



RAD-6 (MRX)

High Efficiency Radius Cutter



Economical Positive Round Inserts with 6 Usable Cutting Edges

Low Cutting Force with Kyocera's Helical Cutting Edge Design

CA6535 and PR1835 Insert Grades Available for Difficult-to-cut Material

R4, R5, R6 and R8 Radius Sizes Available



PR18 Series Inserts with MEGACOAT
NANO EX Coating Technology



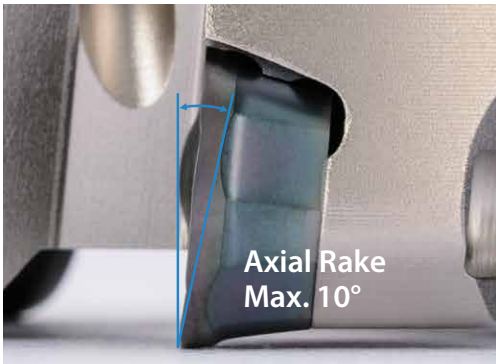
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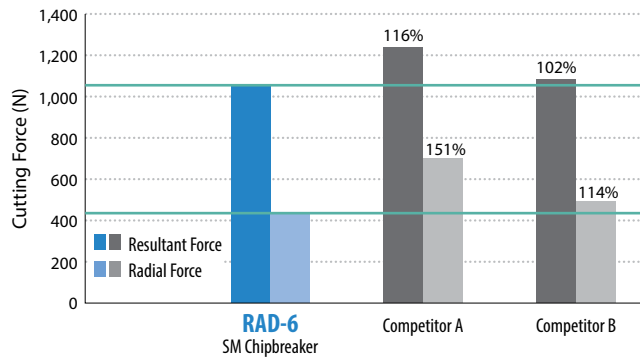
Low Cutting Forces for Longer Tool Life
Available for a Wide Range of Applications

1 Low Cutting Forces with Kyocera's Helical Cutting Edge Design

Maximum Axial Rake Angle



Cutting Force Comparison (Internal Evaluation)



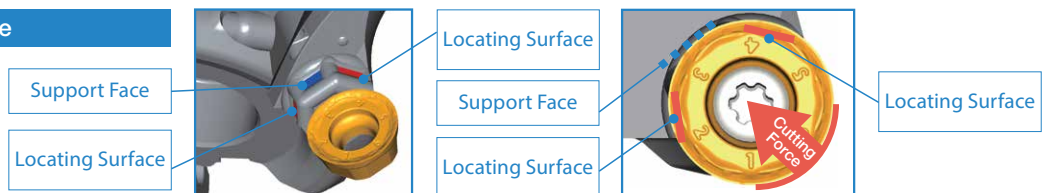
Cutting Conditions: $V_c = 400 \text{ sfm}$, $D.O.C. \times ae = 0.079" \times 0.984" f_z = 0.008 \text{ ipt}$,
Workpiece: 304 Steel Cutter: 02.000"

2 Flat Lock Structure to Hold Insert Firmly in Place

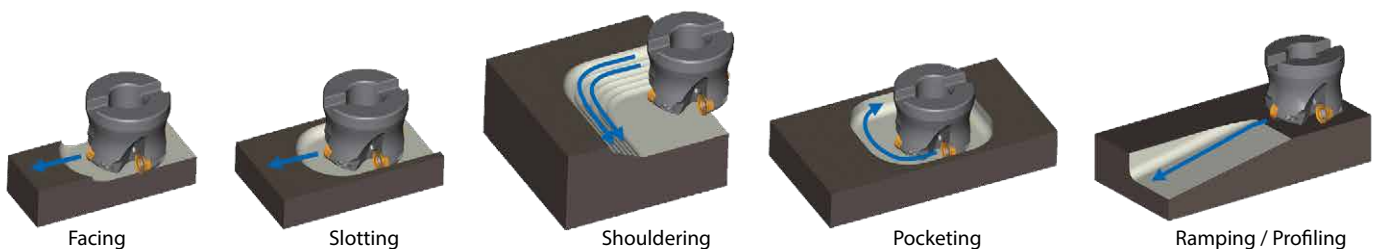
Prevents insert rotation during machining to provide stable cutting

Flat Lock Structure

- Wide Flat Binding Face
- Receives even cutting forces
 - Prevents insert rotation



3 Available for a Wide Range of Applications



Next-generation PVD coating for milling **NEW**

PR18 Series

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



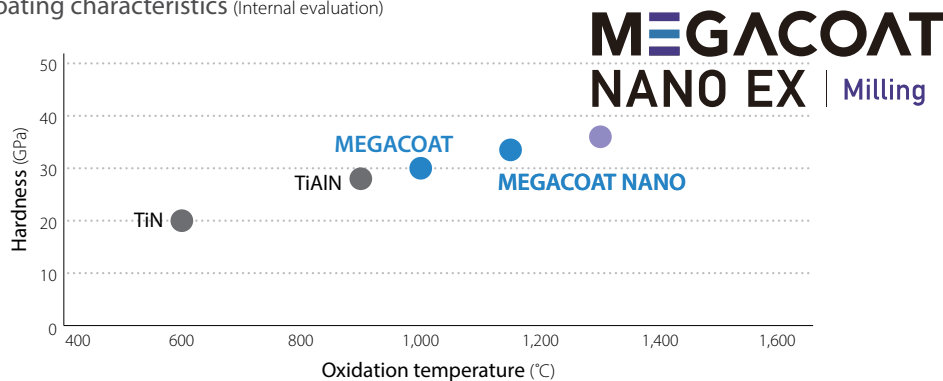
For steel, stainless steel and cast iron

PR1825/PR1835/PR1810 New development MEGACOAT NANO EX

PR1825	P	PR1835	M	PR1810	K
For Steel (Wear resistance oriented)		For Steel (Stability oriented) 1st Recommendation for stainless steel		For Cast iron	

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

Coating characteristics (Internal evaluation)



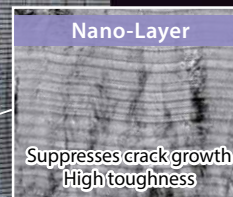
Double lamination technology
with special nano layer

Double Lamination Technology
Maintains Longer Tool Life

Multi-layer structure with two unique nano layers
Superior abrasion resistance and fracture resistance



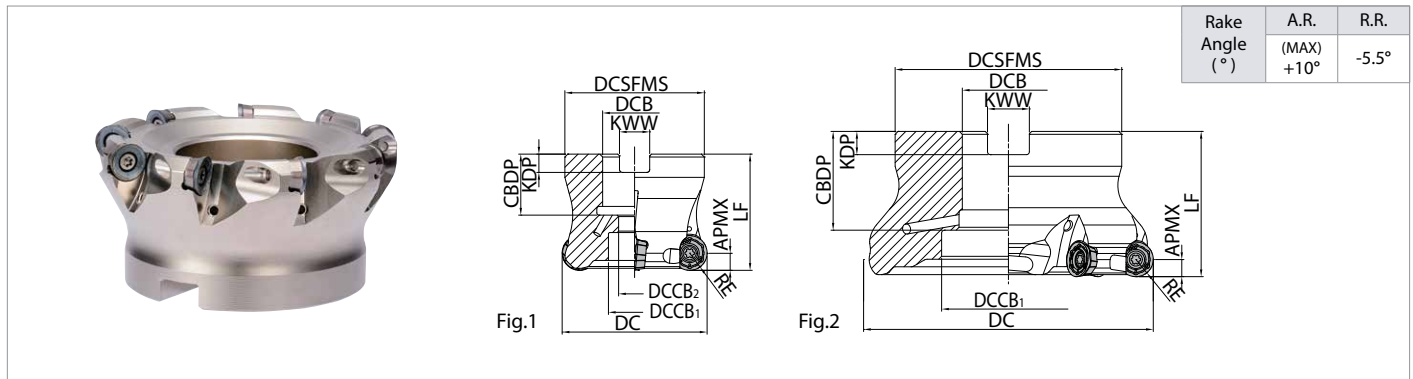
AlCr-based coating
with excellent abrasion resistance



