



SUMITOMO

CARBIDE - CBN - DIAMOND

RSX Series



High Performance Milling Systems

**Radius Cutter for Machining of
Stainless Steel and Exotic Material.**

Stainless Steel



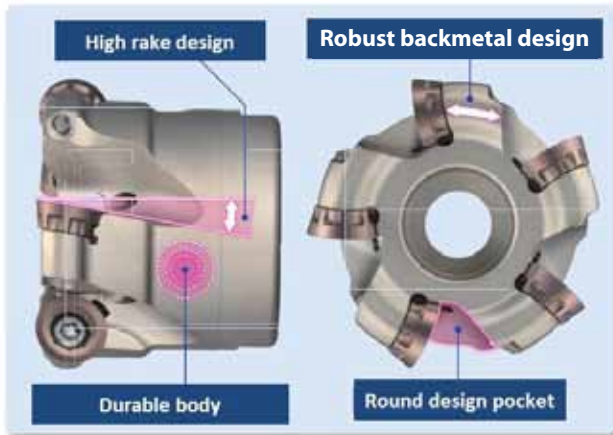
Exotic Material



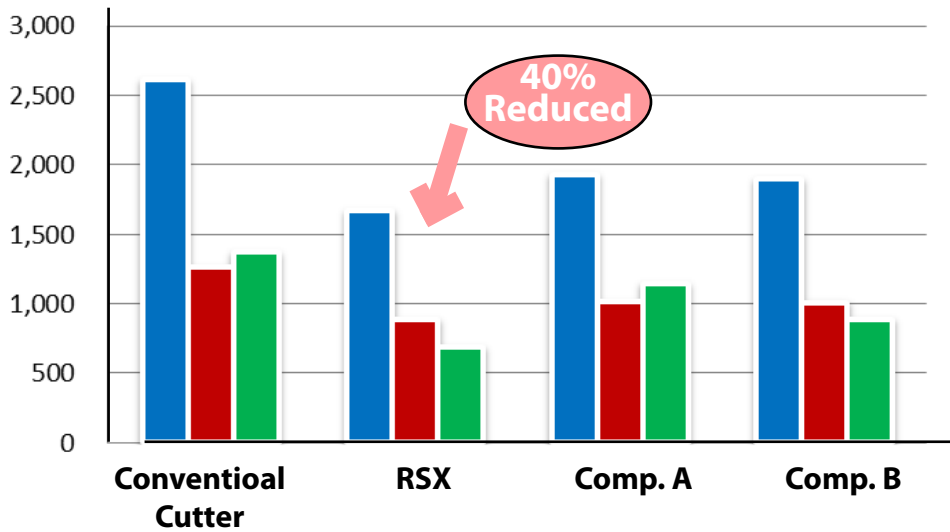


Features & Benefits

- 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 aggressive machining



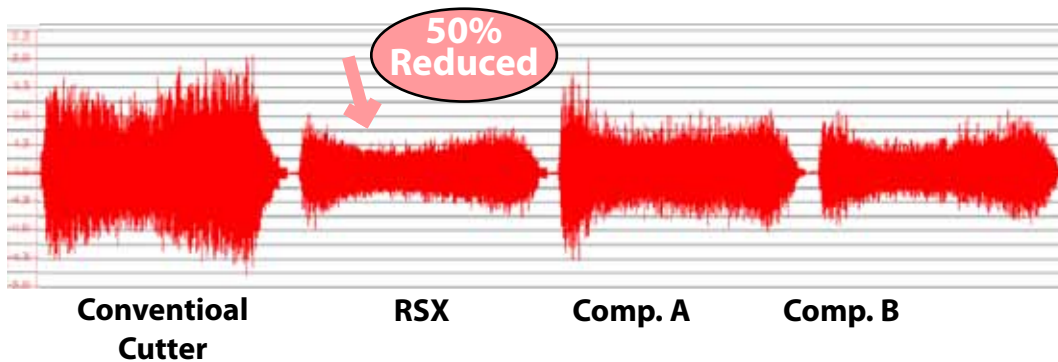
Low Cutting Force



Work piece: 304 Stainless Steel
Cutter: RSXF12050RS
 (2" cutter)
Cutting conditions:
 $V_c = 650$ SFM
 $f_z = 0.02$ in/t
 $a_p = 0.08$ in.
 $a_e = 0.39$ in., WET

