Milling Cutters H

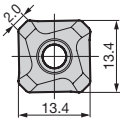
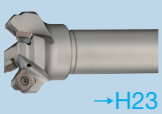
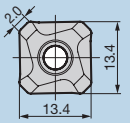
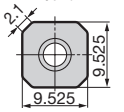
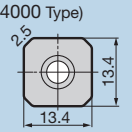
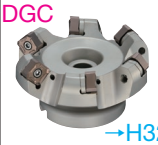
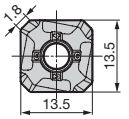
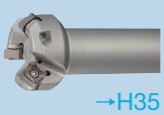
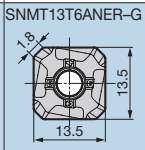
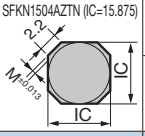
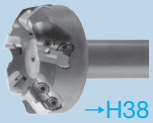
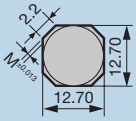
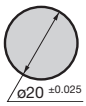
H1 to H208

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

Cutter (Indexable Endmill) Selection Guide

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

Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: 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°*	ø40 to ø250	–	WGX  →H20	WGX13000R(S) WGXM13000R(S) WGXF13000R(S)	SEMT13T3AGSR–G 	20° to 22°	–20° to –24°	◎	◎			○						◎	◎	◎	◎	◎	◎	○	
	6mm 45°*	ø32 to ø63	ø32	WGX–EW  →H23	WGX13000EW	SEMT13T3AGSR–G 	20° to 22°	–20° to –24°	◎	◎			○						◎	◎	◎	◎	◎	◎	○	
	4mm 45°*	ø32 to ø100	–	WGC  →H24	WGC3000 WGC3000RS	SEMT0903AGSN (3000 Type) 	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  →H26	WGC3000EW	SEMT13T3AGSN (4000 Type) 	20°	–10° to –19°	◎	◎			○						◎	◎	◎	◎	◎	◎	◎	
	6mm 45°*	ø32 to ø63	ø32		WGC4000EW		20° to 22°	–20° to –24°																		
	6mm 45°* 3mm 45°*	ø40 to ø250	–	DGC  →H32	DGC13000R(S) DGCM13000R(S) DGCF13000R(S)	SNMT13T6ANER–G 	–5°	–10°	◎				○						◎	◎	◎	◎	◎	◎	○	
	6mm 45°* 3mm 45°*	ø40 to ø63	ø32	DGC–EW  →H35	DGC13000EW	SNMT13T6ANER–G 	–5°	–10°	◎				○						◎	◎	◎	◎	◎	◎	○	
	5.5mm 45°*	ø80 to ø250	–	UFO  →H36	UFO4000	SFKN12T3AZTN (IC=12.70) SFKN1504AZTN (IC=15.875) 	27°	–7°	○	○			○						○	○	○	○	○	○	○	
	7.5mm 45°*	ø100 to ø250	–		UFO5000		27°	–7°																		
	5.5mm 45°*	ø50 to ø80	ø32 to ø42	UFO–E  →H38	UFO4000E	SFKN12T3AZTN 	27°	–7°	○	○			○						○	○	○	○	○	○	○	
	10mm	ø80 to ø160	–	GRC  →H39	GRC6000	RGEN2004SN–S 	25°	10°	○				○							○	○	◎	◎		◎	○

*Use a chamfering tool for chamfering operations.

■ Precautions when Using Wiper Inserts with Holes

- When assembling the wiper insert, attach it as shown in Fig. 1.
  When attached as shown in Fig. 2, normal machined surface roughness cannot be obtained.
- The wiper insert has a single corner specification.
- Refer to page N19 of Technical Guidance for details about milling with wiper inserts.

Fig 1

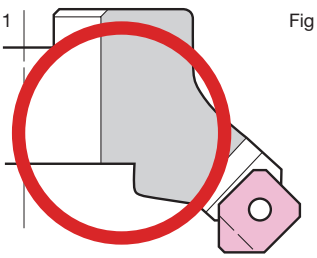
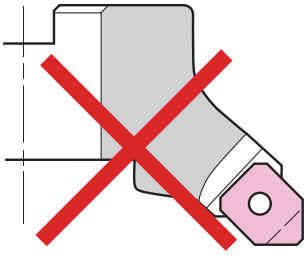
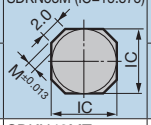
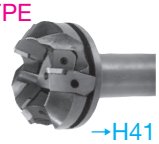
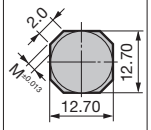
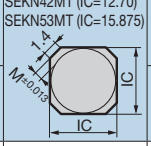
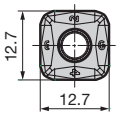
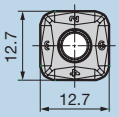
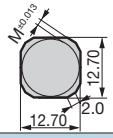
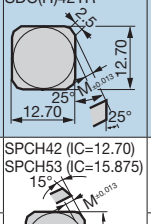
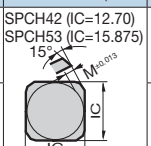
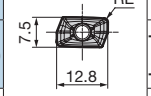
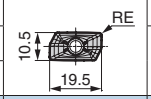
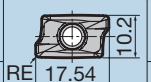


Fig 2



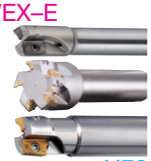
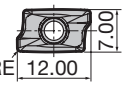
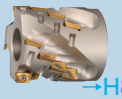
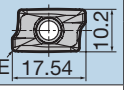
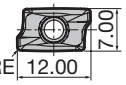
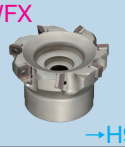
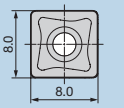
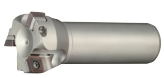
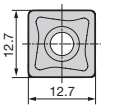
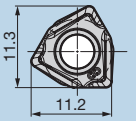
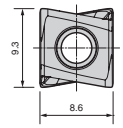
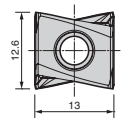
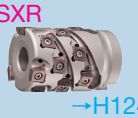
◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: 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	6.5mm / 45° *	ø80 to ø315	–	FPG  →H40	FPG4000	SDKN42M (IC=12.70) SDKN53M (IC=15.875) 	15°	–4°	○				○						○	○	○	○				
Face Milling	8.5mm / 45° *	ø100 to ø200	–	FPG5000			15°	–4°																		
Face Milling	6.5mm / 45° *	ø50 to ø80	ø32 to ø42	FPE  →H41	FPE4000	SDKN42MT 	15°	–3°	○				○						○	○	○	○		○		
Face Milling	5.5mm / 45° *	ø80 to ø200	–	EHG  →H42	EHG4000	SEKN42MT (IC=12.70) SEKN53MT (IC=15.875) 	20°	–3°	○				○						○	○	○	○	○		○	
Face Milling	7.5mm / 45° *	ø(80) to ø(200)	–	EHG5000			20°	–3°																		
Face Milling	8mm / 65°	ø80 to ø250	–	DNX  →H46	DNX12000 DNXF12000	SNMT1205ZNEN 	–5°	–6°	○	○									○			◎				
Face Milling	3mm / 24° 5mm / 24°	ø80 to ø160	–	DNH(S)  →H47	DNH12000 DNHS12000	SNMT1205ZNEN 	–5°	–6°		○	○								○			◎				
Face Milling	6.5mm / 65°	ø80 to ø200	–	DNF  →H48	DNF4000	CSNH43M 	–5°	–6°	○	○			○						○			◎	×	×	×	
Face Milling	7mm / 65°	ø80 to ø315	–	APG  →H49	APG4000	SDC(H)42TR 	18°	–2°	○	○			○						○	○	○	○	◎	◎		×
Face Milling	9.5mm / 75°	ø80 to ø200	–	DPG  →H50	DPG4000 DPGF4000	SPCH42 (IC=12.70) SPCH53 (IC=15.875) 	8°	0°	○	○			○						○	○	○	○	○	○		
Face Milling	12mm / 75°	ø100 to ø315	–		DPG5000		8°	0°																		
Shoulder Milling / Semi-Shoulder Milling	10mm / 90°	ø40 to ø100	–	WEZ New  →H58	WEZ11000R(S)	(For 11000 Type) AOMT11T302PEER-G 	14° to 15°	–7° to –11°	◎	◎		◎	◎	◎				◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling / Semi-Shoulder Milling	15mm / 90°	ø40 to ø160	–		WEZ17000R(S)		–10° to –15°	–4° to –9°																		
Shoulder Milling / Semi-Shoulder Milling	10mm / 90°	ø14 to ø80	ø16 to ø32	WEZ–E New  →H62	WEZ11000E	(For 17000 Type) AOMT170502PEER-G 	6° to 15°	–7° to –18°	◎	◎		◎	◎	◎				◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling / Semi-Shoulder Milling					WEZ11000EL																					
Shoulder Milling / Semi-Shoulder Milling	15mm / 90°	ø25 to ø80	ø25 to ø42		WEZ17000E		6° to 15°	–6° to –12°																		
Shoulder Milling / Semi-Shoulder Milling					WEZ17000EL																					
Shoulder Milling / Semi-Shoulder Milling	6mm / 90°	ø32 to ø63	–	WEX–F/R  →H75	WEX1000F	(For 3000 Type) AXMT170508PEER–G 	9° to 17°	7° to 17°	○			◎	◎	○				◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling / Semi-Shoulder Milling	10mm / 90°	ø40 to ø63	–		WEX2000F		23° to 25°	16° to 18°																		
Shoulder Milling / Semi-Shoulder Milling	14mm / 90°	ø40 to ø125	–		WEX3000F WEX3000R WEXF3000R		19° to 24°	12° to 15°																		

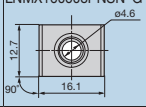
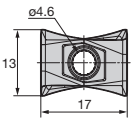
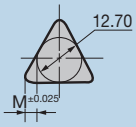
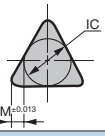
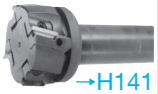
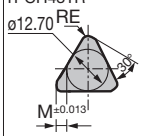
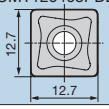
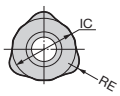
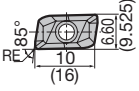
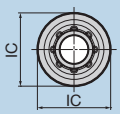
*Use a chamfering tool for chamfering operations.

Cutter (Indexable Endmill) Selection Guide

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

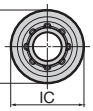
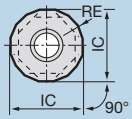
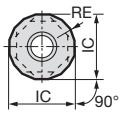
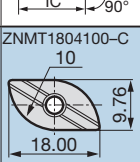
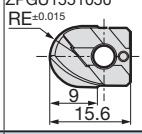
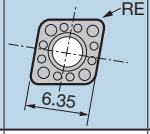
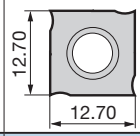
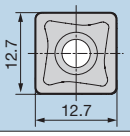
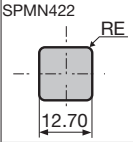
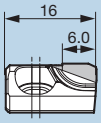
Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Groove Milling	Ramping	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 / Semi-Shoulder Milling	6mm 90°	ø32 to ø63	ø10 to ø20	WEX–E  →H78	WEX1000E WEX1000EL	(For 2000 Type) AXMT123504PEER–G 	9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø14 to ø63	ø16 to ø32		WEX2000E WEX2000EL		14° to 25°	10° to 18°																		
	14mm 90°	ø25 to ø63	ø20 to ø42		WEX3000E(–C) WEX3000ES(–C) WEX3000EL		16° to 24°	8° to 15°																		
	18 to 36mm 90°	ø40 to ø50	–	WRX–R  →H84	WRX2000R	(For 3000 Type) AXMT170508PEER–G 	24°	16° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	22 to 40mm 90°	ø50 to ø100	–		WRX3000R		22° to 24°	13° to 15°																		
	18 to 36mm 90°	ø20 to ø40	ø20 to ø42	WRX–E  →H86	WRX2000E	(For 2000 Type) AXMT123504PEER–G 	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	27 to 53mm 90°	ø40 to ø50	ø32 to ø42		WRX3000E		20° to 22°	12° to 13°																		
	6mm 90°	ø40 to ø100	–	WFX  →H91	WFX08000R(S) WFXM08000R(S) WFXF08000R(S)	(For 08000 Type) SOMT080304PZER 	12°	–6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	10mm 90°	ø50 to ø250	–		WFX12000R(S) WFXF12000R(S)		8°	–8°																		
	6mm 90°	ø20 to ø63	ø16 to ø32	WFX–E  →H96	WFX08000E WFXM08000E	(For 12000 Type) SOMT120408PDER 	12°	–6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	10mm 90°	ø40 to ø80	ø32		WFX12000E WFXF12000E		8°	–8°																		
	6mm 90°	ø50 to ø160	–	DFC  →H103	DFC09000R(S) DFCM09000R(S) DFCF09000R(S)	XNMU060608PNER–G 	–5°	–9°	◎	○		◎	○						◎	◎	○	◎			○	
	6mm 90°	ø25 to ø80	ø25 to ø42	DFC–E  →H106	DFC09000E DFCM09000E		–5°	–9°																		
	8mm 90°	ø40 to ø80	–	TSX New  →H113	TSX08000R(S) TSXF08000R(S)		–6°	–20°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
	12mm 90°	ø40 to ø315	–		TSX13000R(S) TSXM13000R(S) TSXF13000R(S)			–23° to –15°																		
		ø40 to ø160	–																							
	8mm 90°	ø16 to ø80	ø16 to ø32	TSX–E New  →H120	TSX08000E TSXF08000E	(For 08000 Type) LNEX080404PNER–G 	–6° to –3°	–36° to –20°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
		ø20 to ø80	ø20 to ø32																							
	12mm 90°	ø25 to ø80	ø25 to ø32		TSX13000E TSXM13000E TSXF13000E	(For 13000 Type) LNEX130604PNER–L 		–31° to –15°																		
		ø32 to ø80	ø32																							
		ø40 to ø80																								
	34 to 60mm 90°	ø32 to ø63	–	TSXR  →H124	TSXR08000RS		–6° to –3°	–20° to –15°	○			◎							◎	◎	◎	◎	◎	◎	◎	
	41 to 60mm 90°	ø40 to ø125			TSXR13000RS			–23° to –15°																		
	21 to 40mm 90°	ø20 to ø40	ø20 to ø32	TSXR–E  →H128	TSXR08000E		–6° to –3°	–33° to –18°	○			◎							◎	◎	◎	◎	◎	◎	◎	
	41 to 60mm 90°	ø40 to ø50	ø32 to ø42		TSXR13000E			–23° to –18°																		

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

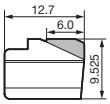
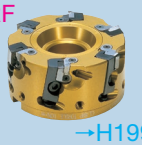
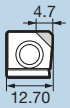
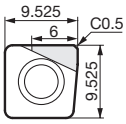
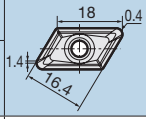
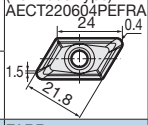
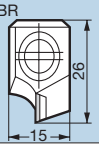
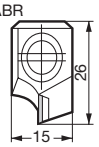
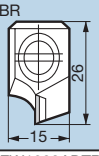
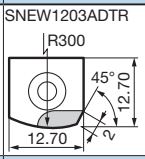
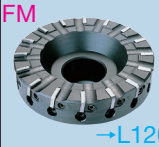
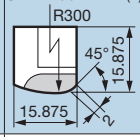
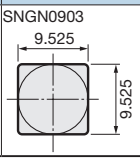
Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: Face Milling: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Groove Milling	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 / Semi-Shoulder Milling	15mm 88°	ø80 to ø200	–	PWC  →H136	PWC4000 PWCF4000	LNMX160608PNSN–G 	–5°	–15°	○		◎	○	○									◎				
	16mm 90°	ø80 to ø250	–	PWS  →H138	PWS4000 PWSF4000	LNMX170808PNSR–G 	–6°	–15°	○		◎	◎	○						◎	○	○	○				
	16mm 90°	ø80 to ø200	–	CHG  →H140	CHG4000	TEKN43TR 	15°	4°				○	○						◎	○	○	○	○	◎		
	8mm 90°	ø16 to ø28	ø16 to ø25	CHE 	CHE2000	TECN22R (IC=6.35) TECN32R (IC=9.525) TEEN43R (IC=12.70) 	6° to 15°	–3° to 0°				○	○						○	○	○	○	○	○		
	13mm 90°	ø30 to ø40	ø32		CHE3000		15°	–3° to 0°																		
	16mm 90°	ø50 to ø80	ø32 to ø42	 →H141	CHE4000		15°	2° to 4°																		
	18mm 90°	ø80 to ø200	–	CPG  →H144	CPG4000	TPCH43TR 	6°	0°				○	○						○	○	○	○				
	8 to 19mm 90°	ø16 to ø60	ø16 to ø42	FMS  →H145	FMS	TPCH43TR 	3° to 7°	–4° to –6°				○	○						○	○	○	○				
High Feed	1.5mm 15°	ø40 to ø63	–	WFXH  →H149	WFXH08000RS	(For 12000 Type) SOMT120408PDER 	–6°	6°			◎	○	○	○					◎	◎	◎	◎	◎	◎	○	
	2.5mm 15°	ø50 to ø63	–		WFXH12000RS		–6°	6°																		
	1.5 to 2.5mm 20°	ø40 to ø100	–	MSX–R  →H154	MSX08000R MSX12000R MSX14000R	WDMT0603ZDTR (IC=6.35) WDMT0804ZDTR (IC=8.5) WDMT1204ZDTR (IC=12) 	8°	–3° to –8°			◎	○	○	○					◎	◎	◎	◎				○
	1.0 to 2.5mm 20°	ø16 to ø63	ø16 to ø42	MSX–E  →H155	MSX06000E MSX08000E MSX12000E MSX14000E		8°	–3° to –8°			◎	○	○	○					◎	◎	◎	◎				○
Multi-Purpose	17 to 35mm 90°	ø20 to ø30	ø20 to ø25	WMM  →H157	WMM2000E/EL WMM2000ELH /EXLH	APMT103504PDER APMT160508PDER 	7° to 11°	15° to 16°	◎			◎	◎	◎		◎			◎	◎	◎	◎	◎	◎	◎	
	39mm 90°	ø32 to ø40	ø32		WMM3000E/EL WMM3000ELH /EXLH		7° to 11°	17° to 19°																		
Radius	5mm	ø40 to ø52	–	RSX  →H163	RSX10000 RSXF10000	RDET0803M0EN (IC=8) RDET10T3M0EN (IC=10) RDET1204M0EN (IC=12) 	10°	–5°	◎			○	◎	○	◎			◎	◎	◎	◎	◎			◎	
	6mm	ø40 to ø100			RSX12000 RSXF12000		10°	–5°																		
	8mm	ø63 to ø160			RSX16000 RSXF16000		10°	–5°																		
	10mm	ø80 to ø160			RSX20000 RSXF20000		10°	–5°																		

Cutter (Indexable Endmill) Selection Guide

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

Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: 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	4mm	ø20 to ø25	ø20 to ø25	RSX–ES  →H167	RSX08000ES RSXF08000ES	(For 10000 Type) RDET10T3M0EN 	10°	–8°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			◎	
	5mm	ø25 to ø32	ø25 to ø32		RSX10000ES RSXF10000ES		10°	–5°																		
	6mm	ø32	ø32		RSX12000ES RSXF12000ES		10°	–5°																		
	6mm	ø40 to ø80	–	WRCX  →H169	WRCX12000 WRCXF12000	QPMT120440PPEN (IC=12) QPMT160660PPEN (IC=16) QPMT200670PPEN (IC=20) 	–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			○	○
	8mm	ø63 to ø100	–		WRCX16000 WRCXF16000		–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎		◎	○	○
	10mm	ø125 to ø160	–		WRCX20000		–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			○	○
	4mm	ø20 to ø25	ø20 to ø25	WRCX–E  →H172	WRCX08000E	QPMT080330PPEN (IC=8) QPMT10T335PPEN (IC=10) QPMT160660PPEN (IC=16) 	–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎		◎	○	○
	5mm	ø25 to ø32	ø25 to ø32		WRCX10000E		–3°	0°																		
	8mm	ø40 to ø50	ø32		WRCX16000E		–3°	0°																		
R / 3D Profiling	20 to 43mm	R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR  →H174	WBMR2000 WBMR2000L	ZNMT1804100–C 	–10°	—					◎				◎		◎	◎	◎	◎			○	○
	0.1 to 0.4mm	R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF  →H177	WBMF1000	ZPGU1551050 	0°	—					◎				◎	◎	◎	◎	◎	◎				○
T–Slot	9 to 22mm 90°	ø21 to ø50	ø25 to ø32	TSE  →H178	TSE	CPMT060204N–US 	0°	0°					○						○	○	○					
Groove	4 to 8mm 88°30'	ø100 to ø160	–	TSM  →H179	TSM	SNHG121 	–2°	–12°					○						○	○	○	○				
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC–E  →H181	WFXC08000E	(For 12000 Type) SOMT120308PDER 	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
	45°	ø25 to ø32	ø25 to ø32		WFXC12000E																					
	45°	ø7 to ø35	ø32	SMC  →H183	SMC	SPMN422 	0°	0°							◎				○	○	○	○				
Non-ferrous Metal	3mm 90°	ø40 to ø125	–	ANX New  →H186	ANXS16000R(S)	ANB1600R–L 	5°	5°	○	◎	◎	◎											◎	◎		
		ø80 to ø160			ANXA16000R(S)		5°	5°																		
		ø32 to ø40	ø20		ANXS16002E		5°	–2° to 0°																		

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

Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	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°	ø80 to ø125	–	HF  →H194	HFM12000 HFF12000	NF–LDEN12T3ZDFR 	10°	4°	◎	◎									×	×	×	×	○	◎		×
Non-ferrous Metal	3mm 90°	ø80 to ø125	–		HFFH12000																					
Non-ferrous Metal	3mm 90°	ø80 to ø125	–		HFFH12000R–BBT30																					
Non-ferrous Metal	3mm 90°	ø80 to ø200	–	RF  →H199	RF4000	NF–SNEW1204ADFR 	10°	4°	◎	◎									×	×	×	×	○	◎		×
Non-ferrous Metal	5mm 90°	ø30 to ø63	–	SRF  →H201	SRF	NF–SNEW09T3ADTR 	6°	–2° to 4°	◎	◎		○							×	×	×	×	○	◎		×
Non-ferrous Metal	5mm 90°	ø30 to ø63	ø20		SRF–ST																					
Non-ferrous Metal	16 to 18mm 90°	ø50 to ø125	–	WAX  →H203	WAX3000	(For 3000 Type) AECT160404PEFRA 	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
Non-ferrous Metal	22 to 24mm 90°	ø50 to ø125	–		WAX4000																					
Non-ferrous Metal	16 to 18mm 90°	ø20 to ø40	ø20 to ø32	WAX–E  →H204	WAX3000E WAX3000EL	(For 4000 Type) AECT220604PEFRA 	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
Non-ferrous Metal	22 to 24mm 90°	ø25 to ø40	ø25 to ø32		WAX4000E WAX4000EL																					
Non-ferrous Metal	5.8mm 65°	ø80 to ø200	–	FAM  →M50	FAM	FABR 	13°	4°	○	○									×	×	×	×	○	○		×
Non-ferrous Metal	5.7mm 90°	ø80 to ø100	–	SAM  →M50	SAM	SABR 	10°	6°	○	○		○							×	×	×	×	○	○		×
Non-ferrous Metal	5.7mm 90°	ø50 to ø80	ø32	SAM–E  →M51	SAM–E	SABR 	10°	0° to 2°	○	○		○							×	×	×	×	○	○		×
High-speed Cast Iron	0.5mm 90°	ø37 to ø200	–	FMU  →H207, L118	FMU FMU–E	SNEW1203ADTR 	8°	2°		◎									×	×	×	◎ (FC)	×	×	×	×
High-speed Cast Iron	0.5mm 90°	ø80 to ø160	–	FM  →L120	FM FMF	SNEN1504ADTR(L) 	8°	2°		◎									×	×	×	◎ (FC)	×	×	×	×
High-speed Cast Iron	3mm 75°	ø80 to ø160	–	RM  →H208, L121	RM	SNGN0903 	–5° 45'	–6° 45'	○	◎									×	×	×	◎ (FC)	×	×	×	×

Selection Guide for Modular Tools

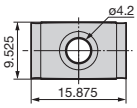
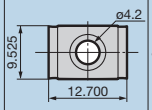
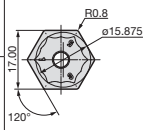
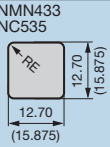
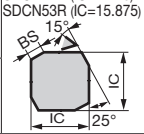
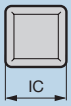
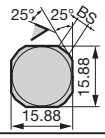
◎: Best ○: Suitable ×: Unsuitable Blank: Not Recommended

Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: 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	6mm 90°	ø20 to ø40	ø18 to ø32	WFX–M Modular →H212	**WFX**08000M	SOMT080304PZER–G RE 8.0 8.0	12°	–6°	○	◎		◎	◎						◎	◎	◎	◎	◎	◎	○	
Shoulder Milling	10mm 90°	ø16 to ø40	ø15 to ø32	WEX–M Modular →H213	**WEX**2000M	(For 3000 Type) AXMT170504PEER–G 10.2 17.54 RE	14° to 25°	10° to 18°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling	14mm 90°	ø25 to ø40	ø23 to ø32		**WEX**3000M		16° to 24°	8° to 15°																		
High Feed	1.5mm 15°	ø25 to ø32	ø23 to ø32	WFXH–M Modular →H215	**WFXH**08000M	(For 12000 Type) SOMT120308PDER 12.7 12.7	6°	–6°			◎	○	○	○					◎	◎	◎	◎	◎	◎	○	
High Feed	2.5mm 15°	ø40	ø28 to ø32		**WFXH**12000M		6°	–6°																		
High Feed	1.0mm 20°	ø16 to ø25	ø15 to ø25	MSX–M Modular →H216	**MSX**06000M	(For 08000 Type) WDMT0804ZDTR 8.5 RE	8°	–3° to –6°			◎	○	○	○					◎	◎	◎	◎				○
High Feed	1.5mm 20°	ø25 to ø35	ø23 to ø32		**MSX**08000M																					
High Feed	2.0mm 20°	ø32 to ø40	ø28 to ø32		**MSX**12000M																					
Radius	4mm	ø20 to ø32	ø18 to ø32	RSX–M Modular →H217	**RSX**08000M	RDET0803M0EN (IC=8) RDET10T3M0EN (IC=10) RDET1204M0EN (IC=12) IC IC	10°	–8°	◎		○	○	○	◎			◎				◎				◎	
Radius	5mm	ø25 to ø32	ø23 to ø32		**RSX**10000M **RSXF**10000M		10°	–5°																		
Radius	6mm	ø32 to ø40	ø28 to ø32		**RSX**12000M **RSXF**12000M		10°	–5°																		
Radius	4mm	ø20 to ø25	ø18 to ø25	WRCX–M Modular →H218	**WRCX**08000M	(For 10000 Type) QPMT10T335PPEN RE 10 10 90	–3°	0°	◎		○	○	○	◎			◎		◎	◎	◎	◎		◎	○	○
Radius	5mm	ø25 to ø32	ø23 to ø32		**WRCX**10000M																					
Radius	6mm	ø40	ø28 to ø32		**WRCX**12000M																					
Chamfering	45°	ø16	ø15 to ø16	WFXC–M Modular →H219	**WFXC**08000M	(For 08000 Type) SOMT080308PZER–G RE 8.0 8.0	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
Chamfering	45°	ø25 to ø32	ø23 to ø32		**WFXC**12000M		0°	0°																		

Shank diameters listed are for shanks with corresponding arbours mounted. Refer to page H211 for details.

Selection Guide for Cast Iron High-feed and Milling Cutters (Special Purpose)

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

Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: 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 Cast Iron Machining	1mm 89°~89°30′	ø80 to ø315	–	GFX  →H226	**GFX(C)**13000	(For 16000 Type) LNGX160516PNFN-W 	−5°	−8°		◎	◎								×	×	×	◎	×	×	×	×
					GFX16000																					
High Feed Cast Iron Machining	10mm 90°	ø80 to ø160	–	GFS  →H228	**GFS**13000	LNGX130508PNFN-W 	−3°	−11°		◎	◎	○							×	×	×	◎	×	×	×	×
High Feed Cast Iron Machining	6mm 60°	ø80 to ø315	–	GRHN  →H229	**GRHNF**17000	HNEF100608DNEN-G 	−6°	−6.5° to −5°			◎								×	×	×	◎	×	×	×	×
					GRHNM17000		−6°	−6.5° to −5°																		
Milling Cutters (Special Purpose)	5.5mm 45° *	ø100 to ø450	–	NRV  →H234	**NRV**4000	SNMN433 SNC535 	−5°	−6°			◎								×	×	×	◎	×	×	×	×
	8.5mm 45° *		–		**NRV**5000																					
	7mm 65°	ø100 to ø450	–	DPV  →H235	**DPV**4000	SDCN42R (IC=12.70) SDCN53R (IC=15.875) 	10°	5°		○	◎								×	×	×	◎	×	×	×	×
	7.5mm 65°	ø100 to ø450	–		**DPV**5000		10°	5°																		
	0.5mm 90°	ø100 to ø450	–	NFV  →H236	**NFV**4000	SNEF43W (IC=12.70) SNEF53W (IC=15.875) 	−5°	−6°		◎	◎								×	×	×	◎	×	×	×	×
	0.5mm 90°	ø100 to ø450	–		**NFV**5000		−5°	−6°		◎	◎								×	×	×	◎	×		×	×
	10mm 65°	ø200 to ø450	–	APV  →H237	**APV**5000	SDC53R 	18°	−2°		◎	◎								×	×	×		◎	○		×

*Use a chamfering tool for chamfering operations.

Indexable Endmill Selection Guide

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

Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: 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 90°	ø25 to ø80	ø25 to ø42	DFC–E →H106	DFC09000E DFCM09000E	XNMU060608PNER–G (11.3, 11.2)	–5°	–9°	◎	○		◎	○						◎	◎	○	◎			○	
Face Milling	5.5mm 45° *	ø50 to ø80	ø32 to ø42	UFO–E →H38	UFO4000E	SFKN12T3AZTN (2.2, 12.70, 12.70)	27°	–7°	○	○			○						○	○	○	○	○	○	○	
Face Milling	6.5mm 45° *	ø50 to ø80	ø32 to ø42	FPE →H41	FPE4000	SDKN42MT (2.0, 12.70, 12.70)	15°	–3°	○				○						○	○	○	○		○		
Shoulder Milling	10mm 90°	ø14 to ø80	ø16 to ø32	WEZ–E New →H62	WEZ11000E WEZ11000EL	AOMT11T302PEER–G RE (7.5, 12.8)	6° to 15°	–7° to –18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling	15mm 90°	ø25 to ø80	ø25 to ø42		WEZ17000E WEZ17000EL		6° to 15°	–6° to –12°																		
Shoulder Milling	6mm 90°	ø20 to ø63	ø16 to ø32	WFX–E →H96	WFX08000E WFXM08000E	(For 12000 Type) SOMT120408PDER (12.7, 12.7)	12°	–6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎		
Shoulder Milling	10mm 90°	ø40 to ø80	ø32		WFX12000E WFXF12000E		8°	–8°																		
Shoulder Milling	8mm 90°	ø16 to ø80	ø16 to ø32	TSX–E New →H120	TSX08000E TSXF08000E	(For 08000 Type) LNEX080404PNER–G (9.3, 8.6)	–6° to –3°	–36° to –20°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
		ø20 to ø80	ø20 to ø32																							
Shoulder Milling	12mm 90°	ø25 to ø80	ø25 to ø32		TSX13000E TSXM13000E TSXF13000E	(For 13000 Type) LNEX130604PNER–L (12.6, 13)		–31° to –15°																		
		ø32 to ø80	ø32																							
		ø40 to ø80																								
Shoulder Milling	21 to 40mm 90°	ø20 to ø40	ø20 to ø32	TSXR–E New →H128	TSXR08000E		–6° to –3°	–33° to –18°	○			◎							◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling	41 to 60mm 90°	ø40 to ø50	ø32 to ø42		TSXR13000E			–23° to –18°																		
Shoulder Milling	6mm 90°	ø32 to ø63	ø10 to ø20	WEX–E →H78	WEX1000E WEX1000EL	(For 2000 Type) AXMT123504PEER–G (7.00, RE 12.00)	9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling	10mm 90°	ø14 to ø63	ø16 to ø32		WEX2000E WEX2000EL		14° to 25°	10° to 18°																		
Shoulder Milling	14mm 90°	ø25 to ø63	ø20 to ø42		WEX3000E(–C) WEX3000ES(–C) WEX3000EL		16° to 24°	8° to 15°																		
Shoulder Milling	18 to 36mm 90°	ø20 to ø40	ø20 to ø42	WRX–E →H86	WRX2000E	(For 2000 Type) AXMT123504PEER–G (7.00, RE 12.00)	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling	27 to 53mm 90°	ø40 to ø50	ø32 to ø42		WRX3000E		20° to 22°	12° to 13°																		
Shoulder Milling	8mm 90°	ø16 to ø28	ø16 to ø25	CHE →H141	CHE2000	TECN22R (IC=6.35) TECN32R (IC=9.525) TEEN43R (IC=12.70) (IC, M±0.013)	6° to 15°	–3° to 0°				○	○						○	○	○	○	○	○		
Shoulder Milling	13mm 90°	ø30 to ø40	ø32		CHE3000		15°	–3° to 0°																		
Shoulder Milling	16mm 90°	ø50 to ø80	ø32 to ø42		CHE4000		15°	2° to 4°																		

*Use a chamfering tool for chamfering operations.

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

Applications	Cutting Edge Angle / Maximum Depth of Cut	Cutting Edge Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	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	8 to 19mm 90°	ø16 to ø60	ø16 to ø42	FMS →H145	FMS	TPCH43TR ø12.70 RE M±0.013	3° to 7°	−4° to −6°				○	○						○	○	○	○	○			
High Feed	1.0 to 2.5mm 20°	ø16 to ø63	ø16 to ø42	MSX–E →H155	MSX06000E MSX08000E MSX12000E	WDMT0603ZDTR (IC=6.35) WDMT0804ZDTR (IC=8.5) WDMT1204ZDTR (IC=12) IC RE	8°	−3° to −8°			◎	○	○	○					◎	◎	◎	◎				○
Multi-Purpose	17 to 35mm 90°	ø20 to ø30	ø20 to ø25	WMM →H157	WMM2000E/EL WMM2000ELH	APMT103504PDER APMT160508PDER 85° RE 10 (16) 6.60 (9.525)	7° to 11°	15° to 16°	◎			◎	◎	◎		◎	◎		◎	◎	◎	◎	◎	◎	◎	
	39mm 90°	ø32 to ø40	ø32		WMM3000E/EL WMM3000ELH		7° to 11°	17° to 19°																		
Radius	4mm	ø20 to ø25	ø20 to ø25	RSX–ES →H167	RSX08000ES RSXF08000ES	RDET0803M0EN (IC=8) RDET10T3M0EN (IC=10) RDET1204M0EN (IC=12) IC IC	10°	−8°																		
	5mm	ø25 to ø32	ø25 to ø32		RSX10000ES RSXF10000ES		10°	−5°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			◎	
	6mm	ø32	ø32		RSX12000ES RSXF12000ES		10°	−5°																		
	4mm	ø20 to ø25	ø20 to ø25	WRCX–E →H172	WRCX08000E	QPMT080330PPEN (IC=8) QPMT10T335PPEN (IC=10) QPMT160660PPEN (IC=16) RE IC IC 90°	−3°	0°																		
	5mm	ø25 to ø32	ø25 to ø32		WRCX10000E		−3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎		◎	○	○
	8mm	ø40 to ø50	ø32		WRCX16000E		−3°	0°																		
R / 3D Profiling	20 to 43mm	R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR →H174	WBMR2000 WBMR2000L	ZNMT1804100–C 10 9.76 18.00	−10°	—					◎				◎		◎	◎	◎	◎			○	○
	0.1 to 0.4mm	R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H177	WBMF1000	ZPGU1551050 RE±0.015 9 15.6	0°	—					◎				◎	◎	◎	◎	◎	◎				○
T–Slot	9 to 22mm 90°	ø21 to ø50	ø25 to ø32	TSE →H178	TSE	CPMT060204N–US RE 6.35	0°	0°					○						○	○	○					
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC–E →H181	WFXC08000E	(For 12000 Type) SOMT120308PDER 12.7 12.7	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
	45°	ø25 to ø32	ø25 to ø32		WFXC12000E																					
	45°	ø7 to ø35	ø32	SMC →H183	SMC	SPMN422 RE 12.70	0°	0°							◎				○	○	○	○				
Non-ferrous Metal	16 to 18mm 90°	ø20 to ø40	ø20 to ø32	WAX–E →H204	WAX3000E WAX3000EL	(For 4000 Type) AECT220604PEFRA 24 0.4 1.5 21.8	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
	22 to 24mm 90°	ø25 to ø40	ø25 to ø32		WAX4000E WAX4000EL																					

Grades for Milling

Work Material	P General Steel (Carbon Steel, Alloy Steel), Mild Steel						M Stainless Steel						K Cast Iron				
Classification	Wear Resistance ← → Fracture Resistance						Wear Resistance ← → Fracture Resistance						Wear Resistance ← → Fracture Resistance				
	–	P01	P10	P20	P30	P40	–	M01	M10	M20	M30	M40	–	K01	K10	K20	K30
Coated Carbide (A26)		New ACP2000						ACM100						New ACK2000			
			New ACP3000						ACM200					New ACK3000			
		New ACU2500								ACM300					New ACU2500		
		ACP100						New ACU2500					ACK100				
			ACP200					ACK300						ACK200			
					ACP300				ACP300								ACK300
Cermet (A29)		New T2500A						New T2500A									
		T250A							T250A								
				T4500A							T4500A						
Carbide (A30)				A30N							A30N				G10E		
Uncoated CBN (A32)															BN7000		
																BNS800	

Work Material	S Exotic Alloy						H Hardened Steel					N Non-Ferrous Metal				
Classification	Wear Resistance ← → Fracture Resistance						Wear Resistance ← → Fracture Resistance					Wear Resistance ← → Fracture Resistance				
	–	S01	S10	S20	S30	S40	–	H01	H10	H20	H30	–	N01	N10	N20	N30
Coated Carbide (A26)		ACM100														
			ACM200											DL1000		
					ACM300											
		New ACU2500											New DL2000			
		ACK300														
Carbide (A30)				EH520											H1	
															New H20	
Uncoated CBN (A32)								BN350	BN7000							
PCD (A34)													DA1000			

: 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 Grades
P Steel	ACP100	89.3	3.1	Super FF Coat	6	· For high-speed machining of steel · Grade emphasising wear resistance for high-speed machining	AC230
P Steel	New ACP2000	89.5	3.2	Absotech	10	· For high-speed machining of steel · Stable long tool life with 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 newly developed high-strength cemented carbide 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 as a grade with high wear resistance	—
K Cast Iron	ACK200	91.7	2.5	Super FF Coat	6	· For high-speed cast iron milling · Adopts a tough carbide substrate as a grade with excellent wear resistance and thermal crack resistance	AC211
K Cast Iron	New ACK2000	91.7	3.1	Absotech	10	· For high-speed cast iron milling · Stable long tool life with 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 Grades
P Steel	New ACU2500	91.6	3.8	Absotech	3	· General-purpose grade supporting 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 with various work material grades	—
P Steel	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
P Steel	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
P Steel	New 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	ACM100	91.4	3.3	(New) Super ZX Coat	3	· For high-speed machining of stainless steel · Adopts high-hardness micro-grain carbide substrate and super multi-layered coating to realise outstanding wear resistance	ACZ310
M Stainless Steel	ACM300	89.8	3.4	(New) Super ZX Coat	3	· Our 1st recommended grade for milling stainless steel · Adopts 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
K Cast Iron	New 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	—
N Non-Ferrous Metal	New 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	—

Cermet

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
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
P Steel	T250A	91.4	2.1	—	—	· For finishing of steel and stainless steel · Tough grade with enhanced crack spread resistance	—
P Steel / M Stainless Steel	New 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
P Steel / M Stainless Steel	T4500A	91.0	2.3	—	—	· For finishing of steel and stainless steel · Tough grade with excellent fracture resistance and reduced thermal cracking	—

CBN

Classification	Grade	Binder	Carbon Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
K Cast Iron	BNS800	Al Alloy	85 to 90	8	39 to 42	0.9 to 1.1	—	—	Grade with 100% solid CBN structure and excellent thermal shock resistance.
K Cast Iron	BN7000	Co Compound	90 to 95	2	41 to 44	1.8 to 1.9	—	—	Grade exhibiting wear and fracture resistance in cutting of cast iron and exotic alloys.
K Cast Iron	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 ultimate cutting edge strength, suitable for heavy interrupted cutting.

Polycrystalline Diamond

Classification	Grade	Binder	Carbon 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 demonstrates optimum wear and fracture resistance and excellent edge sharpness.

Carbide ☞A30 Ceramics ☞A36

Cutter Identification Table

Standard Type

DFC (F) 09 050 R (S)

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

- (1) Cutter Series — Refer to Table 1
- (2) Additional Symbols — 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) Cutter Series

Series Code
DFC
DGC
WGX
WGC
UFO
FPG
EHG
DNX
APG
WRCX
MSX
PWC
PWS
WFX
WEX
WRX

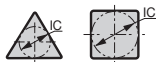
(Table 2) (2) Additional Symbols

Fine-Pitch Indication	
M	Fine pitch
F	Extra Fine Pitch

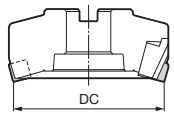
Table 3 (3) Insert Inscribed Circle Size

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

Inscribed Circle Example

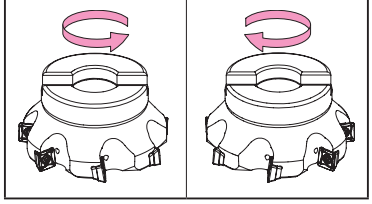


(Table 4) (4) Cutter Diameter



(Table 5) (5) Feed Direction

Left Hand (L)	Right Hand (R)



(Table 6) (6) Mounting

Bore Size Dimension	
S	Metric

High Feed Cutter Type

DPV (Z) 4 100 (Q) R

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

(1) Cutter Series
DPV
GRV
GSV
GFX
GFS
NRV
NFV
APV

(7) 2-Piece Set Indication
Z

(3) (4) (5)
Same as above

(8) Quick Change Type
Q

Insert Identification Table

(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	Angle
A	Parallelogram Type	85°
H	Trigon 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 (mm)

Symbol	Inscribed Circle (mm)	Thickness (mm)
A	±0.025	±0.025
C	±0.025	±0.025
E	±0.025	±0.025
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

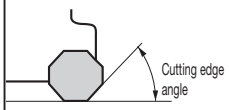


Table 8 (8) Wiper Edge Relief Angle

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	Code Description
A	Sharp Edge
H	Strong Edge
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).

WGX Type

General Features

SEC-WaveMill WGX Type employs a unique chipbreaker design to provide lower resistance and higher-quality finished surface roughness than conventional tools.
Lineup of insert grades and chipbreakers has been significantly expanded, and employment of the ACM series enables machining of stainless steel and exotic alloys.

Features

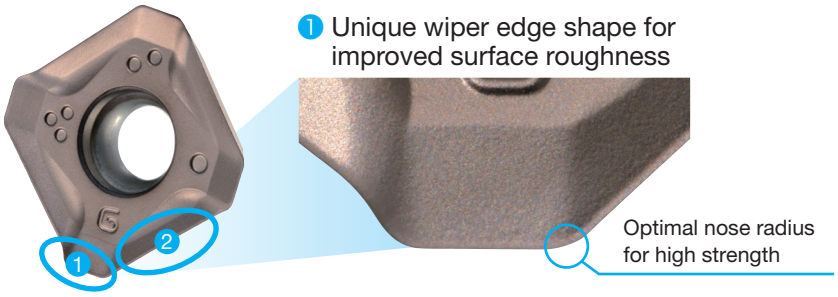
● Reduced Cutting Force
- High-rake chipbreaker designed for use with the WGX type achieves low resistance

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

● New Grade Coating
- Features high-precision technology that reduces insert runout variation and a new coating to provide long, stable tool life
- The new ACM200 and ACM300 grades for stainless steel/exotic alloy machining further expand the range of applications

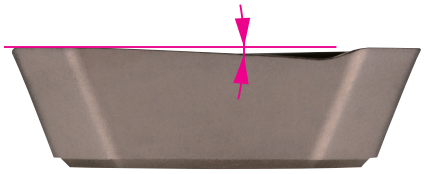
Insert Shape Features

● General-purpose G Type Chipbreaker

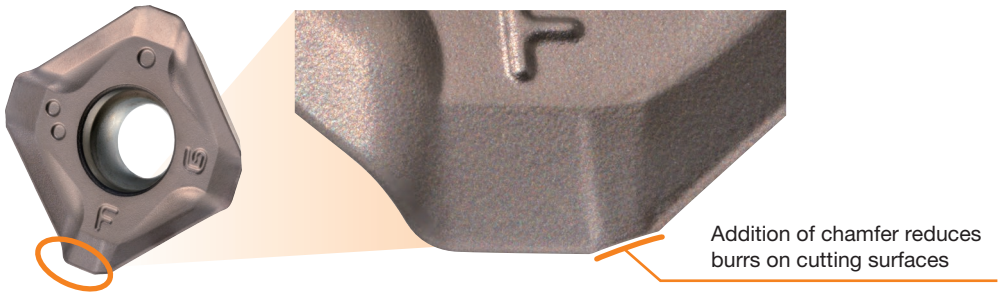


❶ Unique wiper edge shape for improved surface roughness

❷ Large rake angle and cutting edge rake angle for improved sharpness



● FG Type Chipbreaker with Low-Burr Design



Product Range

Type	Type	Cutter Dia.	Number of Teeth	Mounting
Standard Pitch	WGX13000R(S)	ø40 to ø250	3 to 10	Inch/Metric
Fine pitch	WGXM13000R(S)	ø50 to ø250	4 to 14	Inch/Metric
Extra Fine Pitch	WGXF13000R(S)	ø50 to ø250	5 to 24	Inch/Metric
Endmill Type	WGX13000EW	ø32 to ø63	3 to 5	Metric

Sizes of ø125mm and below have a coolant hole

WGX 13000R(S)
Standard Pitch

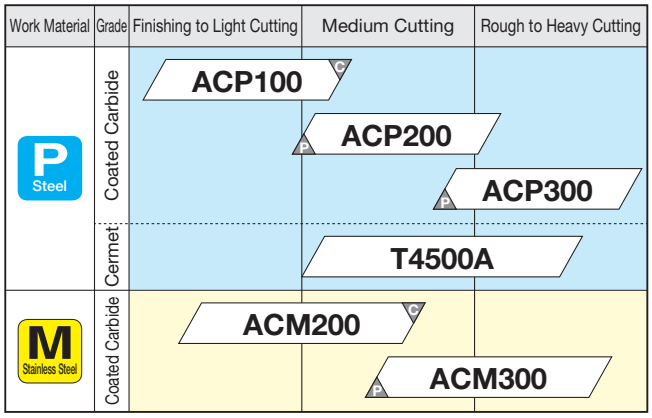
WGXM 13000R(S)
Fine Pitch

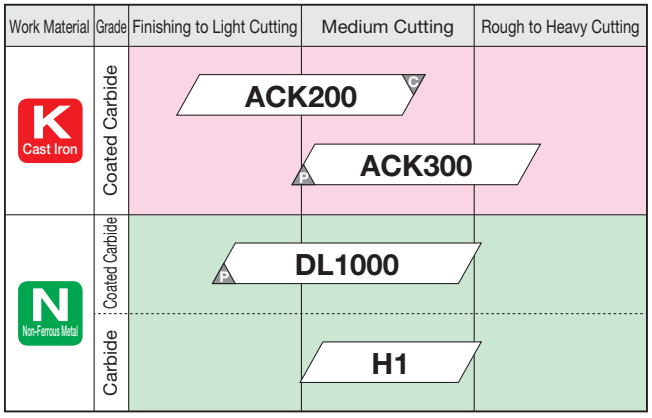
WGXF 13000R(S)
Extra Fine Pitch

WGX 13000EW
Endmill Type

WGX Type

Grade Application Range





The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD, P: PVD, Blank: Uncoated

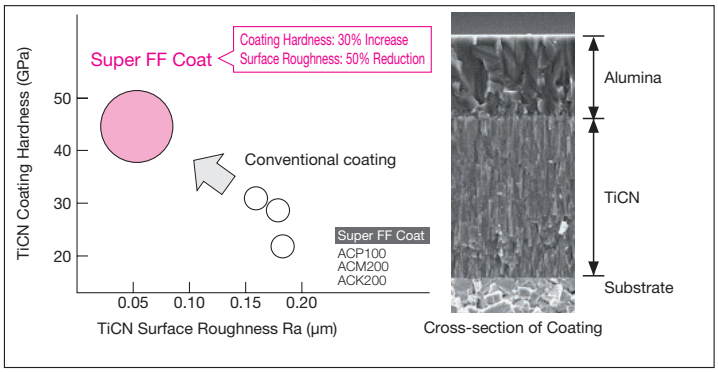
Coating Features

C Super FF Coat (CVD: Chemical Vapor Deposition)

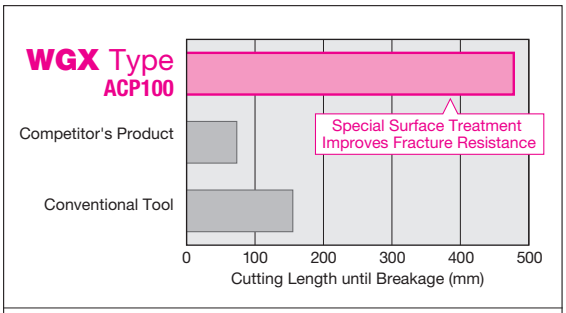
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary CVD process technology.

- Achieves excellent chipping resistance with smooth coating and our coating stress control technology.
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer.
- Achieves more than double the tool life of conventional tools under the same cutting conditions.

Characteristics of the Coating Layer



Fracture Resistance



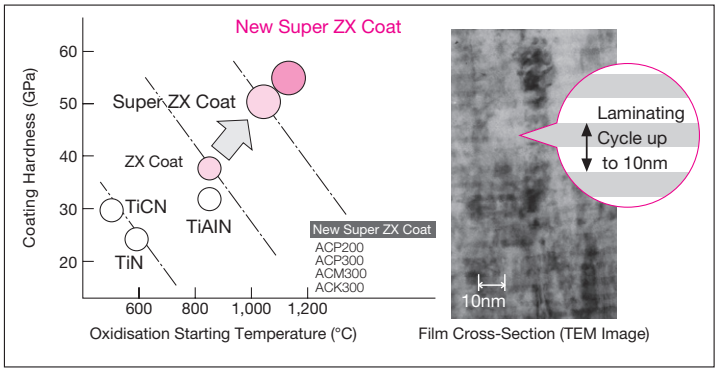
Work Material: S50C Hole Material, Tool: WGX13100R (New ACP100)
Cutting Conditions: v_c=200m/min, f=0.45mm/rev, a_p=2.0mm, a_e=52.0mm Dry

P New Super ZX Coat (PVD: Physical Vapor Deposition)

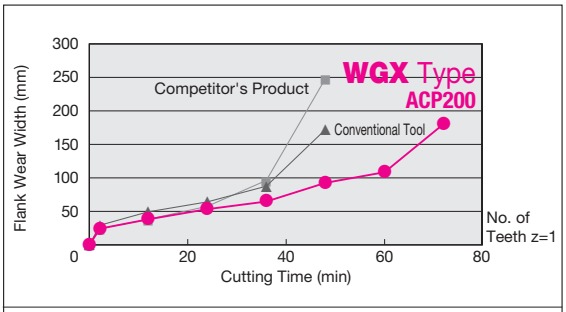
Employs our super multi-layered New Super ZX Coat, which utilises our proprietary thin-layer coating technology and advanced nanotechnology. The coating consists of thousands of alternating, nanometre-thin (1 nanometre=1 billionth of a metre) layers.

- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidisation starting temperature has been increased by 200°C.
- Enables more than 1.5 times the machining speed and efficiency of conventional tools.
- Achieves more than double the tool life of conventional tools under the same cutting conditions.

Characteristics of the Coating Layer



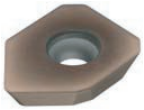
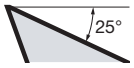
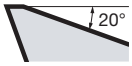
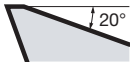
Wear Resistance



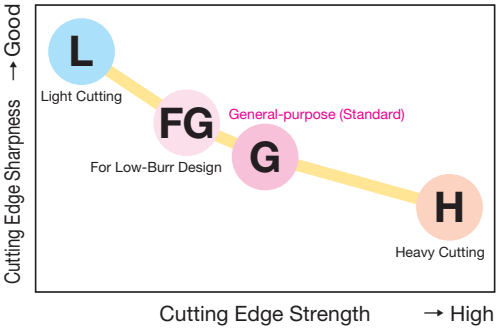
Machine: Machining centre BT50, Work Material: S50C, Tool: WGX13100R (New ACP200)
Cutting Conditions: v_c=200m/min, f_z=0.2mm/t, a_p=2.0mm, a_e=52.0mm Dry

WGX Type

Chipbreaker Selection

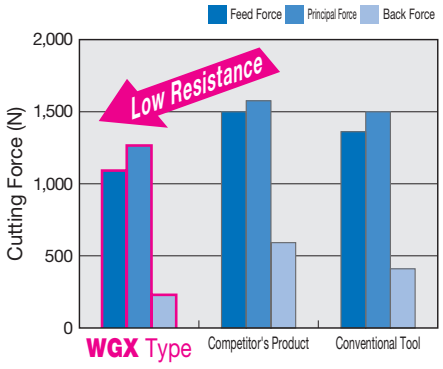
Work Material	P M K S N	P M K S	P K
Chipbreaker	L Type	FG Type	G Type	H Type	W Type
Appearance					
Cutting Edge Cross Section					
Features	Low Resistance	Standard / With Wiper Edge	Standard	High Strength	Wiper
Applications	Light Cutting	General-purpose / Burr Prevention	General-purpose	Heavy Cutting	Finishing Surface Roughness Emphasised

Chipbreaker Selection Guide



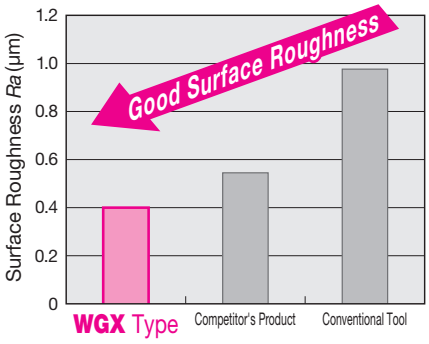
General-purpose G Type Chipbreaker

Comparison of Cutting Force



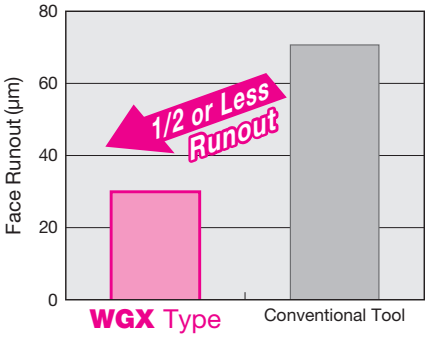
Work Material: S50C, Tool: ø100
Cutting Conditions: v_c=200m/min, f_z=0.2mm/t, a_p=3.0mm

Finishing Surface Roughness Comparison



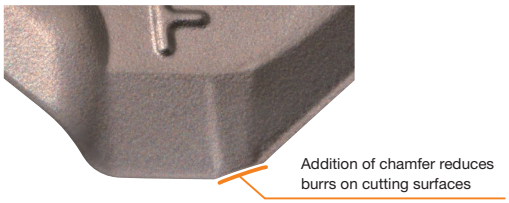
Work Material: S50C, Tool: ø100
Cutting Conditions: v_c=200m/min, f_z=0.2mm/t, a_p=3.0mm

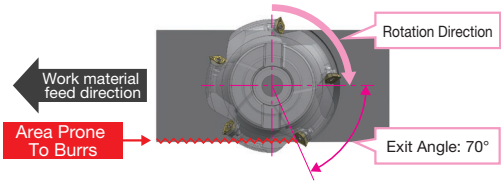
Runout with Insert Attached



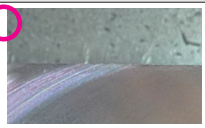
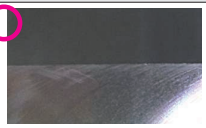
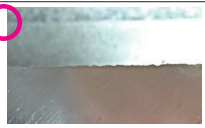
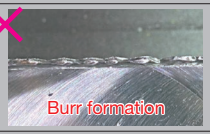
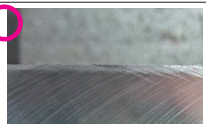
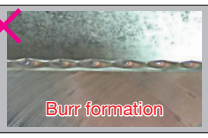
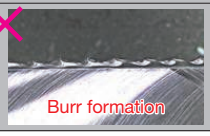
Tool: WGXM13100R (ø100)
Number of Teeth: 7

FG Type Chipbreaker with Low-Burr Design





Machined Surface Comparison

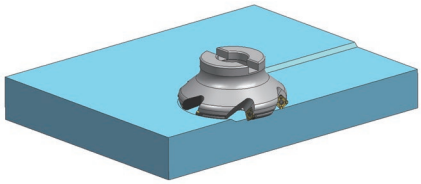
Work Material	FG Type	G Type	Conventional Tool	Competitor's Product
S50C	○ 	○ 	○ 	×  Burr formation
SUS304	○ 	○ 	×  Burr formation	×  Burr formation
SCM440	○ 	×  Burr formation	×  Burr formation	×  Burr formation

Machine: Machining centre BT50, Tool: WGX13100R (ø100), Insert Grade: ACP200
Cutting Conditions: v_c=200m/min, f_z=0.2mm/t, a_p=3.0mm, a_e=80mm Dry

Application Examples

● SCM420 Block Material

G Type

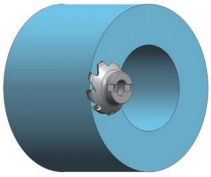


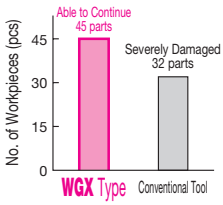
Surface roughness greatly improved compared to competitors' products.
Superior sharpness and reduced cutting force. Stable cutting can be performed with a low cutting load.

Tool: WGX13125R (ø125) Insert: SEMT13T3AGSR-G (ACP200)
Cutting Conditions: v_c=220m/min, f_z=0.25mm/t, a_p=2.0mm, a_e=125mm Dry

● ST-52 Pipe Steel

G Type



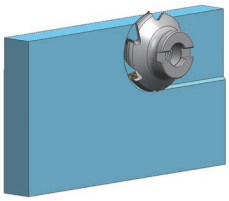


The conventional tool suffered severe damages after 32 parts,
while the WGX Type only had minor wear after 45 parts and was able to continue.

Tool: WGXM13125R (ø125) Insert: SEMT13T3AGSR-G (ACP200)
Cutting Conditions: v_c=300m/min, f_z=0.12mm/t, a_p=4.0mm, a_e=100mm Wet

● SS400 Machine Components

FG Type

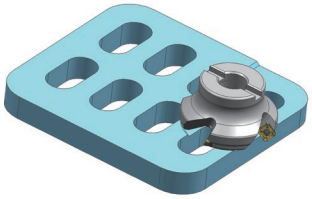


For low-rigidity machines, chattering occurred with conventional tools,
but the WGX Type reduces chattering, as well as the occurrence of exit burrs.

Tool: WGX13125R (ø125) Insert: SEMT13T3AGSR-FG (ACP200)
Cutting Conditions: v_c=200m/min, f_z=0.2mm/t, a_p=1.0mm, a_e=100mm Wet

● SCM440 Machine Components

H Type



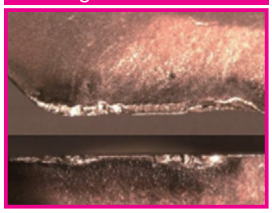
In heavy interrupted cutting of pocketed plates, the WGX Type achieves a longer tool life
with no breakages and a more favourable surface roughness than our competitors' products.

Tool: WGX13080R (ø80) Insert: SEMT13T3AGSR-H (ACP200)
Cutting Conditions: v_c=200m/min, f_z=0.15mm/t, a_p=3.0mm Dry

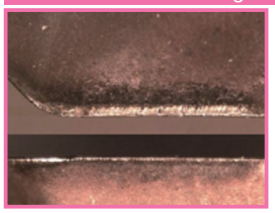
● SUS304 Machine Components

G Type

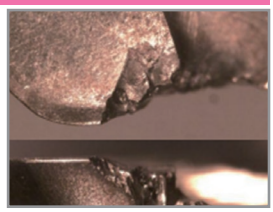
Cutting Distance: 8.25m | Cutting Distance: 3.75m



WGX Type



WGX Type



Competitor's Product

PVD coating, which has high hardness and excellent oxidation resistance,
provides stable tool wear and a tool life that is over twice as long as that of our competitors.

Tool
Cutter: WGX13100RS (ø100)
Insert: SEMT13T3AGSR-G (ACM300)

Cutting Conditions: v_c=150m/min
f_z=0.15mm/t
a_p=2.0mm
a_e=20.0mm Dry

● SUS630/H900 Machine Components

G Type

Cutting Distance: 15m | Cutting Distance: 7.5m

WGX Type

WGX Type

Competitor's Product

The high wear resistance of CVD coating provides stable tool wear and
at least double the tool life of our competitors' products.

Tool
Cutter: WGX13100RS (ø100)
Insert: SEMT13T3AGSR-G (ACM200)

Cutting Conditions: v_c=150m/min
f_z=0.1mm/t
a_p=1.0mm
a_e=75.0mm Dry

● S50C Machine Components

Stable cutting is achieved even with compact machines.

Comparison of Cutting Force

L Type

	Cutting Width a_e			
	10.0mm	20.0mm	30.0mm	40.0mm
WGX Type	○	○	○	○
Competitor's Product	○	○	× Spindle stoppage	× Spindle stoppage

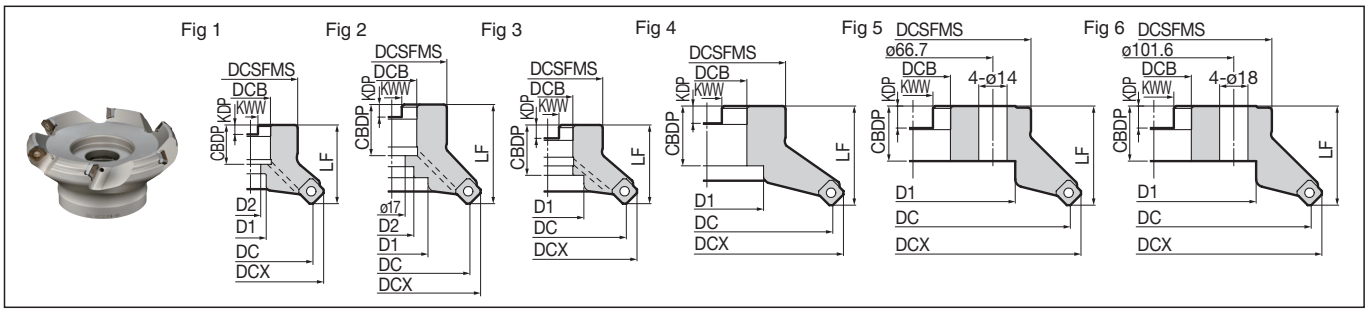
Machine: Machining centre **BT30**
Tool: WGX13063RS (ø63) Insert: SEMT13T3AGSR-L (ACP200)
Cutting Conditions: v_c=300m/min, f_z=0.1mm/t, a_p=4.0mm Dry

WGX 13000R(S) Type

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

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

6mm 45°



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGX 13040RS**	●	**40**	52	32	40	**16**	8.4	5.6	18	14	9	3	0.3	1
	13050RS	●	**50**	62	40	40	**22**	10.4	6.3	20	18	11	3	0.4	1
	13063RS	●	**63**	76	50	40	**22**	10.4	6.3	20	18	11	4	0.6	1
	13080RS	●	***80**	93	55	50	**27**	12.4	7	25	20	13.5	4	1.2	1
	13100RS	●	**100**	113	70	50	**32**	14.4	8.5	32	46	—	5	1.6	3
	13125RS	●	**125**	138	80	63	**40**	16.4	9.5	29	52	29	6	2.8	1
	13160RS	●	**160**	173	130	63	**40**	16.4	9.5	29	88	—	7	4.5	5
	13200RS	●	**200**	213	150	63	**60**	25.7	14	35	130	—	8	7.1	6
	13250RS	●	**250**	263	190	63	**60**	25.7	14	35	160	—	10	11.2	6
Inch	**WGX 13080R**	●	***80**	93	60	50	**25.4**	9.5	6	25	20	13	4	1.2	1
	13100R	●	***100**	113	70	63	**31.75**	12.7	8	32.5	46	28	5	2.3	2
	13125R	●	**125**	138	80	63	**38.1**	15.9	10	35.5	55	30	6	2.9	1
	13160R	●	**160**	173	100	63	**50.8**	19.1	11	38	72	—	7	4.5	4
	13200R	●	**200**	213	150	63	**47.625**	25.4	14	35	130	—	8	7.1	6
	13250R	●	**250**	263	190	63	**47.625**	25.4	14	35	150	—	10	11.2	6

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter. * Sizes ø160 mm and above do not have coolant holes.

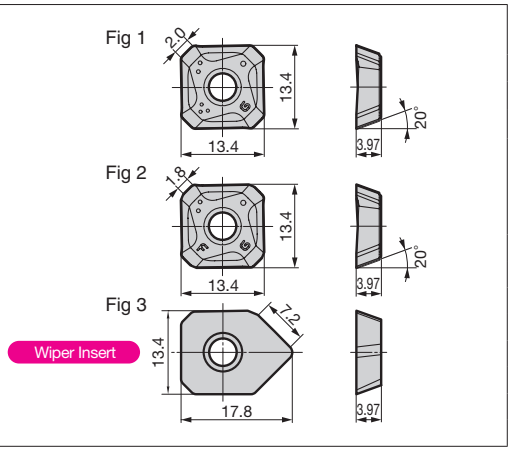
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

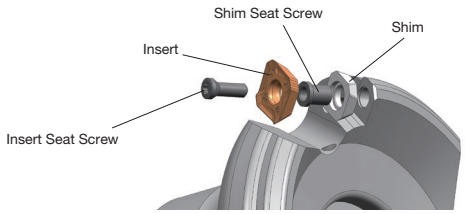
Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light	P			K		M S		K N	N	
	General-purpose		P M	P M	K		M S	M S		N	P
	Roughing		P M	P M		K		M S			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A
SEET 13T3AGFR-L									●	●	
13T3AGSR-L		●	●	●	●	●	●	●			●
13T3AGSR-G		●	●	●	●	●	●	●			●
SEMT 13T3AGSR-L		●	●	●	●	●	●	●			
13T3AGSR-G		●	●	●	●	●	●	●			
13T3AGSR-H		●	●	●	●	●	●	●			
13T3AGSR-FG		●	●	●	●	●	●	●			
XEEW 13T3AGER-WR			●			●					●

Applications	Fig
Light Cutting (For Non-Ferrous Metals)	1
Light Cutting	1
General-purpose	1
Light Cutting	1
General-purpose	1
Heavy Cutting	1
Low-burr design	2
Wiper Insert	3



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seizure Cream
WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P

Identification Code

WGX 13 040 R S

Cutter Series | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	–	160-**210**-250	0.15-**0.23**-0.30	ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	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	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.

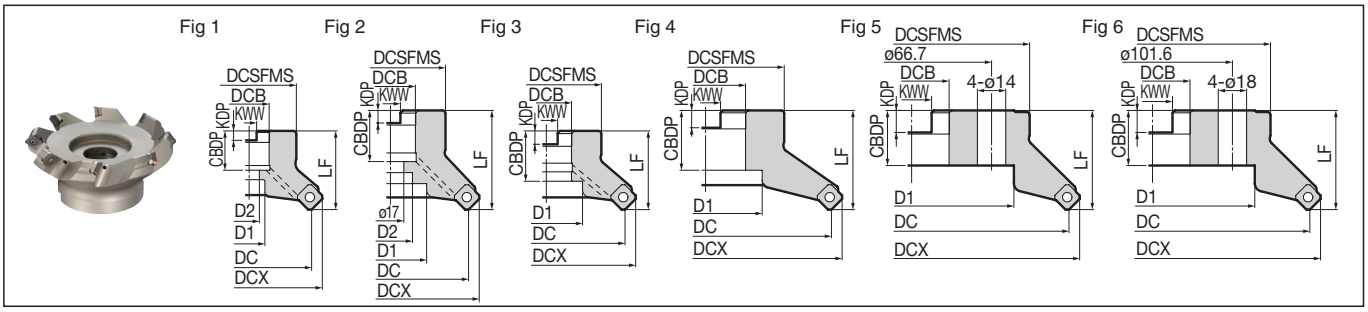
N·m Recommended Tightening Torque (N·m)

WGXM 13000R(S) Type

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

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

6mm 45°



Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGXM 13050RS**	●	**50**	62	40	40	**22**	10.4	6.3	20	18	11	4	0.4	1
	13063RS	●	**63**	77	50	40	**22**	10.4	6.3	20	18	11	5	0.6	1
	13080RS	●	***80**	94	55	50	**27**	12.4	7	25	20	13.5	6	1.1	1
	13100RS	●	**100**	114	70	50	**32**	14.4	8.5	32	46	—	7	1.6	3
	13125RS	●	**125**	139	80	63	**40**	16.4	9.5	29	52	29	8	2.8	1
	13160RS	●	**160**	174	130	63	**40**	16.4	9.5	29	88	—	10	4.5	5
	13200RS	●	**200**	214	150	63	**60**	25.7	14	35	130	—	12	7.0	6
	13250RS	●	**250**	264	190	63	**60**	25.7	14	35	160	—	14	11.1	6
Inch	**WGXM 13080R**	●	***80**	94	60	50	**25.4**	9.5	6	25	20	13	6	1.1	1
	13100R	●	***100**	114	70	63	**31.75**	12.7	8	32.5	46	28	7	2.2	2
	13125R	●	**125**	139	80	63	**38.1**	15.9	10	35.5	55	30	8	2.9	1
	13160R	●	**160**	174	100	63	**50.8**	19.1	11	38	72	—	10	4.5	4
	13200R	●	**200**	214	150	63	**47.625**	25.4	14	35	130	—	12	7.0	6
	13250R	●	**250**	264	190	63	**47.625**	25.4	14	35	150	—	14	11.1	6

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter. * Sizes ø160 mm and above do not have coolant holes.

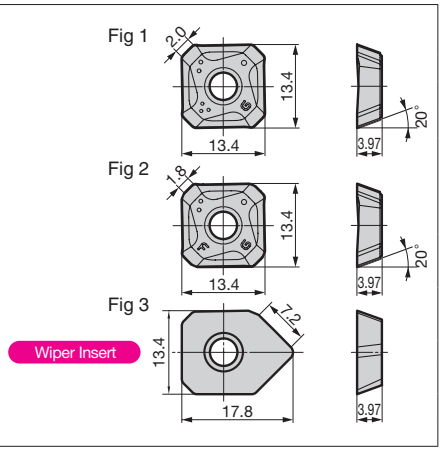
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

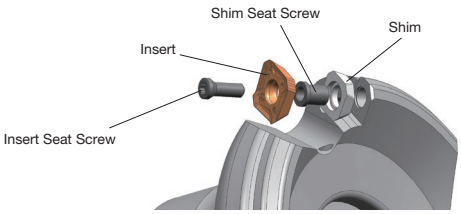
Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light	P			K		M S		K N	N	
	General-purpose		P M	P M	K		M S	M S		N	P
	Roughing		P M	P M		K		M S			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A
SEET 13T3AGFR-L									●	●	
13T3AGSR-L		●	●	●	●	●	●	●			●
13T3AGSR-G		●	●	●	●	●	●	●			●
SEMT 13T3AGSR-L		●	●	●	●	●	●	●			
13T3AGSR-G		●	●	●	●	●	●	●			
13T3AGSR-H		●	●	●	●	●	●	●			
13T3AGSR-FG		●	●	●	●	●	●	●			
XEEW 13T3AGER-WR			●			●					●

Applications	Fig
Light Cutting (For Non-Ferrous Metals)	1
Light Cutting	1
General-purpose	1
Light Cutting	1
General-purpose	1
Heavy Cutting	1
Low-burr design	2
Wiper Insert	3



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Identification Code

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

Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seizure Cream
WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	–	160-**210**-250	0.15-**0.23**-0.30	ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	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	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.

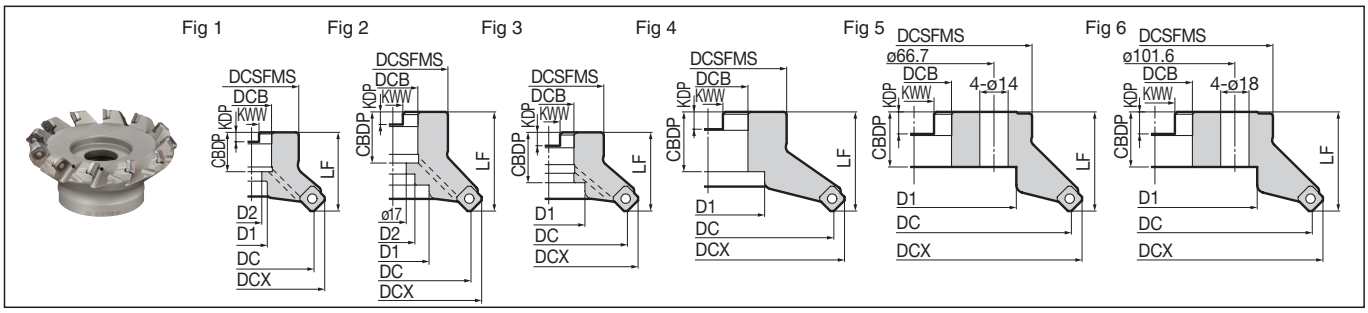
N·m Recommended Tightening Torque (N·m)

WGXF 13000R(S) Type

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

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

6mm 45°



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGXF 13050RS**	●	**50**	62	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	13063RS	●	**63**	77	50	40	**22**	10.4	6.3	20	18	11	6	0.6	1
	13080RS	●	***80**	94	55	50	**27**	12.4	7	25	20	13.5	8	1.1	1
	13100RS	●	**100**	114	70	50	**32**	14.4	8.5	32	46	—	10	1.5	3
	13125RS	●	**125**	139	80	63	**40**	16.4	9.5	29	52	29	12	2.7	1
	13160RS	●	**160**	174	130	63	**40**	16.4	9.5	29	88	—	16	4.5	5
	13200RS	●	**200**	214	150	63	**60**	25.7	14	35	130	—	20	6.9	6
	13250RS	●	**250**	264	190	63	**60**	25.7	14	35	160	—	24	11.0	6
Inch	**WGXF 13080R**	●	***80**	94	60	50	**25.4**	9.5	6	25	20	13	8	1.1	1
	13100R	●	***100**	114	70	63	**31.75**	12.7	8	32.5	46	28	10	2.1	2
	13125R	●	**125**	139	80	63	**38.1**	15.9	10	35.5	55	30	12	2.8	1
	13160R	●	**160**	174	100	63	**50.8**	19.1	11	38	72	—	16	4.5	4
	13200R	●	**200**	214	150	63	**47.625**	25.4	14	35	130	—	20	6.9	6
	13250R	●	**250**	264	190	63	**47.625**	25.4	14	35	150	—	24	11.0	6

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter. * Sizes ø160 mm and above do not have coolant holes.

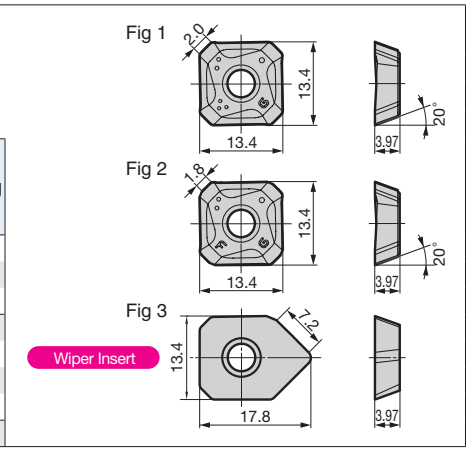
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

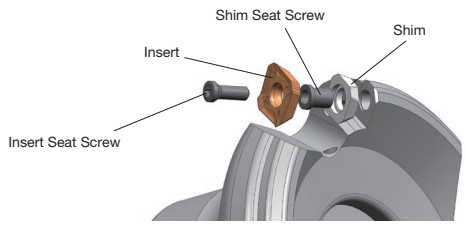
Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light	P			K		M S		K N	N	
	General-purpose		P M	P M	K		M S	M S		N	P
	Roughing		P M	P M		K		M S			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A
SEET 13T3AGFR-L									●	●	
13T3AGSR-L		●	●	●	●	●	●	●			●
13T3AGSR-G		●	●	●	●	●	●	●			●
SEMT 13T3AGSR-L		●	●	●	●	●	●	●			
13T3AGSR-G		●	●	●	●	●	●	●			
13T3AGSR-H		●	●	●	●	●	●	●			
13T3AGSR-FG		●	●	●	●	●	●	●			
XEEW 13T3AGER-WR			●			●					●

Cat. No.	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



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Identification Code

WGX F 13 050 R S

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

Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seizure Cream
WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	–	160-**210**-250	0.15-**0.23**-0.30	ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	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	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.

