

# PRODUCT NEWS

PN-E-005

Generation 2020' s

NEW

**DIJET**<sup>®</sup>

## Multi EXTREME

Possible to high feed machining and shoulder milling.

## EXM/MEX<sub>type</sub>

High feed Machining HF type



Shoulder milling SM type

**DIJET GmbH • [www.dijet.de](http://www.dijet.de)**

## Features

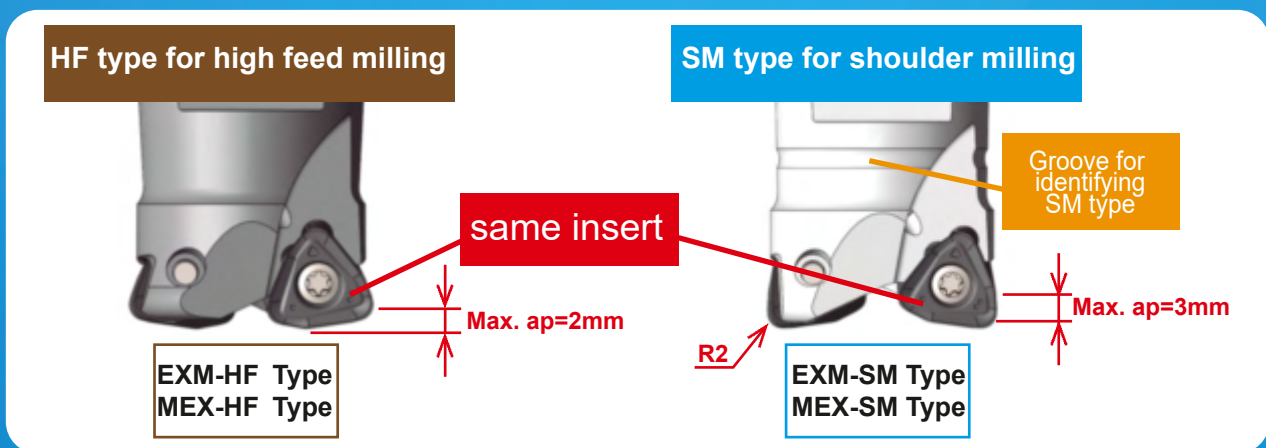
### Both high feed machining and shoulder

#### Features 1

2 types of holder is available by using same insert:

HF type for high feed machining, Max. depth of cut ( $a_p$ )=2mm is possible.

SM type for shoulder milling, possible to facemilling, vertical wall milling, and corner milling.



#### Features 2

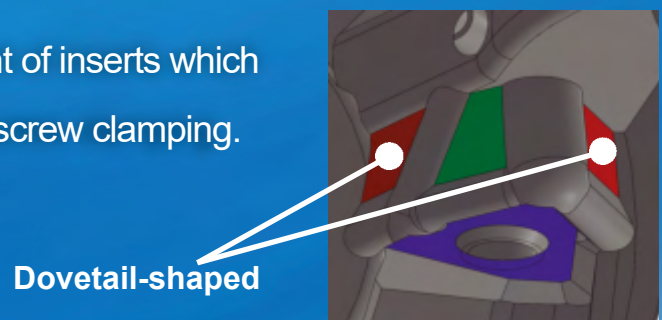
Economical double-side insert (6 corners).

Due to multi blades specification, achieved high efficient machining.



#### Features 3

Due to dovetail-shaped binding face, movement of inserts which occurs by cutting force is prevented only single screw clamping.



# milling is possible by using one type of insert.

## Features 4

2 insert grades are available:

PVD coated grade „JC8050“ achieved both fracture toughness and wear resistance.

PVD coated grade „JC8118“ provided high versatility and can be widely applied such as General & mold steel and high hardened steel less than 50HRC.

## Application

ISO	P					M					K				H			
	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	H01	H10	H20	
Applicable range			NEW	JC8050				NEW	JC8050									
		NEW	JC8118				NEW	JC8118		NEW	JC8118			NEW	JC8118			

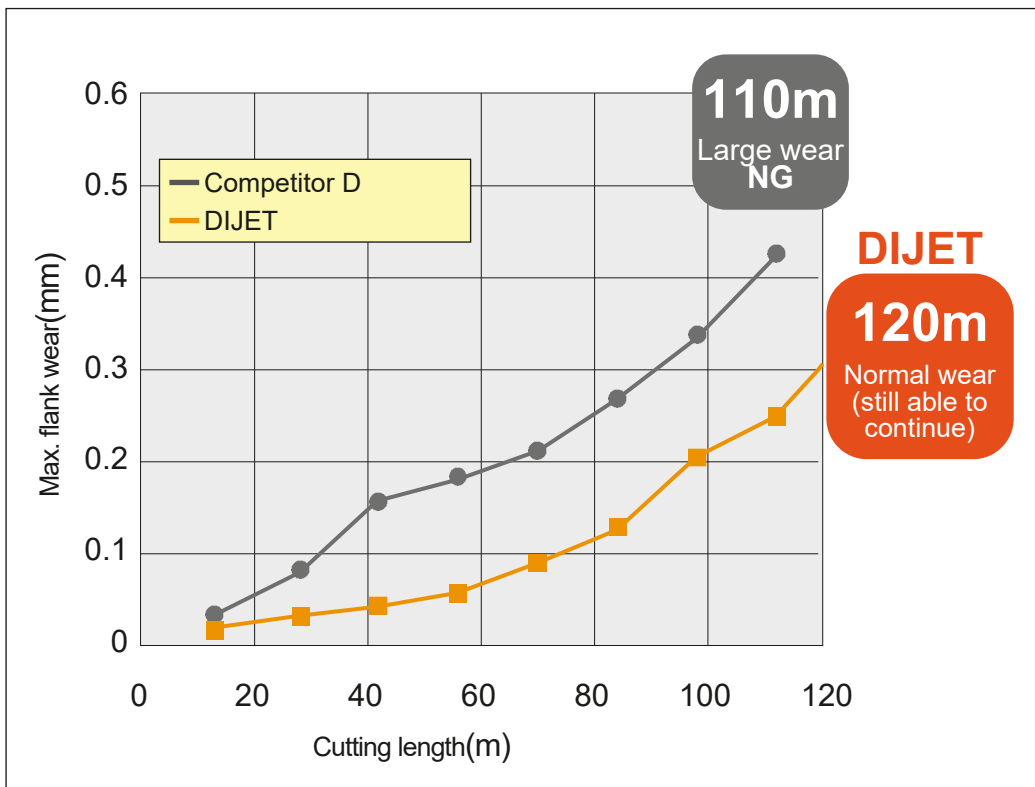
HF type for high feed milling

SM type for shoulder milling

## Cutting performance

● Tool life comparison (for high feed machining)

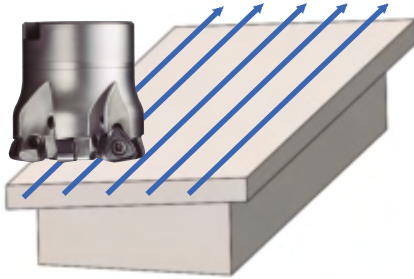
- Material: Mold steel (P20)
- Cutting conditions :  
Vc=200m/min, fz=1.5mm/t  
ap=1.5mm, ae=22mm
- Test by one insert
- Machine: Vertical MC
- UP & DOWN CUT,  
Air blow
- Tool dia.:  $\phi 32$
- (MEX-2032-HF-M16)



## Cutting data

### 1. High feed machining on steel for structure

< Roughing slope surface >



#### Result

After 427 m, still able to continue. Compared with competitor tool cost can be reduced, due to increase number of insert corner (from 4 to 6 corners).

