Milling Cutters H

H1 to H249



Selection Guide for Milling Cutters H2
Selection Guide for Modular Tools H9
Selection Guide for Modular Tools / Cast Iron High-Feed and Milling Cutters (Special Purpose) ... H10
Selection Guide for Milling Cutters (Shank type) H11
Grades for Milling H14
ACS1000/ACS2500/ACS3000 ..... H16
Cutter Identification Code H18
Insert Identification Code H19

Face Milling	For General Milling of Steel, Die Steel, Cast Iron, Stainless Steel, Exotic Alloys, and Non-Ferrous Metal	Expansion!	SEC-WaveMill WGX series H20
	For General Milling of Steel, Die Steel, Cast Iron, Stainless Steel, Exotic Alloys, and Non-Ferrous Metal		SEC-WaveMill WGC series H26
	For General Milling of Steel, Die Steel, Cast Iron, Stainless Steel, Exotic Alloys, and Non-Ferrous Metal	Expansion!	SEC-Sumi Dual Mill DGC series H30
	For General Milling of Steel and Exotic Alloy		SEC-SUMI UFO MILL UFO series H36
	For General Milling of Steel and Exotic Alloy		SEC-ACE MILL FPG series H39
	For General Milling of Steel and Exotic Alloy		SEC-Multi Use Endmill FPE series H40
	For General Milling of Steel and Exotic Alloy		SEC-ACE MILL EHG series H41
	For High-efficiency Cast Iron/Cast Steel Milling		SEC-DNX(F) series / DNH series / DNHS series H42
	For General Milling of Steel and Cast Iron		SEC-ACE MILL DNF series H45
	For General Milling of Non-Ferrous Metal		SEC-ACE MILL APG series H46
	For General Milling of Steel, Cast Iron and Stainless Steel		SEC-ACE MILL DPG series / DPGF series H47
Shoulder Milling	For High-precision Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	Expansion!	SEC-WaveMill WEZ series H50
	For High-precision Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	Expansion!	SEC-WaveMill WEZR series H74
	For High-precision Milling of Steel, Die Steel, Cast Iron, Stainless Steel, Exotic Alloys, and Non-Ferrous Metal		SEC-WaveMill WEX series H86
	For High-efficiency Deep-Step Shoulder Milling		SEC-Wave Repeater WRX series H96
	For Roughing of Stainless Steel and Exotic Alloy		SEC-WaveMill WSE series H102
	For General Milling of Steel, Die Steel, Cast Iron, Stainless Steel, and Non-Ferrous Metal	Expansion!	SEC-WaveMill WFX series H108
	For General Milling of Steel and Cast Iron	Expansion!	SEC-Sumi Dual Mill DFC series H117
	For High-efficiency Milling of Steel, Cast Iron and Stainless Steel	Expansion!	SEC-Sumi Dual Mill TSX series H124
	For High-efficiency Cast Iron/Cast Steel Milling		SEC-Sumi Power Mill PWC(F) series H152
	For Milling of Steel, Cast Iron and Stainless Steel		SEC-Sumi Power Mill PWS(F) series / PWSR series H153
	For Milling of Steel, Cast Iron and Stainless Steel		SEC-ACE MILL CHG series H156
	For Milling of Steel, Cast Iron and Non-Ferrous Metal		SEC-Multi Use Endmill CHE series H157
	For Milling of Steel, Cast Iron and Stainless Steel		SEC-ACE MILL CPG series H160
	For Milling of Steel, Cast Iron and Stainless Steel		SEC-Light Endmill FMS type H161
Multi-purpose			SEC-WaveMulti WMM series H162
High-Feed	For High-feed Milling of Steel, Die Steel, Cast Iron, and Stainless Steel	Expansion!	SEC-Sumi Dual Mill DMSL series / DMSW series ... H166
	For High-speed, High-efficiency Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	Expansion!	SEC-WaveMill WFXH series H178
	For High Feed Milling of Steel, Cast Iron and Stainless Steel		SEC-Metal Slash Mill MSX series H184
Radius	For Milling of Stainless Steel and Exotic Alloy	Expansion!	SEC-Wave Radius Mill RSE series H188
	For Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Exotic Alloy	Expansion!	SEC-Wave Radius Mill RSX series H194
	For Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal		SEC-Wave Radius Mill WRCX series H202
R/3D Profiling	For Roughing		SEC-WaveBall WBMR series H207
	For Finishing		SEC-WaveBall WBMF series H210
Side Cutters / T-Slot Cutters	For Groove Milling	Expansion!	SEC-Sumi Dual Mill TGC series H212
	For T-Slot Endmilling		SEC-T Slot Cutters TSE type H218
Chamfering	Chamfering	Expansion!	SEC-WaveMill WFXC series H219
Non-Ferrous Metal	For High-speed, High-efficiency Milling of Aluminum Alloy and Non-Ferrous Metal	Expansion!	ALNEX ANX series H222
	For High-efficiency Milling of Aluminum Alloy and Non-Ferrous Metal		HF series H232
	For High-speed Milling of Aluminum Alloy and Non-Ferrous Metal		RF series H238
	For Small Diameter Milling of Aluminum Alloy and Non-Ferrous Metal		SRF series H240
	For High-speed, High-efficiency Milling of Non-Ferrous Metal		SEC-WaveMill WAX series H242
Cast Iron, High-Speed	For High-speed Finishing of Cast Iron		SUMIBORON BN Finish Mill EASY (FMU/FMU-E type) ... H247
	For High-speed Finishing of Cast Iron		SUMIBORON BN Finish Mill (FM(F) type) H248
	For High-speed, High-efficiency Milling of Cast Iron		Cutter RM series for High-speed Milling of SUMIBORON Cast Iron ... H249

H Modular Tools ···H251

H Special Purpose Cutters ···H273

Stock Markings and Symbols

- ●● mark: Standard stocked item
- ● mark: To be replaced with the new item featured on the same page
- ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)
- * mark: Semi-standard stock (please confirm stock availability)
- ○ mark: Stock or planned stock (please confirm stock availability)
- Blank: Made-to-order item
- — mark: Not available

Selection Guide for Milling Cutters

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: General-purpose Face Milling	Applications: Finishing Face Milling	Applications: High-Feed Face Milling	Applications: Shoulder Milling	Applications: Groove Milling	Applications: Ramping	Applications: Chamfering	Applications: Drilling	Applications: Profiling	Applications: Profile finishing	Work Material: P General Steel/Cast Steel/Alloy Steel	Work Material: P Tempered Steel/Die Steel	Work Material: M Stainless Steel	Work Material: K Cast Iron/Ductile Cast Iron	Work Material: N Non-Ferrous Metal	Work Material: N Aluminum Alloy	Work Material: S Ti Alloy/Heat-Resistant Alloy	Work Material: H Hardened Steel 45 to 55 HRC
Face Milling	* 6mm 45°	ø40 to ø250	–	WGX →H22	**WGX**13000R/L(S) **WGXM**13000R/L(S) **WGXF**13000R/L(S)	(4)	20° to 22°	-20° to -24°	◎	◎									◎	◎	◎	◎	◎	◎	◎	
	* 6mm 45°	ø32 to ø63	ø32	WGX-EW →H25	**WGX**13000EW		20° to 22°	-20° to -24°	◎	◎									◎	◎	◎	◎	◎	◎	◎	
	* 4mm 45°	ø32 to ø100	–	WGC →H26	**WGC**3000 **WGC**3000RS	(4)	20°	-10° to -19°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	* 6mm 45°	ø40 to ø200	–		**WGC(F)**4000 **WGC(F)**4000RS		20° to 22°	-20° to -24°																		
	* 4mm 45°	ø20 to ø63	ø20 to ø32	WGC-EW →H28	**WGC**3000EW		20°	-10° to -19°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	* 6mm 45°	ø32 to ø63	ø32		**WGC**4000EW		20° to 22°	-20° to -24°																		
	* 6mm 45° * 3mm 45°	ø40 to ø250	–	DGC →H32	**DGC**13000R(S) **DGCM**13000R(S) **DGCF**13000R(S)	(8)	-5°	-10°	◎										◎	◎	◎	◎	◎	◎	○	
	* 6mm 45° * 3mm 45°	ø40 to ø63	ø32	DGC-EW →H35	**DGC**13000EW	(16)	-5°	-10°	◎										◎	◎	◎	◎	◎	◎	○	
	* 5.5mm 45°	ø80 to ø315	–	UFO →H36	**UFO**4000	(4)	27°	-7°	○	○									○	○	○	○	○	○		
	* 7.5mm 45°	ø80 to ø315	–		**UFO**5000		27°	-7°																		
	* 5.5mm 45°	ø50 to ø100	ø32 to ø42	UFO-E →H38	**UFO**4000E	(4)	27°	-7°	○	○									○	○		○	○	○		
	* 6.5mm 45°	ø80 to ø315	–	FPG →H39	**FPG**4000	(4)	15°	-4°	○										○	○	○	○	○	○		
	* 8.5mm 45°	ø80 to ø315	–		**FPG**5000		15°	-4°																		
	* 6.5mm 45°	ø50 to ø100	ø32 to ø42	FPE →H40	**FPE**4000	(4)	15°	-3°	○										○	○		○				
	* 5.5mm 45°	ø80 to ø200	–	EHG →H41	**EHG**4000	(4)	20°	-3°	○										○	○	○	○				
	* 7.5mm 45°	ø80 to ø200	–		**EHG**5000		20°	-3°																		

*Use a chamfering cutter for chamfering operations. *The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G20 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Face Milling	8mm 65°	ø80 to ø160	–	DNX →H43	**DNX**12000 **DNXF**12000	(8)	-5°	-6°	○	○									○			◎				
	3mm 24° 5mm 24°	ø80 to ø160	–	DNH(S) →H44	**DNH**12000 **DNHS**12000		-5°	-6°			○								○			◎				
	6.5mm 65°	ø80 to ø500	–	DNF →H45	**DNF**4000	(4)	-5°	-6°	○	○									○			◎	×	×	×	○
	7mm 65°	ø80 to ø500	–	APG →H46	**APG**4000	(4)	18°	-2°	○	○									○	○	○	○	◎	◎		×
	9.5mm 75°	ø80 to ø200	–	DPG →H47	**DPG**4000 **DPGF**4000	(4)	8°	0°	○	○									○	○	○	○				
	12mm 75°	ø82 to ø502	–		**DPG**5000		8°	0°																		
Shoulder Milling / Deep Shoulder Milling / Semi-Shoulder Milling	10mm 90°	ø40 to ø100	–	WEZ →H58	**WEZ**11000R(S)	(2)	14° to 15°	-7° to -11°	◎	◎		◎	◎	◎			○		◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø40 to ø160	–		**WEZ**17000R(S)		10° to 15°	-4° to -9°																		
	10mm 90°	ø14 to ø80	ø10 to ø32	WEZ-E →H62	**WEZ**11000E **WEZ**11000ES **WEZ**11000EL		6° to 15°	-7° to -18°	◎	◎		◎	◎	◎			○		◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø25 to ø80	ø16 to ø42		**WEZ**17000E **WEZ**17000ES **WEZ**17000EL		6° to 15°	-6° to -12°																		
	44-53mm 90°	ø40 to ø50	–	WEZR →H76	**WEZR**11000RS	(2)	14° to 15°	-11° to -9°	○			◎	○						◎	◎	◎	◎	◎	◎	◎	
	29-84mm 90°	ø50 to ø80	–		**WEZR**17000RS		7° to 15°	-8° to -6°																		
	19-61mm 90°	ø20 to ø40	ø20 to ø32	WEZR-E →H80	**WEZR**11000E		8° to 14°	-15° to -11°																		
	29-84mm 90°	ø40 to ø50	ø32 to ø42		**WEZR**17000E		10° to 12°	-9° to -8°																		
	6mm 90°	ø32 to ø63	–	WEX-F/R →H90	**WEX**1000F	(2)	9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø40 to ø63	–		**WEX**2000F		23° to 25°	16° to 18°																		
	14mm 90°	ø40 to ø125	–		**WEX**3000F **WEX**3000R **WEXF**3000R		19° to 24°	12° to 15°																		
	6mm 90°	ø10 to ø25	ø10 to ø20	WEX-E →H93	**WEX**1000E **WEX**1000EL	(2)	9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø14 to ø63	ø16 to ø32		**WEX**2000E **WEX**2000EL		14° to 25°	10° to 18°																		
	14mm 90°	ø25 to ø63	ø20 to ø42		**WEX**3000E(-C) **WEX**3000ES(-C) **WEX**3000EL		16° to 24°	8° to 15°																		

*Use a chamfering cutter for chamfering operations. *The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G20 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

Selection Guide for Milling Cutters

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling: General-purpose	Face Milling: Finishing	Face Milling: High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Cardon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Shoulder Milling / Deep Shoulder Milling / Semi-Shoulder Milling	18-36mm 90°	ø40 to ø50	–	WRX-R →H98	**WRX**2000RS	(2)	24°	16° to 17°	○			◎	○	○					◎	◎	◎	◎	◎	◎	◎	
	27-53mm 90°	ø50 to ø100	–		**WRX**3000R(S)		22° to 24°	13° to 15°																		
	18-36mm 90°	ø20 to ø40	ø20 to ø42	WRX-E →H100	**WRX**2000E	(2)	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	27-53mm 90°	ø40 to ø50	ø32 to ø42		**WRX**3000E		20° to 22°	12° to 13°																		
	15mm 90°	ø50 to ø63	–	WSE →H104	**WSE**16000RS	(2)	8° to 14°	-9° to -6°	○			◎	○	◎							◎				◎	
	15mm 90°	ø32	ø32	WSE-E →H106	**WSE**16000E		8°	-9°																		
	6mm 90°	ø40 to ø100	–	WFX →H110	**WFX**08000R(S) **WFXM**08000R(S) **WFXF**08000R(S)	(4)	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	10mm 90°	ø50 to ø250	–		**WFX**12000R(S) **WFXF**12000R(S)		8°	-8°																		
	6mm 90°	ø20 to ø63	ø16 to ø32	WFX-E →H115	**WFX**08000E **WFXM**08000E		12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	10mm 90°	ø40 to ø80	ø32		**WFX**12000E **WFXF**12000E		8°	-8°																		
	6mm 90°	ø50 to ø200	–	DFC →H120	**DFC**09000R(S) **DFCM**09000R(S) **DFCF**09000R(S)	(6)	-5°	-9°	◎	○		◎	○						◎	◎	○	◎			○	
	6mm 90°	ø25 to ø80	ø25 to ø42	DFC-E →H123	**DFC**09000E **DFCM**09000E		-5°	-9°																		
	8mm 90°	ø40 to ø80	–	TSX →H128	**TSX**08000R/L(S) **TSXF**08000R/L(S)	(4)	-6°	-20°	◎	◎		◎	○						◎	◎	◎	◎			◎	
	12mm 90°	ø40 to ø315	–		**TSX**13000R/L(S) **TSXM**13000R/L(S) **TSXF**13000R/L(S)			-23° to -15°																		
	8mm 90°	ø16 to ø80	ø16 to ø32	TSX-E →H136	**TSX**08000E **TSXF**08000E		-6°	-36° to -20°	◎	◎		◎	○						◎	◎	◎	◎			◎	
	12mm 90°	ø25 to ø80	ø25 to ø32		**TSX**13000E **TSXM**13000E **TSXF**13000E			-31° to -15°																		
	34-60mm 90°	ø32 to ø63	–	TSXR →H140	**TSXR**08000RS		-6° to -3°	-20° to -15°	○			◎							◎	◎	◎	◎			◎	
	41-60mm 90°	ø40 to ø125			**TSXR**13000RS			-23° to -15°																		
	21-40mm 90°	ø20 to ø40	ø20 to ø32	TSXR-E →H144	**TSXR**08000E		-6° to -3°	-33° to -18°	○			◎							◎	◎	◎	◎			◎	
	41-60mm 90°	ø40 to ø50	ø32 to ø42		**TSXR**13000E			-23° to -18°																		

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G20 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Shoulder Milling / Deep Shoulder Milling / Semi-Shoulder Milling	15mm 88°	ø80 to ø200	–	PWC →H152	**PWC**4000 **PWCF**4000	(4)	-5°	-15°	○			○	○									○					
	16mm 90° / 31mm 90°	ø80 to ø250	–	PWS →H154	**PWS**4000 **PWSF**4000 / **PWSR**4000	(4)	-6°	-15°	○			○	○							○	○	○	○				
	16mm 90°	ø80 to ø315	–	CHG →H156	**CHG**4000	(3)	15°	4°	○			○								○	○	○	○	○	○		
	8mm 90°	ø16 to ø28	ø16 to ø25	CHE →H157	**CHE**2000	(3)	6° to 15°	-3° to 0°	○			○	○							○	○	○	○	○	○		
	13mm 90°	ø30 to ø40	ø32		**CHE**3000		15°	-3° to 0°																			
	16mm 90°	ø50 to ø100	ø32 to ø42		**CHE**4000		15°	2° to 4°																			
	18mm 90°	ø80 to ø315	–	CPG →H160	**CPG**4000	(3)	6°	0°				○	○							○	○	○	○				
	8-19mm 90°	ø16 to ø60	ø16 to ø42	FMS →H161	**FMS**	(3)	3° to 7°	-4° to -6°				○	○							○	○	○	○				
Multi-purpose	17-35mm 90°	ø20 to ø30	ø20 to ø25	WMM →H163	**WMM**2000E/EL **WMM**2000ELH /EXLH	(2)	7° to 11°	15° to 16°	◎			◎	◎	◎		◎				◎	◎	◎	◎	◎	◎		
	39mm 90°	ø32 to ø40	ø32		**WMM**3000E/EL **WMM**3000ELH /EXLH		7° to 11°	17° to 19°																			
High-Feed	1.5mm 17°	ø40 to ø80	–	DMSL →H170	**DMSL**06000R(S)	(4)	-8°	-8° to -12.5°			◎	○	○	○						◎	◎	○	◎			○	○
	3mm 15°	ø50 to ø160	–	DMSW →H172	**DMSW**08000R(S)	(6)	-6°	-7° to -10°			◎	○	○	○						◎	◎	○	◎			○	○
	1.5mm 17°	ø16 to ø40	ø16 to ø32	DMSL-E →H174	**DMSL**06000E(L)	(4)	-8°	-12.5° to -16.5°			◎	○	○	○						◎	◎	○	◎			○	○
	3mm 15°	ø35 to ø50	ø32 to ø42	DMSW-E →H176	**DMSW**08000E(L)	(6)	-6°	-10° to -13°			◎	○	○	○						◎	◎	○	◎			○	○

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G20 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

Selection Guide for Milling Cutters

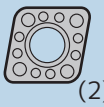
◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling: General-purpose	Face Milling: Finishing	Face Milling: High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
High-Feed	1.5mm 15°	ø40 to ø63	–	WFXH →H181	**WFXH**08000RS	(4)	6°	-6°			◎	○	○	○					◎	◎	◎	◎			○	○
	2.5mm 15°	ø50 to ø63	–		**WFXH**12000RS		6°	-6°																		
	1.5-2.5mm 20°	ø40 to ø100	–	MSX →H186	**MSX**08000RS **MSX**12000RS **MSX**14000R(S)	(3)	8°	-3° to -8°			◎	○	○	○					◎	◎	◎	◎				○
	1.0-2.5mm 20°	ø16 to ø63	ø16 to ø42	MSX-E →H187	**MSX**06000E **MSX**08000E **MSX**12000E **MSX**14000E		8°	-3° to -8°			◎	○	○	○					◎	◎	◎	◎				○
Radius	5mm 4-cornered 1.4mm 8-cornered	ø40 to ø50	–	RSE →H190	**RSE**10000RS	(4) (8)	4°	-5°	○		○			○			○				◎				◎	
	6mm 4-cornered 1.7mm 8-cornered	ø40 to ø80			**RSE**12000R(S)		4°	-5°	○		○			○			○				◎				◎	
	5mm 4-cornered 1.4mm 8-cornered	ø25 to ø32	ø25 to ø32	RSE-E →H192	**RSE**10000E		4°	0°	○		○			○			○				◎				◎	
	5mm	ø40 to ø52	–	RSX →H197	**RSX**10000 **RSXF**10000	(4)	10°	-5°	○		○	○	○	◎			◎		◎	◎	◎	◎			◎	
	6mm 4-cornered 1.6mm 8-cornered	ø40 to ø100			**RSX**12000 **RSXF**12000	(4) (8)	10°	-5°																		
	8mm 4-cornered 2.2mm 8-cornered	ø63 to ø160			**RSX**16000 **RSXF**16000		10°	-5°																		
	10mm 4-cornered 2.7mm 8-cornered	ø80 to ø160			**RSX**20000 **RSXF**20000		10°	-5°																		
	4mm	ø20 to ø25	ø20 to ø25	RSX-ES →H201	**RSX**08000ES **RSXF**08000ES	(4)	10°	-8°	○		○	○	○	◎			◎		◎	◎	◎	◎			◎	
	5mm	ø25 to ø32	ø25 to ø32		**RSX**10000ES **RSXF**10000ES		10°	-5°																		
	6mm 4-cornered 1.6mm 8-cornered	ø32	ø32		**RSX**12000ES **RSXF**12000ES	(4) (8)	10°	-5°																		

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G20 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Radius	6mm	ø40 to ø80	–	WRCX  →H203	**WRCX**12000 **WRCXF**12000	 (4) (8)	-3°	0°			○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	8mm	ø63 to ø100	–		**WRCX**16000 **WRCXF**16000		-3°	0°																		
	10mm	ø125 to ø160	–		**WRCX**20000		-3°	0°																		
	4mm	ø20 to ø25	ø20 to ø25	WRCX-E  →H206	**WRCX**08000E	 (4) (8)	-3°	-3° to 0°			○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	5mm	ø25 to ø32	ø25 to ø32		**WRCX**10000E		-3°	0°																		
	8mm	ø40 to ø50	ø32		**WRCX**16000E		-3°	0°																		
R/3D Profiling	20-47mm	R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR  →H208	**WBMR**2000	 (2)	-10°	—					◎				◎		◎	◎	◎	◎				
	30-69mm				**WBMR**2000L																					
	0.1-0.4mm	R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF  →H211	**WBMF**1000	 (1)	0°	—					◎				◎	◎	◎	◎						
Side Cutters / T-Slot Cutters	17-24.6mm 90°	ø100 to ø200	–	TGC  Standard Disc Shape →H215	**TGC**13000	 (4)	10°	-11.5° to -9.5°	○			○	◎						◎	◎	○	◎				
	9-22mm 90°	ø21 to ø50	ø25 to ø32	TSE  →H218	**TSE**	 (2)	0°	0°					○						○	○		○				
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC-E 	**WFXC**08000E	 (4)	0°	0°								◎				◎	◎	◎	◎	◎	◎	○	
	45°	ø25 to ø32	ø25 to ø32	 →H220	**WFXC**12000E																					
Non-Ferrous Metal	3mm 90°	ø80 to ø160	–	ANX  →H226	**ANXA**16000R(S)	 (1)	5°	5°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
		ø40 to ø125			**ANXS**16000R(S)		5°	5°																		
		ø25 to ø50	ø20 to ø32		**ANXS**16000E		5°	-2° to 0°																		
	3mm 90°	ø25 to ø50	ø20 to ø32	ANX-E  →H230	**ANXS**16000E	 (1)	5°	-2° to -0°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
	3mm 90°	ø80 to ø125	–	HF  →H234	**HFM**12000RS/R **HFF**12000RS/R	 (1)	10°	4°	◎	◎									×	×	×	×	○	◎		×
					HFFH12000RS/R																					
					HFFH12000R-BBT30																					

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G20 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

Selection Guide for Milling Cutters

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling: General-purpose	Face Milling: Finishing	Face Milling: High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Non-Ferrous Metal	3mm 90° (SUMIDIA Insert) / 10mm 87° (Carbide Insert)	ø80 to ø315	–	RF →H239	**RF**4000	(1)	10°	4°	◎	◎									×	×	×	×	○	◎		×
Non-Ferrous Metal	5mm 90°	ø30 to ø63	–	SRF →H241	**SRF**	(1)	6°	-2° to 4°	◎	◎		○							×	×	×	×	○	◎		×
			ø20		**SRF-ST**																					
Non-Ferrous Metal	16-18mm 90°	ø50 to ø127	–	WAX →H243	**WAX**3000	(2)	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
	22-24mm 90°		–		**WAX**4000																					
Non-Ferrous Metal	16-18mm 90°	ø20 to ø40	ø20 to ø32	WAX-E →H244	**WAX**3000E **WAX**3000EL	(2)	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
Non-Ferrous Metal	22-24mm 90°	ø25 to ø40	ø25 to ø32		**WAX**4000E **WAX**4000EL																					
Cast Iron, High-Speed	0.5mm 45°	ø40 to ø315	–	FMU →H247, L145	**FMU** **FMU-E**	(1)	8°	2°		◎									×	×	×	◎ (FC)	×	×	×	×
Cast Iron, High-Speed	0.5mm 45°	ø80 to ø315	–	FM →H248, L146	**FM** **FMF**	(1)	8°	2°		◎									×	×	×	◎ (FC)	×	×	×	×
Cast Iron, High-Speed	3mm 75°	ø80 to ø160	–	RM →H249, L147	**RM**	(4)	-5° 45'	-6° 45'	○	◎									×	×	×	◎ (FC)	×	×	×	×

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G20 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

Selection Guide for Modular Tools

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Shoulder Milling / Deep Shoulder Milling	10mm 90°	ø16 to ø40	ø15 to ø32	WEZ-M Modular →H254	**WEZ**11000M	(2)	6° to 15°	-7° to -18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø25 to ø40	ø23 to ø32		**WEZ**17000M		6° to 15°	-6° to -12°																		
	27mm 90°	ø32	ø28 to ø32	WEZR-M Modular →H258	**WEZR**11000M	(2)	11°	-12°	○			◎	○						◎	◎	◎	◎	◎	◎	◎	
	29mm 90°	ø40	ø28 to ø32		**WEZR**17000M		10°	-9°																		
	10mm 90°	ø16 to ø40	ø15 to ø32	WEX-M Modular →H262	**WEX**2000M	(2)	14° to 25°	10° to 18°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	14mm 90°	ø25 to ø40	ø23 to ø32		**WEX**3000M		16° to 24°	8° to 15°																		
	6mm 90°	ø20 to ø40	ø18 to ø32	WFX-M Modular →H264	**WFX**08000M	(4)	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
High-Feed	1.5mm 17°	ø16 to ø42	ø15 to ø32	DMSL-M Modular →H265	**DMSL**06000M	(4)	-8°	-12.5° to -16.5°			◎	○	○	○					◎	◎	○	◎			○	○
	3mm 15°	ø35 to ø40	ø28 to ø32	DMSW-M Modular →H266	**DMSW**08000M	(6)	-6°	-11° to -13°			◎	○	○	○					◎	◎	○	◎				○
	1.5mm 15°	ø25 to ø32	ø23 to ø32	WFXH-M Modular →H267	**WFXH**08000M	(4)	6°	-6°			◎	○	○	○					◎	◎	◎	◎			○	○
	2.5mm 15°	ø40	ø28 to ø32		**WFXH**12000M		6°	-6°																		
	1.0mm 20°	ø16 to ø25	ø15 to ø25	MSX-M Modular →H268	**MSX**06000M	(3)	8°	-3° to -6°			◎	○	○	○					◎	◎	◎	◎				○
	1.5mm 20°	ø25 to ø35	ø23 to ø32		**MSX**08000M																					
	2.0mm 20°	ø32 to ø40	ø28 to ø32		**MSX**12000M																					
Radius	4mm	ø20 to ø32	ø18 to ø32	RSX-M Modular →H269	**RSX**08000M	(4)	10°	-8°	○		○	○	○	◎			◎		◎	◎	◎	◎			◎	
	5mm	ø25 to ø32	ø23 to ø32		**RSX**10000M **RSXF**10000M		10°	-5°																		
	6mm 4-cornered 1.6mm 8-cornered	ø32 to ø40	ø28 to ø32		**RSX**12000M **RSXF**12000M	(4) (8)	10°	-5°																		

Shank diameters listed are sizes of corresponding arbors. Refer to page H253 for details.

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Selection Guide for Modular Tools / Cast Iron High-Feed and Milling Cutters (Special Purpose)

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Milling Cutters (Special Purpose) / Radius	4mm (4-cornered) / 1.6mm (8-cornered)	ø20 to ø25	ø18 to ø25	WRCX-M Modular →H270	**WRCX**08000M	(4) (8)	-3°	-3° to 0°	○		○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	5mm	ø25 to ø32	ø23 to ø32		**WRCX**10000M			0°																		
	6mm	ø40	ø28 to ø32		**WRCX**12000M																					
Chamfering	45°	ø16	ø15 to ø16	WFXC-M Modular →H271	**WFXC**08000M	(4)	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
		ø25 to ø32	ø23 to ø32		**WFXC**12000M		0°	0°																		
Non-Ferrous Metal	3mm 90°	ø25 to ø40	ø25 to ø32	ANXS-M Modular →H272	**ANXS**16000M	(1)	5°	-2° to 0°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
High Feed Cast Iron Machining	1mm 89°-89°30'	ø63 to ø315	–	GFX →H276	**GFX(C)**13000	(4)	-5°	-8°		◎	◎								×	×	×	◎	×	×	×	×
					GFX16000																					
	6mm 60°	ø80 to ø315	–	GRHN →H278	**GRHNF**17000	(6)	-6°	-6° 30' to -5°			◎								×	×	×	◎	×	×	×	×
					GRHNM17000		-6°	-6° 30' to -5°																		
Milling Cutters (Special Purpose)	5.5mm* 45°	ø100 to ø450	–	NRV →H282	**NRV**4000	(4)	-5°	-6°			◎								×	×	×	◎	×	×	×	×
	8.5mm* 45°		–		**NRV**5000																					
	7mm 65°	ø100 to ø450	–	DPV →H283	**DPV**4000	(4)	10°	5°		○	◎								×	×	×	◎	×	×	×	×
	7.5mm 65°	ø100 to ø450	–		**DPV**5000		10°	5°																		
	0.5mm 90°	ø100 to ø450	–	NFV →H284	**NFV**4000	(4)	-5°	-6°		◎	◎								×	×	×	◎	×	×	×	×
	0.5mm 90°	ø100 to ø450	–		**NFV**5000		-5°	-6°		◎	◎								×	×	×	◎	×	×	×	×
	10mm 65°	ø200 to ø450	–	APV →H285	**APV**5000	(4)	18°	-2°		◎	◎								○	○	×	○	◎	○		×

*Use a chamfering cutter for chamfering operations. * The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Smart Damper™ for Milling G20 *Smart Damper™ is a registered trademark of BIG DAISHOWA Co., Ltd.

Selection Guide for Milling Cutters (Shank type)

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling: General-purpose	Face Milling: Finishing	Face Milling: High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Face Milling	6mm 45° *	ø32 to ø63	ø32	WGX-EW →H25	**WGX**13000EW	(4)	20° to 22°	-20° to -24°	◎	◎									◎	◎	◎	◎	◎	◎	◎	
	4mm 45° *	ø20 to ø63	ø20 to ø32	WGC-EW →H28	**WGC**3000EW	(4)	20°	-10° to -19°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	6mm 45° *	ø32 to ø63	ø32		**WGC**4000EW		20° to 22°	-20° to -24°																		
	6mm 45° * 3mm 45° *	ø40 to ø63	ø32	DGC-EW →H35	**DGC**13000EW	(4)	-5°	-10°	◎										◎	◎	◎	◎	◎	◎	○	
	5.5mm 45° *	ø50 to ø100	ø32 to ø42	UFO-E →H38	**UFO**4000E	(4)	27°	-7°	○	○									○	○		○	○	○		
	6.5mm 45° *	ø50 to ø100	ø32 to ø42	FPE →H40	**FPE**4000	(4)	15°	-3°	○										○	○		○				
Shoulder Milling / Deep Shoulder Milling	10mm 90°	ø14 to ø80	ø10 to ø32	WEZ-E →H62	**WEZ**11000E **WEZ**11000ES **WEZ**11000EL	(2)	6° to 15°	-7° to -18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø25 to ø80	ø16 to ø42		**WEZ**17000E **WEZ**17000ES **WEZ**17000EL		6° to 15°	-6° to -12°																		
	19-61mm 90°	ø20 to ø40	ø20 to ø32	WEZR-E →H80	**WEZR**11000E	(2)	8° to 14°	-15° to -11°	○			◎	○						◎	◎	◎	◎	◎	◎	◎	
	29-84mm 90°	ø40 to ø50	ø32 to ø42		**WEZR**17000E		10° to 12°	-9° to -8°																		
	6mm 90°	ø10 to ø25	ø10 to ø20	WEX-E →H93	**WEX**1000E **WEX**1000EL	(2)	9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø14 to ø63	ø16 to ø32		**WEX**2000E **WEX**2000EL		14° to 25°	10° to 18°																		
	14mm 90°	ø25 to ø63	ø20 to ø42		**WEX**3000E(-C) **WEX**3000ES(-C) **WEX**3000EL		16° to 24°	8° to 15°																		
	18-36mm 90°	ø20 to ø40	ø20 to ø42	WRX-E →H100	**WRX**2000E	(2)	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	27-53mm 90°	ø40 to ø50	ø32 to ø42		**WRX**3000E		20° to 22°	12° to 13°																		
	15mm 90°	ø32	ø32	WSE-E →H106	**WSE**16000E	(2)	8°	-9°	○			◎	○	◎							◎				◎	
	6mm 90°	ø20 to ø63	ø16 to ø32	WFX-E →H115	**WFX**08000E **WFXM**08000E	(4)	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø40 to ø80	ø32		**WFX**12000E **WFXF**12000E		8°	-8°																		
	6mm 90°	ø25 to ø80	ø25 to ø42	DFC-E →H123	**DFC**09000E **DFCM**09000E	(6)	-5°	-9°	◎	○		◎	○						◎	◎	○	◎			○	

*Use a chamfering cutter for chamfering operations. * The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Selection Guide for Milling Cutters (Shank type)

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling: General-purpose	Face Milling: Finishing	Face Milling: High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Shoulder Milling / Deep Shoulder Milling	8mm 90°	ø16 to ø80	ø16 to ø32	TSX-E →H136	TSX08000E TSXF08000E	(4)	-6°	-36° to -20°	◎	◎		◎	○						◎	◎	◎	◎			◎	
	12mm 90°	ø25 to ø80	ø25 to ø32		TSX13000E TSXM13000E TSXF13000E			-31° to -15°																		
	21-40mm 90°	ø20 to ø40	ø20 to ø32	TSXR-E →H144	TSXR08000E	(4)	-6° to -3°	-33° to -18°	○			◎							◎	◎	◎	◎			◎	
	41-60mm 90°	ø40 to ø50	ø32 to ø42		TSXR13000E			-23° to -18°																		
	8mm 90°	ø16 to ø28	ø16 to ø25	CHE →H157	CHE2000	(3)	6° to 15°	-3° to 0°											○	○	○	○	○	○		
	13mm 90°	ø30 to ø40	ø32		CHE3000		15°	-3° to 0°				○	○													
	16mm 90°	ø50 to ø100	ø32 to ø42		CHE4000		15°	2° to 4°																		
	8-19mm 90°	ø16 to ø60	ø16 to ø42	FMS →H161	FMS	(3)	3° to 7°	-4° to -6°	○			○	○						○	○	○	○				
Multi-purpose	17-35mm 90°	ø20 to ø30	ø20 to ø25	WMM →H163	WMM2000E/EL WMM2000ELH /EXLH	(2)	7° to 11°	15° to 16°	◎			◎	◎	◎		◎	◎		◎	◎	◎	◎	◎	◎		
	39mm 90°	ø32 to ø40	ø32		WMM3000E/EL WMM3000ELH /EXLH		7° to 11°	17° to 19°																		
High-Feed	1.5mm 17°	ø8.4 to ø32.3	ø16 to ø32	DMSL-E →H174	DMSL06000E(L)	(4)	-8°	-12.5° to -16.5°			◎	○	○	○					◎	◎	○	◎			○	○
	3mm 15°	ø35 to ø50	ø32 to ø42	DMSW-E →H176	DMSW08000E(L)	(6)	-6°	-10° to -13°			◎	○	○	○					◎	◎	○	◎				○
	1.0-2.5mm 20°	ø16 to ø63	ø16 to ø42	MSX-E →H187	MSX06000E MSX08000E MSX12000E MSX14000E	(3)	8°	-3° to -8°			◎	○	○	○					◎	◎	◎	◎				○
Radius	5mm 4-cornered 1.4mm 8-cornered	ø25 to ø32	ø25 to ø32	RSE-E →H192	RSE10000E	(4) (8)	4°	0°	○		○			○			○				◎				◎	
	4mm	ø20 to ø25	ø20 to ø25	RSX-ES →H201	RSX08000ES RSXF08000ES	(4)	10°	-8°																		
	5mm	ø25 to ø32	ø25 to ø32		RSX10000ES RSXF10000ES		10°	-5°	○		○	○	○	◎			◎		◎	◎	◎	◎			◎	
	6mm 4-cornered 1.6mm 8-cornered	ø32	ø32		RSX12000ES RSXF12000ES	(4) (8)	10°	-5°																		
	4mm	ø20 to ø25	ø20 to ø25	WRCX-E →H206	WRCX08000E	(4) (8)	-3°	-3° to 0°																		
	5mm	ø25 to ø32	ø25 to ø32		WRCX10000E		-3°	0°	○		○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	8mm	ø40 to ø50	ø32		WRCX16000E		-3°	0°																		

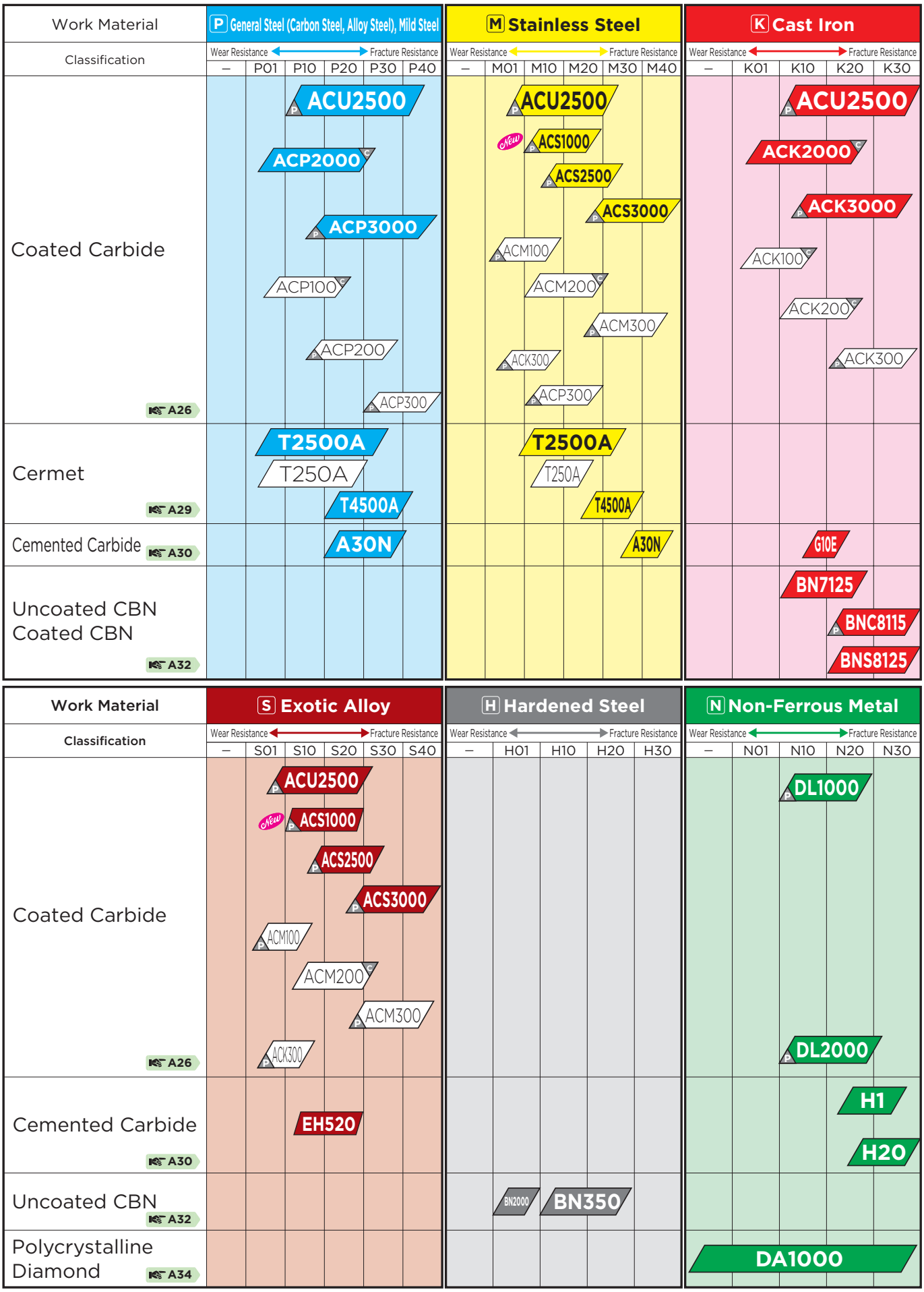
*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape Example (No. of Cutting Edges)	Rake Angle Axial	Rake Angle Radial	Applications: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	Profile finishing	Work Material P: General Steel/Carbon Steel/Alloy Steel	P: Tempered Steel/Die Steel	M: Stainless Steel	K: Cast Iron/Ductile Cast Iron	N: Non-Ferrous Metal	N: Aluminum Alloy	S: Ti Alloy/Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
R/3D Profiling	20-47mm / 30-69mm	R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR →H208	**WBMR**2000 / **WBMR**2000L	(2)	-10°	—					◎				◎		◎	◎	◎	◎				
R/3D Profiling	0.1-0.4mm	R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H211	**WBMF**1000	(1)	0°	—					◎				◎	◎	◎	◎						
Side Cutters / T-Slot Cutters	9-22mm 90°	ø21 to ø50	ø25 to ø32	TSE →H218	**TSE**	(2)	0°	0°					○						○	○		○				
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC-E →H220	**WFXC**08000E	(4)	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
Chamfering	45°	ø25 to ø32	ø25 to ø32		**WFXC**12000E																					
Non-Ferrous Metal	3mm 90°	ø25 to ø50	ø20 to ø32	ANX-E →H230	**ANXS**16000E	(1)	5°	-2° to -0°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
Non-Ferrous Metal	16-18mm 90°	ø20 to ø40	ø20 to ø32	WAX-E →H244	**WAX**3000E / **WAX**3000EL	(2)	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
Non-Ferrous Metal	22-24mm 90°	ø25 to ø40	ø25 to ø32		**WAX**4000E / **WAX**4000EL																					

*The number of cutting edges may vary depending on the insert size, etc. Refer to each product page for details.

Grades for Milling



1st Recommended Grade / 2nd Recommended Grade ▽: CVD Coating △: PVD Coating, Blank: Uncoated

Grades for Milling / Characteristic Values

CVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACP100**	89.3	3.1	Super FF Coat	6	• For high-speed machining of steel • Grade emphasising wear resistance for high-speed cutting	AC230
	ACP2000	89.5	3.2	ABSOTECH	10	• For high-speed machining of steel • Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
M Stainless Steel	**ACM200**	89.8	3.4	Super FF Coat	6	• For machining high-hardness stainless steel • Adopts a newly developed high-strength carbide substrate with excellent wear resistance and thermal resistance, realizing outstanding stability when machining hardened stainless steel	AC230
K Cast Iron	**ACK100**	92.0	2.4	Super FF Coat	6	• For high-speed cast iron milling • Adopts a high-hardness substrate with high wear resistance	—
	ACK200	91.7	2.5	Super FF Coat	6	• For high-speed cast iron milling • Adopts a tough carbide substrate with excellent wear resistance and thermal crack resistance	AC211
	ACK2000	91.7	3.1	ABSOTECH	10	• For high-speed cast iron milling • Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200

PVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACU2500**	91.6	3.8	ABSOTECH	3	• General-purpose grade covering steel, stainless steel, and cast iron machining • Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life on various work materials	—
	ACP200	89.5	3.2	(New) Super ZX Coat	3	• Our 1st recommended grade for steel applications • General-purpose grade with an excellent balance of wear and fracture resistance • Also suitable for machining stainless steel	ACZ330
	ACP300	89.3	3.1	(New) Super ZX Coat	3	• For interrupted machining of steel • Tough grade with an emphasis on fracture resistance • Also suitable for interrupted machining of stainless steel	ACZ350
	ACP3000	89.5	3.2	ABSOTECH	3	• Our 1st recommended grade for milling steel • Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	**ACM300**	89.8	3.4	(New) Super ZX Coat	3	• Our 1st recommended grade for milling stainless steel • Adopts a high-strength carbide substrate and super multi-layered coating for next-level wear resistance and fracture resistance	—
K Cast Iron	**ACK300**	91.4	3.3	(New) Super ZX Coat	3	• General-purpose grade with an excellent balance of wear and fracture resistance	ACZ310
	ACK3000	91.7	3.1	ABSOTECH	3	• Our 1st recommended grade for milling cast iron • Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	**DL1000**	92.9	2.1	AURORA Coat (DLC)	0.5	• For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	—
	DL2000	91.6	3.8	AURORA Coat (DLC)	0.5	• For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	—
S Exotic Alloy	New **ACS1000**	91.6	3.8	ABSOTECH	3	• For high-efficiency milling of exotic alloys • High-hardness carbide substrate coupled with a chipping-resistant coating provides long, stable tool life in high-speed, high-efficiency machining applications	—
	ACS2500	90.8	4.2	ABSOTECH	3	• First recommendation for titanium alloy applications • Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping-resistant coating, balances excellent wear and fracture resistance	ACM200
	ACS3000	89.8	3.4	ABSOTECH	3	• Suitable for a wide range of exotic alloy machining applications • Realises superb stability due to a high-toughness carbide substrate with a highly chipping-resistant coating	ACM300

Cermet

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	**T1500A**	92.0	2.2	—	—	• For finishing of steel and stainless steel • Excellent balance of wear and fracture resistance, achieving excellent machined surface quality over a wide range of cutting conditions	T1200A
	T250A	91.4	2.1	—	—	• For finishing of steel and stainless steel • Tough grade with enhanced crack development resistance	—
M Stainless Steel	**T2500A**	91.8	2.4	—	—	• For finishing of steel and stainless steel • Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes	T250A
	T4500A	91.0	2.3	—	—	• For finishing of steel and stainless steel • Tough grade with excellent fracture resistance and reduced thermal cracking	—

CBN

Work Material	Grade	Binder	Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	TiAlN	Coating Thickness (μm)	Features
K Cast Iron Sintered Alloy	**BN7125**	Co Compound	90 to 95	2	41 to 44	1.9 to 2.0	—	—	General-purpose grade with excellent wear resistance, fracture resistance, and thermal shock resistance, suitable for machining of cast iron and exotic alloys
	BNS8125	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	—	—	Grade with 100% solid CBN structure that exhibits excellent wear and fracture resistance
	BNC8115	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	TiAlN	2	Grade with 100% solid CBN structure, using PVD coating with excellent wear resistance to enable roughing operations.
	BN500	TiC	65 to 70	6	32 to 34	1.0 to 1.1	—	—	Grade optimised for cast iron cutting. Provides superior wear and fracture resistance.
H Hardened Steel	**BN350**	TiN	60 to 65	1	33 to 35	1.5 to 1.6	—	—	Grade with the highest cutting edge strength, suitable for heavy interrupted cutting.
	BN2000	TiN	50 to 55	2	31 to 34	1.1 to 1.2	—	—	General-purpose grade for hardened steel machining with a high degree of fracture and wear resistance.

Polycrystalline Diamond

Work Material	Grade	Binder	Content (%)	Grain Size (μm)	Hardness HK (GPa)	TRS (GPa)	Features
N Non-Ferrous Metal	**DA1000**	Co	90 to 95	up to 0.5	50 to 60	≈ 2.60	High-density sintered material made of ultra-fine grain diamond that exhibits optimum wear and fracture resistance as well as excellent edge sharpness.
	New **DA1090**	Co	92 to 97	Up to 50	55 to 70	≈ 1.30	A polycrystalline diamond material with the highest diamond content, made by sintering coarse diamond particles at high density. High density and enhanced particle binding strength exhibit excellent wear and fracture resistance.

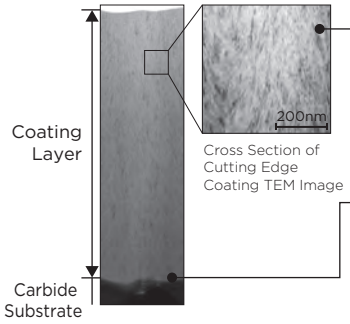
Cemented Carbide A30
Ceramics A36

ACS1000/ACS2500/ACS3000

■ Features of ACS1000/ACS2500/ACS3000

- Uses ABSOTECH, a new coating with excellent wear and chipping resistance.
- Its carbide substrate, with excellent fracture and wear resistance, achieves the ultimate in stable long tool life for milling of exotic alloys.

ABSOTECH PVD



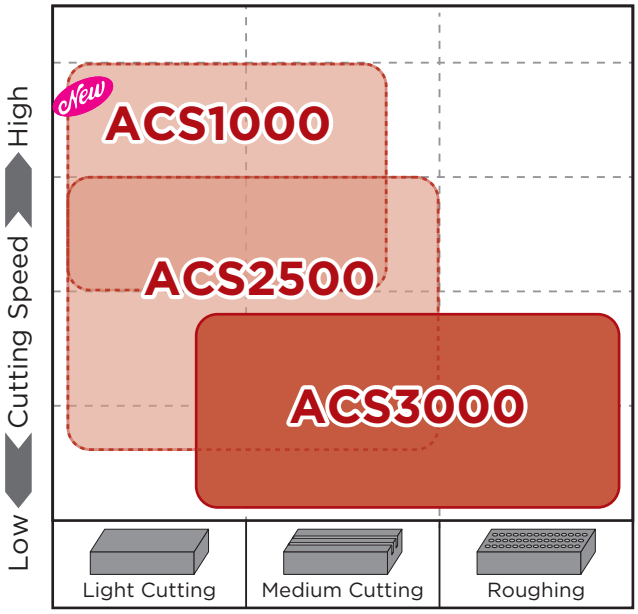
Cross Section of Cutting Edge Coating TEM Image

Ultra-fine Grained B Additive
New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness.
Outstanding chipping and wear resistance.

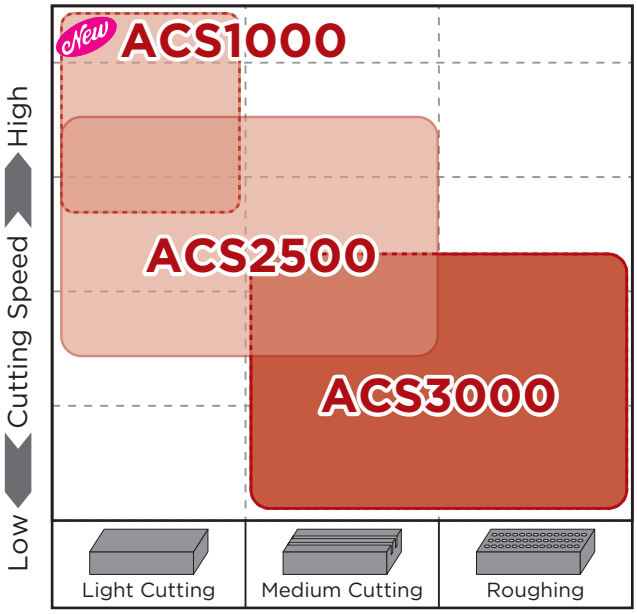
High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings.
Applicable Grades: ACS1000, ACS2500, ACS3000

■ Application Range

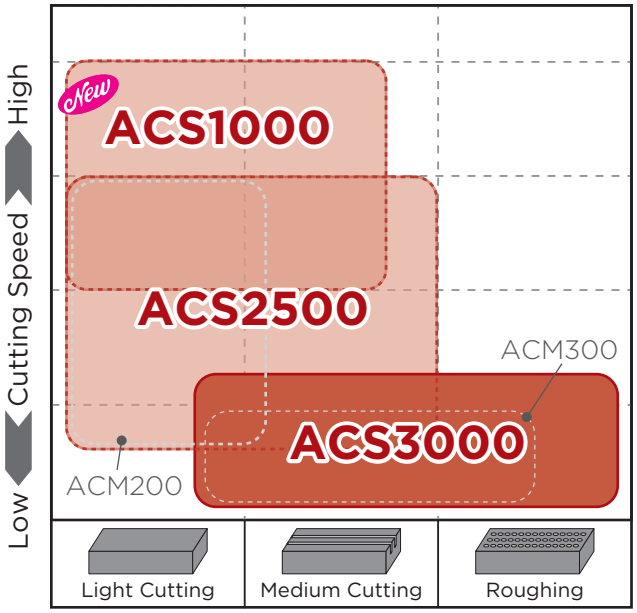
S Heat-Resistant Alloy



S Titanium Alloy



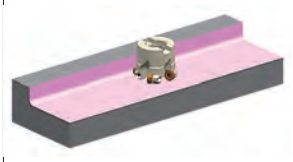
M Stainless Steel

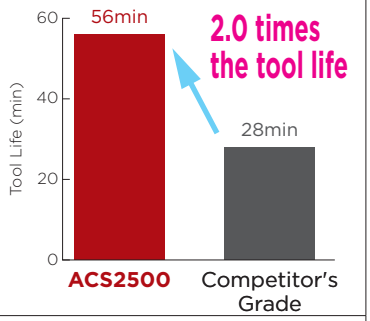


ACS1000/ACS2500/ACS3000

■ Application Examples (ACS1000/ACS2500/ACS3000)

Ti-6Al-4V Aerospace Component S

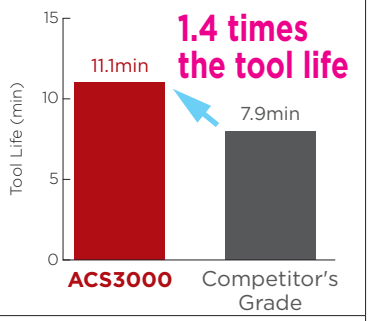




Tool: RSE 12050RS05 Insert: RPHT1204M0EN-G
Cutting Conditions: vc = 60m/min, fz = 0.30mm/t, ap = 3.0mm Wet

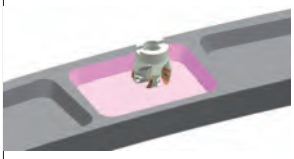
Inconel 718 (44HRC) Block Material S

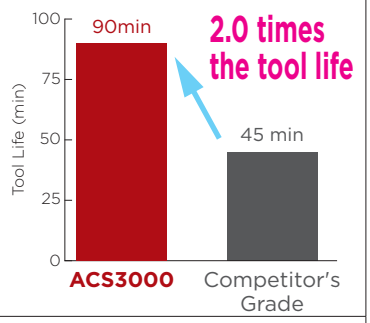




Tool: RSE 12050RS05 Insert: RPHT1204M0EN-G
Cutting Conditions: vc = 40m/min, fz = 0.25mm/t, ap = 2.0mm Wet

Ti-6Al-4V Aerospace Component S

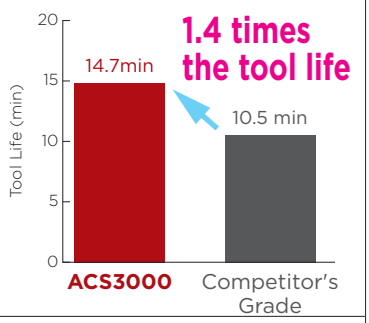




Tool: WSE 16050RS05L Insert: XOMT160540PEER-E
Cutting Conditions: vc = 50m/min, fz = 0.12mm/t, ap = 4.0mm Wet

Precipitation Hardened Stainless Steel (42HRC) Block Material M



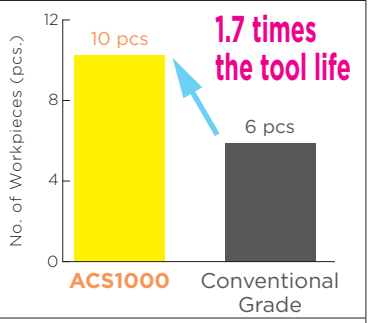


Tool: RSE 12050RS05 Insert: RPHT1204M0EN-G
Cutting Conditions: vc = 150m/min, fz = 0.30mm/t, ap = 2.0mm Wet

■ Application Examples (ACS1000)

Precipitation Hardened Stainless Steel Turbine Blade M





Tool: RSXF12050RS Insert: RDET1204M0EN-G / ACS1000
Cutting Conditions: vc = 107m/min, fz = 0.2mm/t, ap = 1.6mm, Dry

Cutter Identification Code

Standard Cutters

DFC (F) 09 050 R (S)

(1) (2) (3) (4) (5) (6)

- (1) Series Code — Refer to Table 1
- (2) Additional Symbol — Refer to Table 2
- (3) Insert Inscribed Circle Size — Refer to Table 3
- (4) Cutter Diameter — Refer to Table 4
- (5) Feed Direction — Refer to Table 5
- (6) Mounting — Refer to Table 6

Table 1: (1) Series Code

Representative example
DFC
DGC
WGX
WGC
UFO
FPG
EHG
DNX
APG
WRCX
MSX
PWC
PWS
WFX
WEX
TSX

Table 2: (2) Additional Symbol

Fine-pitch Design	
M	Fine Pitch
F	Extra Fine Pitch

Table 3: (3) Insert Inscribed Circle Size

Inch	Inscribed Circle Dimensions (mm)
3	9.525
4	12.70
5	15.875
6	20.0
Millimetre	**Inscribed Circle Dimensions (mm)**
12	12.7
13	13.5
14	14.0
16	16.0
20	20.0

Inscribed Circle Example



Table 4: (4) Cutter Diameter

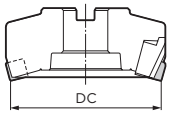


Table 5: (5) Feed Direction

Left Hand (L)	Right Hand (R)

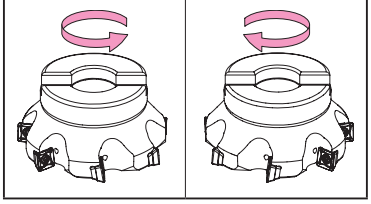


Table 6: (6) Mounting

Mounting	
S	Metric Bore

Milling Cutters (Special Purpose)

DPV (Z) 4 100 (Q) R

(1) (7) (3) (4) (8) (5)

(1) Series Code
DPV
GFX
NRV
NFV
APV
GRHNM
GRHNF

- (7) 2-piece system: Z
- (3) (4) (5): Same as above
- (8) Quick Change type: Q

Insert Identification Code

(Ex.) **S E M T 13 T3 A G S N-H**

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

- (1) Insert Shape — Refer to Table 1
- (2) Relief Angle — Refer to Table 2
- (3) Tolerance — Refer to Table 3
- (4) Insert Hole — Refer to Table 4
- (5) Cutting Edge Length — Refer to Table 5
- (6) Thickness — Refer to Table 6
- (7) Cutting Edge Angle — Refer to Table 7
- (8) Wiper Edge Relief Angle — Refer to Table 8
- (9) Edge Treatment — Refer to Table 9
- (10) Feed Direction — Refer to Table 10
- (11) Additional Information — Refer to Table 11

Table 1: (1) Insert Shape

Symbol	Insert Shape	Apex Angle
A	Parallelogram type	85°
H	Hexagonal type	120°
L	Rectangular type	90°
O	Octagonal type	135°
P	Pentagonal type	108°
R	Round type	—
S	Square type	90°
T	Triangular type	60°
Q	Special	—
X	Special	—

Table 2: (2) Relief Angle

Symbol	Relief Angle
N	0°
A	3°
B	5°
C	7°
P	11°
D	15°
E	20°
F	25°
G	30°
O	Special

Table 3: (3) Tolerance

Symbol	Inscribed Circle (mm)	Thickness (mm)
A	±0.025	±0.025
C	±0.025	±0.025
E	±0.025	±0.025
G	±0.025	±0.13
K	±0.05 to ±0.15	±0.025
M	±0.05 to ±0.15	±0.13

Table 4: (4) Insert Hole

Symbol	Shape (Cross Section)
W	
M	
R	
N	
T	

Table 5: (5) Cutting Edge Length

Shape	Cutting Edge Length (ℓ)
S	
T	
R	
H	
A	
O	

Table 6: (6) Thickness

Symbol	Thickness (mm)
02	2.38
03	3.18
T3	3.97
04	4.76
06	6.35

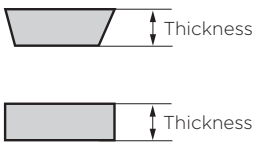


Table 7: (7) Cutting Edge Angle

Symbol	Cutting Edge Angle
A	45°
D	60°
E	75°
F	85°
H	87°
P	90°
Z	Special

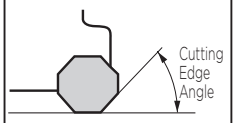


Table 8: (8) Wiper Edge Relief Angle

Symbol	Relief Angle
A	3°
B	5°
C	7°
D	15°
E	20°
F	25°
G	30°
N	0°
P	11°
Z	Special



Table 9: (9) Edge Treatment

Symbol	Shape
F	 Sharp Edge
E	 Round Honing
T	 Negative Land
S	 Negative Land + Round Honing

Table 10 (10) Feed Direction

Symbol	Feed Direction
N	No
R	Right Hand
L	Left Hand

Table 11 (11) Additional Information (Ex.)

Symbol	Symbol Description
A	Sharp Edged
H	Strong Edged
W	Large Edge Treatment
S	For WBMR Insert Main Blade

* Exceptions

The above table does not apply to the following insert codes: SPCH42TR, SPCH42R, SPCH53TR, SPCH53R, SDKN42MT, SDKN42M, SDKN53MT, SDKN53M, SEKN42MT, SEKN42M, SEKN53MT and SEKN53M.

For example,

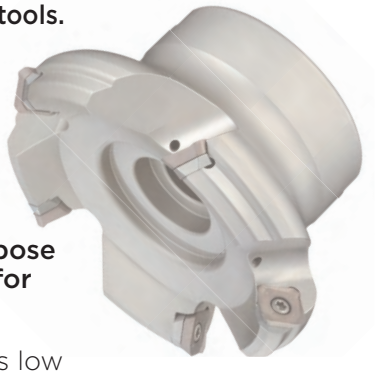
- although "H" and "K" indicate precision tolerances, the main cutting edges have general precision.
- "M" in this instance represents the Neutral Hand insert.
- "T" in this instance represents negative land edge treatment.
- "R" indicates the feed direction (right hand).

Expansion



■ Features

SEC-WaveMill WGX series inserts employ a unique chipbreaker design to provide lower cutting force and higher-quality surface finish than conventional tools. Lineup of insert grades and chipbreakers has been significantly expanded, and the addition of the ACM series enables machining of stainless steel and exotic alloys. Furthermore, the general-purpose grade ACU2500 can be used for any work material.



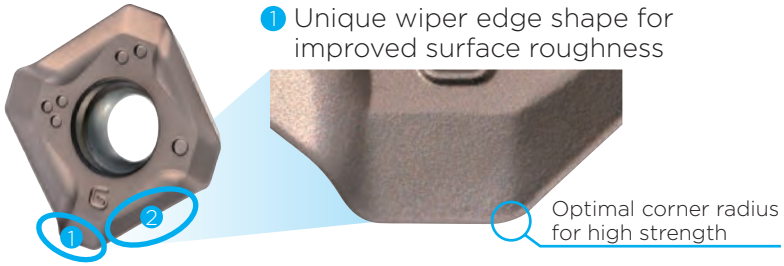
● Reduced Cutting Force
- High-rake chipbreaker designed for use with the WGX series achieves low cutting force

● High Quality
- Improved runout precision and unique wiper edge shape ensure excellent surface finish quality
- Additional edge chamfer reduces burrs and edge chipping

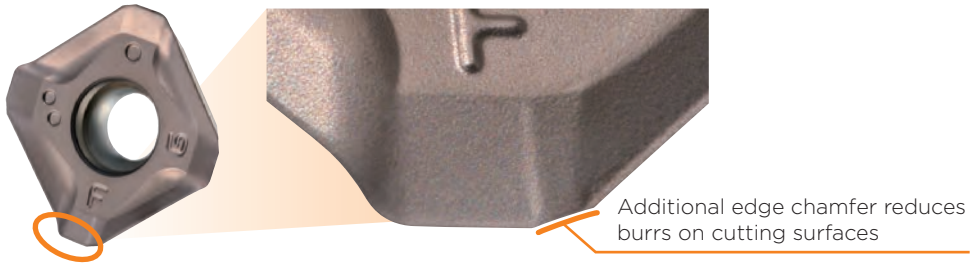
● Wide Ranging Product Lineup
- A wide selection of grades along with 4 types of chipbreakers and wiper inserts are available.
- Can be used for a wide variety of machining applications.

■ Insert Shape Features

● General-purpose G type Chipbreaker



● FG type Chipbreaker with Low-Burr Design



■ Product Range

Type	Cat. No.	Description	Dia. (mm)									
			ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250
Shell	WGX13000R/L (Inch)	Standard Pitch					4	5	6	7	8	10
	WGX13000RS/LS	Standard Pitch		3	3	4	4	5	6	7	8	10
	WGXM13000R/L (Inch)	Fine Pitch					6	7	8	10	12	14
	WGXM13000RS/LS	Fine Pitch			4	5	6	7	8	10	12	14
	WGXF13000R/L (Inch)	Extra Fine Pitch					8	10	12	16	20	24
	WGXF13000RS/LS	Extra Fine Pitch			5	6	8	10	12	16	20	24
Shank	WGX13000EW	Shank type	3	3	4	5						

Number in ●● shows the number of teeth
Sizes of ø125mm and below have coolant holes
(Inch) Inch Bore
For the shell type, left-handed tools can also be manufactured.



WGX 13000R(S)
Standard Pitch



WGXM 13000R(S)
Fine Pitch

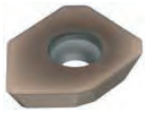
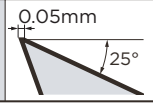
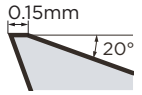
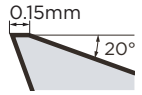
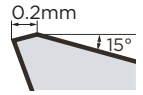


WGXF 13000R(S)
Extra Fine Pitch

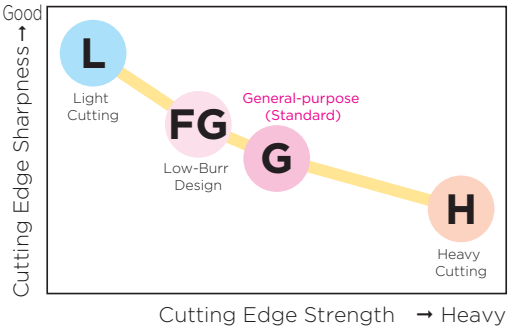


WGX 13000EW
Shank type

■ Chipbreaker Selection

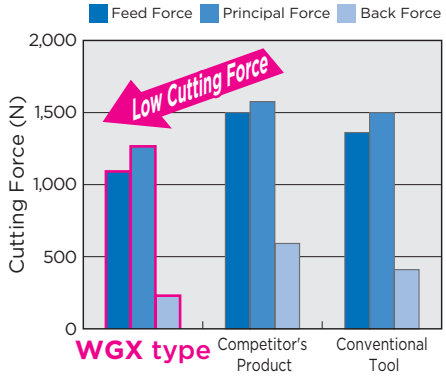
Work Material	P M K S N	P M K S			P K
Applications	Light Cutting	General-purpose/ Burr Prevention	General-purpose	Heavy Cutting	Surface Finish Emphasised
Features	Low Cutting Force	Standard/ With Chamfer	Standard	High Strength	Wiper
	L type	**FG type**	**G type**	**H type**	**WR type**
Chipbreaker					
Cutting Edge Cross Section					

■ Chipbreaker Selection Guide



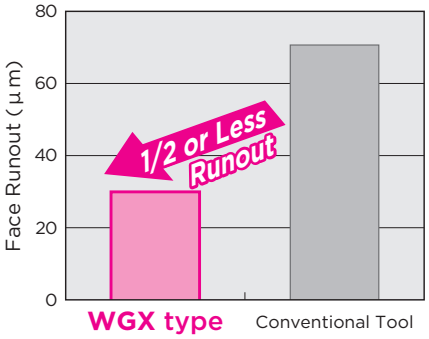
■ Cutting Performance

● Comparison of Cutting Force (G type)



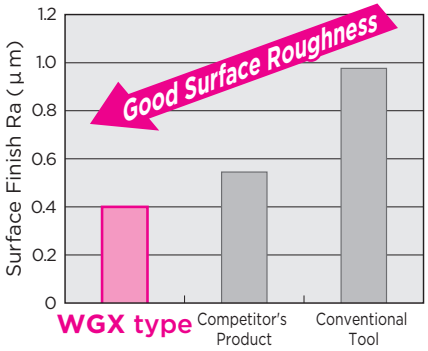
Work Material: S50C, Tool: ø100
Cutting Conditions: vc = 200m/min, fz = 0.2mm/t, ap = 3.0mm

● Runout with Insert Attached (G type)



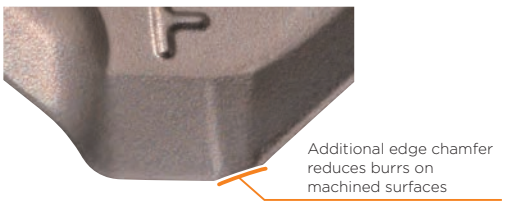
Tool: WGXM13100R (ø100)
Number of Teeth: 7

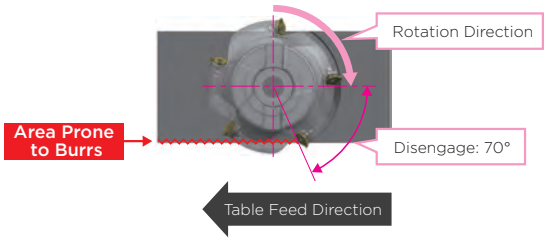
● Surface Finish Comparison (WR type)



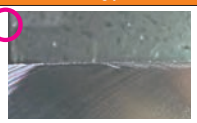
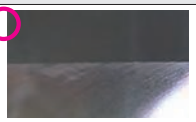
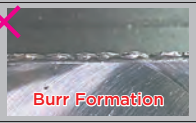
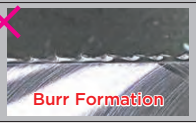
Work Material: S50C, Tool: ø100
Cutting Conditions: vc = 200m/min, fz = 0.2mm/t, ap = 3.0mm

● FG type Chipbreaker with Low-Burr Design





● Machined Surface Comparison

Work Material	FG type	G type	Conventional Tool	Competitor's Product
S50C	○ 	○ 	○ 	×  Burr Formation
SUS304	○ 	○ 	×  Burr Formation	×  Burr Formation
SCM440	○ 	×  Burr Formation	×  Burr Formation	×  Burr Formation

Machine: Machining Centre BT50
Tool: WGX13100R (ø100),
Insert Grade: ACP200
Cutting Conditions:
vc = 200m/min,
fz = 0.2mm/t,
ap = 3.0mm,
ae = 80mm, Dry

■ Precautions When Using Wiper Inserts with Holes

- **When mounting the wiper insert, attach it as shown in Fig 1.**
  When mounted as shown in Fig 2, normal machined surface roughness cannot be obtained.
- **The wiper insert has a single corner specification.**
- **Refer to page N25 of Technical Guidance for details about milling with wiper inserts.**

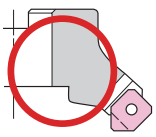
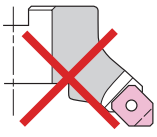
Fig 1 

Fig 2 

WGX 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
Radial	-20° to -24°	
Axial	20° to 22°	

6mm 45°

Face Milling



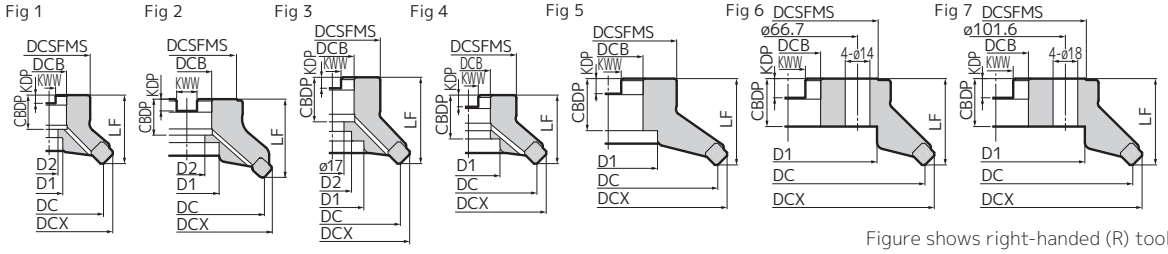


Figure shows right-handed (R) tool.

Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WGX 13040RS/LS	●		40	52	32	40	16	8.4	5.6	18	14	9	3	0.3	1
	13050RS/LS	●		50	62	40	40	22	10.4	6.3	20	18	11	3	0.4	1
	13063RS/LS	●		63	76	50	40	22	10.4	6.3	20	18	11	4	0.6	1
	13080RS/LS	●		*80	93	55	50	27	12.4	7	25	20	13.5	4	1.2	1
	13100RS/LS	●		100	113	70	50	32	14.4	8.5	32	46	—	5	1.6	4
	13125RS/LS	●		125	138	80	63	40	16.4	9.5	29	52	29	6	2.8	2
	13160RS/LS	●		160	173	100	63	40	16.4	9.5	29	88	—	7	4.5	6
	13200RS/LS	●		200	213	130	63	60	25.7	14	35	130	—	8	7.1	7
	13250RS/LS	●		250	263	130	63	60	25.7	14	35	160	—	10	9.8	7
Inch	WGX 13080R/L	●		*80	93	60	50	25.4	9.5	6	25	20	13	4	1.2	1
	13100R/L	●		*100	113	70	63	31.75	12.7	8	32.5	46	28	5	2.3	3
	13125R/L	●		125	138	80	63	38.1	15.9	10	35.5	55	30	6	2.9	1
	13160R/L	●		160	173	100	63	50.8	19.1	11	38	72	—	7	4.5	5
	13200R/L	●		200	213	130	63	47.625	25.4	14	35	130	—	8	7.1	7
	13250R/L	●		250	263	130	63	47.625	25.4	14	35	150	—	10	11.1	7

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter. Sizes ø160mm and above do not have coolant holes.

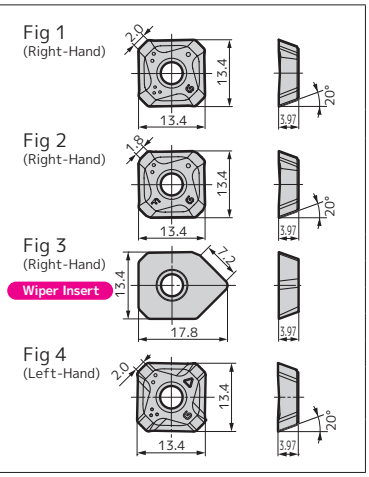
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	●	●			●		●	●		●		●	●			
	Medium Cutting	●		●	●	●			●	●	●	●	●	●	●		
	Roughing	●		●	●		●			●		●					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Applications	Fig
SEET 13T3AGFR-L		—	—	—	—	—	—	—	—	—	—	—	●	●	—	Light Cutting (For Non-Ferrous Metals)	1
13T3AGSR-L		●	●	●	●	●	●		●	●	▲	▲			●	Light Cutting	1
13T3AGSR-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	●	General-purpose	1
SEMT 13T3AGSR-L		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Light Cutting	1
13T3AGSR-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	—	General-purpose	1
13T3AGSR-H		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Heavy Cutting	1
13T3AGSR-FG		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Low-burr Design	2
13T3AGSL-G													—	—	—	General-purpose	4
XEEW 13T3AGER-WR		●		●			●								●	Wiper Insert	3

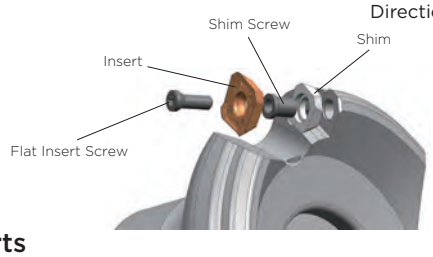


The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance. Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Identification Code

WGX **13** **040** **R** **S**

Series Code	Insert Size	Dia.	Feed Direction	Metric Bore



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - Optimum - Max.	Feed Rate fz (mm/t) Min. - Optimum - Max.	Insert Grade
P	General Steel	180 to 280 HB	150- **200** -250	0.10- **0.20** -0.30	ACU2500 ACP200
	Mild Steel	≤ 180HB	180- **270** -350	0.10- **0.25** -0.40	
	Die Steel	200 to 220 HB	100- **150** -200	0.15- **0.20** -0.25	
M	Stainless Steel	—	160- **210** -250	0.15- **0.23** -0.30	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100- **180** -250	0.15- **0.23** -0.30	ACU2500 ACK200
N	Non-Ferrous Alloy	—	500- **750** -1,000	0.15- **0.23** -0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10- **0.20** -0.30	ACU2500 ACS3000 ACM300

Note 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.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø40 to 125	WGCS13R	BW0507F	LH035	BFTX03512IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WGXM 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
Radial	-20° to -24°	
Axial	20° to 22°	

6mm 45°

Face Milling

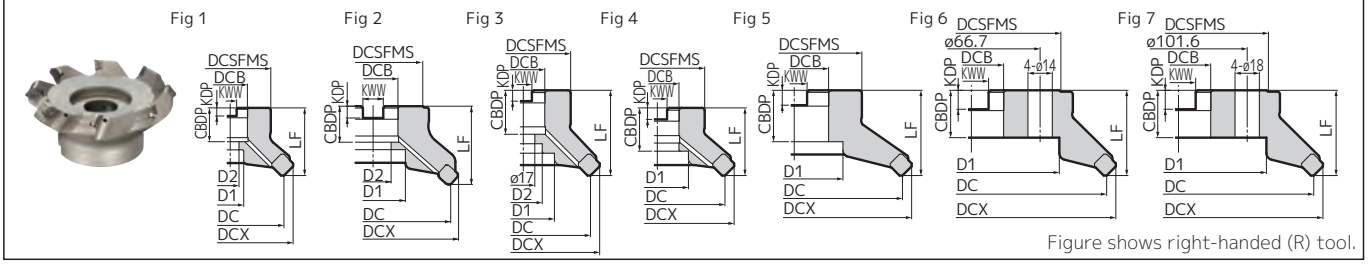


Figure shows right-handed (R) tool.

Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WGXM 13050RS/LS	●		50	62	40	40	22	10.4	6.3	20	18	11	4	0.4	1
	13063RS/LS	●		63	76	50	40	22	10.4	6.3	20	18	11	5	0.6	1
	13080RS/LS	●		*80	93	55	50	27	12.4	7	25	20	13.5	6	1.1	1
	13100RS/LS	●		100	113	70	50	32	14.4	8.5	32	46	—	7	1.6	4
	13125RS/LS	●		125	138	80	63	40	16.4	9.5	29	52	29	8	2.8	2
	13160RS/LS	●		160	173	100	63	40	16.4	9.5	29	88	—	10	4.5	6
	13200RS/LS	●		200	213	130	63	60	25.7	14	35	130	—	12	7.0	7
	13250RS/LS	●		250	263	130	63	60	25.7	14	35	160	—	14	9.6	7
Inch	WGXM 13080R/L	●		*80	93	60	50	25.4	9.5	6	25	20	13	6	1.1	1
	13100R/L	●		*100	113	70	63	31.75	12.7	8	32.5	46	28	7	2.2	3
	13125R/L	●		125	138	80	63	38.1	15.9	10	35.5	55	30	8	2.9	1
	13160R/L	●		160	173	100	63	50.8	19.1	11	38	72	—	10	4.5	5
	13200R/L	●		200	213	130	63	47.625	25.4	14	35	130	—	12	7.0	7
	13250R/L	●		250	263	130	63	47.625	25.4	14	35	150	—	14	10.8	7

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter. Sizes ø160mm and above do not have coolant holes.

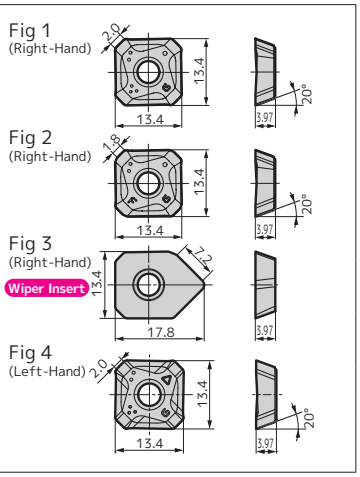
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	P M S N	P			K		M S	M S		M S		K N	N			
	Medium Cutting	P M S N		P M	P M	K			M S	M S	M S	M S		N	P		
	Roughing	P M S N		P M	P M		K			M S		M S					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Applications	Fig
SEET 13T3AGFR-L		—	—	—	—	—	—	—	—	—	—	—	●	●	—	Light Cutting (For Non-Ferrous Metals)	1
13T3AGSR-L		●	●	●	●	●	●		●	●	▲	▲			●	Light Cutting	1
13T3AGSR-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	●	General-purpose	1
SEMT 13T3AGSR-L		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Light Cutting	1
13T3AGSR-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	—	General-purpose	1
13T3AGSR-H		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Heavy Cutting	1
13T3AGSR-FG		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Low-burr Design	2
13T3AGSL-G													—	—	—	General-purpose	4
XEEW 13T3AGER-WR		●		●			●								●	Wiper Insert	3

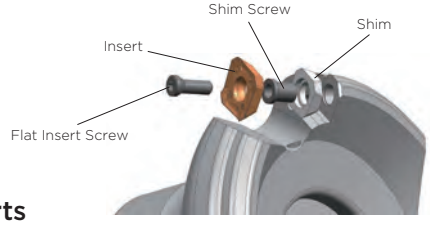


The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance. Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Identification Code

WGX **M** **13** **050** **R** **S**

WGX	M	13	050	R	S
Series Code	Fine Pitch	Insert Size	Dia.	Feed Direction	Metric Bore



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500 ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	ACU2500 ACS3000 ACM300

Note 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.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø50 to 125	WGCS13R	BW0507F	LH035	BFTX03512IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WGXF 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-20° to -24°
	Axial	20° to 22°

6mm 45°

Face Milling

Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6 Fig 7



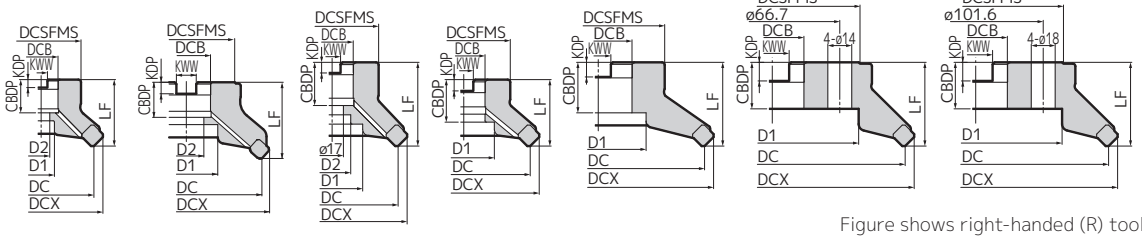


Figure shows right-handed (R) tool.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WGXF 13050RS/LS	●		50	62	40	40	22	10.4	6.3	20	18	11	5	0.4	1
	13063RS/LS	●		63	76	50	40	22	10.4	6.3	20	18	11	6	0.6	1
	13080RS/LS	●		*80	93	55	50	27	12.4	7	25	20	13.5	8	1.1	1
	13100RS/LS	●		100	113	70	50	32	14.4	8.5	32	46	—	10	1.5	4
	13125RS/LS	●		125	138	80	63	40	16.4	9.5	29	52	29	12	2.7	2
	13160RS/LS	●		160	173	100	63	40	16.4	9.5	29	88	—	16	4.5	6
	13200RS/LS	●		200	213	130	63	60	25.7	14	35	130	—	20	6.9	7
	13250RS/LS	●		250	263	130	63	60	25.7	14	35	160	—	24	9.6	7
Inch	WGXF 13080R/L	●		*80	93	60	50	25.4	9.5	6	25	20	13	8	1.1	1
	13100R/L	●		*100	113	70	63	31.75	12.7	8	32.5	46	28	10	2.1	3
	13125R/L	●		125	138	80	63	38.1	15.9	10	35.5	55	30	12	2.8	1
	13160R/L	●		160	173	100	63	50.8	19.1	11	38	72	—	16	4.5	5
	13200R/L	●		200	213	130	63	47.625	25.4	14	35	130	—	20	6.9	7
	13250R/L	●		250	263	130	63	47.625	25.4	14	35	150	—	24	10.9	7

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K								N			
	Medium Cutting			P M	P M	K								N	P		
	Roughing			P M	P M		K										
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Applications	Fig
SEET 13T3AGFR-L		—	—	—	—	—	—	—	—	—	—	—	●	●	—	Light Cutting (For Non-Ferrous Metals)	1
13T3AGSR-L		●	●	●	●	●	●		●	●	▲	▲			●	Light Cutting	1
13T3AGSR-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	●	General-purpose	1
SEMT 13T3AGSR-L		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Light Cutting	1
13T3AGSR-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	—	General-purpose	1
13T3AGSR-H		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Heavy Cutting	1
13T3AGSR-FG		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Low-burr Design	2
13T3AGSL-G													—	—	—	General-purpose	4
XEEW 13T3AGER-WR		●		●			●								●	Wiper Insert	3

Fig 1 (Right-Hand)

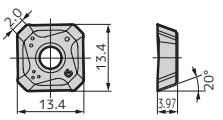


Fig 2 (Right-Hand)

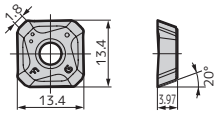


Fig 3 (Right-Hand) Wiper Insert

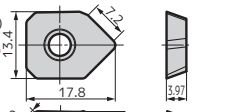
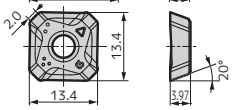


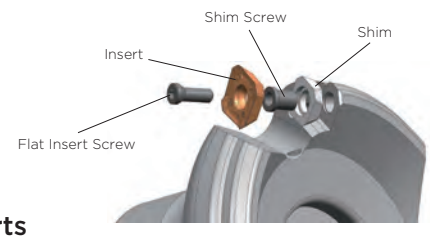
Fig 4 (Left-Hand)



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance. Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Identification Code

WGX Series Code | **F** Extra Fine Pitch | **13** Insert Size | **050** Dia. | **R** Feed Direction | **S** Metric Bore



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500 ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	ACU2500 ACS3000 ACM300

Note 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.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø50 to 125	WGCS13R	BW0507F	LH035	BFTX03512IP	3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WGX 13000EW type

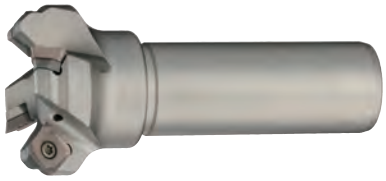
P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

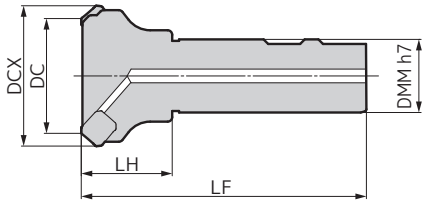
Rake Angle		
	Radial	-20° to -24°
	Axial	20° to 22°

6mm 45°

Face Milling

Fig 1





Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WGX 13032EW	●	**32**	44	32	40	125	3	1
13040EW	●	**40**	52	32	40	125	3	1
13050EW	●	**50**	62	32	40	125	4	1
13063EW	●	**63**	76	32	40	125	5	1

Inserts are sold separately. ø32mm size does not have shims.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	●	●			●		●	●		●		●	●			
	Medium Cutting	●		●	●	●			●	●	●	●		●	●		
	Roughing	●		●	●		●			●		●					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Applications	Fig
SEET 13T3AGFR-L		—	—	—	—	—	—	—	—	—	—	—	●	●	—	Light Cutting (For Non-Ferrous Metals)	1
13T3AGSR-L		●	●	●	●	●	●		●	●	▲	▲			●	Light Cutting	1
13T3AGSR-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	●	General-purpose	1
SEMT 13T3AGSR-L		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Light Cutting	1
13T3AGSR-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	—	General-purpose	1
13T3AGSR-H		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Heavy Cutting	1
13T3AGSR-FG		●	●	●	●	●	●		●	●	▲	▲	—	—	—	Low-burr Design	2
XEEW 13T3AGER-WR		●		●			●								●	Wiper Insert	3

Fig 1

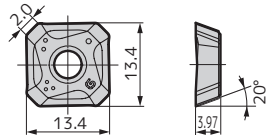


Fig 2

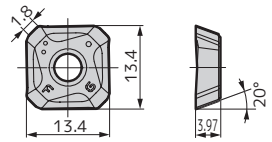
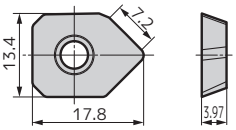


Fig 3

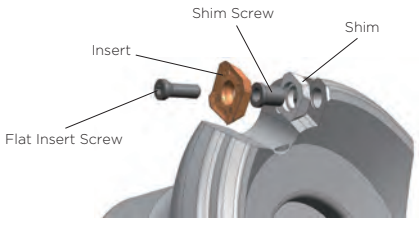
Wiper Insert



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Identification Code

WGX Series Code — **13** Insert Size — **032** Dia. — **EW** Shank type



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500 ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	ACU2500 ACS3000 ACM300

Note 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.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Wrench	Anti-seize Cream
WGX13032EW	—	—	—	BFTX03512IP	3.0	TRDR15IP	SUMI-P
Other than above	WGCS13R	BW0507F	LH035				

WGC 3000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-10° to -19°
	Axial	20°

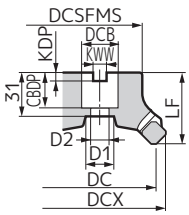
4mm 45°

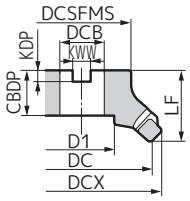
Face Milling

Fig 1



Fig 2





Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGC 3032RS**	●	**32**	41	32	40	**16**	8.4	5.6	18	14	9	4	—	1
	3040RS	●	**40**	49	32	40	**16**	8.4	5.6	18	14	9	4	—	1
	3050RS	●	**50**	59	40	40	**22**	10.4	6.3	20	18	11	5	—	1
	3063RS	●	**63**	72	50	40	**22**	10.4	6.3	20	18	11	6	—	1
Inch	**WGC 3080R**	●	*80	89	60	50	**25.4**	9.5	6	25	20	13	6	1.1	1
	3100R	●	**100**	109	70	50	**31.75**	12.7	8	32	46	—	7	1.5	2

Inserts are sold separately.

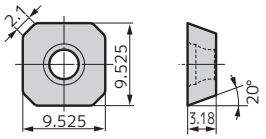
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

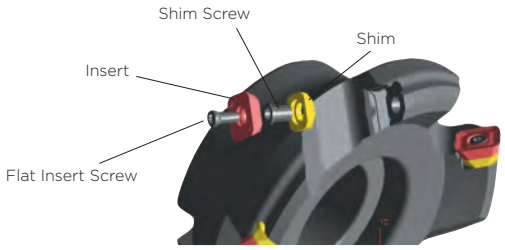
Dimensions (mm)

Grade Classification		Coated Carbide					DLC	Cemented Carbide			Cermet	SUMIDIA		
Process	High-speed/Light Cutting	P			K		N			K N		N	N	
	Medium Cutting		P M	P M	K		N	P	K S		P	N	N	
	Roughing		P M	P M		K						N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	A30N	EH520	H1	T250A	DA1000	DA2200	Fig
SEET 0903AGFN-L		●	●	●	●	●	●			●		—	—	1
0903AGSN-G		●	●	●	●	●			●		●	—	—	1
0903AGSN-N		●	●	●	●	●					●	—	—	1
SEMT 0903AGSN-L		●	●	●	●	●	—			—	—	—	—	1
0903AGSN-G		●	●	●	●	●	—	●		—	—	—	—	1

Fig 1



Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).



Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
				
BFTX0307IP	2.0	HPS1015	TRB10IP	SUMI-P

Recommended Cutting Conditions

WGC3000RS type

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.18**-0.20	ACP200
M	Stainless Steel	—	160-**200**-250	0.15-**0.18**-0.20	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.18**-0.20	ACK200
N	Non-Ferrous Alloy	—	300-**500**-1,000	0.15-**0.18**-0.20	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

Note 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.

N·m Recommended Tightening Torque (N·m)

WGC(F) 4000R(S) type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Rake Angle		
	Radial	-20° to -24°
	Axial	20° to 22°

6mm 45°

Face Milling



Fig 1

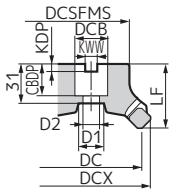


Fig 2

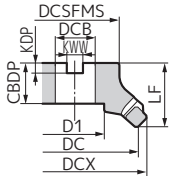
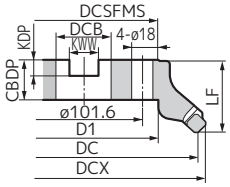


Fig 3



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WGC 4040RS	●	40	52	32	40	16	8.4	5.6	18	14	9	3	—	1
	4050RS	●	50	62	40	40	22	10.4	6.3	20	18	11	3	—	1
	4063RS	●	63	76	50	40	22	10.4	6.3	20	18	11	4	—	1
Inch	WGC 4080R	●	*80	93	60	50	25.4	9.5	6	25	20	13	4	1	1
	4100R	●	100	113	70	50	31.75	12.7	8	32	46	—	5	1.5	2
	4125R	●	125	138	80	63	38.1	15.9	10	38	56	—	6	2.6	2
	4160R	●	160	173	100	63	50.8	19.1	11	38	72	—	7	4	2
	4200R	●	200	213	130	63	47.625	25.4	14	35	130	—	8	6.6	3

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WGCF 4050RS	●	50	62	40	40	22	10.4	6.3	20	18	11	5	—	1
	4063RS	●	63	76	50	40	22	10.4	6.3	20	18	11	6	—	1
Inch	WGCF 4080R	●	*80	93	60	50	25.4	9.5	6	25	20	13	8	1	1
	4100R	●	100	113	70	50	31.75	12.7	8	32	46	—	10	1.5	2
	4125R	●	125	138	80	63	38.1	15.9	10	38	56	—	12	2.6	2
	4160R	●	160	173	100	63	50.8	19.1	11	38	72	—	16	4	2
	4200R	●	200	213	130	63	47.625	25.4	14	35	130	—	20	6.6	3

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					DLC	Cemented Carbide			Cermet	SUMIDIA		
Process	High-speed/Light Cutting	P			K		N			K/N		N	N	
	Medium Cutting		P/M	P/M	K		N	P	K/S		P	N	N	
	Roughing		P/M	P/M		K						N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	A30N	EH520	H1	T250A	DA1000	DA2200	Fig
SEET 13T3AGFN-L		●	●	●	●	●	●		●	●		—	—	1
13T3AGSN-G		●	●	●	●	●			●		●	—	—	1
13T3AGSN-N		●	●	●	●	●		●			●	—	—	1
SEMT 13T3AGSN-L		●	●	●	●	●	—			—	—	—	—	1
13T3AGSN-G		●	●	●	●	●	—	●		—	—	—	—	1
13T3AGSN-H		●	●	●	●	●	—			—	—	—	—	1
NF-SECW 13T3AGTN-N		—	—	—	—	—	—	—	—	—	—	●	▲	1
NF-XEEW 13T3AGFR-W		—	—	—	—	—	—	—	—	—	—	●	▲	2
XEEW 13T3AGER-W						●					●	—	—	2

Fig 1

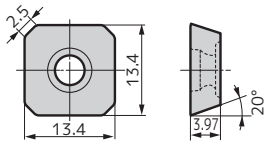
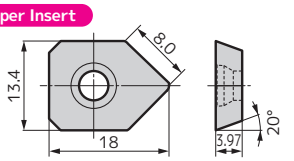


Fig 2

Wiper Insert



Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions for WGC4000RS/WGCF4000RS type

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**500**-1,000	0.15-**0.18**-0.20	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

Note 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.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
WGC(F) 4080R to WGC(F) 4125R	WGCS13R	BW0507F	LH035	BFTX03512IP	3.0	—	HPS1015	TRB15IP	SUMI-P
WGC(F) 4160R to WGC(F) 4200R	WGCS13R	BW0507F	LH035	BFTX03512IP	3.0	TRDR15IP	—	—	
WGC(F) 4000RS type	WGCS13R	BW0507F	LH035	BFTX03512IP	3.0	—	HPS1015	TRB15IP	

N·m Recommended Tightening Torque (N·m) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WGC 3000EW/4000EW type

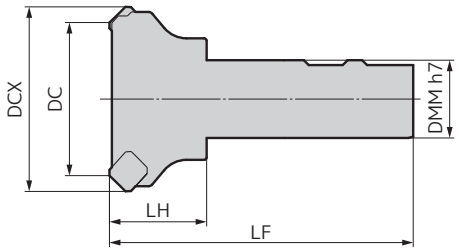
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		(3000 type)	(4000 type)
Radial		-10° to -19°	-20° to -24°
Axial		20°	20° to 22°

4mm 45° (3000 type) | 6mm 45° (4000 type) | Face Milling



Fig 1



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WGC 3020EW	●	**20**	29	20	40	100	2	1
3025EW	●	**25**	34	20	40	100	3	1
3032EW	●	**32**	41	32	40	125	4	1
3040EW	●	**40**	49	32	40	125	4	1
3050EW	●	**50**	59	32	40	125	5	1
3063EW	●	**63**	72	32	40	125	6	1

Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WGC 4032EW	●	**32**	44	32	40	125	3	1
4040EW	●	**40**	52	32	40	125	3	1
4050EW	●	**50**	62	32	40	125	4	1
4063EW	●	**63**	76	32	40	125	5	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					DLC	Cemented Carbide			Cermet	SUMIDIA			
Process	High-speed/Light Cutting	P			K		N			K N		N	N		
	Medium Cutting		P M	M	K		N	P	K S		P	N	N		
	Roughing		P M	P M		K						N	N		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	A30N	EH520	H1	T250A	DA1000	DA2200	Applicable Cutter	Fig
SEET 0903AGFN-L		●	●	●	●	●	●			●		—	—	WGC3000 type	1
0903AGSN-G		●	●	●	●	●			●		●	—	—		1
0903AGSN-N		●	●	●	●	●					●	—	—		1
SEMT 0903AGSN-L		●	●	●	●	●	—			—	—	—	—		1
0903AGSN-G		●	●	●	●	●	—	●		—	—	—	—		1
SEET 13T3AGFN-L		●	●	●	●	●	●		●	●		—	—	WGC4000 type WGCF4000 type	2
13T3AGSN-G		●	●	●	●	●			●		●	—	—		2
13T3AGSN-N		●	●	●	●	●		●			●	—	—		2
SEMT 13T3AGSN-L		●	●	●	●	●	—			—	—	—	—		2
13T3AGSN-G		●	●	●	●	●	—	●		—	—	—	—		2
13T3AGSN-H		●	●	●	●	●	—			—	—	—	—		2
NF-SECW 13T3AGTN-N		—	—	—	—	—	—	—	—	—	—	●	▲		2
NF-XEEW 13T3AGFR-W		—	—	—	—	—	—	—	—	—	—	●	▲		3
XEEW 13T3AGER-W						●					●	—	—		3

Fig 1

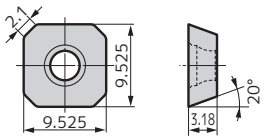


Fig 2

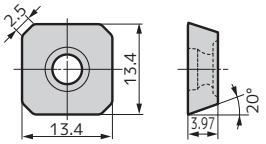
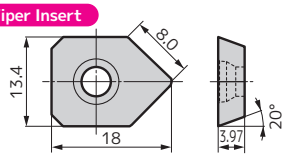


Fig 3

Wiper Insert



Refer to page H21 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions

WGC3000EW type

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.18**-0.20	ACP200
M	Stainless Steel	—	160-**200**-250	0.15-**0.18**-0.20	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.18**-0.20	ACK200
N	Non-Ferrous Alloy	—	300-**500**-1,000	0.15-**0.18**-0.20	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

Note 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.

WGC4000EW type

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.25**-0.40	ACP200
P	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	100-**200**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**500**-1,000	0.15-**0.18**-0.20	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

Note 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.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WGC 3000EW type	—	—	—	BFTX0307IP	2.0	TRDR10IP	SUMI-P
WGC 4032EW				BFTX03512IP	3.0	TRDR15IP	
WGC 4000EW type (Except WGC 4032EW)	WGCS13R	BW0507F	LH035	BFTX03512IP	3.0	TRDR15IP	

N·m Recommended Tightening Torque (N·m)

MEMO

Expansion



■ Features

SEC-Sumi Dual Mill DGC series employs double-sided inserts with up to 16 corners for excellent economy. This is a general-purpose cutter featuring high cutting edge strength for high-efficiency milling and a low-burr chipbreaker design that provides high machined surface quality.

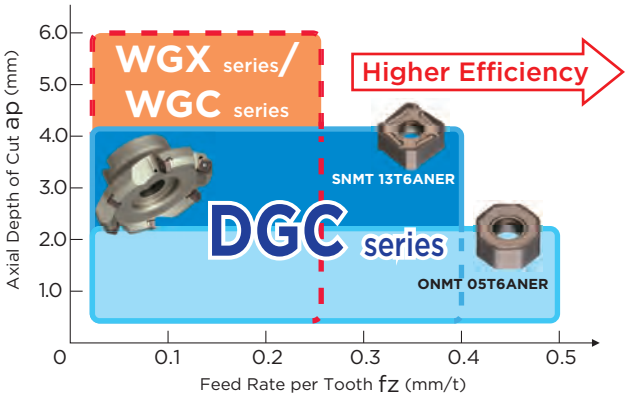


The DGC series insert lineup includes double-sided SNMT/SNET and ONMT/ONET types. Up to 16 corners can be used for improved economy.

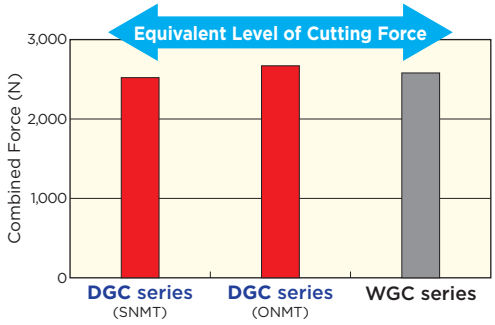
● Same cutting performance as single-sided inserts plus superior economy

Achieves levels of cutting edge sharpness and machined surface quality equivalent to single-sided cutters at a maximum depth of cut of ap = 3mm.

● Application Range for General Steel Machining



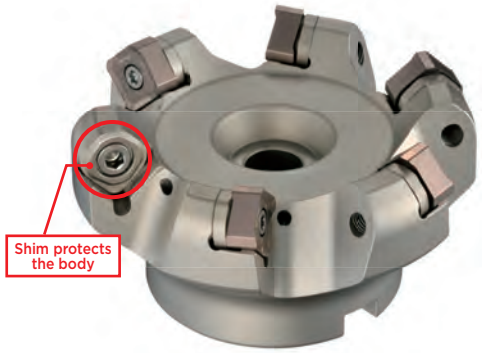
● Comparison of Cutting Force



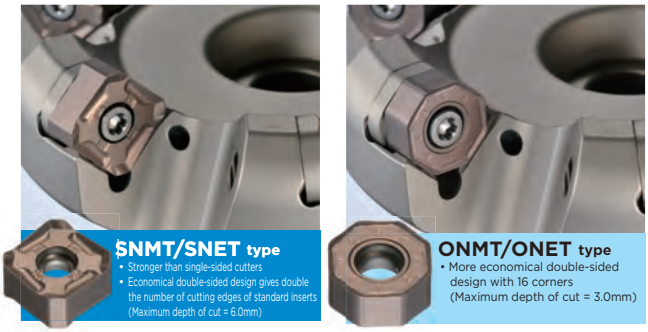
Work Material: SCM435, Tool: ø100
Cutting Conditions: vc = 200m/min, fz = 0.3mm/t, ap = 3mm, ae = 85mm

● Dual-purpose body features

Two types of inserts can be used with a single body depending on the milling application, to help reduce tool costs.



Use two types of insert for different applications



● General-purpose grade applicable to any work material

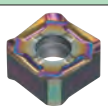
Introducing the new grade ACU2500, which is applicable to a wide variety of processes and work materials such as steel, stainless steel and cast iron.

■ Product Range

Type	Cat. No.	Dia. (mm)								
		ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250
Shell	DGC 13000RS	3	3	4	4	5	6	7	8	10
	DGC 13000R inch				4	5	6	7	8	10
	DGCM 13000RS		4	5	6	7	8	10	12	14
	DGCM 13000R inch				6	7	8	10	12	14
	DGCF 13000RS		5	6	8	10	12	14	16	18
	DGCF 13000R inch				8	10	12	14	16	18
Shank	DGC 13000EW	3	3	4						

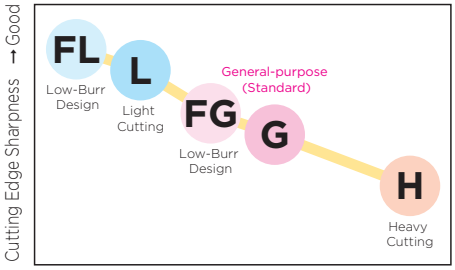
Number in ●● shows the number of teeth inch Inch Bore

■ Chipbreaker Selection

Work Material	P M K S					N	P K
Applications	Light Cutting/ Burr Prevention	Light Cutting	General-purpose/ Burr Prevention	General-purpose	Heavy Cutting	Non-Ferrous Metal	Surface Finish Emphasised
Features	Low Cutting Force/ With Chamfer	Low Cutting Force	Standard/ With Chamfer	Standard	High Strength	High Rake	Wiper
	FL type	**L type**	**FG type**	**G type**	**H type**	**S type**	**W type**
Chipbreaker							
Cutting Edge Cross Section	0.05mm 30°	0.05mm 30°	0.1mm 25°	0.1mm 25°	0.2mm 25°	0.05mm 30°	0.3mm 25°
8 / 16	Not Available	0.05mm 30°	Not Available	0.1mm 23°	Not Available	Not Available	Double-Sided, 2 Corners (*)

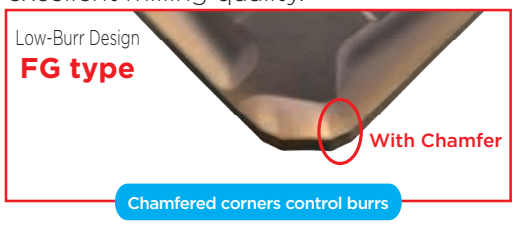
*Can only be used in conjunction with 8 corner inserts

■ Chipbreaker Selection Guide

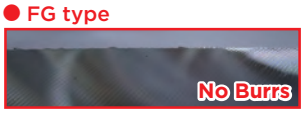


● Improved machining quality

- FG type/FL type chipbreakers feature a chamfered corner to minimise burrs and provide excellent milling quality.



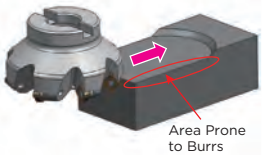
● FG type



● Competitor's Product

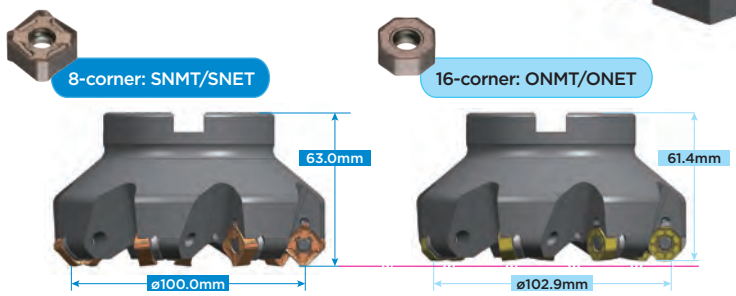


FG type chipbreaker with low-burr design enables high-quality milling with fewer burrs and minimal edge chipping

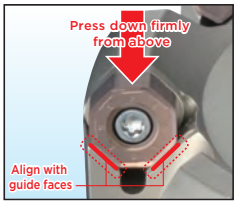


Work Material: SCM435
Tool: ø100
Cutting Conditions: VC = 200m/min, fz = 0.2mm/t
ap = 3mm, ae = 85mm

Cutter Dia. and Cutting Edge Height



16-corner Mounting Method



⚠ Firmly align insert with guide faces, press down in the direction of the arrow, and tighten the screw to fix the insert.

