THE NEW VALUE FRONTIER

KYOCERA

High efficiency radius cutter | MRX

MRX

Economical positive round inserts with 6 usable cutting edges

Low cutting force with helical cutting edge design

CA6535 and PR1535 insert grades available for difficult-to-cut material

R4, R5, R6 and R8 radius sizes available

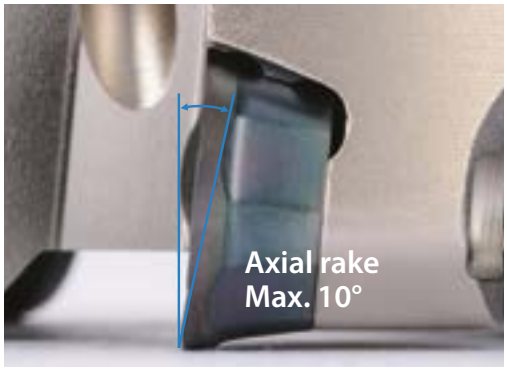
High efficiency radius cutter

MRX

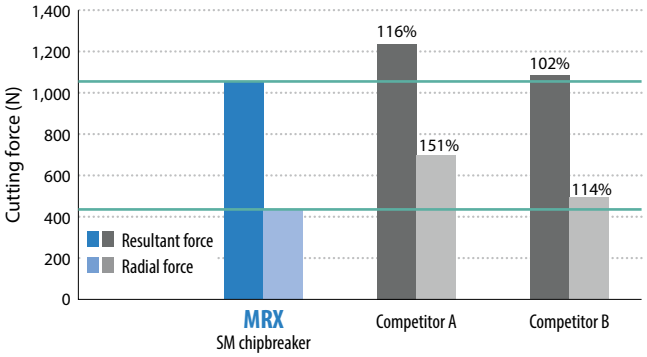
Low cutting forces for longer tool life. Available for a wide range of applications.

1 Low cutting forces with helical cutting edge design

Maximum axial rake angle



Cutting force comparison (Internal evaluation)



Cutting conditions: Vc= 120 m/min, ap x ae = 2 x 25 mm, fz = 0.2 mm/t, workpiece: X5CrNi1810, Cutter: Ø 50

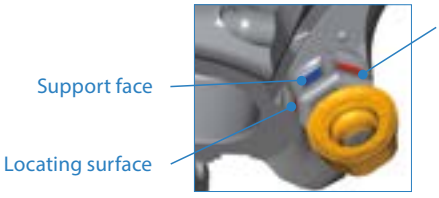
2 Flat lock structure to hold insert firmly in place

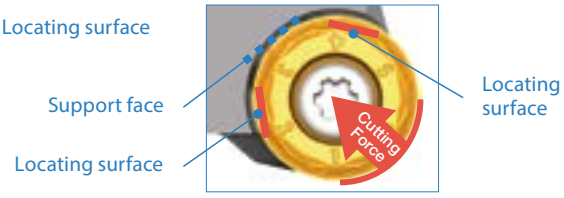
Prevents insert rotation during machining to provide stable cutting

Flat lock structure

Wide flat binding face

- Receives even cutting forces
- Prevents insert rotation





3 Available for a wide range of applications

Facing | Slotting | Shouldering | Pocketing | Ramping / Profiling

4 Grades for difficult-to-cut materials

CA6535: CVD

For Ni-base heat resistant alloy and martensitic stainless steel

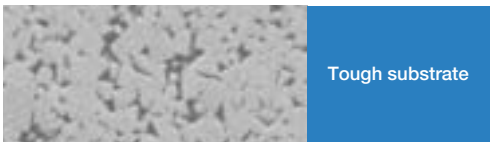
PR1535: PVD

For titanium alloy and precipitation hardened stainless steel

Workpiece	Recommended insert grade	Recommended chipbreaker
Carbon steel / Alloy steel / Die steel	PR1525	GM, SM, GH
Gray cast iron / Nodular cast iron	PR1510	GH, GM
Martensitic stainless steel	CA6535	SM, GM
Austenitic stainless steel	PR1535	
Precipitation hardened stainless steel		
Ni-base heat-resistant alloy	CA6535	
Titanium alloy	PR1535	

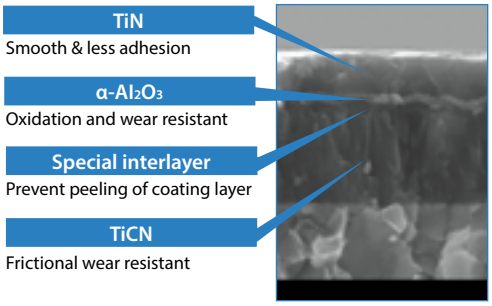
Grades for difficult-to-cut materials

Stable cutting prevents insert fracturing for highly efficient machining



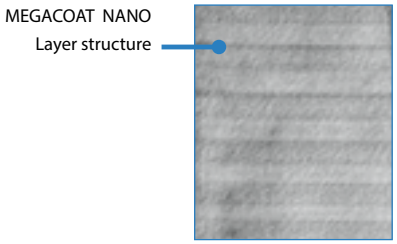
CA6535

- For Ni-base heat resistant alloy and martensitic stainless steel
- High heat resistance and wear resistance with CVD coating
- Improved stability due to thin film coating technology



