

THE NEW VALUE FRONTIER



M-Series Milling

MEC *Ultra Hurricane Endmills & Facemills*

MECX *Ultra Hurricane Fine-Pitch Endmills & Facemills*

MECH *Helical Endmills*

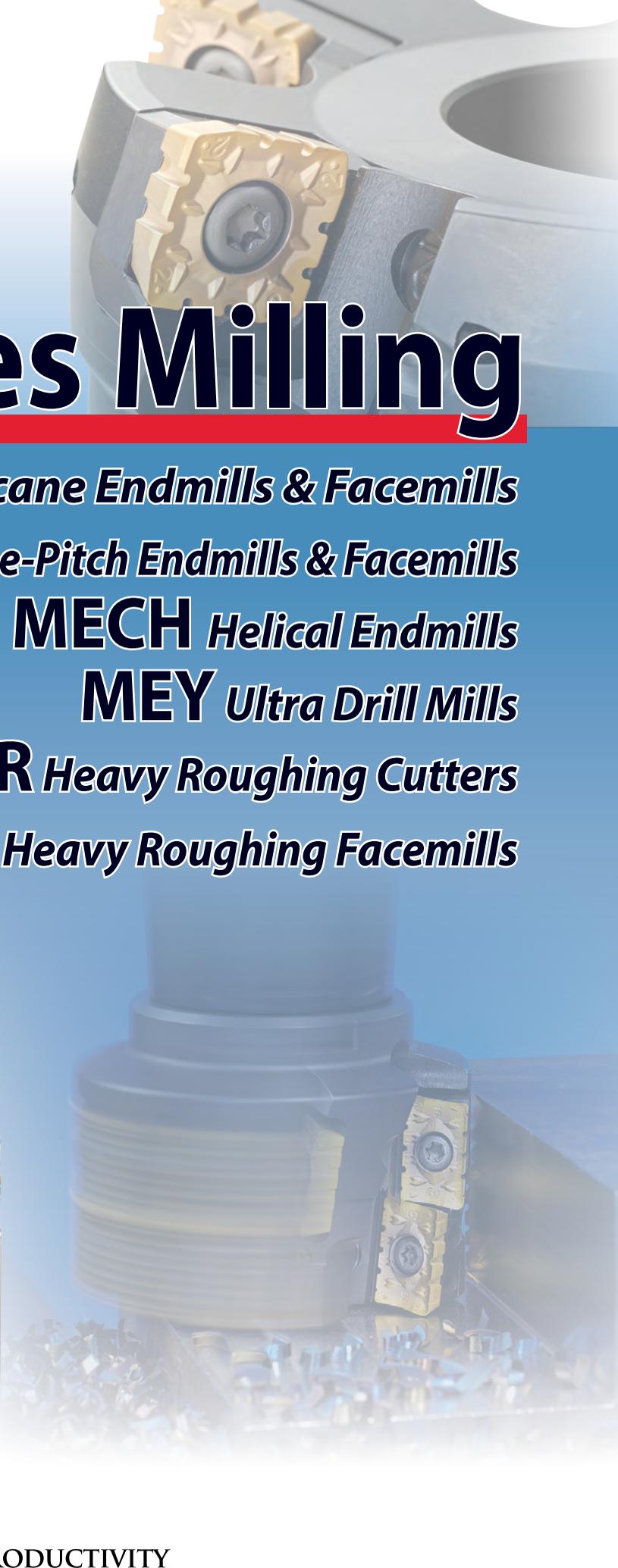
MEY *Ultra Drill Mills*

MSR *Heavy Roughing Cutters*

MSRS *Heavy Roughing Facemills*



Now Featuring MEGACOAT
PR12-Series Inserts
for Increased Cutting Speeds
and Longer Tool Life!



ADVANCING PRODUCTIVITY

KYOCERA'S M-Series Milling Line

MEC

Ultra Hurricane Endmills & Facemills
Pages 4-15

- *Standard shank and long shank product line expansion*
- *Corner radius lineup expansion*
- *JA Chipbreaker and KPD001 (PCD) for Aluminum now available*



MECX

Ultra Hurricane Fine-Pitch Endmills & Facemills
Pages 16-21

- *Extra-fine pitch increases machining efficiency*
- *Low cutting forces*
- *Ideal for lower horsepower machines*



MECH

Helical Endmills
Pages 22-27

- *Improved chip evacuation*
- *Maximum machining efficiency*
- *Reduced cutting force*



KYOCERA'S M-Series Milling Line

MEY

**Ultra Drill Mill
Multi-Function Endmills
Pages 28-33**

- *2 flute effective design for milling*
- *Improved stability and tool life*
- *Low cutting resistance*
- *Good chip evacuation when drilling and slant milling*



MSR

**Heavy Roughing Cutters
Pages 34-39**

- *Double the removal rate; double the productivity*
- *Notched inserts promote larger depths of cut and excellent chip control*
- *Heavy machining with low cutting forces*

MSRS

**Heavy Roughing Facemills
Pages 40-46**

- *Large depth of cut and high feed rate achieves highly efficient machining*
- *Economical square inserts with four edges*
- *Notched inserts and unique cutter design reduce cutting force and chattering*



MEC

High Efficiency / Low Cutting Force

- ◆ Standard shank, long shank lineup expansion
- ◆ Corner radius lineup expansion
- ◆ JA Chipbreaker and KPD001 (PCD) for Aluminum

■ First Choice Grade Lineup

For Steel

PR1225

Work Material	Carbon steel · Alloy steel			
Cutting Range	Finishing → Roughing			
Classification	P01	P10	P20	P30
Applicable Range	PR1225			

For Stainless

PR1225

Work Material	Stainless			
Cutting Range	Finishing → Roughing			
Classification	M01	M10	M20	M30
Applicable Range	PR1225			

For Cast Iron

PR1210

Work Material	Cast Iron			
Cutting Range	Finishing → Roughing			
Classification	K01	K10	K20	M30
Applicable Range	PR1210			

For Aluminum

GW25

Work Material	Aluminum			
Cutting Range	Finishing → Roughing			
Classification	N01	N10	N20	N30
Applicable Range	GW25			

For Aluminum

KPD001

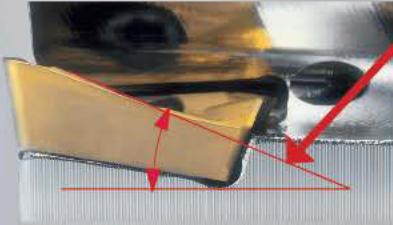
Work Material	Aluminum			
Cutting Range	Finishing → Roughing			
Classification	N01	N10	N20	N30
Applicable Range	KPD001			

■ Corner Radius Variation

Corner Radius Description	Corner Radius(r ε)								
	0.008	0.016	0.031	0.047	0.063	0.079	0.094	0.112	0.157
BDMT1103..ER-JT	●	●	●	-	-	-	-	-	-
BDMT11T3..ER-JT	●	●	●	●	●	●	●	●	-
BDMT1704..ER-JT	-	●	●	●	●	●	●	●	●
BDMT1103..ER-JS	●	●	●	-	-	-	-	-	-
BDMT11T3..ER-JS	●	●	●	-	-	-	-	-	-
BDMT1704..ER-JS	-	●	●	-	-	-	-	-	-
BDMT11T3..FR	●	●	-	-	-	-	-	-	-
BDMT1704..FR	●	●	-	-	-	-	-	-	-
BDGT11T3..FR-JA	●	●	●	-	-	-	-	-	-
BDGT1704..FR-JA	-	●	●	-	-	●	-	●	-

Low Cutting Forces & Sharp Cutting Performance

**High Rake Angle
(22°+ Rake Angle)**



**Higher Body Durability
Silver Coating Promotes
Long Tool Life**

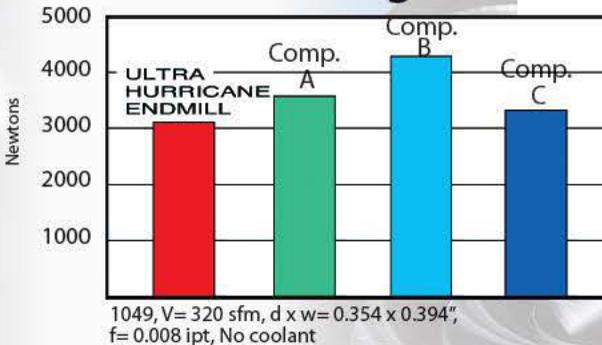
**Higher Rigidity and Durability
Thicker Insert Seat and
Larger Chip Pocket Radius**

**Air Hole for Shanks
over 0.625"
Air/Coolant Capable**

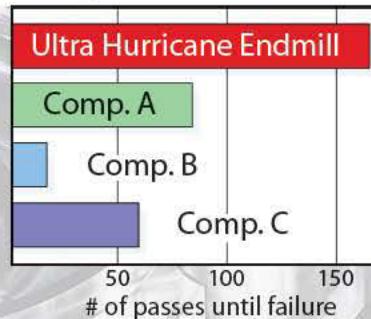
**Better Chip Evacuation
Large Chip Pocket and 3 Efficient
Chipbreaker Types**

**High Strength & Long Tool Life
3 Different PVD Coated Grades**

Low Cutting Forces



High Feed Rates

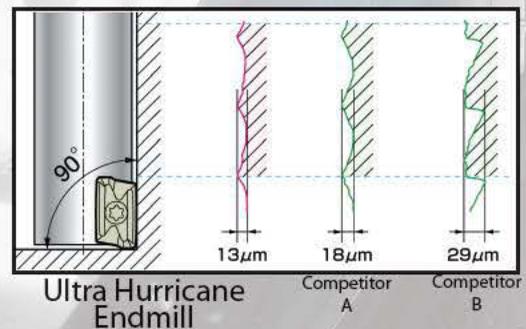


**Excellent Shoulder Wall
Surface Finishes**

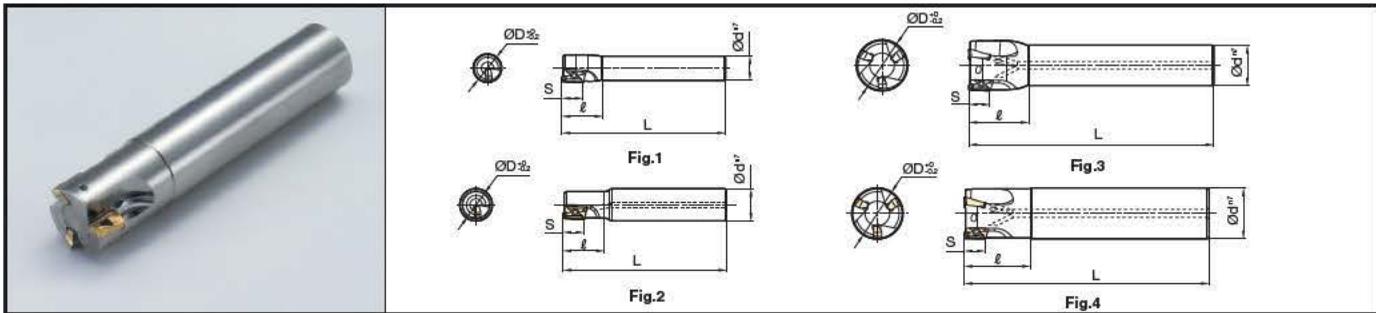


1049, V= 380 sfm, d x w= 0.197 x 0.394",
f= 0.004 ipt, No coolant

Perfect 90° Shoulders



MEC Endmills



Description	Stock	No. of insert	unit	Dimension					Rake angle (°)		Shape	Spare Parts		Max. Revolution (min ⁻¹)		
				φD	φd	L	l	S	A.R.	R.R.		Clamp Screw	Wrench			
															SB-2545TR	DTM-8
MEC 0500-S500-11	●	1	in	0.500	0.500	2.65	0.787	0.394	12°	-21°	Fig.1	SB-2545TR	DTM-8	50,800		
MEC 0625-S500-11T	●	2		0.625	0.500	2.75	0.906	0.394	18°	-14°	Fig.3	SB-2555TRG	DTM-8	43,750		
0625-S625-11T	●			0.625	0.625	3.00	1.024	0.394	18°	-14°	Fig.4			43,750		
0750-S625-11T	●	3		0.750	0.625	3.05	1.024	0.394	20°	-10°	Fig.3			41,000		
0750-S750-11T	●			0.750	0.750	3.25	1.142	0.394	20°	-10°	Fig.4			41,000		
1000-S750-11T	●			1.000	0.750	3.25	1.142	0.394	21°	-10°	Fig.3			37,500		
1000-S100-11T	●	4		1.000	1.000	3.75	1.260	0.394	21°	-10°	Fig.4			37,500		
1250-S100-11T	●			1.250	1.000	3.75	1.260	0.394	23°	-9°	Fig.3			33,900		
1250-S125-11T	●	5		1.250	1.250	4.00	1.575	0.394	23°	-9°	Fig.4			33,900		
1500-S125-11T	●			1.500	1.250	4.35	1.969	0.394	24°	-8°	Fig.3			30,000		
MEC 1000-S750-17	●	2		1.000	0.750	3.50	1.417	0.618	16°	-11°	Fig.3			SB-4070TRN	DTM-15	35,000
1000-S100-17	●			1.000	1.000	3.75	1.417	0.618	16°	-11°	Fig.4					35,000
1250-S100-17	●	3		1.250	1.000	4.00	1.575	0.618	17°	-7°	Fig.3					30,000
1250-S125-17	●			1.250	1.250	4.00	1.575	0.618	17°	-7°	Fig.4					30,000
1500-S125-17	●	4		1.500	1.250	4.35	1.969	0.618	19°	-7°	Fig.3					25,000
MEC 0750-S750-5.2-11T	●	2	in	0.750	0.750	5.20	2.362	0.394	20°	-10°	Fig.4					SB-2555TRG
1000-S100-6.3-11T	●			1.000	1.000	6.30	2.362	0.394	21°	-10°	Fig.4	37,500				
1250-S125-7.9-11T	●			1.250	1.250	7.87	2.559	0.394	23°	-9°	Fig.4	33,900				
1500-S125-9.5-11T	●			1.500	1.250	9.45	2.559	0.394	23°	-8°	Fig.3	30,000				
MEC 1000-S100-6.3-17	●			1.000	1.000	6.30	2.362	0.618	16°	-11°	Fig.4	SB-4070TRN	DTM-15			
1250-S125-7.9-17	●			1.250	1.250	7.87	2.559	0.618	17°	-7°	Fig.4			30,000		
1500-S125-9.5-17	●			1.500	1.250	9.45	2.559	0.618	17°	-7°	Fig.3			25,000		

Applicable Inserts

Milling Cutter	Insert
MEC...11	BDMT 1103
MEC...11T	BDMT 11T3
MEC...17	BDMT 1704

● : Standard Stock
○ : World Express

MEC Endmills (metric)

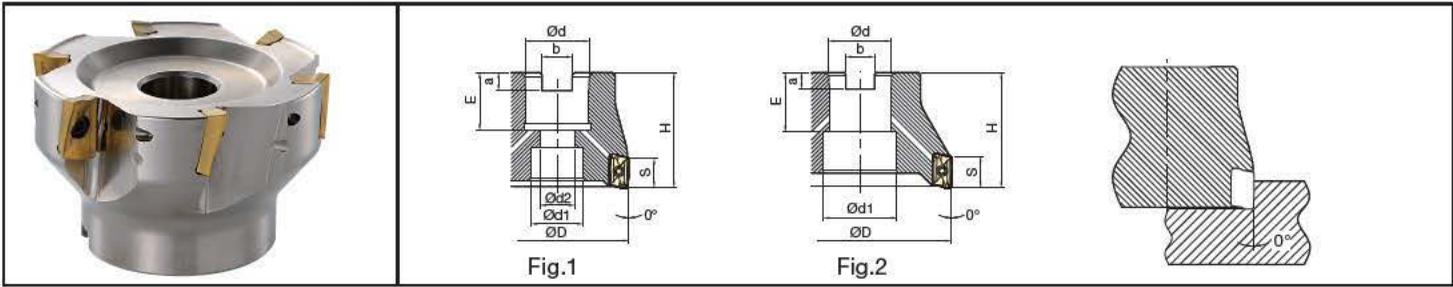
Description	Stock	No. of Insert	unit	Dimension					Rake angle (°)		Coolant Hole	Shape	Spare Parts		Max. Revolution (min ⁻¹)							
				φD	φd	L	ℓ	S	A.R. (MAX)	R.R.			Clamp Screw	Wrench								
																						
Standard Shank	MEC	1	mm	10	10	80	17	10	+10°	-24°	No	Fig.1	SB-2545TR	DTM-8	54,800							
					16						Yes	Fig.2										
				12	10	20	10	+12°	-21°	No	Fig.1											
					12					Yes	Fig.2											
				13	12	20	10	+12°	-19°	No	Fig.1											
					14					Yes	Fig.2											
				MEC	2	2	mm	16	12	100	23	10				+18°	-14°	No	Fig.1	SB-2555TRG	DTM-8	43,750
	17	16	26										10	+20°	-10°			Yes	Fig.3			43,500
																						18
	19	25	32		10	+22°	-9°	Yes	Fig.3	42,000												
										20	30	32	10	+23°	-8°	Yes	Fig.3	41,000				
	21	32	32		10	+23°	-7°	Yes	Fig.3									40,300				
										22	32	32	10	+23°	-9°	Yes	Fig.3	39,600				
	24	32	32		10	+23°	-9°	Yes	Fig.3									38,200				
										25	32	32	10	+23°	-9°	Yes	Fig.3	37,500				
	28	32	32		10	+23°	-9°	Yes	Fig.3									35,800				
										30	32	32	10	+23°	-9°	Yes	Fig.3	34,800				
	32	32	32		10	+23°	-9°	Yes	Fig.3									33,900				
										40	32	32	10	+23°	-9°	Yes	Fig.3	30,000				
	50	32	32	10	+23°	-9°	Yes	Fig.3	22,500													
Same Shank Size									MEC	2	mm	16	16	100	30	10	+18°	-14°	Yes	Fig.4	SB-2555TRG	DTM-8
	20	20	110	10	+20°	-10°	Yes	Fig.4														
												25	25	120	32	+21°	-10°	Yes	Fig.4	SB-2555TRG	DTM-8	37,500
	32	32	130	40	+23°	-9°	Yes	Fig.4														SB-2555TRG
Long Shank									MEC	2	mm	18	170	30	10	+20°	-10°	Yes	Fig.3	SB-2555TRG	DTM-8	
	20	140	60	10	+20°	-10°	Yes	Fig.4														
												22	170	30	10	+21°	-10°	Yes	Fig.3			
	25	210	32	10	+21°	-10°	Yes	Fig.4														
												28	160	60	10	+22°	-9°	Yes	Fig.3			
	32	210	32	10	+22°	-9°	Yes	Fig.4														
												35	250	40	10	+23°	-9°	Yes	Fig.3			
	40	200	65	10	+23°	-9°	Yes	Fig.4														
												32	250	40	10	+23°	-8°	Yes	Fig.3			
	35	250	40	10	+23°	-8°	Yes	Fig.3														
												40	240	65	10	+23°	-8°	Yes	Fig.3			
	Standard	MEC	2	mm	25	20	120	36														15.7
32									25	130	40	15.7	+17°	-7°	Yes	Fig.3						
					40	32	150	50									15.7	+19°	-7°	Yes	Fig.4	
50									32	150	50	15.7	+19°	-7°	Yes	Fig.4						
	Same Size	MEC	2	mm	25	25	120	36									15.7	+16°	-11°	Yes	SB-4070TRN	DTM-15
32									32	130	40	15.7	+17°	-7°	Yes	Fig.4						
					32	32	130	40									15.7	+17°	-7°	Yes		
Long Shank	MEC	2	mm	25					25	160	60	15.7	+16°	-11°	Yes	SB-4070TRN					DTM-15	35,000
					28	210	36	15.7									+16°	-11°	Yes	Fig.3		
				32					200	65	15.7	+17°	-7°	Yes	Fig.4							
					35	250	40	15.7									+17°	-7°	Yes	Fig.4		
				40					240	65	15.7	+19°	-7°	Yes	Fig.3							
					40	240	65	15.7									+19°	-7°	Yes	Fig.3		

● : Standard Stock
○ : World Express

When using inserts with corner radii 0.063" or larger, additional modifications of the cutter body will be necessary. See the chart to the left for the recommended modifications.

