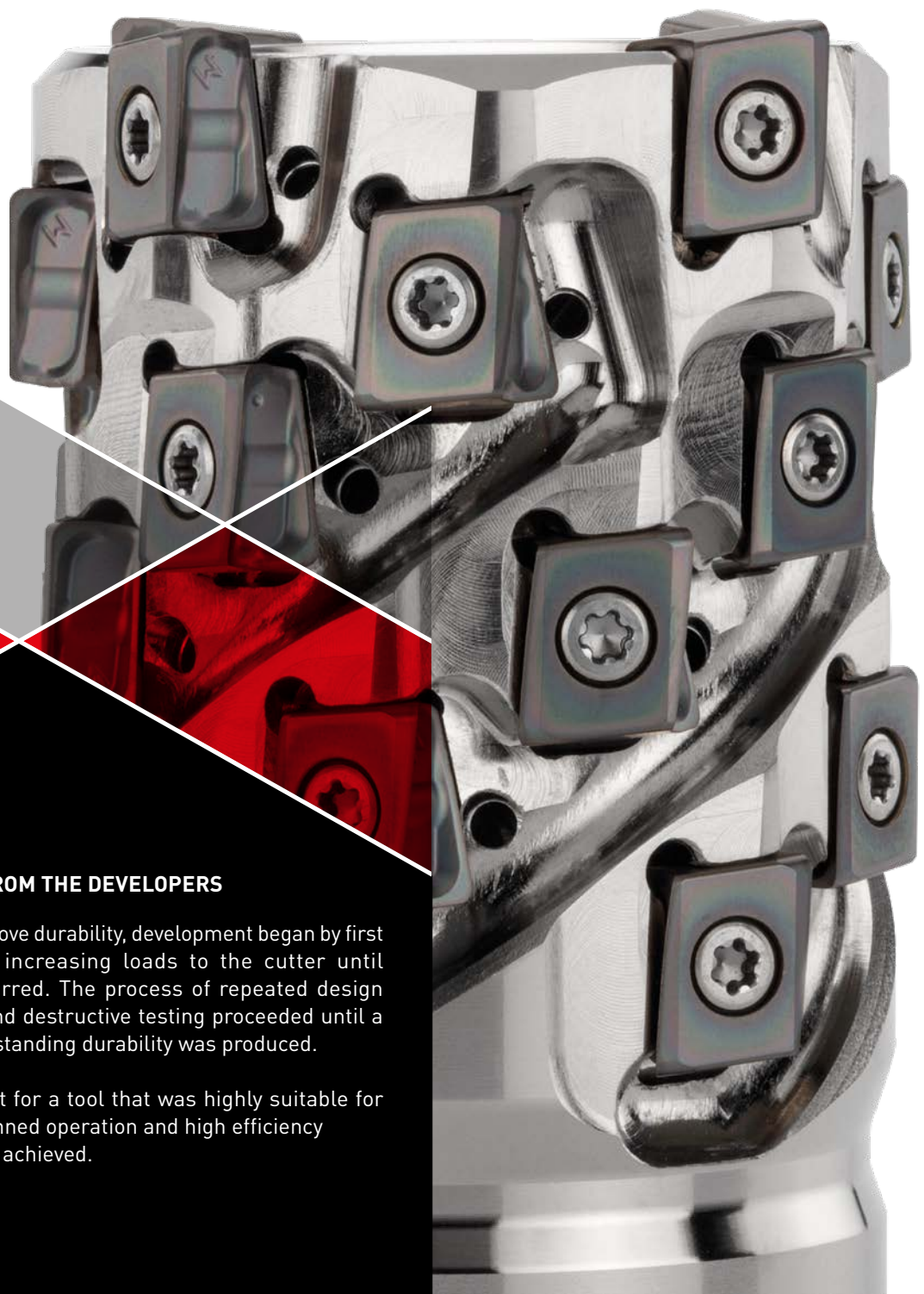


VPX SERIES

BOOST MILLING PERFORMANCE WITH
A TOUGH TANGENTIAL INSERT CUTTER



EXTREME RIGIDITY AND FUNCTIONALITY



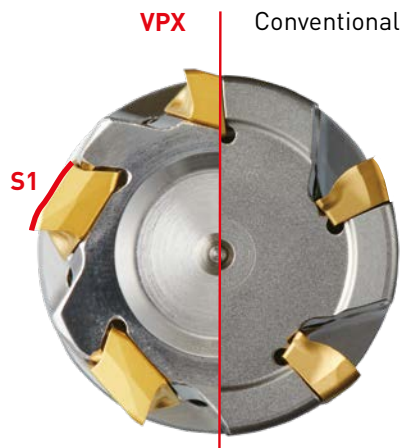
COMMENTS FROM THE DEVELOPERS

In order to improve durability, development began by first applying ever increasing loads to the cutter until breakage occurred. The process of repeated design modification and destructive testing proceeded until a cutter with outstanding durability was produced.

Thus the target for a tool that was highly suitable for reliable, unmanned operation and high efficiency machining was achieved.

VPX

PURSUING THE TOUGH MACHINING CHARACTERISTICS OF TANGENTIAL INSERTS



Arranging the inserts tangentially secures high holder rigidity. The section that is subjected to the highest loads during machining is larger ($S1 > S2$), therefore providing higher fracture resistance and enabling high efficiency machining.

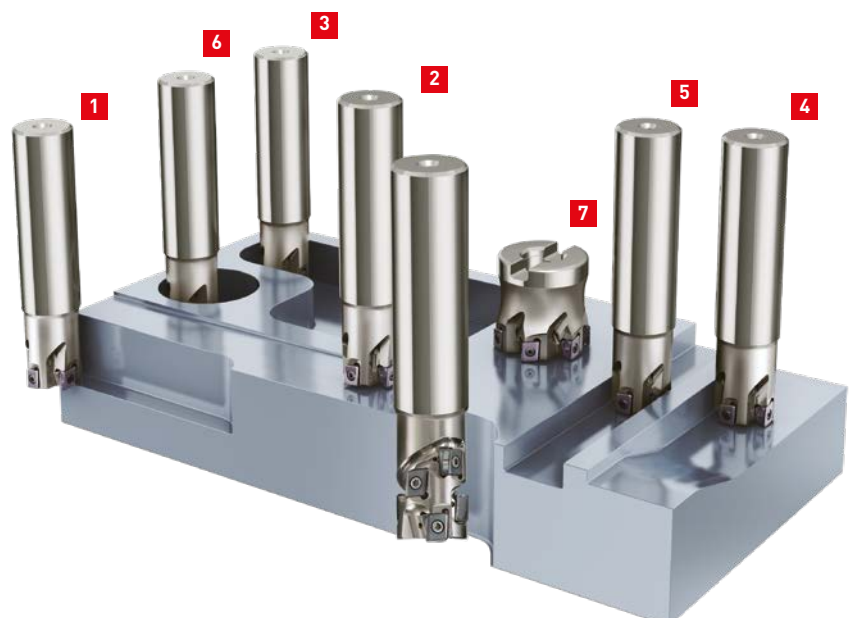


The large insert seating surfaces provides extra secure insert clamping. This suppresses any deflection of the insert caused by vibrations during machining.

A PROBLEM SOLVING MULTI-FUNCTIONAL CUTTER

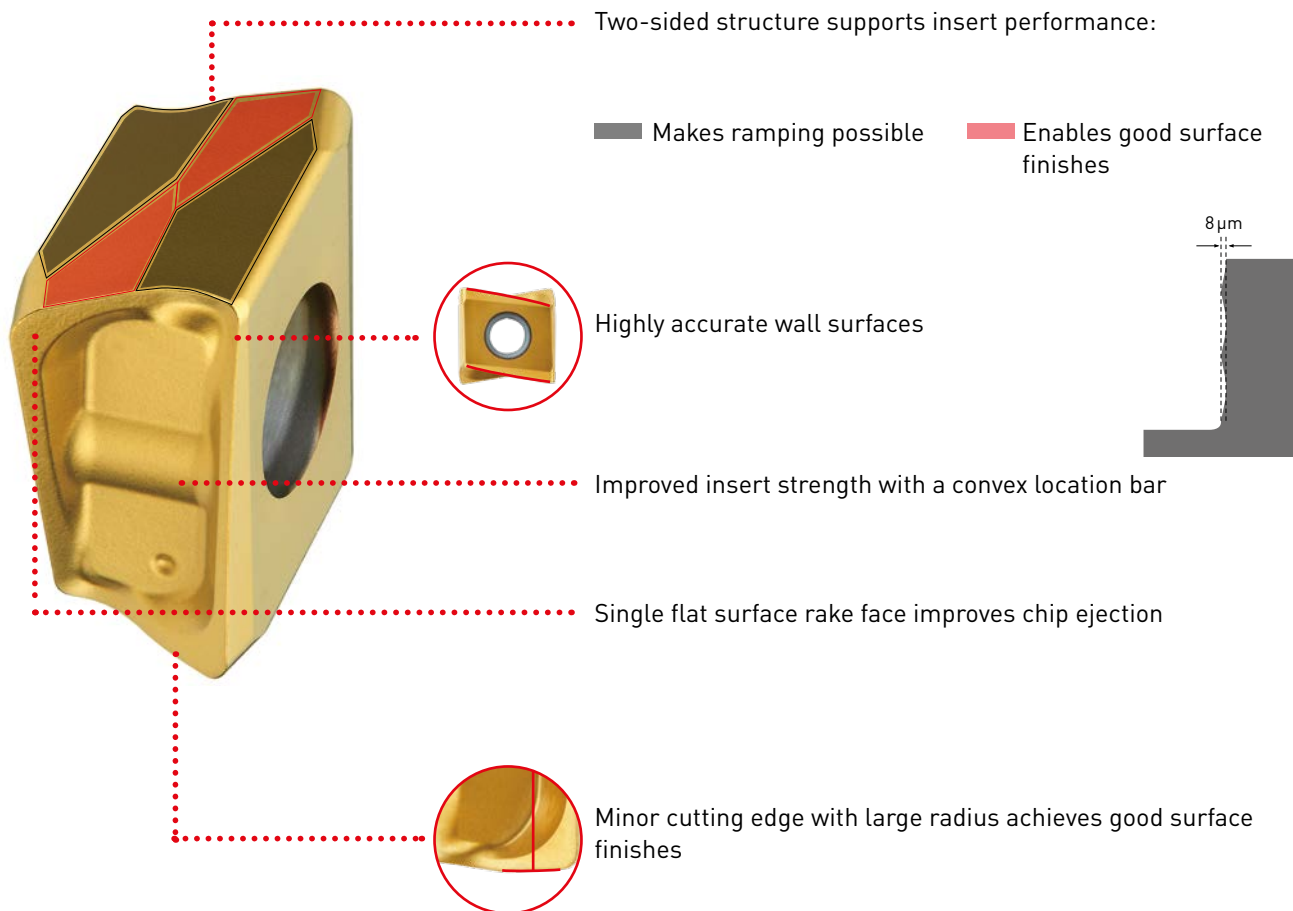
Different methods of machining covers a wide variety of applications.

- 1** Shoulder milling
- 2** Ramping
- 3** Pocketing
- 4** 3D Profiling
- 5** Slotting
- 6** Helical milling
- 7** Face milling

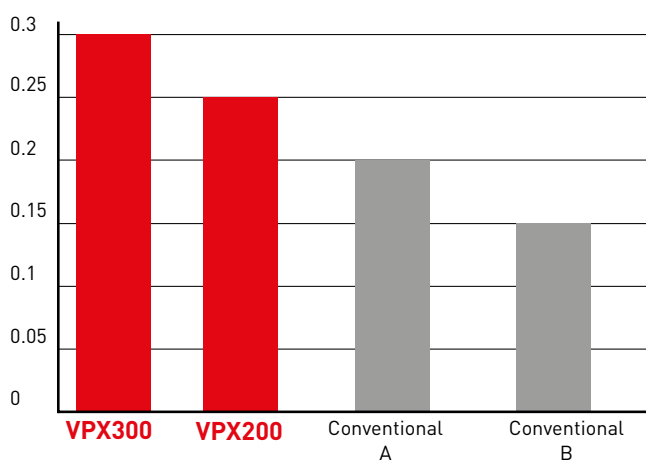


VPX INSERTS

DOUBLE-SIDED TANGENTIAL INSERT THAT HAS REVOLUTIONIZED MULTI-FUNCTIONAL MILLING



POSSIBLE HIGH FEED PER TOOTH (42CRM04)



INSERT GRADES FOR A WIDE RANGE OF MATERIALS

P	CVD	PVD	M	CVD	PVD	K	CVD	PVD	S	PVD	H	PVD
P10	MV1020	MP1220 NEW	MP6120	VP15TF	M10	K10	MC5020	XC5010	S10	MP1220 NEW	H10	VP15TF
P20	MV1030	MP1230 NEW	MP6130	M20	MV1030	K20	MV1020	VP15TF	S20	MP9120	H20	VP15TF
P30	MV1030	MP1240 NEW	MP6130	M30	MP1230 NEW	K30	MV1030	VP15TF	S30	MP1230 NEW	H30	VP15TF
P40		MP1240 NEW	M40		MP7140 NEW	K40		VP20RT	S40	MP1240 NEW	H40	

MP1220

For stable machining operations with an emphasis on wear resistance.

MP1230

Ideal for medium machining applications and for light interrupted cutting.

MP1240

The toughest grade for heavy machining and rough interrupted applications.

MV1020

This grade has advanced wear and thermal shock resistance and also achieves stable cutting at unprecedented cutting speeds, especially when machining steel and ductile cast iron, thus greatly reducing work time.

MV1030

The new Al-Rich coating also provides excellent wear resistance. An unprecedented performance against sudden breakage was also realised especially during problematic wet cutting and when machining stainless steels.

MP6120

For general milling of steel.

MP6130

For interrupted milling of steel.

MP7130

For general milling of stainless steel.

MC5020

For general milling of cast iron.

MP9120

For general milling of HRSA and titanium alloy.

MP9130

For interrupted and general milling of HRSA and Titanium alloy.

TF15

For general milling of aluminium.

VP15TF

For stable machining when the coating is combined with a high wear and fracture resistant carbide substrate.

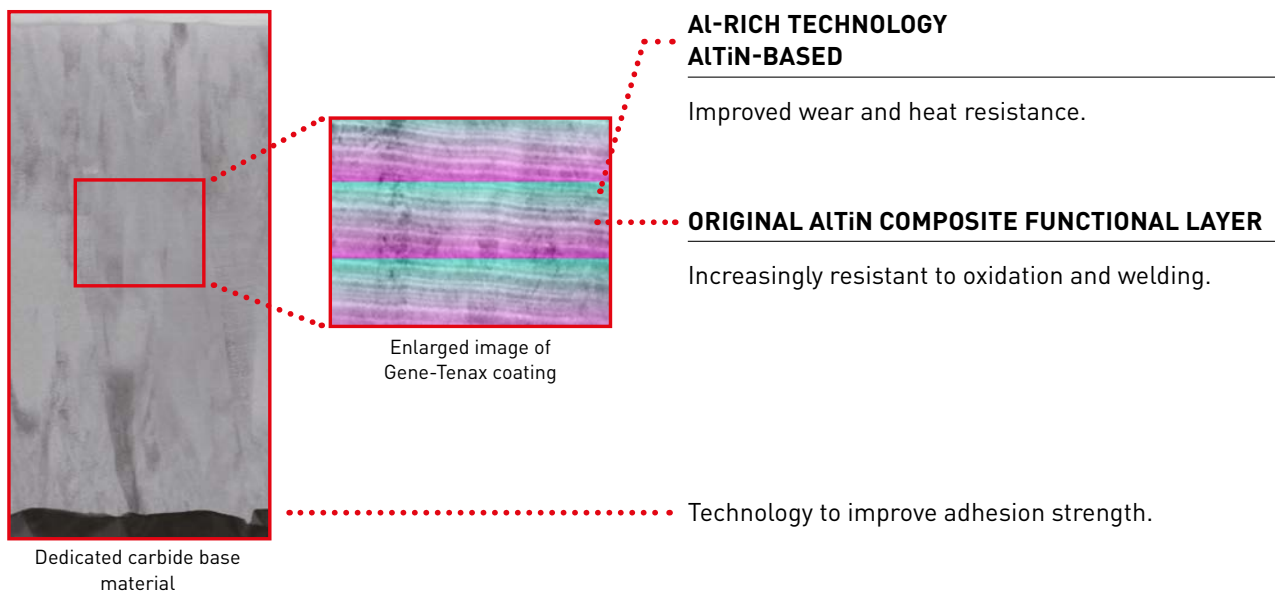
MP1220 / MP1230 / MP1240

MULTI-LAYER PVD COATING FOR MILLING

ONE INSERT SERIES TO SOLVE ALL PROBLEMS WHEN MACHINING STEELS, STAINLESS STEELS, HEAT RESISTANT AND TITANIUM ALLOYS.

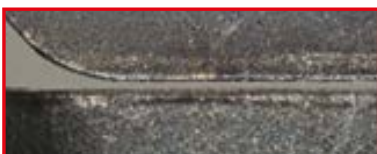
GENE-TENAX COATING

By controlling the coating structure at the nano level, damage to the coating has been vastly reduced compared to conventional lamination. By successfully laminating multiple films, simultaneous strengthening of heat, wear and welding resistance is achieved. Additionally the coating is now much less prone to cracking and with the increased adhesive strength, the most stable grade for milling has been created.



ACHIEVES TOUGHNESS FOR A WIDE RANGE OF WORK MATERIALS

STEEL MACHINING DAMAGE



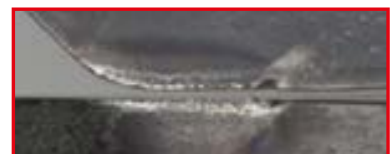
Cutting edge that is resistant to wear when machining steel

STAINLESS STEEL MACHINING DAMAGE



Cutting edge that is less susceptible to notching when machining stainless steel

HEAT RESISTANT AND TITANIUM ALLOYS MACHINING DAMAGE



Cutting edge that is resistant to chipping when machining heat resistant and titanium alloys



Thermal cracking



Notching

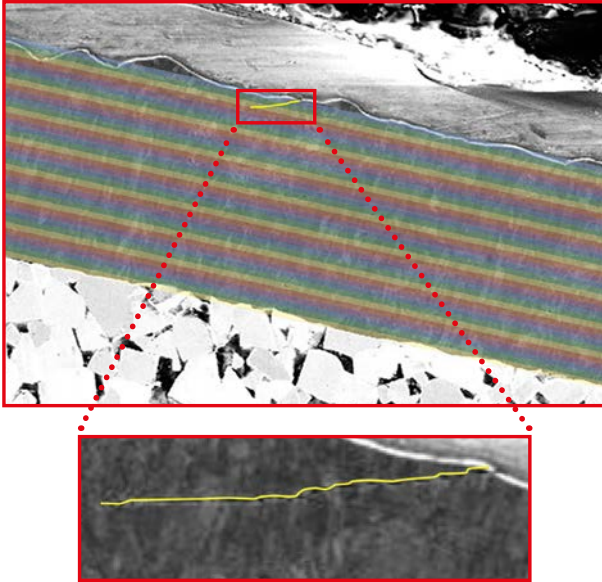


Chipped cutting edge

NEW MULTILAYER TECHNOLOGY

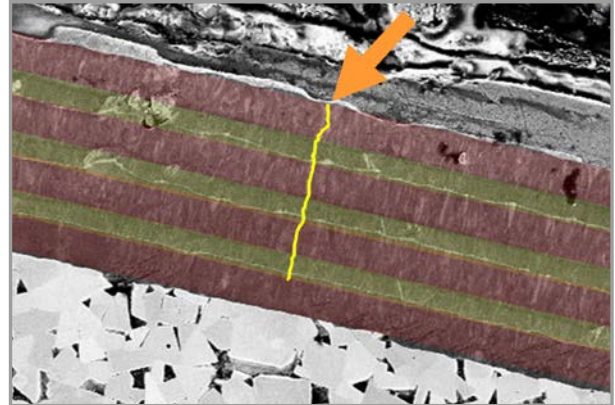
The adoption of a new multi-layer technology has succeeded in suppressing crack propagation and dramatically improved fracture resistance when compared to conventional technology.

MP1200 SERIES MULTI-LAYER TECHNOLOGY



Prevents cracks

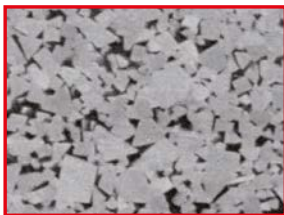
CONVENTIONAL LAYER TECHNOLOGY



MULTI-GRADE SYSTEM

Using simulation technology, precise analysis of the cutting edge load and temperature when machining different workpiece materials was carried out. This led to the creation of different substrates for three different grades and ensures optimal performance for each type of workpiece material. Ensuring the best performance over a wide range of applications.

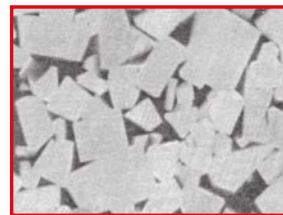
MP1220



MP1230



MP1240



2μm

SELECTION GUIDELINES

Steel, Carbon steel

Stainless steel

Titanium alloys,
Heat resistant alloys

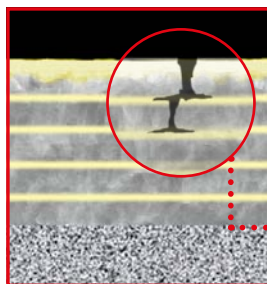


- Hard grade
- Stable cutting
- Emphasis on wear resistance and mechanical properties

- Tough grade
- Unstable cutting
- Emphasis on fracture resistance and thermal properties

MP6100 / MP7100 / MP9100 SERIES

TOUGH-Σ Technology



(Graphical representation)

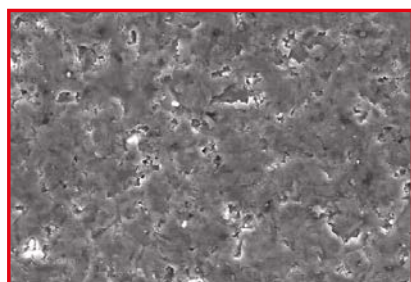
Base layer high Al-(Al, Ti)N

The new technology Al-(Al, Ti)N coating provides stabilisation of the high hardness phase and succeeds in dramatically improving wear, crater and welding resistance.

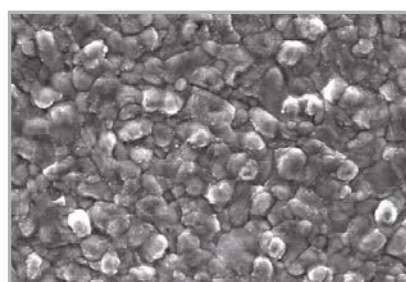
Multi-layering of the coating prevents any cracks penetrating through to the substrate.

MC5020 BLACK SUPER-SMOOTH COATING

Black super-smooth coating prevents abnormal damage such as weld chipping.
First recommendation for cast iron milling.