⚠ Note that while the 8-corner and 16-corner types can be used interchangeably on the same body, however they create different cutter diameters, cutting edge heights and maximum cutting depths.

Body Shape (Example: With Cutter Dia. of ø100mm)

Insert	Cutter Dia. DC (mm)	Cutting Edge Height LF (mm)	Max. Depth of Cut APMX (mm)
SNMT/SNET	100.0	63.0	6.0
ONMT/ONET	102.9	61.4	3.0

Recommended Cutting Conditions (SNMT/SNET)

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.25**-0.40	< 4	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.30**-0.45	< 4	
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.25**-0.35	< 4	
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 3	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.25**-0.40	< 5	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	500-**750**-1,000	0.15-**0.23**-0.30	< 3	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	< 3	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note 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.

Recommended Cutting Conditions (ONMT/ONET)

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.30**-0.50	< 2	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.50**-0.50	< 2	
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.25**-0.30	< 2	
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 2	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.30**-0.50	< 2	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	< 2	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note 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.

■ Precautions When Using Wiper Inserts with Holes

Fig 1

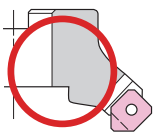
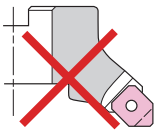


Fig 2



- **When mounting the wiper insert, attach it as shown in Fig 1. When mounted as shown in Fig 2, normal machined surface roughness cannot be obtained.**
- **The wiper insert has a single corner specification.**
- **Refer to page N25 of Technical Guidance for details about milling with wiper inserts.**

DGC 13000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT/SNET) | 3mm 45° (ONMT/ONET) | Face Milling



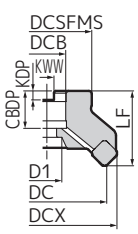
Fig 1


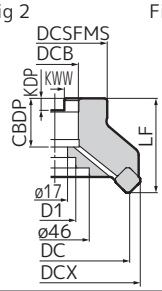
Fig 2


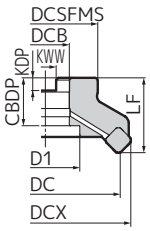
Fig 3


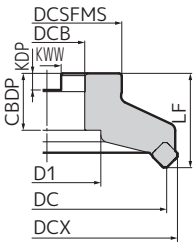
Fig 4


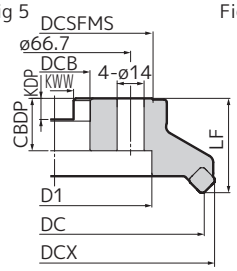
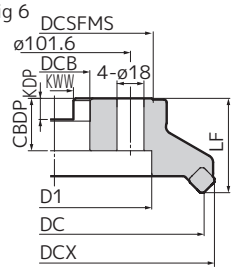
Fig 5


Fig 6


Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGC 13040RS**	●	**40(42.9)**	54(50.8)	36	40(38.44)	**16**	8.4	5.6	18	13.5	3	0.3	1
	13050RS	●	**50(52.9)**	64(60.8)	40	40(38.44)	**22**	10.4	6.3	20	18	3	0.4	1
	13063RS	●	**63(65.9)**	77(73.8)	50	40(38.44)	**22**	10.4	6.3	20	18	4	0.5	1
	13080RS	●	*80(82.9)	94(90.8)	60	50(48.44)	**27**	12.4	7	25	20	4	1.2	1
	13100RS	●	**100(102.9)**	114(110.8)	70	50(48.44)	**32**	14.4	8.5	32	46	5	1.6	3
	13125RS	●	**125(127.9)**	139(135.8)	80	63(61.44)	**40**	16.4	9.5	29	52	6	2.8	1
	13160RS	●	**160(162.9)**	174(170.8)	100	63(61.44)	**40**	16.4	9.5	29	88	7	4.5	5
	13200RS	●	**200(202.9)**	214(210.8)	130	63(61.44)	**60**	25.7	14	35	130	8	7.1	6
	13250RS	●	**250(252.9)**	264(260.8)	130	63(61.44)	**60**	25.7	14	35	160	10	10.6	6
Inch	**DGC 13080R**	●	*80(82.9)	94(90.8)	60	50(48.44)	**25.4**	9.5	6	25	20	4	1.2	1
	13100R	●	*100(102.9)	114(110.8)	70	63(61.44)	**31.75**	12.7	8	32.5	28	5	2.2	2
	13125R	●	**125(127.9)**	139(135.8)	80	63(61.44)	**38.1**	15.9	10	35.5	55	6	2.8	1
	13160R	●	**160(162.9)**	174(170.8)	100	63(61.44)	**50.8**	19.1	11	38	72	7	4.5	4
	13200R	●	**200(202.9)**	214(210.8)	130	63(61.44)	**47.625**	25.4	14	35	130	8	7.1	6
	13250R	●	**250(252.9)**	264(260.8)	130	63(61.44)	**47.625**	25.4	14	35	150	10	11.0	6

( ) indicates value for ONMT/ONET type inserts.
Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).
Note: The values in red have been changed from the 2023-2024 General Catalogue.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide		DLC	Cermet	
Process	High-speed/Light Cutting															
	Medium Cutting															
	Roughing															
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	EH520	DL1000	T4500A	Fig
SNMT 13T6ANER-L		●	●	●	●	●	●						—		—	—	1
13T6ANER-G		●	●	●	●	●	●		●	●				●		●	1
13T6ANER-H		●	●	●	●	●	●						—		—	—	1
13T6ANER-FL		●	●	●	●	●	●						—		—	—	2
13T6ANER-FG		●	●	●	●	●	●		●	●			—		—	—	2
SNET 13T6ANER-L											▲	▲					1
13T6ANER-G									●	●	▲	▲					1
13T6ANER-FL											▲	▲					2
13T6ANER-FG											▲	▲					2
13T6ANFR-S													●		●		1
XNEU 13T6ANEN-W		●		●			●									●	3
ONMT 05T6ANER-L		●	●	●	●	●	●						—		—	—	4
05T6ANER-G		●	●	●	●	●	●		●	●			—		—	—	4
ONET 05T6ANER-L											▲	▲					4
05T6ANER-G											▲	▲					4

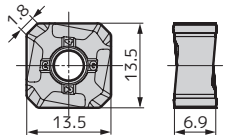
Fig 1


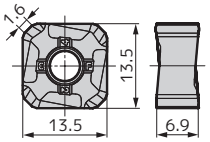
Fig 2


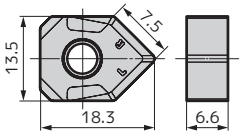
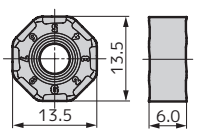
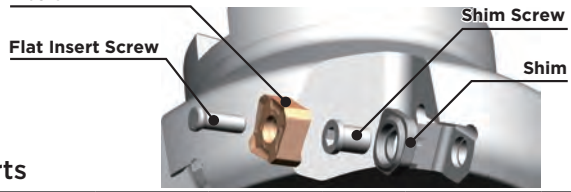
Fig 3 Wiper Insert


Fig 4


Wiper inserts can only be used in combination with 8-cornered inserts (SNMT/SNET).

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to page H31 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC Series Code | **13** Insert Size | **040** Dia. | **R** Feed Direction | **S** Metric Bore

Parts (Sold Separately)

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø40 to 125	DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

Flat Insert Screw (*)	
BFTX0418IP	N·m 3.0

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC/DGCM types.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

DGCM 13000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
Radial	-10°	
Axial	-5°	

6mm 45° (SNMT/SNET) | 3mm 45° (ONMT/ONET) | Face Milling



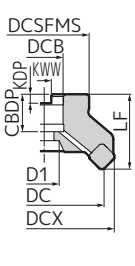
Fig 1


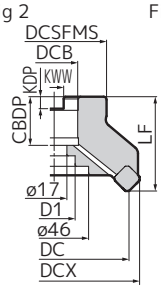
Fig 2


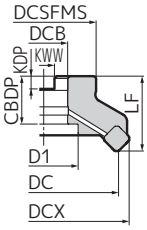
Fig 3


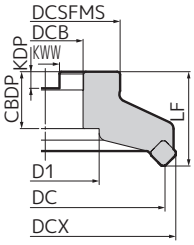
Fig 4


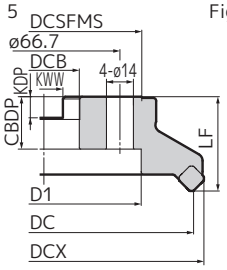
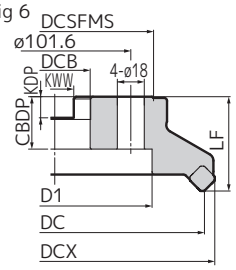
Fig 5


Fig 6


Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGCM 13050RS**	●	50(52.9)	64(60.8)	40	40(38.44)	**22**	10.4	6.3	20	18	4	0.3	1
	13063RS	●	63(65.9)	77(73.8)	50	40(38.44)	**22**	10.4	6.3	20	18	5	0.5	1
	13080RS	●	*80(82.9)	94(90.8)	60	50(48.44)	**27**	12.4	7	25	20	6	1.1	1
	13100RS	●	100(102.9)	114(110.8)	70	50(48.44)	**32**	14.4	8.5	32	46	7	1.5	3
	13125RS	●	125(127.9)	139(135.8)	80	63(61.44)	**40**	16.4	9.5	29	52	8	2.8	1
	13160RS	●	160(162.9)	174(170.8)	100	63(61.44)	**40**	16.4	9.5	29	88	10	4.6	5
	13200RS	●	200(202.9)	214(210.8)	130	63(61.44)	**60**	25.7	14	35	130	12	7	6
	13250RS	●	250(252.9)	264(260.8)	130	63(61.44)	**60**	25.7	14	35	160	14	10.5	6
Inch	**DGCM 13080R**	●	*80(82.9)	94(90.8)	60	50(48.44)	**25.4**	9.5	6	25	20	6	1.1	1
	13100R	●	*100(102.9)	114(110.8)	70	63(61.44)	**31.75**	12.7	8	32.5	28	7	2.2	2
	13125R	●	125(127.9)	139(135.8)	80	63(61.44)	**38.1**	15.9	10	35.5	55	8	2.8	1
	13160R	●	160(162.9)	174(170.8)	100	63(61.44)	**50.8**	19.1	11	38	72	10	4.6	4
	13200R	●	200(202.9)	214(210.8)	130	63(61.44)	**47.625**	25.4	14	35	130	12	7	6
	13250R	●	250(252.9)	264(260.8)	130	63(61.44)	**47.625**	25.4	14	35	150	14	11.0	6

( ) indicates value for ONMT/ONET type inserts. Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide		DLC	Cermet	
Process	High-speed/Light Cutting		P			K		M S	M S		M S	K N		N	P M	
	Medium Cutting			P M	P M	K			M S	M S	M S		K S	N	P	
	Roughing			P M	P M		K			M S		M S				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	EH520	DL1000	T4500A	Fig
SNMT 13T6ANER-L		●	●	●	●	●	●						—		—	—	1
13T6ANER-G		●	●	●	●	●	●		●	●				●		●	1
13T6ANER-H		●	●	●	●	●	●						—		—	—	1
13T6ANER-FL		●	●	●	●	●	●						—		—	—	2
13T6ANER-FG		●	●	●	●	●	●		●	●			—		—	—	2
SNET 13T6ANER-L											▲	▲					1
13T6ANER-G									●	●	▲	▲					1
13T6ANER-FL											▲	▲					2
13T6ANER-FG											▲	▲					2
13T6ANFR-S													●		●		1
XNEU 13T6ANEN-W		●		●			●									●	3
ONMT 05T6ANER-L		●	●	●	●	●	●						—		—	—	4
05T6ANER-G		●	●	●	●	●	●		●	●			—		—	—	4
ONET 05T6ANER-L											▲	▲					4
05T6ANER-G											▲	▲					4

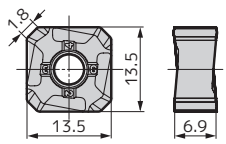
Fig 1


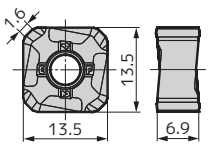
Fig 2


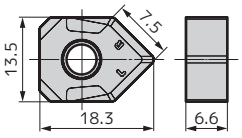
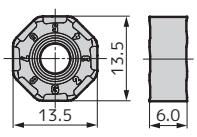
Fig 3 Wiper Insert


Fig 4


Wiper inserts can only be used in combination with 8-cornered inserts (SNMT/SNET).

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to page H31 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC Series Code | **M** Fine Pitch | **13** Insert Size | **050** Dia. | **R** Feed Direction | **S** Metric Bore

Parts (Sold Separately)

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
DC ø50 to 125 Other than above	DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
						TRDR15IP	—	—	

Flat Insert Screw (*)	
BFTX0418IP	N·m 3.0

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC/DGCM types.

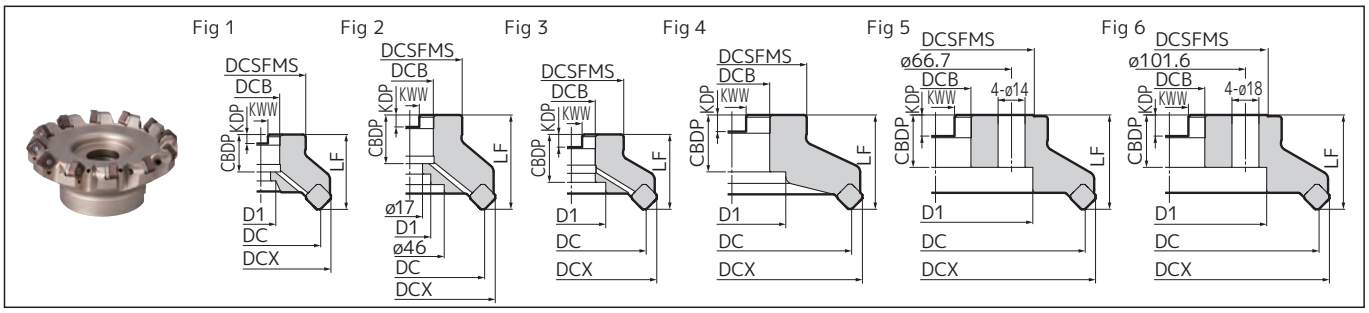
N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

DGCF 13000R(S) type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Rake Angle	Radial	-10°
	Axial	-5°

6mm 45° (SNMT/SNET) 3mm 45° (ONMT/ONET) Face Milling



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGCF 13050RS**	●	50(52.9)	64(60.8)	40	40(38.44)	**22**	10.4	6.3	20	18	5	0.3	1
	13063RS	●	63(65.9)	77(73.8)	50	40(38.44)	**22**	10.4	6.3	20	18	6	0.5	1
	13080RS	●	*80(82.9)	94(90.8)	60	50(48.44)	**27**	12.4	7	25	20	8	1.1	1
	13100RS	●	100(102.9)	114(110.8)	70	50(48.44)	**32**	14.4	8.5	32	46	10	1.4	3
	13125RS	●	125(127.9)	139(135.8)	80	63(61.44)	**40**	16.4	9.5	29	52	12	2.7	1
	13160RS	●	160(162.9)	174(170.8)	100	63(61.44)	**40**	16.4	9.5	29	88	14	4.4	5
	13200RS	●	200(202.9)	214(210.8)	130	63(61.44)	**60**	25.7	14	35	130	16	6.9	6
	13250RS	●	250(252.9)	264(260.8)	130	63(61.44)	**60**	25.7	14	35	160	18	10.4	6
Inch	**DGCF 13080R**	●	*80(82.9)	94(90.8)	60	50(48.44)	**25.4**	9.5	6	25	20	8	1.1	1
	13100R	●	*100(102.9)	114(110.8)	70	63(61.44)	**31.75**	12.7	8	32.5	28	10	2.1	2
	13125R	●	125(127.9)	139(135.8)	80	63(61.44)	**38.1**	15.9	10	35.5	55	12	2.7	1
	13160R	●	160(162.9)	174(170.8)	100	63(61.44)	**50.8**	19.1	11	38	72	14	4.4	4
	13200R	●	200(202.9)	214(210.8)	130	63(61.44)	**47.625**	25.4	14	35	130	16	6.9	6
	13250R	●	250(252.9)	264(260.8)	130	63(61.44)	**47.625**	25.4	14	35	150	18	10.9	6

( ) indicates value for ONMT/ONET type inserts. Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

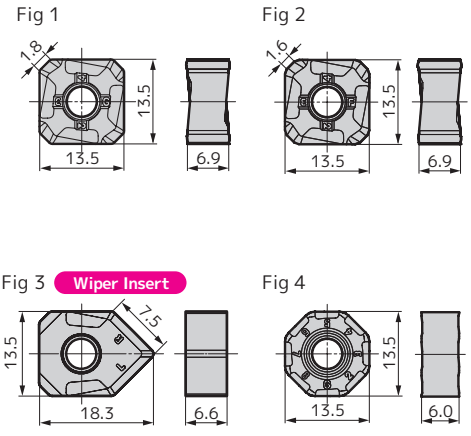
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide		DLC	Cermet	
Process	High-speed/Light Cutting	K M S	P			K		M S	M S		M S	K N		N	P M	
	Medium Cutting	K M S		P M	P M	K			M S	M S	M S		K S	N	P	
	Roughing	K M S		P M	P M		K			M S		M S				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	EH520	DL1000	T4500A	Fig
SNMT 13T6ANER-L		●	●	●	●	●	●						—		—	—	1
13T6ANER-G		●	●	●	●	●	●		●	●				●		●	1
13T6ANER-H		●	●	●	●	●	●						—		—	—	1
13T6ANER-FL		●	●	●	●	●	●						—		—	—	2
13T6ANER-FG		●	●	●	●	●	●		●	●			—		—	—	2
SNET 13T6ANER-L											▲	▲					1
13T6ANER-G									●	●	▲	▲					1
13T6ANER-FL											▲	▲					2
13T6ANER-FG											▲	▲					2
13T6ANFR-S													●		●		1
XNEU 13T6ANEN-W		●		●			●									●	3
ONMT 05T6ANER-L		●	●	●	●	●	●						—		—	—	4
05T6ANER-G		●	●	●	●	●	●		●	●			—		—	—	4
ONET 05T6ANER-L											▲	▲					4
05T6ANER-G											▲	▲					4

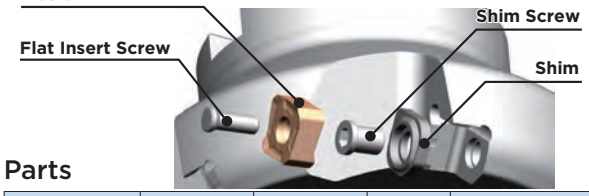


Wiper inserts can only be used in combination with 8-cornered inserts (SNMT/SNET).

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.

Refer to page H31 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC Series Code | **F** Extra Fine Pitch | **13** Insert Size | **050** Dia. | **R** Feed Direction | **S** Metric Bore

Parts (Sold Separately)

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
							Handle Grip	Bit	
DC ø50 to 125	DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

Flat Insert Screw (*)	
BFTX0418IP	N·m 3.0

*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC/DGCM types.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

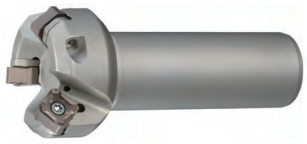
DGC 13000EW type

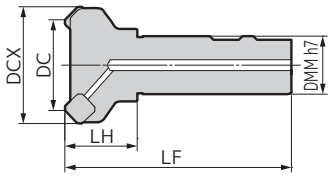
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT/SNET) | 3mm 45° (ONMT/ONET) | Face Milling

Fig 1





Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DGC 13040EW	●	**40(42.9)**	54(50.8)	32	40(38.44)	125	3	0.7	1
13050EW	●	**50(52.9)**	64(60.8)	32	40(38.44)	125	3	0.9	1
13063EW	●	**63(65.9)**	77(73.8)	32	40(38.44)	125	4	1.1	1

( ) indicates value for ONMT/ONET type inserts.
Inserts are sold separately.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide		DLC	Cermet	
Process	High-speed/Light Cutting	●	●			●		●	●		●	●		●	●	
	Medium Cutting	●		●	●	●		●	●	●	●		●	●	●	
	Roughing	●		●	●		●			●	●					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	EH520	DL1000	T4500A	Fig
SNMT 13T6ANER-L		●	●	●	●	●	●						—		—	—	1
13T6ANER-G		●	●	●	●	●	●		●	●				●		●	1
13T6ANER-H		●	●	●	●	●	●						—		—	—	1
13T6ANER-FL		●	●	●	●	●	●						—		—	—	2
13T6ANER-FG		●	●	●	●	●	●		●	●			—		—	—	2
SNET 13T6ANER-L											▲	▲					1
13T6ANER-G									●	●	▲	▲					1
13T6ANER-FL											▲	▲					2
13T6ANER-FG											▲	▲					2
13T6ANFR-S													●		●		1
XNEU 13T6ANEN-W		●		●			●									●	3
ONMT 05T6ANER-L		●	●	●	●	●	●						—		—	—	4
05T6ANER-G		●	●	●	●	●	●		●	●			—		—	—	4
ONET 05T6ANER-L											▲	▲					4
05T6ANER-G											▲	▲					4

Fig 1

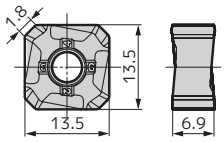


Fig 2

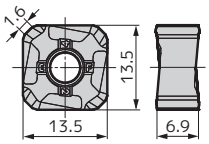


Fig 3 Wiper Insert

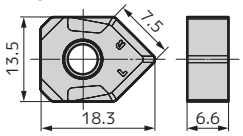
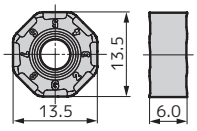


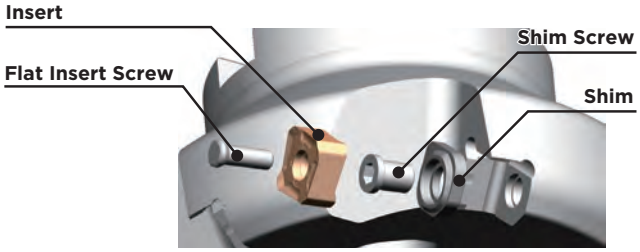
Fig 4



Wiper inserts can only be used in combination with 8-cornered inserts (SNMT/SNET).

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to page H31 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC	13	040	EW
Series Code	Insert Size	Dia.	Shank type

Parts

Shim	Shim Screw	Wrench	Flat Insert Screw		Wrench	Anti-seizure Cream
				N·m		
DGCS13R	BW0609F	LH040	BFTX0412IP	3.0	TRDR15IP	SUMI-P

UFO 4000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

Rake Angle	Radial	-7°
	Axial	27°

5.5mm 45° Face Milling



Fig 1

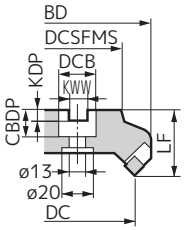


Fig 2

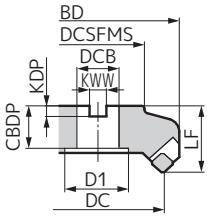


Fig 3

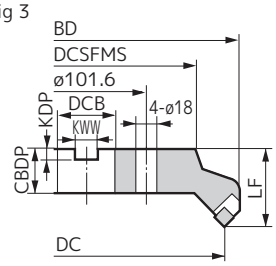


Fig 4

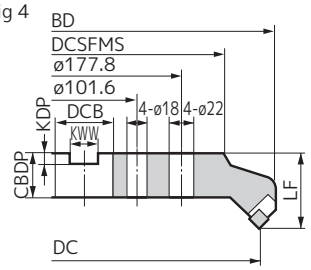


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**UFO 4080R/L**	●		**80**	102	60	50	**25.4**	9.5	6	25	—	4	2.1	1
	4100R/L	●		**100**	122	70	50	**31.75**	12.7	8	32	46	5	2.9	2
	4125R/L	●		**125**	146	75	63	**38.1**	15.9	10	38	56	6	4.2	2
	4160R/L	●		**160**	180	100	63	**50.8**	19.1	11	38	83	8	6.6	2
	4200R/L	●		**200**	220	130	63	**47.625**	25.4	14	35	—	10	9.5	3
	4250R/L	●		**250**	270	130	63	**47.625**	25.4	14	35	—	12	14.8	3
	4315R/L			**315**	335	240	80	**47.625**	25.4	14	35	—	14	26.6	4

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet	
Process	High-speed/Light Cutting	P			K		M			K N			
	Medium Cutting		P M	P M	K			P	K		K	P	
	Roughing		P M	P M		K							
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	H10E	T250A	Fig
SFEN 12T3AZTN		●	●					●				●	1
12T3AZTN-S								●					1
12T3AZTN-W													1
12T3AZFN										●			1
SFKN 12T3AZTN		●	●	●				●				●	2(3)
12T3AZTN-S								●					3
12T3AZTN-W												●	3
12T3AZFN					●	●	▲		●				2(3)
SFKR 12T3AZEN		●						●					4
UW 12500R											●		5

-S: Sharp Edged, -W: Strong Edged.

Fig 1

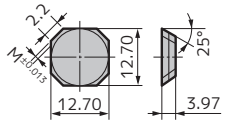


Fig 2 (Grades in ACP/ACK series)

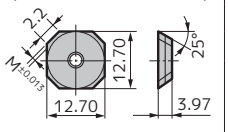


Fig 3

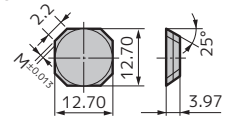


Fig 4

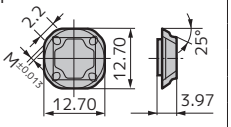
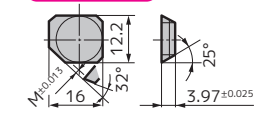
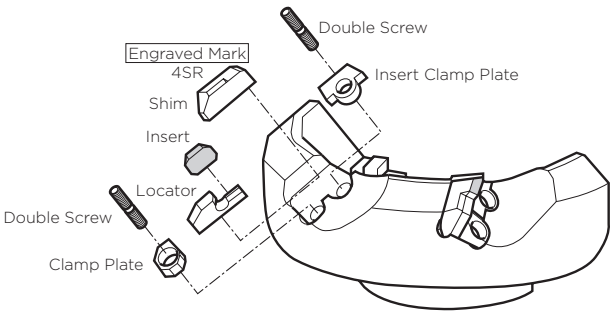


Fig 5 Wiper Insert





Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	100-**175**-250	0.15-**0.23**-0.30	ACP200
	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.23**-0.30	ACP200
	Die Steel	200 to 220HB	80-**140**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**190**-220	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	60-**155**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**550**-800	0.15-**0.23**-0.30	H1

Note 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.

Parts

Applicable Cutter	Shim	Locator	Locator Clamp	Insert Clamp Plate	Double Screw	Size	N·m
UFO 4000R type	UF4SR	UF4KR	UFKWR	UFTWR	WB7-15T	**M7**	**8.0**
UFO 4000L type	UF4SL	UF4KL	UFKWL	UFTWL	WB7-15T	**M7**	**8.0**

T-wrench (TT25) is included as a standard accessory.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

UFO 5000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

Rake Angle	Radial	-7°
	Axial	27°

7.5mm 45°

Face Milling



Fig 1

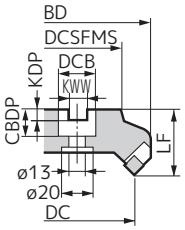


Fig 2

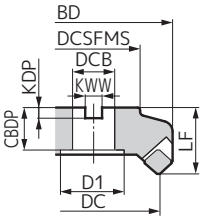


Fig 3

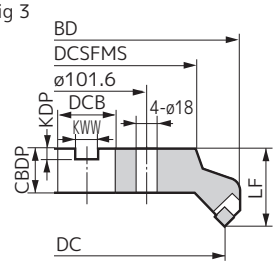


Fig 4

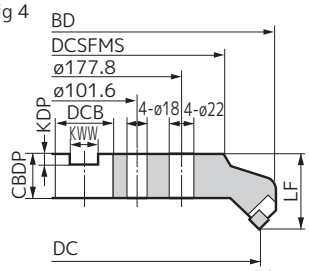


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**UFO 5080R/L**			*80	102	60	50	**25.4**	9.5	6	25	—	4	2.0	1
	5100R/L	●		**100**	119	70	50	**31.75**	12.7	8	32	46	5	2.8	2
	5125R/L	●		**125**	143	75	63	**38.1**	15.9	10	38	56	6	4.0	2
	5160R/L	●		**160**	177	100	63	**50.8**	19.1	11	38	80	8	6.4	2
	5200R/L	●		**200**	217	130	63	**47.625**	25.4	14	35	—	10	9.2	3
	5250R/L			**250**	267	130	63	**47.625**	25.4	14	35	—	12	14.4	3
	5315R/L			**315**	332	240	80	**47.625**	25.4	14	35	—	14	26.1	4

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet	
Process	High-speed/Light Cutting	P			K		M			K N			
	Medium Cutting		P M	P M	K			P	K		K	P	
	Roughing		P M	P M		K							
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	H10E	T250A	Fig
SFEN 1504AZTN		●	●					●				●	1
1504AZTN-S													1
1504AZTN-W													1
1504AZFN													1
SFKN 1504AZTN		●	●	●				●				●	2(3)
1504AZTN-S													3
1504AZTN-W													3
1504AZFN					●		▲		●				2(3)
UW 15500R											●		4

-S: Sharp Edged, -W: Strong Edged.

Fig 1

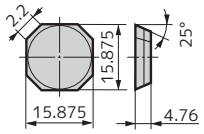


Fig 2 (Grades in ACP/ACK series)

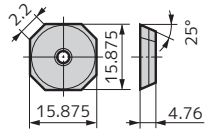


Fig 3

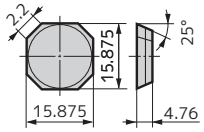
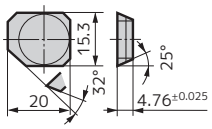
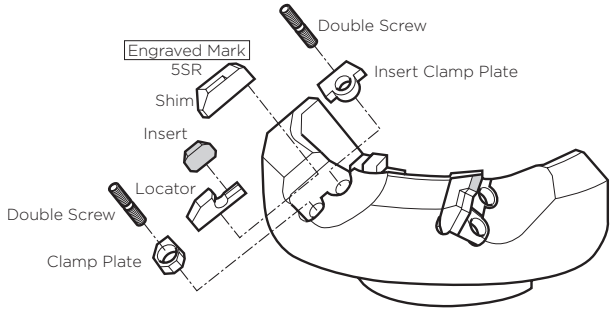


Fig 4 Wiper Insert





Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	100-**175**-250	0.15-**0.23**-0.30	ACP200
	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.23**-0.30	ACP200
	Die Steel	200 to 220HB	80-**140**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**190**-220	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	60-**155**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**550**-800	0.15-**0.23**-0.30	H1

Note 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.

Parts

Applicable Cutter	Shim	Locator	Locator Clamp	Insert Clamp Plate	Double Screw	Size	N·m
UFO 5000R type	UF5SR	UF5KR	UFKWR	UFTWR	WB7-15T	**M7**	**8.0**
UFO 5000L type	UF5SL	UF5KL	UFKWL	UFTWL	WB7-15T	**M7**	**8.0**

T-wrench (TT25) is included as a standard accessory.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

UFO 4000E type

P Steel K Cast Iron N Non-Ferrous Metal

Rake Angle	Radial	-7°
	Axial	27°

5.5mm 45°

Face Milling

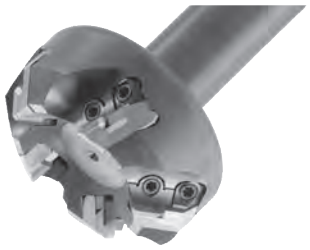
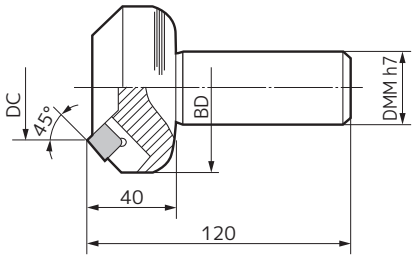


Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	External Dia. BD	Shank DMM	Number of Teeth	Maximum Depth of Cut	Axial Rake	Radial Rake	Fig
UFO 4050ER	●	**50**	74	32	4	5.5	+27°	-7°	1
4050ERS42		**50**	74	42	4				1
4063ER	●	**63**	86	32	5				1
4063ERS42		**63**	86	42	5				1
4080ER	●	**80**	102	32	6				1
4080ERS42		**80**	102	42	6				1
4100ER		**100**	123	32	7				1
4100ERS42		**100**	123	42	7				1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet	
Process	High-speed/Light Cutting	P			K		M			K N			
	Medium Cutting		P M	P M	K			P	K		K	P	
	Roughing		P M	P M		K							
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	H10E	T250A	Fig
SFEN 12T3AZTN		●	●					●				●	1
12T3AZTN-S								●					1
12T3AZTN-W													1
12T3AZFN										●			1
SFKN 12T3AZTN		●	●	●				●				●	2(3)
12T3AZTN-S								●					3
12T3AZTN-W												●	3
12T3AZFN					●	●	▲		●				2(3)
SFKR 12T3AZEN		●						●					4
UW 12500R											●		5

Fig 1

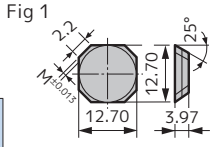


Fig 2 (For ACP/ACK series)

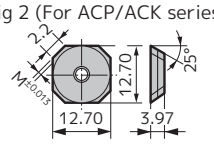


Fig 3

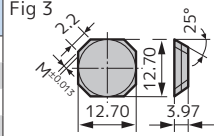


Fig 4

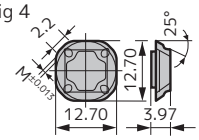
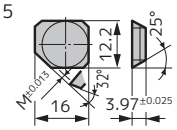
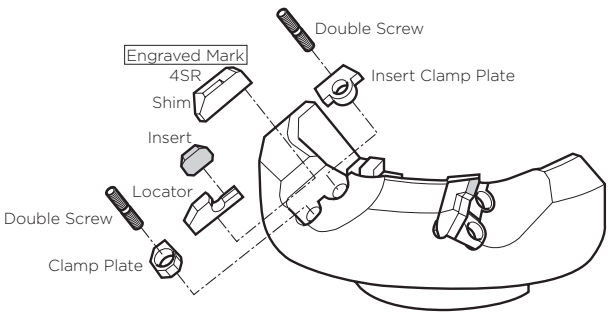


Fig 5



Wiper Insert



Parts

Shim	Locator	Locator Clamp Plate	Insert Clamp Plate	Double Screw			Wrench
					Size	N·m	
UF4SR	UF4KR	UFKWR	UFTWR	WB7-15T	**M7**	**8.0**	TT25

T-wrench (TT25) is included as a standard accessory.

Recommended Cutting Conditions

Diameter ø50 to ø63mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	100-**125**-200	0.10-**0.20**-0.30	ACP200
	Alloy Steel	180 to 280HB	80-**100**-180	0.10-**0.20**-0.30	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.20**-0.30	ACK200
N	Non-Ferrous Metal	—	80-**160**-250	0.05-**0.15**-0.20	H1

Note 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.

Diameter ø80 to ø100mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	100-**125**-200	0.10-**0.25**-0.40	ACP200
	Alloy Steel	180 to 280HB	80-**100**-180	0.10-**0.25**-0.40	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.25**-0.40	ACK200
N	Non-Ferrous Metal	—	80-**160**-250	0.05-**0.25**-0.30	H1

Note 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.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

FPG 4000/5000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

Rake Angle	Radial	-4°
	Axial	15°

6.5mm 45° (4000 type) 8.5mm 45° (5000 type) Face Milling



Fig 1

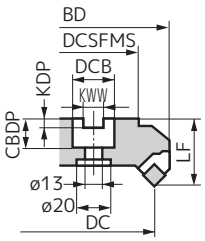


Fig 2

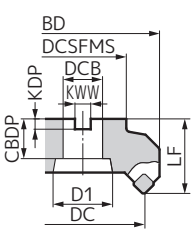


Fig 3

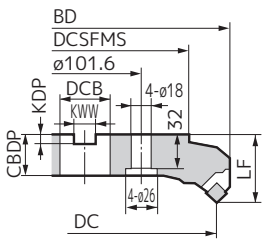


Fig 4

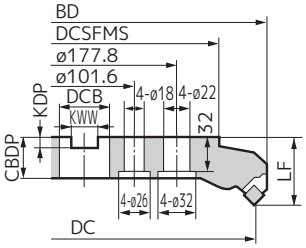


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**FPG 4080R/L**	●	●	*80	104	60	50	**25.4**	9.5	6	25	—	4	1.9	1
	4100R/L	●		**100**	124	70	60	**31.75**	12.7	8	32	44	5	3.0	2
	4125R/L	●	●	**125**	148	105	60	**38.1**	15.9	10	38	67	6	4.5	2
	4160R/L	●	●	**160**	182	135	60	**50.8**	19.1	11	38	98	8	6.7	2
	4200R/L	●		**200**	221	130	60	**47.625**	25.4	13.5	40	—	10	9.4	3
	4250R/L	●		**250**	271	130	70	**47.625**	25.4	13.5	40	—	12	16.2	3
	4315R/L	●		**315**	335	240	70	**47.625**	25.4	13.5	40	—	14	24.6	4
	FPG 5080R/L			*80	104	60	50	**25.4**	9.5	6	25	—	4	1.9	1
	5100R/L			**100**	124	70	60	**31.75**	12.7	8	32	44	5	3.0	2
	5125R/L			**125**	148	105	60	**38.1**	15.9	10	38	67	6	4.5	2
	5160R/L			**160**	182	135	60	**50.8**	19.1	11	38	98	8	6.7	2
	5200R/L			**200**	221	130	60	**47.625**	25.4	13.5	40	—	10	9.4	3
	5250R/L			**250**	271	130	70	**47.625**	25.4	13.5	40	—	12	16.2	3
	5315R/L			**315**	335	240	70	**47.625**	25.4	13.5	40	—	14	24.6	4

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide		Cermet		SUMIDIA		
Process	High-speed/Light Cutting	P			K		M			P		N	N	
	Medium Cutting		P M	P M	K			P	K		P	N	N	
	Roughing		P M	P M		K						N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	T1500A	T250A	DA1000	DA2200	Fig
SDEX 42MT								●		●	●	—	—	2
SDKN 42M					●	●	▲		●			—	—	1(2)
NF-SDKN 42M		—	—	—	—	—	—	—	—		—	●	▲	2
SDKN 42MT		●	●	●				●		●	●	—	—	1(2)
42MT-W											●	—	—	2
SDNN 1203AETN*		●	●	—	—	—	—	●	—	—	●	—	—	2
SDMR 1203AEEN		●	●					●			—	—	—	3
1203AETN		—	—	—	—	—	—	—	—	—	●	—	—	3
SDEX 53MT								●			●	—	—	5
SDKN 53M					●	●	▲		●			—	—	4(5)
53MT		●	●	●				●			●	—	—	4(5)

Fig 1 (Grades in ACP/ACK series) Fig 2

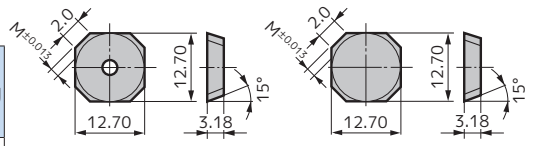


Fig 3 Fig 4 (Grades in ACP/ACK series)

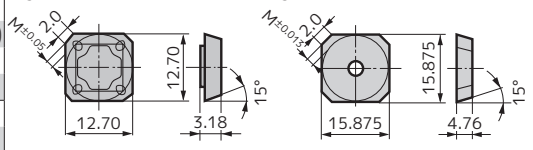
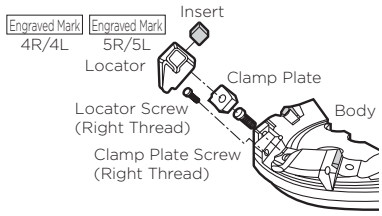


Fig 5: Same as Fig 4 without hole

Cat. No. marked *: M ± 0.08.

Insert Application Table

Body	Insert
FPG4000 type	SDOO42‥ SDOO12‥
FPG5000 type	SDOO53‥



Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Plate Screw
FPG4000R type	LFP4R	FBH0512	M5	5.0	FPWR	FBX0817
FPG4000L type	LFP4L				FPWL	
FPG5000R type	LFP5R				FPWR	
FPG5000L type	LFP5L				FPWL	

T-wrenches used are TH030 (locator screw) and TH040 (clamp plate screw).

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	100-**130**-160	0.15-**0.28**-0.40	ACP200
P	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.28**-0.40	ACP200
P	Die Steel	200 to 220HB	80-**100**-120	0.15-**0.23**-0.30	ACP200
M	Stainless Steel	—	150-**175**-200	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	60-**155**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	300-**650**-1,000	0.15-**0.23**-0.30	G10E

Note 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.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

FPE 4000 type

P Steel K Cast Iron

Rake Angle	Radial	-3°
	Axial	15°

6.5mm 45°

Face Milling

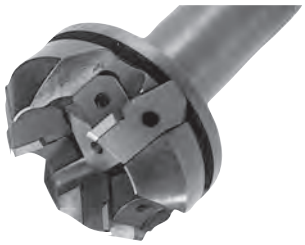
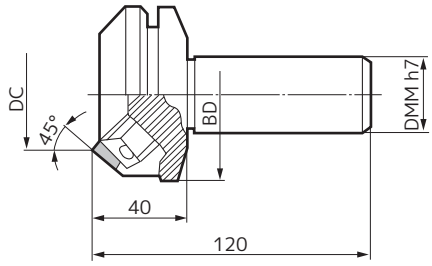


Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	External Dia. BD	Shank DMM	Number of Teeth	Maximum Depth of Cut	Axial Rake	Radial Rake	Fig
FPE 4050R	●	**50**	73	32	3	6.5	+15°	-3°	1
4050RS42		**50**	73	42	3				1
4063R	●	**63**	84	32	4				1
4063RS42		**63**	84	42	4				1
4080R	●	**80**	100	32	4				1
4080RS42		**80**	100	42	4				1
4100R		**100**	118	32	5				1
4100RS42		**100**	118	42	5				1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide		Cermet		SUMIDIA		
Process	High-speed/Light Cutting	P			K		M			P		N	N	
	Medium Cutting		P M	P M	K			P	K		P	N	N	
	Roughing		P M	P M		K						N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	T1500A	T250A	DA1000	DA2200	Fig
SDEX 42MT								●		●	●	—	—	2
SDKN 42M					●	●	▲		●			—	—	1(2)
NF-SDKN 42M		—	—	—	—	—	—	—	—		—	●	▲	2
SDKN 42MT		●	●	●				●		●	●	—	—	1(2)
42MT-W											●	—	—	2
SDNN 1203AETN*		●	●	—	—	—	—	●	—	—	●	—	—	2
SDMR 1203AEEN		●	●					●			—	—	—	3
1203AETN		—	—	—	—	—	—	—	—	—	●	—	—	3

Fig 1 (Grades in ACP/ACK series) Fig 2

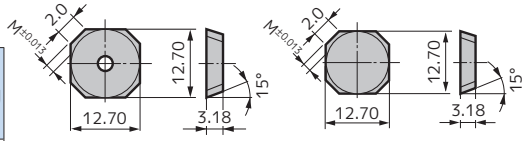
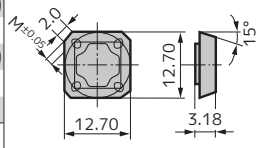


Fig 3



Cat. No. marked *: M ± 0.08.

Parts

Locator	Locator Screw	Clamp Plate	Clamp Plate Screw			Wrench
				Size	N·m	
LFE4R	FBH0512	FEWR	FBX0817	**M8**	**8.0**	TH040

Recommended Cutting Conditions

Diameter ø50 to ø63mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100-**125**-150	0.10-**0.20**-0.30	ACP200
P	Alloy Steel	180 to 280HB	80-**100**-120	0.10-**0.20**-0.30	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.20**-0.30	ACK300

Note 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.

Diameter ø80 to ø100mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100-**125**-150	0.10-**0.25**-0.40	ACP200
P	Alloy Steel	180 to 280HB	80-**100**-120	0.10-**0.25**-0.40	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.25**-0.40	ACK300

Note 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.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

EHG 4000/5000 type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	-3°
	Axial	20°

5.5mm 45° (4000 type) 7.5mm 45° (5000 type) Face Milling



Fig 1

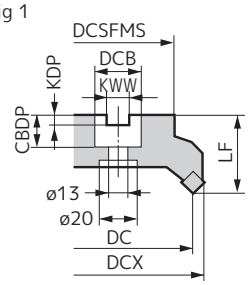


Fig 2

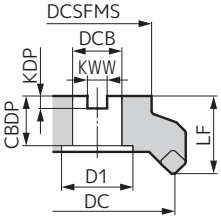
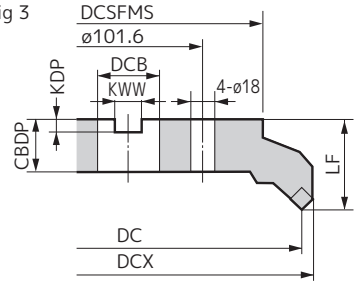


Fig 3



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**EHG 4080R**	●	*80	95	60	50	**25.4**	9.5	6	25	—	4	1.3	1
	4100R	●	**100**	114	70	50	**31.75**	12.7	8	32	46	5	2.0	2
	4125R	●	**125**	138	75	63	**38.1**	15.9	10	38	56	6	3.3	2
	4160R	●	**160**	173	100	63	**50.8**	19.1	11	38	82	8	4.8	2
	4200R	●	**200**	213	130	63	**47.625**	25.4	13.5	35	—	10	7.1	3
	EHG 5080R		*80	100	60	50	**25.4**	9.5	6	25	—	4	1.5	1
	5100R		**100**	118	70	50	**31.75**	12.7	8	32	46	5	2.2	2
	5125R		**125**	143	75	63	**38.1**	15.9	10	38	56	6	3.6	2
	5160R		**160**	178	100	63	**50.8**	19.1	11	38	82	8	5.2	2
	5200R		**200**	218	130	63	**47.625**	25.4	13.5	35	—	10	7.6	3

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide		Cermet			
Process	High-speed/Light Cutting	P			K		M						
	Medium Cutting		PM	PM	K			P	K	P			
	Roughing		PM	PM		K							
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	T250A	Inscribed Circle IC	Thickness S	Fig
SECN 42MT								●		●	12.70	3.18	1
42M											12.70	3.18	1
SEEN 42MT		●	●	●							12.70	3.18	3*
SEKN 42MT		●	●	●				●		●	12.70	3.18	2(3)
42MT-W										●	12.70	3.18	3
42M					●	●	▲		●		12.70	3.18	2(3)
SENN 1203AFTN*		●	—	—	—	—	—	●	—	●	12.70	3.18	3
SEMR 1203AFEN		●	—	—	—	—	—	●	—	—	12.70	3.18	4
SEER 1203AFEN**		●	—	—	—	—	—	●	—	—	12.70	3.18	4
SECN 53MT											15.875	4.76	1
53M											15.875	4.76	1
SEKN 53MT		●	●	●				●		●	15.875	4.76	3
53M					●	●					15.875	4.76	3

Fig 1

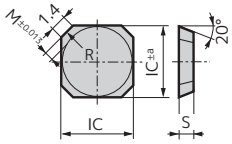


Fig 2 (Grades in ACP/ACK series)

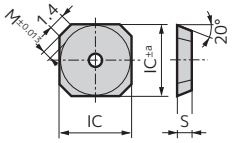


Fig 3

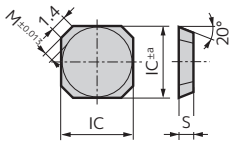
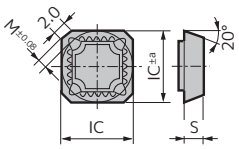


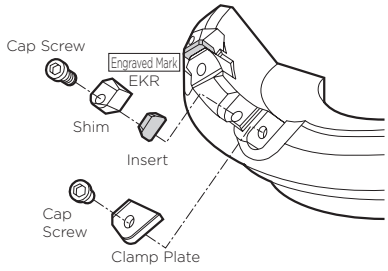
Fig 4



Cat. No. marked *: M ± 0.08 Chamfer 1.4 → 2.0.
Cat. No. marked **: M ± 0.025 Chamfer 2.0 → 2.2.
The shape of *-marked E class inserts differs slightly from the above figures.

Insert Application Table

Body	Insert
EHG4000 type	SEON42·· SEOO12··
EHG5000 type	SEON53··



Parts

Applicable Cutter	Shim	Clamp Plate	Cap Screw	Size	N·m	Wrench
EHG4000R type	EHK4R	EHW4R	EHBX0512	**M5**	**5.0**	TH040
EHG5000R type	EHK5R	EHW5R		**M5**		

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	160-**205**-250	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	160-**230**-300	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220HB	80-**100**-120	0.10-**0.18**-0.25	ACP200
M	Stainless Steel	—	160-**180**-200	0.10-**0.20**-0.30	ACP300
K	Cast Iron	250HB	80-**100**-120	0.10-**0.20**-0.30	ACK200

Note 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.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

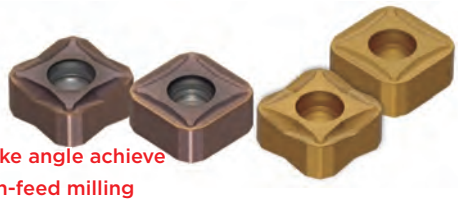
DNX(F) series/DNH series/DNHS series

High-efficiency Face Milling Cutters for Cast Iron and Cast Steel



■ Features

- Achieves high-efficiency milling with a max. 8mm depth of cut
- Employs negative inserts with chipbreakers that have a strong cutting edge on the double negative type body. Economical design using 8 corners
- Supports general to high-efficiency high-feed milling with three body types
  Same inserts can be used with all types

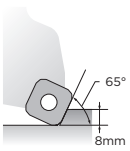


Negative inserts with a rake angle achieve low cutting force and high-feed milling

■ Product Range

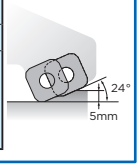
DNX(F) series — General-purpose type

Max. Depth of Cut		8mm
Cutting Edge Angle		65°
Dia.	DNX 12000R(S) Standard Pitch	ø80 to ø160mm
	DNXF 12000R(S) Extra Fine Pitch	ø80 to ø160mm



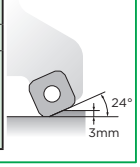
DNHS series — Medium Depth of Cut High Feed type

Max. Depth of Cut		5mm
Cutting Edge Angle		24°
Dia.	DNHS 12000R Medium Depth of Cut High Feed type	ø80 to ø160mm



DNH series — Small Depth of Cut High Feed type

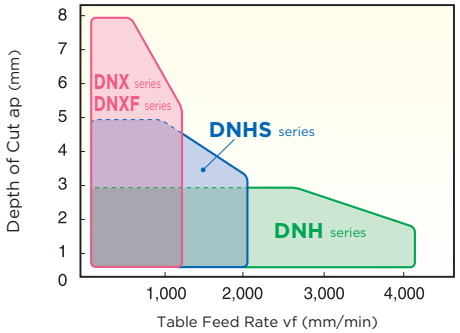
Max. Depth of Cut		3mm
Cutting Edge Angle		24°
Dia.	DNH 12000R Small Depth of Cut High Feed type	ø80 to ø160mm



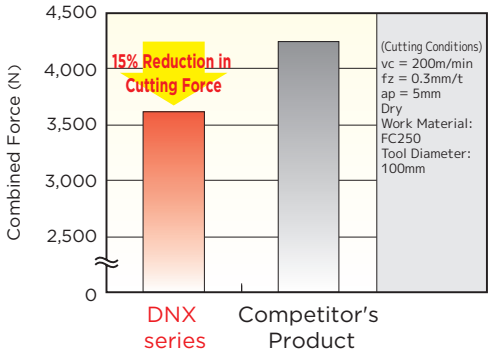
Large ◀ Depth of Cut — Feed Rate ▶ Large

■ Usage Region (Cutting Cast Iron) Cut carbon steel at 20 to 30% reduction.

* The following conditions are provided as a general guide. Actual conditions will need to be adjusted according to tool overhang, machine rigidity, depth of cut and other factors.



■ Comparison of Cutting Force



■ Recommended Cutting Conditions

DNX type/DNXF series

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Cast Iron	250HB	150-**225**-300	0.10-**0.20**-0.30	ACK200 ACK300
K	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.18**-0.25	ACK200 ACK300
P	Carbon Steel	180 to 280HB	150-**175**-200	0.10-**0.15**-0.20	ACP200
P	Alloy Steel	180 to 280HB	150-**175**-200	0.10-**0.15**-0.20	ACP200

Note 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.

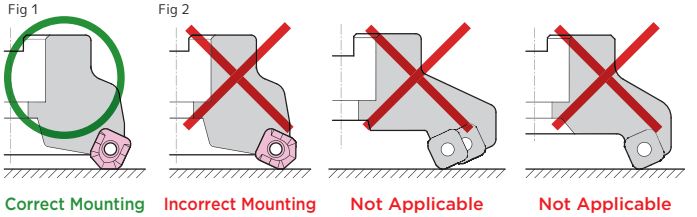
DNHS series/DNH series

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Cast Iron	250HB	150-**225**-300	0.10-**0.55**-1.00	ACK200 ACK300
K	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.55**-1.00	ACK200 ACK300
P	Carbon Steel	180 to 280HB	150-**175**-200	0.10-**0.45**-0.80	ACP200
P	Alloy Steel	180 to 280HB	150-**175**-200	0.10-**0.35**-0.60	ACP200

Note For DNHS type, insert heights are alternatively placed, so the actual feed rate per tooth is double. fz = 0. 5mm/t (actual feed rate 1.0mm/t) as the upper limit.
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.

■ Precautions When Using Wiper Inserts with Holes

- When mounting the wiper insert, attach it as shown in Fig 1.
  When mounted as shown in Fig 2, normal machined surface roughness cannot be obtained.
- Wiper inserts are single-cornered and double-sided.
- Refer to Technical Guidance on page N25 in the General Catalogue for details about wiper inserts.
- Do not use with DNHS and DNH series.



DNX(F)12000 type

P Steel K Cast Iron

Rake Angle	Radial	-6°
	Axial	-5°

8mm 65°

Face Milling



Fig 1

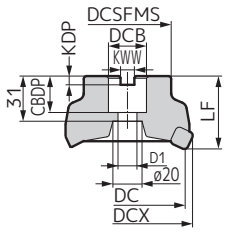


Fig 2

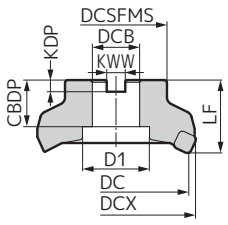
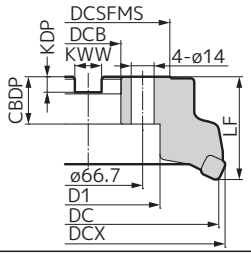


Fig 3



Body (Standard Pitch) Cutting Edge Angle 65°

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Metric	**DNX 12080RS**	●	*80	88	60	50	**27**	12.4	7	25	13.5	6	6	1.2	1
	12100RS	●	100	108	80	50	**32**	14.4	8.5	29	46	7	7	1.6	2
	12125RS	●	125	133	80	63	**40**	16.4	9.5	29	56	8	8	2.8	2
	12160RS	●	160	168	100	63	**40**	16.4	9.5	29	88	10	10	4.4	3
Inch	**DNX 12080R**	●	*80	88	60	50	**25.4**	9.5	6	25	13	6	6	1.2	1
	12100R	●	100	108	70	50	**31.75**	12.7	8	32	46	7	7	1.6	2
	12125R	●	125	133	80	63	**38.1**	15.9	10	38	56	8	8	2.8	2
	12160R	●	160	168	100	63	**50.8**	19.1	11	38	72	10	10	4.4	2

Body (Extra Fine Pitch) Cutting Edge Angle 65°

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Metric	**DNXF 12080RS**	●	*80	88	60	50	**27**	12.4	7	25	13.5	8	8	1.2	1
	12100RS	●	100	108	80	50	**32**	14.4	8.5	29	46	10	10	1.6	2
	12125RS	●	125	133	80	63	**40**	16.4	9.5	29	56	11	11	2.7	2
	12160RS	●	160	168	100	63	**40**	16.4	9.5	29	88	12	12	4.4	3
Inch	**DNXF 12080R**	●	*80	88	60	50	**25.4**	9.5	6	25	13	8	8	1.2	1
	12100R	●	100	108	70	50	**31.75**	12.7	8	32	46	10	10	1.6	2
	12125R	●	125	133	80	63	**38.1**	15.9	10	38	56	11	11	2.7	2
	12160R	●	160	168	100	63	**50.8**	19.1	11	38	72	12	12	4.4	2

Inserts are sold separately.

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

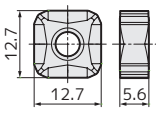
Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	K	K			
	Medium Cutting	K	K		P M	P M
	Roughing			K	P M	P M

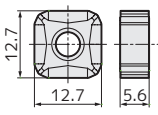
Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Fig
SNMT 1205ZNEN-L		●	●	●		V-shaped Edge type	Light Cutting	1
1205ZNEN-G	●	●	●	●			General-purpose	1
1205ZNEN-H	●	●	●	●			Heavy Cutting	1
SNMT 1205ZNEN-SH	●	●	●	●	●	Straight Edge type	Improved Chip Control	2
XNGT 1205ZNEN-W		●	●			Wiper Insert	Improved Surface Roughness	3

Fig 1



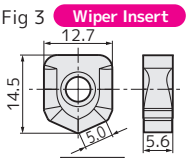
L type/G type/H type

Fig 2



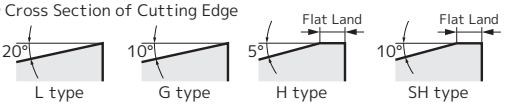
SH type

Fig 3 Wiper Insert



W type

● Cross Section of Cutting Edge



L type G type H type SH type

Refer to page H42 "Precautions When Using Wiper Inserts With Holes" (Mounting Precautions).

Recommended Cutting Conditions H42

Identification Code

DNX **F** **12** **080** **R** **S**

DNX	F	12	080	R	S
Series Code	Extra Fine Pitch	Insert Size	Dia.	Feed Direction	Metric Bore

Parts

Cat. No.	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seize Cream
				Handle Grip	Bit	
		N·m				
DNX(F) 12080R(S) to DNX(F) 12100R(S)	BFTX0412IP	3.0	—	HPS1015	TRB15IP	SUMI-P
DNX(F) 12125R(S) to DNX(F) 12160R(S)			TRDR15IP	—	—	SUMI-P

N·m Recommended Tightening Torque (N·m)

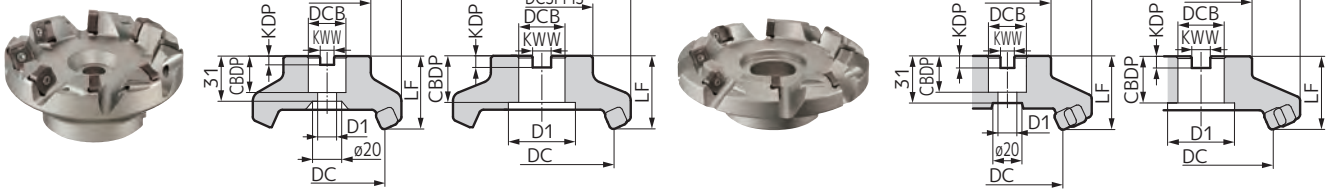
DNH(S)12000 type

P Steel K Cast Iron

Rake Angle	Radial	-6°
	Axial	-5°

3mm 24° (DNH type) 5mm 24° (DNHS type) Face Milling

Fig 1 Fig 2 Fig 3 Fig 4



Body Cutting Edge Angle 24° Small Depth of Cut High Feed type

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Inch	**DNH 12080R**	●	*80	104	60	50	**25.4**	9.5	6	25	13	6	6	1.5	1
	12100R	●	**100**	124	70	50	**31.75**	12.7	8	32	46	7	7	1.9	2
	12125R	●	**125**	149	80	63	**38.1**	15.9	10	38	56	8	8	3.2	2
	12160R	●	**160**	184	100	63	**50.8**	19.1	11	38	72	10	10	5.1	2

Body Cutting Edge Angle 24° Medium Depth of Cut High Feed type

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Inch	**DNHS 12080R**	●	*80	116	60	50	**25.4**	9.5	6	25	13	6	3	1.7	3
	12100R	●	**100**	136	70	50	**31.75**	12.7	8	32	46	8	4	2.3	4
	12125R	●	**125**	161	80	63	**38.1**	15.9	10	38	56	10	5	3.2	4
	12160R	●	**160**	196	100	63	**50.8**	19.1	11	38	72	12	6	6.2	4

Inserts are sold separately.

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

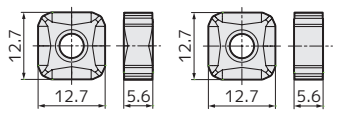
Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	K	K		P M	P M
	Medium Cutting	K	K		P M	P M
	Roughing			K	P M	P M

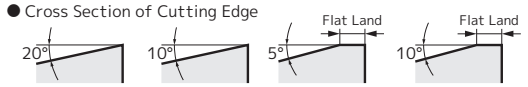
Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Fig
SNMT 1205ZNEN-L		●	●	●		V-shaped Edge type	Light Cutting	1
1205ZNEN-G	●	●	●	●			General-purpose	1
1205ZNEN-H	●	●	●	●			Heavy Cutting	1
SNMT 1205ZNEN-SH	●	●	●	●	●	Straight Edge type	Improved Chip Control	2

Fig 1 Fig 2



L type/G type/H type SH type

● Cross Section of Cutting Edge



Recommended Cutting Conditions H42

Parts

Cat. No.	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
		N·m		Handle Grip	Bit	
DNH(S) 12080R to DNH(S) 12100R	BFTX0412IP	3.0	—	HPS1015	TRB15IP	SUMI-P
DNH(S) 12125R to DNH(S) 12160R			TRDR15IP	—	—	SUMI-P

N·m Recommended Tightening Torque (N·m)

DNF 4000 type

P Steel | K Cast Iron | H Hardened Steel

Rake Angle	Radial	-6°
	Axial	-5°

6.5mm / 65°

Face Milling



Fig 1

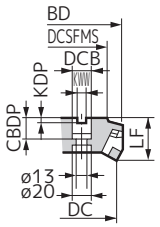


Fig 2

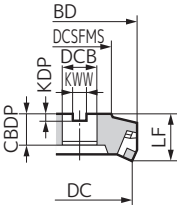


Fig 3

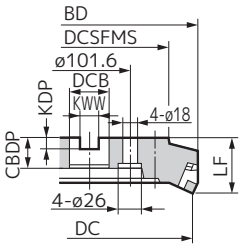


Fig 4

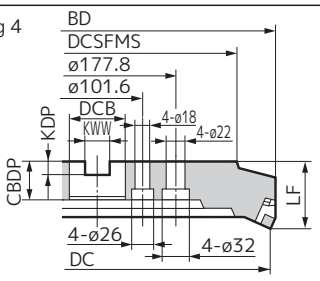


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**DNF 4080R/L**	●		**80**	96	60	50	**25.4**	9.5	6	25	6	1.8	1
	4100R/L	●	●	**100**	116	75	60	**31.75**	12.7	8	32	8	3.0	2
	4125R/L	●		**125**	141	75	60	**38.1**	15.9	10	38	10	4.3	2
	4160R/L	●		**160**	176	100	60	**50.8**	19.1	11	38	12	6.8	2
	4200R/L	●		**200**	216	130	60	**47.625**	25.4	13.5	36	16	9.8	3
	4250R/L			**250**	266	200	70	**47.625**	25.4	13.5	40	20	18.1	3
	4315R/L			**315**	331	240	70	**47.625**	25.4	13.5	40	24	27.4	3
	4400R/L			**400**	416	300	80	**63.5**	25.4	13.5	45	32	49.6	4
	4500R/L			**500**	516	400	80	**63.5**	25.4	13.5	45	40	76.3	4

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet		SUMIBORON	Fig
Process	High-speed/Light Cutting	P			K							P		H	
	Medium Cutting		PM		K			P	P	K	K		P	H	
	Roughing		PM	PM		K									
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	BN2000	
CSNH 43M					●	●		●		●	●			—	1
43MT												●	●	—	1
CSN 43M								●			●			—	2
43MT												●	●	●	2
CSNB 43M								●			●			—	3
43MT													●	—	3
SNC 433														—	—
434														—	—
SNMN 432									●		●	●		—	4
433						●			●		●		●	—	4
434														—	4
SNMN 432TN-S														—	—
433TN-S														—	—
434TN-S														—	—
NW 100										●		●		—	5

Fig 1

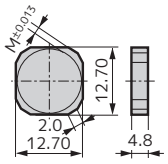


Fig 2

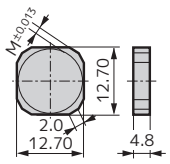


Fig 3

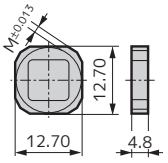


Fig 4

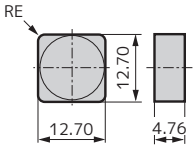
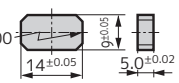
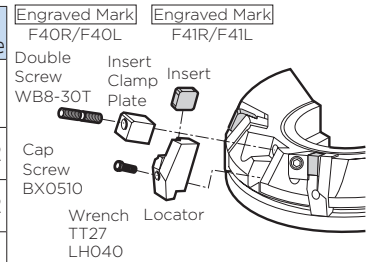


Fig 5 Wiper Insert



Parts

Applicable Cutter	Locator (*)	Insert Clamp Plate
DNF4080R DNF4100R	LNF40R	FTW40R
DNF4125R up to DNF4500R	LNF40R	FTW41R
DNF4080L up to DNF4100L	LNF40L	FTW40L
DNF4125L up to DNF4500L	LNF40L	FTW41L



Double Screw	Size	N·m
WB8-30T	M8	8.0

*: To use wiper inserts, change locators to LNFW40R(L).

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	80-**100**-120	0.10-**0.13**-0.15	T250A
P	Mild Steel	≤ 180	100-**130**-160	0.10-**0.18**-0.25	T250A
K	Cast Iron	250HB	150-**200**-250	0.10-**0.15**-0.20	ACK200

Note 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.

APG 4000 type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal

Rake Angle	Radial	-2°
	Axial	18°

7mm / 65°

Face Milling



Fig 1

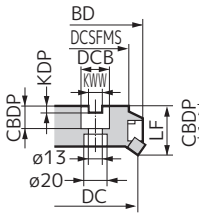


Fig 2

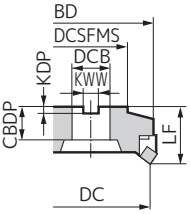


Fig 3

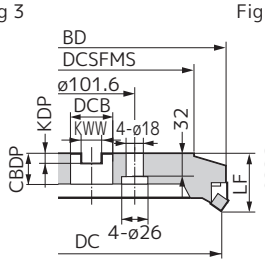


Fig 4

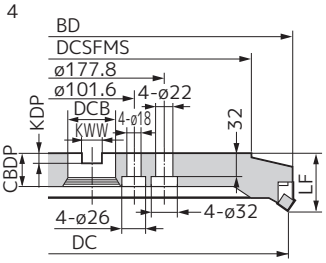


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**APG 4080R/L**	●		*80	90	60	50	**25.4**	9.5	6	25	5	1.6	1
	4100R/L	●		**100**	110	75	60	**31.75**	12.7	8	32	5	2.7	2
	4125R/L	●		**125**	134	75	60	**38.1**	15.9	10	38	6	4.0	2
	4160R/L	●		**160**	169	100	60	**50.8**	19.1	11	38	8	6.5	2
	4200R/L	●		**200**	208	130	60	**47.625**	25.4	13.5	38	10	9.1	3
	4250R/L	●		**250**	258	200	70	**47.625**	25.4	13.5	40	12	18.3	3
	4315R/L	●		**315**	323	240	70	**47.625**	25.4	13.5	40	16	27.6	3
	4400R/L			**400**	408	300	70	**63.5**	25.4	13.5	45	20	48.4	4
	4500R/L			**500**	508	400	70	**63.5**	25.4	13.5	45	24	68.1	4

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide		Cermet		DLC	SUMIDIA		Fig
Process	High-speed/Light Cutting	P			K		M		N	P		N	N	N	
	Medium Cutting		PM	PM	K			P			P	N	N	N	
	Roughing		PM	PM		K							N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	H1	T1500A	T250A	DL1000	DA1000	DA2200	
SDCH 42TR								●				—	—	—	1
42TL												—	—	—	1
42TR-R											●	—	—	—	1
42TL-R												—	—	—	1
SDC 42R									●			●	—	—	2
NF-SDC 42R		—	—	—	—	—	—	—	—	—	—	—	●	▲	2
SDC 42L									●			—	—	—	2
42TR								●				—	—	—	2
42TL												—	—	—	2
42TR-R											●	—	—	—	2
42TL-R												—	—	—	2
APW 4R										●		—	●	▲	3

Fig 1

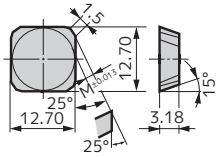


Fig 2

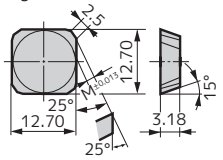
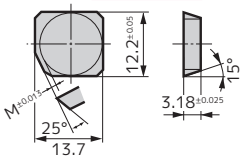
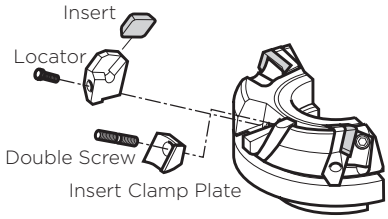


Fig 3 Wiper Insert



Double Screw (Common)	Size	N·m
	M8	8.0

Cap Screw	Size	N·m
	M5	5.0



Parts

Applicable Cutter	Locator	Cap Screw	Insert Clamp Plate	Double Screw	Wrench
APG4080R	LAP40R	BXF0520R	ATW45R	WB8-20	TH040
APG4100R up to APG4500R				WB8-22TL	TT27
APG4080L	LAP40L	BXF0520R	ATW45L	WB8-20	TH040
APG4100L up to APG4500L				WB8-22T	TT27

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280HB	100-**125**-150	0.10-**0.18**-0.25	A30N
P	Mild Steel	≤ 180HB	120-**150**-180	0.10-**0.18**-0.25	A30N
P	Die Steel	200 to 220HB	60- **80** -100	0.10-**0.18**-0.25	A30N
M	Stainless Steel	—	120-**150**-180	0.10-**0.18**-0.25	A30N
K	Cast Iron	250HB	60- **90** -120	0.15-**0.23**-0.30	H1
N	Non-Ferrous Alloy	—	300-**650**-1,000	0.10-**0.20**-0.30	H1

Note 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.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

DPG 4000 type/DPGF 4000 type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	0°
	Axial	8°

9.5mm / 75°

Face Milling



Fig 1

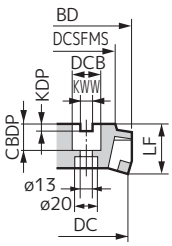


Fig 2

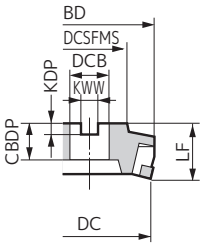


Fig 3

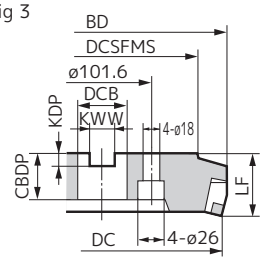


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**DPG 4080R/L**	●		***80**	90	60	50	**25.4**	9.5	6	25	4	1.5	1
	4100R/L	●		**105**	115	75	60	**31.75**	12.7	8	32	5	3.0	2
	4125R/L	●		**125**	135	75	60	**38.1**	15.9	10	38	6	4.0	2
	4160R/L	●		**157**	167	100	60	**50.8**	19.1	11	38	8	6.1	2
	4200R/L	●		**200**	210	130	60	**47.625**	25.4	13.5	38	10	10.0	3
	DPGF 4080R/L	●		***80**	90	60	50	**25.4**	9.5	6	25	6	1.5	1
	4100R/L	●		**105**	115	75	60	**31.75**	12.7	8	32	8	3.0	2
	4125R/L	●		**125**	135	75	60	**38.1**	15.9	10	38	10	4.0	2
	4160R/L	●		**157**	167	100	60	**50.8**	19.1	11	38	12	6.1	2

Inserts are sold separately.

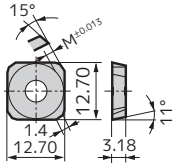
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet		
Process	High-speed/Light Cutting	P			K		M					P		
	Medium Cutting		P M	P M	K			P	P	K	K		P	
	Roughing		P M	P M		K								
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	Fig
SPCH 42R					●	●	▲				●			1(2)
42L					●	●					●			2
42TR		●	●	●				●		●				1(2)
42TL			●					●						2
42TR-R												●	●	2
42TL-R													●	2
SPMN 422									●		●	●	●	3
423					●	●			●		●	●		3
SPG 422									●		●	●		3
423											●			3
DPW 500R										●		●		4
500L										●				4

Fig 1 (Grades in ACP/ACK series) Fig 2



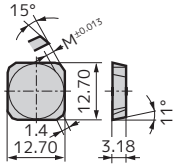


Fig 3

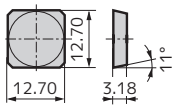
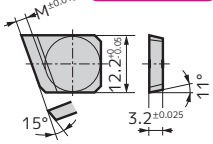
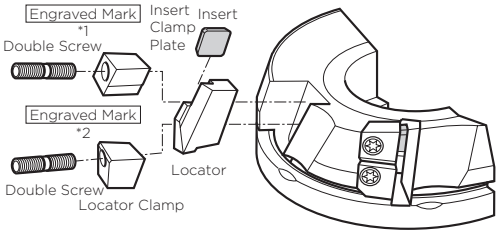


Fig 4 Wiper Insert



Double Screw (Common)	Size	N·m
	M8	8.0



*1
Engraved Mark
T40R,T40L,T41R,T41L,T42R,T42L,
TF80R,TF80L,TF41R,TF41L

*2
Engraved Mark
L40R,L40L,L41R,L41L,L42R,L42L,
LF80R,LF80L,LF41R,LF41L

Parts

Applicable Cutter	Locator	Locator Clamp for DPG	Locator Clamp for DPGF	Insert Clamp for DPG	Insert Clamp for DPGF	Double Screw	Wrench
DPG(F)4080R	GL40R	GLW40R	GLWF80R	GTW40R	GTWF80R	WB8-22T	TT27
DPG(F)4100R Up to DPG(F)4160R		GLW41R	GLWF41R	GTW41R	GTWF41R	WB8-30T	
DPG4200R		GLW42R	—	GTW42R	—		
DPG(F)4080L	GL40L	GLW40L	GLWF80L	GTW40L	GTWF80L	WB8-22T	TT27
DPG(F)4100L Up to DPG(F)4160L		GLW41L	GLWF41L	GTW41L	GTWF41L	WB8-30T	
DPG4200L		GLW42L	—	GTW42L	—		

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	180 to 280HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
P	Mild Steel	≤ 180HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
P	Die Steel	200 to 220HB	80-**120**-160	0.10-**0.15**-0.20	ACP200
M	Stainless Steel	—	80-**120**-160	0.10-**0.15**-0.20	ACP300
K	Cast Iron	250HB	80-**140**-200	0.10-**0.15**-0.20	ACK200

Note 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.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

DPG 5000 type

P Steel M Stainless Steel K Cast Iron

Rake Angle	Radial	0°
	Axial	8°

12mm 75° Face Milling



Fig 1

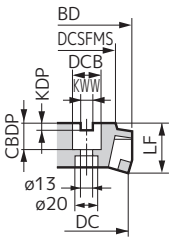


Fig 2

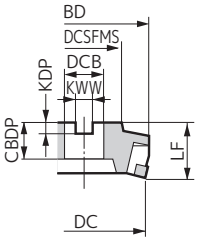


Fig 3

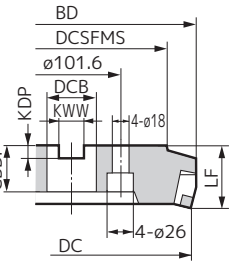


Fig 4

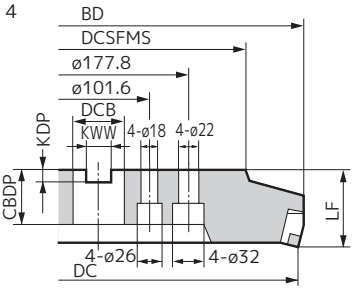


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**DPG 5080R/L**			*82	90	60	50.5	**25.4**	9.5	6	25	4	1.5	1
	5100R/L			**107**	115	75	60.5	**31.75**	12.7	8	32	5	3.0	2
	5125R/L			**127**	135	75	60.5	**38.1**	15.9	10	38	6	4.0	2
	5160R/L			**159**	167	100	60.5	**50.8**	19.1	11	38	8	6.1	2
	5200R/L			**202**	210	130	60.5	**47.625**	25.4	13.5	38	10	10.0	3
	5250R/L			**252**	260	200	70.5	**47.625**	25.4	13.5	52	12	19.7	3
	5315R/L			**317**	325	240	70.5	**47.625**	25.4	13.5	52	14	33.0	3
	5400R/L			**402**	410	300	80.5	**63.5**	25.4	13.5	57	20	60.0	4
	5500R/L			**502**	509	400	80.5	**63.5**	25.4	13.5	57	24	92.0	4

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet		
Process	High-speed/Light Cutting	P			K		M					P		
	Medium Cutting		PM	PM	K			P	P	K	K		P	
	Roughing		PM	PM		K								
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	Fig
SPCH 53R-R					●	●	▲				●			1
53L-R											●			1
53TR-R		●	●					●		●		●	●	1
53TL-R			●					●		●				1
SPMN 532									●		●			2
533									●		●			2
GW 500R										●		●		3
500L														3

Fig 1

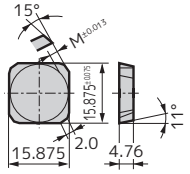


Fig 2

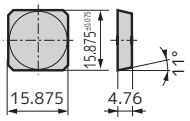
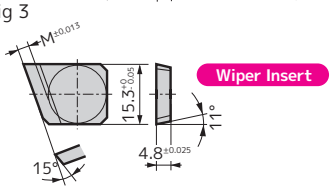
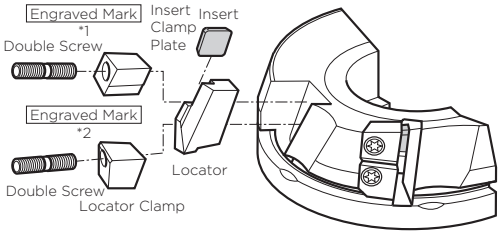


Fig 3



Double Screw (Common)	Size	N·m
	M8	8.0



*1
Engraved Mark
T5OR,T5OL,T51R,T51L,T52R,T52L

*2
Engraved Mark
L5OR,L5OL,L51R,L51L,L52R,L52L

Parts

Applicable Cutter	Locator	Locator Clamp	Insert Clamp Plate	Double Screw	Wrench
DPG5080R	GL50R	GLW50R	GTW50R	WB8-22T	TT27
DPG5100R up to DPG5160R		GLW51R	GTW51R	WB8-30T	
DPG5200R up to DPG5500R		GLW52R	GTW52R		
DPG5080L	GL50L	GLW50L	GTW50L	WB8-22T	TT27
DPG5100L up to DPG5160L		GLW51L	GTW51L	WB8-30T	
DPG5200L up to DPG5500L		GLW52L	GTW52L		

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	180 to 280HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
	Mild Steel	≤ 180HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
	Die Steel	200 to 220HB	80-**120**-160	0.10-**0.15**-0.20	ACP200
M	Stainless Steel	—	80-**120**-160	0.10-**0.15**-0.20	ACP300
K	Cast Iron	250HB	80-**140**-200	0.10-**0.15**-0.20	ACK200

Note 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.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

MEMO

Expansion



■ Features

● Supports A Variety of Machining Operations

A lineup of cutter sizes from ø14 to ø160mm that are capable of large angle ramping. In addition to the shank and modular types, 28 items of the repeater type are also available.

● Excellent Machining Quality

With a combination of optimised cutting edge shape and high-precision molding technology, superb wall accuracy and surface finish quality are achieved

● Excellent Sharpness with Low Cutting Force

Reducing machining noise and suppressing burrs, the lineup includes ground type inserts with a focus on sharpness

● Applicable to Various Work Materials

In addition to the general-purpose grade ACU2500, the lineup includes a wide range of specialised grades applicable to various work materials such as steel, cast iron, stainless steel, exotic alloys, etc.

■ Product Range (Standard)

Type	Cat. No.	Dia. (mm) ø14	ø16	ø18	ø20	ø22	ø25	ø26	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shell	WEZ 11000RS												4 6	5 7	6 8	7 10	9 12		
Shell	WEZ 11000R Inch															7 10	9 12		
Shell	WEZ 17000RS												3 4	3 5	4 6	4 7	5 8	6 9 11	8 10 12
Shell	WEZ 17000R Inch															4 7	5 8	6 9 11	8 10 12
Shank	WEZ 11000E	1	2*	2	2 3*	3	2 3* 4*		4	4	2 3 4 5*	5	2 4 6	5 7	8	10			
Shank	WEZ 11000ES For multi-tasking machines	1	2*		3*		4*												
Shank	WEZ 11000EL	1	2*	2	2*	2	2* 3		2	2	2* 3	2 3	2	3					
Shank	WEZ 17000E						2*		2	3	2 3*	3	3 4	3* 5*	4* 6*	7			
Shank	WEZ 17000ES For multi-tasking machines						2				3								
Shank	WEZ 17000EL						2		2	2	2* 3	2	2 3 4	3* 5*	4* 6*				
Modular	WEZ 11000M		2	2	2 3	3	2 3 4	4 5	4 5	2 4 5	2 3 4 5	2 5	2 4 5 6						
Modular	WEZ 17000M						2 3		2	2 3	2 3 4	2 3	2 3 4						

Number in ●●● shows the number of teeth Inch Inch Bore *mark: Different diameter shanks available

Modular type H254

■ Product Range (Repeater)

Type	Cat. No.	Dia. (mm) ø20	ø25	ø30	ø32	ø35	ø40	ø50	ø63	ø80
Shell	WEZR 11000RS						4	4		
Shell	WEZR 17000RS							2 3 4	3 4 5	5
Shank	WEZR 11000E	1 2	2	2	2 3	3	3 4			
Shank	WEZR 17000E						2 3	2 3		
Modular	WEZR 11000M				3					
Modular	WEZR 17000M						3			

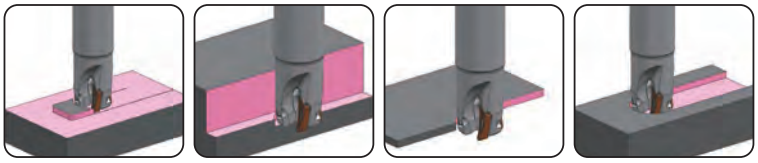
Number in ●●● represent the effective number of teeth

Modular type H258

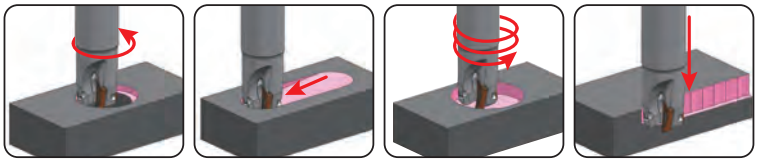
WEZ series

■ Supports Ramping/Helical Milling/Plunge Milling Applicable to various applications!

Face Milling | Shoulder Milling | Side Milling | Groove Milling

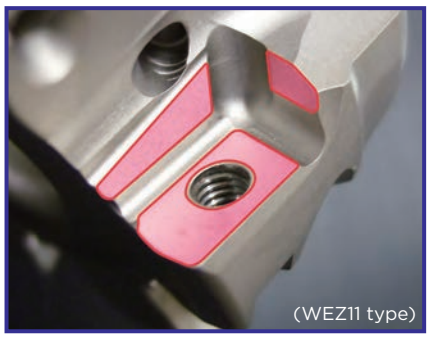


Hole Expansion Milling | Ramping | Helical Milling* | Plunge Milling



*Helical milling is not recommended for WEZR type products.

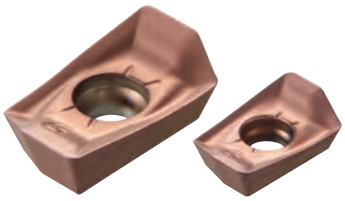
■ Optimised Body Design with Wide Guide Face for Stable Insert Clamping



■ Chipbreaker Selection

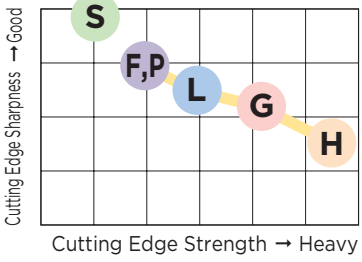
Work Material	P Steel, M Stainless Steel, K Cast Iron, S Heat-resistant Alloy, Titanium Alloy, H Hardened Steel					N Non-Ferrous Metal
Applications	Light Cutting	General-purpose to Interrupted Milling	Heavy Cutting	Light Cutting	Light Cutting	For Non-Ferrous Metals
Features	Low-rigidity Machining	Standard	Heavy Interrupted Cutting Hardened Steel	Medium Finishing Burr Prevention	High-precision Machining High Wall Surface Squareness	Low Cutting Force
	L type	G type	H type	F type	P type	S type
Chipbreaker						
Cutting Edge Cross Section 11 type	Not Available	0.05mm, 28°	0.15mm, 20°	28°		28°
Cutting Edge Cross Section 17 type	0.05mm, 28°	0.15mm, 20°	0.2mm, 10°	28°		28°

■ Insert Size Comparison



AO□T17 type | AO□T11 type

■ Chipbreaker Selection Guide



■ Product Range (Insert)

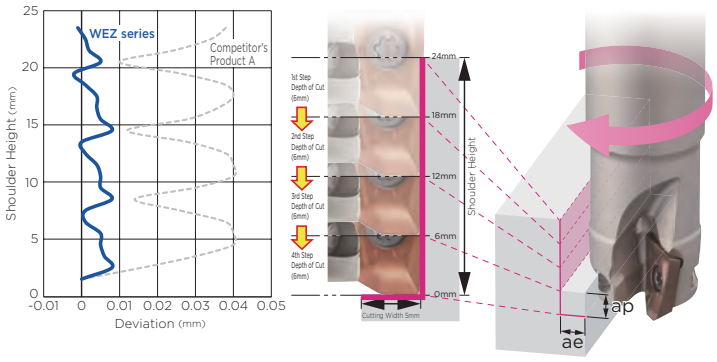
●: Standard stocked item

Insert Size	Tolerance	Cat. No.	Corner Radius (mm)												
			R0.2	R0.4	R0.5	R0.8	R1.0	R1.2	R1.6	R2.0	R2.4	R3.0	R3.2	R4.0	R5.0	R6.4
11 type	M Class	AOMT11T3○○PEER-G	●	●	●	●	●	●	●	●	●	●	●			
		AOMT11T3○○PEER-H		●		●		●	●							
	E Class	AOET11T3○○PEER-F	●	●	●	●	●	●	●	●	●	●	●			
		AOET11T3○○PEER-P16	●	●	●	●	●	●								
		AOET11T3○○PEER-P20	●	●	●	●	●	●								
		AOET11T3○○PEER-P25	●	●	●	●	●	●								
		AOET11T3○○PEFR-S	●	●	●	●	●	●	●	●	●	●	●			
17 type	M Class	AOMT1705○○PEER-L	●	●		●		●	●							
		AOMT1705○○PEER-G	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		AOMT1705○○PEER-H		●		●		●	●							
	E Class	AOET1705○○PEER-F	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		AOET1705○○PEER-P25	●	●	●	●	●	●								
		AOET1705○○PEER-P32	●	●	●	●	●	●								
		AOET1705○○PEFR-S	●	●	●	●	●	●	●	●	●	●	●	●	●	●

P type chipbreaker Cat. No. is specific to a range of cutter diameters. For details, see P type Chipbreaker Selection on page H53.

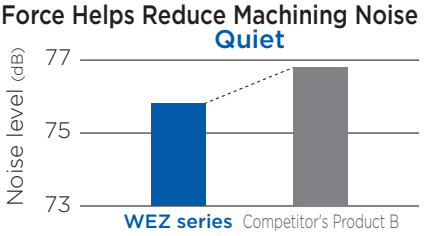
■ Cutting Performance

● Good Wall Accuracy



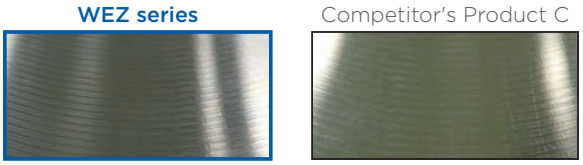
Machine	: Vertical Machining Centre BT40, Work Material: S50C
Tool	: WEZ 11020E03 (ø20, 3 teeth)
Insert	: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions	: vc = 150m/min, fz = 0.15mm/t, ap = 6mm x 4 Passes, ae = 5mm, Dry

● Lower Cutting Force Helps Reduce Machining Noise



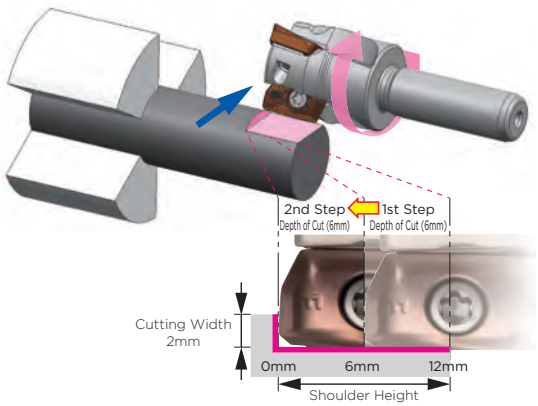
Machine	: Vertical Machining Centre BT40, Work Material: S50C
Tool	: WEZ 11020E03 (ø20, 3 teeth)
Insert	: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions	: vc=150 m/min, fz=0.15 mm/t, ap=8 mm, ae=5 mm, Dry

● Excellent Surface Quality

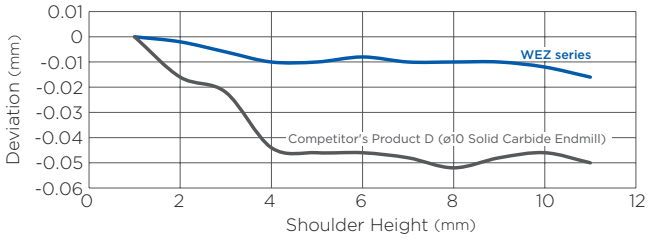


Machine	: Vertical Machining Centre BT50, Work Material: SCM440
Tool	: WEZ 17100RS08 (ø100, 8 teeth)
Insert	: AOMT 170508PEER-G (ACU2500)
Cutting Conditions	: vc=250 m/min, fz=0.15 mm/t, ap=2 mm, ae=85 mm, Dry

● Good Wall Accuracy (for Multi-tasking Machines)



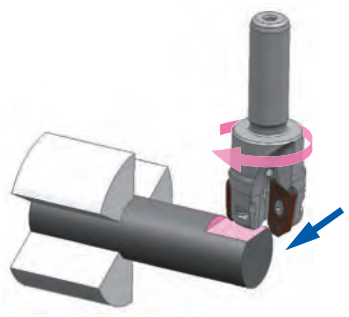
Machine	: Multi-tasking Machine, Work Material: SUS304 ø16 Round Bar
Tool	: WEZ 11020ES03-10 (ø20, 3 teeth)
Insert	: AOET 11T308PEER-F (ACU2500)
Cutting Conditions	: vc = 100m/min, fz = 0.08mm/t, ap = 6mm x 2 Passes, ae = 2mm, Wet

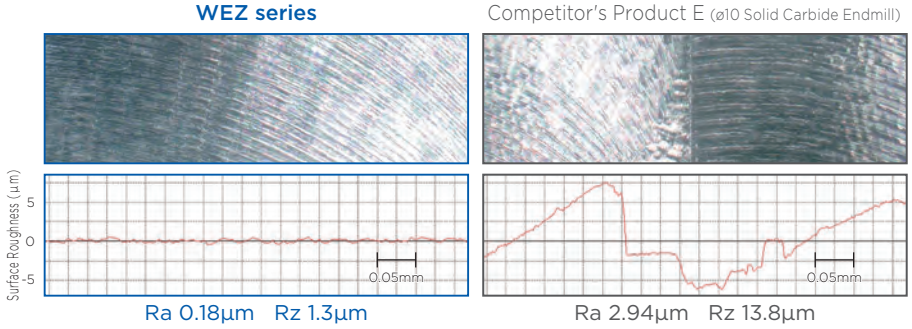




● Excellent machined surface quality (for multi-tasking machines)

Larger tool diameter than solid carbide endmills enables reduced number of passes for high-efficiency machining!
Good wall accuracy and machined surface quality, eliminating the finishing process!



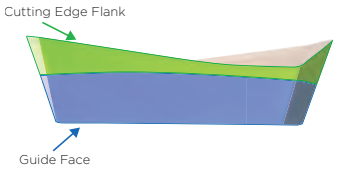


Machine	: Multi-tasking Machine, Work Material: SUS304 ø16 Round Bar Tool: WEZ 11020ES03-10 (ø20, 3 teeth)
Insert	: AOET 11T308PEER-F (ACU2500)
Cutting Conditions	: WEZ series vc = 100m/min, fz = 0.05mm/t, ap = 2mm, ae = 12mm, Wet
	Competitor's Product E vc = 100m/min, fz = 0.05mm/t, ap = 2mm, ae = 6mm × 2 Passes, Wet (Solid Carbide Endmill)

■ High-precision Ground type Insert with Excellent Sharpness

● Ground finish on cutting edge and guide face

The cutting edge, as well as the guide faces are ground finish to minimize corner variations when mounted on the body. Stable edge run-out accuracy and machining quality can be realized!



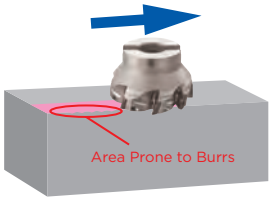
■ Lineup of Chipbreakers for Ground type Inserts

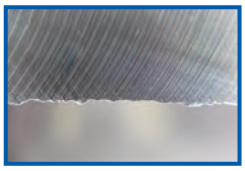
● F type Chipbreaker - Emphasises Edge Sharpness

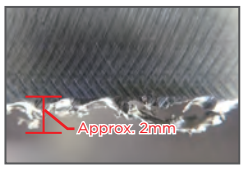


- Sharpness from ground finish enables burr control
- Good wall accuracy with all cutter diameters

Machine	: Vertical Machining Centre BT50,
Work Material	: SUS304
Tool	: WEZ 11050RS07 (ø50, 7 teeth)
Insert	: AOET 11T308PEER-**F** (ACU2500)
Cutting Conditions	: vc = 120m/min, fz = 0.12mm/t, ap = 1mm, ae = 30mm, Dry



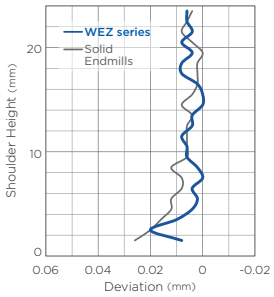


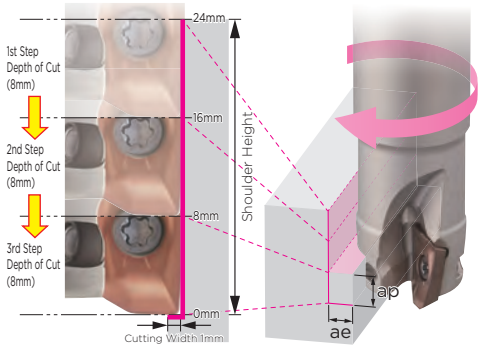


● P type Chipbreaker - Achieves Wall Squareness Equivalent to Using Solid Endmills



- High-precision type with cutting edge shape optimised for each cutter diameter while maintaining the F type chipbreaker's sharpness
- Enables shoulder squareness equal to using solid endmills, through cutting edge shape optimisation for each cutter diameter





Machine	: Vertical Machining Centre BT50,
Work Material	: S50C
Tool	: WEZ 11020E03 (ø20, 3 teeth)
Insert	: AOET 11T308PEER-**P20** (ACU2500)
Cutting Conditions	: vc = 150m/min, fz = 0.1mm/t, ap = 8mm x 3 Passes, ae = 1mm, Dry

P type Chipbreaker Selection Guide

Cat. No.	Dia. (mm)										
	ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40 and above
AOET11T3○○PEER-P○○	-P16		-P20		Not applicable	-P25		Not applicable			
AOET1705○○PEER-P○○	Not applicable					-P25		-P32			Not applicable

● S type Chipbreaker - Sharp-Edged Breaker for Non-Ferrous Metals with Excellent Adhesion Resistance

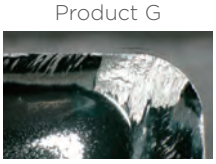


- Suppresses adhesion with rake face lapping
- DLC Coat inserts available for further improved adhesion resistance

Machine	: Vertical Machining Centre BT30, Work Material: ADC12
Tool	: WEZ 11020E03 (ø20, 3 teeth)
Insert	: AOET 11T308PEFR-**S** (H20)
Cutting Conditions	: vc = 350m/min, fz = 0.1mm/t, ap = 3mm, ae = 10mm, Dry



No Adhesion



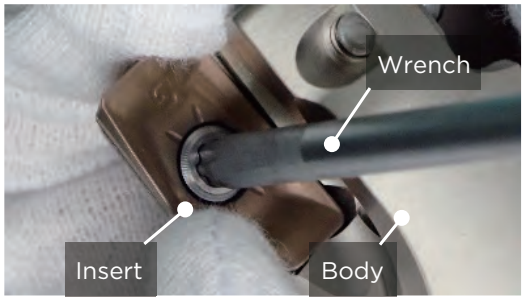
Adhesion



Adhesion

Precautions for Mounting Inserts

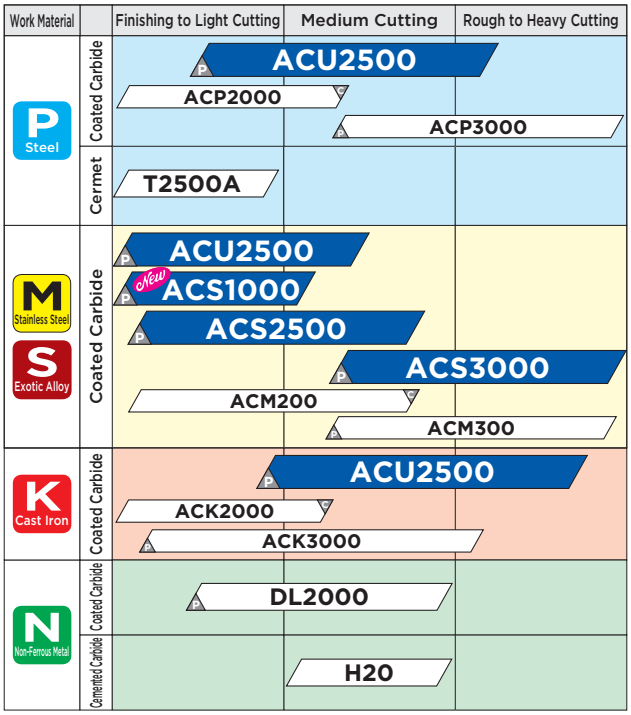
(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert firmly against the seat surface, tighten the screws with the included wrench.
(3) Apply Anti-seizure Cream to the screws and tighten at the recommended torque.
(4) After tightening, check that there are no gaps on the seat surface.





■ Grade Application Range

The addition of **ACS1000/ACS2500/ACS3000** grades for exotic alloys has expanded our lineup of grades to cover a wider variety of work materials.

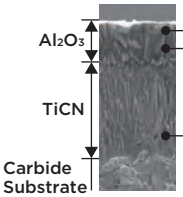


The letters "C" and "P" at the end of each grade indicate the coating type.
▽: CVD △: PVD

■ Grade Features

New coating technology that realises absolute stability
ABSOTECH™ (Absolute Technology)

ABSOTECH CVD



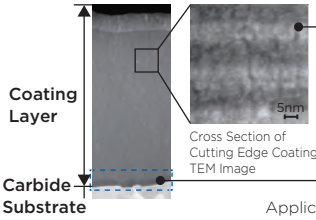
Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice that of conventional coatings

Crystal Orientation Control Al_2O_3
By controlling the growth direction, Al_2O_3 is reinforced for crater wear resistance more than twice that of conventional coatings

High Hardness TiCN
Increased TiCN hardness by using a C-rich composition for flank wear resistance more than twice that of conventional coatings

Applicable Grades: ACP2000, ACK2000

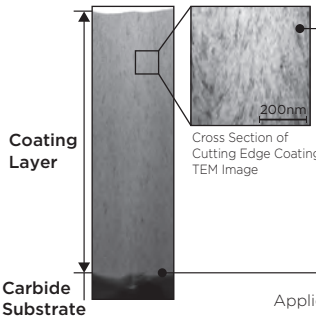
ABSOTECH PVD



New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

Applicable Grades: ACU2500, ACP3000, ACK3000



Ultra-fine Grained B Additive
- New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
- Outstanding balance of chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

Applicable Grades: ACS1000, ACS2500, ACS3000

■ Grade Characteristic Values

CVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	ACP2000	89.5	3.2	ABSOTECH	10	• For high-speed machining of steel • Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
M Stainless Steel	ACM200	89.8	3.4	Super FF Coat	6	• For machining high-hardness stainless steel • Adopts a high-strength carbide substrate with excellent wear resistance and thermal resistance, realizing outstanding stability when machining hardened stainless steel	AC230
K Cast Iron	ACK2000	91.7	3.1	ABSOTECH	10	• For high-speed cast iron milling • Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200

PVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel	ACU2500	91.6	3.8	ABSOTECH	3	• General-purpose grade covering steel, stainless steel, and cast iron machining • Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life on various work materials	–
	ACP3000	89.5	3.2	ABSOTECH	3	• Our 1st recommended grade for milling steel • Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	ACM300	89.8	3.4	(New) Super ZX Coat	3	• Our 1st recommended grade for milling stainless steel • Adopts a high-strength carbide substrate and super multi-layered coating for next-level wear resistance and fracture resistance	–
K Cast Iron	ACK3000	91.7	3.1	ABSOTECH	3	• Our 1st recommended grade for milling cast iron • Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	DL2000	91.6	3.8	AURORA Coat (DLC)	0.5	• For milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	–
S Exotic Alloy	New ACS1000	91.6	3.8	ABSOTECH	3	• For high-efficiency milling of exotic alloys • High-hardness carbide substrate coupled with a chipping-resistant coating provides long, stable tool life in high-speed, high-efficiency machining applications	–
	ACS2500	90.8	4.2	ABSOTECH	3	• First recommendation for titanium alloy applications • Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping-resistant coating, balances excellent wear and fracture resistance	ACM200
	ACS3000	89.8	3.4	ABSOTECH	3	• Suitable for a wide range of exotic alloy machining applications • Realises superb stability due to a high-toughness carbide substrate with a highly chipping-resistant coating	ACM300

Cermet

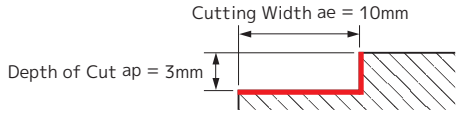
Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features	Old Grade
P Steel M Stainless Steel	T2500A	91.8	2.4	–	–	• For finishing of steel and stainless steel • Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes	T250A

■ Recommended Cutting Conditions

WEZ11 type

Tool: WEZ11020E03, Insert: AO□T11T3 type

Cutting Conditions: Depth of Cut ap = 3mm, Cutting Width ae = 10mm, Dry



ISO Classification	Work Material		Work Material Hardness (HB)	Chipbreaker	Grade: ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACS1000	ACS2500 ACM200	ACS3000 ACM300	DL2000
					Feed Rate per Tooth fz (mm/t) Min. - **Optimum** - Max.									
					0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.12** - 0.18	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.05 - **0.10** - 0.15
					Cutting Speed vc (m/min) Min. - **Optimum** - Max.									
P	Steel, Carbon Steel	S15C	125	G	270 - **320** - 370	300 - **350** - 400	250 - **300** - 350	230 - **280** - 330						
		S45C	190	G	170 - **220** - 270	200 - **250** - 300	150 - **200** - 250	130 - **180** - 230						
		S45C Hardened	250	G	140 - **180** - 220	160 - **200** - 245	120 - **160** - 200	105 - **145** - 185						
		S75C	270	G	110 - **145** - 175	130 - **165** - 195	100 - **130** - 165	85 - **115** - 150						
		S75C Hardened	300	G	70 - **90** - 110	80 - **100** - 120	60 - **80** - 100	50 - **70** - 90						
	Low-alloy Steel	SCM, SNCM	180	G	160 - **205** - 255	190 - **235** - 280	140 - **190** - 235	120 - **170** - 215						
		SCM, SNCM Hardened	275	G	95 - **120** - 150	110 - **135** - 165	80 - **110** - 140	70 - **100** - 125						
		SCM, SNCM Hardened	300	G	85 - **110** - 130	100 - **125** - 150	75 - **100** - 125	65 - **90** - 115						
		SCM, SNCM Hardened	350	G	60 - **80** - 100	70 - **90** - 110	50 - **70** - 90	45 - **65** - 85						
	High-alloy Steel	SKD, SKT, SKH	200	G	140 - **180** - 220	160 - **200** - 245	120 - **160** - 205							
		SKD, SKT, SKH Hardened	325	G	55 - **70** - 85	60 - **80** - 100	50 - **65** - 80							
M	Stainless Steel	SUS430, Others (Martensitic/Ferritic)	200	G	110 - **140** - 170						160 - **190** - 210	140 - **170** - 190	90 - **110** - 140	
		SUS403 and Others (Martensitic Hardened)	240	G	100 - **125** - 150						145 - **170** - 190	125 - **150** - 170	80 - **100** - 125	
		SUS304, SUS316 (Austenitic)	180	G	120 - **150** - 180						170 - **200** - 220	150 - **180** - 200	100 - **120** - 150	
K	Cast Iron			G	150 - **200** - 250				250 - **300** - 350	170 - **220** - 270				
	Ductile Cast Iron			G	90 - **120** - 150				150 - **180** - 210	100 - **130** - 160				
S	Exotic Alloy	Heat-Resistant Alloy		G	30 - **40** - 55						45 - **55** - 70	35 - **45** - 60	25 - **35** - 50	
		Ti Alloy		G	60 - **80** - 100						80 - **100** - 120	70 - **90** - 110	50 - **70** - 90	
N	Aluminum Alloy	Si Content of 12.6% or less		S										500 - **750** - 1000
		Si Content of over 12.6%		S										170 - **200** - 250
	Copper Alloy			S										300 - **330** - 350

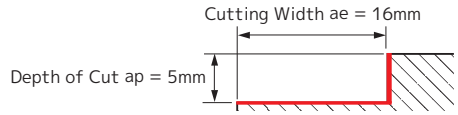
● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

Note · 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.
· The above are the recommended conditions for WEZ11 type overall. Use within the maximum allowable spindle speed.

