KYOCERA

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 PR1535 Insert Grades Available for Difficult-to-cut Material

R4, R5, R6 and R8 Radius Sizes Available

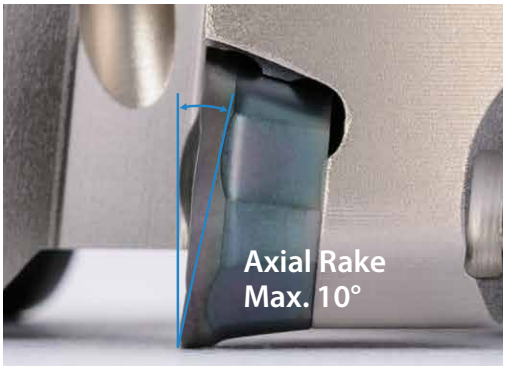
RAD-6 (MRX)

High Efficiency Radius Cutter

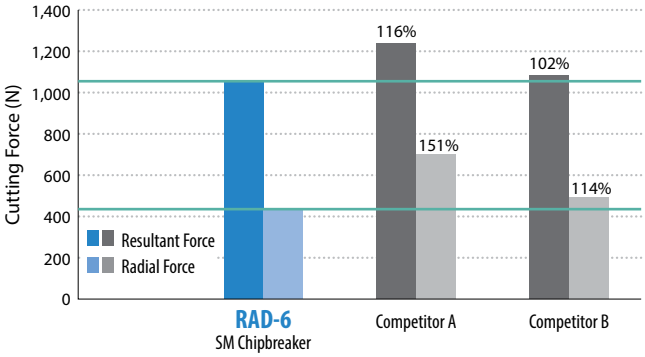
Low Cutting Forces for Longer Tool Life
Available for a Wide Range of Applications

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

Maximum Axial Rake Angle



Cutting Force Comparison (Internal Evaluation)



Cutting Conditions: Vc = 400 sfm, D.O.C. × ae = 0.079" × 0.984" fz = 0.008 ipt,
Workpiece: 304 Steel Cutter: Ø2.000"

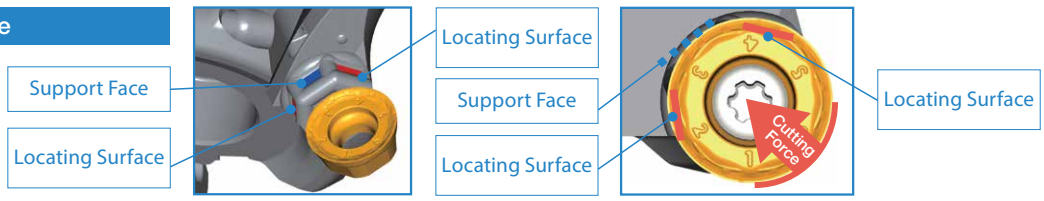
2 Flat Lock Structure to Hold Insert Firmly in Place

Prevents insert rotation during machining to provide stable cuttting

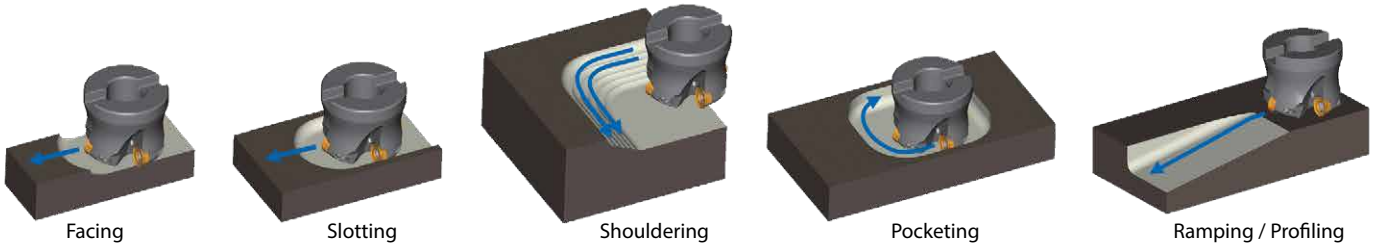
Flat Lock Structure

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 New 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
Austenitic Stainless Steel	CA6535	SM, GM
Martensitic Stainless Steel	PR1535	
Precipitation Hardened Stainless Steel		
Ni-base Heat-Resistant Alloy	CA6535	
Titanium Alloy	PR1535	

