KYOCERA

MFH-RAPTOR

High Feed Milling Series

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

NEW PR18 Series Inserts with MEGACOAT NANO EX Coating Technology

MFH-MAX

Small Diameter/ Larger Depth of Cut

Ø1.000"~Ø3.000" | Ø22mm~Ø80mm

MFH-RAPTOR

Large Diameter

Ø1.000"~Ø6.000" | Ø25mm~Ø160mm

MFH-RAPTOR MiNi

Small Diameter/ Fine Pitch Type

Ø0.625"~Ø2.000" | Ø16mm~Ø50mm

MFH-RAPTOR MiCRO

Micro Diameter

Ø0.375"~Ø0.625" | Ø8mm~Ø16mm

MFH Series

Product Video

View Online

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-MAX

P4

Small Diameter/ Larger Depth of Cut

Ø1.000"~Ø3.000" | Ø22mm~Ø80mm

MFH-RAPTOR

P12

Large Diameter

Ø1.000"~Ø6.000" | Ø25mm~Ø160mm

MFH-RAPTOR MiNi

P23

Small Diameter/ Fine Pitch Type

Ø0.625"~Ø2.000" | Ø16mm~Ø50mm

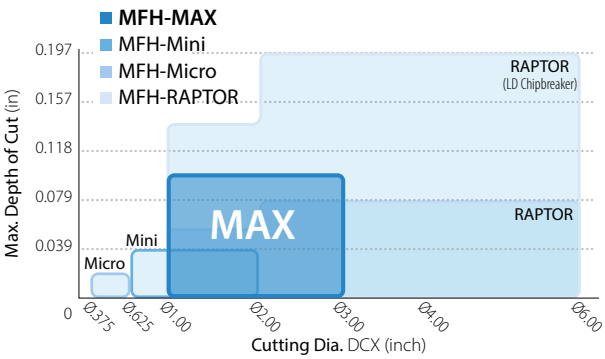
MFH-RAPTOR MiCRO

P30

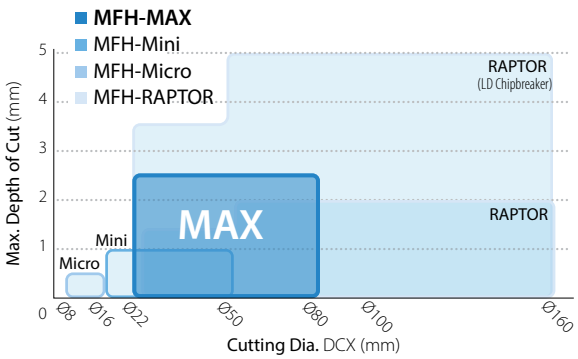
Micro Diameter

Ø0.375"~Ø0.625" | Ø8mm~Ø16mm

MFH-Series Inch Diameter Range



MFH-Series Metric Diameter Range



1 Reduced Chattering with Convex Cutting Edge Design

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

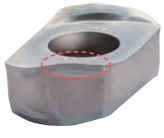
Cutting Force and Vibration when Approaching the Workpiece (D.O.C. = Half of Cutter Diameter)

Convex Edge Design

MFH Micro
LPGT Insert

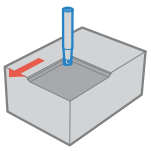
MFH Mini
LOGU Insert

MFH
SOMT Insert

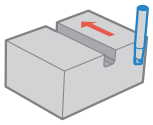


MFH-MAX
LOMU Insert

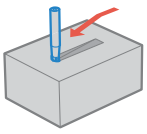
2 Wide Application Range for Multiple Metalworking Processes



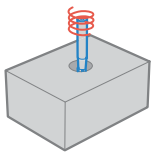
Face Milling & Shouldering



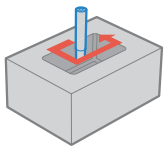
Slotting



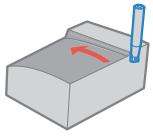
Ramping



Helical Milling



Pocketing



Contouring

For Using MFH:
GM and **GH** chipbreakers are 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 35**)

Next-generation PVD coating for milling NEW

PR18 Series

Kyocera's Nano Layer Coating Technology
Longer Tool Life with Next-generation Coating for Milling

MEGACOAT NANO EX | Milling |

For steel, stainless steel and cast iron

PR1825/PR1835/PR1810 New development MEGACOAT NANO EX

PR1825 P
For Steel (Wear resistance oriented)

PR1835 M
For Steel (Stability oriented)
1st Recommendation for stainless steel

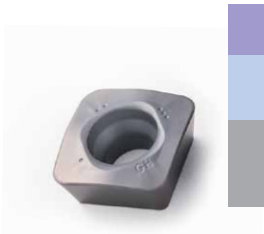
PR1810 K
For Cast iron

Workpiece	P Steel					M Stainless steel					K Cast iron				
ISO	01	10	20	30	40	01	10	20	30	40	01	10	20	30	40
Grade		Wear resistance oriented PR1825					1st Recommendation PR1835					1st Recommendation PR1810			
		Stability oriented PR1835													

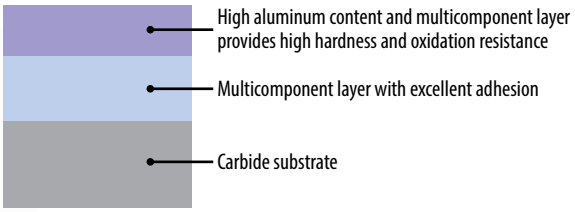
PR015S
MEGACOAT HARD

Thermal property of the substrate reduces cracks and notch wear with a high hardness and heat-resistant coating for improved wear resistance when machining in hardened materials

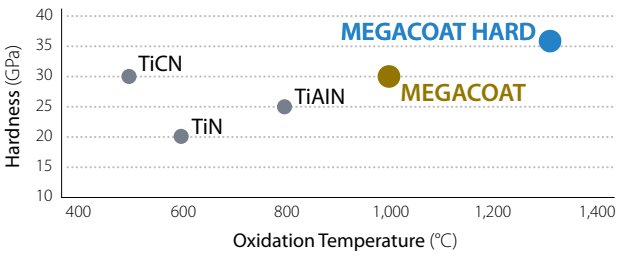
MEGACOAT HARD Improves Wear Resistance with High Hardness and High Heat-resistant PVD Layer



Coating Pattern Diagram



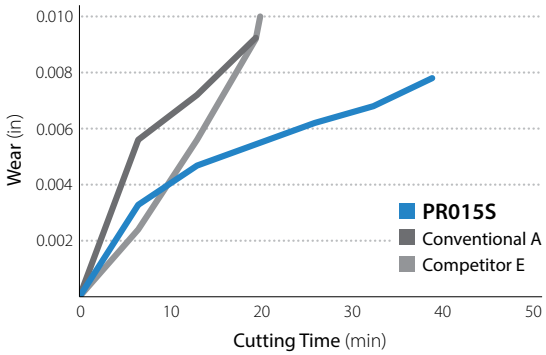
Coating Properties (Internal Evaluation)



Low Oxidation Resistance High

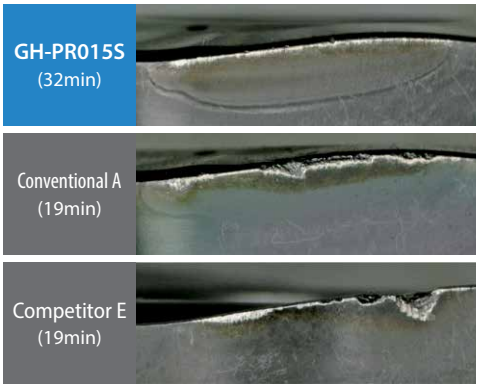
Combining GH chipbreaker and grade PR015S reduces heat cracking and improves fracture resistance for stable machining in hardened material

Cutting Performance Comparison (Internal Evaluation)



Cutting Conditions:
Vc = 165 sfm,
fz = 0.008ipt,
D.O.C. = 0.039" × 1.240",
Wet
SOMT140520ER-GH
Competitor Tough Edge Chipbreaker (Flat type)
Workpiece: D2 (55HRC)

Cutting Edge



MFH-MAX

(Cutter Dia. Ø1.000" ~ Ø3.000")
(Cutter Dia. Ø22mm ~ Ø80mm)

Product Video

View Online

High Feed Milling with a Larger Depth of Cut

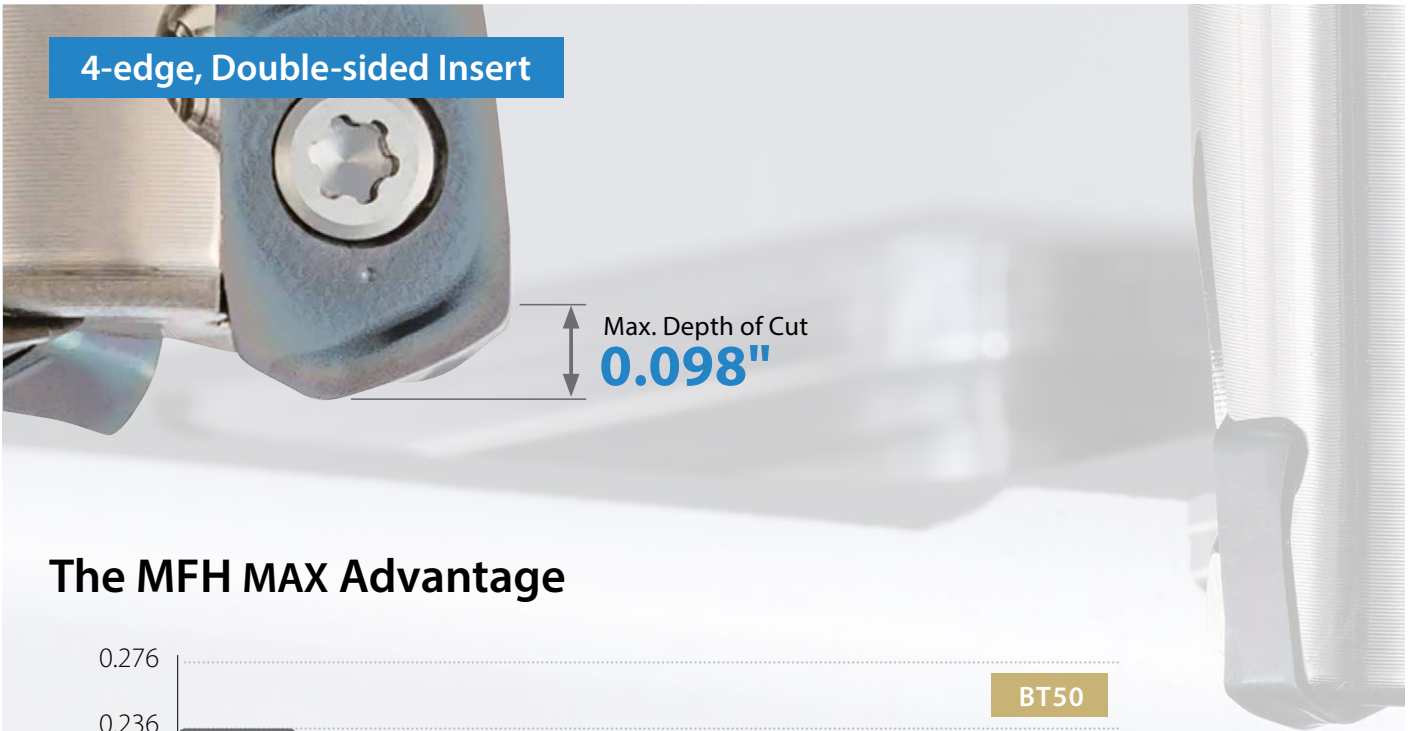
Newest Addition to the MFH High Feed Milling Family with Larger D.O.C. Capabilities

Excellent Performance in Various Applications, including Automotive Parts, Difficult-to-cut Materials, and Mold Machining

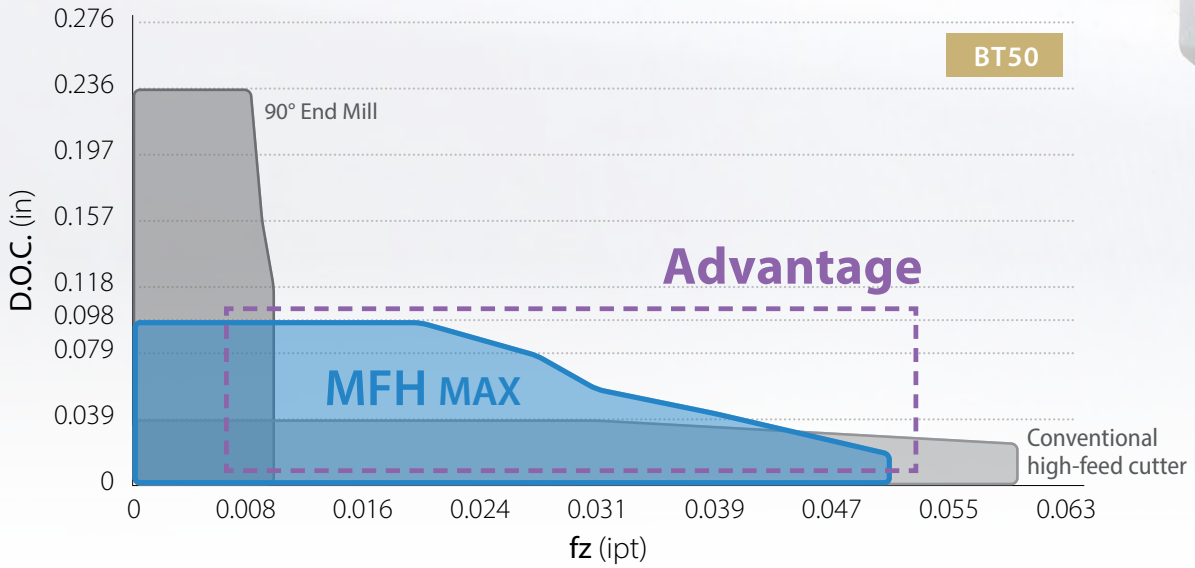
1 High Feed Milling with Large Depth of Cut Capabilities

A small 4-edge, double-sided insert supports depths of cut up to 0.098" (2.5mm) with cutting diameters available from Ø1.000" and Ø22mm.

Achieves high efficiency machining in various shouldering, slotting, helical milling, and ramping applications.



