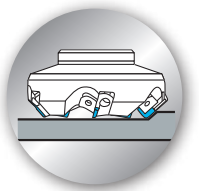


THE NEW VALUE FRONTIER



High efficient Endmills

MEC series

Excellent
Finished Wall

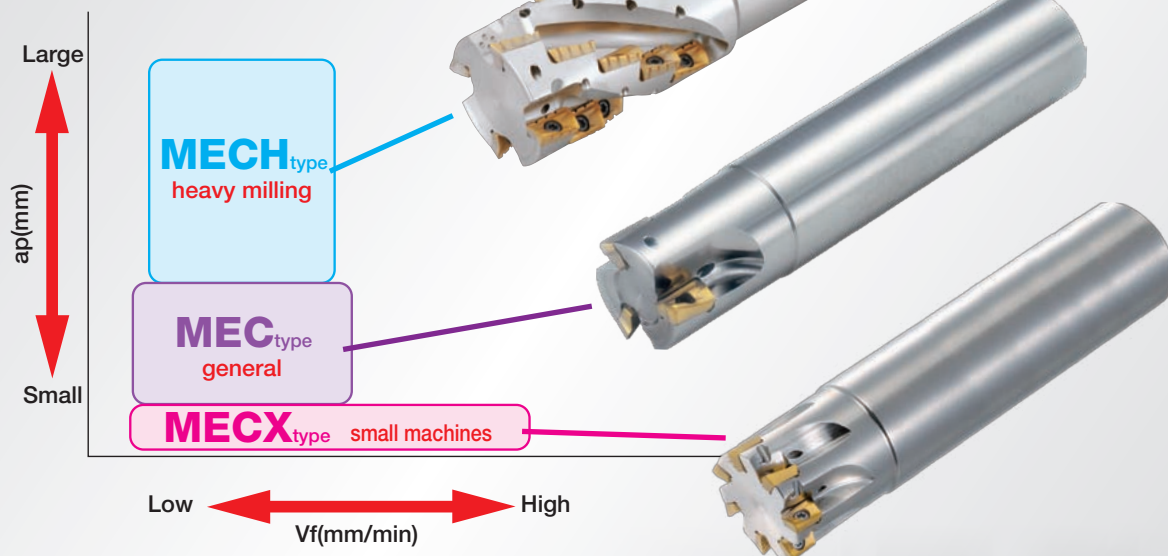
High
Squareness



ADVANCING PRODUCTIVITY

MEC endmill series lineup

● Variety of MEC endmill series



MECH_{type} Heavy milling and High efficient machining

■ Advantages

- 1.Improved Chip Evacuation
- 2.Maximum Machining Efficiency
- 3.Low Cutting Force
- 4.Reduced chattering

For
heavy milling

Notched insert breaks chips into small pieces



MECH



Competitor A

Work Material :SS400
Vc = 120 m/min
ap×ae=40mm×10mm,fz = 0.12mm/t
MECH032-S32-11-5-4T

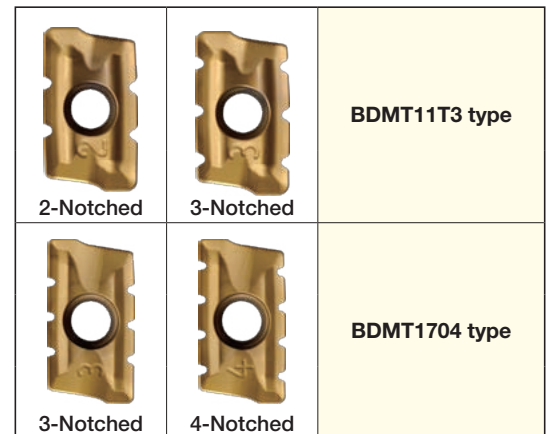
A flat-cut flute provides excellent chip evacuation

Noched inserts lower cutting force, reduce chattering and maximize efficiency

Long cutting edge enable high efficiency machining

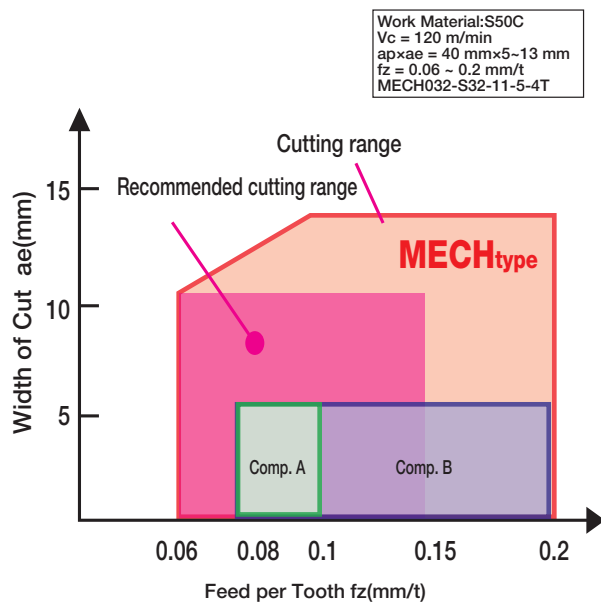
● MECH applicable inserts

Description	Insert Grades		No. of nicks
	PR830	PR905	
BDMT11T308ER-N2	●	●	2
BDMT11T308ER-N3	●	●	3
BDMT170408ER-N3	●	●	3
BDMT170408ER-N4	●	●	4

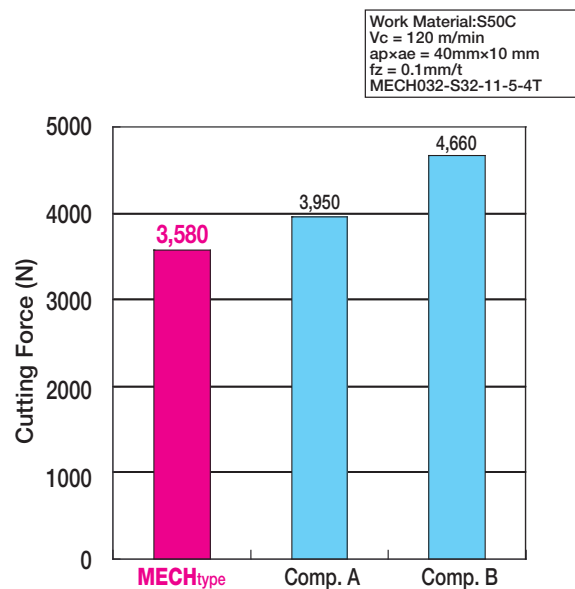


● Low cutting force

● Low Cutting Force due to Notched Inserts



● Cutting Force (principal force)



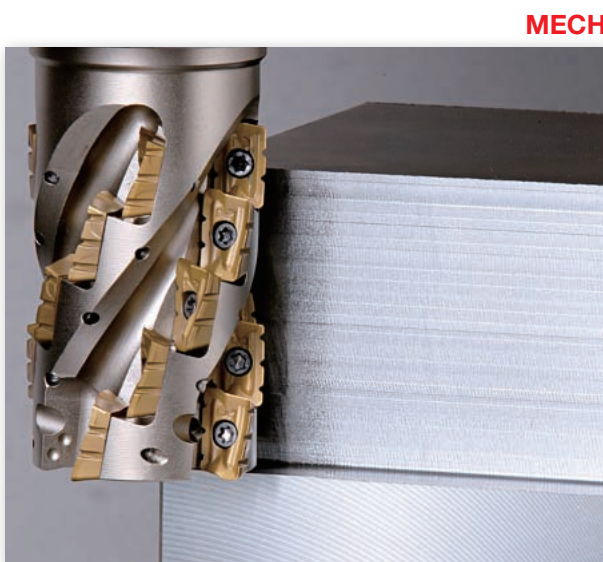
(Internal evaluation)

● Reduced chattering

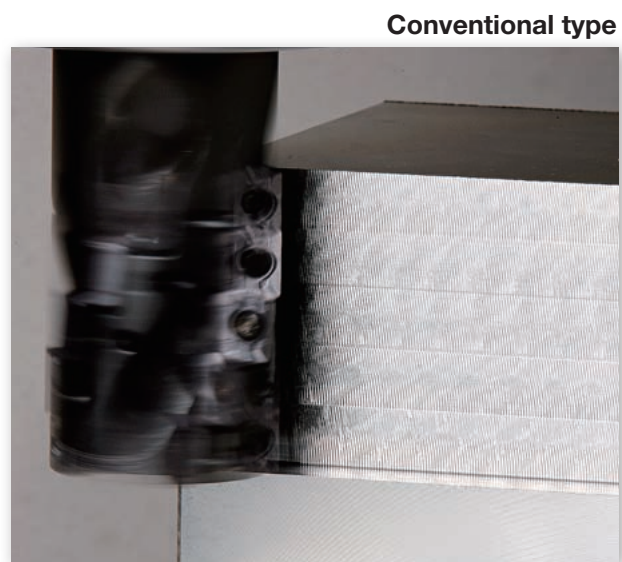
● Comparison of surface wall

Notched insert lowers and disperses cutting force, and enables high feed rates by reducing Chattering

Work Material: S50C
Vc = 120 m/min
fz = 0.12 mm/t
ap×ae = 40×7 mm



MECH type



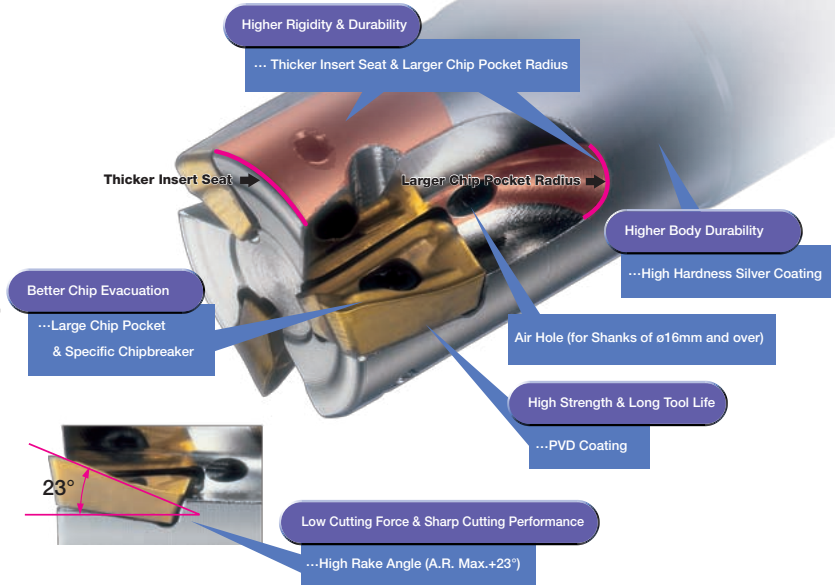
Comp.A

(Internal evaluation)

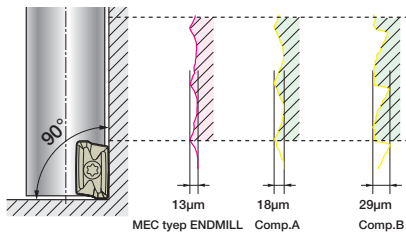
MEC_{type} High efficient endmill

Advantages

1. Low cutting force and sharp cutting performance
2. Perfect 90° shoulders, and smooth surface of shoulder wall
3. An extensive grade lineup applicable to a wide range of work materials, such as steel, stainless steel, cast iron and aluminum



Perfect 90° Shoulders



(Internal evaluation)

Excellent Shoulder Wall Surface Finishes

Smoothly finished shoulder wall and high squareness at shouldering with multiple passes



Cutting Dia. 20mm / S50C
 $V_c=120\text{m/min}$, $a_p \times a_e=5 \times 10\text{mm}$
 $f_z=0.1\text{mm/t}$, Dry (with compressed air)

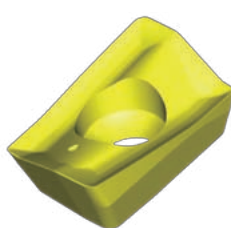
(Internal evaluation)

MECX_{type} High efficient and low cutting force endmill

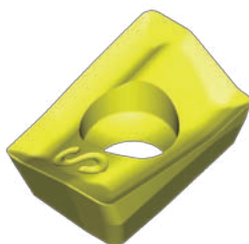
Advantages

1. Extra-fine pitch increases machining efficiency cutter that holds multiple inserts
2. Ideal for lower horsepower machines: low resistance and high strength design
3. Covers a broad range of applications with the multi-purpose JT chipbreaker and the low resistance JS chipbreaker