New Grades for Difficult-to-cut Material

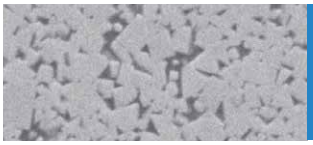
Stable cutting prevents insert fracturing for highly efficient machining

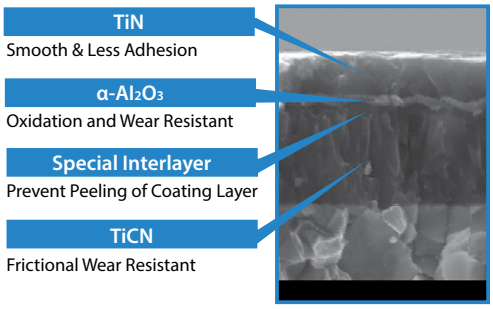
CA6535

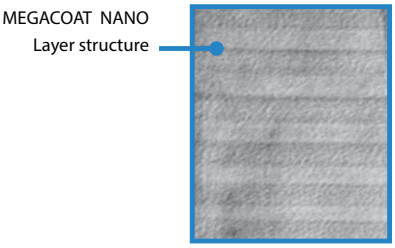
- For Ni-base heat resistant alloy and martensitic stainless steel
- High heat resistance and wear resistance with CVD coating
- Improved stability due to thin film coating technology

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

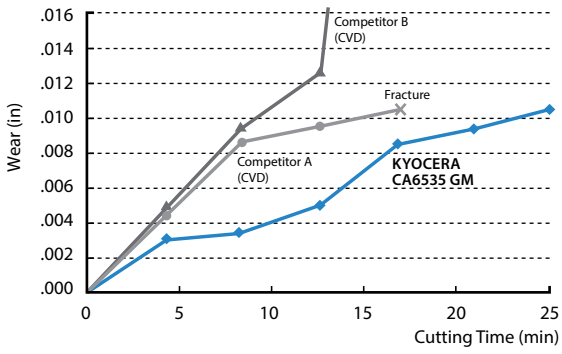






Wear Comparison (Internal Evaluation)

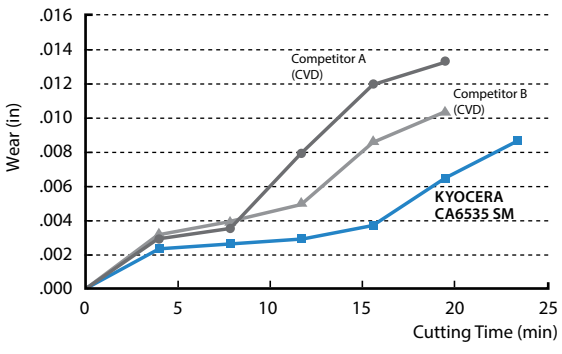
Ni-Base Heat-Resistant Alloy



Cutting Condition: Vc = 175 sfm, D.O.C. = 0.039", fz = 0.006 ipt, WET

Wear Comparison (Internal Evaluation)

