MITSUBISHI MITSUBISHI MATERIALS

TOOLS NEWS

2016.9 Update

B216G YOUR GLOBAL CRAFTSMAN STUDIO

High Feed Finish Milling Cutter

FMAX

Dimensions Added

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

* By CG image

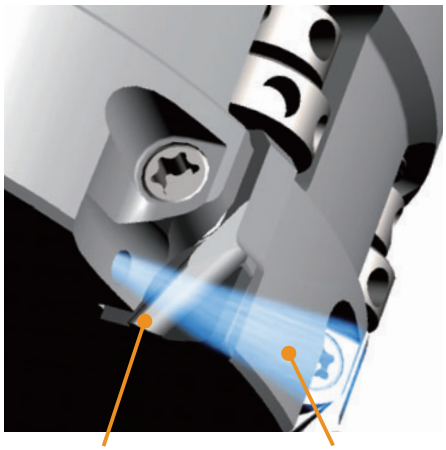
High Feed Finish Milling Cutter

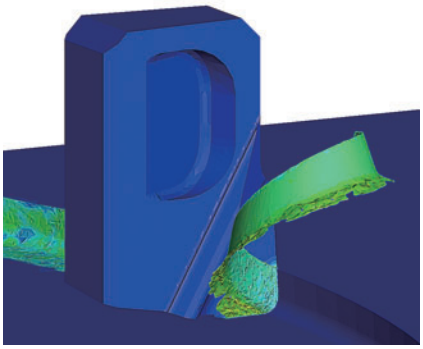
FMAX

Ultra High Efficiency Machining

The ultra fine pitch design is ideal for high efficiency machining (F ≥ 20 m/min).

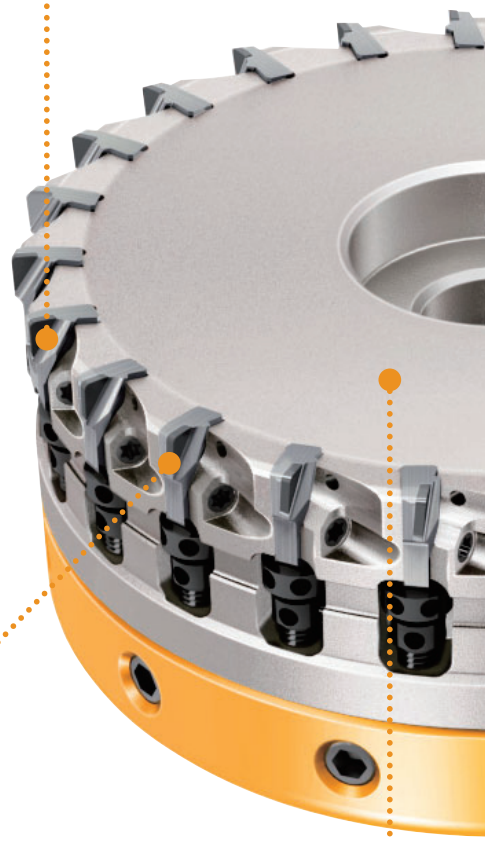
Internal coolant and a special chip breaker wall (Body protector) provides ideal chip discharge performance.





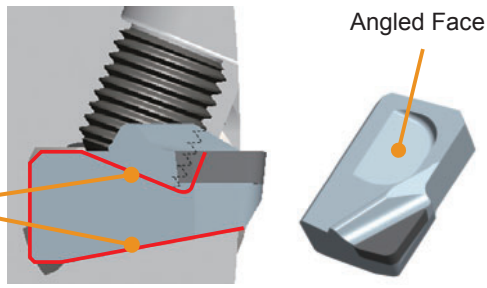
*Graphical Representation.

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.



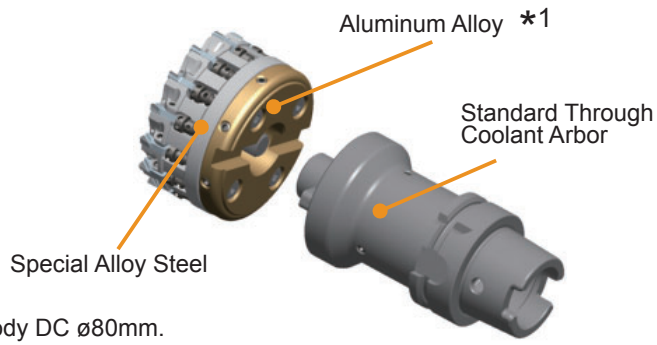
Designed for High Speeds

Anti fly dovetail clamping mechanism.



