

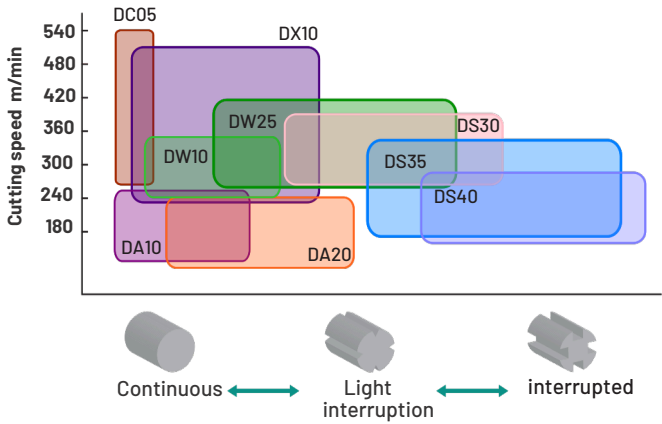
Advanced Ceramic Cutting Tools

Engineered for Peak Productivity



Grade Information

Grade	Composition	ISO	Features and applications
DC05	CBN	K05,H05	Excellent wear resistance and thermal shock resistance. Suitable for high-speed continuous machining of cast iron, hardened steel, and high-temperature alloys. Superior surface finish.
DX10	Composite Ceramics	K10,H10	Compared with whisker ceramics, tool life is significantly extended; machining efficiency is doubled; Superb surface finish. Super alloy with powder metallurgy can also be machined.
DA10	Al2O3+TiCN	K10,H10	For high-speed continuous up to light interrupted cutting of hardened steel and other hard materials; finishing of cast iron.
DA20	Al2O3+(TiC+Metal)	K20,H20	Continuous and light interrupted cutting of hardened steel, cast iron, and other hard materials, with better toughness, suitable for semi- finishing machining.
DW10	Whisker	K10,S10	Finishing of high-temperature alloy, high-hardness steel, and cast iron, especially finish end milling.
DW25	Whisker	K25,S25	High-speed machining of nickel-based/cobalt-based alloy, cast iron, and high-hardness steel in continuous or light interrupted cutting.
DS30	SiALON	K30,S30	Excellent wear resistance and toughness. Widely used in rough milling and semi-finishing milling of high-temperature alloy.
DS35	SiALON	K35,S35	Compared with whisker ceramic, it offers superior flaw resistance. Therefore, it enables high-feed and high-depth-of-cut machining for efficiency improvement. Outstanding performance in scale removal machining of Inconel. Also suitable for end milling.
DS40	SiALON	K40,S40	It's most suitable for scale removal machining and interrupted cutting of high-temperature alloy and cast iron.



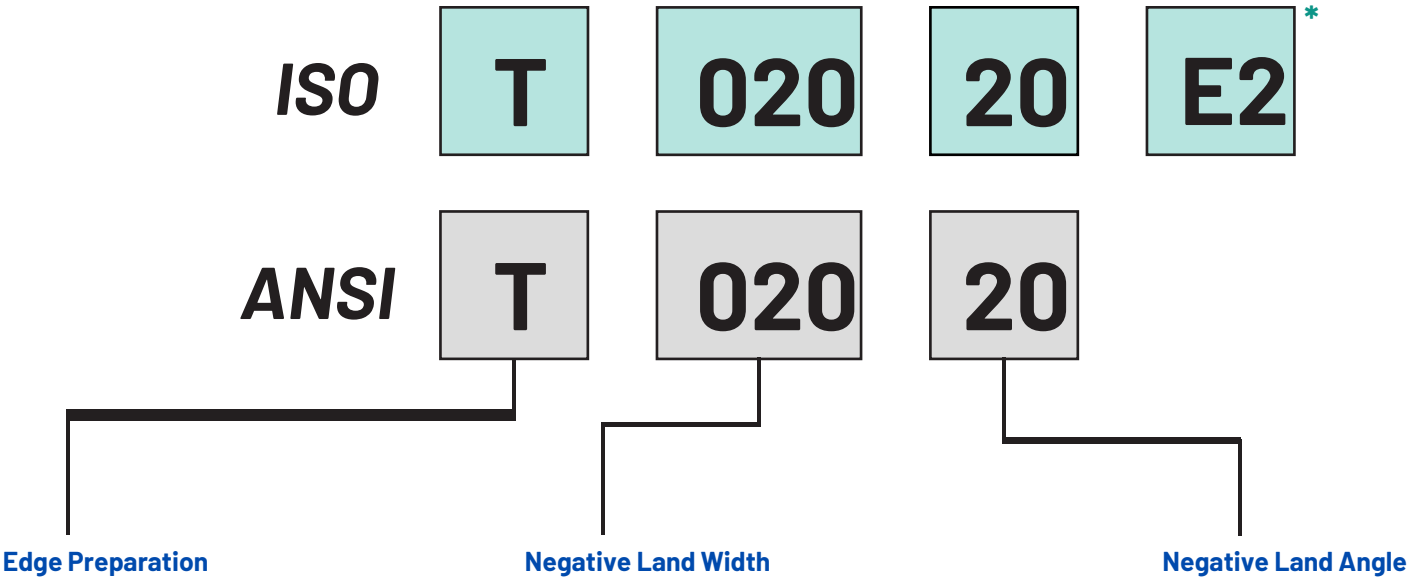
Grade	Rough w/ Scale	Rough	Semi Finishing	Finishing
DC05				
DX10				
DA10				
DA20				
CW10				
DW25				
DS30				
DS35				
DS40				

Grade Comparison Chart

Insert Material	Delton	Sandvik	NTK	Kennametal	TaeguTec	Union	SPK CeramTec	KYOCERA	Greenleaf
CBN	DC05	CC7125	JP2	KB1304	TB610 TB670	SBN1000	BKT120 BHT430	KBN series	
Composite Ceramic	DX10		JX1						
Al2O3+ TiCN	DA10	CC6050	HC4/ZC4 HC7/ZC7	KY4400	AB20 AB30	ST300 ST500 ST900		KT66	
Al2O3+ TiC+ Metal	DA20	CC650	HC2 HC6	KY1615		ST100 SD200		A66N	GEM7
Whisker	DW10 DW25	CC670 CC675	WA1 WA5	KY4300	TC430	SW400 SW800	RST330		WG300 WG600 WG700
SiALON	DS30 DS35	CC6060 CC6065	CX3 CX9	KYS25 KYS30/40 Y1540 KYK10	AS500	SN800 SN950 SN1000	LST320 LST370 LSM800	KS6030 KS6040	XSYTIN-1

New product development is ongoing, and our product grades portfolio will be continuously expanded.

