSM36 WSP45 WSP46	CTP2235
K	K01	**AH110**	MP8010		GC1010	PR1510	ATH80D JP4105	JC8003				IC380 IC900		TT6080	TN2505 TN6405 TN6505		AMZ
	K10	**AH110 AH120**	MP8010 VP15TF		GC1010 GC1020	PR1210 PR1510	ATH80D JP4105 JP4120 CY150	JC8015		MK2050	KC514M KC515M KC520M KC620M	IC380 IC900 IC810 IC910	IN2015 IN2505 IN4015	TT6080	TN2505 TN6405 TN6505 TN6510	WHH15 WXM15 WKK25	AMZ CTP3220 CTP6215
	K20	**AH120 AH9030**	MP8010 VP15TF VP20RT	ACK300	GC1020	PR1210 PR1510	JP4120 CY150 CY250	JC8015 JC5015		MK2050	KC514M KC520M KC522M KC524M KC527M KC610M KC620M KC635M	IC810 IC910 IC950 IC350 IC830 IC928	IN2015 IN2505 IN4015 IN4030		TN2525 TN6510 TN6520 TN6525	WHH15 WXM15 WKK25	CTP3220 CTP1625
	K30	**AH120**	VP15TF VP20RT	ACK300		PR1510	CY250	JC8015 JC5015		MK2050	KC522M KC524M KC527M KC537M KC610M KC620M KC635M	IC830 IC928 IC1008 IC808 IC908	IN2015 IN2505 IN4015 IN4030		TN6430 TN6525 TN6540	WKK25	

●PVD Coated Grade for Milling

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
Classification	Symbol																
N	N01										KC410M KC510M KC5410			TT6080	TN6501		AMZ
	N10	**DS1100**		DL1000	GC1025 GC1030		SD5010 HD7010				KC410M KC510M KC5410 KC620M			TT6080 TT8020	TN6501 TN6502	WXN15	AMZ
	N20	**DS1200**	LC15TF	DL1000	GC1025 GC1030		SD5010 HD7010			F15M	KC422M KC620M			TT8020		WXN15	
S	S01	**AH110** **AH710**		ACM100 ACK300	GC1010	PR905 PR1210 PR1535		JC8003 JC8015			KC510M	IC808 IC907 IC908			TN6405		AMZ
	S10	**AH120** **AH725**	MP9120 VP15TF MP9130 MP9030	ACM100 ACK300	S30T GC1010 GC1030 GC2030	PR905 PR1210 PR1535	PTH13S JS1025	JC8003 JC8015 JC5015 JC5118		MS2050	KC510M KC610M	IC808 IC907 IC908 IC903	IN2505 IN2530	TT9030 TT9080 TT8080	TN6405 TN6425		AMZ CTP1625
	S20	**AH725** **AH130** **AH6030**	MP9120 VP15TF MP9130 MP9030	ACM300	S30T GC1030 GC1040 GC2030 GC2040	PR905 PR1210 PR1535	PTH13S JS1025	JC8015 JC5015 JC5118 JC8050 JC7560		MS2050 F40M	KC522M KC525M KC610M	IC300 IC900 IC830 IC928	IN2505 IN2530	TT8080 TT8020	TN6425	WSM35 WSM36	CTP1235 CTP1625
	S30	**AH130**	MP9130 MP9030	ACM300	S30T GC1040 GC2040	PR1535		JC5118 JC8050 JC7560		MS2050 F40M	KC522M KC525M KC725M	IC830 IC928	IN2530	TT8020	TN6540	WSM35 WSM36 WSP45 WSP46	CTP1235 CTP2235
H	H01	**AH110**	MP8010		GC1010			DH102 JC6102 JC8003 JC8008			KC510M	IC903		TT2510 TT5505	TN2505		
	H10	**AH110** **AH120**	MP8010 VP15TF		GC1010 GC1025 GC1030		PTH08M JP4105	JC6102 JC8003 JC8008 JC8015 JC5118		MH1000 F15M	KC505M KC510M KC635M	IC903 IC808 IC907 IC908		TT5515 TT6080	TN2505 TN2525	WHH15	CTP6215
	H20	**AH120** **AH725** **AH9030**	VP15TF		GC1025 GC1030		JP4105	JC8015 JC5118		F15M	KC635M	IC808 IC907 IC908 IC380 IC900		TT5515 TT6080	TN2525	WHH15	CTP6215
	H30									MP3000 F30M		IC380 IC900 IC1008					

Note: The above table is selected from a publication. We have not obtained approval from each company.