Martensitic Stainless Steel



Cutting Condition: Vc = 975 sfm, D.O.C. = 0.079", fz = 0.008 ipt, WET

Rake Angle (°)	A.R.	R.R.
	(MAX) +10°	-5.5°

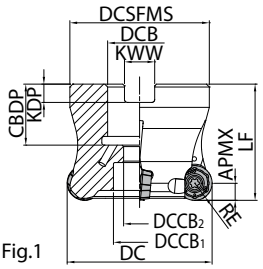


Fig.1

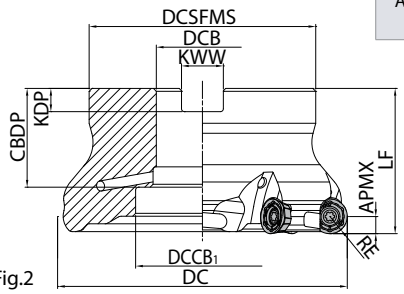


Fig.2

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
2000R-10-6T	●	6		2.000	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.3	17,500
2500R-10-7T	□	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
2000R-12-4T	□	4		2.000	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.3	18,000
2000R-12-5T	●	5		2.000	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.3	18,000
2500R-12-5T	□	5		2.500	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.4	15,500
2500R-12-6T	□	6		2.500	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.4	15,500
3000R-12-6T	●	6		3.000	2.250	1.000	0.866	0.551	1.969	1.063	0.236	0.382				0.8	13,500
3000R-12-7T	□	7		3.000	2.250	1.000	0.866	0.551	1.969	1.063	0.236	0.382				0.8	13,500
4000R-12-7T	□	7		4.000	3.540	1.500	2.047	-	1.969	1.142	0.394	0.626			Fig.2	1.7	12,000
4000R-12-9T	□	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
2500R-16-5T	●	5		2.500	1.750	0.750	0.669	0.433	1.575	0.750	0.187	0.313				0.4	13,500
3000R-16-5T	□	5		3.000	2.250	1.000	0.866	0.551	1.969	1.063	0.236	0.382				0.8	11,500
3000R-16-6T	●	6		3.000	2.250	1.000	0.866	0.551	1.969	1.063	0.236	0.382				0.8	11,500
4000R-16-6T	□	6		4.000	3.540	1.500	2.047	-	1.969	1.142	0.394	0.626			Fig.2	1.6	10,000
4000R-16-7T	●	7		4.000	3.540	1.500	2.047	-	1.969	1.142	0.394	0.626				1.6	10,000
5000R-16-6T	□	6		5.000	3.540	1.500	2.047	-	2.480	1.496	0.394	0.626				2.9	9,000
5000R-16-8T	□	8		5.000	3.540	1.500	2.047	-	2.480	1.496	0.394	0.626				2.8	9,000

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

Spare Parts and Applicable Inserts (Inch Sizes)

Part Number	Insert Screw	Wrench DTPM	Wrench TTP	Anti-Seize Compound	Arbor Bolt	Applicable Inserts Page 9
MRX 1500R-10...	SB-3070TRP	DTPM-10	-	P-37	HH1/4-0.75	RPMT10T3M0**ER-GM** RPGT10T3M0**ER-GM** RPGT10T3M0**ER-SM** RPMT10T3M0**EN-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	RPMT1204M0**ER-GM** RPGT1204M0**ER-GM** RPGT1204M0**ER-SM** RPMT1204M0**EN-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...	Recommended Torque for Insert Screw 4.5 Nm				HH1/2-1.25	
4000R-16...					-	
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

Rake Angle (°)	A.R.	R.R.
	(MAX) +10°	-5.5°

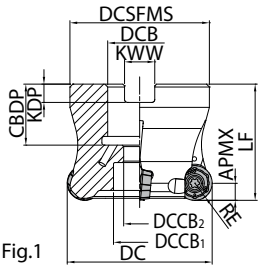


Fig.1

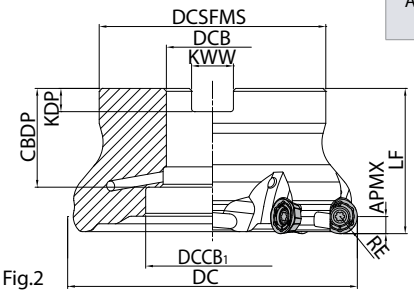


Fig.2

Face Mill Dimensions (Metric Sizes)