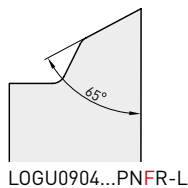
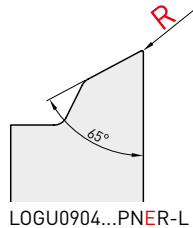


MC5020



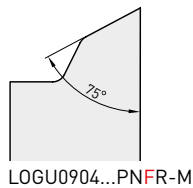
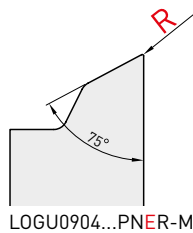
Conventional coating

CHIPBREAKER SYSTEM



L Breaker

Focus on cutting edge sharpness

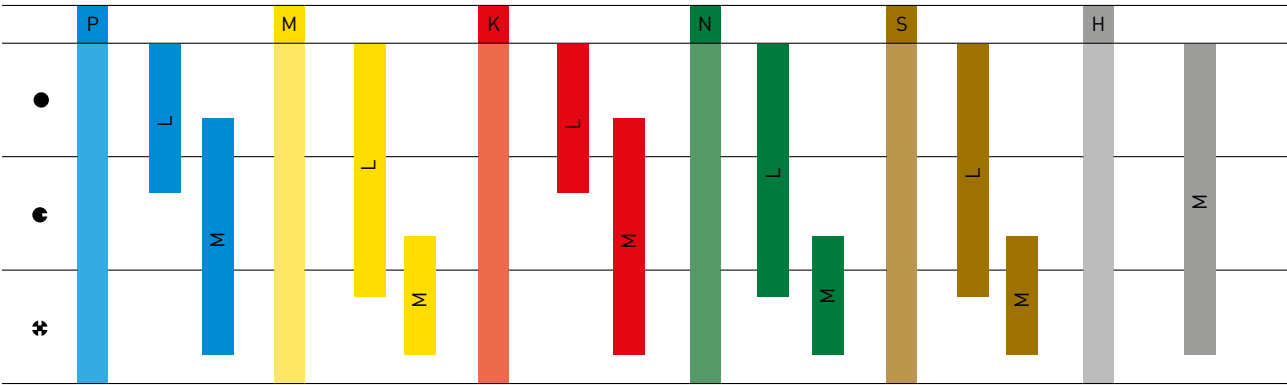


M Breaker

Focus on cutting edge strength

APPLICATION OF CHIPBREAKERS

Cutting conditions: ●: Stable cutting ●: General cutting ✖: Unstable cutting



1. Refer to page 18 for chipbreaker and grade recommendations.

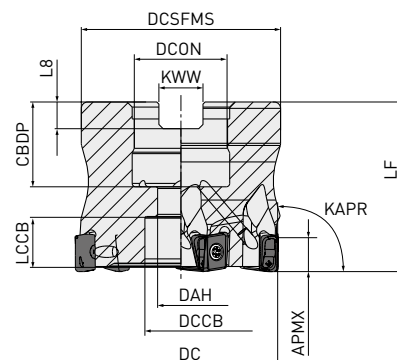
VPX200



P M K N S H



GAMP : -6° T : $+5^\circ$
GAMF : -25° I : $+4^\circ$



Right hand tool holder only

DC	Set bolt	Geometry
Ø32, Ø40	HSC08025H	
Ø50, Ø63	HSC10030H	

ARBOR TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	WT	RPMX	ZNF	 LOGU09
VPX200-032A03AR	●	8	32	16	35	0.71°	0.11	25100	3	
VPX200-032A05AR	●	8	32	16	35	0.71°	0.11	25100	5	
VPX200-040A04AR	●	8	40	16	40	0.54°	0.23	22000	4	
VPX200-040A06AR	●	8	40	16	40	0.54°	0.22	22000	6	
VPX200-050A05AR	●	8	50	22	40	0.42°	0.36	19200	5	
VPX200-050A07AR	●	8	50	22	40	0.42°	0.36	19200	7	
VPX200-063A06AR	●	8	63	22	40	0.32°	0.66	16700	6	
VPX200-063A09AR	●	8	63	22	40	0.32°	0.66	16700	9	

1/1

1. The maximum spindle speeds are set to ensure tool and insert stability.
2. When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.
3. Refer to page 18 for chipbreaker and grade recommendations.



VPX200 – ARBOR TYPE**MOUNTING DIMENSIONS**

Order number	CBDP	DAH	DCCB	DCSFMS	KWW	LCCB	L8
VPX200-032A03AR	18	9	14	30	8.4	8	5.6
VPX200-032A05AR	18	9	14	30	8.4	8	5.6
VPX200-040A04AR	18	9	14	37	8.4	13	5.6
VPX200-040A06AR	18	9	14	37	8.4	13	5.6
VPX200-050A05AR	20	11	17	47	10.4	11	6.3
VPX200-050A07AR	20	11	17	47	10.4	11	6.3
VPX200-063A06AR	20	11	17	60	10.4	11	6.3
VPX200-063A09AR	20	11	17	60	10.4	11	6.3

1/1

SPARE PARTS

Tool holder type	DC	 *		
		Clamp screw	Wrench	Anti-seize lubricant
VPX200	≤63	TPS27F2	TIP07F	MK1KS

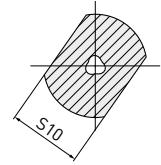
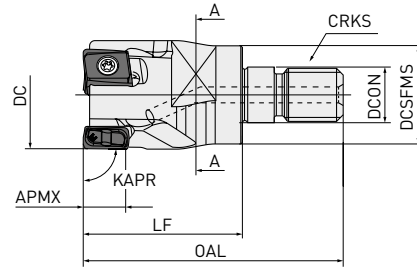
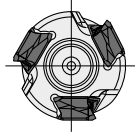
* Clamp torque (N • m): TPS27F2 = 1.0



VPX200



P M K N S H



A-A Section

Right hand tool holder only

SCREW-IN TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	WT	ZNF	 LOGU09
VPX200R1602AM0830	●	8	16	8.5	30	1.85°	0.03	2	
VPX200R1802AM0830	★	8	18	8.5	30	1.56°	0.04	2	
VPX200R2002AM1030	●	8	20	10.5	30	1.35°	0.06	2	
VPX200R2003AM1030	●	8	20	10.5	30	1.35°	0.06	3	
VPX200R2202AM1030	★	8	22	10.5	30	1.16°	0.06	2	
VPX200R2203AM1030	★	8	22	10.5	30	1.16°	0.06	3	
VPX200R2503AM1235	●	8	25	12.5	35	0.97°	0.11	3	
VPX200R2504AM1235	●	8	25	12.5	35	0.97°	0.11	4	
VPX200R3203AM1640	●	8	32	17	40	0.71°	0.21	3	
VPX200R3204AM1640	●	8	32	17	40	0.71°	0.21	4	
VPX200R3205AM1640	●	8	32	17	40	0.71°	0.21	5	
VPX200R3503AM1640	★	8	35	17	40	0.63°	0.24	3	
VPX200R3505AM1640	★	8	35	17	40	0.63°	0.23	5	
VPX200R4004AM1640	●	8	40	17	40	0.54°	0.26	4	
VPX200R4006AM1640	●	8	40	17	40	0.54°	0.26	6	

1/1

1. Refer to page 18 for chipbreaker and grade recommendations.

VPX200 – SCREW-IN TYPE**MOUNTING DIMENSIONS**

Order number	CRKS	S10	DCSFMS	OAL
VPX200R1602AM0830	M08	10	14.5	48
VPX200R1802AM0830	M08	10	14.5	48
VPX200R2002AM1030	M10	14	18.5	49
VPX200R2003AM1030	M10	14	18.5	49
VPX200R2202AM1030	M10	14	18.5	49
VPX200R2203AM1030	M10	14	18.5	49
VPX200R2503AM1235	M12	19	23.5	57
VPX200R2504AM1235	M12	19	23.5	57
VPX200R3203AM1640	M16	24	28.5	63
VPX200R3204AM1640	M16	24	28.5	63
VPX200R3205AM1640	M16	24	28.5	63
VPX200R3503AM1640	M16	24	28.5	63
VPX200R3505AM1640	M16	24	28.5	63
VPX200R4004AM1640	M16	24	28.5	63
VPX200R4006AM1640	M16	24	28.5	63

1/1

SPARE PARTS

Tool holder type	DC	 *		
		Clamp screw	Wrench	Anti-seize lubricant
VPX200R16	≤20	TPS27F1	TIP07F	MK1KS
VPX200R22	>20	TPS27F2		

* Clamp torque (N • m): TPS27F1 = 1.0, TPS27F2 = 1.0



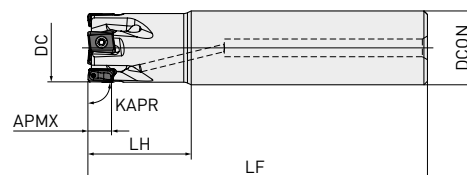
VPX200



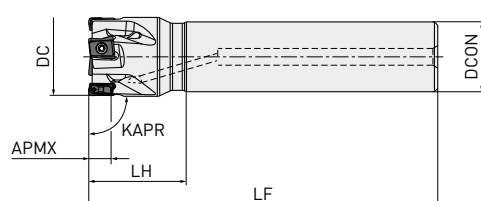
P M K N S H



1



2



Right hand tool holder only

CYLINDRICAL SHANK TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	RPMX	WT	LH	ZNF	Type
SHORT TYPE											
VPX200R1602SA16S	●	8	16	16	85	1.85°	37900	0.11	25	2	1
VPX200R1802SA16S	★	8	18	16	85	1.56°	35300	0.12	25	2	2
VPX200R2002SA16S	★	8	20	16	100	1.35°	33200	0.14	25	2	2
VPX200R2003SA16S	●	8	20	16	100	1.35°	33200	0.14	25	3	2
VPX200R2002SA20S	●	8	20	20	100	1.35°	33200	0.21	30	2	1
VPX200R2003SA20S	●	8	20	20	100	1.35°	33200	0.21	30	3	1
VPX200R2202SA20S	★	8	22	20	115	1.16°	31400	0.26	30	2	2
VPX200R2203SA20S	●	8	22	20	115	1.16°	31400	0.25	30	3	2
VPX200R2503SA20S	●	8	25	20	115	0.97°	29000	0.26	30	3	2
VPX200R2504SA20S	●	8	25	20	115	0.97°	29000	0.26	30	4	2
VPX200R2503SA25S	●	8	25	25	115	0.97°	29000	0.39	35	3	1
VPX200R2504SA25S	●	8	25	25	115	0.97°	29000	0.39	35	4	1
VPX200R2803SA25S	★	8	28	25	115	0.84°	27200	0.41	35	3	2
VPX200R2804SA25S	★	8	28	25	115	0.84°	27200	0.41	35	4	2
VPX200R3003SA25S	★	8	30	25	125	0.77°	26000	0.46	35	3	2
VPX200R3004SA25S	★	8	30	25	125	0.77°	26000	0.46	35	4	2
VPX200R3203SA32S	★	8	32	32	125	0.71°	25100	0.70	45	3	1
VPX200R3204SA32S	●	8	32	32	125	0.71°	25100	0.70	45	4	1
VPX200R3205SA32S	●	8	32	32	125	0.71°	25100	0.70	45	5	1
VPX200R4004SA32S	★	8	40	32	125	0.54°	22000	0.81	45	4	2
VPX200R4006SA32S	★	8	40	32	125	0.54°	22000	0.80	45	6	2
VPX200R5005SA32S	★	8	50	32	125	0.42°	19200	0.91	45	5	2
VPX200R5007SA32S	★	8	50	32	125	0.42°	19200	0.91	45	7	2

LOGU09

1/1

VPX200 – CYLINDRICAL SHANK TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	RPMX	WT	LH	ZNF	Type	
LONG TYPE												
VPX200R1802SA16L	●	8	18	16	120	1.56°	35300	0.17	25	2	2	LOGU09
VPX200R2002SA20L	●	8	20	20	150	1.35°	33200	0.32	60	2	1	
VPX200R2202SA20L	★	8	22	20	150	1.16°	31400	0.34	30	2	2	
VPX200R2503SA25L	●	8	25	25	170	0.97°	29000	0.57	70	3	1	
VPX200R2803SA25L	★	8	28	25	170	0.84°	27200	0.61	35	3	2	
VPX200R3203SA32L	●	8	32	32	190	0.71°	25100	1.06	90	3	1	
VPX200R3503SA32L	★	8	35	32	190	0.63°	23800	1.14	45	3	2	
												1/1

1. The maximum spindle speeds are set to ensure tool and insert stability.
2. When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.
3. Refer to page 18 for chipbreaker and grade recommendations.



SPARE PARTS

Tool holder type	DC			
		Clamp screw	Wrench	Anti-seize lubricant
VPX200	≤20	TPS27F1	TIP07F	MK1KS
VPX200	>20	TPS27F2		

* Clamp torque (N • m): TPS27F1 = 1.0, TPS27F2 = 1.0



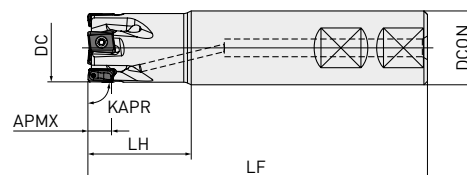
VPX200



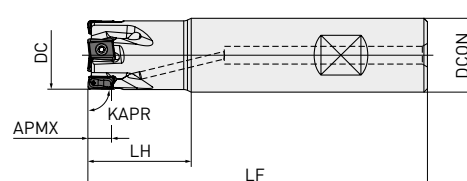
P M K N S H



1



2



Right hand tool holder only

WELDON SHANK TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	RPMX	WT	LH	ZNF	Type	
SHORT TYPE												
VPX200R1602WA16S	●	8	16	16	73	1.85°	37900	0.09	25	2	2	LOGU09
VPX200R2002WA20S	●	8	20	20	80	1.35°	33200	0.17	30	2	2	
VPX200R2003WA20S	●	8	20	20	80	1.35°	33200	0.16	30	3	2	
VPX200R2503WA25S	●	8	25	25	91	0.97°	29000	0.29	35	3	1	
VPX200R2504WA25S	●	8	25	25	91	0.97°	29000	0.29	35	4	1	
VPX200R3203WA32S	●	8	32	32	105	0.71°	25100	0.58	45	3	1	
VPX200R3204WA32S	●	8	32	32	105	0.71°	25100	0.57	45	4	1	
VPX200R3205WA32S	●	8	32	32	105	0.71°	25100	0.57	45	5	1	
LONG TYPE												
VPX200R1602WA16M	●	8	16	16	85	1.85°	37900	0.11	37	2	1	LOGU09
VPX200R2002WA20M	●	8	20	20	100	1.35°	33200	0.20	50	2	1	
VPX200R2003WA20M	●	8	20	20	100	1.35°	33200	0.20	50	3	1	
VPX200R2503WA25M	●	8	25	25	115	0.97°	29000	0.37	59	3	1	
VPX200R2504WA25M	●	8	25	25	115	0.97°	29000	0.37	59	4	1	
VPX200R3203WA32M	●	8	32	32	125	0.71°	25100	0.68	65	3	1	
VPX200R3204WA32M	●	8	32	32	125	0.71°	25100	0.68	65	4	1	
VPX200R3205WA32M	●	8	32	32	125	0.71°	25100	0.68	65	5	1	

1/

1/1

1. The maximum spindle speeds are set to ensure tool and insert stability.
2. When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.
3. Refer to page 18 for chipbreaker and grade recommendations.



SPARE PARTS

Tool holder type	DC			
		Clamp screw	Wrench	Anti-seize lubricant
VPX200	≤20	TPS27F1	TIP07F	MK1KS
VPX200	>20	TPS27F2		

* Clamp torque (N • m): TPS27F1 = 1.0, TPS27F2 = 1.0

VPX200

INSERTS

P	Steel	●	●		●	✱			●	●	●	
M	Stainless steel	●	●	✱			●		●	●	●	
K	Cast iron				●				●	●	✱	
N	Non-ferrous material											●
S	Heat-resistant alloy, Titanium alloy	●	●	✱			●	✱		●		
H	Hardened steel										●	

Cutting conditions:

●: Stable cutting ●: General cutting ✱: Unstable cutting

Honing :

E: Round F: Sharp

Order number	Class	Honing	NEW	MP1220	NEW	MP1230	NEW	MP1240	MC5020	MP6120	MP6130	MP7130	MP9120	MP9130	MV1020	MV1030	VP15TF	TF15	L	RE	LE	S	BS	D1	Geometry	
LOGU0904020PNER-L	G	E	●	●	●	★	★	★	★	★	★	★	★	★	●	●	★		8.7	0.2	7.6	4.3	1.7	3		
LOGU0904040PNER-L	G	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	★		8.7	0.4	7.6	4.3	1.5	3		
LOGU0904080PNER-L	G	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	★		8.7	0.8	7.6	4.3	1.2	3		
LOGU0904100PNER-L	G	E	●	●	★	★	★	★	★	★	★	★	★	★	●	●	★		8.7	1.0	7.6	4.3	1.0	3		
LOGU0904120PNER-L	G	E	★	★	★	★	★	★	★	★	★	★	★	★	●	●	★		8.7	1.2	7.6	4.3	0.8	3		
LOGU0904160PNER-L	G	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	★		8.7	1.6	7.6	4.3	0.5	3		
LOGU0904020PNFR-L	G	F															●		8.7	0.2	7.6	4.3	1.7	3		
LOGU0904040PNFR-L	G	F															●		8.7	0.4	7.6	4.3	1.5	3		
LOGU0904080PNFR-L	G	F															●		8.7	0.8	7.6	4.3	1.2	3		
LOGU0904100PNFR-L	G	F															★		8.7	1.0	7.6	4.3	1.0	3		
LOGU0904120PNFR-L	G	F															★		8.7	1.2	7.6	4.3	0.8	3		
LOGU0904160PNFR-L	G	F															★		8.7	1.6	7.6	4.3	0.5	3		

LOGU0904020PNER-M	G	E	●	●	●	★	★	★	★	★	★	★	★	★	●	●	★		8.7	0.2	7.6	4.3	1.7	3	
LOGU0904040PNER-M	G	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	★		8.7	0.4	7.6	4.3	1.6	3	
LOGU0904080PNER-M	G	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	★		8.7	0.8	7.6	4.3	1.2	3	
LOGU0904100PNER-M	G	E	●	●	●	★	★	★	★	★	★	★	★	★	●	●	★		8.7	1	7.6	4.3	1	3	
LOGU0904120PNER-M	G	E	●	●	●	★	★	★	★	★	★	★	★	★	●	●	★		8.7	1.2	7.6	4.3	0.9	3	
LOGU0904160PNER-M	G	E	●	●	●	●	●	●	●	●	●	●	●	●	●	●	★		8.7	1.6	7.6	4.3	0.5	3	
LOGU0904020PNFR-M	G	F															●		8.7	0.2	7.6	4.3	1.7	3	
LOGU0904040PNFR-M	G	F															●		8.7	0.4	7.6	4.3	1.6	3	
LOGU0904080PNFR-M	G	F															●		8.7	0.8	7.6	4.3	1.2	3	
LOGU0904100PNFR-M	G	F															★		8.7	1	7.6	4.3	1	3	
LOGU0904120PNFR-M	G	F															★		8.7	1.2	7.6	4.3	0.9	3	
LOGU0904160PNFR-M	G	F															★		8.7	1.6	7.6	4.3	0.5	3	

VPX200

CHIPBREAKER AND GRADE RECOMMENDATIONS

Material	Properties	Cutting conditions		
			1st recommendation	2nd recommendation
P	Mild steel	≤180HB	● ●	L M
			✱	M L
	Carbon steel	180 – 350HB	●	L M
	Alloy steel	≤350HB	●	M L
	Alloy tool steel		✱	M L
	Pre-hardened steel	35 – 45HRC	● ●	M L
M			✱	M L
	Austenitic stainless steel	≤280HB	● ●	L M
			✱	M L
		>200HB	● ●	L M
			✱	M L
	Duplex stainless steel	≤280HB	● ●	L M
K			✱	M L
	Ferritic and martensitic stainless steel	—	● ●	L M
			✱	M L
	Precipitation hardening stainless steel	<450HB	● ●	L M
			✱	M L
N	Gray cast iron	≤350MPa	● ●	M L
			✱	M L
S	Ductile cast iron	≤800MPa	● ●	M L
			✱	M L
H	Aluminum alloy	Si<5 %	● ●	L M
			✱	M L
S	Titanium alloys (Ti-6Al-4V)	—	● ●	L M
			✱	M L
	Titanium alloys (Ti-5Al-5V-5Mo-3Cr)	—	● ●	L M
			✱	M L
H	Heat resistant alloys	—	● ●	M L
			✱	M L
H	Hardened steel	40 – 55HRC	● ● ✱	M —

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VPX200

RECOMMENDED CUTTING CONDITIONS

DRY CUTTING



These cutting conditions are reference for standard shank types (last letter in designation is S) and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter the conditions accordingly.

Chattering and vibration is more likely under the following circumstances: When the tool overhang is long (using a long shank, screw-in type, etc.), the rigidity of the machine, work material or attachment of work material is low, or during the machining of corners during pocket machining. Use cutting conditions at the minimum recommendation or below.

CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25x DC	ae≥0.25–0.5 DC	ae≥0.5–0.75 DC	ae=1.0 DC
P	Mild steel	≤180HB	MV1020	280 (220 – 330)	270 (210 – 320)	220 (170 – 260)	220 (170 – 260)
			MP1220	230 (180 – 270)	220 (170 – 260)	180 (140 – 210)	180 (140 – 210)
			MP6120	230 (180 – 270)	220 (170 – 260)	180 (140 – 210)	180 (140 – 210)
			MV1030	230 (180 – 270)	220 (170 – 260)	180 (140 – 210)	180 (140 – 210)
			VP15TF	230 (180 – 270)	220 (170 – 260)	180 (140 – 210)	180 (140 – 210)
			MP1230	200 (150 – 240)	190 (140 – 230)	150 (110 – 180)	150 (110 – 180)
			MP6130	200 (150 – 240)	190 (140 – 230)	150 (110 – 180)	150 (110 – 180)
P	Carbon steel Alloy steel Alloy tool steel	180 – 280HB	MV1020	220 (170 – 260)	210 (160 – 240)	170 (130 – 200)	170 (130 – 200)
			MP1220	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			MV1030	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	170 (130 – 200)
			MP1230	150 (110 – 180)	140 (100 – 170)	110 (80 – 130)	110 (80 – 130)
		280 – 350HB	MV1020	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			MP1220	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			MV1030	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			MP1230	150 (110 – 180)	140 (100 – 170)	110 (80 – 130)	110 (80 – 130)
		180 – 350HB ≤350HB	MP1220	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			MP6120	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			VP15TF	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			MP1230	150 (110 – 180)	140 (100 – 170)	110 (80 – 130)	110 (80 – 130)
			MP6130	150 (110 – 180)	140 (100 – 170)	110 (80 – 130)	110 (80 – 130)
		35 – 45HRC	MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			MP6120	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			VP15TF	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			MP1230	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
			MP6130	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)

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VPX200 – DRY CUTTING – CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25x DC	ae≥0.25–0.5 DC	ae≥0.5–0.75 DC	ae=1.0 DC
Austenitic stainless steel		● ● ✱	MV1030	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP1230	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP1240	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP7130	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ●	VP15TF	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ●	MV1030	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
		● ● ✱	MP1230	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
		● ● ✱	MP1240	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
		● ● ✱	MP7130	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
		● ●	VP15TF	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
	Duplex stainless steel	● ● ✱	MP1230	140 [110 – 170]	130 [90 – 150]	100 [70 – 120]	100 [70 – 120]
		● ● ✱	MP1240	140 [110 – 170]	130 [90 – 150]	100 [70 – 120]	100 [70 – 120]
		● ● ✱	MP7130	140 [110 – 170]	130 [90 – 150]	100 [70 – 120]	100 [70 – 120]
		● ●	VP15TF	140 [110 – 170]	130 [90 – 150]	100 [70 – 120]	100 [70 – 120]
	Ferritic and martensitic stainless steel	● ● ✱	MP1220	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP1230	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP7130	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ●	VP15TF	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
	Precipitation hardening stainless steel	● ● ✱	MP1230	130 [100 – 160]	120 [80 – 140]	90 [60 – 110]	90 [60 – 110]
		● ● ✱	MP1240	130 [100 – 160]	120 [80 – 140]	90 [60 – 110]	90 [60 – 110]
		● ● ✱	MP7130	130 [100 – 160]	120 [80 – 140]	90 [60 – 110]	90 [60 – 110]
		● ●	VP15TF	130 [100 – 160]	120 [80 – 140]	90 [60 – 110]	90 [60 – 110]
K	Gray cast iron	● ●	MC5020	250 [200 – 300]	240 [190 – 290]	210 [160 – 260]	210 [160 – 260]
		● ●	VP15TF	200 [150 – 250]	190 [140 – 240]	160 [110 – 210]	160 [110 – 210]
	Ductile cast iron	● ●	MV1020	200 [150 – 280]	190 [140 – 270]	170 [130 – 240]	170 [130 – 240]
		● ●	MV1030	150 [100 – 200]	140 [90 – 190]	125 [80 – 170]	100 [80 – 120]
		● ●	MV1020	180 [140 – 250]	170 [130 – 240]	150 [120 – 210]	150 [120 – 210]
		● ●	MV1030	150 [100 – 200]	140 [90 – 190]	125 [80 – 170]	150 [120 – 210]
		● ●	MC5020	180 [150 – 200]	170 [140 – 190]	150 [120 – 170]	150 [120 – 170]
		● ● ✱	VP15TF	130 [100 – 150]	120 [90 – 140]	100 [80 – 120]	100 [80 – 120]
N	Aluminum alloy	Si<5 %	TF15	600 [400 – 1000]	600 [400 – 1000]	600 [400 – 1000]	600 [400 – 1000]
H	Hardened steel	40 – 55HRC	VP15TF	90 [70 – 100]	85 [60 – 100]	70 [50 – 80]	70 [50 – 80]

