

HIGH FEED MILLING



F

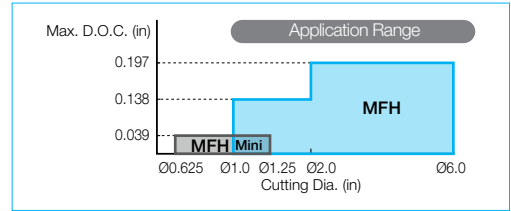
F1 - F25

HIGH FEED MILLING		F2 - F25
MFH	MFH-RAPTOR	F2
MFH	MFH-RAPTOR MINI	F13
MFH	MFH-RAPTOR MICRO	F20

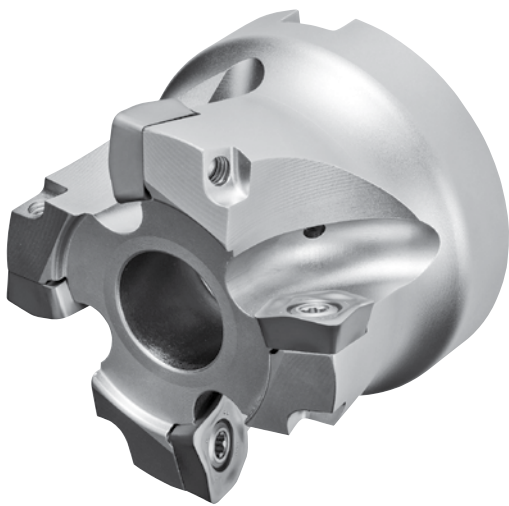
MFH-RAPTOR

(Cutter Dia. Ø1.000" ~ Ø6.000")
(Cutter Dia. Ø25 ~ Ø160)

Anti-vibration Design for Increased Chip Evacuation and Shortened Cutting Times



F
HIGH FEED

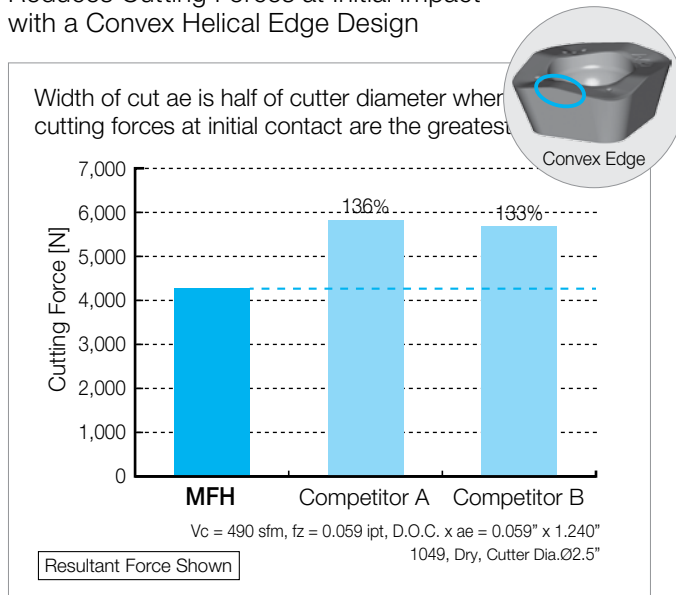


1 3 Different Insert Designs Offer a Variety of Machining Options

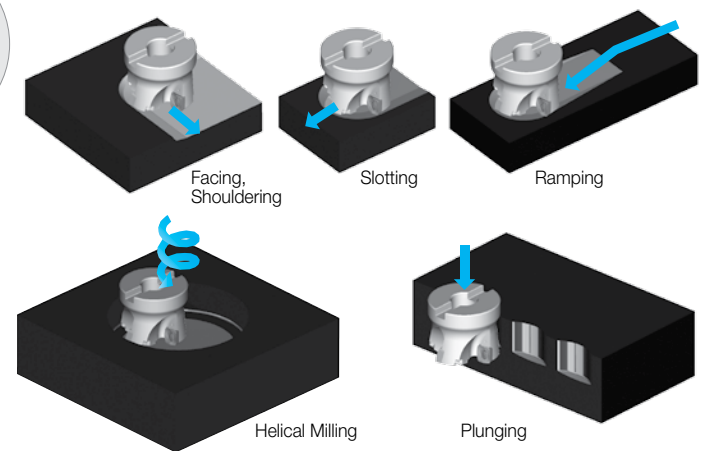
	GM (General Milling)	LD (Large D.O.C.)	FL (Wiper Edge)
Shape			
Applications	1st Choice for General Purpose Multiple Metalworking Processes	1st Choice for Large D.O.C. MAX D.O.C. = 0.197" (SOMT14) MAX D.O.C. = 0.138" (SOMT10) Available for Scale Removal	Wiper Edge Roughing and Finishing Even in Low Horsepower Machining Centers

2 Reduced Chattering with Convex Cutting Edge Design

Reduces Cutting Forces at Initial Impact with a Convex Helical Edge Design

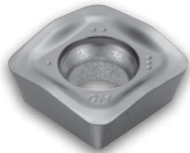


3 Wide Application Range for Multiple Metalworking Processes



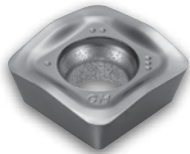
* GM chipbreaker is available for all of the above applications.
* LD and FL chipbreakers are not available for helical milling, plunging and contouring of rising wall. (Refer to Page F12)

4 Fracture Resistant Grades for Stable Machining of Difficult-to-cut Material



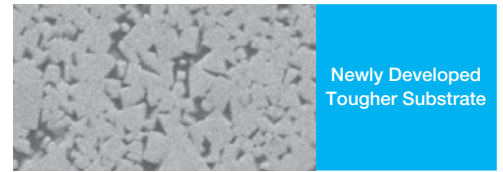
CA6535

- For Ni-base heat resistant alloy and martensitic stainless steel
- High heat resistance and wear resistance with CVD coating
- Improved stability due to thin film coating technology

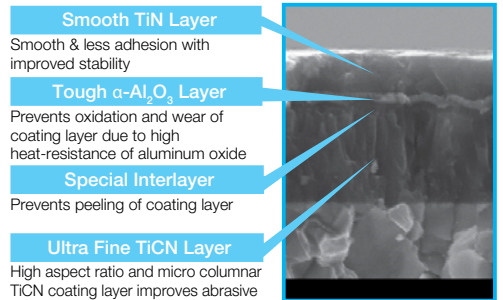


PR1535

- For titanium alloy and precipitation hardened stainless steel
- Stabilized milling operation and long tool life with Kyocera's MEGACOAT NANO coating technology
- Improved stability due to thin film coating technology



Newly Developed Tougher Substrate



Smooth TiN Layer

Smooth & less adhesion with improved stability

Tough α -Al₂O₃ Layer

Prevents oxidation and wear of coating layer due to high heat-resistance of aluminum oxide

Special Interlayer

Prevents peeling of coating layer

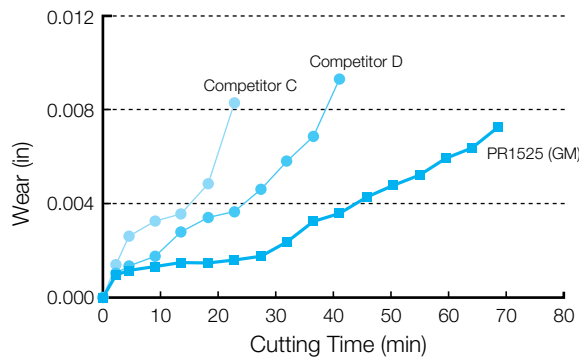
Ultra Fine TiCN Layer

High aspect ratio and micro columnar TiCN coating layer improves abrasive wear resistance

MEGACOAT NANO Layer Structure

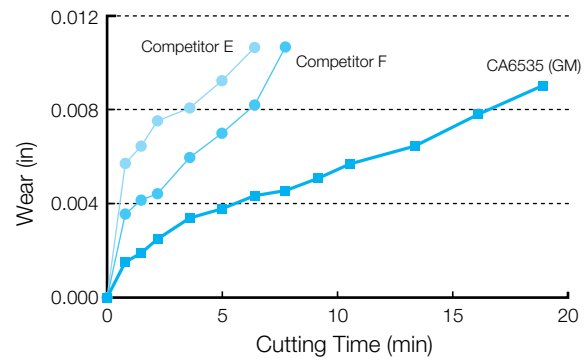
Wear Resistance Comparison

Alloy Tool Steel (D2)



<Cutting Conditions> Vc = 490 sfm, fz = 0.059 ipt, D.O.C. x ae = 0.039" x 0.630", Dry

Ni-Base Heat-Resistant Alloys



<Cutting Conditions> Vc = 98 sfm, fz = 0.0315 ipt, D.O.C. x ae = 0.039" x 1.575", Wet

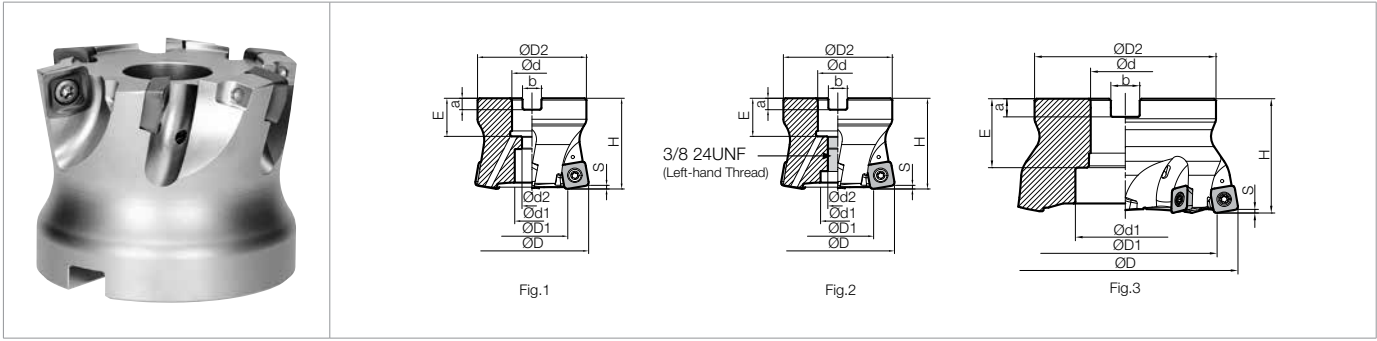
Case Studies

Material	Tool	Performance	Notes
SFVAF22B (Forged Alloy Steel)	PR1525	Chip Removal = 43.94in ³ /min	3 Times the Machining Efficiency
	Competitor G	Chip Removal = 14.65in ³ /min	
304 (Stainless Steel)	PR1535	Chip Removal = 3.54in ³ /min	Chattering Reduced 1.6 Times Machining Efficiency
	Competitor H	Chip Removal = 2.20in ³ /min	
<p>• Turbine Parts • Vc = 520 sfm • fz = 0.0461 ipt • D.O.C. x ae = 0.059" x max. 6.299" • Dry • MFH160R-14-8T (8 inserts) • SOMET140520ER-GM (PR1525)</p>		<p>Small machining noise even at 3 times higher feed rate. Good edge condition without chipping and stable machining. (User Evaluation)</p>	
<p>• Clutch • Vc = 390 sfm • fz = 0.0472 ipt • D.O.C. x ae = 0.039" x 0.787" • Dry • MFH32-S32-10-2T (2 inserts) • SOMET100420ER-GM (PR1535)</p>		<p>Competitor H caused chattering but MFH realized stable machining. Good edge condition and long tool life. (User Evaluation)</p>	

GRADES	A
LINEUP / INSERTS	B
45° / 70° LEAD	C
75° LEAD	D
90° LEAD	E
HIGH FEED	F
MULTI-FUNCTION	G
SLOT MILLS	H
RADIUS / BALL-NOSE	J
OTHER APPLICATIONS	K
TOOL HOLDING	O
SPARE PARTS	P
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MFH-RAPTOR

MFH Face Mill (Inch Size)



Toolholder Dimensions with SOMT10 Inserts (Inch Size)

Part Number	Stock	No. of Inserts	Dimensions (in)														Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max RPM
			ØD	ØD1			ØD2	Ød	Ød1	Ød2	H	E	a	b	S	*S _L	A.R.	R.R.				
				GM	LD	FL																
MFH 2000R-10-4T	●	4	2.000	1.331	1.510	1.469	1.750	0.750	0.669	0.433	1.969	0.947	0.187	0.313			+10°	-5°	Yes	Fig.1	0.4	10,000
2000R-10-5T	●	5	2.000	1.331	1.510	1.469	1.750	0.750	0.669	0.433	1.969	0.947	0.187	0.313			+10°	-5°			0.4	10,000
2500R-10-5T	●	5	2.500	1.831	2.010	1.969	2.250	0.750	0.669	0.433	1.969	0.750	0.187	0.313	0.059	0.138	+10°	-4°			0.7	8,800
2500R-10-6T	●	6	2.500	1.831	2.010	1.969	2.250	0.750	0.669	0.433	1.969	0.750	0.187	0.313			+10°	-4°			0.7	8,800
3000R-10-7T	●	7	3.000	2.331	2.510	2.469	2.750	1.000	0.866	0.551	2.480	1.063	0.236	0.382			+10°	-4°			1.3	7,600

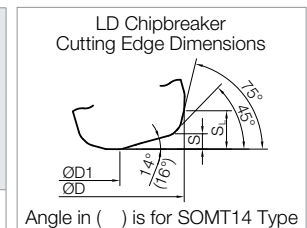
Toolholder Dimensions with SOMT14 Inserts (Inch Size)

Part Number	Stock	No. of Inserts	Dimensions (in)														Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max RPM
			ØD	ØD1			ØD2	Ød	Ød1	Ød2	H	E	a	b	S	*S _L	A.R.	R.R.				
				GM	LD	FL																
NEW MFH 2000R-14-4T	●	4	2.000	1.094	1.330	1.291	1.750	0.750	0.500	3/8 24UNF	1.969	0.827	0.187	0.313			+10°	-10°	Yes	Fig.1	0.4	8,800
2500R-14-4T	●	4	2.500	1.594	1.830	1.791	2.250	0.750	0.669	0.433	1.969	0.750	0.187	0.313			+10°	-10°			0.6	7,400
2500R-14-5T	●	5	2.500	1.594	1.830	1.791	2.250	0.750	0.669	0.433	1.969	0.750	0.187	0.313			+10°	-10°			0.6	7,400
3000R-14-5T	●	5	3.000	2.094	2.330	2.291	2.750	1.000	0.866	0.551	2.480	1.063	0.236	0.382			+10°	-9°			1.2	6,400
3000R-14-6T	●	6	3.000	2.094	2.330	2.291	2.750	1.000	0.866	0.551	2.480	1.063	0.236	0.382	0.079	0.197	+10°	-9°			1.2	6,400
4000R-14-6T	●	6	4.000	3.094	3.330	3.291	3.750	1.500	1.299	0.866	2.480	1.181	0.394	0.626			+10°	-7°	2.3	5,600		
4000R-14-7T	●	7	4.000	3.094	3.330	3.291	3.750	1.500	1.299	0.866	2.480	1.181	0.394	0.626			+10°	-7°	2.3	5,600		
5000R-14-7T	●	7	5.000	4.094	4.330	4.291	3.750	1.500	2.047	-	2.480	1.496	0.394	0.626			+10°	-7°	2.9	4,800		
6000R-14-8T	●	8	6.000	5.094	5.330	5.291	4.880	2.000	2.835	-	2.480	1.496	0.433	0.752			+10°	-6°	No	Fig.3	4.5	4,200

