SUMITOMO

CARBIDE - CBN - DIAMOND

RSX Series

High Performance Milling Systems

Radius Cutter for Machining of Stainless Steel and Exotic Material.

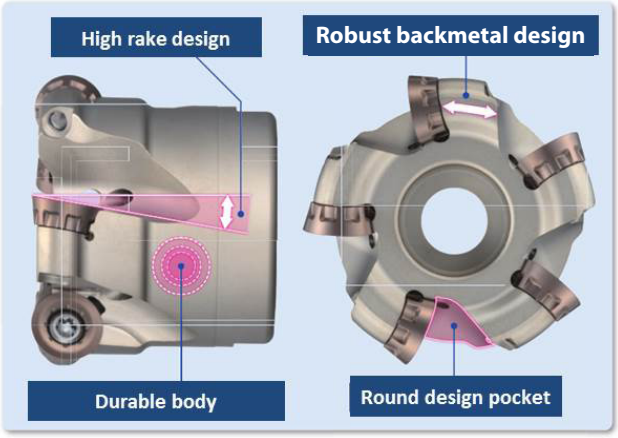
Stainless Steel M

Exotic Material S

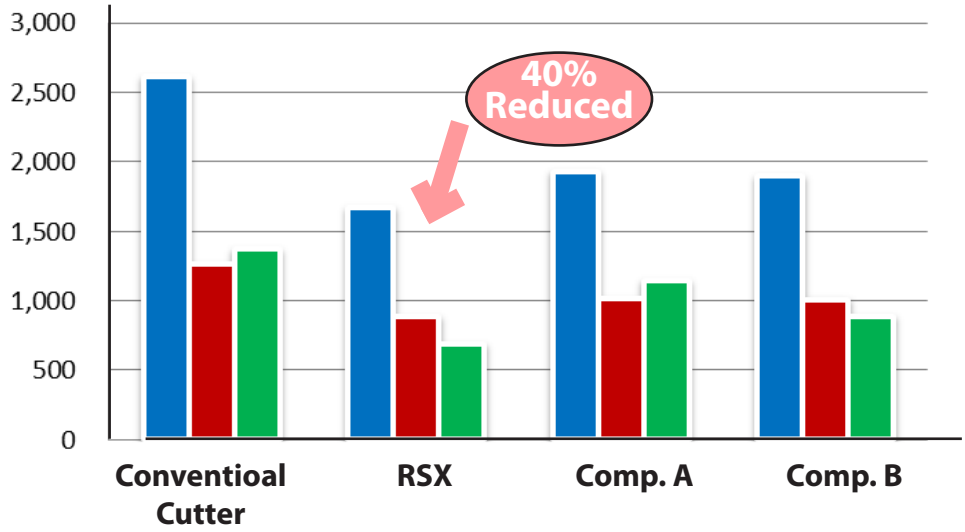
RSX

Features & Benefits

- Wide application range that includes face milling, ramping, slotting, 3-D interpolation, and helical boring
- A highly durable body made of special alloyed steel and protected by a hard surface treatment
- Pocket design eliminates insert rotation during aggresive machining

