

PRODUCT NEWS

PN-E-002

XFG / MXF type



KALIP TEKNİK

High Efficient Multi-Purpose Finisher

Diemaster 5G

- Bore type : $\varnothing 50 \sim 66$
- Modular type : $\varnothing 16 \sim 42$



Face Milling

Copy Milling

Shoulder Milling (radial)

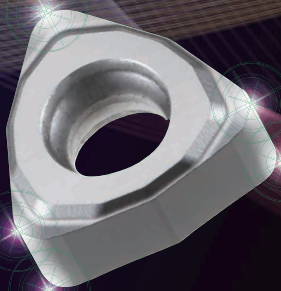
Plunge Milling

NEW

SERIES EXPANSION

XFG type — $\varnothing 50, \varnothing 63$

MXF type — $\varnothing 32, \varnothing 40$



KALIP TEKNİK

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Feature 1 Multiple Machining Styles



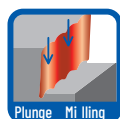
- Side Wall Finishing



- Bottom Finishing

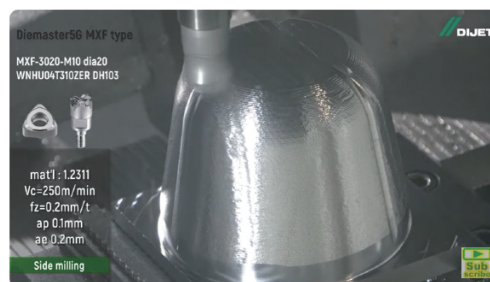


- Semi-Finishing



- Plunge Finishing & Semi-Finishing

Movie



Feature 2 Available in 2 insert grades

JC8015

P

M

K

DH103

P

K

H

For general purpose

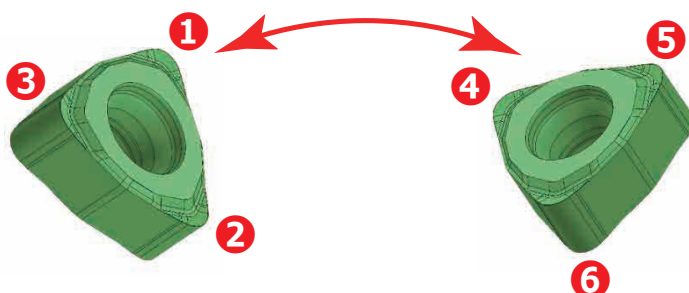
Applied to general steel, mold steel, stainless steel, and hardened die steel up to 50 HRC

For hardened steel

Excellent wear-resistance when finishing or semi-finishing high hardened steels

ISO	P					M					K				H		
	P01	P10	P20	P30	P40	M01	M10	M20	M30	M40	K01	K10	K20	K30	H01	H10	H20
Application Range	JC8015					JC8015					JC8015						
	DH103										DH103				DH103		

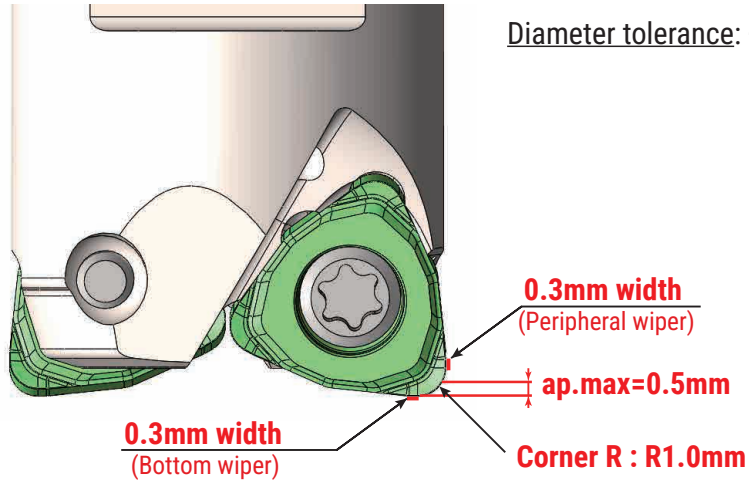
Feature 3 Economical double-sided insert (with 6 cutting edges) High accuracy with H-class tolerance