N·m Recommended Tightening Torque (N·m)

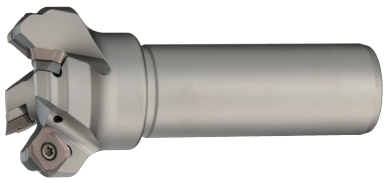
WGX 13000EW Type

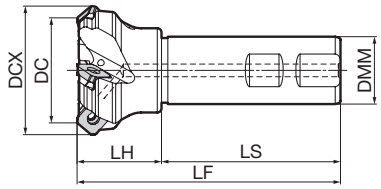
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

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

6mm 45°

Fig 1





Body (Shank Type)

Dimensions (mm)

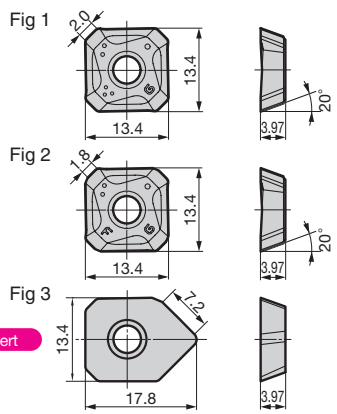
Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WGX 13032EW	●	**32**	44	32	40	85	125	3	1
13040EW	●	**40**	52	32	40	85	125	3	1
13050EW	●	**50**	62	32	40	85	125	4	1
13063EW	●	**63**	76	32	40	85	125	5	1

Inserts are sold separately. ø32 mm size does not have seats.

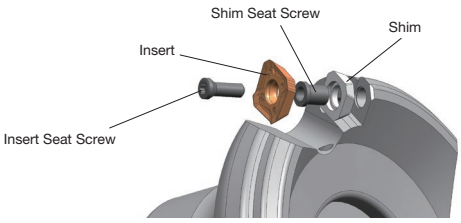
Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M		K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	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



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Parts

Applicable Cutter	Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)	Anti-seizure Cream
Other than those below WGX13000EW Type	WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035	SUMI-P
WGX13032EW Type	—	—	BFTX03512IP	N·m 3.0	TRDR15IP	—	SUMI-P

Identification Code

WGX 13 032 EW

Cutter Series | Insert Size | Cutter Dia. | Endmill Type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	–	160-**210**-250	0.15-**0.23**-0.30	ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	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	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.

WGC 3000 Type

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

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

4mm 45°

Fig 1

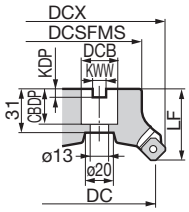
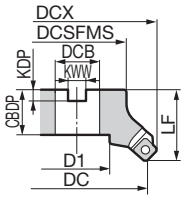


Fig 2



Body (WGC 3000 Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Bolt D1	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**WGC 3080R**	●	***80**	89	60	50	**25.4**	—	9.5	6	25	6	1.1	1
	3100R	●	**100**	109	70	50	**31.75**	46	12.7	8	32	7	1.5	2

Inserts are sold separately.

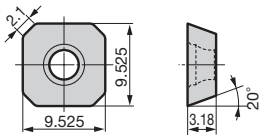
For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

Insert

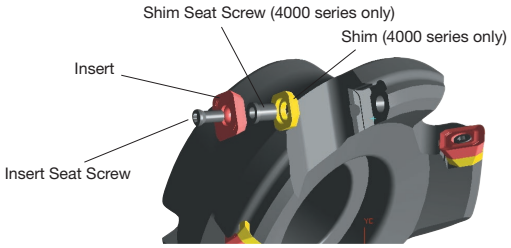
Dimensions (mm)

Grade		Coated Carbide					DLC	Carbide			Cermet	SUMIDIA		
Process	High-speed / Light	P			K		N			K/N		N	N	
	General-purpose		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 H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



Parts

Applicable Cutter	Screw		Wrench
WGC 3000 Type	BFTX0307IP	N·m 2.0	TRDR10IP

SUMI-P anti-seizure cream is included in the package.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.18**-0.25	ACP200
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.18**-0.20	ACP200
M	Stainless Steel	—	160-**210**-250	0.15-**0.18**-0.20	ACP300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.18**-0.20	ACK200
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-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.

N·m Recommended Tightening Torque (N·m)

WGC(F)4000 Type

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

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

6mm 45°

Fig 1

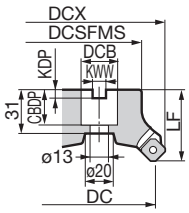


Fig 2

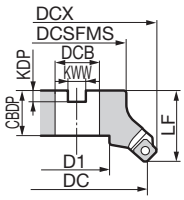
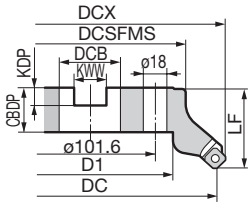


Fig 3



Body (WGC 4000 Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Bolt D1	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**WGC 4080R**	●	***80**	93	60	50	**25.4**	—	9.5	6	25	4	1.0	1
	4100R	●	**100**	113	70	50	**31.75**	46	12.7	8	32	5	1.5	2
	4125R	●	**125**	138	80	63	**38.1**	56	15.9	10	38	6	2.6	2
	4160R	●	**160**	173	100	63	**50.8**	72	19.1	11	38	7	4.0	2
	4200R	●	**200**	213	130	63	**47.625**	130	25.4	14	35	8	6.6	3

Inserts are sold separately.

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

Body (WGCF 4000 Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Bolt D1	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**WGCF 4080R**	●	***80**	93	60	50	**25.4**	—	9.5	6	25	8	1.0	1
	4100R	●	**100**	113	70	50	**31.75**	46	12.7	8	32	10	1.5	2
	4125R	●	**125**	138	80	63	**38.1**	56	15.9	10	38	12	2.6	2
	4160R	●	**160**	173	100	63	**50.8**	72	19.1	11	38	16	4.0	2
	4200R	●	**200**	213	130	63	**47.625**	130	25.4	14	35	20	6.6	3

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade		Coated Carbide					DLC	Carbide			Cermet	SUMIDIA		
Process	High-speed / Light	P			K		N			K N		N	N	
	General-purpose		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

Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Fig 1

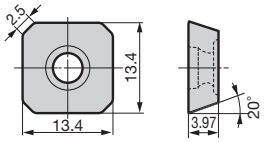
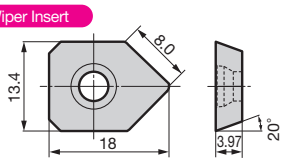
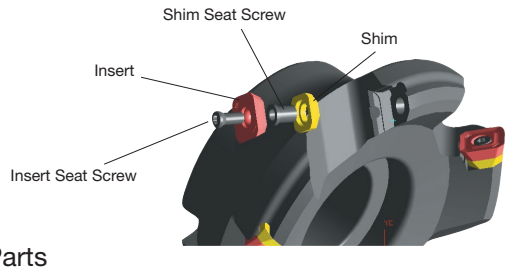


Fig 2

Wiper Insert





Parts

Applicable Cutter	Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)
WGC(F)4000 Type	WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035

SUMI-P anti-seizure cream is included in the package.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.20**-0.30	ACP200
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.20**-0.25	ACP200
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACP300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACK200
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-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.

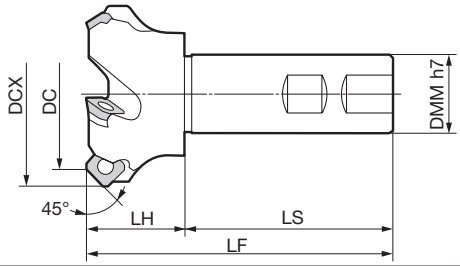
N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

WGC 3000EW / 4000EW Type

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

4mm 45° (3000 Type) | 6mm 45° (4000 Type)

Fig 1



Body (WGC 3000EW Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WGC 3020EW	●	**20**	29	20	40	60	100	2	1
3025EW	●	**25**	34	20	40	60	100	3	1
3032EW	●	**32**	41	32	40	85	125	4	1
3040EW	●	**40**	49	32	40	85	125	4	1
3050EW	●	**50**	59	32	40	85	125	5	1
3063EW	●	**63**	72	32	40	85	125	6	1

Body (WGC 4000EW Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WGC 4032EW	●	**32**	44	32	40	85	125	3	1
4040EW	●	**40**	52	32	40	85	125	3	1
4050EW	●	**50**	62	32	40	85	125	4	1
4063EW	●	**63**	76	32	40	85	125	5	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide					DLC	Carbide			Cermet	SUMIDIA	
Process	High-speed / Light	P			K		N			K N		N	N
	General-purpose		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
SEET 0903AGFN-L		●	●	●	●	●	●			●		—	—
0903AGSN-G		●	●	●	●	●			●		●	—	—
0903AGSN-N		●	●	●	●	●					●	—	—
SEMT 0903AGSN-L		●	●	●	●	●						—	—
0903AGSN-G		●	●	●	●	●		●				—	—
SEET 13T3AGFN-L		●	●	●	●	●	●		●	●		—	—
13T3AGSN-G		●	●	●	●	●			●		●	—	—
13T3AGSN-N		●	●	●	●	●		●			●	—	—
SEMT 13T3AGSN-L		●	●	●	●	●						—	—
13T3AGSN-G		●	●	●	●	●		●				—	—
13T3AGSN-H		●	●	●	●	●						—	—
NF-SECW 13T3AGTN-N		—	—	—	—	—	—	—	—	—	—	●	▲
NF-XEEW 13T3AGFR-W		—	—	—	—	—	—	—	—	—	—	●	▲
XEEW 13T3AGER-W						●					●	—	—

Applicable Cutters	Fig
WGC3000 Type	1
	1
	1
	1
	1
WGC4000 Type WGCF4000 Type	2
	2
	2
	2
	2
	2
	2
	3
	3

Fig 1

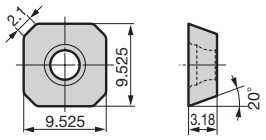


Fig 2

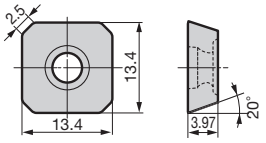
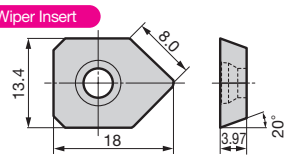


Fig 3

Wiper Insert



Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Spare Parts (Common)

Applicable Endmill	Shim	Shim Screw	Screw		Wrench	Wrench (For Shims)
WGC 3000EW	—	—	BFTX0307IP	N·m 2.0	TRDR10IP	—
WGC 4032EW			BFTX03512IP	N·m 3.0	TRDR15IP	
WGC 4000EW (Except WGC 4032EW)	WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035

SUMI-P anti-seizure cream is included in the package.

Recommended Cutting Conditions

WGC3000EW Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
	Die Steel	200 to 220 HB	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

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 v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	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 220 HB	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

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)

WGC 3000RS / WGC(F) 4000RS Type

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

4mm 45° (3000 Type) | 6mm 45° (4000 Type)

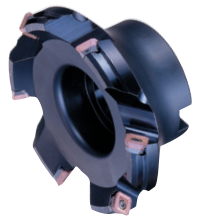
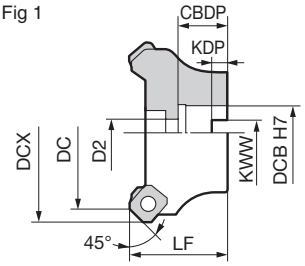


Fig 1



Body (WGC 3000RS Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Bore Dia. DCB	Bolt D2	Keyway Depth KDP	Keyway Width KWW	Height LF	Mounting Depth CBDP	Number of Teeth	Fig
Metric	WGC 3032RS	●	**32**	41	16	9	5.6	8.4	40	18	4	1
	3040RS	●	**40**	49	16	9	5.6	8.4	40	18	4	1
	3050RS	●	**50**	59	22	11	6.3	10.4	40	20	5	1
	3063RS	●	**63**	72	22	11	6.3	10.4	40	20	6	1

Body (WGC 4000RS Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Bore Dia. DCB	Bolt D2	Keyway Depth KDP	Keyway Width KWW	Height LF	Mounting Depth CBDP	Number of Teeth	Fig
Metric	WGC 4040RS	●	**40**	52	16	9	5.6	8.4	40	18	3	1
	4050RS	●	**50**	63	22	11	6.3	10.4	40	20	3	1
	4063RS	●	**63**	76	22	11	6.3	10.4	40	20	4	1

Body (WGCF 4000RS Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Bore Dia. DCB	Bolt D2	Keyway Depth KDP	Keyway Width KWW	Height LF	Mounting Depth CBDP	Fig
Metric	WGCF 4050RS	●	**50**	63	22	11	6.3	10.4	40	20	1
	4063RS	●	**63**	76	22	11	6.3	10.4	40	20	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide					DLC	Carbide			Cermet	SUMIDIA			
Process	High-speed / Light	P			K		N			K/N		N	N		
	General-purpose		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

Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Fig 1

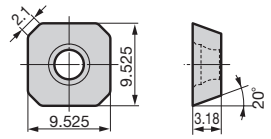


Fig 2

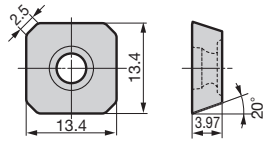
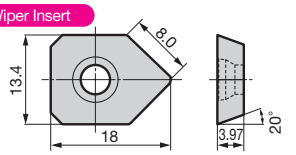


Fig 3

Wiper Insert



Spare Parts (Common)

Applicable Endmill	Shim	Shim Screw	Screw		Wrench	Wrench (For Shims)
WGC 3000RS Type	—	—	BFTX0307IP	N·m 2.0	TRDR10IP	—
WGC 4000RS Type WGCF 4000RS type	WGCS13R	BW0507F	BFTX03512IP	N·m 3.0	TRDR15IP	LH035

SUMI-P anti-seizure cream is included in the package.

Recommended Cutting Conditions

WGC3000RS Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.15**-0.20	ACP200
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
	Die Steel	200 to 220 HB	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

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.

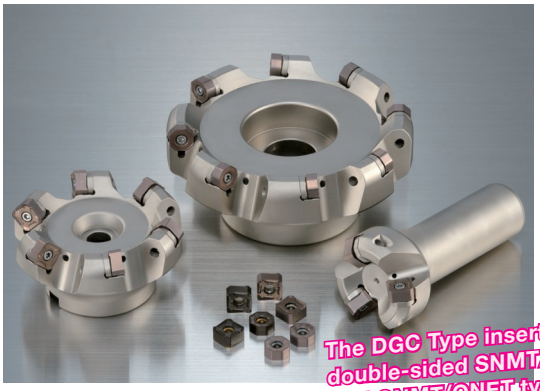
WGC4000RS/WGCF4000RS Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	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 220 HB	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

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)

DGC Type



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

General Features

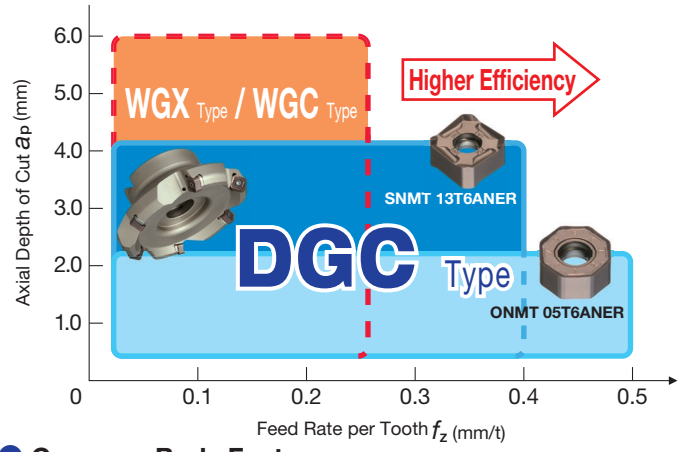
SEC-Sumi Dual Mill DGC Type employs double-sided inserts with up to 16 corners for excellent economy. This is a general-purpose cutter featuring high cutting edge strength for high efficiency milling and a low-burr chipbreaker design that provides high machined surface quality.

Features

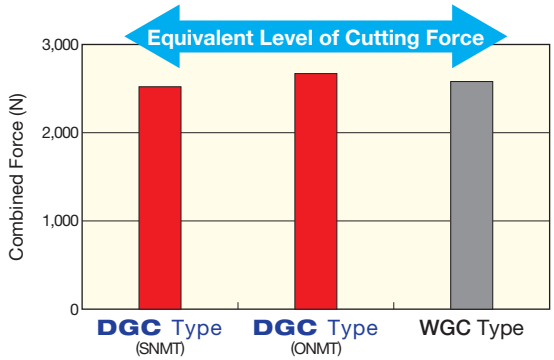
Same cutting performance as single-sided inserts plus superior economy

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

● Recommended Cutting Conditions for General Steel



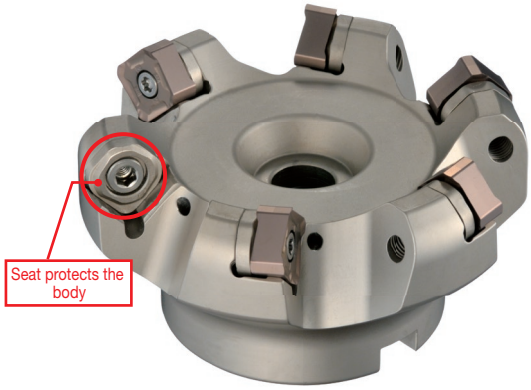
● Comparison of Cutting Force



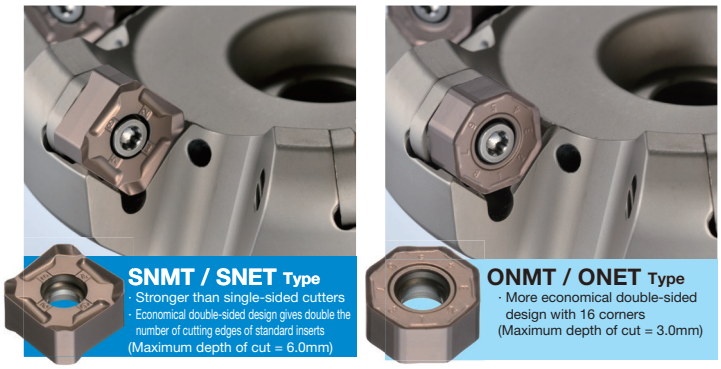
Work Material: SCM435 Tool: ø100
Cutting Conditions: V_c = 200m/min, f_z = 0.3mm/t, a_p = 3mm, a_e = 85mm

Common Body Features

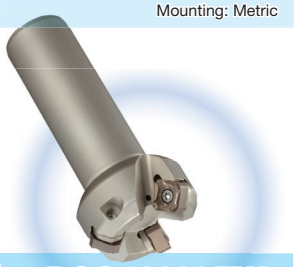
Two types of inserts can be used with a single body depending on the milling application, to help reduce tool costs.



Use two types of insert for different applications

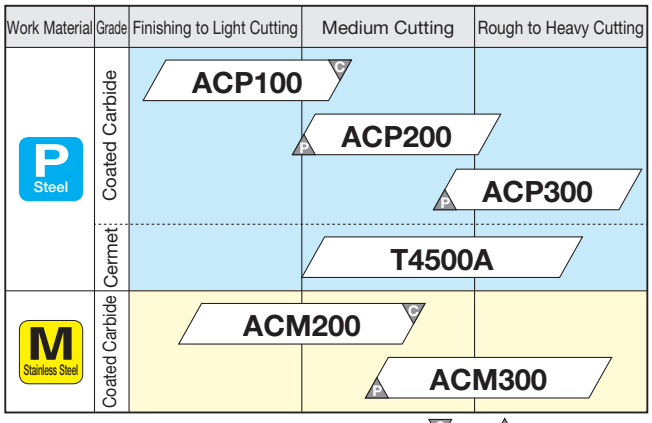


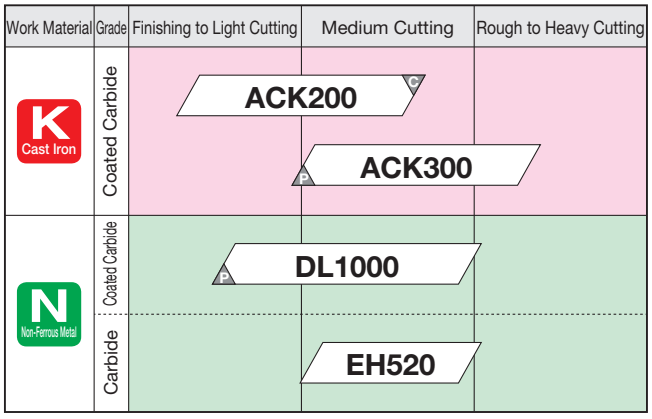
Choose a tool to suit your application from a comprehensive lineup

Cutter Diameter: ø40mm to ø250mm No. of Teeth: 3 to 10 Mounting: Metric/Inch	Cutter Diameter: ø50mm to ø250mm No. of Teeth: 4 to 14 Mounting: Metric/Inch	Cutter Diameter: ø50mm to ø250mm No. of Teeth: 5 to 18 Mounting: Metric/Inch	Cutter Diameter: ø40mm to ø63mm No. of Teeth: 3 to 4 Mounting: Metric
			
DGC 13000R(S) Standard Pitch	DGCM 13000R(S) Fine Pitch	DGC F 13000R(S) Extra Fine Pitch	DGC 13000 EW Endmill Type

DGC Type

Grade Application Range





The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD, P: PVD, Blank: Uncoated

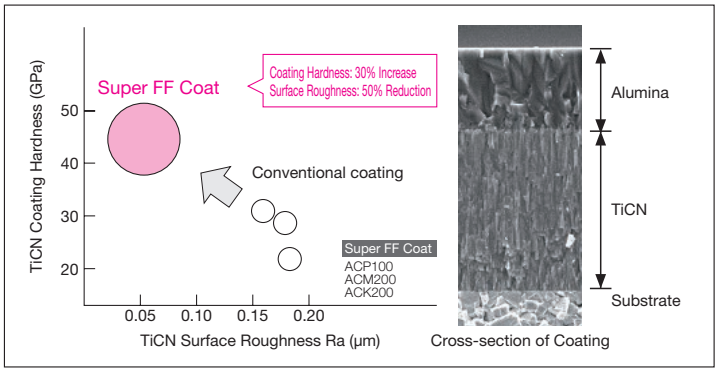
Coating Features

C Super FF Coat (CVD: Chemical Vapor Deposition)

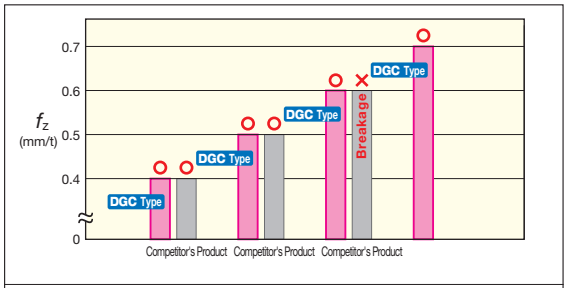
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary CVD process technology

- Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- Achieves more than double the tool life of conventional tools under the same cutting conditions

Characteristics of the Coating Layer



Fracture Resistance



Work Material: S50C Hole Material, Tool: ø100

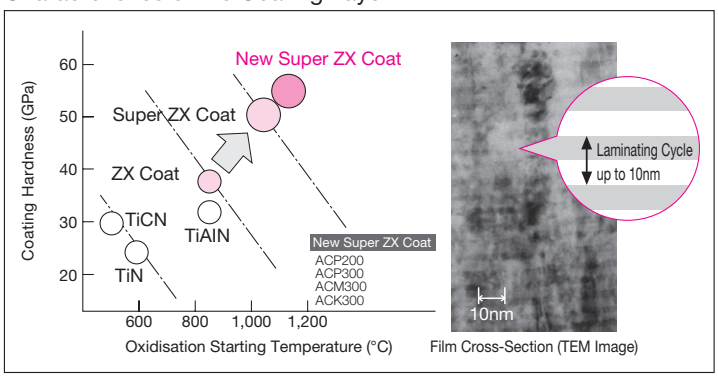
Cutting Conditions: v_c = 150m/min, a_p = 3.0mm, a_e = 75mm, Dry

P New Super ZX Coat (PVD: Physical Vapor Deposition)

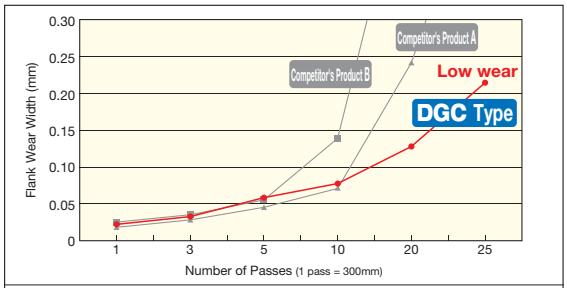
Employs our super multi-layered New Super ZX Coat, which utilises our proprietary thin-layer coating technology and advanced nanotechnology. The coating consists of thousands of alternating, nanometre-thin (1 nanometre = 1 billionth of a metre) layers.

- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidisation starting temperature has been increased by 200°C.
- Enables more than 1.5 times the machining speed and efficiency of conventional tools.
- Achieves more than double the tool life of conventional tools under the same cutting conditions

Characteristics of the Coating Layer



Wear Resistance

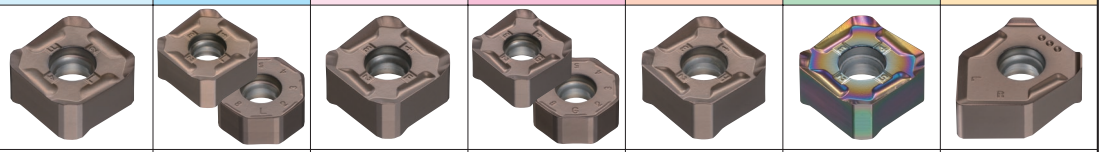


Work Material: SCM435, Tool: ø100

Cutting Conditions: v_c = 200m/min, f_z = 0.15mm/t, a_p = 2.0mm, a_e = 85mm, Dry

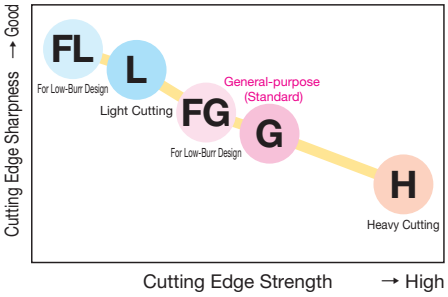
DGC Type

Chipbreaker Selection

Work Material	P M K S					N	P K
Chipbreaker	FL Type	L Type	FG Type	G Type	H Type	S Type	W Type
Appearance							
Cutting Edge Cross Section	30°	30°	25°	25°	25°	30°	25°
8							Double-Sided, 2 Corners
16	Not Available	30°	Not Available	23°	Not Available	Not Available	(*)
Features	Low Resistance / With Wiper Edge	Low Resistance	Standard / With Wiper Edge	Standard	High Strength	High Rake	Wiper
Applications	Light Cutting / Burr Prevention	Light Cutting	General-purpose / Burr Prevention	General-purpose	Heavy Cutting	Non-ferrous Metal	Finishing Surface Roughness Emphasised

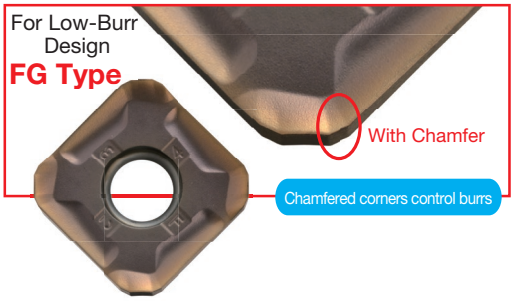
*Can only be used in conjunction with 8 corner inserts

Chipbreaker Selection Guide

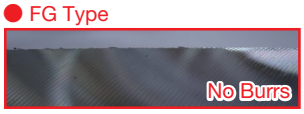


Improved Milling Quality

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

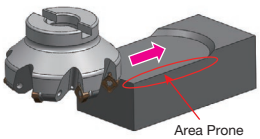


● FG Type



● Competitor's Product

FG type inserts with low-burr design enable high-quality milling with few burrs and minimal edge chipping



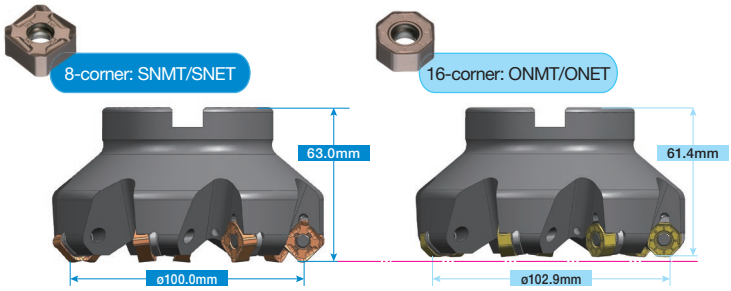
Work Material：SCM435

Tool：ø100

Cutting Conditions：v_c=200m/min, f_z =0.2mm/t

a_p=3mm, a_e=85mm

Cutter Diameter And Cutting Edge Height



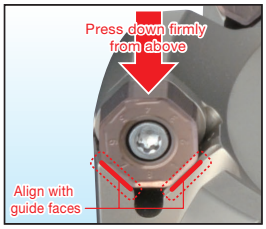
⚠ Note that while the 8-corner and 16-corner types can be used interchangeably on the same body, they have different cutter diameters, cutting edge heights and maximum cutting depths.

Body Shape (Example: With Cutter Diameter of 100mm)

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

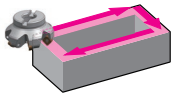
16-corner Mounting Method

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



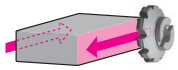
DGC Type

Application Examples



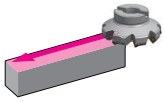
Part / Work Material		Cast Steel Automotive Components	
Tool	Type	DGC Type	Conventional Tool
	Body	DGCM13080R (ø80)	ø80
	Insert	SNMT13T6ANER-G (8 Corners)	Single-Sided Specification (4 Corners)
	Number of Teeth	6	6
	Insert Grade	ACP200	PVD Grade
Cutting Conditions	Cutting Speed (m/min)	160	160
	Feed Rate per Tooth (mm/t)	0.31	0.31
	Feed Rate (mm/min)	1,184	1,184
	Axial Depth of Cut (mm)	3	3
	Cutting Width (mm)	60	60
	Number of Workpieces (pcs/corner)	2	2
	Dry/Wet	Wet	Wet

Can be used under the same conditions as the single-sided inserts. Improves tool economy by doubling the number of cutting edges.



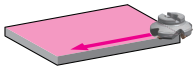
Par t/ Work Material		Machine Components / S50C	
Tool	Type	DGC Type	Conventional Tool
	Body	DGCM13160R (ø160)	ø160
	Insert	SNMT13T6ANER-FG (8 Corners)	Single-Sided Specification (8 Corners)
	Number of Teeth	10	10
	Insert Grade	ACP200	PVD Grade
Cutting Conditions	Cutting Speed (m/min)	133	133
	Feed Rate per Tooth (mm/t)	0.132	0.132
	Feed Rate (mm/min)	350	350
	Axial Depth of Cut (mm)	2.5	2.5
	Cutting Time	287min	287min
	Dry/Wet	Dry	Dry

Reduces burrs and achieves higher milling quality compared to conventional tools.



Part / Work Material		Machine Components / Cast Steel	
Tool	Type	DGC Type	Conventional Tool
	Body	DGCM13125 (ø125)	ø125
	Insert	ONMT05T6ANER-G (16 Corners)	Double-Sided Specification (8 Corners)
	Number of Teeth	8	8
	Insert Grade	ACP200	PVD Grade
Cutting Conditions	Cutting Speed (m/min)	160	160
	Feed Rate per Tooth (mm/t)	0.29	0.29
	Feed Rate (mm/min)	945	945
	Axial Depth of Cut (mm)	2.5	2.5
	Dry/Wet	Dry	Dry

Reduces tool costs by doubling the number of cutting edges.



Part / Work Material		Machine Components / Stainless Steel	
Tool	Type	DGC Type	Conventional Tool
	Body	DGC13100R (ø100)	ø100
	Insert	SNET13T6ANER-G (8 Corners)	Single-Sided Specification (4 Corners)
	Number of Teeth	5	5
	Insert Grade	ACM300	PVD Grade
Cutting Conditions	Cutting Speed (m/min)	150	150
	Feed Rate per Tooth (mm/t)	0.15	0.15
	Feed Rate (mm/min)	360	360
	Axial Depth of Cut (mm)	2.0	2.0
	Dry/Wet	Wet	Wet

Doubles the number of cutting edges and provides over 3 times longer tool life per corner compared to conventional tools.

Recommended Cutting Conditions (SNMT / SNET)

ISO	Work Material	Hardness	Cutting Speed V_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.25**-0.40	< 4	ACP200 ACP300
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.30**-0.45	< 4	ACP200 ACP300
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.25**-0.35	< 4	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 3	ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.25**-0.40	< 5	ACK200 ACK300
N	Non-ferrous Metal	—	500-**750**-1,000	0.15-**0.23**-0.30	< 3	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.

Recommended Cutting Conditions (ONMT / ONET)

ISO	Work Material	Hardness	Cutting Speed V_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.30**-0.50	< 2	ACP200 ACP300
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.50**-0.50	< 2	ACP200 ACP300
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.25**-0.30	< 2	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 2	ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.30**-0.50	< 2	ACK200 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.

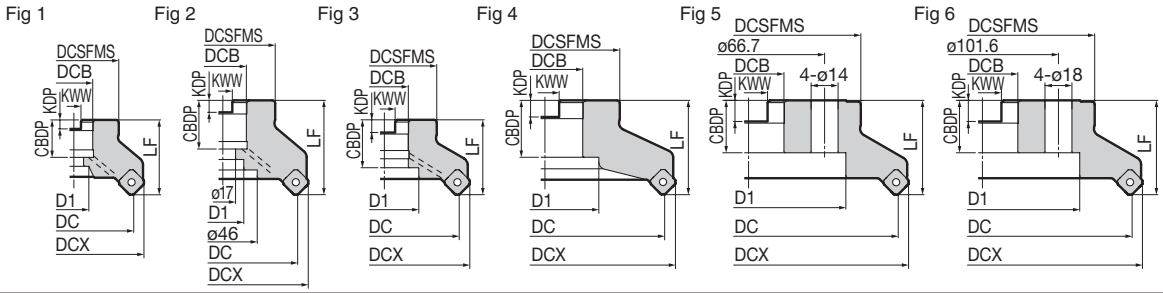
DGC 13000R(S) Type

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

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT / SNET)

3mm 45° (ONMT / ONET)



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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	36	40(38.44)	**16**	8.4	5.6	18	13.5	3	0.3	1
	13050RS	●	**50(52.9)**	64	40	40(38.44)	**22**	10.4	6.3	20	18	3	0.4	1
	13063RS	●	**63(65.9)**	77	50	40(38.44)	**22**	10.4	6.3	20	18	4	0.5	1
	13080RS	●	***80(82.9)**	94	60	50(48.44)	**27**	12.4	7	25	20	4	1.2	1
	13100RS	●	**100(102.9)**	114	70	50(48.44)	**32**	14.4	8.5	32	46	5	1.6	3
	13125RS	●	**125(127.9)**	139	80	63(61.44)	**40**	16.4	9.5	29	52	6	2.8	1
	13160RS	●	**160(162.9)**	174	130	63(61.44)	**40**	16.4	9.5	29	88	7	4.5	5
	13200RS	●	**200(202.9)**	214	150	63(61.44)	**60**	25.7	14	35	130	8	7.1	6
	13250RS	●	**250(252.9)**	264	190	63(61.44)	**60**	25.7	14	35	160	10	11.2	6
Inch	**DGC 13080R**	●	***80(82.9)**	94	60	50(48.44)	**25.4**	9.5	6	25	20	4	1.2	1
	13100R	●	***100(102.9)**	114	70	63(61.44)	**31.75**	12.7	8	32.5	28	5	2.2	2
	13125R	●	**125(127.9)**	139	80	63(61.44)	**38.1**	15.9	10	35.5	55	6	2.8	1
	13160R	●	**160(162.9)**	174	100	63(61.44)	**50.8**	19.1	11	38	72	7	4.5	4
	13200R	●	**200(202.9)**	214	150	63(61.44)	**47.625**	25.4	14	35	130	8	7.1	6
	13250R	●	**250(252.9)**	264	190	63(61.44)	**47.625**	25.4	14	35	150	10	11.2	6

( ) indicates value for ONMT / ONET type inserts.
Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

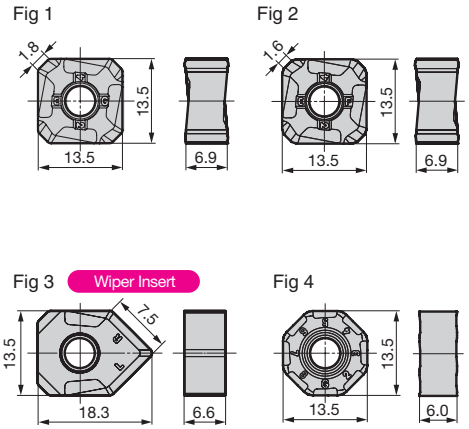
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide		DLC	Cermet
Process	High-speed / Light	P			K		M S		K N		N	P M
	General-purpose		P M	P M	K		M S	M S		K S	N	P
	Roughing		P M	P M		K		M S				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A
SNMT 13T6ANER-L		●	●	●	●	●						
13T6ANER-G		●	●	●	●	●				●		●
13T6ANER-H		●	●	●	●	●						
13T6ANER-FL		●	●	●	●	●						
13T6ANER-FG		●	●	●	●	●						
SNET 13T6ANER-L							●	●				
13T6ANER-G							●	●				
13T6ANER-FL							●	●				
13T6ANER-FG							●	●				
13T6ANFR-S									●		●	
XNEU 13T6ANEN-W			●			●						●
ONMT 05T6ANER-L		●	●	●	●	●						
05T6ANER-G		●	●	●	●	●						
ONET 05T6ANER-L							●	●				
05T6ANER-G							●	●				

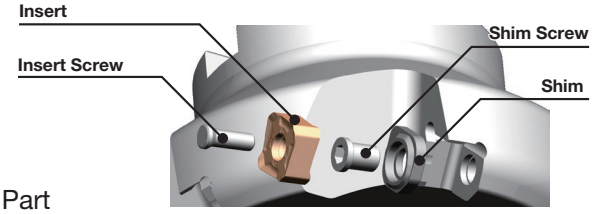
Fig



Wiper inserts can only be used in combination with 8-cornered inserts.

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC 13 040 R S

DGC	13	040	R	S
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Part

(Optional)

Shim	Shim Screw	Wrench	Insert Screw		Wrench	Anti-seizure Cream	Insert Screw (*)	
DGCS13R	BW0609F	LH040	BFTX0412IP	N·m 3.0	TRDR15IP	SUMI-P	BFTX0418IP	N·m 3.0

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

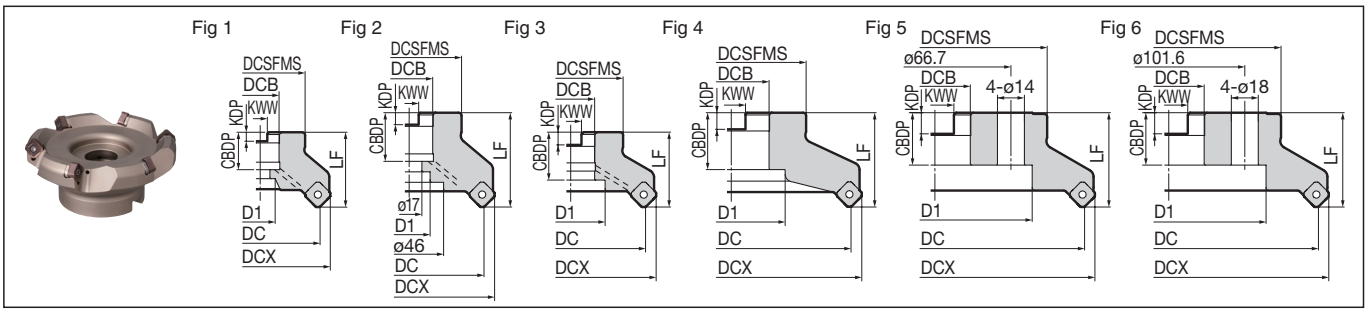
N·m Recommended Tightening Torque (N·m)

DGCM 13000R(S) Type

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

Rake Angle		
	Radial	-10°
	Axial	-5°

3mm 45° (ONMT / ONET) | 6mm 45°



Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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	40	40(38.44)	22	10.4	6.3	20	18	4	0.3	1
	13063RS	●	63(65.9)	77	50	40(38.44)	22	10.4	6.3	20	18	5	0.5	1
	13080RS	●	*80(82.9)	94	60	50(48.44)	27	12.4	7	25	20	6	1.1	1
	13100RS	●	100(102.9)	114	70	50(48.44)	32	14.4	8.5	32	46	7	1.5	3
	13125RS	●	125(127.9)	139	80	63(61.44)	40	16.4	9.5	29	52	8	2.8	1
	13160RS	●	160(162.9)	174	130	63(61.44)	40	16.4	9.5	29	88	10	4.6	5
	13200RS	●	200(202.9)	214	150	63(61.44)	60	25.7	14	35	130	12	7	6
	13250RS	●	250(252.9)	264	190	63(61.44)	60	25.7	14	35	160	14	11.1	6
Inch	DGCM 13080R	●	*80(82.9)	94	60	50(48.44)	25.4	9.5	6	25	20	6	1.1	1
	13100R	●	*100(102.9)	114	70	63(61.44)	31.75	12.7	8	32.5	28	7	2.2	2
	13125R	●	125(127.9)	139	80	63(61.44)	38.1	15.9	10	35.5	55	8	2.8	1
	13160R	●	160(162.9)	174	100	63(61.44)	50.8	19.1	11	38	72	10	4.6	4
	13200R	●	200(202.9)	214	150	63(61.44)	47.625	25.4	14	35	130	12	7	6
	13250R	●	250(252.9)	264	190	63(61.44)	47.625	25.4	14	35	150	14	11.1	6

( ) indicates value for ONMT / ONET type inserts. Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

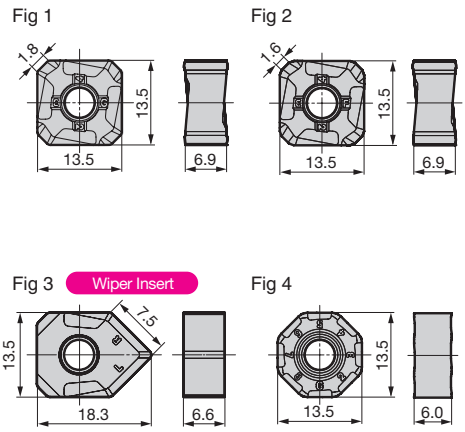
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide		DLC	Cermet
Process	High-speed / Light	P			K		M S		K N		N	P M
	General-purpose		P M	P M	K		M S			K S	N	P
	Roughing		P M	P M		K		M S				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A
SNMT 13T6ANER-L		●	●	●	●	●						
13T6ANER-G		●	●	●	●	●				●		●
13T6ANER-H		●	●	●	●	●						
13T6ANER-FL		●	●	●	●	●						
13T6ANER-FG		●	●	●	●	●						
SNET 13T6ANER-L							●	●				
13T6ANER-G							●	●				
13T6ANER-FL							●	●				
13T6ANER-FG							●	●				
13T6ANFR-S									●		●	
XNEU 13T6ANEN-W			●			●						●
ONMT 05T6ANER-L		●	●	●	●	●						
05T6ANER-G		●	●	●	●	●						
ONET 05T6ANER-L							●	●				
05T6ANER-G							●	●				

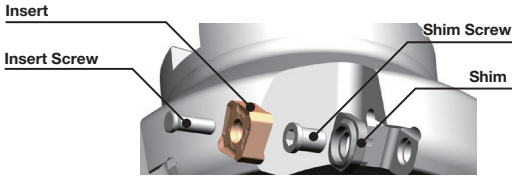
Cat. No.	Fig
SNMT 13T6ANER-L	1
13T6ANER-G	1
13T6ANER-H	1
13T6ANER-FL	2
13T6ANER-FG	2
SNET 13T6ANER-L	1
13T6ANER-G	1
13T6ANER-FL	2
13T6ANER-FG	2
13T6ANFR-S	1
XNEU 13T6ANEN-W	3
ONMT 05T6ANER-L	4
05T6ANER-G	4
ONET 05T6ANER-L	4
05T6ANER-G	4



Wiper inserts can only be used in combination with 8-cornered inserts.

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

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

Part

(Optional)

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

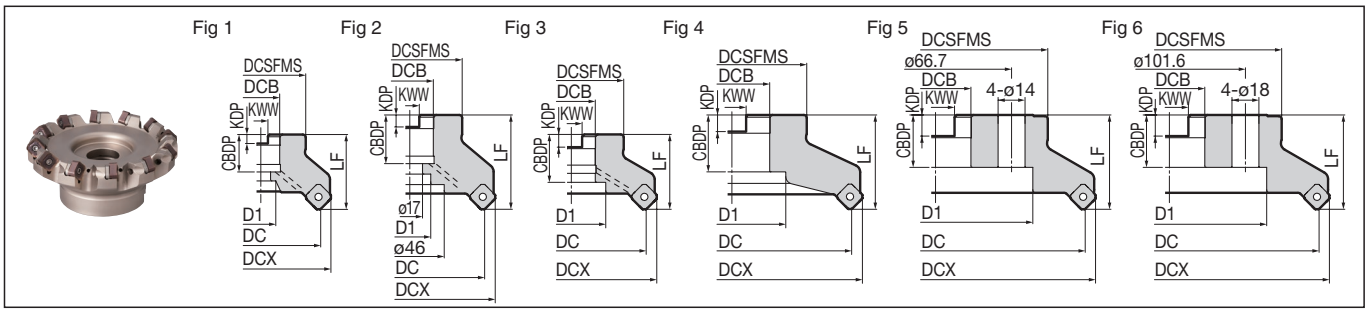
DGCF 13000R(S) Type

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

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT / SNET)

3mm 45° (ONMT / ONET)



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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	40	40(38.44)	22	10.4	6.3	20	18	5	0.3	1
	13063RS	●	63(65.9)	77	50	40(38.44)	22	10.4	6.3	20	18	6	0.5	1
	13080RS	●	*80(82.9)	94	60	50(48.44)	27	12.4	7	25	20	8	1.1	1
	13100RS	●	100(102.9)	114	70	50(48.44)	32	14.4	8.5	32	46	10	1.4	3
	13125RS	●	125(127.9)	139	80	63(61.44)	40	16.4	9.5	29	52	12	2.7	1
	13160RS	●	160(162.9)	174	130	63(61.44)	40	16.4	9.5	29	88	14	4.4	5
	13200RS	●	200(202.9)	214	150	63(61.44)	60	25.7	14	35	130	16	6.9	6
	13250RS	●	250(252.9)	264	190	63(61.44)	60	25.7	14	35	160	18	11	6
Inch	DGCF 13080R	●	*80(82.9)	94	60	50(48.44)	25.4	9.5	6	25	20	8	1.1	1
	13100R	●	*100(102.9)	114	70	63(61.44)	31.75	12.7	8	32.5	28	10	2.1	2
	13125R	●	125(127.9)	139	80	63(61.44)	38.1	15.9	10	35.5	55	12	2.7	1
	13160R	●	160(162.9)	174	100	63(61.44)	50.8	19.1	11	38	72	14	4.4	4
	13200R	●	200(202.9)	214	150	63(61.44)	47.625	25.4	14	35	130	16	6.9	6
	13250R	●	250(252.9)	264	190	63(61.44)	47.625	25.4	14	35	150	18	11	6

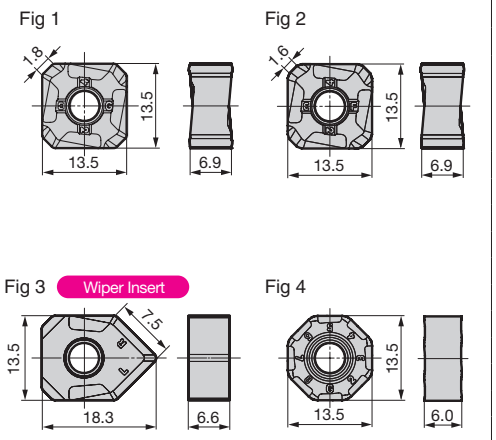
( ) indicates value for ONMT / ONET type inserts. Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

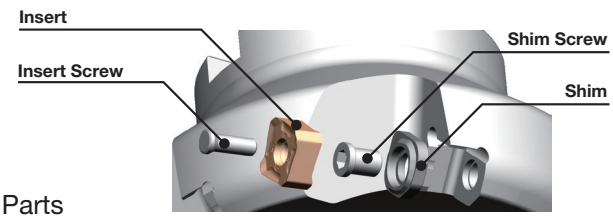
Grade		Coated Carbide							Carbide		DLC	Cermet	
Process	High-speed / Light	P			K		M/S		K/N		N	P/M	
	General-purpose		P/M	P/M	K		M/S			K/S	N	P	
	Roughing		P/M	P/M		K		M/S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Fig
SNMT 13T6ANER-L		●	●	●	●	●							1
13T6ANER-G		●	●	●	●	●				●		●	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.

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

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

Parts

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

N·m Recommended Tightening Torque (N·m)

DGC 13000EW Type

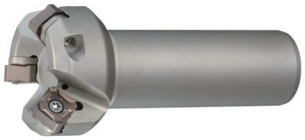
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy

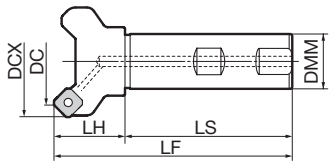
Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT / SNET)

3mm 45° (ONMT / ONET)

Fig 1





Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DGC 13040EW	●	**40(42.9)**	54	32	40(38.44)	85	125	3	0.7	1
13050EW	●	**50(52.9)**	64	32	40(38.44)	85	125	3	0.9	1
13063EW	●	**63(65.9)**	77	32	40(38.44)	85	125	4	1.1	1

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

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide		DLC	Cermet	
Process	High-speed / Light	P			K		M/S		K/N		N	P/M	
	General-purpose		P/M	P/M	K		M/S			K/S	N	P	
	Roughing		P/M	P/M		K		M/S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	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

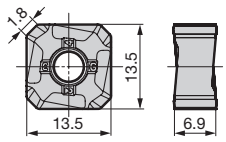


Fig 2

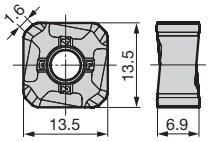


Fig 3 Wiper Insert

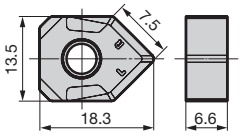
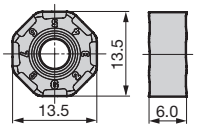


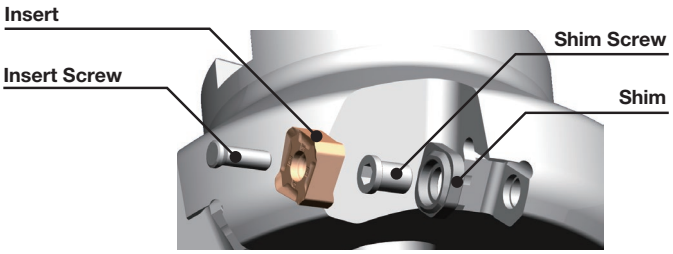
Fig 4



Wiper inserts can only be used in combination with 8-cornered inserts.

The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to H2 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H31



Identification Code

DGC 13 040 EW

Cutter Series | Insert Size | Cutter Dia. | Endmill Type

Parts

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

N·m Recommended Tightening Torque (N·m)

UFO 4000 Type

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

Rake Angle		
	Radial	-7°
	Axial	27°

5.5mm 45°

Fig 1

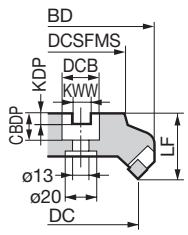


Fig 2

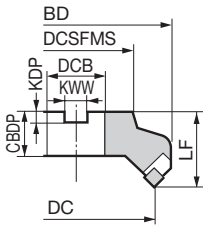


Fig 3

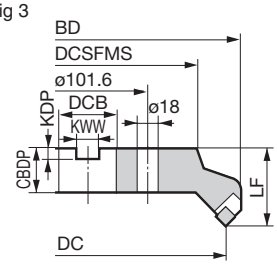
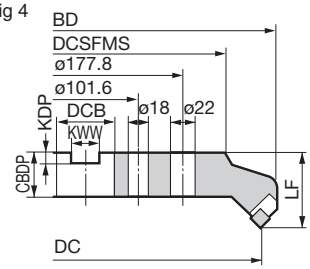


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	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	5	2.9	2
	4125R/L	●		**125**	146	75	63	**38.1**	15.9	10	38	6	4.2	2
	4160R/L	●		**160**	180	100	63	**50.8**	19.1	11	38	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.

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

Insert

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet	
Process	High-speed / Light	P			K		M			K N			
	General-purpose		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 Edge, -W: Strong Edge.

Fig 1

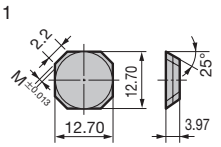


Fig. 2 (Grades in ACP/ACK Series)

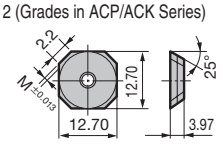


Fig 3

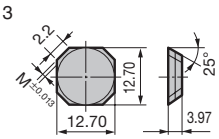


Fig 4

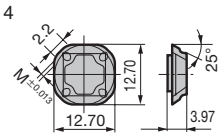
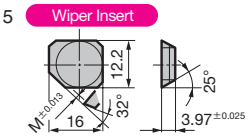
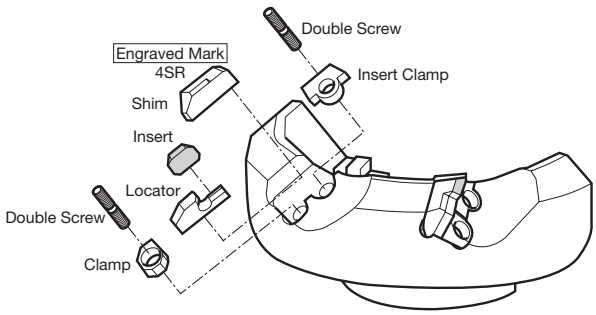


Fig 5 Wiper Insert





Parts

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

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

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	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 220 HB	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.

N·m Recommended Tightening Torque (N·m)

UFO 5000 Type

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

Rake Angle		
	Radial	-7°
	Axial	27°

7.5mm 45°

Fig 1

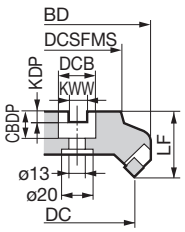


Fig 2

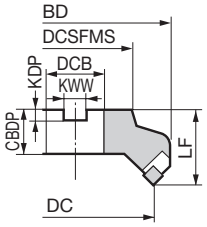


Fig 3

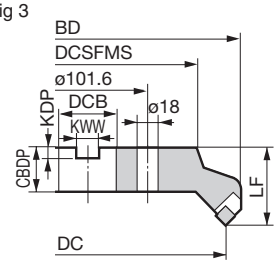
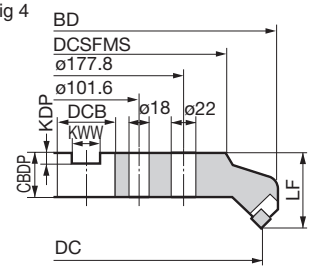


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	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	5	2.8	2
	5125R/L	●		**125**	143	75	63	**38.1**	15.9	10	38	6	4.0	2
	5160R/L	●		**160**	177	100	63	**50.8**	19.1	11	38	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.

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

Insert

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet	
Process	High-speed / Light	P			K		M			K/N			
	General-purpose		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
15500L													—

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

Fig 1

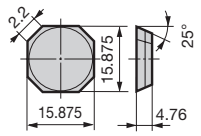


Fig. 2 (Grades in ACP/ACK Series)

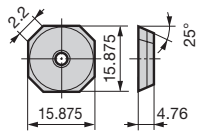


Fig 3

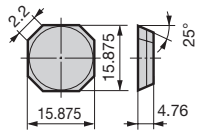
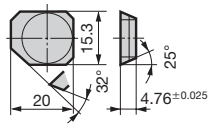
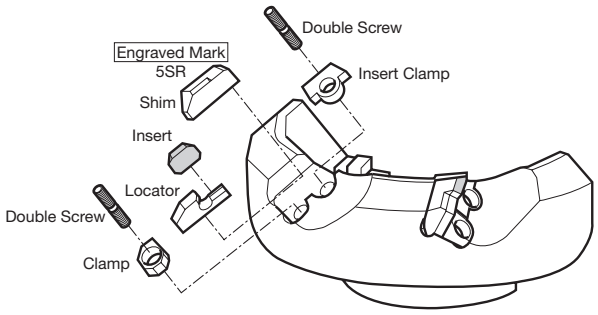


Fig 4 Wiper Insert





Parts

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

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

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	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 220 HB	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.

N·m Recommended Tightening Torque (N·m)

UFO 4000E Type

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

Rake Angle		
	Radial	-7°
	Axial	27°

5.5mm 45°

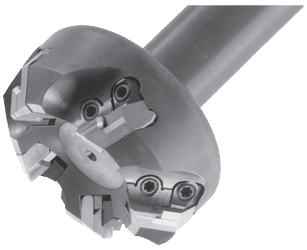
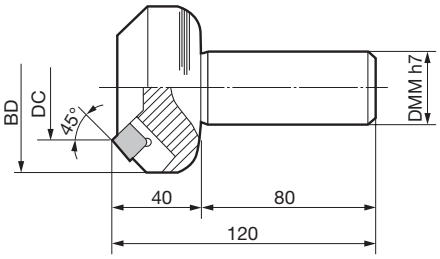


Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	O.D. 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**	103	32	6				1
4080ERS42		**80**	103	42	6				1
4100ER		**100**	122	32	7				1
4100ERS42		**100**	122	42	7				1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet	
Process	High-speed / Light	P			K		M			K N			
	General-purpose		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

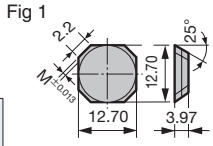


Fig. 2 (For ACP/ACK Series)

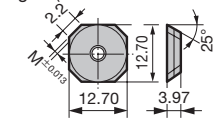


Fig 3

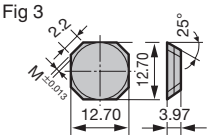


Fig 4

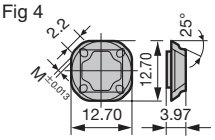
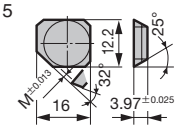
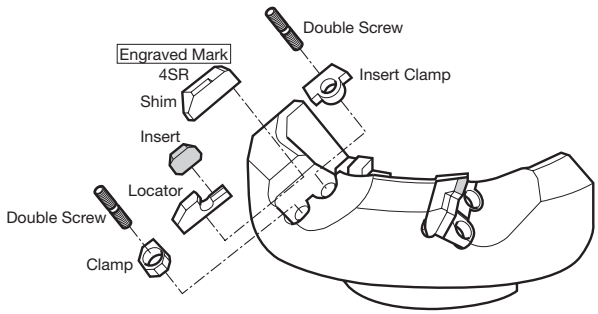


Fig 5



Wiper Insert



Parts

Applicable Cutter	Locator Clamp	Insert Clamp	Double Screw	Size	N·m	Seat	Locator	Wrench
UFO 4000E Type	UFKWR	UFTWR	WB7-15T	**M7**	**8.0**	UF4SR	UF4KR	TT25

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

Recommended Cutting Conditions

Diameter ø50 to ø63 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**125**-200	0.10-**0.20**-0.30	ACP200
	Alloy Steel	180 to 280 HB	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 ø100 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**125**-200	0.10-**0.25**-0.40	ACP200
	Alloy Steel	180 to 280 HB	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)

GRC 6000 Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle	Radial	10°
	Axial	25°

10mm

Fig 1

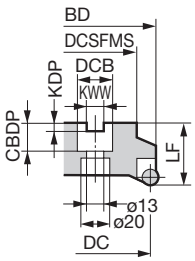


Fig 2

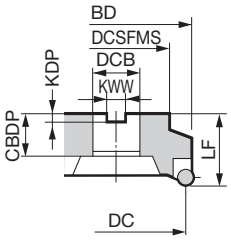
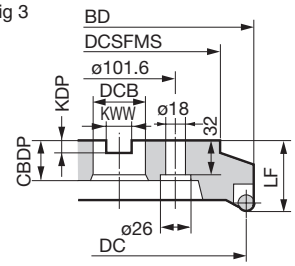


Fig 3



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**GRC 6080R/L**	●		***80**	100	60	50	**25.4**	9.5	6	25	4	2.3	1
	6100R/L	●		**100**	119	70	50	**31.75**	12.7	8	32	5	2.9	2
	6125R/L	●		**125**	143	80	63	**38.1**	15.9	10	38	6	5.1	2
	6160R/L	●		**160**	177	100	63	**50.8**	19.1	11	38	8	7.5	2
	6200R/L			**200**	216	130	63	**47.625**	25.4	14	35	10	11.0	3
	6250R/L			**250**	265	130	63	**47.625**	25.4	14	35	12	16.3	3

Inserts are sold separately.

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

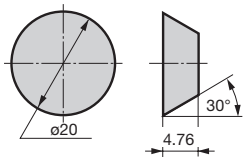
Insert

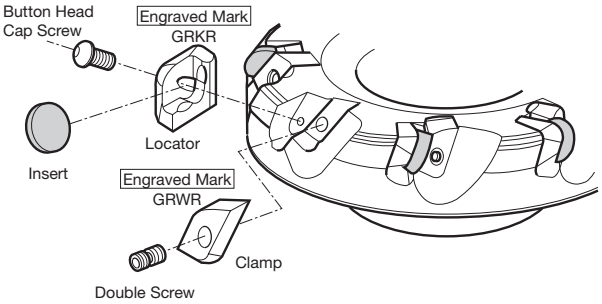
Dimensions (mm)

Grade		Coated Carbide						Carbide	
Process	High-speed / Light	P			K		M		
	General-purpose		P M	P M	K			P	
	Roughing		P M	P M		K			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	Fig
RGEN 2004SN-S			●	●				●	1
2004SN-I							●		1
2004SN-T							●		1

-S: For Stainless Steel, -I: For Inconel, -T: For Titanium Alloys.

Fig 1





Parts

Applicable Cutter	Locator	Clamp	Double Screw	Size	N·m	Locator Fixing Bolt	Size	N·m	Wrench
GRC 6080R Up to GRC 6250R	GRKR	GRWR	WB8-22T	**M8**	8.0	BH0410T	**M4**	3.0	TT27 (TT15)
GRC 6080L Up to GRC 6250L	GRKL	GRWL	WB8-22T	**M8**	8.0	BH0410T	**M4**	3.0	TT27 (TT15)

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Die Steel	200 to 220 HB	80-**120**-160	0.15-**0.23**-0.30	ACP200
M	Stainless Steel	—	120-**150**-180	0.15-**0.23**-0.30	ACP200
S	Inconel	—	40- **45** -50	0.10-**0.15**-0.20	EH20Z
	Titanium Alloy	—	40- **60** -80	0.10-**0.15**-0.20	EH20Z

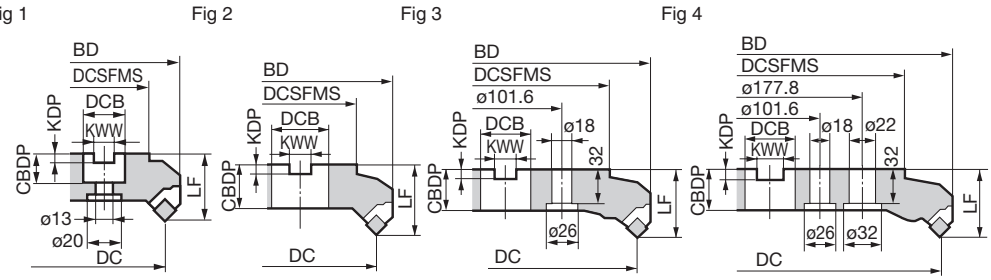
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

FPG 4000/5000 Type

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

Rake Angle		
	Radial	-4°
	Axial	15°

6.5mm 45° | 8.5mm 45°



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FPG 4080R/L**	●	●	***80**	105	60	50	**25.4**	9.5	6	25	4	1.9	1
	4100R/L	●		**100**	124	70	60	**31.75**	12.7	8	32	5	3.0	2
	4125R/L	●	●	**125**	148	105	60	**38.1**	15.9	10	38	6	4.5	2
	4160R/L	●	●	**160**	182	135	60	**50.8**	19.1	11	38	8	6.7	2
	4200R/L	●		**200**	222	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**	336	240	70	**47.625**	25.4	13.5	40	14	24.6	4
	FPG 5080R/L			***80**	105	60	50	**25.4**	9.5	6	25	4	1.9	1
	5100R/L			**100**	124	70	60	**31.75**	12.7	8	32	5	3.0	2
	5125R/L			**125**	148	105	60	**38.1**	15.9	10	38	6	4.5	2
	5160R/L			**160**	182	135	60	**50.8**	19.1	11	38	8	6.7	2
	5200R/L			**200**	222	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**	336	240	70	**47.625**	25.4	13.5	40	14	24.6	4

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade		Coated Carbide						Carbide		Cermet		SUMIDIA		
Process	High-speed / Light	P			K		M			P		N	N	
	General-purpose		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

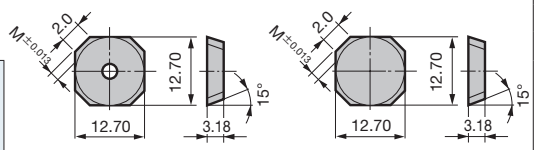


Fig 3 Fig. 4 (Grades in ACP/ACK Series)

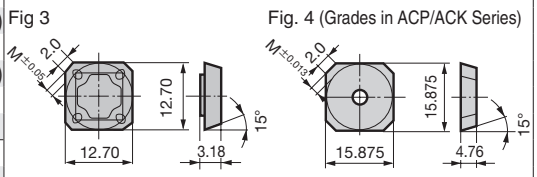
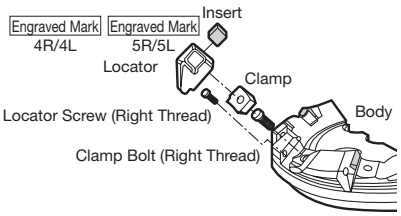


Fig.5: Same as Fig. 4 without hole

Cat. No. marked *: M ±0.08.

Insert Application Table

Body	Insert
FPG4000 Type	SD○○42·· SD○○12··
FPG5000 Type	SD○○53··



Parts

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

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

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	100-**130**-160	0.15-**0.28**-0.40	ACP200
	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.28**-0.40	ACP200
	Die Steel	200 to 220 HB	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 | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle	Radial	-3°
	Axial	15°

6.5mm 45°

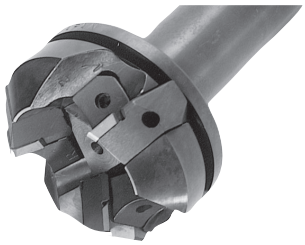
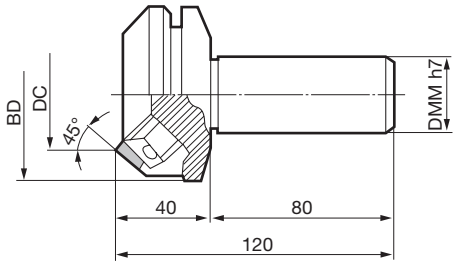


Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	O.D. BD	Shank DMM	Number of Teeth	Maximum Depth of Cut	Axial Rake	Radial Rake	Fig
FPE 4050R	●	**50**	72	32	3	6.5	+15°	-3°	1
4050RS42		**50**	72	42	3				1
4063R	●	**63**	85	32	4				1
4063RS42		**63**	85	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		Coated Carbide						Carbide		Cermet		SUMIDIA		
Process	High-speed / Light	P			K		M			P		N	N	
	General-purpose		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)

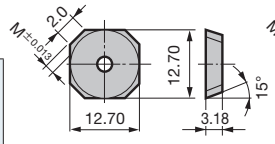


Fig 2

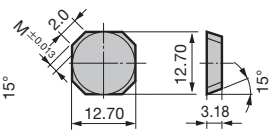
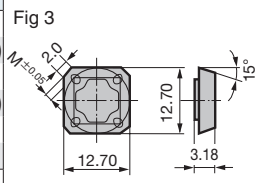


Fig 3



Cat. No. marked *: M ±0.08.

Parts

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

Recommended Cutting Conditions

Diameter ø50 to ø63 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**125**-150	0.10-**0.20**-0.30	ACP200
	Alloy Steel	180 to 280 HB	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 ø100 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**125**-150	0.10-**0.25**-0.40	ACP200
	Alloy Steel	180 to 280 HB	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.

EHG 4000 / 5000 Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-3°
	Axial	20°

5.5mm 45° (4000 Type)

7.5mm 45° (5000 Type)

Fig 1

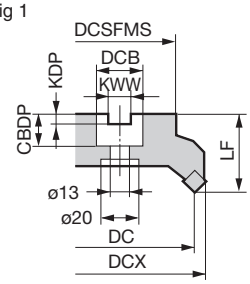


Fig 2

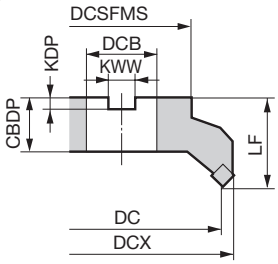
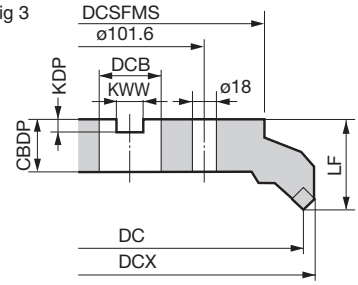


Fig 3



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	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	5	2.0	2
	4125R	●	**125**	138	80	63	**38.1**	15.9	10	38	6	3.3	2
	4160R	●	**160**	173	100	63	**50.8**	19.1	11	38	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	5	2.2	2
	5125R		**125**	143	80	63	**38.1**	15.9	10	38	6	3.6	2
	5160R		**160**	178	100	63	**50.8**	19.1	11	38	8	5.2	2
	5200R		**200**	218	130	63	**47.625**	25.4	13.5	35	10	7.6	3

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade		Coated Carbide						Carbide		Cermet			
Process	High-speed / Light	P			K		M						
	General-purpose		P/M	P/M	K			P	K	P			
	Roughing		P/M	P/M		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

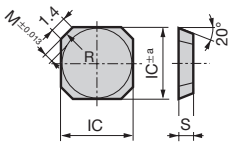


Fig. 2 (Grades in ACP/ACK Series)

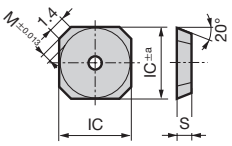


Fig 3

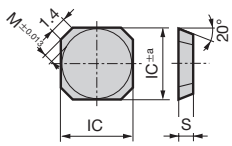
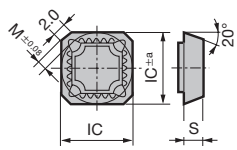


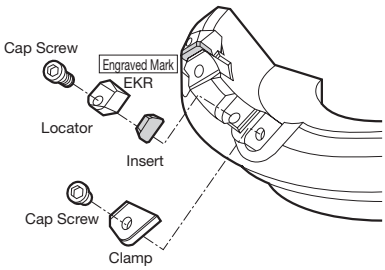
Fig 4



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	SE○N42·· SE○○12··
EHG5000 Type	SE○N53··



Parts

Applicable Cutter	Locator	Clamp	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 v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	160-**205**-250	0.10-**0.15**-0.20	ACP200
	Mild Steel	≤ 180HB	160-**230**-300	0.10-**0.18**-0.25	ACP200
	Die Steel	200 to 220 HB	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)

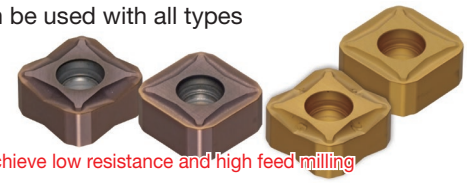
MEMO

DNX(F) Type / DNH Type / DNHS Type

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

Features

- Achieves high efficiency milling with a max. 8 mm 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 Inserts can be used with all types

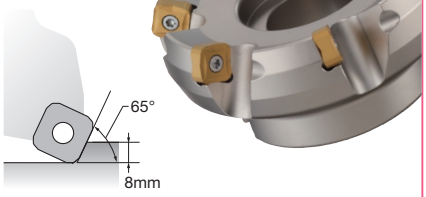


Negative inserts with a rake angle achieve low resistance and high feed milling

Product Range

DNX(F) Type

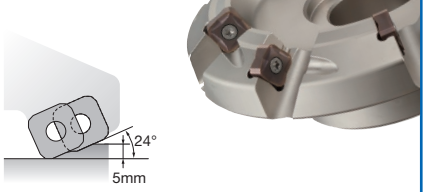
General-purpose Type



Maximum Depth of Cut		8mm
Cutting edge angle		65°
Cutter Dia.	DNX 12000R(S) General-purpose type	ø80 to ø250mm
	DNXF 12000R(S) General-purpose Fine-pitch Type	ø80 to ø160mm

DNHS Type

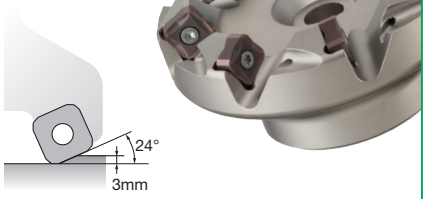
Medium Depth of Cut High Feed Type



Maximum Depth of Cut		5mm
Cutting edge angle		24°
Cutter Dia.	DNHS 12000R Medium Depth of Cut High Feed Type	ø80 to ø160mm

DNH Type

Small Depth of Cut High Feed Type



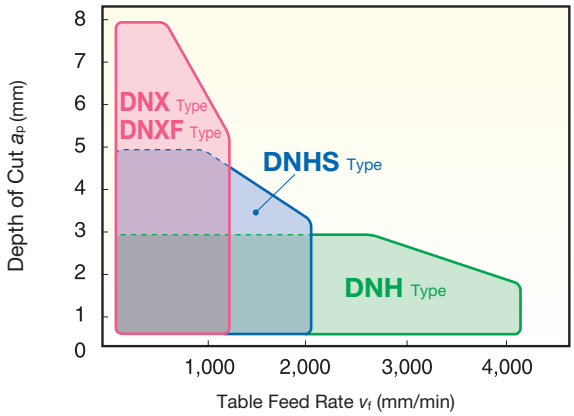
Maximum Depth of Cut		3mm
Cutting edge angle		24°
Cutter Dia.	DNH 12000R Small Depth of Cut High Feed Type	ø80 to ø160mm

Large ← Depth of Cut — Feed Rate → Large

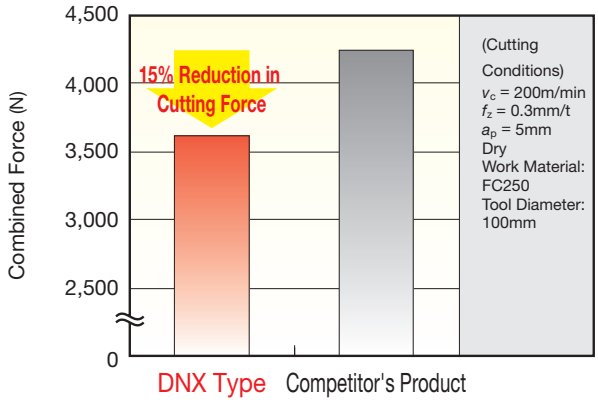
Usage Region (Cutting Cast Iron)

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 Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
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	180to 280 HB	150-**175**-200	0.10-**0.15**-0.20	ACP200
P	Alloy Steel	180to 280 HB	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.

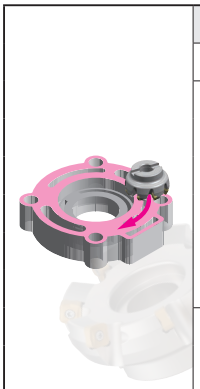
DNHS Type / DNH Type

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
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	180to 280 HB	150-**175**-200	0.10-**0.45**-0.80	ACP200
P	Alloy Steel	180to 280 HB	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. Use with f_z = 0. 5 mm/t (actual feed rate 1.0 mm/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.

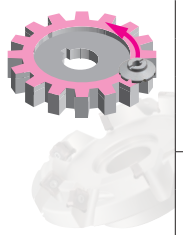
DNX(F) Type / DNH Type / DNHS Type

Application Examples



Part / Work Material		Automotive Components / FC250	
Used Equipment		Machining Centre (BT30)	
Tool	Type	DNXF Type	Conventional Tool
	Body	DNXF 12080R	Cutter for FC
	Insert	G Type	Negative Insert
	Tool Dia. (mm)	80	80
	Number of Teeth	8	8
	Insert Grade	ACK200	K Class CVD
Cutting Conditions	Cutting Speed (m/min)	200	200
	Feed Rate per Tooth (mm/t)	0.069 (v_f = 420mm/min)	0.069 (v_f = 420mm/min)
	Axial Depth of Cut (mm)	1.6	1.6
	Cutting Width (mm)	60	60
	Dry/Wet	Wet	Wet

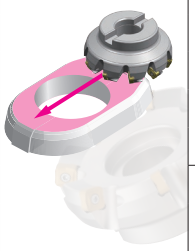
Double the tool life of conventional tools under the same conditions.



Part / Work Material		Construction Machine Component / Cast Steel	
Used Equipment		Machining Centre (BT50)	
Tool	Type	DNHS Type	Conventional Tool
	Body	DNHS 12100R	General-purpose Cutter
	Insert	H Type	Negative Insert
	Tool Dia. (mm)	100	100
	Number of Teeth	8 (4)*	7
	Insert Grade	ACP200	P Class CVD
Cutting Conditions	Cutting Speed (m/min)	140	200
	Feed Rate per Tooth (mm/t)	0.25 (v_f = 450mm/min)	0.095 (v_f = 300mm/min)
	Axial Depth of Cut (mm)	3 to 4	3 to 4
	Cutting Width (mm)	50	50
	Dry/Wet	Dry	Dry

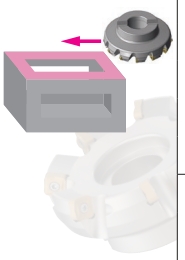
Enables 1.5 times the efficiency of conventional tools.

