

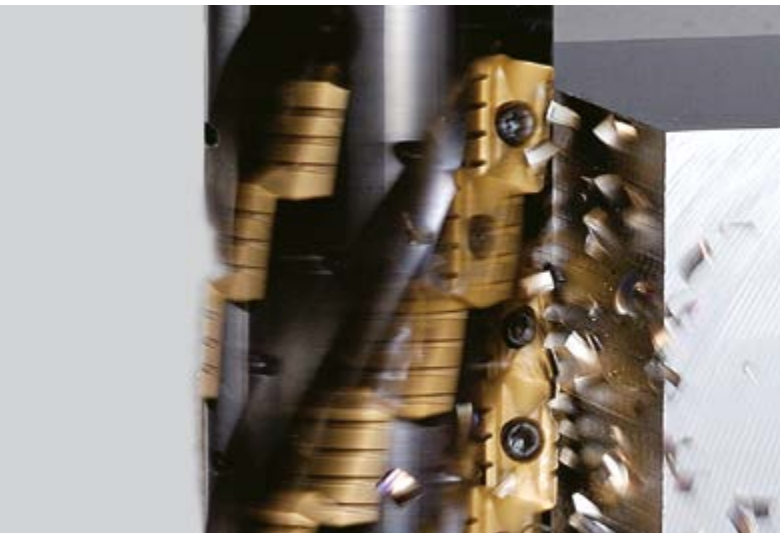
THE NEW VALUE FRONTIER



High efficiency end mills and
face mills

MEC Series

MEC Series



Low cutting force, reduced chattering and high efficiency machining

Large lineup for various applications

New PDL025 grade for machining aluminum

Fine pitch end mills & face mills lineup expansion



NEW DLC coating
(PDL025)



NEW Fine pitch end mills &
face mills



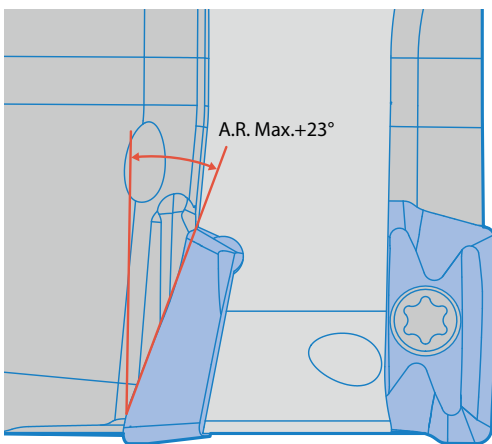
High efficiency end mills and face mills

MEC

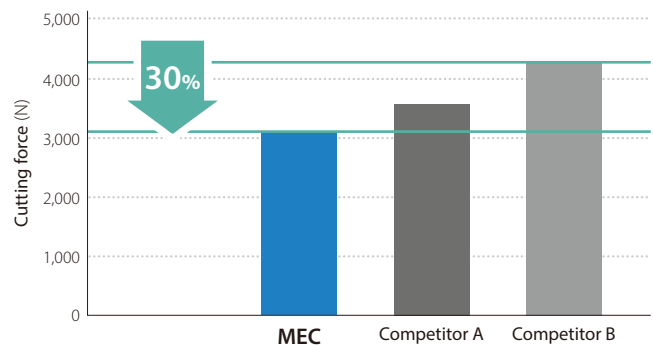
Excellent surface finish with low cutting forces. New grades and cutters for various applications PDL025 DLC coated carbides for aluminum machining

1 Low cutting force and sharp cutting performance

Low cutting forces with helical cutting edge design



Cutting force comparison (In-house evaluation)

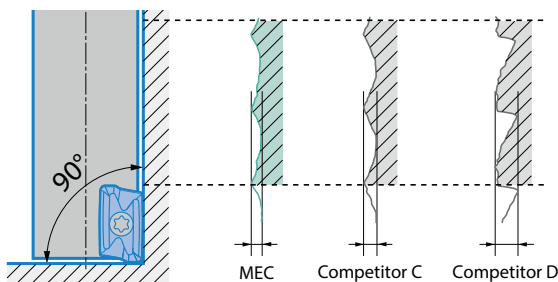


Cutting conditions: $V_c = 100$ m/min, $f_z = 0.2$ mm/t, $a_p \times a_e = 9 \times 10$ mm, dry, Cutter dia. $D_c = \varnothing 20$
Workpiece : C50

2 Smooth surface of shoulder wall

Smoother shoulder wall finish with multiple passes

Shoulder wall surface comparison (In-house evaluation)



Cutting conditions: $V_c = 120$ m/min, $f_z = 0.1$ mm/t, $a_p \times a_e = 5 \times 10$ mm, dry, cutter dia. $D_c = \varnothing 20$
Workpiece : C50

3 Large tooling lineup

Introducing fine pitch end mills & face mills high efficiency shouldering



End mill

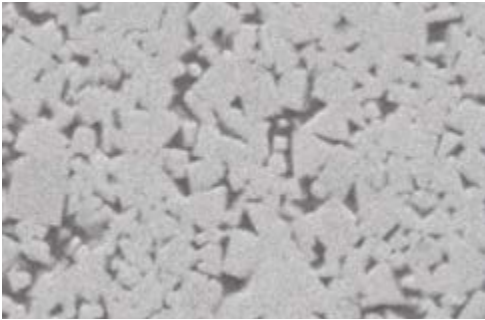
Face mill

MEGACOAT NANO PR1535

Stable machining is realized by a combination of tough substrate with limited chipping and special coating featuring high heat resistance. Features high performance in cutting general steel, mold steel and materials that are difficult to cut.

1 Toughening by a new cobalt mixing ratio (In-house evaluation)

High toughness carbide base material



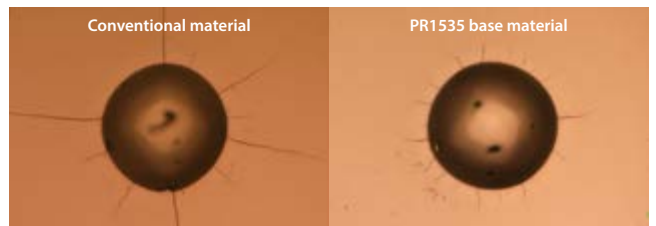
↑
23%
Fracture toughness

2 Stability improvement

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

↑
Shock resistance

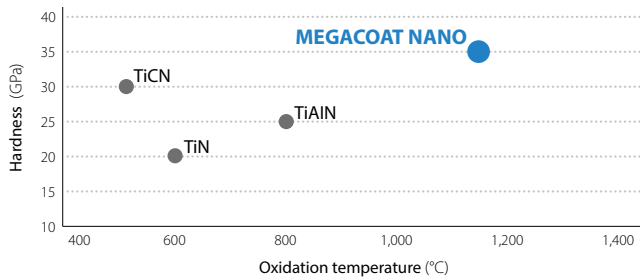
Cracking comparison by diamond indenter (In-house evaluation)



Long cracks

Short cracks

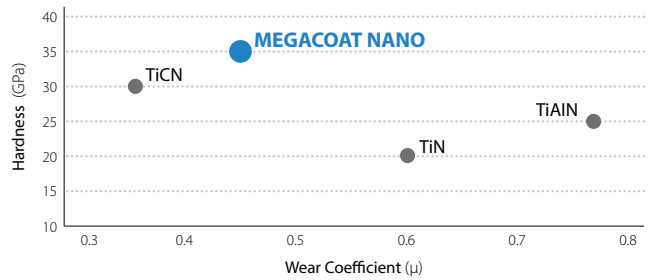
Coating properties (Abrasion resistance)



Low Oxidation resistance High

Achieve long tool life with the combination of a tough substrate and a special nano coating layer

Coating properties (Deposition resistance)



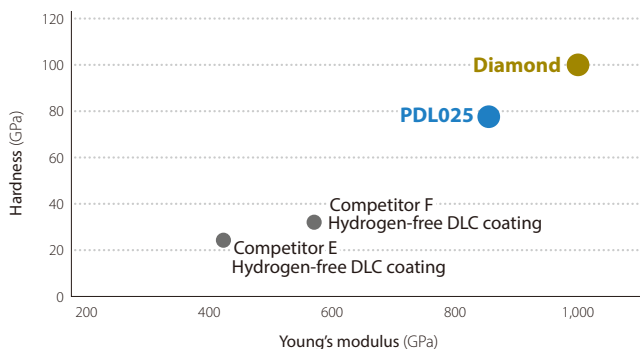
High Deposition resistance Low

Stable machining with excellent wear resistance

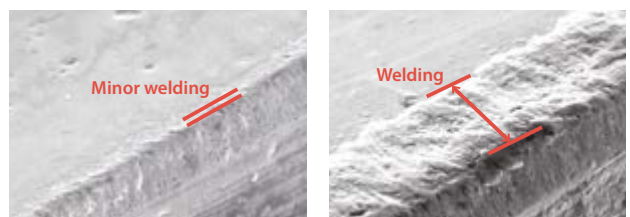
NEW DLC coating PDL025

High quality and long tool life for machining aluminum
High hardness with Kyocera's proprietary hydrogen-free DLC coating

Coating properties



Welding resistance comparison (In-house evaluation)



PDL025

Competitor G

Cutting conditions: $V_c = 800$ m/min, $f_z = 0.1$ mm/t, $a_p \times a_e = 3 \times 5$ mm, dry
Cutter dia. $D_c = \varnothing 25$ mm Workpiece: AlMg2.5 Cutting length: 57 m

High efficiency end mill

MECH

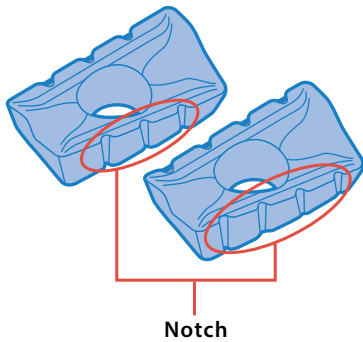
Notched inserts reduce chattering, break chips into small pieces

Improved chip evacuation

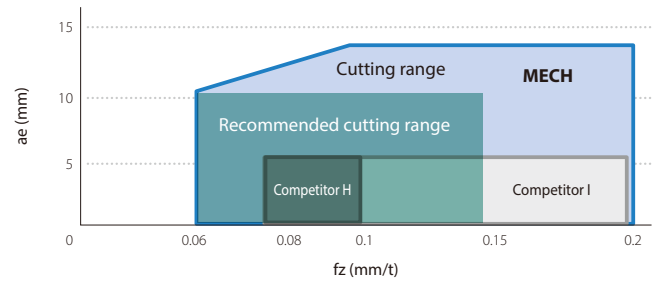
High efficiency heavy machining with large ap

1 Low cutting force due to notched inserts for heavy machining

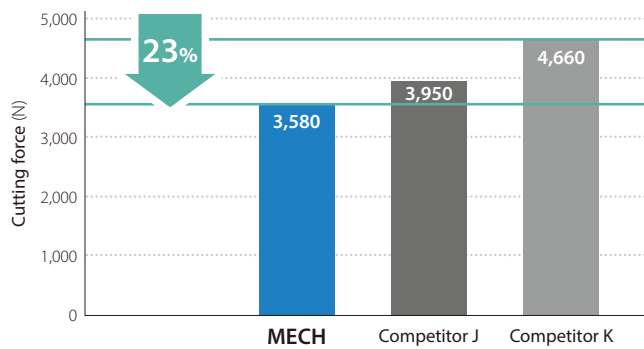
Notched inserts reduce cutting force, lower cutting force and reduce chattering



Application range comparison (In-house evaluation)

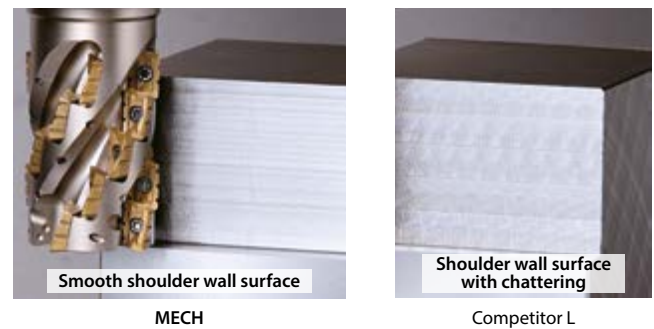


Cutting force comparison (In-house evaluation)



Cutting conditions: $V_c = 120$ m/min, $f_z = 0.1$ mm/t, $a_p \times a_e = 40 \times 10$ mm, dry
MECH032-S32-11-5-4T Workpiece : C50

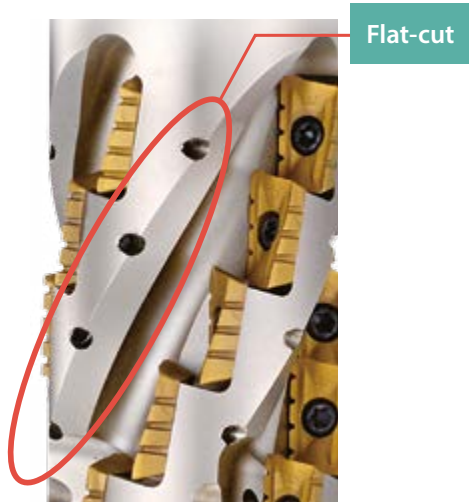
Surface wall comparison (In-house evaluation)