* Refer to LD dimensions in figure below

Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts							Applicable Inserts
	Clamp Screw	Wrench		Pre-Set Torque Wrench ^{*1}	Anti-seize Compound	Mounting Bolt	Mounting Screw	
MFH 2000R-10-4T 2000R-10-5T 2500R-10-5T 2500R-10-6T 3000R-10-7T	SB-4090TRPN	DTPM-15	TTP	NEW PST-IP15	MP-1	HH3/8-1.25(H) HH3/8-1.25(H) HH3/8-1.25(H) HH3/8-1.25(H) HH1/2-1.25(H)	XNS610 ^{*2}	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL
MFH 2000R-14-4T 2500R-14-4T 2500R-14-5T 3000R-14-5T 3000R-14-6T 4000R-14-6T 4000R-14-7T 5000R-14-7T 6000R-14-8T	SB-50120TRP	TTP-20	TTP	PST-IP20	MP-1	HH3/8-1.25(H) HH3/8-1.25(H) HH1/2-1.25(H) HH1/2-1.25(H) - - - - -	XNS610 ^{*2}	SOMT140520ER-GM SOMT140520ER-LD SOMT140514ER-FL



Angle in () is for SOMT14 Type

Caution with Max. Revolution
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

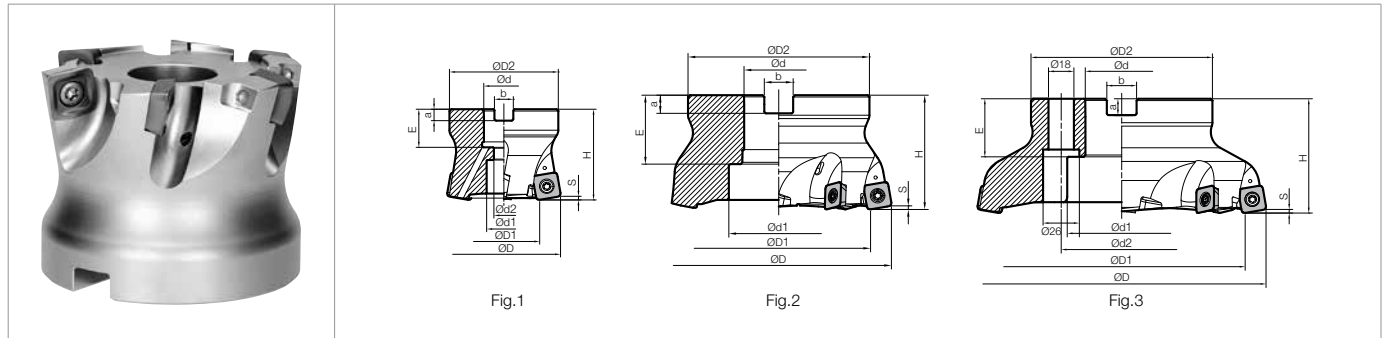
^{*1} For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force. Pre-Set Torque Wrench sold separately.

(H) Optional coolant thru bolt available.

Recommended Cutting Conditions **F11**

^{*2} Differential screw (3/8-24UNF)

MFH Face Mill (Metric Size)



Toolholder Dimensions with SOMT10 Inserts (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)													Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max RPM			
			ØD	ØD1			ØD2	Ød	Ød1	Ød2	H	E	a	b	S	*1SL	A.R.					R.R.		
Inch Bore Dia. MFH 050R-10-4T	○	4	50	33	37.5	36.5	47	0.875"	19	11	50	0.748"	0.197"	0.331"	1.5 *(1.2)	3.5	+10°	-5°	Yes	Fig.1	0.4	10,000		
	○	5	50	33	37.5	36.5	47	0.875"	19	11	50	0.748"	0.197"	0.331"			+10°	-5°					0.4	10,000
	○	5	63	46	50.5	49.5	60	0.875"	19	11	50	0.748"	0.197"	0.331"			+10°	-4°					0.7	8,800
	○	6	63	46	50.5	49.5	60	0.875"	19	11	50	0.748"	0.197"	0.331"			+10°	-4°					0.7	8,800
	○	7	80	63	67.5	66.5	76	1.250"	26	17	63	1.260"	0.315"	0.500"			+10°	-4°					1.3	7,600
Metric Bore Dia. MFH 050R-10-4T-M	○	4	50	33	37.5	36.5	47	22	19	11	50	21	6.3	10.4	1.5 *(1.2)	3.5	+10°	-5°	Yes	Fig.1	0.4	10,000		
	○	5	50	33	37.5	36.5	47	22	19	11	50	21	6.3	10.4			+10°	-5°					0.4	10,000
	○	5	63	46	50.5	49.5	60	22	19	11	50	21	6.3	10.4			+10°	-4°					0.7	8,800
	○	6	63	46	50.5	49.5	60	22	19	11	50	21	6.3	10.4			+10°	-4°					0.7	8,800
	○	5	63	46	50.5	49.5	60	27	20	13	50	24	7.0	12.4			+10°	-4°					0.7	8,800
	○	6	63	46	50.5	49.5	60	27	20	13	50	24	7.0	12.4			+10°	-4°					0.7	8,800
	○	7	80	63	67.5	66.5	76	27	20	13	63	24	7.0	12.4			+10°	-4°					1.6	7,600

Toolholder Dimensions with SOMT14 Inserts (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)													Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max RPM			
			ØD	ØD1			ØD2	Ød	Ød1	Ød2	H	E	a	b	S	*1SL	A.R.					R.R.		
Inch Bore Dia. MFH 063R-14-4T	○	4	63	40	46	45	60	0.875"	19	11	50	0.748"	0.197"	0.331"	2	5	+10°	-10°	Yes	Fig.1	0.6	7,400		
	○	5	63	40	46	45	60	0.875"	19	11	50	0.748"	0.197"	0.331"			+10°	-10°					0.6	7,400
	○	5	80	57	63	62	76	1.250"	26	17	63	1.260"	0.315"	0.500"			+10°	-8°					1.3	6,400
	○	6	80	57	63	62	76	1.250"	26	17	63	1.260"	0.315"	0.500"			+10°	-8°					1.3	6,400
	○	6	100	77	83	82	96	1.250"	26	17	63	1.260"	0.315"	0.500"			+10°	-7°					2.4	5,600
	○	7	100	77	83	82	96	1.250"	26	17	63	1.260"	0.315"	0.500"			+10°	-7°					2.4	5,600
	○	7	125	102	108	107	100	1.500"	55	-	63	1.496"	0.394"	0.625"			+10°	-7°					2.9	4,800
	○	8	160	137	143	142	100	2.000"	72	-	63	1.496"	0.433"	0.750"			+10°	-6°					3.9	4,200
Metric Bore Dia. MFH 063R-14-4T-22M	○	4	63	40	46	45	60	22	19	11.0	50	21	6.3	10.4	2	5	+10°	-10°	Yes	Fig.1	0.6	7,400		
	○	5	63	40	46	45	60	22	19	11.0	50	21	6.3	10.4			+10°	-10°					0.6	7,400
	○	4	63	40	46	45	60	27	20	13.0	50	24	7	12.4			+10°	-10°					0.6	7,400
	○	5	63	40	46	45	60	27	20	13.0	50	24	7	12.4			+10°	-10°					0.6	7,400
	○	5	80	57	63	62	76	27	20	13.0	63	24	7	12.4			+10°	-8°					1.4	6,400
	○	6	80	57	63	62	76	27	20	13.0	63	24	7	12.4			+10°	-8°					1.4	6,400
	○	6	100	77	83	82	96	32	26	17.0	63	28	8	14.4			+10°	-7°					2.4	5,600
	○	7	100	77	83	82	96	32	26	17.0	63	28	8	14.4			+10°	-7°					2.4	5,600
	○	7	125	102	108	107	100	40	55	-	63	33	9	16.4			+10°	-7°					2.8	4,800
	○	8	160	137	143	142	100	40	68	66.7	63	32	9	16.4			+10°	-6°					3.7	4,200

*1 Refer to LD cutting edge dimensions in figure on page F6
*2 Dimension in () is when mounting LD

Spare Parts and Applicable Inserts F6

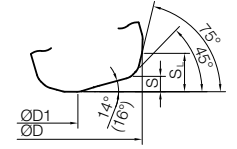
● Spare Parts and Applicable Inserts (Metric Size)

Part Number	Spare Parts					Applicable Inserts ● B17, F10
	Clamp Screw	Wrench		Pre-Set Torque Wrench*	Anti-seize Compound	
MFH 050R-10-...	SB-4090TRPN	DTPM	TTP	NEW PST-IP15	MP-1	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL
050R-10-...-M						
063R-10-...						
063R-10-...-22M						
063R-10-...-27M						
080R-10-...						
080R-10-...-M						
063R-14-...						
063R-14-...-22M						
063R-14-...-27M						
080R-14-...						
080R-14-...-M						
100R-14-...						
100R-14-...-M						
125R-14-...						
160R-14-...						

Recommended Torque for Insert Clamp 3.5 N·m

Recommended Torque for Insert Clamp 4.5 N·m

LD Chipbreaker Cutting Edge Dimensions



Angle in () is for SOMT14 Type

Caution with Max. Revolution
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

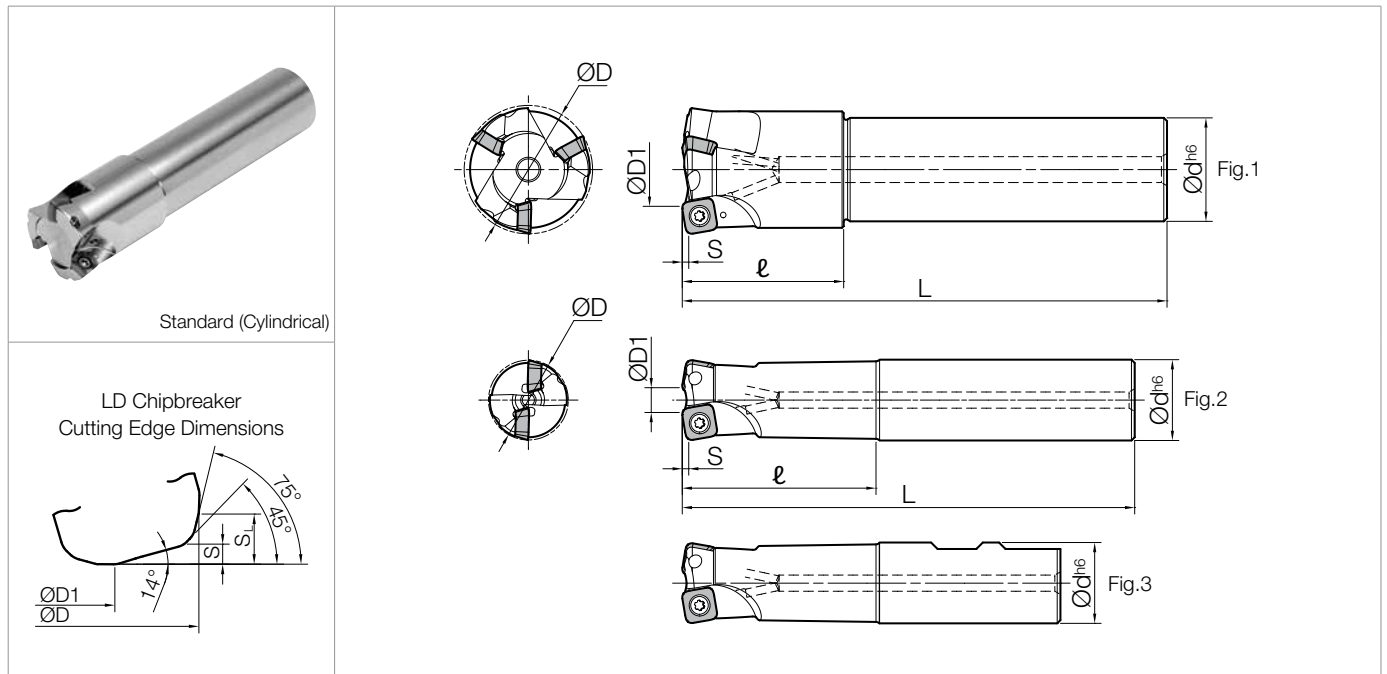
*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force. Pre-Set Torque Wrench sold separately.

Recommended Cutting Conditions ● F11

Holders on Page ● F5

F
HIGH FEED

MFH End Mill (Inch Size)



Toolholder Dimensions with SOMT10 Inserts (Inch Size)

Part Number	Stock	No. of Inserts	Dimensions (in)										Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max RPM
			ØD	ØD1			Ød	L	ℓ	S	S _L	A.R.	R.R.					
Standard Shank (Weldon)	MFH 1000-W100-10-2T	●		2	1.000	0.331						0.508	0.469	1.000	5.500	3.173		
	1250-W125-10-2T	●	2	1.250	0.581	0.758	0.719	1.250	6.000	2.750			+10°	-5°			0.8	14,000
	1250-W125-10-3T	●	3	1.250	0.581	0.758	0.719	1.250	6.000	2.750	0.059	0.138	+10°	-5°	Yes	Fig.3	0.8	14,000
	1500-W150-10-3T	●	3	1.500	0.831	1.008	0.969	1.500	6.000	2.000			+10°	-5°			0.8	11,500
	1500-W150-10-4T	●	4	1.500	0.831	1.008	0.969	1.500	6.000	2.000			+10°	-5°			0.8	11,500
Long Shank (Cylindrical)	MFH 1000-S100-10-2T-8	●	2	1.000	0.331	0.508	0.469	1.000	8.000	4.750			+10°	-5°			0.8	17,000
	1250-S125-10-2T-8	●	2	1.250	0.581	0.758	0.719	1.250	8.000	4.750	0.059	0.138	+10°	-5°	Yes	Fig.2	0.8	14,000
	1500-S125-10-4T10	●	4	1.500	0.831	1.008	0.969	1.250	10.000	2.000			+10°	-5°		Fig.1	0.8	11,500

Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts				Applicable Inserts ➔ B17, F10
	Clamp Screw	Wrench	Pre-Set Torque Wrench*	Anti-Seize Compound	
MFH...-10-...	SB-4075TRP 	DTPM-15 	NEW PST-IP15 	MP-1 	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL

Caution with Max. Revolution

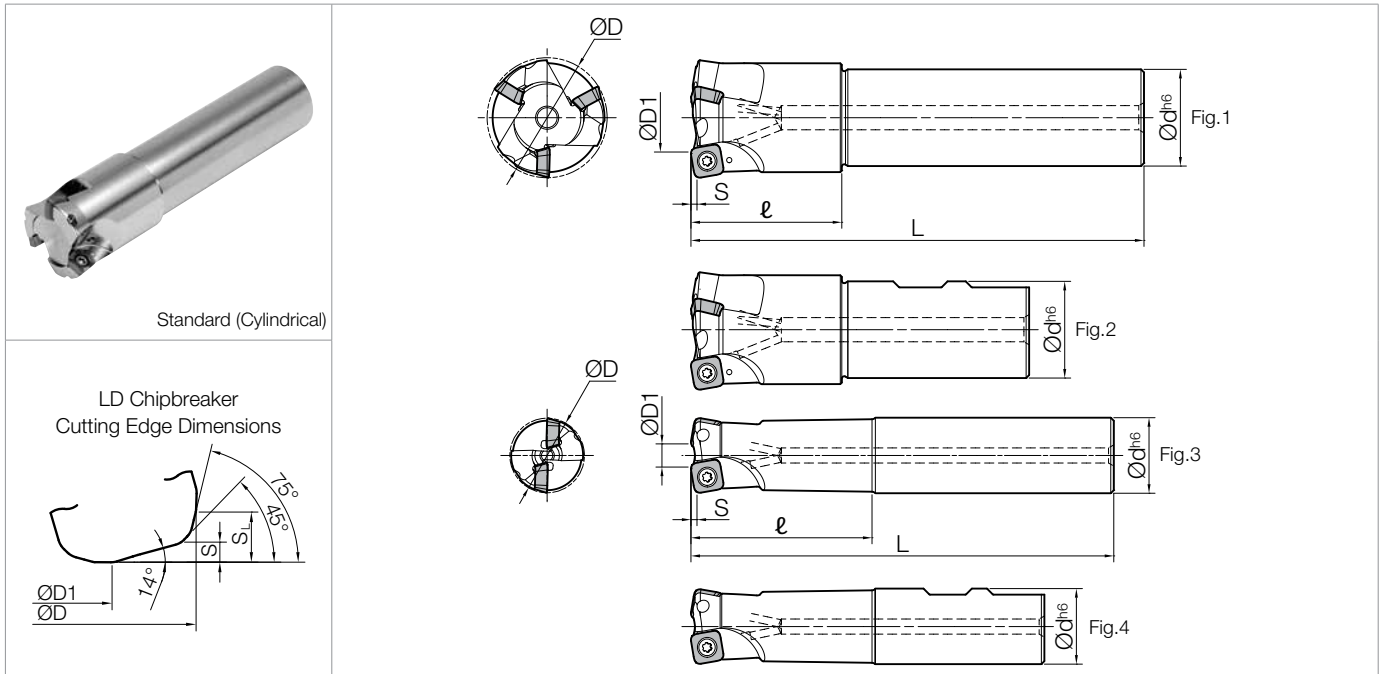
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force. Pre-Set Torque Wrench sold separately.

Recommended Cutting Conditions ➔ F11

MFH End Mill (Metric Size)



Toolholder Dimensions with SOMT10 Inserts (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)										Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max RPM
			ØD	ØD1			Ød	L	l	S	S _L	A.R.	R.R.					
				GM	LD	FL												
Standard Shank (Cylindrical)	MFH 25-S25-10-2T	○	2	25	8	12.5	11.5	25	140	60	1.5 *(1.2)	3.5	+10°	-5°	Yes	Fig.3	0.4	17,000
	28-S25-10-2T	○	2	28	11	15.5	14.5	25	140	40						Fig.1	0.5	15,500
	32-S32-10-2T	○	2	32	15	19.5	18.5	32	150	70						Fig.3	0.8	14,000
	32-S32-10-3T	○	3	32	15	19.5	18.5	32	150	70						Fig.3	0.8	14,000
	35-S32-10-2T	○	2	35	18	22.5	21.5	32	150	50						Fig.1	0.8	13,000
	35-S32-10-3T	○	3	35	18	22.5	21.5	32	150	50						Fig.1	0.8	13,000
	40-S32-10-3T	○	3	40	23	27.5	26.5	32	150	50						Fig.1	0.9	11,500
	40-S32-10-4T	○	4	40	23	27.5	26.5	32	150	50						Fig.1	0.9	11,500
Standard Shank (Weldon)	MFH 25-W25-10-2T	○	2	25	8	12.5	11.5	25	117	60	1.5 *(1.2)	3.5	+10°	-5°	Yes	Fig.4	0.4	17,000
	32-W32-10-3T	○	3	32	15	19.5	18.5	32	131	70						Fig.4	0.7	14,000
	40-W32-10-3T	○	3	40	23	27.5	26.5	32	112	50						Fig.2	0.7	11,500
	40-W32-10-4T	○	4	40	23	27.5	26.5	32	112	50						Fig.2	0.7	11,500
Long Shank (Cylindrical)	MFH 25-S25-10-2T-200	○	2	25	8	12.5	11.5	25	200	120	1.5 *(1.2)	3.5	+10°	-5°	Yes	Fig.3	0.6	17,000
	28-S25-10-2T-200	○	2	28	11	15.5	14.5	25	200	40						Fig.1	0.7	15,500
	32-S32-10-2T-200	○	2	32	15	19.5	18.5	32	200	120						Fig.3	1.0	14,000
	35-S32-10-2T-200	○	2	35	18	22.5	21.5	32	200	50						Fig.1	1.4	13,000
	40-S32-10-4T-250	○	4	40	23	27.5	26.5	32	250	50						Fig.1	1.5	11,500
Extra Long Shank (Cylindrical)	MFH 25-S25-10-2T-300	○	2	25	8	12.5	11.5	25	300	180	1.5 *(1.2)	3.5	+10°	-5°	Yes	Fig.3	1.0	17,000
	28-S25-10-2T-300	○	2	28	11	15.5	14.5	25	300	40						Fig.1	1.1	15,500
	32-S32-10-2T-300	○	2	32	15	19.5	18.5	32	300	180						Fig.3	1.6	14,000
	35-S32-10-2T-300	○	2	35	18	22.5	21.5	32	300	50						Fig.1	1.7	13,000
	40-S32-10-4T-300	○	4	40	23	27.5	26.5	32	300	50						Fig.1	1.8	11,500

* Dimension in () is when mounting LD

Spare Parts and Applicable Inserts (Metric Size)

Part Number	Spare Parts				Applicable Inserts ● B17, F10
	Clamp Screw	Wrench	Pre-Set Torque Wrench*	Anti-Seize Compound	
MFH...-10-...	SB-4075TRP Recommended Torque for Insert Clamp 3.5 N·m	DTPM-15	PST-IP15	MP-1	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL

Caution with Max. Revolution

When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

Coat Anti-Seize Compound (MP-1)

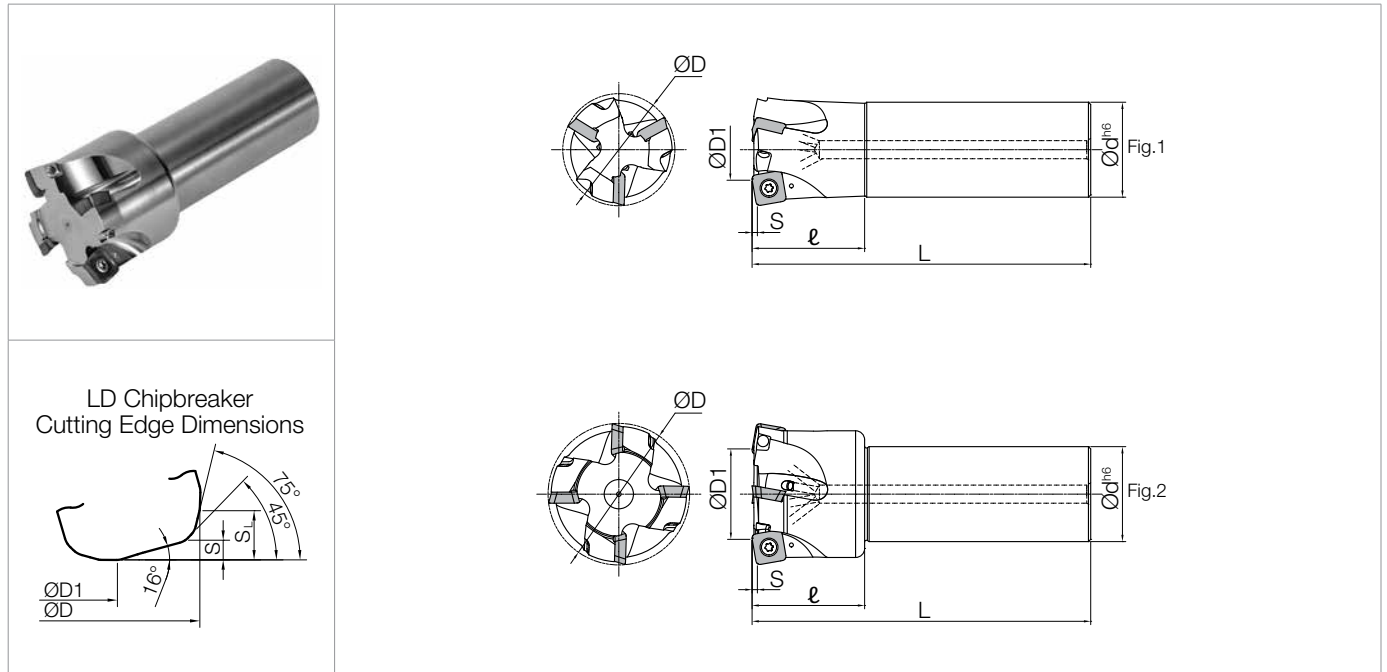
thinly on portion of taper and thread prior to installation.

*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force.

Pre-Set Torque Wrench sold separately.

Recommended Cutting Conditions ● F11

MFH End Mill (Metric Size)



Toolholder Dimensions with SOMT14 Inserts (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)									Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max RPM
			ØD	ØD1			Ød	L	ℓ	S	S _L	A.R.	R.R.				
MFH 50-S42-14-3T	○	3		50	27	33						32	42	150	50		
63-S42-14-4T	○	4	63	40	46	45	42	150	50	2	5	+10°	-10°	Yes	Fig.2	1.7	7,400
80-S42-14-5T	○	5	80	57	63	62	42	150	50			+10°	-8°		Fig.2	2.3	6,400

Spare Parts and Applicable Inserts (Metric Size)

Part Number	Spare Parts				Applicable Inserts
	Clamp Screw	Wrench	Pre-Set Torque Wrench*	Anti-Seize Compound	
MFH...-14-...	 SB-50120TRP Recommended Torque for Insert Clamp 4.5 N-m	 TTP-20	 PST-IP20	 MP-1	B17, F10 SOMT140520ER-GM SOMT140520ER-LD SOMT140514ER-FL

Caution with Max. Revolution

When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

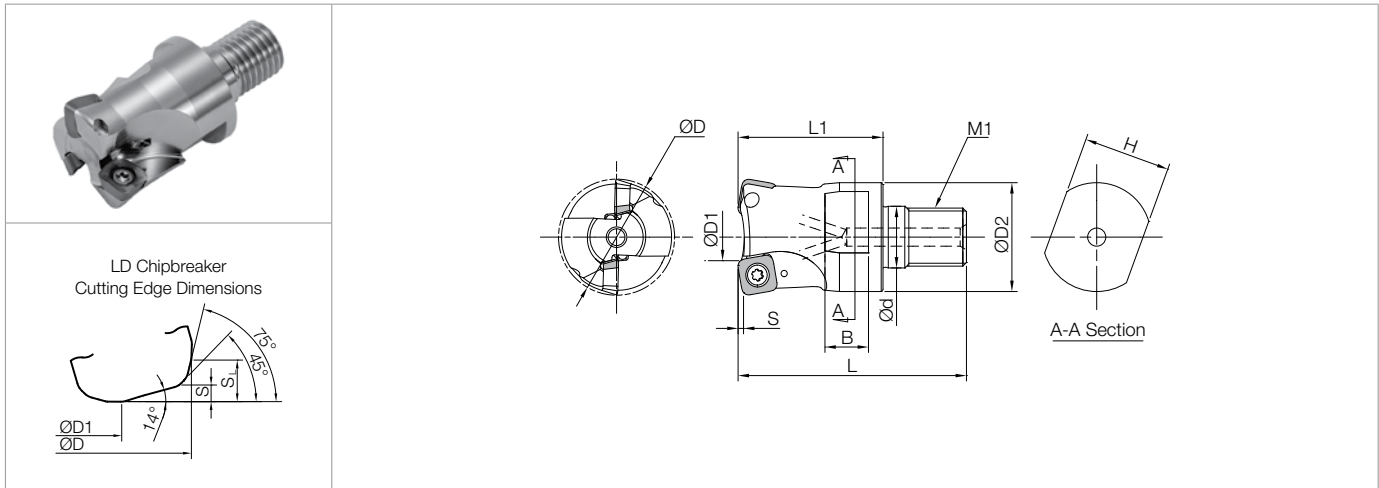
Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force.

Recommended Cutting Conditions F11

Pre-Set Torque Wrench sold separately.

MFH Modular End Mill (Metric Size)



Toolholder Dimensions (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)													Rake Angle (°)		Coolant Hole	Max RPM
			ØD	ØD1			ØD2	Ød	L	L1	M1	H	B	S	S _L	A.R.	R.R.		
MFH 25-M12-10-2T	○	2	25	8	12.5	11.5	23	12.5	57	35	M12xP1.75	19	10	1.5 *(1.2)	3.5	+10°	-5°	Yes	17,000
28-M12-10-2T	○	2	28	11	15.5	14.5	23	12.5	57	35	M12xP1.75	19	10						15,500
32-M16-10-2T	○	2	32	15	19.5	18.5	30	17.0	63	40	M16xP2.0	24	12						14,000
32-M16-10-3T	○	3	32	15	19.5	18.5	30	17.0	63	40	M16xP2.0	24	12						14,000
35-M16-10-2T	○	2	35	18	22.5	21.5	30	17.0	63	40	M16xP2.0	24	12						13,000
35-M16-10-3T	○	3	35	18	22.5	21.5	30	17.0	63	40	M16xP2.0	24	12						13,000
40-M16-10-3T	○	3	40	23	27.5	26.5	30	17.0	63	40	M16xP2.0	24	12						11,500
40-M16-10-4T	○	4	40	23	27.5	26.5	30	17.0	63	40	M16xP2.0	24	12						11,500

* Dimension in () is when mounting LD

Spare Parts and Applicable Inserts (Metric Size)

Part Number	Spare Parts				Applicable Inserts Below
	Clamp Screw	Wrench	Pre-Set Torque Wrench*	Anti-Seize Compound	
MFH...-10-...	SB-4075TRP Recommended Torque for Insert Clamp 3.5 N·m	DTPM-15	PST-IP15	MP-1	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL

Caution with Max. Revolution

When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force.

Recommended Cutting Conditions **F11**

Pre-Set Torque Wrench sold separately.