*( ) indicates effective no. of teeth



Part / Work Material		Electrical Appliance Component / FC250	
Used Equipment		Machining Centre (BT50)	
Tool	Type	DNXF Type	Conventional Tool
	Body	DNXF 12100R	Cutter for FC
	Insert	H Type	Negative Insert
	Tool Dia. (mm)	100	100
	Number of Teeth	10	10
	Insert Grade	ACK200	K Class CVD
Cutting Conditions	Cutting Speed (m/min)	314	314
	Feed Rate per Tooth (mm/t)	0.15 (v_f = 1,500mm/min)	0.11 (v_f = 1,100mm/min)
	Axial Depth of Cut (mm)	1.5	1.5
	Cutting Width (mm)	80	80
	Dry/Wet	Wet	Wet

1.4 times the milling efficiency and 1.3 times the tool life of conventional tools.



Part / Work Material		Housing / FC250	
Used Equipment		Machining Centre (BT50)	
Tool	Type	DNX Type	Conventional Tool
	Body	DNX 12160R	General-purpose Cutter
	Insert	G Type	Positive Insert
	Tool Dia. (mm)	160	160
	Number of Teeth	10	10
	Insert Grade	ACK200	K Class CVD
Cutting Conditions	Cutting Speed (m/min)	200	200
	Feed Rate per Tooth (mm/t)	0.15 (v_f = 597mm/min)	0.10 (v_f = 398mm/min)
	Axial Depth of Cut (mm)	3.5	3.5
	Cutting Width (mm)	135	135
	Dry/Wet	Wet	Wet

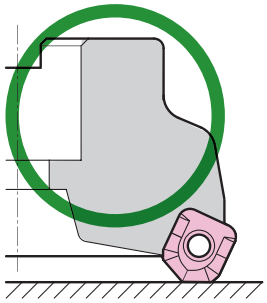
1.5 times longer tool life than conventional tools.

Precautions when Using Wiper Inserts with Holes

- When assembling the wiper insert, attach it as shown in Fig. 1. When attached as shown in Fig. 2, normal machined surface roughness cannot be obtained.
- Wiper inserts are single-cornered and double-sided.
- Refer to Technical Guidance page N19 in the General Catalogue for details about wiper inserts.
- Do not use with DNHS and DNH types.

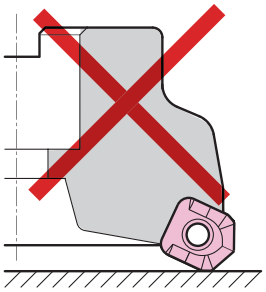
DNX(F) Type

Fig 1



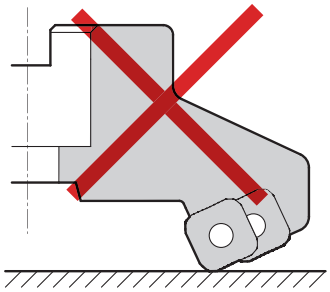
Correct Mounting

Fig 2



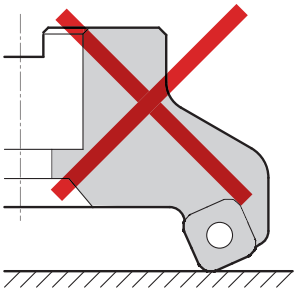
Incorrect Mounting

DNHS Type



Inappropriate

DNH Type



Inappropriate

DNX(F)12000 Type

P Steel | K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

Maximum Depth of Cut: 8mm / 65°

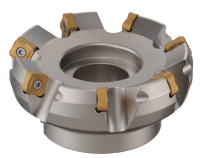


Fig 1

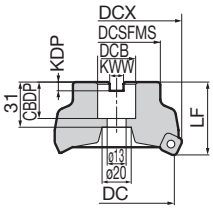


Fig 2

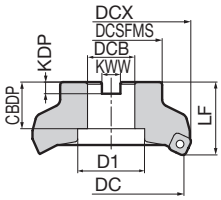


Fig 3

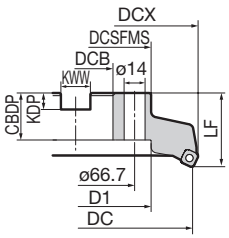
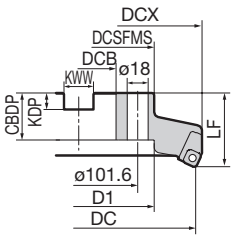


Fig 4



Body (DNX 12000R) Cutting Edge Angle 65° General-purpose Type

Dimensions (mm)

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

Body (DNXF 12000R) Cutting Edge Angle 65° General-purpose Type

Dimensions (mm)

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

Cutters with sizes of 200 mm or above come with locators. Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade		Coated Carbide				
Process	High-speed / Light	K	K			
	General-purpose	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 Blade Type	Light Cutting	1
1205ZNEN-G	●	●	●	●			General-purpose	1
1205ZNEN-H	●	●	●	●			Heavy Cutting	1
SNMT 1205ZNEN-SH	●	●	●	●	●	Straight Type	Improved Chip Control	2
XNGT 1205ZNEN-W		●	●			Wiper Type	Improved Surface Roughness	3

Fig 1

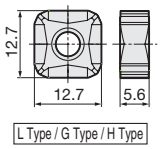


Fig 2

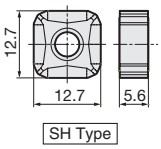
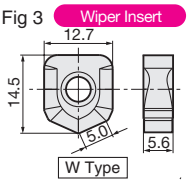
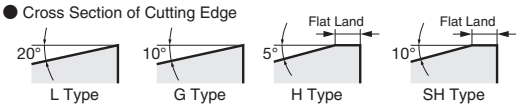


Fig 3 Wiper Insert



● Cross Section of Cutting Edge



Refer to H45 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H44

Parts

Locator (*)	Cap Screw (*)	L-Wrench (*)	Insert Screw		Wrench	Anti-seizure Cream
DNXK12R	BX0515	LH040	BFTX0412IP	3.0	TRDR15IP	SUMI-P

* mark is included with ø200 mm or larger sizes.

Identification Code

DNX	F	12	080	R	S
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

N·m Recommended Tightening Torque (N·m)

DNH(S)12000 Type

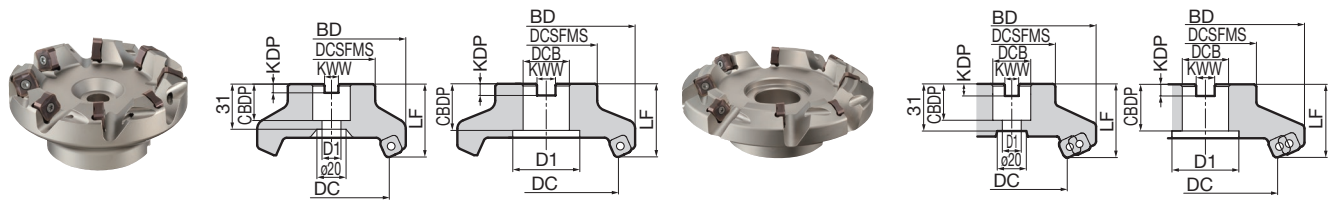
P Steel | K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

Maximum Depth of Cut 3mm 24° (DNH Type)

Maximum Depth of Cut 5mm 24° (DNHS Type)

Fig 1 Fig 2 Fig 3 Fig 4



Body (DNH 12000R) Cutting Edge Angle 24° Shallow Depth of Cut High Feed Type

Dimensions (mm)

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

Body (DNHS 12000R) Cutting Edge Angle 24° Medium Depth of Cut High Feed Type

Dimensions (mm)

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

Inserts are sold separately.

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

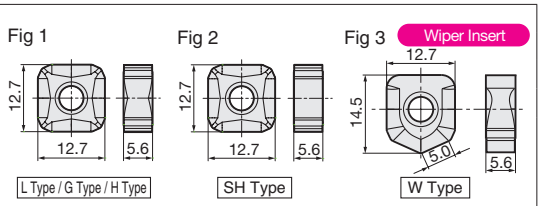
Insert

Dimensions (mm)

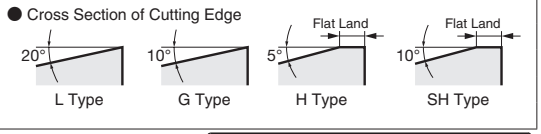
Grade		Coated Carbide				
Process	High-speed / Light	K	K			
	General-purpose	K	K		P M	P M
	Roughing			K	P M	P M

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

Fig 1 Fig 2 Fig 3 Wiper Insert



● Cross Section of Cutting Edge



Refer to H45 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H44

Parts

Locator (*)	Cap Screw (*)	L-Wrench (*)	Insert Screw		Wrench	Anti-seizure Cream
DNXK12R	BX0515	LH040	BFTX0412IP	3.0	TRDR15IP	SUMI-P

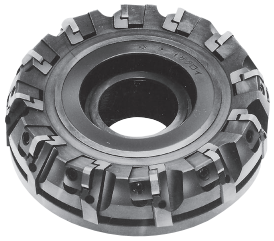
* mark is included with ø200 mm or larger sizes.

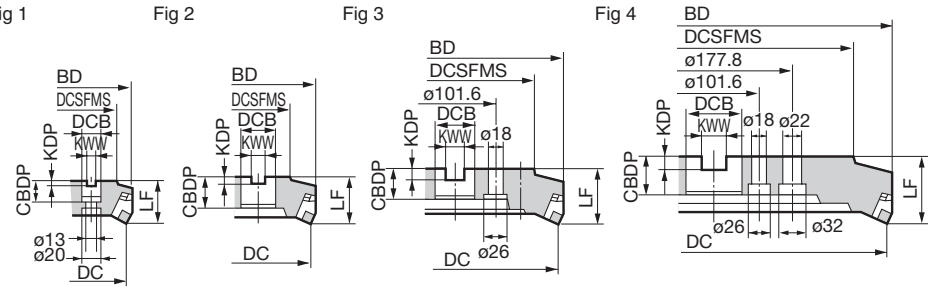
DNF 4000 Type

P Steel | K Cast Iron | H Hardened Steel

Rake Angle		
	Radial	-6°
	Axial	-5°

6.5mm / 65°





Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore 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	38	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

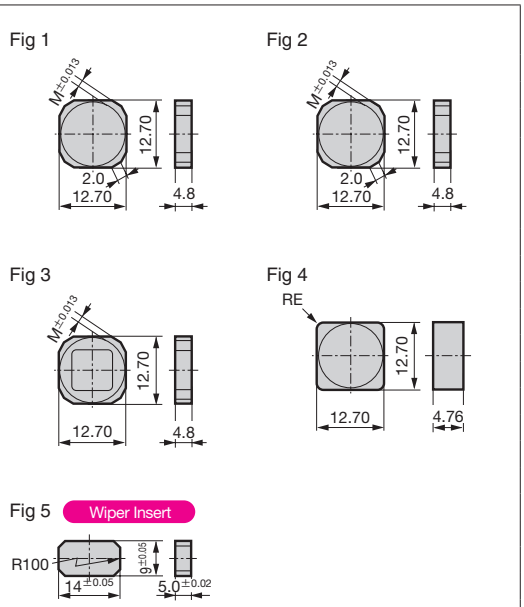
Inserts are sold separately.

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

Insert

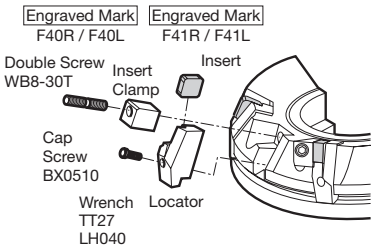
Dimensions (mm)

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



Parts

Applicable Cutter	Locator (*)	Insert Clamp
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). Leave wrench and cap screw as they are.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	80-**100**-120	0.10-**0.13**-0.15	T250A
	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.

N·m Recommended Tightening Torque (N·m)

APG 4000 Type

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

Rake Angle		
	Radial	-2°
	Axial	18°

7mm / 65°

Fig 1

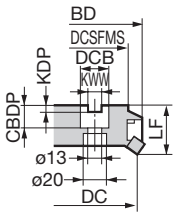


Fig 2

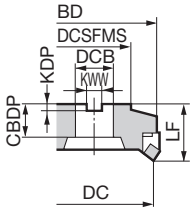


Fig 3

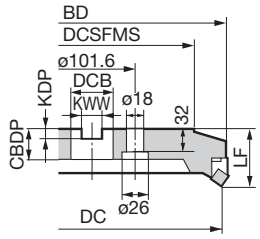
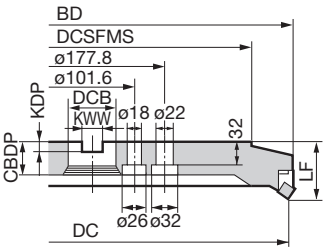


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore 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		4
	4500R/L			**500**	508	400	70	**63.5**	25.4	13.5	45	24		4

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade		Coated Carbide						Carbide		Cermet		DLC	SUMIDIA	
Process	High-speed / Light	P			K		M		K N	P		N	N	N
	General-purpose		P M	P M	K			P			P	N	N	N
	Roughing		P M	P M		K							N	N
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	H1	T1500A	T250A	DL1000	DA1000	DA2200	Fig
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

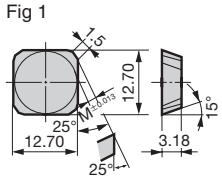


Fig 2

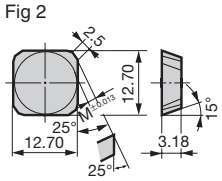
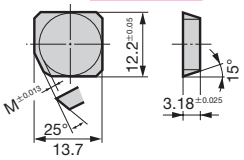
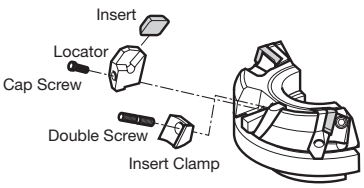


Fig 3 Wiper Insert



Double Screw (Common)	Size	N·m
	M8	8.0

Cap Screw	Size	N·m
	M5	5.0



Parts

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

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	100-**125**-150	0.10-**0.18**-0.25	A30N
	Mild Steel	≤ 180HB	120-**150**-180	0.10-**0.18**-0.25	A30N
	Die Steel	200 to 220 HB	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°

Fig 1

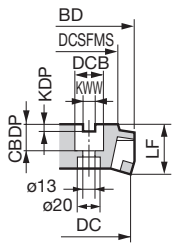


Fig 2

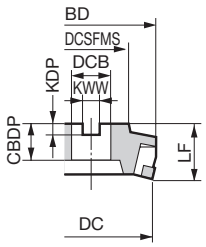
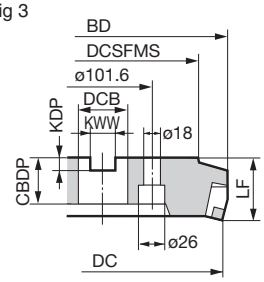


Fig 3



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore 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.

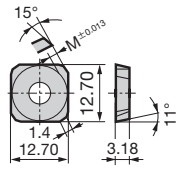
For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet		
Process	High-speed / Light	P			K		M					P		
	General-purpose		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									●		●	●		—
423											●			—
DPW 500R										●		●		4
500L										●				4

Fig. 1 (Grades in ACP/ACK Series) Fig 2



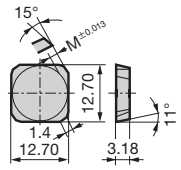


Fig 3

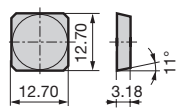
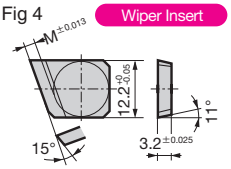
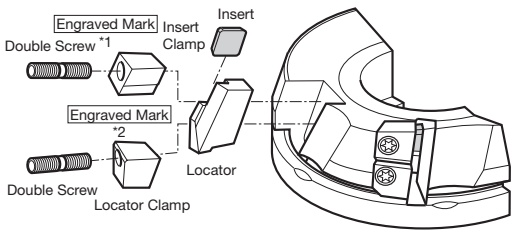


Fig 4 Wiper Insert



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	GL40R	GLW41R	GLWF41R	GTW41R	GTWF41R	WB8-30T	TT27
DPG4200R	GL40R	GLW42R	—	GTW42R	—	WB8-30T	TT27
DPG(F)4080L	GL40L	GLW40L	GLWF80L	GTW40L	GTWF80L	WB8-22T	TT27
DPG(F)4100L Up to DPG(F)4160L	GL40L	GLW41L	GLWF41L	GTW41L	GTWF41L	WB8-30T	TT27
DPG4200L	GL40L	GLW42L	—	GTW42L	—	WB8-30T	TT27

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	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 220 HB	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.

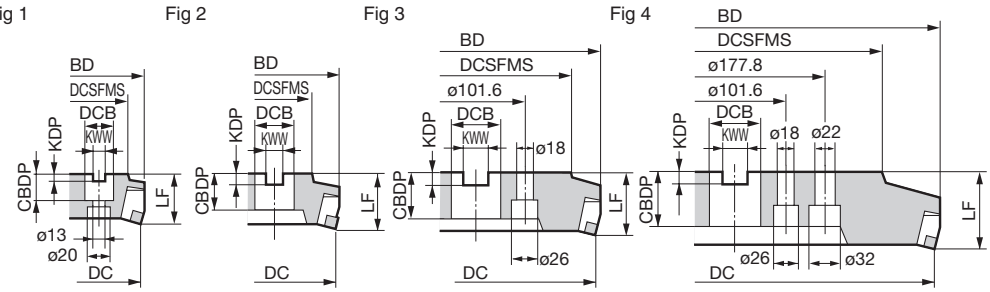
N·m Recommended Tightening Torque (N·m)

DPG 5000 Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	0°
	Axial	8°

12mm / 75°



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore 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

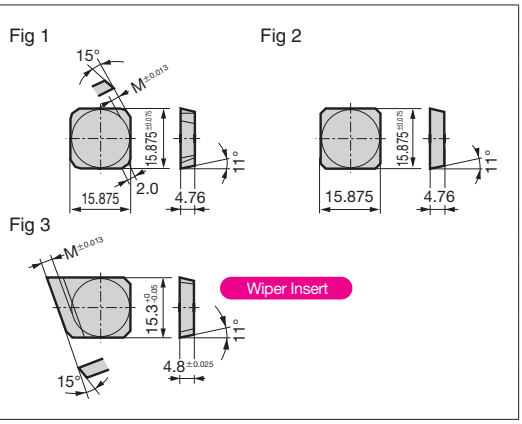
Inserts are sold separately.

For securing the ø82mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

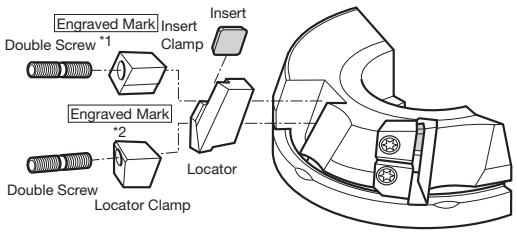
Insert

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet		
Process	High-speed / Light	P			K		M					P		
	General-purpose		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 53R-R					●	●	●				●			1
53L-R											●			1
53TR-R		●	●					●		●		●	●	1
53TL-R			●					●		●				1
SPMN 532									●		●			2
533									●		●			2
GW 500R										●		●		3
500L														3



Double Screw (Common)	Size	N·m
	M8	8.0



*1 Engraved Mark: T50R,T50L,T51R,T51L,T52R,T52L

*2 Engraved Mark: L50R,L50L,L51R,L51L,L52R,L52L

Parts

Applicable Cutter	Locator	Locator Clamp	Insert Clamp	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 v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	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 220 HB	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.

WEZ Type

■ Features

● Supports Various Machining Operations

Applicable to various machining applications, the cutter lineup includes diameters of ø14 to ø160mm, enabling large ramping.

● Excellent Machining Quality

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

● Excellent Sharpness with Low Resistance

Reduces machining noise and suppresses burrs.

Lineup includes ground inserts with a focus on sharpness.

● General-purpose Grade Applicable to Any Work Material

Introducing the new grade ACU2500, supporting machining in a wide range of fields and applicable to steel, stainless steel, and cast iron.

■ Product Range (Body)

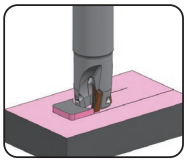
Type	Type	Diameters in Stock (mm)																
		ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shells	WEZ 11000RS											4 6	5 7	6 8	7 10	9 12		
Shells	WEZ 11000R (Inch)														7 10	9 12		
Shells	WEZ 17000RS											3 4	3 5	4 6	4 7	5 8	6 9 11	8 10 12
Shells	WEZ 17000R (Inch)														4 7	5 8	6 9 11	8 10 12
With 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			
With Shank	WEZ 11000EL	1	2*	2	2*	2	2* 3	2	2	2* 3	2 3	2	3					
With Shank	WEZ 17000E						2*	2	3	2 3*	3	3 4	3* 5*	4* 6*	7			
With Shank	WEZ 17000EL						2	2	2	2* 3	2	2 3 4	3* 5*	4* 6*				

● Numbers inside are number of teeth *mark: Different-diameter shanks in stock (Inch) Inch Bore

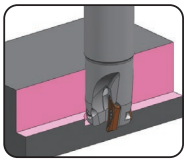
■ Applicable to Various Applications

● Supports Ramping/Helical Milling/Plunge Cutting

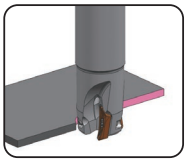
Face Milling



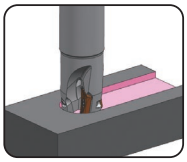
Shoulder Milling



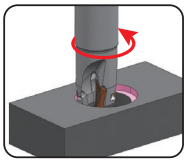
Side Milling



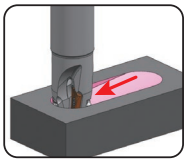
Groove Milling



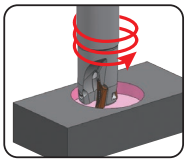
Hole Expansion Drilling



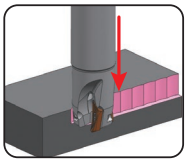
Ramping



Helical Milling

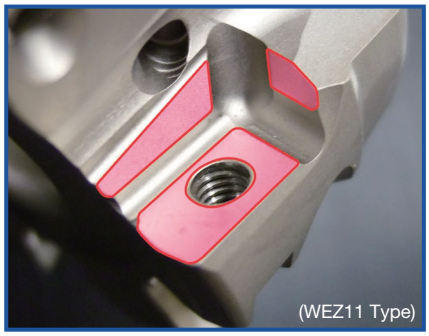


Plunge Cutting



■ Optimised Body Design

● Wide Guide Face for Stable Insert Clamping

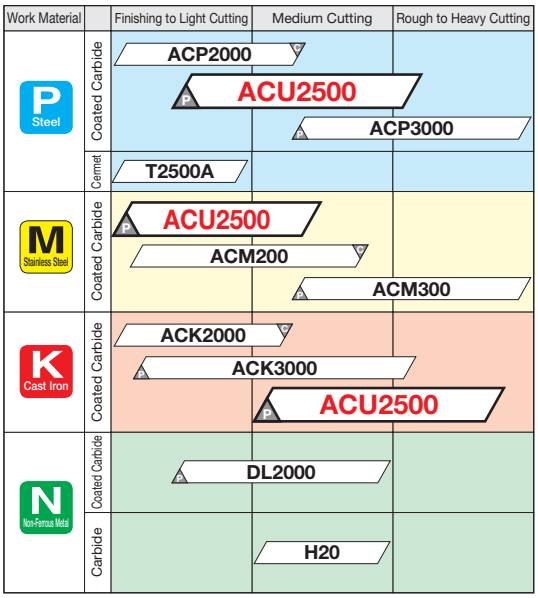


WEZ Type

Grade Application Range

Newly developed general-purpose ACU2500 grade suitable for various work materials has now been released.

Enhanced lineup of coatings, cemented carbide and cermet for milling steel, stainless steel, cast iron, and aluminum alloy

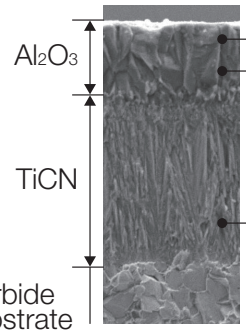


The letters "C" and "P" at the end of each grade indicate the coating type. ▽: CVD △: PVD

Grade Features

New Absotech™ (absolute technology) coating technology that realises absolute stability

ABSOTECH CVD



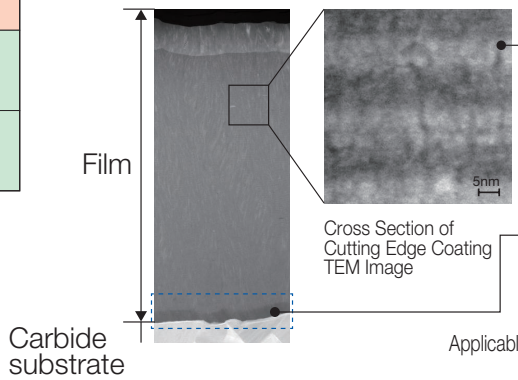
Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice as good as conventional types

Crystal Orientation Control Al_2O_3
By controlling the growth direction, Al_2O_3 is reinforced for crater wear resistance more than twice as good as conventional types

High Hardness TiCN
Increased TiCN hardness by using a C-rich composition for flank wear resistance more than twice as good as conventional types

Applicable Grades: ACP2000, ACK2000

ABSOTECH PVD



Cross Section of Cutting Edge Coating TEM Image

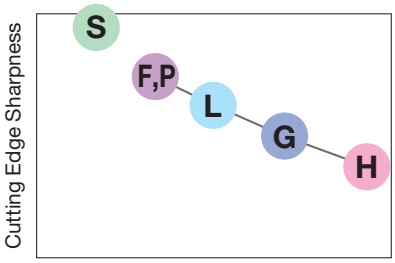
New Super Multi-Layered Composition
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Significantly improved coating adhesion Chipping resistance more than twice as good as conventional types

Applicable Grades: ACU2500, ACP3000, ACK3000

Chipbreaker Lineup

Work Material	P Steel, M stainless steel, K cast iron, S heat-resistant alloy, titanium alloy, H hardened steel					N Non-ferrous Metal
Chipbreaker	L Type	G Type	H Type	F Type	P Type	S Type
Cutting Edge Cross Section: 11 Type	Not Available	28°	20°	28°	28°	28°
Cutting Edge Cross Section: 17 Type	28°	20°	10°	28°	28°	28°
Applications	Light Cutting Low-rigidity Milling	Main Chipbreakers General-purpose to Interrupted Milling	Heavy Cutting Heavy interrupted machining Hardened Steel	Light Cutting Medium Finishing Low-burr design	Light Cutting High-precision Machining High wall surface squareness	For Non-Ferrous Metals



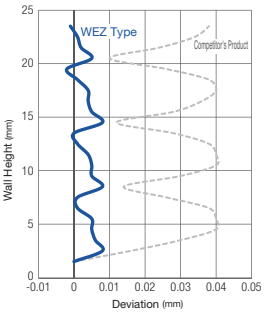
Product Range (Insert)

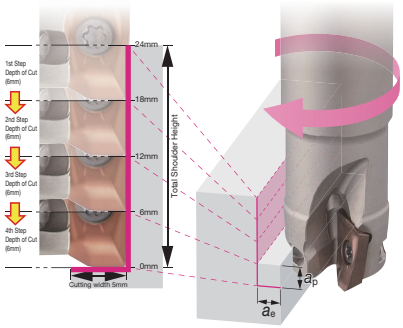
Type			Nose Radius (mm)											
			R0.2	R0.4	R0.8	R1.2	R1.6	R2.0	R2.4	R3.0	R3.2	R4.0	R5.0	R6.4
11 Type	M Class	AOMT 11T3○○PEER-G	○	●	●	○	○	○	○	○	○			
		AOMT 11T3○○PEER-H		●	●	○	○							
	E Class	AOET 11T3○○PEER-F	○	●	●	○								
		AOET 11T3○○PEER-P16	○	●	●	○								
		AOET 11T3○○PEER-P20	○	●	●	○								
		AOET 11T3○○PEER-P25	○	●	●	○								
		AOET 11T3○○PEFR-S	○	●	●	○								
17 Type	M Class	AOMT 1705○○PEER-L	○	●	●	○	○							
		AOMT 1705○○PEER-G	○	●	●	○	○	○	○	○	○	○	○	○
		AOMT 1705○○PEER-H		●	●	○	○							
	E Class	AOET 1705○○PEER-F	○	●	●	○	○							
		AOET 1705○○PEER-P25	○	●	●	○								
		AOET 1705○○PEER-P32	○	●	●	○								
		AOET 1705○○PEFR-S	○	●	●	○								

●: Standard stock ○: Planned stock

WEZ Type

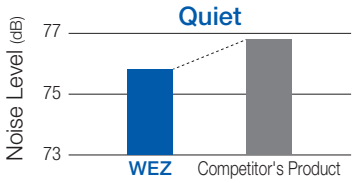
Excellent Wall Accuracy





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

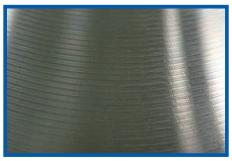
Lower cutting force helps reduce machining noise



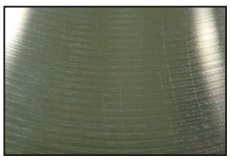
Machine: Vertical Machining Centre BT40, Work Material S50C
Tool: WEZ 11020E03 (ø20, 3 flutes)
Insert: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions: v_c = 150m/min, f_z = 0.15mm/t, a_p=8mm, a_e= 5mm Dry

Improved Milling Quality

WEZ Type

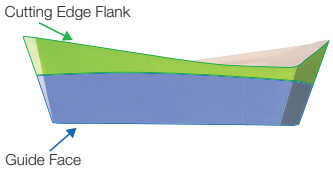


Competitor's Product



High-precision ground class insert with excellent sharpness

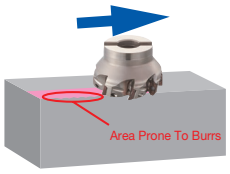
● Ground finish on cutting edge and guide face
The guide face has a ground finish as well as the cutting edge, minimizing corner difference when mounting on the body.
Stable runout precision and machining quality



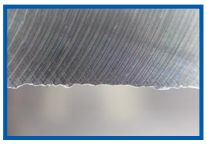
Lineup of Chipbreakers for Ground Inserts

● F Type high rake chipbreaker specialized for sharpness and machining accuracy

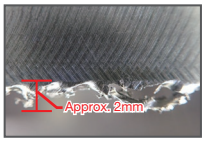
- Sharpness from ground finish enables burr control
- Good wall accuracy with all diameters



WEZ Type



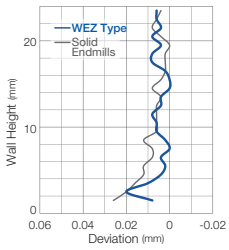
Competitor's Product

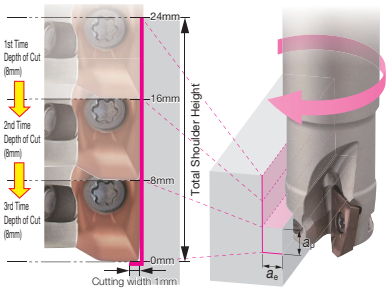


Machine: Vertical Machining Centre BT50, Work Material (SUS304)
Tool: WEZ 11050RS07 (ø50, 7 flutes)
Insert: AOET 11T308PEER-F (ACU2500)
Cutting Conditions: v_c = 120m/min, f_z = 0.12mm/t, a_p=1mm, a_e= 30mm Dry

● P Type chipbreaker for wall surface squareness equivalent to solid endmills

- Premium item with cutting edge shape optimised for each cutter diameter while maintaining the F Type chipbreaker's sharpness
- Enables wall surface squareness equal to solid endmills through a blade shape optimised for each tool diameter





P Type Chipbreaker Selection

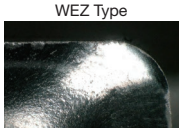
Type	Cutter Dia. (mm)										
	ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40 or more
AOET11T3○○PEER-P○○	-P16		-P20		Not Available	-P25		Not Available			
AOET1705○○PEER-P○○	Not Available					-P25		-P32			Not Available

Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: WEZ 11020E03 (ø20, 3 flutes)
Insert: AOET 11T308PEER-P20 (ACU2500)
Cutting Conditions: v_c = 150m/min, f_z = 0.1mm/t, a_p=8mm x 3 Passes, a_e= 1mm Dry

● S Type sharp edge chipbreaker for non-ferrous metals, with excellent adhesion resistance

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

WEZ Type

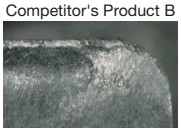


No Adhesion

Competitor's Product A

Adhesion

Competitor's Product B

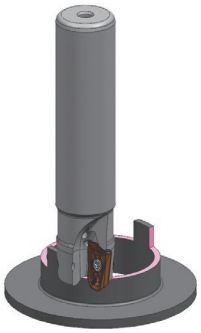


Adhesion

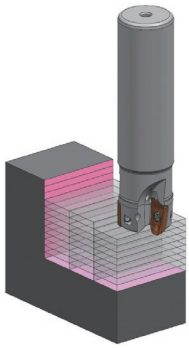
Machine: Vertical Machining Centre BT30, Work Material: ADC12
Tool: WEZ 11020E03 (ø20, 3 flutes)
Insert: AOET 11T308PEFR-S (H20)
Cutting Conditions: v_c = 350m/min, f_z = 0.1mm/t, a_p=3mm, a_e= 10mm Dry

Application Examples

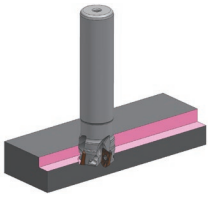
S40C Hub		Sumitomo	Competitor's Product
Vertical Machining Centre BT40	Tool	WEZ17025E02	Double-sided, 4 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	25	25
	Number of Teeth	2	2
	v_c (m/min)	120	120
	v_f (mm/min)	300	300
	f_z (mm/t)	0.066	0.066
	a_p (mm)	9	9
	a_e (mm)	5	5
	Coolant	Wet	Wet
	Results	The high chattering sound typical of thin workpieces is gone, and stable machining enables longer tool life.	



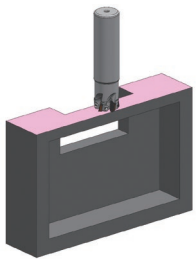
S50C Machine Component		Sumitomo	Competitor's Product
Vertical Machining Centre BT50	Tool	WEZ17032E03	Single-Sided 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	32	32
	Number of Teeth	3	3
	v_c (m/min)	75	75
	v_f (mm/min)	225	225
	f_z (mm/t)	0.1	0.1
	a_p (mm)	4	4
	a_e (mm)	22	22
	Coolant	Wet	Wet
	Results	Drastically reduced cutting edge damage with same number of output Able to continue use, tool life increased.	



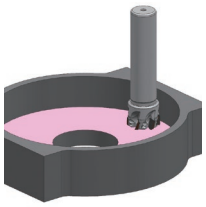
SUS304 Machine Component		Sumitomo	Competitor's Product
Vertical Machining Centre BT40	Tool	WEZ11028E04	—
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	28	28
	Number of Teeth	4	4
	v_c (m/min)	150	150
	v_f (mm/min)	1350	1350
	f_z (mm/t)	0.2	0.2
	a_p (mm)	2	2
	a_e (mm)	10	10
	Coolant	Dry	Dry
	Results	Tool life increased. Stable machining achieved.	



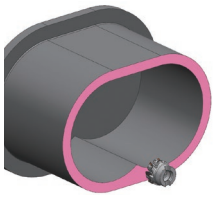
FC250 Mounting base		Sumitomo	Competitor's Product
Vertical Machining Centre BT50	Tool	WEZ11032E05	Single-Sided 2 Corners
	Grade	ACK3000	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	32	32
	Number of Teeth	5	4
	v_c (m/min)	220	220
	v_f (mm/min)	1100	900
	f_z (mm/t)	0.1	0.1
	a_p (mm)	2	2
	a_e (mm)	20	20
	Coolant	Dry	Dry
	Results	Efficiency increased. Even thin areas can be machined without chatter.	



FC300 Table		Sumitomo	Competitor's Product
5-axis Control Vertical Machining Centre HSK-A63	Tool	WEZ11040E06	—
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	40	40
	Number of Teeth	6	6
	v_c (m/min)	200	200
	v_f (mm/min)	1300	1300
	f_z (mm/t)	0.135	0.135
	a_p (mm)	2	2
	a_e (mm)	20	20
	Coolant	Wet	Wet
	Results	Stable machining is possible even for thin workpieces or low-rigidity machines.	



FC250 Machine Component		Sumitomo	Competitor's Product
Horizontal Machining Centre: BT50	Tool	WEZ11050RS07	Single-Sided 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (mm)	50	50
	Number of Teeth	7	5
	v_c (m/min)	180	180
	v_f (mm/min)	805	574
	f_z (mm/t)	0.1	0.1
	a_p (mm)	0.3	0.3
	a_e (mm)	10	10
	Coolant	Wet	Wet
	Results	Quiet machining sounds for improved machining efficiency. Good surface finish quality with 3μm parallelism and 4μm flatness.	

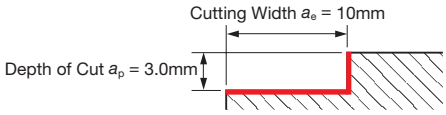


Recommended Cutting Conditions

WEZ11 Type

Tool: WEZ11020E03, Insert: AO□T11T3 Type

Cutting Conditions: Depth of Cut a_p = 3mm, Cutting Width a_e = 10mm, Dry



ISO Classification	Work Material		Work Material Hardness (HB)	Chipbreaker	Grade								
					ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACM200	ACM300	DL2000
					Feed Rate per Tooth f_z (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	0.05 - **0.10** - 0.15
					Cutting Speed v_c (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 and Others (Martensitic / Ferritic)	200	G	110 - **140** - 170						140 - **170** - 190	90 - **110** - 140	
		SUS403 and Others (Martensitic Hardened)	240	G	100 - **125** - 150						125 - **150** - 170	80 - **100** - 125	
		SUS304, SUS316 (Austenitic)	180	G	120 - **150** - 180						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						35 - **45** - 60	25 - **35** - 50	
		Ti Alloy		G	60 - **80** - 100						70 - **90** - 110	50 - **70** - 90	
N	Aluminum Alloy	Si ≤12.6%		S									500 - **750** - 1000
		Si >12.6%		S									170 - **200** - 250
	Copper Alloy			S									300 - **330** - 350

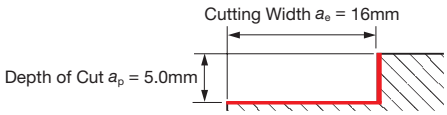
● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

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

WEZ17 Type

Tool: WEZ17032E03, Insert: AO□T1705 Type

Cutting Conditions: Depth of Cut a_p = 5mm, Cutting Width a_e = 16mm, Dry



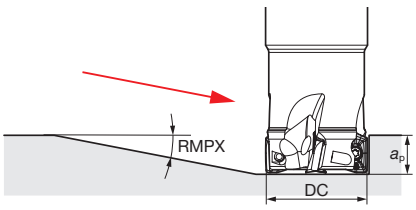
ISO Classification	Work Material		Work Material Hardness (HB)	Chipbreaker	Grade								
					ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACM200	ACM300	DL2000
					Feed Rate per Tooth f_z (mm/t)								
					0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.15** - 0.22	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.05 - **0.10** - 0.15
					Cutting Speed v_c (m/min)								
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						145 - **175** - 195	100 - **115** - 145	
		SUS403 and Others (Martensitic Hardened)	240	G	105 - **130** - 155						130 - **155** - 175	85 - **105** - 130	
		SUS304, SUS316 (Austenitic)	180	G	125 - **155** - 190						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						35 - **45** - 60	25 - **35** - 50	
		Ti Alloy		G	60 - **85** - 105						75 - **95** - 115	50 - **75** - 95	
N	Aluminum Alloy	Si ≤12.6%		S									500 - **750** - 1000
		Si >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.

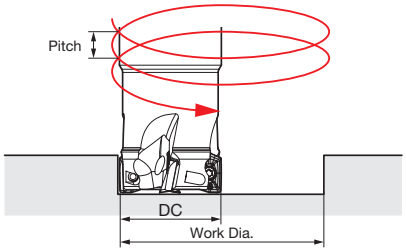
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work material rigidity, depth of cut and other factors.

■ Ramping / Helical Milling Upper Limits

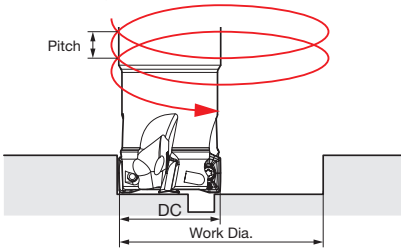
Ramping



Flat bottom machining



Machining with prepared hole



WEZ11 Type

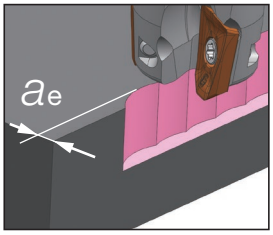
Tool Dia. DC	Max. Ramping Angle RMPX (°)	Flat bottom machining				Machining with prepared hole	
		Max. Machining Dia. (mm)	Maximum Pitch (mm/rev)	Min. Machining Dia. (mm)	Maximum Pitch (mm/rev)	Min. Machining Dia. (mm)	Maximum Pitch (mm/rev)
14	13.2	25.3	8.4	23.1	5.9	19.0	1.9
16	10.5	29.3	7.6	27.0	5.6	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

WEZ17 Type

Tool Dia. DC	Max. Ramping Angle RMPX (°)	Flat bottom machining				Machining with prepared hole	
		Max. Machining Dia. (mm)	Maximum Pitch (mm/rev)	Min. Machining Dia. (mm)	Maximum Pitch (mm/rev)	Min. Machining Dia. (mm)	Maximum 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

*The table above shows values with nose radius 0.8mm.

■ Plunge Cutting Upper Limit



	Max. a_e (mm)
WEZ11 Type	3
WEZ17 Type	5

WEZ 11000R(S) Type

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

New

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

10mm 90°

Fig 1

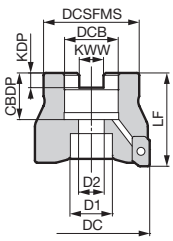


Fig 2

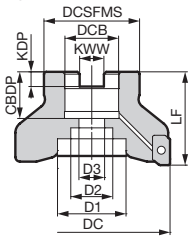
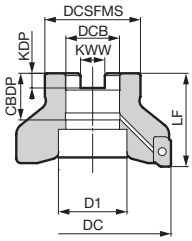


Fig 3



Body (Shell Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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	**16**	8.4	5.6	18	14	9	—	4	0.21	1
	11040RS06	●	**40**	33	40	**16**	8.4	5.6	18	14	9	—	6	0.20	1
	11050RS05	●	**50**	41	40	**22**	10.4	6.3	20	18	11	—	5	0.32	1
	11050RS07	●	**50**	41	40	**22**	10.4	6.3	20	18	11	—	7	0.31	1
	11063RS06	●	**63**	50	40	**22**	10.4	6.3	20	18	11	—	6	0.58	1
	11063RS08	●	**63**	50	40	**22**	10.4	6.3	20	18	11	—	8	0.57	1
	11080RS07	●	***80**	55	50	**27**	12.4	7	22	20	14	—	7	1.08	1
	11080RS10	●	***80**	55	50	**27**	12.4	7	22	20	14	—	10	1.07	1
	11100RS09	●	**100**	70	50	**32**	14.4	8	32	46	—	—	9	1.57	3
	11100RS12	●	**100**	70	50	**32**	14.4	8	32	46	—	—	12	1.56	3
Inch	**WEZ 11080R07**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	—	7	1.09	1
	11080R10	●	***80**	55	50	**25.4**	9.5	6	25	20	14	—	10	1.08	1
	11100R09	●	***100**	70	63	**31.75**	12.7	8	32	46	27	18	9	2.12	2
	11100R12	●	***100**	70	63	**31.75**	12.7	8	32	46	27	18	12	2.10	2

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

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

Parts

Applicable Cutter	Flat Screw		Integrated Wrench	Anti-seizure Cream
		N·m		
WEZ11040RS04	BFTX0306IP	1.5	TRDR08IP	SUMI-P
WEZ11040RS06				
WEZ11050RS05				
WEZ11050RS07				
WEZ11063RS06				
WEZ11063RS08				
WEZ11080RS07				
WEZ11080RS10				
WEZ11100RS09				
WEZ11100RS12				
WEZ11080R07				
WEZ11080R10				
WEZ11100R09				
WEZ11100R12				

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

WEZ 11000R(S) Type

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

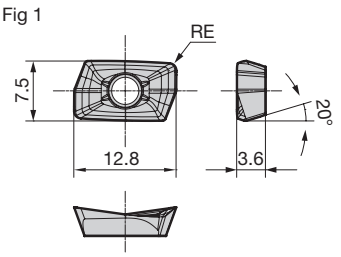
New

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light		P		K		M S			N	P		
	General-purpose	K M S		P		K	M S	M S	N	N			
	Roughing	K M S		P		K		M S					
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Fig
AOMT	11T302PEER-G	○	○	○	○	○	○	○	—	—	○	0.2	1
	11T304PEER-G	●	○	○	○	○	○	○	—	—	○	0.4	1
	11T308PEER-G	●	○	○	○	○	○	○	—	—	○	0.8	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	1
	11T332PEER-G	○	○	○	○	○	○	○	—	—	○	3.2	1
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
	11T308PEER-F	●	—		—		—		—	—	—	0.8	1
	11T312PEER-F	○	—		—		—		—	—	—	1.2	1
AOET	11T302PEER-P16	○	—		—		—		—	—	—	0.2	1
	11T304PEER-P16	●	—		—		—		—	—	—	0.4	1
	11T308PEER-P16	●	—		—		—		—	—	—	0.8	1
	11T312PEER-P16	○	—		—		—		—	—	—	1.2	1
	11T302PEER-P20	○	—		—		—		—	—	—	0.2	1
	11T304PEER-P20	●	—		—		—		—	—	—	0.4	1
	11T308PEER-P20	●	—		—		—		—	—	—	0.8	1
	11T312PEER-P20	○	—		—		—		—	—	—	1.2	1
	11T302PEER-P25	○	—		—		—		—	—	—	0.2	1
	11T304PEER-P25	●	—		—		—		—	—	—	0.4	1
	11T308PEER-P25	●	—		—		—		—	—	—	0.8	1
	11T312PEER-P25	○	—		—		—		—	—	—	1.2	1
AOET	11T302PEFR-S	—	—	—	—	—	—	—	○	○	—	0.2	1
	11T304PEFR-S	—	—	—	—	—	—	—	●	●	—	0.4	1
	11T308PEFR-S	—	—	—	—	—	—	—	●	●	—	0.8	1
	11T312PEFR-S	—	—	—	—	—	—	—	○	○	—	1.2	1

Fig 1



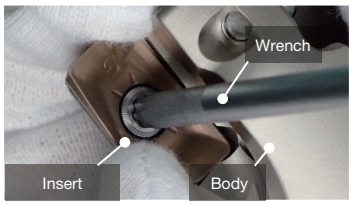
-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -P16/-P20/-P25: High-precision Machining, -S: Non-ferrous metals.

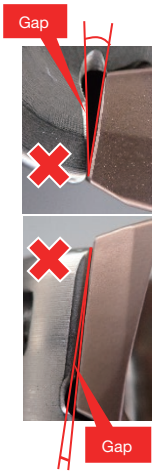
Recommended Cutting Conditions ☞ H56

*-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.

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly 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.





＊When mounting inserts with nose radius of 3.0 or above, modification of the body is required.

Modify this edge.

Reworking guidelines
Nose radius = 3.0: C1
(AOMT11T330PEER)
Nose radius = 3.2: C1
(AOMT11T332PEER)
Standard: R1.

● mark: Standard stocked item (new product/expanded item) ○ mark: Planned Stock (stock confirmation requested)

WEZ 17000R(S) Type

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

New

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

15mm 90°

Fig 1

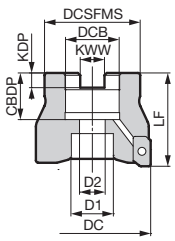


Fig 2

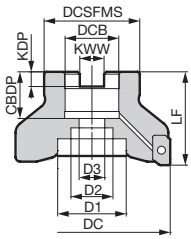


Fig 3

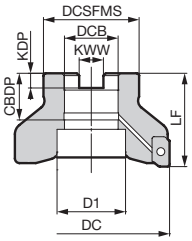


Fig 4

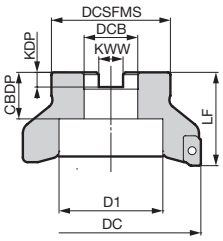
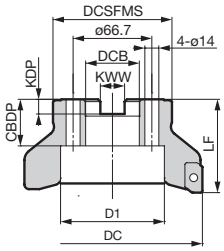


Fig 5



Body (Shell Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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	**16**	8.4	5.6	18	14	9	—	3	0.19	1
	17040RS04	●	**40**	33	40	**16**	8.4	5.6	18	14	9	—	4	0.16	1
	17050RS03	●	**50**	41	40	**22**	10.4	6.3	20	18	11	—	3	0.30	1
	17050RS05	●	**50**	41	40	**22**	10.4	6.3	20	18	11	—	5	0.26	1
	17063RS04	●	**63**	50	40	**22**	10.4	6.3	20	18	11	—	4	0.54	1
	17063RS06	●	**63**	50	40	**22**	10.4	6.3	20	18	11	—	6	0.51	1
	17080RS04	●	***80**	55	50	**27**	12.4	7	22	20	14	—	4	1.10	1
	17080RS07	●	***80**	55	50	**27**	12.4	7	22	20	14	—	7	1.05	1
	17100RS05	●	**100**	70	50	**32**	14.4	8	32	46	—	—	5	1.58	3
	17100RS08	●	**100**	70	50	**32**	14.4	8	32	46	—	—	8	1.57	3
	17125RS06	●	**125**	80	63	**40**	16.4	9	29	52	29	—	6	3.04	1
	17125RS09	●	**125**	80	63	**40**	16.4	9	29	52	29	—	9	3.07	1
	17125RS11	●	**125**	80	63	**40**	16.4	9	29	52	29	—	11	3.02	1
	17160RS08	●	**160**	130	63	**40**	16.4	9	29	90	—	—	8	5.24	5
	17160RS10	●	**160**	130	63	**40**	16.4	9	29	90	—	—	10	5.31	5
	17160RS12	●	**160**	130	63	**40**	16.4	9	29	90	—	—	12	5.26	5
Inch	**WEZ 17080R04**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	—	4	1.10	1
	17080R07	●	***80**	55	50	**25.4**	9.5	6	25	20	14	—	7	1.06	1
	17100R05	●	***100**	70	63	**31.75**	12.7	8	32	46	27	18	5	2.08	2
	17100R08	●	***100**	70	63	**31.75**	12.7	8	32	46	27	18	8	2.07	2
	17125R06	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	—	6	3.09	1
	17125R09	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	—	9	3.11	1
	17125R11	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	—	11	3.06	1
	17160R08	●	**160**	100	63	**50.8**	19.1	11	38	72	—	—	8	5.04	4
	17160R10	●	**160**	100	63	**50.8**	19.1	11	38	72	—	—	10	5.09	4
	17160R12	●	**160**	100	63	**50.8**	19.1	11	38	72	—	—	12	5.04	4

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Parts

Applicable Cutter	Flat Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
		N·m				
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	17	100	R	S	05
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric	Number of Teeth

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

WEZ 17000R(S) Type

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

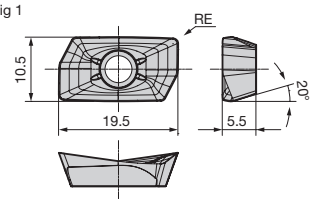
New

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light		P		K		M S			N	P		
	General-purpose	P K S		P		K	M S	M S	N	N			
	Roughing	P K S		P		K		M S					
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose 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
	170508PEER-G	●	○	○	○	○	○	○	—	—	○	0.8	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	1
	170564PEER-G	○	○	○	○	○	○	○	—	—	○	6.4	1
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
	170508PEER-F	●	—		—		—		—	—	—	0.8	1
	170512PEER-F	○	—		—		—		—	—	—	1.2	1
AOET	170502PEER-P25	○	—		—		—		—	—	—	0.2	1
	170504PEER-P25	●	—		—		—		—	—	—	0.4	1
	170508PEER-P25	●	—		—		—		—	—	—	0.8	1
	170512PEER-P25	○	—		—		—		—	—	—	1.2	1
	170502PEER-P32	○	—		—		—		—	—	—	0.2	1
	170504PEER-P32	●	—		—		—		—	—	—	0.4	1
	170508PEER-P32	●	—		—		—		—	—	—	0.8	1
	170512PEER-P32	○	—		—		—		—	—	—	1.2	1
AOET	170502PEFR-S	—	—	—	—	—	—	—	○	○	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	●	●	—	0.4	1
	170508PEFR-S	—	—	—	—	—	—	—	●	●	—	0.8	1
	170512PEFR-S	—	—	—	—	—	—	—	○	○	—	1.2	1

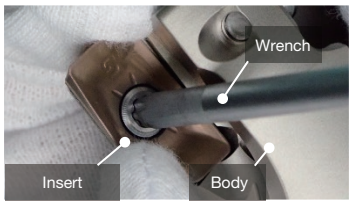
Fig 1

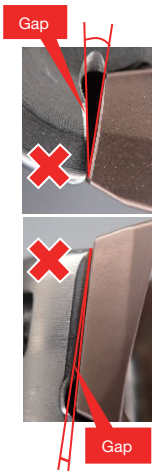


-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -P25/-P32: High-precision Machining, -S: Non-ferrous metals.
*-P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35.

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly 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.





＊When mounting inserts with nose radius of 3.0 or above, modification of the body is required.

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

● mark: Standard stocked item (new product/expanded item) ○ mark: Planned Stock (stock confirmation requested)

WEZ 11000E Type

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

New

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

10mm 90°

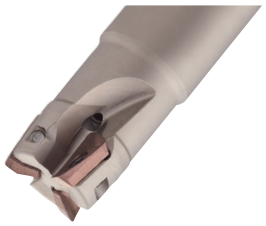


Fig 1

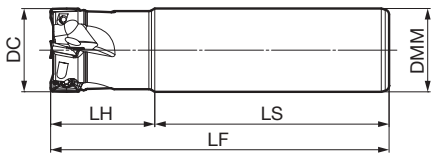
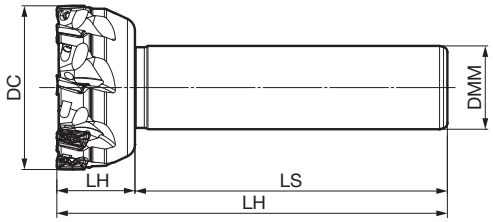


Fig 2



Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 11014E01	●	**14**	16	25	55	80	1	0.10	1
11016E02	●	**16**	16	25	75	100	2	0.13	1
11016E02-12	●	**16**	12	25	75	100	2	0.07	2
11018E02	●	**18**	16	25	75	100	2	0.13	2
11020E02	●	**20**	20	30	80	110	2	0.23	1
11020E02-16	●	**20**	16	30	80	110	2	0.15	2
11020E03	●	**20**	20	30	80	110	3	0.22	1
11020E03-16	●	**20**	16	30	80	110	3	0.14	2
11022E03	●	**22**	20	30	80	110	3	0.23	1
11025E02	●	**25**	25	35	85	120	2	0.40	1
11025E03	●	**25**	25	35	85	120	3	0.40	1
11025E03-20	●	**25**	20	35	85	120	3	0.26	2
11025E04	●	**25**	25	35	85	120	4	0.39	2
11025E04-20	●	**25**	20	35	85	120	4	0.26	2
11028E04	●	**28**	25	35	85	120	4	0.41	1
11030E04	●	**30**	25	40	90	130	4	0.46	1
11032E02	●	**32**	32	40	90	130	2	0.74	1
11032E03	●	**32**	32	40	90	130	3	0.73	1
11032E04	●	**32**	32	40	90	130	4	0.73	2
11032E05	●	**32**	32	40	90	130	5	0.72	2
11032E05-25	●	**32**	25	40	90	130	5	0.46	2
11035E05	●	**35**	32	40	90	130	5	0.75	2
11040E02	●	**40**	32	30	120	150	2	0.96	2
11040E04	●	**40**	32	30	120	150	4	0.94	2
11040E06	●	**40**	32	30	120	150	6	0.93	2
11050E05	●	**50**	32	30	120	150	5	1.04	2
11050E07	●	**50**	32	30	120	150	7	1.04	2
11063E08	●	**63**	32	30	120	150	8	1.24	2
11080E10	●	**80**	32	30	120	150	10	1.52	2

Inserts are sold separately.

Parts

Applicable Cutters	Flat Screw		Integrated Wrench	Anti-seizure Cream
		N·m		
WEZ11014E01	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEZ11016E02(-12)				
WEZ11018E02				
WEZ11020E02(-16)	BFTX0306IP	1.5		
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	11	025	E	02	-22
Cutter Series	Insert Size	Cutter Dia.	With Shank	Number of Teeth	Shank Dia.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

WEZ 11000E Type

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

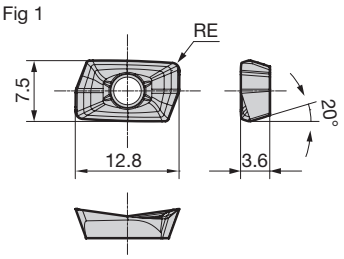
New

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light		P		K		M S			N	P		
	General-purpose	P K M S		P		K	M S	M S	N	N			
	Roughing	P K M S		P		K		M S					
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Fig
AOMT	11T302PEER-G	○	○	○	○	○	○	○	—	—	○	0.2	1
	11T304PEER-G	●	○	○	○	○	○	○	—	—	○	0.4	1
	11T308PEER-G	●	○	○	○	○	○	○	—	—	○	0.8	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	1
	11T332PEER-G	○	○	○	○	○	○	○	—	—	○	3.2	1
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
	11T308PEER-F	●	—		—		—		—	—	—	0.8	1
	11T312PEER-F	○	—		—		—		—	—	—	1.2	1
AOET	11T302PEER-P16	○	—		—		—		—	—	—	0.2	1
	11T304PEER-P16	●	—		—		—		—	—	—	0.4	1
	11T308PEER-P16	●	—		—		—		—	—	—	0.8	1
	11T312PEER-P16	○	—		—		—		—	—	—	1.2	1
	11T302PEER-P20	○	—		—		—		—	—	—	0.2	1
	11T304PEER-P20	●	—		—		—		—	—	—	0.4	1
	11T308PEER-P20	●	—		—		—		—	—	—	0.8	1
	11T312PEER-P20	○	—		—		—		—	—	—	1.2	1
	11T302PEER-P25	○	—		—		—		—	—	—	0.2	1
	11T304PEER-P25	●	—		—		—		—	—	—	0.4	1
	11T308PEER-P25	●	—		—		—		—	—	—	0.8	1
	11T312PEER-P25	○	—		—		—		—	—	—	1.2	1
AOET	11T302PEFR-S	—	—	—	—	—	—	—	○	○	—	0.2	1
	11T304PEFR-S	—	—	—	—	—	—	—	●	●	—	0.4	1
	11T308PEFR-S	—	—	—	—	—	—	—	●	●	—	0.8	1
	11T312PEFR-S	—	—	—	—	—	—	—	○	○	—	1.2	1

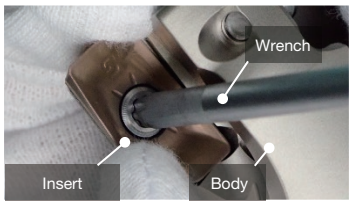
Fig 1

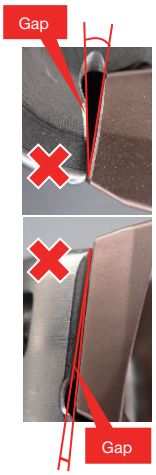


-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -P16/-P20/-P25: High-precision Machining, -S: Non-ferrous metals.
*-P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20. -P25 is applicable to cutter diameters ø25 and ø28.

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly 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.





＊When mounting inserts with nose radius of 3.0 or above, modification of the body is required.

Modify this edge.

Reworking guidelines
Nose radius = 3.0: C1
(AOMT11T330PEER)
Nose radius = 3.2: C1
(AOMT11T332PEER)
Standard: R1.

WEZ 11000EL Type

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

New

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

10mm 90°

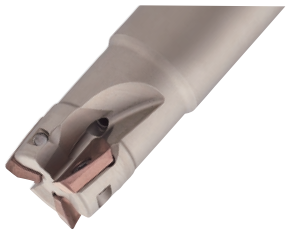


Fig 1

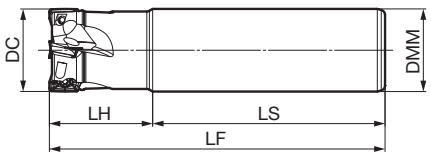
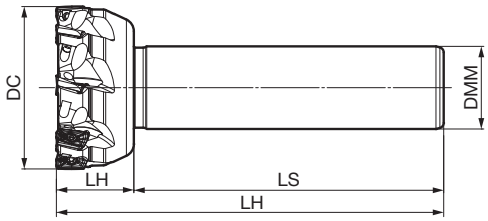


Fig 2



Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 11014EL01	●	**14**	16	25	95	120	1	0.16	1
11016EL02	●	**16**	16	25	120	145	2	0.19	1
11016EL02-14	●	**16**	14	25	120	145	2	0.15	2
11018EL02	●	**18**	16	25	120	145	2	0.20	2
11020EL02	●	**20**	20	40	110	150	2	0.31	1
11020EL02-18	●	**20**	18	25	125	150	2	0.26	2
11022EL02	●	**22**	20	30	120	150	2	0.32	2
11025EL02	●	**25**	25	50	120	170	2	0.57	1
11025EL02-22	●	**25**	22	30	140	170	2	0.46	2
11025EL03	●	**25**	25	50	120	170	3	0.57	1
11028EL02	●	**28**	25	30	140	170	2	0.60	2
11030EL02	●	**30**	25	30	140	170	2	0.62	2
11032EL02	●	**32**	32	60	110	170	2	0.97	1
11032EL02-30	●	**32**	30	30	140	170	2	0.88	2
11032EL03	●	**32**	32	60	110	170	3	0.96	1
11035EL02	●	**35**	32	30	140	170	2	1.02	2
11035EL03	●	**35**	32	30	140	170	3	1.00	2
11040EL02	●	**40**	32	30	140	170	2	1.08	2
11050EL03	●	**50**	32	30	140	170	3	1.19	2

Inserts are sold separately.

Identification Code

WEZ	11	025	E	L	02	-22
Cutter Series	Insert Size	Cutter Dia.	With Shank	Long Type	Number of Teeth	Shank Dia.

Parts

Applicable Cutter	Flat Screw		Integrated Wrench	Anti-seizure Cream
		N·m		
WEZ11014EL01	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEZ11016EL02(-14)		1.5		
WEZ11018EL02				
WEZ11020EL02(-18)	BFTX0306IP			
WEZ11022EL02				
WEZ11025EL02(-22)				
WEZ11025EL03				
WEZ11028EL02				
WEZ11030EL02				
WEZ11032EL02(-30)				
WEZ11032EL03				
WEZ11035EL02				
WEZ11035EL03				
WEZ11040EL02				
WEZ11050EL03				

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

WEZ 11000EL Type

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

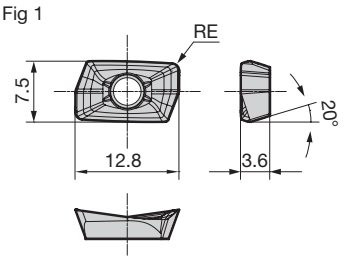
New

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light		P		K		M S			N	P		
	General-purpose	P K M S		P		K	M S	M S	N	N			
	Roughing	P K M S		P		K		M S					
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE	Fig
AOMT 11T302PEER-G		○	○	○	○	○	○	○	—	—	○	0.2	1
11T304PEER-G		●	○	○	○	○	○	○	—	—	○	0.4	1
11T308PEER-G		●	○	○	○	○	○	○	—	—	○	0.8	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	1
11T332PEER-G		○	○	○	○	○	○	○	—	—	○	3.2	1
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
11T308PEER-F		●	—		—		—		—	—	—	0.8	1
11T312PEER-F		○	—		—		—		—	—	—	1.2	1
AOET 11T302PEER-P16		○	—		—		—		—	—	—	0.2	1
11T304PEER-P16		●	—		—		—		—	—	—	0.4	1
11T308PEER-P16		●	—		—		—		—	—	—	0.8	1
11T312PEER-P16		○	—		—		—		—	—	—	1.2	1
11T302PEER-P20		○	—		—		—		—	—	—	0.2	1
11T304PEER-P20		●	—		—		—		—	—	—	0.4	1
11T308PEER-P20		●	—		—		—		—	—	—	0.8	1
11T312PEER-P20		○	—		—		—		—	—	—	1.2	1
11T302PEER-P25		○	—		—		—		—	—	—	0.2	1
11T304PEER-P25		●	—		—		—		—	—	—	0.4	1
11T308PEER-P25		●	—		—		—		—	—	—	0.8	1
11T312PEER-P25		○	—		—		—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	○	○	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	●	●	—	0.4	1
11T308PEFR-S		—	—	—	—	—	—	—	●	●	—	0.8	1
11T312PEFR-S		—	—	—	—	—	—	—	○	○	—	1.2	1

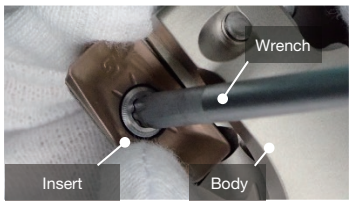
Fig 1

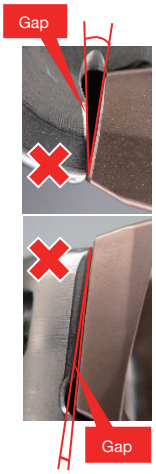


-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -P16/-P20/-P25: High-precision Machining, -S: Non-ferrous metals.
*-P16 is applicable to cutter diameters ø14 and ø16. -P20 is applicable to cutter diameters ø18 and ø20. -P25 is applicable to cutter diameters ø25 and ø28.

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly 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.





* When mounting inserts with nose radius of 3.0 or above, modification of the body is required.

Modify this edge.

Reworking guidelines
Nose radius = 3.0: C1
(AOMT11T330PEER)
Nose radius = 3.2: C1
(AOMT11T332PEER)
Standard: R1.

WEZ 17000E Type

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

New

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

15mm 90°

Fig 1

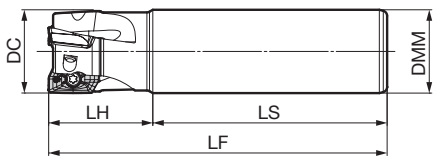
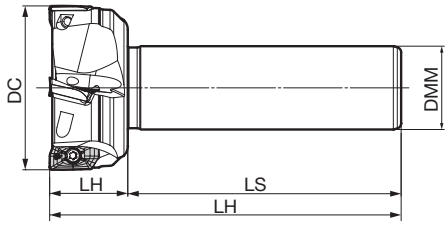


Fig 2



Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 17025E02	●	**25**	25	35	85	120	2	0.38	1
17025E02-20	●	**25**	20	35	85	120	2	0.25	2
17028E02	●	**28**	25	35	85	120	2	0.40	2
17030E03	●	**30**	25	40	90	130	3	0.43	2
17032E02	●	**32**	32	40	90	130	2	0.71	1
17032E03	●	**32**	32	40	90	130	3	0.69	1
17032E03-25	●	**32**	25	40	90	130	3	0.44	2
17035E03	●	**35**	32	40	90	130	3	0.72	2
17040E03	●	**40**	32	30	105	135	3	0.81	2
17040E04	●	**40**	32	30	105	135	4	0.79	2
17050E03	●	**50**	32	30	105	135	3	0.93	2
17050E03-42	●	**50**	42	30	105	135	3	1.41	2
17050E05	●	**50**	32	30	105	135	5	0.89	2
17050E05-42	●	**50**	42	30	105	135	5	1.37	2
17063E04	●	**63**	32	30	105	135	4	1.10	2
17063E04-42	●	**63**	42	30	105	135	4	1.58	2
17063E06	●	**63**	32	30	105	135	6	1.08	2
17063E06-42	●	**63**	42	30	105	135	6	1.56	2
17080E07	●	**80**	32	30	105	135	7	1.39	2

Inserts are sold separately.

Identification Code

WEZ	17	032	E	02	-30
Cutter Series	Insert Size	Cutter Dia.	With Shank	Number of Teeth	Shank Dia.

Parts

Applicable Cutter	Flat Screw		Integrated 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				

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

WEZ 17000E Type

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

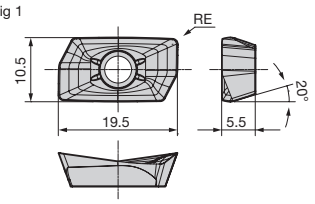
New

Insert

Dimensions (mm)

Grade	Coated Carbide							Carbide	DLC	Cermet		
Process: High-speed / Light		P		K		M S			N	P		
Process: General-purpose	P K S		P		K	M S	M S	N	N			
Process: Roughing	P K S		P		K		M S					
Cat. No.	ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose 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
170508PEER-G	●	○	○	○	○	○	○	—	—	○	0.8	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	1
170564PEER-G	○	○	○	○	○	○	○	—	—	○	6.4	1
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
170508PEER-F	●	—		—		—		—	—	—	0.8	1
170512PEER-F	○	—		—		—		—	—	—	1.2	1
AOET 170502PEER-P25	○	—		—		—		—	—	—	0.2	1
170504PEER-P25	●	—		—		—		—	—	—	0.4	1
170508PEER-P25	●	—		—		—		—	—	—	0.8	1
170512PEER-P25	○	—		—		—		—	—	—	1.2	1
170502PEER-P32	○	—		—		—		—	—	—	0.2	1
170504PEER-P32	●	—		—		—		—	—	—	0.4	1
170508PEER-P32	●	—		—		—		—	—	—	0.8	1
170512PEER-P32	○	—		—		—		—	—	—	1.2	1
AOET 170502PEFR-S	—	—	—	—	—	—	—	○	○	—	0.2	1
170504PEFR-S	—	—	—	—	—	—	—	●	●	—	0.4	1
170508PEFR-S	—	—	—	—	—	—	—	●	●	—	0.8	1
170512PEFR-S	—	—	—	—	—	—	—	○	○	—	1.2	1

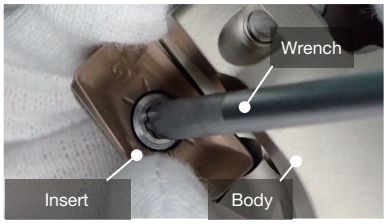
Fig 1

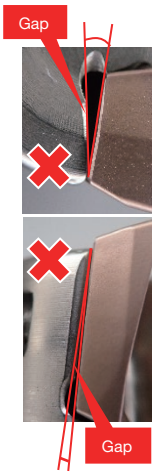


-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -P25/-P32: High-precision Machining, -S: Non-ferrous metals.
*-P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35.

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly 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.





＊When mounting inserts with nose radius of 3.0 or above, modification of the body is required.

Modify this edge.

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

● mark: Standard stocked item (new product/expanded item) ○ mark: Planned Stock (stock confirmation requested)

WEZ 17000EL Type

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

New

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

15mm 90°

Fig 1

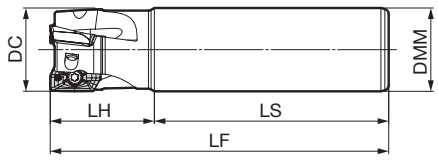
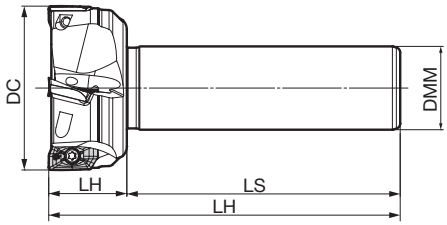


Fig 2



Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEZ 17025EL02	●	**25**	25	50	120	170	2	0.55	1
17028EL02	●	**28**	25	50	120	170	2	0.57	2
17030EL02	●	**30**	25	50	120	170	2	0.59	2
17032EL02	●	**32**	32	60	110	170	2	0.94	1
17032EL02-30	●	**32**	30	50	120	170	2	0.85	2
17032EL03	●	**32**	32	60	110	170	3	0.92	1
17035EL02	●	**35**	32	50	120	170	2	0.98	2
17040EL02	●	**40**	32	50	120	170	2	1.09	2
17040EL03	●	**40**	32	50	120	170	3	1.08	2
17040EL04	●	**40**	32	50	120	170	4	1.05	2
17050EL03	●	**50**	32	50	120	170	3	1.29	2
17050EL03-42	●	**50**	42	50	120	170	3	1.83	2
17050EL05	●	**50**	32	50	120	170	5	1.25	2
17050EL05-42	●	**50**	42	50	120	170	5	1.79	2
17063EL04	●	**63**	32	50	120	170	4	1.61	2
17063EL04-42	●	**63**	42	50	120	170	4	2.16	2
17063EL06	●	**63**	32	50	120	170	6	1.58	2
17063EL06-42	●	**63**	42	50	120	170	6	2.13	2

Inserts are sold separately.

Identification Code

WEZ	17	032	E	L	02	-30
Cutter Series	Insert Size	Cutter Dia.	With Shank	Long Type	Number of Teeth	Shank Dia.

Parts

Applicable Cutter	Flat Screw		Integrated 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)				

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

WEZ 17000EL Type

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

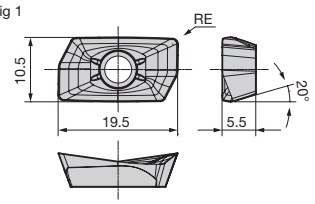
New

Insert

Dimensions (mm)

Grade	Coated Carbide							Carbide	DLC	Cermet		
Process: High-speed / Light		P		K		M S			N	P		
Process: General-purpose	P K S		P		K	M S	M S	N	N			
Process: Roughing	P K S		P		K		M S					
Cat. No.	ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose 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
170508PEER-G	●	○	○	○	○	○	○	—	—	○	0.8	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	1
170564PEER-G	○	○	○	○	○	○	○	—	—	○	6.4	1
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
170508PEER-F	●	—		—		—		—	—	—	0.8	1
170512PEER-F	○	—		—		—		—	—	—	1.2	1
AOET 170502PEER-P25	○	—		—		—		—	—	—	0.2	1
170504PEER-P25	●	—		—		—		—	—	—	0.4	1
170508PEER-P25	●	—		—		—		—	—	—	0.8	1
170512PEER-P25	○	—		—		—		—	—	—	1.2	1
170502PEER-P32	○	—		—		—		—	—	—	0.2	1
170504PEER-P32	●	—		—		—		—	—	—	0.4	1
170508PEER-P32	●	—		—		—		—	—	—	0.8	1
170512PEER-P32	○	—		—		—		—	—	—	1.2	1
AOET 170502PEFR-S	—	—	—	—	—	—	—	○	○	—	0.2	1
170504PEFR-S	—	—	—	—	—	—	—	●	●	—	0.4	1
170508PEFR-S	—	—	—	—	—	—	—	●	●	—	0.8	1
170512PEFR-S	—	—	—	—	—	—	—	○	○	—	1.2	1

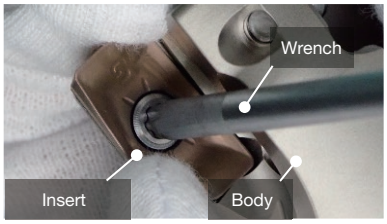
Fig 1

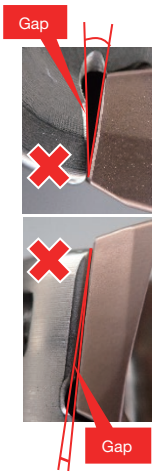


-L: Low Cutting Force, -G: General-purpose, -H: Strong Edge, -F: Medium Finishing, -P25/-P32: High-precision Machining, -S: Non-ferrous metals.
*-P25 is applicable to cutter diameters ø25 and ø28. -P32 is applicable to cutter diameters ø30, ø32 and ø35.

Precautions for Mounting Inserts

(1) Clean the mounting seat surface and contact parts.
(2) While pressing the insert solidly 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.





＊When mounting inserts with nose radius of 3.0 or above, modification of the body is required.

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

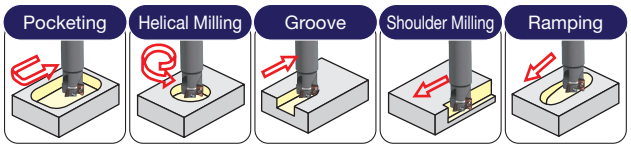
SEC-WaveMill

WEX Type

General Features

An insert with a strong cutting edge design coupled with a high rigidity body, for stable and high efficiency milling with low resistance. 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.