Cutting conditions: $V_c = 120$ m/min, $f_z = 0.12$ mm/t, $a_p \times a_e = 40 \times 7$ mm, dry
MECH032-S32-11-5-4T Workpiece : C50

2 Improved chip evacuation

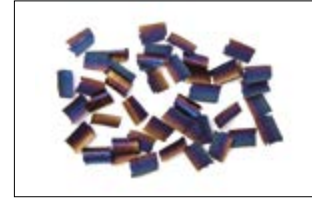
Notched insert breaks chips into small pieces
Flat-cut flute provides excellent chip evacuation



Chips comparison (In-house evaluation)



MECH

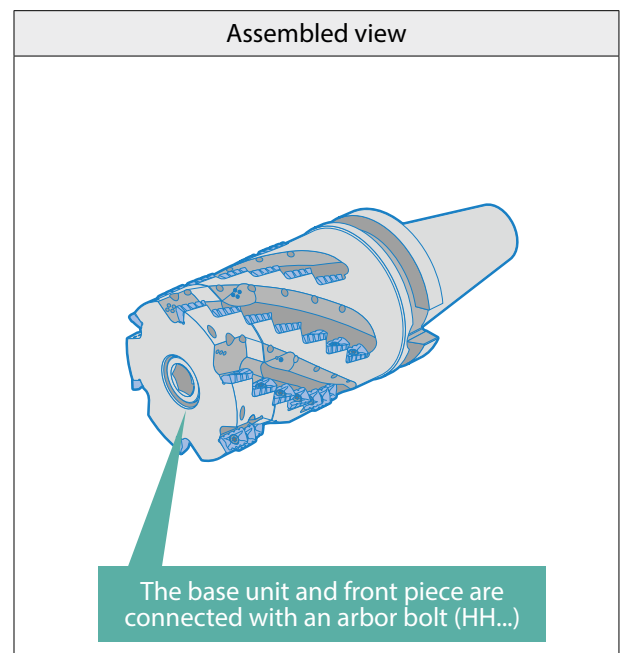
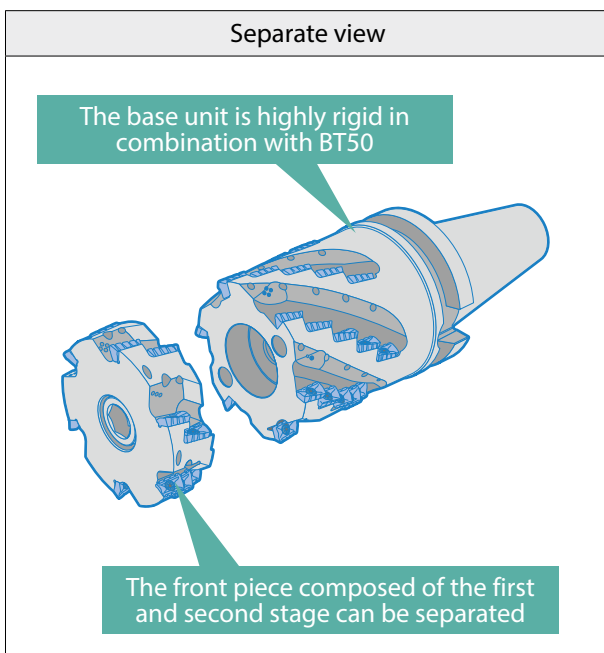


Competitor M

Cutting Conditions: $V_c = 120$ m/min, $f_z = 0.12$ mm/t, $a_p \times a_e = 40 \times 10$ mm, dry
MECH032-S32-11-5-4T Workpiece : 17Cr3

3 MECH interchangeable head minimizes tooling costs

If head is damaged, it can be replaced
Minimizing tooling costs


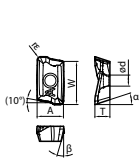

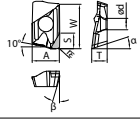

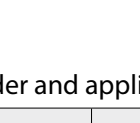


Applicable inserts

Usage classification		P	Carbon steel / Alloy steel		■			★	★		☆	Ref. page for applicable toolholders				
			Mold steel		■			★	★		☆					
★ : Roughing / 1st choice ☆ : Roughing / 2nd choice ■ : Finishing / 1st choice □ : Finishing / 2nd choice (In case hardness is under 45HRC)		M	Austenitic stainless steel				★	☆	☆	☆	☆					
			Martensitic stainless steel			★	☆									
			Precipitation hardened stainless steel				★									
			K		Gray cast iron								★			
		K	Nodular cast iron							★						
			N		Non ferrous metals											
		S	Heat resistant alloy (Ni-base)			★	☆	★	★							
			Titanium alloy				★			★						
		H	Hard materials						□		□					
Insert	Description	Dimension (mm)					Angle			Cermet	CVD coated carbide	MEGACOAT NANO	MEGACOAT			PVD coated carbide
		A	T	ød	W (X)	r _e (Z)	α	β	γ	TN100M	CA6535	PR1355	PR1225	PR120	PR1210	PR30
	BDMT 110302ER-JT	6.3	3.0	2.8	11.0	0.2	18°	15°	—		●	●	●		●	●
	110304ER-JT										●	●	●		●	●
	110308ER-JT										●	●	●		●	●
	BDMT 11T302ER-JT	6.7	3.8	2.8	11.0	0.2	18°	13°	—		●	●	●		●	●
	11T304ER-JT									●	●	●		●	●	
	11T308ER-JT									●	●	●		●	●	
	11T312ER-JT										●	●	●		●	●
	11T316ER-JT										●	●	●		●	●
	11T320ER-JT										●	●	●		●	●
	11T324ER-JT										●	●	●		●	●
	11T331ER-JT										●	●	●		●	●
	BDMT 170404ER-JT									9.6	4.9	4.4	17.0	0.4	18°	13°
	170408ER-JT	●	●	●	●		●	●								
	170412ER-JT		●	●	●		●	●								
	170416ER-JT		●	●	●		●	●								
	170420ER-JT		●	●	●		●	●								
	170424ER-JT		●	●	●		●	●								
170431ER-JT		●	●	●		●	●									
170440ER-JT		●	●	●		●	●									
	BDMT 110302ER-JS	6.3	3.0	2.8	11.0	0.2	18°	15°	—		●	●	●		●	●
	110304ER-JS										●	●	●		●	●
	110308ER-JS										●	●	●		●	●
	BDMT 11T302ER-JS	6.7	3.8	2.8	11.0	0.2	18°	13°	—		●	●	●		●	●
	11T304ER-JS										●	●	●		●	●
	11T308ER-JS										●	●	●		●	●
	BDMT 170404ER-JS	9.6	4.9	4.4	17.0	0.4	18°	13°	—		●	●	●		●	●
	170408ER-JS										●	●	●		●	●
											●	●	●		●	●
	BDMT 11T308ER-N2	6.7	3.8	2.8	11.0	0.8	18°	13°	—			●	●	●	●	●
	BDMT 11T308ER-N3	6.7	3.8	2.8	11.0	0.8	18°	13°	—			●	●	●	●	●
	BDMT 170408ER-N3	9.6	4.9	4.4	17.0	0.8	18°	13°	—			●	●	●	●	●
	BDMT 170408ER-N4	9.6	4.9	4.4	17.0	0.8	18°	13°	—			●	●	●	●	●

Inserts are sold in 10 piece boxes
●: Available

Applicable inserts

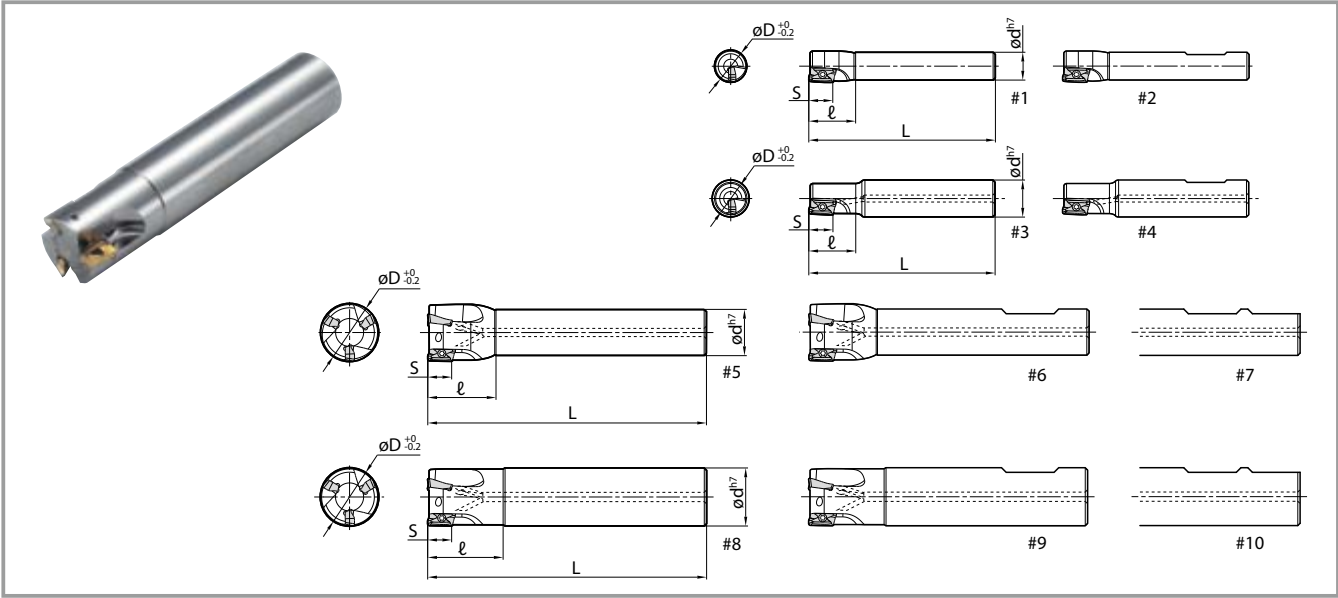
Usage classification		P		M		K		N		S		H		Ref. page for toolholder			
★ : Roughing / 1st choice ☆ : Roughing / 2nd choice ■ : Finishing / 1st choice □ : Finishing / 2nd choice (In case hardness is under 45HRC)		Carbon steel / Alloy steel															
		Mold steel															
		Austenitic stainless steel															
		Martensitic stainless steel															
		Precipitation hardened stainless steel															
		Gray cast iron															
		Nodular cast iron															
Non ferrous metals		★		☆		□		■									
Heat resistant alloy (Ni-base)																	
Titanium alloy				☆		□		■									
Hard materials																	
Insert <small>Handed insert shows right-hand</small>	Description	Dimension (mm)					Angle				DLC coated carbide	Carbide	PCD				
		A	T	ød	W (X)	r _E (Z)	S	α	β	γ	PDI025	GW25	KPD001	KPD230			
 	BDGT 11T302FR-JA	6.7	3.8	2.8	11.0	—	18°	13°	—	●	●			P7			
	11T304FR-JA									●	●						
	11T308FR-JA									●	●						
 	BDGT 170404FR-JA	9.6	4.9	4.4	17.0	—	18°	13°	—	●	●			P8			
	170408FR-JA									●	●						
	170420FR-JA									●	●						
	170431FR-JA									●	●						
 	BDMT 11T302FR	6.7	3.8	2.8	11.0	3.6	18°	13°	—			●	●	P9			
	11T304FR											●	●				
	BDMT 170402FR	9.6	4.9	4.4	17.0	4.4	18°	13°	—				●	●	P10		
													170404FR	●		●	

Inserts are sold in 10 piece boxes
 PCD inserts are sold in 1 piece boxes
 ● : Available

Toolholder and applicable insert

Toolholder	Applicable insert					Remarks
MEC.....11	BDMT 1103○○ER-JT	BDMT 1103○○ER-JS	—	—	—	
MEC.....11T MEC-R-11	BDMT 11T3○○ER-JT	BDMT 11T3○○ER-JS	BDGT 11T3○○FR-JA	BDMT 11T3○○FR	—	Using notched insert (---N2/N3/N4) is not recommended.
MEC.....17 MEC-R-17	BDMT 1704○○ER-JT	BDMT 1704○○ER-JS	BDGT 1704○○FR-JA	BDMT 1704○○FR	—	
MECH...11	BDMT 11T3○○ER-JT	BDMT 11T3○○ER-JS	BDGT 11T3○○ER-JA	—	BDMT11T308ER-N2 BDMT11T308ER-N3	Notched insert (---N2/N3/N4) is 1st recommendation.
MECH...17	BDMT 1704○○ER-JT	BDMT 1704○○ER-JS	BDGT 1704○○FR-JA	—	BDMT170408ER-N3 BDMT170408ER-N4	

MEC End mill



Toolholder dimensions

Description	Availability	No. of inserts	Dimension (mm)					Rake angle		Coolant hole	Drawing	Spare parts		Max. revolution (min ⁻¹)					
			ϕD	ϕd	L	ℓ	S	A.R. (MAX.)	R.R.			Clamp screw	Wrench						
Cylindrical	Standard shank	MEC	1	10	10	80	17	10	+10°	-24°	No	#1	SB-2545TR	DTM-8	54,800				
					16						Yes	#3							
					12						10	No				#1			
											12	Yes				#3			
					13						12	No				#1			
											14	Yes				#3			
					16						16	No				#1			
											16	Yes				#3			
		Same shank size	MEC	2	16	12	100	23	10	+18°	-14°	No	#1	SB-2555TRG	DTM-8	43,750			
						17						Yes	#3						
	18					No						#1							
	19					Yes						#3							
	3			20	16	110	26	10	+20°	-10°	No	#1	SB-2555TRG	DTM-8	43,000				
					21						Yes	#3							
					22						No	#1							
	4			25	25	120	29	10	+21°	-10°	No	#1	SB-2555TRG	DTM-8	39,600				
											24	Yes				#3			
											25	No				#1			
	5	32	32	130	32	10	+23°	-9°	No	#1	SB-2555TRG	DTM-8	38,200						
									28	Yes				#3					
30									No	#1									
32									Yes	#3									
32									No	#1									
Long shank	MEC	2	20	18	200	170	30	+20°	-10°	No	#5	SB-2555TRG	DTM-8	41,000					
				140						Yes	#3								
				170						No	#1								
				23						170	30				10	+21°	-10°	No	#5
				160						60	Yes							#3	
				25						210	32				10	+22°	-9°	No	#5
				60						Yes	#3								
				28						210	32				10	+23°	-9°	No	#5
				30						250	40							Yes	#3
				32						200	65				10	+23°	-9°	No	#5
250	40	Yes	#3																
35	250	40	10	+23°	-9°	No	#5												
240	65	Yes				#3													
40	240	65	10	+23°	-9°	No	#5												
8°	Yes	#3																	

Coat anti-seize compound (P-37) thinly on portion of taper and thread when insert is fixed.