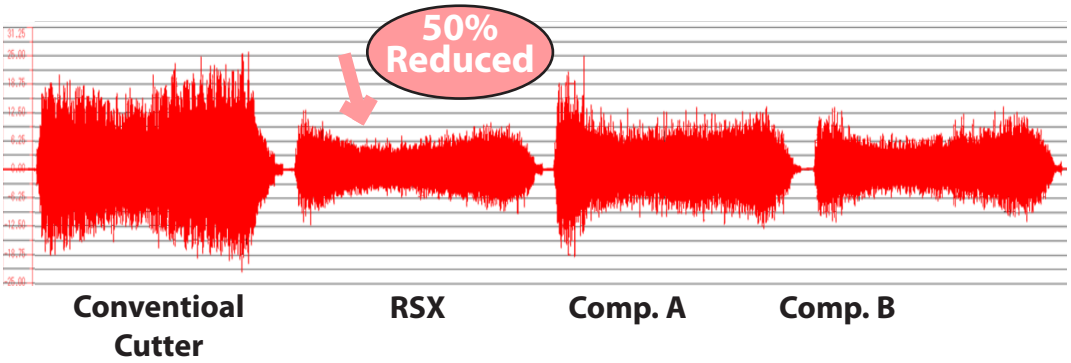


Low Cutting Force



Work piece: 304 Stainless Steel
Cutter: RSXF12050RS (2" cutter)
Cutting conditions:
Vc= 650 SFM
fz=0.02 in/t
ap=0.08 in.
ae=0.39 in., WET

Low Vibration



Work piece: 304 Stainless Steel
Cutter: RSXF12050RS (2" cutter)
Cutting conditions:
Vc= 650 SFM
fz=0.02 in/t
ap=0.08 in.
ae=0.39 in., DRY

Fig. 1

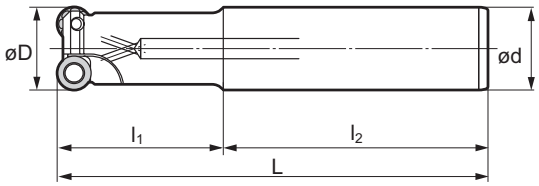


Fig. 2

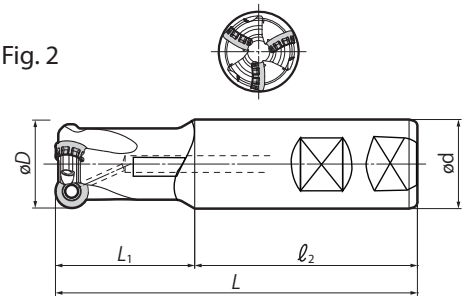
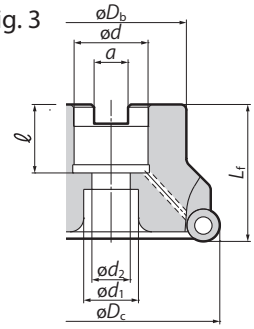