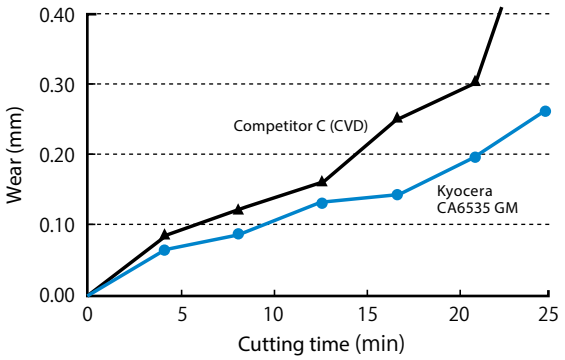
PR1535

- For titanium alloy and precipitation hardened stainless steel
- Improved stability due to thin film coating technology
- Stabilized milling operation and long tool life with MEGACOAT NANO coating technology



Wear comparison (Internal evaluation)

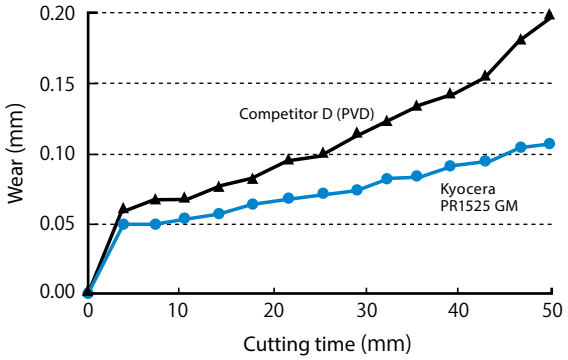
Ni-base heat-resistant alloy



Cutting conditions: Vc = 50 m/min, ap × ae = 1 × 20, fz = 0.15 mm/t, wet

Wear comparison (Internal evaluation)

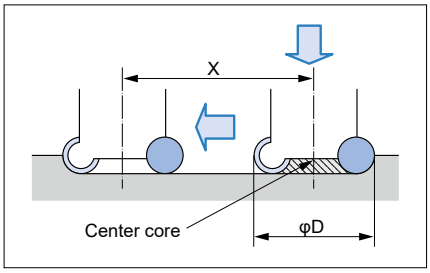
Tool steel



Cutting conditions: Vc = 120 m/min, ap × ae = 2×25, fz = 0.35 mm/t, dry

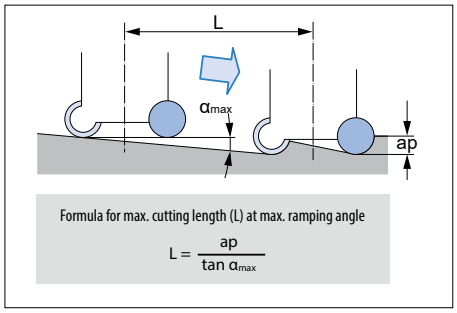
Tips for peck milling

- Reduce the table feed by 50 % of the recommended conditions until the center core part is completely cut off. The internal cutting edge's radial rake angle is large in the negative direction.
- Min. cutting length for flat bottom face is as the list on page 11.



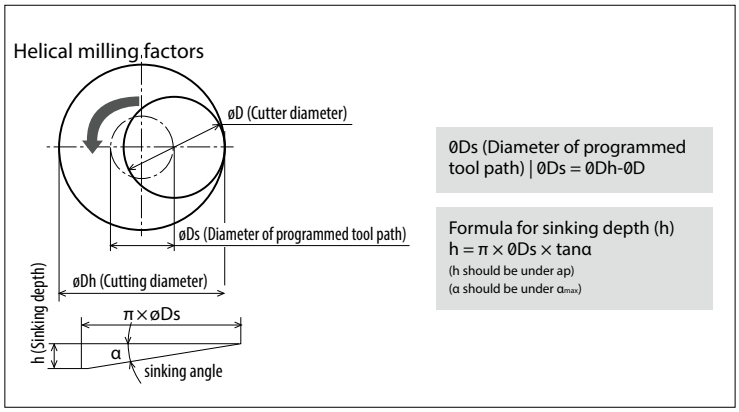
Tips for ramping

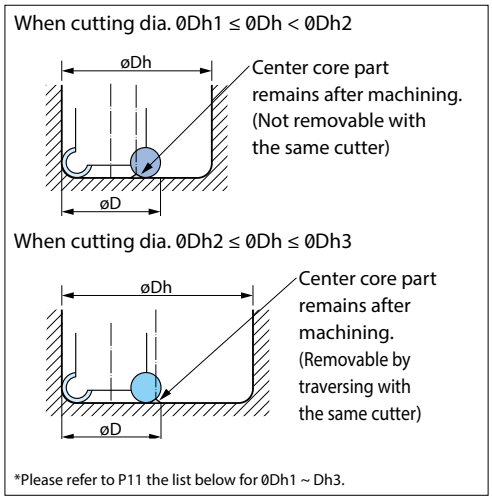
- Ramping angle should be under α_{max} (refer to table on page 11).
- Feed rate should be under 70 % of the cutting conditions.



Tips for helical milling

- Sinking depth (h) at helical milling should be under max. ap. Sinking angle α (with programmed tool path) should be under αmax (Maximum ramping angle).
- Feed rate should be under 70 % of the cutting conditions.
- Climb milling is recommended.