Applicable Inserts (↔ B17)

Insert (Right-hand Shown)	Part Number	Dimensions (in)					Angle (°)	CVD Coated Carbide	MEGACOAT NANO		
		A	T	Ød	Z	rε			α	CA6535	PR1535
 General Purpose	SOMT 100420ER-GM	0.406	0.180	0.181	-	0.079	16°	●	●	●	●
	140520ER-GM	0.557	0.219	0.228				●	●	●	●
 Large D.O.C.	SOMT 100420ER-LD	0.411	0.180	0.181	0.035	0.079	16°	●	●	●	●
	140520ER-LD	0.581	0.219	0.228	0.063	●		●	●	●	
 Wiper Edge	SOMT 100420ER-FL	0.411	0.180	0.181	0.055	0.079	16°	●	●	●	●
	140514ER-FL	0.574	0.219	0.228	0.122	0.055		●	●	●	●

Recommended Cutting Conditions

Chipbreaker	Workpiece	Holder Description and Feed Rate (fz: ipt)				Recommended Insert Grade (Vc: sfm)				
		End Mill Feed Rates			Face Mill Feed Rates		MEGACOAT NANO		CVD	
		MFH1000... MFH25-...	MFH1250... MFH32-...	MFH1500... MFH40-...	MFH...R-10	MFH...-14	PR1535	PR1525	PR1510	CA6535
GM	Carbon Steel	① 0.020-0.032-0.039 ② 0.008-0.016-0.020	① 0.020-0.039-0.059 ② 0.012-0.028-0.039	① 0.020-0.047-0.071 ② 0.016-0.039-0.059	0.020-0.059-0.079		☆ 390-590-820	★ 390-590-820	-	-
	Alloy Steel	① 0.020-0.032-0.039 ② 0.008-0.016-0.020	① 0.020-0.039-0.059 ② 0.012-0.028-0.039	① 0.020-0.047-0.071 ② 0.016-0.039-0.059	0.020-0.059-0.079		☆ 330-520-720	★ 330-520-720	-	-
	Mold Steel (~40HRc)	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		☆ 260-460-590	★ 260-460-590	-	-
	Mold Steel (40-50HRc)	① 0.006-0.012-0.020 ② 0.006-0.008-0.010	① 0.008-0.020-0.032 ② 0.008-0.012-0.018	① 0.008-0.024-0.035 ② 0.008-0.020-0.028	0.008-0.028-0.039		☆ 200-330-430	★ 200-330-430	-	-
	Austenitic Stainless Steel	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		☆ 330-520-660	☆ 330-520-660	-	-
	Martensitic Stainless Steel	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		☆ 490-660-820	-	-	★ 590-790-980
	Precipitation Hardened Stainless Steel	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		★ 300-390-490	-	-	-
	Gray Cast Iron	① 0.020-0.032-0.039 ② 0.008-0.016-0.020	① 0.020-0.039-0.059 ② 0.012-0.028-0.039	① 0.020-0.047-0.071 ② 0.016-0.039-0.059	0.020-0.059-0.079		-	-	★ 390-590-820	-
	Nodular Cast Iron	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		-	-	★ 330-490-660	-
	Ni-base Heat Resistant Alloy	① 0.008-0.016-0.024 ② 0.006-0.008-0.012	① 0.008-0.020-0.035 ② 0.008-0.016-0.024	① 0.008-0.024-0.039 ② 0.008-0.020-0.032	0.008-0.032-0.047		☆ 70-100-160	-	-	★ 70-100-160
Titanium Alloy	① 0.008-0.016-0.024 ② 0.006-0.008-0.012	① 0.008-0.020-0.035 ② 0.008-0.016-0.024	① 0.008-0.024-0.039 ② 0.008-0.020-0.032	0.008-0.032-0.047		★ 130-200-260	-	☆ 100-160-230	-	
LD	Carbon Steel	① 0.020-0.032-0.039 ③ 0.002-0.004-0.008	① 0.020-0.039-0.059 ③ 0.002-0.006-0.012	① 0.020-0.047-0.071 ③ 0.002-0.008-0.012	① 0.020-0.059-0.079 ③ 0.002-0.008-0.012	④ 0.020-0.059-0.079 ⑤ 0.002-0.008-0.016	☆ 390-590-820	★ 390-590-820	-	-
	Alloy Steel	① 0.020-0.032-0.039 ③ 0.002-0.004-0.008	① 0.020-0.039-0.059 ③ 0.002-0.006-0.012	① 0.020-0.047-0.071 ③ 0.002-0.008-0.012	① 0.020-0.059-0.079 ③ 0.002-0.008-0.012	④ 0.020-0.059-0.079 ⑤ 0.002-0.008-0.016	☆ 330-520-720	★ 330-520-720	-	-
	Mold Steel (~40HRc)	① 0.020-0.028-0.032 ③ 0.002-0.003-0.006	① 0.020-0.032-0.047 ③ 0.002-0.004-0.008	① 0.020-0.039-0.063 ③ 0.002-0.006-0.008	① 0.020-0.047-0.071 ③ 0.002-0.006-0.008	④ 0.020-0.047-0.071 ⑤ 0.002-0.006-0.012	☆ 260-460-590	★ 260-460-590	-	-
	Mold Steel (40-50HRc)	① 0.008-0.012-0.020 ③ 0.001-0.002-0.004	① 0.008-0.020-0.032 ③ 0.001-0.003-0.006	① 0.008-0.024-0.035 ③ 0.001-0.004-0.006	① 0.008-0.028-0.039 ③ 0.001-0.004-0.006	④ 0.008-0.028-0.039 ⑤ 0.001-0.004-0.008	☆ 200-330-430	★ 200-330-430	-	-
	Austenitic Stainless Steel	① 0.020-0.028-0.032 ③ 0.002-0.003-0.006	① 0.020-0.032-0.047 ③ 0.002-0.004-0.008	① 0.020-0.039-0.063 ③ 0.002-0.006-0.008	① 0.020-0.047-0.071 ③ 0.002-0.006-0.008	④ 0.020-0.047-0.071 ⑤ 0.002-0.006-0.012	★ 330-520-660	☆ 330-520-660	-	-
	Martensitic Stainless Steel	① 0.020-0.028-0.032 ③ 0.002-0.003-0.006	① 0.020-0.032-0.047 ③ 0.002-0.004-0.008	① 0.020-0.039-0.063 ③ 0.002-0.006-0.008	① 0.020-0.047-0.071 ③ 0.002-0.006-0.008	④ 0.020-0.047-0.071 ⑤ 0.002-0.006-0.012	☆ 490-660-820	-	-	★ 590-790-980
	Precipitation Hardened Stainless Steel	① 0.020-0.028-0.032 ③ 0.002-0.003-0.006	① 0.020-0.032-0.047 ③ 0.002-0.004-0.008	① 0.020-0.039-0.063 ③ 0.002-0.006-0.008	① 0.020-0.047-0.071 ③ 0.002-0.006-0.008	④ 0.020-0.047-0.071 ⑤ 0.002-0.006-0.012	★ 300-390-490	-	-	-
	Gray Cast Iron	① 0.020-0.032-0.039 ③ 0.002-0.004-0.008	① 0.020-0.039-0.059 ③ 0.002-0.006-0.012	① 0.020-0.047-0.071 ③ 0.002-0.008-0.012	① 0.020-0.059-0.079 ③ 0.002-0.008-0.012	④ 0.020-0.059-0.079 ⑤ 0.002-0.008-0.016	-	-	★ 390-590-820	-
	Nodular Cast Iron	① 0.020-0.028-0.032 ③ 0.002-0.003-0.006	① 0.020-0.032-0.047 ③ 0.002-0.004-0.008	① 0.020-0.039-0.063 ③ 0.002-0.006-0.008	① 0.020-0.047-0.071 ③ 0.002-0.006-0.008	④ 0.020-0.047-0.071 ⑤ 0.002-0.006-0.012	-	-	★ 330-490-660	-
	Ni-base Heat Resistant Alloy	① 0.008-0.016-0.024 ③ 0.001-0.002-0.004	① 0.008-0.020-0.035 ③ 0.001-0.003-0.006	① 0.008-0.024-0.039 ③ 0.001-0.004-0.006	① 0.008-0.032-0.047 ③ 0.001-0.004-0.006	④ 0.008-0.032-0.047 ⑤ 0.001-0.004-0.008	☆ 70-100-160	-	-	★ 70-100-160
Titanium Alloy	① 0.008-0.016-0.024 ③ 0.001-0.002-0.004	① 0.008-0.020-0.035 ③ 0.001-0.003-0.006	① 0.008-0.024-0.039 ③ 0.001-0.004-0.006	① 0.008-0.032-0.047 ③ 0.001-0.004-0.006	④ 0.008-0.032-0.047 ⑤ 0.001-0.004-0.008	★ 130-200-260	-	☆ 100-160-230	-	
FL	Carbon Steel	① 0.020-0.032-0.039 ② 0.008-0.016-0.020	① 0.020-0.039-0.059 ② 0.012-0.028-0.039	① 0.020-0.047-0.071 ② 0.016-0.039-0.059	0.020-0.059-0.079		☆ 390-590-820	★ 390-590-820	-	-
	Alloy Steel	① 0.020-0.032-0.039 ② 0.008-0.016-0.020	① 0.020-0.039-0.059 ② 0.012-0.028-0.039	① 0.020-0.047-0.071 ② 0.016-0.039-0.059	0.020-0.059-0.079		☆ 330-520-720	★ 330-520-720	-	-
	Mold Steel (~40HRc)	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		☆ 260-460-590	★ 260-460-590	-	-
	Mold Steel (40-50HRc)	① 0.006-0.012-0.020 ② 0.006-0.008-0.010	① 0.008-0.020-0.032 ② 0.008-0.012-0.018	① 0.008-0.024-0.035 ② 0.008-0.020-0.028	0.008-0.028-0.039		☆ 200-330-430	★ 200-330-430	-	-
	Austenitic Stainless Steel	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		★ 330-520-660	☆ 330-520-660	-	-
	Martensitic Stainless Steel	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		☆ 490-660-820	-	-	★ 590-790-980
	Precipitation Hardened Stainless Steel	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		★ 300-390-490	-	-	-
	Gray Cast Iron	① 0.020-0.032-0.039 ② 0.008-0.016-0.020	① 0.020-0.039-0.059 ② 0.012-0.028-0.039	① 0.020-0.047-0.071 ② 0.016-0.039-0.059	0.020-0.059-0.079		-	-	★ 390-590-820	-
	Nodular Cast Iron	① 0.020-0.028-0.032 ② 0.008-0.012-0.016	① 0.020-0.032-0.047 ② 0.012-0.024-0.032	① 0.020-0.039-0.063 ② 0.016-0.032-0.047	0.020-0.047-0.071		-	-	★ 330-490-660	-
	Ni-base Heat Resistant Alloy	① 0.008-0.016-0.024 ② 0.006-0.008-0.012	① 0.008-0.020-0.035 ② 0.008-0.016-0.024	① 0.008-0.024-0.039 ② 0.008-0.020-0.032	0.008-0.032-0.047		☆ 70-100-160	-	-	★ 70-100-160
Titanium Alloy	① 0.008-0.016-0.024 ② 0.006-0.008-0.012	① 0.008-0.020-0.035 ② 0.008-0.016-0.024	① 0.008-0.024-0.039 ② 0.008-0.020-0.032	0.008-0.032-0.047		★ 130-200-260	-	☆ 100-160-230	-	

- ① For D.O.C. ≤ 0.039"
 - ② For D.O.C. 0.040 - 0.059"
 - ③ For D.O.C. 0.040 - 0.138"
 - ④ For D.O.C. ≤ 0.079"
 - ⑤ For D.O.C. 0.080 - 0.197"
- Machining with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy
 - The figure in bold font is recommended starting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.
 - Machining with CAT30 or equivalent, feed rate should be reduced to 25% of recommended cutting conditions
 - Internal coolant is recommended for slotting applications
 - For finishing, maximum recommended feed is f = 0.059 ipt for SOMT14-LD type, f = 0.035 ipt for SOMT10-LD type, f = 0.118 ipt for SOMT14-FL type, f = 0.055 ipt for SOMT10-FL type
- ★: 1st Recommendation ☆: 2nd Recommendation

GRADES	A
LINEUP / INSERTS	B
45° / 70° LEAD	C
75° LEAD	D
90° LEAD	E
HIGH FEED	F
MULTI-FUNCTION	G
SLOT MILLS	H
RADIUS / BALL-NOSE	J
OTHER APPLICATIONS	K
TOOL HOLDING	O
SPARE PARTS	P
TECHNICAL	R
INDEX	T

Approximate Programming Radius Adjustment

Shape	Holder	Chipbreaker	Cutting Edge Angle γ (°)	Approx. R (in)	Unmachined Part K (in)	Max. Wall Angle (°)
	MFH...-10-...	GM	10°	0.118	0.034	90°
		LD	14°	0.148	0.027	65°
		FL	14°	0.118	0.035	80°
	MFH...-14-...	GM	10°	0.148	0.054	90°
		LD	16°	0.197	0.042	65°
		FL	13°	0.118	0.054	80°

Ramping Data

MFH...-10-...

Cutter Dia. ØD (in)	1.00"	-	1.25"	-	1.50"	2.00"	2.50"	3.00"
Cutter Dia. ØD (mm)	25mm	28mm	32mm	35mm	40mm	50mm	63mm	80mm
Max. Ramping Angle α max (°)	5°	4.5°	4°	3.5°	3°	2.5°	2°	1°
$\tan \alpha$ max	0.087	0.078	0.070	0.061	0.052	0.043	0.035	0.017

MFH...-14-...

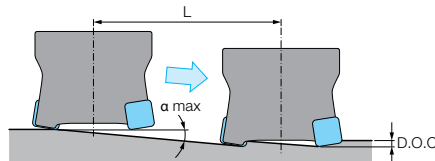
Cutter Dia. ØD (in)	2.00"	2.50"	3.00"	4.00"	5.00"	6.00"
Cutter Dia. ØD (mm)	50mm	63mm	80mm	100mm	125mm	160mm
Max. Ramping Angle α max (°)	2°	1.8°	1°	0.5°	0.4°	0.2°
$\tan \alpha$ max	0.035	0.031	0.017	0.009	0.007	0.003

Ramping Guide

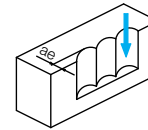
- Ramping angle should be under α max (maximum ramping angle) in the above cutting conditions
- Reduce recommended feed rate in cutting conditions above by 70%

Formula for Max. Cutting Length (L) at Max. Ramping Angle

$$L = \frac{\text{D.O.C.}}{\tan \alpha \text{ max}}$$



Plunging

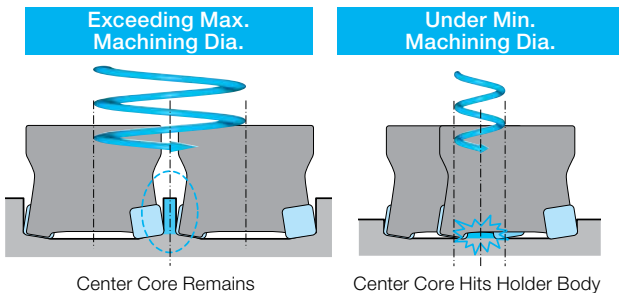


Insert Description	Maximum Width of Cut (ae)
SOMT10 Type	0.315"
SOMT14 Type	0.453"

- LD and FL chipbreakers are not available for plunging
- Reduce feed rate to $f_z \leq 0.008$ ipt when plunging

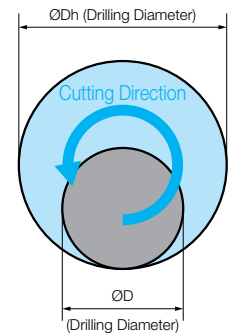
Helical Milling

- For Helical milling, use between Min. Drilling Dia. and Max. Drilling Dia.

