



MFH-RAPTOR

High Feed Milling Cutters



Stable Machining with Greater Chatter Resistance

Reduce Cycle Time During Roughing Applications

Multi-Functional for Various Applications

MFH Mini / Micro High Feed Mills for Small Machining Centers



MFH Series

Convex Cutting Edge Design Reduces Chatter for High-Efficiency Rough Machining
Large Tooling Lineup to Cover a Wide Application Range for Multiple Metalworking Processes

MFH-RAPTOR MICRO

Cutter Diameter $\varnothing 0.375"$ ~ $\varnothing 0.625"$
Cutter Diameter $\varnothing 8\text{mm}$ ~ $\varnothing 16\text{mm}$

Can Replace Solid End Mills to
Reduce Machining Costs



NEW Modular Available

MFH-RAPTOR MINI

Cutter Diameter $\varnothing 0.625"$ ~ $\varnothing 2.000"$
Cutter Diameter $\varnothing 16\text{mm}$ ~ $\varnothing 50\text{mm}$

Economical Inserts with 4 Cutting Edges



NEW Face Mill Available

MFH-RAPTOR

Cutter Diameter $\varnothing 1.000"$ ~ $\varnothing 6.000"$
Cutter Diameter $\varnothing 25\text{mm}$ ~ $\varnothing 160\text{mm}$

3 Different Insert Designs Offer a
Variety of Machining Options

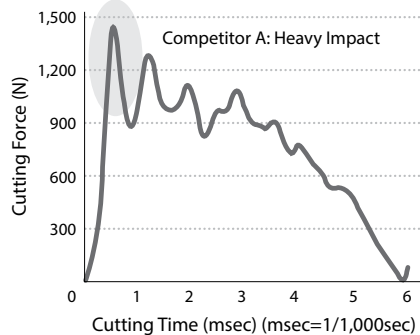
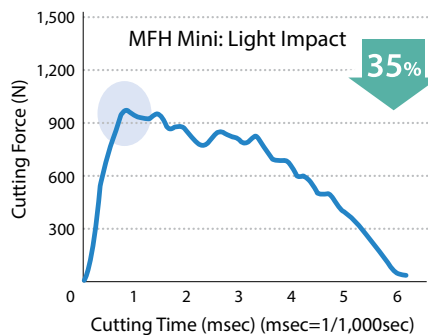


NEW SOMET14 $\varnothing 2.000"$ Face Mill Available

1 Reduced Chattering with Convex Cutting Edge Design

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

Cutting Force and Vibration when Approaching the Workpiece (D.O.C. = Half of Cutter Diameter)



Convex Edge Design



MFH Micro
LPGT Insert



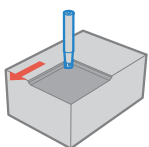
MFH Mini
LOGU Insert



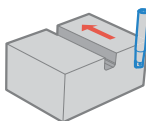
MFH
LOMU Insert

Cutting Conditions: Cutter Dia. $D_c = \varnothing 0.625"$, $V_c = 490$ sfm, $f_z = 0.039$ ipt, D.O.C. $\times ae = 0.020" \times 0.315"$, Dry Workpiece: 1049 Structural Steel

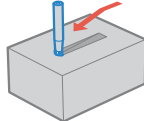
2 Wide Application Range for Multiple Metalworking Processes



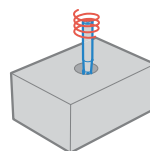
Face Milling &
Shouldering



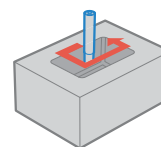
Slotting



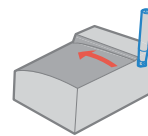
Ramping



Helical Milling



Pocketing



Contouring

For Using MFH:

GM chipbreaker is available for all the above applications. LD and FL chipbreakers are not available for helical milling, plunging and contouring of rising wall. (Refer to Page 11)

MFH-RAPTOR MICRO

(Cutter Dia. $\emptyset 0.375"$ ~ $\emptyset 0.625"$)
(Cutter Dia. $\emptyset 8\text{mm}$ ~ $\emptyset 16\text{mm}$)

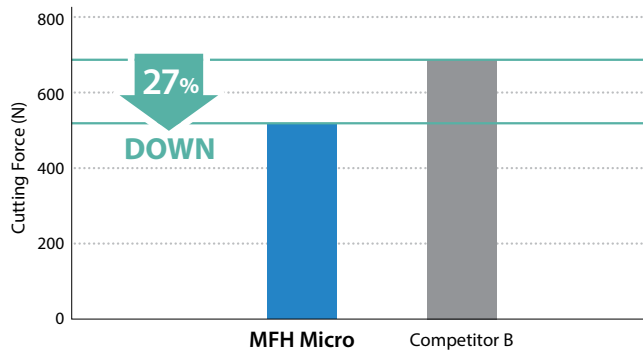
Low Resistance and Durable Design Aids in Chatter Resistant Machining

Maximum D.O.C. 0.020" and Stable High Feed Machining on a Wide Range of Applications

1 Stable Machining with Chattering Resistance

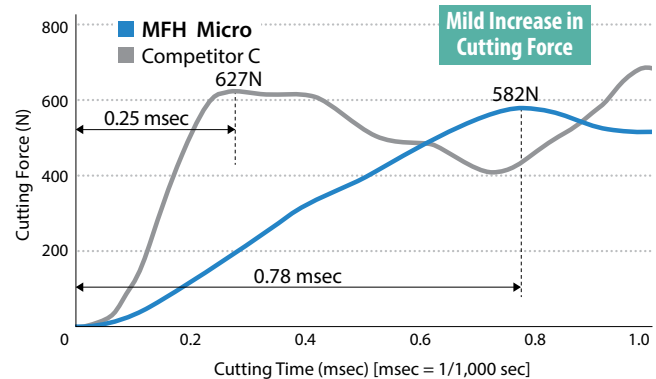
Molded Convex Cutting Edge Controls Initial Impact when Entering the Workpiece

Cutting Force Comparison (In-house Evaluation)



Cutting Conditions: $V_c = 390 \text{ sfm}$, $f_z = 0.024 \text{ ipt}$, D.O.C. = 0.016"
Cutter Dia. $\emptyset 0.375"$, Slotting, Dry Workpiece: 1049

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



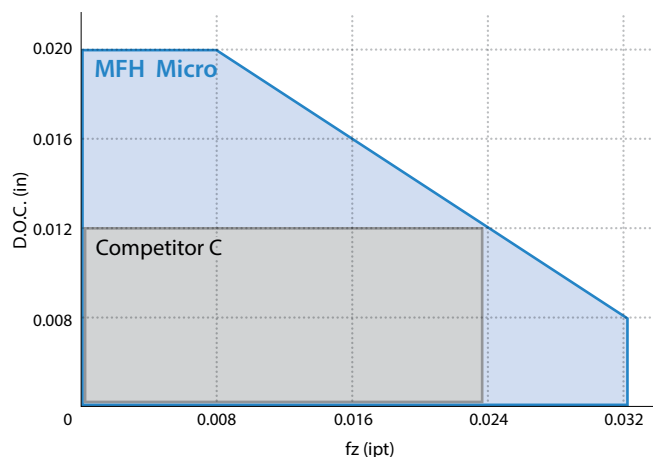
Cutting Conditions: $V_c = 390 \text{ sfm}$, $f_z = 0.024 \text{ ipt}$, D.O.C. $\times a_e = 0.016" \times 0.197"$
Cutter Dia. $\emptyset 0.375"$, Dry Workpiece: 1049

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. $\emptyset 0.375"$)



(In-house Evaluation)

3 Can Replace Solid End Mills to Reduce Machining Costs

Suppresses Chattering and Increases Milling Efficiency

MFH Micro Compared to Solid End Mills (Mechanical Parts Slotting 1049)

MFH Micro Q = 15.3 cc/min

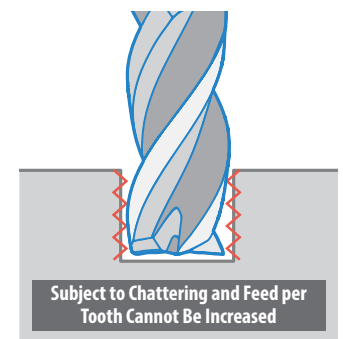
$V_c = 490 \text{ sfm}$, $f_z = 0.016 \text{ ipt}$
D.O.C. $\times a_e = 0.016" \times 0.394"$, Dry
MFH10-S10-01-2T (2 Flutes)
LPGT010210ER-GM (PR1525)

1.2x
Machining
Efficiency



Solid End Mill Q = 12.2 cc/min

$V_c = 260 \text{ sfm}$, $f_z = 0.002 \text{ ipt}$
D.O.C. $\times a_e = 0.012" \times 0.394"$, Dry
 $\emptyset 10\text{mm}$ (4 Flute)



MFH-RAPTOR[®] Mini

(Cutter Dia. Ø0.625" ~ Ø2.000")
(Cutter Dia. Ø16mm ~ Ø50mm)

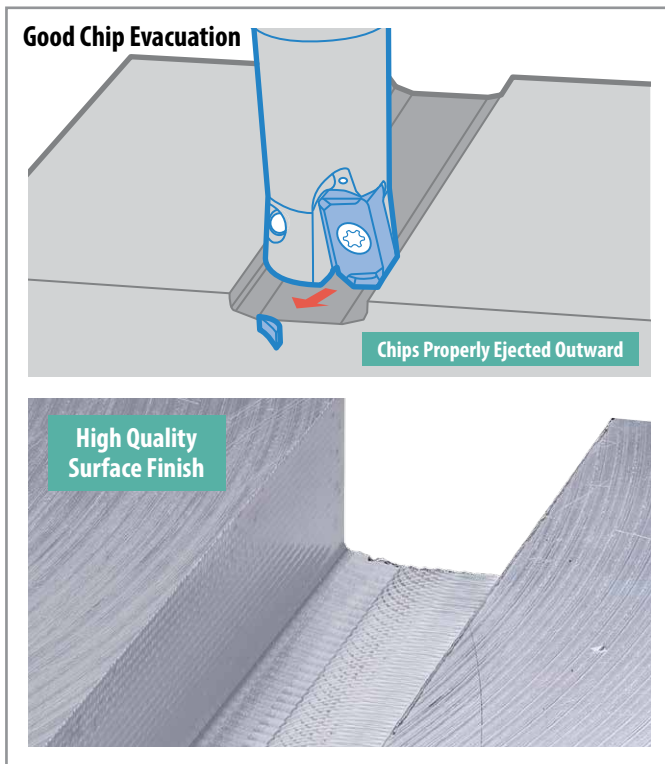
Economical Inserts with 4 Cutting Edges

High Feed Milling for Small Diameters and Small Machining Centers

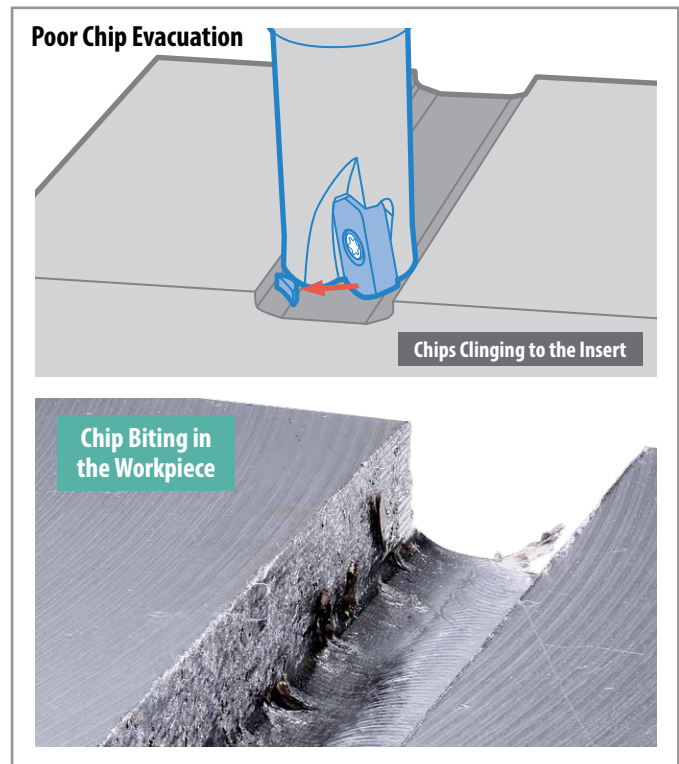
1 Good Chip Evacuation

MFH Mini Controls Chip Biting with Convex Cutting Edge

MFH Mini



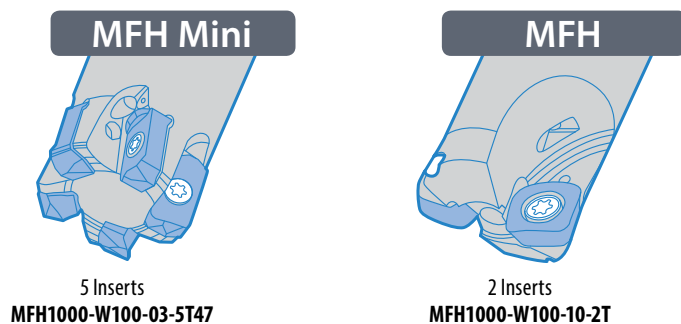
Competitor High Feed Cutter



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

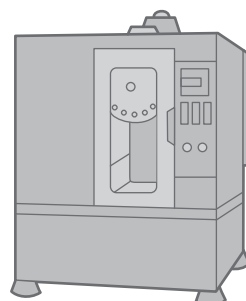
2 Fine Pitch for Efficient Machining

Cutter Dia. 1.000" Type



3 Suitable for Roughing of Molds

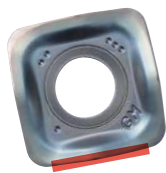
High Feed Machining in Small Machining Centers



Wide Product Lineup for High Feed Milling Applications
Large Depths of Cut and Low Cutting Forces

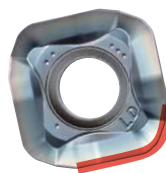
1 3 Different Insert Designs Offer a Variety of Machining Options

GM (General Milling)



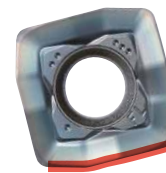
1st Choice for General Purpose
Multiple Metalworking Processes

LD (Large D.O.C.)