Chipbreaker Lineup

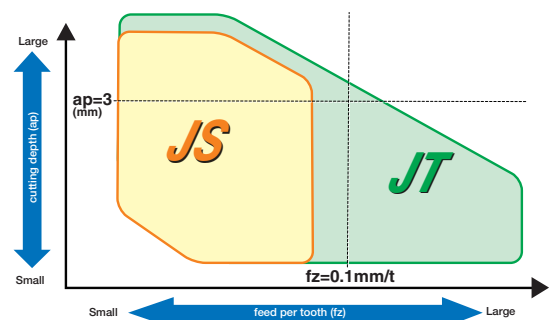


General JT Chipbreaker



Low resistance JS Chipbreaker

Chipbreaker Application Chart



Recommended for
small machines

● Lineup of MEC/MECX

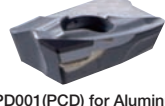
1. Grade Lineup (PVD Coated Insert)

For Steel				
PR830				
				
Work Material	Carbon Steel•Alloy Steel			
Cutting Range	Finishing Roughing			
Classification	P01	P10	P20	P30
Applicable Range	PR830			

For Stainless				
PR1025				
				
Micro grain carbide substrate				
Work Material	Stainless			
Cutting Range	Finishing Roughing			
Classification	M01	M10	M20	M30
Applicable Range	PR1025			

For Cast Iron				
PR905				
				
Work Material	Cast Iron			
Cutting Range	Finishing Roughing			
Classification	K01	K10	K20	K30
Applicable Range	PR905			

2. Chipbreaker lineup and Corner Radius variation

shape	Coner Radius(re) Description	Coner Radius(re)								
		0.2	0.4	0.8	1.2	1.6	2.0	2.4	3.1	4.0
 General JT Chipbreaker	BDMT0703...ER-JT	●	●	●						
	BDMT1103...ER-JT	●	●	●						
	BDMT11T3...ER-JT	●	●	●	●	●	●	●	●	
	BDMT1704...ER-JT		●	●	●	●	●	●	●	●
 Low resistance JS Chipbreaker	BDMT0703...ER-JS	●	●	●						
	BDMT1103...ER-JS	●	●	●						
	BDMT11T3...ER-JS	●	●	●						
	BDMT1704...ER-JS		●	●						
 JA Chipbreaker for Aluminum	BDGT11T3...FR-JA	●	●	●						
	BDGT1704...FR-JA		●	●			●		●	
 KPD001(PCD) for Aluminum	BDMT11T3...FR	●	●							
	BDMT1704...FR	●	●							

3. Various products lineup of MEC/MECX(Different usage of MEC and MECX)



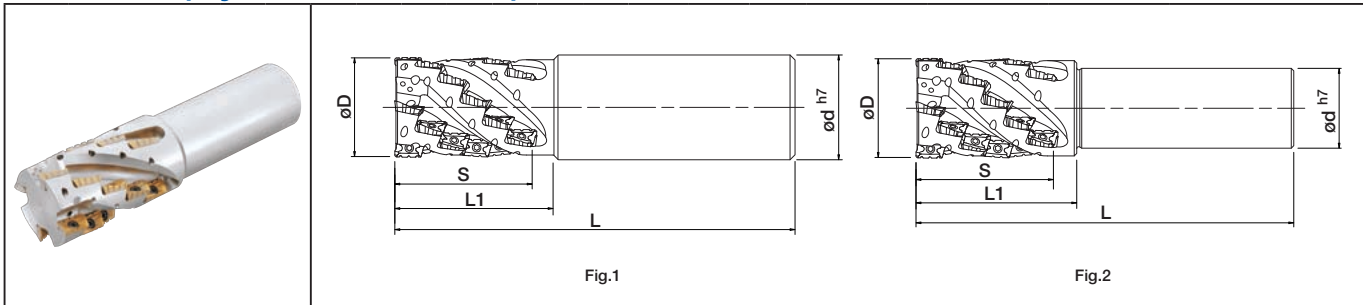
MECX25-S25-07-7T

MEC25-S25-11T

MEC25-S25-17

MECX-07 Type	MEC-11 Type	MEC-17 Type
 BDMT070304ER-JT	 BDMT11T308ER-JT	 BDMT170408ER-JT
1) Multiple edges, capable of increasing table feed and high efficiency machining 2) Design with low resistance and high toughness, optimum for turning mill and small machines	1) Actualized low resistance and high toughness with an insert with 11mm edges 2) Actualized high efficiency machining by ensuring toolholder toughness and increasing edge contact	1) Substantial cut is available with an insert with 17mm edge length

MECH (Cylindrical Shank)



Toolholder Dimension

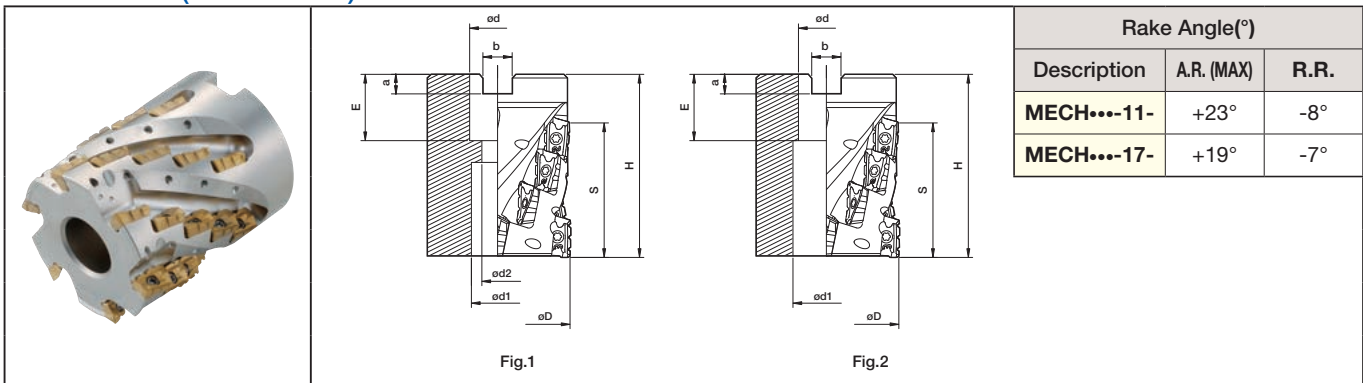
Description	Stock	No. of Flute	No. of Stage	No. of Insert	Dimension (mm)					Rake Angle(°)		Shape	Spare Parts			Applicable Insert		
					øD	ød	L	L1	S	A.R. (MAX)	R.R.		Clamp Screw	Wrench	Anti-seize Compound			
																		
MECH	025-S25-11-4-2T	●	2	4	8	25	25	120	46	37	+21°	-10°	Fig.1	SB-2555TRG	DTM-8	MP-1	BDMT11T308ER-N2 BDMT11T308ER-N3	
	032-S32-11-5-2T	●		5	10	32	32	140	55	46	+23°	-9°						
	032-S32-11-5-4T	●	20		150			64	55	-8°								
	040-S32-11-6-4T	●	4	6	24	40	160	+23°	-8°									
	040-S42-11-6-4T	●							-8°									
	050-S42-11-7-4T	●		7	28	50	42		170	75		64						-7°
	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	●		170	73	59		-7°	Fig.1									
	050-S42-17-5-4T	●	4	5	20	50	42	185	88	74		-7°	Fig.2					

●:Standard Stock



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

MECH (Shell Mill)



Toolholder Dimension

Description	Stock	No. of Flute	No. of Stage	No. of Insert	Dimension (mm)									Shape	Spare Parts			Applicable Insert		
															Clamp Screw	Wrench	Anti-seize Compound			
					øD	ød	ød1	ød2	H	E	a	b	S							
MECH	040R-11-4-4T-M	●	4	4	16	40	16	15	9	50	19	5.6	8.4	37	Fig.1	SB-2555TRG	DTM-8	MP-1	BDMT11T308ER-N2 BDMT11T308ER-N3	
	050R-11-5-6T-M	●	6	5	30	50	22	18	11	63	21	6.3	10.4	46						
MECH	050R-17-2-4T-M	●	4	2	8	50	22	18	11	52	21	6.3	10.4	30		SB-4070TRN	DTM-15	MP-1		BDMT170408ER-N3 BDMT170408ER-N4
	050R-17-4-4T-M	●	4	4	16	50	22	18	11	78	21	6.3	10.4	59						
	063R-17-3-4T-M	▲	4	3	12	63	27	20	14	70	24	7	12.4	45						
	080R-17-4-6T-M	▲	6	4	24	80	32	26	18	85	28	8	14.4	59						
	100R-17-4-6T-M	▲	6	4	24	100	40	56	-	85	30	9	16.4	59	Fig.2					
MECH	063R-17-3-4T	▲	4	3	12	63	25.4	20	14	70	26	6	9.5	45	Fig.1	SB-4070TRN	DTM-15	MP-1	BDMT170408ER-N3 BDMT170408ER-N4	
	080R-17-4-6T	▲	6	4	24	80	31.75	26	18	85	32	8	12.7	59						
		100R-17-4-6T	▲	6	4	24	100	38.1	56	-	85	38	10	15.9	59					Fig.2

●:Standard Stock ▲:Stock in January 2009



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

MECH-BT50 (Integral Arbor Type)

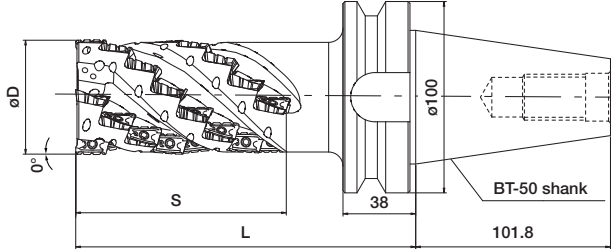
			Rake Angle(°)		
			Description	A.R. (MAX)	R.R.
			MECH•••-11-	+23°	-7°
			MECH•••-17-	+19°	-7°

Fig.1

Toolholder Dimension

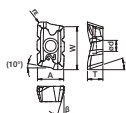
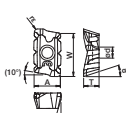
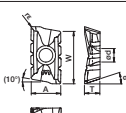
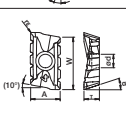
Description	Stock	No. of Flute	No. of Stage	No. of Insert	Dimension (mm)			Rake Angle(°)		Shape	Spare Parts			Applicable Insert
					øD	L	S	A.R. (MAX)	R.R.		Clamp Screw	Wrench	Anti-seize Compound	
														
MECH 050R11-8-4T-BT50	●	4	8	32	50	143	73	+23°	-7°	Fig.1	SB-2555TRG	DTM-8	MP-1	BDMT11T308ER-N2 BDMT11T308ER-N3
MECH 050R17-7-4T-BT50	●	4	7	28	50	173	104	+19°	-7°		SB-4070TRN	DTM-15	MP-1	BDMT170408ER-N3 BDMT170408ER-N4
063R17-7-4T-BT50	▲				63									
080R17-7-4T-BT50	▲				80									
100R17-7-6T-BT50	▲	6		42	100									

●:Standard Stock ▲:Stock in January 2009



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

Applicable Insert

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

Inserts are sold in 10 piece boxes.

●:Standard Stock

Recommended Cutting Condition

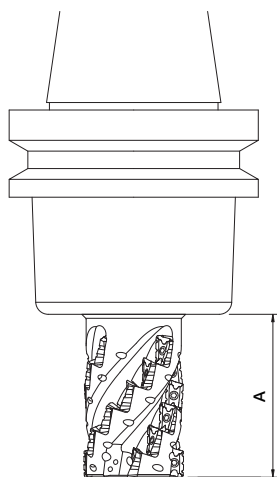
Workpiece Material	Feed Rate(mm/t)	Insert Grade(Cutting Speed Vc:m/min)	
		PVD Coated	
		PR830	PR905
Carbon Steel (SxxC)	0.08~0.1~0.15	100~180	-
Alloy Steel (SCM)	0.08~0.1~0.15	100~180	-
Die Steel (SKD/NAK)	0.08~0.1~0.15	100~150	-
Gray Cast Iron (FC)	0.08~0.1~0.15	-	100~180
Nodular Cast Iron (FCD)	0.08~0.1~0.15	-	100~150

■Cutting Performance (Tested Machine:Machining center equivalent to AC15/18.5kw)

● MECH Endmill Type

Cutting Dia.	Description	Overhang Length:A(mm)
ø25	MECH025-S25-11-4-2T	48
ø32	MECH032-S32-11-5-2T	57
ø40	MECH040-S32-11-6-4T	65
ø40	MECH040-S42-11-6-4T	65
ø50	MECH050-S42-11-7-4T	76
ø50	MECH050-S42-11-7-6T	76
ø40	MECH040-S32-17-4-2T	74
ø40	MECH040-S42-17-4-2T	74
ø50	MECH050-S42-17-5-4T	89

Shape



2 Flute Type

(Work Material:S50C)

Description	Shouldering	Grooving
	Cutting Speed : Vc=100~180m/min Feed :fz=0.08~0.15mm/t	Cutting Speed : Vc=100~120m/min Feed :fz=0.08~0.12mm/t
MECH025-S25-11-4-2T		
MECH032-S32-11-5-2T		
MECH040-S32-17-4-2T MECH040-S42-17-4-2T		

