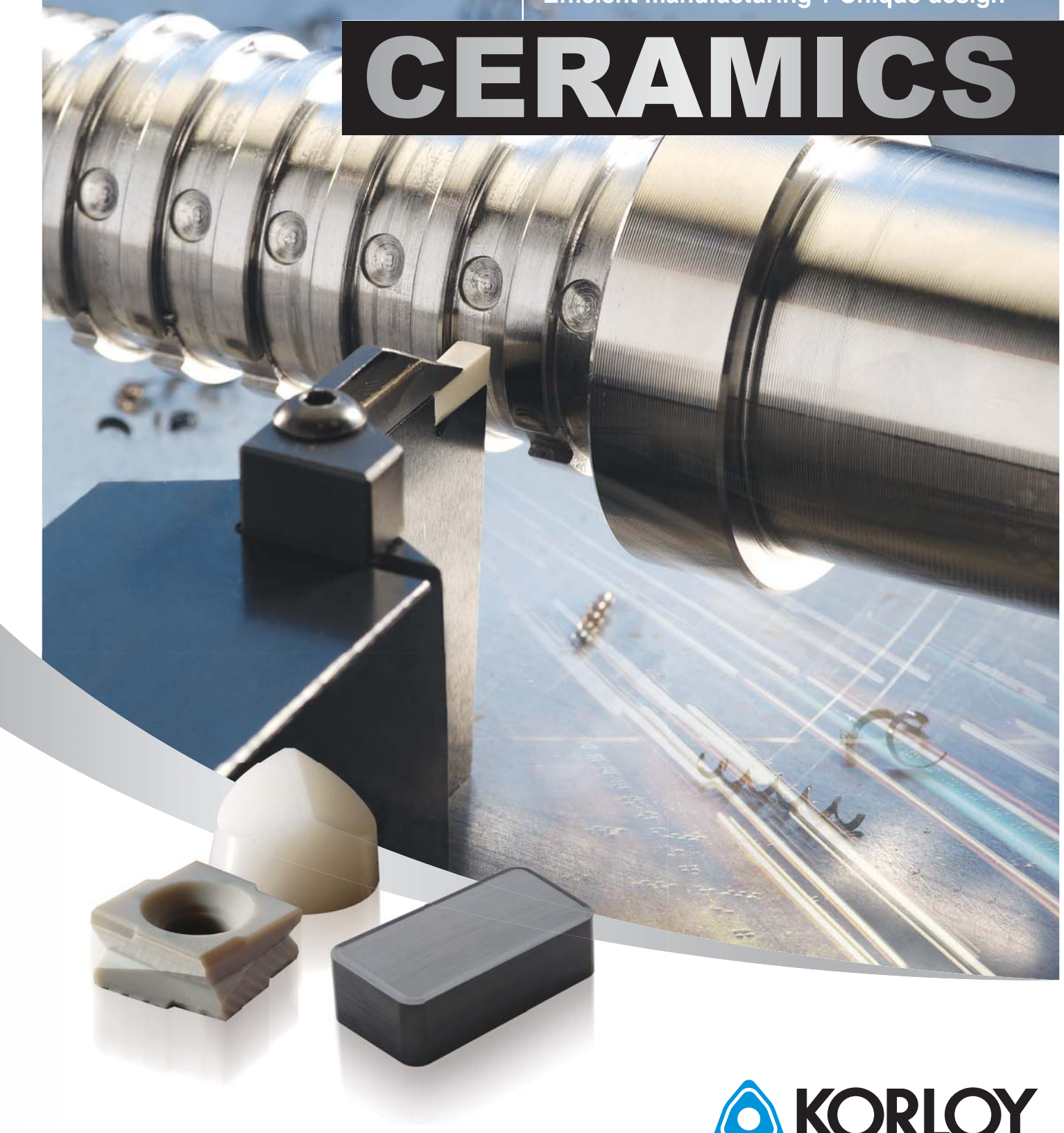
We Create Your Tomorrow!

Efficient manufacturing + Unique design

CERAMICS



KORLOY

KORLOY CERAMICS



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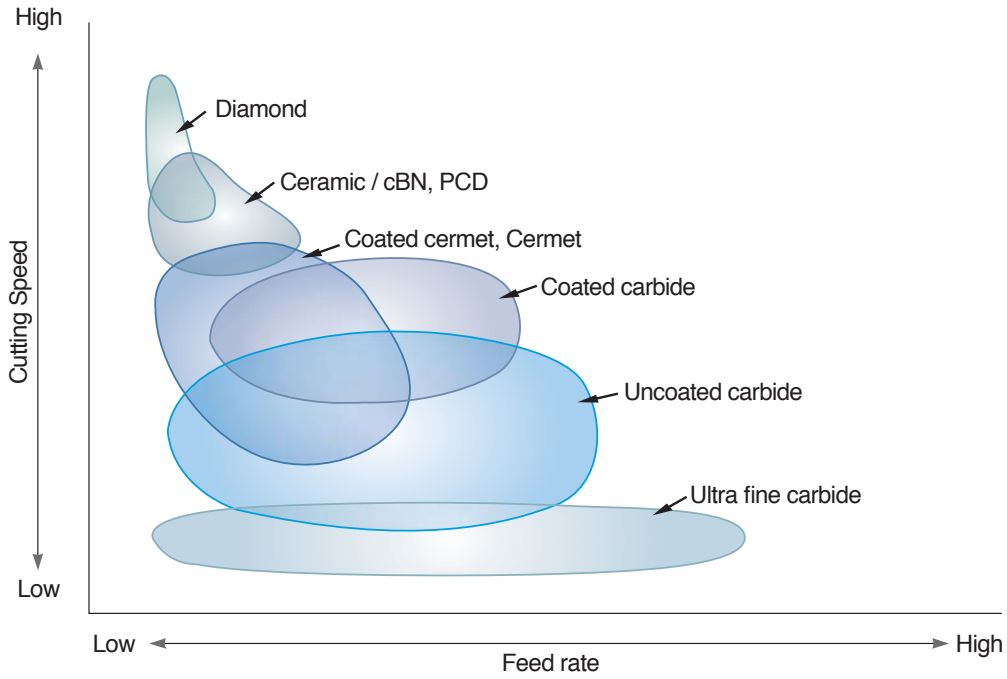


Grade Information

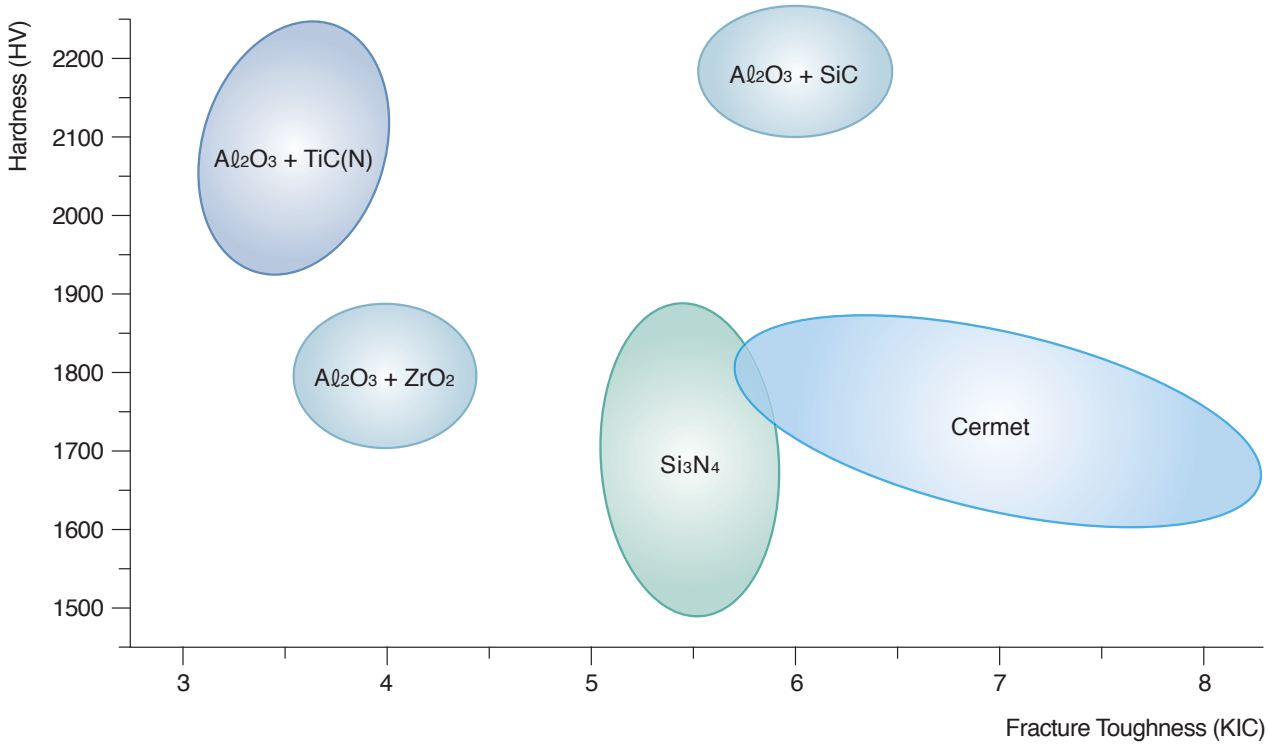
CERAMIC

SiC-Whisker	CW40	High Speed Steel, High Chrome Steel in medium or low speed cutting. Roughing and medium cutting with heavy interruption
	CW80	Nickel Base Alloy, Cobalt Base Alloy in high speed cutting. Roughing and finishing with continuous or light interruption
Al_2O_3+TiC(N)	CAT10	Finishing for hardened steel and cast iron
	CAT30	General machining for hardened steel and cast iron
	CAT50	Fine finishing for hardened steel and cast iron
	CAT70	Fine finishing for hardened steel and cast iron in high speed
TiN Coating	CAT10C	TiN coated on CAT10 grade
	CAT30C	TiN coated on CAT30 grade
TiC+Al_2O_3	CAT20	Turning & Milling for ductile cast iron in finish
Al_2O_3+ZrO_2	CA20	Medium cutting for cast iron
	CA30	Medium cutting for high hardness cast iron
Si_3N_4	CSN20	Roughing and interrupted cutting for cast iron
	CSN30	Roughing and heavy interrupted cutting for cast iron
	CSN40	General machining for cast iron
	CSN50	Roughing for hard material in high speed
	CSN60	Roughing for hard material with interrupted in high speed
	CSN80(SiAlON)	General machining for high temperature alloy and inconel (Dry)
	CSN90(SiAlON)	General machining for high temperature alloy and inconel (Wet)

Application Range



Mechanical Properties



CERAMIC

● KORLOY Ceramics take pride in its outstanding wear resistance and thermal shock resistance with high speed cutting. Pure raw materials give stability and fine microstructure to the products. Through HIP process, shaped bodies are completely condensed so that the finished goods are strong and resistant against fracture and wear.

▶ Improved work efficiency by increasing cutting speed on extremely higher than carbide inserts.
▶ Longer tool life through excellent wear resistance
▶ Precise cutting and superior surface roughness

Grade		Features	Applications	Toughness
Whisker	CW40	Excellent flank & notch wear in high speed cutting Al_2O_3+SiC	High Speed Steel, High Chrome Steel in medium or low speed cutting Roughing and medium cutting with heavy interruption	Tougher ↓ Harder
	CW80	Excellent flank & notch wear in high speed cutting Al_2O_3+SiC	Nickel Base Alloy, Cobalt Base Alloy in high speed cutting Roughing and finishing with continuous or light interruption	
Al_2O_3 Series	CAT10	Tougher alternative to CAT30 High thermal shock resistance Al_2O_3+TiC	Universal grade for machining cast iron and hardened steel	Tougher ↓ Harder
	CAT30	Excellent wear resistance Al_2O_3+TiCN	A basic choice for machining hardened steel and alloy steel	
	CAT50	Alternative to PCBN fine microstructure Al_2O_3+TiCN	Fine finishing for hardened steel and cast iron	
	CAT70	Excellent wear and thermal shock resistance Al_2O_3+TiCN	Fine finishing for hardened steel and cast iron in high speed	
	CAT10C	Wear resistance improved TiN coated	Finishing for hardened steel and cast iron	
	CAT30C	Excellent wear resistance TiN coated	Finishing for hardened steel and cast iron	
	CAT20	High thermal shock resistance Usable with coolant TiC+Al_2O_3	Machining ductile cast iron Finishing for ductile cast iron and hard materials	Finishing for ductile cast iron
ZrO_2 Series	CA20	Toughened by zirconia High chemical stability Al_2O_3+ZrO_2	Finishing, semi-finishing of cast iron and steel	Tougher ↓ Harder
	CA30	Harder alternative to CA20 Al_2O_3+ZrO_2	Finishing, semi-finishing of cast iron and steel	
Si_3N_4 Series	CSN20	Good toughness and thermal shock resistance Well balanced wear resistance and toughness Si_3N_4	First choice for roughing with interrupted cuts Roll turning and milling of cast iron and steel	Roughing in lower speed
	CSN30	Tougher alternative to CSN40 Thermal shock resistance and good toughness Si_3N_4	Roughing and high speed cutting with interruption	Tougher ↓ Harder
	CSN40	Excellent wear resistance in high speed cutting Si_3N_4	First choice for roughing of cast iron High speed machining with interrupted cuts	
	CSN50	Harder alternative to CSN40 Improved wear resistance at high cutting speed Si_3N_4	High speed roughing for cast iron	
	CSN60	Excellent wear resistance in interrupted cutting Si_3N_4	Roughing for hard material with interruption and high speed	
	CSN80	Advanced grade with SiAlON contained superior edge strength SiAlON	Great performance against notch wear High speed roughing of high temperature alloys and inconel	Harder ↓ Tougher
	CSN90	Excellent thermal shock resistance and thermal conductivity SiAlON	Tough machining in heat resistance Super alloy (HRSA)	

Physical Properties

Grade	Composition	Color	Density (g/cm^3)	Hardness (HV)	Toughness ($MPa \cdot m^{1/2}$)	Thermal Conductivity (cal/cm. sec. °C)
CW40	Al_2O_3+SiC	Green	3.80	2,100	7.00	-
CW80	Al_2O_3+SiC	Green	3.70	2,100	7.00	-
CAT10	Al_2O_3+TiC	Black	4.20	2,100	4.00	0.08
CAT30	Al_2O_3+TiCN	Black	4.40	2,150	4.50	0.08
CAT50	Al_2O_3+TiCN	Black	4.30	2,200	4.50	0.08
CAT70	Al_2O_3+TiCN	Black	4.40	2,200	4.50	0.08
CAT10C	CAT10+TiN PVD	Gold	4.20	2,150	4.00	-
CAT30C	CAT30+TiN PVD	Gold	4.40	2,200	4.50	-
CAT20	TiC+Al_2O_3	Black	4.60	2,200	4.50	0.07
CA20	Al_2O_3+ZrO_2	White	4.00	1,800	4.50	0.07
CA30	Al_2O_3+ZrO_2	Pink	4.10	1,850	4.50	0.07
CSN20	Si_3N_4	Black	3.30	1,600	5.00	0.06
CSN30	Si_3N_4	Gray	3.20	1,600	6.00	0.05
CSN40	Si_3N_4	Gray	3.20	1,650	6.00	0.05
CSN50	Si_3N_4	Gray	3.20	1,700	6.00	0.05
CSN60	Si_3N_4	Black	3.20	1,700	6.50	0.07
CSN80	Si_3N_4	Black	3.20	1,900	6.00	0.04
CSN90	Si_3N_4	Gray	3.22	1,600	5.00	0.07

Choice of Ceramic Grade for Workpiece

		CAT10/CAT30 CAT50/CAT70 CAT10C/ CAT30C	CAT20	CA20 CA30	CSN20 CSN30/CSN40 CSN50/CSN60	CSN80 CSN90	CW40	CW80
Cast Iron	Gray Cast Iron	◎	○	◎	◎	○		
	Chilled Cast Iron	◎		◎	◎	◎		
	Ductile Cast Iron	○	◎		○	○		○
Steel	Mild Steel			○				
	Carbon Steel			○				
	Alloy Steel	◎		○		◎	○	○
	Forged Steel	◎						
	Heat Treated Steel	◎						
	High Speed Steel	◎					◎	
	High Manganese Steel	○			○	○	◎	○
	Stainless Steel							
	Heat Resistant Steel	○			○	○	○	○
	Super Alloy Steel	○			○	◎	○	◎
	Inconel					◎	○	◎

◎ : Excellent ○ : Good

Choice of Ceramic Grade for Workpiece

Application	Grade	Workpiece		Machining Type	Speed (V) (m/min)	Feed (f) (mm/rev)	Depth (DOC) (mm)
Turning	CAT10 CAT30 CAT50 CAT70 CAT10C CAT30C	Gray Cast Iron	Gray Cast Iron (FC) Malleable (FCMB)	Rough Finish	150 ~ 800 200 ~ 1,200	0.20 ~ 0.50 0.30 ~ 0.50	3.0 ~ 6.0 0.1 ~ 0.5
			Chilled Cast Iron	Rough Finish	30 ~ 100 50 ~ 200	0.10 ~ 0.20 0.05 ~ 0.15	0.5 ~ 1.5 0.1 ~ 0.5
		Steel	Carbon Steel Alloy Steel Bearing Steel	Rough Finish	150 ~ 400 200 ~ 800	0.20 ~ 0.50 0.05 ~ 0.20	2.0 ~ 5.0 0.1 ~ 0.5
			Hard Steel (HRC 45≥)	Rough Finish	20 ~ 100 40 ~ 200	0.10 ~ 0.20 0.05 ~ 0.50	0.5 ~ 1.5 0.1 ~ 0.5
	CAT20	Ductile Cast Iron Nodular Cast Iron		Rough Finish	100 ~ 400 200 ~ 800	0.10 ~ 0.20 0.05 ~ 0.25	1.0 ~ 2.0 0.1 ~ 0.5
	CA20 CA30	Gray Cast Iron (FC) Steel (HRC 45≤)		Rough Finish	200 ~ 700 300 ~ 1,200	0.20 ~ 0.40 0.05 ~ 0.30	2.0 ~ 5.0 0.1 ~ 0.5
	CSN20 CSN30 CSN40 CSN50 CSN60	Gray Cast Iron	Gray Cast Iron (FC) Malleable (FCMB)	Rough Finish	150 ~ 1,100 250 ~ 1,200	0.30 ~ 0.80 0.15 ~ 0.40	< 5.0 < 1.0
			Chilled Cast Iron	Rough Finish	20 ~ 100 60 ~ 200	1.00 ~ 2.00 0.50 ~ 1.00	< 5.0 < 1.0
	CSN80 CSN90	Ni-Based Alloy Non-Ferrous Metal Inconel		Rough Finish	150 ~ 250 150 ~ 450	0.20 ~ 0.40 0.10 ~ 0.20	< 5.0 < 1.0
	CW40 CW80	High temperature alloys Inconel Stellite		Rough Finish	180 ~ 360 180 ~ 450	0.10 ~ 0.25 0.10 ~ 0.30	1.0 ~ 3.0 0.5 ~ 2.0
Milling	CSN20 CSN30 CSN40 CSN50 CSN60	Gray Cast Iron (FC)		Rough Finish	100 ~ 1,200 150 ~ 1,500	0.30 ~ 0.50 0.30 ~ 0.70	< 5.0 < 3.0
		Ductile Cast Iron Alloy Steel		Rough Finish	90 ~ 500 100 ~ 700	0.10 ~ 0.30 0.10 ~ 0.40	< 5.0 < 3.0
	CSN80 CSN90	High temperature alloys Inconel Stellite		Finish	700 ~ 1,000	0.05 ~ 0.15 / tooth	0.5 ~ 2.5
	CW40 CW80	High temperature alloys Inconel		Rough	150 ~ 400	0.05 ~ 0.10 / tooth	1.0 ~ 3.0

Ceramic Inserts





Code System 08

Application Index 11

Turning 12

Roll Turning 33

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Code System Turning

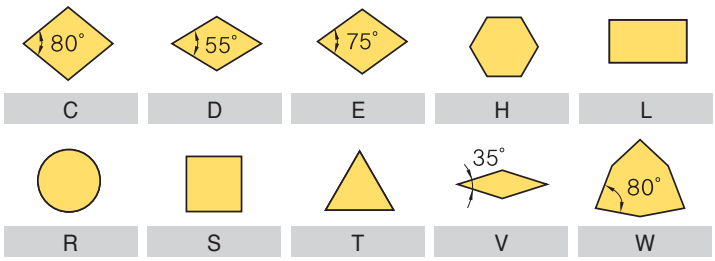
Turning (ISO)

S	N	G	N
1	2	3	4
Insert Shape	Clearance Angle	Tolerance	Cross Section Type

ASA

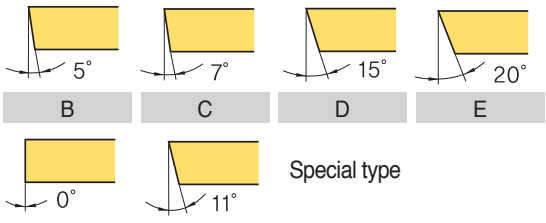
S	N	G	N
1	2	3	4
Insert Shape	Clearance Angle	Tolerance	Cross Section Type

1 Insert Shape



C	D	E	H	L
R	S	T	V	W

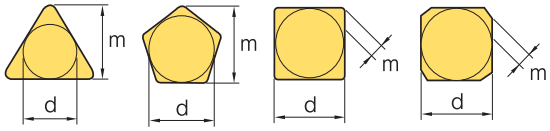
2 Clearance Angle



B	C	D	E
N	P	O (Special type)	

3 Tolerance

d : Inscribed circle
t : Thickness
m : Refer to figure



(mm)

Class	d	m	t
A	±0.025	±0.005	±0.025
C	±0.025	±0.013	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J *	±0.05 ~ ±0.15	±0.005	±0.025
K *	±0.05 ~ ±0.15	±0.013	±0.025
L *	±0.05 ~ ±0.15	±0.025	±0.025
M *	±0.05 ~ ±0.15	±0.08 ~ ±0.20	±0.13
N *	±0.05 ~ ±0.15	±0.08 ~ ±0.18	±0.025
U *	±0.08 ~ ±0.25	±0.13 ~ ±0.38	±0.13