1st Choice for Large D.O.C.
Available for Scale Removal

FL (Wiper Edge)



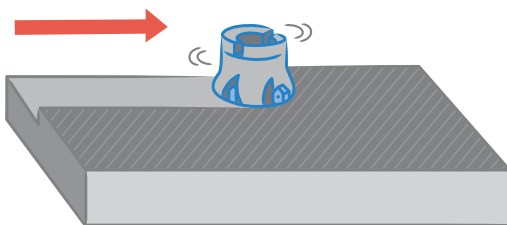
Wiper Edge
Roughing and Finishing Even in
Low Horsepower Machining Centers



LD Chipbreaker Can Be Used for Both Large D.O.C. and High Feed Machining

Large D.O.C. for Scale Removal

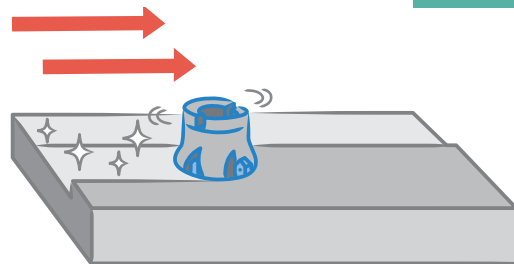
D.O.C. = 0.158"



($f_z = 0.010$ ipt, D.O.C. = 0.158")

High Feed Rates After Scale Removal

$f_z = 0.059$ ipt



($f_z = 0.059$ ipt, D.O.C. = 0.079")

MFH2500R-14-5T (Cutter Dia. 2.500", 5 Inserts)

① Roughing for Scale Removal (2 Passes): Large D.O.C.

$V_c = 660$ sfm, $f_z = 0.010$ ipt
D.O.C. $\times$ ae = 0.118" $\times$ 1.575"
 $V_f = 50$ in/min

② Roughing (2 Passes) After Scale Removal: High Feed Rate

$V_c = 660$ sfm, $f_z = 0.059$ ipt
D.O.C. $\times$ ae = 0.079" $\times$ 1.575", $V_f = 298$ in/min
Workpiece: Stainless Steel

Conventional 45° Cutter (Cutter Dia. 2.500", 5 Inserts)

Roughing (4 Passes): Constant D.O.C. and Feed Rate

$V_c = 660$ sfm, $f_z = 0.010$ ipt
D.O.C. $\times$ ae = 0.118" $\times$ 1.575", $V_f = 50$ in/min
Workpiece: Structural Steel

Chip Evacuation

MFH

404 cc/min

Efficiency

x2.6

Conventional
Cutter

151 cc/min

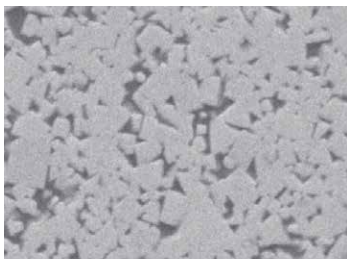
PR1535 MEGACOAT NANO

Fracture resistant with a tough substrate and high heat-resistant coating for stable machining of general steel, mold steel, and difficult-to-cut materials

1 23% Improved Fracture Toughness

An increase in cobalt content yields a substrate with greater toughness. Fracture toughness values are improved by 23% over previous grades.

High Toughness Carbide Base Material

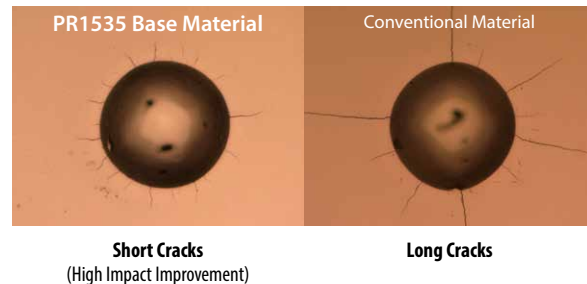


↑
23%
Fracture
Toughness

2 Stability Improvement

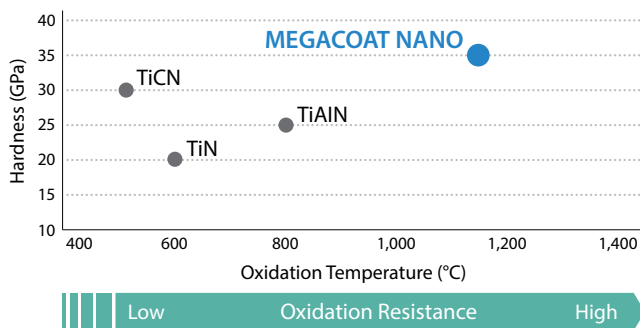
The coarse grain structure and uniform particle size correspond to improved heat resistance, with conductivity values decreased by 11%. The uniform structure also reduces crack propagation.

Cracking Comparison by Diamond Indenter (In-house Evaluation)



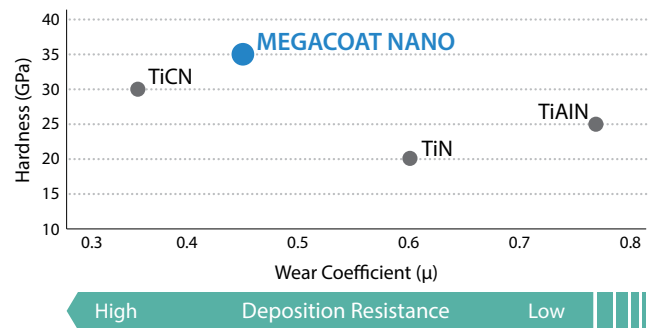
↑
Shock
Resistance

Coating Properties (Abrasion Resistance)



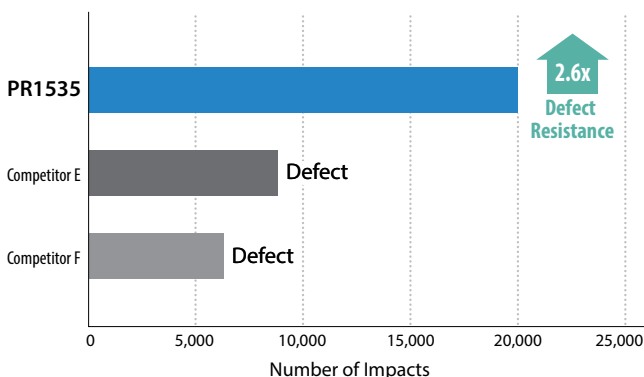
Achieves long tool life with the combination of a tough substrate and a special Nano coating layer

Coating Properties (Deposition Resistance)



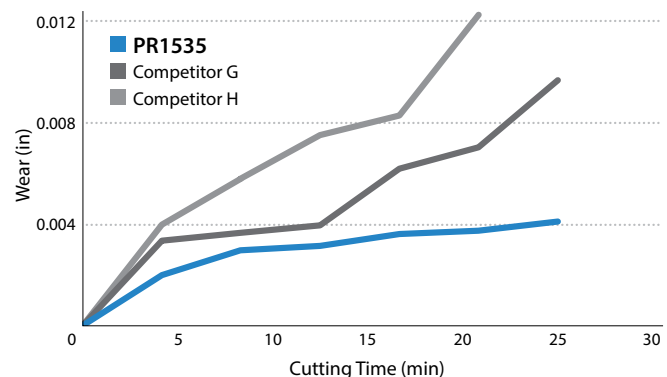
Stable machining with excellent wear resistance

Defect Resistance Comparison (In-house Evaluation)

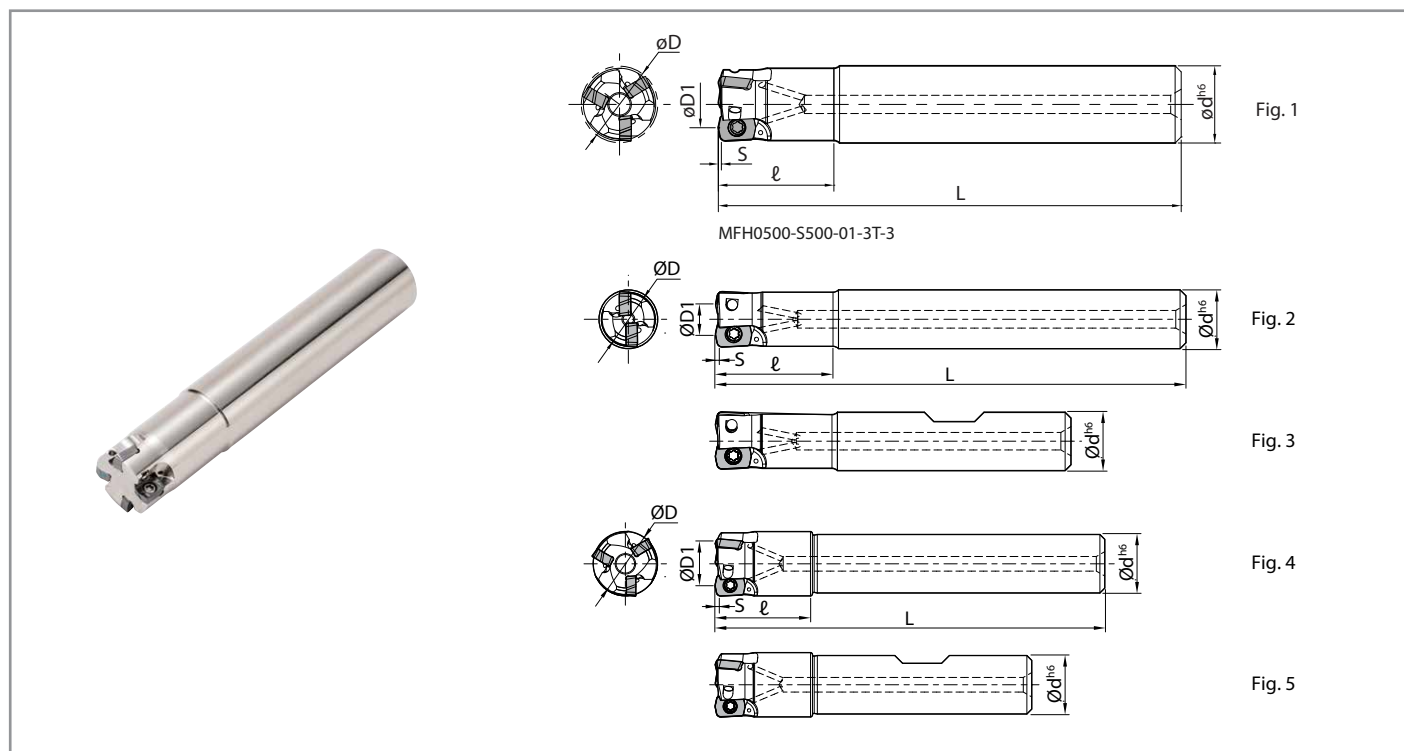


Cutting Conditions: $V_c = 390$ sfm, $f_z = 0.059$ ipt, D.O.C. $\times a_e = 0.016'' \times 0.098''$
Cutting Dia. $\varnothing 0.375''$, Dry Workpiece: H13 (40~45HRC)

Abrasion Resistance Comparison (In-house Evaluation)



Cutting Conditions: $V_c = 590$ sfm, $f_z = 0.020$ ipt, D.O.C. $\times a_e = 0.012'' \times 0.315''$
Cutting Dia. $\varnothing 0.375''$, Dry Workpiece: 304



Toolholder Dimensions (Inch Size)

Shank	Part Number	Stock	No. of Inserts	Dimensions (in)						Maximum Ramping Angle	Rake Angle (°)	Coolant Hole	Drawing	Weight (kg)	Max. RPM	Clamp Screw
				ØD	ØD1	Ød	L	ℓ	S							
Standard (Cylindrical)	MFH 0375-S375-01-1T-3	■	1	0.375	0.225	0.375	3.000	0.750		3°				0.04	16,200	
	0500-S500-01-3T-3	●	3	0.500	0.350	0.500	3.000	0.750	0.020	2°	+5°	✓	Fig. 1	0.07	14,000	SB-1840TRP
	0625-S625-01-4T35	●	4	0.625	0.475	0.625	3.500	1.000		1.2°				0.12	11,400	

● : U.S. Stock ■ : Quoted Item (Made to Order)

Toolholder Dimensions (Metric Size)