Ceramic Inserts Edge-Preparation



Edge Preparation	ANSI Code	ISO Code	Applica-tion
Sharp	F	F	Al
Honed	E	E	Light
T-land	T	T	Light/ Medium/ Heavy
T-land and Honed	T with E2 at end (.002" hone)	S (0.04mm hone)	Light/ Medium/ Heavy
	T with E1 at end (.001" hone)	Z (0.02mm hone)	Light/ Medium/ Heavy
Double T-land	P	P	Light/ Heavy
Double T-land & Honed	HD	HD	Light/ Heavy

Code	Description		a	r
	ANSI	ISO	Metric/Inch	Metric/Inch
E	01	002	-	.02/.001"
	02	004	-	.04/.002"
T	02	005	.05/.002"	-
	04	010	.10/.004"	-
	06	015	.15/.006"	-
	08	020	.20/.008"	-
S	04	010	.10/.004"	.04/.002"
	08	020	.20/.008"	.04/.002"
Z	04	010	.10/.004"	.02/.001"
	08	020	.20/.008"	.02/.001"

Description	b
10	10°
15	15°
20	20°
25	25°
30	30°

* Edge Honed
E0: 0.01mm
E1: 0.02mm
E2: 0.04mm

CDH

		☐ Stable Machining	☒ Interrupted Machining	☒ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	H Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
CDH 22 HD00710	CDH 22 HD02810	3.175/.125"				▲			▲	
CDH 33 HD01510E2	CDH 33 HD06010E2	6.35/.250"				▲			▲	
CDH 42 HD02015E1	CDH 42 HD08015E1	6.76/.266"				▲			▲	
CDH 515 HD01810	CDH 515 HD07110	9.93/.391"				▲			▲	

ISO/ANSI	IC	T	H
CDH 22/CDH 22	12.7/1/2"	6.35/1/4"	3.175/1/8"
CDH 33/CDH 33	19.05/3/4"	9.525/3/8"	6.35/1/4"
CDH 42/CDH 42	25.4/1"	12.7/1/2"	6.76/.266"
CDH 515/CDH515	31.7/5/4"	9.525/3/8"	9.93/.391"

CNGA

		☐ Stable Machining	☒ Interrupted Machining	☒ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
CNGA 120404 T01020	CNGA 431 T0420	0.4/.016"			▲	▲	▲		▲	
CNGA 120408 T01020	CNGA 432 T0420	0.8/.031"			▲	▲	▲		▲	
CNGA 120408 T02020	CNGA 432 T0820				▲	▲	▲		▲	
CNGA 120408 T02025	CNGA 432 T0825				▲	▲	▲		▲	
CNGA 120408 Z02020	CNGA 432 T0820E1				▲	▲	▲		▲	
CNGA 120412 T01020	CNGA 433 T0420	1.2/.047"			▲	▲	▲		▲	
CNGA 120412 T02020	CNGA 433 T0820				▲	▲	▲		▲	
CNGA 120412 T02025	CNGA 433 T0825				▲	▲	▲		▲	
CNGA 120412 Z02020	CNGA 433 T0820E1				▲	▲	▲		▲	
CNGA 120416 T01020	CNGA 434 T0420	1.6/.063"			▲	▲	▲		▲	
CNGA 120416 T02020	CNGA 434 T0820				▲	▲	▲		▲	
CNGA 120416 T02025	CNGA 434 T0825				▲	▲	▲		▲	
CNGA 160612 T01020	CNGA 543 T0420	1.2/.047"			▲	▲	▲		▲	
CNGA 160612 Z02025	CNGA 543 T0825E1				▲	▲	▲		▲	
CNGA 160616 T01020	CNGA 544 T0420	1.6/.063"			▲	▲	▲		▲	
CNGA 190612 T01020	CNGA 643 T0420				▲	▲	▲		▲	
CNGA 190612 T02020	CNGA 643 T0820				▲	▲	▲		▲	
CNGA 190612 Z02025	CNGA 643 T0825E1				▲	▲	▲		▲	
CNGA 190616 T02020	CNGA 644 T0820	1.6/.063"			▲	▲	▲		▲	

▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

CNGN

ISO/ANSI	IC	T
CNGN 1204/CNGN 43	12.7/1/2"	4.76/3/16"
CNGN 1207/CNGN 45	12.7/1/2"	7.94/5/16 r
CNGN 1906/CNGN 64	19.05/3/4"	6.35/1/4 r

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron			☐	☐				☐	
S	Super Alloy					☐			☐	
H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
CNGN 120404 T01020	CNGN 431 T0420	0.4/.016"			●	●	▲		▲	
CNGN 120408 T01020	CNGN 432 T0420	0.8/.031"			●	●	▲		▲	
CNGN 120408 T02020	CNGN 432 T0820				●	●	▲		▲	
CNGN 120408 T02025	CNGN 432 T0825				●	●	▲		▲	
CNGN 120408 S02020	CNGN 433 T0820E2				●	●	▲		▲	
CNGN 120412 T01020	CNGN 433 T0420	1.2/.047"			●	●	▲		▲	
CNGN 120412 T02020	CNGN 433 T0820				●	●	▲		▲	
CNGN 120412 T02025	CNGN 433 T0825				●	●	▲		▲	
CNGN 120412 S02020	CNGN 433 T0820E2				●	●	▲		▲	
CNGN 120416 T01020	CNGN 434 T0420	1.6/.063"			●	●	▲		▲	
CNGN 120416 T02020	CNGN 434 T0820				●	●	▲		▲	
CNGN 120416 T02025	CNGN 434 T0825				●	●	▲		▲	
CNGN 120416 S02020	CNGN 443 T0820E2				●	●	▲		▲	
CNGN 120708 T02020	CNGN 452 T0820	0.8/.031"			●	●	▲		▲	
CNGN 120712 T02020	CNGN 453 T0820	1.2/.047"			●	●	▲		▲	
CNGN 120716 T02020	CNGN 454 T0820	1.6/.063"			●	●	▲		▲	
CNGN 190612 T02020	CNGN 643 T0820	1.2/.047"			●	●	▲		▲	
CNGN 190616 T01020	CNGN 644 T0420	1.6/.063"			●	●	▲		▲	
CNGN 190716 T02020	CNGN 654 T0820				●	●	▲		▲	