The MFH MAX Advantage



Vc = 490 sfm, ae = 0.492" (ae/DCX = 50%), 1049 Dry Ø1.000" Overhang length 2.362" BT50

Higher Efficiency at 0.098" Max. Depth of Cut

1 Better Alternative to Conventional 90° End Mills (Roughing to Medium-Finishing)

Automotive Suspension Parts

Automotive Parts

General Steel Machining

- **Increased productivity with large D.O.C. machining**
- **High reliability in unstable machining environments**
  Long overhang length and better clamping rigidity
  Stable machining with low rigidity machines
- **High-efficiency ramping**
  Large ramping angle (Small dia. Ø25mm: 3°)
  Dramatic efficiency improvement when ramping in pockets
- **Longer tool life**

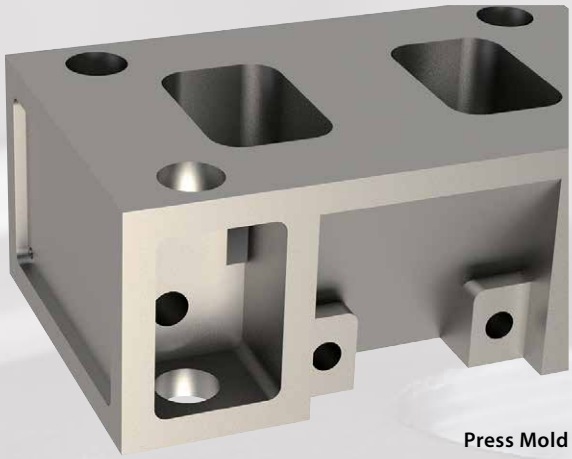
2 More Capabilitites than Conventional High Feed Cutters

General Parts/Molds (Roughing/Facing)

General Parts, Pressing and Die Casting

- **Higher productivity with larger D.O.C.**
- **Long tool life and improved efficiency through the reduction of tool paths**
  Reduced machining time when machining workpieces with large variations in machining margins
- **Longer tool life with high-efficiency machining**

*MFH-Mini/RAPTOR recommended for contouring with small depth of cut and high feed



Press Mold

3 Excellent Solution for Machining Difficult-to-cut Materials

Aircraft Landing Gear Parts

Aircraft/Energy Industry Parts

Difficult-to-cut materials such as titanium alloy and stainless steel machining

- **High feed rates increase productivity**
- **Long tool life through the reduction of tool paths**
- **Heat-resistant grade PR1535 provides long tool life and stable machining**

Improve Productivity and Reduce Machining Costs

2 The MFH-MAX can cover a Large Variety of Machining Applications and Environments

1 A Better Alternative to 90° End Mills (Rough to Medium-Finish Machining)

High Feed Rates Dramatically Improve Machining Efficiency

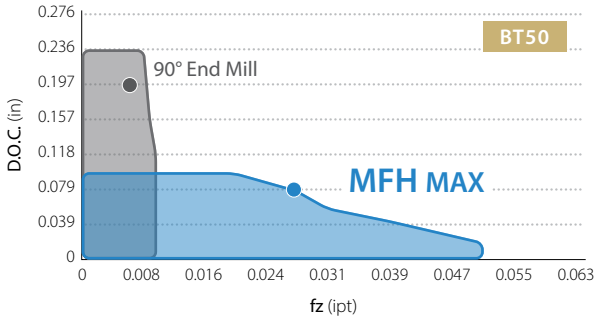
Machining Efficiency Simulation Example

Pocketing: Vc = 490 m/min, ae = 0.492"

MFH MAX
Ø1.000" (3 Flute)
100 cc/min
D.O.C. = **0.079"**, fz = **0.028** ipt

Machining Efficiency x 1.8

Conventional 90° End Mill
Ø1.000" (3 Flute)
54 cc/min
D.O.C. = **0.197"**, fz = **0.006** ipt



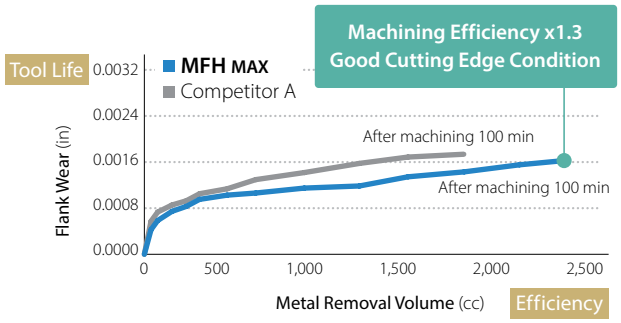
High Efficiency and Good Tool Life

Machining Efficiency and Cutting Edge Condition Comparison (Internal Evaluation)

Cutting edge condition after machining 100 min

MFH MAX
D.O.C = 0.063", fz = 0.024 ipt

Competitor A 90° End Mill
D.O.C. = 0.197", fz = **0.006** ipt



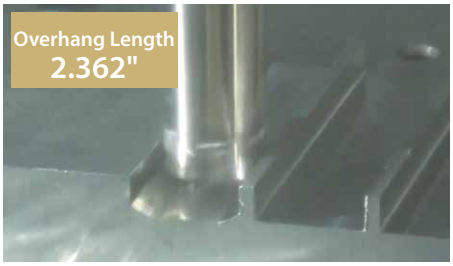
Vc = 490 sfm, ae = 0.492", Dry 4140Ⓗ Ø1.000" BT50

Higher Stability in Unstable Machining Environment

Chatter Resistance Comparison (Internal evaluation)

Slotting
Ø1.000" (3 Flute)
External air
1049
BT50

Video



Machining Efficiency

MFH MAX
103 cc/min
Vc = 390 sfm, D.O.C. = 0.059", fz = **0.024** ipt

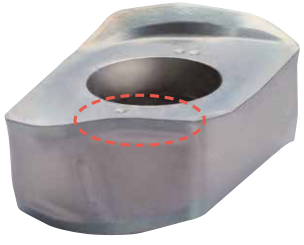
Machining Efficiency x 4.5

Competitor A
90 ° End Mill
31 cc/min **Chattering (Machining was impossible)**
Vc = 260 sfm, D.O.C. = 0.079", fz = 0.008 ipt

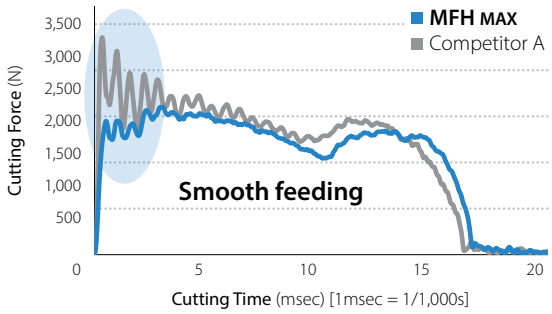
23 cc/min
Vc = 260 sfm, D.O.C. = 0.079", fz = 0.006 ipt

Innovative Insert Design

Convex cutting edge design reduces impact when entering workpiece



Cutting Force when Entering Workpiece (Internal Evaluation)



Vc = 490 sfm, D.O.C. = 0.079",
ae = 1.000", fz = 0.028 ipt,
Dry 1049 Ø2.000" BT50

2 When Compared to Conventional High Feed Cutters

A Larger D.O.C. Dramatically Improves Machining Efficiency

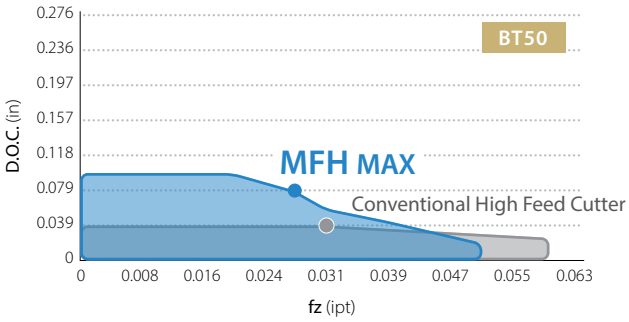
Machining Efficiency Simulation Example

Multistage Machining (Depth 1.181"): Vc = 490 sfm, ae = 0.492"

MFH MAX
Ø1.000" (3 Flute)
100 cc/min
D.O.C. = 0.079", fz = **0.028** ipt

Machining Efficiency x 1.3

Conventional High Feed Cutter
Ø1.000" (3 Flute)
76 cc/min
D.O.C. = **0.039"**, fz = **0.031** ipt



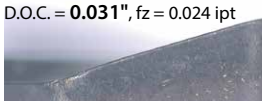
High Efficiency and Good Tool Life

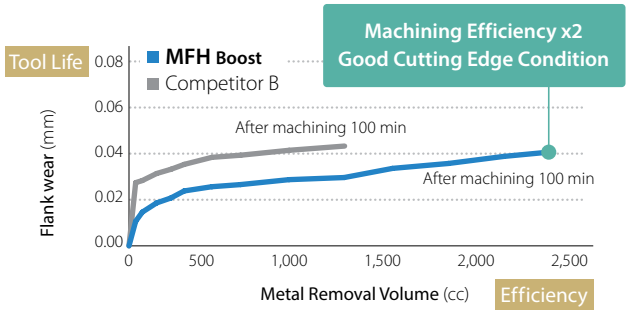
Machining Efficiency and Cutting Edge Condition Comparison
(Internal Evaluation)

Cutting Edge Condition after 100 min machining

MFH MAX
D.O.C. = 0.063", fz = 0.024 ipt

Competitor B High Feed Type
D.O.C. = **0.031"**, fz = 0.024 ipt





Vc = 490 sfm, ae = 0.492", Dry 4140 Ø1.000" BT50

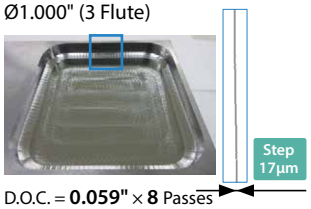
Excellent Wall Accuracy

Video

Machining Efficiency and Wall Comparisons
(Internal Evaluation)

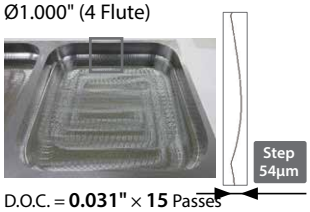
Pocketing (Depth 0.472")

MFH MAX
Ø1.000" (3 Flute)



D.O.C. = **0.059"** × **8** Passes
Q = 115 cc/min

Competitor B High Feed Type
Ø1.000" (4 Flute)



D.O.C. = **0.031"** × **15** Passes
Q = **81** cc/min

Cutting Conditions: Vc = 660 sfm, ae = 0.492", fz = 0.031 ipt, Dry 1049 BT50

Superior Wall Accuracy

Wiper on outer periphery

Reduction of wall level variation in multi-pass machining

3 A Powerful Tool for Difficult-to-cut Materials

Video

The MFH-MAX gained dramatic improvements in efficiency when machining titanium alloy, stainless steel, etc.

Machining Efficiency Comparison (Internal Evaluation)

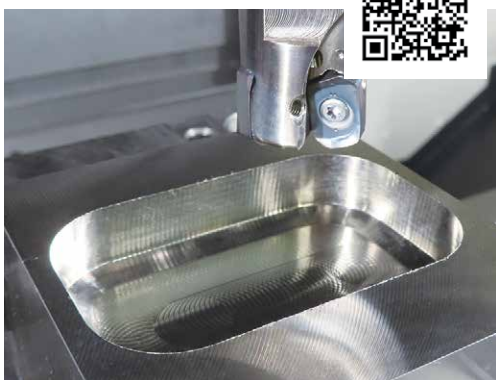
Titanium Alloy Pocketing (Depth 0.236")

MFH MAX
Approx. 1' 30"
D.O.C. = **0.059"** × **4** Passes (fz = ~0.014 ipt)

Machining Efficiency x 1.8

Competitor C High Feed Type
Approx. 2' 50"
D.O.C. = **0.024"** × **10** Passes (fz = ~0.016 ipt)

Vc = 160 sfm, ae = 0.492" (ae/DCX = 50%), Ramping Angle 3° Ti-6Al-4V Wet Ø1.000" (3 Flute) BT50



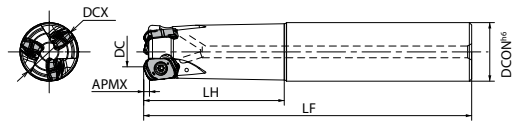


Fig.1

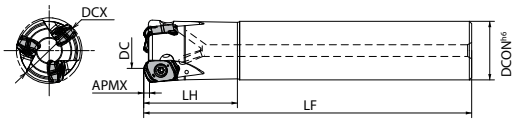


Fig.2

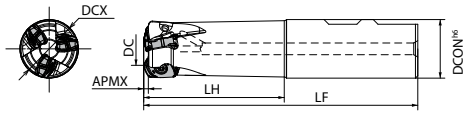


Fig.3

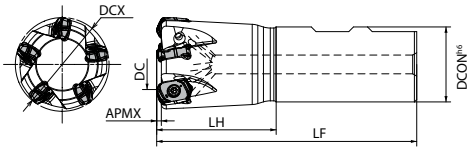


Fig.4

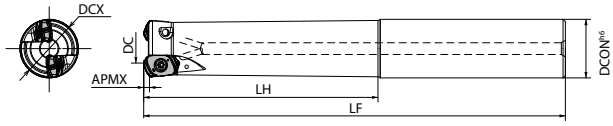


Fig.5

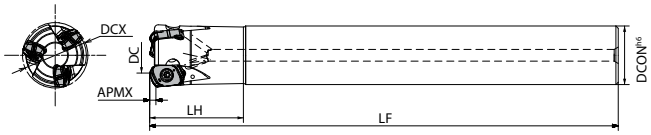


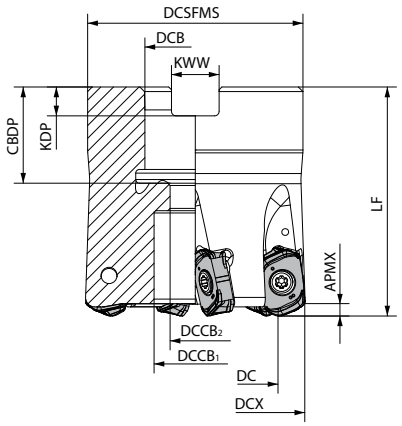
Fig.6

Toolholder Dimensions

		Part Number	Stock	Unit	No. of Inserts	Dimensions						Rake Angle	Coolant Hole	Drawing	Weight (kg)	Max. Revolution (RPM)
						DCX	DC	DCON	LH	LF	APMX	A.R.				
Cylindrical	Standard Shank	MFH 1000-S100-04-3T	●	inch	3	1.000	0.567	1.000	2.500	5.500	0.098	-10°	Yes	Fig.1	0.4	12,500
		1250-S125-04-5T	●		5	1.250	0.817	1.250	2.750	6.000					0.7	11,000
	Long Shank	MFH 1000-S100-04-3T-7	●	inch	3	1.000	0.567	1.000	4.000	7.000	0.098	-10°	Yes	Fig.5	0.7	12,500
		1250-S125-04-4T-8	●		4	1.250	0.817	1.250	4.750	8.000					1.1	11,000
Weldon	Standard Shank	MFH 1000-W100-04-3T	●	inch	3	1.000	0.567	1.000	2.000	4.600	0.098	-10°	Yes	Fig.3	0.4	12,500
		1250-W125-04-5T	●		5	1.250	0.817	1.250	2.750	5.150					0.7	11,000
Cylindrical	Standard Shank	MFH 25-S25-04-2T	●	mm	2	25	14	25	60	140	2.5	-10°	Yes	Fig.1	0.5	12,700
		25-S25-04-3T	●		3										0.5	12,700
		32-S32-04-4T	●		4	32	21	32	70	150					0.8	11,200
		32-S32-04-5T	●		5										0.8	11,200
	Oversize	MFH 22-S20-04-2T	●	mm	2	22	11	20	30	130	2.5	-10°	Yes	Fig.2	0.3	13,600
		28-S25-04-3T	●		3	28	17	25	40	140					0.5	12,000
		28-S25-04-4T	●		4										0.5	12,000
		35-S32-04-4T	●			35	24	32	50	150					0.8	10,700
		35-S32-04-5T	●		5										0.8	10,700
		40-S32-04-5T	●			40	29								0.9	10,000
		40-S32-04-6T	●		6										0.9	10,000
	Long Shank	MFH 25-S25-04-2T-180	●	mm	2	25	14	25	100	180	2.5	-10°	Yes	Fig.5	0.6	12,700
		25-S25-04-3T-180	●		3										0.6	12,700
		28-S25-04-3T-200	●			28	17		40	200				Fig.6	0.7	12,000
		32-S32-04-4T-200	●		4	32	21	32	120					Fig.5	1.1	11,200
		35-S32-04-4T-200	●			35	24		50					Fig.6	1.1	10,700
		40-S32-04-5T-250	●		5	40	29			250					1.5	10,000
Weldon	Standard Shank	MFH 25-W25-04-2T	●	mm	2	25	14	25	60	117	2.5	-10°	Yes	Fig.3	0.4	12,700
		25-W25-04-3T	●		3										0.4	12,700
		32-W32-04-4T	●		4	32	21	32	70	131					0.7	11,200
		32-W32-04-5T	●		5										0.7	11,200
		40-W32-04-5T	●			40	29		50	111				Fig.4	0.7	10,000
		40-W32-04-6T	●		6										0.7	10,000

Caution with Max. Revolution
Set the number of revolutions per minute within the recommended cutting speed on **P11**
When running an end mill or a cutter at the maximum revolution, the insert or the cutter may be damaged by centrifugal force.