Grade Comparison Chart

●Cermet for Milling

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
Classifi-cation	Symbol																
P	P01			T250A	CT530	TN60 TN100M	MZ1000						IN0560	CT3000			TCC410
	P10	**NS740**	NX2525	T250A	CT530	TN60 TN100M TC60M	MZ1000 MZ2000 CH550	NIT CX75 CX90		MP1020	KTPK20	IC30N	IN0560 IN60C	CT3000 CT7000	TTI25		TCC410 TCM10
	P20	**NS740**	NX2525 NX4545	T250A T4500A		TN60 TN100M TC60M	MZ2000 MZ3000 CH500 CH7030	NIT CX75 CX90 SC30		MP1020	KTPK20	IC30N	IN60C	CT3000 CT7000	TTI25		TCM10
	P30		NX4545	T4500A			MZ3000 CH7035		C7X			IC30N	IN0545	CT7000			
M	M10	**NS740**	NX2525	T250A	CT530	TN60 TN100M TC60M	MZ1000 CH550	NIT CX75			KTPK20	IC30N	IN0560	CT3000 CT7000	TTI25		TCC410
	M20	**NS740**	NX2525 NX4545	T250A T4500A		TN60 TN100M TC60M	MZ2000 MZ3000 CH500 CH7030	NIT CX75 SC30	C7X	MP1020	KTPK20	IC30N		CT7000	TTI25		TCC410 TCM10
	M30		NX4545	T4500A			MZ3000 CH7035	SC30									
K	K01						MZ1000 CH550	NIT									TCC410
	K10	**NS740**	NX2525				MZ2000 MZ3000 CH500 CH7030	NIT CX75			KTPK20			CT7000			TCC410 TCM10
	K20						MZ2000 MZ3000 CH500 CH7030 CH7035	CX75			KTPK20						

Note: The above table is selected from a publication. We have not obtained approval from each company.

Grade Comparison Chart

●Cemented Carbide for Milling

ISO		Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Sandvik	Kyocera	Mitsubishi Hitachi Tool	Dijet	NTK	Seco Tools	Kennametal	Iscar	Ingersoll	TaeguTec	Widia	Walter	Ceratizit
Classifi-cation	Symbol																
P	P01																
	P10																S26T
	P20		UTi20T	A30N			EX35				K125M	IC50M		P30	TTM		S26T
	P30	**UX30**	UTi20T	A30N	SM30		EX40				K125M	IC50M IC28		P30	TTM TTR		S26T
	P40				SM30							IC28			TTR		
M	M01																
	M10											IC20 IC07 IC08					S26T
	M20		UTi20T		SM30							IC07 IC08			TTM		S26T
	M30		UTi20T	A30N	SM30							IC28			TTM TTR		S26T
	M40			A30N								IC28			TTR		
K	K01					KW10					K115M K313			K10	THM-F		
	K10	**TH10**	HTi10	G10E	H13A	KW10 GW25	WH10				K115M K313 K110M	IC20		K10	THM-F THM		CTW4615 H216T
	K20		HTi10 UTi20T	G10E	H13A	KW10 GW25				HX	KMF	IC20	IN10K		THM THR		CTW4615 H216T
	K30		UTi20T								KMF		IN10K		THR		
	K40												IN10K				
N	N01	**KS05F**	HTi10		H10	KW10					K115M				THM-U	WK10	
	N10	**TH10**	HTi10		H10 H13A H10F	KW10 GW25	WH10			H15	K115M K313 K110M	IC20 IC08		K10 UF10	THM-U THM-F THR-S	WK10	CTW4615 H216T
	N20	**KS15F**	HTi10 TF15	H1	H13A H10F	KW10 GW25				HX H15 H25	KMF K313 K110M	IC20 IC08 IC28		K10 UF10	THM-F THR-S THM	WMG40	CTW4615 H216T
	N30		TF15	H1						H25	KMF	IC28				WMG40	
S	S01					KW10					K313	IC20					
	S10			EH520	H13A	KW10 GW25		FZ15			K313 K110M	IC20 IC07 IC08			THM-F		
	S20	**KS20**		EH520	H10F H13A	KW10 GW25		FZ15		HX H25	KMF	IC20 IC07 IC08 IC28			THM		
	S30				H10F							IC07 IC08					
H	H01				H1P			FZ05									
	H10				H1P			FZ05 FZ15				IC20			THM-F		
	H20							FZ15									