CNGX

ISO/ANSI	IC	T
CNGX 1204/CNGX 43	12.7/1/2"	4.76/3/16"
CNGX 1207/CNGX 45	12.7/1/2"	7.94/5/16 r

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron								☐	
S	Super Alloy								☐	
H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
CNGX 120408 S02020	CNGX 432 T0820E2	0.8/.031 r							●	
CNGX 120412 S02020	CNGX 433 T0820E2	1.2/.047"							●	
CNGX 120416 S02020	CNGX 434 T0820E2	1.6/.063"							●	
NGX 120708 T02025	CNGX 452 T0825	0.8/.031"							●	
CNGX 120712 T02025	CNGX 453 T0825	1.2/.047"							●	
CNGX 120716 T02025	CNGX 454 T0825	1.6/.063"							●	

▲ 1st choice ● Optional choice, produce according to the requests
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DNGA

ISO/ANSI	IC	T
DNGA 1504/DNGA 43	12.7/1/2"	4.76/3/16"

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron			☐	☐				☐	
S	Super Alloy					☐			☐	
H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
DNGA 150404 T01020	DNGA 431 T0420	0.4/.016"			▲	▲	●		●	
DNGA 150408 T01020	DNGA 432 T0420	0.8/.031"			▲	▲	●		●	
DNGA 150408 T02025	DNGA 432 T0825				▲	▲	●		●	
DNGA 150408 S01025	DNGA 432 T0425E2				▲	▲	●		●	
DNGA 150412 T01020	DNGA 433 T0420	1.2/.047"			▲	▲	●		●	
DNGA 150412 T02025	DNGA 433 T0825				▲	▲	●		●	
DNGA 150412 S01025	DNGA 433 T0425E2				▲	▲	●		●	
DNGA 150416 T01020	DNGA 434 T0420	1.6/.063"			▲	▲	●		●	
DNGA 150416 T02025	DNGA 434 T0825				▲	▲	●		●	
DNGA 150416 S02025	DNGA 434 T0825E2				▲	▲	●		●	

DNGN

ISO/ANSI	IC	T
DNGN 1504/DNGN 43	12.7/1/2"	4.76/3/16"

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron			☐	☐				☐	
S	Super Alloy					☐			☐	
H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
DNGN 150408 T01020	DNGN 432 T0420	0.8/.031"			▲	▲	●		●	
DNGN 150408 T02025	DNGN 432 T0825				▲	▲	●		●	
DNGN 150408 S02020	DNGN 432 T0820E2				▲	▲	●		●	
DNGN 150412 T01020	DNGN 433 T0420	1.2/.047"			▲	▲	●		●	
DNGN 150412 T02025	DNGN 433 T0825				▲	▲	●		●	
DNGN 150412 S02020	DNGN 433 T0820E2				▲	▲	●		●	
DNGN 150416 T01020	DNGN 434 T0420	1.6/.063"			▲	▲	●		●	
DNGN 150416 T02025	DNGN 434 T0825				▲	▲	●		●	
DNGN 150416 S02020	DNGN 434 T0820E2				▲	▲	●		●	

▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

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LNJ

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
LNJ 6688 HD1515E1	LNJ 6688 HD06015E1	3.8/1/8"				●	●			
LNJ 6688 HD2015E2	LNJ 6688 HD08015E2					●	●			

RCGX

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	T Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
RCGX 060400 T01020	RCGX 23 T0420	4.76/3/16"		●	▲	▲	▲		▲	▲
RCGX 060400 Z01020	RCGX 23 T0420E1				▲	▲	▲		▲	
RCGX 060600 T01020	RCGX 24 T0220	6.35/1/4"		●	▲	▲	▲		▲	
RCGX 060600 Z02020	RCGX 24 T0820E1				▲	▲	▲		▲	
RCGX 090700 T01020	RCGX 35 T0420	7.94/5/16"		●	▲	▲	▲		▲	
RCGX 090700 Z01020	RCGX 35 T0420E1				▲	▲	▲		▲	
RCGX 090700 T02020	RCGX 35 T0820				▲	▲	▲		▲	
RCGX 090700 Z02020	RCGX 35 T0820E1				▲	▲	▲		▲	
RCGX 090700 T02025	RCGX 35 T0825				▲	▲	▲		▲	
RCGX 090700 Z02025	RCGX 35 T0825E1				▲	▲	▲		▲	
RCGX 120700 T01020	RCGX 45 T0420			●	▲	▲	▲		▲	
RCGX 120700 Z01020	RCGX 45 T0420E1				▲	▲	▲		▲	
RCGX 120700 T02020	RCGX 45 T0820				▲	▲	▲		▲	
RCGX 120700 Z02020	RCGX 45 T0820E1				▲	▲	▲		▲	
RCGX 120700 T02025	RCGX 45 T0825				▲	▲	▲		▲	
RCGX 120700 Z02025	RCGX 45 T0825E1				▲	▲	▲		▲	
RCGX 102 HD1215E1	RCGX 102HD04815E1	7.85/0.309"			▲	▲	▲		▲	
RCGX 103 HD1215E1	RCGX 103HD04815E1				▲	▲	▲		▲	
RCGX 104 HD1515E1	RCGX 104HD06015E1	7.92/0.312"			▲	▲	▲		▲	
RCGX 105 HD2015E1	RCGX 105HD08015E1	9.86/0.388"			▲	▲	▲		▲	
RCGX 106 HD2015E1	RCGX 106HD08015E1				▲	▲	▲		▲	
RCGX 108 HD1515E1	RCGX 108HD06015E1	11.71/0.461"			▲	▲	▲		▲	