* Sides are based on unground insert

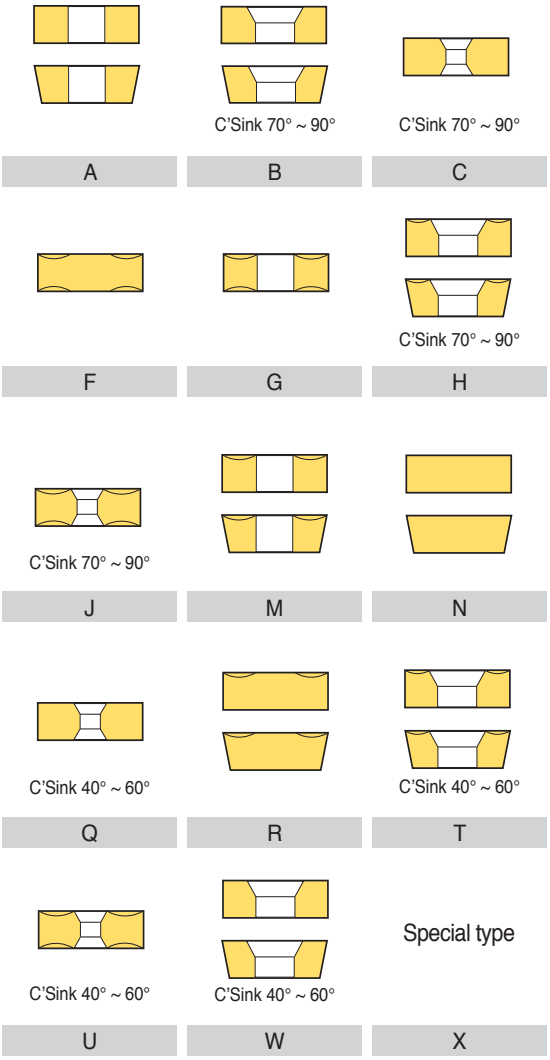
Tolerance on C,E,H,M,O,P,R,S,T,W Insert Shape (Exceptional case)

d	Tolerance on d		Tolerance on m	
	J, K, L, M, N	U	M, N	U
6.35	±0.05	±0.08	±0.08	±0.13
9.525	±0.05	±0.08	±0.08	±0.13
12.7	±0.08	±0.13	±0.13	±0.20
15.875	±0.10	±0.18	±0.15	±0.27
19.05	±0.10	±0.18	±0.15	±0.27
25.4	±0.13	±0.25	±0.18	±0.38

Tolerance on D Insert Shape (Exceptional case)

d	Tolerance on d	Tolerance on m
6.35	±0.05	±0.11
9.525	±0.05	±0.11
12.7	±0.08	±0.15
15.875	±0.10	±0.18
19.05	±0.10	±0.18

4 Cross Section Type



A	B	C
F	G	H
J	M	N
Q	R	T
U	W	X (Special type)

12	04	08	E040
5 Cutting Edge Length	6 Height of Cutting Edge	7 Nose Radius (Nose R)	8 Edge preparation

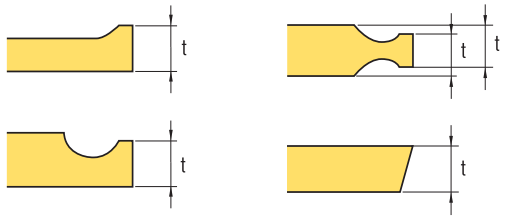
4	3	2
5 Cutting Edge Length	6 Height of Cutting Edge	7 Nose-Radius (Nose R)

5 Cutting Edge Length

Symbol							Inch	IC
C	d	S	T	R	V	W		
Metric								d(mm)
03	04	03	06	03	-	02	1.2(5)	3.97
04	05	04	08	04	08	S3	1.5(6)	4.76
05	06	05	09	05	09	03	1.8(7)	5.56
-	-	-	-	06	-	-	-	6.00
06	07	06	11	06	11	04	2	6.35
08	09	07	13	07	13	05	2.5	7.94
-	-	-	-	08	-	-	-	8.00
09	11	09	16	09	16	06	3	9.525
-	-	-	-	10	-	-	-	10.00
11	13	11	19	11	19	07	3.5	11.11
-	-	-	-	12	-	-	-	12.00
12	15	12	22	12	22	08	4	12.70
14	17	14	24	14	24	09	4.5	14.29
16	19	15	27	15	27	10	5	15.875
-	-	-	-	16	-	-	-	16.00
17	21	17	30	17	30	11	5.5	17.46
19	23	19	33	19	33	13	6	19.05
-	-	-	-	20	-	-	-	20.00
22	27	22	38	22	38	15	7	22.225
-	-	-	-	25	-	-	-	25.00
25	31	25	44	25	44	17	8	25.40
32	38	31	54	31	54	21	10	31.75
-	-	-	-	32	-	-	-	32.00

( ) Symbol for small size insert

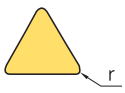
6 Height of Cutting Edge



Symbol		Height of Cutting Edge(t)	
Metric	Inch	mm	Inch
01	1(2)	1.59	1/16
T0	1.125	1.79	9/128
T1	1.2	1.98	5/64
02	1.5(3)	2.38	3/32
T2	1.75	2.78	7/64
03	2	3.18	1/8
T3	2.5	3.97	5/32
04	3	4.76	3/16
05	3.5	5.56	7/32
06	4	6.35	1/4
07	5	7.94	5/16
09	6	9.52	3/8
11	7	11.11	7/16
12	8	12.70	1/2

( ) Symbol for small size insert

7 Nose Radius (Nose R)



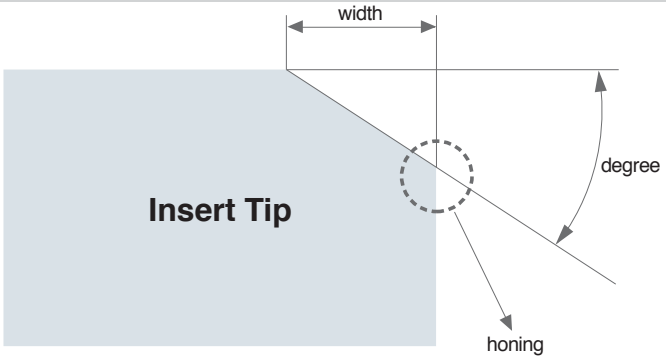
Symbol		Corner Radius	
Metric	Inch	Metric	Inch
01	0	0.1	0.004
02	0.5	0.2	0.008
04	1	0.4	1/64
08	2	0.8	1/32
12	3	1.2	3/64
16	4	1.6	1/16
20	5	2.0	5/64
24	6	2.4	3/32
28	7	2.8	7/64
32	8	3.2	1/8
00	-	Round insert(Inch)	
M0	-	Round insert(Metric)	

8 Edge preparation

Detailed edge preparations refer to the next page.

8 Edge preparation

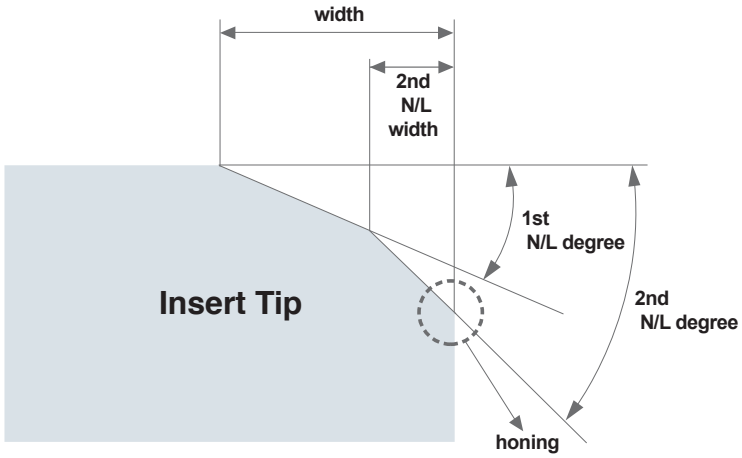
1. Mono N/L



ISO S N G N 1 2 0 4 0 8 E 0 4 0

N/L Degree (°)	N/L Width (mm)		Honing (μm)
E : 20	01 : 0.05	20 : 1.00	0 : No Honing
G : 30	02 : 0.10	40 : 2.00	1 : 10
	03 : 0.15		2 : 20
	04 : 0.20		3 : 30

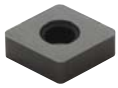
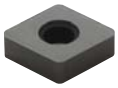
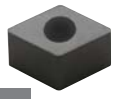
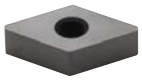
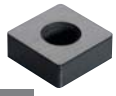
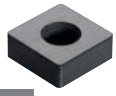
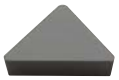
2. Double N/L



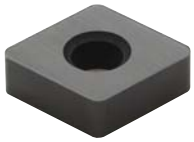
ISO S N G N 1 9 0 7 1 6 X 5 4 2

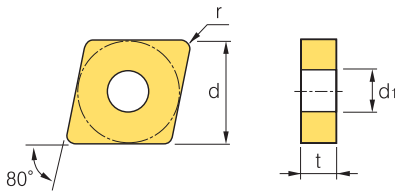
1st N/L Degree (°)	1st N/L Width (mm)		2nd N/L Width(mm)×Degree		Honing (μm)
W : 10	4 : 1.20	A : 0.75	3 : 0.20×25	A : 0.15×30	0 : No Honing
X : 15	5 : 1.50	B : 1.25	4 : 0.10×30	B : 0.45×25	1 : 10
	6 : 2.00	D : 2.30	5 : 0.20×30		2 : 20
					3 : 30
					5 : 50

Turning

CNGA	CNMA	CNGN	CNMN	CNGX	CNVX
					
12p	12p	13p	13p	14p	14p
CNMX	**CNMX .. RD**	**CCGX**	**CCGW**	**CPGN**	**DNGA**
					
15p	15p	15p	16p	16p	17p
DNMA	**DNGN**	**DNGX**	**DNMX**	**DCGX**	**ENGN**
					
17p	18p	18p	19p	19p	19p
RNGA	**RNGN**	**RPGA**	**RPGN**	**RPGX .. DP**	**RNGX .. DP**
					
20p	20p	21p	21p	22p	22p
RBGN	**RCGN**	**SNGA**	**SNMA**	**SNGN**	**SNGX**
					
23p	23p	24p	24p	25p	26p
SNMX	**SNMX .. RD**	**SCGN**	**SCGX**	**SCGW**	**SPGN**
					
26p	26p	27p	27p	27p	28p
TNGA	**TNGN**	**TCUN**	**TPGN**	**TPUN**	**VNGA**
					
28p	29p	29p	30p	30p	31p
VNGN	**VNGX**	**WNGA**	**WNGX**	**CDH**	**F-Series**
31p	32p	32p	32p	33p	33p
F-Series	**F-Series**	**F-Series**	**LNJ**	**SNGN3812R**	**RBGX**
33p	34p	34p	34p	35p	35p
RCGX	**RPGX**	**RXGX**			
36p	36p	36p			

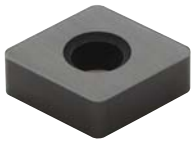
CNGA

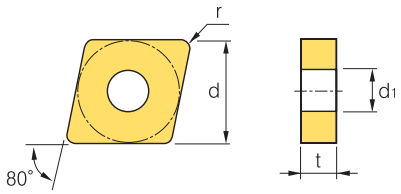




Type		Grades																Dimensions (mm)				Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	d1	Designation	Page
CNGA 120404	CNGA 431	●	○	●	○	○					○					○				12.70	4.76	0.4	5.16		
CNGA 120408	CNGA 432	●	○	●	○	○	○	○	○	○	○	○	●	○	○	○		○	○	12.70	4.76	0.8	5.16		
CNGA 120412	CNGA 433	●	○	●					○		○	○	●	○	○	○		○	○	12.70	4.76	1.2	5.16		
CNGA 120416	CNGA 434	○	○	○							○	○	○			○		○	○	12.70	4.76	1.6	5.16		
CNGA 120704	CNGA 451																			12.70	7.94	0.4	5.16		
CNGA 120708	CNGA 452	○		○							○	○								12.70	7.94	0.8	5.16		
CNGA 120712	CNGA 453	○		○	○						○	○				○		○	○	12.70	7.94	1.2	5.16		
CNGA 120716	CNGA 454	○									○	○				○				12.70	7.94	1.6	5.16		
CNGA 160608	CNGA 542										○									15.87	6.35	0.8	6.35		
CNGA 160612	CNGA 543										○	○						○	○	15.87	6.35	1.2	6.35	-	-
CNGA 160616	CNGA 544	○																		15.87	6.35	1.6	6.35		
CNGA 160708	CNGA 552	○		○																15.87	7.94	0.8	6.35		
CNGA 160712	CNGA 553	○		○								○								15.87	7.94	1.2	6.35		
CNGA 160716	CNGA 554											○								15.87	7.94	1.6	6.35		
CNGA 190608	CNGA 642	○									○	○				○				19.05	6.35	0.8	7.93		
CNGA 190612	CNGA 643										○							○	○	19.05	6.35	1.2	7.93		
CNGA 190616	CNGA 644	○		○																19.05	6.35	1.6	7.93		
CNGA 190712	CNGA 653																			19.05	7.94	1.2	7.93		
CNGA 190716	CNGA 654	○																		19.05	7.94	1.6	7.93		

CNMA

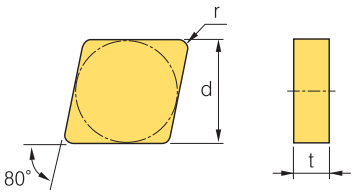




Type		Grades																Dimensions (mm)				Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	d1	Designation	Page
CNMA 120408	CNMA 432											○	○							12.70	4.76	0.8	5.16		
CNMA 120412	CNMA 433											○	○	○	○	○				12.70	4.76	1.2	5.16		
CNMA 120416	CNMA 434											○	○	○	○	○				12.70	4.76	1.6	5.16	-	-
CNMA 160612	CNMA 543												○		○					15.87	6.35	1.2	6.35		
CNMA 160616	CNMA 544												○		○					15.87	6.35	1.6	6.35		

CNGN



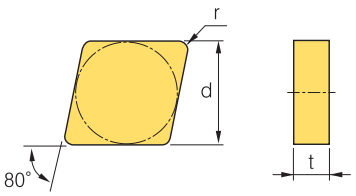


Type		Grades																	Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
CNGN 090304	CNGN 321			○																9.52	3.18	0.4		
CNGN 090308	CNGN 322				○										○	○				9.52	3.18	0.8		
CNGN 090312	CNGN 323														○	○				9.52	3.18	1.2		
CNGN 120304	CNGN 421	○																		12.70	3.18	0.4		
CNGN 120308	CNGN 422	○																		12.70	3.18	0.8		
CNGN 120312	CNGN 423	○																		12.70	3.18	1.2		
CNGN 120404	CNGN 431	●	○	●					○											12.70	4.76	0.4		
CNGN 120408	CNGN 432	●	○	●	○	○		○	○	○	○		●	○		○		○	○	12.70	4.76	0.8		
CNGN 120412	CNGN 433	●	○	●	○	○			○		○		●	○	○	○		○	○	12.70	4.76	1.2		
CNGN 120416	CNGN 434	○	○	○	○						○		○	○	○	○		○	○	12.70	4.76	1.6		
CNGN 120704	CNGN 451																	○	○	12.70	7.94	0.4		
CNGN 120708	CNGN 452										○	○				○				12.70	7.94	0.8		
CNGN 120712	CNGN 453	○	○								○		○	○		○		○	○	12.70	7.94	1.2		
CNGN 120716	CNGN 454	○	○								○		○	○		○		○	○	12.70	7.94	1.6		
CNGN 160608	CNGN 542																			15.87	6.35	0.8		
CNGN 160612	CNGN 543	○											○					○	○	15.87	6.35	1.2		
CNGN 160616	CNGN 544	○																		15.87	6.35	1.6		
CNGN 160708	CNGN 552	○											○							15.87	7.94	0.8		
CNGN 160712	CNGN 553	○		○	○						○		○	○						15.87	7.94	1.2		
CNGN 160716	CNGN 554	○	○	○	○						○	○								15.87	7.94	1.6		
CNGN 160720	CNGN 555	○									○	○								15.87	7.94	2.0		
CNGN 190612	CNGN 643	○		○																19.05	6.35	1.2		
CNGN 190616	CNGN 644	○		○																19.05	6.35	1.6		
CNGN 190712	CNGN 653	○		○																19.05	7.94	1.2		
CNGN 190716	CNGN 654	○		○																19.05	7.94	1.6		
CNGN 190720	CNGN 655	○																		19.05	7.94	2.0		
CNGN 250724	CNGN 856	○																		25.40	7.94	2.4		
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CCLN 42
CCBN 43
CCKN 44

CNMN



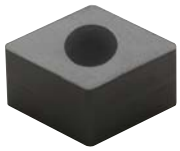


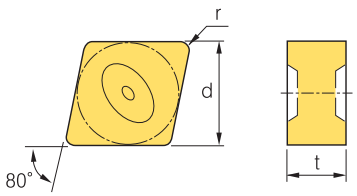
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CNMN 120412	CNMN 433												○			○				12.70	4.76	1.2	-	-
CNMN 120416	CNMN 434												○			○				12.70	4.76	1.6		

Code system **08~09p**

● : Stock item

CNGX

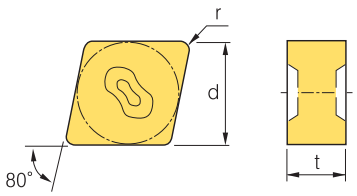




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
CNGX 120412	CNGX 433											○	○							12.70	4.76	1.2	CCLN CCBN CCKN	42 43 44
CNGX 120416	CNGX 434												○							12.70	4.76	1.6		
CNGX 120708	CNGX 452	○		○								○								12.70	7.94	0.8		
CNGX 120712	CNGX 453	○		○								○	○	○						12.70	7.94	1.2		
CNGX 120716	CNGX 454	○		○								○	○	○	○					12.70	7.94	1.6		
CNGX 160708	CNGX 552											○								15.87	7.94	0.8		
CNGX 160712	CNGX 553											○	○	○						15.87	7.94	1.2		
CNGX 160716	CNGX 554											○	○							15.87	7.94	1.6		

CNVX

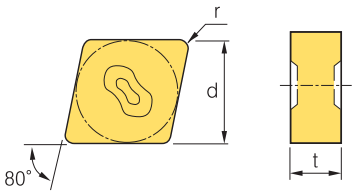




Type		Grades																Dimensions (mm)			Available tool holders	
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CNVX 120412	CNVX 433												○							12.70	4.76	1.2	CCLN CCBN CCKN	42 43 44
CNVX 120416	CNVX 434												○							12.70	4.76	1.6		
CNVX 120708	CNVX 452	○							○			○								12.70	7.94	0.8		
CNVX 120712	CNVX 453	○		○					○			○	○	○	○	○				12.70	7.94	1.2		
CNVX 120716	CNVX 454			○		○			○			○	○	○	○	○				12.70	7.94	1.6		
CNVX 160708	CNVX 552																			15.87	7.94	0.8		
CNVX 160712	CNVX 553																			15.87	7.94	1.2		
CNVX 160716	CNVX 554																			15.87	7.94	1.6		

CNMX

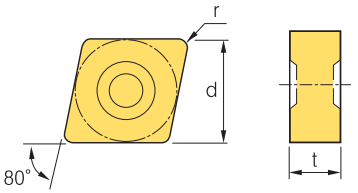




Type		Grades																Dimensions (mm)			Available tool holders	
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CNMX 120712	CNMX 453												○	○	○					12.70	7.94	1.2	-	-
CNMX 120716	CNMX 454												○	○	○	○				12.70	7.94	1.6		

CNMX .. RD

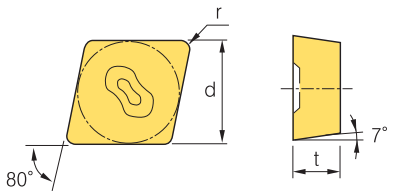




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
CNMX 120716 RD	CNMX 454 RD											○	○							12.70	7.94	1.6	-	-

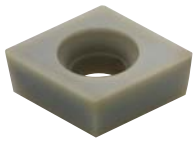
CCGX

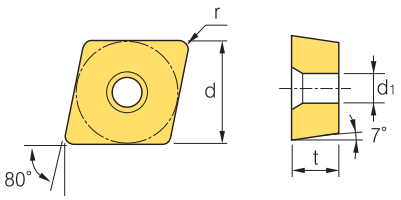




Type		Grades																Dimensions (mm)			Available tool holders	
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CCGX 120608	CCGX 442												○							12.70	6.35	0.8	-	-
CCGX 120612	CCGX 443												○	○	○	○				12.70	6.35	1.2		
CCGX 120616	CCGX 444												○							12.70	6.35	1.6		

CCGW

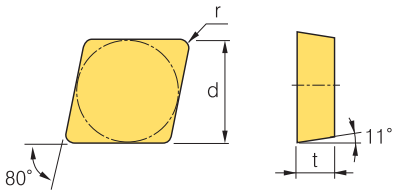




Type	Grades																Dimensions (mm)				Available tool holders	
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CCGW 09T304		○									○	○							9.52	3.97	0.4	4.40		
CCGW 09T308		○									○	○		○					9.52	3.97	0.8	4.40		
CCGW 09T312											○	○		○					9.52	3.97	1.2	4.40	-	-
CCGW 120408												○							12.70	4.76	0.8	5.50		
CCGW 120412												○							12.70	4.76	1.2	5.50		

CPGN

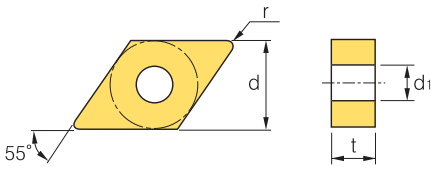




Type		Grades																	Dimensions (mm)			Available tool holders	
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CPGN 090304	CPGN 321																	○	○	9.52	3.18	0.4		
CPGN 090308	CPGN 322																	○	○	9.52	3.18	0.8		
CPGN 120408	CPGN 432	○																○	○	12.70	4.76	0.8	-	-
CPGN 120412	CPGN 433																			12.70	4.76	1.2		
CPGN 120416	CPGN 434																			12.70	4.76	1.6		

DNGA

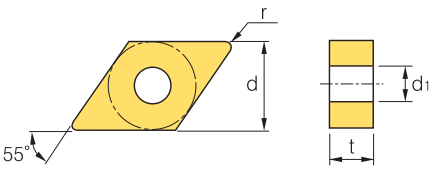




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DNGA 150404	DNGA 431	●		●		○														12.70	4.76	0.4	5.16		
DNGA 150408	DNGA 432	●		●	○	○		○			○	○	○					○	○	12.70	4.76	0.8	5.16		
DNGA 150412	DNGA 433	●		●	○	○						○	○	○		○		○	○	12.70	4.76	1.2	5.16		
DNGA 150416	DNGA 434	○									○							○	○	12.70	4.76	1.6	5.16		
DNGA 150604	DNGA 441	●	○	●	○	○				○										12.70	6.35	0.4	5.16		
DNGA 150608	DNGA 442	●	○	●	○	○					○		●							12.70	6.35	0.8	5.16		
DNGA 150612	DNGA 443	●		●	○	○					○		●	○		○				12.70	6.35	1.2	5.16		
DNGA 150616	DNGA 444	○		○	○															12.70	6.35	1.6	5.16	-	-
DNGA 150704	DNGA 451	○		○																12.70	7.94	0.4	5.16		
DNGA 150708	DNGA 452	○		○						○	○	○	○							12.70	7.94	0.8	5.16		
DNGA 150712	DNGA 453	○		○						○		○	○	○		○				12.70	7.94	1.2	5.16		
DNGA 150716	DNGA 454																			12.70	7.94	1.6	5.16		
DNGA 190608	DNGA 542	○		○																15.87	6.35	0.8	6.35		
DNGA 190612	DNGA 543	○		○						○	○		○			○				15.87	6.35	1.2	6.35		
DNGA 190616	DNGA 544	○																		15.87	6.35	1.6	6.35		

