Milling Cutters H

H1 to H210

Stock Markings and Symbols

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

Selection Guide for Milling Cutters

◎: Best ○: Applicable ×: Unsuitable Blank: Not recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Application: Face Milling Finishing	Application: Face Milling High-Feed	Application: Shoulder Milling	Application: Groove Milling	Application: Ramping	Application: Chamfering	Application: Drilling	Application: Profiling	Application: Profile Finishing	Work Material P: General Steel/Cartoon Steel/Alloy Steel	Work Material P: Tempered Steel/Die Steel	Work Material M: Stainless Steel	Work Material K: Cast Iron/Ductile Cast Iron	Work Material N: Non-ferrous Metal	Work Material N: Aluminum Alloy	Work Material S: Ti Alloy/Heat-Resistant Alloy	Work Material H: Hardened Steel 45 to 55 HRC
Face Milling	6mm 45° *	ø40 to ø250	—	WGX →H20	**WGX**13000R(S) **WGXM**13000R(S) **WGXF**13000R(S)	SEMT13T3AGSR-G	20° to 22°	-20° to -24°	◎	◎									◎	◎	◎	◎	◎	◎	◎	
	6mm 45° *	ø32 to ø63	ø32	WGX-EW →H23	**WGX**13000EW	SEMT13T3AGSR-G	20° to 22°	-20° to -24°	◎	◎									◎	◎	◎	◎	◎	◎	◎	
	4mm 45° *	ø32 to ø100	—	WGC →H24	**WGC**3000 **WGC**3000RS	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	**WGC**3000EW	SEMT13T3AGSN (4000 Type)	20°	-10° to -19°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	6mm 45° *	ø32 to ø63	ø32		**WGC**4000EW		20° to 22°	-20° to -24°																		
	6mm 45° * 3mm 45° *	ø40 to ø250	—	DGC →H30	**DGC**13000R(S) **DGCM**13000R(S) **DGCF**13000R(S)	SNMT13T6ANER-G	-5°	-10°	◎										◎	◎	◎	◎	◎	◎	○	
	6mm 45° * 3mm 45° *	ø40 to ø63	ø32	DGC-EW →H33	**DGC**13000EW	SNMT13T6ANER-G	-5°	-10°	◎										◎	◎	◎	◎	◎	◎	○	
	5.5mm 45° *	ø80 to ø315	—	UFO →H34	**UFO**4000	SFKN12T3AZTN (IC = 12.70) SFKN1504AZTN (IC =15.875)	27°	-7°	○	○									○	○	○	○	○	○		
	7.5mm 45° *	ø80 to ø315	—		**UFO**5000		27°	-7°																		
	5.5mm 45° *	ø50 to ø100	ø32 to ø42	UFO-E →H36	**UFO**4000E	SFKN12T3AZTN	27°	-7°	○	○									○	○		○	○	○		
	10mm	ø80 to ø250	—	GRC →H37	**GRC**6000	RGEN2004SN-S	25°	10°	○											○	○				○	
	6.5mm 45° *	ø80 to ø315	—	FPG →H38	**FPG**4000	SDKN42M (IC = 12.70) SDKN53M (IC = 15.875)	15°	-4°	○										○	○	○	○	○	○		
	8.5mm 45° *	ø80 to ø315	—		**FPG**5000		15°	-4°																		
	6.5mm 45° *	ø50 to ø100	ø32 to ø42	FPE →H39	**FPE**4000	SDKN42MT	15°	-3°	○										○	○		○				

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Face Milling	5.5mm 45°*	ø80 to ø200	—	EHG →H40	**EHG**4000	SEKN42MT (IC = 12.70) SEKN53MT (IC = 15.875)	20°	-3°	○										○	○	○	○				
	7.5mm 45°*	ø80 to ø200	—		**EHG**5000		20°	-3°																		
	8mm 65°	ø80 to ø160	—	DNX →H43	**DNX**12000 **DNXF**12000	SNMT1205ZNEN	-5°	-6°	○	○									○			◎				
	3mm 24° 5mm 24°	ø80 to ø160	—	DNH(S) →H44	**DNH**12000 **DNHS**12000	SNMT1205ZNEN	-5°	-6°			○								○			◎				
	6.5mm 65°	ø80 to ø500	—	DNF →H45	**DNF**4000	CSNH43M	-5°	-6°	○	○									○			◎	×	×	×	○
	7mm 65°	ø80 to ø500	—	APG →H46	**APG**4000	SDC(H)42TR	18°	-2°	○	○									○	○	○	○	◎	◎		×
	9.5mm 75°	ø80 to ø200	—	DPG →H47	**DPG**4000 **DPGF**4000	SPCH42 (IC = 12.70) SPCH53 (IC = 15.875)	8°	0°	○	○									○	○	○	○				
	12mm 75°	ø82 to ø502	—		**DPG**5000		8°	0°																		
Shoulder Milling / Deep Shoulder Milling / Semi-Shouldering	10mm 90°	ø40 to ø100	—	WEZ →H58	**WEZ**11000R(S)	(For 11000 Type) AOMT11T302PEER-G	14° to 15°	-7° to -11°	◎	◎		◎	◎	◎			○		◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø40 to ø160	—		**WEZ**17000R(S)		10° to 15°	-4° to -9°																		
	10mm 90°	ø14 to ø80	ø10 to ø32	WEZ-E New →H62	**WEZ**11000E **WEZ**11000ES **WEZ**11000EL		6° to 15°	-7° to -18°	◎	◎		◎	◎	◎			○		◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø25 to ø80	ø16 to ø42		**WEZ**17000E **WEZ**17000ES **WEZ**17000EL		6° to 15°	-6° to -12°																		
	6mm 90°	ø32 to ø63	—	WEX-F/R →H78	**WEX**1000F	(For 3000 Type) AXMT170508PEER-G	9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø40 to ø63	—		**WEX**2000F		23° to 25°	16° to 18°																		
	14mm 90°	ø40 to ø125	—		**WEX**3000F **WEX**3000R **WEXF**3000R		19° to 24°	12° to 15°																		
	6mm 90°	ø10 to ø25	ø10 to ø20	WEX-E →H81	**WEX**1000E **WEX**1000EL	(For 2000 Type) AXMT123504PEER-G	9° to 17°	7° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø14 to ø63	ø16 to ø32		**WEX**2000E **WEX**2000EL		14° to 25°	10° to 18°																		
	14mm 90°	ø25 to ø63	ø20 to ø42		**WEX**3000E(-C) **WEX**3000ES(-C) **WEX**3000EL		16° to 24°	8° to 15°																		
	18 to 36mm 90°	ø40 to ø50	—	WRX-R →H86	**WRX**2000RS	(For 3000 Type) AXMT170508PEER-G	24°	16° to 17°	○			◎	○	○					◎	◎	◎	◎	◎	◎	◎	
	27 to 53mm 90°	ø50 to ø100	—		**WRX**3000R(S)		22° to 24°	13° to 15°																		

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Shoulder Milling / Deep Shoulder Milling / Semi-Shouldering	18 to 36mm 90°	ø20 to ø40	ø20 to ø42	WRX-E →H88	**WRX**2000E	(For 2000 Type) AXMT123504PEER-G	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	27 to 53mm 90°	ø40 to ø50	ø32 to ø42		**WRX**3000E		20° to 22°	12° to 13°																		
	6mm 90°	ø40 to ø100	—	WFX →H92	**WFX**08000R(S) **WFXM**08000R(S) **WFXF**08000R(S)	(For 08000 Type) SOMT080304PZER	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	10mm 90°	ø50 to ø250	—		**WFX**12000R(S) **WFXF**12000R(S)		8°	-8°																		
	6mm 90°	ø20 to ø63	ø16 to ø32	WFX-E →H97	**WFX**08000E **WFXM**08000E	(For 12000 Type) SOMT120408PDER	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	10mm 90°	ø40 to ø80	ø32		**WFX**12000E **WFXF**12000E		8°	-8°																		
	6mm 90°	ø50 to ø200	—	DFC →H102	**DFC**09000R(S) **DFCM**09000R(S) **DFCF**09000R(S)	XNMU060608PNER-G	-5°	-9°	◎	○		◎	○						◎	◎	○	◎			○	
	6mm 90°	ø25 to ø80	ø25 to ø42	DFC-E →H105	**DFC**09000E **DFCM**09000E		-5°	-9°																		
	8mm 90°	ø40 to ø80	—	TSX →H110	**TSX**08000R/L(S) **TSXF**08000R/L(S)	(For 08000 Type) LNEX080404PNER-G	-6°	-20°	◎	◎		◎	○						◎	◎	◎	◎			◎	
	12mm 90°	ø40 to ø315	—		**TSX**13000R/L(S) **TSXM**13000R/L(S) **TSXF**13000R/L(S)			-23° to -15°																		
	8mm 90°	ø16 to ø80	ø16 to ø32	TSX-E →H118	**TSX**08000E **TSXF**08000E		-6°	-36° to -20°	◎	◎		◎	○						◎	◎	◎	◎			◎	
	12mm 90°	ø25 to ø80	ø25 to ø32		**TSX**13000E **TSXM**13000E **TSXF**13000E			-31° to -15°																		
	34 to 60mm 90°	ø32 to ø63	—	TSXR →H122	**TSXR**08000RS		-6° to -3°	-20° to -15°	○			◎							◎	◎	◎	◎			◎	
	41 to 60mm 90°	ø40 to ø125			**TSXR**13000RS			-23° to -15°																		
	21 to 40mm 90°	ø20 to ø40	ø20 to ø32	TSXR-E →H126	**TSXR**08000E		-6° to -3°	-33° to -18°	○			◎							◎	◎	◎	◎			◎	
	41 to 60mm 90°	ø40 to ø50	ø32 to ø42		**TSXR**13000E			-23° to -18°																		
	15mm 88°	ø80 to ø200	—	PWC →H134	**PWC**4000 **PWCF**4000	LNMX160608PNSN-G	-5°	-15°	○			○	○									○				
	16mm 90°	ø80 to ø250	—	PWS →H136	**PWS**4000 **PWSF**4000	LNMX170808PNSR-G	-6°	-15°	○			○	○						○	○	○	○				
	31mm 90°				**PWSR**4000																					

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Shoulder Milling / Semi-Shouldering	16mm 90°	ø80 to ø315	—	CHG →H138	**CHG**4000	TEKN43TR 12.70 M±0.025	15°	4°	○			○							○	○	○	○	○	○		
	8mm 90°	ø16 to ø28	ø16 to ø25	CHE →H139	**CHE**2000	TECN22R (IC = 6.35) TECN32R (IC = 9.525) TEEN43R (IC = 12.70) IC M±0.013	6° to 15°	-3° to 0°	○			○	○						○	○	○	○	○	○		
	13mm 90°	ø30 to ø40	ø32		**CHE**3000		15°	-3° to 0°																		
	16mm 90°	ø50 to ø80	ø32 to ø42		**CHE**4000		15°	2° to 4°																		
	18mm 90°	ø80 to ø315	—	CPG →H142	**CPG**4000	TPCH43TR 13° M±0.013 ø12.70	6°	0°				○	○						○	○	○	○				
	8 to 19mm 90°	ø16 to ø60	ø16 to ø42	FMS →H143	**FMS**	TPCH43TR ø12.70 RE 90° M±0.013	3° to 7°	-4° to -6°				○	○						○	○	○	○				
High-Feed	3mm 15°	ø50 to ø160	—	DMSW →H146	**DMSW**08000R(S)	WNMU0807ZNER IC RE	-6°	-7° to -10°			◎	○	○	○					◎	◎	○	◎				○
	3mm 15°	ø35 to ø63	ø32 to ø42	DMSW-E →H147	**DMSW**08000E(L)		-6°	-10° to -13°			◎	○	○	○					◎	◎	○	◎				○
	1.5mm 15°	ø40 to ø63	—	WFXH →H151	**WFXH**08000RS	(For 12000 Type) SOMT120408PDER 12.7 12.7	-6°	6°			◎	○	○	○					◎	◎	◎	◎			○	○
	2.5mm 15°	ø50 to ø63	—		**WFXH**12000RS		-6°	6°																		
	1.5 to 2.5mm 20°	ø40 to ø100	—	MSX →H156	**MSX**08000RS **MSX**12000RS **MSX**14000R(S)	WDMT0603ZDTR (IC = 6.35) WDMT0804ZDTR (IC = 8.5) WDMT1204ZDTR (IC = 12) IC RE	8°	-3° to -8°			◎	○	○	○					◎	◎	◎	◎				○
	1.0 to 2.5mm 20°	ø16 to ø63	ø16 to ø42	MSX-E →H157	**MSX**06000E **MSX**08000E **MSX**12000E **MSX**14000E		8°	-3° to -8°			◎	○	○	○					◎	◎	◎	◎				○
Multi-purpose	17 to 35mm 90°	ø20 to ø30	ø20 to ø25	WMM →H159	**WMM**2000E/EL **WMM**2000ELH /EXLH	APMT103504PDER APMT160508PDER 85° REX 10 (16) 6.60 (9.525)	7° to 11°	15° to 16°	◎			◎	◎	◎		◎			◎	◎	◎	◎	◎	◎		
	39mm 90°	ø32 to ø40	ø32		**WMM**3000E/EL **WMM**3000ELH /EXLH		7° to 11°	17° to 19°																		
Radius	5mm	ø40 to ø52	—	RSX →H165	**RSX**10000 **RSXF**10000	RDET0803M0EN (IC = 8) RDET10T3M0EN (IC = 10) RDET1204M0EN (IC = 12) IC IC	10°	-5°	○			○	○	○	◎			◎	◎	◎	◎	◎			◎	
	6mm	ø40 to ø100			**RSX**12000 **RSXF**12000		10°	-5°																		
	8mm	ø63 to ø160			**RSX**16000 **RSXF**16000		10°	-5°																		
	10mm	ø80 to ø160			**RSX**20000 **RSXF**20000		10°	-5°																		