VPX200 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=016-018		DC=020-025		DC=028-063	
				ap	fz	ap	fz	ap	fz
P	Mild steel	≤180HB	   ≤0.25DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.25
			   0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.1 – 0.15	≤8	0.1 – 0.2
			   0.5 – 0.75 DC	≤4	0.08 – 0.12	≤6	0.08 – 0.12	≤6	0.1 – 0.15
			   1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.08 – 0.12
	Carbon steel Alloy steel Alloy tool steel	180–280HB	   ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.25
			   0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.1 – 0.15	≤8	0.1 – 0.2
			   0.5 – 0.75 DC	≤4	0.08 – 0.12	≤6	0.08 – 0.12	≤6	0.1 – 0.15
			   1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.08 – 0.12
	Carbon steel Alloy steel Alloy tool steel	280—350HB ≤350HB (Annealing)	   ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.15	≤8	0.1 – 0.2
			   0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.1 – 0.15
			   0.5 – 0.75 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.1	≤6	0.08 – 0.12
			   1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.05 – 0.1
	Pre-hardened steel	35–45HRC	   ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.15	≤8	0.1 – 0.2
			   0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.1 – 0.15
			   0.5 – 0.75 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.1	≤6	0.08 – 0.12
			   1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
M	Austenitic stainless steel	—	  ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			 ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			  0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			 0.25 – 0.5 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.08 – 0.12	≤6	0.08 – 0.12
			 0.5 – 0.75 DC	≤4	0.06 – 0.08	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			  1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.06 – 0.08
	Duplex stainless steel	≤280HB	  ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			 ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			  0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			 0.25 – 0.5 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.08 – 0.12	≤6	0.08 – 0.12
			 0.5 – 0.75 DC	≤4	0.06 – 0.08	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			  1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.06 – 0.08
	Ferritic and martensitic stainless steel	—	  ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			 ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			  0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			 0.25 – 0.5 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.08 – 0.12	≤6	0.08 – 0.12
			 0.5 – 0.75 DC	≤4	0.06 – 0.08	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			  1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.06 – 0.08
	Precipitation hardening stainless steel	≤450HB	  ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.15	≤8	0.1 – 0.15
			 ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			 0.25 – 0.5 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			 0.5 – 0.75 DC	≤4	0.06 – 0.08	≤6	0.06 – 0.08	≤6	0.06 – 0.08
			  1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.06 – 0.08

VPX200 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=Ø16 – Ø18		DC=Ø20 – Ø25		DC=Ø28 – Ø63	
				ap	fz	ap	fz	ap	fz
K	Gray cast iron	≤350MPa	● ● ≤0.25DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.25
			✱ 0.25 – 0.5 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.1 – 0.2
			● ● 0.5 – 0.75 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.1 – 0.2
			✱ 1.0 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.1 – 0.15
			● ● ≤0.25 DC	≤4	0.08 – 0.12	≤6	0.08 – 0.12	≤6	0.1 – 0.15
			✱ 0.25 – 0.5 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.1	≤6	0.08 – 0.12
			● ● 0.5 – 0.75 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.08 – 0.15
			✱ 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.08 – 0.1
	Ductile cast iron	≤800MPa	● ● ≤0.25DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			✱ 0.25 – 0.5 DC	≤6	0.08 – 0.12	≤8	0.1 – 0.15	≤8	0.1 – 0.15
			● ● 0.5 – 0.75 DC	≤5	0.08 – 0.12	≤8	0.1 – 0.15	≤8	0.1 – 0.15
			✱ 1.0 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			● ● ≤0.25 DC	≤4	0.08 – 0.12	≤6	0.08 – 0.12	≤6	0.08 – 0.12
			✱ 0.25 – 0.5 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			● ● 0.5 – 0.75 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			✱ 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.06 – 0.08
N	Aluminum alloy	Si<5 %	● ● ≤0.25DC	≤6	0.1 – 0.2	≤8	0.1 – 0.25	≤8	0.1 – 0.25
			✱ 0.25 – 0.5 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			● ● 0.5 – 0.75 DC	≤5	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			✱ 1.0 DC	≤5	0.08 – 0.12	≤8	0.1 – 0.15	≤8	0.1 – 0.15
			● ● ≤0.25 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.15	≤6	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤4	0.06 – 0.1	≤6	0.06 – 0.15	≤6	0.08 – 0.15
			● ● 0.5 – 0.75 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.15	≤4	0.08 – 0.15
			✱ 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.12	≤4	0.08 – 0.12
H	Hardened steel	40 – 55HRC	● ● ≤0.25DC	≤4	0.08 – 0.15	≤4	0.08 – 0.15	≤4	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤4	0.08 – 0.12	≤4	0.08 – 0.12	≤4	0.08 – 0.12
			● ● 0.5 – 0.75 DC	≤3	0.08 – 0.12	≤3	0.08 – 0.12	≤3	0.08 – 0.12
			✱ 1.0 DC	≤3	0.06 – 0.1	≤3	0.08 – 0.1	≤3	0.06 – 0.1
			● ● ≤0.25 DC	≤2	0.06 – 0.1	≤2	0.08 – 0.1	≤2	0.06 – 0.1
			✱ 0.25 – 0.5 DC	≤2	0.06 – 0.08	≤2	0.06 – 0.08	≤2	0.06 – 0.08
			● ● 0.5 – 0.75 DC	≤1	0.06 – 0.1	≤1	0.06 – 0.1	≤1	0.06 – 0.1
			✱ 1.0 DC	≤1	0.06 – 0.08	≤1	0.06 – 0.08	≤1	0.06 – 0.08

VPX200

RECOMMENDED CUTTING CONDITIONS

WET CUTTING



These cutting conditions are reference for standard shank types (last letter in designation is S) and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter the conditions accordingly.

Chattering and vibration is more likely under the following circumstances: When the tool overhang is long (using a long shank, screw-in type, etc.), the rigidity of the machine, work material or attachment of work material is low, or during the machining of corners during pocket machining. Use cutting conditions at the minimum recommendation or below.

CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25 DC	ae≥0.25 – 0.5 DC	ae≥0.5 – 0.75 DC	ae=1.0 DC
Mild steel	≤180HB	● ● ●	MV1020	210 (150 – 290)	200 (140 – 270)	150 (110 – 180)	150 (110 – 180)
		● ● ● ✖	MP1220	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		● ● ●	MP6120	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		● ● ●	MV1030	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		● ● ● ✖	MP1230	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		● ● ●	VP15TF	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		● ● ● ✖	MP6130	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
P Carbon steel Alloy steel Alloy tool steel	180 – 280HB	● ● ●	MV1020	180 (140 – 210)	170 (120 – 200)	150 (110 – 180)	150 (110 – 180)
		● ● ● ✖	MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ●	MV1030	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ● ✖	MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
	280 – 350HB	● ● ●	MV1020	140 (110 – 160)	130 (90 – 150)	120 (80 – 140)	120 (80 – 140)
		● ● ● ✖	MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ●	MV1030	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	120 (80 – 140)
		● ● ● ✖	MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
	180 – 350HB ≤350HB	● ● ● ✖	MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ●	MP6120	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ● ✖	MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ●	VP15TF	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ● ✖	MP6130	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ● ✖	MP1220	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
Pre-hardened steel	35 – 45HRC	● ● ●	MP6120	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
		● ● ● ✖	MP1230	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
		● ● ●	VP15TF	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
		● ● ● ✖	MP6130	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
		● ● ● ✖	MP6130	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)

VPX200 – WET CUTTING – CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25 DC	ae≥0.25 – 0.5 DC	ae≥0.5 – 0.75 DC	ae=1.0 DC
M	Austenitic stainless steel	≤200HB	 MP1230	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP1240	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP7130	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 VP15TF	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
		>200HB	 MP1230	100 (80 – 130)	90 (70 – 110)	70 (50 – 100)	70 (50 – 100)
			 MP1240	100 (80 – 130)	90 (70 – 110)	70 (50 – 100)	70 (50 – 100)
			 MP7130	100 (80 – 130)	90 (70 – 110)	70 (50 – 100)	70 (50 – 100)
			 VP15TF	100 (80 – 130)	90 (70 – 110)	70 (50 – 100)	70 (50 – 100)
	Duplex stainless steel	≤280HB	 MP1230	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP1240	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP7130	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 VP15TF	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
	Ferritic and martensitic stainless steel	—	 MP1220	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP1230	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP7130	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 VP15TF	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
	Precipitation hardening stainless steel	<450HB	 MP1230	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 MP1240	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 MP7130	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 VP15TF	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
K	Gray cast iron	≤350MPa	 MC5020	180 (160 – 220)	170 (150 – 210)	150 (130 – 190)	150 (130 – 190)
			 VP15TF	130 (100 – 150)	120 (90 – 140)	100 (80 – 120)	100 (80 – 120)
	Ductile cast iron	≤450MPa	 MV1020	180 (150 – 240)	170 (140 – 230)	150 (130 – 200)	150 (130 – 200)
			 MV1030	130 (80 – 180)	120 (70 – 170)	105 (60 – 150)	105 (60 – 150)
		≤800MPa	 MV1020	160 (130 – 210)	150 (120 – 200)	130 (110 – 170)	130 (110 – 170)
			 MV1030	130 (80 – 180)	120 (70 – 170)	105 (60 – 150)	105 (60 – 150)
			 MC5020	160 (140 – 180)	150 (130 – 170)	130 (110 – 150)	130 (110 – 150)
			 VP15TF	110 (80 – 140)	100 (70 – 130)	80 (60 – 120)	80 (60 – 120)
N	Aluminum alloy	Si<5 %	 TF15	600 (400 – 1000)	600 (400 – 1000)	600 (400 – 1000)	600 (400 – 1000)
S	Titanium alloy (Ti-6Al-4V)	—	 MP1220	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP1230	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP9120	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 VP15TF	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP1230	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP1240	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP9130	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
	Titanium alloy (Ti-5Al-5V-5Mo-3Cr)	—	 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1240	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9120	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 VP15TF	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9130	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
	Heat resistant alloy	—	 MP1220	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP9120	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 VP15TF	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1240	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9130	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
H	Hardened steel	40 – 55HRC	 VP15TF	90 (70 – 100)	85 (60 – 100)	70 (50 – 80)	70 (50 – 80)

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1. A type with fewer teeth is recommended when the depth of cut in the radial direction (ae) is 0.5 DC or more.

VPX200 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=Ø16 – Ø18		DC=Ø20 – Ø25		DC=Ø28 – Ø63	
				ap	fz	ap	fz	ap	fz
P	Mild steel	≤180HB	   ≤0.25DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.25
			   0.25 – 0.5 DC	≤5	0.1 – 0.15	≤8	0.1 – 0.15	≤8	0.1 – 0.2
			   0.5 – 0.75 DC	≤4	0.08 – 0.12	≤6	0.08 – 0.12	≤6	0.1 – 0.15
			   1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.08 – 0.12
	Carbon steel Alloy steel Alloy tool steel	180 – 280HB	   ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.25
			   0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.1 – 0.15	≤8	0.1 – 0.2
			   0.5 – 0.75 DC	≤4	0.08 – 0.12	≤6	0.08 – 0.12	≤6	0.1 – 0.15
			   1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.08 – 0.12
	Carbon steel Alloy steel Alloy tool steel	280 – 350HB ≤350HB (Annealing)	   ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.15	≤8	0.1 – 0.2
			   0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.1 – 0.15
			   0.5 – 0.75 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.1	≤6	0.08 – 0.12
			   1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
	Pre-hardened steel	35 – 45HRC	   ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.15	≤8	0.1 – 0.2
			   0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.1 – 0.15
			   0.5 – 0.75 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.1	≤6	0.08 – 0.12
			   1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
M	Austenitic stainless steel	—	  ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			 ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			  0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			 0.25 – 0.5 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.08 – 0.12	≤6	0.08 – 0.12
			 0.5 – 0.75 DC	≤4	0.06 – 0.08	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			  1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.06 – 0.08
	Duplex stainless steel	≤280HB	  ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			 ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			  0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.12
			 0.25 – 0.5 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.08 – 0.12	≤6	0.08 – 0.12
			 0.5 – 0.75 DC	≤4	0.06 – 0.08	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			  1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.06 – 0.08
	Ferritic and martensitic stainless steel	—	  ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			 ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			  0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			 0.25 – 0.5 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.08 – 0.12	≤6	0.08 – 0.12
			 0.5 – 0.75 DC	≤4	0.06 – 0.08	≤6	0.06 – 0.1	≤6	0.05 – 0.1
			  1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.05 – 0.1
			 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.05 – 0.08
	Precipitation hardening stainless steel	≤450HB	  ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.15	≤8	0.1 – 0.15
			 ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			 0.25 – 0.5 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			  0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.06 – 0.1	≤6	0.05 – 0.1
			 0.5 – 0.75 DC	≤4	0.06 – 0.08	≤6	0.06 – 0.08	≤6	0.05 – 0.08
			  1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.05 – 0.1
			 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.05 – 0.08

VPX200 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=Ø16 – Ø18		DC=Ø20 – Ø25		DC=Ø28 – Ø63	
				ap	fz	ap	fz	ap	fz
K	Gray cast iron	≤350MPa	● ● ≤0.25DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.25
			✱ 0.25 – 0.5 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.1 – 0.2
			● ● 0.5 – 0.75 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.15	≤8	0.1 – 0.2
			✱ 1.0 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.1 – 0.15
			● ● ≤0.25 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.1	≤6	0.1 – 0.15
			✱ 0.25 – 0.5 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.1	≤6	0.08 – 0.12
			● ● 0.5 – 0.75 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.08 – 0.15
			✱ 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.06 – 0.1
	Ductile cast iron	≤800MPa	● ● ≤0.25 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			✱ 0.25 – 0.5 DC	≤6	0.08 – 0.12	≤8	0.1 – 0.15	≤8	0.1 – 0.15
			● ● 0.5 – 0.75 DC	≤5	0.08 – 0.12	≤8	0.1 – 0.15	≤8	0.1 – 0.15
			✱ 1.0 DC	≤5	0.06 – 0.1	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			● ● ≤0.25 DC	≤4	0.08 – 0.12	≤6	0.08 – 0.12	≤6	0.08 – 0.12
			✱ 0.25 – 0.5 DC	≤4	0.08 – 0.12	≤6	0.08 – 0.12	≤6	0.06 – 0.1
			● ● 0.5 – 0.75 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			✱ 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.08	≤4	0.06 – 0.08
N	Aluminum alloy	Si<5 %	● ● ≤0.25DC	≤6	0.1 – 0.2	≤8	0.1 – 0.25	≤8	0.1 – 0.25
			✱ 0.25 – 0.5 DC	≤6	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			● ● 0.5 – 0.75 DC	≤5	0.1 – 0.15	≤8	0.1 – 0.2	≤8	0.1 – 0.2
			✱ 1.0 DC	≤5	0.08 – 0.12	≤8	0.1 – 0.15	≤8	0.1 – 0.15
			● ● ≤0.25 DC	≤4	0.08 – 0.12	≤6	0.06 – 0.15	≤6	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤4	0.06 – 0.1	≤6	0.06 – 0.15	≤6	0.08 – 0.15
			● ● 0.5 – 0.75 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.15	≤4	0.08 – 0.15
			✱ 1.0 DC	≤2	0.06 – 0.08	≤4	0.06 – 0.12	≤4	0.08 – 0.12
S	Titanium alloy (Ti-6Al-4V)	—	● ● ✱ ≤0.25DC	≤6	0.08 – 0.15	≤8	0.08 – 0.15	≤8	0.08 – 0.15
			● ● ✱ 0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			● ● ✱ 1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
	Titanium alloy (Ti-5Al-5V-5Mo-3Cr)	—	● ● ✱ ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			● ● ✱ 0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			● ● ✱ 1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
	Heat resistant alloy	—	● ● ✱ ≤0.25 DC	≤6	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			● ● ✱ 0.25 – 0.5 DC	≤5	0.08 – 0.12	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤4	0.06 – 0.1	≤6	0.06 – 0.1	≤6	0.06 – 0.1
			● ● ✱ 1.0 DC	≤2	0.06 – 0.1	≤4	0.06 – 0.1	≤4	0.06 – 0.1
H	Hardened steel	40 – 55HRC	● ● ≤0.25DC	≤4	0.08 – 0.15	≤4	0.08 – 0.15	≤4	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤4	0.08 – 0.12	≤4	0.08 – 0.12	≤4	0.08 – 0.12
			● ● 0.5 – 0.75 DC	≤3	0.08 – 0.12	≤3	0.08 – 0.12	≤3	0.08 – 0.12
			✱ 1.0 DC	≤3	0.06 – 0.1	≤3	0.06 – 0.1	≤3	0.06 – 0.1
			● ● ≤0.25 DC	≤2	0.06 – 0.1	≤2	0.06 – 0.1	≤2	0.06 – 0.1
			✱ 0.25 – 0.5 DC	≤2	0.06 – 0.1	≤2	0.06 – 0.1	≤2	0.06 – 0.1
			● ● 0.5 – 0.75 DC	≤1	0.06 – 0.1	≤1	0.06 – 0.1	≤1	0.06 – 0.1
			✱ 1.0 DC	≤1	0.06 – 0.1	≤1	0.06 – 0.1	≤1	0.06 – 0.1

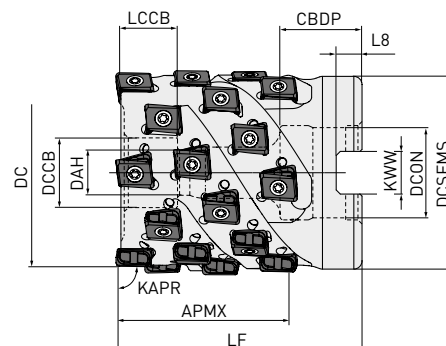
VPX200



P M K N S



LONG CUTTING EDGE



Right hand tool holder only

DC	Set bolt	Geometry
Ø32	HSC08045	
Ø40	HSC08050	
Ø50	HSC10045	

SHELL TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	WT	ZNF	ZNP	
VPX200-032A02A035R10	★	35	32	16	55	0.71°	0.22	2	10	 LOGU09
VPX200-032A03A035R15	●	35	32	16	55	0.71°	0.20	3	15	
VPX200-040A03A042R18	★	42	40	16	60	0.54°	0.34	3	18	
VPX200-040A04A042R24	●	42	40	16	60	0.54°	0.33	4	24	
VPX200-050A04A042R24	★	42	50	22	60	0.42°	0.55	4	24	
VPX200-050A05A042R30	★	42	50	22	60	0.42°	0.54	5	30	

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1. The maximum spindle speeds are set to ensure tool and insert stability.
2. When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.
3. Refer to page 32 for chipbreaker and grade recommendations.



VPX200 – LONG CUTTING EDGE – SHELL TYPE**MOUNTING DIMENSIONS**

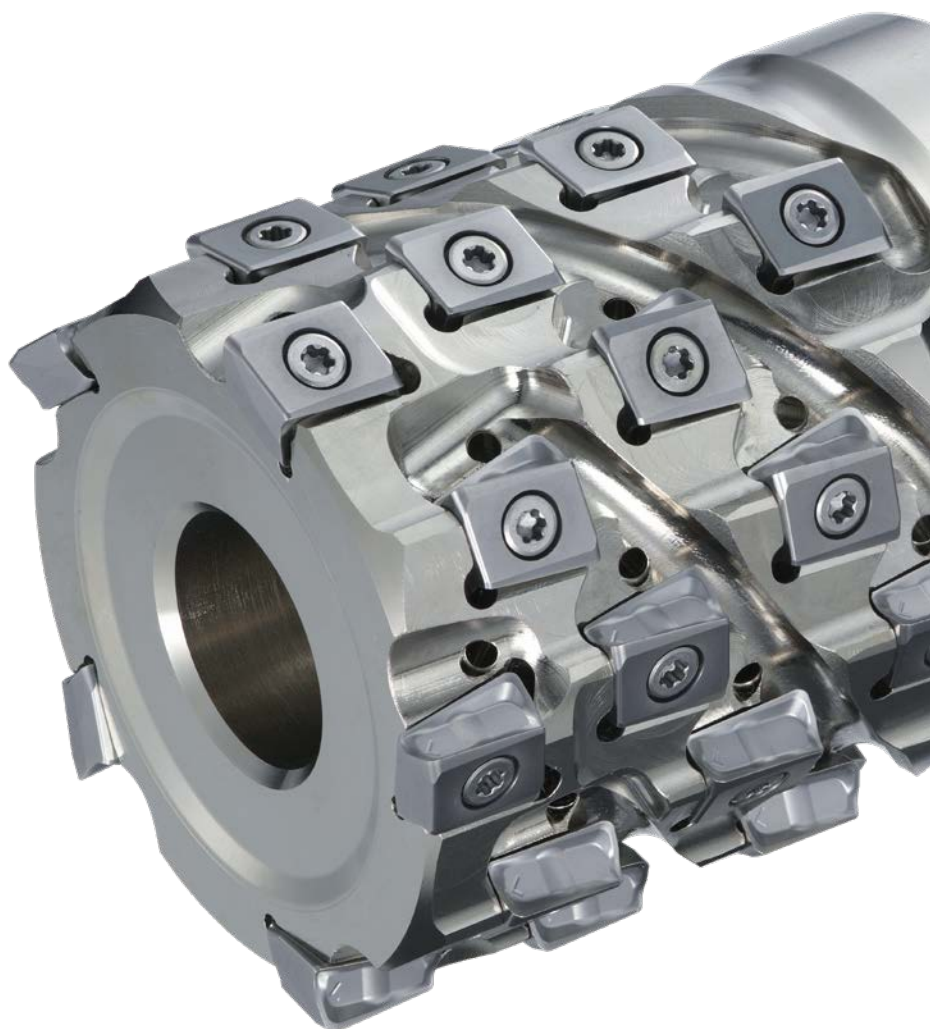
Order number	CBDP	DAH	DCCB	DCSFMS	KWW	LCCB	L8
VPX200-032A02A035R10	18	9	14	37	8.4	8	5.6
VPX200-032A03A035R15	18	9	14	37	8.4	8	5.6
VPX200-040A03A042R18	18	9	14	37	8.4	8	5.6
VPX200-040A04A042R24	18	9	14	37	8.4	8	5.6
VPX200-050A04A042R24	20	11	17	47	10.4	13	6.3
VPX200-050A05A042R30	20	11	17	47	10.4	13	6.3

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SPARE PARTS

Tool holder type	DC			
		Clamp screw	Wrench	Anti-seize lubricant
VPX200	≤63	TPS27F2	TIP07F	MK1KS

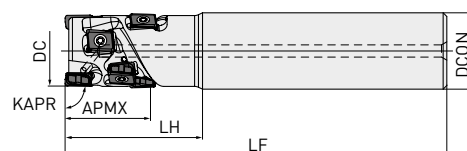
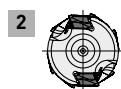
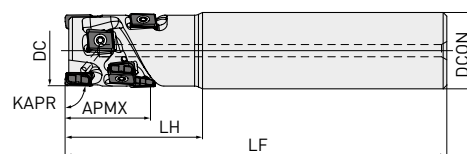
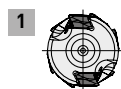
* Clamp torque (N • m): TPS27F2 = 1.0



VPX200



P M K N S



Right hand tool holder only

LONG CUTTING EDGE

CYLINDRICAL SHANK TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	WT	LH	ZNF	ZNP	Type	
SHORT TYPE												
VPX200R202SA20S01404	●	14	20	20	100	1.35°	0.21	30	2	4	1	LOGU09
VPX200R222SA20S01404	●	14	22	20	115	1.16°	0.26	30	2	4	2	
VPX200R252SA25S02106	●	21	25	25	115	0.97°	0.39	35	2	6	1	
VPX200R252SA25S02808	●	28	25	25	125	0.97°	0.41	45	2	8	1	
VPX200R282SA25S02106	★	21	28	25	115	0.84°	0.40	35	2	6	2	
VPX200R282SA25S02808	★	28	28	25	125	0.84°	0.43	45	2	8	2	
VPX200R322SA32S02808	★	28	32	32	125	0.71°	0.68	45	2	8	1	
VPX200R323SA32S02812	●	28	32	32	125	0.71°	0.67	45	3	12	1	
VPX200R322SA32S03510	★	35	32	32	130	0.71°	0.70	50	2	10	1	
VPX200R323SA32S03515	●	35	32	32	130	0.71°	0.68	50	3	15	1	
VPX200R352SA32S02808	★	28	35	32	125	0.63°	0.72	45	2	8	2	
VPX200R353SA32S02812	★	28	35	32	125	0.63°	0.71	45	3	12	2	
VPX200R352SA32S03510	★	35	35	32	130	0.63°	0.74	50	2	10	2	
VPX200R353SA32S03515	★	35	35	32	130	0.63°	0.73	50	3	15	2	
VPX200R403SA32S03515	★	35	40	32	130	0.54°	0.81	50	3	15	2	
VPX200R404SA32S03520	●	35	40	32	130	0.54°	0.80	50	4	20	2	
VPX200R403SA32S04218	★	42	40	32	140	0.54°	0.88	60	3	18	2	
VPX200R404SA32S04224	★	42	40	32	140	0.54°	0.86	60	4	24	2	

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1. The maximum spindle speeds are set to ensure tool and insert stability.
2. When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.
3. Refer to page 32 for chipbreaker and grade recommendations.