●: Standard Item



Toolholder Dimensions

	Part Number	Stock	Unit	No. of Inserts	Dimensions											Rake Angle	Coolant Hole	Weight (kg)	Max. Revolution (RPM)
					DCX	DC	DCSFMS	DCB	$DCCB_1$	$DCCB_2$	LF	CBDP	KDP	KWW	APMX	A.R.			
Inch Bore	MFH 1500R-04-6T	●	inch	6	1.500	1.067	1.400	0.500	0.433	0.276	1.575	0.709	0.156	0.250	0.098	-10°	Yes	0.2	10,200
	2000R-04-7T	●		7	2.000	1.567	1.750	0.750	0.669	0.433	1.969	0.947	0.188	0.313				0.5	8,600
	2500R-04-9T	●		9	2.500	2.067	2.250					0.750						0.7	8,000
	3000R-04-10T	●		10	3.000	2.567	2.750	1.000	0.866	0.551	2.480	1.063	0.236	0.375				1.3	7,500
	MFH 080R-04-8T	●	mm	8	80	69	76	1.250"	26	17	63	1.260"	0.315"	0.500"	2.5	-10°	Yes	1.6	7,100
	080R-04-10T	●		10														1.6	
Metric Bore	MFH 040R-04-5T-M	●	mm	5	40	29	38	16	15	9	40	19	5.6	8.4	2.5	-10°	Yes	0.2	10,000
	040R-04-6T-M	●		6														0.2	
	050R-04-6T-M	●			50	39	47	22	18	11	50	21	6.3	10.4				0.4	9,000
	050R-04-7T-M	●		7														0.4	
	052R-04-6T-M	●		6	52	41												0.5	8,800
	052R-04-7T-M	●		7														0.4	
	063R-04-7T-M	●			63	52	60											0.8	8,000
	063R-04-9T-M	●		9														0.8	
	063R-04-7T-27M	●		7				27	20	13		24	7.0	12.4				0.8	
	063R-04-9T-27M	●		9														0.7	
	080R-04-8T-M	●		8	80	69	76				63							1.8	7,100
	080R-04-10T-M	●		10														1.7	

Caution with Max. Revolution
Set the number of revolutions per minute within the recommended cutting speed on **P10**
When running an end mill or a cutter at the maximum revolution, the insert or the cutter may be damaged by centrifugal force.

● : Standard Item

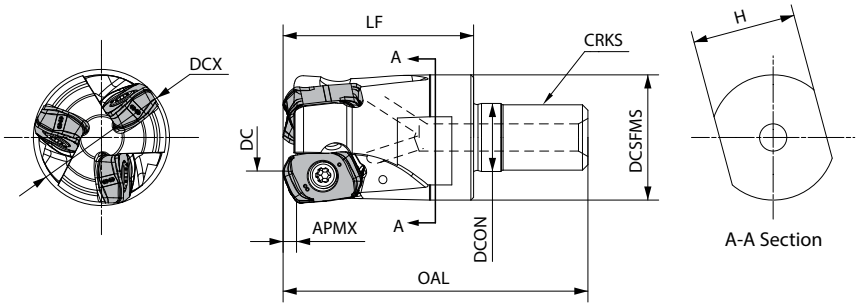
Spare Parts and Applicable Inserts

Part Number			Spare Parts				Applicable Inserts P10
			Insert Screw	Wrench	Anti-Seize Compound	Arbor Bolt	
End Mills		MFH …-04-…	SB-3575TRP	DTPM-10	P-37	-	LOMU040410ER-GM
Face Mills	Inch Bore	MFH 1500R-04-6T	SB-3575TRP	DTPM-10	P-37	HH1/4-0.75(H)	
		2000R-04-7T				HH3/8-1.25(H)	
		2500R-04-9T				HH3/8-1.25(H)	
		3000R-04-10T				HH1/2-1.25(H)	
		MFH 080R-04-...-8T				HH16X40(H)	
		080R-04-...-10T	Recommended torque for insert screw 2.0 Nm			HH16X40(H)	
	Metric Bore	MFH 040R-04-…-M	SB-3575TRP	DTPM-10	P-37	HH8X25(H)	
		050R-04-…-M				HH10X30(H)	
		052R-04-...-M				HH10X30(H)	
		063R-04-...-M				HH10X30(H)	
		080R-04-...-M				HH12X35(H)	
Modular End Mills		MFH …-04-…	SB-3575TRP	DTPM-10	P-37	-	

(H) Optional coolant-through bolt available

Recommended Cutting Conditions P11

MFH-MAX | Modular End Mill (Metric Size)



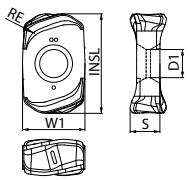
Toolholder Dimensions

Part Number	Stock	Unit	No. of Inserts	Dimensions									Rake Angle	Coolant Hole	Max. Revolution (RPM)
				DCX	DC	DCSFMS	DCON	OAL	LF	CRKS	H	APMX	A.R.		
MFH 1000-M12-04-3T	●	inch	3	1.000	0.567	0.900	0.492	2.205	1.380	M12xP1.75	0.748	0.098	-10°	Yes	12,500
1250-M16-04-5T	●		5	1.250	0.817	1.180	0.669	2.441	1.580	M16xP2.0	0.945				11,000
MFH 22-M10-04-2T	●	mm	2	22	11	18.7	10.5	48	30	M10XP1.5	15	2.5	-10°	Yes	13,600
25-M12-04-2T	●			25	14	23	12.5	56	35	M12XP1.75	19				12,700
25-M12-04-3T	●		3												
28-M12-04-3T	●			28	17										12,000
28-M12-04-4T	●		4												
32-M16-04-4T	●			32	21										11,200
32-M16-04-5T	●		5												
35-M16-04-4T	●		4	35	24	30	17	62	40	M16XP2.0	24				10,700
35-M16-04-5T	●		5												
40-M16-04-5T	●			40	29										10,000
40-M16-04-6T	●		6												
42-M16-04-5T	●		5	42	31										9,800
42-M16-04-6T	●		6												

Caution with Max. Revolution
Set the number of revolutions per minute within the recommended cutting speed on **P10**
When running an end mill or a cutter at the maximum revolution, the insert or the cutter may be damaged by centrifugal force.

● : Standard Item

MFH-MAX | Applicable Inserts

Insert		Part Number	Dimensions (in)					NEW MEGACOAT NANO EX			MEGACOAT NANO			CVD Coating
			W1	S	D1	INSL	RE	PR1835	PR1825	PR1810	PR1535	PR1525	PR1510	CA6535
 4-Edge Double-Sided		LOMU 040410ER-GM	0.358	0.173	0.161	0.571	0.039	●	●	●	●	●	●	●

● : Standard Item

Insert Grade:

PR1835 For Steel Machining (Stability Oriented Machining), Titanium Alloy, Austenitic/Precipitation Hardened Stainless Steel, etc.
PR1825 For Steel Machining (General Use)
PR1810 For Cast Iron Machining
CA6535 For Martensitic Stainless Steel, Ni-base Heat-Resistant Alloy, etc.

Recommended Cutting Conditions ➡ **P11**

MFH-MAX | Recommended Cutting Conditions ★ 1st Recommendation ☆ 2nd Recommendation

Chipbreaker	Workpiece		Holder Part Number and Feed Rate (fz: ipt)		Recommended Insert Grade (Vc: sfm)						
			D.O.C. (in)	MFH…04…	MEGACOAT NANO EX			MEGACOAT NANO			CVD Coating
					PR1835	PR1825	PR1810	PR1535	PR1525	PR1510	CA6535
GM	Carbon Steel Alloy Steel	(~ 280HB)	≤ 0.020	0.008 – **0.032** – 0.051	☆ 390 – 520 – 720	★ 390 – 520 – 720	–	☆ 390 – 520 – 720	★ 390 – 520 – 720	–	–
			≤ 0.039	0.008 – **0.028** – 0.043							
			≤ 0.059	0.008 – **0.024** – 0.032							
			≤ 0.079	0.008 – **0.016** – 0.028							
			≤ 0.098	0.008 – **0.012** – 0.020							
		(~ 350HB)	≤ 0.020	0.008 – **0.030** – 0.047	☆ 330 – 490 – 660	★ 330 – 490 – 660	–	☆ 330 – 490 – 660 (Dry Machining Recommended)	★ 330 – 490 – 660 (Dry Machining Recommended)	–	–
			≤ 0.039	0.008 – **0.026** – 0.039							
			≤ 0.059	0.008 – **0.022** – 0.028							
			≤ 0.079	0.008 – **0.016** – 0.022							
			≤ 0.098	0.008 – **0.010** – 0.014							
	Mold Steel	(~ 40HRC)	≤ 0.020	0.008 – **0.024** – 0.043	☆ 260 – 460 – 590	★ 260 – 460 – 590	–	☆ 260 – 390 – 520 (Dry Machining Recommended)	★ 260 – 390 – 520 (Dry Machining Recommended)	–	–
			≤ 0.039	0.008 – **0.020** – 0.035							
			≤ 0.059	0.008 – **0.016** – 0.026							
			≤ 0.079	0.008 – **0.012** – 0.022							
			≤ 0.098	0.008 – **0.010** – 0.014							
		(40 ~ 50HRC)	≤ 0.020	0.004 – **0.012** – 0.020	–	★ 200 – 330 – 430	–	–	★ 200 – 330 – 430 (Dry Machining Recommended)	–	–
			≤ 0.039	0.004 – **0.010** – 0.016							
			≤ 0.059	0.004 – **0.008** – 0.012							
			≤ 0.079	–							
			≤ 0.098								
		(50 ~ 55HRC)	≤ 0.020	0.004 – **0.008** – 0.016	–	★ 160 – 230 – 330	–	–	★ 160 – 230 – 330 (Dry Machining Recommended)	–	–
			≤ 0.039	0.004 – **0.006** – 0.010							
			≤ 0.059	–							
			≤ 0.079								
			≤ 0.098								
	Austenitic Stainless Steel		≤ 0.020	0.008 – **0.02**4 – 0.039	★ 330 – 460 – 590	☆ 330 – 460 – 590	–	★ 330 – 460 – 590	☆ 330 – 460 – 590	–	–
			≤ 0.039	0.008 – **0.020** – 0.035							
			≤ 0.059	0.008 – **0.018** – 0.024							
			≤ 0.079	0.008 – **0.012** – 0.020							
			≤ 0.098	0.008 – **0.010** – 0.016							
	Martensitic Stainless Steel		≤ 0.020	0.008 – **0.024** – 0.039	☆ 330 – 490 – 660	–	–	☆ 330 – 490 – 660	–	–	★ 490 – 660 – 980
			≤ 0.039	0.008 – **0.020** – 0.035							
			≤ 0.059	0.008 – **0.018** – 0.024							
			≤ 0.079	0.008 – **0.012** – 0.020							
			≤ 0.098	0.008 – **0.010** – 0.016							
	Precipitation Hardened Stainless Steel		≤ 0.020	0.004 – **0.012** – 0.020	★ 300 – 390 – 490	–	–	★ 300 – 390 – 490	–	–	–
			≤ 0.039	0.004 – **0.010** – 0.018							
			≤ 0.059	0.004 – **0.006** – 0.010							
			≤ 0.079	–							
			≤ 0.098								
	Gray Cast Iron		≤ 0.020	0.008 – **0.032** – 0.051	–	–	★ 390 - 520 - 720	–	–	★ 390 – 520 – 720	–
			≤ 0.039	0.008 – **0.028** – 0.043							
			≤ 0.059	0.008 – **0.024** – 0.032							
			≤ 0.079	0.008 – **0.016** – 0.028							
			≤ 0.098	0.008 – **0.012** – 0.020							
	Nodular Cast Iron		≤ 0.020	0.008 – **0.024** – 0.039	–	–	★ 330 - 490 - 660	–	–	★ 330 – 490 – 660	–
			≤ 0.039	0.008 – **0.020** – 0.035							
			≤ 0.059	0.008 – **0.016** – 0.028							
			≤ 0.079	0.008 – **0.012** – 0.024							
			≤ 0.098	0.008 – **0.010** – 0.016							
	Ni-base Heat-Resistant Alloy		≤ 0.020	0.004 – **0.012** – 0.018	☆ 70 – 100 – 160	–	–	☆ 70 – 100 – 160	–	–	★ 70 – 100 – 160
			≤ 0.039	0.004 – **0.010** – 0.016							
			≤ 0.059	0.004 – **0.006** – 0.008							
			≤ 0.079	–							
			≤ 0.098								
	Titanium Alloy		≤ 0.020	0.004 – **0.012** – 0.020	★ 130 – 200 – 260	–	–	★ 130 – 200 – 260	–	–	–
			≤ 0.039	0.004 – **0.010** – 0.018							
			≤ 0.059	0.004 – **0.006** – 0.010							
			≤ 0.079	–							
			≤ 0.098								

- 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 coolant is recommended for Precipitation Hardened Stainless Steel, Ni-base Heat-Resistant Alloy, and Titanium Alloy.
- Machining with coolant may have a lower tool life than dry machining. Set the cutting speed, feed rate and D.O.C. lower than recommended conditions.
- Machining with CAT30 or equivalent, feed rate should be reduced to 25% of recommended cutting conditions. Slotting is not recommended in this situation.
- Center through air is recommended for slotting.
- Slotting or pocketing are not recommended for face mill types.
- For face milling, it is recommended that width of cut should be set to 75% or less of the cutting diameter.
- For long shank end mills, 75% or less of the recommended conditions is recommended for both D.O.C. and feed rate.