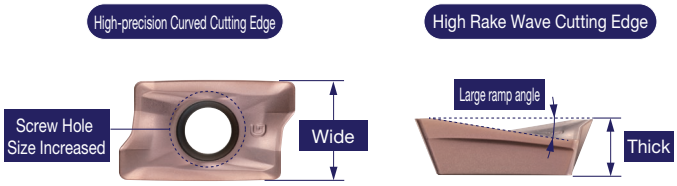
Compatible with Wide Range of Milling



Features

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



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

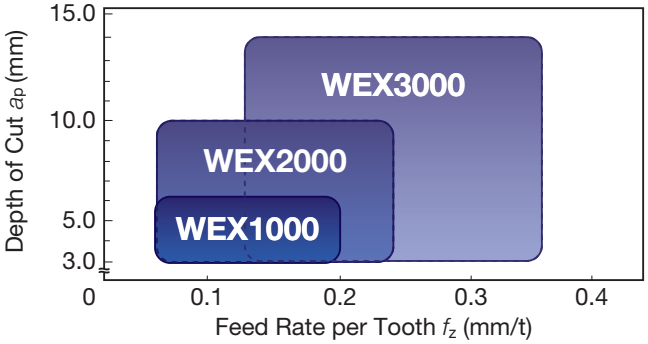
WEX1000 Series

Fine-pitched and high efficiency milling is possible at a small machining cost.

Wide Variety of Inserts

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

WEX Type Series Application Range (Shoulder Milling)



WEX1000 Number of Teeth

Cutter Dia.	Number of Teeth: WEX1000E Standard Type APMX = 6.0mm	WEX1000EL Long Type APMX = 6.0mm	WEX2000E Standard Type APMX = 10.0mm
ø10mm	2	2	—
ø12mm	3	2	—
ø14mm	3	3	1
ø16mm	4	3	2

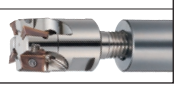
Maximum Depth of Cut APMX

Product Range

	Cat. No.		Remarks	ø10	ø12	ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125
Shell Type	WEX 1000F	H75	Standard Type											8		10	12	14			
Shell Type	WEX 2000F	H76	Standard Type													6	7	8			
Shell Type	WEX 3000F	H77	Standard Type													4	5	6			
Shell Type	WEX 3000R	H77	Standard Type																4	5	6
Shell Type	WEXF 3000R	H77	Fine pitch																7	8	9
Shank Type	WEX 1000E	H78	Standard Type	2	3	3	4	4	5		7										
Shank Type	WEX 1000EL	H78	Long Type	2	2	3	3	3	4												
Shank Type	WEX 2000E	H79	Standard Type			1	2	2	3	3	4	4	4	5		6	7	8			
Shank Type	WEX 2000EL	H79	Long Type			1	2	2	2	2	2	2	2	2		2					
Shank Type	WEX 3000E	H80	Standard Type								2	2	3	3	3	4	5	6			
Shank Type	WEX 3000ES	H80	Short Type														5	6			
Shank Type	WEX 3000EL	H80	Long Type								2	2	2	2	2	2					
Shank Type	WEX 3000E-C	H80	Coarse Pitch Type													3	3	4			
Shank Type	WEX 3000ES-C	H80	Short & Coarse Pitch Type														3	4			
Modular Type	WEX 2000M	H213	Modular Type				2	2	3	3	4	4	4	5		6					
Modular Type	WEX 3000M	H214	Modular Type								2	2	3	3	3	4					

Cutter Diameters in Stock (mm) / Number of Teeth

Shape



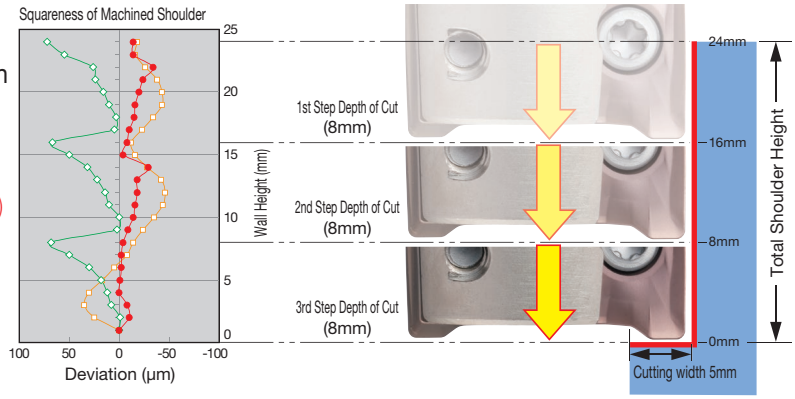
● Numbers inside are number of teeth * mark: Different-diameter shanks in stock

WEX Type

Cutting Performance

(1) Shoulder milling precision

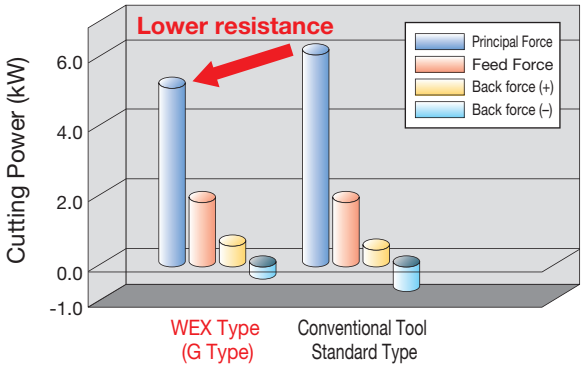
High-precision cutting edges provide very small step marks
(less than half that of competitors' products)



Cutting Conditions
Work Material: SS400
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c=150m/min
Feed Rate: f_z=0.15mm/t (v_f=675mm/min)
Cutting Width: a_e=5mm
Depth of Cut: a_p=8mm x 3 times
Dry

(2) Cutting force

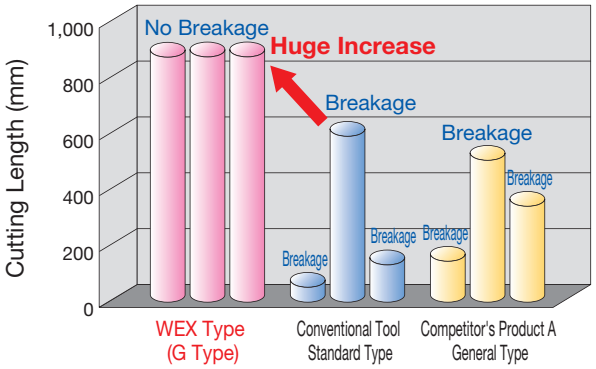
Cutting force (principal force) is approximately 15% lower than conventional tools



Cutting Conditions
Work Material: S50C
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c=200m/min
Feed Rate: f_z=0.2mm/t (v_f=1,200mm/min)
Cutting Width: a_e=8mm
Depth of Cut: a_p=10mm, Dry

(3) Fracture resistance

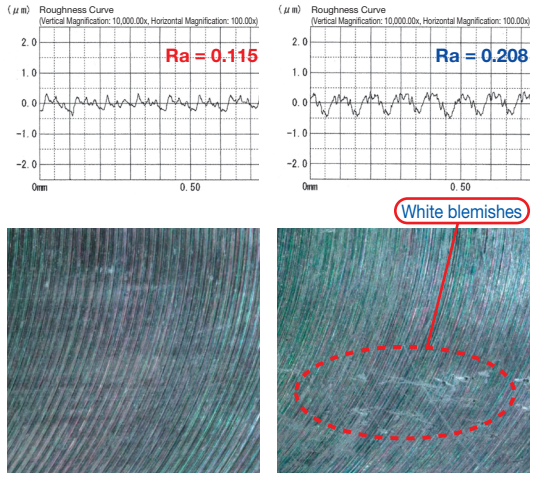
Huge increase in fracture resistance with improved cutting edge strength



Cutting Conditions
Work Material: SCM440
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c=100m/min
Feed Rate: f_z=0.4mm/t (v_f=1,260mm/min)
Cutting Width: a_e=25mm
Depth of Cut: a_p=3mm, Dry

(4) Surface roughness (aluminum alloy milling)

Smooth surface finish free of white blemishes

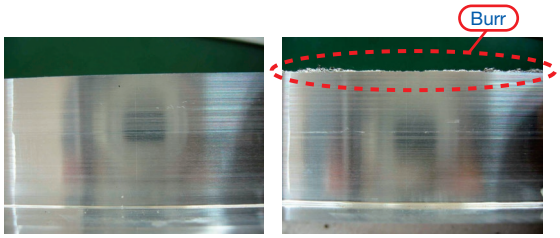


WEX Type | Competitor's Product

Cutting Conditions
Work Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: v_c=800m/min
Feed Rate: f_z=0.1mm/t (v_f=2,400mm/min)
Cutting Width: a_e=16mm
Depth of Cut: a_p=10mm, Dry

(5) Wall surface burrs (aluminum alloy milling)

High rake edge significantly reduces burrs.

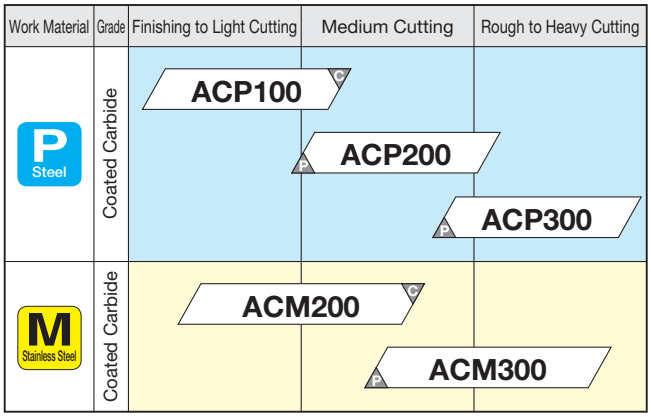


WEX Type | Competitor's Product

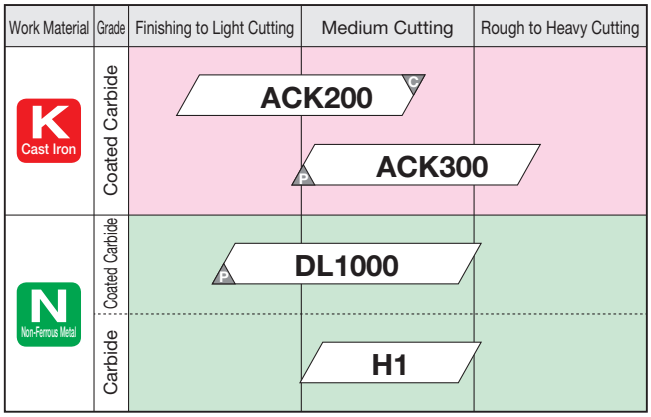
Cutting Conditions
Work Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: v_c=800m/min
Feed Rate: f_z=0.1mm/t (v_f=2,400mm/min)
Cutting Width: a_e=5mm
Depth of Cut: a_p=12mm, Dry

WEX Type

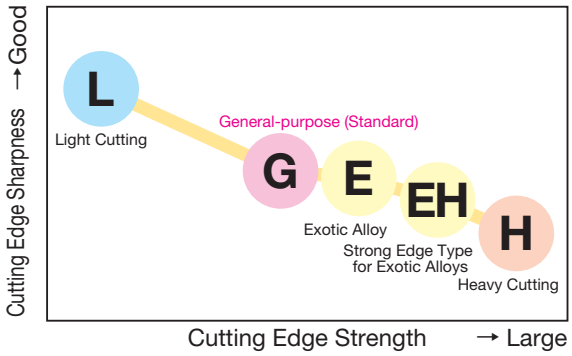
Grade Application Range



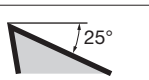
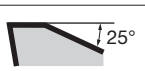
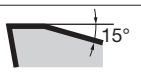
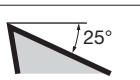
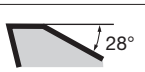
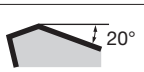
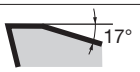
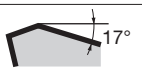
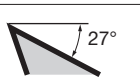
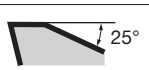
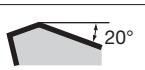
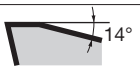
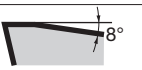
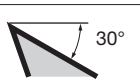
The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD, P: PVD, Blank: Uncoated



Chipbreaker Selection Guide



Chipbreaker Lineup

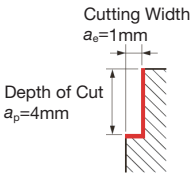
Work Material	P K			M S		N
	L Type	G Type	H Type	E Type	EH Type	S Type
Chipbreaker						
Features	Low Cutting Force	General-purpose Type	High Strength Type	General-Purpose Type For Exotic Alloys	Strong Edge Type For Exotic Alloys	High Rake Type
1000 Series Cross Section	 25°	 25°	 15°	–	–	 25°
2000 Series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

Recommended Cutting Conditions

WEX1000

Tool: WEX1012E, Insert: AX□T0602

Cutting Conditions: Depth of Cut a_p=4mm, Width of Cut a_e=1mm, Dry



ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade: ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per Tooth f_z (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 v_c (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	For Aluminum Alloy Si ≤12.6%		S																						800	600	400
	Si >12.6%		S																						240	200	160
	Copper Alloy		S																						330	300	270

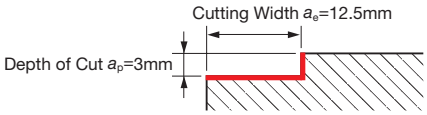
- The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
- For groove milling, adjust the feed rate to around 70% of the above values.

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 a_p=3mm, Width of Cut a_e=12.5mm, Dry



ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade: ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per Tooth f_z (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 v_c (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	For Aluminum Alloy Si ≤12.6%		S																						1000	750	500
	Si >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.

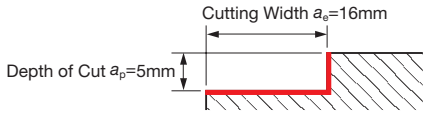
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Recommended Cutting Conditions

WEX3000

Tool: WEX3032E, Insert: AX□T1705

Cutting Conditions: Depth of Cut a_p=5mm, Width of Cut a_e=16mm, Dry



ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade																							
				ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per Tooth f_z (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 v_c (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	For Aluminum Alloy Si ≤12.6%		S																						1000	750	500
	Si >12.6%		S																						250	200	170
	Copper Alloy		S																						350	330	300

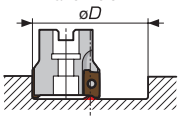
● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

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

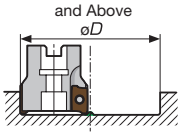
Precautions for Helical Milling

For Minimum Diameter and Below



Center uncut portion cannot be removed by traverse cutting with the same cutter

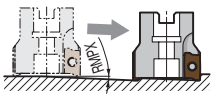
For Maximum Diameter and Above



Center 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

Cutter Dia. (mm) DC	WEX1000 (AX□T06···)			WEX2000 (AX□T12···)			WEX3000 (AX□T17···)		
	Helical Milling (mm)		Ramping	Helical Milling (mm)		Ramping	Helical Milling (mm)		Ramping
	Work Dia. øD		Maximum Ramping Angle RMPX	Work Dia. øD		Maximum Ramping Angle RMPX	Work Dia. øD		Maximum Ramping Angle RMPX
	Min. Diameter	Max. Diameter		Min. Diameter	Max. Diameter		Min. Diameter	Max. Diameter	
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 above table shows the recommended values for 0.8mm nose radius bits.

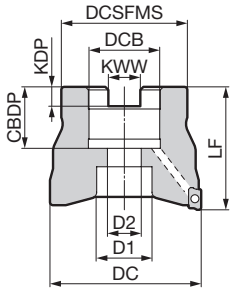
WEX 1000F Type

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

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

6mm 90°

Fig 1



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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

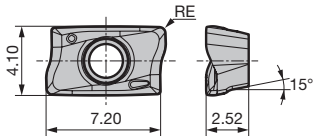
Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		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	Nose 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

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

Fig 1



Recommended Cutting Conditions H73

Parts

(Sold Separately)

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

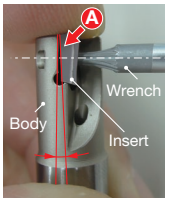
Identification Code

WEX 1 032 F

Cutter Series | Insert Size | Dia. | Metric Bore

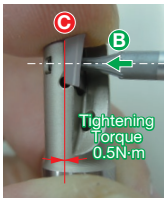
Precautions when Mounting WEX1000 Inserts

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 base of insert pocket, and tighten with wrench B (tightening torque 0.5N·m)

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

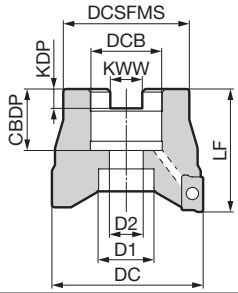
WEX 2000F Type

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

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

10mm 90°

Fig 1



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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

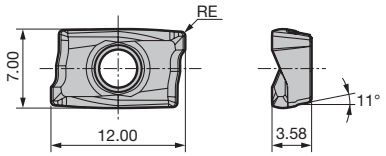
Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC		
Process	High-speed / Light	P			K		M S		K N	N		
	General-purpose		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	Nose 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 H73

Parts

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

Identification Code

WEX 2 040 F

Cutter Series	Insert Size	Dia.	Metric Bore

N·m Recommended Tightening Torque (N·m)

WEX 3000F / R Type WEXF 3000R Type

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

Rake Angle		
	Radial	12° to 15°
	Axial	29° to 24°

14mm 90°

Fig 1

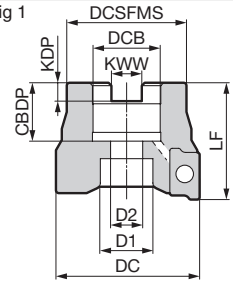
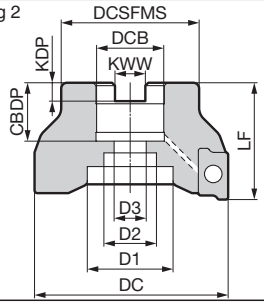


Fig 2



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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 (Fine Pitch Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

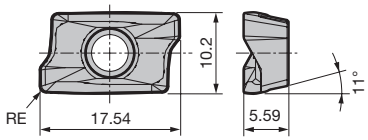
Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose 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 H74

Parts

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

Identification Code

WEX 3 040 F

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

* Modification of the cutter body is required when attaching a nose radius RE = 2.0 or 3.0 insert.

Modify this portion.
Reworking guidelines
For Nose Radius of 2.0: C1 (AXMT170520PEER)
For Nose Radius of 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m)

WEX 1000E / EL Type

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

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

6mm 90°

Fig 1

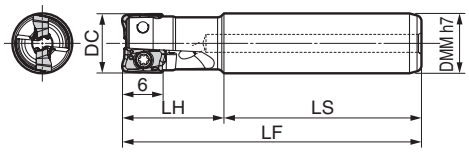
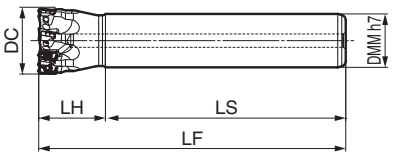


Fig 2



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 1010E**	●	**10**	10	17	33	50	2	0.03	1
	1012E	●	**12**	12	20	60	80	3	0.06	1
	1014E	●	**14**	16	22	59	80	3	0.10	1
	1016E	●	**16**	16	20	70	90	4	0.12	1
	1018E	●	**18**	20	20	80	100	4	0.21	1
	1020E	●	**20**	20	22	78	100	5	0.22	1
	1025E	●	**25**	20	25	90	115	7	0.27	2

Inserts are sold separately.

Body (Long Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX 1010EL**	●	**10**	8	17	83	100	2	0.03	2
	1012EL	●	**12**	10	20	100	120	2	0.06	2
	1014EL	●	**14**	12	20	125	145	3	0.11	2
	1016EL	●	**16**	14	20	140	160	3	0.17	2
	1018EL	●	**18**	16	20	160	180	3	0.25	2
	1020EL	●	**20**	18	25	175	200	4	0.36	2

Inserts are sold separately.

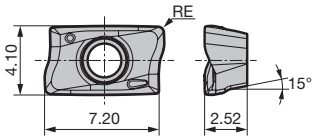
Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		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
AXMT 060204PDER-L		●	●	●	●	●	●	●	—	—
060208PDER-L		●	●	●	●	●	●	●	—	—
060212PDER-L		●	●	●	●	●	●	●	—	—
AXMT 060202PDER-G		●	●	●	●	●	●	●	—	—
060204PDER-G		●	●	●	●	●	●	●	—	—
060208PDER-G		●	●	●	●	●	●	●	—	—
060212PDER-G		●	●	●	●	●	●	●	—	—
AXMT 060204PDER-H		●	●	●	●	●	●	●	—	—
060208PDER-H		●	●	●	●	●	●	●	—	—
060212PDER-H		●	●	●	●	●	●	●	—	—
AXMT 060202PDFR-S		—	—	—	—	—	—	—	●	●

Cat. No.	Nose 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: For Aluminum Alloy.

Recommended Cutting Conditions H73

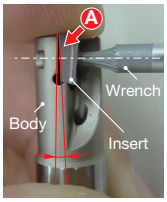
Parts

(Sold Separately)

Applicable Cutter	Flat Screw		Wrench	Anti-seizure Cream	Torque Wrench
					 0.5N·m
WEX1010E(EL) to WEX1025E	BFTX01804IP	0.5	TRX06IP	SUMI-P	TRDR06IP05

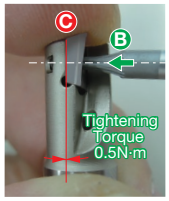
Precautions when Mounting WEX1000 Inserts

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 base of insert pocket, and tighten with wrench B (tightening torque 0.5N·m)

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

Identification Code

WEX 1 010 E L

WEX	1	010	E	L
Cutter Series	Insert Size	Dia.	With Shank	Long Type

N·m Recommended Tightening Torque (N·m)

WEX 2000E / EL Type

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

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

10mm 90°

Modular Type H213

Fig 1

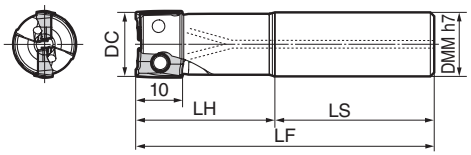
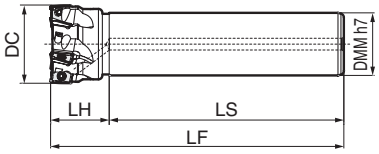


Fig 2



Body (Standard Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 2014E	●	14	16	25	55	80	1	0.10	1
2016E	●	16	16	25	75	100	2	0.13	1
2018E	●	18	16	25	75	100	2	0.14	2
2020E	●	20	20	30	80	110	3	0.22	1
2022E	●	22	20	30	80	110	3	0.23	2
2025E	●	25	25	35	85	120	4	0.38	1
2028E	●	28	25	35	85	120	4	0.39	2
2030E	●	30	25	35	85	120	4	0.40	2
2032E	●	32	32	40	90	130	5	0.70	1
2040E	●	40	32	30	120	150	6	0.91	2
2050E	●	50	32	30	120	150	7	1.02	2
2063E	●	63	32	30	120	150	8	1.22	2

Inserts are sold separately.

Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 2014EL	●	14	16	25	95	120	1	0.14	1
2016EL	●	16	16	25	120	145	2	0.19	1
2018EL	●	18	16	25	120	145	2	0.19	2
2020EL	●	20	20	40	110	150	2	0.32	1
2022EL	●	22	20	30	120	150	2	0.33	2
2025EL	●	25	25	50	120	170	2	0.55	1
2028EL	●	28	25	30	140	170	2	0.59	2
2030EL	●	30	25	30	140	170	2	0.60	2
2032EL	●	32	32	60	120	180	2	0.99	1
2040EL	●	40	32	30	150	180	2	1.12	2

Inserts are sold separately.

Insert

Dimensions (mm)

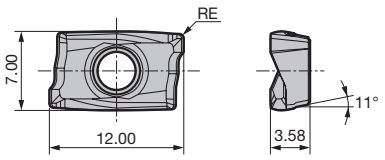
Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		P M	P M	K		M S	M S		N
	Roughing		P M	P M		K		M S		

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose 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

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

Recommended Cutting Conditions H73

Fig 1



Parts

Applicable Cutter	Flat Screw		Wrench	Anti-seizure Cream
		N·m		
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

Cutter Series	Insert Size	Dia.	With Shank	Long Type

N·m Recommended Tightening Torque (N·m)

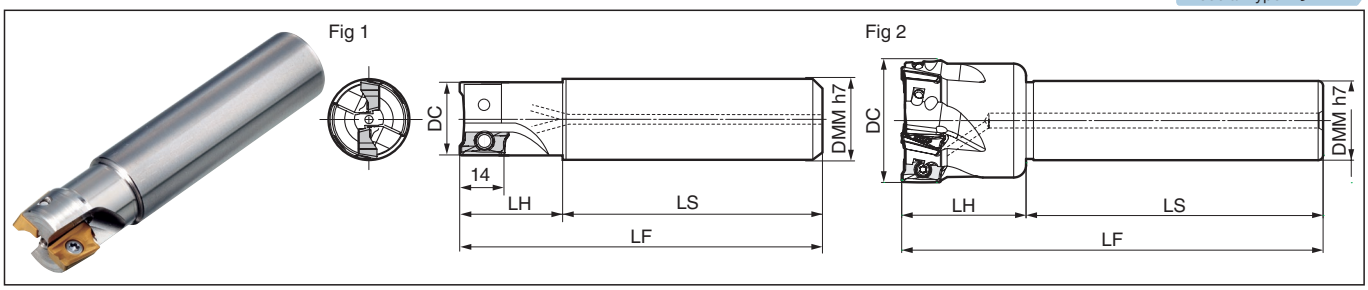
WEX 3000 E/ES/EL/E-C/ES-C Type

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

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

14mm 90°

Modular Type H214



Body (Standard Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3025E-20	●	25	20	35	85	120	2	0.25	2
3025E	●	25	25	35	85	120	2	0.37	1
3028E	●	28	25	35	85	120	2	0.39	2
3030E	●	30	25	40	90	130	3	0.42	2
3032E-25	●	32	25	40	90	130	3	0.43	2
3032E	●	32	32	40	90	130	3	0.67	1
3035E	●	35	32	40	90	130	3	0.69	2
3040E	●	40	32	50	120	170	4	1.01	2
3050E	●	50	32	50	120	170	5	1.23	2
3063E	●	63	32	50	120	170	6	1.58	2

Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3025EL	●	25	25	50	120	170	2	0.54	1
3028EL	●	28	25	50	120	170	2	0.56	2
3030EL	●	30	25	60	120	180	2	0.60	2
3032EL	●	32	32	60	120	180	2	0.95	1
3035EL	●	35	32	60	120	180	2	0.98	2
3040EL	●	40	32	80	140	220	2	1.38	2

Body (Short Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3050ES	●	50	32	25	110	135	5	0.86	2
3050ES-42	●	50	42	25	110	135	5	1.36	2
3063ES	●	63	32	25	110	135	6	1.02	2
3063ES-42	●	63	42	25	110	135	6	1.52	2

Inserts are sold separately.

Body (Coarse Pitch Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3040E-C	●	40	32	50	120	170	3	1.04	2
3050E-C	●	50	32	50	120	170	3	1.28	2
3063E-C	●	63	32	50	120	170	4	1.64	2

Body (Short Coarse Pitch Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX 3050ES-C	●	50	32	25	110	135	3	0.91	2
3050ES-C-42	●	50	42	25	110	135	3	1.41	2
3063ES-C	●	63	32	25	110	135	4	1.07	2
3063ES-C-42	●	63	42	25	110	135	4	1.57	2

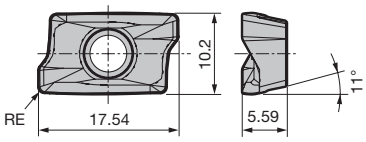
Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC		
Process	High-speed / Light	P			K		M S		K N	N		
	General-purpose		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	Nose 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 H74

Parts

Applicable Cutter	Flat Screw		Wrench	Anti-seizure Cream
		N·m		
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 attaching a nose radius RE = 2.0 or 3.0 insert.

Modify this portion.
Reworking guidelines
For Nose Radius of 2.0: C1 (AXMT170520PEER)
For Nose Radius of 3.0: C1.5 (AXMT170530PEER)
Standard: C0.5.

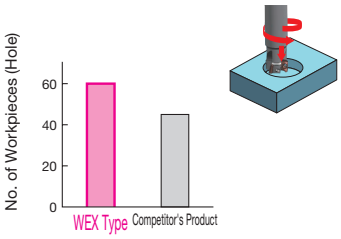
N·m Recommended Tightening Torque (N·m)

Application Examples

Machine Components SUS304

WEX1000

The WEX type achieves 1.3x longer tool life for helical milling compared to competitors' products.



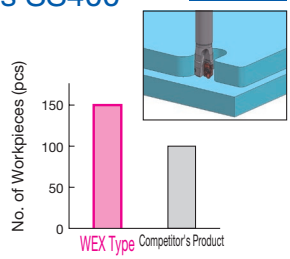
Tool: WEX1020E (ø20)
Insert: AXMT060204PDER-G
Grade: ACM300
Machine: Vertical machining centre BT30

(Cutting Conditions)
v_c=60m/min
f_z =0.18mm/t
a_p=1.0mm
Dry

Machine Components SS400

WEX1000

The WEX type has low cutting force and enables stable machining, while competitors' products have unstable power.
Achieves 1.5x longer tool life than competitors' products.



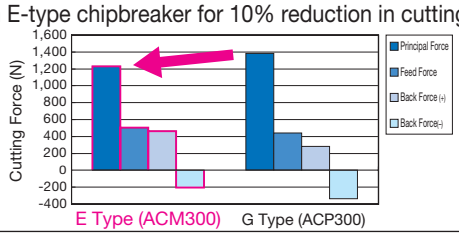
Tool: WEX1010EL (ø10)
Insert: AXMT060204PDER-L
Grade: ACP200
Machine: Vertical machining centre BT40

(Cutting Conditions)
v_c=160m/min
f_z =0.08mm/t
a_p=5.0mm
Dry

Block Material SUS316

WEX2000

Using an E-type chipbreaker for 10% reduction in cutting force.



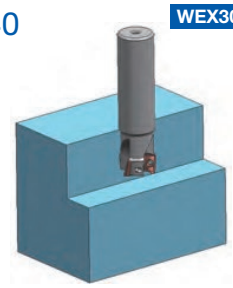
Tool: WEX2050F (ø50)
Insert: AXMT123508PEER-E
Grade: ACM300

(Cutting Conditions)
v_c=180m/min
f_z =0.15mm/t
a_e=20mm
a_p=3mm Dry

Block Material SCM440

WEX3000

Compared to competitors', the machined surface has fewer steps, enabling finishing without changing tool.



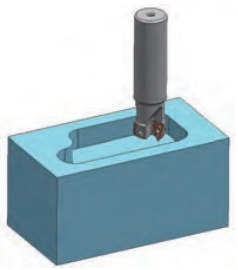
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200

(Cutting Conditions)
v_c=200m/min
f_z =0.15mm/t
a_e=5mm
a_p=10mm x 3 Times Dry

Die Parts, Low Carbon Steel

WEX3000

The WEX type doubles the tool life of conventional tools by performing for longer without breakage.



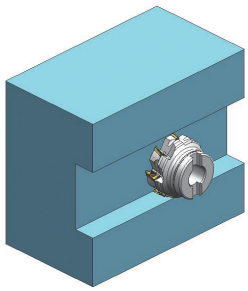
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP100

(Cutting Conditions)
v_c=151m/min
f_z =0.2mm/t
a_e=25mm
a_p=5mm Wet

Extrusion Mold SKT4

WEX3000

Less cutting noise than conventional tools and excellent chip evacuation for stable cutting even if the cutting conditions are doubled.
Achieves a nice glossy machined surface.



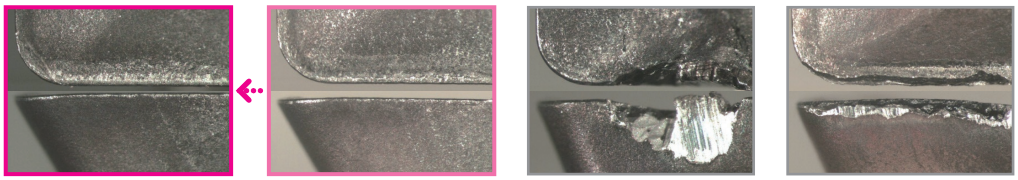
Tool: WEX3080R (ø80)
Insert: AXMT170508PEER-G
Grade: ACP200

(Cutting Conditions)
v_c=75m/min
f_z =0.19mm/t
a_e=80mm
a_p=5mm Dry

Machine Components SUS304

WEX3000

Cutting Distance: 4,500mm | Cutting Distance: 1,650mm



WEX Type (ACM300) | WEX Type (ACP300) | Competitor's Product A | Competitor's Product B

The substrate has excellent fracture resistance and the high hardness coating enables stable machining without breakage.

Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-E
Grade: ACM300

(Cutting Conditions)
v_c=150m/min
f_z =0.15mm/t
a_e=10mm
a_p=3.0mm
Dry

WRX Type

High Efficiency Shoulder Milling of Deep Steps

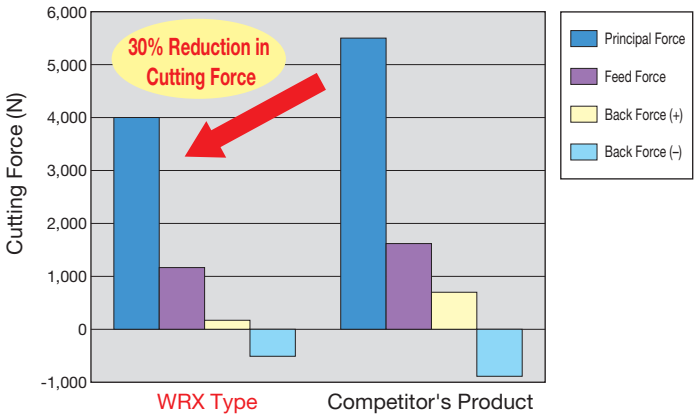
General Features

The WEX WaveMill is an endmill that features cutting edges arrayed in a wave-like configuration. Its long cutting edges are arranged in multiple stages to enable high efficiency shoulder milling of deep steps.

Features

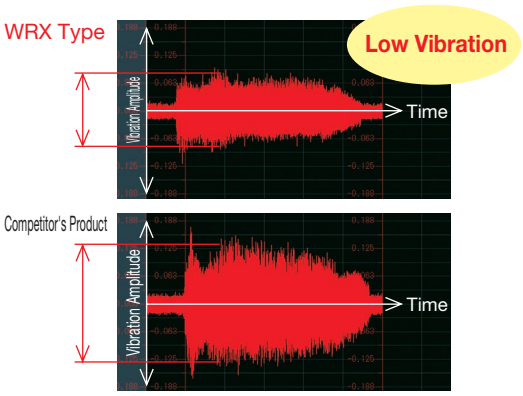
- Cutting edge positions are optimised to provide low resistance and low vibration

Comparison of Cutting Force



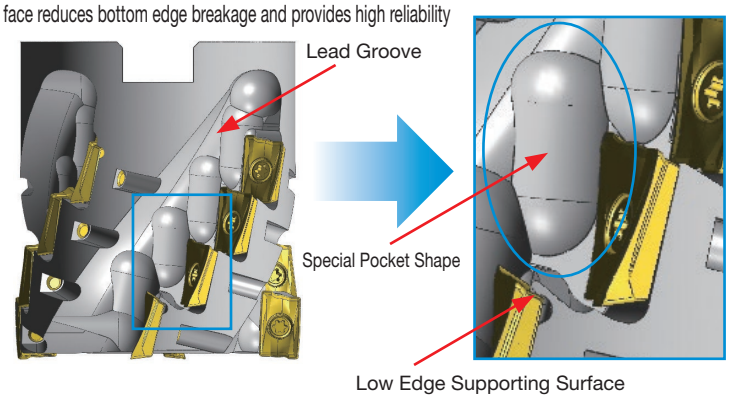
Cutting Conditions
Work Material: S50C
Tool: WRX2025E2725
Cutting Speed: v_c=100m/min, f_z=0.15mm/t, a_e=10mm, a_p=25mm, Dry

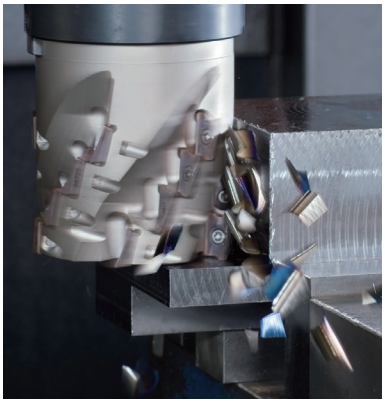
Comparison of Vibration



Cutting Conditions
Work Material: S50C
Tool: WRX3080RS5332
Cutting Speed: v_c=150m/min, f_z=0.20mm/t, a_e=5mm, a_p=40mm, Dry

- Lead groove and special pocket shape provide smooth chip evacuation and high body rigidity
- Low edge supporting face reduces bottom edge breakage and provides high reliability



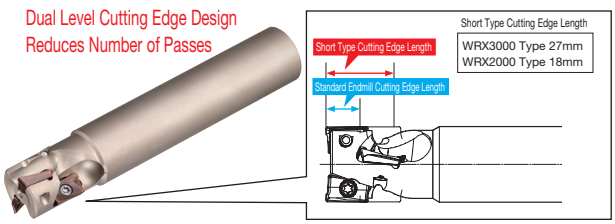


Product Range

Cutting Edge	Series Code	Cutting Edge Length (mm)	Dia. (mm)	Shape	Applicable Insert (*)
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 common with the popular WEX type SEC-WaveMill

Short Cutting Head Series

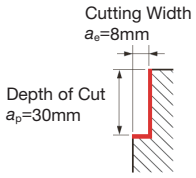


Recommended Cutting Conditions

WRX2000

Tool: WRX2040E3642, Insert: AXMT123504PEER

Cutting Conditions: Depth of Cut a_p=30mm, Width of Cut a_e=8mm, Dry



ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade: ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per Tooth f_z (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 v_c (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	For Aluminum Alloy Si <12.6%		S																						1000	750	500
	Si >12.6%		S																						250	200	170

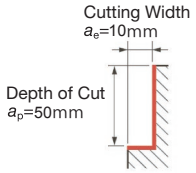
● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).

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 a_p=50mm, Width of Cut a_e=10mm, Dry



ISO Classification	Work Material	Workpiece Hardness (HB)	Chipbreaker	Grade: ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
				Feed Rate per Tooth f_z (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 v_c (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	For Aluminum Alloy Si <12.6%		S																						1000	750	500
	Si >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).

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 | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	16° to 17°
	Axial	24°

18 to 36 mm 90°

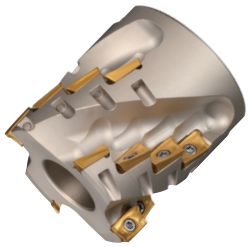


Fig 1

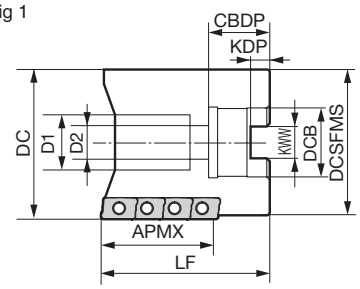
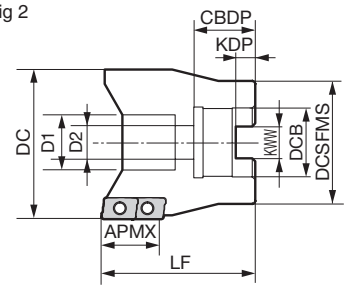


Fig 2



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective Number 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	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective Number 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.

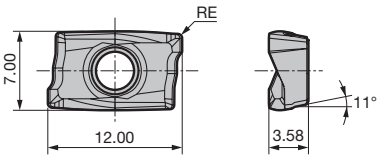
Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		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	Nose 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



Recommended Cutting Conditions H83

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

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

Identification Code

WRX	2	040	R	S	36	16
Cutter Series	Insert Size (Insert Length 12mm)	Tool Dia.	Feed Direction	Metric Bore	Cutting Edge Length	Mounting Dia.

N·m Recommended Tightening Torque (N·m)

WRX 3000R(S) Type

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

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

27 to 53mm | 90°

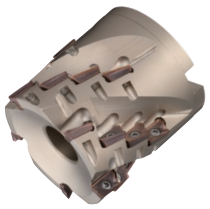


Fig 1

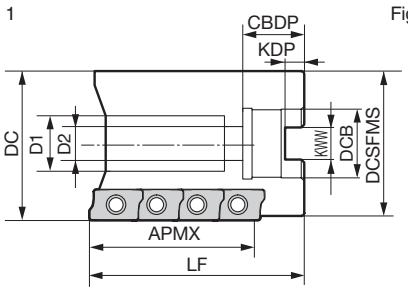


Fig 2

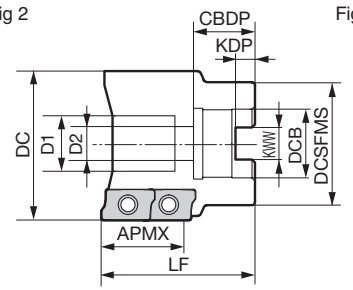
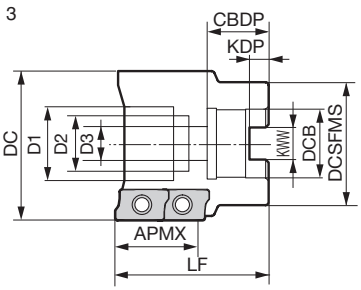


Fig 3



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	Steps	Effective Number 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	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	Steps	Effective Number 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	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	Steps	Effective Number 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	**31.8**	12.7	8	32.5	46	28	17	14	2	7	2.0	3

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

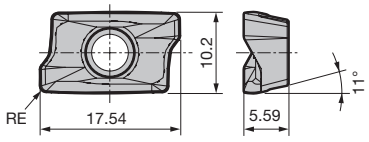
Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC
Process	High-speed / Light	P			K		M S		K N	N
	General-purpose		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	Nose 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 H83

Parts

Flat Screw		Wrench
BFTX0409IP	3.0	TRDR15IP

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

* Modification of the cutter body is required when attaching a nose radius RE = 2.0 or 3.0 insert.

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)

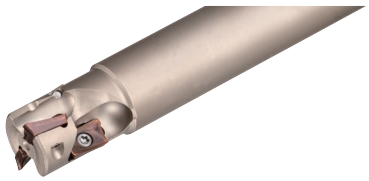
WRX 2000E Type

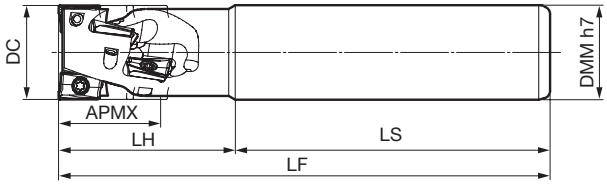
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

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

18 to 36 mm 90°

Fig 1





Body (Standard Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
WRX 2020E3620	●	**20**	36	20	45	85	130	4	4	1	0.3	1
2025E2725	●	**25**	27	25	45	85	130	6	3	2	0.4	1
2032E2732	●	**32**	27	32	45	85	130	9	3	3	0.7	1
2040E3642	●	**40**	36	42	45	85	130	16	4	4	1.2	1

Body (Short Cutting Edge Type)

Dimensions (mm)

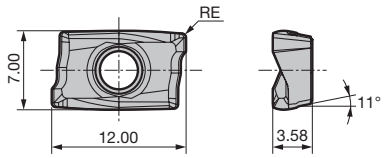
Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
WRX 2020E1820	●	**20**	18	20	40	80	120	4	2	2	0.3	1
2025E1825	●	**25**	18	25	45	85	130	6	2	3	0.4	1
2032E1832	●	**32**	18	32	50	90	140	8	2	4	0.8	1
2040E1832	●	**40**	18	32	40	120	160	10	2	5	1.1	1

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC		
Process	High-speed / Light	P			K		M S		K N	N		
	General-purpose		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	Nose 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, S: For Aluminum.

Recommended Cutting Conditions H83

Parts

Wrench	Flat Screw	N·m
TRDR08IP	BFTX0306IP	2.0

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

Identification Code

WRX 2 020 E 36 20

WRX	2	020	E	36	20
Cutter Series	Insert Size (Insert Length 12mm)	Tool Dia.	Endmills	Cutting Edge Length	Shank Dia.

N·m Recommended Tightening Torque (N·m)

WRX 3000E Type

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

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

27 to 53 mm | 90°

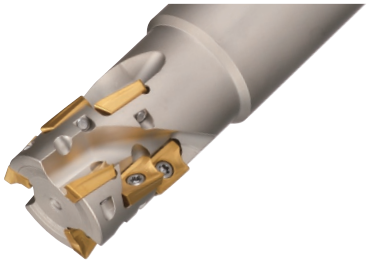
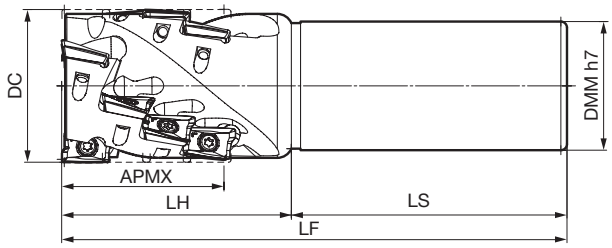


Fig 1



Body (Standard Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
WRX 3040E4042	●	**40**	40	42	65	85	150	9	3	3	1.3	1
3050E5342	●	**50**	53	42	75	90	165	12	4	3	1.8	1

Body (Short Cutting Edge Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
WRX 3040E2732	●	**40**	27	32	60	120	180	6	2	3	1.2	1
3050E2732	●	**50**	27	32	60	120	180	8	2	4	1.4	1

Inserts are sold separately.

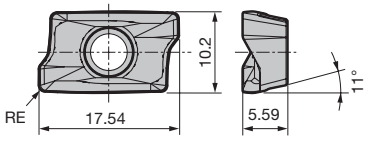
Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC		
Process	High-speed / Light	P			K		M S		K N	N		
	General-purpose		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	Nose 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 H83

Parts

Flat Screw		Wrench
	N·m	
BFTX0409IP	3.0	TRDR15IP

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

* Modification of the cutter body is required when attaching a nose radius RE = 2.0 or 3.0 insert.

Modify this portion.
Reworking guidelines
For RE = 2.0: C1
(AXMT170520PEER)
For RE = 3.0: C1.5
(AXMT170530PEER)
Standard: C0.5.

Identification Code

WRX 3 040 E 40 42

Cutter Series	Insert Size (Insert Length 17mm)	Tool Dia.	Endmills	Cutting Edge Length	Shank Dia.

WFX Type

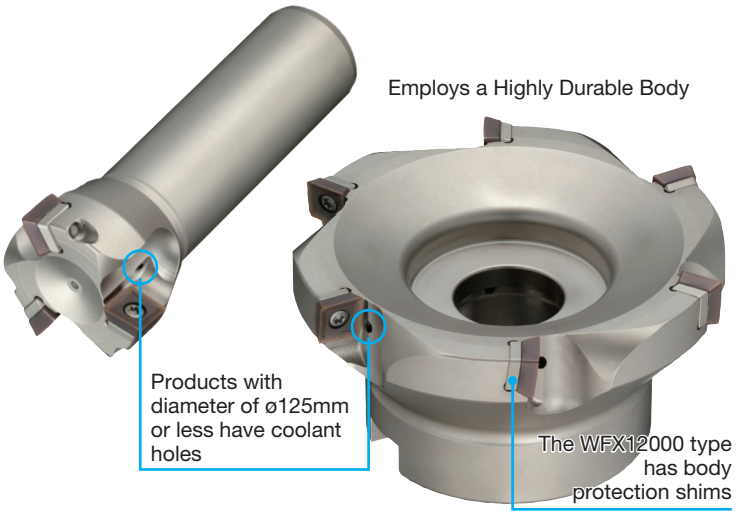
General Features

SEC-WaveMill WFX Type for shoulder milling is a screw-locking type cutter capable of using four corners.
Ideal cut edge design delivers good squareness.
Now with high-efficiency, multi-functional WFXH type and chamfering WFXC type.
Our wide range covers a wide variety of applications.

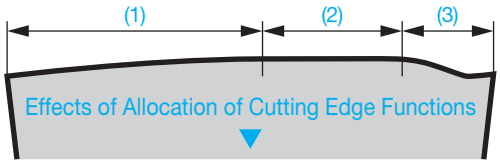
WFXH Type **WFXC** Type

Features

The insert shape optimised for shoulder milling and the high-precision body leave a superior machined surface finish.

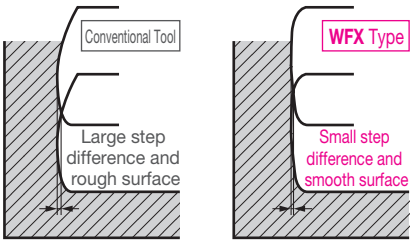


Optimised Edge Shape (For Shoulder Milling)



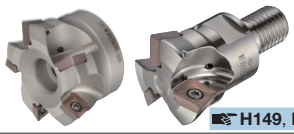
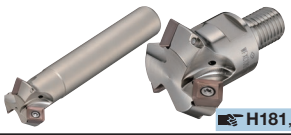
(1): The convex shape **ensures cutting edge strength**

(2): The flat shape **reduces step differences** in shoulder milling



(3): The wiper edge function improves the surface roughness

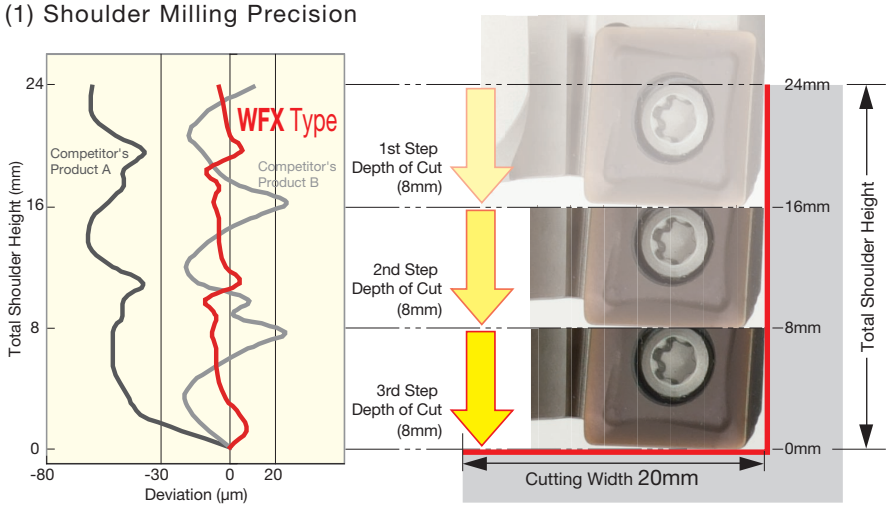
Product Range

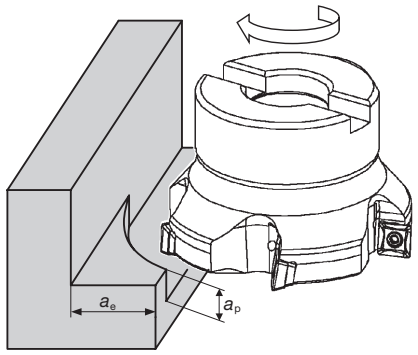
Applications	Type	Cat. No.	Description	Blade Diameters in Stock (mm) (ø10 ø25 ø40 ø60 ø63 ø80 ø100 ø125 ø250)	Shape
Shoulder Milling	Shell Type	**WFX 08000RS**	Standard Type	40–100	 H91, H212
		WFXM 08000RS	Fine Pitch	40–100	
		WFXF 08000RS	Extra Fine Pitch	40–100	
		WFX 08000R	Standard Type	80–100	
		WFXM 08000R	Fine Pitch	80–100	
		WFXF 08000R	Extra Fine Pitch	80–100	
		WFX 12000RS	Standard Type	50–100	
		WFXF 12000RS	Extra Fine Pitch	50–100	
		WFX 12000R	Standard Type	80–250	
		WFXF 12000R	Extra Fine Pitch	80–250	
	Endmill Type	**WFX 08000E**	Standard Type	20–63	
		WFXM 08000E	Fine Pitch	25–63	
		WFX 12000E	Standard Type	40–80	
		WFXF 12000E	Extra Fine Pitch	50–80	
	Modular Type	**WFX 08000M**	Modular Type	20–40	
High Efficiency	Shell Type	**WFXH 08000RS**	Standard Type	40–63	 H149, H215
		WFXH 12000RS	Standard Type	60–63	
	Modular Type	**WFXH 08000M**	Modular Type	25–32	
		WFXH 12000M	Modular Type	40	
Chamfering	Endmill Type	**WFXC 08000E**	Standard Type	8–16	 H181, H219
		WFXC 12000E	Standard Type	25–32	
	Modular Type	**WFXC 08000M**	Modular Type	16	
		WFXC 12000M	Modular Type	25–32	

WFX Type

Cutting Performance

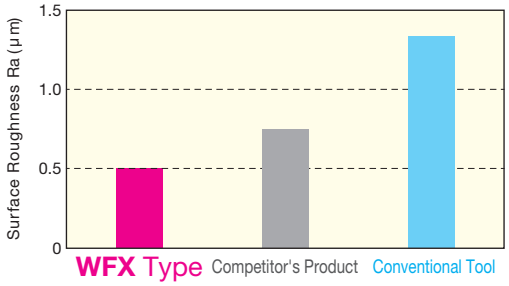
(1) Shoulder Milling Precision





Work Material: **S50C** Tool: **WFX12100R** (ø100 x 5 flutes)
Cutting Conditions: v_c = **200**m/min, f_z = **0.15**mm/t,
a_p = **8.0**mm x **3** times, a_e = **20**mm

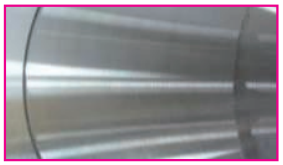
(2) Comparison of Surface Roughness



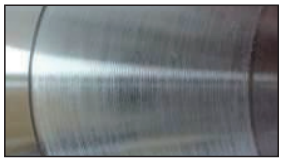
Work Material: **SCM440** Tool: **WFX12100R** (ø100 x 5 flutes)
Cutting Conditions: v_c = **200**m/min, f_z = **0.10**mm/t,
a_p = **3.0**mm, a_e = **90**mm

(3) Comparison of Surface Properties

Work Material: **S50C**
Cutting Conditions: a_p = **0.5**mm



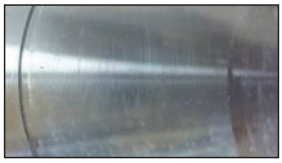
Glossy without Clouding



Clouded without Gloss

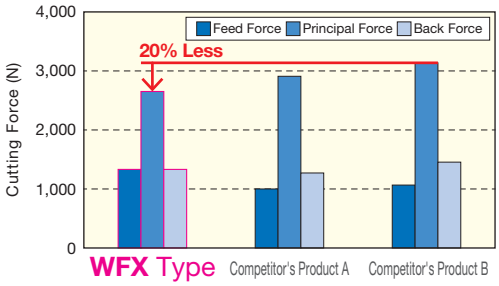
Work material: **SUS304**
Cutting Conditions: a_p = **0.5**mm

WFX Type



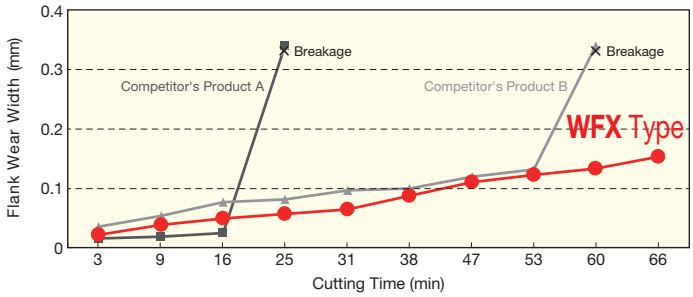
Competitor's Product

(4) Comparison of Cutting Force



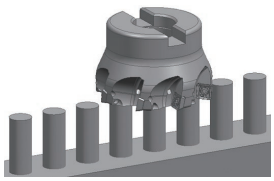
Work Material: **S50C** Tool: **WFX12100R** (ø100 x 5 flutes)
Cutting Conditions: v_c = **200**m/min, f_z = **0.15**mm/t,
a_p = **10**mm, a_e = **20**mm

(5) Comparison of Wear Resistance

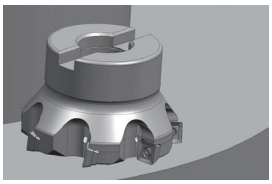


Work Material: **SCM440** Tool: **WFX12100R** (ø100 x 1 flute evaluation)
Cutting Conditions: v_c = **200**m/min, f_z = **0.15**mm/t,
a_p = **5.0**mm, a_e = **30**mm

Application Examples



Workpiece (S50C)		Sumitomo	Conventional Tool
	Tool	**WFXF08063RS**	
	Grade	**ACP200**	
	Tool Dia. (mm)	ø63	ø63
	Number of Teeth	8	5
	v_c (mm/min)	220	220
	v_f (mm/min)	1,100	1,100
	f_z (mm/t)	0.15	0.20
	a_p (mm)	3.0	4.0
	a_e (mm)	50	50
	Coolant	Wet	Wet
	Results	· Vibration reduced by approximately 30% · Good machined surface · Tool life doubled	



Workpiece (FCD450)		Sumitomo	Conventional Tool
	Tool	**WFXF12100R**	
	Grade	**ACK300**	
	Tool Dia. (mm)	ø100	ø100
	Number of Teeth	7	6
	v_c (m/min)	200	200
	v_f (mm/min)	446	382
	f_z (mm/t)	0.10	0.10
	a_p (mm)	0.05	0.05
	a_e (mm)	-	-
	Coolant	Dry	Dry
	Results	· Good surface roughness Ra 0.98 → 0.38μm, Rz 7.63 → 3.34μm · Cutting time shortened Insert life is extended by approximately 20%	

WFX Type

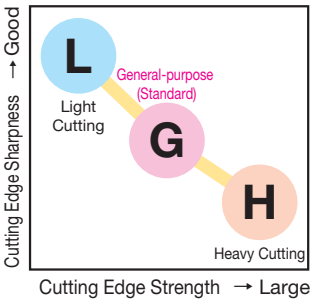
Grade Application Range

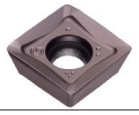
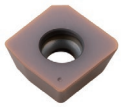
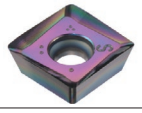
Work Material	Grade	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
P Steel	Coated Carbide	ACP100 (C)	ACP200 (P)	ACP300 (P)
M Stainless Steel	Coated Carbide	ACM200 (C)		ACM300 (P)

Work Material	Grade	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
K Cast Iron	Coated Carbide	ACK200 (C)	ACK300 (P)	
N Non-Ferrous Metal	Coated Carbide		DL1000 (P)	
	Carbide		H1	

The letters "C" and "P" at the end of each grade indicate the coating type. (C) : CVD, (P) : PVD, Blank: Uncoated

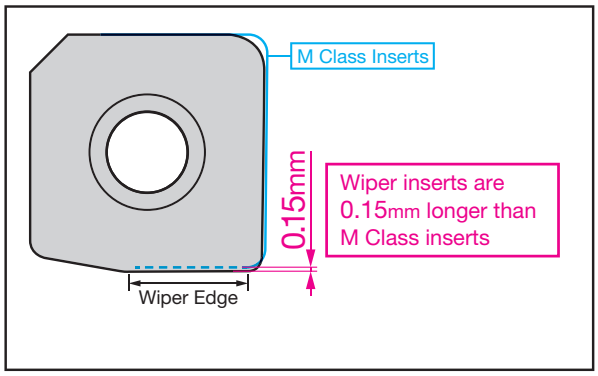
Chipbreaker Selection

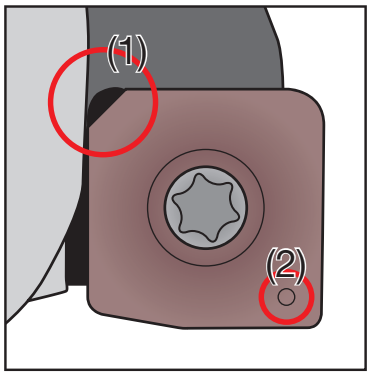


Work Material	P M K				N
	L Type	G Type	H Type	Wiper Insert	S Type
Chipbreaker					
Features	Low Cutting Force	General-purpose Type	High Strength Type	Wiper Edge	Sharp Edge
Cutting Edge Cross Section	 20 °	 15°	 10°	15° 	 25°
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General Purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	High-precision Finish	For Non-Ferrous Metals

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 N19 for details about wiper inserts.

WFX 08000R(S) Type

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

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Fig 1

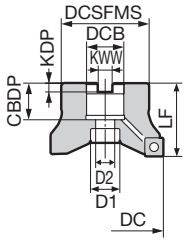


Fig 2

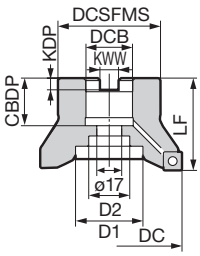
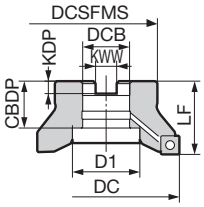


Fig 3



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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	25	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. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose 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 H90 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

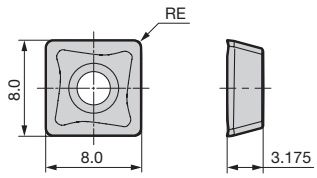
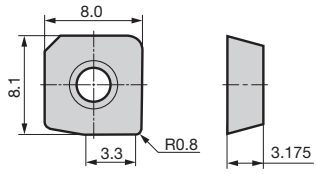


Fig 2 Wiper Insert



Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seizure cream included in the package.

Identification Code

WFX 08 040 R S

Cutter Series | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	ACP200 ACP300
	Die Steel	200 to 220 HB	100-**150**-200	0.08-**0.12**-0.18	< 4	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACK200 ACK300
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 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.

WFXM 08000R(S) Type

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

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Fig 1

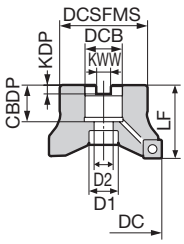


Fig 2

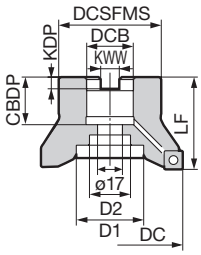
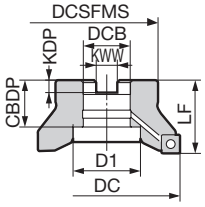


Fig 3



Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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	25	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. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed/Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose 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 H90 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

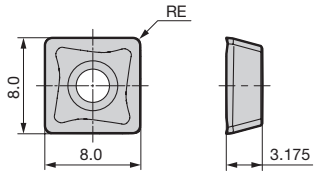
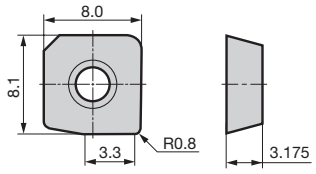


Fig 2 Wiper Insert



Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seizure cream included in the package.

Identification Code

WFX	M	08	040	R	S
Cutter Series	Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	ACP200 ACP300
	Die Steel	200 to 220 HB	100-**150**-200	0.08-**0.12**-0.18	< 4	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACK200 ACK300
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 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.

N·m Recommended Tightening Torque (N·m)

WFXF 08000R(S) Type

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

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Fig 1

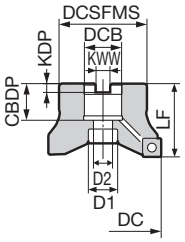


Fig 2

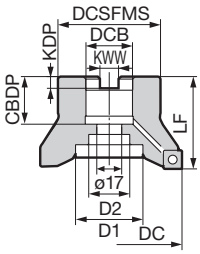
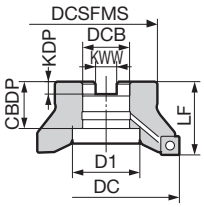


Fig 3



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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	25	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. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose 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 H90 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

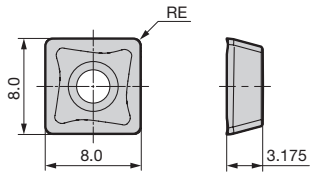
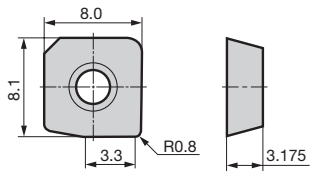


Fig 2 Wiper Insert



Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seizure cream included in the package.

Identification Code

WFX F 08 040 R S

WFX	F	08	040	R	S
Cutter Series	M: Fine Pitch F: Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	ACP200 ACP300
	Die Steel	200 to 220 HB	100-**150**-200	0.08-**0.12**-0.18	< 4	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACK200 ACK300
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000

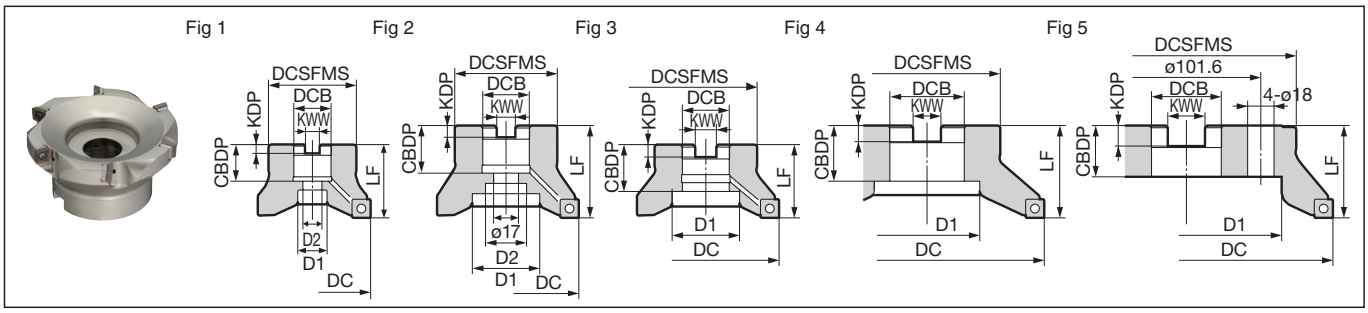
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WFX 12000R(S) Type

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

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90°



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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	25	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	32.5	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**	160	63	**47.625**	25.4	14	35	130	—	10	6.8	5
	12250R	●	**250**	180	63	**47.625**	25.4	14	35	160	—	12	9.6	5

Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

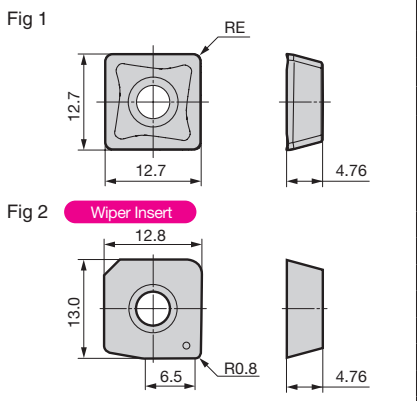
Insert

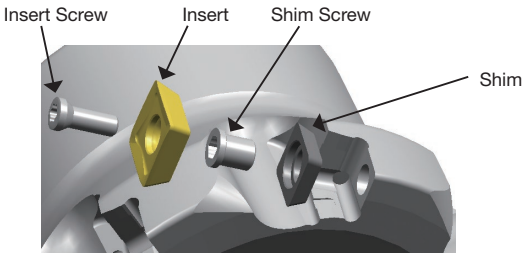
Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light	P			K		M S		K N	N	
	General-purpose		P M	P M	K		M S	M S		N	P
	Roughing		P M	P M		K		M S			

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose 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

Refer to H90 (Precautions when Using Wiper Inserts) (Mounting Precautions).





Identification Code

WFX 12 050 R S

Cutter Series | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Parts

Shim	Shim Screw	Insert Screw	Wrench	Wrench (For Shims)
WFXS4R	BW0507F	BFTX03512IP	3.0	TRDR15IP	LH035

SUMI-P Anti-seizure cream included in the package.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.15**-0.20	< 10	ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	ACP200 ACP300
	Die Steel	200 to 220 HB	100-**150**-200	0.10-**0.15**-0.20	< 6	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACK200 ACK300
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 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.

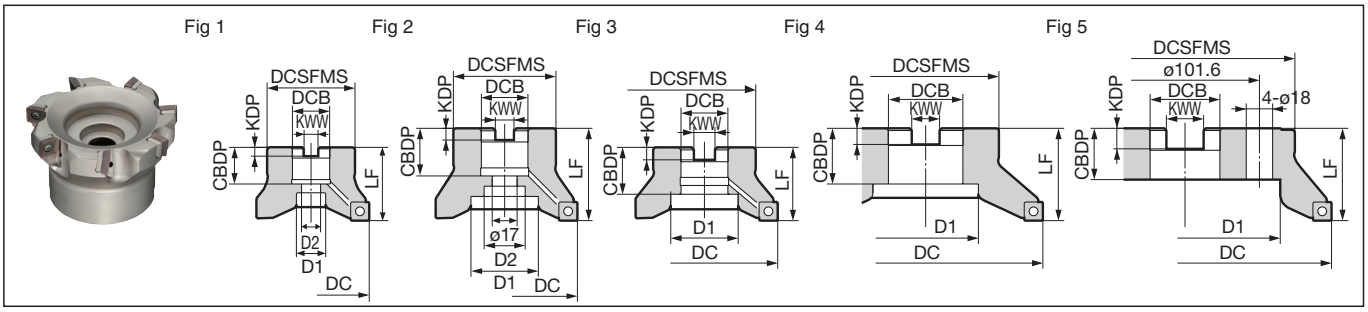
N·m Recommended Tightening Torque (N·m)

WFXF 12000R(S) Type

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

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90°



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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	32.5	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**	160	63	**47.625**	25.4	14	35	135	—	16	6.7	5
	12250R		**250**	180	63	**47.625**	25.4	14	35	160	—	18	9.5	5

Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

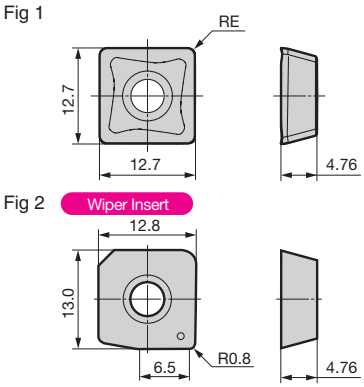
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

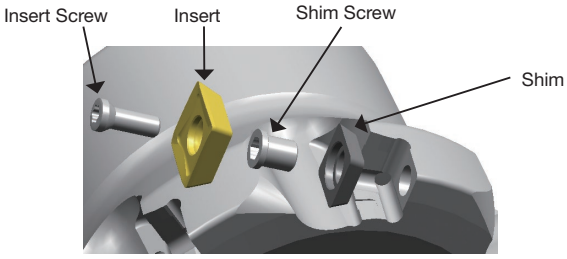
Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose 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

Refer to H90 (Precautions when Using Wiper Inserts) (Mounting Precautions).





Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)
WFXS4R	BW0507F	BFTX03512IP	3.0	TRDR15IP	LH035

SUMI-P Anti-seizure cream included in the package.

Identification Code

WFX F 12 050 R S

WFX	F	12	050	R	S
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.15**-0.20	< 10	ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	ACP200 ACP300
	Die Steel	200 to 220 HB	100-**150**-200	0.10-**0.15**-0.20	< 6	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACK200 ACK300
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 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.

N·m Recommended Tightening Torque (N·m)

WFX 08000E Type

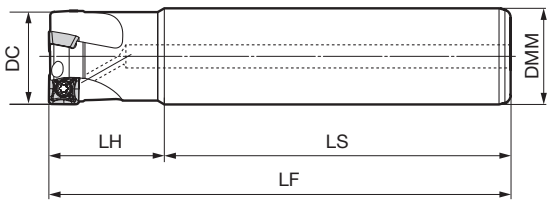
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Modular Type H212

Fig 1



Body (Standard Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WFX 08020E-16	●	**20**	16	30	80	110	2	1
08020E	●	**20**	20	30	80	110	2	1
08022E	●	**22**	20	30	90	120	2	1
08025E-20	●	**25**	20	30	90	120	2	1
08025E	●	**25**	25	30	90	120	2	1
08028E	●	**28**	25	30	90	120	2	1
08030E	●	**30**	25	30	90	120	3	1
08032E	●	**32**	32	30	90	120	3	1
08033E	●	**33**	32	30	90	120	3	1
08040E	●	**40**	32	30	90	120	3	1
08050E	●	**50**	32	30	90	120	4	1
08063E	●	**63**	32	30	90	120	5	1

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WFXM 08025E	●	**25**	25	30	90	120	3	1
08032E	●	**32**	32	30	90	120	4	1
08040E	●	**40**	32	30	90	120	4	1
08050E	●	**50**	32	30	90	120	5	1
08063E	●	**63**	32	30	90	120	6	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose 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

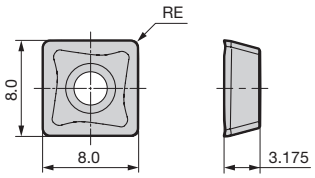
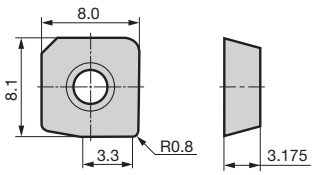


Fig 2 Wiper Insert



Refer to H90 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seizure cream included in the package.

Identification Code

WFX M 08 025 E

WFX	M	08	025	E
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Endmill Type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.08-**0.12**-0.18	< 6	ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	ACP200 ACP300
	Die Steel	200 to 220 HB	100-**150**-200	0.08-**0.12**-0.18	< 4	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACK200 ACK300
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 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.

N·m Recommended Tightening Torque (N·m)

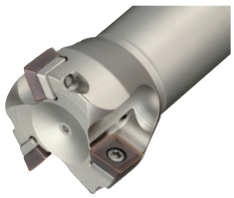
WFX(F) 12000E Type

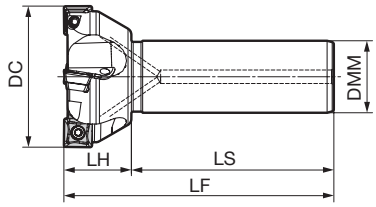
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90°

Fig 1





Body (Standard Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFX 12040E	●	**40**	32	30	90	120	3	0.68	1
12050E	●	**50**	32	30	90	120	3	0.78	1
12063E	●	**63**	32	30	90	120	4	0.94	1
12080E	●	**80**	32	30	90	120	4	1.29	1

Inserts are sold separately. ø40 mm size does not have seats.

Body (Extra Fine Pitch)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFXF 12050E	●	**50**	32	30	90	120	4	0.78	1
12063E	●	**63**	32	30	90	120	5	0.96	1
12080E	●	**80**	32	30	90	120	6	1.22	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	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

Refer to H90 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

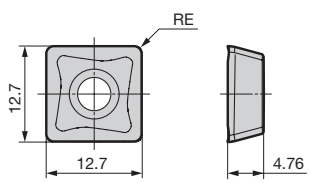
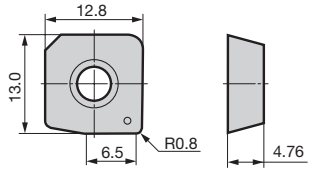
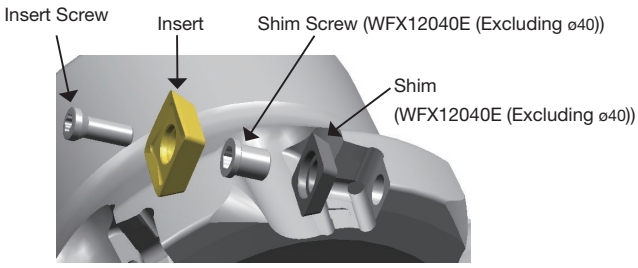


Fig 2 Wiper Insert





Parts

Shim	Shim Screw	Insert Screw		Wrench	Wrench (For Shims)
					
WFXS4R	BW0507F	BFTX03512IP	3.0	TRDR15IP	LH035

SUMI-P Anti-seizure cream included in the package.
ø40 mm size does not have seats.

Identification Code

WFX F 12 050 E

WFX	F	12	050	E
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Endmill Type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.15**-0.20	< 10	ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	ACP200 ACP300
	Die Steel	200 to 220 HB	100-**150**-200	0.10-**0.15**-0.20	< 6	ACP200 ACP300
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACK200 ACK300
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 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.

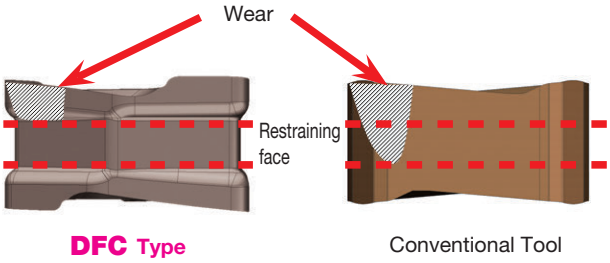
DFC Type

General Features

The high-efficiency general-purpose SEC-Sumi Dual Mill DFC Type 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.

Features

Unique insert shape delivers sharp cutting performance and cutting edge strength



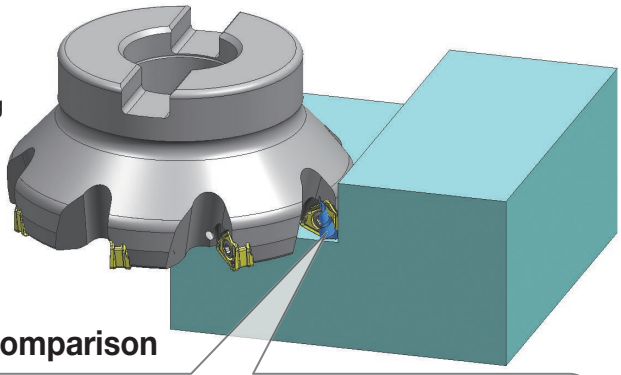
Flank wear of inserts for DFC Type does not reach the restraining face and thus mounting accuracy does not suffer.

