

High-efficiency and High-rigidity
Radius Milling Cutter

SEC-Wave Radius Mill **RSE** Series

**Tough cutter for high-efficiency
machining of stainless steel and
exotic alloy**



Lineup of Ground Type and M Class Inserts

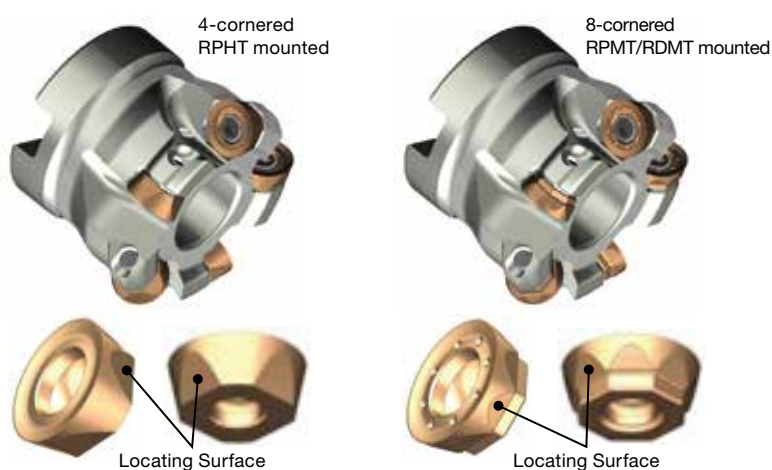
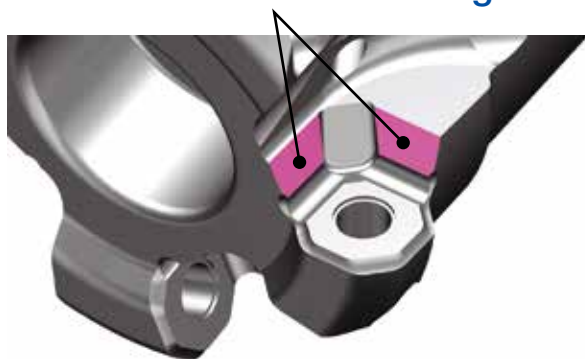


■ Features

- High-efficiency, high-rigidity radius cutter
Wide insert seat face design achieves excellent durability, for high efficiency machining of stainless steel etc. and is ideal for roughing of aerospace components such as turbine blades.
- Lineup of ground type and M class inserts
In addition to the 4-cornered Ground type inserts, economical 8-cornered M Class inserts are also available.
- Uses new grades for exotic alloy machining
Utilizing newly developed ACS2500/ACS3000 grades to achieve stable and long tool life in machining exotic alloys, such as titanium alloys and Ni-based heat-resistant alloys, as well as stainless steel.

■ High-rigidity clamp design

Wide Insert Seat Face Design



4-cornered Ground type inserts and 8-cornered M Class inserts can be used on the same cutter body

■ Product Range

Type	Cat. No.	Max. Diameter (mm)							
		ø25	ø32	ø40	ø42	ø50	ø52	ø63	ø80
Shell	RSE 10000RS○○			5		6			
	RSE 12000RS○○			4	4	5 6	5	6	8
	RSE 12000R○○ Inch								8
Shank	RSE 10000E○○	2 3	3 4						

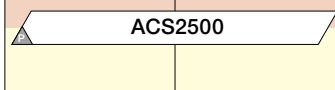
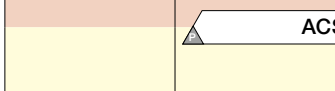
Number in ● shows the number of teeth Inch Inch Bore

Grade Features

Work Material	Grade	Coating Thickness (μm)	Features
 Exotic Alloy	ACS2500	3	Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping resistant coating, provide outstanding performance especially in machining titanium alloys
 Stainless Steel	ACS3000	3	High toughness carbide substrate and coating with excellent chipping resistance provide outstanding stability when machining titanium alloys, heat-resistant alloys or stainless steel

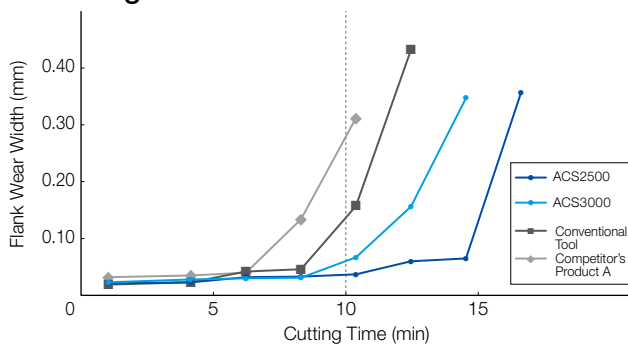
Grade Application Range

The newly developed **ACS2500/ACS3000** grades ideal for machining titanium alloys, heat-resistant alloys and stainless steel are now available!