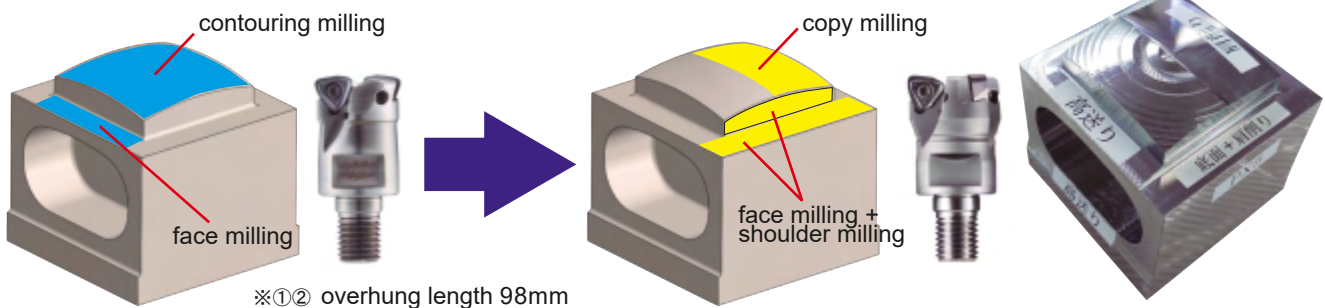
Work	Part name	Large welding jig	
	Material	SS400 Steel for structure	
	Hardness	-	
Tool	Tool No.	EXM-5050R-HF-22 (φ 50)	
	Insert No.	WNMU070620ZER-PM (JC8050)	
Cutting conditions	Cutting speed	n	800 (min <sup>-1</sup> )
		V <sub>c</sub>	125 (m/min)
	Feed speed	V <sub>f</sub>	6,000 (mm/min)
		f <sub>z</sub>	1.5 (mm/t)
	a <sub>p</sub>	1.5 (mm)	
	a <sub>e</sub>	35 (mm)	
	Coolant	External	
	Machine	Vertical MC	

### 2. High feed machining to shoulder milling on mold steel

< Removal of machining steps in case of work material with slope & corner milling >

① Contouring milling of slope surface (by HF type)

② Copy milling of slope surface (by SM type)



Work	Part name	Test piece			
	Material	PX5 Mold steel (P20)			
	Hardness	30-36HRC			
Tool	Tool No.	① MEX-2032-HF-M16 (φ 32-2N) + MSN-M16-55-S32C		② MEX-2032-SM-M16 (φ 32-2N) + MSN-M16-55-S32C	
	Insert No.	WNMU070620ZER-PM (JC8118) ※in case of ①②, using same insert corner			
Cutting conditions	Cutting speed	n	① 1,500 (min <sup>-1</sup> )	② 2,000 (min <sup>-1</sup> )	
		V <sub>c</sub>	150 (m/min)	201 (m/min)	
	Feed speed	V <sub>f</sub>	3,600 (mm/min)	1,000 (mm/min)	
		f <sub>z</sub>	1.2 (mm/t)	0.25 (mm/t)	
	a <sub>p</sub>	0.8 (mm)		0.3 (mm)	
	a <sub>e</sub>	14 (mm)		1 (mm)	
	Coolant	External		Air blow (Internal)	
	Machine	Vertical MC			

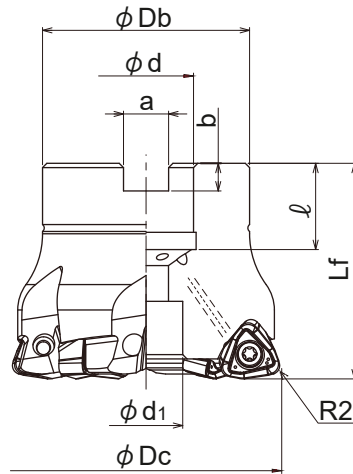
#### Result

Possible to removing the machining steps by using HF/SM type separately, therefore achieved high-accuracy in final finishing. And, due to using the same insert, reduce the type & the running cost of the tool.

## Line up

### ● Facemill type

**G-Body**



● Through coolant hole

Parts	
Clamp screw	Wrench (not be included)
TSW-410H	A-15T

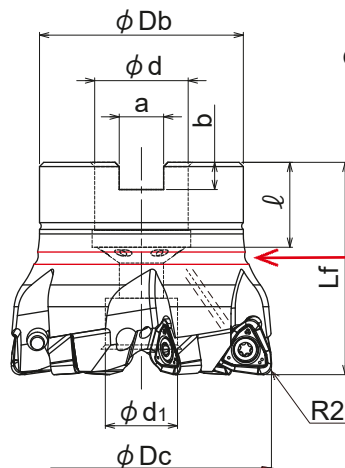
Clamp screw	Recommended torque (N · m)
TSW-410H	3.5



### ● Body (HF type for high feed milling)

Type	Cat. No.	Stock	No. of inserts	Dimensions (mm)								Set bolt	Weight (kg)	inserts	
				$\phi Dc$	$Lf$	$\phi Db$	$\phi d$	$\phi d_1$	$a$	$b$	$\ell$				
Metric Bore	EXM-5050R-HF-22	●	5	50	50	40	22	16.5	10.4	6.3	20	M10	Head cap screw (JIS Standard)	0.38	WNMU070620 ZER-PM
	EXM-5052R-HF-22	●	5	52	50	40	22	16.5	10.4	6.3	20	M10		0.40	
	EXM-6063R-HF-22	●	6	63	50	48	22	17	10.4	6.3	20	M10		0.64	

● : Standard stock items □ : Stock in Japan. (14 days delivery upon ordering)  
 Note) 1. All cutters are supplied without inserts. 2. All cutters are supplied without wrench & MOLY.



● Through coolant hole

Parts	
Clamp screw	Wrench (not be included)
TSW-410H	A-15T

※ Difference of looking in HF type and SM type for tool proof.

Clamp screw	Recommended torque (N · m)
TSW-410H	3.5



### ● Body (SM type for shoulder milling)

Type	Cat. No.	Stock	No. of inserts	Dimensions (mm)								Set bolt	Weight (kg)	inserts	
				$\phi Dc$	$Lf$	$\phi Db$	$\phi d$	$\phi d_1$	$a$	$b$	$\ell$				
Metric Bore	EXM-5050R-SM-22	●	5	50	50	40	22	16.5	10.4	6.3	20	M10	Head cap screw (JIS Standard)	0.39	WNMU070620 ZER-PM
	EXM-5052R-SM-22	●	5	52	50	40	22	16.5	10.4	6.3	20	M10		0.41	
	EXM-6063R-SM-22	●	6	63	50	48	22	17	10.4	6.3	20	M10		0.63	

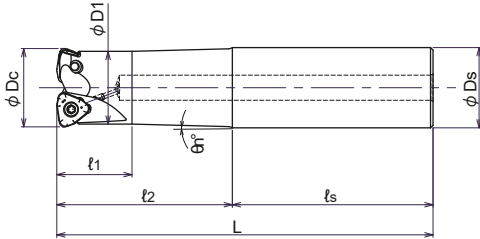
● : Standard stock items □ : Stock in Japan. (14 days delivery upon ordering)  
 Note) 1. All cutters are supplied without inserts. 2. All cutters are supplied without wrench & MOLY.

# Line up

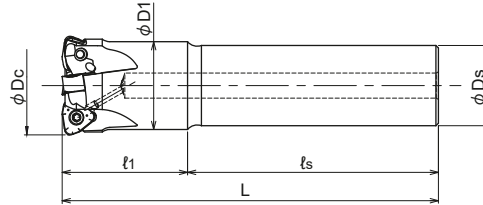
● End Mill type

● Through coolant hole

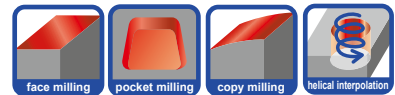
● In case  $\phi D_c = \phi 32$



● In case  $\phi D_c = \phi 35$  or  $40$



● Body (HF type for high feed milling)



Cat. No.	Stock	No. of inserts	Dimensions (mm)							Applicable inserts	Parts		
			$\phi D_c$	$l_1$	$l_2$	$l_s$	L	$\phi D_1$	$\phi D_s$		$\theta_n^\circ$ テーパ角	Clamp screw	Wrench (not be included)
EXM-2032-HF-70-S32	<input type="checkbox"/>	2	32	30	70	80	150	29	32	1.5°	 WNNMU070620ZER-PM	 TSW-410H	 A-15
EXM-2032-HF-120-S32	<input type="checkbox"/>	2	32	30	120	80	200	29	32	0.6°			
EXM-3035-HF-40-S32	<input type="checkbox"/>	3	35	40	-	110	150	31	32	-			
EXM-3035-HF-40L-S32	<input type="checkbox"/>	3	35	40	-	160	200	31	32	-			
EXM-4040-HF-50-S32	<input type="checkbox"/>	4	40	50	-	100	150	35	32	-			
EXM-4040-HF-50L-S32	<input type="checkbox"/>	4	40	50	-	150	200	35	32	-			

: Stock in Japan. (14 days delivery upon ordering)

Note) 1. All cutters are supplied without inserts. 2. All cutters are supplied without wrench & MOLY.