WEZ17 type

Tool: WEZ17032E03, Insert: AO□T1705 type

Cutting Conditions: Depth of Cut ap = 5mm, Cutting Width ae = 16mm, Dry



ISO Classification	Work Material		Work Material Hardness (HB)	Chipbreaker	Grade: ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACS1000	ACS2500 ACM200	ACS3000 ACM300	DL2000
					Feed Rate per Tooth fz (mm/t) Min. - **Optimum** - Max.									
					0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.15** - 0.22	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.05 - **0.10** - 0.15
					Cutting Speed vc (m/min) Min. - **Optimum** - Max.									
P	Steel, Carbon Steel	S15C	125	G	285 - **335** - 390	315 - **360** - 420	265 - **315** - 370	240 - **295** - 345						
		S45C	190	G	180 - **230** - 285	210 - **265** - 315	160 - **210** - 265	135 - **190** - 240						
		S45C Hardened	250	G	145 - **190** - 230	170 - **210** - 255	130 - **170** - 215	110 - **155** - 195						
		S75C	270	G	115 - **150** - 185	135 - **170** - 205	100 - **135** - 170	90 - **125** - 155						
		S75C Hardened	300	G	70 - **90** - 115	85 - **105** - 125	65 - **85** - 105	55 - **75** - 95						
	Low-alloy Steel	SCM, SNCM	180	G	170 - **220** - 265	200 - **245** - 295	150 - **200** - 250	130 - **180** - 225						
		SCM, SNCM Hardened	275	G	100 - **130** - 155	115 - **145** - 175	85 - **115** - 145	75 - **105** - 135						
		SCM, SNCM Hardened	300	G	90 - **115** - 140	105 - **130** - 155	75 - **105** - 130	65 - **90** - 120						
		SCM, SNCM Hardened	350	G	65 - **85** - 100	75 - **95** - 115	55 - **75** - 95	50 - **70** - 85						
	High-alloy Steel	SKD, SKT, SKH	200	G	145 - **185** - 230	170 - **215** - 255	130 - **170** - 215							
		SKD, SKT, SKH Hardened	325	G	55 - **75** - 90	65 - **85** - 100	50 - **65** - 85							
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	G	115 - **145** - 175						165 - **195** - 215	145 - **175** - 195	100 - **115** - 145	
		SUS403 and Others (Martensitic Hardened)	240	G	105 - **130** - 155						150 - **175** - 195	130 - **155** - 175	85 - **105** - 130	
		SUS304, SUS316 (Austenitic)	180	G	125 - **155** - 190						180 - **210** - 230	160 - **190** - 210	105 - **125** - 160	
K	Cast Iron			G	160 - **210** - 265				265 - **315** - 370	180 - **230** - 285				
	Ductile Cast Iron			G	95 - **125** - 160				160 - **190** - 220	105 - **140** - 170				
S	Exotic Alloy	Heat-Resistant Alloy		G	30 - **40** - 60						45 - **55** - 70	35 - **45** - 60	25 - **35** - 50	
		Ti Alloy		G	60 - **85** - 105						85 - **105** - 125	75 - **95** - 115	50 - **75** - 95	
N	Aluminum Alloy	Si Content of 12.6% or less		S										500 - **750** - 1000
		Si Content of over 12.6%		S										170 - **200** - 250
	Copper Alloy			S										300 - **330** - 350

● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

Note 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.

■ Maximum Allowable Spindle Speed

WEZ11 type

Dia. DC(mm)	n max(min^{-1})	Dia. DC(mm)	n max(min^{-1})
14	12,000(7,500)	**32**	17,200
16	29,000	**35**	16,250
18	26,150	**40**	14,950
20	24,000	**50**	13,100
22	22,300	**63**	11,500
25	20,300	**80**	10,050
28	18,800	**100**	8,900
30	17,950		

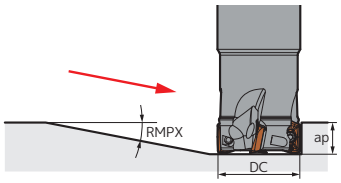
WEZ17 type

Dia. DC(mm)	n max(min^{-1})	Dia. DC(mm)	n max(min^{-1})
25	15,700	**80**	7,250
28	14,350	**100**	6,400
30	13,650	**125**	5,650
32	13,000	**160**	4,950
35	12,200		
40	11,100		
50	9,600		
63	8,350		

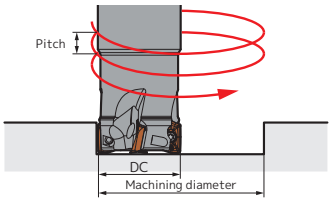
*The parentheses above refer to the use of WEZ11014EL01.
*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

■ Ramping/Helical Milling Upper Limit

Ramping



Helical Milling



WEZ11 type

Dia. DC (mm)	Max. Ramping Angle RMPX(°)	Helical Milling					
		Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Diameter (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
14	8.0	25.3	5.0	23.1	3.4	19.0	1.5
16	10.5	29.3	7.6	27.0	5.6	21.7	1.5
18	8.1	33.3	6.7	30.9	5.0	25.2	1.4
20	6.5	37.3	6.0	34.9	4.6	29.1	1.3
22	5.3	41.3	5.4	38.8	4.3	32.9	1.3
25	4.1	47.3	4.8	44.8	3.9	38.9	1.3
28	3.4	53.3	4.4	50.7	3.6	44.9	1.3
30	3.0	57.3	4.2	54.7	3.5	48.8	1.3
32	2.7	61.3	4.0	58.7	3.3	52.8	1.2
35	2.3	67.3	3.8	64.6	3.1	58.8	1.2
40	1.8	77.3	3.4	74.6	2.9	68.8	1.2
50	1.2	97.3	3.0	94.6	2.6	88.8	1.1
63	0.8	123.3	2.8	120.5	2.5	114.7	1.1
80	Not recommended						
100	Not recommended						

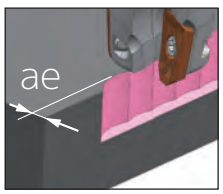
*The table above shows values with corner radius 0.8mm. Helical milling is not recommended for WEZR type products.

WEZ17 type

Dia. DC (mm)	Max. Ramping Angle RMPX(°)	Helical Milling					
		Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Diameter (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
25	10.8	47.3	13.0	41.0	8.3	33.1	1.8
28	8.1	53.3	11.1	46.9	7.5	39.0	1.8
30	7.0	57.3	10.2	50.9	7.0	43.0	1.8
32	6.1	61.3	9.5	54.9	6.7	47.0	1.7
35	5.1	67.3	8.7	60.8	6.2	53.0	1.7
40	4.0	77.3	7.7	70.8	5.7	63.0	1.7
50	2.5	97.3	6.5	90.7	5.0	83.0	1.6
63	1.8	123.3	5.6	116.7	4.5	109.0	1.6
80	1.2	156.0	5.0	149.4	4.1	141.8	1.5
100	0.9	197.3	4.7	190.7	4.0	183.1	1.5
125	Not recommended						
160	Not recommended						

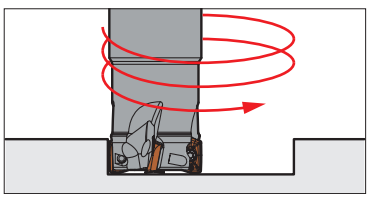
*The table above shows values with corner radius 0.8mm. Helical milling is not recommended for WEZR type products.

■ Plunge Cutting Upper Limit



	Max. ae (mm)
WEZ11 type	3
WEZ17 type	5

■ Precautions for Helical Milling



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

WEZ 11000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-7° to -11°
	Axial	14° to 15°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

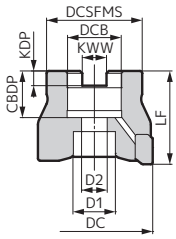


Fig 2

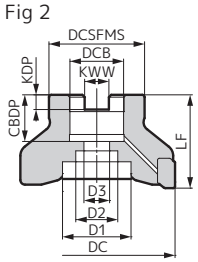
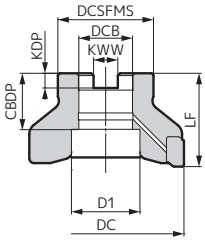


Fig 3



Body (Shell type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEZ 11040RS04**	●	**40**	33	40(39.7)	**16**	8.4	5.6	18	14	9	—	4	0.21	1
	11040RS06	●	**40**	33	40(39.7)	**16**	8.4	5.6	18	14	9	—	6	0.20	1
	11050RS05	●	**50**	41	40(39.7)	**22**	10.4	6.3	20	18	11	—	5	0.32	1
	11050RS07	●	**50**	41	40(39.7)	**22**	10.4	6.3	20	18	11	—	7	0.31	1
	11063RS06	●	**63**	50	40(39.7)	**22**	10.4	6.3	20	18	11	—	6	0.58	1
	11063RS08	●	**63**	50	40(39.7)	**22**	10.4	6.3	20	18	11	—	8	0.57	1
	11080RS07	●	***80**	55	50(49.7)	**27**	12.4	7	22	20	14	—	7	1.08	1
	11080RS10	●	***80**	55	50(49.7)	**27**	12.4	7	22	20	14	—	10	1.07	1
	11100RS09	●	**100**	70	50(49.7)	**32**	14.4	8	32	46	—	—	9	1.57	3
	11100RS12	●	**100**	70	50(49.7)	**32**	14.4	8	32	46	—	—	12	1.56	3
Inch	**WEZ 11080R07**	●	***80**	55	50(49.7)	**25.4**	9.5	6	25	20	14	—	7	1.09	1
	11080R10	●	***80**	55	50(49.7)	**25.4**	9.5	6	25	20	14	—	10	1.08	1
	11100R09	●	***100**	70	63(62.7)	**31.75**	12.7	8	32	46	27	18	9	2.12	2
	11100R12	●	***100**	70	63(62.7)	**31.75**	12.7	8	32	46	27	18	12	2.10	2

The LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts.
When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	1.5	TRDR08IP	SUMI-P

Identification Code

WEZ Series Code | **11** Insert Size | **050** Dia. | **R** Feed Direction | **S** Metric Bore | **07** Number of Teeth

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZ 11000R(S) type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	M K S		P		K		M S	M S	M S	M S	N	N		
	Roughing	M K S		P		K			M S		M S				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●		●		●	●	●	●	▲	▲	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
11T305PEER-G		●							●	▲	▲	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
11T310PEER-G		●							●	▲	▲	—	—		1.0	1
11T312PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.2	1
11T316PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.6	1
11T320PEER-G		●		●		●	●	●	●	▲	▲	—	—		2.0	1
11T324PEER-G*		●							●	▲	▲	—	—		2.4	1
11T330PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.0	2
11T332PEER-G*		●							●	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
11T312PEER-H		●							●	▲	▲	—	—	—	1.2	1
11T316PEER-H		●							●	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		●	—		—				●	—		—	—	—	0.2	1
11T304PEER-F		●	—		—				●	—		—	—	—	0.4	1
11T305PEER-F		●	—		—					—		—	—	—	0.5	1
11T308PEER-F		●	—		—				●	—		—	—	—	0.8	1
11T310PEER-F		●	—		—					—		—	—	—	1.0	1
11T312PEER-F		●	—		—				●	—		—	—	—	1.2	1
11T316PEER-F		●	—		—					—		—	—	—	1.6	1
11T320PEER-F		●	—		—				●	—		—	—	—	2.0	1
11T324PEER-F*		●	—		—					—		—	—	—	2.4	1
11T330PEER-F*		●	—		—				●	—		—	—	—	3.0	2
11T332PEER-F*		●	—		—					—		—	—	—	3.2	2
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

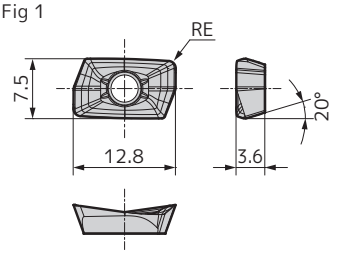
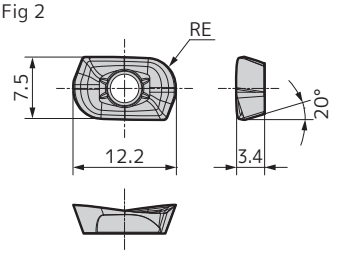


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZ 17000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
Radial	-4° to -9°	
Axial	10° to 15°	

15mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

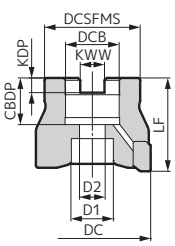


Fig 2

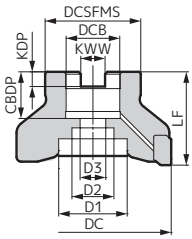


Fig 3

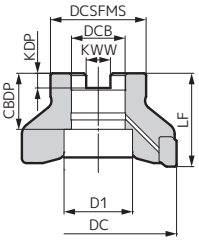


Fig 4

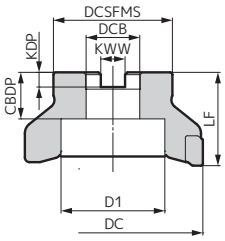
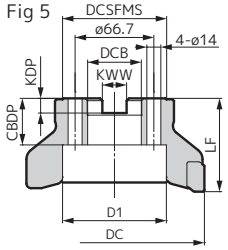


Fig 5



Body (Shell type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEZ 17040RS03**	●	**40**	33	40(39.3)	**16**	8.4	5.6	18	14	9	—	3	0.19	1
	17040RS04	●	**40**	33	40(39.3)	**16**	8.4	5.6	18	14	9	—	4	0.16	1
	17050RS03	●	**50**	41	40(39.3)	**22**	10.4	6.3	20	18	11	—	3	0.30	1
	17050RS05	●	**50**	41	40(39.3)	**22**	10.4	6.3	20	18	11	—	5	0.26	1
	17063RS04	●	**63**	50	40(39.3)	**22**	10.4	6.3	20	18	11	—	4	0.54	1
	17063RS06	●	**63**	50	40(39.3)	**22**	10.4	6.3	20	18	11	—	6	0.51	1
	17080RS04	●	***80**	55	50(49.3)	**27**	12.4	7	22	20	14	—	4	1.10	1
	17080RS07	●	***80**	55	50(49.3)	**27**	12.4	7	22	20	14	—	7	1.05	1
	17100RS05	●	**100**	70	50(49.3)	**32**	14.4	8	32	46	—	—	5	1.58	3
	17100RS08	●	**100**	70	50(49.3)	**32**	14.4	8	32	46	—	—	8	1.57	3
	17125RS06	●	**125**	80	63(62.3)	**40**	16.4	9	29	52	29	—	6	3.04	1
	17125RS09	●	**125**	80	63(62.3)	**40**	16.4	9	29	52	29	—	9	3.07	1
	17125RS11	●	**125**	80	63(62.3)	**40**	16.4	9	29	52	29	—	11	3.02	1
	17160RS08	●	**160**	100	63(62.3)	**40**	16.4	9	29	90	—	—	8	5.24	5
	17160RS10	●	**160**	100	63(62.3)	**40**	16.4	9	29	90	—	—	10	5.31	5
	17160RS12	●	**160**	100	63(62.3)	**40**	16.4	9	29	90	—	—	12	5.26	5
Inch	**WEZ 17080R04**	●	***80**	55	50(49.3)	**25.4**	9.5	6	25	20	14	—	4	1.10	1
	17080R07	●	***80**	55	50(49.3)	**25.4**	9.5	6	25	20	14	—	7	1.06	1
	17100R05	●	***100**	70	63(62.3)	**31.75**	12.7	8	32	46	27	18	5	2.08	2
	17100R08	●	***100**	70	63(62.3)	**31.75**	12.7	8	32	46	27	18	8	2.07	2
	17125R06	●	**125**	80	63(62.3)	**38.1**	15.9	10	35.5	55	30	—	6	3.09	1
	17125R09	●	**125**	80	63(62.3)	**38.1**	15.9	10	35.5	55	30	—	9	3.11	1
	17125R11	●	**125**	80	63(62.3)	**38.1**	15.9	10	35.5	55	30	—	11	3.06	1
	17160R08	●	**160**	100	63(62.3)	**50.8**	19.1	11	38	72	—	—	8	5.04	4
	17160R10	●	**160**	100	63(62.3)	**50.8**	19.1	11	38	72	—	—	10	5.09	4
	17160R12	●	**160**	100	63(62.3)	**50.8**	19.1	11	38	72	—	—	12	5.04	4

The LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. When using RE = 5.0/6.4 inserts, the maximum depth of cut is 14.5mm.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Parts

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
WEZ17040RS03	BFTX0409IP	3.0	—	HPS1015	TRB15IP	SUMI-P
WEZ17040RS04						
WEZ17050RS03						
WEZ17050RS05						
WEZ17063RS04						
WEZ17063RS06						
WEZ17080R(S)04						
WEZ17080R(S)07						
WEZ17100R(S)05						
WEZ17100R(S)08						
WEZ17125R(S)06						
WEZ17125R(S)09						
WEZ17125R(S)11						
WEZ17160R(S)08			TRDR15IP	—	—	
WEZ17160R(S)10						
WEZ17160R(S)12						

Identification Code

WEZ Series Code | **17** Insert Size | **100** Dia. | **R** Feed Direction | **S** Metric Bore | **05** Number of Teeth

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZ 17000R(S) type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	M K S		P		K		M S	M S	M S	M S	N	N		
	Roughing	M K S		P		K			M S		M S				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 170502PEER-L		●	—		—				●	▲	▲	—	—		0.2	1
170504PEER-L		●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.4	1
170508PEER-L		●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.8	1
170512PEER-L		●	—		—				●	▲	▲	—	—		1.2	1
170516PEER-L		●	—		—				●	▲	▲	—	—		1.6	1
AOMT 170502PEER-G		●		●		●	●	●	●	▲	▲	—	—		0.2	1
170504PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
170505PEER-G		●							●	▲	▲	—	—		0.5	1
170508PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
170510PEER-G		●							●	▲	▲	—	—		1.0	1
170512PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.2	1
170516PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.6	1
170520PEER-G		●		●		●	●	●	●	▲	▲	—	—		2.0	1
170524PEER-G*		●							●	▲	▲	—	—		2.4	1
170530PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.0	1
170532PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.2	1
170540PEER-G*		●		●		●	●	●	●	▲	▲	—	—		4.0	1
170550PEER-G*		●		●		●	●	●	●	▲	▲	—	—		5.0	2
170564PEER-G*		●							●	▲	▲	—	—		6.4	2
AOMT 170504PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
170508PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
170512PEER-H		●							●	▲	▲	—	—	—	1.2	1
170516PEER-H		●							●	▲	▲	—	—	—	1.6	1
AOET 170502PEER-F		●	—		—					—		—	—	—	0.2	1
170504PEER-F		●	—		—				●	—		—	—	—	0.4	1
170505PEER-F		●	—		—					—		—	—	—	0.5	1
170508PEER-F		●	—		—				●	—		—	—	—	0.8	1
170510PEER-F		●	—		—					—		—	—	—	1.0	1
170512PEER-F		●	—		—				●	—		—	—	—	1.2	1
170516PEER-F		●	—		—				●	—		—	—	—	1.6	1
170520PEER-F		●	—		—				●	—		—	—	—	2.0	1
170524PEER-F*		●	—		—					—		—	—	—	2.4	1
170530PEER-F*		●	—		—				●	—		—	—	—	3.0	1
170532PEER-F*		●	—		—				●	—		—	—	—	3.2	1
170540PEER-F*		●	—		—				●	—		—	—	—	4.0	1
170550PEER-F*		●	—		—					—		—	—	—	5.0	2
170564PEER-F*		●	—		—					—		—	—	—	6.4	2
AOET 170502PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
170505PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
170508PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
170510PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
170512PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
170516PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
170520PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
170524PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
170530PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
170532PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
170540PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
170550PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
170564PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

Fig 1

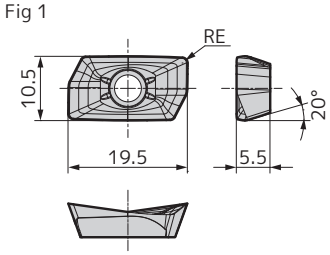
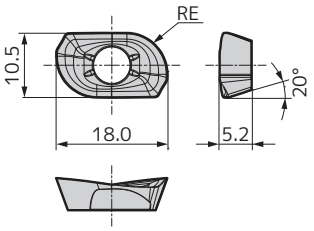


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge,
-F: Medium Finishing, -S: Non-Ferrous Metals.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZ 11000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-7° to -18°
	Axial	6° to 15°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling

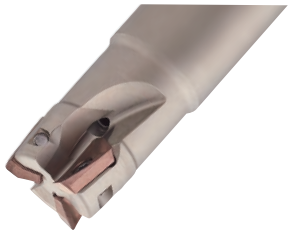


Fig 1

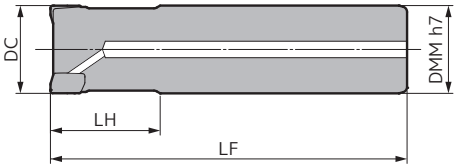
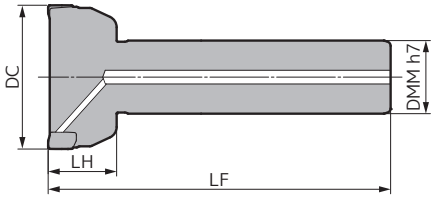


Fig 2



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 11014E01	●	**14**	16	25(24.7)	80(79.7)	1	0.10	1
11016E02	●	**16**	16	25(24.7)	100(99.7)	2	0.13	1
11016E02-12	●	**16**	12	25(24.7)	100(99.7)	2	0.07	2
11018E02	●	**18**	16	25(24.7)	100(99.7)	2	0.13	2
11020E02	●	**20**	20	30(29.7)	110(109.7)	2	0.23	1
11020E02-16	●	**20**	16	30(29.7)	110(109.7)	2	0.15	2
11020E03	●	**20**	20	30(29.7)	110(109.7)	3	0.22	1
11020E03-16	●	**20**	16	30(29.7)	110(109.7)	3	0.14	2
11022E03	●	**22**	20	30(29.7)	110(109.7)	3	0.23	2
11025E02	●	**25**	25	35(34.7)	120(119.7)	2	0.40	1
11025E03	●	**25**	25	35(34.7)	120(119.7)	3	0.40	1
11025E03-20	●	**25**	20	35(34.7)	120(119.7)	3	0.26	2
11025E04	●	**25**	25	35(34.7)	120(119.7)	4	0.39	1
11025E04-20	●	**25**	20	35(34.7)	120(119.7)	4	0.26	2
11028E04	●	**28**	25	35(34.7)	120(119.7)	4	0.41	2
11030E04	●	**30**	25	40(39.7)	130(129.7)	4	0.46	2
11032E02	●	**32**	32	40(39.7)	130(129.7)	2	0.74	1
11032E03	●	**32**	32	40(39.7)	130(129.7)	3	0.73	1
11032E04	●	**32**	32	40(39.7)	130(129.7)	4	0.73	1
11032E05	●	**32**	32	40(39.7)	130(129.7)	5	0.72	1
11032E05-25	●	**32**	25	40(39.7)	130(129.7)	5	0.46	2
11035E05	●	**35**	32	40(39.7)	130(129.7)	5	0.75	2
11040E02	●	**40**	32	30(29.7)	150(149.7)	2	0.96	2
11040E04	●	**40**	32	30(29.7)	150(149.7)	4	0.94	2
11040E06	●	**40**	32	30(29.7)	150(149.7)	6	0.93	2
11050E05	●	**50**	32	30(29.7)	150(149.7)	5	1.04	2
11050E07	●	**50**	32	30(29.7)	150(149.7)	7	1.04	2
11063E08	●	**63**	32	30(29.7)	150(149.7)	8	1.24	2
11080E10	●	**80**	32	30(29.7)	150(149.7)	10	1.52	2

The LH and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm.
Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Anti-seizure Cream
WEZ11014E01	BFTX0305IP	1.5	TRDR08IP	SUMI-P
WEZ11016E02(-12)				
WEZ11018E02				
WEZ11020E02(-16)	BFTX0306IP			
WEZ11020E03(-16)				
WEZ11022E03				
WEZ11025E02				
WEZ11025E03(-20)				
WEZ11025E04(-20)				
WEZ11028E04				
WEZ11030E04				
WEZ11032E02				
WEZ11032E03				
WEZ11032E04				
WEZ11032E05(-25)				
WEZ11035E05				
WEZ11040E02				
WEZ11040E04				
WEZ11040E06				
WEZ11050E05				
WEZ11050E07				
WEZ11063E08				
WEZ11080E10				

Identification Code

WEZ Series Code | **11** Insert Size | **025** Dia. | **E** Shank type | **03** Number of Teeth | **-20** Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C2.5 (AOMT11T330PEER)
Corner radius = 3.2: C2.5 (AOMT11T332PEER)
Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZ 11000E type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	K M S		P		K		M S	M S	M S	M S	N	N		
	Roughing	K M S		P		K			M S		M S				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●		●		●	●	●	●	▲	▲	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
11T305PEER-G		●							●	▲	▲	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
11T310PEER-G		●							●	▲	▲	—	—		1.0	1
11T312PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.2	1
11T316PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.6	1
11T320PEER-G		●		●		●	●	●	●	▲	▲	—	—		2.0	1
11T324PEER-G*		●							●	▲	▲	—	—		2.4	1
11T330PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.0	2
11T332PEER-G*		●							●	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
11T312PEER-H		●							●	▲	▲	—	—	—	1.2	1
11T316PEER-H		●							●	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		●	—		—				●	—		—	—	—	0.2	1
11T304PEER-F		●	—		—				●	—		—	—	—	0.4	1
11T305PEER-F		●	—		—					—		—	—	—	0.5	1
11T308PEER-F		●	—		—				●	—		—	—	—	0.8	1
11T310PEER-F		●	—		—					—		—	—	—	1.0	1
11T312PEER-F		●	—		—				●	—		—	—	—	1.2	1
11T316PEER-F		●	—		—					—		—	—	—	1.6	1
11T320PEER-F		●	—		—				●	—		—	—	—	2.0	1
11T324PEER-F*		●	—		—					—		—	—	—	2.4	1
11T330PEER-F*		●	—		—				●	—		—	—	—	3.0	2
11T332PEER-F*		●	—		—					—		—	—	—	3.2	2
AOET 11T302PEER-P16		●	—		—					—		—	—	—	0.2	1
11T304PEER-P16		●	—		—					—		—	—	—	0.4	1
11T305PEER-P16		●	—		—					—		—	—	—	0.5	1
11T308PEER-P16		●	—		—					—		—	—	—	0.8	1
11T310PEER-P16		●	—		—					—		—	—	—	1.0	1
11T312PEER-P16		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P20		●	—		—					—		—	—	—	0.2	1
11T304PEER-P20		●	—		—					—		—	—	—	0.4	1
11T305PEER-P20		●	—		—					—		—	—	—	0.5	1
11T308PEER-P20		●	—		—					—		—	—	—	0.8	1
11T310PEER-P20		●	—		—					—		—	—	—	1.0	1
11T312PEER-P20		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P25		●	—		—					—		—	—	—	0.2	1
11T304PEER-P25		●	—		—					—		—	—	—	0.4	1
11T305PEER-P25		●	—		—					—		—	—	—	0.5	1
11T308PEER-P25		●	—		—					—		—	—	—	0.8	1
11T310PEER-P25		●	—		—					—		—	—	—	1.0	1
11T312PEER-P25		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

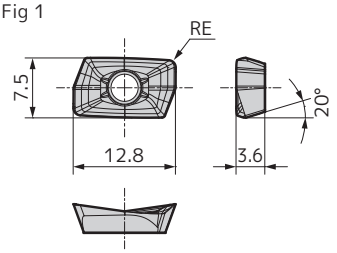
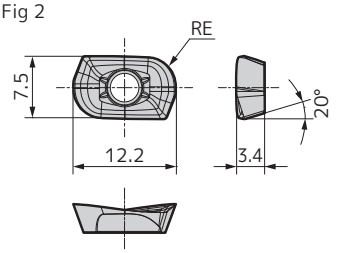


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.
* -P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20. -P25 is applicable to cutter diameters ø25 and ø28.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 | Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZ 11000ES type for Multi-tasking Machines

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-14° to -18°
	Axial	6° to 10°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

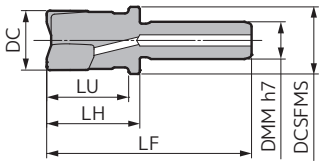
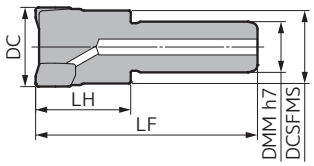


Fig 2



Body (Short Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Boss DCSFMS	Shank DMM	Head LH	Effective Length LU	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 11014ES01-12	●	**14**	18	12	30(29.7)	27	65(64.7)	1	0.05	1
11016ES02-10	●	**16**	18	10	25(24.7)	22	55(54.7)	2	0.04	1
11016ES02-12	●	**16**	18	12	30(29.7)	27	65(64.7)	2	0.05	1
11020ES03-10	●	**20**	18	10	25(24.7)	—	55(54.7)	3	0.04	2
11020ES03-12	●	**20**	18	12	30(29.7)	—	65(64.7)	3	0.06	2
11020ES03-16	●	**20**	23	16	30(29.7)	27	70(69.7)	3	0.10	1
11025ES04-12	●	**25**	23	12	30(29.7)	—	65(64.7)	4	0.09	2
11025ES04-16	●	**25**	23	16	30(29.7)	—	70(69.7)	4	0.12	2

The LH and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm.
Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ11014ES01-12	BFTX0305IP	1.5	TRDR08IP	SUMI-P
WEZ11016ES02-10				
WEZ11016ES02-12				
WEZ11020ES03-10	BFTX0306IP			
WEZ11020ES03-12				
WEZ11020ES03-16				
WEZ11025ES04-12				
WEZ11025ES04-16				

Identification Code

WEZ	11	020	E	S	03	-12
Series Code	Insert Size	Dia.	Shank type	Short Shank	Number of Teeth	Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



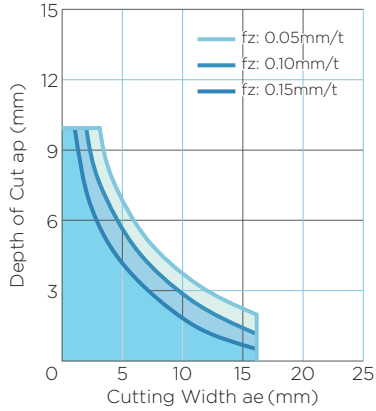
Modify the C chamfering portion.

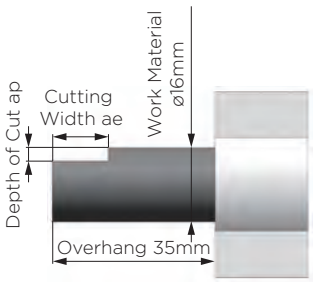
WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

Recommended Cutting Conditions

Tool: WEZ 11016ES02-10
Insert: AOET 11T3OOPEER-F





- For cutting conditions for each work material, see page H56.
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).

N·m Recommended Tightening Torque (N·m)

WEZ 11000ES type for Multi-tasking Machines

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS			N	P		
	Medium Cutting	KS		P		K		MS	MS	MS	MS	N	N			
	Roughing	KS		P		K			MS		MS					
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●		●		●	●	●	●	▲	▲	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
11T305PEER-G		●							●	▲	▲	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
11T310PEER-G		●							●	▲	▲	—	—		1.0	1
11T312PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.2	1
11T316PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.6	1
11T320PEER-G		●		●		●	●	●	●	▲	▲	—	—		2.0	1
11T324PEER-G*		●							●	▲	▲	—	—		2.4	1
11T330PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.0	2
11T332PEER-G*		●							●	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
11T312PEER-H		●							●	▲	▲	—	—	—	1.2	1
11T316PEER-H		●							●	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		●	—		—				●	—		—	—	—	0.2	1
11T304PEER-F		●	—		—				●	—		—	—	—	0.4	1
11T305PEER-F		●	—		—					—		—	—	—	0.5	1
11T308PEER-F		●	—		—				●	—		—	—	—	0.8	1
11T310PEER-F		●	—		—					—		—	—	—	1.0	1
11T312PEER-F		●	—		—				●	—		—	—	—	1.2	1
11T316PEER-F		●	—		—					—		—	—	—	1.6	1
11T320PEER-F		●	—		—				●	—		—	—	—	2.0	1
11T324PEER-F*		●	—		—					—		—	—	—	2.4	1
11T330PEER-F*		●	—		—				●	—		—	—	—	3.0	2
11T332PEER-F*		●	—		—					—		—	—	—	3.2	2
AOET 11T302PEER-P16		●	—		—					—		—	—	—	0.2	1
11T304PEER-P16		●	—		—					—		—	—	—	0.4	1
11T305PEER-P16		●	—		—					—		—	—	—	0.5	1
11T308PEER-P16		●	—		—					—		—	—	—	0.8	1
11T310PEER-P16		●	—		—					—		—	—	—	1.0	1
11T312PEER-P16		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P20		●	—		—					—		—	—	—	0.2	1
11T304PEER-P20		●	—		—					—		—	—	—	0.4	1
11T305PEER-P20		●	—		—					—		—	—	—	0.5	1
11T308PEER-P20		●	—		—					—		—	—	—	0.8	1
11T310PEER-P20		●	—		—					—		—	—	—	1.0	1
11T312PEER-P20		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P25		●	—		—					—		—	—	—	0.2	1
11T304PEER-P25		●	—		—					—		—	—	—	0.4	1
11T305PEER-P25		●	—		—					—		—	—	—	0.5	1
11T308PEER-P25		●	—		—					—		—	—	—	0.8	1
11T310PEER-P25		●	—		—					—		—	—	—	1.0	1
11T312PEER-P25		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

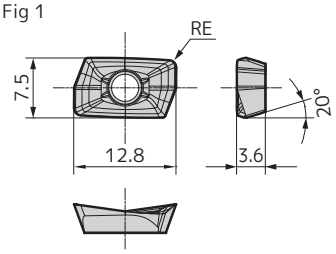
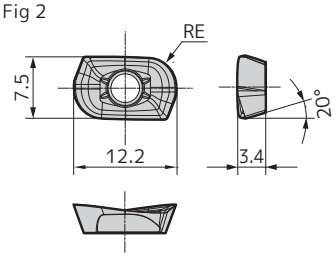


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.

* -P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20.
-P25 is applicable to cutter diameters ø25 and ø28.

* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZ 11000EL type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-7° to -18°
	Axial	6° to 15°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling

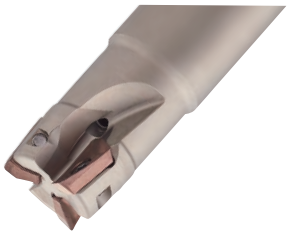


Fig 1

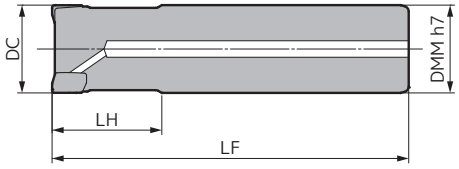
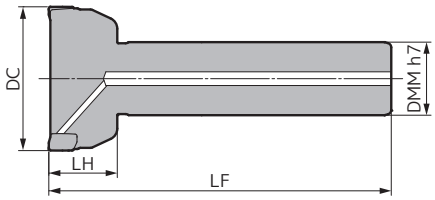


Fig 2



Body (Long Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 11014EL01	●	**14**	16	25(24.7)	120(119.7)	1	0.16	1
11016EL02	●	**16**	16	25(24.7)	145(144.7)	2	0.19	1
11016EL02-14	●	**16**	14	25(24.7)	145(144.7)	2	0.15	2
11018EL02	●	**18**	16	25(24.7)	145(144.7)	2	0.20	2
11020EL02	●	**20**	20	40(39.7)	150(149.7)	2	0.31	1
11020EL02-18	●	**20**	18	25(24.7)	150(149.7)	2	0.26	2
11022EL02	●	**22**	20	30(29.7)	150(149.7)	2	0.32	2
11025EL02	●	**25**	25	50(49.7)	170(169.7)	2	0.57	1
11025EL02-22	●	**25**	22	30(29.7)	170(169.7)	2	0.46	2
11025EL03	●	**25**	25	50(49.7)	170(169.7)	3	0.57	1
11028EL02	●	**28**	25	30(29.7)	170(169.7)	2	0.60	2
11030EL02	●	**30**	25	30(29.7)	170(169.7)	2	0.62	2
11032EL02	●	**32**	32	60(59.7)	170(169.7)	2	0.97	1
11032EL02-30	●	**32**	30	30(29.7)	170(169.7)	2	0.88	2
11032EL03	●	**32**	32	60(59.7)	170(169.7)	3	0.96	1
11035EL02	●	**35**	32	30(29.7)	170(169.7)	2	1.02	2
11035EL03	●	**35**	32	30(29.7)	170(169.7)	3	1.00	2
11040EL02	●	**40**	32	30(29.7)	170(169.7)	2	1.08	2
11050EL03	●	**50**	32	30(29.7)	170(169.7)	3	1.19	2

The LH and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5mm. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ11014EL01	BFTX0305IP	1.5	TRDR08IP	SUMI-P
WEZ11016EL02(-14)				
WEZ11018EL02				
WEZ11020EL02(-18)	BFTX0306IP			
WEZ11022EL02				
WEZ11025EL02(-22)				
WEZ11025EL03				
WEZ11028EL02				
WEZ11030EL02				
WEZ11032EL02(-30)				
WEZ11032EL03				
WEZ11035EL02				
WEZ11035EL03				
WEZ11040EL02				
WEZ11050EL03				

Identification Code

WEZ 11 025 E L 02 -22

WEZ: Series Code | 11: Insert Size | 025: Dia. | E: Shank type | L: Long Shank | 02: Number of Teeth | -22: Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZ 11000EL type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	MK		P		K		MS	MS	MS	MS	N	N		
	Roughing	MK		P		K			MS		MS				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●		●		●	●	●	●	▲	▲	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
11T305PEER-G		●							●	▲	▲	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
11T310PEER-G		●							●	▲	▲	—	—		1.0	1
11T312PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.2	1
11T316PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.6	1
11T320PEER-G		●		●		●	●	●	●	▲	▲	—	—		2.0	1
11T324PEER-G*		●							●	▲	▲	—	—		2.4	1
11T330PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.0	2
11T332PEER-G*		●							●	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
11T312PEER-H		●							●	▲	▲	—	—	—	1.2	1
11T316PEER-H		●							●	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		●	—		—				●	—		—	—	—	0.2	1
11T304PEER-F		●	—		—				●	—		—	—	—	0.4	1
11T305PEER-F		●	—		—					—		—	—	—	0.5	1
11T308PEER-F		●	—		—				●	—		—	—	—	0.8	1
11T310PEER-F		●	—		—					—		—	—	—	1.0	1
11T312PEER-F		●	—		—				●	—		—	—	—	1.2	1
11T316PEER-F		●	—		—					—		—	—	—	1.6	1
11T320PEER-F		●	—		—				●	—		—	—	—	2.0	1
11T324PEER-F*		●	—		—					—		—	—	—	2.4	1
11T330PEER-F*		●	—		—				●	—		—	—	—	3.0	2
11T332PEER-F*		●	—		—					—		—	—	—	3.2	2
AOET 11T302PEER-P16		●	—		—					—		—	—	—	0.2	1
11T304PEER-P16		●	—		—					—		—	—	—	0.4	1
11T305PEER-P16		●	—		—					—		—	—	—	0.5	1
11T308PEER-P16		●	—		—					—		—	—	—	0.8	1
11T310PEER-P16		●	—		—					—		—	—	—	1.0	1
11T312PEER-P16		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P20		●	—		—					—		—	—	—	0.2	1
11T304PEER-P20		●	—		—					—		—	—	—	0.4	1
11T305PEER-P20		●	—		—					—		—	—	—	0.5	1
11T308PEER-P20		●	—		—					—		—	—	—	0.8	1
11T310PEER-P20		●	—		—					—		—	—	—	1.0	1
11T312PEER-P20		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P25		●	—		—					—		—	—	—	0.2	1
11T304PEER-P25		●	—		—					—		—	—	—	0.4	1
11T305PEER-P25		●	—		—					—		—	—	—	0.5	1
11T308PEER-P25		●	—		—					—		—	—	—	0.8	1
11T310PEER-P25		●	—		—					—		—	—	—	1.0	1
11T312PEER-P25		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

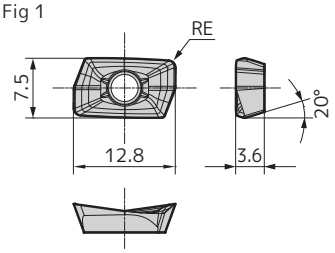
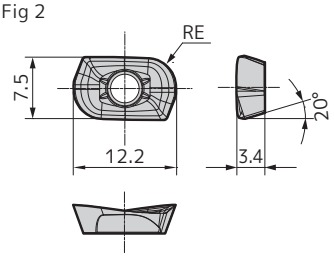


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P16/-P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.

* -P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20.
-P25 is applicable to cutter diameters ø25 and ø28.

* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56 | Maximum Allowable Spindle Speed H57
Precautions for Mounting Inserts H54

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZ 17000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-6° to -12°
	Axial	6° to 15°

15mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

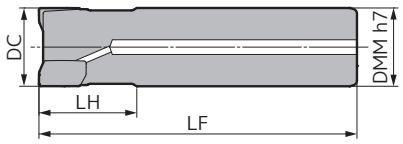
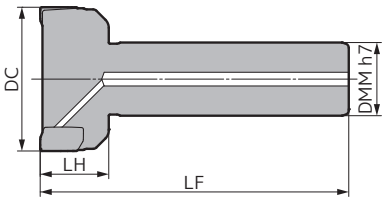


Fig 2



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 17025E02	●	**25**	25	35(34.3)	120(119.3)	2	0.38	1
17025E02-20	●	**25**	20	35(34.3)	120(119.3)	2	0.25	2
17028E02	●	**28**	25	35(34.3)	120(119.3)	2	0.40	2
17030E03	●	**30**	25	40(39.3)	130(129.3)	3	0.43	2
17032E02	●	**32**	32	40(39.3)	130(129.3)	2	0.71	1
17032E03	●	**32**	32	40(39.3)	130(129.3)	3	0.69	1
17032E03-25	●	**32**	25	40(39.3)	130(129.3)	3	0.44	2
17035E03	●	**35**	32	40(39.3)	130(129.3)	3	0.72	2
17040E03	●	**40**	32	30(29.3)	135(134.3)	3	0.81	2
17040E04	●	**40**	32	30(29.3)	135(134.3)	4	0.79	2
17050E03	●	**50**	32	30(29.3)	135(134.3)	3	0.93	2
17050E03-42	●	**50**	42	30(29.3)	135(134.3)	3	1.41	2
17050E05	●	**50**	32	30(29.3)	135(134.3)	5	0.89	2
17050E05-42	●	**50**	42	30(29.3)	135(134.3)	5	1.37	2
17063E04	●	**63**	32	30(29.3)	135(134.3)	4	1.10	2
17063E04-42	●	**63**	42	30(29.3)	135(134.3)	4	1.58	2
17063E06	●	**63**	32	30(29.3)	135(134.3)	6	1.08	2
17063E06-42	●	**63**	42	30(29.3)	135(134.3)	6	1.56	2
17080E07	●	**80**	32	30(29.3)	135(134.3)	7	1.39	2

The LH and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. When using RE = 5.0/6.4 inserts, the maximum depth of cut is 14.5mm. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ17025E02(-20)	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ17028E02				
WEZ17030E03				
WEZ17032E02	BFTX0409IP			
WEZ17032E03(-25)				
WEZ17035E03				
WEZ17040E03				
WEZ17040E04				
WEZ17050E03(-42)				
WEZ17050E05(-42)				
WEZ17063E04(-42)				
WEZ17063E06(-42)				
WEZ17080E07				

Identification Code

WEZ 17 025 E 02 -20

Series Code	Insert Size	Dia.	Shank type	Number of Teeth	Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZ 17000E type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		MS	MS		MS		N	P		
	Medium Cutting	KS		P		K		MS	MS	MS	MS	N	N		
	Roughing	KS		P		K			MS		MS				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 170502PEER-L		●	—		—				●	▲	▲	—	—		0.2	1
170504PEER-L		●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.4	1
170508PEER-L		●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.8	1
170512PEER-L		●	—		—				●	▲	▲	—	—		1.2	1
170516PEER-L		●	—		—				●	▲	▲	—	—		1.6	1
AOMT 170502PEER-G		●		●		●	●	●	●	▲	▲	—	—		0.2	1
170504PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
170505PEER-G		●							●	▲	▲	—	—		0.5	1
170508PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
170510PEER-G		●							●	▲	▲	—	—		1.0	1
170512PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.2	1
170516PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.6	1
170520PEER-G		●		●		●	●	●	●	▲	▲	—	—		2.0	1
170524PEER-G*		●							●	▲	▲	—	—		2.4	1
170530PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.0	1
170532PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.2	1
170540PEER-G*		●		●		●	●	●	●	▲	▲	—	—		4.0	1
170550PEER-G*		●		●		●	●	●	●	▲	▲	—	—		5.0	2
170564PEER-G*		●							●	▲	▲	—	—		6.4	2
AOMT 170504PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
170508PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
170512PEER-H		●							●	▲	▲	—	—	—	1.2	1
170516PEER-H		●							●	▲	▲	—	—	—	1.6	1
AOET 170502PEER-F		●	—		—					—		—	—	—	0.2	1
170504PEER-F		●	—		—				●	—		—	—	—	0.4	1
170505PEER-F		●	—		—					—		—	—	—	0.5	1
170508PEER-F		●	—		—				●	—		—	—	—	0.8	1
170510PEER-F		●	—		—					—		—	—	—	1.0	1
170512PEER-F		●	—		—				●	—		—	—	—	1.2	1
170516PEER-F		●	—		—				●	—		—	—	—	1.6	1
170520PEER-F		●	—		—				●	—		—	—	—	2.0	1
170524PEER-F*		●	—		—					—		—	—	—	2.4	1
170530PEER-F*		●	—		—				●	—		—	—	—	3.0	1
170532PEER-F*		●	—		—				●	—		—	—	—	3.2	1
170540PEER-F*		●	—		—				●	—		—	—	—	4.0	1
170550PEER-F*		●	—		—					—		—	—	—	5.0	2
170564PEER-F*		●	—		—					—		—	—	—	6.4	2
AOET 170502PEER-P25		●	—		—					—		—	—	—	0.2	1
170504PEER-P25		●	—		—					—		—	—	—	0.4	1
170505PEER-P25		●	—		—					—		—	—	—	0.5	1
170508PEER-P25		●	—		—					—		—	—	—	0.8	1
170510PEER-P25		●	—		—					—		—	—	—	1.0	1
170512PEER-P25		●	—		—					—		—	—	—	1.2	1
AOET 170502PEER-P32		●	—		—					—		—	—	—	0.2	1
170504PEER-P32		●	—		—					—		—	—	—	0.4	1
170505PEER-P32		●	—		—					—		—	—	—	0.5	1
170508PEER-P32		●	—		—					—		—	—	—	0.8	1
170510PEER-P32		●	—		—					—		—	—	—	1.0	1
170512PEER-P32		●	—		—					—		—	—	—	1.2	1
AOET 170502PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
170505PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
170508PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
170510PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
170512PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
170516PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
170520PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
170524PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
170530PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
170532PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
170540PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
170550PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
170564PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

Fig 1

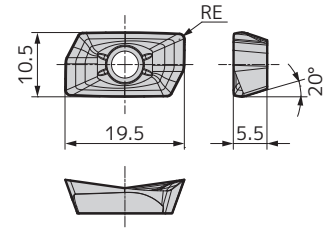
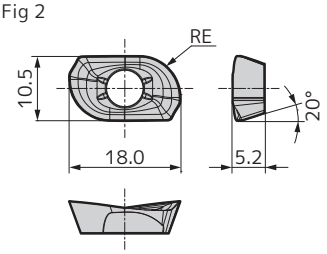


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge,
-F: Medium Finishing, -P25/-P32: High-precision Machining,
-S: Non-Ferrous Metals.

* -P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35.

* marked inserts require modification of the cutter body.

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Recommended Cutting Conditions ☞H56 Maximum Allowable Spindle Speed ☞H57
Precautions for Mounting Inserts ☞H54

WEZ 17000ES type for Multi-tasking Machines

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

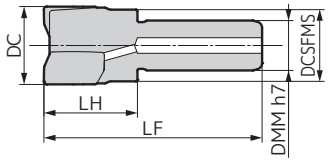
Rake Angle	Radial	-10° to -12°
	Axial	6° to 8°

15mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1



Body (Short Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Boss DCSFMS	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 17025ES02-16	●	**25**	23	16	30(29.3)	70(69.3)	2	0.11	1
17032ES03-16	●	**32**	27	16	30(29.3)	70(69.3)	3	0.14	1

The LH and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. When using RE = 5.0/6.4 inserts, the maximum depth of cut is 14.5mm.
Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ17025ES02-16	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ17032ES03-16	BFTX0409IP			

Identification Code

WEZ 17 025 E S 02 -16

WEZ	17	025	E	S	02	-16
Series Code	Insert Size	Dia.	Shank type	Short Shank	Number of Teeth	Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



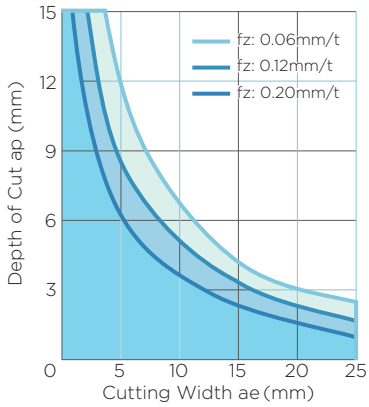
Modify the C chamfering portion.

WEZ17 type

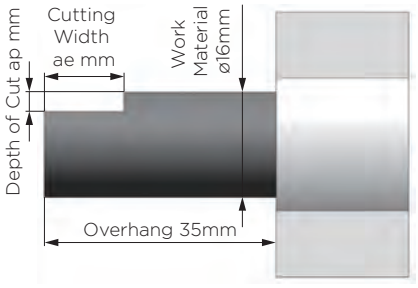
Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

Recommended Cutting Conditions

Tool: WEZ17025ES02-16
Insert: AOET1705OOPEER-F



- For cutting conditions for each work material, see page H56.
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).



N·m Recommended Tightening Torque (N·m)

WEZ 17000ES type for Multi-tasking Machines

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	M K S		P		K		M S	M S	M S	M S	N			
	Roughing	M K S		P		K			M S		M S				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	170502PEER-L	●	—		—				●	▲	▲	—	—		0.2	1
	170504PEER-L	●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.4	1
	170508PEER-L	●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.8	1
	170512PEER-L	●	—		—				●	▲	▲	—	—		1.2	1
	170516PEER-L	●	—		—				●	▲	▲	—	—		1.6	1
AOMT	170502PEER-G	●		●		●	●	●	●	▲	▲	—	—		0.2	1
	170504PEER-G	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
	170505PEER-G	●							●	▲	▲	—	—		0.5	1
	170508PEER-G	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
	170510PEER-G	●							●	▲	▲	—	—		1.0	1
	170512PEER-G	●		●		●	●	●	●	▲	▲	—	—		1.2	1
	170516PEER-G	●		●		●	●	●	●	▲	▲	—	—		1.6	1
	170520PEER-G	●		●		●	●	●	●	▲	▲	—	—		2.0	1
	170524PEER-G*	●							●	▲	▲	—	—		2.4	1
	170530PEER-G*	●		●		●	●	●	●	▲	▲	—	—		3.0	1
	170532PEER-G*	●		●		●	●	●	●	▲	▲	—	—		3.2	1
	170540PEER-G*	●		●		●	●	●	●	▲	▲	—	—		4.0	1
	170550PEER-G*	●		●		●	●	●	●	▲	▲	—	—		5.0	2
	170564PEER-G*	●							●	▲	▲	—	—		6.4	2
AOMT	170504PEER-H	●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
	170508PEER-H	●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
	170512PEER-H	●							●	▲	▲	—	—	—	1.2	1
	170516PEER-H	●							●	▲	▲	—	—	—	1.6	1
AOET	170502PEER-F	●	—		—					—		—	—	—	0.2	1
	170504PEER-F	●	—		—				●	—		—	—	—	0.4	1
	170505PEER-F	●	—		—					—		—	—	—	0.5	1
	170508PEER-F	●	—		—				●	—		—	—	—	0.8	1
	170510PEER-F	●	—		—					—		—	—	—	1.0	1
	170512PEER-F	●	—		—				●	—		—	—	—	1.2	1
	170516PEER-F	●	—		—				●	—		—	—	—	1.6	1
	170520PEER-F	●	—		—				●	—		—	—	—	2.0	1
	170524PEER-F*	●	—		—					—		—	—	—	2.4	1
	170530PEER-F*	●	—		—				●	—		—	—	—	3.0	1
	170532PEER-F*	●	—		—				●	—		—	—	—	3.2	1
	170540PEER-F*	●	—		—				●	—		—	—	—	4.0	1
	170550PEER-F*	●	—		—					—		—	—	—	5.0	2
	170564PEER-F*	●	—		—					—		—	—	—	6.4	2
AOET	170502PEER-P25	●	—		—					—		—	—	—	0.2	1
	170504PEER-P25	●	—		—					—		—	—	—	0.4	1
	170505PEER-P25	●	—		—					—		—	—	—	0.5	1
	170508PEER-P25	●	—		—					—		—	—	—	0.8	1
	170510PEER-P25	●	—		—					—		—	—	—	1.0	1
	170512PEER-P25	●	—		—					—		—	—	—	1.2	1
AOET	170502PEER-P32	●	—		—					—		—	—	—	0.2	1
	170504PEER-P32	●	—		—					—		—	—	—	0.4	1
	170505PEER-P32	●	—		—					—		—	—	—	0.5	1
	170508PEER-P32	●	—		—					—		—	—	—	0.8	1
	170510PEER-P32	●	—		—					—		—	—	—	1.0	1
	170512PEER-P32	●	—		—					—		—	—	—	1.2	1
AOET	170502PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
	170524PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
	170530PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
	170532PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
	170540PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
	170550PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
	170564PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

Fig 1

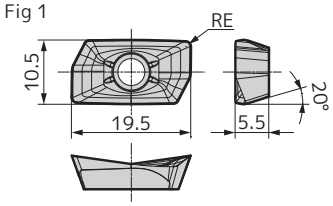
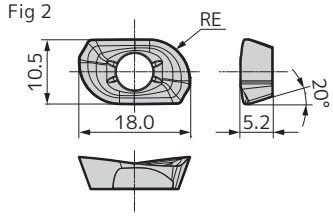


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P25/-P32: High-precision Machining, -S: Non-Ferrous Metals.
* -P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZ 17000EL type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-6° to -12°
	Axial	6° to 15°

15mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

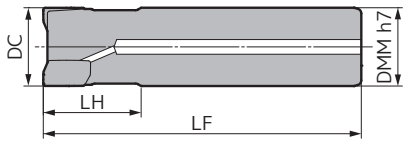
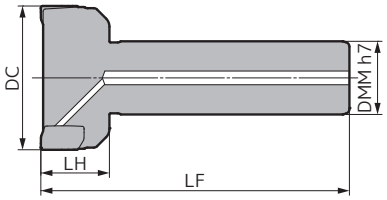


Fig 2



Body (Long Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 17025EL02	●	**25**	25	50(49.3)	170(169.3)	2	0.55	1
17028EL02	●	**28**	25	50(49.3)	170(169.3)	2	0.57	2
17030EL02	●	**30**	25	50(49.3)	170(169.3)	2	0.59	2
17032EL02	●	**32**	32	60(59.3)	170(169.3)	2	0.94	1
17032EL02-30	●	**32**	30	50(49.3)	170(169.3)	2	0.85	2
17032EL03	●	**32**	32	60(59.3)	170(169.3)	3	0.92	1
17035EL02	●	**35**	32	50(49.3)	170(169.3)	2	0.98	2
17040EL02	●	**40**	32	50(49.3)	170(169.3)	2	1.09	2
17040EL03	●	**40**	32	50(49.3)	170(169.3)	3	1.08	2
17040EL04	●	**40**	32	50(49.3)	170(169.3)	4	1.05	2
17050EL03	●	**50**	32	50(49.3)	170(169.3)	3	1.29	2
17050EL03-42	●	**50**	42	50(49.3)	170(169.3)	3	1.83	2
17050EL05	●	**50**	32	50(49.3)	170(169.3)	5	1.25	2
17050EL05-42	●	**50**	42	50(49.3)	170(169.3)	5	1.79	2
17063EL04	●	**63**	32	50(49.3)	170(169.3)	4	1.61	2
17063EL04-42	●	**63**	42	50(49.3)	170(169.3)	4	2.16	2
17063EL06	●	**63**	32	50(49.3)	170(169.3)	6	1.58	2
17063EL06-42	●	**63**	42	50(49.3)	170(169.3)	6	2.13	2

The LH and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. When using RE = 5.0/6.4 inserts, the maximum depth of cut is 14.5mm. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEZ17025EL02	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ17028EL02				
WEZ17030EL02				
WEZ17032EL02(-30)	BFTX0409IP			
WEZ17032EL03				
WEZ17035EL02				
WEZ17040EL02				
WEZ17040EL03				
WEZ17040EL04				
WEZ17050EL03(-42)				
WEZ17050EL05(-42)				
WEZ17063EL04(-42)				
WEZ17063EL06(-42)				

Identification Code

WEZ Series Code | **17** Insert Size | **032** Dia. | **E** Shank type | **L** Long Shank type | **02** Number of Teeth | **-30** Shank Dia.

*Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZ 1700EL type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	K M S		P		K		M S	M S	M S	M S	N			
	Roughing	K M S		P		K			M S		M S				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	170502PEER-L	●	—		—				●	▲	▲	—	—		0.2	1
	170504PEER-L	●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.4	1
	170508PEER-L	●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.8	1
	170512PEER-L	●	—		—				●	▲	▲	—	—		1.2	1
	170516PEER-L	●	—		—				●	▲	▲	—	—		1.6	1
AOMT	170502PEER-G	●		●		●	●	●	●	▲	▲	—	—		0.2	1
	170504PEER-G	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
	170505PEER-G	●							●	▲	▲	—	—		0.5	1
	170508PEER-G	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
	170510PEER-G	●							●	▲	▲	—	—		1.0	1
	170512PEER-G	●		●		●	●	●	●	▲	▲	—	—		1.2	1
	170516PEER-G	●		●		●	●	●	●	▲	▲	—	—		1.6	1
	170520PEER-G	●		●		●	●	●	●	▲	▲	—	—		2.0	1
	170524PEER-G*	●							●	▲	▲	—	—		2.4	1
	170530PEER-G*	●		●		●	●	●	●	▲	▲	—	—		3.0	1
	170532PEER-G*	●		●		●	●	●	●	▲	▲	—	—		3.2	1
	170540PEER-G*	●		●		●	●	●	●	▲	▲	—	—		4.0	1
	170550PEER-G*	●		●		●	●	●	●	▲	▲	—	—		5.0	2
	170564PEER-G*	●							●	▲	▲	—	—		6.4	2
AOMT	170504PEER-H	●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
	170508PEER-H	●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
	170512PEER-H	●							●	▲	▲	—	—	—	1.2	1
	170516PEER-H	●							●	▲	▲	—	—	—	1.6	1
AOET	170502PEER-F	●	—		—					—		—	—	—	0.2	1
	170504PEER-F	●	—		—				●	—		—	—	—	0.4	1
	170505PEER-F	●	—		—					—		—	—	—	0.5	1
	170508PEER-F	●	—		—				●	—		—	—	—	0.8	1
	170510PEER-F	●	—		—					—		—	—	—	1.0	1
	170512PEER-F	●	—		—				●	—		—	—	—	1.2	1
	170516PEER-F	●	—		—				●	—		—	—	—	1.6	1
	170520PEER-F	●	—		—				●	—		—	—	—	2.0	1
	170524PEER-F*	●	—		—					—		—	—	—	2.4	1
	170530PEER-F*	●	—		—				●	—		—	—	—	3.0	1
	170532PEER-F*	●	—		—				●	—		—	—	—	3.2	1
	170540PEER-F*	●	—		—				●	—		—	—	—	4.0	1
	170550PEER-F*	●	—		—					—		—	—	—	5.0	2
	170564PEER-F*	●	—		—					—		—	—	—	6.4	2
AOET	170502PEER-P25	●	—		—					—		—	—	—	0.2	1
	170504PEER-P25	●	—		—					—		—	—	—	0.4	1
	170505PEER-P25	●	—		—					—		—	—	—	0.5	1
	170508PEER-P25	●	—		—					—		—	—	—	0.8	1
	170510PEER-P25	●	—		—					—		—	—	—	1.0	1
	170512PEER-P25	●	—		—					—		—	—	—	1.2	1
AOET	170502PEER-P32	●	—		—					—		—	—	—	0.2	1
	170504PEER-P32	●	—		—					—		—	—	—	0.4	1
	170505PEER-P32	●	—		—					—		—	—	—	0.5	1
	170508PEER-P32	●	—		—					—		—	—	—	0.8	1
	170510PEER-P32	●	—		—					—		—	—	—	1.0	1
	170512PEER-P32	●	—		—					—		—	—	—	1.2	1
AOET	170502PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
	170524PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
	170530PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
	170532PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
	170540PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
	170550PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
	170564PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

Fig 1

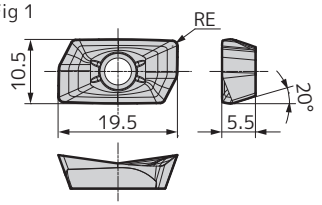
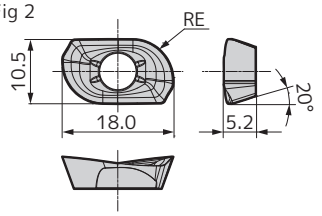


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing,
-P25/-P32: High-precision Machining, -S: Non-Ferrous Metals.
* -P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H56

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZR series

Expansion



■ Features

● High-efficiency shoulder milling of deep steps

Inserts for SEC-WaveMill WEZ series are arranged in multiple stages forming a long cutting edge, to enable high-efficiency shoulder milling of deep steps

● Superb chatter resistance

Sharp inserts and irregular pitched body help suppress chatter and vibration

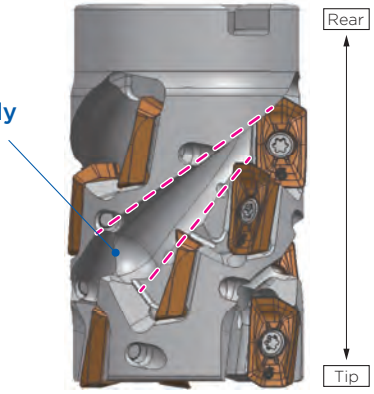
● Support for all types of work materials

A lineup of grades specific to each work material, as well as the general-purpose ACU2500 grade, which is applicable to steel, stainless steel and cast iron

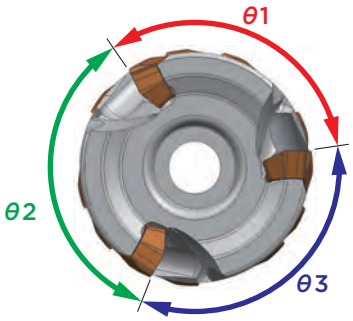
■ Body Features

● Flute shape ensures both rigidity and excellent chip evacuation performance

The chip pocket is larger toward the tip and the body is thicker toward the rear, for excellent chip evacuation and rigidity



● Irregular pitched body suppresses chattering



θ1 ≠ θ2 ≠ θ3

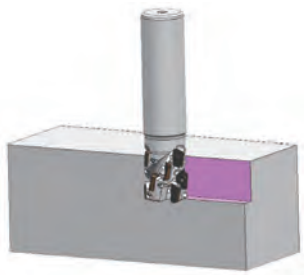
Irregular pitch is used to improve chatter resistance

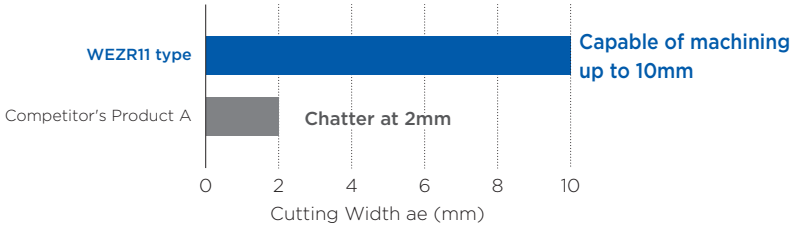
■ Cutting Performance

● Sharp inserts and irregular pitched body provide superb chatter resistance

Capable of stable machining even with BT40 spindle machines

Vertical Machining Centre BT40

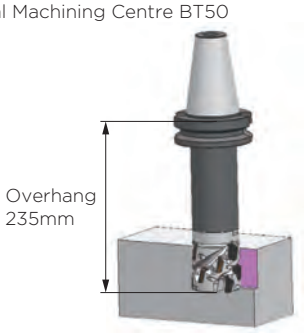


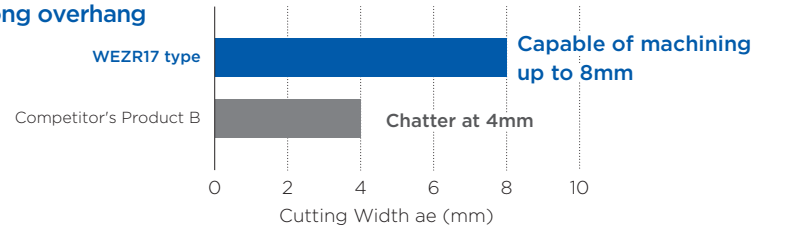


Machine	: Vertical Machining Centre BT40, Work Material: S50C, Overhang Amount: 60mm
Tool	: WEZR 11032E3632Z03 (ø32, 3-teeth 4-stage)
Insert	: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions	: vc = 150m/min, fz = 0.1mm/t, ap = 30mm, Dry

Capable of stable machining even with a long overhang

Vertical Machining Centre BT50

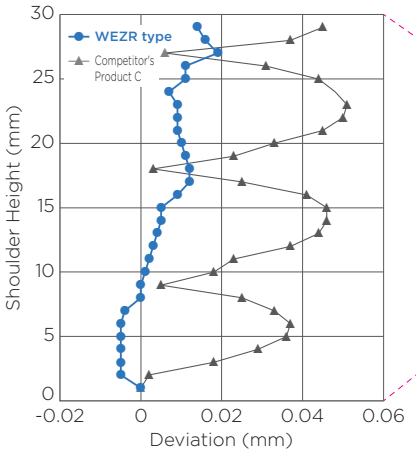


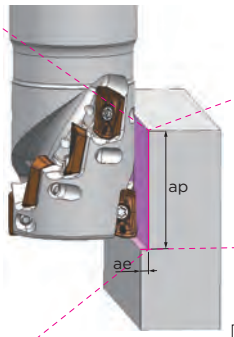


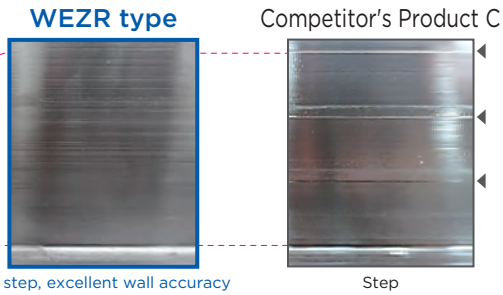
Machine	: Vertical Machining Centre BT50, Work Material: SCM440, Overhang Amount: 235mm
Tool	: WEZR 17063RS5727Z04 (ø63, 4-teeth 4-stage)
Insert	: AOMT 170508PEER-G (ACU2500)
Cutting Conditions	: vc = 150m/min, fz = 0.15mm/t, ap = 50mm, Dry

■ Cutting Performance

● Optimised cutting edge shape and high-precision molding technology result in excellent wall accuracy



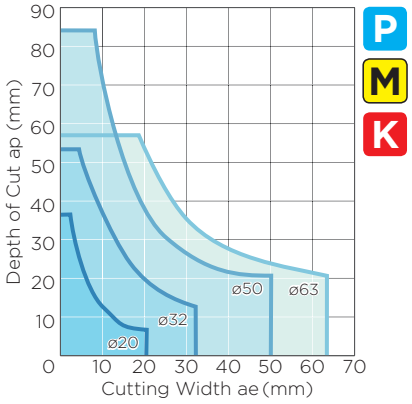




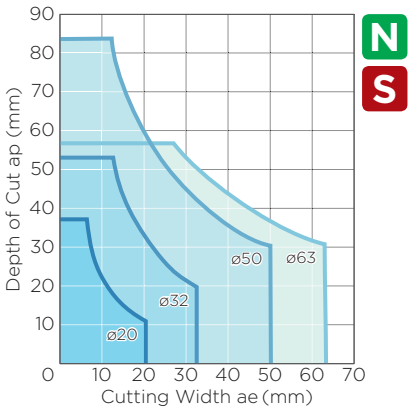
Machine	: Vertical Machining Centre BT50, Work Material: SCM435, Overhang Amount: 60mm
Tool	: WEZR 11032E3632Z02 (ø32, 2-teeth 4-stage)
Insert	: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions	: vc = 160m/min, fz = 0.15mm/t, ap = 30mm, ae = 2mm, Dry

■ Application Range

● Steel, stainless steel, cast iron



● Aluminum alloys, titanium alloys



Note
- The depth of cut figures above are guidelines for use with BT50 machine tools. Use a depth of cut of approximately 50% if using BT40.
- For a tool overhang of L/D = 3 or L/D = 4, use a depth of cut of approximately 50% or 25%, respectively.
- There may be cases where machining cannot be performed at the depth of cut figures above, depending on the machine rigidity and work rigidity.

WEZR 1100ORS type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-11° to -9°
	Axial	14° to 15°

44-53mm 90°

Shoulder Milling | Groove Milling | Side Milling

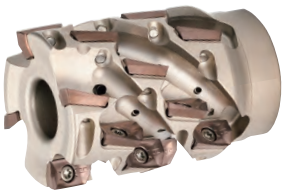
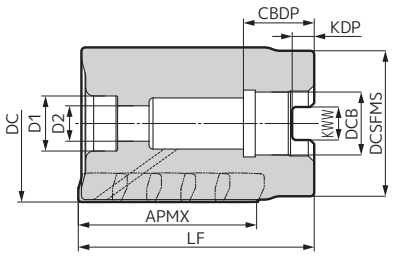


Fig 1



Body (Shell type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective Number of Teeth	Weight (kg)	Fig
Metric	WEZR 11040RS4416Z04	●	40	44(43)	37	60(59.7)	16	8.4	5.6	18	14	9	20	5	4	0.27	1
	11050RS5322Z04	●	50	53(52)	47	70(69.7)	22	10.4	6.3	20	18	11	24	6	4	0.57	1

The APMX and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Bolt	Anti-seizure Cream
WEZR 11040RS4416Z04 WEZR 11050RS5322Z04	BFTX0306IP	1.5	TRDR08IP	BX0850 BX1060	SUMI-P

Identification Code

WEZR **11** **040** **R** **S** **44** **16** **Z04**

WEZR	11	040	R	S	44	16	Z04
Series Code	Insert Size	Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Size	Effective No. of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Chip breaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	≤ 280HB	G	80 - **150** - 200	0.08 - **0.12** - 0.20	ACU2500 ACP2000 ACP3000
		> 280HB	G	80 - **100** - 120	0.08 - **0.12** - 0.20	
	Alloy Steel	≤ 280HB	G	80 - **150** - 180	0.08 - **0.12** - 0.20	
M	Stainless Steel	≤ 280HB	G	80 - **120** - 160	0.08 - **0.12** - 0.20	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
K	Cast Iron / Ductile Cast Iron	—	G	80 - **150** - 200	0.08 - **0.12** - 0.20	ACU2500 ACK2000 ACK3000
S	Exotic Alloy	—	G	40 - **50** - 60	0.08 - **0.12** - 0.20	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
N	Aluminum Alloy	Si ≤ 12.6%	S	300 - **500** - 800	0.05 - **0.10** - 0.15	DL2000 H20
		Si >12.6%	S	100 - **200** - 250	0.05 - **0.10** - 0.15	

Note

- 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.
- There may be cases where machining cannot be performed under recommended cutting conditions, depending on the machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1
(AOMT11T324PEER)
Corner radius = 3.0: C2.5
(AOMT11T330PEER)
Corner radius = 3.2: C2.5
(AOMT11T332PEER)
Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZR 11000RS type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	M K S		P		K		M S	M S	M S	M S	N	N		
	Roughing	M K S		P		K			M S		M S				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●		●		●	●	●	●	▲	▲	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
11T305PEER-G		●							●	▲	▲	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
11T310PEER-G		●							●	▲	▲	—	—		1.0	1
11T312PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.2	1
11T316PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.6	1
11T320PEER-G		●		●		●	●	●	●	▲	▲	—	—		2.0	1
11T324PEER-G*		●							●	▲	▲	—	—		2.4	1
11T330PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.0	2
11T332PEER-G*		●							●	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
11T312PEER-H		●							●	▲	▲	—	—	—	1.2	1
11T316PEER-H		●							●	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		●	—		—				●	—		—	—	—	0.2	1
11T304PEER-F		●	—		—				●	—		—	—	—	0.4	1
11T305PEER-F		●	—		—					—		—	—	—	0.5	1
11T308PEER-F		●	—		—				●	—		—	—	—	0.8	1
11T310PEER-F		●	—		—					—		—	—	—	1.0	1
11T312PEER-F		●	—		—				●	—		—	—	—	1.2	1
11T316PEER-F		●	—		—					—		—	—	—	1.6	1
11T320PEER-F		●	—		—				●	—		—	—	—	2.0	1
11T324PEER-F*		●	—		—					—		—	—	—	2.4	1
11T330PEER-F*		●	—		—				●	—		—	—	—	3.0	2
11T332PEER-F*		●	—		—					—		—	—	—	3.2	2
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

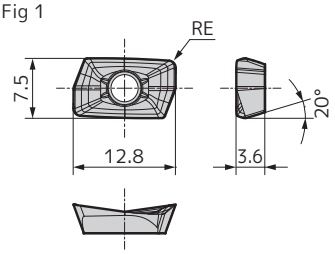
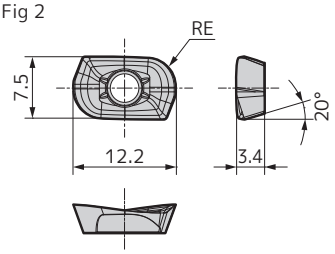


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -S: Non-Ferrous Metals.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H76
Precautions for Mounting Inserts H54

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZR 17000RS type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-8° to -6°
	Axial	7° to 15°

29-57mm 90°

Shoulder Milling | Groove Milling | Side Milling

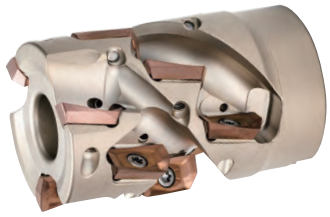
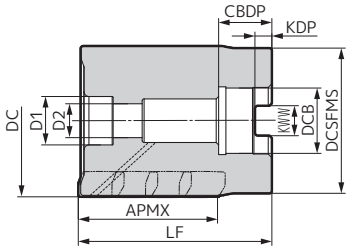


Fig 1



Body (Shell type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WEZR 17050RS2922Z04**	●	**50**	29(28)	47	50(49.3)	22	10.4	6.3	20	18	11	8	2	4	0.35	1
	17050RS5722Z02	●	**50**	57(56)	47	80(79.3)	22	10.4	6.3	20	18	11	8	4	2	0.70	1
	17050RS5722Z03	●	**50**	57(56)	47	80(79.3)	22	10.4	6.3	20	18	11	12	4	3	0.59	1
	17063RS2927Z05	●	**63**	29(28)	60	55(54.3)	27	12.4	7	22	20	14	10	2	5	0.74	1
	17063RS5727Z03	●	**63**	57(56)	60	80(79.3)	27	12.4	7	22	20	14	12	4	3	1.11	1
	17063RS5727Z04	●	**63**	57(56)	60	80(79.3)	27	12.4	7	22	20	14	16	4	4	1.05	1
	17080RS5627Z05	●	**80**	56(55)	70	80(79.3)	27	12.4	7	22	20	14	20	4	5	1.85	1
	17080RS5632Z05	●	**80**	56(55)	70	80(79.3)	32	14.4	8	26	25	18	20	4	5	1.76	1

The APMX and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Bolt	Anti-seizure Cream
		N·m					
WEZR 17050RS2922Z04	BFTX0409IP	3.0	—	HPS1015	TRB15IP	BX1045	SUMI-P
WEZR 17050RS5722Z02						BX1070	
WEZR 17050RS5722Z03							
WEZR 17063RS2927Z05						BX1240	
WEZR 17063RS5727Z03							
WEZR 17063RS5727Z04						BX1265	
WEZR 17080RS5627Z05			TRDR15IP	—	—		
WEZR 17080RS5632Z05						BX1660	

Identification Code

WEZR **17** **050** **R** **S** **29** **22** **Z04**

Series Code	Insert Size	Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Size	Effective No. of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	≤ 280HB	G	80 - **150** - 200	0.10 - **0.20** - 0.30	ACU2500 ACP2000 ACP3000
		> 280HB	G	80 - **100** - 120	0.10 - **0.20** - 0.30	
	Alloy Steel	≤ 280HB	G	80 - **150** - 180	0.10 - **0.20** - 0.30	
M	Stainless Steel	≤ 280HB	G	80 - **120** - 160	0.10 - **0.20** - 0.30	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
K	Cast Iron / Ductile Cast Iron	—	G	80 - **150** - 200	0.10 - **0.20** - 0.30	ACU2500 ACK2000 ACK3000
S	Exotic Alloy	—	G	40 - **50** - 60	0.10 - **0.20** - 0.30	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
N	Aluminum Alloy	Si ≤ 12.6%	S	300 - **500** - 800	0.05 - **0.10** - 0.15	DL2000 H20
		Si >12.6%	S	100 - **200** - 250	0.05 - **0.10** - 0.15	

Note

- 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.
- There may be cases where machining cannot be performed under recommended cutting conditions, depending on the machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)

Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZR 17000RS type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S		N	P		
	Medium Cutting	M K S		P		K		M S	M S	M S	M S	N	N		
	Roughing	M K S		P		K			M S		M S				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 170502PEER-L		●	—		—				●	▲	▲	—	—		0.2	1
170504PEER-L		●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.4	1
170508PEER-L		●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.8	1
170512PEER-L		●	—		—				●	▲	▲	—	—		1.2	1
170516PEER-L		●	—		—				●	▲	▲	—	—		1.6	1
AOMT 170502PEER-G		●		●		●	●	●	●	▲	▲	—	—		0.2	1
170504PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
170505PEER-G		●							●	▲	▲	—	—		0.5	1
170508PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
170510PEER-G		●							●	▲	▲	—	—		1.0	1
170512PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.2	1
170516PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.6	1
170520PEER-G		●		●		●	●	●	●	▲	▲	—	—		2.0	1
170524PEER-G*		●							●	▲	▲	—	—		2.4	1
170530PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.0	1
170532PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.2	1
170540PEER-G*		●		●		●	●	●	●	▲	▲	—	—		4.0	1
170550PEER-G*		●		●		●	●	●	●	▲	▲	—	—		5.0	2
170564PEER-G*		●							●	▲	▲	—	—		6.4	2
AOMT 170504PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
170508PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
170512PEER-H		●							●	▲	▲	—	—	—	1.2	1
170516PEER-H		●							●	▲	▲	—	—	—	1.6	1
AOET 170502PEER-F		●	—		—					—		—	—	—	0.2	1
170504PEER-F		●	—		—				●	—		—	—	—	0.4	1
170505PEER-F		●	—		—					—		—	—	—	0.5	1
170508PEER-F		●	—		—				●	—		—	—	—	0.8	1
170510PEER-F		●	—		—					—		—	—	—	1.0	1
170512PEER-F		●	—		—				●	—		—	—	—	1.2	1
170516PEER-F		●	—		—				●	—		—	—	—	1.6	1
170520PEER-F		●	—		—				●	—		—	—	—	2.0	1
170524PEER-F*		●	—		—					—		—	—	—	2.4	1
170530PEER-F*		●	—		—				●	—		—	—	—	3.0	1
170532PEER-F*		●	—		—				●	—		—	—	—	3.2	1
170540PEER-F*		●	—		—				●	—		—	—	—	4.0	1
170550PEER-F*		●	—		—					—		—	—	—	5.0	2
170564PEER-F*		●	—		—					—		—	—	—	6.4	2
AOET 170502PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
170505PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
170508PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
170510PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
170512PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
170516PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
170520PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
170524PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
170530PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
170532PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
170540PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
170550PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
170564PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

Fig 1

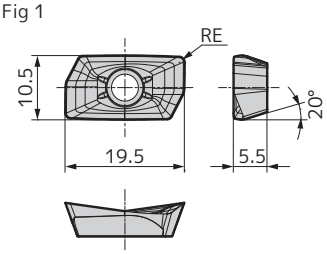
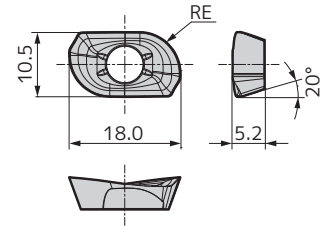


Fig 2



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -S: Non-Ferrous Metals.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H78
Precautions for Mounting Inserts H54

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZR 11000E type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Rake Angle	Radial	-15° to -11°
	Axial	8° to 14°

19-61mm 90°

Shoulder Milling Groove Milling Side Milling

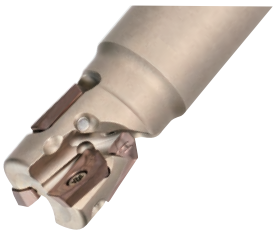


Fig 1

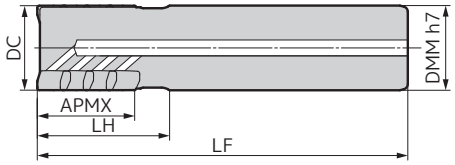
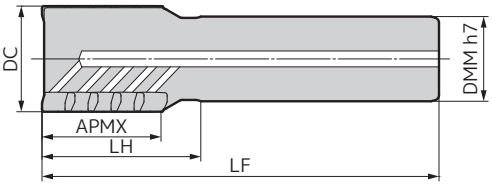


Fig 2



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WEZR 11020E1920Z02	●	20	19(18)	20	30(29.7)	110(109.7)	4	2	2	0.22	1
11020E3620Z01	●	20	36(35)	20	45(44.7)	125(124.7)	4	4	1	0.24	1
11025E2725Z02	●	25	27(26)	25	40(39.7)	130(129.7)	6	3	2	0.41	1
11025E3625Z02	●	25	36(35)	25	50(49.7)	140(139.7)	8	4	2	0.42	1
11030E5325Z02	●	30	53(52)	25	65(64.7)	155(154.7)	12	6	2	0.52	2
11032E3632Z02	●	32	36(35)	32	50(49.7)	140(139.7)	8	4	2	0.74	1
11032E3632Z03	●	32	36(35)	32	50(49.7)	140(139.7)	12	4	3	0.71	1
11032E5332Z02	●	32	53(52)	32	70(69.7)	160(159.7)	12	6	2	0.90	1
11035E5332Z03	●	35	53(52)	32	65(64.7)	155(154.7)	18	6	3	0.88	2
11040E4432Z03	●	40	44(43)	32	60(59.7)	150(149.7)	15	5	3	0.87	2
11040E4432Z04	●	40	44(43)	32	60(59.7)	150(149.7)	20	5	4	0.85	2
11040E6132Z03	●	40	61(60)	32	75(74.7)	165(164.7)	21	7	3	0.95	2

The APMX, LH and LF dimensions in parentheses are dimensions using RE = 3.0/3.2 inserts. Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	1.5	TRDR08IP	SUMI-P

Identification Code

WEZR 11 032 E 36 32 Z02

WEZR	11	032	E	36	32	Z02
Series Code	Insert Size	Dia.	Shank type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	≤ 280HB	G	80 - **150** - 200	0.08 - **0.12** - 0.20	ACU2500 ACP2000 ACP3000
		> 280HB	G	80 - **100** - 120	0.08 - **0.12** - 0.20	
	Alloy Steel	≤ 280HB	G	80 - **150** - 180	0.08 - **0.12** - 0.20	
M	Stainless Steel	≤ 280HB	G	80 - **120** - 160	0.08 - **0.12** - 0.20	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
K	Cast Iron / Ductile Cast Iron	—	G	80 - **150** - 200	0.08 - **0.12** - 0.20	ACU2500 ACK2000 ACK3000
S	Exotic Alloy	—	G	40 - **50** - 60	0.08 - **0.12** - 0.20	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
N	Aluminum Alloy	Si ≤ 12.6%	S	300 - **500** - 800	0.05 - **0.10** - 0.15	DL2000 H20
		Si >12.6%	S	100 - **200** - 250	0.05 - **0.10** - 0.15	

Note

- 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.
- There may be cases where machining cannot be performed under recommended cutting conditions, depending on the machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ11 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C2.5 (AOMT11T330PEER)
Corner radius = 3.2: C2.5 (AOMT11T332PEER)
Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZR 11000E type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S			N	P		
	Medium Cutting	M K S		P		K		M S	M S	M S	M S	N	N			
	Roughing	M K S		P		K			M S		M S					
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●		●		●	●	●	●	▲	▲	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
11T305PEER-G		●							●	▲	▲	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
11T310PEER-G		●							●	▲	▲	—	—		1.0	1
11T312PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.2	1
11T316PEER-G		●		●		●	●	●	●	▲	▲	—	—		1.6	1
11T320PEER-G		●		●		●	●	●	●	▲	▲	—	—		2.0	1
11T324PEER-G*		●							●	▲	▲	—	—		2.4	1
11T330PEER-G*		●		●		●	●	●	●	▲	▲	—	—		3.0	2
11T332PEER-G*		●							●	▲	▲	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
11T312PEER-H		●							●	▲	▲	—	—	—	1.2	1
11T316PEER-H		●							●	▲	▲	—	—	—	1.6	1
AOET 11T302PEER-F		●	—	—					●	—		—	—	—	0.2	1
11T304PEER-F		●	—	—					●	—		—	—	—	0.4	1
11T305PEER-F		●	—	—						—		—	—	—	0.5	1
11T308PEER-F		●	—	—					●	—		—	—	—	0.8	1
11T310PEER-F		●	—	—						—		—	—	—	1.0	1
11T312PEER-F		●	—	—					●	—		—	—	—	1.2	1
11T316PEER-F		●	—	—						—		—	—	—	1.6	1
11T320PEER-F		●	—	—					●	—		—	—	—	2.0	1
11T324PEER-F*		●	—	—						—		—	—	—	2.4	1
11T330PEER-F*		●	—	—					●	—		—	—	—	3.0	2
11T332PEER-F*		●	—	—						—		—	—	—	3.2	2
AOET 11T302PEER-P20		●	—		—					—		—	—	—	0.2	1
11T304PEER-P20		●	—		—					—		—	—	—	0.4	1
11T305PEER-P20		●	—		—					—		—	—	—	0.5	1
11T308PEER-P20		●	—		—					—		—	—	—	0.8	1
11T310PEER-P20		●	—		—					—		—	—	—	1.0	1
11T312PEER-P20		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEER-P25		●	—		—					—		—	—	—	0.2	1
11T304PEER-P25		●	—		—					—		—	—	—	0.4	1
11T305PEER-P25		●	—		—					—		—	—	—	0.5	1
11T308PEER-P25		●	—		—					—		—	—	—	0.8	1
11T310PEER-P25		●	—		—					—		—	—	—	1.0	1
11T312PEER-P25		●	—		—					—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S*		—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

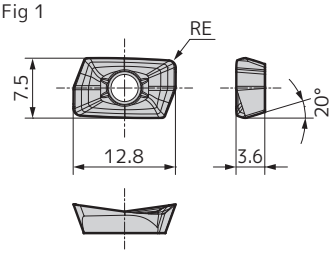
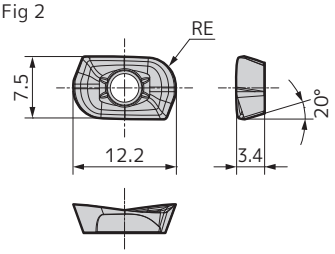


Fig 2



-G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -P20/-P25: High-precision Machining, -S: Non-Ferrous Metals.

* -P20 is applicable to cutter diameter ø20. -P25 is applicable to cutter diameter ø25.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H80
Precautions for Mounting Inserts H54

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WEZR 17000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-9° to -8°
	Axial	10° to 12°

29-84mm 90°

Shoulder Milling | Groove Milling | Side Milling

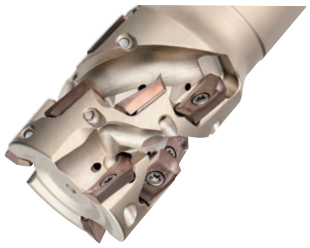
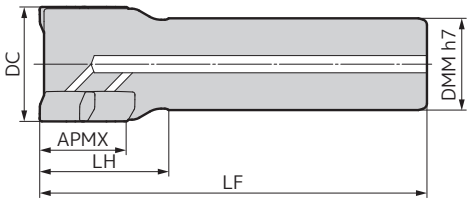


Fig 1



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WEZR 17040E2932Z03	●	**40**	29(28)	32	45(44.3)	135(134.3)	6	2	3	0.75	1
17040E4332Z02	●	**40**	43(42)	32	60(59.3)	150(149.3)	6	3	2	0.86	1
17050E5742Z03	●	**50**	57(56)	42	75(74.3)	165(164.3)	12	4	3	1.58	1
17050E8442Z02	●	**50**	84(83)	42	105(104.3)	195(194.3)	12	6	2	1.94	1

The APMX, LH and LF dimensions in parentheses are dimensions using RE = 5.0/6.4 inserts. Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0409IP	3.0	TRDR15IP	SUMI-P

Identification Code

WEZR **17** **040** **E** **29** **32** **Z03**

Series Code	Insert Size	Dia.	Shank type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	≤ 280HB	G	80 - **150** - 200	0.10 - **0.20** - 0.30	ACU2500 ACP2000 ACP3000
		> 280HB	G	80 - **100** - 120	0.10 - **0.20** - 0.30	
	Alloy Steel	≤ 280HB	G	80 - **150** - 180	0.10 - **0.20** - 0.30	
M	Stainless Steel	≤ 280HB	G	80 - **120** - 160	0.10 - **0.20** - 0.30	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
K	Cast Iron / Ductile Cast Iron	—	G	80 - **150** - 200	0.10 - **0.20** - 0.30	ACU2500 ACK2000 ACK3000
S	Exotic Alloy	—	G	40 - **50** - 60	0.10 - **0.20** - 0.30	ACU2500 ACS1000 ACS2500 ACS3000 ACM200 ACM300
N	Aluminum Alloy	Si ≤ 12.6%	S	300 - **500** - 800	0.05 - **0.10** - 0.15	DL2000 H20
		Si >12.6%	S	100 - **200** - 250	0.05 - **0.10** - 0.15	

Note

- 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.
- There may be cases where machining cannot be performed under recommended cutting conditions, depending on the machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

***Modification of the cutter body is required when using inserts with corner radius RE 2.4 or larger.**



Modify the C chamfering portion.

WEZ17 type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1.5 (AOMT170530PEER)
Corner radius = 3.2: C1.5 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)

Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZR 17000E type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P		K		M S	M S		M S			N	P		
	Medium Cutting	M K S		P		K		M S	M S	M S	M S	N	N			
	Roughing	M K S		P		K			M S		M S					
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	170502PEER-L	●	—		—				●	▲	▲	—	—		0.2	1
	170504PEER-L	●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.4	1
	170508PEER-L	●	—	●	—	●	●	●	●	▲	▲	—	—	●	0.8	1
	170512PEER-L	●	—		—				●	▲	▲	—	—		1.2	1
	170516PEER-L	●	—		—				●	▲	▲	—	—		1.6	1
AOMT	170502PEER-G	●		●		●	●	●	●	▲	▲	—	—		0.2	1
	170504PEER-G	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.4	1
	170505PEER-G	●							●	▲	▲	—	—		0.5	1
	170508PEER-G	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
	170510PEER-G	●							●	▲	▲	—	—		1.0	1
	170512PEER-G	●		●		●	●	●	●	▲	▲	—	—		1.2	1
	170516PEER-G	●		●		●	●	●	●	▲	▲	—	—		1.6	1
	170520PEER-G	●		●		●	●	●	●	▲	▲	—	—		2.0	1
	170524PEER-G*	●							●	▲	▲	—	—		2.4	1
	170530PEER-G*	●		●		●	●	●	●	▲	▲	—	—		3.0	1
	170532PEER-G*	●		●		●	●	●	●	▲	▲	—	—		3.2	1
	170540PEER-G*	●		●		●	●	●	●	▲	▲	—	—		4.0	1
	170550PEER-G*	●		●		●	●	●	●	▲	▲	—	—		5.0	2
	170564PEER-G*	●							●	▲	▲	—	—		6.4	2
AOMT	170504PEER-H	●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.4	1
	170508PEER-H	●	●	●	●	●	●	●	●	▲	▲	—	—	—	0.8	1
	170512PEER-H	●							●	▲	▲	—	—	—	1.2	1
	170516PEER-H	●							●	▲	▲	—	—	—	1.6	1
AOET	170502PEER-F	●	—		—					—		—	—	—	0.2	1
	170504PEER-F	●	—		—				●	—		—	—	—	0.4	1
	170505PEER-F	●	—		—					—		—	—	—	0.5	1
	170508PEER-F	●	—		—				●	—		—	—	—	0.8	1
	170510PEER-F	●	—		—					—		—	—	—	1.0	1
	170512PEER-F	●	—		—				●	—		—	—	—	1.2	1
	170516PEER-F	●	—		—				●	—		—	—	—	1.6	1
	170520PEER-F	●	—		—				●	—		—	—	—	2.0	1
	170524PEER-F*	●	—		—					—		—	—	—	2.4	1
	170530PEER-F*	●	—		—				●	—		—	—	—	3.0	1
	170532PEER-F*	●	—		—				●	—		—	—	—	3.2	1
	170540PEER-F*	●	—		—				●	—		—	—	—	4.0	1
	170550PEER-F*	●	—		—					—		—	—	—	5.0	2
	170564PEER-F*	●	—		—					—		—	—	—	6.4	2
AOET	170502PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
	170524PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
	170530PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
	170532PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
	170540PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
	170550PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
	170564PEFR-S*	—	—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -S: Non-Ferrous Metals.
Use peripheral inserts with RE of 0.8mm or less from the second stage and above.
* marked inserts require modification of the cutter body.

Fig 1

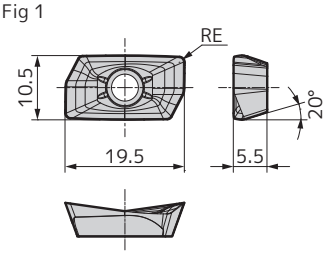
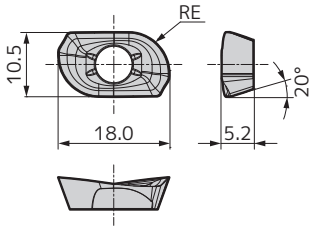


Fig 2



Recommended Cutting Conditions H82
Precautions for Mounting Inserts H54

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

SEC-WaveMill WEZR series Repeater Made-to-Order Request Sheet (1)

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.
Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

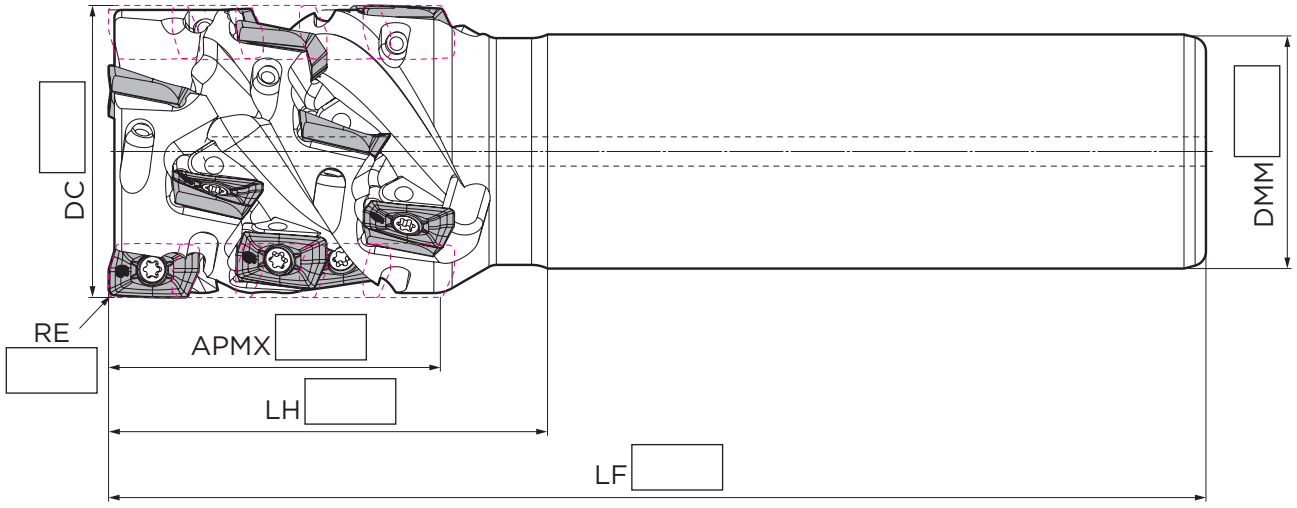


■ Reference Specifications

*1: The max. effective no. of teeth below is based on standard insert stage configurations.

Applicable Inserts	Dia. (mm) DC	Max. Depth of Cut (mm) APMX	Total No. of Teeth	Insert Stages	Max. Effective No. of Teeth *1	Specifications Shell	Specifications Shank
AOMT11 AOET11 (Refer to page H81)	20	19	4	2	2		○
	25	27	6	3	2		○
	32	36	12	4	3		○
	40	44	20	5	4	○	○
	50	53	24	6	4	○	
AOMT17 AOET17 (Refer to page H83)	40	43	6	3	2		○
	50	57	12	4	3	○	○
	63	57	16	4	4	○	
	80	56	20	4	5	○	

☑ **Shank** Refer to the reference specifications above.



Effective No. of Teeth Desired: ☐, Coolant Hole: Yes ☑ No ☑

- The tip insert corner radius (RE) can be selected. (Applicable size: Refer to page H51 ■ Product Range) Other inserts are all RE = 0.8mm or less.

■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

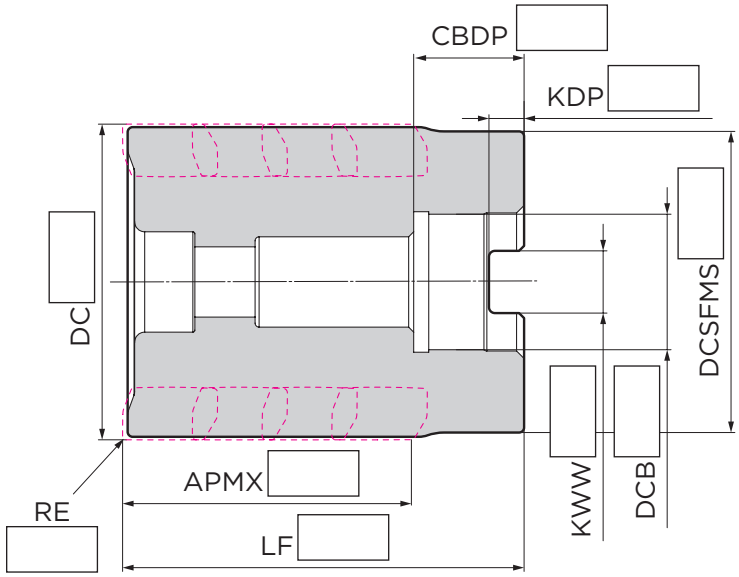
SEC-WaveMill WEZR series Repeater Made-to-Order Request Sheet (2)

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.
Feel free to contact us for other shapes or dimensions or with other requests.

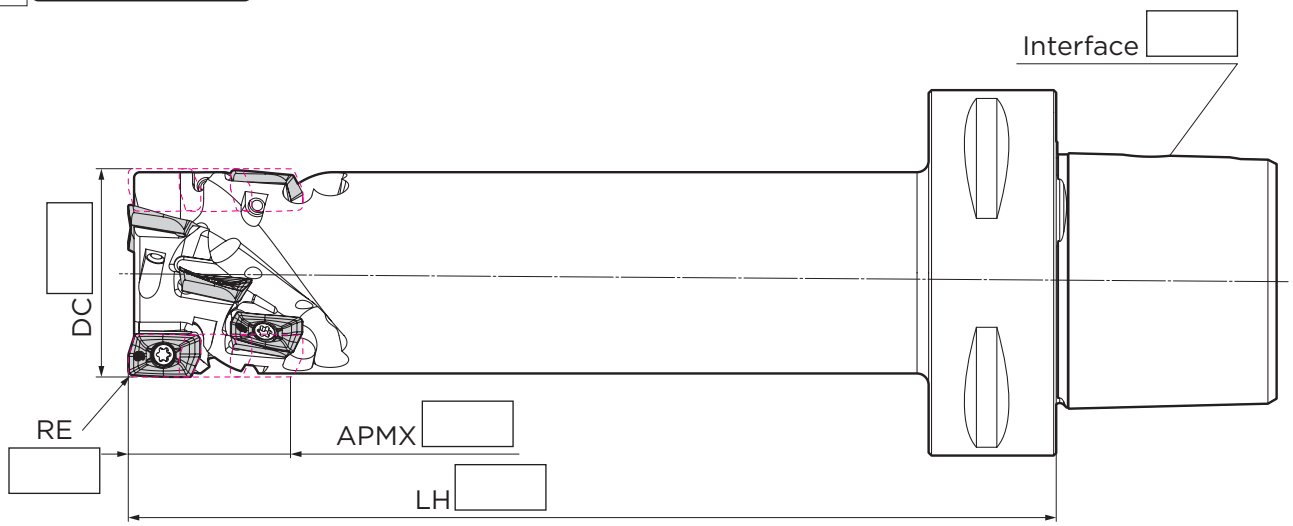
Company Name/Contact

☑ **Shell** Refer to the reference specifications on page H84.



Effective No. of Teeth Desired: ☐, Coolant Hole: Yes ☑ No ☑

☑ **Integrated Arbor** Refer to the reference specifications on page H84.



Effective No. of Teeth Desired: ☐, Coolant Hole: Yes ☑ No ☑

■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

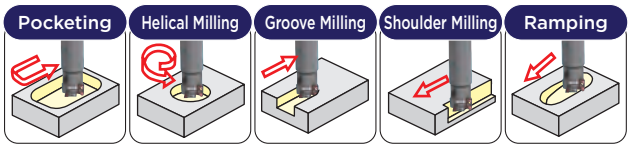
- The tip insert corner radius (RE) can be selected.
  (Applicable size: Refer to page H51 ■ Product Range)
  Other inserts are all RE = 0.8mm or less.



Features

Utilising an insert with a strong cutting edge design coupled with a high rigidity body, for stable and high-efficiency milling with low cutting force.
The improved body and insert accuracy realise high accuracy and smooth surface finish, supporting various machining with a selection of 6 types of chipbreakers and 9 milling grades.

