

High Feed Finish Milling Cutter

**FMAX**

Insert  
Expansion

**Feed Maximum (FMAX)  
milling cutter for ultra efficient  
and accurate finishing.**



For Machining of Aluminum Alloys

\* By CG image

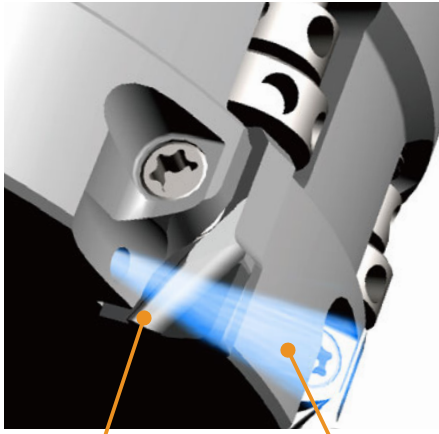
# High Feed Finish Milling Cutter

# FMAX

## Ultra High Efficiency Machining

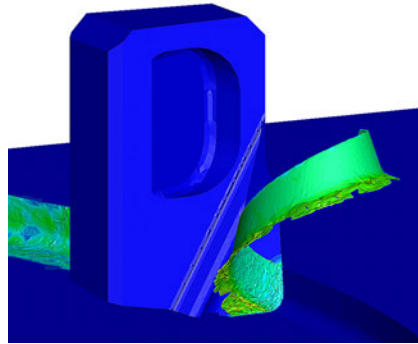
The ultra fine pitch design is ideal for high efficiency machining ( $IPM \geq 787$ ).

Internal coolant and a special chip breaker wall (body protector) provides ideal chip discharge performance.



Body Protector

Internal Coolant

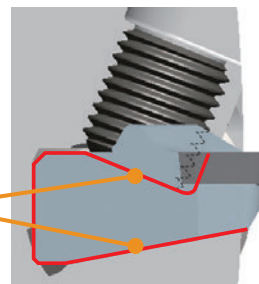


\*Graphical representation.

The body protector on the rake face forms chip shapes ideal for disposal and disperses them away from the body. Internal coolant also aids this process. The body is compatible with all center through coolant arbors.

## Designed for High Speeds

Anti Fly dovetail clamping mechanism.



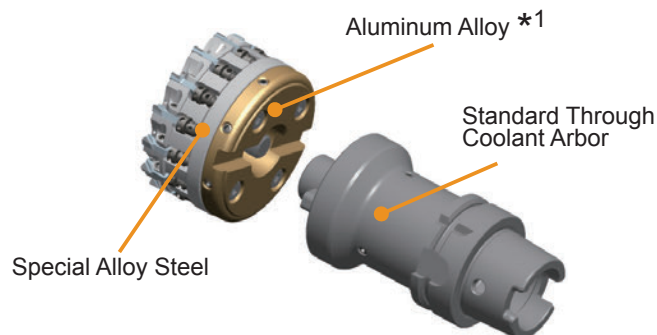
Dovetail Clamp



Angled Face

## Light Weight, High Rigidity Body

A special alloy steel and aluminum body combine to provide rigidity and light weight.