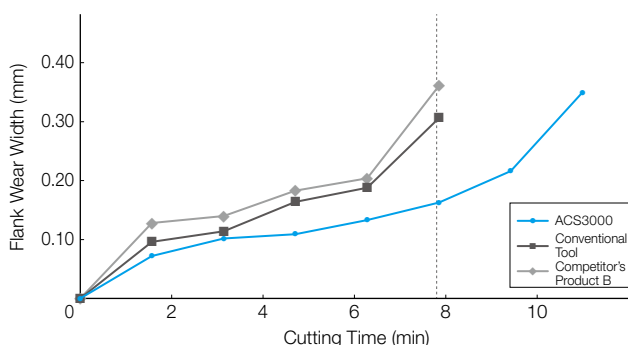
Work Material		Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
 Exotic Alloy	Coated Carbide			
 Stainless Steel				
 Exotic Alloy	Coated Carbide			
 Stainless Steel				

The letters "C" and "P" at the end of each grade indicate the coating type. ▽: CVD ▲: PVD

Cutting Performance

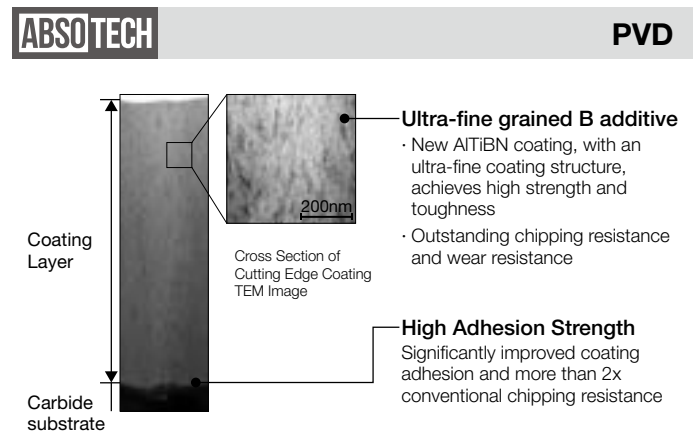


Machine : Vertical Machining Centre BT40, Work Material: SUS630H
 Tool : RSE 12050RS05, Insert: RPHT1204M0EN-G
 Cutting conditions : $v_c = 150\text{m/min}$ $f_z = 0.3\text{mm/t}$ $a_p = 2\text{mm}$ $a_e = 10\text{mm}$ Wet

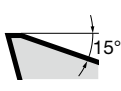


Machine : Vertical Machining Centre BT40, Work Material: Inconel 718 (44HRC)
 Tool : RSE 12050RS05, Insert: RPHT1204M0EN-G
 Cutting conditions : $v_c = 40\text{m/min}$ $f_z = 0.3\text{mm/t}$ $a_p = 2\text{mm}$ $a_e = 30\text{mm}$ Wet

New PVD Coating Features



Chipbreaker Shape

Work Material	 Stainless Steel,  Exotic Alloy
Applications	General-purpose to roughing
Features	Standard
Chipbreaker	G Type 
Cutting Edge Cross Section	



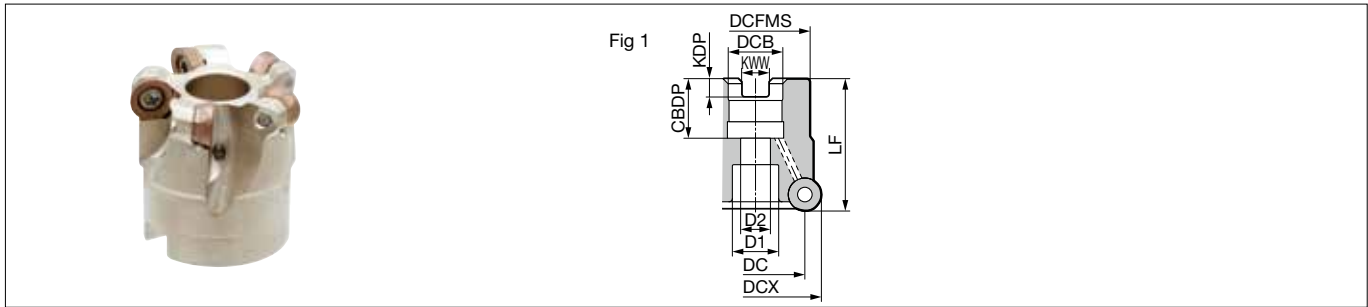
Superb wear resistance for a tool life 1.4 times greater than that of conventional tools and competitor's products



Superb fracture resistance for a tool life 1.4 times greater than that of conventional tools and competitor's products

Rake Angle	Radial	-5°
	Axial	4°

5mm	1.4mm
4-cornered	8-cornered



■ Body (Shell Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CDBP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	RSE 10040RS05	○	40	30	33	40	16	8.4	5.6	18	14	9	5	0.16	1
	10050RS06	○	50	40	40	40	22	10.4	6.3	20	18	11	6	0.27	1

Inserts are sold separately.