DNMA





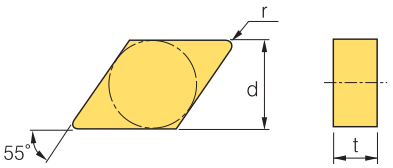
Type		Grades																Dimensions (mm)				Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	d1	Designation	Page
DNMA 150612	DNMA 443											○	○							12.70	6.35	1.2	5.16	-	-
DNMA 150616	DNMA 444												○							12.70	6.35	1.6	5.16		

Code system **08~09p**

● : Stock item

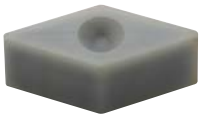
DNGN

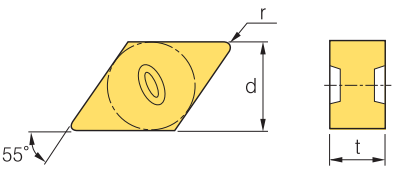




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
DNGN 150404	DNGN 431																			12.70	4.76	0.4		
DNGN 150408	DNGN 432	●											●					○	○	12.70	4.76	0.8		
DNGN 150412	DNGN 433	●	○								○		●					○	○	12.70	4.76	1.2		
DNGN 150416	DNGN 434																	○	○	12.70	4.76	1.6		
DNGN 150604	DNGN 441																			12.70	6.35	0.4		
DNGN 150608	DNGN 442	○				○							○			○				12.70	6.35	0.8	CDHN	45
DNGN 150612	DNGN 443	○				○							○			○				12.70	6.35	1.2	CDJN	46
DNGN 150616	DNGN 444																			12.70	6.35	1.6	CDNN	47
DNGN 150704	DNGN 451	○		○																12.70	7.94	0.4		
DNGN 150708	DNGN 452	○		○	○	○			○	○	○	○				○				12.70	7.94	0.8		
DNGN 150712	DNGN 453	○		○	○	○			○	○	○	○	○			○				12.70	7.94	1.2		
DNGN 150716	DNGN 454	○		○					○		○	○	○			○				12.70	7.94	1.6		

DNGX





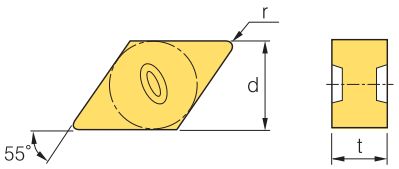
Type		Grades																Dimensions (mm)			Available tool holders	
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DNGX 120708	DNGX 352								○				○							10.00	7.94	0.8		
DNGX 120712	DNGX 353								○			○	○	○	○	○				10.00	7.94	1.2		
DNGX 120716	DNGX 354								○			○	○	○						10.00	7.94	1.6	CDHN	45
DNGX 150708	DNGX 452																			12.70	7.94	0.8	CDJN	46
DNGX 150712	DNGX 453								○			○	○							12.70	7.94	1.2		
DNGX 150716	DNGX 454											○	○	○	○	○				12.70	7.94	1.6		

Code system **08~09p**

● : Stock item

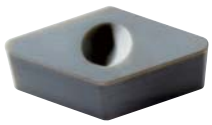
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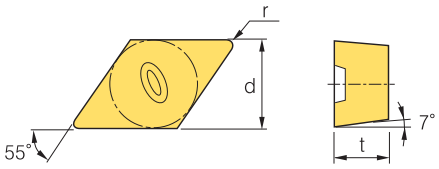




Type		Grades																Dimensions (mm)			Available tool holders	
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DNMX 120708	DNMX 352												○							10.00	7.94	0.8	-	-
DNMX 120712	DNMX 353												○	○						10.00	7.94	1.2		
DNMX 120716	DNMX 354												○	○	○					10.00	7.94	1.6		

DCGX

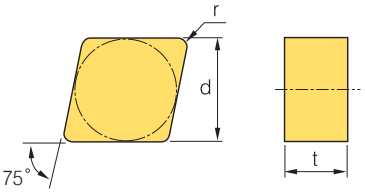




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
DCGX 150612	DCGX 443												○		○					12.70	6.35	1.2	-	-
DCGX 150616	DCGX 444												○		○					12.70	6.35	1.6		

ENGN





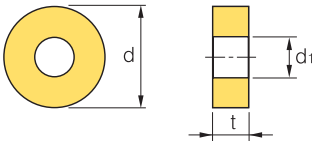
Type		Grades																Dimensions (mm)			Available tool holders	
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ENGN 130404	ENGN 431																			12.70	4.76	0.4		
ENGN 130408	ENGN 432			○							○		○							12.70	4.76	0.8		
ENGN 130412	ENGN 433			○							○		○							12.70	4.76	1.2	CEFN	48
ENGN 130704	ENGN 451	○		○																12.70	7.94	0.4	CEGN	49
ENGN 130708	ENGN 452	○		○	○	○			○	○	○	○	○							12.70	7.94	0.8	CEJN	50
ENGN 130712	ENGN 453	○		○	○	○					○	○	○			○		○	○	12.70	7.94	1.2		
ENGN 130716	ENGN 454	○	○	○							○	○	○							12.70	7.94	1.6		

Code system **08~09p**

● : Stock item

RNGA

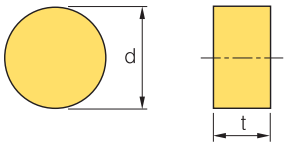




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	d1	Designation	Page
RNGA 120400	RNGA 430	○		○																12.70	4.76	5.16	-	-
RNGA 120700	RNGA 450	○		○														○	○	12.70	7.94	5.16		

RNGN



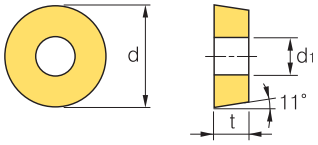


Type		Grades																Dimensions (mm)		Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	Designation	Page
RNGN 060300	RNGN 220			○																6.35	3.18		
RNGN 060400	RNGN 230	○			○															6.35	4.76		
RNGN 090300	RNGN 320	○			○						○	○								9.52	3.18		
RNGN 090400	RNGN 330	○	○	○	○						○					○		○	○	9.52	4.76		
RNGN 120300	RNGN 420										○					○				12.70	3.18		
RNGN 120400	RNGN 430	●	○	●	○				○		○	○	●			○		○	○	12.70	4.76		
RNGN 120600	RNGN 440																			12.70	6.35		
RNGN 120700	RNGN 450	●		●	○	○		○	○	○	○	○	●			○		○	○	12.70	7.94		
RNGN 150700	RNGN 550	○									○	○								15.87	7.94		
RNGN 190600	RNGN 640	○		○							○					○				19.05	6.35		
RNGN 190700	RNGN 650	○		○	○				○			○				○		○	○	19.05	7.94		
RNGN 250700	RNGN 850	○			○	○			○	○	○	○								25.40	7.94		
RNGN 250900	RNGN 860																			25.40	9.52		
RNGN 320900	RNGN 106	○																		31.75	9.52		
RNGN 0807MO	-	○																		8.00	7.94		
RNGN 1007MO	-	○																		10.00	7.94		
RNGN 1207MO	-	○																		12.00	7.94		

CRDN 51
CRGN 52

RPGA

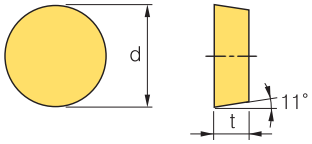




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	d1	Designation	Page
RPGA 120400	RPGA 430	○																		12.70	4.76	5.16	-	-
RPGA 120700	RPGA 450	○																		12.70	7.94	5.16		

RPGN

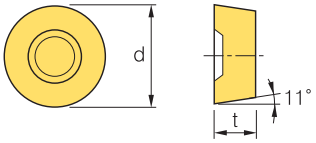




Type		Grades																Dimensions (mm)		Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	Designation	Page
RPGN 090300	RPGN 320	○		○												○				9.52	3.18		
RPGN 090400	RPGN 330	○		○	○															9.52	4.76		
RPGN 120300	RPGN 420																			12.70	3.18		
RPGN 120400	RPGN 430	○		○									○			○		○	○	12.70	4.76	-	-
RPGN 120700	RPGN 450	○		○												○				12.70	7.94		
RPGN 150700	RPGN 550																			15.87	7.94		
RPGN 190700	RPGN 650			○																19.05	7.94		

RPGX .. DP

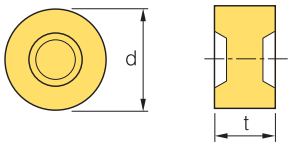




Type		Grades																	Dimensions (mm)		Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	Designation	Page
RPGX 1204 DP	RPGX 43 DP															○				12.70	4.76	-	-
RPGX 1207 DP	RPGX 45 DP															○				12.70	7.94		

RNGX .. DP





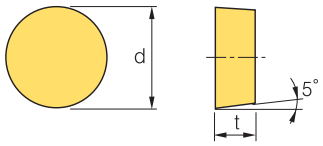
Type		Grades																	Dimensions (mm)		Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	Designation	Page
RNGX 1207 DP	RNGX 45 DP														○	○				12.70	7.94	CRDN CRGN	51 52

Code system **08~09p**

● : Stock item

RBGN

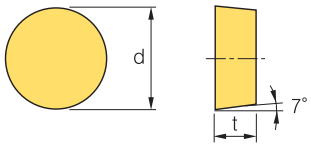




Type		Grades																Dimensions (mm)		Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	Designation	Page
RBGN 060300	RBGN 220			○																6.35	3.18		
RBGN 060400	RBGN 230			○																6.35	4.76		
RBGN 090300	RBGN 320	○																		9.52	3.18		
RBGN 090400	RBGN 330	○																		9.52	4.76		
RBGN 120400	RBGN 430	○		○	○								○							12.70	4.76		
RBGN 120600	RBGN 440	○																		12.70	6.35		
RBGN 120700	RBGN 450	○		○								○	○			○				12.70	7.94	-	-
RBGN 0604MO	-			○																6.00	4.76		
RBGN 0804MO	-			○																8.00	4.76		
RBGN 1007MO	-	○												○						10.00	7.94		
RBGN 1207MO	-																			12.00	7.94		
RBGN 1607MO	-																			16.00	7.94		

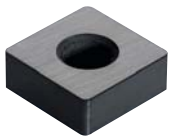
RCGN

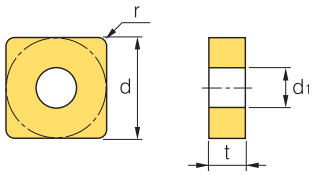




Type	Grades																Dimensions (mm)		Available tool holders	
ISO	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	Designation	Page
RCGN 060400	○		○												○				6.35	4.76		
RCGN 060600	○		○	○						○					○				6.35	6.35		
RCGN 060700	○		○	○				○							○				6.35	7.94		
RCGN 070400			○																7.94	4.76		
RCGN 090700	○		○	○						○					○	○			9.52	7.94	-	-
RCGN 120700	○		○	○				○		○					○	○			12.70	7.94		
RCGN 151000	○		○	○				○		○					○				15.87	10.00		
RCGN 191000	○		○	○				○		○					○				19.05	10.00		
RCGN 251200	○		○	○				○		○					○				25.40	12.70		

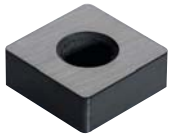
SNGA

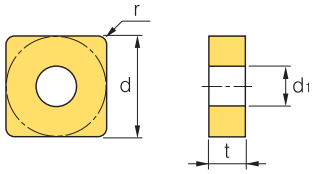




Type		Grades																	Dimensions (mm)				Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	d1	Designation	Page
SNGA 090304	SNGA 321	○		○																9.52	3.18	0.4	3.81		
SNGA 090308	SNGA 322	○		○																9.52	3.18	0.8	3.81		
SNGA 090312	SNGA 323	○		○																9.52	3.18	1.2	3.81		
SNGA 090404	SNGA 331																			9.52	4.76	0.4	3.81		
SNGA 090408	SNGA 332																			9.52	4.76	0.8	3.81		
SNGA 090412	SNGA 333																			9.52	4.76	1.2	3.81		
SNGA 090416	SNGA 334												○							9.52	4.76	1.6	3.81		
SNGA 120404	SNGA 431	●	○		○						○									12.70	4.76	0.4	5.16		
SNGA 120408	SNGA 432	●	○	●	○	○					○	○		○		○	○	○	○	12.70	4.76	0.8	5.16		
SNGA 120412	SNGA 433	●	○	●	○	○			○		○	○	○		○	○	○			12.70	4.76	1.2	5.16	-	-
SNGA 120416	SNGA 434	○	○								○				○	○				12.70	4.76	1.6	5.16		
SNGA 120708	SNGA 452	○																		12.70	7.94	0.8	5.16		
SNGA 120712	SNGA 453	○									○	○								12.70	7.94	1.2	5.16		
SNGA 120716	SNGA 454	○									○	○				○				12.70	7.94	1.6	5.16		
SNGA 150608	SNGA 542		○																	15.87	6.35	0.8	6.35		
SNGA 150612	SNGA 543	○	○																	15.87	6.35	1.2	6.35		
SNGA 150616	SNGA 544		○																	15.87	6.35	1.6	6.35		
SNGA 190612	SNGA 643	○									○	○								19.05	6.35	1.2	7.94		
SNGA 190616	SNGA 644																			19.05	6.35	1.6	7.94		

SNMA





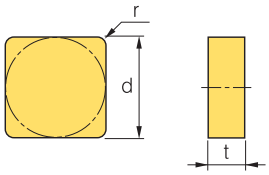
Type		Grades																	Dimensions (mm)				Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	d1	Designation	Page
SNMA 120408	SNMA 432												○		○					12.70	4.76	0.8	5.16		
SNMA 120412	SNMA 433											○	○		○	○				12.70	4.76	1.2	5.16	-	-
SNMA 120416	SNMA 434											○	○							12.70	4.76	1.6	5.16		
SNMA 150616	SNMA 544											○	○							15.87	6.35	1.6	6.35		

Code system **08~09p**

● : Stock item

SNGN

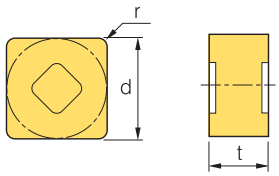




Type		Grades																	Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
SNGN 090304	SNGN 321	○		○																9.52	3.18	0.4		
SNGN 090308	SNGN 322	○	○	○	○						○		○							9.52	3.18	0.8		
SNGN 090312	SNGN 323	○		○																9.52	3.18	1.2		
SNGN 090404	SNGN 331																			9.52	4.76	0.4		
SNGN 090408	SNGN 332	○											○							9.52	4.76	0.8		
SNGN 090412	SNGN 333								○				○							9.52	4.76	1.2		
SNGN 120404	SNGN 431	○									○									12.70	4.76	0.4		
SNGN 120408	SNGN 432	●	○	●	○	○		○			○	○	●			○	○	○	○	12.70	4.76	0.8		
SNGN 120412	SNGN 433	●	○	●	○	○		○		○	○	○	●		○	○	○	○	○	12.70	4.76	1.2		
SNGN 120416	SNGN 434	○	○	○				○		○	○	○	○	○		○	○	○	○	12.70	4.76	1.6		
SNGN 120420	SNGN 435	○									○	○	○	○						12.70	4.76	2.0		
SNGN 120604	SNGN 441																			12.70	6.35	0.4		
SNGN 120608	SNGN 442	○																		12.70	6.35	0.8		
SNGN 120612	SNGN 443	○																		12.70	6.35	1.2		
SNGN 120616	SNGN 444	○																		12.70	6.35	1.6		
SNGN 120704	SNGN 451			○																12.70	7.94	0.4	**CSBN**	55
SNGN 120708	SNGN 452	○		○					○		○					○		○	○	12.70	7.94	0.8	**CSDN**	56
SNGN 120712	SNGN 453	○	○	○					○		○	○	○	○	○	○	○	○	○	12.70	7.94	1.2	**CSKN**	57
SNGN 120716	SNGN 454	○	○	○					○	○	○	○	○	○	○	○		○	○	12.70	7.94	1.6	**CSRN**	58
SNGN 120720	SNGN 455	○	○	○					○		○									12.70	7.94	2.0	**CSSN**	59
SNGN 150404	SNGN 531			○																15.87	4.76	0.4	**CSYN**	60
SNGN 150408	SNGN 532			○																15.87	4.76	0.8		
SNGN 150412	SNGN 533	○							○											15.87	4.76	1.2		
SNGN 150416	SNGN 534	○																		15.87	4.76	1.6		
SNGN 150708	SNGN 552	○																		15.87	7.94	0.8		
SNGN 150712	SNGN 553	○	○	○					○		○	○	○							15.87	7.94	1.2		
SNGN 150716	SNGN 554	○							○	○	○	○	○	○	○					15.87	7.94	1.6		
SNGN 190608	SNGN 642																			19.05	6.35	0.8		
SNGN 190612	SNGN 643	○									○		○			○				19.05	6.35	1.2		
SNGN 190616	SNGN 644	○									○					○		○	○	19.05	6.35	1.6		
SNGN 190712	SNGN 653	○																		19.05	7.94	1.2		
SNGN 190716	SNGN 654	○	○	○					○		○		○			○				19.05	7.94	1.6		
SNGN 190720	SNGN 655	○							○		○									19.05	7.94	2.0		
SNGN 250720	SNGN 854	○									○									25.40	7.94	2.0		
SNGN 250724	SNGN 856	○		○							○	○								25.40	7.94	2.4		
SNGN 250924	SNGN 866	○							○		○	○	○			○				25.40	9.52	2.4		

SNGX

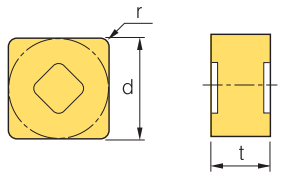




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
SNGX 120408	SNGX 432												○							12.70	4.76	0.8	CSBN	55
SNGX 120412	SNGX 433												○							12.70	4.76	1.2	CSDN	56
SNGX 120416	SNGX 434												○							12.70	4.76	1.6	CSKN	57
SNGX 120708	SNGX 452	○										○		○						12.70	7.94	0.8	CSRN	58
SNGX 120712	SNGX 453	○	○									○	○	○		○				12.70	7.94	1.2	CSSN	59
SNGX 120716	SNGX 454											○	○	○	○	○				12.70	7.94	1.6	CSYN	60
SNGX 150708	SNGX 552	○	○									○		○						15.87	7.94	0.8		
SNGX 150712	SNGX 553	○	○									○		○		○				15.87	7.94	1.2		
SNGX 150716	SNGX 554											○	○	○						15.87	7.94	1.6		

SNMX

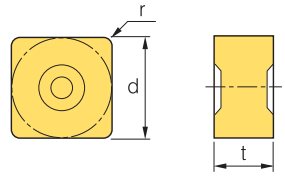




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
SNMX 120712	SNMX 453											○	○	○	○	○				12.70	7.94	1.2	-	-
SNMX 120716	SNMX 454												○							12.70	7.94	1.6		

SNMX .. RD





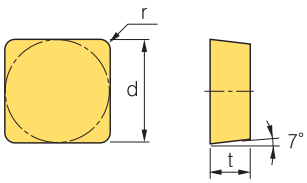
Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
SNMX 120716 RD	SNMX 454 RD											○			○					12.70	7.94	1.6	-	-

Code system **08~09p**

● : Stock item

SCGN

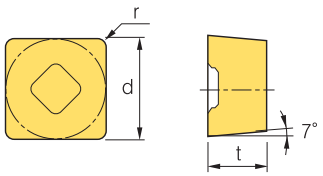




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
SCGN 090412	SCGN 333	○											○							9.52	4.76	1.2		
SCGN 090416	SCGN 334	○																		9.52	4.76	1.6		
SCGN 120404	SCGN 431			○																12.70	4.76	0.4	CSRC	64
SCGN 120408	SCGN 432	○		○																12.70	4.76	0.8	CSSC	65
SCGN 120412	SCGN 433									○		○	○		○	○				12.70	4.76	1.2		
SCGN 120416	SCGN 434	○		○																12.70	4.76	1.6		

SCGX

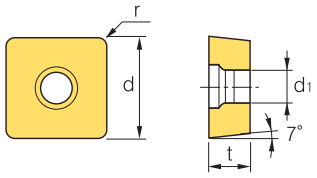




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
SCGX 120408	SCGX 432																			12.70	4.76	0.8		
SCGX 120616	SCGX 444														○					12.70	6.35	1.6	-	-
SCGX 120716	SCGX 454																			12.70	7.94	1.6		

SCGW





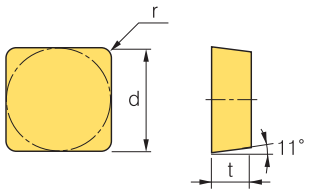
Type		Grades																Dimensions (mm)				Available tool holders	
ISO		CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	d1	Designation	Page
SCGW 09T304													○							9.52	3.97	0.4	4.40		
SCGW 09T308													○							9.52	3.97	0.8	4.40	-	-
SCGW 120408													○							12.70	4.76	0.8	5.50		

Code system **08~09p**

● : Stock item

SPGN

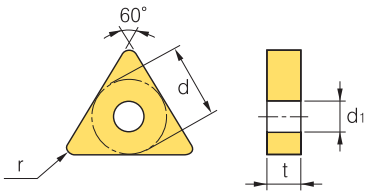




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
SPGN 090304	SPGN 321	○		○							○									9.52	3.18	0.4	CSTP	66
SPGN 090308	SPGN 322	○	○	○								○	○	○				○	○	9.52	3.18	0.8		
SPGN 090312	SPGN 323	○																		9.52	3.18	1.2		
SPGN 120304	SPGN 421	○		○																12.70	3.18	0.4		
SPGN 120308	SPGN 422	○		○					○		○		○							12.70	3.18	0.8		
SPGN 120312	SPGN 423	○	○	○							○		○		○					12.70	3.18	1.2		
SPGN 120404	SPGN 431																			12.70	4.76	0.4		
SPGN 120408	SPGN 432	○		○	○						○							○	○	12.70	4.76	0.8		
SPGN 120412	SPGN 433	○	○	○							○	○	○	○	○	○	○	○	○	12.70	4.76	1.2		
SPGN 120416	SPGN 434	○	○	○														○	○	12.70	4.76	1.6		
SPGN 150408	SPGN 532																			15.87	4.76	0.8		
SPGN 150412	SPGN 533			○																15.87	4.76	1.2		
SPGN 190412	SPGN 633	○																		19.05	4.76	1.2		
SPGN 190416	SPGN 634	○		○									○	○						19.05	4.76	1.6		