● : Available

Caution with max. revolution

When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force. For more details, see "warning" on page P13.





Toolholder dimensions

Description	Availability	No. of inserts	Dimension (mm)					rake angle		Coolant hole	Drawing	Spare parts		Max. revolution (min ⁻¹)								
			øD	ød	L	ℓ	S	A.R. (MAX.)	R.R.			Clamp screw	Wrench									
															Clamp screw		Wrench					
Cylindrical	Long shank	MEC 20-S20-150-11T-3	●	3	20	20	150	60	10	+20°	-10°	Yes	#8	SB-2555TRG	DTM-8	41,000						
		25-S25-170-11T-3	●	4	25	25	170	60	+21°	-10°	37,500											
		25-S25-170-11T-4	●	3	30		180	32	+23°	-9°	34,800											
		30-S25-180-11T-3	●	4	32	32	200	65			33,900											
		32-S32-200-11T-3	●	5																		
		32-S32-200-11T-4	●																			
	Standard shank	MEC 25-S20-17	●	2	25	20	120	36	15.7	+16°	-11°	Yes	#5	SB-4070TRN	DTM-15	35,000						
		32-S25-17	●	3	32	25	130	40	+17°	-7°	30,000											
		40-S32-17	●	4	40	32	150	50	+19°		25,000											
		50-S32-17	●	5	50						17,000											
		MEC 25-S25-17	●	2	25	25	120	36	15.7	+16°	-11°					Yes	#8	SB-4070TRN	DTM-15	35,000		
		32-S32-17	●	3	32	32	130	40	+17°	-7°	30,000											
	Long shank	MEC	25-S25-160-17	●	2	25	25	160	60	15.7	+16°	-11°	Yes	#8	SB-4070TRN	DTM-15	35,000					
			25-S25-210-17	●		28	210	36	32,500													
			28-S25-210-17	●		32	200	65	30,000													
			32-S32-200-17	●		35	250	40	27,700													
			32-S32-250-17	●		40	240	65	25,000													
			35-S32-250-17	●																		
MEC		32-S32-250-17-3	●	3	32	32	250	65	15.7	+17°	-7°	Yes	#8	SB-4070TRN	DTM-15	30,000						
		40-S32-250-17-3	●	4	40				+19°	-6°	25,000											
		40-S32-250-17-4	●		50	42	64				17,000											
		50-S42-250-17-4	●																			
		MEC 10-W10-1103	●	1	10	10	60	17	10	+10°	-24°					No	#2	SB-2545TR	DTM-8	54,800		
		10-W16-1103-H	●		16	68																
12-W10-1103	●	12	10		60							No	#2									
12-W16-1103-H	●	16										Yes	#4									
14-W12-1103	●	14	12		68	20						No	#2									
14-W16-1103-H	●	16										Yes	#4									
MEC	16-W12-11T3	●	2	16	12		23	10	+18°	-14°	No	#2	SB-2555TRG	DTM-8	43,750							
	18-W16-11T3-H	●		18	16	68	25								+19°	-13°	43,000					
	20-W16-11T3-H	●	20							+20°		41,000										
	22-W20-11T3-H	●	3	22	20	81	26		+21°	-10°	Yes	#6			39,600							
	25-W20-11T3-H	●		25			29									+22°		37,500				
	28-W25-11T3-H	●		28															35,800			
	30-W25-11T3-H	●	4	30	25	88	32		+23°	-9°	Yes	#7			34,800							
	32-W25-11T3-H	●		32															33,900			
	40-W32-11T3-H	●		40	32	110	50												30,000			
	MEC 16-W16-11T3-H	●		2	16	16	68									25	10	+18°	-14°	Yes	#9	SB-2555TRG
20-W20-11T3-H	●	3	20	20	81	30	+20°	-10°	41,000													
25-W25-11T3-H	●	4	25	25	88	32	+21°		37,500													
32-W32-11T3-H	●	4	32	32	100	40	+23°	-9°	33,900													
MEC	25-W20-1704-H	●	2	25	20	86	36	15.7	+16°	-11°	Yes	#6	SB-4070TRN	DTM-15	35,000							
	32-W25-1704-H	●	3	32	25	92	+17°								-7°	30,000						
	40-W32-1704-H	●	4	40	32	110	50								+19°		25,000					
MEC	25-W25-1704-H	●	2	25	25	92	36	15.7	+16°	-11°	Yes	#10	SB-4070TRN	DTM-15	35,000							
	32-W32-1704-H	●	3	32	32	100	40								+17°	-7°	30,000					

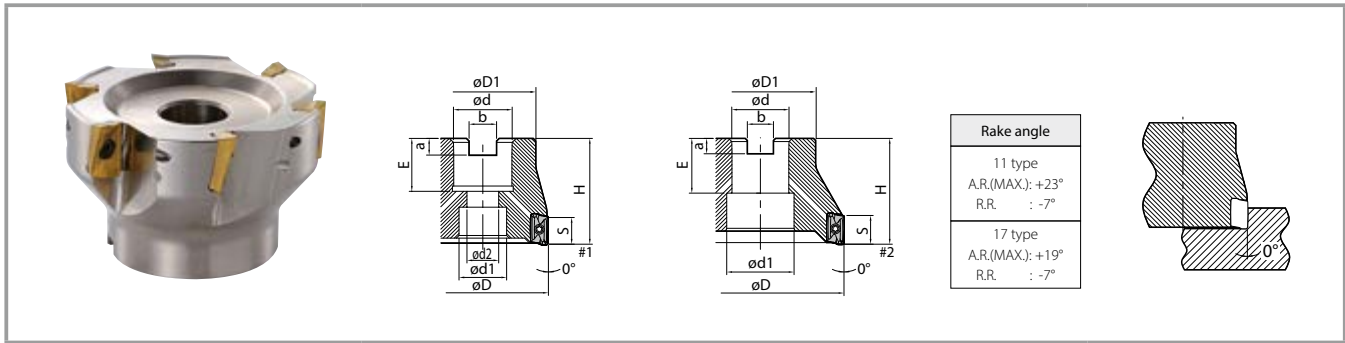
Coat anti-seize compound (P-37) thinly on portion of taper and thread when insert is fixed.

● : Available

Applicable inserts

Description	Applicable inserts → P5, P6			Applicable inserts → P6
				
MEC-----11 MEC-----1103	BDMT 1103○○ER-JT	BDMT 1103○○ER-JS	—	—
MEC-----11T MEC-----11T03	BDMT 11T3○○ER-JT	BDMT 11T3○○ER-JS	BDGT 11T3○○FR-JA	BDMT 11T3○○FR
MEC-----17 MEC-----1704	BDMT 1704○○ER-JT	BDMT 1704○○ER-JS	BDGT 1704○○FR-JA	BDMT 1704○○FR

Recommended cutting conditions → P13



Toolholder dimensions

Description	Availability	No. of inserts	Dimension (mm)								Coolant hole	Drawing	Weight (Kg)	Spare parts		Max. revolution (min ⁻¹)		
			øD	ød	ød1	ød2	H	E	a	b				S	Clamp screw		Wrench	
Coarse pitch	MEC 040R-11-5T-M	●	5	40	16	14	8.5	40	20	5.6	8.5	10	Yes	#1	0.3	SB-2555TRG	DTM-8	30,000
	MEC 050R-11-5T-M	●		50	22	18	12								0.4			22,500
	MEC 063R-11-6T-M	●	6	63	20	14	12	0.6	20,500									
	MEC 080R-11-7T-M	●	7	80	27	20	14	50	26	7	12.4				0.9			18,500
	MEC 100R-11-9T-MN	●	9	100	32	26	17.6	55	8	14.4	1.6				17,000			
	MEC 125R-11-11T-M	●	11	125	40	45	32	63	33	9.5	16.4				3.1			15,000
	MEC 160R-11-14T-M	●	14	160	40	68	-	63	33	9.5	16.4				4.5			13,900
Fine pitch	MEC 032R-11-5T-M	●	5	32	16	11.5	14	8.5	35	20	5.6	8.4	10	Yes	#1	0.1	DTM-8	33,900
	MEC 040R-11-6T-M	●	6	40	16	14	8.5	40	20	5.6	8.4	0.2	30,000					
	MEC 080R-11-10T-M	●	10	80	27	20	14	50	26.5	7	12.4	0.9	18,500					
	MEC 100R-11-11T-M	●	11	100	32	26	17.6	55	34	8	14.4	1.7	17,000					
Coarse pitch	MEC 040R-17-4T-M	●	4	40	16	14	8.5	40	20	5.6	8.5	15.7	Yes	#1	0.3	SB-4070TRN	DTM-15	25,000
	MEC 050R-17-4T-M	●		50	22	18	12								0.4			17,000
	MEC 063R-17-5T-M	●	5	63	20	14	12	0.6	14,500									
	MEC 080R-17-6T-M	●	6	80	27	20	14	50	26	7	12.4				1.0			12,000
	MEC 100R-17-7T-MN	●	7	100	32	26	17.6	55	8	14.4	1.8				10,500			
	MEC 125R-17-9T-M	●	9	125	40	45	32	63	33	9.5	16.4				3.1			8,900
	MEC 160R-17-12T-M	●	12	160	40	68	-	63	33	9.5	16.4				4.5			7,400

Coat anti-seize compound (P-37) thinly on portion of taper and thread when insert is fixed.

Caution with max. revolution

When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force. For more details, see "warning" on page P13.

● Available

Recommended cutting conditions → P13

When using center-through air/coolant/mist

If center through air (coolant, mist) is used, please use appropriate arbor and clamp with arbor bolt (Table 1).

MEC's surface finish when shouldering with multiple passes

In order to obtain smoothly finished shoulder wall by multiple passes of MEC milling cutter, please keep ap less than 0.217" (5.5 mm) for 11T3 type insert and also keep ap less than 0.354" (9 mm) for 1704 type insert.

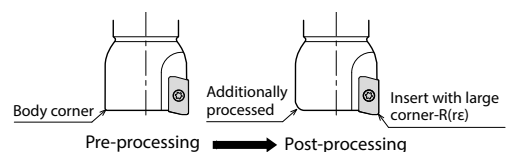
Table 1

Description	Arbor clamp bolt (attachment)	Wrench
MEC040R-...-M	HH8 × 25H	LW-5 (Double width 5 mm)
MEC050R-...-M MEC063R-...-M	HH10 × 30H	LW-6 (Double width 6 mm)
MEC080R-...-M	HH12 × 35H	LW-8 (Double width 8 mm)
MEC100R-...-N MEC100R-...-M	HH16 × 52H	LW-12 (Double width 12 mm)
MEC125R-...-M	HF20 × 53H	LW-14 (Double width 14 mm)
MEC160R-...-M	HF24 × 60H	LW-17 (Double width 17 mm)

Wrench is not included. Please purchase separately.

