

QM MILL **MPM/PME Type**

Low cutting force geometry

- Unique 3D geometry insert provides stable cutting and less power consumption.
- BT30 Capable of running on low horse power & compact machines.




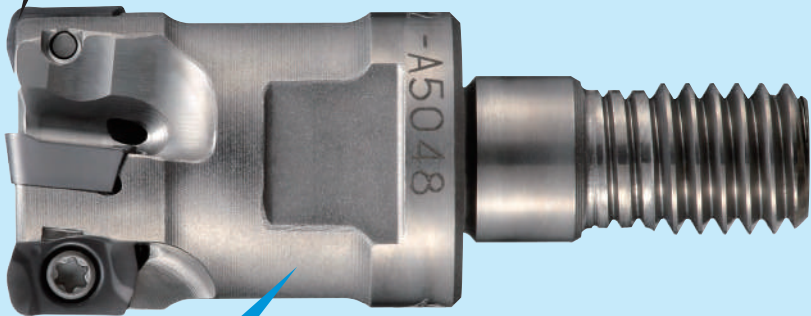
Multi - flutes specification

- High speed and high efficient machining.

Vibration free

- Control vibration with combination of MSN carbide shank holder for longer tool life.




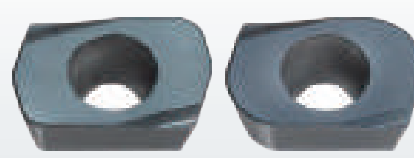

Low cutting force geometry **High feed machining with Multi-flutes specification**

Adopted G-Body **Possible to use even for finishing applications**

Insert Line-Up

A variety of inserts all fit into the same body.

<p>High feed insert</p>  <p style="text-align: center;">EOMT0602...ZER (R1.0, 2.0)</p>	<p>High feed insert for unfavorable conditions</p>  <p style="text-align: center;">EOMW060210ZER</p>	
<p>Shoulder insert</p>  <p style="text-align: center;">ZOMT0602...ZER-PL (R0.2,0.4,0.8)</p>	<p>For high hardened steel</p>  <p style="text-align: center;">EOHW0602...ZTR (R1.0, 2.0)</p>	<p>"Mirror Insert" for finishing side & bottom face</p>  <p style="text-align: center;">YOHW0602...ZER-12</p>