Insert Corner R	Material to be removed from cutter body corner
0.063	R.040
0.079	R.040
0.122	R.063

MEC Facemills

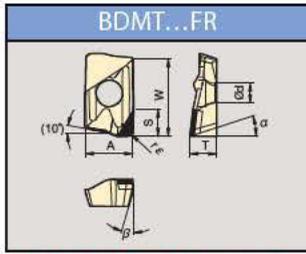


Description	Stock	No. of insert	Unit	Dimensions									Rake angle (°)		Fig.	Screw	Wrench	Max. Rev	
				ϕD	ϕd	$\phi d1$	$\phi d2$	H	E	a	b	S	A.R.	R.R.					
MEC 1500R-11T-5T	●	5	in	1.500		.630			.807						+23°	1	SB-2555TRG	DTM-8	30,700
	●	5		2.000	0.750	.646	.417	1.575	.819	.188	.312			22,300					
	●	6		2.500		.630			.819			.394		20,400					
	●	7		3.000	1.000	.827	.555	1.969	.878	.223	.375			18,500					
	●	9		4.000	1.500	1.969	-	2.480	1.654	.375	.625			16,800					
MEC 2000R-17-4T	●	4	in	2.000	0.750	.646	.417	1.575	.819	.188	.312			+17°	1	SB-4070TRN	DTM-15	16,800	
	●	5		2.500		.646			.819			.618						14,400	
	●	6		3.000	1.000	.827	.555	1.969	.878	.223	.375							12,250	
	●	7		4.000	1.500	1.969	-	2.480	1.654	.375	.625							10,400	
Standard	MEC	○	5	40	16	14	8.5	40	20	5.5	8.5	10	+23°	1	SB-2555TRG	DTM-8	30,000		
		○	5	50					22	6.3	10.4						22,500		
		○	6	63	22	18	12										20,500		
		○	6	63	25.4	20	14	50	26	6	9.5						20,500		
		○	7	80													18,500		
		○	9	100	31.75	26	17.6	63	32	8	12.7						17,000		
		○	11	125	38.1	45	32		38	10	15.9						15,000		
		○	14	160	50.8	70	-		47	10	19.1						13,900		
		Fine pitch	MEC	○	7	50			40	20	5.5						8.5	10	+23°
○	8			63	22	18	12	22		6.3	10.4	20,500							
○	8			63	25.4	20	14	50		26	6	9.5	20,500						
○	10			80								18,500							
Standard	MEC	○	4	40	16	14	8.5	40	20	5.5	8.5	15.7	-7°	1	SB-4070TRN	DTM-15	25,000		
		○	4	50					22	6.3	10.4						17,000		
		○	5	63	22	18	12										14,500		
		○	5	63	25.4	20	14	50	26	6	9.5						14,500		
		○	6	80							12,000								
		○	7	100	31.75	26	17.6	63	32	8	12.7						10,500		
		○	9	125	38.1	45	32		38	10	15.9						8,900		
		○	12	160	50.8	70	-		47	10	19.1						7,400		
Fine pitch	MEC	○	5	50			40	20	5.5	8.5	15.7	+19°	1	SB-4070TRN	DTM-15	17,000			
		○	6	63	22	18		12	22	6.3						10.4	14,500		
		○	6	63	25.4	20		14	50	26						6	9.5	14,500	
		○	8	80													12,000		
		○	9	100	31.75	26		17.6	63	32						8	12.7	10,500	

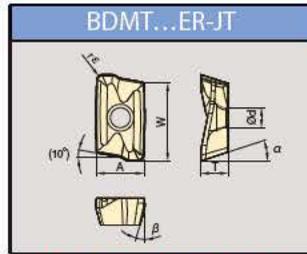
● : Standard Stock
○ : World Express

Milling Cutter	Insert
MEC...11T	BDMT 11T3
MEC...17	BDMT 1704

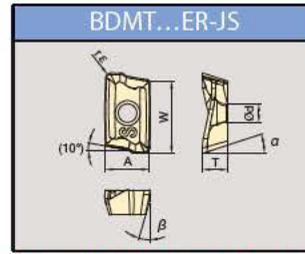
MEC Applicable Inserts



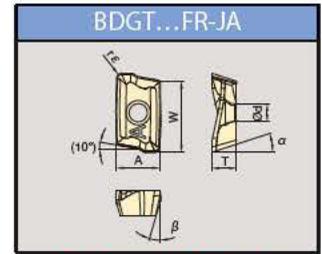
For High Speed Machining of Aluminum



For General Machining of Steel and Cast Iron



For General Machining of Stainless Steel and Low Carbon Steel



For General Machining of Aluminum

Chipbreaker Lineup

General Purpose
JT Chipbreaker



Low resistance
JS Chipbreaker



20% Cutting Force Reduction

Aluminum
JA Chipbreaker



Material	☆	★	■	□	Usage Guide
Carbon Steel, Alloy Steel	☆			★	Usage Guide ★: Roughing/ First choice ☆: Roughing/ Second choice ■: Finishing/ First choice □: Finishing/ Second choice
Die steel	☆			★	
Stainless steel		☆		★	
Grey cast Iron				★	
Ductile cast Iron				★	
Non ferrous metal				★	
Heat resistant part				★	
Titanium Alloy				★	
Hardened Material	□				

Description	Dimension (inch)						Angle (°)		PVD Coated			MEGACOAT PVD Coated		Carbide	PCD	Applicable Toolholder
	A	T	φd	W	re	S	α	β	PR830	PR905	PR1025	PR1210	PR1225	GW25	KPD001	
	BDMT	110302ER-JT	0.248	0.118	0.110	0.443		15°	○	●		●	●			MEC...-11
		110304ER-JT							●	●		●	●			
		110308ER-JT							●	●		●	●			
	BDMT	11T302ER-JT	0.264	0.150	0.110	0.433		18°	13°		○		●	●		MEC...-11T MEC...R-11
		11T304ER-JT								●	●		●	●		
		11T308ER-JT								●	●		●	●		
		11T312ER-JT								●	●		●	●		
		11T316ER-JT								●	●		●	●		
		11T320ER-JT								●	●		●	●		
		11T324ER-JT								●	○		●	●		
	11T331ER-JT	●	●		●	●										
	BDMT	170404ER-JT	0.378	0.193	0.173	0.669		18°	13°	●	●		●	●		MEC...-17 MEC...R-17
		170408ER-JT								●	●		●	●		
		170412ER-JT								●	●		●	●		
		170416ER-JT								●	●		●	●		
170420ER-JT		●								●		●	●			
170424ER-JT		●								●		●	●			
170431ER-JT		●								●		●	●			
170440ER-JT	○	○		●	●											
	BDMT	110302ER-JS	0.248	0.118	0.110	0.443	18°	15°	●	○		●	●		MEC...-11T MEC...R-11	
		110304ER-JS							●		●	●				
		110308ER-JS							●		●	●				
	BDMT	11T302ER-JS	0.264	0.150	0.110	0.433		18°	13°	○			●	●	MEC...-17 MEC...R-17	
		11T304ER-JS								●		●	●			
		11T308ER-JS								●		●	●			
	BDMT	11T302FR	0.264	0.150	0.110	0.433	3.6	18°	13°					●	MEC...-11T MEC...R-11	
		11T304FR								●						
	BDMT	170402FR	0.378	0.193	0.173	0.669	4.4	18°	13°					●	MEC...-11T MEC...R-11	
		170404FR								●						
	BDGT	11T302FR-JA	0.264	0.150	0.110	0.433		18°	13°					●	MEC...-11T MEC...R-11	
		11T304FR-JA								●						
		11T308FR-JA								●						
	BDGT	170404FR-JA	0.378	0.193	0.173	0.669		18°	13°					●	MEC...-17 MEC...R-17	
		170408FR-JA								●						
170420FR-JA	●															

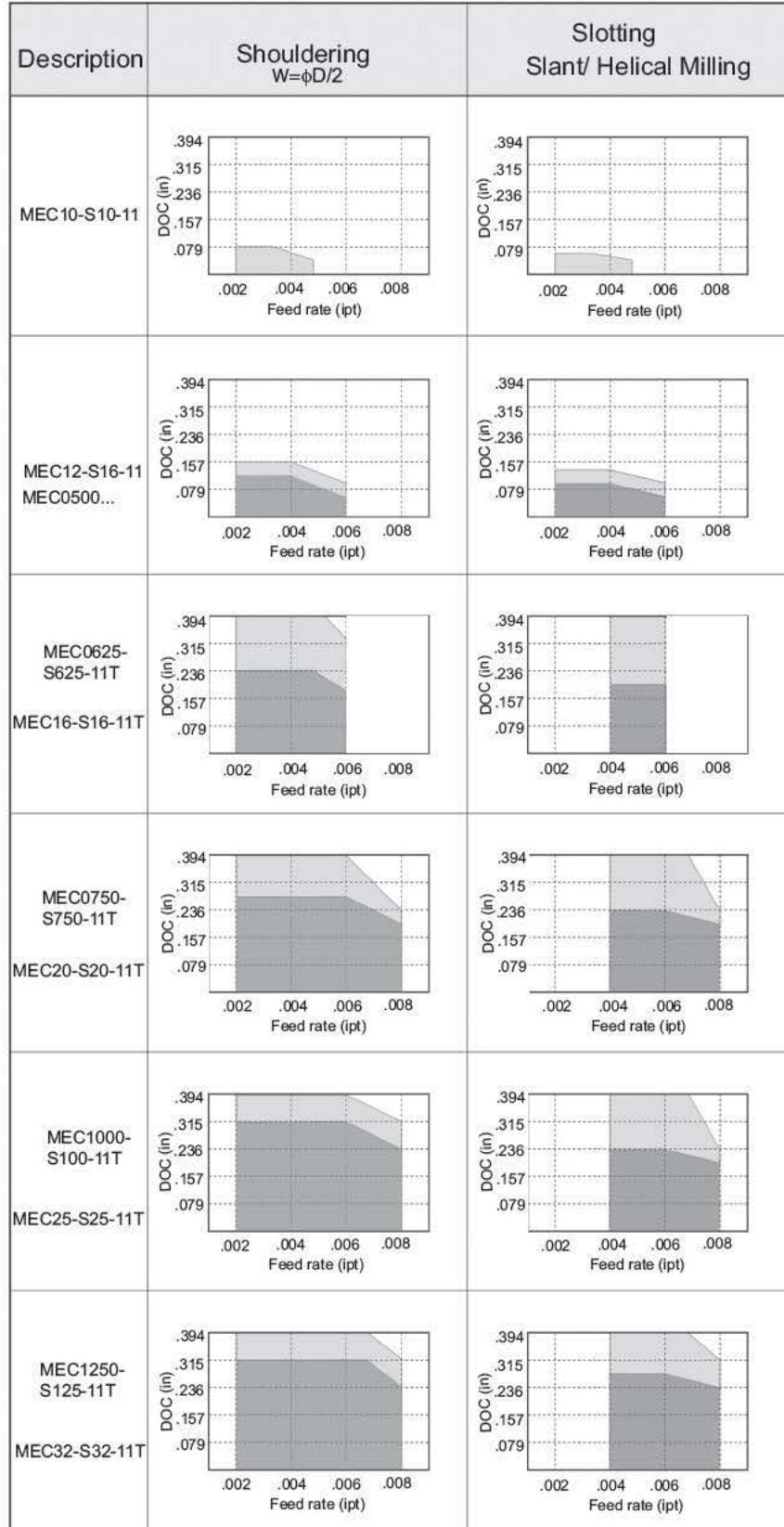
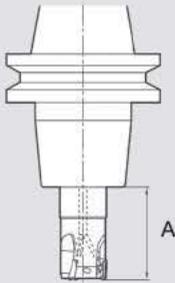
● : Standard Stock
○ : World Express

MEC Endmill Cutting Performance

Cutting Edge Length 0.394 in

V= 400sfm, 1050

Description	A Overhang length (in)	
MEC10-S10-11	.670	-
MEC12-S16-11 / MEC0500...	.787	1.18
MEC16-S16-11T / MEC0625-S625-11T	1.18	1.79
MEC20-S20-11T / MEC0750-S750-11T	1.18	1.79
MEC25-S25-11T / MEC1000-S100-11T	1.26	1.89
MEC32-S32-11T / MEC1250-S125-11T	1.58	2.36

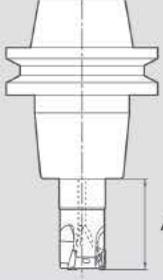
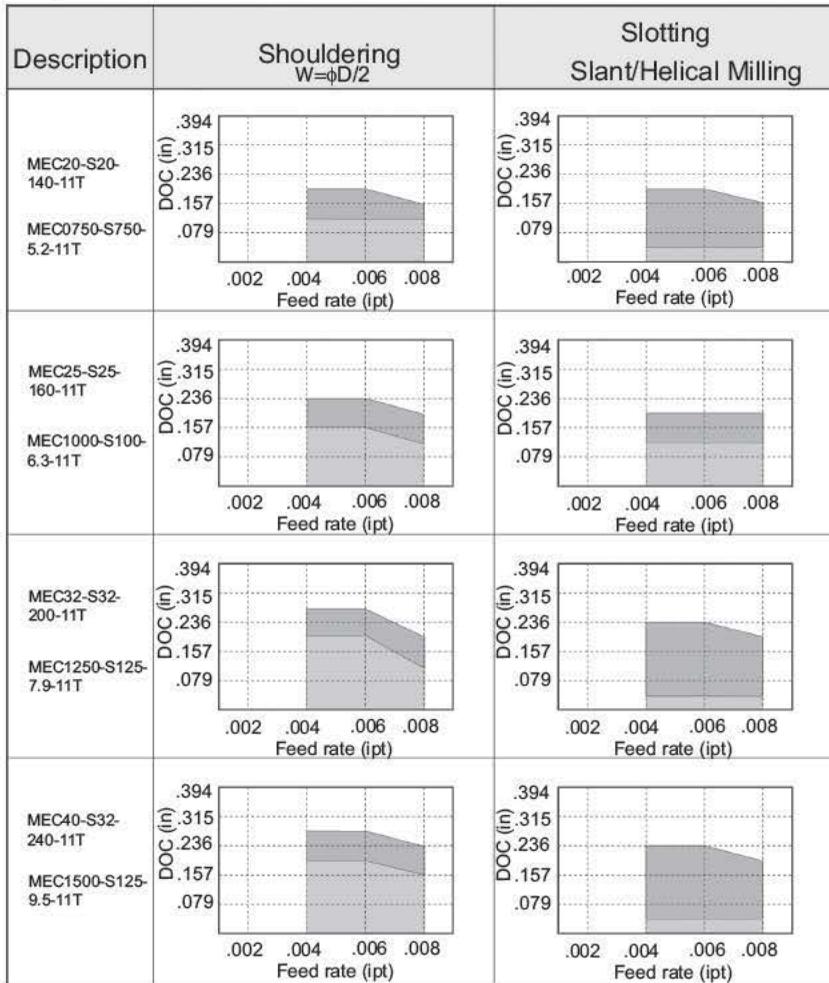


MEC Endmill Cutting Performance

Cutting Edge Length 0.394 in (Long Shank)

v=400 SFM

Description	A Overhang length (in)	
	MEC20-S20-140-11T MEC0750-S750-5.2-11T	2.362
MEC25-S25-160-11T MEC1000-S100-6.3-11T	2.362	3.957
MEC32-S32-200-11T MEC1250-S125-7.9-11T	3.957	5.118
MEC40-S32-240-11T MEC1500-S125-9.5-11T	3.957	5.118

Maximum Revolution

When running the endmill at revolutions exceeding the maximum revolution limit, the inserts or toolholder may be damaged due to the centrifugal force.

When using at a higher revolution (over 10,000/min), refer to the table to adjust the balance of MEC and suitable arbor

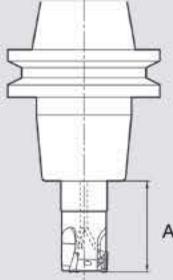
Max. Revolution	JIS ISO
~20,000	G16
~30,000	G6.3
30,000~	G2.5

MEC Endmill Cutting Performance

Cutting Edge Length 0.618 in

v=400 SFM

Description	A Overhang length (in)	
	MEC25-S25-17 / MEC1000-S100-17	1.417
MEC32-S32-17 / MEC1250-S125-17	1.575	2.362
MEC40-S32-17 / MEC1500-S125-17	1.969	2.953
MEC25-S25-160-17 MEC1000-S100-6.3-17	2.362	3.937
MEC32-S32-200-17 MEC1250-S125-7.9-17	3.937	5.118
MEC40-S32-240-17 MEC1500-S125-9.5-17	3.937	5.118



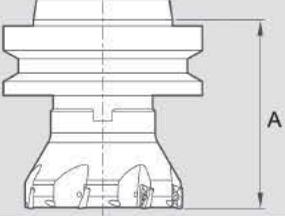
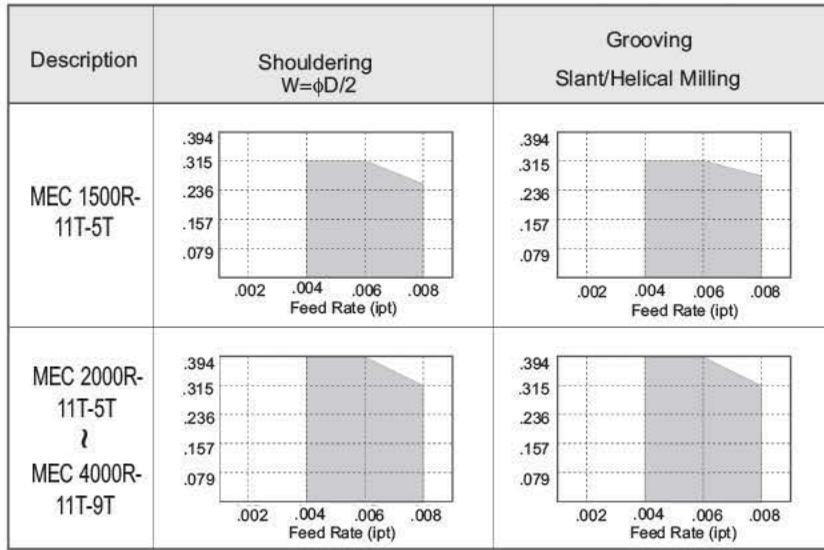
Description	Shouldering		Slotting Slant/Helical Milling	
MEC1000-S100-17 MEC25-S25-17				
MEC1250-S125-17 MEC32-S32-17				
MEC1500-S125-17 MEC40-S32-17				
MEC1000-S100-6.3-17 MEC25-S25-160-17				
MEC1250-S125-7.9-17 MEC32-S32-200-17				
MEC1500-S125-9.5-17 MEC40-S32-240-17				