Fig. 3

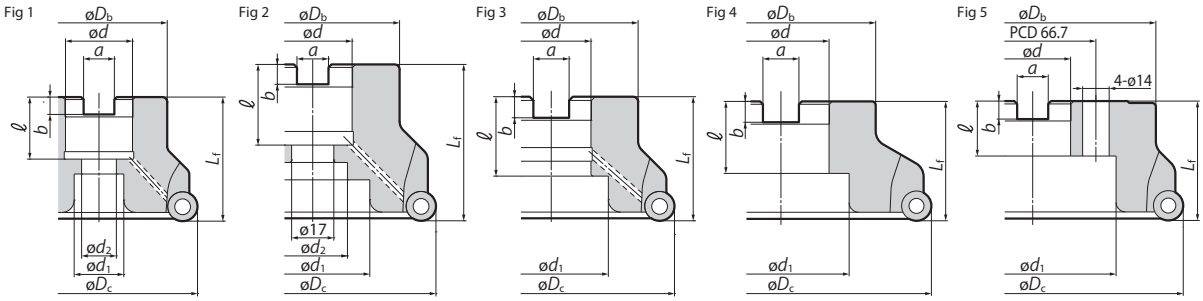


RSX Cutter Bodies- End Mill-INCH

Catalog No.	Stock	φD	φd	L	l_1	l_2	Insert Type	# of Inserts	Shank Style	Weight (lbs)	Max Ramp Angle	Fig.
RSX31000EW	●	1.000	1.000	4.340	2.060	2.280	RDET10	2	Weldon	0.95	10° 15′	2
RSX31250EW	●	1.250	1.250	4.340	2.060	2.280	RDET10	3	Weldon	1.15	6° 45′	2
RSX31500EW	●	1.500	1.250	4.340	2.060	2.280	RDET10	3	Weldon	1.25	4 ° 45′	2
RSX41250EW	●	1.250	1.250	4.340	2.060	2.280	RDET12	2	Weldon	1.20	12° 30′	2
RSX41500EW	●	1.500	1.250	4.340	2.060	2.280	RDET12	3	Weldon	1.50	8° 30′	2
RSXF31000EW	●	1.000	1.000	4.340	2.060	2.280	RDET10	3	Weldon	1.00	10° 15′	2
RSXF31000ELC	●	1.000	1.000	10.000	3.750	6.250	RDET10	3	Cylindrical	2.00	10° 15′	1
RSXF31250EW	●	1.250	1.250	4.340	2.060	2.280	RDET10	4	Weldon	1.25	6° 45′	2
RSXF31250ELC	●	1.250	1.250	10.000	3.750	6.250	RDET10	4	Cylindrical	2.75	6° 45′	1
RSXF31500EW	●	1.500	1.250	4.340	2.060	2.280	RDET10	4	Weldon	1.40	4 ° 45′	2
RSXF31500ELC	●	1.500	1.250	10.000	3.750	6.250	RDET10	4	Cylindrical	3.25	4 ° 45′	1
RSXF41250EW	●	1.250	1.250	4.340	2.060	2.280	RDET12	3	Weldon	1.40	12° 30′	2
RSXF41250ELC	●	1.250	1.250	10.000	3.750	6.250	RDET12	3	Cylindrical	3.50	12° 30′	1
RSXF41500EW	●	1.500	1.250	4.340	2.060	2.280	RDET12	4	Weldon	1.65	8° 30′	2
RSXF41500ELC	●	1.500	1.250	10.000	3.750	6.250	RDET12	4	Cylindrical	4.00	8° 30′	1