Aluminum Alloy \*1

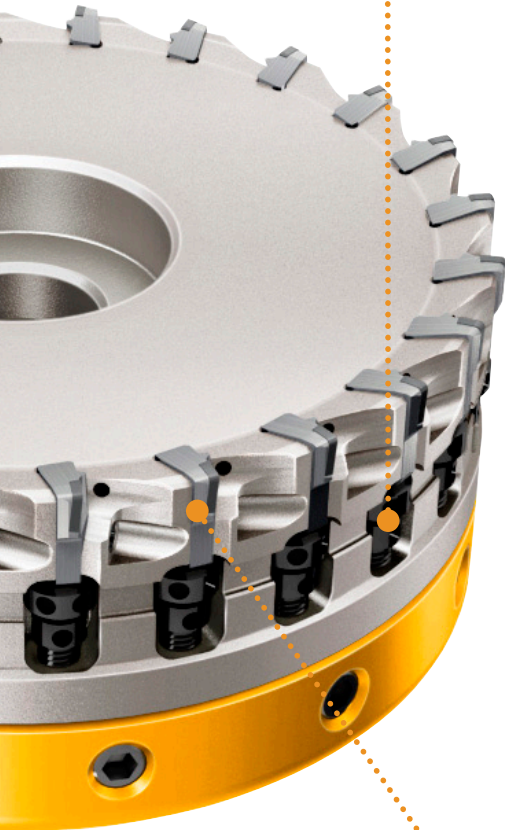
Standard Through Coolant Arbor

Special Alloy Steel

\*1 Except  $\phi 50$ mm and  $\phi 63$ mm

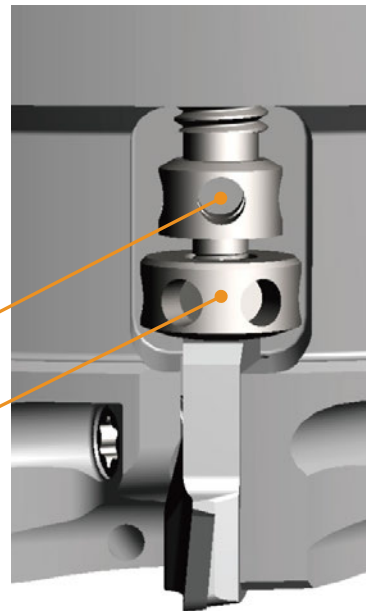
## High Precision, Easy Setting

The combination of both a large and micro screw provides precise run-out adjustment and for adjusting new or re-grinding inserts (.0002" or better).



Large Adjustment Screw

Micro Adjustment Nut

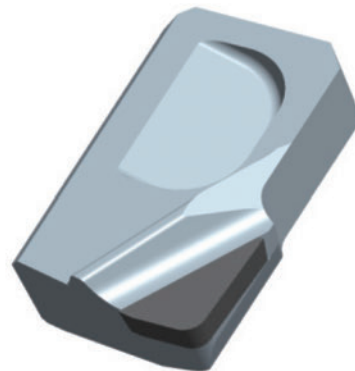


### Inserts, RE=0.4 and 0.8, MD2030



DC = 50, 63mm

New PCD Grade  
for Machining  
Aluminum Alloy



GAMP 5°



# High Feed Finish Milling Cutter

## FACE MILLING <HIGH FEED FINISHING>



### FMAX

- P M K **N** S H



Fig.1  
ø50mm  
ø63mm

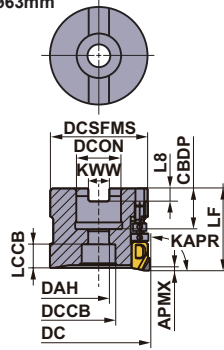


Fig.2  
ø3.000"  
ø4.000"  
ø80mm

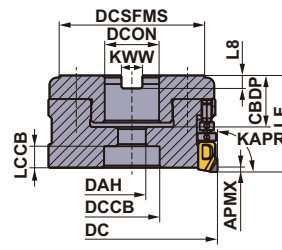
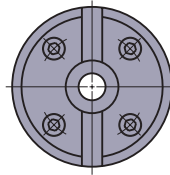
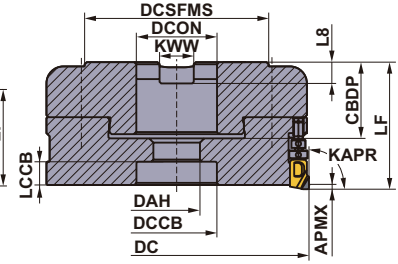
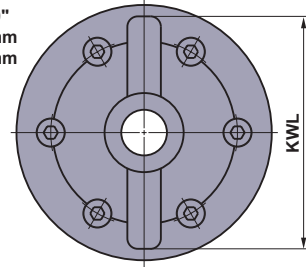


Fig.3  
ø5.000"  
ø100mm  
ø125mm



DC=Inch size, DCON=Inch size

KAPR : 90° GAMP : +5°  
GAMF : 0°

With Coolant hole

Right hand tool holder only.

(inch)

DC	Order Number	Stock	Number of teeth	LF	DCON	WT (lbs)	APMX	RPMX (min <sup>-1</sup> )	Fig.
3.000	FMAXUR0310C	●	10	1.772	1.000	2.2	.079	24500	2
3.000	FMAXUR0314C	●	14	1.772	1.000	2.1	.079	24500	2
4.000	FMAXUR0412D	●	12	1.969	1.250	4.2	.079	22000	2
4.000	FMAXUR0418D	●	18	1.969	1.250	4.1	.079	22000	2
5.000	FMAXUR0516E	●	16	2.362	1.500	7.6	.079	19600	3
5.000	FMAXUR0524E	●	24	2.362	1.500	7.5	.079	19600	3

\* .079" or less is the recommended maximum depth of cut for ultra high efficiency machining.