TNGA





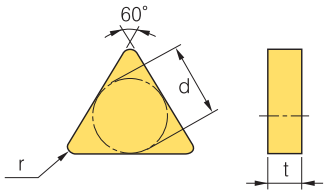
Type		Grades																Dimensions (mm)				Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	d1	Designation	Page
TNGA 110304	TNGA 221	○		○																6.35	3.18	0.4	2.26	-	-
TNGA 110308	TNGA 222	○		○																6.35	3.18	0.8	2.26		
TNGA 160304	TNGA 321	○		○																9.52	3.18	0.4	3.81		
TNGA 160308	TNGA 322	○		○					○		○									9.52	3.18	0.8	3.81		
TNGA 160312	TNGA 323	○		○																9.52	3.18	1.2	3.81		
TNGA 160404	TNGA 331	●	○	○	○	○					○	○	○	○		○				9.52	4.76	0.4	3.81		
TNGA 160408	TNGA 332	●	○	●	○	○				○	○	○	●	○		○		○	○	9.52	4.76	0.8	3.81		
TNGA 160412	TNGA 333	○	○	●	○	○				○	○	○	●	○		○				9.52	4.76	1.2	3.81		
TNGA 160416	TNGA 334	○		○	○				○		○	○	○	○		○				9.52	4.76	1.6	3.81		
TNGA 220404	TNGA 431	○		○							○									12.70	4.76	0.4	5.16		
TNGA 220408	TNGA 432	○		○							○		○			○				12.70	4.76	0.8	5.16		
TNGA 220412	TNGA 433	○		○							○		○			○				12.70	4.76	1.2	5.16		
TNGA 220416	TNGA 434	○		○					○		○		○							12.70	4.76	1.6	5.16		
TNGA 220708	TNGA 452	○		○																12.70	7.94	0.8	5.16		
TNGA 220712	TNGA 453	○																		12.70	7.94	1.2	5.16		
TNGA 270608	TNGA 542			○																15.87	6.35	0.8	6.35		
TNGA 270612	TNGA 543			○																15.87	6.35	1.2	6.35		
TNGA 330924	TNGA 666			○																19.05	9.52	2.4	7.94		

Code system **08~09p**

● : Stock item

TNGN

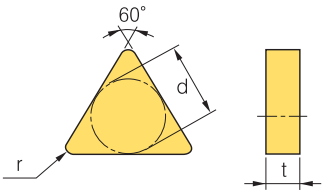




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
TNGN 110304	TNGN 221	○		○							○									6.35	3.18	0.4		
TNGN 110308	TNGN 222	○		○					○		○	○								6.35	3.18	0.8		
TNGN 160404	TNGN 331	●	○	○					○		○									9.52	4.76	0.4		
TNGN 160408	TNGN 332	●	○	●	○	○		○	○		○	○	○		○					9.52	4.76	0.8		
TNGN 160412	TNGN 333	○		●	○	○		○			○	○	●					○	○	9.52	4.76	1.2		
TNGN 160416	TNGN 334	○	○	○	○	○					○	○	○							9.52	4.76	1.6		
TNGN 160704	TNGN 351	○																		9.52	7.94	0.4		
TNGN 160708	TNGN 352	○	○	○								○								9.52	7.94	0.8		
TNGN 160712	TNGN 353	○		○					○		○	○								9.52	7.94	1.2		
TNGN 160716	TNGN 354	○		○							○									9.52	7.94	1.6		
TNGN 220404	TNGN 431	○																		12.70	4.76	0.4	CTFN	61
TNGN 220408	TNGN 432	○		○							○		○			○		○	○	12.70	4.76	0.8	CTGN	62
TNGN 220412	TNGN 433	○		○							○		○			○		○	○	12.70	4.76	1.2		
TNGN 220416	TNGN 434			○							○		○					○	○	12.70	4.76	1.6		
TNGN 220708	TNGN 452	○																		12.70	7.94	0.8		
TNGN 220712	TNGN 453			○																12.70	7.94	1.2		
TNGN 220716	TNGN 454			○																12.70	7.94	1.6		
TNGN 270608	TNGN 542	○		○																15.87	6.35	0.8		
TNGN 270612	TNGN 543	○		○																15.87	6.35	1.2		
TNGN 270616	TNGN 544			○												○				15.87	6.35	1.6		
TNGN 330924	TNGN 666			○																19.05	9.52	2.4		
TNGN 440932	TNGN 868	○		○							○									25.40	9.52	3.2		

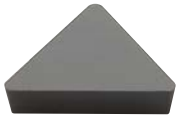
TCUN

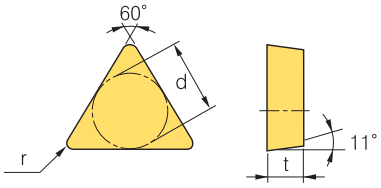




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
TCUN 160408	TCUN 332			○								○	○							9.52	4.76	0.8		
TCUN 160412	TCUN 333			○								○	○							9.52	4.76	1.2	-	-
TCUN 160416	TCUN 334			○								○								9.52	4.76	1.6		

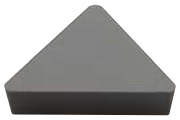
TPGN

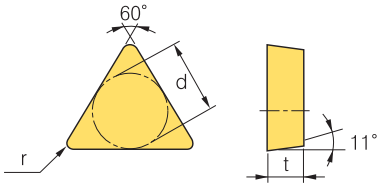




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
TPGN 090204	TPGN 731			○																5.56	2.38	0.4	CTFP	67
TPGN 090208	TPGN 732			○																5.56	2.38	0.8		
TPGN 110304	TPGN 221	○	○	○							○		○							6.35	3.18	0.4		
TPGN 110308	TPGN 222	○	○	○							○	○	○			○		○	○	6.35	3.18	0.8		
TPGN 160304	TPGN 321	○	○	○					○		○		○							9.52	3.18	0.4		
TPGN 160308	TPGN 322	○	○	○					○		○	○	○	○		○		○	○	9.52	3.18	0.8		
TPGN 160312	TPGN 323	○		○									○	○				○	○	9.52	3.18	1.2		
TPGN 160404	TPGN 331	○																		9.52	4.76	0.4		
TPGN 160408	TPGN 332	○		○												○				9.52	4.76	0.8		
TPGN 160412	TPGN 333	○														○				9.52	4.76	1.2		
TPGN 160416	TPGN 334	○																		9.52	4.76	1.6		
TPGN 220404	TPGN 431	○		○																12.70	4.76	0.4		
TPGN 220408	TPGN 432	○		○							○							○	○	12.70	4.76	0.8		
TPGN 220412	TPGN 433	○		○								○	○							12.70	4.76	1.2		
TPGN 220416	TPGN 434	○		○																12.70	4.76	1.6		
TPGN 220712	TPGN 453																			12.70	7.94	1.2		
TPGN 220716	TPGN 454																			12.70	7.94	1.6		
TPGN 271232	TPGN 588			○																15.87	12.70	3.2		

TPUN





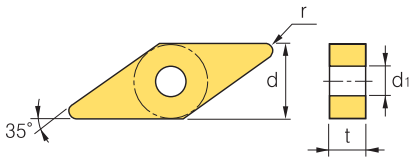
Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	Designation	Page
TPUN 110308	TPUN 222												○							6.35	3.18	0.8	-	-
TPUN 110312	TPUN 223												○							6.35	3.18	1.2		

Code system **08~09p**

● : Stock item

VNGA

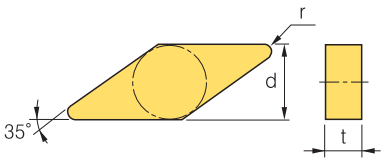




Type		Grades																	Dimensions (mm)				Available tool holders	
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VNGA 160404	VNGA 331	○		○	○						○									9.52	4.76	0.4	3.81		
VNGA 160408	VNGA 332	○		○	○	○		○		○	○	○	○	○		○				9.52	4.76	0.8	3.81		
VNGA 160412	VNGA 333	○		○	○	○				○	○	○	○	○						9.52	4.76	1.2	3.81		
VNGA 160604	VNGA 341	○		○																9.52	6.35	0.4	3.81		
VNGA 160608	VNGA 342	○		○																9.52	6.35	0.8	3.81		
VNGA 160612	VNGA 343	○		○																9.52	6.35	1.2	3.81	-	-
VNGA 220404	VNGA 431	○		○																12.70	4.76	0.4	5.16		
VNGA 220408	VNGA 432	○		○									○							12.70	4.76	0.8	5.16		
VNGA 220412	VNGA 433	○		○									○							12.70	4.76	1.2	5.16		
VNGA 220424	VNGA 436																	○	○	12.70	4.76	2.4	5.16		

VNGN

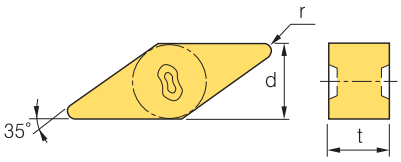




Type		Grades																	Dimensions (mm)			Available tool holders	
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VNGN 160404	VNGN 331			○																9.52	4.76	0.4		
VNGN 160408	VNGN 332			○																9.52	4.76	0.8		
VNGN 160704	VNGN 351			○																9.52	7.94	0.4		
VNGN 160708	VNGN 352			○																9.52	7.94	0.8	CVJN	69
VNGN 160712	VNGN 353																			9.52	7.94	1.2		
VNGN 160716	VNGN 354																			9.52	7.94	1.6		

VNGX

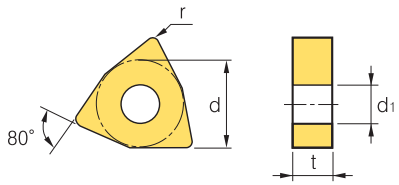




Type		Grades																Dimensions (mm)			Available tool holders	
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VNGX 160708	VNGX 352			○					○				○							9.52	7.94	0.8	CVJN CVVN	69 70
VNGX 160712	VNGX 353			○					○				○		○					9.52	7.94	1.2		
VNGX 160716	VNGX 354												○							9.52	7.94	1.6		

WNGA

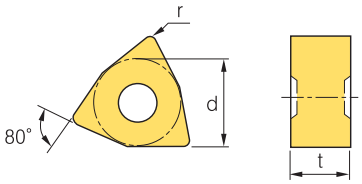




Type		Grades																Dimensions (mm)				Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	d1	Designation	Page
WNGA 080404	WNGA 431	●		●	○															12.70	4.76	0.4	5.16	-	-
WNGA 080408	WNGA 432	●		●	○						○	○	○	○	○	○		○	○	12.70	4.76	0.8	5.16		
WNGA 080412	WNGA 433	●		●	○						○	○	○	○	○	○				12.70	4.76	1.2	5.16		

WNGX





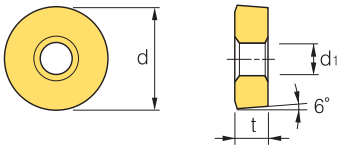
Type		Grades																Dimensions (mm)			Available tool holders	
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WNGX 080708	WNGX 452												○							12.70	7.94	0.8	CWLN	63
WNGX 080712	WNGX 453										○		○	○	○	○				12.70	7.94	1.2		
WNGX 080716	WNGX 454												○							12.70	7.94	1.6		

Code system **08~09p**

● : Stock item

CDH

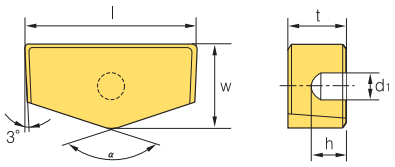




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	d1	Designation	Page
CDH 120600	CDH 22	○		○	○															12.70	6.35	3.18	HRCD	68
CDH 120900	CDH 23	○																		12.70	9.52	3.18		
CDH 190900	CDH 33	○		○	○	○					○									19.05	9.52	6.35		
CDH 191200	CDH 34	○																		19.05	12.70	6.35		
CDH 251200	CDH 42	○		○	○				○		○									25.40	12.70	6.75		
CDH 251900	CDH 43	○							○		○									25.40	19.05	6.75		
CDH 320900	CDH 515	○		○					○		○	○								31.75	9.52	10.00		
CDH 321900	CDH 53	○		○	○				○		○	○								31.75	19.05	10.00		
CDH 381100	-	○																		38.10	11.11	9.93		

F-Series

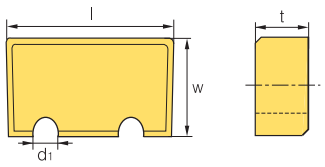




Type	Grades																Dimensions (mm)						Available tool holders	
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F 13941	○		○					○		○	○								32.00	19.05	12.00	6.50	6.00	120°	CFLN	72
F 10537	○		○					○		○	○								44.50	25.40	14.20	6.50	7.00	120°		

F-Series



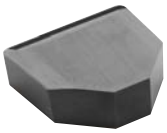


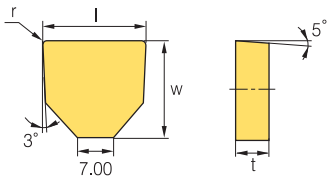
Type	Grades																Dimensions (mm)				Available tool holders	
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F 10537 V	○	○						○											44.00	26.00	15.00	5.00	-	-

Code system **08~09p**

● : Stock item

F-Series

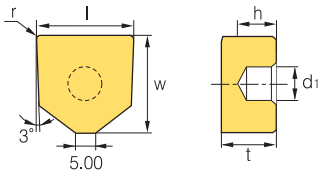




Type	Grades																	Dimensions (mm)				Available tool holders	
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F 250723			○																25.00	7.94	1.20	23.00	CFLN	72

F-Series

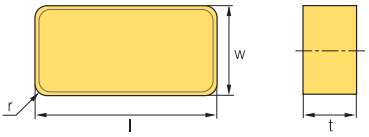




Type	Grades																	Dimensions (mm)						Available tool holders	
ISO	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	l	t	r	w	d1	h	Designation	Page
F 251425										○									25.00	14.40	2.40	25.40	9.17	10.00	-	-
F251425 H65										○									25.40	14.40	2.40	25.40	6.50	10.00		

LNJ





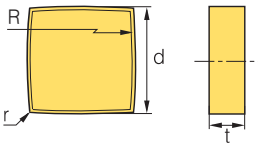
Type	Grades																	Dimensions (mm)				Available tool holders	
ISO	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	l	w	t	r	Designation	Page
LNJ 5464	○		○																25.40	15.87	9.52	1.6	CLKN	71
LNJ 5568										○									31.75	15.87	9.52	3.2		
LNJ 6588	○		○	○	○			○		○	○								31.75	19.05	12.70	3.2		
LNJ 6688	○		○	○	○			○		○	○				○		○		38.10	19.05	12.70	3.2		
LNJ 6898										○									48.10	21.05	12.70	3.2		

Code system **08~09p**

● : Stock item

SNGN3812R

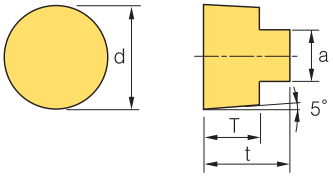




Type	Grades																Dimensions (mm)				Available tool holders	
ISO	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	r	R	Designation	Page
SNGN 3812R	○		○	○															38.10	12.70	0.4	114	-	-

RBGX

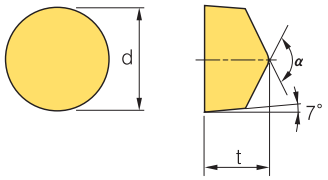




Type	Grades																Dimensions (mm)				Available tool holders	
ISO	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	T	a	Designation	Page
RBGX 06T	○		○																6.00	5.00	3.00	3.00	CRDB	53
RBGX 08T	○		○																8.00	6.50	4.00	4.00		
RBGX 10T			○																10.00	9.00	6.00	6.00		
RBGX 12T	○		○																12.00	9.00	6.00	6.00		
RBGX 16T	○		○																16.00	13.00	8.00	8.00		
RBGX 20T	○		○	○	○														20.00	15.00	10.00	10.00		
RBGX 26T	○		○																26.00	15.00	10.00	14.00		

RCGX

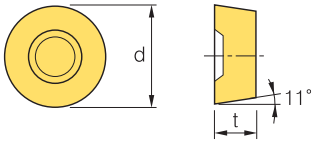




Type		Grades																Dimensions (mm)			Available tool holders	
ISO	ASA	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	α	Designation	Page
RCGX 060400	RCGX 102	○		○												○		○	○	6.35	4.76	120°	CRDC	54
RCGX 060600	RCGX 102	○		○	○	○										○				6.35	6.35	120°		
RCGX 060700	RCGX 102	○		○	○	○					○					○				6.35	7.94	120°		
RCGX 090700	RCGX 103	○		○	○	○	○				○					○	○	○	○	9.52	7.94	120°		
RCGX 120700	RCGX 104	○		○	○	○	○				○					○	○	○	○	12.70	7.94	120°		
RCGX 151000	RCGX 105	○		○	○	○					○					○	○			15.87	10.00	120°		
RCGX 191000	RCGX 106	○		○	○	○					○					○				19.05	10.00	120°		
RCGX 251200	RCGX 108	○		○	○	○					○					○				25.40	12.00	140°		

RPGX

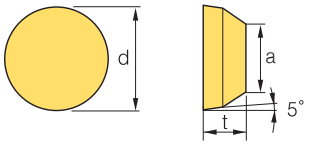




Type	Grades																Dimensions (mm)			Available tool holders	
ISO	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	α	Designation	Page
RPGX 060400																	○	○	6.35	4.76	120°	-	-
RPGX 090700															○	○	○	○	9.52	7.94	120°		
RPGX 120700															○	○	○	○	12.70	7.94	120°		

RXGX





Type	Grades																Dimensions (mm)			Available tool holders	
ISO	CAT10	CAT20	CAT30	CAT50	CAT70	CAT10C	CAT30C	CA20	CA30	CSN20	CSN30	CSN40	CSN50	CSN60	CSN80	CSN90	CW40	CW80	d	t	a	Designation	Page
RXGX 1207MO	○	○																	12.00	7.94	6.90	-	-
RXGX 1608MO		○						○											16.00	8.00	9.50		
RXGX 2508MO	○							○											25.00	8.00	18.20		

Code system **08~09p**

● : Stock item

Tool Holders





Code System 39

Application Index 40

External Toolholders 42

KORLOY CERAMICS

C	C	L	N	R	25
1	2	3	4	5	6
Clamping Method of Insert	Insert Shape	Holder Style	Clearance Angle of Insert	Hand	Height of Shank

1 Clamping Method of Insert


Top clamping without hole
C


Top and hole clamping (Multi clamp, pin and clamp)
D


Top and hole clamping (Multi clamp, pin and clamp)
M


Hole clamping(Pin lock)
C


Screw on
D


Top and hole clamping (Wedge clamp, pin and clamp)
M

2 Insert Shape

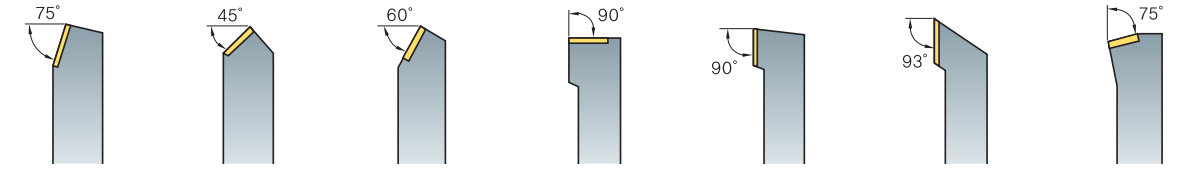


C D E K L

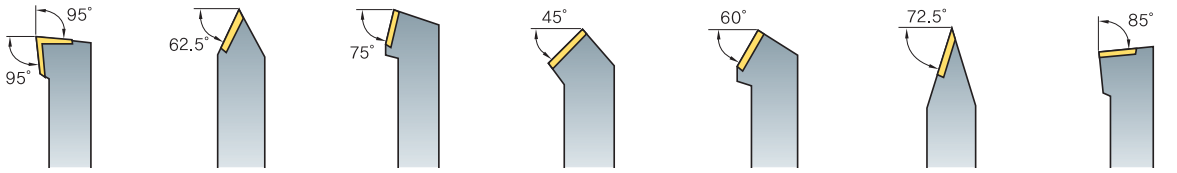


R S T V W

3 Holder Style



B D E F G J K

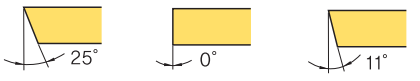


L N R S T V Y

4 Clearance Angle of Insert

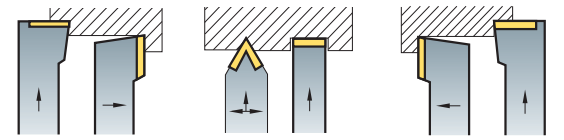


B C D E



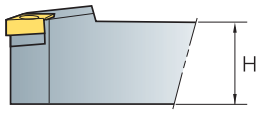
F N P

5 Hand

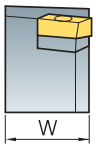

L N R

25	M	12	-	A	7
7	8	9		10	11
Width of Shank	Length of Holder	Length of Insert Cutting Edge		Clamping System	Thickness of Insert

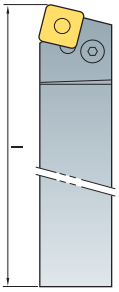
6 Height of Shank



7 Width of Shank

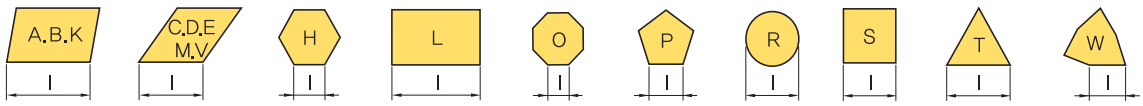


8 Length of Holder

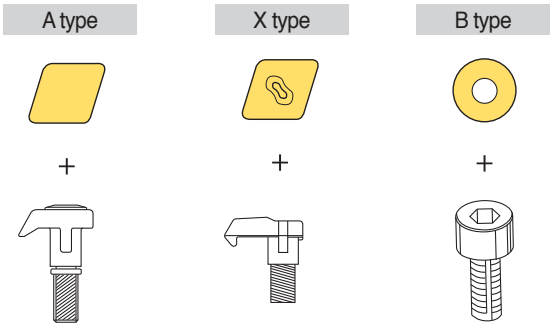


A - 32	H - 100	Q - 180	X-Special Item
B - 40	J - 110	R - 200	
C - 50	K - 125	S - 250	
D - 60	L - 140	T - 300	
E - 70	M - 150	U - 350	
F - 80	N - 160	V - 400	
G - 90	P - 170	W - 450	