Note: The above table is selected from a publication. We have not obtained approval from each company.

Chipbreaker Comparison Chart

●Negative insert type

ISO Classification	Cuutting Mode	Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Kyocera	Sandvik	Mitsubishi Hitachi Tool	Kennametal	Dijet	Iscar	TaeguTec	Widia	Walter	Ceratizit
P	Precision finishing	**01** **TF**	PK FH	FA	DP	QF	FE	FS , LF	PF	 SF , PP , TF	 FA			
	Finishing and light cutting	**TS , TSF** **ZF** **11 , NS** **AS** **TQ** **NM** **CB** **C**	SA FY C SH MP	SU FL SE , SX	PQ , VF CJ PQ GP , PP HQ GS CQ	PF , QF LC MF R/L-K	BE , BH AB , CT CE	FF , FN	UA , FT UR , UT	F3P NF , SF	FG VF , EA FC MC ML , MP	4 AP	NF3 NS6	CF , TF
	Finishing and light cutting (With Wiper)	**AFW , FW** **ASW , SW**	SW	LUW SEW GUW	WP WQ	WL , WF WMX WM , WR		FW MW RW		WF WG	WS WT	FW MW	NF NM	TFQ TMQ
	Medium cutting	**TM , AM** **DM , ZM** **All-round**	MA MH , MP	GU GE , UX	HS , PT , GT CS , PS	PM , QM XM , XRM	AH AE , AY , B	P MN	PG , UB GN GNP	M3P , M3M PP , TF , GN	PC , MT MC , MG-	48	NMT , NM4	TMF , TMM M50
	Medium to heavy cutting	**TH** **THS**	RP , GH HZ , HL	MU , ME HG	PH All-round	HM , PR MR	RE	RN , RP MR	GG , UD	NR MR	RT	49	NM5 , NM6 NM9	TM TRM
	Heavy cutting	**TU** **TRS** **TUS**	HM , HX HV	HG , HP HU , HW HF	PX	PR , MR HR , QR	TE , UE HX , HE H	RM RH	UC	R3P NM	HT , HD RX , RH HY , HZ		NR6 NRF NRR	TRR , TR R28 , R58 R88
M	Finishing and light cutting	**SF , SA** **SS**	GM , MS SH , LM	EX , EG SU , EF	GU MQ	MF , XF LC , R/L-K	MP BH , AB	FP	SF	TF , VL	EA , SF , SU FG		NF4 NMS	CF , F30 , M34 F32 , TF
	Medium cutting	**SM** **S**	MM , MA ES	GU HM	TK MU	MM , QM XM , XRM	PV , SE DE	 MP , P	SZ	M3M , PP	EM , ET		NM4	TMF , M42 M30 , M52
	Heavy cutting	**TH , SH** **TU**	GH , RM , HZ	EM , MU	MS	MR HM , PR	AH , AE	UP , RP	SG	MR , MH		SR	NR4 NRT , NRS	TM , M60 TRM , TMR , TRR R80
K	Finishing	**CF**	LK, MA	UZ	C	KF , XF	Y , AH	FN		GN	FG			CF
	Medium cutting	**CM** **All-round**	MK GK	GZ	ZS All-round	KM , QM XM , XRM	V, AE VA	RP , UN	PG		MT MG		NM5	M50
	Heavy cutting	**CH** **Without chipbreaker**	RK Without chipbreaker	 Without chipbreaker	GC Without chipbreaker	KR Without chipbreaker	RE Without chipbreaker	Without chipbreaker	GG , UD Without chipbreaker		RT		Without chipbreaker	TMR , TR R28 R58 , R88
N	Cutting of non-ferrous metals	**P**		AX	AH , A3	MF QM	Without chipbreaker	MS , MP MG		PP	ML			F32
S	Finishing	**HRF**	FJ , LS	EF EX	MQ	SF 01		FS , LS MS			SF		NFT NF4	
	Medium cutting	**HRM** **HMM** **SA**	MS RS , GJ	EG MU	TK , MS , MU	MM , QM SMR		UP , P , NGP RP		PP	SU	SM	NMS NM4 , NRS , NR4	M34 , M52