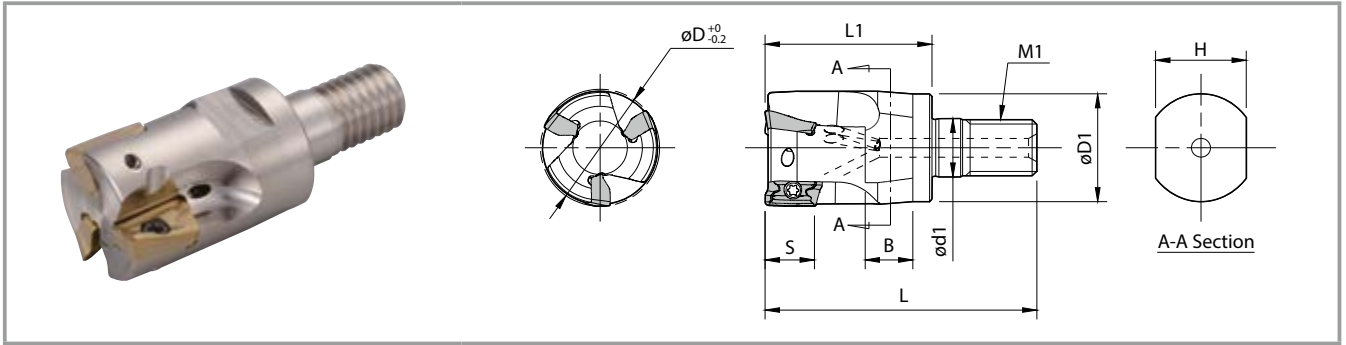
When using inserts with corner-R(ε)1.6 or larger, additional modifications of the cutter body will be necessary. Ref. to the chart below for the recommended modifications. If corner-radius is 1.2 mm, additional processing is not needed.

Insert Corner-R(ε)	Additional modifications of the cutter body corner
1.6	R1.0
2.0	
2.4	R1.2
3.1	R1.6
4.0	R2.5



* R shape is recommended for additional processing to the body corner. When applying chamfer shaped additional processing, do not cut away too much.

MEC Screw on type



Toolholder dimensions







Description	Availability	No. of inserts	Dimension (mm)									Rake angle		Coolant hole	Applicable inserts ➔ P5, P6	Max. revolution (min ⁻¹)
			$\varnothing D$	$\varnothing D1$	$\varnothing d1$	L	L1	M1	H	B	S	A.R. (MAX.)	R.R.			
MEC 16-M08-11T-2T	●	2	16	14.7	8.5	43	25	M8 × P1.25	12	8	10	+18°	-14°	Yes	BDMT11T3 BDGT11T3	43,750
20-M10-11T-2T	●		20	18.7	10.5	49	30	M10 × P1.5	15	9		+20°	-10°			41,000
20-M10-11T-3T	●	3	25	23	12.5	57	35	M12 × P1.75	19	10	+21°	-10°	37,500			
25-M12-11T-3T	●		32	30	17	63	40	M16 × P2.0	24	12	+23°	-9°	33,900			
32-M16-11T-4T	●	4	32	30	17	63	40	M16 × P2.0	24	12	+23°	-9°	33,900			
MEC 25-M12-17-2T	●	2	25	23	12.5	57	35	M12 × P1.75	19	10	15.7	+16°	-11°	Yes	BDMT1704 BDGT1704	35,000
32-M16-17-3T	●	3	32	30	17	63	40	M16 × P2.0	24	12		+17°	-7°			30,000

Caution with max. revolution

When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force. For more details, see "warning" on page P13.

● : Available

Spare Parts

Description	Spare parts		
	Clamp screw	Wrench	Anti-seize compound
MEC 16-M08-11T-2T	 SB-2555TRG For insert screw recommended torque 1.2 N·m	 DTM-8	 P-37
20-M10-11T-2T			
20-M10-11T-3T			
25-M12-11T-3T			
32-M16-11T-4T			
MEC 25-M12-17-2T	 SB-4070TRN For insert screw recommended torque 3.5 N·m	 DTM-15	 P-37
32-M16-17-3T			

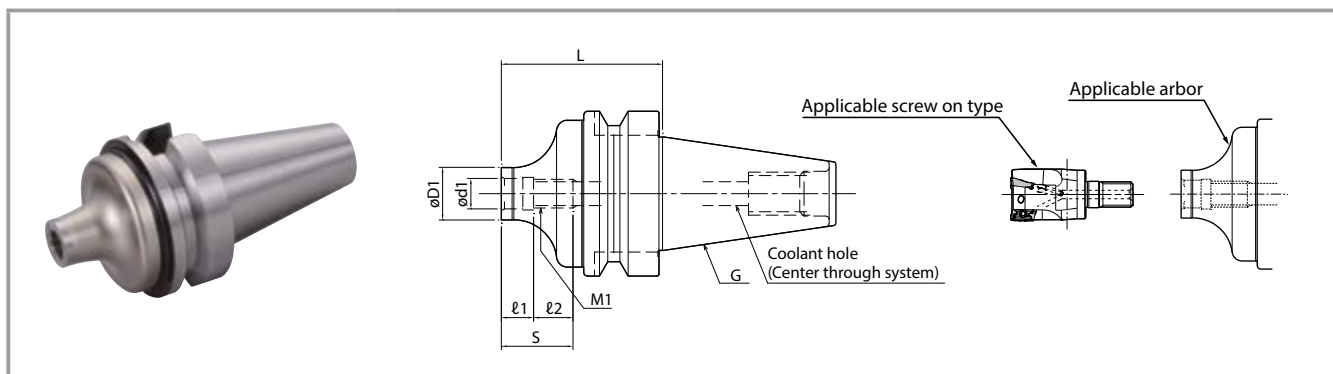
Coat anti-seize compound (P-37) thinly on portion of taper and thread when insert is fixed.

Identification system for screw on type

MEC **16** - **M08** - **11T** - **2T**

Series Cutting dia. Thread size Insert size No. of inserts

BT arbor (For screw on type / two face contact)



Arbor dimensions

Description	Availability	Dimension (mm)							Coolant hole	Arbor (Double-face clamping)	Screw on type (Head) → P10
		L	øD1	ød1	S	ℓ1	ℓ2	M1			
BT30K- M08-45	●	45	14.7	8.5	20	9	11	M8 × P1.25	Yes	BT30	MEC16-M08-
	●		18.7	10.5	21		12	M10 × P1.5			MEC20-M10-
	●		23	12.5	24		15	M12 × P1.75			MEC25-M12-
BT40K- M08-55	●	55	14.7	8.5	20	9	11	M8 × P1.25	Yes	BT40	MEC16-M08-
	●	60	18.7	10.5	21		12	M10 × P1.5			MEC20-M10-
	●	55	23	12.5	24		15	M12 × P1.75			MEC25-M12-
	●	65	30	17	25		16	M16 × P2.0			MEC32-M16-

● : Available

Effective depth of assembled tool

Arbor description	Applicable screw on type			Effective depth of assembled tool (mm)	
	Description	Cutting dia. (mm)	Dimension (mm)	M	L2
		øD	L1		
BT30K- M08-45	MEC16-M08-	ø16	25	31.8	6.8
	MEC20-M10-	ø20	30	36.8	
	MEC25-M12-	ø25	35	42.8	
BT40K- M08-55	MEC16-M08-	ø16	25	31.7	6.7
	MEC20-M10-	ø20	30	38.7	
	MEC25-M12-	ø25	35	44.6	
	MEC32-M16-	ø32	40	51.2	

Arbor identification system

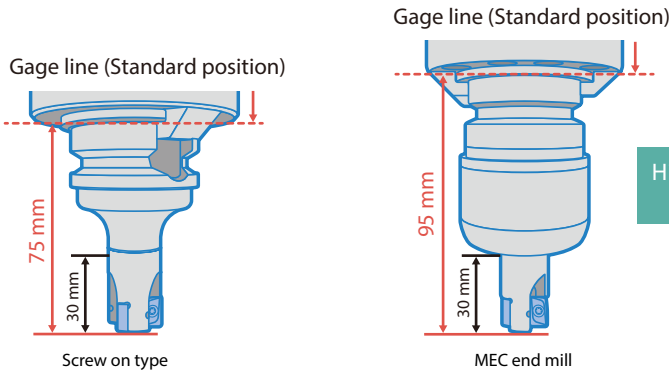
BT30 **K** - **M08** - **45**

Arbor size Two-Face clamping spindle Thread size Length

Advantages of screw on type

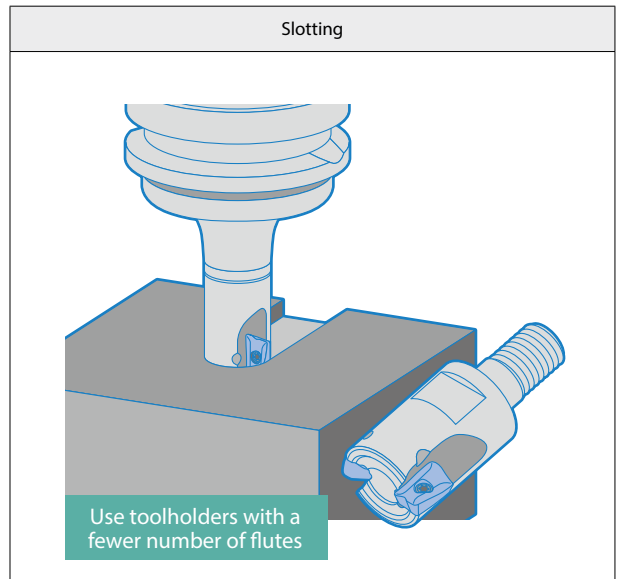
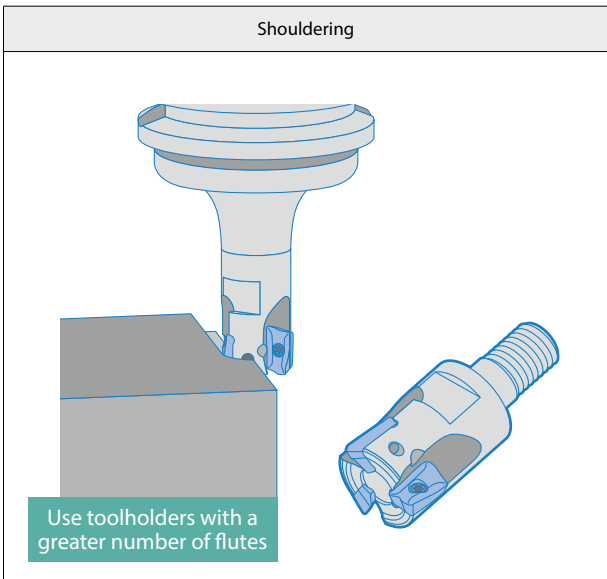
Low gage line reduces chattering

Though the overhang length is the same (30 mm), MEC screw on type has a shorter distance from the cutting edge to the gage line compared to other MEC end mills.



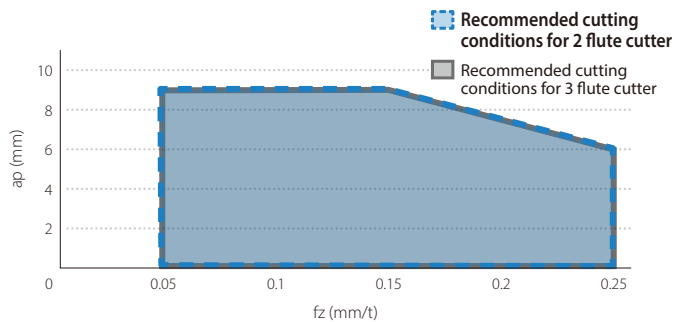
High efficiency and high quality machining in small machining centers (BT30/BT40, etc.).

Toolholders with a greater number of flutes vs. toolholders with a fewer number of flutes.

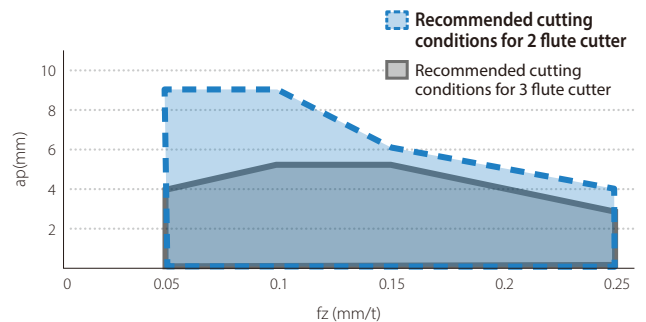


MEC screw on type recommended cutting conditions

Shouldering



Slotting



When shouldering, use cutters with a greater number of flutes for higher efficiency and higher feed rates. When slotting use cutters with a fewer number of flutes to lower cutting forces.