▲ 1st choice ● Optional choice, produce according to the requests
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RNGN

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	/	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
RNGN 090300 T01020	RNGN 32 T0420	/		●	▲	▲	▲		▲	
RNGN 090400 T01020	RNGN 33 T0420			●	▲	▲	▲		▲	
RNGN 120400 T01020	RNGN 43 T0420			●	▲	▲	▲		▲	
RNGN 120400 T02025	RNGN 43 T0825			●	▲	▲	▲		▲	
RNGN 120700 T01020	RNGN 45 T0420			●	▲	▲	▲		▲	
RNGN 120700 Z02020	RNGN 45 T0820E1				▲	▲	▲		▲	
RNGN 150700 T01020	RNGN 55 T0420				▲	▲	▲		▲	
RNGN 190700 T01020	RNGN 65 T0420				▲	▲	▲		▲	
RNGN 250700 T01020	RNGN 85 T0420				▲	▲	▲		▲	
RNGN 250900 T01020	RNGN 86 T0420				▲	▲	▲		▲	

RPGN

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	/	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
RPGN 060200 T01020	RPGN 215 T0420	/		●	▲	▲	▲		▲	
RPGN 060200 T02020	RPGN 215 T0820			●	▲	▲	▲		▲	
RPGN 060300 T01020	RPGN 22 T0420			●	▲	▲	▲		▲	
RPGN 060300 T02020	RPGN 22 T0820			●	▲	▲	▲		▲	
R9GN 090300 T01020	RPGN 32 T0420			●	▲	▲	▲		▲	
RPGN 090300 T02020	RPGN 32 T0820			●	▲	▲	▲		▲	
RPGN 120400 T01020	RPGN 43 T0420			●	▲	▲	▲		▲	
RPGN 120400 T02020	RPGN 43 T0820			●	▲	▲	▲		▲	

▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

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RPGX

ISO/ANSI	IC	θ
RPGX 0604/RPGX 23	6.35/1/4"	120°
RPGX 0907/RPGX 35	9.525/3/8"	120°
RPGX 1207/RPGX 45	12.7/1/2"	120°

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	T Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
RPGX 060400 T01020	RPGX 23 T0420	4.76/3/16"		●	▲	▲	▲		▲	
RPGX 060400 Z01020	RPGX 23 T0420E1			●	▲	▲	▲		▲	
RPGX 090700 T01020	RPGX 35 T0420	7.94/.31"		●	▲	▲	▲		▲	
RPGX 090700 T02020	RPGX 35 T0820			●	▲	▲	▲		▲	
RPGX 090700 Z02020	RPGX 35 T0820E1			●	▲	▲	▲		▲	
RPGX 120700 T01020	RPGX 45 T0420			●	▲	▲	▲		▲	
RPGX 120700 T02020	RPGX 45 T0820			●	▲	▲	▲		▲	
				●	▲	▲	▲		▲	

SNGA

ISO/ANSI	IC	T
SNGA1204/SNGA 43	12.7/1/2"	4.96/3/16"
SNGA 1506/SNGA 54	15.875/5/8"	6.35/1/4"
SNGA 1906/SNGA 64	19.05/3/4"	6.35/1/4"

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
SNGA 120408 T01020	SNGA 432 T0420	0.8/.031"			▲	▲	▲		▲	
SNGA 120408 T02020	SNGA 432 T0820				▲	▲	▲		▲	
SNGA 120416 T01020	SNGA 434 T0420	1.6/.063"			▲	▲	▲		▲	
SNGA 120416 T02025	SNGA 434 T0825				▲	▲	▲		▲	
SNGA 150612 T01020	SNGA 543 T0420	1.2/.047"			▲	▲	▲		▲	
SNGA 150612 T02025	SNGA 543 T0825				▲	▲	▲		▲	
SNGA 150616 T01020	SNGA 544 T0420	1.6/.063"			▲	▲	▲		▲	
SNGA 150616 T02020	SNGA 544 T0820				▲	▲	▲		▲	
SNGA 190616 T02025	SNGA 644 T0825				▲	▲	▲		▲	

▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

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SNGN

ISO/ANSI	IC	T
SNGN 1204/SNGN 43	12.7/1/2"	4.76/3/16"
SNGN 1207/SNGN 45	12.7/1/2"	7.94/5/16"
SNGN 1506/SNGN 54	15.875/5/8"	6.35/1/4"
SNGN 1906/SNGN 64	19.05/3/4"	6.35/1/4"

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
SNGN 120408 T01020	SNGN 432 T0420	0.8/.031"			▲	▲	▲		▲	
SNGN 120408 T02020	SNGN 432 T0820				▲	▲	▲		▲	
SNGN 120408 T02025	SNGN 432 T0825				▲	▲	▲		▲	
SNGN 120408 S02020	SNGN 432 T0820E2				▲	▲	▲		▲	
SNGN 120412 T01020	SNGN 433 T0420	1.2/.047"			▲	▲	▲		▲	
SNGN 120412 T02020	SNGN 433 T0820				▲	▲	▲		▲	
SNGN 120412 T02025	SNGN 433 T0825				▲	▲	▲		▲	
SNGN 120412 S02020	SNGN 433 T0820E2				▲	▲	▲		▲	
SNGN 120416 T01020	SNGN 434 T0420	1.6/.063"			▲	▲	▲		▲	
SNGN 120416 T02020	SNGN 434 T0820				▲	▲	▲		▲	
SNGN 120416 T02025	SNGN 434 T0825				▲	▲	▲		▲	
SNGN 120416 S02020	SNGN 434 T0820E2				▲	▲	▲		▲	
SNGN 120708 T01020	SNGN 452 T0420	0.8/.031"			▲	▲	▲		▲	
SNGN 120712 T01020	SNGN 453 T0420	1.2/.047"			▲	▲	▲		▲	
SNGN 120716 T01020	SNGN 454 T0420	1.6/.063"			▲	▲	▲		▲	
SNGN 190612 T01020	SNGN 643 T0420	1.2/.047"			▲	▲	▲		▲	
SNGN 190616 T01020	SNGN 644 T0420	1.6/.063"			▲	▲	▲		▲	