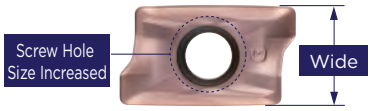
Compatible with Wide Range of Milling

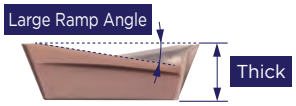


Higher Accuracy Cutting Edge with Both Sharpness and Cutting Edge Strength

Unique curved cutting edge design lowers cutting force yet improves cutting edge strength.
Achieves high quality machined surface with high precision cutting edge.
Smooth deep groove milling even with low-rigidity machines

High-precision Curved Cutting Edge | High Rake Wave Cutting Edge





Coolant Holes are a Standard Feature for the Whole Series

Improved chip evacuation with air or coolant supply

Highly Durable Body

Special surface treatment improves corrosion resistance and scratch resistance
Increased screw size improves clamping force and durability

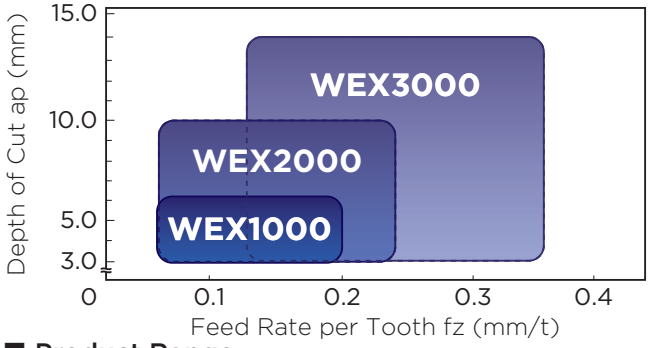
WEX1000 Series

Enables multiple teeth high-efficiency milling for small stock removal amounts

Wide Variety of Inserts

6 types of chipbreaker and 9 milling grades available for a wide range of applications and work materials

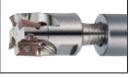
WEX series Application Range (Shoulder Milling)



WEX1000 Number of Teeth

Dia.	Number of Teeth: WEX1000E Standard type Max. Depth of Cut: 6.0mm	WEX1000EL Long type Max. Depth of Cut: 6.0mm	WEX2000E Standard type Max. Depth of Cut: 10.0mm
ø10mm	2	2	—
ø12mm	3	2	—
ø14mm	3	3	1
ø16mm	4	3	2

Product Range

Type	Cat. No.	Description	Dia. (mm) ø10	ø12	ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125	Shape
Shell	WEX 1000F	Standard type											8		10	12	14				
Shell	WEX 2000F	Standard type													6	7	8				
Shell	WEX 3000F	Standard type													4	5	6				
Shell	WEX 3000R (Inch)	Standard type																4	5	6	
Shell	WEXF 3000R (Inch)	Fine Pitch																7	8	9	
Shank	WEX 1000E	Standard type	2	3	3	4	4	5		7											
Shank	WEX 1000EL	Long type	2	2	3	3	3	4													
Shank	WEX 2000E	Standard type			1	2	2	3	3	4	4	4	5		6	7	8				
Shank	WEX 2000EL	Long type			1	2	2	2	2	2	2	2	2		2						
Shank	WEX 3000E	Standard type								2*	2	3	3*	3	4	5	6				
Shank	WEX 3000ES	Short type														5*	6*				
Shank	WEX 3000EL	Long type								2	2	2	2	2	2						
Shank	WEX 3000E-C	Coarse Pitch type													3	3	4				
Shank	WEX 3000ES-C	Short & Coarse Pitch type														3*	4*				
Modular	WEX 2000M	Modular type				2	2	3	3	4	4	4	5		6						
Modular	WEX 3000M	Modular type								2	2	3	3	3	4						

Number in ●●● shows the number of teeth (Inch) Inch Bore *mark: Different diameter shanks available Modular type ☞H262

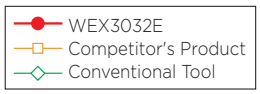
SEC-WaveMill

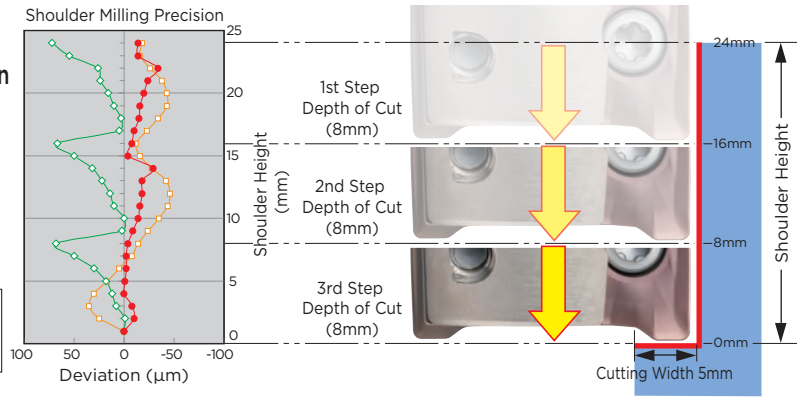
WEX series

■ Cutting Performance

(1) Shoulder Milling Precision

High-precision cutting edges provide very small step marks
(less than half that of competitors' products)

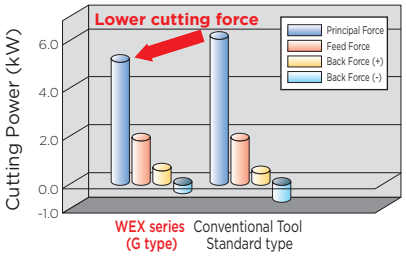




Cutting Conditions
Work Material: SS400
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: vc = 150m/min
Feed Rate: fz = 0.15mm/t (vf = 675mm/min)
Cutting Width: ae = 5mm
Depth of Cut: ap = 8mm x 3 times Dry

(2) Cutting force

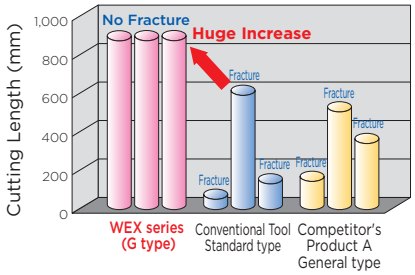
Cutting force (principal force) is approximately 15% lower than conventional tools



Cutting Conditions
Work Material: S50C
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: vc = 200m/min
Feed Rate: fz = 0.2mm/t (vf = 1,200mm/min)
Cutting Width: ae = 8mm
Depth of Cut: ap = 10mm, Dry

(3) Fracture resistance

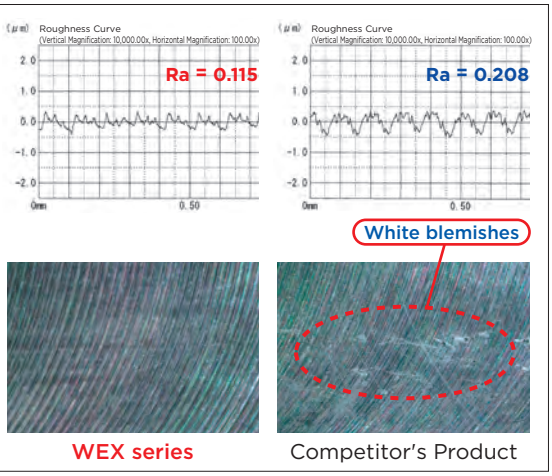
Huge increase in fracture resistance with improved cutting edge strength



Cutting Conditions
Work Material: SCM440
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: vc = 100m/min
Feed Rate: fz = 0.4mm/t (vf = 1,260mm/min)
Cutting Width: ae = 25mm
Depth of Cut: ap = 3mm, Dry

(4) Surface finish (aluminum alloy milling)

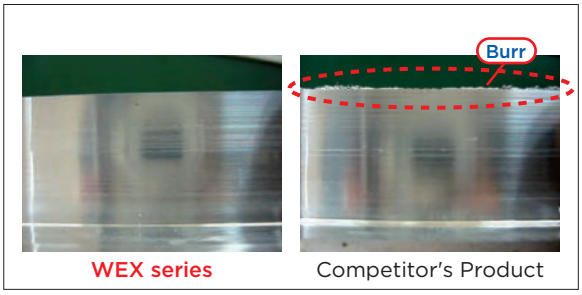
Smooth surface finish free of white blemishes



Cutting Conditions
Work Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: vc = 800m/min
Feed Rate: fz = 0.1mm/t (vf = 2,400mm/min)
Cutting Width: ae = 16mm
Depth of Cut: ap = 10mm, Dry

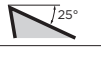
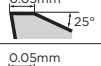
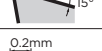
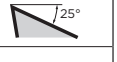
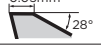
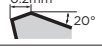
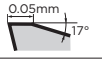
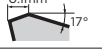
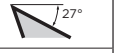
(5) Wall surface burrs (aluminum alloy milling)

High rake edge significantly reduces burrs

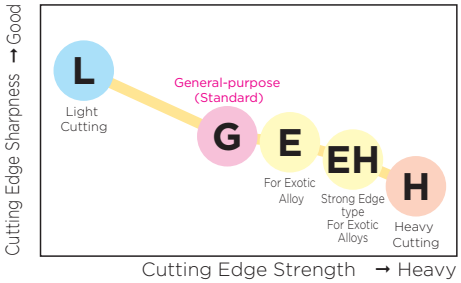


Cutting Conditions
Work Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: vc = 800m/min
Feed Rate: fz = 0.1mm/t (vf = 2,400mm/min)
Cutting Width: ae = 5mm
Depth of Cut: ap = 12mm, Dry

■ Chipbreaker Selection

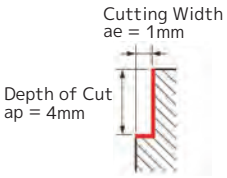
Work Material	P K			M S		N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	**Main Chipbreaker** General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	Light Cutting to General-purpose	Heavy Interrupted Machining	Aluminum Alloy and Non-Ferrous Metal
Features	Low Cutting Force	General-purpose type	High Strength type	General-purpose type For Exotic Alloys	Strong Edge type For Exotic Alloys	High Rake type
	L type	**G type**	**H type**	**E type**	**EH type**	**S type**
Chipbreaker						
1000 series Cross Section	 25°	 0.05mm 25°	 0.05mm 15°	-	-	 25°
2000 series Cross Section	-	 0.05mm 28°	 0.2mm 20°	 0.05mm 17°	 0.1mm 17°	 27°
3000 series Cross Section	 0.05mm 25°	 0.15mm 20°	 0.24mm 5°	 0.2mm 14°	 0.2mm 8°	 30°

■ Chipbreaker Selection Guide



■ Recommended Cutting Conditions

WEX1000



Tool: WEX1012E, Insert: AX□T0602

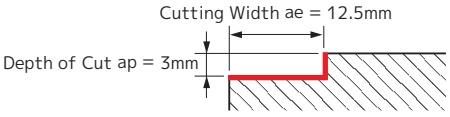
Cutting Conditions: Depth of Cut ap = 4mm, Cutting Width ae = 1mm, Dry

ISO Classification	Work Material		Workpiece Hardness (HB)	Chipbreaker	Grade																							
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
					Feed Rate per tooth fz (mm/t)																							
					0.08	0.12	0.16	0.08	0.12	0.16	0.08	0.12	0.16	0.10	0.15	0.20	0.10	0.15	0.20	0.08	0.10	0.12	0.08	0.10	0.12	0.05	0.10	0.15
					Cutting Speed vc (m/min)																							
P	Steel, Carbon Steel	S15C	125	G	260	240	220	240	220	200	220	200	180															
		S45C	190	G	200	180	160	180	160	140	180	160	140															
		S45C Hardened	250	G	180	120	140	160	140	120	150	130	110															
		S75C	270	G	160	140	120	150	130	110	130	110	110															
		S75C Hardened	300	G	100	80	70	90	70	60	70	60	50															
	Low Alloy Steel (SCM, SNCM)		180	G	200	180	160	180	160	150	160	150	130															
		SCM, SNCM Hardened	275	G	130	110	90	120	100	90	100	90	80															
		SCM, SNCM Hardened	300	G	120	100	80	100	90	80	90	80	60															
		SCM, SNCM Hardened	350	G	90	80	60	80	70	60	70	60	40															
	High Alloy Steel (SKD, SKT, SKH)		200	G	180	170	160	170	160	130	150	140	120															
		SKD, SKT, SKH Hardened	325	G	100	80	60	80	60	50	60	50	30															
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E																170	150	120	140	130	110			
		SUS403 and Others (Martensitic/Hardened)	240	E																140	120	100	120	100	90			
		SUS304, SUS316 (Austenitic)	180	E																180	160	140	160	140	130			
K	Cast Iron			G										240	220	200	220	200	180									
	Ductile Cast Iron			G										160	140	120	140	120	100									
S	Exotic Alloy			E																50	35		45	25				
N	Aluminum Alloy	Si Content of 12.6% or less		S																						800	600	400
		Si Content of over 12.6%		S																						240	200	160
	Copper Alloy			S																						330	300	270

● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

Note 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.

WEX2000



Tool: WEX2025E, Insert: AX□T1235

Cutting Conditions: Depth of Cut ap = 3mm, Cutting Width ae = 12.5mm, Dry

ISO Classification	Work Material		Workpiece Hardness (HB)	Chipbreaker	Grade																							
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
					Feed Rate per tooth fz (mm/t)																							
					0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.08	0.15	0.20	0.05	0.15	0.22
					Cutting Speed vc (m/min)																							
P	Steel, Carbon Steel	S15C	125	G	380	350	330	350	330	315	330	315	295															
		S45C	190	G	285	255	235	255	235	220	235	220	200															
		S45C Hardened	250	G	235	210	190	210	190	170	190	170	150															
		S75C	270	G	190	162	143	171	152	133	152	133	115															
		S75C Hardened	300	G	145	115	95	115	95	75	95	75	55															
	Low Alloy Steel (SCM, SNCM)		180	G	265	235	220	235	220	200	220	200	180															
		SCM, SNCM Hardened	275	G	170	145	125	150	130	115	130	115	95															
		SCM, SNCM Hardened	300	G	150	125	105	135	115	95	115	95	75															
		SCM, SNCM Hardened	350	G	125	95	75	105	85	65	85	65	45															
	High Alloy Steel (SKD, SKT, SKH)		200	G	235	210	190	210	190	170	190	170	150															
		SKD, SKT, SKH Hardened	325	G	125	95	75	95	75	55	75	55	35															
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E																175	155	125	155	140	110			
		SUS403 and Others (Martensitic/Hardened)	240	EH																160	140	110	145	125	100			
		SUS304, SUS316 (Austenitic)	180	E																190	170	140	170	150	125			
K	Cast Iron			G										285	255	235	255	235	220									
	Ductile Cast Iron			G										190	160	140	160	140	125									
S	Exotic Alloy		300	E																50	40		45	35				
	(Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)		330	E																35	25		30	20				
N	Aluminum Alloy	Si Content of 12.6% or less		S																						1000	750	500
		Si Content of over 12.6%		S																						250	200	170
	Copper Alloy			S																						350	330	300

● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

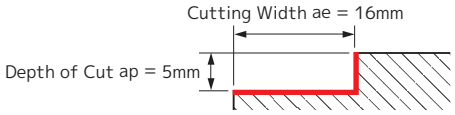
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Recommended Cutting Conditions

WEX3000

Tool: WEX3032E, Insert: AX□T1705

Cutting Conditions: Depth of Cut ap = 5mm, Cutting Width ae = 16mm, Dry



ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade	ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per tooth fz (mm/t)	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.12	0.25	0.35	0.05	0.15	0.25
				Cutting Speed vc (m/min)																								
P	Steel, Carbon Steel S15C	125	G		400	370	350	370	350	330	350	330	310															
	S45C	190	G		300	270	250	270	250	230	250	230	210															
	S45C Hardened	250	G		250	220	200	220	200	180	200	180	160															
	S75C	270	G		200	170	150	180	160	140	160	140	120															
	S75C Hardened	300	G		150	120	100	120	100	80	100	80	60															
	Low Alloy Steel (SCM, SNCM)	180	G		280	250	230	250	230	210	230	210	190															
	SCM, SNCM Hardened	275	G		180	150	130	160	140	120	140	120	100															
	SCM, SNCM Hardened	300	G		160	130	110	140	120	100	120	100	80															
	SCM, SNCM Hardened	350	G		130	100	80	110	90	70	90	70	50															
	High Alloy Steel (SKD, SKT, SKH)	200	G		250	220	200	220	200	180	200	180	160															
	SKD, SKT, SKH Hardened	325	G		130	100	80	100	80	60	80	60	40															
M	Stainless Steel SUS430 and Others (Martensitic/Ferritic)	200	E								185	165	135							185	165	135	165	150	120			
	SUS403 and Others (Martensitic/Hardened)	240	EH								170	150	120							170	150	120	150	135	110			
	SUS304, SUS316 (Austenitic)	180	E								200	180	150							200	180	150	180	160	135			
K	Cast Iron		G											300	270	250	270	250	230									
	Ductile Cast Iron		G											200	170	150	170	150	130									
S	Exotic Alloy	300	E														50	30		50	30		45	25				
	(Heat-Resistant Alloy, Super Alloy, Titanium Alloy, etc.)	330	E														50	30		50	30		45	25				
N	Aluminum Alloy Si Content of 12.6% or less		S																							1000	750	500
	Si Content of over 12.6%		S																							250	200	170
	Copper Alloy		S																							350	330	300

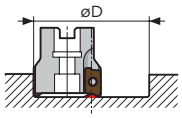
● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

Note 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.

■ Recommended Values for Helical Milling and Ramping

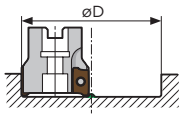
Precautions for Helical Milling

For Minimum Diameter and Below



Centre uncut portion **cannot be removed** by traverse cutting with the same cutter.

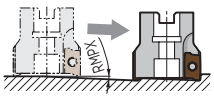
For Maximum Diameter and Above



Centre uncut portion **can be removed** by traverse cutting with the same cutter.

Precautions for Ramping

Use at the RMPX at right or lower.



Recommended Values for Helical Milling and Ramping

Dia. (mm) DC	WEX1000 (AX□T06···)			WEX2000 (AX□T12···)			WEX3000 (AX□T17···)		
	Helical Milling (mm)		Ramping	Helical Milling (mm)		Ramping	Helical Milling (mm)		Ramping
	Machining Dia. øD		Maximum Ramp Angle RMPX	Machining Dia. øD		Maximum Ramp Angle RMPX	Machining Dia. øD		Maximum Ramp Angle RMPX
	Min. Dia.	Max. Dia.		Min. Dia.	Max. Dia.		Min. Dia.	Max. Dia.	
10	16.0	18.0	2° 30'						
12	20.0	22.0	1° 45'						
14	24.0	26.0	1° 25'	25.0	27.0	1° 40'			
16	28.0	30.0	1° 00'	29.0	31.0	1° 20'			
18	32.0	34.0	0° 45'	33.0	35.0	1° 10'			
20	36.0	38.0	0° 30'	37.0	39.0	1° 00'			
22				41.0	43.0	0° 50'			
25	46.0	48.0	0° 30'	47.0	49.0	0° 45'	44.5	48.0	1° 30'
28				53.0	55.0	0° 45'	50.5	54.0	1° 10'
30				57.0	59.0	0° 40'	54.5	58.0	1° 10'
32	60.0	62.0	0° 25'	61.0	63.0	0° 35'	58.5	62.0	1° 00'
35							64.5	68.0	0° 50'
40	76.0	78.0	0° 20'	77.0	79.0	0° 25'	74.5	78.0	0° 45'
50	96.0	98.0	0° 15'	97.0	99.0	0° 20'	94.5	98.0	0° 30'
63	122.0	124.0	0° 10'	123.0	125.0	0° 15'	120.5	124.0	0° 20'
80							154.5	158.0	0° 15'
100							Unusable	Unusable	Unusable
125							Unusable	Unusable	Unusable

The table above shows recommended values with corner radius 0.8mm.

WEX 1000F type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

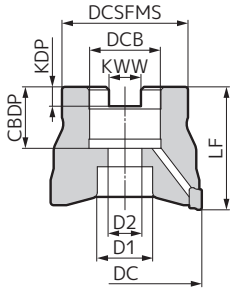
Rake Angle		
	Radial	7° to 17°
	Axial	9° to 17°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 1032F**	●	**32**	31	40	**16**	8.4	5.6	18	14	9	8	0.16	1
	1040F	●	**40**	32	40	**16**	8.4	5.6	18	14	9	10	0.21	1
	1050F	●	**50**	38	40	**22**	10.4	6.3	20	18	11	12	0.30	1
	1063F	●	**63**	48	40	**22**	10.4	6.3	20	18	11	14	0.52	1

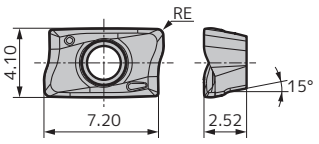
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		MS		KN	N		
	Medium Cutting		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 060204PDER-L		●	●	●	●	●	▲	▲	—	—	0.4	1
060208PDER-L		●	●	●	●	●	▲	▲	—	—	0.8	1
060212PDER-L		●	●	●	●	●	▲	▲	—	—	1.2	1
060202PDER-G		●	●	●	●	●	▲	▲	—	—	0.2	1
060204PDER-G		●	●	●	●	●	▲	▲	—	—	0.4	1
060208PDER-G		●	●	●	●	●	▲	▲	—	—	0.8	1
060212PDER-G		●	●	●	●	●	▲	▲	—	—	1.2	1
060204PDER-H		●	●	●	●	●	▲	▲	—	—	0.4	1
060208PDER-H		●	●	●	●	●	▲	▲	—	—	0.8	1
060212PDER-H		●	●	●	●	●	▲	▲	—	—	1.2	1
060202PDFR-S		—	—	—	—	—	—	—	●	●	0.2	1

Fig 1



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -S: Aluminum Alloy.

Recommended Cutting Conditions H88

Parts

(Sold Separately)

Flat Insert Screw		Wrench	Anti-seizure Cream	Torque Wrench
	N·m			 0.5N·m
BFTX01804IP	0.5	TRX06IP	SUMI-P	TRDR06IP05

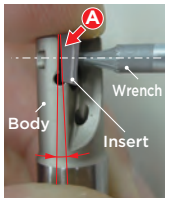
Identification Code

WEX **1** **032** **F**

Series Code	Insert Size	Dia.	Metric Bore

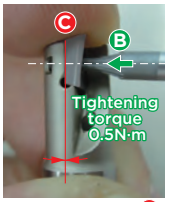
Precautions when Mounting WEX1000 Inserts

1



Press the top of the insert in the direction of A.

2





Hold down as shown in C so that there is no gap between the insert bottom and the base of insert pocket, and tighten with wrench B (tightening torque 0.5N·m)

A dedicated torque wrench is optionally available (sold separately).

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

SEC-WaveMill

WEX 2000F type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

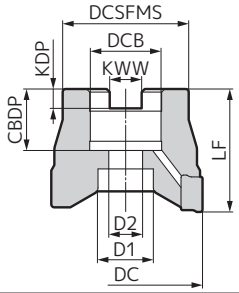
Rake Angle	Radial	16° to 18°
	Axial	23° to 25°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 2040F**	●	**40**	32	40	**16**	8.4	5.6	18	14	9	6	0.19	1
	2050F	●	**50**	40	40	**22**	10.4	6.3	20	18	11	7	0.29	1
	2063F	●	**63**	50	40	**22**	10.4	6.3	20	18	11	8	0.51	1

Inserts are sold separately.

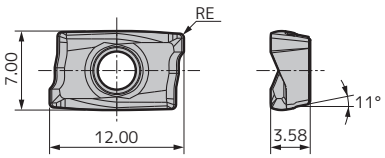
Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC
Process	High-speed/Light Cutting	P			K		M S		K N	N
	Medium Cutting		P M	P M	K		M S	M S		N
	Roughing		P M	P M		K		M S		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 123504PEER-G	●	●	●	●	●	—	—	—	—	0.4	1
123508PEER-G	●	●	●	●	●	—	—	—	—	0.8	1
123512PEER-G	●	●	●	●	●	—	—	—	—	1.2	1
AXMT 123504PEER-H	●	●	●	●	●	—	—	—	—	0.4	1
123508PEER-H	●	●	●	●	●	—	—	—	—	0.8	1
123512PEER-H	●	●	●	●	●	—	—	—	—	1.2	1
AXMT 123504PEER-E	—	—	—	—	—	▲	▲	—	—	0.4	1
123508PEER-E	—	—	—	—	—	▲	▲	—	—	0.8	1
123512PEER-E	—	—	—	—	—	▲	▲	—	—	1.2	1
AXMT 123508PEER-EH	—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 123502PEFR-S	—	—	—	—	—	—	—	●	●	0.2	1
123504PEFR-S	—	—	—	—	—	—	—	●	●	0.4	1
123508PEFR-S	—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Recommended Cutting Conditions H88

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0306IP	2.0	TRDR08IP	SUMI-P

Identification Code

WEX **2** **040** **F**

Series Code	Insert Size	Dia.	Metric Bore

WEX 3000F/R type WEXF 3000R type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	12° to 15°
	Axial	19° to 24°

14mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

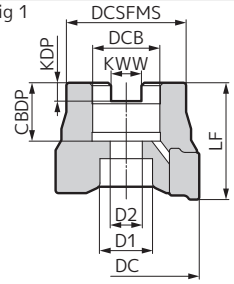
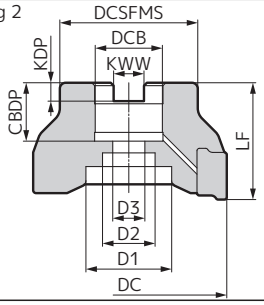


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 3040F**	●	**40**	32	40	**16**	8.4	5.6	18	14	9	—	4	0.16	1
	3050F	●	**50**	40	40	**22**	10.4	6.3	20	18	11	—	5	0.25	1
	3063F	●	**63**	50	40	**22**	10.4	6.3	20	18	11	—	6	0.48	1
Inch	**WEX 3080R**	●	***80**	60	50	**25.4**	9.5	6	25	35	26	13.5	4	1.06	2
	3100R	●	***100**	70	63	**31.75**	12.7	8	32.5	46	28	17	5	1.99	2
	3125R	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	—	6	2.89	1

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Inch	**WEXF 3080R**	●	***80**	60	50	**25.4**	9.5	6	25	35	26	13.5	7	0.98	2
	3100R	●	***100**	70	63	**31.75**	12.7	8	32.5	46	28	17	8	1.91	2
	3125R	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	—	9	2.80	1

Inserts are sold separately.

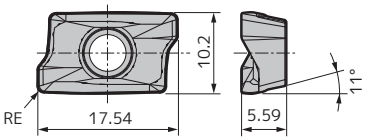
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 170508PEER-L		●	●	●	●	●	—	—	—	—	0.8	1
AXMT 170504PEER-G		●	●	●	●	●	—	—	—	—	0.4	1
170508PEER-G		●	●	●	●	●	—	—	—	—	0.8	1
170512PEER-G		●	●	●	●	●	—	—	—	—	1.2	1
170516PEER-G		●	●	●	●	●	—	—	—	—	1.6	1
170520PEER-G*		●	●	●	●	●	—	—	—	—	2.0	1
170530PEER-G*		●	●	●	●	●	—	—	—	—	3.0	1
AXMT 170508PEER-H		●	●	●	●	●	—	—	—	—	0.8	1
170512PEER-H		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 170504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
170508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
170512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
170516PEER-E		—	—	—	—	—	▲	▲	—	—	1.6	1
170520PEER-E*		—	—	—	—	—	▲	▲	—	—	2.0	1
170530PEER-E*		—	—	—	—	—	▲	▲	—	—	3.0	1
AXMT 170508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H89

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
				
BFTX0409IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Identification Code

WEX 3 040 F

Series Code	Insert Size	Dia.	F: Metric Bore R: Inch Bore

*Modification of the cutter body is required when using inserts with corner radius RE 2.0 or 3.0.



Modify this portion.

Reworking guidelines

For Corner Radius RE 2.0: C1 (AXMT170520PEER)
For Corner Radius RE 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

WEX 1000E/EL type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	7° to 17°
	Axial	9° to 17°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

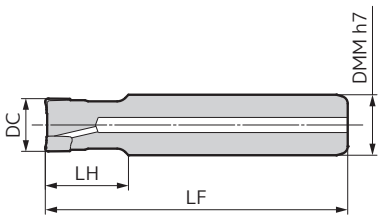
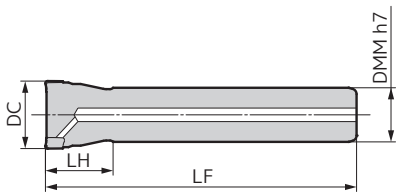


Fig 2



Body (Shank type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 1010E**	●	**10**	10	17	50	2	0.03	1
	1012E	●	**12**	12	20	80	3	0.06	1
	1014E	●	**14**	16	22	80	3	0.10	1
	1016E	●	**16**	16	20	90	4	0.12	1
	1018E	●	**18**	20	22	100	4	0.21	1
	1020E	●	**20**	20	22	100	5	0.22	1
	1025E	●	**25**	20	25	115	7	0.27	2

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 1010EL**	●	**10**	8	17	100	2	0.03	2
	1012EL	●	**12**	10	20	120	2	0.06	2
	1014EL	●	**14**	12	20	145	3	0.11	2
	1016EL	●	**16**	14	20	160	3	0.17	2
	1018EL	●	**18**	16	20	180	3	0.25	2
	1020EL	●	**20**	18	25	200	4	0.36	2

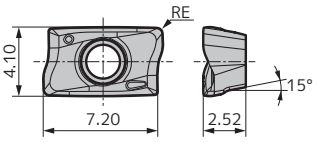
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		MS		KN	N		
	Medium Cutting		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 060204PDER-L		●	●	●	●	●	▲	▲	—	—	0.4	1
060208PDER-L		●	●	●	●	●	▲	▲	—	—	0.8	1
060212PDER-L		●	●	●	●	●	▲	▲	—	—	1.2	1
AXMT 060202PDER-G		●	●	●	●	●	▲	▲	—	—	0.2	1
060204PDER-G		●	●	●	●	●	▲	▲	—	—	0.4	1
060208PDER-G		●	●	●	●	●	▲	▲	—	—	0.8	1
060212PDER-G		●	●	●	●	●	▲	▲	—	—	1.2	1
AXMT 060204PDER-H		●	●	●	●	●	▲	▲	—	—	0.4	1
060208PDER-H		●	●	●	●	●	▲	▲	—	—	0.8	1
060212PDER-H		●	●	●	●	●	▲	▲	—	—	1.2	1
AXMT 060202PDFR-S		—	—	—	—	—	—	—	●	●	0.2	1

Fig 1



-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -S: Aluminum Alloy.

Recommended Cutting Conditions H88

Identification Code

WEX Series Code | **1** Insert Size | **010** Dia. | **E** Shank type | **L** Long type

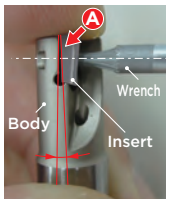
Parts

(Sold Separately)

Flat Insert Screw		Wrench	Anti-seizure Cream	Torque Wrench
				 0.5N·m
BFTX01804IP	0.5	TRX06IP	SUMI-P	TRDR06IP05

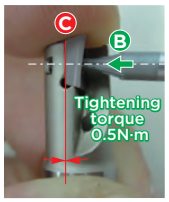
Precautions when Mounting WEX1000 Inserts

1



Press the top of the insert in the direction of A.

2





Hold down as shown in C so that there is no gap between the insert bottom and the base of insert pocket, and tighten with wrench B (tightening torque 0.5N·m)

A dedicated torque wrench is optionally available (sold separately).

WEX 2000E/EL type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	10° to 18°
	Axial	14° to 25°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling



Fig 1

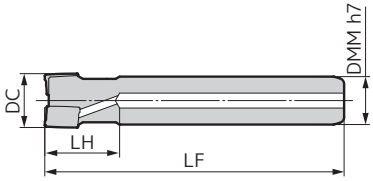
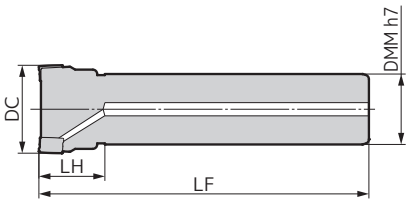


Fig 2



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 2014E	●	**14**	16	25	80	1	0.10	1
2016E	●	**16**	16	25	100	2	0.13	1
2018E	●	**18**	16	25	100	2	0.14	2
2020E	●	**20**	20	30	110	3	0.22	1
2022E	●	**22**	20	30	110	3	0.23	2
2025E	●	**25**	25	35	120	4	0.38	1
2028E	●	**28**	25	35	120	4	0.39	2
2030E	●	**30**	25	35	120	4	0.40	2
2032E	●	**32**	32	40	130	5	0.70	1
2040E	●	**40**	32	30	150	6	0.91	2
2050E	●	**50**	32	30	150	7	1.02	2
2063E	●	**63**	32	30	150	8	1.22	2

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 2014EL	●	**14**	16	25	120	1	0.14	1
2016EL	●	**16**	16	25	145	2	0.19	1
2018EL	●	**18**	16	25	145	2	0.19	2
2020EL	●	**20**	20	40	150	2	0.32	1
2022EL	●	**22**	20	30	150	2	0.33	2
2025EL	●	**25**	25	50	170	2	0.55	1
2028EL	●	**28**	25	30	170	2	0.59	2
2030EL	●	**30**	25	30	170	2	0.60	2
2032EL	●	**32**	32	60	180	2	0.99	1
2040EL	●	**40**	32	30	180	2	1.12	2

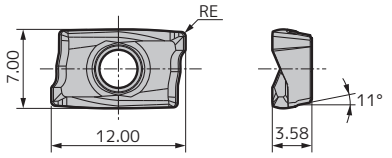
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 123504PEER-G		●	●	●	●	●	—	—	—	—	0.4	1
123508PEER-G		●	●	●	●	●	—	—	—	—	0.8	1
123512PEER-G		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 123504PEER-H		●	●	●	●	●	—	—	—	—	0.4	1
123508PEER-H		●	●	●	●	●	—	—	—	—	0.8	1
123512PEER-H		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 123504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
123508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
123512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
AXMT 123508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 123502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
123504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
123508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Recommended Cutting Conditions H88

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WEX2014E(EL) to WEX2018E(EL)	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEX2020E(EL) to WEX2063E	BFTX0306IP	2.0	TRDR08IP	SUMI-P

Identification Code

WEX **2** **014** **E** **L**

Series Code	Insert Size	Dia.	Shank type	Long type

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

WEX 3000 E/ES/EL/E-C/ES-C type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	8° to 15°
	Axial	16° to 24°

14mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Side Milling | Plunge Milling | Helical Milling

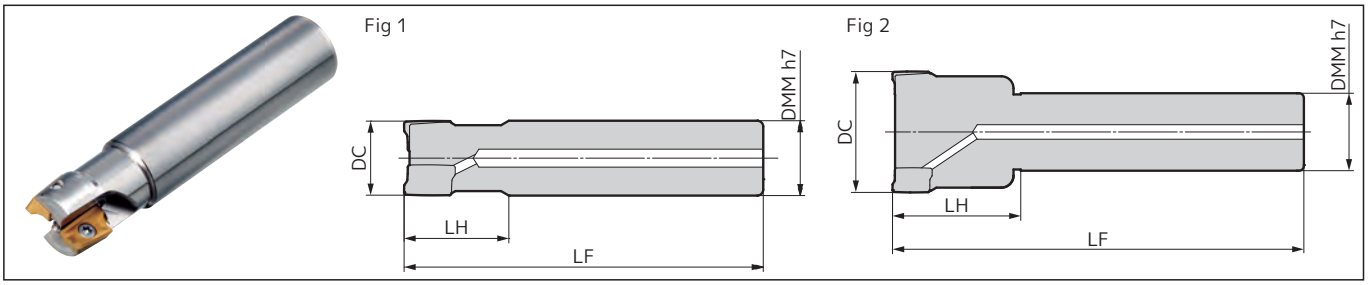


Fig 1

Fig 2

Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3025E-20	●	25	20	35	120	2	0.25	2
3025E	●	25	25	35	120	2	0.37	1
3028E	●	28	25	35	120	2	0.39	2
3030E	●	30	25	40	130	3	0.42	2
3032E-25	●	32	25	40	130	3	0.43	2
3032E	●	32	32	40	130	3	0.67	1
3035E	●	35	32	40	130	3	0.69	2
3040E	●	40	32	50	170	4	1.01	2
3050E	●	50	32	50	170	5	1.23	2
3063E	●	63	32	50	170	6	1.58	2

Body (Short Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3050ES	●	50	32	25	135	5	0.86	2
3050ES-42	●	50	42	25	135	5	1.36	2
3063ES	●	63	32	25	135	6	1.02	2
3063ES-42	●	63	42	25	135	6	1.52	2

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3025EL	●	25	25	50	170	2	0.54	1
3028EL	●	28	25	50	170	2	0.56	2
3030EL	●	30	25	60	180	2	0.60	2
3032EL	●	32	32	60	180	2	0.95	1
3035EL	●	35	32	60	180	2	0.98	2
3040EL	●	40	32	80	220	2	1.38	2

Body (Coarse Pitch type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3040E-C	●	40	32	50	170	3	1.04	2
3050E-C	●	50	32	50	170	3	1.28	2
3063E-C	●	63	32	50	170	4	1.64	2

Body (Short Coarse Pitch type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3050ES-C	●	50	32	25	135	3	0.91	2
3050ES-C-42	●	50	42	25	135	3	1.41	2
3063ES-C	●	63	32	25	135	4	1.07	2
3063ES-C-42	●	63	42	25	135	4	1.57	2

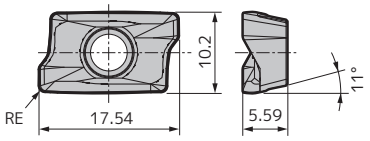
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 170508PEER-L		●	●	●	●	●	—	—	—	—	0.8	1
AXMT 170504PEER-G		●	●	●	●	●	—	—	—	—	0.4	1
170508PEER-G		●	●	●	●	●	—	—	—	—	0.8	1
170512PEER-G		●	●	●	●	●	—	—	—	—	1.2	1
170516PEER-G		●	●	●	●	●	—	—	—	—	1.6	1
170520PEER-G*		●	●	●	●	●	—	—	—	—	2.0	1
170530PEER-G*		●	●	●	●	●	—	—	—	—	3.0	1
AXMT 170508PEER-H		●	●	●	●	●	—	—	—	—	0.8	1
170512PEER-H		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 170504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
170508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
170512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
170516PEER-E		—	—	—	—	—	▲	▲	—	—	1.6	1
170520PEER-E*		—	—	—	—	—	▲	▲	—	—	2.0	1
170530PEER-E*		—	—	—	—	—	▲	▲	—	—	3.0	1
AXMT 170508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.
* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H89

Parts

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
WEX3025E(EL) to 3030EL	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEX3032E(EL) to 3063E(ES)	BFTX0409IP	3.0	TRDR15IP	SUMI-P

*Modification of the cutter body is required when using inserts with corner radius RE 2.0 or 3.0.



Modify this portion.

Reworking guidelines

For Corner Radius RE 2.0: C1 (AXMT170520PEER)

For Corner Radius RE 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

WRX series

High-efficiency Shoulder Milling of Deep Steps

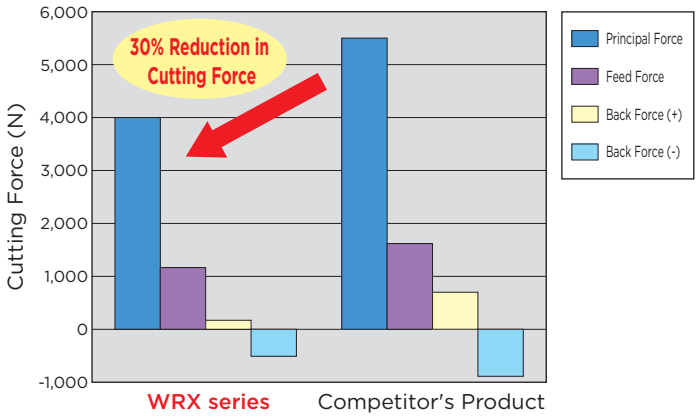


■ Features

Inserts for SEC-WaveMill WEX series, with wave-like cutting edges, are arranged in multiple stages forming a long cutting edge to enable high-efficiency shoulder milling of deep steps.

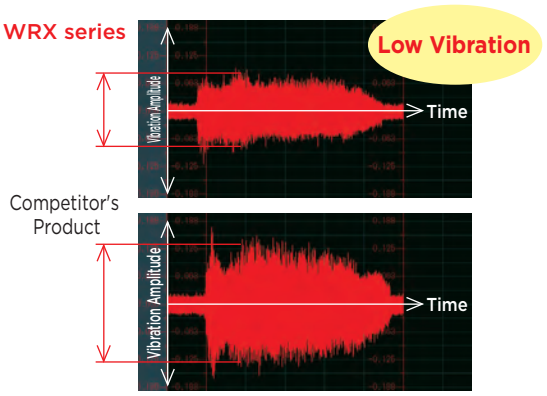
● Cutting edge positions are optimised to provide low cutting force and low vibration

■ Comparison of Cutting Force



Cutting Conditions
Work Material : S50C
Tool : WRX2025E2725
Cutting Speed : vc = 100m/min, fz = 0.15mm/t, ae = 10mm, ap = 25mm, Dry

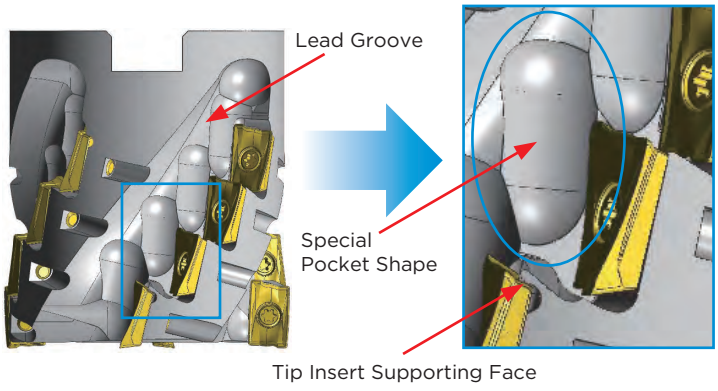
■ Comparison of Vibration

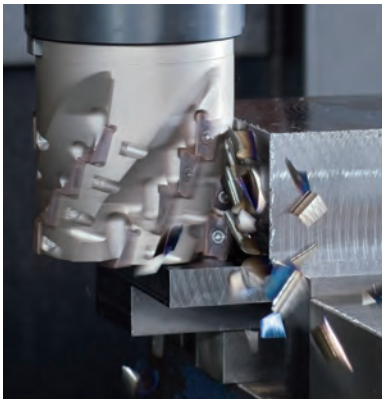


Cutting Conditions
Work Material : S50C
Tool : WRX3080RS5332
Cutting Speed : vc = 150m/min, fz = 0.20mm/t, ae = 5mm, ap = 40mm, Dry

● Lead groove and special pocket shape provide smooth chip evacuation and high body rigidity

● Tip insert supporting face reduces bottom edge fracture and provides high reliability





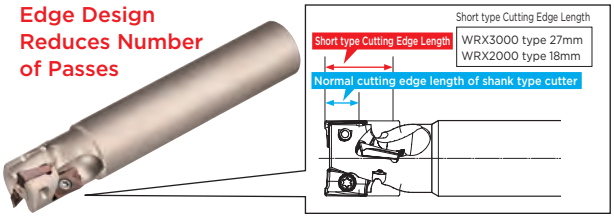
■ Product Range

Cutting Edge	Series Code	Cutting Edge Length (mm)	Dia. (mm)	Shape	Applicable Inserts (*)
Standard type	WRX2000E	27 to 36	ø20 to ø40	Shank type	AXMT1235 type
	WRX2000R	36	ø40 to ø50	Mounting Hole type	
	WRX3000E	40 to 53	ø40 to ø50	Shank type	AXMT1705 type
	WRX3000R	53	ø50 to ø100	Mounting Hole type	
Short Cutting Edge type	WRX2000E	18	ø20 to ø40	Shank type	AXMT1235 type
	WRX2000R		ø40 to ø50	Mounting Hole type	
	WRX3000E	27	ø40 to ø50	Shank type	AXMT1705 type
	WRX3000R		ø50 to ø100	Mounting Hole type	

* Applicable inserts are the same as those used in the popular SEC-WaveMill WEX series.

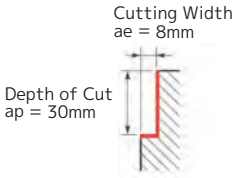
Short Cutting Edge Series

2-stepped Cutting Edge Design Reduces Number of Passes



■ Recommended Cutting Conditions

WRX2000



Tool: WRX2040E3642 Insert: AXMT123504PEER

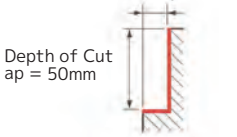
Cutting Conditions: Depth of Cut ap = 30mm, Cutting Width ae = 8mm, Dry

ISO Classification	Work Material		Workpiece Hardness (HB)	Chipbreaker	Grade																										
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000						
					Feed Rate per tooth fz (mm/t)																												
					0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2				
					Cutting Speed vc (m/min)																												
P	Steel, Carbon Steel	S15C	125	G	280	260	240	260	240	220	240	220	200																		
		S45C	190	G	200	180	160	180	160	140	180	160	140																		
		S45C Hardened	250	G	180	120	140	160	140	120	150	130	110																		
		S75C	270	G	160	140	120	150	130	110	130	110	110																		
		S75C Hardened	300	G	100	80	70	90	70	60	70	60	50																		
	Low Alloy Steel	(SCM, SNCM)	180	G	200	180	160	180	160	150	160	150	130																		
		SCM, SNCM Hardened	275	G	130	110	90	120	100	90	100	90	80																		
		SCM, SNCM Hardened	300	G	120	100	80	100	90	80	90	80	60																		
		SCM, SNCM Hardened	350	G	90	80	60	80	70	60	70	60	40																		
	High Alloy Steel	(SKD, SKT, SKH)	200	G	180	170	160	170	160	130	150	140	120																		
		SKD, SKT, SKH Hardened	325	G	100	80	60	80	60	50	60	50	30																		
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E																170	150	120	140	130	110						
		SUS403 and Others (Martensitic/Hardened)	240	E																140	120	100	120	100	90						
		SUS304, SUS316 (Austenitic)	180	E																180	160	140	160	140	130						
K	Cast Iron			G										240	220	200	220	200	180												
	Ductile Cast Iron			G										160	140	120	140	120	100												
S	Exotic Alloy			E																50	35		45	25							
N	Aluminum Alloy	Si Content of 12.6% or less		S																						1000	750	500			
		Si Content of over 12.6%		S																						250	200	170			

- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

Note 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.

WRX3000



Tool: WRX3050E5342 Insert: AXMT170508PEER

Cutting Conditions: Depth of Cut ap = 50mm, Cutting Width ae = 10mm, Dry

ISO Classification	Work Material		Workpiece Hardness (HB)	Chipbreaker	Grade																										
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000						
					Feed Rate per tooth fz (mm/t)																												
					0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2	0.1	0.15	0.2				
					Cutting Speed vc (m/min)																												
P	Steel, Carbon Steel	S15C	125	G	320	300	280	300	280	260	280	260	240																		
		S45C	190	G	240	220	200	220	200	180	200	180	160																		
		S45C Hardened	250	G	200	180	160	180	160	140	160	140	120																		
		S75C	270	G	160	140	120	150	130	110	130	110	110																		
		S75C Hardened	300	G	120	100	80	100	80	60	80	60	50																		
	Low Alloy Steel	(SCM, SNCM)	180	G	220	200	180	200	180	170	180	170	150																		
		SCM, SNCM Hardened	275	G	140	120	100	130	110	100	110	100	80																		
		SCM, SNCM Hardened	300	G	130	110	90	110	90	80	100	80	60																		
		SCM, SNCM Hardened	350	G	100	80	60	90	70	60	70	60	40																		
	High Alloy Steel	(SKD, SKT, SKH)	200	G	200	180	160	180	160	140	160	140	120																		
		SKD, SKT, SKH Hardened	325	G	100	80	60	80	60	50	60	50	30																		
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E																170	150	130	140	130	110						
		SUS403 and Others (Martensitic/Hardened)	240	E																140	120	100	120	100	90						
		SUS304, SUS316 (Austenitic)	180	E																180	160	140	160	140	130						
K	Cast Iron			G										240	220	200	220	200	180												
	Ductile Cast Iron			G										160	140	120	140	120	100												
S	Exotic Alloy			E																50	30		45	25							
N	Aluminum Alloy	Si Content of 12.6% or less		S																						1000	750	500			
		Si Content of over 12.6%		S																						250	200	170			

- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

Note 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.

WRX 2000RS type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	16° to 17°
	Axial	24°

18-36mm 90°

Shoulder Milling | Groove Milling | Side Milling

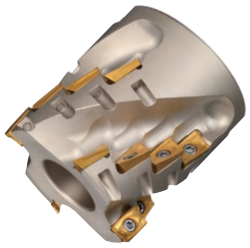


Fig 1

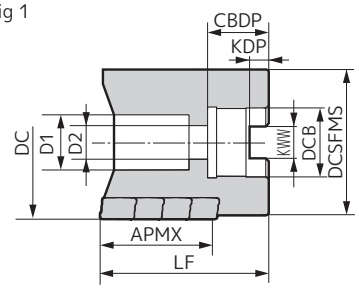
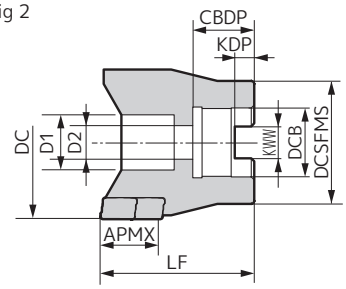


Fig 2



Body (Standard type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WRX 2040RS3616**	▲	**40**	36	37.5	55	**16**	8.4	5.6	18	14	9	16	4	4	0.3	1
	2050RS3622	▲	**50**	36	47.5	55	**22**	10.4	6.3	20	18	11	16	4	4	0.5	1

Body (Short Cutting Edge type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WRX 2040RS1816**	▲	**40**	18	32	50	**16**	8.4	5.6	18	14	9	10	2	5	0.3	2
	2050RS1822	▲	**50**	18	40	50	**22**	10.4	6.3	20	18	11	10	2	5	0.4	2

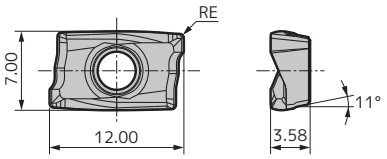
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		MS		KN	N		
	Medium Cutting		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 123504PEER-G		●	●	●	●	●	—	—	—	—	0.4	1
123508PEER-G		●	●	●	●	●	—	—	—	—	0.8	1
123512PEER-G		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 123504PEER-H		●	●	●	●	●	—	—	—	—	0.4	1
123508PEER-H		●	●	●	●	●	—	—	—	—	0.8	1
123512PEER-H		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 123504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
123508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
123512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
AXMT 123508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 123502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
123504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
123508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Recommended Cutting Conditions H97

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	SUMI-P

* Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Identification Code

WRX 2 **040** **R** **S** **36** **16**

WRX	2	040	R	S	36	16
Series Code	Insert Size	Dia.	Feed Direction	Metric Bore	Cutting Edge Length	Mounting Size

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

WRX 3000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	13° to 15°
	Axial	22° to 24°

27-53mm 90°

Shoulder Milling | Groove Milling | Side Milling



Fig 1

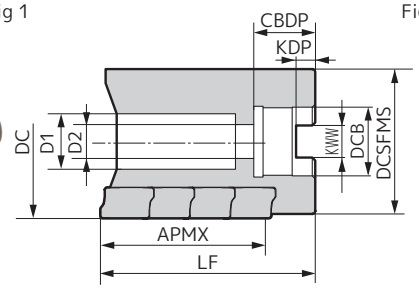


Fig 2

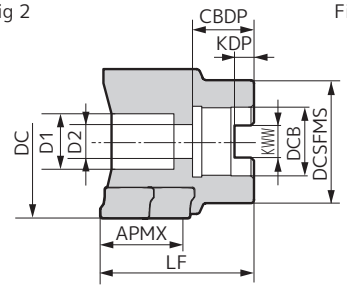
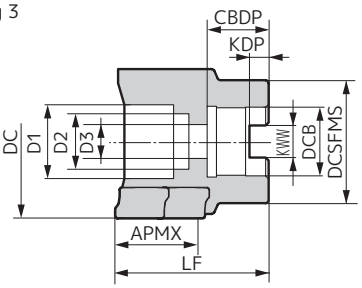


Fig 3



Body (Standard type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WRX 3050RS5322**	▲	**50**	53	47	70	**22**	10.4	6.3	20	18	11	—	12	4	3	0.6	1
	3063RS5327	▲	**63**	53	60	70	**27**	12.4	7	23	20	13.5	—	16	4	4	1.0	1
	3080RS5332	▲	**80**	53	77	85	**32**	14.4	8	26	25	17	—	20	4	5	2.2	1
	3100RS5340	▲	**100**	53	97	85	**40**	16.4	9.5	30	32	21	—	24	4	6	3.5	1

Body (Short Cutting Edge type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**WRX 3050RS2722**	▲	**50**	27	40	50	**22**	10.4	6.3	20	18	11	—	8	2	4	0.4	2
	3063RS2722	▲	**63**	27	50	50	**22**	10.4	6.3	20	18	11	—	10	2	5	0.7	2

Body (Short Cutting Edge type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Inch	**WRX 3080R27254**	▲	*80	27	60	50	**25.4**	9.5	6	25	35	26	13	12	2	6	1.1	3
	3100R27317	▲	*100	27	70	63	**31.75**	12.7	8	32.5	46	28	17	14	2	7	2.0	3

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

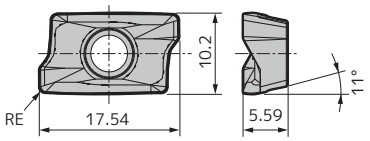
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		M S		K N	N		
	Medium Cutting		P M	P M	K		M S	M S		N		
	Roughing		P M	P M		K		M S				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 170508PEER-L		●	●	●	●	●	—	—	—	—	0.8	1
AXMT 170504PEER-G		●	●	●	●	●	—	—	—	—	0.4	1
170508PEER-G		●	●	●	●	●	—	—	—	—	0.8	1
170512PEER-G		●	●	●	●	●	—	—	—	—	1.2	1
170516PEER-G		●	●	●	●	●	—	—	—	—	1.6	1
170520PEER-G*		●	●	●	●	●	—	—	—	—	2.0	1
170530PEER-G*		●	●	●	●	●	—	—	—	—	3.0	1
AXMT 170508PEER-H		●	●	●	●	●	—	—	—	—	0.8	1
170512PEER-H		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 170504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
170508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
170512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
170516PEER-E		—	—	—	—	—	▲	▲	—	—	1.6	1
170520PEER-E*		—	—	—	—	—	▲	▲	—	—	2.0	1
170530PEER-E*		—	—	—	—	—	▲	▲	—	—	3.0	1
AXMT 170508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H97

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
	N·m			
BFTX0409IP	3.0	HPS1015	TRB15IP	SUMI-P

* Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

*Modification of the cutter body is required when using inserts with corner radius RE 2.0 or 3.0.



Modify this portion.

Reworking guidelines

For RE = 2.0: C1 (AXMT170520PEER)

For RE = 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

WRX 2000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	13° to 16°
	Axial	16° to 24°

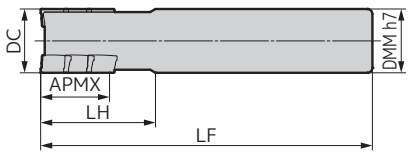
18-36mm 90°

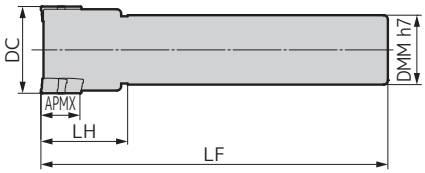
Shoulder Milling | Groove Milling | Side Milling

Fig 1



Fig 2





Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WRX 2020E3620	▲	**20**	36	20	45	130	4	4	1	0.3	1
2025E2725	▲	**25**	27	25	45	130	6	3	2	0.4	1
2032E2732	▲	**32**	27	32	45	130	9	3	3	0.7	1
2040E3642	▲	**40**	36	42	45	130	16	4	4	1.2	1

Body (Short Cutting Edge type)

Dimensions (mm)

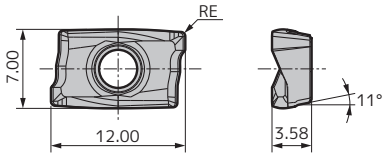
Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WRX 2020E1820	▲	**20**	18	20	40	120	4	2	2	0.3	1
2025E1825	▲	**25**	18	25	45	130	6	2	3	0.4	1
2032E1832	▲	**32**	18	32	50	140	8	2	4	0.8	1
2040E1832	▲	**40**	18	32	40	160	10	2	5	1.1	2

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		MS		KN	N		
	Medium Cutting		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 123504PEER-G		●	●	●	●	●	—	—	—	—	0.4	1
123508PEER-G		●	●	●	●	●	—	—	—	—	0.8	1
123512PEER-G		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 123504PEER-H		●	●	●	●	●	—	—	—	—	0.4	1
123508PEER-H		●	●	●	●	●	—	—	—	—	0.8	1
123512PEER-H		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 123504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
123508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
123512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
AXMT 123508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 123502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
123504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
123508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



-G: General-purpose, -H: Strong Edge, -E, -EH: Exotic Alloy, -S: Aluminum Alloy.

Recommended Cutting Conditions H97

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	SUMI-P

* Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Identification Code

WRX	2	020	E	36	20
Series Code	Insert Size	Dia.	Shank type	Cutting Edge Length	Shank Dia.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

SEC-Wave Repeater

WRX 3000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	12° to 13°
	Axial	20° to 22°

27-53mm 90°

Shoulder Milling | Groove Milling | Side Milling



Fig 1

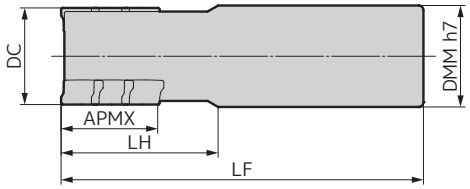
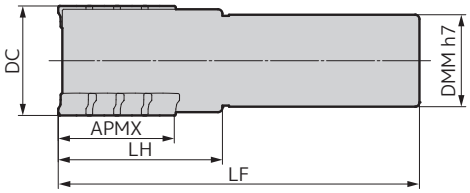


Fig 2



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WRX 3040E4042	▲	**40**	40	42	65	150	9	3	3	1.3	1
3050E5342	▲	**50**	53	42	75	165	12	4	3	1.8	2

Body (Short Cutting Edge type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
WRX 3040E2732	▲	**40**	27	32	60	180	6	2	3	1.2	2
3050E2732	▲	**50**	27	32	60	180	8	2	4	1.4	2

Inserts are sold separately.

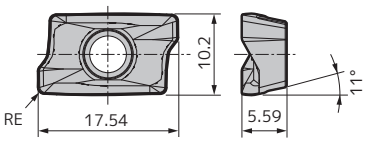
Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light Cutting	P			K		MS		KN	N		
	Medium Cutting		PM	PM	K		MS	MS		N		
	Roughing		PM	PM		K		MS				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Corner Radius RE	Fig
AXMT 170508PEER-L		●	●	●	●	●	—	—	—	—	0.8	1
AXMT 170504PEER-G		●	●	●	●	●	—	—	—	—	0.4	1
170508PEER-G		●	●	●	●	●	—	—	—	—	0.8	1
170512PEER-G		●	●	●	●	●	—	—	—	—	1.2	1
170516PEER-G		●	●	●	●	●	—	—	—	—	1.6	1
170520PEER-G*		●	●	●	●	●	—	—	—	—	2.0	1
170530PEER-G*		●	●	●	●	●	—	—	—	—	3.0	1
AXMT 170508PEER-H		●	●	●	●	●	—	—	—	—	0.8	1
170512PEER-H		●	●	●	●	●	—	—	—	—	1.2	1
AXMT 170504PEER-E		—	—	—	—	—	▲	▲	—	—	0.4	1
170508PEER-E		—	—	—	—	—	▲	▲	—	—	0.8	1
170512PEER-E		—	—	—	—	—	▲	▲	—	—	1.2	1
170516PEER-E		—	—	—	—	—	▲	▲	—	—	1.6	1
170520PEER-E*		—	—	—	—	—	▲	▲	—	—	2.0	1
170530PEER-E*		—	—	—	—	—	▲	▲	—	—	3.0	1
AXMT 170508PEER-EH		—	—	—	—	—	▲	▲	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

* marked inserts require modification of the cutter body.

Fig 1



Recommended Cutting Conditions H97

Identification Code

WRX **3** **040** **E** **40** **42**

Series Code	Insert Size	Dia.	Shank type	Cutting Edge Length	Shank Dia.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0409IP	3.0	TRDR15IP	SUMI-P

* Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

***Modification of the cutter body is required when using inserts with corner radius RE 2.0 or 3.0.**



Modify this portion.

Reworking guidelines

For RE = 2.0: C1
(AXMT170520PEER)

For RE = 3.0: C1.5
(AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

WSE series



■ Features

- Ideal for machining titanium alloys for aerospace
  Designed for machining at large ramping angles, coupled with a selection of corner radiuses, makes it applicable for a variety of applications including titanium structural parts
- Stable and long tool life in machining titanium alloys
  The optimised cutting edge shape together with newly developed ACS1000/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

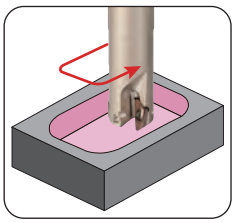
■ Product Range

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		

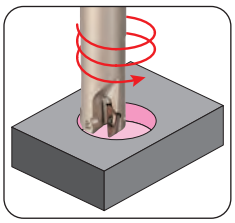
Number in ●● shows the number of teeth

■ Applicable to various applications!

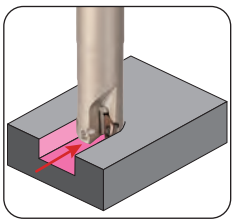
Pocket Expansion



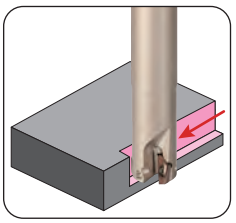
Helical Milling



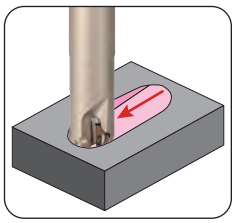
Groove Milling



Shoulder Milling

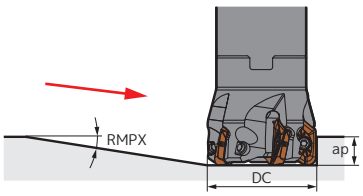


Ramping

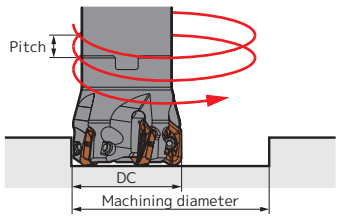


■ Ramping/Helical Milling Upper Limit

Ramping



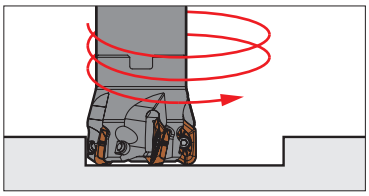
Helical Milling



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. Machining Dia. ø (mm)	Max. Pitch (mm/rev)	Standard Diameter 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 Helical Milling



Helical Milling

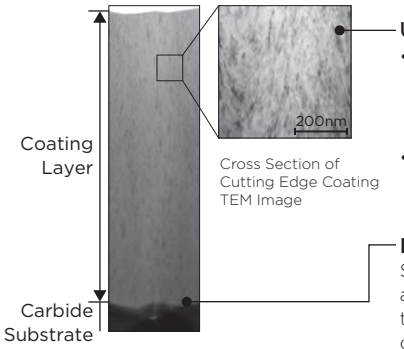
- For helical milling, if the work diameter is smaller than the standard diameter, there will be a centre uncut portion.
- A prepared centre hole should be made.
- Above the standard diameter, this portion can be removed by traverse cutting with the same cutter.

■ Grade Features

Work Material	Grade	Coating Thickness (μm)	Features
S Exotic Alloy, M Stainless Steel	New ACS1000	3	• For high-efficiency milling of exotic alloys • High-hardness carbide substrate coupled with a chipping-resistant coating provides long and stable tool life in high-speed, high-efficiency machining applications
	ACS2500	3	Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping resistant coating, provide outstanding performance, especially in machining **titanium alloys**
	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**

New PVD Coating Layer Features

ABSOTECH PVD

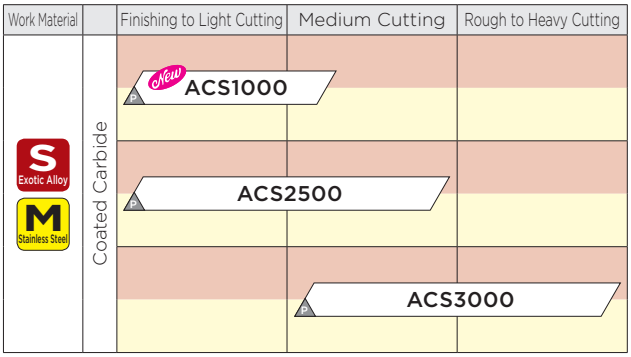


Ultra-fine Grained B Additive
- New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
- Outstanding balance of chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

■ Grade Application Range

Lineup includes **ACS1000/ACS2500/ACS3000** grades, ideal for machining titanium alloys, heat-resistant alloys and stainless steel



■ Chipbreaker Shape

Work Material	M Stainless Steel, S Exotic Alloy
Applications	General-purpose to Roughing
Features	Standard
Chipbreaker	**E type**
Cutting Edge Cross Section	15°

■ Excellent Chip Control

Cutting Conditions	Chip	
vc = 60m/min fz = 0.12mm/t ap = 10mm ae = 21mm Wet (7MPa) Ramping Angle: 0°	Stable Chip Control **WSE series**	Unstable Chips Competitor's Product
vc = 50m/min fz = 0.12mm/t ap = 4mm ae = 50mm Wet (7MPa) Ramping Angle: 3°	Stable Chip Control **WSE series**	Unstable Chips Competitor's Product
vc = 50m/min fz = 0.12mm/t ap = 4mm ae = 50mm Wet (7MPa) Ramping Angle: 5.5°	Stable Chip Control **WSE series**	× 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)

WSE 16000RS type

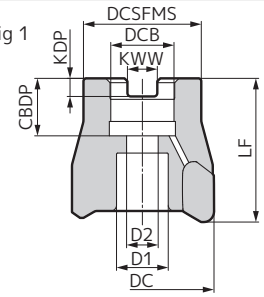
Rake Angle		
	Radial	-9° to -6°
	Axial	8° to 14°

15mm 90°

Shoulder Milling | Groove Milling | Ramping | Helical Milling



Fig 1



Body (Shell type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WSE 16050RS05**	●	**50**	41	40(38.5)	22	10.4	6.3	20	18	11	5	0.24	1
	16050RS05L	●	**50**	41	50(48.5)	22	10.4	6.3	20	18	11	5	0.33	1
	16063RS06	●	**63**	50	40(38.5)	22	10.4	6.3	20	18	11	6	0.46	1
	16063RS06L	●	**63**	50	50(48.5)	22	10.4	6.3	20	18	11	6	0.61	1

The LF dimensions in parentheses are dimensions using RE = 5.0 or larger inserts. When using RE = 5.0 or larger inserts, the maximum depth of cut is 13mm.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Identification Code

WSE	16	050	R	S	05	L
Series Code	Insert Size	Dia.	Feed Direction	Metric Bore	Number of Teeth	Long Body

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
				
BFTX0409IP	3.0	HPS1015	TRB15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

WSE 16000RS type

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	M S	M S			
	Medium Cutting		M S	M S		
	Roughing			M S		
Cat. No.		ACS1000 (New)	ACS2500	ACS3000	Corner Radius RE	Fig
XOMT 160508PEER-E			●	●	0.8	1
160512PEER-E			●	●	1.2	1
160516PEER-E			●	●	1.6	1
160520PEER-E			●	●	2	1
160530PEER-E			●	●	3	1
160540PEER-E			●	●	4	1
160550PEER-E*			●	●	5	2
160560PEER-E*			●	●	6	2
160564PEER-E*			●	●	6.35	2

Fig 1

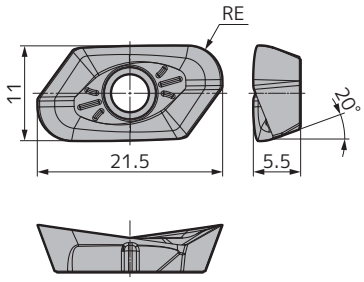
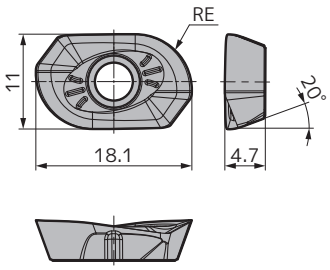


Fig 2



* marked inserts require modification of the cutter body.

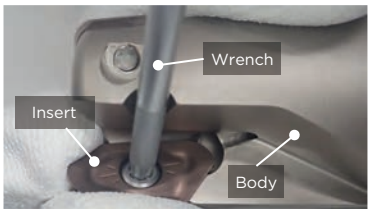
Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.

(2) While pressing the insert firmly against the seat surface, tighten the screws with the included wrench.

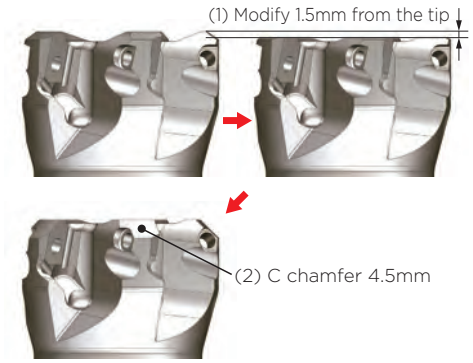
(3) Apply Anti-seizure Cream to the screws and tighten at the recommended torque.

(4) After tightening, check that there are no gaps on the seat surface.





* Modification of the cutter body is required when using inserts with corner radius RE 5.0 or larger.



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	E	25 - **35** - 50	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		Ti Alloy	—	E	30 - **60** - 90	0.05 - **0.10** - 0.15	ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E	115 - **145** - 175	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240	E	105 - **130** - 155	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180	E	125 - **155** - 190	0.05 - **0.10** - 0.15	ACS2500/ACS3000

● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

Note 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.

WSE 16000E type

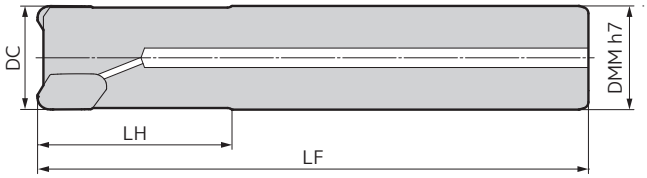
Rake	Radial	-9°
Angle	Axial	8°

15mm 90°

Shoulder Milling | Groove Milling | Ramping | Helical Milling



Fig 1



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WSE 16032E03	●	**32**	32	60(58.4)	170(168.4)	3	0.9	1

The LH and LF dimensions in parentheses are dimensions using RE = 5.0 or larger inserts. When using RE = 5.0 or larger inserts, the maximum depth of cut is 13mm.
Inserts are sold separately.

Identification Code

WSE **16** **032** **E** **03**

WSE	16	032	E	03
Series Code	Insert Size	Dia.	Shank type	Number of Teeth

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0409IP	**3.0**	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

WSE 16000E type

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	M S	M S	
	Medium Cutting		M S	M S
	Roughing			M S

Cat. No.	ACS1000 (New)	ACS2500	ACS3000	Corner Radius RE	Fig
XOMT 160508PEER-E		●	●	0.8	1
160512PEER-E		●	●	1.2	1
160516PEER-E		●	●	1.6	1
160520PEER-E		●	●	2	1
160530PEER-E		●	●	3	1
160540PEER-E		●	●	4	1
160550PEER-E*		●	●	5	2
160560PEER-E*		●	●	6	2
160564PEER-E*		●	●	6.35	2

Fig 1

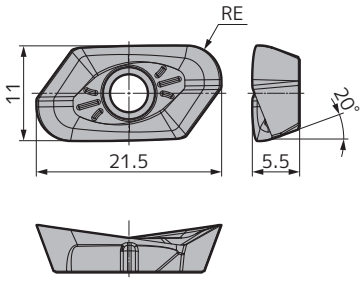
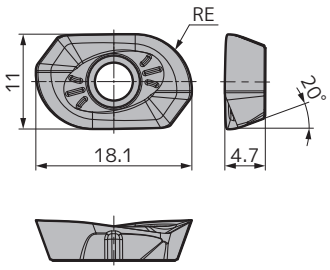


Fig 2



* marked inserts require modification of the cutter body.

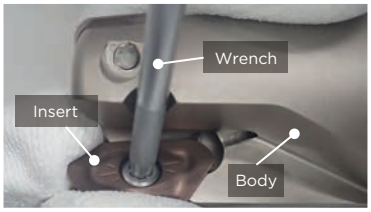
Precautions for Mounting Inserts

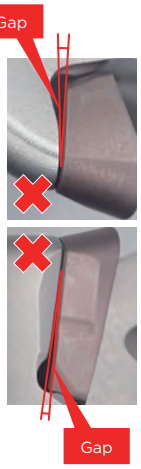
(1) Clean the mounting seat surface and contact parts.

(2) While pressing the insert firmly against the seat surface, tighten the screws with the included wrench.

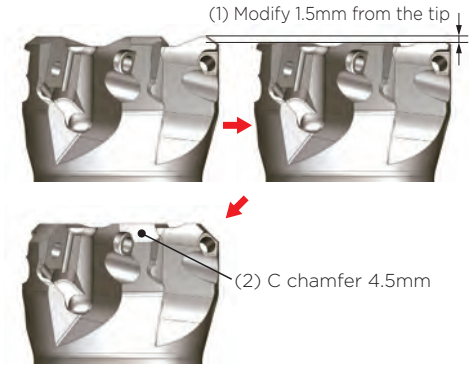
(3) Apply Anti-seizure Cream to the screws and tighten at the recommended torque.

(4) After tightening, check that there are no gaps on the seat surface.





* Modification of the cutter body is required when using inserts with corner radius RE 5.0 or larger.



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	E	25 - **35** - 50	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		Ti Alloy	—	E	30 - **60** - 90	0.05 - **0.10** - 0.15	ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	E	115 - **145** - 175	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240	E	105 - **130** - 155	0.05 - **0.10** - 0.15	ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180	E	125 - **155** - 190	0.05 - **0.10** - 0.15	ACS2500/ACS3000

● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

Note 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.

SEC-WaveMill

WFX series

VIDEO OF CUTTING

Expansion



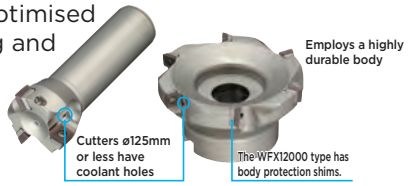
■ Features

SEC-WaveMill WFX series for shoulder milling is a screw-lock type cutter capable of using four corners.
Ideal cutting edge design delivers good squareness.
Now with high-efficiency, multi-functional WFXH type and chamfering WFXC type, our comprehensive range covers a wide variety of applications.
Expansion of the new grade ACS series, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.

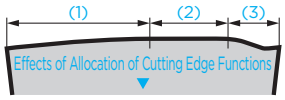


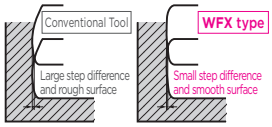
WFXH type WFXC type

The insert shape optimised for shoulder milling and the high-precision body leave a superior machined surface finish.



● Optimised Edge Shape (For Shoulder Milling)





(1) : The convex shape ensures **cutting edge strength**
(2) : The flat shape reduces step **differences in shoulder milling**
(3) : The wiper edge function improves **the surface roughness**

■ Product Range

Applications	Type	Cat. No.	Description	Dia. (mm) ø8	ø16	ø20	ø22	ø25	ø28	ø30	ø32	ø33	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250	Shape
Shoulder Milling	Shell	WFX 08000R (inch)	Standard Pitch													6	8					
		WFX 08000RS	Standard Pitch										3	4	5	6	8					
		WFXM 08000R (inch)	Fine Pitch													8	10					
		WFXM 08000RS	Fine Pitch										4	5	6	8	10					
		WFXF 08000R (inch)	Extra Fine Pitch													10	12					
		WFXF 08000RS	Extra Fine Pitch										6	7	8	10	12					
		WFX 12000R (inch)	Standard Pitch													4	5	6	8	10	12	
		WFX 12000RS	Standard Pitch											3	4	4	5					
		WFXF 12000R (inch)	Extra Fine Pitch													6	7	8	12	16	18	
		WFXF 12000RS	Extra Fine Pitch											4	5	6	7					
	Shank	WFX 08000E	Standard Pitch			2*	2	2*	2	3	3	3	3	4	5							
		WFXM 08000E	Fine Pitch					3			4		4	5	6							
		WFX 12000E	Standard Pitch										3	3	4	4						
		WFXF 12000E	Extra Fine Pitch											4	5	6						
	Modular	WFX 08000M	Modular type			2	2	2	2	3	3		3									
High Efficiency	Shell	WFXH 08000RS	Standard Pitch										4	5 6	6							
		WFXH 12000RS	Standard Pitch											4	5							
	Modular	WFXH 08000M	Modular type					2			3											
		WFXH 12000M	Modular type										3									
Chamfering	Shank	WFXC 08000E	Standard Pitch	1	2																	
		WFXC 12000E	Standard Pitch					3			3											
	Modular	WFXC 08000M	Modular type		2																	
		WFXC 12000M	Modular type					3			3											





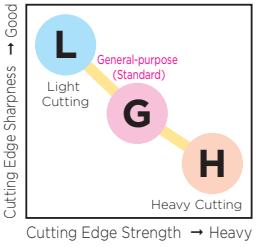


■ Chipbreaker Selection

Number in ●●● shows the number of teeth (inch) Inch Bore *mark: Different diameter shanks available Modular type ☞H264

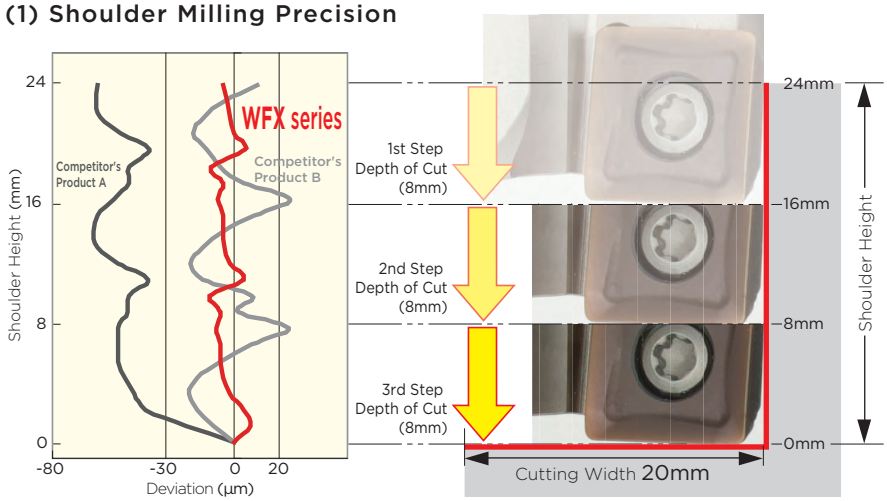
Work Material	P M K S				N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	High-precision Finish	For Non-Ferrous Metals
Features	Low Cutting Force	General-purpose type	High Strength type	Wiper	Sharp Edge
	L type	G type	H type	Wiper Insert	S type
Chipbreaker					
08 type Cross Section	0.05mm 20°	0.1mm 15°	0.15mm 10°	0.18mm 15°	25°
12 type Cross Section	0.05mm 25°	0.1mm 15°	0.2mm 15°	0.2mm 15°	27°

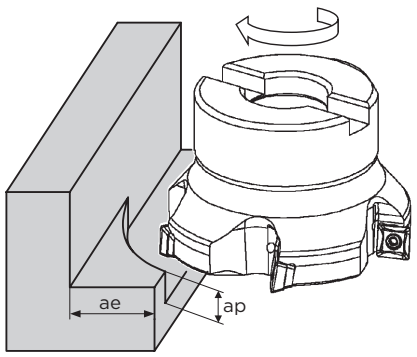
■ Chipbreaker Selection Guide



■ Cutting Performance

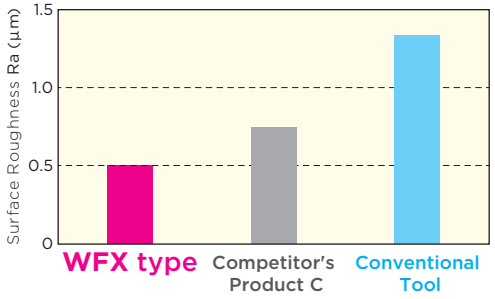
(1) Shoulder Milling Precision





Work Material : S50C Tool: WFX12100R (ø100 x 5 teeth)
Cutting Conditions : vc = 200m/min, fz = 0.15mm/t,
ap = 8.0mm x 3 Passes, ae = 20mm

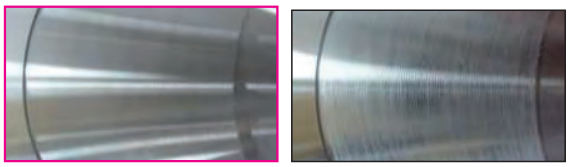
(2) Comparison of Surface Roughness



Work Material : SCM440 Tool: WFX12100R (ø100 x 5 teeth)
Cutting Conditions : vc = 200m/min, fz = 0.10mm/t,
ap = 3.0mm, ae = 90mm

(3) Comparison of Surface Properties

Work Material : S50C
Cutting Conditions: ap = 0.5mm



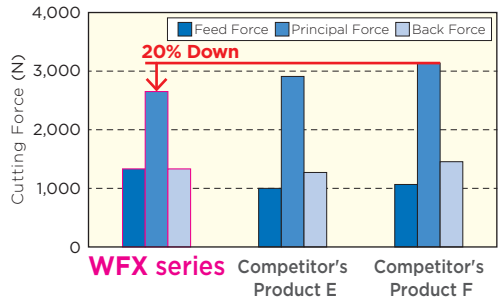
Glossy without Clouding | Clouded without Gloss

Work Material : SUS304
Cutting Conditions: ap = 0.5mm



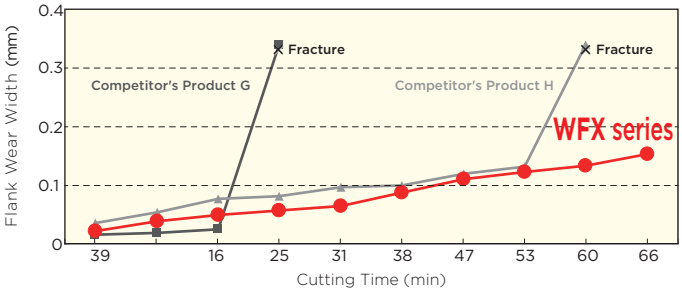
WFX series | Competitor's Product D

(4) Comparison of Cutting Force



Work Material : S50C Tool: WFX12100R (ø100 x 5 teeth)
Cutting Conditions : vc = 200m/min, fz = 0.15mm/t,
ap = 10mm, ae = 20mm

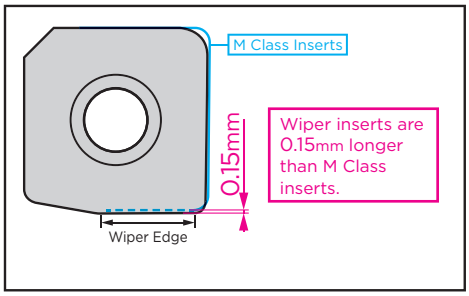
(5) Comparison of Wear Resistance

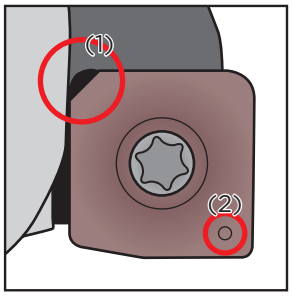


Work Material : SCM440 Tool: WFX12100R (ø100 x 1 tooth evaluation)
Cutting Conditions : vc = 200m/min, fz = 0.15mm/t,
ap = 5.0mm, ae = 30mm

■ Wiper Insert

Optimised wiper edge shape provides superior surface roughness.





Precautions when Using Wiper Inserts

- The wiper insert has a single corner specification.
- Attach the wiper insert so that the chamfered corner is in location (1) shown in the figure.
- Use the corner with the ID mark. (2)
  (08-size inserts have no marks.)
- Refer to page N25 for details about wiper inserts.

WFX 08000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling



Fig 1

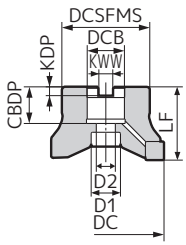


Fig 2

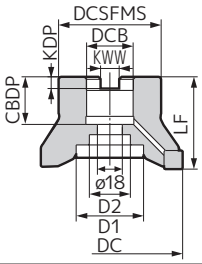
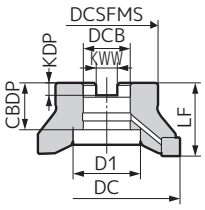


Fig 3



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WFX 08040RS	●	40	33	40	16	8.4	5.6	18	14	9	3	0.2	1
	08050RS	●	50	41	40	22	10.4	6.3	20	18	11	4	0.3	1
	08063RS	●	63	50	40	22	10.4	6.3	20	18	11	5	0.6	1
	08080RS	●	*80	55	50	27	12.4	7	22	20	14	6	1.0	1
	08100RS	●	100	70	50	32	14.4	8	32	46	—	8	1.4	3
Inch	WFX 08080R	●	*80	55	50	25.4	9.5	6	25	20	14	6	1.0	1
	08100R	●	*100	70	63	31.75	12.7	8	32	46	27	8	1.9	2

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	K M S	P			K		M S	M S		M S		K N	N			
	Medium Cutting	K M S		P M	P M	K			M S	M S	M S	M S		N	P M		
	Roughing	K M S		P M	P M		K			M S		M S			P		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●				▲	▲	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		0.8	1
080312PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
080312PZER-H		●	●	●	●	●	●			●	▲	▲	—	—		1.2	1
SOET 080304PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	0.4	1
080308PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	●	0.8	1
080312PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 080308PZTR-W		●	—	—	—		●						—	—	●	—	2

Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Fig 1

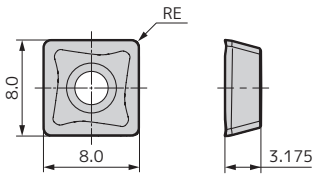
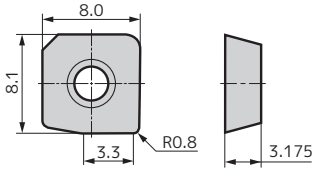


Fig 2 Wiper Insert



Identification Code

WFX Series Code | **08** Insert Size | **040** Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WFXM 08000R(S) type

P Steel · M Stainless Steel · K Cast Iron · N Non-Ferrous Metal · S Exotic Alloy

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Face Milling · Shoulder Milling · Groove Milling · Side Milling · Plunge Milling



Fig 1

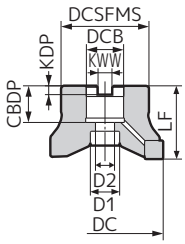


Fig 2

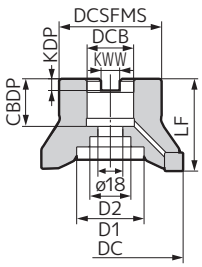
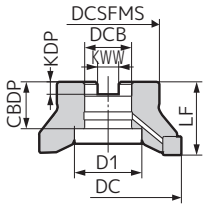


Fig 3



Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXM 08040RS**	●	**40**	33	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	08050RS	●	**50**	41	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	08063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.5	1
	08080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	8	1.0	1
	08100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	10	1.4	3
Inch	**WFXM 08080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	8	1.0	1
	08100R	●	***100**	70	63	**31.75**	12.7	8	32	46	27	10	1.9	2

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	S P	P			K		M S	M S		M S		K N	N			
	Medium Cutting	S P		P M	P M	K			M S	M S	M S	M S		N	P M		
	Roughing	S P		P M	P M		K			M S		M S			P		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●				▲	▲	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		0.8	1
080312PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
080312PZER-H		●	●	●	●	●	●			●	▲	▲	—	—		1.2	1
SOET 080304PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	0.4	1
080308PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	●	0.8	1
080312PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 080308PZTR-W		●	—	—	—		●						—	—	●	—	2

Fig 1

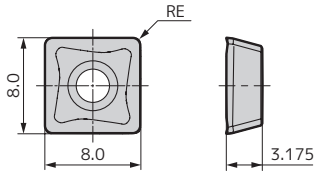
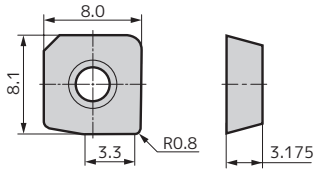


Fig 2 **Wiper Insert**



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX Series Code · **M** Fine Pitch · **08** Insert Size · **040** Dia. · **R** Feed Direction · **S** Metric Bore

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30-**50**-80	0.08-**0.13**-0.18	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WFXF 08000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-6°
	Axial	12°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling



Fig 1

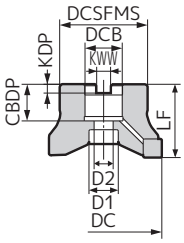


Fig 2

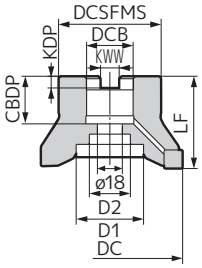
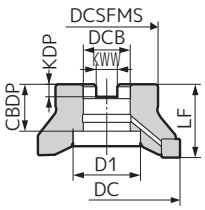


Fig 3



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WFXF 08040RS	●	40	33	40	16	8.4	5.6	18	14	9	6	0.2	1
	08050RS	●	50	41	40	22	10.4	6.3	20	18	11	7	0.3	1
	08063RS	●	63	50	40	22	10.4	6.3	20	18	11	8	0.5	1
	08080RS	●	*80	55	50	27	12.4	7	22	20	14	10	0.9	1
	08100RS	●	100	70	50	32	14.4	8	32	46	—	12	1.4	3
Inch	WFXF 08080R	●	*80	55	50	25.4	9.5	6	25	20	14	10	1.0	1
	08100R	●	*100	70	63	31.75	12.7	8	32	46	27	12	1.9	2

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting																
	Medium Cutting																
	Roughing																
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●				▲	▲	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		0.8	1
080312PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
080312PZER-H		●	●	●	●	●	●			●	▲	▲	—	—		1.2	1
SOET 080304PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	0.4	1
080308PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	●	0.8	1
080312PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 080308PZTR-W		●	—	—	—		●						—	—	●	—	2

Fig 1

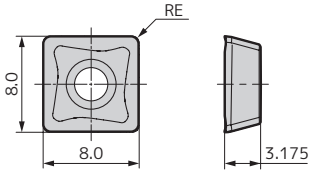
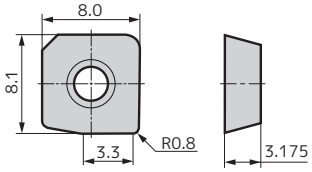


Fig 2 Wiper Insert



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX Series Code | **F** Extra Fine Pitch | **08** Insert Size | **040** Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0306IP	2.0	TRDR08IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note · 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.
· For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

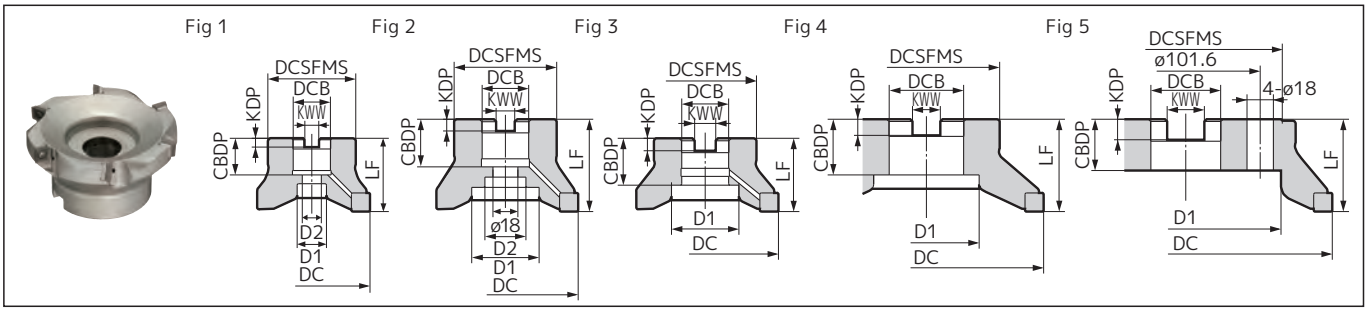
WFX 12000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-8°
	Axial	8°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFX 12050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	3	0.3	1
	12063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	12080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	4	0.9	1
	12100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	5	1.3	3
Inch	**WFX 12080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	4	0.9	1
	12100R	●	***100**	70	63	**31.75**	12.7	8	32	46	27	5	1.7	2
	12125R	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	6	2.4	1
	12160R	●	**160**	100	63	**50.8**	19.1	11	38	72	—	8	3.6	4
	12200R	●	**200**	130	63	**47.625**	25.4	14	35	135	—	10	6.8	5
	12250R	●	**250**	130	63	**47.625**	25.4	14	35	160	—	12	9.5	5

Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	S	P			K		M S	M S		M S		K N	N			
	Medium Cutting	S		P M	P M	K			M S	M S	M S	M S		N	P M		
	Roughing	S		P M	P M		K			M S		M S			P		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.4	1
120408PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
120412PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	1.2	1
120416PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 120408PDTR-W		●	—	—	—	—	●						—	—	●	—	2

Fig 1

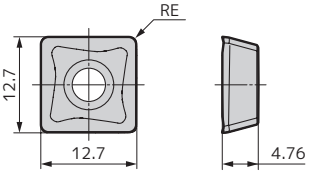
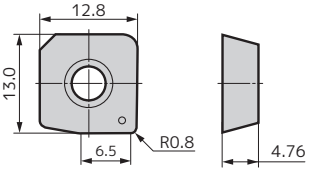


Fig 2 Wiper Insert

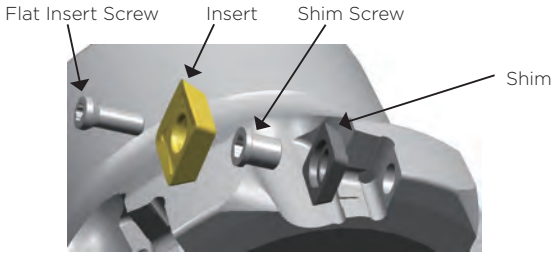


Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX **12** **050** **R** **S**

Series Code | Insert Size | Dia. | Feed Direction | Metric Bore



Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
					N·m				
DC ø50 to 125	WFXS4R	BW0507F	LH035	BFTX03512IP	3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	
	Die Steel	200 to 220HB	100-**150**-200	0.10-**0.15**-0.20	< 6	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.15**-0.20	< 10	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WFXF 12000R(S) type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle	Radial	-8°
	Axial	8°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling

Fig 1



Fig 2

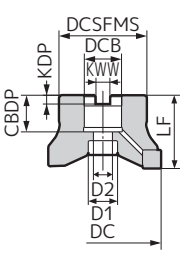


Fig 3

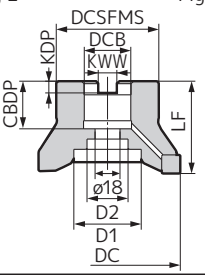


Fig 4

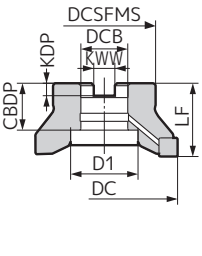
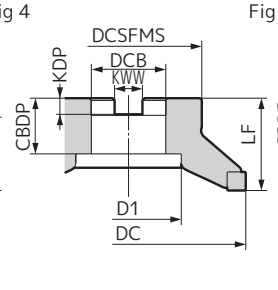


Fig 5



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXF 12050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	5	0.5	1
	12080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	6	0.9	1
	12100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	7	1.3	3
Inch	**WFXF 12080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	6	0.9	1
	12100R	●	***100**	70	63	**31.75**	12.7	8	32	46	27	7	1.7	2
	12125R	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	8	2.3	1
	12160R	●	**160**	100	63	**50.8**	19.1	11	38	72	—	12	3.5	4
	12200R	●	**200**	130	63	**47.625**	25.4	14	35	135	—	16	6.7	5
	12250R		**250**	130	63	**47.625**	25.4	14	35	160	—	18	9.5	5

Inserts are sold separately. Sizes ø160mm and above do not have coolant holes.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	M S	P			K		M S	M S		M S		K N	N			
	Medium Cutting	M S		P M	P M	K			M S	M S	M S	M S		N	P M		
	Roughing	M S		P M	P M		K			M S		M S			P		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.4	1
120408PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
120412PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	1.2	1
120416PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 120408PDTR-W		●	—	—	—	—	●						—	—	●	—	2

Fig 1

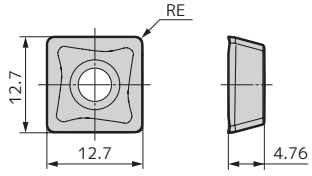
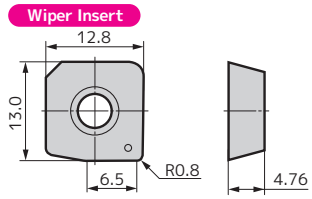


Fig 2 Wiper Insert

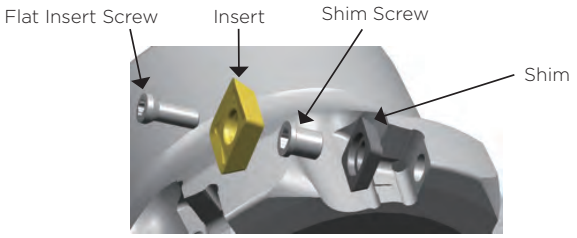


Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX **F** **12** **050** **R** **S**

Series Code | Extra Fine Pitch | Insert Size | Dia. | Feed Direction | Metric Bore



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	
	Die Steel	200 to 220HB	100-**150**-200	0.10-**0.15**-0.20	< 6	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.15**-0.20	< 10	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
DC ø50 to 125	WFXS4R	BW0507F	LH035	BFTX03512IP	**3.0**	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WFX 08000E type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling



Fig 1

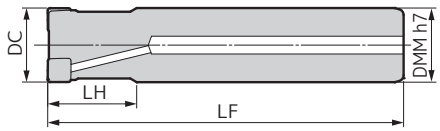
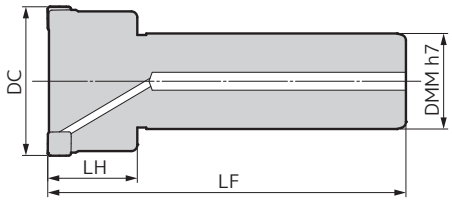


Fig 2



Body (Standard Pitch)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WFX 08020E-16	●	**20**	16	30	110	2	1
08020E	●	**20**	20	30	110	2	1
08022E	●	**22**	20	30	120	2	1
08025E-20	●	**25**	20	30	120	2	1
08025E	●	**25**	25	30	120	2	1
08028E	●	**28**	25	30	120	2	1
08030E	●	**30**	25	30	120	3	1
08032E	●	**32**	32	30	120	3	1
08033E	●	**33**	32	30	120	3	1
08040E	●	**40**	32	30	120	3	2
08050E	●	**50**	32	30	120	4	2
08063E	●	**63**	32	30	120	5	2

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
WFXM 08025E	●	**25**	25	30	120	3	1
08032E	●	**32**	32	30	120	4	1
08040E	●	**40**	32	30	120	4	2
08050E	●	**50**	32	30	120	5	2
08063E	●	**63**	32	30	120	6	2

Inserts are sold separately.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K		M S	M S		M S		K N	N			
	Medium Cutting			P M	P M	K			M S	M S	M S	M S		N	P M		
	Roughing			P M	P M		K			M S		M S			P		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●				▲	▲	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		0.8	1
080312PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
080312PZER-H		●	●	●	●	●	●			●	▲	▲	—	—		1.2	1
SOET 080304PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	0.4	1
080308PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	●	0.8	1
080312PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 080308PZTR-W		●	—	—	—		●						—	—	●	—	2

Fig 1

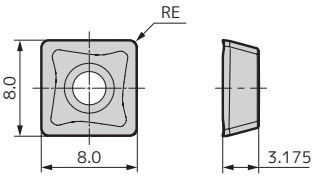
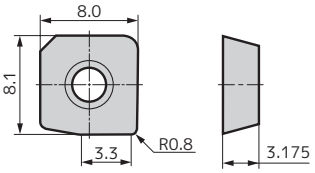


Fig 2 Wiper Insert



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).

Identification Code

WFX Series Code | **M** Fine Pitch | **08** Insert Size | **025** Dia. | **E** Shank type

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
P	Die Steel	200 to 220HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WFX(F) 12000E type

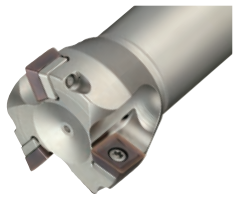
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

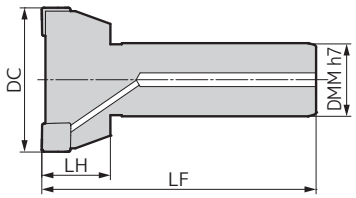
Rake Angle	Radial	-8°
	Axial	8°

10mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling | Plunge Milling

Fig 1





Body (Standard Pitch)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFX 12040E	●	**40**	32	30	120	3	0.68	1
12050E	●	**50**	32	30	120	3	0.78	1
12063E	●	**63**	32	30	120	4	0.94	1
12080E	●	**80**	32	30	120	4	1.29	1

Inserts are sold separately. ø40mm size does not have shims.

Body (Extra Fine Pitch)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFXF 12050E	●	**50**	32	30	120	4	0.78	1
12063E	●	**63**	32	30	120	5	0.96	1
12080E	●	**80**	32	30	120	6	1.22	1

Inserts are sold separately.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	●	●			●		●	●		●		●			
	Medium Cutting	●		●	●	●			●	●	●	●		●		
	Roughing	●		●	●		●			●		●			●	
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.4	1
120408PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
120412PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	1.2	1
120416PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 120408PDTR-W		●	—	—	—	—	●						—	—	●	—	2

Fig 1

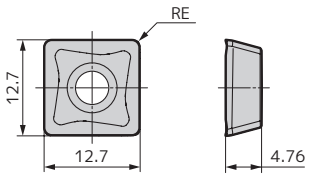
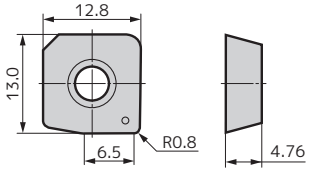
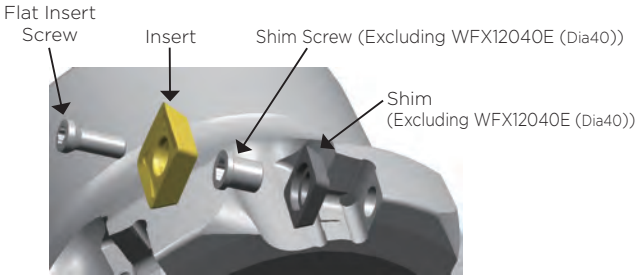


Fig 2 Wiper Insert



Refer to page H109 "Precautions when Using Wiper Inserts" (Mounting Precautions).



Identification Code

WFX	F	12	050	E
Series Code	Extra Fine Pitch	Insert Size	Dia.	Shank type

Parts

Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WFXS4R	BW0507F	LH035	BFTX03512IP	3.0	TRDR15IP	SUMI-P

ø40mm size does not have shims.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grades
P	General Steel	180 to 280HB	150-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	
	Die Steel	200 to 220HB	100-**150**-200	0.10-**0.15**-0.20	< 6	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACK200 ACK300
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.15**-0.20	< 10	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

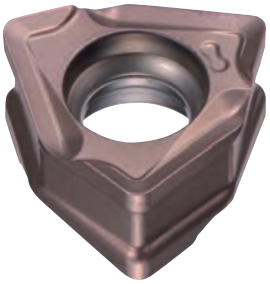
N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Expansion

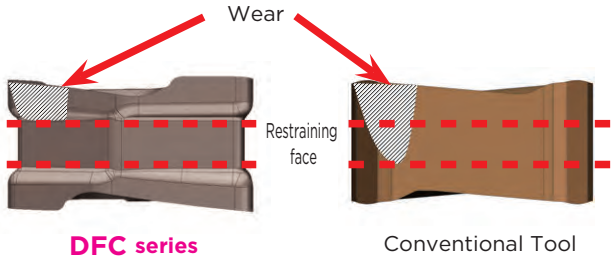


■ Features

- The high-efficiency general-purpose/shoulder milling SEC-Sumi Dual Mill DFC series cutter has a unique insert shape with both excellent sharpness and cutting edge strength, enabling it to be used for a wider range of applications from high-efficiency machining through to finishing.
  Further expansion of the shoulder milling GS type chipbreaker, suitable for a wide range of applications.
- Applicable to various work materials
  Expansion of the new grade ACS series, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.



Unique insert shape provides both sharpness and cutting edge strength



Flank wear of inserts for DFC series does not reach the restraining face and thus mounting accuracy does not suffer

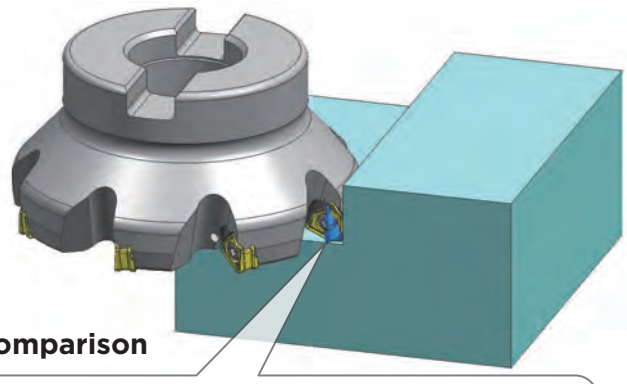


The 90° cutting angle is suitable for both face milling and shoulder milling

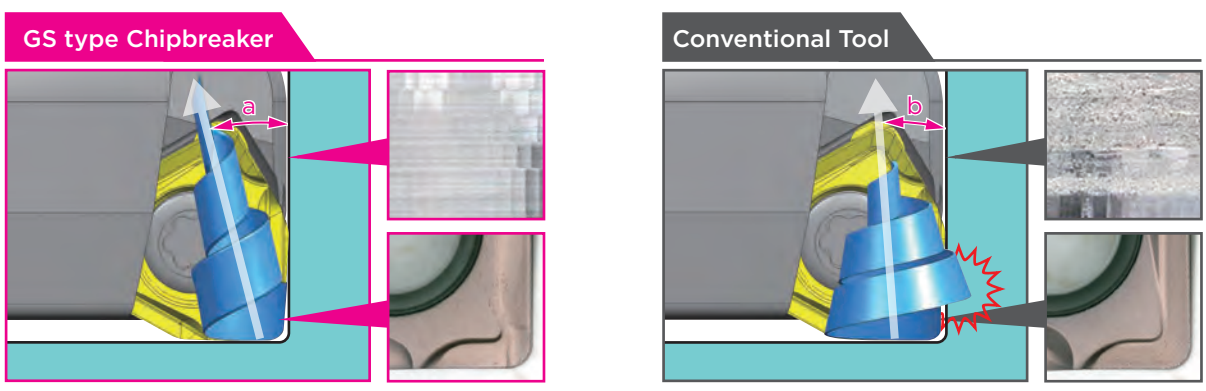
GS type Chipbreaker for Shoulder Milling

- Excellent chip control
- Suppresses machined surface deterioration due to chip biting

Work Material : S50C, Tool: ø100mm
Cutting Conditions : vc = 200m/min, fz = 0.2mm/t, ae = 50mm, ap = 3mm x 6 Passes, Dry

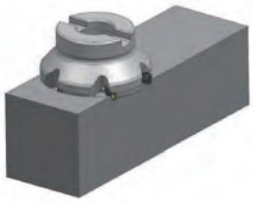


Chip generation image and machined surface comparison



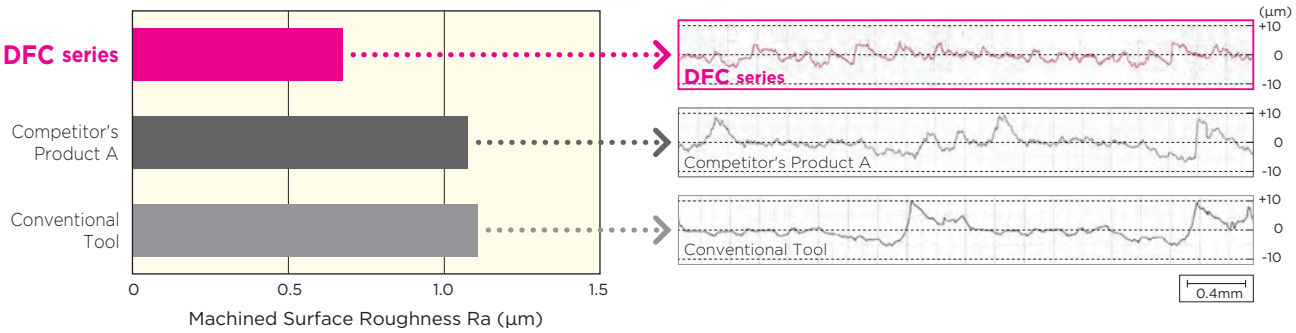
Chip flow direction control (a > b) → chip biting suppressed

■ Cutting Performance



Face Milling

(1) Machined surface roughness:
Better than competitors' products



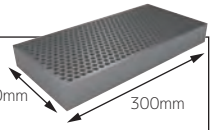
Work Material: S50C Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: vc=200 m/min, fz=0.2 mm/t, ap=3 mm, ae=85 mm, Dry

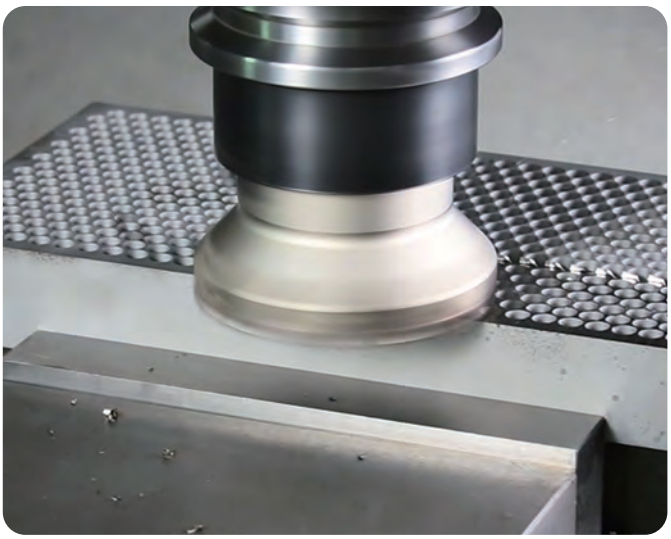
(2) Cutting edge strength / Cutting edge damage during heavy interrupted cutting:
Cutting edge strength surpasses competitors' double-sided cutters

	fz(mm/t)		
	0.3	0.4	0.5
DFC series	○	○	○
Competitor's Product B (Double-sided, 6 Corners)	○	Damage (Midway through 2 passes)	
Competitor's Product C (Double-sided, 6 Corners)	Damage (Midway through 3 passes)		
Competitor's Product D (Double-sided tangential)	Damage (Midway through 3 passes)		

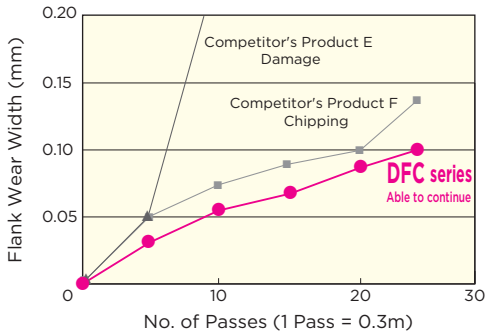
(Cutting Distance: 0.9m)

Work Material: S50C (With Holes)
Tool: DFC 09100RS
Insert: XNMU 060608PNER-G Grade: ACP300
Cutting Conditions: vc = 150m/min, ap = 3mm, ae = 50mm, Dry

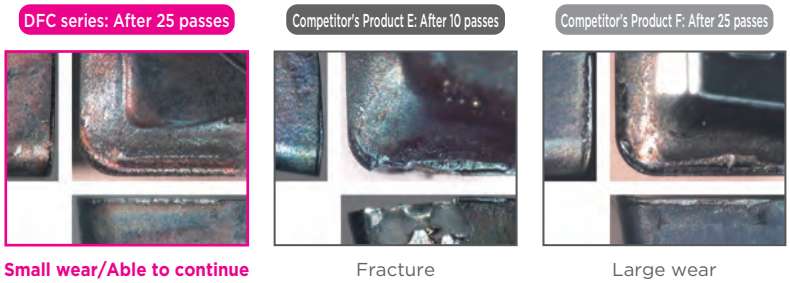




(3) Wear resistance: **Achieves long tool life thanks to excellent wear resistance**



Comparison of cutting edge damage

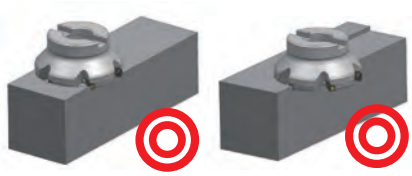


Small wear/Able to continue | Fracture | Large wear

Work Material: S50C Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: vc=200 m/min, fz=0.2 mm/t, ap=3 mm, ae=85 mm, Dry

■ Applications and Recommended Chipbreakers

Face Milling	Shoulder Milling	Side Milling	Helical Milling	Ramping
G	GS	G/GS		



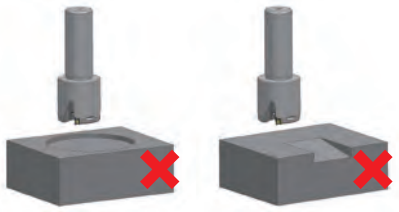
Guidelines for Shoulder Milling Conditions

Maximum Radial Depth of Cut
G type: ae ≦ 10% of cutter diameter
GS type: ae ≦ 50% of cutter diameter

Recommended Axial Depth of Cut
ap = 3mm

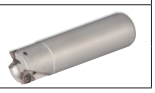
Recommended Feed Rate
fz ≦ 0.2mm/t
(for general steel)





⚠ Applications which are not applicable

■ Product Range

Type	Cat. No.	Description	Dia. (mm) ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	Shape
Shell	DFC 09000R (Inch)	Standard Pitch						5	6	7	8	10	
Shell	DFC 09000RS	Standard Pitch				4	4	5	6	7	8	10	
Shell	DFCM 09000R (Inch)	Fine Pitch						7	8	11	12	16	
Shell	DFCM 09000RS	Fine Pitch				5	6	7	8	11	12	16	
Shell	DFCF 09000R (Inch)	Extra Fine Pitch						9	11	14	16	20	
Shell	DFCF 09000RS	Extra Fine Pitch				6	7	9	11	14	16	20	
Shank	DFC 09000E	Standard Pitch	2	2	3	3*	4*	5*					
Shank	DFCM 09000E	Fine Pitch		3	4	5*	6*	7*					

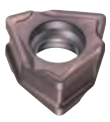
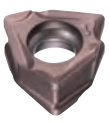
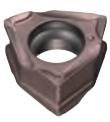
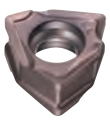
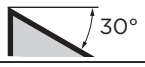
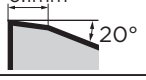
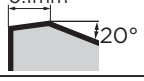
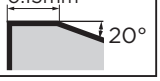
Number in ●● shows the number of teeth (Inch) Inch Bore *mark: Different diameter shanks available

■ Insert Grades

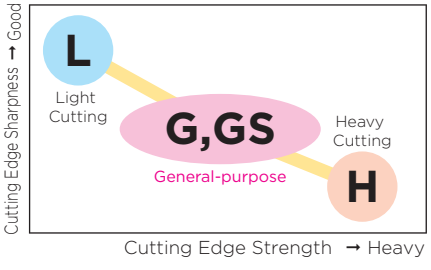
Lineup featuring the general-purpose ACU2500 grade suitable for various work materials.
Lineup of Steel Milling Grades ACP100/ACP200/ACP300, Stainless Steel Milling Grades ACM200/ACM300, Cast Iron Milling Grades ACK200/ACK300 and more to suit a wide range of work materials.