MEC Facemill Cutting Performance

Cutting Edge Length 0.394 in

V= 400sfm 1050

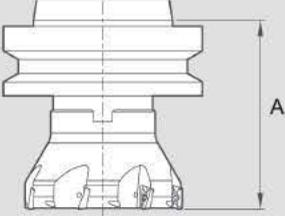
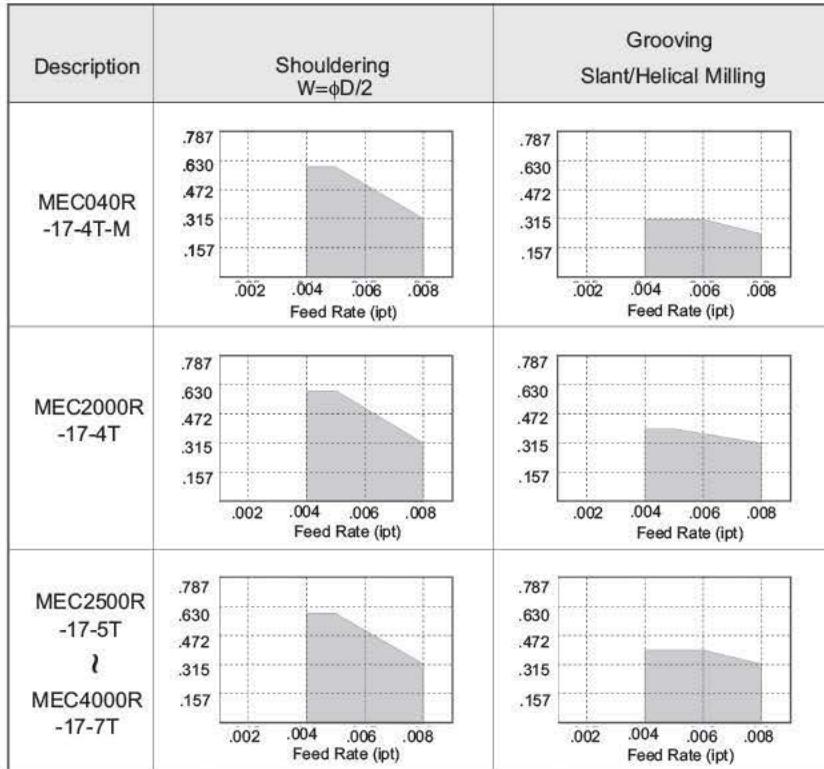
Description	A Overhang length
MEC 1500R-11T-5T	4.528
MEC 2000R-11T-5T	3.937
MEC 2500R-11T-6T	3.740
MEC 3000R-11T-7T	3.740
MEC 4000R-11T-9T	4.252

Cutting Edge Length .618 in

V= 400sfm 1050

Description	A Overhang length
MEC 040R-17-4T	4.528
MEC 2000R-17-4T	3.937
MEC 2500R-17-5T	3.740
MEC 3000R-17-6T	3.740
MEC 4000R-17-7T	4.252

■ MEC Recommended Cutting Conditions

• JT Chipbreaker

Work Material	Feed per tooth (ipt)		Insert Grade (Cutting Speed : sfm)		
			MEGACOAT	PVD Coated	MEGACOAT
	Cutting Diameter		PR1225	PR830	PR1210
	Φ0.500"~Φ0.750" <MEC0500 ~ MEC0750>	Φ1.00~Φ4.00" <MEC1000 ~ MEC1500 <MEC1500R~MEC4000R>			
Stainless Steel	0.002~0.003~0.004	0.003~0.005~0.006	★ 325~650	☆ 325~600	—
Carbon Steel	0.002~0.004~0.006	0.003~0.006~0.010	★ 400~820	☆ 400~650	—
Alloy Steel	0.002~0.004~0.005	0.003~0.006~0.008	★ 325~725	☆ 325~600	—
Metal Mold Steel	0.002~0.003~0.004	0.003~0.005~0.008	★ 250~600	☆ 250~500	—
Gray Cast Iron	0.003~0.004~0.006	0.003~0.007~0.010	—	—	★ 325~600
Ductile Iron	0.002~0.003~0.004	0.003~0.006~0.008	—	—	★ 250~400
Titanium	0.002~0.003~0.004	0.003~0.006~0.008	—	—	★ 100~230

★ : 1st Choice ☆ : 2nd Choice

• JS Chipbreaker

Work Material	Feed per tooth (ipt)		Insert Grade (Cutting Speed : sfm)		
			MEGACOAT	PVD Coated	PVD Coated
	Cutting Diameter		PR1225	PR830	PR1025
	Φ0.500"~Φ0.750" <MEC0500 ~ MEC0750>	Φ1.00~Φ4.00" <MEC1000 ~ MEC1500 <MEC1500R~MEC4000R>			
Stainless Steel	0.002~0.003~0.004	0.003~0.004~0.005	★ 400~820	☆ 325~600	☆ 325~600
Carbon Steel	0.002~0.004~0.006	0.003~0.006~0.007	★ 400~820	☆ 400~650	☆ 400~650
Alloy Steel	0.002~0.004~0.005	0.003~0.005~0.006	★ 325~725	☆ 325~600	—
Metal Mold Steel	0.002~0.003~0.004	0.003~0.005~0.005	★ 250~600	☆ 250~500	—

★ : 1st Choice ☆ : 2nd Choice

• JA Chipbreaker

Work Material	Feed per tooth (ipt)	Insert Grade (Cutting Speed :sfm)
		Carbide
		GW25
Aluminum alloy(SI less 13%)	0.002~0.012	650~2600
Aluminum alloy(SI over 13%)	0.002~0.008	650~1000

• PCD

Work Material	Feed per tooth (ipt)	Insert Grade (Cutting Speed : sfm)
		PVD
		KPD001
Aluminum alloy(SI less 13%)	0.002~0.008	1650~5000
Aluminum alloy(SI over 13%)	0.002~0.006	1000~3250

Warning about maximum revolution indicated on the product

1. If the tool is used over maximum recommended revolution the body of the tool may be broken by inserts and clamp screws which may be dispersed by centrifugal force.
2. Machine within the recommended cutting conditions of the insert.
3. When using at higher revolution (over 10,000/min¹), refer to the table shown on the right to adjust the balance by combining MEC and suitable arbor.

Max. Revolution (min ¹)	ISO 1940-1/8821 (JIS B0905)
~20,000	G16
~30,000	G6.3
30,000~	G2.5

■ Note for Slant Milling, Helical Milling and Vertical Milling with the MEC

Slant Milling • Helical Milling

- Ramping Angle should be Under α°
- For plunge depth per revolution when helical milling, see the cutting performance data of each tool.
Use compressed air during machining.

Cutting Dia.	Applicable Insert	Max.Ramping Angle(α°)
$\Phi 16\text{mm}, \Phi 18\text{mm}$ $\Phi 0.625''$	BDMT11T3 type BDGT11T3 type	3°
$\Phi 20\text{mm}; \Phi 0.750''$		5°
$\Phi 22\text{mm}, \Phi 25\text{mm}$ $\Phi 1.000''$		2.5°
$\Phi 28\sim\Phi 32\text{mm}$ $\Phi 1.250''$		1.5°
$\Phi 40\text{mm}; \Phi 1.500''$		0.7°
$\Phi 25\text{mm}; \Phi 1.000''$	BDMT1704 type BDGT1704 type	8°
$\Phi 32\text{mm}; \Phi 1.250''$		5°
$\Phi 40\text{mm}; \Phi 1.500''$		2.5°

BDMT1103 inserts are not recommended for Slant Milling or Helical Milling.

Vertical Milling

Cutting Dia.	Applicable Insert	Max.W.O.C.(ae)
$\Phi 16\text{mm}, \Phi 18\text{mm}$ $\Phi 0.625''$	BDMT11T3 type BDGT11T3 type	0.05"
$\Phi 20\text{mm}\sim\Phi 160\text{mm}$ $\Phi 0.750''\sim\Phi 4.000''$	BDMT11T3 type BDGT11T3 type	0.20"
$\Phi 25\text{mm}\sim\Phi 160\text{mm}$ $\Phi 1.000''\sim\Phi 4.000''$	BDMT1704 type BDGT1704 type	0.30"

BDMT1103 inserts are not recommended for Vertical Milling.

■ MEC Case Studies

RC55 (Prehardened Tool Steel)	
<ul style="list-style-type: none"> • Test Piece (54~56HRC) • $V_c=175\text{ sfm}$ ($n=800\text{ min}^{-1}$) • $a_p \times a_e=0.08'' \times 0.55''$ • $f_z=0.005\text{ ipt}$ ($V_f=11.8\text{ ipm}$) • Dry • MEC20-S20-11T • 3teeth • BDMT11T308ER-JT (PR830) 	
MEC	Metal Removal Volume=4.35 in ³ (continuable)
Competitor A	Metal Removal Volume=0.18 in ³ (Chipping)
<ul style="list-style-type: none"> • Comp. A($\Phi 25:2$ teeth) caused chipping after 10 minutes machining with the conditions of $V_c=131\text{ sfm}$, $f_z=0.003\text{ ipt}$, $a_p \times a_e=0.08'' \times 0.12''$, and it was noisy. Also, higher feed rate was not possible because it would cause breakage. • MEC maintained a good edge condition even after 10 minutes and was still available for further machining. <p>(Evaluation from the user)</p>	

SS400	
<ul style="list-style-type: none"> • Plate • $V_c=300\text{ sfm}$ ($n=1400\text{ min}^{-1}$) • $a_p=0.20'' \times 2$ Pass • $f_z=0.005\text{ ipt}$ ($V_f=19.7\text{ ipm}$) • Dry • MEC20-S20-11T • 3teeth • BDMT11T308ER-JT (PR830) 	
MEC	23 pcs/edge
Competitor B	10~11 pcs/edge
<ul style="list-style-type: none"> • MEC doubled Competitor B's tool life under the same machining conditions. <p>(Evaluation from the user)</p>	

MECX

High Efficiency / Low Cutting Force

- ◆ Extra-fine pitch increases machining efficiency
- ◆ Low cutting forces
- ◆ Ideal for lower horsepower machines

■ First Choice Grade Lineup



PR1225

Work Material	Carbon steel · Alloy steel			
Cutting Range	Finishing		Roughing	
Classification	P01	P10	P20	P30
Applicable Range	PR1225			



PR1225

Work Material	Stainless			
Cutting Range	Finishing		Roughing	
Classification	M01	M10	M20	M30
Applicable Range	PR1225			



PR905

Work Material	Cast Iron			
Cutting Range	Finishing		Roughing	
Classification	K01	K10	K20	M30
Applicable Range	PR905			

■ MECX Chipbreakers

JT Chipbreaker

General Purpose
(tough edge)

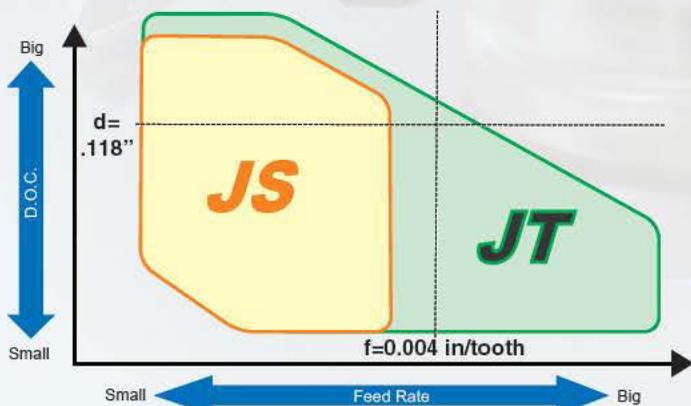


JS Chipbreaker

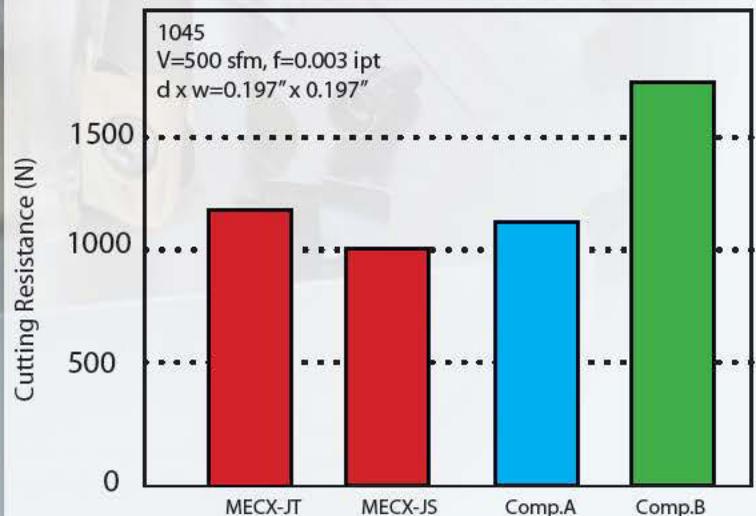
Low Resistance
(sharp edge)



■ Chipbreaker Application Chart



■ Low Cutting Forces: 4140 Steel



◆ Cutting Edge Strength Comparison

# of passes	25	50	75	
MECX-JT	[Red arrows pointing from 25 to 75]			75
Competitor A	x 28			
Competitor B	x 24			
	x 7			
	x 20			

4140 Steel V=400 sfm f=0.008 ipt d x w = 0.08" x 0.4"

◆ Holder Strength Comparison

# of passes	100	200	300	
MECX-JT	[Red arrows pointing from 100 to 300]			260
Competitor A	x 60			
Competitor B	x 103			
	x 96			
			x 227	

1049 Cutting Diameter 0.787" V=400 sfm f=0.006 ipt d x w = 0.2" x 0.275"

◆ MEC and MECX Comparison (1" diameter cutter)



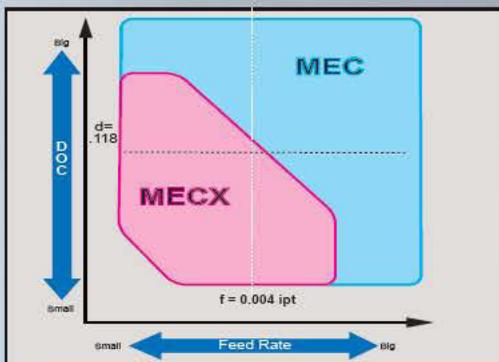
MECX1000-S100-07-7T

MEC1000-S100-11T

MEC1000-S100-17

MECX-07	MEC-11	MEC-17
 BDMT070304ER-JT	 BDMT11T308ER-JT	 BDMT170408ER-JT
1) Multiple inserts promote increased table feeds and high efficiency machining 2) Low resistance and high toughness, optimum for low horsepower machines	1) Low resistance and high toughness with an 11mm insert 2) High efficiency machining by ensuring toolholder toughness and increased edge contact	1) 17mm edge length insert provides larger depths of cut

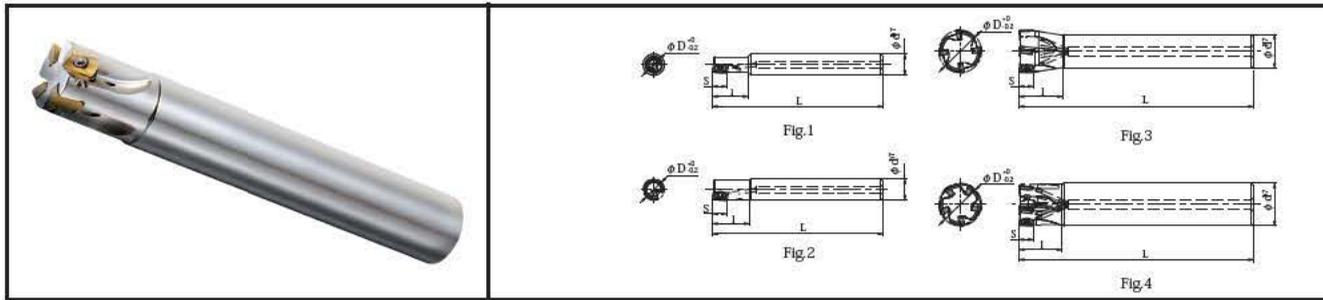
◆ MEC and MECX Application Ranges



◆ Facemill Series



Lineup : Cutter Dia. ϕ 1.25", ϕ 1.5", ϕ 2", ϕ 2.5"



MECX Endmills (Inch)

Description	Stock	# of Inserts	Dimensions					Rake Angle		Coolant Hole	Figure	Spare Parts		Applicable Insert	Maximum Revolution		
			ΦD	Φd	L	I	S	A.R. (max)	R.R.			Clamp Screw	Wrench				
Standard Shank	MECX	●	0375-S375-07-1T	.375	.375	3.00	.669		12.8°	-19.7°		Fig.1	SB-2035TRG	DTM-6	BD MT0703	47150	
			0500-S500-07-2T	.500	.500	3.27	.709		14.3°	-12.9°		Fig.2				45800	
			0625-S625-07-3T	.625		3.50				-11.3°		Fig.3				43300	
			0750-S625-07-4T	.750	.625	4.00				-10.9°		Fig.2				40900	
			0750-S625-07-5T	.750		4.00						Fig.2				40900	
			0750-S750-07-4T	.750	.750	4.00						Fig.2				40900	
			0750-S750-07-5T	.750	.750	4.00						Fig.2				40900	
			1000-S100-07-5T	1.00	1.00	4.50						Fig.2				36900	
			1000-S100-07-7T	1.00	1.00	4.50						Fig.2				36900	
			1000-S750-07-5T	1.00	.750	4.50						Fig.3				36900	
			1000-S750-07-7T	1.00	.750	4.50						Fig.2				36900	
			1250-S125-07-6T	1.25	1.25	5.00	1.181				-8.9°					Fig.2	33700
1250-S125-07-8T	1.25	1.25	5.00	1.181				-8.9°		Fig.2	33700						
Long Shank	MECXL	●	0625-S625-07-3T	.625	.625	5.10	2.165		16.3°	-11.3°		Fig.4	SB-2042TRG	DTM-6	BDMT0703	43300	
			0750-S750-07-4T	.750	.750	5.50	2.362			-10.9°						40900	
			1000-S100-07-5T	1.00	1.00	6.30	2.362			-9.5°						36900	
			1250-S125-07-6T	1.25	1.25	7.90	2.559			-8.9°						33700	

MECX Endmill (Metric)

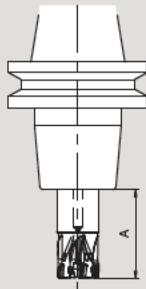
Description	Stock	# of Inserts	Dimensions					Rake Angle		Coolant Hole	Figure	Spare Parts		Applicable Insert	Maximum Revolution							
			ΦD	Φd	L	I	S	A.R. (max)	R.R.			Clamp Screw	Wrench									
Standard Shank	Standard	○	MECX 08-S10-07-1T	8	10	80	16		11.7°	-24.0°		Fig.1	SB-2035TRG	DTM-6	BDMT0703	48,100						
			14-S12-07-2T	14	12		18			-12.1°		Fig.3				44,800						
			17-S16-07-3T	17		100				-11.0°						42,400						
			18-S16-07-3T	18	16		20			-10.9°						41,600						
			20-S16-07-4T	20		110				-10.4°						40,200						
			21-S20-07-4T	21	20					-10.1°						39,500						
			25-S20-07-5T	25	25	120	25			-9.7°						37,000						
			26-S25-07-5T	26	25					-9.5°						36,500						
			33-S32-07-6T	33	32	130	30			-8.8°						33,100						
			Fine pitch	MECX	○	20-S16-07-5T	20	16	110	20						16.3°	-10.4°		Fig.3	DTM-6	BDMT0703	40,200
						25-S20-07-7T	25	20	120	25							-9.7°		Fig.3	DTM-6	BDMT0703	37,000
						Same Shank Size	Standard	○	MECX 10-S10-07-1T	10	10					80	17		12.8°	-18.7°		Fig.2
12-S12-07-2T	12	12								18				-13.7°		46,200						
16-S16-07-3T	16	16							100				-11.3°		43,200							
20-S20-07-4T	20	20							110	20			-10.4°		40,200							
25-S25-07-5T	25	25	120	25			-9.7°		37,000													
32-S32-07-6T	32	32	130	30			-8.9°		33,600													
Fine pitch	MECX	○	16-S16-07-4T	16	16	100	20		16.3°	-11.3°		Fig.4	SB-2042TRG	DTM-6	BDMT0703	43,200						
			20-S20-07-5T	20	20	110				-10.4°						40,200						
			25-S25-07-7T	25	25	120	25			-9.7°						37,000						
			32-S32-07-8T	32	32	130	30			-8.9°						33,600						
Long Shank	Standard	○	MECX 17-S16-130-07-3T	17	16	130	20		16.3°	-11.0°		Fig.3	SB-2042TRG	DTM-6	BDMT0703	42,400						
			21-S20-140-07-4T	21	20	140				-10.1°						39,500						
			26-S25-160-07-5T	26	25	160	25			-9.5°						36,500						
			33-S32-200-07-6T	33	32	200	30			-8.8°						33,100						

● : Standard Stock
○ : World Express

MECX Endmill Cutting Performance

V=492 SFM Workpiece :1049

Cutting Diameter	Description	Overhang Length A(inch)	
		Max	Min
Ø8mm	MECX08-S10-07-1T	.630	-
Ø10mm	MECX10-S10-07-1T	.670	-
Ø0.375"	MECX0375-S375-07-1T		
Ø12mm	MECX12-S12-07-3T	.709	1.18
Ø0.500"	MECX0500-S500-07-2T		
Ø16mm	MECX16-S16-07-3T	.787	1.57
Ø0.625"	MECX0625-S625-07-4T		
Ø20mm	MECX20-S20-07-4T	.787	1.57
Ø0.750"	MECX0750-S750-07-4T		
Ø25mm	MECX25-S25-07-5T	1.00	1.97
Ø1.000"	MECX1000-S100-07-5T		
Ø32mm	MECX32-S32-07-6T	1.18	1.97
Ø1.250"	MECX1250-S125-07-6T		



Cutting condition of the JS Chipbreaker:

MECX Diameter 0.375"~0.500"

Decrease the feed rate by 25% according to cutting parameters

MECX Diameter 0.625" and above

Decrease the feed rate and D.O.C by 30% according to cutting parameters

Extending the overhang of 8mm and 10mm diameters is not recommended.