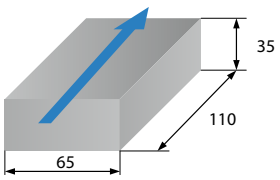


Case studies

MRX case studies

Nozzle parts
X5CrNi1810

Vc = 113 m/min
fz = 0.14 mm/t
ap × ae = 1.0 × 65 mm
Dry
MRX100R-12-9T-M (9 Flutes)
RPGT1204M0ER-SM (PR1535)



Tool life

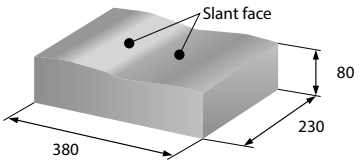
		Tool life
PR1535	450 pcs/edge	4.5x
Conventional A	100 pcs/edge	

Cost savings with 4.5 times longer tool life with 1.5 times more insert edges.
MRX prevented burr formation and improved surface finish.

(User evaluation)

Mold part
Tool steel (47-49HRC)

Vc = 125 m/min
fz = 0.25 mm/t
Dap × ae = 1.0 ~ 2.0 × 10 mm
Dry
MRX20-S20-08-2T (2 Flutes)
RDGT0803M0ER-GM (PR1525)



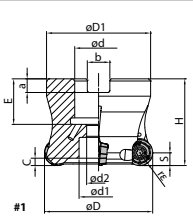
Tool life

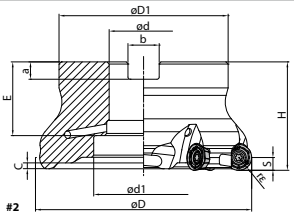
		Tool life
PR1525	2 pcs/edge (with Stable machining)	2x+
Conventional B	1 pcs/edge (with unstable tool life)	

Conventional tool only machined 1 workpiece due to unstable tool life,but the MRX doubled the tool life with stable machining.

(User evaluation)

MRX face mill (with coolant hole)





Toolholder dimension

		Availability	No. of inserts	Dimension (mm)												Rake angle (°)		Coolant hole	Drawing	Weight (kg)	Max. revolution (min^{-1})
				rε	øD	øD1	ød	ød1	ød2	H	E	a	b	C	S	A.R.	R.R.				
MRX	040R-10-5T-M	●	5	5	40	38	16	15	9	40	19	5.6	8.4	2.9	5	+10°	-5.5°	Yes	#1	0.2	20,000
	050R-10-6T-M	●	6		50	48	22	18	11		21	6.3	10.4							0.3	17,500
	063R-10-7T-M	●	7		63	60														0.6	15,000
MRX	040R-12-4T-M	●	4	6	40	38	16	13.5	9	40	19	5.6	8.4	3.4	6	+10°	-5.5°		#1	0.2	21,000
	050R-12-4T-M	●	4		50	48	22	18	11		21	6.3	10.4							0.3	18,000
	050R-12-5T-M	●	5																	0.3	18,000
	052R-12-4T-M	●	4		52															0.3	17,500
	052R-12-5T-M	●	5																	0.3	17,500
	063R-12-5T-M	●	5		63	60														0.6	15,500
	063R-12-6T-M	●	6																	0.6	15,500
	066R-12-5T-M	●	5		66															0.6	15,000
	066R-12-6T-M	●	6																	0.6	15,000
	080R-12-6T-M	●	6		80	70	27	20	13	50	24	7	12.4							1.2	13,500
	080R-12-8T-M	●	8																	1.1	13,500
	100R-12-7T-M	●	7		100	78	32	46	-		30	8	14.4						#2	1.4	12,000
	100R-12-9T-M	●	9																	1.4	12,000
MRX	063R-16-4T-M	●	4	8	63	60	22	18	11	40	21	6.3	10.4	4.4	8	+10°	-5.5°		#1	0.5	13,500
	063R-16-5T-M	●	5																	0.5	13,500
	066R-16-4T-M	●	4		66															0.6	13,000
	066R-16-5T-M	●	5																	0.5	13,000
	080R-16-5T-M	●	5		80	70	27	20	13	50	24	7	12.4							1.1	11,500
	080R-16-6T-M	●	6																	1.1	11,500
	100R-16-6T-M	●	6		100	78	32	46	-		30	8	14.4						#2	1.4	10,000
	100R-16-7T-M	●	7																	1.4	10,000
	125R-16-6T-M	●	6		125	89	40	55		63	33	9	16.4							2.6	9,000
	125R-16-8T-M	●	8																	2.6	9,000

●: Available

Spare parts and applicable inserts

Description		Clamp screw	Wrench		Anti-seize compound	Mounting bolt	Applicable inserts
			DTPM	TTP			
MRX	040R-10...	SB-3070TRP	DTPM-10		MP-1	HH8X25	RPMT10T3M0ER-GM RPGT10T3M0ER-GM RPGT10T3M0ER-SM RPMT10T3M0EN-GH *1
	050R-10...	Recommended torque for insert clamp 2.0 Nm				HH10X30	
	063R-10...					HH10X30	
MRX	040R-12...	SB-4090TRPN	DTPM-15		MP-1	HH8X25	RPMT1204M0ER-GM RPGT1204M0ER-GM RPGT1204M0ER-SM RPMT1204M0EN-GH *2
	050R-12...	Recommended torque for insert clamp 3.5 Nm				HH10X30	
	052R-12...					HH10X30	
	063R-12...					HH10X30	
	066R-12...					HH10X30	
	080R-12...					HH12X35	
	100R-12...					-	
MRX	063R-16...	SB-50120TRP	TTP-20		MP-1	HH10X30	RPMT1605M0ER-GM RPGT1605M0ER-GM RPGT1605M0ER-SM RPMT1605M0EN-GH *3
	066R-16...	Recommended torque for insert clamp 4.5 Nm				HH10X30	
	080R-16...					HH12X35	
	100R-16...					-	
	125R-16...						