■ Chipbreaker Selection

Work Material	P M K S			
Application	Light Cutting	General-purpose to Interrupted Milling	Shoulder Milling	Heavy Cutting
Features	Low Rigidity Milling, Reduction of Burrs	Face Milling	Shoulder Milling	Heavy Side Milling, Hardened Steel
Chipbreaker	L type	G type	GS type	H type
				
Cutting Edge Cross Section	 30°	 0.1mm 20°	 0.1mm 20°	 0.15mm 20°

■ Chipbreaker Selection Guide



■ Insert Mounting Precautions



No Gap

Make sure there is no gap



Gap

Place the insert face flat onto the cutter's insert pocket and tighten the flat insert screw with the recommended torque.

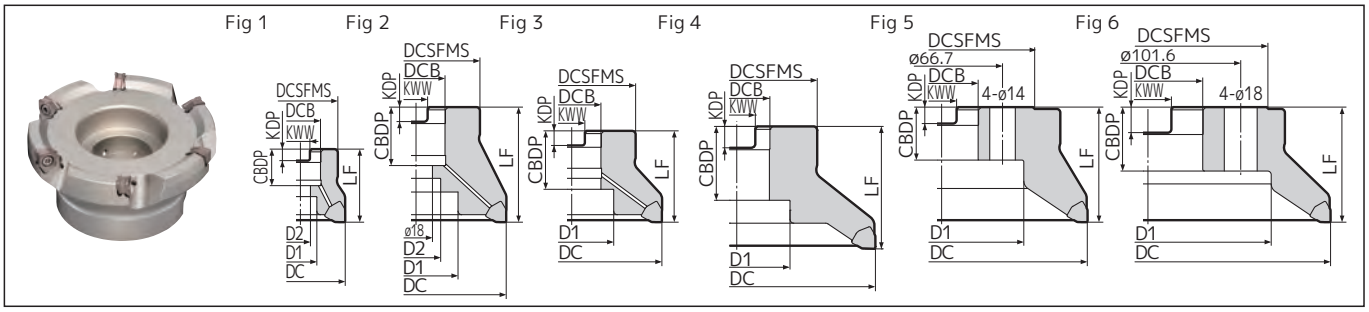
DFC 09000R(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFC 09050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	09063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	09080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	5	1.0	1
	09100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	6	1.4	3
	09125RS	●	**125**	80	63	**40**	16.4	9	29	52	29	7	2.8	1
	09160RS	●	**160**	100	63	**40**	16.4	9	29	90	—	8	4.6	5
	09200RS	●	**200**	130	63	**60**	25.7	14	35	135	—	10	5.7	6
Inch	**DFC 09080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	5	1.0	1
	09100R	●	***100**	70	63	**31.75**	12.7	8	32	46	27	6	2.0	2
	09125R	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	7	2.8	1
	09160R	●	**160**	100	63	**50.8**	19.1	11	38	72	—	8	3.6	4
	09200R	●	**200**	130	63	**47.625**	25.4	14	35	135	—	10	6.0	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

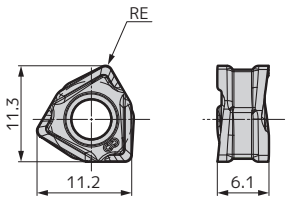
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting	MS	PM			K		MS	MS		MS			
	Medium Cutting	MS	PM	PM		K			MS	MS	MS	MS		
	Roughing	MS		PM	PM		K			MS		MS		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		●	—	●	●	—	●				—	▲	0.4	1
060608PNER-L		●	—	●	●	—	●		●	●	—	▲	0.8	1
XNMU 060604PNER-G		●	●	●	●	●	●			●	▲	▲	0.4	1
060608PNER-G		●	●	●	●	●	●		●	●	▲	▲	0.8	1
060612PNER-G		●	●	●	●	●	●				▲	▲	1.2	1
060616PNER-G		●	●	●	●	●	●				▲	▲	1.6	1
XNMU 060604PNER-GS		●	●	●	●						▲	▲	0.4	1
060608PNER-GS		●	●	●	●						▲	▲	0.8	1
060612PNER-GS		●	●	●	●						▲	▲	1.2	1
060616PNER-GS		●	●	●	●						▲	▲	1.6	1
XNMU 060608PNER-H		●	●	●	●	●	●				▲	▲	0.8	1
060612PNER-H		●	●	●	●	●	●				▲	▲	1.2	1
060616PNER-H		●	●	●	●	●	●				▲	▲	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC **09** **050** **R** **S**

Series Code	Insert Size	Dia.	Feed Direction	Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
DC ø50 to 125	BFTX03512IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above			TRDR15IP	—	—	

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300
S	Exotic Alloy	-	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

For shoulder milling, the GS type chipbreaker is recommended.
Use at ae ≤ 50% of cutter diameter and fz ≤ 0.2mm/t.

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

DFCM 09000R(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

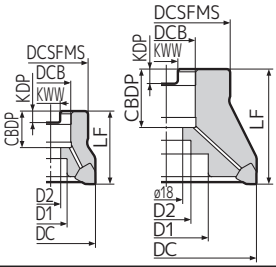


Fig 2

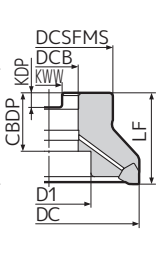


Fig 3

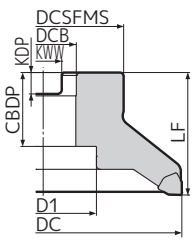


Fig 4

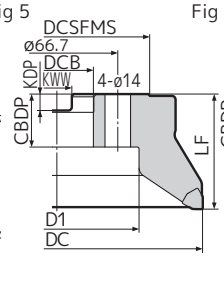


Fig 5

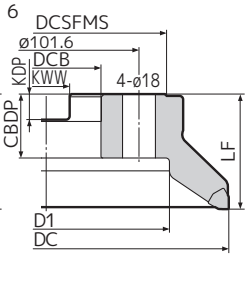


Fig 6

Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFCM 09050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	09063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.5	1
	09080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	7	0.9	1
	09100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	8	1.4	3
	09125RS	●	**125**	80	63	**40**	16.4	9	29	52	29	11	2.7	1
	09160RS	●	**160**	100	63	**40**	16.4	9	29	90	—	12	4.5	5
	09200RS	●	**200**	130	63	**60**	25.7	14	35	135	—	16	5.6	6
Inch	**DFCM 09080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	7	0.9	1
	09100R	●	***100**	70	63	**31.75**	12.7	8	32	46	27	8	1.9	2
	09125R	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	11	2.7	1
	09160R	●	**160**	100	63	**50.8**	19.1	11	38	72	—	12	3.5	4
	09200R	●	**200**	130	63	**47.625**	25.4	14	35	135	—	16	5.9	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

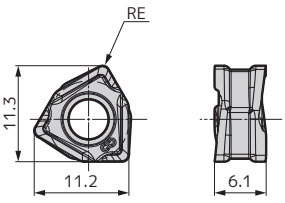
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting	MS	PM			K		MS	MS		MS			
	Medium Cutting	MS	PM	PM		K			MS	MS	MS	MS		
	Roughing	MS		PM	PM		K			MS		MS		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		●	—	●	●	—	●				—	▲	0.4	1
060608PNER-L		●	—	●	●	—	●		●	●	—	▲	0.8	1
XNMU 060604PNER-G		●	●	●	●	●	●			●	▲	▲	0.4	1
060608PNER-G		●	●	●	●	●	●		●	●	▲	▲	0.8	1
060612PNER-G		●	●	●	●	●	●				▲	▲	1.2	1
060616PNER-G		●	●	●	●	●	●				▲	▲	1.6	1
XNMU 060604PNER-GS		●	●	●	●						▲	▲	0.4	1
060608PNER-GS		●	●	●	●						▲	▲	0.8	1
060612PNER-GS		●	●	●	●						▲	▲	1.2	1
060616PNER-GS		●	●	●	●						▲	▲	1.6	1
XNMU 060608PNER-H		●	●	●	●	●	●				▲	▲	0.8	1
060612PNER-H		●	●	●	●	●	●				▲	▲	1.2	1
060616PNER-H		●	●	●	●	●	●				▲	▲	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC **M** **09** **050** **R** **S**

DFC	M	09	050	R	S
Series Code	Fine Pitch	Insert Size	Dia.	Feed Direction	Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
DC ø50 to 125	BFTX03512IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above			TRDR15IP	—	—	

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300
S	Exotic Alloy	-	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

For shoulder milling, the GS type chipbreaker is recommended.
Use at ae ≤ 50% of cutter diameter and fz ≤ 0.2mm/t.

Note · 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.
· For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

DFCF 09000R(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

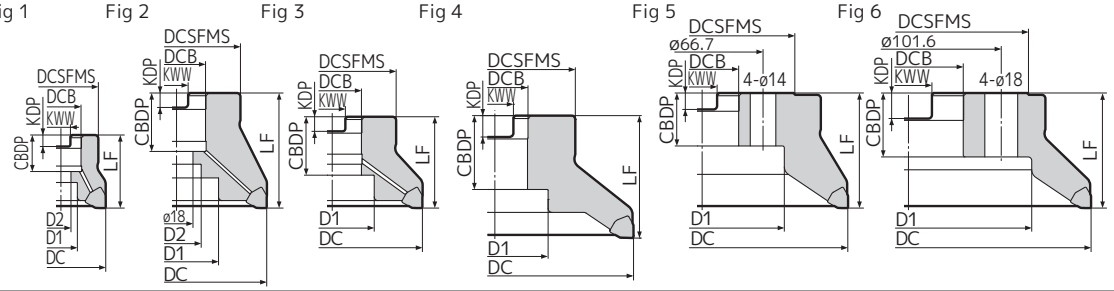
Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFCF 09050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	09063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	7	0.5	1
	09080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	9	0.9	1
	09100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	11	1.3	3
	09125RS	●	**125**	80	63	**40**	16.4	9	29	52	29	14	2.6	1
	09160RS	●	**160**	100	63	**40**	16.4	9	29	90	—	16	4.5	5
	09200RS	●	**200**	130	63	**60**	25.7	14	35	135	—	20	5.5	6
Inch	**DFCF 09080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	9	0.9	1
	09100R	●	***100**	70	63	**31.75**	12.7	8	32	46	27	11	1.9	2
	09125R	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	14	2.7	1
	09160R	●	**160**	100	63	**50.8**	19.1	11	38	72	—	16	3.5	4
	09200R	●	**200**	130	63	**47.625**	25.4	14	35	135	—	20	5.8	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

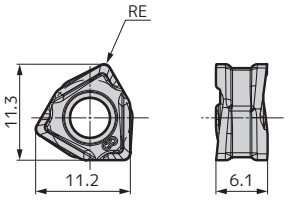
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting	MS	PM			K		MS	MS		MS			
	Medium Cutting	MS	PM	PM		K			MS	MS	MS	MS		
	Roughing	MS		PM	PM		K			MS		MS		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		●	—	●	●	—	●				—	▲	0.4	1
060608PNER-L		●	—	●	●	—	●		●	●	—	▲	0.8	1
XNMU 060604PNER-G		●	●	●	●	●	●			●	▲	▲	0.4	1
060608PNER-G		●	●	●	●	●	●		●	●	▲	▲	0.8	1
060612PNER-G		●	●	●	●	●	●				▲	▲	1.2	1
060616PNER-G		●	●	●	●	●	●				▲	▲	1.6	1
XNMU 060604PNER-GS		●	●	●	●						▲	▲	0.4	1
060608PNER-GS		●	●	●	●						▲	▲	0.8	1
060612PNER-GS		●	●	●	●						▲	▲	1.2	1
060616PNER-GS		●	●	●	●						▲	▲	1.6	1
XNMU 060608PNER-H		●	●	●	●	●	●				▲	▲	0.8	1
060612PNER-H		●	●	●	●	●	●				▲	▲	1.2	1
060616PNER-H		●	●	●	●	●	●				▲	▲	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC F 09 050 R S

DFC	F	09	050	R	S
Series Code	Extra Fine Pitch	Insert Size	Dia.	Feed Direction	Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
DC ø50 to 125	BFTX03512IP	N·m 3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above			TRDR15IP	—	—	

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	-	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300
S	Exotic Alloy	-	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

For shoulder milling, the GS type chipbreaker is recommended. Use at ae ≤ 50% of cutter diameter and fz ≤ 0.2mm/t.

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

DFC(M) 09000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

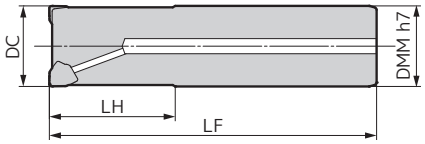
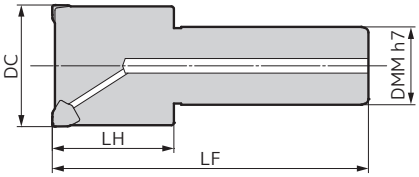


Fig 2



Body (Standard Pitch)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
DFC 09025E	●	**25**	25	40	120	2	1
09032E	●	**32**	32	50	130	2	1
09040E	●	**40**	32	50	130	3	2
09050E	●	**50**	32	50	130	3	2
09050E-42		**50**	42	50	150	3	2
09063E	●	**63**	32	50	130	4	2
09063E-42		**63**	42	50	150	4	2
09080E	●	**80**	32	50	130	5	2
09080E-42		**80**	42	50	150	5	2

Body (Fine Pitch)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Fig
DFCM 09032E	●	**32**	32	50	130	3	1
09040E	●	**40**	32	50	130	4	2
09050E	●	**50**	32	50	130	5	2
09050E-42		**50**	42	50	150	5	2
09063E	●	**63**	32	50	130	6	2
09063E-42		**63**	42	50	150	6	2
09080E	●	**80**	32	50	130	7	2
09080E-42		**80**	42	50	150	7	2

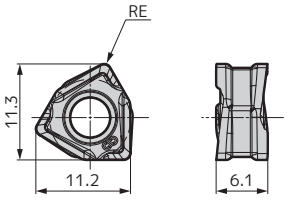
Inserts are sold separately.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting					K								
	Medium Cutting					K								
	Roughing						K							
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		●	—	●	●	—	●				—	▲	0.4	1
060608PNER-L		●	—	●	●	—	●		●	●	—	▲	0.8	1
XNMU 060604PNER-G		●	●	●	●	●	●			●	▲	▲	0.4	1
060608PNER-G		●	●	●	●	●	●		●	●	▲	▲	0.8	1
060612PNER-G		●	●	●	●	●	●				▲	▲	1.2	1
060616PNER-G		●	●	●	●	●	●				▲	▲	1.6	1
XNMU 060604PNER-GS		●	●	●	●						▲	▲	0.4	1
060608PNER-GS		●	●	●	●						▲	▲	0.8	1
060612PNER-GS		●	●	●	●						▲	▲	1.2	1
060616PNER-GS		●	●	●	●						▲	▲	1.6	1
XNMU 060608PNER-H		●	●	●	●	●	●				▲	▲	0.8	1
060612PNER-H		●	●	●	●	●	●				▲	▲	1.2	1
060616PNER-H		●	●	●	●	●	●				▲	▲	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC **M** **09** **025** **E**

Series Code	Fine Pitch	Insert Size	Dia.	Shank type

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX03512IP	**3.0**	TRDR15IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACS3000 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300
S	Exotic Alloy	-	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACS2500 ACS3000 ACM200 ACM300

For shoulder milling, the GS type chipbreaker is recommended. Use at ae ≤ 50% of cutter diameter and fz ≤ 0.2mm/t.

Note · 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.
· For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

Expansion



■ Features

- **Excellent Machined Surface Quality**
  Adopts ground type insert for high accuracy to realise excellent machined surface quality.
- **Cutting Edge Designed for High Cutting Edge Strength and Sharpness**
  Adopts tangential insert and optimised cutting edge shape to achieve both high cutting edge strength and sharpness.
- **Wide Ranging Product Lineup**
  An enhanced lineup of grades is available in addition to 2 types of insert sizes and 3 types of chipbreakers. Can be used for a wide variety of machining applications.
- **Applicable to Various Work Materials**
  Expansion of the new grade ACS series, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.

■ Product Range (Face Mills)

Type	Cat. No.	Description	Dia. (mm) ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250	ø315	Shape
Shell	TSX 08000RS/LS	Standard Pitch					4	5	6	7							
Shell	TSX 08000R/L (Inch)	Standard Pitch								7							
Shell	TSXF 08000RS/LS	Extra Fine Pitch					6	8	10	11							
Shell	TSXF 08000R/L (Inch)	Extra Fine Pitch								11							
Shell	TSX 13000RS/LS	Standard Pitch					3	4	5	5	6	7	8	12	14	16	
Shell	TSX 13000R/L (Inch)	Standard Pitch								5	6	7	8	12	14	16	
Shell	TSXM 13000RS/LS	Fine Pitch					4	5	6	7	8	10	12	16	20	24	
Shell	TSXM 13000R/L (Inch)	Fine Pitch								7	8	10	12	16	20	24	
Shell	TSXF 13000RS/LS	Extra Fine Pitch					5	6	7	8	10	14	16				
Shell	TSXF 13000R/L (Inch)	Extra Fine Pitch								8	10	14	16				
Shank	TSX 08000E	Standard Pitch	2	2*	3*	3*	4	5	6	7							
Shank	TSXF 08000E	Extra Fine Pitch		3	4	5	6	8	10	11							
Shank	TSX 13000E	Standard Pitch			2	2	3	4	5	5							
Shank	TSXM 13000E	Fine Pitch				3	4	5	6	7							
Shank	TSXF 13000E	Extra Fine Pitch					5	6	7	8							

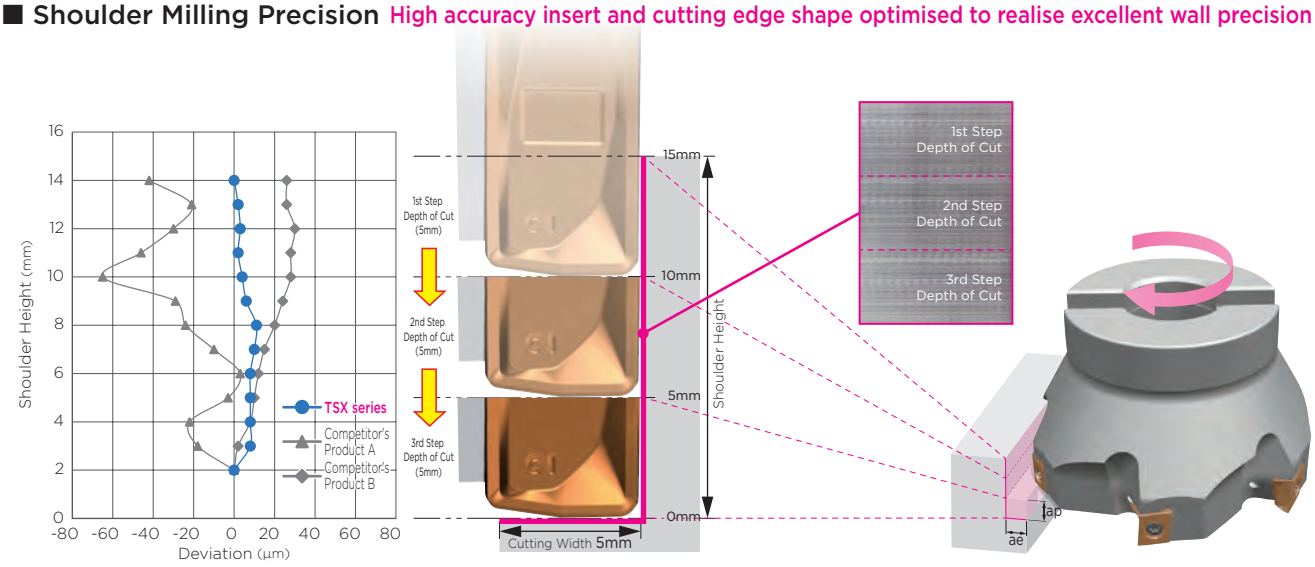
Number in ●● shows the number of teeth (Inch) Inch Bore *mark: Different diameter shanks available.
For the shell type, left-handed tools can also be manufactured.

■ Product Range (Repeaters)

Type	Cat. No.	Dia. (mm) ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	Shape
Shell	TSXR 08000RS			2	3	3 4	5				
Shell	TSXR 13000RS				2	3	3 4	4 5	5 6	7	
Shank	TSXR 08000E	1	2	2	3						
Shank	TSXR 13000E				2	3					

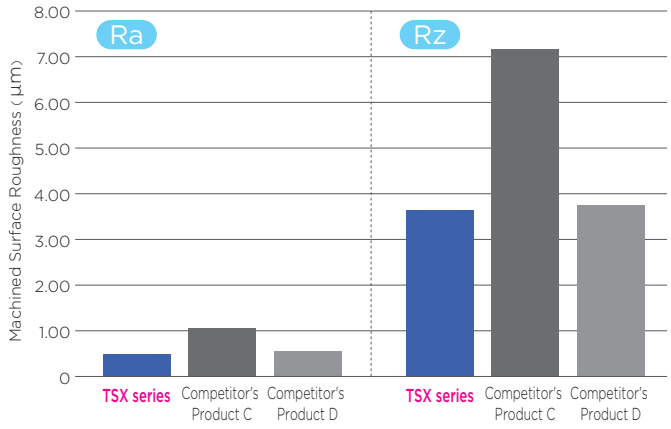
Number in ●● shows the number of teeth

■ Shoulder Milling Precision High accuracy insert and cutting edge shape optimised to realise excellent wall precision



Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions	: vc = 200m/min, fz = 0.2mm/t, ap = 5mm x 3 Passes, ae = 5mm, Dry

■ Machined Surface Roughness Cutting edge shape optimised to realise excellent machined surface roughness

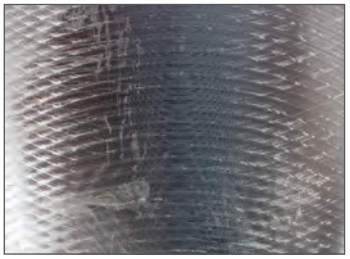


Machined Surface Comparison

TSX series Without Cloudiness



Competitor's Product Cloudy

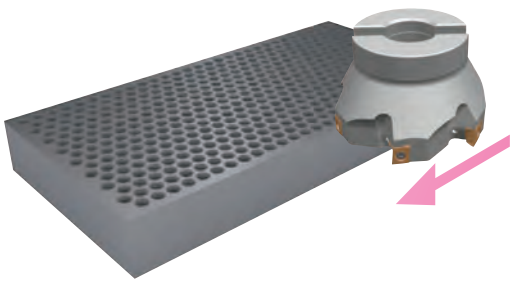


Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions	: vc = 200m/min, fz = 0.2mm/t, ap = 3mm, ae = 60mm, Dry

■ Cutting Edge Strength TSX type has high cutting edge strength and enables high-efficiency machining

1 Pass = 300mm

Cutting Length	4 Passes	8 Passes	12 Passes
TSX series	Continued Machining Possible		
Competitor's Product E	Damage		
Competitor's Product F	Damage		

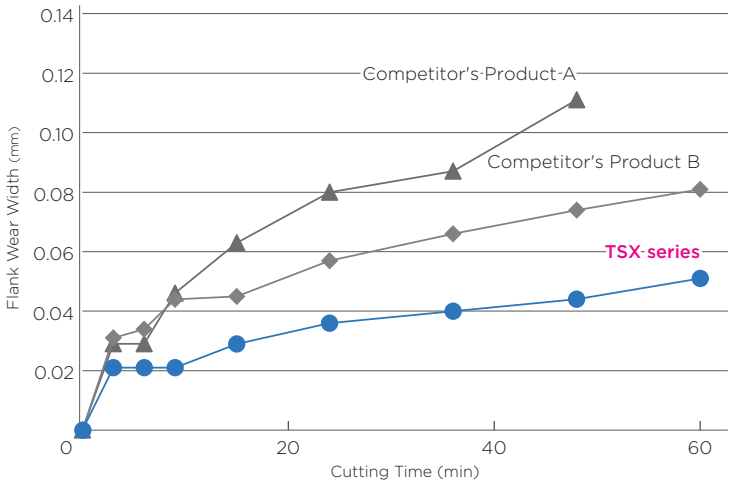


Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions	: vc = 150m/min, fz = 0.6mm/t (Accelerating), ap = 3mm, ae = 40mm, Dry

TSX series

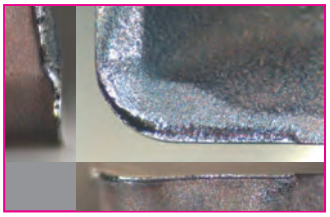
■ Tool Life

Excellent Wear Resistance Realises Stable Tool Life

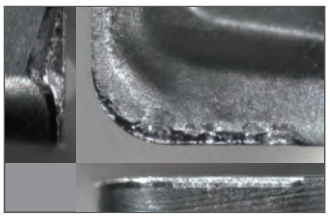


Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 08025E, Insert: LNEX 080408PNER-G (ACP200)
Cutting Conditions	: vc = 200m/min, fz = 0.1mm/t, ap = 2mm, ae = 5mm, Dry

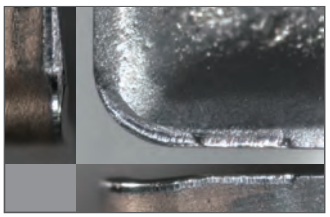
TSX series
(After cutting for 60 minutes)



Competitor's Product A
(After cutting for 48 minutes)

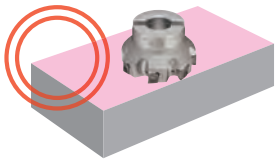


Competitor's Product B
(After cutting for 60 minutes)

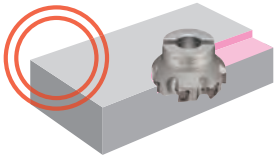


■ Applications

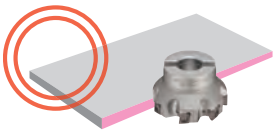
Face Milling



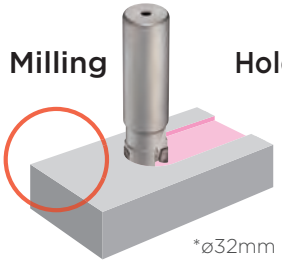
Shoulder Milling



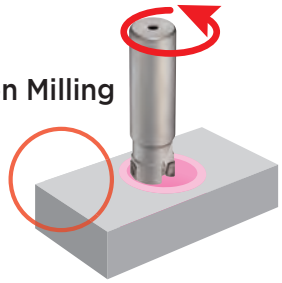
Side Milling



Groove Milling

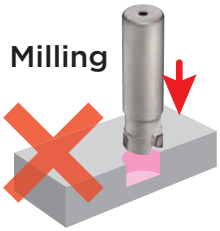


Hole Expansion Milling

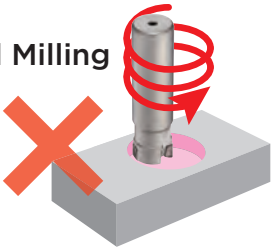


*ø32mm or Less
Standard Pitch Recommended

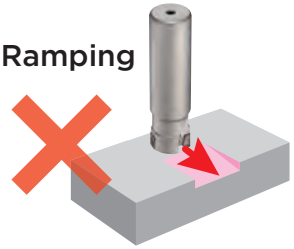
Plunge Milling



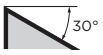
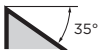
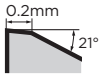
Helical Milling



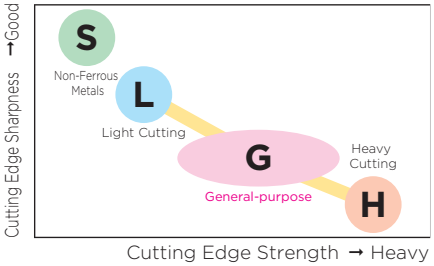
Ramping



■ Chipbreaker Selection

Work Material	P M K S			N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	General-purpose to Interrupted Milling	Heavy Cutting, Heavy Side Milling and Hardened Steel Milling	For Non-Ferrous Metals
Features	Low Cutting Force	General-purpose type	High Strength type	High Rake type
Chipbreaker	**L type**	**G type**	**H type**	**S type**
				
LNEX08 type Cross Section			Not Available	
LNEX13 type Cross Section				

■ Chipbreaker Selection Guide



■ Product Range

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804○○PNER/L-L	●	●	●	●	—	—	—
LNEX 0804○○PNER/L-G	●	●	●	●	—	—	—
LNEX 0804○○PNFR/L-S					—	—	—
LNEX 1306○○PNER/L-L	●	●	●	●	●	●	●
LNEX 1306○○PNER/L-G	●	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●	●
LNEX 1306○○PNFR/L-S							

TSX(F) 08000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-20°
	Axial	-6°

8mm 90°

Face Milling | Shoulder Milling | Side Milling



Fig 1

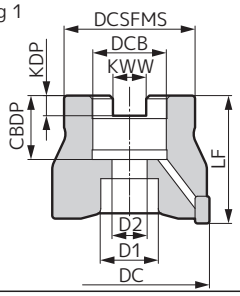


Figure shows right-handed (R) tool.

Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 08040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18	14	9	4	0.21	1
	08050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20	18	11	5	0.30	1
	08063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.53	1
	08080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22	20	14	7	0.99	1
Inch	**TSX 08080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25	20	14	7	1.00	1

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

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

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 08040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18	14	9	6	0.21	1
	08050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20	18	11	8	0.31	1
	08063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20	18	11	10	0.54	1
	08080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22	20	14	11	0.97	1
Inch	**TSXF 08080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25	20	14	11	0.98	1

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

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

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0308IP	2.0	TRDR08IP	SUMI-P

Identification Code

TSX F 08 050 R S

TSX	F	08	050	R	S
Series Code	Extra Fine Pitch	Insert Size	Dia.	R: Right-Hand L: Left-Hand	Metric Bore

N·m Recommended Tightening Torque (N·m)

TSX(F) 08000R/L(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			●		●	●		●			●		
	Medium Cutting	●	●	●		●			●	●	●	●	●	●		
	Roughing	●		●	●		●			●		●				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 080404PNER-L		●		●	●	●	●				▲	▲	—	—	0.4	1
080408PNER-L		●		●	●	●	●				▲	▲	—	—	0.8	1
080412PNER-L		●		●			●				▲	▲	—	—	1.2	1
080416PNER-L		●		●			●				▲	▲	—	—	1.6	1
LNEX 080404PNER-G		●	●	●	●	●	●				▲	▲	—	—	0.4	1
080408PNER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
080412PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.2	1
080416PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.6	1
LNEX 080402PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
080404PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
080408PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
080412PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
080416PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
LNEX 080404PNEL-L				●			●						—	—	0.4	2
080408PNEL-L				●			●						—	—	0.8	2
080412PNEL-L				●			●						—	—	1.2	2
080416PNEL-L				●			●						—	—	1.6	2
LNEX 080404PNEL-G				●		●	●					▲	—	—	0.4	2
080408PNEL-G				●		●	●					▲	—	—	0.8	2
080412PNEL-G				●		●	●						—	—	1.2	2
080416PNEL-G				●		●	●						—	—	1.6	2
LNEX 080402PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.2	2
080404PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.4	2
080408PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.8	2
080412PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.2	2
080416PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.6	2

Fig 1 (Right-Hand)

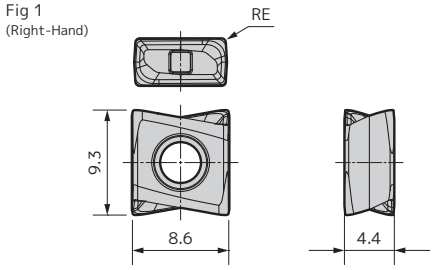
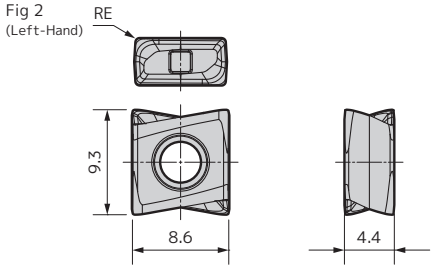


Fig 2 (Left-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.08 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT40 machine tools.

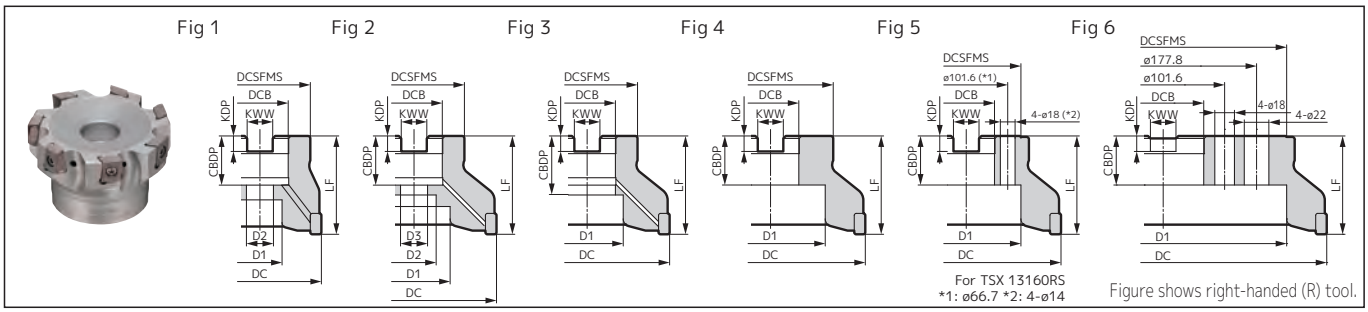
TSX 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-23° to -15°
	Axial	-6°

12mm 90°

Face Milling | Shoulder Milling | Side Milling



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 13040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18.0	14	9	—	3	0.20	1
	13050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20.0	18	11	—	4	0.30	1
	13063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20.0	18	11	—	5	0.50	1
	13080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22.0	20	14	—	5	0.92	1
	13100RS/LS	●		**100**	70	50	**32**	14.4	8.0	32.0	46	—	—	6	1.35	3
	13125RS/LS	●		**125**	80	63	**40**	16.4	9.0	29.0	52	29	—	7	2.55	1
	13160RS/LS	●		**160**	100	63	**40**	16.4	9.0	29.0	90	—	—	8	4.97	5-1, 5-2
	13200RS/LS	●		**200**	130	63	**60**	25.7	14.0	35.0	135	—	—	12	6.20	5
	13250RS/LS	●		**250**	130	63	**60**	25.7	14.0	35.0	160	—	—	14	9.35	5
	13315RS/LS	●		**315**	240	63	**60**	25.7	14.0	35.0	230	—	—	16	16.42	6
Inch	**TSX 13080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	5	0.93	1
	13100R/L	●		***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	6	1.88	2
	13125R/L	●		**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	7	2.61	1
	13160R/L	●		**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	8	4.18	4
	13200R/L	●		**200**	130	63	**47.625**	25.4	14.0	35.0	135	—	—	12	6.36	5
	13250R/L	●		**250**	130	63	**47.625**	25.4	14.0	35.0	160	—	—	14	9.60	5
	13315R/L	●		**315**	240	63	**47.625**	25.4	14.0	35.0	230	—	—	16	16.68	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Identification Code

TSX 13 100 R S

TSX	13	100	R	S
Series Code	Insert Size	Dia.	R: Right-Hand L: Left-Hand	Metric Bore

Parts

Applicable Cutter	Shim	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
TSX 13040RS/LS TSX 13050RS/LS TSX 13063RS/LS TSX 13080RS/LS TSX 13100RS/LS TSX 13125RS/LS TSX 13160RS/LS	—	BFTX03510IP	3.0	—	HPS1015	TRB15IP	SUMI-P
TSX 13200RS/LS TSX 13250RS/LS TSX 13315RS/LS	TSXS13R/L			TRDR15IP	—	—	
TSX 13080R/L TSX 13100R/L TSX 13125R/L TSX 13160R/L	—			—	HPS1015	TRB15IP	
TSX 13200R/L TSX 13250R/L TSX 13315R/L	TSXS13R/L			TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m)

TSX 13000R/L(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	PMS	PM			K		MS	MS		MS			N		
	Medium Cutting	PMS	PM	PM		K			MS	MS	MS	MS	N	N		
	Roughing	PMS		PM	PM		K			MS		MS				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		●		●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-L		●		●	●	●	●				▲	▲	—	—	0.8	1
130612PNER-L		●		●			●				▲	▲	—	—	1.2	1
130616PNER-L		●		●			●				▲	▲	—	—	1.6	1
130620PNER-L		●		●			●				▲	▲	—	—	2.0	1
130624PNER-L		●		●			●				▲	▲	—	—	2.4	1
130632PNER-L		●		●			●				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
130612PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.2	1
130616PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.6	1
130620PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.0	1
130624PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.4	1
130632PNER-G		●	●	●	●	●	●				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		●		●	●	●	●						—	—	0.4	1
130608PNER-H		●		●	●	●	●						—	—	0.8	1
130612PNER-H		●		●	●	●	●						—	—	1.2	1
130616PNER-H		●		●	●	●	●						—	—	1.6	1
130620PNER-H		●		●	●	●	●						—	—	2.0	1
130624PNER-H		●		●	●	●	●						—	—	2.4	1
130632PNER-H		●		●	●	●	●						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1
LNEX 130604PNEL-L				●			●						—	—	0.4	2
130608PNEL-L				●			●						—	—	0.8	2
130612PNEL-L				●			●						—	—	1.2	2
130616PNEL-L				●			●						—	—	1.6	2
130620PNEL-L				●			●						—	—	2.0	2
130624PNEL-L				●			●						—	—	2.4	2
130632PNEL-L				●			●						—	—	3.2	2
LNEX 130604PNEL-G				●		●	●					▲	—	—	0.4	2
130608PNEL-G				●		●	●					▲	—	—	0.8	2
130612PNEL-G				●		●	●						—	—	1.2	2
130616PNEL-G				●		●	●						—	—	1.6	2
130620PNEL-G				●		●	●						—	—	2.0	2
130624PNEL-G				●		●	●						—	—	2.4	2
130632PNEL-G				●		●	●						—	—	3.2	2
LNEX 130602PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.2	2
130604PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.4	2
130608PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.8	2
130612PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.2	2
130616PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.6	2
130620PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.0	2
130624PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.4	2
130632PNFL-S		—	—	—	—	—	—	—	—	—	—	—			3.2	2

Fig 1 (Right-Hand)

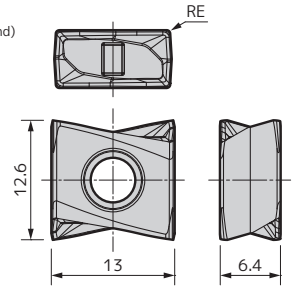
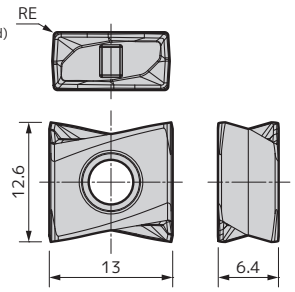


Fig 2 (Left-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
· The above figures are guidelines for use with BT50 machine tools.

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

TSXM 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

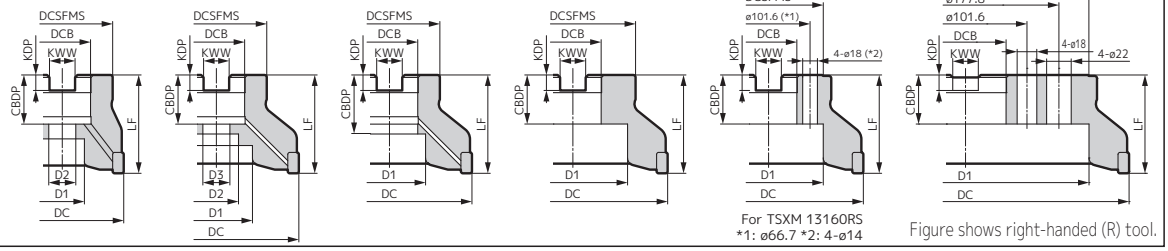
Rake Angle		
	Radial	-23° to 15°
	Axial	-6°

12mm 90°

Face Milling | Shoulder Milling | Side Milling

Fig 1 Fig 2 Fig 3 Fig 4 Fig 5 Fig 6





For TSXM 13160RS
*1: ø66.7 *2: 4-ø14

Figure shows right-handed (R) tool.

Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM 13040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18.0	14	9	—	4	0.19	1
	13050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20.0	18	11	—	5	0.28	1
	13063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20.0	18	11	—	6	0.50	1
	13080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22.0	20	14	—	7	0.92	1
	13100RS/LS	●		**100**	70	50	**32**	14.4	8.0	32.0	46	—	—	8	1.36	3
	13125RS/LS	●		**125**	80	63	**40**	16.4	9.0	29.0	52	29	—	10	2.57	1
	13160RS/LS	●		**160**	100	63	**40**	16.4	9.0	29.0	90	—	—	12	5.02	$5\frac{1}{2}$
	13200RS/LS	●		**200**	130	63	**60**	25.7	14.0	35.0	135	—	—	16	6.32	5
	13250RS/LS	●		**250**	130	63	**60**	25.7	14.0	35.0	160	—	—	20	9.42	5
	13315RS/LS	●		**315**	240	63	**60**	25.7	14.0	35.0	230	—	—	24	16.37	6
Inch	**TSXM 13080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	7	0.93	1
	13100R/L	●		***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	8	1.90	2
	13125R/L	●		**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	10	2.62	1
	13160R/L	●		**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	12	4.22	4
	13200R/L	●		**200**	130	63	**47.625**	25.4	14.0	35.0	135	—	—	16	6.48	5
	13250R/L	●		**250**	130	63	**47.625**	25.4	14.0	35.0	160	—	—	20	9.68	5
	13315R/L	●		**315**	240	63	**47.625**	25.4	14.0	35.0	230	—	—	24	16.63	6

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

Identification Code

TSX M 13 100 R S

TSX	M	13	100	R	S
Series Code	Fine Pitch	Insert Size	Dia.	R: Right-Hand L: Left-Hand	Metric Bore

Parts

Applicable Cutter	Shim	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
TSXM 13040RS/LS TSXM 13050RS/LS TSXM 13063RS/LS TSXM 13080RS/LS TSXM 13100RS/LS TSXM 13125RS/LS TSXM 13160RS/LS	—	BFTX03510IP	3.0	—	HPS1015	TRB15IP	SUMI-P
TSXM 13200RS/LS TSXM 13250RS/LS TSXM 13315RS/LS	TSXS13R/L			TRDR15IP	—	—	
TSXM 13080R/L TSXM 13100R/L TSXM 13125R/L TSXM 13160R/L	—			—	HPS1015	TRB15IP	
TSXM 13200R/L TSXM 13250R/L TSXM 13315R/L	TSXS13R/L			TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m)

TSXM 13000R/L(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC		
Process	High-speed/Light Cutting	MS	PM			K		MS	MS		MS		N		
	Medium Cutting	MS	PM	PM		K			MS	MS	MS	MS	N	N	
	Roughing	MS		PM	PM		K			MS		MS			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		●		●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-L		●		●	●	●	●				▲	▲	—	—	0.8	1
130612PNER-L		●		●			●				▲	▲	—	—	1.2	1
130616PNER-L		●		●			●				▲	▲	—	—	1.6	1
130620PNER-L		●		●			●				▲	▲	—	—	2.0	1
130624PNER-L		●		●			●				▲	▲	—	—	2.4	1
130632PNER-L		●		●			●				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
130612PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.2	1
130616PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.6	1
130620PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.0	1
130624PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.4	1
130632PNER-G		●	●	●	●	●	●				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		●		●	●	●	●						—	—	0.4	1
130608PNER-H		●		●	●	●	●						—	—	0.8	1
130612PNER-H		●		●	●	●	●						—	—	1.2	1
130616PNER-H		●		●	●	●	●						—	—	1.6	1
130620PNER-H		●		●	●	●	●						—	—	2.0	1
130624PNER-H		●		●	●	●	●						—	—	2.4	1
130632PNER-H		●		●	●	●	●						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1
LNEX 130604PNEL-L				●			●						—	—	0.4	2
130608PNEL-L				●			●						—	—	0.8	2
130612PNEL-L				●			●						—	—	1.2	2
130616PNEL-L				●			●						—	—	1.6	2
130620PNEL-L				●			●						—	—	2.0	2
130624PNEL-L				●			●						—	—	2.4	2
130632PNEL-L				●			●						—	—	3.2	2
LNEX 130604PNEL-G				●		●	●					▲	—	—	0.4	2
130608PNEL-G				●		●	●					▲	—	—	0.8	2
130612PNEL-G				●		●	●						—	—	1.2	2
130616PNEL-G				●		●	●						—	—	1.6	2
130620PNEL-G				●		●	●						—	—	2.0	2
130624PNEL-G				●		●	●						—	—	2.4	2
130632PNEL-G				●		●	●						—	—	3.2	2
LNEX 130602PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.2	2
130604PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.4	2
130608PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.8	2
130612PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.2	2
130616PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.6	2
130620PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.0	2
130624PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.4	2
130632PNFL-S		—	—	—	—	—	—	—	—	—	—	—			3.2	2

Fig 1 (Right-Hand)

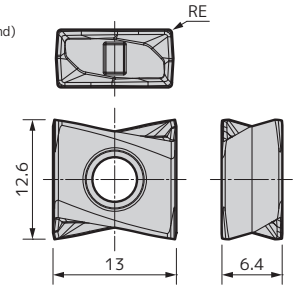
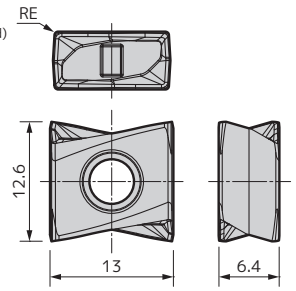


Fig 2 (Left-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
· The above figures are guidelines for use with BT50 machine tools.

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

TSXF 13000R/L(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-23 to -15°
	Axial	-6°

12mm 90°

Face Milling | Shoulder Milling | Side Milling



Fig 1

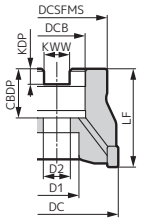


Fig 2

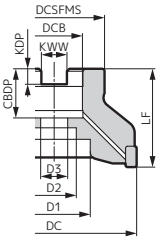


Fig 3

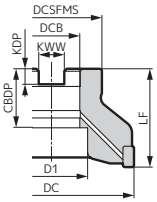


Fig 4

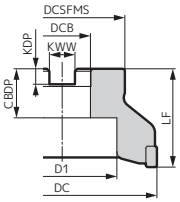


Fig 5

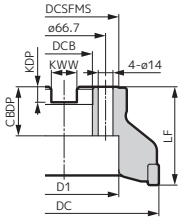


Figure shows right-handed (R) tool.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 13040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18.0	14	9	—	5	0.18	1
	13050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20.0	18	11	—	6	0.29	1
	13063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20.0	18	11	—	7	0.50	1
	13080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22.0	20	14	—	8	0.92	1
	13100RS/LS	●		**100**	70	50	**32**	14.4	8.0	32.0	46	—	—	10	1.34	3
	13125RS/LS	●		**125**	80	63	**40**	16.4	9.0	29.0	52	29	—	14	2.58	1
	13160RS/LS	●		**160**	130	63	**40**	16.4	9.0	29.0	90	—	—	16	5.08	5
Inch	**TSXF 13080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	8	0.93	1
	13100R/L	●		***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	10	1.88	2
	13125R/L	●		**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	14	2.60	1
	13160R/L	●		**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	16	4.28	4

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX **F** **13** **100** **R** **S**

TSX	F	13	100	R	S
Series Code	Extra Fine Pitch	Insert Size	Dia.	R: Right-Hand L: Left-Hand	Metric Bore

Parts

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
TSXF 13040RS/LS	BFTX03510IP	3.0	—	HPS1015	TRB15IP	SUMI-P
TSXF 13050RS/LS						
TSXF 13063RS/LS						
TSXF 13080RS/LS						
TSXF 13100RS/LS						
TSXF 13125RS/LS						
TSXF 13160RS/LS			TRDR15IP	—	—	
TSXF 13080R/L			—	HPS1015	TRB15IP	
TSXF 13100R/L						
TSXF 13125R/L						
TSXF 13160R/L			TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m)

TSXF 1300OR/L(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			K		●	●		●		N		
	Medium Cutting	●	●	●		K			●	●	●	●	N		
	Roughing	●		●	●		K			●		●			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		●		●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-L		●		●	●	●	●				▲	▲	—	—	0.8	1
130612PNER-L		●		●			●				▲	▲	—	—	1.2	1
130616PNER-L		●		●			●				▲	▲	—	—	1.6	1
130620PNER-L		●		●			●				▲	▲	—	—	2.0	1
130624PNER-L		●		●			●				▲	▲	—	—	2.4	1
130632PNER-L		●		●			●				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
130612PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.2	1
130616PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.6	1
130620PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.0	1
130624PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.4	1
130632PNER-G		●	●	●	●	●	●				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		●		●	●	●	●						—	—	0.4	1
130608PNER-H		●		●	●	●	●						—	—	0.8	1
130612PNER-H		●		●	●	●	●						—	—	1.2	1
130616PNER-H		●		●	●	●	●						—	—	1.6	1
130620PNER-H		●		●	●	●	●						—	—	2.0	1
130624PNER-H		●		●	●	●	●						—	—	2.4	1
130632PNER-H		●		●	●	●	●						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1
LNEX 130604PNEL-L				●			●						—	—	0.4	2
130608PNEL-L				●			●						—	—	0.8	2
130612PNEL-L				●			●						—	—	1.2	2
130616PNEL-L				●			●						—	—	1.6	2
130620PNEL-L				●			●						—	—	2.0	2
130624PNEL-L				●			●						—	—	2.4	2
130632PNEL-L				●			●						—	—	3.2	2
LNEX 130604PNEL-G				●		●	●					▲	—	—	0.4	2
130608PNEL-G				●		●	●					▲	—	—	0.8	2
130612PNEL-G				●		●	●						—	—	1.2	2
130616PNEL-G				●		●	●						—	—	1.6	2
130620PNEL-G				●		●	●						—	—	2.0	2
130624PNEL-G				●		●	●						—	—	2.4	2
130632PNEL-G				●		●	●						—	—	3.2	2
LNEX 130602PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.2	2
130604PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.4	2
130608PNFL-S		—	—	—	—	—	—	—	—	—	—	—			0.8	2
130612PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.2	2
130616PNFL-S		—	—	—	—	—	—	—	—	—	—	—			1.6	2
130620PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.0	2
130624PNFL-S		—	—	—	—	—	—	—	—	—	—	—			2.4	2
130632PNFL-S		—	—	—	—	—	—	—	—	—	—	—			3.2	2

Fig 1 (Right-Hand)

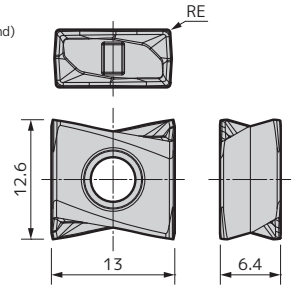
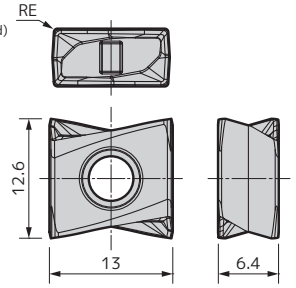


Fig 2 (Left-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
· The above figures are guidelines for use with BT50 machine tools.

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

TSX(F) 08000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-36 to -20°
	Axial	-6°

8mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling

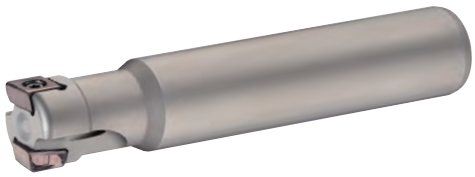


Fig 1

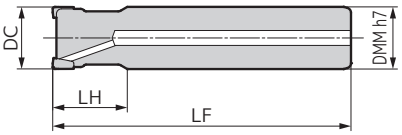
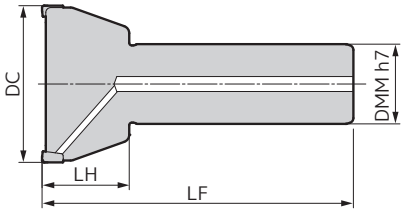


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 08016E**	●	**16**	16	25	100	2	0.13	1
	08020E	●	**20**	20	30	110	2	0.22	1
	08020E-16	●	**20**	16	30	110	2	0.15	2
	08025E	●	**25**	25	30	120	3	0.40	1
	08025E-20	●	**25**	20	30	120	3	0.26	2
	08032E	●	**32**	32	30	120	3	0.67	1
	08032E-25	●	**32**	25	30	120	3	0.43	2
	08040E	●	**40**	32	30	120	4	0.72	2
	08050E	●	**50**	32	30	120	5	0.85	2
	08063E	●	**63**	32	35	125	6	1.09	2
	08080E	●	**80**	32	35	125	7	1.44	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 08020E**	●	**20**	20	30	110	3	0.22	1
	08025E	●	**25**	25	30	120	4	0.40	1
	08032E	●	**32**	32	30	120	5	0.67	1
	08040E	●	**40**	32	30	120	6	0.73	2
	08050E	●	**50**	32	30	120	8	0.85	2
	08063E	●	**63**	32	35	125	10	1.10	2
	08080E	●	**80**	32	35	125	11	1.42	2

Inserts are sold separately.

Identification Code

TSX	F	08	032	E	(-25)
Series Code	Extra Fine Pitch	Insert Size	Dia.	Shank type	Shank Dia.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
TSX 08016E, TSX 08020E, TSXF 08020E	BFTX0306IP	2.0	TRDR08IP	SUMI-P
TSX 08025E to 80E, TSXF 08025E to 80E	BFTX0308IP			

N·m Recommended Tightening Torque (N·m)

TSX(F) 08000E type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

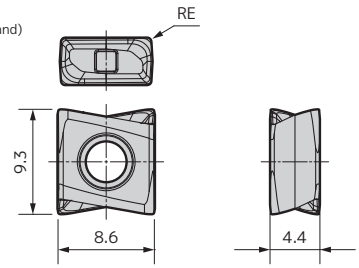
Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC
Process	High-speed/Light Cutting	MS	PM			K		MS	MS		MS			N
	Medium Cutting	MS	PM	PM		K			MS	MS	MS	MS	N	N
	Roughing	MS		PM	PM		K			MS		MS		

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 080404PNER-L	●		●	●	●	●				▲	▲	—	—	0.4	1
080408PNER-L	●		●	●	●	●				▲	▲	—	—	0.8	1
080412PNER-L	●		●			●				▲	▲	—	—	1.2	1
080416PNER-L	●		●			●				▲	▲	—	—	1.6	1
LNEX 080404PNER-G	●	●	●	●	●	●				▲	▲	—	—	0.4	1
080408PNER-G	●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
080412PNER-G	●	●	●	●	●	●				▲	▲	—	—	1.2	1
080416PNER-G	●	●	●	●	●	●				▲	▲	—	—	1.6	1
LNEX 080402PNFR-S	—	—	—	—	—	—	—	—	—	—	—			0.2	1
080404PNFR-S	—	—	—	—	—	—	—	—	—	—	—			0.4	1
080408PNFR-S	—	—	—	—	—	—	—	—	—	—	—			0.8	1
080412PNFR-S	—	—	—	—	—	—	—	—	—	—	—			1.2	1
080416PNFR-S	—	—	—	—	—	—	—	—	—	—	—			1.6	1

Fig 1
(Right-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.08 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT40 machine tools.
- For groove milling, adjust the feed rate to around 70% of the above values.
  * For goove milling, use ø32mm or less; standard pitch is recommended.

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

TSX(M/F) 13000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-31 to -15°
	Axial	-6°

12mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling

Fig 1

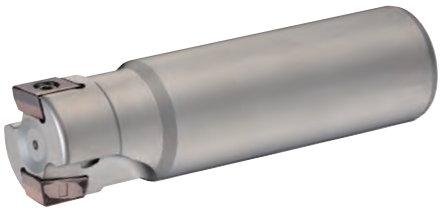
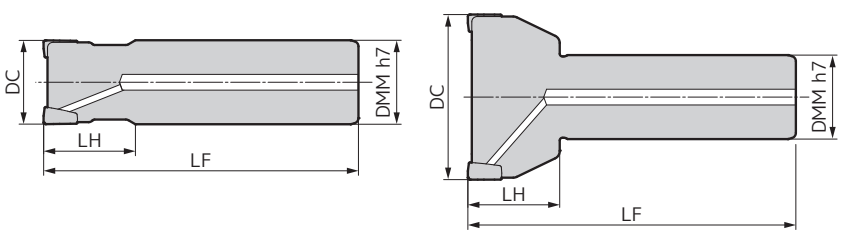


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 13025E**	●	**25**	25	35	120	2	0.38	1
	13032E	●	**32**	32	35	120	2	0.66	1
	13040E	●	**40**	32	30	120	3	0.71	2
	13050E	●	**50**	32	30	120	4	0.81	2
	13063E	●	**63**	32	35	125	5	1.08	2
	13080E	●	**80**	32	35	125	5	1.40	2

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM 13032E**	●	**32**	32	35	120	3	0.65	1
	13040E	●	**40**	32	30	120	4	0.71	2
	13050E	●	**50**	32	30	120	5	0.80	2
	13063E	●	**63**	32	35	125	6	1.07	2
	13080E	●	**80**	32	35	125	7	1.41	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 13040E**	●	**40**	32	30	120	5	0.70	2
	13050E	●	**50**	32	30	120	6	0.80	2
	13063E	●	**63**	32	35	125	7	1.07	2
	13080E	●	**80**	32	35	125	8	1.42	2

Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03510IP	3.0	TRDR15IP	SUMI-P

Identification Code

TSX **M** **13** **050** **E**

Series Code	M: Fine Pitch F: Extra Fine Pitch	Insert Size	Dia.	Shank type

N·m Recommended Tightening Torque (N·m)

TSX(M/F) 13000E type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

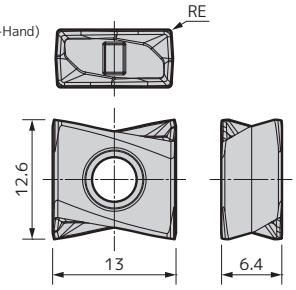
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			K		MS	MS		MS			N		
	Medium Cutting	●	●	PM		K			MS	MS	MS	MS	N	N		
	Roughing	●		PM	PM		K			MS		MS				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		●		●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-L		●		●	●	●	●				▲	▲	—	—	0.8	1
130612PNER-L		●		●			●				▲	▲	—	—	1.2	1
130616PNER-L		●		●			●				▲	▲	—	—	1.6	1
130620PNER-L		●		●			●				▲	▲	—	—	2.0	1
130624PNER-L		●		●			●				▲	▲	—	—	2.4	1
130632PNER-L		●		●			●				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
130612PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.2	1
130616PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.6	1
130620PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.0	1
130624PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.4	1
130632PNER-G		●	●	●	●	●	●				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		●		●	●	●	●						—	—	0.4	1
130608PNER-H		●		●	●	●	●						—	—	0.8	1
130612PNER-H		●		●	●	●	●						—	—	1.2	1
130616PNER-H		●		●	●	●	●						—	—	1.6	1
130620PNER-H		●		●	●	●	●						—	—	2.0	1
130624PNER-H		●		●	●	●	●						—	—	2.4	1
130632PNER-H		●		●	●	●	●						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1

Fig 1
(Right-Hand)



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACU2500 ACP100 ACP200 ACP300
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- For groove milling, adjust the feed rate to around 70% of the above values.
  * For goove milling, use ø32mm or less; standard pitch is recommended.

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

TSXR 08000RS type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-20 to -15°
	Axial	-6 to -3°

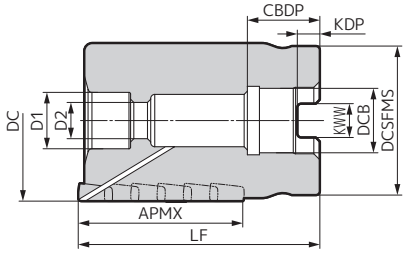
34-60mm 90°







Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 08032RS3416Z02**	●	**32**	34	33	55	**16**	8.4	5.6	18.0	14	9	10	5	2	0.17	1
	08040RS4016Z03	●	**40**	40	37	60	**16**	8.4	5.6	18.0	14	9	18	6	3	0.32	1
	08050RS5422Z03	●	**50**	54	47	75	**22**	10.4	6.3	20.0	18	11	24	8	3	0.70	1
	08050RS5422Z04	●	**50**	54	47	75	**22**	10.4	6.3	20.0	18	11	32	8	4	0.68	1
	08063RS6027Z05	●	**63**	60	60	80	**27**	12.4	7.0	22.0	20	14	45	9	5	1.25	1

Inserts are sold separately.

Identification Code

TSXR Series Code | **08** Insert Size | **050** Dia. | **R** Right Hand | **S** Metric Bore | **54** Max. Depth of Cut | **22** Mounting Size | **Z03** Effective No. of Teeth

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Bolt	Anti-seizure Cream
TSXR 08032RS3416Z02	BFTX0308IP	2.0	TRDR08IP	BX0845	SUMI-P
TSXR 08040RS4016Z03				BX0850	
TSXR 08050RS5422Z03				BX1060	
TSXR 08050RS5422Z04					
TSXR 08063RS6027Z05				BX1265	

N·m Recommended Tightening Torque (N·m)

TSXR 08000RS type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

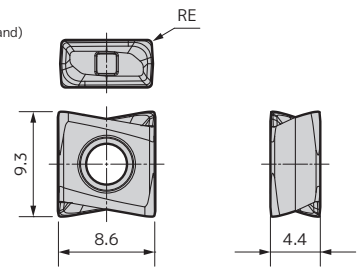
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			●		●	●		●		●		
	Medium Cutting	●	●	●		●			●	●	●	●	●		
	Roughing	●		●	●		●			●					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 080404PNER-L		●		●	●	●	●				▲	▲	—	—	0.4	1
080408PNER-L		●		●	●	●	●				▲	▲	—	—	0.8	1
080412PNER-L		●		●			●				▲	▲	—	—	1.2	1
080416PNER-L		●		●			●				▲	▲	—	—	1.6	1
LNEX 080404PNER-G		●	●	●	●	●	●				▲	▲	—	—	0.4	1
080408PNER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
080412PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.2	1
080416PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.6	1
LNEX 080402PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
080404PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
080408PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
080412PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
080416PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1

Fig 1
(Right-Hand)



Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	110 - **200** - 280	0.08 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	70 - **135** - 200	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	90 - **155** - 220	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for ae = diameter DC 20% or less.

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

TSXR 13000RS type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

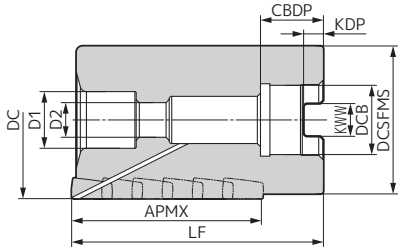
Rake Angle	Radial	-23 to -15°
	Axial	-6 to -3°

41-60mm 90°

Shoulder Milling | Side Milling

Fig 1





Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 13040RS4116Z02**	●	**40**	41	37	60	**16**	8.4	5.6	18.0	14	9	8	4	2	0.31	1
	13050RS6022Z03	●	**50**	60	47	80	**22**	10.4	6.3	20.0	18	11	18	6	3	0.66	1
	13063RS5027Z03	●	**63**	50	60	75	**27**	12.4	7.0	22.0	20	14	15	5	3	1.12	1
	13063RS6027Z04	●	**63**	60	60	80	**27**	12.4	7.0	22.0	20	14	24	6	4	1.15	1
	13080RS6032Z04	●	**80**	60	77	80	**32**	14.4	8.0	26.0	25	18	24	6	4	2.06	1
	13080RS6032Z05	●	**80**	60	77	80	**32**	14.4	8.0	26.0	25	18	30	6	5	2.04	1
	13100RS6040Z05	●	**100**	60	88	85	**40**	16.4	9.0	29.0	32	21	30	6	5	3.45	1
	13100RS6040Z06	●	**100**	60	88	85	**40**	16.4	9.0	29.0	32	21	36	6	6	3.44	1
	13125RS6040Z07	●	**125**	60	100	85	**40**	16.4	9.0	29.0	32	21	42	6	7	5.63	1

Inserts are sold separately.

Identification Code

TSXR	13	050	R	S	60	22	Z03
Series Code	Insert Size	Dia.	Right Hand	Metric Bore	Max. Depth of Cut	Mounting Size	Effective No. of Teeth

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Bolt	Anti-seizure Cream
TSXR 13040RS4116Z02	BFTX03510IP	3.0	—	HPS1015	TRB15IP	BX0850	SUMI-P
TSXR 13050RS6022Z03						BX1060	
TSXR 13063RS5027Z03						BX1260	
TSXR 13063RS6027Z04						BX1265	
TSXR 13080RS6032Z04			TRDR15IP	—	—	BX1660	
TSXR 13080RS6032Z05							
TSXR 13100RS6040Z05						BX2065	
TSXR 13100RS6040Z06							
TSXR 13125RS6040Z07							

N·m Recommended Tightening Torque (N·m)

TSXR 1300ORS type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

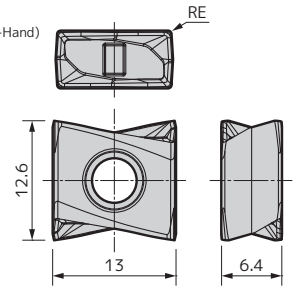
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			K		MS	MS		MS			N		
	Medium Cutting	●	●	PM		K			MS	MS	MS	MS	N	N		
	Roughing	●		PM	PM		K			MS		MS				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		●		●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-L		●		●	●	●	●				▲	▲	—	—	0.8	1
130612PNER-L		●		●			●				▲	▲	—	—	1.2	1
130616PNER-L		●		●			●				▲	▲	—	—	1.6	1
130620PNER-L		●		●			●				▲	▲	—	—	2.0	1
130624PNER-L		●		●			●				▲	▲	—	—	2.4	1
130632PNER-L		●		●			●				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
130612PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.2	1
130616PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.6	1
130620PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.0	1
130624PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.4	1
130632PNER-G		●	●	●	●	●	●				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		●		●	●	●	●						—	—	0.4	1
130608PNER-H		●		●	●	●	●						—	—	0.8	1
130612PNER-H		●		●	●	●	●						—	—	1.2	1
130616PNER-H		●		●	●	●	●						—	—	1.6	1
130620PNER-H		●		●	●	●	●						—	—	2.0	1
130624PNER-H		●		●	●	●	●						—	—	2.4	1
130632PNER-H		●		●	●	●	●						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1

Fig 1 (Right-Hand)



Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	90 - **155** - 220	0.10 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for ae = diameter DC 20% or less.

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

TSXR 08000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-33 to -18°
	Axial	-6° to -3°

21-40mm 90°

Shoulder Milling | Side Milling

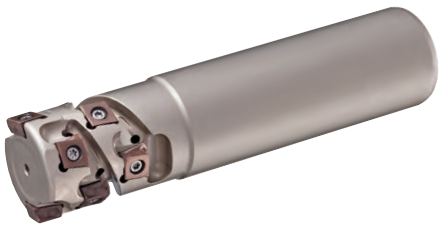


Fig 1

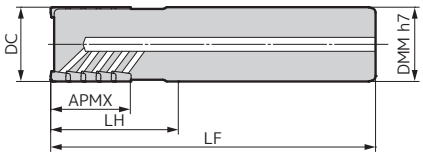
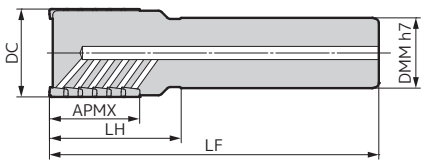


Fig 2



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 08020E2120Z01**	●	**20**	21	20	30	110	3	3	1	0.22	1
	08025E2725Z02	●	**25**	27	25	35	125	8	4	2	0.39	1
	08032E3432Z02	●	**32**	34	32	50	140	10	5	2	0.74	1
	08040E4032Z03	●	**40**	40	32	60	150	18	6	3	0.92	2

Inserts are sold separately.

Identification Code

TSXR Series Code | **08** Insert Size | **025** Dia. | **E** Shank type | **27** Max. Depth of Cut | **25** Shank Dia. | **Z02** Effective No. of Teeth

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0308IP	2.0	TRDR08IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

TSXR 08000E type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

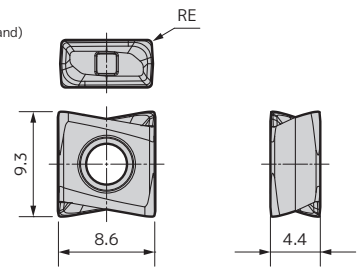
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			K		●	●		●		N		
	Medium Cutting	●	●	●		K			●	●	●	N	N		
	Roughing	●		●	●		K			●					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 080404PNER-L		●		●	●	●	●				▲	▲	—	—	0.4	1
080408PNER-L		●		●	●	●	●				▲	▲	—	—	0.8	1
080412PNER-L		●		●			●				▲	▲	—	—	1.2	1
080416PNER-L		●		●			●				▲	▲	—	—	1.6	1
LNEX 080404PNER-G		●	●	●	●	●	●				▲	▲	—	—	0.4	1
080408PNER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
080412PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.2	1
080416PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.6	1
LNEX 080402PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
080404PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
080408PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
080412PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
080416PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1

Fig 1
(Right-Hand)



Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	110 - **200** - 280	0.08 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	70 - **135** - 200	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	90 - **155** - 220	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for ae = diameter DC 20% or less.

● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

TSXR 13000E type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

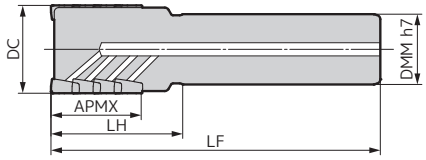
Rake Angle		
	Radial	-23 to -18°
	Axial	-6° to -3°

41-60mm 90°

Shoulder Milling | Side Milling

Fig 1





Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Overall Length LF	Total No. of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 13040E4132Z02**	●	**40**	41	32	60	150	8	4	2	0.91	1
	13050E6042Z03	●	**50**	60	42	80	170	18	6	3	1.74	1

Inserts are sold separately.

Identification Code

TSXR 13 050 E 60 42 Z03

TSXR	13	050	E	60	42	Z03
Series Code	Insert Size	Dia.	Shank type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03510IP	3.0	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

TSXR 13000E type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

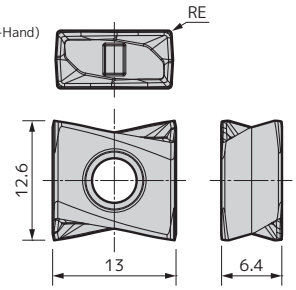
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC		
Process	High-speed/Light Cutting	●	●			●		●	●		●			●		
	Medium Cutting	●	●	●		●			●	●	●	●	●	●		
	Roughing	●		●	●		●			●		●				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM200	ACM300	H20	DL2000	Corner Radius RE	Fig
LNEX 130604PNER-L		●		●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-L		●		●	●	●	●				▲	▲	—	—	0.8	1
130612PNER-L		●		●			●				▲	▲	—	—	1.2	1
130616PNER-L		●		●			●				▲	▲	—	—	1.6	1
130620PNER-L		●		●			●				▲	▲	—	—	2.0	1
130624PNER-L		●		●			●				▲	▲	—	—	2.4	1
130632PNER-L		●		●			●				▲	▲	—	—	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●				▲	▲	—	—	0.4	1
130608PNER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	0.8	1
130612PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.2	1
130616PNER-G		●	●	●	●	●	●				▲	▲	—	—	1.6	1
130620PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.0	1
130624PNER-G		●	●	●	●	●	●				▲	▲	—	—	2.4	1
130632PNER-G		●	●	●	●	●	●				▲	▲	—	—	3.2	1
LNEX 130604PNER-H		●		●	●	●	●						—	—	0.4	1
130608PNER-H		●		●	●	●	●						—	—	0.8	1
130612PNER-H		●		●	●	●	●						—	—	1.2	1
130616PNER-H		●		●	●	●	●						—	—	1.6	1
130620PNER-H		●		●	●	●	●						—	—	2.0	1
130624PNER-H		●		●	●	●	●						—	—	2.4	1
130632PNER-H		●		●	●	●	●						—	—	3.2	1
LNEX 130602PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.2	1
130604PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.4	1
130608PNFR-S		—	—	—	—	—	—	—	—	—	—	—			0.8	1
130612PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.2	1
130616PNFR-S		—	—	—	—	—	—	—	—	—	—	—			1.6	1
130620PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.0	1
130624PNFR-S		—	—	—	—	—	—	—	—	—	—	—			2.4	1
130632PNFR-S		—	—	—	—	—	—	—	—	—	—	—			3.2	1

Fig 1 (Right-Hand)



Use peripheral inserts with RE of 0.8mm or less from the second stage and above.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACU2500 ACP100 ACP200 ACP300
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	
	Alloy Steel	180 to 280HB	90 - **155** - 220	0.10 - **0.15** - 0.25	
M	Stainless Steel	220 to 280HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACU2500 ACS2500 ACS3000 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACU2500 ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 ACS2500 ACS3000 ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for ae = diameter DC 20% or less.

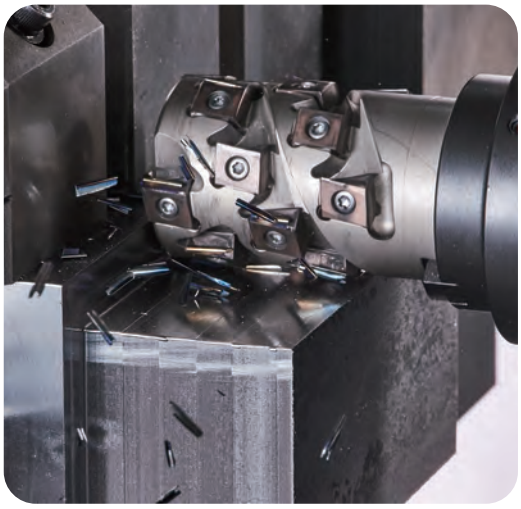
● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

SEC-Sumi Dual Mill TSX series Repeater Made-to-Order Request Sheet (1)

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor. Feel free to contact us for other shapes or dimensions or with other requests.

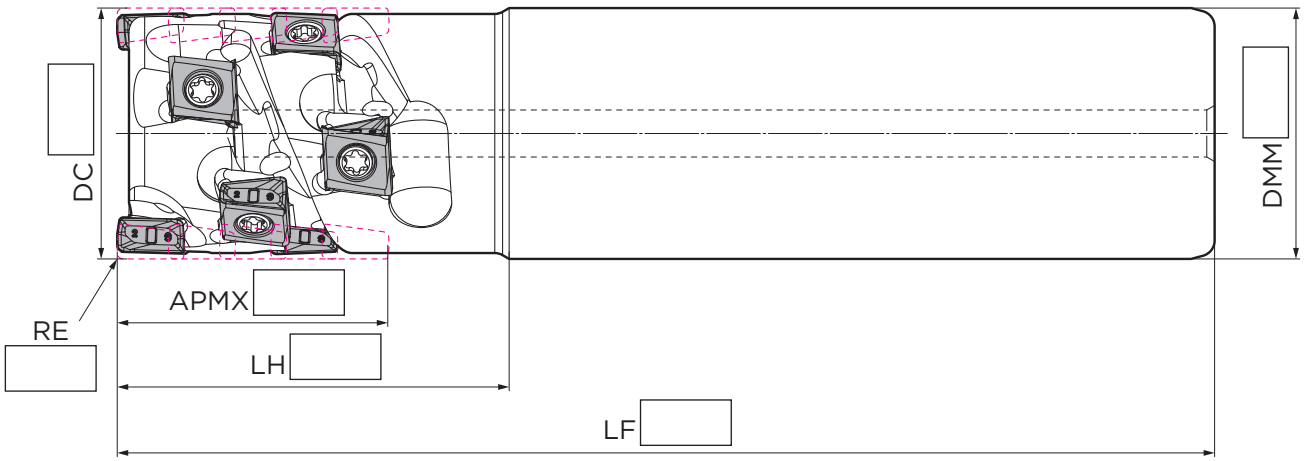
Company Name/Contact



Reference Specifications

Applicable Inserts	Dia. (mm) DC	Max. Depth of Cut (mm) APMX	Total No. of Teeth	No. of Stages	Max. Effective No. of Teeth	Specifications Shell	Specifications Shank
LNEX08 (Refer to page H141)	20	21	3	3	1		○
	25	27	8	4	2		○
	32	34	10	5	2	○	○
	40	40	18	6	3	○	○
	50	54	32	8	4	○	
	63	60	45	9	5	○	
LNEX13 (Refer to page H143)	40	41	8	4	2	○	○
	50	60	18	6	3	○	○
	63	60	24	6	4	○	
	80	60	30	6	5	○	
	100	60	36	6	6	○	
	125	60	42	6	7	○	

☑ **Shank** Refer to the reference specifications above when completing.



■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

- The tip insert corner radius (RE) can be selected. (Applicable size: Refer to page H127 ■ Product Range)
  Other inserts are all RE = 0.8mm or less.
- Effective No. of Teeth Desired: ☐
- Coolant Hole: Yes ☑ No ☑

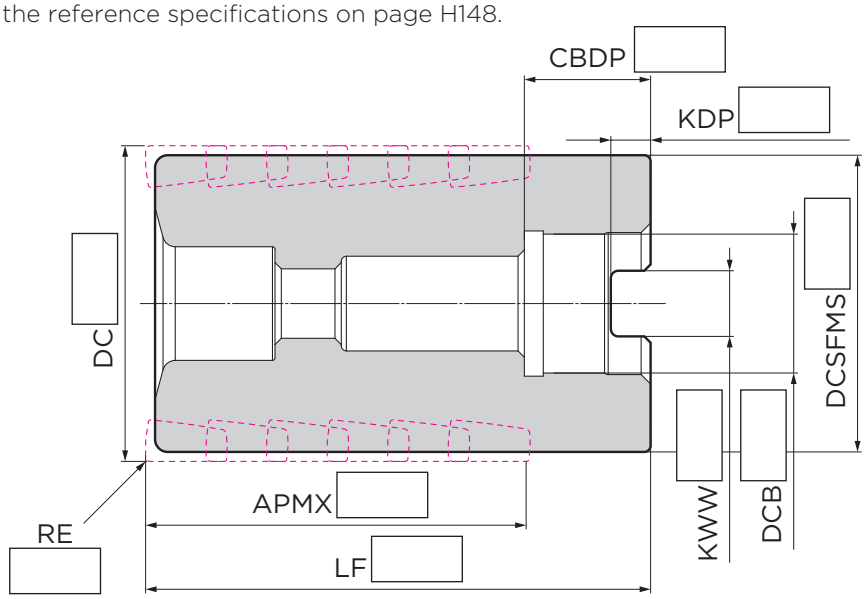
SEC-Sumi Dual Mill TSX series Repeater Made-to-Order Request Sheet (2)

Select a cutter design and enter the dimensions in ☐.

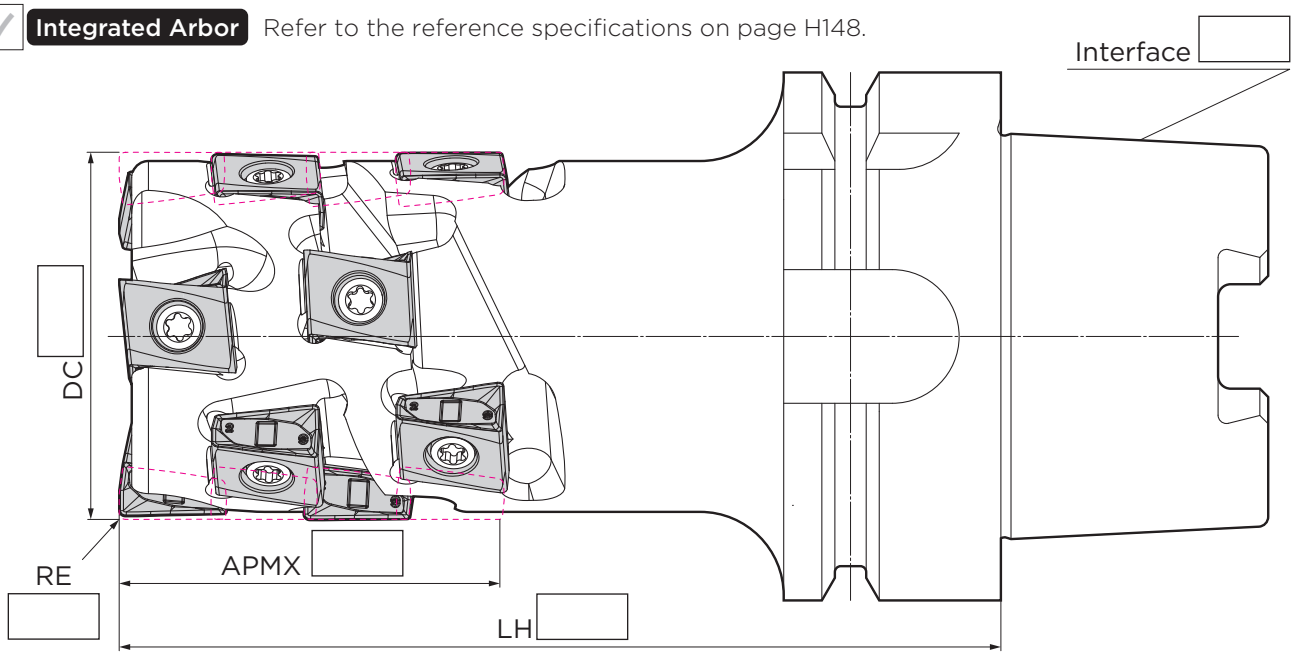
After completion, send the sheet to our nearest sales office or distributor. Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

☑ **Shell** Refer to the reference specifications on page H148.



☑ **Integrated Arbor** Refer to the reference specifications on page H148.



■ Accessories

Flat Insert Screw	Wrench	Bolt	Anti-seizure Cream
		 *Shell type Only	

- The tip insert corner radius (RE) can be selected. (Applicable size: Refer to page H127 ■ Product Range)
  Other inserts are all RE = 0.8mm or less.
- Effective No. of Teeth Desired: ☐
- Coolant Hole: Yes ☑ No ☑

SEC-Sumi Dual Mill TSX series Side Cutter Made-to-Order Sheet

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor. Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

■ Insert series Configuration

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804○○PNER/L-L	●	●	●	●	—	—	—
LNEX 0804○○PNER/L-G	●	●	●	●	—	—	—
LNEX 1306○○PNER/L-L	●	●	●	●	●	●	●
LNEX 1306○○PNER/L-G	●	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●	●

— mark: Not available

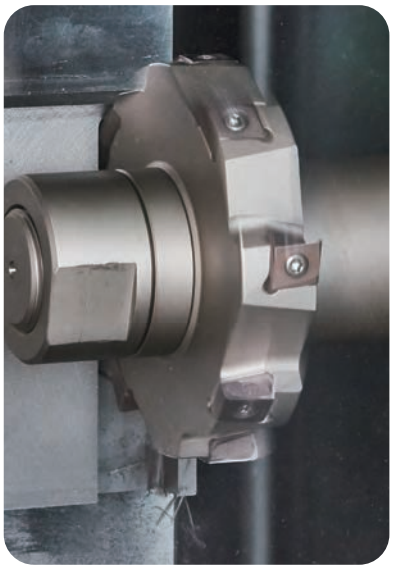
[Insert Special Orders]
LNEX08 has Corner Radius (RE) = 0.4 to 1.6mm
LNEX13 has Corner Radius (RE) = 0.4 to 3.2mm. Both right-hand and left-hand types are supported.
(Radius shape after machining may differ from the mounted insert corner radius RE size.)
LNEX1306○○PNEL-H (left-handed H type chipbreaker) is not available.

CW Size Reference Specification	
14mm	LNEX08 (Refer to page H141)
18 to 22mm	LNEX13 (Refer to page H143)

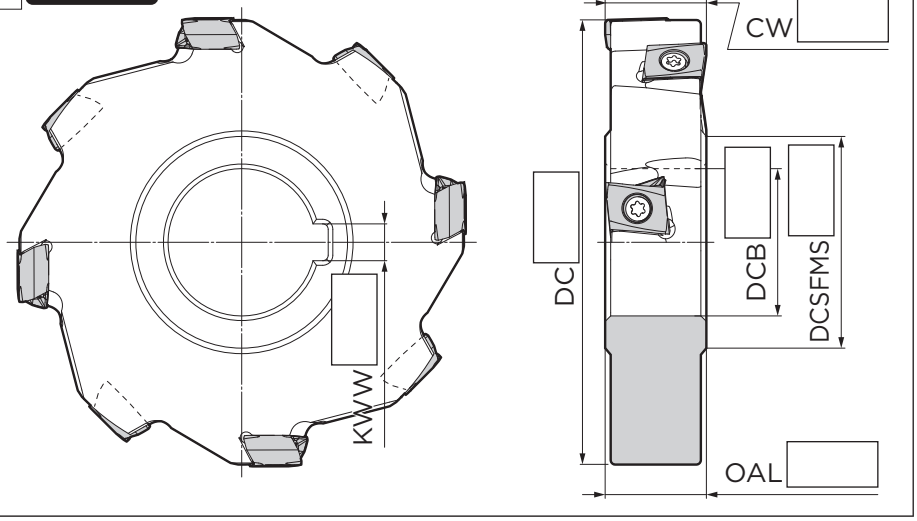
A multi-stage design is required if the CW size exceeds the above.

■ Accessories

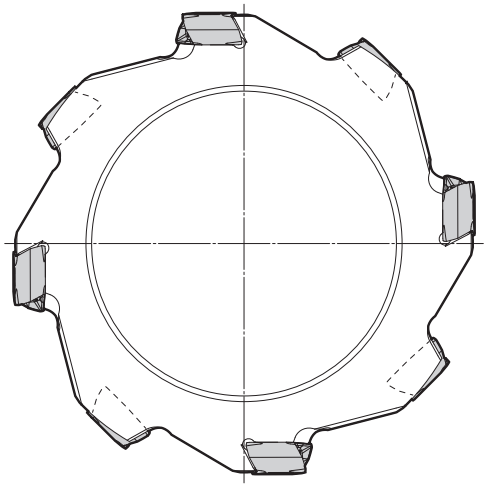
Flat Insert Screw	Wrench	Anti-seizure Cream
		

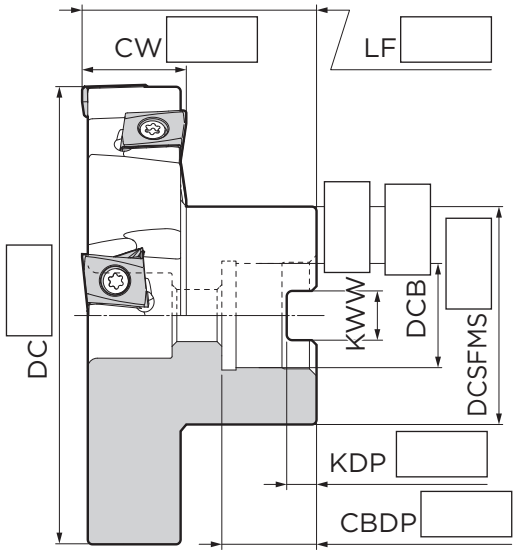


☑ **Disc type**



☑ **Boss type**





· Effective No. of Teeth Desired: ☐

SEC-Sumi Dual Mill TSX series Made-to-Order Request Sheet

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor. Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

■ Insert series Configuration

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804○○PNER/L-L	●	●	●	●	—	—	—
LNEX 0804○○PNER/L-G	●	●	●	●	—	—	—
LNEX 1306○○PNER/L-L	●	●	●	●	●	●	●
LNEX 1306○○PNER/L-G	●	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●	●

— mark: Not available

[Insert Special Orders]
LNEX08 has Corner Radius (RE) = 0.4 to 1.6mm
LNEX13 has Corner Radius (RE) = 0.4 to 3.2mm. Both right-hand and left-hand types are supported.
(Radius shape after machining may differ from the mounted insert corner radius RE size.)
LNEX1306○○PNEL-H (left-handed H type chipbreaker) is not available.

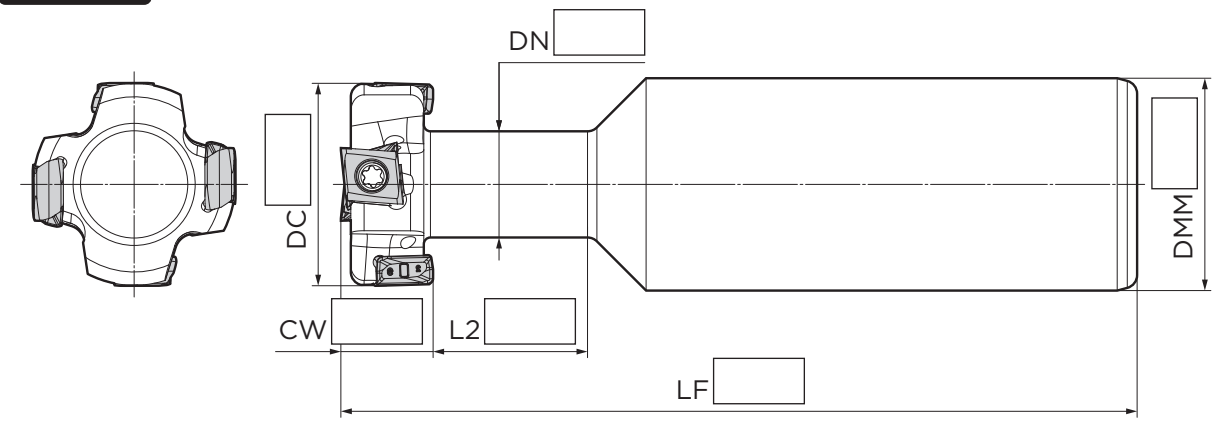
CW Size Reference Specification	
14mm	LNEX08 (Refer to page H141)
18 to 22mm	LNEX13 (Refer to page H143)

A multi-stage design is required if the CW size exceeds the above.

■ Accessories

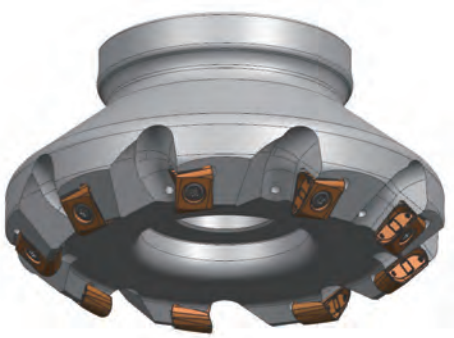
Flat Insert Screw	Wrench	Anti-seizure Cream
		

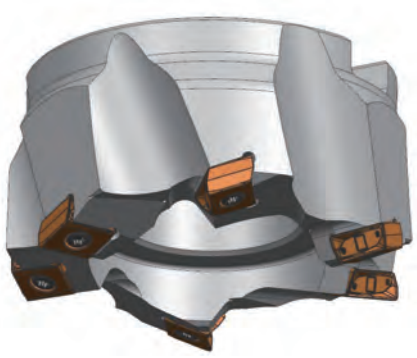
☑ **T-Slot type**



· Effective No. of Teeth Desired: ☐ · Coolant Hole: Yes ☑ No ☑

■ Angled cutters, high-feed cutters and bore cutters can be designed. For details, please contact us.





PWC(F) 4000 type

K Cast Iron

Rake Angle	Radial	-15°
	Axial	-5°

15mm 88°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

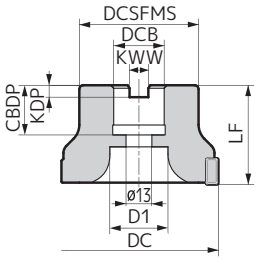


Fig 2

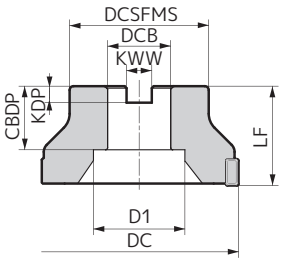


Fig 3

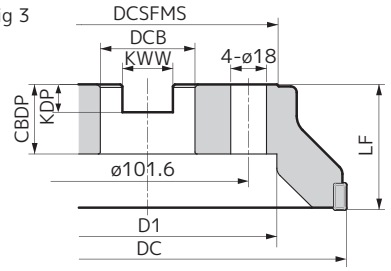


Figure shows right-handed (R) tool.

Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**PWC 4080R/L**	●		*80	60	50	**25.4**	9.5	6	25	29.5	7	0.9	1
	4100R/L	●		**100**	70	50	**31.75**	12.7	8	32	46	8	1.3	2
	4125R/L	●		**125**	80	63	**38.1**	15.9	10	38	56	10	2.5	2
	4160R/L	●		**160**	100	63	**50.8**	19.1	11	38	72	12	4.2	2
	4200R/L	●		**200**	150	63	**47.625**	25.4	14	35	130	16	7.2	3

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**PWCF 4080R/L**	●		*80	60	50	**25.4**	9.5	6	25	29.5	9	0.9	1
	4100R/L	●		**100**	70	50	**31.75**	12.7	8	32	46	12	1.4	2
	4125R/L	●		**125**	80	63	**38.1**	15.9	10	38	56	15	2.6	2
	4160R/L	●		**160**	100	63	**50.8**	19.1	11	38	72	18	4.3	2
	4200R/L	●		**200**	150	63	**47.625**	25.4	14	35	130	24	7.4	3

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	K	K	
	Medium Cutting	K	K	
	Roughing			K

Cat. No.	ACK100	ACK200	ACK300	Applications	Remarks	Fig
LNMX 160608PNSN-G		●	●	General-purpose machining	1st Recommendation	1
160608PNSN-H	●	●	●	Heavy interrupted cutting and other unstable applications		2

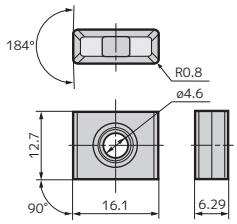
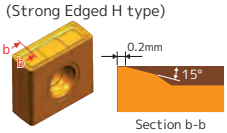


Fig 1 (General-purpose G type)



Fig 2 (Strong Edged H type)



Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0412N	3.0	TTX15W	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Cast Iron	250HB	150-**250**-350	0.10-**0.23**-0.35	ACK200/ACK300
	Ductile Cast Iron	250HB	100-**200**-300	0.05-**0.18**-0.30	ACK100/ACK200

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m)

PWS(F) series/PWSR series



■ Features

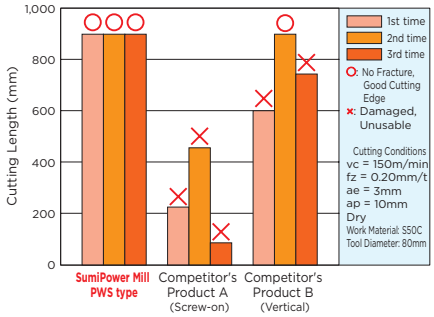
A highly reliable cutter equipped with tangentially-mounted inserts that combines unprecedented high cutting edge strength and sharpness.
PWSR type, with a 2-stage insert array structure supporting large depths of cut, has been added to the lineup.

- **Tangential inserts with excellent cutting edge strength and optimised breaker provide superb cutting edge and sharpness.**
- **Nicked insert design created with high-precision molding technology allows stable milling and low chatter even in applications with large tool overhang.**

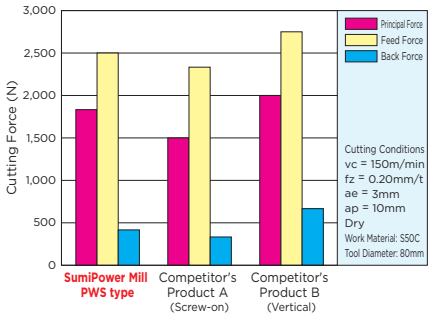
■ Performance

● General-purpose G type Insert Performance Comparison

Comparison of Cutting Edge Strength
Strong cutting edge delivers superb stability

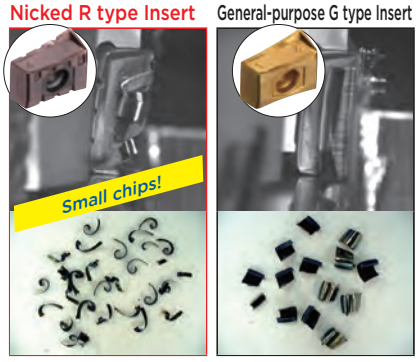


Comparison of Cutting Force
Sharpness approaching that of screw-on inserts

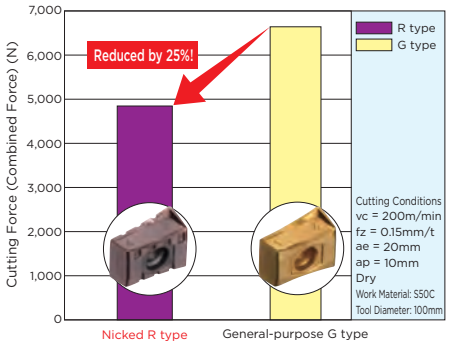


● Nicked R type Insert Performance Comparison

Nicked R type Insert | General-purpose G type Insert



Comparison of Cutting Force
Reduced cutting power and excellent chatter resistance

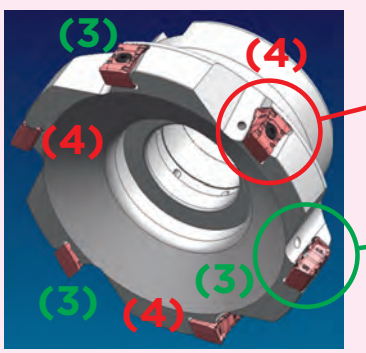


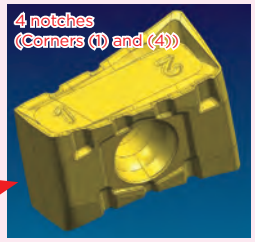
■ Product Range

Type	Cat. No.	Dia. (mm) ø80	ø100	ø125	ø160	ø200	ø250
Shell	PWS 4000R (inch)	4	6	6	8	10	12
	PWSF 4000R (inch)	6	8	8	10	12	14
	PWSR 4000	(4)	(6)	(6)	(8)	(10)	

Number in ●○ shows the number of teeth (inch) Inch Bore

⚠ Nicked R type Insert Usage Precautions







1) Precautions when Mounting
When using the nicked R type indexable inserts, mount them so that the nicked grooves alternate as shown in the image on the left.

2) Precautions for Cutting Conditions
When the inserts are mounted as shown in the left figure, the feed rate per tooth is doubled that of mounting inserts with the same edge design. As such, set feed rate

fz = 0.25mm/t

as the upper limit and adjust accordingly.

Ex.) For use with fz = 0.2mm/t
With all regular inserts : feed rate per tooth 0.2mm/t
With nicked type inserts : feed rate per tooth 0.4mm/t

Using inserts incorrectly may damage tools.

PWS(F) 4000 type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	-15°
	Axial	-6°

16mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



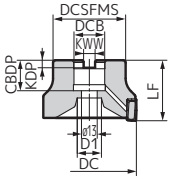
Fig 1


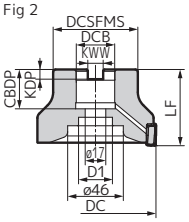
Fig 2


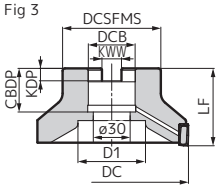
Fig 3


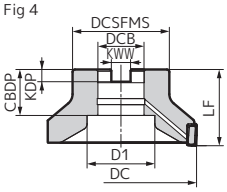
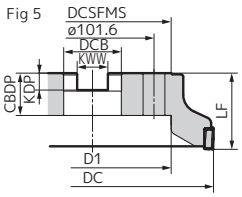
Fig 4


Fig 5


Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**PWS 4080R**	●	*80	60	50	**25.4**	9.5	6	25	20	4	1.0	1
	4100R	●	*100	70	63	**31.75**	12.7	8	32.5	28	6	1.8	2
	4125R	●	125	80	63	**38.1**	15.9	10	35.5	55	6	2.4	3
	4160R	●	160	100	63	**50.8**	19.1	11	41.5	72	8	4.0	4
	4200R	●	200	130	63	**47.625**	25.4	14	35	130	10	6.6	5
	4250R	●	250	130	63	**47.625**	25.4	14	35	160	12	12.4	5

Cutters ø200mm or larger do not have coolant holes but come with shims.
Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	**PWSF 4080R**	●	*80	60	50	**25.4**	9.5	6	25	20	6	0.9	1
	4100R	●	*100	70	63	**31.75**	12.7	8	32.5	28	8	1.7	2
	4125R	●	125	80	63	**38.1**	15.9	10	35.5	55	8	2.3	3
	4160R	●	160	100	63	**50.8**	19.1	11	41.5	72	10	3.9	4
	4200R	●	200	130	63	**47.625**	25.4	14	35	130	12	6.6	5
	4250R	●	250	130	63	**47.625**	25.4	14	35	160	14	12.5	5

Cutters ø200mm or larger do not have coolant holes but come with shims.
Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	P			K	
	Medium Cutting		P M	P M	K	
	Roughing		P M	P M		K

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Applications	Remarks	Fig
LNMX 170808PNSR-L	●	●	●	●	●	Light Cutting		1
170808PNSR-G	●	●	●	●	●	General-purpose	1st Recommendation	1
170808PNSR-R	●	●	●	●	●	Heavy Cutting	Nicked	2

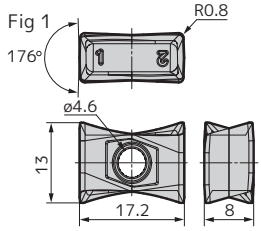
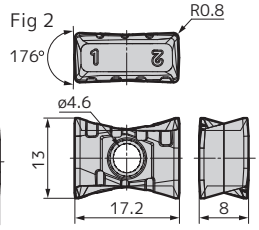
Fig 1


Fig 2


Parts

Flat Head Screw (For Inserts/Shims)		Wrench	Anti-seizure Cream	Shim (*)
				
BFTX0412IP	**3.0**	TTR15IP	SUMI-P	PWSS4R

* For cutters ø200mm or larger.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	150-**250**-350	0.10-**0.23**-0.35	ACP200
	Alloy Steel	180 to 280HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
M	Stainless Steel	—	100-**150**-200	0.10-**0.18**-0.25	ACP300
K	Cast Iron Ductile Cast Iron	250HB	100-**175**-250	0.10-**0.23**-0.35	ACK200

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m)

SEC-Sumi Power Mill

PWSR 4000 type

P Steel M Stainless Steel K Cast Iron

Rake Angle	Radial	-15°
	Axial	-6°

31mm 90°

Face Milling Shoulder Milling Groove Milling Side Milling



Fig 1

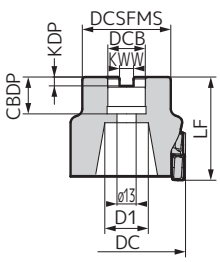


Fig 2

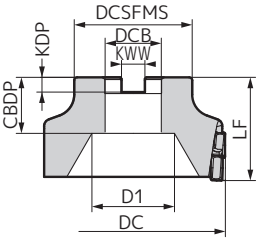


Fig 3

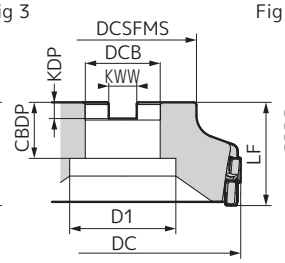
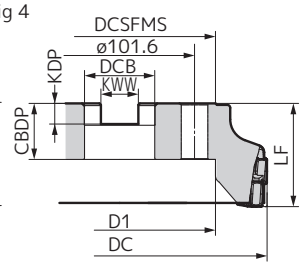


Fig 4



Body (2-Step type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	No. of Stages	Effective No. of Teeth	Weight (kg)	Fig
Inch	**PWSR 4080R**		*80	60	70	**25.4**	9.5	6	25	29.5	8	2	4	1.4	1
	4100R		*100	70	70	**31.75**	12.7	8	32	46	12	2	6	2.0	2
	4125R		125	80	70	**38.1**	15.9	10	38	56	12	2	6	3.0	2
	4160R		160	100	70	**50.8**	19.1	11	38	72	16	2	8	5.2	3
	4200R		200	130	70	**47.625**	25.4	14	38	160	20	2	10	8.0	4

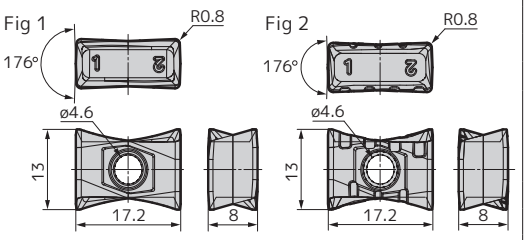
Cutters ø200mm or larger do not have coolant holes but come with shims.
Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							
Process	High-speed/Light Cutting	P			K				
	Medium Cutting		PM	PM	K				
	Roughing		PM	PM		K			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	Applications	Remarks	Fig
LNMX 170808PNSR-L		●	●	●	●	●	Light Cutting		1
170808PNSR-G		●	●	●	●	●	General-purpose	1st Recommendation	1
170808PNSR-R		●	●	●	●	●	Heavy Cutting	Nicked	2



Parts

Flat Head Screw (For Inserts/Shims)		Wrench	Anti-seizure Cream	Shim (*)
				
BFTX0412IP	3.0	TTR15IP	SUMI-P	PWSS4R

* For cutters ø200mm or larger.