Note: Above charts are based on published data and not authorized by each manufacturer.

Chipbreaker Comparison Chart

●Positive insert type

ISO Classification	Cuutting Mode	Tungaloy	Mitsubishi Carbide	Sumitomo Electric	Kyocera	Sandvik	Mitsubishi Hitachi Tool	Kennametal	Dijet	Iscar	TaeguTec	Widia	Walter	Ceratizit
P	Precision finishing	**01**	FV , SMG	FC , FW	CF CK		No sign MP	UF		SF		2	PF2	F32
	Finishing and light cutting	**PSF , PF , SS** **PS , PSS , TS** **TSW** **W08~20**	FP , FV , SV LP SW , MW R/L , R/L-FD R/L-FS R/L-MV R/L-F , R/L-L	FP , FZ , LU FK , SS , SC SU , SK , SF US LUW , SDW W , SD FX , FY	GQ , GK GP , HQ XP , XQ	R/L-K PF , XF UF , PM WF , WK , WM	JQ	11 , GM LF	FT	PF SM , 14 , 17 19 , XL R/L RF , LF No sign	FA FG GF	41	PF5 PF4 PS5 PF , PM	SF SMF SMQ , 25Q
	Medium cutting	**PM** **23** **24** **All-round** **RS**	MP MV No sign	SU , MU UJ SC (except for G-class inserts) RP	All-round VF , MF	PM , XM UM , PR , XR UR	JE	GM , MP , MR	GG	DT , HQ	MT MT	43	PM5	SM
	High-feed, small depth of cut cutting	**61**	No sign			No mark	WE			No sign 14	No sign	No sign		
M	Finishing	**PSF , SS**	FM , FV , SV	FC		R/L-K UF , MF	MP	GM , LF			FG	41		
	finishing to Medium cutting	**PSS** **PS**	LM SV		MQ	MM , XM UM	JQ	MF					PF4	SF , SMF
	Medium cutting	**PM**	MM , MV	MU		MR , XR UR	JE						PM5	F23 , F43 SM
K	Cutting of cast irons	**CM** **Flat-top**	MK Flat-top	Flat-top	Flat-top	KF , XF KM , XM UM , KR , XR	JQ , JE	Flat-top	Flat-top	19	MT Flat-top		PS5 , PM5 Flat-top	SF 25P 27 , 29
N	Cutting of non-ferrous metals	**AL** **PP** **Ground**	AZ R/L-F R/L	AG AX , AY	AH , A3	AL		GT-HP		AS	FL	AL1, AL2 , AL3	PF2 PM2	23P 25P 27 , 29
S	Finishing	**PSF**	FJ	FC	MQ	MF , UF , R/L-K								SF
	finishing to Medium cutting	**PSS** **PS**		FX , FY		MM , XM								F23
	Medium cutting	**All-round**		SI		UM , MR , UR , XR					FG		PF2 , PF4	SM , 25P , 29
P M N S	Turning on small lathes	**01** **W08 , W15 , W20** **J10** **JRP , JSP , JPP** **TS , JTS** **TSW** **SS , JSS** **JS**	R/L-SR R/L-SN R/L-SS FS , F SW , MW SMG	W , SD FX , FY LUW , SDW LU , FP , FK , SU FB , LB FC , SI , SC	R/L-F , R/L-FSF ER/L-U FR/L-U R/L-U FR/L-U , R/L-USF MF , R/L-FSF GK E-GK	F , M	No sign		MF , MM ALU , MM1 ASF FT , ACB		GF , GW		PM5	

Note: Above charts are based on published data and not authorized by each manufacturer.