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Radius	4mm	ø20 to ø25	ø20 to ø25	RSX-ES →H169	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 →H171	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 →H174	WRCX08000E	QPMT080330PPEN (IC = 8) QPMT10T335PPEN (IC = 10) QPMT160660PPEN (IC = 16)	-3°	-3° to 0°	○		○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	5mm	ø25 to ø32	ø25 to ø32		WRCX10000E		-3°	0°																		
	8mm	ø40 to ø50	ø32		WRCX16000E		-3°	0°																		
Radius/3D Profiling	20 to 47mm	R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR →H176	WBMR2000	ZNMT1804100-C	-10°	—					◎				◎		◎	◎	◎	◎				
	30 to 69mm				WBMR2000L																					
	0.1 to 0.4mm	R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H179	WBMF1000	ZPGU1551050	0°	—					◎				◎	◎	◎	◎						
T-Slot	9 to 22mm 90°	ø21 to ø50	ø25 to ø32	TSE →H180	TSE	CPMT060204N-US	0°	0°					○						○	○		○				
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC-E →H182	WFXC08000E	(For 12000 Type) SOMT120308PDER	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
	45°	ø25 to ø32	ø25 to ø32		WFXC12000E																					
	45°	ø7 to ø35	ø32	SMC →H184	SMC	SPMN422	0°	0°							◎				○	○		○				
Non-ferrous Metal	3mm 90°	ø80 to ø160	—	ANX →H188	ANXA16000R(S)	ANB1600R-L	5°	5°																		
		ø40 to ø125			ANXS16000R(S)		5°	5°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
		ø25 to ø50	ø20 to ø32		ANXS16000E		5°	-2° to 0°																		

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Non-ferrous Metal	3mm 90°	ø80 to ø125	—	HF →H196	HFM12000RS/R HFF12000RS/R HFFH12000RS/R HFFH12000R-BBT30	NF-LDEN12T3ZDFR	10°	4°	◎	◎									×	×	×	×	○	◎		×
	3mm 90° (SUMIDIA Insert) 10mm 87° (Carbide Insert)	ø80 to ø200	—	RF →H201	RF4000	NF-SNEW1204ADFR	10°	4°	◎	◎									×	×	×	×	○	◎		×
	5mm 90°	ø30 to ø63	—	SRF →H203	SRF	NF-SNEW09T3ADTR	6°	-2° to 4°	◎	◎		○							×	×	×	×	○	◎		×
			ø20		SRF-ST																					
	16 to 18mm 90°	ø50 to ø125	—	WAX →H205	WAX3000	(For 3000 Type) AECT160404PEFRA	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
	22 to 24mm 90°		—		WAX4000																					
	16 to 18mm 90°	ø20 to ø40	ø20 to ø32	WAX-E →H206	WAX3000E WAX3000EL	(For 4000 Type) AECT220604PEFRA	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
	22 to 24mm 90°	ø25 to ø40	ø25 to ø32		WAX4000E WAX4000EL																					
	5.8mm 65°	ø80 to ø200	—	FAM →M50	FAM	FABR	13°	4°	○	○									×	×	×	×	○	○		×
	5.7mm 90°	ø80 to ø100	—	SAM →M50	SAM	SABR	10°	6°	○	○		○							×	×	×	×	○	○		×
	5.7mm 90°	ø50 to ø80	ø32	SAM-E →M51	SAM-E	SABR	10°	0° to 2°	○	○		○							×	×	×	×	○	○		×
Cast Iron, High-Speed	0.5mm 90°	ø37 to ø315	—	FMU →H209, L133	FMU FMU-E	SNEW1203ADTR	8°	2°		◎									×	×	×	◎ (FC)	×	×	×	×
	0.5mm 90°	ø80 to ø160	—	FM →L134	FM FMF	SNEN1504ADTR(L)	8°	2°		◎									×	×	×	◎ (FC)	×	×	×	×
	3mm 75°	ø80 to ø160	—	RM →H210, L135	RM	SNGN0903	-5° 45'	-6° 45'	○	◎									×	×	×	◎ (FC)	×	×	×	×

Selection Guide for Modular Tools

◎: Best ○: Applicable ×: Unsuitable Blank: Not recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape	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: 45 to 55 Hardened Steel HRC
Shoulder Milling	10mm 90°	ø16 to ø40	ø15 to ø32	WEZ-M Modular →H214	**WEZ**11000M	(For 11000 Type) AOMT11T302PEER-G	6° to 15°	-7° to -18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø25 to ø40	ø23 to ø32		**WEZ**17000M	(For 17000 Type) AOMT170502PEER-G	6° to 15°	-6° to -12°																		
	10mm 90°	ø16 to ø40	ø15 to ø32	WEX-M Modular →H218	**WEX**2000M	(For 3000 Type) AXMT170504PEER-G	14° to 25°	10° to 18°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	14mm 90°	ø25 to ø40	ø23 to ø32		**WEX**3000M		16° to 24°	8° to 15°																		
	6mm 90°	ø20 to ø40	ø18 to ø32	WFX-M Modular →H220	**WFX**08000M	SOMT080304PZER-G	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
High-Feed	3mm 15°	ø35 to ø42	—	DMSW-M Modular New →H221	**DMSW**08000M	WNMU0807ZNER	-6°	-11° to -13°			◎	○	○	○					◎	◎	○	◎				○
	1.5mm 15°	ø25 to ø32	ø23 to ø32	WFXH-M Modular →H222	**WFXH**08000M	(For 12000 Type) SOMT120308PDER	6°	-6°			◎	○	○	○					◎	◎	◎	◎			○	○
	2.5mm 15°	ø40	ø28 to ø32		**WFXH**12000M		6°	-6°																		
	1.0mm 20°	ø16 to ø24.7	ø15 to ø25	MSX-M Modular →H223	**MSX**06000M	(For 08000 Type) WDMT0804ZDTR	8°	-3° to -6°			◎	○	○	○					◎	◎	◎	◎				○
	1.5mm 20°	ø25 to ø35	ø23 to ø32		**MSX**08000M																					
	2.0mm 20°	ø32 to ø40	ø28 to ø32		**MSX**12000M																					
Radius	4mm	ø20 to ø32	ø18 to ø32	RSX-M Modular →H224	**RSX**08000M	RDET0803M0EN (IC = 8) RDET10T3M0EN (IC = 10) RDET1204M0EN (IC = 12)	10°	-8°	○		○	○	○	◎			◎		◎	◎	◎	◎			◎	
	5mm	ø25 to ø32	ø23 to ø32		**RSX**10000M **RSXF**10000M		10°	-5°																		
	6mm	ø32 to ø40	ø28 to ø32		**RSX**12000M **RSXF**12000M		10°	-5°																		
	4mm	ø20 to ø25	ø18 to ø25	WRCX-M Modular →H225	**WRCX**08000M	(For 10000 Type) QPMT10T335PPEN	-3°	-3° to 0°	○		○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	5mm	ø25 to ø32	ø23 to ø32		**WRCX**10000M			0°																		
	6mm	ø40	ø28 to ø32		**WRCX**12000M																					
Chamfering	45°	ø16	ø15 to ø16	WFXC-M Modular →H226	**WFXC**08000M	(For 08000 Type) SOMT080308PZER-G	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
		ø25 to ø32	ø23 to ø32		**WFXC**12000M		0°	0°																		
Non-ferrous Metal	3mm 90°	ø25 to ø40	ø25 to ø32	ANXS-M Modular →H227	**ANXS**16000M	ANB 1600R-L	5°	-2° to 0°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×

Shank diameters listed are sizes of corresponding arbors. Refer to page H213 for details.

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

◎: Best ○: Applicable ×: Unsuitable Blank: Not recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape	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: 45 to 55 HRC Hardened Steel
Cast Iron, High-Feed	1mm 89°to 89°30′	ø63 to ø315	—	GFX →H232	**GFX(C)**13000 **GFX**16000	(For 16000 Type) LNGX160516PNFN-W	-5°	-8°			◎	◎							×	×	×	◎	×	×	×	×
	6mm 60°	ø80 to ø315	—	GRHN →H234	**GRHNF**17000 **GRHNM**17000	HNEF100608DNEN-G	-6° -6°	-6°30′ to -5° -6°30′ to -5°				◎							×	×	×	◎	×	×	×	×
Milling Cutters (Special Purpose)	* 5.5mm 45°	ø100 to ø450	—	NRV →H238	**NRV**4000	SNMN433 SNC535	-5°	-6°				◎							×	×	×	◎	×	×	×	×
	* 8.5mm 45°		—		**NRV**5000																					
	7mm 65°	ø100 to ø450	—	DPV →H239	**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 →H240	**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 →H241	**APV**5000	SDC53R	18°	-2°		◎	◎								○	○	×	○	◎	○		×
Face Milling	* 6mm 45°	ø32 to ø63	ø32	WGX-EW →H23	**WGX**13000EW	SEMT13T3AGSR-G	20° to 22°	-20° to -24°	◎	◎									◎	◎	◎	◎	◎	◎	◎	
	* 4mm 45°	ø20 to ø63	ø20 to ø32	WGC-EW →H26	**WGC**3000EW	SEMT13T3AGSN (4000 Type)	20°	-10° to -19°	◎	◎									◎	◎	◎	◎	◎	◎	○	
	* 6mm 45°	ø32 to ø63	ø32		**WGC**4000EW		20° to 22°	-20° to -24°																		
	* 6mm 45°	ø40 to ø63	ø32	DGC-EW →H33	**DGC**13000EW	SNMT13T6ANER-G	-5°	-10°	◎										◎	◎	◎	◎	◎	◎	○	
	* 3mm 45°																									
	* 5.5mm 45°	ø50 to ø100	ø32 to ø42	UFO-E →H36	**UFO**4000E	SFKN12T3AZTN	27°	-7°	○	○									○	○		○	○	○		
	* 6.5mm 45°	ø50 to ø100	ø32 to ø42	FPE →H39	**FPE**4000	SDKN42MT	15°	-3°	○										○	○		○				

* Use a chamfering cutter for chamfering operations.