### Metric Standard

DC=mm size, DCON=Inch size

KAPR : 90° GAMP : +5°  
GAMF : -5°—0°

With Coolant hole

(mm)

DC	Order Number	Stock	Number of teeth	LF	DCON	DCON (inch)	WT (kg)	APMX	RPMX (min <sup>-1</sup> )	Fig.
50	FMAX-050A08R	★	8	40	22	.866"	0.37	2	30000	1
50	FMAX-050A10R	★	10	40	22	.866"	0.35	2	30000	1
63	FMAX-063A10R	★	10	40	22	.866"	0.67	2	27000	1
63	FMAX-063A12R	★	12	40	22	.866"	0.66	2	27000	1
80	FMAXR08010C	★	10	45	25.4	1.000"	1.11	2	24500	2
80	FMAXR08014C	★	14	45	25.4	1.000"	1.09	2	24500	2
100	FMAXR10012D	★	12	50	31.75	1.250"	1.85	2	22000	3
100	FMAXR10018D	★	18	50	31.75	1.250"	1.81	2	22000	3
125	FMAXR12516E	★	16	60	38.1	1.500"	3.33	2	19600	3
125	FMAXR12524E	★	24	60	38.1	1.500"	3.27	2	19600	3

\* .079" or less is the recommended maximum depth of cut for ultra high efficiency machining.

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

## Mounting Dimension

(inch)








DCON	Tool Holder Type	DC	CBDP	DAH	DCCB	LCCB	DCSFMS	KWW	L8	KWL
1.000	<b>FMAXUR03</b>	3.000	.945	.539	1.024	.433	2.677	.375	.219	—
1.250	<b>FMAXUR04</b>	4.000	1.260	.669	1.260	.394	3.465	.500	.281	—
1.500	<b>FMAXUR05</b>	5.000	1.417	.787	1.496	.472	3.465	.625	.375	4.409

(mm)

DCON	DCON (inch)	Tool Holder Type	DC	CBDP	DAH	DCCB	LCCB	DCSFMS	KWW	L8	KWL
22	.866"	<b>FMAX-050</b>	50	20	11	17	12	47	10.4	6.3	—
22	.866"	<b>FMAX-063</b>	63	20	11	17	12	60	10.4	6.3	—
25.4	1.000"	<b>FMAXR08</b>	80	24	13	26	11	68	9.5	6	—
31.75	1.250"	<b>FMAXR10</b>	100	32	17	32	10	79	12.7	8	90
38.1	1.500"	<b>FMAXR12</b>	125	36	22	38	12	88	15.9	10	112

## Spare Parts

(inch)








Tool Holder Type	Insert Clamp Screw	Micro Adjustment Nut	Large Adjustment Screw	Balance Adjustment Screw	Cutter Set Bolt	Wrench T10	Wrench ø.098"
							
<b>FMAXUR03</b>	TSS04505S	KSN2	KSS2	HSS05005G	HSCXU50012H	TKY10T	RKY25S
<b>FMAXUR04</b>	TSS04505S	KSN2	KSS2	HSS06006G	HSCXU62514H	TKY10T	RKY25S
<b>FMAXUR05</b>	TSS04505S	KSN2	KSS2	HSS08008G	HSCXU75017H	TKY10T	RKY25S

\* Clamp Torque (lbf-in) : TSS04505S=31

\* Refer to the instruction manual included in the cutter body for how to locate the insert and adjust the run-out.

\* The (inch) cutter body includes a set bolt for an arbor.