9 Length of Insert Cutting Edge



10 Clamping System



11 Thickness of Insert



Index	S(mm)
3	3.18
4	4.76
6	6.35
7	7.94
9	9.52

CCLN	CCBN	CCKN	CDHN
			
42p	43p	44p	45p

CDJN	CDNN	CEFN	CEGN
			
46p	47p	48p	49p

CEJN	CRDN	CRGN	CRDB
			
50p	51p	52p	53p

CRDC	CSBN	CSDN	CSKN
			
54p	55p	56p	57p

CSRN	CSSN	CSYN	CTFN
			
58p	59p	60p	61p

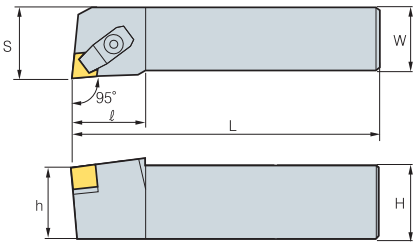
CTGN	CWLN	CSRC	CSSC
			
62p	63p	64p	65p

CSTP	CTFP	HRCD	CVJN
			
66p	67p	68p	69p

CVVN	CLKN	CFLN	
			
70p	71p	72p	

CCLN

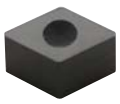




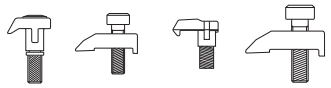
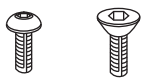
(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CCLNR/L 2525M12-A4	25	25	150	35	32	CNGN1204	UH1	SHCN4A	BM510	LW4
CCLNR/L 2525M12-A7	25	25	150	35	32	CNGN1207	UH1	SHCN4A	BM510	LW4
CCLNR/L 2525M12-X7	25	25	150	35	32	CNG(V)X1207	UH5	SHCN4A	BM510	LW4
CCLNR/L 3225P12-A4	32	25	170	35	32	CNGN1204	UH1	SHCN4A	BM510	LW4
CCLNR/L 3225P12-A7	32	25	170	35	32	CNGN1207	UH1	SHCN4A	BM510	LW4
CCLNR/L 3225P12-X7	32	25	170	35	32	CNG(V)X1207	UH5	SHCN4A	BM510	LW4
CCLNR/L 3225P16-X7	32	25	170	35	32	CNG(V)X1607	UH5	SHCN5A	FM510	LW4
CCLNR/L 3225P16-A7	32	25	170	35	32	CNGN1607	UH1	SHCN5A	FM510	LW4
CCLNR/L 4040S19-A7	40	40	250	60	50	CNGN1907	UH4	SHCN6A	FM615	LW6
CCLNR/L 5050T25-A9	50	50	300	65	60	CNGN2509	UH25	SHCN8	FM815	LW6

Available Inserts

CNGN	CNGX	CNVX
		
13p	14p	14p

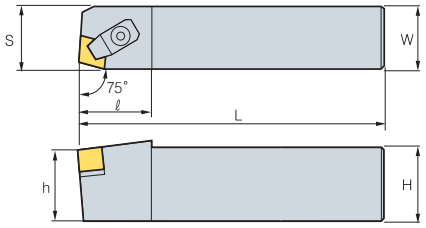
Parts

Clamp & Clamp Screw				Shim	Shim Screw		Wrench
							
UH1	UH4	UH5	UH25	SHCN4A SHCN5A SHCN6A SHCN8	BM510	FM510 FM615 FM815	LW4 LW6

Code system **38~39p**

CCBN

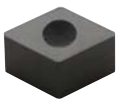




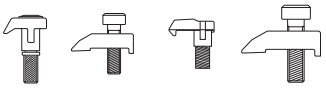
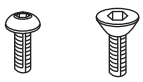
(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CCBNR/L 2525M12-A4	25	25	150	35	22	CNGN1204	UH1	SHCN4A	BM510	LW4
CCBNR/L 2525M12-A7	25	25	150	35	22	CNGN1207	UH1	SHCN4A	BM510	LW4
CCBNR/L 2525M12-X7	25	25	150	35	22	CNG(V)X1207	UH5	SHCN4A	BM510	LW4
CCBNR/L 3225P12-A4	32	25	170	35	22	CNGN1204	UH1	SHCN4A	BM510	LW4
CCBNR/L 3225P12-A7	32	25	170	35	22	CNGN1207	UH1	SHCN4A	BM510	LW4
CCBNR/L 3225P12-X7	32	25	170	35	22	CNG(V)X1207	UH5	SHCN4A	BM510	LW4
CCBNR/L 3225P16-A7	32	25	170	35	27	CNGN1607	UH1	SHCN5A	FM510	LW4
CCBNR/L 3225P16-X7	32	25	170	35	27	CNG(V)X1607	UH5	SHCN5A	FM510	LW4
CCBNR/L 4040S19-A7	40	40	250	60	36	CNGN1907	UH4	SHCN6A	FM615	LW6
CCBNR/L 5050T25-A9	50	50	300	65	45	CNGN2509	UH25	SHCN8	FM815	LW6

Available Inserts

CNGN	CNGX	CNVX
		
13p	14p	14p

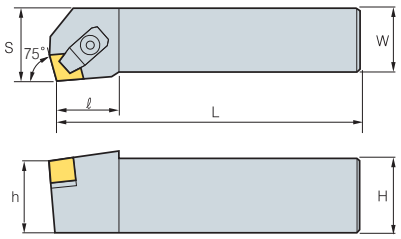
Parts

Clamp & Clamp Screw				Shim	Shim Screw		Wrench
							
UH1	UH4	UH5	UH25	SHCN4A SHCN5A SHCN6A SHCN8	BM510	FM510 FM615 FM815	LW4 LW6

Code system **38~39p**

CCKN

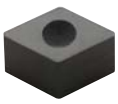




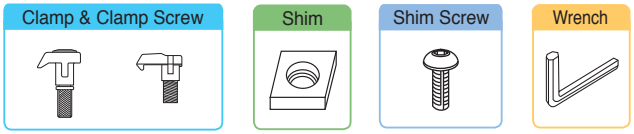
(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CCKNR/L 2525M12-A4	25	25	150	29	32	CNGN1204	UH1	SHCN4A	BM510	LW4
CCKNR/L 2525M12-A7	25	25	150	29	32	CNGN1207	UH1	SHCN4A	BM510	LW4
CCKNR/L 2525M12-X7	25	25	150	29	32	CNG(V)X1207	UH5	SHCN4A	BM510	LW4
CCKNR/L 3225P12-A4	32	25	170	29	32	CNGN1204	UH1	SHCN4A	BM510	LW4
CCKNR/L 3225P12-A7	32	25	170	29	32	CNGN1207	UH1	SHCN4A	BM510	LW4
CCKNR/L 3225P12-X7	32	25	170	29	32	CNG(V)X1207	UH5	SHCN4A	BM510	LW4

Available Inserts

CNGN	CNGX	CNVX
		
13p	14p	14p

Parts

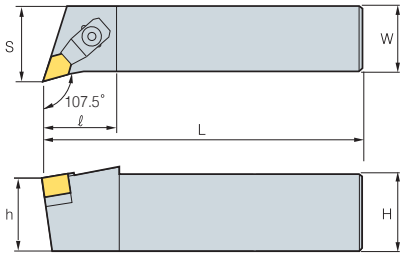


UH1	UH5	SHCN4A	BM510	LW4

Code system **38~39p**

CDHN

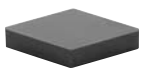
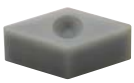




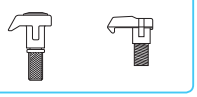
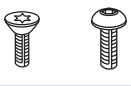
(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CDHNR/L 2525M15-A4	25	25	150	33	32	DNGN1504	UH1	SHDN4A	BM510	LW4
CDHNR/L 2525M15-A7	25	25	150	33	32	DNGN1507	UH1	SHDN4A	BM510	LW4
CDHNR/L 2525M12-X7	25	25	150	30	32	DNGX1207	UH5	SHDN3A	TM3507	LW4
CDHNR/L 2525M15-X7	25	25	150	33	32	DNGX1507	UH5	SHDN4A	BM510	LW4
CDHNR/L 3225P15-A4	32	25	170	33	32	DNGN1504	UH1	SHDN4A	BM510	LW4
CDHNR/L 3225P15-A7	32	25	170	33	32	DNGN1507	UH1	SHDN4A	BM510	LW4
CDHNR/L 3225P12-X7	32	25	170	30	32	DNGX1207	UH5	SHDN3A	TM3507	LW4
CDHNR/L 3225P15-X7	32	25	170	33	32	DNGX1507	UH5	SHDN4A	BM510	LW4

Available Inserts

DNGN	DNGX
	
18p	18p

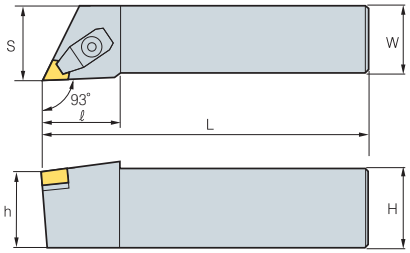
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1 UH5	SHDN3A SHDN4A	TM3507 BM510	LW4

Code system **38~39p**

CDJN

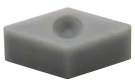




(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CDJNR/L 2525M15-A4	25	25	150	38	32	DNGN1504	UH1	SHDN4A	BM510	LW4
CDJNR/L 2525M15-A7	25	25	150	38	32	DNGN1507	UH1	SHDN4A	BM510	LW4
CDJNR/L 2525M12-X7	25	25	150	38	32	DNGX1207	UH5	SHDN3A	TM3507	LW4
CDJNR/L 2525M15-X7	25	25	150	38	32	DNGX1507	UH5	SHDN4A	BM510	LW4
CDJNR/L 3225P15-A4	32	25	170	38	32	DNGN1504	UH1	SHDN4A	BM510	LW4
CDJNR/L 3225P15-A7	32	25	170	38	32	DNGN1507	UH1	SHDN4A	BM510	LW4
CDJNR/L 3225P12-X7	32	25	170	38	32	DNGX1207	UH5	SHDN3A	TM3507	LW4
CDJNR/L 3225P15-X7	32	25	170	38	32	DNGX1507	UH5	SHDN4A	BM510	LW4

Available Inserts

DNGN	DNGX
	
18p	18p

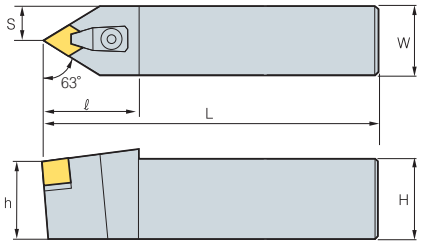
Parts

Clamp & Clamp Screw		Shim	Shim Screw		Wrench
					
UH1	UH5	SHDN3A SHDN4A	TM3507	BM510	LW4

Code system **38~39p**

CDNN





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CDNNN 2525M15-A4	25	25	150	40	12.5	DNGN1504	UH1	SHDN4A	BM510	LW4
CDNNN 2525M15-A7	25	25	150	40	12.5	DNGN1507	UH1	SHDN4A	BM510	LW4
CDNNN 4025M15-A7	40	25	150	40	12.5	DNGN1507	UH1	SHDN4A	BM510	LW4

Available Inserts

DNGN

18p

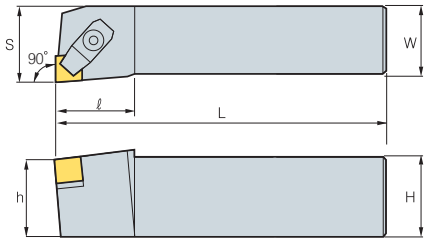
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHDN4A	BM510	LW4

Code system **38~39p**

CEFN





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CEFNR/L 2525M13-A7	25	25	150	29	32	ENGN1307	UH1	SHEN4A	BM510	LW4
CEFNR/L 3225P13-A7	32	25	170	29	32	ENGN1307	UH1	SHEN4A	BM510	LW4

Available Inserts

ENGN

19p

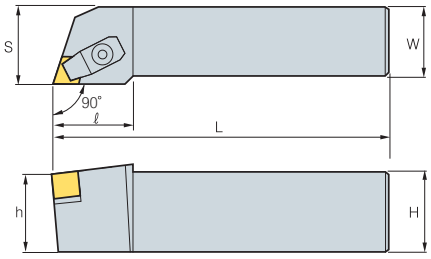
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHEN4A	BM510	LW4

Code system **38~39p**

CEGN





(mm)

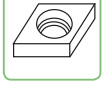
Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CEGNR/L 2525M13-A7	25	25	150	23	32	ENGN1307	UH1	SHEN4A	BM510	LW4
CEGNR/L 3225P13-A7	32	25	170	23	32	ENGN1307	UH1	SHEN4A	BM510	LW4

Available Inserts

ENGN

19p

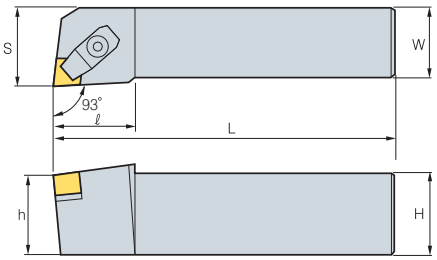
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHEN4A	BM510	LW4

Code system **38~39p**

CEJN





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CEJNR/L 2525M13-A7	25	25	150	30	32	ENGN1307	UH1	SHEN4A	BM510	LW4
CEJNR/L 3225P13-A7	32	25	170	30	32	ENGN1307	UH1	SHEN4A	BM510	LW4

Available Inserts

ENGN

19p

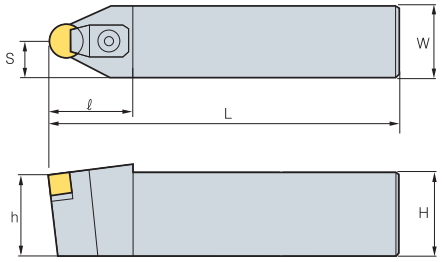
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHEN4A	BM510	LW4

Code system **38~39p**

CRDN





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CRDNN 2525M09-A4	25	25	150	32	12.5	RNGN0904	UH1	SHRN3A	TM3507	LW4
CRDNN 2525M09-A7	25	25	150	32	12.5	RNGN0907	UH1	SHRN3A	TM3507	LW4
CRDNN 2525M12-A4	25	25	150	32	12.5	RNGN1204	UH1	SHRN4A	BM510	LW4
CRDNN 2525M12-A7	25	25	150	32	12.5	RNGN1207	UH1	SHRN4A	BM510	LW4
CRDNN 2525M12-X7	25	25	150	32	12.5	RNGX1207	UH5	SHRN4A	BM510	LW4
CRDNN 3225P12-A4	32	25	170	32	12.5	RNGN1204	UH1	SHRN4A	BM510	LW4
CRDNN 3225P12-A7	32	25	170	32	12.5	RNGN1207	UH1	SHRN4A	BM510	LW4
CRDNN 3225P12-X7	32	25	170	32	12.5	RNGX1207	UH5	SHRN4A	BM510	LW4
CRDNN 3225P15-A7	32	25	170	32	12.5	RNGN1507	UH1	SHRN5A	BM510	LW4
CRDNN 3225P19-A7	32	25	170	32	12.5	RNGN1907	UH4	SHRN6	FM512	LW6

Available Inserts

RNGN	RNGX .. DP
	
20p	22p

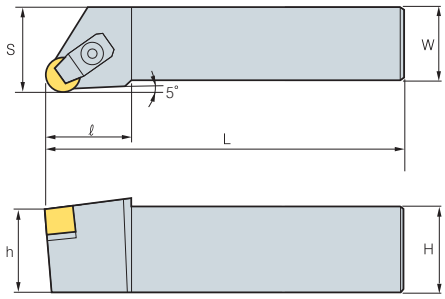
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1 UH4 UH5	SHRN3A SHRN6 SHRN4A SHRN5A	BM510 TM3507 FM512	LW4 LW6

Code system **38~39p**

CRGN





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CRGNR/L 2525M09-A4	25	25	150	32	32	RNGN0904	UH1	SHRN3A	TM3507	LW4
CRGNR/L 2525M09-A7	25	25	150	32	32	RNGN0907	UH1	SHRN3A	TM3507	LW4
CRGNR/L 2525M12-A4	25	25	150	35	32	RNGN1204	UH1	SHRN4A	BM510	LW4
CRGNR/L 2525M12-A7	25	25	150	35	32	RNGN1207	UH1	SHRN4A	BM510	LW4
CRGNR/L 2525M12-X7	25	25	150	35	32	RNGX1207	UH5	SHRN4A	BM510	LW4
CRGNR/L 3225P12-A4	32	25	170	35	32	RNGN1204	UH1	SHRN4A	BM510	LW4
CRGNR/L 3225P12-A7	32	25	170	35	32	RNGN1207	UH1	SHRN4A	BM510	LW4
CRGNR/L 3225P12-X7	32	25	170	35	32	RNGX1207	UH5	SHRN4A	BM510	LW4
CRGNR/L 3225P15-A7	32	25	170	37	32	RNGN1507	UH1	SHRN5A	BM510	LW4
CRGNR/L 3225P19-A7	32	25	170	45	32	RNGN1907	UH4	SHRN6	FM512	LW6

Available Inserts

RNGN	RNGX .. DP
	
20p	22p

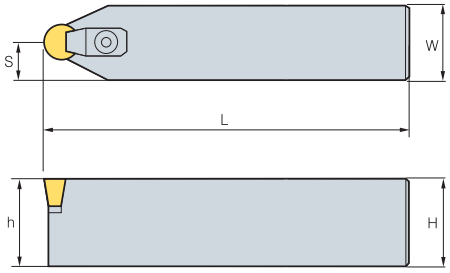
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1 UH4 UH5	SHRN3A SHRN6 SHRN4A SHRN5A	BM510 TM3507 FM512	LW4 LW6

Code system **38~39p**

CRDB





(mm)

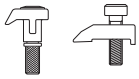
Designation	H(h)	W	L	S	Insert	Parts			
						Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CRDBN 2525M12-A	25	25	150	12.5	RBGX12T	UH1	SHRB12	SH3015	LW4
CRDBN 2525M16-A	25	25	150	12.5	RBGX16T	UH1	SHRB16	SH3515	LW4
CRDBN 3232P12-A	32	32	170	16	RBGX12T	UH1	SHRB12	SH3015	LW4
CRDBN 3232P16-A	32	32	170	16	RBGX16T	UH1	SHRB16	SH3515	LW4
CRDBN 3232P20-A	32	32	170	16	RBGX20T	UH4	SHRB20	SH5015	LW6
CRDBN 3232P26-A	32	32	170	16	RBGX26T	UH4	SHRB26	SH6015	LW6

Available Inserts

RBGX

35p

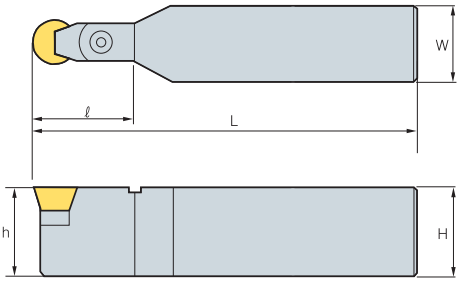
Parts

Clamp & Clamp Screw		Shim	Shim Screw	Wrench
				
UH1	UH4	SHRB12 SHRB16 SHRB20 SHRB26	SH3015 SH3515 SH5015 SH6015	LW4 LW6

Code system **38~39p**

CRDC





(mm)

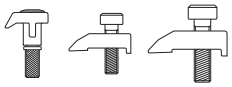
Designation	H(h)	W	L	S	Insert	Parts			
						Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CRDCN 3225P06-A4	32	25	170	20	RCGX0604	CLRC6	SHRC102	FM210	LW3
CRDCN 3225P06-A6	32	25	170	20	RCGX0606	CLRC6	SHRC102	FM210	LW3
CRDCN 3225P06-A7	32	25	170	20	RCGX0607	CLRC6	SHRC102	FM210	LW3
CRDCN 3225P09-A7	32	25	170	20	RCGX0907	CLRC9	SHRC103	FM315	LW4
CRDCN 3225P12-A7	32	25	170	20	RCGX1207	UH1	SHRC104	FM415	LW4
CRDCN 5040T12-A7	50	40	300	30	RCGX1207	UH1	SHRC104	FM415	LW4
CRDCN 5040T15-A10	50	40	300	35	RCGX1510	UH1	SHRC105	FM415	LW4
CRDCN 5040T19-A10	50	40	300	45	RCGX1910	UH4	SHRC106	FM415	LW6
CRDCN 5040T25-A12	50	40	300	50	RCGX2512	UH25	SHRC108	FM615	LW6

Available Inserts

RCGX

36p

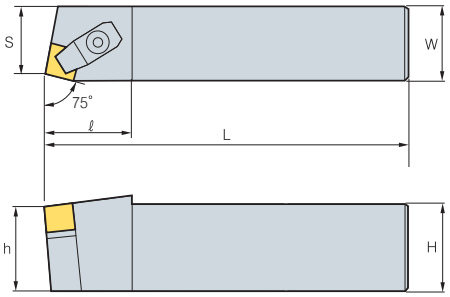
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
CLRC6 CLRC9 UH1 UH4 UH25	SHRC102 SHRC105 SHRC103 SHRC106 SHRC104 SHRC108	FM210 FM415 FM315 FM615	LW3 LW4 LW6

Code system **38~39p**

CSBN





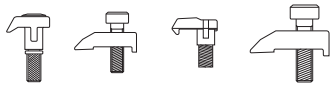
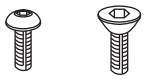
(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CSBNR/L 2525M12-A4	25	25	150	34	22	SNGN1204	UH1	SHSN4A	BM510	LW4
CSBNR/L 2525M12-A7	25	25	150	34	22	SNGN1207	UH1	SHSN4A	BM510	LW4
CSBNR/L 2525M12-X7	25	25	150	34	22	SNGX1207	UH5	SHSN4A	BM510	LW4
CSBNR/L 2525M15-A7	25	25	150	34	22	SNGN1507	UH1	SHSN5A	FM512	LW4
CSBNR/L 2525M15-X7	25	25	150	40	22	SNGX1507	UH5	SHSN5A	FM512	LW4
CSBNR/L 3225P12-A7	32	25	170	34	22	SNGN1207	UH1	SHSN4A	BM510	LW4
CSBNR/L 3225P12-X7	32	25	170	34	22	SNGX1207	UH5	SHSN4A	BM510	LW4
CSBNR/L 3225P15-A7	32	25	170	40	22	SNGN1507	UH1	SHSN5A	FM512	LW4
CSBNR/L 3225P15-X7	32	25	170	40	22	SNGX1507	UH5	SHSN5A	FM512	LW4
CSBNR/L 4040S19-A7	40	40	250	54	35	SNGN1907	UH4	SHSN6A	FM612	LW6
CSBNR/L 5050T25-A9	50	50	300	65	45	SNGN2509	UH25	SHSN8	FM815	LW6