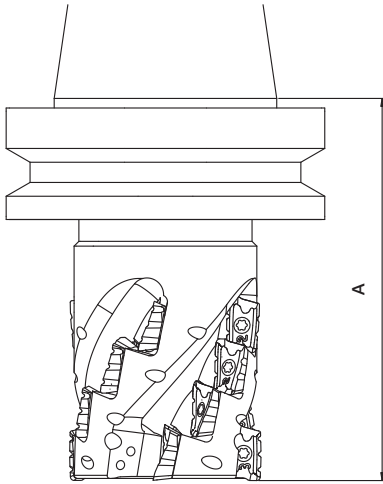
4 Flute / 6 Flute Type

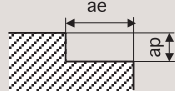
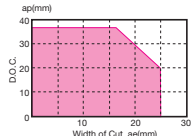
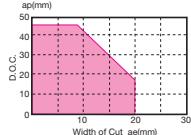
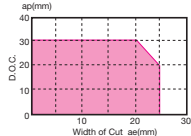
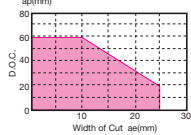
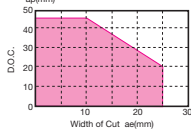
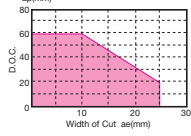
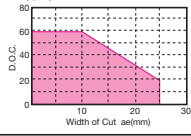
MECH032-S32-11-5-4T	
MECH040-S32-11-6-4T MECH040-S42-11-6-4T	
MECH050-S42-11-7-4T	
MECH050-S42-11-7-6T	
MECH050-S42-17-5-4T	

4 Flute / 6 Flute Type are not recommended for grooving.

● MECH Shell Mill Type

(Work Material:S50C)

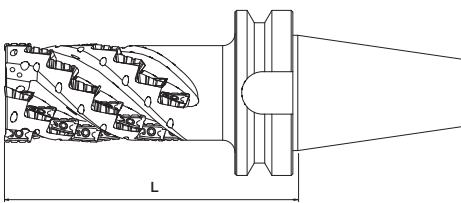
Cutting Dia.	Description	Overhang Length:A(mm)
ø40	MECH040R-11-4-4T-M	125
ø50	MECH050R-11-5-6T-M	123
	MECH050R-17-2-4T-M	112
	MECH050R-17-4-4T-M	138
ø63	MECH063R-17-3-4T-M	115
	MECH063R-17-3-4T	115
ø80	MECH080R-17-4-6T-M	130
	MECH080R-17-4-6T	130
ø100	MECH100R-17-4-6T-M	130
	MECH100R-17-4-6T	130
Shape 		

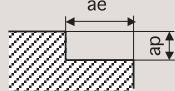
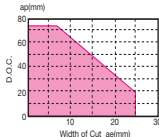
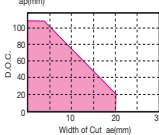
Description	Shouldering
	 Cutting Speed :Vc=100~180m/min Feed :fz=0.08~0.15mm/t
MECH040R-11-4-4T-M	
MECH050R-11-5-6T-M	
MECH050R-17-2-4T-M	
MECH050R-17-4-4T-M	
MECH063R-17-3-4T-M MECH063R-17-3-4T	
MECH080R-17-4-6T-M MECH080R-17-4-6T	
MECH100R-17-4-6T-M MECH100R-17-4-6T	

Type are recommended for grooving.

● MECH-BT50 Type

(Work Material:S50C)

Cutting Dia.	Description	Overhang Length:L(mm)
ø50	MECH050R11-8-4T-BT50	143
	MECH050R17-7-4T-BT50	173
Shape 		

Description	Shouldering
	 Cutting Speed :Vc=100~180m/min Feed :fz=0.08~0.15mm/t
MECH050R11-8-4T-BT50	
MECH050R17-7-4T-BT50	

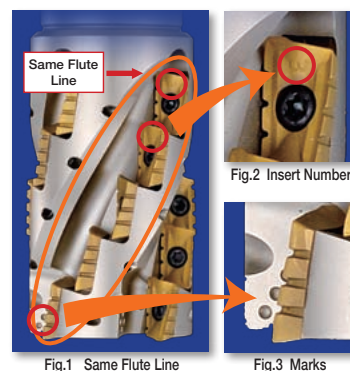
Type are recommended for grooving.

Number of Inserts Installed

Description	No. of Flute	No. of Insert	No. of Inserts Installed			
			BDMT11T308ER-		BDMT170408ER-	
			N2	N3	N3	N4
MECH 025-S25-11-4-2T	2	8	4	4		
032-S32-11-5-2T		10	5	5		
032-S32-11-5-4T	4	20	10	10		
040-S32-11-6-4T		24	12	12	-	-
040-S42-11-6-4T		28	14	14		
050-S42-11-7-4T	6	42	21	21		
050-S42-11-7-6T						
MECH 040-S32-17-4-2T	2	8	-	-	4	4
040-S42-17-4-2T	4	20			10	10
050-S42-17-5-4T						
MECH 040R-11-4-4T-M	4	16	8	8	-	-
050R-11-5-6T-M	6	30	15	15		
MECH 050R-17-2-4T-M	4	8			4	4
050R-17-4-4T-M		16			8	8
063R-17-3-4T-M		12			6	6
080R-17-4-6T-M	6	24	-	-	12	12
100R-17-4-6T-M						
MECH 063R-17-3-4T	4	12			6	6
080R-17-4-6T	6	24			12	12
100R-17-4-6T						
MECH 050R11-8-4T-BT50	4	32	16	16	-	-
050R17-7-4T-BT50						
063R17-7-4T-BT50		28	-	-	14	14
080R17-7-4T-BT50						
100R17-7-6T-BT50	6	42			21	21

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.

Case studies Achievement of productivity improvement and machining time reduction

S45C

- Ship parts
- Vc=150m/min (n=955min⁻¹)
- ap x ae=70mm x 10mm
- fz=0.2mm/t
- Vf=764mm/min
- Dry
- MECH050-S42-17-5-4T
- 4 Flutes
- BDMT170408ER-N3
- BDMT170408ER-N4
- PR830

MECH

Chip removal Q=534cc/min.

Comp. C

Chip removal Q=115cc/min.

•Comp. C removed 115cc of chips per minute. In contrast, MECH removed 534cc per minute. Machining productivity improved to 4.6 times.

Evaluation by the customer

SS400

- Plate
- Vc=150m/min (n=955min⁻¹)
- ap x ae=70mm x 10mm
- fz=0.2mm/t
- Vf=760mm/min
- Dry
- MECH050-S42-17-5-4T
- 4 Flutes
- BDMT170408ER-N3
- BDMT170408ER-N4
- PR830

MECH

Chip removal Q=532cc/min.

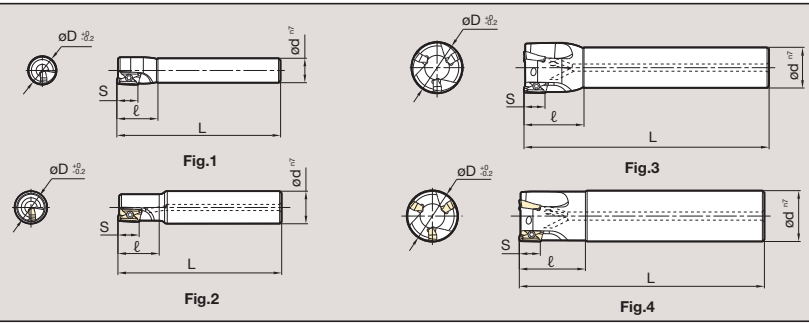
Comp. D

Chip removal Q=170cc/min.

•Comp. D removed 170cc of chips per minute. In contrast, MECH removed 532cc per minute. Machining productivity improved to 3.1 times and finished wall condition was excellent.

Evaluation by the customer

MEC Endmill



Toolholder Dimension

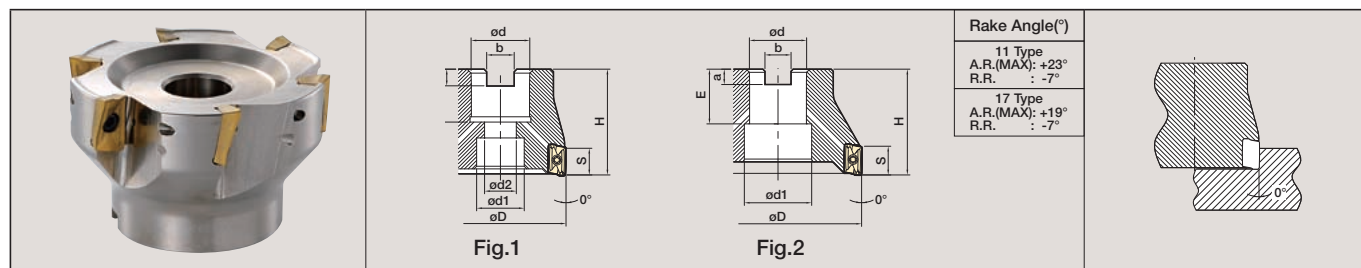
Description			Stock	No.of Insert	Dimension(mm)					Rake Angle(°)		Coolant Hole	Shape	Spare Parts		Applicable Insert	Max. Revolution (min ⁻¹)																																																																						
					øD	ød	L	ℓ	S	A.R. (MAX)	R.R.			Clamp Screw	Wrench																																																																								
																																																																																							
Standard Shank	MEC	10-S10-11	●	1	10	10	80	17	10	+10°	-24°	No	Fig.1	SB-2545TR	DTM-8	BDMT1103	54,800																																																																						
		10-S16-11	●		10	16											+12°	-21°	No	Fig.1	49,200																																																																		
		12-S10-11	●		12	10																-19°	No	Fig.1	47,700																																																														
		12-S12-11	●		12	12																				Yes	Fig.2																																																												
		12-S16-11	●		12	16																							Yes	Fig.2																																																									
		13-S12-11	●		13	12																																																																																	
		14-S12-11	●		14	12																																																																																	
		14-S16-11	●		14	16																																																																																	
	MEC	16-S12-11T	●	2	16	12	100	23	10	+18°	-14°	No	Fig.1	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3																									43,750																																														
		17-S16-11T	●	17	16	+19°											-13°	Yes	Fig.3	SB-2555TRG	DTM-8																				BDMT11T3 BDGT11T3	43,500																																													
		18-S16-11T	●	18	16																	+20°	-10°	Yes	Fig.3																	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	43,000																																										
		19-S16-11T	●	19	16																					+20°	-10°	Yes																	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	42,000																																						
		20-S16-11T	●	20	16																								+21°	-10°	Yes																		Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	41,000																																		
		21-S20-11T	●	21	20																											+21°	-10°	Yes																			Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	40,300																														
		22-S20-11T	●	22	20																														+22°	-9°	Yes																				Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	39,600																										
		24-S20-11T	●	24	20																																	+23°	-8°	Yes																					Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	38,200																						
		25-S20-11T	●	25	20																																																												+23°	-8°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	37,500															
		28-S25-11T	●	28	25																																																																			+23°	-8°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	35,800								
		30-S25-11T	●	30	25																																																																										+23°	-8°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	34,800	
		32-S25-11T	●	32	25																																																																																	+23°	-8°
40-S32-11T	●	40	32	+23°	-8°		Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	30,000																																																																											
50-S32-11T	●	50	32			+23°						-8°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	22,500																																																																					
Same Shank Size	MEC	16-S16-11T	●															2	16	16	100	30	10	+18°	-14°																Yes	Fig.4	SB-2555TRG	DTM-8																																											
		20-S20-11T	●															3	20	20	110	32	+20°	-10°	41,000																																																														
		25-S25-11T	●															25	25	120	32	+21°	-10°	37,500																																																															
		32-S32-11T	●															4	32	32	130	40	+23°	-9°	33,900																																																														
Long Shank	MEC	20-S18-170-11T	●															2	20	18	170	30	10	+20°	-10°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	41,000																																																								
		20-S20-140-11T	●																	20	140	60									+21°	-10°	Yes	Fig.4	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	39,600																																																	
		20-S20-170-11T	●																	20	170	30																+22°	-9°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	37,500																																										
		22-S20-170-11T	●																	22	170	30																							+23°	-9°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	35,800																																			
		25-S23-210-11T	●																	23	210	32																														+23°	-9°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	33,900																												
		25-S25-160-11T	●																	25	160	60																																					+23°	-9°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	32,600																					
		25-S25-210-11T	●	25	210		32	+23°	-9°	Yes	Fig.3									SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3																																												30,000																					
		28-S25-210-11T	●	28	210	32	+23°					-9°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3																																																	30,000																					
		32-S30-250-11T	●	30	250	40																																																												+23°	-9°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	30,000														
		32-S32-200-11T	●	32	200	65																																																																			+23°	-9°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	30,000							
		32-S32-250-11T	●	32	250	40																																																																										+23°	-9°	Yes	Fig.3	SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	30,000
		35-S32-250-11T	●	35	250	40																																																																																	+23°
40-S32-240-11T	●	40	240	65	+23°	-9°												Yes	Fig.3				SB-2555TRG	DTM-8	BDMT11T3 BDGT11T3	30,000																																																													
Standard	MEC	25-S20-17	●	2																						25	20	120	36	15.7	+16°	-11°	Yes	Fig.3	SB-4070TRN	DTM-15	BDMT1704 BDGT1704																																																		
		32-S25-17	●	3																						32	25	130	40	+17°	-7°	30,000																																																							
		40-S32-17	●	4																						40	32	150	50	+19°	-7°	25,000																																																							
		50-S32-17	●	50																						32	150	50			17,000																																																								
Same Size	MEC	25-S25-17	●	2																						25	25	120	36	15.7	+16°	-11°	Yes	Fig.4	SB-4070TRN	DTM-15		BDMT1704 BDGT1704	35,000																																																
		32-S32-17	●	3				32	32	130	40									+17°	-7°	30,000																																																																	
Long	MEC	25-S25-160-17	●	2			25	160	60	15.7	+16°	-11°	Yes	Fig.4	SB-4070TRN	DTM-15	BDMT1704 BDGT1704			35,000																																																																			
		25-S25-210-17	●					210	36											+17°	-7°	Yes				Fig.4	SB-4070TRN	DTM-15	BDMT1704 BDGT1704	32,500																																																									
		28-S25-210-17	●					28	210																					36	+17°	-7°	Yes	Fig.4	SB-4070TRN	DTM-15			BDMT1704 BDGT1704	30,000																																															
		32-S32-200-17	●					32	200																					65										+17°	-7°	Yes	Fig.4	SB-4070TRN	DTM-15	BDMT1704 BDGT1704	27,700																																								
		32-S32-250-17	●					32	250																					40																	+17°	-7°	Yes	Fig.4	SB-4070TRN	DTM-15	BDMT1704 BDGT1704	25,000																																	
		35-S32-250-17	●		35	250		40	+17°									-7°	Yes				Fig.4	SB-4070TRN	DTM-15					BDMT1704 BDGT1704																								25,000																																	
40-S32-240-17	●	40	240	65	+17°	-7°	Yes	Fig.4		SB-4070TRN	DTM-15	BDMT1704 BDGT1704	25,000																																																																										