Unified symbols for cutting conditions and tool dimensions

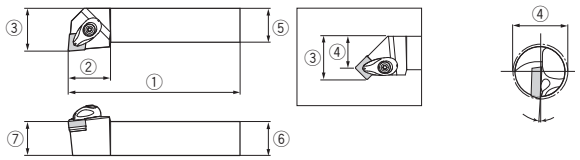
Japan Cutting & Wear-resistant Tool Association has standardized the quantity symbols for cutting conditions and tool specifications in order to avoid the confusion caused by each manufacturer's using its own symbols.

(Quantity symbols of cutting conditions) Symbol / Unit

Turning	Cutting speed		Feed		Depth of cut		Cutting edge width		Min. bore diameter	
	Vc	m/min	*f*	mm/rev	*ap*	mm	*W*	mm	*øDm*	mm
	Power consumption		Specific cutting force		Theoretical surface roughness		Corner radius		Number of revolutions	
	Pc	*k*W	*kc*	MPa	*h*	μm	*rε*	mm	*n*	min^{-1}
Milling	Cutting speed		Feed speed		Feed per tooth		Feed		Number of teeth	
	Vc	m/min	*Vf*	mm/min	*fz*	mm/t	*f*	mm/rev	z	
	Axial depth of cut		Radial depth of cut		Pick feed		Power consumption		Specific cutting force	
	ap	mm	*ae*	mm	*Pf*	mm	*Pc*	kW	*kc*	MPa
	Chip removal rate		Number of revolutions							
	Q	cm^3/min	*n*	min^{-1}						
Drilling	Cutting speed		Feed speed		Feed		Tool diameter		Power consumption	
	Vc	m/min	*Vf*	mm/min	*f*	mm/rev	*øDc*	mm	*Pc*	kW
	Torque		Thrust force		Specific cutting force		Drilling depth		Number of revolutions	
	Mc	N·m	*Tc*	N	*Kc*	MPa	*H*	mm	*n*	min^{-1}

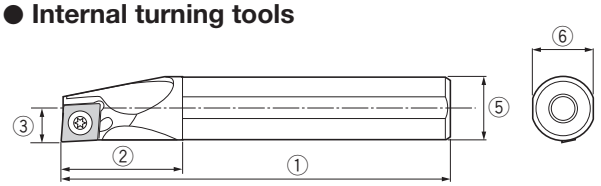
Dimensional symbols of turning tools

● External turning tools



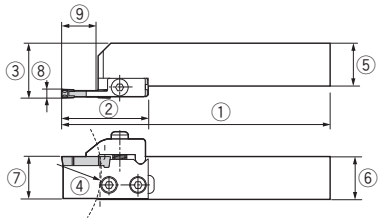
①	②	③	④	⑤	⑥	⑦
Overall length	Head length	Distance to cutting edge	Distance to cutting edge	Shank width	Shank height	Cutting edge height
L_1	L_2	*f*	f_1	*b*	*h*	h_1

● Internal turning tools



①	②	③	④	⑤	⑥
Overall length	Head length	Distance to cutting edge	Minimum bore diameter	Shank diameter	Shank height
L_1	L_2	*f*	*øDm*	*øDs*	*h*

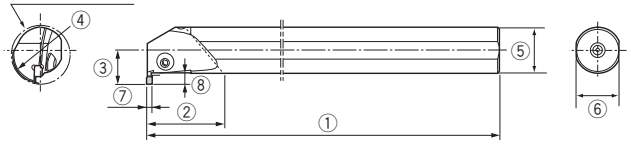
● External and face grooving tools



①	②	③	④	⑤
Overall length	Head length	Distance to cutting edge	Maximum grooving diameter	Shank width
L_1	L_2	*f*	*øDm*	*b*
⑥	⑦	⑧	⑨	
Shank height	Cutting edge height	Cutting edge width	Maximum grooving depth	
h	h_1	*w*	*ar*	