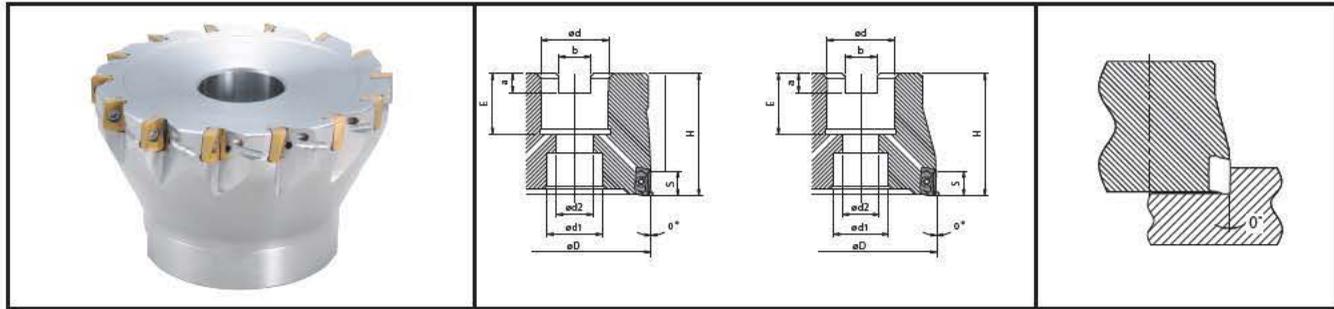
Caution:

1. If the tool is used over the maximum recommended revolution, the body of the tool may break and the inserts and clamp screws may be dispersed by centrifugal force.
2. Machine within the recommended cutting conditions of the insert.
3. When using at higher revolutions (over 10,000min-1), refer to the table shown on the right to adjust the balance by combining the MECX and a suitable arbor.

Description	W=φ D/2	Grooving
	Shouldering	Slant/Helical Milling
MECX08-S10-07-1T		
MECX0375-S375-07-1T MECX10-S10-07-1T		
MECX0500-S500-07-2T MECX12-S12-07-3T		
MECX0625-S625-07-4T MECX16-S16-07-3T		
MECX0750-S750-07-4T MECX20-S20-07-4T		
MECX1000-S100-07-5T MECX25-S25-07-5T		
MECX1250-S125-07-6T MECX32-S32-07-6T		

* Cutting conditions listed are for the JT chipbreaker used in the cutter with minimal cutting edges. When machining under 70% of maximum D.O.C., select the cutter with additional cutting edges.

Maximum Revolution	JIS ISO
~20,000	G16
~30,000	G6.3
30,000~	G2.5



MECX Facemill (Inch)

Description	Stock	# of Inserts	Dimension (inch)									Rake Angle		Shape	Maximum Revolution
			ΦD	Φd	Φd1	Φd2	H	E	a	b	S	A.R.	R.R.		
MECX 1250R-07-8T	●	8	1.25	0.75	0.630	0.417	1.575	0.807	0.187	0.313	0.236	+7°	-8.9°	Fig.5	33,600
1500R-07-10T	●	10	1.5	0.75	0.630	0.417	1.575	0.807	0.187	0.313			-8.4°		30,500
2000R-07-12T	●	12	2	0.75	0.646	0.417	1.575	0.819	0.187	0.313			-8.3°	Fig.6	27,700
2500R-07-14T	●	14	2.5	0.75	0.630	0.417	1.575	0.819	0.187	0.313			-7.9°		24,900

● : Standard Stock

MECX Facemill (Metric)

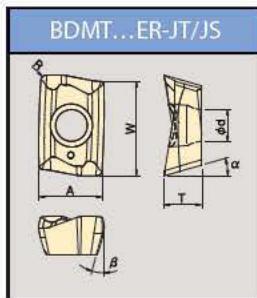
Description	Stock	# of Inserts	Dimension (mm)									Rake Angle		Shape	Maximum Revolution
			ΦD	Φd	Φd1	Φd2	H	E	a	b	S	A.R.	R.R.		
MECX 032R-07-8T-M	○	8	32	16	14	8.5	35	20	5.5	8.5	6	+7°	-8.9°	Fig.5	33,600
040R-07-10T-M	○	10	40	22	18	12	40	22	6.3	10.4			-8.4°		30,500
050R-07-12T-M	○	12	50										-8.3°	Fig.6	27,700
063R-07-14T-M	○	14	63	-7.9°	24,900										

○ : World Express

Maximum Revolution

When running the endmill at the maximum recommended revolution, holder or insert breakage may occur due to the centrifugal force. In order to obtain a smooth surface with the MECX, take multiple cuts at d=0.2" each.

MECX Inserts



Description	Dimension					Angle (°)		Stock			
	A	T	Φd	W	R	α	β	PVD Coated Carbide			MEGACOAT
								PR830	PR1025	PR905	PR1225
BDMT 070302ER-JT	.181	.102	.091	.264	0.008	16	15	●	●	●	●
070304ER-JT					0.016			●	●	●	●
070308ER-JT					0.031			●	●	●	●
BDMT 070302ER-JS	.181	.102	.091	.264	0.008	16	15	●	●	●	●
070304ER-JS					0.016			●	●	●	●
070308ER-JS					0.031			●	●	●	●

● : Standard Stock
○ : World Express

MECX Facemill Cutting Performance

[Vc=500 sfm Workpiece : S50C]

Description	At Shouldering
MECX1250R-07-8T MECX032R-07-8T-M MECX1500R-07-10T MECX040R-07-10T-M	
MECX2000R-07-12T MECX050R-07-12T-M MECX2500R-07-14T MECX063R-07-14T-M	

Cutting Diameter	Description	Overhang Length A 3.94"/100mm
1.25" 32mm	MECX1250R-07-8T MECX032R-07-8T-M	
1.5" 40mm	MECX1500R-07-10T MECX040R-07-10T-M	
2" 50mm	MECX2000R-07-12T MECX050R-07-12T-M	
2.5" 63mm	MECX2500R-07-14T MECX063R-07-14T-M	

MECX Recommended Cutting Conditions

(JT Chipbreaker)

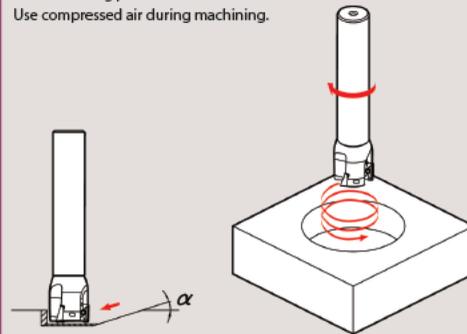
Work Material	Feed Rate (in/tooth)	Insert Grade Speed			
		PR830	PR1025	PR905	PR1225
Stainless Steel	0.002~0.003~0.004		☆ 325~650		★ 400~820
Carbon Steel	0.003~0.004~0.006	☆ 400~600			★ 400~820
Alloy Steel	0.002~0.003~0.005	☆ 325~600			★ 325~725
Metal Mold Steel	0.002~0.003~0.005	☆ 250~500			★ 250~525
Gray Cast Iron	0.003~0.004~0.006			★ 325~600	
Ductile Iron	0.003~0.004~0.005			★ 250~400	

(JS Chipbreaker)

Work Material	Feed Rate (in/tooth)	Insert Grade Speed			
		PR830	PR1025	PR905	PR1225
Stainless Steel	0.0015~0.002~0.003		☆ 325~650		★ 400~820
Carbon Steel	0.0015~0.003~0.004	☆ 400~600			★ 400~820
Alloy Steel	0.0015~0.002~0.003	☆ 325~600			★ 325~725
Metal Mold Steel	0.0015~0.002~0.003	☆ 250~500			★ 250~525
Gray Cast Iron	0.0015~0.003~0.004			★ 325~600	
Ductile Iron	0.0015~0.002~0.003			★ 250~400	

Slant Milling / Helical Milling

For plunge depth per revolution at helical milling, see the cutting performance data for each tool.
Use compressed air during machining.



Cutting Diameter	Applicable Insert	Max.Ramping Angle(α°)
φ8mm/φ0.375"	BDMT0703	Not Recommended
φ10mm		1.5°
φ12,14mm/ φ0.500"		2°
φ16mm/φ16.25"		3°
φ17,18mm		1.5°
φ20mm/φ0.750"		2°
φ21mm		1.8°
φ25mm/φ1.00"		1.3°
φ26mm		1.2°
φ32mm/φ1.250"		0.8°
φ33mm		0.5°



MECH

Helical Endmill

Improved Chip Evacuation

Notched insert breaks chips into small pieces



Work Material: Structural Steel
 $V_c = 400$ sfm
 $ap \times ae = 1.57'' \times 0.40''$
 $fz = 0.0047$ ipt
 MECH032-S32-11-5-4T



A flat-cut flute provides excellent chip evacuation



Notched inserts lower cutting force, reduce chattering and maximize efficiency

Maximum Machining Efficiency



MECH
 $\phi 32$ mm
 4 Flutes

Improved Efficiency

22.76 in³/min
 $(ae=0.512'')$
 3.5 times higher metal removal rate

Comp. A
 $\phi 32$ mm
 3 Flutes

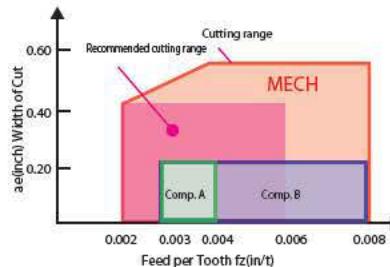
6.52 in³/min
 $(ae=0.197'')$

Comp. B
 $\phi 32$ mm
 3 Flutes

6.52 in³/min
 $(ae=0.197'')$

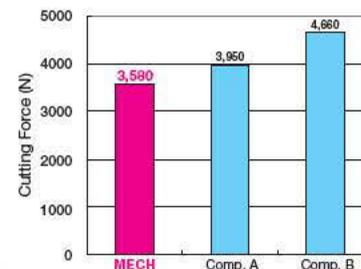
Work Material: S50C
 $V_c=400$ sfm
 $ap=1.57''$
 $ae=0.197'' \sim 0.512''$
 $fz=0.006$ ipt

Low Cutting Force



Work Material: S50C
 $V = 400$ sfm
 $ap \times ae = 1.57'' \times 0.20'' \sim 0.512''$
 $fz = 0.0023 \sim 0.008$ ipt
 MECH032-S32-11-5-4T

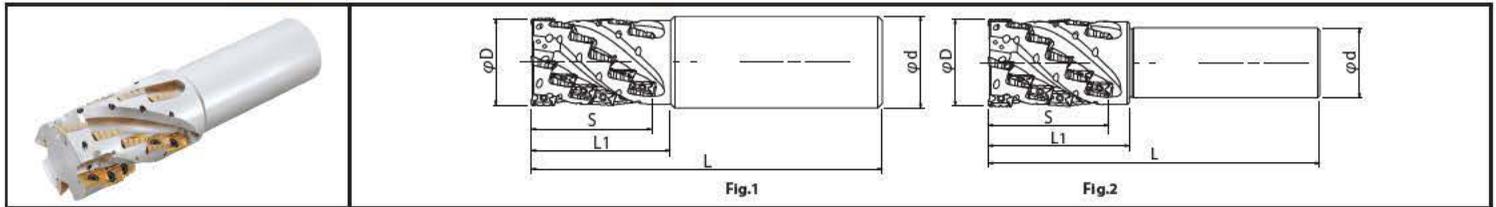
Cutting Force (principal force)



Work Material: S50C
 $V_c=400$ sfm
 $ap \times ae = 1.57'' \times 0.40''$
 $fz = 0.004$ ipt
 MECH032-S32-11-5-4T

Internal evaluation

MECH (Cylindrical Shank)

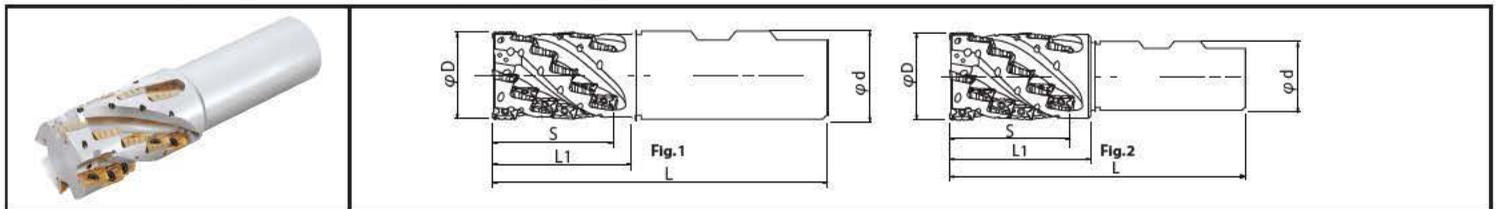


Toolholder Dimension (Metric)

Description	Stock	No. of Flute	No. of Stage	No. of Inserts	Dimension (mm)					Rake Angle(°)		Shape	Spare Parts			Applicable Insert								
					φD	φd	L	L1	S	A.R. (MAX)	R.R.		Clamp Screw	Wrench	Anti-seize Compound									
MECH 025-S25-11-4-2T	○	2	4	8	25	25	120	46	37	+21°	-10°	Fig.1	SB-2555TRG	DTM-8	MP-1	BDMT11T308ER-N2 BDMT11T308ER-N3								
032-S32-11-5-2T	○				5	10	32	140	55	46									-9°					
032-S32-11-5-4T	○	20																						
040-S32-11-6-4T	○	4	6	24	40	150	64	55	+23°	-8°	Fig.2													
040-S42-11-6-4T	○																7	28	42	160	75	64	-7°	Fig.2
050-S42-11-7-4T	○																							
050-S42-11-7-6T	○																							
MECH 040-S32-17-4-2T	○	2	4	8	40	32	160	73	59	+19°	-7°	Fig.2	SB-4070TRN	DTM-15	MP-1	BDMT170408ER-N3 BDMT170408ER-N4								
040-S42-17-4-2T	○					4	5	20	50								42	170	88	74	Fig.1			
050-S42-17-5-4T	○																							

MECH (Weldon Shank)

○ : World Express



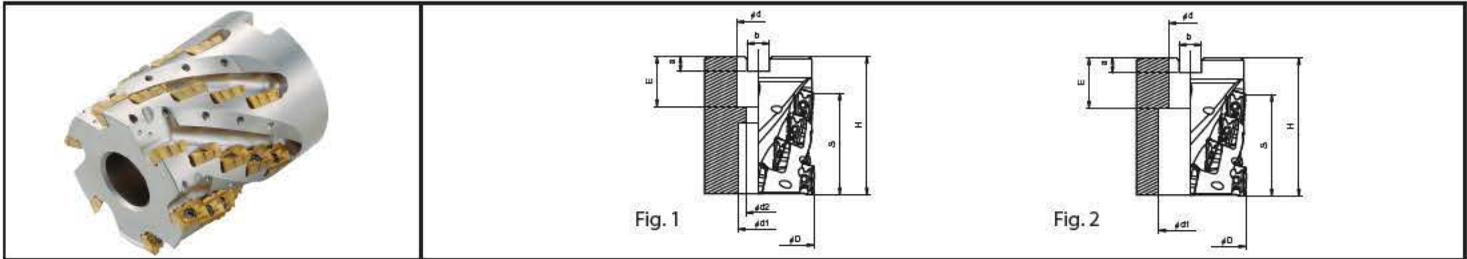
Toolholder Dimension (Inch)

Description	Stock	No. of Flute	No. of Stage	No. of Inserts	Dimension (inch)					Rake Angle(°)		Shape	Spare Parts			Applicable Insert									
					φD	φd	L	L1	S	A.R. (MAX)	R.R.		Clamp Screw	Wrench	Anti-seize Compound										
MECH 1000-W1000-11-4-2T	●	2	4	8	1.00	1.00	4.17	1.81	1.46	+21°	-10°	Fig.1	SB-2555TRG	DTM-8	MP-1	BDMT11T308ER-N2 BDMT11T308ER-N3									
1250-W1250-11-5-2T	●				5	10	1.25	1.25	4.52	2.17	1.81								-9°						
1250-W1250-11-5-4T	●	20																							
1500-W1250-11-6-4T	●	4	6	24	1.50	4.90	2.52	2.16	+23°	-8°	Fig.2														
1500-W1500-11-6-4T	●																7	28	2.00	1.50	5.28	2.95	2.52	-7°	Fig.1
2000-W1500-11-7-4T	●																								
2000-W1500-11-7-6T	●																								
MECH 1500-W1250-17-4-2T	●	2	4	8	1.50	1.25	5.26	2.87	2.32	+19°	-7°	Fig.2	SB-4070TRN	DTM-15	MP-1	BDMT170408ER-N3 BDMT170408ER-N4									
1500-W1500-17-4-2T	●					4	5	20	2.00								1.50	5.64	3.46	2.91	Fig.1				
2000-W1500-17-5-4T	●																								

• Apply thin coat of anti-seizing compound (MP-1) on clamp screw.