(mm)

Tool Holder Type	Insert Clamp Screw	Micro Adjustment Nut	Large Adjustment Screw	Balance Adjustment Screw	Cutter Set Bolt	Wrench T10	Wrench ø2.5
							
<b>FMAX-050</b>	TSS04505S	KSN2	KSS2	HSS04004G	HSC10030H	TKY10T	RKY25S
<b>FMAX-063</b>	TSS04505S	KSN2	KSS2	HSS04004G	HSC10030H	TKY10T	RKY25S
<b>FMAXR08</b>	TSS04505S	KSN2	KSS2	HSS05005G	HSCX12030H	TKY10T	RKY25S
<b>FMAXR10</b>	TSS04505S	KSN2	KSS2	HSS06006G	HSCX16035H	TKY10T	RKY25S
<b>FMAXR12</b>	TSS04505S	KSN2	KSS2	HSS08008G	HSCX20035H	TKY10T	RKY25S

\* Clamp Torque (N·m) : TSS04505S=3.5


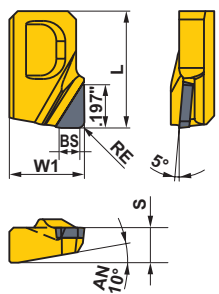
\* Refer to the instruction manual included in the cutter body for how to locate the insert and adjust the run-out.

\* Set bolt not included (mm).

# High Feed Finish Milling Cutter

## Inserts

(inch)

Shape	Order Number	Class	Stock	L	W1	S	BS	RE	
	<b>NEW</b> GOER1404PXFR2	MD2030	●	.551	.354	.165	.079	.016	
	GOER1408PXFR2	MD2030	●	.551	.354	.165	.079	.031	

● : Inventory maintained. (PCD inserts are available in 1 piece in one case)

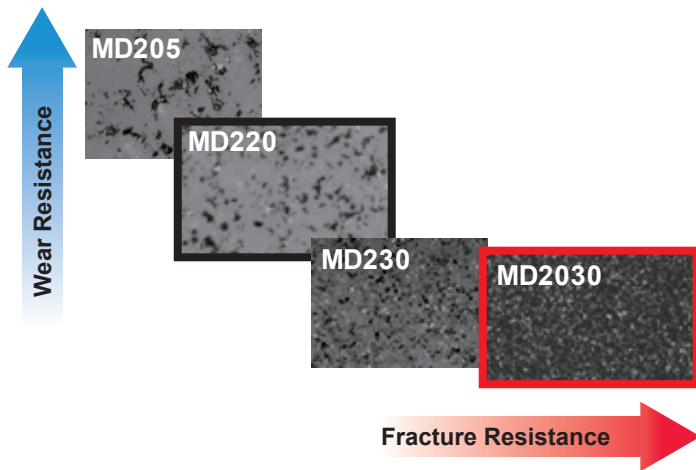
## Features of New PCD Grade MD2030

### Diamond Sintered Segment Containing Ultra Microparticle Diamond

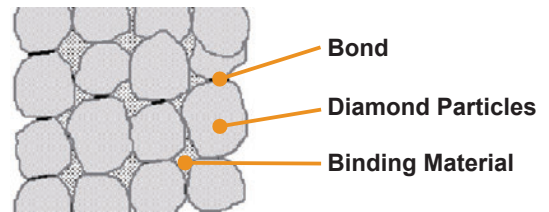
Optimized grade for milling.

Improved fracture resistance during interrupted machining.

Offers a highly stable cutting edge that prevents burrs and gives an excellent surface finish.



### Bond of Diamond Particles



Due to the unique bond of diamond particles and binding material, MD2030 grade provides a highly stable cutting edge and performance.