Caution with max. revolution

- When running an endmill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.
- Coat anti-seize compound (mp-1) thinly on portion of taper and thread when insert is fixed.

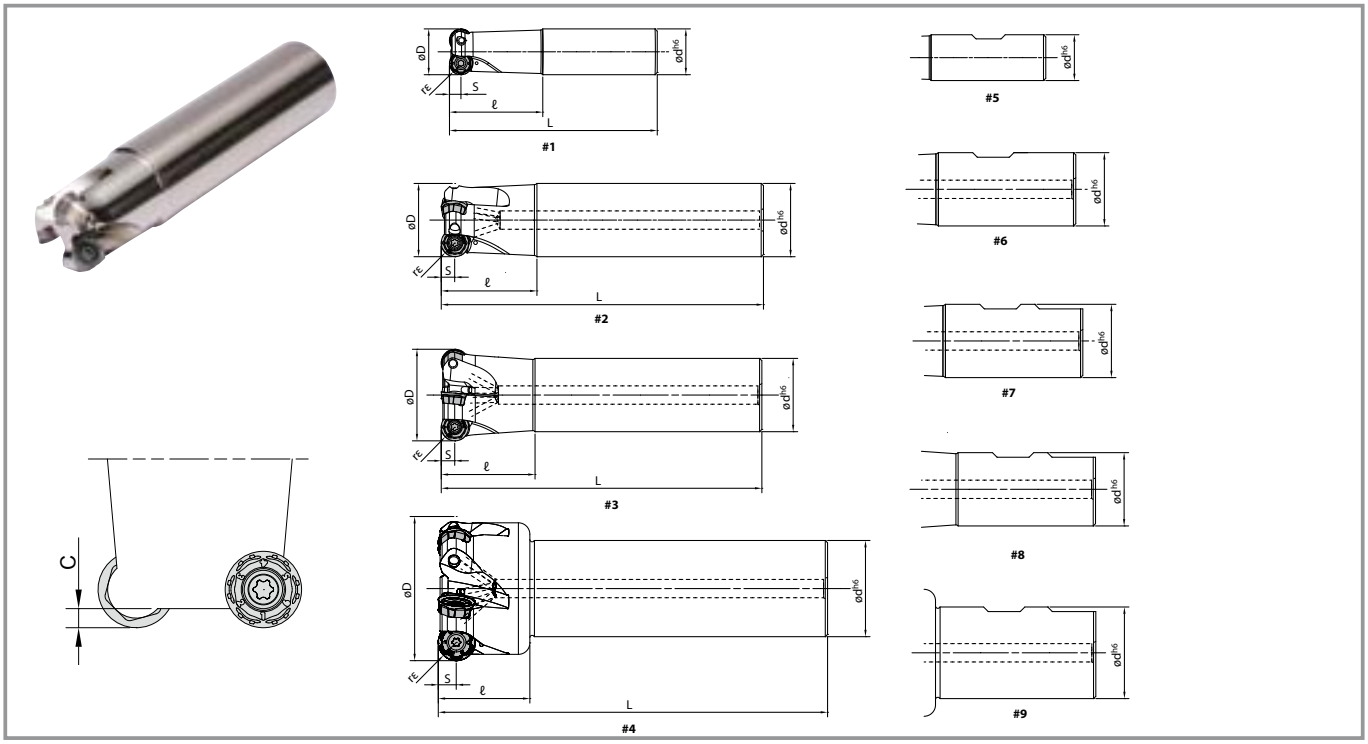
*1 Not compatible with conventional PRMT10T3M0.

*2 Not compatible with conventional PRMT1204M0 and PRMT1204M0-H.

*3 Not compatible with conventional PRMT1606M0-H.