JT chipbreaker

Workpiece material	fz (mm/t)		Recommended insert grades (Vc m/min)					
	Holder		Cermet	MEGACOAT NANO	MEGACOAT		PVD coated carbide	CVD coated carbide
	MEC10~MEC19	MEC20~MEC40 MEC032R~MEC160R	TN100M	PR1535	PR1225	PR1210	PR830	CA6535
Carbon steel	0.06 - 0.1 - 0.15	0.08 - 0.15 - 0.25	☆ 120 - 160 - 200	☆ 120 - 180 - 250	★ 120 - 180 - 250	—	☆ 120 - 160 - 200	—
Alloy steel	0.06 - 0.1 - 0.12	0.08 - 0.15 - 0.2	☆ 100 - 140 - 180	☆ 100 - 160 - 220	★ 100 - 160 - 220	—	☆ 100 - 140 - 180	—
Mold steel	0.06 - 0.08 - 0.1	0.08 - 0.12 - 0.2	☆ 80 - 120 - 150	☆ 80 - 140 - 180	★ 80 - 140 - 180	—	☆ 80 - 120 - 150	—
Austenitic stainless steel	0.06 - 0.08 - 0.1	0.08 - 0.12 - 0.15	—	☆ 100 - 160 - 200	☆ 100 - 160 - 200	—	☆ 100 - 140 - 180	—
Martensitic stainless steel	0.06 - 0.08 - 0.1	0.08 - 0.12 - 0.2	—	☆ 150 - 200 - 250	—	—	—	★ 180 - 240 - 300
Precipitation hardened stainless steel	0.06 - 0.08 - 0.1	0.08 - 0.12 - 0.2	—	★ 90 - 120 - 150	—	—	—	—
Gray cast iron	0.06 - 0.1 - 0.15	0.08 - 0.18 - 0.25	—	—	—	★ 120 - 180 - 250	—	—
Nodular cast iron	0.06 - 0.08 - 0.1	0.08 - 0.15 - 0.2	—	—	—	★ 100 - 150 - 200	—	—
Ni-base heat resistant alloy	0.06 - 0.08 - 0.1	0.08 - 0.12 - 0.15	—	★ 20 - 30 - 50	—	—	—	☆ 20 - 30 - 50
Titanium alloy	0.06 - 0.08 - 0.1	0.08 - 0.15 - 0.2	—	☆ 40 - 60 - 80	—	☆ 30 - 50 - 70	—	—

Cutting with coolant is recommended for Ni-base heat resistant alloy and titanium alloy.

JS chipbreaker

Workpiece material	fz (mm/t)		Insert grades (Cutting speed Vc m/min)			
	Holder		MEGACOAT NANO	MEGACOAT	PVD coated carbide	CVD coated carbide
	MEC10~MEC19	MEC20~MEC40 MEC032R~MEC160R	PR1535	PR1225	PR830	CA6535
Stainless steel	0.06 - 0.1 - 0.12	0.08 - 0.15 - 0.18	☆ 120 - 180 - 250	★ 120 - 180 - 250	☆ 120 - 160 - 200	—
Carbon steel	0.06 - 0.08 - 0.1	0.08 - 0.12 - 0.15	☆ 100 - 160 - 220	★ 100 - 160 - 220	☆ 100 - 140 - 180	—
Mold steel	0.06 - 0.08 - 0.1	0.08 - 0.1 - 0.12	☆ 80 - 140 - 180	★ 80 - 140 - 180	☆ 80 - 120 - 150	—
Austenitic stainless steel	0.06 - 0.08 - 0.1	0.08 - 0.1 - 0.12	★ 100 - 160 - 200	☆ 100 - 160 - 200	☆ 100 - 140 - 180	—
Martensitic stainless steel	0.06 - 0.08 - 0.1	0.08 - 0.1 - 0.12	☆ 150 - 200 - 250	—	—	★ 180 - 240 - 300
Precipitation hardened stainless steel	0.06 - 0.08 - 0.1	0.08 - 0.1 - 0.12	☆ 90 - 120 - 150	—	—	—
Ni-base heat resistant alloy	0.06 - 0.08 - 0.1	0.08 - 0.1 - 0.12	★ 20 - 30 - 50	—	—	☆ 20 - 30 - 50
Titanium Alloy	0.06 - 0.08 - 0.1	0.08 - 0.1 - 0.12	☆ 40 - 60 - 80	—	—	—

Cutting with coolant is recommended for Ni-base heat resistant alloy and titanium alloy.

JA chipbreaker

Workpiece material	fz (mm/t)	Insert grades (Cutting speed: Vc m/min)	
		DLC coated carbide	Carbide
		PDL025	GW25
Aluminium alloys (Si 13% or below)	0.05 - 0.3	200 - 1,000	200 - 800
Aluminium alloys (Si 13% or above)	0.05 - 0.2	200 - 300	200 - 300

PCD

Workpiece material	fz (mm/t)	Insert Grades (Cutting speed: Vc m/min)
		PCD
		KPD230 (KPD001)
Aluminium alloys (Si 13% or below)	0.05 - 0.2	500 - 1,500
Aluminium alloys (Si 13% or above)	0.05 - 0.15	300 - 1,000

Warning Please observe below precautions fully. Failure to observe the precautions may cause serious damage to human body.

Warning about max. revolution indicated on main body

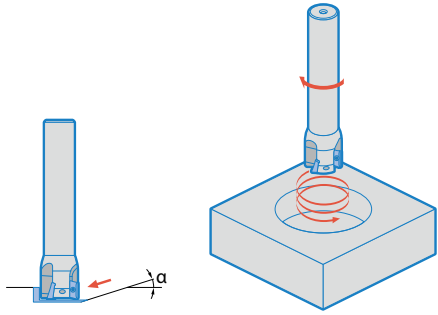
- When running the end mill and the face mill at revolutions exceeding the maximum revolution limit, the inserts or toolholder may be damaged due to the centrifugal force.
- For actual practical revolution, please set within recommended cutting condition.
- When using at a higher revolution (over 10,000 min⁻¹), refer to the table to adjust the balance of MEC and suitable arbor.

Max. revolution (min ⁻¹)	Balance quality grade G ISO 1940-1 / 8821 (JIS B0905)
~20,000	G16
~30,000	G6.3
30,000~	G2.5

Ramping, helical milling and vertical milling

Ramping, helical milling

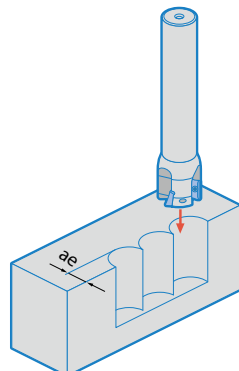
- Ramping angle should be under α°
- For plunge depth per revolution when helical milling, see the cutting performance data of each tool. Use compressed air during machining.



Cutting dia.	Applicable insert	Max. ramping angle (α°)
$\phi 16 - \phi 18$	BDMT11T3 type BDGT11T3 type	3°
$\phi 19 - \phi 21$		5°
$\phi 22 - \phi 25$		2.5°
$\phi 28 - \phi 32$		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)
$\phi 16 - \phi 19$	BDMT11T3 type BDGT11T3 type	1.5 mm
$\phi 20 - \phi 160$	BDMT11T3 type BDGT11T3 type	5 mm
$\phi 25 - \phi 160$	BDMT1704 type BDGT1704 type	8 mm

BDMT1103 inserts are not recommended for vertical milling.

Guidance of minimum cutting dia by helical machining

MEC	Holder dia.	$\phi 16$	$\phi 18$	$\phi 20$	$\phi 22$	$\phi 25$	$\phi 28$	$\phi 30$	$\phi 32$	$\phi 40$	$\phi 50$
BD_T11T3 type	Guidance of minimum cutting dia by helical machining.	$\phi 21$	$\phi 25$	$\phi 29$	$\phi 33$	$\phi 39$	$\phi 45$	$\phi 49$	$\phi 53$	$\phi 69$	Helical machining is not recommended.
	Guidance of minimum cutting dia in case of flattening bottom after helical machining.	$\phi 28$	$\phi 32$	$\phi 36$	$\phi 40$	$\phi 46$	$\phi 52$	$\phi 56$	$\phi 60$	$\phi 76$	

MEC	Holder dia.	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$
BD_T1704 type	Guidance of minimum cutting dia by helical machining.	$\phi 34$	$\phi 48$	$\phi 64$	Helical machining is not recommended.
	Guidance of minimum cutting dia in case of flattening bottom after helical machining.	$\phi 46$	$\phi 60$	$\phi 76$	

Cutting performance of MEC end mill (JT chipbreaker)

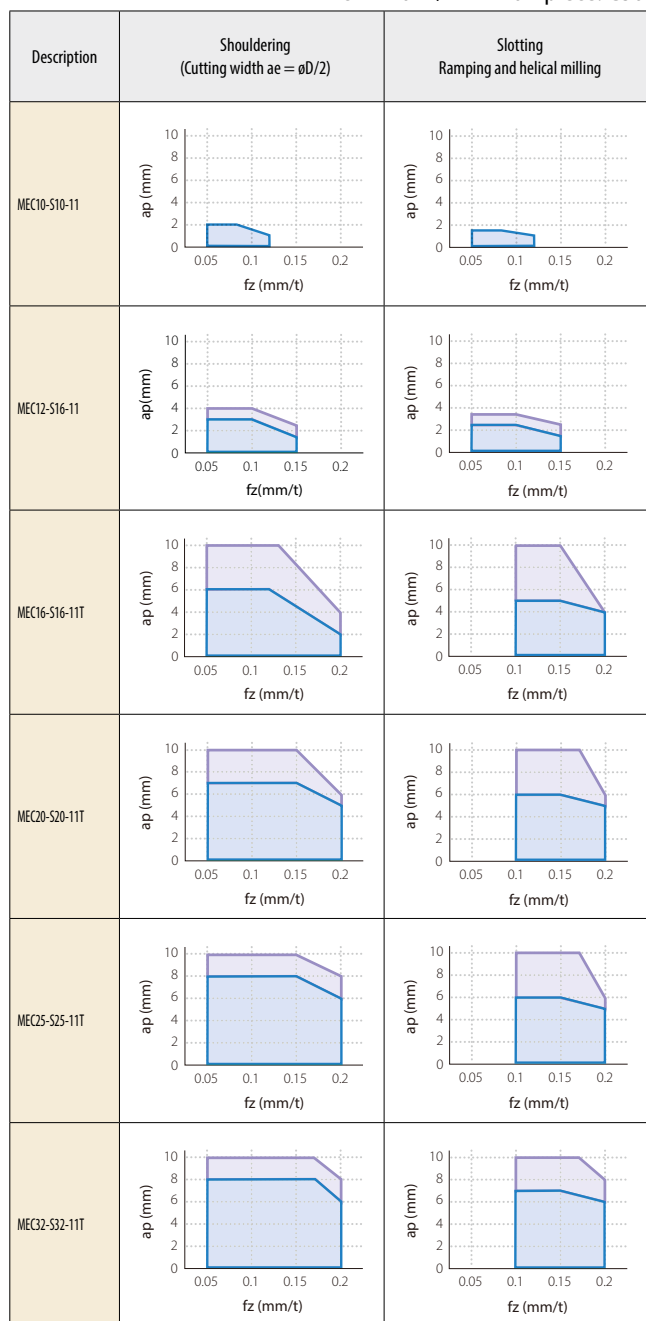
① Cutting edge length 10 mm (Standard/Same size shank)

Cutting dia.	Description	Overhang length A (mm)		Shape
		Standard	Long shank	
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	

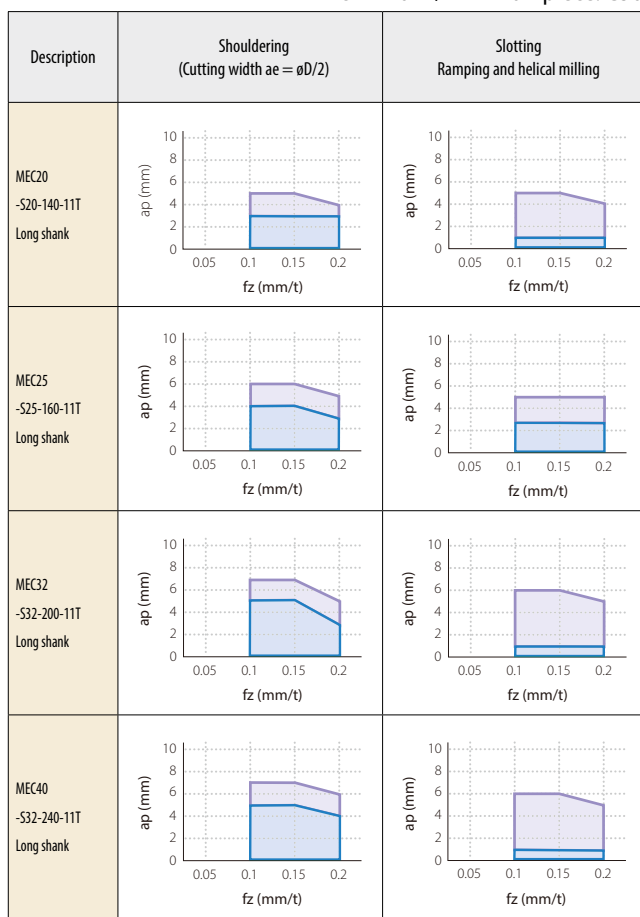
② Cutting edge length 10 mm (Long shank)

Cutting dia.	Description	Overhang length A (mm)		Shape
		Standard	Long shank	
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 = 120 m/min Workpiece: C50



Vc = 120 m/min Workpiece: C50



③ Cutting edge length 15.7 mm

Vc = 120 m/min Workpiece: C50

Cutting dia.	Description	Overhang length A (mm)	
		36	54
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

Description	Shouldering (Cutting width $a_e = \phi D/2$)		Slotting Ramping and helical milling
	ap (mm)	fz (mm/t)	
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			

Cutting performance of MEC milling cutter (JT chipbreaker)