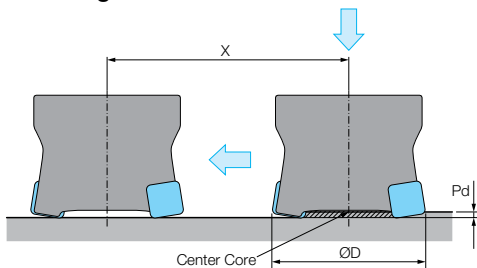


Holder	Min. Drilling Dia.	Max. Drilling Dia.
MFH...-10-...	$2 \times D - 0.709"$	$2 \times D - 0.079"$
MFH...-14-...	$2 \times D - 0.984"$	$2 \times D - 0.079"$

- Keep machine depth per rotation less than max D.O.C. (S) in the cutter dimensions chart
- Use climb milling. (Refer to detail on right)
- Feed rates should be reduced to 50% of recommended cutting condition (Page **F11**)
- Use caution to eliminate incidences caused by producing long chips



Drilling



3D Machining

Chipbreaker	Ramping	Contouring (Rising Wall Angle)	Plunging	Helical Milling	Pocketing
GM	✓	✓ (90°)	✓	✓	✓
LD	✓	Limit (65°)	X	X	X
FL	✓	Limit (80°)	X	X	X

- Some applications are not available depending on chipbreaker.
- For FL and LD type, there is a limit of rising wall angle during contouring.

Holder	GM		LD		FL	
	Max. Drilling Depth (Pd)	X	Max. Drilling Depth (Pd)	X	Max. Drilling Depth (Pd)	X
MFH...-10-...	0.059"	D-0.709"	0.059"	D-0.551"	0.059"	D-0.591"
MFH...-14-...	0.079"	D-0.945"	0.079"	D-0.709"	0.079"	D-0.748"

[Drilling Depth]

See Max. Drilling Depth (Pd) in the above cutting conditions

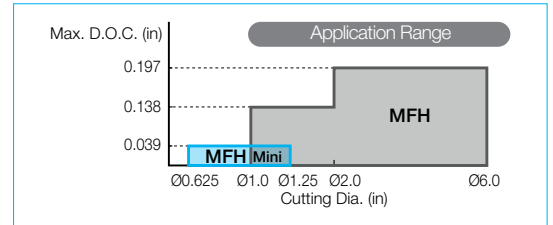
Traversing after Drilling

- It is recommended to reduce feed by 25% of recommendation on Page **F11** until Center Core is removed
- Axial feed rate recommendation per revolution is 0.008 ipr while drilling

MFH-RAPTOR MINI

(Cutter Dia. $\varnothing 0.625'' \sim \varnothing 2.000''$)
(Cutter Dia. $\varnothing 16\text{mm} \sim \varnothing 32\text{mm}$)

Economical Inserts with 4 Cutting Edges
High Feed Milling for Small Diameters and
Small Machining Centers

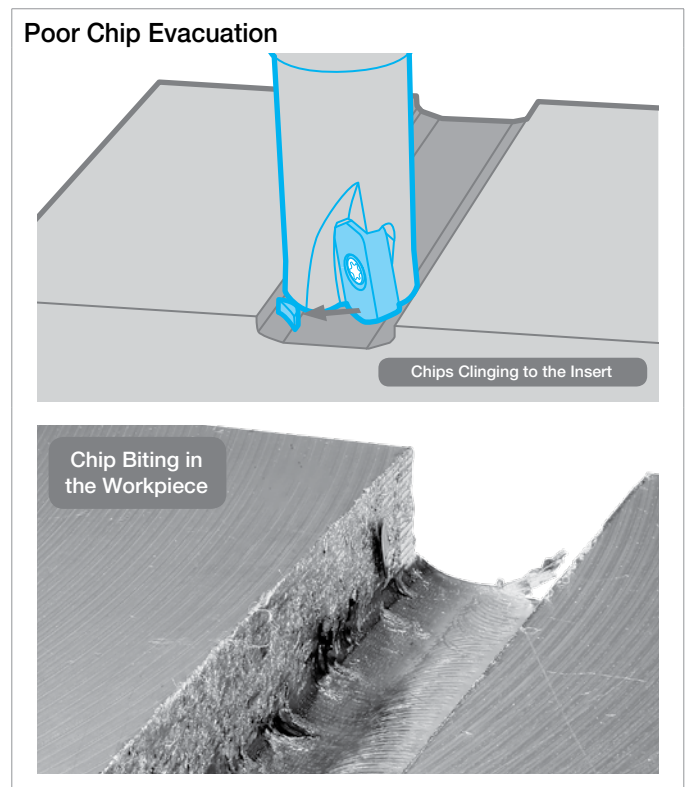
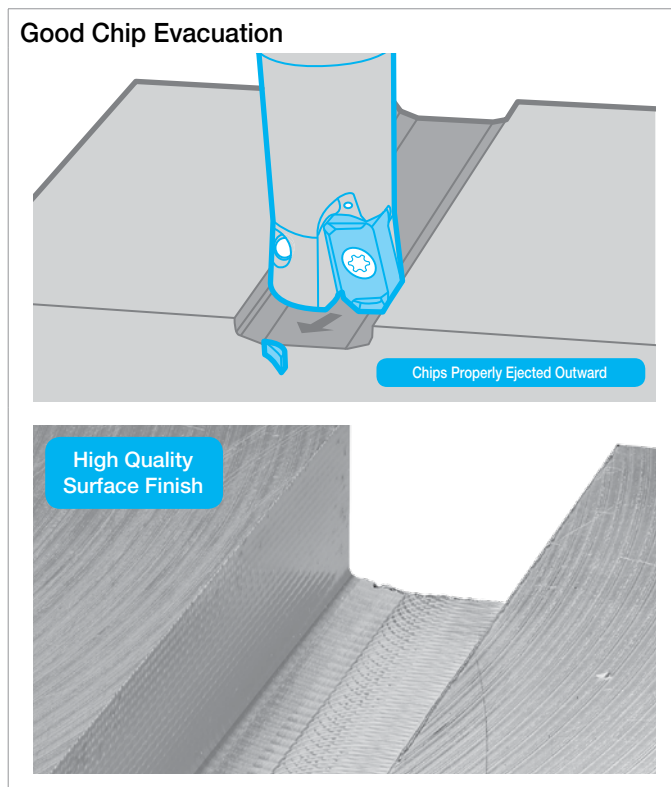


1 Good Chip Evacuation

MFH Mini Controls Chip Biting with Convex Cutting Edge

MFH Mini

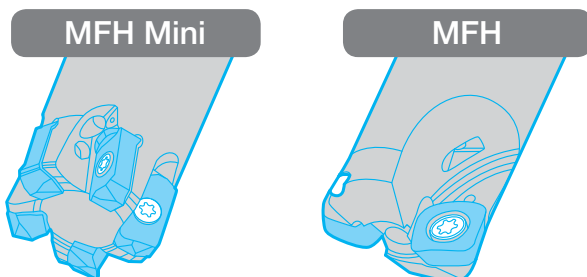
Competitor High Feed Cutter



Cutting Conditions: Cutter Dia. $D_c = \varnothing 0.625''$, $V_c = 490 \text{ sfm}$, $f_z = 0.024 \text{ ipt}$, $D.O.C. = 0.020''$ (20 Passes): Total $0.394'' \times 0.630''$, Dry Workpiece: Stainless Steel

2 Fine Pitch for Efficient Machining

Cutter Dia. 1.000" Type

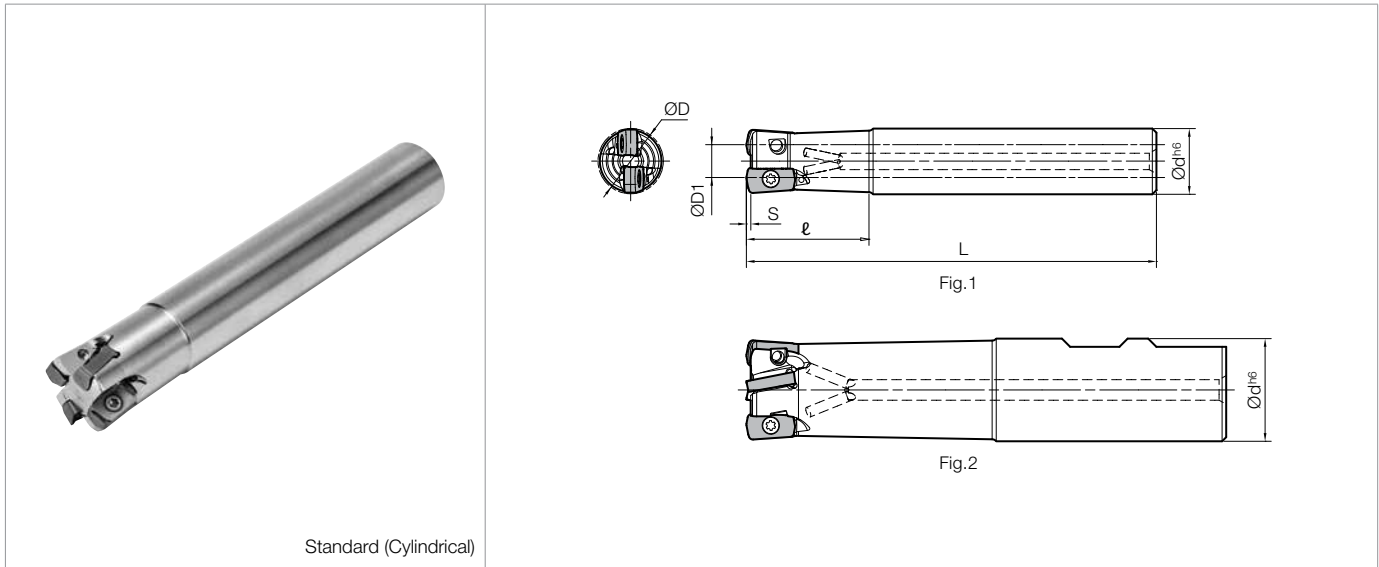


5 Inserts
MFH1000-W100-03-5T47

2 Inserts
MFH1000-W100-10-2T

GRADES	A
LINEUP / INSERTS	B
45° / 70° LEAD	C
75° LEAD	D
90° LEAD	E
HIGH FEED	F
MULTI-FUNCTION	G
SLOT MILLS	H
RADIUS / BALL-NOSE	J
OTHER APPLICATIONS	K
TOOL HOLDING	O
SPARE PARTS	P
TECHNICAL	R
INDEX	T

MFH Mini End Mill (Inch Size)



Toolholder Dimensions (Inch Size)

Part Number	Stock	No. of Inserts	Dimensions (in)							Max. Ramping Angle α	Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max RPM
			ØD	ØD1	Ød	L	l	S	A.R.		R.R.					
Standard Shank (Weldon)	MFH 0625-W625-03-2T-3	●	2	0.625	0.310	0.625	3.196	1.250	0.039	2.8°	-10°	-15°	Yes	Fig.2	0.1	18,800
	0750-W750-03-3T-4	●	3	0.750	0.435	0.750	4.070	2.000	0.039	1.7°					0.2	15,700
	1000-W100-03-4T47	●	4	1.000	0.685	1.000	4.820	2.500	0.039	1.2°					0.4	13,400
	1000-W100-03-5T47	●	5	1.000	0.685	1.000	4.820	2.500	0.039	1.2°					0.4	13,400
	1250-W125-03-5T-5	●	5	1.250	0.935	1.250	5.070	2.750	0.039	0.8°					0.7	11,400
	1250-W125-03-6T-5	●	6	1.250	0.935	1.250	5.070	2.750	0.039	0.8°					0.7	11,400
Long Shank (Cylindrical)	MFH 0625-S625-03-2T-6	●	2	0.625	0.310	0.625	6.000	2.000	0.039	2.8°	-10°	-15°	Yes	Fig.1	0.2	18,800
	0750-S750-03-3T65	●	3	0.750	0.435	0.750	6.500	3.000	0.039	1.7°					0.3	15,700
	1000-S100-03-4T-7	●	4	1.000	0.685	1.000	7.000	4.000	0.039	1.2°					0.6	13,400
	1250-S125-03-5T-8	●	5	1.250	0.935	1.250	8.000	4.750	0.039	0.8°					1.1	11,400

Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts				Applicable Inserts ● B13, F17
	Clamp Screw	Wrench	Pre-Set Torque Wrench*	Anti-Seize Compound	
MFH...-03-...	SB-3065TRP Recommended Torque for Insert Clamp 1.2 N·m	DTPM-8	PST-IP8	MP-1	LOGU030310ER-GM

Caution with Max. Revolution

When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

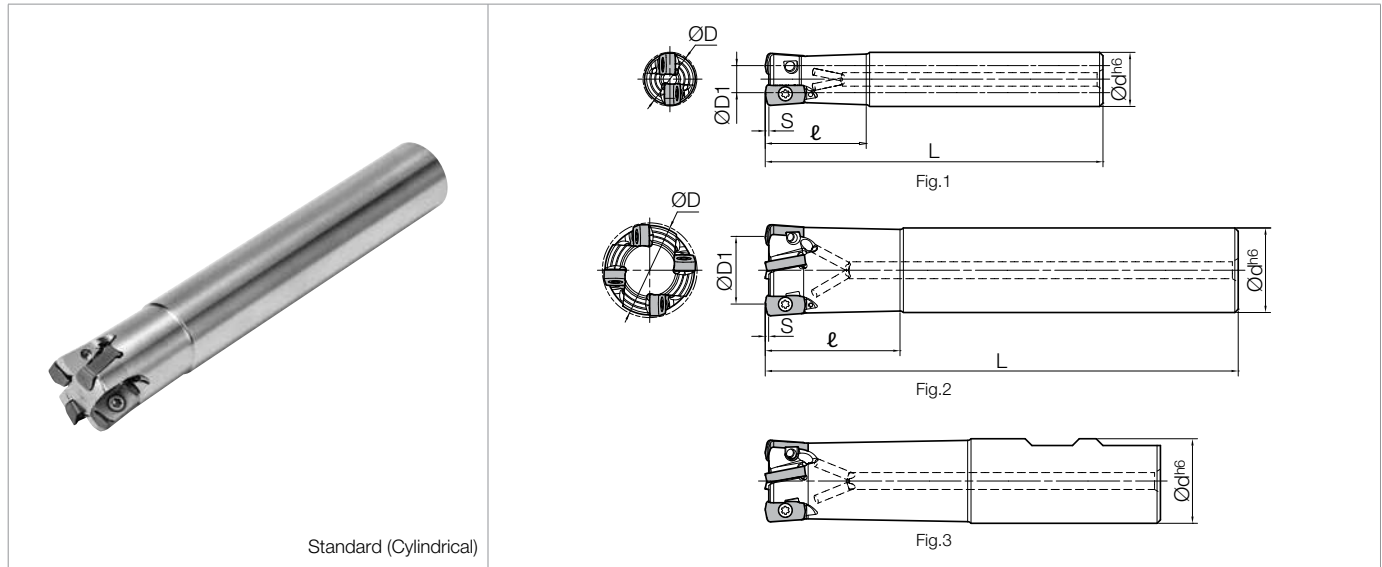
🔧 Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force.