	Part Number	Stock	No. of Inserts	Dimensions (mm)											Coolant Hole	Drawing	Weight (kg)	Max. RPM
				RE	DC	DCSFMS	DCB	DCCB1	DCCB2	LF	CBDP	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
	080R-12-8T	●	8		80	70	1.000"	20	13	50	1.063"	0.236"	0.375"				1.1	13,500
	100R-12-7T	●	7		100	78	1.250"	46	-	50	1.339"	0.315"	0.500"			Fig.2	1.5	12,000
	100R-12-9T	●	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
	080R-16-6T	●	6		80	70	1.000"	20	13	50	1.063"	0.236"	0.375"				1.1	11,500
	100R-16-6T	●	6		100	78	1.250"	46	-	50	1.339"	0.315"	0.500"			Fig.2	1.4	10,000
	100R-16-7T	●	7		100	78	1.250"	46	-	50	1.339"	0.315"	0.500"				1.4	10,000
	125R-16-6T	●	6		125	89	1.500"	55	-	63	1.496"	0.394"	0.625"				2.7	9,000
	125R-16-8T	●	8		125	89	1.500"	55	-	63	1.496"	0.394"	0.625"				2.7	9,000
Metric Bore Dia.	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
	050R-10-6T-M	●	6		50	48	22	18	11	40	21	6.3	10.4				0.3	17,500
	063R-10-7T-M	●	7		63	60	22	18	11	40	21	6.3	10.4				0.6	15,000
	MRX 040R-12-4T-M	●	4	6	40	38	16	13.5	9	40	19	5.6	8.4	6	✓	Fig.1	0.2	21,000
	050R-12-4T-M	●	4		50	48	22	18	11	40	21	6.3	10.4				0.3	18,000
	050R-12-5T-M	●	5		50	48	22	18	11	40	21	6.3	10.4				0.3	18,000
	063R-12-5T-M	●	5		63	60	22	18	11	40	21	6.3	10.4				0.6	15,500
	063R-12-6T-M	●	6		63	60	22	18	11	40	21	6.3	10.4				0.6	15,500
	080R-12-6T-M	●	6		80	70	27	20	13	50	24	7	12.4				1.2	13,500
	080R-12-8T-M	●	8		80	70	27	20	13	50	24	7	12.4				1.1	13,500
	100R-12-7T-M	●	7		100	78	32	46	-	50	30	8	14.4			Fig.2	1.4	12,000
	100R-12-9T-M	●	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
	063R-16-5T-M	●	5		63	60	22	18	11	40	21	6.3	10.4				0.5	13,500
	080R-16-5T-M	●	5		80	70	27	20	13	50	24	7	12.4				1.1	11,500
	080R-16-6T-M	●	6		80	70	27	20	13	50	24	7	12.4				1.1	11,500
	100R-16-6T-M	●	6		100	78	32	46	-	50	30	8	14.4			Fig.2	1.4	10,000
	100R-16-7T-M	●	7		100	78	32	46	-	50	30	8	14.4				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		125	89	40	55	-	63	33	9	16.4				2.6	9,000

● : Standard Item

Spare Parts and Applicable Inserts (Metric Sizes)

Part Number	Insert Screw	Wrench		Anti-Seize Compound	Arbor Bolt	Applicable Inserts → Page 9	
		DTPM	TTP				
MRX 040R-10...	SB-3070TRP	DTPM-10	-	P-37	HH8X25	RPMT10T3M0**ER-GM** RPGT10T3M0**ER-GM** RPGT10T3M0**ER-SM** RPMT10T3M0**EN-GH**	*1
050R-10...	Recommended Torque for Insert Screw 2.0 Nm				HH10X30		
063R-10...					HH10X30		
MRX 040R-12...	SB-4090TRPN	DTPM-15	-	P-37	HH8X25	RPMT1204M0**ER-GM** RPGT1204M0**ER-GM** RPGT1204M0**ER-SM** RPMT1204M0**EN-GH** RPMW1204M0TN	*2
050R-12...	Recommended Torque for Insert Screw 3.5 Nm				HH10X30		
063R-12...					HH10X30		
080R-12...					HH12X35		
100R-12...					-		
MRX 063R-16...	SB-50120TRP	-	TTP-20	P-37	HH10X30	RPMT1605M0**ER-GM** RPGT1605M0**ER-GM** RPGT1605M0**ER-SM** RPMT1605M0**EN-GH** RPMW1605M0TN	*3
080R-16...	Recommended Torque for Insert Screw 4.5 Nm				HH12X35		
100R-16...					-		
125R-16...					-		