Light Weight, High Rigidity Body

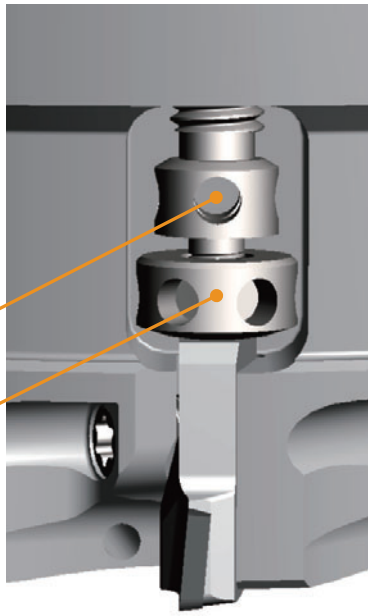
A special alloy steel and aluminum body combine to provide rigidity and light weight.



* 1t applies to more of the cutter body DC ø80mm.

High Precision, Easy Setting

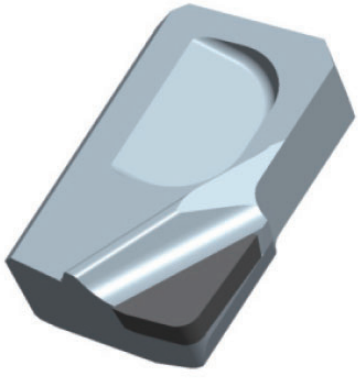
The combination of both a large and micro screw provides precise run-out adjustment and for adjusting new or re-grinding inserts (5 µm or better).



Economy, Multi-use

A maximum re-grinding allowance of 0.6 mm is possible on both the peripheral and bottom edges.

New Grade, PCD Aluminum Alloy



GAMP 5°

FACE MILLING
<HIGH FEED FINISHING>

90°

Finishing

FMAX

P M K **N** S H

Fig.1
ø50
ø63

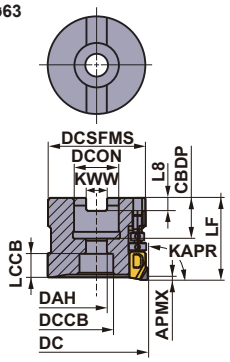


Fig.2
ø80

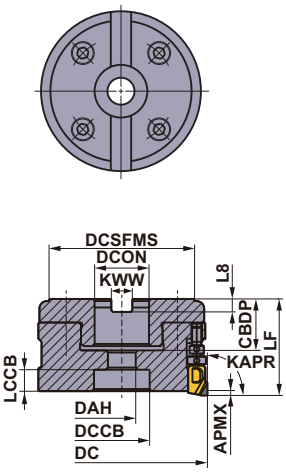
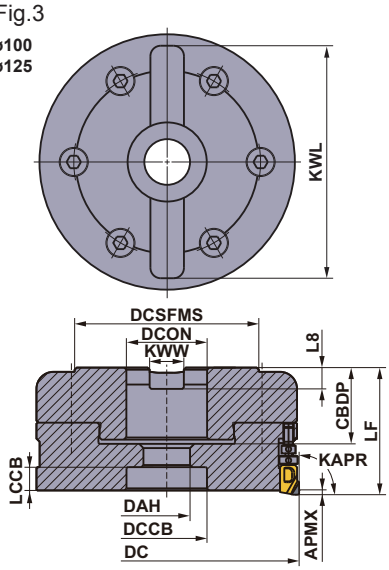


Fig.3
ø100
ø125



Cutter Body

DC=mm, DCON=inch (DC=50,63 mm)

KAPR : 90°　GAMP : +5°
GAMF : -5°—0°
With Coolant Hole

Right hand tool holder only.