Feature 4

Double-wiper insert

Wiper for face cutting and for periphery cutting



Selection Guide

Product	Mirror Radius MRX / RNM type	High Precision QM max MQT-A00 type	Diemaster 5G XFG / MXF type
			
Tool diameter (mm)	6 - 32	16 - 35	16 - 66
Diameter tolerance	0 / -0.02	0 / -0.03	+0.01 / -0.05
Accuracy	★★★★	★★★	★
Efficiency	★	★★★★	★★★
Economical	★	★★★	★★★★

XFG
TYPE

Bore Type

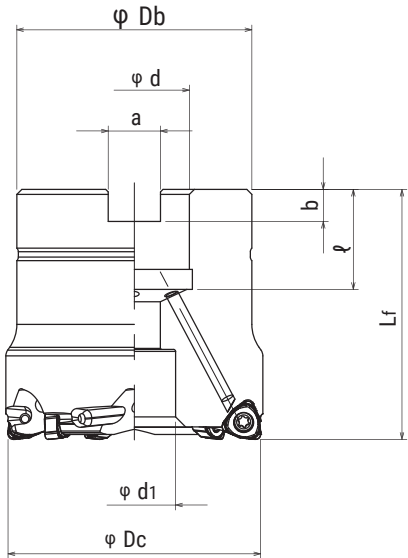
Through
coolant
hole

Face Milling

Copy Milling

Shoulder

Plunge Milling



Cat.No.	Stock	No. of inserts	Dimensions (mm)								Arbor set bolt	Weight (kg)	Inserts
			φDc	Lf	φDb	φd	φd1	a	b	ℓ			
NEW XFG-6050R-22	●	6	50	50	47	22	16.5	10.4	6.3	20	M10	0.54	WNHU04T310ZER
XFG-6052R-22	●	6	52	50	47	22	16.5	10.4	6.3	20	M10	0.56	
NEW XFG-7063R-27	●	7	63	50	48	27	20.0	12.4	7	22	M12×1.75×30★	0.69	
XFG-7066R-27	●	7	66	50	48	27	20.0	12.4	7	22	M12×1.75×30★	0.72	

1. All cutters are supplied without inserts or wrench.
2. ★ mark shows : these cutter bodies are equipped with the set bolt because of the specified bolt size.
Except for these cutter bodies, please use the set bolt equipped with arbor.