●:Standard Stock

Maximum Revolution

When running the endmill and cutter at the maximum revolution, the insert or holder may be damaged by centrifugal force. For more details, see "Warning" on page 12.

MEC Face Mill



Toolholder Dimension

Description		stock	No. of Insert	Dimension(mm)								Coolant Hole	Shape	Weight (Kg)	Spare Parts		Max. Revolution (min ⁻¹)								
															Clamp Screw	Wrench									
																									
Standard	MEC 040R-11-5T-M	●	5	40	16	14	8.5	40	20	5.5	8.5	10	Yes	Fig.1	0.3	SB-2555TRG	DTM-8	30,000							
	050R-11-5T-M	●	5	50	22	18	12		22	6.3	10.4				0.4			22,500							
	063R-11-6T-M	●	6	63	25.4	20	14		50	26	6				9.5			0.6	20,500						
	063R-11-6T	●	6	63	25.4	20	14	50	26	6	9.5			1.0	20,500										
	080R-11-7T	●	7	80	31.75	26	17.6	63	32	8	12.7			1.8	17,000										
	100R-11-9TN	●	9	100	38.1	45	32		38	10	15.9			3.4	15,000										
	125R-11-11T	●	11	125	50.8	70	-		47	10	19.1			4.4	13,900										
	160R-11-14T	●	14	160	22	18	12	40	22	6.3	10.4			10	Yes			Fig.1	0.4	SB-2555TRG	DTM-8	22,500			
	MEC 050R-11-7T-M	●	7	50	25.4	20	14	50	26	6	9.5								0.6			20,500			
063R-11-8T-M	●	8	63	25.4	20	14	50	26	6	9.5	0.8	20,500													
063R-11-8T	●	8	63	25.4	20	14	50	26	6	9.5	1.0	18,500													
080R-11-10T	●	10	80	16	14	8.5	40	20	5.5	8.5	15.7	Yes	Fig.1	0.3	SB-4070TRN	DTM-15	25,000								
MEC 040R-17-4T-M	●	4	40	22	18	12		22	6.3	10.4				0.4			17,000								
050R-17-4T-M	●	4	50	25.4	20	14		50	26	6				9.5			0.6	14,500							
063R-17-5T-M	●	5	63	25.4	20	14	50	26	6	9.5			0.8	14,500											
063R-17-5T	●	5	63	31.75	26	17.6	63	32	8	12.7			1.0	12,000											
080R-17-6T	●	6	80	38.1	45	32		38	10	15.9			1.8	10,500											
100R-17-7TN	●	7	100	50.8	70	-		47	10	19.1			3.4	8,900											
125R-17-9T	●	9	125	160R-17-12T	●	12	160	22	18	12			40	22			6.3	10.4	15.7	Yes	Fig.1	0.4	SB-4070TRN	DTM-15	7,400
MEC 050R-17-5T-M	●	5	50	25.4	20	14	50	26	6	9.5			0.6	14,500											
063R-17-6T-M	●	6	63	25.4	20	14	50	26	6	9.5	0.8	14,500													
063R-17-6T	●	6	63	31.75	26	17.6	63	32	8	12.7	1.0	12,000													
080R-17-8T	●	8	80	100R-17-9TN	●	9	100	31.75	26	17.6	63	32	8	12.7				1.8		10,500					

●:Standard Stock

Maximum Revolution

When running the endmill and cutter at the maximum revolution, the insert or holder may be damaged by centrifugal force. For more details, see "Warning" on [page 12](#).

When using Center-through Air / Coolant / Mist

If Center Through air (Coolant, Mist) is used, please use appropriate arbor and clamp with arbor bolt. (Table1)

MEC's surface finish when shouldering with multiple passes

In order to obtain smoothly finished shoulder wall with multiple passes keep less than 5.5mm for 11T3 type and also keep less than 9mm for 1704 type.

Table1

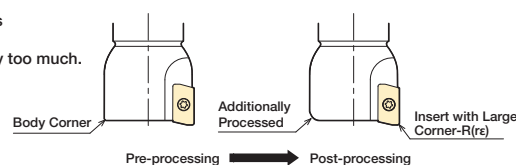
Holder Description	Arbor attachment Bolt (Attachment)	Wrench
MEC040R****-M	HH8×25H	LW-5(Double width 5mm)
MEC050R****-M	HH10×30H	LW-6(Double width 6mm)
MEC063R****-M	HH12×35H	LW-8(Double width 8mm)
MEC080R****	HH16×52H	LW-12(Double width 12mm)
MEC100R****-N	HF20×53H	LW-14(Double width 14mm)
MEC125R****	HF24×60H	LW-17(Double width 17mm)

Wrench is not included. Purchase separately.

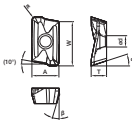
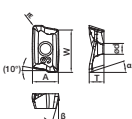
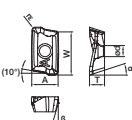
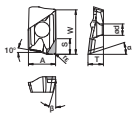
When using an insert with corner-radius 1.6mm or larger, additional processing may be necessary. Apply additional processing to the body corner according to the chart. If corner-radius is 1.2mm, additional processing is not needed.

Insert Corner-R(re)	Additional Processing Dimension (mm) to Body Corner
1.6	R1.0
2.0	
2.4	R1.2
3.1	R1.6
4.0	R2.5

*Round- shaped additional processing is recommended. When applying chamfer, do not cut away too much.



●Applicable Insert

Guidance of usage choice			Carbon Steel-Alloy Steel							★	☆							
			Die Steel							★	☆							
★:Roughing/First Choice ☆:Roughing/Second Choice ■:Finishing/First Choice □:Finishing/Second Choice (High Hardness material is applicable only under 45HRC)			Stainless steel							☆	★							
			Gray cast Iron										★					
			Ductile cast Iron										★					
			Non Ferrous Iron											★	■			
			Heat resistance part										★					
			Titanium Alloy											★	■			
			Hardened Material								□							
Description			Dimension (mm)						Angle (°)		Cermet	PVD Coated				Carbide	PCD	Applicable Toolholder
			A	T	ød	W	rε	S	α	β	TN100M	PR830	PR1025	PR905	GW25	KPD001		
		BDMT	110302ER-JT				0.2					●		●			MEC---...-11	
			110304ER-JT	6.3	3.00	2.8	11.0	0.4	-	18°	15°		●		●			
			110308ER-JT					0.8					●		●			
		BDMT	11T302ER-JT					0.2					●		●			MEC---...-11T MEC...R-11
			11T304ER-JT					0.4					●		●			
			11T308ER-JT					0.8					●		●			
			11T312ER-JT	6.7	3.80	2.8	11.0	1.2	-	18°	13°		●		●			
			11T316ER-JT					1.6					●		●			
			11T320ER-JT					2.0					●		●			
			11T324ER-JT					2.4					●		●			
			11T331ER-JT					3.1					●		●			
			BDMT	170404ER-JT					0.4					●		●		
		170408ER-JT						0.8					●		●			
		170412ER-JT						1.2					●		●			
		170416ER-JT		9.6	4.90	4.4	17.0	1.6	-	18°	13°		●		●			
		170420ER-JT						2.0					●		●			
		170424ER-JT						2.4					●		●			
		170431ER-JT						3.1					●		●			
		170440ER-JT						4.0					●		●			
				BDMT	110302ER-JS				0.2					●	●			MEC---...-11
110304ER-JS	6.3				3.00	2.8	11.0	0.4	-	18°	15°		●	●				
110308ER-JS								0.8					●	●				
BDMT	11T302ER-JS							0.2					●	●				MEC---...-11T MEC...R-11
	11T304ER-JS			6.7	3.80	2.8	11.0	0.4	-	18°	13°		●	●				
	11T308ER-JS							0.8					●	●				
BDMT	170404ER-JS					0.4					●	●				MEC---...-17 MEC...R-17		
	170408ER-JS	9.6	4.90	4.4	17.0	0.8	-	18°	13°		●	●						
		BDGT	11T302FR-JA				0.2								●	MEC---...-11T MEC...R-11		
			11T304FR-JA	6.7	3.80	2.8	11.0	0.4	-	18°	13°						●	
			11T308FR-JA					0.8									●	
		BDGT	170404FR-JA					0.4								●	MEC---...-17 MEC...R-17	
			170408FR-JA	9.6	4.90	4.4	17.0	0.8	-	18°	13°					●		
			170420FR-JA					2.0								●		
			170431FR-JA					3.1								●		
		BDMT	11T302FR	6.7	3.80	2.8	11.0	0.2	3.6	18°	13°					●	MEC---...-11T MEC...R-11	
			11T304FR					0.4								●		
		BDMT	170402FR	9.6	4.90	4.4	17.0	0.2	4.4	18°	13°						●	MEC---...-11T MEC...R-11
			170404FR					0.4								●		

*Chipbreaker Lineup: JT (general purpose), JS (low cutting force), JA (aluminum & non-ferrous)

●:Standard Stock

⚠ Warning

To avoid the significant hazard to you, we ask for your cooperation in carefully observing the following guidelines.

Warning about Maximum Revolution indicated on the Product

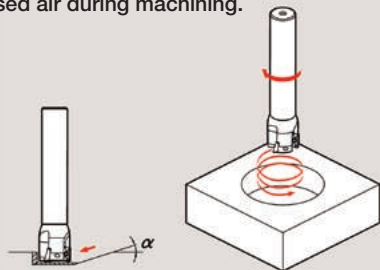
- 1.If the tool is used over maximum recommended revolution the body of the tool may be broken by inserts and clamp screws which may be dispersed by centrifugal force.
- 2.Machine within the recommended cutting conditions of the insert.
- 3.When using at higher revolution (over 10,000min⁻¹), refer to 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

Slant Milling•Helical Milling

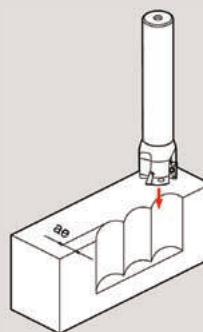
- Ramping Angle should be Under α°
- For plunge depth per revolution when helical milling, see the cutting performance data of each tool. Use compressed air during machining.