AlTi-based coating
with excellent heat resistance

Multi-layering of high-performance nano layers
Increases toughness with the suppression of crack growth and optimization of internal stress

CG Image



Face Mill Dimensions (Inch Sizes)

Part Number	Stock	No. of Inserts	Dimensions (in)											Coolant Hole	Drawing	Weight (kg)	Max. RPM
			RE	DC	DCSFMS	DCB	DCCB ₁	DCCB ₂	LF	CBDP	KDP	KWW	APMX				
MRX 1500R-10-5T	●	5	0.197 (5mm)	1.500	1.400	0.500	0.433	0.276	1.575	0.709	0.156	0.250	0.197 (5mm)	✓	Fig.1	0.2	20,000
	●	6		2.000	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.3	17,500
	□	7		2.500	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.5	15,000
MRX 1500R-12-4T	□	4	0.236 (6mm)	1.500	1.400	0.500	0.394	0.276	1.575	0.709	0.156	0.250	0.236 (6mm)	✓	Fig.1	0.2	21,000
	□	4		2.000	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.3	18,000
	●	5		2.000	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.3	18,000
	□	5		2.500	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.4	15,500
	□	6		2.500	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.4	15,500
	●	6		3.000	2.250	1.000	0.866	0.551	1.969	1.063	0.236	0.382			Fig.2	0.8	13,500
	□	7		3.000	2.250	1.000	0.866	0.551	1.969	1.063	0.236	0.382				0.8	13,500
	□	7		4.000	3.540	1.500	2.047	-	1.969	1.142	0.394	0.626				1.7	12,000
	□	9		4.000	3.540	1.500	2.047	-	1.969	1.142	0.394	0.626				1.6	12,000
	□	9		4.000	3.540	1.500	2.047	-	1.969	1.142	0.394	0.626				1.6	12,000
MRX 2500R-16-4T	□	4	0.315 (8mm)	2.500	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313	0.315 (8mm)	✓	Fig.1	0.4	13,500
	●	5		2.500	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.4	13,500
	□	5		3.000	2.250	1.000	0.866	0.551	1.969	1.063	0.236	0.382				0.8	11,500
	●	6		3.000	2.250	1.000	0.866	0.551	1.969	1.063	0.236	0.382			Fig.2	0.8	11,500
	□	6		4.000	3.540	1.500	2.047	-	1.969	1.142	0.394	0.626				1.6	10,000
	●	7		4.000	3.540	1.500	2.047	-	1.969	1.142	0.394	0.626				1.6	10,000
	□	6		5.000	3.540	1.500	2.047	-	2.480	1.496	0.394	0.626				2.9	9,000
	□	8		5.000	3.540	1.500	2.047	-	2.480	1.496	0.394	0.626				2.8	9,000
	□	8		5.000	3.540	1.500	2.047	-	2.480	1.496	0.394	0.626				2.8	9,000
	□	8		5.000	3.540	1.500	2.047	-	2.480	1.496	0.394	0.626				2.8	9,000

Spare Parts and Applicable Inserts (Inch Sizes)

● : Standard Item □ : Made to Order / Quoted Item

Part Number	Insert Screw	Wrench		Anti-Seize Compound	Arbor Bolt	Applicable Inserts  Page 9				
		DTPM	TTP							
										
MRX 1500R-10...	SB-3070TRP	DTPM-10	-	P-37	HH1/4-0.75	RPMT10T3M0ER-GM RPGT10T3M0ER-GM RPGT10T3M0ER-SM RPMT10T3M0EN-GH	*1			
2000R-10...	Recommended Torque for Insert Screw 2.0 Nm				HH3/8-1.25					
2500R-10...					HH3/8-1.25					
MRX 1500R-12...	SB-4090TRPN	DTPM-15	-	P-37	HH1/4-0.75	RPMT1204M0ER-GM RPGT1204M0ER-GM RPGT1204M0ER-SM RPMT1204M0EN-GH RPMW1204M0TN	*2			
2000R-12...					HH3/8-1.25					
2500R-12...					Recommended Torque for Insert Screw 3.5 Nm			HH3/8-1.25		
3000R-12...								HH1/2-1.25		
4000R-12...								-		
MRX 2500R-16...	SB-50120TRP	-	TTP-20	P-37	HH3/8-1.25	RPMT1605M0ER-GM RPGT1605M0ER-GM RPGT1605M0ER-SM RPMT1605M0EN-GH RPMW1605M0TN	*3			
3000R-16...					HH1/2-1.25					
4000R-16...					Recommended Torque for Insert Screw 4.5 Nm			-		
5000R-16...								-		

Caution with Max. Revolution

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

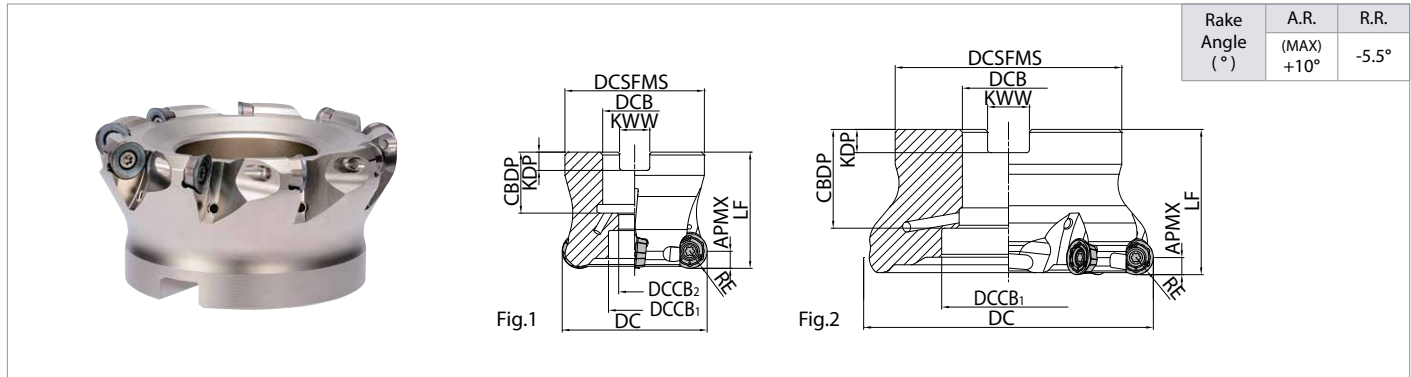
🔧 Coat Anti-Seize Compound (P-37) thinly on portion of taper and thread prior to installation.

*1... Not compatible with conventional RP-MT10T3M0 inserts (without ER.. or EN..)