Clamp screw	Recommended torque (N · m)
TSW-410H	3.5

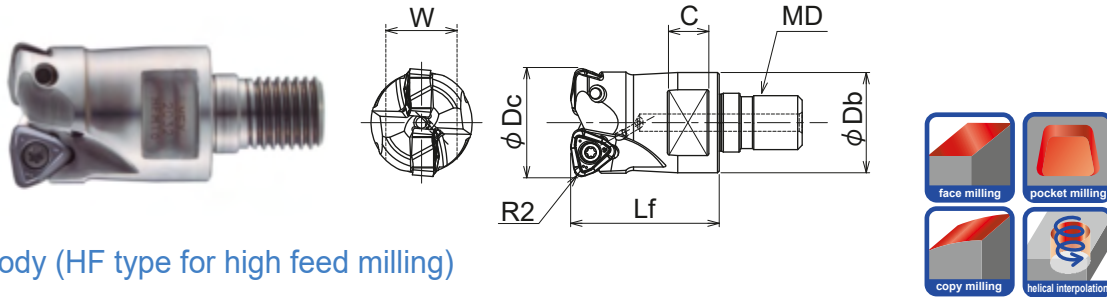
## Line up

### ● Modular head type

**G-Body**

● Through coolant hole

Clamp screw	Recommended torque (N · m)
TSW-410H	3.5



### ● Body (HF type for high feed milling)

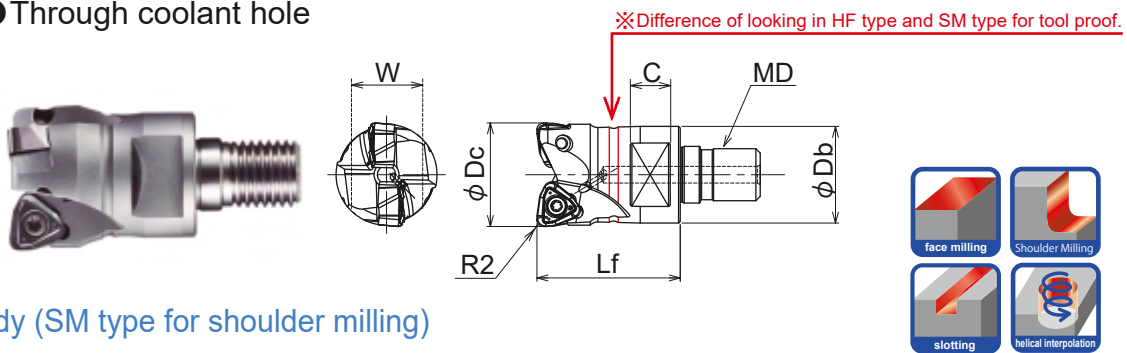
Cat. No.	Stock	No. of inserts	Dimensions (mm)						inserts	Parts	
			φDc	Lf	φDb	MD	C	W		Clamp screw	Wrench (not be included)
MEX-2032-HF-M16	●	2	32	43	29	M16	12	22			
MEX-3035-HF-M16	●	3	35	43	29	M16	12	22			
MEX-4040-HF-M16	●	4	40	43	32	M16	14	26			
MEX-4042-HF-M16	●	4	42	43	32	M16	14	26			

● : Standard stock items □ : Stock in Japan (14 days delivery upon ordering)  
 Note) 1. All cutters are supplied without inserts. 2. All cutters are supplied without wrench & MOLY.

**G-Body**

Adopted GN surface-hardening treatment on thermal resistant high strength steel gives high hardness over 65HRC and secure insert pocket and holder against thermal deformation, improved body durability and tool life by 30% or more. Make it difficult to be damaged even under severe cutting conditions. Also rust-proof and anti-welding effect is much improved.

### ● Through coolant hole



### ● Body (SM type for shoulder milling)

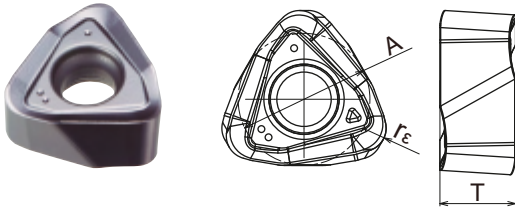
Cat. No.	Stock	No. of inserts	Dimensions (mm)						inserts	Parts	
			φDc	Lf	φDb	MD	C	W		Clamp screw	Wrench (not be included)
MEX-2032-SM-M16	●	2	32	43	29	M16	12	22			
MEX-3035-SM-M16	●	3	35	43	29	M16	12	22			
MEX-4040-SM-M16	●	4	40	43	32	M16	14	26			
MEX-4042-SM-M16	●	4	42	43	32	M16	14	26			

● : Standard stock items □ : Stock in Japan (14 days delivery upon ordering)  
 Note) 1. All cutters are supplied without inserts. 2. All cutters are supplied without wrench & MOLY.



# Line up

## ● Insert

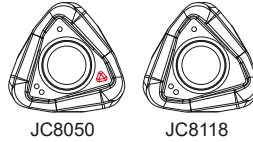


Cat. No.	Tolerance	PVD coated		Dimensions (mm)		
		JC8050	JC8118	A	T	rε
WNMU070620ZER-PM	M	●	●	11.2	6.4	2

● : Standard stock items

10 inserts per case.

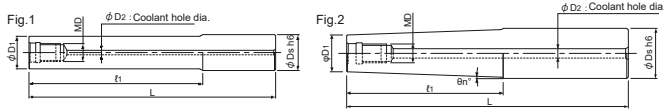
● Each grade shows different mark around the hole for tool proof.



## ● MSN Carbide shank arbor

### ■ End mill shank type

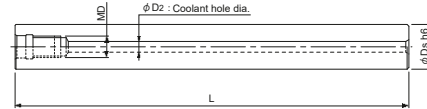
- Through coolant hole
- For high productivity



Cat. No.	Stock	Dimensions (mm)						Weight (kg)	Fig.	
		φDs	f1	L	φD1	θn°	MD			φD2
MSN-M16-25-S32C	●	32	25	90	29	-	M16	8	0.85	1
MSN-M16-55-S32C	●	32	55	120	29	-			1.13	1
MSN-M16-77-S32C	●	32	77	157	29	-			1.47	1
MSN-M16-97-S32C	●	32	97	177	29	-			1.64	1
MSN-M16-105-S32C	●	32	105	170	29	-			1.59	1
MSN-M16-117T-S32C	□	32	117	197	29	0°38'			1.88	2
MSN-M16-127-S32C	●	32	127	207	29	-			1.89	1
MSN-M16-127T-S32C	□	32	127	207	29	0°30'			2.23	2
MSN-M16-155-S32C	●	32	155	220	29	-			2.04	1
MSN-M16-177-S32C	●	32	177	257	29	-			2.32	1
MSN-M16-177T-S32C	●	32	177	257	29	0°23'			2.78	2
MSN-M16-195-S32C	●	32	195	260	29	-			2.40	1
MSN-M16-197T-S32C	□	32	197	277	29	0°23'			3.00	2
MSN-M16-225-S32C	●	32	225	290	29	-			2.57	1
MSN-M16-245-S32C	●	32	245	310	29	-			2.74	1
MSN-M16-295-S32C	●	32	295	360	29	-			3.17	1

### ■ Straight arbor type

- Through coolant hole
- For high productivity



Cat. No.	Stock	Dimensions (mm)				Weight (kg)
		φDs	L	MD	φD2	
MSN-M16-160S-S28C	●	28	160	M16	8	1.22
MSN-M16-230S-S28C	●		230			1.77
MSN-M16-310S-S28C	●		310			2.41
MSN-M16-157S-S32C	●	32	157	M16	8	1.61
MSN-M16-217S-S32C	●		217			2.22
MSN-M16-287S-S32C	●		287			2.94
MSN-M16-357S-S32C	●		357			3.66

● : Standard stock items

Note) Please see page 9 for recommended tightening torque.



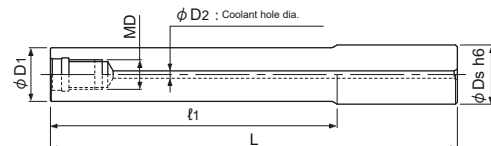
Please scan the following QR code for the other arbor (MSA type integrated carbide shank).