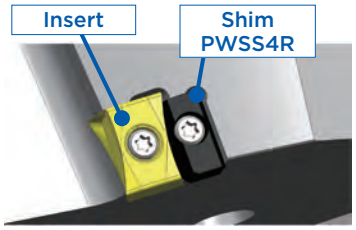
Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	150-**250**-350	0.10-**0.23**-0.35	ACP200
	Alloy Steel	180 to 280HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
M	Stainless Steel	—	100-**150**-200	0.10-**0.18**-0.25	ACP300
K	Cast Iron Ductile Cast Iron	250HB	100-**175**-250	0.10-**0.23**-0.35	ACK200

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

Large Diameter Size (ø200mm or larger) Body Structure

Safety Shim Design to Protect the Body



CHG 4000 type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal

Rake Angle	Radial	4°
	Axial	15°

16mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

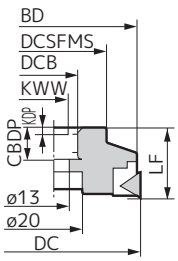


Fig 2

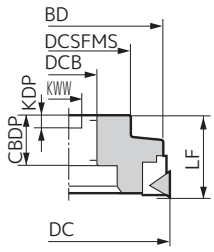


Fig 3

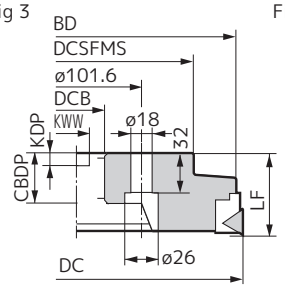
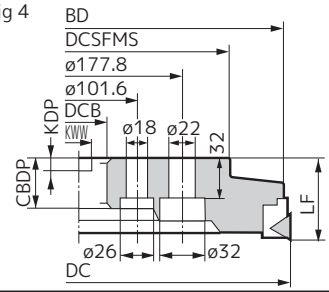


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**CHG 4080R**	●	*80	78	60	50	**25.4**	9.5	6	25	4	1.3	1
	4100R	●	**100**	96	70	63	**31.75**	12.7	8	32	5	2.0	2
	4125R	●	**125**	120	80	63	**38.1**	15.9	10	38	6	3.1	2
	4160R	●	**160**	154	100	63	**50.8**	19.1	11	38	8	5.3	2
	4200R	●	**200**	193	130	63	**47.625**	25.4	13.5	38	10	8.1	3
	4250R		**250**	242	180	63	**47.625**	25.4	13.5	40	12	13.8	3
	4315R		**315**	307	240	63	**47.625**	25.4	13.5	40	14	21.9	4

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide			Cermet	SUMIDIA			
Process	High-speed/Light Cutting	P			K		M			K N		N	N	N	
	Medium Cutting		P M	P M	K			P	K		P	N	N	N	
	Roughing		P M	P M		K						N	N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	T250A	DA150	DA1000	DA2200	Fig
TEEN 43R*									●	●		●	—	—	1-A
NF-TEEN 43R		—	—	—	—	—	—	—	—	—	—	—	●	▲	1-A
TEEN 43TR		●	●	●				●			●	—	—	—	2(1)-B
TEKN 43R					●	●			●			—	—	—	2(1)-A
43TR		●	●	●				●			●	—	—	—	2(1)-B

Fig 1

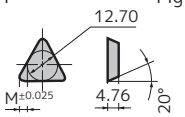
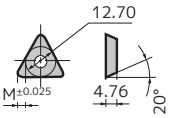


Fig 2 (Grades in ACP/ACK series)



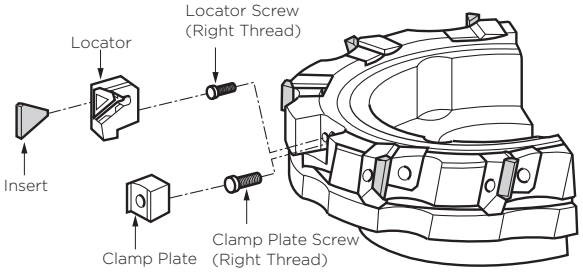


Cutting Edge A



Cutting Edge B

DL1000 is also available for *-marked TEEN43R.
Top face and wiper edge of H1 insert have a mirror finish.
E class precision inserts have some difference in shape.



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	180 to 280HB	80-**115**-150	0.10-**0.18**-0.25	ACP200
P	Mild Steel	≤ 180HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
P	Die Steel	200 to 220HB	60- **80** -100	0.10-**0.15**-0.20	ACP200
M	Stainless Steel	—	80-**115**-150	0.05-**0.10**-0.15	ACP300
K	Cast Iron	250HB	60- **90** -120	0.10-**0.18**-0.25	ACK200
N	Non-Ferrous Metal	—	300-**650**-1,000	0.10-**0.20**-0.30	DA1000 H1

Note 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.

Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Plate Screw	Size	N·m	Wrench
CHG 4080R to CHG 4125R	LCH4R	FBH0512	**M5**	**5.0**	CHWR	FBX0811	**M8**	**8.0**	TH030
CHG 4160R to CHG 4315R						FBX0817			TH040

The wrench for locator screw is TH030 and for clamp plate screw is TH040.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

SEC-Multi Use Endmill

CHE 2000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

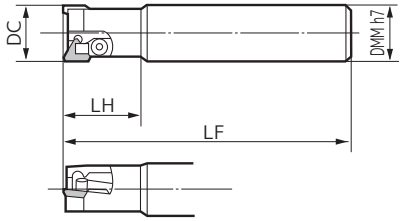
Rake Angle	Radial	-3° to 0°
	Axial	6° to 15°

8mm 90°

Face Milling Shoulder Milling Groove Milling Side Milling

Fig 1





Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
CHE 2016R	●	**16**	16	25	100	1	+6°	-3°	1
2018R	●	**18**	20	30	110	1	+8°	-2°	1
2020R	●	**20**	20	30	110	2	+10°	-2°	1
2022R	●	**22**	20	30	110	2	+12°	-1°	1
2025R	●	**25**	25	35	120	2	+15°	-1°	1
2028R	●	**28**	25	35	120	2	+15°	0°	1

Inserts are sold separately.

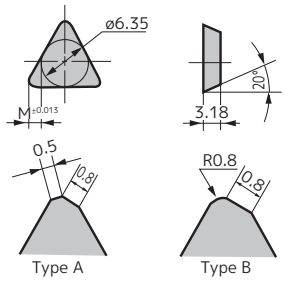
Insert

Dimensions (mm)

Grade Classification		Coated Carbide	Cemented Carbide			Cermet	SUMIDIA	
Process	High-speed/Light Cutting				K N		N	N
	Medium Cutting	P M	P	K		P	N	N
	Roughing	P M					N	N

Cat. No.	ACP200	A30N	G10E	H1	T250A	DA1000	DA2200	Cutting Edge Shape	Fig
TEEN 22R	—	—	—	—	—	—	—	A	1
NF-TEEN 22R	—	—	—	—	—	●	▲	A	1
TECN 22R			●	●		—	—	A	1
22TR		●				—	—	B	1
TEKN 22R			●			—	—	A	1
22TR		●			●	—	—	B	1

Fig 1



Parts

Clamp Plate	Bolt		Retaining Ring	Wrench
		N·m		
CCH4R	BHE0407	**1.8**	ER03	TH025

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	50- **75** -100	0.03-**0.06**-0.10	A30N
P	Alloy Steel	180 to 280HB	50- **75** -80	0.03-**0.05**-0.06	A30N
K	Cast Iron	250HB	40- **70** -100	0.03-**0.10**-0.15	G10E
N	Non-Ferrous Metal	—	40- **90** -150	0.03-**0.10**-0.15	DA1000 H1

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

CHE 3000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

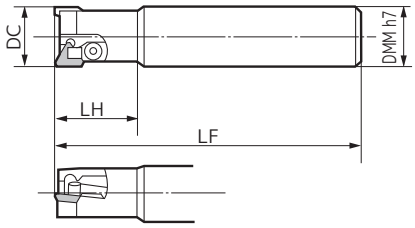
Rake Angle	Radial	-3° to 0°
	Axial	15°

13mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling

Fig 1





Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
CHE 3030R	●	**30**	32	45	160	2	+15°	-3°	1
3032R	●	**32**	32	45	160	2	+15°	-2°	1
3036R	●	**36**	32	45	160	2	+15°	-1°	1
3040R	●	**40**	32	45	160	2	+15°	0°	1

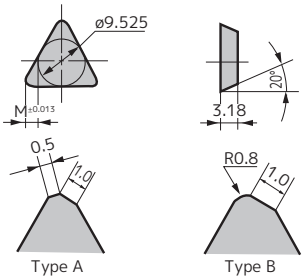
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		Cemented Carbide			Cermet	SUMIDIA			
Process	High-speed/Light Cutting		K			K/N		N	N		
	Medium Cutting	P/M	K	P	K		P	N	N		
	Roughing	P/M						N	N		
Cat. No.		ACP200	ACK200	A30N	G10E	H1	T250A	DA1000	DA2200	Cutting Edge Shape	Fig
TEEN 32R		—	—	—	—	—	—	—	—	A	1
NF-TEEN 32R		—	—	—	—	—	—	●	▲	A	1
TECN 32R					●	●		—	—	A	1
32TR				●				—	—	B	1
TEKN 32R			●		●			—	—	A	1
32TR		●		●			●	—	—	B	1

Fig 1



Parts

Clamp Plate	Bolt		Retaining Ring	Wrench
		N·m		
CCH5R	BHE0510	**2.7**	ER04	LH030

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	60- **90** -120	0.04-**0.08**-0.15	ACP200
	Alloy Steel	180 to 280HB	60- **80** -100	0.04-**0.08**-0.13	ACP200
K	Cast Iron	250HB	60- **90** -120	0.04-**0.12**-0.20	ACK200
N	Non-Ferrous Metal	—	60-**130**-200	0.04-**0.12**-0.20	DA1000 H1

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

CHE 4000 type

P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal

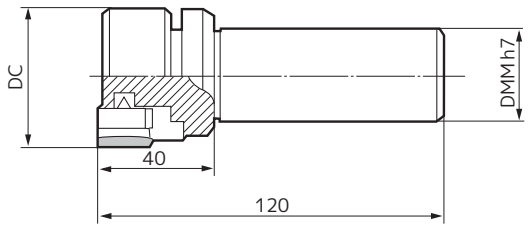
Rake Angle	Radial	2° to 4°
	Axial	15°

16mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling

Fig 1





Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Number of Teeth	Axial Rake	Radial Rake	Approach Angle	Fig
CHE 4050R	●	**50**	32	3	+15°	+2°	0°	1
4063R	●	**63**	32	4	+15°	+3°	0°	1
4080R	●	**80**	32	4	+15°	+4°	0°	1
4080RS42		**80**	42	4	+15°	+4°	0°	1
4100R		**100**	32	5	+15°	+4°	0°	1
4100RS42		**100**	42	5	+15°	+4°	0°	1

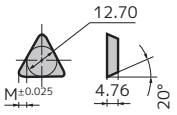
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide			Cermet	SUMIDIA			Fig
Process	High-speed/Light Cutting	P			K		M			K N		N	N	N	
	Medium Cutting		P M	P M	K			P	K		P	N	N	N	
	Roughing		P M	P M		K						N	N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	T250A	DA150	DA1000	DA2200	
TEEN 43R*									●	●		●	—	—	1-A
NF-TEEN 43R		—	—	—	—	—	—	—	—	—	—	—	●	▲	1-A
TEEN 43TR		●	●	●				●			●	—	—	—	2(1)-B
TEKN 43R					●	●			●			—	—	—	2(1)-A
43TR		●	●	●				●			●	—	—	—	2(1)-B

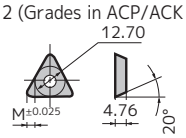
Fig 1





Cutting Edge A

Fig 2 (Grades in ACP/ACK series)





Cutting Edge B

DL1000 is also available for *-marked TEEN43R.
Top face and wiper edge of H1 insert have a mirror finish.
E class precision inserts have some difference in shape.

Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Plate Screw	Size	N·m	Wrench
CHE4050R CHE4063R	LCE4R	FBH0512	**M5**	**5.0**	CEWR	WB8R-16T	**M8**	**8.0**	TT27

Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Plate Screw	Size	N·m	Wrench
CHE4080R CHE4100R CHE4080RS42 CHE4100RS42	LCH4R	FBH0512	**M5**	**5.0**	CHWR	FBX0811	**M8**	**5.0**	TH040

* The above includes a TH030 wrench for locator screw.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	125-**100**-150	0.10-**0.15**-0.20	ACP200
	Alloy Steel	180 to 280HB	80-**100**-120	0.10-**0.20**-0.30	ACP200
K	Cast Iron	250HB	80-**100**-120	0.10-**0.20**-0.30	ACK200
N	Non-Ferrous Metal	—	60-**130**-200	0.05-**0.20**-0.30	DA1000 H1

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

CPG 4000 type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	0°
	Axial	6°

18mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling



Fig 1

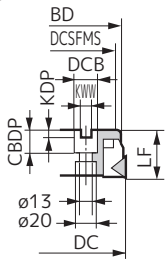


Fig 2

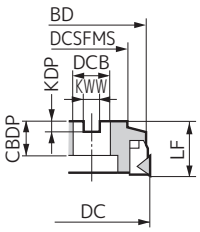


Fig 3

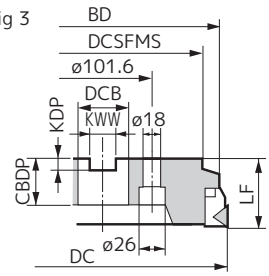


Figure shows right-handed (R) tool.

Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**CPG 4080R/L**	●		*80	77	60	50	**25.4**	9.5	6	25	5	1.2	1
	4100R/L	●		**100**	97	75	60	**31.75**	12.7	8	32	6	2.0	2
	4125R/L	●		**125**	121	75	60	**38.1**	15.9	10	38	8	3.3	2
	4160R/L	●		**160**	155	100	60	**50.8**	19.1	11	38	10	5.5	2
	4200R/L	●		**200**	194	130	60	**47.625**	25.4	13.5	38	12	8.6	3
	4250R/L			**250**	243	200	70	**47.625**	25.4	13.5	52	14	17.9	3
	4315R/L			**315**	308	240	70	**47.625**	25.4	13.5	52	18	25.5	3

Inserts are sold separately.

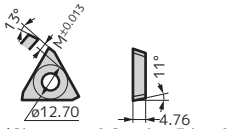
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet			
Process	High-speed/Light Cutting	P			K		M					P	P		
	Medium Cutting		PM	PM	K			P	P	K	K				P
	Roughing		PM	PM		K									
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30	A30N	H10E	G10E	T1500A	T130A	T250A	Fig
TPCH 43R					●	●	▲				●				1(2)
43L											●				2
43TR		●	●	●					●	●		●		●	1(2)
43TL									●						2
TPMN 432								●			●	●	●		3
433								●			●				3

Fig 1 (Grades in ACP/ACK series)



(Close-up of Cutting Edge for Figures 1 & 2)

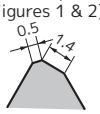


Fig 2

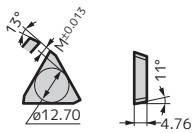
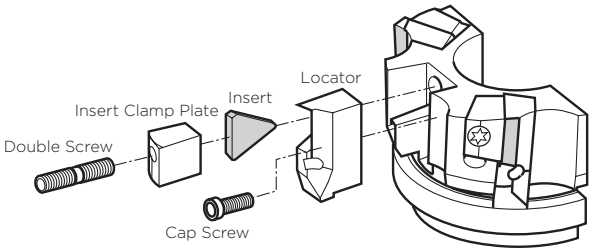


Fig 3





Parts

Applicable Cutter	Locator	Cap Screw	Clamp Plate	Double Screw	Wrench
CPG4080R	LCP40R	BX0508	PTW40R	WB8-22T	TT27 LH040
CPG4100R up to CPG4125R	LCP40R	BX0510	PTW41R	WB8-22T	TT27 LH040
CPG4160R up to CPG4315R	LCP40R	BX0510	PTW41R	WB8-30T	TT27 LH040
CPG4080L	LCP40L	BX0508	PTW40L	WB8-22T	TT27 LH040
CPG4100L up to CPG4125L	LCP40L	BX0510	PTW41L	WB8-22T	TT27 LH040
CPG4160L up to CPG4315L	LCP40L	BX0510	PTW41L	WB8-30T	TT27 LH040

Of the wrenches, TT27 is for double screw while LH040 is for cap screw.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	180 to 280HB	80-**110**-140	0.10-**0.18**-0.25	ACP200
P	Mild Steel	≤ 180HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
P	Die Steel	200 to 220HB	60- **80** -100	0.10-**0.15**-0.20	ACP200
M	Stainless Steel	—	100-**125**-150	0.10-**0.18**-0.25	ACP300
K	Cast Iron	250HB	60- **90** -120	0.10-**0.18**-0.25	ACK200

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

FMS type

P Steel | M Stainless Steel | K Cast Iron

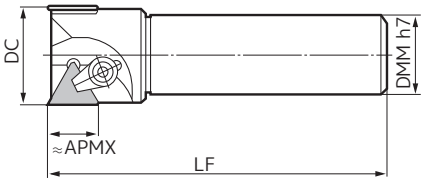
Rake Angle	Radial	-4° to -6°
	Axial	3° to 7°

8-19mm 90°

Face Milling | Shoulder Milling | Groove Milling | Side Milling

Fig 1





Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
FMS 216	●	**16**	8	16	70	1	+3°	-6°	1
220	●	**20**	8	20	100	2	+3°	-4°	1
225	●	**25**	8	25	110	2	+7°	-4°	1
FMS 330	●	**30**	13	32	160	2	+7°	-4°	1
332	●	**32**	13	32	160	2	+7°	-4°	1
335	●	**35**	13	32	160	2	+7°	-4°	1
FMS 440	●	**40**	19	32	160	2	+7°	-4°	1
450	●	**50**	19	32	160	2	+7°	-4°	1
460	●	**60**	19	32	160	3	+7°	-4°	1
440B		**40**	19	42	160	2	+7°	-4°	1

Inserts are sold separately.

Insert

Common to Figs. 1 to 3

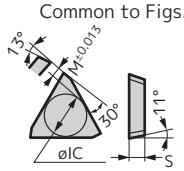
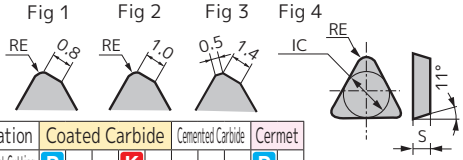


Fig 1 Fig 2 Fig 3 Fig 4



Grade Classification		Coated Carbide					Cemented Carbide			Cermet					
Process	High-speed/Light Cutting	P			K					P					
	Medium Cutting		P M	P M	K		P		K		P				
	Roughing		P M	P M		K									

Dimensions (mm)

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	A30N	A30	G10E	T1500A	T250A	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig	Applicable Cutter
TPKN 22TR						●				●	6.35	3.18	0.8	1	FMS 216
22R								●			6.35	3.18	0.8	1	to
TPMN 222							●	●			6.35	3.18	0.8	4	FMS 225
TPKN 32TR						●				●	9.525	3.18	0.8	2	FMS 330
32R								●			9.525	3.18	0.8	2	to
TPMN 322							●	●	●		9.525	3.18	0.8	4	FMS 335
TPCH 43TR	●	●	●			●			●	●	12.70	4.76	—	3	FMS
43R				●	●			●			12.70	4.76	—	3	440(B)
TPMN 432							●	●	●		12.70	4.76	0.8	4	to
433							●	●			12.70	4.76	1.2	4	FMS 460

H10E is also in stock for TPCH43TR.
EH10Z is also in stock for TPCH43R.

Recommended Cutting Conditions

Diameter ø16 to ø25mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	50- **75** -100	0.03-**0.06**-0.10	ACP200
	Alloy Steel	180 to 280HB	50- **65** -80	0.03-**0.05**-0.08	ACP200
K	Cast Iron	250HB	40- **70** -100	0.03-**0.10**-0.15	ACK200

Note
· 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.
· For groove milling, adjust the feed rate to around 70% of the above values.

Diameter ø30 to ø35mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	60- **90** -120	0.04-**0.08**-0.15	ACP200
	Alloy Steel	180 to 280HB	60- **80** -100	0.04-**0.08**-0.13	ACP200
K	Cast Iron	250HB	60- **90** -120	0.04-**0.12**-0.20	ACK200

Note
· 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.
· For groove milling, adjust the feed rate to around 70% of the above values.

Diameter ø40 to ø60mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	60-**100**-150	0.05-**0.15**-0.20	ACP200
	Alloy Steel	180 to 280HB	60- **90** -120	0.05-**0.12**-0.18	ACP200
K	Cast Iron	250HB	60- **90** -120	0.05-**0.15**-0.25	ACK200

Note
· 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.
· For groove milling, adjust the feed rate to around 70% of the above values.

Parts

Applicable Cutter	Clamp Plate	Double Screw			Shim	Spring Pin	Wrench
			Size	N·m			
FMS216 / FMS220	CCM5BSL	WB5-10	**M5**	**5.0**	—	—	TH025
FMS225	CCM5BSL	WB5-12	**M5**	**5.0**	—	—	TH025
FMS330 to FMS335	CCM6BL	WB6-16	**M6**	**5.0**	—	—	LH030
FMS440(B) to FMS460	CCM8UL	WB8-20	**M8**	**8.0**	STPL42	SPP308	LH040

N·m Recommended Tightening Torque (N·m)

WMM series

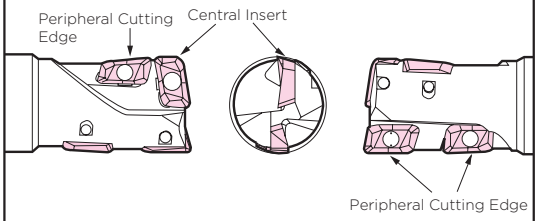


■ Features

A multi-functional cutter that performs a variety of operations such as groove milling, shoulder milling, ramping, pocketing, drilling, helical milling, etc., using WaveMill inserts.
With low cutting force and excellent chip evacuation, it is also effective for consolidating tools.

- The WMM series alone can perform a number of operations such as shoulder milling, groove milling and drilling
- Excellent for high-efficiency ramping, helical drilling and pocketing
- Uses WaveMill inserts for sharpness and cutting edge strength
- The reduction in cutting force enables the same chip evacuation as conventional tools but with less force required
- Easy tool management as only 1 type of insert is used
- Also ideal for stainless steel machining

● WMM series insert arrangement

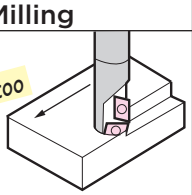


■ Applications: WMM2025E

● Shoulder Milling

SUS304

Cuts stainless steel too

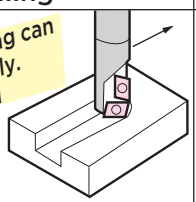


Diameter of Tool: ø25
Insert: APMT1103504PDER (ACZ350)
Depth of Cut: ap = 25mm, ae = 5mm
Cutting Speed: vc = 120m/min, Feed Rate: fz = 0.15mm/t
Air Blow

● Groove Milling

FC250

Deep groove milling can be performed easily. Easy chip removal

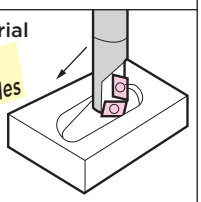


Diameter of Tool: ø25
Insert: APMT1103504PDER (ACZ310)
Depth of Cut: ap = 15mm, ae = 25mm
Cutting Speed: vc = 180m/min, Feed Rate: fz = 0.12mm/t
Air Blow

● Ramping

S50C Block Material

Capable of ramping without prepared holes

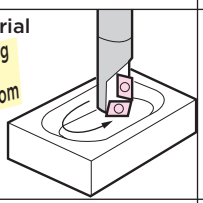


Diameter of Tool: ø25
Insert: APMT1103504PDER (ACZ350)
Cutting Width: ae = 25mm, Depth: ap = 15mm
Cutting Speed: vc = 200m/min, Feed Rate: fz = 0.1mm/t
Ramp Angle: θ=15°
Air Blow

● Pocketing

S50C Block Material

Capable of traverse cutting and pocketing with continuous lateral feed from the initial drilling or ramping process

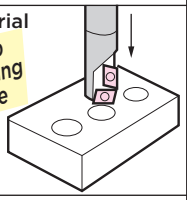


Diameter of Tool: ø25
Insert: APMT1103504PDER (ACZ350)
Machining done continuously from a deep drilling process with a depth of 15mm
Cutting Width: ae = 25mm, Depth ap = 15mm
Cutting Speed: vc = 200m/min, Feed Rate: fz = 0.1mm/t
Air Blow

● Drilling

S50C Block Material

Capable of easy chip evacuation and drilling without tool damage

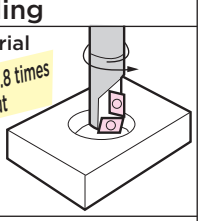


Diameter of Tool: ø25
Insert: APMT1103504PDER (ACZ350)
Hole Diameter: ø25mm, Depth: ap = 15mm
Cutting Speed: vc = 200m/min, Feed Rate: f = 0.1mm/rev
Step Feed: 0.5mm
Air Blow

● Helical Milling

S50C Block Material

Capable of large boring with diameters 1.2-1.8 times the cutter diameter without prepared holes



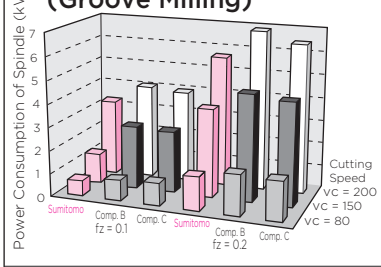
Diameter of Tool: ø25
Insert: APMT1103504PDER (ACZ350)
Hole Diameter: ø40mm, Depth: ap = 20mm
Cutting Speed: vc = 300m/min, Feed Rate: f = 0.1mm/rev
Axial Feed: 15mm/Pitch
Air Blow

■ Product Range and Performance

Type	Cat. No.	Description	Dia. (mm)												
			ø20	ø21	ø22	ø24.7	ø25	ø26	ø27	ø28	ø30	ø32	ø33	ø35	ø40
Shank	WMM 2000E	Standard type	1	1			1	1			1				
	WMM 2000EL	Long type	1	1			1	1			1				
	WMM 2000ELH	Long type w/ Coolant Hole	1	1			1	1			1				
	WMM 2000EXLH	Extra-Long type w/ Coolant Hole			(1)				(1)		(1)				
	WMM 3000E	Standard type										1	1	1	1
	WMM 3000EL	Long type										1	1	1	1
	WMM 3000ELH	Long type w/ Coolant Hole										1	1	1	1
	WMM 3000EXLH	Extra-Long type w/ Coolant Hole												(1)	(1)

Number in ●○ shows the number of teeth

● Performance Comparison (Groove Milling)



Diameter of Tool: ø25
Work Material: S50C
Cutting Conditions: vc = 80,150,200m/min,
fz = 0.1, 0.2mm/t
ap = 15mm, Tool Overhang = 40mm

WMM 2000E/EL/ELH/EXLH type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal

Rake Angle	Radial	15° to 16°
	Axial	7° to 11°

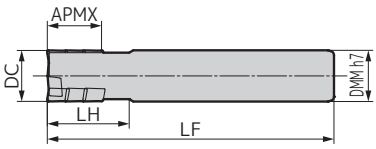
17-35mm | 90°

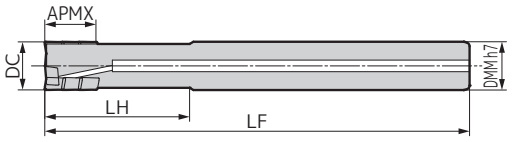
Face Milling | Shoulder Milling | Groove Milling | Ramping | Drilling | Profiling | Plunge Milling | Helical Milling

Fig 1



Fig 2





Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2020E	●	**20**	17	20	35	130	3	1	2
2021E	●	**21**	17	20	35	130	3	1	1
2025E	●	**25**	26	25	40	140	4	1	2
2026E	●	**26**	26	25	40	140	4	1	1
2030E	●	**30**	35	25	50	150	5	1	1

Body (Long Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2020EL	●	**20**	17	20	60	185	3	1	2
2021EL	●	**21**	17	20	35	185	3	1	1
2025EL	●	**25**	26	25	75	220	4	1	2
2026EL	●	**26**	26	25	40	220	4	1	1
2030EL	●	**30**	35	25	50	230	5	1	1

Body (Long Shank type / With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2020ELH	●	**20**	17	20	60	185	3	1	2
2021ELH	●	**21**	17	20	35	185	3	1	2
2025ELH	●	**25**	26	25	75	220	4	1	2
2026ELH	●	**26**	26	25	40	220	4	1	2
2030ELH	●	**30**	35	25	50	230	5	1	2

Body (Extra Long Shank type / With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2022EXLH		**22**	17	20	35	250	3	1	2
2027EXLH		**27**	26	25	40	320	4	1	2
2030EXLH		**30**	35	25	50	350	5	1	2

Inserts are sold separately.

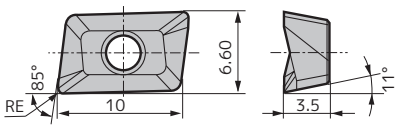
Insert

Dimensions (mm)

Grade Classification		Coated Carbide			Cemented Carbide	DLC		
Process	High-speed/Light Cutting				K N	N		
	Medium Cutting	M	P	K		N		
	Roughing							
Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Corner Radius RE	Fig
APMT 103504PDER		●	●	●	—	—	0.4	1
103508PDER		●	●	●	—	—	0.8	1
103512PDER		●	●	●	—	—	1.2	1
APMT 103504PDER-H		●	●	●	—	—	0.4	1
103508PDER-H		●	●	●	—	—	0.8	1
103512PDER-H		●	●	●	—	—	1.2	1
APET 103504PDER-F		●	●	●	—	—	0.4	1
APET 103504PDFR-S		—	—	—	●	●	0.4	1

-H: Strong-edged type, -F: Ground type Insert, -S: For Aluminum Alloy.

Fig 1



Parts (Common)

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
WMM 2000E/EL/ELH/EXLH type	BFTX02506N	N·m 1.5	TRD08	SUMI-P

Recommended Cutting Conditions Diameter ø20 to ø26mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed VC (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.		Insert Grades
P	Carbon Steel	180 to 280HB	80-**120**-160	Shoulder Milling	0.05-**0.13**-0.20	ACZ330
				Groove Milling	0.05-**0.09**-0.12	
				Drilling	0.05-**0.12**-0.18	
M	Stainless Steel	—	80-**100**-120	Shoulder Milling	0.05-**0.10**-0.15	ACZ350
				Groove Milling	0.05-**0.08**-0.10	
				Drilling	0.05-**0.09**-0.12	
K	Cast Iron	250HB	70-**150**-180	Shoulder Milling	0.05-**0.13**-0.20	ACZ310
				Groove Milling	0.05-**0.09**-0.12	
				Drilling	0.05-**0.12**-0.18	
N	Aluminum Alloy	—	200-**300**-500	Shoulder Milling	0.10-**0.15**-0.20	DL1000
				Groove Milling	0.05-**0.08**-0.10	
				Drilling	0.05-**0.08**-0.10	

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

Recommended Cutting Conditions Diameter ø30 to ø40mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed VC (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.		Insert Grades
P	Carbon Steel	180 to 280HB	80-**120**-160	Shoulder Milling	0.05-**0.15**-0.25	ACZ330
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
M	Stainless Steel	—	80-**100**-120	Shoulder Milling	0.05-**0.13**-0.20	ACZ350
				Groove Milling	0.05-**0.09**-0.12	
				Drilling	0.05-**0.12**-0.18	
K	Cast Iron	250HB	70-**150**-180	Shoulder Milling	0.05-**0.15**-0.25	ACZ310
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
N	Aluminum Alloy	—	200-**300**-500	Shoulder Milling	0.10-**0.15**-0.20	DL1000
				Groove Milling	0.05-**0.08**-0.10	
				Drilling	0.05-**0.08**-0.10	

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

N·m Recommended Tightening Torque (N·m)

WMM 3000E/EL/ELH/EXLH type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal

Rake Angle	Radial	17° to 19°
	Axial	7° to 11°

39mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Drilling | Profiling | Plunge Milling | Helical Milling



Fig 1

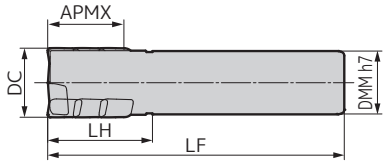
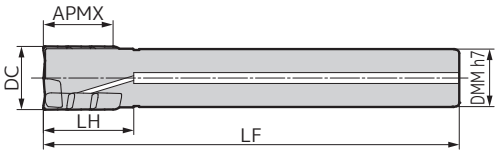


Fig 2



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3032E	●	**32**	39	32	50	150	4	1	1
3033E	●	**33**	39	32	50	150	4	1	1
3035E	●	**35**	39	32	50	150	4	1	1
3040E	●	**40**	39	32	55	160	4	1	1

Body (Long Shank type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3032EL	●	**32**	39	32	90	230	4	1	2
3033EL	●	**33**	39	32	50	230	4	1	1
3035EL	●	**35**	39	32	50	230	4	1	1
3040EL	●	**40**	39	32	55	240	4	1	1

Body (Long Shank type / With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3032ELH	●	**32**	39	32	90	230	4	1	1
3033ELH	●	**33**	39	32	50	230	4	1	2
3035ELH	●	**35**	39	32	50	230	4	1	2
3040ELH	●	**40**	39	32	55	240	4	1	2

Body (Extra Long Shank type / With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3035EXLH		**35**	39	32	50	370	4	1	2
3040EXLH		**40**	39	32	55	420	4	1	2

Note: The values in red have been changed from the 2023-2024 General Catalogue.

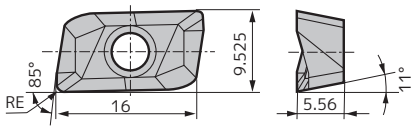
Insert

Dimensions (mm)

Grade Classification		Coated Carbide			Cemented Carbide	DLC
Process	High-speed/Light Cutting				K N	N
	Medium Cutting	M	P	K		N
	Roughing					

Cat. No.	ACZ350	ACZ330	ACZ310	H1	DL1000	Corner Radius RE	Fig
APMT 160508PDER	●	●	●	—	—	0.8	1
160512PDER	●	●	●	—	—	1.2	1
160516PDER	●	●	●	—	—	1.6	1
APMT 160508PDER-H	●	●	●	—	—	0.8	1
160512PDER-H	●	●	●	—	—	1.2	1
160516PDER-H	●	●	●	—	—	1.6	1
160520PDER-H*	●	●	●	—	—	2.0	1
160530PDER-H*	●	●	●	—	—	3.0	1
160540PDER-H*	●	●	●	—	—	4.0	1
160550PDER-H*	●	●	●	—	—	5.0	1
160560PDER-H*	●	●	●	—	—	6.0	1
APET 160508PDER-F	●	●	●	—	—	0.8	1
APET 160508PDFR-S	—	—	—	●	●	0.8	1

Fig 1



-H: Strong-edged type, -F: Ground type Insert, -S: For Aluminum Alloy.

* marked inserts require modification of the cutter body. Correct the tool diameter by +0.5mm before use.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WMM 3000E/EL/ELH/EXLH type	BFTX03584	**3.0**	TRD15	SUMI-P

Recommended Cutting Conditions Diameter ø30 to ø40mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t)	Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	80-**120**-160	Shoulder Milling	0.05-**0.15**-0.25	ACZ330
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
M	Stainless Steel	—	80-**100**-120	Shoulder Milling	0.05-**0.13**-0.20	ACZ350
				Groove Milling	0.05-**0.09**-0.12	
				Drilling	0.05-**0.12**-0.18	
K	Cast Iron	250HB	70-**150**-180	Shoulder Milling	0.05-**0.15**-0.25	ACZ310
				Groove Milling	0.05-**0.10**-0.15	
				Drilling	0.05-**0.13**-0.20	
N	Aluminum Alloy	—	200-**300**-500	Shoulder Milling	0.10-**0.15**-0.20	DL1000
				Groove Milling	0.05-**0.08**-0.10	
				Drilling	0.05-**0.08**-0.10	

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

N·m Recommended Tightening Torque (N·m)

MEMO

DMSL series / DMSW series

VIDEO OF CUTTING

Expansion



■ Features

- Complex arc-shaped cutting edge achieves a smaller cutting angle and a larger depth of cut simultaneously High-efficiency machining at maximum feed rate per tooth of 3.5mm/t is possible
- Small cutting angle controls cutting force toward the back force direction
  Stable machining without chatter even with long tool overhang amount
- Introducing the small diameters DMSL series
  Lineup of diameters ø16mm and up
  (Shell type/Shank type/Modular type)

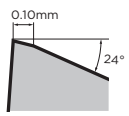
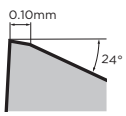
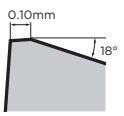
■ Product Range

Type	Cat. No.	Max. Diameter (mm)																			
		ø16	ø18	ø20	ø22	ø25	ø26	ø28	ø30	ø32	ø35	ø40	ø42	ø50	ø52	ø63	ø66	ø80	ø100	ø125	ø160
Shell	DMSL 06000RS											5 6 7	6 7	5 8	6 8	9	9	9			
Shell	DMSL 06000R inch													5 8		9		9			
Shell	DMSW 08000RS													4 5	4 5	4 5 6 *	5 6	6 8	6 8	8	10
Shell	DMSW 08000R inch													4 5		4 5 6		6 8 *	6 8	8	10
Shank	DMSL 06000E	2	2	3 4	3 4	4 5		4 5	5	5 6	5 6	6									
Shank	DMSL 06000EL	2	2	3	3	4		4	5	5	5	6									
Shank	DMSW 08000E										2	3		3							
Shank	DMSW 08000EL										2	3		3							
Modular	DMSL 06000M	2	2	3 4	3 4	4 5	4	4 5	5	5 6	5 6	6	6 7								
Modular	DMSW 08000M										2	3									

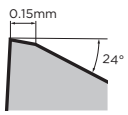
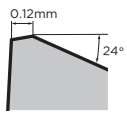
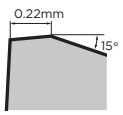
○○○ Shows expanded items Number in ●●● shows the number of teeth inch Inch Bore *mark: Different-diameter mounting sizes in stock

Modular type H265

■ Chipbreaker (DMSL type)

Work Material	P M K S		P M K H
Applications	Low-rigidity Milling	General-purpose to Interrupted Milling	Heavy Interrupted Milling, High-hardness
Features	Low Cutting Force	General-purpose	High Strength
	L type	G type	H type
Chipbreaker			
Cutting Edge Cross Section	 0.10mm 24° 4 corners	 0.10mm 24° 4 corners	 0.10mm 18° 4 corners

■ Chipbreaker (DMSW type)

Work Material	P M K S		P M K H
Applications	Low-rigidity Milling	General-purpose to Interrupted Milling	Heavy Interrupted Milling, High-hardness
Features	Low Cutting Force	General-purpose	High Strength
	L type	G type	H type
Chipbreaker			
Cutting Edge Cross Section	 0.15mm 24° 6 corners	 0.12mm 24° 6 corners	 0.22mm 15° 6 corners

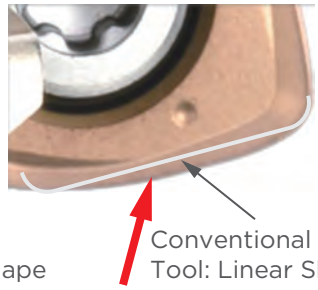
DMSL series / DMSW series

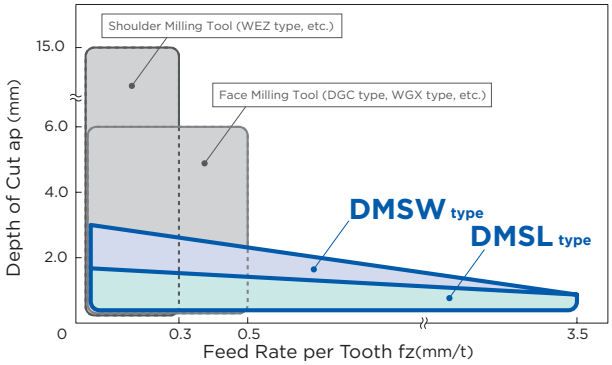
● **Complex arc-shaped cutting edge achieves a smaller cutting angle and a larger depth of cut simultaneously. High-efficiency machining at maximum feed rate per tooth of 3.5mm/t is possible.**

DMSL type

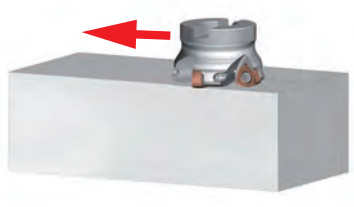


DMSW type

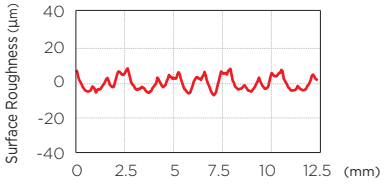




● **Even at high feed rates of 2.0mm/t or more, a reasonable surface finish can be attained without a wiper insert.**

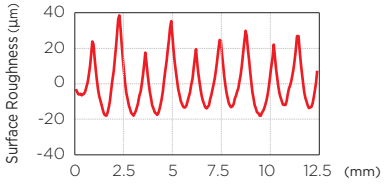


DMSW type



Ra 3.3µm Rz 14.1µm

Comp's A (High-Feed Tool)

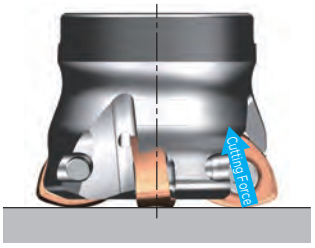


Ra 11.2µm Rz 51.0µm

Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: DMSW 08063RS04 (ø63, 4-teeth)
Insert: WNMU0807ZNER-G (ACU2500)
Cutting Conditions: vc = 150m/min, fz = 2.5mm/t, ap = 0.5mm, ae = 40mm Dry

● **Small cutting angle controls cutting force toward the back force direction Suppresses chatter in long tool overhang machining, increasing efficiency**

DMSL type / DMSW type

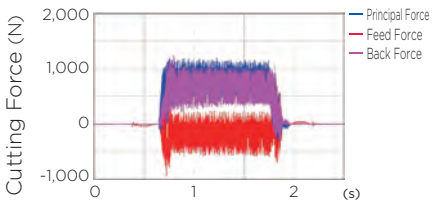


(Reference) Shoulder Milling Tool



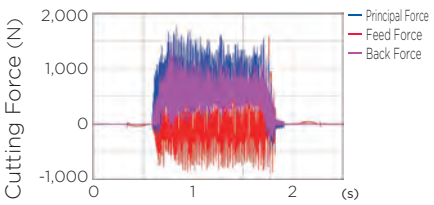


DMSL type



No Chattering

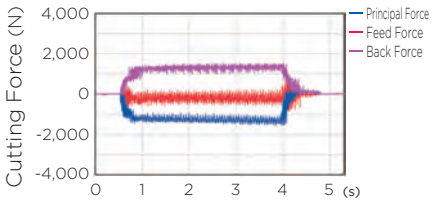
Comp's B (High-Feed Tool)



Heavy Chattering

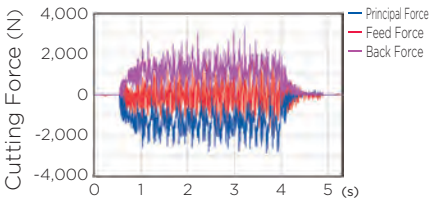
Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: DMSL06020E03 (D = ø20, 3 teeth)
Insert: LNMU06T3ZNER-G (ACU2500)
Cutting Conditions: vc = 160m/min, fz = 0.60mm/t, ap = 0.8mm, ae = 20mm, L = 100mm,Dry

DMSW type



No Chattering

Comp's C (High-Feed Tool)



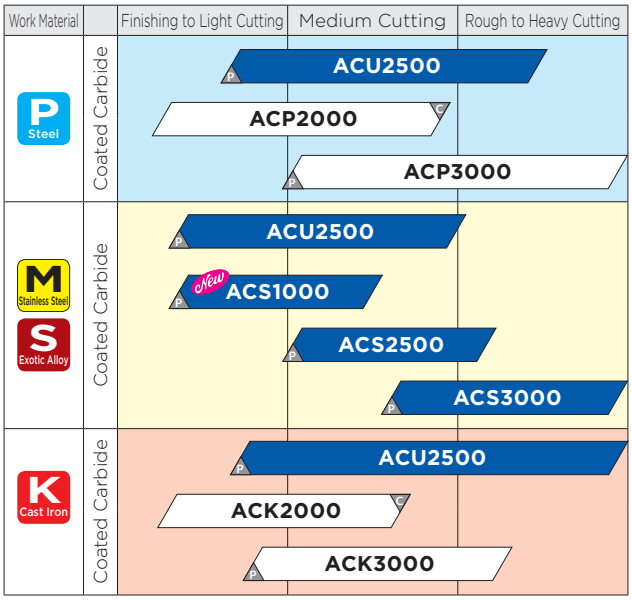
Heavy Chattering

Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: DMSW08050RS04 (D = ø50, 4 teeth)
Insert: WNMU0807ZNER-G (ACU2500)
Cutting Conditions: vc = 160m/min, fz = 0.65mm/t, ap = 0.8mm, ae = 45mm, L = 340mm,Dry

DMSL series / DMSW series

■ Grade Features

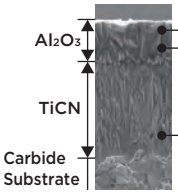
In addition to ACU2500 (applicable to various work materials), the lineup includes **ACS1000/ACS2500/ACS3000** grades, ideal for machining titanium alloys, heat-resistant alloys, and stainless steel.



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

New coating technology that realises absolute stability
ABSOTECH™ (Absolute Technology)

ABSOTECH CVD



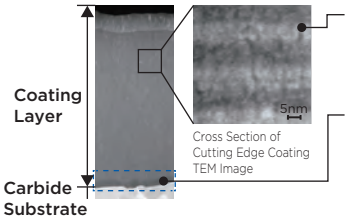
Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice that of conventional coatings

Crystal Orientation Control Al_2O_3
By controlling the growth direction, Al_2O_3 is reinforced for crater wear resistance more than twice that of conventional coatings

High Hardness TiCN
Increased TiCN hardness by using a C-rich composition for flank wear resistance more than twice that of conventional coatings

Applicable Grades: ACP2000, ACK2000

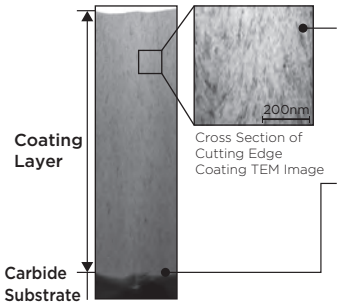
ABSOTECH PVD



New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

Applicable Grades: ACU2500, ACP3000, ACK3000



Ultra-fine Grained B Additive
- New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
- Outstanding balance of chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

Applicable Grades: ACS1000, ACS2500, ACS3000

Characteristic Values of Grade

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating type	Coating Thickness (μm)	Features
P Steel	ACU2500	91.6	3.8	ABSOTECH	3	· General-purpose grade covering steel, stainless steel, and cast iron machining · Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life on various work materials
P Steel	ACP2000	89.5	3.2	ABSOTECH	10	· For high-speed machining of steel · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance
P Steel	ACP3000	89.5	3.2	ABSOTECH	3	· Our 1st recommended grade for milling steel · Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions
M Stainless Steel / S Exotic Alloy	New ACS1000	91.6	3.8	ABSOTECH	3	· For high-efficiency milling of exotic alloys · High-hardness carbide substrate coupled with a chipping-resistant coating provides long, stable tool life in high-speed, high-efficiency machining applications
M Stainless Steel / S Exotic Alloy	ACS2500	90.8	4.2	ABSOTECH	3	· First recommendation for titanium alloy applications · Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping-resistant coating, balances excellent wear and fracture resistance
M Stainless Steel / S Exotic Alloy	ACS3000	89.8	3.4	ABSOTECH	3	· Suitable for a wide range of exotic alloy machining applications · Realises superb stability due to a high-toughness carbide substrate with a highly chipping-resistant coating
K Cast Iron	ACK2000	91.7	3.1	ABSOTECH	10	· For high-speed cast iron milling · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance
K Cast Iron	ACK3000	91.7	3.1	ABSOTECH	3	· Our 1st recommended grade for milling cast iron · Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations

■ Precautions for Corner Finishing

* Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

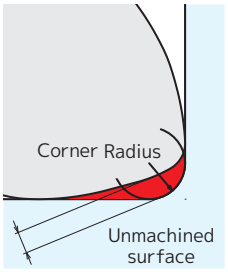
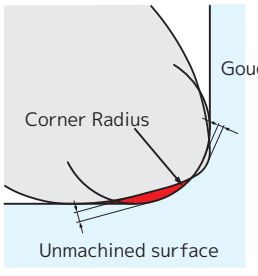


Fig 2



DMSL type			
Corner Radius	Unmachined surface	Gouging	Fig
0.5	0.88	0	1
1.0	0.69	0	1
1.5	0.54	0	1
2.0	0.41	0.02	2

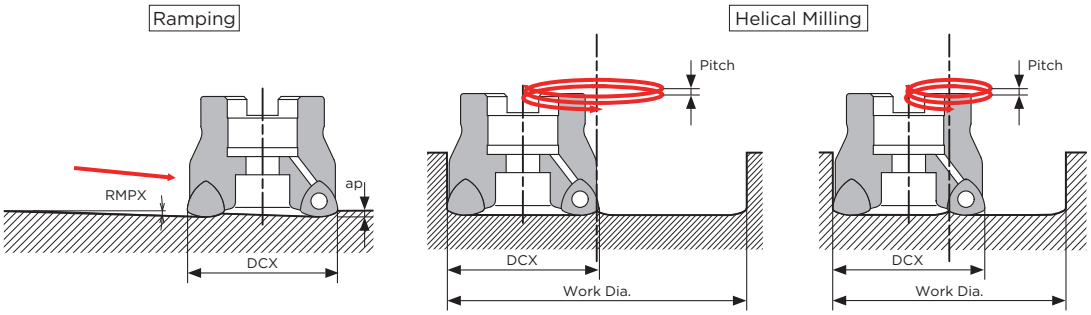
(mm)

DMSW type			
Corner Radius	Unmachined surface	Gouging	Fig
2.0	1.22	0	1
2.5	1.08	0	1
3.0	0.95	0	1
3.5	0.83	0.04	2

(mm)

DMSL series / DMSW series

■ Ramping/Helical Milling Upper Limit



Precautions for Helical Milling

- Above the max. machining diameter, the centre uncut portion can be removed by traverse cutting with the same cutter.
- Below the min. machining diameter, the centre uncut portion cannot be removed with the same cutter.

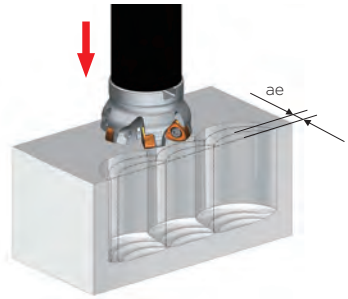
DMSL type

Max. Dia. DCX (mm)	Ramping	Helical Milling					
	Max. Ramping Angle RMPX (°)	Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Dia. (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
16	0.6	31.3	0.6	24.4	0.3	23.8	0.25
18	0.8	35.3	0.8	28.3	0.4	27.2	0.3
20	1.0	39.3	1.0	32.3	0.6	30.5	0.3
22	1.0	43.3	1.0	36.3	0.7	34.3	0.3
25	1.0	49.3	1.0	42.3	0.9	39.9	0.3
26	1.0	51.3	1.0	44.3	0.9	41.8	0.3
28	0.9	55.3	1.0	48.2	0.9	45.7	0.3
30	0.8	59.3	1.0	52.2	1.0	49.6	0.3
32	0.7	63.3	1.0	56.2	1.0	53.6	0.3
35	0.6	69.3	1.0	62.2	1.0	59.5	0.3
40	0.5	79.3	1.0	72.2	1.0	69.6	0.3
42	0.5	83.3	1.0	76.2	1.0	73.5	0.3
50	Not recommended						
52							
63							
66							
80							

DMSW type

Max. Dia. DCX (mm)	Ramping	Helical Milling					
	Max. Ramping Angle RMPX (°)	Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Dia. (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
35	0.5	69.3	1.3	53.5	0.5	52.0	0.5
40	0.8	79.3	2.0	63.4	1.0	60.2	0.5
50	1.4	99.3	2.0	83.3	2.0	79.1	1.0
52	1.4	103.3	2.0	87.3	2.0	82.8	1.0
63	1.2	125.3	2.0	109.3	2.0	103.6	1.0
66	1.2	131.3	2.0	115.3	2.0	109.4	1.0
80	1.2	159.3	2.0	143.2	2.0	134.0	1.0
100	0.8	199.3	2.0	183.2	2.0	174.0	1.0
125	Not recommended						
160							

■ Plunge Cutting Upper Limit



	Max. ae (mm)	Max. fz (mm/t)
DMSL type	4	0.2
DMSW type	10	0.2

DMSL 06000R(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

Expansion

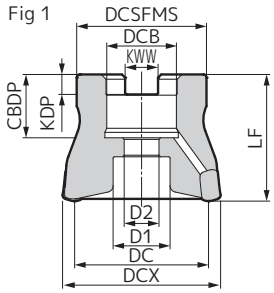
Rake Angle	Radial	-8° to -12.5°
	Axial	-8°

1.5mm 17°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DMSL 06040RS05**	●	**40**	32.3	33	40	16	8.4	5.6	18	14	9	5	0.20	1
	06040RS06	●	**40**	32.3	33	40	16	8.4	5.6	18	14	9	6	0.20	1
	06040RS07	●	**40**	32.3	33	40	16	8.4	5.6	18	14	9	7	0.19	1
	06042RS06	●	**42**	34.3	33	40	16	8.4	5.6	18	14	9	6	0.21	1
	06042RS07	●	**42**	34.3	33	40	16	8.4	5.6	18	14	9	7	0.21	1
	06050RS05	●	**50**	42.3	41	40	22	10.4	6.3	20	18	11	5	0.31	1
	06050RS08	●	**50**	42.3	41	40	22	10.4	6.3	20	18	11	8	0.30	1
	06052RS06	●	**52**	44.3	41	40	22	10.4	6.3	20	18	11	6	0.32	1
	06052RS08	●	**52**	44.3	41	40	22	10.4	6.3	20	18	11	8	0.31	1
	06063RS09	●	**63**	55.3	50	40	22	10.4	6.3	20	18	11	9	0.52	1
	06066RS09-27	●	**66**	58.3	55	50	27	12.4	7	22	20	14	9	0.77	1
	06080RS09	●	***80**	72.3	55	50	27	12.4	7	22	20	14	9	0.94	1
Inch	**DMSL 06050R05**	●	**50**	42.3	41	40	22.225	8.4	5	20	18	11	5	0.32	1
	06050R08	●	**50**	42.3	41	40	22.225	8.4	5	20	18	11	8	0.30	1
	06063R09	●	**63**	55.3	50	40	22.225	8.4	5	20	18	11	9	0.52	1
	06080R09	●	***80**	72.3	70	63	31.75	12.7	8	32	27	18	9	1.39	1

Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Note To mount the cutters marked with * to an arbor, use a JIS B1176 hexagonal socket bolt (metric specification: M12 x 30 to 35mm, inch specification: M16 x 40 to 45mm).

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX02507IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

DMSL 06 066 R S 09 - 27

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

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

DMSL 06000R(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy H Hardened Steel

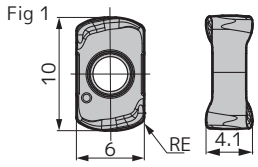
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									
Process	High-speed/Light Cutting		P		K		MS	MS			
	Medium Cutting	KPMS	P	P	K	K		MS	MS		
	Roughing	KPMS		P		K			MS		
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 New	ACS2500	ACS3000	Corner Radius RE	Fig
LNMU 06T3ZNER-L New		●	●	●			●	●	●	1.0	1
LNMU 06T3ZNER-G		●	●	●	●	●	●	●	●	1.0	1
LNMU 06T3ZNER-H New		●	●	●			●	●	●	1.0	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0	ACU2500/ACP2000/ACP3000
	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8	
	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2	
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2	ACU2500/ACS1000/ACS2500/ACS3000
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8	ACU2500/ACK2000/ACK3000
S	Heat-Resistant Alloy	—	20 - **30** - 40	0.3 - **0.5** - 0.7	ACU2500/ACS1000/ACS2500/ACS3000
	Ti Alloy	—	30 - **50** - 70	0.4 - **0.6** - 0.8	
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7	ACU2500/ACP3000

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (ap) of 0.75mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

DMSW 08000R(S) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

Expansion

Rake Angle	Radial	-7° to -10°
	Axial	-6°

3mm 15°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1

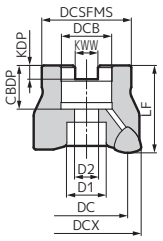


Fig 2

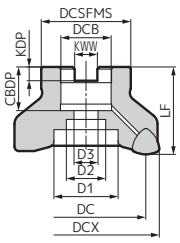


Fig 3

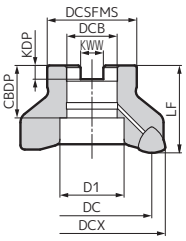


Fig 4

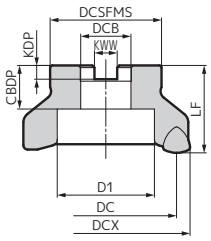
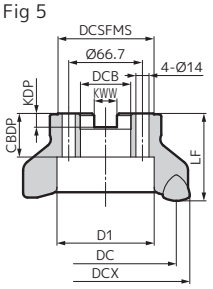


Fig 5



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 CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**DMSW 08050RS04**	●	**50**	33.4	41	40	**22**	10.4	6.3	20	16.7	11	—	4	0.25	1
	08050RS05	●	**50**	33.4	41	40	**22**	10.4	6.3	20	16.7	11	—	5	0.24	1
	08052RS04	●	**52**	35.4	41	40	**22**	10.4	6.3	20	16.7	11	—	4	0.27	1
	08052RS05	●	**52**	35.4	41	40	**22**	10.4	6.3	20	16.7	11	—	5	0.25	1
	08063RS04	●	**63**	46.4	50	40	**22**	10.4	6.3	20	18	11	—	4	0.46	1
	08063RS05	●	**63**	46.4	50	40	**22**	10.4	6.3	20	18	11	—	5	0.46	1
	08063RS06	●	**63**	46.4	50	40	**22**	10.4	6.3	20	18	11	—	6	0.44	1
	08063RS05-27	●	**63**	46.4	50	50	**27**	12.4	7	22	20	14	—	5	0.55	1
	08063RS06-27	●	**63**	46.4	50	50	**27**	12.4	7	22	20	14	—	6	0.53	1
	08066RS05-27	●	**66**	49.4	50	50	**27**	12.4	7	22	20	14	—	5	0.60	1
	08066RS06-27	●	**66**	49.4	50	50	**27**	12.4	7	22	20	14	—	6	0.58	1
	08080RS06	●	***80**	63.3	55	50	**27**	12.4	7	22	20	14	—	6	0.88	1
	08080RS08	●	***80**	63.3	55	50	**27**	12.4	7	22	20	14	—	8	0.84	1
	08100RS06	●	**100**	83.3	70	50	**32**	14.4	8	32	46	—	—	6	1.29	3
	08100RS08	●	**100**	83.3	70	50	**32**	14.4	8	32	46	—	—	8	1.29	3
	08125RS08	●	**125**	108.3	80	63	**40**	16.4	9	29	52	29	—	8	2.41	1
	08160RS10	●	**160**	143.3	100	63	**40**	16.4	9	29	90	—	—	10	4.73	5
Inch	**DMSW 08050R04**	●	**50**	33.4	41	40	**22.225**	8.4	5	20	16.7	11	—	4	0.25	1
	08050R05	●	**50**	33.4	41	40	**22.225**	8.4	5	20	16.7	11	—	5	0.24	1
	08063R04	●	**63**	46.4	50	40	**22.225**	8.4	5	20	18	11	—	4	0.46	1
	08063R05	●	**63**	46.4	50	40	**22.225**	8.4	5	20	18	11	—	5	0.46	1
	08063R06	●	**63**	46.4	50	40	**22.225**	8.4	5	20	18	11	—	6	0.44	1
	08080R06	●	***80**	63.3	70	63	**31.75**	12.7	8	32	27	18	—	6	1.32	1
	08080R08	●	***80**	63.3	70	63	**31.75**	12.7	8	32	27	18	—	8	1.28	1
	08080R06-25.4	●	**80**	63.3	55	50	**25.4**	9.5	6	25	20	14	—	6	0.91	1
	08080R08-25.4	●	**80**	63.3	55	50	**25.4**	9.5	6	25	20	14	—	8	0.87	1
	08100R06	●	***100**	83.3	70	63	**31.75**	12.7	8	32	46	27	18	6	1.75	2
	08100R08	●	***100**	83.3	70	63	**31.75**	12.7	8	32	46	27	18	8	1.76	2
	08125R08	●	**125**	108.3	80	63	**38.1**	15.9	10	35.5	55	30	—	8	2.55	1
	08160R10	●	**160**	143.3	100	63	**50.8**	19.1	11	38	72	—	—	10	4.18	4

Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Note To mount the cutters marked with * to an arbor, use a JIS B1176 hexagonal socket bolt (metric specification: M12 x 30 to 35mm, inch specification: M16 x 40 to 45mm).

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
DMSW08160R(S)10	BFTX0513IP	5.0	TRDR20IP	—	—	SUMI-P
Other than above			—	HPL2025	TRB20IP	

Identification Code

DMSW 08 063 R S 05 - 27

DMSW	08	063	R	S	05	27
Series Code	Insert Size	Max. Dia.	Feed Direction	Metric Bore	Number of Teeth	Mounting Size

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

DMSW 08000R(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy H Hardened Steel

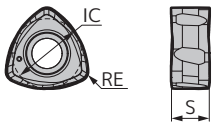
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										
Process	High-speed/Light Cutting		P		K		MS	MS				
	Medium Cutting	PMS	P	P	K	K		MS	MS			
	Roughing	PMS		P		K			MS			
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 (New)	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
WNMU 0807ZNER-L		●	●	●			●	●	●	13	7	1.6	1
WNMU 0807ZNER-G		●	●	●	●	●	●	●	●	13	7	1.6	1
WNMU 0807ZNER-H		●	●	●			●	●	●	13	7	1.6	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0	ACU2500/ACP2000/ACP3000
	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8	
	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2	
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2	ACU2500/ACS1000/ACS2500/ACS3000
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8	ACU2500/ACK2000/ACK3000
S	Heat-Resistant Alloy	—	20 - **30** - 40	0.3 - **0.5** - 0.7	ACU2500/ACS1000/ACS2500/ACS3000
	Ti Alloy	—	30 - **50** - 70	0.4 - **0.6** - 0.8	
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7	ACU2500/ACP3000

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (ap) of 1.5mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

DMSL 06000E(L) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

Expansion

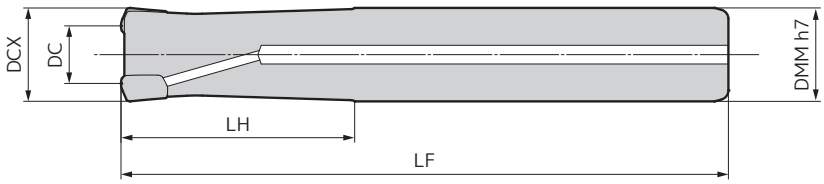
Rake Angle	Radial	-12.5° to -16.5°
	Axial	-8°

1.5mm 17°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSL 06016E02	●	**16**	8.4	16	30	110	2	0.15	1
06018E02	●	**18**	10.4	16	30	110	2	0.15	1
06020E03	●	**20**	12.4	20	50	130	3	0.27	1
06020E04	●	**20**	12.4	20	50	130	4	0.27	1
06022E03	●	**22**	14.3	20	50	130	3	0.29	1
06022E04	●	**22**	14.3	20	50	130	4	0.29	1
06025E04	●	**25**	17.3	25	60	140	4	0.46	1
06025E05	●	**25**	17.3	25	60	140	5	0.46	1
06028E04	●	**28**	20.3	25	60	140	4	0.49	1
06028E05	●	**28**	20.3	25	60	140	5	0.48	1
06030E05	●	**30**	22.3	32	70	150	5	0.81	1
06032E05	●	**32**	24.3	32	70	150	5	0.82	1
06032E06	●	**32**	24.3	32	70	150	6	0.82	1
06035E05	●	**35**	27.3	32	50	150	5	0.88	1
06035E06	●	**35**	27.3	32	50	150	6	0.88	1
06040E06	●	**40**	32.3	32	50	150	6	0.91	1

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSL 06016EL02	●	**16**	8.4	16	70	150	2	0.19	1
06018EL02	●	**18**	10.4	16	50	150	2	0.21	1
06020EL03	●	**20**	12.4	20	80	160	3	0.33	1
06022EL03	●	**22**	14.3	20	60	160	3	0.36	1
06025EL04	●	**25**	17.3	25	100	170	4	0.54	1
06028EL04	●	**28**	20.3	25	60	170	4	0.60	1
06030EL05	●	**30**	22.3	32	120	200	5	1.01	1
06032EL05	●	**32**	24.3	32	120	200	5	1.06	1
06035EL05	●	**35**	27.3	32	60	210	5	1.21	1
06040EL06	●	**40**	32.3	32	60	210	6	1.24	1

Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX02507IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

DMSL Series Code | **06** Insert Size | **025** Max. Dia. | **E** Shank type | **L** Long Shank | **04** Number of Teeth

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

DMSL 06000E(L) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy H Hardened Steel

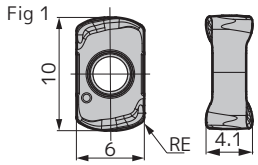
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									
Process	High-speed/Light Cutting		P		K		M S	M S			
	Medium Cutting	K P M S	P	P	K	K		M S	M S		
	Roughing	K P M S		P		K			M S		
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS1000 New	ACS2500	ACS3000	Corner Radius RE	Fig
LNMU 06T3ZNER-L New		●	●	●			●	●	●	1.0	1
LNMU 06T3ZNER-G		●	●	●	●	●	●	●	●	1.0	1
LNMU 06T3ZNER-H New		●	●	●			●	●	●	1.0	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0	ACU2500/ACP2000/ACP3000
	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8	
	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2	
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2	ACU2500/ACS1000/ACS2500/ACS3000
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8	ACU2500/ACK2000/ACK3000
S	Heat-Resistant Alloy	—	20 - **30** - 40	0.3 - **0.5** - 0.7	ACU2500/ACS1000/ACS2500/ACS3000
	Ti Alloy	—	30 - **50** - 70	0.4 - **0.6** - 0.8	
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7	ACU2500/ACP3000

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (ap) of 0.75mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

DMSW 08000E(L) type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

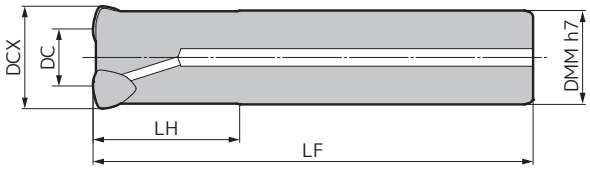
Rake Angle		
	Radial	-10° to -13°
	Axial	-6°

3mm 15°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSW 08035E02	●	**35**	18.6	32	50	150	2	0.85	1
08040E03	●	**40**	23.5	32	50	150	3	0.86	1
08050E03-42	●	**50**	33.4	42	50	150	3	1.51	1

Inserts are sold separately.

Body (Long Shank type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSW 08035EL02	●	**35**	18.6	32	60	210	2	1.21	1
08040EL03	●	**40**	23.5	32	60	210	3	1.22	1
08050EL03-42	●	**50**	33.4	42	50	250	3	2.54	1

Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0513IP	**5.0**	TRDR20IP	SUMI-P

Identification Code

DMSW **08** **050** **E** **L** **03** - **42**

Series Code	Insert Size	Max. Dia.	Shank type	Long Shank	Number of Teeth	Shank Dia.

N·m Recommended Tightening Torque (N·m)

DMSW 08000E(L) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy H Hardened Steel

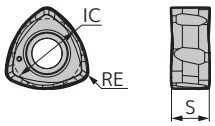
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting		P		K		MS	MS					
	Medium Cutting	SPMS	P	P	K	K		MS	MS				
	Roughing	SPMS		P		K			MS				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	New ACS1000	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
WNMU 0807ZNER-L		●	●	●			●	●	●	13	7	1.6	1
WNMU 0807ZNER-G		●	●	●	●	●	●	●	●	13	7	1.6	1
WNMU 0807ZNER-H		●	●	●			●	●	●	13	7	1.6	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0	ACU2500/ACP2000/ACP3000
	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8	
	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2	
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2	ACU2500/ACS1000/ACS2500/ACS3000
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8	ACU2500/ACK2000/ACK3000
S	Heat-Resistant Alloy	—	20 - **30** - 40	0.3 - **0.5** - 0.7	ACU2500/ACS1000/ACS2500/ACS3000
	Ti Alloy	—	30 - **50** - 70	0.4 - **0.6** - 0.8	
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7	ACU2500/ACP3000

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (ap) of 1.5mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- For groove milling, adjust the feed rate to around 70% of the above values.

WFXH series

VIDEO OF CUTTING

Expansion



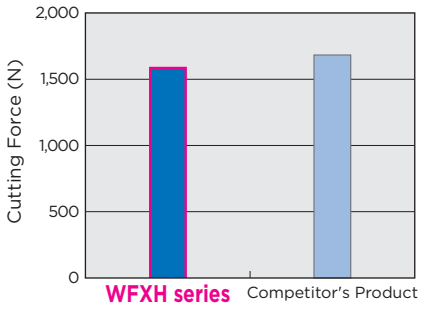
■ Features

SEC-WaveMill WFXH series are high performance multi-functional cutters that use WFX series inserts to support roughing at high feed rates and other milling applications.

(1) Stable, high-efficiency machining due to their superior sharpness
(2) Various milling applications are supported (ramping, helical milling)
(3) Various inserts for the WFX series can be used
(4) Applicable to various work materials
Expansion of the new grade ACS series, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.

Modular type H267

Cutting force: High sharpness realises stable milling



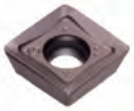
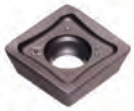
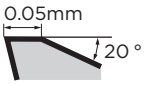
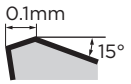
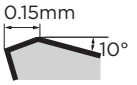
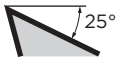
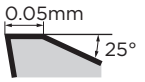
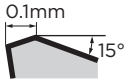
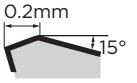
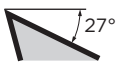
Work Material : S50C
Tool : WFXH12063RS (5 fluted)
Cutting Conditions : vc = 200m/min, fz = 1.0mm/t, ap = 0.5mm, ae = 44mm, Dry

Chips: Small and curled, low cutting temperatures

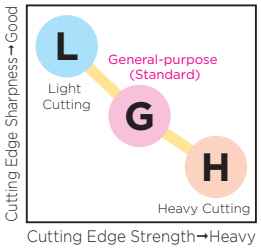


Work Material : S50C
Tool : WFXH12063RS, SOMT120416PDER-G (ACP200)
Cutting Conditions : vc = 200m/min, fz = 1.0mm/t, ap = 1mm, ae = 35mm, Dry

■ Chipbreaker Selection

Work Material	P M K S			N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	For Non-Ferrous Metals
Features	Low Cutting Force	General-purpose type	High Strength type	Sharp Edge
	L type	G type	H type	S type
Chipbreaker				
08 type Cross Section				
12 type Cross Section				

■ Chipbreaker Selection Guide



■ Precautions for Use (1) Precautions for corner milling

* Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

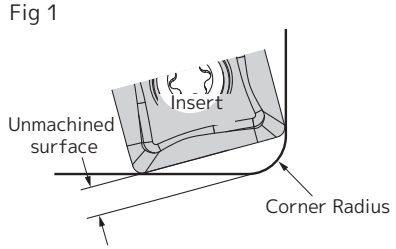
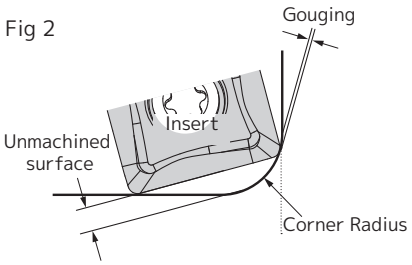


Fig 2



WFXH08000RS type

Dimensions (mm)

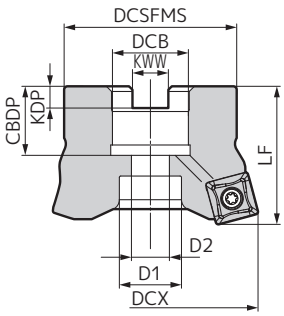
Corner Radius	SOMT08OO04-☐ (RE0.4)			SOMT08OO08-☐ (RE0.8)			SOMT08OO12-☐ (RE1.2)		
	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig
2.0	1.41	0	1	1.30	0	1	1.21	0	1
2.5	1.30	0.02	2	1.19	0.01	2	1.09	0	1
3.0	—	—	—	—	—	—	0.98	0.05	2

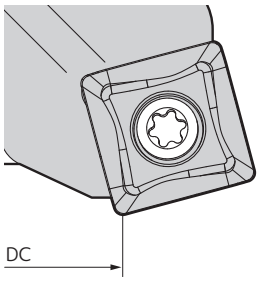
WFXH12000RS type

Dimensions (mm)

Corner Radius	SOMT12OO04-☐ (RE0.4)			SOMT12OO08-☐ (RE0.8)			SOMT12OO12-☐ (RE1.2)			SOMT12OO16-☐ (RE1.6)		
	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig	Unmachined surface	Gouging	Fig
2.0	2.58	0	1	2.48	0	1	2.37	0	1	2.25	0	1
2.5	2.47	0	1	2.37	0	1	2.25	0	1	2.14	0	1
3.0	2.36	0	1	2.26	0	1	2.14	0	1	2.11	0	1
3.5	2.24	0.01	2	2.14	0	1	2.03	0	1	1.91	0	1
4.0	—	—	—	2.03	0.04	2	1.91	0.03	2	1.8	0.01	2

■ Precautions for Use (2) The cutting diameter DC differs depending on the insert used. We recommend using WFXH type with large corner radius inserts.





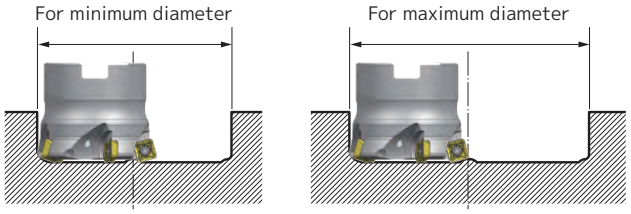
	Body Cat. No.	DCX	DC			
			R0.4	R0.8	R1.2	R1.6
*	WFXH 08025M12Z2	25	10.4	10.9	11.5	—
*	08032M12Z3	32	17.4	17.9	18.5	—
	WFXH 08040RS	40	25.4	25.9	26.5	—
	08050RS	50	35.4	35.9	36.5	—
	08050RS-Z6	50	35.4	35.9	36.5	—
	08063RS	63	48.4	48.9	49.5	—
*	WFXH 12040M12Z3	40	16.6	17.1	17.5	18.1
*	WFXH 12050RS	50	26.6	27.2	27.7	28.2
	12063RS	63	39.5	40.0	40.4	41.1

* mark: Modular Tools ☞H267

WFXH series

■ Helical Milling and Ramping

Helical Milling



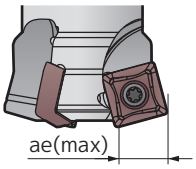
Ramping



Insert Cat. No.	DC	Helical Milling (mm)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramp Angle
SOMT08○○04-□	**25**	35	49	1.5°
	32	49	63	0.5°
	40	65	79	0.5°
	50	Impossible	Impossible	Impossible
	63	Impossible	Impossible	Impossible
SOMT08○○08-□	**25**	35	48	3°
	32	49	62	1.5°
	40	65	78	1.0°
	50	85	98	0.5°
	63	111	124	0.5°
SOMT08○○12-□	**25**	34	47	4.5°
	32	48	61	2.5°
	40	64	77	1.5°
	50	84	97	1.0°
	63	110	123	0.5°

Insert Cat. No.	DC	Helical Milling (mm)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramp Angle
SOMT12○○04-□	**40**	56	79	1.0°
	50	76	99	0.5°
	63	Impossible	Impossible	Impossible
SOMT12○○08-□	**40**	56	78	1.5°
	50	76	98	1.0°
	63	102	124	0.5°
SOMT12○○12-□	**40**	55	77	2.5°
	50	75	97	1.5°
	63	101	123	1.0°
SOMT12○○16-□	**40**	55	76	3.5°
	50	75	96	2.0°
	63	101	122	1.5°

■ Maximum Depth of Cut when Plunging



Insert Cat. No.	Max. Depth of Cut ae(max)
SOMT08	6mm
SOMT12	10mm

Lower the feed rate when plunging.

■ Recommended Cutting Conditions

Work Material	Insert Grades	Cutting Speed vc(m/min)	Insert Cat. No.	ø25		ø32		ø40		ø50		ø63	
				ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)
P General Steel Below 200HB	ACU2500 ACP200	100-**150**-200	**SOMT08**	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
			SOMT12	—	—	—	—	1.0	1.0	1.0	1.0	1.0	1.0
P Alloy Steel Below 45HRC		80-**130**-180	**SOMT08**	0.7	0.8	0.7	0.8	0.7	0.8	0.7	0.8	0.7	0.8
			SOMT12	—	—	—	—	0.8	1.0	0.8	1.0	0.8	1.0
M Stainless Steel SUS304, etc.	ACU2500 ACS3000 ACM300	80-**120**-150	**SOMT08**	0.8	0.7	0.8	0.7	0.8	0.7	0.8	0.7	0.8	0.7
			SOMT12	—	—	—	—	1.0	0.8	1.0	0.8	1.0	0.8
K Cast Iron FC, FCD	ACU2500 ACK200	100-**150**-200	**SOMT08**	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0	0.8	1.0
			SOMT12	—	—	—	—	1.0	1.2	1.0	1.2	1.0	1.2
H Hardened Steel Below 50HRC	ACK300	40-**80**-100	**SOMT08**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
			SOMT12	—	—	—	—	0.6	0.8	0.6	0.8	0.6	0.8

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity. The above figures are guidelines for use with BT50 machine tools.
- The above recommended cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length of 3 times tool diameter) or less.
  When tool overhang is more than L/D = 3 and less than or equal to L/D = 5, settings should be adjusted to approximately **70 to 80%** of those indicated in the above recommended cutting conditions (ap, fz).
  When tool overhang is more than L/D = 5 and less than or equal to L/D = 8, settings should be adjusted to approximately **50 to 60%** of those indicated in the above recommended cutting conditions (ap, fz).
- For groove milling, adjust the feed rate to around 70% of the above values.

WFXH 08000RS type

P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy | H Hardened Steel

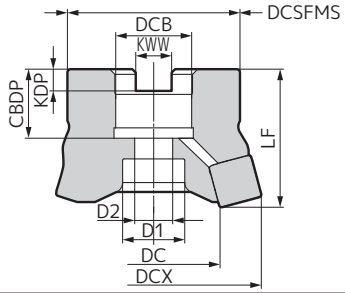
Rake Angle	Radial	-6°
	Axial	6°

1.5mm 15°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1



Body

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXH 08040RS**	●	**40**	*26.5	33	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	08050RS	●	**50**	*36.5	41	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	08050RS-Z6	●	**50**	*36.5	41	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	08063RS	●	**63**	*49.5	50	40	**22**	10.4	6.3	20	18	11	6	0.5	1

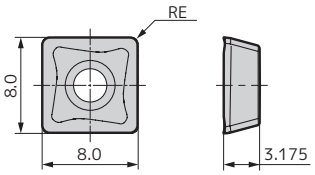
Inserts are sold separately.
* indicates value with corner radius 1.2 inserts mounted. Refer to page H179 for details.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	●	●			●		●	●		●		●	●			
	Medium Cutting	●		●	●	●			●	●	●	●		●	●		
	Roughing	●		●	●		●			●		●			●		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●				▲	▲	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		0.8	1
080312PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
080312PZER-H		●	●	●	●	●	●			●	▲	▲	—	—		1.2	1
SOET 080304PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	0.4	1
080308PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	●	0.8	1
080312PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	1.2	1
SOET 080302PZFR-S*		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S*		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S*		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1

Fig 1



*If the cutting edge strength for high-efficiency milling of non-ferrous metal is insufficient, try a G-type chipbreaker (ACK300).

Recommended Cutting Conditions H180 | Precautions for Use H179

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	SUMI-P

Identification Code

WFXH 08 040 RS - Z6

Series Code	Insert Size	Max. Dia.	Metric Bore	Fine Pitch type (with no. of teeth)

WFXH 12000RS type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

Rake Angle	Radial	-6°
	Axial	6°

2.5mm 15°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling

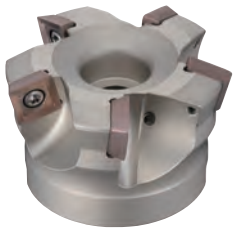
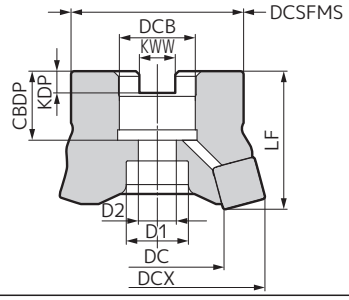


Fig 1



Body

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXH 12050RS**	●	**50**	*28.2	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	●	**63**	*41.1	50	40	**22**	10.4	6.3	20	18	11	5	0.4	1

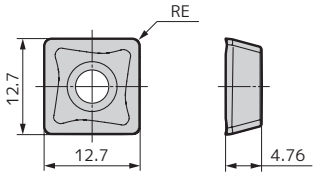
Inserts are sold separately.
* indicates value with corner radius 1.6 inserts mounted. Refer to page H179 for details.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	PS	P			K		MS	MS		MS		KN	N			
	Medium Cutting	PS		PM	PM	K			MS	MS	MS	MS		N	PM		
	Roughing	PS		PM	PM		K			MS		MS			P		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.4	1
120408PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
120412PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	1.2	1
120416PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S*		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1

Fig 1



*If the cutting edge strength for high-efficiency milling of non-ferrous metal is insufficient, try a G-type chipbreaker (ACK300).

Recommended Cutting Conditions H180 | Precautions for Use H179

Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
				
BFTX03512IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Identification Code

WFXH 12 050 RS

WFXH	12	050	RS
Series Code	Insert Size	Max. Dia.	Metric Bore

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

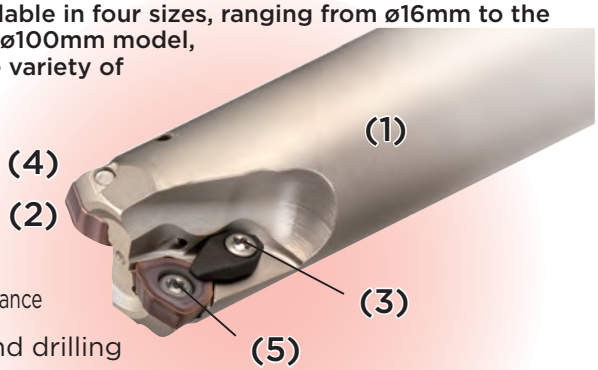
MEMO

MSX series



■ Features

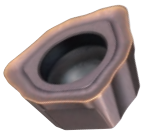
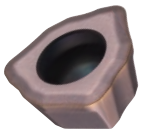
**The SEC-Metal Slash Mill MSX series is a multi-purpose cutter capable of roughing at ultra-high feeds.
Its wide application range dramatically boosts efficiency.
Inserts are available in four sizes, ranging from ø16mm to the large diameter ø100mm model, to cover a wide variety of milling needs.**



(1) **Highly Durable Body** Special surface treatment improves scratch resistance
(2) **Versatile Machining Operations** Enables ramping, helical milling, and drilling
(3) **Double Clamp** Stable milling with a strong clamp is possible (ø22mm or smaller MSX06000 type and MSX08000 type cutters only use a single clamp)
(4) **With Coolant Hole** Improved chip evacuation with air or coolant supply hole and specially shaped pocket design
(5) **Insert Shape** Unique tool shape combines sharpness and cutting edge strength

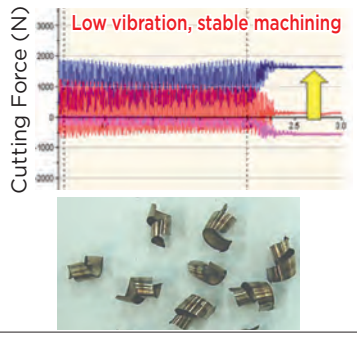
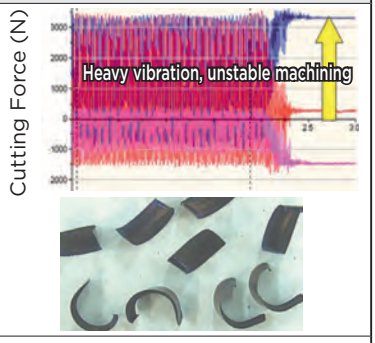
■ Insert Applications and Types

· Insert utilises a special cutting edge profile
· Economical, three-cornered insert

Type	General-purpose type	Strong Edged
Applications	General Milling (First Recommendation)	Interrupted Cutting
Appearance / Features	 Sharper Edge	 Emphasis on Fracture Resistance

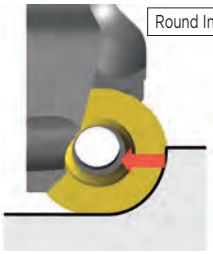
■ Cutting Performance

● Comparison of Cutting Force

MSX series	Conventional Tool
	

Work Material: S50C
Cutting Conditions: vc = 150m/min, fz = 1.0mm/t, ae = 25mm, ap = 2mm

● Shoulder Milling Comparison of MSX type and Conventional Tool

MSX series	Conventional Tool
Performs under high conditions	Prone to chatter
	
Cutting force is consistent even when depth of cut is increased, enabling stable cutting performance.	Greater depth of cut increases contact length, which increases cutting force.

■ Product Range

Type	Cat. No.	Max. Diameter (mm) ø16	ø17	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	Applicable Inserts
Shell	MSX 08000RS											4					WDMT 08 type
Shell	MSX 12000RS												4	5			WDMT 12 type
Shell	MSX 14000R (inch)														5	6	WDMT 12 type
Shell	MSX 14000RS												3	4	5	6	WDMT 14 type
Shank	MSX 06000E(S/M)	2	2	2	3	3	3										WDMT 06 type
Shank	MSX 08000E(S/M)				2	2	2	2		3	3						WDMT 08 type
Shank	MSX 12000E(S/M)									2	2	3	4				WDMT 12 type
Shank	MSX 14000E(S/M)											2	3	4			WDMT 14 type
Modular	MSX 06000M	2		2	3	3	3										WDMT 06 type
Modular	MSX 08000M						2	2	3	3	3						WDMT 08 type
Modular	MSX 12000M									2	2	3					WDMT 12 type

Number in ●●● shows the number of teeth (inch) Inch Bore

Modular type ☞ H268

■ Precautions for Corner Finishing

* Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

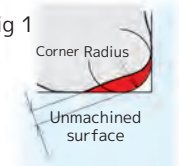
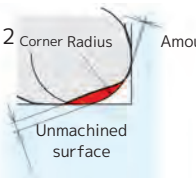


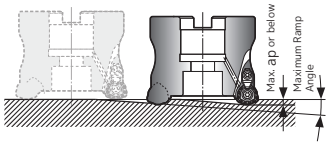
Fig 2



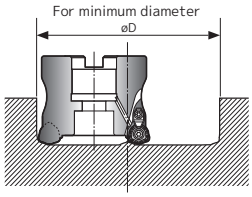
Corner Radius	MSX06000			MSX08000			MSX12000			MSX14000		
	Unmachined surface	Amount of Engagement	Fig	Unmachined surface	Amount of Engagement	Fig	Unmachined surface	Amount of Engagement	Fig	Unmachined surface	Amount of Engagement	Fig
2.0	0.403	0	1	0.735	0	1	1.312	0	1	1.642	0	1
2.5	0.263	0.087	2	0.593	0	1	1.171	0	1	1.501	0	1
3.0				0.451	0.031	2	1.030	0	1	1.360	0	1
3.5							0.888	0.001	2	1.219	0	1
4.0										1.078	0.016	2
	(mm)			(mm)			(mm)			(mm)		

■ Ramping and Helical Milling

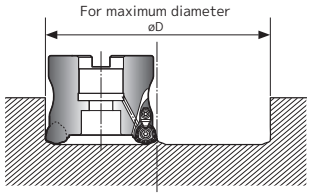
Ramping



Helical Milling



Centre uncut portion cannot be removed by traverse cutting with the same cutter.



Centre uncut portion can be removed by traverse cutting with the same cutter.

DC (mm)	MSX06000			MSX08000			MSX12000			MSX14000		
	Ramping (°)	Helical Milling (mm)		Ramping (°)	Helical Milling (mm)		Ramping (°)	Helical Milling (mm)		Ramping (°)	Helical Milling (mm)	
	Maximum Ramp Angle	Min. Dia.	Max. Dia.	Maximum Ramp Angle	Min. Dia.	Max. Dia.	Maximum Ramp Angle	Min. Dia.	Max. Dia.	Maximum Ramp Angle	Min. Dia.	Max. Dia.
16	6	21	30									
17	5	23	32									
18	4.5	25	34									
20	3.5	29	38	7.5	25	38						
22	3	33	42	5.5	29	42						
25	2	39	48	4	35	48						
28				3	41	54						
32				2.5	49	62	6.5	42	62			
35				2	55	68	5	48	68			
40				2	65	78	4	58	78	6	53	78
50							2.5	78	98	3.5	73	98
63							2	103	124	2	99	124
80										1.5	133	158
100										1	173	198

■ Recommended Cutting Conditions

(mm)

Insert Cat. No.	Max. ap	RE	Approx. RE
WDMT 0603	1.0	1.5	2.0
WDMT 0804	1.5	2.0	2.5
WDMT 1205	2.0	2.0	3.0
WDMT 1406	2.5	2.0	3.5

(ap: Depth of Cut fz: Feed Rate)

Work Material	Insert Grades	Cutting Speed vc (m/min)	Insert Cat. No.	Shank type										Shell type			
				ø16		ø20		ø25		ø32		ø40		ø50 / ø63		ø80 / ø100	
				ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)	ap (mm)	fz (mm/t)
P General Steel Below 200HB	ACP200	100-**150**-200	**WDMT 0603**	0.8	0.8	0.8	0.8	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	1.0	1.0	1.0	1.2	1.0	1.2	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	1.2	1.4	1.2	1.4	1.2	1.4	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.5	1.5	1.5	1.5	1.5	1.5
P Alloy Steel Below 45HRC	ACP200	80-**130**-180	**WDMT 0603**	0.7	0.8	0.7	0.8	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	0.8	1.0	0.8	1.2	0.8	1.2	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	1.0	1.4	1.0	1.4	1.0	1.4	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.3	1.5	1.3	1.5	1.3	1.5
M Stainless Steel SUS304, etc.	ACP300	80-**120**-150	**WDMT 0603**	0.8	0.7	0.8	0.7	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	1.0	0.8	1.0	0.8	1.0	0.8	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	1.2	1.2	1.2	1.2	1.2	1.2	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.5	1.3	1.5	1.3	1.5	1.3
K Cast Iron FC, FCD	ACK200 ACK300	100-**150**-200	**WDMT 0603**	0.8	1.0	0.8	1.0	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	1.0	1.2	1.0	1.4	1.0	1.4	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	1.2	1.5	1.2	1.5	1.2	1.5	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.5	1.8	1.5	1.8	1.5	1.8
H Hardened Steel Below 50HRC	ACK200 ACK300	40-**80**-100	**WDMT 0603**	0.5	0.5	0.5	0.5	—	—	—	—	—	—	—	—	—	—
			WDMT 0804	—	—	0.5	0.6	0.5	0.8	0.5	0.8	—	—	—	—	—	—
			WDMT 1205	—	—	—	—	—	—	0.6	1.0	0.6	1.0	0.6	1.0	—	—
			WDMT 1406	—	—	—	—	—	—	—	—	1.0	1.2	1.0	1.2	1.0	1.2

Note

- 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.
  The above figures are guidelines for use with BT50 machine tools.
- The above recommended cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length of 3 times tool diameter) or less.
  When tool overhang is more than L/D = 3 and less than or equal to L/D = 5, settings should be adjusted to approximately **70 to 80%** of those indicated in the above recommended cutting conditions (ap, fz).
  When tool overhang is more than L/D = 5 and less than or equal to L/D = 8, settings should be adjusted to approximately **50 to 60%** of those indicated in the above recommended cutting conditions (ap, fz).
- For groove milling, adjust the feed rate to around 70% of the above values.

MSX 08000RS/12000RS/14000R(S) type

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel

Rake Angle		
Radial	-3° to -8°	
Axial	8°	

1.5mm 20° (08000 type) | 2.0mm 20° (12000 type) | 2.5mm 20° (14000 type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling



Fig 1

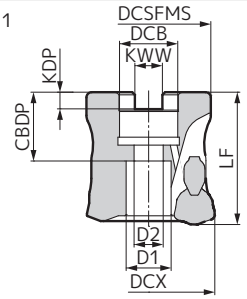
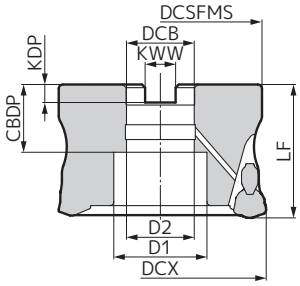


Fig 2



Body (Applicable Insert WDMT08 type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**MSX 08040RS**	▲	**40**	37	45	**16**	8.4	5.6	18	13.5	9	4	0.2	1

Body (Applicable Insert WDMT12 type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**MSX 12050RS**	▲	**50**	47	50	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	▲	**63**	60	50	**22**	10.4	6.3	20	18	11	5	0.6	1

Body (Applicable Insert WDMT14 type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**MSX 14050RS**	▲	**50**	47	50	**22**	10.4	6.3	20	17	11	3	0.3	1
	14063RS	▲	**63**	60	50	**22**	10.4	6.3	20	18	11	4	0.6	1
	14080RS	▲	*80	76	63	**27**	12.4	7.0	25	20	13.5	5	1.4	1
	14100RS	▲	**100**	96	63	**32**	14.4	8.5	32	44	—	6	2.2	2
Inch	**MSX 14080R**	▲	*80	76	63	**31.75**	12.7	8.0	32.5	28	17	5	1.3	1
	14100R	▲	*100	96	63	**31.75**	12.7	8.0	32.5	28	17	6	2.4	1

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

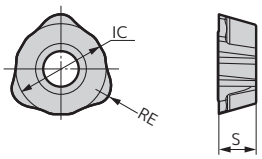
Insert

Dimensions (mm)

Grade Classification		Coated Carbide			
Process	High-speed/Light Cutting			K H	
	Medium Cutting	P M	P M	K H	
	Roughing	P M	P M		K H

Application	Cat. No.	ACP200	ACP300	ACK200	ACK300	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
General-purpose	**WDMT 0804ZDTR**	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000RS type	1
	1205ZDTR	▲	▲	▲	▲	12.0	5.0	2.0	MSX 12000RS type	1
	1406ZDTR	▲	▲	▲	▲	14.0	6.0	2.0	MSX 14000R(S) type	1
Honed type	**WDMT 0804ZDTR-H**	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000RS type	1
	1205ZDTR-H	▲	▲	▲	▲	12.0	5.0	2.0	MSX 12000RS type	1
	1406ZDTR-H	▲	▲	▲	▲	14.0	6.0	2.0	MSX 14000R(S) type	1

Fig 1



Recommended Cutting Conditions H185

Identification Code

MSX 08 040 R S

Series Code | Insert Size | Max. Dia. | Feed Direction | Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Clamp Plate	C-Ring	Cap Screw	Anti-seizure Cream
MSX 08000RS type	BFTX0306IP	2.0	TRDR08IP	—	—	CCH3.5	CR03	BFTX03510IP08	SUMI-P
MSX 12000RS type	BFTX0409IP	3.0	—	HPS1015	TRB15IP	CCH3.5	CR03	BFTX03510IP15	
MSX 14000R(S) type	BFTX0511IP	5.0	—	HPL2025	TRB20IP	CCH4.5	CR03	BFTX04513IP20	

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

MSX 06000E(S/M)/08000E(S/M)/12000E(S/M)/14000E(S/M) type

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel

Rake Angle	Radial	-3° to -8°
	Axial	8°

1.0mm 20° (06000 type) | 1.5mm 20° (08000 type) | 2.0mm 20° (12000 type) | 2.5mm 20° (14000 type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Plunge Milling | Helical Milling

Fig 1 (Single Clamp)



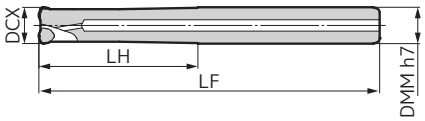
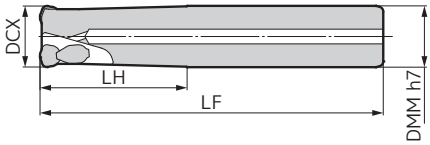


Fig 2 (Double Clamp)



Body (Applicable Insert WDMT06 type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 06016ES	▲	**16**	16	30	110	2	0.2	1
06016EM	▲	**16**	16	70	150	2	0.2	1
06017EM	▲	**17**	16	20	150	2	0.2	1
06018EM	▲	**18**	16	20	150	2	0.2	1
06020ES	▲	**20**	20	50	130	3	0.3	1
06020EM	▲	**20**	20	100	180	3	0.4	1
06022EM	▲	**22**	20	30	180	3	0.4	1
06025ES	▲	**25**	25	60	140	3	0.5	1
06025EM	▲	**25**	25	120	250	3	0.8	1

Body (Applicable Insert WDMT08 type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 08020ES	▲	**20**	20	50	130	2	0.3	1
08020EM	▲	**20**	20	100	180	2	0.3	1
08022EM	▲	**22**	20	30	180	2	0.4	1
08025ES	▲	**25**	25	60	140	2	0.4	2
08025EM	▲	**25**	25	120	250	2	0.8	2
08028EM	▲	**28**	25	40	250	2	0.9	2
08032ES	▲	**32**	32	70	150	3	0.8	2
08032EM	▲	**32**	32	120	250	3	1.4	2
08035EM	▲	**35**	32	50	250	3	1.5	2

Body (Applicable Insert WDMT12 type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 12032ES	▲	**32**	32	70	150	2	0.8	2
12032EM	▲	**32**	32	120	250	2	1.4	2
12035EM	▲	**35**	32	50	250	2	1.4	2
12040ES	▲	**40**	32	50	150	3	0.9	2
12040EM	▲	**40**	32	50	250	3	1.5	2
12050EM	▲	**50**	42	50	250	4	2.6	2

Body (Applicable Insert WDMT14 type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 14040ES	▲	**40**	32	50	150	2	0.9	2
14040EM	▲	**40**	32	50	250	2	1.5	2
14050ES	▲	**50**	42	50	150	3	1.5	2
14050EM	▲	**50**	42	50	250	3	2.5	2
14063ES	▲	**63**	42	50	150	4	1.7	2
14063EM	▲	**63**	42	50	250	4	2.8	2

Inserts are sold separately.

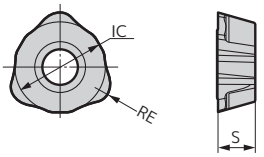
Insert

Dimensions (mm)

Grade Classification		Coated Carbide			
Process	High-speed/Light Cutting			K H	
	Medium Cutting	P M	P M	K H	
	Roughing	P M	P M		K H

Application	Cat. No.	ACP200	ACP300	ACK200	ACK300	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
General-purpose	**WDMT 0603ZDTR**	▲	▲	▲	▲	6.35	3.0	1.5	MSX 06000E(S/M) type	1
	0804ZDTR	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000E(S/M) type	1
	1205ZDTR	▲	▲	▲	▲	12.0	5.0	2.0	MSX 12000E(S/M) type	1
	1406ZDTR	▲	▲	▲	▲	14.0	6.0	2.0	MSX 14000E(S/M) type	1
Honed type	**WDMT 0603ZDTR-H**	▲	▲	▲	▲	6.35	3.0	1.5	MSX 06000E(S/M) type	1
	0804ZDTR-H	▲	▲	▲	▲	8.5	4.0	2.0	MSX 08000E(S/M) type	1
	1205ZDTR-H	▲	▲	▲	▲	12.0	5.0	2.0	MSX 12000E(S/M) type	1
	1406ZDTR-H	▲	▲	▲	▲	14.0	6.0	2.0	MSX 14000E(S/M) type	1

Fig 1



Recommended Cutting Conditions H185

Identification Code

MSX 06 016 E S

Series Code	Insert Size	Max. Dia.	Shank type	S: Short M: Medium

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Clamp Plate	C-Ring	Cap Screw	Anti-seizure Cream
MSX 06000E(S/M) type	BFTX02505IP	1.5	TRDR08IP	—	—	—	SUMI-P
MSX 08020E(S/M), MSX 08022EM	BFTX0306IP	2.0	TRDR08IP	—	—	—	
MSX 08000E(S/M) types other than the above	BFTX0306IP	2.0	TRDR08IP	CCH3.5	CR03	BFTX03510IP08	
MSX 12000E(S/M) type	BFTX0409IP	3.0	TRDR15IP	CCH3.5	CR03	BFTX03510IP15	
MSX 14000E(S/M) type	BFTX0511IP	5.0	TRDR20IP	CCH4.5	CR03	BFTX04513IP20	

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

RSE series

Expansion



■ Features

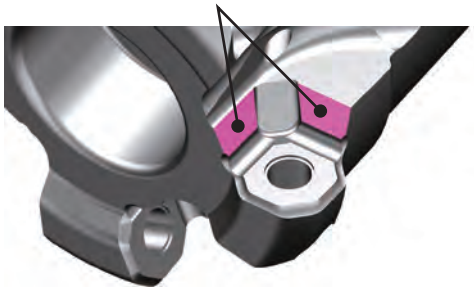
● High-efficiency, high-rigidity radius cutter
Wide insert seat face design achieves high efficiency machining of stainless steel etc.
Designed for superior durability
Ideal for roughing of aerospace components such as turbine blades

● 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

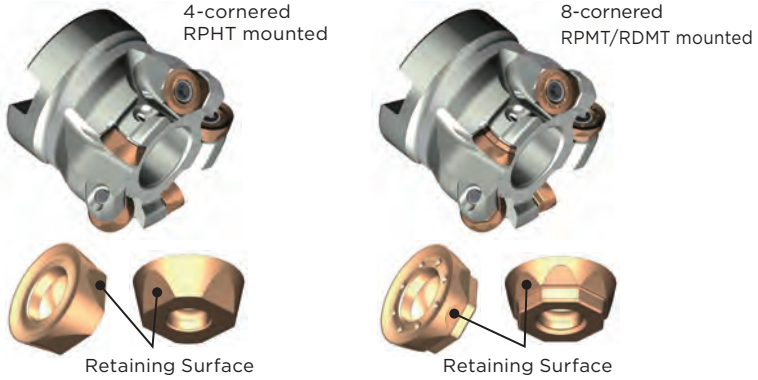
● Uses new grades for exotic alloy machining
New ACS1000/ACS2500/ACS3000 grades achieve stable and long tool life in machining exotic alloys, such as titanium alloys and Ni-based heat-resistant alloys, as well as stainless steel

■ High-rigidity clamp design

Wide Insert Seat Face Design



■ Cutter body can be shared by optimizing the retaining surface design



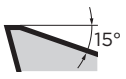
4-cornered ground type inserts or 8-cornered M Class inserts can be used on the same cutter body

■ Product Range

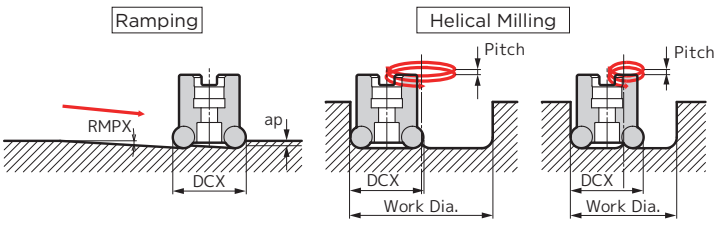
Type	Cat. No.	Max. Diameter (mm)							
		ø25	ø32	ø40	ø42	ø50	ø52	ø63	ø80
Shell	RSE 10000RS○○			5		6			
	RSE 12000RS○○			4	4	5 6	5	6	8
	RSE 12000R○○ inch								8
Shank	RSE 10000E○○	2 3	3 4						

Number in ●● shows the number of teeth inch Inch Bore

■ Chipbreaker Shape

Work Material	M Stainless Steel, S Exotic Alloy
Applications	General-purpose to Roughing
Features	Standard
Chipbreaker	G type 
Cutting Edge Cross Section	

■ Ramping/Helical Milling Upper Limit



Precautions for Helical Milling

- Above the max. machining diameter, the centre uncut portion can be removed by traverse cutting with the same cutter.
- Below the min. machining diameter, the centre uncut portion cannot be removed with the same cutter.