MFH-RAPTOR

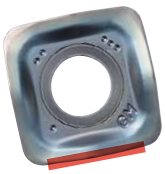
(Cutter Dia. Ø1.000" ~ Ø6.000")
(Cutter Dia. Ø25mm ~ Ø160mm)

Wide Product Lineup for High Feed Milling Applications

Large Depths of Cut and Low Cutting Forces

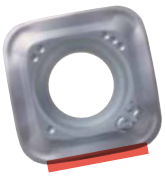
1 4 Different Insert Designs Offer a Variety of Machining Options

GM (General Milling)



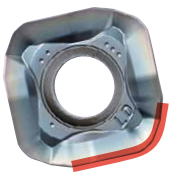
1st Choice for General Purpose
Multiple Metalworking Processes

GH (Tough Edge)



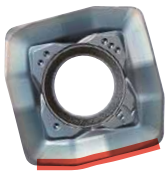
Tough Edge
Excellent Fracture Resistance

LD (Large D.O.C.)



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

FL (Wiper Edge)



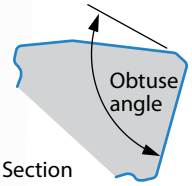
Wiper Edge
Roughing and Finishing Even in Low Horsepower Machining Centers

GH Chipbreaker

Excellent Fracture Resistance

Convex Cutting Edge Design

Reduces cutting force when entering workpiece
Surpresses chattering and fracturing



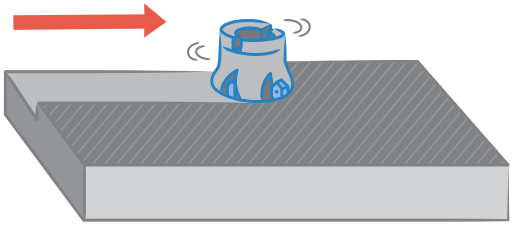
A - A' Section

Tough Edge Design

Combining with PR015S is excellent for machining hardened material with improved fracture resistance

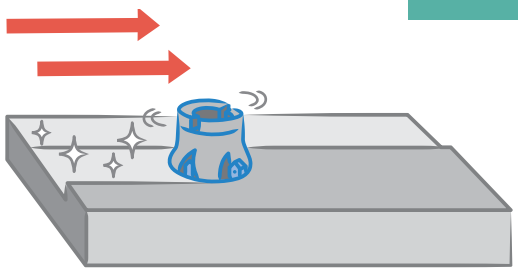
LD Chipbreaker Can Be Used for Both Large D.O.C. and High Feed Machining

Large D.O.C. for Scale Removal — **D.O.C. = 0.158"**



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

High Feed Rates After Scale Removal — **fz = 0.059 ipt**



(fz = 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.

Vc = 660 sfm, fz = 0.010 ipt
D.O.C. × ae = 0.158" × 1.575"
Vf = 50 in/min

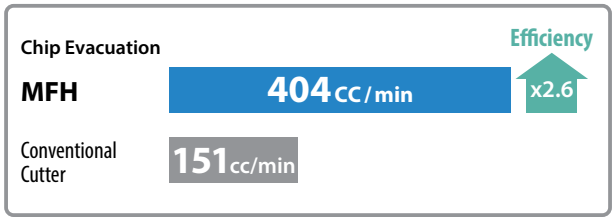
② Roughing (2 Passes) After Scale Removal: High Feed Rate

Vc = 660 sfm, fz = 0.059 ipt
D.O.C. × ae = 0.079" × 1.575", Vf = 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

Vc = 660 sfm, fz = 0.010 ipt
D.O.C. × ae = 0.118" × 1.575", Vf = 50 in/min
Workpiece: Structural Steel



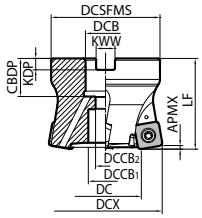


Fig.1

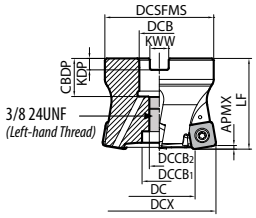


Fig.2

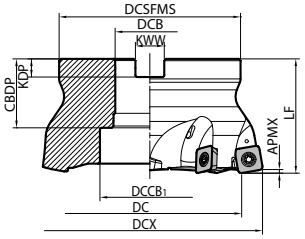


Fig.3

Toolholder Dimensions with SOMT10 Inserts (Inch Size)

Part Number	Stock	No. of Inserts	Dimensions (in)														Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max. RPM
			DCX	DC			DCSFMS	DCB	$DCCB_1$	$DCCB_2$	LF	CBDP	KDP	KWW	APMX	$*^1APMX_2$	A.R.	R.R.				
				GM/GH	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 $*^2$(0.138)	0.047	+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)

Part Number	Stock	No. of Inserts	Dimensions (in)														Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max. RPM
			DCX	DC			DCSFMS	DCB	$DCCB_1$	$DCCB_2$	LF	CBDP	KDP	KWW	APMX	$*^1APMX_2$	A.R.	R.R.				
				GM/GH	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 $*^2$(0.197)	0.079	+10°	-10°	✓	Fig.2	0.4	8,800
2000R-14-5T	●	5	2.000	1.094	1.330	1.291	1.750	0.750	0.500		1.969	0.827	0.187	0.313			+10°	-10°			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
2500R-14-5T-1000	●	5	2.500	1.594	1.830	1.791	2.251	1.000	0.866	0.551	2.480	1.063	0.236	0.382			+10°	-10°			0.7	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
3000R-14-6T-1250	●	6	3.000	2.094	2.330	2.291	2.750	1.250	1.000	0.657	2.480	1.063	0.280	0.504			+10°	-9°			1.3	6,400
MFH 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
MFH 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°	✓	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	-	2.480	1.496	0.433	0.752			+10°	-6°	×		4.5	4,200

● : Standard Item

*1 Refer to LD cutting edge dimensions in figure below

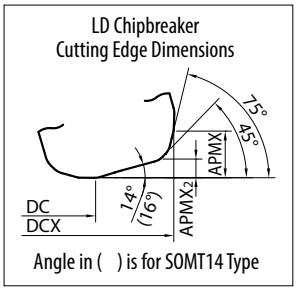
*2 Dimension in ( ) is when mounting LD

Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts					Applicable Inserts P20
	Insert Screw	Wrench		Anti-Seize Compound	Mounting Bolt	
		DTPM	TTP			
MFH2000R-10-4T	SB-4090TRPN	DTPM-15 Recommended Torque for Insert Clamp 3.5 N·m		P-37	HH3/8-1.25(H)	SOMT100420ER-GM SOMT100420ER-GH SOMT100420ER-LD SOMT100420ER-FL
MFH2000R-10-5T						
MFH2500R-10-5T						
MFH2500R-10-6T						
MFH3000R-10-7T					HH1/2-1.25(H)	
MFH2000R-14-4T	SB-50120TRP	TTP-20 Recommended Torque for Insert Clamp 4.5 N·m		P-37	XNS610*2	SOMT140520ER-GM SOMT140520ER-GH SOMT140520ER-LD SOMT140514ER-FL
MFH2000R-14-5T	SB-5090TRP					
MFH2500R-14-4T	SB-50120TRP				HH3/8-1.25(H)	
MFH2500R-14-5T						
MFH2500R-14-5T-1000					HH1/2-1.25(H)	
MFH3000R-14-5T						
MFH3000R-14-6T						
MFH3000R-14-6T-1250					HH5/8-1.50(H)	
MFH4000R-14-6T					HH3/4-2.3(H)	
MFH4000R-14-7T						
MFH5000R-14-7T					-	
MFH6000R-14-8T						

(H) Optional coolant thru bolt available.

Recommended Cutting Conditions P21-22



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.

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

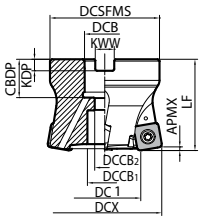


Fig.1

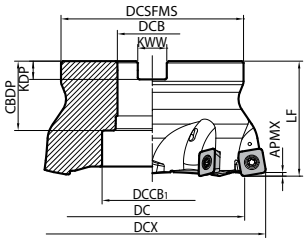


Fig.2

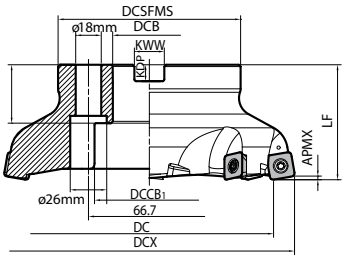


Fig.3

Toolholder Dimensions with SOMT10 Inserts (Metric Size)

Bore Dia.	Part Number	Stock	No. of Inserts	Dimensions (mm)														Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max. RPM
				DCX	DC			DCSFMS	DCB	$DCCB_1$	$DCCB_2$	LF	CBDP	KDP	KWW	APMX	$*^1APMX_2$	A.R.	R.R.				
					GM/GH	LD	FL																
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 $*^2$(3.5)	1.2	+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	1.5 $*^2$(3.5)	1.2	+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 SOMT14 Inserts (Metric Size)

Bore Dia.	Part Number	Stock	No. of Inserts	Dimensions (mm)														Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max. RPM
				DCX	DC			DCSFMS	DCB	$DCCB_1$	$DCCB_2$	LF	CBDP	KDP	KWW	APMX	$*^1APMX_2$	A.R.	R.R.				
					GM/GH	LD	FL																
Inch Spec	MFH 050R-14-4T	●	4	50	27	33	32	47	0.875"	12	-	50	0.748"	0.197"	0.331"	2 $*^2$(5)	2	+10°	-10°		Fig.1	0.4	8,800
	MFH 063R-14-4T	●	4	63	40	46	45	60	0.875"	19	11	50	0.748"	0.197"	0.331"				-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 050R-14-4T-M	●	4	50	27	33	32	47	22	12	-	50	21	6.3	10.4	2 $*^2$(5)	2	+10°	-10°		Fig.1	0.4	8,800
	MFH 063R-14-4T-22M	●	4	63	40	46	45	60	22	19	11	50	21	6.3	10.4				-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 ➡ **P15**
Recommended Cutting Conditions ➡ **P21-22**

● : Standard Item

$*^1$ Refer to LD cutting edge dimensions on page 16 $*^2$ Dimension in ( ) is when mounting LD

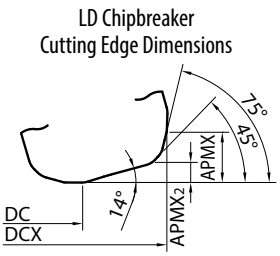
Spare Parts and Applicable Inserts (Metric Size)

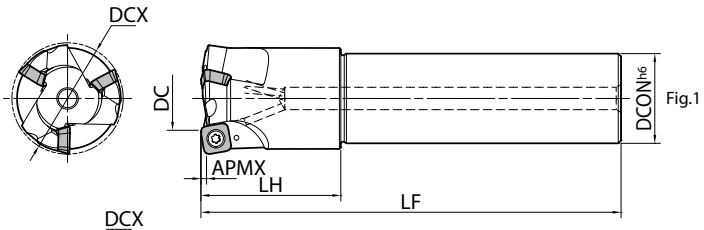
Part Number	Spare Parts					Applicable Inserts P20
	Insert Screw	Wrench		Anti-Seize Compound	Mounting Bolt	
		DTPM 	TTP 			
MFH050R-10-…(-M)	SB-4090TRPN	DTPM-15 Recommended Torque for Insert Clamp 3.5 N·m		P-37	HH10×30	SOMT100420ER-GM SOMT100420ER-GH SOMT100420ER-LD SOMT100420ER-FL
MFH063R-10-…(-22M)					HH10×30	
MFH063R-10-…-27M					HH12×35	
MFH080R-10-…					HH16×40	
MFH080R-10-…-M					HH12×35	
MFH050R-14-…(-M)	SB-50120TRP	TTP-20 Recommended Torque for Insert Clamp 4.5 N·m		P-37	W10×30	SOMT140520ER-GM SOMT140520ER-GH SOMT140520ER-LD SOMT140514ER-FL
MFH063R-14-…(-22M)					HH10×30	
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-…					-	

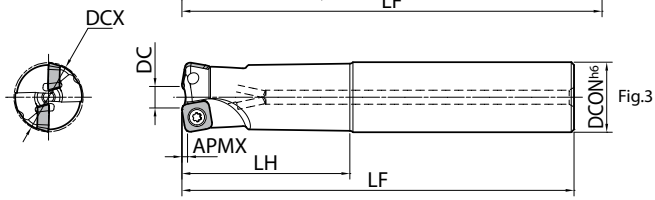
Caution with Max. Revolution
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

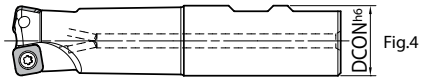
Coat Anti-Seize Compound (P-37) thinly on portion of taper and thread prior to installation.

Standard (Cylindrical)









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
				DCX	DC			DCON	LF	LH	APMX	$APMX_2$	A.R.	R.R.				
					GM/GH	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)	0.047	+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

● : Standard Item
*Dimension in ( ) is when mounting LD

Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts			Applicable Inserts
	Insert Screw	Wrench	Anti-Seize Compound	P20
				
MFH…-10-…	SB-4075TRP	DTPM-15 Recommended Torque for Insert Clamp 3.5 N-m	P-37	SOMT100420ER-GM SOMT100420ER-GH SOMT100420ER-LD SOMT100420ER-FL

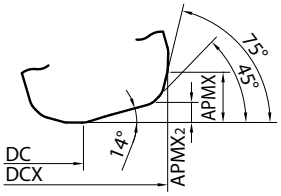
Caution with Max. Revolution
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

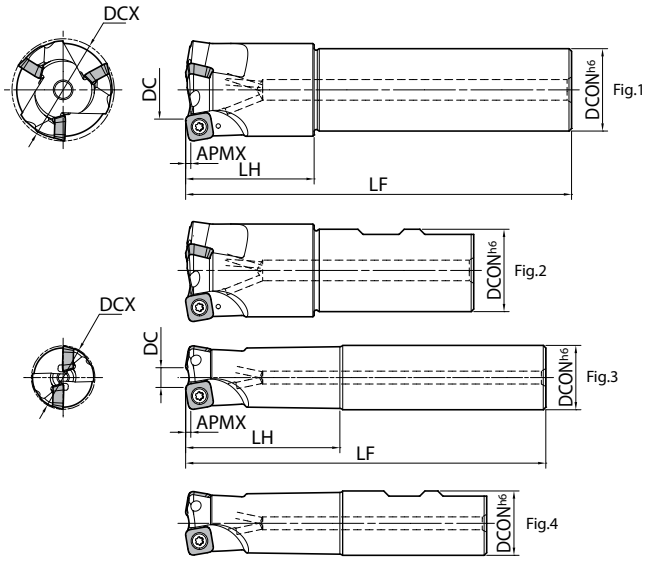
Coat Anti-Seize Compound (P-37) thinly on portion of taper and thread prior to installation.