## ● MGN G-Body steel shank holder

- Adopted ultra-rigid and improved body durability "G-Body".
- Short type
- Cost-effective and high strength steel shank holder.

### ■ End mill shank type

- Through coolant hole



Cat. No.	Stock	Dimensions (mm)						Weight (kg)	
		φDs	f1	L	φD1	θn°	MD		φD2
MGN-M16-37-S32	□	32	37	107	29	-	M16	6	0.56
MGN-M16-77-S32	□	32	77	157	29	-	M16	6	0.83

● : Standard stock items □ : Stock in Japan

Note) 1. In case of using modular head combined with MGN steel shank holder, apply the recommended cutting conditions sheet (see page 9-17).

2. Please see page 9 for recommended tightening torque.

## Attention

**⚠ Attention to mounting head and MSN/ MGN shank holder.**

■ Tightening procedure

① Cleaning

Remove dirt and chips with air from the connecting thread and face of modular head and MSN/MGN shank holder.

② Initial Tightening

Tighten by hand until the head and the shank holder faces touch.

③ Final Tightening

Tighten slowly with torque control spanner wrench or DIJET DS type spanner wrench and confirm that there is no gap.

Attention : Final tightening without initial tightening cause connecting thread damage.

**⚠ NOTE**

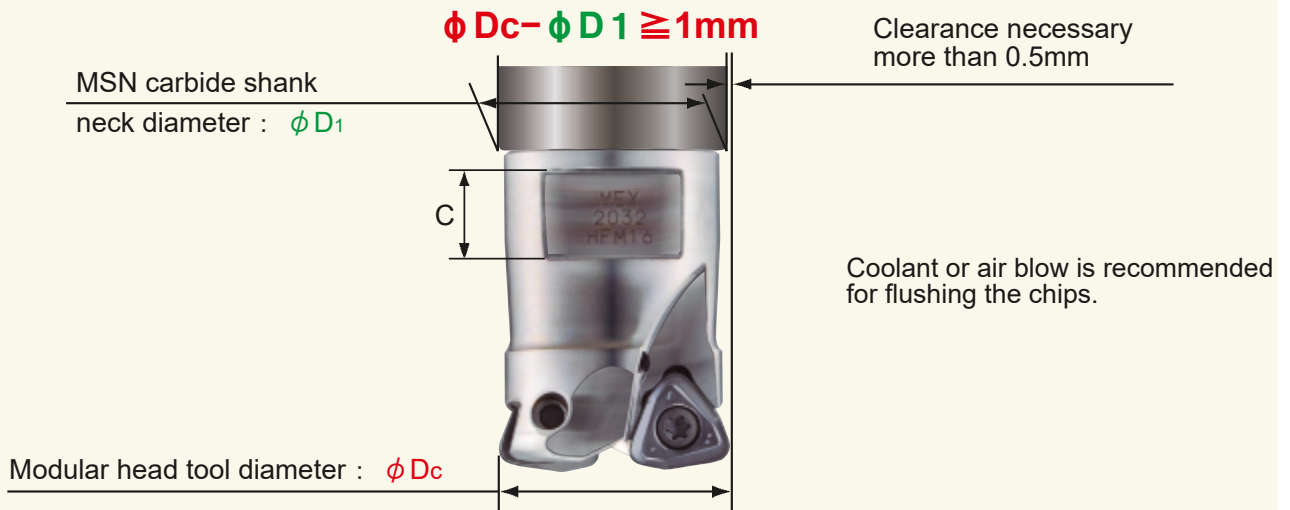
- Note) 1. Only use the torque control spanner wrench or DIJET DS type spanner wrench.  
 2. Please gently apply pressure on wrench.  
 3. Please confirm that there is no gap between MSN/MGN shank holder and modular head.

Thread	Tightening torque	Spanner size W(mm)
M6	8.0N · m	8☆
M8	16N · m	10, 12☆
M10	16N · m	14, 15
M12	20N · m	17, 19
M16	25N · m	22, 26

- Note) 1. Modular heads are supplied without spanner wrench.  
 2. In case of choosing torque control spanner wrench, confirm that the wrench size is match to the dimensions W & C of each modular head.  
 (There are some cases that modifying the thickness of spanner wrench is necessary)  
 3. ☆ mark shows: DIJET have a stock of DS-8 and 12 type spanner wrenches.

**⚠ Selection of "MSN Carbide shank holder"**

In case of using modular head over  $\phi 16\text{mm}$ , please select MSN carbide shank that diameter ( $\phi D_1$ ) is 1mm or more smaller than modular head ( $\phi D_c$ ). A wrong selection causes damage to the carbide shank.

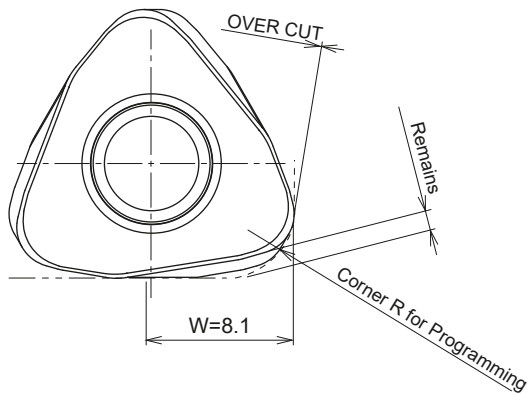


**⚠ Caution for the mounting to shrink fit holder.**

When you use a carbide shank and a modular head on the shrink fit holder, please shrink fit the only carbide shank without mounting a modular head. **Please mount a modular head after shrinking fit operation.**

Note) In case of shrink fit MSN shank + modular head together, it will be difficult to loose due to heat desipation.

## Definition of corner shape for programming (in case of using HF type)

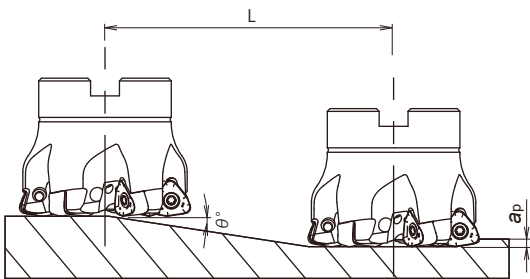


Corner radius for programming	Over cut	Remains
R3.0 ( Standard)	0	0.8
R3.5	0.06	0.73
R4.0	0.21	0.66

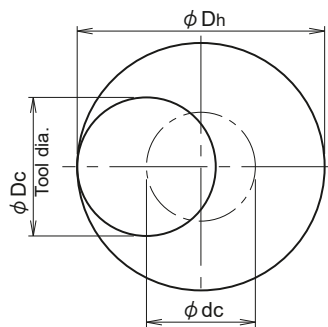
(mm)

## Attention for profile milling

### Ramping



### Helical interpolation



● Calculation of tool pass dia.

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

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, so tool pass rotation should be counterclockwise.

◎ In case of ramping and helical interpolation, apply 70% or less feed speed from standard cutting condition table.

◎ In case of drilling, apply 50% or less Z axis feed speed from standard cutting condition table.

◎ Long consecutive chips may come out in case of drilling, confirm the safe condition sufficiently.