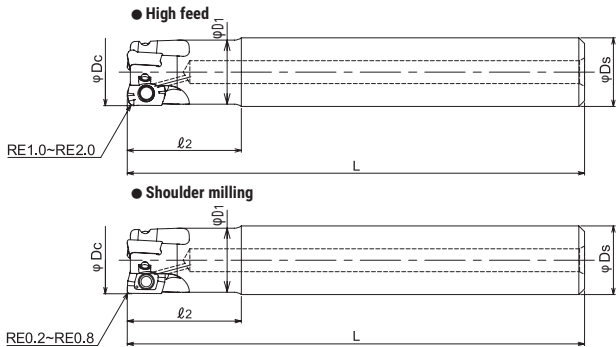
QM MILL **MPM/PME Type**

PME
TYPE

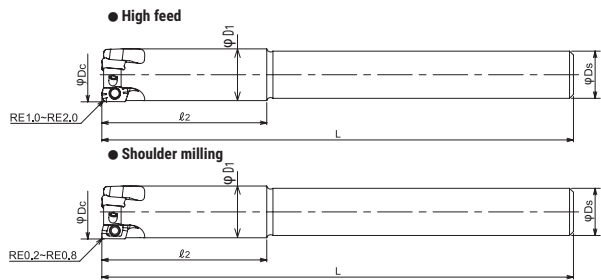
Shank Type



■ **PME type (Through coolant hole)**



■ **PME-LS type (No coolant hole)**



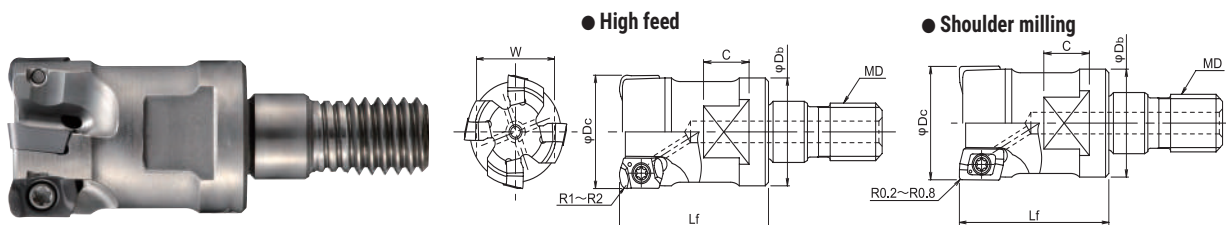
Type	Cat.No.	Stock	No. of inserts	Dimensions (mm)					Insert
				φD _c	ℓ ₂	L	φD ₁	φD _s	
Standard	PME2010S10	●	2	10	20	80	9.3	10	EO**0602**Z*R ZOMT0602**ZER YOHWO602**ZER-12
	PME3012S12	●	3	12			11.2	12	
	PME3014S12	●		14			13.15		
Long shank	PME2011S10-LS	●	2	11	33	120	10.3	10	
	PME3013S12-LS	●	3	13			12.2	12	
	PME3014S12-LS	●		14			13.15		

Screw	Torque(N.m)	Wrench
DSW-1840H	0.4	A-06

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TYPE

Modular Type

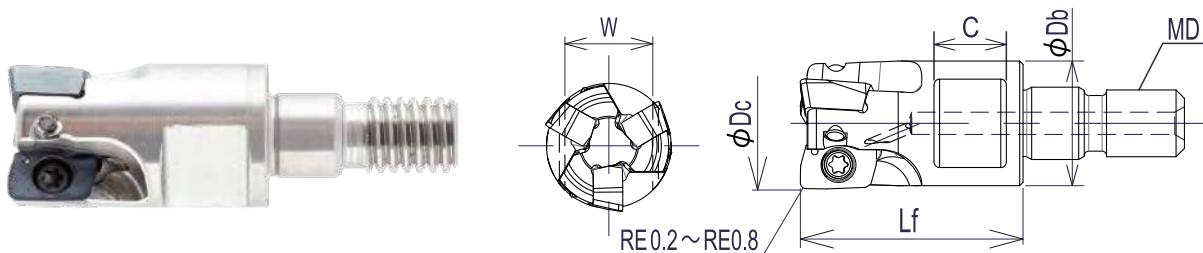


Cat.No.	Stock	No. of inserts	Dimensions (mm)						Insert
			φDc	Lf	φDb	MD	C	W	
MPM-2010-M6	●	2	10	18	9.5	M6	6.5	8	EO**0602**Z*R ZOMT0602**ZER YOHW0602**ZER-12
MPM-2011-M6	●		11		9.7				
MPM-3012-M6	●	3	12	20	11.2	M6	8	12	
MPM-3013-M6	●		13		11.5				
MPM-3015-M8	○	4	15	23	14	M8	8	12	
MPM-4016-M8	●		16		15				
MPM-4017-M8	●	17	M8						
MPM-4018-M8	○	18		M8					
MPM-5020-M10	●	5	20		30	19	M10	9	
MPM-5021-M10	●		21	M10					
MPM-6025-M12	●	6	25		35	23.6	M12	10	
MPM-7030-M16	●	7	30	43	29	M16	12	22	
MPM-8032-M16	●	8	32			M16			

MPT
TYPE

High Precision "QM MILL"

High tolerance insert-pocket for the ground inserts



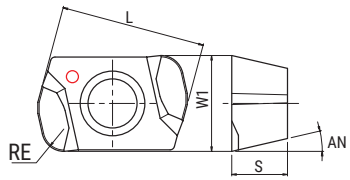
Cat.No.	Stock	No. of inserts	Dimensions (mm)						Insert
			φDc	Lf	φDb	MD	C	W	
MPT-2010A00-M6	●	2	10	18	9.5	M6	6.5	8	ZOMT0602**ZER YOHW0602**ZER-12
MPT-2011A00-M6	○		11		9.7				
MPT-3012A00-M6	●	3	12	20	11.2	M6	8		
MPT-3013A00-M6	○		13		11.5				
MPT-4016A00-M8	●	4	16	23	15	M8	8	12	

Screw	Torque(N.m)	Wrench
DSW-1840H	0.4	A-06

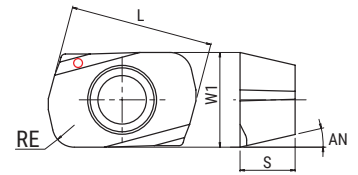
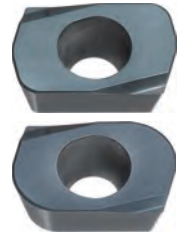
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Insert