Selection Guide for Milling Cutters (Shank Type)

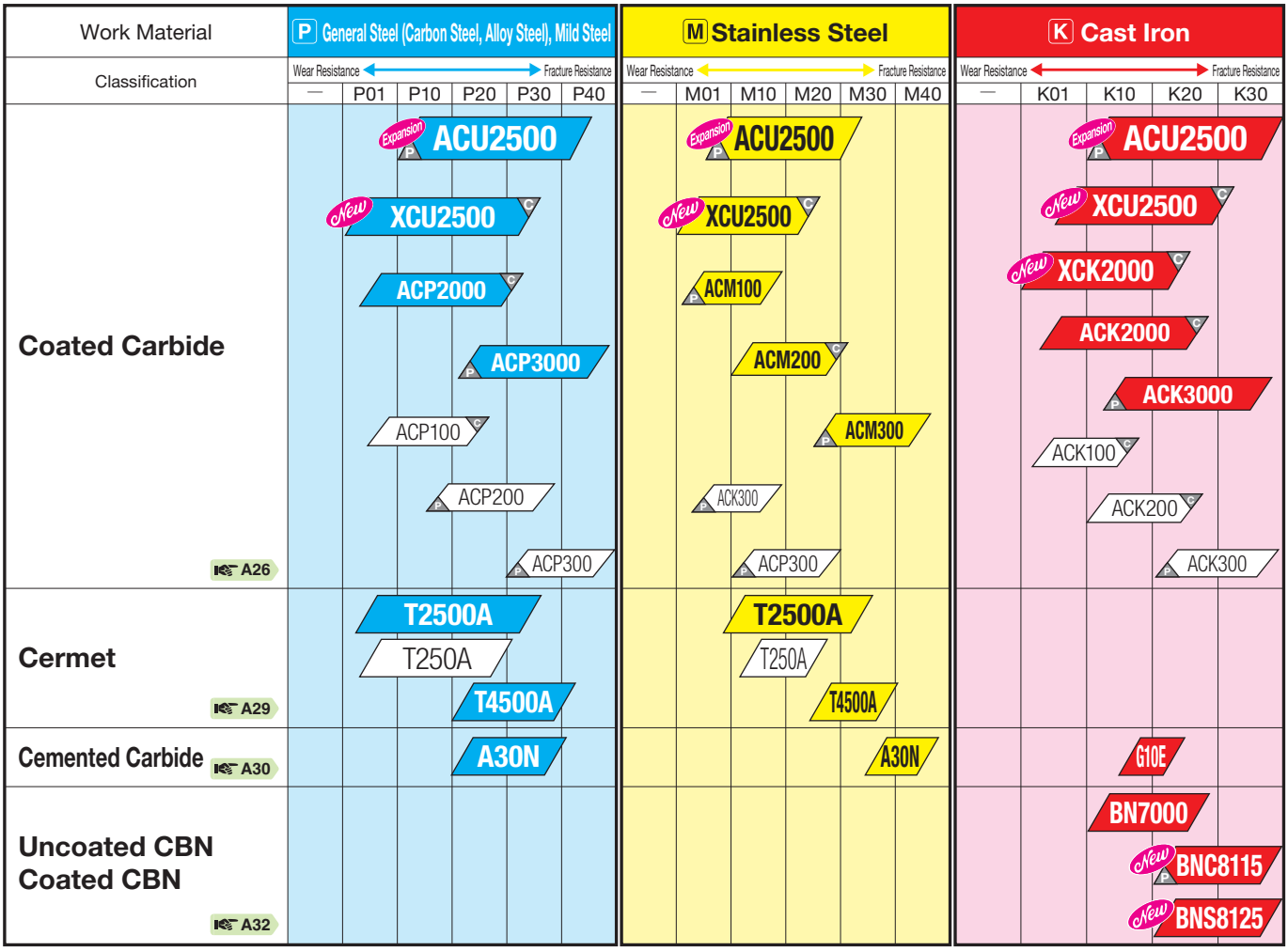
◎: Best ○: Applicable ×: Unsuitable Blank: Not recommended

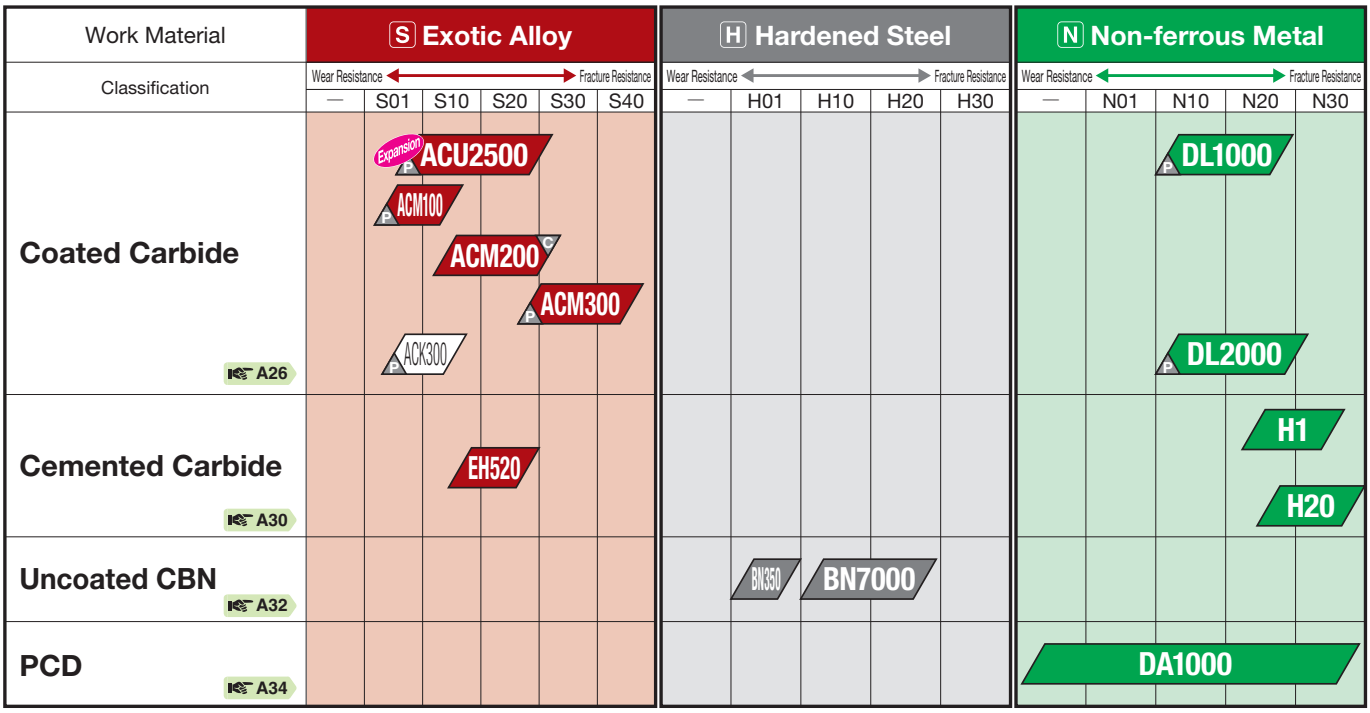
Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape	Rake Angle Axial	Rake Angle Radial	Application: Face Milling General-purpose	Face Milling Finishing	Face Milling High-Feed	Shoulder Milling	Groove Milling	Ramping	Chamfering	Drilling	Profiling	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: 45 to 55 HRC Hardened Steel
Shoulder Milling	10mm 90°	ø14 to ø80	ø10 to ø32	WEZ-E →H62	**WEZ**11000E **WEZ**11000ES **WEZ**11000EL	AOMT11T302PEER-G RE 7.5 12.8	6° to 15°	-7° to -18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	15mm 90°	ø25 to ø80	ø16 to ø42		**WEZ**17000E **WEZ**17000ES **WEZ**17000EL		6° to 15°	-6° to -12°																		
	6mm 90°	ø10 to ø25	ø10 to ø20	WEX-E →H81	**WEX**1000E **WEX**1000EL	(For 2000 Type) AXMT123504PEER-G 7.00 RE 12.00	9° to 17°	7° to 17°	○			◎	◎	○						◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø14 to ø63	ø16 to ø32		**WEX**2000E **WEX**2000EL		14° to 25°	10° to 18°																		
	14mm 90°	ø25 to ø63	ø20 to ø42		**WEX**3000E(-C) **WEX**3000ES(-C) **WEX**3000EL		16° to 24°	8° to 15°																		
	18 to 36mm 90°	ø20 to ø40	ø20 to ø42	WRX-E →H88	**WRX**2000E	(For 2000 Type) AXMT123504PEER-G 7.00 RE 12.00	16° to 24°	13° to 16°	○			◎	◎	○						◎	◎	◎	◎	◎	◎	◎	
	27 to 53mm 90°	ø40 to ø50	ø32 to ø42		**WRX**3000E		20° to 22°	12° to 13°																		
	6mm 90°	ø20 to ø63	ø16 to ø32	WFX-E →H97	**WFX**08000E **WFXM**08000E	(For 12000 Type) SOMT120408PDER 12.7 12.7	12°	-6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
	10mm 90°	ø40 to ø80	ø32		**WFX**12000E **WFXF**12000E		8°	-8°																		
	6mm 90°	ø25 to ø80	ø25 to ø42	DFC-E →H105	**DFC**09000E **DFCM**09000E	XNMU060608PNER-G 11.3 11.2	-5°	-9°	◎	○		◎	○						◎	◎	○	◎			○	
	8mm 90°	ø16 to ø80	ø16 to ø32	TSX-E →H118	**TSX**08000E **TSXF**08000E	(For 08000 Type) LNEX080404PNER-G 9.3 8.6	-6°	-36° to -20°	◎	◎		◎	○						◎	◎	◎	◎			◎	
	12mm 90°	ø25 to ø80	ø25 to ø32		**TSX**13000E **TSXM**13000E **TSXF**13000E			-31° to -15°																		
	21 to 40mm 90°	ø20 to ø40	ø20 to ø32	TSXR-E →H126	**TSXR**08000E	(For 13000 Type) LNEX130604PNER-L 12.6 13	-6° to -3°	-33° to -18°	○			◎							◎	◎	◎	◎			◎	
	41 to 60mm 90°	ø40 to ø50	ø32 to ø42		**TSXR**13000E			-23° to -18°																		
	8mm 90°	ø16 to ø28	ø16 to ø25	CHE →H139	**CHE**2000	TECN22R (IC = 6.35) TECN32R (IC = 9.525) TEEN43R (IC = 12.70) IC M±0.013	6° to 15°	-3° to 0°				○	○							○	○	○	○	○	○		
	13mm 90°	ø30 to ø40	ø32		**CHE**3000		15°	-3° to 0°																		
	16mm 90°	ø50 to ø80	ø32 to ø42		**CHE**4000		15°	2° to 4°																		
	8 to 19mm 90°	ø16 to ø60	ø16 to ø42	FMS →H143	**FMS**	TPCH43TR ø12.70 RE M±0.013	3° to 7°	-4° to -6°	○			○	○						○	○	○	○				
High-Feed	3mm 15°	ø35 to ø63	ø32 to ø42	DMSW-E New →H147	**DMSW**08000E(L)	WNMU0807ZNER IC RE	-6°	-10° to -13°			◎	○	○	○					◎	◎	○	◎				○
	1.0 to 2.5mm 20°	ø16 to ø63	ø16 to ø42	MSX-E →H157	**MSX**06000E **MSX**08000E **MSX**12000E **MSX**14000E	WDMT0603ZDTR (IC = 6.35) WDMT0804ZDTR (IC = 8.5) WDMT1204ZDTR (IC = 12) IC RE	8°	-3° to -8°			◎	○	○	○					◎	◎	◎	◎				○

◎: Best ○: Applicable ×: Unsuitable Blank: Not recommended

Applications	Cutting Angle / Maximum Depth of Cut	Dia. (mm)	Shank Dia. (mm)	Series (Page)	Model	Insert Shape	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: 45 to 55 HRC Hardened Steel
Multi-purpose	17 to 35mm 90°	ø20 to ø30	ø20 to ø25	WMM →H159	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	4mm	ø20 to ø25	ø20 to ø25	RSX-ES →H169	RSX08000ES RSXF08000ES	RDET0803M0EN (IC = 8) RDET10T3M0EN (IC = 10) RDET1204M0EN (IC = 12)	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 →H174	WRCX08000E	QPMT080330PPEN (IC = 8) QPMT10T335PPEN (IC = 10) QPMT160660PPEN (IC = 16)	-3°	-3° to 0°	○		○	○	○	◎			◎		◎	◎	◎	◎	◎	◎		
	5mm	ø25 to ø32	ø25 to ø32		WRCX10000E		-3°	0°																		
	8mm	ø40 to ø50	ø32		WRCX16000E		-3°	0°																		
Radius/3D Profiling	20 to 47mm	R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR →H176	WBMR2000	ZNMT1804100-C	-10°	—					◎				◎		◎	◎	◎	◎				
	30 to 69mm				WBMR2000L																					
	0.1 to 0.4mm	R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H179	WBMF1000	ZPGU1551050	0°	—					◎				◎	◎	◎	◎						
T-Slot	9 to 22mm 90°	ø21 to ø50	ø25 to ø32	TSE →H180	TSE	CPMT060204N-US	0°	0°					○						○	○		○				
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC-E →H182	WFXC08000E	(For 12000 Type) SOMT120308PDER	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
	45°	ø25 to ø32	ø25 to ø32		WFXC12000E																					
	45°	ø7 to ø35	ø32	SMC →H184	SMC	SPMN422	0°	0°							◎				○	○		○				
Non-ferrous Metal	3mm 90°	ø25 to ø50	ø20 to ø32	ANX-E →H192	ANXS16000E	ANB1600R-L	5°	-2° to -0°	○	◎	◎	◎	○						×	×	×	×	◎	◎		×
	16 to 18mm 90°	ø20 to ø40	ø20 to ø32	WAX-E →H206	WAX3000E WAX3000EL	(For 4000 Type) AECT220604PEFRA	19° to 25°	6°	○			◎	◎	◎			◎		×	×	×	×	○	◎		×
	22 to 24mm 90°	ø25 to ø40	ø25 to ø32		WAX4000E WAX4000EL																					