*2... Not compatible with conventional RP-MT1204M0 or RPMT1204M0-H inserts (without ER.. or EN..)

*3... Not compatible with conventional RP-MT1605M0-H inserts

Recommended Cutting Conditions See ➔ Page 10



Face Mill Dimensions (Metric Sizes)

Part Number	Stock	No. of Inserts	Dimensions (mm)											Coolant Hole	Drawing	Weight (kg)	Max. RPM
			RE	DC	DCSFMS	DCB	DCCB ₁	DCCB ₂	LF	CDBP	KDP	KWW	APMX				
Inch Bore Dia.	MRX 080R-12-6T	6	6	80	70	1.000"	20	13	50	1.063"	0.236"	0.375"	6	✓	Fig.1	1.2	13,500
		8		80	70	1.000"	20	13	50	1.063"	0.236"	0.375"				1.1	13,500
		7		100	78	1.250"	46	-	50	1.339"	0.315"	0.500"			Fig.2	1.5	12,000
		9		100	78	1.250"	46	-	50	1.339"	0.315"	0.500"				1.5	12,000
	MRX 080R-16-5T	5	8	80	70	1.000"	20	13	50	1.063"	0.236"	0.375"	8	✓	Fig.1	1.1	11,500
		6		80	70	1.000"	20	13	50	1.063"	0.236"	0.375"				1.1	11,500
		6		100	78	1.250"	46	-	50	1.339"	0.315"	0.500"			Fig.2	1.4	10,000
		7		100	78	1.250"	46	-	50	1.339"	0.315"	0.500"				1.4	10,000
	MRX 125R-16-6T	6		125	89	1.500"	55	-	63	1.496"	0.394"	0.625"	8	✓	Fig.2	2.7	9,000
		8		125	89	1.500"	55	-	63	1.496"	0.394"	0.625"				2.7	9,000
	MRX 040R-10-5T-M	5	5	40	38	16	15	9	40	19	5.6	8.4	5	✓	Fig.1	0.2	20,000
		6		50	48	22	18	11	40	21	6.3	10.4				0.3	17,500
		7		63	60	22	18	11	40	21	6.3	10.4			Fig.1	0.6	15,000
		4		40	38	16	13.5	9	40	19	5.6	8.4				0.2	21,000
Metric Bore Dia.	MRX 050R-12-4T-M	4	6	50	48	22	18	11	40	21	6.3	10.4	6	✓	Fig.1	0.3	18,000
		5		50	48	22	18	11	40	21	6.3	10.4				0.3	18,000
		5		63	60	22	18	11	40	21	6.3	10.4			Fig.1	0.6	15,500
		6		63	60	22	18	11	40	21	6.3	10.4				0.6	15,500
	MRX 080R-12-6T-M	6	8	80	70	27	20	13	50	24	7	12.4	8	✓	Fig.1	1.2	13,500
		8		80	70	27	20	13	50	24	7	12.4				1.1	13,500
		7		100	78	32	46	-	50	30	8	14.4			Fig.2	1.4	12,000
		9		100	78	32	46	-	50	30	8	14.4				1.4	12,000
	MRX 063R-16-4T-M	4	8	63	60	22	18	11	40	21	6.3	10.4	8	✓	Fig.1	0.5	13,500
		5		63	60	22	18	11	40	21	6.3	10.4				0.5	13,500
		5		80	70	27	20	13	50	24	7	12.4			Fig.1	1.1	11,500
		6		80	70	27	20	13	50	24	7	12.4				1.1	11,500
	MRX 100R-16-6T-M	6		100	78	32	46	-	50	30	8	14.4	8	✓	Fig.1	1.4	10,000
		7		100	78	32	46	-	50	30	8	14.4				1.4	10,000
		6		125	89	40	55	-	63	33	9	16.4			Fig.2	2.6	9,000
		8		125	89	40	55	-	63	33	9	16.4				2.6	9,000

Spare Parts and Applicable Inserts (Metric Sizes)

● : Standard Item

Part Number	Insert Screw	Wrench		Anti-Seize Compound	Arbor Bolt	Applicable Inserts	
		DTPM	TTP				
						 Page 9	
MRX 040R-10... 050R-10... 063R-10...	SB-3070TRP	DTPM-10	-	P-37	HH8X25 HH10X30 HH10X30	RPMT10T3M 0ER-GM RPGT10T3M 0ER-GM RPGT10T3M 0ER-SM RPMT10T3M 0EN-GH	*1
Recommended Torque for Insert Screw 2.0 Nm							
MRX 040R-12... 050R-12... 063R-12... 080R-12... 100R-12...	SB-4090TRPN	DTPM-15	-	P-37	HH8X25 HH10X30 HH10X30 HH12X35 -	RPMT1204M 0ER-GM RPGT1204M 0ER-GM RPGT1204M 0ER-SM RPMT1204M 0EN-GH RPMW1204MOTN	*2
Recommended Torque for Insert Screw 3.5 Nm							
MRX 063R-16... 080R-16... 100R-16... 125R-16...	SB-50120TRP	-	TTP-20	P-37	HH10X30 HH12X35 - -	RPMT1605M 0ER-GM RPGT1605M 0ER-GM RPGT1605M 0ER-SM RPMT1605M 0EN-GH RPMW1605MOTN	*3
Recommended Torque for Insert Screw 4.5 Nm							

Recommended Cutting Conditions See Page 10

Caution with Max. Revolution

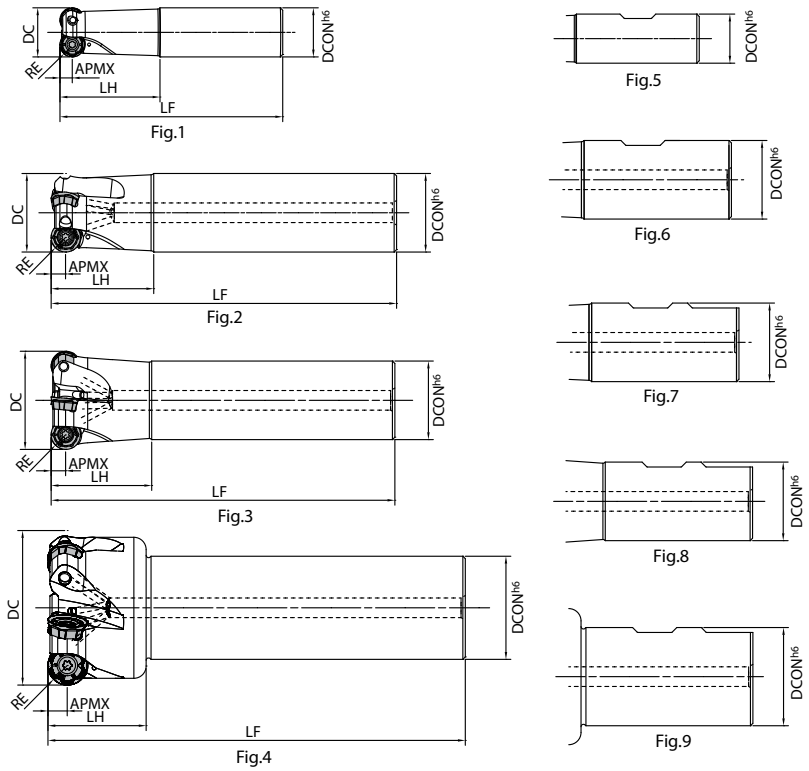
When running an end mill or a cutter at the maximum revolution, the insert or cutter may be damaged by centrifugal force.