Recommended Cutting Conditions P21-22

Standard (Cylindrical)

LD Chipbreaker
Cutting Edge Dimensions





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
				DCX	DC			DCON	LF	LH	APMX	APMX2	A.R.	R.R.				
					GM/GH	LD	FL											
Standard Shank (Cylindrical)	MFH 25-S25-10-2T	●	2	25	8	12.5	11.5	25	140	60	1.5 *(3.5)	1.2	+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 *(3.5)	1.2	+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 *(3.5)	1.2	+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 *(3.5)	1.2	+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

● : Standard Item
*Dimension in ( ) is when mounting LD

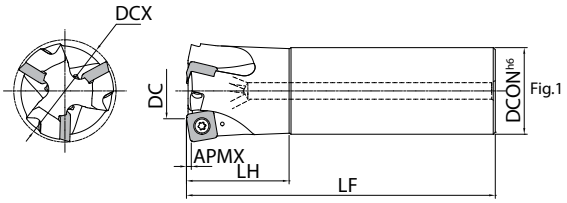
Spare Parts and Applicable Inserts (Metric Size)

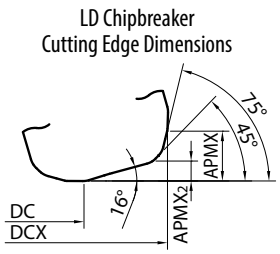
Part Number	Spare Parts			Applicable Inserts ➡ P20
	Insert Screw	Wrench	Anti-Seize Compound	
				
MFH...-10-...	SB-4075TRP	DTPM-15 Recommended Torque for Insert Clamp 3.5 N·m	P-37	SOMT100420ER-GM SOMT100420ER-GH SOMT100420ER-LD SOMT100420ER-FL

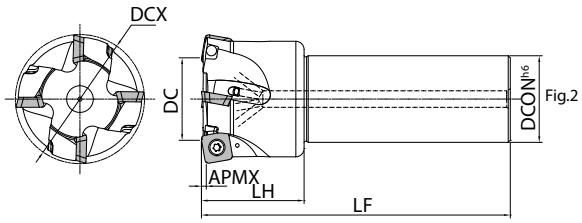
Caution with Max. Revolution
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

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

Recommended Cutting Conditions ➡ P21-22







Toolholder Dimensions with SOMT14 Inserts (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)									Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max. RPM
			DCX	DC			DCON	LF	LH	APMX	APMX2	A.R.	R.R.				
				GM/GH	LD	FL											
MFH 50-S42-14-3T	●	3	50	27	33	32	42	150	50	2 *(5)	2	+10°	-10°	✓	Fig.1	1.4	8,800
MFH 63-S42-14-4T	●	4	63	40	46	45	42	150	50				-10°	✓	Fig.2	1.7	7,400
MFH 80-S42-14-5T	●	5	80	57	63	62	42	150	50				-8°	✓	Fig.2	2.3	6,400

● : Standard Item
*Dimension in ( ) is when mounting LD

Spare Parts and Applicable Inserts (Metric Size)

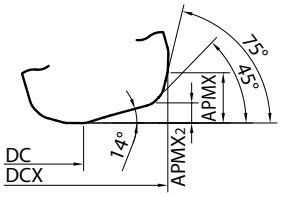
Part Number	Spare Parts			Applicable Inserts P20
	Insert Screw	Wrench	Anti-Seize Compound	
				
MFH…-14-…	SB-50120TRP	TTP-20 Recommended Torque for Insert Clamp 4.5 N·m	P-37	SOMT140520ER-GM SOMT140520ER-GH SOMT140520ER-LD SOMT140514ER-FL

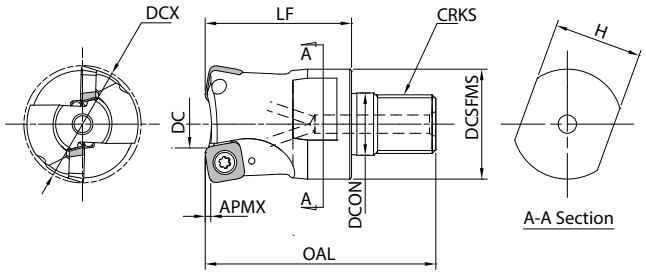
Caution with Max. Revolution
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

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

Recommended Cutting Conditions P21-22

LD Chipbreaker
Cutting Edge Dimensions





Toolholder Dimensions

Part Number	Stock	No. of Inserts	Dimensions (mm)												Rake Angle (°)		Coolant Hole	Max. RPM
			DCX	DC			DCSFMS	DCON	OAL	LF	CRKS	H	APMX	$APMX_2$	A.R.	R.R.		
				GM/GH	LD	FL												
MFH 25-M12-10-2T	●	2	25	8	12.5	11.5	23	12.5	57	35	M12×P1.75	19	1.5 *(3.5)	1.2	+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						15,500
MFH 32-M16-10-2T	●	2	32	15	19.5	18.5	30	17	63	40	M16×P2.0	24						14,000
32-M16-10-3T	●	3	32	15	19.5	18.5	30	17	63	40	M16×P2.0	24						14,000
MFH 35-M16-10-2T	●	2	35	18	22.5	21.5	30	17	63	40	M16×P2.0	24						13,000
35-M16-10-3T	●	3	35	18	22.5	21.5	30	17	63	40	M16×P2.0	24						13,000
MFH 40-M16-10-3T	●	3	40	23	27.5	26.5	30	17	63	40	M16×P2.0	24						11,500
40-M16-10-4T	●	4	40	23	27.5	26.5	30	17	63	40	M16×P2.0	24						11,500

● : Standard Item
*Dimension in ( ) is when mounting LD

Spare Parts and Applicable Inserts

Part Number	Spare Parts			Applicable Inserts
	Insert Screw	Wrench	Anti-Seize Compound	P20
				
MFH…-10-…	SB-4075TRP	DTPM-15 Recommended Torque for Insert Clamp 3.5 N·m	P-37	SOMT100420ER-GM SOMT100420ER-GH SOMT100420ER-LD SOMT100420ER-FL

Recommended Cutting Conditions P21-22

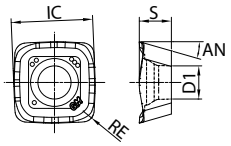
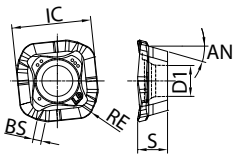
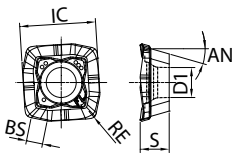
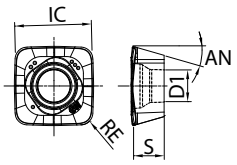
Caution with Max. Revolution
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

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

MFH | Applicable Inserts

Usage Classification											
	P	Carbon Steel / Alloy Steel		★	☆		★	☆			
		Mold Steel		★	☆		★	☆			
	M	Austenitic Stainless Steel		☆	★		☆	★			
		Martensitic Stainless Steel			☆			☆		★	
		Precipitation Hardened Stainless Steel			★			★			
	K	Gray Cast Iron	★			★					
		Nodular Cast Iron	★			★					
	S	Ni-base Heat Resistant Alloy			☆			☆		★	
		Titanium Alloy	☆		★			★			
	H	Hardened Materials							★		

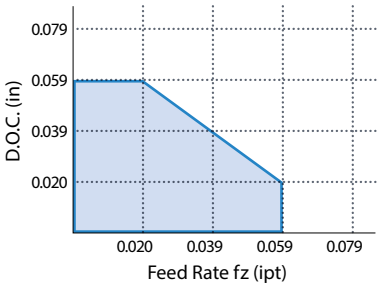
★ : Roughing / 1st Choice
☆ : Roughing / 2nd Choice
■ : Finishing / 1st Choice
□ : Finishing / 2nd Choice

Insert		Part Number	Dimension (in)					Angle (°)	NEW MEGACOAT NANO EX			MEGACOAT NANO			MEGA COAT HARD	CVD	Toolholder Reference Page
			IC	S	D1	BS	RE	AN	PR1810	PR1825	PR1835	PR1510	PR1525	PR1535	PR015S	CA6535	
 General Purpose		SOMT 100420ER-GM	0.406	0.180	0.181	-	0.079	16°	●	●	●	●	●	●	-	●	P13 ~ P19
		SOMT 140520ER-GM	0.557	0.219	0.228	-	0.079	16°	●	●	●	●	●	●	-	●	
 Large D.O.C.		SOMT 100420ER-LD	0.411	0.180	0.181	0.035	0.079	16°	●	●	●	●	●	●	-	●	
		SOMT 140520ER-LD	0.581	0.219	0.228	0.063	0.079	16°	●	●	●	●	●	●	-	●	
 Wiper Edge		SOMT 100420ER-FL	0.411	0.180	0.181	0.055	0.079	16°	●	●	●	●	●	●	-	●	
		SOMT 140514ER-FL	0.574	0.219	0.228	0.122	0.055	16°	●	●	●	●	●	●	-	●	
 Tough Edge		SOMT 100420ER-GH	0.411	0.180	0.179	-	0.079	16°	●	●	●	●	●	●	●	-	
		SOMT 140520ER-GH	0.558	0.219	0.228	-	0.079	16°	●	●	●	●	●	●	●	-	

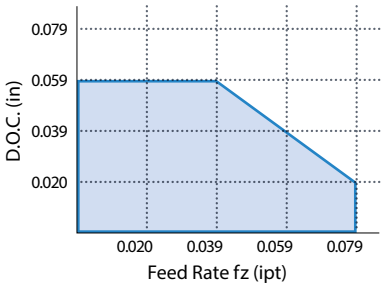
● : Standard Item

Cutting Performance (GM / GH / FL Chipbreakers)

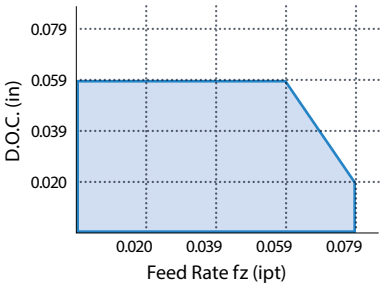
MFH1000-W100-10-2T
MFH25-S25-10-2T



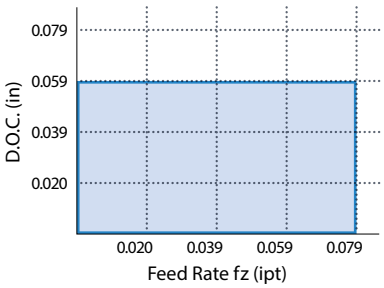
MFH1250-W125-10-○T
MFH32-S32-10-○T



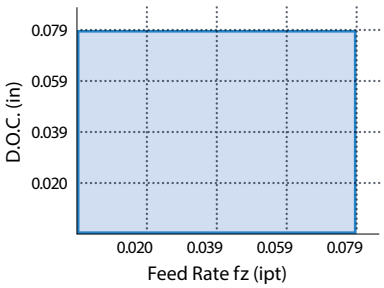
MFH1500-W150-10-○T
MFH40-S32-10-○T



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 **P21-P22** for feed rate

End Mill:
Please refer to the application map above

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

MFH | Recommended Cutting Conditions ★ 1st Recommendation ☆ 2nd Recommendation

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 EX			MEGACOAT NANO			MEGACOAT HARD	CVD
		MFH1000 MFH25-	MFH1250 MFH32-	MFH1500 MFH40-	MFH···R-10	MFH····-14	PR1835	PR1825	PR1810	PR1535	PR1525	PR1510	PR015S	CA6535
GM GH	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	-	☆ 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	-	☆ 330 - **520** - 720	★ 330 - **520** - 720	-	-	-
	Mold Steel ~ 40 HRc	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	-	☆ 260 - **460** - 590	☆ 260 - **460** - 590	-	**GH** ★ 260-**460**-590	-
	Mold Steel 40~50 HRc	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	-	**GH** ★ 200-**330**-430	-
	Mold Steel 50~55 HRc	① 0.006 - **0.010** - 0.016	① 0.006 - **0.014** - 0.024	① 0.006 - **0.010** - 0.028	0.008 - **0.020** - 0.031		-	☆ 160 - 230 - 330	-	-	☆ 160 - 230 - 330	-	**GH** ★ 160-**230**-330	-
	Mold Steel 55~60 HRc	① 0.0004-**0.0024**-0.0039 (Recommended only with GH chipbreaker)					-	-	-	-	-	-	**GH** ★ 160-**200**-230	-
	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		**GM** ☆ 330 - **520** - 660	**GM** ☆ 330 - **520** - 660	-	**GM** ☆ 330 - **520** - 660	**GM** ☆ 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	-	-	☆ 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	-	-	★ 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	-	-	★ 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	-	-	★ 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	-	-	-	★ 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	**GM** ★ 130 - **200** - 260	-	**GM** ☆ 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	-	☆ 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	-	☆ 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	-	☆ 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	-	☆ 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	-	★ 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	-	-	☆ 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	-	-	★ 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	-	-	★ 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	-	-	★ 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	-	-	-	★ 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	★ 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

MFH | Recommended Cutting Conditions

★ 1st Recommendation ☆ 2nd Recommendation

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 EX			MEGACOAT NANO			MEGACOAT HARD	CVD
		MFH1000 MFH25-	MFH1250 MFH32-	MFH1500 MFH40-	MFH···R-10	MFH···-14	PR1835	PR1825	PR1810	PR1535	PR1525	PR1510	PR015S	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	-	☆ 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	-	☆ 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	-	☆ 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	-	☆ 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	-	★ 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	-	-	☆ 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	-	-	★ 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	-	-	★ 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	-	-	★ 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	-	-	-	★ 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	★ 130 - **200** - 260	-	☆ 100 - **160** - 230	-	-

① **For D.O.C. ≤ 0.039"**
② **For D.O.C. 0.040 - 0.059"**
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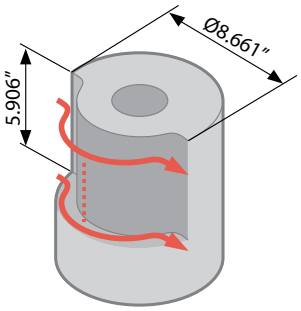
Case Studies

Construction Machine Parts 1025



Vc = 720 sfm (n = 1,750 rpm)
f = 0.028 ipr (Vf = 192.913 ipm)
D.O.C. × ae = 0.059" × 1.181", Dry
MFH1500-W150-10-4T
SOMT100420ER-GM PR1525

Cutting Time

PR1525 **950** Sec

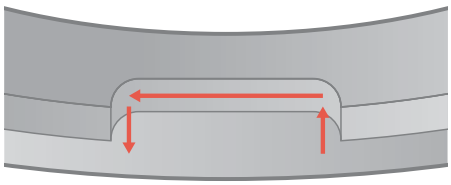
75% Cutting Time

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 ipt (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)