Available Inserts

SNGN	SNGX
	
25p	26p

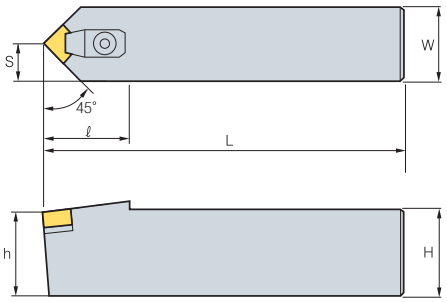
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1 UH4 UH5 UH25	SHSN4A SHSN6A SHSN5A SHSN8	BM510 FM512 FM612 FM815	LW4 LW6

Code system **38~39p**

CSDN





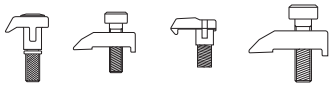
(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CSDNN 2525M12-A4	25	25	150	35	12.5	SNGN1204	UH1	SHSN4A	BM510	LW4
CSDNN 2525M12-A7	25	25	150	35	12.5	SNGN1207	UH1	SHSN4A	BM510	LW4
CSDNN 2525M12-X7	25	25	150	35	12.5	SNGX1207	UH5	SHSN4A	BM510	LW4
CSDNN 2525M15-A7	25	25	150	38	12.5	SNGN1507	UH1	SHSN5A	FM512	LW4
CSDNN 2525M15-X7	25	25	150	38	12.5	SNGX1507	UH5	SHSN5A	FM512	LW4
CSDNN 3225P12-A7	32	25	170	35	12.5	SNGN1207	UH1	SHSN4A	BM510	LW4
CSDNN 3225P12-X7	32	25	170	35	12.5	SNGX1207	UH5	SHSN4A	BM510	LW4
CSDNN 3225P15-A7	32	25	170	38	12.5	SNGN1507	UH1	SHSN5A	FM512	LW4
CSDNN 3225P15-X7	32	25	170	38	12.5	SNGX1507	UH5	SHSN5A	FM512	LW4
CSDNN 4040S19-A7	40	40	250	60	20	SNGN1907	UH4	SHSN6A	FM612	LW6
CSDNN 5050T25-A9	50	50	300	60	25	SNGN2509	UH25	SHSN8	FM815	LW6

Available Inserts

SNGN	SNGX
	
25p	26p

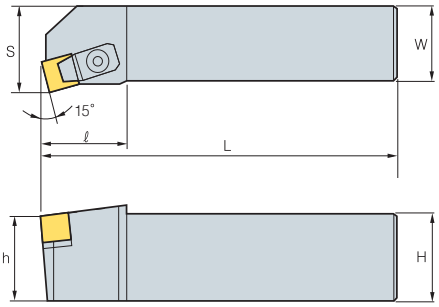
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1 UH4 UH5 UH25	SHSN4A SHSN6A SHSN5A SHSN8	BM510 FM512 FM612 FM815	LW4 LW6

Code system **38~39p**

CSKN





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CSKNR/L 2525M12-A4	25	25	150	34	32	SNGN1204	UH1	SHSN4A	BM510	LW4
CSKNR/L 2525M12-A7	25	25	150	34	32	SNGN1207	UH1	SHSN4A	BM510	LW4
CSKNR/L 2525M12-X7	25	25	150	34	32	SNGX1207	UH5	SHSN4A	BM510	LW4
CSKNR/L 2525M15-A7	25	25	150	40	32	SNGN1507	UH1	SHSN5A	FM512	LW4
CSKNR/L 2525M15-X7	25	25	150	40	32	SNGX1507	UH5	SHSN5A	FM512	LW4
CSKNR/L 3225P12-A7	32	25	170	34	32	SNGN1207	UH1	SHSN4A	BM510	LW4
CSKNR/L 3225P12-X7	32	25	170	34	32	SNGX1207	UH5	SHSN4A	BM510	LW4
CSKNR/L 3225P15-A7	32	25	170	40	32	SNGN1507	UH1	SHSN5A	FM512	LW4
CSKNR/L 3225P15-X7	32	25	170	40	32	SNGX1507	UH5	SHSN5A	FM512	LW4

Available Inserts

SNGN	SNGX
	
25p	26p

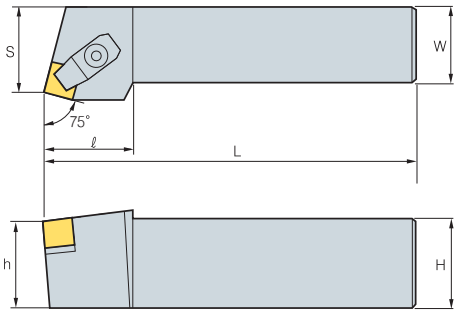
Parts

Clamp & Clamp Screw		Shim	Shim Screw		Wrench
					
UH1	UH5	SHSN4A SHSN5A	BM510	FM512	LW4

Code system **38~39p**

CSRN





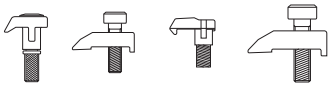
(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CSRNR/L 2525M12-A4	25	25	150	32	27	SNGN1204	UH1	SHSN4A	BM510	LW4
CSRNR/L 2525M12-A7	25	25	150	32	27	SNGN1207	UH1	SHSN4A	BM510	LW4
CSRNR/L 2525M12-X7	25	25	150	32	27	SNGX1207	UH5	SHSN4A	BM510	LW4
CSRNR/L 2525M15-A7	25	25	150	34	27	SNGN1507	UH1	SHSN5A	FM512	LW4
CSRNR/L 2525M15-X7	25	25	150	34	27	SNGX1507	UH5	SHSN5A	FM512	LW4
CSRNR/L 3225P12-A7	32	25	170	32	27	SNGN1207	UH1	SHSN4A	BM510	LW4
CSRNR/L 3225P12-X7	32	25	170	32	27	SNGX1207	UH5	SHSN4A	BM510	LW4
CSRNR/L 3225P15-A7	32	25	170	34	27	SNGN1507	UH1	SHSN5A	FM512	LW4
CSRNR/L 3225P15-X7	32	25	170	34	27	SNGX1507	UH5	SHSN5A	FM512	LW4
CSRNR/L 4040S19-A7	40	40	250	54	43	SNGN1907	UH4	SHSN6A	FM612	LW6
CSRNR/L 5050T25-A9	50	50	300	70	53	SNGN2509	UH25	SHSN8	FM815	LW6

Available Inserts

SNGN	SNGX
	
25p	26p

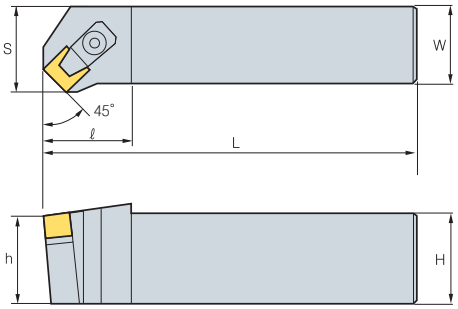
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1 UH4 UH5 UH25	SHSN4A SHSN6A SHSN5A SHSN8	BM510 FM512 FM612 FM815	LW4 LW6

Code system **38~39p**

CSSN





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CSSNR/L 2525M12-A4	25	25	150	35	32	SNGN1204	UH1	SHSN4A	BM510	LW4
CSSNR/L 2525M12-A7	25	25	150	35	32	SNGN1207	UH1	SHSN4A	BM510	LW4
CSSNR/L 2525M12-X7	25	25	150	35	32	SNGX1207	UH5	SHSN4A	BM510	LW4
CSSNR/L 2525M15-A7	25	25	150	37	32	SNGN1507	UH1	SHSN5A	FM512	LW4
CSSNR/L 2525M15-X7	25	25	150	37	32	SNGX1507	UH5	SHSN5A	FM512	LW4
CSSNR/L 3225P12-A7	32	25	170	35	32	SNGN1207	UH1	SHSN4A	BM510	LW4
CSSNR/L 3225P12-X7	32	25	170	35	32	SNGX1207	UH5	SHSN4A	BM510	LW4
CSSNR/L 3225P15-A7	32	25	170	37	32	SNGN1507	UH1	SHSN5A	FM512	LW4
CSSNR/L 3225P15-X7	32	25	170	37	32	SNGX1507	UH5	SHSN5A	FM512	LW4

Available Inserts

SNGN	SNGX
	
25p	26p

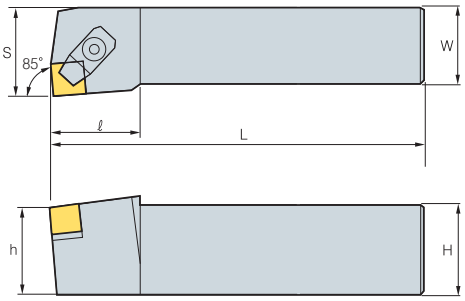
Parts

Clamp & Clamp Screw		Shim	Shim Screw		Wrench
					
UH1	UH5	SHSN4A SHSN5A	BM510	FM512	LW4

Code system **38~39p**

CSYN





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CSYNR/L 2525M12-A4	25	25	150	27	32	SNGN1204	UH1	SHSN4A	BM510	LW4
CSYNR/L 2525M12-A7	25	25	150	27	32	SNGN1207	UH1	SHSN4A	BM510	LW4
CSYNR/L 2525M12-X7	25	25	150	27	32	SNGX1207	UH5	SHSN4A	BM510	LW4
CSYNR/L 2525M15-A7	25	25	150	27	32	SNGN1507	UH1	SHSN5A	FM512	LW4
CSYNR/L 2525M15-X7	25	25	150	27	32	SNGX1507	UH5	SHSN5A	FM512	LW4
CSYNR/L 3225P12-A7	32	25	170	27	32	SNGN1207	UH1	SHSN4A	BM510	LW4
CSYNR/L 3225P12-X7	32	25	170	27	32	SNGX1207	UH5	SHSN4A	BM510	LW4
CSYNR/L 3225P15-A7	32	25	170	27	32	SNGN1507	UH1	SHSN5A	FM512	LW4
CSYNR/L 3225P15-X7	32	25	170	27	32	SNGX1507	UH5	SHSN5A	FM512	LW4

Available Inserts

SNGN	SNGX
	
25p	26p

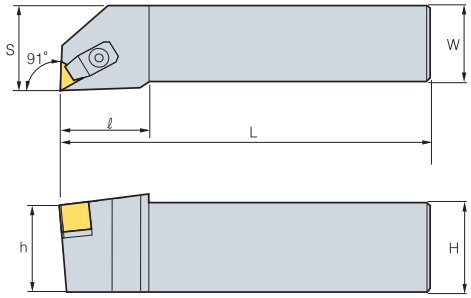
Parts

Clamp & Clamp Screw		Shim	Shim Screw		Wrench
					
UH1	UH5	SHSN4A SHSN5A	BM510	FM512	LW4

Code system **38~39p**

CTFN





(mm)

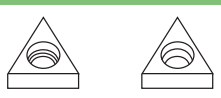
Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CTFNR/L 2525M16-A4	25	25	150	29	32	TNGN1604	UH1	SHTN3A	BM408	LW4
CTFNR/L 2525M16-A7	25	25	150	29	32	TNGN1607	UH1	SHTN3A	BM408	LW4
CTFNR/L 2525M22-A4	25	25	150	32	32	TNGN2204	UH1	SHTN4	FM410	LW4
CTFNR/L 2525M22-A7	25	25	150	32	32	TNGN2207	UH1	SHTN4	FM410	LW4
CTFNR/L 3225P16-A4	32	25	170	29	32	TNGN1604	UH1	SHTN3A	BM408	LW4
CTFNR/L 3225P16-A7	32	25	170	29	32	TNGN1607	UH1	SHTN3A	BM408	LW4
CTFNR/L 3225P22-A4	32	25	170	32	32	TNGN2204	UH1	SHTN4	FM410	LW4
CTFNR/L 3225P22-A7	32	25	170	32	32	TNGN2207	UH1	SHTN4	FM410	LW4

Available Inserts

TNGN

29p

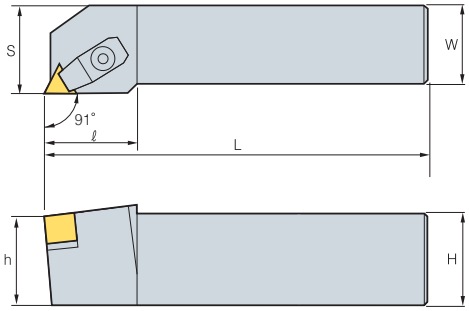
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHTN3A SHTN4A	BM408 FM410	LW4

Code system **38~39p**

CTGN





(mm)

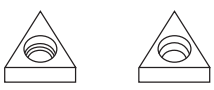
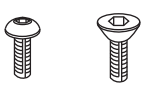
Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CTGNR/L 2525M16-A4	25	25	150	26	32	TNGN1604	UH1	SHTN3A	BM408	LW4
CTGNR/L 2525M16-A7	25	25	150	26	32	TNGN1607	UH1	SHTN3A	BM408	LW4
CTGNR/L 2525M22-A4	25	25	150	26	32	TNGN2204	UH1	SHTN4	FM410	LW4
CTGNR/L 2525M22-A7	25	25	150	26	32	TNGN2207	UH1	SHTN4	FM410	LW4
CTGNR/L 3225P16-A4	32	25	170	26	32	TNGN1604	UH1	SHTN3A	BM408	LW4
CTGNR/L 3225P16-A7	32	25	170	26	32	TNGN1607	UH1	SHTN3A	BM408	LW4
CTGNR/L 3225P22-A4	32	25	170	26	32	TNGN2204	UH1	SHTN4	FM410	LW4
CTGNR/L 3225P22-A7	32	25	170	26	32	TNGN2207	UH1	SHTN4	FM410	LW4

Available Inserts

TNGN

29p

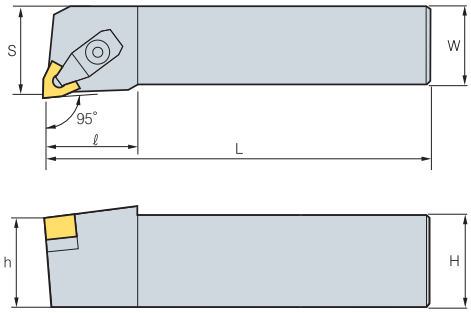
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHTN3A SHTN4A	BM408 FM410	LW4

Code system **38~39p**

CWLN





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CWLNR/L 2525M08-X7	25	25	150	28	32	WNGX0807	UH5	SHWN4A	TM4010	LW4
CWLNR/L 3225M08-X7	32	25	150	28	32	WNGX0807	UH5	SHWN4A	TM4010	LW4

Available Inserts

WNGX

32p

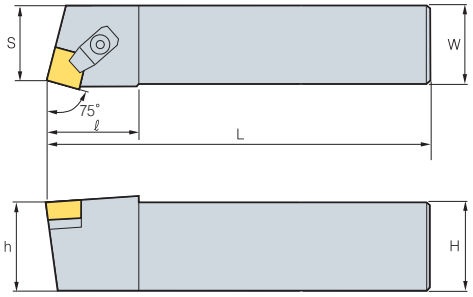
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH5	SHWN4A	TM4010	LW4

Code system **38~39p**

CSRC





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CSRCR/L 2525M12-A4	25	25	150	32	27	SCGN1204	UH1	SHSC4A	SP3	LW4
CSRCR/L 3225P12-A4	32	25	170	32	27	SCGN1204	UH1	SHSC4A	SP3	LW4

Available Inserts

SCGN

27p

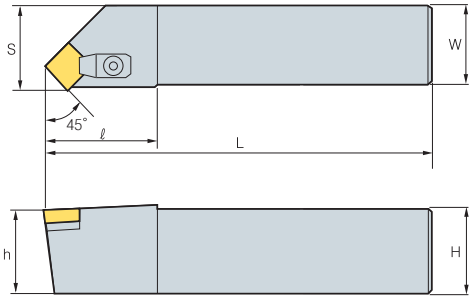
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHSC4A	SP3	LW4

Code system **38~39p**

CSSC





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CSSCR/L 2525M12-A4	25	25	150	35	32	SCGN1204	UH1	SHSC4A	SP3	LW4
CSSCR/L 2525M12-A6	25	25	150	35	32	SCGN1206	UH1	SHSC4A	SP3	LW4
CSSCR/L 3225P12-A4	32	25	170	35	32	SCGN1204	UH1	SHSC4A	SP3	LW4
CSSCR/L 3225P12-A6	32	25	170	35	32	SCGN1206	UH1	SHSC4A	SP3	LW4

Available Inserts

SCGN

27p

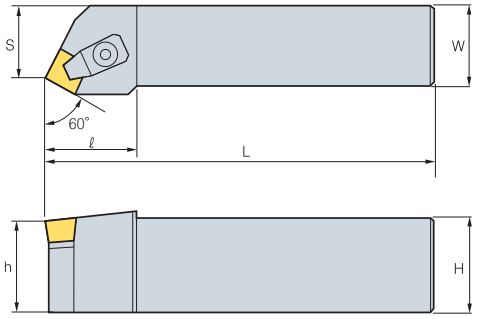
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHSC4A	SP3	LW4

Code system **38~39p**

CSTP





(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CSTPR/L 2020K09-A3	20	20	125	24	17	SPGN0903	UH1	SHSC3A	SP3	LW4
CSTPR/L 2020K12-A3	20	20	125	30	17	SPGN1203	UH1	SHSC4A	SP3	LW4
CSTPR/L 2020K12-A4	20	20	125	30	17	SPGN1204	UH1	SHSC4A	SP3	LW4
CSTPR/L 2525M12-A3	25	25	150	30	22	SPGN1203	UH1	SHSC4A	SP3	LW4
CSTPR/L 2525M12-A4	25	25	150	30	22	SPGN1204	UH1	SHSC4A	SP3	LW4

Available Inserts

SPGN

28p

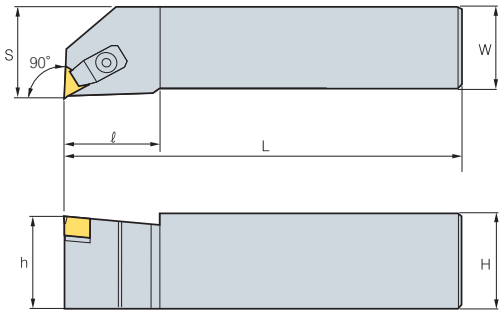
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHSC3A SHSC4A	SP3	LW4

Code system **38~39p**

CTFP

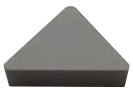




(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CTFPR/L 2020K16-A3	20	20	125	20	25	TPGN1603	UH1	SHTC3A	SP3	LW4
CTFPR/L 2525M16-A3	25	25	150	20	32	TPGN1603	UH1	SHTC3A	SP3	LW4

Available Inserts

TPGN

30p

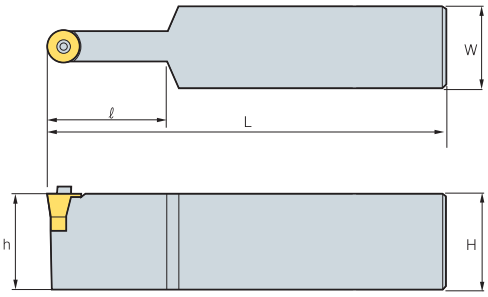
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH1	SHTC3A	SP3	LW3 LW4

Code system **38~39p**

HRCD





(mm)

Designation	H(h)	W	L	ℓ	Insert	Parts		
						Clamp & Clamp Screw	Shim	Wrench
HRCD 2525M12-B6	25	25	150	15	CDH1206	HB 2	SHCD22	LW2.5
HRCD 2525M19-B9	25	25	150	15	CDH1909	HB 3	SHCD33	LW5
HRCD 3225R19-B9	32	25	200	38	CDH1909	HB 3	SHCD33	LW5
HRCD 4035S19-B9	40	35	250	45	CDH1909	HB 3	SHCD33	LW5
HRCD 4035S32-B19	40	35	250	45	CDH3219	HB 5	SHCD53	LW6
HRCD 5050T32-B19	50	50	300	50	CDH3219	HB 5	SHCD53	LW6

Available Inserts

CDH

33p

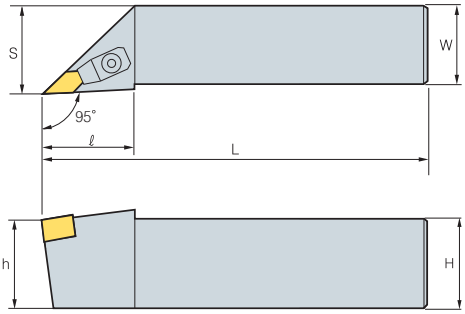
Parts

Clamp & Clamp Screw	Shim	Wrench
		
HB2	SHCD22	LW2.5
HB3	SHCD33	LW5
HB5	SHCD53	LW6

Code system **38~39p**

CVJN





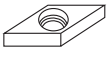
(mm)

Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CVJNR/L 2525M16-A4	25	25	150	41	32	VNGN1604	SM4	SHVN3A	TM412	LW4
CVJNR/L 2525M16-X7	25	25	150	41	32	VNGX1607	SM4	SHVN3A	TM412	LW4
CVJNR/L 3225P16-X7	32	25	170	41	32	VNGX1607	SM4	SHVN3A	TM412	LW4

Available Inserts

VNGN	VNGX
	
31p	32p

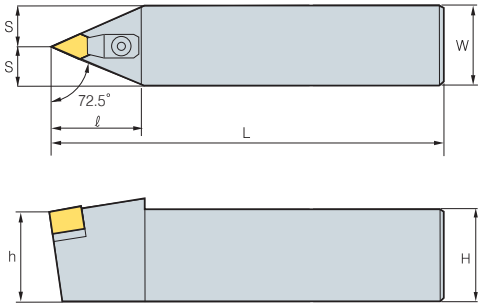
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
SM4	SHVN3A	TM412	LW4

Code system **38~39p**

CVVN





(mm)

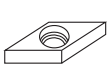
Designation	H(h)	W	L	ℓ	S	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CVVNN 2525M16-X7	25	25	150	45	12.5	VNGX1607	SM4	SHVN3A	TM412	LW4
CVVNN 3225P16-X7	32	25	170	45	12.5	VNGX1607	SM4	SHVN3A	TM412	LW4