Recommended cutting conditions ➡ P11

MRX end mill



Toolholder dimension

Description			Availability	No. of inserts	Dimension (mm)							Rake angle (°)		Coolant hole	Drawing	Max. revolution (min^{-1})
					rε	øD	ød	L	ℓ	C	S	A.R.(MAX)	R.R.			
Cylindrical	MRX	16-S16-08-2T	●	2	4	16	16	110	40	2.4	4.0	+3°	-5.5°	No	#1	38,000
		20-S20-08-2T	●	2		20	20	120				+10°		Yes	#2	32,000
		25-S25-08-4T	●	4		25	25									28,000
	MRX	20-S20-10-2T	●	2	5	20	20	120	40	2.9	5.0	+5°	-8°	No	#1	30,000
		25-S25-10-3T	●	3		25	25					+10°	-5.5°	Yes	#2	28,000
		32-S32-10-4T	●	4		32	32	140								22,500
	MRX	32-S32-12-3T	●	3	6	32	32	140	40	3.4	6.0	+10°	-5.5°	Yes	#2	24,500
		40-S32-12-4T	●	4		40									#3	21,000
		50-S42-12-5T	●	5		50	42	170								18,000
	MRX	40-S32-16-2T	●	2	8	40	32	140	40	4.4	8.0	+10°	-5.5°	Yes	#3	18,000
		50-S42-16-4T	●	4		50	42	170								15,500
		63-S42-16-5T	●	5		63									#4	13,500
Weldon	MRX	16-W16-08-2T	●	2	4	16	16	89	40	2.4	4.0	+3°	-5.5°	No	#5	38,000
		20-W20-08-2T	●	2		20	20	91				+10°		Yes	#6	32,000
		25-W25-08-4T	●	4		25	25	97							#7	28,000
	MRX	20-W20-10-2T	●	2	5	20	20	91	40	2.9	5.0	+5°	-8°	No	#5	30,000
		25-W25-10-3T	●	3		25	25	97				+10°	-5.5°	Yes	#7	28,000
		32-W32-10-4T	●	4		32	32	101							#7	22,500
	MRX	32-W32-12-3T	●	3	6	32	32	101	40	3.4	6.0	+10°	-5.5°	Yes	#7	24,500
		40-W32-12-4T	●	4		40									#8	21,000
		50-W40-12-5T	●	5		50	40	111								18,000
	MRX	40-W32-16-2T	●	2	8	40	32	101	40	4.4	8.0	+10°	-5.5°	Yes	#8	18,000
		50-W40-16-4T	●	4		50	40	111								15,500
		63-W40-16-5T	●	5		63		112							#9	13,500
Cylindrical (Long)	MRX	16-S16-08-2T-160	●	2	4	16	16	160	70	2.4	4.0	+3°	-5.5°	No	#1	38,000
		20-S20-08-2T-180	●	2		20	20	180	80			+10°		Yes	#2	32,000
		25-S25-08-4T-180	●	4		25	25	180								28,000
	MRX	20-S20-10-2T-180	●	2	5	20	20	180	80	2.9	5.0	+5°	-8°	No	#1	30,000
		25-S25-10-2T-180	●	2		25	25	180				+10°	-5.5°	Yes	#2	28,000
		32-S32-10-4T-200	●	4		32	32	200								22,500
	MRX	32-S32-12-2T-200	●	2	6	32	32	200	80	3.4	6.0	+10°	-5.5°	Yes	#2	24,500
		40-S32-12-4T-200	●	4		40		200	40						#3	21,000
		50-S42-12-4T-300	●	4		50	42	300								18,000
	MRX	40-S32-16-2T-200	●	2	8	40	32	200	40	4.4	8.0	+10°	-5.5°	Yes	#3	18,000
		50-S42-16-4T-300	●	4		50	42	300								15,500
		63-S42-16-4T-300	●	4		63		300							#4	13,500

●: Available

Spare parts and applicable inserts

Description		Clamp screw	Wrench		Anti-seize compound	Applicable inserts
			DTPM 	TTP 		
MRX	●●●-08...	SB-2555TRP	DTPM-8		MP-1	RDMT0803M0ER-GM RDGT0803M0ER-GM RDGT0803M0ER-SM RDMT0803M0EN-GH *1
		Recommended torque for insert clamp 1.2 Nm				
MRX	●●●-10...	SB-3070TRP	DTPM-10		MP-1	RPMT10T3M0ER-GM RPGT10T3M0ER-GM RPGT10T3M0ER-SM RPMT10T3M0EN-GH *2
		Recommended torque for insert clamp 2.0 Nm				
MRX	●●●-12...	SB-4090TRPN	DTPM-15		MP-1	RPMT1204M0ER-GM RPGT1204M0ER-GM RPGT1204M0ER-SM RPMT1204M0EN-GH *3
		Recommended torque for insert clamp 3.5 Nm				
MRX	●●●-16...	SB-50120TRP	TTP-20		MP-1	RPMT1605M0ER-GM RPGT1605M0ER-GM RPGT1605M0ER-SM RPMT1605M0EN-GH *4
		Recommended torque for insert clamp 4.5 Nm				

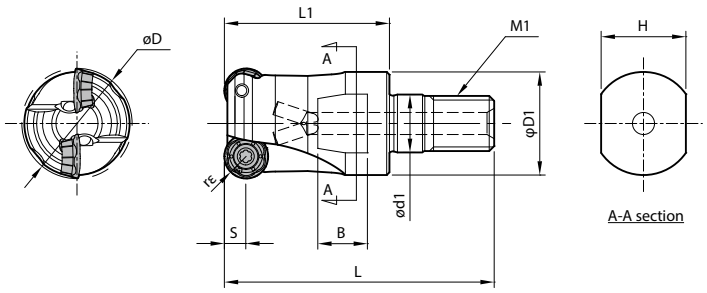
Recommended cutting conditions ➡ P11

*1 Not compatible with conventional RDMT08T2M0-H.
*2 Not compatible with conventional RPMT10T3M0.
*3 Not compatible with conventional RPMT1204M0 and RPMT1204M0-H.
*4 Not compatible with conventional RPMT1606M0-H.