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

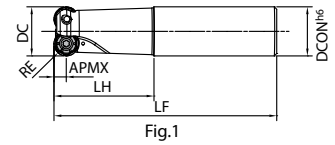


Fig.1

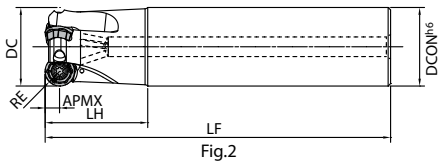


Fig.2

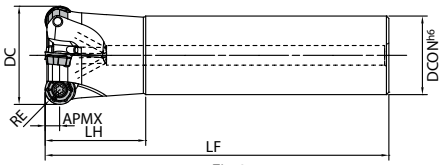


Fig.3

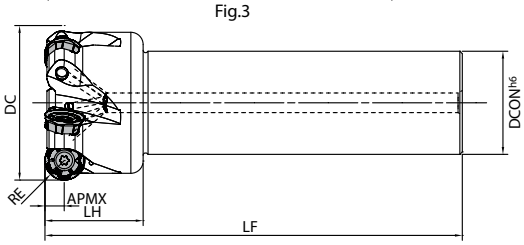


Fig.4

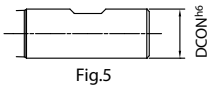


Fig.5

Fig.6

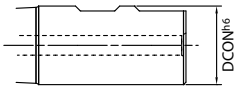


Fig.7

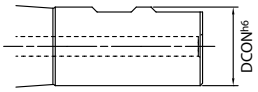


Fig.8

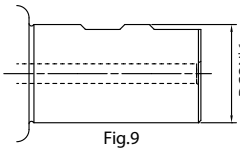


Fig.9

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

Spare Parts & Applicable Inserts ➔ **Page 8**

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

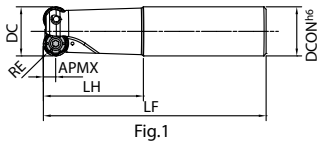


Fig.1

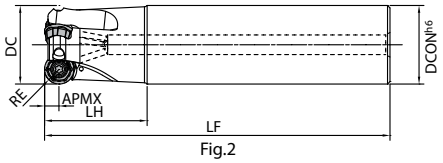


Fig.2

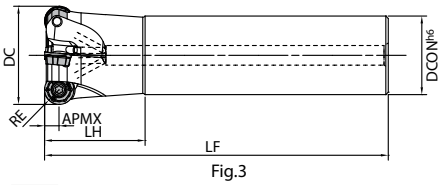


Fig.3

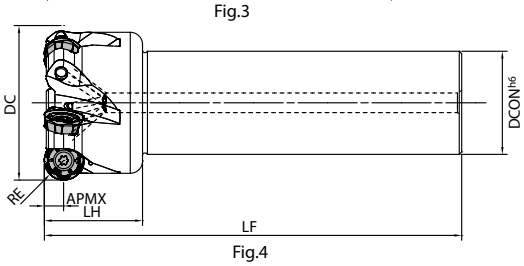


Fig.4

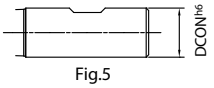


Fig.5

Fig.6

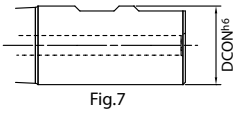


Fig.7

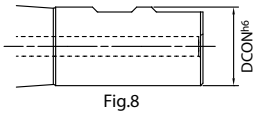


Fig.8

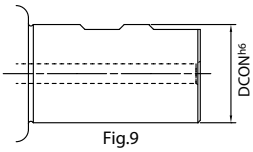


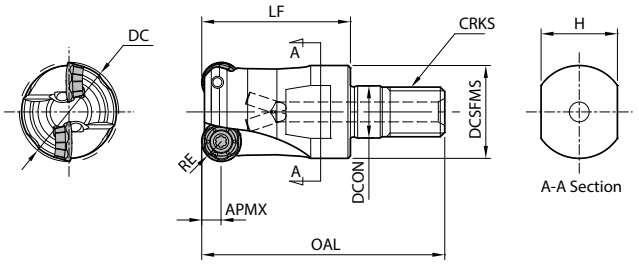
Fig.9

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	4	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	5	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	6	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	8	40	32	140	40	8	+10°	-5.5°	✓	Fig.3	18,000
	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
Standard Shank (Weldon)	MRX 16-W16-08-2T	●	2	4	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	5	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	6	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
	50-W40-12-5T	●	5		50	40	111	40					Fig.8	18,000
	MRX 40-W32-16-2T	●	2	8	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
Long Shank (Cylindrical)	MRX 16-S16-08-2T-160	●	2	4	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	5	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
	MRX 32-S32-12-2T-200	●	2	6	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	8	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