Grades for Milling





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

Grades for Milling / Characteristic Values

CVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grade
P Steel	ACP100	89.3	3.1	Super FF Coat	6	· For high-speed machining of steel · Grade emphasising wear resistance for high-speed cutting	AC230
	ACP2000	89.5	3.2	ABSOTECH	10	· For high-speed machining of steel · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
	New XCU2500	89.5	3.2	ABSOTECH X	6	· General-purpose grade for a wide variety of materials such as steel, cast iron and stainless steel · New coating combining wear and fracture resistance realises long tool life in medium-speed to high-speed machining	—
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 substrate with excellent wear resistance and thermal resistance, realizing outstanding stability when machining hardened stainless steel	AC230
K Cast Iron	ACK100	92.0	2.4	Super FF Coat	6	· For high-speed cast iron milling · Adopts a high-hardness substrate with high wear resistance	—
	ACK200	91.7	2.5	Super FF Coat	6	· For high-speed cast iron milling · Adopts a tough carbide substrate with excellent wear resistance and thermal crack resistance	AC211
	ACK2000	91.7	3.1	ABSOTECH	10	· For high-speed cast iron milling · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200
	New XCK2000	91.7	2.5	ABSOTECH X	6	· For high-speed cast iron milling · Along with a high-hardness carbide substrate, the new coating combining wear and fracture resistance realises superb long tool life in medium-speed to high-speed machining	—

PVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grade
P Steel	Expansion 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 on various work materials	—
	ACP200	89.5	3.2	(New) Super ZX Coat	3	· Our 1st recommended grade for steel applications · General-purpose grade with an excellent balance of wear and fracture resistance · Also suitable for machining stainless steel	ACZ330
	ACP300	89.3	3.1	(New) Super ZX Coat	3	· For interrupted machining of steel · Tough grade with an emphasis on fracture resistance · Also suitable for interrupted machining of stainless steel	ACZ350
	ACP3000	89.5	3.2	ABSOTECH	3	· Our 1st recommended grade for milling steel · Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	ACM100	91.4	3.3	(New) Super ZX Coat	3	· For high-speed machining of stainless steel · Adopts high-hardness micro-grain cemented carbide substrate and super multi-layered coating to realise outstanding wear resistance	ACZ310
	ACM300	89.8	3.4	(New) Super ZX Coat	3	· Our 1st recommended grade for milling stainless steel · Adopts high-strength cemented carbide substrate and super multi-layered coating for next-level wear resistance and fracture resistance	—
K Cast Iron	ACK300	91.4	3.3	(New) Super ZX Coat	3	· General-purpose grade with an excellent balance of wear and fracture resistance	ACZ310
	ACK3000	91.7	3.1	ABSOTECH	3	· Our 1st recommended grade for milling cast iron · Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	DL1000	92.9	2.1	AURORA Coat (DLC)	0.5	· Grade for milling non-ferrous metal, utilising DLC coat with a low coefficient of friction and excellent adhesion resistance	—
	DL2000	91.6	3.8	AURORA Coat (DLC)	0.5	· Grade 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 Grade
P Steel	T1500A	92.0	2.2	—	—	· For finishing of steel and stainless steel · Excellent balance of wear and fracture resistance, achieving excellent machined surface quality over a wide range of cutting conditions	T1200A
	T250A	91.4	2.1	—	—	· For finishing of steel and stainless steel · Tough grade with enhanced crack development resistance	—
M Stainless Steel	T2500A	91.8	2.4	—	—	· For finishing of steel and stainless steel · Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes	T250A
	T4500A	91.0	2.3	—	—	· For finishing of steel and stainless steel · Tough grade with excellent fracture resistance and reduced thermal cracking	—

CBN

Work Material	Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
K Cast Iron	New BNC8115	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	TiAlN	2	Grade with 100% solid CBN structure, using PVD coating with excellent wear resistance to enable roughing operations.
	New BNS8125	Al Alloy	85 to 90	8	39 to 42	0.95 to 1.15	—	—	Grade with 100% solid CBN structure that exhibits excellent wear and fracture resistance
	BNS800	Al Alloy	85 to 90	8	39 to 42	0.9 to 1.1	—	—	Grade with solid CBN structure that has excellent thermal shock resistance
	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.
	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

Work Material	Grade	Binder	CBN Content (%)	Grain Size (μm)	Hardness HK (GPa)	TRS (GPa)	Features
N Non-Ferrous Metal	DA1000	Co	90 to 95	up to 0.5	50 to 60	≈ 2.60	High-density sintered material made of ultra-fine grain diamond that exhibits optimum wear and fracture resistance as well as excellent edge sharpness.

Cemented Carbide A30 Ceramic A36

ACU2500/XCU2500/XCK2000

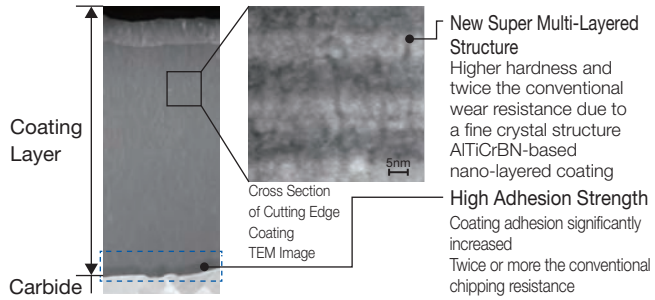
■ Features of ACU2500

· Utilizing ABSOTECH, a new coating with excellent wear and chipping resistance.
· Adopts a carbide substrate with excellent fracture resistance and wear resistance, realising stable long tool life with various work material grades. Our 1st recommended grade for milling.

■ Features of XCU2500/XCK2000

· Uses the revolutionary ABSOTECH X coating, combining the wear resistance of conventional CVD coatings and fracture resistance equivalent to that of PVD coatings.
· Superb long tool life in machining of steel, cast iron, and stainless steel.

ABSOTECH PVD

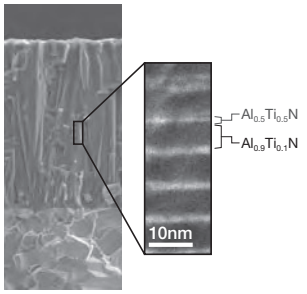


New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure AlTiCrBN-based nano-layered coating

High Adhesion Strength
Coating adhesion significantly increased
Twice or more the conventional chipping resistance

Applicable Grades: ACU2500, ACP3000, ACK3000

ABSOTECH X CVD



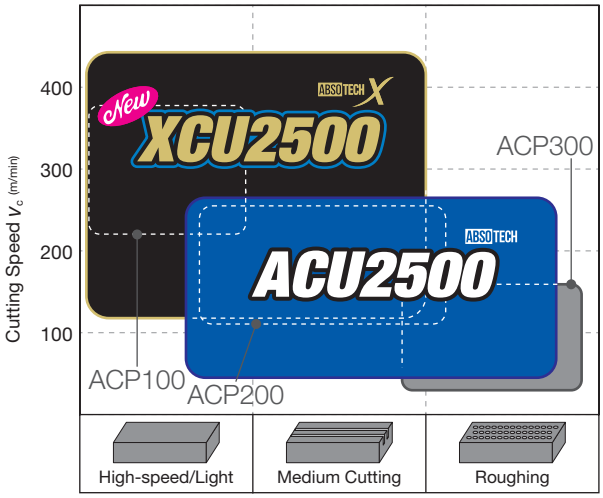
Pure cubic crystal AlTiN with high Al content:
With proprietary structural control technology, differently composed layers of AlTiN are stacked at the nanometre level.
With a high-Al composition containing over 80% Al on average, it also maintains a cubic crystalline structure to achieve excellent thermal resistance and high hardness.
Vastly improved wear resistance.

Special Surface Treatment:
Proprietary surface treatment introduces high compression stress to the coating, suppressing the development of cracks.
Greatly improved fracture and thermal crack resistance.

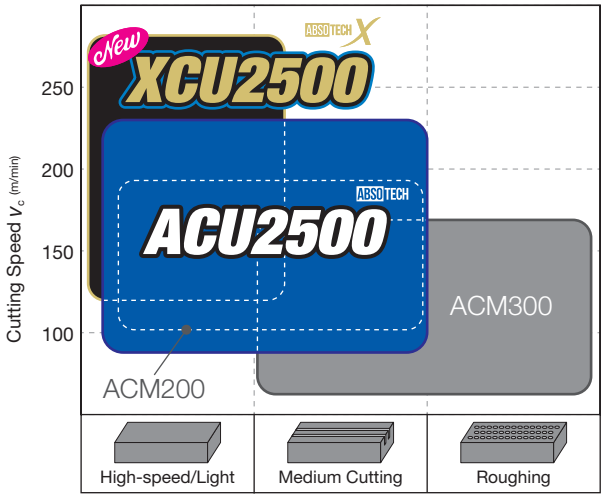
Applicable Grades: XCU2500, XCK2000

■ Application Range

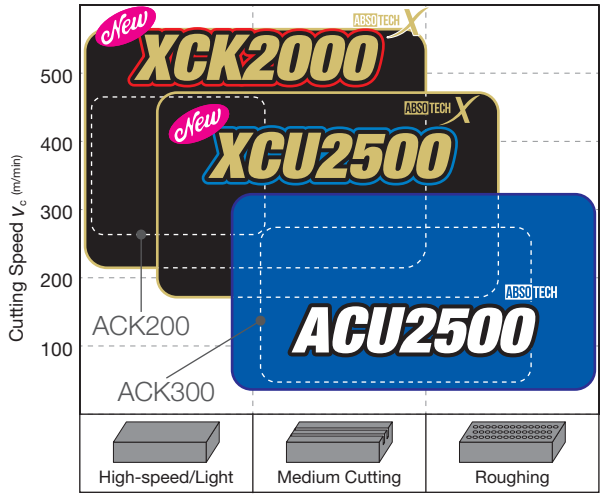
P Steel



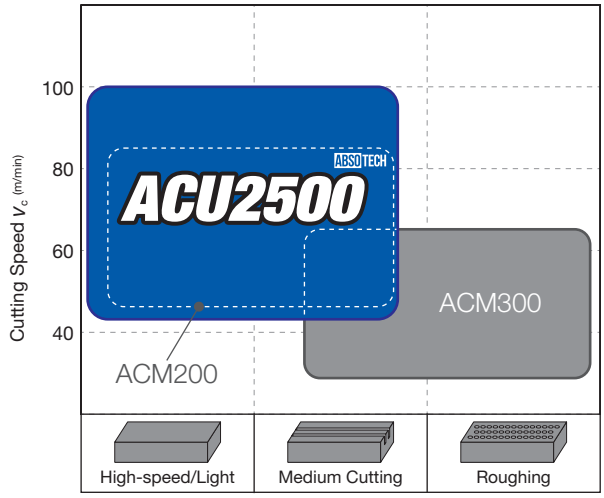
M Stainless Steel



K Cast Iron



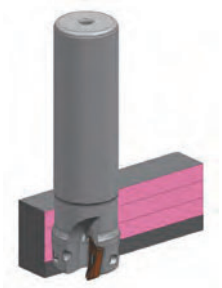
S Exotic Alloy

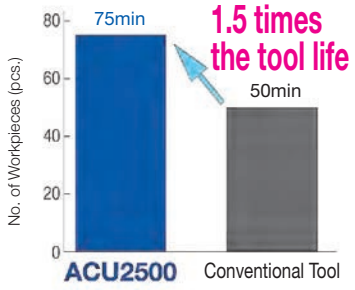


ACU2500/XCU2500/XCK2000

■ Application Examples (ACU2500)