Cutting edge length 10 mm

Cutting dia.	Description	Overhang length A (mm)
ø40	MEC040R-11-ST-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

Vc = 120 m/min Workpiece: C50

Description	Shouldering (Cutting width $a_e = \phi D/2$)	Slotting
MEC040R -11-ST-M		
MEC050R -11-○T-M } MEC100R -11-9TN		
MEC125R -11-11T MEC160R -11-14T		

Cutting edge length 15.7 mm

Cutting dia.	Description	Overhang Length A (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

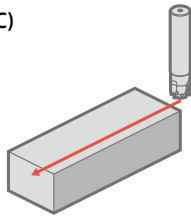
Vc = 120 m/min Workpiece: C50

Description	Shouldering (Cutting width $a_e = \phi D/2$)	Slotting
MEC040R -17-4T-M		
MEC050R -17-○T-M		
MEC063R -17-○T(-M) } MEC100R -17-○TN		
MEC125R -17-9T MEC160R -17-12T		

MEC case studies

Pre-hardened tool steel (54-56 HRC)

Test piece (54 - 56HRC)
 $V_c = 50 \text{ m/min}$ ($n = 800 \text{ min}^{-1}$)
 $f_z = 0.125 \text{ mm/t}$ ($V_f = 300 \text{ mm/min}$)
 $ap \times ae = 2 \times 14 \text{ mm}$
 Dry
 MEC20-S20-11T (3 teeth)
 BDMT11T308ER-JT (PR830)



Metal removal volume

MEC **71.3 cm³** (continuable)

x24

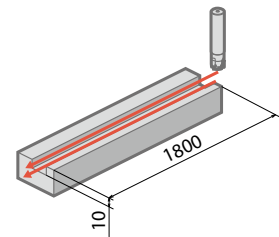
Competitor N
 (End mill) **2.9 cm³** (chipping)

Competitor N ($\phi 25$: 2 teeth) caused chipping after 10 minutes machining with the conditions of $V_c = 40 \text{ m/min}$, $f_z = 0.075 \text{ mm/t}$, $ap \times ae = 2 \times 3 \text{ mm}$, 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.

(User evaluation)

17Cr3

Plate
 $V_c = 88 \text{ m/min}$ ($n = 1,400 \text{ min}^{-1}$)
 $f_z = 0.12 \text{ mm/t}$ ($V_f = 500 \text{ mm/min}$)
 $ap = 5 \text{ mm} \times 2 \text{ passes}$
 Dry
 MEC20-S20-11T (3 teeth)
 BDMT11T308ER-JT (PR830)



Number of workpieces

MEC **23 pcs/edge**

x2

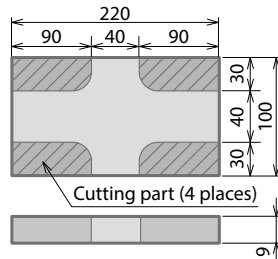
Competitor O
 (End mill) **10~11 pcs/edge**

MEC doubled competitor O's tool life under the same machining conditions.

(User evaluation)

X5CrNi1810

Plate
 $V_c = 125 \text{ m/min}$ ($n = 1,600 \text{ min}^{-1}$)
 $f_z = 0.1 \text{ mm/t}$ ($V_f = 320 \text{ mm/min}$)
 $ap = 9.0 \text{ mm}$
 Dry
 MEC25-S25-17 (2 teeth)
 BDMT170408ER-JT (PR830)



Number of workpieces

MEC **4 pcs/edge or over**

x4

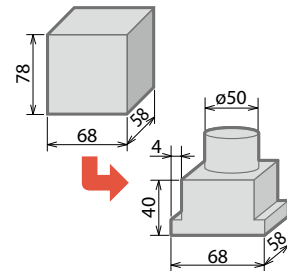
Competitor P
 (End mill) **Under 1 pc/edge**

Competitor M showed higher cutting forces and caused cracking to the cutting edge. MEC produced 4 pcs/edge without cracking.

(User evaluation)

Hot tool steel

Mold
 $V_c = 130 \text{ m/min}$ ($n = 1,040 \text{ min}^{-1}$)
 $f_z = 0.18 \text{ mm/t}$ ($V_f = 936 \text{ mm/min}$)
 $ap \times ae = 3 \times 5$
 (depends on machined part)
 Dry (with air)
 MEC40-S32-11T (5 teeth)
 BDMT11T308ER-JT (PR830)



Cutting time

MEC **2 hours (Less wear/can continue)**

Same or more

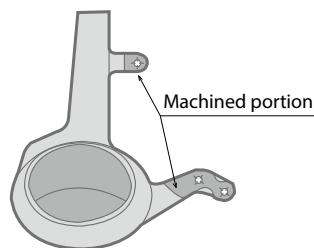
Competitor Q
 (End mill) **2 hours (Cracking/cannot continue)**

MEC tool life was better than Competitor Q. MEC's wear was less and able to machine further. Competitor mill had 6 teeth and its table feed rate was 936 mm/min . ($f_z = 0.15 \text{ mm/t}$).

(User evaluation)

20CrMo4

Knuckle steering
 $V_c = 150 \text{ m/min}$ ($n = 1,200 \text{ min}^{-1}$)
 $f_z = 0.1 \text{ mm/t}$ ($V_f = 478 \text{ mm/min}$)
 $ap = 0.5 - 5 \text{ mm}$ (Shouldering)
 Dry
 MEC40-S32-17 (4 teeth)
 BDMT170408ER-JT (PR830)



Number of workpieces

MEC **150 pcs/edge**

x3

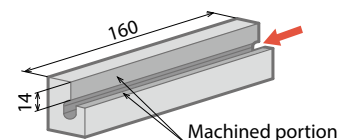
Competitor R
 (End mill) **40 pcs/edge**

MEC surface finish was better than the competitor end mill R and the tool life was over 3 times longer.

(User evaluation)

Ni-base heat resistant alloy

Turbine part
 $V_c = 15 \text{ m/min}$ ($n = 120 \text{ min}^{-1}$)
 $f_z = 0.08 \text{ mm/t}$ ($V_f = 38 \text{ mm/min}$)
 $ap = 0.5 \text{ mm}$
 Wet
 MEC040R-17-4T-M (4 teeth)
 BDMT170408ER-JS PR1025



Number of workpieces

MEC **9 pcs/edge**

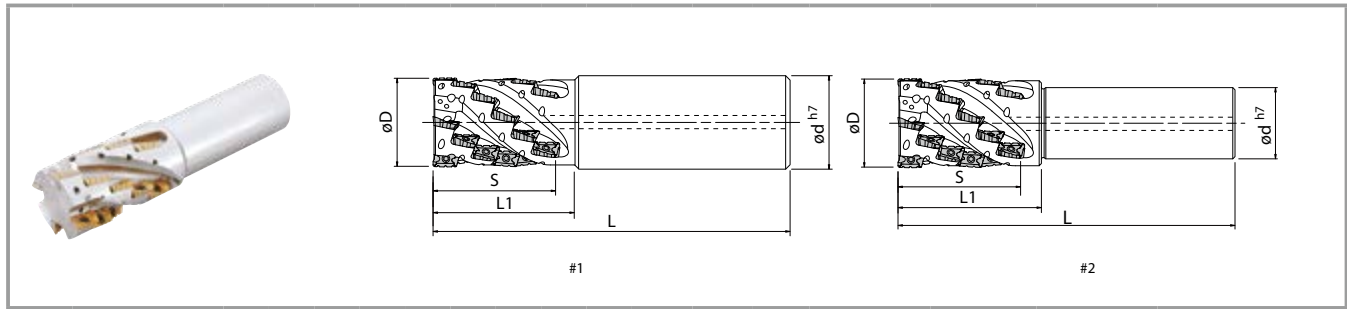
x9

Competitor S
 (End mill) **Less than 1 pc/edge**

Competitor S was not able to successfully machine one piece, but the MEC produced 9 pieces with good surface finishes.

(User evaluation)

MECH end mill with cylindrical shank (With coolant hole for bottom insert)



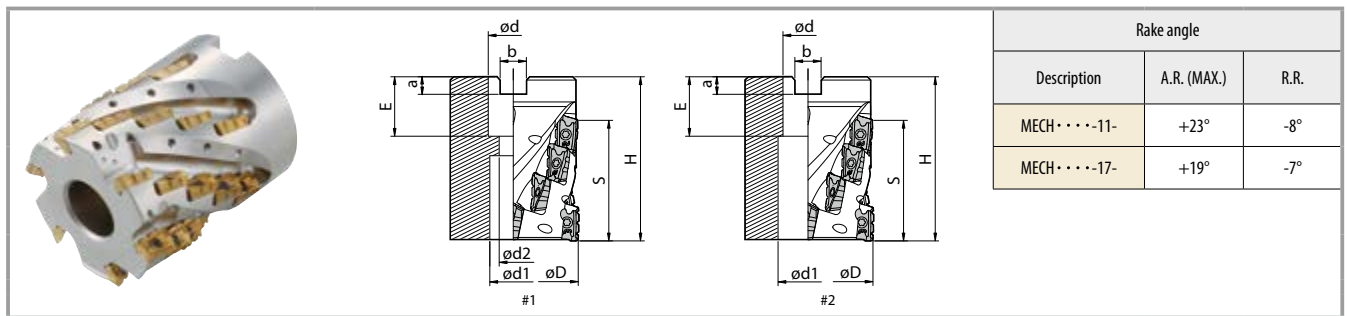
Toolholder dimensions

Description	Availability	No. of flutes	No. of stages	No. of inserts	Dimension (mm)					Rake angle		Drawing	Spare parts			Applicable inserts ➔ P5								
					øD	ød	L	L1	S	A.R. (MAX.)	R.R.		Insert screw	Wrench	Anti-seize compound									
MECH 025-S25-11-4-2T	●	2	4	8	25	25	120	46	37	+21°	-10°	#1	SB-2555TRG	DTM-8	P-37	BDMT11T308ER-N2 BDMT11T308ER-N3								
032-S32-11-5-2T	●																5	10	20	32	140	55	46	+23°
032-S32-11-5-4T	●		4	6	24	40	150	64	55	-8°														
040-S32-11-6-4T	●										7						28	50	42	172	75	64	-7°	
040-S42-11-6-4T	●																							6
050-S42-11-7-4T	●										6						42	50	42	172	75	64	-7°	
050-S42-11-7-6T	●	2	4	8	40	32	160	73	59	+19°		-7°	#2	SB-4070TRN	DTM-15	P-37								BDMT170408ER-N3 BDMT170408ER-N4
MECH 040-S32-17-4-2T	●										4						5	20	50	42	185	88	74	
040-S42-17-4-2T	●	7	28	50	42	172	75	64	-7°															
050-S42-17-5-4T	●									6		42	50	42	172	75								64
	●	6	42	50	42	172	75	64	-7°															

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

● : Available
Recommended cutting conditions ➔ P24

MECH shell mill (Without coolant hole)



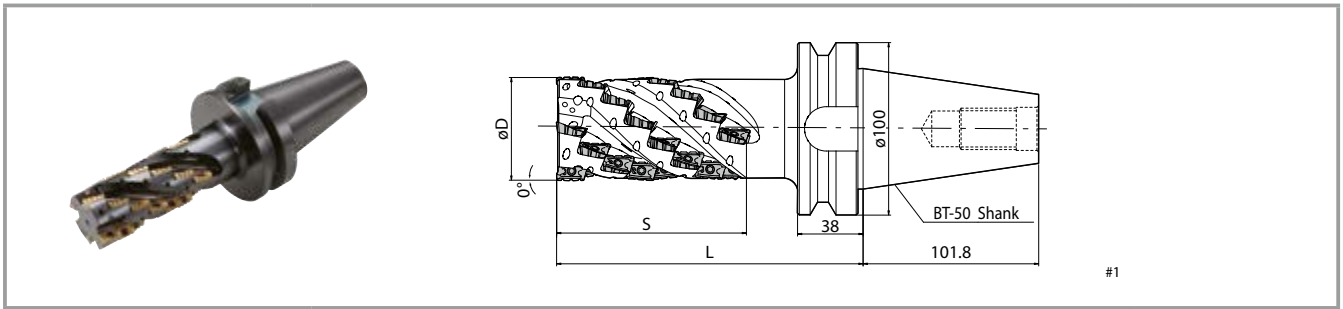
Toolholder dimensions

Description	Availability	No. of flutes	No. of stages	No. of inserts	Dimension (mm)										Drawing	Spare parts				Arbor bolt ➔ P5											
					øD	ød	ød1	ød2	H	E	a	b	S	Insert screw		Wrench	Anti-seize compound	Applicable inserts													
MECH 040R-11-4-4T-M	●	4	4	16	40	16	15	9	50	19	5.6	8.4	37	#1	SB-2555TRG	DTM-8	P-37	HH8X25 HH10X30	BDMT11T308ER-N2 BDMT11T308ER-N3												
050R-11-5-6T-M	●																			4	2	8	50	22	18	11	63	21	6.3	10.4	46
MECH 050R-17-2-4T-M	●	4	4	16	50	22	18	11	52	21	6.3	10.4	30																		
050R-17-4-4T-M	●																														
063R-17-3-4T-M	●	6	4	24	80	32	26	18	85	28	8	14.4	59																		
080R-17-4-6T-M	●																			6	4	24	100	40	56	-	85	30	9	16.4	59
100R-17-4-6T-M	●	4	3	12	63	25.4	20	14	70	26	6	9.5	45																		
MECH 063R-17-3-4T	●													6	4	24	80	31.75	26	18	85	32	8	12.7	59						
080R-17-4-6T	●	4	3	12	63	25.4	20	14	70	26	6	9.5	45																		
100R-17-4-6T	●																									6	4	24	100	38.1	56
	●	6	4	24	100	38.1	56	-	85	38	10	15.9	59																		

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

● : Available
Recommended cutting conditions ➔ P24

MECH-BT50 (Integral arbor type, without coolant hole)



Integral arbor type dimensions

Description	Availability	No. of flutes	No. of stages	No. of inserts	Dimension (mm)			Rake angle		Drawing	Spare parts			Applicable inserts ➔ P5
					øD	L	S	A.R. (MAX.)	R.R.		Insert screw	Wrench	Anti-seize compound	
MECH 050R11-8-4T-BT50	●	4	8	32	50	143	73	+23°	-7°	#1	SB-2555TRG	DTM-8	P-37	BDMT11T308ER-N2 BDMT11T308ER-N3
MECH 050R17-7-4T-BT50	●	4	7	28	50	173	104	+19°	-7°		SB-4070TRN	DTM-15	P-37	BDMT170408ER-N3 BDMT170408ER-N4
063R17-7-4T-BT50	●				63									
080R17-7-4T-BT50	●				80									
100R17-7-6T-BT50	●	6	42	100										

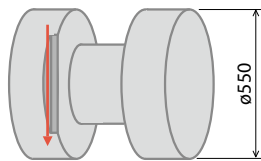
Coat anti-seize compound (MP-1) thinly on clamp screw when insert is fixed.

