



■ Features

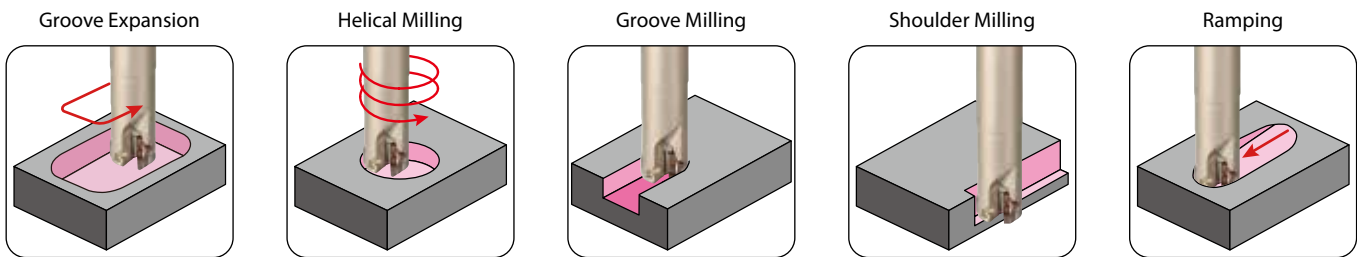
- Ideal for machining titanium alloys for aerospace
 Designed for machining at large ramping angles, coupled with a selection of corner radii, makes it applicable for a variety of applications including titanium structural parts
- Stable and long tool life in machining titanium alloys
 The optimized cutting edge shape together with newly developed ACS2500/ACS3000 grades (for machining exotic alloys) result in excellent wear resistance and fracture resistance
- Optimized cutting edge shape and chip pocket for excellent chip evacuation

■ Product Range

Number in ●●● shows the number of teeth

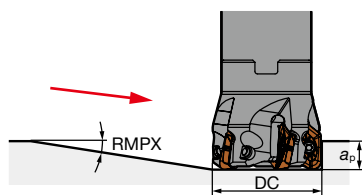
Type	Description	Cat. No.	Dia. (mm)		
			ø32	ø50	ø63
Shell	Standard	WSE 16000RS○○		●5	●6
	Long	WSE 16000RS○○L		●5	●6
Shank	Standard	WSE 16000E○○	●3		

■ Applicable to various applications!

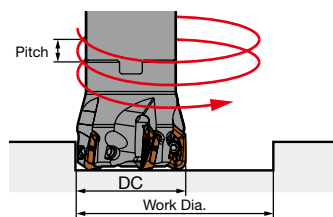


■ Ramping/Helical Milling Upper Limit

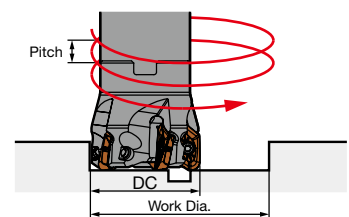
Ramping



Flat bottom machining



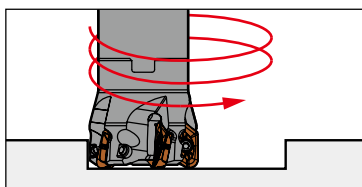
Machining with prepared hole



Dia. DC ø (mm)	Corner Radius RE	Max. Ramping Angle RMPX (°)
32	RE ≥ 5.0	8.4
	RE ≤ 4.0	12.2
50	RE ≥ 5.0	3.6
	RE ≤ 4.0	5.6
63	RE ≥ 5.0	2.5
	RE ≤ 4.0	3.9



Dia. DC ø (mm)	Corner Radius RE	Max. Hole Dia. ø (mm)	Max. Pitch (mm/rev)	Standard Work Dia. ø (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. ø (mm)	Max. Pitch (mm/rev)
32	4.0	55.3	13.0	55.2	13.0	45.9	3.0
	0.8	61.3	13.0	56.3	13.0	45.9	2.9
50	4.0	91.6	11.2	91.6	11.2	81.9	2.8
	0.8	97.3	13.0	92.2	11.0	81.9	2.7
63	4.0	117.6	10.1	117.6	10.1	107.9	2.7
	0.8	123.3	11.7	118.2	9.9	107.9	2.6

Precautions for Flat Bottom Machining





- For flat bottom machining, if the work diameter is smaller than the minimum machining diameter, there will be a centre uncut portion.
- A prepared centre hole should be made.
- Above the maximum machining diameter, this portion can be removed by traverse cutting with the same cutter.

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 a coating with excellent chipping resistance provide outstanding stability when machining titanium alloys, heat-resistant alloys or stainless steel

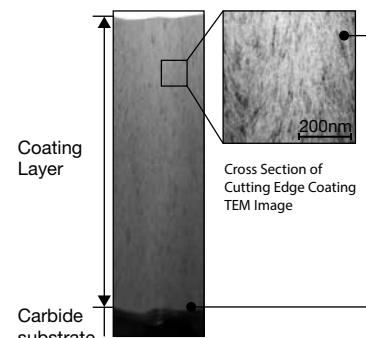
Grade Application Range

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  Stainless Steel	Coated Carbide	ACS2500		
	Coated Carbide		ACS3000	




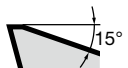
New PVD Coating Features

ABSOTECH
PVD

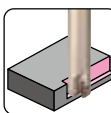

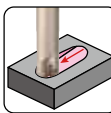

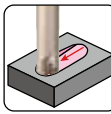


- Ultra-fine grained B additive
- New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
- Outstanding chipping resistance and wear resistance
- High Adhesion Strength
- Significantly improved coating adhesion and more than 2x conventional chipping resistance

Chipbreaker Shape

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

Excellent Chip Control

Cutting Conditions	Chip	
$v_c = 60\text{m/min}$ $f_z = 0.12\text{mm/t}$ $a_p = 10\text{mm}$ $a_e = 21\text{mm}$ Wet (7MPa) Ramping Angle: 0°	 Stable Chip Control WSE Type	 Unstable Chips Competitor's Product
$v_c = 50\text{m/min}$ $f_z = 0.12\text{mm/t}$ $a_p = 4\text{mm}$ $a_e = 50\text{mm}$ Wet (7MPa) Ramping Angle: 3°	 Stable Chip Control WSE Type	 Unstable Chips Competitor's Product
$v_c = 50\text{m/min}$ $f_z = 0.12\text{mm/t}$ $a_p = 4\text{mm}$ $a_e = 50\text{mm}$ Wet (7MPa) Ramping Angle: 5.5°	 Stable Chip Control WSE Type	X Machining Not Possible Competitor's Product

Machine : 5-axis Machine HSK100, Work Material: Ti-6Al-4V
 Tool : WSE 16050RS05L (ø50, 5-tooth)
 Insert : XOMT160540PEER-E (ACS3000)