Shank	Part Number	Stock	No. of Inserts	Dimensions (mm)						Maximum Ramping Angle	Rake Angle (°)	Coolant Hole	Drawing	Weight (kg)	Max. RPM	Clamp Screw
				ØD	ØD1	Ød	L	ℓ	S							
Standard (Cylindrical)	MFH 08-S10-01-1T	○	1	8	4.2	10	75	16		4°				0.04	20,000	
	10-S10-01-2T	○	2	10	6.2	10	80	20		3°				0.04	16,200	
	12-S12-01-3T	○	3	12	8.2	12	80	20		2°				0.06	14,000	
	16-S16-01-4T	○	4	16	12.2	16	90	25		1.2°				0.12	11,400	
Over Size (Cylindrical)	MFH 14-S12-01-3T	○	3	14	10.2	12	80	20	0.5	1.5°	+5°	✓	Fig. 4	0.07	12,500	SB-1840TRP
Standard (Weldon)	MFH 08-W10-01-1T	○	1	8	4.2	10	58	16		4°				0.03	20,000	
	10-W10-01-2T	○	2	10	6.2	10	60	20		3°				0.03	16,200	
	12-W12-01-3T	○	3	12	8.2	12	65	20		2°				0.05	14,000	
	16-W16-01-4T	○	4	16	12.2	16	73	25		1.2°				0.1	11,400	
Over Size (Weldon)	MFH 14-W12-01-3T	○	3	14	10.2	12	65	20	0.5	1.5°	+5°	✓	Fig. 5	0.05	12,500	

○ : World Express (Shipping: 7-10 Business Days)

Spare Parts and Applicable Inserts (Metric Size)

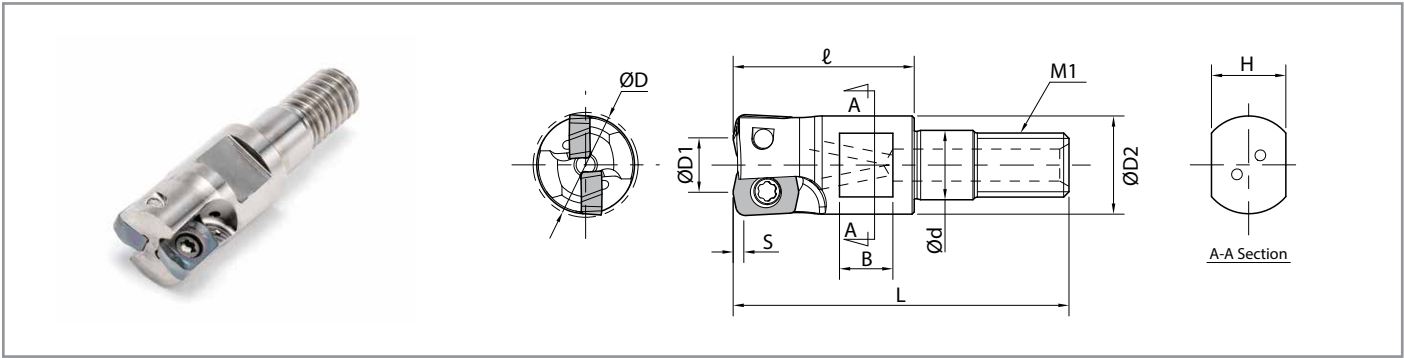
Part Number	Spare Parts			Applicable Inserts P8
	Clamp Screw	Wrench	Anti-Seize Compound	
				
MFH...-01-...	SB-1840TRP	FTP-6	P-37	LPGT010210ER-GM

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 (P-37)** thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions P9



Toolholder Dimensions (Metric Size)

Part Number	Stock	Unit	No. of Inserts	Dimensions (mm)											Maximum Ramping Angle	A.R.	Coolant Hole	Max. RPM						
				ØD	ØD1	ØD2	Ød	L	ℓ	M1	H	B	S	α										
MFH 0500-M06-01-3T	●	inch	3	0.500	0.350	0.441	0.256	1.240	0.669	M6xP1.0	0.276	0.197	0.020	2°	+5°	✓	14,000							
	0625-M08-01-4T		●	4	0.625	0.475	0.579	0.335	1.575	0.866	M8xP1.25	0.472		0.315			1.2°	11,400						
MFH 08-M06-01-1T	○	mm	1	8	4.2	9.2	6.5	31.5	17	M6×P1.0	7	5	0.5	4°			20,000							
10-M06-01-2T	○		2	10	6.2									3°			16,200							
12-M06-01-3T	○		3	12	8.2	11.2								2°			14,000							
14-M06-01-3T	○		3	14	10.2									1.5°			12,500							
16-M08-01-4T	○		4	16	12.2	14.7	8.5	40	22	M8×P1.25	12	8		1.2°			11,400							

Industry standard threads for adapting to common toolholders (For Ø8mm - Ø14mm screw size: M6 x P1.0).
Check screw specifications for the shank in use.

○ : World Express (Shipping: 7-10 Business Days)

Spare Parts and Applicable Inserts (Metric Size)

Part Number	Spare Parts			Applicable Inserts See Below
	Clamp Screw	Wrench	Anti-Seize Compound	
				
MFH...-01-...	SB-1840TRP	FTP-6	P-37	LPGT010210ER-GM

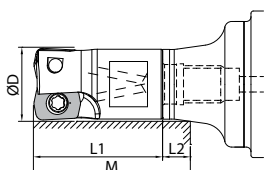
Caution with Max. Revolution

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

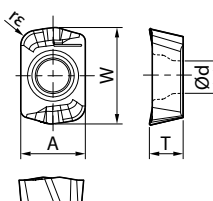
 Coat Anti-Seize Compound (P-37) thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions  P9

Actual End Mill Depth (MFH16-M080-01-4T)

	Arbor Part Number	Applicable End Mill			Actual End Mill Depth (mm)	
		Part Number	Cutting Dia. (mm)	Dimension (mm)	M	L2
			ØD	L1		
	BT30K-M08-45	MFH16-M08-01...	Ø16	22	28.8	6.8
	BT40K-M08-55	MFH16-M08-01...	Ø16	22	28.7	6.7

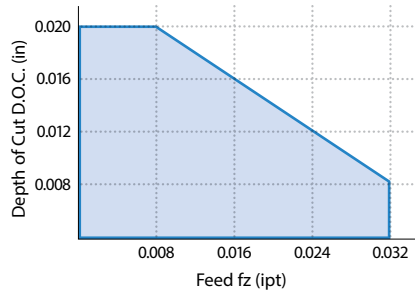
MFH Micro | Applicable Inserts

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	●	●	●

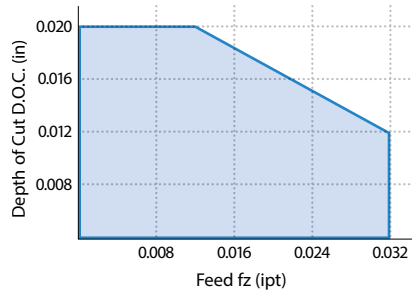
● : U.S. Stock

MFH Micro | Cutting Performance

Cutter Dia: Ø0.375" ~ Ø0.500"
Cutter Dia: Ø8mm ~ Ø12mm



Cutter Dia: Ø0.625"
Cutter Dia: Ø14mm ~ Ø16mm



Recommended Cutting Conditions ★ 1st Recommendation ☆ 2nd Recommendation

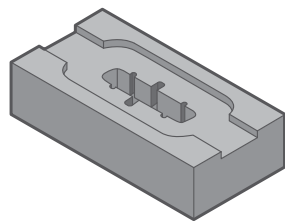
Chipbreaker	Workpiece Material	Cutter Part Number and Feed Rate (fz: ipt) *Recommended D.O.C. = 0.012" Reference Value					Recommended Insert Grade (Vc: sfm)		
		MFH08-...-1T	MFH0375-...-1T-3 MFH10-...-2T	MFH0500-...-3T(-3) MFH12-...-3T	MFH14-...-3T	MFH0625-...-4T(35) MFH16-...-4T	MEGACOAT NANO		CVD Coated Carbide
							PR1525	PR1535	CA6535
GM	Carbon Steel	0.008~ 0.016 ~0.024		0.008~ 0.020 ~0.031		★ 390- 590 -820	☆ 390- 590 -820	☆ 390- 590 -820	-
	Alloy Steel						★ 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	☆ 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	☆ 200- 330 -430	-
	Austenitic Stainless Steel	0.008~ 0.012 ~0.020		0.008~ 0.016 ~0.024		☆ 330- 520 -660	★ 330- 520 -660	★ 330- 520 -660	-
	Martensitic Stainless Steel					-	☆ 490- 660 -820	★ 590- 790 -980	★
	Precipitation Hardened Stainless Steel					-	★ 300- 390 -490	★ 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					-	★ 130- 200 -260	★ 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

Case Studies

Mold H13

Vc = 300 sfm (n = 2,400 rpm)
fz = 0.011 ipr
(Vf = 75.984 ipm)
D.O.C. x ae = 0.012" x ~ 0.028"; Dry
MFH0500-S500-01-3T-3
LPGT010210ER-GM PR1535



Chip Evacuation

PR1535

4.5 cc/min

Efficiency
1.3x

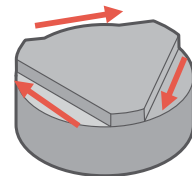
Competitor I

3.4 cc/min

PR1535 shows 1.3 times machining efficiency compared to Competitor I
Good cutting edge condition after machining almost doubling the tool life
(User Evaluation)

Industrial Machine Parts 440C

Vc = 590 sfm (n = 3,580 rpm)
fz = 0.016 ipt (Vf = 225.591 ipm)
D.O.C. = 0.016", ae = 0.315", Wet
MFH0625-S625-01-4T35
LPGT010210ER-GM PR1535



Cutting Time

PR1535

7 min

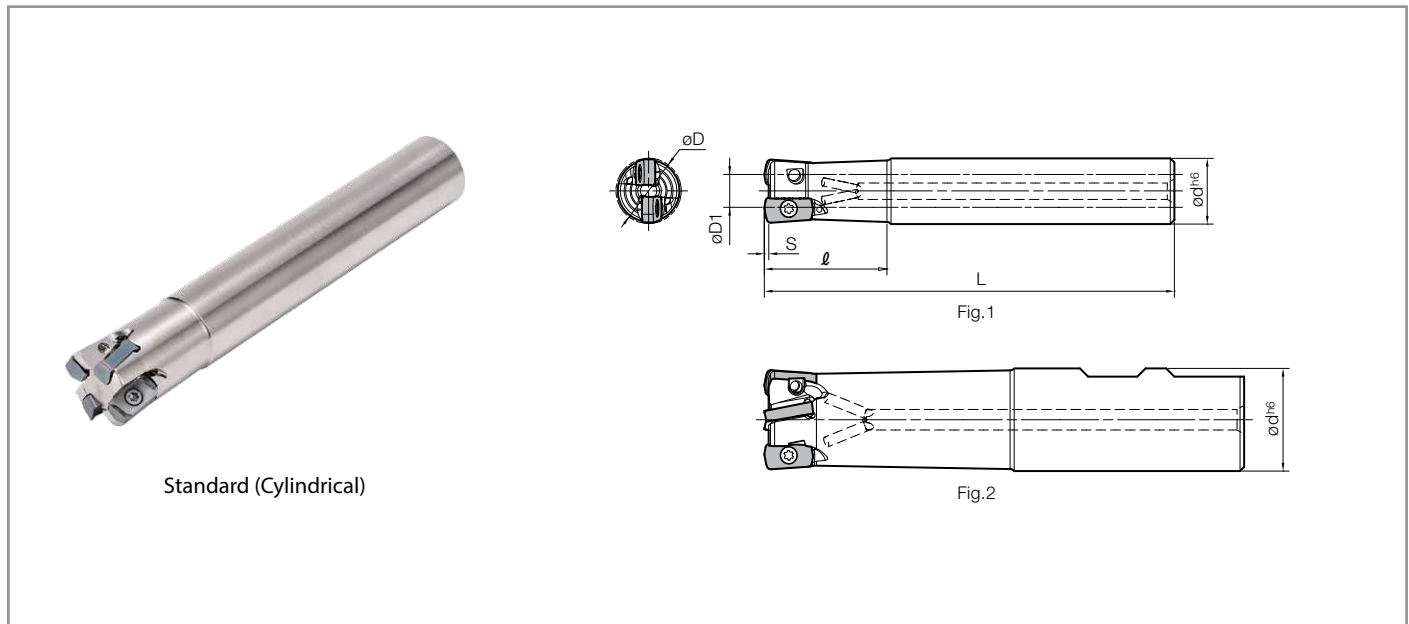
35%
Cutting Time

Competitor J

11 min

PR1535 shows 30% faster cycle time compared to competitor J

(User Evaluation)



Toolholder Dimensions (Inch Size)

Part Number	Stock	No. of Inserts	Dimensions (in)							Ramping Angle	Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max. RPM
			ØD	ØD1	ød	L	ℓ	S	α		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°	✓	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°	-10°	-15°			0.2	15,700
	1000-W100-03-4T47	●	4	1.000	0.685	1.000	4.820	2.500	0.039	1.2°	-10°	-15°			0.4	13,400
	1000-W100-03-5T47	●	5	1.000	0.685	1.000	4.820	2.500	0.039	1.2°	-10°	-15°			0.4	13,400
	1250-W125-03-5T-5	●	5	1.250	0.935	1.250	5.070	2.750	0.039	0.8°	-10°	-15°			0.7	11,400
	1250-W125-03-6T-5	●	6	1.250	0.935	1.250	5.070	2.750	0.039	0.8°	-10°	-15°			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°	✓	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°	-10°	-15°			0.3	15,700
	1000-S100-03-4T-7	●	4	1.000	0.685	1.000	7.000	4.000	0.039	1.2°	-10°	-15°			0.6	13,400
	1250-S125-03-5T-8	●	5	1.250	0.935	1.250	8.000	4.750	0.039	0.8°	-10°	-15°			1.1	11,400