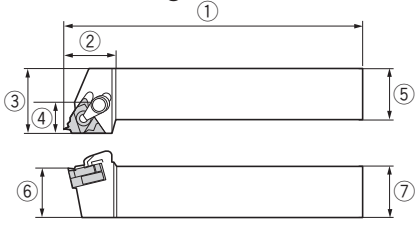
● Internal grooving tools

Min. bore diameter *øDm*



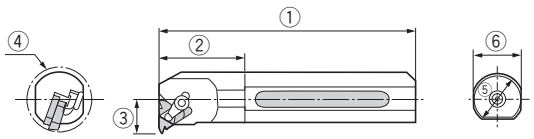
①	②	③	④
Overall length	Head length	Distance to cutting edge	Maximum grooving diameter
L_1	L_2	*f*	*øDm*
⑤	⑥	⑦	⑧
Shank diameter	Shank height	Cutting edge width	Maximum grooving depth
øDs	*h*	*w*	*ar*

● External threading tools



①	②	③	④	⑤	⑥	⑦
Overall length	Head length	Distance to cutting edge	Shoulder width	Shank width	Shank height	Cutting edge height
L_1	L_2	*f*	-	*b*	*h*	h_1

● Internal threading tools



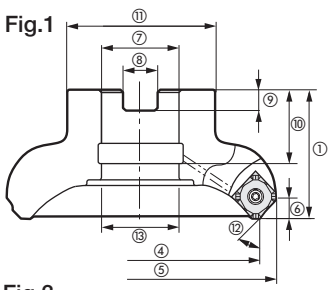
①	②	③	④	⑤	⑥
Overall length	Head length	Distance to cutting edge	Maximum grooving diameter	Shank diameter	Shank height
L_1	L_2	*f*	*øDm*	*øDs*	*h*

Dimensional symbols of milling tools

● Bore type milling tools

Square shoulder cutter

Fig.1



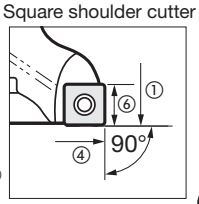


Fig.2

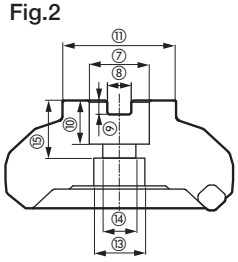


Fig.3

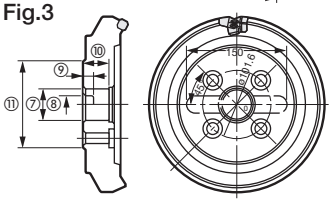
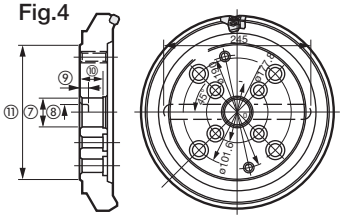
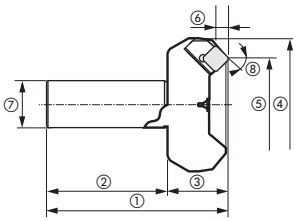


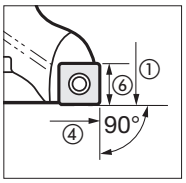
Fig.4



● Shank type milling tools



Square shoulder cutter

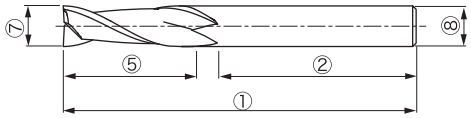


①	②	③	④
Overall length	Shank length	Cutter height	Cutter diameter
L	ℓ_s	L_f	$\varnothing D_c$
⑤	⑥	⑦	⑧
Maximum outer diameter	Maximum depth of cut	Shank diameter	Corner angle
$\varnothing D_1$	ap	$\varnothing D_s$	κ