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

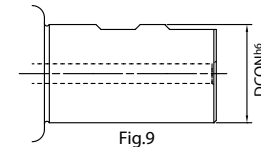
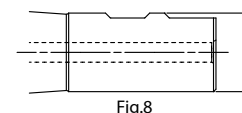
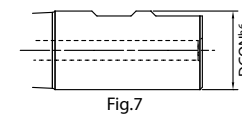
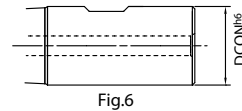
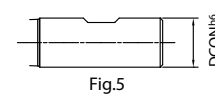
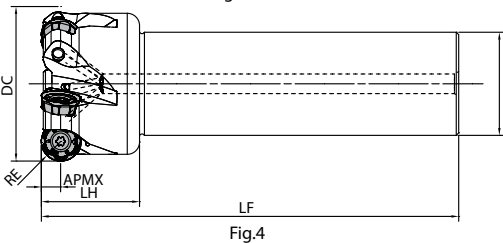
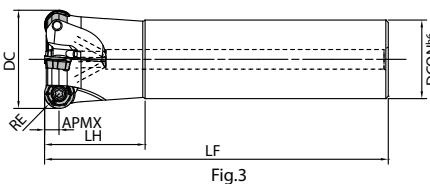
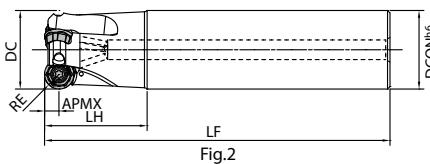
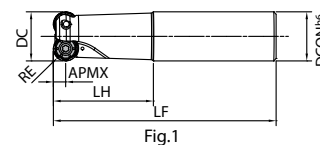
*1... Not compatible with conventional RP-MT10T3M0 inserts (without ER-.. or EN-..)

*2... Not compatible with conventional RP-MT1204M0 or RPMT1204M0-H inserts (without ER-.. or EN-..)

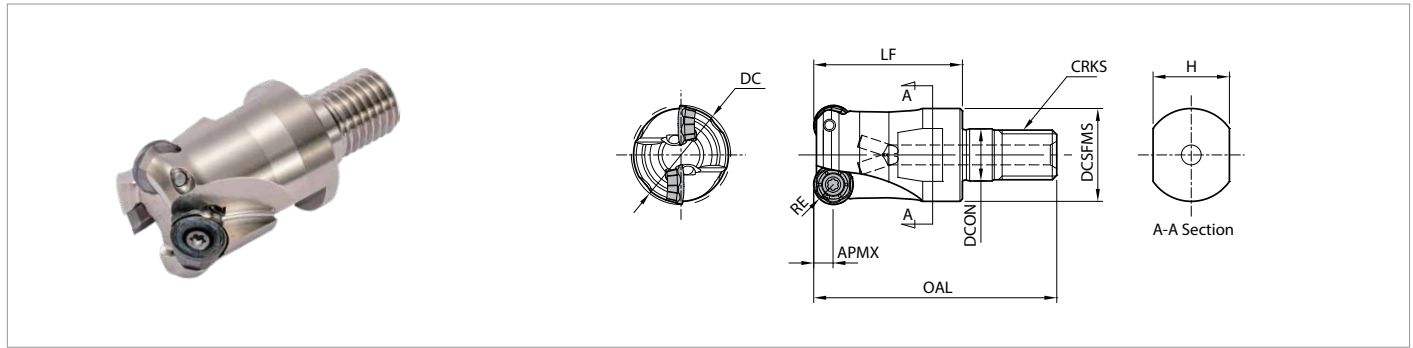
*3... Not compatible with conventional RP-MT1605M0-H inserts


Face Mill Dimensions (Inch Sizes)

	Part Number	Stock	No. of Inserts	Dimensions (in)						Rake Angle (°)		Coolant Hole	Drawing	Max. RPM
				RE	DC	DCON	LF	LH	APMX	A.R. (MAX)	R.R.			
Standard Shank (Weldon)	MRX 0625-W625-08-2T	●	2	0.157 (4mm)	0.625	0.625	4.331	2.386	0.157 (4mm)	+3°	-6.5°	x	Fig.5	13,500
	0750-W750-08-2T	●	2		0.750	0.750	4.724	2.654		+10°	-5.5°	✓	Fig.6	13,500
	1000-W100-08-4T	●	4		1.000	1.000	4.724	2.406					Fig.7	12,000
	MRX 1000-W100-10-3T	●	3	0.197 (5mm)	1.000	1.000	4.724	2.409	0.197 (5mm)	+10°	-5.5°	✓	Fig.7	12,000
	1250-W125-10-4T	●	4		1.250	1.250	5.512	3.197					Fig.7	11,500
	MRX 1250-W125-12-3T	●	3	0.236 (6mm)	1.250	1.250	5.512	3.189	0.236 (6mm)	+10°	-5.5°	✓	Fig.7	11,500
	1500-W125-12-4T	●	4		1.500	1.250	5.512	1.575					Fig.8	10,000
	2000-W150-12-5T	□	5		2.000	1.500	6.693	1.575					Fig.8	10,000
	MRX 1500-W125-16-2T	□	2	0.315 (8mm)	1.500	1.250	5.512	1.575	0.315 (8mm)	+10°	-5.5°	✓	Fig.8	9,000
	2000-W150-16-4T	●	4		2.000	1.500	6.693	1.575					Fig.8	9,000
Standard Shank (Cylindrical)	MRX 0625-S625-08-2T-6	□	2	0.157 (4mm)	0.625	0.625	6.000	3.150	0.157 (4mm)	+3°	-6.5°	x	Fig.1	20,000
	0750-S750-08-2T-7	□	2		0.750	0.750	7.000	3.150		+10°	-5.5°	✓	Fig.2	17,500
	1000-S100-08-4T-7	□	4		1.000	1.000	7.000	3.150					Fig.2	15,000
	MRX 1000-S100-10-2T-7	□	2	0.197 (5mm)	1.000	1.000	7.000	3.150	0.197 (5mm)	+10°	-5.5°	✓	Fig.2	21,000
	MRX 1250-S125-12-2T-8	□	2	0.236 (6mm)	1.250	1.250	8.000	3.150	0.236 (6mm)	+10°	-5.5°	✓	Fig.2	18,000
	1500-S125-12-4T-8	□	4		1.500	1.250	8.000	1.575					Fig.3	18,000
	2000-S150-12-4T12	□	4		2.000	1.500	12.000	1.575					Fig.3	15,500
	MRX 1500-S125-16-2T-8	□	2	0.315 (8mm)	1.500	1.250	8.000	1.575	0.315 (8mm)	+10°	-5.5°	✓	Fig.3	15,500
	2000-S150-16-4T12	□	4		2.000	1.500	12.000	1.575					Fig.3	13,500
	2500-S150-16-4T12	□	4		2.500	1.500	12.000	1.575					Fig.4	13,500


Face Mill Dimensions (Metric Sizes)