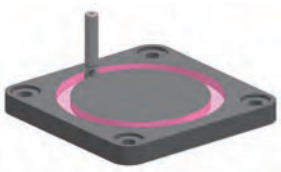
S45C Mold Component P

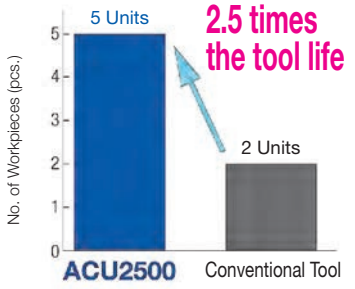




Tool: WEZ17050E, Insert: AOMT170508PEER-G
Cutting Conditions: v_c = 250m/min, f_z = 0.1mm/t, a_p = 2.5mm Dry

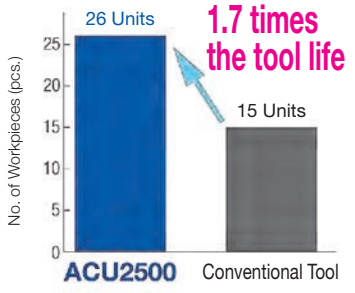
SKT4 Machine Component P





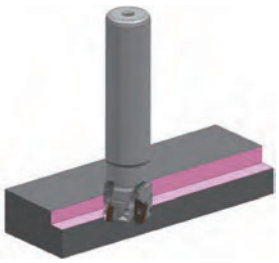
Tool: WEZ11022E03, Insert: AOMT11T308PEER-G
Cutting Conditions: v_c = 50m/min, f_z = 0.1mm/t, a_p = 3.0mm Wet

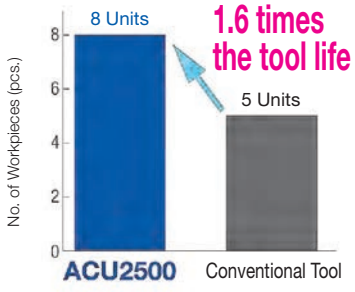
FCD450 Brake Caliper K



Tool: WGX13160R, Insert: SEMT13T3AGSR-G
Cutting Conditions: v_c = 175m/min, f_z = 0.1mm/t, a_p = 1.0mm Wet

SUS304 Machine Component M

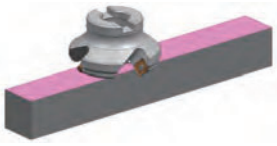


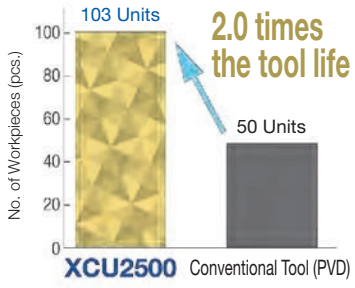


Tool: WEZ11020E, Insert: AOMT11T308PEER-G
Cutting Conditions: v_c = 150m/min, f_z = 0.2mm/t, a_p = 3.0mm Dry

■ Application Examples (XCU2500/XCK2000)

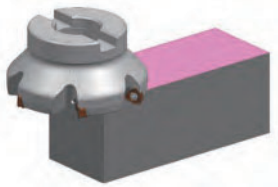
Boron Steel Axle Beam P

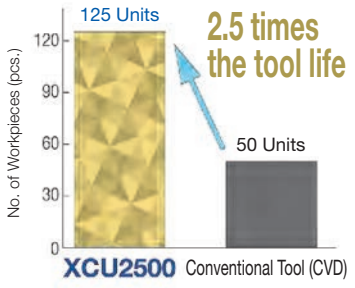




Tool: WGX13080RS, Insert: SEMT13T3AGSR-G
Cutting Conditions: v_c = 332m/min, f_z = 0.15mm/t, a_p = 0.5mm, a_e = 4mm Dry

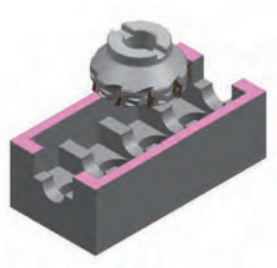
FC250/FCD450/SC450 Mixed Bearing Cover P K

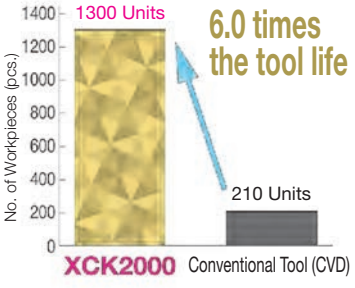




Tool: DFC09100RS, Insert: XNMU060604PNER-G
Cutting Conditions: v_c = 236m/min, f_z = 0.12mm/t, a_p = 3.0mm Dry

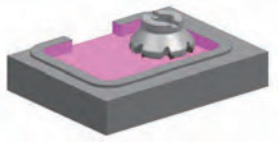
FC250 Cylinder Block K

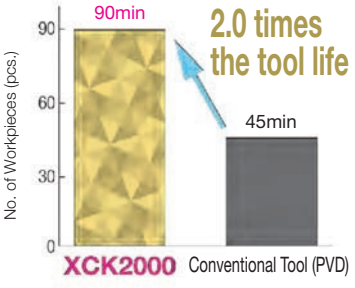




Tool: WEZ17125RS09, Insert: AOMT 170508PEER-G
Cutting Conditions: v_c = 300m/min, f_z = 0.26mm/t, a_p = 2.0mm Dry

FCD450 Housing Pilot K





Tool: DFC09125RS, Insert: XNMU060608PNER-G
Cutting Conditions: v_c = 163m/min, f_z = 0.2mm/t, a_p = 3mm Wet

Cutter Cat. No. Identification Table

Standard Cutters

DFC (F) 09 050 R (S)

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

Table 1: (1) Series

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

Table 2: (2) Additional Symbol

Fine-pitch Design	
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

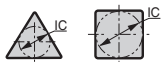


Table 4: (4) Cutter Diameter

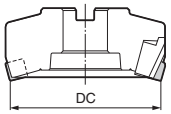


Table 5: (5) Feed Direction

Left Hand (L)	Right Hand (R)

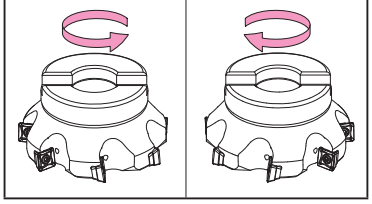


Table 6: (6) Mounting

Bore Size Dimension	
S	Metric Bore

Milling Cutters (Special Purpose)

DPV (Z) 4 100 (Q) R

(1) Series
(7) 2-piece Set Indication — Z
(3) (4) (5) — Same as above
(8) Quick Change Type — Q

(1) Series
DPV
GFX
NRV
NFV
APV
GRHNM
GRHNF

Insert Cat. No. 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 Angle Refer to Table 7	(8) Wiper Flat 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	Hexagonal Type	120°
L	Rectangular Type	90°
O	Octagonal Type	135°
P	Pentagonal Type	108°
R	Round Type	—
S	Square Type	90°
T	Triangular Type	60°
Q	Special	—
X	Special	—

Table 2: (2) Relief Angle

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

Table 3: (3) Tolerance (mm)

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

Table 4: (4) Insert Hole

Symbol	Shape (Cross Section)
W	
M	
R	
N	
T	

Table 5: (5) Cutting Edge Length

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

Table 6: (6) Thickness

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

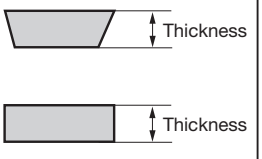


Table 7: (7) Cutting Angle

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

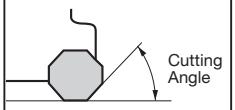


Table 8: (8) Wiper Flat Relief Angle

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

Expansion

■ General Features

SEC-WaveMill WGX Type employs a unique chipbreaker design to provide lower resistance and higher-quality finished surface roughness than conventional cutters.
Lineup of insert grades and chipbreakers has been significantly expanded, and employment of the ACM series enables machining of stainless steel and exotic alloys.
Also applicable to any work material, using the general-purpose grade ACU2500.

■ Features

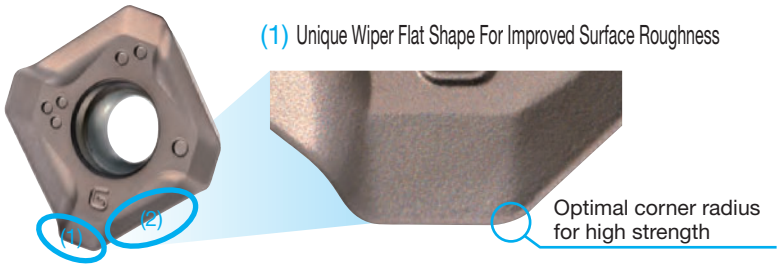
● Reduced Cutting Force
- High-rake chipbreaker designed for use with the WGX type achieves low resistance

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

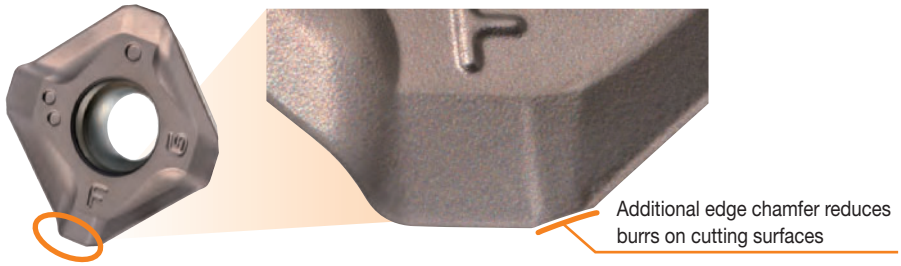
● Wide Ranging Product Lineup
- A wide selection of grades along with 4 types of chipbreakers and wiper insert is available.
- Can be used for a wide variety of machining applications.

■ Insert Shape Features

● General-purpose G Type Chipbreaker



● FG Type Chipbreaker with Low-Burr Design



■ Product Range

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

Number in ● shows the number of teeth Inch Inch Bore Sizes of ø125mm and below have coolant holes

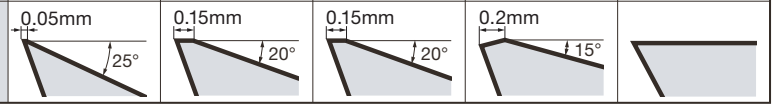
WGX 13000R(S) Standard Pitch

WGXM 13000R(S) Fine Pitch

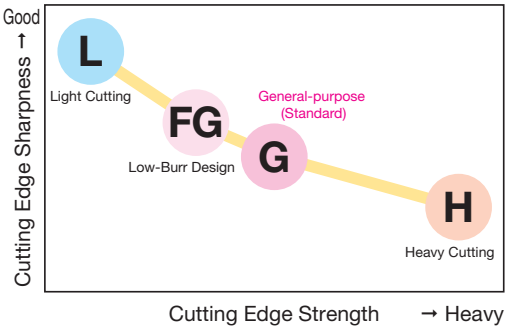
WGXF 13000R(S) Extra Fine Pitch

WGX 13000EW Shank Type

Chipbreaker Selection

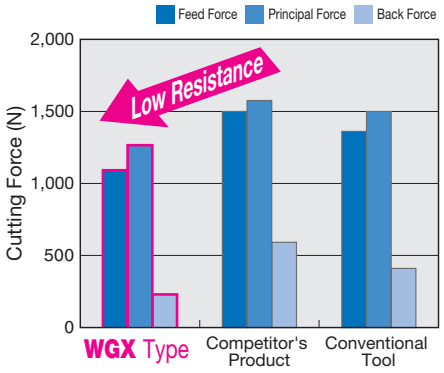
Work Material	P M K S N	P M K S			P K
Applications	Light Cutting	General-purpose/ Burr Prevention	General-purpose	Heavy Cutting	Finishing Surface Roughness Emphasised
Features	Low Resistance	Standard/ With Chamfer	Standard	High Strength	Wiper
	L Type	FG Type	G Type	H Type	W Type
Chipbreaker					
Cutting Edge Cross Section	 0.05mm 25°	0.15mm 20°	0.15mm 20°	0.2mm 15°	