MFH-RAPTOR MiNi

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

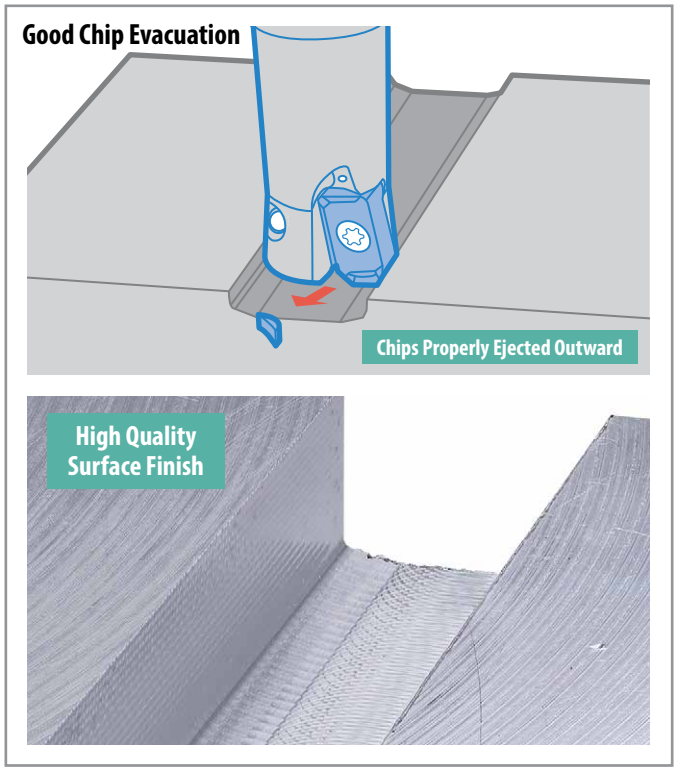
Economical Inserts with 4 Cutting Edges

High Feed Milling for Small Diameters and Small Machining Centers

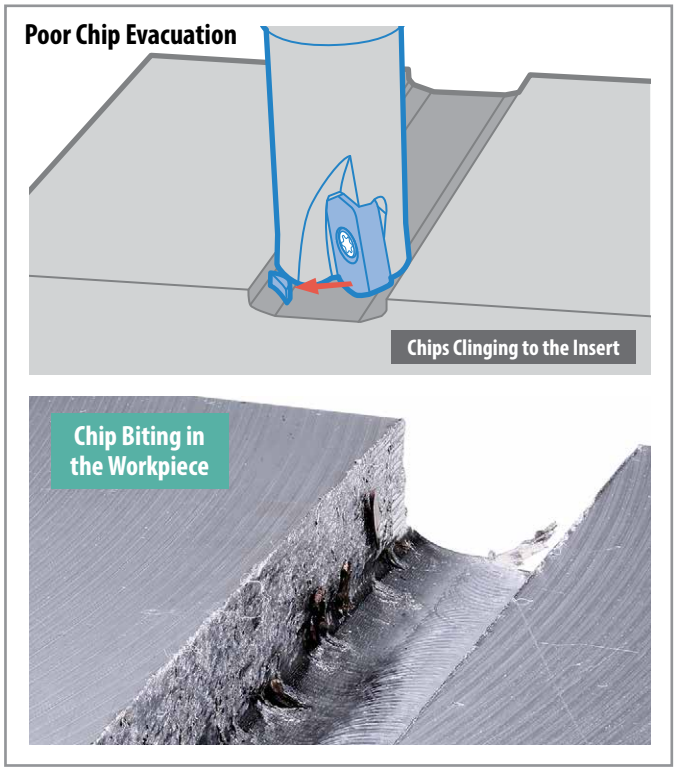
1 Good Chip Evacuation

MFH Mini Controls Chip Biting with Convex Cutting Edge

MFH Mini



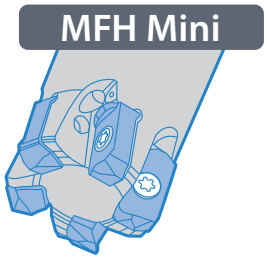
Competitor High Feed Cutter



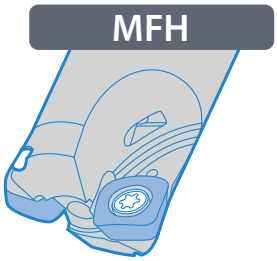
Cutting Conditions: Cutter Dia. DCX = Ø0.625" , Vc = 490 sfm, fz = 0.024 ipt, D.O.C. = 0.020" (20 Passes): Total 0.394" × 0.630", Dry Workpiece: Stainless Steel

2 Fine Pitch for Efficient Machining

Cutter Dia. 1.000" Type



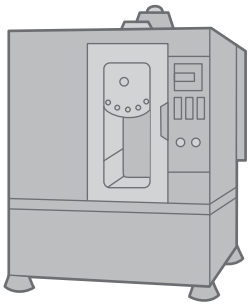
5 Inserts
MFH1000-W100-03-5T47



2 Inserts
MFH1000-W100-10-2T

3 Suitable for Roughing of Molds

High Feed Machining in Small Machining Centers



Standard (Cylindrical)

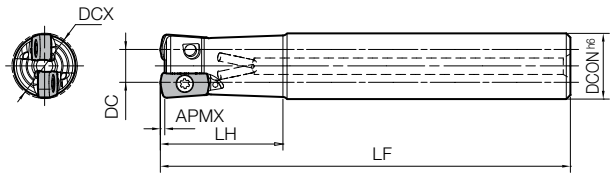


Fig.1

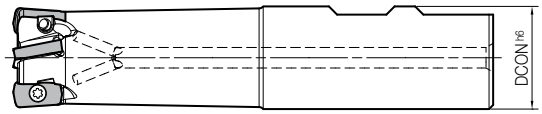


Fig.2

Toolholder Dimensions (Inch Size)

	Part Number	Stock	No. of Inserts	Dimensions (in)						Ramping Angle	Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max. RPM
				DCX	DC	DCON	LF	LH	APMX	RMPX	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-S750-03-3T55	●	3	0.750	0.435	0.750	5.500	2.000	0.039	1.7°	-10°	-15°			0.3	15,700
	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
	0875-S750-03-3T55	●	3	0.875	0.560	0.750	5.500	2.000	0.039	1.3°	-10°	-15°			0.3	14,700
	1000-S100-03-4T55	●	4	1.000	0.685	1.000	5.500	2.500	0.039	1.2°	-10°	-15°			0.5	13,400
	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-S125-03-5T62	●	5	1.250	0.935	1.250	6.250	3.000	0.039	0.8°	-10°	-15°			0.8	11,400
	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

● : Standard Item

Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts			Applicable Inserts ➡ P28
	Insert Screw	Wrench	Anti-Seize Compound	
				
MFH…-03-…	SB-3065TRP	DTPM-8 Recommended Torque for Insert Clamp 1.2 N·m	P-37	LOGU030310ER-GM LOGU030310ER-GH

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 ➡ P29

Standard (Cylindrical)

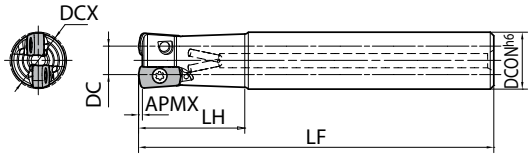


Fig.1

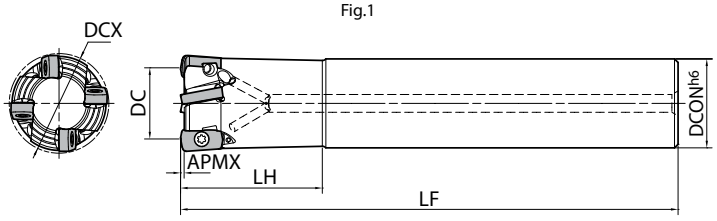


Fig.2

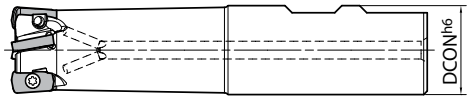


Fig.3

Toolholder Dimensions (Metric Size)

	Part Number	Stock	No. of Inserts	Dimensions (mm)						Ramping Angle	Rake Angle (°)		Coolant Hole	Drawing	Weight (kg)	Max. RPM
				DCX	DC	DCON	LF	LH	APMX	RMPX	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°			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°			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°			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°			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°			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
	32-S32-03-6T	●	6	32	24	32	150	70	1	0.8°	-10°	-15°			0.8	11,400
Standard Shank (Weldon)	MFH 16-W16-03-2T	●	2	16	8	16	79	30	1	2.8°	-10°	-15°			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°	✓	Fig.3	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
Long Shank (Cylindrical)	MFH 16-S16-03-2T-150	●	2	16	8	16	150	50	1	2.8°	-10°	-15°			0.2	18,800
	20-S20-03-3T-160	●	3	20	12	20	160	80	1	1.7°	-10°	-15°	✓	Fig.1	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

● : Standard Item

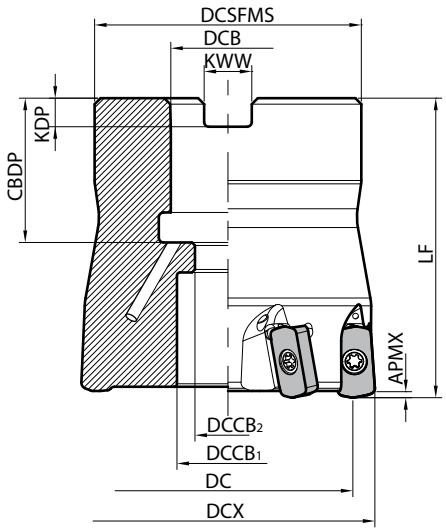
Spare Parts and Applicable Inserts (Inch Size)

Part Number	Spare Parts			Applicable Inserts P28
	Insert Screw	Wrench	Anti-Seize Compound	
				
MFH…-03-…	SB-3065TRP	DTPM-8 Recommended Torque for Insert Clamp 1.2 N-m	P-37	LOGU030310ER-GM LOGU030310ER-GH

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 P29



Toolholder Dimensions (Inch Size)

Part Number	Stock	No. of Inserts	Dimensions (in)											Rake Angle (°)		Coolant Hole	Weight (kg)	Max. RPM
			DCX	DC	DCSFMS	DCB	$DCCB_1$	$DCCB_2$	LF	CBDP	KDP	KWW	APMX	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
2000R-03-9T	●	9																

Toolholder Dimensions (Metric Size)

Part Number	Stock	No. of Inserts	Dimensions (mm)											Rake Angle (°)		Coolant Hole	Weight (kg)	Max. RPM
			DCX	DC	DCSFMS	DCB	$DCCB_1$	$DCCB_2$	LF	CBDP	KDP	KWW	APMX	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

● : Standard Item

Spare Parts and Applicable Inserts (Inch Size)

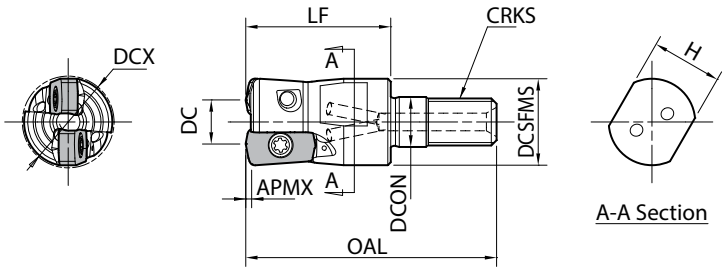
Part Number	Spare Parts				Applicable Inserts P28
	Insert Screw	Wrench	Anti-Seize Compound	Arbor Bolt	
					
MFH1500R-03-5T	SB-3065TRP	DTPM-8 Recommended Torque for Insert Clamp 1.2 N·m	P-37	HH1/4-0.75(H)	LOGU030310ER-GM LOGU030310ER-GH
MFH1500R-03-6T					
MFH2000R-03-8T				HH3/8-1.25(H)	
MFH2000R-03-9T					

(H) Optional coolant-through bolt available

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 P29



Toolholder Dimensions

Part Number	Stock	Unit	No. of Inserts	Dimensions									Ramping Angle	Rake Angle (°)		Coolant Hole	Max. RPM
				DCX	DC	DCSFMS	DCON	OAL	LF	CRKS (mm)	H	APMX	RMPX	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	0.039	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	0.039	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	0.039	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	0.039	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	0.039	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	0.039	0.8°	-10°	-15°	✓	11,400
MFH 1500-M16-03-6T	●		6	1.500	1.185	1.181	0.669	2.480	1.575	M16xP2	0.945	0.039	0.5°	-10°	-15°	✓	10,200
MFH 16-M08-03-2T	●	mm	2	16	8	14.7	8.5	43	25	M8xP1.25	12	1	2.8°	-10°	-15°	✓	18,880
MFH 17-M08-03-2T	●		2	17	9	14.7	8.5	43	25	M8xP1.25	12	1	2.5°	-10°	-15°	✓	17,900
MFH 18-M08-03-2T	●		2	18	10	14.7	8.5	43	25	M8xP1.25	12	1	2.1°	-10°	-15°	✓	17,000
MFH 20-M10-03-3T	●		3	20	12	18.7	10.5	49	30	M10xP1.5	15	1	1.7°	-10°	-15°	✓	15,700
20-M10-03-4T	●		4	20	12	18.7	10.5	49	30	M10xP1.5	15	1	1.7°	-10°	-15°	✓	15,700
MFH 22-M10-03-3T	●		3	22	14	18.7	10.5	49	30	M10xP1.5	15	1	1.4°	-10°	-15°	✓	14,700
22-M10-03-4T	●		4	22	14	18.7	10.5	49	30	M10xP1.5	15	1	1.4°	-10°	-15°	✓	14,700
MFH 25-M12-03-4T	●		4	25	17	23	12.5	57	35	M12xP1.75	19	1	1.2°	-10°	-15°	✓	13,400
25-M12-03-5T	●		5	25	17	23	12.5	57	35	M12xP1.75	19	1	1.2°	-10°	-15°	✓	13,400
MFH 28-M12-03-4T	●		4	28	20	23	12.5	57	35	M12xP1.75	19	1	1.0°	-10°	-15°	✓	12,400
28-M12-03-5T	●		5	28	20	23	12.5	57	35	M12xP1.75	19	1	1.0°	-10°	-15°	✓	12,400
MFH 32-M16-03-5T	●		5	32	24	30	17	63	40	M16xP2	24	1	0.8°	-10°	-15°	✓	11,400
32-M16-03-6T	●		6	32	24	30	17	63	40	M16xP2	24	1	0.8°	-10°	-15°	✓	11,400

Spare Parts and Applicable Inserts

● : Standard Item

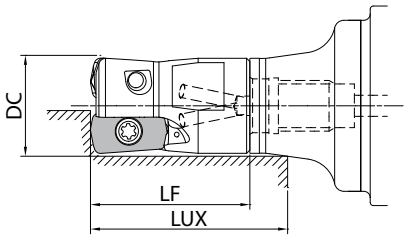
Part Number	Spare Parts			Applicable Inserts P28
	Insert Screw	Wrench	Anti-Seize Compound	
				
MFH…-03-…	SB-3065TRP	DTPM-8 Recommended Torque for Insert Clamp 1.2 N·m	P-37	LOGU030310ER-GM LOGU030310ER-GH

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 P29

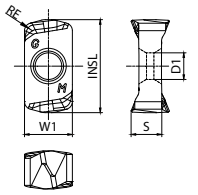
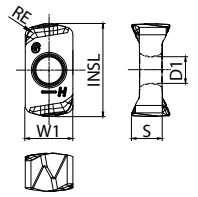
Actual End Mill Depth (BT Arbor Metric)



Arbor Part Number	Applicable End Mill			Actual End Mill Depth (mm)
	Part Number	Cutting Dia. (mm)	Dimension (mm)	LUX
		DC	LF	
BT30K-M08-45	MFH16-M08-03…	Ø16	25	31.8
	MFH17-M08-03…	Ø17	25	33.2
	MFH18-M08-03…	Ø18	25	34.2
BT30K-M10-45	MFH20-M10-03…	Ø20	30	36.8
	MFH22-M10-03…	Ø22	30	39.2
BT30K-M12-45	MFH25-M12-03…	Ø25	35	42.8
	MFH28-M12-03…	Ø28	35	45.5
BT40K-M08-55	MFH16-M08-03…	Ø16	25	31.7
	MFH17-M08-03…	Ø17	25	33.2
	MFH18-M08-03…	Ø18	25	34.3
BT40K-M10-60	MFH20-M10-03…	Ø20	30	38.7
	MFH22-M10-03…	Ø22	30	44.5
BT40K-M12-55	MFH25-M12-03…	Ø25	35	44.6
	MFH28-M12-03…	Ø28	35	47.6
BT40K-M16-65	MFH32-M16-03…	Ø32	40	51.2