Part Number	Stock	No. of Inserts	Dimensions (mm)						Rake Angle (°)		Coolant Hole	Drawing	Max. RPM
			RE	DC	DCON	LF	LH	APMX	A.R. (MAX)	R.R.			
Standard Shank (Cylindrical)	MRX 16-S16-08-2T	●	2	16	16	110	40	4	+3°	-5.5°	x	Fig.1	38,000
	20-S20-08-2T	●	2	20	20	120	40		+10°	-5.5°	✓	Fig.2	32,000
	25-S25-08-4T	●	4	25	25	120	40					Fig.2	28,000
	MRX 20-S20-10-2T	●	2	20	20	120	40	5	+5°	-8°	x	Fig.1	30,000
	25-S25-10-3T	●	3	25	25	120	40		+10°	-5.5°	✓	Fig.2	28,000
	32-S32-10-4T	●	4	32	32	140	40					Fig.2	22,500
	MRX 32-S32-12-3T	●	3	32	32	140	40	6	+10°	-5.5°	✓	Fig.2	24,500
	40-S32-12-4T	●	4	40	32	140	40					Fig.3	21,000
	50-S42-12-5T	●	5	50	42	170	40					Fig.3	18,000
	MRX 40-S32-16-2T	●	2	40	32	140	40	8	+10°	-5.5°	✓	Fig.3	18,000
Standard Shank (Weldon)	50-S42-16-4T	●	4	50	42	170	40					Fig.3	15,500
	63-S42-16-5T	●	5	63	42	170	40					Fig.4	13,500
	MRX 16-W16-08-2T	●	2	16	16	89	40	4	+3°	-5.5°	x	Fig.5	38,000
	20-W20-08-2T	●	2	20	20	91	40		+10°	-5.5°	✓	Fig.6	32,000
	25-W25-08-4T	●	4	25	25	97	40					Fig.7	28,000
	MRX 20-W20-10-2T	●	2	20	20	91	40	5	+5°	-8°	x	Fig.5	30,000
	25-W25-10-3T	●	3	25	25	97	40		+10°	-5.5°	✓	Fig.7	28,000
	32-W32-10-4T	●	4	32	32	101	40					Fig.7	22,500
	MRX 32-W32-12-3T	●	3	32	32	101	40	6	+10°	-5.5°	✓	Fig.7	24,500
	40-W32-12-4T	●	4	40	32	101	40					Fig.8	21,000
Long Shank (Cylindrical)	50-W40-12-5T	●	5	50	40	111	40					Fig.8	18,000
	MRX 40-W32-16-2T	●	2	40	32	101	40	8	+10°	-5.5°	✓	Fig.8	18,000
	50-W40-16-4T	●	4	50	40	111	40					Fig.8	15,500
	63-W40-16-5T	●	5	63	40	112	40					Fig.9	13,500
	MRX 16-S16-08-2T-160	●	2	16	16	160	70	4	+3°	-5.5°	x	Fig.1	38,000
	20-S20-08-2T-180	●	2	20	20	180	80		+10°	-5.5°	✓	Fig.2	32,000
	25-S25-08-4T-180	●	4	25	25	180	80					Fig.2	28,000
	MRX 20-S20-10-2T-180	●	2	20	20	180	80	5	+5°	-8°	x	Fig.1	30,000
	25-S25-10-2T-180	●	2	25	25	180	80		+10°	-5.5°	✓	Fig.2	28,000
	32-S32-10-4T-200	●	4	32	32	200	80					Fig.2	22,500
Long Shank (Cylindrical)	MRX 32-S32-12-2T-200	●	2	32	32	200	80	6	+10°	-5.5°	✓	Fig.2	24,500
	40-S32-12-4T-200	●	4	40	32	200	40					Fig.3	21,000
	50-S42-12-4T-300	●	4	50	42	300	40					Fig.3	18,000
	MRX 40-S32-16-2T-200	●	2	40	32	200	40	8	+10°	-5.5°	✓	Fig.3	18,000
	50-S42-16-4T-300	●	4	50	42	300	40					Fig.3	15,500
	63-S42-16-4T-300	●	4	63	42	300	40					Fig.4	13,500



Modular End Mill Dimensions (Metric Sizes)

Part Number	Stock	No. of Inserts	Dimensions (mm)									Rake Angle (°)		Coolant Hole	Max. RPM
			RE	DC	DCSFMS	DCON	OAL	LF	CRKS	H	APMX	A.R. (MAX)	R.R.		
MRX 16-M08-08-2T	●	2	4	16	14.7	8.5	43	25	M8xP1.25	12	4	+3°	-5.5°	x	38,000
20-M10-08-2T	●	2		20	18.7	10.5	49	30	M10xP1.50	15		+10°	-5.5°	✓	32,000
25-M12-08-4T	●	4		25	23.0	12.5	57	35	M12xP1.75	19		+10°	-5.5°	✓	28,000
MRX 20-M10-10-2T	●	2	5	20	18.7	10.5	49	30	M10xP1.50	15	5	+5°	-8.0°	x	30,000
25-M12-10-3T	●	3		25	23.0	12.5	57	35	M12xP1.75	19		+10°	-5.5°	✓	28,000
32-M16-10-4T	●	4		32	30.0	17.0	63	40	M16xP2.00	24		+10°	-5.5°	✓	22,500
MRX 32-M16-12-3T	●	3	6	32	30.0	17.0	63	40	M16xP2.00	24	6	+10°	-5.5°	✓	24,500
40-M16-12-4T	●	4		40	30.0	17.0	63	40	M16xP2.00	24		+10°	-5.5°		21,000
MRX 40-M16-16-2T	●	2	8	40	30.0	17.0	63	40	M16xP2.00	24	8	+10°	-5.5°		18,000

● : Standard Item

End Mill Spare Parts and Applicable Inserts (Inch / Metric Sizes)

Part Number	Insert Screw	Wrench		Anti-Seize Compound	Applicable Inserts ➔ Page 9
		DTPM	TTP		
MRX ...-08-...	SB-2555TRP	DTPM-8	-	P-37	RDMT0803MOER-GM RDGT0803MOER-GM RDGT0803MOER-SM RDMT0803MOEN-GH *1
	Recommended Torque for Insert Screw 1.2 Nm				
MRX ...-10-...	SB-3070TRP	DTPM-10	-	P-37	RPMT10T3MOER-GM RPGT10T3MOER-GM RPGT10T3MOER-SM RPMT10T3MOEN-GH *2
	Recommended Torque for Insert Screw 2.0 Nm				
MRX ...-12-...	SB-4090TRPN	DTPM-15	-	P-37	RPMT1204MOER-GM RPGT1204MOER-GM RPGT1204MOER-SM RPMT1204MOEN-GH RPMW1204MOTN *3
	Recommended Torque for Insert Screw 3.5 Nm				
MRX ...-16-...	SB-50120TRP	-	TTP-20	P-37	RPMT1605MOER-GM RPGT1605MOER-GM RPGT1605MOER-SM RPMT1605MOEN-GH RPMW1605MOTN *4
	Recommended Torque for Insert Screw 4.5 Nm				

Caution with Max. Revolution

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

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

*1... Not compatible with conventional RP-MT08T2M0-H inserts

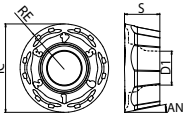
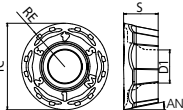
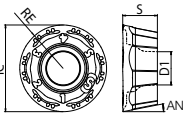
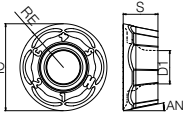
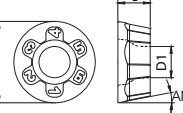
*2... Not compatible with conventional RP-MT10T3M0 inserts (without ER-.. or EN-..)