● : U.S. Stock

Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts			Applicable Inserts ➡ P14
	Clamp Screw	Wrench	Anti-Seize Compound	
				
MFH...-03-...	SB-306STRP	DTPM-8 Recommended Torque for Insert Clamp 1.2 N·m	P-37	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 (P-37) thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions ➡ P15



Standard (Cylindrical)

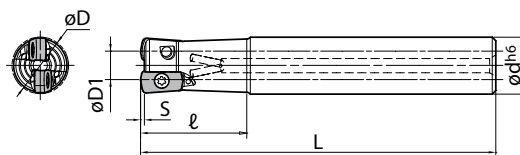


Fig.1

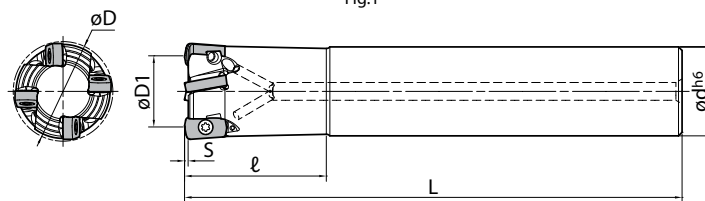


Fig.2

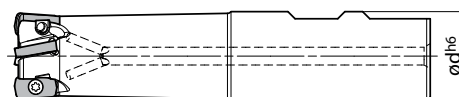


Fig.3

Toolholder Dimensions (Metric Size)

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

Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts			Applicable Inserts P14
	Clamp Screw	Wrench	Anti-Seize Compound	
MFH...-03-...	SB-3065TRP	DTPM-8 Recommended Torque for Insert Clamp 1.2 N-m	P-37	LOGU030310ER-GM

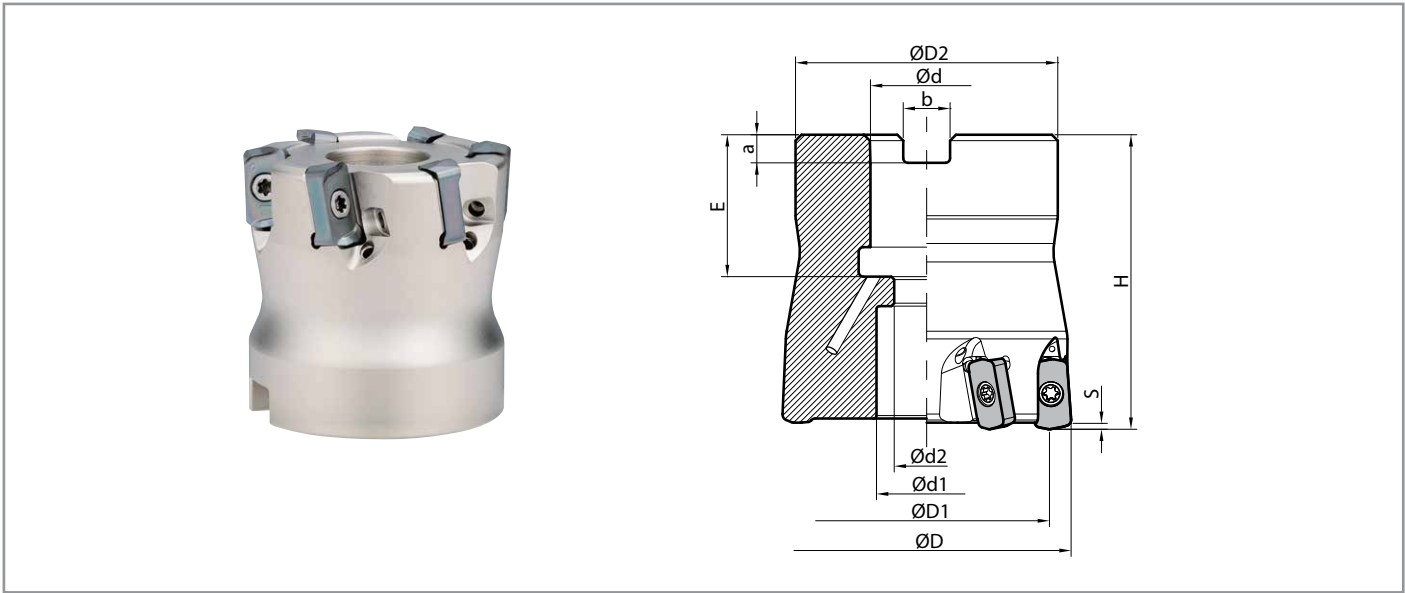
○ : World Express (Shipping: 7-10 Business Days)

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 (P-37) thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions P15



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°	✓	0.2	10,200
1500R-03-6T	●	6																
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°	✓	0.5	8,600

● : U.S. Stock

Toolholder Dimensions (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)											Rake Angle (°)		Coolant Hole	Weight (kg)	Max. RPM
			ØD	ØD1	ØD2	Ød	Ød1	Ød2	H	E	a	b	S	A.R.	R.R.			
MFH 040R-03-5T-M	○	5	40	32	38	16	15	9	40	19	5.6	8.4	1	-10°	-15°	✓	0.2	9,900
040R-03-6T-M	○	6	40	32	38	16	15	9	40	19	5.6	8.4						
MFH 050R-03-8T-M	○	8	50	42	47	22	19	11	50	21	6.3	10.4	1	-10°	-15°	✓	0.5	8,600

Multiple step slot milling is NOT recommended for MFH-Mini face mill diameters above Ø1.300" due to a danger of re-cutting chips

○ : World Express (Shipping: 7-10 Business Days)

Spare Parts and Applicable Inserts (Inch Size)

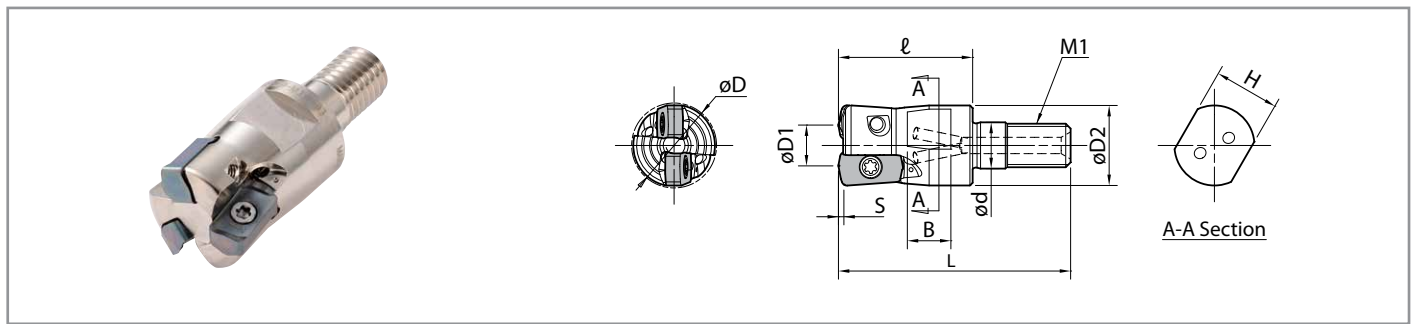
Part Number	Spare Parts				Applicable Inserts  P14
	Clamp Screw	Wrench	Anti-Seize Compound	Arbor Bolt	
					
MFH1500-03-5T	SB-3065TRP	DTPM-8 Recommended Torque for Insert Clamp 1.2 N·m	P-37	HH1/4-0.75	LOGU030310ER-GM
MFH1500-03-6T				HH3/8-1.25	
MFH2000-03-8T					

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 (P-37) thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions ➡ P15



Toolholder Dimensions

Part Number	Stock	Unit	No. of Inserts	Dimensions										Ramping Angle	Rake Angle (°)		Coolant Hole	Max. RPM
				ØD	ØD1	ØD2	Ød	L	ℓ	M1 (mm)	H	B	S		A.R.	R.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°	✓	18,800
MFH 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°	-10°	-15°	✓	15,700
MFH 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°	-10°	-15°	✓	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°	-10°	-15°	✓	13,400
MFH 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°	-10°	-15°	✓	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°	-10°	-15°	✓	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°	✓	18,880
MFH 17-M08-03-2T	○		2	17	9	14.7	8.5	43	25	M8xP1.25	12	8	1	2.5°	-10°	-15°	✓	17,900
MFH 18-M08-03-2T	○		2	18	10	14.7	8.5	43	25	M8xP1.25	12	8	1	2.1°	-10°	-15°	✓	17,000
MFH 20-M10-03-3T	○		3	20	12	18.7	10.5	49	30	M10xP1.5	15	9	1	1.7°	-10°	-15°	✓	15,700
20-M10-03-4T	○		4	20	12	18.7	10.5	49	30	M10xP1.5	15	9	1	1.7°	-10°	-15°	✓	15,700
MFH 22-M10-03-3T	○		3	22	14	18.7	10.5	49	30	M10xP1.5	15	9	1	1.4°	-10°	-15°	✓	14,700
22-M10-03-4T	○		4	22	14	18.7	10.5	49	30	M10xP1.5	15	9	1	1.4°	-10°	-15°	✓	14,700
MFH 25-M12-03-4T	●		4	25	17	23	12.5	57	35	M12xP1.75	19	10	1	1.2°	-10°	-15°	✓	13,400
25-M12-03-5T	○		5	25	17	23	12.5	57	35	M12xP1.75	19	10	1	1.2°	-10°	-15°	✓	13,400
MFH 28-M12-03-4T	○		4	28	20	23	12.5	57	35	M12xP1.75	19	10	1	1.0°	-10°	-15°	✓	12,400
28-M12-03-5T	○		5	28	20	23	12.5	57	35	M12xP1.75	19	10	1	1.0°	-10°	-15°	✓	12,400
MFH 32-M16-03-5T	○		5	32	24	30	17	63	40	M16xP2	24	12	1	0.8°	-10°	-15°	✓	11,400
32-M16-03-6T	○		6	32	24	30	17	63	40	M16xP2	24	12	1	0.8°	-10°	-15°	✓	11,400

Spare Parts and Applicable Inserts

● : U.S. Stock ○ : World Express (Shipping: 7-10 Business Days)

Part Number	Spare Parts			Applicable Inserts ➡ P14
	Clamp Screw	Wrench	Anti-Seize Compound	
				
MFH...-03-...	SB-3065TRP	DTPM-8 Recommended Torque for Insert Clamp 1.2 N·m	P-37	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 (P-37) thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions ➡ P15

Actual End Mill Depth (BT Arbor Metric)

A technical cross-sectional drawing of an end mill. The drawing shows the tool's geometry, including the cutting edges and the central flute. Dimension lines indicate the following measurements: ØD is the cutting diameter at the tip; L1 is the total length of the tool; L2 is the length of the flute; and M is the diameter of the arbor (the central shaft of the tool).

Arbor Part Number	Applicable End Mill			Actual End Mill Depth (mm)	
	Part Number	Cutting Dia. (mm)	Dimension (mm)	M	L2
		ØD	L1		
BT30K-M08-45	MFH16-M08-03...	Ø16	25	31.8	6.8
	MFH17-M08-03...	Ø17	25	33.2	8.2
	MFH18-M08-03...	Ø18	25	34.2	9.2
BT30K-M10-45	MFH20-M10-03...	Ø20	30	36.8	6.8
	MFH22-M10-03...	Ø22	30	39.2	9.2
BT30K-M12-45	MFH25-M12-03...	Ø25	35	42.8	7.8
	MFH28-M12-03...	Ø28	35	45.5	10.5
BT40K-M08-55	MFH16-M08-03...	Ø16	25	31.7	6.7
	MFH17-M08-03...	Ø17	25	33.2	8.2
	MFH18-M08-03...	Ø18	25	34.3	9.3
BT40K-M10-60	MFH20-M10-03...	Ø20	30	38.7	8.7
	MFH22-M10-03...	Ø22	30	44.5	14.5
BT40K-M12-55	MFH25-M12-03...	Ø25	35	44.6	9.6
	MFH28-M12-03...	Ø28	35	47.6	12.6
BT40K-M16-65	MFH32-M16-03...	Ø32	40	51.2	11.2

For BT Arbor See [P26](#)

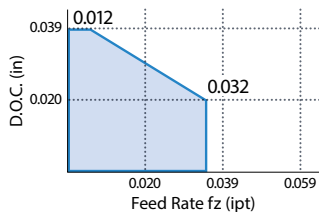
Applicable Inserts

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	●	●	●	●

● : U.S. Stock

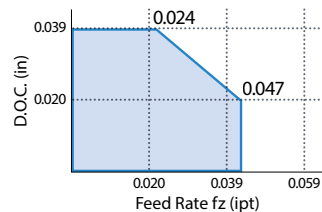
MFH Mini | Cutting Performance (GM Chipbreaker)

Fine Pitch End Mill



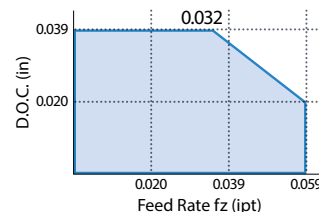
Standard Pitch End Mill

Cutting Dia. Ø0.625" - Ø0.750"
Cutting Dia. Ø16mm - Ø22mm



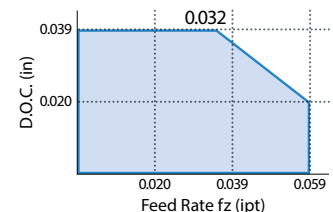
Standard Pitch End Mill

Cutting Dia. 1.000" - 1.250"
Cutting Dia. Ø25mm - Ø32mm



MFH Mini Face Mill

Cutting Dia. 1.500" - 2.000"
Cutting Dia. Ø40mm - Ø50mm



Caution:
When using fine pitch, reduce the cutting conditions compared with standard type