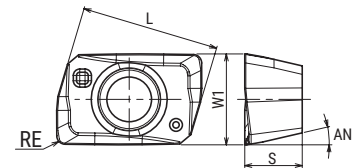
High feed insert



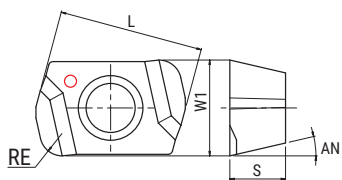
For high hardened steel



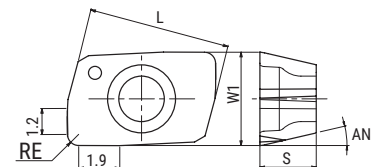
Shoulder insert



High feed insert for unfavorable conditions

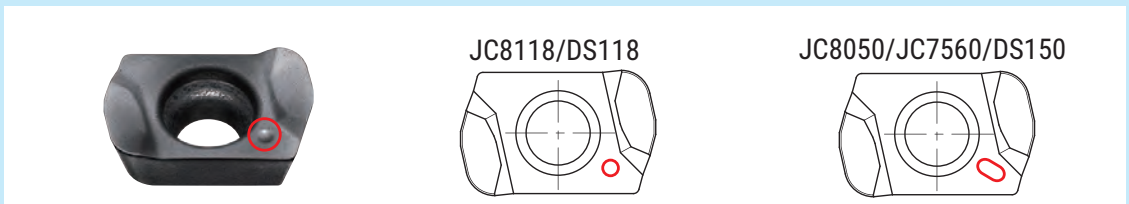


"Mirror Insert" for finishing side & bottom face



Type	Cat.No.	Tolerance	PVD Coating						Dimensions (mm)				
			DH102	DS118	DS150	JC7560	JC8015	JC8050	JC8118	RE	L	W1	S
High feed insert	EOMT060210ZER	M		●	●	●		●	●	1	6.5	2.5	13°
	EOMT060220ZER			●	●			●	●	2			
High feed insert for unfavorable conditions	EOMW060210ZER					●		●	●	1			
For high hardened steel	EOHW060210ZTR	H	●						●	●			
	EOHW060220ZTR		●							●	●	2	
shoulder insert	ZOMT060202ZER-PL	M						●	●	0.2	6.62	4.3	2.7
	ZOMT060204ZER-PL							●	●	0.4			
	ZOMT060208ZER-PL								●	●			
"Mirror Insert" for finishing side & bottom face	YOHW060203ZER-12	H	●							0.3	6.5	2.6	
	YOHW060205ZER-12		●				●			0.5			
	YOHW060208ZER-12		●							0.8			
							●						

GRADE MARKINGS



MAGNETIZER



- Magnetizing and demagnetizing a wrench can easily be done by inserting the tip into the magnetizer and rubbing lightly.
- Do not use in the vicinity of the equipment that can be influenced with magnetism.

Cat.No.	Stock
MAGNETISER	●

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■ Insert selection guide

Material	Carbon steel (S50C, S55C) below 250HB						Tool & die steel # (SKD61, SKD11) below 255HB							
	Cat.No.	Grade	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150
EOMT0602*0ZER			☆	☆	☆				☆	☆	☆			
EOMW060210ZER			○	○	◎				○	○	◎			
EOHW0602*0ZTR														

Material	Mold steel (HPM7, PX5, KPM30) 30-36HRC						Mold steel (NAK80, HPM1) 38-43HRC							
	Cat.No.	Grade	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150
EOMT0602*0ZER			☆	☆	☆				☆	☆				
EOMW060210ZER			○	○	◎				◎	○				
EOHW0602*0ZTR														

Material	Hardened die steel (SKD61, DAC, DHA) 42-52HRC						Hardened die steel (SKD11, SLD, DC11) 55-62HRC							
	Cat.No.	Grade	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150
EOMT0602*0ZER			☆						x	x				
EOMW060210ZER			○	●					○					
EOHW0602*0ZTR			◎						●			◎		