■ Identification Code

RSE 10 040 R S 05

Series Insert Size Dia. Feed Direction Metric Bore Number of Teeth

■ Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
BFTX03584IP	3.0	HPS1015	TRB15IP	SUMI-P

■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light					
	Medium Cutting					
	Roughing					
Cat. No.		ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Fig
RPHT10T3M0EN-G		○	○	10	3.97	1
RPMT10T3M0EN-G		○	○	10	3.97	2
RDMT10T3M0EN-G		○	○	10	3.97	3

Fig 1 4-cornered

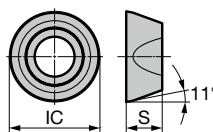


Fig 2 8-cornered

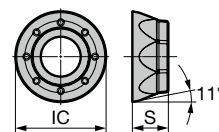
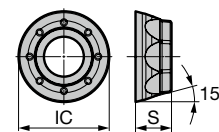


Fig 3 8-cornered

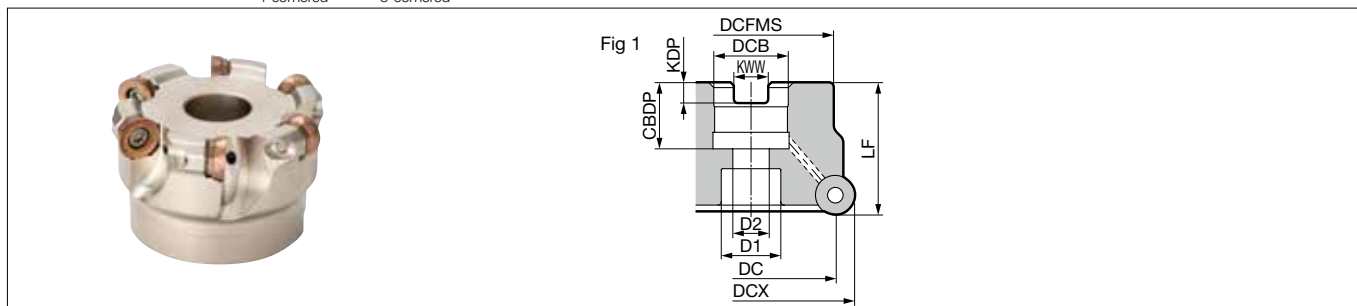
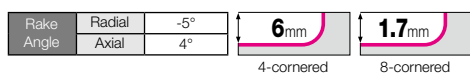


■ Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	G	25 - 35 - 50	0.15 - 0.25 - 0.35	ACS2500/ACS3000
		Ti Alloy	—	G	30 - 60 - 90	0.15 - 0.25 - 0.35	ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	115 - 145 - 175	0.15 - 0.30 - 0.45	ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	105 - 130 - 155	0.15 - 0.30 - 0.45	ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	125 - 155 - 190	0.15 - 0.30 - 0.45	ACS2500/ACS3000

Note

- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- For groove milling, calculate the feed rate at around 70% of the above values.
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.



■ Body (Shell Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CDBP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
RSE 12040RS04	○	40	28	33	40	16	8.4	5.6	18	13.5	9	4	0.15	1
12042RS04	○	42	30	33	40	16	8.4	5.6	18	14	9	4	0.17	1
12050RS05	○	50	38	41	40	22	10.4	6.3	20	18	11	5	0.24	1
12050RS06	○	50	38	41	40	22	10.4	6.3	20	18	11	6	0.23	1
12052RS05	○	52	40	41	40	22	10.4	6.3	20	18	11	5	0.26	1
12063RS06	○	63	51	50	40	22	10.4	6.3	20	18	11	6	0.47	1
12080RS08	○	*80	68	55	50	27	12.4	7	22	20	14	8	0.89	1
12080R08	○	*80	68	55	50	25.4	12.4	7	22	20	14	8	0.90	1

Inserts are sold separately.