Caution with max. revolution

- When running an endmill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.
- Coat anti-seize compound (MP-1) thinly on portion of taper and thread when insert is fixed.

MRX screw on type



Toolholder dimension

Description		Availability	No. of inserts	Dimension (mm)										Rake angle (°)		Coolant hole	Applicable inserts	Max. spindle revolution (min^{-1})
				rε	ØD	ØD1	Ød1	L	L1	M1	H	B	S	A.R. (MAX)	R.R.			
MRX	16-M08-08-2T	●	2	4	16	14.7	8.5	43	25	M8	12	8	4	+3°	-5.5°	No	RDMT08 RDGT08	38,000
	20-M10-08-2T	●	2		20	18.7	10.5	49	30	M10	15	9		+10°		Yes		32,000
	25-M12-08-4T	●	4		25	23	12.5	57	35	M12	19	10						28,000
MRX	20-M10-10-2T	●	2	5	20	18.7	10.5	49	30	M10	15	9	5	+5°	-8°	No	RPMT10 RPGT10	30,000
	25-M12-10-3T	●	3		25	23	12.5	57	35	M12	19	10		+10°	-5.5°	Yes		28,000
	32-M16-10-4T	●	4		32	30	17	63	40	M16	24	12						22,500
MRX	32-M16-12-3T	●	3	6	32	30	17	63	40	M16	24	12	6	+10°	-5.5°	Yes	RPMT12 RPGT12	24,500
	40-M16-12-4T	●	4		40	30	17	63	40	M16	24	12						21,000
MRX	40-M16-16-2T	●	2	8	40	30	17	63	40	M16	24	12	8	+10°	-5.5°	Yes	RPMT16 RPGT16	18,000

●: Available

Caution with max. revolution

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

Screw on type identification system

MRX 16 - M08 - 08 - 2T

Series	Cutter Ø	Thread size	Insert size	No. of inserts

Wrenches and clamp screws are 'Torx plus'.

1. See fig. 1 for 'Torx plus' wrench (blue grip)
2. See fig. 2 for 'Torx' wrench (black grip)

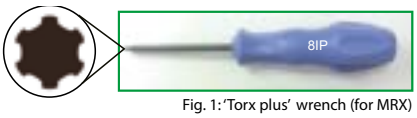


Fig. 1: 'Torx plus' wrench (for MRX)

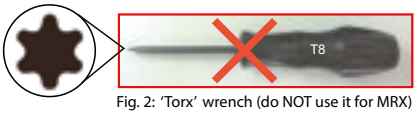
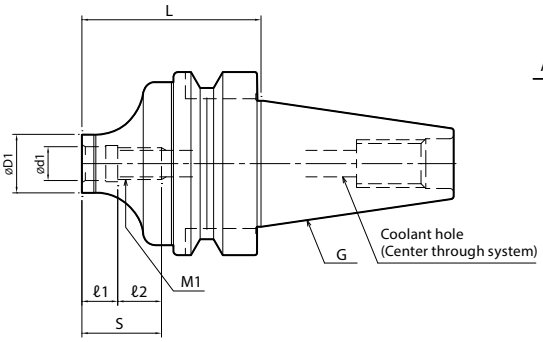
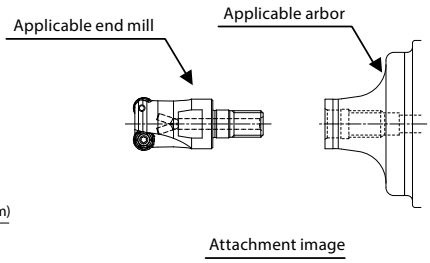


Fig. 2: 'Torx' wrench (do NOT use it for MRX)

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



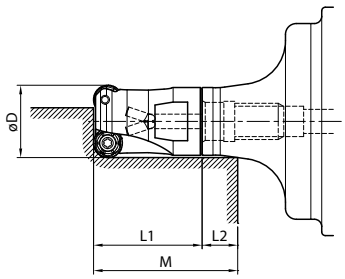


Arbor dimension

Description		Availability	Dimension (mm)							Coolant hole	Arbor size	Applicable end mill
			L	øD1	ød1	S	ℓ1	ℓ2	M1			
BT30K-	M08-45	●	45	14.7	8.5	20	9	11	M8	Yes	BT30	MRX16-M08··
	M10-45	●		18.7	10.5	21		12	M10			MRX20-M10··
	M12-45	●		23	12.5	24		15	M12			MRX25-M12··
BT40K-	M08-55	●	55	14.7	8.5	20	9	11	M8	Yes	BT40	MRX16-M08··
	M10-60	●	60	18.7	10.5	21		12	M10			MRX20-M10··
	M12-55	●	55	23	12.5	24		15	M12			MRX25-M12··
	M16-65	●	65	30	17	25		16	M16			MRX32-M16·· / MRX40-M16··

●: Available

Effective depth of assembled tool



Arbor description		Description	øD	L1	M	L2
BT30K-	M08-45	MRX16-M08··	16	25	31.8	6.8
	M10-45	MRX20-M10··	20	30	36.8	6.8
	M12-45	MRX25-M12··	25	35	42.8	7.8
BT40K-	M08-55	MRX16-M08··	16	25	31.7	6.7
	M10-60	MRX20-M10··	20	30	38.7	8.7
	M12-55	MRX25-M12··	25	35	44.6	9.6
	M16-65	MRX32-M16··	32	40	51.2	11.2
		MRX40-M16··	40	40	64	24