Chipbreaker Selection Guide



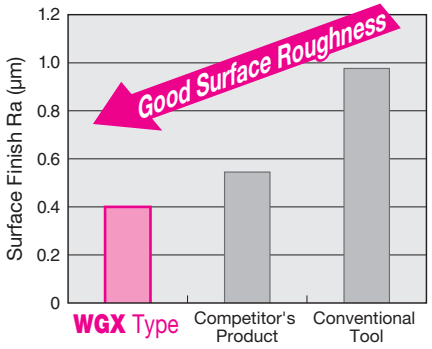
General-purpose G Type Chipbreaker

Comparison of Cutting Force



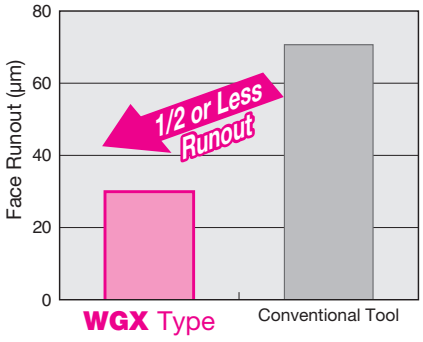
Work Material: S50C, Tool: ø100
Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3.0mm

Finishing Surface Roughness Comparison



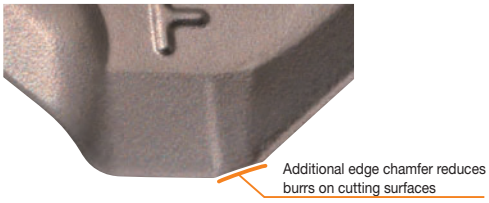
Work Material: S50C, Tool: ø100
Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3.0mm

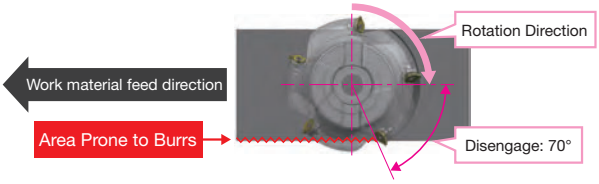
Runout with Insert Attached



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

Precautions when Using Wiper Inserts with Holes

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

Fig 1

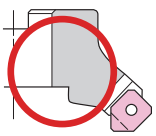
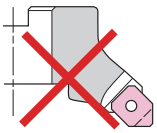


Fig 2



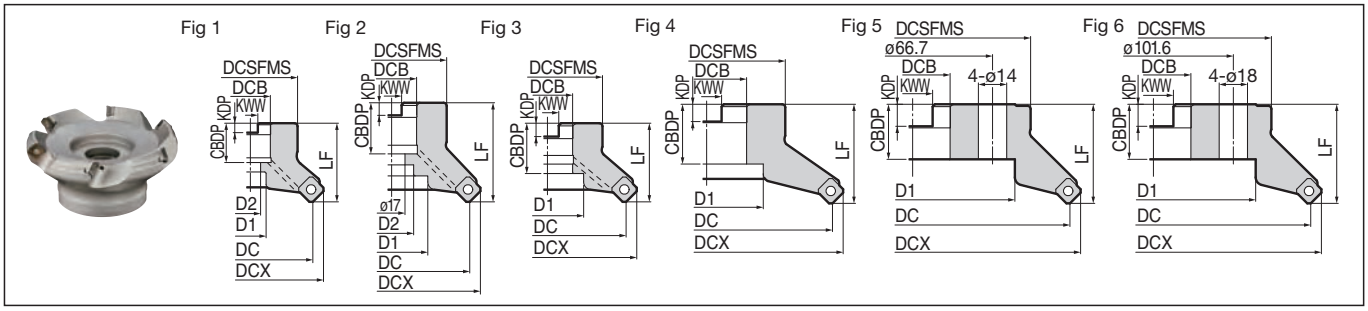
WGX 13000R(S) Type

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

Expansion

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

6mm 45°



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**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

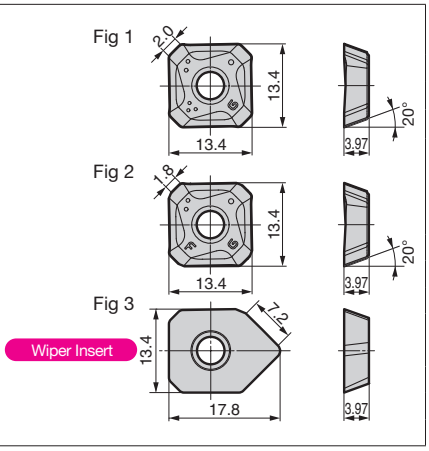
Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter. Sizes ø160 mm and above do not have coolant holes.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

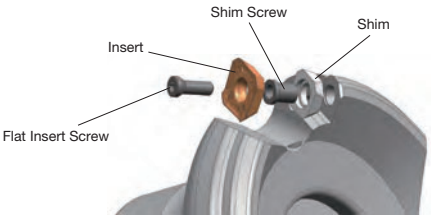
Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	P M S	P M	P			K	K		M S		K N	N			
	Medium Cutting	P M S	P M		P M	P M	K	K		M S	M S		N	P		
	Roughing	P M S			P M	P M			K		M S					
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	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 H19 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Identification Code

WGX Series | **13** Insert Size | **040** Cutter Dia. | **R** Feed Direction | **S** Metric Body



Recommended Cutting Conditions

ISO	Work Materials	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 280HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.20**-0.25	XCU2500
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200 XCU2500 XCK2000
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	ACU2500 ACM300

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

Parts

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

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

WGXM 13000R(S) Type

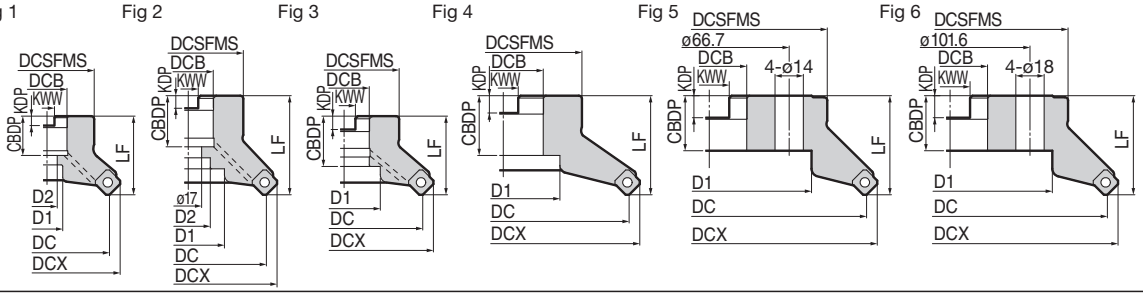
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Expansion

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

6mm 45°

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



Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	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

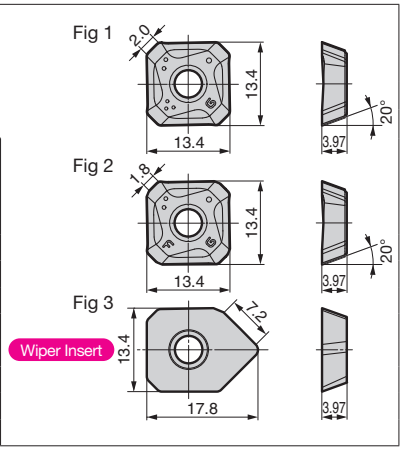
Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter. Sizes ø160 mm and above do not have coolant holes.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

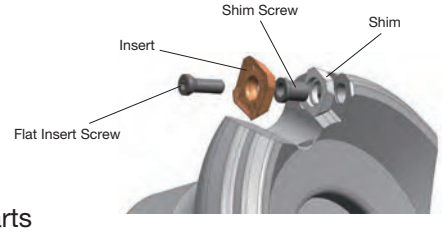
Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	MS KM	P KM	P			K	K		MS		K N	N			
	Medium Cutting	MS KM	P KM		P M	P M	K	K		MS	MS		N	P		
	Roughing	MS KM			P M	P M			K		MS					
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	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 H19 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Identification Code

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



Recommended Cutting Conditions

ISO	Work Materials	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 280HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.20**-0.25	XCU2500
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200 XCU2500 XCK2000
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30-**50**-80	0.10-**0.20**-0.30	ACU2500 ACM300

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

Parts

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

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

WGXF 13000R(S) Type

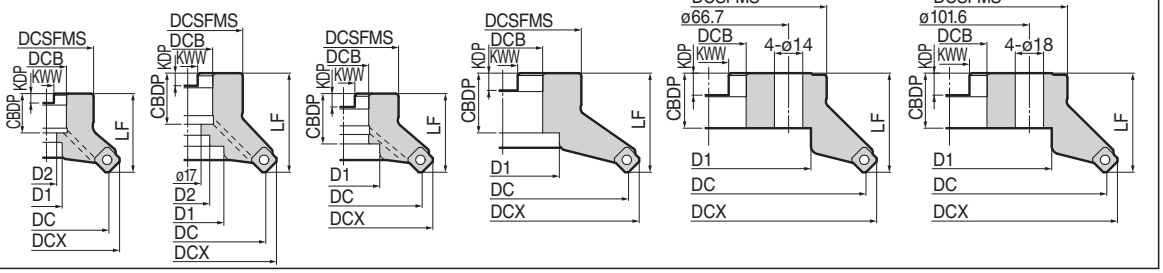
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Expansion

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

6mm 45°

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



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**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

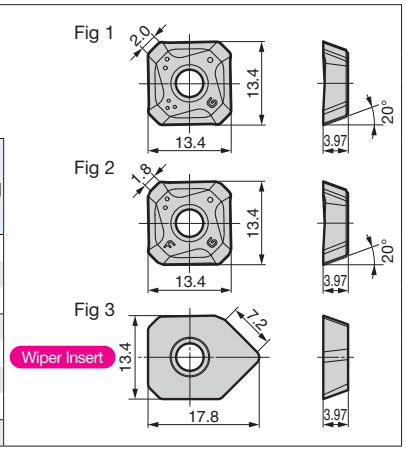
Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter. Sizes ø160 mm and above do not have coolant holes.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	P S	P M	P			K	K		M S		K N	N		
	Medium Cutting	P S	P M		P M	P M	K	K		M S	M S		N	P	
	Roughing	P S			P M	P M			K		M S				
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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

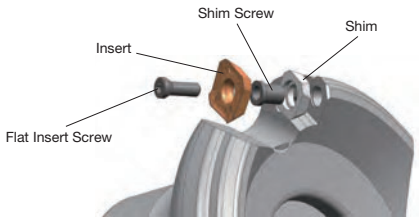


The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance. Refer to H19 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Identification Code

WGX **F** **13** **050** **R** **S**

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



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 280HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.20**-0.25	XCU2500
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200 XCU2500 XCK2000
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	ACU2500 ACM300

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

Parts

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

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

WGX 13000EW Type

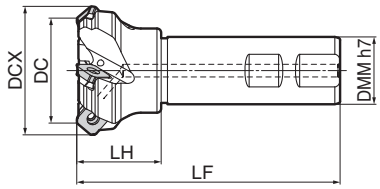
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Expansion

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	Overall Length LF	Number of Teeth	Fig
WGX 13032EW	●	**32**	44	32	40	125	3	1
13040EW	●	**40**	52	32	40	125	3	1
13050EW	●	**50**	62	32	40	125	4	1
13063EW	●	**63**	76	32	40	125	5	1

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	PS PK	PS PK	P			K	K		MS		N			
	Medium Cutting	PS PK	PS PK		PM	PM	K	K		MS	MS	N	P		
	Roughing	PS			PM	PM			K		MS				
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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

Fig 1

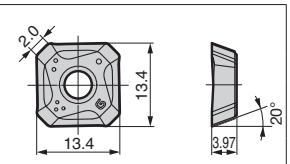


Fig 2

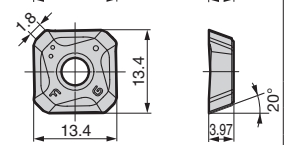
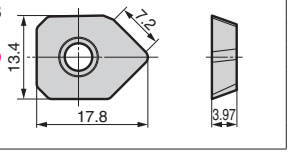


Fig 3

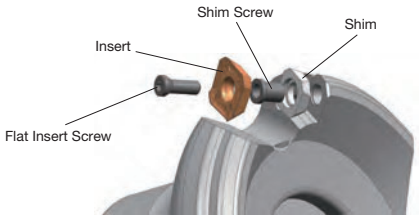
Wiper Insert



The ACP100 and ACK200 may vary in colour or lustre, but these variations do not affect the performance.
Refer to H19 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Identification Code

WGX Series | **13** Insert Size | **032** Cutter Dia. | **EW** Shank 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 280HB	150-**200**-250	0.10-**0.20**-0.30	ACU2500
	Mild Steel	≤ 180HB	180-**270**-350	0.10-**0.25**-0.40	ACP200
	Die Steel	200 to 220HB	100-**150**-200	0.15-**0.20**-0.25	XCU2500
M	Stainless Steel	—	160-**210**-250	0.15-**0.23**-0.30	ACU2500 ACM300
K	Cast Iron	250HB	100-**180**-250	0.15-**0.23**-0.30	ACU2500 ACK200 XCU2500 XCK2000
N	Non-Ferrous Alloy	—	500-**750**-1,000	0.15-**0.23**-0.30	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	ACU2500 ACM300

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

Parts

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

WGC 3000 Type

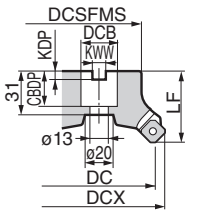
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

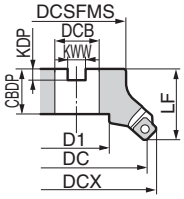
Rake Angle		
	Radial	-10° to -19°
	Axial	20°

4mm 45°

Fig 1

Fig 2





Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole 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.