Screw	Torque(N.m)	Wrench
TSW-2567H	1.1	A-08

MXF TYPE

Modular Type

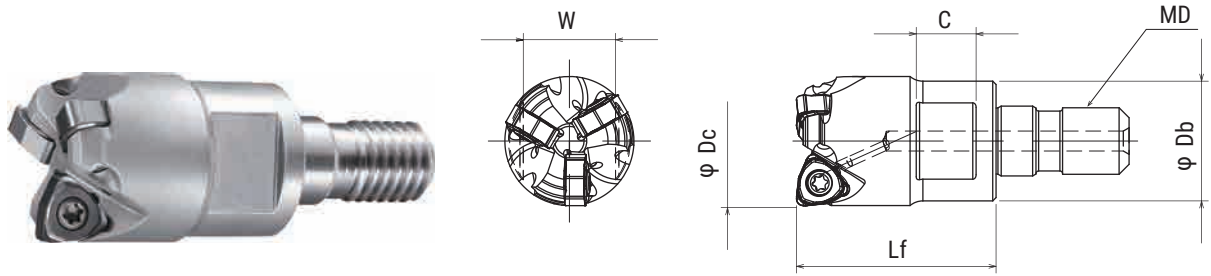
Through
coolant
hole

Face Milling

Copy Milling

Shoulder

Plunge Milling

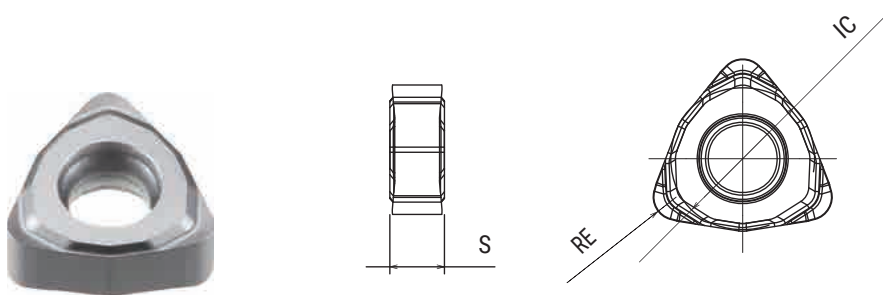


Cat.No.	Stock	No. of inserts	Dimensions (mm)						Insert
			φDc	Lf	φDb	MD	C	W	
MXF-2016-M8	●	2	16	23	14	M8	8	12	WNHU04T310ZER
MXF-3020-M10	●	3	20	30	18	M10	9	14	
MXF-4025-M12	●	4	25	35	22	M12	11	19	
NEW MXF-5032-M16	●	5	32	43	29	M16	12	22	
MXF-5035-M16	●	5	35	43	29	M16	12	22	
NEW MXF-6040-M16	●	6	40	43	32	M16	14	26	
MXF-6042-M16	●	6	42	43	32	M16	14	26	

All cutters are supplied without inserts or wrench.

Screw	Torque(N.m)	Wrench
TSW-2567H	1.1	A-08

Insert



Cat.No.	Tolerance	PVD coated		Dimensions (mm)		
		DH103	JC8015	RE	IC	S
WNHU04T310ZER	H	●	●	1.0	6.35	3.33

10 inserts per case.

● : Standard stock items

○ : Stock in Japan

■ Recommended Cutting Conditions

Material	Grade		Finishing		Semi Finishing
			Side Wall	Bottom Face	
Carbon steel below 250HB	JC8015	Vc(mm/min)	300	260	190
		fz(mm/t)	0.20	0.20	0.4 - 0.6
		ap(mm)	0.30	0.20	0.20
		ae(mm)	0.10	~ 0.7 Dc	0.5Dc
Cast steel below 285HB	JC8015	Vc(mm/min)	300	260	190
		fz(mm/t)	0.20	0.20	0.4 - 0.6
		ap(mm)	0.30	0.20	0.20
		ae(mm)	0.10	~ 0.7 Dc	0.5Dc
Tool & die steel below 255HB	JC8015	Vc(mm/min)	300	260	175
		fz(mm/t)	0.20	0.20	0.4 - 0.6
		ap(mm)	0.30	0.20	0.20
		ae(mm)	0.10	~ 0.7 Dc	0.5Dc
Mold steel 30-36 HRC	DH103 JC8015	Vc(mm/min)	300	260	175
		fz(mm/t)	0.20	0.20	0.4 - 0.6
		ap(mm)	0.30	0.20	0.20
		ae(mm)	0.10	~ 0.7 Dc	0.5Dc
Mold steel 38-43HRC	DH103 JC8015	Vc(mm/min)	280	240	160
		fz(mm/t)	0.15	0.15	0.4 - 0.6
		ap(mm)	0.30	0.20	0.20
		ae(mm)	0.10	~ 0.7 Dc	0.5Dc
Hardened die steel 42-52HRC	DH103 JC8015	Vc(mm/min)	250	190	150
		fz(mm/t)	0.08	0.08	0.4 - 0.6
		ap(mm)	0.30	0.15	0.20
		ae(mm)	0.10	~ 0.7 Dc	0.5Dc
Grey cast iron 160-260HB	DH103 JC8015	Vc(mm/min)	350	300	160
		fz(mm/t)	0.25	0.20	0.4 - 0.6
		ap(mm)	0.30	0.20	0.20
		ae(mm)	0.20	~ 0.7 Dc	0.5Dc
Nodular cast iron 170-300HB	DH103 JC8015	Vc(mm/min)	350	300	160
		fz(mm/t)	0.25	0.20	0.4 - 0.6
		ap(mm)	0.30	0.20	0.20
		ae(mm)	0.20	~ 0.7 Dc	0.5Dc
Stainless steel	JC8015	Vc(mm/min)	280	240	170
		fz(mm/t)	0.20	0.20	0.4 - 0.6
		ap(mm)	0.30	0.15	0.20
		ae(mm)	0.10	~ 0.7 Dc	0.5Dc
Titanium alloy Ti-6Al-4V 35-43HRC	JC8015	Vc(mm/min)	100	55	-
		fz(mm/t)	0.12	0.10	-
		ap(mm)	0.25 - 0.30	0.20	-
		ae(mm)	0.10	~ 0.7 Dc	-
Heat resistant alloy INCO718 35-43HRC	JC8015	Vc(mm/min)	80	55	-
		fz(mm/t)	0.12	0.10	-
		ap(mm)	0.25 - 0.30	0.20	-
		ae(mm)	0.10	~ 0.7 Dc	-