SPARE PARTS

Tool holder type	DC	Clamp screw	Wrench	Anti-seize lubricant
VPX200	≤20	TPS27F1	TIP07F	MK1KS
VPX200	>20	TPS27F2		

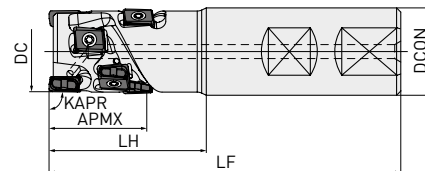
* Clamp torque (N • m): TPS27F1 = 1.0, TPS27F2 = 1.0

● : Inventory maintained. ★ : Inventory maintained in Japan.

VPX200



P M K N S



Right hand tool holder only

LONG CUTTING EDGE

WELDON SHANK TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	WT	Lh	ZNF	ZNP	
SHORT TYPE											
VPX200R202WA20S01404	●	14	20	20	80	1.35°	0.16	30	2	4	LOGU09
VPX200R252WA25S02106	●	21	25	25	91	0.97°	0.29	35	2	6	
VPX200R252WA25S02808	●	28	25	25	101	0.97°	0.32	45	2	8	
VPX200R322WA32S02808	●	28	32	32	105	0.71°	0.55	45	2	8	
VPX200R323WA32S02812	●	28	32	32	105	0.71°	0.54	45	3	12	
VPX200R322WA32S03510	●	35	32	32	110	0.71°	0.57	50	2	10	
VPX200R323WA32S03515	●	35	32	32	110	0.71°	0.55	50	3	15	
											1/1

1. The maximum spindle speeds are set to ensure tool and insert stability.
2. When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.
3. Refer to page 32 for chipbreaker and grade recommendations.



SPARE PARTS

Tool holder type	DC	 *		
		Clamp screw	Wrench	Anti-seize lubricant
VPX200	≤20	TPS27F1	TIP07F	MK1KS
VPX200	>20	TPS27F2		

* Clamp torque (N • m): TPS27F1 = 1.0, TPS27F2 = 1.0

VPX200

INSERTS

P	Steel	●	●		●	✱			●	●	●	
M	Stainless steel	●	●	✱			●		●	●	●	
K	Cast iron				●				●	●	✱	
N	Non-ferrous material											●
S	Heat-resistant alloy, Titanium alloy	●	●	✱			●	✱		●		
H	Hardened steel										●	

Cutting conditions:

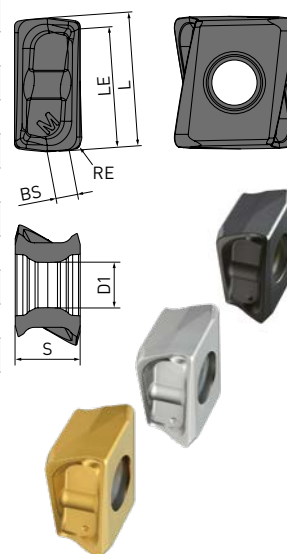
●: Stable cutting ●: General cutting ✱: Unstable cutting

Honing :

E: Round F: Sharp

Order number	Class	Honing	NEW MP1220	NEW MP1230	NEW MP1240	MC5020	MP6120	MP6130	MP7130	MP9130	MP1020	MP1030	VP15TF	TF15	L	RE	LE	S	BS	D1	Geometry
Right hand insert only																					
LOGU0904020PNER-L	G	E	●	●	●	★	★	★	★	★	★	●	★		8.7	0.2	7.6	4.3	1.7	3	
LOGU0904040PNER-L	G	E	●	●	●	●	●	●	●	●	●	●	★		8.7	0.4	7.6	4.3	1.5	3	
LOGU0904080PNER-L	G	E	●	●	●	●	●	●	●	●	●	●	★		8.7	0.8	7.6	4.3	1.2	3	
LOGU0904100PNER-L	G	E	●	●	★	★	★	★	★	★	★	●	★		8.7	1.0	7.6	4.3	1.0	3	
LOGU0904120PNER-L	G	E	★	★	★	★	★	★	★	★	★	●	★		8.7	1.2	7.6	4.3	0.8	3	
LOGU0904160PNER-L	G	E	●	●	●	●	●	●	●	●	●	●	★		8.7	1.6	7.6	4.3	0.5	3	
LOGU0904020PNFR-L	G	F											●		8.7	0.2	7.6	4.3	1.7	3	
LOGU0904040PNFR-L	G	F											●		8.7	0.4	7.6	4.3	1.5	3	
LOGU0904080PNFR-L	G	F											●		8.7	0.8	7.6	4.3	1.2	3	
LOGU0904100PNFR-L	G	F											★		8.7	1.0	7.6	4.3	1.0	3	
LOGU0904120PNFR-L	G	F											★		8.7	1.2	7.6	4.3	0.8	3	
LOGU0904160PNFR-L	G	F											★		8.7	1.6	7.6	4.3	0.5	3	

LOGU0904020PNER-M	G	E	●	●	●	★	★	★	★	★	★	●	★		8.7	0.2	7.6	4.3	1.7	3	
LOGU0904040PNER-M	G	E	●	●	●	●	●	●	●	●	●	●	★		8.7	0.4	7.6	4.3	1.6	3	
LOGU0904080PNER-M	G	E	●	●	●	●	●	●	●	●	●	●	★		8.7	0.8	7.6	4.3	1.2	3	
LOGU0904100PNER-M	G	E	●	●	●	★	★	★	★	★	★	●	★		8.7	1	7.6	4.3	1	3	
LOGU0904120PNER-M	G	E	●	●	●	★	★	★	★	★	★	●	★		8.7	1.2	7.6	4.3	0.9	3	
LOGU0904160PNER-M	G	E	●	●	●	●	●	●	●	●	●	●	★		8.7	1.6	7.6	4.3	0.5	3	
LOGU0904020PNFR-M	G	F											●		8.7	0.2	7.6	4.3	1.7	3	
LOGU0904040PNFR-M	G	F											●		8.7	0.4	7.6	4.3	1.6	3	
LOGU0904080PNFR-M	G	F											●		8.7	0.8	7.6	4.3	1.2	3	
LOGU0904100PNFR-M	G	F											★		8.7	1	7.6	4.3	1	3	
LOGU0904120PNFR-M	G	F											★		8.7	1.2	7.6	4.3	0.9	3	
LOGU0904160PNFR-M	G	F											★		8.7	1.6	7.6	4.3	0.5	3	



VPX200

CHIPBREAKER AND GRADE RECOMMENDATIONS

Material	Properties	Cutting conditions		
			1st recommendation	2nd recommendation
P	Mild steel	≤180HB	● ●	L M
			✱	M L
	Carbon steel	180 – 350HB	●	L M
	Alloy steel	≤350HB	●	M L
	Alloy tool steel		✱	M L
	Pre-hardened steel	35 – 45HRC	● ●	M L
M			✱	M L
	Austenitic stainless steel	≤280HB	● ●	L M
			✱	M L
		>200HB	● ●	L M
			✱	M L
	Duplex stainless steel	≤280HB	● ●	L M
K			✱	M L
	Ferritic and martensitic stainless steel	—	● ●	L M
			✱	M L
	Precipitation hardening stainless steel	<450HB	● ●	L M
			✱	M L
	Gray cast iron	≤350MPa	● ●	M L
N			✱	M L
	Ductile cast iron	≤800MPa	● ●	M L
			✱	M L
	Aluminum alloy	Si<5 %	● ●	L M
			✱	M L
	Titanium alloys (Ti-6Al-4V)	—	● ●	L M
S			✱	M L
	Titanium alloys (Ti-5Al-5V-5Mo-3Cr)	—	● ●	L M
			✱	M L
	Heat resistant alloys	—	● ●	M L
			✱	M L
H	Hardened steel	40 – 55HRC	● ● ✱	M —

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VPX200

RECOMMENDED CUTTING CONDITIONS

WET CUTTING



These cutting conditions are reference for standard shank types (last letter in designation is S) and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter the conditions accordingly.

Chattering and vibration is more likely under the following circumstances: When the tool overhang is long (using a long shank, screw-in type, etc.), the rigidity of the machine, work material or attachment of work material is low, or during the machining of corners during pocket machining. Use cutting conditions at the minum recommendation or below.

CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25 DC	ae≥0.25 – 0.5 DC	ae≥0.5 – 0.75 DC	ae=1.0 DC
P	Mild steel	● ●	MV1020	210 (150 – 290)	200 (140 – 270)	150 (110 – 180)	150 (110 – 180)
		● ● ✖	MP1220	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		● ●	MP6120	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		● ●	MV1030	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		● ● ✖	MP1230	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		● ●	VP15TF	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
		✖	MP6130	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
P	180 – 280HB	● ●	MV1020	180 (140 – 210)	170 (120 – 200)	150 (110 – 180)	150 (110 – 180)
		● ● ✖	MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ●	MV1030	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ✖	MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
	280 – 350HB	● ●	MV1020	140 (110 – 160)	130 (90 – 150)	120 (80 – 140)	120 (80 – 140)
		● ● ✖	MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ●	MV1030	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	120 (80 – 140)
		● ● ✖	MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
	180 – 350HB ≤350HB	● ● ✖	MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ●	MP6120	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ● ✖	MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		● ●	VP15TF	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		✖	MP6130	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
	Pre-hardened steel	● ● ✖	MP1220	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
		● ●	MP6120	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
		● ● ✖	MP1230	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
		● ●	VP15TF	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
		✖	MP6130	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)

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VPX200 – WET CUTTING – CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25 DC	ae≥0.25 – 0.5 DC	ae≥0.5 – 0.75 DC	ae=1.0 DC
M	Austenitic stainless steel	≤200HB	 MP1230	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP1240	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP7130	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 VP15TF	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
		>200HB	 MP1230	100 (80 – 130)	90 (70 – 110)	70 (50 – 100)	70 (50 – 100)
			 MP1240	100 (80 – 130)	90 (70 – 110)	70 (50 – 100)	70 (50 – 100)
			 MP7130	100 (80 – 130)	90 (70 – 110)	70 (50 – 100)	70 (50 – 100)
			 VP15TF	100 (80 – 130)	90 (70 – 110)	70 (50 – 100)	70 (50 – 100)
	Duplex stainless steel	≤280HB	 MP1230	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP1240	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP7130	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 VP15TF	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
	Ferritic and martensitic stainless steel	—	 MP1220	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP1230	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP7130	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 VP15TF	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
	Precipitation hardening stainless steel	<450HB	 MP1230	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 MP1240	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 MP7130	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 VP15TF	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
K	Gray cast iron	≤350MPa	 MC5020	180 (160 – 220)	170 (150 – 210)	150 (130 – 190)	150 (130 – 190)
			 VP15TF	130 (100 – 150)	120 (90 – 140)	100 (80 – 120)	100 (80 – 120)
	Ductile cast iron	≤450MPa	 MV1020	180 (150 – 240)	170 (140 – 230)	150 (130 – 200)	150 (130 – 200)
			 MV1030	130 (80 – 180)	120 (70 – 170)	105 (60 – 150)	105 (60 – 150)
		≤800MPa	 MV1020	160 (130 – 210)	150 (120 – 200)	130 (110 – 170)	130 (110 – 170)
			 MV1030	130 (80 – 180)	120 (70 – 170)	105 (60 – 150)	105 (60 – 150)
			 MC5020	160 (140 – 180)	150 (130 – 170)	130 (110 – 150)	130 (110 – 150)
			 VP15TF	110 (80 – 140)	100 (70 – 130)	80 (60 – 120)	80 (60 – 120)
N	Aluminum alloy	Si<5 %	 TF15	600 (400 – 1000)	600 (400 – 1000)	600 (400 – 1000)	600 (400 – 1000)
S	Titanium alloy (Ti-6Al-4V)	—	 MP1220	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP9120	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP1230	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 VP15TF	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP1230	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP1240	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP9130	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
	Titanium alloy (Ti-5Al-5V-5Mo-3Cr)	—	 MP9120	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1240	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 VP15TF	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9130	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
	Heat resistant alloy	—	 MP1220	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP9120	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 VP15TF	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1240	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9130	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
H	Hardened steel	40 – 55HRC	 VP15TF	90 (70 – 100)	85 (60 – 100)	70 (50 – 80)	70 (50 – 80)

VPX200 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=Ø20 – Ø28		DC=Ø32 – Ø50	
				ap	fz	ap	fz
P	Mild steel	≤180HB	● ● ✱ ≤0.25 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.10 – 0.2]
			● ● ✱ 0.25 – 0.5 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.13 [0.10 – 0.15]
			● ● ✱ 0.5 – 0.75 DC	≤6	0.10 [0.08 – 0.12]	≤14	0.10 [0.08 – 0.12]
			● ● ✱ 1.0 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
	Carbon steel Alloy steel Alloy tool steel	180 – 280HB	● ● ✱ ≤0.25 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.10 – 0.2]
			● ● ✱ 0.25 – 0.5 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.13 [0.10 – 0.15]
			● ● ✱ 0.5 – 0.75 DC	≤6	0.10 [0.08 – 0.12]	≤14	0.10 [0.08 – 0.12]
			● ● ✱ 1.0 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
	Carbon steel Alloy steel Alloy tool steel	280 – 350HB ≤350HB	● ● ✱ ≤0.25 DC	≤14	0.13 [0.1 – 0.15]	≤APMX	0.13 [0.10 – 0.15]
			● ● ✱ 0.25 – 0.5 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤6	0.10 [0.08 – 0.12]	≤14	0.08 [0.06 – 0.10]
			● ● ✱ 1.0 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
	Pre-hardened steel	35 – 45HRC	● ● ✱ ≤0.25 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.13 [0.10 – 0.15]
			● ● ✱ 0.25 – 0.5 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤6	0.10 [0.08 – 0.12]	≤14	0.08 [0.06 – 0.10]
			● ● ✱ 1.0 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
M	Austenitic stainless steel	—	● ● ✱ ≤0.25 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.10 – 0.2]
			✱ 0.25 – 0.5 DC	≤14	0.10 [0.08 – 0.12]	≤APMX	0.12 [0.08 – 0.15]
			● ● ✱ 0.5 – 0.75 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.12 [0.08 – 0.15]
			✱ 1.0 DC	≤8	0.08 [0.06 – 0.10]	≤28	0.10 [0.08 – 0.12]
			● ● ✱ ≤0.25 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.10 [0.08 – 0.12]
			✱ 0.25 – 0.5 DC	≤6	0.07 [0.06 – 0.08]	≤14	0.08 [0.06 – 0.10]
			● ● ✱ 0.5 – 0.75 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤4	0.07 [0.06 – 0.08]	≤4	0.07 [0.06 – 0.08]
	Duplex stainless steel	≤280HB	● ● ✱ ≤0.25 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.10 – 0.2]
			✱ 0.25 – 0.5 DC	≤14	0.10 [0.08 – 0.12]	≤APMX	0.12 [0.08 – 0.15]
			● ● ✱ 0.5 – 0.75 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.12 [0.08 – 0.15]
			✱ 1.0 DC	≤8	0.08 [0.06 – 0.10]	≤28	0.10 [0.08 – 0.12]
			● ● ✱ ≤0.25 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.10 [0.08 – 0.12]
			✱ 0.25 – 0.5 DC	≤6	0.07 [0.06 – 0.08]	≤14	0.08 [0.06 – 0.10]
			● ● ✱ 0.5 – 0.75 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤4	0.07 [0.06 – 0.08]	≤4	0.07 [0.06 – 0.08]
	Ferritic and martensitic stainless steel	—	● ● ✱ ≤0.25 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.10 – 0.20]
			✱ 0.25 – 0.5 DC	≤14	0.10 [0.08 – 0.12]	≤APMX	0.12 [0.08 – 0.15]
			● ● ✱ 0.5 – 0.75 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.12 [0.08 – 0.15]
			✱ 1.0 DC	≤8	0.08 [0.06 – 0.10]	≤28	0.10 [0.08 – 0.12]
			● ● ✱ ≤0.25 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.10 [0.08 – 0.12]
			✱ 0.25 – 0.5 DC	≤6	0.07 [0.06 – 0.08]	≤14	0.08 [0.06 – 0.10]
			● ● ✱ 0.5 – 0.75 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤4	0.07 [0.06 – 0.08]	≤4	0.07 [0.06 – 0.08]
	Precipitation hardening stainless steel	≤450HB	● ● ✱ ≤0.25 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.13 [0.10 – 0.15]
			✱ 0.25 – 0.5 DC	≤14	0.10 [0.08 – 0.12]	≤APMX	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.10 [0.08 – 0.12]
			✱ 1.0 DC	≤8	0.08 [0.06 – 0.10]	≤28	0.10 [0.08 – 0.12]
			● ● ✱ ≤0.25 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.08 [0.06 – 0.10]
			✱ 0.25 – 0.5 DC	≤6	0.07 [0.06 – 0.08]	≤14	0.07 [0.06 – 0.08]
			● ● ✱ 0.5 – 0.75 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤4	0.07 [0.06 – 0.08]	≤4	0.07 [0.06 – 0.08]

VPX200 – DEPTH OF CUT / FEED PER TOOTH

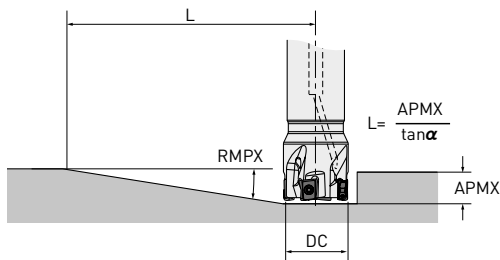
Material	Properties	Cutting conditions	ae	DC=Ø20 – Ø28		DC=Ø32 – Ø50	
				ap	fz	ap	fz
K	Gray cast iron	≤350MPa	● ● ≤0.25 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.1 – 0.2]
			✱ 0.25 – 0.5 DC	≤14	0.10 [0.08 – 0.12]	≤APMX	0.12 [0.08 – 0.15]
			● ● 0.5 – 0.75 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.12 [0.08 – 0.15]
			✱ 1.0 DC	≤8	0.08 [0.06 – 0.10]	≤28	0.10 [0.08 – 0.12]
			● ● ≤0.25 DC	≤6	0.10 [0.08 – 0.12]	≤14	0.10 [0.08 – 0.12]
			✱ 0.25 – 0.5 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.08 [0.06 – 0.10]
			● ● 0.5 – 0.75 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤4	0.07 [0.06 – 0.08]	≤4	0.07 [0.06 – 0.08]
	Ductile cast iron	≤800MPa	● ● ≤0.25 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.10 – 0.20]
			✱ 0.25 – 0.5 DC	≤14	0.10 [0.08 – 0.12]	≤APMX	0.13 [0.10 – 0.15]
			● ● 0.5 – 0.75 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.13 [0.10 – 0.15]
			✱ 1.0 DC	≤8	0.08 [0.06 – 0.10]	≤28	0.10 [0.08 – 0.12]
			● ● ≤0.25 DC	≤6	0.10 [0.08 – 0.12]	≤14	0.10 [0.08 – 0.12]
			✱ 0.25 – 0.5 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.08 [0.06 – 0.10]
			● ● 0.5 – 0.75 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤4	0.07 [0.06 – 0.08]	≤4	0.07 [0.06 – 0.08]
N	Aluminum alloy	Si<5 %	● ● ≤0.25 DC	≤14	0.15 [0.10 – 0.20]	≤APMX	0.18 [0.10 – 0.25]
			✱ 0.25 – 0.5 DC	≤14	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.10 – 0.20]
			● ● 0.5 – 0.75 DC	≤8	0.13 [0.10 – 0.15]	≤28	0.15 [0.10 – 0.20]
			✱ 1.0 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.13 [0.10 – 0.15]
			● ● ≤0.25 DC	≤6	0.10 [0.08 – 0.12]	≤14	0.11 [0.06 – 0.15]
			✱ 0.25 – 0.5 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.11 [0.06 – 0.15]
			● ● 0.5 – 0.75 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.11 [0.06 – 0.15]
			✱ 1.0 DC	≤4	0.07 [0.06 – 0.08]	≤4	0.09 [0.06 – 0.12]
S	Titanium alloy (Ti-6Al-4V)	—	● ● ✱ ≤0.25 DC	≤14	0.12 [0.08 – 0.15]	≤APMX	0.12 [0.08 – 0.15]
			● ● ✱ 0.25 – 0.5 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.08 [0.06 – 0.10]
			● ● ✱ 1.0 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
	Titanium alloy (Ti-5Al-5V-5Mo-3Cr)	—	● ● ✱ ≤0.25 DC	≤14	0.10 [0.08 – 0.12]	≤APMX	0.10 [0.08 – 0.12]
			● ● ✱ 0.25 – 0.5 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.08 [0.06 – 0.10]
			● ● ✱ 1.0 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]
	Heat resistant alloy	—	● ● ✱ ≤0.25 DC	≤14	0.10 [0.08 – 0.12]	≤APMX	0.10 [0.08 – 0.12]
			● ● ✱ 0.25 – 0.5 DC	≤8	0.10 [0.08 – 0.12]	≤28	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤6	0.08 [0.06 – 0.10]	≤14	0.08 [0.06 – 0.10]
			● ● ✱ 1.0 DC	≤4	0.08 [0.06 – 0.10]	≤4	0.08 [0.06 – 0.10]

VPX200

RAMPING/HELICAL MILLING

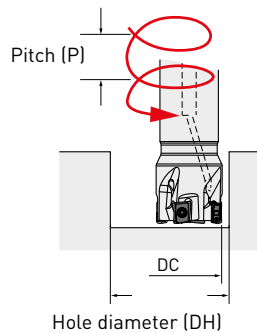
1 Ramping

Refer to the table below for cutting conditions. For feed per tooth and cutting speed, follow the cutting conditions for slot milling.