■ X
 ■ Y
 ■ Z

Low Vibration



Work piece: 304 Stainless Steel
Cutter: RSXF12050RS
 (2" cutter)
Cutting conditions:
 $V_c = 650$ SFM
 $f_z = 0.02$ in/t
 $a_p = 0.08$ in.
 $a_e = 0.39$ in., DRY

Fig. 1

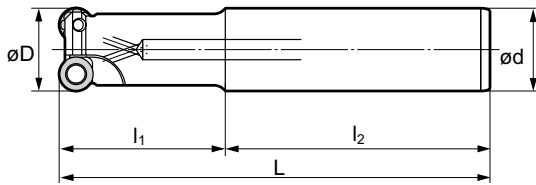


Fig. 2

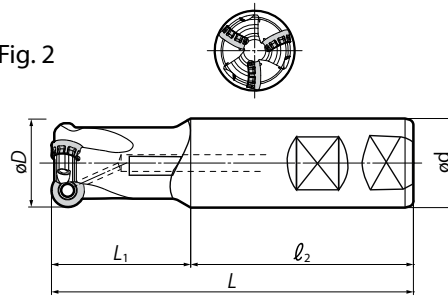
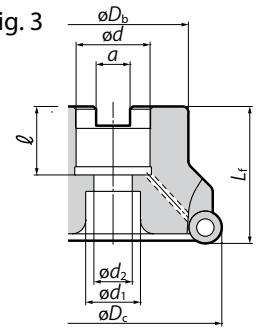