Cutting Dia.	Applicable Insert	Max.Ramping Angle(α°)
$\phi 16, \phi 18$	BDMT11T3 type BDGT11T3 type	3°
$\phi 20$		5°
$\phi 22, \phi 25$		2.5°
$\phi 28 \sim \phi 32$		1.5°
$\phi 40$		0.7°
$\phi 50$ over		Not recommended
$\phi 25$	BDMT1704 type BDGT1704 type	8°
$\phi 32$		5°
$\phi 40$		2.5°
$\phi 50$ over		Not recommended

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

Vertical Milling



Cutting Dia.	Applicable Insert	Max.W.O.C.(ae)
$\phi 16$ $\phi 18$	BDMT11T3 type BDGT11T3 type	1.5mm
$\phi 20$ $\phi 160$	BDMT11T3 type BDGT11T3 type	5mm
$\phi 25$ $\phi 160$	BDMT1704 type BDGT1704 type	8mm

BDMT1103 inserts are not recommended for Vertical Milling.

●Recommended Cutting Conditions (MEC Endmill/Face Mill)

●JT Chipbreaker
Cutting Dia.10~18
[MEC10~MEC18]

Work Material	Feed per tooth(mm/t)	Insert Grade (Cutting Speed : m/min)	
		PVD Coated	
		PR830	PR905
Stainless Steel(SUS304)	0.06~0.08~0.1	100~180	-
Carbon Steel(SxxC)	0.06~0.1~0.15	120~200	-
Alloy Steel(SCM)	0.06~0.1~0.12	100~180	-
Metal Mold Steel(SKD/NAK)	0.06~0.08~0.1	80~150	-
Gray Cast Iron(FC)	0.08~0.1~0.15	-	100~180
Ductile Iron(FCD)	0.06~0.08~0.1	-	80~120

Cutting Dia.20~160
[MEC20~MEC40][MEC040R~MEC160R]

Work Material	Feed per tooth(mm/t)	Insert Grade (Cutting Speed : m/min)	
		PVD Coated	
		PR830	PR905
Stainless Steel(SUS304)	0.08~0.12~0.15	100~180	-
Carbon Steel(SxxC)	0.08~0.15~0.25	120~200	-
Alloy Steel(SCM)	0.08~0.15~0.2	100~180	-
Metal Mold Steel(SKD/NAK)	0.08~0.12~0.2	80~150	-
Gray Cast Iron(FC)	0.08~0.18~0.25	-	100~180
Ductile Iron(FCD)	0.08~0.15~0.2	-	80~120

●JS Chipbreaker
Cutting Dia.10~18
[MEC10~MEC18]

Work Material	Feed per tooth(mm/t)	Insert Grade (Cutting Speed : m/min)	
		PVD Coated	
		PR830	PR1025
Stainless Steel(SUS304)	0.06~0.08~0.1	100~180	100~180
Carbon Steel(SxxC)	0.06~0.1~0.12	120~200	100~150
Alloy Steel(SCM)	0.06~0.08~0.1	100~180	-
Metal Mold Steel(SKD/NAK)	0.06~0.08~0.1	80~150	-

Cutting Dia.20~160
[MEC20~MEC40][MEC40R~MEC160R]

Work Material	Feed per tooth(mm/t)	Insert Grade (Cutting Speed : m/min)	
		PVD Coated	
		PR830	PR1025
Stainless Steel(SUS304)	0.08~0.1~0.12	100~180	100~180
Carbon Steel(SxxC)	0.08~0.15~0.18	120~200	100~150
Alloy Steel(SCM)	0.08~0.12~0.15	100~180	-
Metal Mold Steel(SKD/NAK)	0.08~0.1~0.12	80~150	-

●JA Chipbreaker

Work Material	Feed per tooth(mm/t)	Insert Grade (Cutting Speed : m/min)	
		Carbide	
		GW25	
Aluminum alloy(Si less 13%)	0.05~0.3	200~800	
Aluminum alloy(Si over 13%)	0.05~0.2	200~300	

●PCD

Work Material	Feed per tooth(mm/t)	Insert Grade (Cutting Speed : m/min)	
		PCD	
		KPD001	
Aluminum alloy(Si less 13%)	0.05~0.2	500~1,500	
Aluminum alloy(Si over 13%)	0.05~0.15	300~1,000	

●MEC type Cutting Performance of ULTRA HURRICANE ENDMILL

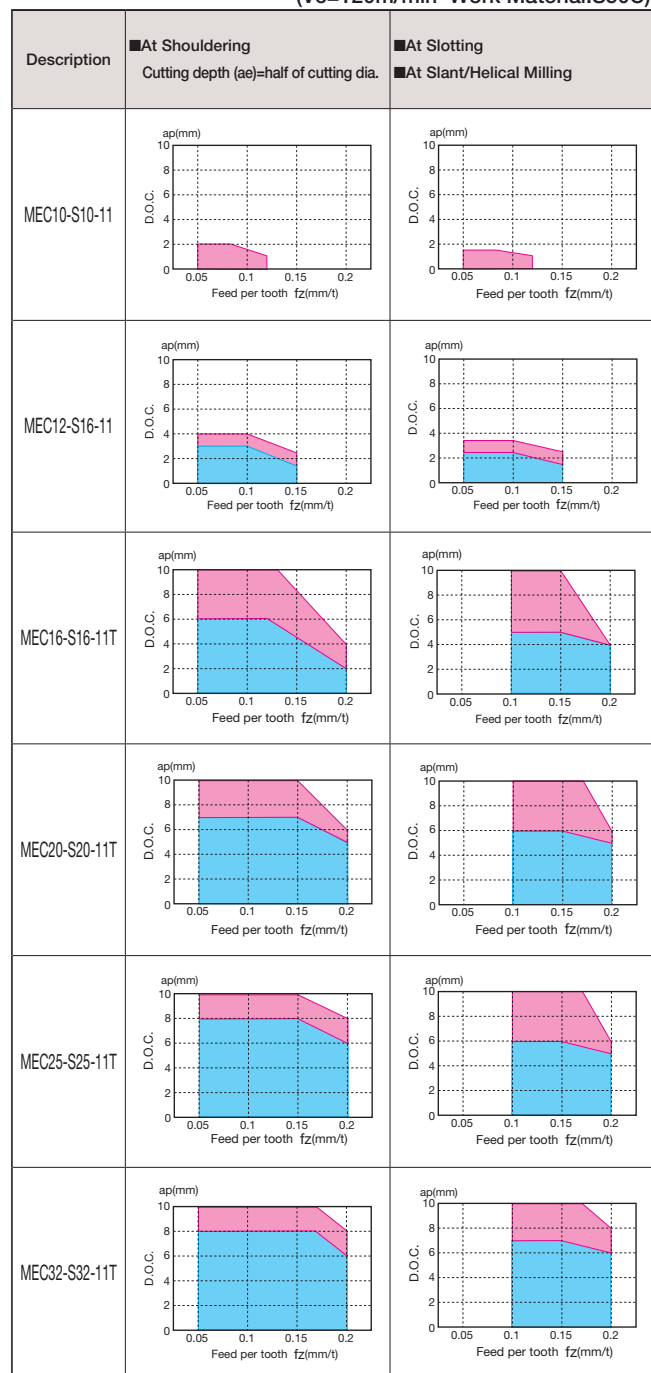
①Cutting Edge Length 10mm (Standard/Same Size Shank)

Cutting Dia.	Description	Overhang LengthA (mm)		Shape
ø10	MEC10-S10-11	17	-	
ø12	MEC12-S16-11	20	30	
ø16	MEC16-S16-11T	30	45	
ø20	MEC20-S20-11T	30	45	
ø25	MEC25-S25-11T	32	48	
ø32	MEC32-S32-11T	40	60	

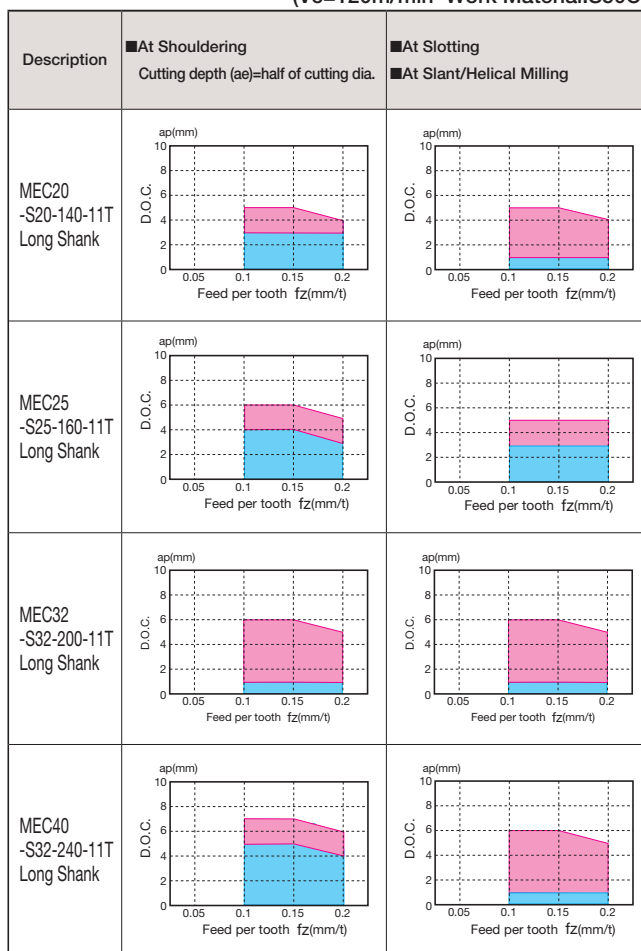
②Cutting Edge Length 10mm (Long Shank)

Cutting Dia.	Description	Overhang LengthA (mm)		Shape
ø20 Long Shank	MEC20-S20-140-11T	60	90	
ø25 Long Shank	MEC25-S25-160-11T	60	100	
ø32 Long Shank	MEC32-S32-200-11T	100	130	
ø40 Long Shank	MEC40-S32-240-11T	100	130	

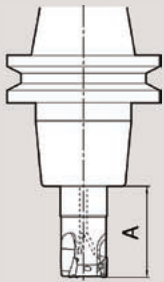
(Vc=120m/min Work Material:S50C)



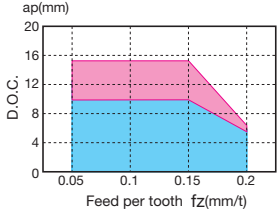
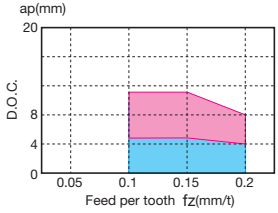
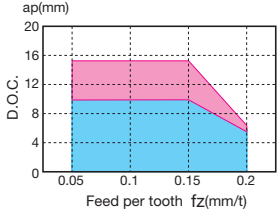
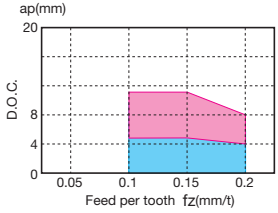
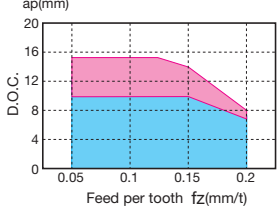
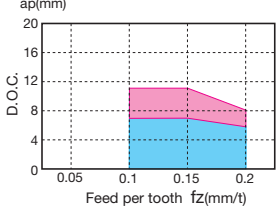
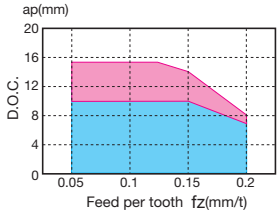
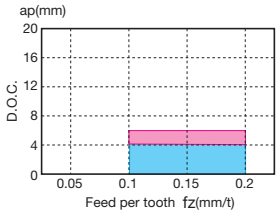
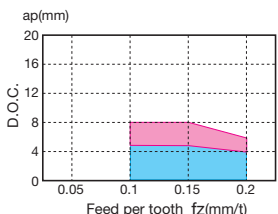
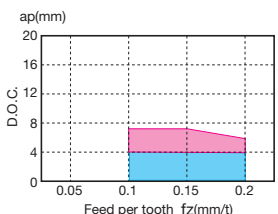
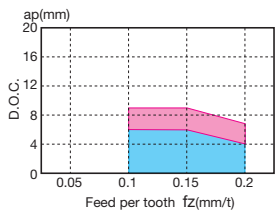
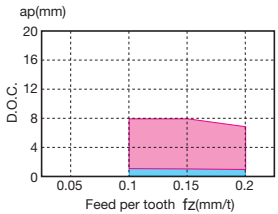
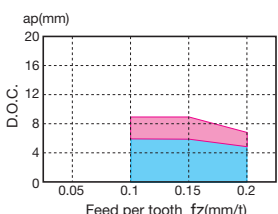
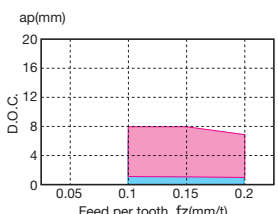
(Vc=120m/min Work Material:S50C)