Chipbreaker	Workpiece Material	Holder Part Number 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)	(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	0.008- 0.031 -0.059	☆ 390- 590 -820	★ 390- 590 -820	-	-
	Alloy Steel									☆ 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	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	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	0.008- 0.024 -0.047	★ 330- 520 -660	☆ 330- 520 -660	-	-
	Martensitic Stainless Steel									☆ 490- 660 -820	-	-	★ 590- 790 -980
	Precipitation Hardened Stainless Steel									★ 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	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	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	0.008- 0.016 -0.031	☆ 70- 100 -160	-	-	★ 70- 100 -160
	Titanium Alloy									★ 130- 200 -260	-	☆ 100- 160 -230	-

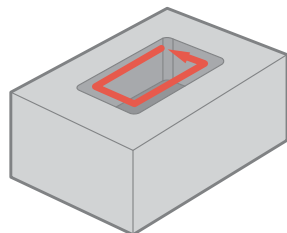
- Machining with coolant is recommended for Ni-base Heat Resistant Alloy and Titanium Alloy
- The number in bold font is recommended starting conditions. Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.
- Machining with CAT30 or equivalent,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

Standard Pitch End Mills Fine Pitch End Mills MFH Mini Face Mills

Case Studies

Mold Parts Pre-hardened Steel

Vc = 720 sfm (n = 3,500 rpm)
f = 0.002 ipt (Vf = 27.559 ipm)
D.O.C. x ae = 0.002" x 0.551" Dry
MFH20-S20-03-4T
LOGU030310ER-GM PR1535



Tool Life

PR1535

2.0_H

Tool Life
MAX
2x

Competitor K (4 Flutes)

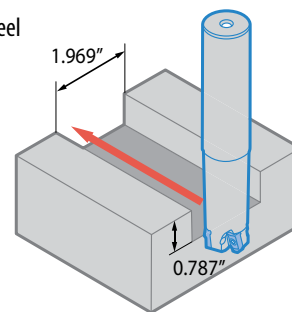
1.0~1.5_H

PR1535 shows lower cutting load compared with Competitor K making it possible to extend the machining time.

(User Evaluation)

Airplane Parts Precipitation Hardened Stainless Steel

Vc = 390 sfm (n = 1,530 rpm)
fz = 0.024 ipt (Vf = 144.488 ipm)
D.O.C. x ae = 0.028" x 0.984" Dry
MFH1000-W100-03-4T47 (4 Flutes)
LOGU030310ER-GM (PR1535)



Machining Efficiency

PR1535

100 pcs

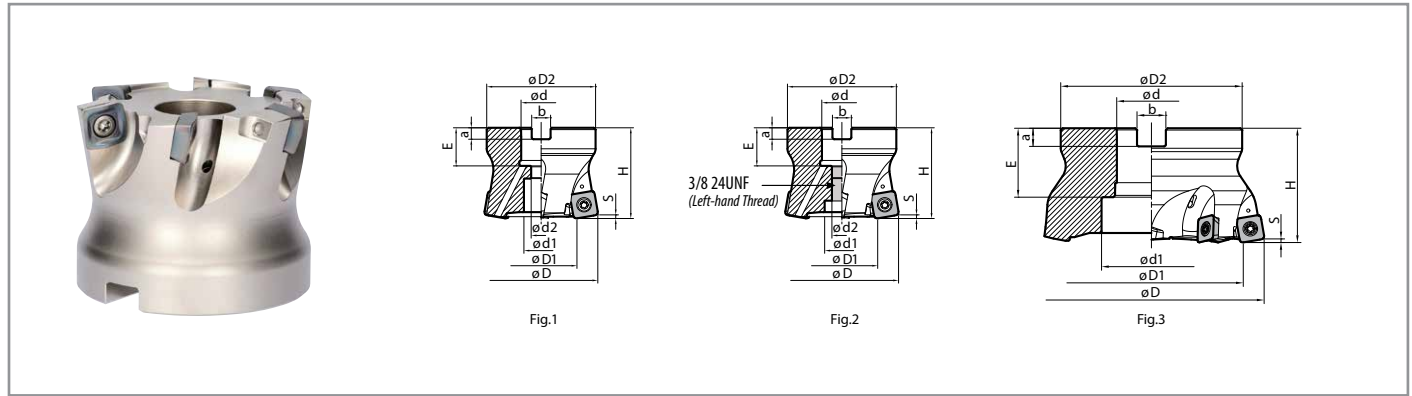
Tool Life
1.8x

Competitor L (5 Inserts)

55 pcs

PR1535 maintains good cutting edge condition after machining 100 pcs with stable machining.

(User Evaluation)



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	0.059	0.138	+10°	-5°	✓	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
MFH 2500R-10-5T	●	5	2.500	1.831	2.010	1.969	2.250	0.750	0.669	0.433	1.969	0.75	0.187	0.313			+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	0.75	0.187	0.313			+10°	-4°			0.7	8,800
MFH 3000R-10-7T	●	7	3.000	2.331	2.510	2.469	2.750	1.000	0.866	0.551	2.48	1.063	0.236	0.382			+10°	-4°			1.3	7,600

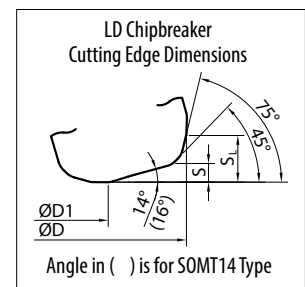
Toolholder Dimensions with SOMT14 Inserts (Inch Size)

NEW	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-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	0.079	0.197	+10°	-10°	✓	Fig.2	0.4	8,800	
	MFH 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°			Fig.1	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
	MFH 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			+10°	-9°			1.2	6,400	
	MFH 4000R-14-6T	●	6	4.000	3.094	3.330	3.291	3.750	1.500	1.299	0.866	2.48	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	2.48	1.181	0.394	0.626			+10°	-7°		2.3	5,600		
	MFH 5000R-14-7T	●	7	5.000	4.094	4.330	4.291	3.750	1.500	2.047	-	2.48	1.496	0.394	0.626			+10°	-7°	✓	Fig.3	2.9	4,800	
	MFH 6000R-14-8T	●	8	6.000	5.094	5.330	5.291	4.880	2.000	2.835	-	2.48	1.496	0.433	0.752			+10°	-6°	×	Fig.3	4.5	4,200	

Spare Parts and Applicable Inserts (Inch Size)

* Refer to LD dimensions in figure below ● : U.S. Stock

Part Number	Spare Parts				Applicable Inserts ➔ P23
	Clamp Screw	Wrench		Anti-Seize Compound	
MFH2000R-10-4T	SB-4090TRPN	DTPM-15 Recommended Torque for Insert Clamp 3.5 N·m	TTP-20 Recommended Torque for Insert Clamp 4.5 N·m	P-37	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL
MFH2000R-10-5T					
MFH2500R-10-5T					
MFH2500R-10-6T					
MFH3000R-10-7T					
MFH2000R-14-4T	SB-50120TRP	TTP-20 Recommended Torque for Insert Clamp 4.5 N·m	P-37	P-37	SOMT140520ER-GM SOMT140520ER-LD SOMT140514ER-FL
MFH2500R-14-4T					
MFH2500R-14-5T					
MFH3000R-14-5T					
MFH3000R-14-6T					
MFH4000R-14-6T					
MFH4000R-14-7T					
MFH5000R-14-7T					
MFH6000R-14-8T					



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 (P-37) thinly on portion of taper and thread prior to installation.

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

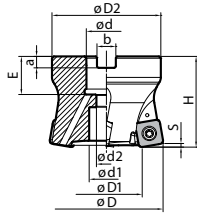


Fig.1

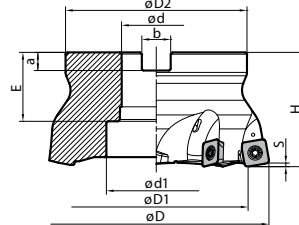


Fig.2

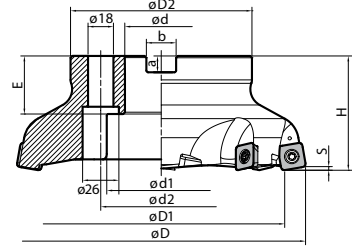


Fig.3

Toolholder Dimensions with SOMET10 Inserts (Metric Size)

Bore Dia.	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	*1 S _L	A.R.	R.R.				
Inch Spec	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°	✓	Fig.1	0.4	10,000
	050R-10-5T	○	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
	MFH 063R-10-5T	○	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
	063R-10-6T	○	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
	MFH 080R-10-7T	○	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 Spec	MFH 050R-10-4T-M	○	4	50	33	37.5	36.5	47	22	19	11	50	21	6.3	10.4			+10°	-5°	✓	Fig.1	0.4	10,000
	050R-10-5T-M	○	5	50	33	37.5	36.5	47	22	19	11	50	21	6.3	10.4			+10°	-5°			0.4	10,000
	MFH 063R-10-5T-22M	○	5	63	46	50.5	49.5	60	22	19	11	50	21	6.3	10.4			+10°	-4°			0.7	8,800
	063R-10-6T-22M	○	6	63	46	50.5	49.5	60	22	19	11	50	21	6.3	10.4			+10°	-4°			0.7	8,800
	063R-10-5T-27M	○	5	63	46	50.5	49.5	60	27	20	13	50	24	7	12.4			+10°	-4°			0.7	8,800
	063R-10-6T-27M	○	6	63	46	50.5	49.5	60	27	20	13	50	24	7	12.4			+10°	-4°			0.7	8,800
	MFH 080R-10-7T-M	○	7	80	63	67.5	66.5	76	27	20	13	63	24	7	12.4			+10°	-4°			1.6	7,600

Toolholder Dimensions with SOMET14 Inserts (Metric Size)

Bore Dia.	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	*1 S _L	A.R.	R.R.				
Inch Spec	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°	✓	Fig.1	0.6	7,400
	063R-14-5T	○	5	63	40	46	45	60	0.875"	19	11	50	0.748"	0.197"	0.331"				-10°		Fig.1	0.6	7,400
	MFH 080R-14-5T	○	5	80	57	63	62	76	1.250"	26	17	63	1.260"	0.315"	0.500"				-8°		Fig.1	1.3	6,400
	080R-14-6T	○	6	80	57	63	62	76	1.250"	26	17	63	1.260"	0.315"	0.500"				-8°		Fig.1	1.3	6,400
	MFH 100R-14-6T	○	6	100	77	83	82	96	1.250"	26	17	63	1.260"	0.315"	0.500"				-7°		Fig.1	2.4	5,600
	100R-14-7T	○	7	100	77	83	82	96	1.250"	26	17	63	1.260"	0.315"	0.500"				-7°		Fig.1	2.4	5,600
	MFH 125R-14-7T	○	7	125	102	108	107	100	1.500"	55	-	63	1.496"	0.394"	0.625"				-7°		Fig.2	2.9	4,800
	MFH 160R-14-8T	○	8	160	137	143	142	100	2.000"	72	-	63	1.496"	0.433"	0.750"				-6°	×	Fig.2	3.9	4,200
Metric Spec	MFH 063R-14-4T-22M	○	4	63	40	46	45	60	22	19	11	50	21	6.3	10.4	2	5	+10°	-10°	✓	Fig.1	0.6	7,400
	063R-14-5T-22M	○	5	63	40	46	45	60	22	19	11	50	21	6.3	10.4				-10°		Fig.1	0.6	7,400
	063R-14-4T-27M	○	4	63	40	46	45	60	27	20	13	50	24	7	12.4				-10°		Fig.1	0.6	7,400
	063R-14-5T-27M	○	5	63	40	46	45	60	27	20	13	50	24	7	12.4				-10°		Fig.1	0.6	7,400
	MFH 080R-14-5T-M	○	5	80	57	63	62	76	27	20	13	63	24	7	12.4				-8°		Fig.1	1.4	6,400
	080R-14-6T-M	○	6	80	57	63	62	76	27	20	13	63	24	7	12.4				-8°		Fig.1	1.4	6,400
	MFH 100R-14-6T-M	○	6	100	77	83	82	96	32	26	17	63	28	8	14.4				-7°		Fig.2	2.4	5,600
	100R-14-7T-M	○	7	100	77	83	82	96	32	26	17	63	28	8	14.4				-7°		Fig.2	2.4	5,600
	MFH 125R-14-7T-M	○	7	125	102	108	107	100	40	55	-	63	33	9	16.4				-7°		Fig.2	2.8	4,800
	MFH 160R-14-8T-M	○	8	160	137	143	142	100	40	68	66.7	63	32	9	16.4				-6°	×	Fig.3	3.7	4,200

Spare Parts and Applicable Inserts [P18](#)

○ : World Express (Shipping: 7-10 Business Days)

*1 Refer to LD cutting edge dimensions in figure on Page 12

Recommended Cutting Conditions [P24-25](#)

*2 Dimension in () is when mounting LD

Spare Parts and Applicable Inserts (Metric Size)