Material	Cast iron (FC, FCD) below 300HB						Stainless steel (SUS304) below 250HB							
	Cat.No.	Grade	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150
EOMT0602*0ZER			○							◎	○			
EOMW060210ZER			◎		●					●				
EOHW0602*0ZTR														

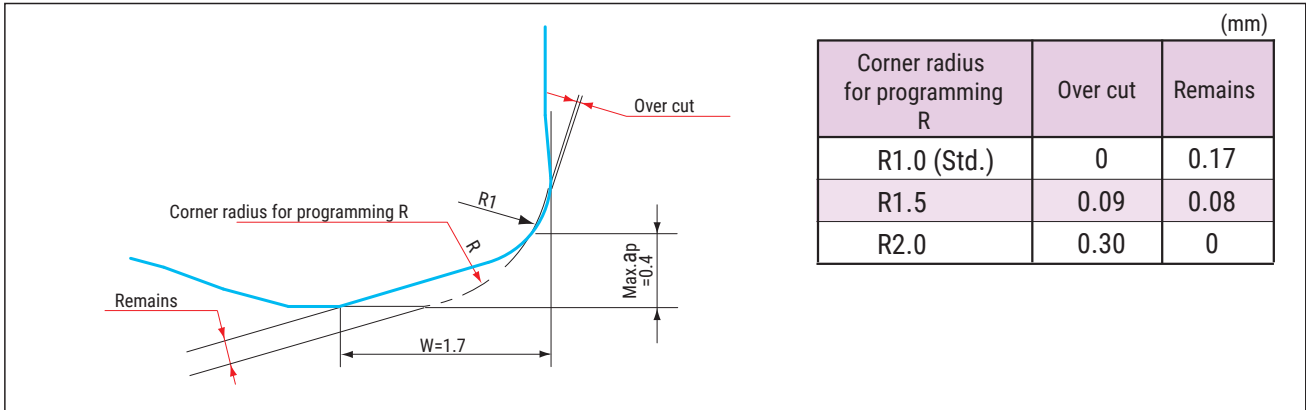
Material	Titanium alloy (Ti-6Al-4V)						Heat resistant alloy (INCO718)							
	Cat.No.	Grade	JC8118	JC8050	JC7560	DH102	DS118	DS150	JC8118	JC8050	JC7560	DH102	DS118	DS150
EOMT0602*0ZER			○	○	◎		○	◎	◎	○	○		○	○
EOMW060210ZER					●					●				
EOHW0602*0ZTR														

◎: First choice ○: For general milling ●: For unstable milling ☆: For light cutting force x: Not recommended

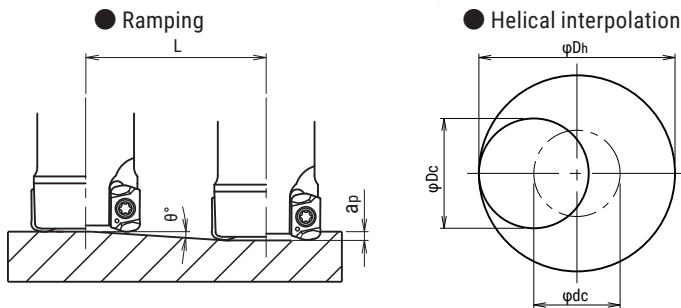
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Definition of corner shape for programming



Recommended Data for Profile Milling



- Calculation of tool pass dia.

$$\varphi_{dc} = \varphi_{Dh} - \varphi_{Dc}$$

Tool pass dia. Bore dia. Tool Dia.

- Depth of cut per one circuit should not exceed max. depth of cut a_p
- Down cutting is recommended, tool pass rotation should be counterclockwise

- In case of ramping and helical interpolation, apply 70% or less feed (V_f) from standard cutting condition table
- In case of drilling, apply 50% or less Z axis feed (F) from standard cutting condition table
- Long consecutive chips may result in case of drilling, confirm safe operating conditions