(mm)

DC	Order Number	Stock	∗2 No.T	LF	DCON	WT (kg)	APMX	RPMX (min^{-1})	Fig.
NEW 50	**FMAX-050A08R**	●	8	40	22	0.37	2	30000	1
NEW 50	**FMAX-050A10R**	●	10	40	22	0.35	2	30000	1
NEW 63	**FMAX-063A10R**	●	10	40	22	0.67	2	27000	1
NEW 63	**FMAX-063A12R**	●	12	40	22	0.66	2	27000	1
80	**FMAXR08010C**	●	10	45	25.4	1.11	2	24500	2
80	**FMAXR08014C**	●	14	45	25.4	1.09	2	24500	2
100	**FMAXR10012D**	●	12	50	31.75	1.85	2	22000	3
100	**FMAXR10018D**	●	18	50	31.75	1.81	2	22000	3
125	**FMAXR12516E**	●	16	60	38.1	3.33	2	19600	3
125	**FMAXR12524E**	●	24	60	38.1	3.27	2	19600	3

∗1 2 mm or less is the recommended maximum depth of cut for ultra high efficiency machining.
∗2 Number of Teeth

Spare Parts

(mm)

DC	Tool Holder Type	Insert Clamp Screw	Micro Adjustment Nut	Large Adjustment Screw	Balance Adjustment Screw	Cutter Clamp Bolt	Wrench T10	Wrench ø2.5
								
50	**FMAX-050**	TSS04505S	KSN2	KSS2	HSS04004G	HSC10030H	TKY10T	RKY25S
63	**FMAX-063**	TSS04505S	KSN2	KSS2	HSS04004G	HSC10030H	TKY10T	RKY25S
80	**FMAX-080**	TSS04505S	KSN2	KSS2	HSS05005G	HSCX12030H	TKY10T	RKY25S
80	**FMAXR080**	TSS04505S	KSN2	KSS2	HSS05005G	HSCX12030H	TKY10T	RKY25S
100	**FMAX-100**	TSS04505S	KSN2	KSS2	HSS06006G	HSCX16035H	TKY10T	RKY25S
100	**FMAXR100**	TSS04505S	KSN2	KSS2	HSS06006G	HSCX16035H	TKY10T	RKY25S
125	**FMAX-125**	TSS04505S	KSN2	KSS2	HSS08008G	HSCX20035H	TKY10T	RKY25S
125	**FMAXR125**	TSS04505S	KSN2	KSS2	HSS08008G	HSCX20035H	TKY10T	RKY25S

∗ Clamp Torque (N • m) : TSS04505S = 3.5
∗ Please refer to the instruction manual included in the cutter body for how to locate the insert and adjust the run-out.

● : Inventory maintained in Japan.

Metric Standard

DC=mm, DCON=mm

KAPR : 90° GAMP : +5°
GAMF : 0°
With Coolant Hole

(mm)

	DC	Order Number	Stock	*2 No.T	LF	DCON	WT (kg)	APMX	RPMX (min^{-1})	Fig.
NEW	50	**FMAX-050A08R**	●	8	40	22	0.37	2	30000	1
NEW	50	**FMAX-050A10R**	●	10	40	22	0.35	2	30000	1
NEW	63	**FMAX-063A10R**	●	10	40	22	0.67	2	27000	1
NEW	63	**FMAX-063A12R**	●	12	40	22	0.66	2	27000	1
	80	**FMAX-080B14R**	●	14	45	27	1.08	2	24500	2
	100	**FMAX-100B18R**	●	18	50	32	1.81	2	22000	3
	125	**FMAX-125B24R**	●	24	60	40	3.26	2	19600	3

*1 2 mm or less is the recommended maximum depth of cut for ultra high efficiency machining.
*2 Number of Teeth

Mounting Dimension

(mm)

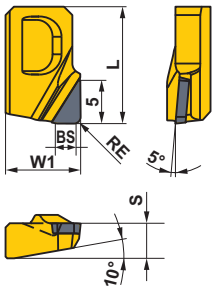
DCON	DC	Order Number	*1 No.T	CBDP	DAH	DCCB	LCCB	DCSFMS	KWW	L8	KWL	Fig.
22	50	**FMAX-050A08R**	8	20	11	17	12	47	10.4	6.3	—	1
22	50	**FMAX-050A10R**	10	20	11	17	12	47	10.4	6.3	—	1
22	63	**FMAX-063A10R**	10	20	11	17	12	60	10.4	6.3	—	1
22	63	**FMAX-063A12R**	12	20	11	17	12	60	10.4	6.3	—	1
25.4	80	**FMAXR08010C**	10	24	13	26	11	68	9.5	6	—	2
25.4	80	**FMAXR08014C**	14	24	13	26	11	68	9.5	6	—	2
27	80	**FMAX-080B14R**	14	24	13	26	11	68	12.4	7	—	2
31.75	100	**FMAXR10012D**	12	32	17	32	10	79	12.7	8	90	3
31.75	100	**FMAXR10018D**	18	32	17	32	10	79	12.7	8	90	3
32	100	**FMAX-100B18R**	18	32	17	32	10	79	14.4	8	90	3
38.1	125	**FMAXR12516E**	16	36	22	38	12	88	15.9	10	112	3
38.1	125	**FMAXR12524E**	24	36	22	38	12	88	15.9	10	112	3
40	125	**FMAX-125B24R**	24	36	22	38	12	88	16.4	9	112	3