The 90° cutting edge angle is suitable for both face milling and shoulder milling

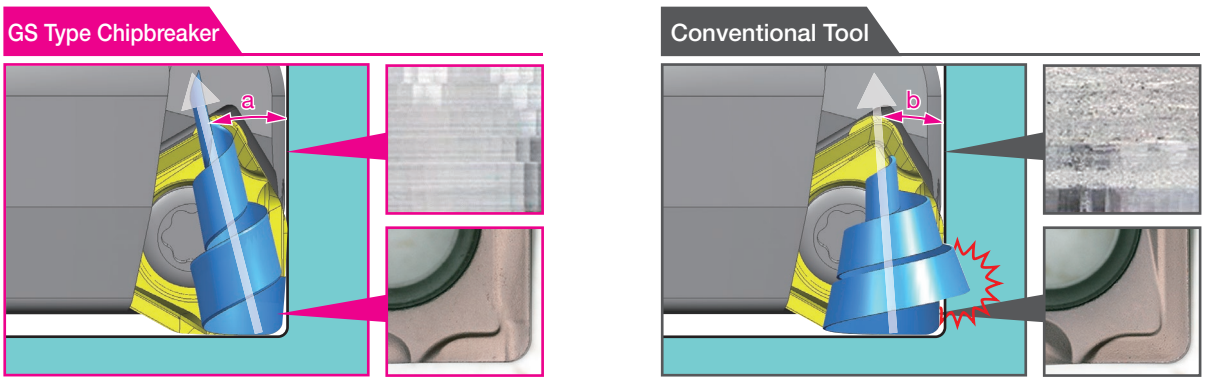
GS Type Chipbreaker for Shoulder Milling

- Excellent chip control
- Suppresses machined surface deterioration due to chip biting

Work Material: S50C, Tool: ø100mm
Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_e = 50mm, a_p = 3mm x 6 passes, Dry



Chip generation image and machined surface comparison

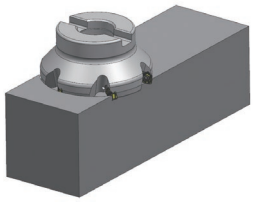


Chip flow direction control (a > b) → chip biting suppressed

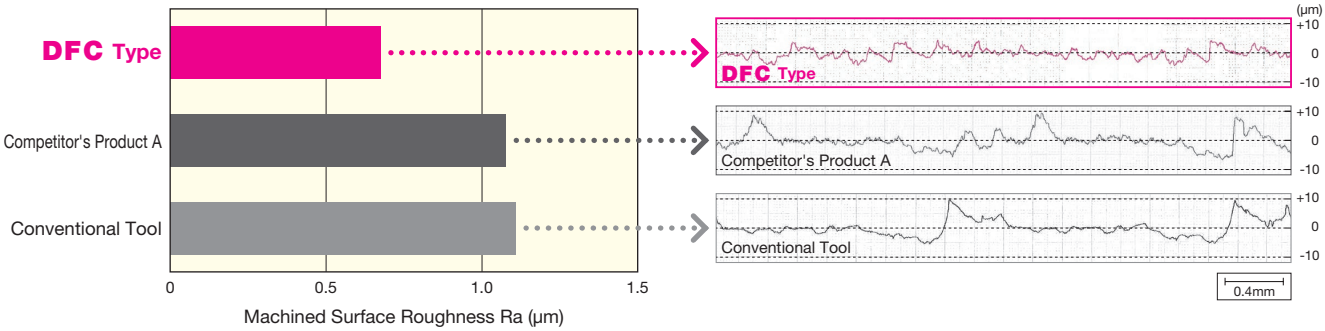
DFC Type

■ Cutting Performance

Face Milling



(1) Machined Surface Roughness Better than competitors' products

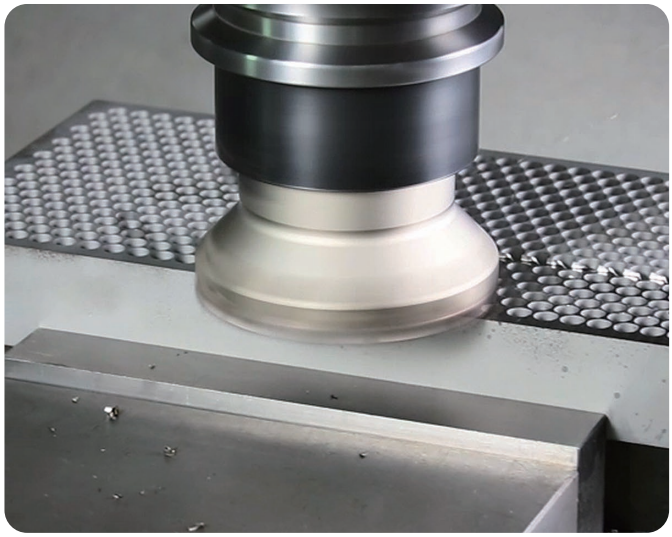


Work Material: S50C Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3mm, a_e = 85mm Dry

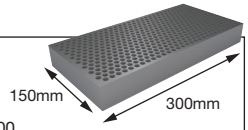
(2) Cutting edge strength: Cutting edge damage during heavy interrupted cutting
Cutting edge strength surpassing competitors' double-sided cutters

	f_z(mm/t)		
	0.3	0.4	0.5
DFC Type	○	○	○
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 vertical)	Damage (Midway through 3 passes)		

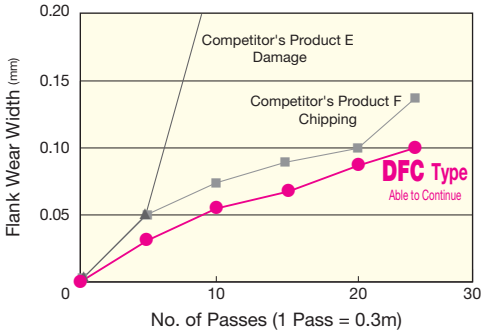
(Cutting Distance: 0.9m)



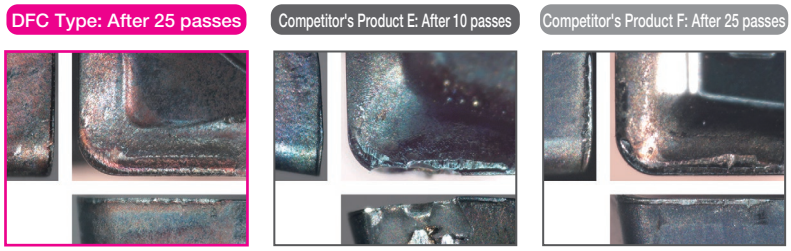
Work Material: S50C (With Holes)
Tool: DFC 09100RS
Insert: XNMU 060608PNER-G Grade: ACP300
Cutting Conditions: v_c = 150m/min, a_p = 3mm, a_e = 50mm Dry



(3) Wear resistance: Achieves long tool life thanks to excellent wear resistance



Comparison of cutting edge damage



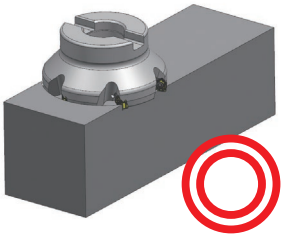
Little damage / Able to continue | Breakage | Extremely damaged

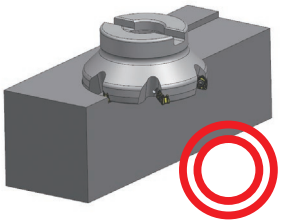
Work Material: S50C Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3mm, a_e = 85mm Dry

DFC Type

Applications and Recommended Chipbreakers

Face Milling	Shoulder Milling	Side Milling
G	GS	G/GS



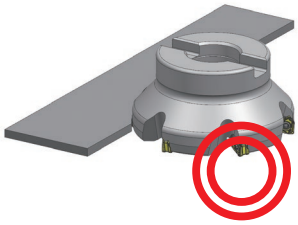


Guidelines for Shoulder Milling Conditions

Radial Direction Maximum Depth of Cut
G Type: $a_e \leq 10\%$ of cutter diameter
GS Type: $a_e \leq 50\%$ of cutter diameter

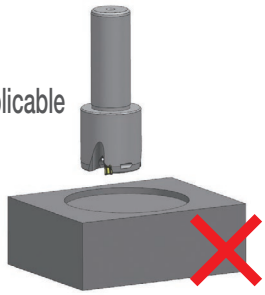
Recommended Axial Depth of Cut a_p = 3mm

Recommended Feed Rate $f_z \leq 0.2$mm/t
(for general steel)

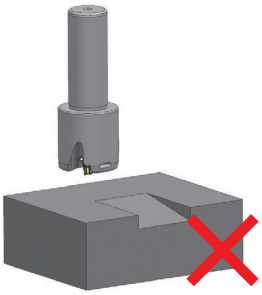


Applications which are not applicable

Helical Milling

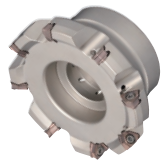


Ramping



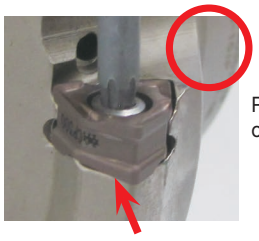
Product Range

Number in ● is the number of teeth

	Cat. No.	Remarks	Cutter Diameters in Stock (mm)										Shape
			ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	
Shell Type	DFC 09000R/RS H103	Standard Pitch	—	—	—	4	4	5	6	7	8	10	
Shell Type	DFCM 09000R/RS H104	Fine Pitch	—	—	—	5	6	7	8	11	12	16	
Shell Type	DFCF 09000R/RS H105	Extra Fine Pitch	—	—	—	6	7	9	11	14	16	20	
Shank Type	DFC 09000E H106	Standard Pitch	2	2	3	3*	4*	5*	—	—	—	—	
Shank Type	DFCM 09000E H106	Fine Pitch	—	3	4	5*	6*	7*	—	—	—	—	

● mark: Only metric in stock ◉ mark: Both metric and inch in stock * mark: Shank dia. 42mm type (made-to-order) — mark: Not available

Insert Mounting Precautions



No Gap

Prevent gaps from occurring

Gap

Place the insert face flat on to the cutter's insert pocket and tighten the flat screw with the recommended torque.

DFC Type

Insert Grade

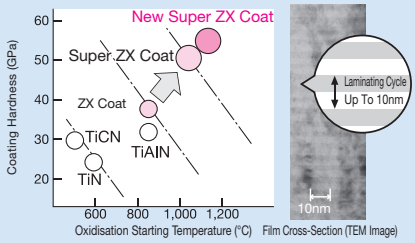
Lineup of Steel Milling Grades ACP100/ACP200/ACP300, Stainless Steel Milling Grades ACM200/ACM300, Cast Iron Milling Grades ACK200/ACK300 and more to suit a wide range of work materials.

Work Material	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
P Steel	ACP100 (C)	ACP200 (P)	ACP300 (P)
M Stainless Steel	ACM200 (C)	ACM300 (P)	
K Cast Iron	ACK200 (C)	ACK300 (P)	
S Exotic Alloy	ACM200 (C)	ACM300 (P)	

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

P ACP200/ACP300/ACK300/ACM300

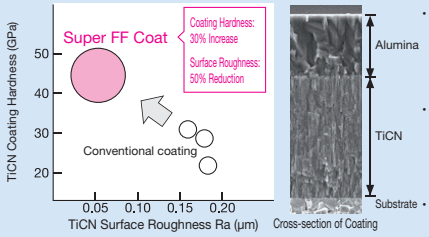
NEW SUPER ZX COAT



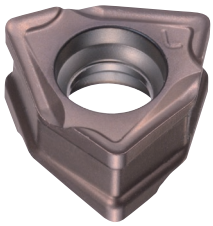
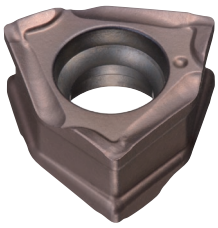
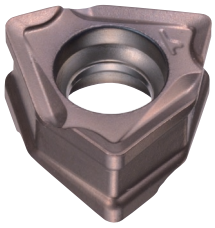
- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidisation starting temperature has been increased by 200°C
- Enables more than 1.5 times the machining speed and efficiency of conventional tools
- Achieves more than double the tool life of conventional tools

C ACP100/ACK200/ACM200

SUPER FF COAT

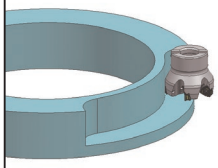


- Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- Achieves more than double the tool life of conventional tools

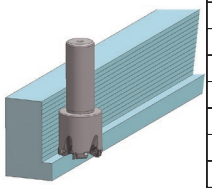
	L Type	G Type	GS Type	H Type
Chipbreaker				
Cutting Edge Cross Section	 30°	 20°	 20°	 20°
Nose Radius	0.4, 0.8	0.4, 0.8, 1.2, 1.6	0.4, 0.8, 1.2, 1.6	0.8, 1.2, 1.6
Features and Applications	Light Cutting, Low Rigidity Milling, Reduction of Burrs	Face Milling General-purpose to Interrupted Milling	Shoulder Milling	Heavy Cutting, Heavy Cross-Section Machining and Hardened Steel Milling

DFC Type

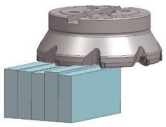
Application Examples



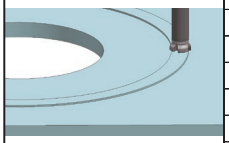
Ring Part Work Material SCM440	Sumitomo	Competitor's Product
Tool	DFCM09050RS	Double-sided 6 Corners
Grade	ACP200	—
Chipbreaker	GS	—
Cutter Dia. (mm)	50	50
Number of Teeth	5	5
v_c (m/min)	140	140
v_f (mm/min)	1,113	1,113
f_z (mm/t)	0.25	0.25
a_p (mm)	2.5	2.5
a_e (mm)	30	30
Coolant	Dry	Dry
Results	With no chip biting, tool life of 600%	



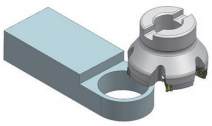
Machine Vise Work Material S45C	Sumitomo	Competitor's Product
Tool	DFCM09050E	Single-sided 2 Corners
Grade	ACP200	—
Chipbreaker	GS	—
Cutter Dia. (mm)	50	50
Number of Teeth	5	5
v_c (m/min)	188	188
v_f (mm/min)	1,200	800
f_z (mm/t)	0.20	0.13
a_p (mm)	5	5
a_e (mm)	13	13
Coolant	Air Blow	Air Blow
Results	150% Machining Efficiency	



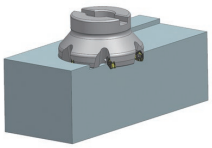
Block Simultaneous Milling Work Material SCMnH1	Sumitomo	Competitor's Product
Tool	DFC09160RS	Double-sided 8 Corners
Grade	ACP300	—
Chipbreaker	G	—
Cutter Dia. (mm)	160	160
Number of Teeth	8	12
v_c (m/min)	150	150
v_f (mm/min)	500	500
f_z (mm/t)	0.21	0.14
a_p (mm)	1.0	0.5
a_e (mm)	100	100
Coolant	Wet	Wet
Results	200% Machining Efficiency Tool Life 300%	



Construction Machinery Part Work Material S50C	Sumitomo	Competitor's Product
Tool	DFC09063RS	Single-sided 2 Corners
Grade	ACP200	—
Chipbreaker	G	—
Cutter Dia. (mm)	63	63
Number of Teeth	4	5
v_c (m/min)	180	180
v_f (mm/min)	1,092	910
f_z (mm/t)	0.3	0.2
a_p (mm)	2.0	2.0
a_e (mm)	50	50
Coolant	Dry	Dry
Results	120% Machining Efficiency	



Automotive Part Work Material S50C	Sumitomo	Competitor's Product
Tool	DFC09080RS	Single-sided 4 Corners
Grade	ACP200	—
Chipbreaker	G	—
Cutter Dia. (mm)	80	80
Number of Teeth	5	5
v_c (m/min)	226	200
v_f (mm/min)	1,260	800
f_z (mm/t)	0.28	0.20
a_p (mm)	2.0	2.0
a_e (mm)	5.0	5.0
Coolant	Wet	Wet
Results	160% Machining Efficiency	



Pump Part Work Material FCD400	Sumitomo	Competitor's Product
Tool	DFCF09100R	Double-sided 6 Corners
Grade	ACK300	—
Chipbreaker	G	—
Cutter Dia. (mm)	100	100
Number of Teeth	11	8
v_c (m/min)	335	335
v_f (mm/min)	1,825	1,825
f_z (mm/t)	0.15	0.21
a_p (mm)	2.0	2.0
a_e (mm)	75	75
Coolant	Dry	Dry
Results	Tool Life Over 150%	

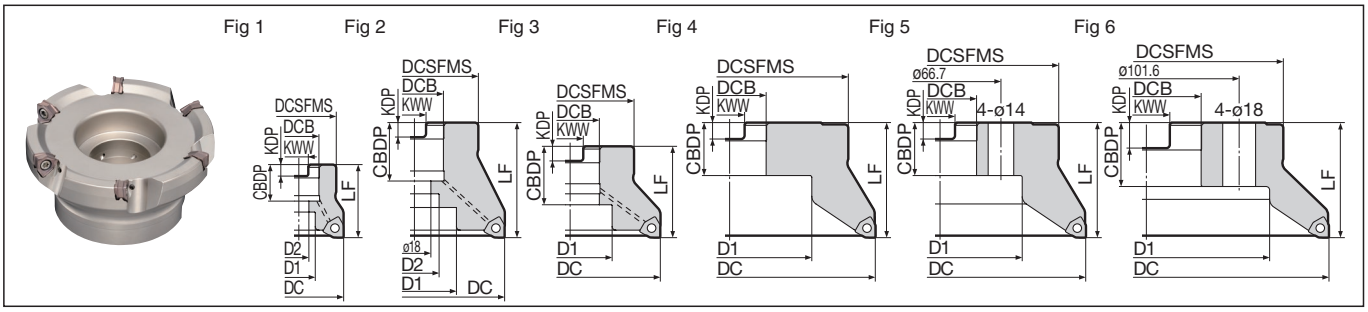
DFC 09000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Expansion

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90°



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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	130	63	40	16.4	9	29	90	—	8	4.6	5
	09200RS	●	200	150	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	150	63	47.625	25.4	14	35	135	—	10	6.0	6

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

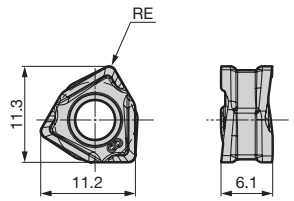
Insert

Dimensions (mm)

Grade		Coated Carbide						
Process	High-speed / Light	P M			K		M S	
	General-purpose	P M	P M		K		M S	M S
	Roughing		P M	P M		K		M S
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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



Parts

Wrench	Insert Screw		Anti-seizure Cream
TRDR15IP	BFTX03512IP	3.0 (N·m)	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed (v_c) (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	ACP200 ACP300
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	ACP200 ACP300
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at a_e ≤ 50% of cutter diameter and f_z ≤ 0.2mm/t.

Identification Code

DFC 09 050 R S

Cutter Series | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

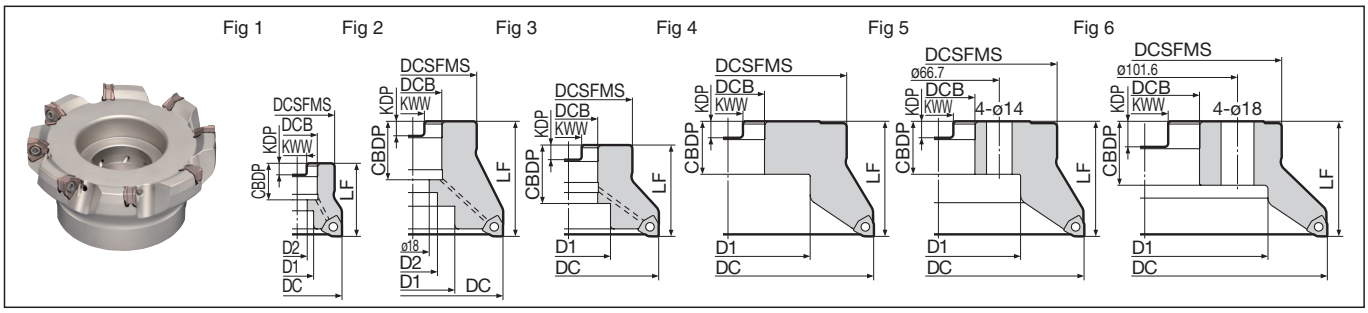
DFCM 09000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Expansion

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90°



Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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**	130	63	**40**	16.4	9	29	90	—	12	4.5	5
	09200RS	●	**200**	150	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**	150	63	**47.625**	25.4	14	35	135	—	16	5.9	6

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

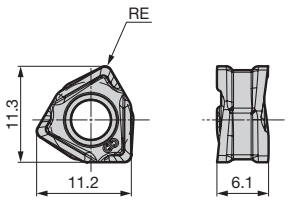
Insert

Dimensions (mm)

Grade		Coated Carbide						
Process	High-speed / Light	P M			K		M S	
	General-purpose	P M	P M		K		M S	M S
	Roughing		P M	P M		K		M S
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300
XNMU 060604PNER-L			●	●		●		●
060608PNER-L			●	●		●		●
XNMU 060604PNER-G		●	●	●	●	●	●	●
060608PNER-G		●	●	●	●	●	●	●
060612PNER-G		●	●	●	●	●	●	●
060616PNER-G		●	●	●	●	●	●	●
XNMU 060604PNER-GS		●	●	●			●	●
060608PNER-GS		●	●	●			●	●
060612PNER-GS		●	●	●			●	●
060616PNER-GS		●	●	●			●	●
XNMU 060608PNER-H		●	●	●	●	●	●	●
060612PNER-H		●	●	●	●	●	●	●
060616PNER-H		●	●	●	●	●	●	●

Nose Radius RE	Fig
0.4	1
0.8	1
0.4	1
0.8	1
1.2	1
1.6	1
0.4	1
0.8	1
1.2	1
1.6	1
0.8	1
1.2	1
1.6	1

Fig 1



Parts

Wrench	Insert Screw		Anti-seizure Cream
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Identification Code

DFC M 09 050 R S

Cutter Series | Fine Pitch | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed (v_{cj}) (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	ACP200 ACP300
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	ACP200 ACP300
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at a_e ≤ 50% of cutter diameter and f_z ≤ 0.2mm/t.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

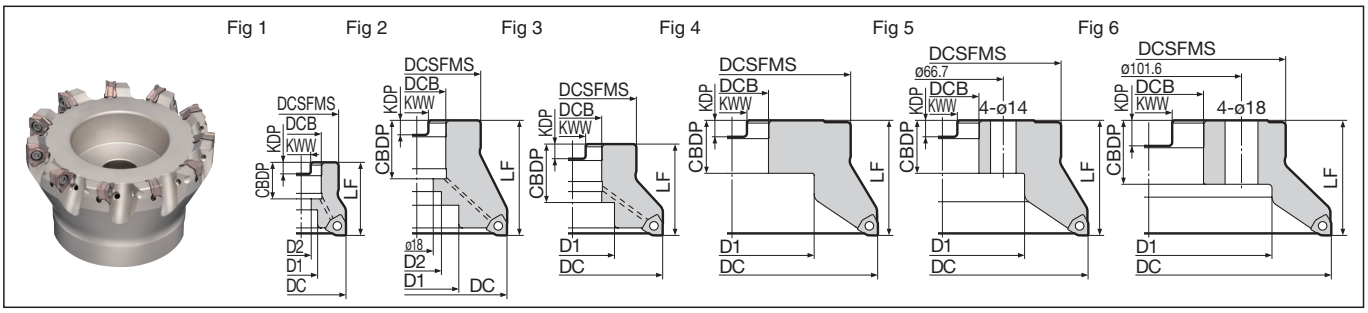
DFCF 09000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Expansion

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90°



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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	130	63	40	16.4	9	29	90	—	16	4.5	5
	09200RS	●	200	150	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	150	63	47.625	25.4	14	35	135	—	20	5.8	6

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

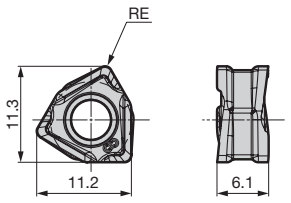
Insert

Dimensions (mm)

Grade		Coated Carbide						
Process	High-speed / Light	P M			K		M S	
	General-purpose	P M	P M		K		M S	M S
	Roughing		P M	P M		K		M S
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300
XNMU 060604PNER-L			●	●		●		●
060608PNER-L			●	●		●		●
XNMU 060604PNER-G		●	●	●	●	●	●	●
060608PNER-G		●	●	●	●	●	●	●
060612PNER-G		●	●	●	●	●	●	●
060616PNER-G		●	●	●	●	●	●	●
XNMU 060604PNER-GS		●	●	●			●	●
060608PNER-GS		●	●	●			●	●
060612PNER-GS		●	●	●			●	●
060616PNER-GS		●	●	●			●	●
XNMU 060608PNER-H		●	●	●	●	●	●	●
060612PNER-H		●	●	●	●	●	●	●
060616PNER-H		●	●	●	●	●	●	●

Cat. No.	Nose 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



Parts

Wrench	Insert Screw		Anti-seizure Cream
		N·m	
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Identification Code

DFC	F	09	050	R	S
Cutter Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed (v_c) (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	ACP200 ACP300
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	ACP200 ACP300
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at a_e ≤ 50% of cutter diameter and f_z ≤ 0.2mm/t.

DFC(M) 09000E Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Expansion

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90°

Fig 1

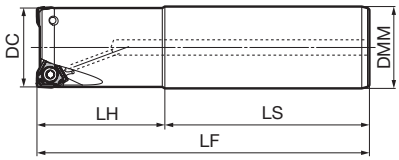
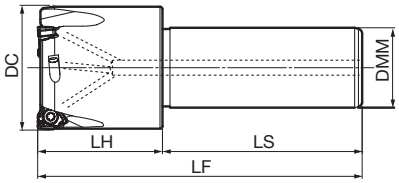


Fig 2



Body (Standard Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
DFC 09025E	●	**25**	25	40	80	120	2	1
09032E	●	**32**	32	50	80	130	2	1
09040E	●	**40**	32	50	80	130	3	2
09050E	●	**50**	32	50	80	130	3	2
09050E-42		**50**	42	50	100	150	3	2
09063E	●	**63**	32	50	80	130	4	2
09063E-42		**63**	42	50	100	150	4	2
09080E	●	**80**	32	50	80	130	5	2
09080E-42		**80**	42	50	100	150	5	2

Body (Fine Pitch)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
DFCM 09032E	●	**32**	32	50	80	130	3	1
09040E	●	**40**	32	50	80	130	4	2
09050E	●	**50**	32	50	80	130	5	2
09050E-42		**50**	42	50	100	150	5	2
09063E	●	**63**	32	50	80	130	6	2
09063E-42		**63**	42	50	100	150	6	2
09080E	●	**80**	32	50	80	130	7	2
09080E-42		**80**	42	50	100	150	7	2

Inserts are sold separately.

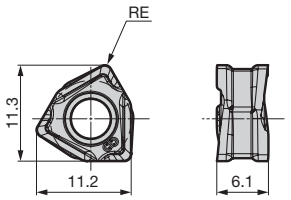
Insert

Dimensions (mm)

Grade		Coated Carbide						
Process	High-speed / Light	P M			K		M S	
	General-purposeg	P M	P M		K		M S	M S
	Roughing		P M	P M		K		M S

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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



Parts

Wrench	Insert Screw		Anti-seizure Cream
TRDR15IP	BFTX03512IP	3.0	SUMI-P

Identification Code

DFC **M** **09** **025** **E**

Cutter Series | Fine Pitch | Insert Size | Cutter Dia. | Endmill Type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed (v_c) (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Depth of Cut a_p (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - **200** - 250	0.10 - **0.20** - 0.30	< 6	ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	ACP200 ACP300
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	ACP200 ACP300
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.2$mm/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.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

MEMO

TSX Type

New

Features

● Excellent Machined Surface Quality

Adopts ground 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 various machining applications.

Product Range (Face Mills)

Type	Type		Description	Cutter Diameters in Stock (mm)														Shape
				ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250	ø315	
Shells	TSX 08000RS		Standard Pitch					4	5	6	7							
	TSX 08000R	Inch	Standard Pitch								7							
	TSXF 08000RS		Extra Fine Pitch					6	8	10	11							
	TSXF 08000R	Inch	Extra Fine Pitch								11							
	TSX 13000RS		Standard Pitch					3	4	5	5	6	7	8	12	14	16	
	TSX 13000R	Inch	Standard Pitch								5	6	7	8	12	14	16	
	TSXM 13000RS		Fine Pitch					4	5	6	7	8	10	12	16	20	24	
	TSXM 13000R	Inch	Fine Pitch								7	8	10	12	16	20	24	
	TSXF 13000RS		Extra Fine Pitch					5	6	7	8	10	14	16				
	TSXF 13000R	Inch	Extra Fine Pitch								8	10	14	16				
With Shank	TSX 08000E		Standard Pitch	2	2*	3*	3*	4	5	6	7							
	TSXF 08000E		Extra Fine Pitch		3	4	5	6	8	10	11							
	TSX 13000E		Standard Pitch			2	2	3	4	5	5							
	TSXM 13000E		Fine Pitch				3	4	5	6	7							
	TSXF 13000E		Extra Fine Pitch					5	6	7	8							

Number in ● is the number of teeth
* mark: Different-diameter shanks in stock

Product Range (Repeaters)

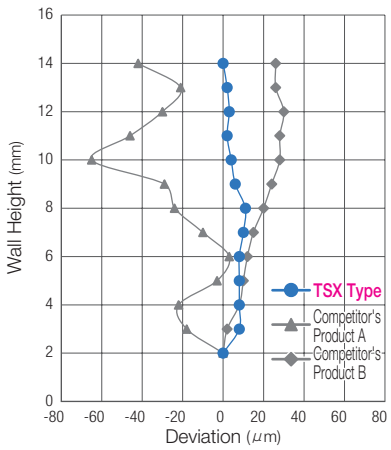
Type	Type	Cutter Diameters in Stock (mm)												Shape
		ø20	ø25	ø32	ø40	ø50		ø63		ø80		ø100	ø125	
Shells	TSXR 08000RS			2	3	3	4	5						
	TSXR 13000RS				2	3		3	4	4	5	5	6	7
With Shank	TSXR 08000E	1	2	2	3									
	TSXR 13000E				2	3								

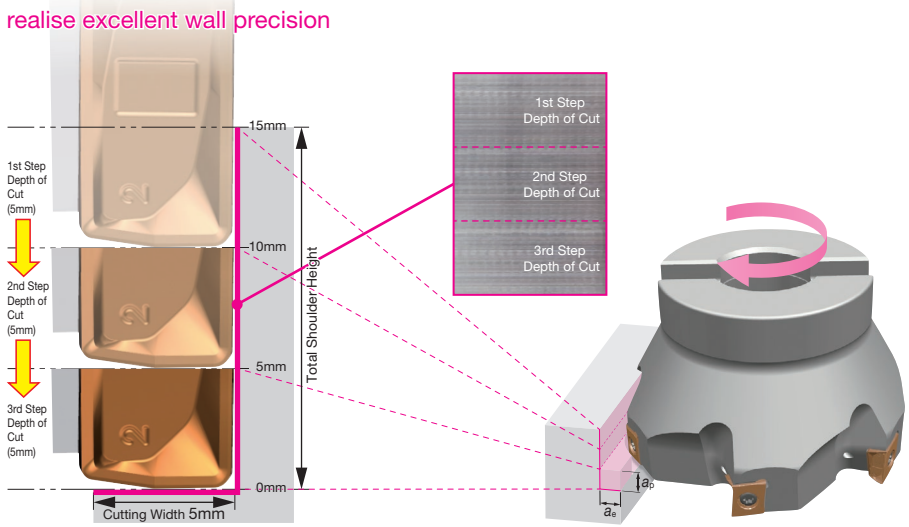
Number in ● is the number of teeth

TSX Type

Shoulder Milling Precision

High accuracy insert and cutting edge shape optimised to realise excellent wall precision

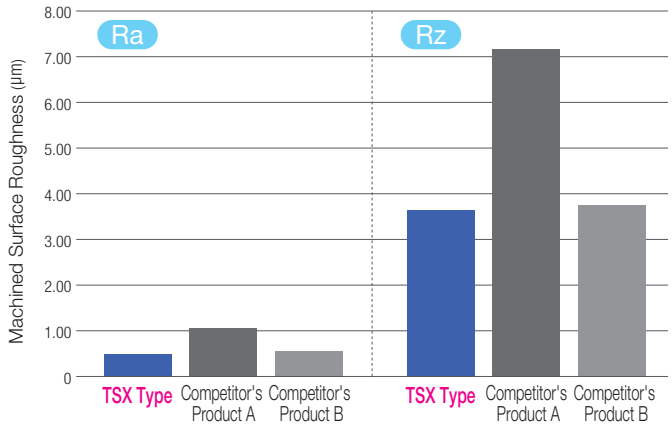




Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 5mm x 3 Passes, a_e = 5mm Dry

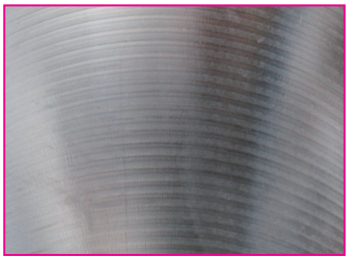
Machined Surface Roughness

Cutting edge shape optimised to realise excellent machined surface roughness



Machined Surface Comparison

TSX Type Without Cloudiness



Competitor's Product Cloudy

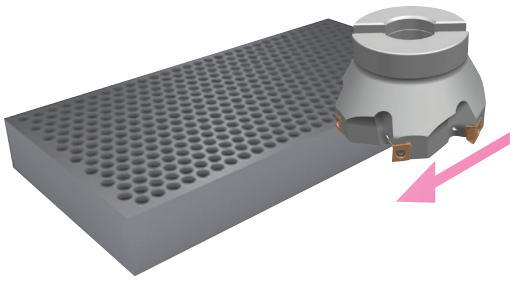
Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3mm, a_e = 60mm Dry

Cutting Edge Strength

TSX Type has high cutting edge strength and enables high efficiency machining

1 Pass = 300 mm

Cutting Length	4 Passes	8 Passes	12 Passes
TSX Type	Continued Machining Possible		
Competitor's Product A	Damage		
Competitor's Product B	Damage		

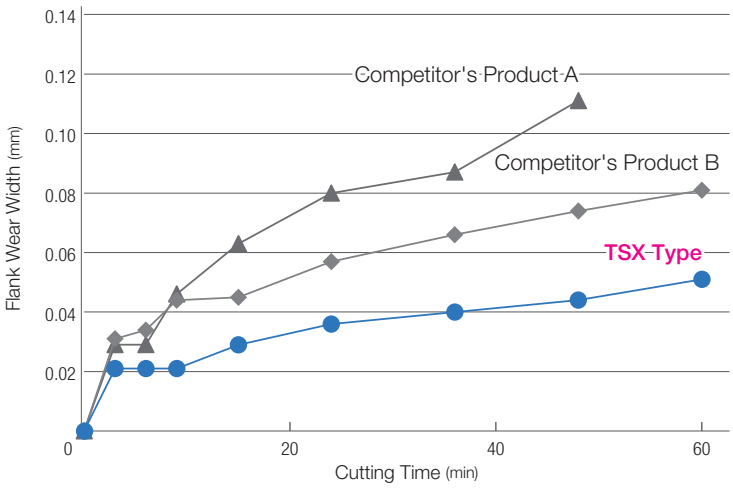


Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions: v_c = 150m/min, f_z = 0.6mm/t (Accelerating)
a_p = 3mm, a_e = 40mm Dry

TSX Type

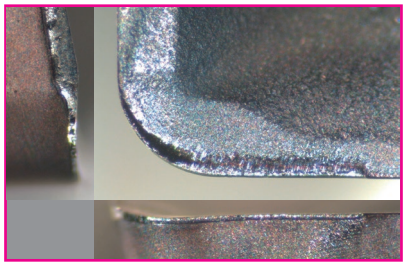
Tool Life

Excellent Wear Resistance Realizes Stable Tool Life

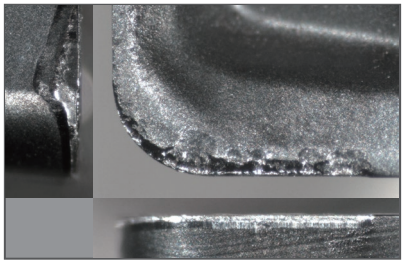


Machine: Vertical Machining Centre BT50, Work Material: S50C
Tool: TSX 08025E, Insert: LNEX 080408PNER-G (ACP200)
Cutting Conditions: v_c = 200m/min, f_z = 0.1mm/t, a_p = 2mm, a_e = 5mm Dry

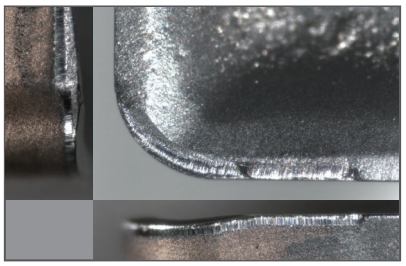
TSX Type
(After cutting for 60 minutes)



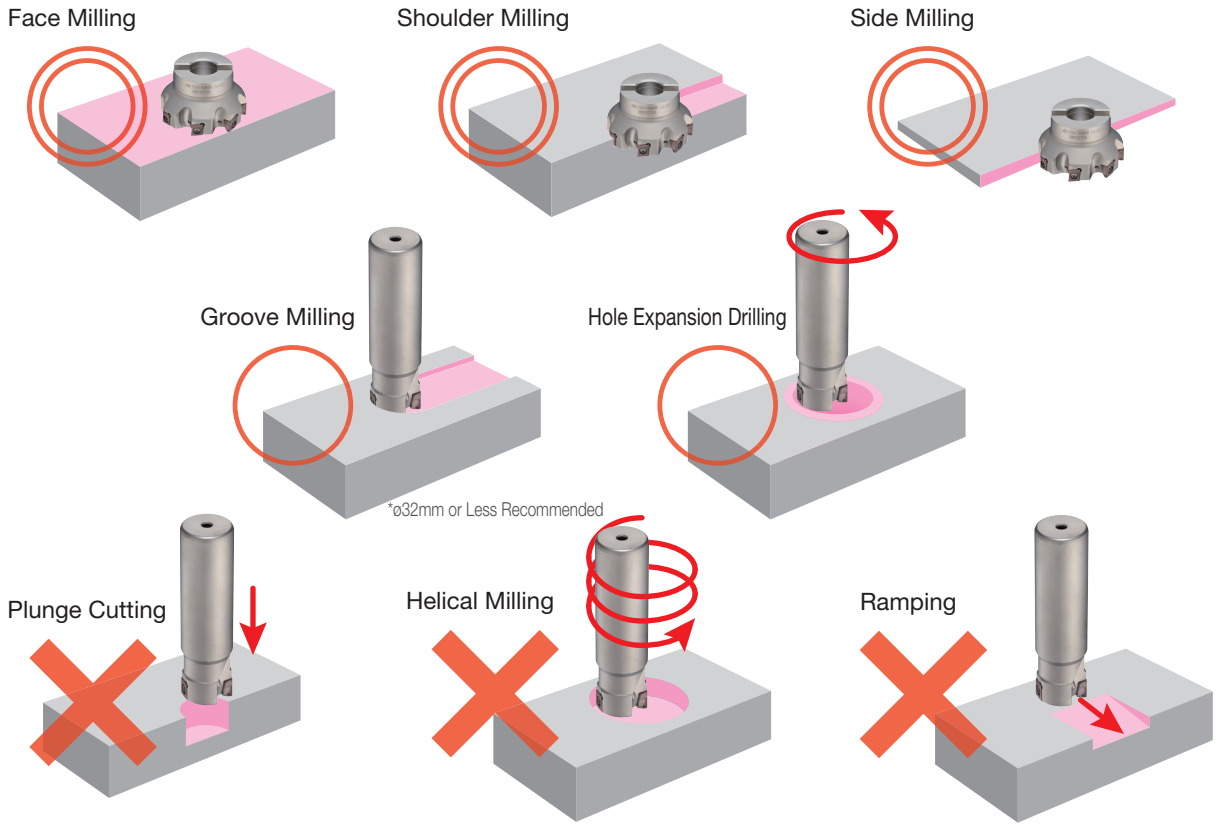
Competitor's Product A
(After cutting for 48 minutes)



Competitor's Product B
(After cutting for 60 minutes)



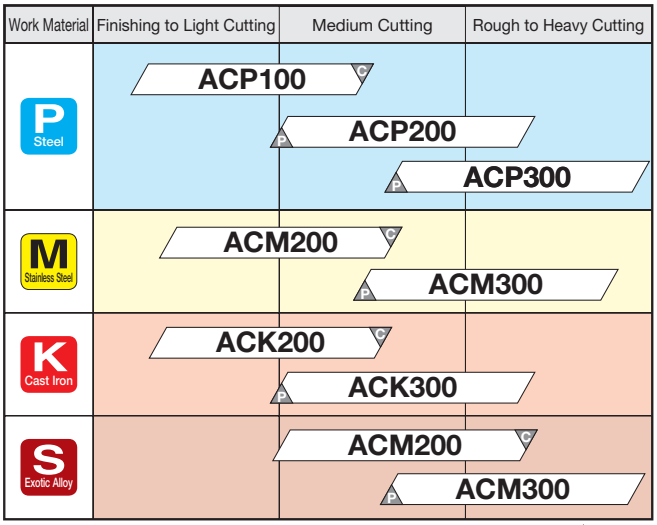
Applications



TSX Type

Insert Grade Selection

Lineup of 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.



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

Product Range

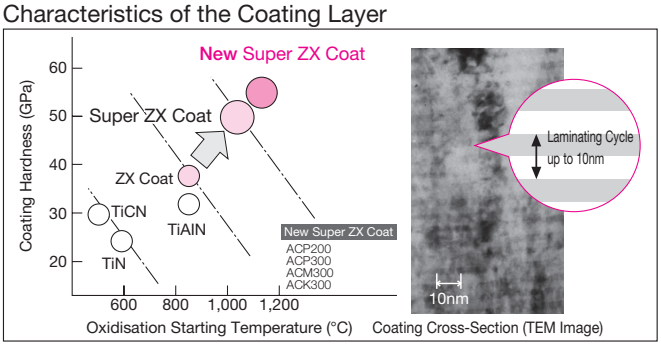
Cat. No.	Nose Radius (mm)						
	R0.4	R0.8	R1.2	R1.6	R2.0	R2.4	R3.2
LNEX 0804○○PNER-L	●	●	●	●			
LNEX 0804○○PNER-G	●	●	●	●			
LNEX 1306○○PNER-L	●	●	●	●	●	●	●
LNEX 1306○○PNER-G	●	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●	●

Coating Features

New Super ZX Coat
(PVD: Physical Vapor Deposition)

Employs our super multi-layered New Super ZX Coat, which utilises our proprietary thin-layer coating technology and advanced nanotechnology. The coating consists of thousands of alternating, nanometre-thin (1 nanometre = 1 billionth of a meter) layers

Characteristics of the Coating Layer

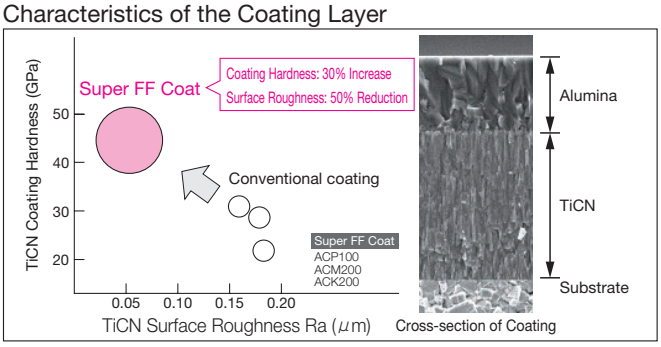


- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidisation starting temperature has been increased by 200°C
- Enables more than 1.5 times the machining speed and efficiency of conventional tools
- Achieves more than double the tool life of conventional tools

Super FF Coat
(CVD: Chemical Vapor Deposition)

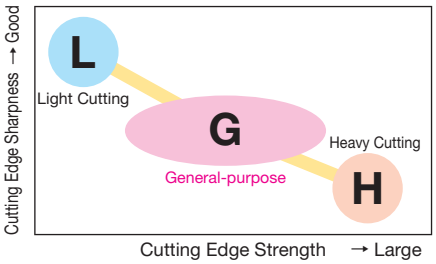
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary CVD process technology

Characteristics of the Coating Layer

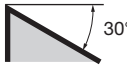
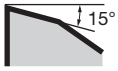
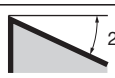
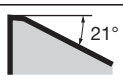


- Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- Achieves more than double the tool life of conventional tools

Chipbreaker Selection



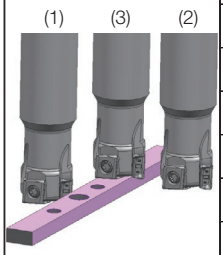
Chipbreaker Lineup

Work Material	P M K S		
Chipbreaker	L Type	G Type	H Type
			
Features	Low Cutting Force	General-purpose Type	High Strength Type
LNEX08 Type Cross Section	 30°	 15°	Not Available
LNEX13 Type Cross Section	 25°	 21°	 21°
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	General-purpose to Interrupted Milling	Heavy Cutting, Heavy Cross-Section Machining and Hardened Steel Milling

TSX Type

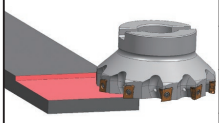
Application Examples

SCM440 Machining Components		Sumitomo	Conventional Tool
Machining Centre: BT30	Tool	TSXF 08020E	Vertical Type 4 Corners
	Grade	ACP200	–
	Chipbreaker	G	–
	Cutter Dia. (mm)	20	20
	Number of Teeth	3	3
	v_c (m/min)	270	270
	v_f (mm/min)	650	650
	f_z (mm/t)	0.05	0.05
	a_p (mm)	8.0	8.0
	a_e (mm)	0.64	0.64
	Coolant	Wet	Wet
	Results	Reduced finishing processes thanks to wall surface accuracy superior to conventional tools.	

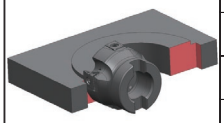


(1)(2) Side Milling
(3) Face Milling

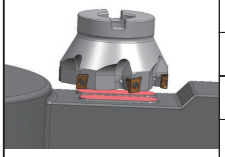
SUS304L Guide		Sumitomo	Conventional Tool
Machining Centre: BT50	Tool	TSXM 13125RS	–
	Grade	ACM200	–
	Chipbreaker	L	–
	Cutter Dia. (mm)	125	125
	Number of Teeth	10	8
	v_c (m/min)	70	70
	v_f (mm/min)	80	40
	f_z (mm/t)	0.045	0.028
	a_p (mm)	5.0	5.0
	a_e (mm)	95	95
	Coolant	Wet	Wet
	Results	2 times the machining efficiency and 2 times longer tool life.	



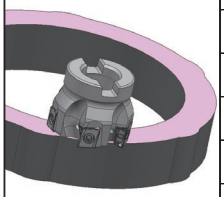
FC250 Cylinder Block		Sumitomo	Conventional Tool
Machining Centre: BT40	Tool	TSX 13050RS	–
	Grade	ACK300	–
	Chipbreaker	L	–
	Cutter Dia. (mm)	50	50
	Number of Teeth	4	4
	v_c (m/min)	235	235
	v_f (mm/min)	600	600
	f_z (mm/t)	0.1	0.1
	a_p (mm)	0.8	0.8
	a_e (mm)	0.8	0.8
	Coolant	Wet	Wet
	Results	Dimensional tolerance and surface roughness superior to conventional tools.	



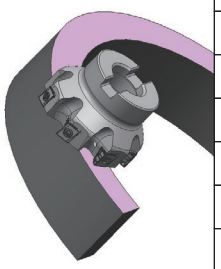
Cast Steel Shaft Housing		Sumitomo	Conventional Tool
Machining Centre: BT40	Tool	TSX 13100R	–
	Grade	ACP200	–
	Chipbreaker	G	–
	Cutter Dia. (mm)	100	100
	Number of Teeth	6	8
	v_c (m/min)	180	141
	v_f (mm/min)	962	1000
	f_z (mm/t)	0.28	0.28
	a_p (mm)	Roughing: 3mm, Finishing: 1mm	Roughing: 3mm, Finishing: 1mm
	a_e (mm)	–	–
	Coolant	Wet	Wet
	Results	Machined surface superior to conventional tools.	



Ductile Cast Iron Housing		Sumitomo	Conventional Tool
Machining Centre: BT40	Tool	TSXM 13050RS	Single-Sided 4 Corners
	Grade	ACK300	–
	Chipbreaker	G	–
	Cutter Dia. (mm)	50	50
	Number of Teeth	5	5
	v_c (m/min)	240	240
	v_f (mm/min)	1150	1150
	f_z (mm/t)	0.13	0.13
	a_p (mm)	1.0	1.0
	a_e (mm)	30.0	30.0
	Coolant	Dry	Dry
	Results	Tool life extension of 131% achieved.	



SCM430 Bearing Cover		Sumitomo	Competitor's Product
Horizontal Machining Centre: BT50	Tool	TSXM 13080RS	–
	Grade	ACP200	–
	Chipbreaker	H	–
	Cutter Dia. (mm)	80	80
	Number of Teeth	7	6
	v_c (m/min)	180	180
	v_f (mm/min)	950	950
	f_z (mm/t)	0.2	0.2
	a_p (mm)	3.8	3.8
	a_e (mm)	50.0	50.0
	Coolant	Dry	Dry
	Results	Tool life extension of 333% achieved.	



TSX(F) 08000R(S) Type

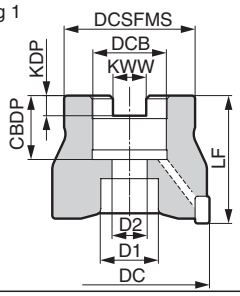
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

Rake Angle		
	Radial	-20°
	Axial	-6°

8mm 90°

Fig 1



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	TSX 08040RS	●	40	33	40	16.0	8.4	5.6	18	14	9	4	0.21	1
	08050RS	●	50	41	40	22.0	10.4	6.3	20	18	11	5	0.30	1
	08063RS	●	63	50	40	22.0	10.4	6.3	20	18	11	6	0.53	1
	08080RS	●	*80	55	50	27.0	12.4	7.0	22	20	14	7	0.99	1
Inch	TSX 08080R	●	*80	55	50	25.4	9.5	6.0	25	20	14	7	1.00	1

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

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

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	TSXF 08040RS	●	40	33	40	16.0	8.4	5.6	18	14	9	6	0.21	1
	08050RS	●	50	41	40	22.0	10.4	6.3	20	18	11	8	0.31	1
	08063RS	●	63	50	40	22.0	10.4	6.3	20	18	11	10	0.54	1
	08080RS	●	*80	55	50	27.0	12.4	7.0	22	20	14	11	0.97	1
Inch	TSXF 08080R	●	*80	55	50	25.4	9.5	6.0	25	20	14	11	0.98	1

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

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

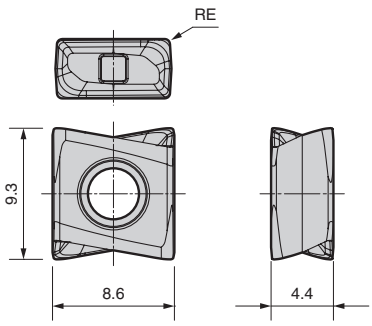
Insert

Dimensions (mm)

Grade		Coated Carbide						
Process	High-speed / Light	P M			K		M S	
	General-purpose	P M	P M		K		M S	M S
	Roughing		P M	P M		K		M S
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300
LNEX 080404PNER-L			●	●	●	●	●	●
080408PNER-L			●	●	●	●	●	●
080412PNER-L			●			●	●	●
080416PNER-L			●			●	●	●
LNEX 080404PNER-G		●	●	●	●	●	●	●
080408PNER-G		●	●	●	●	●	●	●
080412PNER-G		●	●	●	●	●	●	●
080416PNER-G		●	●	●	●	●	●	●

Nose Radius RE	Fig
0.4	1
0.8	1
1.2	1
1.6	1
0.4	1
0.8	1
1.2	1
1.6	1

Fig 1



Parts

Screw		Wrench	Anti-seizure Cream
BFTX0308IP	2.0	TRDR08IP	SUMI-P

Identification Code

TSX F 08 050 R S

Cutter Series | Extra Fine Pitch | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.08 - **0.20** - 0.30	ACP100
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.08 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACM200
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	ACM300
K	Cast Iron/Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT40 machine tools.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

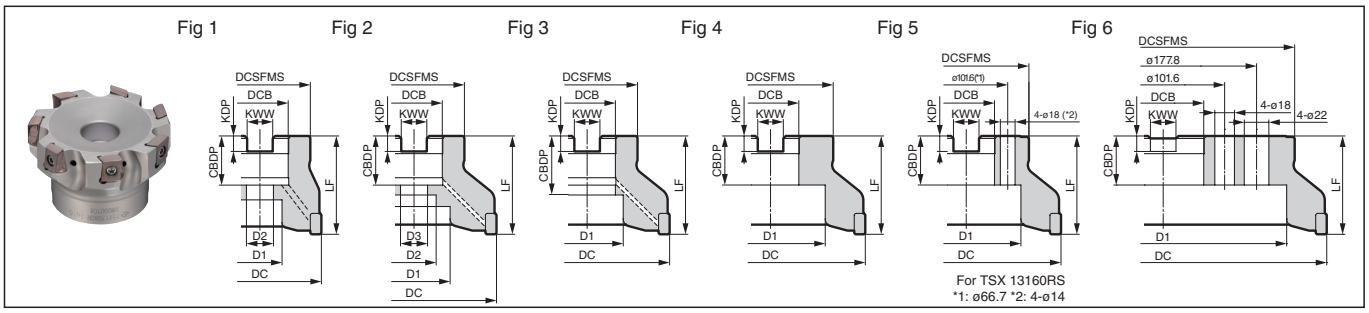
TSX 13000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

Rake Angle		
	Radial	-23° to -15°
	Axial	-6°

12mm 90°



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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**	●	**40**	33	40	**16.0**	8.4	5.6	18.0	14	9	—	3	0.20	1
	13050RS	●	**50**	41	40	**22.0**	10.4	6.3	20.0	18	11	—	4	0.30	1
	13063RS	●	**63**	50	40	**22.0**	10.4	6.3	20.0	18	11	—	5	0.50	1
	13080RS	●	***80**	55	50	**27.0**	12.4	7.0	22.0	20	14	—	5	0.92	1
	13100RS	●	**100**	70	50	**32.0**	14.4	8.0	32.0	46	—	—	6	1.35	3
	13125RS	●	**125**	80	63	**40.0**	16.4	9.0	29.0	52	29	—	7	2.55	1
	13160RS	●	**160**	130	63	**40.0**	16.4	9.0	29.0	90	—	—	8	4.97	5*
	13200RS	●	**200**	160	63	**60.0**	25.7	14.0	35.0	135	—	—	12	6.20	5
	13250RS	●	**250**	180	63	**60.0**	25.7	14.0	35.0	160	—	—	14	9.35	5
	13315RS	●	**315**	240	63	**60.0**	25.7	14.0	35.0	230	—	—	16	16.42	6
Inch	**TSX 13080R**	●	***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	5	0.93	1
	13100R	●	***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	6	1.88	2
	13125R	●	**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	7	2.61	1
	13160R	●	**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	8	4.18	4
	13200R	●	**200**	160	63	**47.625**	25.4	14.0	35.0	135	—	—	12	6.36	5
	13250R	●	**250**	180	63	**47.625**	25.4	14.0	35.0	160	—	—	14	9.60	5
	13315R	●	**315**	240	63	**47.625**	25.4	14.0	35.0	230	—	—	16	16.68	6

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX 13 100 R S

Cutter Series | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Parts

Applicable Cutter	Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Seat	Anti-seizure Cream
TSX 13040RS	BFTX03510IP	3.0	—	HPS1015	TRB15IP	—	SUMI-P
TSX 13050RS							
TSX 13063RS							
TSX 13080RS							
TSX 13100RS							
TSX 13125RS							
TSX 13160RS			TRDR15IP	—	—	TSXS13R	
TSX 13200RS							
TSX 13250RS							
TSX 13315RS							
TSX 13080R			—	HPS1015	TRB15IP	—	
TSX 13100R							
TSX 13125R							
TSX 13160R			TRDR15IP	—	—	TSXS13R	
TSX 13200R							
TSX 13250R							
TSX 13315R							

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

TSX 13000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

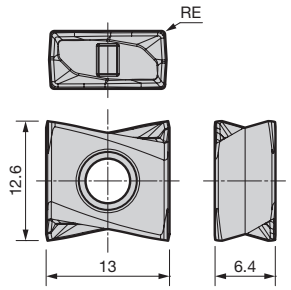
New

Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	P/M			K		M/S			
	General-purpose		P/M		K		M/S	M/S		
	Roughing		P/M	P/M		K		M/S		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACP100
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACM200
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	ACM300
K	Cast Iron/Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACM200 ACM300

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.

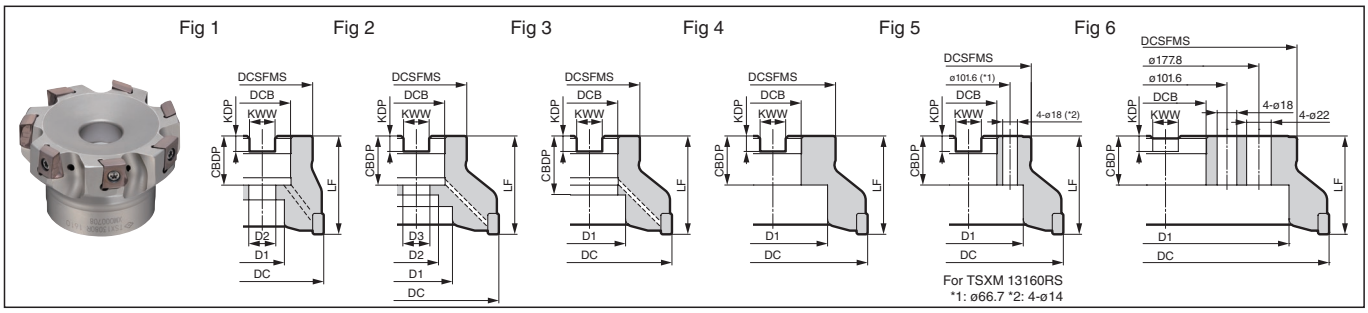
TSXM 13000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

Rake Angle		
	Radial	-23° to 15°
	Axial	-6°

12mm 90°



Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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**	●	**40**	33	40	**16.0**	8.4	5.6	18.0	14	9	—	4	0.19	1
	13050RS	●	**50**	41	40	**22.0**	10.4	6.3	20.0	18	11	—	5	0.28	1
	13063RS	●	**63**	50	40	**22.0**	10.4	6.3	20.0	18	11	—	6	0.50	1
	13080RS	●	***80**	55	50	**27.0**	12.4	7.0	22.0	20	14	—	7	0.92	1
	13100RS	●	**100**	70	50	**32.0**	14.4	8.0	32.0	46	—	—	8	1.36	3
	13125RS	●	**125**	80	63	**40.0**	16.4	9.0	29.0	52	29	—	10	2.57	1
	13160RS	●	**160**	130	63	**40.0**	16.4	9.0	29.0	90	—	—	12	5.02	5*
	13200RS	●	**200**	160	63	**60.0**	25.7	14.0	35.0	135	—	—	16	6.32	5
	13250RS	●	**250**	180	63	**60.0**	25.7	14.0	35.0	160	—	—	20	9.42	5
	13315RS	●	**315**	240	63	**60.0**	25.7	14.0	35.0	230	—	—	24	16.37	6
Inch	**TSXM 13080R**	●	***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	7	0.93	1
	13100R	●	***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	8	1.90	2
	13125R	●	**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	10	2.62	1
	13160R	●	**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	12	4.22	4
	13200R	●	**200**	160	63	**47.625**	25.4	14.0	35.0	135	—	—	16	6.48	5
	13250R	●	**250**	180	63	**47.625**	25.4	14.0	35.0	160	—	—	20	9.68	5
	13315R	●	**315**	240	63	**47.625**	25.4	14.0	35.0	230	—	—	24	16.63	6

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX M 13 100 R S

Cutter Series | Fine Pitch | Insert Size | Cutter Dia. | Feed Direction | Metric Bore

Parts

Applicable Cutter	Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Seat	Anti-seizure Cream
TSXM 13040RS	BFTX03510IP	3.0	—	HPS1015	TRB15IP	—	SUMI-P
TSXM 13050RS							
TSXM 13063RS							
TSXM 13080RS							
TSXM 13100RS							
TSXM 13125RS							
TSXM 13160RS			TRDR15IP	—	—	TSXS13R	
TSXM 13200RS							
TSXM 13250RS							
TSXM 13315RS							
TSXM 13080R			—	HPS1015	TRB15IP	—	
TSXM 13100R							
TSXM 13125R							
TSXM 13160R			TRDR15IP	—	—	TSXS13R	
TSXM 13200R							
TSXM 13250R							
TSXM 13315R							

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

TSXM 13000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

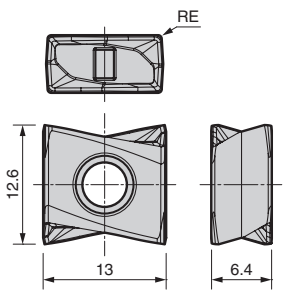
New

Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	P M			K		M S			
	General-purpose	P M	P M		K		M S	M S		
	Roughing		P M	P M		K		M S		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACP100
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACM200
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	ACM300
K	Cast Iron/Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACM200 ACM300

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.

TSXF 13000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

Rake Angle	Radial	–23 to –15°
	Axial	–6°

12mm 90°

Fig 1

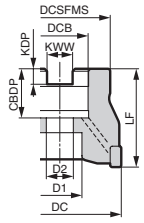


Fig 2

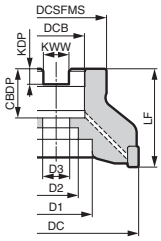


Fig 3

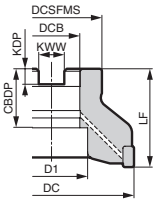


Fig 4

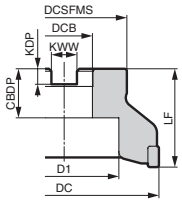
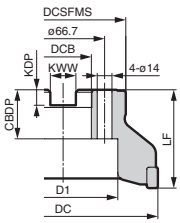


Fig 5



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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**	●	**40**	33	40	**16.0**	8.4	5.6	18.0	14	9	—	5	0.18	1
	13050RS	●	**50**	41	40	**22.0**	10.4	6.3	20.0	18	11	—	6	0.29	1
	13063RS	●	**63**	50	40	**22.0**	10.4	6.3	20.0	18	11	—	7	0.50	1
	13080RS	●	***80**	55	50	**27.0**	12.4	7.0	22.0	20	14	—	8	0.92	1
	13100RS	●	**100**	70	50	**32.0**	14.4	8.0	32.0	46	—	—	10	1.34	3
	13125RS	●	**125**	80	63	**40.0**	16.4	9.0	29.0	52	29	—	14	2.58	1
	13160RS	●	**160**	130	63	**40.0**	16.4	9.0	29.0	90	—	—	16	5.08	5
Inch	**TSXF 13080R**	●	***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	8	0.93	1
	13100R	●	***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	10	1.88	2
	13125R	●	**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	14	2.60	1
	13160R	●	**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	16	4.28	4

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal 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
Cutter Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Parts

Applicable Cutter	Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
TSXF 13040RS	BFTX03510IP	3.0	—	HPS1015	TRB15IP	SUMI-P
TSXF 13050RS						
TSXF 13063RS						
TSXF 13080RS						
TSXF 13100RS						
TSXF 13125RS						
TSXF 13160RS			TRDR15IP	—	—	
TSXF 13080R			—	HPS1015	TRB15IP	
TSXF 13100R						
TSXF 13125R						
TSXF 13160R			TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

TSXF 13000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

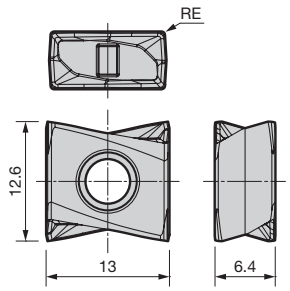
New

Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	P/M			K		M/S			
	General-purpose	P/M	P/M		K		M/S	M/S		
	Roughing		P/M	P/M		K		M/S		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACP100
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACM200
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACM200 ACM300

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.

TSX(F) 08000E Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

Rake Angle		
	Radial	–36 to –20°
	Axial	–6°

8mm 90°

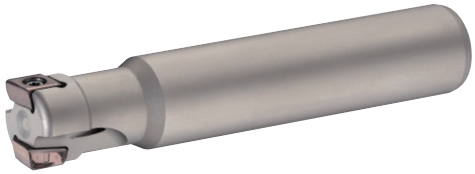


Fig 1

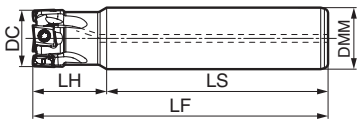
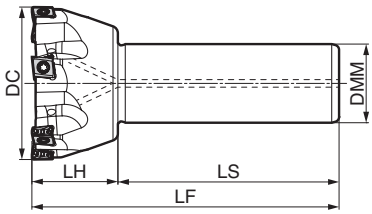


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 08016E**	●	**16**	16	25	75	100	2	0.13	1
	TSX 08020E	●	**20**	20	30	80	110	2	0.22	1
	TSX 08020E-16	●	**20**	16	30	80	110	2	0.15	2
	TSX 08025E	●	**25**	25	30	90	120	3	0.40	1
	TSX 08025E-20	●	**25**	20	30	90	120	3	0.26	2
	TSX 08032E	●	**32**	32	30	90	120	3	0.67	1
	TSX 08032E-25	●	**32**	25	30	90	120	3	0.43	2
	TSX 08040E	●	**40**	32	30	90	120	4	0.72	2
	TSX 08050E	●	**50**	32	30	90	120	5	0.85	2
	TSX 08063E	●	**63**	32	35	90	125	6	1.09	2
	TSX 08080E	●	**80**	32	35	90	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	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 08020E**	●	**20**	20	30	80	110	3	0.22	1
	08025E	●	**25**	25	30	90	120	4	0.40	1
	08032E	●	**32**	32	30	90	120	5	0.67	1
	08040E	●	**40**	32	30	90	120	6	0.73	2
	08050E	●	**50**	32	30	90	120	8	0.85	2
	08063E	●	**63**	32	35	90	125	10	1.10	2
	08080E	●	**80**	32	35	90	125	11	1.42	2

Inserts are sold separately.

Identification Code

TSX F 08 032 E (-25)

Cutter Series | Extra Fine Pitch | Insert Size | Cutter Dia. | Shank Type | Shank Dia.

Parts

Applicable Cutter	Screw		Wrench	Anti-seizure Cream
		N·m		
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) ● mark: Standard stocked item (new product/expanded item)

TSX(F) 08000E Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

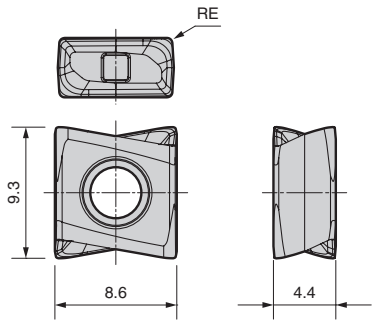
New

Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	P M			K		M S			
	General-purpose	P M	P M		K		M S	M S		
	Roughing		P M	P M		K		M S		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.08 - **0.20** - 0.30	ACP100
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.08 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACM200
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT40 machine tools.

TSX(M/F) 13000E Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

Rake Angle	Radial	–31 to –15°
	Axial	–6°

12mm 90°

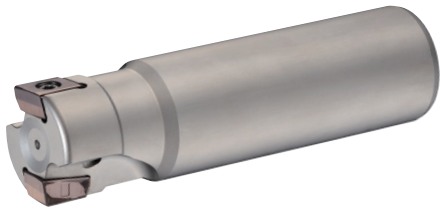


Fig 1

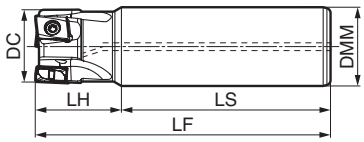
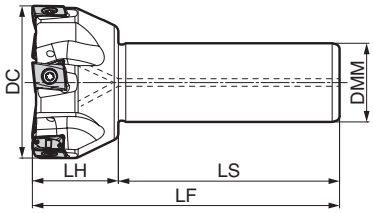


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 13025E**	●	**25**	25	35	85	120	2	0.38	1
	13032E	●	**32**	32	35	85	120	2	0.66	1
	13040E	●	**40**	32	30	90	120	3	0.71	2
	13050E	●	**50**	32	30	90	120	4	0.81	2
	13063E	●	**63**	32	35	90	125	5	1.08	2
	13080E	●	**80**	32	35	90	125	5	1.40	2

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM 13032E**	●	**32**	32	35	85	120	3	0.65	1
	13040E	●	**40**	32	30	90	120	4	0.71	2
	13050E	●	**50**	32	30	90	120	5	0.80	2
	13063E	●	**63**	32	35	90	125	6	1.07	2
	13080E	●	**80**	32	35	90	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	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 13040E**	●	**40**	32	30	90	120	5	0.70	2
	13050E	●	**50**	32	30	90	120	6	0.80	2
	13063E	●	**63**	32	30	90	125	7	1.07	2
	13080E	●	**80**	32	35	90	125	8	1.42	2

Inserts are sold separately.

Identification Code

TSX M 13 050 E

TSX	M	13	050	E
Cutter Series	M: Fine Pitch F : Extra Fine Pitch	Insert Size	Cutter Dia.	Shank Type

Parts

Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX03510IP	3.0	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

TSX(M/F) 13000E Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

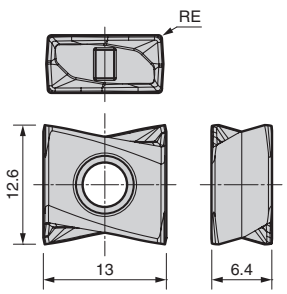
New

Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	P/M			K		M/S			
	General-purpose	P/M	P/M		K		M/S	M/S		
	Roughing		P/M	P/M		K		M/S		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - **225** - 300	0.10 - **0.30** - 0.40	ACP100
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	ACP200
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACM200
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACM200 ACM300

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.

TSXR 08000R(S) Type

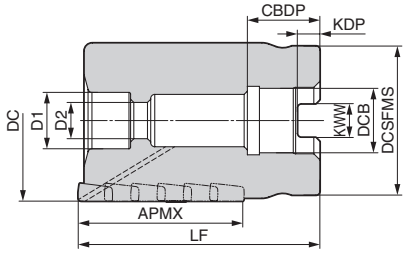
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

Rake Angle		
	Radial	–20 to –15°
	Axial	–6 to –3°

34 to 60 mm | 90°

Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Weight (kg)	Fig
Metric	**TSXR 08032RS3416Z02**	●	**32**	34	33	55	**16.0**	8.4	5.6	18.0	14	9	10	5	0.17	1
	08040RS4016Z03	●	**40**	40	37	60	**16.0**	8.4	5.6	18.0	14	9	18	6	0.32	1
	08050RS5422Z03	●	**50**	54	47	75	**22.0**	10.4	6.3	20.0	18	11	24	8	0.70	1
	08050RS5422Z04	●	**50**	54	47	75	**22.0**	10.4	6.3	20.0	18	11	32	8	0.68	1
	08063RS6027Z05	●	**63**	60	60	80	**27.0**	12.4	7.0	22.0	20	14	45	9	1.25	1

Inserts are sold separately.

Identification Code

TSXR 08 050 R S 54 22 Z03

TSXR	08	050	R	S	54	22	Z03
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Hole Diameter	Effective No. of Teeth

Parts

Applicable Cutter	Screw		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) ● mark: Standard stocked item (new product/expanded item)

TSXR 08000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

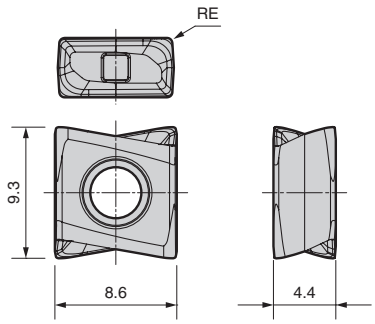
Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	P M			K		M S			
	General-purpose	P M	P M		K		M S	M S		
	Roughing		P M	P M		K		M S		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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

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

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACP100
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACM200
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

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 are the recommended cutting conditions for a_e = diameter 20% or less.

TSXR 13000R(S) Type

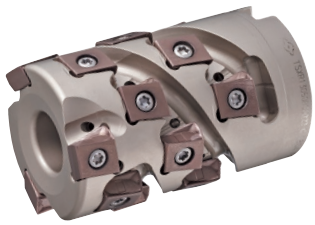
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

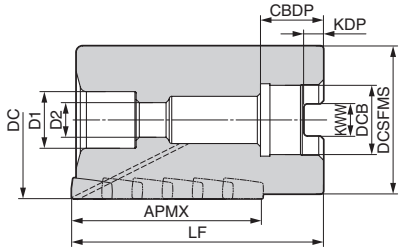
New

Rake Angle		
	Radial	–23 to –15°
	Axial	–6 to –3°

41 to 60 mm | 90°

Fig 1





Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 13040RS4116Z02**	●	**40**	41	37	60	**16.0**	8.4	5.6	18.0	14	9	8	4	2	0.31	1
	13050RS6022Z03	●	**50**	60	47	80	**22.0**	10.4	6.3	20.0	18	11	18	6	3	0.66	1
	13063RS5027Z03	●	**63**	50	60	75	**27.0**	12.4	7.0	22.0	20	14	15	5	3	1.12	1
	13063RS6027Z04	●	**63**	60	60	80	**27.0**	12.4	7.0	22.0	20	14	24	6	4	1.15	1
	13080RS6032Z04	●	**80**	60	77	80	**32.0**	14.4	8.0	26.0	25	18	24	6	4	2.06	1
	13080RS6032Z05	●	**80**	60	77	80	**32.0**	14.4	8.0	26.0	25	18	30	6	5	2.04	1
	13100RS6040Z05	●	**100**	60	88	85	**40.0**	16.4	9.0	29.0	32	21	30	6	5	3.45	1
	13100RS6040Z06	●	**100**	60	88	85	**40.0**	16.4	9.0	29.0	32	21	36	6	6	3.44	1
	13125RS6040Z07	●	**125**	60	100	85	**40.0**	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

TSXR	13	050	R	S	60	22	Z03
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Hole Diameter	Effective No. of Teeth

Parts

Applicable Cutter	Screw		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) ● mark: Standard stocked item (new product/expanded item)

TSXR 13000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

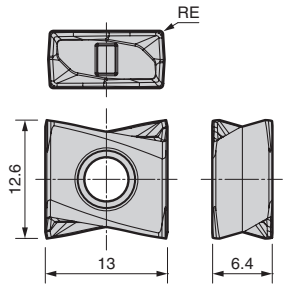
Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	P M			K		M S			
	General-purpose	P M	P M		K		M S	M S		
	Roughing		P M	P M		K		M S		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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

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

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACP100
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACM200
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

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 are the recommended cutting conditions for a_e = diameter 20% or less.

● mark: Standard stocked item (new product/expanded item)

TSXR 08000E Type

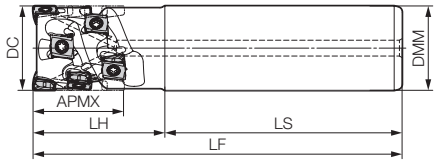
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

Rake Angle		
	Radial	–33 to –18°
	Axial	–6° to –3°

21 to 40 mm | 90°

Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	TSXR 08020E2120Z01	●	20	21	20	30	80	110	3	3	1	0.22	1
	08025E2725Z02	●	25	27	25	35	90	125	8	4	2	0.39	1
	08032E3432Z02	●	32	34	32	50	90	140	10	5	2	0.74	1
	08040E4032Z03	●	40	40	32	60	90	150	18	6	3	0.92	1

Inserts are sold separately.

Identification Code

TSXR	08	025	E	27	25	Z02
Cutter Series	Insert Size	Cutter Dia.	Shank Type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Parts

Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0308IP	2.0	TRDR08IP	SUMI-P

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

TSXR 08000E Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

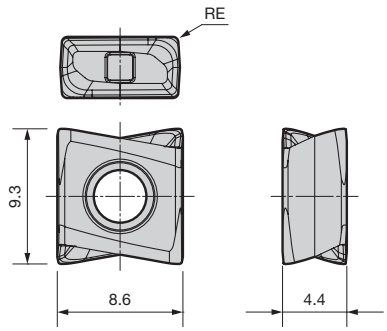
Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	P/M			K		M/S			
	General-purpose	P/M	P/M		K		M/S	M/S		
	Roughing		P/M	P/M		K		M/S		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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

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

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACP100
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACM200
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

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.

TSXR 13000E Type

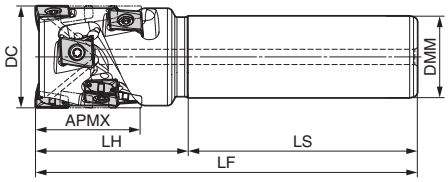
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

Rake Angle		
	Radial	–23 to –18°
	Axial	–6° to –3°

41 to 60 mm | 90°

Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 13040E4132Z02**	●	**40**	41	32	60	90	150	8	4	2	0.91	1
	13050E6042Z03	●	**50**	60	42	80	90	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
Cutter Series	Insert Size	Cutter Dia.	Shank Type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Parts

Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX03510IP	3.0	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item (new product/expanded item)

TSXR 13000E Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

New

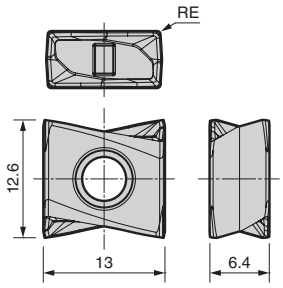
Insert

Dimensions (mm)

Grade		Coated Carbide								
Process	High-speed / Light	P M			K		M S			
	General-purpose	P M	P M		K		M S	M S		
	Roughing		P M	P M		K		M S		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose 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

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

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - **200** - 280	0.10 - **0.20** - 0.30	ACP100
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACM200
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACK200 ACK300
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACM200 ACM300

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.