Pre-Set Torque Wrench sold separately.

Recommended Cutting Conditions ➔ F18

MFH Mini End Mill (Metric Size)



Standard (Cylindrical)

Toolholder Dimensions (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)							Max. Ramping Angle	Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max RPM
			ØD	ØD1	Ød	L	ℓ	S	α		A.R.	R.R.				
Standard Shank (Cylindrical)	MFH 16-S16-03-2T	○	2	16	8	16	100	30	1	2.8°	-10°	-15°	Yes	Fig.1	0.1	18,800
	17-S16-03-2T	○	2	17	9	16	100	20	1	2.5°				Fig.2	0.1	17,900
	18-S16-03-2T	○	2	18	10	16	100	20	1	2.1°				Fig.1	0.1	17,000
	20-S20-03-3T	○	3	20	12	20	130	50	1	1.7°					0.3	15,700
	20-S20-03-4T	○	4	20	12	20	130	50	1	1.7°				Fig.2	0.3	15,700
	22-S20-03-3T	○	3	22	14	20	130	30	1	1.4°					0.3	14,700
	22-S20-03-4T	○	4	22	14	20	130	30	1	1.4°				Fig.1	0.3	14,700
	25-S25-03-4T	○	4	25	17	25	140	60	1	1.2°					0.5	13,400
	25-S25-03-5T	○	5	25	17	25	140	60	1	1.2°				Fig.2	0.5	13,400
	28-S25-03-4T	○	4	28	20	25	140	40	1	1.0°					0.5	12,400
	28-S25-03-5T	○	5	28	20	25	140	40	1	1.0°				Fig.1	0.5	12,400
	32-S32-03-5T	○	5	32	24	32	150	70	1	0.8°					0.8	11,400
32-S32-03-6T	○	6	32	24	32	150	70	1	0.8°	0.8	11,400					
Standard Shank (Weldon)	MFH 16-W16-03-2T	○	2	16	8	16	79	30	1	2.8°	-10°	-15°	Yes	Fig.3	0.1	18,800
	20-W20-03-3T	○	3	20	12	20	101	50	1	1.7°					0.2	15,700
	20-W20-03-4T	○	4	20	12	20	101	50	1	1.7°					0.2	15,700
	25-W25-03-4T	○	4	25	17	25	117	60	1	1.2°						
	25-W25-03-5T	○	5	25	17	25	117	60	1	1.2°					0.4	13,400
	32-W32-03-5T	○	5	32	24	32	131	70	1	0.8°						
	32-W32-03-6T	○	6	32	24	32	131	70	1	0.8°					0.7	11,400
Long Shank (Cylindrical)	MFH 16-S16-03-2T-150	○	2	16	8	16	150	50	1	2.8°	-10°	-15°	Yes	Fig.1	0.2	18,800
	20-S20-03-3T-160	○	3	20	12	20	160	80	1	1.7°					0.3	15,700
	25-S25-03-4T-180	○	4	25	17	25	180	100	1	1.2°					0.6	13,400
	32-S32-03-5T-200	○	5	32	24	32	200	120	1	0.8°					1.1	11,400

Spare Parts and Applicable Inserts (Metric Size)

Part Number	Spare Parts				Applicable Inserts
	Clamp Screw	Wrench	Pre-Set Torque Wrench*	Anti-Seize Compound	
					B13, F17
MFH...-03-...	SB-3065TRP	DTPM-8	PST-IP8	MP-1	LOGU030310ER-GM

Caution with Max. Revolution

When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

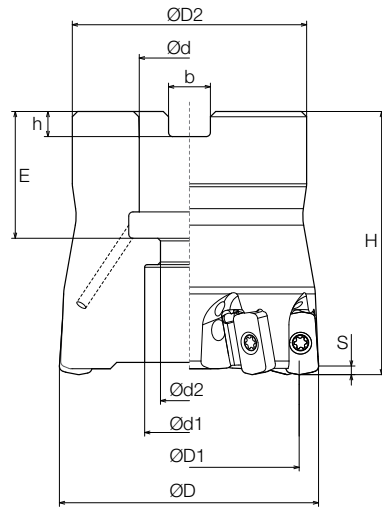
Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force. Pre-Set Torque Wrench sold separately.

Recommended Cutting Conditions F18

GRADES A
LINEUP / INSERTS B
45° / 70° LEAD C
75° LEAD D
90° LEAD E
HIGH FEED F
MULTI-FUNCTION G
SLIT MILLS H
RADIUS / BALL-NOSE J
OTHER APPLICATIONS K
TOOL HOLDING O
SPARE PARTS P
TECHNICAL R
INDEX T

MFH Mini Face Mill (Inch Size)



Toolholder Dimensions (Inch Size)

Part Number	Stock	No. of Inserts	Dimensions (in)											Rake Angle (°)		Coolant Hole	Weight (kg)	Max RPM
			ØD	ØD1	ØD2	Ød	Ød1	Ød2	H	E	a	b	S	A.R.	R.R.			
MFH 1500R-03-5T	●	5	1.500	1.185	1.400	0.500	0.433	0.276	1.575	0.709	0.156	0.250	0.039	-10°	-15°	Yes	0.2	10,200
1500R-03-6T	●	6	1.500	1.185	1.400	0.500	0.433	0.276	1.575	0.709	0.156	0.250	0.039	-10°	-15°	Yes	0.2	10,200
2000R-03-8T	●	8	2.000	1.685	1.750	0.750	0.669	0.433	1.968	0.947	0.188	0.312	0.039	-10°	-15°	Yes	0.5	8,600

Multiple step slot milling is NOT recommended for MFH-Mini face mill diameters above Ø1.3" due to a danger of re-cutting chips

Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts					Applicable Inserts ● B13, F17
	Clamp Screw	Wrench	Pre-Set Torque Wrench*	Anti-Seize Compound	Arbor Bolt	
MFH1500-03-5T						LOGU030310ER-GM
MFH1500-03-6T	Recommended Torque for Insert Clamp 1.2 N-m		PST-IP8	MP-1	HH1/4-0.75	
MFH2000-03-8T	Recommended Torque for Insert Clamp 1.2 N-m				HH3/8-1.25	

Caution with Max. Revolution

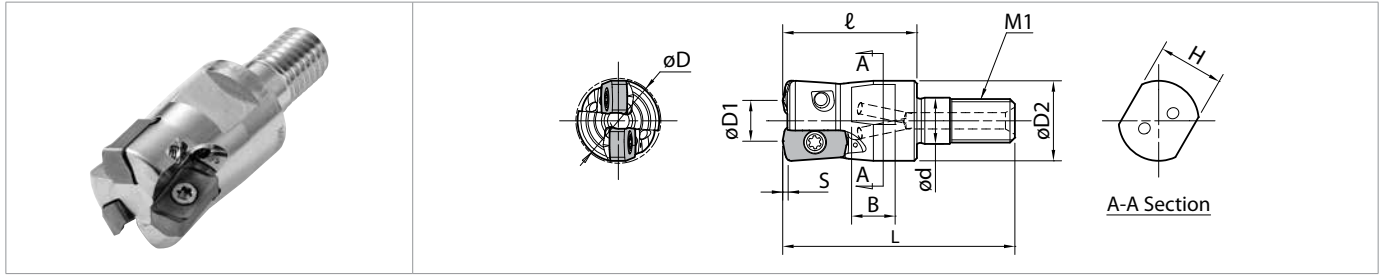
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

Recommended Cutting Conditions ● F18

Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force. Pre-Set Torque Wrench sold separately.

MFH Mini Modular End Mill



Toolholder Dimensions

Part Number	Stock	Unit	No. of Inserts	Dimensions										Max. Ramping Angle	Rake Angle (°)		Coolant Hole	Max RPM
				øD	øD1	øD2	ød	L	ℓ	M1 (mm)	H	B	S		α	A.R.		
MFH 0625-M08-03-2T	●	inch	2	0.625	0.310	0.579	0.335	1.693	0.984	M8xP1.25	0.472	0.315	0.039	2.8°	-10°	-15°	Yes	18,800
0750-M10-03-3T	●		3	0.750	0.435	0.728	0.413	1.929	1.181	M10xP1.5	0.591	0.354	0.039	1.7°				15,700
1000-M12-03-4T	●		4	1.000	0.685	0.906	0.492	2.244	1.378	M12xP1.75	0.748	0.394	0.039	1.2°				13,400
1000-M12-03-5T	●		5	1.000	0.685	0.906	0.492	2.244	1.378	M12xP1.75	0.748	0.394	0.039	1.2°				13,400
1250-M16-03-5T	●		5	1.250	0.935	1.181	0.669	2.480	1.575	M16xP2	0.945	0.472	0.039	0.8°				11,400
1250-M16-03-6T	●		6	1.250	0.935	1.181	0.669	2.480	1.575	M16xP2	0.945	0.472	0.039	0.8°				11,400
MFH 16-M08-03-2T	○	mm	2	16	8	14.7	8.5	43	25	M8xP1.25	12	8	1	2.8°	-10°	-15°	Yes	18,880
17-M08-03-2T	○		2	17	9	14.7	8.5	43	25	M8xP1.25	12	8	1	2.5°				17,900
18-M08-03-2T	○		2	18	10	14.7	8.5	43	25	M8xP1.25	12	8	1	2.1°				17,000
20-M10-03-3T	○		3	20	12	18.7	10.5	49	30	M10xP1.5	15	9	1	1.7°				15,700
20-M10-03-4T	○		4	20	12	18.7	10.5	49	30	M10xP1.5	15	9	1	1.7°				15,700
22-M10-03-3T	○		3	22	14	18.7	10.5	49	30	M10xP1.5	15	9	1	1.4°				14,700
22-M10-03-4T	○		4	22	14	18.7	10.5	49	30	M10xP1.5	15	9	1	1.4°				14,700
25-M12-03-4T	○		4	25	17	23.0	12.5	57	35	M12xP1.75	19	10	1	1.2°				13,400
25-M12-03-5T	○		5	25	17	23.0	12.5	57	35	M12xP1.75	19	10	1	1.2°				13,400
28-M12-03-4T	○		4	28	20	23.0	12.5	57	35	M12xP1.75	19	10	1	1.0°				12,400
28-M12-03-5T	○		5	28	20	23.0	12.5	57	35	M12xP1.75	19	10	1	1.0°				12,400
32-M16-03-5T	○		5	32	24	30.0	17.0	63	40	M16xP2	24	12	1	0.8°				11,400
32-M16-03-6T	○		6	32	24	30.0	17.0	63	40	M16xP2	24	12	1	0.8°				11,400

* Dimension in () is when mounting LD

Spare Parts and Applicable Inserts

Part Number	Spare Parts				Applicable Inserts Below
	Clamp Screw	Wrench	Pre-Set Torque Wrench*	Anti-Seize Compound	
MFH...-03-...	SB-3065TRP 	DTPM-8 	PST-IP8 	MP-1 	LOGU030310ER-GM

Caution with Max. Revolution

When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force. Pre-Set Torque Wrench sold separately.

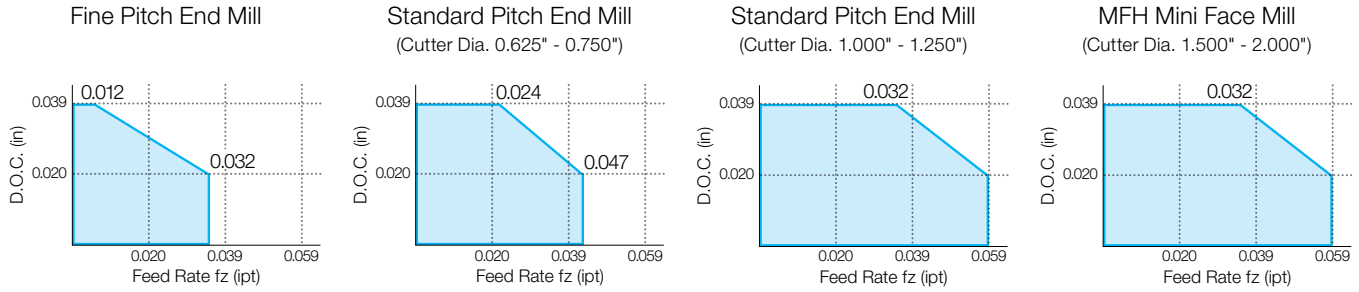
Applicable Inserts (B13)

Recommended Cutting Conditions **F18**

Insert	Part Number	Dimension (in)					MEGACOAT NANO			CVD
		A	T	ød	W	rε	PR1535	PR1525	PR1510	CA6535
 General Purpose	LOGU030310ER-GM	0.244	0.156	0.136	0.469	0.039	●	●	●	●

GRADES A
LINEUP / INSERTS B
45° / 70° LEAD C
75° LEAD D
90° LEAD E
HIGH FEED F
MULTI-FUNCTION G
SLOT MILLS H
RADIUS / BALL-NOSE J
OTHER APPLICATIONS K
TOOL HOLDING O
SPARE PARTS P
TECHNICAL R
INDEX T

MFH Mini Cutting Performance (GM Chipbreaker)



Recommended Cutting Conditions

Chipbreaker	Workpiece Material	Holder Description and Feed Rate (fz: ipt) *Recommended D.O.C. = 0.020" Reference Value								Recommended Insert Grade (Vc: sfm)			
		MFH0625...2T (MFH16...2T)	MFH0750...3T (MFH20...3T)	N/A (MFH20...4T)	MFH1000...4T (MFH25...4T)	MFH1000...5T (MFH25...5T)	MFH1250...5T (MFH32...5T)	MFH1250...6T (MFH32...6T)	MFH1500...5T/6T MFH2000...8T	MEGACOAT NANO			CVD
										PR1535	PR1525	PR1510	CA6535
GM	Carbon Steel	0.008- 0.028 -0.047	0.008- 0.020 -0.031	0.008- 0.031 -0.059	0.008- 0.020 -0.031	0.008- 0.031 -0.059	0.008- 0.020 -0.031	0.008- 0.031 -0.059	☆ 390-590-820	★ 390-590-820	-	-	
	Alloy Steel	0.008- 0.028 -0.047	0.008- 0.020 -0.031	0.008- 0.031 -0.059	0.008- 0.020 -0.031	0.008- 0.031 -0.059	0.008- 0.020 -0.031	0.008- 0.031 -0.059	☆ 330-520-720	★ 330-520-720	-	-	
	Mold Steel (~40 HRC)	0.008- 0.020 -0.035	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	☆ 260-460-590	★ 260-460-590	-	-	
	Mold Steel (40-50 HRC)	0.008- 0.012 -0.020	0.008- 0.010 -0.012	0.008- 0.012 -0.024	0.008- 0.010 -0.012	0.009- 0.012 -0.024	0.008- 0.010 -0.012	0.008- 0.012 -0.024	☆ 200-330-430	★ 200-330-430	-	-	
	Austenitic Stainless Steel	0.008- 0.020 -0.035	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	★ 330-520-660	☆ 330-520-660	-	-	
	Martensitic Stainless Steel	0.008- 0.020 -0.035	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	☆ 490-660-820	-	-	★ 590-790-980	
	Precipitation Hardened Stainless Steel	0.008- 0.020 -0.035	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	★ 300-390-490	-	-	-	
	Gray Cast Iron	0.008- 0.028 -0.047	0.008- 0.020 -0.031	0.008- 0.031 -0.059	0.008- 0.020 -0.031	0.008- 0.031 -0.059	0.008- 0.020 -0.031	0.008- 0.031 -0.059	-	-	★ 390-590-820	-	
	Nodular Cast Iron	0.008- 0.020 -0.035	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	0.008- 0.016 -0.024	0.008- 0.024 -0.047	-	-	★ 330-490-660	-	
	Ni-base Heat Resistant Alloy	0.008- 0.012 -0.024	0.008- 0.010 -0.016	0.008- 0.016 -0.031	0.008- 0.010 -0.016	0.008- 0.016 -0.031	0.008- 0.010 -0.016	0.008- 0.016 -0.031	☆ 70-100-160	-	-	★ 70-100-160	
Titanium Alloy	0.008- 0.012 -0.024	0.008- 0.010 -0.016	0.008- 0.016 -0.031	0.008- 0.010 -0.016	0.008- 0.016 -0.031	0.008- 0.010 -0.016	0.008- 0.016 -0.031	★ 130-200-260	-	☆ 100-160-230	-		