Spare Parts & Applicable Inserts ➡ **Page 8**

● : Standard Item



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					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					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				✓	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	RDMT0803M0ER-GM RDGT0803M0ER-GM RDGT0803M0ER-SM RDMT0803M0EN-GH *1
	Recommended Torque for Insert Screw 1.2 Nm				
MRX ...-10-...	SB-3070TRP	DTPM-10	-	P-37	RPMT10T3M0**ER-GM** RPGT10T3M0**ER-GM** RPGT10T3M0**ER-SM** RPMT10T3M0**EN-GH** *2
	Recommended Torque for Insert Screw 2.0 Nm				
MRX ...-12-...	SB-4090TRPN	DTPM-15	-	P-37	RPMT1204M0**ER-GM** RPGT1204M0**ER-GM** RPGT1204M0**ER-SM** RPMT1204M0**EN-GH** RPMW1204M0TN *3
	Recommended Torque for Insert Screw 3.5 Nm				
MRX ...-16-...	SB-50120TRP	-	TTP-20	P-37	RPMT1605M0ER-GM RPGT1605M0ER-GM RPGT1605M0ER-SM RPMT1605M0EN-GH RPMW1605M0TN *4
	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-MT08T2M0-H inserts

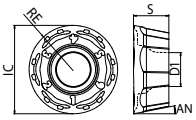
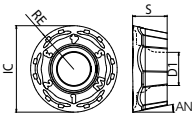
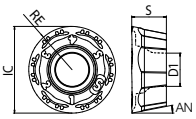
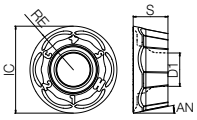
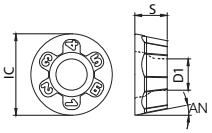
*2… Not compatible with conventional RP-MT10T3M0 inserts (without **ER**-.. or **EN**-..)

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

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

Applicable Inserts

Usage Classification									
★ Roughing / 1st Choice ☆ Roughing / 2nd Choice ■ Finishing / 1st Choice □ Finishing / 2nd Choice (When hardness is under 45HRC)	P	Carbon Steel / Alloy Steel				☆	★		
		Mold Steel				☆	★		
	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 (°)	MEGACOAT NANO			CVD Coated Carbide
			IC	S	D1	RE	AN	PR1535	PR1525	PR1510	CA6535
 General Purpose (G-Class)		RDGT 0803M0ER-GM	0.315	0.125	0.118	0.157	15°	●	●	●	●
		RPGT 10T3M0ER-GM	0.394	0.156	0.138	0.197		●	●	●	●
		1204M0ER-GM	0.472	0.187	0.181	0.236	11°	●	●	●	●
		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	0.394	0.156	0.138	0.197		●	●	●	●
		1204M0ER-GM	0.472	0.187	0.181	0.236	11°	●	●	●	●
		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	0.394	0.156	0.138	0.197		●	●		●
		1204M0ER-SM	0.472	0.187	0.181	0.236	11°	●	●		●
		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	0.394	0.156	0.138	0.197		●	●	●	●
		1204M0EN-GH	0.472	0.187	0.181	0.236	11°	●	●	●	●
		1605M0EN-GH	0.630	0.219	0.228	0.315		●	●	●	●
 Flat Top (Heavy Milling)		RPMW 1204M0TN	0.472	0.187	0.181	0.236	11º	●	●		
		1605M0TN	0.630	0.219	0.228	0.315		●	●		

● : Standard Item

Recommended Cutting Conditions See **Page 10**

Recommended Cutting Conditions ★ 1st Recommendation ☆ 2nd Recommendation

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			CVD Coated Carbide
	RDMT-GM RPMT-GM	RDGT-GM RPGT-GM	RDGT-SM RPGT-SM	RDMT-GH RPMT-GH	RPMW	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	-	-
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	-	-
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	-	-
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	-	-
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	-	-	★ 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	-	-	-
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	-
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	-
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
Titanium Alloy	☆ 0.004 - **0.005** - 0.006	☆ 0.004 - **0.005** - 0.006	★ 0.002 - **0.004** - 0.006	-	-	★ 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 rε/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 ipt (Standard value for carbon steel and GM chipbreaker) X 1.5 (Conversion factor for ROMU12 type, D.O.C. = 0.039") = fz = 0.012 ipt (Recommended feed rate)

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]

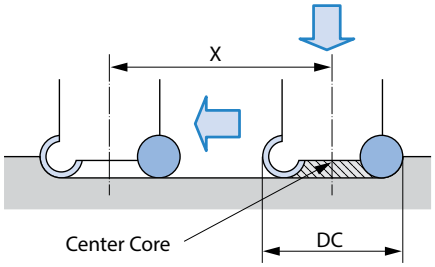
See Max. Cutting Depth **(Pd)** in the table below.