③Cutting Edge Length 15.7mm

Cutting Dia.	Description	Overhang LengthA (mm)	
ø25	MEC25-S25-17	36	54
ø32	MEC32-S32-17	40	60
ø40	MEC40-S32-17	50	75
ø25 Long Shank	MEC25-S25-160-17	60	100
ø32 Long Shank	MEC32-S32-200-17	100	130
ø40 Long Shank	MEC40-S32-240-17	100	130
Shape 			

(Vc=120m/min Work Material:S50C)

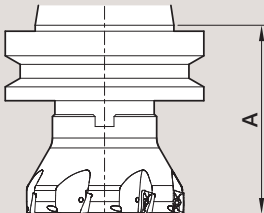
Description	■At Shouldering Cutting depth (ae)=half of cutting dia. 	■At Slotting ■At Slant/Helical Milling 
MEC25-S25-17		
MEC32-S32-17		
MEC40-S32-17		
MEC25-S25-160-17 Long Shank		
MEC32-S32-200-17 Long Shank		
MEC40-S32-240-17 Long Shank		

●MEC type Cutting Performance of ULTRA HURRICANE FACEMILL

Cutting Edge Length 10mm

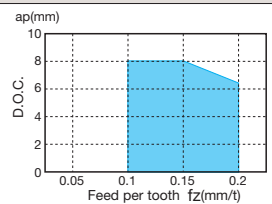
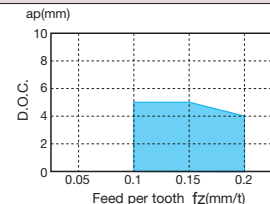
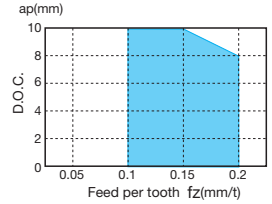
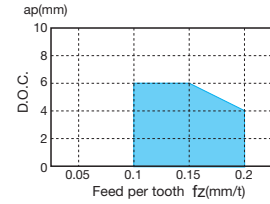
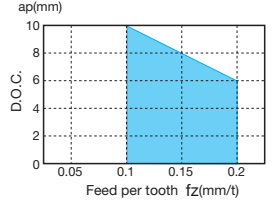
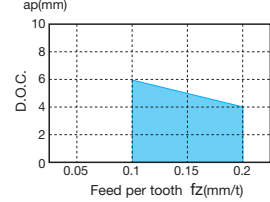
Cutting Dia.	Description	Overhang LengthA (mm)
ø40	MEC040R-11-5T-M	115
ø50	MEC050R-11-○T-M	100
ø63	MEC063R-11-○T	95
	MEC063R-11-○T-M	
ø80	MEC080R-11-○T	95
ø100	MEC100R-11-9TN	108
ø125	MEC125R-11-11T	
ø160	MEC160R-11-14T	

Shape



The diagram shows a cross-section of the MEC type face mill. It features a central vertical axis of symmetry. The top part is a wide, flat cutting edge. Below this is a series of steps or grooves. The bottom part is a wider base. A vertical dimension line on the right side, labeled 'A', indicates the total height of the cutting edge section.

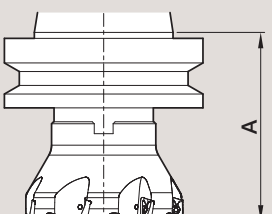
(Vc=120m/min Work Material:S50C)

Description	■At Shouldering Cutting depth (ae)=half of cutting dia.	■At Slotting
MEC040R-11-5T-M		
MEC050R-11-○T-M MEC100R-11-9TN		
MEC125R-11-11T MEC160R-11-14T		

Cutting Edge Length 15.7mm

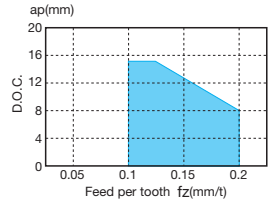
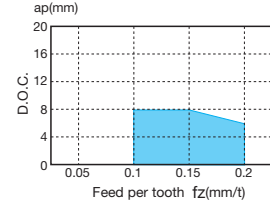
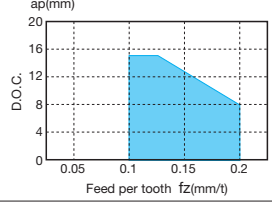
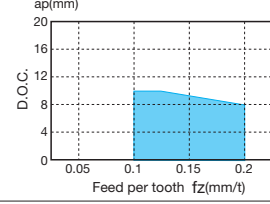
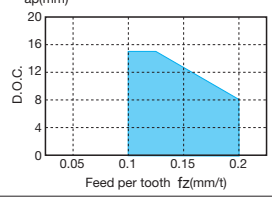
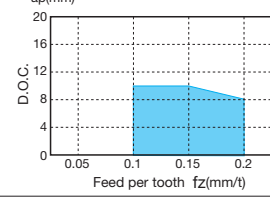
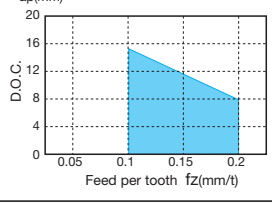
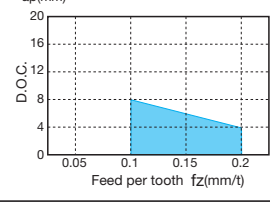
Cutting Dia.	Description	Overhang LengthA (mm)
ø40	MEC040R-17-4T-M	115
ø50	MEC050R-17-○T-M	100
ø63	MEC063R-17-○T	95
	MEC063R-17-○T-M	
ø80	MEC080R-17-○T	95
ø100	MEC100R-17-○TN	108
ø125	MEC125R-17-9T	
ø160	MEC160R-17-12T	

Shape

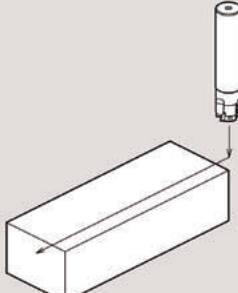


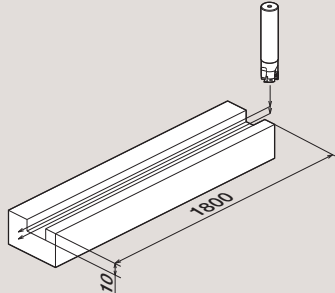
The diagram shows a cross-section of the MEC face mill. It features a central cutting edge with a width of 17mm. The cutting edge is flanked by two side lobes, each with a width of 12mm. The total width of the cutting edge is 41mm. The side lobes are separated by a central gap of 17mm. The overall width of the cutting edge is 108mm. The cutting edge is labeled with 'A' and a dimension line indicating its length.

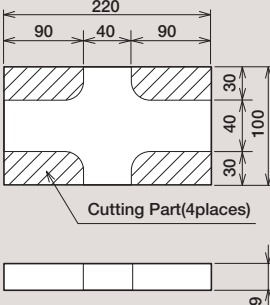
(Vc=120m/min Work Material:S50C)

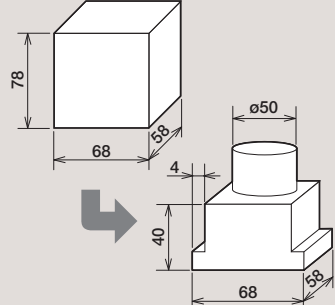
Description	■At Shouldering Cutting depth (ae)=half of cutting dia.	■At Slotting
MEC040R-17-4T-M		
MEC050R-17-○T-M		
MEC063R-17-○T(-M) MEC100R-17-○TN		
MEC125R-17-9T MEC160R-17-12T		

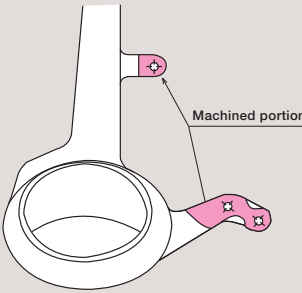
Case Studies

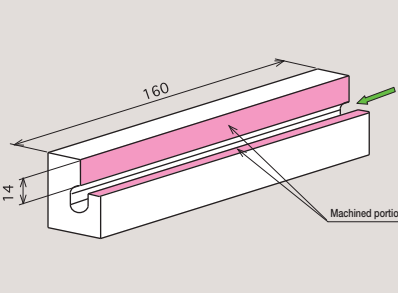
RC55 (Prehardened Tool Steel)	
•Test Piece (54~56HRC) •Vc=50m/min (n=800min⁻¹) •apxae=2x14mm •z=0.125mm/t (Vf=300mm/min) •Dry •MEC20-S20-11T •3teeth •BDMT11T308ER-JT (PR830)	MEC Metal Removal Volume=71.3cm ³ (continuable)
Competitor E	 Metal Removal Volume=2.9cm ³ (Chipping)
•Comp. E(ø25:2 teeth) caused chipping after 10 minutes machining with the conditions of Vc=40m/min, fz=0.075mm/t, apxae=2x3mm, 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. (Evaluation from the user)	

SS400	
•Plate •Vc=88m/min (n=1400min⁻¹) •ap=5mmx2Pass •fz=0.12mm/t (Vf=500mm/min) •Dry •MEC20-S20-11T •3teeth •BDMT11T308ER-JT (PR830)	MEC 23 pcs/edge
Competitor F	 10~11 pcs/edge
•MEC doubled Competitor F's tool life under the same machining conditions. (Evaluation from the user)	

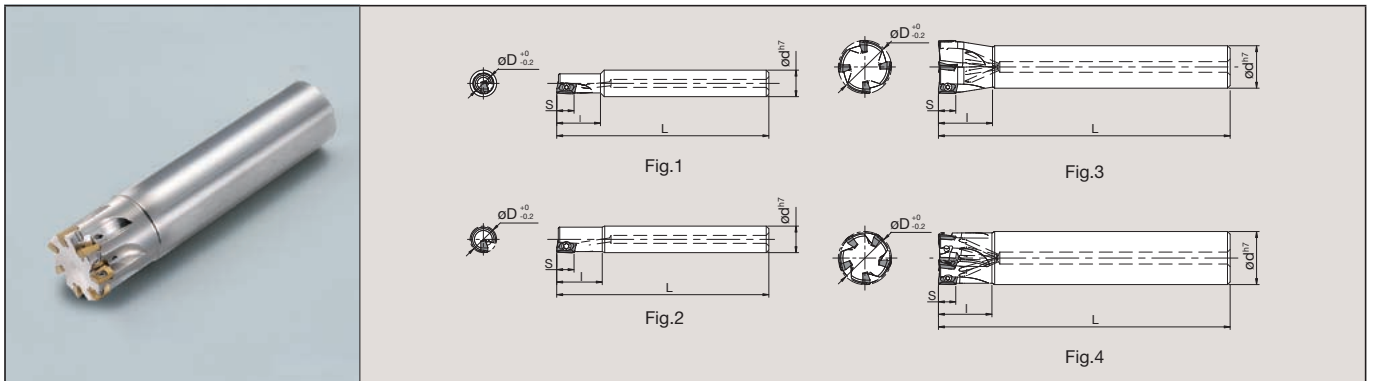
SUS304	
•Plate •Vc=125m/min (n=1600min⁻¹) •ap=9.0mm •fz=0.1mm/t (Vf=320mm/min) •Dry •MEC25-S25-17 •2 teeth •BDMT170408ER-JT (PR830)	MEC 4pcs/edge or over
Competitor G	 Under 1pc/edge
•Competitor G showed higher cutting forces and caused cracking to the cutting edge. MEC produced 4 pcs/edge without cracking. (Evaluation from the user)	

DAC10 (Hot Tool Steel)	
•Mold •Vc=130m/min (n=1040min⁻¹) •ap X ae=(-3) X (-5) (depends on machined part) •fz=0.18mm/t (Vf=936mm/min) •Dry (with air) •MEC40-S32-11T •5 teeth •BDMT11T308ER-JT (PR830)	MEC 2 Hours (Less Wear/Can Continue)
Competitor H	2 Hours (Cracking/Cannot Continue)
•MEC tool life was better than Competitor H. MEC's wear was less and able to machine further. •Competitor mill had 6 teeth and its table feed rate was 936mm/min. (fz=0.15mm/t) (Evaluation from the user)	

SCM420	
•Knuckle Steering •Vc=150m/min (n=1,200min⁻¹) •ap=0.5~5mm (Corner Machining) •fz=0.1mm/t (Vf=478mm/min) •Dry •MEC40-S32-17 •4 teeth •BDMT170408ER-JT (PR830)	MEC 150pcs/edge
Competitor I	 40pcs/edge
•MEC surface finish was better than the Competitor endmill I and the tool life was over 300% longer. (Evaluation from the user)	

Inconel	
•Turbine Part •Vc=15m/min (n=120min⁻¹) •ap=0.5mm •fz=0.08mm/t (Vf=38mm/min) •Wet •MEC040R-17-4T-M •4 teeth •BDMT170408ER-JS PR1025(PR925)	MEC 9pcs/edge
Competitor J	 Less than 1pc / edge
•Competitor J was not able to successfully machine one piece, but the MEC produced 9 pieces with good surface finishes. (Evaluation from the user)	