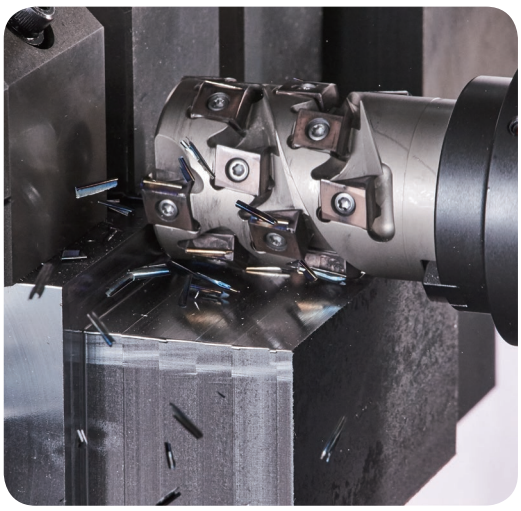
SEC-Sumi Dual Mill TSX Type Repeater Made-To-Order Request Sheet (1)

Select the shape you want and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.

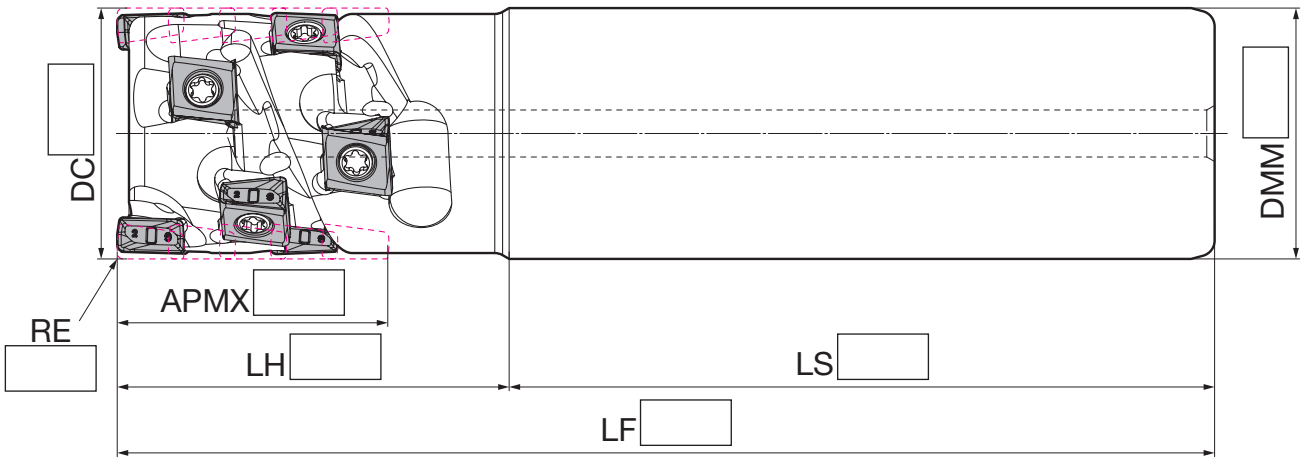
Feel free to contact us for other shapes or dimensions or with other requests.

Company Name / Contact

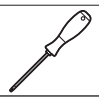


Reference Specifications							
Applicable Insert	Cutter Dia. (mm) DC	Maximum Depth of Cut (mm) APMX	Total No. of Teeth	Steps	Max. Effective No. of Teeth	Specifications: Shell Type	Specifications: Shank Type
LNEX08 (Refer to H125)	20	21	3	3	1		○
	25	27	8	4	2		○
	32	34	10	5	2	○	○
	40	40	18	6	3	○	○
	50	54	32	8	4	○	
	63	60	45	9	5	○	
LNEX13 (Refer to H127)	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	○	

✓ With Shank Refer to the reference specifications above when completing.



■ Accessories

Screw	Wrench	Anti-seizure Cream
		

- The tip insert nose radius (RE) can be selected. (Refer to Applicable Size: H111 ■ Series Configuration) Other inserts are all RE=0.8mm or less.
- Effective No. of Teeth Desired: ☐
- Coolant Hole: Yes ☐ No ☐

SEC-Sumi Dual Mill TSX Type Repeater Made-To-Order Request Sheet (2)

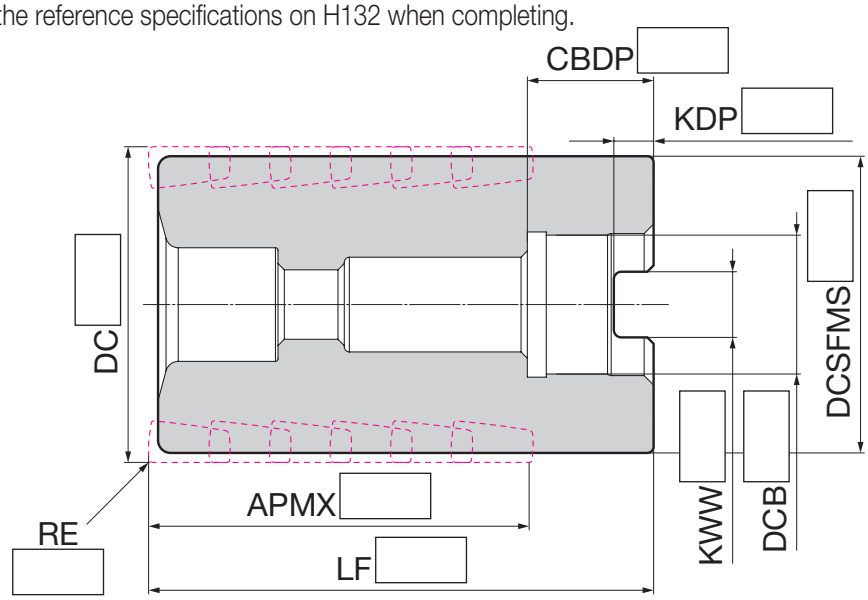
Select the shape you want and enter the dimensions in ☐ .

After completion, send the sheet to our nearest sales office or distributor.

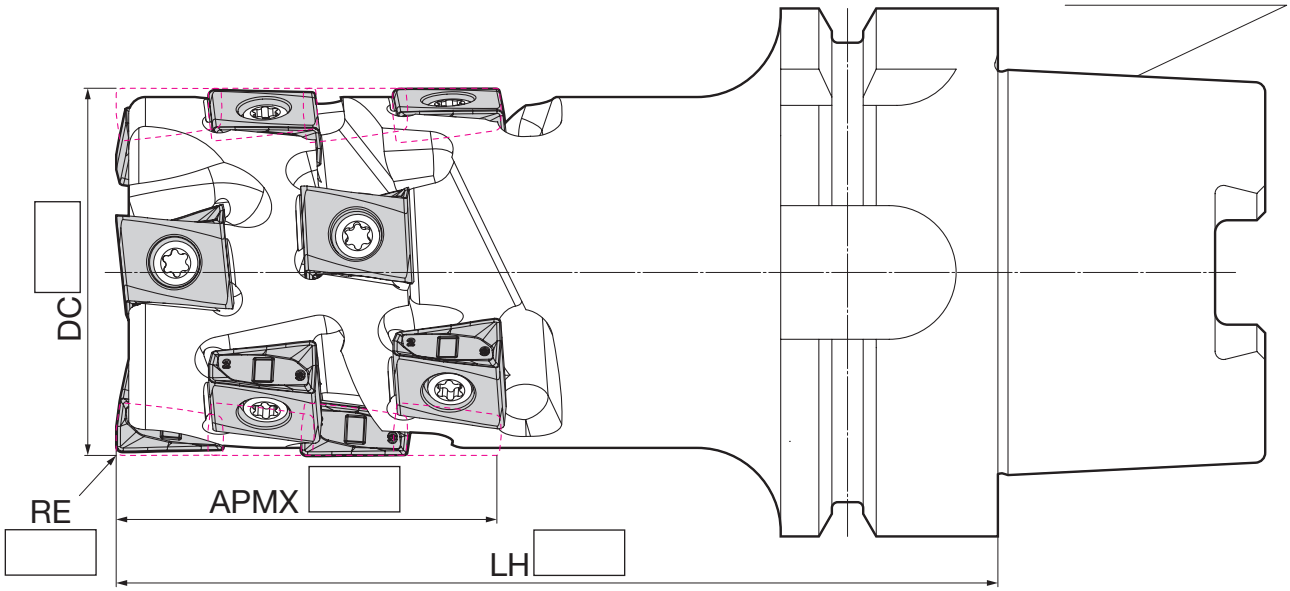
Feel free to contact us for other shapes or dimensions or with other requests.

Company Name / Contact

☑ **Shells** Refer to the reference specifications on H132 when completing.



☑ **Integrated Arbour** Refer to the reference specifications on H132 when completing.

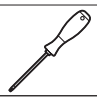


· The tip insert nose radius (RE) can be selected.
(Refer to Applicable Size: H111 ■ Series Configuration)
Other inserts are all RE=0.8mm or less.

· Effective No. of Teeth Desired: ☐

· Coolant Hole: Yes ☑ No ☑

■ Accessories

Screw	Wrench	Bolt	Anti-seizure Cream
		 *Shell Type Only	

SEC-Sumi Dual Mill TSX Type Side Cutter Made-To-Order Request Sheet

Select the shape you want 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 (Left Hand)

Cat. No.	Nose Radius (mm)						
	R0.4	R0.8	R1.2	R1.6	R2.0	R2.4	R3.2
LNEX 0804○○PNEL-L	☐	☐	☐	☐	—	—	—
LNEX 0804○○PNEL-G	☐	☐	☐	☐	—	—	—
LNEX 1306○○PNEL-L	☐	☐	☐	☐	☐	☐	☐
LNEX 1306○○PNEL-G	☐	☐	☐	☐	☐	☐	☐

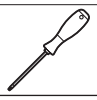
Left-handed (☐ mark) products are made-to-order items. — marked products are not available.

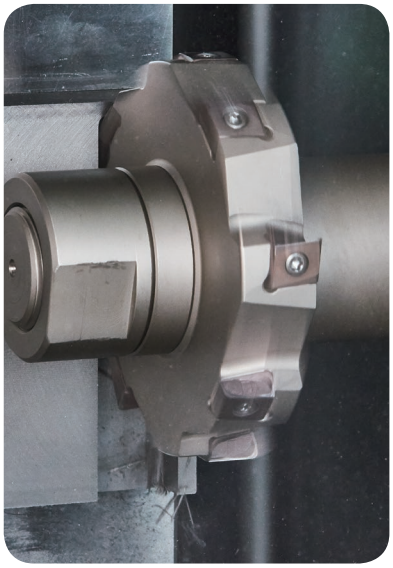
[Special Insert Shape Support]
LNEX08 has Nose Radius (RE)=0.4 to 1.6mm
LNEX13 has Nose Radius (RE)=0.4 to 3.2mm. Both right hand and left hand types are supported.
(Radius shape after machining may differ from the mounted insert nose radius RE size.)

CW Size Reference Specification	
14mm	LNEX08 (Refer to H125)
18 to 22mm	LNEX13 (Refer to H127)

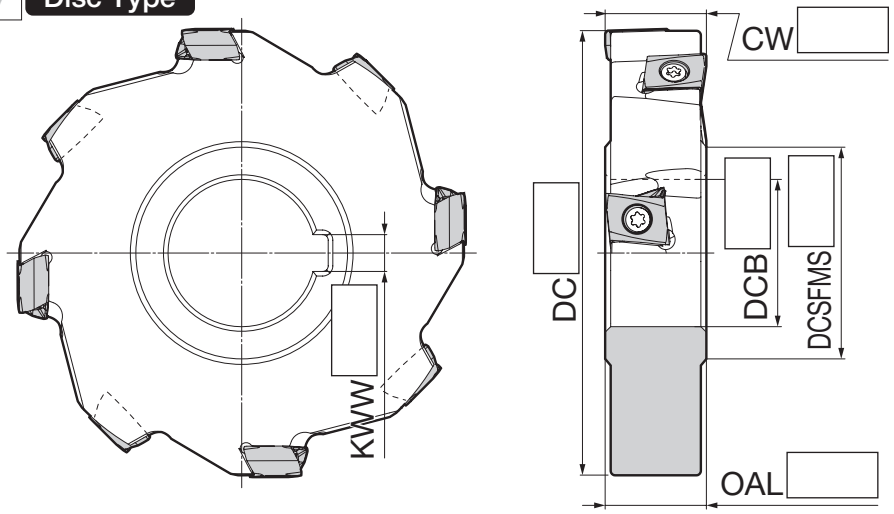
A multi-step design is required if the CW size exceeds the above.

Accessories

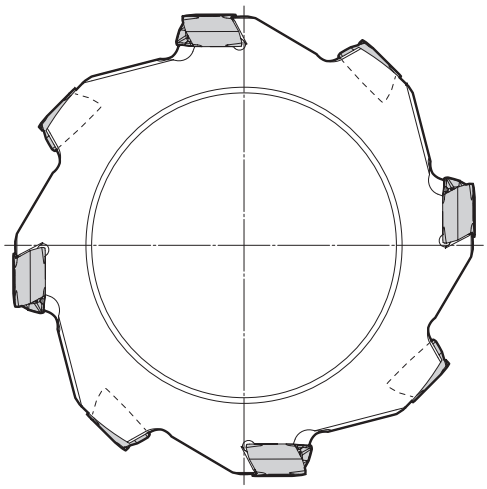
Screw	Wrench	Anti-seizure Cream
		

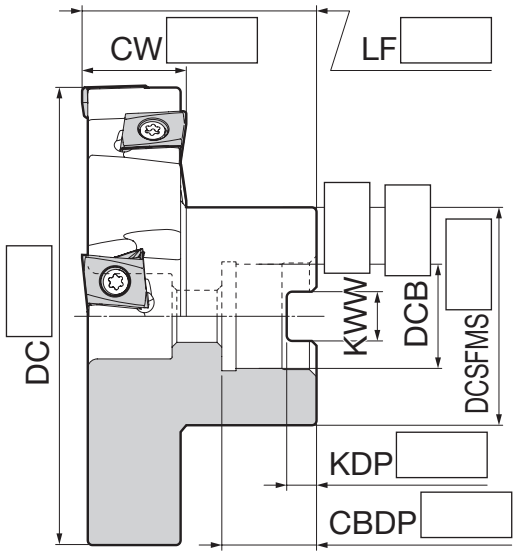


Disc Type



Boss Type





· Effective No. of Teeth Desired: ☐

SEC-Sumi Dual Mill TSX Type Special Made-To-Order Request Sheet

Select the shape you want 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 (Left Hand)

Cat. No.	Nose Radius (mm)						
	R0.4	R0.8	R1.2	R1.6	R2.0	R2.4	R3.2
LNEX 0804○○PNEL-L	☐	☐	☐	☐	—	—	—
LNEX 0804○○PNEL-G	☐	☐	☐	☐	—	—	—
LNEX 1306○○PNEL-L	☐	☐	☐	☐	☐	☐	☐
LNEX 1306○○PNEL-G	☐	☐	☐	☐	☐	☐	☐

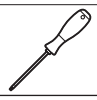
Left-handed (☐ mark) products are made-to-order items. — marked products are not available.

[Special Insert Shape Support]
LNEX08 has Nose Radius (RE)=0.4 to 1.6mm
LNEX13 has Nose 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 nose radius RE size.)

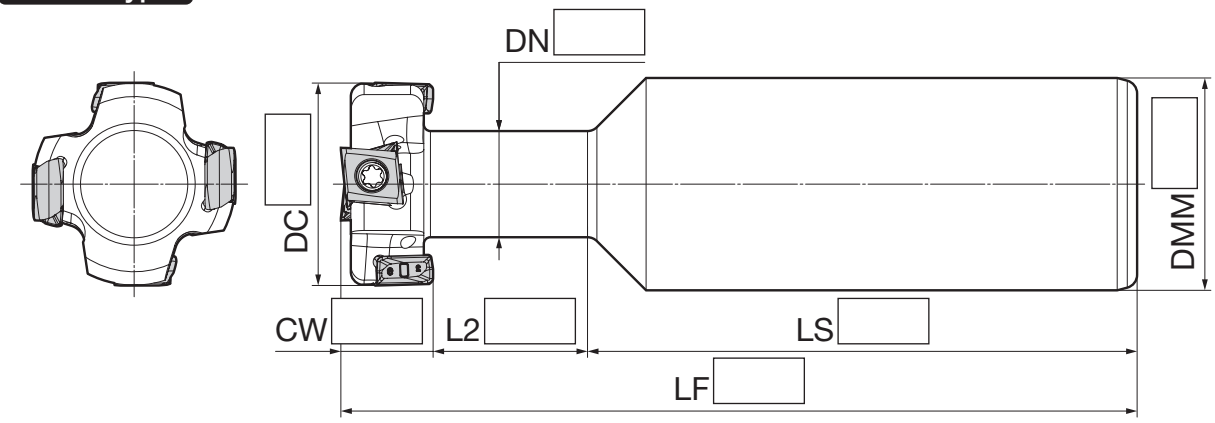
CW Size Reference Specification	
14mm	LNEX08 (Refer to H125)
18 to 22mm	LNEX13 (Refer to H127)

A multi-step design is required if the CW size exceeds the above.

■ Accessories

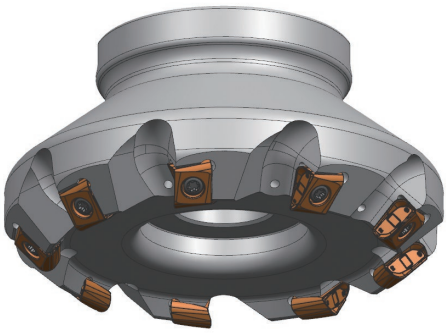
Screw	Wrench	Anti-seizure Cream
		

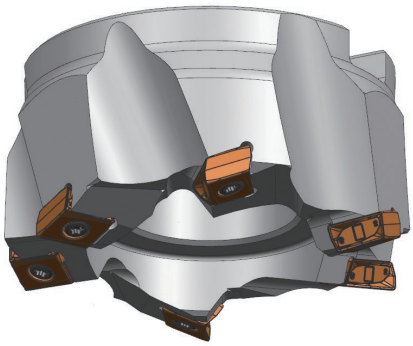
✓ T-Slot Type



· 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°

Fig 1

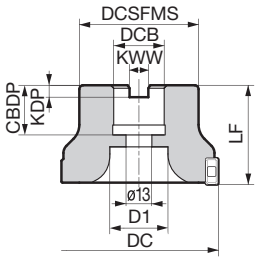


Fig 2

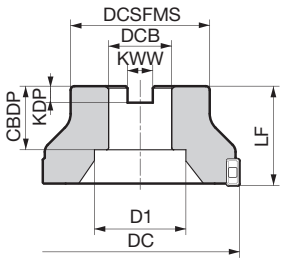
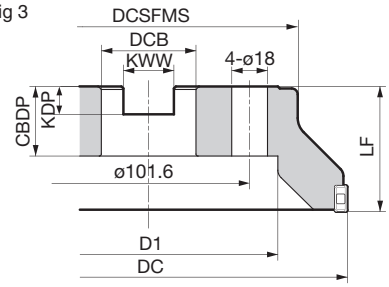


Fig 3



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**PWC 4080R/L**	●		***80**	**25.4**	60	29.5	50	9.5	6	25	7	0.9	1
	4100R/L	●		**100**	**31.75**	70	46	50	12.7	8	32	8	1.3	2
	4125R/L	●		**125**	**38.1**	80	56	63	15.9	10	38	10	2.5	2
	4160R/L	●		**160**	**50.8**	100	72	63	19.1	11	38	12	4.2	2
	4200R/L	●		**200**	**47.625**	150	130	63	25.4	14	35	16	7.2	3

Body (Fine Pitch Type)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**PWCF 4080R/L**	●		***80**	**25.4**	60	29.5	50	9.5	6	25	9	0.9	1
	4100R/L	●		**100**	**31.75**	70	46	50	12.7	8	32	12	1.4	2
	4125R/L	●		**125**	**38.1**	80	56	63	15.9	10	38	15	2.6	2
	4160R/L	●		**160**	**50.8**	100	72	63	19.1	11	38	18	4.3	2
	4200R/L	●		**200**	**47.625**	150	130	63	25.4	14	35	24	7.4	3

Inserts are sold separately.

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

Insert

Dimensions (mm)

Grade		Coated Carbide		
Process	High-speed / Light	K	K	
	General-purpose	K	K	
	Roughing			K

Cat. No.	ACK100	ACK200	ACK300	Applications	Remarks	Fig
LNMX 160608PNSN-G		●	●	General-purpose	1st Recommended	1
160608PNSN-H	●	●	●	Heavy interrupted cutting and other unstable applications		2

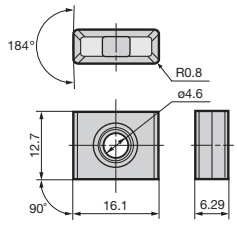


Fig 1
(General-purpose G Type)

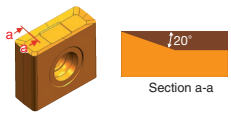
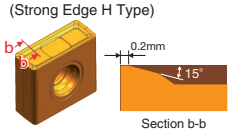


Fig 2
(Strong Edge H Type)



Parts

Flat Screw		Wrench	Anti-seizure Cream
BFTX0412N	3.0	TTX15W	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (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.

N·m Recommended Tightening Torque (N·m)

PWS(F) Type / PWSR Type

General Features

A new, highly reliable shoulder milling cutter with strong, sharp cutting edge and tangential inserts.

PWSR Type, with a 2-stage insert array structure supporting large depths of cut, has been added to the lineup.

Features

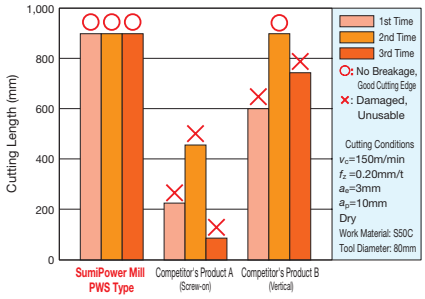
- Tangential inserts with excellent cutting edge strength and optimised breaker provide superb cutting edge and sharpness.
- Nicked insert design created with high-precision formation technology allows stable milling and low chatter even in applications with large tool overhang.
- ACP and ACK series allow a wide range of work materials to be covered.

Performance

- General-purpose G Type Insert Performance Comparison

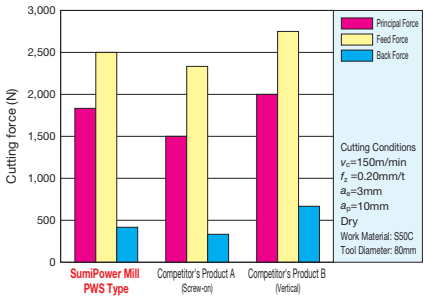
Comparison of Cutting Edge Strength

Strong cutting edge delivers superb stability



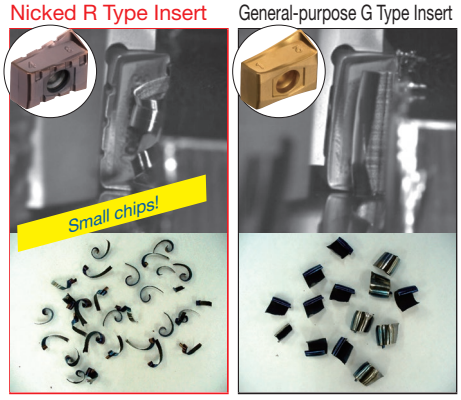
Comparison of Cutting Force

Sharpness approaching that of screw-on inserts



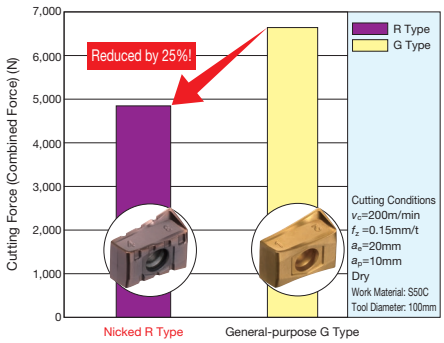
- Nicked R Type Insert Performance Comparison

Nicked R Type Insert | General-purpose G Type Insert

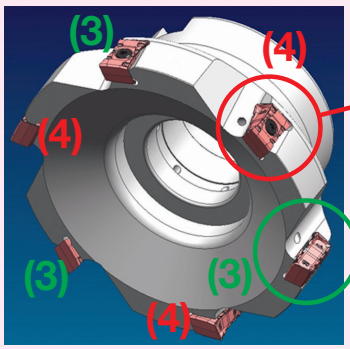


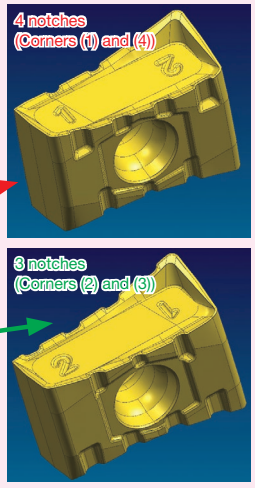
Comparison of Cutting Force

Reduced cutting power and excellent chatter resistance



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

As these are mounted as in the image on the left, compared to mounting inserts of the same shape for all blades, the feed rate per tooth is doubled. Accordingly,

f_z = 0.25mm/t

feed rate is set as the upper limit and can be adjusted for use.

Ex.) For use with f_z = 0.2mm/t
With all regular blades: Feed Rate per Tooth 0.2mm/t
With nicked types: Feed Rate per Tooth 0.4mm/t

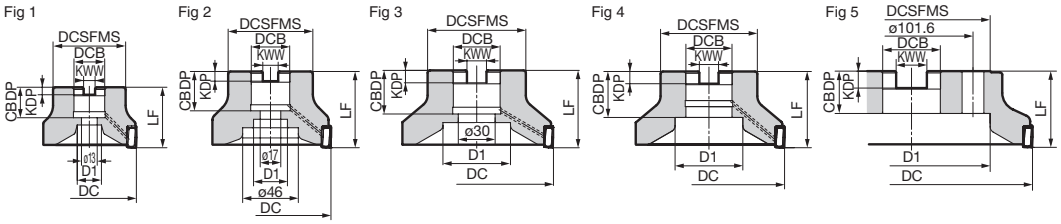
Using inserts incorrectly may damage tools.

PWS(F) 4000 Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	–15°
	Axial	–6°

16mm 90°



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**PWSF 4080R**	●	***80**	**25.4**	60	20	50	9.5	6	25	4	1.0	1
	4100R	●	***100**	**31.75**	70	28	63	12.7	8	32.5	6	1.8	2
	4125R	●	**125**	**38.1**	80	55	63	15.9	10	35.5	6	2.4	3
	4160R	●	**160**	**50.8**	100	72	63	19.1	11	38	8	4.0	4
	4200R	●	**200**	**47.625**	130	130	63	25.4	14	35	10	6.5	5
	4250R	●	**250**	**47.625**	130	160	63	25.4	14	35	12	12.3	5

Cutters with sizes of ø200mm or above have "without oil holes" and "with shim" specifications.
Inserts are sold separately.

Body (Fine Pitch Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**PWSF 4080R**	●	***80**	**25.4**	60	20	50	9.5	6	25	6	0.9	1
	4100R	●	***100**	**31.75**	70	28	63	12.7	8	32.5	8	1.7	2
	4125R	●	**125**	**38.1**	80	55	63	15.9	10	35.5	8	2.3	3
	4160R	●	**160**	**50.8**	100	72	63	19.1	11	38	10	3.9	4
	4200R	●	**200**	**47.625**	130	130	63	25.4	14	35	12	6.4	5
	4250R	●	**250**	**47.625**	130	160	63	25.4	14	35	14	12.2	5

Cutters with sizes of ø200mm or above have "without oil holes" and "with shim" specifications.
Inserts are sold separately.

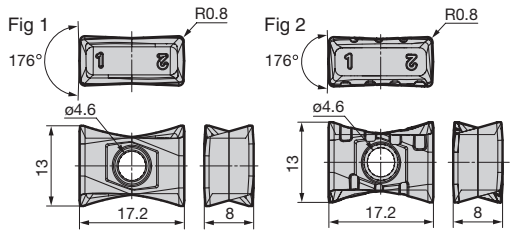
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide				
Process	High-speed / Light	P			K	
	General-purpose		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 Recommended	1
170808PNSR-R	●	●	●	●	●	Heavy Cutting	Nicked	2



Parts

Flat Screw (For Inserts / Shims)		Wrench	Anti-seizure Cream	Shim (*)
BFTX0412IP	3.0	TTR15IP	SUMI-P	PWSS4R

* mark is included with ø200 mm or larger sizes.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150-**250**-350	0.10-**0.23**-0.35	ACP200
	Alloy Steel	180 to 280 HB	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.

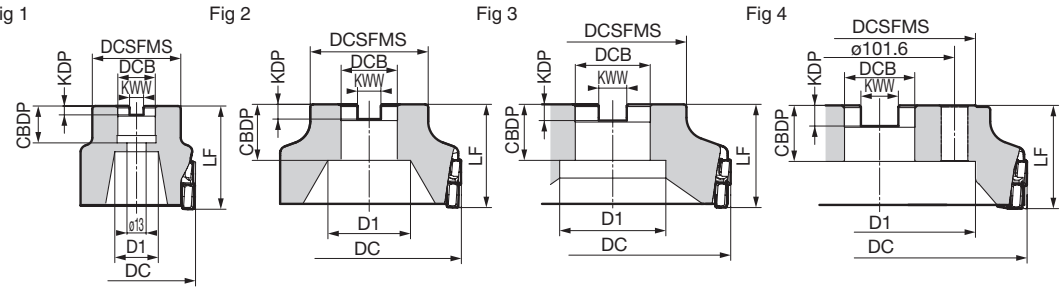
N·m Recommended Tightening Torque (N·m)

PWSR 4000 Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	–15°
	Axial	–6°

Maximum Depth of Cut: 31 mm, 90°



Body (2-Step Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Inch	**PWSR 4080R**		***80**	**25.4**	60	29.5	70	9.5	6	25	8	4	1.4	1
	4100R		***100**	**31.75**	70	46	70	12.7	8	32	12	6	2.0	2
	4125R		**125**	**38.1**	80	56	70	15.9	10	38	12	6	3.0	2
	4160R		**160**	**50.8**	100	72	70	19.1	11	38	16	8	5.2	3
	4200R		**200**	**47.625**	130	160	70	25.4	14	38	20	10	8.0	4

Cutters with sizes of ø200mm or above have "without oil holes" and "with shim" specifications.
Inserts are sold separately.

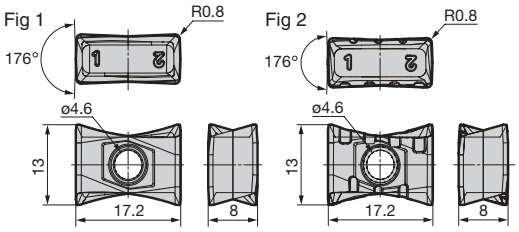
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide				
Process	High-speed / Light	P			K	
	General-purpose		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 Recommended	1
170808PNSR-R	●	●	●	●	●	Heavy Cutting	Nicked	2



Parts

Flat Screw (For Inserts / Shims)		Wrench	Anti-seizure Cream	Shim (*)
BFTX0412IP	3.0	TTR15IP	SUMI-P	PWSS4R

* mark is included with ø200 mm or larger sizes.

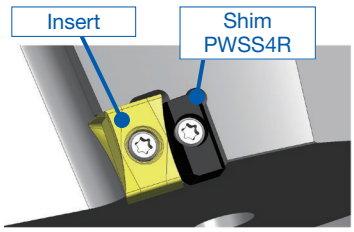
Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150-**250**-350	0.10-**0.23**-0.35	ACP200
	Alloy Steel	180 to 280 HB	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.

Large Diameter Size (ø200mm or Above) Body Structure

Safety Shim Design to Protect Body

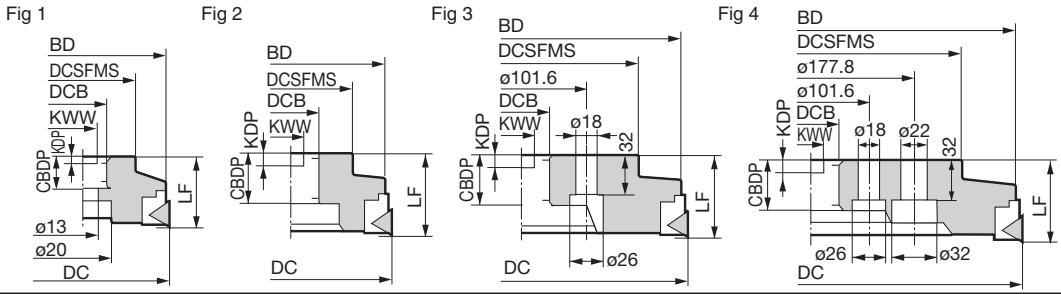


CHG 4000 Type

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

Rake Angle		
	Radial	4°
	Axial	15°

16mm 90°



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore 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.

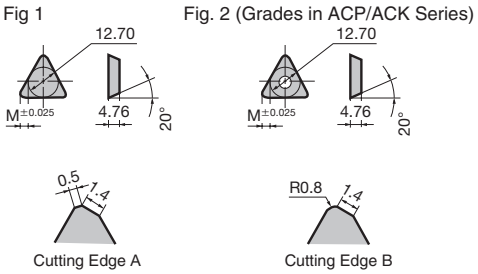
For securing the ø80mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

Insert

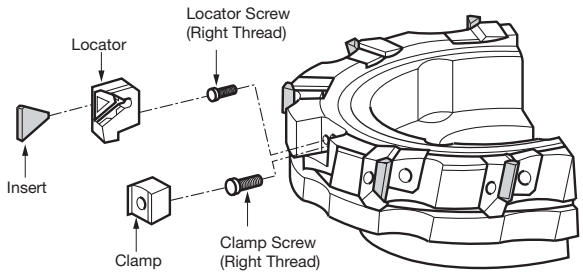
Dimensions (mm)

Grade		Coated Carbide						Carbide			Cermet	SUMIDIA		
Process	High-speed / Light	P			K		M			K/N		N	N	N
	General-purpose		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*									●	●		●	—	▲
NF-TEEN 43R		—	—	—	—	—	—	—	—	—	—	—	●	▲
TEEN 43TR		●	●	●				●			●	—	—	—
TEKN 43R					●	●			●			—	—	—
43TR		●	●	●				●			●	—	—	—

Fig 1 | Fig. 2 (Grades in ACP/ACK Series) | Fig



DL1000 is also available for *-marked TEEN43R.
Upper face and wiper edge of H1 insert have a mirror finish.
Some E class precision inserts have different shapes.



Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	80-**115**-150	0.10-**0.18**-0.25	ACP200
	Mild Steel	≤ 180HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
	Die Steel	200 to 220 HB	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	Clamp	Clamp Screw			Locator Screw			Wrench
CHG 4080R Up to CHG 4125R	LCH4R	CHWR	FBX0811	M8	N·m 8.0	FBH0512	M5	N·m 5.0	TH030 TH040
CHG 4160R Up to CHG 4315R			FBX0817						

The wrench is for the locator screw for TH030 and for the clamp screw for TH040.

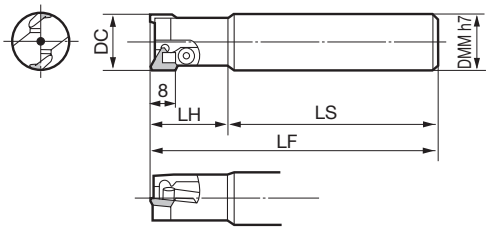
N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

CHE 2000 Type

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

8mm 90°

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
CHE 2016R	●	**16**	16	25	75	100	1	+6°	-3°	1
2018R	●	**18**	20	30	80	110	1	+8°	-2°	1
2020R	●	**20**	20	30	80	110	2	+10°	-2°	1
2022R	●	**22**	20	30	80	110	2	+12°	-1°	1
2025R	●	**25**	25	35	85	120	2	+15°	-1°	1
2028R	●	**28**	25	35	85	120	2	+15°	0°	1

Inserts are sold separately.

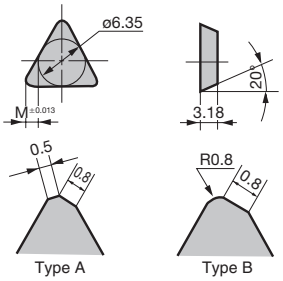
Insert

Dimensions (mm)

Grade		Coated Carbide		Carbide		Cermet	SUMIDIA	
Process	High-speed / Light				K N		N	N
	General-purpose	P M	P	K		P	N	N
	Roughing	P M					N	N
Cat. No.		ACP200	A30N	G10E	H1	T250A	DA1000	DA2200
TEEN 22R		—	—	—	—	—	—	—
NF-TEEN 22R		—	—	—	—	—	●	▲
TECN 22R				●	●		—	—
22TR			●				—	—
TEKN 22R				●			—	—
22TR			●			●	—	—

Cat. No.	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	Bolt		Ring	Wrench
				
CCH4R	BHE0407	**1.8**	ER03	TH025

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	50- **75** -100	0.03-**0.06**-0.10	A30N
	Alloy Steel	180 to 280 HB	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

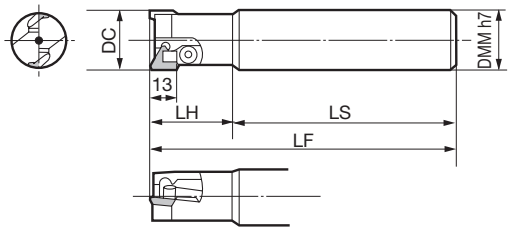
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

CHE 3000 Type

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

13mm 90°

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
CHE 3030R	●	**30**	32	45	115	160	2	+15°	-3°	1
3032R	●	**32**	32	45	115	160	2	+15°	-2°	1
3036R	●	**36**	32	45	115	160	2	+15°	-1°	1
3040R	●	**40**	32	45	115	160	2	+15°	0°	1

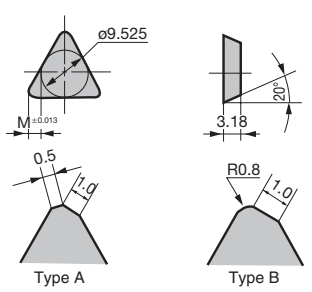
Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide		Carbide			Cermet	SUMIDIA			
Process	High-speed / Light		K			K N		N	N		
	General-purpose	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	Bolt		Ring	Wrench
CCH5R	BHE0510	2.7	ER04	LH030

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	60- **90** -120	0.04- **0.08** -0.15	ACP200
	Alloy Steel	180 to 280 HB	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.

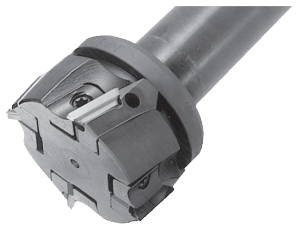
N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

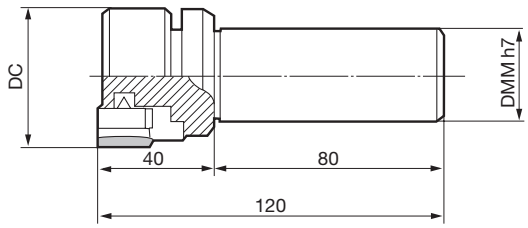
CHE 4000 Type

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

16mm 90°

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		Coated Carbide						Carbide			Cermet	SUMIDIA			
Process	High-speed / Light	P			K		M			K/N		N	N	N	
	General-purpose		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

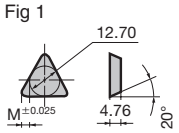
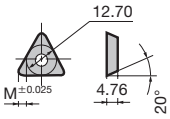


Fig. 2 (Grades in ACP/ACK Series)



Cutting Edge A

Cutting Edge B

DL1000 is also available for *-marked TEEN43R.
Upper face and wiper edge of H1 insert have a mirror finish.
Some E class precision inserts have different shapes.

Parts

Applicable Endmill	Locator	Clamp	Clamp Screw	Size	N·m	Locator Screw	Size	N·m	Wrench
CHE4050R CHE4063R	LCE4R	CEWR	WB8R-16T	**M8**	8.0	FBH0512	**M5**	5.0	TT27

Parts

Applicable Endmill	Locator	Clamp	Clamp Screw	Size	N·m	Locator Screw	Size	N·m	Wrench
CHE4080R CHE4100R CHE4080RS42 CHE4100RS42	LCH4R	CHWR	FBX0811	**M5**	5.0	FBH0512	**M5**	5.0	TH040

* The above includes a TH030 wrench for locator fixing.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	125-**100**-150	0.10-**0.15**-0.20	ACP200
	Alloy Steel	180 to 280 HB	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.

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°

Fig 1

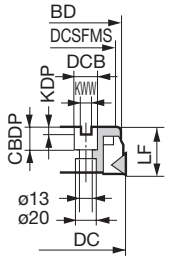


Fig 2

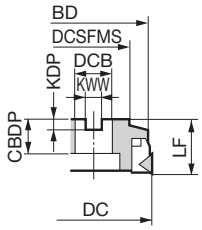
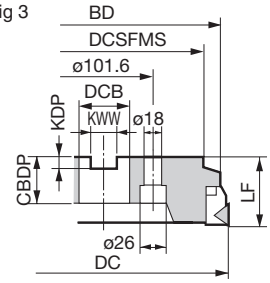


Fig 3



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	O.D. BD	Boss DCSFMS	Height LF	Bore 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**	98	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.

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

Insert

Dimensions (mm)

Grade		Coated Carbide						Carbide				Cermet		
Process	High-speed / Light	P			K		M					P	P	
	General-purpose		P M	P M	K			P	P	K	K			P
	Roughing		P M	P M		K								
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30	A30N	H10E	G10E	T1500A	T130A	T250A
TPCH 43R					●	●	●				●			
43L											●			
43TR		●	●	●					●	●		●		●
43TL									●					
TPMN 432								●			●	●	●	
433								●			●			

Cat. No.	Fig
TPCH 43R	1(2)
43L	2
43TR	1(2)
43TL	2
TPMN 432	3
433	3

Fig. 1 (Grades in ACP/ACK Series)

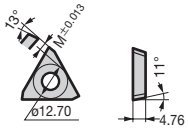
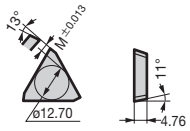
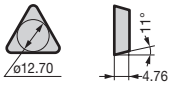


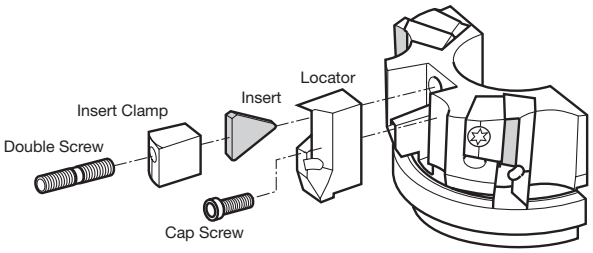
Fig 2



(Close-up of Cutting Edge for Figures 1 & 2)

Fig 3





Parts

Applicable Cutter	Locator	Clamp	Double Screw	Cap Screw	Wrench
CPG4080R	LCP40R	PTW40R	WB8-22T	BX0508	TT27 LH040
CPG4100R Up to CPG4125R	LCP40R	PTW41R	WB8-22T	BX0510	TT27 LH040
CPG4160R Up to CPG4500R	LCP40R	PTW41R	WB8-30T	BX0510	TT27 LH040
CPG4080L	LCP40L	PTW40L	WB8-22T	BX0508	TT27 LH040
CPG4100L Up to CPG4125L	LCP40L	PTW41L	WB8-22T	BX0510	TT27 LH040
CPG4160L Up to CPG4500L	LCP40L	PTW41L	WB8-30T	BX0510	TT27 LH040

Of the wrenches, TT27 is for double screw types while LH040 is for cap screw types.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	General Steel	180 to 280 HB	80-**110**-140	0.10-**0.18**-0.25	ACP200
	Mild Steel	≤ 180HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
	Die Steel	200 to 220 HB	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

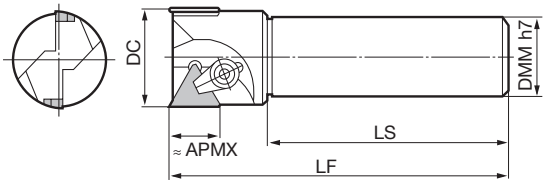
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

FMS Type

P Steel | M Stainless Steel | K Cast Iron

8 to 19mm | 90°

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Overall Length LF	Shank DMM	Maximum Depth of Cut APMX	Shank LS	Number of Teeth	Axial Rake	Radial Rake	Applicable Insert	Fig
FMS 216	●	**16**	70	16	8	50	1	+3°	-6°	TPKN 22TR	1
220	●	**20**	100	20	8	75	2	+3°	-4°		1
225	●	**25**	110	25	8	80	2	+7°	-4°		1
FMS 330	●	**30**	160	32	13	120	2	+7°	-4°	TPKN 32TR	1
332	●	**32**	160	32	13	120	2	+7°	-4°		1
335	●	**35**	160	32	13	120	2	+7°	-4°		1
FMS 440	●	**40**	160	32	19	120	2	+7°	-4°	TPCH 43TR	1
450	●	**50**	160	32	19	120	2	+7°	-4°		1
460	●	**60**	160	32	19	120	3	+7°	-4°		1
440B		**40**	160	42	19	120	2	+7°	-4°		1

Inserts are sold separately.

Insert

Common to Fig.'s 1 to 3

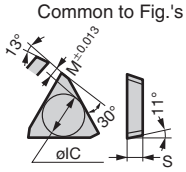
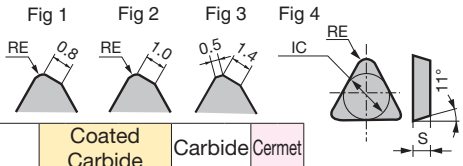


Fig 1 Fig 2 Fig 3 Fig 4



Grade		Coated Carbide					Carbide			Cermet	
Process	High-speed / Light	P			K					P	
	General-purpose		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	Nose Radius RE	Fig	Good Endmills
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 and EH20Z grades are also in stock for TPCH43R.

Recommended Cutting Conditions

Diameter ø16 to ø25 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	50- **75** -100	0.03- **0.06** -0.10	ACP200
	Alloy Steel	180 to 280 HB	50- **65** -80	0.03- **0.05** -0.08	ACP200
K	Cast Iron	250HB	40- **70** -100	0.03- **0.10** -0.15	ACK200

Diameter ø30 to ø35 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	60- **90** -120	0.04- **0.08** -0.15	ACP200
	Alloy Steel	180 to 280 HB	60- **80** -100	0.04- **0.08** -0.13	ACP200
K	Cast Iron	250HB	60- **90** -120	0.04- **0.12** -0.20	ACK200

Diameter ø40 to ø60 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	60- **100** -150	0.05- **0.15** -0.20	ACP200
	Alloy Steel	180 to 280 HB	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.

Parts

Applicable Endmill	Clamp	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)

WFXH Type

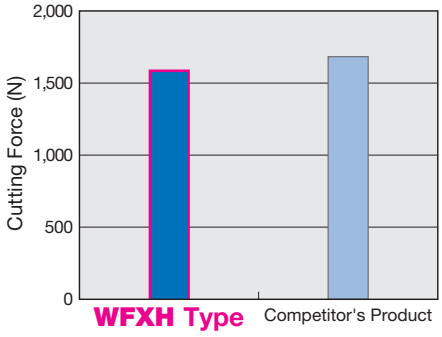
General Features

SEC-WaveMill WFXH Types are high performance multi-functional cutters that use a WFX series insert to support roughing at high feed rates and other milling applications.

Features

(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

Cutting force: High sharpness realises stable cutting



Work Material: S50C
Tool: WFXH12063RS (5 flutes)
Cutting Conditions: v_c=200m/min, f_z=1.0mm/t, a_p=0.5mm, a_e=44mm, Dry

Chips: Small, curly chips at low cutting temperature

WFXH Type (R1.6-G Chipbreaker)

WFXH Type

Competitor's Product A

Competitor's Product B

Work Material: S50C
Tool: WFXH12063RS, SOMT120416PDER-G (ACP200)
Cutting Conditions: v_c=200m/min, f_z=1.0mm/t, a_p=1mm, a_e=35mm, Dry

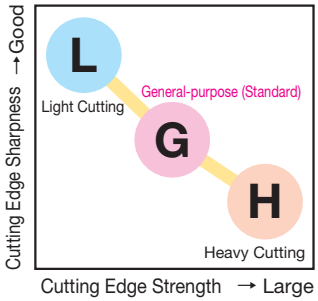
Grade Application Range

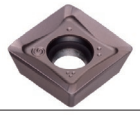
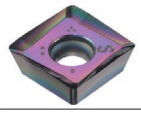
Work Material	Grade	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
P Steel	Coated Carbide	ACP100 (C)	ACP200 (P)	ACP300 (P)
M Stainless Steel	Coated Carbide	ACM200 (C)	ACM300 (P)	

The letters "C" and "P" at the end of each grade indicate the coating type. (C): CVD, (P): PVD, Blank: Uncoated

Work Material	Grade	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
K Cast Iron	Coated Carbide	ACK200 (C)	ACK300 (P)	
N Non-Ferrous Metal	Coated Carbide	DL1000 (P)		
	Carbide		H1	

Chipbreaker Selection



Work Material	P M K			N
	L Type	G Type	H Type	S Type
Chipbreaker				
Features	Low Cutting Force	General-purpose Type	High Strength Type	Sharp Edge
Cutting Edge Cross Section	 20°	 15°	 10°	 25°
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

■ Precautions for Use (1) Precautions for Corner Finishing

* Corners have remaining material or gouges with respect to the expected corner profile.

Fig 1

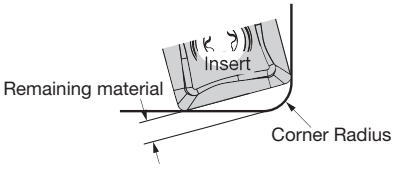
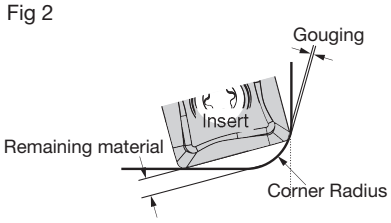


Fig 2



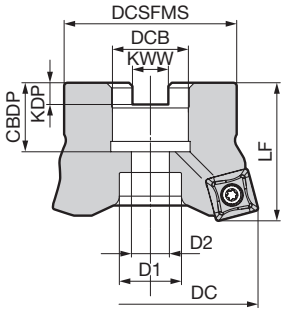
WFXH08000RS Type

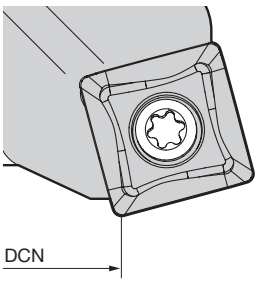
Corner Radius	SOMT08○○04-□			SOMT08○○08-□			SOMT08○○12-□		
	Remaining material	Gouging	Shape	Remaining material	Gouging	Shape	Remaining material	Gouging	Shape
2.0	1.41	0	Fig 1	1.30	0	Fig 1	1.21	0	Fig 1
2.5	1.30	0.02	Fig 2	1.19	0.01	Fig 2	1.09	0	Fig 1
3.0	—	—	—	—	—	—	0.98	0.05	Fig 2

WFXH12000RS Type

Corner Radius	SOMT12○○04-□			SOMT12○○08-□			SOMT12○○12-□			SOMT08○○16-□		
	Remaining material	Gouging	Shape	Remaining material	Gouging	Shape	Remaining material	Gouging	Shape	Remaining material	Gouging	Shape
2.0	2.58	0	Fig 1	2.48	0	Fig 1	2.37	0	Fig 1	2.25	0	Fig 1
2.5	2.47	0	Fig 1	2.37	0	Fig 1	2.25	0	Fig 1	2.14	0	Fig 1
3.0	2.36	0	Fig 1	2.26	0	Fig 1	2.14	0	Fig 1	2.11	0	Fig 1
3.5	2.24	0.01	Fig 2	2.14	0	Fig 1	2.03	0	Fig 1	1.91	0	Fig 1
4.0	—	—	—	2.03	0.04	Fig 2	1.91	0.03	Fig 2	1.8	0.01	Fig 2

■ Precautions for Use (2) The minimum machining diameter DCN differs depending on the insert used. We recommend using WFXH Type large nose radius inserts.

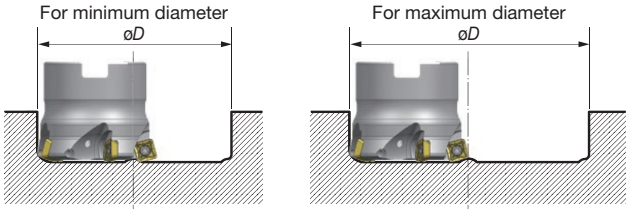




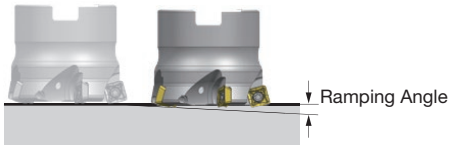
Body Cat. No.	Nominal Diameter	DCN			
		R0.4	R0.8	R1.2	R1.6
WFXH 08025M12Z2	25	10.4	10.9	11.5	—
08032M12Z3	32	17.4	17.9	18.5	—
WFXH 08040RS	40	25.4	25.9	26.5	—
08050RS	50	35.4	35.9	36.5	—
08050RS-Z6	50	35.4	35.9	36.5	—
08063RS	63	48.4	48.9	49.5	—
WFXH 12040M12Z3	40	16.6	17.1	17.5	18.1
WFXH 12050RS	50	26.6	27.2	27.7	28.2
12063RS	63	39.5	40.0	40.4	41.1

WFXH Type

Ramping and Helical Milling



Min. Diameter, Max. Diameter

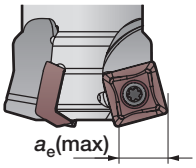


Ramping Angle

Insert Cat. No.	Nominal Diameter	Helical Milling (mm)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramping Angle
SOMT08○○04-□	**25**	35	49	1°30'
	32	49	63	0°30'
	40	65	79	0°30'
	50	Impossible	Impossible	0°30'
	63	Impossible	Impossible	Impossible
SOMT08○○08-□	**25**	35	48	3°
	32	49	62	1°30'
	40	65	78	1°
	50	85	98	0°30'
	63	111	124	0°30'
SOMT08○○12-□	**25**	34	47	4°30'
	32	48	61	2°30'
	40	64	77	1°30'
	50	84	97	1°
	63	110	123	0°30'

Insert Cat. No.	Nominal Diameter	Helical Milling (mm)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramping Angle
SOMT12○○04-□	**40**	56	79	1°
	50	76	99	0°30'
	63	Impossible	Impossible	Impossible
SOMT12○○08-□	**40**	56	78	1°30'
	50	76	98	1°
	63	102	124	0°30'
SOMT12○○12-□	**40**	55	77	2°30'
	50	75	97	1°30'
	63	101	123	1°
SOMT12○○12-□	**40**	55	76	3°30'
	50	75	96	2°
	63	101	122	1°30'

Maximum Depth of Cut when Plunging



Insert Cat. No.	Maximum Depth of Cut a_e(max)
SOMT08	6mm
SOMT12	10mm

Lower the feed rate when plunging.

Recommended Cutting Conditions

Work Material	Insert Grade	Cutting Speed v_c(m/min)	Insert Cat. No.	ø25		ø32		ø40		ø50		ø63	
				a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (mm/t)
P General Steel Below 200HB	ACP200	100-**150**-200	**SOMT08**	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	ACP200	80-**130**-180	**SOMT08**	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.	ACM300	80-**120**-150	**SOMT08**	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	ACK300	100-**150**-200	**SOMT08**	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
			SOMT12	—	—	—	—	0.6	0.8	0.6	0.8	0.6	0.8

· 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 (a_p, f_z).
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 (a_p, f_z).

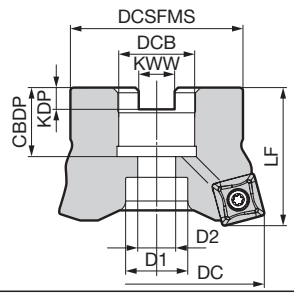
WFXH 08000RS Type

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

Rake Angle		
	Radial	−6°
	Axial	6°

1.5mm, 15°

Fig 1



Body (WFXH08000RS) Applicable Insert SOMT08 Type

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore 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**	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
	08050RS-Z6	●	**50**	41	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	08063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.5	1

Inserts are sold separately.

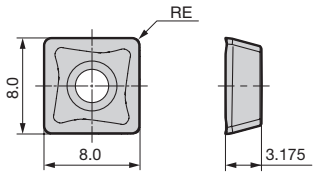
Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light	P			K		M S		K N	N	
	General-purpose		P M	P M	K		M S	M S		N	P
	Roughing		P M	P M		K		M S			

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose 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 H148
Precautions for Use H147

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seizure cream included in the package.

Identification Code

WFX H 08 040 RS - Z6

Cutter Series	For High Efficiency Milling	Insert Size	Dia.	Metric Bore	Fine Pitch Type (Number is no. of teeth)

WFXH 12000RS Type

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

Rake Angle		
	Radial	–6°
	Axial	6°

2.5mm 15°

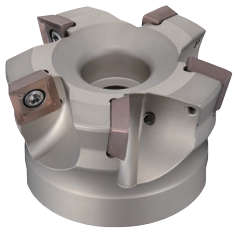
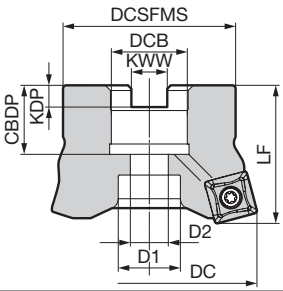


Fig 1



Body (WFXH12000RS) Applicable Insert SOMT12 Type

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXH12050RS**	●	**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	0.4	1

Inserts are sold separately.

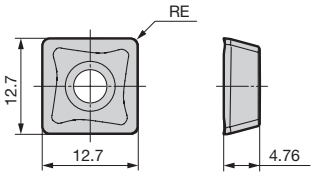
Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet
Process	High-speed / Light	P			K		M S		K N	N	
	General-purpose		P M	P M	K		M S	M S		N	P
	Roughing		P M	P M		K		M S			
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A
SOMT 120408PDER-L		●	●	●	●	●	●	●	—	—	—
SOMT 120404PDER-G		●	●	●	●	●	●	●	—	—	—
120408PDER-G		●	●	●	●	●	●	●	—	—	●
120412PDER-G		●	●	●	●	●	●	●	—	—	—
120416PDER-G		●	●	●	●	●	●	●	—	—	—
SOMT 120408PDER-H		●	●	●	●	●	●	●	—	—	—
SOET 120408PDFR-S *		—	—	—	—	—	—	—	●	●	—

Cat. No.	Nose 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 H148
Precautions for Use H147

Parts

Insert Screw		Wrench
	N·m	
BFTX03512IP	3.0	TRDR15IP

SUMI-P Anti-seizure cream included in the package.

Identification Code

WFX H 12 050 RS

WFX	H	12	050	RS
Cutter Series	For High Efficiency Milling	Insert Size	Dia.	Metric Bore

N·m Recommended Tightening Torque (N·m)

MEMO

MSX Type

General Features

The SEC-Metal Slash Mill MSX Type 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.

Features

(1) **Highly Durable Body** Special surface treatment improves scratch resistance

(2) **Versatile Machining Operations** Use for ramping, helical and pocketing

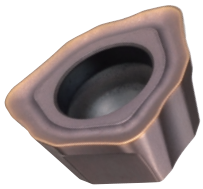
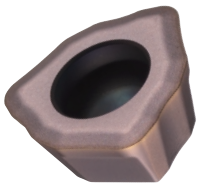
(3) **Double Clamp** Stable milling with a strong clamp is possible (MSX06000 type or MSX08000 type units with ø22mm or less use a single clamp)

(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

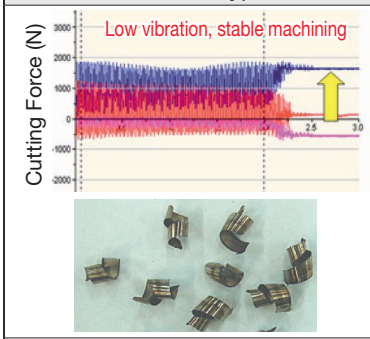
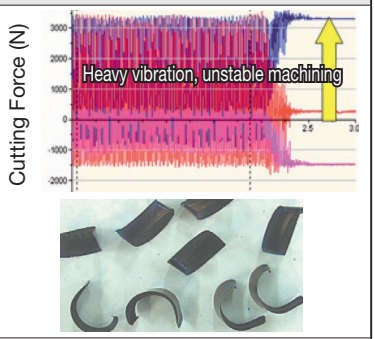
Insert Applications and Types

· Insert utilizes a special cutting edge profile.
· Economical, three-cornered insert

Type	General-purpose Type	Strong Edge Type
Applications	General Milling (First Recommendation)	Interrupted Milling
Appearance / Features	 Sharper Edge	 Emphasis on Fracture Resistance

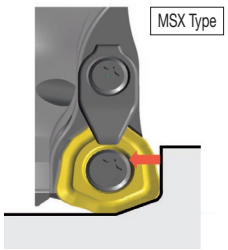
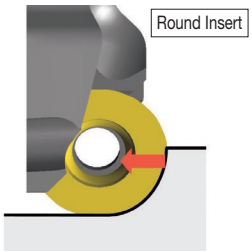
Cutting Performance

● Comparison of Cutting Force

MSX Type	Conventional Tool
	

Work Material: S50C
Cutting Conditions: v_c=150m/min, f_z=1.0mm/t, a_p=25mm, a_e=2mm

● Shoulder Milling Comparison of MSX Type and Conventional Tool

MSX Type	Conventional Tool
Performs under high conditions  Cutting force is consistent even when depth of cut is increased, for stable cutting performance.	Prone to chatter  Greater depth of cut increases contact length, which increases cutting force.

Product Range

	Type	External Diameter (mm)	Number of Teeth	Applicable Insert
Shell Type ☞H154	**MSX 08000R**	ø40	4	WDMT 08 Type
	MSX 12000R	ø50 to ø63	4 to 5	WDMT 12 Type
	MSX 14000R	ø50 to ø100	3 to 6	WDMT 14 Type
Endmill Type ☞H155	**MSX 06000E**	ø16 to ø25	2 to 3	WDMT 06 Type
	MSX 08000E	ø20 to ø35	2 to 3	WDMT 08 Type
	MSX 12000E	ø32 to ø50	2 to 4	WDMT 12 Type
	MSX 14000E	ø40 to ø63	2 to 4	WDMT 14 Type
Modular Type ☞H216	**MSX 06000M**	ø16 to ø25	2 to 3	WDMT 06 Type
	MSX 08000M	ø25 to ø35	2 to 3	WDMT 08 Type
	MSX 12000M	ø32 to ø40	2 to 3	WDMT 12 Type

Precautions for Corner Finishing

* Corners will have remaining material or gouges with respect to the expected corner profile.

Fig 1

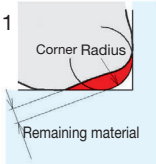
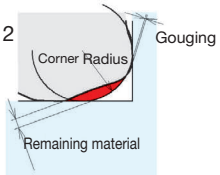


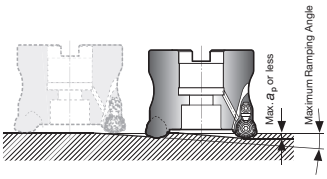
Fig 2



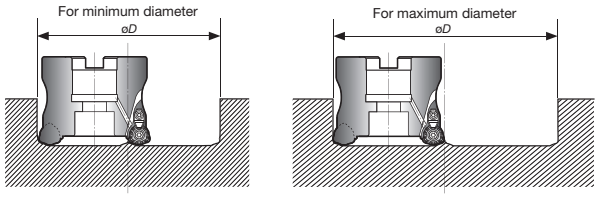
Corner Radius	MSX06000			MSX08000			MSX12000			MSX14000		
	Remaining material	Gouging	Fig	Remaining material	Gouging	Fig	Remaining material	Gouging	Fig	Remaining material	Gouging	Fig
2.0	0.403	0	1	0.735	0	1	1.312	0	1	1.642	0	1
2.5	0.263	0.087	2	0.593	0	1	1.171	0	1	1.501	0	1
3.0				0.451	0.031	2	1.030	0	1	1.360	0	1
3.5							0.888	0.001	2	1.219	0	1
4.0										1.078	0.016	2

Ramping and Helical Milling

Ramping



Helical Milling



Uncut material at the centre not removable with same cutter.

Uncut material at the centre removable with same cutter using traverse cutting.

DC	MSX06000			MSX08000			MSX12000			MSX14000		
	Ramping	Helical Milling		Ramping	Helical Milling		Ramping	Helical Milling		Ramping	Helical Milling	
	Maximum Ramping Angle	Min. Dia.	Max. Dia.	Maximum Ramping Angle	Min. Dia.	Max. Dia.	Maximum Ramping Angle	Min. Dia.	Max. Dia.	Maximum Ramping Angle	Min. Dia.	Max. Dia.
16	6°00'	21	30									
17	5°00'	23	32									
18	4°30'	25	34									
20	3°30'	29	38	7°30'	25	38						
22	3°00'	33	42	5°30'	29	42						
25	2°00'	39	48	4°00'	35	48						
28				3°00'	41	54						
32				2°30'	49	62	6°30'	42	62			
35				2°00'	55	68	5°00'	48	68			
40				2°00'	65	78	4°00'	58	78	6°00'	53	78
50							2°30'	78	98	3°30'	73	98
63							2°00'	103	124	2°00'	99	124
80										1°30'	133	158
100										1°00'	173	198

Recommended Cutting Conditions

Insert Cat. No.	Max. a_p	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

(a_p: Depth of Cut f_z: Feed Rate)

Work Material	Insert Grade	Cutting Speed v_c (m/min)	Insert Cat. No.	Endmill Type										Shell Type			
				ø16		ø20		ø25		ø32		ø40		ø50/ø63		ø80/ø100	
				a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (mm/t)	a_p (mm)	f_z (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

· 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 (a_p, f_z).
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 (a_p, f_z).

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)

Fig 1

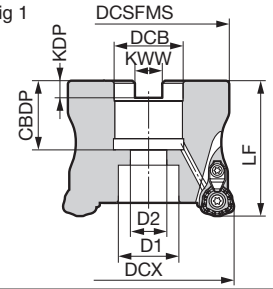
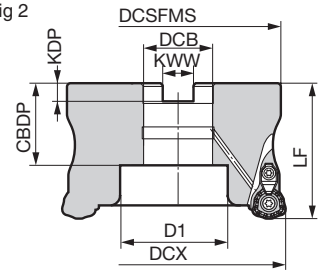


Fig 2



Body (MSX08000) Applicable Insert WDMT08 Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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 (MSX12000) Applicable Insert WDMT12 Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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 (MSX14000) Applicable Insert WDMT14 Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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	28	17	5	1.3	1
	14100R	●	***100**	96	63	**31.75**	12.7	8.0	32	28	17	6	2.4	1

Inserts are sold separately.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

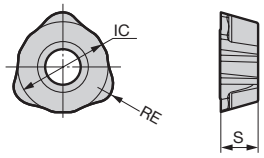
Insert

Dimensions (mm)

Grade		Coated Carbide			
Process	High-speed / Light			K	
	General-purpose	P M	P M	K	
	Roughing	P M	P M		K

Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	Inscribed Circle IC	Thickness S	Nose Radius RE	Applicable Cutter	Fig
General-purpose	**WDMT 0804ZDTR**	●	●	●	●	8.5	4.0	2.0	MSX08000R Type	1
	1205ZDTR	●	●	●	●	12	5.0	2.0	MSX12000R Type	1
	1406ZDTR	●	●	●	●	14	6.0	2.0	MSX14000R Type	1
Honed Type	**WDMT 0804ZDTR-H**	●	●	●	●	8.5	4.0	2.0	MSX08000R Type	1
	1205ZDTR-H	●	●	●	●	12	5.0	2.0	MSX12000R Type	1
	1406ZDTR-H	●	●	●	●	14	6.0	2.0	MSX14000R Type	1

Fig 1



Recommended Cutting Conditions H153

Parts

Applicable Body	Flat Screw		Wrench	Clamp	C-Ring	Clamp Screw
		N·m				
MSX08000R Type	BFTX0306IP	2.0	TRDR08IP	CCH3.5	CR03	BFTX03510IP08
MSX12000R Type	BFTX0409IP	3.0	TRDR15IP	CCH3.5	CR03	BFTX03510IP15
MSX14000R Type	BFTX0511IP	5.0	TRDR20IP	CCH4.5	CR03	BFTX04513IP20

Identification Code

MSX 08 040 R S

Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

N·m Recommended Tightening Torque (N·m)

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)

Modular Type H216

Fig. 1 (Single Clamp)

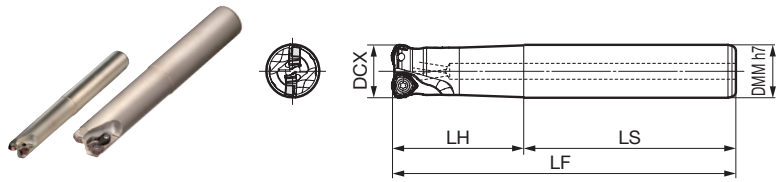
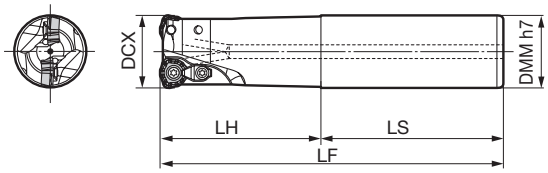


Fig. 2 (Double Clamp)



Body (MSX06000E) Applicable Insert WDMT06 Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 06016ES	●	**16**	16	30	80	110	2	0.2	1
06016EM	●	**16**	16	70	80	150	2	0.2	1
06017EM	●	**17**	16	20	130	150	2	0.2	1
06018EM	●	**18**	16	20	130	150	2	0.2	1
06020ES	●	**20**	20	50	80	130	3	0.3	1
06020EM	●	**20**	20	100	80	180	3	0.4	1
06022EM	●	**22**	20	30	150	180	3	0.4	1
06025ES	●	**25**	25	60	80	140	3	0.5	1
06025EM	●	**25**	25	120	130	250	3	0.8	1

Body (MSX08000E) Applicable Insert WDMT08 Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 08020ES	●	**20**	20	50	80	130	2	0.3	1
08020EM	●	**20**	20	100	80	180	2	0.3	1
08022EM	●	**22**	20	30	150	180	2	0.4	1
08025ES	●	**25**	25	60	80	140	2	0.4	2
08025EM	●	**25**	25	120	130	250	2	0.8	2
08028EM	●	**28**	25	40	210	250	2	0.9	2
08032ES	●	**32**	32	70	80	150	3	0.8	2
08032EM	●	**32**	32	120	130	250	3	1.4	2
08035EM	●	**35**	32	50	200	250	3	1.5	2

Body (MSX12000E) Applicable Insert WDMT12 Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 12032ES	●	**32**	32	70	80	150	2	0.8	2
12032EM	●	**32**	32	120	130	250	2	1.4	2
12035EM	●	**35**	32	50	200	250	2	1.4	2
12040ES	●	**40**	32	50	100	150	3	0.9	2
12040EM	●	**40**	32	50	200	250	3	1.5	2
12050EM	●	**50**	42	50	200	250	4	2.6	2

Body (MSX14000E) Applicable Insert WDMT14 Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 14040ES	●	**40**	32	50	100	150	2	0.9	2
14040EM	●	**40**	32	50	200	250	2	1.5	2
14050ES	●	**50**	42	50	100	150	3	1.5	2
14050EM	●	**50**	42	50	200	250	3	2.5	2
14063ES	●	**63**	42	50	100	150	4	1.7	2
14063EM	●	**63**	42	50	200	250	4	2.8	2

Inserts are sold separately.

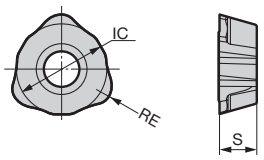
Insert

Dimensions (mm)

Grade		Coated Carbide			
Process	High-speed / Light			K	
	General-purpose	P M	P M	K	
	Roughing	P M	P M		K

Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	Inscribed Circle IC	Thickness S	Nose Radius RE	Applicable Cutter	Fig
General-purpose	**WDMT 0603ZDTR**	●	●	●	●	6.35	3.0	1.5	MSX06000E Type	1
	0804ZDTR	●	●	●	●	8.5	4.0	2.0	MSX08000R Type	1
	1205ZDTR	●	●	●	●	12	5.0	2.0	MSX12000R Type	1
	1406ZDTR	●	●	●	●	14	6.0	2.0	MSX14000R Type	1
Honed Type	**WDMT 0603ZDTR-H**	●	●	●	●	6.35	3.0	1.5	MSX06000E Type	1
	0804ZDTR-H	●	●	●	●	8.5	4.0	2.0	MSX08000R Type	1
	1205ZDTR-H	●	●	●	●	12	5.0	2.0	MSX12000R Type	1
	1406ZDTR-H	●	●	●	●	14	6.0	2.0	MSX14000R Type	1

Fig 1



Recommended Cutting Conditions H153

Parts

Applicable Body	Flat Screw	N·m	Wrench	Clamp	C-Ring	Clamp Screw
MSX06000E Type	BFTX02505IP	1.5	TRDR08IP	—	—	—
MSX08020E, MSX08022E Type	BFTX0306IP	2.0	TRDR08IP	—	—	—
Other MSX08000E types not described above	BFTX0306IP	2.0	TRDR08IP	CCH3.5	CR03	BFTX03510IP08
MSX12000E Type	BFTX0409IP	3.0	TRDR15IP	CCH3.5	CR03	BFTX03510IP15
MSX14000E Type	BFTX0511IP	5.0	TRDR20IP	CCH4.5	CR03	BFTX04513IP20

Identification Code

MSX 06 016 E S

Cutter Series	Insert Size	Cutter Dia.	Endmill Type	S: Short M: Medium

N·m Recommended Tightening Torque (N·m)

WMM Type

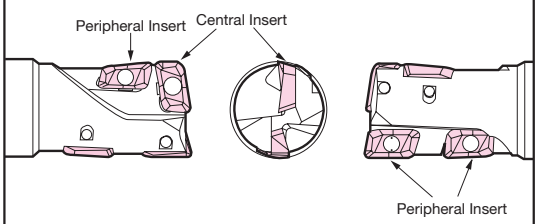
General Features

The WaveMill WMM Type performs a variety of operations such as groove milling, shoulder milling, ramping, pocketing, drilling, helical milling, etc., all with a single tool.
With low cutting force and excellent chip evacuation, it is also effective for consolidating tools.

Features and Applications

- The WMM Type alone can perform a number of operations such as shoulder milling, slot 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

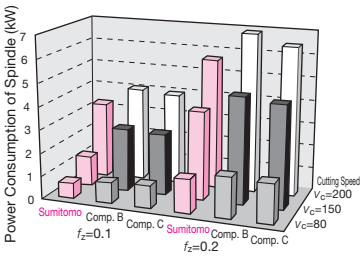
WMM Type insert arrangement



Product Range and Performance

Type	Description	Cutter Dia. (mm) ø20 – ø30	Cutter Dia. (mm) ø30 – ø40
2000E	Standard Type	20 – 30	
2000EL	Long Type	20 – 30	
2000ELH	Long Type w / Coolant Hole	20 – 30	
2000EXLH	Extra-Long Type w / Coolant Hole	22 – 30	
3000E	Standard Type		32 – 40
3000EL	Long Type		32 – 40
3000ELH	Long Type w / Coolant Hole		32 – 40
3000EXLH	Extra-Long Type w / Coolant Hole		35 – 40

Performance Comparison (Groove Milling)



Diameter of Tool: ø25
Work Material: S50C
Cutting Conditions: v_c=80,150,200m/min, f_z=0.1, 0.2mm/t
a_p=15mm, Tool Overhang=40mm

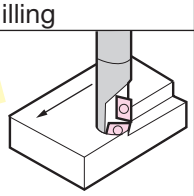
Various Milling Examples

Tool: WMM2025E

Shoulder Milling

SUS304

Cuts stainless steel too

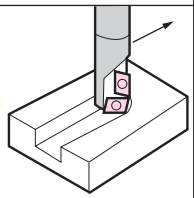


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Depth of Cut: a_p=25mm , a_e=5mm
Cutting Speed: v_c=120m/min, Feed Rate: f_z=0.15mm/t
Air Blow

Slot Milling

FC250

Deep slot milling can be performed easily, Easy chip removal

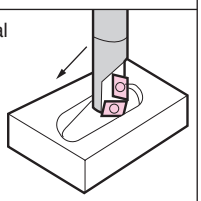


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ310)
Depth of Cut: a_p=15mm , a_e=25mm
Cutting Speed: v_c=180m/min, Feed Rate: f_z=0.12mm/t
Air Blow

Ramping

S50C Block Material

Capable of tapered recess cutting without prepared holes

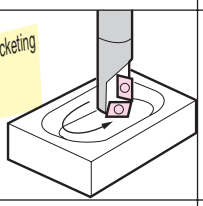


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Cutting Width: a_e=25mm, Depth: a_p=15mm
Cutting Speed: v_c=200m/min, Feed Rate: f_z=0.1mm/t
Ramp Angle: θ°=15°
Air Blow

Pocketing

S50C Block Material

Capable of traverse cutting and pocketing with continuous lateral feed from the initial drilling or ramping process

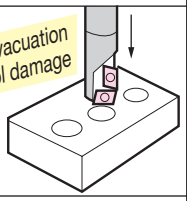


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Machining done continuously from a deep drilling process with a depth of 15mm
Cutting Width: a_e=25mm, Depth: a_p=15mm
Cutting Speed: v_c=200m/min, Feed Rate: f_z=0.1mm/t
Air Blow

Drilling

S50C Block Material

Capable of easy chip evacuation and drilling without tool damage

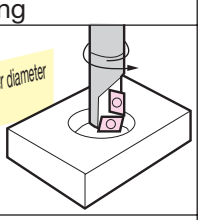


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Bore Diameter: ø25mm, Depth: a_p=15mm
Cutting Speed: v_c=200m/min, Feed Rate: f=0.1mm/rev
Step Feed: 0.5mm
Air Blow

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: APMT103504PDER (ACZ350)
Bore Diameter: ø40mm, Depth: a_p=20mm
Cutting Speed: v_c=300m/min, Feed Rate: f=0.1mm/rev
Axial Feed: 15mm/Pitch
Air Blow

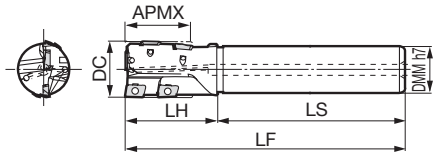
WMM 2000E / EL / ELH / EXLH Type

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

Rake Angle		
	Radial	15° to 16°
	Axial	7° to 11°

17 to 35 mm | 90°

Fig 1



Body (Standard Type / WMM2000E Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM 2020E	●	**20**	20	17	35	95	130	3	1	1
2021E	●	**21**	20	17	35	95	130	3	1	1
2025E	●	**25**	25	26	40	100	140	4	1	1
2026E	●	**26**	25	26	40	100	140	4	1	1
2030E	●	**30**	25	35	50	100	150	5	1	1

Milling Cutter Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM 2020EL	●	**20**	20	17	60	125	185	3	1	1
2021EL	●	**21**	20	17	35	150	185	3	1	1
2025EL	●	**25**	25	26	75	145	220	4	1	1
2026EL	●	**26**	25	26	40	180	220	4	1	1
2030EL	●	**30**	25	35	50	180	230	5	1	1

Body (Long Type / With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM 2020ELH	●	**20**	20	17	60	125	185	3	1	1
2021ELH	●	**21**	20	17	35	150	185	3	1	1
2025ELH	●	**25**	25	26	75	145	220	4	1	1
2026ELH	●	**26**	25	26	40	180	220	4	1	1
2030ELH	●	**30**	25	35	50	180	230	5	1	1

Body (Extra-Long Type / With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM 2022EXLH		**22**	20	17	35	215	250	3	1	1
2027EXLH		**27**	25	26	40	280	320	4	1	1
2030EXLH		**30**	25	35	50	300	350	5	1	1

Inserts are sold separately.