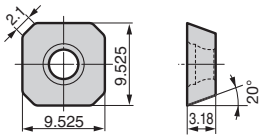
For securing the ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					DLC	Cemented 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 H19 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Parts

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

Recommended Cutting Conditions

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
S	Exotic Alloy	—	30-**50**-80	0.10-**0.20**-0.30	EH520

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

N·m Recommended Tightening Torque (N·m)

WGC(F)4000 Type

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

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

6mm 45°

Fig 1

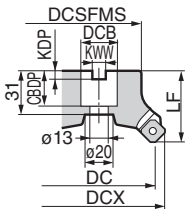


Fig 2

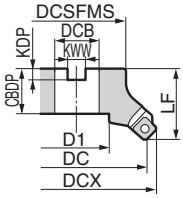
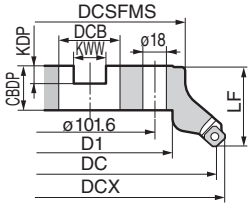


Fig 3



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole 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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					DLC	Cemented 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

Fig 1

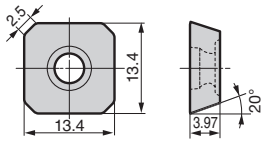
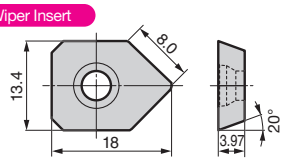
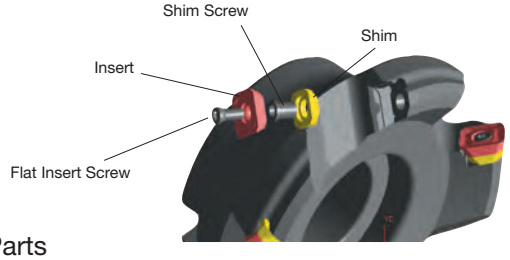


Fig 2

Wiper Insert



Refer to H19 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).



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
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

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

Parts

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

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

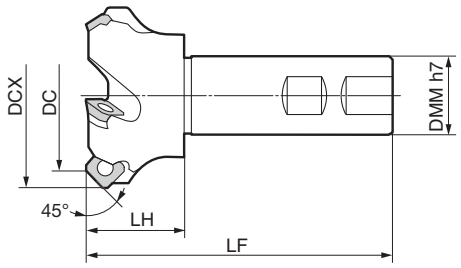
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

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

4mm 45° (3000 Type)

6mm 45° (4000 Type)

Fig 1



Body (Shank Type)

Dimensions (mm)

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

Body (Shank Type)

Dimensions (mm)

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

Inserts are sold separately.

Insert

Dimensions (mm)

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

Fig 1

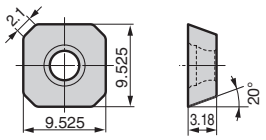


Fig 2

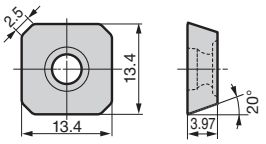
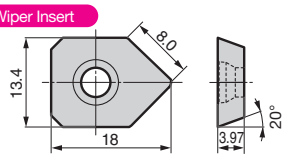


Fig 3

Wiper Insert



Refer to H19 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Parts

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

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
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

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

WGC4000EW Type

ISO	Work Material	Hardness	Cutting Speed 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
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

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

N·m Recommended tightening torque (N·m) ▲ 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 | S Exotic Alloy

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

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

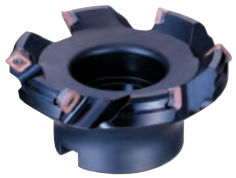
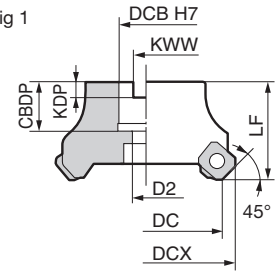


Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Hole 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

Inserts are sold separately.

Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Hole 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 (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Hole 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 Classification		Coated Carbide				DLC	Cemented Carbide			Cermet	SUMIDIA		Applicable Cutter	Fig
Process		ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	A30N	EH520	H1	T250A	DA1000	DA2200		
Process	High-speed/Light	P			K		N			KN		N	N		
Process	General-purpose		PM	M	K		N	P	KS		P	N	N		
Process	Roughing		PM	PM		K						N	N		
	SEET 0903AGFN-L	●	●	●	●	●	●			●		—	—	WGC3000 Type	1
	0903AGSN-G	●	●	●	●	●			●		●	—	—		1
	0903AGSN-N	●	●	●	●	●					●	—	—		1
	SEMT 0903AGSN-L	●	●	●	●	●					—	—	—		1
	0903AGSN-G	●	●	●	●	●		●			—	—	—		1
	SEET 13T3AGFN-L	●	●	●	●	●	●		●	●		—	—	WGC4000 Type WGCF4000 Type	2
	13T3AGSN-G	●	●	●	●	●			●		●	—	—		2
	13T3AGSN-N	●	●	●	●	●		●			●	—	—		2
	SEMT 13T3AGSN-L	●	●	●	●	●					—	—	—		2
	13T3AGSN-G	●	●	●	●	●		●			—	—	—		2
	13T3AGSN-H	●	●	●	●	●					—	—	—		2
	NF-SECW 13T3AGTN-N	—	—	—	—	—	—	—	—	—	—	●	▲		2
	NF-XEEW 13T3AGFR-W	—	—	—	—	—	—	—	—	—	—	●	▲		3
	XEEW 13T3AGER-W					●					●	—	—		3

Fig 1

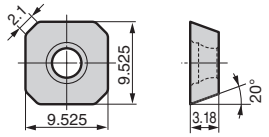


Fig 2

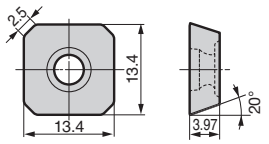
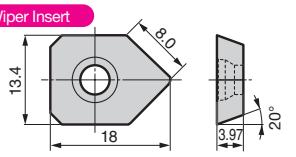


Fig 3

Wiper Insert



Refer to H19 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seizure Cream
					N·m			
WGC 3000RS Type	—	—	—	BFTX0307IP	2.0	HPS1015	TRB10IP	SUMI-P
WGC 4000RS Type WGCF 4000RS Type	WGCS13R	BW0507F	LH035	BFTX03512IP	3.0		TRB15IP	

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
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.18**-0.25	ACP200
P	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
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

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

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
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.25**-0.40	ACP200
P	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
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	EH520

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

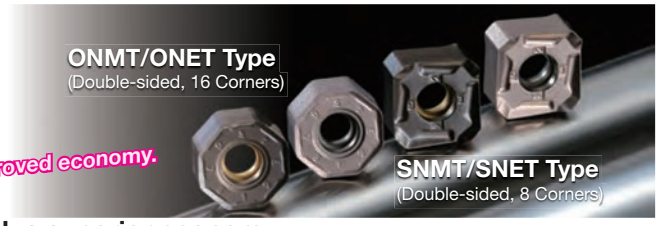
N·m Recommended tightening torque (N·m) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

DGC Type

Expansion

■ 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.



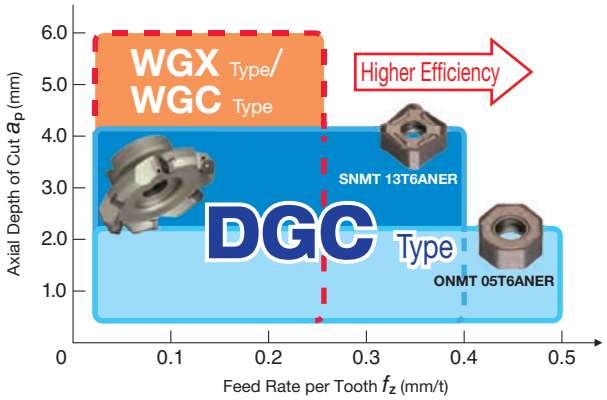
The DGC Type insert lineup includes double-sided SNMT/SNET and ONMT/ONET types.
Up to 16 corners can be used for improved economy.

■ Features

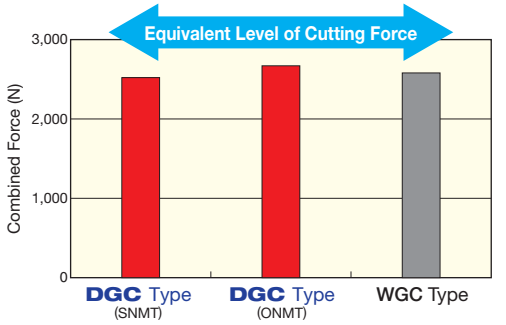
● Same cutting performance as single-sided inserts plus superior economy

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.

● Application Range for General Steel Machining



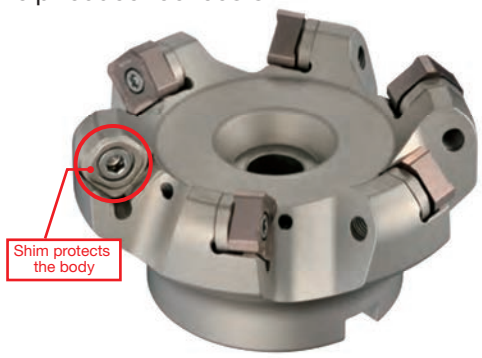
● Comparison of Cutting Force



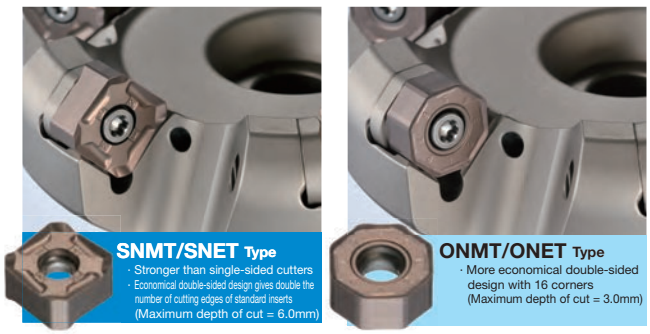
Work Material: SCM435 Tool: ø100
Cutting Conditions: V_c = 200m/min, f_z = 0.3mm/t, a_p = 3mm, a_e = 85mm

● Dual-purpose Body Features

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



Use two types of insert for different applications



● Choose a tool to suit your application from a comprehensive lineup

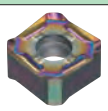
DGC 13000R(S) Standard Pitch	DGCM 13000R(S) Fine Pitch	DGCF 13000R(S) Extra Fine Pitch	DGC 13000EW Shank Type
Cutter Diameter: ø40mm to ø250mm	Cutter Diameter: ø50mm to ø250mm	Cutter Diameter: ø50mm to ø250mm	Cutter Diameter: ø40mm to ø63mm
No. of Teeth: 3 to 10	No. of Teeth: 4 to 14	No. of Teeth: 5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