Vc : Cutting speed fz : Feed rate per tooth ap : Depth of cut ae : Width of cut

Note) (1) The above cutting conditions should be adjusted according to the machine rigidity and workpiece rigidity.

(2) The above cutting conditions are for a overhung length of 3Dc.

Adjust the rotation speed n (min-1) and feed rate Vf (mm/min) according to the protrusion length.

(3) If chattering occurs, reduce the depth of cut to a shallower depth than the above values or lower the feed rate.

(4) Remove chips by air blow. Be especially careful when machining cavities with a vertical MC.

(5) When using a steel shank, reduce the rotation speed n (min-1) and feed rate Vf (mm/min) to 80% of the above conditions.

■ Recommended Cutting Conditions

Material	Grade		Plunging	
			Finishing	Semi Finishing
Carbon steel below 250HB	JC8015	Vc(mm/min)	400	300
		fz(mm/t)	0.10	0.15
		ae(mm)	~0.2	~2
		Pf(mm)	-	~0.15Dc
Cast steel below 285HB	JC8015	Vc(mm/min)	400	300
		fz(mm/t)	0.10	0.15
		ae(mm)	~0.2	~2
		Pf(mm)	-	~0.15Dc
Tool & die steel below 255HB	JC8015	Vc(mm/min)	350	260
		fz(mm/t)	0.10	0.15
		ae(mm)	~0.2	~2
		Pf(mm)	-	~0.15Dc
Mold steel 30-36 HRC	DH103 JC8015	Vc(mm/min)	300	220
		fz(mm/t)	0.10	0.12
		ae(mm)	~0.2	~2
		Pf(mm)	-	~0.15Dc
Mold steel 38-43HRC	DH103 JC8015	Vc(mm/min)	200	150
		fz(mm/t)	0.10	0.12
		ae(mm)	~0.2	~2
		Pf(mm)	-	~0.15Dc
Hardened die steel 42-52HRC	DH103 JC8015	Vc(mm/min)	140	100
		fz(mm/t)	0.07	0.10
		ae(mm)	~0.2	~2
		Pf(mm)	-	~0.15Dc
Grey cast iron 160-260HB	DH103 JC8015	Vc(mm/min)	500	370
		fz(mm/t)	0.10	0.15
		ae(mm)	~0.2	~2
		Pf(mm)	-	~0.15Dc
Nodular cast iron 170-300HB	DH103 JC8015	Vc(mm/min)	500	370
		fz(mm/t)	0.10	0.15
		ae(mm)	~0.2	~2
		Pf(mm)	-	~0.15Dc

Vc : Cutting speed fz : Feed rate per tooth ae : Width of cut Pf : Pick Feed

Note) (1) The above cutting conditions should be adjusted according to the machine rigidity and workpiece rigidity.