Available Inserts

VNGX

32p

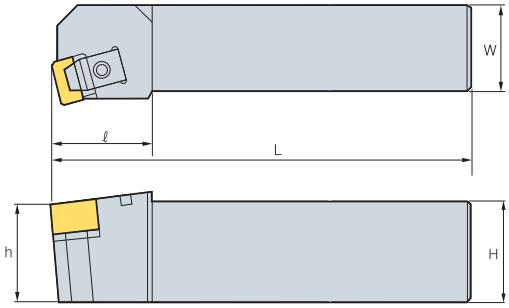
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
SM4	SHVN3A	TM412	LW4

Code system **38~39p**

CLKN





(mm)

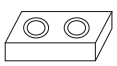
Designation	H(h)	W	L	ℓ	Insert	Parts			
						Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CLKNR/L 6060V65-A	60	60	400	70	LNJ6588	UH25	SHLJ65	BM510	LW6
CLKNR/L 6060V66-A	60	60	400	70	LNJ6688	UH25	SHLJ66	BM510	LW6

Available Inserts

LNJ

34p

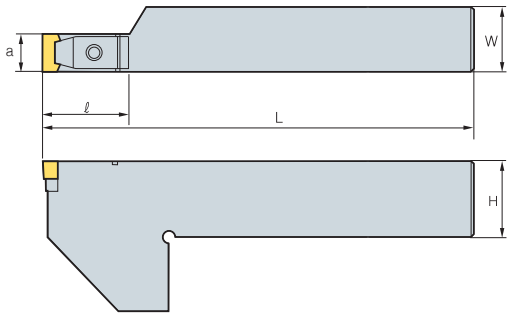
Parts

Clamp & Clamp Screw	Shim	Shim Screw	Wrench
			
UH25	SHLJ65 SHLJ66	BM510	LW6

Code system **38~39p**

CFLN





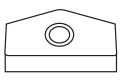
(mm)

Designation	a	H	W	L	ℓ	Insert	Parts			
							Clamp & Clamp Screw	Shim	Shim Screw	Wrench
CFLNN 6060U44-A	14	60	60	350	80	F10537	UH25	SHF10	BM510	LW6
CFLNN 5050T32-A	12	50	50	300	75	F13941	UH25	SHF13	BM510	LW6
CFLNN 4040R25-A	7	40	40	200	40	F250723	UH4	SHF25	BM510	LW4

Available Inserts

F-Series	F-Series
	
33p	34p

Parts

Clamp & Clamp Screw		Shim	Shim Screw	Wrench
				
UH4	UH25	SHF10 SHF13 SHF25	BM510	LW6

Code system **38~39p**

Technical Information





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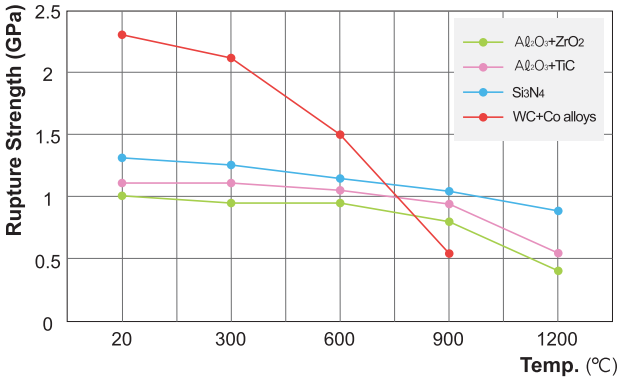
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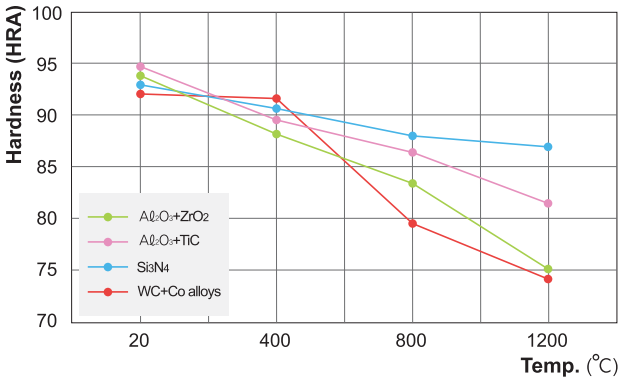
SI unit conversion table 83

KORLOY CERAMICS

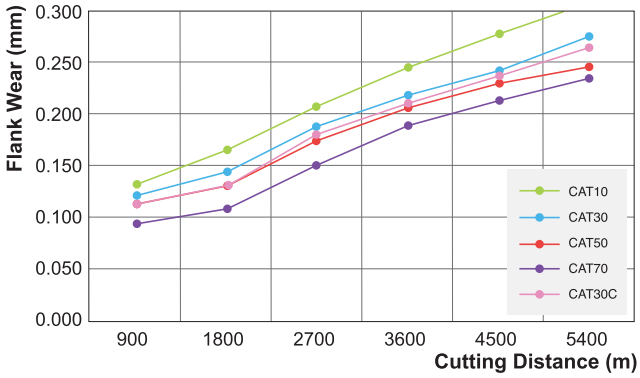
High Temperature Strength



Hardness vs Temperature

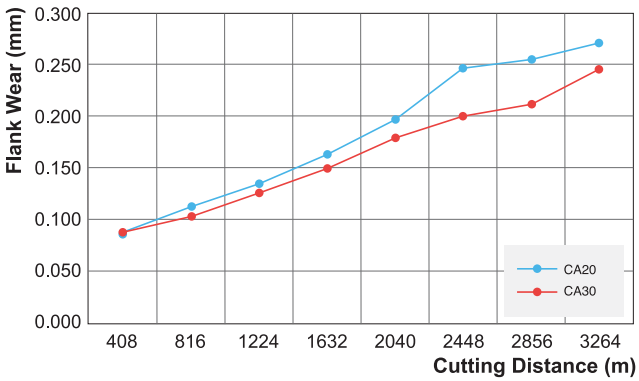


Flank Wear vs Cutting Distance



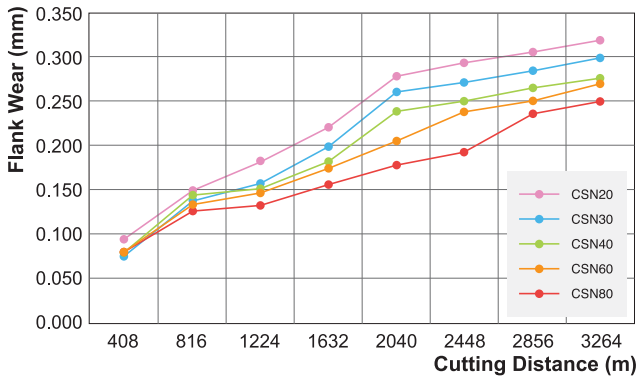
Cutting Condition

Workpiece SKD-11(HRC>65)
Velocity : 150m/min **Feed** : 0.15mm/rev **Depth** : 0.3mm
Insert : SNGN 120412 E040



Cutting Condition

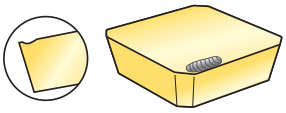
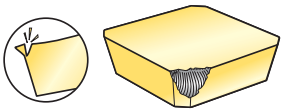
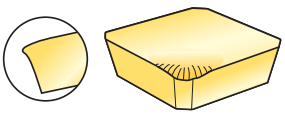
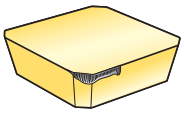
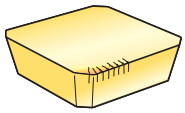
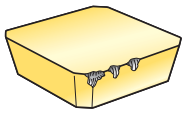
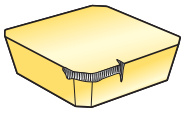
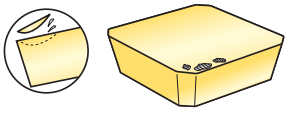
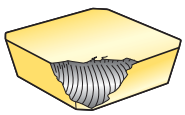
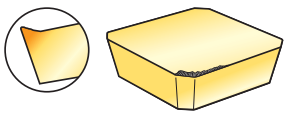
Workpiece FC-25(HRC>45)
Velocity : 500m/min **Feed** : 0.5mm/rev **Depth** : 1.2mm
Insert : SNGN 120412 E040



Cutting Condition

Workpiece FC-25(HRC>45)
Velocity : 800m/min **Feed** : 0.5mm/rev **Depth** : 2.0mm
Insert : CNGN 120412 E040

Trouble Shooting

Tool Failure	Cause	Solution
Crater wear 	• Improper grade • Excessive cutting condition	• Choose harder grade • Decrease cutting condition
Fracture 	• Improper grade • Excessive feed • Shorten cutting edge strength • Insufficient rigidity of holder	• Choose tougher grade • Decrease feed • Apply to large honed or chamfered edge • Choose bigger size holder
Plastic deformation 	• Improper grade • Excessive cutting condition • High cutting temperature	• Choose harder grade • Decrease cutting condition • Choose grade wich heat conductivity are big
Wear on nose radius (Flank wear) 	• When the hardness of workpiece is too high compare with tool • When machinig surface hardened workpiece • Improper grade • Excessive cutting speed • Too small relief angle • Too low feed	• Choose harder grade • Decrease cutting speed • Choose lager relief angle • Increase feed
Thermal crack 	• Expansion and shrinking by cutting temperature • Improper grade (*Specially milling operation)	• Apply to dry cutting (In case of wet cutting, use enough coolant) • Choose tougher grade
Chipping 	• Improper grade • Excessive feed • Shorten cutting edge strength • Insufficient rigidity of holder	• Choose tougher grade • Decrease feed • Apply to large honing or chamfer edge • Choose bigger size holder
Notch wear 	• Surface hardened workpiece • Friction due to bad chip geometry (Generate vibration)	• Choose harder grade • Improve chip control form large rake angle
Flaking 	• Deposition on cutting edge • Bad chip control	• Improve cutting performance fromd large rake angle • Apply to chip pocket with big size
Complete breakage 	• Unusable condition due to wear off the most parts of cutting edge by progress of wear	• Reduce the feed rate. • Reduce the depth of cut. • Select a tougher grade. • Select a stronger chipbreaker. • Select a thicker insert.
Built-up edge 	• Slow cutting speed • Sticky materials	• Increase cutting speed. • Use more positive rake geometry. • Use tougher grade

Hardness calculating table

Vickers 50kgf Hv	Brinell, 3000kgf HB: Standard ball 10mm	Brinell, 3000kgf HB: Cemented carbide ball 10mm	Rockwell: A scale 60kgf Diamond particle HRA	Rockwell: B scale 100kgf 1/16in ball HRB	Rockwell: C scale 150kgf Diamond particle HRC	Rockwell: D scale 100kgf Diamond particle HRD	Shore HS	Tensile strength (approximate value) MPa(1)
940	-	-	85.6	-	68.0	76.9	97	
920	-	-	85.3	-	67.5	76.5	96	
900	-	-	85.0	-	67.0	76.1	95	
880	-	(767)	84.7	-	66.4	75.7	93	
860	-	(757)	84.4	-	65.9	75.3	92	
840	-	(745)	84.1	-	65.3	74.8	91	
820	-	(733)	83.8	-	64.7	74.3	90	
800	-	(722)	83.4	-	64.0	74.8	88	
780	-	(710)	83.0	-	63.3	73.3	87	
760	-	(698)	82.6	-	62.5	72.6	86	
740	-	(684)	82.2	-	61.8	72.1	84	
720	-	(670)	81.8	-	61.0	71.5	83	
700	-	(656)	81.3	-	60.1	70.8	81	
690	-	(647)	81.1	-	59.7	70.5	-	
680	-	(638)	80.8	-	59.2	70.1	80	
670	-	630	80.6	-	58.8	69.8	-	
660	-	620	80.3	-	58.3	69.4	79	
650	-	611	80.0	-	57.8	69.0	-	
640	-	601	79.8	-	57.3	68.7	77	
630	-	591	79.5	-	56.8	68.3	-	
620	-	582	79.2	-	56.3	67.9	75	
610	-	573	78.9	-	55.7	67.5	-	
600	-	564	78.6	-	55.2	67.0	74	
590	-	554	78.4	-	54.7	66.7	-	2055
580	-	545	78.0	-	54.1	66.2	72	2020
570	-	535	77.8	-	53.6	65.8	-	1985
560	-	525	77.4	-	53.0	65.4	71	1950
550	(505)	517	77.0	-	52.3	64.8	-	1905
540	(496)	507	76.7	-	51.7	64.4	69	1860
530	(488)	497	76.4	-	51.1	63.9	-	1825
520	(480)	488	76.1	-	50.5	63.5	67	1795
510	(473)	479	75.7	-	49.8	62.9	-	1750
500	(465)	471	75.3	-	49.1	62.2	66	1705
490	(456)	460	74.9	-	48.4	61.6	-	1660
480	488	452	74.5	-	47.7	61.3	64	1620
470	441	442	74.1	-	46.9	60.7	-	1570
460	433	433	73.6	-	46.1	60.1	62	1530
450	425	425	73.3	-	45.3	59.4	-	1495
440	415	415	72.8	-	44.5	58.8	59	1460
430	405	405	72.3	-	43.6	58.2	-	1410
420	397	397	71.8	-	42.7	57.5	57	1370
410	388	388	71.4	-	41.8	56.8	-	1330
100	379	379	70.8	-	40.8	56.0	55	1290
390	369	369	70.3	-	39.8	55.2	-	1240
380	360	360	69.8	(100.0)	38.8	54.4	52	1205
370	350	350	69.2	-	39.9	53.6	-	1170
360	341	341	68.7	(109.0)	36.6	52.8	50	1130
350	331	331	68.1	-	35.5	51.9	-	1095
340	322	322	67.6	(108.0)	34.4	51.1	47	1070
330	313	313	67.0	-	33.3	50.2	-	1035

Vickers 50kgf Hv	Brinell, 3000kgf HB: Standard ball 10mm	Brinell, 3000kgf HB: Cemented carbide ball 10mm	Rockwell: A scale 60kgf Diamond particle HRA	Rockwell: B scale 100kgf 1/16in ball HRB	Rockwell: C scale 150kgf Diamond particle HRC	Rockwell: D scale 100kgf Diamond particle HRD	Shore HS	Tensile strength (approximate value) MPa(1)
320	303	303	66.4	(107.0)	32.2	49.4	45	1005
310	294	294	65.8	-	31.0	48.4	-	980
300	284	284	65.2	(105.5)	29.8	47.5	42	950
295	280	280	64.8	-	29.2	47.1	-	935
290	275	275	64.5	(104.5)	28.5	46.5	41	915
285	270	270	64.2	-	27.8	46.0	-	905
280	265	265	63.8	(103.5)	27.1	45.3	40	890
275	261	261	63.5	-	26.4	44.9	-	875
270	256	256	63.1	(102.0)	25.6	44.3	38	855
265	252	252	62.7	-	24.8	43.7	-	840
260	247	247	62.4	(101.0)	24.0	43.1	37	825
255	243	243	62.0	-	23.1	42.2	-	805
250	238	238	61.6	99.5	22.2	41.7	36	795
245	233	233	61.2	-	21.3	41.1	-	780
240	228	228	60.7	98.1	20.3	40.3	34	765
230	219	219	-	96.7	(18.0)	-	33	730
220	209	209	-	95.0	(15.7)	-	32	695
210	200	200	-	93.4	(13.4)	-	30	670
200	190	190	-	91.5	(11.0)	-	29	635
190	181	181	-	89.5	(8.5)	-	28	605
180	171	171	-	87.1	(6.0)	-	26	580
170	162	162	-	85.0	(3.0)	-	25	545
160	152	152	-	81.7	(0.0)	-	24	515
150	143	143	-	78.7	-	-	22	490
140	133	133	-	75.0	-	-	21	455
130	124	124	-	71.2	-	-	20	425
120	114	114	-	66.7	-	-	-	390
110	105	105	-	62.3	-	-	-	-
100	95	95	-	56.2	-	-	-	-
95	90	90	-	52.0	-	-	-	-
90	86	86	-	48.0	-	-	-	-
85	81	81	-	41.0	-	-	-	-

Note1.) Gothic number is ASTM E 1 in the list 140

Note2.) 1. 1MPa=1N/㎟

2. The number In the blank is not generally used ranges.

Grade Comparison

	Grade \ Maker	KORLOY	NTK	CeramTec	Kennametal	Sandvik	Tungaloy	Greenleaf	Kyocera	Mitsubishi	Sumitomo
CERAMIC	Black Ceramic	CAT10	HC2	SH1	K090		LX21		A65	XD202	NB90M
		CAT30	HC4	SH2/SH3	KY1615	CC650		GEM6		XD805	NB90S
		CAT50 CAT70	HC5 HC7		MC2				KT66		
		CAT20	HC6								
	Coated Ceramic	CAT10C CAT30C	ZC4 ZC7	SH2C	KY4400 HTM85D		LX11		A66N		NB100C
	White Ceramic	CA20	HC1	SN60 SN80	AC5 K060	CC620	LXA	GEM9	AZ5000 SN60		W80
	Pink	CA30	HW2								
	Silicon Nitride	CSN20	EC1	SL100	KY2000				KS5000		NS130
		CSN30	SX8	SL200	KY3000	CC690			KS5000		
		CSN40/CSN60	SX2 SX6	SL500/SL506 SL608	KY1320/ KY3500	CC6090	FX90 FX105	GSN	KS6000	XD515 XD520	NS260
		CSN50	SX1	SL508			CX710 CSC73		KS7000		NS30
			SX5			CC680					
		CSN80 CSN90	SX9 SX7	SL800/SL806	KY1540/ KY1310 KY2100	CC6080 CC6060/ CC6065			KS6040		
	Coated Silicon Nitride		SP2	SL550C	KY3400	GC1690	CXC73 TF110	HSN200	KX207		NS260C
	Whisker	CW40 CW80	WA5 WA1		KY1525 KY4300 MC3	CC670		WG300 WG600 WG700			WX120 WX2000

The physical properties of element

Element	Density (g/cm^3)	Hardness (Hv)	Young's modulus ($\times 103 kgf/mm^2$)	Thermal conductivity (cal/cm·sec·°C)	Thermal expansion coefficient ($\times 10^{-6}$/°C)	Melting point (°C)
WC	15.6	2,150	70	0.3	5.1	2,900
TiC	4.94	3,200	45	0.04	7.6	3,200
TaC	14.5	1,800	29	0.05	6.6	3,800
NbC	8.2	2,050	35	0.04	6.8	3,500
TiN	5.43	2,000	26	0.07	9.2	2,950
Al_2O_3	3.98	3,000	42	0.07	8.5	2,050
cBN	3.48	4,500	71	3.1	4.7	-
Diamond	3.52	9,000	99	5.0	3.1	-
Co	8.9	-	10~18	0.165	12.3	1,495
Ni	8.9	-	20	0.22	13.3	1,455

Carbon steel and alloy steel for structural use

Type		Korea	ISO	Japan	U.S.A		Great Britain	Germany	France	Russia
		KS	ISO	JIS	AISI SAE		BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Carbon steel		SM10C	C10	S10C	1010		040A10 045A10 045M10	C10E C10R	XC10	-
		SM15C	C15E4 C15M2	S15C	1015		055M15	C15E C15R	-	-
		SM20C	-	S20C	1020		070M20 C22, C22E C22R	C22 C22E C22R	C22 C22E C22R	-
		SM25C	C25 C25E4 C25M2	S25C	1025		C25 C25E C25R	C25 C25E C25R	C25 C25E C25R	-
		SM30C	C30 C30E4 C30M2	S30C	1030		080A30 080M30 CC30 C30E C30R	C30 C30E C30R	C30 C30E C30R	30Γ
		SM35C	C35 C35E4 C35M2	S35C	1035		C35 C35E C35R	C35 C35E C35R	C35 C35E C35R	35Γ
		SM40C	C40 C40E4 C40M2	S40C	1039 1040		080M40 C40 C40E C40R	C40 C40E C40R	C40 C40E C40R	40Γ
		SM43C	-	S43C	1042 1043		080A42	-	-	40Γ
		SM45C	C45 C45E4 C45M2	S45C	1045 1046		C45 C45E C45R	C45 C45E C45R	C45 C45E C45R	45Γ
		SM48C	-	S48C	-		080A47	-	-	45Γ
		SM50C	C50 C50E4 C50M2	S50C	1049		080M50 C50 C50E C50R	C50 C50E C50R	C50 C50E C50R	50Γ
		SM53C	-	S53C	1050 1053		-	-	-	50Γ
		SM55C	C55 C55E4 C55M2	S55C	1055		070M55 C55 C55E C55R	C55 C55E C55R	C55 C55E C55R	-
		SM58C	C60 C60E4 C60M2	S58C	1059 1060		C60 C60E C60R	C60 C60E C60R	C60 C60E C60R	60Γ
Alloy steel	Nickel chromium steel	SNC236 SNC415(H) SNC631(H) SNC815(H) SNC836	- - - 15NiCr13 -	SNC236 SNC415(H) SNC631(H) SNC815(H) SNC836	- - - - -		- - - 655M13(655H13) -	- - - 15NiCr13 -	- - - - -	40XH - 30XH3A - -
	Nickel chromium molybdenum steel	SNCM220	20NiCrMo2 20NiCrMoS2	SNCM220	8615 8617(H) 8620(H) 8622(H)		805A20 805M20 805A22 805M22	20NiCrMo2 20NiCrMoS2	20NCD2	-
		SNCM240	41CrNiMo2 41CrNiMoS2	SNCM240	8637 8640		-	-	-	-
		SNCM415 SNCM420(H) SNCM431 SNCM439 SNCM447 SNCM616 SNCM625 SNCM630 SNCM815	- - - - - - - - -	SNCM415 SNCM420(H) SNCM431 SNCM439 SNCM447 SNCM616 SNCM625 SNCM630 SNCM815	- 4320(H) - 4340 - - - - -		- - - - - - - - -	- - - - - - - - -	- - - - - - - - -	- 20XH2M(20XHM) - - - - - - -
	Chromium steel	SCr415(H)	-	SCr415(H)	-		-	17Cr3 17CrS3	-	15X 15XA
		SCr420(H)	20Cr4(H) 20CrS4	SCr420(H)	5120(H)		-	-	-	20X
		SCr430(H)	34Cr4 34CrS4	SCr430(H)	5130(H) 5132(H)		34Cr4 34CrS4	34Cr4 34CrS4	34Cr4 34CrS4	30X
		SCr435(H)	34Cr4 34CrS4 37Cr4 37CrS4	SCr435(H)	5135(H)		37Cr4 37CrS4	37Cr4 37CrS4	37Cr4 37CrS4	35X
		SCr440(H)	37Cr4 37CrS4 41Cr4 41CrS4	SCr440(H)	5140(H)		530M40 41Cr4 41CrS4	41Cr4 41CrS4	41Cr4 41CrS4	40X
		SCr445(H)		SCr445(H)						45X