RSX Cutter Bodies-Shell Mill-INCH

Catalog N	Stock	φD_c	φD_b	L_f	φd	φd_2	φd_1	ℓ	a	Insert Type	# of Inserts	Weight (lbs)	Max Ramp Angle	Fig.
RSX32000R	●	2.000	1.500	1.750	0.750	0.406	0.609	0.750	0.312	RDET10	4	0.80	3° 15′	3
RSX42000R	●	2.000	1.500	1.750	0.750	0.406	0.609	0.750	0.312	RDET12	4	0.70	5° 30′	3
RSX42500R	●	2.500	1.750	1.750	1.000	0.531	0.797	0.750	0.375	RDET12	5	1.1	4°	3
RSX43000R	●	3.000	2.250	1.750	1.000	0.531	0.797	0.750	0.375	RDET12	6	1.75	3°	3
RSX44000R-1.25	●	4.000	2.870	2.000	1.250	0.656	1.000	0.750	0.500	RDET12	7	3.75	2°	3
RSX44000R-1.50	●	4.000	2.870	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	7	4.00	2°	3
RSX45000R	●	5.000	3.750	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	8	7.60	1° 30′	3
RSX46000R	●	6.000	4.380	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	9	11.90	1°	3
RSX52500R	●	2.500	1.750	1.750	1.000	0.531	0.797	0.750	0.375	RDET16	4	0.95	5° 50′	3
RSX53000R	●	3.000	2.250	1.750	1.000	0.531	0.797	0.750	0.375	RDET16	5	1.50	4° 20′	3
RSX54000R-1.25	●	4.000	2.870	2.000	1.250	0.656	1.000	0.750	0.500	RDET16	7	4.25	2° 50′	3
RSX54000R-1.50	●	4.000	2.870	2.500	1.500	0.781	2.000	1.000	0.625	RDET16	7	4.90	2°	3
RSX55000R	●	5.000	3.750	2.500	1.500	0.781	2.000	1.000	0.625	RDET16	8	7.1	1° 30′	3
RSX56000R	●	6.000	4.380	2.500	1.500	0.781	2.000	1.000	0.625	RDET16	9	11.2	1°	3
RSXF32000R	●	2.000	1.500	1.750	0.750	0.406	0.609	0.750	0.312	RDET10	6	0.75	3° 15′	3
RSXF42000R	●	2.000	1.500	1.750	0.750	0.406	0.609	0.750	0.312	RDET12	5	0.65	5° 30′	3
RSXF42500R	●	2.500	1.750	1.750	1.000	0.531	0.797	0.750	0.375	RDET12	6	1.05	4°	3
RSXF43000R	●	3.000	2.250	1.750	1.000	0.531	0.797	0.750	0.375	RDET12	8	1.75	3°	3
RSXF44000R-1.25	●	4.000	2.870	2.000	1.250	0.656	1.000	0.750	0.500	RDET12	9	4.75	2°	3
RSXF44000R-1.50	●	4.000	2.870	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	9	5.25	2°	3
RSXF45000R	●	5.000	3.750	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	11	7.5	1° 30′	3
RSXF46000R	●	6.000	4.380	2.500	1.500	0.781	2.000	1.000	0.625	RDET12	12	11.75	1°	3
RSXF52500R	●	2.500	1.750	1.750	1.000	0.531	0.797	0.750	0.375	RDET16	5	0.85	5° 50′	3
RSXF53000R	●	3.000	2.250	1.750	1.000	0.531	0.797	0.750	0.375	RDET16	6	1.55	4° 20′	3
RSXF54000R-1.25	●	4.000	2.870	2.000	1.250	0.656	1.000	0.750	0.500	RDET16	8	3.25	2° 50′	3
RSXF54000R-1.50	●	4.000	2.870	2.500	1.500	0.781	2.000	1.000	0.625	RDET16	8	4.35	2°	3
RSXF55000R	●	5.000	3.750	1.500	1.500	0.781	2.000	1.000	0.625	RDET16	9	6.4	1° 30′	3
RSXF56000R	●	6.000	6.000	4.380	2.500	1.500	0.781	1.000	1.312	RDET16	10	10.5	1°	3



RSX Cutter Bodies-Shell Mill-Metric

Catalog No.	Stock	φDc	φDb	Lf	φd	a	b	ℓ	φd1	φd2	Insert Type	# of Inserts	Weight (lbs)	Ramp Angle	Fig.
RSX10040RS	●	40	34	40	16	8.4	5.6	18	14	9	RDET10	4	0.45	4° 30′	1
RSX10050RS	●	50	40	40	22	10.4	6.3	20	18	11	RDET10	5	0.66	3° 15′	1
RSX10052RS	●	52	40	40	22	10.4	6.3	20	18	11	RDET10	5	0.89	3° 10′	1
RSX12040RS	●	40	32	40	16	8.4	5.6	18	13.5	9	RDET12	3	0.45	8° 00′	1
RSX12050RS	●	50	40	40	22	10.4	6.3	20	18	11	RDET12	4	0.66	5° 30′	1
RSX12052RS	●	52	40	40	22	10.4	6.3	20	18	11	RDET12	4	0.66	5° 15′	1
RSX12063RS	●	63	40	40	22	10.4	6.3	20	18	11	RDET12	5	0.89	4° 00′	1
RSX12066RS	●	66	55	50	27	12.4	7.0	25	20	14	RDET12	6	1.54	3° 45′	1
RSX12080RS	●	80	55	50	27	12.4	7.0	25	20	14	RDET12	6	2.20	2° 50′	1
RSX12100RS	●	100	70	50	32	14.4	8.5	32	46	-	RDET12	6	3.09	2° 10′	3
RSX16063RS	●	63	50	40	22	10.4	6.3	20	18	11	RDET16	4	1.10	6° 00′	1
RSX16080RS	●	80	55	50	27	12.4	7.0	25	20	14	RDET16	5	1.98	4° 10′	1
RSX16100RS	●	100	70	50	32	14.4	8.532	32	46	-	RDET16	6	2.87	3° 00′	3
RSX16125RS	●	125	80	63	40	16.4	9.5	29	52	29	RDET16	6	5.73	2° 20′	1