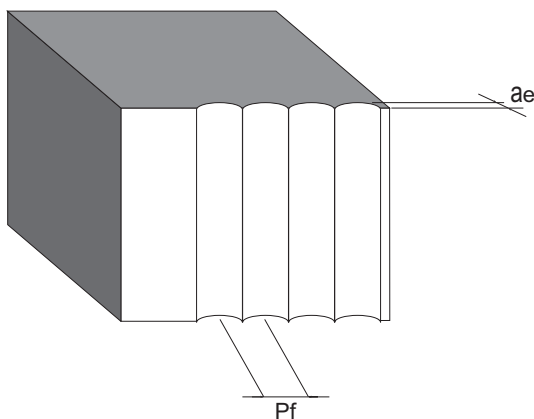
(2) The above cutting conditions are for a overhung length of 3Dc.

Adjust the rotation speed n (min-1) and feed rate Vf (mm/min) according to the protrusion length.

(3) If chattering occurs, reduce the depth of cut to a shallower depth than the above values or lower the feed rate.

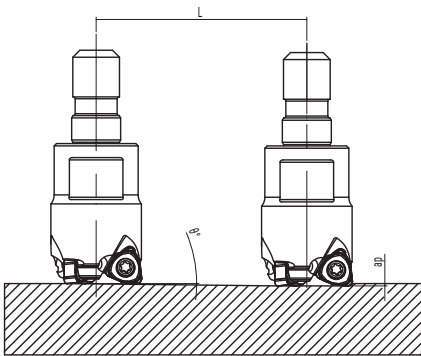
(4) Remove chips by air blow. Be especially careful when machining cavities with a vertical MC.

(5) When using a steel shank, reduce the rotation speed n (min-1) and feed rate Vf (mm/min) to 80% of the above conditions.

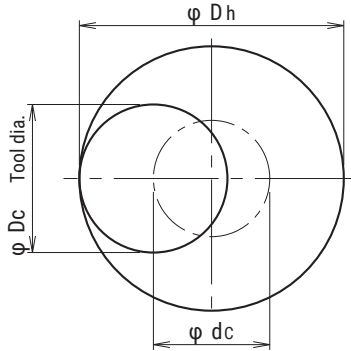


Attention for profile milling

Ramping



Helical interpolation



- ⊙ In case of ramping and helical interpolation, apply 80% or less feed speed from standard cutting condition table.
- ⊙ In case of helical interpolation, recommend wet cutting by coolant through the tool.

● 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.
- To obtain a flat bottom surface when helical milling, it requires to remove "the uncut part" in the center of work materials at final pass.

Cat.No.	Tool dia.	Max. Depth of cut (mm) a_p	Ramping		Helical interpolation		
			Max. ramping angle θ°	Total cutting length at Max. a_p L (mm)	Through hole Min. bore dia. D_h min (mm)	Through hole Max. bore dia. ϕ_{Dh} max (mm)	Flat bottom Min. bore dia. D_f min (mm)
MXF-2016-M8	16	0.5	0.4	72	28.2	31	29.6
MXF-3020-M10	20	0.5	0.3	95	36.2	39	37.6
MXF-4025-M12	25	0.5	0.2	143	46.2	49	47.6
MXF-5032-M16	32	0.5	0.15	191	60.2	63	61.6
MXF-5035-M16	35	0.5	0.15	191	66.2	69	67.6
MXF-6040-M16	40	0.5	0.1	286	76.2	79	77.6
MXF-6042-M16	42	0.5	0.1	286	80.2	83	81.6
XFG-6050R-22	50	0.5	0.1	286	96.2	99	97.6
XFG-6052R-22	52	0.5	0.1	286	100.2	103	101.6
XFG-7063R-27	63	0.5	※Ramping & helical interpolation is not recommended.				
XFG-7066R-27	66	0.5					

※Drilling is not recommended.

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