Fig. 3

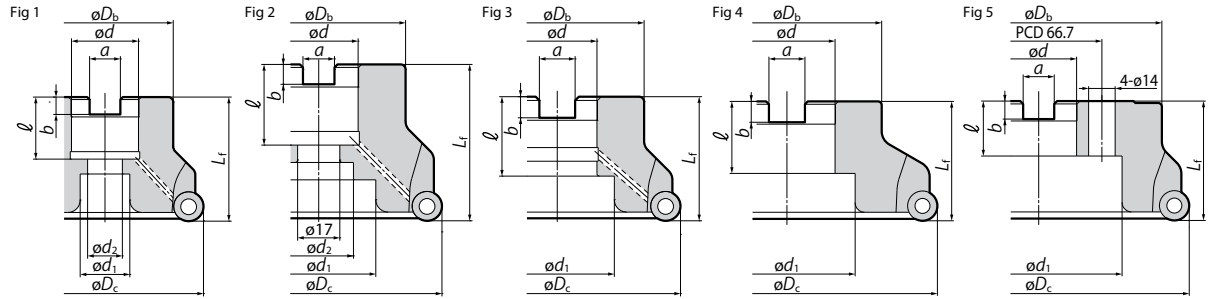


RSX Cutter Bodies- End Mill-INCH

Catalog No.	Stock	ϕD	ϕd	L	l_1	l_2	Insert Type	# of Inserts	Shank Style	Max Ramp Angle	Weight (lbs)	Fig.
RSX31000EW	•	1.000	1.000	4.340	2.060	2.280	RDET10	2	Weldon	10° 15'	0.95	2
RSX31250EW	•	1.250	1.250	4.340	2.060	2.280	RDET10	3	Weldon	6° 45'	1.15	2
RSX31500EW	•	1.500	1.250	4.340	2.060	2.280	RDET10	3	Weldon	4° 45'	1.25	2
RSX41250EW	•	1.250	1.250	4.340	2.060	2.280	RDET12	2	Weldon	12° 30'	1.20	2
RSX41500EW	•	1.500	1.250	4.340	2.060	2.280	RDET12	3	Weldon	8° 30'	1.50	2
RSXF31000EW	•	1.000	1.000	4.340	2.060	2.280	RDET10	3	Weldon	10° 15'	1.00	2
RSXF31000ELC	•	1.000	1.000	10.000	3.750	6.250	RDET10	3	Cylindrical	10° 15'	2.00	1
RSXF31250EW	•	1.250	1.250	4.340	2.060	2.280	RDET10	4	Weldon	6° 45'	1.25	2
RSXF31250ELC	•	1.250	1.250	10.000	3.750	6.250	RDET10	4	Cylindrical	6° 45'	2.75	1
RSXF31500EW	•	1.500	1.250	4.340	2.060	2.280	RDET10	4	Weldon	4° 45'	1.40	2
RSXF31500ELC	•	1.500	1.250	10.000	3.750	6.250	RDET10	4	Cylindrical	4° 45'	3.25	1
RSXF41250EW	•	1.250	1.250	4.340	2.060	2.280	RDET12	3	Weldon	12° 30'	1.40	2
RSXF41250ELC	•	1.250	1.250	10.000	3.750	6.250	RDET12	3	Cylindrical	12° 30'	3.50	1
RSXF41500EW	•	1.500	1.250	4.340	2.060	2.280	RDET12	4	Weldon	8° 30'	1.65	2
RSXF41500ELC	•	1.500	1.250	10.000	3.750	6.250	RDET12	4	Cylindrical	8° 30'	4.00	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	2.500	1.500	0.781	2.000	1.000	0.625	RDET16	9	6.4	1° 30'	3
RSXF56000R	•	6.000	4.380	2.500	1.500	0.781	2.000	1.312	0.625	RDET16	10	10.5	1°	3



RSX Cutter Bodies-Shell Mill-Metric

Catalog No.	Stock	ϕD_c	ϕD_b	L_f	ϕd	a	b	ℓ	ϕd_1	ϕd_2	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

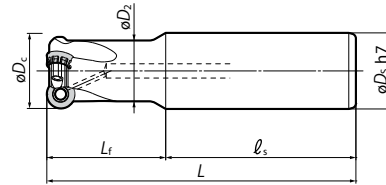
RSX12080R	•	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET10	6	2.20	2° 50'	1
RSX12100R	•	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET12	6	4.19	2° 10'	2
RSX16080R	•	80	55	50	1.0 in.	9.5	6.0	25	20	13	RDET12	5	1.98	4° 10'	1
RSX16100R	•	100	70	63	1.25 in.	12.7	8.0	32.5	46	28	RDET12	6	3.97	3° 00'	2
RSX16125R	•	125	80	63	1.5 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	IC		Thickness	
	●	●	●	0.394	0.156	
	●	●	●			
RDET10T3M0EN-G	●	●	●	0.472	0.187	
RDET10T3M0EN-H	●	●	●			
RDET1204M0EN-G	●	●	●	0.629	0.256	
RDET1204M0EN-H	●	●	●			
RDET1606M0EN-G	●	●	●			
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	Ferrite System	200 HB	500 - 650	0.006 - 0.014	ACM300
		Martensitic	200~330HB	250 - 600	0.006 - 0.014	ACM300
	Cr-Ni Based	Austenitic	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	Titanium	Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
		Pure Titanium	(Rm400)	200 - 325	0.004 - 0.012	
		$\alpha+\beta$ 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.

Material	Wear Resistance ←	Fracture Resistance →
Stainless Steel	ACM100	
M	ACM200	
Exotic Material	ACM300	
S		

ACM100/300 (PVD)

Cross sectional TEM image

20nm

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

Conventional

Residual tensile stress

Cracks easily propagate = Unstable

ACM200

Turn to compressive stress

Crack propagation is inhibited = Stable



SUMITOMO

CARBIDE - CBN - DIAMOND

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