Recommended cutting conditions ➔ P24

MECH case studies

Ship parts C45

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



Metal removal volume

MECH **534 cc/min** ↑ x4.6

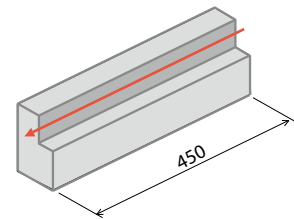
Competitor T **115 cc/min**

MECH machining efficiency improved 4.6 times that of Competitor T.

(User evaluation)

Plate 17Cr3

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



Metal removal volume

MECH **532 cc/min** ↑ x3.1

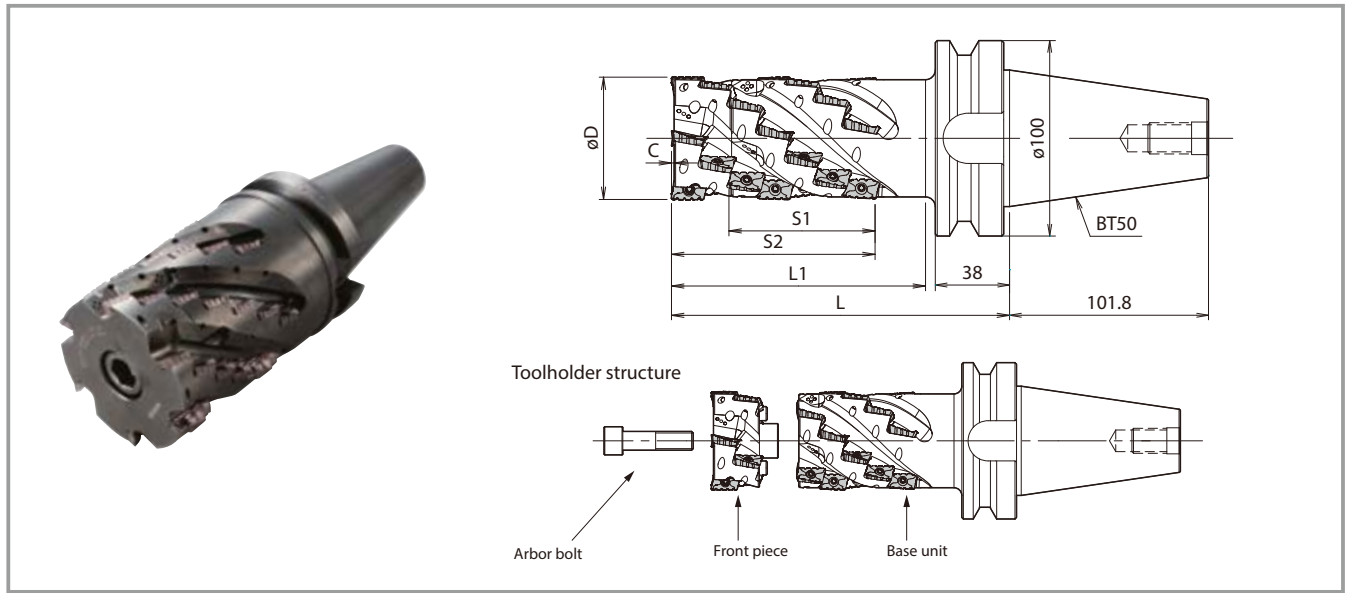
Competitor U **170 cc/min**

MECH machining efficiency improved 3.1 times that of competitor U and had an excellent wall finish.

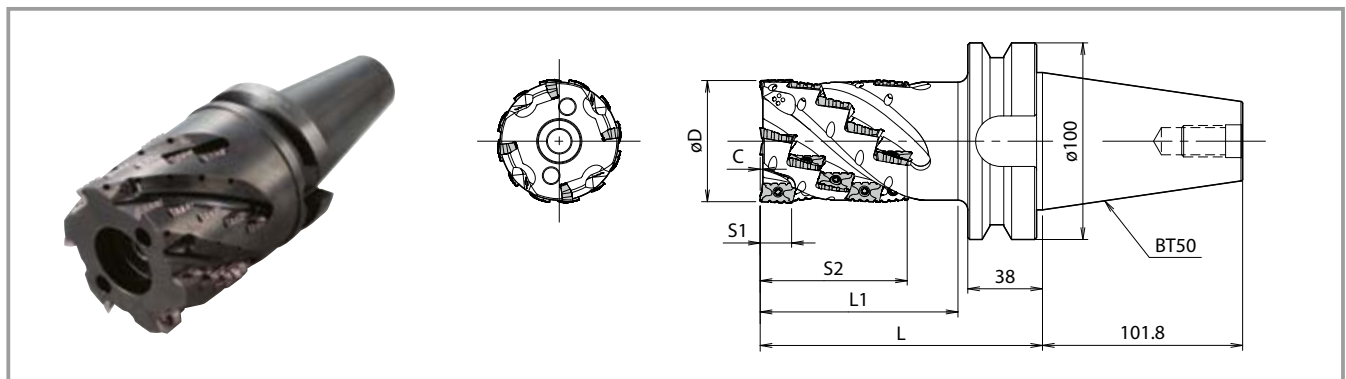
(User evaluation)

MECH interchangeable head

MECH-BT50SA (without coolant hole) arbor integral type (base unit +1 front piece + arbor bolt)



MECH-BT50-A (without coolant hole) base unit



Toolholder dimensions

	Description	Availability	No. of flutes	No. of stages	No. of inserts	Dimension (mm)						Rake angle		Weight (kg)
						øD	L	L1	C	S1	S2	A.R.	R.R.	
Arbor integral type	MECH 050R11-4T-BT50SA	MTO	4	8	32	50	143	99	0.7	55	73	+23°	-7°	4.8
	063R17-4T-BT50SA	MTO		7	28	63	173	130	1.3	75	104	+19°	-7°	5.8
	080R17-4T-BT50SA	MTO		80	7.6									
	100R17-6T-BT50SA	MTO	6	7	42	100	9.8							
Base unit	MECH 050R11-4T-BT50-A	MTO	4	6	24	50	125	81	0.7	10	55	+23°	-7°	4.6
	063R17-4T-BT50-A	MTO		5	20	63	143	100	1.3	16	75	+19°	-7°	5.4
	080R17-4T-BT50-A	MTO				80								6.8
	100R17-6T-BT50-A	MTO	6	5	30	100	8.5							

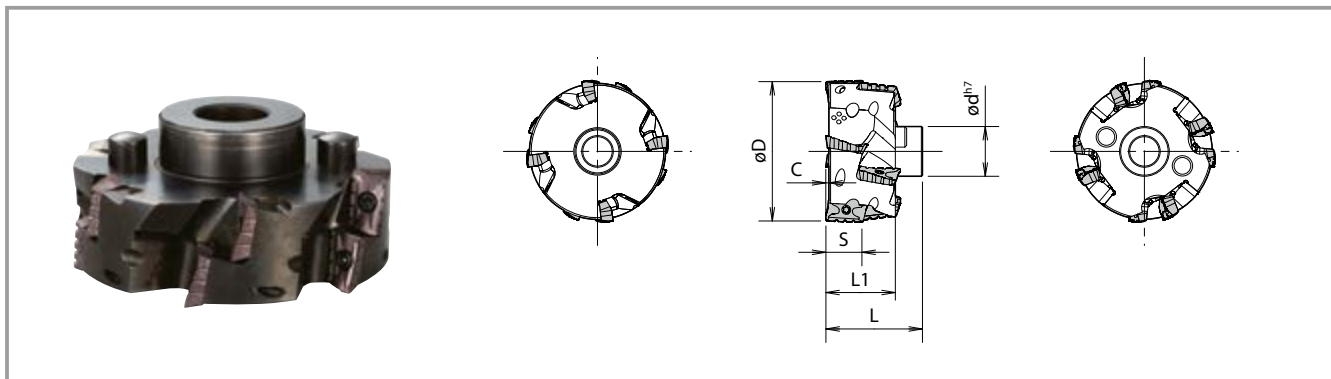
MTO : Made to order
For recommended cutting conditions, see page → P24

Toolholder structure

End mill		=	Base unit → P21		+	Front piece (1 pc) → P22		+	Arbor bolt	
MECH	050R11-4T-BT50SA		MECH050R11-4T-BT50-A			MECH050R11-4T-F			HH12X35	
	063R17-4T-BT50SA		MECH063R17-4T-BT50-A			MECH063R17-4T-F			HH12X40	
	080R17-4T-BT50SA		MECH080R17-4T-BT50-A			MECH080R17-4T-F			HH16X40	
	100R17-6T-BT50SA		MECH100R17-6T-BT50-A			MECH100R17-6T-F			HH20X40	

MECH interchangeable head

MECH-F (without a coolant hole) front piece



Toolholder dimensions

Description	Availability	No. of flutes	No. of stages	No. of inserts	Dimension (mm)						Rake angle		Weight (kg)	
					øD	ød	L	L1	C	S	A.R.	R.R.		
MECH 050R11-4T-F	●	4	2	8	50	22	44	18	0.7	10	+23°	-7°	0.2	
063R17-4T-F	●				63	22								
080R17-4T-F	●				80	32								
100R17-6T-F	●	6	2	12	100	45								1.3

● : Available

Applicable inserts

End mill	Base unit	Front piece	Applicable inserts → P5
MECH 050R11-4T-BT50SA	MECH050R11-4T-BT50-A	MECH050R11-4T-F	BDMT11T308ER-N2 BDMT11T308ER-N3
063R17-4T-BT50SA	MECH063R17-4T-BT50-A	MECH063R17-4T-F	BDMT170408ER-N3 BDMT170408ER-N4
080R17-4T-BT50SA	MECH080R17-4T-BT50-A	MECH080R17-4T-F	
100R17-6T-BT50SA	MECH100R17-6T-BT50-A	MECH100R17-6T-F	

For installation of notched insert, ref. page 23.

Spare parts

Description		Spare parts				
		Insert screw	Wrench (for insert screw)	Arbor bolt	Wrench (for arbor bolt)	Anti-seize compound
Arbor integral type (Set)	MECH 050R11-4T-BT50SA	SB-255STRG	DTM-8	HH12X35	LW-10	P-37
	063R17-4T-BT50SA			HH12X40		
	080R17-4T-BT50SA	SB-407OTRN	DTM-15	HH16X40	LW-14	
	100R17-6T-BT50SA			HH20X40	LW-17	
Base unit	MECH 050R11-4T-BT50-A	SB-255STRG	DTM-8	HH12X35	LW-10	
	063R17-4T-BT50-A			HH12X40		
	080R17-4T-BT50-A	SB-407OTRN	DTM-15	HH16X40	LW-14	
	100R17-6T-BT50-A			HH20X40	LW-17	
Front piece	MECH 050R11-4T-F	SB-255STRG	—	—	—	
	063R17-4T-F	SB-407OTRN				
	080R17-4T-F					
	100R17-6T-F					

If you purchased the front piece only, wrench (for insert screw)/arbor bolt and wrench (for arbor bolt) is not included. Coat anti-seize compound (P-37) thinly on clamp screw when insert is fixed.