Cat. No.	Tool dia (mm)	Eff. Cutting dia. (mm)	Max. depth of cut $a_p$ (mm)	Ramping		Helical interpolation		Max. drilling depth (mm)
				Max. ramping angle $\theta^\circ$	Total length at Max. $a_p$	Min. bore dia. Dh min (mm)	Max. bore dia. Dh max (mm)	
EXM / MEX-2032-HF...	32	15	2	2.5°	46	47	58	0.6
EXM / MEX-3035-HF...	35	18	2	2.5°	46	53	64	0.6
EXM / MEX-4040-HF...	40	23	2	2.0°	57	63	74	0.6
MEX-4042-HF-M16	42	25	2	1.8°	64	63	78	0.6
EXM-5050R-HF-22	50	33	2	1.5°	76	83	94	0.6
EXM-5052R-HF-22	52	35	2	1.2°	95	87	98	0.6
EXM-6063R-HF-22	63	46	2	1.0°	115	109	120	0.6
MEX-2032-SM-M16	32	28	2.5	0.8°	179	48	60	0.6
MEX-3035-SM-M16	35	31	2.5	0.8°	179	54	66	0.6
MEX-4040-SM-M16	40	36	2.5	0.8°	179	64	76	0.6
MEX-4042-SM-M16	42	38	2.5	0.8°	179	68	80	0.6
EXM-5050R-SM-22	50	46	2.5	0.8°	179	84	96	0.6
EXM-5052R-SM-22	52	48	2.5	0.8°	179	88	100	0.6
EXM-6063R-SM-22	63	59	2.5	0.8°	179	110	122	0.6

## Recommended cutting conditions for high feed milling

### MEX-HF and MSN type

1/2

Work materials	Grades	Tool dia. (mm)									
		32					35				
		No. of teeth 2N					No. of teeth 3N				
$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ (min <sup>-1</sup> )	$V_f$ (mm/min)	$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ (min <sup>-1</sup> )	$V_f$ (mm/min)		
Carbon steel (C50,C55) Below 250HB	JC8050	~100	1	~14	1,990	5,970	~100	1	~18	1,820	8,190
		150	0.8	~14	1,990	5,570	150	0.8	~18	1,820	7,640
		210	0.6	~14	1,790	4,650	210	0.6	~18	1,640	6,400
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~100	1	~14	1,790	5,370	~100	1	~18	1,640	7,380
		150	0.8	~14	1,790	5,010	150	0.8	~18	1,640	6,890
		210	0.6	~14	1,590	4,130	210	0.6	~18	1,460	5,690
Mold steel (1.2311, P20) 30~36HRC	JC8118	~100	1	~14	1,790	5,370	~100	1	~18	1,640	7,380
		150	0.8	~14	1,790	5,010	150	0.8	~18	1,640	6,890
		210	0.6	~14	1,590	4,130	210	0.6	~18	1,460	5,690
Mold steel (1.2311, P21) 38~43HRC	JC8118	~100	0.8	~14	1,290	3,100	~100	0.8	~18	1,180	4,250
		150	0.6	~14	1,290	2,840	150	0.6	~18	1,180	3,890
		210	0.4	~14	1,090	2,180	210	0.4	~18	1,000	3,000
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~100	0.8	~14	990	1,980	~100	0.8	~18	910	2,730
		150	0.6	~14	990	1,780	150	0.6	~18	910	2,460
		210	0.4	~14	800	1,280	210	0.4	~18	730	1,750
Cast iron (GG25) 160~260HB	JC8118	~100	1.5	~14	1,990	5,970	~100	1.5	~18	1,820	8,190
		150	1.2	~14	1,990	5,970	150	1.2	~18	1,820	8,190
		210	0.8	~14	1,790	5,010	210	0.8	~18	1,640	6,890
Nodular cast iron (GGG70) 170~300HB	JC8118	~100	1	~14	1,690	5,070	~100	1	~18	1,550	6,980
		150	0.8	~14	1,690	4,730	150	0.8	~18	1,550	6,510
		210	0.6	~14	1,490	3,870	210	0.6	~18	1,360	5,300
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~100	0.8	~14	1,490	3,580	~100	0.8	~18	1,360	4,900
		150	0.6	~14	1,490	3,280	150	0.6	~18	1,360	4,490
		210	0.4	~14	1,290	2,580	210	0.4	~18	1,180	3,540
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~100	1	~14	1,690	4,060	~100	1	~18	1,550	5,580
		150	0.8	~14	1,690	3,720	150	0.8	~18	1,550	5,120
		210	0.6	~14	1,490	2,980	210	0.6	~18	1,360	4,080

$l$ : Overhung length  $a_p$ : Axial depth of cut  $a_e$ : Radial depth of cut  $n$ : Spindle speed  $V_f$ : Feed speed

**Note:**

\*1. The figure to be adjusted according to the machine rigidity or work rigidity.

\*2. In case of chatter occurring, recommend to reduce the depth of cut  $a_p$  or Spindle speed and keep feed per tooth.

\*3. If machine does not have enough power, recommend to reduce the depth of cut  $a_p$  or Spindle speed and Feed speed.

\*4. Use air blow.

## Recommended cutting conditions for high feed milling

### ● MEX-HF and MSN type

2/2

Work materials	Grades	Tool dia. (mm)							
		40/42							
		No. of teeth 4N							
		$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ (min <sup>-1</sup> )	$V_f$ (mm/min)			
Carbon steel (C50,C55) Below 250HB	JC8050	~100	1	~23	1,430	8,580			
		150	0.8	~23	1,430	8,010			
		210	0.6	~23	1,270	6,600			
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~100	1	~23	1,270	7,620			
		150	0.8	~23	1,270	7,110			
		210	0.6	~23	1,110	5,770			
Mold steel (1.2311, P20) 30~36HRC	JC8118	~100	1	~23	1,270	7,620			
		150	0.8	~23	1,270	7,110			
		210	0.6	~23	1,110	5,770			
Mold steel (1.2311, P21) 38~43HRC	JC8118	~100	0.8	~23	880	4,220			
		150	0.6	~23	880	3,870			
		210	0.4	~23	720	2,880			
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~100	0.8	~23	720	2,880			
		150	0.6	~23	720	2,590			
		210	0.4	~23	560	1,790			
Cast iron (GG25) 160~260HB	JC8118	~100	1.5	~23	1,430	8,580			
		150	1.2	~23	1,430	8,580			
		210	0.8	~23	1,270	7,110			
Nodular cast iron (GGG70) 170~300HB	JC8118	~100	1	~23	1,190	7,140			
		150	0.8	~23	1,190	6,660			
		210	0.6	~23	1,030	5,360			
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~100	0.8	~23	1,030	4,940			
		150	0.6	~23	1,030	4,530			
		210	0.4	~23	880	3,520			
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~100	1	~23	1,190	5,710			
		150	0.8	~23	1,190	5,240			
		210	0.6	~23	1,030	4,120			

$l$  : Overhung length    $a_p$  : Axial depth of cut    $a_e$  : Radial depth of cut    $n$  : Spindle speed    $V_f$  : Feed speed

Note:

\*1. The figure to be adjusted according to the machine rigidity or work rigidity.

\*2. In case of chatter occurring, recommend to reduce the depth of cut  $a_p$  or Spindle speed and keep feed per tooth.

\*3. If machine does not have enough power, recommend to reduce the depth of cut  $a_p$  or Spindle speed and Feed speed.

\*4. Use air blow.

### End mill type (EXM-HF-S32 type)

1/2

Work materials	Grades	Tool dia. (mm)									
		32					35				
		No. of teeth 2N					No. of teeth 3N				
		ℓ (mm)	ap (mm)	ae (mm)	n (min <sup>-1</sup> )	Vf (mm/min)	ℓ (mm)	ap (mm)	ae (mm)	n (min <sup>-1</sup> )	Vf (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050	~70	0.8	~14	1,990	4,780	~90	0.8	~18	1,820	6,550
		~120	0.7	~14	1,790	3,940	~140	0.7	~18	1,640	5,410
		-	-	-	-	-	-	-	-	-	-
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~70	0.8	~14	1,790	4,300	~90	0.8	~18	1,640	5,900
		~120	0.7	~14	1,590	3,500	~140	0.7	~18	1,460	4,820
		-	-	-	-	-	-	-	-	-	-
Mold steel (1.2311, P20) 30~36HRC	JC8118	~70	0.8	~14	1,790	4,300	~90	0.8	~18	1,640	5,900
		~120	0.7	~14	1,590	3,500	~140	0.7	~18	1,460	4,820
		-	-	-	-	-	-	-	-	-	-
Mold steel (1.2311, P21) 38~43HRC	JC8118	~70	0.6	~14	1,290	2,580	~90	0.6	~18	1,180	3,540
		~120	0.5	~14	1,090	1,960	~140	0.5	~18	1,000	2,700
		-	-	-	-	-	-	-	-	-	-
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~70	0.6	~14	990	1,780	~90	0.6	~18	910	2,460
		~120	0.5	~14	800	1,280	~140	0.5	~18	730	1,750
		-	-	-	-	-	-	-	-	-	-
Cast iron (GG25) 160~260HB	JC8118	~70	1.2	~14	1,990	4,780	~90	1.2	~18	1,820	6,550
		~120	1	~14	1,790	4,300	~140	1	~18	1,640	5,900
		-	-	-	-	-	-	-	-	-	-
Nodular cast iron (GGG70) 170~300HB	JC8118	~70	0.8	~14	1,690	4,060	~90	0.8	~18	1,550	5,580
		~120	0.6	~14	1,490	3,280	~140	0.6	~18	1,360	4,490
		-	-	-	-	-	-	-	-	-	-
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~70	0.6	~14	1,490	2,980	~90	0.6	~18	1,360	4,080
		~120	0.5	~14	1,290	2,320	~140	0.5	~18	1,180	3,190
		-	-	-	-	-	-	-	-	-	-
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~70	0.8	~14	1,690	3,380	~90	0.8	~18	1,550	4,650
		~120	0.7	~14	1,490	2,680	~140	0.7	~18	1,360	3,670
		-	-	-	-	-	-	-	-	-	-

ℓ : Overhung length ap : Axial depth of cut ae : Radial depth of cut n : Spindle speed Vf : Feed speed

Note:

\*1. The figure to be adjusted according to the machine rigidity or work rigidity.