● : Standard Stock

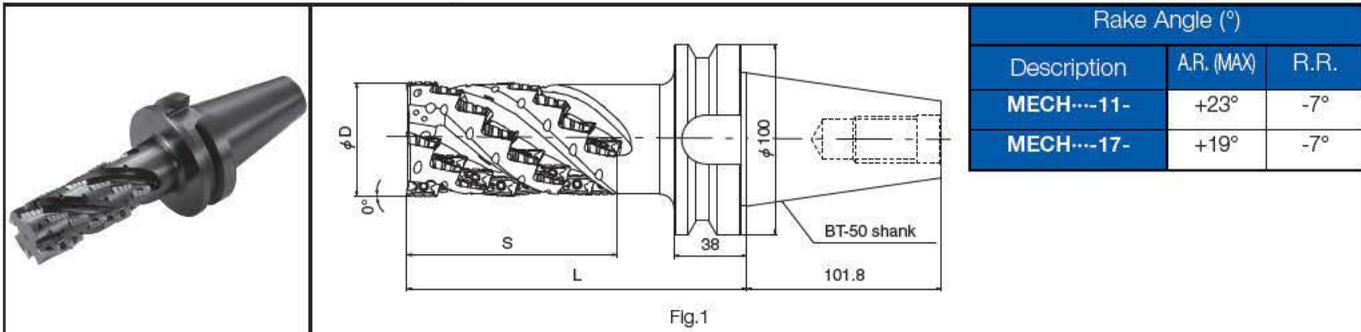
MECH Shell Mill



Description	Stock	No. of Flute	No. of Stage	No. of Insert	Unit	Dimension										Shape	Spare Parts				Applicable Inserts
						φD	φd	φd1	φd2	H	E	a	b	S	Clamp Screw		Wrench	Anti-seize Compound	Mounting Bolt		
MECH 2000R-11-5-6T	●	6	5	30	inch	2.00	0.75	0.630	0.417	2.480	0.750	0.197	0.313	1.811	Fig.1	SB-2555TRG	DTM-8	MP-1	HH3/8-1.5	BDMT11T308ER-N2 BDMT11T308ER-N3	
2000R-17-2-4T	●	4	2	8		2.047	0.750	0.197	0.313	1.181	Fig.1	SB-4070TRN	DTM-15	HH3/8-1.25		BDMT170408ER-N3					
2000R-17-4-4T	●	4	4	16		3.070	0.750	0.197	0.313	2.322		Fig.1	SB-4070TRN	DTM-15	HH3/8-1.25	BDMT170408ER-N4					
MECH 040R-11-4-4T-M	○	4	4	16	mm	40	16	15	9	50	19	5.6	8.4	37	Fig.1	SB-2555TRG	DTM-8		HH8x25	BDMT11T308ER-N2	
050R-11-5-6T-M	○	6	5	30		50	22	18	11	63	21	6.3	10.4	46		Fig.1	SB-2555TRG		DTM-8	HH10x30	BDMT11T308ER-N3
MECH 050R-17-2-4T-M	○	4	2	8		50	22	18	11	52	21	6.3	10.4	30	Fig.1	SB-4070TRN	DTM-15		HH10x30	BDMT170408ER-N3 BDMT170408ER-N4	
050R-17-4-4T-M	○	4	4	16	78	21	6.3	10.4	59	Fig.1	SB-4070TRN	DTM-15	HH10x40								
063R-17-3-4T-M	○	4	3	12	63	27	20	14	70				24	7	12			45	Fig.1		SB-4070TRN
080R-17-4-6T-M	○	6	4	24	80	32	26	18	85	28	8	14	59	Fig.2	SB-4070TRN			DTM-15			
100R-17-4-6T-M	○	6	4	24	100	40	56	-	85	30	9	16	59						Fig.2		SB-4070TRN
MECH 063R-17-3-4T	○	4	3	12	63	25.4 (1")	20	14	70	26	6	9.5	45	Fig.1	SB-4070TRN			DTM-15			
080R-17-4-6T	○	6	4	24	80	31.75 (1.25")	26	18	85	32	8	13	59			Fig.2	SB-4070TRN		DTM-15	HH16x45	
100R-17-4-6T	○	6	4	24	100	38.1 (1.5")	56	-	85	38	10	16	59	Fig.2	SB-4070TRN			DTM-15		-	

● : Standard Stock
○ : World Express

MECH-BT50 (Integral Arbor Type)



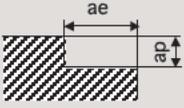
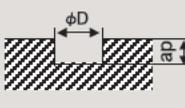
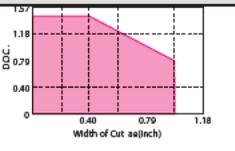
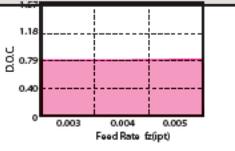
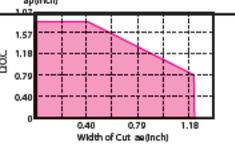
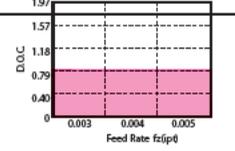
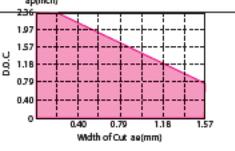
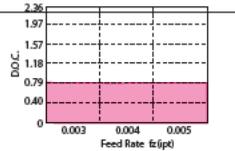
Description	Stock	No. of Flute	No. of Stage	No. of Insert	Dimension (mm)			Shape	Weight (kg)	Spare Parts			Applicable Inserts
					φD	L	S			Clamp Screw	Wrench	Anti-seize Compound	
MECH 050R11-8-4T-BT50	●	4	8	32	50	143	73	Fig.1	4.8	SB-2555TRG	DTM-8	MP-1	BDMT11T308ER-N2 BDMT11T308ER-N3
MECH 050R17-7-4T-BT50	○	4	7	28	50	173	104		4.9	SB-4070TRN	DTM-15	MP-1	BDMT170408ER-N3 BDMT170408ER-N4
063R17-7-4T-BT50	○				63				5.9				
080R17-7-4T-BT50	○				80				7.8				
100R17-7-6T-BT50	○				100				10.2				

● : Standard Stock
○ : World Express

MECH Cutting Performance

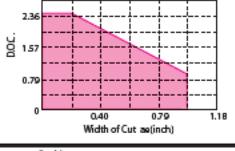
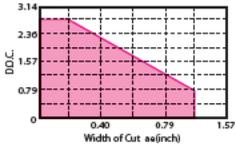
2 Flute Type

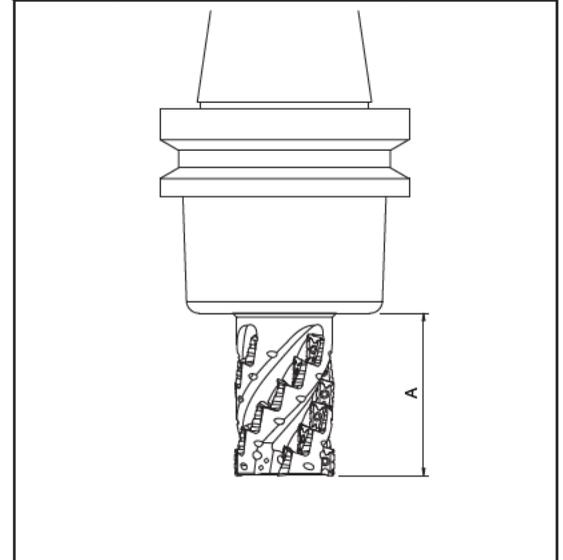
(Workpiece:1550)

Description Metric/ (Inch)	Shouldering	Grooving
		
	Cutting Speed : $V_c=325\sim 600\text{sfm}$ Feed: $f_z=0.003\sim 0.006\text{ipt}$	Cutting Speed : $V_c=325\sim 400\text{sfm}$ Feed: $f_z=0.003\sim 0.005\text{ipt}$
MECH025-S25-11-4-2T (MECH1000-W1000-11-4-2T)		
MECH032-S32-11-5-2T (MECH1250-W1250-11-5-2T)		
MECH040-S32-17-4-2T MECH040-S42-17-4-2T (MECH1500-W1250-17-4-2T) (MECH1500-W1500-17-5-4T)		

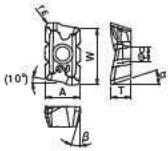
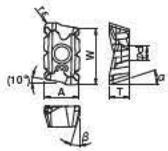
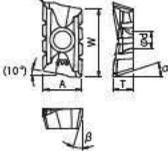
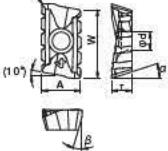
Cutting Dia. Metric/ (Inch)	Description Metric/ (Inch)	Overhang Length:A Metric/ (Inch)
ø25 (1.00")	MECH025-S25-11-4-2T (MECH1000-W1000-11-4-2T)	48 (1.89)
ø32 (1.25")	MECH032-S32-11-5-2T (MECH1250-W1250-11-5-2T)	57 (2.24)
	MECH032-S32-11-5-4T (MECH1500-W1250-11-6-4T)	
ø40 (1.50")	MECH040-S32-11-6-4T (MECH1500-W1250-11-6-4T)	65 (2.56)
	MECH040-S42-11-6-4T (MECH1500-W1500-11-6-4T)	
ø50 (2.00")	MECH050-S42-11-7-4T (MECH2000-W1500-11-7-4T)	76 (2.99)
	MECH050-S42-11-7-6T (MECH2000-W1500-11-7-6T)	
ø40 (1.50")	MECH040-S32-17-4-2T (MECH1500-W1250-17-4-2T)	74 (2.91)
	MECH040-S42-17-4-2T (MECH1500-W1500-17-5-4T)	
ø50 (2.00")	MECH050-S42-17-5-4T (MECH2000-W1500-17-5-4T)	89 (3.50)

4 Flute / 6 Flute Type
 (Shouldering Only - 4 Flute / 6 Flute Type are not recommended for grooving)

MECH032-S32-11-5-4T (MECH1500-W1250-11-6-4T)	
MECH040-S32-11-6-4T MECH040-S42-11-6-4T (MECH1500-W1250-11-6-4T) (MECH1500-W1500-11-6-4T)	
MECH050-S42-11-7-4T (MECH2000-W1500-11-7-4T)	
MECH050-S42-11-7-6T (MECH2000-W1500-11-7-6T)	
MECH050-S42-17-5-4T (MECH2000-W1500-17-5-4T)	



MECH Applicable Inserts

Shape Right-hand Shown	Description	Dimension(mm)					Angle(°)		Stock Grades			Applicable Toolholder
		A	T	Φd	W	rε	α	β	PVD Coated		MEGACOAT	
									PR830	PR905	PR1225	
 2-Notch	 BDMT 11T308ER-N2	6.7	3.80	2.8	11.0	0.8	18°	13°	●	●	●	MECH***-11-***T
 3-Notch	 BDMT 11T308ER-N3	6.7	3.80	2.8	11.0	0.8	18°	13°	●	●	●	
 3-Notch	 BDMT 170408ER-N3	9.6	4.90	4.4	17.0	0.8	18°	13°	●	●	●	MECH***-17-***T
 4-Notch	 BDMT 170408ER-N4	9.6	4.90	4.4	17.0	0.8	18°	13°	●	●	●	

Recommended Cutting Condition

Work Material	Feed Rate(inch/tooth)	Insert Grade(SFM)		
		MEGACOAT	PVD Coated	
		PR1225	PR830	PR905
Carbon Steel	0.003~0.004~0.006	★ 400~820	☆ 325~600	
Alloy Steel	0.003~0.004~0.006	★ 325~725	☆ 325~600	
Die Steel	0.003~0.004~0.006	★ 250~600	☆ 325~500	
Gray Cast Iron	0.003~0.004~0.006			★ 325~600
Nodular Cast Iron	0.003~0.004~0.006			★ 325~500
Titanium	0.003~0.004~0.006			★ 65~165

★: 1st Choice ☆: 2nd Choice

Number of Inserts Installed

Description Metric/ (Inch)	Number of Flutes	Number of Inserts	Number of Inserts Installed			
			BDMT11T308ER-		BDMT170408ER-	
			N2	N3	N3	N4
MECH 025-S25-11-4-2T (1000-W1000-11-4-2T)	2	8	4	4		
032-S32-11-5-2T (1250-W1250-11-5-2T)	2	10	5	5		
032-S32-11-5-4T (1250-W1250-11-5-4T)	4	20	10	10		
040-S32-11-6-4T (1500-W1250-11-6-4T)	4	24	12	12	-	-
040-S42-11-6-4T (1500-W1500-11-6-4T)	4	24	12	12		
050-S42-11-7-4T (2000-W1500-11-7-4T)	4	28	14	14		
050-S42-11-7-6T (2000-W1500-11-7-6T)	6	42	21	21		
MECH 040-S32-17-4-2T (1500-W1250-17-4-2T)	2	8			4	4
040-S42-17-4-2T (1500-W1500-17-4-2T)	2	8	-	-	4	4
050-S42-17-5-4T (2000-W1500-17-5-4T)	4	20			10	10

MECH Case Studies

1045	
<ul style="list-style-type: none"> • Ship parts • Vc=500 sfm • ap x ae=2.75" x 0.40" • f=0.008 ipt • Vf=30 ipm • Dry • MECH050-S42-17-5-4T • 4 Flutes • BDMT170408ER-N3 • BDMT170408ER-N4 <li style="text-align: right;">PR830 	<p>Shouldering (Down Cut)</p>
MECH	
Competitor P	
<p>• Comp. P removed 7.01 in³ of chips per minute. In contrast, MECH removed 32.58 in³/min per minute. Machining efficiency improved to 4.6 times.</p> <p style="text-align: right;">Evaluation from the customer</p>	

Structural Steel	
<ul style="list-style-type: none"> • Plate • Vc=500 sfm • ap x ae=2.75" x 0.40" • f=0.008 ipt • Vf=30 ipm • Dry • MECH050-S42-17-5-4T • 4 Flutes • BDMT170408ER-N3 • BDMT170408ER-N4 <li style="text-align: right;">PR830 	<p>Shouldering (Down Cut)</p>
MECH	
Competitor O	
<p>• Comp. O removed 10.37 in³ of chips per minute. In contrast, MECH removed 32.46 in³ per minute. Machining efficiency improved by 3.1 times and the finished wall condition was excellent.</p> <p style="text-align: right;">Evaluation from the customer</p>	

Precautions when installing inserts with notches

1. Install notched inserts by matching the insert with the number of marks on the holder body.
2. When installing notched inserts in flute line, ensure that the number on the insert is the same as the insert in first stage. See Fig.1, 2 and 3.

< Insert Number and Holder Marks >

Insert Size	11 Type		17 Type	
Insert Number	2	3	3	4
Marks				

Using the cutter with the inserts installed incorrectly will damage the holder.



Fig.1 Same Flute Line



Fig.2 Insert Number

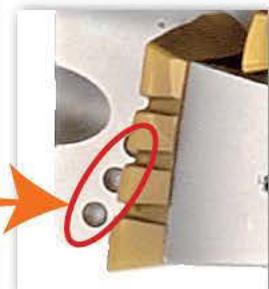


Fig.3 Holder Marks

MEY

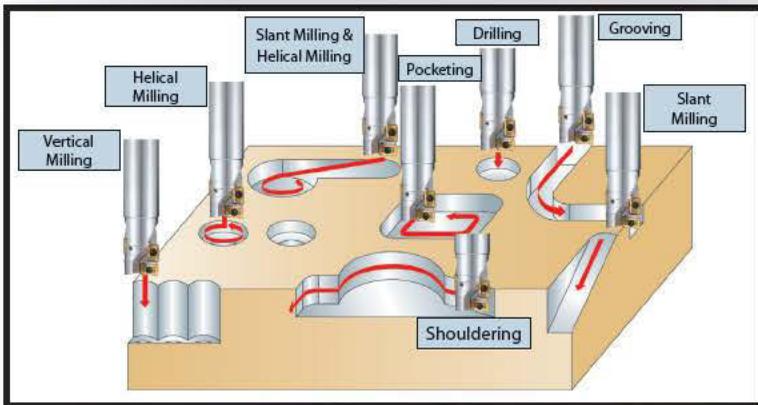
Ultra Drill Mill

Multi-Function Endmill

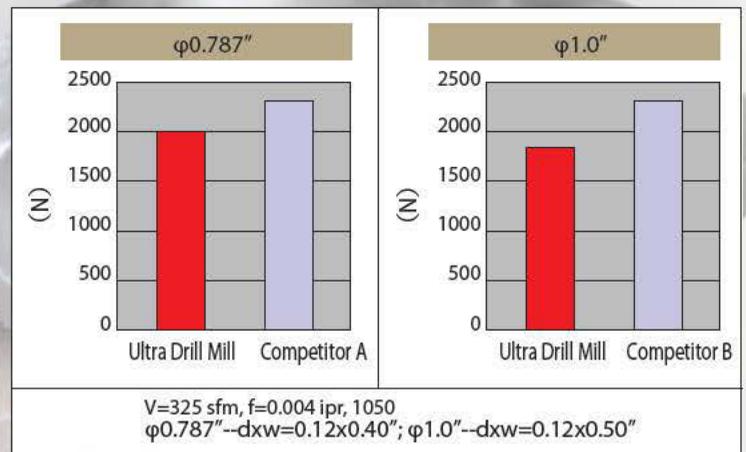
- ◆ 2 flute effective design for milling
- ◆ Improved stability and tool life
- ◆ Low cutting resistance
- ◆ Good chip evacuation when drilling and slant milling



Multi-Function Machining



Cutting Resistance Comparison



MEGACOAT PVD Coated Carbide

Grades

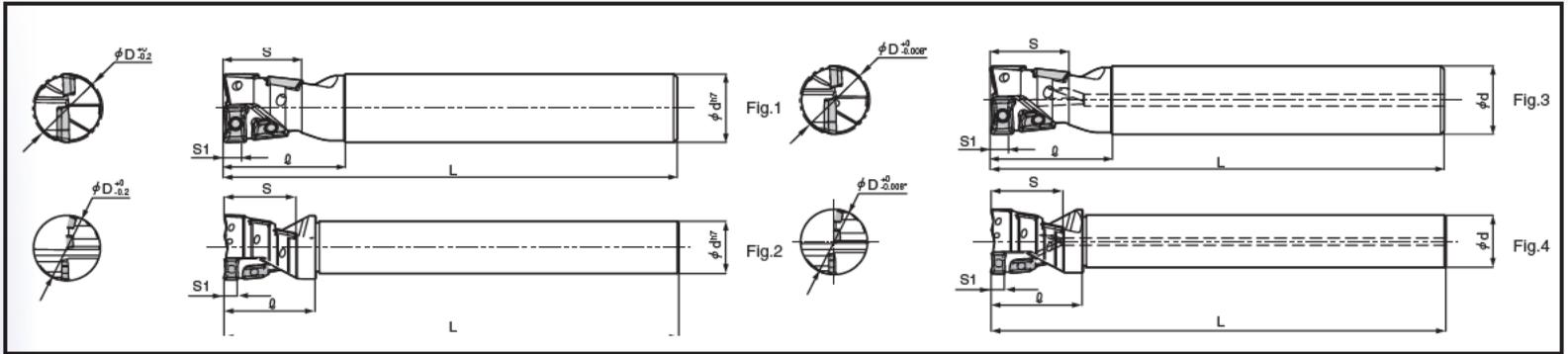
PR1225 for Steel and Stainless

PR1210 for Cast Iron

JOMT

GOMT

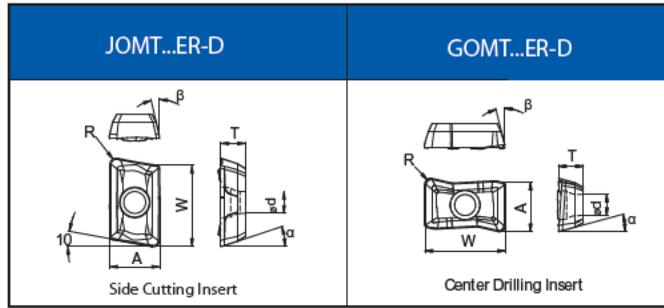




MEY Ultra Drill Mill

Description	Stock	No. of Inserts	No. of Flutes	Unit	Dimension						Rake Angle (°)		Drawing	Spare Parts			
					ΦD	Φd	L	ℓ	S	S1	A.R.	R.R.		Inserts Screw	Wrench	Anti-seize Compound	
Standard (Straight)	MEY 16-S16	○	4	2	mm	16	16	120	31	19	4.5	+11°	-11°	Fig.1	SB-2040TRG	FT-6	MP-1
	17-S16	○	4	2	mm	17	16	120	31	19	4.5	+11°	-11°		SB-2040TRG	FT-6	
	20-S20	○	4	2	mm	20	20	130	35	22	6	+13°	-9°		SB-255TRG	DT-8	
	21-S20	○	4	2	mm	21	20	130	35	22	6	+13°	-9°		SB-255TRG	DT-8	
	25-S25	○	4	2	mm	25	25	140	40	28	7.5	+13°	-11°		SB-3070TRG	DT-10	
	26-S25	○	4	2	mm	26	25	140	40	28	7.5	+13°	-11°		SB-3070TRG	DT-10	
	32-S32	○	4	2	mm	32	32	150	50	36	9.5	+13°	-9°		SB-4070TRG	DT-15	
	33-S32	○	4	2	mm	33	32	150	50	36	9.5	+13°	-9°		SB-4070TRG	DT-15	
	40-S32	○	7	2	mm	40	32	160	55	42	7.5	+13°	-11°		SB-3070TRG	DT-10	
Long Head (Straight)	MEY 16-S16-140H	○	4	2	mm	16	16	140	51	19	4.5	+11°	-11°	Fig.1	SB-2040TRG	FT-6	
	20-S20-150H	○	4	2	mm	20	20	150	53	22	6	+13°	-9°		SB-255TRG	DT-8	
	25-S25-170H	○	4	2	mm	25	25	180	70	28	7.5	+13°	-11°		SB-3070TRG	DT-10	
	32-S32-180H	○	4	2	mm	32	32	180	80	36	9.5	+13°	-9°		SB-4070TRG	DT-15	
Long Shank (Straight)	MEY 16-S16-190	○	4	2	mm	16	16	190	61	19	4.5	+11°	-11°	Fig.1	SB-2040TRG	FT-6	
	17-S16-190	○	4	2	mm	17	16	190	31	19	4.5	+11°	-11°		SB-2040TRG	FT-6	
	20-S20-200	○	4	2	mm	20	20	200	63	22	6	+13°	-9°		SB-2555TRG	DT-8	
	21-S20-200	○	4	2	mm	21	20	200	35	22	6	+13°	-9°		SB-255TRG	DT-8	
	25-S25-220	○	4	2	mm	25	25	220	80	28	7.5	+13°	-11°		SB-3070TRG	DT-10	
	26-S25-220	○	4	2	mm	26	25	220	40	28	7.5	+13°	-11°		SB-3070TRG	DT-10	
	32-S32-230	○	4	2	mm	32	32	230	90	36	9.5	+13°	-9°		SB-4070TRG	DT-15	
	33-S32-230	○	4	2	mm	33	32	230	50	36	9.5	+13°	-9°		SB-4070TRG	DT-15	
	40-S32-240	○	7	2	mm	40	32	240	55	42	7.5	+13°	-11°		SB-3070TRG	DT-10	
Standard (With Coolant Hole)	MEY 625-S625-HG	●	4	2	inch	0.630	0.625	4.699	1.195	0.748	0.177	+11°	-11°	Fig.3	SB-2040TRG	FT-6	
	750-S750-HG	●	4	2	inch	0.787	0.750	5.091	1.350	0.866	0.236	+13°	-9°		SB-2555TRG	DT-8	
	1000-S100-HG	●	4	2	inch	1.000	1.000	5.486	1.549	1.102	0.295	+13°	-11°		SB-3070TRG	DT-10	
	1250-S125-HG	●	4	2	inch	1.250	1.250	5.858	1.921	1.417	0.374	+13°	-9°		SB-4070TRG	DT-15	
	1500-S125-HG	●	7	2	inch	1.500	1.250	6.260	2.126	1.654	0.295	+13°	-11°		SB-3070TRG	DT-10	
	2000-S150-HG	●	7	2	inch	1.984	1.500	6.649	2.712	2.126	0.374	+13°	-9°		SB-4070TRG	DT-15	