SNGX

ISO/ANSI	IC	T
SNGX 1204/SNGX 43	12.7/1/2"	4.76/3/16"
SNGX 1207/SNGX 45	12.7/1/2"	7.94/5/16"

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions						
K	Cast Iron									
S	Super Alloy									
H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
SNGX 120408 S02020	SNGX 432 T0820E2	0.8/.031"							●	
SNGX 120412 S02020	SNGX 433 T0820E2	1.2/.047"							●	
SNGX 120416 S02020	SNGX 434 T0820E2	1.6/.063"							●	
SNGX 120708 T02025	SNGX 452 T0825	0.8/.031"							●	
SNGX 120712 T02025	SNGX 453 T0825	1.2/.047"							●	
SNGX 120716 T02025	SNGX 454 T0825	1.6/.063"							●	

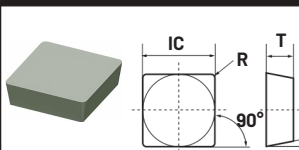
▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

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SPGN

ISO/ANSI	IC	T
SPGN 0903/SPGN32	9.525/3/8"	3.18/1/8"
SPGN 1204/SPGN 43	12.7/1/2"	4.76/3/16"
SPGN 1904/SPGN 63	19.05/3/4"	4.76/3/16"

		○ Stable Machining ⌚ Interrupted Machining ⚠ Severe Interrupted Conditions										
		K	Cast Iron				○				⌚	
		S	Super Alloy					○			⌚	
		H	Hardened Steel				○					
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40		
SPGN 090308 T01020	SPGN 322 T0420	0.8/.031"			●		●		●			
SPGN 120408 T01020	SPGN 432 T0420				●		●		●			
SPGN 120412 T01020	SPGN 433 T0420	1.2/.047"			●		●		●			
SPGN 120416 T01020	SPGN 434 T0420	1.6/.063"			●		●		●			
SPGN 190412 T01020	SPGN 633 T0420	1.2/.047"					●		●			
SPGN 190416 T01020	SPGN 634 T0420	1.6/.063"					●		●			

TNGA

ISO/ANSI	IC	T
TNGA 1604/TNGA 33	9.525/3/8"	4.76/3/16"
TNGA 2204/TNGA 43	12.7/1/2"	4.76/3/16"

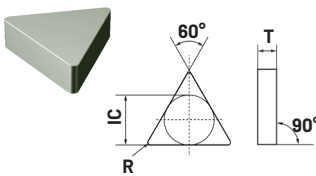
	○ Stable Machining ⌚ Interrupted Machining ⚠ Severe Interrupted Conditions									
	K	Cast Iron			○	⌚			⌚	
	S	Super Alloy					○		⌚	
	H	Hardened Steel								
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
TNGA 160408 T01020	TNGA 332 T0420	0.8/.031"			▲	▲	●		●	
TNGA 220408 T01020	TNGA 432 T0420				▲	▲	●		●	
TNGA 220408 T02025	TNGA 432 T0825				▲	▲	●		●	

▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

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TNGN

ISO/ANSI	IC	T
TNGN 16A04/TNGN 33	9.525/3/8"	4.76/3/16"
TNGN 2204/TNGN 43	12.7/1/2"	4.76/3/16"
TNGN 2207/TNGN 45	12.7/1/2"	7.94/5/16"

		○ Stable Machining ⌚ Interrupted Machining ⚠ Severe Interrupted Conditions										
		K	Cast Iron				○	⌚			⌚	
		S	Super Alloy						○		⌚	
		H	Hardened Steel									
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40		
TNGN 160408 T01020	TNGN 332 T0420	0.8/.031"			▲	▲	●		●			
TNGN 220408 T01020	TNGN 432 T0420				▲	▲	●		●			
TNGN 220408 S02025	TNGN 432 T0825E2				▲	▲	●		●			
TNGN 220412 T01020	TNGN 433 T0420	1.2/.047"			▲	▲	●		●			
TNGN 220412 S02025	TNGN 433 T0825E2				▲	▲	●		●			
TNGN 220416 T01020	TNGN 434 T0420	1.6/.063"			▲	▲	●		●			
TNGN 220416 S02025	TNGN 434 T0825E2				▲	▲	●		●			
TNGN 220712 T01020	TNGN 453 T0420	1.2/.047"			▲	▲	●		●			
TNGN 220716 T01020	TNGN 454 T0420	1.6/.063"			▲	▲	●		●			

VNGA

ISO/ANSI	IC	T
VNGA 1604/VNGA 33	9.525/3/8"	4.76/3/16"
VNGA 2204/VNGA 43	12.7/1/2"	4.76/3/16"

		○ Stable Machining ⌚ Interrupted Machining ⚠ Severe Interrupted Conditions									
		K	Cast Iron			○	⌚			⌚	
		S	Super Alloy					○		⌚	
		H	Hardened Steel								
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40	
VNGA 160404 T01020	VNGA 331 T0420	0.4/.016"			▲	▲	●		●		
VNGA 160408 T01020	VNGA 332 T0420	0.8/.031"			▲	▲	●		●		
VNGA 160412 T01020	VNGA 333 T0420	1.2/.047"			▲	▲	●		●		
VNGA 220408 T01020	VNGA 432 T0420	0.8/.031"			▲	▲	●		●		
VNGA 220412 T01020	VNGA 433 T0420	1.2/.047"			▲	▲	●		●		

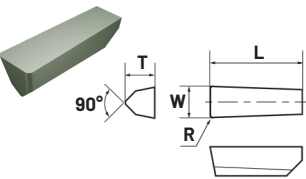
▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

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VGW

ISO/ANSI	T	L
VGW 41/VGW 41	4.75/.187"	12.7/.500"
VGW 62/VGW 62	6.35/.250"	19.05/.750"
VGW 83/VGW 83	8.56/.337"	25.4/1.00"