*1 Number of Teeth

Inserts

(mm)

Shape	Order Number	Class	Stock	L	W1	S	BS	RE
	GOER1408PXFR2	MD2030	●	14.0	9.0	4.2	2.0	0.8

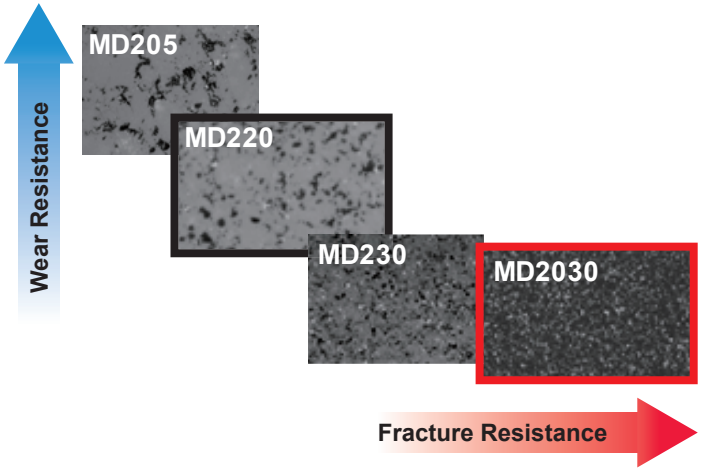


● : Inventory maintained. (PCD inserts are available in 1 piece in one case)

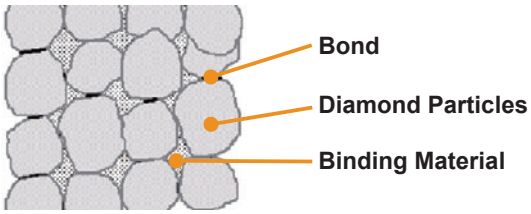
Features of New Grade MD2030

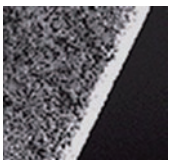
Diamond Sintered Body Containing Ultra Microparticle Diamond

- 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



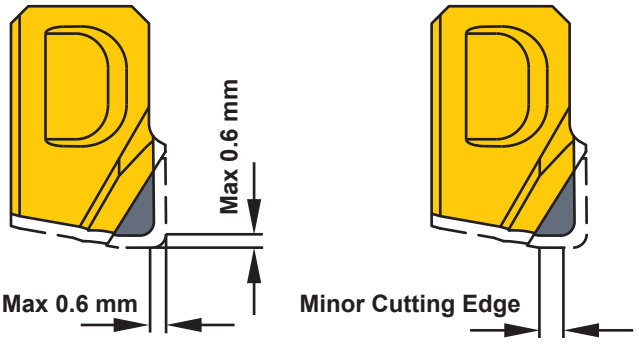


Diamond Particles : Give a highly stable cutting edge performance because of the strong bonding.

Re-grinding of an Insert

- The maximum material to be re-grinding is 0.6 mm.
- Use similar inserts after re-grinding to maintain balance.
- Problems may occur if the cutter isn't balanced correctly.
- After re-grinding the minor edge will reduce in size and may affect surface finishes.
- Check the diameter offset after fitting re-grinding inserts.

* Please contact us regarding optimum re-grinding conditions.



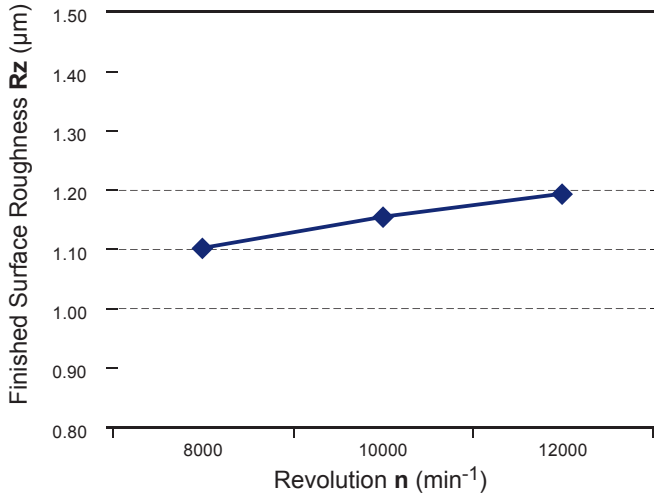
Recommended Cutting Conditions

(mm)