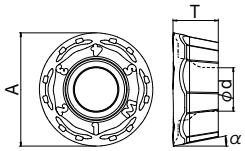
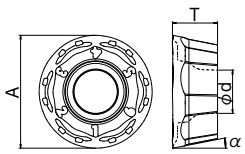
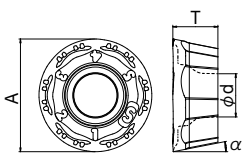
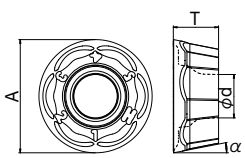
Arbor identification system

BT30 K - M08 - 45

- BT30 — Arbor size
- K — Two-face clamping spindle
- M08 — Thread size
- 45 — Length L

Inserts

Classification of usage						
★ : Roughing / 1st choice ☆ : Roughing / 2nd choice ■ : Finishing / 1st choice □ : Finishing / 2nd choice Hardened material is applicable only under 45HRC	P	Carbon steel / Alloy steel		★		
		Die steel		★		
	M	Austenitic stainless steel	★	☆		
		Martensitic stainless steel	☆			★
	K	Gray cast iron			★	
		Nodular cast iron			★	
	S	Heat-resistant alloy	☆			★
		Titanium alloy	★		☆	
	H	Hardened material		□		

Insert		Description		Dimension (mm)				Angle (°)	MEGACOAT NANO carbide			CVD carbide
				A	T	ød	rε	α	PR1535	PR1525	PR1510	CA6535
 General purpose (M-class)		RDMT	0803M0ER-GM	8	3.18	3.0	4	15	●	●	●	●
		RPMT	10T3M0ER-GM	10	3.97	3.5	5		●	●	●	●
			1204M0ER-GM	12	4.76	4.6	6	11	●	●	●	●
			1605M0ER-GM	16	5.56	5.8	8		●	●	●	●
 General purpose (G-class)		RDGT	0803M0ER-GM	8	3.18	3.0	4	15	●	●	●	●
		RPGT	10T3M0ER-GM	10	3.97	3.5	5		●	●	●	●
			1204M0ER-GM	12	4.76	4.6	6	11	●	●	●	●
			1605M0ER-GM	16	5.56	5.8	8		●	●	●	●
 For stainless steel (Low cutting force)		RDGT	0803M0ER-SM	8	3.18	3.0	4	15	●	●		●
		RPGT	10T3M0ER-SM	10	3.97	3.5	5		●	●		●
			1204M0ER-SM	12	4.76	4.6	6	11	●	●		●
			1605M0ER-SM	16	5.56	5.8	8		●	●		●
 Tough edge (Heavy milling)		RDMT	0803M0EN-GH	8	3.18	3.0	4	15	●	●	●	●
		RPMT	10T3M0EN-GH	10	3.97	3.5	5		●	●	●	●
			1204M0EN-GH	12	4.76	4.6	6	11	●	●	●	●
			1605M0EN-GH	16	5.56	5.8	8		●	●	●	●

●: Available

Recommended cutting conditions

Workpiece material	Recommended chipbreaker (fz: mm/t) RD**08 type: ap = 2 mm, RP**10 type: ap = 2.5 mm RP**12 type: ap = 3 mm, RP**16 type: ap = 4 mm				Recommended insert grade (Vc: m/min)			
					MEGACOAT NANO			CVD coated carbide
	RDMT-GM RPMT-GM	RDGT-GM RPGT-GM	RDGT-SM RPGT-SM	RDMT-GH RPMT-GH	PR1535	PR1525	PR1510	CA6535
Carbon steel	★ 0.1 ~ 0.2 ~ 0.3	☆ 0.1 ~ 0.2 ~ 0.3	☆ 0.06 ~ 0.15 ~ 0.2	☆ 0.15 ~ 0.3 ~ 0.35	–	★ 120 ~ 180 ~ 250	–	–
Alloy steel	★ 0.1 ~ 0.2 ~ 0.3	☆ 0.1 ~ 0.2 ~ 0.3	☆ 0.06 ~ 0.15 ~ 0.2	☆ 0.15 ~ 0.3 ~ 0.35	–	★ 100 ~ 160 ~ 220	–	–
Die steel	★ 0.1 ~ 0.15 ~ 0.25	☆ 0.1 ~ 0.15 ~ 0.25	☆ 0.06 ~ 0.12 ~ 0.2	☆ 0.15 ~ 0.2 ~ 0.3	–	★ 80 ~ 140 ~ 180	–	–
Austenitic stainless steel	☆ 0.1 ~ 0.15 ~ 0.2	☆ 0.1 ~ 0.15 ~ 0.2	★ 0.06 ~ 0.12 ~ 0.2	–	★ 100 ~ 160 ~ 200	☆ 100 ~ 160 ~ 200	–	–
Martensitic stainless steel	☆ 0.1 ~ 0.15 ~ 0.2	☆ 0.1 ~ 0.15 ~ 0.2	★ 0.06 ~ 0.12 ~ 0.2	–	☆ 150 ~ 200 ~ 250	–	–	★ 180 ~ 240 ~ 300
Precipitation hardened stainless steel	☆ 0.1 ~ 0.15 ~ 0.2	★ 0.1 ~ 0.15 ~ 0.2	☆ 0.06 ~ 0.12 ~ 0.2	–	★ 90 ~ 120 ~ 150	–	–	–
Gray cast iron	★ 0.1 ~ 0.2 ~ 0.3	☆ 0.1 ~ 0.2 ~ 0.3	–	☆ 0.15 ~ 0.3 ~ 0.35	–	–	★ 120 ~ 180 ~ 250	–
Nodular cast iron	★ 0.1 ~ 0.15 ~ 0.25	☆ 0.1 ~ 0.15 ~ 0.25	–	☆ 0.15 ~ 0.2 ~ 0.3	–	–	★ 100 ~ 150 ~ 200	–
Ni-base heat resistant alloy	☆ 0.1 ~ 0.12 ~ 0.15	★ 0.1 ~ 0.12 ~ 0.15	☆ 0.06 ~ 0.1 ~ 0.15	–	☆ 20 ~ 30 ~ 50	–	–	★ 20 ~ 30 ~ 50
Titanium alloy	☆ 0.1 ~ 0.12 ~ 0.15	☆ 0.1 ~ 0.12 ~ 0.15	★ 0.06 ~ 0.1 ~ 0.15	–	★ 40 ~ 60 ~ 80	–	☆ 30 ~ 50 ~ 70	–