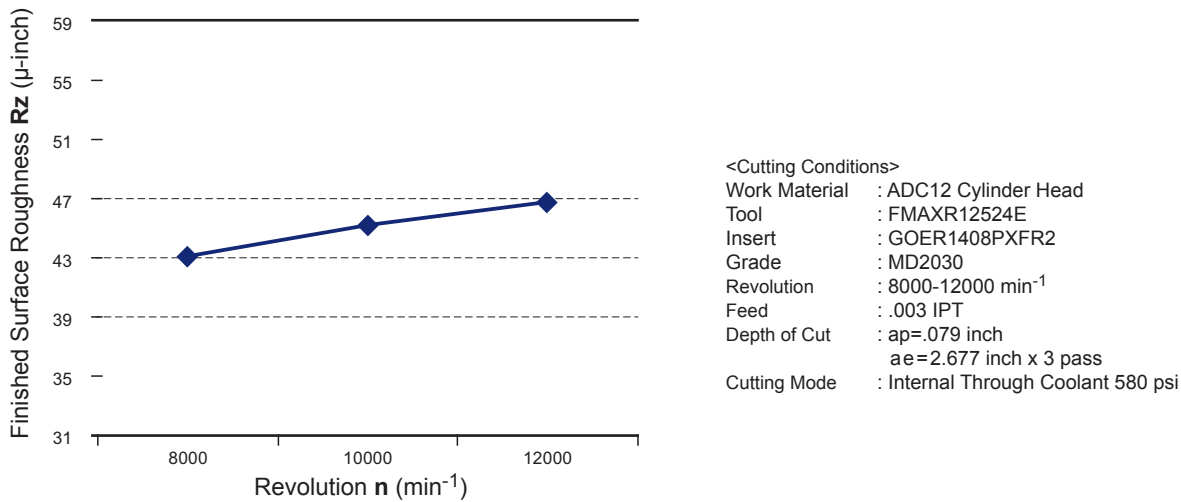
## Recommended Cutting Conditions

(inch)

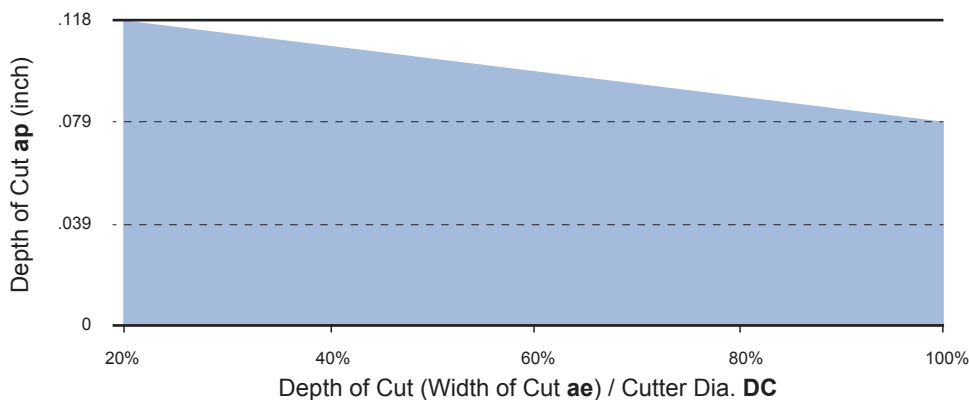
Work Material	Characteristics	Grade	vc (SFM)	ae	ap	fz (IPT)
N  Aluminum Alloy	Si <12.5%	MD2030	8200 (6560—9840)	≤.008 DC	≤.079 (.020—.118)	.003 (.002—.008)
				≤.020 DC	≤.079 (.020—.098)	
				≤.031 DC	≤.079 (.020—.079)	
	Si ≥12.5%	MD2030	1970 (1310—2625)	≤.008 DC	≤.079 (.020—.118)	.003 (.002—.008)
				≤.020 DC	≤.079 (.020—.098)	
				≤.031 DC	≤.079 (.020—.079)	

\* Adjust the depth of cut depending on the width of cut.


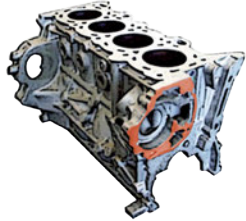
## Finished Surface Roughness (Rz)



## Effective Chip Disposal Range



## Application Examples

Cutter Body		FMAXR10018D	FMAXR08014C
Insert (Grade)		GOER1408PXFR2 (MD2030)	GOER1408PXFR2 (MD2030)
Workpiece		Aluminum Alloy 	Aluminum Alloy 
Cutting Conditions	Revolution (min <sup>-1</sup> )	8000	8000
	Cutting Speed (SFM)	8245	6600
	Feed (IPT)	.008	.005
	Table Feed (IPM)	1134	591
	Depth of Cut (inch)	.059	.098
	Width of Cut (inch)	1.969	.787
Cutting Mode		Wet Cutting	Wet Cutting
Machine		Horizontal Type	Horizontal Type
Results		Increased efficiency with a table feed increase x 2.6, FMAX achieved good surface finishes and increased machining stability.	Increased efficiency with a table feed increase x 2.2, FMAX achieved good surface finishes and increased machining stability.

### For your safety

●Don't handle inserts and chips without gloves. ●Please machine within the recommended application range and exchange expired tools with new ones in advance of breakage. ●Please use safety covers and wear safety glasses. ●When using compounded cutting oils, please take fire precautions. ●When attaching inserts or spare parts, please use only the correct wrench or driver. ●When using rotating tools, please make a trial run to check run-out, vibration and abnormal sounds etc.

## MITSUBISHI MATERIALS CORPORATION

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