• The above Alloy steel can supplied by domestic manufacturing

Type		Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
		KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Alloy steel	Chromium molybdenum steel	SCM415(H)	-	SCM415(H)	-	-	-	-	-
		SCM418(H)	18CrMo4 18CrMoS4	SCM418(H)	-	-	18CrMo4 18CrMoS4	-	20XM
		SCM420(H)	-	SCM420(H)	-	708M20(708H20)	-	-	20XM
		SCM430	-	SCM430	4130	-	-	-	30XM 30XMA
		SCM432	-	SCM432	-	-	-	-	-
		SCM435(H)	34CrMo4 34CrMoS4	SCM435(H)	(4135H) 4137(H)	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	34CrMo4 34CrMoS4	35XM
		SCM440(H)	42CrMo4 42CrMoS4	SCM440(H)	4140(H) 4142(H)	708M70 709M40 42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	42CrMo4 42CrMoS4	-
		SCM445(H)	-	SCM445(H)	4145(H) 4147(H)	-	-	-	-
	Manganese steel and Manganese chromium steel	SMn420(H)	22Mn6(H)	SMn420(H)	1522(H)	150M19	-	-	-
		SMn433(H)	-	SMn433(H)	1534	150M36	-	-	30Γ2 35Γ2
		SMn438(H)	36Mn6(H)	SMn438(H)	1541(H)	150M36			35Γ2 40Γ2
		SMn443(H)	42Mn6(H)	SMn443(H)	1541(H)	-	-	-	40Γ2 45Γ2
		SMnC420(H)	-	SMnC420(H)	-	-	-	-	-
		SMnC443(H)	-	SMnC443(H)	-	-	-	-	-
	Aluminum chromium molybdenum steel	SACM645	41CrAlMo74	SACM645	-	-	-	-	-

• The above Alloy steel can supplied by domestic manufacturing

Tool steel

Type	Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
	KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
High speed steel	SKH2	HS18-0-1	SKH2	T1				
	SKH3	-	SKH3	T4				
	SKH4	-	SKH4	T5				
	SKH10	-	SKH10	T15	BM 2	S6/5/2	Z 85 WDCV	
	SKH51	HS6-5-2	SKH51	M2				
	SKH52	HS6-6-2	SKH52	M3-1				
	SKH53	HS6-5-3	SKH53	M3-2				
	SKH54	HS6-5-4	SKH54	M4	BM 35	S6/5/2/5	6-5-2-5	
	SKH55	HS6-5-2-5	SKH55	M 35				
	SKH56	-	SKH56	M36				
	SKH57	HS10-4-3-10	SKH57	-		S2/9/2		
	SKH58	HS2-9-2	SKH58	M7				
	SKH59	HS2-9-1-8	SKH59	M42				
Alloy tool steel	STS11	-	SKS11	F2				
	STS2	-	SKS2	-				
	STS21	-	SKS21	-				
	STS5	-	SKS5	-				
	STS51	-	SKS51	L6				
	STS7	-	SKS7	-				
	STS8	-	SKS8	-				
	STS4	-	SKS4	-				
	STS41	-	SKS41	-				
	STS43	105V	SKS43	W2-9 1/				
	STS44	-	SKS44	W2-8 1-2				
	STS3	-	SKS3	-		105WCr6	105WC13	
	STS31	105WCr1	SKS31	-				
	STS93	-	SKS93	-				
	STS94	-	SKS94	-				
	STS95	-	SKS95	-	BD3	X210Cr12	Z200C12	
	STD1	210Cr12	SKD1	D3				
	STD11	-	SKD11	D2	BA2	X100CrMoV5 1	Z100CDV5	
	STD12	100CrMoV5	SKD12	A2				
	STD4	-	SKD4	-	BH21	X30WCrV9 3	Z30WCV9	
	STD5	X30WCrV9-3	SKD5	H21				
	STD6	X37CrMoV5-1	SKD6	H11	BH13	X40CrMoV5 1	Z40CDV5	
	STD61	X40CrMoV5-1	SKD61	H13				
	STD62	X35CrWMoV5	SKD62	H12				
	STD7	32CrMoV12-28	SKD7	H10				
	STD8	-	SKD8	H19				
	STF3	-	SKT3	-		55NiCrMoV6	55NCDV7	
	STF4	55NiCrMoV7	SKT4	L6				

• The above High speed steel can supplied by domestic manufacturing

Type	Korea	ISO	Japan	U.S.A		Great Britain	Germany	France	Russia
	KS	ISO	JIS	AISI SAE		BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Free cutting carbon steel	SUM11	-	SUM11	1110					
	SUM12	-	SUM12	1109					
	SUM21	9S20	SUM21	1212					
	SUM22	11SMn28	SUM22	1213		230M07	9SMn28	S250	
	SUM22L	11SMnPb28	SUM22L	12L13			9SMnPb28	S250Pb	
	SUM23	-	SUM23	1215		240M07	9SMn36	S 300	
	SUM23L	-	SUM23L	-					
	SUM24L	11SMnPb28	SUM24L	12L14			9SMnPb36	S300Pb	
	SUM25	12SMn35	SUM25	-					
	SUM31	-	SUM31	1117					
	SUM31L	-	SUM31L	-					
	SUM32	-	SUM32	-					
	SUM41	-	SUM41	1137					
	SUM42	-	SUM42	1141					
	SUM43	44SMn28	SUM43	1144					
High carbon chromium	STB1	-	SUJ1	-					
	STB2	B1	SUJ2	52100		534A99	100Cr6	100Cr6	
	STB3	B2	SUJ3	ASTM A 485 Grade 1					
	STB4	-	SUJ4	-					
	STB5	-	SUJ5	-					

• The above Special speed steel can supplied by domestic manufacturing

Stainless steel

Type		Korea	ISO	Japan	U.S.A		Great Britain	Germany	France	Russia
		KS	ISO	JIS	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Stainless steel	Austenitic	STS201	X12CrMnNiN17-7-5	SUS201	S20100	201	284S16	X12CrNi17-7	Z12CMN17-07Az	12X17•9AH4
		STS202	X12CrMnNiN18-9-5	SUS202	S20200	202	301S21	X2CrNiN18-7		07X16H6
		STS301	X10CrNi18-8	SUS301	S30100	301		X12CrNi17-7	Z11CN17-08	
		STS301L	X2CrNiN18-7	SUS301L						
		STS301J1		SUS301J1			302S25			12X18H9
		STS302		SUS302	S30200	302		X10CrNiS18-9	Z12CN18-09	
		STS302B	X12CrNiSi18-9-3	SUS302B	S30215	302B	303S21			
		STS303	X10CrNiS18-9	SUS303	S30300	303	303S41		Z8CNF18-09	12X18H10E
		STS303Se		SUS303Se	S30323	303Se		X5CrNi18-10		
		STS303Cu		SUS303Cu			304S31			08X18H10
		STS304	X5CrNi18-9 X2CrNi18-9	SUS304	S30400	304	304S11	X2CrNi19-11	Z7CN18-09	03X18H11
		STS304L	X2CrNi19-11	SUS304L	S30403	304L		X2CrNiN18-10	Z3CN19-11	
		STS304N1	X5CrNiN18-8	SUS304N1	S30451	304N			Z6CN19-09Az	
		STS304LN	X2CrNiN18-8	SUS304LN	S30453	304LN		X5CrNi18-12	Z3CN18-10Az	
		STS304J1		SUS304J1			305S19			06X18H11
		STS305	X6CrNi18-12	SUS305	S30500	305			Z8CN18-12	
		STS309S		SUS309S	S30908	309S	310S31	X5CrNiMo27-12-2	Z10CN24-13	10X23H18
		STS310S	X6CrNi25-20	SUS310S	S31008	310S	316S31	X5CrNiMo27-13-3	Z8CN25-20	
		STS316	X5CrNiMo17-12-2 X3CrNiMo17-12-3	SUS316	S31600	316	316S11	X2CrNiMo17-13-2 X2CrNiMo17-14-3	Z7CND17-12-02 Z6CND18-12-03	03X17H14M3
		STS316L	X2CrNiMo17-12-2 X2CrNiMo17-12-3 X2CrNiMo18-14-3	SUS316L	S31603	316L			Z3CND17-12-02 Z3CND17-12-03	
		STS316N		SUS316N	S31651	316N	317S16	X6CrNiTi18-10		
		STS317		SUS317	S31700	317	321S31	X6CrNiNb18-10		08X18H10T
		STS321	X6CrNiTi18-10	SUS321	S32100	321	347S31		Z6CNT18-10	08X18H12
		STS347	X6CrNiNb18-10	SUS347	S34700	347		X6CrAl13	Z6CNNb18-10	
		STS384	X3NiCr18-16	SUS384	S38400	384	405S17		Z6CN18-16	
	Ferritic	STS405	X6CrAl13	SUS405	S40500	405			Z8CA12	
		STS410L		SUS410L				X6Cr17	Z3C14	
		STS429		SUS429	S42900	429	430S17	X7CrS18		12X17
		STS430	X6Cr17	SUS430	S43000	430		X6CrMo17-1	Z8C17	
		STS430F	X7CrS17	SUS430F	S43020	430F	434S17		Z8CF17	
		STS434	X6CrMo17-1	SUS434	S43400	434			Z8CD17-01	
		STS444	X2CrMoTi18-2	SUS444	S44400	444			Z3CDT18-02	
		STSXM27		SUSXM27	S44627			X10Cr13	Z1CD26-01	
	Martensitic	STS403		SUS403	S40300	403	410S21			
		STS410	X12Cr13	SUS410	S41000	410	416S21	X20Cr13	Z13C13	
		STS416	X12CrS13	SUS416	S41600	416	420S29	X20CrNi17-2	Z11CF13	20X13
		STS420J1	X20Cr13	SUS420J1	S42000	420	431S29		Z20C13	20X17H2
		STS431	X19CrNi16-2	SUS431	S43100	431			Z15CN16-02	
		STS440A	X70CrMo15	SUS440A	S44002	440A		X7CrNiAl17-7	Z70C15	
	Precipitation hardening type	STS630	X5CrNiCuNb16-4	SUS630	S17400	S17400			Z6CNU17-04	09X17H7IO
		STS631	X7CrNiAl17-7	SUS631	S17700	S17700			Z9CNA17-07	
		STS631J1		SUS631J1						

• The above Stainless steel can supplied by domestic manufacturing

Casting or forging steel

Type		Korea	ISO	Japan	U.S.A	Great Britain	Germany	France	Russia
		KS	ISO	JIS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Casting Iron	Gray iron casting	GC100 GC150 GC200 GC250 GC300 GC350	100,150, 200, 250, 300, 350	FC100 FC150 FC200 FC250 FC300 FC350	No 20 B No 25 B No 30 B No 35 B No 45 B No 50 B No 55 B	 Grade 150 Grade 220 Grade 260 Grade 300 Grade 350 Grade 400	GG 10 GG 15 GG 20 GG 25 GG 30 GG 35 GG 40	Ft 10 D Ft 15 D Ft 20 D Ft 25 D Ft 30 D Ft 35 D Ft 40 D	-
	Spheroidal graphite iron casting	GCD400 GCD500 GCD600 GCD700	700-2, 600-3, 500-7, 450-10, 400-15, 400-18, 350-22	FCD400 FCD500 FCD600 FCD700	60-40-18 80-55-06 100-70-03	SNG 420/12 SNG 370/17 SNG 500/7 SNG 600/3 SNG 700/2	GGG 40 GGG 40.3 GGG 50 GGG 60 GGG 70	FCS 400-12 FGS 370-17 FGS 500-7 FGS 600-3 FGS 700-2	B
	Austempered Spheroidal graphite iron casting	FCAD	-	FCAD	-	EN-GJS-	EN-GJS-	EN-GJS-	-
	Austenitic iron casting	FCA- FCDA-	L-, S-	FCA- FCDA-	Type 1, 2, Type D-2, D-3A Class 1, 2	F1, F2, S2W, S5S	GGL-, GGG-	L-, S-	-

Non-ferrous alloy

Type		Korea	ISO	Japan	U.S.A		Great Britain	Germany	France	Russia
		KS	ISO	JIS	AISI SAE		BS BS/EN	DIN DIN/EN	NF NF/EN	GOCT
Aluminum alloy	Aluminum alloy ingots for casting	AC1B	Al-Cu4MgTi	AC1B	204.0		-	-	A-U5GT	
		AC2A	-	AC2A	-		-	-	-	
		AC2B	-	AC2B	319.0		-	-	-	
		AC3A	-	AC3A	-		LM-6	-	-	
		AC4A	-	AC4A	-		-	G(GK)-AlSi9Cu3	-	
		AC4B	-	AC4B	-		-	-	-	
		AC4C	Al-Si7Mg(Fe)	AC4C	356.0		LM-25	G(GK)-AlSi7MG	A-S7G	
		AC4CH	Al-Si7Mg	AC4CH	A356.0		-	-	-	
		AC4D	Al-Si5Cu1Mg	AC4D	355.0		LM-16	-	-	
		AC5A	Al-Cu4Ni2Mg2	AC5A	242.0		-	G(GK)-AlMg5	A-U4NT	
		AC7A	-	AC7A	514.0		LM-5	-	-	
		AC8A	-	AC8A	-		LM-13	-	A-S12UNG	
		AC8B	-	AC8B	-		LM-26	-	A-S10UG	
		AC8C	-	AC8C	-		-	-	A-S10UG	
		AC9A	-	AC9A	-		LM-29	-	-	
		AC9B	-	AC9B	-		-	GD-AlSi12 (Cu)	A-S18UNG	
	Aluminum alloy die casting	ALDC1	Al-Si12CuFe	ADC1	A413.0		LM20	GD-AlSi10Mg	A-S13	
		ALDC2	-	ADC3	A360.0		-	GD-AlMg9	A-S9G	
		ALDC3	-	ADC5	518.0		-	-	A-G6	
		ALDC4	-	ADC6	-		-	GD-AlSi9Cu3	A-G3T	
		ALDC7	Al-Si8Cu3Fe	ADC10	A380.0		-	GD-AlSi9Cu3	-	
		ALDC7Z	Al-Si8Cu3Fe	ADC10Z	A380.0		LM24	-	-	
		ALDC8	-	ADC12	383.0		LM2	-	-	
		ALDC8Z	-	ADC12Z	383.0		LM2	-	-	
		ALDC9	-	ADC14	B390.0		LM30	EN AW-5052	-	
	Aluminum alloy extruded shapes	A5052S	-	A5052S	5052		EN AW-5052	EN AW-5454	EN AW-5052	
		A5454S	-	A5454S	5454		EN AW-5454	EN AW-5083	EN AW-5454	
		A5083S	AlMg4.5Mn0.7	A5083S	5083		EN AW-5083	EN AW-5086	EN AW-5083	
		A5086S	-	A5086S	5086		EN AW-5086	EN AW-6061	EN AW-5086	
		A6061S	AlMg1SiCu	A6061S	6061		EN AW-6061	EN AW-6063	EN AW-6061	
		A6063S	AlMg0.7Si	A6063S	6063		EN AW-6063	EN AW-7003	EN AW-6063	
		A7003S	-	A7003S	-		EN AW-7003	-	EN AW-7003	
		A7N01S	-	A7N01S	-		-	EN AW-7075	-	
		A7075S	AlZn5.5MgCu	A7075S	7075		EN AW-7075		EN AW-7075	

Heat resistant steel

Type		Korea	ISO	Japan	U.S.A		Great Britain	Germany	France	Russia
		KS	ISO	JIS	UNS	AISI SAE	BS BS/EN	DIN DIN/EN	NF NF/EN	ГОСТ
Heat resistant steel	Austenitic	STR31		SUH31			331S42		Z35CNWS14-14	
		STR35		SUH35			349S52	X53CrMnNi21-9	Z52CMN21-09-Az	
		STR36		SUH36			349S54		Z55CMN21-09-Az	
		STR37		SUH37	S63008		381S34			
		STR38		SUH38	S63017					
		STR309		SUH309			309S24	CrNi2520	Z15CN24-13	
		STR310		SUH310	S30900		310S24		Z15CN25-20	
		STR330		SUH330	S31000	309			Z12NCS35-16	
		STR660		SUH660	N08330	310			Z6NCTV25-20	
		STR661		SUH661	S66286	N08330		CrAl1205		
	Ferritic	STR21		SUH21	R30155			X6CrTi12		
		STR409	X6CrTi12	SUH409			409S19		Z6CT12	
		STR409L	X2CrTi12	SUH409L	S40900				Z3CT12	
		STR446		SUH446		409		X45CrSi9-3	Z12C25	
	Martensitic	STR1		SUH1	S44600		401S45		Z45CS9	
		STR3		SUH3	S65007	446			Z40CSD10	
		STR4		SUH4			443S65		Z80CSN20-02	
		STR11		SUH11						
		STR600		SUH600						
		STR616		SUH616	S42200					

• The above Heat resistant steel can supplied by domestic manufacturing

Comparison of workpiece material standards

GROUP		STANDARD TERM	CODE
Structural Steel		Rolled Steel for Welded Suructure	SWS
		Rerolled Steel	SBR
		Rolled Steel for General Structure	SB
		Light Gauge Steel for General Structure	SBC
		Hot- rolled Steel Plate, Sheet/ Strip for Automobile Structural Use	SAPH
Steel Plate		Cold-rolled Steel Sheet/Strip	SBC
		Hot-rolled Soft Steel Sheet/Strip	SHP
Steel Pipe		Carbon Steel Pipe for Ordinary Piping	SPP
		Carbon Steel Pipe for Boiler and Heat Exchanger	STH
		Seamless Steel Pipe for High Pressure Gas Cylinder	STHG
		Carbon Steel Pipe for General Structural Use	SPS
		Carbon Steel Pipe for Machine Structural Use	STST
		Alloy Steel Pipe for Structural Use	STA
		Stainless Steel Pipe for Machine and Structural Use	STS-TK
		Carbon Steel Square Pipe for General Structural Use	SPSR
		Alloy Steel Pipe	SPA
		Carbon Steel Pipe for Pressure Service	SPPS
		Carbon Steel Pipe for High Temperature Service	SPSR
		Carbon Steel Pipe for High Pressure Service	SPPH
		Stainless Steel Pipe	STSxT
Iron and Steel		Carbon Steel for Machine Structural Use	SMxxC, SMxxCK
		Aluminum Chromium Molybdenum Steel	SACM
		Chromium Molybdenum Steel	SCM
		Chromium Steel	SCr
		Nickel Chromium Steel	SNC
		Nickel Chromium Molybdenum Steel	SNCM
		Manganese Steel and manganese Chromium Steel for Machine Structural Use	SMn, SMnC
Special steel	Tool steel	Carbon Tool Steel	STC
		Hollow Drill Steel	SKC
		Alloy Tool Steel	STS, STD, STF
		High Speed Tool Steel	SKH
	Stainless steel	Stainless Steel Bar	STS
	Heat resisting steel	Heat Resisting Steel	STR
		Heat Resisting Steel Bar	STR
		Heat Resisting Steel Sheet	STR
		Free cutting carbon steel	SUM
		Special steel	STB
		Spring steel	SPS

GROUP	STANDARD TERM	CODE
Forged steel	Carbon Steel Forging	SF
	Chromium Molybdenum Steel Forging	SFCM
	Nickel Chromium Molybdenum Steel Forging	SFNCM
Cast iron	Gray Cast iron	GC
	Spheroidal Graphite Cast iron	GCD
	Blackheart Malleable Cast iron	BMC
	Whiteheat Malleable Cast iron	WMC
	Pearlitic Malleable Cast iron	PMC
Cast steel	Carbon Cast Steel	SC
	High Tensile Strength Carbon Cast Steel&Low Alloy Cast Steel	HSC
	Stainless Cast Steel	SSC
	Heat Resisting Cast Steel	HRSC
	High Manganese Cast Steel	HMnSC
	Cast Steel for High Temperature and High Pressure Service	SCPH
Casting	Brass Casting	BsC
	High Strength Brass Casting	HBsC
	Bronze Casting	BrC
	Phosphoric Bronze Casting	PCB
	Aluminum Bronze Casting	AlBC
	Aluminum Alloy Casting	ACxA
	Magnesium Alloy Casting	MgC
	Zinc Alloy Die Casting	ZnDC
	Aluminum Alloy Die Casting	AlDC
	Magnesium Alloy Die Casting	MgDC
	White Metal	WM
	Aluminum Alloy Casting for Bearing	AM
	Brass Alloy Casting for Bearing	KM

Major SI unit conversion table

● Force

N	kgf	dyn
1	1.01972×10^{-1}	1×10^{-5}
9.80665	1	9.80665×10^{5}
1×10^{-5}	1.01972×10^{-6}	1

● Stress

Pa or N/m²	MPa or N/mm²	kgf/mm²	kgf/cm²	kgf/m²
1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}	1.01972×10^{-1}
1×10^{6}	1	1.01972×10^{-1}	1.01972×10	1.01972×10^{5}
9.80665×10^{6}	9.80665	1	1×10^{2}	1×10^{6}
9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1	1×10^{4}
9.80665	9.80665×10^{-6}	1×10^{-6}	1×10^{-4}	1

● Pressure

Pa	kPa	MPa	bar	kgf/cm²
1	1×10^{-3}	1×10^{-6}	1×10^{-5}	1.01972×10^{-5}
1×10^{3}	1	1×10^{-3}	1×10^{-2}	1.01972×10^{-2}
1×10^{6}	1×10^{3}	1	1×10	1.01972×10
1×10^{5}	1×10^{2}	1×10^{-1}	1	1.01972
9.80665×10^{4}	9.80665×10	9.80665×10^{-2}	9.80665×10^{-1}	1

● Work, Energy, Calorie

J	kW·h	kgf·m	kcal
1	2.77778×10^{-7}	1.01972×10^{-1}	2.38889×10^{-4}
3.60000×10^{6}	1	3.67098×10^{5}	8.60000×10^{2}
9.80665	2.72407×10^{-6}	1	2.34270×10^{-3}
4.18605×10^{3}	1.16279×10^{-3}	4.26858×10^{2}	1

● Power

W	kW	kgf·m/s	PS	kcal/h
1	1×10^{-3}	1.01972×10^{-1}	1.35962×10^{-3}	0.860
1×10^{3}	1	1.01972×10^{2}	1.359 62	8.60000×10^{2}
9.81 65	9.80665×10^{-3}	1	1.33333×10^{-2}	8.433 71
7.355×10^{2}	7.355×10^{-1}	7.5x10	1	6.32529×10^{2}
1.162 79	1.16279×10^{-3}	1.18572×10^{-1}	1.58095×10^{-3}	1

● Specific heat

J/(kgK)	kcal/(kg°C) cal/(g°C)
1	2.38889×10^{-4}
4.18605×10^{3}	1

● Thermal conductivity

W/(mk)	kcal/(hm°C)
1	8.6000×10^{-1}
1.16279	1

● Revolution per minute

min^{-1}	s^{-1}	r.p.m.
1	0.0167	1
60	1	60

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