	Work Material	Characteristics	Grade	vc (m/min)	ae	ap	fz (mm/t.)
N	Aluminum Alloy	Si < 12.5%	MD2030	2500 (2000—3000)	≤ 0.2 DC	≤ 2 (0.5—3)	0.08 (0.05—0.2)
					≤ 0.5 DC	≤ 2 (0.5—2.5)	
					≤ 0.8 DC	≤ 2 (0.5—2.0)	
		Si ≥ 12.5%	MD2030	600 (400—800)	≤ 0.2 DC	≤ 2 (0.5—3)	0.08 (0.05—0.2)
					≤ 0.5 DC	≤ 2 (0.5—2.5)	
					≤ 0.8 DC	≤ 2 (0.5—2.0)	

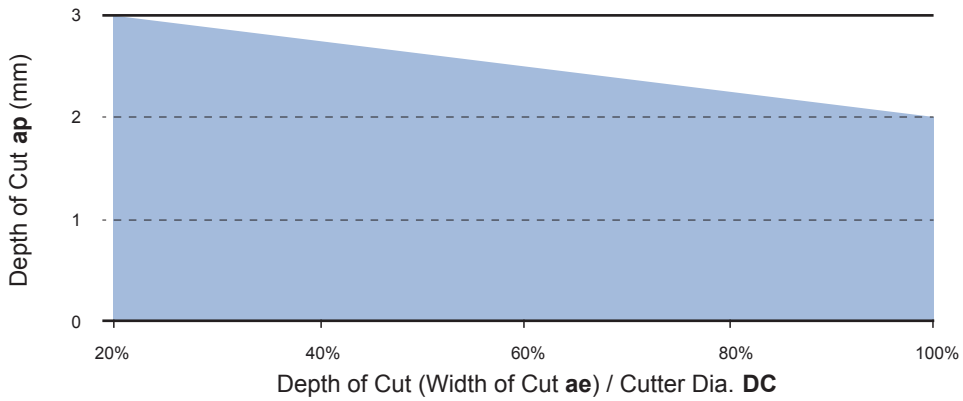
* Please adjust the depth of cut depending on the width of cut.

Finished Surface Roughness (Rz)

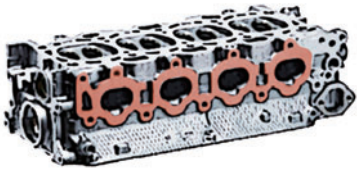
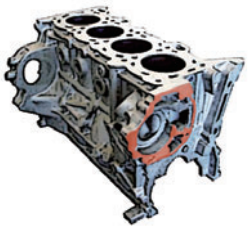


<Cutting Conditions>
Work Material : ADC12 Cylinder Head
Tool : FMAXR12524E
Insert : GOER1408PXFR2
Grade : MD2030
Revolution : 8000–12000 min^{-1}
Feed : 0.08 mm/t.
Depth of Cut : ap = 2.0 mm
ae = 68 mm x 3 pass
Cutting Mode : Internal Through Coolant 4MPa

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^{-1})	8000	8000
	Cutting Speed (m/min)	2513	2011
	Feed (mm/t.)	0.2	0.13
	Table Feed (mm/min)	28800	15000
	Depth of Cut (mm)	1.5	2.5
	Width of Cut (mm)	50	20
Cutting Mode		Wet Cutting	Wet Cutting
Machine		Horizontal M/C	Horizontal M/C
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.

The above application examples are customer's application examples, so it can be different from the recommended conditions.

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

MITSUBISHI MATERIALS CORPORATION

Overseas Sales Dept, Asian Region
KFC bldg., 8F, 1-6-1 Yokoami, Sumida-ku, Tokyo 130-0015, Japan
TEL +81-3-5819-8771 FAX +81-3-5819-8774

Overseas Sales Dept, European & American Region
KFC bldg., 8F, 1-6-1 Yokoami, Sumida-ku, Tokyo 130-0015, Japan
TEL +81-3-5819-8772 FAX +81-3-5819-8774

http://www.mitsubishicarbide.com/en/
(Tools specifications subject to change without notice.)

EXP-14-E012
2016.9.E(-)