★: 1st recommendation ☆: 2nd recommendation

- Machining with coolant is recommended for Ni-base heat resistant alloy and titanium alloy.
- RDGT/RPGT are recommended for stainless steel, Ni-base heat resistant alloy and titanium alloy.
- Recommended feed rate in the table is the reference value when ap is rε/2.
  (2.0 mm for RD**08 / 2.5 mm for RP**10 / 3 mm for RP**12 / 4 mm for RP**16. For other ap, calculate the recommended feed rate based on the conversion factor below.
- For MRX16-S16-08-2T(-160), MRX16-W-08-2T, MRX20-S20-10-2T(-180)and MRX20-W20-10-2T, set the feed rate not higher than 50 % of the recommended cutting conditions.

Conversion factor for feed per tooth by depth of cut (ap)

Insert	ap (max)	Conversion factor for feed per tooth									
		ap = 0.5 mm	ap = 1 mm	ap = 1.5 mm	ap = 2 mm	ap = 2.5 mm	ap = 3 mm	ap = 4 mm	ap = 5 mm	ap = 6 mm	ap = 8 mm
RD**08 type GM / SM / GH chipbreaker	4 mm	1.7	1.3	1.1	1 Standard	0.9	0.8	0.8	–	–	–
RP**10 type GM / SM / GH chipbreaker	5 mm	1.9	1.4	1.2	1	1 Standard	0.9	0.8	0.8	–	–
RP**12 type GM / SM / GH chipbreaker	6 mm	2.1	1.5	1.3	1.1	1	1 Standard	0.9	0.8	0.8	–
RP**16 type GM / SM / GH chipbreaker	8 mm	2.4	1.7	1.4	1.3	1.1	1.1	1 Standard	0.9	0.8	0.8

Calculation example for recommended feed rate:
Workpiece: carbon steel, RPMT12 type, ap = 1 mm,

0.2 mm/t x 1.5 = 0.3 mm/t
(Reference value for carbon steel/GM chipbreaker)
x (Conversion factor for RP**12 type, ap = 1 mm)
= Recommended feed rate

Peck milling / Ramping / Helical milling

Insert	Toolholder Ø	Max. ap	Peck milling		Ramping			Helical milling		
			Max. Cutting Depth	Min. cutting length for flat bottom face	Ramping angle α_{max} (°)	tan α_{max}	Max. cutting length at max. ramping angle	Min. cutting dia Ø Dh1	Min. cutting dia. for flat bottom facing Ø Dh2	Max. cutting dia. ØDh3
RD**08 type	16	4	0.7	9	8	0.141	28	20	24	30
	20		1.4	13	9	0.158	25	26	32	38
	25			18	5	0.087	45	36	42	48
RP**10 type	20	5	0.6	11	5	0.087	57	26	30	38
	25		1.9	16	10	0.176	28	33	40	48
	32			23	6	0.105	47	47	54	62
	40			31	4	0.070	71	63	70	78
	50			41	3	0.052	95	83	90	98
	63			54	2	0.035	143	109	116	124
RP**12 type	32	6	2.4	21	9	0.158	37	43	52	62
	40			29	5	0.087	68	59	68	78
	50			39	4	0.070	85	79	88	98
	52			41	3	0.052	114	80	92	102
	63			52	2	0.035	171	105	114	124
	66			55		0.035		106	120	130
	80			69		0.035		139	148	158
	100			89	1	0.017	343	179	188	198
RP**16 type	40	8	3.4	25	11	0.194	41	51	64	78
	50			35	7	0.123	65	71	84	98
	63			48	4	0.070	114	97	110	124
	66			51	3	0.052	152	98	116	130
	80			65	3	0.052	152	131	144	158
	100			85	2	0.035	229	171	184	198
	125			110	1	0.017	458	221	234	248

The above value is based on the clearance of 1 mm between the tool body and the workpiece.

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- Waved cutting edge design

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