MEY Applicable Inserts



Description	Dimension(Inch)					Angle(°)		Stock Grades	
	A	T	Φd	W	R	α	β	MEGACOAT	
								PR1210	PR1225
JOMT 08T208ER-D	0.200	0.110	0.090	0.330	0.03	17°	13°	●	●
100308ER-D	0.250	0.130	0.110	0.400				●	●
13T308ER-D	0.320	0.150	0.130	0.520				●	●
16-4-8ER-D	0.380	0.190	0.170	0.660				●	●
GOMT 08T208ER-D	0.210	0.110	0.090	0.340	0.03	18°	13°	●	●
100308ER-D	0.260	0.130	0.110	0.420				●	●
13T308ER-D	0.330	0.150	0.130	0.520				●	●
160408ER-D	0.390	0.190	0.170	0.660				●	●

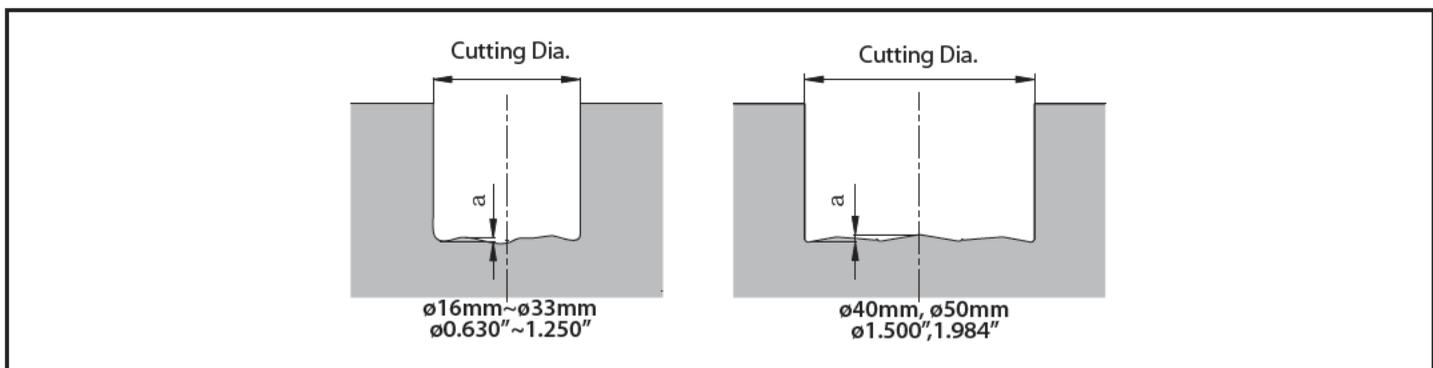
● : Standard Stock

Endmill	Insert			
	Side Edge	Qty	Center Edge	Qty
MEY 16-S16(-...)	JOMT 08T208ER-D	3	GOMT 08T208ER-D	1
17-S16(-...)	JOMT 08T208ER-D	3	GOMT 08T208ER-D	1
20-S20(-...)	JOMT 100308ER-D	3	GOMT 100308ER-D	1
21-S20(-...)	JOMT 100308ER-D	3	GOMT 100308ER-D	1
25-S25(-...)	JOMT 13T308ER-D	3	GOMT 13T308ER-D	1
26-S25(-...)	JOMT 13T308ER-D	3	GOMT 13T308ER-D	1
32-S32(-...)	JOMT 160408ER-D	3	GOMT 160408ER-D	1
33-S32(-...)	JOMT 160408ER-D	3	GOMT 160408ER-D	1
40-S32(-...)	JOMT 13T308ER-D	6	GOMT 13T308ER-D	1
50-S42(-...)	JOMT 160408ER-D	6	GOMT 160408ER-D	1
625-S625-HG	JOMT 08T208ER-D	3	GOMT 08T208ER-D	1
750-S750-HG	JOMT 100308ER-D	3	GOMT 100308ER-D	1
1000-S100-HG	JOMT 13T308ER-D	3	GOMT 13T308ER-D	1
1250-S125-HG	JOMT 160408ER-D	3	GOMT 160408ER-D	1
1500-S125-HG	JOMT 13T308ER-D	6	GOMT 13T308ER-D	1
2000-S150-HG	JOMT 160408ER-D	6	GOMT 160408ER-D	1

Recommended Cutting Conditions

Work Material	Feed Rate (ipt)		Insert Grade (Speed)	
	Drilling	Shouldering - Grooving	PVD Coated	
			PR830	PR905
Stainless Steel	0.003~0.005	0.002~0.006	325~600	-
Carbon Steel	0.003~0.006	0.002~0.010	400~650	-
Alloy Steel	0.003~0.006	0.002~0.010	325~600	-
Metal Mold Steel	0.003~0.006	0.002~0.006	250~500	-
Cast Iron	0.002~0.008	0.002~0.010	-	325~650

Drilled Hole Bottom Shape

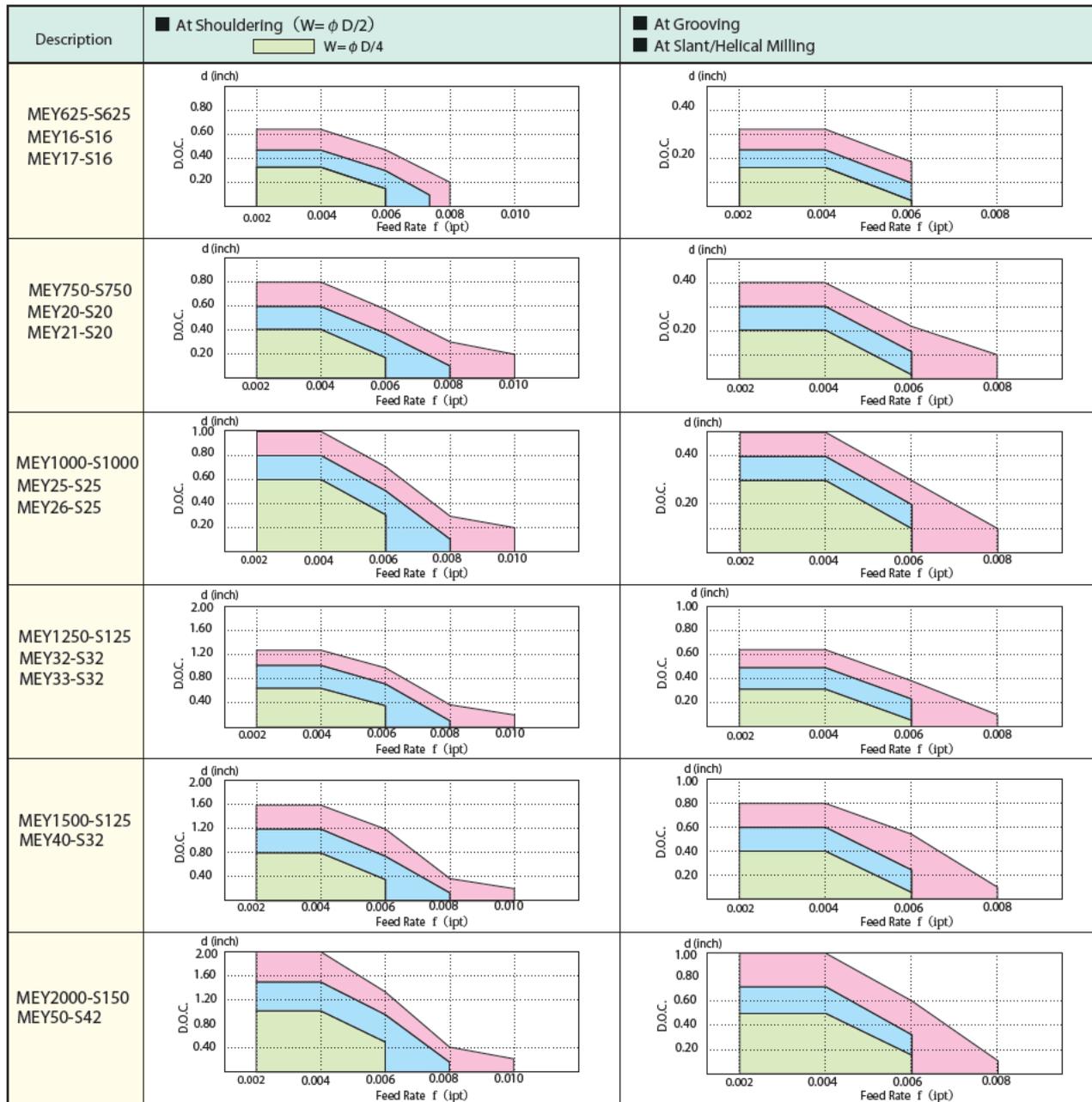


Cutting Diameter	Φ16mm, Φ17mm Φ0.630"	Φ20mm, Φ21mm Φ0.787"	Φ25mm, Φ26mm Φ1.000"	Φ32mm, Φ33mm Φ1.250"	Φ40mm Φ1.500"	Φ50mm 1.984"
a (mm)	0.5mm	0.64mm	0.85mm	1.12mm	1.54mm	1.65mm
a (inch)	0.020"	0.025"	0.033"	0.044"	0.061"	0.065"

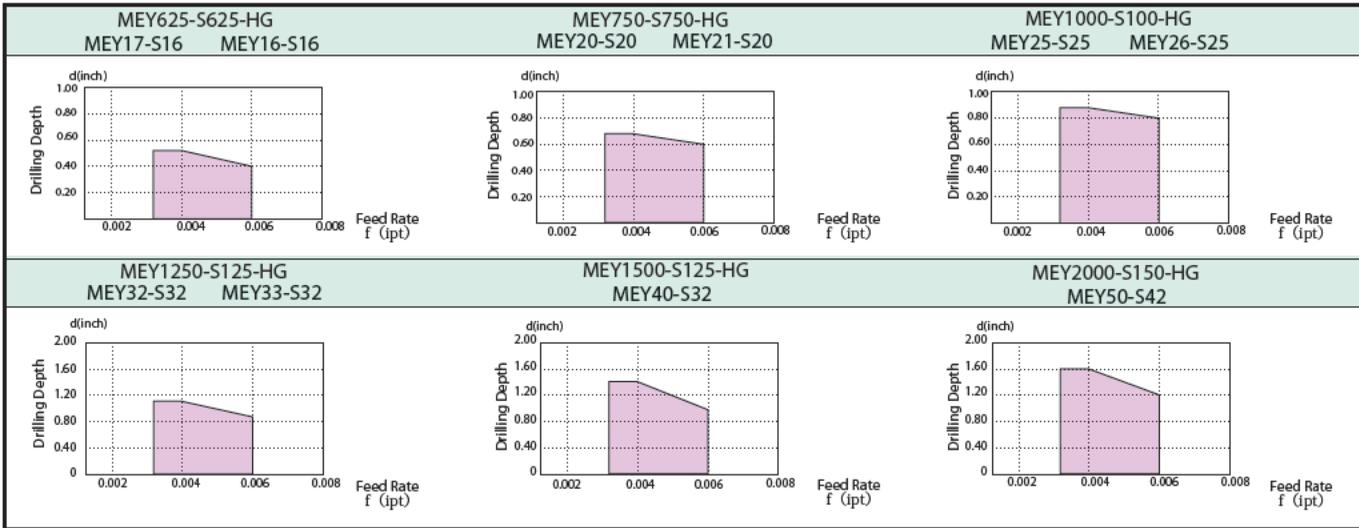
MEY Cutting Performance

Cutting Dia.	Description	Overhang Length (Inch)			Cutting Dia.	Description	Overhang Length (Inch)			Shape
		Green	Blue	Pink			Green	Blue	Pink	
0.630"	MEY625-S625-HG	1.24	[~2.44]	(N.R.)	1.000"	MEY1000-S1000	1.60	[~2.80]	(N.R.)	
16mm	MEY16-S16	1.24	[~2.44]	(N.R.)	25mm	MEY25-S25	1.60	[~2.80]	(N.R.)	
	MEY16-S16-140H	-	~2.44	[~3.64]		MEY25-S25-170H	-	2.80	[~4.00]	
	MEY16-S16-190	-	2.44	~3.64		MEY25-S25-220	-	~3.20	~4.00	
17mm	MEY17-S16	1.24	[~2.44]	(N.R.)	26mm	MEY26-S25	1.60	[~2.80]	(N.R.)	
	MEY17-S16-190	1.24	[~2.44]	(N.R.)		MEY26-S25-220	1.60	~2.80	~4.00	
0.787"	MEY750-S750	1.40	[~2.60]	(N.R.)	1.250"	MEY1250-S125	2.00	[~3.20]	(N.R.)	
20mm	MEY20-S20	1.40	[~2.60]	(N.R.)	32mm	MEY32-S32	2.00	[~3.20]	(N.R.)	
	MEY20-S20-150H	-	~2.60	[~3.80]		MEY32-S32-180H	-	~3.20	[~4.40]	
	MEY20-S20-200	-	2.60	~3.80		MEY32-S32-230	-	3.60	~4.40	
21mm	MEY21-S20	1.40	[~2.60]	(N.R.)	33mm	MEY33-S32	2.00	[~3.20]	(N.R.)	
	MEY21-S20-200	1.40	~2.60	~3.80		MEY33-S32-230	2.00	~3.20	~4.40	
					1.500"	MEY1500-S125	2.20	[~3.40]	[~4.60]	
					40mm	MEY40-S32	2.20	[~3.40]	[~4.60]	
						MEY40-S32-240	2.20	~3.40	~4.60	
					1.984"	MEY2000-S150	2.80	[~4.00]	[~5.20]	
					50mm	MEY50-S42	2.80	[~4.00]	[~5.20]	
						MEY50-S42-250	2.80	~4.00	~5.20	

- (N.R.) means Not Recommended
- The chucking length will be shorter for tools with [] dimension.



Drilling Depth (For Standard, Long Head, Long Shank: 1050)



MEY Usage

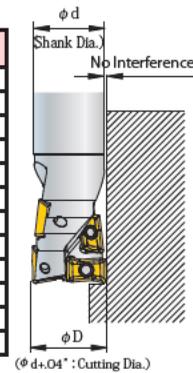
Drilling

- Drilling conditions shall be calculated as one edge line
- Use compressed air during drilling
- Use step feed method for sticky material
- For stainless steel, wet cutting is recommended

Cutting Dia.	Max. Depth
φ 16mm/φ 0.630"	13mm/ 0.52"
φ 17mm/φ 0.669"	13mm/ 0.52"
φ 20mm/φ 0.787"	17mm/ 0.68"
φ 21mm/φ 0.827"	17mm/ 0.68"
φ 25mm/φ 0.984"	22mm/ 0.88"
φ 26mm/φ 1.024"	22mm/ 0.88"
φ 32mm/φ 1.260"	29mm/ 1.16"
φ 33mm/φ 1.299"	29mm/ 1.16"

Shouldering

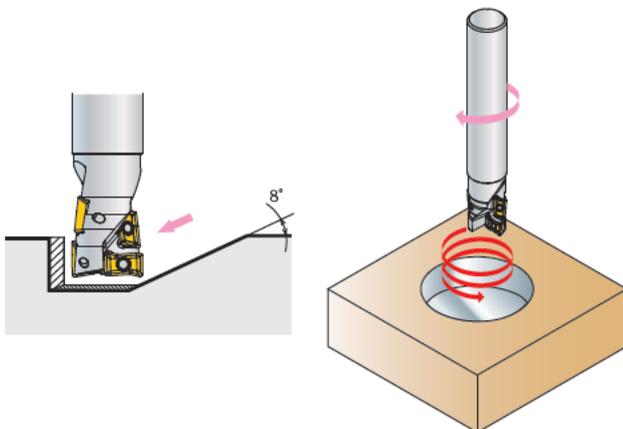
Description	ΦD	Φd
MEY625-S625-HG	0.630"	0.625"
MEY750-S750-HG	0.787"	0.750"
MEY1500-S125-HG	1.500"	1.250"
MEY2000-S150-HG	1.984"	1.500"
MEY17-16	0.669"	0.630"
MEY21-S20	0.827"	0.787"
MEY26-S25	1.024"	0.984"
MEY33-S32	1.299"	1.260"
MEY17-S16-190	0.669"	0.630"
MEY21-S20-200	0.827"	0.787"
MEY26-S25-220	1.024"	0.984"
MEY33-S32-230	1.299"	1.260"



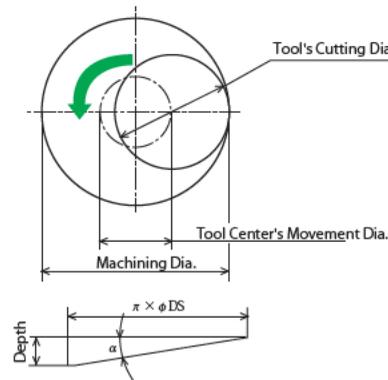
- Tools with larger cutting diameter than shank diameter are available
- High wall shouldering is available

Slant Milling • Helical Milling

- Ramping angle shall be Under 8°
- Plunge depth per revolution at Helical Milling shall be Under 1/2 D
- Use compressed air during machining



How to Find Factors at Helical Milling



How to Find "φDS"
$\phi DS = \phi DL - \phi D$
How to Find "h"
$h = \pi \times \phi DS \times \tan \alpha$ (α shall be Under 8°)

MEY Case Studies

1050	
<ul style="list-style-type: none"> • $V=600$ sfm ($N=2300 \text{ min}^{-1}$) • $dxw=0.236" \times 0.276"$ • $F=33$ ipm ($f=0.007$ ipt) <ul style="list-style-type: none"> • MEY25-S25 • JOMT13T308ER-D (PR830) • GOMT13T308ER-D (PR830) 	<p>$\phi 3.1 \rightarrow \phi 3.7"$</p>
<p>• Ultra Drill Mill could machine even at $f=0.007$ ipt ($F=33$ ipm) comfortably without vibration.</p>	
Evaluation from the user	