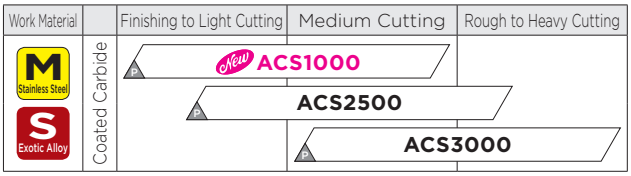
Insert Cat. No.	Max. Dia. DCX (mm)	Ramping	Helical Milling					
		Max. Ramping Angle RMPX(°)	Max. Machining Dia. (mm)	Max. Pitch (mm/rev)	Standard Diameter (mm)	Max. Pitch (mm/rev)	Min. Machining Dia. (mm)	Max. Pitch (mm/rev)
R○○T10···	ø25	4.6	48.6	4.8	40.6	3.3	36.3	1.4
	ø32	2.8	62.6	4.6	54.6	2.9	50.3	1.4
	ø40	1.9	78.6	3.9	70.6	2.6	66.3	1.4
	ø50	1.3	98.6	3.4	90.6	2.5	86.3	1.4
R○○T12···	ø40	3.4	78.6	6.0	68.6	4.5	62.4	1.6
	ø42	3.1	82.6	6.0	72.6	4.4	66.4	1.6
	ø50	2.3	98.6	6.0	88.6	4.1	82.4	1.6
	ø52	2.2	102.6	6.0	92.6	4.1	86.4	1.6
	ø63	1.6	124.6	5.3	114.6	3.9	108.4	1.6
	ø80	1.1	158.6	4.8	148.6	3.7	142.4	1.6

■ Grade Features

Work Material	Grade	Coating Thickness (μm)	Features
M Stainless Steel / S Exotic Alloy	New ACS1000	3	· For high-efficiency milling of **exotic alloys** · High-hardness carbide substrate coupled with a chipping-resistant coating provides long and stable tool life in high-speed, high-efficiency machining applications
M Stainless Steel / S Exotic Alloy	ACS2500	3	Coating with excellent wear and adhesion resistance provides outstanding performance especially in machining **titanium alloys**
M Stainless Steel / S Exotic Alloy	ACS3000	3	High toughness carbide substrate and a coating with excellent chipping resistance provide outstanding stability in a wide range of work materials such as **heat-resistant alloys**, **stainless steel**, and **titanium alloys**

■ Grade Application Range

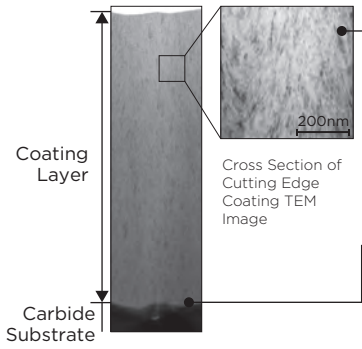
Newly developed **ACS2500/ACS3000** grades ideal for machining titanium alloys, heat-resistant alloys and stainless steel. Newly available **ACS1000**



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

New PVD Coating Layer Features

ABSOTECH **PVD**

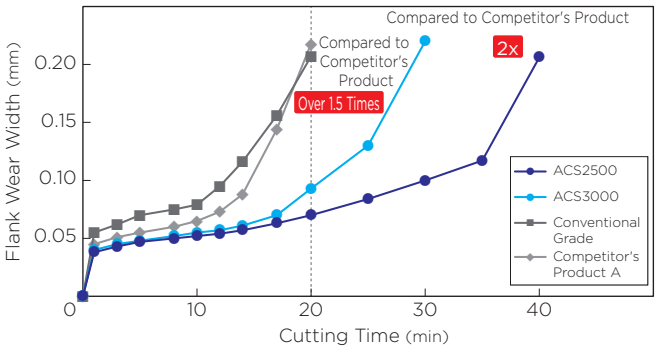


Ultra-fine Grained B Additive
· New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
· Outstanding balance of chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion and more than twice the conventional chipping resistance

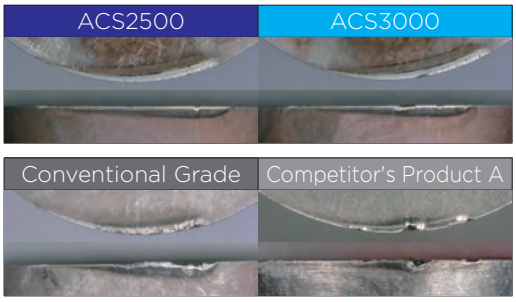
Applicable Grades: ACS2500, ACS3000

■ Cutting Performance

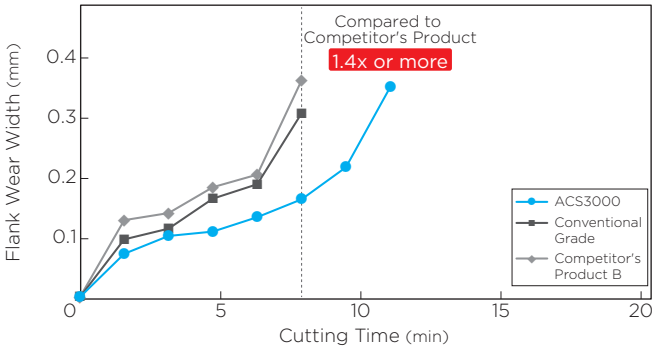


Machine	: Vertical Machining Centre BT40, Work Material: Ti-6Al-4V
Tool	: RSE 12050RS05, Insert: RPHT1204M0EN-G
Cutting conditions	: vc = 70m/min fz = 0.25mm/t ap = 2mm ae = 30mm Wet

After cutting for 20 minutes



Superb wear resistance with 1.5 times longer tool life than conventional grades and competitor's products



Machine	: Vertical Machining Centre BT40, Work Material: Inconel 718 (44HRC)
Tool	: RSE 12050RS05, Insert: RPHT1204M0EN-G
Cutting conditions	: vc = 40m/min fz = 0.3mm/t ap = 2mm ae = 30mm Wet

After cutting for 7.9 minutes



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

RSE 10000RS type

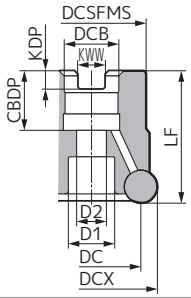
Rake Angle		
Radial	-5°	
Axial	4°	

5mm 4-cornered | 1.4mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



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 CBDP	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.

Parts

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

Identification Code

RSE Series Code | **10** Insert Size | **040** Max. Dia. | **R** Feed Direction | **S** Metric Bore | **05** Number of Teeth

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	M S	M S	
	Medium Cutting		M S	M S
	Roughing			M S

Cat. No.	ACS1000 (New)	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Fig
RPHT 10T3M0EN-G	●	●	●	10	3.97	1
RPMT 10T3M0EN-G	●	●	●	10	3.97	2
RDMT 10T3M0EN-G	●	●	●	10	3.97	3

Fig 1 4-cornered

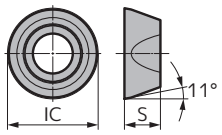


Fig 2 8-cornered

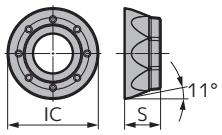
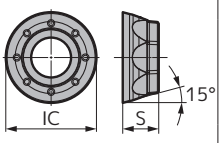


Fig 3 8-cornered



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed **vc** (m/min) Min. - **Optimum** - Max.	Feed Rate **fz** (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	G	25 - **35** - 50	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
		Ti Alloy	—	G	30 - **60** - 90	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	115 - **145** - 175	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	105 - **130** - 155	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	125 - **155** - 190	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000

Note
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

SEC-Wave Radius Mill

RSE 12000R(S) type

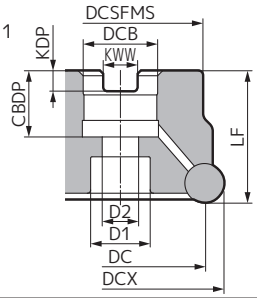
Rake Angle		
Radial	-5°	
Axial	4°	

6mm 4-cornered | 1.7mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**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
Inch	**RSE 12080R08**	●	*80	68	55	50	**25.4**	12.4	7	22	20	14	8	0.9	1

Inserts are sold separately.

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

Parts

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

Identification Code

RSE Series Code | **12** Insert Size | **050** Max. Dia. | **R** Feed Direction | **S** Metric Bore | **05** Number of Teeth

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	MS	MS	
	Medium Cutting		MS	MS
	Roughing			MS

Cat. No.	ACS1000 (New)	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Fig
RPHT 1204M0EN-G	●	●	●	12	4.76	1
RPMT 1204M0EN-G	●	●	●	12	4.76	2
RDMT 1204M0EN-G	●	●	●	12	4.76	3

Fig 1 4-cornered

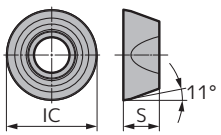


Fig 2 8-cornered

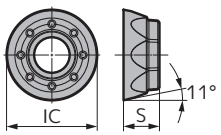
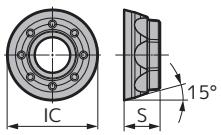


Fig 3 8-cornered



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed **vc** (m/min) Min. - **Optimum** - Max.	Feed Rate **fz** (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	G	25 - **35** - 50	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
		Ti Alloy	—	G	30 - **60** - 90	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	115 - **145** - 175	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	105 - **130** - 155	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	125 - **155** - 190	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000

Note
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

RSE 10000E type

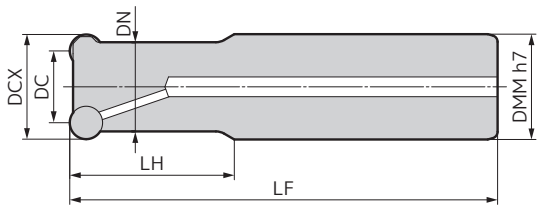
Rake Angle		
	Radial	0°
	Axial	4°

5mm 4-cornered | 1.4mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



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	0.4	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.

Parts

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

Identification Code

RSE Series Code | **10** Insert Size | **032** Max. Dia. | **E** Shank type | **03** Number of Teeth

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		
Process	High-speed/Light Cutting	M S	M S	
	Medium Cutting		M S	M S
	Roughing			M S

Cat. No.	ACS1000 (New)	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Fig
RPHT 10T3M0EN-G	●	●	●	10	3.97	1
RPMT 10T3M0EN-G	●	●	●	10	3.97	2
RDMT 10T3M0EN-G	●	●	●	10	3.97	3

Fig 1 4-cornered

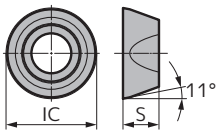


Fig 2 8-cornered

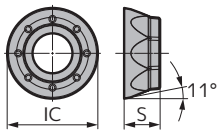
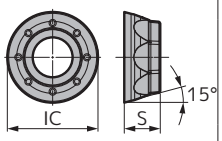


Fig 3 8-cornered



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed **vc** (m/min) Min. - **Optimum** - Max.	Feed Rate **fz** (mm/t) Min. - **Optimum** - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	G	25 - **35** - 50	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
		Ti Alloy	—	G	30 - **60** - 90	0.15 - **0.25** - 0.35	ACS1000/ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	115 - **145** - 175	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	105 - **130** - 155	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	125 - **155** - 190	0.15 - **0.30** - 0.45	ACS1000/ACS2500/ACS3000

Note
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

MEMO

Expansion

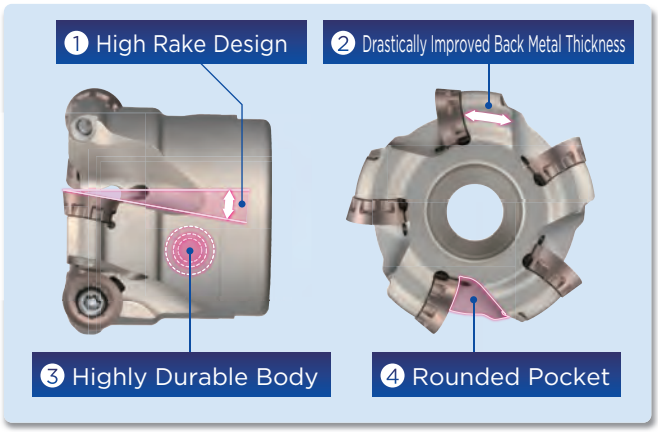


■ Features

SEC-Wave Radius Mill RSX series is a radius cutter that enables stable machining even when using machines with low clamp rigidity, thanks to a body design that achieves excellent sharpness and rigidity.
Lineup of ACM series grades for stainless steel/exotic alloy, ACP200 grade for steel and ACK300 grade for cast iron to suit a wide range of work materials.
RSX08000 and RSX20000 lineup extended to support a wide range of machining

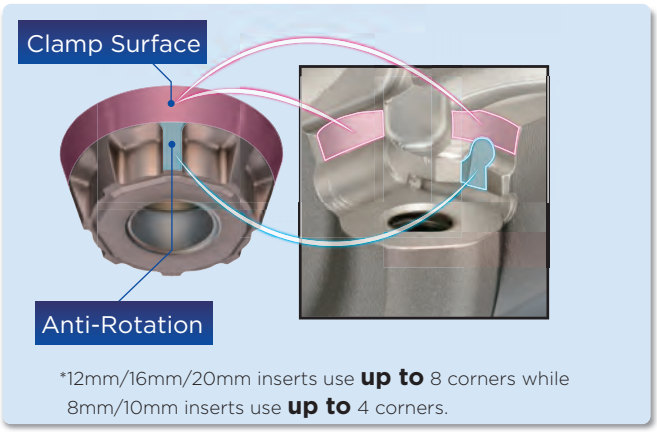
■ Low Cutting Force, Low-vibration Design

Achieves low cutting force, low-vibration machining thanks to ultra-high-rake design and high-rigidity body design



■ Excellent Operability

Enables easy corner control with high accuracy and operability by employing our proprietary positioning mechanism



*12mm/16mm/20mm inserts use **up to** 8 corners while 8mm/10mm inserts use **up to** 4 corners.

■ Product Range

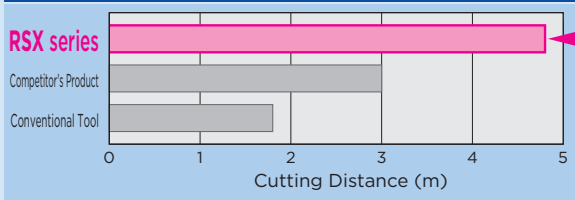
Type	Cat. No.	Description	Max. Diameter (mm) ø20	ø25	ø32	ø40	ø50	ø52	ø63	ø66	ø80	ø100	ø125	ø160	Shape
Shell	RSX1000RS	Standard Pitch				4	5	5							
	RSXF1000RS	Extra Fine Pitch				5	6	6							
	RSX12000RS	Standard Pitch				3	4	4	5	6	6	6			
	RSX12000R (inch)	Standard Pitch									6	6			
	RSXF12000RS	Extra Fine Pitch				4	5	5	6	7	7	10			
	RSXF12000R (inch)	Extra Fine Pitch									7	10			
	RSX16000RS	Standard Pitch							4		5	6	6		
	RSX16000R (inch)	Standard Pitch									5	6	6		
	RSXF16000RS	Extra Fine Pitch							5		6	7	8	10	
	RSXF16000R (inch)	Extra Fine Pitch									6	7	8	10	
	RSX20000RS	Standard Pitch									4	5	6	7	
	RSX20000R (inch)	Standard Pitch									4	5	6	7	
	RSXF20000RS	Extra Fine Pitch									5	6	7	9	
	RSXF20000R (inch)	Extra Fine Pitch									5	6	7	9	
Shank	RSX08000ES	Standard Pitch	2	3											
	RSXF08000ES	Extra Fine Pitch	3	4											
	RSX10000ES	Standard Pitch		2	3										
	RSXF10000ES	Extra Fine Pitch		3	4										
	RSX12000ES	Standard Pitch			2										
	RSXF12000ES	Extra Fine Pitch			3										
Modular	RSX08000M	Standard Pitch	2	3	4										
	RSXF08000M	Extra Fine Pitch	3	4	5										
	RSX10000M	Standard Pitch		2	3										
	RSXF10000M	Extra Fine Pitch		3	4										
	RSX12000M	Standard Pitch			2	3									
	RSXF12000M	Extra Fine Pitch			3	4									

Number in ●●● shows the number of teeth (inch) Inch Bore

Modular type H269

■ Cutting Performance

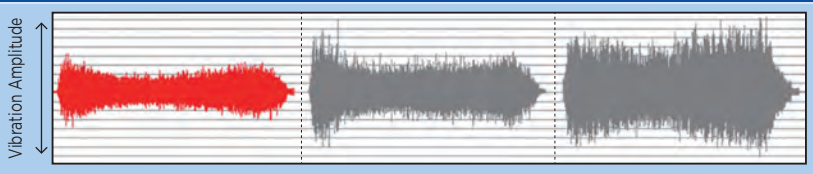
Tool Life Comparison (Fracture Resistance)





Achieves a tool life approximately 1.6 times longer than competitors' products

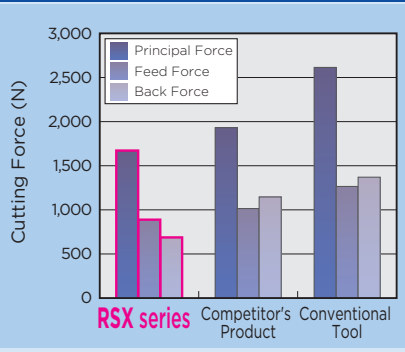
Cutting Vibration Comparison



RSX series Competitor's Product Conventional Tool

Approximately 15% lower than competitors' products

Comparison of Cutting Force



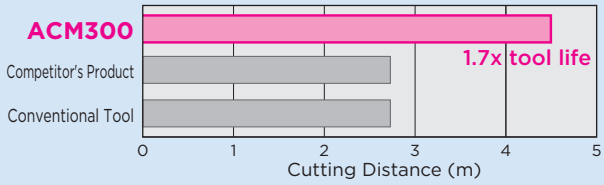
Work Material: SUS304 Tool: ø50

Cutting Conditions: vc = 200m/min, fz = 0.5mm/t

ap = 2.0mm, ae = 10.0mm Wet

■ Long, Stable Tool Life

Tool Life (Milling SUS304)

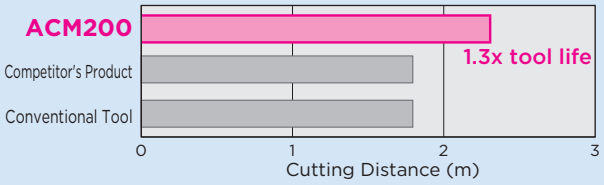


Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: vc = 200m/min, fz = 0.5mm/t, ap = 2mm, ae = 10mm Wet

(Cutting Distance: 2.7m)



Tool Life (Milling SUS630-H900)



Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: vc = 150m/min, fz = 0.3mm/t, ap = 2mm, ae = 10mm Wet

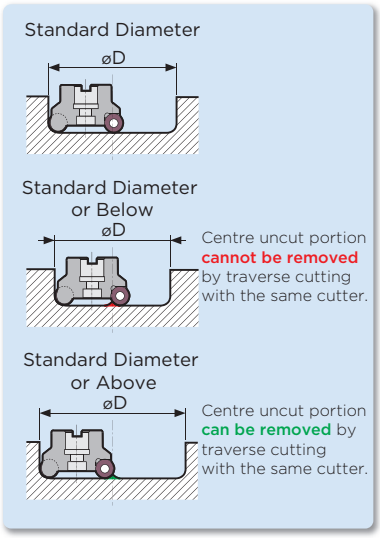
(Cutting Distance: 1.8m)



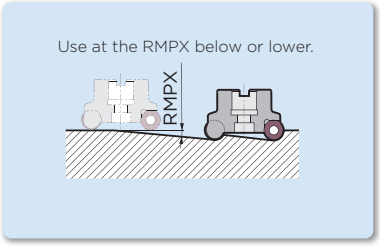
■ Machining Applications

Can be used for various types of high-efficiency machining such as deep shoulder milling of molds, ramping, and helical milling.

Precautions for Helical Milling



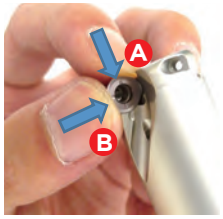
Precautions for Ramping



Recommended Values for Helical Milling and Ramping

Insert Cat. No.	Helical Milling (mm)				Ramping
	Max. Dia. DCX	Machining Dia. øD			Maximum Ramp Angle RMPX
		Min. Dia.	Standard Diameter	Max. Dia.	
RDET08...	**20**	27.6	32	39	12°00′
	25	37.0	42	49	7°15′
	32	50.8	56	63	4°45′
RDET10...	**25**	33.0	40	49	10°30′
	32	46.0	54	63	6°45′
	40	62.0	70	79	4°30′
	50	82.0	90	99	3°15′
	52	86.0	94	103	3°10′
RDET12...	**32**	41.5	52	63	12°30′
	40	57.5	68	79	8°00′
	50	77.5	88	99	5°30′
	52	81.5	92	103	5°15′
	63	103.5	114	125	4°00′
	66	109.5	120	131	3°45′
	80	137.5	148	159	2°50′
	100	177.5	188	199	2°10′
RDET16...	**63**	96.0	110	125	6°00′
	80	130.0	144	159	4°10′
	100	170.0	184	199	3°00′
	125	220.0	234	249	2°20′
RDET20...	**80**	122.0	140	159	4°15′
	100	162.0	180	199	3°00′
	125	212.0	230	249	2°00′
	160	282.0	300	319	1°15′

■ Precautions for Mounting Inserts



Hold down the insert from the Ⓐ and Ⓑ directions and fasten the screw.



Align either insert rake face marking position Ⓒ with the marking position Ⓓ on the body.

RSX(F) 10000RS type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

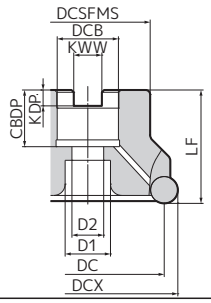
Rake Angle	Radial	-5°
	Axial	10°

5mm

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Standard Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 10040RS**	●	**40**	30	34	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	10050RS	●	**50**	40	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	10052RS	●	**52**	42	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1

Body (Extra Fine Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 10040RS**	●	**40**	30	34	40	**16**	8.4	5.6	18	14	9	5	0.2	1
	10050RS	●	**50**	40	40	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	10052RS	●	**52**	42	40	40	**22**	10.4	6.3	20	18	11	6	0.3	1

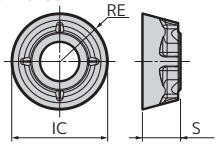
Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Insert Expansion

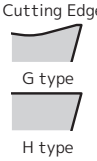
Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting			MS	MS		MS	MS					
	Medium Cutting	PM			MS	MS	MS	MS	MS				
	Roughing	PM	K			MS			MS				
Cat. No.		ACP200	ACK300	New ACS1000	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 10T3M0EN-G		●	●	●	●	●	●	▲	▲	10	5.0	3.97	1
10T3M0EN-H		●	●		●	●	●	▲	▲	10	5.0	3.97	1

Fig 1 4-cornered



● Cross Section of Cutting Edge



Precautions for Mounting Inserts H196

Identification Code

RSX **F** **10** **040** **R** **S**

RSX	F	10	040	R	S
Series Code	Extra Fine Pitch	Insert Size	Max. Dia.	Feed Direction	Metric Bore

Parts

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

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel			180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80- **120** -180	0.15- **0.25** -0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80- **120** -180	0.15- **0.25** -0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60- **100** -160	0.15- **0.25** -0.35	ACS2500 ACM200
K	Cast Iron			250HB	80- **120** -160	0.10- **0.30** -0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20- **30** - 40	0.10- **0.20** -0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10- **0.20** -0.30	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10- **0.20** -0.30	

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

RSX(F) 12000R(S) type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle	Radial	-5°
	Axial	10°

6mm 4-cornered | 1.6mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

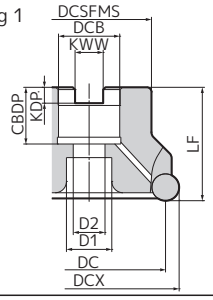


Fig 2

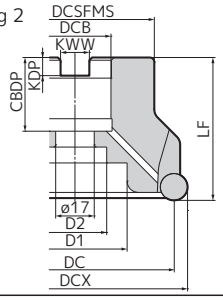
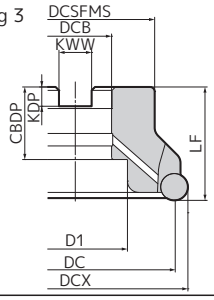


Fig 3



Body (Standard Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	RSX 12040RS	●	40	28	32	40	16	8.4	5.6	18	13.5	9	3	0.2	1
	12050RS	●	50	38	40	40	22	10.4	6.3	20	18	11	4	0.3	1
	12052RS	●	52	40	40	40	22	10.4	6.3	20	18	11	4	0.3	1
	12063RS	●	63	51	40	40	22	10.4	6.3	20	18	11	5	0.4	1
	12066RS	●	66	54	55	50	27	12.4	7.0	25	20	14	6	0.7	1
	12080RS	●	*80	68	55	50	27	12.4	7.0	25	20	14	6	1.0	1
	12100RS	●	100	88	70	50	32	14.4	8.5	32	46	—	6	1.4	3
Inch	RSX 12080R	●	*80	68	55	50	25.4	9.5	6.0	25	20	13	6	1.0	1
	12100R	●	*100	88	70	63	31.75	12.7	8.0	32.5	46	28	6	1.9	2

Body (Extra Fine Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	RSXF 12040RS	●	40	28	32	40	16	8.4	5.6	18	13.5	9	4	0.2	1
	12050RS	●	50	38	40	40	22	10.4	6.3	20	18	11	5	0.3	1
	12052RS	●	52	40	40	40	22	10.4	6.3	20	18	11	5	0.3	1
	12063RS	●	63	51	40	40	22	10.4	6.3	20	18	11	6	0.4	1
	12066RS	●	66	54	55	50	27	12.4	7.0	25	20	14	7	0.7	1
	12080RS	●	*80	68	55	50	27	12.4	7.0	25	20	14	7	0.9	1
	12100RS	●	100	88	70	50	32	14.4	8.5	32	46	—	10	1.3	3
Inch	RSXF 12080R	●	*80	68	55	50	25.4	9.5	6.0	25	20	13	7	1.0	1
	12100R	●	*100	88	70	63	31.75	12.7	8.0	32.5	46	28	10	1.8	2

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

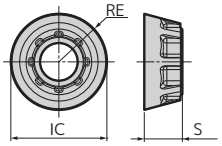
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert Expansion

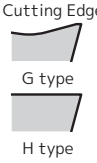
Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting			MS	MS		MS	MS					
	Medium Cutting	PM			MS	MS	MS	MS	MS				
	Roughing	PM	K			MS			MS				
Cat. No.		ACP200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 1204M0EN-G		●	●	●	●	●	●	▲	▲	12	6.0	4.76	1
1204M0EN-H		●	●		●	●	●	▲	▲	12	6.0	4.76	1

Fig 1 8-cornered



● Cross Section of Cutting Edge



Precautions for Mounting Inserts H196

Identification Code

RSX	F	12	040	R	S
Series Code	Extra Fine Pitch	Insert Size	Max. Dia.	Feed Direction	Metric Bore

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
		Handle Grip	Bit	
	N·m			
BFTX0409IP	3.0	HPS1015	TRB15IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - Optimum - Max.	Feed Rate fz (mm/t) Min. - Optimum - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel			180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80- **120** -180	0.15- **0.25** -0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80- **120** -180	0.15- **0.25** -0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60- **100** -160	0.15- **0.25** -0.35	ACS2500 ACM200
K	Cast Iron			250HB	80- **120** -160	0.10- **0.30** -0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20- **30** - 40	0.10- **0.20** -0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10- **0.20** -0.30	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10- **0.20** -0.30	

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

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

RSX(F) 16000R(S) type

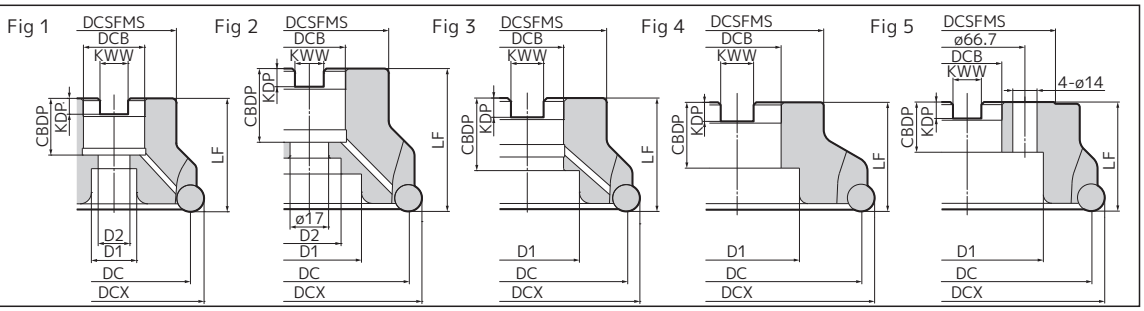
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-5°
	Axial	10°

8mm 4-cornered | 2.2mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling





Body (Standard Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 16063RS**	●	**63**	47	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	16080RS	●	***80**	64	55	50	**27**	12.4	7.0	25	20	14	5	0.9	1
	16100RS	●	**100**	84	70	50	**32**	14.4	8.5	32	46	—	6	1.3	3
	16125RS	●	**125**	109	80	63	**40**	16.4	9.5	29	52	29	6	2.6	1
Inch	**RSX 16080R**	●	***80**	64	55	50	**25.4**	9.5	6.0	25	20	13	5	0.9	1
	16100R	●	***100**	84	70	63	**31.75**	12.7	8.0	32.5	46	28	6	1.8	2
	16125R	●	**125**	109	80	63	**38.1**	15.9	10.0	35.5	55	30	6	2.7	1

Body (Extra Fine Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 16063RS**	●	**63**	47	50	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	16080RS	●	***80**	64	55	50	**27**	12.4	7.0	25	20	14	6	0.8	1
	16100RS	●	**100**	84	70	50	**32**	14.4	8.5	32	46	—	7	1.3	3
	16125RS	●	**125**	109	80	63	**40**	16.4	9.5	29	52	29	8	2.5	1
	16160RS		**160**	144	130	63	**40**	16.4	9.5	29	88	—	10	4.8	5
Inch	**RSXF 16080R**	●	***80**	64	55	50	**25.4**	9.5	6.0	25	20	13	6	0.8	1
	16100R	●	***100**	84	70	63	**31.75**	12.7	8.0	32.5	46	28	7	1.7	2
	16125R	●	**125**	109	80	63	**38.1**	15.9	10.0	35.5	55	30	8	2.6	1
	16160R		**160**	144	100	63	**50.8**	19.1	11.0	38	72	—	10	4.3	4

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

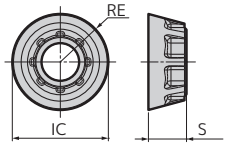
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert Expansion

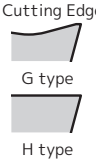
Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting			M S	M S		M S	M S						
	Medium Cutting	P M			M S	M S	M S	M S	M S					
	Roughing	P M	K			M S			M S					
Cat. No.		ACP200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 1606M0EN-G		●	●	●	●	●	●	▲	▲	16	8.0	6.5	1
1606M0EN-H		●	●		●	●	●	▲	▲	16	8.0	6.5	1

Fig 1 8-cornered



● Cross Section of Cutting Edge



Precautions for Mounting Inserts H196

Identification Code

RSX Series Code | **F** Extra Fine Pitch | **16** Insert Size | **063** Max. Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
		N·m				
RSX(F) 16063RS RSX(F) 16080R(S) Up to RSX(F) 16125R(S)	BFTX0511IP	5.0	—	HPL2025	TRB20IP	SUMI-P
RSXF 16160R(S)	BFTX0511IP	5.0	TRDR20IP	—	—	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80-**120**-180	0.15-**0.25**-0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80-**120**-180	0.15-**0.25**-0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60-**100**-160	0.15-**0.25**-0.35	ACS2500 ACM200
K	Cast Iron			250HB	80-**120**-160	0.10-**0.30**-0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20-**30**-40	0.10-**0.20**-0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60-**80**-100	0.10-**0.20**-0.30	
			α + β Alloy	(Rm1050)	40-**50**-60	0.10-**0.20**-0.30	

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

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

RSX(F) 2000OR(S) type

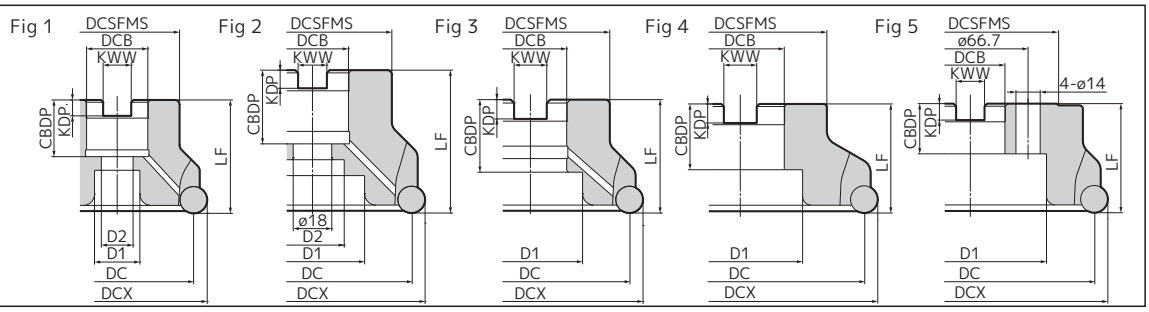
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-5°
	Axial	10°

10mm 4-cornered | 2.7mm 8-cornered

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling





Body (Standard Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 20080RS**	●	*80	60	55	50	**27**	12.4	7	22	20	14	4	0.9	1
	20100RS	●	**100**	80	70	50	**32**	14.4	8	32	46	—	5	1.8	3
	20125RS	●	**125**	105	80	63	**40**	16.4	9	29	52	29	6	2.6	1
	20160RS	●	**160**	140	130	63	**40**	16.4	9	29	90	—	7	4.7	5
Inch	**RSX 20080R**	●	*80	60	55	50	**25.4**	9.5	6	25	20	14	4	0.9	1
	20100R	●	**100**	80	70	63	**31.75**	12.7	8	32	46	27	5	1.8	2
	20125R	●	**125**	105	80	63	**38.1**	15.9	10	35.5	55	30	6	2.6	1
	20160R	●	**160**	140	130	63	**50.8**	19.1	11	38	72	—	7	4.2	4

Body (Extra Fine Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 20080RS**	●	*80	60	55	50	**27**	12.4	7	22	20	14	5	0.9	1
	20100RS	●	**100**	80	70	50	**32**	14.4	8	32	46	—	6	1.8	3
	20125RS	●	**125**	105	80	63	**40**	16.4	9	29	52	29	7	2.6	1
	20160RS	●	**160**	140	130	63	**40**	16.4	9	29	90	—	9	4.6	5
Inch	**RSXF 20080R**	●	*80	60	55	50	**25.4**	9.5	6	25	20	14	5	0.9	1
	20100R	●	*100	80	70	63	**31.75**	12.7	8	32	46	27	6	1.8	2
	20125R	●	**125**	105	80	63	**38.1**	15.9	10	35.5	55	30	7	2.6	1
	20160R	●	**160**	140	130	63	**50.8**	19.1	11	38	72	—	9	4.1	4

Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

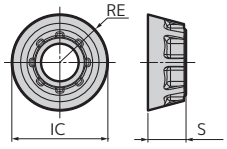
Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light Cutting				M S	M S		M S	M S				
	Medium Cutting	P M				M S	M S	M S	M S	M S			
	Roughing	P M	K				M S			M S			
Cat. No.		ACP200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 2006M0EN-G		●	●	●	●	●	●	▲	▲	20	10.0	6.5	1
2006M0EN-H		●	●		●	●	●	▲	▲	20	10.0	6.5	1

Fig 1 8-cornered



● Cross Section of Cutting Edge

G type

H type

Precautions for Mounting Inserts H196

Identification Code

RSX Series Code | **F** Extra Fine Pitch | **20** Insert Size | **080** Max. Dia. | **R** Feed Direction | **S** Metric Bore

Parts

Cat. No.	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
		N·m				
RSX(F) 20080R(S) Up to RSX(F) 20125R(S)	BFTX0615IP	5.0	—	HPL2025	TRB25IP	SUMI-P
RSX(F) 20160R(S)	BFTX0615IP	5.0	TRDR25IP	—	—	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel			180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80- **120** -180	0.15- **0.25** -0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80- **120** -180	0.15- **0.25** -0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60- **100** -160	0.15- **0.25** -0.35	ACS2500 ACM200
K	Cast Iron			250HB	80- **120** -160	0.10- **0.30** -0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20- **30** - 40	0.10- **0.20** -0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10- **0.20** -0.30	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10- **0.20** -0.30	

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

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

RSX(F) 08000ES/10000ES/12000ES type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	-5° to -8°
	Axial	10°

4mm (08000ES) | 5mm (10000ES) | 6mm 4-cornered (12000ES) | 1.6mm 8-cornered (12000ES)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling

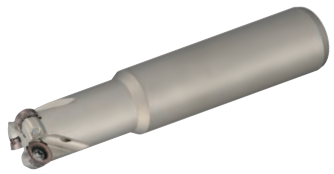
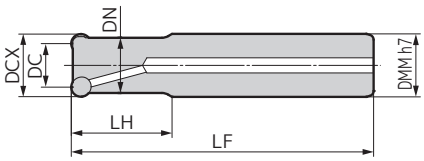


Fig 1



Body (Standard Pitch) Applicable Insert IC = 8mm 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
RSX 08020ES	●	**20**	12	20	16.9	30	100	2	0.3	1
08025ES	●	**25**	17	25	21.9	40	120	3	0.4	1

Body (Extra Fine Pitch) Applicable Insert IC = 8mm 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
RSXF 08020ES	●	**20**	12	20	16.9	30	100	3	0.3	1
08025ES	●	**25**	12	25	21.9	40	120	4	0.4	1

Body (Standard Pitch) Applicable Insert IC = 10mm 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
RSX 10025ES	●	**25**	15	25	20.3	50	130	2	0.4	1
10032ES	●	**32**	22	32	27.1	50	130	3	0.7	1

Body (Extra Fine Pitch) Applicable Insert IC = 10mm 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
RSXF 10025ES	●	**25**	15	25	20.3	50	130	3	0.4	1
10032ES	●	**32**	22	32	27.1	50	130	4	0.7	1

Body (Standard Pitch) Applicable Insert IC = 12mm 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
RSX 12032ES	●	**32**	20	32	25.6	50	130	2	0.7	1

Body (Extra Fine Pitch) Applicable Insert IC = 12mm 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
RSXF 12032ES	●	**32**	20	32	25.6	50	130	3	0.7	1

Inserts are sold separately.

Insert Expansion

Dimensions (mm)

Grade Classification		Coated Carbide												
Process	High-speed/Light Cutting			MS	MS		MS	MS						
	Medium Cutting	PM			MS	MS	MS	MS	MS					
	Roughing	PM	K			MS			MS					
Cat. No.		ACP200	ACK300	ACS1000 (New)	ACS2500	ACS3000	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Applicable Cutter	Fig
RDET 0803M0EN-G		●	●	●	●	●	●	▲	▲	8	4.0	3.18	RSX(F) 08000ES type	1
0803M0EN-H		●	●		●	●	●	▲	▲					1
RDET 10T3M0EN-G		●	●	●	●	●	●	▲	▲	10	5.0	3.97	RSX(F) 10000ES type	1
10T3M0EN-H		●	●		●	●	●	▲	▲					1
RDET 1204M0EN-G		●	●	●	●	●	●	▲	▲	12	6.0	4.76	RSX(F) 12000ES type	2
1204M0EN-H		●	●		●	●	●	▲	▲					2

Fig 1 4-cornered

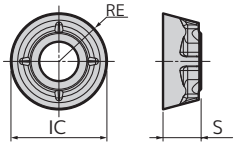
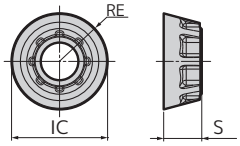


Fig 2 8-cornered



● Cross Section of Cutting Edge



Precautions for Mounting Inserts H196

Identification Code

RSX **F** **10** **025** **ES**

RSX	F	10	025	ES
Series Code	Extra Fine Pitch	Insert Size	Max. Dia.	Shank type

Parts

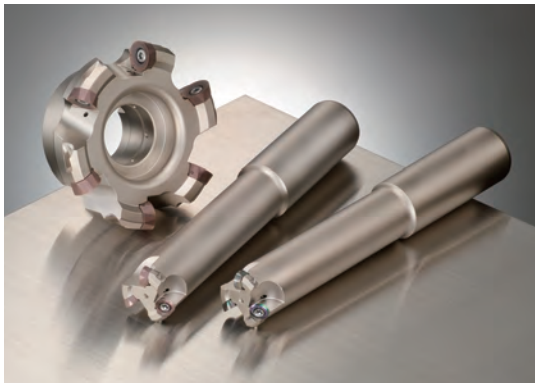
Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
RSX(F) 08000ES type	BFTX02506IP	1.5	TRDR08IP	SUMI-P
RSX(F) 10000ES type	BFTX03584IP	3.0	TRDR15IP	SUMI-P
RSX(F) 12000ES type	BFTX0409IP	3.0	TRDR15IP	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel			180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Martensitic	200 to 330HB	80- **120** -180	0.15- **0.25** -0.35	ACS3000 ACM300
		Cr-Ni-based	Austenitic	200HB	150- **180** -200	0.15- **0.25** -0.35	ACS3000 ACM300
			Duplex (Austenitic/Ferritic)	230 to 270HB	80- **120** -180	0.15- **0.25** -0.35	ACS2500 ACM200
			Deposition Hardened Structures	330HB	60- **100** -160	0.15- **0.25** -0.35	ACS2500 ACM200
K	Cast Iron			250HB	80- **120** -160	0.10- **0.30** -0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350HB	20- **30** - 40	0.10- **0.20** -0.30	ACS1000 ACS2500 ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10- **0.20** -0.30	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10- **0.20** -0.30	

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

WRCX series



■ Features

**The SEC-Wave Radius Mill WRCX type is a versatile, high-efficiency cutter that is suited to various types of machining such as deep shoulder milling of molds, ramping, and helical milling.
Furthermore, a wide selection of chipbreakers and grades covers a wide range of work materials, from steel to non-ferrous metals.**

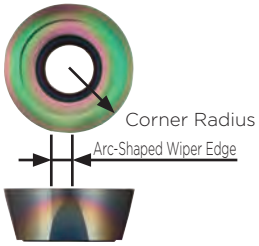
- **Durable body with special surface treatment offers significantly improved tool life and reliability.**
- **Superb chatter resistance with anti-vibration edge design.**
- **All sizes come with coolant holes preventing chip build-up and jamming.**
- **Sturdy screw clamp with Torx Plus screw insert mounting ensures stable machining**

■ Abundant Insert Series

- **In addition to conventional WRC type inserts, the new lineup includes non-ferrous metal inserts and surfing inserts**

Non-Ferrous Metal Inserts QPET ○○○○○○ PPFR-S

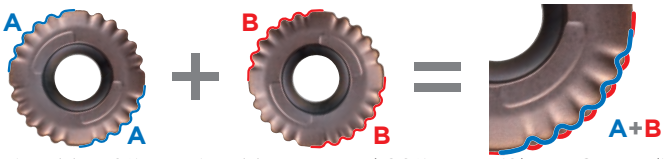
- Good surface roughness with arc-shaped wiper edge
- Sharp corners
- Four-cornered insert

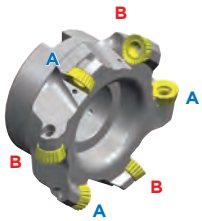


Surfing Insert QPMT ○○○○○○ PPER-R

- Cutting edges feature unique rippled design
- Four-cornered insert
- Low cutting force, enabling use on low-rigidity machines as well

*Use in combinations that alternate cutting edge A and cutting edge B.
(Only usable on cutters with an even number of cutting edges)





Shift the phase in 90° increments to mount inserts

■ Product Range

	Cat. No.	Max. Dia. (mm)	Number of Teeth
Shell type	**WRCX(F) 12000R(S)**	ø40 to ø80	4-6
	WRCX(F) 16000R(S)	ø63 to ø100	3-6
	WRCX 20000R(S)	ø125 to ø160	5-6
Shank type	**WRCX 08000E**	ø20 to ø25	2-3
	WRCX 10000E	ø25 to ø32	2-3
	WRCX 16000E	ø40 to ø50	2-3
Modular type	**WRCX 08000M**	ø20 to ø25	2-3
	WRCX 10000M	ø25 to ø32	2-3
	WRCX 12000M	ø40	4

Modular type H270

● Maximum Allowable Spindle Speed when Milling Non-Ferrous Metal (Unit: min⁻¹)

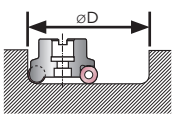
Max. Dia. DCX(mm)	Insert Cat. No.		
	QPET10·····-S	QPET12·····-S	QPET16·····-S
25	28,000		
32	25,000		
40		22,000	15,000
50		20,000	14,000
63		18,000	13,000
80		16,000	12,000
100			10,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force. Even if the speed used is within the maximum allowable spindle speeds, abnormal vibrations may occur due to machine rigidity or other factors. Therefore, it is advisable to start operation at half the maximum allowable spindle speed and increase the speed gradually while checking for abnormalities.

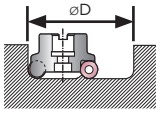
■ Usage Precautions

● Precautions for Helical Milling

Standard Diameter

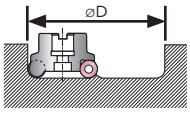


Standard Diameter or Below



Centre uncut portion cannot be removed by traverse cutting with the same cutter.

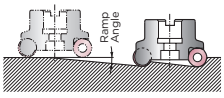
Standard Diameter or Above



Centre uncut portion can be removed by traverse cutting with the same cutter.

● Precautions for Ramping

● Use at the RMPX below or lower.



● Recommended Values for Helical Milling and Ramping

Insert Cat. No.	Helical Milling (Dimensions in mm)				Ramping
	Max. Dia. DCX	Machining Dia. øD			Maximum Ramp Angle RMPX(max)
		Min. Dia.	Standard Diameter	Max. Dia.	
QP□□080000	**20**	25	32	39	13°
	25	35	42	49	8°20′
QP□□100000	**25**	32	40	48	13°10′
	32	46	54	62	8°
QP□□120000	**40**	57	68	79	10°
	50	77	88	99	7°30′
	63	103	114	125	5°10′
	80	137	148	159	3°50′
QP□□160000	**40**	49	64	79	19°30′
	50	69	84	99	12°
	63	95	110	125	8°
	80	129	144	159	5°30′
	100	169	184	199	4°
QP□□200000	**125**	212	230	248	3°30′
	160	282	300	318	2°30′

WRCX(F)12000 type

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

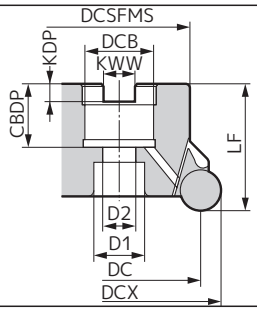
Rake Angle	Radial	0°
	Axial	-3°

6mm

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Standard Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX 12040RS**	●	**40**	28	36	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	12050RS	●	**50**	38	40	40	**22**	10.4	6.3	20	18	11	4	0.2	1
	12063RS	●	**63**	51	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	12080RS	●	***80**	68	55	50	**27**	12.4	7.0	25	20	13.5	6	0.9	1

Inserts are sold separately.

Body (Extra Fine Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCXF 12050RS**	●	**50**	38	40	40	**22**	10.4	6.3	20	18	11	5	0.2	1
	12063RS	●	**63**	51	40	40	**22**	10.4	6.3	20	18	11	6	0.4	1

Inserts are sold separately.

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

Insert (Common)

Dimensions (mm)

Grade Classification		Coated Carbide					Cemented Carbide	DLC				
Process	High-speed/Light Cutting	P			K		K N	N				
	Medium Cutting		P M	P M	K			N				
	Roughing		P M	P M		K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
General-purpose	**QPMT 120440 PPEN**		●	●	●	●	—	—	12	4.0	4.76	1
	120440 PPEN-H*		●	●	●	●	—	—	12	4.0	4.76	1
For Non-Ferrous Metals	**QPET 120460 PPFR-S**	—	—	—	—	—	●	●	12	6.0	4.76	2
Surfing	**QPMT 120460 PPER-R**		●	●			—	—	12	6.0	4.76	3

*: -H at the end indicates strong edged.

Fig 1 8-cornered

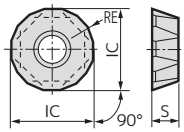


Fig 2 For Non-Ferrous Metals 4 corners

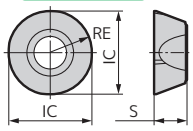
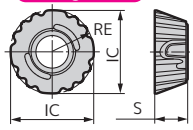


Fig 3 Surfing Insert 4 corners



Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
	N·m			
BFTX0409IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Recommended Cutting Conditions

Diameter ø40 to ø80mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	—	80- **120** -160	0.10- **0.20** -0.30	ACP300
K	Cast Iron	250HB	80- **120** -160	0.10- **0.20** -0.40	ACK200
N	Non-Ferrous Metal	—	200- **500** -1,000	0.10- **0.30** -0.40	DL1000

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

WRCX(F) 16000R(S) type

P Steel M Stainless Steel K Cast Iron N Aluminum Alloy

Rake Angle	Radial	0°
	Axial	-3°

8mm

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

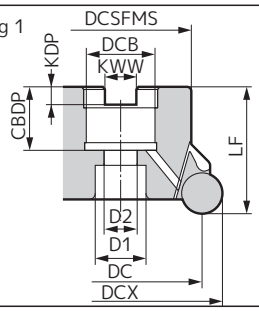
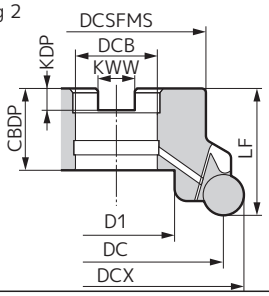


Fig 2



Body (Standard Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX 16063RS**	●	**63**	47	50	40	**22**	10.4	6.3	20	18	11	3	0.4	1
	16080RS	●	***80**	64	55	50	**27**	12.4	7.0	25	20	13.5	4	0.8	1
	16100RS	●	**100**	84	70	50	**32**	14.4	8.5	32	46	—	5	1.2	2
Inch	**16080R**	●	**80**	64	55	50	**25.4**	9.5	6.0	25	20	13	4	0.8	1
	16100R	●	**100**	84	70	63	**31.75**	12.7	8.0	32	46	17	5	1.4	1

Inserts are sold separately.

Body (Extra Fine Pitch)

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCXF 16063RS**	●	**63**	47	50	40	**22**	10.4	6.3	20	18	11	4	0.4	1
	16080RS	●	***80**	64	55	50	**27**	12.4	7.0	25	20	13.5	5	0.7	1
	16100RS	●	**100**	84	70	50	**32**	14.4	8.5	32	46	—	6	1.2	2

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					Cemented Carbide	DLC				
Process	High-speed/Light Cutting	P			K		K N	N				
	Medium Cutting		P M	P M	K			N				
	Roughing		P M	P M		K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
General-purpose	**QPMT 160660 PPEN**		●	●	●	●	—	—	16	6.0	6.5	1
	160660 PPEN-H*1		●	●	●	●	—	—	16	6.0	6.5	1
Anti-Vibration*2	**QPMT 160608 PPEN**		●	●	●	●	—	—	16	0.8	6.5	1
	160608 PPEN-CP		●	●	●	●	—	—	16	0.8	6.5	2
For Non-Ferrous Metals	**QPET 160680 PPFR-S**	—	—	—	—	—	●	●	16	8.0	6.5	3
Surfing	**QPMT 160680 PPER-R**		●	●			—	—	16	8.0	6.5	4

Fig 1 8-cornered

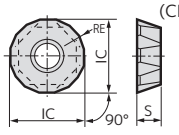


Fig 2 (CP type)

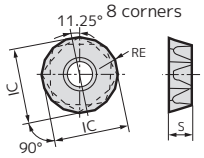


Fig 3 For Non-Ferrous Metals 4 corners

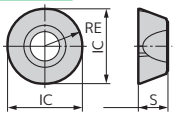
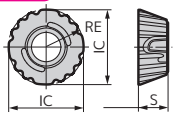


Fig 4 Surfing Insert 4 corners



*1: -H at the end indicates strong cutting edge type.
*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.
Only even numbers of cutting edges are usable.

Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
				
BFTX0511IP	5.0	HPL2025	TRB20IP	SUMI-P

Recommended Cutting Conditions

Diameter ø40 to ø80mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	—	80- **120** -160	0.10- **0.20** -0.30	ACP300
K	Cast Iron	250HB	80- **120** -160	0.10- **0.20** -0.40	ACK200
N	Non-Ferrous Metal	—	200- **500** -1,000	0.10- **0.30** -0.40	DL1000

Note · 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.
· For groove milling, adjust the feed rate to around 70% of the above values.

Diameter ø100 to ø160mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	150- **200** -250	0.30- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280HB	100- **160** -200	0.10- **0.30** -0.50	ACP200
M	Stainless Steel	—	160- **180** -200	0.15- **0.20** -0.30	ACP300
K	Cast Iron	250HB	100- **150** -200	0.10- **0.15** -0.20	ACK200
N	Non-Ferrous Metal	—	200- **500** -1,000	0.20- **0.40** -0.60	DL1000

Note · 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.
· For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m)

SEC-Wave Radius Mill

WRCX 2000OR type

P Steel M Stainless Steel K Cast Iron N Aluminum Alloy

Rake Angle	Radial	0°
	Axial	-3°

10mm

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

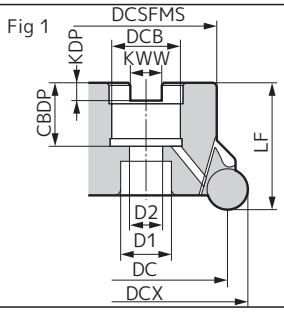
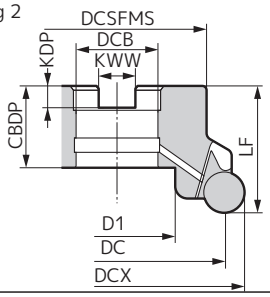


Fig 2



Body

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 CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**WRCX 20125R**	●	**125**	105	80	63	**38.1**	15.9	10.0	35.5	55	30	5	2.3	1
	20160R	●	**160**	140	100	63	**50.8**	19.1	11.0	41.5	72	—	6	4.0	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					Cemented Carbide	DLC					
Process	High-speed/Light Cutting	P			K		K N	N					
	Medium Cutting		P M	P M	K			N					
	Roughing		P M	P M		K							
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
General-purpose	**QPMT 200670 PPEN**		●	●	●	●	—	—	20	7.0	6.5	1
	200670 PPEN-H[*1]		●	●	●	●	—	—	20	7.0	6.5	1
Anti-Vibration[*2]	**QPMT 200608 PPEN**		●	●	●	●	—	—	20	0.8	6.5	1
	200608 PPEN-CP		●	●	●	●	—	—	20	0.8	6.5	2
Surfing	**QPMT 2006100 PPER-R**		●	●			—	—	20	10.0	6.5	3

Fig 1 8-cornered

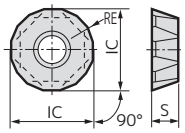


Fig 2 (CP type) 11°15' 8 corners

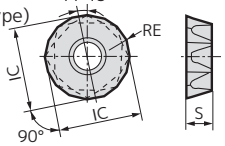
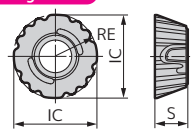


Fig 3 Surfing Insert 4 corners



*1: -H at the end indicates strong cutting edge type.

*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
		N·m				
WRCX 20125R	BFTX0615IP	7.5	—	HPL2025	TRB25IP	SUMI-P
WRCX 20160R	BFTX0615IP	7.5	TRDR25IP	—	—	

Recommended Cutting Conditions

Diameter ø100 to ø160mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	150- **200** -250	0.30- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280HB	100- **160** -200	0.10- **0.30** -0.50	ACP200
M	Stainless Steel	—	160- **180** -200	0.15- **0.20** -0.30	ACP300
K	Cast Iron	250HB	100- **150** -200	0.10- **0.15** -0.20	ACK200

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

WRCX 08000E(S/M)/10000E(S/M)/16000E(S/M) type

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

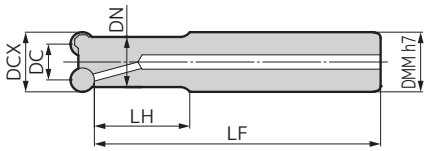
Rake Angle	Radial	-3 to 0°
	Axial	-3°

4mm (08000E type) | 5mm (10000E type) | 8mm (16000E type)

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Applicable Insert IC = 8mm 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
WRCX 08020ES	●	20	12	20	18	50	130	2	0.2	1
08020EM	●	20	12	20	18	100	180	2	0.3	1
08020EL		20	12	20	18	130	250	2	0.5	1
WRCX 08025ES	●	25	17	25	21	50	130	3	0.4	1
08025EM	●	25	17	25	21	100	180	3	0.5	1
08025EL		25	17	25	21	130	250	3	0.7	1

Body (Applicable Insert IC = 10mm 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
WRCX 10025ES	●	25	15	25	21	50	130	2	0.4	1
10025EM	●	25	15	25	21	100	180	2	0.5	1
10025EL		25	15	25	21	130	250	2	0.7	1
WRCX 10032ES	●	32	22	32	28	50	130	3	0.7	1
10032EM	●	32	22	32	28	120	200	3	1.0	1
10032EL		32	22	32	28	180	300	3	1.5	1

Body (Applicable Insert IC = 16mm 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
WRCX 16040ES	●	40	24	32	31.3	50	170	2	0.9	1
16040EM	●	40	24	32	31.3	50	250	2	1.4	1
WRCX 16050ES	●	50	34	32	40.8	50	170	3	1.0	1
16050EM	●	50	34	32	40.8	50	250	3	1.5	1

Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
WRCX 08000E(S/M) type	BFTX02506IP	1.5 N·m	TRDR08IP	SUMI-P
WRCX 10000E(S/M) type	BFTX03584IP	3.0 N·m	TRDR15IP	
WRCX 16000E(S/M) type	BFTX0511IP	5.0 N·m	TRDR20IP	

Recommended Cutting Conditions

Diameter ø20 to ø32mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	80- **120** -160	0.10- **0.30** -0.40	ACP200
	Alloy Steel	180 to 280HB	60- **100** -140	0.10- **0.20** -0.30	ACP200
M	Stainless Steel	—	60- **100** -120	0.10- **0.15** -0.20	ACP300
K	Cast Iron	250HB	60- **80** -120	0.10- **0.20** -0.30	ACK200
N	Non-Ferrous Alloys	—	200- **500** -1,000	0.10- **0.20** -0.30	DL1000

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

Diameter ø40 to ø50mm

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280HB	100- **140** -180	0.20- **0.30** -0.40	ACP200
M	Stainless Steel	—	80- **120** -160	0.10- **0.20** -0.30	ACP300
K	Cast Iron	250HB	80- **120** -160	0.10- **0.20** -0.40	ACK200
N	Non-Ferrous Alloys	—	200- **500** -1,000	0.10- **0.30** -0.40	DL1000

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					Cermet Carbide	DLC
Process	High-speed/Light Cutting	P			K		K N	N
	Medium Cutting		P M	P M	K			N
	Roughing		P M	P M		K		

Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig	Applicable Cutter
General-purpose	QPMT 080330 PPEN		●	●	●	●	—	—	8	3.0	3.18	1	WRCX08000E(S/M) type
	080330 PPEN-H*1		●	●	●	●	—	—	8	3.0	3.18	1	
	QPMT 10T335 PPEN		●	●	●	●	—	—	10	3.5	3.97	1	WRCX10000E(S/M) type
	10T335 PPEN-H*1		●	●	●	●	—	—	10	3.5	3.97	1	
	QPMT 160660 PPEN		●	●	●	●	—	—	16	6.0	6.5	1	WRCX16000E(S/M) type
	160660 PPEN-H*1		●	●	●	●	—	—	16	6.0	6.5	1	
Anti-Vibration*2	QPMT 160608 PPEN		●	●	●	●	—	—	16	0.8	6.5	1	WRCX16000E(S/M) type
	160608 PPEN-CP		●	●	●	●	—	—	16	0.8	6.5	2	
For Non-Ferrous Metals	QPET 10T350 PPFR-S	—	—	—	—	—	●	●	10	5.0	3.97	3	WRCX10000E(S/M) type
	QPET 160680 PPFR-S	—	—	—	—	—	●	●	16	8.0	6.5	3	WRCX16000E(S/M) type
Surfing	QPMT 160680 PPER-R		●	●			—	—	16	8.0	6.5	4	WRCX16000E(S/M) type

Fig 1 — 8 corners

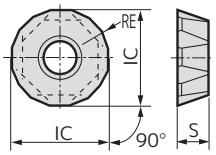


Fig 2 (CP type) — 8 corners

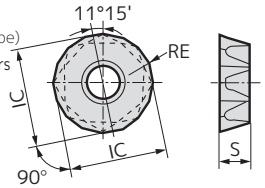


Fig 3 — For Non-Ferrous Metals — 4 corners

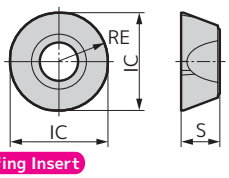
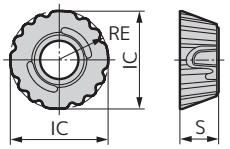


Fig 4 — Surfing Insert — 4 corners



*1: -H at the end indicates strong cutting edge type. *2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

N·m Recommended Tightening Torque (N·m)

WBMR series



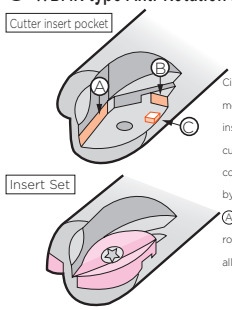
■ Features

A lineup of ø20 to ø50mm shank type ballnose cutter models for 3D profile roughing of die molds and machine parts.

● WBMR2000/2000L (ø20 to ø50mm)

- Wave-shaped high rake angle insert design achieves a sharp cutting edge and low cutting force
- Economical M-class insert with strong cutting edge
- Anti-rotation guides prevent the insert from slipping during machining
- Combination of main and secondary inserts used for large diameter cutters (ø40, ø50), which enables easier tool management

● WBMR type Anti-Rotation Mechanism



WBMR2000
(ø20 to ø50mm)

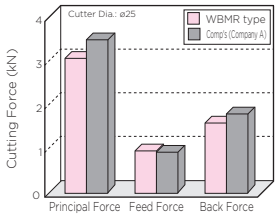


WBMR2000L
(ø20 to ø50mm)



■ Performance

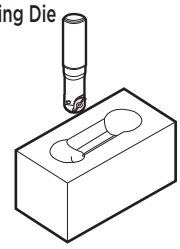
● Cutting Force



Work Material: S50C
Cutting Conditions
(Shoulder Milling, Down Cutting)
vc = 200m/min
fz = 0.15mm/t
ap = 5mm
ae = 5mm

■ Application Examples

● Cold Molding Die (SKD11)



Evaluation
Flank wear width after continuous cutting for seven hours was less than competitor's product. Stable cutting was observed.

WBMR2200S (ø20)
Insert Grade: ACZ350
Cutting Conditions
n = 2,200min^{-1}
vf = 500mm/min
ap 0.3 to 2mm
Non-water soluble Cutting Oil

■ Product Range

Type	Cat. No.	Dia. (mm)				
		ø20	ø25	ø30	ø40	ø50
Shank	**WBMR 2000S**	●	●	●	●	●
	WBMR 2000M	●	●	●	●	●
	WBMR 2000L	●	●	●	●	●
	WBMR 2000S(M/L)-C					●
	WBMR 2000SL	●	●	●	●	●
	WBMR 2000ML	●	●	●	●	●
	WBMR 2000LL	●	●	●	●	●
	WBMR 2000S(M/L)L-C					●

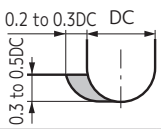
■ Parts

Applicable Cutter □ indicates S/M/L type	Part Name	Short Edge type	Long Edge type (-L)		Anti-seizure Cream
		For Tip Insert	For Tip Insert	For Peripheral Cutting Edge	
WBMR2200□(L)	Flat Insert Screw	BFTX0307N (N·m) **2.0**			SUMI-P
	Wrench	TRX10			
WBMR2250□(L)	Flat Insert Screw	BFTX0409N (N·m) **3.0**			
	Wrench	TRD15			
WBMR2300□(L)	Flat Insert Screw	BFTX0511N (N·m) **5.0**		BFTX0407N (N·m) **3.0**	
	Wrench	TRD20		TRD15	
WBMR2400□(L)	Flat Insert Screw	BFTX0619N (N·m) **7.5**		BFTX0409N (N·m) **3.0**	
	Wrench	TRD25		TRD15	
WBMR2500□(L) WBMR2500□(L)-C	Flat Insert Screw	BFTX0619N (N·m) **7.5**		BFTX0409N (N·m) **3.0**	
	Wrench	TRD25		TRD15	

Recommended Cutting Conditions

(A) Tip insert only

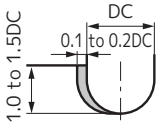
ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **150** -200	0.10- **0.20** -0.30	ACP200
	Alloy Steel	180 to 280HB	70- **100** -120	0.10- **0.20** -0.30	ACP200
M	Stainless Steel, Die Steel	—	50- **80** -100	0.10- **0.15** -0.20	ACP300
K	Cast Iron	250HB	100- **120** -150	0.20- **0.30** -0.40	ACK300



Note 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.

(B) Tip insert and peripheral cutting edge

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	80- **120** -150	0.10- **0.20** -0.30	ACP200
	Alloy Steel	180 to 280HB	50- **80** -100	0.10- **0.20** -0.30	ACP200
M	Stainless Steel, Die Steel	—	40- **60** -80	0.10- **0.15** -0.20	ACP300
K	Cast Iron	250HB	80- **100** -120	0.20- **0.30** -0.40	ACK300



Note 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.

(N·m) Recommended Tightening Torque (N·m)

WBMR 2000 type

P Steel M Stainless Steel K Cast Iron

Rake Angle	Radial	—
	Axial	-10°

20-47mm

R-Grooving Profiling



Fig 1

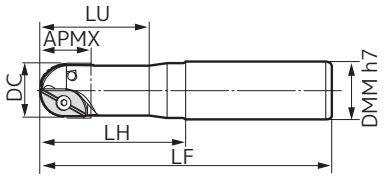
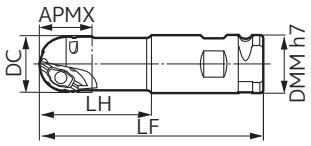


Fig 2



Note: Fig 2 shows a combination clamped shank diagram (2500☐-C).

Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Length LU	Overall Length LF	Fig
WBMR 2200S	●	**20**	20	25	60	40	140	1
2200M	●	**20**	20	25	60	40	200	1
2200L	●	**20**	20	25	80	40	250	1
WBMR 2250S	●	**25**	23	32	70	50	150	1
2250M	●	**25**	23	32	73	50	220	1
2250L	●	**25**	23	32	100	50	300	1
WBMR 2300S	●	**30**	28	32	80	60	160	1
2300M	●	**30**	28	32	85	60	240	1
2300L	●	**30**	28	32	120	60	350	1
WBMR 2400S	●	**40**	35	42	100	—	200	1
2400M	●	**40**	35	42	180	—	280	1
2400L	●	**40**	35	42	250	—	350	1
WBMR 2500S	●	**50**	47	42	100	—	200	1
2500M	●	**50**	47	42	180	—	280	1
2500L	●	**50**	47	42	250	—	350	1
WBMR 2500S-C	●	**50**	47	50.8	100	—	200	2
2500M-C	●	**50**	47	50.8	180	—	280	2
2500L-C	●	**50**	47	50.8	250	—	350	2

Inserts are sold separately.

Insert

Dimensions (mm)

Fig 1

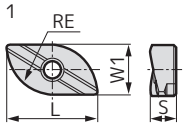


Fig 2

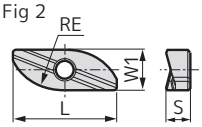


Fig 3

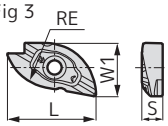
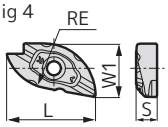


Fig 4



Grade Classification		Coated Carbide				
Process	High-speed/Light Cutting	P			K	
	Medium Cutting		P M	P M	K	
	Roughing		P M	P M		K

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Length L	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Milling Cutters	Remarks
ZNMT 1804100-C		●	●		●	18.00	9.76	4.76	10	1	WBMR 2200☐	· Tip inserts are used in combination according to Fig 1 & 2.
2004100-S		●	●		●	20.00	7.50	4.37	10	2		
ZNMT 2205125-C		●	●		●	22.50	12.20	5.70	12.5	1	WBMR 2250☐	· Tip inserts are used in combination according to Fig 1 & 2.
2305125-S		●	●		●	23.00	9.38	5.56	12.5	2		
ZNMT 2706150-C		●	●		●	27.00	14.64	6.75	15	1	WBMR 2300☐	· Tip inserts are used in combination according to Fig 1 & 2.
2806150-S		●	●		●	28.00	11.25	6.35	15	2		
ZNMT 3608200		●	●		●	36.00	19.50	8.65	20	3	WBMR 2400☐	· Use two of the items shown in Fig 3 as the tip inserts.
ZNMT 4310250		●	●		●	43.00	25.70	10.15	25	3	WBMR 2500☐	· Use two of the items shown in Fig 3 or Fig 4 (nicked) as the tip inserts.
4310250-N		●	●		●	43.00	25.70	10.15	25	4		

Parts H207 Recommended Cutting Conditions H207

WBMR 2000L type

P Steel M Stainless Steel K Cast Iron

Rake Angle	Radial	—
	Axial	-10°

30-69mm

R-Grooving Profiling



Fig 1

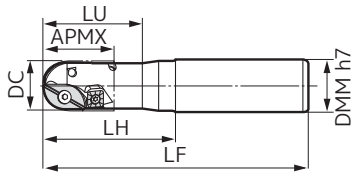
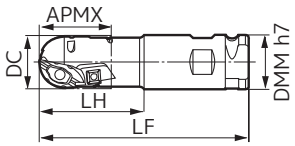


Fig 2



Note: Fig 2 shows a combination clamped shank diagram (2500□-C).

Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Length LU	Overall Length LF	Fig
WBMR 2200SL	●	**20**	30	25	60	40	140	1
2200ML	●	**20**	30	25	60	40	200	1
2200LL	●	**20**	30	25	80	40	250	1
WBMR 2250SL	●	**25**	38	32	70	50	150	1
2250ML	●	**25**	38	32	73	50	220	1
2250LL	●	**25**	38	32	100	50	300	1
WBMR 2300SL	●	**30**	42	32	80	60	160	1
2300ML	●	**30**	42	32	85	60	240	1
2300LL	●	**30**	42	32	120	60	350	1
WBMR 2400SL	●	**40**	50	42	100	—	200	1
2400ML	●	**40**	50	42	180	—	280	1
2400LL	●	**40**	50	42	250	—	350	1
WBMR 2500SL	●	**50**	69	42	100	—	200	1
2500ML	●	**50**	69	42	180	—	280	1
2500LL	●	**50**	69	42	250	—	350	1
WBMR 2500SL-C	●	**50**	69	50.8	100	—	200	2
2500ML-C	●	**50**	69	50.8	180	—	280	2
2500LL-C	●	**50**	69	50.8	250	—	350	2

Inserts are sold separately.

Insert

Dimensions (mm)

Fig 1

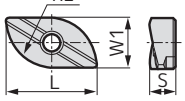


Fig 2

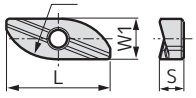


Fig 3



Fig 4

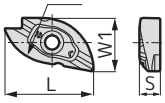
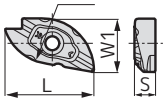


Fig 5

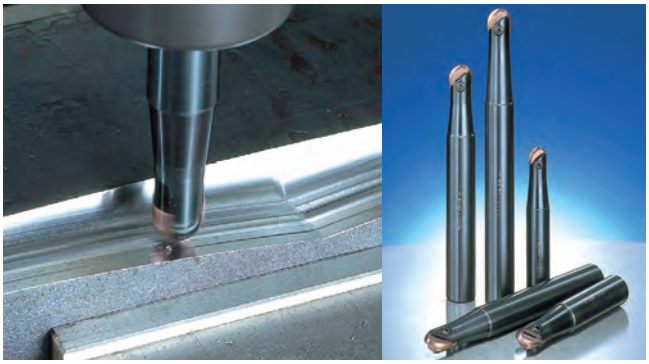


Grade Classification		Coated Carbide			
Process	High-speed/Light Cutting	P			K
	Medium Cutting		P M	P M	K
	Roughing		P M	P M		K

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Length L	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Milling Cutters	Remarks
ZNMT 1804100-C		●	●		●	18.00	9.76	4.76	10	1	WBMR 2200□L	· Tip inserts are used in combination according to Fig 1 & 2. · Peripheral cutting edge (Fig 3) for 2200□L only.
2004100-S		●	●		●	20.00	7.50	4.37	10	2		
SPMT 070308		●	●		●	7.94	—	3.18	—	3		
ZNMT 2205125-C		●	●		●	22.50	12.20	5.70	12.5	1	WBMR 2250□L	· Tip inserts are used in combination according to Fig 1 & 2. · Peripheral cutting edge (Fig 3) for 2250□L only.
2305125-S		●	●		●	23.00	9.38	5.56	12.5	2		
SPMT 09T308		●	●		●	9.53	—	3.97	—	3		
ZNMT 2706150-C		●	●		●	27.00	14.64	6.75	15	1	WBMR 2300□L	· Tip inserts are used in combination according to Fig 1 & 2. · Peripheral cutting edge (Fig 3) for 2300□L only.
2806150-S		●	●		●	28.00	11.25	6.35	15	2		
SPMT 09T308		●	●		●	9.53	—	3.97	—	3		
ZNMT 3608200		●	●		●	36.00	19.50	8.65	20	4	WBMR 2400□L	· Use two of the items shown in Fig 4 as the tip inserts. · Peripheral cutting edge (Fig 3) for 2400□L only.
SPMT 09T308		●	●		●	9.53	—	3.97	—	3		
ZNMT 4310250		●	●		●	43.00	25.70	10.15	25	4	WBMR 2500□L	· Use two of the items shown in Fig 4 or Fig 5 (nicked) as the tip inserts. · Peripheral cutting edge (Fig 3) for 2500□L only.
4310250-N		●	●		●	43.00	25.70	10.15	25	5		
SPMT 120408		●	●		●	12.70	—	4.76	—	3		

Parts H207 Recommended Cutting Conditions H207

WBMF series



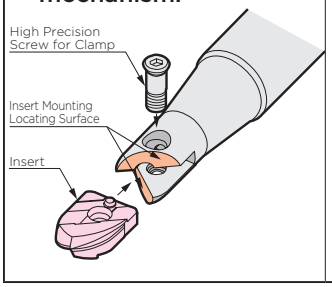
■ Features

A lineup of ø10 to ø30mm shank type ballnose cutter models for 3D profile finishing of die molds and machine parts.

● WBMF1000 type (ø10 to ø30mm)

- Simple but precise clamping design.
- Original large helix angle design.
- Sharp cutting edge that produces good surface roughness.
- Excellent wear resistance with Super ZX Coat.

● WBMF type clamp mechanism.

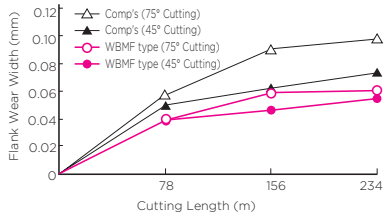


WBMF1000



■ Performance

● Insert Life



Results
WBMF type exhibits superior wear resistance compared to competitors' products in ramping operations, which are frequently encountered in actual machining.

Work Material: S50C
Machining Method: Ramping (45°, 75°)
Cutting Conditions
n = 2,000min^{-1}
vf = 2,000mm/min
ap = 0.3mm
pf = 0.6mm
Dry

■ Product Range

Type	Cat. No.	Dia. (mm)					
		ø10	ø12	ø16	ø20	ø25	ø30
Shank	**WBMF 1000S**	●	●	●	●	●	●
	WBMF 1000M	●	●	●	●	●	●
	WBMF 1000L	●	●	●	●	●	●

WBMF 1000 type

P Steel

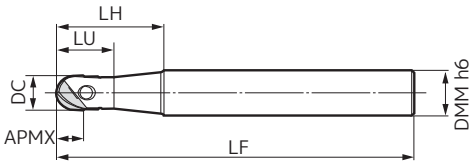
Rake Angle	Radial	—
	Axial	0°

0.1-0.4mm

R-Grooving Profiling

Fig 1





Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Length LU	Overall Length LF	Fig
WBMF 1100S	●	**10**	9	16	30	17	100	1
1100M	●	**10**	9	16	35	17	130	1
1100L	●	**10**	9	16	50	17	180	1
1120S	●	**12**	10.5	16	40	19.5	110	1
1120M	●	**12**	10.5	16	40	19.5	150	1
1120L	●	**12**	10.5	16	60	19.5	200	1
1160S	●	**16**	12	20	50	25.5	130	1
1160M	●	**16**	12	20	50	25.5	180	1
1160L	●	**16**	12	20	70	25.5	220	1
1200S	●	**20**	15	25	60	32	140	1
1200M	●	**20**	15	25	60	32	200	1
1200L	●	**20**	15	25	80	32	250	1
1250S	●	**25**	18.5	32	70	36	150	1
1250M	●	**25**	18.5	32	73	36	220	1
1250L	●	**25**	18.5	32	100	36	300	1
1300S	●	**30**	22.5	32	80	43	160	1
1300M	●	**30**	22.5	32	85	43	240	1
1300L	●	**30**	22.5	32	120	43	350	1

Inserts are sold separately.

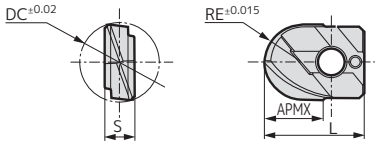
Insert

Dimensions (mm)

Grade Classification		Coated Carbide
Process	High-speed/Light Cutting	P
	Medium Cutting	
	Roughing	

Cat. No.	ACZ120	Dia. DC	Length L	Max. Depth of Cut APMX	Thickness S	Corner Radius RE	Applicable Cutter	Fig
ZPGU 1551050	●	10	15.6	9	5.1	5.0	WBMF 1100□	1
1856060	●	12	18	10.5	5.6	6.0	WBMF 1120□	1
2061080	●	16	20.5	12	6.1	8.0	WBMF 1160□	1
2471100	●	20	24.5	15	7.1	10.0	WBMF 1200□	1
2876125	●	25	28.5	18.5	7.6	12.5	WBMF 1250□	1
3486150	●	30	34.4	22.5	8.6	15.0	WBMF 1300□	1

Fig 1

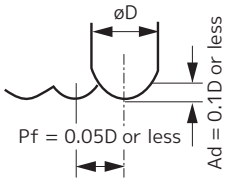


Parts

Applicable Cutter	Precision Screw	N·m	Wrench	Anti-seizure Cream
WBMF1100□	BFTG0408F	3.0	TRD15	SUMI-P
WBMF1120□	BFTG0409F			
WBMF1160□	BFTG0513F	5.0	TRD20	
WBMF1200□	BFTG0617F	7.5	TRD25	
WBMF1250□	BFTG0621F			
WBMF1300□	BFTG0825F			

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	200- **250** -300	0.10- **0.20** -0.30	ACZ120
	Alloy Steel	180 to 280HB	100- **150** -200	0.10- **0.20** -0.30	ACZ120



Note 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.

Expansion



■ Features

- **Side Cutter Suitable For A Variety Of Applications**
  Made-to-order bodies possible with cutting width of 17mm and up
  Suitable for various applications such as groove milling and shoulder milling.
- **Realises Low Resistance and Low Vibration Milling**
  Design emphasizes cutting edge sharpness with +10° inclination angle
  Excellent cutting edge sharpness suppresses chatter to enable stable machining.
- **Excellent Machined Surface Quality**
  Proprietary insert array design minimises joint steps at the groove bottom for excellent machining quality.
- **Neutral-handed 4-cornered Insert**
  Easy management with neutral-handed insert design that eliminates the need to align right-hand and left-hand inserts.

■ Product Range (Body)

Body: Made-to-order (custom design)

Standard design



Multi-stage design



Insert Cat. No.	Width of Cut CW (mm)									
	17	18.5	19	20.3	21	22	22.8	23.7	24.6	Over 24.6
TGCX130704PNEN-G	Standard design									Multi-stage design
TGCX130708PNEN-G	Standard design								Multi-stage design	
TGCX130712PNEN-G	Standard design							Multi-stage design		
TGCX130716PNEN-G	Standard design						Multi-stage design			
TGCX130720PNEN-G	Standard design					Multi-stage design				
TGCX130724PNEN-G	Standard design				Multi-stage design					
TGCX130730PNEN-G	Standard design			Multi-stage design						
TGCX130732PNEN-G	Standard design		Multi-stage design							

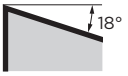
Standard design CW upper limit value varies with insert.

■ Product Range (Insert)

Cat. No.	Corner Radius RE (mm)							
	0.4	0.8	1.2	1.6	2.0	2.4	3.0	3.2
TGCX1307○○PNEN-G	●	●	●	●	●	●	●	●

● mark: Standard stocked item ● mark: Standard stocked item

■ Chipbreaker

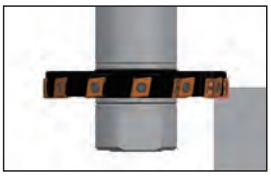
Work Material	P Steel, M stainless steel, K cast iron
Applications	General-purpose to Roughing
Chipbreaker	**G type**
	TGCX 13
	
Cutting Edge Cross Section	

■ Suitable for Various Applications

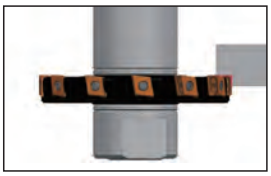
Groove Milling



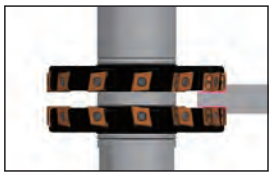
Shoulder Milling



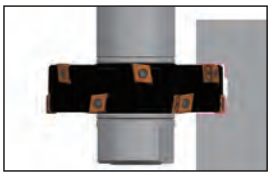
Back Spot Facing



Width Setting



Double-Sided Machining



Standard disc shape

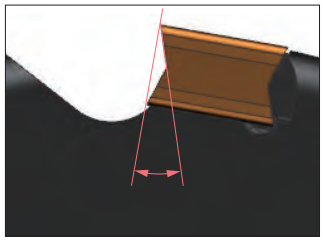
TGC series

■ Sharp Edge Design

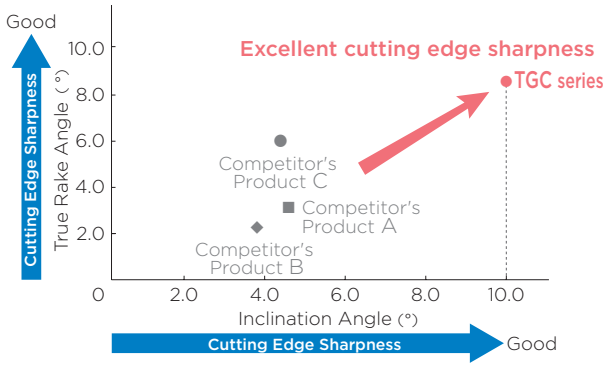
Design emphasizes cutting edge sharpness with +10° inclination angle.
Excellent cutting edge sharpness suppresses chatter to enable stable machining.



Inclination Angle

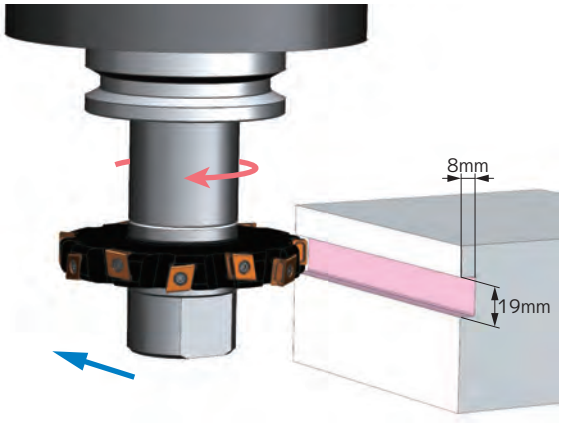


True Rake Angle

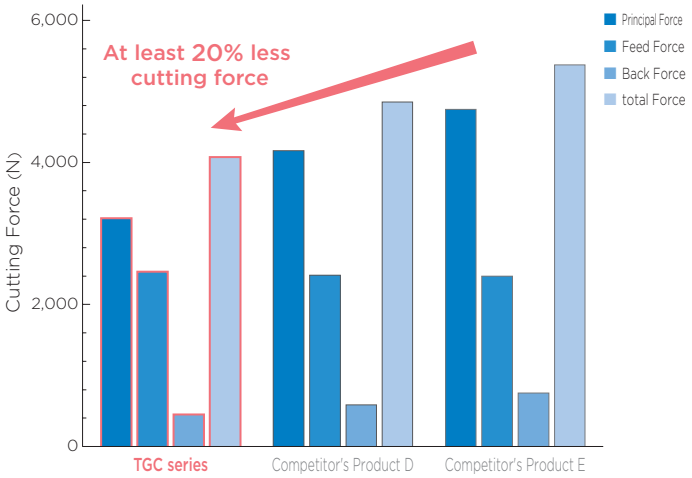


■ Cutting Performance

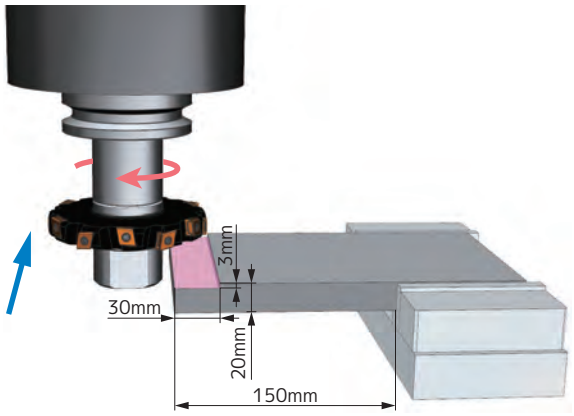
● Low Cutting Force



Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TGC 13125W19Z12RS (ø125, Width of Cut 19mm, 12 teeth)
Insert	: TGCX 130708PNEN-G (ACU2500)
Cutting Conditions	: vc = 200m/min fz = 0.2mm/t ap = 19mm ae = 8mm, Down Cut, Dry



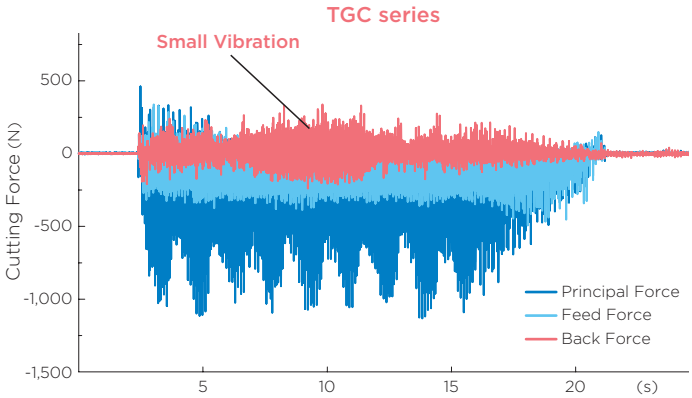
● Low Vibration

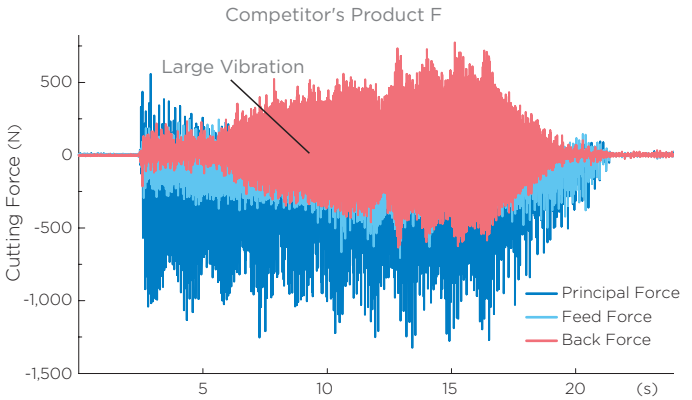


Machine	: Vertical Machining Centre BT50, Work Material: FC250
Tool	: TGC 13125W19Z12RS (ø125, Width of Cut 19mm, 12 teeth)
Insert	: TGCX 130708PNEN-G (ACU2500)
Cutting Conditions	: vc = 200m/min fz = 0.2mm/t ap = 3mm ae = 30mm, Down Cut, Dry

Suppresses chatter even when machining low-rigidity workpieces

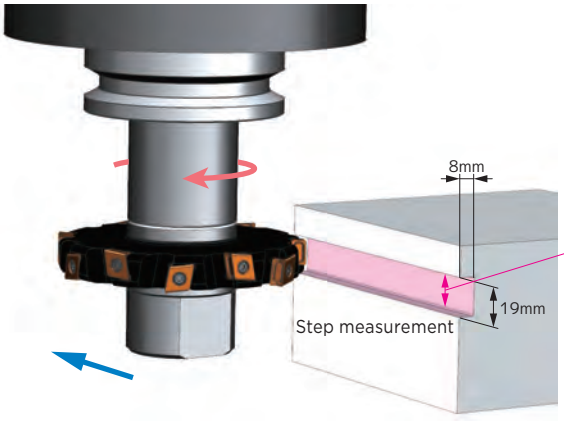
Excellent cutting edge sharpness eliminates chatter to enable stable machining



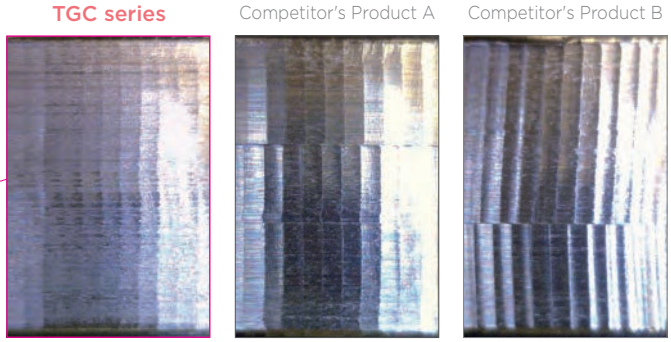


● Small Joint Steps At Groove Bottom

Proprietary insert array design minimizes joint steps at groove bottom for excellent visual quality



Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TGC 13125W19Z12RS (ø125, Width of Cut 19mm, 12 teeth)
Insert	: TGCX 130708PNEN-G (ACU2500)
Cutting Conditions	: vc = 200m/min fz = 0.2mm/t ap = 19mm ae = 8mm , Down Cut, Dry



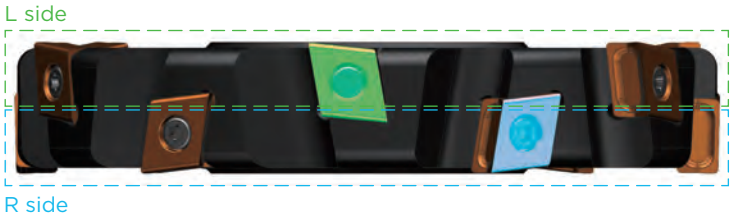
Less than 0.01mm step | Step 0.026mm | Step 0.024mm

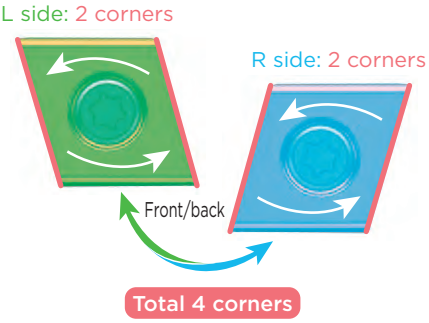
Excellent visual quality

*Results of in-house evaluation.

● Neutral-handed 4-cornered Insert

Easy management with neutral-handed insert design that eliminates the need to align right-hand and left-hand inserts



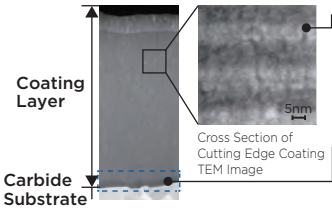


■ Grade Features

Work Material	Grade	Coating Thickness (µm)	Features
P K M S	ACU2500	3	Utilises ABSOTECH™ coating technology with excellent wear and chipping resistance. Its carbide substrate, with excellent fracture and wear resistance, achieves stable and long tool life for a variety of work materials.

Coating Layer Features

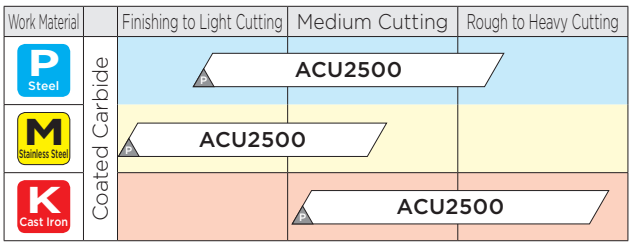
ABSOTECH — PVD



New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion has more than twice the chipping resistance of conventional coatings

■ Grade Application Range (TGC type)



The letter "P" at the end of each grade indicates the coating type. P: PVD

SEC-Sumi Dual Mill

TGC 13000 type

P Steel | M Stainless Steel | K Cast Iron

Expansion

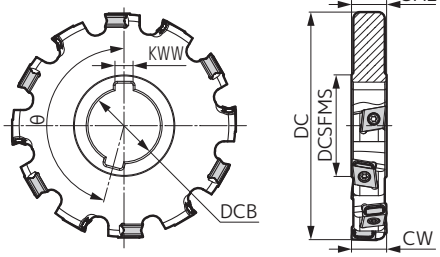
Rake Angle	Radial	-11.5° to -9.5°
	Axial	10°

ϕ17-24.6mm 90°

Face Milling | Shoulder Milling | Side Milling | Groove Milling | Back Spot Facing | Width Setting



Fig 1



Body (Standard Disc Shape)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss Dia. DCSFMS	Width of Cut CW	Boss Thickness OAL	Bore Dia. DCB	Keyway Width KWW	Phase θ (°)	Total No. of Teeth	Weight (kg)	Fig
Metric	TGC 13100W○○Z10RS		100	47	17 to 24.6	= CW	32	8	162	10	0.66 up	1
	13125W○○Z12RS		125	55	17 to 24.6	= CW	40	10	165	12	1.29 up	1
	13160W○○Z14RS		160	55	17 to 24.6	= CW	40	10	167.14	14	2.04 up	1
	13200W○○Z16RS		200	69	17 to 24.6	= CW	50	12	168.75	16	3.33 up	1

Basic specifications have two keyways. (Also available with only one) Inserts are sold separately.
The upper limit of width of cut CW is the value of inserts with corner radius RE0.4. For the width of cut CW upper limit values for each corner radius RE, see the Insert Cat. No. Table.
Disc shapes other than the standard type can be designed.

Identification Code

TGC	13	125	W17	Z12	R	S
Series Code	Insert Size	Dia.	Width of Cut	Number of Teeth	Feed Direction	Metric Bore

Parts

Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0412IP	3.0	TRDR15IP	SUMI-P

Expansion

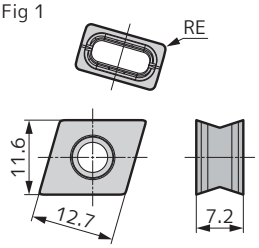
Insert

Dimensions (mm)

Grade Classification		Coated Carbide
Process	High-speed/Light Cutting	P K M
	Medium Cutting	P K M
	Roughing	P K M

Cat. No.	ACU2500	Corner Radius RE	Width of Cut CW Upper Limit	Fig
TGCX 130704PNEN-G	●	0.4	24.6	1
130708PNEN-G	●	0.8	23.7	1
130712PNEN-G	●	1.2	22.8	1
130716PNEN-G	●	1.6	22.0	1
130720PNEN-G	●	2.0	21.0	1
130724PNEN-G	●	2.4	20.3	1
130730PNEN-G	●	3.0	19.0	1
130732PNEN-G	●	3.2	18.5	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed **vc** (m/min) Min. - **Optimum** - Max.	Feed Rate **fz** (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	G	100 - **200** - 300	0.1 - **0.2** - 0.25	ACU2500
	Alloy Steel	180 to 280HB	G	80 - **160** - 260	0.1 - **0.2** - 0.25	ACU2500
M	Stainless Steel	180 to 280HB	G	90 - **135** - 180	0.1 - **0.15** - 0.2	ACU2500
K	Cast Iron/Ductile Cast Iron	250HB	G	100 - **200** - 300	0.1 - **0.2** - 0.25	ACU2500

Note
· The above figures are guidelines for simultaneous cutting with one R/L cutting tooth each, on a BT50 machine tool.
· The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.

SEC-Sumi Dual Mill TGC type Made-to-Order Request Sheet

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.

Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

■ Insert Series Configuration

Dimensions (mm)

Cat. No.	Corner Radius RE							
	0.4	0.8	1.2	1.6	2.0	2.4	3.0	3.2
TGCX 1307○○PNEN-G	●	●	●	●	●	●	●	●
TGCX 13 Width of Cut CW Upper Limit Value	24.6	23.7	22.8	22.0	21.0	20.3	19.0	18.5

A multi-stage design is required if the width of cut CW is wider than these upper limit values.

● mark: Standard stocked item (expanded item)
● mark: Standard stocked item

[Made-to-Order Insert Support]

Corner radius (RE) = 0.4 to 2.0mm supported.
(Machined radius size may differ from the corner radius RE size of the mounted inserts)

Width of Cut CW Size Reference Specification

Width of Cut CW	Insert type
17 to 24.6mm	TGCX 13

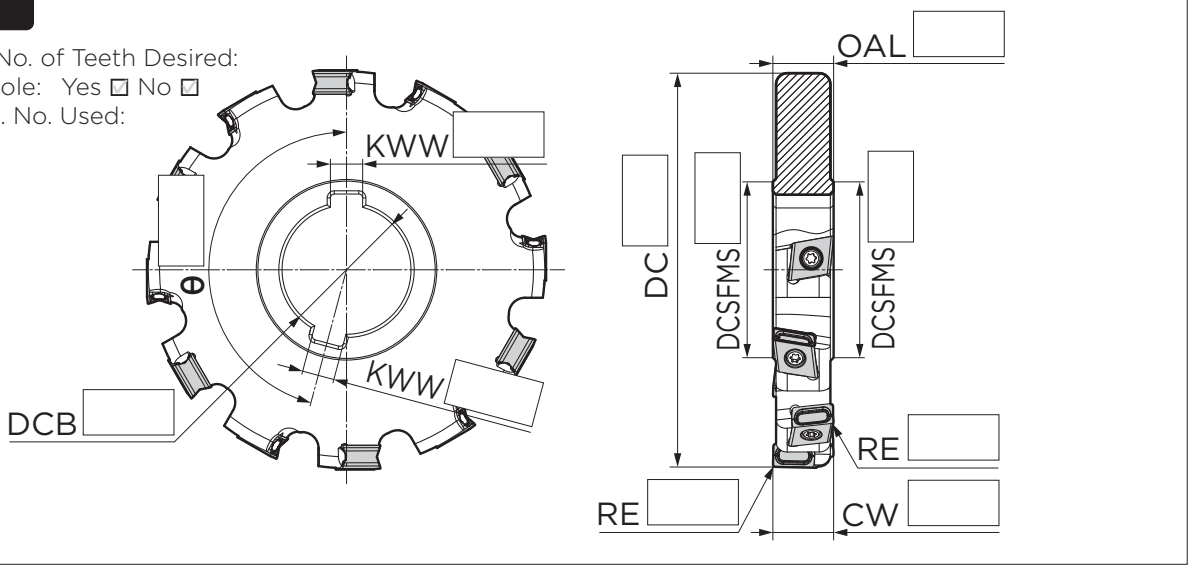
- The above width of cut CW upper limit value is the value with insert corner radius RE0.4.
- For the width of cut CW upper limit values for each corner radius RE, see the Insert Series Configuration Table on the left.

■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

☐ **Disc**

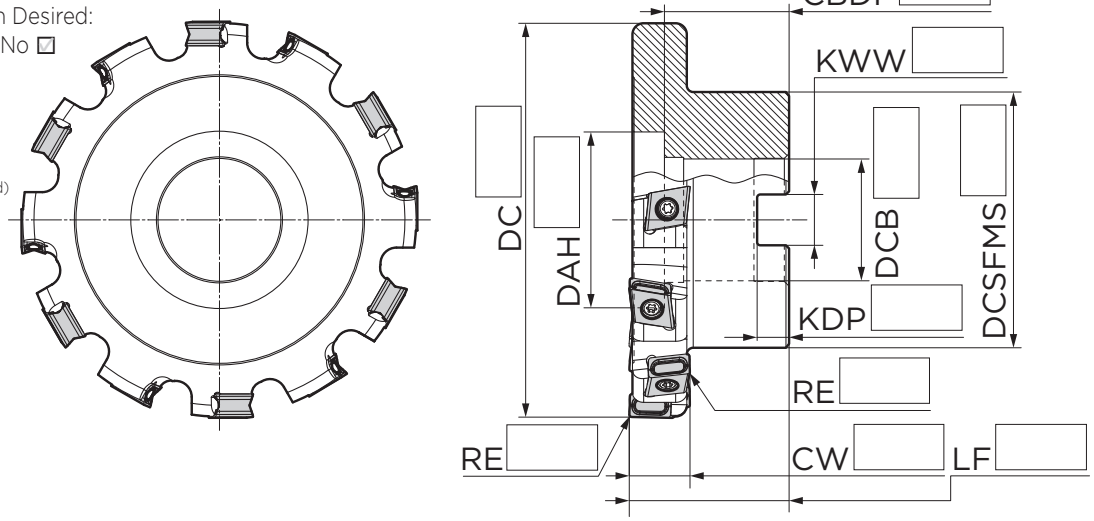
Effective No. of Teeth Desired:
Coolant Hole: Yes ☐ No ☐
Arbor Cat. No. Used:



Basic specifications have two keyways. (Also available with only one)

☐ **With Boss**

Effective No. of Teeth Desired:
Coolant Hole: Yes ☐ No ☐
Arbor Cat. No. Used:
Feed Direction:
Right-handed ☐
Left-handed ☐
(Figure shows right-handed)



Designs for applications other than those listed above are possible, please consult us separately.

MEMO

TSE type

P Steel K Cast Iron

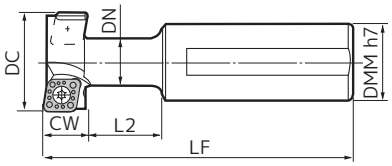
Rake Angle		
	Radial	0°
	Axial	0°

9-22mm 90°

Groove Milling

Fig 1





Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Diameter DN	Width CW	Length L2	Overall Length LF	Number of Teeth	Fig
TSE 2125	●	**21**	25	10.5	9	20	109	2	1
2525	●	**25**	25	12.5	11	21	112	2	1
3232	●	**32**	32	16.5	14	26	120	2	1
4032	●	**40**	32	20.5	18	32	130	2	1
5032	●	**50**	32	26.5	22	38	140	4	1

Inserts are sold separately.

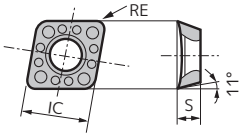
Insert

Dimensions (mm)

Grade Classification		Coated Carbide	Cemented Carbide	
Process	High-speed/Light Cutting			
	Medium Cutting	PM	PK	K
	Roughing			

Cat. No.	AC630M	A30	G10E	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
CPMT 060204N-US	●	●	●	6.35	2.38	0.4	TSE 2125	1
080308N-US	●	●	●	7.938	3.18	0.8	TSE 2525	1
09T308N-US	●	●	●	9.525	3.97	0.8	TSE 3232	1
CPMH 120408N-US	●	●	●	12.7	4.76	0.8	TSE 4032 TSE 5032	1

Fig 1



Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench
TSE2125	BFTX02506N	1.5	TRX08
TSE2525	BFTX0307N	2.0	TRX10
TSE3232	BFTX0407N	3.0	TRX15
TSE4032 TSE5032	BFN0511T	5.0	TRX20

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
P	Carbon Steel	180 to 280HB	100- **125** -150	0.05- **0.08** -0.10	AC630M
P	Alloy Steel	180 to 280HB	60- **80** -100	0.03- **0.05** -0.08	AC630M
K	Cast Iron	250HB	60- **80** -100	0.05- **0.08** -0.10	G10E

Note 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.

N·m Recommended Tightening Torque (N·m)

Expansion



■ Features

The SEC-WaveMill WFXC series is a chamfering tool that uses a WFX series insert. A wide variety of grades supports various work materials.
New grade ACS series has also been expanded, achieving excellent stability and longer tool life in machining of stainless steel and exotic alloys.

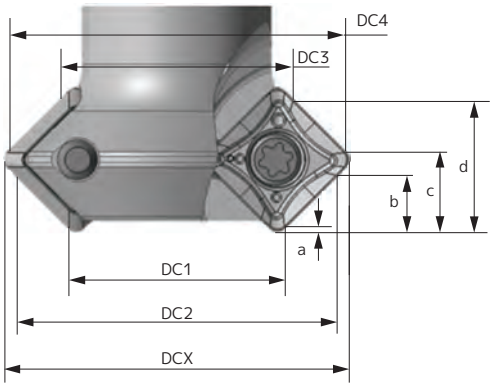
■ Precautions for Use

Chamfering tools use a straight cutting edge that enables the chamfering range to be changed depending on the corner radius (RE) of the insert mounted to the body.
Machining diameter: Use within the range shown in the table below, no lower than DC1 and no higher than DC2.
Depth of cut: Cutting to a depth shown by the distance from the tool tip (a) in a straight line to the cutting edge (b) is possible.

Dimensions (mm)

Body	Insert		Chamfering				Back Chamfering				Max. Dia.
			Min. Machining Dia.	Max. Machining Dia.	Minimum Depth	Maximum Depth	Min. Machining Dia.	Max. Machining Dia.	Minimum Depth	Maximum Depth	
	Cat. No.	RE	DC1	DC2	a	b	DC3	DC4	c	d	DCX
WFXC08008E	SOMT080304	0.4	7.5	15.8	0.1	4.1	9.3	17.6	5.8	9.9	17.8
	SOMT080308	0.8	8.0	15.8	0.2	3.9	9.3	17.1	5.9	9.8	17.5
	SOMT080312	1.2	8.5	15.8	0.4	3.6	9.3	16.6	6.0	9.6	17.2
WFXC08016E WFXC08016M	SOMT080304	0.4	15.5	23.8	0.1	4.1	17.3	25.6	5.8	9.9	25.8
	SOMT080308	0.8	16.0	23.8	0.2	3.9	17.3	25.1	5.9	9.8	25.5
	SOMT080312	1.2	16.5	23.8	0.4	3.6	17.3	24.6	6.0	9.6	25.2
WFXC12025E WFXC12025M	SOMT120404	0.4	24.6	38.3	0.1	6.8	27.3	41.2	9.1	16.0	41.3
	SOMT120408	0.8	25.0	38.3	0.2	6.6	27.3	40.6	9.2	15.8	41.0
	SOMT120412	1.2	25.6	38.3	0.4	6.3	27.3	40.1	9.3	15.7	40.7
	SOMT120416	1.6	26.1	38.3	0.5	6.1	27.3	39.5	9.4	15.5	40.4
WFXC12032E WFXC12032M	SOMT120404	0.4	31.6	45.3	0.1	6.8	34.3	48.2	9.1	16.0	48.3
	SOMT120408	0.8	32.0	45.3	0.2	6.6	34.3	47.6	9.2	15.8	48.0
	SOMT120412	1.2	32.6	45.3	0.4	6.3	34.3	47.1	9.3	15.7	47.7
	SOMT120416	1.6	33.1	45.3	0.5	6.1	34.3	46.5	9.4	15.5	47.4

Modular type H271



WFXC 08000E type

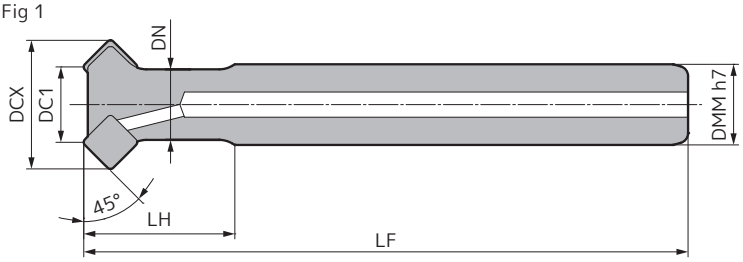
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Rake Angle		
	Radial	0°
	Axial	0°

45° Chamfering | Back Chamfering



Fig 1



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFXC 08008E	●	**8**	17.5	10	30	120	1	0.1	1
08016E	●	**16**	25.5	16	30	120	2	0.2	1

DC1 and DCX values were obtained with a 0.8 corner radius insert mounted.