Cat.No.	Tool dia. (mm)	Effective cutting dia. (mm)	Max.depth of cut: a_p (mm)	Ramping		Helical interpolation	
				Max. ramping angle θ	Max. depth of cut (a_p) Total cutting length L(mm)	Min. Bore dia. (mm)	Max. Bore dia. (mm)
MPM-2010-M6	10	6.6	0.3	2°18'	7.5	15	18
MPM-2011-M6	11	7.6	0.3	1°54'	9	17	20
MPM-3012-M6	12	8.5	0.3	1°36'	10.7	19	22
MPM-3013-M6	13	9.5	0.3	1°24'	12.3	21	24
MPM-3015-M8	15	11.5	0.4	1°12'	19.1	25	28
MPM-4016-M8	16	12.5	0.4	1°	22.9	27	30
MPM-4017-M8	17	13.5	0.4	0°54'	25.5	29	32
MPM-4018-M8	18	14.5	0.4	0°51'	27.0	31	34
MPM-5020-M10	20	16.5	0.4	0°45'	30.6	35	38
MPM-5021-M10	21	17.5	0.4	0°42'	32.7	37	40
MPM-6025-M12	25	21.5	0.4	0°30'	45.8	45	48
MPM-7030-M16	30	26.5	0.4	0°27'	50.9	55	58
MPM-8032-M16	32	28.5	0.4	0°24'	57.3	59	62
PME2010S10	10	6.6	0.3	2°18'	7.5	15	18
PME2011S10-LS	11	7.6	0.3	1°54'	9	17	20
PME3012S12	12	8.5	0.3	1°36'	10.7	19	22
PME3013S12-LS	13	9.5	0.3	1°24'	12.3	21	24
PME3014S12 (-LS)	14	10.5	0.3	1°18'	13.2	23	26

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Recommended Cutting Conditions

Material		High Feed		Side Finishing	Bottom Finishing
		EOMT / EOMW	EOHW	YOHW	YOHW
Carbon Steel below 250HB	Grade	JC7560 (JC8050 JC8118)	-	JC8015 (DH102)	JC8015 (DH102)
	Vc	95 - 120	-	280 - 400	160 - 250
	fz	0.5 - 0.9	-	0.1 - 0.15	0.14 - 0.2
	ap	0.2 - 0.4	-	~1.2	~0.12
	ae	0.7 Dc	-	~0.1	0.6 Dc
Tool & Die Steel below 255HB	Grade	JC7560 (JC8050 JC8118)	-	JC8015 (DH102)	JC8015 (DH102)
	Vc	90 - 110	-	250 - 360	150 - 230
	fz	0.5 - 0.9	-	0.1 - 0.15	0.13 - 0.18
	ap	0.15 - 0.4	-	~1.0	~0.12
	ae	0.7 Dc	-	~0.1	0.6 Dc
Mold Steel 30-36HRC	Grade	JC8118 (JC7560 JC8050)	-	JC8015 (DH102)	JC8015 (DH102)
	Vc	90 - 110	-	250 - 360	150 - 230
	fz	0.5 - 0.9	-	0.1 - 0.15	0.13 - 0.18
	ap	0.2 - 0.4	-	~1.0	~0.12
	ae	0.7 Dc	-	~0.1	0.6 Dc
Mold Steel 38-43HRC	Grade	JC8118 (JC8050)	-	DH102 (JC8015)	DH102 (JC8015)
	Vc	70 - 90	-	200 - 280	130 - 200
	fz	0.5 - 0.7	-	0.08 - 0.12	0.08 - 0.12
	ap	0.2 - 0.3	-	~1.0	~0.12
	ae	0.6 Dc	-	~0.1	0.6 Dc
Hardened Die Steel 42-52HRC	Grade	JC8118	JC8118	DH102 (JC8015)	DH102 (JC8015)
	Vc	50 - 70	70 - 90	140 - 200	90 - 120
	fz	0.45 - 0.6	0.3 - 0.6	0.08 - 0.1	0.08 - 0.1
	ap	0.15 - 0.3	0.1 - 0.25	~0.8	~0.1
	ae	0.6 Dc	0.6 Dc	~0.1	0.4 Dc
Hardened Die Steel 55-62HRC	Grade	-	DH102	DH102	DH102
	Vc	-	70 - 80	100 - 150	50 - 70
	fz	-	0.27 - 0.3	0.08 - 0.1	0.06 - 0.08
	ap	-	0.1 - 0.15	~0.5	~0.1
	ae	-	0.4 Dc	~0.1	0.4 Dc
Grey & Nodular Cast Iron below 300HB	Grade	JC8118	-	JC8015 (DH102)	JC8015 (DH102)
	Vc	120 - 150	-	280 - 400	130 - 200
	fz	0.5 - 0.9	-	0.1 - 0.15	0.1 - 0.15
	ap	0.2 - 0.4	-	~1.2	~0.15
	ae	0.7 Dc	-	~0.12	0.6 Dc
Stainless Steel	Grade	JC8050 (JC7560)	-	JC8015 (DH102)	JC8015 (DH102)
	Vc	95 - 120	-	250 - 360	150 - 230
	fz	0.5 - 0.9	-	0.1 - 0.15	0.13 - 0.18
	ap	0.15 - 0.4	-	~1.0	~0.12
	ae	0.6 Dc	-	~0.1	0.6 Dc
Titanium Alloy	Grade	DS150 (JC7560 JC8050 DS118)	-	JC8015 (DH102)	JC8015 (DH102)
	Vc	50 - 60	-	55 - 80	30 - 50
	fz	0.4 - 0.5	-	0.08 - 0.12	0.09 - 0.12
	ap	0.15 - 0.3	-	~1.0	~0.12
	ae	0.6 Dc	-	~0.1	0.6 Dc
Heat Resistant Alloy	Grade	JC8118 (JC8050)	-	-	-
	Vc	25 - 30	-	-	-
	fz	0.3 - 0.4	-	-	-
	ap	0.15 - 0.3	-	-	-
	ae	0.6 Dc	-	-	-

Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. In case of chatter occurring, recommended to reduce ap or rpm and keep feed per tooth.
3. ap should be reduced when using on low rigidity machine.
4. Use air blow.

■ Recommended Cutting Conditions

Material		Shoulder Milling	Side Finishing	Bottom Finishing
		ZOMT	ZOMT	ZOMT
Carbon Steel below 250HB	Grade	JC8050 (JC8118)	JC8050 (JC8118)	JC8050 (JC8118)
	Vc	128 - 160	145 - 240	90 - 180
	fz	0.06 - 0.08	0.07 - 0.13	0.1 - 0.15
	ap	~4.0	~4.0	~0.15
	ae	~0.15 Dc	~0.1	~0.6 Dc
Tool & Die Steel below 255HB	Grade	JC8050 (JC8118)	JC8050 (JC8118)	JC8050 (JC8118)
	Vc	120 - 150	130 - 215	80 - 160
	fz	0.04 - 0.06	0.07 - 0.13	0.1 - 0.15
	ap	~4.0	~4.0	~0.15
	ae	~0.15 Dc	~0.1	~0.6 Dc
Mold Steel 30-36HRC	Grade	JC8118 (JC8050)	JC8118 (JC8050)	JC8118 (JC8050)
	Vc	120 - 150	130 - 215	80 - 160
	fz	0.03 - 0.05	0.07 - 0.13	0.1 - 0.15
	ap	~4.0	~4.0	~0.15
	ae	~0.15 Dc	~0.1	~0.6 Dc
Mold Steel 38-43HRC	Grade	JC8118 (JC8050)	JC8118 (JC8050)	JC8118 (JC8050)
	Vc	90 - 120	110 - 185	70 - 140
	fz	0.03 - 0.05	0.05 - 0.1	0.1 - 0.15
	ap	~3.0	~3.0	~0.15
	ae	~0.13 Dc	~0.1	~0.6 Dc
Hardened Die Steel 42-52HRC	Grade	JC8118	JC8118	JC8118
	Vc	80 - 100	90 - 120	75 - 100
	fz	0.03 - 0.05	0.05 - 0.07	0.1 - 0.12
	ap	~2.5	~2.5	~0.1
	ae	~0.12 Dc	~0.1	~0.6 Dc
Grey & Nodular Cast Iron below 300HB	Grade	JC8118	JC8118	JC8118
	Vc	120 - 150	125 - 210	90 - 180
	fz	0.06 - 0.08	0.07 - 0.15	0.12 - 0.18
	ap	~4.0	~4.0	~0.15
	ae	~0.15 Dc	~0.1	~0.6 Dc
Stainless Steel	Grade	JC8050	JC8050	JC8050
	Vc	120 - 150	130 - 215	80 - 160
	fz	0.04 - 0.06	0.07 - 0.13	0.1 - 0.15
	ap	~4.0	~4.0	~0.15
	ae	~0.15 Dc	~0.1	~0.6 Dc

Note

1. Please adjust cutting conditions according to machine rigidity or work rigidity.
2. In case of chatter occurring, recommended to reduce ap or rpm and keep feed per tooth.
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4. Use air blow.