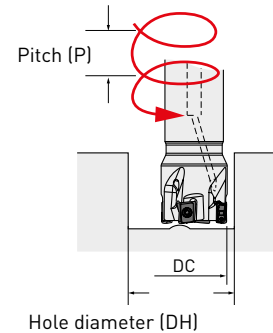


2 Helical milling

2.1 Blind holes, flat bottom



2.2 Through holes



DC	RE	1		2.1				2.2	
		RMPX	L *	DH max.	P max.	DH min	P max.	DH min	P max.
16	0.2	1.85°	248	31	1.5	27.5	1.2	24.2	0.8
	0.4	1.85°	248	30.6	1.5	27.5	1.2	24.2	0.8
	0.8	1.85°	248	29.8	1.4	27.5	1.2	24.2	0.8
	1	1.85°	248	29.4	1.4	27.5	1.2	24.2	0.8
	1.2	1.85°	248	29	1.3	27.5	1.2	24.2	0.8
	1.6	1.85°	248	28.2	1.2	27.5	1.2	24.2	0.8
18	0.2	1.56°	294	35	1.5	31.5	1.2	28.1	0.9
	0.4	1.56°	294	34.6	1.4	31.5	1.2	28.1	0.9
	0.8	1.56°	294	33.8	1.4	31.5	1.2	28.1	0.9
	1	1.56°	294	33.4	1.3	31.5	1.2	28.1	0.9
	1.2	1.56°	294	33	1.3	31.5	1.2	28.1	0.9
	1.6	1.56°	294	32.2	1.2	31.5	1.2	28.1	0.9
20	0.2	1.35°	340	39	1.4	35.5	1.1	32	0.9
	0.4	1.35°	340	38.6	1.4	35.5	1.1	32	0.9
	0.8	1.35°	340	37.8	1.3	35.5	1.1	32	0.9
	1	1.35°	340	37.4	1.3	35.5	1.1	32	0.9
	1.2	1.35°	340	37	1.3	35.5	1.1	32	0.9
	1.6	1.35°	340	36.2	1.2	35.5	1.1	32	0.9
22	0.2	1.16°	396	43	1.3	39.5	1.1	36	0.9
	0.4	1.16°	396	42.6	1.3	39.5	1.1	36	0.9
	0.8	1.16°	396	41.8	1.3	39.5	1.1	36	0.9
	1	1.16°	396	41.4	1.2	39.5	1.1	36	0.9
	1.2	1.16°	396	41	1.2	39.5	1.1	36	0.9
	1.6	1.16°	396	40.2	1.2	39.5	1.1	36	0.9
25	0.2	0.97°	473	49	1.3	45.5	1.1	42	0.9
	0.4	0.97°	473	48.6	1.3	45.5	1.1	42	0.9
	0.8	0.97°	473	47.8	1.2	45.5	1.1	42	0.9
	1	0.97°	473	47.4	1.2	45.5	1.1	42	0.9
	1.2	0.97°	473	47	1.2	45.5	1.1	42	0.9
	1.6	0.97°	473	46.2	1.1	45.5	1.1	42	0.9

VPX200 – RAMPING/HELICAL MILLING

DC	RE	1		2.1				2.2	
		RMPX	L *	DH max.	P max.	DH min	P max.	DH min	P max.
28	0.2	0.84°	546	55	1.2	51.5	1.1	48	0.9
	0.4	0.84°	546	54.6	1.2	51.5	1.1	48	0.9
	0.8	0.84°	546	53.8	1.2	51.5	1.1	48	0.9
	1	0.84°	546	53.4	1.2	51.5	1.1	48	0.9
	1.2	0.84°	546	53	1.2	51.5	1.1	48	0.9
	1.6	0.84°	546	52.2	1.1	51.5	1.1	48	0.9
30	0.2	0.77°	596	59	1.2	55.5	1.1	52	0.9
	0.4	0.77°	596	58.6	1.2	55.5	1.1	52	0.9
	0.8	0.77°	596	57.8	1.2	55.5	1.1	52	0.9
	1	0.77°	596	57.4	1.2	55.5	1.1	52	0.9
	1.2	0.77°	596	57	1.1	55.5	1.1	52	0.9
	1.6	0.77°	596	56.2	1.1	55.5	1.1	52	0.9
32	0.2	0.71°	646	62.8	1.2	59.4	1.1	56	0.9
	0.4	0.71°	646	62.4	1.2	59.4	1.1	56	0.9
	0.8	0.71°	646	61.6	1.2	59.4	1.1	56	0.9
	1	0.71°	646	61.2	1.1	59.4	1.1	56	0.9
	1.2	0.71°	646	60.8	1.1	59.4	1.1	56	0.9
	1.6	0.71°	646	60	1.1	59.4	1.1	56	0.9
35	0.2	0.63°	728	69	1.2	65.5	1.1	62	0.9
	0.4	0.63°	728	68.6	1.2	65.5	1.1	62	0.9
	0.8	0.63°	728	67.8	1.1	65.5	1.1	62	0.9
	1	0.63°	728	67.4	1.1	65.5	1.1	62	0.9
	1.2	0.63°	728	67	1.1	65.5	1.1	62	0.9
	1.6	0.63°	728	66.2	1.1	65.5	1.1	62	0.9
40	0.2	0.54°	849	78.8	1.2	75.4	1	72	0.9
	0.4	0.54°	849	78.4	1.1	75.4	1	72	0.9
	0.8	0.54°	849	77.6	1.1	75.4	1	72	0.9
	1	0.54°	849	77.2	1.1	75.4	1	72	0.9
	1.2	0.54°	849	76.8	1.1	75.4	1	72	0.9
	1.6	0.54°	849	76	1.1	75.4	1	72	0.9
50	0.2	0.42°	1092	98.8	1.1	95.4	1	92	1
	0.4	0.42°	1092	98.4	1.1	95.4	1	92	1
	0.8	0.42°	1092	97.6	1.1	95.4	1	92	1
	1	0.42°	1092	97.2	1.1	95.4	1	92	1
	1.2	0.42°	1092	96.8	1.1	95.4	1	92	1
	1.6	0.42°	1092	96	1.1	95.4	1	92	1
63	0.2	0.32°	1433	124.8	1.1	121.4	1	118	1
	0.4	0.32°	1433	124.4	1.1	121.4	1	118	1
	0.8	0.32°	1433	123.6	1.1	121.4	1	118	1
	1	0.32°	1433	123.2	1.1	121.4	1	118	1
	1.2	0.32°	1433	122.8	1.1	121.4	1	118	1
	1.6	0.32°	1433	122	1	121.4	1	118	1

2/2

* Shows the distance until a maximum depth of cut of 8 mm is achieved at the maximum ramping angle $L (= 8 / \tan \alpha)$.
 1. When machining a highly ductile work material with the ramping angles in the table above, chips may be elongated.

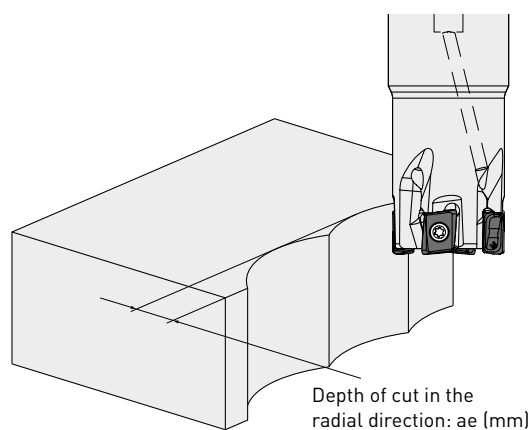
VPX200

RECOMMENDED CUTTING CONDITIONS FOR PLUNGING AND DRILLING

Follow the cutting conditions for slot milling for the feed per tooth and cutting speed.

PLUNGING

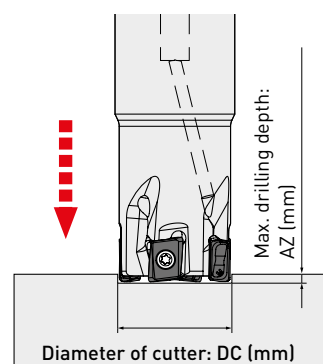
DC	ae max.
16	3.9
18	3.9
20	3.9
22	4
25	4
28	4
30	4
32	4
35	4
40	4
50	4
63	4



1. No step feed necessary.

DRILLING

DC	AZ max.
16	0.3
18	0.3
20	0.3
22	0.3
25	0.3
28	0.3
30	0.3
32	0.3
35	0.3
40	0.3
50	0.3
63	0.3



1. Exercise due caution as chips scatter easily.
2. Use compressed air to eliminate chips (or coolant when machining aluminum alloys).

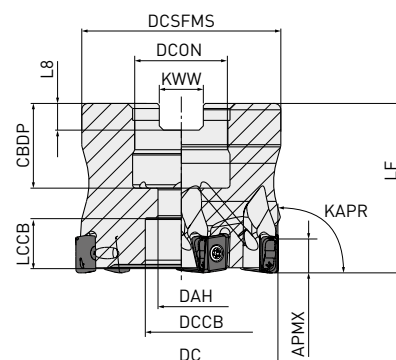
VPX300



P M K N S H



GAMP : -6° T : $+5^\circ$
GAMF : -22.5° I : $+5^\circ$



Right hand tool holder only

DC	Set bolt	Geometry
Ø40	HSC08025H	
Ø50, Ø63	HSC10030H	
Ø80	HSC12035H	

ARBOR TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	WT	RPMX	ZNF	 LOGU12
VPX300-040A03AR	●	11	40	16	40	1.06°	0.21	17900	3	
VPX300-040A04AR	●	11	40	16	40	1.06°	0.21	17900	4	
VPX300-050A04AR	●	11	50	22	40	0.79°	0.34	15500	4	
VPX300-050A06AR	●	11	50	22	40	0.79°	0.33	15500	6	
VPX300-063A06AR	●	11	63	22	40	0.60°	0.61	13400	6	
VPX300-063A08AR	●	11	63	22	40	0.60°	0.62	13400	8	
VPX300-080A07AR	●	11	80	27	50	0.45°	0.99	11500	7	
VPX300-080A10AR	●	11	80	27	50	0.45°	0.99	11500	10	

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1. The maximum spindle speeds are set to ensure tool and insert stability.
2. When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.



VPX 300 – ARBOR TYPE**MOUNTING DIMENSIONS**

Order number	CBDP	DAH	DCCB	DCSFMS	KWW	LCCB	L8
VPX300-040A03AR	18	9	14	37	8.4	12.4	5.6
VPX300-040A04AR	18	9	14	37	8.4	12.4	5.6
VPX300-050A04AR	20	11	17	47	10.4	10.4	6.3
VPX300-050A06AR	20	11	17	47	10.4	10.4	6.3
VPX300-063A06AR	20	11	17	60	10.4	10.4	6.3
VPX300-063A08AR	20	11	17	60	10.4	10.4	6.3
VPX300-080A07AR	23	13	20	56	12.4	13.4	7
VPX300-080A10AR	23	13	20	56	12.4	13.4	7

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SPARE PARTS

Tool holder type	DC			
		Clamp screw	Wrench	Anti-seize lubricant
VPX300	≤80	TPS40F1	TIP15W	MK1KS

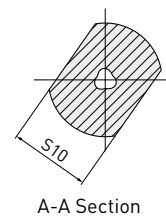
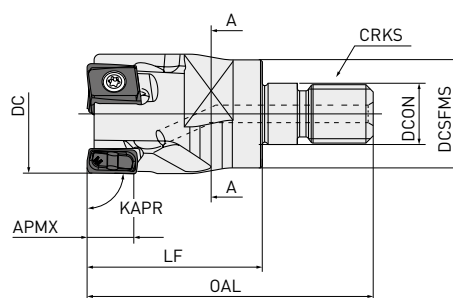
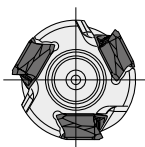
* Clamp torque (N • m): TPS40F1 = 3.0



VPX300



P M K N S H



Right hand tool holder only

SCREW-IN TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	WT	ZNF	
VPX300R2502AM1235	●	11	25	12.5	35	2.13°	0.10	2	LOGU12
VPX300R2802AM1235	★	11	28	12.5	35	1.77°	0.12	2	
VPX300R3202AM1640	●	11	32	17	40	1.47°	0.20	2	
VPX300R3203AM1640	●	11	32	17	40	1.47°	0.19	3	
VPX300R3502AM1640	★	11	35	17	40	1.28°	0.22	2	
VPX300R3503AM1640	★	11	35	17	40	1.28°	0.22	3	
VPX300R4003AM1640	●	11	40	17	40	1.06°	0.26	3	
VPX300R4004AM1640	●	11	40	17	40	1.06°	0.26	4	

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MOUNTING DIMENSIONS

Order number	CRKS	S10	DCSFMS	OAL
VPX300R2502AM1235	M12	19	23.5	57
VPX300R2802AM1235	M12	19	23.5	57
VPX300R3202AM1640	M16	24	28.5	63
VPX300R3203AM1640	M16	24	28.5	63
VPX300R3502AM1640	M16	24	28.5	63
VPX300R3503AM1640	M16	24	28.5	63
VPX300R4003AM1640	M16	24	28.5	63
VPX300R4004AM1640	M16	24	28.5	63

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SPARE PARTS

Tool holder type	DC			
		Clamp screw	Wrench	Anti-seize lubricant
VPX300R25	≤50	TPS40F1	TIP15W	MK1KS

* Clamp torque (N • m): TPS40F1 = 3.0

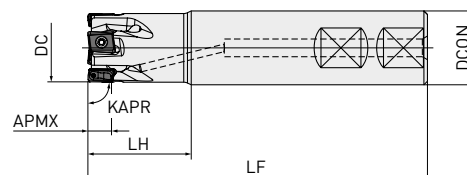
VPX300



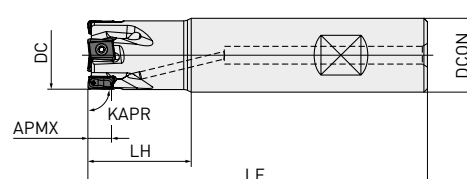
P M K N S H



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Right hand tool holder only

CYLINDRICAL SHANK TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	RPMX	WT	LH	ZNF	Type	
SHORT TYPE												
VPX300R2502SA25S	●	11	25	25	115	2.13°	24100	0.38	35	2	1	LOGU12
VPX300R2802SA25S	★	11	28	25	115	1.77°	22500	0.40	35	2	2	
VPX300R3002SA25S	★	11	30	25	125	1.61°	21500	0.45	35	2	2	
VPX300R3003SA25S	★	11	30	25	125	1.61°	21500	0.44	35	3	2	
VPX300R3202SA32S	●	11	32	32	125	1.47°	20600	0.69	45	2	1	
VPX300R3203SA32S	●	11	32	32	125	1.47°	20600	0.68	45	3	1	
VPX300R4003SA32S	●	11	40	32	125	1.06°	17900	0.76	45	3	2	
VPX300R4004SA32S	●	11	40	32	125	1.06°	17900	0.76	45	4	2	
VPX300R5004SA32S	★	11	50	32	125	0.79°	15500	0.89	45	4	2	
VPX300R5006SA32S	★	11	50	32	125	0.79°	15500	0.88	45	6	2	
LONG TYPE												
VPX300R2502SA25L	●	11	25	25	170	2.13°	24100	0.56	70	2	1	LOGU12
VPX300R2802SA25L	★	11	28	25	170	1.77°	22500	0.60	35	2	2	
VPX300R3203SA32L	●	11	32	32	190	1.47°	20600	1.04	90	3	1	
VPX300R3503SA32L	★	11	35	32	190	1.28°	19500	1.10	45	3	2	

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1. The maximum spindle speeds are set to ensure tool and insert stability.

2. When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.



SPARE PARTS

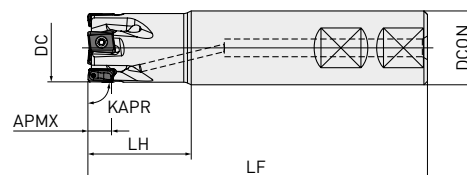
Tool holder type	DC			
		Clamp screw	Wrench	Anti-seize lubricant
VPX300R25	≤50	TPS40F1	TIP15W	MK1KS

* Clamp torque (N • m): TPS40F1 = 3.0

VPX300



P M K N S H



Right hand tool holder only

WELDON SHANK TYPE

Order number	Stock	APMX	DC	DCON	LF	LH	RMPX	RPMX	WT	ZNF	
SHORT TYPE											
VPX300R2502WA25S	●	11	25	25	91	35	2.13°	24100	0.29	2	LOGU12
VPX300R3202WA32S	●	11	32	32	105	45	1.47°	20600	0.56	2	
VPX300R3203WA32S	●	11	32	32	105	45	1.47°	20600	0.55	3	
											1/1

1. The maximum spindle speeds are set to ensure tool and insert stability.
2. When using the tool at high spindle speeds, ensure that the tool and arbor are correctly balanced.



SPARE PARTS

Tool holder type	DC			
		Clamp screw	Wrench	Anti-seize lubricant
VPX300R25	≤50	TPS40F1	TIP15W	MK1KS

* Clamp torque [N • m]: TPS40F1 = 3.0

VPX300

INSERTS

P	Steel	●	●			●	✱			●	●	●
M	Stainless steel	●	●	✱				●		●	●	●
K	Cast iron				●					●	●	✱
N	Non-ferrous material											●
S	Heat-resistant alloy, Titanium alloy	●	●	✱				●	✱		●	
H	Hardened steel										●	

Cutting conditions:

●: Stable cutting ●: General cutting ✱: Unstable cutting

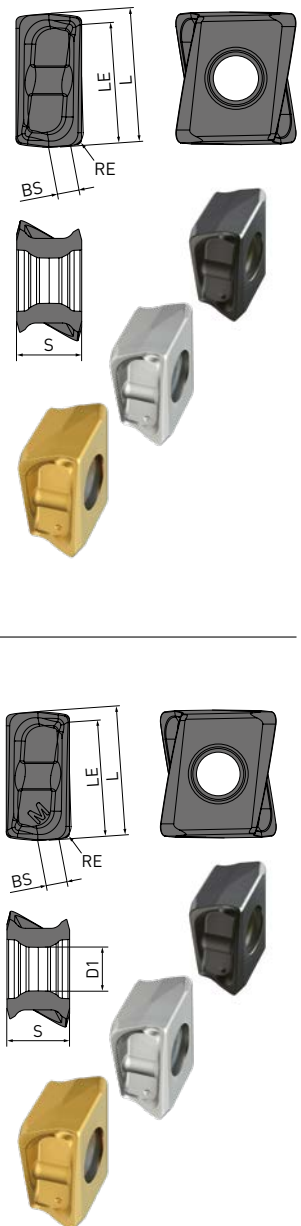
Honing :

E: Round F: Sharp

Order number	Class	Honing	NEW MP1220	NEW MP1230	NEW MP1240	MC5020	MP6120	MP6130	MP7130	MP9120	MP9130	MV1020	MV1030	VP15TF	TF15	L	RE	LE	S	BS	D1
LOGU1207020PNER-L	G	E	★	★	★	★	★	★	★	★	★	●	●	★		12.4	0.2	11.3	7.0	3.0	4.4
LOGU1207040PNER-L	G	E	●	●	★	●	●	●	●	●	●	●	●	★		12.4	0.4	11.3	7.0	2.8	4.4
LOGU1207080PNER-L	G	E	●	●	●	●	●	●	●	●	●	●	●	★		12.4	0.8	11.3	7.0	2.6	4.4
LOGU1207100PNER-L	G	E	★	★	★	★	★	★	★	★	★	●	●	★		12.4	1	11.3	7.0	2.5	4.4
LOGU1207120PNER-L	G	E	★	●	★	●	●	●	●	●	●	●	●	★		12.4	1.2	11.3	7.0	2.4	4.4
LOGU1207160PNER-L	G	E	★	★	★	●	●	●	●	●	●	●	●	★		12.4	1.6	11.3	7.0	1.8	4.4
LOGU1207200PNER-L	G	E	★	●	●	●	●	●	●	●	●	●	●	★		12.4	2	11.3	7.0	1.4	4.4
LOGU1207240PNER-L	G	E	★	★	★	●	●	●	●	●	●	●	●	★		12.4	2.4	11.3	7.0	1.2	4.4
LOGU1207300PNER-L	G	E	★	★	★	★	★	★	★	★	★	●	●	★		12.4	3	11.3	7.0	0.6	4.4
LOGU1207320PNER-L	G	E	★	★	★	●	●	●	●	●	●	●	●	★		12.4	3.2	11.3	7.0	0.4	4.4
LOGU1207020PNFR-L	G	F	●	●	★									★		12.4	0.2	11.3	7.0	3.0	4.4
LOGU1207040PNFR-L	G	F	●	●	●									●		12.4	0.4	11.3	7.0	2.8	4.4
LOGU1207080PNFR-L	G	F	●	●	●									●		12.4	0.8	11.3	7.0	2.6	4.4
LOGU1207100PNFR-L	G	F	●	●	●									★		12.4	1	11.3	7.0	2.5	4.4
LOGU1207120PNFR-L	G	F	●	●	●									●		12.4	1.2	11.3	7.0	2.4	4.4
LOGU1207160PNFR-L	G	F	★	●	●									●		12.4	1.6	11.3	7.0	1.8	4.4
LOGU1207200PNFR-L	G	F	●	●	●									●		12.4	2	11.3	7.0	1.4	4.4
LOGU1207240PNFR-L	G	F	●	●	★									●		12.4	2.4	11.3	7.0	1.2	4.4
LOGU1207300PNFR-L	G	F	●	●	★									★		12.4	3	11.3	7.0	0.6	4.4
LOGU1207320PNFR-L	G	F	●	●	●									●		12.4	3.2	11.3	7.0	0.4	4.4
LOGU1207020PNER-M	G	E				★	★	★	★	★	●	●	★			12.4	0.2	11.3	7.0	3.0	4.4
LOGU1207040PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	0.4	11.3	7.0	2.8	4.4
LOGU1207080PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	0.8	11.3	7.0	2.4	4.4
LOGU1207100PNER-M	G	E				★	★	★	★	★	●	●	★			12.4	1.0	11.3	7.0	2.3	4.4
LOGU1207120PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	1.2	11.3	7.0	2.1	4.4
LOGU1207160PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	1.6	11.3	7.0	1.7	4.4
LOGU1207200PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	2.0	11.3	7.0	1.4	4.4
LOGU1207240PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	2.4	11.3	7.0	1.0	4.4
LOGU1207300PNER-M	G	E				★	★	★	★	★	●	●	★			12.4	3.0	11.3	7.0	0.5	4.4
LOGU1207320PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	3.2	11.3	7.0	0.3	4.4
LOGU1207020PNFR-M	G	F												★		12.4	0.2	11.3	7.0	3.0	4.4
LOGU1207040PNFR-M	G	F												●		12.4	0.4	11.3	7.0	2.8	4.4
LOGU1207080PNFR-M	G	F												●		12.4	0.8	11.3	7.0	2.4	4.4
LOGU1207100PNFR-M	G	F												★		12.4	1.0	11.3	7.0	2.3	4.4
LOGU1207120PNFR-M	G	F												●		12.4	1.2	11.3	7.0	2.1	4.4
LOGU1207160PNFR-M	G	F												●		12.4	1.6	11.3	7.0	1.7	4.4
LOGU1207200PNFR-M	G	F												●		12.4	2.0	11.3	7.0	1.4	4.4
LOGU1207240PNFR-M	G	F												●		12.4	2.4	11.3	7.0	1.0	4.4
LOGU1207300PNFR-M	G	F												★		12.4	3.0	11.3	7.0	0.5	4.4
LOGU1207320PNFR-M	G	F												●		12.4	3.2	11.3	7.0	0.3	4.4

Geometry

Right hand insert only



VPX300

CHIPBREAKER AND GRADE RECOMMENDATIONS

Material	Properties	Cutting conditions		
			1st recommendation	2nd recommendation
P	Mild steel	≤180HB	● ●	L M
			✱	M L
	Carbon steel	180 – 350HB	●	L M
	Alloy steel	≤350HB	●	M L
	Alloy tool steel		✱	M L
	Pre-hardened steel	35 – 45HRC	● ●	M L
M			✱	M L
	Austenitic stainless steel	≤280HB	● ●	L M
			✱	M L
		>200HB	● ●	L M
			✱	M L
	Duplex stainless steel	≤280HB	● ●	L M
K			✱	M L
	Ferritic and martensitic stainless steel	—	● ●	L M
			✱	M L
	Precipitation hardening stainless steel	<450HB	● ●	L M
			✱	M L
	Gray cast iron	≤350MPa	● ●	M L
N			✱	M L
	Ductile cast iron	≤800MPa	● ●	M L
			✱	M L
	Aluminum alloy	Si<5 %	● ●	L M
			✱	M L
	Titanium alloys (Ti-6Al-4V)	—	● ●	L M
S			✱	M L
	Titanium alloys (Ti-5Al-5V-5Mo-3Cr)	—	● ●	L M
			✱	M L
	Heat resistant alloys	—	● ●	M L
			✱	M L
H	Hardened steel	40 – 55HRC	● ● ✱	M —

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VPX300

RECOMMENDED CUTTING CONDITIONS

DRY CUTTING



These cutting conditions are reference for standard shank types (last letter in designation is S) and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter the conditions accordingly.