For BT Arbor See P34

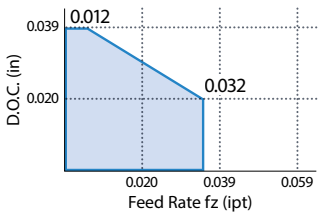
Applicable Inserts

Insert		Part Number	Dimension (in)					NEW MEGACOAT NANO EX			MEGACOAT NANO			MEGACOAT HARD	CVD Coated Carbide
			W1	S	D1	INSL	RE	PR1835	PR1825	PR1810	PR1535	PR1525	PR1510	PR015S	CA6535
 General Purpose		LOGU030310ER-GM	0.244	0.156	0.136	0.469	0.039	●	●	●	●	●	●	-	●
 Tough Edge		LOGU030310ER-GH	0.244	0.156	0.136	0.469	0.039	●	●	●	●	●	●	●	-

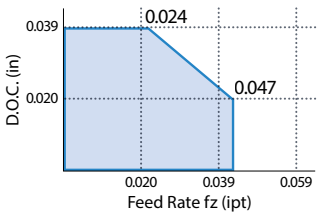
● : Standard Item

MFH Mini | Cutting Performance

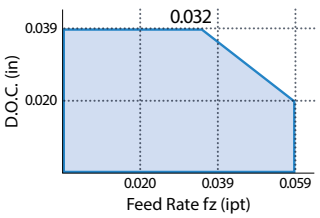
Fine Pitch End Mill



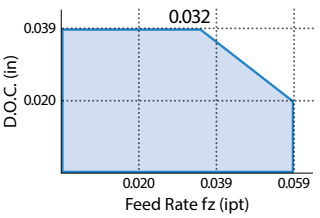
Standard Pitch End Mill
Cutting Dia. Ø0.625" - Ø0.750"
Cutting Dia. Ø16mm - Ø22mm



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

Recommended Cutting Conditions ★ 1st Recommendation ☆ 2nd Recommendation

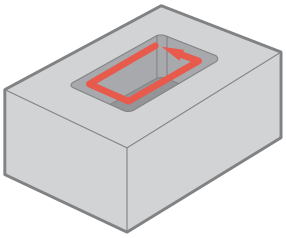
Chipbreaker	Workpiece Material	Holder Part Number and Feed Rate (fz: ipt) *Recommended D.O.C. = 0.020" Reference Value*								Recommended Insert Grade (Vc: sfm)							
		MFH0625...2T (MFH16...2T)	MFH0750...3T (MFH20...3T)	(MFH20...4T)	MFH1000...4T (MFH25...4T)	MFH1000...5T (MFH25...5T)	MFH1250...5T (MFH32...5T)	MFH1250...6T (MFH32...6T)	MFH1500...5T/6T MFH2000...8T	MEGACOAT NANO EX			MEGACOAT NANO			MEGACOAT HARD	CVD
										PR1835	PR1825	PR1810	PR1535	PR1525	PR1510	PR015S	CA6535
GM GH	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	-	☆ 390-**590**-820	★ 390-**590**-820	-	-	-
	Alloy Steel									☆ 330-**520**-720	★ 330-**520**-720	-	☆ 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	-	☆ 260-**460**-590	☆ 260-**460**-590	-	**GH** ★ 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	-	**GH** ★ 200-**330**-430	-
	Mold Steel 50~55 HRc	0.004-**0.012**-0.020		0.004-**0.008**-0.012	0.004-**0.012**-0.020	0.004-**0.008**-0.012	0.004-**0.012**-0.020	0.004-**0.008**-0.012	0.004-**0.008**-0.012	-	☆ 160-**230**-330	-	-	☆ 160-**230**-330	-	**GH** ★ 160-**230**-330	-
	Mold Steel 55~60 HRc	0.0004-**0.0024**-0.0039 (Recommended only with GH chipbreaker)								-	-	-	-	-	-	**GH** ☆ 160-**200**-230	-
	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	**GM** ★ 330-**520**-660	**GM** ☆ 330-**520**-660	-	**GM** ★ 330-**520**-660	**GM** ☆ 330-**520**-660	-	-	-
	Martensitic Stainless Steel									☆ 490-**660**-820	-	-	☆ 490-**660**-820	-	-	-	★ 590-**790**-980
	Precipitation Hardened Stainless Steel									★ 300-**390**-490	-	-	★ 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	-	-	★ 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	-	-	★ 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	-	-	-	★ 70-**100**-160
	Titanium Alloy									**GM** ★ 130-**200**-260	-	**GM** ☆ 100-**160**-230	**GM** ★ 130-**200**-260	-	**GM** ☆ 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
- Slotting and pocketing are not recommended for face mill types

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

Case Studies

Mold Parts
Pre-hardended 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

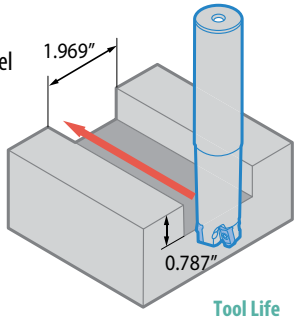
Tool Life

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. × ae = 0.028" × 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)

MFH-RAPTOR MICRO

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

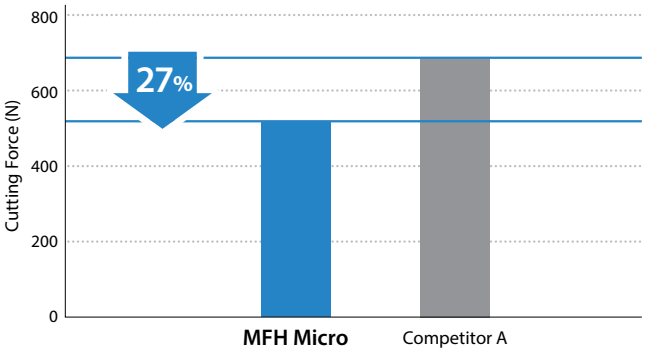
Low Resistance and Durable Design Aids in Chatter Resistant Machining

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

1 Stable Machining with Chattering Resistance

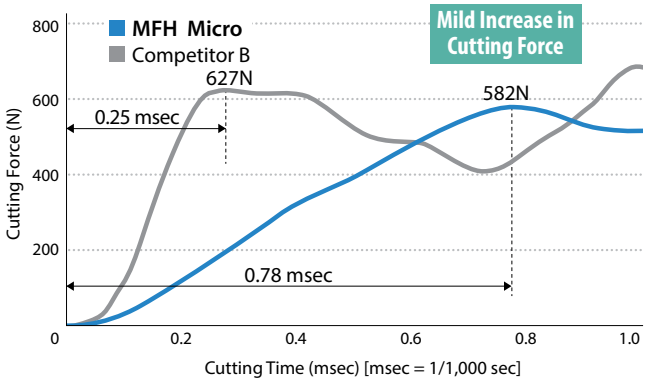
Molded Convex Cutting Edge Controls Initial Impact when Entering the Workpiece

Cutting Force Comparison (In-house Evaluation)



Cutting Conditions: Vc = 390 sfm, fz = 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)



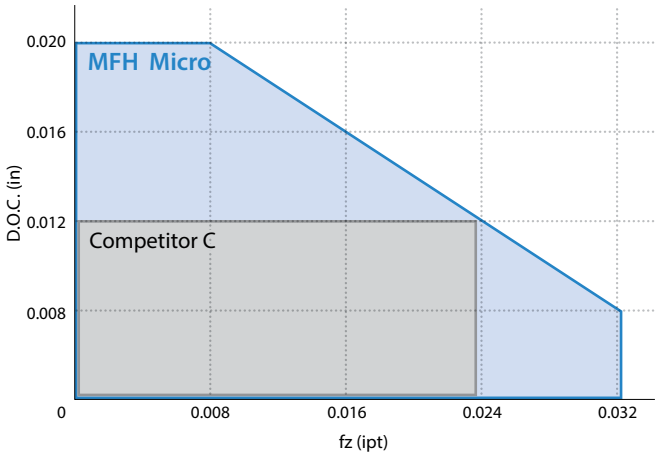
Cutting Conditions: Vc = 390 sfm, fz = 0.024 ipt, D.O.C. × ae = 0.016" × 0.197"
Cutter Dia. Ø0.375", Dry Workpiece: 1049

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")



(Internal 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)

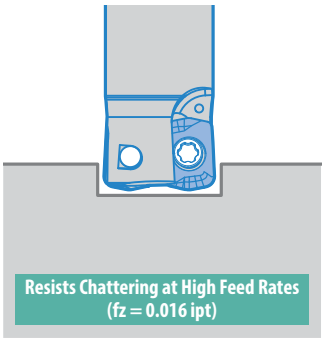
MFH Micro Q = 15.3 cc/min

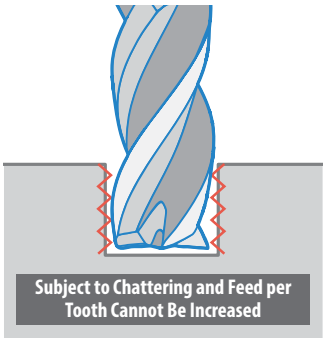
Vc = 490 sfm, fz = 0.016 ipt
D.O.C. × ae = 0.016" × 0.394", Dry
MFH10-S10-01-2T (2 Flutes)
LPGT010210ER-GM (PR1525)

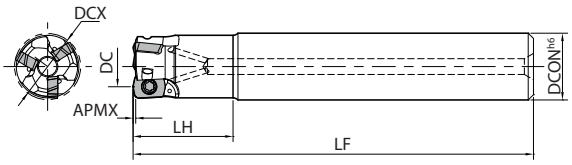
1.2x
Machining Efficiency

Solid End Mill Q = 12.2 cc/min

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







MFH0500-S500-01-3T-3

Fig. 1

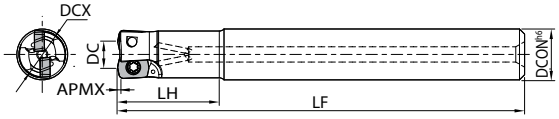


Fig. 2

Fig. 3

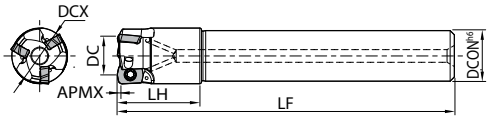


Fig. 4

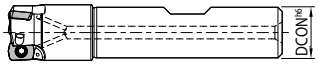


Fig. 5

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
				DCX	DC	DCON	LF	LH	APMX	RMPX	A.R.				
Standard (Cylindrical)	MFH 0375-S375-01-1T-3	■	1	0.375	0.225	0.375	3.000	0.750	0.020	3°	+5°	✓	Fig. 1	0.04	16,200
	0394-S375-01-2T-3	●	2	10mm	0.244	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		2°				0.07	14,000
	0500-S500-01-3T-5	●	3	0.500	0.350	0.500	5.000	0.750		2°				0.11	14,000
	0625-S625-01-4T35	●	4	0.625	0.475	0.625	3.500	1.000		1.2°				0.12	11,400

● : Standard Item ■ : Quoted Item (Made to Order)

Toolholder Dimensions (Metric Size)

Shank	Part Number	Stock	No. of Inserts	Dimensions (in)						Maximum Ramping Angle	Rake Angle (°)	Coolant Hole	Drawing	Weight (kg)	Max. RPM
				DCX	DC	DCON	LF	LH	APMX	α	A.R.				
Standard (Cylindrical)	MFH 08-S10-01-1T	●	1	8	4.2	10	75	16	0.5	4°	+5°	✓	Fig. 2	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
Standard (Weldon)	MFH 08-W10-01-1T	●	1	8	4.2	10	58	16	0.5	4°	+5°	✓	Fig. 3	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

● : Standard Item

Spare Parts and Applicable Inserts

Part Number	Spare Parts			Applicable Inserts
	Insert Screw	Wrench	Anti-Seize Compound	
				P32
MFH...-01-...	SB-1840TRP	FTP-6	P-37	LPGT010210ER-GM

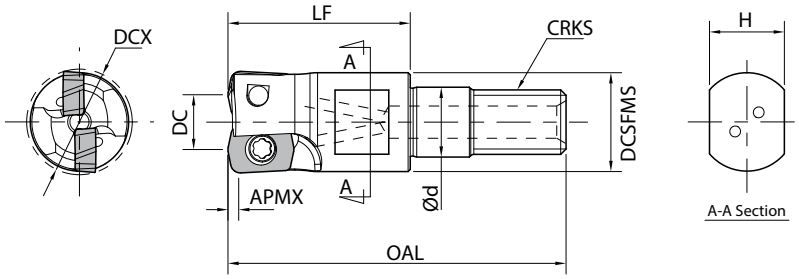
Recommended Torque for Insert Screw 1.2 N·m

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 P33

MFH Micro | Modular End Mill



Toolholder Dimensions (Metric Size)

Part Number	Stock	Unit	No. of Inserts	Dimensions (mm)									Maximum Ramping Angle	A.R.	Coolant Hole	Max. RPM
				DCX	DC	DCSFMS	DCON	OAL	LF	CRKS	H	APMX	RMPX			
MFH 0500-M06-01-3T	●	inch	3	0.500	0.350	0.441	0.256	1.240	0.669	M6xP1.0	0.276	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		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	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		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.

● : Standard Item

Spare Parts and Applicable Inserts

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

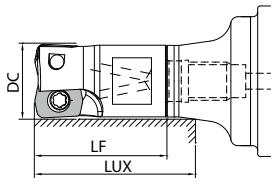
Recommended Torque for Insert Clamp 1.2 N·m

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.