\*2. In case of chatter occurring, recommend to reduce the depth of cut ap or Spindle speed and keep feed per tooth.

\*3. If machine does not have enough power, recommend to reduce the depth of cut ap or Spindle speed and Feed speed.

\*4. Use air blow.

## Recommended cutting conditions for high feed milling

### End mill type (EXM-HF-S32 type)

2/2

Work materials	Grades	Tool dia. (mm)							
		40							
		No. of teeth 4N							
		$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ ( $\text{min}^{-1}$ )	$V_f$ (mm/min)			
Carbon steel (C50,C55) Below 250HB	JC8050	~90	0.8	~23	1,430	6,860			
		~140	0.7	~23	1,350	5,940			
		-	-	-	-	-			
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~90	0.8	~23	1,270	6,100			
		~140	0.7	~23	1,190	5,240			
		-	-	-	-	-			
Mold steel (1.2311, P20) 30~36HRC	JC8118	~90	0.8	~23	1,270	6,100			
		~140	0.7	~23	1,190	5,240			
		-	-	-	-	-			
Mold steel (1.2311, P21) 38~43HRC	JC8118	~90	0.6	~23	880	3,520			
		~140	0.5	~23	800	2,880			
		-	-	-	-	-			
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~90	0.6	~23	720	2,590			
		~140	0.5	~23	640	2,050			
		-	-	-	-	-			
Cast iron (GG25) 160~260HB	JC8118	~90	1.2	~23	1,430	6,860			
		~140	1	~23	1,350	6,480			
		-	-	-	-	-			
Nodular cast iron (GGG70) 170~300HB	JC8118	~90	0.8	~23	1,190	5,710			
		~140	0.6	~23	1,110	4,880			
		-	-	-	-	-			
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~90	0.6	~23	1,030	4,120			
		~140	0.5	~23	950	3,420			
		-	-	-	-	-			
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~90	0.8	~23	1,190	4,760			
		~140	0.7	~23	1,110	4,000			
		-	-	-	-	-			

$l$ : Overhung length  $a_p$ : Axial depth of cut  $a_e$ : Radial depth of cut  $n$ : Spindle speed  $V_f$ : Feed speed

Note:

- \*1. The figure to be adjusted according to the machine rigidity or work rigidity.
- \*2. In case of chatter occurring, recommend to reduce the depth of cut  $a_p$  or Spindle speed and keep feed per tooth.
- \*3. If machine does not have enough power, recommend to reduce the depth of cut  $a_p$  or Spindle speed and Feed speed.
- \*4. Use air blow.

## Recommended cutting conditions for high feed milling

### Facemill type (EXM-HF type)

1/1

Work materials	Insert No.	Tool dia. (mm)									
		50/52					63				
		No. of teeth 5N					No. of teeth 6N				
		$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ (min <sup>-1</sup> )	$V_f$ (mm/min)	$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ (min <sup>-1</sup> )	$V_f$ (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050	~150	1.5	~33	950	7,130	~150	1.5	~46	760	6,840
		200	1.2	~33	950	6,180	200	1.2	~46	760	5,930
		250	1	~33	830	5,400	250	1	~46	660	5,150
		300	0.7	~33	760	4,180	300	0.7	~46	610	4,030
		350	-	-	-	-	350	0.5	~46	610	4,030
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~150	1.5	~33	830	6,230	~150	1.5	~46	660	5,940
		200	1.2	~33	830	5,400	200	1.2	~46	660	5,150
		250	1	~33	700	4,550	250	1	~46	560	4,370
		300	0.7	~33	640	3,520	300	0.7	~46	510	3,370
		350	-	-	-	-	350	0.5	~46	510	3,370
Mold steel (1.2311, P20) 30~36HRC	JC8118	~150	1.5	~33	830	6,230	~150	1.5	~46	660	5,940
		200	1.2	~33	830	5,400	200	1.2	~46	660	5,150
		250	1	~33	700	4,550	250	1	~46	560	4,370
		300	0.7	~33	640	3,520	300	0.7	~46	510	3,370
		350	-	-	-	-	350	0.5	~46	510	3,370
Mold steel (1.2311, P21) 38~43HRC	JC8118	~150	1.2	~33	700	4,550	~150	1.2	~46	560	4,370
		200	1	~33	700	3,850	200	1	~46	560	3,700
		250	0.7	~33	570	3,140	250	0.7	~46	450	2,970
		300	0.5	~33	510	2,550	300	0.5	~46	400	2,400
		350	-	-	-	-	350	-	-	-	-
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~150	1	~33	570	2,850	~150	1	~46	450	2,700
		200	0.8	~33	570	2,570	200	0.8	~46	450	2,430
		250	0.6	~33	510	2,300	250	0.6	~46	400	2,160
		300	0.4	~33	450	1,800	300	0.4	~46	350	1,680
		350	-	-	-	-	350	-	-	-	-
Cast iron (GG25) 160~260HB	JC8118	~150	2	~33	950	7,130	~150	2	~46	760	6,840
		200	1.5	~33	950	6,180	200	1.5	~46	760	5,930
		250	1	~33	830	5,400	250	1	~46	660	5,150
		300	0.7	~33	760	4,180	300	0.7	~46	610	4,030
		350	-	-	-	-	350	0.5	~46	610	4,030
Nodular cast iron (GGG70) 170~300HB	JC8118	~150	1.5	~33	830	6,230	~150	1.5	~46	660	5,940
		200	1.2	~33	830	5,400	200	1.2	~46	660	5,150
		250	1	~33	700	4,550	250	1	~46	560	4,370
		300	0.7	~33	640	3,520	300	0.7	~46	510	3,370
		350	-	-	-	-	350	0.5	~46	510	3,370
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~150	1.2	~33	700	4,550	~150	1.2	~46	560	4,370
		200	1	~33	700	3,850	200	1	~46	560	3,700
		250	0.7	~33	570	3,140	250	0.7	~46	450	2,970
		300	0.5	~33	510	2,550	300	0.5	~46	400	2,400
		350	-	-	-	-	350	0.4	~46	400	2,400
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~150	1.5	~33	830	5,400	~150	1.5	~46	660	5,150
		200	1.2	~33	830	4,570	200	1.2	~46	660	4,360
		250	1	~33	700	3,850	250	1	~46	560	3,700
		300	0.7	~33	640	3,200	300	0.7	~46	510	3,060
		350	-	-	-	-	350	0.5	~46	510	3,060

$l$  : Overhung length  $a_p$  : Axial depth of cut  $a_e$  : Radial depth of cut  $n$  : Spindle speed  $V_f$  : Feed speed

Note:

\*1. The figure to be adjusted according to the machine rigidity or work rigidity.

\*2. In case of chatter occurring, recommend to reduce the depth of cut  $a_p$  or Spindle speed and keep feed per tooth.

\*3. If machine does not have enough power, recommend to reduce the depth of cut  $a_p$  or Spindle speed and Feed speed.

\*4. Use air blow.