Chattering and vibration is more likely under the following circumstances: When the tool overhang is long (using a long shank, screw-in type, etc.), the rigidity of the machine, work material or attachment of work material is low, or during the machining of corners during pocket machining. Use cutting conditions at the minimum recommendation or below.

CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc				
				ae<0.25x DC	ae≥0.25–0.5 DC	ae≥0.5–0.75 DC	ae=1.0 DC	
P	Mild steel	≤180HB	 	MV1020	280 (220 – 330)	270 (210 – 320)	220 (170 – 260)	220 (170 – 260)
			 	MP1220	230 (180 – 270)	220 (170 – 260)	180 (140 – 210)	180 (140 – 210)
			 	MP6120	230 (180 – 270)	220 (170 – 260)	180 (140 – 210)	180 (140 – 210)
			 	MV1030	230 (180 – 270)	220 (170 – 260)	180 (140 – 210)	180 (140 – 210)
			 	VP15TF	230 (180 – 270)	220 (170 – 260)	180 (140 – 210)	180 (140 – 210)
				MP1230	200 (150 – 240)	190 (170 – 260)	150 (110 – 180)	150 (110 – 180)
	Carbon steel Alloy steel Alloy tool steel	180 – 280HB	 	MV1020	220 (170 – 260)	210 (160 – 240)	170 (130 – 200)	170 (130 – 200)
			 	MP1220	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	170 (130 – 200)
			 	MV1030	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	170 (130 – 200)
				MP1230	150 (110 – 180)	140 (100 – 170)	110 (80 – 130)	110 (80 – 130)
		280 – 350HB	 	MV1020	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			 	MP1220	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			 	MV1030	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
				MP1230	150 (110 – 180)	140 (100 – 170)	110 (80 – 130)	110 (80 – 130)
		180 – 350HB <350HB	 	MP1220	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 180)
			 	MP6120	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 160)
			 	VP15TF	180 (140 – 210)	170 (130 – 200)	140 (110 – 160)	140 (110 – 180)
				MP1230	150 (110 – 180)	140 (100 – 170)	110 (80 – 130)	110 (80 – 130)
Pre-hardened steel	35 – 45HRC		MP6130	150 (110 – 180)	140 (100 – 170)	110 (80 – 130)	110 (80 – 130)	
		 	MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)	
			MP6120	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)	
		 	VP15TF	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)	
			MP1230	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)	
			MP6130	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)	

VPX300 – DRY CUTTING – CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25x DC	ae≥0.25–0.5 DC	ae≥0.5–0.75 DC	ae=1.0 DC
K	Austenitic stainless steel	● ● ✱	MV1030	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP1230	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP1240	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP7130	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ●	VP15TF	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ●	MV1030	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
		● ● ✱	MP1230	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
		● ● ✱	MP1240	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
		● ● ✱	MP7130	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
		● ●	VP15TF	150 [110 – 180]	140 [100 – 160]	110 [80 – 130]	110 [80 – 130]
	Duplex stainless steel	● ● ✱	MP1230	140 [110 – 170]	130 [90 – 150]	100 [70 – 120]	100 [70 – 120]
		● ● ✱	MP1240	140 [110 – 170]	130 [90 – 150]	100 [70 – 120]	100 [70 – 120]
		● ● ✱	MP7130	140 [110 – 170]	130 [90 – 150]	100 [70 – 120]	100 [70 – 120]
		● ●	VP15TF	140 [110 – 170]	130 [90 – 150]	100 [70 – 120]	100 [70 – 120]
	Ferritic and martensitic stainless steel	● ● ✱	MP1220	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP1230	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ● ✱	MP7130	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
		● ●	VP15TF	180 [140 – 210]	170 [130 – 200]	140 [110 – 160]	140 [110 – 160]
	Precipitation hardening stainless steel	● ● ✱	MP1230	130 [100 – 160]	120 [80 – 140]	90 [60 – 110]	90 [60 – 110]
		● ● ✱	MP1240	130 [100 – 160]	120 [80 – 140]	90 [60 – 110]	90 [60 – 110]
		● ● ✱	MP7130	130 [100 – 160]	120 [80 – 140]	90 [60 – 110]	90 [60 – 110]
		● ●	VP15TF	130 [100 – 160]	120 [80 – 140]	90 [60 – 110]	90 [60 – 110]
K	Gray cast iron	● ●	MC5020	250 [200 – 300]	240 [190 – 290]	210 [160 – 260]	140 [110 – 160]
		● ● ✱	VP15TF	200 [150 – 250]	190 [140 – 240]	160 [110 – 210]	160 [110 – 210]
	Ductile cast iron	● ●	MV1020	200 [150 – 280]	190 [140 – 270]	170 [130 – 240]	170 [130 – 240]
		● ●	MV1030	150 [100 – 200]	140 [90 – 190]	125 [80 – 170]	100 [80 – 120]
		● ●	MV1020	180 [140 – 250]	170 [130 – 240]	150 [120 – 210]	150 [120 – 210]
		● ●	MV1030	150 [100 – 200]	140 [90 – 190]	125 [80 – 170]	150 [120 – 210]
		● ●	MC5020	180 [150 – 200]	170 [140 – 190]	150 [120 – 170]	150 [120 – 170]
		● ● ✱	VP15TF	130 [100 – 150]	120 [90 – 140]	100 [80 – 120]	100 [80 – 120]
N	Aluminum alloy	● ● ✱	TF15	600 [400 – 1000]	600 [400 – 1000]	600 [400 – 1000]	600 [400 – 1000]
H	Hardened steel	● ● ✱	VP15TF	90 [70 – 100]	85 [60 – 100]	70 [50 – 80]	70 [50 – 80]

VPX300 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=Ø25		DC=Ø28-Ø80	
				ap	fz	ap	fz
P	Mild steel	≤180HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.3
			● ● ✱ 0.25 – 0.5 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.25
			● ● ✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.1 – 0.2
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.15
	Carbon steel Alloy steel Alloy tool steel	180–280HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.3
			● ● ✱ 0.25 – 0.5 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.25
			● ● ✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.1 – 0.2
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.15
	Carbon steel Alloy steel Alloy tool steel	280–350HB ≤350HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.25
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.1 – 0.2
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.1 – 0.15
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.12
	Pre-hardened steel	35–45HRC	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.25
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.1 – 0.2
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.1 – 0.15
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.12
M	Austenitic stainless steel	—	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			✱ ≤0.25 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.08
	Duplex stainless steel	≤280HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			✱ ≤0.25 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.08
	Ferritic and martensitic stainless steel	—	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			✱ ≤0.25 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.08
	Precipitation hardening stainless steel	<450HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.15
			✱ ≤0.25 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.06 – 0.1
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.08	≤8	0.06 – 0.08
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.08

VPX300 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=Ø25		DC=Ø28-Ø80	
				ap	fz	ap	fz
K	Gray cast iron	≤350MPa	● ● ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.3
			✱ ≤0.25 DC	≤11	0.08 – 0.15	≤11	0.1 – 0.25
			● ● 0.25 – 0.5 DC	≤11	0.08 – 0.15	≤11	0.1 – 0.25
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.1 – 0.2
			● ● 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.1 – 0.2
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.08 – 0.15
			● ● 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.15
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.08 – 0.12
	Ductile cast iron	≤800MPa	● ● ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.25
			✱ ≤0.25 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.2
			● ● 0.25 – 0.5 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.2
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.1 – 0.15
			● ● 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.1 – 0.15
			✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			● ● 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.12
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.1
N	Aluminum alloy	Si<5 %	● ● ≤0.25 DC	≤11	0.1 – 0.25	≤11	0.1 – 0.25
			✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			● ● 0.25 – 0.5 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			✱ 0.25 – 0.5 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.15
			● ● 0.5 – 0.75 DC	≤8	0.06 – 0.15	≤8	0.08 – 0.15
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.15	≤8	0.08 – 0.15
			● ● 1.0 DC	≤5	0.06 – 0.15	≤5	0.08 – 0.15
			✱ 1.0 DC	≤5	0.06 – 0.15	≤5	0.08 – 0.12
H	Hardened steel	40-55HRC	● ● ≤0.25 DC	≤5	0.08 – 0.15	≤5	0.08 – 0.15
			✱ ≤0.25 DC	≤5	0.08 – 0.12	≤5	0.08 – 0.12
			● ● 0.25 – 0.5 DC	≤4	0.08 – 0.12	≤4	0.08 – 0.12
			✱ 0.25 – 0.5 DC	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			● ● 0.5 – 0.75 DC	≤3	0.06 – 0.1	≤3	0.06 – 0.1
			✱ 0.5 – 0.75 DC	≤3	0.06 – 0.08	≤3	0.06 – 0.08
			● ● 1.0 DC	≤2	0.06 – 0.1	≤2	0.06 – 0.1
			✱ 1.0 DC	≤2	0.06 – 0.08	≤2	0.06 – 0.08

VPX300

RECOMMENDED CUTTING CONDITIONS

WET CUTTING



These cutting conditions are reference for standard shank types (last letter in designation is S) and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter the conditions accordingly.

Chattering and vibration is more likely under the following circumstances: When the tool overhang is long (using a long shank, screw-in type, etc.), the rigidity of the machine, work material or attachment of work material is low, or during the machining of corners during pocket machining. Use cutting conditions at the minimum recommendation or below.

CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25 DC	ae≥0.25–0.5 DC	ae≥0.5–0.75 DC	ae=1.0 DC
P	Mild steel	≤180HB	● ● MV1020	210 (150 – 290)	200 (140 – 270)	150 (110 – 180)	150 (110 – 180)
			● ● ✱ MP1220	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			● ● MP6120	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			● ● MV1030	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			● ● ✱ MP1230	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			● ● VP15TF	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			● ✱ MP6130	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
	Carbon steel Alloy steel Alloy tool steel	180 – 280HB	● ● MV1020	180 (140 – 210)	170 (120 – 200)	150 (110 – 180)	150 (110 – 180)
			● ● ✱ MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			● ● MV1030	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			● ● ✱ MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		280 – 350HB	● ● MV1020	140 (110 – 160)	130 (90 – 150)	120 (80 – 140)	120 (80 – 140)
			● ● ✱ MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			● ● MV1030	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	120 (80 – 140)
			● ● ✱ MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		180 – 350HB ≤350HB	● ● ✱ MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			● ● MP6120	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			● ● ✱ MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			● ● VP15TF	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			● ✱ MP6130	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
	Pre-hardened steel	35 – 45HRC	● ● ✱ MP1220	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
			● ● MP6120	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
			● ● ✱ MP1230	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
			● ● VP15TF	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
			● ✱ MP6130	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)

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VPX300 – WET CUTTING – CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25 DC	ae≥0.25–0.5 DC	ae≥0.5–0.75 DC	ae=1.0 DC
M	Austenitic stainless steel	≤200HB	 MP1230	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP1240	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP7130	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 VP15TF	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
		>200HB	 MP1230	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP1240	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP7130	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 VP15TF	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
	Duplex stainless steel	≤280HB	 MP1230	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP1240	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP7130	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 VP15TF	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
	Ferritic and martensitic stainless steel	—	 MP1220	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP1230	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP7130	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 VP15TF	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
	Precipitation hardening stainless steel	<450HB	 MP1230	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 MP1240	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 MP7130	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 VP15TF	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
K	Gray cast iron	≤350MPa	 MC5020	180 (160 – 220)	170 (150 – 210)	150 (130 – 190)	150 (130 – 190)
			 VP15TF	130 (100 – 150)	120 (90 – 140)	100 (80 – 120)	100 (80 – 120)
	Ductile cast iron	≤450MPa	 MV1020	180 (150 – 240)	170 (140 – 230)	150 (130 – 200)	150 (130 – 200)
			 MV1030	130 (80 – 180)	120 (70 – 170)	105 (60 – 150)	105 (60 – 150)
		≤800MPa	 MV1020	160 (130 – 210)	150 (120 – 200)	130 (110 – 170)	130 (110 – 170)
			 MV1030	130 (80 – 180)	120 (70 – 170)	105 (60 – 150)	105 (60 – 150)
			 MC5020	160 (140 – 180)	150 (130 – 170)	130 (110 – 150)	130 (110 – 150)
			 VP15TF	110 (80 – 140)	100 (70 – 130)	80 (60 – 120)	80 (60 – 120)
N	Aluminum alloy	Si<5 %	 TF15	600 (400 – 1000)	600 (400 – 1000)	600 (400 – 1000)	600 (400 – 1000)
S	Titanium alloy (Ti-6Al-4V)	—	 MP1220	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP9120	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP1230	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 VP15TF	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP1230	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP1240	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP9130	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
	Titanium alloy (Ti-5Al-5V-5Mo-3Cr)	—	 MP9120	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1240	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 VP15TF	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9130	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
	Heat resistant alloy	—	 MP1220	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP9120	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 VP15TF	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9130	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1240	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
H	Hardened steel	40 – 55HRC	 VP15TF	90 (70 – 100)	85 (60 – 100)	70 (50 – 80)	70 (50 – 80)

VPX300 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=Ø25		DC=Ø28 – Ø80	
				ap	fz	ap	fz
P	Mild steel	≤180HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.3
			● ● ✱ 0.25 – 0.5 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.25
			● ● ✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.1 – 0.2
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.15
	Carbon steel Alloy steel Alloy tool steel	180 – 280HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.3
			● ● ✱ 0.25 – 0.5 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.25
			● ● ✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.1 – 0.2
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.15
	Carbon steel Alloy steel Alloy tool steel	280 – 350HB ≤350HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.25
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.1 – 0.2
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.1 – 0.15
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.12
	Pre-hardened steel	35 – 45HRC	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.25
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.1 – 0.2
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.1 – 0.15
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.12
M	Austenitic stainless steel	—	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			✱ ≤0.25 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤11	0.06 – 0.1	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.08 – 0.12
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.08
	Duplex stainless steel	≤280HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			✱ ≤0.25 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.08
	Ferritic and martensitic stainless steel	—	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			✱ ≤0.25 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.08 – 0.12
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.08
	Precipitation hardening stainless steel	<450HB	● ● ✱ ≤0.25 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.15
			✱ ≤0.25 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.08	≤8	0.06 – 0.08
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.08

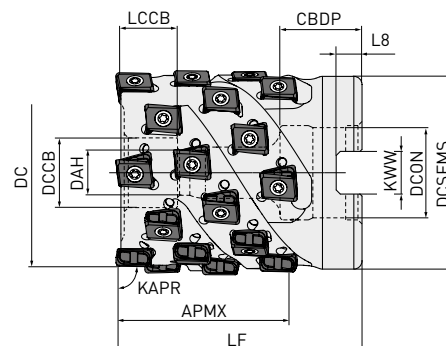
VPX300 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=Ø25		DC=Ø28 – Ø80	
				ap	fz	ap	fz
K	Gray cast iron	≤350MPa	● ● ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.3
			✱ ≤0.25 DC	≤11	0.08 – 0.15	≤11	0.1 – 0.25
			● ● 0.25 – 0.5 DC	≤11	0.08 – 0.15	≤11	0.1 – 0.25
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.1 – 0.2
			● ● 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.1 – 0.2
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.08 – 0.15
			● ● 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.15
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.08 – 0.12
	Ductile cast iron	≤800MPa	● ● ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.25
			✱ ≤0.25 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.2
			● ● 0.25 – 0.5 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.2
			✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.1 – 0.15
			● ● 0.5 – 0.75 DC	≤8	0.08 – 0.12	≤8	0.1 – 0.15
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.08 – 0.12
			● ● 1.0 DC	≤5	0.06 – 0.1	≤5	0.08 – 0.12
			✱ 1.0 DC	≤5	0.06 – 0.08	≤5	0.06 – 0.1
N	Aluminum alloy	Si<5 %	● ● ≤0.25 DC	≤11	0.1 – 0.25	≤11	0.1 – 0.25
			✱ ≤0.25 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			● ● 0.25 – 0.5 DC	≤11	0.1 – 0.2	≤11	0.1 – 0.2
			✱ 0.25 – 0.5 DC	≤11	0.1 – 0.15	≤11	0.1 – 0.15
			● ● 0.5 – 0.75 DC	≤8	0.06 – 0.15	≤8	0.08 – 0.15
			✱ 0.5 – 0.75 DC	≤8	0.06 – 0.15	≤8	0.08 – 0.15
			● ● 1.0 DC	≤5	0.06 – 0.15	≤5	0.08 – 0.15
			✱ 1.0 DC	≤5	0.06 – 0.15	≤5	0.08 – 0.12
S	Titanium alloy (Ti-6Al-4V)	—	● ● ✱ ≤0.25 DC	≤11	0.08 – 0.15	≤11	0.08 – 0.15
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
	Titanium alloy (Ti-5Al-5V-5Mo-3Cr)	—	● ● ✱ ≤0.25 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
	Heat resistant alloy	—	● ● ✱ ≤0.25 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.25 – 0.5 DC	≤11	0.08 – 0.12	≤11	0.08 – 0.12
			● ● ✱ 0.5 – 0.75 DC	≤8	0.06 – 0.1	≤8	0.06 – 0.1
			● ● ✱ 1.0 DC	≤5	0.06 – 0.1	≤5	0.06 – 0.1
H	Hardened steel	40 – 55HRC	● ● ≤0.25 DC	≤5	0.08 – 0.15	≤5	0.08 – 0.15
			✱ ≤0.25 DC	≤5	0.08 – 0.12	≤5	0.08 – 0.12
			● ● 0.25 – 0.5 DC	≤4	0.08 – 0.12	≤4	0.08 – 0.12
			✱ 0.25 – 0.5 DC	≤4	0.06 – 0.1	≤4	0.06 – 0.1
			● ● 0.5 – 0.75 DC	≤3	0.06 – 0.1	≤3	0.06 – 0.1
			✱ 0.5 – 0.75 DC	≤3	0.06 – 0.1	≤3	0.06 – 0.08
			● ● 1.0 DC	≤2	0.06 – 0.1	≤2	0.06 – 0.1
			✱ 1.0 DC	≤2	0.06 – 0.1	≤2	0.06 – 0.08

VPX300



P M K N S



LONG CUTTING EDGE

Order number	Set bolt	Geometry
VPX300-040A02A031R06	HSC08040	
VPX300-040A02A042R08	HSC08050	
VPX300-050A03A031R09	HSC10040	
VPX300-050A03A042R12	HSC10050	
VPX300-050A03A052R15	HSC10060	
VPX300-063A04A042R16	HSC12050	
VPX300-063A04A052R20	HSC12060	
VPX300-080A05A052R25	HSC12060	
VPX300-080A05A063R30	HSC12070	
VPX300R08005CA05225	HSC16055	
VPX300R08005CA06330	HSC16065	

SHELL TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	WT	ZNF	ZNP	 LOGU12
VPX300-040A02A031R06	●	31	40	16	50	1.06°	0.26	2	6	
VPX300-040A02A042R08	●	42	40	16	60	1.06°	0.31	2	8	
VPX300-050A03A031R09	●	31	50	22	55	0.79°	0.47	3	9	
VPX300-050A03A042R12	●	42	50	22	65	0.79°	0.55	3	12	
VPX300-050A03A052R15	●	52	50	22	75	0.79°	0.63	3	15	
VPX300-063A04A042R16	★	42	63	27	65	0.6°	0.92	4	16	
VPX300-063A04A052R20	★	52	63	27	75	0.6°	1.06	4	20	
VPX300-080A05A052R25	★	52	80	27	75	0.45°	1.94	5	25	
VPX300-080A05A063R30	★	63	80	27	85	0.45°	2.20	5	30	
VPX300R08005CA05225	★	52	80	31.75	75	0.45°	1.81	5	25	
VPX300R08005CA06330	★	63	80	31.75	85	0.45°	2.06	5	30	

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VPX300 – LONG CUTTING EDGE – SHELL TYPE

MOUNTING DIMENSIONS

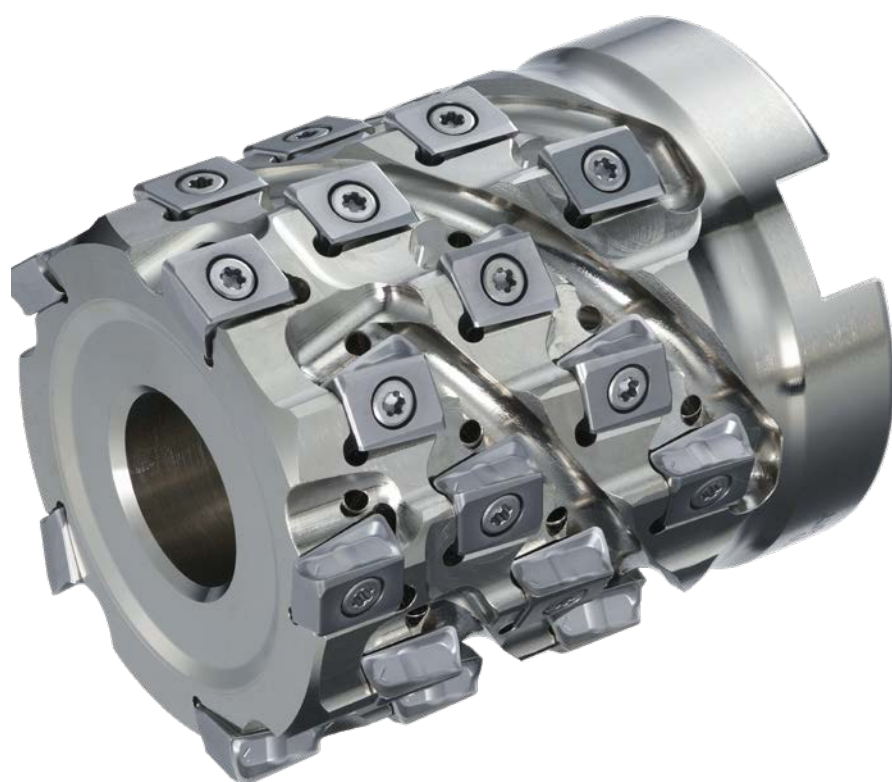
Order number	CBDP	DAH	DCCB	DCSFMS	KWW	LCCB	L8
VPX300-040A02A031R06	18	9	14	37	8.4	8.4	5.6
VPX300-040A02A042R08	18	9	14	37	8.4	8.4	5.6
VPX300-050A03A031R09	20	11	17	47	10.4	12.4	6.3
VPX300-050A03A042R12	20	11	17	47	10.4	12.4	6.3
VPX300-050A03A052R15	20	11	17	47	10.4	12.4	6.3
VPX300-063A04A042R16	23	13	20	60	12.4	12.4	7
VPX300-063A04A052R20	23	13	20	60	12.4	12.4	7
VPX300-080A05A052R25	23	13	20	76	12.4	12.4	7
VPX300-080A05A063R30	23	13	20	76	12.4	12.4	7
VPX300R08005CA05225	32	17	26	76	12.7	17.4	8
VPX300R08005CA06330	32	17	26	76	12.7	17.4	8