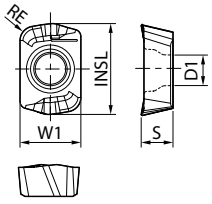
Recommended Cutting Conditions **P33**

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



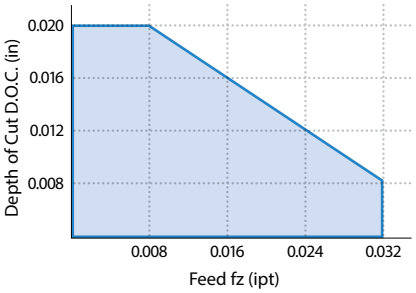
Arbor Part Number	Applicable End Mill			Actual End Mill Depth (mm)
	Part Number	Cutting Dia. (mm)	Dimension (mm)	
		DC	LF	LUX
BT30K-M08-45	MFH16-M08-01…	Ø16	22	28.8
BT40K-M08-55	MFH16-M08-01…	Ø16	22	28.7

MFH Micro | Applicable Inserts

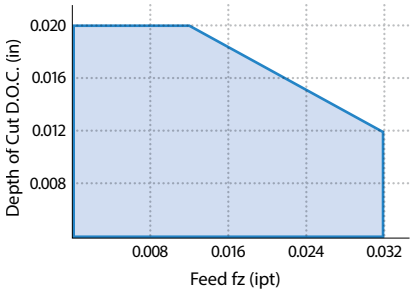
Insert		Part Number	Dimension (in)					NEW MEGACOAT NANO EX		MEGACOAT NANO		CVD
			W1	S	D1	INSL	RE	PR1835	PR1825	PR1535	PR1525	CA6535
 General Purpose		LPGT010210ER-GM	0.165	0.086	0.083	0.247	0.039	●	●	●	●	●

● : Standard Item

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

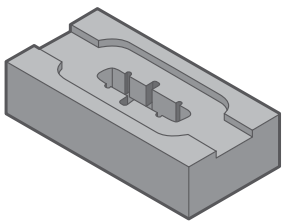
Chipbreaker	Workpiece Material	Cutter Part Number and Feed Rate (fz: ipt) *Recommended D.O.C. = 0.012" Reference Value*					Recommended Insert Grade (Vc: sfm)				
		MFH08-…-1T	MFH0375…-1T-3 MFH0394…-2T-3 MFH10-…-2T	MFH0500-…-3T-.. MFH12-…-3T	MFH14-…-3T	MFH0625-…-4T(35) MFH16-…-4T	MEGACOAT NANO EX		MEGACOAT NANO		CVD
							PR1835	PR1825	PR1535	PR1525	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	★ 390-**590**-820	-
	Alloy Steel						☆ 330-**520**-720	★ 330-**520**-720	☆ 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	★ 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	★ 200-**330**-430	-
	Mold Steel (50~55 HRc)	-	-	-	-	-	-	★ 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	☆ 330-**520**-660	-
	Martensitic Stainless Steel						☆ 490-**660**-820	-	☆ 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	-	★ 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. × ae = 0.012" × ~ 0.028", Dry
MFH0500-S500-01-3T-3
LPGT010210ER-GM PR1535



Chip Evacuation

PR1535 4.5 cc/min

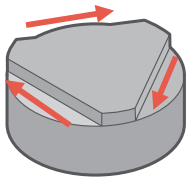
Competitor I 3.4 cc/min

Efficiency 1.3x

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

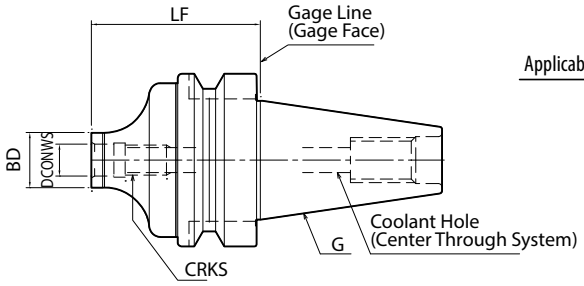
Competitor J 11 min

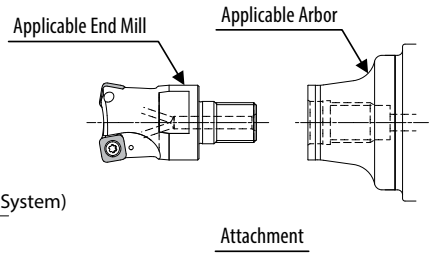
35% Cutting Time

PR1535 shows 30% faster cycle time compared to competitor J

(User Evaluation)

BT Arbor (for Exchangeable Head / Two Face Contact)



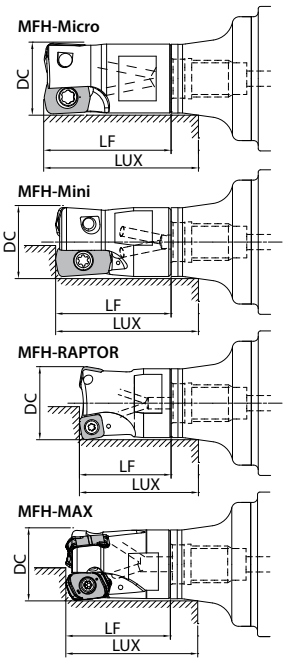


Holder Dimensions

Part Number		Stock	Dimensions (mm)				Coolant Hole	Arbor (Two Face Clamping)	Applicable End Mill (Head)
			L	BD	DCONWS	CRKS		CCMS	
BT30K-	M08-45	□	45	14.7	8.5	M8×P1.25	✓	BT30	MFH..-M08-..
	M10-45	●	45	18.7	10.5	M10×P1.5		BT30	MFH..-M10-..
	M12-45	●	45	23	12.5	M12×P1.75		BT30	MFH..-M12-..
BT40K-	M08-55	□	55	14.7	8.5	M8×P1.25	✓	BT40	MFH..-M08-..
	M10-60	□	60	18.7	10.5	M10×P1.5		BT40	MFH..-M10-..
	M12-55	□	55	23	12.5	M12×P1.75		BT40	MFH..-M12-..
	M16-65	□	65	30	17	M16×P2.0		BT40	MFH..-M16-..

● : Standard Item □ : Made to Order

Actual End Mill Depth (BT Arbor Metric)



Arbor Part Number		Applicable End Mill			Actual End Mill Depth (mm)
		Part Number	Cutting Dia. (mm)	Dimension (mm)	
			DC	LF	LUX
BT30K-	M08-45	MFH16-M08-01…	16	22	28.8
		MFH16-M08-03…	16	25	31.8
		MFH17-M08-03…	17	25	33.2
		MFH18-M08-03…	18	25	34.2
	M10-45	MFH20-M10-03…	20	30	36.8
		MFH22-M10-…	22	30	39.2
	M12-45	MFH25-M12-…	25	35	42.8
		MFH28-M12-…	28	35	45.5
BT40K-	M08-55	MFH16-M08-01…	16	22	28.7
		MFH16-M08-03…	16	25	31.7
		MFH17-M08-03…	17	25	33.2
		MFH18-M08-03…	18	25	34.3
	M10-60	MFH20-M10-03…	20	30	38.7
		MFH22-M10…	22	30	44.5
	M12-55	MFH25-M12-…	25	35	44.6
		MFH28-M12-…	28	35	47.6
	M16-65	MFH32-M16-…	32	40	51.2
		MFH35-M16-10…	35	40	60.2
		MFH40-M16…	40	40	64
		MFH42-M16…	42	40	64

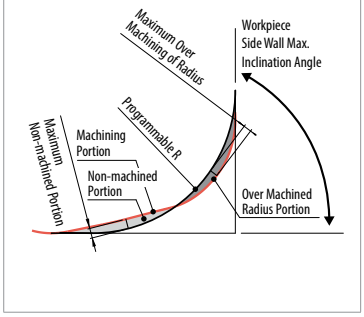
Arbor Identification System

BT30 - **K** - **M12** - **45**

- BT30 — Arbor Size
- K — Two-Face Clamping Spindle
- M12 — Thread Size for Clamping
- 45 — Length from the Gage

Approximate Programming Radius Adjustment

Shape



MFH Micro			MFH Mini			MFH MAX		
Programmable R (in)	Maximum Over Machining of Radius (in)	Over Machined Radius Portion (in)	Programmable R (in)	Maximum Over Machining of Radius (in)	Maximum Non-machined Portion (in)	Programmable R (in)	Maximum Over Machining of Radius (in)	Maximum Non-machined Portion (in)
R0.039	0	0.0083	R0.063 (Recommended)	0	0.0154	R0.059	0	0.0559
R0.047 (Recommended)	0	0.0067	R0.079	0.0035	0.0138	R0.079	0	0.0488
R0.059	0.0032	0.0039	R0.098	0.0102	0.0102	R0.118 (Recommended)	0	0.0343
R0.079	0.0110	0.0004	R0.118	0.0181	0.0067	0.138	0.0024	0.0272

MFH Micro / MFH Mini: Cutting Edge Angle γ(°) = 12°, Side Wall Max. Inclination Angle = 90°

MFH (GM / GH)						
Cutter	Insert	Cutting Edge Angle γ (°)	Programmable R (in) (Recommended)	Maximum Over Machining of Radius (in)	Maximum Non-machined Portion (in)	Workpiece Side Wall Max. Inclination Angle
MFH... -10-...	GM / GH	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 / GH	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. DCX (in)	-	0.375"	0.500"	-	0.625"
	Cutter Dia. DCX (mm)	8mm	10mm	12mm	14mm	16mm
MFH Micro	Max. Ramping Angle RMPX (°)	4.0°	3.0°	2.0°	1.5°	1.2°
	tan RMPX	0.070	0.052	0.035	0.026	0.021

Cutter Type	Cutter Dia. DCX (in)	0.625"	-	-	0.750"	-	0.875"	1.000"	-	1.250"	1.500"	2.000"
	Cutter Dia. DCX (mm)	16mm	17mm	18mm	20mm	22mm	-	25mm	28mm	32mm	40mm	50mm
MFH Mini	Max. Ramping Angle RMPX (°)	2.8°	2.5°	2.1°	1.7°	1.4°	1.3°	1.2°	1°	0.8°	0.5°	0.4°
	tan RMPX	0.049	0.042	0.037	0.030	0.024	0.023	0.021	0.017	0.014	0.009	0.007

Cutter Type	Cutter Dia. DCX (in)	1.000"	-	1.250"	-	1.500"	2.000"	2.500"	3.000"
	Cutter Dia. DCX (mm)	25mm	28mm	32mm	35mm	40mm	50mm	63mm	80mm
MFH (MFH····10-···)	Max. Ramping Angle RMPX (°)	5°	4.5°	4°	3.5°	3°	2.5°	2°	1°
	tan RMPX	0.087	0.078	0.070	0.061	0.052	0.043	0.035	0.017

Cutter Type	Cutter Dia. DCX (in)	2.000"	2.500"	3.000"	4.000"	5.000"	6.000"
	Cutter Dia. DCX (mm)	50mm	63mm	80mm	100mm	125mm	160mm
MFH (MFH····14-···)	Max. Ramping Angle RMPX (°)	2°	1.8°	1°	0.5°	0.4°	0.2°
	tan RMPX	0.035	0.031	0.017	0.009	0.007	0.003

Cutter Type	Cutter Dia. DCX (in)	-	1.000"	-	1.250"	-	1.500"	-	2.000"	-	2.500"	3.000"
	Cutter Dia. DCX (mm)	22mm	25mm	28mm	32mm	35mm	40mm	42mm	50mm	52mm	63mm	80mm
MFH MAX	Max. Ramping Angle RMPX (°)	3.9°	3.0°	2.4°	2.0°	1.7°	1.4°	1.3°	1.0°	1.0°	0.8°	0.6°
	tan RMPX	0.068	0.052	0.042	0.035	0.029	0.024	0.022	0.018	0.017	0.013	0.010

Decrease Ramping Angle if Chips Become Excessively Long

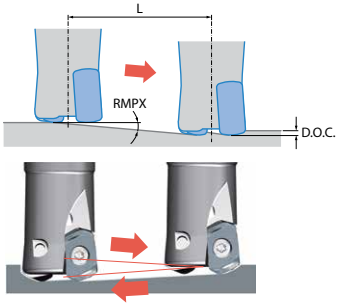
Ramping angle should be under RMPX (maximum ramping angle) in the cutting conditions above

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

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



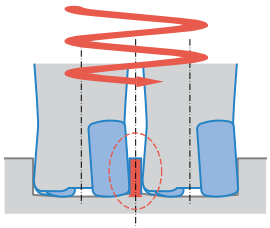
When ramping from both the front and outer periphery, set the maximum ramping angle RMPX to 50%.

Helical Milling

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

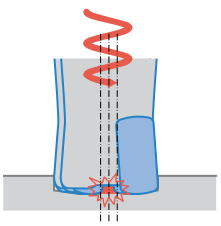
Exceeding Max. Machining Dia.

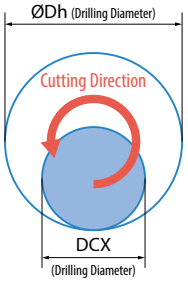
Center Core Remains After Machining



Under Min. Machining Dia.

Center Core Hits Holder Body





Cutter Type	Min. Drilling Dia.	Max. Drilling Dia.	Max. Ramping Depth per Cycle
MFH Micro	2xDCX-0.138"	2xDCX-0.079"	0.020"
MFH Mini	2xDCX-0.315"	2xDCX-0.079"	0.039"
MFH (MFH...-10-...)	2xDCX-0.709"	2xDCX-0.079"	GM = 0.059"
MFH (MFH...-14-...)	2xDCX-0.984"	2xDCX-0.079"	GM = 0.079"
MFH MAX	2xDCX-0.433"	2xDCX-0.079"	0.098"

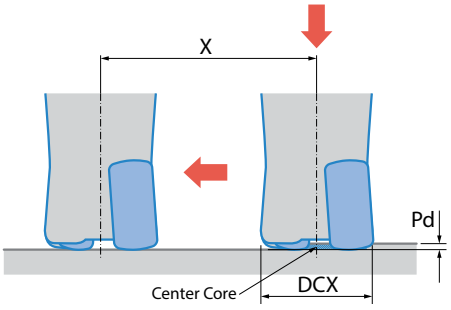
- Keep machine depth per rotation less than max D.O.C. (S) in cutter dimensions chart
- Use climb milling
- Feed rate should be reduced to 50% of the recommended cutting conditions
- Use caution to eliminate incidences caused by producing long chips

Drilling

Cutter Type	Max. Drilling Depth (Pd)	Min. Cutting Length (X) for Flat Bottom Surface
MFH Micro	0.020"	DCX-0.138"
MFH Mini	0.039"	DCX-0.354"
MFH MAX	0.024"	DCX-0.472"

Unit: inch

Cutter Type	GM / GH		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"	DCX-0.709"	0.059"	DCX-0.551"	0.059"	DCX-0.591"
MFH (MFH...-14-...)	0.079"	DCX-0.945"	0.079"	DCX-0.709"	0.079"	DCX-0.748"



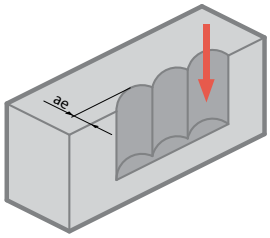
[Drilling Depth]
See Max. Drilling Depth (Pd) in the above cutting conditions

Traversing after Drilling

① It is recommended to reduce feed by 25% of recommendation until Center Core is removed

② Axial feed rate recommendation per revolution is 0.008 ipr while drilling

Plunging



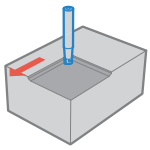
LD and FL chipbreakers are not available for plunging

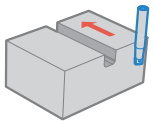
Reduce feed rate to fz ≤ 0.008ipt when plunging

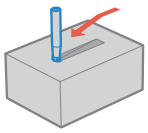
Cutter Type	Insert	Maximum Width of Cut (ae)
MFH Micro	LPGT01...	0.067"
MFH Mini	LOGU03...	0.138"
MFH (MFH...-10-...)	SOMT10...	0.315"
MFH (MFH...-14-...)	SOMT14...	0.453"
MFH MAX	LOMU04...	0.197"

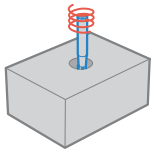
3D Machining

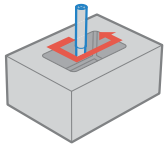
GM chipbreaker is available for all applications.

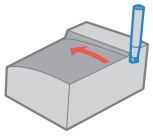

Face Milling & Shouldering


Slotting


Ramping


Helical Milling


Pocketing


Contouring

Insert	Ramping	Contouring (Rising Wall Angle)	Plunging	Helical Milling	Pocketing
GM / GH	✓	✓ (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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