RSX Cutter Bodies-Shell Mill-Metric with Inch Arbor

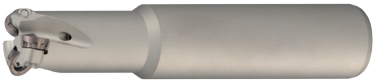
RSX12080R	●	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET10	6	2.20	2° 50′	1
RSX12100R	●	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET12	6	4.19	2° 10′	2
RSX16080R	●	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET12	5	1.98	4° 10′	1
RSX16100R	●	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET12	6	3.97	3° 00′	2
RSX16125R	●	125	80	63	1.50 in.	15.9	10.0	35.5	55	30	RDET12	6	5.95	2° 20′	1

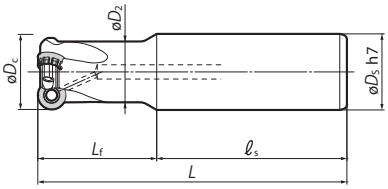
RSXF Cutter Bodies-Shell Mill-Metric

RSXF10040RS	●	40	34	40	16	8.4	5.6	18	14	9	RDET10	5	0.45	4° 30′	1
RSXF10050RS	●	50	40	40	22	10.4	6.3	20	18	11	RDET12	6	0.66	3° 15′	1
RSXF10052RS	●	52	40	40	22	10.4	6.3	20	18	11	RDET12	6	0.66	3° 10′	1
RSXF12040RS	●	40	32	40	16	8.4	5.6	18	13.5	9	RDET12	4	0.45	8° 00′	1
RSXF12050RS	●	50	40	40	22	10.4	6.3	20	18	11	RDET12	5	0.66	5° 30′	1
RSXF12052RS	●	52	40	40	22	10.4	6.3	20	18	11	RDET12	5	0.66	5° 15′	1
RSXF12063RS	●	63	40	40	22	10.4	6.3	20	18	11	RDET12	6	0.88	4° 00′	1
RSXF12066RS	●	66	55	50	27	12.4	7.0	25	20	14	RDET12	7	1.54	3° 45′	1
RSXF12080RS	●	80	55	50	27	12.4	7.0	25	20	14	RDET16	7	1.98	2° 50′	1
RSXF12100RS	●	100	70	50	32	14.4	8.5	32	46	-	RDET16	10	2.86	2° 10′	3
RSXF16063RS	●	63	50	40	22	10.4	6.3	20	18	11	RDET16	4	0.88	6° 00′	1
RSXF16080RS	●	80	55	50	27	12.4	7.0	25	20	14	RDET16	6	1.75	4° 10′	1
RSXF16100RS	●	100	70	50	32	14.4	8.5	32	46	-	RDET16	6	2.86	3° 00′	3
RSXF16125RS	●	125	80	63	40	16.4	9.5	29	52	29	RDET16	8	5.51	2° 20′	1
RSXF16160RS		160	130	63	40	16.4	9.5	29	88	-	RDET16	10	10.58	-	5

RSXF Cutter Bodies-Shell Mill-Metric with Inch Arbor

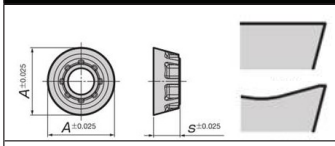
RSXF12080R	●	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET12	7	2.20	2° 50′	1
RSXF12100R	●	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET12	10	3.97	2° 10′	2
RSXF16080R	●	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET16	6	1.75	4° 10′	1
RSXF16100R	●	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET16	7	3.75	3° 00′	2
RSXF16125R	●	125	80	63	1.5 in.	15.9	10.0	35.5	55	30	RDET16	8	5.73	2° 20′	1
RSXF16160R		160	100	63	2.0 in.	19.0	11.0	38	72	-	RDET16	10	9.48	-	4