*3... Not compatible with conventional RP-MT1204M0 or RPMT1204M0-H inserts (without ER-.. or EN-..)

*4... Not compatible with conventional RP-MT1605M0-H inserts

Recommended Cutting Conditions See ➔ [Page 10](#)

Applicable Inserts

Usage Classification		P	Carbon Steel / Alloy Steel					☆	★		☆	★			
			Mold Steel					☆	★		☆	★			
★ Roughing / 1st Choice ☆ Roughing / 2nd Choice ■ Finishing / 1st Choice □ Finishing / 2nd Choice (When hardness is under 45HRC)		M	Austenitic Stainless Steel					★	☆		★	☆			
			Martensitic Stainless Steel					☆			☆			★	
			Precipitation Hardened Stainless Steel					★			★				
		K	Gray Cast Iron								★			★	
			Ductile Cast Iron								★			★	
S	Heat Resistant Alloy (Ni-base)						☆				☆			★	
	Titanium Alloy (Ti-6Al-4V)						★			☆	★		☆		
		H	Hardened Materials												
Insert		Part Num ber	Dimensions (in)				Angle (°)	NEW MEGACOAT NANO EX			MEGACOAT NANO			CVD	
			IC	S	D1	RE		AN	PR1835	PR1825	PR1810	PR1535	PR1525		PR1510
 General Purpose (G-Class)		RDGT 0803M0ER-GM	0.315	0.125	0.118	0.157	15°	●	●	●	●	●	●	●	
		RPGT 10T3M0ER-GM	1204M0ER-GM	0.394	0.156	0.138	0.197	11°	●	●	●	●	●	●	●
			1605M0ER-GM	0.472	0.187	0.181	0.236		●	●	●	●	●	●	●
			1605M0ER-GM	0.630	0.219	0.228	0.315		●	●	●	●	●	●	●
 General Purpose (M-Class)		RDMT 0803M0ER-GM	0.315	0.125	0.118	0.157	15°	●	●	●	●	●	●	●	
		RPMT 10T3M0ER-GM	1204M0ER-GM	0.394	0.156	0.138	0.197	11°	●	●	●	●	●	●	●
			1605M0ER-GM	0.472	0.187	0.181	0.236		●	●	●	●	●	●	●
			1605M0ER-GM	0.630	0.219	0.228	0.315		●	●	●	●	●	●	●
 For Stainless Steel / Low Cutting Force		RDGT 0803M0ER-SM	0.315	0.125	0.118	0.157	15°	●	●		●	●		●	
		RPGT 10T3M0ER-SM	1204M0ER-SM	0.394	0.156	0.138	0.197	11°	●	●		●	●		●
			1605M0ER-SM	0.472	0.187	0.181	0.236		●	●		●	●		●
			1605M0ER-SM	0.630	0.219	0.228	0.315		●	●		●	●		●
 Tough Edge (Heavy Milling)		RDMT 0803M0EN-GH	0.315	0.125	0.118	0.157	15°	●	●	●	●	●	●	●	
		RPMT 10T3M0EN-GH	1204M0EN-GH	0.394	0.156	0.138	0.197	11°	●	●	●	●	●	●	●
			1605M0EN-GH	0.472	0.187	0.181	0.236		●	●	●	●	●	●	●
			1605M0EN-GH	0.630	0.219	0.228	0.315		●	●	●	●	●	●	●
 Flat Top (Heavy Milling)		RPMW 1204M0TN	0.472	0.187	0.181	0.236	11°				●	●			
		1605M0TN	0.630	0.219	0.228	0.315					●	●			

● : Standard Item

Recommended Cutting Conditions See [Page 10](#)

Workpiece	Recommended Insert Chipbreaker / Feed Rate (fz: ipt)					Recommended Insert Grade (Vc: sfm)						
	RD..08... : D.O.C. = 0.079" RP..10... : D.O.C. = 0.098"		RP..12... : D.O.C. = 0.118" RP..16... : D.O.C. = 0.158"			MEGACOAT NANO EX			MEGACOAT NANO			CVD Coated Carbide
	RDMT-GM RPMT-GM	RDGT-GM RPGT-GM	RDGT-SM RPGT-SM	RDMT-GH RPMT-GH	RPMW	PR1810	PR1825	PR1835	PR1535	PR1525	PR1510	CA6535
Carbon Steel	★ 0.004 - 0.008 - 0.012	☆ 0.004 - 0.008 - 0.012	☆ 0.002 - 0.006 - 0.008	☆ 0.006 - 0.012 - 0.014	☆ 0.006 - 0.012 - 0.016	-	★ 390 - 590 - 820	☆ 390 - 590 - 820	☆ 390 - 590 - 820	★ 390 - 590 - 820	-	-
Alloy Steel	★ 0.004 - 0.008 - 0.012	☆ 0.004 - 0.008 - 0.012	☆ 0.002 - 0.006 - 0.008	☆ 0.006 - 0.012 - 0.014	☆ 0.006 - 0.012 - 0.016	-	★ 330 - 520 - 720	☆ 330 - 520 - 720	☆ 330 - 520 - 720	★ 330 - 520 - 720	-	-
Mold Steel	★ 0.004 - 0.006 - 0.010	☆ 0.004 - 0.006 - 0.010	☆ 0.002 - 0.005 - 0.008	☆ 0.006 - 0.008 - 0.012	☆ 0.006 - 0.008 - 0.012	-	★ 260 - 460 - 590	☆ 260 - 460 - 590	☆ 260 - 460 - 590	★ 260 - 460 - 590	-	-
Austenitic Stainless Steel	☆ 0.004 - 0.006 - 0.008	☆ 0.004 - 0.006 - 0.008	★ 0.002 - 0.005 - 0.008	☆ 0.006 - 0.008 - 0.010	☆ 0.006 - 0.008 - 0.010	-	☆ 330 - 520 - 660	★ 330 - 520 - 660	★ 330 - 520 - 660	☆ 330 - 520 - 660	-	-
Martensitic Stainless Steel	☆ 0.004 - 0.006 - 0.008	☆ 0.004 - 0.006 - 0.008	★ 0.002 - 0.005 - 0.008	☆ 0.006 - 0.008 - 0.010	☆ 0.006 - 0.008 - 0.010	-	-	☆ 490 - 660 - 820	☆ 490 - 660 - 820	-	-	★ 590 - 790 - 980
Precipitation Hardened Stainless Steel	☆ 0.004 - 0.006 - 0.008	★ 0.004 - 0.006 - 0.008	☆ 0.002 - 0.005 - 0.008	☆ 0.006 - 0.008 - 0.010	☆ 0.006 - 0.008 - 0.010	-	-	★ 300 - 390 - 490	★ 300 - 390 - 490	-	-	-
Gray Cast Iron	★ 0.004 - 0.008 - 0.012	☆ 0.004 - 0.008 - 0.012	-	☆ 0.006 - 0.012 - 0.014	☆ 0.006 - 0.012 - 0.016	★ 390 - 590 - 820	-	-	-	-	★ 390 - 590 - 820	-
Nodular Cast Iron	★ 0.004 - 0.006 - 0.010	☆ 0.004 - 0.006 - 0.010	-	☆ 0.006 - 0.008 - 0.012	☆ 0.006 - 0.010 - 0.014	★ 330 - 490 - 660	-	-	-	-	★ 330 - 490 - 660	-
Ni-base Heat-Resistant Alloy	☆ 0.004 - 0.005 - 0.006	★ 0.004 - 0.005 - 0.006	☆ 0.002 - 0.004 - 0.006	☆ 0.005 - 0.006 - 0.008	☆ 0.005 - 0.006 - 0.008	-	-	☆ 70 - 100 - 160	☆ 70 - 100 - 160	-	-	★ 70 - 100 - 160
Titanium Alloy	☆ 0.004 - 0.005 - 0.006	☆ 0.004 - 0.005 - 0.006	★ 0.002 - 0.004 - 0.006	-	-	☆ 100 - 160 - 230	-	★ 130 - 200 - 260	★ 130 - 200 - 260	-	☆ 100 - 160 - 230	-