		○ Stable Machining		⏸ Interrupted Machining		⚠ Severe Interrupted Conditions					
		K	Cast Iron								
		S	Super Alloy	○	○			○		⏸	
		H	Hardened Steel								
ISO	ANSI	R	W	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
		Metric/Inch									
VGW 4125-1 E004	VGW 4125-1 E02	0.4/0.16"	3.18/.125"	●	●			▲		●	
VGW 4125-1 T00520	VGW 4125-1 T0220			●	●			▲		●	
VGW 4125-2 E004	VGW 4125-2 E02			●	●			▲		●	
VGW 4156-1 E004	VGW 4156-1 E02	0.4/.016"	3.96/.156"	●	●			▲		●	
VGW 4156-1 T00520	VGW 4156-1 T0220			●	●			▲		●	
VGW 4156-2 E004	VGW 4156-2 E02			●	●			▲		●	
VGW 4187-1 E004	VGW 4187-1 E02	0.4/.016"	4.75/.187"	●	●			▲		●	
VGW 4187-1 T00520	VGW 4187-1 T0220			●	●			▲		●	
VGW 4187-2 E004	VGW 4187-2 E02			●	●			▲		●	
VGW 6218-1 E004	VGW 6218-1 E02	0.4/.016"	5.54/.218"	●	●			▲		●	
VGW 6218-1 T00520	VGW 6218-1 T0220			●	●			▲		●	
VGW 6218-2 E004	VGW 6218-2 E02			●	●			▲		●	
VGW 6250-1 E004	VGW 6250-1 E02	0.4/.016"	6.35/.250"	●	●			▲		●	
VGW 6250-1 T00520	VGW 6250-1 T0220			●	●			▲		●	
VGW 6250-1 Z01020	VGW 6250-1 T0420E1			●	●			▲		●	
VGW 6250-2 E004	VGW 6250-2 E02	0.8/.031"	7.14/.281"	●	●			▲		●	
VGW 6250-3 E004	VGW 6250-3 E02	1.2/.047"		●	●			▲		●	
VGW 6281-4 E004	VGW 6281-4 E02	1.6/.063"		●	●			▲		●	
VGW 6281-4 T00520	VGW 6281-4 T0220	0.8/.031"	7.92/.312"	●	●			▲		●	
VGW 8312-2 E004	VGW 8312-2 E02			●	●			▲		●	
VGW 8312-2 T00520	VGW 8312-2 T0220			●	●			▲		●	
VGW 8312-4 E004	VGW 8312-4 E02	1.6/.063"	9.525/.375"	●	●			▲		●	
VGW 8312-4 T00520	VGW 8312-4 T0220	●		●			▲		●		
VGW 8375-2 E004	VGW 8375-2 E02	0.8/.031"		●	●			▲		●	
VGW 8375-2 T00520	VGW 8375-2 T0220		●	●			▲		●		
VGW 8375-4 E004	VGW 8375-4 E02		1.6/.063"	●	●			▲		●	
VGW 8375-4 T00520	VGW 8375-4 T0220	●		●			▲		●		

ZT

ISO/ANSI	IC	T
ZT-1130/ZT-1130	38.1/3/2"	12.7/1/2"

			☐ Stable Machining			☐ Interrupted Machining		☒ Severe Interrupted Conditions				
			K	Cast Iron				☐			☐	
			S	Super Alloy								
			H	Hardened Steel								
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40		
ZT1130	ZT-1130	114.3/4.5"					▲		●			

▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

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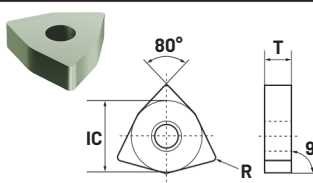
VGW...R

ISO/ANSI	T	L
VGW 41/VGW 41	4.75/.187"	12.7/.500"
VGW 62/VGW 62	6.35/.250"	19.05/.750"
VGW 83/VGW 83	8.56/.337"	25.4/1.00"

		☐ Stable Machining	☐ Interrupted Machining	☐ Severe Interrupted Conditions							
K	Cast Iron										
S	Super Alloy	☐	☐			☐		☐			
H	Hardened Steel										
ISO	ANSI	R Metric/Inch	W	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
VGW 4125-R E004	VGW 4125-R E02	1.59/0.63"	3.18/.125"	●	●			▲		●	
VGW 4125-R T00520	VGW 4125-R T0220			●	●			▲		●	
VGW 4156-R E004	VGW 4156-R E02	1.98/.078"	3.96/.156"	●	●			▲		●	
VGW 4156-R T00520	VGW 4156-R T0220			●	●			▲		●	
VGW 4156-R Z02020	VGW 4156-R T0820E1			●	●			▲		●	
VGW 4187-R E004	VGW 4187-R E02	2.38/.094	4.75/.187"	●	●			▲		●	
VGW 4187-R T00520	VGW 4187-R T0220			●	●			▲		●	
VGW 6218-R E004	VGW 6218-R E02	2.77/.109"	5.54/.218"	●	●			▲		●	
VGW 6218-R T00520	VGW 6218-R T0220			●	●			▲		●	
VGW 6250-R E004	VGW 6250-R E02	3.18/.125"	6.35/.250"	●	●			▲		●	
VGW 6250-R T00520	VGW 6250-R T0220			●	●			▲		●	
VGW 6281-R E004	VGW 6281-R E02	3.58/.141"	7.14/.281"	●	●			▲		●	
VGW 6281-R T00520	VGW 6281-R T0220			●	●			▲		●	
VGW 8312-R E004	VGW 8312-R E02	3.96/.156"	7.92/.312"	●	●			▲		●	
VGW 8312-R T00520	VGW 8312-R T0220			●	●			▲		●	
VGW 8375-R E004	VGW 8375-R E02	4.76/.188"	9.525/.375"	●	●			▲		●	
VGW 8375-R T00520	VGW 8375-R T0220			●	●			▲		●	

WNGA

ISO/ANSI	IC	T
WNGA 0604/WNGA 33	9.525/3/8"	4.76/3/16"
WNGA 0804/WNGA 43	12.7/1/2"	4.76/3/16"