MECX type Endmill



Endmill Dimension

Description			Stock	No.of Insert	Dimension(mm)					Rake Angle(°)		Coolant Hole	Shape	Spare Parts		Applicable Insert	Max. Revolution (min ⁻¹)	
					øD	ød	L	I	S	A.R. (MAX)	R.R.			Clamp Screw	Wrench			
																		
Standard Shank	Standard	MECX 08-S10-07-1T	●	1	8	10	80	16	6	16.3	11.7	-24.0	Yes	Fig.1	SB-2035TRG	DTM-6	BDMT0703	48,100
		14-S12-07-2T	●	2	14	12					18			-12.1				44,800
		17-S16-07-3T	●	3	17	16	100	20						-11.0	42,400			
		18-S16-07-3T	●		18						-10.9	41,600						
		20-S16-07-4T	●	4	20	110	20	-10.4			40,200							
		21-S20-07-4T	●		21			-10.1			39,500							
		25-S20-07-5T	●	5	25	120	25	-9.7			37,000							
		26-S25-07-5T	●		26			-9.5			36,500							
		33-S32-07-6T	●	6	33	32	130	30			-8.8	33,100						
	Fine pitch	MECX 20-S16-07-5T	●	5	20	16	110	20			6	16.3		-10.4	Yes			Fig.3
		25-S20-07-7T	●	7	25	20	120	25	-9.7	37,000								
Same Shank Size	Standard	MECX 10-S10-07-1T	●	1	10	10	80	17	6	16.3	12.8	-18.7	Yes	Fig.2	SB-2035TRG	DTM-6	BDMT0703	47,100
		12-S12-07-2T	●	2	12	12					18			14.3				-13.7
		16-S16-07-3T	●	3	16	16	100	20						16.3	-11.3			43,200
		20-S20-07-4T	●	4	20	20	110				-10.4	40,200						
		25-S25-07-5T	●	5	25	25	120	25			-9.7	37,000						
		32-S32-07-6T	●	6	32	32	130	30			-8.9	33,600						
	Fine pitch	MECX 16-S16-07-4T	●	4	16	16	100	20	6	16.3	-11.3	Yes	Fig.4	SB-2042TRG	DTM-6	BDMT0703	43,200	
		20-S20-07-5T	●	5	20	20	110				-10.4						40,200	
		25-S25-07-7T	●	7	25	25	120	25			-9.7						37,000	
		32-S32-07-8T	●	8	32	32	130	30			-8.9						33,600	
Long Shank	Standard	MECX 17-S16-130-07-3T	●	3	17	16	130	20	6	16.3	-11.0	Yes	Fig.3	SB-2042TRG	DTM-6	BDMT0703	42,400	
		21-S20-140-07-4T	●	4	21	20	140				-10.1						39,500	
		26-S25-160-07-5T	●	5	26	25	160	25			-9.5						36,500	
		33-S32-200-07-6T	●	6	33	32	200	30			-8.8						33,100	

●:Standard Stock

Maximum Revolution

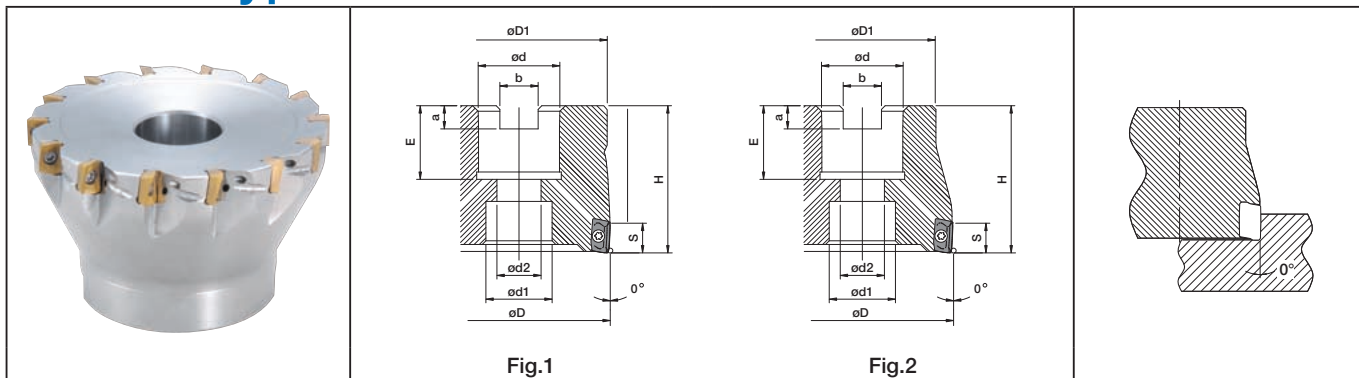
When running the endmill at the maximum recommended revolution, holder or insert breakage may occur due to the centrifugal force.

Please see "Warning" on [page 19](#).

For good shoulder finishes by MECX Endmill using multistage D.O.C

In order to obtain smooth cutting wall surface by MECX multistage D.O.C, set D.O.C within ap=5 for each cut.

MECX type Face Mill



Face Mill Dimension

Description	Stock	No.of Insert	Dimension(mm)											Rake Angle(°)		Coolant Hole	Shape	Weight(Kg)	Spare Parts		Max. Revolution (min ⁻¹)
														A.R. (MAX)	R.R.				Clamp Screw	Wrench	
			øD	øD1	ød	ød1	ød2	H	E	a	b	S									
MECX	032R-07-8T-M	●	8	32	30	16	14	8.5	40	20	5.5	8.5	6	+7°	-8.9°	Yes	Fig.1	0.15	SB-2042TRG	DTM-6	33,600
	040R-07-10T-M	●	10	40	38	22	18	12		22	6.3	10.4			-8.4°			0.25			30,500
	050R-07-12T-M	●	12	50	40										-8.3°		0.35	27,700			
	063R-07-14T-M	●	14	63											-7.9°		0.50	24,900			

●:Standard Stock

Maximum Revolution

When running the endmill at the maximum recommended revolution, holder or insert breakage may occur due to the centrifugal force.

Please see "Warning" on [page 19](#).

For good shoulder finishes by MECX Face Mill multistage D.O.C

In order to obtain smooth cutting wall surface by MECX multistage D.O.C, set D.O.C within $ap=5$ for each cut.



Warning

Please strictly follow the instructions below. It may cause the serious physical damage.

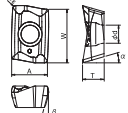
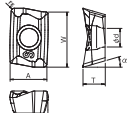
Warning about Maximum Revolution indicated on the Product

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 10,000min⁻¹), 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



●Applicable Insert

Shape		Description	Dimension(mm)					Angle(°)		Stock		
			A	T	ød	W	rε	α	β	PVD Coated		
										PR830	PR1025	PR905
		BDMT 070302ER-JT	4.6	2.6	2.3	6.7	0.2	16°	15°	●	●	●
		070304ER-JT					0.4			●	●	●
		070308ER-JT					0.8			●	●	●
		BDMT 070302ER-JS	4.6	2.6	2.3	6.7	0.2	16°	15°	●	●	●
		070304ER-JS					0.4			●	●	●
		070308ER-JS					0.8			●	●	●

●:Standard Stock

*Grade application:PR830 for Steel, PR1025 for Stainless steel, PR905 for Cast iron

*Chipbreaker application:Multipurpose chipbreaker (JT),Low resistance chipbreaker (JS)

●Recommended Cutting Condition

(JT Chipbreaker)

Work Material	Feed per tooth(mm/t)	Insert Grade (Speed)		
		PVD Coated Carbide		
		PR830	PR1025	PR905
Stainless Steel (SUS304)	0.05~0.07		100~200	
Carbon Steel(SxxC)	0.06~0.1~0.15	120~180		
Alloy Steel(SCM)	0.06~0.08~0.12	100~180		
Metal Mold Steel (SKD/NAK)	0.06~0.08~0.12	80~150		
Gray Cast Iron(FC)	0.08~0.1~0.15			100~180
Nodular Cast Iron (FCD)	0.08~0.1~0.12			80~120

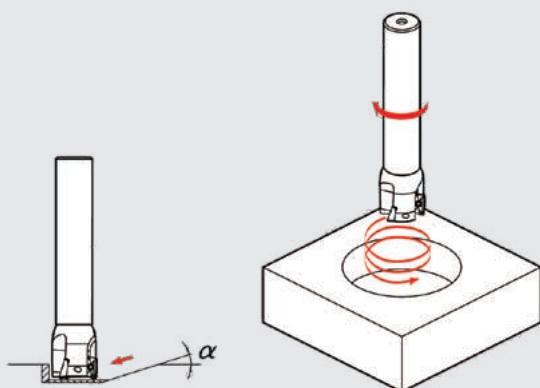
(JS Chipbreaker)

Work Material	Feed per tooth(mm/t)	Insert Grade (Speed)		
		PVD Coated Carbide		
		PR830	PR1025	PR905
Stainless Steel (SUS304)	0.04~0.05		100~200	
Carbon Steel(SxxC)	0.04~0.08~0.1	120~180		
Alloy Steel(SCM)	0.04~0.06~0.08	100~180		
Metal Mold Steel (SKD/NAK)	0.04~0.06~0.08	80~150		
Gray Cast Iron(FC)	0.04~0.08~0.1			100~180
Nodular Cast Iron (FCD)	0.04~0.06~0.08			80~120

●Note when Slant Milling-Helical Milling

Slant Milling•Helical Milling

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



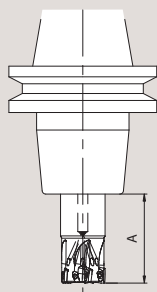
Cutting Dia.	Applicable Insert	Max.Ramping Angle(α°)
ø8	BDMT0703 type	Not recommended
ø10		1.5°
ø12,ø14		2°
ø16		3°
ø17,ø18		1.5°
ø20		2°
ø21		1.8°
ø25		1.3°
ø26		1.2°
ø32		0.8°
ø33		0.5°

●Cutting Performance of MECX Type

(Vc=150m/min Work Material :S50C)

Cutting Dia.	Description	Overhang Length A(mm)	
ø8	MECX08-S10-07-1T	16	-
ø10	MECX10-S10-07-1T	17	-
ø12	MECX12-S12-07-2T	18	30
ø16	MECX16-S16-07-3T	20	40
ø20	MECX20-S20-07-4T	20	40
ø25	MECX25-S25-07-5T	25	50
ø32	MECX32-S32-07-6T	30	50

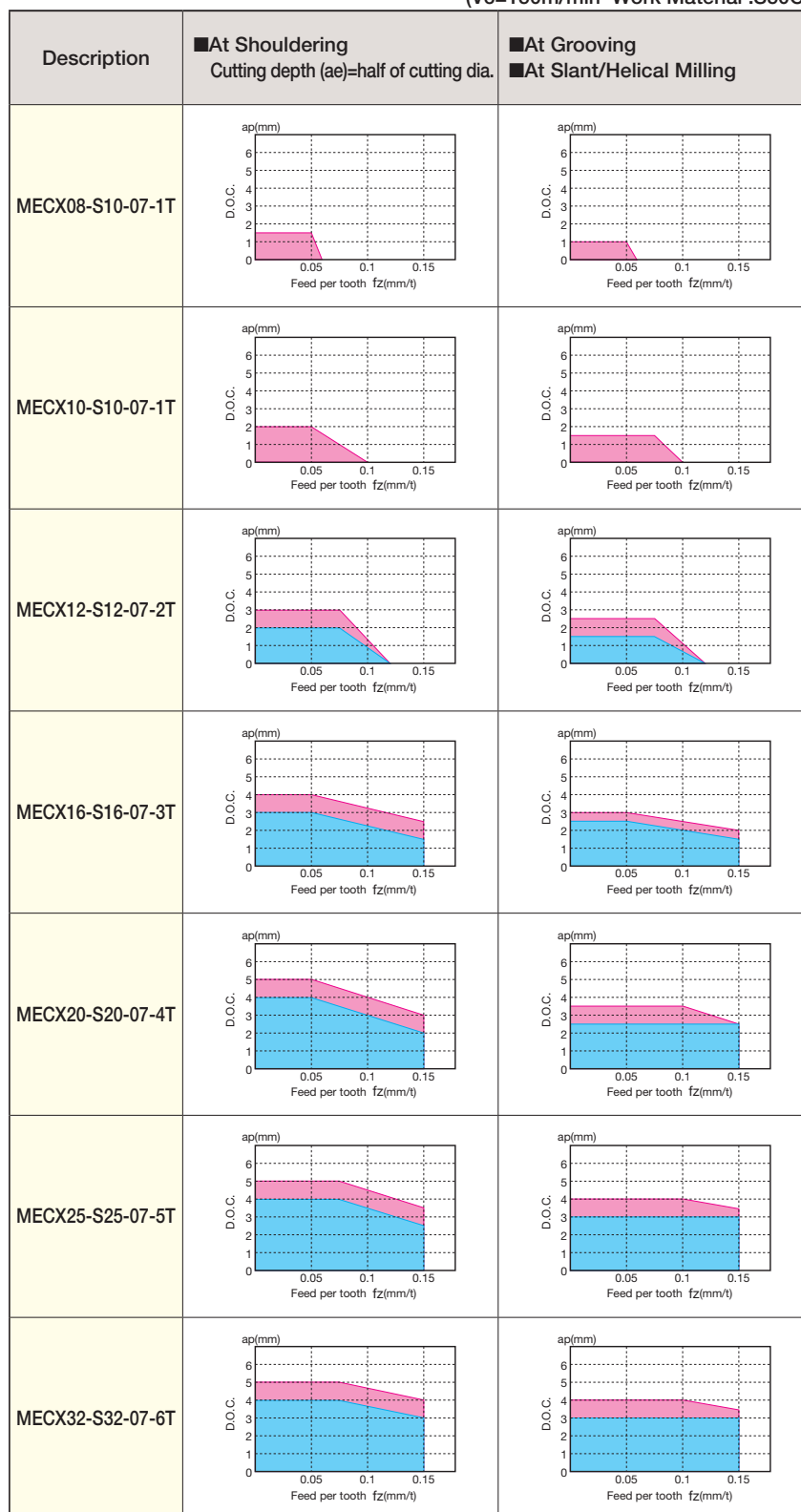
Shape



* Machining by extending over hang of dia. 8mm and 10mm is not recommended.