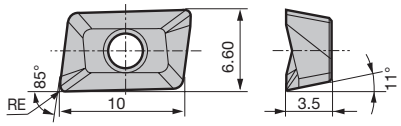
Insert

Dimensions (mm)

Grade		Coated Carbide						
Process	High-speed / Light				K N	N		
	General-purpose	M	P	K		N		
	Roughing							
Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Nose 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 Edge Type, F: Ground Insert, S: For Aluminum Alloy.

Fig 1



Spare Parts (Common)

Applicable Endmill	Flat Screw		Wrench	Anti-seizure Cream
WMM2000 Type	BFTX02506N	N·m 1.5	TRD08	SUMI-P
WMM3000 Type	BFTX03584	N·m 3.0	TRD15	SUMI-P

Recommended Cutting Conditions Diameter ø20 to ø26mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.		Insert Grade
P	Carbon Steel	180 to 280 HB	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	

Recommended Cutting Conditions Diameter ø30 to ø40mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.		Insert Grade
P	Carbon Steel	180 to 280 HB	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 guidelines. 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)

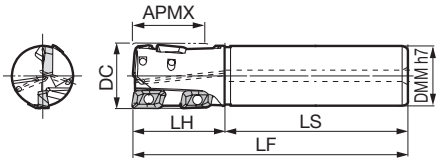
WMM 3000E / EL / ELH / EXLH Type

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

Rake Angle		
	Radial	17° to 19°
	Axial	7° to 11°

39mm 90°

Fig 1



Body (Standard Type / WMM3000E Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM 3032E	●	**32**	32	39	50	100	150	4	1	1
3033E	●	**33**	32	39	50	100	150	4	1	1
3035E	●	**35**	32	39	50	100	150	4	1	1
3040E	●	**40**	32	39	55	105	160	4	1	1
2030E	●	**30**	25	35	50	100	150	5	1	1

Milling Cutter Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM 3032EL	●	**32**	32	39	90	140	230	4	1	1
3033EL	●	**33**	32	39	50	180	230	4	1	1
3035EL	●	**35**	32	39	50	180	230	4	1	1
3040EL	●	**40**	32	39	55	185	240	4	1	1

Body (Long Type / With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM 3032ELH	●	**32**	32	39	90	140	230	4	1	1
3033ELH	●	**33**	32	39	50	180	230	4	1	1
3035ELH	●	**35**	32	39	50	180	230	4	1	1
3040ELH	●	**40**	32	39	55	185	240	4	1	1

Body (Extra-Long Type / With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM 3035EXLH		**35**	32	39	50	320	370	4	1	1
3040EXLH		**40**	32	39	55	365	420	4	1	1

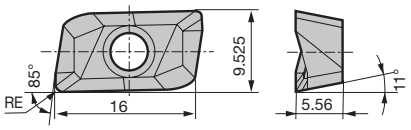
Insert

Dimensions (mm)

Grade		Coated Carbide				
Process	High-speed / Light				K N	N
	General-purpose	M	P	K		N
	Roughing					

Cat. No.	ACZ350	ACZ330	ACZ310	H1	DL1000	Nose 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 Edge Type, F: Ground Insert, S: For Aluminum Alloy.

* marked inserts require modification of the cutter body. Correct the tool diameter by +0.5mm before use.

Parts

Applicable Endmill	Flat Screw		Wrench	Anti-seizure Cream
WMM2000 Type	BFTX02506N	N·m 1.5	TRD08	SUMI-P
WMM3000 Type	BFTX03584	N·m 3.0	TRD15	SUMI-P

Recommended Cutting Conditions

Blade Diameter ø30 to ø40mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t)	Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	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 guidelines. 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

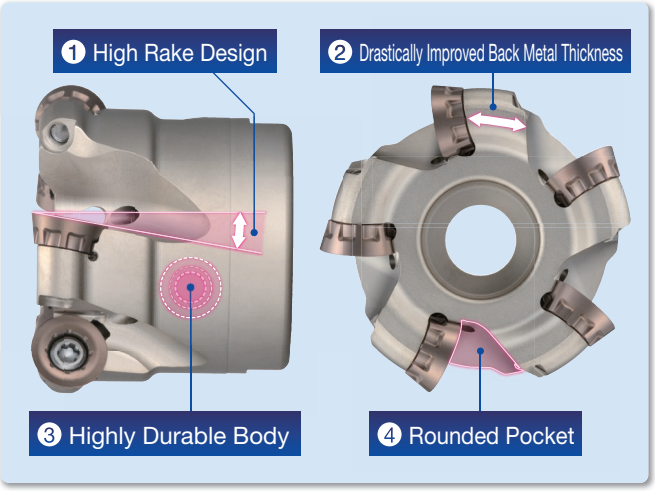
RSX Type

General Features

SEC-Wave Radius Mill RSX type 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.

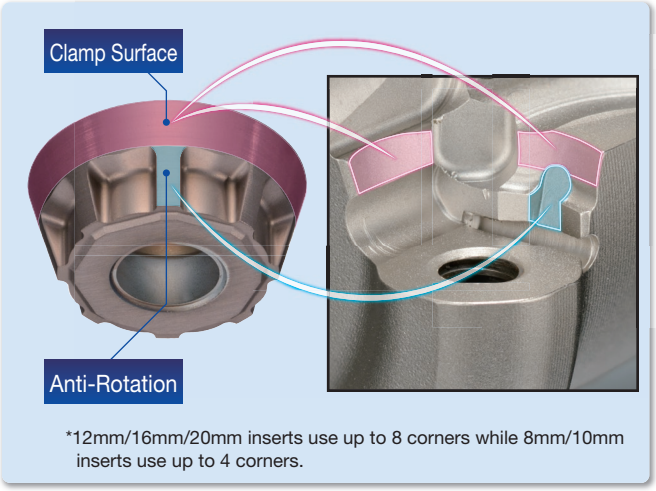
Low-resistance, Low-vibration Design

Achieves low-resistance, 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

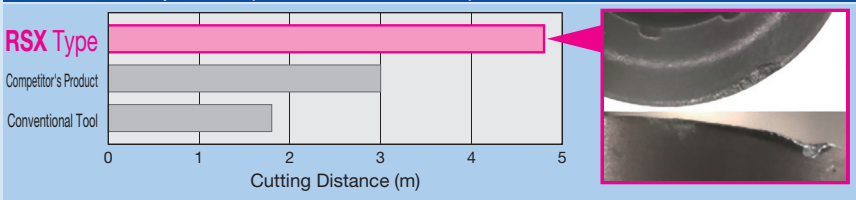
Type		Insert Size	Type	Cutter Dia. (mm) ø20	ø25	ø32	ø40	ø50	ø52	ø63	ø66	ø80	ø100	ø125	ø160
Shell Type H163	Standard	10	RSX 10000 RS				●	●	●						
		12	RSX 12000 RS/R				●	●	●	●	●	◉	◉		
		16	RSX 16000 RS/R							●		◉	◉	◉	
		20	RSX 20000 RS/R									◉	◉	◉	◉
	Multi-Blade	10	RSXF 10000 RS				●	●	●						
		12	RSXF 12000 RS/R				●	●	●	●	●	◉	◉		
		16	RSXF 16000 RS/R							●		◉	◉	◉	○
		20	RSXF 20000 RS/R									◉	◉	◉	◉
Shank Type H167	Standard	8	RSX 08000 ES	●	●										
		10	RSX 10000 ES		●	●									
		12	RSX 12000 ES			●									
	Multi-Blade	8	RSXF 08000 ES	●	●										
		10	RSXF 10000 ES		●	●									
		12	RSXF 12000 ES			●									
Modular Type H217	Standard	8	RSX 08000 M	●	●										
		10	RSX 10000 M		●	●									
		12	RSX 12000 M			●	●								
	Multi-Blade	8	RSXF 08000 M	●	●	●									
		10	RSXF 10000 M		●	●									
		12	RSXF 12000 M			●	●								

● mark: Only metric in stock, ◉: Both metric and inch in stock, ○: Made-to-order for both metric and inch, Blank: Not available

RSX Type

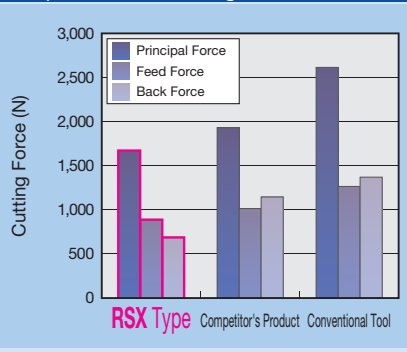
Cutting Performance

Tool Life Comparison (Fracture Resistance)



Achieves a tool life approximately 1.6 times longer than that of our competitors' products

Comparison of Cutting Force

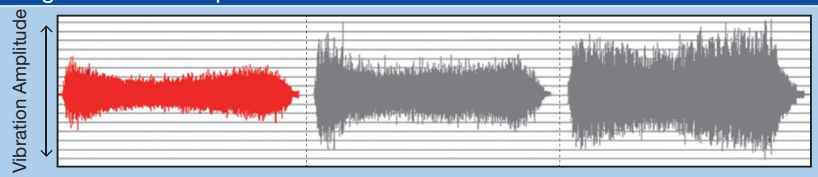


Work Material: SUS304 Tool: ø50

Cutting Conditions: V_c = 200m/min, f_z = 0.5mm/t

a_p = 2.0mm, a_e = 10.0mm, Wet

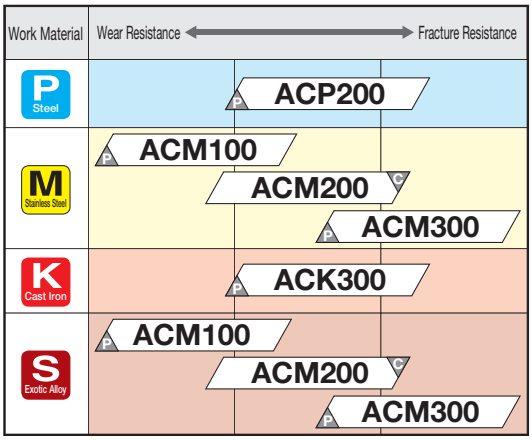
Cutting Vibration Comparison



Reduced by approximately 15% compared to competitors' products

Long, Stable Tool Life

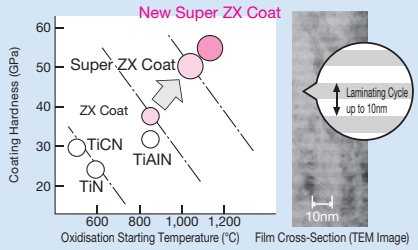
Adopts ACP200 grade for steel and ACK300 grade for cast iron machining, enabling milling of steel, stainless steel, cast iron and exotic alloys



The letters "C" and "P" at the end of each grade indicate the coating type.
C: CVD, P: PVD, Blank: Uncoated

ACP200/ACM100/ACM300/ACK300

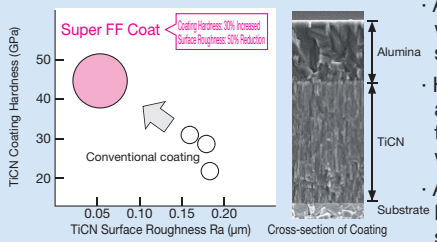
NEW SUPER ZX COAT



- Compared to conventional tools, the coating hardness has been increased by 40% and the oxidisation starting temperature has been increased by 200°C
- Enables more than 1.5 times the machining speed and efficiency of conventional tools
- Achieves more than double the tool life of conventional tools under the same cutting conditions

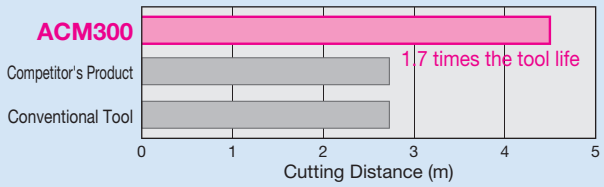
ACM200

SUPER FF COAT



- Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- Achieves more than double the tool life of conventional tools under the same cutting conditions

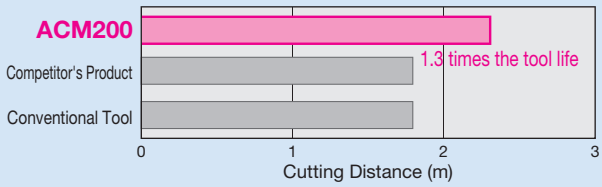
Tool Life (SUS304 Machining)



Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: v_c = 200m/min, f_z = 0.5mm/t
a_p = 2mm, a_e = 10mm Wet

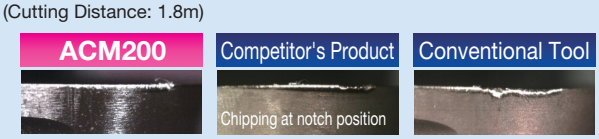
(Cutting Distance: 2.7m)

Tool Life (SUS630-H900 Machining)



Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: v_c = 150m/min, f_z = 0.3mm/t
a_p = 2mm, a_e = 10mm Wet

(Cutting Distance: 1.8m)

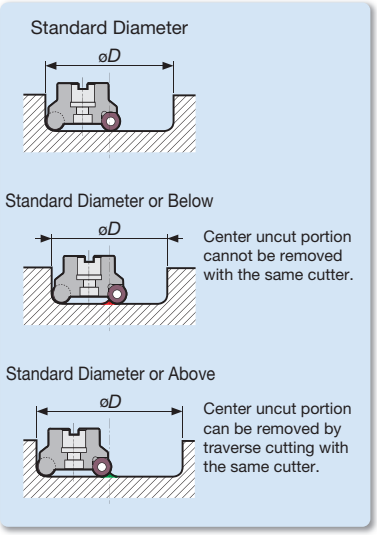


RSX Type

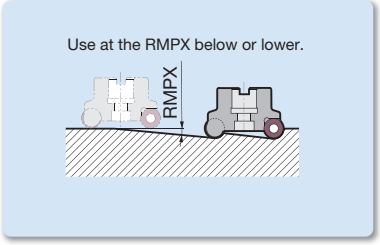
Machining Applications

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



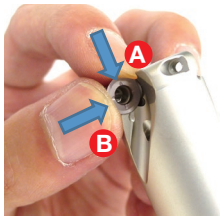
Precautions for Ramping



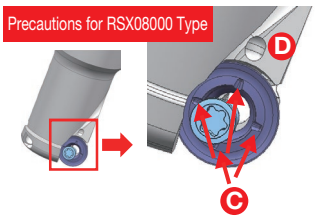
Recommended Values for Helical Milling and Ramping

Insert Cat. No.	Helical Milling (mm)				Ramping
	Cutter Dia. DC	Work Dia. øD			Maximum Ramping 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.

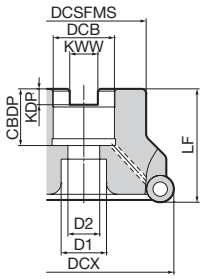
RSX(F) 10000RS Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-5°
	Axial	10°

5mm

Fig 1



Body (RSX10000RS)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	34	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	10050RS	●	**50**	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	10052RS	●	**52**	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1

Body (RSXF10000RS) Fine Pitch Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	34	40	**16**	8.4	5.6	18	14	9	5	0.2	1
	10050RS	●	**50**	40	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	10052RS	●	**52**	40	40	**22**	10.4	6.3	20	18	11	6	0.3	1

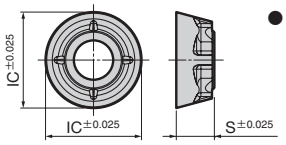
Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

Insert

Dimensions (mm)

Grade		Coated Carbide							
Process	High-speed / Light			M S	M S				
	General-purpose	P M		M S	M S	M S			
	Roughing	P M	K			M S			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET 10T3MOEN-G		●	●	●	●	●	10	3.97	1
10T3M0EN-H		●	●	●	●	●	10	3.97	1

Fig 1



● Cross Section of Cutting Edge

Precautions for Mounting Inserts ☞ H162

Parts

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

Identification Code

RSX F 10 040 R S

RSX	F	10	040	R	S
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280 HB	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	ACM300
			Martensitic	200 to 330 HB	80-**120**-180	0.15-**0.25**-0.35	ACM300
		Cr-Ni-based	Austenitic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
			2-Phase Structure (Austenitic/Ferritic)	230 to 270 HB	80-**120**-180	0.15-**0.25**-0.35	ACM200
			Deposition Hardened Structures	330HB	60-**100**-160	0.15-**0.25**-0.35	ACM200
K	Cast Iron			250HB	80-**120**-160	0.10-**0.30**-0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350 HB	20- **30** - 40	0.10-**0.20**-0.30	ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10-**0.20**-0.30	
			$\alpha + \beta$ Alloy	(Rm1050)	40- **50** - 60	0.10-**0.20**-0.30	

RSX(F) 12000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-5°
	Axial	10°

6mm

Fig 1

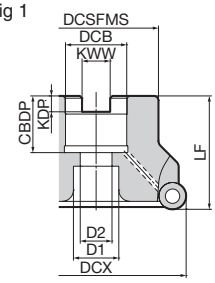


Fig 2

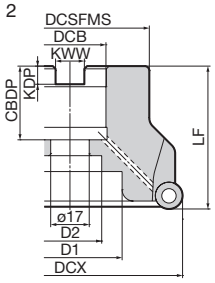
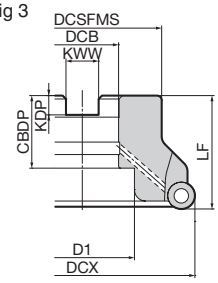


Fig 3



Body (RSX12000RS / R)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	32	40	**16**	8.4	5.6	18	13.5	9	3	0.2	1
	12050RS	●	**50**	40	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12052RS	●	**52**	40	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	●	**63**	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	12066RS	●	**66**	55	50	**27**	12.4	7.0	25	20	14	6	0.7	1
	12080RS	●	***80**	55	50	**27**	12.4	7.0	25	20	14	6	1.0	1
	12100RS	●	**100**	70	50	**32**	14.4	8.5	32	46	—	6	1.4	3
Inch	**RSX 12080R**	●	***80**	55	50	**25.4**	9.5	6.0	25	20	13	6	1.0	1
	12100R	●	***100**	70	63	**31.75**	12.7	8.0	32.5	46	28	6	1.9	2

Body (RSXF12000RS / R) Fine Pitch Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	32	40	**16**	8.4	5.6	18	13.5	9	4	0.2	1
	12050RS	●	**50**	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	12052RS	●	**52**	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	12063RS	●	**63**	40	40	**22**	10.4	6.3	20	18	11	6	0.4	1
	12066RS	●	**66**	55	50	**27**	12.4	7.0	25	20	14	7	0.7	1
	12080RS	●	***80**	55	50	**27**	12.4	7.0	25	20	14	7	0.9	1
	12100RS	●	**100**	70	50	**32**	14.4	8.5	32	46	—	10	1.3	3
Inch	**RSXF 12080R**	●	***80**	55	50	**25.4**	9.5	6.0	25	20	13	7	1.0	1
	12100R	●	***100**	70	63	**31.75**	12.7	8.0	32.5	46	28	10	1.8	2

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

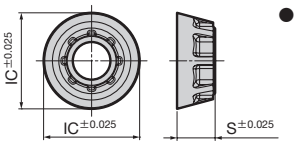
* For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide							
Process	High-speed / Light			M S	M S				
	General-purpose	P M		M S	M S	M S			
	Roughing	P M	K			M S			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET 1204M0EN-G		●	●	●	●	●	12	4.76	1
1204M0EN-H		●	●	●	●	●	12	4.76	1

Fig 1



● Cross Section of Cutting Edge

Precautions for Mounting Inserts H162

Parts

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

Identification Code

RSX F 12 040 R S

Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280 HB	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	ACM300
			Martensitic	200 to 330 HB	80-**120**-180	0.15-**0.25**-0.35	ACM300
		Cr-Ni-based	Austenitic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
			2-Phase Structure (Austenitic/Ferritic)	230 to 270 HB	80-**120**-180	0.15-**0.25**-0.35	ACM200
			Deposition Hardened Structures	330HB	60-**100**-160	0.15-**0.25**-0.35	ACM200
K	Cast Iron			250HB	80-**120**-160	0.10-**0.30**-0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350 HB	20-**30**-40	0.10-**0.20**-0.30	ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60-**80**-100	0.10-**0.20**-0.30	
			$\alpha + \beta$ Alloy	(Rm1050)	40-**50**-60	0.10-**0.20**-0.30	

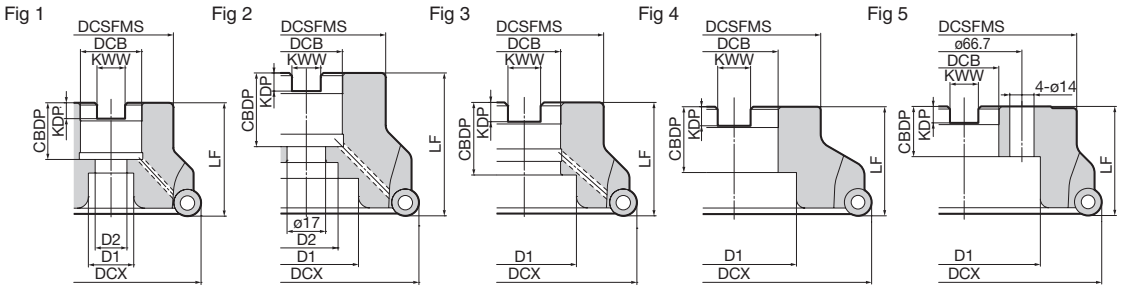
N·m Recommended Tightening Torque (N·m)

RSX(F) 16000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-5°
	Axial	10°

8mm



Body (RSX16000RS / R)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	16080RS	●	***80**	55	50	**27**	12.4	7.0	25	20	14	5	0.9	1
	16100RS	●	**100**	70	50	**32**	14.4	8.5	32	46	—	6	1.3	3
	16125RS	●	**125**	80	63	**40**	16.4	9.5	29	52	29	6	2.6	1
Inch	**RSX 16080R**	●	***80**	55	50	**25.4**	9.5	6.0	25	20	13	5	0.9	1
	16100R	●	***100**	70	63	**31.75**	12.7	8.0	32.5	46	28	6	1.8	2
	16125R	●	**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	6	2.7	1

Body (RSXF16000RS / R) Fine Pitch Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	50	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	16080RS	●	***80**	55	50	**27**	12.4	7.0	25	20	14	6	0.8	1
	16100RS	●	**100**	70	50	**32**	14.4	8.5	32	46	—	7	1.3	3
	16125RS	●	**125**	80	63	**40**	16.4	9.5	29	52	29	8	2.5	1
	16160RS		**160**	130	63	**40**	16.4	9.5	29	88	—	10	4.8	5
Inch	**RSXF 16080R**	●	***80**	55	50	**25.4**	9.5	6.0	25	20	13	6	0.8	1
	16100R	●	***100**	70	63	**31.75**	12.7	8.0	32.5	46	28	7	1.7	2
	16125R	●	**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	8	2.6	1
	16160R		**160**	100	63	**50.8**	19.0	11.0	38	72	—	10	4.3	4

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

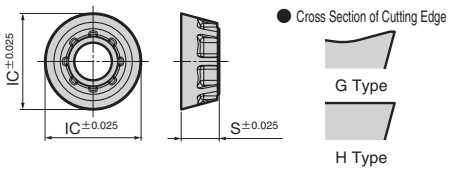
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide							
Process	High-speed / Light			M S	M S				
	General-purpose	P M		M S	M S	M S			
	Roughing	P M	K			M S			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET 1606M0EN-G		●	●	●	●	●	16	6.5	1
1606M0EN-H		●	●	●	●	●	16	6.5	1

Fig 1



Precautions for Mounting Inserts H162

Parts

Wrench	Flat Screw		Anti-seizure Cream
TRDR20IP	BFTX0511IP	5.0	SUMI-P

Identification Code

RSX F 16 063 R S

RSX	F	16	063	R	S
Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280 HB	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	ACM300
			Martensitic	200 to 330 HB	80-**120**-180	0.15-**0.25**-0.35	ACM300
		Cr-Ni-based	Austenitic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
			2-Phase Structure (Austenitic/Ferritic)	230 to 270 HB	80-**120**-180	0.15-**0.25**-0.35	ACM200
			Deposition Hardened Structures	330HB	60-**100**-160	0.15-**0.25**-0.35	ACM200
K	Cast Iron			250HB	80-**120**-160	0.10-**0.30**-0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350 HB	20- **30** - 40	0.10-**0.20**-0.30	ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10-**0.20**-0.30	
			$\alpha + \beta$ Alloy	(Rm1050)	40- **50** - 60	0.10-**0.20**-0.30	

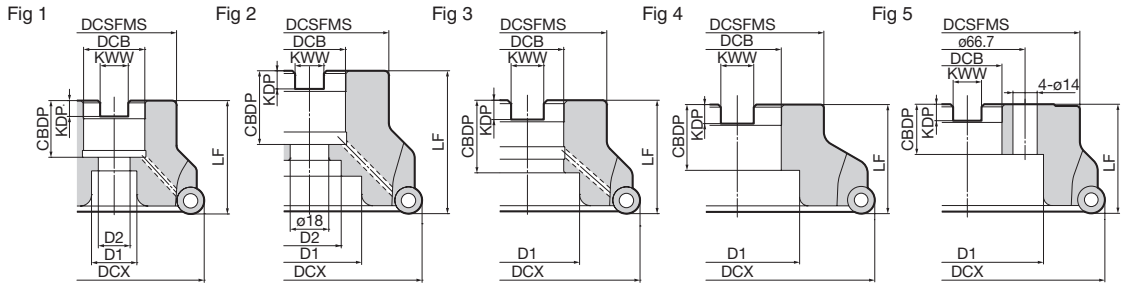
N·m Recommended Tightening Torque (N·m)

RSX(F) 20000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Rake Angle		
	Radial	-5°
	Axial	10°

10mm



Body (RSX20000R / RS)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	55	50	**27**	12.4	7	22	20	14	4	0.9	1
	20100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	5	1.8	3
	20125RS	●	**125**	80	63	**40**	16.4	9	29	52	29	6	2.6	1
	20160RS	●	**160**	130	63	**40**	16.4	9	29	90	—	7	4.7	5
Inch	**RSX 20080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	4	0.9	1
	20100R	●	**100**	70	63	**31.75**	12.7	8	32	46	27	5	1.8	2
	20125R	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	6	2.6	1
	20160R	●	**160**	100	63	**50.8**	19.1	11	38	72	—	7	4.2	4

Body (RSXF20000R / RS) Fine Pitch Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	55	50	**27**	12.4	7	22	20	14	5	0.9	1
	20100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	6	1.8	3
	20125RS	●	**125**	80	63	**40**	16.4	9	29	52	29	7	2.6	1
	20160RS	●	**160**	130	63	**40**	16.4	9	29	90	—	9	4.6	5
Inch	**RSXF 20080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	5	0.9	1
	20100R	●	***100**	70	63	**31.75**	12.7	8	32	46	27	6	1.8	2
	20125R	●	**125**	80	63	**38.1**	15.9	10	35.5	55	30	7	2.6	1
	20160R	●	**160**	100	63	**50.8**	19.1	11	38	72	—	9	4.1	4

Inserts are sold separately. Check the collet mounting size (DCB) when selecting the cutter.

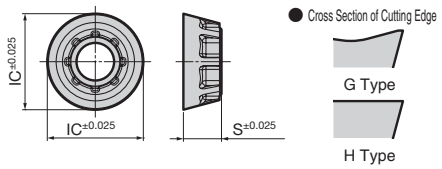
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide							
Process	High-speed / Light			M S	M S				
	General-purpose	P M		M S	M S	M S			
	Roughing	P M	K			M S			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET 2006M0EN-G		●	●	●	●	●	20	6.5	1
2006M0EN-H		●	●	●	●	●	20	6.5	1

Fig 1



Precautions for Mounting Inserts H162

Parts

Wrench	Flat Screw		Anti-seizure Cream
TRDR25IP	BFTX0615IP	5.0	SUMI-P

Identification Code

RSX F 20 080 R S

Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280 HB	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	ACM300
			Martensitic	200 to 330 HB	80-**120**-180	0.15-**0.25**-0.35	ACM300
		Cr-Ni-based	Austenitic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
			2-Phase Structure (Austenitic/Ferritic)	230 to 270 HB	80-**120**-180	0.15-**0.25**-0.35	ACM200
			Deposition Hardened Structures	330HB	60-**100**-160	0.15-**0.25**-0.35	ACM200
K	Cast Iron			250HB	80-**120**-160	0.10-**0.30**-0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350 HB	20-**30**-40	0.10-**0.20**-0.30	ACM100 ACM200
	Titanium		Pure Titanium (99.5%)	(Rm400)	60-**80**-100	0.10-**0.20**-0.30	
			$\alpha + \beta$ Alloy	(Rm1050)	40-**50**-60	0.10-**0.20**-0.30	

N·m Recommended Tightening Torque (N·m)

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 (12000ES)

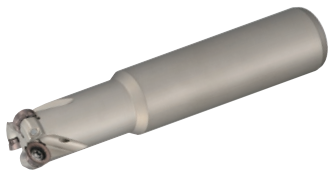
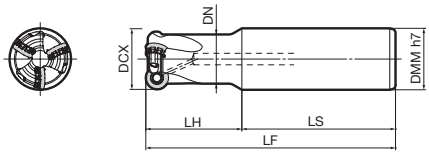


Fig 1



Body (RSX08000ES) Applicable Insert IC = 8mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSX 08020ES	●	**20**	20	16.9	30	70	100	2	0.3	1
08025ES	●	**25**	25	21.9	40	80	120	3	0.4	1

Body (RSXF08000ES) Fine Pitch Type, Applicable Insert IC = 8mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSXF 08020ES	●	**20**	20	16.9	30	70	100	3	0.3	1
08025ES	●	**25**	25	21.9	40	80	120	4	0.4	1

Body (RSX10000ES) Applicable Insert IC = 10mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSX 10025ES	●	**25**	25	20.3	50	80	130	2	0.4	1
10032ES	●	**32**	32	27.1	50	80	130	3	0.7	1

Body (RSXF10000ES) Fine Pitch Type, Applicable Insert IC = 10mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSXF 10025ES	●	**25**	25	20.3	50	80	130	3	0.4	1
10032ES	●	**32**	32	27.1	50	80	130	4	0.7	1

Body (RSX12000ES) Applicable Insert IC = 12mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSX 12032ES	●	**32**	32	25.6	50	80	130	2	0.7	1

Body (RSXF12000ES) Fine Pitch Type, Applicable Insert IC = 12mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSXF 12032ES	●	**32**	32	25.6	50	80	130	3	0.7	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide				
Process	High-speed / Light			M S	M S	
	General-purpose	P M		M S	M S	M S
	Roughing	P M	K			M S
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300
RDET 0803M0EN-G		●	●	●	●	●
0803M0EN-H		●	●	●	●	●
RDET 10T3M0EN-G		●	●	●	●	●
10T3M0EN-H		●	●	●	●	●
RDET 1204M0EN-G		●	●	●	●	●
1204M0EN-H		●	●	●	●	●

Inscribed Circle IC	Thickness S	Applicable Cutters	Fig
8	3.18	RSX(F)08000ES	1
			1
10	3.97	RSX(F)10000RS / ES	1
			1
12	4.76	RSX(F)12000RS / ES	2
			2

Fig 1

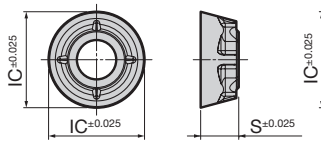
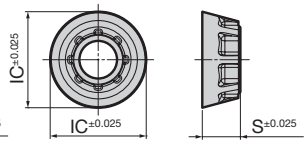


Fig 2



● Cross Section of Cutting Edge

G Type H Type

Precautions for Mounting Inserts ☞ H162

Parts

Applicable Cutter	Wrench	Flat Screw		Anti-seizure Cream
			N·m	
RSX(F)08000ES	TRDR08IP	BFTX02506IP	1.5	SUMI-P
RSX(F)10000ES	TRDR15IP	BFTX03584IP	3.0	SUMI-P
RSX(F)12000ES	TRDR15IP	BFTX0409IP	3.0	SUMI-P

Identification Code

RSX F 10 025 ES

Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Endmill Type

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
P	Alloy Steel			180 to 280 HB	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	ACM300
M	Stainless Steel	Cr-based	Martensitic	200 to 330 HB	80-**120**-180	0.15-**0.25**-0.35	ACM300
M	Stainless Steel	Cr-Ni-based	Austenitic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
M	Stainless Steel	Cr-Ni-based	2-Phase Structure (Austenitic/Ferritic)	230 to 270 HB	80-**120**-180	0.15-**0.25**-0.35	ACM200
M	Stainless Steel	Cr-Ni-based	Deposition Hardened Structures	330HB	60-**100**-160	0.15-**0.25**-0.35	ACM200
K	Cast Iron			250HB	80-**120**-160	0.10-**0.30**-0.40	ACK300
S	Heat-Resistant Alloy		Ni-based Material	250 to 350 HB	20- **30** - 40	0.10-**0.20**-0.30	ACM100 ACM200
S	Titanium		Pure Titanium (99.5%)	(Rm400)	60- **80** -100	0.10-**0.20**-0.30	ACM100 ACM200
S	Titanium		$\alpha + \beta$ Alloy	(Rm1050)	40- **50** - 60	0.10-**0.20**-0.30	ACM100 ACM200

N·m Recommended Tightening Torque (N·m)

WRCX Type

General Features

The WRCX Type SEC-Wave Radius Mill 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.

Features

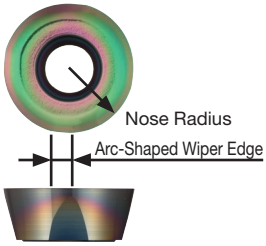
- Durable body with special surface treatment offers significantly improved tool life and reliability.
- Superb chatter resistance with anti-vibration edge design.
- All sizes come with coolant holes preventing chip build-up and jamming.
- Sturdy screw clamp with Torx Plus screw insert mounting ensures 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

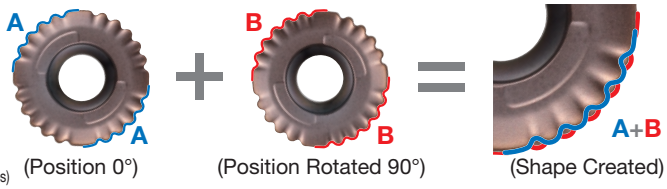
- Good surface roughness with arc-shaped wiper edge
- Sharp corners
- Four-cornered insert



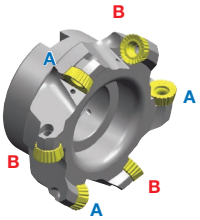
Surfing Insert QPMT ○○○○○○ PPER-R

- 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 useable on cutters with an even number of cutting edges)



(Position 0°) (Position Rotated 90°) (Shape Created)



Shift the phase in 90° increments to mount inserts

Product Range

	Type	O.D. (mm)	Number of Teeth
Shell Type	**WRCX(F) 12000R(S)**	ø40 to ø80	4-6
	WRCX(F) 16000R(S)	ø63 to ø100	3-6
☞ H170, 171	**WRCX 20000R(S)**	ø125 to ø160	5-6
Endmill Type	**WRCX 08000E**	ø20 to ø25	2-3
	WRCX 10000E	ø25 to ø32	2-3
☞ H172	**WRCX 16000E**	ø40 to ø50	2-3
Modular Type	**WRCX 08000M**	ø20 to ø25	2-3
	WRCX 10000M	ø25 to ø32	2-3
☞ H218	**WRCX 12000M**	ø40	4

- Maximum Allowable Spindle Speed when Milling Non-Ferrous Metal (Unit: min⁻¹)

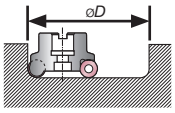
Cutter Dia. DC(mm)	Insert Cat. No.		
	QPET10·····-S	QPET12·····-S	QPET16·····-S
25	28,000		
32	25,000		
40		22,000	15,000
50		20,000	14,000
63		18,000	13,000
80		16,000	12,000
100			10,000

Even if the speed used is within the maximum allowable revolution speeds listed above, abnormal vibrations may occur due to machine rigidity or other factors. Therefore, it is advisable to start operation at half the maximum allowable revolution speed and increase the speed gradually while checking for abnormalities.

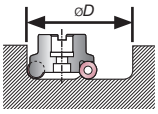
Usage Precautions

- Precautions for Helical Milling

Standard Diameter

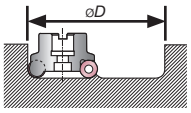


Standard Diameter or Below



Center uncut portion cannot be removed with the same cutter.

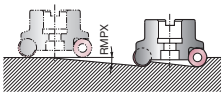
Standard Diameter or Above



Center 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
	Cutter Dia.	Work Dia. øD			Maximum Ramping Angle
	DCX	Min. Dia.	Standard Diameter	Max. Dia.	RMPX(max)
QP□□08○○○○	**20**	25	32	39	13°
	25	35	42	49	8°20'
QP□□10○○○○	**25**	32	40	48	13°10'
	32	46	54	62	8°
QP□□12○○○○	**40**	57	68	79	10°
	50	77	88	99	7°30'
	63	103	114	125	5°10'
	80	137	148	159	3°50'
QP□□16○○○○	**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□□20○○○○	**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

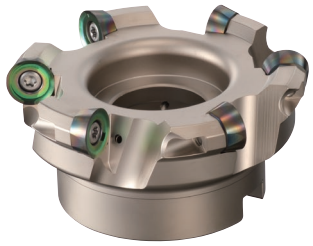
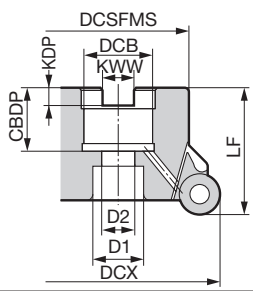


Fig 1



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	36	40	**16**	8.4	5.6	18	13.5	9	4	0.2	1
	12050RS	●	**50**	40	40	**22**	10.4	6.3	20	18	11	4	0.2	1
	12063RS	●	**63**	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	12080RS	●	***80**	55	50	**27**	12.4	7.0	25	20	13.5	6	0.9	1

Inserts are sold separately.

Body (Fine Pitch Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	40	40	**22**	10.4	6.3	20	18	11	5	0.2	1
	12063RS	●	**63**	40	40	**22**	10.4	6.3	20	18	11	6	0.4	1

Inserts are sold separately.

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

Insert (Common)

Dimensions (mm)

Grade		Coated Carbide					Carbide	DLC				
Process	High-speed / Light	P			K		K N	N				
	General-purpose		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	Nose 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 edge type.

Fig 1

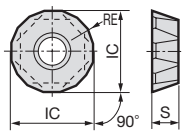


Fig 2 For Non-Ferrous Metals

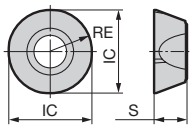
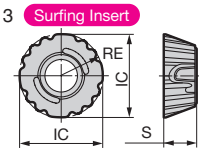


Fig 3 Surfing Insert



Parts

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

Recommended Cutting Conditions

External Diameter ø40 to ø80 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel	180 to 280 HB	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.

WRCX(F) 16000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle		
	Radial	0°
	Axial	-3°

8mm

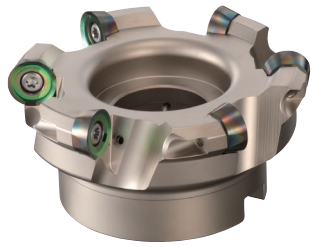


Fig 1

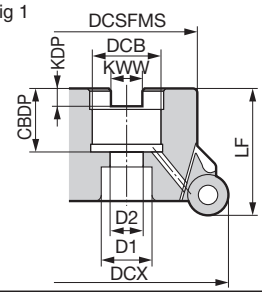
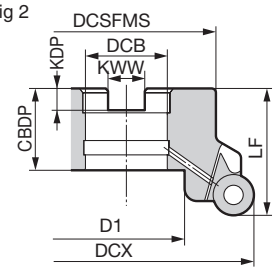


Fig 2



Body (WRCX16000RS / R)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	50	40	**22**	10.4	6.3	20	18	11	3	0.4	1
	16080RS	●	***80**	55	50	**27**	12.4	7.0	25	20	13.5	4	0.8	1
	16100RS	●	**100**	70	50	**32**	14.4	8.5	32	46	—	5	1.2	2
Inch	**16080R**	●	**80**	55	50	**25.4**	9.5	6.0	25	20	13	4	0.8	1
	16100R	●	**100**	70	63	**31.75**	12.7	8.0	32	46	17	5	1.4	1

Inserts are sold separately.

Body (WRCXF16000RS / R) Fine Pitch Type

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	50	40	**22**	10.4	6.3	20	18	11	4	0.4	1
	16080RS	●	***80**	55	50	**27**	12.4	7.0	25	20	13.5	5	0.7	1
	16100RS	●	**100**	70	50	**32**	14.4	8.5	32	46	—	6	1.2	2

Inserts are sold separately.

For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade		Coated Carbide					Carbide	DLC				
Process	High-speed / Light	P			K		K N	N				
	General-purpose		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	Nose Radius RE	Thickness S	Fig
General-purpose*1	**QPMT 160660 PPEN**		●	●	●	●	—	—	16	6.0	6.5	1
	160660 PPEN-H		●	●	●	●	—	—	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

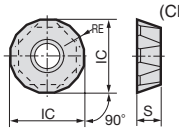


Fig 2 (CP Type)

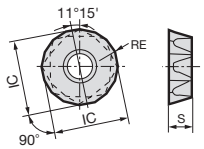


Fig 3 For Non-Ferrous Metals

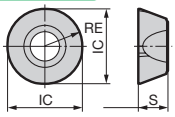
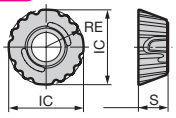


Fig 4 Surfing Insert



*1: -H at the end indicates strong edge type.
*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Parts

Flat Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0511IP	5.0	TRDR20IP	SUMI-P

Recommended Cutting Conditions

Diameter ø40 to ø80 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100- **160** -200	0.20- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280 HB	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.

Diameter ø100 to ø160mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150- **200** -250	0.30- **0.40** -0.60	ACP200
	Alloy Steel	180 to 280 HB	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.

N·m Recommended Tightening Torque (N·m)

WRCX 20000R Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	0°
	Axial	-3°

10mm

Fig 1

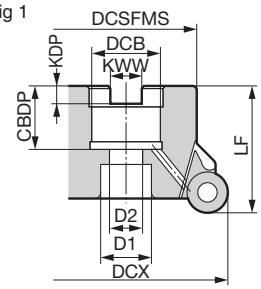
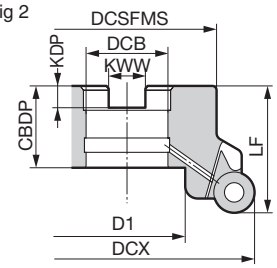


Fig 2



Body (WRCX20000R)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore 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**	80	63	**38.1**	15.9	10.0	35.5	55	30	5	2.3	1
	20160R	●	**160**	100	63	**50.8**	19.1	11.0	38	72	—	6	4.0	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade		Coated Carbide					Carbide	DLC				
Process	High-speed / Light	P			K		K/N	N				
	General-purpose		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	Nose Radius RE	Thickness S	Fig
General-purpose*1	**QPMT 200670 PPEN**		●	●	●	●	—	—	20	7.0	6.5	1
	200670 PPEN-H		●	●	●	●	—	—	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

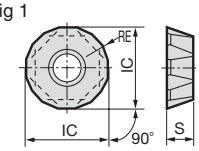


Fig 2 (CP Type)

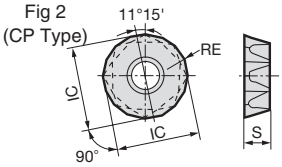
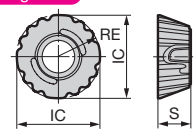


Fig 3

Surfing Insert



*1: -H at the end indicates strong edge type.

*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Parts

Flat Screw		Wrench	Anti-seizure Cream
	N·m		
BFTX0615IP	7.5	TRDR25IP	SUMI-P

Recommended Cutting Conditions

Diameter ø100 to ø160mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150-**200**-250	0.30-**0.40**-0.60	ACP200
	Alloy Steel	180 to 280 HB	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.

WRCX 08000E(S/M) / 10000E(S/M) / 16000E(S/M) Type

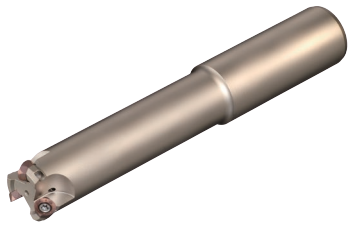
P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

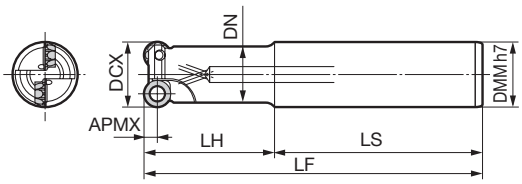
Rake Angle		
	Radial	-23 to -15°
	Axial	-6°

4mm (08000E Type) | 5mm (10000E Type) | 8mm (16000E Type)

Modular Type H218

Fig 1





Body (WRCX08000E) Applicable Insert IC = 8mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX 08020ES	●	20	20	18	4	50	80	130	2	0.2	1
08020EM	●	20	20	18	4	100	80	180	2	0.3	1
08020EL		20	20	18	4	130	120	250	2	0.5	1
WRCX 08025ES	●	25	25	21	4	50	80	130	3	0.4	1
08025EM	●	25	25	21	4	100	80	180	3	0.5	1
08025EL		25	25	21	4	130	120	250	3	0.7	1

Body (WRCX10000E) Applicable Insert IC = 10mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX 10025ES	●	25	25	21	5	50	80	130	2	0.4	1
10025EM	●	25	25	21	5	100	80	180	2	0.5	1
10025EL		25	25	21	5	130	120	250	2	0.7	1
WRCX 10032ES	●	32	32	28	5	50	80	130	3	0.7	1
10032EM	●	32	32	28	5	120	80	200	3	1.0	1
10032EL		32	32	28	5	180	120	300	3	1.5	1

Body (WRCX16000E) Applicable Insert IC = 16mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX 16040ES	●	40	32	31.3	8	50	120	170	2	0.9	1
16040EM	●	40	32	31.3	8	50	200	250	2	1.4	1
WRCX 16050ES	●	50	32	40.8	8	50	120	170	3	1.0	1
16050EM	●	50	32	40.8	8	50	200	250	3	1.5	1

Inserts are sold separately.

Parts

Applicable Cutters	Flat Screw	N·m	Wrench
WRCX08000E Type	BFTX02506IP	1.5	TRDR08IP
WRCX10000E Type	BFTX03584IP	3.0	TRDR15IP
WRCX16000E Type	BFTX0511IP	5.0	TRDR20IP

Recommended Cutting Conditions

Diameter ø20 to ø32mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	80-**120**-160	0.10-**0.30**-0.40	ACP200
	Alloy Steel	180 to 280 HB	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.

Diameter ø40 to ø50 mm

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel	180 to 280 HB	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.

Insert

Dimensions (mm)

Grade		Coated Carbide					Carbide	DLC
Process	High-speed / Light	P			K		K N	N
	General-purpose		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*1	QPMT 080330 PPEN		●	●	●	●	—	—	8	3.0	3.18	1	WRCX08000E Type
	080330 PPEN-H		●	●	●	●	—	—	8	3.0	3.18	1	
	QPMT 10T335 PPEN		●	●	●	●	—	—	10	3.5	3.97	1	WRCX10000E Type
	10T335 PPEN-H		●	●	●	●	—	—	10	3.5	3.97	1	
	QPMT 160660 PPEN		●	●	●	●	—	—	16	6.0	6.5	1	WRCX16000E Type
	160660 PPEN-H		●	●	●	●	—	—	16	6.0	6.5	1	
Anti-Vibration*2	QPMT 160608 PPEN		●	●	●	●	—	—	16	0.8	6.5	1	WRCX16000E 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 Type
	QPET 160680 PPFR-S	—	—	—	—	—	●	●	16	8.0	6.5	3	WRCX16000E Type
Surfing	QPMT 160680 PPER-R		●	●			—	—	16	8.0	6.5	4	WRCX16000E Type

Fig 1

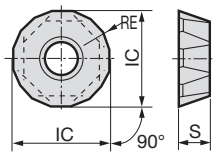


Fig 2 (CP Type)

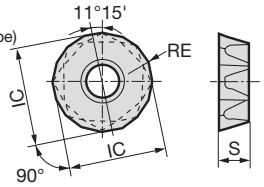


Fig 3 For Non-Ferrous Metals

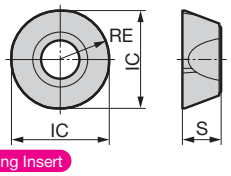
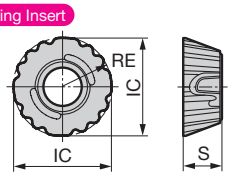


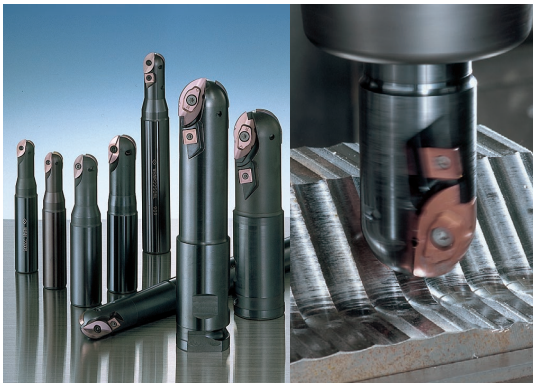
Fig 4 Surfing Insert



*1: -H at the end indicates strong 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 Type



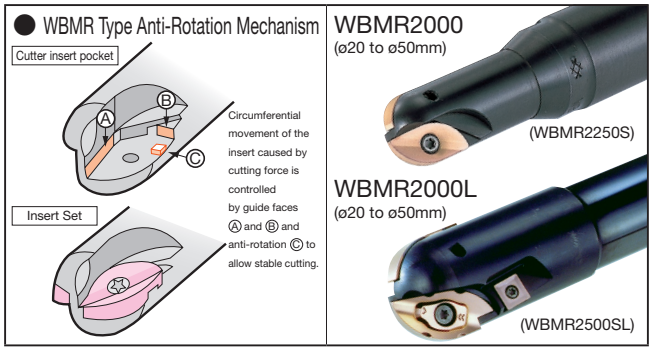
General Features

A lineup of ø20 to ø50mm ballnose endmill models for 3D profile roughing of die molds and machine parts.

3D Profile Roughing

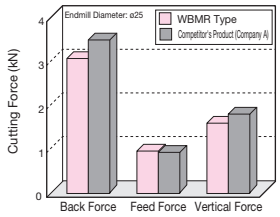
WBMR2000 / 2000L (ø20 to ø50mm)

- Wave-shaped high rake angle insert design achieves a sharp cutting edge and low resistance
- Economical M-class insert with strong cutting edge
- Anti-rotation guides prevent insert from slipping during machining
- Integrated insert shape is used for large diameter cutters (ø40、ø50), enabling easier tool management



Performance

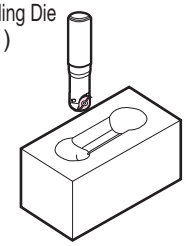
Cutting Force



Work Material: S50C
Cutting Conditions
(Shoulder Milling, Down Cut)
v_c = 200m/min
f_z = 0.15mm/t
Axial Depth of Cut 5mm
Radial Depth of Cut 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}
v_f = 500mm/min
Depth of Cut: 0.3 to 2mm
Insoluble Cutting Oil

Spare Parts

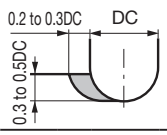
Endmill Cat. No. (□ indicates S/M/L Type)	Part Name	Short Edge Type	Long Edge Type (-L)	
		For Tip Insert	For Tip Insert	For Peripheral Insert
WBMR2200□(L)	Flat Screw	BFTX0307N (N·m) 2.0		
	Wrench	TRX10		
WBMR2250□(L)	Flat Screw	BFTX0409N (N·m) 3.0		
	Wrench	TRD15		
WBMR2300□(L)	Flat Screw	BFTX0511N (N·m) 5.0		BFTX0407N (N·m) 3.0
	Wrench	TRD20		TRD15
WBMR2400□(L)	Flat Screw	BFTX0619N (N·m) 7.5		BFTX0409N (N·m) 3.0
	Wrench	TRD25		TRD15
WBMR2500□(L) WBMR2500□(L)-C	Flat Screw	BFTX0619N (N·m) 7.5		BFTX0409N (N·m) 3.0
	Wrench	TRD25		TRD15

SUMI-P Anti-seizure cream included in the package.

Recommended Cutting Conditions

(A) Tip insert only

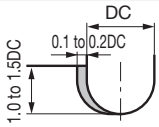
ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**150**-200	0.10-**0.20**-0.30	ACP200
	Alloy Steel	180 to 280 HB	70-**100**-120	0.10-**0.20**-0.30	ACP200
M	Stainless Steel, Die 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 insert

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	80-**120**-150	0.10-**0.20**-0.30	ACP200
	Alloy Steel	180 to 280 HB	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.

SEC-WaveBall (Roughing Short Edge Type)

WBMR 2000 Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	—
	Axial	-10°

20~47mm

Fig 1

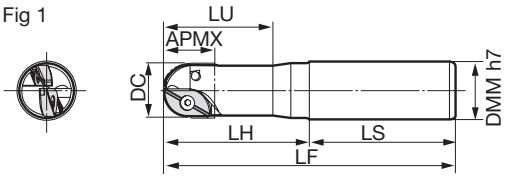
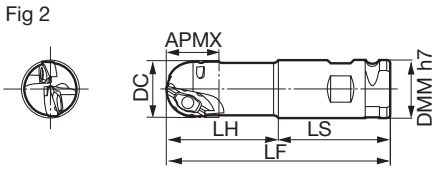


Fig 2



Note: Fig. 2 shows a combination clamped shank diagram (2500□-C).

Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Length LU	Overall Length LF	Fig
WBMR 2200S	●	**20**	25	20	60	80	40	140	1
2200M	●	**20**	25	20	60	140	40	200	1
2200L	●	**20**	25	20	80	170	40	250	1
WBMR 2250S	●	**25**	32	23	70	80	50	150	1
2250M	●	**25**	32	23	73	147	50	220	1
2250L	●	**25**	32	23	100	200	50	300	1
WBMR 2300S	●	**30**	32	28	80	80	60	160	1
2300M	●	**30**	32	28	85	155	60	240	1
2300L	●	**30**	32	28	120	230	60	350	1
WBMR 2400S	●	**40**	42	35	100	100	—	200	1
2400M	●	**40**	42	35	180	100	—	280	1
2400L	●	**40**	42	35	250	100	—	350	1
WBMR 2500S	●	**50**	42	47	100	100	—	200	1
2500M	●	**50**	42	47	180	100	—	280	1
2500L	●	**50**	42	47	250	100	—	350	1
WBMR 2500S-C	●	**50**	50.8	47	100	100	—	200	2
2500M-C	●	**50**	50.8	47	180	100	—	280	2
2500L-C	●	**50**	50.8	47	250	100	—	350	2

Inserts are sold separately.

Insert

Dimensions (mm)

Fig 1

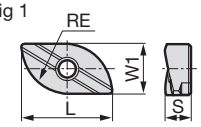


Fig 2

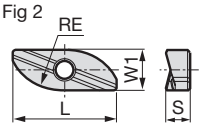


Fig 3

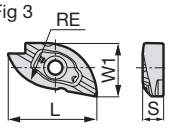
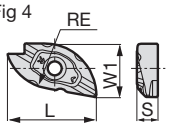


Fig 4



Grade		Coated Carbide				
Process	High-speed / Light	P			K	
	General-purpose		P M	P M	K	
	Roughing		P M	P M		K

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill	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.
ZNMT 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. 4 as the tip inserts.
ZNMT 4310250		●	●		●	43.00	25.70	10.15	25	3	WBMR 2500□	· Use two of the items shown in Fig. 4 or Fig. 5 (nicked) as the tip inserts.
4310250-N		●	●		●	43.00	25.70	10.15	25	4		

Parts H173 | Recommended Cutting Conditions H173

WBMR 2000L Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	—
	Axial	-10°

30 to 69 mm

Fig 1

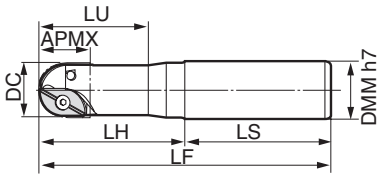
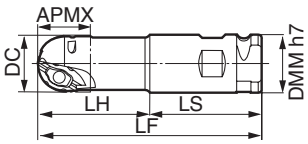


Fig 2



Note: Fig. 2 shows a combination clamped shank diagram (2500□-C).

Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Length LU	Overall Length LF	Fig
WBMR 2200SL	●	**20**	25	30	60	80	40	140	1
2200ML	●	**20**	25	30	60	140	40	200	1
2200LL	●	**20**	25	30	80	170	40	250	1
WBMR 2250SL	●	**25**	32	38	70	80	50	150	1
2250ML	●	**25**	32	38	73	147	50	220	1
2250LL	●	**25**	32	38	100	200	50	300	1
WBMR 2300SL	●	**30**	32	42	80	80	60	160	1
2300ML	●	**30**	32	42	85	155	60	240	1
2300LL	●	**30**	32	42	120	230	60	350	1
WBMR 2400SL	●	**40**	42	50	100	100	—	200	1
2400ML	●	**40**	42	50	180	100	—	280	1
2400LL	●	**40**	42	50	250	100	—	350	1
WBMR 2500SL	●	**50**	42	69	100	100	—	200	1
2500ML	●	**50**	42	69	180	100	—	280	1
2500LL	●	**50**	42	69	250	100	—	350	1
WBMR 2500SL-C	●	**50**	50.8	69	100	100	—	200	2
2500ML-C	●	**50**	50.8	69	180	100	—	280	2
2500LL-C	●	**50**	50.8	69	250	100	—	350	2

Inserts are sold separately.

Insert

Dimensions (mm)

Fig 1

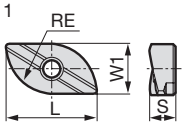


Fig 2

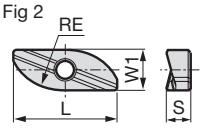


Fig 3

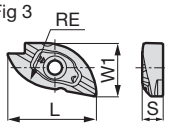
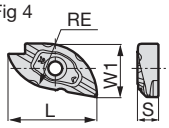


Fig 4



Grade		Coated Carbide				
Process	High-speed / Light	P			K	
	General-purpose		P M	P M	K	
	Roughing		P M	P M		K

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill	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 insert (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 insert (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 insert (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 insert (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 insert (Fig. 3) for 2500□L only.
4310250-N		●	●		●	43.00	25.70	10.15	25	5		
SPMT 120408						12.70	—	4.76	—	3		

Parts H173 | Recommended Cutting Conditions H173

WBMF Type

General Features

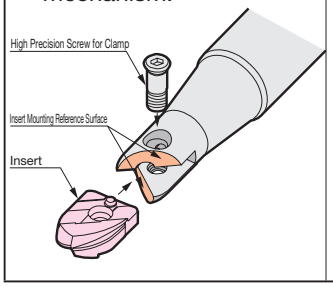
A lineup of ø10 to ø30mm ballnose endmill models for 3D profile finishing of die molds and machine parts.

3D Profile Finishing

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

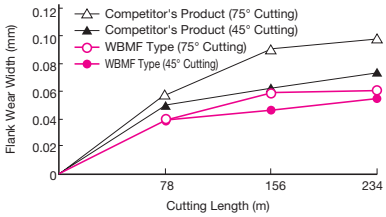
● WBMF Type clamp mechanism.



WBMF1000

Performance

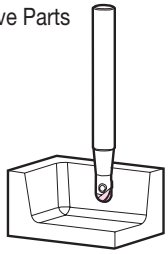
● Insert Life



Results
WBMF Type outperforms competitors' products in most processes including plan profiling, with better wear resistance.
Work Material: S50C
Machining Method: Ramping (45°, 75°)
Cutting Conditions
n = 2,000min^{-1}
v_f = 2,000mm/min
a_p = 0.3mm
p_f = 0.6mm
Dry

Application Examples

● Mold for Automotive Parts (Injection Mold)



Evaluation
Much better finishing as compared to competitors' products, with polishing time required reduced by half.
WBMF1000 Type
Work Material: S55C
Process: Contouring
Cutting Conditions
n = 2,500min^{-1}
v_f = 800mm/min
a_p = 0.7mm
Overhang = 150 mm
Wet

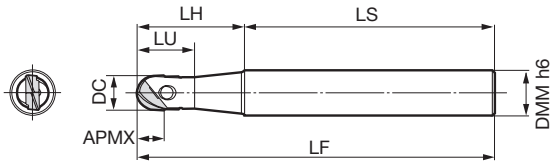
WBMF 1000 Type

P Steel

Rake Angle	Radial	—
	Axial	0°

0.1 to 0.4 mm

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Length LU	Overall Length LF	Fig
WBMF 1100S	●	**10**	16	9	30	70	17	100	1
1100M	●	**10**	16	9	35	95	17	130	1
1100L	●	**10**	16	9	50	130	17	180	1
1120S	●	**12**	16	10.5	40	70	19.5	110	1
1120M	●	**12**	16	10.5	40	110	19.5	150	1
1120L	●	**12**	16	10.5	60	140	19.5	200	1
1160S	●	**16**	20	12	50	80	25.5	130	1
1160M	●	**16**	20	12	50	130	25.5	180	1
1160L	●	**16**	20	12	70	150	25.5	220	1
1200S	●	**20**	25	15	60	80	32	140	1
1200M	●	**20**	25	15	60	140	32	200	1
1200L	●	**20**	25	15	80	170	32	250	1
1250S	●	**25**	32	18.5	70	80	36	150	1
1250M	●	**25**	32	18.5	73	147	36	220	1
1250L	●	**25**	32	18.5	100	200	36	300	1
1300S	●	**30**	32	22.5	80	80	43	160	1
1300M	●	**30**	32	22.5	85	155	43	240	1
1300L	●	**30**	32	22.5	120	230	43	350	1

Inserts are sold separately.

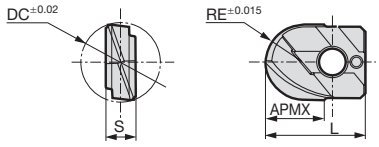
Insert

Dimensions (mm)

Grade		Coated Carbide
Process	High-speed / Light	P
	General-purpose	
	Roughing	

Cat. No.	ACZ120	Dia. DC	Length L	Maximum Depth of Cut APMX	Thickness S	Nose Radius RE	Applicable Endmill	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 Endmill	Precision Screw		Wrench
WBMF1100	BFTG0408F	N·m 3.0	TRD15
WBMF1120	BFTG0409F		
WBMF1160	BFTG0513F	N·m 5.0	TRD20
WBMF1200	BFTG0617F	N·m 7.5	TRD25
WBMF1250	BFTG0621F		
WBMF1300	BFTG0825F		

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	200-**250**-300	0.10-**0.20**-0.30	ACZ120
	Alloy Steel	180 to 280 HB	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.

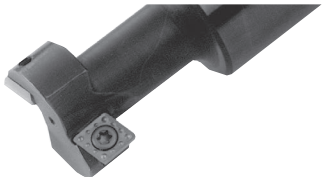
TSE Type

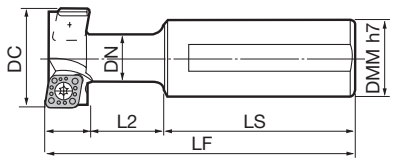
P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	0°
	Axial	0°

9 to 22mm 90°

Fig 1





Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Diameter DN	Shank DMM	Width CW	Length L2	Shank LS	Overall Length LF	Number of Teeth	Fig
TSE 2125	●	**21**	10.5	25	9	20	80	109	2	1
2525	●	**25**	12.5	25	11	21	80	112	2	1
3232	●	**32**	16.5	32	14	26	80	120	2	1
4032	●	**40**	20.5	32	18	32	80	130	2	1
5032	●	**50**	26.5	32	22	38	80	140	4	1

Inserts are sold separately.

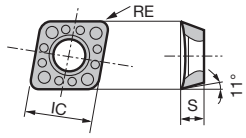
Insert

Dimensions (mm)

Grade		Coated Carbide	Carbide	
Process	High-speed / Light			
	General-purpose	P M	P K	K
	Roughing			

Cat. No.	AC630M	A30	G10E	Inscribed Circle IC	Thickness S	Nose Radius RE	Applicable Endmill	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

Flat Screw		Wrench	Applicable Endmill
BFTX02506N	N·m 1.5	TRX08	TSE2125
BFTX0307N	N·m 2.0	TRX10	TSE2525
BFTX0407N	N·m 3.0	TRX15	TSE3232
BFN0511T	N·m 5.0	TRX20	TSE4032 TSE5032

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**125**-150	0.05-**0.08**-0.10	AC630M
	Alloy Steel	180 to 280 HB	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)

TSM Type

P Steel K Cast Iron

Rake Angle	Radial	-12°
	Axial	-2°

4 to 8mm 88°30'

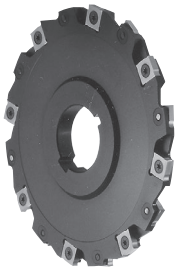
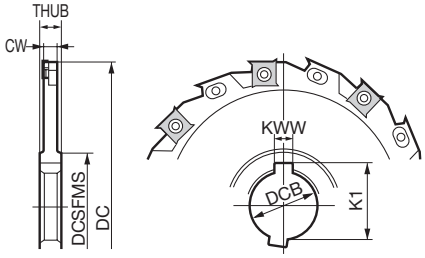


Fig 1



Body

Dimensions (mm)

Cat. No.	Dia. DC	Boss DCSFMS	Width CW	Thickness THUB	Bore Dia. DCB	Keyway Width KWW	Key Groove K1	Number of Teeth	Weight (kg)	Fig
TSM 1004	100	48	4	8	**31.75**	7.92	35.2	10	0.15	1
1005	100	48	5	8	**31.75**	7.92	35.2	10	0.20	1
1006	100	48	6	8	**31.75**	7.92	35.2	10	0.30	1
1254	125	58	4	8	**31.75**	7.92	35.2	12	0.35	1
1255	125	58	5	8	**31.75**	7.92	35.2	12	0.40	1
1256	125	58	6	8	**31.75**	7.92	35.2	12	0.45	1
1258	125	58	8	10	**31.75**	7.92	35.2	12	0.60	1
1604	160	58	4	8	**38.10**	9.52	42.3	16	0.50	1
1605	160	58	5	8	**38.10**	9.52	42.3	16	0.60	1
1606	160	58	6	8	**38.10**	9.52	42.3	16	0.70	1
1608	160	58	8	10	**38.10**	9.52	42.3	16	0.95	1

Inserts are sold separately.
All of the above items are made-to-order.

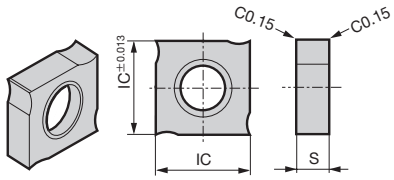
Insert

Dimensions (mm)

Grade		Carbide
Process	High-speed / Light	
	General-purpose	P K
	Roughing	

Cat. No.	A30	Inscribed Circle IC	Thickness S	Applicable Cutter	Fig
SNHG 121		12.7	2.2	TSM 1004 / TSM 1254 / TSM 1604	1
122		12.7	2.7	TSM 1005 / TSM 1255 / TSM 1605	1
123		12.7	3.2	TSM 1006 / TSM 1256 / TSM 1606	1
124		12.7	4.3	TSM 1258 / TSM 1608	1

Fig 1



Parts

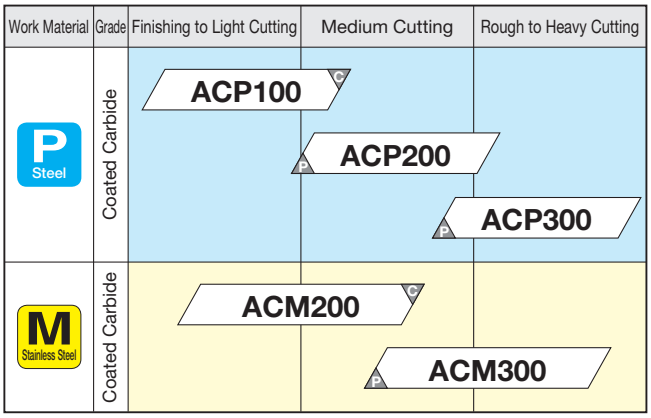
Applicable Cutter	Screw Hole Piece	Flat Screw		Wrench
TSM1004 TSM1254 TSM1604	TP43	BFNX0303	N·m 2.0	TRX10
TSM1005 TSM1255 TSM1605	TP53	BFNX0304	N·m 2.0	TRX10
TSM1006 TSM1256 TSM1606	TP64	BFNX0405	N·m 3.5	TRD20
TSM1258 TSM1608	TP84	BFNX0407	N·m 3.5	TRD20

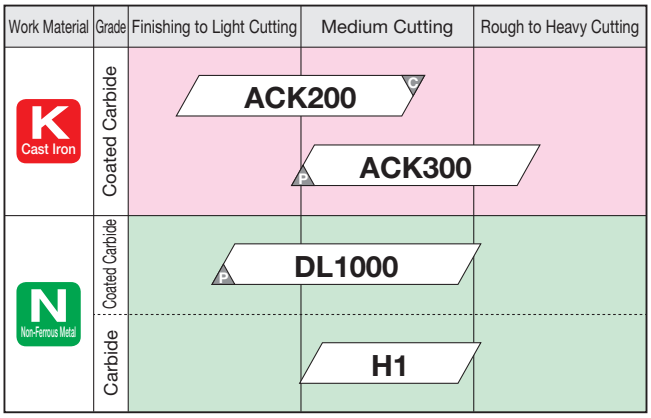
WFXC Type

General Features

The SEC-WaveMill WFXC Type is a chamfering tool that uses a WFX series insert. A wide variety of grades support various work materials.

Grade Application Range





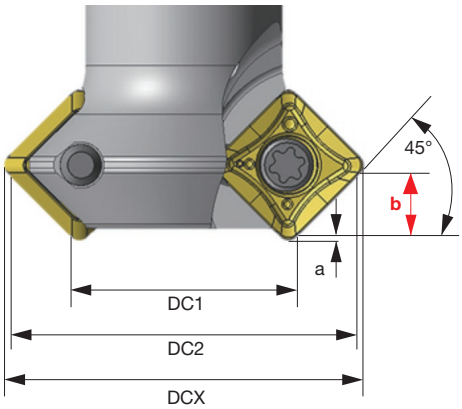
The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD, P: PVD, Blank: Uncoated

Precautions for Use

Chamfering tools use a straight cutting edge that enables the chamfering range to be changed depending on the nose radius (RE) of the insert mounted to the body.
Work 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		Min. Machining Dia.	Min. Machining Dia.	Minimum Depth	Maximum Depth	Maximum Dia.
	Cat. No.	RE	DC1	DC2	a	b	DCX
WFXC08008E	SOMT080304	0.4	7.5	15.8	0.1	**4.1**	17.8
	SOMT080308	0.8	8.0	15.8	0.2	**3.9**	17.5
	SOMT080312	1.2	8.5	15.8	0.4	**3.6**	17.2
WFXC08016E	SOMT080304	0.4	15.5	23.8	0.1	**4.1**	25.8
	SOMT080308	0.8	16.0	23.8	0.2	**3.9**	25.5
	SOMT080312	1.2	16.5	23.8	0.3	**3.6**	25.2
WFXC12025E	SOMT120404	0.4	24.6	38.3	0.1	**6.8**	41.3
	SOMT120408	0.8	25.0	38.3	0.2	**6.6**	41.0
	SOMT120412	1.2	25.6	38.3	0.4	**6.3**	40.7
	SOMT120416	1.6	26.1	38.3	0.5	**6.1**	40.4
WFXC12032E	SOMT120404	0.4	31.6	45.3	0.1	**6.8**	48.3
	SOMT120408	0.8	32.0	45.3	0.2	**6.6**	48.0
	SOMT120412	1.2	32.6	45.3	0.4	**6.3**	47.7
	SOMT120416	1.6	33.1	45.3	0.5	**6.1**	47.4



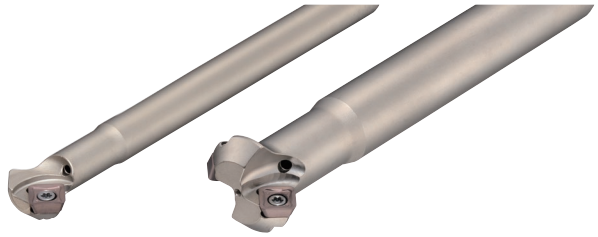
WFXC 08000E Type

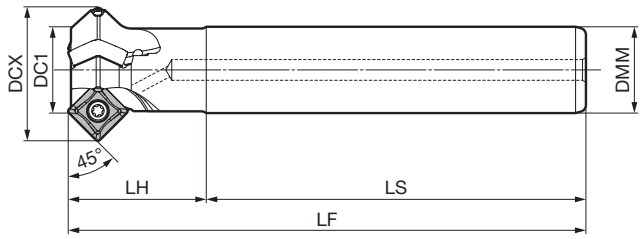
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	0°
	Axial	0°

45°

Fig 1





Body (Standard Type) Applicable Insert 8mm Type

Dimensions (mm)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Overall Length LF	Head LH	Shank LS	Shank DMM	Number of Teeth	Weight (kg)	Fig
WFXC08008E	●	8	17.5	120	30	90	10	1	0.1	1
WFXC08016E	●	16	25.5	120	30	90	16	2	0.2	1

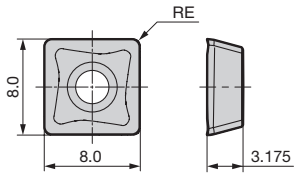
DC1 and DCX dimensions are values with an insert with 0.8 nose radius mounted.

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose 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 H180

Parts

Applicable Cutter	Flat Screw		Wrench
		N·m	
WFXC08000M	BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seizure Cream is included in the package.

Identification Code

WFX C 08 016 E

Cutter Series | Chamfering | Insert Size | Dia. | Endmill Type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.
P	General Steel	180 to 280 HB	150-**200**-250	0.05-**0.10**-0.15
	Mild Steel	≤ 180HB	180-**265**-350	0.10-**0.15**-0.20
	Die Steel	200 to 220 HB	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

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.

WFXC 12000E Type

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

Rake Angle		
	Radial	0°
	Axial	0°

45°

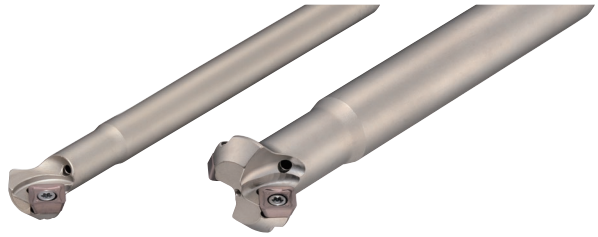
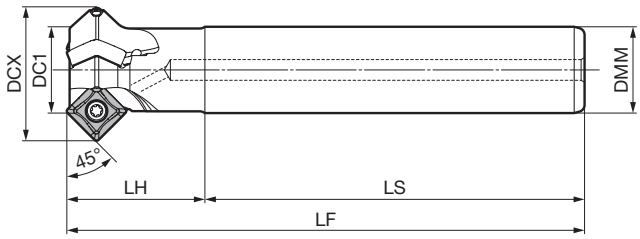


Fig 1



Body (Standard Type) Applicable Insert 12mm Type

Dimensions (mm)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Overall Length LF	Head LH	Shank LS	Shank DMM	Number of Teeth	Weight (kg)	Fig
WFXC12025E	●	25	41.0	150	40	110	25	3	0.6	1
12032E	●	32	48.0	150	40	110	32	3	1.0	1

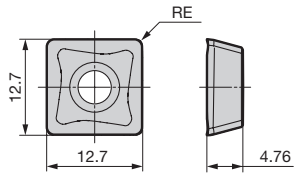
DC1 and DCX dimensions are values with an insert with 0.8 nose radius mounted.