- 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.
- The figure in bold font is the starting value of the recommended cutting conditions.
Adjust the cutting speed and the feed rate within the above conditions according to the actual machining situation.
- Recommended feed rate is the reference value when D.O.C. is $r_e/2$ (0.079" for RD..08 / 0.098" for RP..10 / 0.118" for RP..12 / 0.158" for RP..16).
For other D.O.C., 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), MRX20-W20-10-2T, MRX0625-W625-08-2T, MRX0625-S625-08-2T-6 set the feed rate no higher than 50% of the recommended cutting conditions.

Conversion Factor for Feed Per Tooth by Depth of Cut (D.O.C.)

Insert	D.O.C. (Max.)	Conversion Factor for Feed Per Tooth									
		D.O.C. = 0.020" (0.5mm)	D.O.C. = 0.039" (1.0mm)	D.O.C. = 0.059" (1.5mm)	D.O.C. = 0.079" (2.0mm)	D.O.C. = 0.098" (2.5mm)	D.O.C. = 0.118" (3.0mm)	D.O.C. = 0.158" (4.0mm)	D.O.C. = 0.197" (5.0mm)	D.O.C. = 0.236" (6.0mm)	D.O.C. = 0.315" (8.0mm)
RD..08... (GM/SM/GH Chipbreaker)	0.158" (4mm)	1.7	1.3	1.1	1.0 (Standard)	0.9	0.8	0.8	-	-	-
RP..10... (GM/SM/GH Chipbreaker)	0.197" (5mm)	1.9	1.4	1.2	1.0	1.0 (Standard)	0.9	0.8	0.8	-	-
RP..12... (GM/SM/GH Chipbreaker)	0.236" (6mm)	2.1	1.5	1.3	1.1	1.0	1.0 (Standard)	0.9	0.8	0.8	-
RP..16... (GM/SM/GH Chipbreaker)	0.315" (8mm)	2.4	1.7	1.4	1.3	1.1	1.1	1.0 (Standard)	0.9	0.8	0.8

Calculation Example (RPMT12..., Carbon Steel, GM Chipbreaker, D.O.C. = 0.039")

$fz = 0.008 \text{ ipt}$ (Standard value for carbon steel and GM chipbreaker)	×	1.5 (Conversion factor for ROMU12 type, D.O.C. = 0.039")	=	$fz = 0.012 \text{ ipt}$ (Recommended feed rate)
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Maximum Depth of Cut and Usable Edges

Usable Edges	Insert Radius			
	R4	R5	R6	R8
3 Edges	D.O.C. = 0.079"~0.158"	D.O.C. = 0.098"~0.197"	D.O.C. = 0.118"~0.236"	D.O.C. = 0.158"~0.315"
6 Edges	Less than D.O.C. = 0.079"	Less than D.O.C. = 0.098"	Less than D.O.C. = 0.118"	Less than D.O.C. = 0.158"

Drilling Conditions

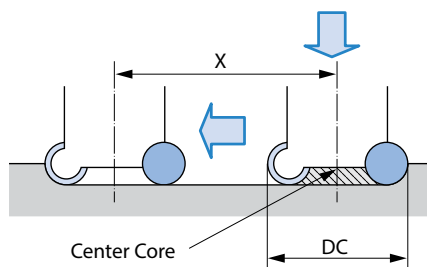
[Drilling Depth]

See Max. Cutting Depth (Pd) in the table below.

[Traversing After Drilling]

Caution when Traversing right after Drilling

- ① 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.
- ② Min cutting length for flat bottom face (X) is in the table to the right.



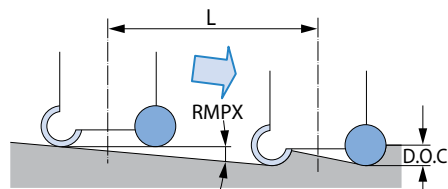
Inch					Metric				
Inch Tool Spec		Max D.O.C.	Max. Cutting Depth (Pd)	Min. Cutting Length for Flat Bottom Face (X)	Metric Tool Spec		Max D.O.C.	Max. Cutting Depth (Pd)	Min. Cutting Length for Flat Bottom Face (X)
Insert	Cutter Dia.				Insert	Cutter Dia.			
RD..08...	0.625	0.157	0.028	0.349	RD..08...	16	4	0.7	9
	0.750	0.157	0.055	0.474		20	4	1.4	13
	1.000	0.157	0.055	0.724		25	4	1.4	18
RP..10...	0.750	0.197	0.024	0.396	RP..10...	20	5	0.6	11
	1.000	0.197	0.075	0.646		25	5	1.9	16
	1.250	0.197	0.075	0.896		32	5	1.9	23
	1.500	0.197	0.075	1.146		40	5	1.9	31
	2.000	0.197	0.075	1.646		50	5	1.9	41
	2.500	0.197	0.075	2.146		63	5	1.9	54
RP..12...	1.250	0.236	0.094	0.817	RP..12...	32	6	2.4	21
	1.500	0.236	0.094	1.067		40	6	2.4	29
	2.000	0.236	0.094	1.567		50	6	2.4	39
	2.500	0.236	0.094	2.067		63	6	2.4	52
	3.000	0.236	0.094	2.567		80	6	2.4	69
	4.000	0.236	0.094	3.567		100	6	2.4	89
RP..16...	1.500	0.315	0.134	0.909	RP..16...	40	8	3.4	25
	2.000	0.315	0.134	1.409		50	8	3.4	35
	2.500	0.315	0.134	1.909		63	8	3.4	48
	3.000	0.315	0.134	2.409		80	8	3.4	65
	4.000	0.315	0.134	3.409		100	8	3.4	85
	5.000	0.315	0.134	4.346		125	8	3.4	110

* Above value is based on the clearance of 0.039" between the tool and the workpiece.