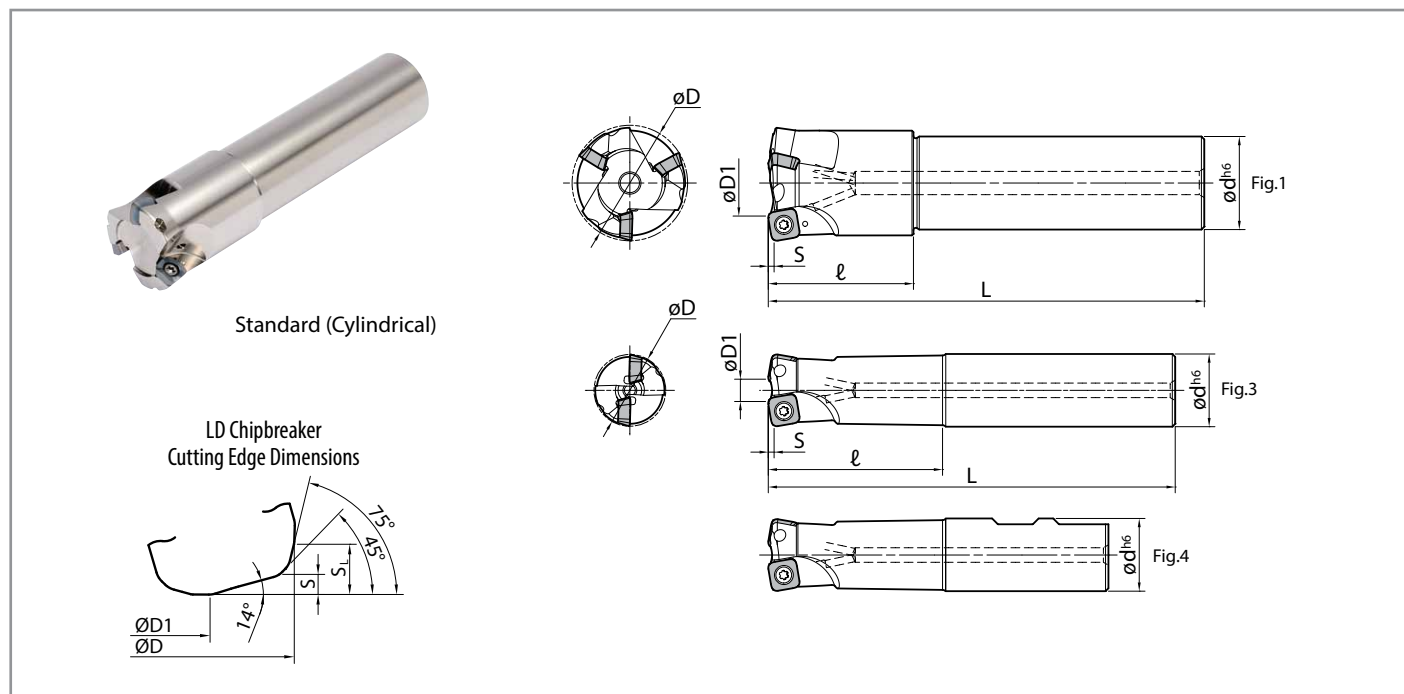
Part Number	Spare Parts					Applicable Inserts  P23
	Clamp Screw	Wrench		Anti-Seize Compound	Mounting Bolt	
		DTPM 	TTP 			
MFH050R-10-...(-M)	SB-4090TRPN	DTPM-15 Recommended Torque for Insert Clamp 3.5 N-m		P-37	HH10×30	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL
MFH063R-10-...(-22M)					HH10×30	
MFH063R-10-...-27M					HH12×35	
MFH080R-10-...					HH16×40	
MFH080R-10-...-M					HH12×35	
MFH063R-14-...(-22M)	SB-50120TRP	TTP-20 Recommended Torque for Insert Clamp 4.5 N-m		P-37	HH10×30	SOMT140520ER-GM SOMT140520ER-LD SOMT140514ER-FL
MFH063R-14-...-27M					HH12×35	
MFH080R-14-...					HH16×40	
MFH080R-14-...-M					HH12×35	
MFH100R-14-...					HH16×40	
MFH100R-14-...-M					-	
MFH125R-14-...					-	
MFH160R-14-...					-	

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 (P-37) thinly on portion of taper and thread prior to installation.

Holders on Page  **P17**


Toolholder Dimensions with SOMT10 Inserts (Inch Size)

Shank	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.					
					GM	LD	FL												
Standard Shank (Weldon)	MFH 1000-W100-10-2T	●	2	1.000	0.331	0.508	0.469	1.000	5.500	3.173	0.059	0.138	+10°	-5°	✓	Fig.4	0.4	17,000	
	MFH 1250-W125-10-2T	●	2	1.250	0.581	0.758	0.719	1.250	6.000	2.750						Fig.4	0.8	14,000	
	1250-W125-10-3T	●	3	1.250	0.581	0.758	0.719	1.250	6.000	2.750						Fig.4	0.8	14,000	
	MFH 1500-W150-10-3T	●	3	1.500	0.831	1.008	0.969	1.500	6.000	2.000						Fig.4	0.8	11,500	
	1500-W150-10-4T	●	4	1.500	0.831	1.008	0.969	1.500	6.000	2.000						Fig.4	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						Fig.3	0.8	17,000	
	MFH 1250-S125-10-2T-8	●	2	1.250	0.581	0.758	0.719	1.250	8.000	4.750						Fig.3	0.8	14,000	
	MFH 1500-S125-10-4T10	●	4	1.500	0.831	1.008	0.969	1.250	10.000	2.000						Fig.1	0.8	11,500	

● : U.S. Stock

Spare Parts and Applicable Inserts (Inch Size)

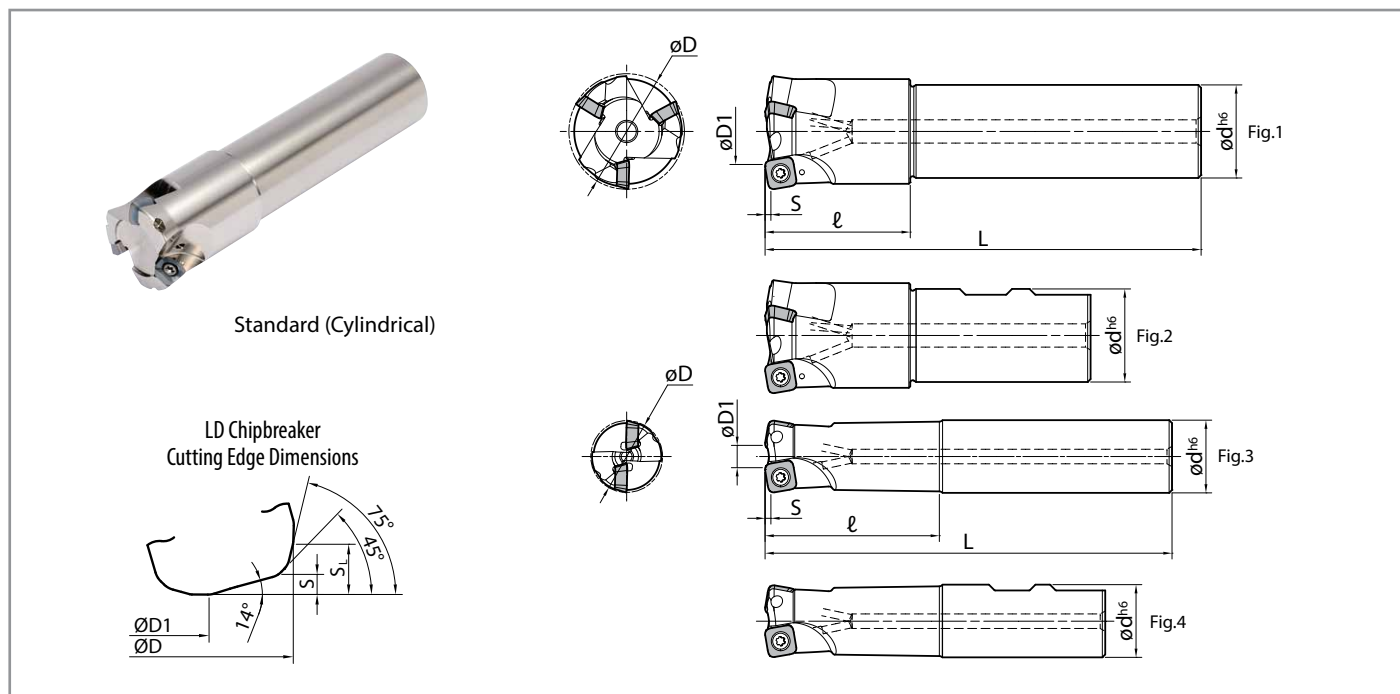
Part Number	Spare Parts			Applicable Inserts ➡ P23
	Clamp Screw 	Wrench 	Anti-Seize Compound 	
MFH...-10-...	SB-4075TRP	DTPM-15 Recommended Torque for Insert Clamp 3.5 N·m	P-37	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL

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 (P-37)** thinly on portion of taper and thread prior to installation.

 Recommended Cutting Conditions ➡ **P24-25**


Toolholder Dimensions with SOMT10 Inserts (Metric Size)

Shank	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°	✓	Fig.3	0.4	17,000	
	MFH 28-S25-10-2T	○	2	28	11	15.5	14.5	25	140	40						Fig.1	0.5	15,500	
	MFH 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	
	MFH 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	
	MFH 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°	✓	Fig.4	0.4	17,000	
	MFH 32-W32-10-3T	○	3	32	15	19.5	18.5	32	131	70						Fig.4	0.7	14,000	
	MFH 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°	✓	Fig.3	0.6	17,000	
	MFH 28-S25-10-2T-200	○	2	28	11	15.5	14.5	25	200	40						Fig.1	0.7	15,500	
	MFH 32-S32-10-2T-200	○	2	32	15	19.5	18.5	32	200	120						Fig.3	1.0	14,000	
	MFH 35-S32-10-2T-200	○	2	35	18	22.5	21.5	32	200	50						Fig.1	1.4	13,000	
	MFH 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°	✓	Fig.3	1.0	17,000	
	MFH 28-S25-10-2T-300	○	2	28	11	15.5	14.5	25	300	40						Fig.1	1.1	15,500	
	MFH 32-S32-10-2T-300	○	2	32	15	19.5	18.5	32	300	180						Fig.3	1.6	14,000	
	MFH 35-S32-10-2T-300	○	2	35	18	22.5	21.5	32	300	50						Fig.1	1.7	13,000	
	MFH 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 ○ : World Express (Shipping: 7-10 Business Days)

Spare Parts and Applicable Inserts (Metric Size)

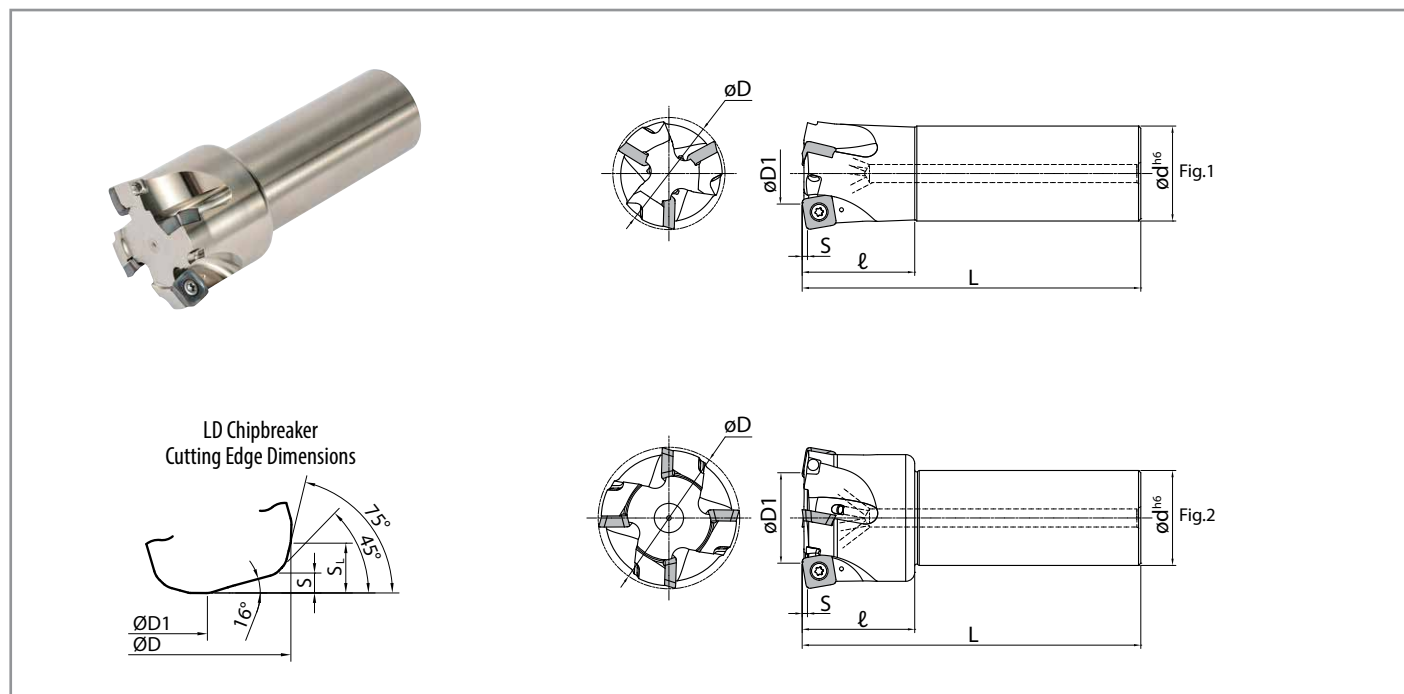
Part Number	Spare Parts			Applicable Inserts P23
	Clamp Screw	Wrench	Anti-Seize Compound	
MFH...-10-...	SB-4075TRP	DTPM-15 Recommended Torque for Insert Clamp 3.5 N·m	P-37	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL

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 (P-37) thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions P24-25


Toolholder Dimensions with SOMET14 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	2	5	+10°	-10°	✓	Fig.1	1.4	8,800
MFH 63-S42-14-4T	○	4	63	40	46	45	42	150	50	2	5	+10°	-10°	✓	Fig.2	1.7	7,400
MFH 80-S42-14-5T	○	5	80	57	63	62	42	150	50	2	5	+10°	-8°	✓	Fig.2	2.3	6,400

○ : World Express (Shipping: 7-10 Business Days)

Spare Parts and Applicable Inserts (Metric Size)

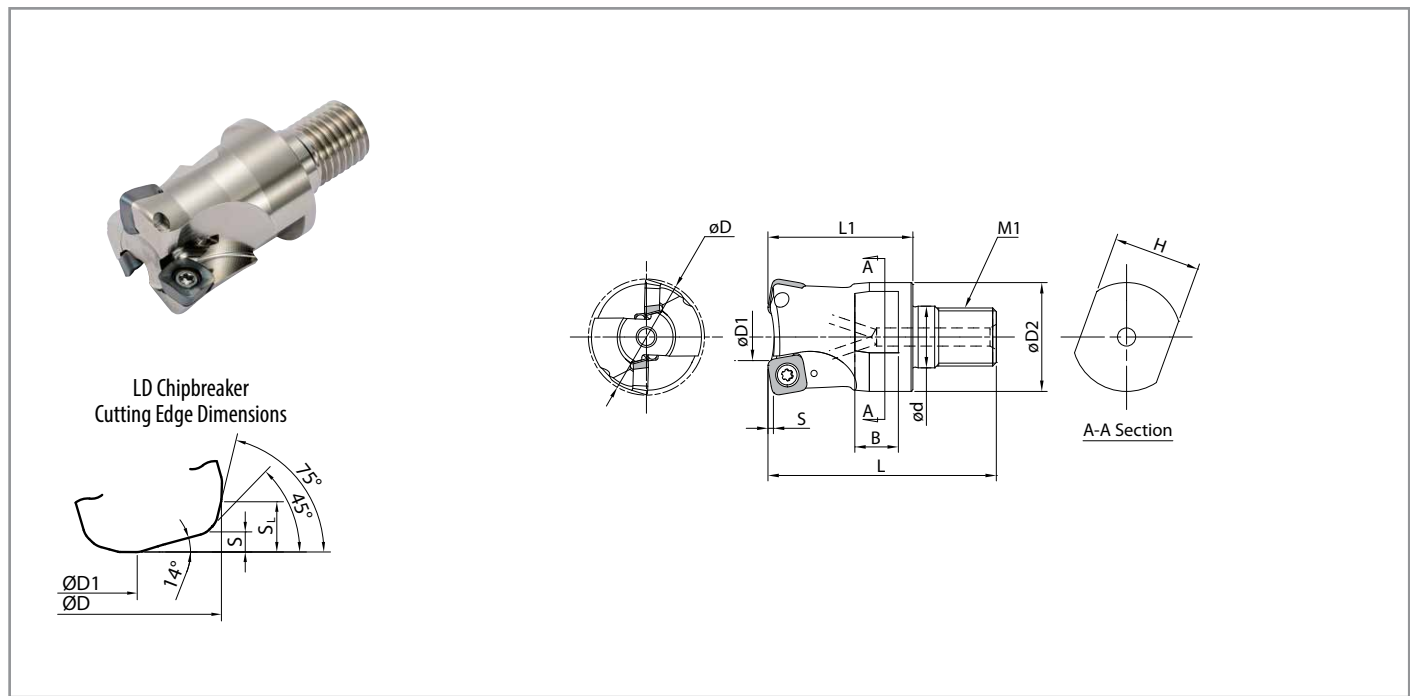
Part Number	Spare Parts			Applicable Inserts ➡ P23
	Clamp Screw 	Wrench 	Anti-Seize Compound 	
MFH...-14-...	SB-50120TRP	TTP-20 Recommended Torque for Insert Clamp 4.5 N·m	P-37	SOMT140S20ER-GM SOMT140S20ER-LD SOMT140S14ER-FL

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 (P-37)** thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions ➡ **P24-25**



Toolholder Dimensions

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.		
				GM	LD	FL													
MFH 25-M12-10-2T	○	2	25	8	12.5	11.5	23	12.5	57	35	M12×P1.75	19	10	1.5 *(1.2)	3.5	+10°	-5°	✓	17,000
MFH 28-M12-10-2T	○	2	28	11	15.5	14.5	23	12.5	57	35	M12×P1.75	19	10						15,500
MFH 32-M16-10-2T	○	2	32	15	19.5	18.5	30	17	63	40	M16×P2.0	24	12						14,000
32-M16-10-3T	○	3	32	15	19.5	18.5	30	17	63	40	M16×P2.0	24	12						14,000
MFH 35-M16-10-2T	○	2	35	18	22.5	21.5	30	17	63	40	M16×P2.0	24	12						13,000
35-M16-10-3T	○	3	35	18	22.5	21.5	30	17	63	40	M16×P2.0	24	12						13,000
MFH 40-M16-10-3T	○	3	40	23	27.5	26.5	30	17	63	40	M16×P2.0	24	12						11,500
40-M16-10-4T	●	4	40	23	27.5	26.5	30	17	63	40	M16×P2.0	24	12						11,500

* Dimension in () is when mounting LD ○ : World Express (Shipping: 7-10 Business Days)

Spare Parts and Applicable Inserts

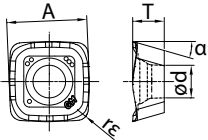
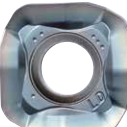
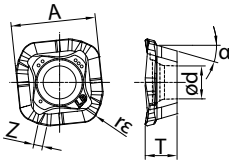
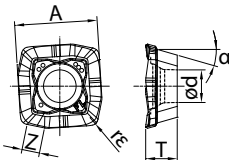
Part Number	Spare Parts			Applicable Inserts ➡ P23
	Clamp Screw	Wrench	Anti-Seize Compound	
MFH...-10-...	SB-4075TRP	DTPM-15 Recommended Torque for Insert Clamp 3.5 N·m	P-37	SOMT100420ER-GM SOMT100420ER-LD SOMT100420ER-FL

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 (P-37) thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions ➡ P24-25

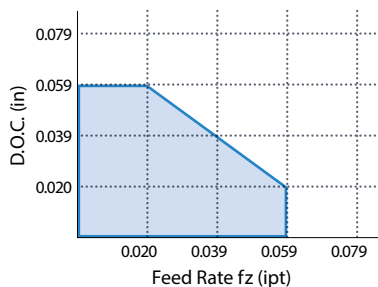
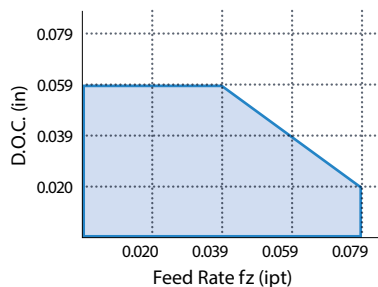
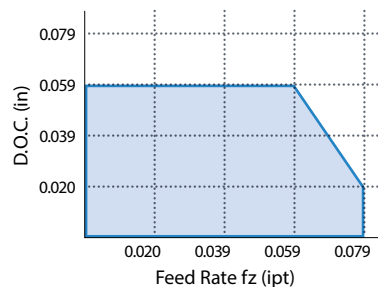
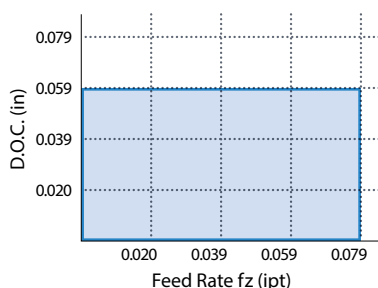
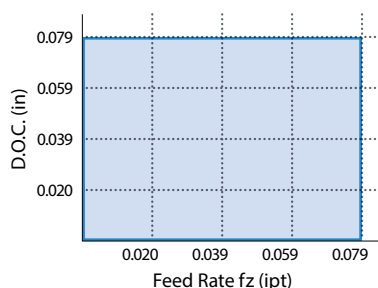
Usage Classification		P	Carbon Steel / Alloy Steel						☆	★		
			Mold Steel						☆	★		
★ : Roughing / 1st Choice ☆ : Roughing / 2nd Choice ■ : Finishing / 1st Choice □ : Finishing / 2nd Choice		M	Austenitic Stainless Steel						★	☆		★
			Martensitic Stainless Steel						☆			
		K	Gray Cast Iron									★
			Nodular Cast Iron									★
		S	Ni-base Heat Resistant Alloy						★			☆
			Titanium Alloy						★		☆	
		H	Hardened Materials							□		
Insert		Part Number	Dimension (in)					Angle (°)	MEGACOAT NANO			CVD
			A	T	Ød	Z	rε	α	PR1535	PR1525	PR1510	CA6535
		SOMT 100420ER-GM	0.406	0.180	0.181	-	0.079	16°	●	●	●	●
General Purpose		SOMT 140520ER-GM	0.557	0.219	0.228	-	0.079	16°	●	●	●	●
		SOMT 100420ER-LD	0.411	0.180	0.181	0.035	0.079	16°	●	●	●	●
Large D.O.C.		SOMT 140520ER-LD	0.581	0.219	0.228	0.063	0.079	16°	●	●	●	●
		SOMT 100420ER-FL	0.411	0.180	0.181	0.055	0.079	16°	●	●	●	●
Wiper Edge		SOMT 140514ER-FL	0.574	0.219	0.228	0.122	0.055	16°	●	●	●	○

Toolholder Reference Page

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P22

Cutting Performance (GM, FL Chipbreakers)

● : U.S. Stock ○ : World Express (Shipping: 7-10 Business Days)

MFH1000-W100-10-2T
MFH25-S25-10-2T

MFH1250-W125-10-○T
MFH32-S32-10-○T

MFH1500-W150-10-○T
MFH40-S32-10-○T

MFH2000R ~ 3000R-10-○T
MFH050R ~ 080R-10-○T

MFH...-14-○T

LD Chipbreaker:

MAX D.O.C. for LD chipbreaker is 0.197" (0.138" for SOMT10)

Please refer to P24-25 for feed rate

End Mill:

Please refer to the application map above

Face Mill:

MAX feed rate (inches per tooth) fz = 0.079ipt

Chipbreaker	Workpiece	Holder Part Number 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	-

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

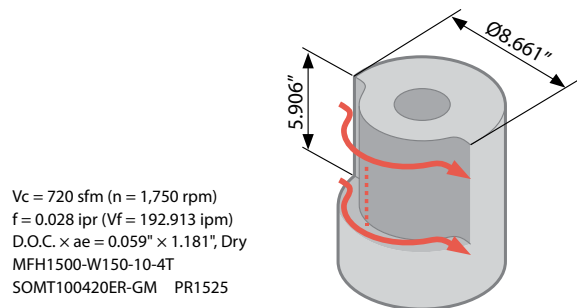
• For finishing, maximum recommended feed is f = 0.059 ipt for **SOMT14-LD** type, f = 0.035 ipt for **SOMT10-LD** type, f = 0.118 ipt for **SOMT14-FL** type, f = 0.055 ipt for **SOMT10-FL** type

Chipbreaker	Workpiece	Holder Part Number and Feed Rate (fz: ipf)					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
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 ipf for **SOMT14-LD** type, f = 0.035 ipf for **SOMT10-LD** type, f = 0.118 ipf for **SOMT14-FL** type, f = 0.055 ipf for **SOMT10-FL** type

Case Studies

Construction Machine Parts 1025



Cutting Time

PR1525

950 Sec

75%
Cutting Time

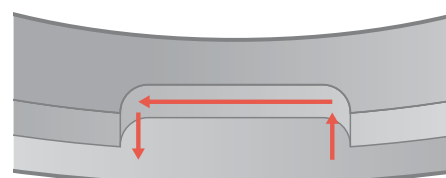
Competitor N (90° Cutter)

3,800 Sec

PR1525 features a higher number of passes compared to Competitor N, but the machining time was reduced by 75% because the feed rate can be increased by 7 times.
 (User Evaluation)

Clutch 304

Reduced Chattering



Vc = 400 sfm (n = 1,190 rpm), fz = 0.047 ipf (Vf = 112.205 ipm)
 D.O.C. × ae = 0.039" × 0.787", Dry
 MFH1250-W125-10-2T (2 Flutes), SOMT100420ER-GM (PR1535)