	☐ Stable Machining		☐ Interrupted Machining		☐ Severe Interrupted Conditions					
	K	Cast Iron			☐	☐			☐	
	S	Super Alloy							☐	
	H	Hardened Steel								
ISO	ANSI	R Metric/Inch	DC05	DX10	DA10	DA20	DW25	DS30	DS35	DS40
WNGA 060408 T01020	WNGA 332 T0420	0.8/.031"			▲	▲			▲	
WNGA 060412 T01020	WNGA 333 T0420	1.2/.047"			▲	▲			▲	
WNGA 080404 T01020	WNGA 431 T0420	0.4/.016"			▲	▲			▲	
WNGA 080408 T01020	WNGA 432 T0420	0.8/.031"			▲	▲			▲	
WNGA 080412 T01020	WNGA 433 T0220	1.2/.047"			▲	▲			▲	
WNGA 080416 T00520	WNGA 434 T0420	1.6/0.63"			▲	▲			▲	

▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

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Achieving High-Efficiency Roughing Superior to Carbide End Mills

Straight Shank

Optimized flute geometry
Enables smooth chip evacuation

Negative cutting geometry
Increases cutting edge rigidity

Regrindable

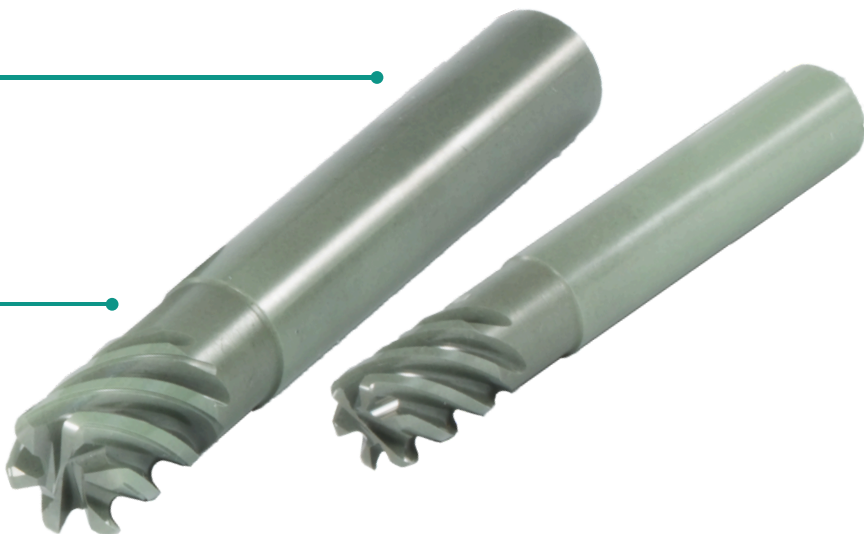


Reduced Neck Shank

Suitable for 3D machining
Suitable for multi-functional milling

Accessibility
Avoid interference and can access narrow, deep cavities, and complex curved surfaces on workpieces

Variety of lineup
4 or 6 flute options, based on your application needs

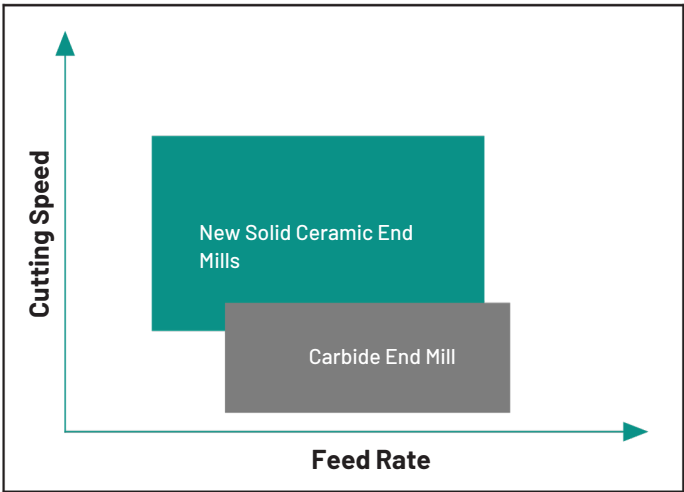


Product Features

A new solid ceramic end mill is launched, better than carbide milling tools in performance!

The new solid ceramic end mills utilize alumina (Al₂O₃) as the base material, combined with silicon carbide (SiC) whiskers a unique cutting-edge geometry to enhance toughness. The toughness is improved by 30%-50%, enabling customers to achieve higher milling speed compared to traditional solid ceramic end mills while maintaining cutting load comparable to solid carbide end mills, thereby significantly enhancing productivity.

Featutes



- ↳ Suitable for high-cutting-load operations in slot milling, pocket milling and profile milling
- ↳ Versatility
- ↳ Superior machining efficiency, faster cutting speed range.

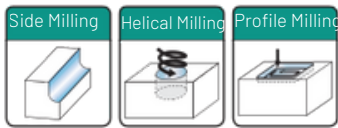
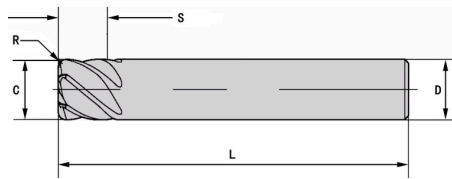
Machining Materials

Suitable for various materials :

- ↳ High-temperature alloy
- ↳ Hardened steel
- ↳ Nodular cast iron
- ↳ CGI
- ↳ Precipitation-Hardened Stainless Steel
- ↳ 3D printing of new high-temperature alloy



Straight Shank

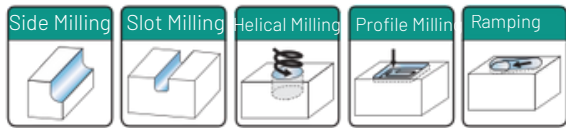
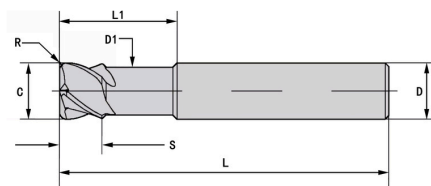