Ramping Conditions

[Ramping]

- Ramping angle should be under **RMPX** (maximum ramping angle) in the table below.
- Feed rate should be under 70% of the cutting conditions on [Page 10](#)



Inch						Metric					
Inch Tool Spec						Metric Tool Spec					
Insert	Cutter Dia.	Max D.O.C.	Max. Ramping Angle (α max)	tan RMPX	Max. Cutting Length at Max. Ramping Angle (L)	Insert	Cutter Dia.	Max D.O.C.	Max. Ramping Angle (α max)	tan RMPX	Max. Cutting Length at Max. Ramping Angle (L)
RD..08...	0.625	0.157	7°	0.123	1.282	RD..08...	16	4	8°	0.141	28
	0.750	0.157	9°	0.158	0.994		20	4	9°	0.158	25
	1.000	0.157	5°	0.087	1.800		25	4	5°	0.087	45
RP..10...	0.750	0.197	4°	0.070	2.816	RP..10...	20	5	5°	0.087	57
	1.000	0.197	9°	0.158	1.243		25	5	10°	0.176	28
	1.250	0.197	6°	0.105	1.873		32	5	6°	0.105	47
	1.500	0.197	4°	0.070	2.816		40	5	4°	0.070	71
	2.000	0.197	3°	0.052	3.757		50	5	3°	0.052	95
	2.500	0.197	2°	0.035	5.640		63	5	2°	0.035	143
RP..12...	1.250	0.236	9°	0.158	1.491	RP..12...	32	6	9°	0.158	37
	1.500	0.236	6°	0.105	2.248		40	6	5°	0.087	68
	2.000	0.236	4°	0.070	3.379		50	6	4°	0.070	85
	2.500	0.236	2°	0.035	6.768		63	6	2°	0.035	171
	3.000	0.236	2°	0.035	6.768		80	6	2°	0.035	171
	4.000	0.236	1°	0.017	13.498		100	6	1°	0.017	343
RP..16...	1.500	0.315	12°	0.213	1.481	RP..16...	40	8	11°	0.194	41
	2.000	0.315	6°	0.105	2.997		50	8	7°	0.123	65
	2.500	0.315	4°	0.070	4.506		63	8	4°	0.070	114
	3.000	0.315	3°	0.052	6.011		80	8	3°	0.052	152
	4.000	0.315	2°	0.035	9.025		100	8	2°	0.035	229
	5.000	0.315	1°	0.017	17.998		125	8	1°	0.017	458

* Above value is based on the clearance of 0.039" between the tool and the workpiece.

Helical Milling Conditions

[Helical Milling]

- Sinking depth (**h**) when helical milling should be under **Max D.O.C.** in table below.
Sinking angle **α** (with trajectory of the center line of tool) should be under **RMPX** (maximum ramping angle) in cutting conditions on [Page 13](#).
- Feed rate should be under 70% of cutting conditions on [Page 10](#).
- Climb milling is recommended.

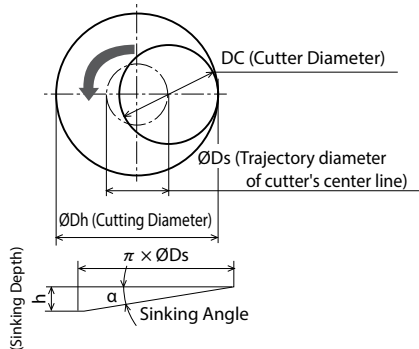
Formula for Sinking Depth (h)
 $h = \pi \times \text{ØDs} \times \tan \alpha$
 (h should be under D.O.C.)
 (α should be under RMPX)

ØDs (Trajectory diameter of cutter's center line)
 $\text{ØDs} = \text{ØDh} - \text{DC}$

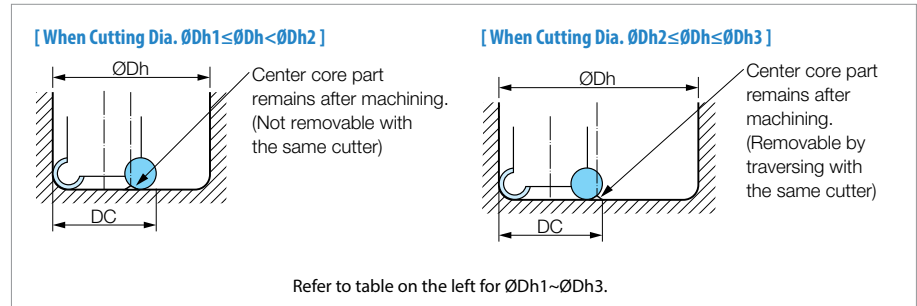
Inch						Metric					
Inch Tool Spec		Max D.O.C.	Min. Cutting Dia. (ØDh1)	Min. Cutting Dia. for Flat Bottom Facing (ØDh2)	Max. Cutting Dia. (ØDh3)	Metric Tool Spec		Max D.O.C.	Min. Cutting Dia. (ØDh1)	Min. Cutting Dia. for Flat Bottom Facing (ØDh2)	Max. Cutting Dia. (ØDh3)
Insert	Cutter Dia.					Insert	Cutter Dia.				
RD..08...	0.625	0.157	0.787	0.935	1.171	RD..08...	16	4	20	24	30
	0.750	0.157	0.984	1.185	1.421		20	4	26	32	38
	1.000	0.157	1.457	1.685	1.921		25	4	36	42	48
RP..10...	0.750	0.197	0.945	1.106	1.421	RP..10...	20	5	26	30	38
	1.000	0.197	1.299	1.606	1.921		25	5	33	40	48
	1.250	0.197	1.811	2.106	2.421		32	5	47	54	62
	1.500	0.197	2.323	2.606	2.921		40	5	63	70	78
	2.000	0.197	3.307	3.606	3.921		50	5	83	90	98
	2.500	0.197	4.331	4.606	4.921		63	5	109	116	124
RP..12...	1.250	0.236	1.654	2.028	2.421	RP..12...	32	6	43	52	62
	1.500	0.236	2.165	2.528	2.921		40	6	59	68	78
	2.000	0.236	3.150	3.528	3.921		50	6	79	88	98
	2.500	0.236	4.173	4.528	4.921		63	6	105	114	124
	3.000	0.236	5.157	5.528	5.921		80	6	139	148	158
	4.000	0.236	7.165	7.528	7.921		100	6	179	188	198
RP..16...	1.500	0.315	1.890	2.370	2.921	RP..16...	40	8	51	64	78
	2.000	0.315	2.874	3.370	3.921		50	8	71	84	98
	2.500	0.315	3.858	4.370	4.921		63	8	97	110	124
	3.000	0.315	4.882	5.370	5.921		80	8	131	144	158
	4.000	0.315	6.890	7.370	7.921		100	8	171	184	198
	5.000	0.315	8.740	9.244	9.795		125	8	221	234	248

* Above value is based on the clearance of 0.039" between the tool and the workpiece.

Helical Milling Factors



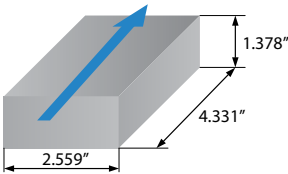
Requirements for Removing Core



RAD-6 Case Studies

Nozzle Parts
304 Stainless Steel

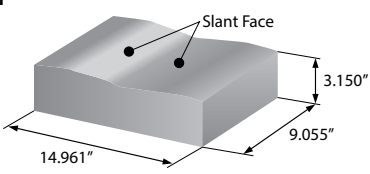
Vc = 375 sfm
fz = 0.006 ipt
D.O.C. x ae = 0.039" x 2.559"
Dry
MRX100R-12-9T-M (9 Flutes)
RPGT1204M0ER-SM (PR1535)



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
H13 (45HRC) Alloy Tool Steel

Vc = 330 sfm
fz = 0.004 ipt
D.O.C. x ae = 0.039~0.079" x 0.394"
Dry
MRX20-S20-08-2T (2 Flutes)
RDGT0803M0ER-GM (PR1525)



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



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