*Cutting condition of JS Chipbreaker

- ① In case of MECX08~MECX12
Please decrease feed ratio about 25% according to cutting capability list.
- ② In case of over MECX16
Lower feed ratio and D.O.C about 30% at the same time according to cutting capability list.



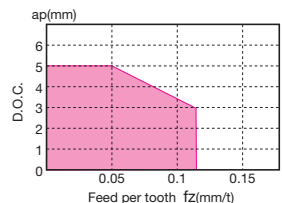
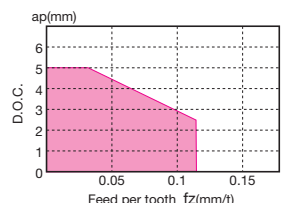
* Above cutting capability list illustrates application range of standard edge number of JT Chipbreaker (PR830)
Please use multiple edge type under 70% of D.O.C.

●Cutting Performance of Face Mill

(Vc=150m/min Work Material :S50C)

Cutting Dia.	Description	Overhang Length A(mm)
ø32	MECX032R-07-8T-M	100
ø40	MECX040R-07-10T-M	
ø50	MECX050R-07-12T-M	
ø63	MECX063R-07-14T-M	

Shape

Description	■At Shouldering Cutting depth (ae)=half of cutting dia.
MECX032R-07-8T-M MECX040R-07-10T-M	
MECX050R-07-12T-M MECX063R-07-14T-M	

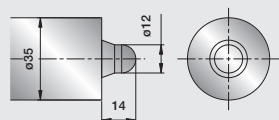
*Please select JT chipbreaker
*Not recommended for grooving

●Case Studies

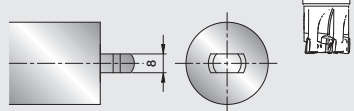
SCM435H

- Oil Pressure part
- Vc=160m/min
(n=2,550min⁻¹)
- ap x ae=1x12mm
- fz=0.1mm/t
(Vf=1,275mm/min)
- Wet
- MECX20-S20-07-5T
- 5 edge lines
- BDMT070304ER-JT
(PR830)

Material geometry



Machining geometry

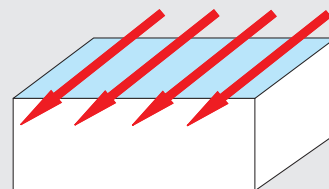


- Machining at the same cutting speed, as competitor K (Dia. 25mm-3 edges), MECX improved cutting efficiency because of increased feed rates and greater number of parts produced.
- MECX's cutting noise is smaller than competitor K.

(Evaluation from the user)

S45C

- Plate
- Vc=220m/min
(n=3,500min⁻¹)
- ap x ae=1x20mm
- fz=0.12mm/t
(Vf=2,100mm/min)
- Dry
- MECX20-S20-07-5T
- 5 edge lines
- BDMT070304ER-JT
(PR830)



- Competitor L (Dia.20-3 edges) with a table feed of 1260mm/min produces loud cutting noise, and it does not have much stability. While MECX (Dia.20-5 edges) is a low hardening machine, it is capable of handling a table feed of 2100mm/min and its finishing efficiency has almost doubled.
- BT30 applied machine

(Evaluation from the user)

MEC/MECX Type Machining Diameter Reference

●End Mill

Dia. (øD)	Shank (ød)	No. of Insert	Description	Notes	Applicable Insert
8	10	1	MECX 08-S10-07-1T	Machining Dia.<Shank Dia.	BDMT0703
10	10	1	MECX 10-S10-07-1T	Machining Dia.=Shank Dia.	BDMT0703
			MEC 10-S10-11		BDMT1103
			MEC 10-S16-11	Machining Dia.<Shank Dia.	
12	10	1	MEC 12-S10-11	Machining Dia.>Shank Dia.	BDMT1103
	MEC 12-S12-11		Machining Dia.=Shank Dia.	BDMT0703	
	12	2			MECX 12-S12-07-2T
	16	1	MEC 12-S16-11	Machining Dia.<Shank Dia.	BDMT1103
13	12	1	MEC 13-S12-11	Machining Dia.>Shank Dia.	BDMT1103
14	12	1	MEC 14-S12-11	Machining Dia.>Shank Dia.	BDMT1103
		2	MECX 14-S12-07-2T		BDMT0703
	16	1	MEC 14-S16-11	Machining Dia.<Shank Dia.	BDMT1103
16	12	2	MEC 16-S12-11T	Machining Dia.>Shank Dia.	BDMT11T3
	MEC 16-S16-11T		Machining Dia.=Shank Dia.	BDMT0703	
	16	3			MECX 16-S16-07-3T
	4	MECX 16-S16-07-4T			
17	16	2	MEC 17-S16-11T	Machining Dia.>Shank Dia.	BDMT11T3
		3	MECX 17-S16-07-3T		BDMT0703
		MECX 17-S16-130-07-3T	Machining Dia.>Shank Dia.(long)		
18	16	2	MEC 18-S16-11T	Machining Dia.>Shank Dia.	BDMT11T3
		3	MECX 18-S16-07-3T		BDMT0703
19	16	3	MEC 19-S16-11T	Machining Dia.>Shank Dia.	BDMT11T3
20	16	3	MEC 20-S16-11T	Machining Dia.>Shank Dia.	BDMT11T3
		4	MECX 20-S16-07-4T		BDMT0703
		5	MECX 20-S16-07-5T		
	18	2	MEC 20-S18-170-11T	Machining Dia.>Shank Dia.(long)	BDMT11T3
	20	2	MEC 20-S20-140-11T	Machining Dia.=Shank Dia.(long)	BDMT11T3
			MEC 20-S20-170-11T		
		3	MEC 20-S20-11T	Machining Dia.=Shank Dia.	BDMT11T3
		4	MECX 20-S20-07-4T		BDMT0703
5	MECX 20-S20-07-5T				
21	20	3	MEC 21-S20-11T	Machining Dia.>Shank Dia.	BDMT11T3
		4	MECX 21-S20-07-4T		BDMT0703
		MECX 21-S20-140-07-4T	Machining Dia.>Shank Dia.(long)		
22	20	2	MEC 22-S20-170-11T	Machining Dia.>Shank Dia.(long)	BDMT11T3
		3	MEC 22-S20-11T	Machining Dia.>Shank Dia.	
24	20	3	MEC 24-S20-11T	Machining Dia.>Shank Dia.	BDMT11T3

Dia. (øD)	Shank (ød)	No. of Insert	Description	Notes	Applicable Insert	
25	20	2	MEC 25-S20-17	Machining Dia.>Shank Dia.	BDMT1704	
		3	MEC 25-S20-11T		BDMT11T3	
		5	MECX 25-S20-07-5T		BDMT0703	
		7	MECX 25-S20-07-7T			
	23	2	MEC 25-S23-210-11T	Machining Dia.>Shank Dia.(long)	BDMT11T3	
	25		MEC 25-S25-160-11T	Machining Dia.=Shank Dia.(long)		
			MEC 25-S25-210-11T			
		2	MEC 25-S25-17	Machining Dia.=Shank Dia.	BDMT1704	
			MEC 25-S25-160-17	Machining Dia.=Shank Dia.(long)		
			MEC 25-S25-210-17			
		3	MEC 25-S25-11T	Machining Dia.=Shank Dia.	BDMT11T3	
		5	MECX 25-S25-07-5T		BDMT0703	
		7	MECX 25-S25-07-7T			
	26	25	5	MECX 26-S25-07-5T	Machining Dia.>Shank Dia.	BDMT0703
		MECX 26-S25-160-07-5T	Machining Dia.>Shank Dia.(long)			
	28	25	2	MEC 28-S25-210-11T	Machining Dia.>Shank Dia.(long)	BDMT11T3
			MEC 28-S25-210-17	BDMT1704		
3			MEC 28-S25-11T	Machining Dia.>Shank Dia.	BDMT11T3	
30	25	4	MEC 30-S25-11T	Machining Dia.>Shank Dia.	BDMT11T3	
32	25	3	MEC 32-S25-17	Machining Dia.>Shank Dia.	BDMT1704	
		4	MEC 32-S25-11T			
	30	2	MEC 32-S30-250-11T	Machining Dia.>Shank Dia.(long)	BDMT11T3	
	32	4	MEC 32-S32-11T	Machining Dia.=Shank Dia.		
		2	MEC 32-S32-200-11T	Machining Dia.=Shank Dia.(long)		BDMT1704
			MEC 32-S32-250-11T			
			MEC 32-S32-200-17			
			MEC 32-S32-250-17			
	3	MEC 32-S32-17	Machining Dia.=Shank Dia.	BDMT0703		
	6	MECX 32-S32-07-6T				
8	MECX 32-S32-07-8T					
33	32	6	MECX 33-S32-07-6T	Machining Dia.>Shank Dia.	BDMT0703	
			MECX 33-S32-200-07-6T	Machining Dia.>Shank Dia.(long)		
35	32	2	MEC 35-S32-250-11T	Machining Dia.>Shank Dia.(long)	BDMT11T3	
			MEC 35-S32-250-17		BDMT1704	
40	32	2	MEC 40-S32-240-11T	Machining Dia.>Shank Dia.(long)	BDMT11T3	
			MEC 40-S32-240-17			
		4	MEC 40-S32-17	Machining Dia.>Shank Dia.	BDMT1704	
		5	MEC 40-S32-11T		BDMT11T3	
50	32	4	MEC 50-S32-17	Machining Dia.>Shank Dia.	BDMT1704	
		5	MEC 50-S32-11T		BDMT11T3	

●Face Mill

Dia.(øD)	Inlay Dia.	No. of Insert	Description	Applicable Insert
32	16	8	MECX032R-07-8T-M	BDMT0703
40	22	10	MECX040R-07-10T-M	BDMT0703
	16	5	MEC 040R-11-5T-M	BDMT11T3
		4	MEC 040R-17-4T-M	BDMT1704
50	22	12	MECX050R-07-12T-M	BDMT0703
		7	MEC 050R-11-7T-M	BDMT11T3
		5	MEC 050R-11-5T-M	
		5	MEC 050R-17-5T-M	BDMT1704
		4	MEC 050R-17-4T-M	
63	22	14	MECX063R-07-14T-M	BDMT0703
		8	MEC 063R-11-8T-M	BDMT11T3
	25.4	8	MEC 063R-11-8T	
	22	6	MEC 063R-11-6T-M	
	25.4	6	MEC 063R-11-6T	
	22	6	MEC 063R-17-6T-M	BDMT1704
	25.4	6	MEC 063R-17-6T	

Dia.(øD)	Inlay Dia.	No. of Insert	Description	Applicable Insert
63	22	5	MEC 063R-17-5T-M	BDMT1704
	25.4	5	MEC 063R-17-5T	
80	25.4	10	MEC 080R-11-10T	BDMT11T3
		8	MEC 080R-17-8T	BDMT1704
		7	MEC 080R-11-7T	BDMT11T3
		6	MEC 080R-17-6T	BDMT1704
		9	MEC 100R-11-9TN	BDMT11T3
100	31.75	9	MEC 100R-17-9TN	BDMT1704
		7	MEC 100R-17-7TN	
125	38.1	11	MEC 125R-11-11T	BDMT11T3
		9	MEC 125R-17-9T	BDMT1704
160	50.8	14	MEC 160R-11-14T	BDMT11T3
		12	MEC 160R-17-12T	BDMT1704