1050	
<ul style="list-style-type: none"> • $V=400$ sfm ($N=750 \text{ min}^{-1}$) • $d=0.118"$ • $F=7.1$ ipm $d=0.118"$ • $F=1.6$ ipm <ul style="list-style-type: none"> • MEY50-S42 • JOMT160408ER-D (PR830) • GOMT160408ER-D (PR830) 	<p>Helical Milling █ Machined Portion</p>
<p>Ultra Drill Mill enhanced the machining efficiency greatly.</p>	
Evaluation from the user	

SCM440H	
<ul style="list-style-type: none"> • $V=400$ sfm ($N=2000 \text{ min}^{-1}$) • $d=0.197" \times 3$ passes • $F=23.6$ ipm ($f=0.006$ ipt) <ul style="list-style-type: none"> • MEY20-S20 • JOMT100308ER-D (PR830) • GOMT100308ER-D (PR830) 	<p>$\phi 1.24"$</p> <p>$0.60" (0.20" \times 3)$ ($0.24"$)</p>
<p>Competitor could not machine 20 work pieces, but the Ultra Drill Mill machined more than 20 work pieces with greater stability.</p>	
Evaluation from the user	

Alloy Tool Steel	
<ul style="list-style-type: none"> • $V=350$ sfm ($N=1400 \text{ min}^{-1}$) • $d \times W=0.197" \times 0.394"$ • $F=20.4$ ipm ($f=0.007$ ipt) <ul style="list-style-type: none"> • MEY25-S25 • JOMT13T308ER-D (PR830) • GOMT13T308ER-D (PR830) 	<p>6.5°</p> <p>$3.9"$</p> <p>$0.60"$</p>
<p>Even at higher feed rate, consistent machining was available without vibration. As a result, machining efficiency improved.</p>	
Evaluation from the user	

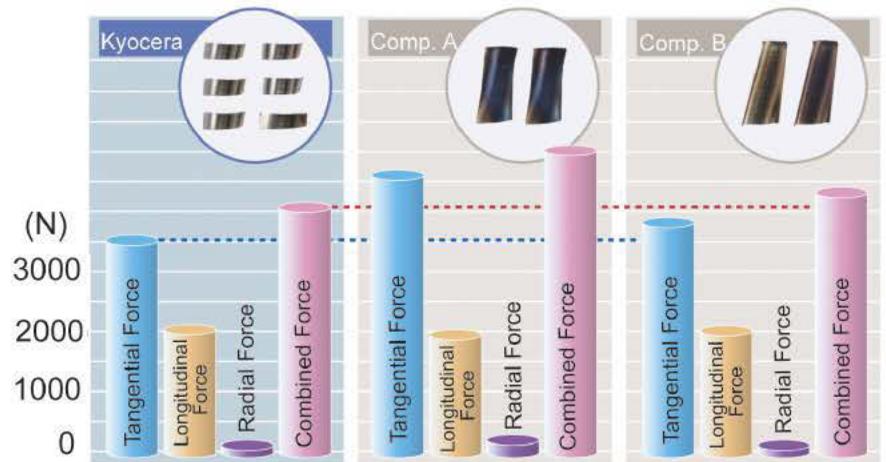
MSR

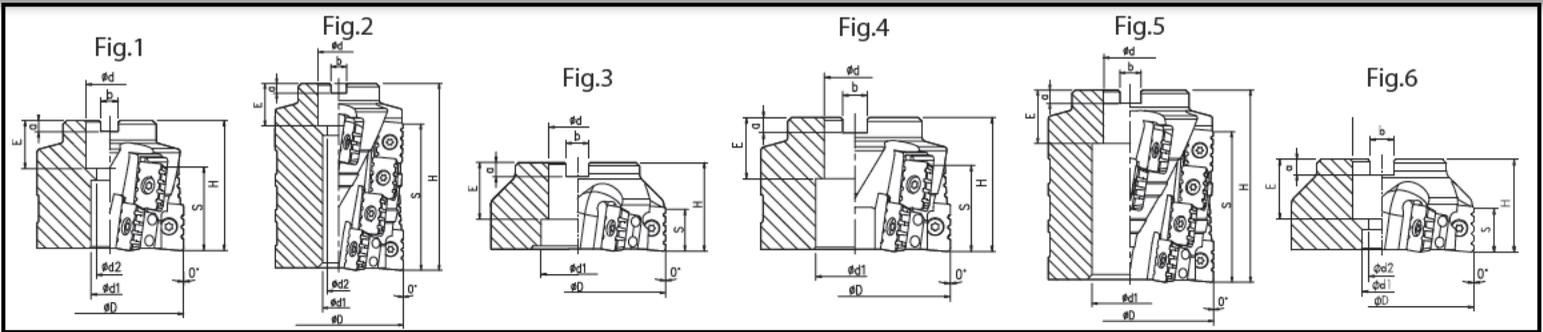
Heavy Roughing Milling Cutters

- Double the metal removal rate; double the productivity
- Notched inserts promote larger depths of cut and excellent chip control
- Heavy machining with low cutting forces



Comparison of Cutting Resistance





MSR Inch ϕD / Inch ϕd

Description	Stock	# of inserts	# of flutes	Dimensions										Rake Angle		Fig.
				unit	Inch ϕD	Inch ϕd	$\phi d1$	$\phi d2$	H	E	a	b	S	A.R.	R.R.	
MSR 3000R -1	●	4	4	in	3.00	1.00	.790	-	1.970	1.020	.240	.370	.925	+9°	-5°	3
MSR 3000R -2	●	8	4		3.00	1.00	.790	-	2.760	1.020	.240	.370	1.77			4
MSR 4000R -1-1.5ID	●	6	6		4.00	1.50	1.610	-	1.970	1.260	.310	.500	.925			3
MSR 4000R -2-1.5ID	●	12	6		4.00	1.50	1.610	-	2.760	1.260	.310	.500	1.77			4

MSR Metric ϕD / Inch ϕd

Description	Stock	# of inserts	# of flutes	Dimensions										Rake Angle		Fig.
				unit	Metric ϕD	Inch ϕd	$\phi d1$	$\phi d2$	H	E	a	b	S	A.R.	R.R.	
MSR 063R -1	○	4	4	mm	63	25.4	20	14	65	26	6	9.5	23.5	+9°	-5°	6
MSR 063R -2	○	8			85	45	1									
MSR 080R -2	○	8	4	mm	80	25.4 (1 in)	20	14	70	26	6	9.5	45	+9°	-5°	1
MSR 080R -4	●	16							115				90			2
MSR 080R 43175	○	16	4	mm	80	31.75	26	18	115	32	8	12.7	90	+9°	-5°	1
MSR 100R -1	○	6	6	mm	100	31.75 (1.25 in)	41	-	50	32	8	12.7	23.5	+9°	-5°	3
MSR 100R -2	○	12							70				45			4
MSR 100R -4	○	24							115				90			5
MSR 125R -1	●	6	6	mm	125	38.1 (1.5 in)	58	-	60	38	10	15.9	23.5	+9°	-5°	3
MSR 125R -2	○	12							70				45			4
MSR 125R -4	○	24							115				90			5
MSR 160R -1	○	8	8	mm	160	50.8 (2 in)	68	-	60	38	11	19.3	23.5	+9°	-5°	3
MSR 160R -2	○	16							70				45			4
MSR 160R -4	○	32							115				90			5
MSR 200R -1	○	10	10	mm	200	47.63 (1.875 in)	-	-	60	38	14	25.7	23.5	+9°	-5°	3
MSR 200R -2	○	20							90				45			4
MSR 250R -1	○	12	12	mm	250	47.63 (1.875 in)	-	-	60	38	14	25.7	23.5	+9°	-5°	3
MSR 250R -2	○	24							90				45			4

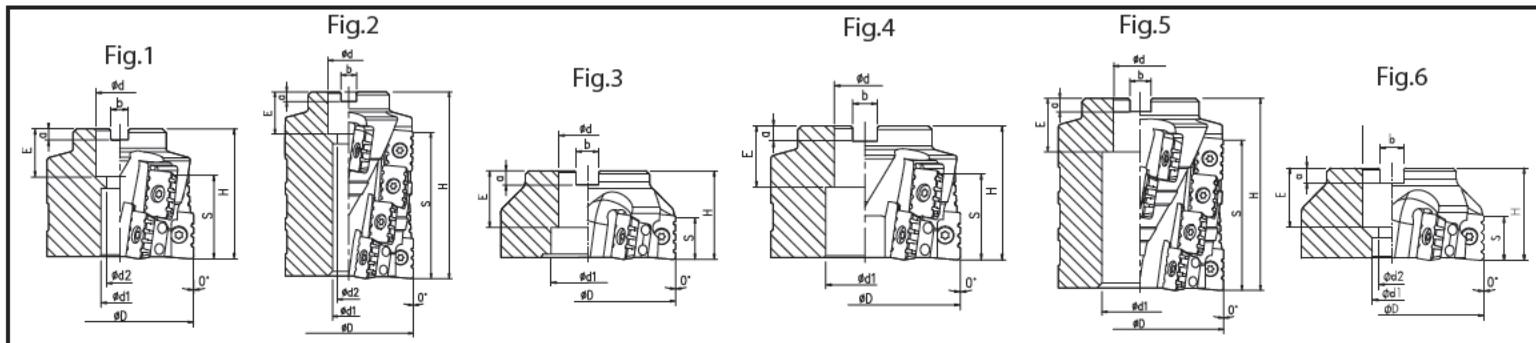
● : Standard Stock
○ : World Express

It is important to install the appropriate notched insert into the correct position. Failure to do so may result in damage to the cutter body. The appropriate insert is marked on the pockets of the cutter body.

- If marked with a "3" in the pocket, use AP.ER-NB3
- If marked with a "4" in the pocket, use AP.ER-NB4

Note: All cutters require the following hardware:

Screws: SB-60120TR & SB-40140TR
Wrench: TT-25L & DT-15
Shim: MAP-2506
Anti-seize compound: MP-1



Metric ϕD / Metric ϕd				Dimensions										Rake Angle		
Description	Stock	# of inserts	# of flutes	Unit	Metric	Metric	$\phi d1$	$\phi d2$	H	E	a	b	S	A.R.	R.R.	Fig.
					ϕD	ϕd										
MSR 063R -1M	○	4	4	mm	63	27	20	14	65	22	7.2	12.4	23.5	+9°	-5°	6
MSR 063R -2M	○	8							85				45			1
MSR 080R -1M	○	4	4		80	27	20	14	50	22	7.2	12.4	23.5			6
MSR 080R -2M	○	8							70				45			1
MSR 080R -4M	○	16			115	90	2									
MSR 100R -1M	○	6			6	100	32	48	-	50	28	8	14.4			23.5
MSR 100R -2M	○	12	70							45						4
MSR 100R -4M	○	24	115			90	5									
MSR 125R -1M	○	6	6		125	40	58	-	60	30	9	16.4	23.5			3
MSR 125R -2M	○	12							70				45			4
MSR 125R -4M	○	24			115	90	5									
MSR 160R -1M	○	8	8		160	40	68	-	60	30	10	16.4	23.5			3
MSR 160R -2M	○	16							70				45			4
MSR 160R -4M	○	32			115	90	5									
MSR 200R -1M	○	10	10		200	60	-	-	60	38	15	25.4	23.5			3
MSR 200R -2M	○	20							90				45			4
MSR 250R -1M	○	12	12		250	60	-	-	60	38	15	25.4	23.5			3
MSR 250R -2M	○	24							90				45			4

It is important to install the appropriate notched insert into the correct position. Failure to do so may result in damage to the cutter body. The appropriate insert is marked on the pockets of the cutter body.

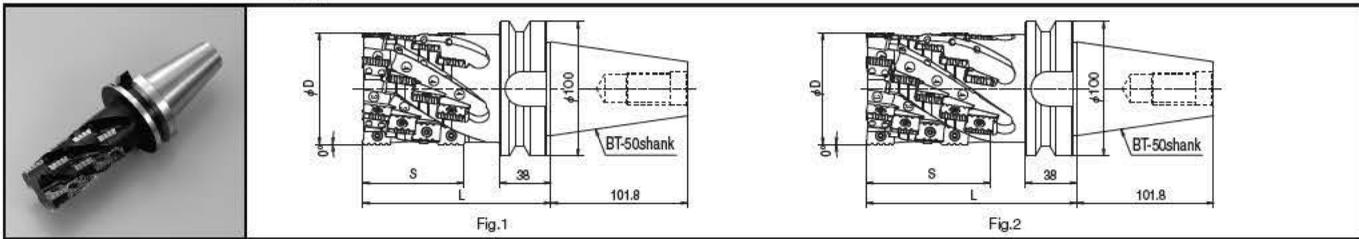
● : Standard Stock
○ : World Express

- If marked with a "3" in the pocket, use AP..ER-NB3
- If marked with a "4" in the pocket, use AP..ER-NB4

Note: All cutters require the following hardware:

- Screws: SB-60120TR & SB-40140TR
- Wrench: TT-25L & DT-15
- Shim: MAP-2506
- Anti-seize compound: MP-1

MSR-BT50 Type



Holder Dimensions (BT50 Integral Arbor Type)

Description	Stock	No. of Insert	No. of Flute	No. of Stage	Dimension (mm)			Rake Angle (°)		Shape	Weight (kg)	Spare Part					
					φD	L	S	A.R.	R.R.			Clamp Screw	Wrench	Shim	Clamp Screw	Wrench	Anti-seize Compound
MSR 063R-BT50-4	○	16	4	4	63	160	90	+9°	-8°	Fig.1	5.7	SB-60120TR	TT-25L	-	-	-	MP-1
MSR 063R-BT50-5	○	20	5	5	180	111	Fig.2										
MSR 080R-BT50-4	○	16	4	4	80	160	90	+9°	-8°	Fig.1	6.9	-	-	MAP-2506	SB-40140TR	DT-15	MP-1
MSR 080R-BT50-5	○	20	5	5		180	111										
MSR 100R-BT50-4	○	24	6	4	100	160	90	+9°	-5°	Fig.1	9.6	for Insert Clamp	for Shim Clamp			MP-1	
MSR 100R-BT50-5	○	30		5		180	111						Fig.2	10.5			

- Shim is not available for MSR063R (Dia. D=63).
- It is not recommended using only top edge part (D.O.C 30mm) for 4 stages/5 stages type. If D.O.C is small, use previous page's 1 stage type or 2 stages type. 4 and 5 stage cutters are not recommended.
- Deep slotting is not recommended for this cutter.

MSR Inserts

Insert	Description	Dimension					Angle		Insert Grade				
		A	T	φd	W	R	α	β	PVD Coated			MEGACOAT PVD Coated	
									PR660	PR830	PR905	PR1210	PR1230
 NB3(P) NB4(P)	APMT 250608 ER-NB3	0.625	0.250	0.256	0.984	0.031	15°	11°	○	●	○	●	●
	APMT 250608 ER-NB4								○	●	○	●	●
	APMT 250616 ER-NB3	0.625	0.250	0.256	0.984	0.063			●	●	●	●	●
	APMT 250616 ER-NB4								●	●	●	●	●
	APMT 250616 ER-NB3P*	0.625	0.250	0.256	0.984	0.063				○		●	●
	APMT 250616 ER-NB4P*									○		●	●
	APMT 250640 ER-NB3	0.625	0.250	0.256	0.984	0.157				●	○	●	●
	APMT 250640 ER-NB4								●	○	●	●	

* A lower cutting force insert

● : Standard Stock
○ : World Express

MSR Recommended Cutting Condition

Work Material	Feed Rate(inch/tooth)		Insert Grade(SFM)			
	Low Cutting Force	Normal Cutting Force	MEGACOAT		PVD Coated	
	NB3P + NB4P	NB3 + NB4	PR1230	PR1210	PR830	PR905
Cast Iron	0.006	0.008	-	★ 325~500~650	-	★ 325~450~600
Carbon Steel	0.006	0.008	★ 325~500~650	-	★ 325~450~600	-
Stainless Steel	Not Recommended					
Aluminum / Non-Ferrous Materials	Not Recommended					



■ MSR Case Studies

Ductile Iron	
<ul style="list-style-type: none"> • Construction part • V=550 SFM • d x w = 0.20 x 2.0" • F = 26 in/min • No coolant • MSR 100R-2 with APMT 250616ER-NB3 APMT 250616ER-NB4 PR905 	
MSR	Chip evacuation = 165cc/min
Competitor D	Chip evacuation=51cc/min
<p>Machining efficiency is 3 times better than the competitor due to the greater chip evacuation</p> <p style="text-align: right;">Evaluation from the customer</p>	

Steel	
<ul style="list-style-type: none"> • V=650 SFM • d x w = 1.6 x 1.0" • F = 16 in/min • No coolant • MSR 100R-2 with APMT 250616ER-NB3 APMT 250616ER-NB4 PR660 	
MSR	2 pieces per hour
Competitor B	0.5 piece per hour
<p>Machining efficiency is 4 times better than the competitor</p> <p style="text-align: right;">Evaluation from the customer</p>	

Steel	
<ul style="list-style-type: none"> • Construction part • V=500 SFM • d x w = 0.80 x 0.3" • F = 29 in/min • No coolant • MSR 63R-4 with APMT 250616ER-NB3 APMT 250616ER-NB4 PR905 	
MSR	Chip evacuation = 120cc/min
Competitor E	Chip evacuation=29cc/min
<p>Machining efficiency is 4 times better than the competitor, with less vibration and machining noise</p> <p style="text-align: right;">Evaluation from the customer</p>	

Structural Steel	
<ul style="list-style-type: none"> • Plate • V=400 SFM • d x w = 1.0 x .20" • F = 16 in/min • No coolant • MSR 100R-2 with APMT 250616ER-NB3 APMT 250616ER-NB4 PR660 	
MSR	Chip evacuation = 50cc/min
Competitor B	Chip evacuation=7cc/min
<p>Machining efficiency is 7 times better than the competitor due to the greater chip evacuation</p> <p style="text-align: right;">Evaluation from the customer</p>	

Steel	
<ul style="list-style-type: none"> • Cover • V=450 SFM • d x w = ~.250 x ~2.5" • F = 13 in/min • No coolant • MSR 400R1 with APMT 250616ER-NB3 APMT 250616ER-NB4 PR830 	
MSR	Material Removal = 8.5 in³/min
Competitor B	Material Removal=5 in ³ /min
<p>Metal removal rate increases by ~ 70% with fewer passes required.</p> <p style="text-align: right;">Evaluation from the customer</p>	

Steel	
<ul style="list-style-type: none"> • Cover • V=500 SFM • d x w = ~.75 - 1.75" x ~.5 - 3.75" • F = 14 in/min • No coolant • MSR 400R-2 with APMT 250616ER-NB3 APMT 250616ER-NB4 PR830 	
MSR	Material Removal = 42 in³/min
Competitor B	Material Removal=30 in ³ /min
<p>Metal removal rate increases by ~ 40% and cycle time decreases by ~ 30%.</p> <p style="text-align: right;">Evaluation from the customer</p>	



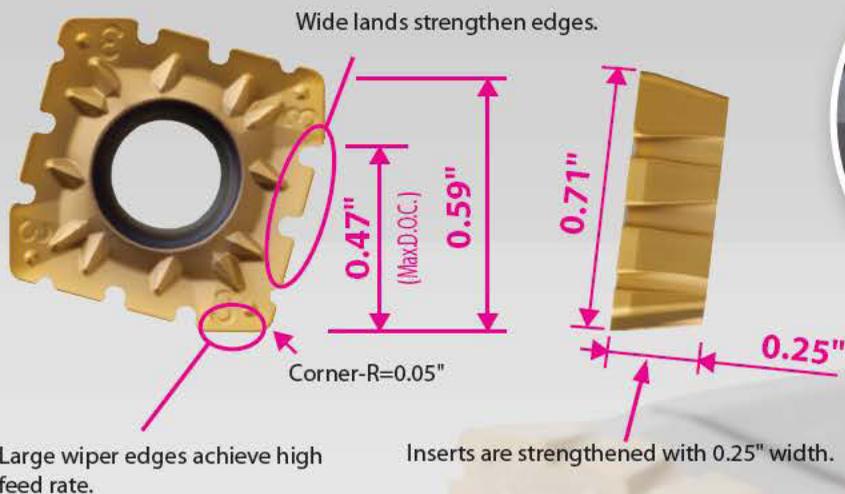
MSRS

Square Insert MSR Face Mill

MSRS Revolutionizes Heavy Milling!