## Recommended cutting conditions for shoulder milling

### ● MEX-SM and MSN type

1/2

Work materials	Grades	Tool dia. (mm)									
		32					35				
		No. of teeth 2N					No. of teeth 3N				
$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ (min <sup>-1</sup> )	$V_f$ (mm/min)	$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ (min <sup>-1</sup> )	$V_f$ (mm/min)		
Carbon steel (C50,C55) Below 250HB	JC8050	~100	3	~10	1,990	1,000	~100	3	~10	1,820	1,370
		150	2	~8	1,990	800	150	2	~8	1,820	1,090
		210	1	~6	1,790	540	210	1	~6	1,640	740
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~100	3	~10	1,790	900	~100	3	~10	1,640	1,230
		150	2	~8	1,790	720	150	2	~8	1,640	980
		210	1	~6	1,590	480	210	1	~6	1,460	660
Mold steel (1.2311, P20) 30~36HRC	JC8118	~100	3	~10	1,790	900	~100	3	~10	1,640	1,230
		150	2	~8	1,790	720	150	2	~8	1,640	980
		210	1	~6	1,590	480	210	1	~6	1,460	660
Mold steel (1.2311, P21) 38~43HRC	JC8118	~100	2	~10	1,290	520	~100	2	~10	1,180	710
		150	1.5	~8	1,290	390	150	1.5	~8	1,180	530
		210	1	~6	1,090	220	210	1	~6	1,000	300
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~100	1.5	~10	990	240	~100	1.5	~10	910	330
		150	1	~8	990	200	150	1	~8	910	270
		210	-	-	-	-	210	-	-	-	-
Cast iron (GG25) 160~260HB	JC8118	~100	3	~10	1,990	1,000	~100	3	~10	1,820	1,370
		150	2.5	~8	1,990	800	150	2.5	~8	1,820	1,090
		210	2	~6	1,790	720	210	2	~6	1,640	980
Nodular cast iron (GGG70) 170~300HB	JC8118	~100	3	~10	1,690	850	~100	3	~10	1,550	1,160
		150	2	~8	1,690	680	150	2	~8	1,550	930
		210	1	~6	1,490	450	210	1	~6	1,360	610
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~100	2	~10	1,490	600	~100	2	~10	1,360	820
		150	1.5	~8	1,490	450	150	1.5	~8	1,360	610
		210	1	~6	1,290	260	210	1	~6	1,180	350
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~100	3	~10	1,690	850	~100	3	~10	1,550	1,160
		150	2	~8	1,690	680	150	2	~8	1,550	930
		210	1	~6	1,490	450	210	1	~6	1,360	610

$l$  : Overhung length    $a_p$  : Axial depth of cut    $a_e$  : Radial depth of cut    $n$  : Spindle speed    $V_f$  : Feed speed

Note:

\*1. The figure to be adjusted according to the machine rigidity or work rigidity.

\*2. In case of chatter occurring, recommend to reduce the depth of cut  $a_p$  or Spindle speed and keep feed per tooth.

\*3. If machine does not have enough power, recommend to reduce the depth of cut  $a_p$  or Spindle speed and Feed speed.

\*4. Use air blow.

## Recommended cutting conditions for shoulder milling

### MEX-SM and MSN type

2/2

Work materials	Grades	Tool dia. (mm)								
		40/42								
		No. of teeth 4N								
		$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ ( $\text{min}^{-1}$ )	$V_f$ (mm/min)				
Carbon steel (C50,C55) Below 250HB	JC8050	~100	3	~12	1,590	1,590				
		150	2	~10	1,590	1,270				
		210	1	~8	1,430	860				
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~100	3	~12	1,430	1,430				
		150	2	~10	1,430	1,140				
		210	1	~8	1,270	760				
Mold steel (1.2311, P20) 30~36HRC	JC8118	~100	3	~12	1,430	1,430				
		150	2	~10	1,430	1,140				
		210	1	~8	1,270	760				
Mold steel (1.2311, P21) 38~43HRC	JC8118	~100	2	~12	1,030	820				
		150	1.5	~10	1,030	620				
		210	1	~8	880	350				
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~100	1.5	~12	800	380				
		150	1	~10	800	320				
		210	-	~8	-	-				
Cast iron (GG25) 160~260HB	JC8118	~100	3	~12	1,590	1,590				
		150	2.5	~10	1,590	1,270				
		210	2	~8	1,430	1,140				
Nodular cast iron (GGG70) 170~300HB	JC8118	~100	3	~12	1,350	1,350				
		150	2	~10	1,350	1,080				
		210	1	~8	1,190	710				
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~100	2	~12	1,190	950				
		150	1.5	~10	1,190	710				
		210	1	~8	1,030	410				
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~100	3	~12	1,350	1,350				
		150	2	~10	1,350	1,080				
		210	1	~8	1,190	710				

$l$  : Overhung length  $a_p$  : Axial depth of cut  $a_e$  : Radial depth of cut  $n$  : Spindle speed  $V_f$  : Feed speed

Note:

\*1. The figure to be adjusted according to the machine rigidity or work rigidity.

\*2. In case of chatter occurring, recommend to reduce the depth of cut  $a_p$  or Spindle speed and keep feed per tooth.

\*3. If machine does not have enough power, recommend to reduce the depth of cut  $a_p$  or Spindle speed and Feed speed.

\*4. Use air blow.

## Recommended cutting conditions for shoulder milling

### ● Facemill type (EXM-SM type)

1/1

Work materials	Grades	Tool dia. (mm)									
		50/52					63				
		No. of teeth 5N					No. of teeth 6N				
		ℓ (mm)	a <sub>p</sub> (mm)	a <sub>e</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)	ℓ (mm)	a <sub>p</sub> (mm)	a <sub>e</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050	~150	3	~15	1,150	1,730	~150	3	~15	910	1,640
		200	2.5	~12	1,150	1,440	200	2.5	~12	910	1,370
		250	1.5	~10	1,020	1,020	250	1.5	~10	810	970
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~150	3	~15	1,020	1,530	~150	3	~15	810	1,460
		200	2.5	~12	1,020	1,280	200	2.5	~12	810	1,220
		250	1.5	~10	890	890	250	1.5	~10	710	850
Mold steel (1.2311, P20) 30~36HRC	JC8118	~150	3	~15	1,020	1,530	~150	3	~15	810	1,460
		200	2.5	~12	1,020	1,280	200	2.5	~12	810	1,220
		250	1.5	~10	890	890	250	1.5	~10	710	850
Mold steel (1.2311, P21) 38~43HRC	JC8118	~150	3	~12	700	880	~150	3	~12	560	840
		200	2	~10	700	700	200	2	~10	560	670
		250	1	~8	640	480	250	1	~8	510	460
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~150	3	~10	570	430	~150	3	~10	450	410
		200	2	~8	570	340	200	2	~8	450	320
		250	1	~6	510	260	250	1	~6	400	240
Cast iron (GG25) 160~260HB	JC8118	~150	3	~18	1,150	1,730	~150	3	~18	910	1,640
		200	2.5	~15	1,150	1,440	200	2.5	~15	910	1,370
		250	2	~10	1,020	1,280	250	2	~10	810	1,220
Nodular cast iron (GGG70) 170~300HB	JC8118	~150	3	~15	950	1,430	~150	3	~15	760	1,370
		200	2.5	~12	950	1,190	200	2.5	~12	760	1,140
		250	1	~10	830	420	250	1	~10	660	400
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~150	3	~15	830	1,040	~150	3	~15	660	990
		200	2	~12	830	830	200	2	~12	660	790
		250	1	~10	700	530	250	1	~10	560	500
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~150	3	~15	950	1,430	~150	3	~15	760	1,370
		200	2.5	~12	950	1,190	200	2.5	~12	760	1,140
		250	1.5	~10	830	830	250	1.5	~10	660	790

ℓ : Overhung length   a<sub>p</sub> : Axial depth of cut   a<sub>e</sub> : Radial depth of cut   n : Spindle speed   V<sub>f</sub> : Feed speed

Note:

- \*1. The figure to be adjusted according to the machine rigidity or work rigidity.
- \*2. In case of chatter occurring, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and keep feed per tooth.
- \*3. If machine does not have enough power, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and Feed speed.
- \*4. Use air blow.