RSX Cutter Bodies-End Mill-Metric												
Catalog No.	Stock	φD_c	φD_s	φD_2	L_f	ℓ_f	L	Insert Type	# of Inserts	Weight (lbs)	Ramp Angle	Fig.
RSX10025ES	●	25	25	20.3	50	80	130	RDET10	2	0.88	10° 30′	1
RSX10032ES	●	32	32	27.1	50	80	130	RDET10	3	1.54	6° 45′	1
RSX12032ES	●	32	32	25.6	50	80	130	RDET12	2	1.54	12° 30′	1
RSXF10025ES	●	25	25	20.3	50	80	130	RDET10	3	0.88	10° 30′	1
RSXF10032ES	●	32	32	27.1	50	80	130	RDET10	4	1.54	6° 45′	1
RSXF12032ES	●	32	32	25.6	50	80	130	RDET12	3	1.54	12° 30′	1

Insert & Parts Information

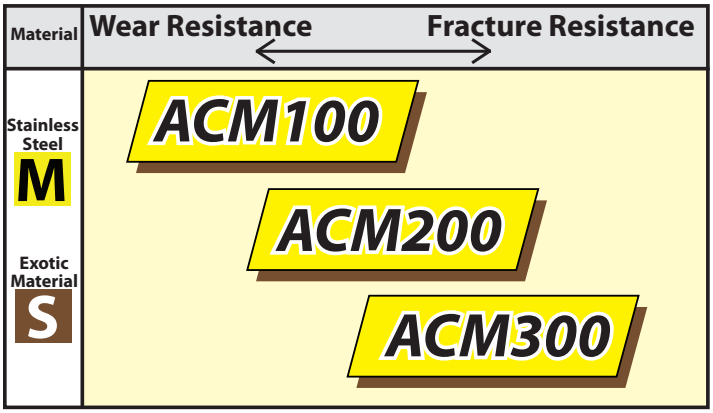
Inserts	M		S	Dimensions	
 H / G	ACM100	ACM200	ACM300	IC	Thickness
RDET10T3M0EN-G	●	●	●	0.394	0.156
RDET10T3M0EN-H	●	●	●		
RDET1204M0EN-G	●	●	●	0.472	0.187
RDET1204M0EN-H	●	●	●		
RDET1606M0EN-G	●	●	●	0.629	0.256
RDET1606M0EN-H	●	●	●		

Parts			
Applicable Cutters	Wrench	Insert Screw	Recommended Tightening Torque Inch / LBs
RSX30000 Cutters	TRDR15IP	BFTX03584IP	25
RSX40000 Cutters		BFTX0409IP	25
RSX50000 Cutters	TRDR20IP	BFTX0409IP	45

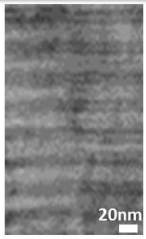
Cutting Conditions

ISO			Work Material	Hardness	Cutting Speed v_c(sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel	Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
			Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
		Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
			400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
			Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy		Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
	Titanium		Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
			α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

NOTE: The cutting conditions above are a guide. Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.



ACM100/300 (PVD)



Cross sectional TEM image

Excellent wear resistance and improved adhesion resistance

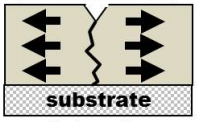
(1) High hardness
→ 1.5 times higher wear resistance

(2) High compressive stress
→1.5 times higher toughness

(3) Low reaction with work material
→ Improve adhesion resistance

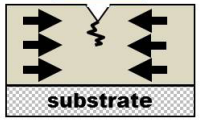
ACM200

Higher stability with stress control technology



Residual tensile stress

Cracks easily propagate
= Unstable



Turn to compressive stress

Crack propagation is Inhibited
= **Stable**

SUMITOMO

CARBIDE - CBN - DIAMOND

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Suite 120
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Huntsville Branch

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