Cutting Time

PR1535

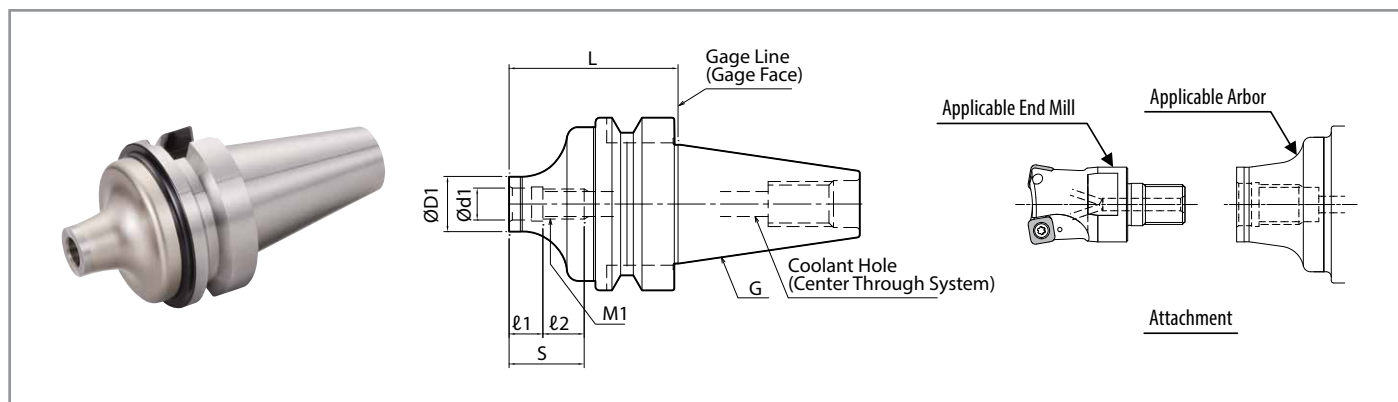
58 cc/min

Machining Efficiency
1.6x

Competitor M

36 cc/min

PR1535 shows stable machining while Competitor M generated chattering.
 PR1535 maintained a good cutting edge condition with stable machining.
 (User Evaluation)



Holder Dimensions

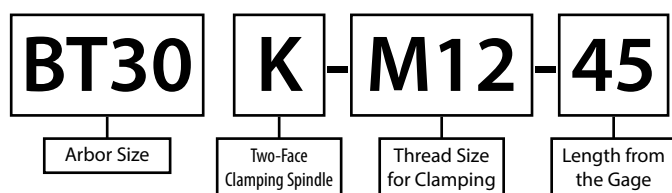
Part Number	Stock	Dimensions (mm)							Coolant Hole	Arbor (Two Face Clamping)	Applicable End Mill (Head)
		L	ØD1	Ød1	S	ℓ1	ℓ2	M1		G	
BT30K- M08-45	○	45	14.7	8.5	20	9	11	M8×P1.25	✓	BT30	MFH..-M08-..
	○	45	18.7	10.5	21		12	M10×P1.5		BT30	MFH..-M10-..
	○	45	23	12.5	24		15	M12×P1.75		BT30	MFH..-M12-..
BT40K- M08-55	○	55	14.7	8.5	20	9	11	M8×P1.25	✓	BT40	MFH..-M08-..
	○	60	18.7	10.5	21		12	M10×P1.5		BT40	MFH..-M10-..
	○	55	23	12.5	24		15	M12×P1.75		BT40	MFH..-M12-..
	○	65	30	17	25		16	M16×P2.0		BT40	MFH..-M16-..

Actual End Mill Depth (BT Arbor Metric)

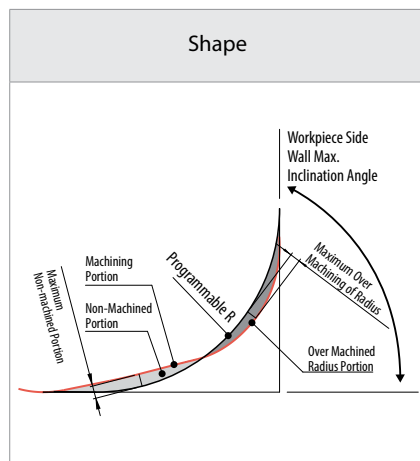
○ : World Express (Shipping: 7-10 Business Days)

Arbor Part Number	Applicable End Mill			Actual End Mill Depth (mm)	
	Part Number	Cutting Dia. (mm)	Dimension (mm)	M	L2
		ØD	L1		
BT30K- M08-45	...16-M08-...	Ø16	25	31.8	6.8
	...17-M08-...	Ø17	25	33.2	8.2
	...18-M08-...	Ø18	25	34.2	9.2
	...20-M10-...	Ø20	30	36.8	6.8
	...22-M10-...	Ø22	30	39.2	9.2
	...25-M12-...	Ø25	35	42.8	7.8
BT40K- M08-55	...28-M12-...	Ø28	35	45.5	10.5
	...16-M08-...	Ø16	25	31.7	6.7
	...17-M08-...	Ø17	25	33.2	8.2
	...18-M08-...	Ø18	25	34.3	9.3
	...20-M10-...	Ø20	30	38.7	8.7
	...22-M10-...	Ø22	30	44.5	14.5
BT40K- M10-60	...25-M12-...	Ø25	35	44.6	9.6
	...28-M12-...	Ø28	35	47.6	12.6
	...32-M16-...	Ø32	40	51.2	11.2
	...35-M16-...	Ø35	40	60.2	20.2
	...40-M16-...	Ø40	40	64	24
	...40-M16-...	Ø40	40	64	24

Arbor Identification System



Approximate Programming Radius Adjustment



MFH Micro			MFH Mini		
Programmable R (in)	Maximum Over Machining of Radius (in)	Over Machined Radius Portion (in)	Programmable R (in)	Cutter (in)	Maximum Non-machined Portion (in)
R0.039	0	0.0083	R0.063 (Recommended)	0	0.0154
R0.047 (Recommended)	0	0.0067	R0.079	0.0035	0.0138
R0.059	0.0032	0.0039	R0.098	0.0102	0.0102
R0.079	0.0110	0.0004	R0.118	0.0181	0.0067

MFH Micro / MFH Mini: Cutting Edge Angle $\gamma(^{\circ}) = 12^{\circ}$, Side Wall Max. Inclination Angle = 90°

MFH (GM)						
Cutter	Insert	Cutting Edge Angle $\gamma(^{\circ})$	Programmable R (in) (Recommended)	Cutter (in)	Maximum Non-machined Portion (in)	Side Wall Max. Inclination Angle
MFH...-10-...	GM	10°	R0.118	0	0.034	90°
	LD	14°	R0.148	0	0.027	65°
	FL	14°	R0.118	0	0.035	80°
MFH...-14-...	GM	10°	R0.148	0	0.054	90°
	LD	16°	R0.197	0	0.042	65°
	FL	13°	R0.118	0	0.054	80°

Ramping Reference Data

Cutter Type	Cutter Dia. ØD (in)	-	0.375"	0.500"	-	0.625"
	Cutter Dia. ØD (mm)	8mm	10mm	12mm	14mm	16mm
MFH Micro	Max. Ramping Angle $\alpha_{\max} (^{\circ})$	4.0°	3.0°	2.0°	1.5°	1.2°
	$\tan \alpha_{\max}$	0.070	0.052	0.035	0.026	0.021

Cutter Type	Cutter Dia. ØD (in)	0.625"	-	-	0.750"	-	1.000"	-	1.250"	1.500"	2.000"
	Cutter Dia. ØD (mm)	16mm	17mm	18mm	20mm	22mm	25mm	28mm	32mm	40mm	50mm
MFH Mini	Max. Ramping Angle $\alpha_{\max} (^{\circ})$	2.8°	2.5°	2.1°	1.7°	1.4°	1.2°	1°	0.8°	0.5°	0.4°
	$\tan \alpha_{\max}$	0.049	0.042	0.037	0.030	0.024	0.021	0.017	0.014	0.009	0.007

Cutter Type	Cutter Dia. ØD (in)	1.000"	-	1.250"	-	1.500"	2.000"	2.500"	3.000"
	Cutter Dia. ØD (mm)	25mm	28mm	32mm	35mm	40mm	50mm	63mm	80mm
MFH (MFH...-10-...)	Max. Ramping Angle $\alpha_{\max} (^{\circ})$	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

Cutter Type	Cutter Dia. ØD (in)	2.000"	2.500"	3.000"	4.000"	5.000"	6.000"
	Cutter Dia. ØD (mm)	50mm	63mm	80mm	100mm	125mm	160mm
MFH (MFH...-14-...)	Max. Ramping Angle $\alpha_{\max} (^{\circ})$	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

Decrease Ramping Angle if Chips Become Excessively Long

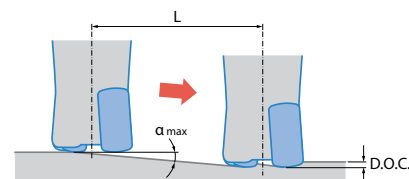
Ramping angle should be under $\alpha_{\max}$ (maximum ramping angle) in the cutting conditions above

Reduce recommended feed rate in recommended cutting conditions 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

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

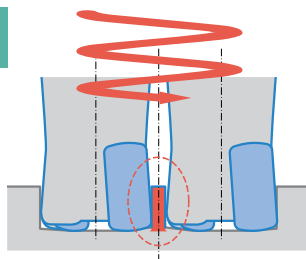


Helical Milling

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

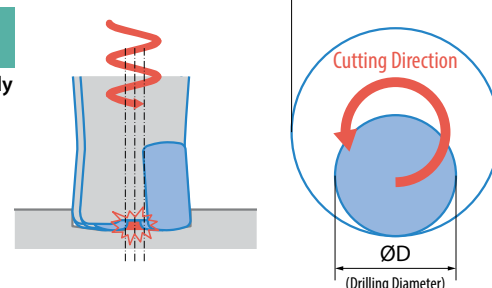
Exceeding Max. Machining Dia.

Center Core Remains After Machining



Under Min. Machining Dia.

Center Core Hits Holder Body



Cutter Type	Min. Drilling Dia. ØDh1	Max. Drilling Dia. ØDh2	Max. Ramping Depth per Cycle
MFH Micro	2xØD-0.138"	2xØD-0.079"	0.020"
MFH Mini	2xØD-0.315"	2xØD-0.079"	0.039"
MFH (MFH...-10-...)	2xØD-0.709"	2xØD-0.079"	GM = 0.059"
MFH (MFH...-14-...)	2xØD-0.984"	2xØD-0.079"	GM = 0.079"

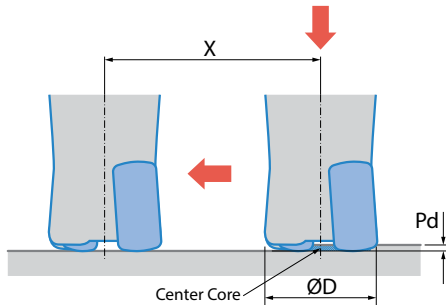
- Keep machine depth per rotation less than max D.O.C. (S) in cutter dimensions chart
- Feed rate should be reduced to 50% of the recommended cutting conditions
- Use caution to eliminate incidences caused by producing long chips

Drilling

Cutter Type	Max. Drilling Depth (Pd)	Min. Cutting Length (X) for Flat Bottom Surface
MFH Micro	0.020"	ØD-0.138"
MFH Mini	0.039"	ØD-0.354"

Unit: inch

Cutter Type	GM		LD		FL	
	Max. Drilling Depth (Pd)	Min. Cutting Length (X) for Flat Bottom Surface	Max. Drilling Depth (Pd)	Min. Cutting Length (X) for Flat Bottom Surface	Max. Drilling Depth (Pd)	Min. Cutting Length (X) for Flat Bottom Surface
MFH (MFH...-10-...)	0.059"	ØD-0.709"	0.059"	ØD-0.551"	0.059"	ØD-0.591"
MFH (MFH...-14-...)	0.079"	ØD-0.945"	0.079"	ØD-0.709"	0.079"	ØD-0.748"



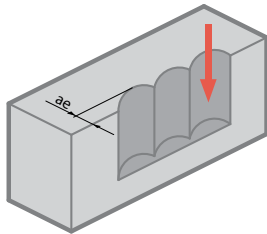
[Drilling Depth]

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

Traversing after Drilling

- ① It is recommended to reduce feed by 25% of recommendation on **Page 24-25** until Center Core is removed
- ② Axial feed rate recommendation per revolution is 0.008 ipr while drilling

Plunging



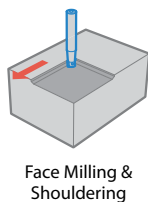
LD and FL chipbreakers are not available for plunging

Reduce feed rate to $fz \leq 0.008 \text{ipt}$ when plunging

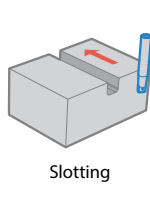
Cutter Type	Insert	Maximum Width of Cut (ae)
MFH Micro	LPGT01...	0.067"
MFH Mini	LOGU01...	0.138"
MFH (MFH...-10-...)	SOMT10...	0.315"
MFH (MFH...-14-...)	SOMT14...	0.453"

3D Machining

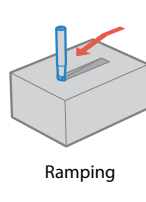
GM chipbreaker is available for all applications.



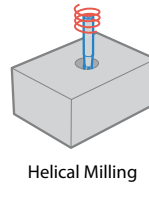
Face Milling & Shouldering



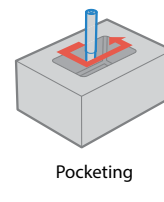
Slotting



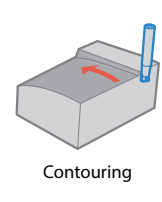
Ramping



Helical Milling



Pocketing



Contouring

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

Some applications are not available depending on chipbreaker.

For FL and LD type, there is a limit of rising wall angle during contouring.



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