■ Standard Pitch End Mills ■ Fine Pitch End Mills ■ MFH Mini Face Mills ★: 1st Recommendation ☆: 2nd Recommendation

- Machining with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy
- The number in bold font is recommended starting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.
- Machining with CAT30 or equivalent, feed rate should be reduced to 25% of recommended cutting conditions
- Internal coolant is recommended for slotting applications

Approximate Programming Radius Adjustment

Shape	Holder	Chipbreaker	Cutting Edge Angle γ (°)	Programmable (R)	Unmachined Part (K)	Max. Wall Angle
	MFH...-03-...	GM	12°	0.063"	0.015"	90°

Ramping

Inch Size Standard and Modular End Mills and Mini Face Mills

Holder	Cutter Dia. Ø	0.625"	0.750"	1.000"	1.250"	1.500"	2.000"
MFH...-03-...	Max. Ramping Angle (°)	2.8°	1.7°	1.2°	0.8°	0.5°	0.4°
	tan α max	0.049	0.030	0.021	0.014	0.009	0.007

Metric Size Standard & Modular End Mills

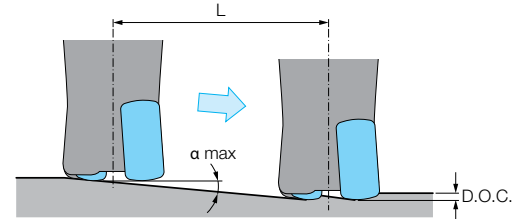
Holder	Cutter Dia. Ø	16mm	17mm	18mm	20mm	22mm	25mm	28mm	32mm
MFH...-03-...	Max. Ramping Angle (°)	2.8°	2.5°	2.1°	1.7°	1.4°	1.2°	1.0°	0.8°
	tan α max	0.049	0.042	0.037	0.030	0.024	0.021	0.017	0.014

- Recommended ramping angle is ≤ max (see chart above for recommended ramp angle)
- Reduce recommended feed rate by 70%

Multiple step slot milling is NOT recommended for MFH-Mini face mill diameters above Ø1.3" due to a danger of re-cutting chips

Formula for Max. Cutting Length (L) at Max. Ramping Angle

$$L = \frac{D.O.C.}{\tan \alpha \text{ max}}$$

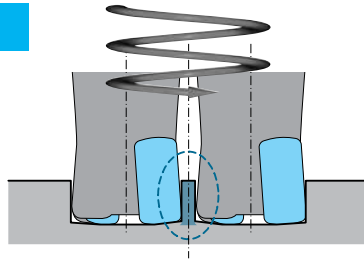


Helical Milling

- For Helical milling, use between Min. Drilling Dia. and Max. Drilling Dia.

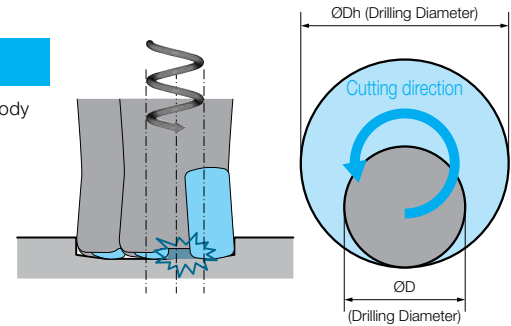
Exceeding Max. Machining Dia.

Center Core Remains



Under Min. Machining Dia.

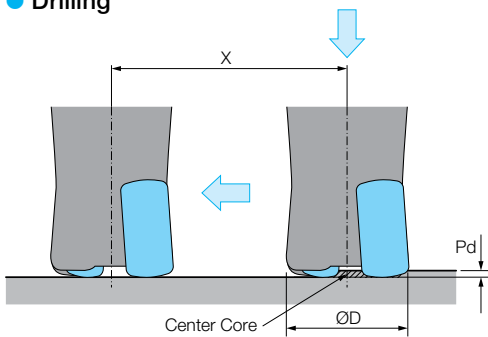
Center Core Hits Holder Body



Holder	Min. Drilling Dia.	Max. Drilling Dia.
MFH...-03-...	2xØD-0.315"	2xØD-0.079"

- Keep machine depth per rotation less than max D.O.C. (0.039")
- Use climb milling. (Refer to detail on right)
- Feed rate should be reduced to 50% of recommended cutting condition (Page F18)
- Use caution to eliminate incidences caused by producing long chips

Drilling

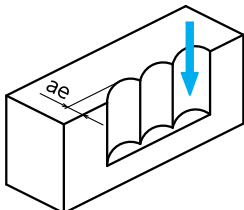


Holder	Max. Drilling Depth (Pd)	X
MFH...-03-...	0.039"	ØD-0.354"

Plunging After Drilling

- It is recommended to reduce feed by 25% of recommendation on Page F18 until Center Core is removed
- Axial feed rate recommendation per revolution is 0.008ipr while drilling

Plunging



Insert Description	Maximum Width of Cut (ae)
LOGU03...	0.138"

- Reduce feed rate to fz ≤ 0.008 ipt when plunging

GRADES A
LINEUP / INSERTS B
45° / 70° LEAD C
75° LEAD D
90° LEAD E
HIGH FEED F
MULTI-FUNCTION G
SLOT MILLS H
RADIUS / BALL-NOSE J
OTHER APPLICATIONS K
TOOL HOLDING O
SPARE PARTS P
TECHNICAL R
INDEX T

NEW ITEMS!

(Cutter Dia. Ø0.375" ~ Ø0.625")
(Cutter Dia. Ø8mm ~ Ø16mm)

MFH-RAPTOR MICRO

Durable Design Aids in Chatter Resistance
Maximum D.O.C. 0.020". Stable High Feed Machining on a Wide Range of Applications

Molded Convex Cutting Edge

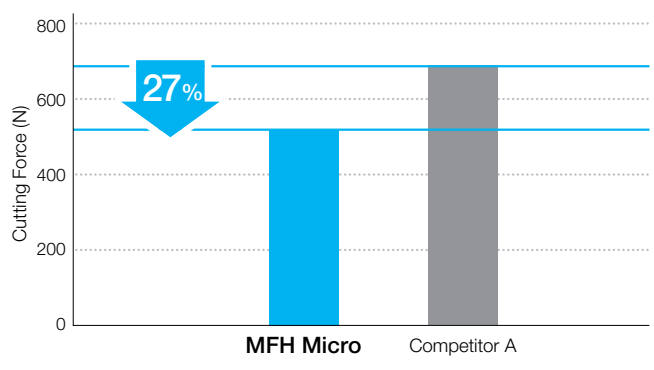


High Precision G Class Insert

1 Stable Machining with Chattering Resistance

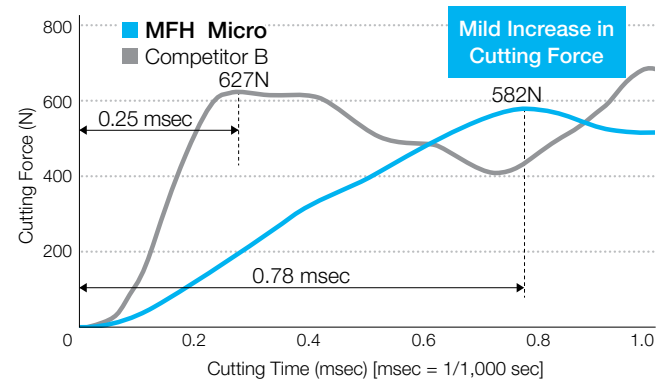
Molded Convex Cutting Edge Controls Initial Impact when Entering the Workpiece

Cutting Force Comparison (In-house Evaluation)



Cutting Conditions: $V_c = 390$ sfm, $f_z = 0.024$ ipt, D.O.C. = 0.016"
Cutter Dia. Ø0.375", Slotting, Dry Workpiece: 1049

Increase in Cutting Force when Entering Work Piece (In-house Evaluation)

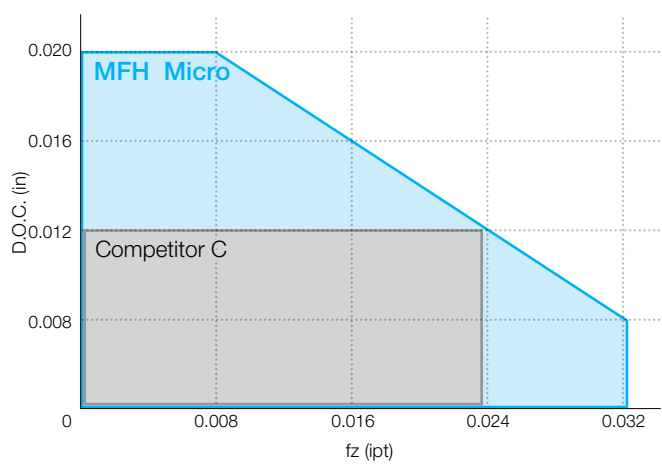


Cutting Conditions: $V_c = 390$ sfm, $f_z = 0.024$ ipt, D.O.C. $\times a_e = 0.016" \times 0.197"$
Cutter Dia. Ø0.375", Dry Workpiece: 1049

2 Wide Range of Machining Applications

Wide Range of Machining Applications at a Maximum Depth of Cut of 0.020"
Stable Machining Even with Small Machining Centers

Cutting Performance Map (Cutter Dia. Ø0.375")

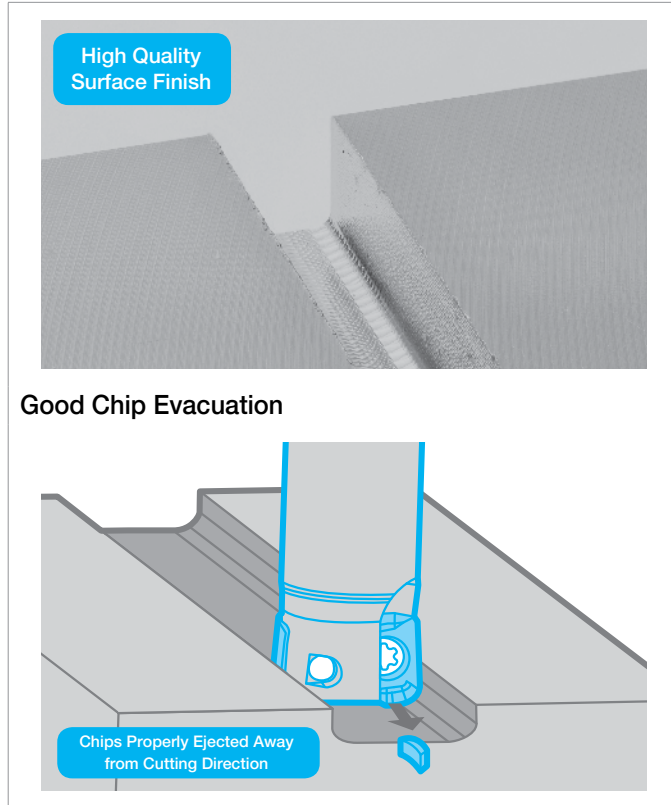


(In-house Evaluation)

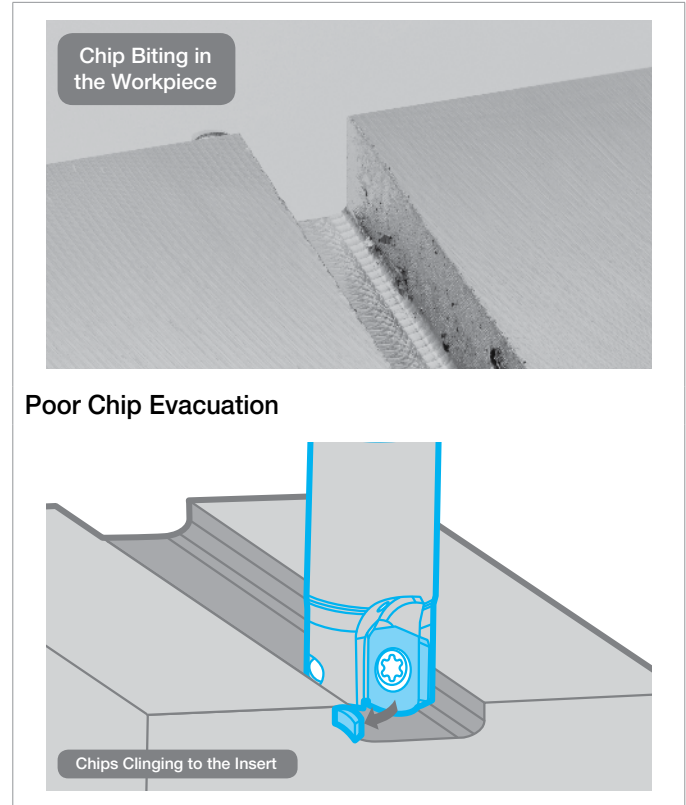
3 Good Chip Evacuation

Controls Chip Biting with Convex Cutting Edge

MFH Micro



Competitor F



Cutting Conditions: Cutter Dia. Dc = Ø0.375", Vc = 390 sfm, fz = 0.024 ipt, D.O.C. = 0.016" (25 Passes) Total 0.394", Dry Workpiece: Structural Steel

(In-house Evaluation)

4 Replaces Solid End Mills to Reduce Machining Costs

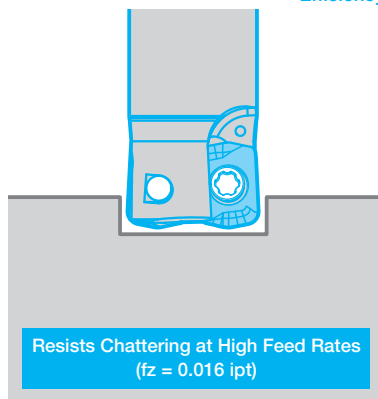
Suppresses Chattering and Increases Milling Efficiency