 For mounting the ø80mm sized cutters marked with * to an arbor, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

■ Identification Code

RSE 12 050 R S 05

Series Insert Size Dia. Feed Direction Metric Bore Number of Teeth

■ Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
				
BFTX04095IP	3.0	HPS1015	TRB15IP	SUMI-P

■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light					
	Medium Cutting					
	Roughing					
Cat. No.		ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Fig
RPHT1204M0EN-G		○	○	12	4.76	1
RPMT1204M0EN-G		○	○	12	4.76	2
RDMT1204M0EN-G		○	○	12	4.76	3

Fig 1 4-cornered

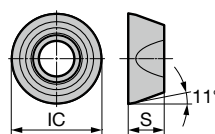


Fig 2 8-cornered

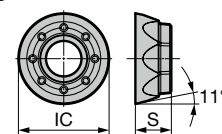
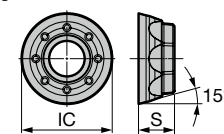


Fig 3 8-cornered



■ Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	G	25 - 35 - 50	0.15 - 0.25 - 0.35	ACS2500/ACS3000
		Ti Alloy	—	G	30 - 60 - 90	0.15 - 0.25 - 0.35	ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	115 - 145 - 175	0.15 - 0.30 - 0.45	ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	105 - 130 - 155	0.15 - 0.30 - 0.45	ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	125 - 155 - 190	0.15 - 0.30 - 0.45	ACS2500/ACS3000

Note

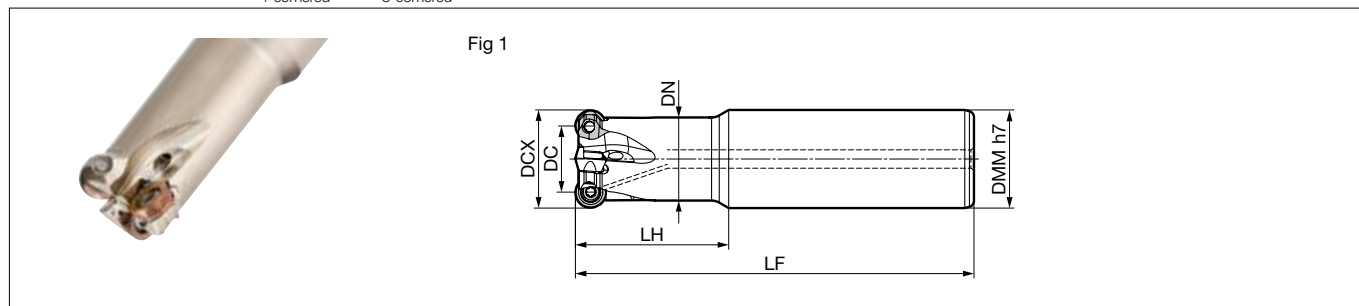
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- For groove milling, calculate the feed rate at around 70% of the above values.
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Rake Angle	Radial	0°
	Axial	4°




4-cornered

8-cornered



■ Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSE 10025E02	○	25	15	25	20.3	50	130	2	0.40	1
10025E03	○	25	15	25	20.3	50	130	3	0.39	1
10032E03	○	32	22	32	27.1	50	130	3	0.68	1
10032E04	○	32	22	32	27.1	50	130	4	0.67	1

Inserts are sold separately.

■ Identification Code

RSE 10 032 E 03

Series Insert Size Dia. Shank Type Number of Teeth

■ Parts

Flat Insert Screw	Wrench	Anti-seizure Cream
 BFTX03584IP	 3.0 TRDR15IP	 SUMI-P

■ Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light					
	Medium Cutting					
	Roughing					
Cat. No.		ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Fig
RPHT10T3M0EN-G		○	○	10	3.97	1
RPMT10T3M0EN-G		○	○	10	3.97	2
RDMT10T3M0EN-G		○	○	10	3.97	3

Fig 1 4-cornered

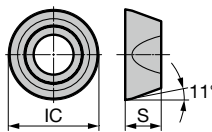


Fig 2 8-cornered

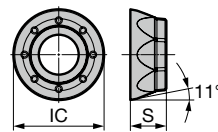
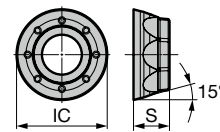


Fig 3 8-cornered



■ Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed v_c (m/min) Min. - Optimum - Max.	Feed Rate f_z (mm/t) Min. - Optimum - Max.	Grade
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		Ti Alloy	—	G	30 - 60 - 90	0.15 - 0.25 - 0.35	ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	115 - 145 - 175	0.15 - 0.30 - 0.45	ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	105 - 130 - 155	0.15 - 0.30 - 0.45	ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	125 - 155 - 190	0.15 - 0.30 - 0.45	ACS2500/ACS3000

Note

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- For groove milling, calculate the feed rate at around 70% of the above values.
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

MEMO

A large rectangular area filled with a uniform grid of small dots, intended for handwritten notes or a drawing.

MEMO



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