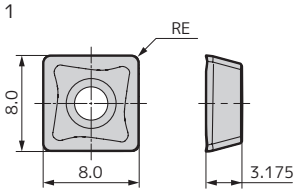
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting	P S	P			K		M S	M S		M S		K N	N			
	Medium Cutting	P S		P M	P M	K			M S	M S	M S	M S		N	P M		
	Roughing	P S		P M	P M		K			M S		M S			P		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	New ACS1000	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●				▲	▲	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		0.8	1
080312PZER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●		●	●	▲	▲	—	—		0.8	1
080312PZER-H		●	●	●	●	●	●			●	▲	▲	—	—		1.2	1
SOET 080304PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	0.4	1
080308PZER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	●	0.8	1
080312PZER-G		●	●	●	●	●	●				▲	▲	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1

Fig 1



Precautions for Use H219

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	SUMI-P

Identification Code

WFXC 08 016 E

WFXC	08	016	E
Series Code	Insert Size	Min. Machining Dia.	Shank type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.
P	General Steel	180 to 280HB	150-**200**-250	0.05-**0.10**-0.15
P	Mild Steel	≤ 180HB	180-**265**-350	0.10-**0.15**-0.20
P	Die Steel	200 to 220HB	100-**150**-200	0.05-**0.10**-0.15
M	Stainless Steel	—	150-**200**-250	0.05-**0.10**-0.15
K	Cast Iron	250HB	100-**175**-250	0.05-**0.10**-0.15
N	Non-Ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20
S	Exotic Alloy	—	30-**50**-80	0.08-**0.13**-0.18

Note 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.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item) ▲: To be replaced by a new product, made to order or discontinued (please confirm stock availability)

WFXC 12000E type

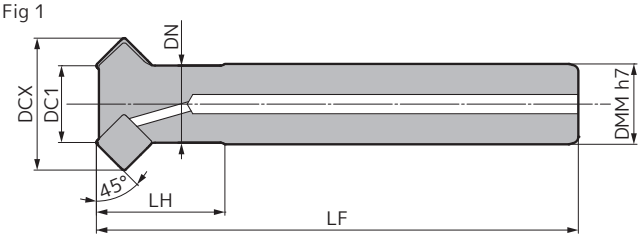
P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Rake Angle	Radial	0°
	Axial	0°

45° Chamfering Back Chamfering



Fig 1



Body (Shank type)

Dimensions (mm)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFXC 12025E	●	**25**	41	25	40	150	3	0.6	1
12032E	●	**32**	48	32	40	150	3	1.0	1

DC1 and DCX values were obtained with a 0.8 corner radius insert mounted.

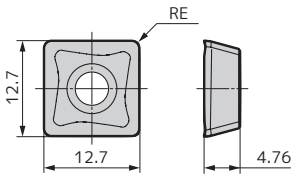
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light Cutting		P			K		MS	MS		MS		KN	N		
	Medium Cutting			PM	PM	K			MS	MS	MS	MS		N	PM	
	Roughing			PM	PM		K			MS		MS			P	
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACS1000 New	ACS2500	ACS3000	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 120408PDER-L		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOMT 120404PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.4	1
120408PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	●	0.8	1
120412PDER-G		●	●	●	●	●	●		●	●	▲	▲	—	—	—	1.2	1
120416PDER-G		●	●	●	●	●	●	●	●	●	▲	▲	—	—	—	1.6	1
SOMT 120408PDER-H		●	●	●	●	●	●		●	●	▲	▲	—	—	—	0.8	1
SOET 120408PDFR-S		—	—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1

Fig 1



Precautions for Use H219

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03512IP	**3.0**	TRDR15IP	SUMI-P

Identification Code

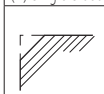
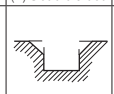
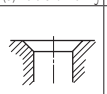
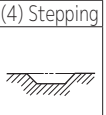
WFXC Series Code **12** Insert Size **025** Min. Machining Dia. **E** Shank type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.
P	General Steel	180 to 280HB	150- **200** -250	0.05- **0.10** -0.15
P	Mild Steel	≤ 180HB	180- **265** -350	0.10- **0.15** -0.20
P	Die Steel	200 to 220HB	100- **150** -200	0.05- **0.10** -0.15
M	Stainless Steel	—	150- **200** -250	0.05- **0.10** -0.15
K	Cast Iron	250HB	100- **175** -250	0.05- **0.10** -0.15
N	Non-Ferrous Metal	—	300- **500** -1,000	0.10- **0.15** -0.20
S	Exotic Alloy	—	30- **50** -80	0.10- **0.15** -0.20

Note 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.

Application

(1) Single Sided	(2) Double Sided	(3) Hole Chamfering	(4) Stepping
			

Expansion



■ Features

● **Drastically Reduced Runout Adjustment Time**
Simple screw-fastening structure enables fine adjustments to be made easily

● **Through-Blade Coolant**
Ensures coolant supply to the cutting edge and breaks chips

● **Lightweight Aluminum Alloy Body (ANXA type)**
Utilises aluminum alloy to achieve a total weight of less than 1.3kg for a ø125mm cutter with 22 teeth

● **High-strength CVD Single Crystal Diamond SCV10**
Wiper Blade WS type lineup

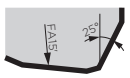
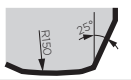
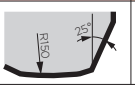
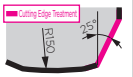
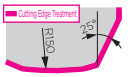
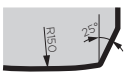
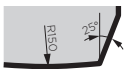
■ Product Range

Type	Cat. No.	Body Material	Max. Diameter (mm)									
			ø25	ø30	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shell	ANXA 16000R (Inch)	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
	ANXA 16000RS	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
	ANXS 16000R (Inch)	Steel						6 8 12	6 10 14	8 12 18	10 14 22	
	ANXS 16000RS	Steel				4 6	4 6 9	6 8 12	6 10 14	8 12 18	10 14 22	
Shank	ANXS 16000E	Steel	2	3 4	3 4	4 6	4 6 9					
Modular	ANXS 16000M	Steel	2	3 4	3 4	4 6						

Number in ●●● shows the number of teeth (Inch) Inch Bore

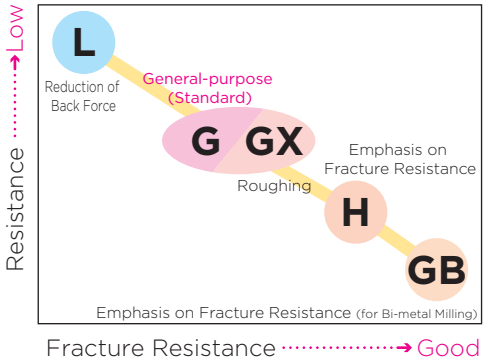
Modular type ☞H272

■ Blade Selection Guide

Work Material	N								
Applications	Finishing/Light Cutting	General-purpose	Roughing		Composite Milling *1	Corner Radius Milling	Corner Radius Milling	Finishing	Burr-free Mirror Finish
Features	Low Cutting Force	Standard	Long Edge	High Strength	High Strength	Corner Radius 0.4	Corner Radius 0.8	Wiper	Wiper
Cutting Edge Shape	L	G	GX	H	GB	—	—	W	WS
									
Edge Length (*2)	6.0mm	6.0mm	9.0mm	6.0mm	6.0mm	6.0mm	6.0mm	2.0mm	1.0mm

*1 Machining of components combining aluminum alloy and cast iron. W type and WS type cannot be used together.

■ Blade Selection Reference

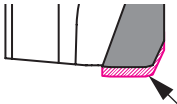


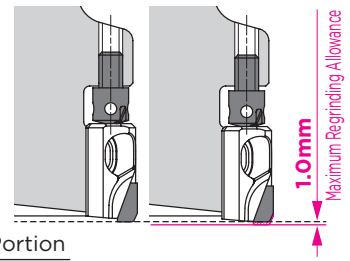


*2 Edge length

● **Regrinding possible up to 1.0mm. Reduced running costs**

Assuming 0.2mm of regrinding each time, an edge can be used up to 6 times.
(Peripheral cutting edge and WS type cannot be reground.)





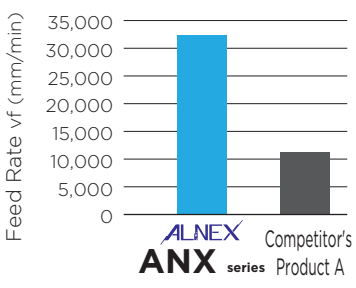
■ High-speed, High-efficiency Cutting

Realises ultra-high-efficiency machining with vf = 30,000mm/min



Cutter diameter ø100mm comparison

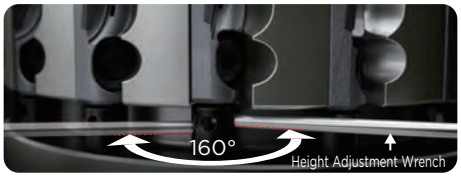
	Spindle Speed min⁻¹	Number of Teeth	Feed Rate vf(mm/min)
ALNEX ANX series	18,000	18	32,400
Competitor's Product A	9,500	12	11,400



■ Drastically Reduced Runout Adjustment Time

● Simple screw-fastening structure ● Enables fine adjustments to be made easily ● High-rigidity body (reduces deformation due to tightening)

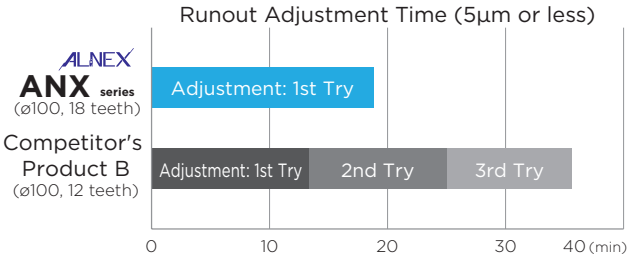




Adjustment is easy thanks to the large movable range of the height adjustment wrench.



We recommend keeping cutting edge height variation during runout adjustment to within 5µm.

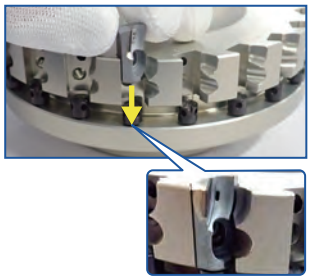


Completed on 1st Try, Adjustment Time Reduced

*Because the cutting edge chips off easily, care is required when mounting on the cutter body. Use a non-contact tool presetter.

■ Blade Mounting/Runout Adjustment

(1)



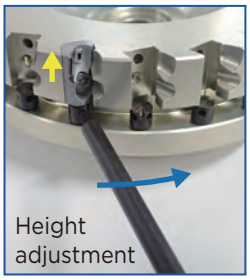
(1)Slide the blade into the cutter teeth groove.

(2)



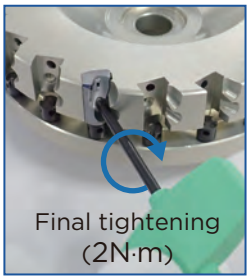
(2)Lightly tighten the cap screw while pressing the blade against the restraining face. (1N·m)

(3)



(3)Adjust the blade to the required height by using the dedicated wrench to turn the height adjustment screw.

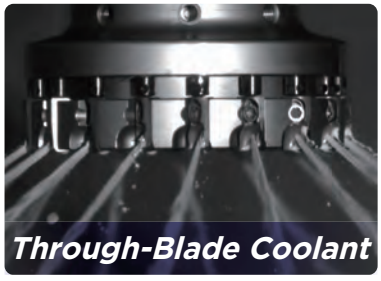
(4)

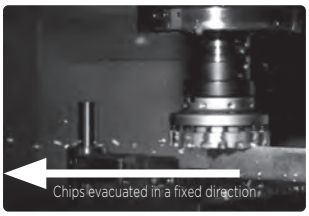


(4)Perform final tightening of the cap screw. (2N·m)

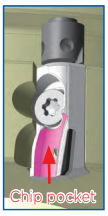
■ Chip Control

Through-Blade Coolant chip breaking





Controls the chips' scatter direction.



The chip pocket catches the chips and suppresses damage to the body.



ALNEX ANX series

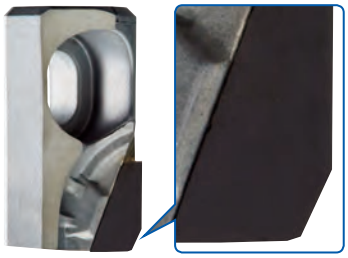


Competitor's Product C

Work Material: ADC12 Cutting Conditions: vc = 2,500m/min, fz = 0.05mm/t, ap = 0.5mm, Wet

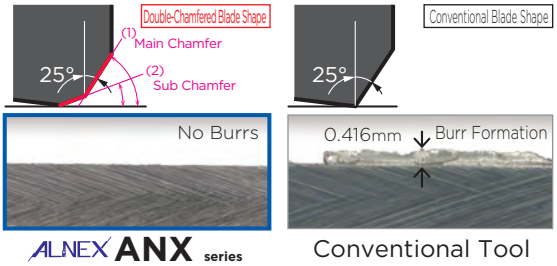
■ Burr Control

Reduces burrs by using a double-chamfered cutting edge (L/G/GX/H/GB type)



Drastically reduces burrs by preventing plastic deformation that causes burrs.

Work Material : A6061 Rolled Steel
Cutting Conditions: vc = 3,142m/min,
fz = 0.10mm/t ap = 0.5mm, Dry

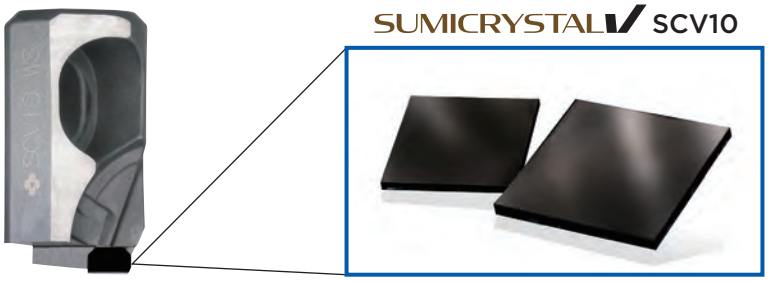


ALNEX ANX series

Conventional Tool

CVD Single Crystal Diamond SCV10 Wiper Blade WS type

- Wiper blade adopts high-strength single-crystal diamond using Sumitomo Electric Hardmetal's vapour phase synthesis technology
- Sharp cutting edge achieves burr-free mirror finish in aluminum alloy machining
- Superior wear resistance maintains cutting edge sharpness for a long time, reducing total tool costs



Conventional single-crystal diamond

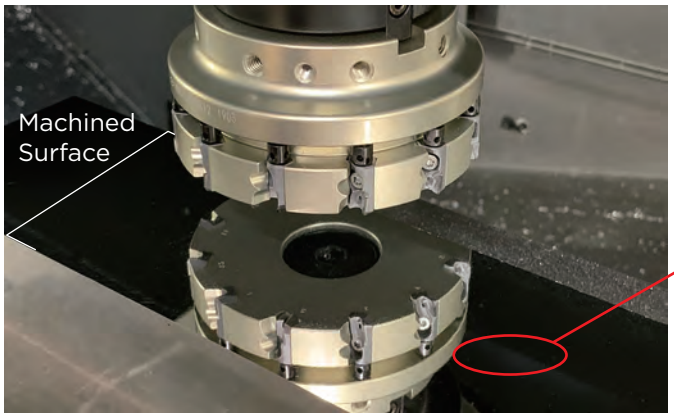


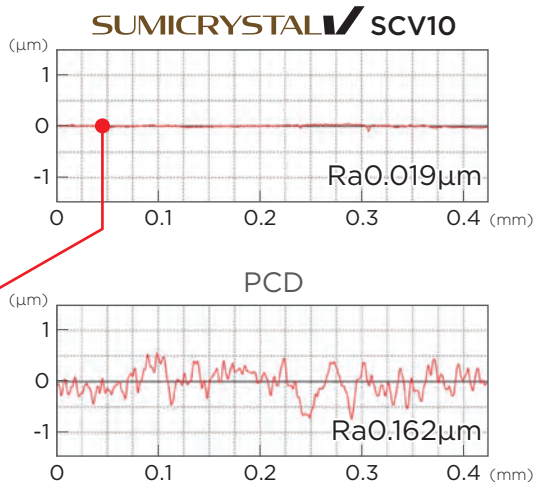
◆ Superb mirror surface and burr control through sharp cutting edge

Realizes a mirror finish in milling of aluminum alloys, copper alloys, and other non-ferrous metals, with long-term burr control

■ Mirror Finish (Wiper Blade WS type)

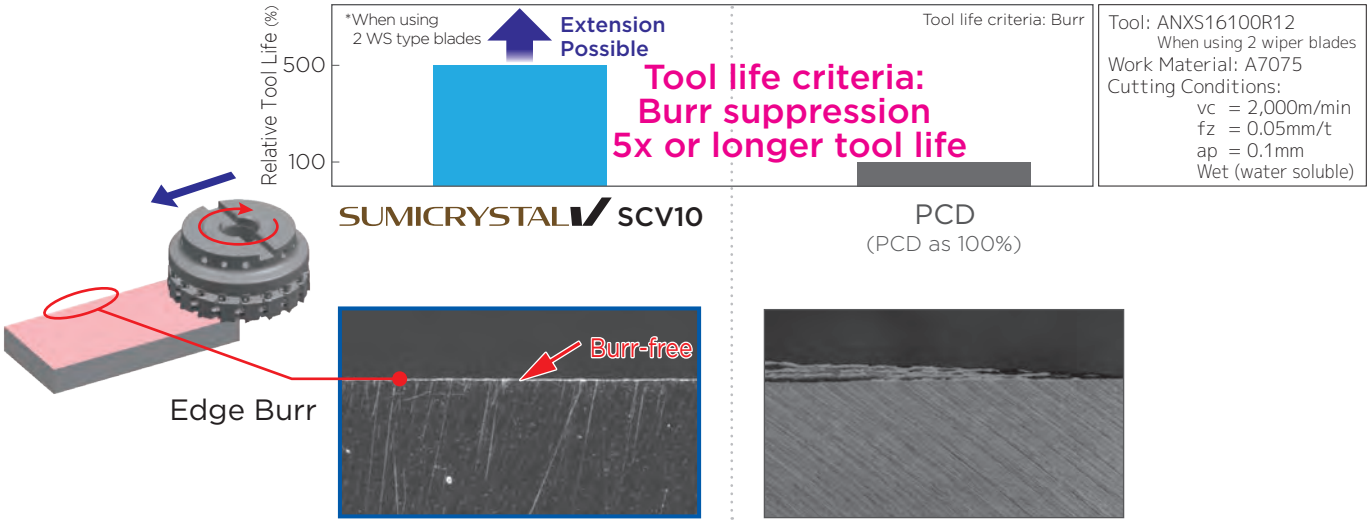
Sharp cutting edge achieves mirror finish with cutting alone





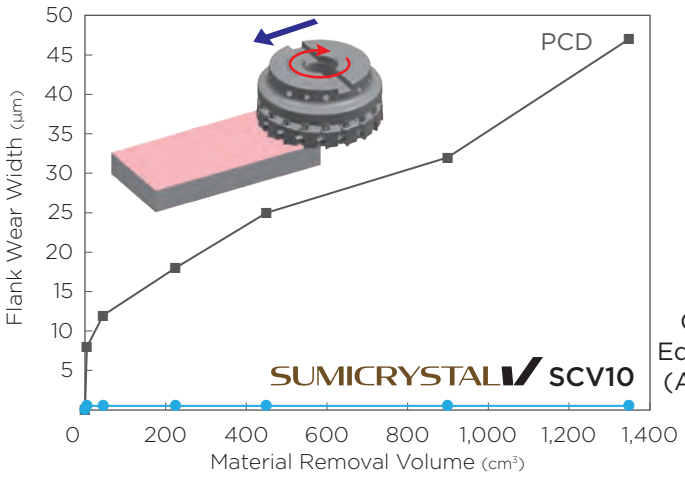
■ Burr-Free (Wiper Blade WS type)

Sharp cutting edge and excellent wear resistance suppress burrs over a long period

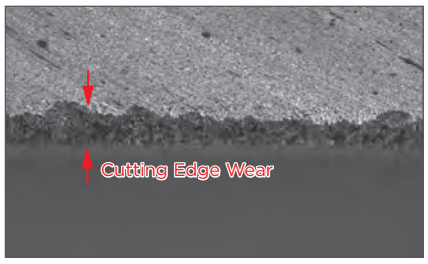


◆ Superior wear resistance maintains cutting edge sharpness for a long time

Wear resistance evaluation in high-silicon aluminum alloy machining



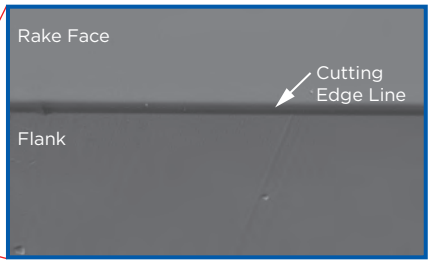
PCD



Cutting Edge Photo (After use)



SUMICRYSTAL V SCV10

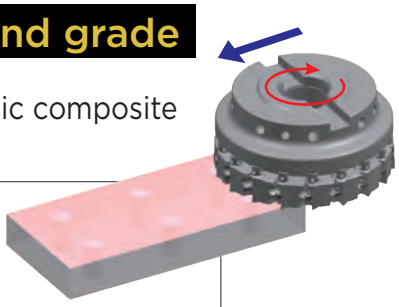


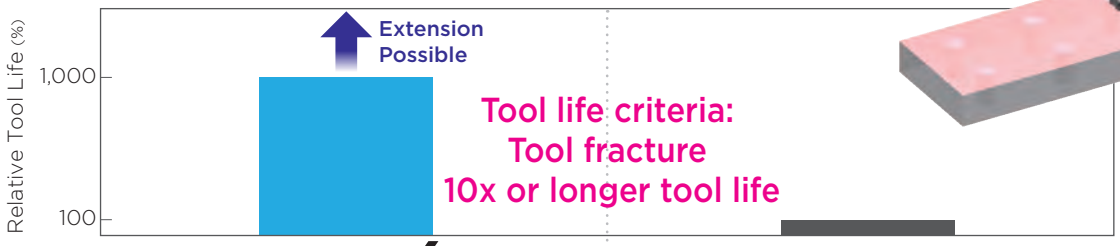
Work Material: Al-17wt.% Si alloy
Cutting Conditions: vc = 800m/min, fz = 1.0mm/t, ap = 0.03mm
Wet (water soluble)
*Evaluated with 1 wiper blade (dummy blade used in opposite position)

No progression of flank wear, consistent mirror finish with burr suppression

◆ Jet-black high-strength single-crystal diamond grade

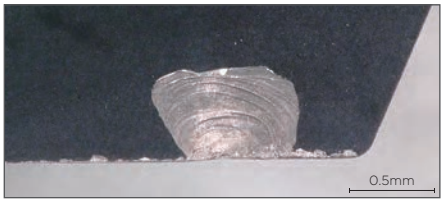
Fracture resistance evaluation in machining aluminum alloy-ceramic composite





Cutting Edge Photo (after evaluation)





Work Material: Aluminum Alloy + Ceramic Composite
Cutting Conditions: vc = 2,500m/min, fz = 1.0mm/t, ap = 0.03mm
Wet (water soluble)
*Evaluated with 1 wiper blade (dummy blade used in opposite position)

10x or more fracture resistance compared to PCD in finishing at low depths of cut (0.05 mm or less)

ANXA 16000R(S) type

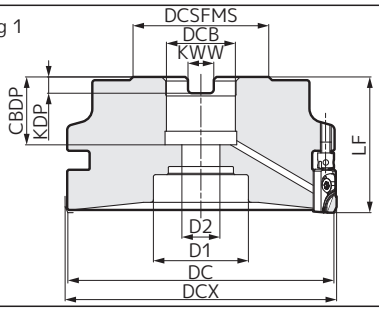
Rake Angle	Radial	+5°
	Axial	+5°

3mm 90°

Face Milling | Shoulder Milling | Groove Milling



Fig 1



Body (Aluminum Alloy)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss Dia. DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXA 16080RS06**	●	**80**	78	50	50	**27**	12.4	7	22	35	14	6	0.5	1
	16080RS10	●	**80**	78	50	50	**27**	12.4	7	22	35	14	10	0.5	1
	16080RS14	●	**80**	78	50	50	**27**	12.4	7	22	35	14	14	0.5	1
	16100RS08	●	**100**	98	50	50	**27**	12.4	7	22	35	14	8	0.8	1
	16100RS12	●	**100**	98	50	50	**27**	12.4	7	22	35	14	12	0.8	1
	16100RS18	●	**100**	98	50	50	**27**	12.4	7	22	35	14	18	0.8	1
	16125RS10	●	**125**	123	50	50	**27**	12.4	7	22	35	14	10	1.2	1
	16125RS14	●	**125**	123	50	50	**27**	12.4	7	22	35	14	14	1.2	1
	16125RS22	●	**125**	123	50	50	**27**	12.4	7	22	35	14	22	1.3	1
	16160RS12	●	**160**	158	80	63	**40**	16.4	9	29	52	29	12	2.6	1
	16160RS20	●	**160**	158	80	63	**40**	16.4	9	29	52	29	20	2.6	1
	16160RS28	●	**160**	158	80	63	**40**	16.4	9	29	52	29	28	2.6	1
Inch	**ANXA 16080R06**	●	**80**	78	50	50	**25.4**	9.5	6	25	35	14	6	0.5	1
	16080R10	●	**80**	78	50	50	**25.4**	9.5	6	25	35	14	10	0.5	1
	16080R14	●	**80**	78	50	50	**25.4**	9.5	6	25	35	14	14	0.5	1
	16100R08	●	**100**	98	50	50	**25.4**	9.5	6	25	35	14	8	0.8	1
	16100R12	●	**100**	98	50	50	**25.4**	9.5	6	25	35	14	12	0.9	1
	16100R18	●	**100**	98	50	50	**25.4**	9.5	6	25	35	14	18	0.9	1
	16125R10	●	**125**	123	50	50	**25.4**	9.5	6	25	35	14	10	1.2	1
	16125R14	●	**125**	123	50	50	**25.4**	9.5	6	25	35	14	14	1.2	1
	16125R22	●	**125**	123	50	50	**25.4**	9.5	6	25	35	14	22	1.3	1
	16160R12	●	**160**	158	80	63	**38.1**	15.9	10	35.5	55	30	12	2.3	1
	16160R20	●	**160**	158	80	63	**38.1**	15.9	10	35.5	55	30	20	2.4	1
	16160R28	●	**160**	158	80	63	**38.1**	15.9	10	35.5	55	30	28	2.6	1

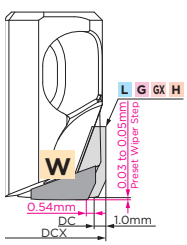
Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).
All aluminum alloy cutter bodies from (DCX) ø80 to ø125 have similar bore diameter (DCB) (metric ø27/inch ø25.4).

Identification Code

ANX	A	16	100	R	S	18
Series Code	Aluminum Alloy Body	Blade Size	Max. Dia.	Feed Direction	Metric Bore	Number of Teeth

■ Precautions When Using Wiper Blades

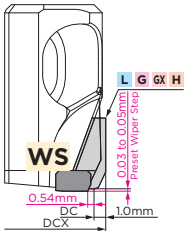
· W type Setting



⚠ Precautions

In order to maintain cutter balance when using the W type wiper blade, use a cutter with an even-number of cutting teeth and place another W type wiper blade at the opposite teeth position.

· WS type Setting



⚠ Precautions

(For more details, refer to the instruction manual included with the product)

In order to maintain cutter balance when using the WS type (SCV10 wiper blade), use a cutter with an even-number of cutting teeth and place another WS type wiper blade (or dummy blade ANBD) at opposite teeth positions.

*The dummy blade is dedicated for use with WS type.

ANXA 16000R(S) type

Expansion

Blade

Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V
Process	High-speed/Light Cutting	N	KN	KN	N
	Medium Cutting	N	KN	KN	
	Roughing	N	KN	KN	

Cat. No.	DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	●			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600R-G	●			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	●	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600R-H	●	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	●			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	●			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	●			—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	—	●*2	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	—	●*2	—	—	—	Dummy Blade	6

Fig 1

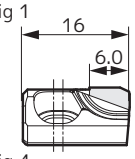


Fig 2

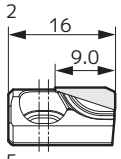


Fig 3

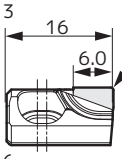
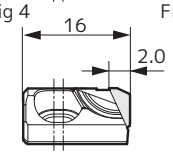
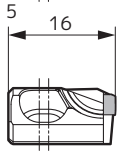


Fig 4



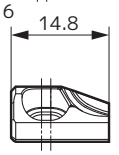
Wiper Blade

Fig 5



Wiper Blade

Fig 6



Dummy Blade

*1 Cast iron/aluminum alloy *2 Dummy blade (cemented carbide) for use with WS type, refer to page H226 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000 SCV10

Si Content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note
- 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. For combined milling of cast iron/aluminum alloy, we recommend DA90.
- When using wiper blade WS type, see the table below for the feed rate.

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXA 16080RS06	20,000
16080RS10	20,000
16080RS14	20,000
16100RS08	18,000
16100RS12	18,000
16100RS18	18,000
16125RS10	16,000
16125RS14	16,000
16125RS22	16,000
16160RS12	14,000
16160RS20	14,000
16160RS28	14,000
ANXA 16080R06	20,000
16080R10	20,000
16080R14	20,000
16100R08	18,000
16100R12	18,000
16100R18	18,000
16125R10	16,000
16125R14	16,000
16125R22	16,000
16160R12	14,000
16160R20	14,000
16160R28	14,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

Parts

Applicable Cutter	Cap Screw		Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	
		N·m					N·m
ANXA 16080R(S)○○	BXA0310IP	2.0	TRXW10IP	HFJ	ANT	BXH1235-D33	50
ANXA 16100R(S)○○							
ANXA 16125R(S)○○							
ANXA 16160R(S)○○						BXH2036-D50	200

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

■ Wiper Blade WS type Recommended Feed Rate

WS Cutting Edge Feed Rate per Tooth*1 fzws (mm/tws)	D ≤ 0.5	0.5 < D ≤ 1.7	1.7 < D
Burr-free Finish	◎ Excellent		Impossible
Mirror Finishing	◎ Excellent	○ Good	
Target Surface Roughness Ra (μm)	0.015 to 0.05	up to 0.6	

*1 Feed Rate per WS Cutting Edge Tooth fzws Feed Rate per Tooth fz

$$fz_{ws}\ (mm/t_{ws}) = \frac{fz \times (\text{Total No. of Teeth})^{*2}}{(\text{WS type No. of Teeth})^{*3}}$$

$$fz\ (mm/t) = \frac{\text{Feed Rate (vf) (mm/min)}}{\text{Spindle Speed n (min}^{-1}\text{)} \times (\text{Total No. of Teeth})}$$

*2 Total number of teeth includes dummy blade and wiper blade (WS type).

*3 WS type number of teeth does not include dummy blade.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

ANXS 16000R(S) type

Rake Angle	Radial	+5°
	Axial	+5°

3mm 90°

Face Milling | Shoulder Milling | Groove Milling



Fig 1

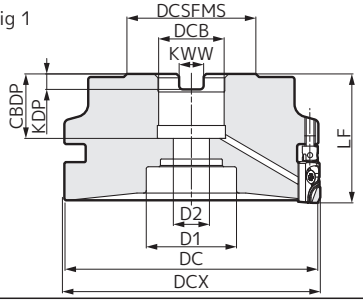
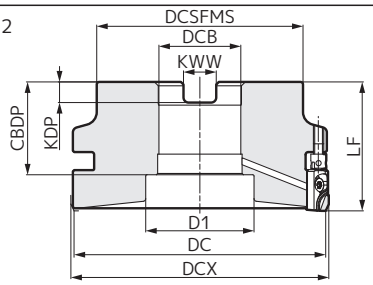


Fig 2



Body (Steel)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss Dia. DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16040RS04**	●	**40**	38	38.5	40	**16**	8.4	5.6	18	14	9	4	0.3	1
	16040RS06	●	**40**	38	38.5	40	**16**	8.4	5.6	18	14	9	6	0.3	1
	16050RS04	●	**50**	48	48.5	40	**22**	10.4	6.3	20	18	11	4	0.4	1
	16050RS06	●	**50**	48	48.5	40	**22**	10.4	6.3	20	18	11	6	0.4	1
	16050RS09	●	**50**	48	48.5	40	**22**	10.4	6.3	20	18	11	9	0.4	1
	16063RS06	●	**63**	61	50	40	**22**	10.4	6.3	20	18	11	6	0.7	1
	16063RS08	●	**63**	61	50	40	**22**	10.4	6.3	20	18	11	8	0.7	1
	16063RS12	●	**63**	61	50	40	**22**	10.4	6.3	20	18	11	12	0.7	1
	16080RS06	●	**80**	78	50	50	**27**	12.4	7	22	35	14	6	1.2	1
	16080RS10	●	**80**	78	50	50	**27**	12.4	7	22	35	14	10	1.2	1
	16080RS14	●	**80**	78	50	50	**27**	12.4	7	22	35	14	14	1.2	1
	16100RS08	●	**100**	98	80	50	**32**	14.4	8	32	46	—	8	1.9	2
	16100RS12	●	**100**	98	80	50	**32**	14.4	8	32	46	—	12	2.0	2
	16100RS18	●	**100**	98	80	50	**32**	14.4	8	32	46	—	18	2.0	2
	16125RS10	●	**125**	123	80	63	**40**	16.4	9	29	52	29	10	3.8	1
	16125RS14	●	**125**	123	80	63	**40**	16.4	9	29	52	29	14	3.9	1
	16125RS22	●	**125**	123	80	63	**40**	16.4	9	29	52	29	22	3.9	1
Inch	**ANXS 16063R06**	●	**63**	61	50	50	**25.4**	9.5	6	25	20	14	6	0.9	1
	16063R08	●	**63**	61	50	50	**25.4**	9.5	6	25	20	14	8	0.9	1
	16063R12	●	**63**	61	50	50	**25.4**	9.5	6	25	20	14	12	0.9	1
	16080R06	●	**80**	78	50	50	**25.4**	9.5	6	25	35	14	6	1.2	1
	16080R10	●	**80**	78	50	50	**25.4**	9.5	6	25	35	14	10	1.2	1
	16080R14	●	**80**	78	50	50	**25.4**	9.5	6	25	35	14	14	1.2	1
	16100R08	●	**100**	98	80	50	**31.75**	12.7	8	36	42	—	8	1.9	2
	16100R12	●	**100**	98	80	50	**31.75**	12.7	8	36	42	—	12	2.0	2
	16100R18	●	**100**	98	80	50	**31.75**	12.7	8	36	42	—	18	2.0	2
	16125R10	●	**125**	123	80	63	**38.1**	15.9	10	35.5	52	29	10	3.9	1
	16125R14	●	**125**	123	80	63	**38.1**	15.9	10	35.5	52	29	14	3.9	1
	16125R22	●	**125**	123	80	63	**38.1**	15.9	10	35.5	52	29	22	3.9	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).

Identification Code

ANX	S	16	100	R	S	18
Series Code	Steel Body	Blade Size	Max. Dia.	Feed Direction	Metric Bore	Number of Teeth

ANXS 16000R(S) type

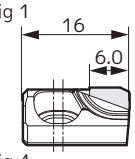
Expansion

Blade

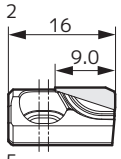
Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V
Process	High-speed/Light Cutting	N	KN	KN	N
	Medium Cutting	N	KN	KN	
	Roughing	N	KN	KN	

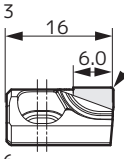
Cat. No.	DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	●			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600R-G	●			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	●	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600R-H	●	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	●			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	●			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	●			—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	—	●*2	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	—	●*2	—	—	—	Dummy Blade	6

Fig 1 

Wiper Blade

Fig 2 

Wiper Blade

Fig 3 

Dummy Blade

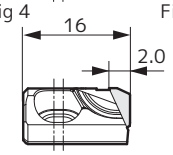
Fig 4 

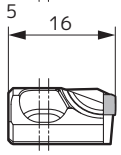
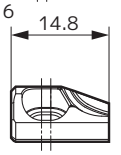
Fig 5 

Fig 6 

*1 Cast iron/aluminum alloy *2 Dummy blade (cemented carbide) for use with WS type, refer to page H226 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000 SCV10

Si Content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
KN	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note
- 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. For combined milling of cast iron/aluminum alloy, we recommend DA90.
- When using wiper blade WS type, refer to page H227.

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS 16040RS04	25,000
16040RS06	25,000
16050RS04	25,000
16050RS06	25,000
16050RS09	25,000
16063RS06	22,000
16063RS08	22,000
16063RS12	22,000
16080RS06	20,000
16080RS10	20,000
16080RS14	20,000
16100RS08	18,000
16100RS12	18,000
16100RS18	18,000
16125RS10	16,000
16125RS14	16,000
16125RS22	16,000
ANXS 16063R06	22,000
16063R08	22,000
16063R12	22,000
16080R06	20,000
16080R10	20,000
16080R14	20,000
16100R08	18,000
16100R12	18,000
16100R18	18,000
16125R10	16,000
16125R14	16,000
16125R22	16,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

Parts

Applicable Cutter	Cap Screw	(N·m)	Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	(N·m)
ANXS 16040RS○○	BXA0310IP	2.0	TRXW10IP	HFJ	ANT	BXH0825-D13	15
ANXS 16050RS○○						BXH1030-D16	25
ANXS 16063RS○○							
ANXS 16080RS○○						BXH1235-D33	50
ANXS 16100RS○○						BXH1635-D40	100
ANXS 16125RS○○						BXH2036-D50	200
ANXS 16063R○○	BXA0310IP	2.0	TRXW10IP	HFJ	ANT	BXH1235-D18	40
ANXS 16080R○○						BXH1235-D33	50
ANXS 16100R○○						BXH1635-D40	100
ANXS 16125R○○						BXH2036-D50	200

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

ANXS 16000E type

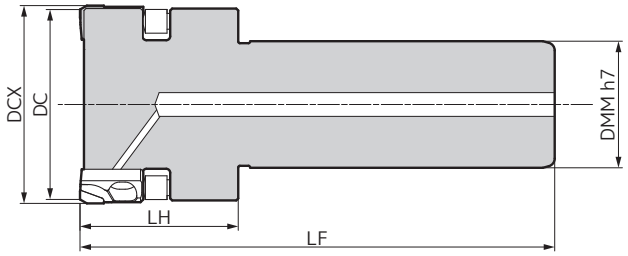
Rake Angle	Radial	-2° to 0°
	Axial	+5°

3mm 90°

Face Milling Shoulder Milling Groove Milling



Fig 1



Body (Steel)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
ANXS 16025E02	●	**25**	23	20	35	95	2	0.2	1
16030E03	●	**30**	28	20	35	95	3	0.3	1
16030E04	●	**30**	28	20	35	95	4	0.3	1
16032E03	●	**32**	30	20	35	95	3	0.3	1
16032E04	●	**32**	30	20	35	95	4	0.3	1
16040E04	●	**40**	38	20	40	100	4	0.4	1
16040E06	●	**40**	38	20	40	100	6	0.5	1
16050E04	●	**50**	48	32	40	120	4	1.0	1
16050E06	●	**50**	48	32	40	120	6	1.0	1
16050E09	●	**50**	48	32	40	120	9	1.0	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts.

Identification Code

ANX	S	16	032	E	04
Series Code	Steel Body	Blade Size	Max. Dia.	Shank type	Number of Teeth

ANXS 16000E type

Expansion

Blade

Dimensions (mm)

Grade Classification		SUMIDIA			SUMICRYSTAL V					
Process	High-speed/Light Cutting	N	KN	KN	N					
	Medium Cutting	N	KN	KN						
	Roughing	N	KN	KN						
Cat. No.		DA1000	DA1090 (New)	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L		●			—	6.0	—	Linear	Low Cutting Force	1
ANB 1600R-G		●			—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB			●	●	—	6.0	—	Arc-Shaped	Composite Milling*1	1
ANB 1600R-H		●	—	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX		●			—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R		●			—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R		●			—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W		●			—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS		—	—	—	●	—	—	Arc-Shaped	Wiper	5
ANBD		—	—	—	●*2	—	—	—	Dummy Blade	6

Fig 1

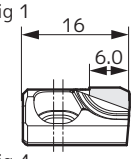


Fig 2

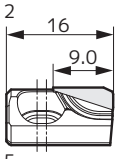


Fig 3

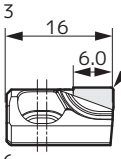
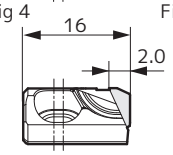
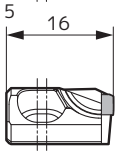


Fig 4



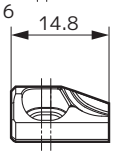
Wiper Blade

Fig 5



Wiper Blade

Fig 6



Dummy Blade

*1 Cast iron/aluminum alloy *2 Dummy blade (cemented carbide) for use with WS type, refer to page H226 "Precautions When Using Wiper Blades" (Mounting Precautions).

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - **2,500** - 3,000	0.05 - **0.13** - 0.20	DA1000 SCV10

Si Content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	400 - **600** - 800	0.05 - **0.13** - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - **400** - 500	0.05 - **0.13** - 0.20	DA90

Note
- The above are the recommended conditions for ANX series overall. Use within the maximum allowable spindle speed.
- 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. For combined milling of cast iron/aluminum alloy, we recommend DA90.
- When using wiper blade WS type, refer to page H227.

Parts

Cap Screw		Wrench	Adjustment Screw	Adjustment Wrench
	N·m			
BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF series and High-efficiency Cutter HF series.

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS 16025E02	10,000
16030E03	10,000
16030E04	10,000
16032E03	10,000
16032E04	10,000
16040E04	10,000
16040E06	10,000
16050E04	10,000
16050E06	10,000
16050E09	10,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

HF series

VIDEO OF CUTTING



■ Features

The HF series high-efficiency cutter for aluminum alloys employs a unique blade design to achieve machining without burrs.
HFFH type with coolant holes is now available as a BBT30 (BIG-PLUS™) arbor integrated version.

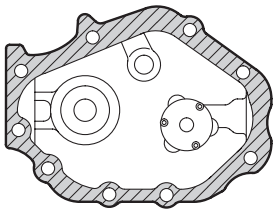
Work Material

· Aluminum and aluminum alloys
· Other non-ferrous metals
(Not suited for cast iron or steel.)

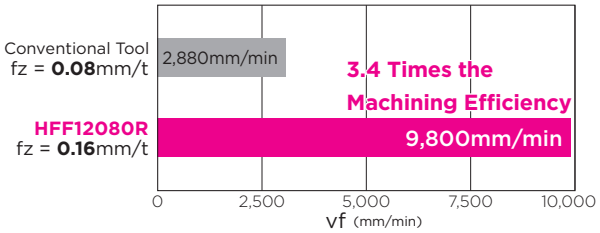


● Achieves high-efficiency milling with vf of over 20,000 mm/min thanks to its multi-blade design (3 teeth per inch)

High-feed, High-efficiency Milling with Multi-blade Design



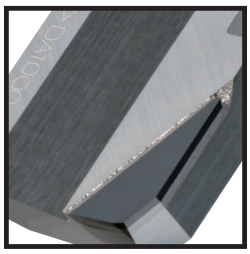
Workpiece: Aluminum Case (Frame Milling)
Tool: **HFF12080R-25.4** (ø80 10-tooth), Conventional Tool (ø80 6-tooth)



● Maximum Allowable Spindle Speed and Feed Rate

Cutter Dia. (mm)	nmax (min⁻¹)	vc (m/min)	fz (mm/t)	Max. No. of Teeth (pcs.)	vf (mm/min)
ø80	11,000	2,763	up to 0.2	10	up to 22,000
ø100	9,500	2,983	up to 0.2	12	up to 22,800
ø125	7,500	2,944	up to 0.2	15	up to 22,500

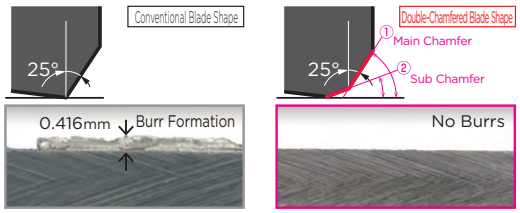
*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.



● Reduces burrs by using a double-chamfered blade type

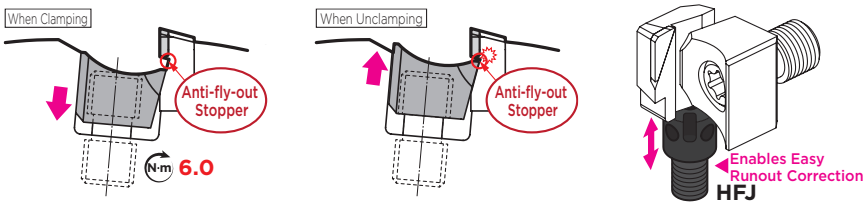
Drastically reduces burrs by preventing plastic deformation that causes burrs.

Work Material : **A6061** Rolled Steel
Cutting Conditions : vc = **3,142**m/min, fz = **0.10**mm/t, ap = **0.5**mm, Dry





● Wedge clamp with anti-fly-out mechanism ensures safety and operability



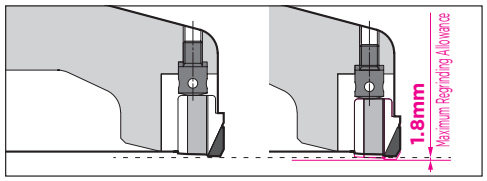
Ensure that the maximum allowable spindle speed (n max) specified for each cutter diameter is not exceeded. (See the table at upper right)



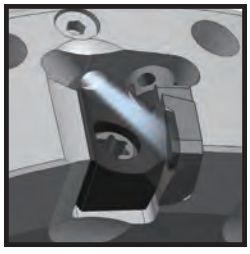
● Reduces running costs by drastically increasing blade regrinding allowance (to 1.8mm)

Assuming 0.2mm of regrinding each time, an edge can be used up to 10 times.
(Given conditions of normal wear with ap = **1.4**mm or less)





The regrinding allowance has been drastically increased compared to conventional screw-lock types.



● Internal coolant improves chip evacuation performance (HFFH type, HFFH-BBT30 type)

The internal coolant effectively prevents chips from becoming clogged or biting into the work material and achieves longer tool life. (Use an internal coolant compatible arbor)

*1: BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
*2: Can also be used with BT30 spindle machines.

N·m Recommended Tightening Torque (N·m)

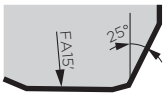
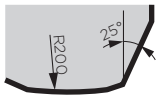
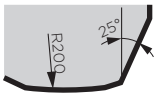
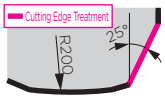
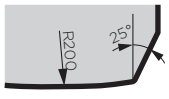
HF series

■ Product Range

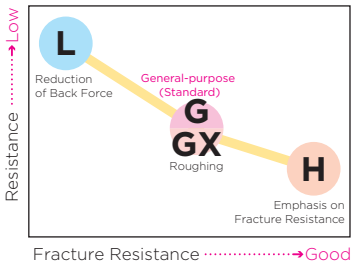
Type	Cat. No.	Dia. (mm) ø80	ø100	ø125
Shell	HFM 12000RS	6*	8	10*
	HFM 12000R (inch)	6	8*	10*
	HFF 12000RS	10*	12	15*
	HFF 12000R (inch)	10	12*	15*
	HFFH 12000RS	10*	12	15*
	HFFH 12000R (inch)	10	12*	15*
	HFFH 12000R-BBT30	10	12	15

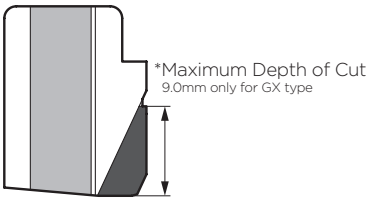
Number in ● shows the number of teeth (inch) Inch Bore * mark: Different diameter shanks available

■ Blade Selection Guide

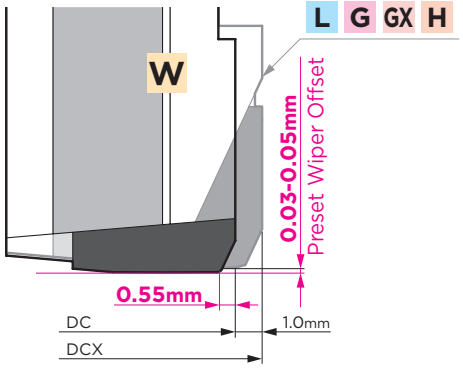
Work Material	N				
Applications	Reduction of Back Force	General-purpose	Roughing	Emphasis on Fracture Resistance	Finishing
Features	Low Cutting Force	Standard	Long Edge	High Strength	Wiper
Type	L type	G type	GX type	H type	W type
Cutting Edge Shape					
Edge Length (*)	6.0mm	6.0mm	9.0mm	6.0mm	2.0mm

■ Blade Selection Reference



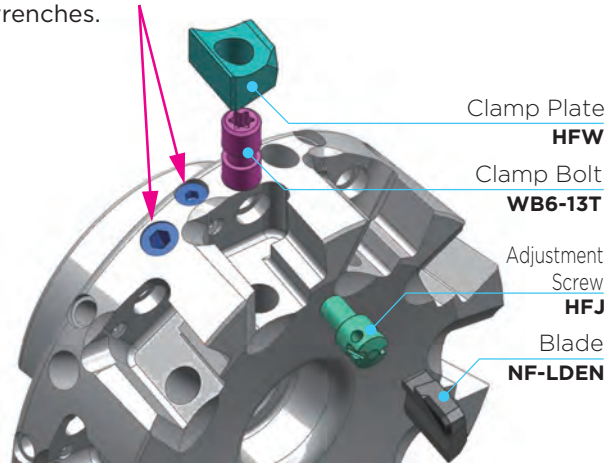


■ Wiper Blade Offset Position



■ Structure of HF series

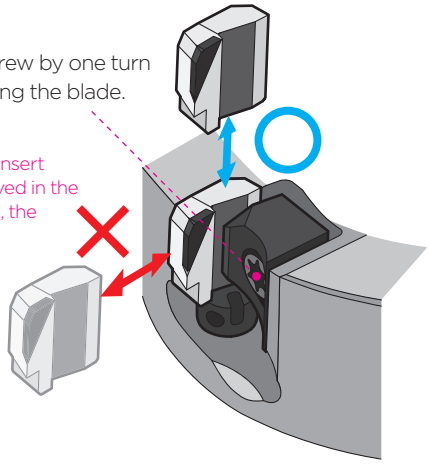
The axial set screw and balance adjustment screw hole have an embedded special material that prevents the insertion of screwdrivers or hex wrenches.



■ Blade Mounting Direction

Loosen the screw by one turn before removing the blade.

⚠ Note that if the insert is forcibly removed in the wrong direction, the part may break.



High-efficiency Cutter for Aluminum Alloys

HFM 12000RS/R type

Rake Angle		
Radial	4°	
Axial	10°	

3mm 90°

Face Milling



Fig 1

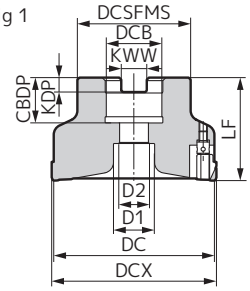


Fig 2

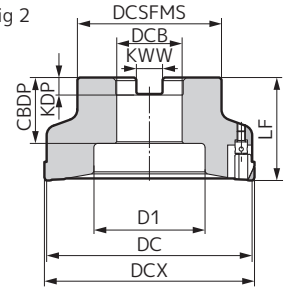
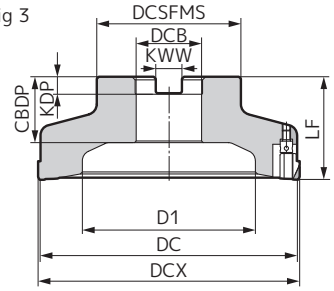


Fig 3



Body (Fine Pitch: 2-teeth/Inch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFM 12080RS-22**	●	**80**	82	50	40	**22**	10.4	6.3	20	18	11	6	1.0	1
	12080RS-27	●	**80**	82	55	50	**27**	12.4	7	22	20	14	6	1.2	1
	12100RS-32	●	**100**	102	70	50	**32**	14.4	8	32	54	—	8	1.7	2
	12125RS-32	●	**125**	127	70	50	**32**	14.4	8	32	84	—	10	2.2	3
	12125RS-40	●	**125**	127	90	63	**40**	16.4	9	35	84	—	10	2.8	3
Inch	**HFM 12080R-25.4**	●	**80**	82	50	50	**25.4**	9.5	6	30	35	—	6	1.0	2
	12100R-25.4	●	**100**	102	50	50	**25.4**	9.5	6	30	54	—	8	1.5	2
	12100R-31.75	●	**100**	102	70	50	**31.75**	12.7	8	32	54	—	8	1.7	2
	12125R-25.4	●	**125**	127	50	50	**25.4**	9.5	6	30	84	—	10	2.0	3
	12125R-31.75	●	**125**	127	70	50	**31.75**	12.7	8	32	84	—	10	2.2	3
	12125R-38.1	●	**125**	127	80	63	**38.1**	15.9	10	36	84	—	10	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	●	6.0	Linear	Low Cutting Force	1
12T3ZDFR-G	●	6.0	Arc-Shaped	General-purpose	1
12T3ZDTR-H	●	6.0	Arc-Shaped	Strong Edge	1
12T3ZDFR-GX	●	9.0	Arc-Shaped	Long Edge	2
12T3ZDFR-W	●	2.0	Arc-Shaped	Wiper	3

Fig 1

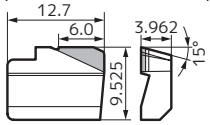


Fig 2

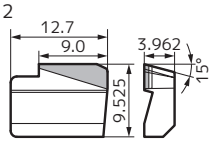
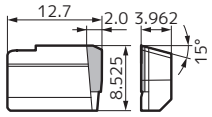


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
						
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code

HF	M	12	080	R	S	-	22
Series Code	Fine Pitch	Blade Size	Dia.	Feed Direction	Metric Bore		Hole Dia.

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note 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.

N·m Recommended Tightening Torque (N·m)

HFF 12000RS/R type

Rake Angle		
Radial	4°	
Axial	10°	

3mm 90°

Face Milling



Fig 1

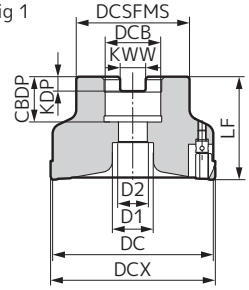


Fig 2

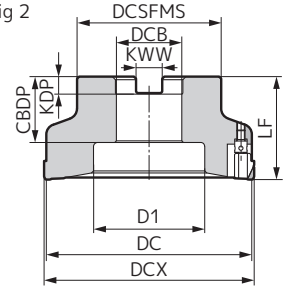
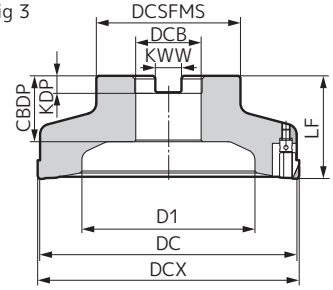


Fig 3



Body (Extra Fine Pitch: 3-teeth/Inch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFF 12080RS-22**	●	**80**	82	50	40	**22**	10.4	6.3	20	18	11	10	1.0	1
	12080RS-27	●	**80**	82	55	50	**27**	12.4	7	22	20	14	10	1.2	1
	12100RS-32	●	**100**	102	70	50	**32**	14.4	8	32	54	—	12	1.7	2
	12125RS-32	●	**125**	127	70	50	**32**	14.4	8	32	84	—	15	2.2	3
	12125RS-40	●	**125**	127	90	63	**40**	16.4	9	35	84	—	15	2.8	3
Inch	**HFF 12080R-25.4**	●	**80**	82	50	50	**25.4**	9.5	6	30	35	—	10	1.0	2
	12100R-25.4	●	**100**	102	50	50	**25.4**	9.5	6	30	54	—	12	1.5	2
	12100R-31.75	●	**100**	102	70	50	**31.75**	12.7	8	32	54	—	12	1.7	2
	12125R-25.4	●	**125**	127	50	50	**25.4**	9.5	6	30	84	—	15	2.0	3
	12125R-31.75	●	**125**	127	70	50	**31.75**	12.7	8	32	84	—	15	2.2	3
	12125R-38.1	●	**125**	127	80	63	**38.1**	15.9	10	36	84	—	15	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	●	6.0	Linear	Low Cutting Force	1
12T3ZDFR-G	●	6.0	Arc-Shaped	General-purpose	1
12T3ZDTR-H	●	6.0	Arc-Shaped	Strong Edge	1
12T3ZDFR-GX	●	9.0	Arc-Shaped	Long Edge	2
12T3ZDFR-W	●	2.0	Arc-Shaped	Wiper	3

Fig 1

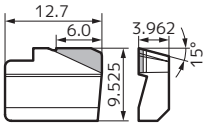


Fig 2

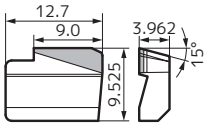
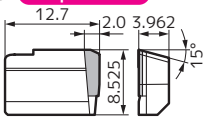


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code

HF F 12 080 R S - 22

Series Code	Extra Fine Pitch	Blade Size	Dia.	Feed Direction	Metric Bore	Hole Dia.

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Note
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.
- For groove milling, adjust the feed rate to around 70% of the above values.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

HFFH 12000RS/R type

Rake Angle		
Radial	4°	
Axial	10°	

3mm 90°

Face Milling



Fig 1

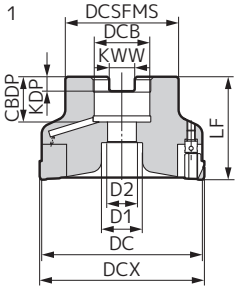


Fig 2

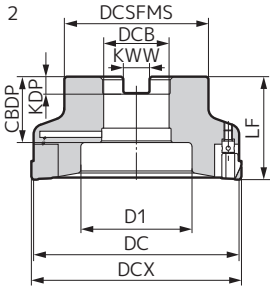
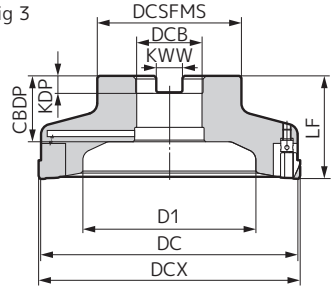


Fig 3



Body (Extra Fine Pitch: 3-teeth/Inch) With Coolant Holes

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFFH 12080RS-22**	●	**80**	82	50	40	**22**	10.4	6.3	20	18	11	10	1.0	1
	12080RS-27	●	**80**	82	55	50	**27**	12.4	7	22	20	14	10	1.2	1
	12100RS-32	●	**100**	102	70	50	**32**	14.4	8	32	54	—	12	1.7	2
	12125RS-32	●	**125**	127	70	50	**32**	14.4	8	32	84	—	15	2.2	3
	12125RS-40	●	**125**	127	90	63	**40**	16.4	9	35	84	—	15	2.8	3
Inch	**HFFH 12080R-25.4**	●	**80**	82	50	50	**25.4**	9.5	6	30	35	—	10	1.0	2
	12100R-25.4	●	**100**	102	50	50	**25.4**	9.5	6	30	54	—	12	1.5	2
	12100R-31.75	●	**100**	102	70	50	**31.75**	12.7	8	32	54	—	12	1.7	2
	12125R-25.4	●	**125**	127	50	50	**25.4**	9.5	6	30	84	—	15	2.0	3
	12125R-31.75	●	**125**	127	70	50	**31.75**	12.7	8	32	84	—	15	2.2	3
	12125R-38.1	●	**125**	127	80	63	**38.1**	15.9	10	36	84	—	15	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	●	6.0	Linear	Low Cutting Force	1
12T3ZDFR-G	●	6.0	Arc-Shaped	General-purpose	1
12T3ZDTR-H	●	6.0	Arc-Shaped	Strong Edge	1
12T3ZDFR-GX	●	9.0	Arc-Shaped	Long Edge	2
12T3ZDFR-W	●	2.0	Arc-Shaped	Wiper	3

Fig 1

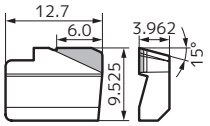


Fig 2

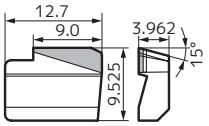
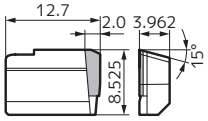


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Wrench	Adjustment Screw	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	TTX20	HFJ	RFT	HFVT

Identification Code

HF F H 12 080 R S - 22

HF	F	H	12	080	R	S	-	22
Series Code	Extra Fine Pitch	With Oil Hole	Blade Size	Dia.	Feed Direction	Metric		Hole Dia.

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Note
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note 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.

N·m Recommended Tightening Torque (N·m)

High-efficiency Cutter for Aluminum Alloys

HFFH 12000R-BBT30 type

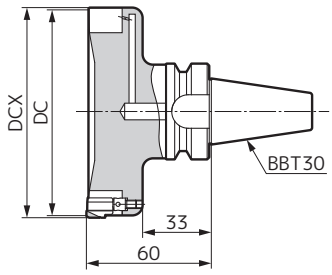
Rake Angle	Radial	4°
	Axial	10°

3mm 90°

Face Milling



Fig 1



Body (Extra Fine Pitch: 3-teeth/Inch) With Coolant Holes

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Number of Teeth	Weight (kg)	Fig
Inch	**HFFH 12080R-BBT30**	●	**80**	82	10	1.6	1
	12100R-BBT30	●	**100**	102	12	2.4	1
	12125R-BBT30	●	**125**	127	15	2.6	1

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light Cutting	N
	Medium Cutting	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	●	6.0	Linear	Low Cutting Force	1
12T3ZDFR-G	●	6.0	Arc-Shaped	General-purpose	1
12T3ZDTR-H	●	6.0	Arc-Shaped	Strong Edge	1
12T3ZDFR-GX	●	9.0	Arc-Shaped	Long Edge	2
12T3ZDFR-W	●	2.0	Arc-Shaped	Wiper	3

Fig 1

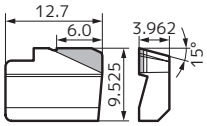


Fig 2

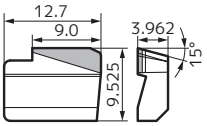
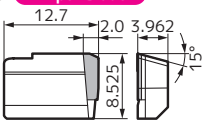


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Wrench	Adjustment Screw	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	TTX20	HFJ	RFT	HFVT

Identification Code

HF	F	H	12	080	R	-	BBT30
Series Code	Extra Fine Pitch	With Oil Hole	Blade Size	Dia.	Feed Direction		Supported Arbor Symbol

Recommended Cutting Conditions

Si Content of 12.6% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Note
- The above are the recommended conditions for HF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12.6%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note 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.

* BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
* Can also be used with BT30 spindle machines.

N·m Recommended Tightening Torque (N·m)

RF series



■ Features

The RF series cutter has a lightweight body designed for high-speed, high-performance roughing to finish milling of aluminum alloys and other non-ferrous metals.

■ Work Material

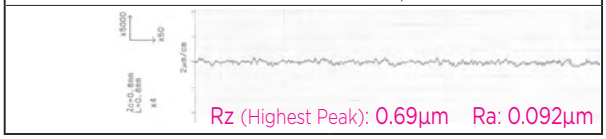
- Aluminum and aluminum alloys
- Other Non-Ferrous Metals

(Not suited for cast iron or steel.)

- **From Roughing to Finishing Processes:** Roughing: Economical carbide insert / Finishing: High-precision SUMIDIA insert
- **Strong and Lightweight Body:** Special aluminum alloy body. 40% lighter than steel cutters. Hard anodizing. Improved efficiency with higher spindle speeds, lower spindle loads and shorter tool change time
- **Safety Design:** Prevents inserts from dislodging from cutter due to centrifugal force. (Speeds must be within max. recommended conditions) To prevent warping, wedges are not used in the cutter construction
- **Easy Runout Adjustment:** External setting gauge is used for easy tool presetting. High-precision cutter construction - units fitted are within 10µm runout even before setting

■ Surface Finish

- Process: Finish Milling
- Machine: Vertical Machining Centre
- Arbor: HSK63A
- Work Material: Si 10 to 12% Al Alloy
- Cutter: RF4100R 6-tooth (1 Wiper)
- Grade: SUMIDIA (DA1000)
- vc = 4,990m/min
- n = 15,900min^{-1}
- vf = 11,400mm/min
- fz = 0.12mm/t
- ap = 0.5mm, Wiper ap = 0.03mm, Dry

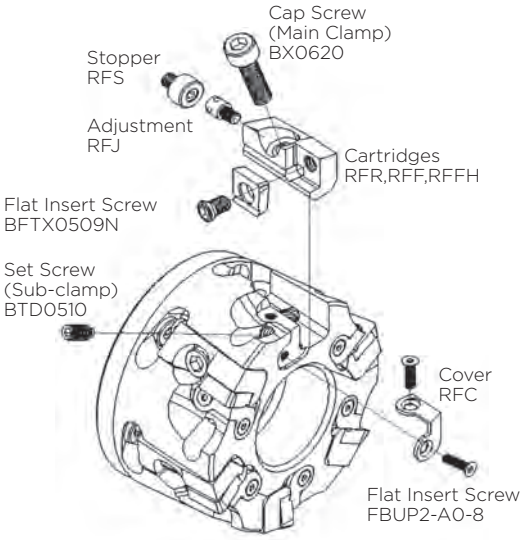


● Maximum Allowable Spindle Speed

Cat. No.	n max (min $^{-1}$)
RF4080R	17,000
RF4100R	15,900
RF4125R	13,500
RF4160R	11,000
RF4200R	9,000
RF4250R	7,600
RF4315R	6,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

■ Structure of RF series



■ Recommended Cutting Conditions

Si Content of 12% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	2,000-**2,500**-3,000	0.05- **0.13** -0.20	DA1000 DA2200
		300-**650**-1,000	0.05- **0.13** -0.20	H1

Note
- The above are the recommended conditions for RF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12%

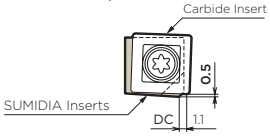
ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000 DA2200
		200- **300** -400	0.05- **0.13** -0.20	H1

Note 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.

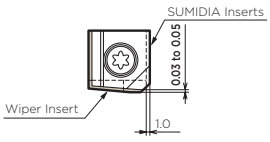
● Recommended Cutting Edge Position

We recommend positioning as in the figure below when mounting carbide inserts or SUMIDIA inserts (blades).

- When roughing and finishing in the same process



- When using wiper edge



■ Product Range

Type	Cat. No.	Dia. (mm)						
		ø80	ø100	ø125	ø160	ø200	ø250	ø315
Shell	RF 4000R (Inch)	6	6	8	10	12	16	18

Number in ●○ shows the number of teeth (Inch) Inch Bore

⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

As it is possible to mix different types of inserts/blades, it is important to take note of the following.

- Do not mix reground and new inserts or inserts with a different regrinding allowance on the same cutter.
- Carbide and SUMIDIA inserts must be arranged alternately.
- When using a combination of SUMIDIA blades and inserts, ensure proper balance by mounting the same type of cutting edges on opposite sides of the cutter.

RF 4000R type

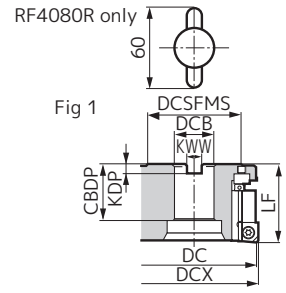
Rake Angle		
Radial	4°	
Axial	10°	

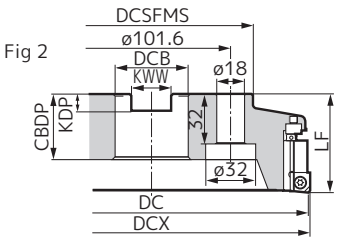
3mm 90° (SUMIDIA Insert)

10mm 87° (Carbide Insert)

Face Milling







Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**RF 4080R**	●	**80**	82	60	50	**25.4**	9.5	6	30	6	0.7	1
	4100R	●	**100**	102	75	50	**31.75**	12.7	8	38	6	1.0	1
	4125R	●	**125**	127	75	63	**38.1**	15.9	10	38	8	1.6	1
	4160R	●	**160**	162	100	63	**50.8**	19.1	11	38	10	2.6	1
	4200R	●	**200**	202	130	63	**47.625**	25.4	14	42	12	3.6	2
	4250R		**250**	252	130	63	**47.625**	25.4	14	42	16	6.0	2
	4315R		**315**	317	240	80	**47.625**	25.4	14	42	18	11.0	2

Cartridges, blades and inserts are sold separately.
Use a flanged bolt to mount the cutter to the arbor.

Insert/Cartridge

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC	SUMIDIA		SUMICRYSTAL
Process	High-speed/Light Cutting	N	N	N	N	N
	Medium Cutting	N	N	N	N	
	Roughing	N	N	N	N	

Refer to page M68 for details of SUMICRYSTAL.

*When using large depth of cut (ap = 3mm or longer) with RF4080R, use the RFFH cartridge. (RFF is possible for normal cutting.)

Cat. No.	H1	DL1000	DA1000	DA2200	SC10	Fig	Cartridges Cat. No.	Cartridges Stock	Fig
SDET 1204ZDFR	●	●	—	—	—	3	RFR	●	1
NF-SNEW 1204ADFR	—	—	●	▲	—	4	RFF	●	2
120404ADFR-H	—	—	●	—	—	5	RFF (Others) *RFFH(RF4080R)	●	2
1204ADFR-W	—	—	●	▲	—	6	RFF	●	2
SNEW 1204ADFR-WS	—	—	—	—	●	7	RFF	●	2

Cartridges
Fig 1(RFR)



Fig 2(RFF)



Fig 3



Fig 4



Fig 5



Fig 6 Wiper Insert

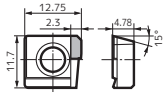
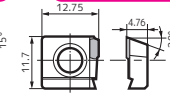
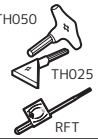


Fig 7 Wiper Insert



An "H" at the end of the part number indicates large depth of cut type, while "W" or "WS" indicates a wiper insert.

Parts

Cover	Stopper	Cap Screw		Set Screw		Flat Insert Screw	Adjustment	Flat Insert Screw		Wrench	Wrench
		Main Clamp 	N·m	Sub-clamp 	N·m	Cover Mounting 			N·m	TH050 TH025 RFT 	
RFC	RFS	BX0620	**10.0**	BTD0510	**3.0**	FBUP2-A0-8	RFJ	BFTX0509N	**5.0**	TH050 TH025 RFT	TTX20

Blades/Dummy Blades

	RFB	RFBW	RFD
			

Product Name	Cat. No.	SUMIDIA DA2200
SUMIDIA Blade	RFB	●
SUMIDIA Wiper Blade	RFBW	●
Dummy Blade	RFD	●(Steel)

Use dummy blades for unused teeth to protect the body as well as maintaining balance.

Setting Parts

Inserts can be set in the cartridge with high precision outside the machine in advance.



Setting Gauge
RF-SET
(Sold Separately/ Standard Stock)



Clamp Jig
RF-JIG
(Sold Separately/ Standard Stock)

*Dial gauge is not included.

Internal Coolant Attachments

For internal coolant supply, use an internal coolant holder or a commercially available clamp bolt with coolant holes. Typical examples are given in the table below. For specifications, contact each manufacturer directly.

Body Cat. No.	Internal Coolant Holders	Standard Clamp Bolt with Coolant Hole (Example)	
		MST Corporation	BIG DAISHOWA
RF 4080R	—	MBC-M12	TMBA-M12
RF 4100R	—	MBC-M16	TMBA-M16
RF 4125R	—	MBC-M20	TMBA-M20
RF 4160R	—	MBC-M24	TMBA-M24
RF 4200R	RF-CLT	—	—
RF 4250R	RF-CLT	—	—
RF 4315R	RF-CLT	—	—



Direction of Coolant Streams



Internal Coolant Holders
RF-CLT (Standard Stock)



Standard Clamp Bolt with Coolant Hole
[Typical Example] MBC-M12 to M24
(Sold Separately)

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

SRF series



■ Features

The SRF series is ideal for aluminum alloy machining on high-performance small machines.

- **Ideal for small machines**
  Especially reliable on BT30 class small machines.
- **From roughing to finishing processes**
  Utilises SUMIDIA DA1000 inserts with effective cutting edge length of 5mm.
- **Economical NF type inserts:**
  NF type SUMIDIA inserts with tough DA1000 grade lower tooling costs.
- **High-speed cutting with SUMIDIA:**
  Maximum spindle speeds of up to n = 20,000min^{-1}
  (Please operate within the maximum allowable spindle speed of the machine and holder used)
  *The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.
- **Simple runout adjustment mechanism:**
  Simple direct insert mounting design with easy fine-adjustment for runout precision.

■ Recommended Cutting Conditions

Si Content of 12% or less

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	2,000- **3,000** -4,000	0.05- **0.13** -0.20	DA1000

Note
- The above are the recommended conditions for SRF series overall. Use within the maximum allowable spindle speed.
- The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Si Content of over 12%

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

Note 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.

SRF type

Rake Angle		
Radial	-2° to 4°	
Axial	6°	

5mm 90°

Face Milling Shoulder Milling

Fig 1



Fig 2

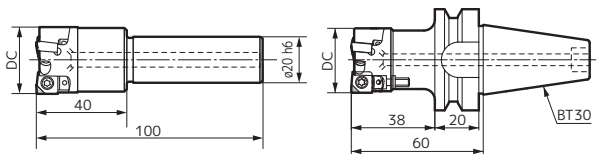


Fig 3

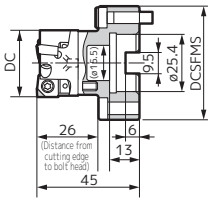
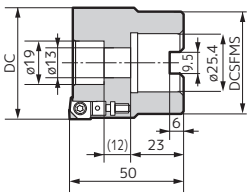


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Number of Teeth	Weight (kg)	Fig
Inch	**SRF 30R-ST**	●	**30**	—	3	0.34	1
	40R-ST	●	**40**	—	4	0.50	1
	SRF 30R-BT30	●	**30**	—	3	0.57	2
	40R-BT30	●	**40**	—	4	0.72	2
	SRF 30R	●	**30**	**50.0**	3	0.27	3
	40R	●	**40**	**50.0**	4	0.35	3
	50R	●	*50	**46.5**	5	0.59	4
	63R	●	*63	**45.0**	6	0.67	4

Inserts are sold separately.

■ Product Range

Type	Cat. No.	Dia. (mm) ø30	ø40	ø50	ø63
Shell	**SRF 30R(-ST)**	3			
	SRF 40R(-ST)		4		
	SRF 30R-BT30	3			
	SRF 40R-BT30		4		
	SRF 50R Inch			5	
	SRF 63R Inch				6

Number in ● shows the number of teeth Inch Inch Bore

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

Insert

Dimensions (mm)

Grade Classification		SUMIDIA	
Process	High-speed/Light Cutting	N	N
	Medium Cutting	N	N
	Roughing	N	N

Cat. No.	DA1000	DA2200	Cutting Edge Shape	Fig
NF-SNEW 09T3ADTR	●	▲	Standard	1
09T3ADTR-U	●	▲	Wiper Flat	2
09T3ADTR-R	●	▲	Corner Radius	3

Fig 1

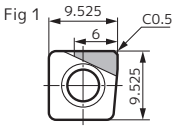
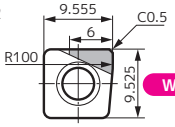
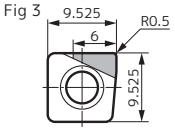


Fig 2

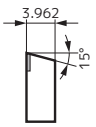


Wiper Insert

Fig 3

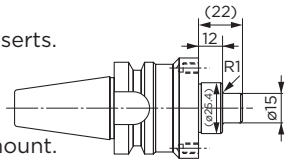


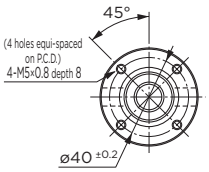
Side View (Same For All)



Recommended Cutting Conditions H240

- Standard inserts and wiper inserts can be used on the same cutter body.
- Standard inserts with corner radius should be used where chatter is present. These cannot be used with wiper inserts.
- Inserts can be reground 3 times (up to minimum IC diameter of 9.225mm), but the cutting edge height changes by the reground amount.
- Do not mix new and reground inserts or inserts with different regrind amounts on the same cutter.
- When using reground inserts, it is advisable to re-confirm cutting edge position with a tool pre-setter.
- Arbor for SRF30R, SRF40R





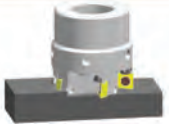
When using SRF30R and SRF40R cutters, the arbor needs to be modified as shown above.
(1. Reduce part of the arbor's adapter shaft length from ø25.4 to ø15.
2. Add 4 tap holes for (M5) mounting bolts.)
Use hex socket bolts M5 × 20mm for securing the body.

Maximum Depth of Cut (SRF50R, 5-teeth)

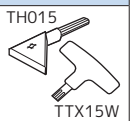
The table below contains guidelines on the maximum depth of cut, determined from internal tests. 'O' marks indicate the possible application range. Actual cutting conditions should be set based on the actual machine and workpiece characteristics.

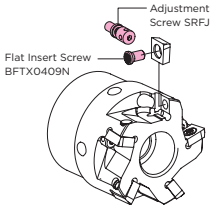
Depth of Cut ap (mm) \ Feed Rate	Feed Rate (vf) (mm/min) 2,500	4,000	5,000
	Feed Rate Per Tooth (fz) (mm/t) 0.05	0.08	0.10
0.5	○	○	○
1.0	○	○	○
1.5	○	○	○
2.0	○	○	○
2.5	○	○	○
3.0	○	○	○
3.5	○	○	—
4.0	○	—	—
4.5	○	—	—
5.0	○	—	—

Cutting Conditions
Cutter : SRF50R
Insert : NF-SNEW 09T3ADTR (DA1000)
n = 10,000min^{-1}
Arbor : BT30 FMA25.4-45
Workpiece : A-5052
Width : Maximum depth of cut at 35mm



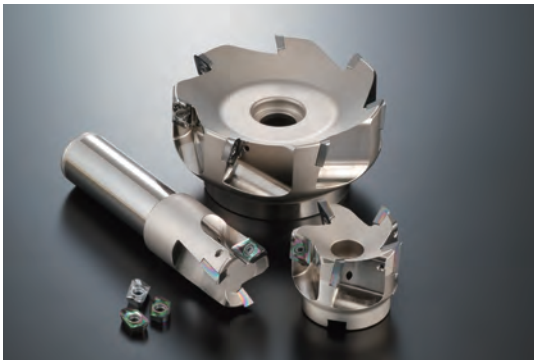
Parts

Flat Insert Screw		Adjustment Screw	Wrench
	N·m		TH015  TTX15W
BFTX0409N	**4.0**	SRFJ	TH015 TTX15W



N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

WAX series



■ Features

- ● Ideal for Roughing to Finishing of Non-ferrous Metals such as Aluminum Alloy
- ● Excellent Adhesion Resistance
  Top rake face of the insert has a lapped finish
  AURORA (DLC) Coat grade - DL1000, for improved adhesion resistance also available
- ● Safety Design
  Prevents dislodging of inserts caused by centrifugal force
- ● Coolant Compatible
  Coolant holes are a standard feature for the whole series

■ Product Range

Type	Cat. No.	Dia. (mm) ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125
Shell	WAX 3000-3.2					4	5			
	WAX 3000-3.2 inch							5	6	7
	WAX 3000-4.0					4	4			
	WAX 3000-4.0 inch							5	6	7
	WAX 4000-3.2					2	3			
	WAX 4000-3.2 inch							4	5	6
	WAX 4000-4.0					2	3			
	WAX 4000-4.0 inch							4	5	6
Shank	WAX 3000E-3.2	1	2	2	3					
	WAX 3000EL-3.2		2	2	3					
	WAX 3000E-4.0	1	2	2	3					
	WAX 3000EL-4.0		2	2	3					
	WAX 4000E-3.2		1	1	2					
	WAX 4000EL-3.2		1	1	2					
	WAX 4000E-4.0		1	1	2					
	WAX 4000EL-4.0		1	1	2					

Number in ●● shows the number of teeth inch Inch Bore

■ Grade Features

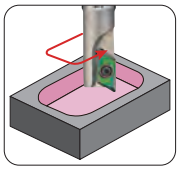
Work Material	Grade	Coating Thickness (μm)	Features
N Non-Ferrous Metal	DL1000	0.5	Coating with an extremely low coefficient of friction and excellent resistance to aluminum adhesion, provides stable cutting edge sharpness and chip evacuation. In combination with a dedicated carbide substrate for non-ferrous metals, wear resistance is further improved.

■ Grade Application Range

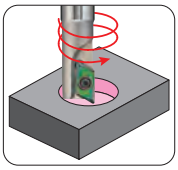
Work Material		Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
N Non-Ferrous Metal	Coated Carbide	DL1000		

■ Suitable for Various Applications

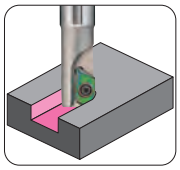
Pocket Expansion



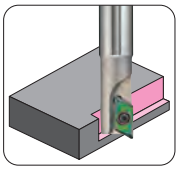
Helical Milling



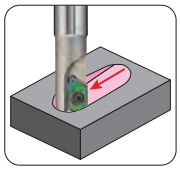
Groove Milling



Shoulder Milling

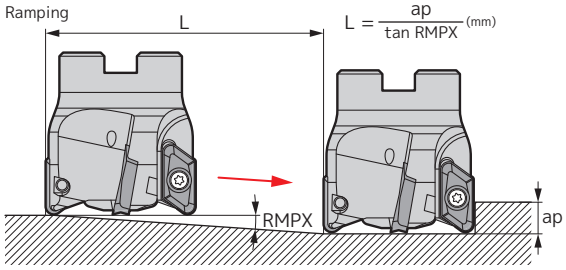


Ramping

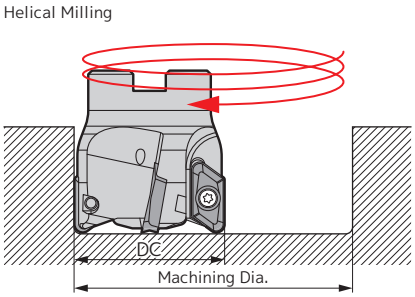


■ Ramping/Helical Milling Upper Limit and Allowable Maximum Spindle Speed

Ramping



Helical Milling



Dia. DC (mm)	Ramping: WAX3000 type Max. Ramping Angle RMPX (°)	Ramping: WAX4000 type Max. Ramping Angle RMPX (°)	Helical Milling: WAX3000 type Min. Machining Dia. (mm)	Helical Milling: WAX3000 type Max. Machining Dia. (mm)	Helical Milling: WAX4000 type Min. Machining Dia. (mm)	Helical Milling: WAX4000 type Max. Machining Dia. (mm)	Maximum Allowable Spindle Speed: WAX3000 type n max (min⁻¹)	WAX3000 type vc (m/min)	WAX4000 type n max (min⁻¹)	WAX4000 type vc (m/min)
20	28	—	22	33	—	—	14,000	880	—	—
25	17	26	29	43	27	43	29,000	2,200	11,000	860
32	12	18.5	43	57	38	57	25,000	2,500	9,000	900
40	9	13	59	73	54	73	23,000	2,900	20,000	2,500
50	7	9.5	79	93	74	93	20,000	3,100	18,000	2,800
63	5	7	105	119	100	119	18,000	3,500	16,000	3,100
80	3	5	139	153	134	153	16,000	4,000	14,000	3,500
100	3	4	179	193	174	193	14,000	4,400	12,000	3,700
125	2	3	229	243	224	243	13,000	5,100	11,000	4,300

*Maximum ramping angle (RMPX) depends on cutter diameter DC (mm). Minimum milling distance (L) for any depth of cut can be calculated by the equation above.
*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

SEC-WaveMill

WAX 3000 type

Rake Angle	Radial	6°
	Axial	19° to 25°

16-18mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

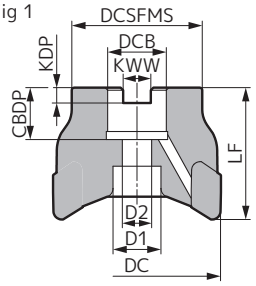


Fig 2

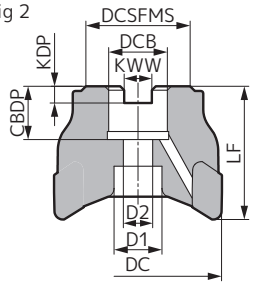
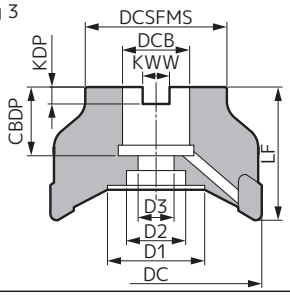


Fig 3



Body (Shell type for RE = 3.2 and below)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 3050-3.2**	●	**50**	**42**	50	**22**	10.4	6.3	21	18	11	—	4	0.34	1
	3063-3.2	●	**63**	**42**	50	**22**	10.4	6.3	21	18	11	—	5	0.6	2
Inch	**WAX 3080-3.2**	●	**80**	**57**	50	**25.4**	9.5	6	25	35	26	14	5	1.0	3
	3100-3.2	●	**100**	**67**	63	**31.75**	12.7	8	32.5	46	28	17	6	2.2	3
	3125-3.2	●	**125**	**87**	63	**38.1**	15.9	10	35.5	30	21	—	7	3.5	1

Body (Shell type for RE = 4.0 and above)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 3050-4.0**	●	**50**	**42**	50	**22**	10.4	6.3	21	18	11	—	4	0.34	1
	3063-4.0	●	**63**	**42**	50	**22**	10.4	6.3	21	18	11	—	4	0.6	2
Inch	**WAX 3080-4.0**	●	**80**	**57**	50	**25.4**	9.5	6	25	35	26	14	5	1.0	3
	3100-4.0	●	**100**	**67**	63	**31.75**	12.7	8	32.5	46	28	17	6	2.2	3
	3125-4.0	●	**125**	**87**	63	**38.1**	15.9	10	35.5	30	21	—	7	3.5	1

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

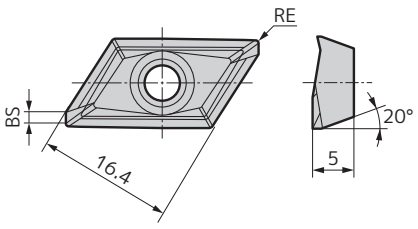
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light Cutting	N	N
	Medium Cutting		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Wiper BS	Corner Radius RE	Fig
AECT 160404PEFRA	●	●	18	1.4	0.4	1
160408PEFRA	●	●	18	1.0	0.8	1
160412PEFRA	●	●	18	0.6	1.2	1
160416PEFRA	●	●	17.5	0.5	1.6	1
160420PEFRA	●	●	17.5	0.5	2.0	1
160430PEFRA	●	●	17	0.7	3.0	1
160432PEFRA	●	●	17	0.5	3.2	1
AECT 160440PEFRA	●	●	16.5	0.5	4.0	1
160450PEFRA	●	●	16	0.4	5.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0408	**3.0**	TRD15	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	600-**900**-1,200	0.05-**0.15**-0.25	H1 DL1000

Note
- The above are the recommended conditions for WAX3000 type overall. Use within the maximum allowable spindle speed.
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

WAX 3000E/EL type

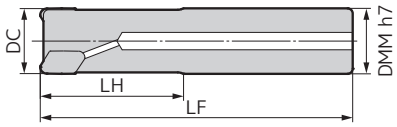
Rake Angle		
	Radial	6°
	Axial	19° to 25°

16-18mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (Shank type RE = 3.2 or less)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Number of Teeth	Weight (kg)	Fig
WAX 3020E -3.2	●	**20**	20	130	60	1	0.25	1
3025E -3.2	●	**25**	25	140	60	2	0.42	1
3025EL-3.2	●	**25**	25	200	60	2	0.63	1
3032E -3.2	●	**32**	32	150	70	2	0.75	1
3032EL-3.2	●	**32**	32	220	70	2	1.2	1
3040E -3.2	●	**40**	32	160	70	3	1.0	1
3040EL-3.2	●	**40**	32	220	70	3	1.4	1

Inserts are sold separately.

Body (Shank type RE = 4.0 or above)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Number of Teeth	Weight (kg)	Fig
WAX 3020E -4.0	●	**20**	20	130	60	1	0.25	1
3025E -4.0	●	**25**	25	140	60	2	0.42	1
3025EL-4.0	●	**25**	25	200	60	2	0.63	1
3032E -4.0	●	**32**	32	150	70	2	0.75	1
3032EL-4.0	●	**32**	32	220	70	2	1.2	1
3040E -4.0	●	**40**	32	160	70	3	1.0	1
3040EL-4.0	●	**40**	32	220	70	3	1.4	1

Inserts are sold separately.

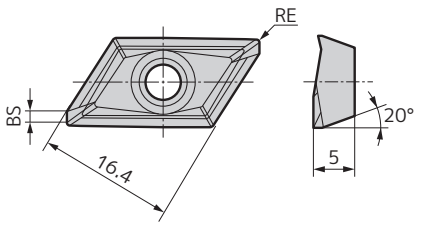
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light Cutting	N	N
	Medium Cutting		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Wiper BS	Corner Radius RE	Fig
AECT 160404PEFRA	●	●	18	1.4	0.4	1
160408PEFRA	●	●	18	1.0	0.8	1
160412PEFRA	●	●	18	0.6	1.2	1
160416PEFRA	●	●	17.5	0.5	1.6	1
160420PEFRA	●	●	17.5	0.5	2.0	1
160430PEFRA	●	●	17	0.7	3.0	1
160432PEFRA	●	●	17	0.5	3.2	1
AECT 160440PEFRA	●	●	16.5	0.5	4.0	1
160450PEFRA	●	●	16	0.4	5.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WAX3020E type	BFTX0407K	3.0	TRD15	SUMI-P
Other than above	BFTX0408			

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	600-**900**-1,200	0.05-**0.15**-0.25	H1 DL1000

Note
- The above are the recommended conditions for WAX3000 type overall. Use within the maximum allowable spindle speed.
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m)

SEC-WaveMill

WAX 4000 type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

22-24mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1

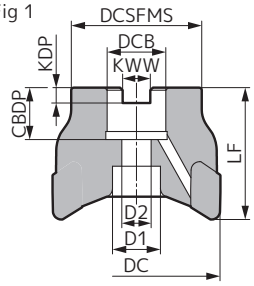


Fig 2

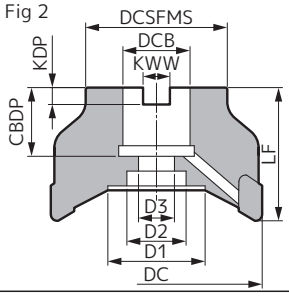
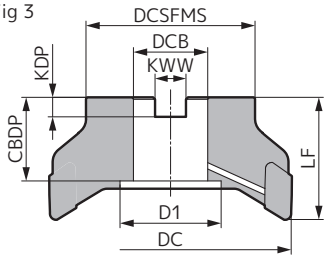


Fig 3



Body (Shell type for RE = 3.2 and below)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 4050-3.2**	●	**50**	**42**	50	**16**	8.4	5.6	18	14	9	—	2	0.37	1
	4063-3.2	●	**63**	**49**	50	**22**	10.4	6.3	21	18	11	—	3	0.54	1
Inch	**WAX 4080-3.2**	●	**80**	**57**	50	**25.4**	9.5	6	25	35	26	14	4	0.81	2
	4100-3.2	●	**100**	**67**	63	**31.75**	12.7	8	32.5	46	28	17	5	1.7	2
	4125-3.2	●	**125**	**87**	63	**38.1**	15.9	10	43	52	—	—	6	2.6	3

Body (Shell type for RE = 4.0 and above)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 4050-4.0**	●	**50**	**42**	50	**16**	8.4	5.6	18	14	9	—	2	0.38	1
	4063-4.0	●	**63**	**49**	50	**22**	10.4	6.3	21	18	11	—	3	0.54	1
Inch	**WAX 4080-4.0**	●	**80**	**57**	50	**25.4**	9.5	6	25	35	26	14	4	0.83	2
	4100-4.0	●	**100**	**67**	63	**31.75**	12.7	8	32.5	46	28	17	5	1.7	2
	4125-4.0	●	**125**	**87**	63	**38.1**	15.9	10	43	52	—	—	6	2.8	3

Inserts are sold separately.

Note For mounting the cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Note: The values in red have been changed from the 2023-2024 General Catalogue.

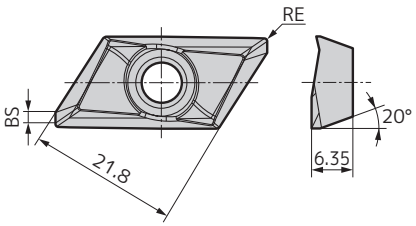
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light Cutting	N	N
	Medium Cutting		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Wiper BS	Corner Radius RE	Fig
AECT 220604PEFRA	●	●	24	1.5	0.4	1
220608PEFRA	●	●	24	1.2	0.8	1
220612PEFRA	●	●	24	0.8	1.2	1
220616PEFRA	●	●	24	0.4	1.6	1
220620PEFRA	●	●	24	0.5	2.0	1
220630PEFRA	●	●	23	0.6	3.0	1
220632PEFRA	●	●	23	0.4	3.2	1
AECT 220640PEFRA	●	●	22	1.2	4.0	1
220650PEFRA	●	●	22	0.4	5.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0511N	**5.0**	TRD20	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	600-**900**-1,200	0.05-**0.15**-0.25	H1 DL1000

Note
- The above are the recommended conditions for WAX4000 type overall. Use within the maximum allowable spindle speed.
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

WAX 4000E/EL type

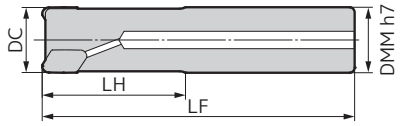
Rake Angle		
	Radial	6°
	Axial	19° to 25°

22-24mm 90°

Face Milling | Shoulder Milling | Groove Milling | Ramping | Profiling | Helical Milling



Fig 1



Body (RE = 3.2 or less)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WAX 4025E -3.2	●	**25**	25	60	140	1	0.41	1
4025EL-3.2	●	**25**	25	60	200	1	0.63	1
4032E -3.2	●	**32**	32	70	150	1	0.72	1
4032EL-3.2	●	**32**	32	70	220	1	1.2	1
4040E -3.2	●	**40**	32	70	160	2	0.88	1
4040EL-3.2	●	**40**	32	70	220	2	1.2	1

Body (RE = 4.0 or more)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WAX 4025E -4.0	●	**25**	25	60	140	1	0.41	1
4025EL-4.0	●	**25**	25	60	200	1	0.63	1
4032E -4.0	●	**32**	32	70	150	1	0.72	1
4032EL-4.0	●	**32**	32	70	220	1	1.2	1
4040E -4.0	●	**40**	32	70	160	2	0.88	1
4040EL-4.0	●	**40**	32	70	220	2	1.2	1

Inserts are sold separately.

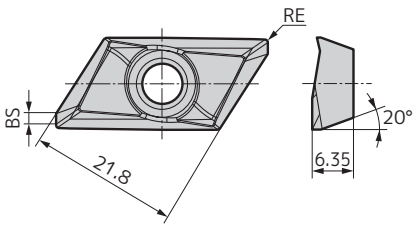
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light Cutting	N	N
	Medium Cutting		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Wiper BS	Corner Radius RE	Fig
AECT 220604PEFRA	●	●	24	1.5	0.4	1
220608PEFRA	●	●	24	1.2	0.8	1
220612PEFRA	●	●	24	0.8	1.2	1
220616PEFRA	●	●	24	0.4	1.6	1
220620PEFRA	●	●	24	0.5	2.0	1
220630PEFRA	●	●	23	0.6	3.0	1
220632PEFRA	●	●	23	0.4	3.2	1
AECT 220640PEFRA	●	●	22	1.2	4.0	1
220650PEFRA	●	●	22	0.4	5.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WAX4025E/EL type, WAX4032E/EL type	BFTX0509N	5.0	TRD20	SUMI-P
WAX4040E/EL type	BFTX0511N			

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	600-**900**-1,200	0.05-**0.15**-0.25	H1 DL1000

Note
- The above are the recommended conditions for WAX4000 type overall. Use within the maximum allowable spindle speed.
- 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.
- For groove milling, adjust the feed rate to around 70% of the above values.

N·m Recommended Tightening Torque (N·m)

FMU type/FMU-E type

Rake Angle		
Radial	2°	
Axial	8°	

0.5mm 45°

Face Milling



Fig 1

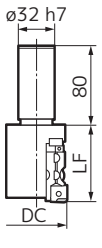


Fig 2

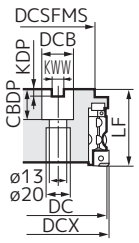


Fig 3

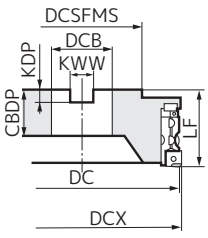


Fig 4

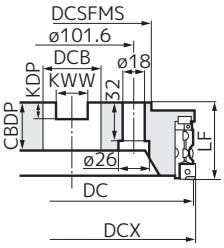
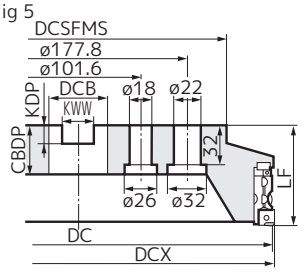


Fig 5



Body

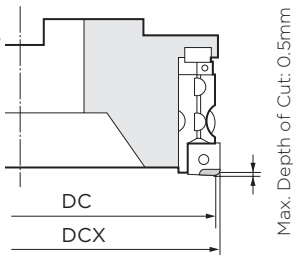
Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FMU 4040ER**	●	37.2	**40**	—	63	—	—	—	—	2	1.0	1
	4050ER	●	47.2	**50**	—	63	—	—	—	—	3	1.2	1
	4063ER	●	60.2	**63**	60	63	**25.4**	9.5	6	25	4	1.0	2
	FMU 4080R	●	**80**	82.8	60	63	**25.4**	9.5	6	25	6	1.7	2
	4100R	●	**100**	102.8	76	63	**31.75**	12.7	8	38	8	2.5	3
	4125R	●	**125**	127.8	75	63	**38.1**	15.9	10	38	10	3.9	3
	4160R	●	**160**	162.8	100	63	**50.8**	19.1	11	38	12	6.3	3
	4200R	●	**200**	202.8	130	63	**47.625**	25.4	14	40	16	9.3	4
	4250R		**250**	252.8	130	63	**47.625**	25.4	14	40	20	14.5	4
	4315R		**315**	317.8	240	80	**47.625**	25.4	14	40	24	25.0	5

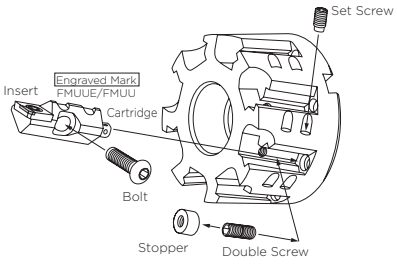
Inserts are sold separately.

Max. Depth of Cut

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle: +2°



Structure



Insert

Dimensions (mm)

Grade Classification		SUMIBORON		
Process	High-speed/Light Cutting	K	K	
	Medium Cutting	K	K	
	Roughing			
Cat. No.		BN7125	BN7000	Fig
SNEW1203ADTR		●	▲	1
1203ADTR-S		●	▲	2

-S denotes a low-thrust insert.

Fig 1

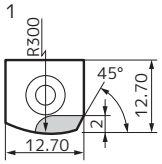
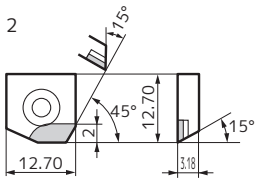


Fig 2



Cartridges

Cartridges	Flat Insert Screw		Adjustment Bolt	O-ring	Wrench	Wrench
		N·m			(For Flat Insert Screw)	
FMUU(E)*	BFTX0509N	5.0	FMUJ	P3	TTX20	TH015

*FMU4040ER/4050ER/4063ER use FMUUE type cartridges.
*FMUU/FMUUE are pre-assembled with flat screws and adjustment screws (with O-rings attached).

Setting Gauge



FMU-SET (Sold Separately)

*Dial gauge is not included.

Parts

Bolt	Set Screw	Stopper	Double Screw	Wrench	Wrench	Wrench (Radial)	Anti-seizure Cream
				(For Cartridges)	(For Set Screws)	(For Stoppers)	
BH0620*	BTD0609	FMUE	WB5-10	TH040	LH030	LH025	SUMI-P

*FMU4040ER, 4050ER and 4063ER use BH0615 bolts.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Grey Cast Iron	250HB	800-**1,400**-2,000	0.10-**0.20**-0.30	BN7125(Dry)

Note 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.

N·m Recommended Tightening Torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

FM(F) type

Rake Angle		
	Radial	2°
	Axial	8°

0.5mm 45°

Face Milling



Fig 1

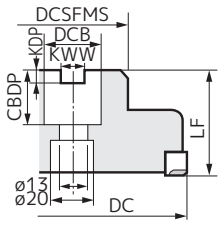


Fig 2

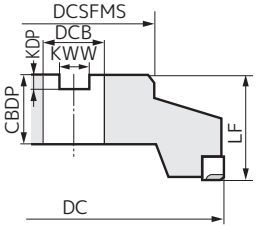


Fig 3

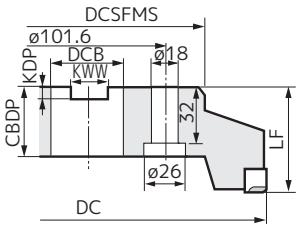
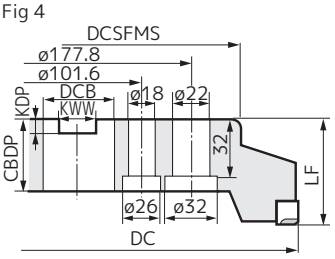


Fig 4



High-speed Finishing for Cast Iron

● Specially designed cutting edge shape combined with SUMIBORON grade for cast iron machining, realising high-speed milling of grey cast iron.

Body

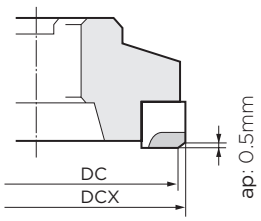
Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FM 5080 R/L**	●		**80**	82.8	60	50	**25.4**	9.5	6	25	6	1.6	1
	5100 R/L	●		**100**	102.8	75	50	**31.75**	12.7	8	32	8	2.4	2
	5125 R/L	●		**125**	127.8	75	63	**38.1**	15.9	10	38	10	3.4	2
	5160 R/L	●		**160**	162.8	100	63	**50.8**	19.1	11	38	12	5.6	2
	5200 R/L			**200**	202.8	130	63	**47.625**	25.4	14	40	16	8.3	3
	5250 R/L			**250**	252.8	130	63	**47.625**	25.4	14	40	20	14.3	3
	5315 R/L			**315**	317.8	240	80	**47.625**	25.4	14	40	24	27.8	4
	FMF 5125 R/L			**125**	127.8	75	63	**38.1**	15.9	10	38	12	3.4	2
	5160 R/L			**160**	162.8	100	63	**50.8**	19.1	11	38	16	5.6	2
	5200 R/L			**200**	202.8	130	63	**47.625**	25.4	14	40	20	8.3	3
	5250 R/L			**250**	252.8	130	63	**47.625**	25.4	14	40	24	14.3	3
	5315 R/L			**315**	317.8	240	80	**47.625**	25.4	14	40	28	27.8	4

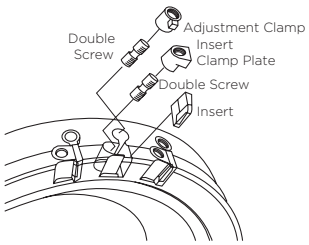
Inserts are sold separately.

Body

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle: +2°



Structure



Insert

Dimensions (mm)

Grade Classification		SUMIBORON				
Process	High-speed/Light Cutting	K		K		
	Medium Cutting	K		K		
	Roughing					
Cat. No.		BN7125		BN7000		Fig
		R	L	R	L	
SNEN 1504ADT R/L		●		▲		1
1504ADT R/L-S		●		▲		2

Fig 1

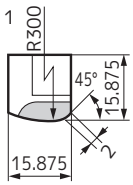
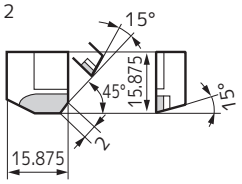


Fig 2



Parts

Applicable Cutter	Insert Clamp Plate	Adjustment Clamp	Adjustment Screw	Double Screw	Wrench	Wrench
FM(F) 5080R/L	FMW	—	FMJ	WB7F-20TL	TT25	1.8 x 45
FM(F) 5100R/L to FM(F) 5315R/L		FME	—			—

▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

RM type

Rake Angle		
Radial	-6° 45'	
Axial	-5° 45'	

3mm 75°

Face Milling



Fig 1

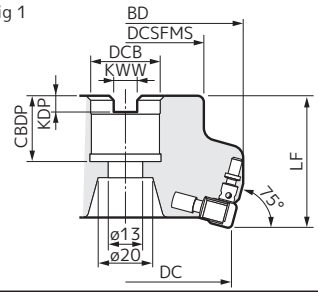
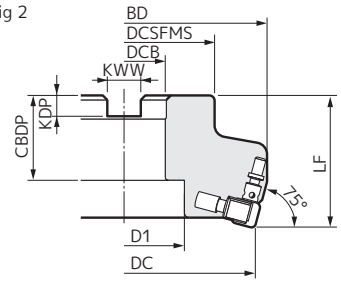


Fig 2



For High-speed, High-efficiency Milling of Cast Iron

● High-efficiency Milling of Grey Cast Iron
- Utilises solid SUMIBORON for high-speed cutting of vc = 1,500m/min
- High speed roughing with depth of cut up to 3.0mm
- Wiper insert for high-speed finishing

● Low Cost
- Economical double-sided insert with 8 usable corners
- Insert can be reground and used again

● Simple Runout Adjustment Mechanism
- Simple design for direct insert mounting
- Easy yet precise runout precision adjustment

Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	External Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Maximum Spindle Speed (min^{-1})	Weight (kg)	Fig
Inch	**RM 3080R**		**80**	90	60	50	**25.4**	9.5	6	25	—	6	9,000	1.6	1
	RM 3100R		**100**	110	70	50	**31.75**	12.7	8	32	46	8	8,000	2.1	2
	3125R		**125**	135	80	63	**38.1**	15.9	10	38	59	10	7,000	3.9	2
	3160R		**160**	170	100	63	**50.8**	19.1	11	38	80	12	6,000	5.9	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		SUMIBORON		
Process	High-speed/Light Cutting	K	K	
	Medium Cutting	K	K	
	Roughing	K	K	
Cat. No.		BNS8125	BNC8115	Fig
SNGN 090308		●	●	1
090312		●	●	1
SNEN 090308W		●	●	2

Fig 1

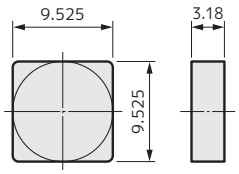
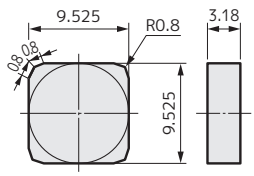
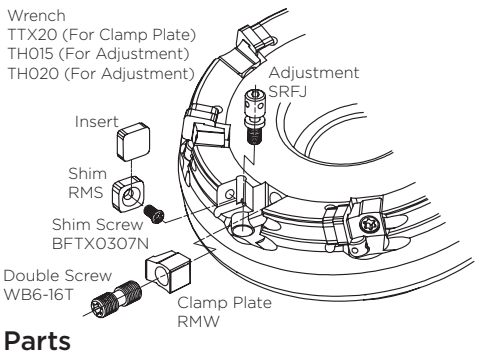


Fig 2 Wiper Insert





Parts

Shim	Shim Screw		Clamp Plate	Double Screw	Adjustment	Wrench (For Clamp Plate)	Wrench (For Adjustment)	Wrench (For Adjustment)
		N·m						
RMS	BFTX0307N	**2.0**	RMW	WB6-16T	SRFJ	TTX20	TH015	TH020

⚠ Precautions for Use

- Do not use inserts with different catalogue numbers, such as a mix of standard and wiper inserts, on a single cutter setting.
- New and reground inserts cannot be mixed for use. Use either only new inserts or only reground inserts.
- Inserts can only be reground once (inscribed circle dimension must be at least 9.125mm).

For hardened steel machining, use the SEC-ACE MILL DNF series.
Body: H45 Insert: L120

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Insert Grades
K	Grey Cast Iron	250HB	800-**1,150**-1,500	0.05-**0.13**-0.20	BNS8125 (Dry)

Note 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.

N·m Recommended Tightening Torque (N·m)

MEMO