MFH Micro Compared to Solid End Mills

MFH Micro Q = 0.93in³/min

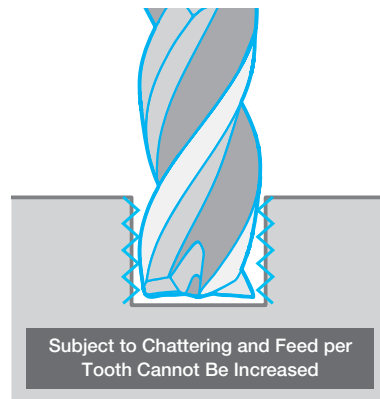
Vc = 490 sfm, fz = 0.016 ipt
D.O.C. x ae = 0.016" x 0.394", Dry
MFH10-S10-01-2T (2 Inserts)
LPGT010210ER-GM (PR1525)

1.2x
Machining Efficiency



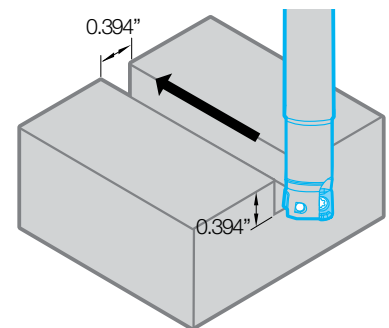
Solid End Mill Q = 0.74in³/min

Vc = 260 sfm, fz = 0.002 ipt
D.O.C. x ae = 0.012" x 0.394", Dry
Ø10mm (4 Flute)



Mechanical Parts Slotting

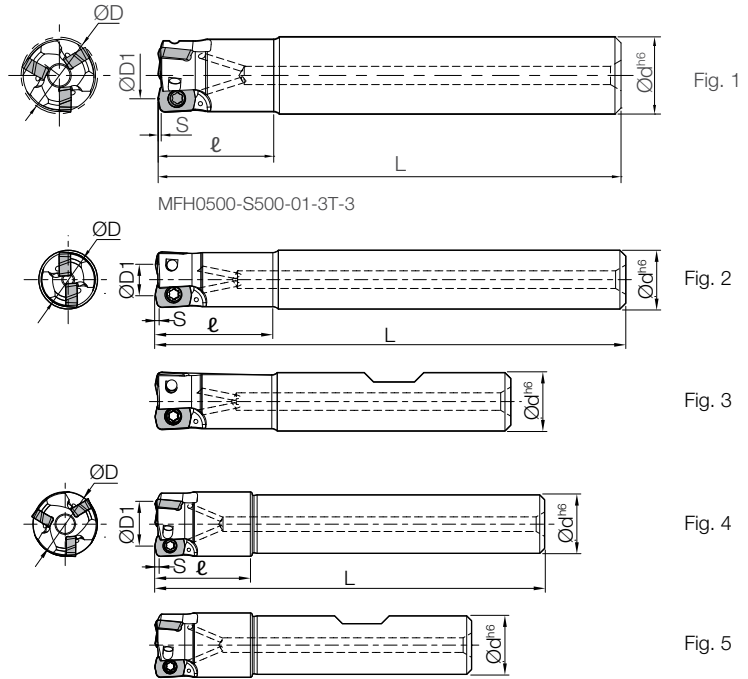
Workpiece: 1049



(User Evaluation)

GRADES	A
LINEUP / INSERTS	B
45° / 70° LEAD	C
75° LEAD	D
90° LEAD	E
HIGH FEED	F
MULTI-FUNCTION	G
SLOT MILLS	H
RADIUS / BALL-NOSE	J
OTHER APPLICATIONS	K
TOOL HOLDING	O
SPARE PARTS	P
TECHNICAL	R
INDEX	T

MFH Micro End Mill



Toolholder Dimensions (Inch Size)

Part Number	Stock	No. of Inserts	Dimensions (in)						Max. Ramping Angle	Rake Angle (°)	Coolant Hole	Drawing	Weight (kg)	Max RPM	Clamp Screw
			ØD	ØD1	Ød	L	ℓ	S							
Standard Shank (Cylindrical) MFH 0375-S375-01-1T-3	☐	1	0.375	0.225	0.375	3.000	0.750	0.020	3.0°	+5°	Yes	Fig. 1	0.04	16,200	SB-1840TRP
MFH 0500-S500-01-3T-3	●	3	0.500	0.350	0.500	3.000	0.750	0.020	2.0°				0.07	14,000	
MFH 0625-S625-01-4T35	●	4	0.625	0.475	0.625	3.500	1.000	0.020	1.2°				0.12	11,400	

Toolholder Dimensions (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)						Max. Ramping Angle	Rake Angle (°)	Coolant Hole	Drawing	Weight (kg)	Max RPM	Clamp Screw
			ØD	ØD1	Ød	L	ℓ	S							
Standard Shank (Cylindrical) MFH 08-S10-01-1T	○	1	8	4.2	10	75	16	0.5	4.0°	5°	Yes	Fig. 2	0.04	20,000	SB-1840TRP
MFH 10-S10-01-2T	○	2	10	6.2	10	80	20	0.5	3.0°				0.04	16,200	
MFH 12-S12-01-3T	○	3	12	8.2	12	80	20	0.5	2.0°				0.06	14,000	
MFH 16-S16-01-4T	○	4	16	12.2	16	90	25	0.5	1.2°				0.12	11,400	
Oversize Shank (Cylindrical) MFH 14-S12-01-3T	○	3	14	10.2	12	80	20	0.5	1.5°	5°	Yes	Fig. 4	0.07	12,500	SB-1840TRP
Standard Shank (Weldon) MFH 08-W10-01-1T	○	1	8	4.2	10	58	16	0.5	4.0°	5°	Yes	Fig. 3	0.03	20,000	
MFH 10-W10-01-2T	○	2	10	6.2	10	60	20	0.5	3.0°				0.03	16,200	
MFH 12-W12-01-3T	○	3	12	8.2	12	65	20	0.5	2.0°				0.05	14,000	
MFH 16-W16-01-4T	○	4	16	12.2	16	73	25	0.5	1.2°				0.10	11,400	
Oversize (Weldon) MFH 14-W12-01-3T	○	3	14	10.2	12	65	20	0.5	1.5°	5°	Yes	Fig. 5	0.05	12,500	

Spare Parts and Applicable Inserts (Metric Size)

Part Number	Spare Parts				Applicable Inserts
	Clamp Screw	Wrench	Pre-Set Torque Wrench*	Anti-Seize Compound	
MFH...-01-...	SB-1840TRP	FTP-6	PST-IP6	MP-1	LPGT010210ER-GM

Caution with Max. Revolution


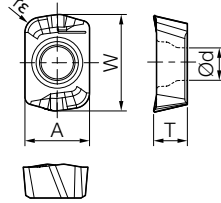
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

Coat Anti-Seize Compound (MP-1) thinly on portion of taper and thread prior to installation.

*For prolonged insert and cutter life, it is recommended to use the pre-set torque wrench to ensure proper insert screw force. Pre-Set Torque Wrench sold separately.

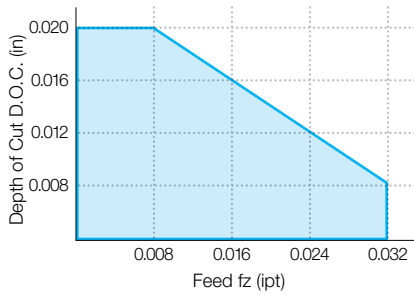
Recommended Cutting Conditions F23

● Applicable Inserts (➔ B13)

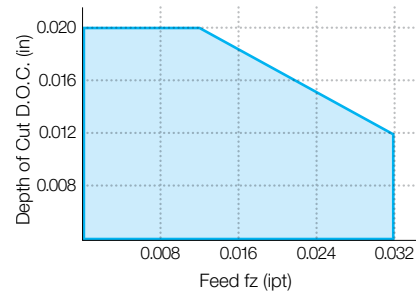
Insert	Part Number	Dimension (in)					MEGACOAT NANO		CVD
		A	T	Ød	W	rε	PR1535	PR1525	CA6535
 General Purpose 	LPGT010210ER-GM	0.165	0.086	0.083	0.247	0.039	●	●	●

● Cutting Performance

Cutter Dia: Ø0.375" ~ Ø0.500"
Cutter Dia: Ø8 ~ Ø12



Cutter Dia: Ø0.625"
Cutter Dia: Ø14 ~ Ø16



◆ Recommended Cutting Conditions

Chipbreaker	Workpiece Material	Holder Description and Feed Rate (fz: ipt)					Recommended Insert Grade (Vc: sfm)		
		*Recommended D.O.C. = 0.012" Reference Value					MEGACOAT NANO		CVD
		MFH08-...-1T	MFH0375...-3T MFH10-...-2T	MFH0500...-3T MFH12-...-3T	MFH14-...-3T	MFH0625...-4T MFH16-...-4T	PR1535	PR1525	CA6535
GM	Carbon Steel	0.008- 0.016 -0.024			0.008- 0.020 -0.031		☆ 390- 590 -820	★ 390- 590 -820	-
	Alloy Steel	0.008- 0.016 -0.024			0.008- 0.020 -0.031		☆ 330- 520 -720	★ 330- 520 -720	-
	Mold Steel (~40 HRC)	0.008- 0.012 -0.020			0.008- 0.016 -0.024		☆ 260- 460 -590	★ 260- 460 -590	-
	Mold Steel (40-50 HRC)	0.008- 0.010 -0.012			0.008- 0.010 -0.016		☆ 200- 330 -430	★ 200- 330 -430	-
	Austenitic Stainless Steel	0.008- 0.012 -0.020			0.008- 0.016 -0.024		★ 330- 520 -660	☆ 330- 520 -660	-
	Martensitic Stainless Steel	0.008- 0.012 -0.020			0.008- 0.016 -0.024		☆ 490- 660 -820	-	★ 590- 790 -980
	Precipitation Hardened Stainless Steel	0.008- 0.012 -0.020			0.008- 0.016 -0.024		★ 300- 390 -490	-	-
	Gray Cast Iron	0.008- 0.016 -0.024			0.008- 0.020 -0.031		-	★ 390- 590 -820	-
	Nodular Cast Iron	0.008- 0.012 -0.020			0.008- 0.016 -0.024		-	★ 330- 490 -660	-
	Ni-base Heat Resistant Alloy	0.008- 0.010 -0.012			0.008- 0.010 -0.016		☆ 70- 100 -160	-	★ 70- 100 -160
Titanium Alloy	0.008- 0.010 -0.012			0.008- 0.010 -0.016		★ 130- 200 -260	-	-	

- Machining with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy
 - The number in bold font is recommended starting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.
 - Internal coolant is recommended for slotting applications
- ★: 1st Recommendation ☆: 2nd Recommendation

GRADES A
LINEUP / INSERTS B
45° / 70° LEAD C
75° LEAD D
90° LEAD E
HIGH FEED F
MULTI-FUNCTION G
SLOT MILLS H
RADIUS / BALL-NOSE J
OTHER APPLICATIONS K
TOOL HOLDING O
SPARE PARTS P
TECHNICAL R
INDEX T

● Approximate Programming Radius Adjustment

Drawing	Programmable R (in)	Maximum Over Machining of Radius (in)	Maximum Unmachined Portion (in)
	0.039	0	0.0083
	0.047 (Recommended)	0	0.0067
	0.059	0.0032	0.0039
	0.079	0.0110	0.0004

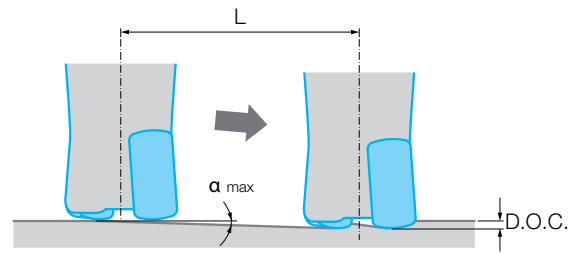
Cutting Edge Angle: 12°

● Ramping

Holder	Cutter Dia. Ø	0.375"	0.500"	0.625"	8mm	10mm	12mm	14mm	16mm
MFH...-01-...	Max. Ramping Angle (°)	3.0°	2.0°	1.2°	4.0°	3.0°	2.0°	1.5°	1.2°
	tan α max	0.052	0.035	0.021	0.070	0.052	0.035	0.026	0.021

Decrease Ramping Angle if Chips Become Excessively Long

- Recommended ramping angle is ≤ max (see chart above for recommended ramp angle)
- Reduce recommended feed rate by 70%



Formula for Max. Cutting Length (L) at Max. Ramping Angle

$$L = \frac{D.O.C.}{\tan \alpha \max}$$

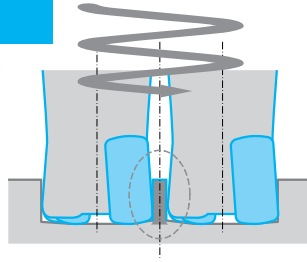
F HIGH FEED

Helical Milling

- For Helical milling, use between Min. Drilling Dia. and Max. Drilling Dia.

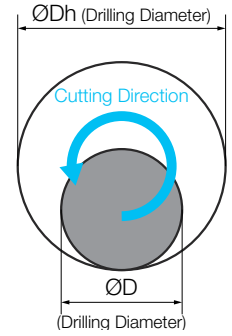
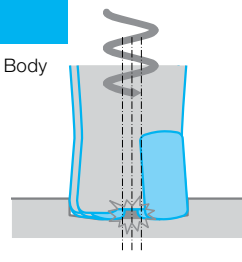
Exceeding Max. Machining Dia.

Center Core Remains



Under Min. Machining Dia.

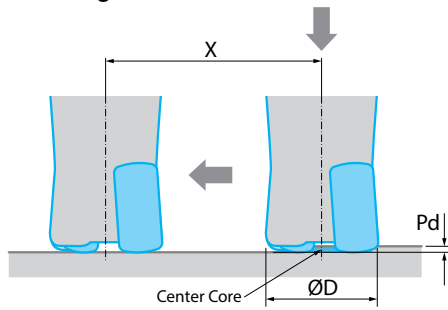
Center Core Hits Holder Body



Holder	Min. Drilling Dia.	Max. Drilling Dia.
MFH...-01-...	2xØD-0.138"	2xØD-0.079"

- Keep machine depth per rotation less than max D.O.C. (0.020")
- Use climb milling. (Refer to detail on right)
- Feed rate should be reduced to 50% of recommended cutting condition (Page [F23](#))
- Use caution to eliminate incidences caused by producing long chips

Drilling

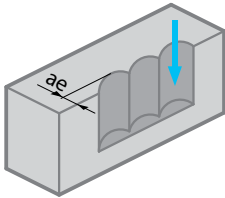


Holder	Min. Drilling Depth (Pd)	Min. Cutting Length X for Flat Bottom Surface
MFH...-01-...	0.020"	ØD-0.138"

Plunging After Drilling

- It is recommended to reduce feed by 25% of recommendation on Page [F23](#) until Center Core is removed
- Axial feed rate recommendation per revolution is 0.008ipr while drilling

Plunging



Insert Description	Maximum Width of Cut (ae)
LPGT01...	0.067"

- Reduce feed rate to $fz \leq 0.008$ ipt when plunging

GRADES	A
LINEUP / INSERTS	B
45° / 70° LEAD	C
75° LEAD	D
90° LEAD	E
HIGH FEED	F
MULTI-FUNCTION	G
SLOT MILLS	H
RADIUS / BALL-NOSE	J
OTHER APPLICATIONS	K
TOOL HOLDING	O
SPARE PARTS	P
TECHNICAL	R
INDEX	T

F
HIGH FEED