## Recommended cutting conditions for facemilling

### MEX-SM and MSN type

1/2

Work materials	Grades	Tool dia. (mm)									
		32					35				
		No. of teeth 2N					No. of teeth 3N				
		ℓ (mm)	a <sub>p</sub> (mm)	a <sub>e</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)	ℓ (mm)	a <sub>p</sub> (mm)	a <sub>e</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050	~100	1	~28	1,990	1,190	~100	1	~31	1,820	1,640
		150	0.8	~28	1,990	1,000	150	0.8	~31	1,820	1,370
		210	0.6	~28	1,790	720	210	0.6	~31	1,640	980
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~100	1	~28	1,790	1,070	~100	1	~31	1,640	1,480
		150	0.8	~28	1,790	900	150	0.8	~31	1,640	1,230
		210	0.6	~28	1,590	640	210	0.6	~31	1,460	880
Mold steel (1.2311, P20) 30~36HRC	JC8118	~100	1	~28	1,790	1,070	~100	1	~31	1,640	1,480
		150	0.8	~28	1,790	900	150	0.8	~31	1,640	1,230
		210	0.6	~28	1,590	640	210	0.6	~31	1,460	880
Mold steel (1.2311, P21) 38~43HRC	JC8118	~100	0.8	~28	1,290	650	~100	0.8	~31	1,180	890
		150	0.6	~28	1,290	520	150	0.6	~31	1,180	710
		210	0.4	~28	1,090	330	210	0.4	~31	1,000	450
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~100	0.8	~28	990	300	~100	0.8	~31	910	410
		150	0.6	~28	990	240	150	0.6	~31	910	330
		210	0.4	~28	800	160	210	0.4	~31	730	220
Cast iron (GG25) 160~260HB	JC8118	~100	1.5	~28	1,990	1,190	~100	1.5	~31	1,820	1,640
		150	1.2	~28	1,990	1,000	150	1.2	~31	1,820	1,370
		210	0.8	~28	1,790	900	210	0.8	~31	1,640	1,230
Nodular cast iron (GGG70) 170~300HB	JC8118	~100	1	~28	1,690	1,010	~100	1	~31	1,550	1,400
		150	0.8	~28	1,690	850	150	0.8	~31	1,550	1,160
		210	0.6	~28	1,490	300	210	0.6	~31	1,360	410
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~100	0.8	~28	1,490	750	~100	0.8	~31	1,360	1,020
		150	0.6	~28	1,490	600	150	0.6	~31	1,360	820
		210	0.4	~28	1,290	390	210	0.4	~31	1,180	530
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~100	1	~28	1,690	1,010	~100	1	~31	1,550	1,400
		150	0.8	~28	1,690	850	150	0.8	~31	1,550	1,160
		210	0.6	~28	1,490	600	210	0.6	~31	1,360	820

ℓ : Overhung length   a<sub>p</sub> : Axial depth of cut   a<sub>e</sub> : Radial depth of cut   n : Spindle speed   V<sub>f</sub> : Feed speed

Note:

\*1. The figure to be adjusted according to the machine rigidity or work rigidity.

\*2. In case of chatter occurring, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and keep feed per tooth.

\*3. If machine does not have enough power, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and Feed speed.

\*4. Use air blow.

## Recommended cutting conditions for facemilling

### MEX-SM and MSN type

2/2

Work materials	Grades	Tool dia. (mm)								
		40/42								
		No. of teeth 4N								
		$l$ (mm)	$a_p$ (mm)	$a_e$ (mm)	$n$ (min <sup>-1</sup> )	$V_f$ (mm/min)				
Carbon steel (C50,C55) Below 250HB	JC8050	~100	1	~36	1,430	1,720				
		150	0.8	~36	1,430	1,430				
		210	0.6	~36	1,270	1,020				
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~100	1	~36	1,270	1,520				
		150	0.8	~36	1,270	1,270				
		210	0.6	~36	1,110	890				
Mold steel (1.2311, P20) 30~36HRC	JC8118	~100	1	~36	1,270	1,520				
		150	0.8	~36	1,270	1,270				
		210	0.6	~36	1,110	890				
Mold steel (1.2311, P21) 38~43HRC	JC8118	~100	0.8	~36	880	880				
		150	0.6	~36	880	700				
		210	0.4	~36	720	430				
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~100	0.8	~36	720	430				
		150	0.6	~36	720	350				
		210	0.4	~36	560	220				
Cast iron (GG25) 160~260HB	JC8118	~100	1.5	~36	1,430	1,720				
		150	1.2	~36	1,430	1,430				
		210	0.8	~36	1,270	1,270				
Nodular cast iron (GGG70) 170~300HB	JC8118	~100	1	~36	1,190	1,430				
		150	0.8	~36	1,190	1,190				
		210	0.6	~36	1,030	410				
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~100	0.8	~36	1,030	1,030				
		150	0.6	~36	1,030	820				
		210	0.4	~36	880	530				
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~100	1	~36	1,190	1,430				
		150	0.8	~36	1,190	1,190				
		210	0.6	~36	1,030	820				

$l$  : Overhung length  $a_p$  : Axial depth of cut  $a_e$  : Radial depth of cut  $n$  : Spindle speed  $V_f$  : Feed speed

Note:

- \*1. The figure to be adjusted according to the machine rigidity or work rigidity.
- \*2. In case of chatter occurring, recommend to reduce the depth of cut  $a_p$  or Spindle speed and keep feed per tooth.
- \*3. If machine does not have enough power, recommend to reduce the depth of cut  $a_p$  or Spindle speed and Feed speed.
- \*4. Use air blow.

## Recommended cutting conditions for facemilling

### Facemill type (EXM-SM type)

1/1

Work materials	Grades	Tool dia. (mm)									
		50/52					63				
		No. of teeth 5N					No. of teeth 6N				
		ℓ (mm)	a <sub>p</sub> (mm)	a <sub>e</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)	ℓ (mm)	a <sub>p</sub> (mm)	a <sub>e</sub> (mm)	n (min <sup>-1</sup> )	V <sub>f</sub> (mm/min)
Carbon steel (C50,C55) Below 250HB	JC8050	~150	1.5	~46	950	1,430	~150	1.5	~59	760	1,370
		200	1.2	~46	950	1,190	200	1.2	~59	760	1,140
		250	1	~46	830	830	250	1	~59	660	790
Die steel (1.2344, 1.2379) Below 255HB	JC8050	~150	1.5	~46	830	1,250	~150	1.5	~59	660	1,190
		200	1.2	~46	830	1,040	200	1.2	~59	660	990
		250	1	~46	700	700	250	1	~59	560	670
Mold steel (1.2311, P20) 30~36HRC	JC8118	~150	1.5	~46	830	1,250	~150	1.5	~59	660	1,190
		200	1.2	~46	830	1,040	200	1.2	~59	660	990
		250	1	~46	700	700	250	1	~59	560	670
Mold steel (1.2311, P21) 38~43HRC	JC8118	~150	1.2	~46	700	880	~150	1.2	~59	560	840
		200	1	~46	700	700	200	1	~59	560	670
		250	0.7	~46	570	430	250	0.7	~59	450	410
Hardened die steel (1.2344, 1.2379) 42~52HRC	JC8118	~150	1	~46	570	430	~150	1	~59	450	410
		200	0.8	~46	570	340	200	0.8	~59	450	320
		250	0.6	~46	510	260	250	0.6	~59	400	240
Cast iron (GG25) 160~260HB	JC8118	~150	2	~46	950	1,430	~150	2	~59	760	1,370
		200	1.5	~46	950	1,190	200	1.5	~59	760	1,140
		250	1	~46	830	1,040	250	1	~59	660	990
Nodular cast iron (GGG70) 170~300HB	JC8118	~150	1.5	~46	830	1,250	~150	1.5	~59	660	1,190
		200	1.2	~46	830	1,040	200	1.2	~59	660	990
		250	1	~46	700	350	250	1	~59	560	340
Stainless steel Austenitic (AISI 304, 316, 317)	JC8050	~150	1.2	~46	700	880	~150	1.2	~59	560	840
		200	1	~46	700	700	200	1	~59	560	670
		250	0.7	~46	570	430	250	0.7	~59	450	410
Stainless steel Ferritics / Martensitic (AISI 403, 420J2, 430)	JC8118	~150	1.5	~46	830	1,250	~150	1.5	~59	660	1,190
		200	1.2	~46	830	1,040	200	1.2	~59	660	990
		250	1	~46	700	700	250	1	~59	560	670

ℓ : Overhung length   a<sub>p</sub> : Axial depth of cut   a<sub>e</sub> : Radial depth of cut   n : Spindle speed   V<sub>f</sub> : Feed speed

Note:

\*1. The figure to be adjusted according to the machine rigidity or work rigidity.

\*2. In case of chatter occurring, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and keep feed per tooth.

\*3. If machine does not have enough power, recommend to reduce the depth of cut a<sub>p</sub> or Spindle speed and Feed speed.

\*4. Use air blow.

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JQA-2089



JQA-EM1580

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