[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 **Insert**	Cutter **Dia.**	Max **D.O.C.**	Max. Cutting Depth **(Pd)**	Min. Cutting Length for Flat Bottom Face **(X)**	**Metric** Tool Spec **Insert**	Cutter **Dia.**	Max **D.O.C.**	Max. Cutting Depth **(Pd)**	Min. Cutting Length for Flat Bottom Face **(X)**
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

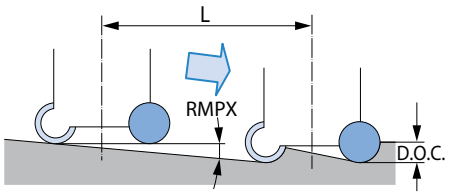
* Above value is based on the clearance of 0.039" between the tool and the workpiece.

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 **Insert**	Cutter **Dia.**	Max **D.O.C.**	Max. Ramping Angle **(α max)**	**tan RMPX**	Max. Cutting Length at Max. Ramping Angle **(L)**	**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)**
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 **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.

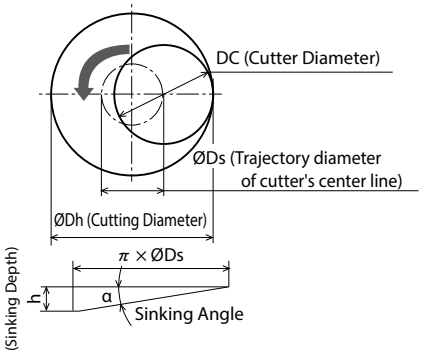
Formula for Sinking Depth (h)
h = π × ØDs × tan α
(**h** should be under **D.O.C.**)
(**α** should be under **RMPX**)

ØDs (Trajectory diameter of cutter's center line)
ØDs = ØDh - DC

Inch						Metric					
Inch Tool Spec **Insert**	**Cutter Dia.**	Max **D.O.C.**	Min. Cutting Dia. **(ØDh1)**	Min. Cutting Dia. for Flat Bottom Facing **(ØDh2)**	Max. Cutting Dia. **(ØDh3)**	**Metric** Tool Spec **Insert**	**Cutter Dia.**	Max **D.O.C.**	Min. Cutting Dia. **(ØDh1)**	Min. Cutting Dia. for Flat Bottom Facing **(ØDh2)**	Max. Cutting Dia. **(ØDh3)**
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

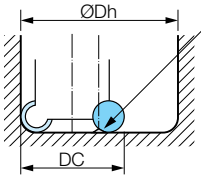
* Above value is based on the clearance of 0.039" between the tool and the workpiece.

Helical Milling Factors



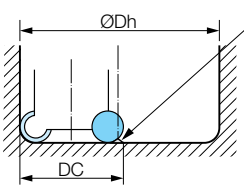
Requirements for Removing Core

[When Cutting Dia. ØDh1≤ØDh<ØDh2]



Center core part remains after machining. (Not removable with the same cutter)

[When Cutting Dia. ØDh2≤ØDh≤ØDh3]



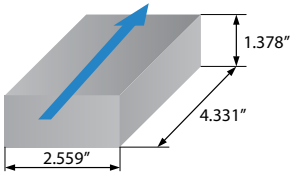
Center core part remains after machining. (Removable by traversing with the same cutter)

Refer to table on the left for ØDh1~ØDh3.

RAD-6 Case Studies

Nozzle Parts
304 Stainless Steel

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

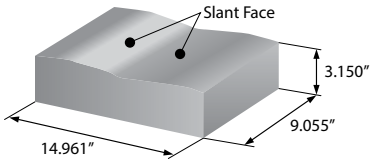


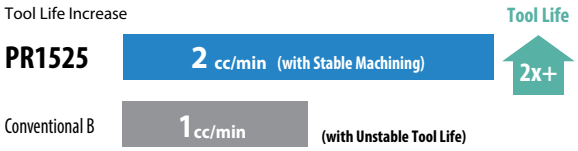
Cost savings with 4.5 times longer tool life with 1.5 times more insert edges.
MRX prevented burr formation and improved surface finish.

(User Evaluation)

Mold Part
H13 (45HRC) Alloy Tool Steel

Vc = 330 sfm
fz = 0.004 ipt
D.O.C. × ae = 0.039~0.079" × 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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