		○ Stable Machining		⏻ Interrupted Machining		⚙ Severe Interrupted Conditions			
		K	Cast Iron					○	⏻
		S	Super Alloy					○	⏻
		H	Hardened Steel						
Metric/Inch	ITEM	D Shank	R Corner	C	Cutting Length	L Overall	F	DW10	DS35
TYPE		Diameter	Radius	Cutting Edge dia	(Max Axial Depth)	Length	Flutes		
TB-D4R0.5C4S3L50F4		4.0/.157"	0.50/.0197"	4.0/.157"	3.0/.118"	50.0/1.968"	4	●	▲
TB-D6R0.75C6S4.5L50F4		6.0/.236"	0.75/.0295"	6.0/.236"	4.5/.177"	50.0/1.968"		●	▲
TB-D8R1.0C8S6.0L60F4		8.0/.315"	1.00/.0394"	8.0/.315"	6.0/.236"	60.0/2.362"		●	▲
TB-10R1.25C10S7.5L65F4		10.0/.394"	1.25/.0492"	10.0/.394"	7.5/.295"	65.0/2.559"		●	▲
TB-D12R1.5C12S9L70F4		12.0/.472"	1.50/.0590"	12.0/.472"	9.0/.354"	70.0/2.756"		●	▲
TB-D16R1.75C16S12L75F4		16.0/.630"	1.75/.0689"	16.0/.630"	12.0/.472"	75.0/2.952"		●	▲
TB-D20R2.0C20S15L80F4		20.0/.787"	1.75/.0689"	20.0/.787"	15.0/.590"	80.0/3.149"		●	▲
TB-D4R0.5C4S3L50F6		4.0/.157"	0.50/.0197"	4.0/.157"	3.0/.118"	50.0/1.968"	6	●	▲
TB-D6R0.75C6S4.5L50F6		6.0/.236"	0.75/.0295"	6.0/.236"	4.5/.177"	50.0/1.968"		●	▲
TB-D8R1.0C8S6.0L60F6		8.0/.315"	1.00/.0394"	8.0/.315"	6.0/.236"	60.0/2.362"		●	▲
TB-D10R1.25C10S7.5L65F6		10.0/.394"	1.25/.0492"	10.0/.394"	7.5/.295"	65.0/2.559"		●	▲
TB-D12R1.5C12S9L70F6		12.0/.472"	1.50/.0590"	12.0/.472"	9.0/.354"	70.0/2.756"		●	▲
TB-D16R1.75C16S12L75F6		16.0/.630"	1.75/.0689"	16.0/.630"	12.0/.472"	75.0/2.952"		●	▲
TB-D20R2.0C20S15L80F6		20.0/.787"	1.75/.0689"	20.0/.787"	15.0/.590"	80.0/3.149"		●	▲

▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

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Reduced Neck Shank



		○ Stable Machining		⏸ Interrupted Machining		⚙ Severe Interrupted Conditions					
		K	Cast Iron							○	⏸
		S	Super Alloy							○	⏸
		H	Hardened Steel								
Metric/Inch ITEM		D Shank	R Corner	C	Cutting Length	D1 Reduced	L1	L Overall	F	DW10	DS35
TYPE		Dia.	Radius	Cutting Edge Dia	(Max Axial Depth)	Neck	Useful Length	Length	Flutes		
SJ-D4R0.5C4S3L50F4		4.0/.157"	0.50/.0197"	4.0/.157"	3.0/.118"	3.80/.015"	6.0/.236"	50.0/1.968"	4	●	▲
SJ-D6R0.75C6S4.5L50F4		6.0/.236"	0.75/.0295"	6.0/.236"	4.5/.177"	5.80/.228"	9.0/.354"	50.0/1.968"		●	▲
SJ-D8R1.0C8S6.0L60F4		8.0/.315"	1.00/.0394"	8.0/.315"	6.0/.236"	7.70/.303"	12.0/.472"	60.0/2.362"		●	▲
SJ-10R1.25C10S7.5L65F4		10.0/.394"	1.25/.0492"	10.0/.394"	7.5/.295"	9.60/.378"	15.0/.590"	65.0/2.559"		●	▲
SJ-D12R1.5C12S9L70F4		12.0/.472"	1.50/.0590"	12.0/.472"	9.0/.354"	11.50/.453"	18.0/.708"	70.0/2.756"		●	▲
SJ-D16R1.75C16S12L75F4		16.0/.630"	1.75/.0689"	16.0/.630"	12.0/.472"	15.40/.606"	24.0/.945"	75.0/2.952"		●	▲
SJ-D20R2.0C20S15L80F4		20.0/.787"	1.75/.0689"	20.0/.787"	15.0/.590"	15.40/.606"	30.0/1.181"	80.0/3.149"		●	▲
SJ-D4R0.5C4S3L50F6		4.0/.157"	0.50/.0197"	4.0/.157"	3.0/.118"	3.80/.015"	6.0/.236"	50.0/1.968"	6	●	▲
SJ-D6R0.75C6S4.5L50F6		6.0/.236"	0.75/.0295"	6.0/.236"	4.5/.177"	5.80/.228"	9.0/.354"	50.0/1.968"		●	▲
SJ-D8R1.0C8S6.0L60F6		8.0/.315"	1.00/.0394"	8.0/.315"	6.0/.236"	7.70/.303"	12.0/.472"	60.0/2.362"		●	▲
SJ-10R1.25C10S7.5L65F6		10.0/.394"	1.25/.0492"	10.0/.394"	7.5/.295"	9.60/.378"	15.0/.590"	65.0/2.559"		●	▲
SJ-D12R1.5C12S9L70F6		12.0/.472"	1.50/.0590"	12.0/.472"	9.0/.354"	11.50/.453"	18.0/.708"	70.0/2.756"		●	▲
SJ-D16R1.75C16S12L75F6		16.0/.630"	1.75/.0689"	16.0/.630"	12.0/.472"	15.40/.606"	24.0/.945"	75.0/2.952"		●	▲
SJ-D20R2.0C20S15L80F6		20.0/.787"	1.75/.0689"	20.0/.787"	15.0/.590"	15.40/.606"	30.0/1.181"	80.0/3.149"		●	▲

▲ 1st choice ● Optional choice, produce according to the requests
Note: Edge preparation not listed in the table can be customized for production.

PLEASE CONTACT DELTON USA FOR THE QUOTE, ORDER AND DELIVERY:
sales@delton-usa.com, 248-881-1847