1. Large depth of cut and high feed rate achieve high efficiency machining

■ Recommended depth of cut: 0.20" to 0.40"



A.R. +9°
R.R. -9°(Φ80)
-5°(more than Φ100)

2. Economical square inserts with four edges



With two notches
NB2



With three notches
NB3



Without notches
V

3. Notched inserts reduce cutting force and chattering which enables efficient machining

■ Notched Insert



■ Notch effect

The effects of the notch can be seen at more than 0.20" of vertical depth of cut. (effects for NB3 appear from at least 0.08" or more)



4. Unique design allows suppressed chattering and low cutting force

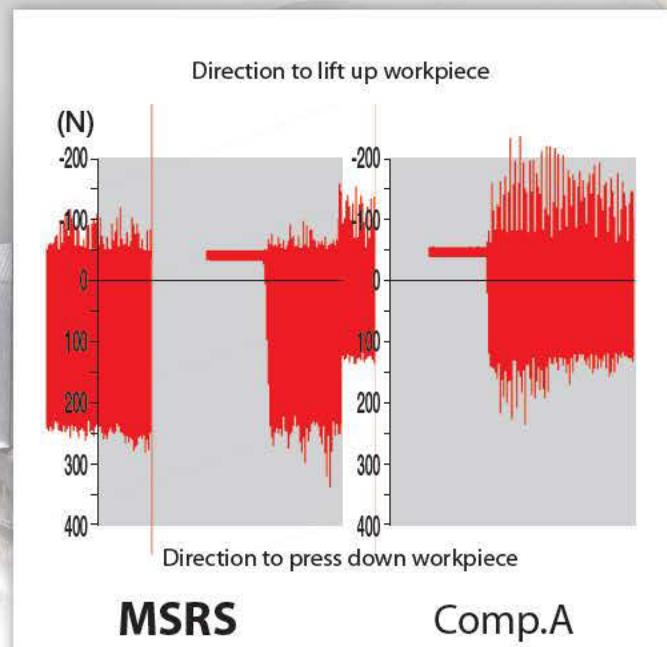
■ Possible to machine thin plate workpieces (low rigidity material such as can manufacturing equipment)

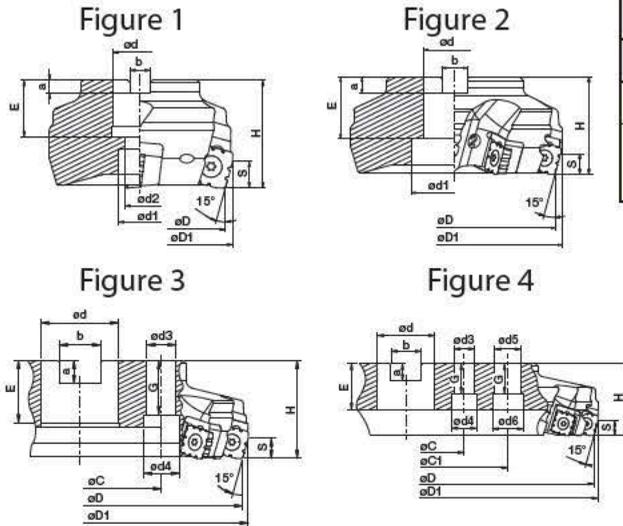
■ Comparison of cutting force (radial force)

The MSRS suppresses chattering since less up force is created reducing potential to lift the work piece into the cutter.



MSRS15160R-8T
 Workpiece Material :S50C
 $V_c=650$ sfm($n=398$ min⁻¹)
 $f_z=0.056$ ipt($V_f=18.78$ ipm), $a_p \times a_e=0.24 \times 3.94$ "
 (Machining of overhang from 0.60" to 0.35")





Rake Angle(°)		
Description	A.R.	R.R.
MSRS153000R---	+9°	-9°
MSRS154000R---	+9°	-5°
MSRS1512000R---		

MSRS Facemill (Bore ϕ d: inch)

Description	Stock	Unit	Flutes	Cutting Angle	Dimension																Shape															
					ϕ D	ϕ D1	ϕ d	ϕ d1	ϕ d2	H	E	a	b	S	ϕ d3	ϕ d4	ϕ d5	ϕ d6	ϕ C	ϕ C1		G														
Standard Pitch	MSRS	Inch	4	15°	3.0	3.27	1.0	1.06	0.551	1.97	0.75	0.31	0.500	0.47	-	-	-	-	-	-	-	-	Fig.1													
					4.0	4.27	1.5	1.38			0.40	0.625																			Fig.2					
					5.0	5.27	1.5	2.13			0.40	0.625																					Fig.2			
					6.0	6.27	2.0	2.68			0.47	0.750																						Fig.2		
					8.0	8.27																													Fig.3	
					10.0	10.27	25	-			1.25	0.53	1.00														0.675	1.045			4		1.25		Fig.3	
					12.0	12.27																							0.795	1.25			2.65		Fig.4	
	MSRS	mm	4	15°	80	87	25.4	20	13	50	26	6	9.5	12	-	-	-	-	-	-	-	-	Fig.1													
					100	107	31.75	42			32	8	12.7																			Fig.2				
					125	132	38.1	54					10										15.9											Fig.2		
					160	167	50.8	68					11										19.0												Fig.2	
					200	207					60	38																								Fig.3
					250	257	47.625	-	-				14										25.4				18	26			101.6		32		Fig.3	
					315	322																							22	32			177.8	25	Fig.4	
Fine Pitch	MSRS	Inch	6	15°	3.0	3.27	1.0	1.06	0.551	1.97	0.75	0.31	0.500	0.47	-	-	-	-	-	-	-	-	Fig.1													
					4.0	4.27	1.5	1.38			0.40	0.625																				Fig.2				
					5.0	5.27	1.5	2.13			0.40	0.625																						Fig.2		
					6.0	6.27	2.0	2.68			0.47	0.750																							Fig.2	
					8.0	8.27																														Fig.3
					10.0	10.27	25	-			1.25	0.53	1.00														0.675	1.045			4		1.25		Fig.3	
					12.0	12.27																							0.795	1.25			2.65		Fig.4	
	MSRS	mm	6	15°	80	87	25.4	20	13	50	26	6	9.5	12	-	-	-	-	-	-	-	-	Fig.1													
					100	107	31.75	42			32	8	12.7																				Fig.2			
					125	132	38.1	54					10										15.9												Fig.2	
					160	167	50.8	68					11										19.0													Fig.2
					200	207					60	38																								Fig.3
					250	257	47.625	-	-				14										25.4				18	26			101.6		32		Fig.3	
					315	322																							22	32			177.8	25	Fig.4	

Arbor mounting bolts (HH12X35) are included in MSRS15080R-__T type.
 Cartridge is included in the standard pitch cutter, but no cartridge in the fine pitch cutter.

● : Standard Stock
 ○ : World Express

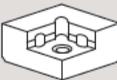
■ MSRS Facemill (Bore ϕ d: mm)

Description	Stock	No. of Insert	Dimension																	Shape															
			ϕ D	ϕ D1	ϕ d	ϕ d1	ϕ d2	H	E	a	b	S	ϕ d3	ϕ d4	ϕ d5	ϕ d6	ϕ C	ϕ C1	G																
Coarse pitch	MSRS 15080R-4T-M	○	4	80	87	27	20	13	50	24	7	12.4	12	-	-	-	-	-	-	-	-	Fig.1													
	MSRS 15100R-4T-M	○	4	100	107	32	45	-		29	8	14.4										Fig.2													
	MSRS 15125R-6T-M	○	6	125	132	40	55	-	33	9	16.4	Fig.3																							
	MSRS 15160R-8T-M	○	8	160	167		68															60	38	15	25.7	14	20	-	-	66.7	-	28	Fig.4		
	MSRS 15200R-10T-M	○	10	200	207	60	-	-	18	26	-															-	101.6	-	-	-	-	-		-	-
	MSRS 15250R-12T-M	○	12	250	257																	22	32	177.8											
	MSRS 15315R-14T-M	○	14	315	322																														
Fine pitch	MSRS 15080R-6T-M	○	6	80	87	27	20	13	50	24	7		12.4	12	-	-	-	-	-	-	-	-	-	Fig.1											
	MSRS 15100R-6T-M	○	6	100	107	32	45	-		29	8		14.4											Fig.2											
	MSRS 15125R-8T-M	○	8	125	132	40	55	-	33	9	16.4	Fig.3																							
	MSRS 15160R-10T-M	○	10	160	167		68						60											38	15	25.7	14	20	-	-	66.7	-	28	Fig.4	
	MSRS 15200R-12T-M	○	12	200	207	60	-	-	18	26	-																-	101.6	-	-	-	-	-		-
	MSRS 15250R-14T-M	○	14	250	257								22											32	177.8										
	MSRS 15315R-16T-M	○	16	315	322																														

- Arbor mounting bolts (HH12X35) are included in MSRS15080R-sT-M Type.
 - Cartridge is included in the coarse pitch cutters, but no cartridge in the fine pitch cutters.

● : Standard Stock
 ○ : World Express

■ MSRS Spare Parts

Description		Spare Part						
		Clamp Screw	Wrench	Cartridge	Clamp Screw	Wrench	Anti-seize Compound	Arbar Clamp Screw
Standard type	MSRS 153000R-__							
	MSRS 154000R-__ ~ 1512000-__	for Insert Clamp Tightening Torque 7.5Nm		for Insert Clamp Tightening Torque 3.5Nm		MP-1	HH12x35	
Multi-edge type	MSRS 153000R-__			-	-	-		
	MSRS 154000R-__ ~ 1512000-__	for Insert Clamp Tightening Torque 7.5Nm		-	-	MP-1	-	

 Coat Anti-seize Compound (MP-1) thinly on clamp screw when insert is fixed.

■ MSRS Applicable Insert

Shape		Description	Dimension(inch)					Angle(°)			PVD Coated		MEGACOAT	
			A	T	Ød	X	Z	α	β	γ	PR830	PR905	PR1210	PR1230
		SPMT 1806EDER-NB2	0.71	0.25	0.27	R0.05	0.122	11°	15°	15°	●	●	●	●
With two notches														
		SPMT 1806EDER-NB3	0.71	0.25	0.27	R0.05	0.122	11°	15°	15°	●	●	●	●
With three notches														
		SPMT 1806EDER-V	0.71	0.25	0.27	R0.05	0.122	11°	15°	15°	●	●	●	●
Without notch														
		SPMT 1806EDER-NB2P	0.71	0.25	0.27	R0.05	0.122	11°	15°	15°	○	○	●	●
4 Notches - Low Resistance														
		SPMT 1806EDER-NB3P	0.71	0.25	0.27	R0.05	0.122	11°	15°	15°	○	○	●	●
5 Notches - Low Resistance														
		SPMT 1806EDSR/L-NB2T	0.71	0.25	0.27	R0.05	0.122	11°	15°	15°	○	○	R	R
2 Notches - Tough Edge														
		SPMT 1806EDSR/L-NB3T	0.71	0.25	0.27	R0.05	0.122	11°	15°	15°	○	○	R	R
3 Notches - Tough Edge														

Inserts are sold in 10 piece boxes

● : Standard Stock
○ : World Express
R: Right Hand Only

■ Combination of inserts

1st Recommendation	
Emphasis on edge strength and biting	
Emphasis on edge strength	

■ MSRS Recommended Cutting Condition

Work Material	Feed Rate(inch/tooth)			Insert Grade(SFM)			
	NB2P + NB3P	NB2 + NB3	NB2T + NB3T	MEGACOAT		PVD Coated	
				PR1230	PR1210	PR830	PR905
Carbon Steel	0.006	0.008	0.012	★ 400~600~725	-	☆ 400~550~725	-
Alloy Steel	0.006	0.008	0.012	★ 400~600~725	-	☆ 400~550~725	-
Die Steel	0.004	0.006	0.008	★ 325~525~650	-	☆ 325~500~650	-
Gray Cast Iron	0.008	0.010	0.014	-	★ 400~600~800		☆ 400~550~790
Ductile Cast Iron	0.006	0.008	0.012	-	★ 325~525~725		☆ 325~500~650
Stainless Steel	Not Recommended						
Aluminum / Non-Ferrous Materials	Not Recommended						

Q&A

Q-1 What is the recommended radial with of cut?

A-1 Recommendation is 70 to 80% of cutter diameter.

Q-2 Why is the MSRS cutting edge inclination angle 75 degrees?

A-2 A 45 degree cutting edge angle causes chattering at a larger depth of cut because of increased radial force. Meanwhile, a 90 degree cutting edge angle has smaller radial force, but directly receives a bigger impact when cutting into the workpiece. In contrast, the MSRS cutter with a 75 degree cutting edge angle controls radial force even at a large depth of cut while reducing the impact on approach.

Q-3 Is the MSRS available for stainless steel machining?

A-3 No. This chipbreaker is not suitable for stainless steel.

■ MSRS Case studies

SS400	
Plate	
<ul style="list-style-type: none"> Vc=500 sfm (n=382min⁻¹) apxae=0.39" x 4.92" fz=0.008 ipt (Vf=18.03 ipm) Dry 6edges MSRS15125R-6T SPMT1806EDER-NB2 SPMT1806EDER-NB3 (PR830) 	
MSRS	Chip removal 34.9 i ³ /min
Competitor Cutter A	7.9 i ³ /min
(Competitor Cutter A) ø4.92" ,6edges Vc=500 sfm (n=382min ⁻¹) apxae=0.12"x4.92" fz=0.006 ipt (Vf=13.5 ipm)	(User comment) Improvement of the condition to a large extent results in time reduction. Productivity has improved 4.4 times.

S50C	
Rail	
<ul style="list-style-type: none"> Vc=500 sfm (n=300min⁻¹) apxae=0.24"x5.51" fz=0.008 ipt (Vf=18.9 ipm) Dry 8edges MSRS15160R-8T SPMT1806EDER-NB2 SPMT1806EDER-NB3 (PR830) 	
MSRS	Chip removal 24.6 i ³ /min
Competitor Cutter B	5.1 i ³ /min
(Competitor Cutter B) 0.08" x 3passes Vc=500 sfm (n=300min ⁻¹) apxae=0.08"x5.5" fz=0.005 ipt (Vf=11.8 ipm)	(User comment) MSRS enabled one pass cutting, while it formerly took three passes. In addition, the MSRS greatly reduced cutting noise. Productivity has improved 4.7 times.

C12A(Cast steel)	
Industrial machinery components	
<ul style="list-style-type: none"> Vc=325 sfm (n=200min⁻¹) apxae=0.39"x4.49" fz=0.016 ipt (Vf=25 ipm) Dry 8edges MSRS15160R-8T SPMT1806EDER-NB2 SPMT1806EDER-NB3 (PR830) 	
MSRS	Chip removal 44.2 i ³ /min
Competitor Cutter C	17.7 i ³ /min
(Competitor Cutter C) 6inch Dia., 8edges Vc=820 sfm (n=522min ⁻¹) apxae=0.1" x4.5" fz=0.010 ipt (Vf=40 ipm)	(User comment) Although conventional type could not increase depth of cut due to high cutting force, MSRS has enabled to increase depth of cut without increasing spindle load. Productivity increased 2.5 times.

S45C	
Gear	
<ul style="list-style-type: none"> Vc=650 sfm (n=255min⁻¹) apxae=0.39"x7.87" fz=0.007 ipt (Vf=23.6 ipm) Dry 14edges MSRS15250R-14T SPMT1806EDER-NB2 SPMT1806EDER-NB3 (PR830) 	
MSRS	Chip removal 73.2 i ³ /min
Competitor Cutter D	28.0 i ³ /min
(Competitor Cutter D) ø10" ,12edges Vc=400 sfm (n=153min ⁻¹) apxae=0.2"x7.9" fz=0.010 ipt (Vf=18.1 ipm)	(User comment) Cutting noise is quiet even when cutting width is nearly 80% of cutter diameter. Productivity increased 2.6 times.

Other Cutting Tool Products from



Drilling

THE NEW VALUE FRONTIER
KYOCERA

2012
KYOCERA cutting Tools
Drilling Catalog

ADVANCING PRODUCTIVITY

Grooving

THE NEW VALUE FRONTIER
KYOCERA

GBA Grooving System
3 Cutting Edges per insert

With New MEGACOAT Grade
PR1215
For High Reliability and Long Tool Life

GBA-MY
KGBA/KGBAS
KGBA

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER
KYOCERA

KGD/KGDF
New Grooving, Cut-off, and Chamfer Grooving Tools

1 Improved Grooving Performance
- Improved chip control
- MEGACOAT for long tool life and high reliability

2 Differentiated Toolholder Linings
- High-heat resistant and wear-resistant tool holder linings available
- Grooving inserts designed for easy tool change and easy toolholder cleaning

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER
KYOCERA

OTM API Ring Groovers
The most economical way to make API Ring Grooves

Ideal for high pressure and high temperature applications in the oil, gas and petrochemical industries

Advantages:
 ■ Lower cost per cut
 ■ Great surface finish
 ■ Reliable repeatability
 ■ Easy to set and adjust
 ■ Free cutting geometry

Standard shank sizes available: CAT 50, 60, 80, 100, 125, 150, 175, 200, 225, 250, 275, 300, 325, 350, 375, 400, 425, 450, 475, 500, 525, 550, 575, 600, 625, 650, 675, 700, 725, 750, 775, 800, 825, 850, 875, 900, 925, 950, 975, 1000

ADVANCING PRODUCTIVITY

Turning

THE NEW VALUE FRONTIER
KYOCERA

for Gray and Nodular Cast Iron
CA4515 / CA4505
New CVD Coated Carbide

New Bright Black (BB) Coating Technology
Improved coating adhesion due to the new BB coating technology. Results in longer and more consistent tool life.

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER
KYOCERA

CVD Coated Carbide Grades for Steel
CA55-Series
Featuring PV172 chipbreaker for easy chip removal

CA5505 High Speed
CA5515 Light Intermittent
CA5525 General Purpose
CA5535 Heavy Intermittent

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER
KYOCERA

CA65^{15/25} and PR11²⁵
for Stainless Steel Machining

New MQ Chipbreaker

Innovative Solution for Stainless Steel Machining
- Minimizes Built-up Edge
- Promotes High Productivity

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER
KYOCERA

For Heat-Resistant Alloys
PR13-Series / SW05
For stable cutting and long tool life of difficult-to-cut material

PR13 / VPR13 / VPR13P
- 2-Flute PVD Coated Carbide
- ISO 10000 Series
- ISO 10000 Series
- ISO 10000 Series
- ISO 10000 Series

SW05
- ISO 10000 Series
- ISO 10000 Series

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER
KYOCERA

Double-Clamp Series
Securely clamps the insert with a single action

Increases clamping rigidity
Improves machining stability
Results in greater insert life

Improved Clamping Rigidity
Fully clamp the insert in one direction with one action

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER
KYOCERA

MEGACOAT Cermets
Featuring new PV7005 for General Machining of Steel

Three PVD MEGACOAT Cermet Grades Providing Superior Tool Life and Stable Machining
Two Uncoated Cermet Grades Providing Excellent Performance at an Economical Price

NEW
First Recommended PVD Cermet For General Machining of Steel
PV7005

MEGACOAT Cermet For Steel Machining
PV7010

Uncoated Cermet For Steel Machining
TN6010
TN6020

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER
KYOCERA

MEGACOAT CBN

MEGACOAT CBN can provide extended tool life, stabilize the tool and increase feed speeds
Eight grades in the lineup to accommodate a wide range of workpiece materials

ADVANCING PRODUCTIVITY

THE NEW VALUE FRONTIER



KYOCERA Industrial Ceramics Corporation

Cutting Tool Division

100 Industrial Park Road

Mountain Home, NC 28758

PH: 800-823-7284

FAX: 828-692-1344

Email: cuttingtools@kyocera.com

Website: www.kyocera.com/cuttingtools

Distributor Website: <http://mykicc.kyocera.com>

ADVANCING PRODUCTIVITY