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SPARE PARTS

Tool holder type	DC			
		Clamp screw	Wrench	Anti-seize lubricant
VPX300	≤80	TPS40F1	TIP15W	MK1KS

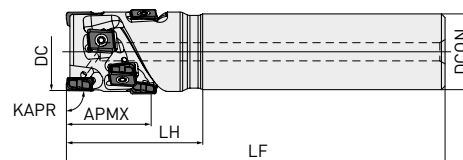
* Clamp torque (N • m): TPS40F1 = 3.0



VPX300



P M K N S



Right hand tool holder only

LONG CUTTING EDGE

CYLINDRICAL SHANK TYPE

Order number	Stock	APMX	DC	DCON	LF	RMPX	WT	LH	ZNF	ZNP	
SHORT TYPE											
VPX300R402SA32S02104	●	21	40	32	125	1.06°	0.78	45	2	4	LOGU12
VPX300R402SA32S03106	●	31	40	32	130	1.06°	0.79	50	2	6	
VPX300R402SA32S04208	●	42	40	32	140	1.06°	0.84	60	2	8	

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SPARE PARTS

Tool holder type	DC			
		Clamp screw	Wrench	Anti-seize lubricant
VPX300R25	≤50	TPS40F1	TIP15W	MK1KS

* Clamp torque (N • m): TPS40F1 = 3.0

VPX300

INSERTS

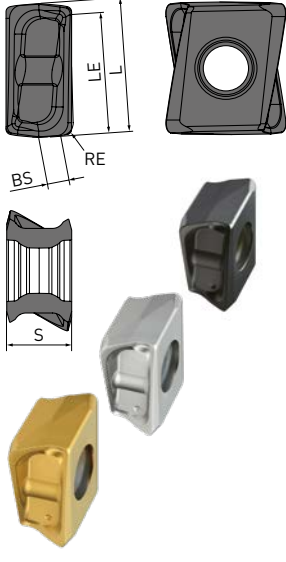
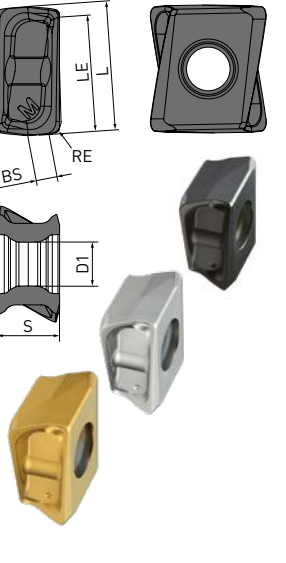
P	Steel	●	●			●	✱			●	●	●
M	Stainless steel	●	●	✱				●		●	●	●
K	Cast iron				●					●	●	✱
N	Non-ferrous material											●
S	Heat-resistant alloy, Titanium alloy	●	●	✱				●	✱		●	
H	Hardened steel											●

Cutting conditions:

●: Stable cutting ●: General cutting ✱: Unstable cutting

Honing :

E: Round F: Sharp

Order number	Class	Honing	NEW MP1220	NEW MP1230	NEW MP1240	MC5020	MP6120	MP6130	MP7130	MP9120	MP9130	MV1020	MV1030	VP15TF	TF15	L	RE	LE	S	BS	D1	Geometry Right hand insert only
LOGU1207020PNER-L	G	E	★	★	★	★	★	★	★	★	★	●	●	★		12.4	0.2	11.3	7.0	3.0	4.4	
LOGU1207040PNER-L	G	E	●	●	★	●	●	●	●	●	●	●	●	★		12.4	0.4	11.3	7.0	2.8	4.4	
LOGU1207080PNER-L	G	E	●	●	●	●	●	●	●	●	●	●	●	★		12.4	0.8	11.3	7.0	2.6	4.4	
LOGU1207100PNER-L	G	E	★	★	★	★	★	★	★	★	★	●	●	★		12.4	1	11.3	7.0	2.5	4.4	
LOGU1207120PNER-L	G	E	★	●	★	●	●	●	●	●	●	●	●	★		12.4	1.2	11.3	7.0	2.4	4.4	
LOGU1207160PNER-L	G	E	★	★	★	●	●	●	●	●	●	●	●	★		12.4	1.6	11.3	7.0	1.8	4.4	
LOGU1207200PNER-L	G	E	★	●	●	●	●	●	●	●	●	●	●	★		12.4	2	11.3	7.0	1.4	4.4	
LOGU1207240PNER-L	G	E	★	★	★	●	●	●	●	●	●	●	●	★		12.4	2.4	11.3	7.0	1.2	4.4	
LOGU1207300PNER-L	G	E	★	★	★	★	★	★	★	★	★	●	●	★		12.4	3	11.3	7.0	0.6	4.4	
LOGU1207320PNER-L	G	E	★	★	★	●	●	●	●	●	●	●	●	★		12.4	3.2	11.3	7.0	0.4	4.4	
LOGU1207020PNFR-L	G	F	●	●	★									★		12.4	0.2	11.3	7.0	3.0	4.4	
LOGU1207040PNFR-L	G	F	●	●	●									●		12.4	0.4	11.3	7.0	2.8	4.4	
LOGU1207080PNFR-L	G	F	●	●	●									●		12.4	0.8	11.3	7.0	2.6	4.4	
LOGU1207100PNFR-L	G	F	●	●	●									★		12.4	1	11.3	7.0	2.5	4.4	
LOGU1207120PNFR-L	G	F	●	●	●									●		12.4	1.2	11.3	7.0	2.4	4.4	
LOGU1207160PNFR-L	G	F	★	●	●									●		12.4	1.6	11.3	7.0	1.8	4.4	
LOGU1207200PNFR-L	G	F	●	●	●									●		12.4	2	11.3	7.0	1.4	4.4	
LOGU1207240PNFR-L	G	F	●	●	★									●		12.4	2.4	11.3	7.0	1.2	4.4	
LOGU1207300PNFR-L	G	F	●	●	★									★		12.4	3	11.3	7.0	0.6	4.4	
LOGU1207320PNFR-L	G	F	●	●	●									●		12.4	3.2	11.3	7.0	0.4	4.4	
LOGU1207020PNER-M	G	E				★	★	★	★	★	●	●	★			12.4	0.2	11.3	7.0	3.0	4.4	
LOGU1207040PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	0.4	11.3	7.0	2.8	4.4	
LOGU1207080PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	0.8	11.3	7.0	2.4	4.4	
LOGU1207100PNER-M	G	E				★	★	★	★	★	●	●	★			12.4	1.0	11.3	7.0	2.3	4.4	
LOGU1207120PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	1.2	11.3	7.0	2.1	4.4	
LOGU1207160PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	1.6	11.3	7.0	1.7	4.4	
LOGU1207200PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	2.0	11.3	7.0	1.4	4.4	
LOGU1207240PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	2.4	11.3	7.0	1.0	4.4	
LOGU1207300PNER-M	G	E				★	★	★	★	★	●	●	★			12.4	3.0	11.3	7.0	0.5	4.4	
LOGU1207320PNER-M	G	E				●	●	●	●	●	●	●	●	★		12.4	3.2	11.3	7.0	0.3	4.4	
LOGU1207020PNFR-M	G	F												★		12.4	0.2	11.3	7.0	3.0	4.4	
LOGU1207040PNFR-M	G	F												●		12.4	0.4	11.3	7.0	2.8	4.4	
LOGU1207080PNFR-M	G	F												●		12.4	0.8	11.3	7.0	2.4	4.4	
LOGU1207100PNFR-M	G	F												★		12.4	1.0	11.3	7.0	2.3	4.4	
LOGU1207120PNFR-M	G	F												●		12.4	1.2	11.3	7.0	2.1	4.4	
LOGU1207160PNFR-M	G	F												●		12.4	1.6	11.3	7.0	1.7	4.4	
LOGU1207200PNFR-M	G	F												●		12.4	2.0	11.3	7.0	1.4	4.4	
LOGU1207240PNFR-M	G	F												●		12.4	2.4	11.3	7.0	1.0	4.4	
LOGU1207300PNFR-M	G	F												★		12.4	3.0	11.3	7.0	0.5	4.4	
LOGU1207320PNFR-M	G	F												●		12.4	3.2	11.3	7.0	0.3	4.4	

VPX300

CHIPBREAKER AND GRADE RECOMMENDATIONS

Material	Properties	Cutting conditions		
			1st Recommend	2nd Recommend
P	Mild steel	≤180HB	● ●	L M
			✱	M L
	Carbon steel	180 – 350HB	●	L M
	Alloy steel	≤350HB	●	M L
	Alloy tool steel		✱	M L
	Pre-hardened steel	35 – 45HRC	● ●	M L
M			✱	M L
	Austenitic stainless steel	≤280HB	● ●	L M
			✱	M L
		>200HB	● ●	L M
			✱	M L
	Duplex stainless steel	≤280HB	● ●	L M
K			✱	M L
	Ferritic and martensitic stainless steel	—	● ●	L M
			✱	M L
	Precipitation hardening stainless steel	<450HB	● ●	L M
			✱	M L
N	Gray cast iron	≤350MPa	● ●	M L
			✱	M L
S	Ductile cast iron	≤800MPa	● ●	M L
			✱	M L
H	Aluminum alloy	Si<5 %	● ●	L M
			✱	M L
S	Titanium alloys (Ti-6Al-4V)	—	● ●	L M
			✱	M L
	Titanium alloys (Ti-5Al-5V-5Mo-3Cr)	—	● ●	L M
			✱	M L
H	Heat resistant alloys	—	● ●	M L
			✱	M L
H	Hardened steel	40 – 55HRC	● ● ✱	M —

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VPX300

RECOMMENDED CUTTING CONDITIONS

WET CUTTING



These cutting conditions are reference for standard shank types (last letter in designation is S) and arbor shank types. If there is chatter, insert chipping, etc. during machining, alter the conditions accordingly.

Chattering and vibration is more likely under the following circumstances: When the tool overhang is long (using a long shank, screw-in type, etc.), the rigidity of the machine, work material or attachment of work material is low, or during the machining of corners during pocket machining. Use cutting conditions at the minimum recommendation or below.

CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25 DC	ae≥0.25–0.5 DC	ae≥0.5–0.75 DC	ae=1.0 DC
P	Mild steel	≤180HB	MV1020	210 (150 – 290)	200 (140 – 270)	150 (110 – 180)	150 (110 – 180)
			MP1220	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			MP6120	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			MV1030	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			MP1230	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			VP15TF	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
			MP6130	140 (100 – 190)	130 (90 – 180)	100 (70 – 120)	100 (70 – 120)
	Carbon steel Alloy steel Alloy tool steel	180 – 280HB	MV1020	180 (140 – 210)	170 (120 – 200)	150 (110 – 180)	150 (110 – 180)
			MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			MV1030	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		280 – 350HB	MV1020	140 (110 – 160)	130 (90 – 150)	120 (80 – 140)	120 (80 – 140)
			MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			MV1030	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	120 (80 – 140)
			MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
		180 – 350HB ≤350HB	MP1220	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			MP6120	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			MP1230	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			MP6130	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
			VP15TF	120 (90 – 140)	110 (80 – 130)	100 (70 – 120)	100 (70 – 120)
	Pre-hardened steel	35 – 45HRC	MP1220	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
			MP6120	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
			MP1230	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
			MP6130	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)
			VP15TF	100 (80 – 120)	90 (70 – 110)	80 (60 – 100)	80 (60 – 100)

1/2

VPX300 – WET CUTTING – CUTTING SPEED

Material	Properties	Cutting conditions	Grade	Vc			
				ae<0.25 DC	ae≥0.25–0.5 DC	ae≥0.5–0.75 DC	ae=1.0 DC
M	Austenitic stainless steel	≤200HB	 MP1230	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP1240	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP7130	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 VP15TF	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
		>200HB	 MP1230	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP1240	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP7130	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 VP15TF	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
	Duplex stainless steel	≤280HB	 MP1230	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP1240	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 MP7130	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
			 VP15TF	100 (80 – 130)	90 (70 – 120)	70 (50 – 100)	70 (50 – 100)
	Ferritic and martensitic stainless steel	—	 MP1220	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP1230	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 MP7130	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
			 VP15TF	120 (100 – 150)	110 (90 – 140)	90 (70 – 120)	90 (70 – 120)
	Precipitation hardening stainless steel	<450HB	 MP1230	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 MP1240	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 MP7130	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
			 VP15TF	90 (70 – 120)	80 (60 – 110)	60 (40 – 90)	60 (40 – 90)
K	Gray cast iron	≤350MPa	 MC5020	180 (160 – 220)	170 (150 – 210)	150 (130 – 190)	150 (130 – 190)
			 VP15TF	130 (100 – 150)	120 (90 – 140)	100 (80 – 120)	100 (80 – 120)
	Ductile cast iron	≤450MPa	 MV1020	180 (150 – 240)	170 (140 – 230)	150 (130 – 200)	150 (130 – 200)
			 MV1030	130 (80 – 180)	120 (70 – 170)	105 (60 – 150)	105 (60 – 150)
		≤800MPa	 MV1020	160 (130 – 210)	150 (120 – 200)	130 (110 – 170)	130 (110 – 170)
			 MV1030	130 (80 – 180)	120 (70 – 170)	105 (60 – 150)	105 (60 – 150)
			 MC5020	160 (140 – 180)	150 (130 – 170)	130 (110 – 150)	130 (110 – 150)
			 VP15TF	110 (80 – 140)	100 (70 – 130)	80 (60 – 120)	80 (60 – 120)
N	Aluminum alloy	Si<5 %	 TF15	600 (400 – 1000)	600 (400 – 1000)	600 (400 – 1000)	600 (400 – 1000)
S	Titanium alloy (Ti-6Al-4V)	—	 MP1220	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP9120	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP1230	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 VP15TF	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)	50 (40 – 70)
			 MP1230	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP1240	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP9130	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
	Titanium alloy (Ti-5Al-5V-5Mo-3Cr)	—	 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1240	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9120	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 VP15TF	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9130	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
	Heat resistant alloy	—	 MP1220	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP9120	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 VP15TF	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)	40 (30 – 60)
			 MP1230	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP1240	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
			 MP9130	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)	30 (20 – 40)
H	Hardened steel	40 – 55HRC	 VP15TF	90 (70 – 100)	85 (60 – 100)	70 (50 – 80)	70 (50 – 80)

VPX300 – DEPTH OF CUT/FEED PER TOOTH

Material	Properties	Cutting conditions	ae	DC=Ø40		DC=Ø50 – 80	
				ap	fz	ap	fz
P	Mild steel	≤180HB	● ● ✱ ≤0.25 DC	≤APMX	0.15 [0.10 – 0.20]	≤APMX	0.18 [0.10 – 0.25]
			● ● ✱ 0.25 – 0.5 DC	≤APMX	0.13 [0.10 – 0.15]	≤31	0.15 [0.10 – 0.20]
			● ● ✱ 0.5 – 0.75 DC	≤21	0.10 [0.08 – 0.12]	≤21	0.13 [0.10 – 0.15]
			● ● ✱ 1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.10 [0.08 – 0.12]
	Carbon steel Alloy steel Alloy tool steel	180 – 280HB	● ● ✱ ≤0.25 DC	≤APMX	0.15 [0.10 – 0.20]	≤APMX	0.18 [0.10 – 0.25]
			● ● ✱ 0.25 – 0.5 DC	≤APMX	0.13 [0.10 – 0.15]	≤31	0.15 [0.10 – 0.20]
			● ● ✱ 0.5 – 0.75 DC	≤21	0.10 [0.08 – 0.12]	≤21	0.13 [0.10 – 0.15]
			● ● ✱ 1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.10 [0.08 – 0.12]
	Carbon steel Alloy steel Alloy tool steel	280 – 350HB ≤350HB	● ● ✱ ≤0.25 DC	≤APMX	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.10 – 0.20]
			● ● ✱ 0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.13 [0.10 – 0.15]
			● ● ✱ 0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.10 [0.08 – 0.12]
			● ● ✱ 1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]
	Pre-hardened steel	35 – 45HRC	● ● ✱ ≤0.25 DC	≤APMX	0.13 [0.10 – 0.15]	≤APMX	0.15 [0.10 – 0.20]
			● ● ✱ 0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.13 [0.10 – 0.15]
			● ● ✱ 0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.10 [0.08 – 0.12]
			● ● ✱ 1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]
M	Austenitic stainless steel	—	● ● ✱ ≤0.25 DC	≤APMX	0.15 [0.10 – 0.20]	≤APMX	0.15 [0.10 – 0.20]
			✱ ≤0.25 DC	≤APMX	0.12 [0.08 – 0.15]	≤APMX	0.12 [0.08 – 0.15]
			● ● ✱ 0.25 – 0.5 DC	≤APMX	0.12 [0.08 – 0.15]	≤31	0.12 [0.08 – 0.15]
			✱ 0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤21	0.10 [0.08 – 0.12]	≤21	0.10 [0.08 – 0.12]
			✱ 0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.08 [0.06 – 0.10]
			● ● ✱ 1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤5	0.07 [0.06 – 0.08]	≤5	0.07 [0.06 – 0.08]
	Duplex stainless steel	≤280HB	● ● ✱ ≤0.25 DC	≤APMX	0.15 [0.10 – 0.20]	≤APMX	0.15 [0.10 – 0.20]
			✱ ≤0.25 DC	≤APMX	0.12 [0.08 – 0.15]	≤APMX	0.12 [0.08 – 0.15]
			● ● ✱ 0.25 – 0.5 DC	≤APMX	0.12 [0.08 – 0.15]	≤31	0.12 [0.08 – 0.15]
			✱ 0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤21	0.10 [0.08 – 0.12]	≤21	0.10 [0.08 – 0.12]
			✱ 0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.08 [0.06 – 0.10]
			● ● ✱ 1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤5	0.07 [0.06 – 0.08]	≤5	0.07 [0.06 – 0.08]
	Ferritic and martensitic stainless steel	—	● ● ✱ ≤0.25 DC	≤APMX	0.15 [0.10 – 0.20]	≤APMX	0.15 [0.10 – 0.20]
			✱ ≤0.25 DC	≤APMX	0.12 [0.08 – 0.15]	≤APMX	0.12 [0.08 – 0.15]
			● ● ✱ 0.25 – 0.5 DC	≤APMX	0.12 [0.08 – 0.15]	≤31	0.12 [0.08 – 0.15]
			✱ 0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤21	0.10 [0.08 – 0.12]	≤21	0.10 [0.08 – 0.12]
			✱ 0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.08 [0.06 – 0.10]
			● ● ✱ 1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤5	0.07 [0.06 – 0.08]	≤5	0.07 [0.06 – 0.08]
	Precipitation hardening stainless steel	<450HB	● ● ✱ ≤0.25 DC	≤APMX	0.13 [0.10 – 0.15]	≤APMX	0.13 [0.10 – 0.15]
			✱ ≤0.25 DC	≤APMX	0.10 [0.08 – 0.12]	≤APMX	0.10 [0.08 – 0.12]
			● ● ✱ 0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.10 [0.08 – 0.12]
			✱ 0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.10 [0.08 – 0.12]
			● ● ✱ 0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.08 [0.06 – 0.10]
			✱ 0.5 – 0.75 DC	≤21	0.07 [0.06 – 0.08]	≤21	0.07 [0.06 – 0.08]
			● ● ✱ 1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]
			✱ 1.0 DC	≤5	0.07 [0.06 – 0.08]	≤5	0.07 [0.06 – 0.08]

VPX300 – DEPTH OF CUT/FEED PER TOOTH

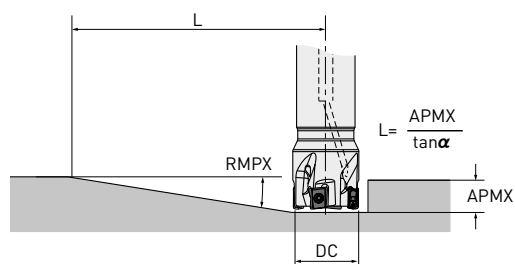
Material	Properties	Cutting conditions	ae	DC=Ø40		DC=Ø50 – 80	
				ap	fz	ap	fz
K	Gray cast iron	≤350MPa	  ≤0.25 DC	≤APMX	0.15 [0.10 – 0.20]	≤APMX	0.18 [0.10 – 0.25]
			 ≤0.25 DC	≤APMX	0.12 [0.08 – 0.15]	≤APMX	0.15 [0.10 – 0.20]
			  0.25 – 0.5 DC	≤APMX	0.12 [0.08 – 0.15]	≤31	0.15 [0.10 – 0.20]
			 0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.13 [0.10 – 0.15]
			  0.5 – 0.75 DC	≤21	0.10 [0.08 – 0.12]	≤21	0.13 [0.10 – 0.15]
			 0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.10 [0.08 – 0.12]
			  1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.12 [0.08 – 0.15]
			 1.0 DC	≤5	0.07 [0.06 – 0.08]	≤5	0.08 [0.06 – 0.10]
	Ductile cast iron	≤800MPa	  ≤0.25 DC	≤APMX	0.15 [0.10 – 0.20]	≤APMX	0.15 [0.10 – 0.20]
			 ≤0.25 DC	≤APMX	0.13 [0.10 – 0.15]	≤APMX	0.13 [0.10 – 0.15]
			  0.25 – 0.5 DC	≤APMX	0.13 [0.10 – 0.15]	≤31	0.13 [0.10 – 0.15]
			 0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.10 [0.08 – 0.12]
			  0.5 – 0.75 DC	≤21	0.10 [0.08 – 0.12]	≤21	0.10 [0.08 – 0.12]
			 0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.08 [0.06 – 0.10]
			  1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]
			 1.0 DC	≤5	0.07 [0.06 – 0.08]	≤5	0.07 [0.06 – 0.08]
N	Aluminum alloy	Si<5 %	  ≤0.25 DC	≤APMX	0.18 [0.10 – 0.25]	≤APMX	0.18 [0.10 – 0.25]
			 ≤0.25 DC	≤APMX	0.15 [0.10 – 0.20]	≤APMX	0.15 [0.10 – 0.20]
			  0.25 – 0.5 DC	≤APMX	0.15 [0.10 – 0.20]	≤31	0.15 [0.10 – 0.20]
			 0.25 – 0.5 DC	≤APMX	0.13 [0.10 – 0.15]	≤31	0.13 [0.10 – 0.15]
			  0.5 – 0.75 DC	≤21	0.11 [0.06 – 0.15]	≤21	0.12 [0.08 – 0.15]
			 0.5 – 0.75 DC	≤21	0.11 [0.06 – 0.15]	≤21	0.12 [0.08 – 0.15]
			  1.0 DC	≤5	0.11 [0.06 – 0.15]	≤5	0.12 [0.08 – 0.15]
			 1.0 DC	≤5	0.09 [0.06 – 0.12]	≤5	0.10 [0.08 – 0.12]
S	Titanium alloy (Ti-6Al-4V)	—	   ≤0.25 DC	≤APMX	0.12 [0.08 – 0.15]	≤APMX	0.12 [0.08 – 0.15]
			   0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.10 [0.08 – 0.12]
			   0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.08 [0.06 – 0.10]
			   1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]
	Titanium alloy (Ti-5Al-5V-5Mo-3Cr)	—	   ≤0.25 DC	≤APMX	0.10 [0.08 – 0.12]	≤APMX	0.10 [0.08 – 0.12]
			   0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.10 [0.08 – 0.12]
			   0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.08 [0.06 – 0.10]
			   1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]
	Heat resistant alloy	—	   ≤0.25 DC	≤APMX	0.10 [0.08 – 0.12]	≤APMX	0.10 [0.08 – 0.12]
			   0.25 – 0.5 DC	≤APMX	0.10 [0.08 – 0.12]	≤31	0.10 [0.08 – 0.12]
			   0.5 – 0.75 DC	≤21	0.08 [0.06 – 0.10]	≤21	0.08 [0.06 – 0.10]
			   1.0 DC	≤5	0.08 [0.06 – 0.10]	≤5	0.08 [0.06 – 0.10]

VPX300

RAMPING/HELICAL MILLING

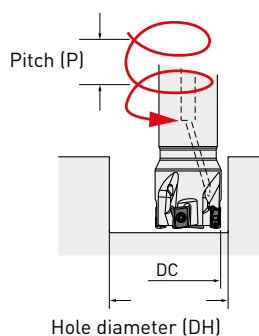
1 Ramping

Refer to the table below for cutting conditions. For feed per tooth and cutting speed, follow the cutting conditions for slot milling.