Insert

Dimensions (mm)

Grade		Coated Carbide							Carbide	DLC	Cermet		
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N	P		
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	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 H180

Parts

Applicable Cutter	Flat Screw		Wrench
		N·m	
WFXC12000M	BFTX03512IP	3.0	TRDR15IP

SUMI-P Anti-seizure Cream is included in the package.

Identification Code

WFX C 12 025 E

Cutter Series | Chamfering | Insert Size | Dia. | Endmill Type

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.
P	General Steel	180 to 280 HB	150-**200**-250	0.05-**0.10**-0.15
	Mild Steel	≤ 180HB	180-**265**-350	0.10-**0.15**-0.20
	Die Steel	200 to 220 HB	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

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)

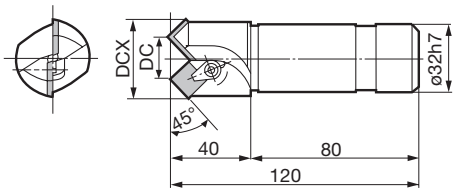
SMC Type

P Steel K Cast Iron

Rake Angle	Radial	0°
	Axial	0°

45°

Fig 1



(Figure shows SMC420)

Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Number of Teeth	Hole Chamfering Machining Range	Fig
SMC 407	●	**7**	24.3	1	ø11.0 to ø23.8	1
420	●	**20**	37.3	2	ø21.2 to ø36.8	1
435	●	**35**	52.3	2	ø36.2 to ø51.8	1

Inserts are sold separately.

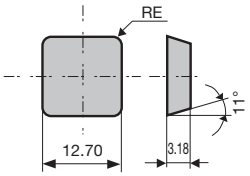
Insert

Dimensions (mm)

Grade		Coated Carbide		Carbide			Cermet	
Process	High-speed / Light	K					P	
	General-purpose	K		P	P K	K		P
	Roughing		K					
Cat. No.		ACK200	ACK300	ST20E	A30	G10E	T1500A	T250A
SPMN 422				●	●	●	●	●
423		●	●		●	●	●	
SPG 422				●	●	●	●	

Nose Radius RE	Fig
0.8	1
1.2	1
0.8	1

Fig 1

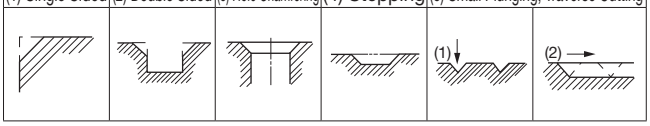


Parts

Clamp	Double Screw			Wrench
		Size	N·m	
CCM6BR	WB616	**M6**	**5.0**	LH030

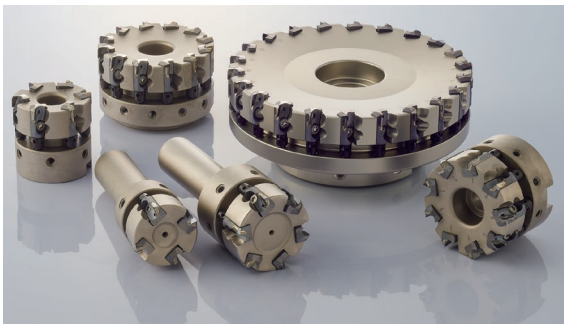
Applications

(1) Single Sided	(2) Double Sided	(3) Hole Chamfering	(4) Stepping	(5) Small Plunging, Traverse Cutting	



ALNEX ANX Type

New



Features

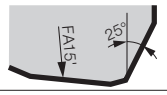
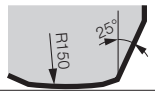
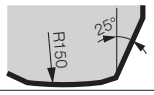
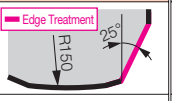
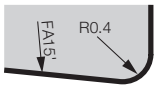
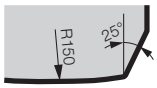
- **Drastically Reduced Runout Adjustment Time**
  Simple screw-fastening structure enables fine adjustments to be made easily
- **Through-Tool Coolant**
  Secures a supply of coolant to the cutting edge and breaks chips thoroughly
- **Lightweight Aluminum Alloy Body**
  Utilizing aluminum alloy to achieve a total weight of less than 1.3kg for a ø125mm cutter with 22 teeth.

Product Range

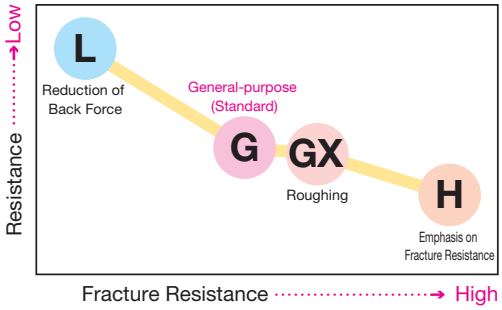
Type	Type	Body Material	Maximum Dia. in Stock (mm)							
			ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shells	ANXA 16000RS	Aluminum Alloy					10 14	12 18	14 22	20 28
Shells	ANXA 16000R Inch	Aluminum Alloy					10 14	12 18	14 22	20 28
Shells	ANXS 16000RS	Steel		6	6 9	8 12	10 14	12 18	14 22	
Shells	ANXS 16000R Inch	Steel				8 12	10 14	12 18	14 22	
With Shank	ANXS 16000E	Steel	4	6						

Number in ● is the number of teeth Inch Inch Bore

Blade Selection Guide

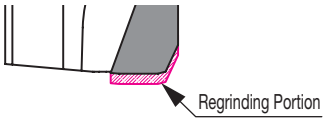
Work Material	N					
Type	L Type	G Type	GX Type	H Type	-	W Type
Cutting Edge Shape						
Features	Low Resistance	Standard	Long Edge	High Strength	Corner Radius Milling	Wiper
Applications	Finishing/Light Cutting	General-purpose	Roughing			
Edge Length (※)	6.0mm	6.0mm	9.0mm	6.0mm		

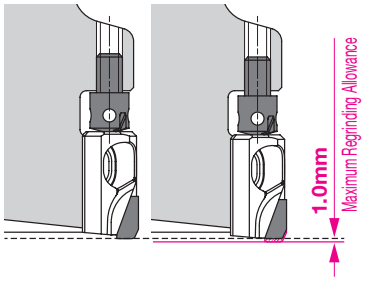
*Edge Length
GX Type only 9.0mm



● Reduces running costs by drastically increasing insert regrinding allowance (to 1.0mm).

Assuming 0.2mm of regrinding each time, an edge can be used up to 6 times.
(*Peripheral edge cannot be reground.)





Maximum Allowable Spindle Speed

(Aluminum alloy body)

Cat. No.	n max(min⁻¹)	Cat. No.	n max(min⁻¹)
ANXA 16080RS14	20,000	ANXA 16160R28	14,000
ANXA 16100RS18	18,000	ANXA 16080R10	20,000
ANXA 16125RS22	16,000	ANXA 16100R12	18,000
ANXA 16160RS28	14,000	ANXA 16125R14	16,000
ANXA 16080RS10	20,000	ANXA 16160R20	14,000
ANXA 16100RS12	18,000		
ANXA 16125RS14	16,000		
ANXA 16160RS20	14,000		
ANXA 16080R14	20,000		
ANXA 16100R18	18,000		
ANXA 16125R22	16,000		

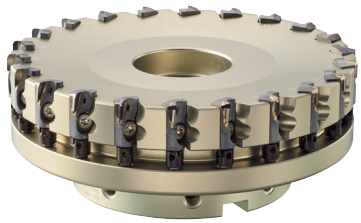
(Steel body)

Cat. No.	n max(min⁻¹)	Cat. No.	n max(min⁻¹)
ANXS 16040RS06	25,000	ANXS 16063R12	22,000
ANXS 16050RS09	25,000	ANXS 16080R14	20,000
ANXS 16063RS12	22,000	ANXS 16100R18	18,000
ANXS 16080RS14	20,000	ANXS 16125R22	16,000
ANXS 16100RS18	18,000	ANXS 16063R08	22,000
ANXS 16125RS22	16,000	ANXS 16080R10	20,000
ANXS 16050RS06	25,000	ANXS 16100R12	18,000
ANXS 16063RS08	22,000	ANXS 16125R14	16,000
ANXS 16080RS10	20,000	ANXS 16032E04	10,000
ANXS 16100RS12	18,000	ANXS 16040E06	10,000
ANXS 16125RS14	16,000		

ALNEX ANX Type

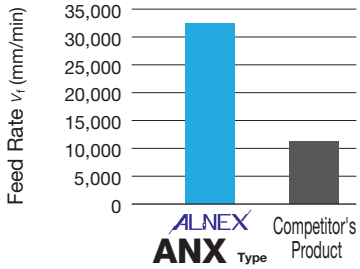
High-speed/High-efficiency Cutting

Realizes ultra-high efficiency machining with v_f = 30,000mm/min



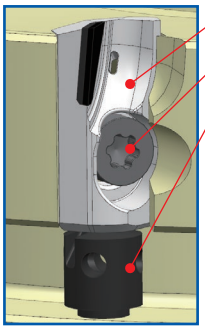
Cutter diameter ø100mm comparison

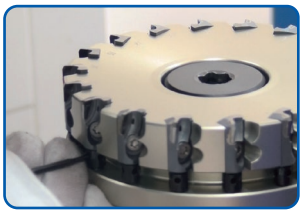
	Spindle Speed min^{-1}	Number of Teeth	Feed Rate v_f(mm/min)
ALNEX ANX Type	18,000	18	32,400
Competitor's Product	9,500	12	11,400

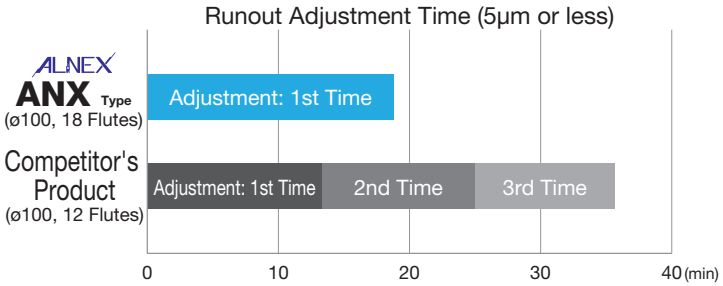


Drastically Reduced Runout Adjustment Time

● Simple screw-fastening structure ● Enables fine adjustments to be made easily ● High-rigidity body



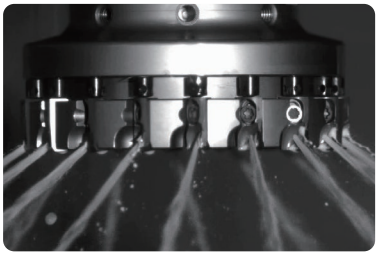




1st Time Completed, Adjustment Time Reduced

Chip Control

Through-Tool Coolant Chip Breaking



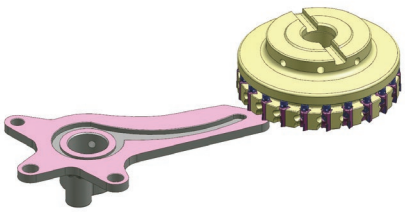
ALNEX ANX Type

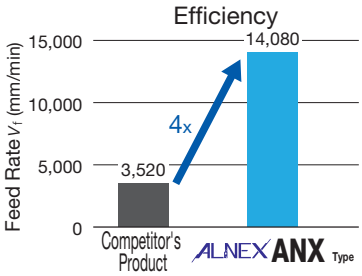
Competitor's Product

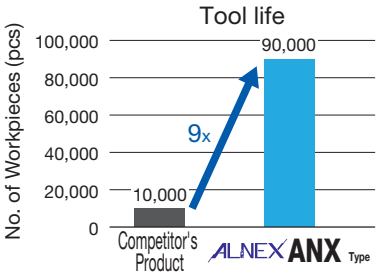
Work Material: ADC12, Cutting Conditions: v_c = 2,500m/min, f_z = 0.05mm/t, a_p = 0.5mm Wet

Application Examples

Achieves 4 times the efficiency and 9 times the tool life

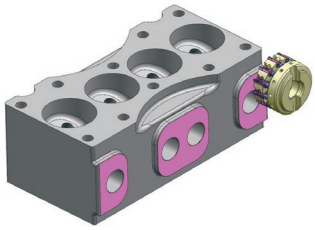


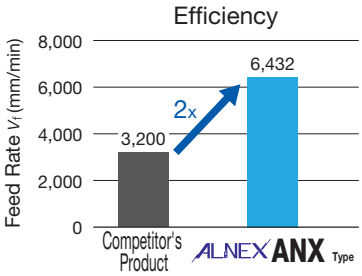


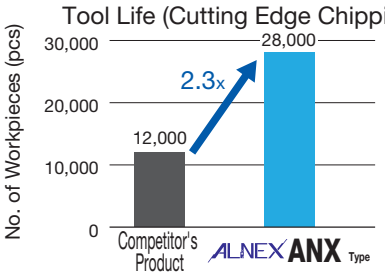


Machine: Vertical Machining Centre BT30 Work Material: ADC12 Automotive Component Tool: ANXA 16125R22 (ø125, 22-flute, aluminum alloy body *Total weight with arbor 1.75kg)
Blade: ANB 1600R-G (DA1000) Cutting Conditions: v_c = 3,142m/min, v_f = 14,080mm/min, a_p = 0.8mm Wet

Achieves 2 times the efficiency and 2.3 times the tool life







Machine: Vertical Machining Centre HSK63 Work Material: ADC12 Cylinder Head Tool: ANXS 16063RS12 (ø63, 12-flute, steel body)
Blade: ANB 1600R-G (DA1000) Cutting Conditions: v_c = 1,583m/min, v_f = 6,432mm/min, a_p = 0.5mm Wet

ANXS 16000R(S) Type

New

Rake Angle		
	Radial	5°
	Axial	5°

3mm 90°

Fig 1

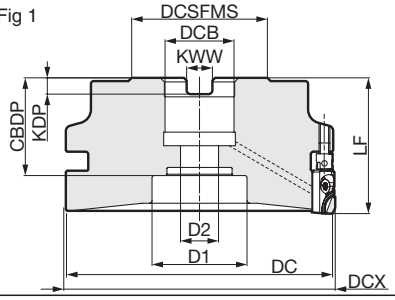
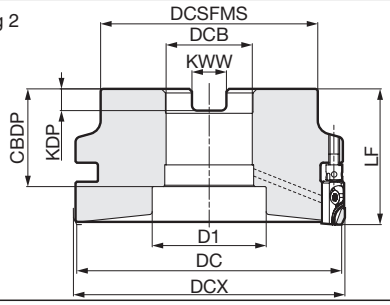


Fig 2



Body (Steel)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss Dia. DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16040RS06**	●	**38**	40	38.5	40	**16**	8.4	5.6	26	14	9	6	0.3	1
	16050RS06	●	**48**	50	48.5	40	**22**	10.4	6.3	26	18	11	6	0.4	1
	16050RS09	●	**48**	50	48.5	40	**22**	10.4	6.3	26	18	11	9	0.5	1
	16063RS08	●	**61**	63	50	40	**22**	10.4	6.3	26	18	11	8	0.7	1
	16063RS12	●	**61**	63	50	40	**22**	10.4	6.3	26	18	11	12	0.7	1
	16080RS10	●	**78**	80	50	50	**27**	12.4	7	34	35	14	10	1.2	1
	16080RS14	●	**78**	80	50	50	**27**	12.4	7	34	35	14	14	1.2	1
	16100RS12	●	**98**	100	80	50	**32**	14.4	8	32	46	—	12	2.0	2
	16100RS18	●	**98**	100	80	50	**32**	14.4	8	32	46	—	18	2.0	2
	16125RS14	●	**123**	125	80	63	**40**	16.4	9	35	52	—	14	3.9	2
	16125RS22	●	**123**	125	80	63	**40**	16.4	9	35	52	—	22	3.9	2
Inch	**ANXS 16063R08**	●	**61**	63	50	50	**25.4**	9.5	6	31	20	14	8	0.9	1
	16063R12	●	**61**	63	50	50	**25.4**	9.5	6	31	20	14	12	0.9	1
	16080R10	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	10	1.2	1
	16080R14	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	14	1.2	1
	16100R12	●	**98**	100	80	50	**31.75**	12.7	8	36	42	—	12	2.0	2
	16100R18	●	**98**	100	80	50	**31.75**	12.7	8	36	42	—	18	2.0	2
	16125R14	●	**123**	125	80	63	**38.1**	15.9	10	42.5	52	—	14	3.9	2
	16125R22	●	**123**	125	80	63	**38.1**	15.9	10	42.5	52	—	22	3.9	2

Blades are sold separately.
If using a blade for corner radius machining (ANB1604R), DC = DCX.

Identification Code

ANX	S	16	100	R	S	18
Cutter Series	Body Material Steel	Blade Size	Cutter Dia.	Feed Direction	Metric Bore	Number of Teeth

Parts

(Sold Separately)

Applicable Cutters	Clamp Screw	Adjustment Screw	Wrench	Adjustment Wrench	Centre Bolt	Assembly Wrench
ANXS 16040RS06	BXA0310IP	HFJ	TRXW10IP	ANT	BXH0825-D13	HFVT
ANXS 16050RS○○					BXH1030-D16	
ANXS 16063RS○○						
ANXS 16080RS○○					BXH1235-D33	
ANXS 16100RS○○					BXH1635-D40	
ANXS 16125RS○○					BXH2036-D50	
ANXS 16063R○○					BXH1235-D18	
ANXS 16080R○○					BXH1235-D33	
ANXS 16100R○○					BXH1635-D40	
ANXS 16125R○○					BXH2036-D50	

● mark: Standard stocked item (new product/expanded item)

ANXS 16000R(S) Type

N Non-Ferrous Metal N Aluminum Alloy

New

Blade

Dimensions (mm)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	●	6.0	Linear	Low Resistance	1
1600R-G	●	6.0	Arc-Shaped	General-purpose	1
1600R-H	●	6.0	Arc-Shaped	Strong Edge	1
1600R-GX	●	9.0	Arc-Shaped	Long Edge	2
1604R	●	6.0	Linear	Corner Radius	3
1600R-W	●	—	Arc-Shaped	Wiper	4

Fig 1

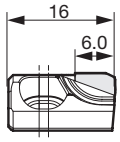


Fig 2

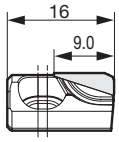


Fig 3

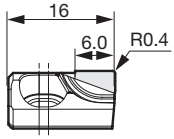
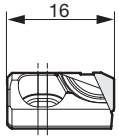


Fig 4



Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (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.

● mark: Standard stocked item (new product/expanded item)

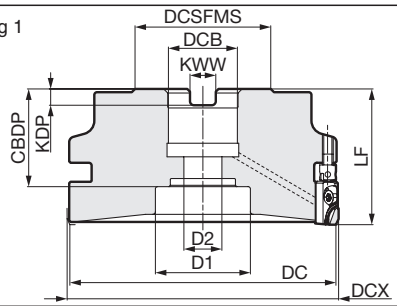
ANXA 16000R(S) Type

New

Rake Angle		
	Radial	5°
	Axial	5°

3mm 90°

Fig 1



Body (Aluminum Alloy)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss Dia. DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXA 16080RS10**	●	**78**	80	50	50	**27**	12.4	7	34	35	14	10	0.5	1
	16080RS14	●	**78**	80	50	50	**27**	12.4	7	34	35	14	14	0.5	1
	16100RS12	●	**98**	100	50	50	**27**	12.4	7	34	35	14	12	0.8	1
	16100RS18	●	**98**	100	50	50	**27**	12.4	7	34	35	14	18	0.9	1
	16125RS14	●	**123**	125	50	50	**27**	12.4	7	34	35	14	14	1.2	1
	16125RS22	●	**123**	125	50	50	**27**	12.4	7	34	35	14	22	1.3	1
	16160RS20	●	**158**	160	80	63	**40**	16.4	9	35	52	29	20	2.6	1
	16160RS28	●	**158**	160	80	63	**40**	16.4	9	35	52	29	28	2.6	1
Inch	**ANXA 16080R10**	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	10	0.5	1
	16080R14	●	**78**	80	50	50	**25.4**	9.5	6	34	35	14	14	0.5	1
	16100R12	●	**98**	100	50	50	**25.4**	9.5	6	34	35	14	12	0.9	1
	16100R18	●	**98**	100	50	50	**25.4**	9.5	6	34	35	14	18	0.9	1
	16125R14	●	**123**	125	50	50	**25.4**	9.5	6	34	35	14	14	1.2	1
	16125R22	●	**123**	125	50	50	**25.4**	9.5	6	34	35	14	22	1.3	1
	16160R20	●	**158**	160	80	63	**38.1**	15.9	10	42.5	55	30	20	2.4	1
	16160R28	●	**158**	160	80	63	**38.1**	15.9	10	42.5	55	30	28	2.6	1

Blades are sold separately.
If using a blade for corner radius machining (ANB1604R), DC = DCX.

Identification Code

ANX	A	16	100	R	S	18
Cutter Series	Body Material Aluminum Alloy	Blade Size	Cutter Dia.	Feed Direction	Metric Bore	Number of Teeth

Parts

(Sold Separately)

Applicable Cutters	Clamp Screw	Adjustment Screw	Wrench	Adjustment Wrench	Centre Bolt	Assembly Wrench
ANXA 16080RS○○	BXA0310IP	HFJ	TRXW10IP	ANT	BXH1235-D33	HFVT
ANXA 16100RS○○						
ANXA 16125RS○○						
ANXA 16160RS○○					BXH2036-D50	
ANXA 16080R○○					BXH1235-D33	
ANXA 16100R○○						
ANXA 16125R○○						
ANXA 16160R○○					BXH2036-D50	

● mark: Standard stocked item (new product/expanded item)

ANXA 16000R(S) Type

N Non-Ferrous Metal N Aluminum Alloy

New

Blade

Dimensions (mm)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	●	6.0	Linear	Low Resistance	1
1600R-G	●	6.0	Arc-Shaped	General-purpose	1
1600R-H	●	6.0	Arc-Shaped	Strong Edge	1
1600R-GX	●	9.0	Arc-Shaped	Long Edge	2
1604R	●	6.0	Linear	Corner Radius	3
1600R-W	●	—	Arc-Shaped	Wiper	4

Fig 1

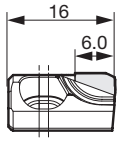


Fig 2

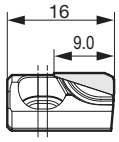


Fig 3

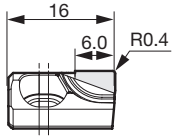
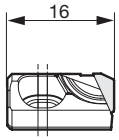


Fig 4



Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (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.

● mark: Standard stocked item (new product/expanded item)

ANXS 16000E Type

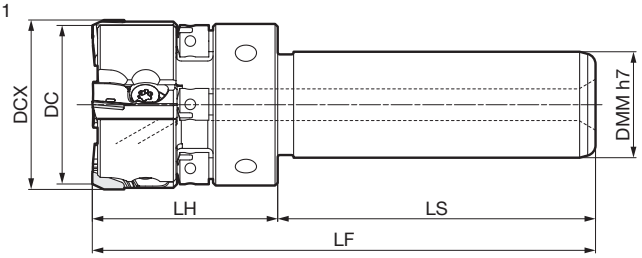
N Non-Ferrous Metal | N Aluminum Alloy

New

Rake Angle		
	Radial	-2° to 0°
	Axial	5°

3mm 90°

Fig 1



Body (Steel)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Maximum Dia. DCX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16032E04**	●	**30**	32	20	35	60	95	4	0.3	1
	16040E06	●	**38**	40	20	40	60	100	6	0.5	1

Blades are sold separately.
If using a blade for corner radius machining (ANB1604R), DC = DCX.

Identification Code

ANX S 16 032 E 04

ANX	S	16	032	E	04
Cutter Series	Body Material Steel	Blade Size	Cutter Dia.	With Shank	Number of Teeth

Parts

(Sold Separately)

Applicable Cutters	Clamp Screw	Adjustment Screw	Wrench	Adjustment Wrench	Assembly Wrench
					
ANXS 16032E04 ANXS 16040E06	BXA0310IP	HFJ	TRXW10IP	ANT	HFVT

Blade

Dimensions (mm)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	●	6.0	Linear	Low Resistance	1
1600R-G	●	6.0	Arc-Shaped	General-purpose	1
1600R-H	●	6.0	Arc-Shaped	Strong Edge	1
1600R-GX	●	9.0	Arc-Shaped	Long Edge	2
1604R	●	6.0	Linear	Corner Radius	3
1600R-W	●	—	Arc-Shaped	Wiper	4

Fig 1

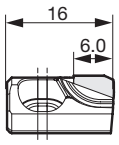


Fig 2

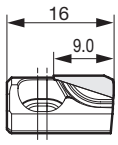


Fig 3

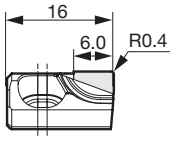
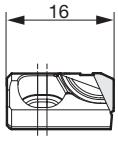


Fig 4



Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (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.

● mark: Standard stocked item (new product/expanded item)

MEMO

HF Type

General Features

The HF Type high-efficiency aluminum alloy cutter employs a unique blade design to achieve machining without burrs.
New HFFH Type with coolant holes is now available as a BBT30 (BIG-PLUS™) arbour integrated version.

Work Material

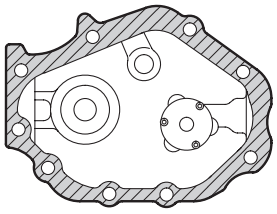
- Aluminum and aluminum alloys
- Other non-ferrous metals

(Not suited for cast iron or steel.)

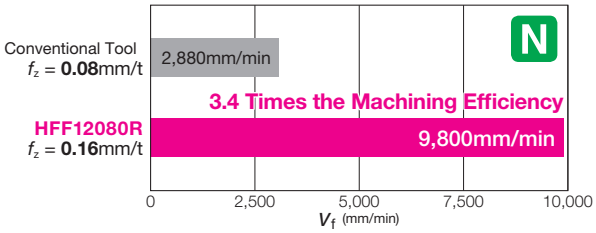
Features

● Achieves high-efficiency milling with v_f of over 20,000mm/min thanks to its multi-blade design (3 edges per inch)

High-feed, High-efficiency Milling by Multi-edge Design

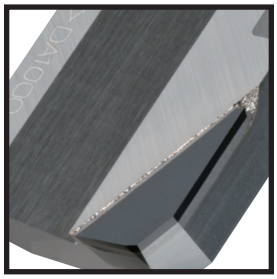


Workpiece: Aluminum Case (Frame Milling)
Tool: **HFF12080R-25.4** (ø80 10-flute),
Conventional Tool (ø80 6-flute)



■ Maximum Allowable Spindle Speed and Feed Rate

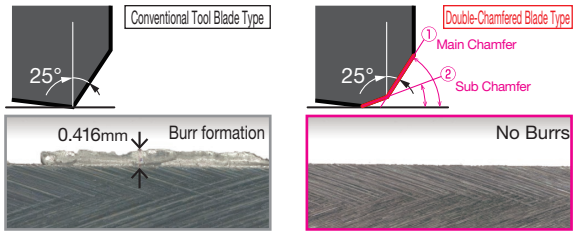
Cutter Dia. (mm)	$n$max (min⁻¹)	v_c (m/min)	f_z (mm/t)	Maximum Number of Teeth	v_f (mm/min)
ø80	11,000	2,763	up to 0.2	10	up to 22,000
ø100	9,500	2,983	up to 0.2	12	up to 22,800
ø125	7,500	2,944	up to 0.2	15	up to 22,500

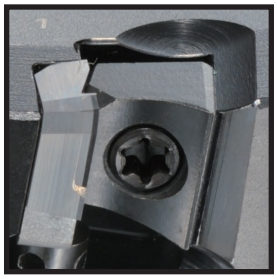


● Reduces burrs by using a double-chamfered blade type

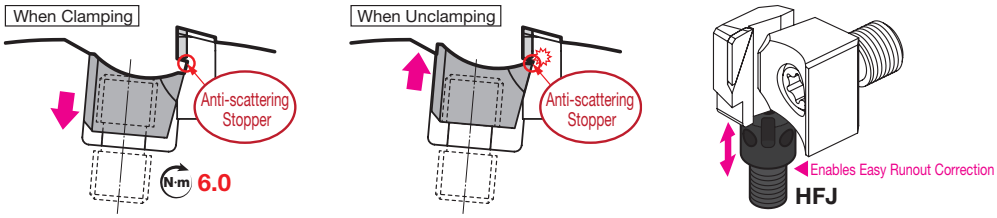
Drastically reduces burrs by preventing the plastic deformation that causes burrs.

Work Material: **A6061** Sheet Metal
Cutting Conditions: v_c = **3,142**m/min,
f_z = **0.10**mm/t, a_p = **0.5**mm, Dry

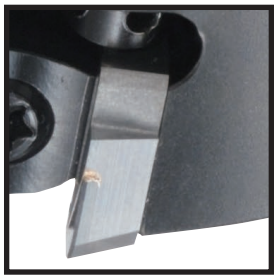




● Wedge clamp with anti-scattering mechanism ensures safety and operability



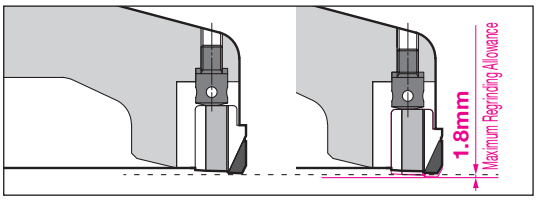
Ensure that the maximum allowable spindle speed (n max) specified for each cutter diameter is not exceeded. (See the table at upper right)



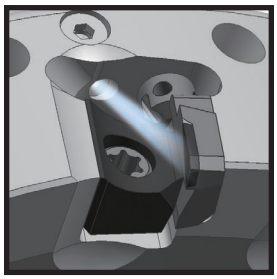
● Reduces running costs by drastically increasing blade regrinding allowance (to 1.8mm)

Assuming 0.2mm of regrinding each time, an edge can be used up to 10 times.

(Given conditions of normal wear with a_p = **1.4**mm or less)



The regrinding amount has been drastically increased compared to conventional screw-lock types



● Internal coolant improves chip evacuation performance (HFFH Type, HFFH-BBT30 Type)

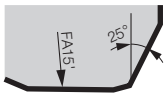
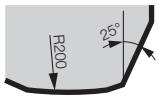
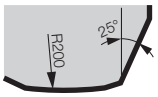
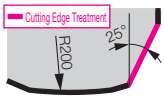
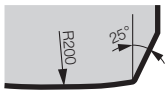
The internal coolant effectively prevents chips from becoming clogged or biting into the work material and achieves longer tool life. (Use an internal coolant compatible arbor)

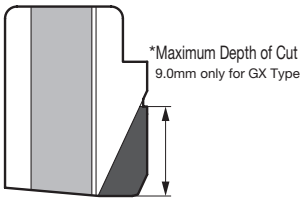
*1 BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
*2 Can also be used with BT30 spindle machines.

N·m Recommended Tightening Torque (N·m)

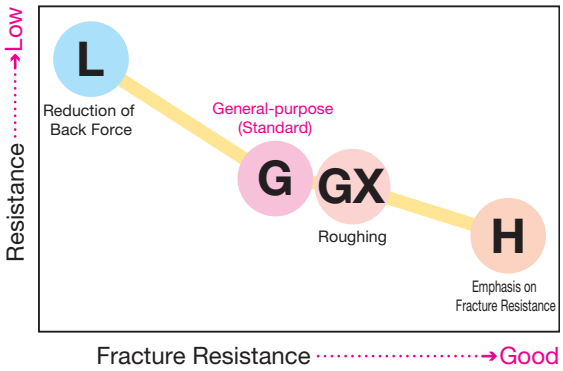
HF Type

Chipbreaker Selection

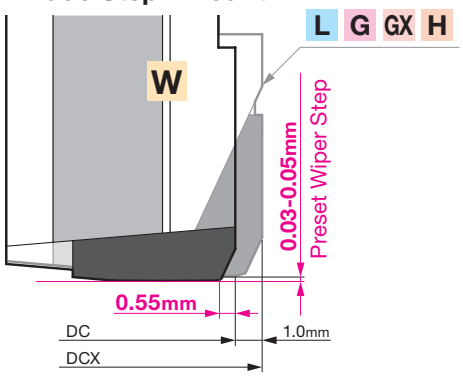
Work Material	N				
Type	L Type	G Type	GX Type	H Type	W Type
Cutting Edge Shape					
Features	Low Resistance	Standard	Long Edge	High Strength	Wiper
Applications	Reduction of Back Force	General-purpose	Roughing	Emphasis on Fracture Resistance	
Edge Length (*)	6.0mm	6.0mm	9.0mm	6.0mm	



Chipbreaker Selection Guide

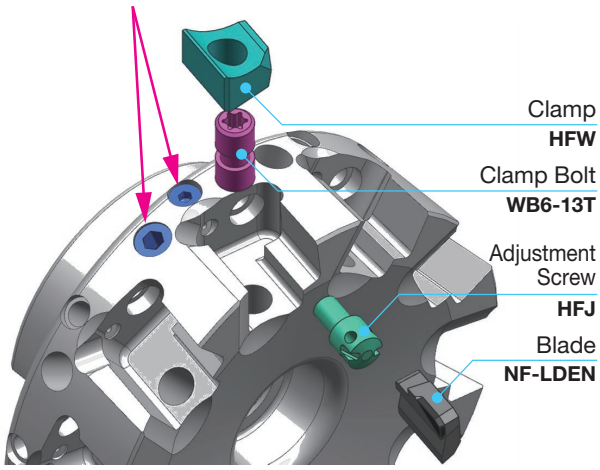


Wiper Blade Step Amount



Structure of HF Type

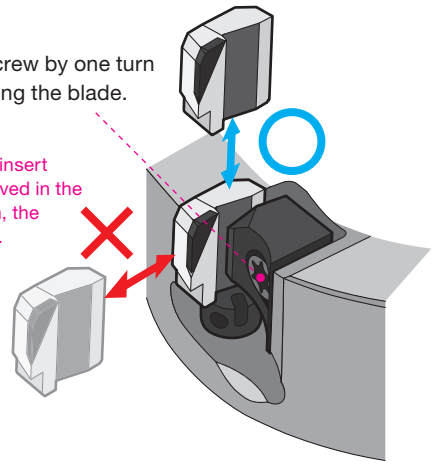
The axial set screw and balance adjustment screw hole have an embedded special part that prevents the insertion of screwdrivers or hex wrenches.



Blade Mounting Direction

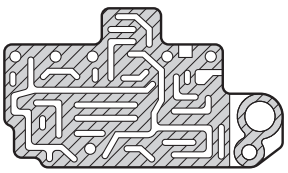
Loosen the screw by one turn before removing the blade.

⚠ Note that if the insert is forcibly removed in the wrong direction, the part may break.

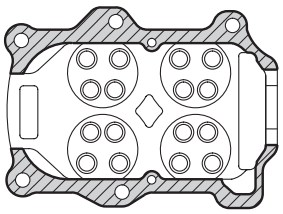


Application Examples

● Workpiece: Automotive Component		Sumitomo
Work Material: Aluminum Alloy	Body	HFFH12100R-25.4
	Blade Cat. No.	NF-LDEN12T3ZDTR-H
	Grade	DA1000
	Number of Teeth	12
	v_c(m/min)	1,884
	n(min^{-1})	6,000
	v_f(mm/min)	3,600
	f_z(mm/t)	0.05
	a_p(mm)	0.2
	Coolant	Wet (Internal Coolant Supply)
	Results	Achieves 3,600 units, double the tool life of conventional external coolant supply types. Good machined surface



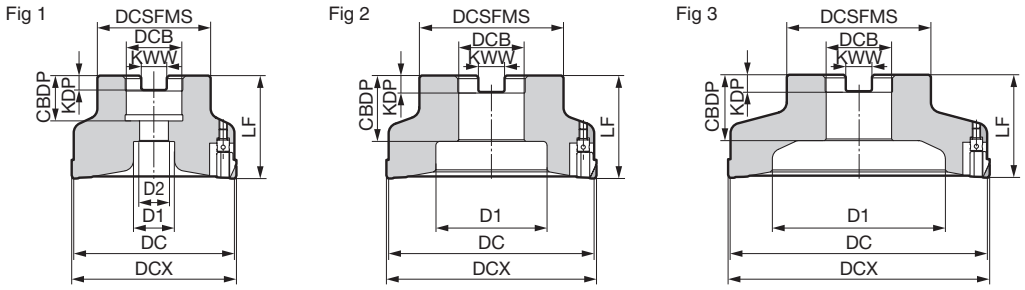
● Workpiece: Engine Component		Sumitomo
Work Material: Aluminum Alloy	Body	HFFH12125R-31.75
	Blade Cat. No.	NF-LDEN12T3ZDFR-G
	Grade	DA1000
	Number of Teeth	15
	v_c(m/min)	2,945
	n(min^{-1})	7,500
	v_f(mm/min)	6,750
	f_z(mm/t)	0.06
	a_p(mm)	2.0
	Coolant	Wet (Internal Coolant Supply)
	Results	In contrast to conventional external coolant supply types, the tool life has reached 1.7x greater at 17,000 units and creates finer chips



HFM 12000RS / R Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°



Body (Fine Pitch: 2-teeth / Inch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore 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

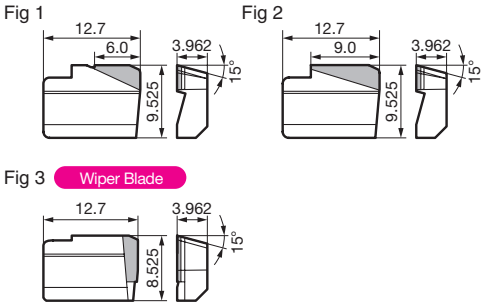
Blades are sold separately.

Blades

Dimensions (mm)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	●	6.0	Linear	Low Resistance	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	●	—	Arc-Shaped	Wiper	3



Parts

(Sold Separately)

Clamp	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

Cutter Series | Fine Pitch | Blade Size | Cutter Dia. | Feed Direction | Metric Bore | Bore Dia.

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

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°

Fig 1

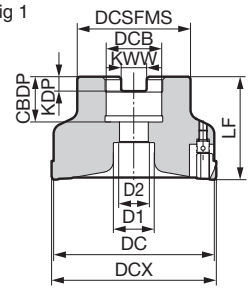


Fig 2

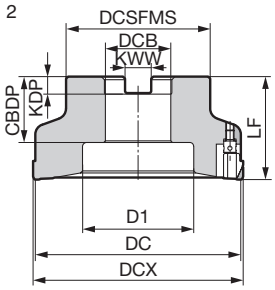
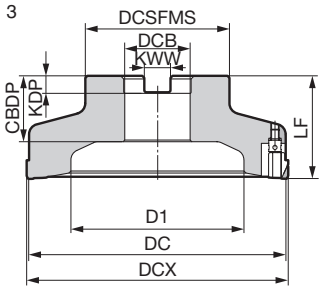


Fig 3



Body (Extra Fine Pitch: 3-teeth / Inch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore 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.

Blades

Dimensions (mm)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	●	6.0	Linear	Low Resistance	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	●	—	Arc-Shaped	Wiper	3

Fig 1

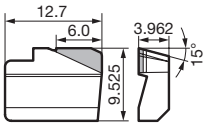


Fig 2

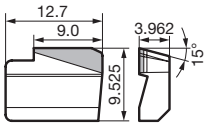
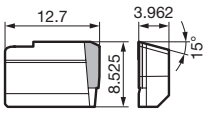


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp	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

HF	F	12	080	R	S	22
Cutter Series	Extra Fine Pitch	Blade Size	Cutter Dia.	Feed Direction	Metric Bore	Bore Dia.

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

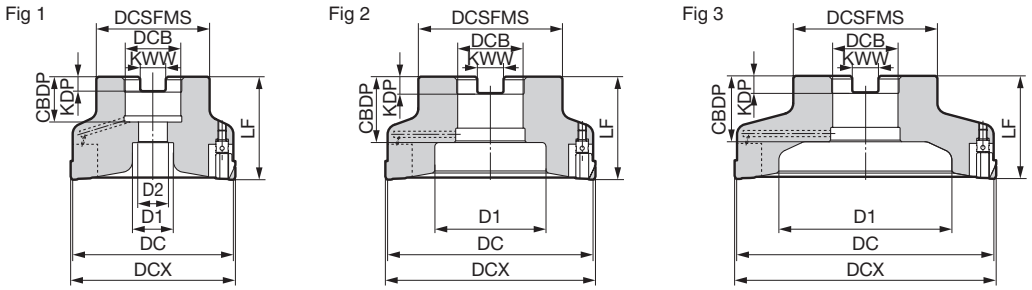
N	Aluminum Alloy	—	400- **600** -800	0.05- **0.13** -0.20	DA1000

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.

HFFH 12000RS / R Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°



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	Bore 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

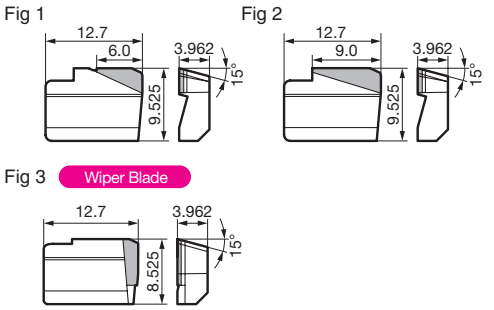
Blades are sold separately.

Blades

Dimensions (mm)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	●	6.0	Linear	Low Resistance	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	●	—	Arc-Shaped	Wiper	3



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
HFW	WB6-13T	6.0 (N·m)	HFJ	TTX20	RFT	HFVT

Identification Code

HF F H 12 080 R S - 22

Cutter Series	Extra Fine Pitch	With Oil Hole	Blade Size	Cutter Dia.	Feed Direction	Metric Bore	Bore Dia.

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

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)

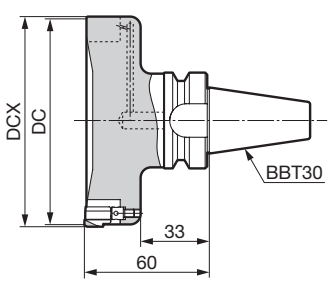
High-Efficiency Cutter for Aluminum Alloys

HFFH 12000R-BBT30 Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°

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	2.9	1

Blades are sold separately.

Blades

Dimensions (mm)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Edge Shape	Applications	Fig
NF-LDEN 12T3ZDFR-L	●	6.0	Linear	Low Resistance	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	●	—	Arc-Shaped	Wiper	3

Fig 1

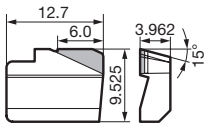


Fig 2

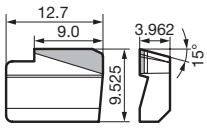
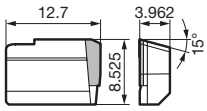


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code

HF F H 12 080 R - BBT30

Cutter Series	Extra Fine Pitch	With Oil Hole	Blade Size	Cutter Dia.	Feed Direction	Supported Arbour Symbol

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Blade Grade
N	Aluminum Alloy	—	2,000- **2,500** -3,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

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.

RF Type

General Features

The RF Type cutter for aluminum alloy has a lightweight body designed for high-speed, high-performance roughing to finish milling of aluminum alloy and other non-ferrous metals.

Work Material

- Aluminum and aluminum alloys
- Other Non-Ferrous Metals

(Not suited for cast iron or steel.)

Features

- **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

Application Examples

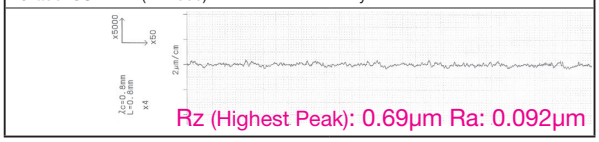
Workpiece (Work Material)	Tool Cutting Blade (Insert Grade)	Cutting Conditions v_c = Cutting Speed (m/min) v_f = Feed Rate (mm/min) a_p = Depth of Cut (mm)	Results
Case (ADC12)	RF4160R SUMIDIA Blade (DA2200)	v_c = 3,000 v_f = 5,730 a_p = 0.10	Finished Surface Roughness: Ra=0.2μm, Number of Workpieces: 30,000 pcs (30x tool life of carbide inserts)
Contact Surface of Transmission Case (ADC12)	RF4125R SUMIDIA Insert (DA1000)	v_c = 3,000 v_f = 7,640 a_p = 1.5	Finished Surface Roughness: Ra=0.3μm, Number of Workpieces: 20,000 units
Contact Surface of Cylinder Head (AC4C)	RF4250R Carbide Insert (H1)	v_c = 2,000 v_f = 7,535 a_p = 3.5	Rough Cutting Number of Workpieces: 10,000 units

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

Finished Surface Roughness

- Process: Finish Milling
- Machine: Vertical Machining Centre
- Arbour: HSK63A
- Work Material: Si 10 to 12% Al Alloy
- Cutter: RF4100R 6-Flute (1 Wiper)
- Grade: SUMIDIA (DA1000)
- v_c = 4,990m/min
- n = 15,900min-1
- v_f = 11,400mm/min
- f_z = 0.12mm/t
- a_p = 0.5mm, Wiper a_p = 0.03mm
- Dry



Rz (Highest Peak): 0.69μm Ra: 0.092μm

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	—	2,000-**3,500**-5,000	0.05-**0.13**-0.20	DA1000 DA2200
		—	1,000-**1,750**-2,500	0.05-**0.13**-0.20	H1

Si content of over 12.6%

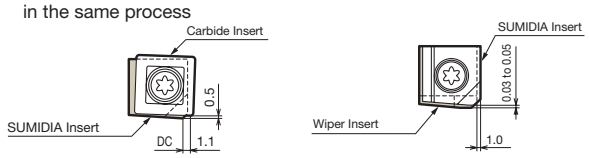
N	Aluminum Alloy	—	400- **600** -800	0.05-**0.13**-0.20	DA1000 DA2200
		—	200- **300** -400	0.05-**0.13**-0.20	H1

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.

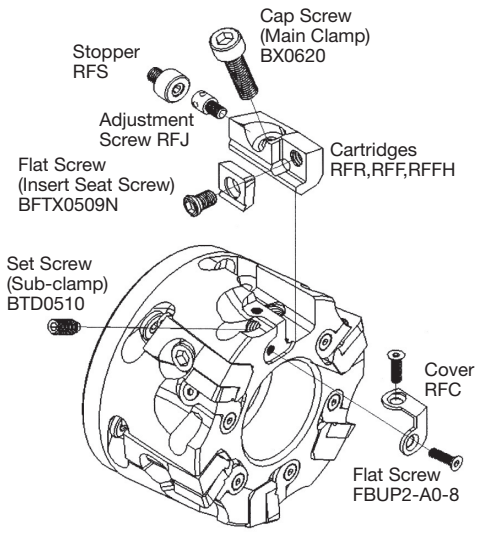
Recommended Cutting Edge Position

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



Structure of RF Type



⚠ 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.

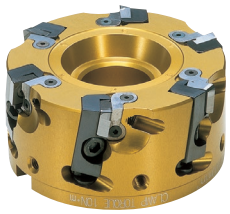
- Do not mix reground and new inserts or inserts with a different regrinding amount on the same cutter.
- Carbide and SUMIDIA inserts must be arranged alternately.
- Ensure proper balance by fixing the SUMIDIA inserts of the blades on opposite sides of the cutter.

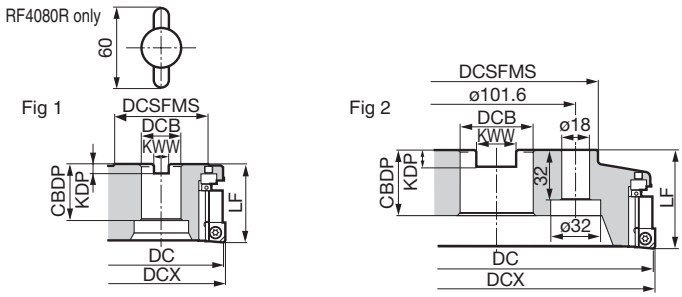
RF 4000R Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90° (SUMIDIA Insert)

10mm 87° (Carbide Insert)





Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Maximum Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**RF 4080R**	●	**80**	82	60	50	**25.40**	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	**38.10**	15.9	10	38	8	1.6	1
	4160R	●	**160**	162	100	63	**50.80**	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 collar bolt to mount the cutter to the arbor.

Insert / Cartridge

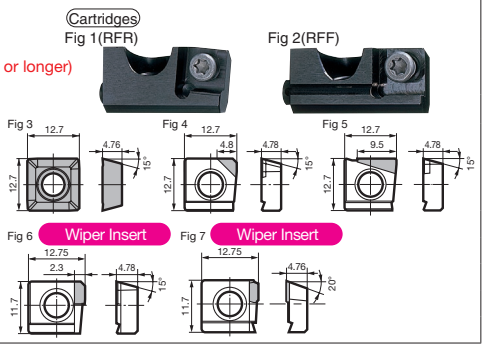
Dimensions (mm)

Grade		Carbide	DLC	SUMIDIA		SUMICRYSTAL
Process	High-speed / Light	N	N	N	N	N
	General-purpose	N	N	N	N	
	Roughing	N	N	N	N	

For SUMICRYSTAL details, refer to page M62

When using large depths of cut (a_p = 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



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 Screw	Adjustment Screw	Flat Screw		Wrench	Wrench
		Main Clamp		Sub-clamp		Cover Mounting		Insert Fastening			
RFC	RFS	BX0620	**10.0**	BTD0510	**3.0**	FBUP2 -A0-8	RFJ	BFTX0509N	**5.0**	TH050 TH025 RFT	TTX20

Blades / Dummy Blades

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

Cartridge design allows inserts to be attached outside the machine with high precision.

Setting Gauge
RF-SET
(Sold Separately / Standard Stock)

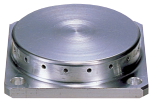
Clamp Jig
RF-JIG
(Sold Separately / Standard Stock)

Internal Coolant Attachments

Use an internal coolant holder or a standard clamp bolt with a coolant hole when using internal coolant.
Typical examples are given in the table below. For standards, contact each manufacturer directly.

Body Cat. No.	Internal Coolant Holder	Standard Clamp Bolt with Coolant Hole (Example) MST Corporation	Big Daishowa Seiki Co. Ltd.
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 Ejection



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 Type

General Features

The SRF Type small diameter aluminum alloy cutter is ideal for aluminum alloy machining on high-performance small machines.

Features

- Ideal for small machines
  Especially reliable on BT30 class small machines.
- From roughing to finishing processes
  Utilizes 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}
  (Actual spindle speeds must be set within the rotational limits of your machine and holder)
- Simple Runout Adjustment Mechanism:
  Simple insert direct mounting design
  for runout precision with easy fine adjustment

Application Examples

Workpiece (Work Material)	Tool Insert Cat. No. (Insert Grade)	Cutting Conditions n = Spindle Speed (min^{-1}) v_f = Feed Rate (mm/min) a_p = Depth of Cut (mm)	Results
Cam Case (ADC12)	SRF50R NF-SNEW09T3ADTR (DA1000)	n = 6,000 v_f = 2,400 a_p= 0.5	12,000 pcs machined with no problems
Computer Case (ADC12)	SRF50R NF-SNEW09T3ADTR (DA1000)	n = 15,000 v_f = 7,500 a_p= 0.2	2.5 times more efficient endmill operation
Differential Case (ADC12)	SRF63R NF-SNEW09T3ADTR (DA1000)	n = 8,000 v_f = 4,000 a_p= 0.5	No obstructions on tool magazine when mounting ø63 cutter on small machines.

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	—	2,000- **3,000** -4,000	0.05- **0.13** -0.20	DA1000

Si content of over 12.6%

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°

Fig 1

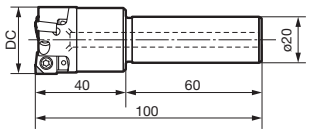


Fig 2

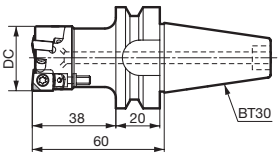


Fig 3

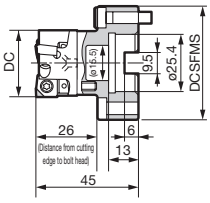
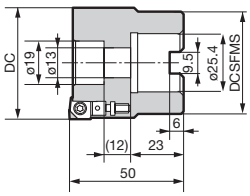


Fig 4

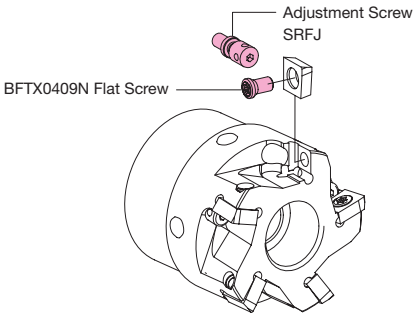


Body

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.



For securing the ø80mm and ø100mm cutters to the arbor, use a JIS B1176 hexagonal socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade		SUMIDIA	
Process	High-speed / Light	N	N
	General-purpose	N	N
	Roughing	N	N

Cat. No.	DA1000	DA2200	Cutting Edge Shape	Fig
NF-SNEW 09T3ADTR	●	▲	Standard	1
09T3ADTR-U	●	▲	Wiper Edge	2
09T3ADTR-R	●	▲	Nose Radius	3

Fig 1

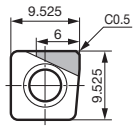


Fig 2

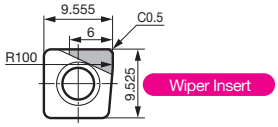
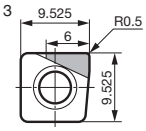
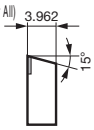


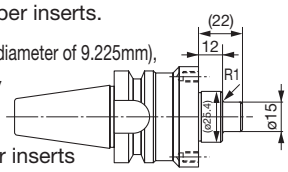
Fig 3

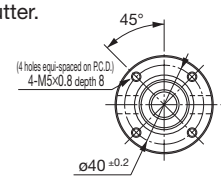


Side View (Same For All)



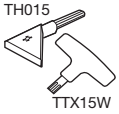
- Standard inserts and wiper inserts can be used on the same cutter body.
- Standard inserts with nose radius should be used where chatter is present. These cannot be used with wiper inserts.
- Inserts can be reground 3 times (up to minimum IC diameter of 9.225mm), but the cutting edge height changes 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.
- Arbour for SRF30R, SRF40R





When using body 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 × 20 mm for securing the body.

Parts

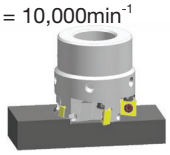
Flat Screw		Adjustment Screw	Wrench
	N·m		TH015  TTX15W
BFTX0409N	4.0	SRFJ	TH015 TTX15W

Maximum Depth of Cut (SRF50R, 5-Flute)

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.

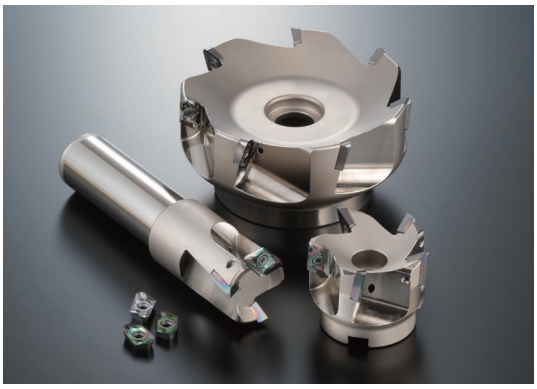
Depth of Cut a_p (mm) \ Feed Rate	Feed Rate v_f (mm/min)		
	2,500	4,000	5,000
	Feed Rate Per Tooth f_z (mm/t)		
	0.05	0.08	0.10
0.5	○	○	○
1.0	○	○	○
1.5	○	○	○
2.0	○	○	○
2.5	○	○	○
3.0	○	○	○
3.5	○	○	—
4.0	○	—	—
4.5	○	—	—
5.0	○	—	—

Cutting Conditions
Cutter: SRF50R
Insert: NF-SNEW 09T3ADTR (DA1000) n = 10,000min^{-1}
Arbour: BT30 FMA25.4-45
Workpiece: A-5052
Width: Maximum depth of cut at 35mm



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 Type



General Features

SEC-WaveMill WAX type is a high speed and high efficiency cutter capable of processes from rough milling to finishing of non-ferrous metals such as aluminum alloy.

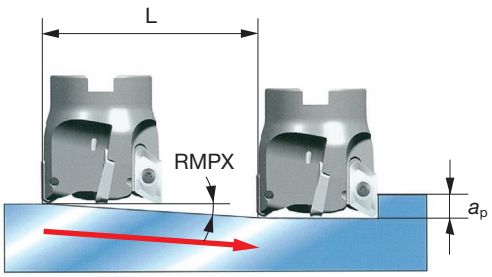
Features

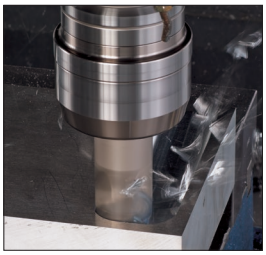
- Ramping Possible
- For Helical Milling
- Safety Design:
  Prevents dislodging of inserts caused by centrifugal force.
- Coolant Compatible:
  Coolant holes are a standard feature for the whole series.
- Excellent Adhesion Resistance
  - Top rake face of the insert has a lapped finish.
  - DLC Coat inserts are available for improved adhesion resistance.

Ramping

Maximum ramping angle (RMPX) depends on cutter diameter.
Minimum milling distance (L) for any depth of cut can be calculated by the equation below:

$$L = \frac{a_p}{\tan \mathrm{RMPX}} \quad (\mathrm{mm})$$

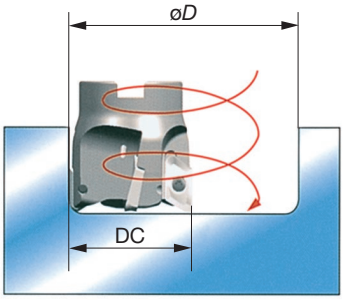




Ramping Angle

Cutter Dia. DC(mm)	Maximum Ramping Angle RMPX	
	WAX3000 Type	WAX4000 Type
20	28°	
25	17°	26°
32	12°	18°30'
40	9°	13°
50	7°	9°30'
63	5°	7°
80	3°	5°
100	3°	4°
125	2°	3°

Helical Milling



Helical Milling Diameter

Cutter Dia. DC(mm)	WAX3000 Type		WAX4000 Type	
	Min. Dia.	Max. Dia.	Min. Dia.	Max. Dia.
20	22	33		
25	29	43	27	43
32	43	57	38	57
40	59	73	54	73
50	79	93	74	93
63	105	119	100	119
80	139	153	134	153
100	179	193	174	193
125	229	243	224	243

Maximum Allowable Spindle Speed

Cutter Dia. DC(mm)	WAX3000 Type		WAX4000 Type	
	n max(min^{-1})	v_c(m/min)	n max(min^{-1})	v_c(m/min)
20	14,000	880		
25	29,000	2,200	11,000	860
32	25,000	2,500	9,000	900
40	23,000	2,900	20,000	2,500
50	20,000	3,100	18,000	2,800
63	18,000	3,500	16,000	3,100
80	16,000	4,000	14,000	3,500
100	14,000	4,400	12,000	3,700
125	13,000	5,100	11,000	4,300

The n maximum speeds are set to prevent the inserts from dislodging by centrifugal force.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	—	600-**900**-1,200	0.05-**0.15**-0.25	DL1000

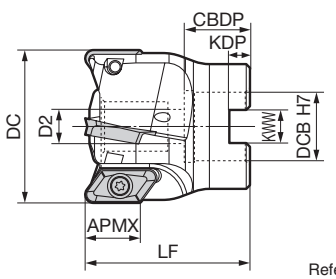
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WAX 3000 Type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

16 to 18 mm 90°

Fig 1



Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Overall Length LF	Bolt D2	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 3050-3.2**	●	**50**	**22**	50	11	10.4	6.3	21	4	0.34	1
	3063-3.2	●	**63**	**22**	50	11	10.4	6.3	21	5	0.6	1
Inch	**WAX 3080-3.2**	●	**80**	**25.4**	50	14	9.5	6	25	5	1.0	1
	3100-3.2	●	**100**	**31.75**	63	17	12.7	8	32	6	2.2	1
	3125-3.2	●	**125**	**38.1**	63	21	15.9	10	35	7	3.5	1

Body (RE = 4.0 or less)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Overall Length LF	Bolt D2	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 3050-4.0**	●	**50**	**22**	50	11	10.4	6.3	21	4	0.34	1
	3063-4.0	●	**63**	**22**	50	11	10.4	6.3	21	4	0.6	1
Inch	**WAX 3080-4.0**	●	**80**	**25.4**	50	14	9.5	6	25	5	1.0	1
	3100-4.0	●	**100**	**31.75**	63	17	12.7	8	32	6	2.2	1
	3125-4.0	●	**125**	**38.1**	63	21	15.9	10	35	7	3.5	1

Inserts are sold separately.

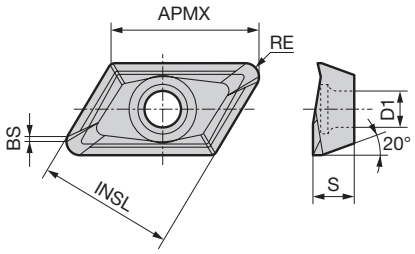
Insert

Dimensions (mm)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Thickness S	Bore Dia. D1	Fig
AECT 160404PEFRA	●	●	18	16.4	1.4	0.4	5	4.4	1
160408PEFRA	●	●	18	16.4	1.0	0.8	5	4.4	1
160412PEFRA	●	●	18	16.4	0.6	1.2	5	4.4	1
160416PEFRA	●	●	17.5	16.4	0.5	1.6	5	4.4	1
160420PEFRA	●	●	17.5	16.4	0.5	2.0	5	4.4	1
160430PEFRA	●	●	17	16.4	0.7	3.0	5	4.4	1
160432PEFRA	●	●	17	16.4	0.5	3.2	5	4.4	1
160440PEFRA	●	●	16.5	16.4	0.5	4.0	5	4.4	1
160450PEFRA	●	●	16	16.4	0.4	5.0	5	4.4	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Screw		Wrench	Anti-seizure Cream
		N·m		
WAX3000 Type	BFTX0408	3.0	TRD15	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	—	600-**900**-1,200	0.05-**0.15**-0.25	DL1000

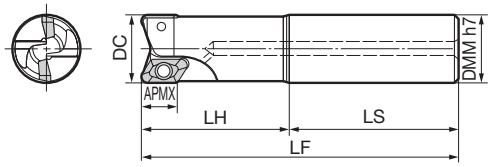
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WAX 3000E / EL Type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

16 to 18 mm 90°

Fig 1



Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (kg)	Fig
WAX 3020E -3.2	●	**20**	20	130	60	70	1	0.25	1
3025E -3.2	●	**25**	25	140	60	80	2	0.42	1
3025EL-3.2	●	**25**	25	200	60	140	2	0.63	1
3032E -3.2	●	**32**	32	150	70	80	2	0.75	1
3032EL-3.2	●	**32**	32	220	70	150	2	1.2	1
3040E -3.2	●	**40**	32	160	70	90	3	1.0	1
3040EL-3.2	●	**40**	32	220	70	150	3	1.4	1

Body (RE = 4.0 or less)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (kg)	Fig
WAX 3020E -4.0	●	**20**	20	130	60	70	1	0.25	1
3025E -4.0	●	**25**	25	140	60	80	2	0.42	1
3025EL-4.0	●	**25**	25	200	60	140	2	0.63	1
3032E -4.0	●	**32**	32	150	70	80	2	0.75	1
3032EL-4.0	●	**32**	32	220	70	150	2	1.2	1
3040E -4.0	●	**40**	32	160	70	90	3	1.0	1
3040EL-4.0	●	**40**	32	220	70	150	3	1.4	1

Inserts are sold separately.

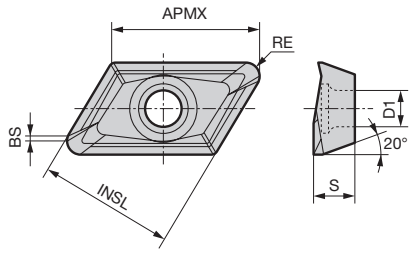
Insert

Dimensions (mm)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Thickness S	Bore Dia. D1	Fig
AECT 160404PEFRA	●	●	18	16.4	1.4	0.4	5	4.4	1
160408PEFRA	●	●	18	16.4	1.0	0.8	5	4.4	1
160412PEFRA	●	●	18	16.4	0.6	1.2	5	4.4	1
160416PEFRA	●	●	17.5	16.4	0.5	1.6	5	4.4	1
160420PEFRA	●	●	17.5	16.4	0.5	2.0	5	4.4	1
160430PEFRA	●	●	17	16.4	0.7	3.0	5	4.4	1
160432PEFRA	●	●	17	16.4	0.5	3.2	5	4.4	1
160440PEFRA	●	●	16.5	16.4	0.5	4.0	5	4.4	1
160450PEFRA	●	●	16	16.4	0.4	5.0	5	4.4	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Screw		Wrench	Anti-seizure Cream
		N·m		
WAX3000E/EL Type	BFTX0408	3.0	TRD15	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	—	600-**900**-1,200	0.05-**0.15**-0.25	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.

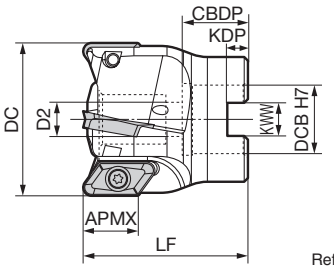
N·m Recommended Tightening Torque (N·m)

WAX 4000 Type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

22 to 24 mm 90°

Fig 1



Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Overall Length LF	Bolt D2	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 4050-3.2**	●	**50**	**16**	50	9	8.4	5.6	18	2	0.37	1
	4063-3.2	●	**63**	**22**	50	11	10.4	6.3	21	3	0.54	1
Inch	**WAX 4080-3.2**	●	**80**	**25.4**	50	14	9.5	6	25	4	0.81	1
	4100-3.2	●	**100**	**31.75**	63	17	12.7	8	32	5	1.7	1
	4125-3.2	●	**125**	**38.1**	63	21	15.9	10	35	6	2.6	1

Body (RE = 4.0 or less)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Overall Length LF	Bolt D2	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Metric	**WAX 4050-4.0**	●	**50**	**16**	50	9	8.4	5.6	18	2	0.37	1
	4063-4.0	●	**63**	**22**	50	11	10.4	6.3	21	3	0.54	1
Inch	**WAX 4080-4.0**	●	**80**	**25.4**	50	14	9.5	6	25	4	0.81	1
	4100-4.0	●	**100**	**31.75**	63	17	12.7	8	32	5	1.7	1
	4125-4.0	●	**125**	**38.1**	63	21	15.9	10	35	6	2.6	1

Inserts are sold separately.

Insert

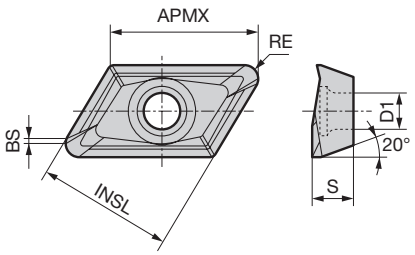
Dimensions (mm)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Thickness S	Bore Dia. D1	Fig
AECT 220604PEFRA	●	●	24	21.8	1.5	0.4	6.35	6.0	1
220608PEFRA	●	●	24	21.8	1.2	0.8	6.35	6.0	1
220612PEFRA	●	●	24	21.8	0.8	1.2	6.35	6.0	1
220616PEFRA	●	●	24	21.8	0.4	1.6	6.35	6.0	1
220620PEFRA	●	●	24	21.8	0.5	2.0	6.35	6.0	1
220630PEFRA	●	●	23	21.8	0.6	3.0	6.35	6.0	1
220632PEFRA	●	●	23	21.8	0.4	3.2	6.35	6.0	1
220640PEFRA	●	●	22	21.8	1.2	4.0	6.35	6.0	1
220650PEFRA	●	●	22	21.8	0.4	5.0	6.35	6.0	1

Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Fig 1



Parts

Applicable Cutter Diameter	Flat Screw		Wrench	Anti-seizure Cream
		N·m		
ø25 to ø32	BFTX0509N	5.0	TRD20	SUMI-P
ø40 to ø125	BFTX0511N			

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	—	600-**900**-1,200	0.05-**0.15**-0.25	DL1000

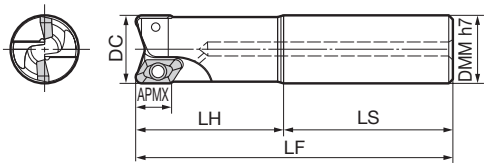
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WAX 4000E / EL Type

Rake Angle		
	Radial	6
	Axial	19° to 25°

22 to 24 mm 90°

Fig 1



Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (kg)	Fig
WAX 4025E -3.2	●	**25**	25	140	60	80	1	0.41	1
4025EL-3.2	●	**25**	25	200	60	140	1	0.63	1
4032E -3.2	●	**32**	32	150	70	80	1	0.72	1
4032EL-3.2	●	**32**	32	220	70	150	1	1.2	1
4040E -3.2	●	**40**	32	160	70	90	2	0.88	1
4040EL-3.2	●	**40**	32	220	70	150	2	1.2	1

Body (RE = 4.0 or less)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (kg)	Fig
WAX 4025E -4.0	●	**25**	25	140	60	80	1	0.41	1
4025EL-4.0	●	**25**	25	200	60	140	1	0.63	1
4032E -4.0	●	**32**	32	150	70	80	1	0.72	1
4032EL-4.0	●	**32**	32	220	70	150	1	1.2	1
4040E -4.0	●	**40**	32	160	70	90	2	0.88	1
4040EL-4.0	●	**40**	32	220	70	150	2	1.2	1

Inserts are sold separately.

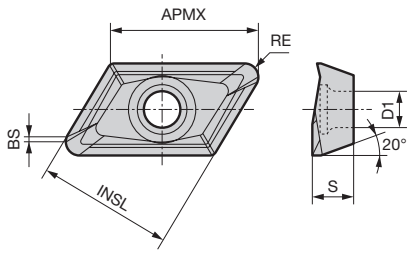
Insert

Dimensions (mm)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Thickness S	Bore Dia. D1	Fig
AECT 220604PEFRA	●	●	24	21.8	1.5	0.4	6.35	6.0	1
220608PEFRA	●	●	24	21.8	1.2	0.8	6.35	6.0	1
220612PEFRA	●	●	24	21.8	0.8	1.2	6.35	6.0	1
220616PEFRA	●	●	24	21.8	0.4	1.6	6.35	6.0	1
220620PEFRA	●	●	24	21.8	0.5	2.0	6.35	6.0	1
220630PEFRA	●	●	23	21.8	0.6	3.0	6.35	6.0	1
220632PEFRA	●	●	23	21.8	0.4	3.2	6.35	6.0	1
220640PEFRA	●	●	22	21.8	1.2	4.0	6.35	6.0	1
220650PEFRA	●	●	22	21.8	0.4	5.0	6.35	6.0	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter Diameter	Flat Screw		Wrench	Anti-seizure Cream
		N·m		
ø25 to ø32	BFTX0509N	5.0	TRD20	SUMI-P
ø40 to ø125	BFTX0511N			

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	—	600-**900**-1,200	0.05-**0.15**-0.25	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.

N·m Recommended Tightening Torque (N·m)

FMU / FMU-E Type

K Cast Iron

Rake Angle		
	Radial	2°
	Axial	8°

0.5mm 90°

Fig 1

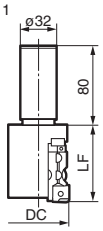


Fig 2

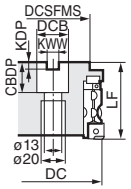


Fig 3

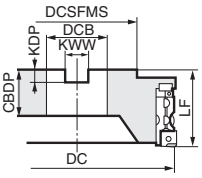


Fig 4

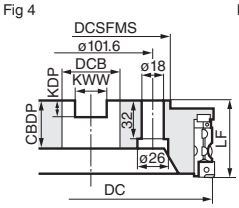
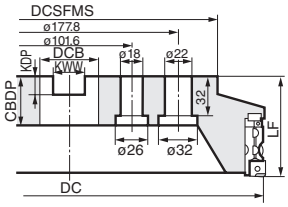


Fig 5



Body

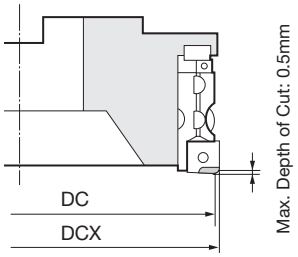
Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**FMU 4040ER**	●	**37**	40	—	63	—	—	—	—	2	1.0	1
	4050ER	●	**47**	50	—	63	—	—	—	—	3	1.2	1
	4063ER	●	**60**	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	75	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

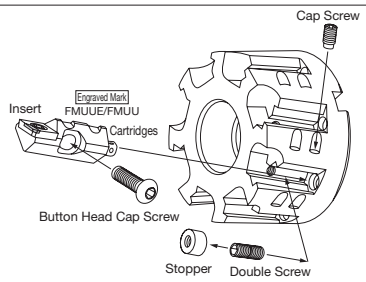
Inserts are sold separately.

Maximum Depth of Cut

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle : +2°



Structure



Insert

Dimensions (mm)

Grade		SUMIBORON		
Process	High-speed / Light	K	K	
	General-purpose	K	K	
	Roughing			
Cat. No.		BN7000	BN700	Fig
SNEW1203ADTR		●	●	1
1203ADTR-S		●	●	2

Part number suffix -S denotes a low-thrust insert.

Fig 1

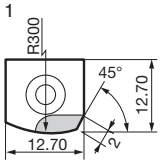
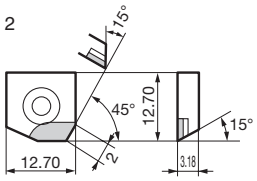


Fig 2



Cartridges

Cartridges	Flat Screw		Adjustment Bolt	O-ring	Wrench	Wrench
		N·m			(For Flat Screws)	
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)

Parts

Bolt	Set Screw	Stopper	Double Screw	Wrench	Wrench	Wrench (Radial)
				(For Cartridges)	(For Cap Screws)	(For Stoppers)
BH0620*	BTD0609	FMUE	WB5-10	TH040	LH030	LH025

* FMU4040ER, 4050ER and 4063ER use BH0615 bolts.
* SUMI-P Anti-seizure cream included in the package.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Gray Cast Iron	250HB	800- **1,400** -2,000	0.10- **0.20** -0.30	BN7000(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)

RM Type

K Cast Iron

Rake Angle		
	Radial	-6° 45'
	Axial	-5° 45'

3mm 75°

Fig 1

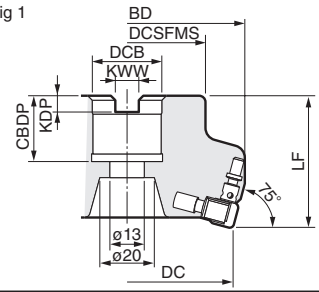
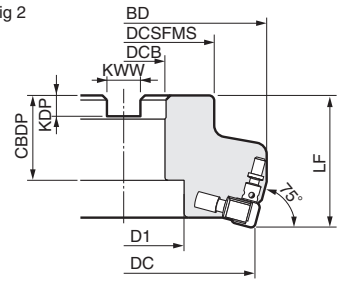


Fig 2



High-speed, High-efficiency Milling for Cast Iron

- **High-Efficiency Milling of Gray Cast Iron**
  - · Utilises solid SUMIBORON BNS800 for high-speed cutting of v_c = 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 insert direct mounting
  - · Easy yet precise runout precision adjustment

Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	O.D. BD	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Maximum Spindle Speed (min⁻¹)	Weight (kg)	Fig
Inch	**RM 3080R**		**80**	90	60	—	50	**25.40**	9.5	6	25	6	9,000	1.6	1
	RM 3100R		**100**	110	70	46	50	**31.75**	12.7	8	32	8	8,000	2.1	2
	3125R		**125**	135	80	59	63	**38.10**	15.9	10	38	10	7,000	3.9	2
	3160R		**160**	170	100	80	63	**50.80**	19.1	11	38	12	6,000	5.9	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade		SUMIBORON
Process	High-speed / Light	K
	General-purpose	K
	Roughing	K

Cat. No.	BNS800	Fig
SNGN 090308	●	1
090312	●	1
SNEN 090308W	●	2

Fig 1

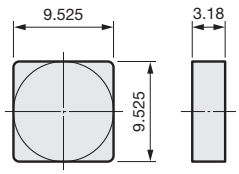
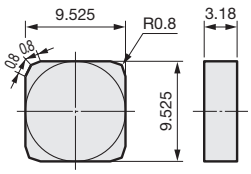
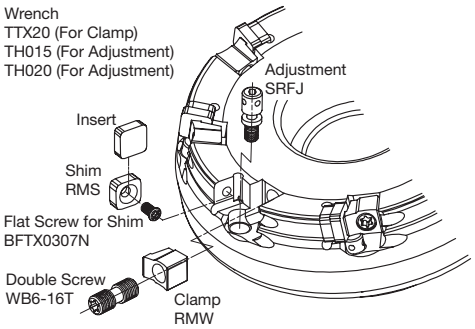


Fig 2 Wiper Insert





⚠ CAUTION

- · 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 Type.
Body: H48 Insert: L98

Parts

Clamp	Double Screw	Shim	Flat Screw for Shim		Adjustment Screw	Wrench (For Clamp)	Wrench (For Adjustment)	Wrench (For Adjustment)
RMW	WB6-16T	RMS	BFTX0307N	N·m 2.0	SRFJ	TTX20	TH015	TH020

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
K	Gray Cast Iron	250HB	800- **1,150** -1,500	0.05- **0.13** -0.20	BNS800 (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)