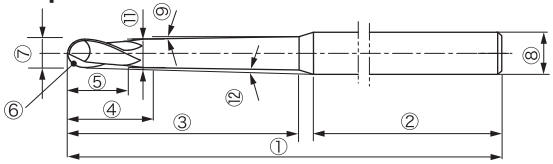
①	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
Cutter height	Cutter diameter	Maximum outer diameter	Maximum depth of cut	Hole diameter	Key way width	Key way depth	Mounting hole depth	Mounting flat diameter	Corner angle	Mounting bolt counter bore dia.	Mounting bolt hole diameter	Mounting bolt hole depth
L_f	$\varnothing D_c$	$\varnothing D_1$	ap	d	a	b	ℓ	$\varnothing D_b$	κ	$\varnothing d_1$	$\varnothing d_2$	ℓ_1

Dimensional symbols of endmills

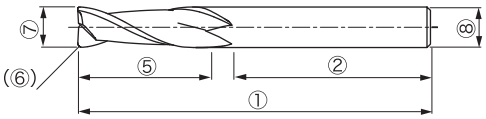
● Square endmills



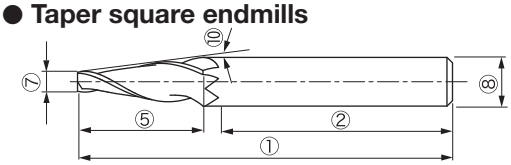
●Taper-neck ball endmills



● Radius endmills

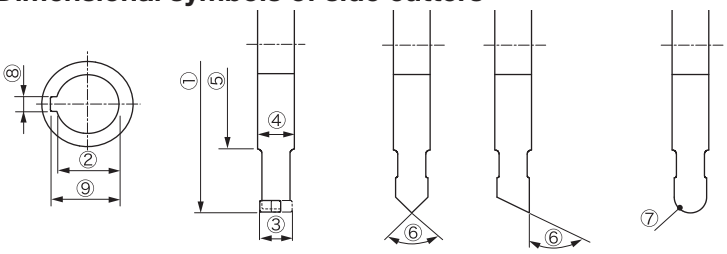


● Taper square endmills



①	②	③	④	⑤	⑥ Ball end	⑥ Radius end	⑦	⑧	⑨	⑩	⑪	⑫	⑬
Overall length	Shank length	Neck length	Length of parallel portion	Cutting edge length	Ball radius	Corner radius	Tool diameter	Shank diameter	Half angle of neck taper	Half angle of cutting edge taper	Neck diameter	Inter-ference angle	Helix angle
L	ℓ_s	ℓ_2	ℓ_1	ℓ	R	r	$\varnothing D_c$	$\varnothing D_s$	θ_n	θ_c	$\varnothing D_1$	$\theta\kappa$	λ

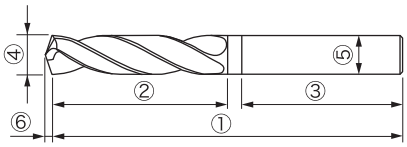
Dimensional symbols of side cutters



①	②	③	④	⑤
Cutter diameter	Bore diameter	Cutting edge width	Boss thickness	Boss diameter
$\varnothing D_c$	$\varnothing d$	ℓ	T	$\varnothing D_b$
⑥	⑦	⑧	⑨	⑩
Cutting edge angle	Corner radius	Key way width	Key way depth	Number of teeth
α	R	a	b	z

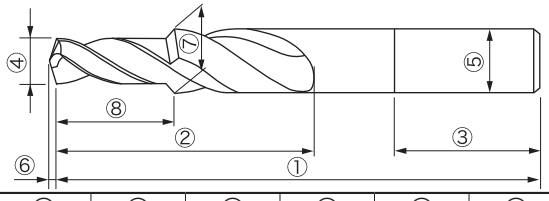
Dimensional symbols of drills

● Solid straight drills



①	②	③	④	⑤	⑥
Overall length	Flute length	Shank length	Drill diameter	Shank diameter	Point length
L	ℓ	ℓ_s	$\varnothing D_c$	$\varnothing D_s$	L_p

● Solid step drills



①	②	③	④	⑤	⑥	⑦	⑧
Overall length	Flute length	Shank length	First step drill diameter	Shank diameter	Point length	Second step drill diameter	Step length
L	ℓ	ℓ_s	$\varnothing D_c$	$\varnothing D_s$	L_p	$\varnothing D_{c2}$	ℓ_1

Alphanumeric Index



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