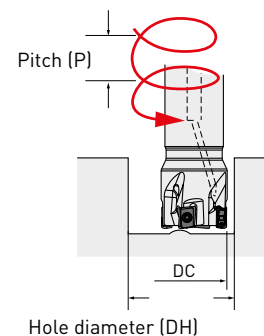


2 Helical milling

2.1 Blind holes, flat bottom



2.2 Through holes



DC	RE	1		2.1				2.2	
		RMPX	L *	DH max.	P max.	DH min	P max.	DH min	P max.
25	0.2	2.13°	296	49	2.8	42.7	2.1	36.9	1.4
	0.4	2.13°	296	48.6	2.8	42.7	2.1	36.9	1.4
	0.8	2.13°	296	47.8	2.7	42.7	2.1	36.9	1.4
	1	2.13°	296	47.4	2.6	42.7	2.1	36.9	1.4
	1.2	2.13°	296	47	2.6	42.7	2.1	36.9	1.4
	1.6	2.13°	296	46.2	2.5	42.7	2.1	36.9	1.4
	2	2.13°	296	45.4	2.4	42.7	2.1	36.9	1.4
	2.4	2.13°	296	44.6	2.3	42.7	2.1	36.9	1.4
	3	2.13°	296	43.4	2.2	42.7	2.1	36.9	1.4
	3.2	2.13°	296	43	2.1	42.7	2.1	36.9	1.4
28	0.2	1.77°	356	55	2.6	48.7	2	42.7	1.4
	0.4	1.77°	356	54.6	2.6	48.7	2	42.7	1.4
	0.8	1.77°	356	53.8	2.5	48.7	2	42.7	1.4
	1	1.77°	356	53.4	2.5	48.7	2	42.7	1.4
	1.2	1.77°	356	53	2.4	48.7	2	42.7	1.4
	1.6	1.77°	356	52.2	2.4	48.7	2	42.7	1.4
	2	1.77°	356	51.4	2.3	48.7	2	42.7	1.4
	2.4	1.77°	356	50.6	2.2	48.7	2	42.7	1.4
	3	1.77°	356	49.4	2.1	48.7	2	42.7	1.4
	3.2	1.77°	356	49	2	48.7	2	42.7	1.4
30	0.2	1.61°	392	59	2.6	52.7	2	46.6	1.5
	0.4	1.61°	392	58.6	2.5	52.7	2	46.6	1.5
	0.8	1.61°	392	57.8	2.5	52.7	2	46.6	1.5
	1	1.61°	392	57.4	2.4	52.7	2	46.6	1.5
	1.2	1.61°	392	57	2.4	52.7	2	46.6	1.5
	1.6	1.61°	392	56.2	2.3	52.7	2	46.6	1.5
	2	1.61°	392	55.4	2.2	52.7	2	46.6	1.5
	2.4	1.61°	392	54.6	2.2	52.7	2	46.6	1.5
	3	1.61°	392	53.4	2.1	52.7	2	46.6	1.5
	3.2	1.61°	392	53	2	52.7	2	46.6	1.5

VPX300 – RAMPING/HELICAL MILLING

DC	RE	1		2.1				2.2	
		RMPX	L *	DH max.	P max.	DH min	P max.	DH min	P max.
32	0.2	1.47°	429	63	2.5	56.7	2	50.6	1.5
	0.4	1.47°	429	62.6	2.5	56.7	2	50.6	1.5
	0.8	1.47°	429	61.8	2.4	56.7	2	50.6	1.5
	1	1.47°	429	61.4	2.4	56.7	2	50.6	1.5
	1.2	1.47°	429	61	2.3	56.7	2	50.6	1.5
	1.6	1.47°	429	60.2	2.3	56.7	2	50.6	1.5
	2	1.47°	429	59.4	2.2	56.7	2	50.6	1.5
	2.4	1.47°	429	58.6	2.1	56.7	2	50.6	1.5
	3	1.47°	429	57.4	2.1	56.7	2	50.6	1.5
	3.2	1.47°	429	57	2	56.7	2	50.6	1.5
35	0.2	1.28°	493	69	2.4	62.8	1.9	56.6	1.5
	0.4	1.28°	493	68.6	2.4	62.8	1.9	56.6	1.5
	0.8	1.28°	493	67.8	2.3	62.8	1.9	56.6	1.5
	1	1.28°	493	67.4	2.3	62.8	1.9	56.6	1.5
	1.2	1.28°	493	67	2.2	62.8	1.9	56.6	1.5
	1.6	1.28°	493	66.2	2.2	62.8	1.9	56.6	1.5
	2	1.28°	493	65.4	2.1	62.8	1.9	56.6	1.5
	2.4	1.28°	493	64.6	2.1	62.8	1.9	56.6	1.5
	3	1.28°	493	63.4	2	62.8	1.9	56.6	1.5
	3.2	1.28°	493	63	2	62.8	1.9	56.6	1.5
40	0.2	1.06°	595	78.8	2.3	72.7	1.9	66.5	1.5
	0.4	1.06°	595	78.4	2.2	72.7	1.9	66.5	1.5
	0.8	1.06°	595	77.6	2.2	72.7	1.9	66.5	1.5
	1	1.06°	595	77.2	2.2	72.7	1.9	66.5	1.5
	1.2	1.06°	595	76.8	2.1	72.7	1.9	66.5	1.5
	1.6	1.06°	595	76	2.1	72.7	1.9	66.5	1.5
	2	1.06°	595	75.2	2	72.7	1.9	66.5	1.5
	2.4	1.06°	595	74.4	2	72.7	1.9	66.5	1.5
	3	1.06°	595	73.2	1.9	72.7	1.9	66.5	1.5
	3.2	1.06°	595	72.8	1.9	72.7	1.9	66.5	1.5
50	0.2	0.79°	798	98.8	2.1	92.7	1.8	86.5	1.6
	0.4	0.79°	798	98.4	2.1	92.7	1.8	86.5	1.6
	0.8	0.79°	798	97.6	2.1	92.7	1.8	86.5	1.6
	1	0.79°	798	97.2	2	92.7	1.8	86.5	1.6
	1.2	0.79°	798	96.8	2	92.7	1.8	86.5	1.6
	1.6	0.79°	798	96	2	92.7	1.8	86.5	1.6
	2	0.79°	798	95.2	2	92.7	1.8	86.5	1.6
	2.4	0.79°	798	94.4	1.9	92.7	1.8	86.5	1.6
	3	0.79°	798	93.2	1.9	92.7	1.8	86.5	1.6
	3.2	0.79°	798	92.8	1.9	92.7	1.8	86.5	1.6
63	0.2	0.6°	1051	124.8	2	118.7	1.8	112.5	1.6
	0.4	0.6°	1051	124.4	2	118.7	1.8	112.5	1.6
	0.8	0.6°	1051	123.6	2	118.7	1.8	112.5	1.6
	1	0.6°	1051	123.2	2	118.7	1.8	112.5	1.6
	1.2	0.6°	1051	122.8	2	118.7	1.8	112.5	1.6
	1.6	0.6°	1051	122	1.9	118.7	1.8	112.5	1.6
	2	0.6°	1051	121.2	1.9	118.7	1.8	112.5	1.6
	2.4	0.6°	1051	120.4	1.9	118.7	1.8	112.5	1.6
	3	0.6°	1051	119.2	1.9	118.7	1.8	112.5	1.6
	3.2	0.6°	1051	118.8	1.8	118.7	1.8	112.5	1.6

VPX300 – RAMPING/HELICAL MILLING

DC	RE	1		2.1				2.2	
		RMPX	L*	DH max.	P max.	DH min	P max.	DH min	P max.
80	0.2	0.45°	1401	158.8	1.9	152.6	1.8	146.5	1.6
	0.4	0.45°	1401	158.4	1.9	152.7	1.8	146.5	1.6
	0.8	0.45°	1401	157.6	1.9	152.7	1.8	146.5	1.6
	1	0.45°	1401	157.2	1.9	152.7	1.8	146.5	1.6
	1.2	0.45°	1401	156.8	1.9	152.7	1.8	146.5	1.6
	1.6	0.45°	1401	156	1.9	152.7	1.8	146.5	1.6
	2	0.45°	1401	155.2	1.9	152.7	1.8	146.5	1.6
	2.4	0.45	1401	154.4	1.8	152.7	1.8	146.5	1.6
	3	0.45	1401	153.2	1.8	152.7	1.8	146.5	1.6
	3.2	0.45	1401	152.8	1.8	152.7	1.8	146.5	1.6

3/3

* Shows the distance until a maximum depth of cut of 11 mm is achieved at the maximum ramping angle $L (= 11/\tan \alpha)$.

1. When machining a highly ductile work material with the ramping angles in the table above, chips may be elongated.

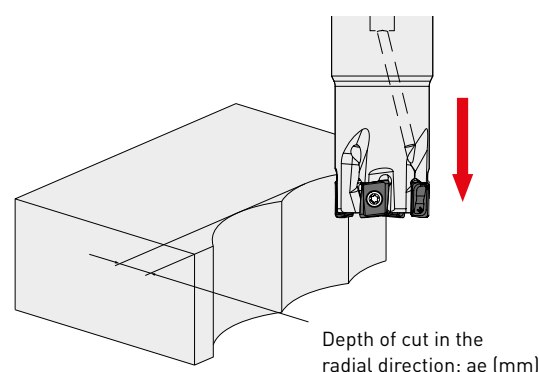
RECOMMENDED CUTTING CONDITIONS FOR PLUNGING AND DRILLING

Follow the cutting conditions for slot milling for the feed per tooth and cutting speed.

PLUNGING

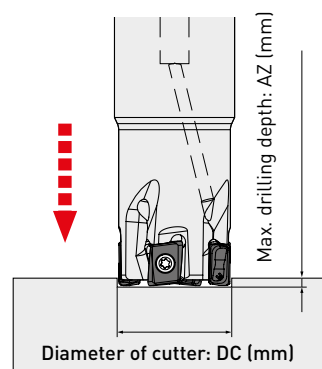
DC	ae max.
25	6.5
28	6.6
30	6.6
32	6.6
35	6.7
40	6.7
50	6.7
63	6.7
80	6.7

1. No step feed necessary.



DRILLING

DC	AZ max.
25	0.55
28	0.55
30	0.55
32	0.55
35	0.55
40	0.55
50	0.55
63	0.55
80	0.55



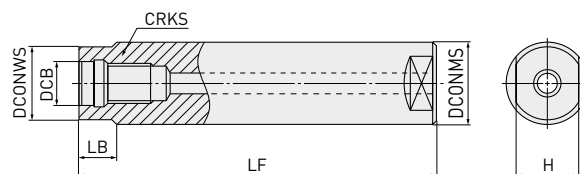
1. Exercise due caution as chips scatter easily.

2. Use compressed air to eliminate chips (or coolant for when machining aluminum alloys).

ARBORS

ARBORS FOR SCREW-IN TOOLS

STRAIGHT SHANK ARBOR



Order number	Stock	DCB	DCONWS	DCONWS	LF	LB	H	CRKS
STEEL SHANK TYPE								
SC16M08S100S	★	8.5	16	14.5	100	10	10	M8
SC16M08S200L	★	8.5	16	14.5	200	10	10	M8
SC20M10S120S	★	10.5	20	18.5	120	10	14	M10
SC20M10S220L	★	10.5	20	18.5	220	10	14	M10
SC25M12S125S	★	12.5	25	23.5	125	10	19	M12
SC25M12S245L	★	12.5	25	23.5	245	10	19	M12
SC32M16S140S	★	17	32	28.5	140	15	24	M16
SC32M16S280L	★	17	32	28.5	280	15	24	M16
CARBIDE SHANK TYPE								
SC16M08S100SW	★	8.5	16	14.5	100	10	10	M8
SC16M08S200LW	★	8.5	16	14.5	200	10	10	M8
SC20M10S120SW	★	10.5	20	18.5	120	10	14	M10
SC20M10S220LW	★	10.5	20	18.5	220	10	14	M10
SC25M12S125SW	★	12.5	25	23.5	125	10	19	M12
SC25M12S245LW	★	12.5	25	23.5	245	10	19	M12
SC32M16S140SW	★	17	32	28.5	140	15	24	M16
SC32M16S280LW	★	17	32	28.5	280	15	24	M16

1/1

HOW TO INSTALL THE SCREW-IN HEAD

1. Thoroughly clean the clamping section of the head and the arbor with an air blower or brush before installation.
2. Tighten the head to the recommended torque and ensure there is no gap between the head and arbor.

Screw size	Recommended torque (N • m)	Wrench size (mm)
M8	23	10
M10	46	14
M12	80	19
M16	90	24



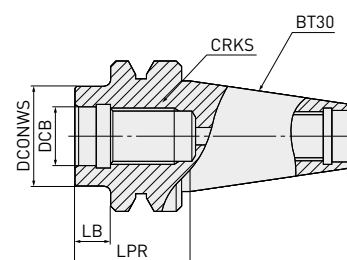
Cutting tools become extremely hot during cutting. Do not handle the cutting tools with bare hands as this may cause injuries.

VPX300

STRAIGHT SHANK ARBOR

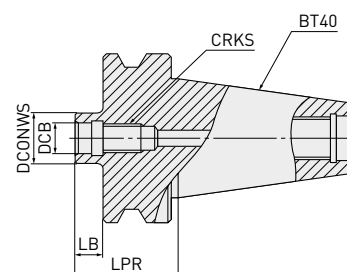
BT30 SHANK ARBOR

Order number	Stock	DCB	DCONWS	LPR	LB	CRKS
SC16M08S10-BT30	★	8.5	14.5	32	10	M8
SC20M10S10-BT30	★	10.5	18.5	32	10	M10
SC25M12S10-BT30	★	12.5	23.5	32	10	M12
SC32M16S10-BT30	★	17.0	28.5	32	10	M16



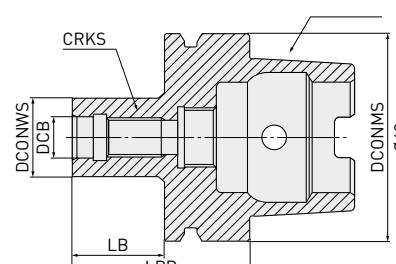
BT40 SHANK ARBOR

Order number	Stock	DCB	DCONWS	LPR	LB	CRKS
SC16M08S10-BT40	★	8.5	14.5	37	10	M8
SC20M10S10-BT40	★	10.5	18.5	37	10	M10
SC25M12S10-BT40	★	12.5	23.5	37	10	M12
SC32M16S10-BT40	★	17.0	28.5	37	10	M16



HSK63A SHANK ARBOR

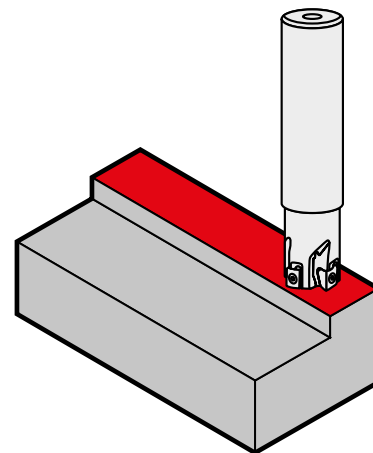
Order number	Stock	DCB	DCONWS	LPR	LB	CRKS
SC16M08S22-HSK63A	★	8.5	14.5	48	22	M8
SC20M10S24-HSK63A	★	10.5	18.5	50	24	M10
SC25M12S27-HSK63A	★	12.5	23.5	53	27	M12
SC32M16S28-HSK63A	★	17.0	28.5	54	28	M16



APPLICATION EXAMPLES

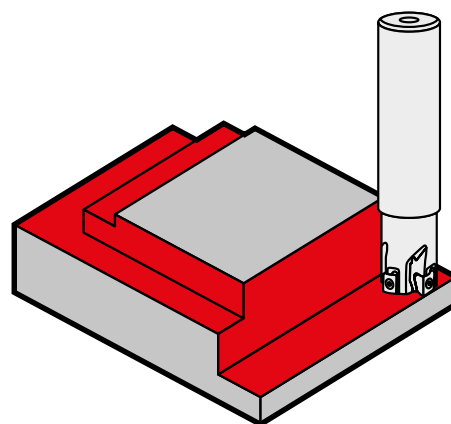
Holder	VPX200R3004SA25S
Insert (grade)	LOGU0904080PNER-M(MP9130)
Workpiece	Precipitation hardening stainless steel (38-43HRC) (PH)
Component	Block
Vc (m/min)	40
fz (mm/t.)	0.06
ap (mm)	1.8
Cutting mode	Dry cutting
Results	Good sharpness compared to conventional products allows VPX to achieve double tool life.

The examples shown are actual applications and can differ from the recommended cutting conditions.

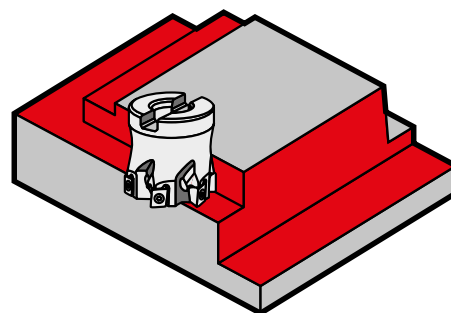


Holder	VPX200R2503SA25S
Insert (grade)	LOGU0904040PNER-M(MP7130)
Workpiece	X5CrNi18-10
Component	Location block
Vc (m/min)	180
fz (mm/t.)	0.6
ap (mm)	2.7
Cutting mode	–
Results	Reduced noise during machining than conventional products, allowing cutting conditions to be improved.

The examples shown are actual applications and can differ from the recommended cutting conditions.



Holder	VPX300-080A10AR
Insert (grade)	LOGU1207080PNER-M(MP6120)
Workpiece	Alloy tool steel
Component	Locator
Vc (m/min)	226
fz (mm/t.)	0.13
ap (mm)	5
ae (mm)	70
Cutting mode	–
Results	Achieves 2.7 times the length of machining of conventional products whilst maintaining good surface finishes.



SYMBOLS

 Recommended cutting conditions	MACHINING TYPE
NEW Completely new products or expansions released in the current Spring or Autumn product launch and are not included in the latest version of the General Catalogue.	 Roughing
NEW Products or expansions that have already been introduced in one of the previous Spring or Autumn product launches but are not included in the latest General Catalogue.	 Medium cutting
APPLICATION	 Light cutting
 Face milling	 Pre-finishing
 Chamfer milling	 Finishing
 Shoulder milling with R	 Fine-finishing
 Face milling close to a wall	TOOL MATERIAL
 Shoulder milling	 Ultra micro grain carbide Ultra micro grain carbide substrate material.
 Side milling	 Cubic boron nitride Mitsubishi Materials' original CBN material.
 Slot milling	 Ceramic For high speed efficient machining of super alloys due to the excellent high temperature strength property.
 Ramping	 High hardness powder metallurgy HSS High hardness powder metallurgy HSS substrate material.
 Pocket milling	 High grade high alloy HSS High grade high alloy HSS substrate material.
 Slot milling with R	 Cobalt high speed steel Cobalt high speed steel substrate material.
 Copy milling	 High speed steel High speed steel substrate material.
 T-Slot milling	

SYMBOLS

COATING



SMART MIRACLE coating

New smooth and dense coating technology for high efficiency milling of difficult to cut materials.



CRN coating

Newly developed CrN coating for Copper Electrodes machining.



Violet coating

Increased tool life of 2-3 times more than TiN coated products.



DP coating

New generation coating suitable for a wide range of materials.



MIRACLE coating

The original Miracle (Al,Ti)N coating. Also suitable for dry cutting.



[Al, Ti]N coating

[Al,Ti]N highly versatile application range.



[Al,Ti,Cr]N multi-layer coating

For carbon, alloy and hardened steels.



IMPACT MIRACLE coating

Single phase nano crystal coating technology has higher film hardness and heat resistance.



MIRACLE coating

The original MIRACLE (Al,Ti)N coating. Also suitable for dry cutting.



VFR coating

The [AlCrSi]N/[AlTiSi]N PVD multilayer coating is ideal for machining of extremely hard materials up to 70 HRC.



DLC coating

Hardness similar to CVD diamond coating achieved with high adhesion strength.



Diamond coating

Suitable for CFRP and CFRP-aluminium materials.



Diamond coating

Suitable for graphite machining.



Diamond coating

The original CVD diamond coating.



CVD Diamond coating

Unique multi-layer micro-grain diamond crystal control technology drastically improves wear resistance and smoothness.

CUTTING EDGE PROPERTIES



Sharp corner edge

Indicates the end mill has a sharp corner edge.



Gash land

Indicates the end mill cutting edge has a protective chamfer.



Rake angle



Helix angle

Indicates the helix angle of the end mill.



Point angle

Indicates the drill point angle.



Roughing flute geometry



Variable helix



Rounded gash



Corner angle

WEB THINNING



X type point geometry

X web thinning used at the drill point.



XR type point geometry

XR web thinning used at the drill point.



S type point geometry

Easy cutting geometry.



N type point geometry

Effective when the point web is thick.



Chipbreaker

SYMBOLS

TOLERANCES



Tolerance of taper angle
Indicates the tolerance of the taper angle.



R tolerance
Indicates the radial tolerance of a ball nose end mill.



R tolerance
Indicates the radial tolerance of the corner radius.



R tolerance
Indicates the radial tolerance of a cutter with a corner radius.



Outside diameter tolerance
Indicates the diameter tolerance of the end mill.



Peak tolerance
Indicates the tolerance for the end diameter.



Shank diameter tolerance



Shank diameter tolerance



Drill tolerance / diameter

COOLANT HOLES



External coolant



Internal coolant



Internal coolant



Centered, internal coolant hole



Radial, internal coolant holes



Internal coolant holes



Internal coolant holes

MEMO

EUROPEAN SALES COMPANIES

GERMANY

MITSUBISHI MATERIALS TOOLS EUROPE GMBH
Comeniusstr. 2 . 40670 Meerbusch
Phone +49 2159 91890 . Fax +49 2159 918966
Email admin@mmchg.de

UK Office

MMC HARDMETAL UK LTD
1 Centurion Court, Centurion Way
Tamworth, B77 5PN
Phone +44 1827 312312
Email sales@mitsubishicarbide.co.uk

UK Deliveries / Returns

Unit 4 B5K Business Park, Quartz Close
Tamworth, B77 4GR

SPAIN

MITSUBISHI MATERIALS ESPAÑA, S.A.
Calle Emperador 2 . 46136 Museros / Valencia
Phone +34 96 1441711
Email comercial@mmevalencia.es

FRANCE

MMC METAL FRANCE S.A.R.L.
6, Rue Jacques Monod . 91400 Orsay
Phone +33 1 69 35 53 53 . Fax +33 1 69 35 53 50
Email mmfsales@mmc-metal-france.fr

POLAND

MMC HARDMETAL POLAND SP. Z O.O.
Al. Armii Krajowej 61 . 50-541 Wrocław
Phone +48 71335 1620 . Fax +48 71335 1621
Email sales@mitsubishicarbide.com.pl

ITALY

MMC ITALIA S.R.L.
Viale Certosa 144 . 20156 Milano
Phone +39 0293 77031 . Fax +39 0293 589093
Email info@mmc-italia.it

TURKEY

MITSUBISHI MATERIALS TOOLS EUROPE GMBH ALMANYA İZMİR MERKEZ ŞUBESİ
Adalet Mahallesi Anadolu Caddesi No: 41-1 . 15001 35530 Bayraklı / İzmir
Phone +90 232 5015000 . Fax +90 232 5015007
Email info@mmchg.com.tr

www.mmc-carbide.com

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