MECH interchangeable head

Number of inserts installed

Description	No. of flutes	No. of inserts	No. of inserts			
			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						
050-S42-17-5-4T	4	20			10	10
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	6	12			6	6
080R-17-4-6T-M		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		28			14	14
063R17-7-4T-BT50						
080R17-7-4T-BT50		6	42	21	21	

Description	No. of flutes	No. of inserts	No. of inserts			
			BDMT11T308ER-		BDMT170408ER-	
			N2	N3	N3	N4
MECH 050R11-4T-BT50SA	4	32	16	16		
063R17-4T-BT50SA	4	28			14	14
080R17-4T-BT50SA						
100R17-6T-BT50SA		6	42			21
MECH 050R11-4T-BT50-A	4	24	12	12		
063R17-4T-BT50-A	4	20			10	10
080R17-4T-BT50-A						
100R17-6T-BT50-A	6	30			15	15
MECH 050R11-4T-F	4	8	4	4		
063R17-4T-F	4	8			4	4
080R17-4T-F						
100R17-6T-F	6	12			6	6

Precautions when installing notched inserts

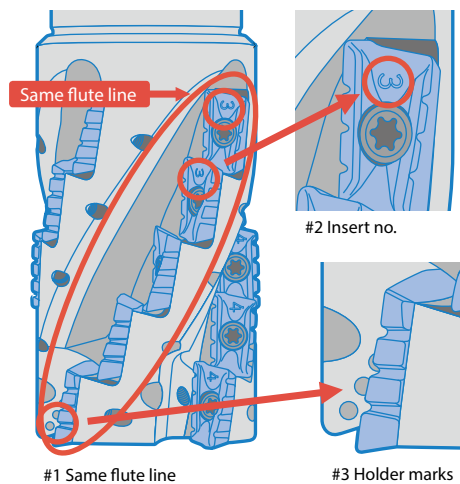
1. Install notched inserts by matching the insert with the number of marks on the holder body.

Insert number and holder marks

Insert size	11 type		17 type	
Insert no.	2	3	3	4
Marks				

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

2. When installing notched inserts in flute line, ensure that the number on the insert is the same as the insert in first stage. Ref. to #1, #2 and #3.



Recommended cutting conditions (when using a notched insert)

Workpiece material	fz (mm/t)	Recommended insert grades (Cutting speed Vc m/min)				
		MEGACOAT NANO	MEGACOAT			PVD coated carbide
		PR1535	PR1225	PR1230	PR1210	PR830
Carbon steel	0.08 – 0.1 – 0.15	☆ 120 – 180 – 250	☆ 120 – 180 – 250	★ 120 – 180 – 220	—	☆ 100 – 140 – 180
Alloy steel	0.08 – 0.1 – 0.15	☆ 100 – 160 – 220	☆ 100 – 160 – 220	★ 100 – 160 – 200	—	☆ 100 – 140 – 180
Mold steel	0.08 – 0.1 – 0.15	☆ 80 – 140 – 180	☆ 80 – 140 – 180	★ 80 – 140 – 160	—	☆ 100 – 120 – 150
Gray cast iron	0.08 – 0.15 – 0.18	—	—	—	★ 120 – 180 – 250	—
Nodular cast iron	0.08 – 0.15 – 0.18	—	—	—	★ 100 – 150 – 220	—
* Titanium alloys	0.08 – 0.1 – 0.15	★ 40 – 60 – 80	—	—	☆ 30 – 50 – 70	—

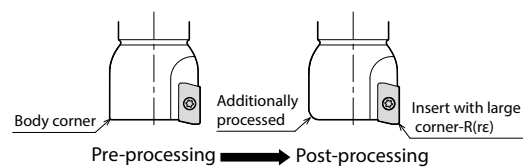
* Cutting with coolant is recommended for titanium alloy.

1. The recommended cutting conditions above are for notched inserts.
2. If using an insert without notch, the cutting depth (ap) and width (ae) should be less than 60% of those of a notched insert.

Workpiece material	fz (mm/t)	Recommended insert grades (Cutting Speed Vc m/min)	
		DLC coated carbide	Carbide
		PDL025	GW25
Aluminum alloy (Si 13% or less)	0.05 – 0.3	200 – 1,000	200 – 800
Aluminum alloy (Si 13% or less)	0.05 – 0.2	200 – 300	200 – 300

When using inserts with corner-R (re) 1.6 or larger, additional modifications of the cutter body will be necessary. Ref. to the table below for the recommended modifications. Additional grind off is not necessary when corner-R is 1.2 mm or less.

Insert corner-R(re)	Additional processing dimension to body corner (mm)
1.6	R1.0
2.0	
2.4	R1.2
3.1	R1.6
4.0	R2.5



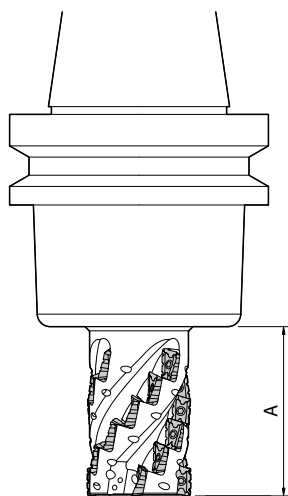
* Round-shaped additional processing is recommended. When applying chamfer shaped additional processing, do not cut away too much.

Cutting performance (Used machine: Machining center equivalent to AC15 / 18.5kW)

MECH end mill type

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

Shape



2 flute type

(Workpiece material : C50)

Description	Shouldering	Slotting
	Cutting speed: $V_c = 100 - 180$ m/min Feed: $f_z = 0.08 - 0.15$ mm/t	Cutting speed: $V_c = 100 - 120$ m/min Feed: $f_z = 0.08 - 0.12$ mm/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	

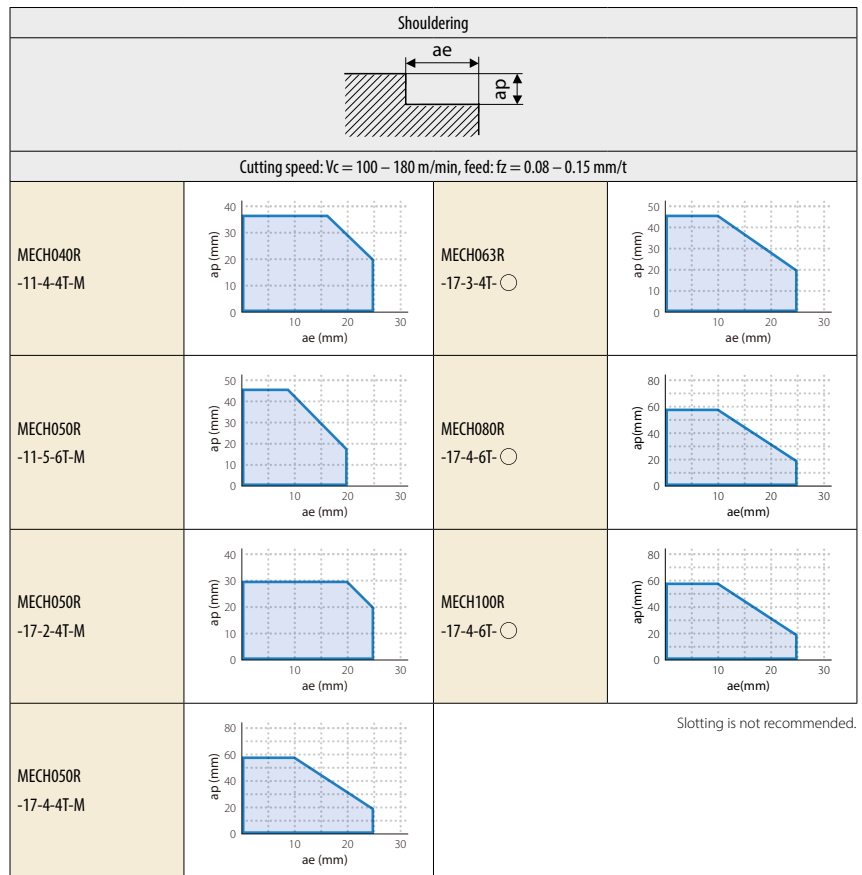
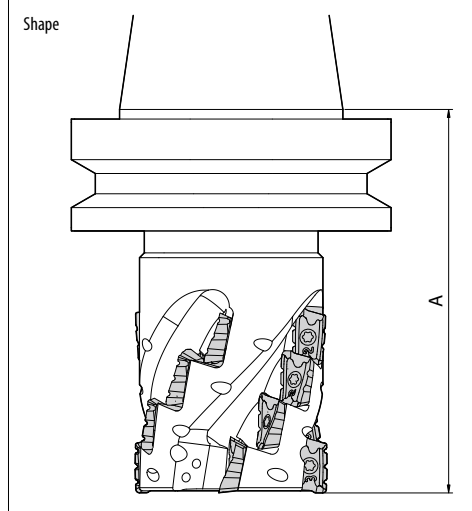
4 flute / 6 flute type are not recommended for slotting.

Cutting performance (Used machine: Machining center equivalent to AC15 / 18.5kW)

MECH shell mill type

(Workpiece material : C50)

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

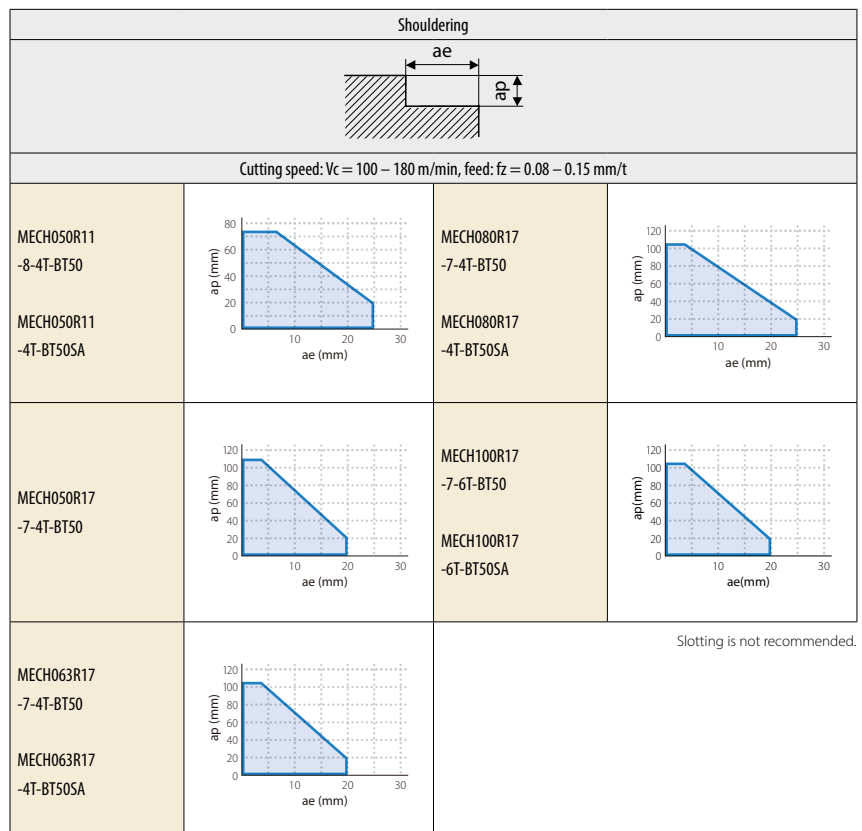
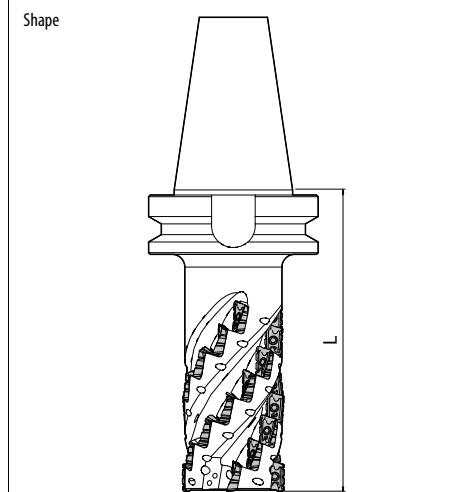


MECH-BT50 (Integral arbor type)

MECH-BT50SA (Replaceable head type / Integral arbor type)

(Workpiece material : C50)

Cutting dia.	Description	Overhang length L (mm)
ø50	MECH050R11-8-4T-BT50	143
	MECH050R11-4T-BT50SA	
	MECH050R17-7-4T-BT50	
ø63	MECH063R17-7-4T-BT50	173
	MECH063R17-4T-BT50SA	
ø80	MECH080R17-7-4T-BT50	173
	MECH080R17-4T-BT50SA	
ø100	MECH100R17-7-6T-BT50	173
	MECH100R17-6T-BT50SA	



90° milling with double sided 4-edge inserts

MEW Series

- Economical 4-edge insert
- Improved toolholder durability and insert installation accuracy
- Chattering resistance for excellent surface finish



NEW

DLC coating for machining aluminum
Grade PDL025 added to the lineup



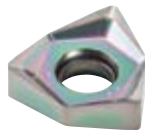
Double-sided 6-edge insert

MFWN

- Sharp cutting due to lower cutting forces
- Resistant to chattering and applicable to long overhang
- MEGACOAT NANO coated insert grade for long tool life

NEW

DLC coated insert grade
for aluminum machining



New grade PDL025