● General-purpose Grade Applicable to Any Work Material

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

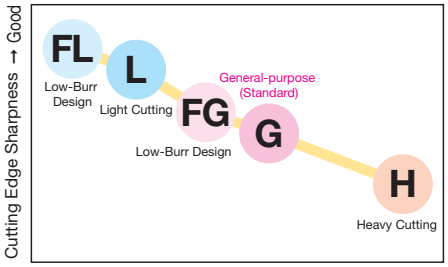
DGC Type

■ Chipbreaker Selection

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

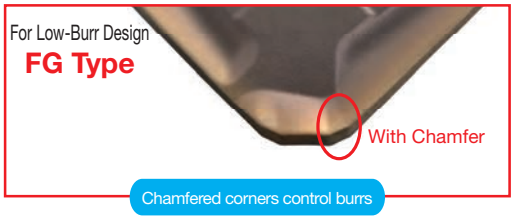
* Can only be used in conjunction with 8 corner inserts

■ Chipbreaker Selection Guide

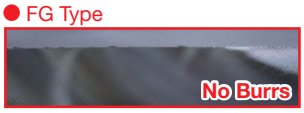


● Improved Machining Quality

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

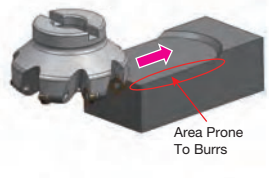


● FG Type



● Competitor's Product

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

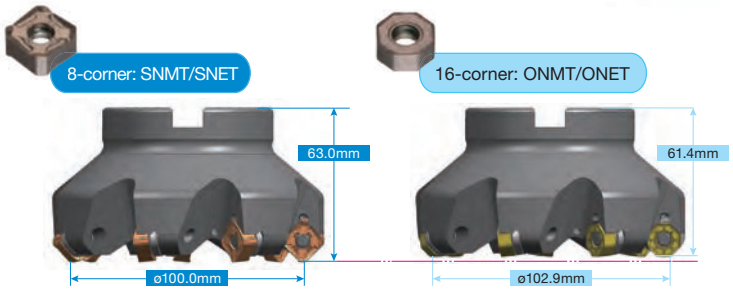


Work Material: SCM435

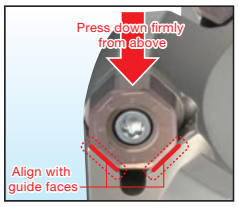
Tool: ø100

Cutting Conditions: V_c = 200m/min, f_z = 0.2mm/t
a_p = 3mm, a_e = 85mm

Cutter Diameter and Cutting Edge Height



16-corner Mounting Method



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

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

Body Shape (Example: With Cutter Diameter of ø100mm)

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

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	ACU2500 ACP200 ACP300 XCU2500
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.30**-0.45	< 4	
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.25**-0.35	< 4	
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 3	ACU2500 ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.25**-0.40	< 5	ACU2500 ACK200 ACK300 XCU2500 XCK2000
N	Non-ferrous Metal	—	500-**750**-1,000	0.15-**0.23**-0.30	< 3	DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	< 3	ACU2500 ACM200 ACM300

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

Recommended Cutting Conditions (ONMT/ONET)

ISO	Work Material	Hardness	Cutting Speed 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-**0.30**-0.50	< 2	ACU2500 ACP200 ACP300 XCU2500
P	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.50**-0.50	< 2	
P	Die Steel	200 to 220 HB	100-**150**-200	0.15-**0.25**-0.30	< 2	
M	Stainless Steel	—	160-**200**-250	0.15-**0.23**-0.30	< 2	ACU2500 ACM300
K	Cast Iron	250HB	100-**200**-250	0.10-**0.30**-0.50	< 2	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.20**-0.30	< 2	ACU2500 ACM200 ACM300

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

■ Precautions when Using Wiper Inserts with Holes

Fig 1

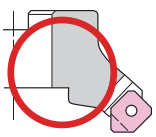
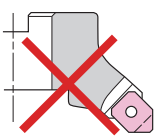


Fig 2



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

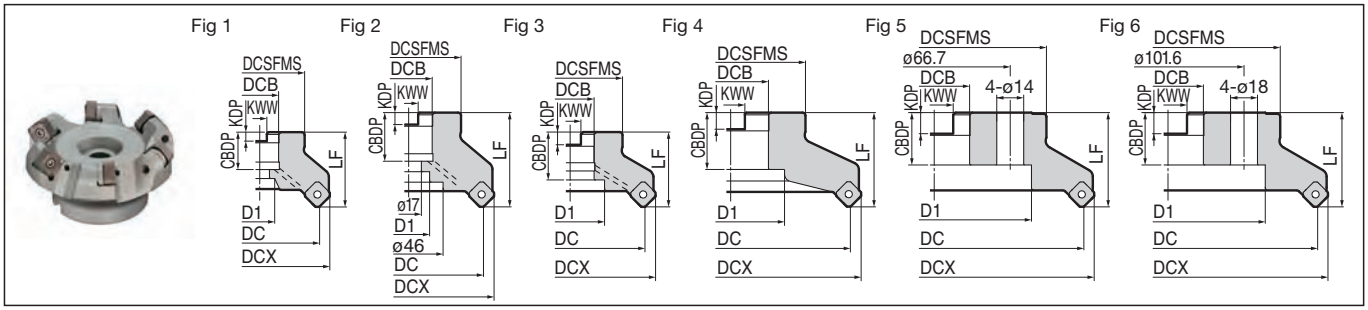
DGC 13000R(S) Type

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

Expansion

Rake Angle	Radial	-10°
	Axial	-5°

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



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGC 13040RS**	●	**40(42.9)**	54(50.8)	36	40(38.44)	**16**	8.4	5.6	18	13.5	3	0.3	1
	13050RS	●	**50(52.9)**	64(60.8)	40	40(38.44)	**22**	10.4	6.3	20	18	3	0.4	1
	13063RS	●	**63(65.9)**	77(73.8)	50	40(38.44)	**22**	10.4	6.3	20	18	4	0.5	1
	13080RS	●	***80(82.9)**	94(90.8)	60	50(48.44)	**27**	12.4	7	25	20	4	1.2	1
	13100RS	●	**100(102.9)**	114(110.8)	70	50(48.44)	**32**	14.4	8.5	32	46	5	1.6	3
	13125RS	●	**125(127.9)**	139(135.8)	80	63(61.44)	**40**	16.4	9.5	29	52	6	2.8	1
	13160RS	●	**160(162.9)**	174(170.8)	130	63(61.44)	**40**	16.4	9.5	29	88	7	4.5	5
	13200RS	●	**200(202.9)**	214(210.8)	150	63(61.44)	**60**	25.7	14	35	130	8	7.1	6
	13250RS	●	**250(252.9)**	264(260.8)	190	63(61.44)	**60**	25.7	14	35	160	10	11.2	6
Inch	**DGC 13080R**	●	***80(82.9)**	94(90.8)	60	50(48.44)	**25.4**	9.5	6	25	20	4	1.2	1
	13100R	●	***100(102.9)**	114(110.8)	70	63(61.44)	**31.75**	12.7	8	32.5	28	5	2.2	2
	13125R	●	**125(127.9)**	139(135.8)	80	63(61.44)	**38.1**	15.9	10	35.5	55	6	2.8	1
	13160R	●	**160(162.9)**	174(170.8)	100	63(61.44)	**50.8**	19.1	11	38	72	7	4.5	4
	13200R	●	**200(202.9)**	214(210.8)	150	63(61.44)	**47.625**	25.4	14	35	130	8	7.1	6
	13250R	●	**250(252.9)**	264(260.8)	190	63(61.44)	**47.625**	25.4	14	35	150	10	11.2	6

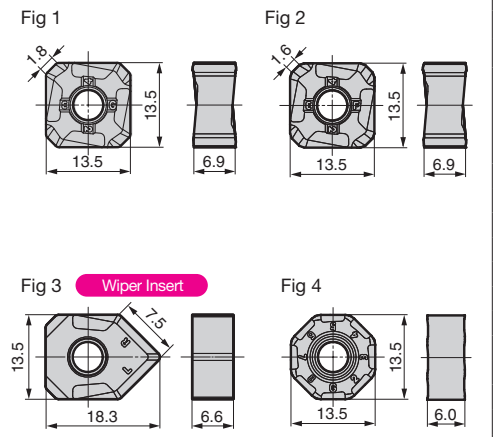
( ) indicates value for ONMT/ONET type inserts. Inserts are sold separately. Sizes ø160 mm and above do not have coolant holes.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

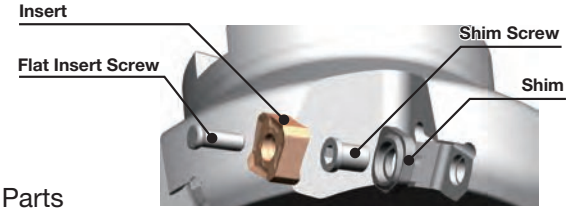
Grade Classification		Coated Carbide									Cemented Carbide		DLC	Cermet	
Process	High-speed/Light	P K M S	P K M S	P			K	K		M S		K N		N	P M	
	Medium Cutting	P K M S	P K M S		P M	P M	K	K		M S	M S		K S	N	P	
	Roughing	P K M S			P M	P M			K		M S					
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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 H29 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H29



Identification Code

DGC Series | **13** Insert Size | **040** Cutter Dia. | **R** Feed Direction | **S** Metric Body

Parts

(Sold Separately)

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

Flat Insert Screw (*)	
BFTX0418IP	N·m 3.0

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

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

DGCM 13000R(S) Type

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

Expansion

Rake Angle	Radial	-10°
	Axial	-5°

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

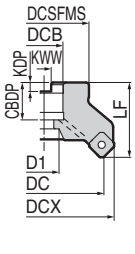
Fig 1


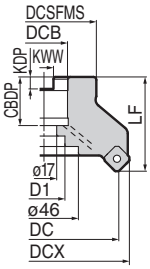
Fig 2


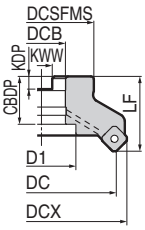
Fig 3


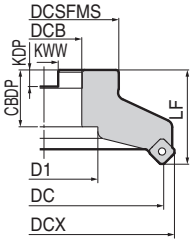
Fig 4


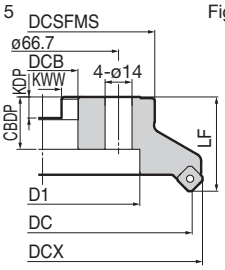
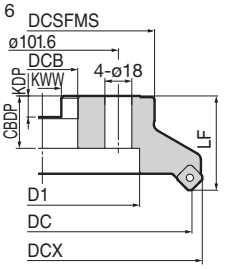
Fig 5


Fig 6


Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGCM 13050RS**	●	**50(52.9)**	64(60.8)	40	40(38.44)	**22**	10.4	6.3	20	18	4	0.3	1
	13063RS	●	**63(65.9)**	77(73.8)	50	40(38.44)	**22**	10.4	6.3	20	18	5	0.5	1
	13080RS	●	***80(82.9)**	94(90.8)	60	50(48.44)	**27**	12.4	7	25	20	6	1.1	1
	13100RS	●	**100(102.9)**	114(110.8)	70	50(48.44)	**32**	14.4	8.5	32	46	7	1.5	3
	13125RS	●	**125(127.9)**	139(135.8)	80	63(61.44)	**40**	16.4	9.5	29	52	8	2.8	1
	13160RS	●	**160(162.9)**	174(170.8)	130	63(61.44)	**40**	16.4	9.5	29	88	10	4.6	5
	13200RS	●	**200(202.9)**	214(210.8)	150	63(61.44)	**60**	25.7	14	35	130	12	7	6
	13250RS	●	**250(252.9)**	264(260.8)	190	63(61.44)	**60**	25.7	14	35	160	14	11.1	6
Inch	**DGCM 13080R**	●	***80(82.9)**	94(90.8)	60	50(48.44)	**25.4**	9.5	6	25	20	6	1.1	1
	13100R	●	***100(102.9)**	114(110.8)	70	63(61.44)	**31.75**	12.7	8	32.5	28	7	2.2	2
	13125R	●	**125(127.9)**	139(135.8)	80	63(61.44)	**38.1**	15.9	10	35.5	55	8	2.8	1
	13160R	●	**160(162.9)**	174(170.8)	100	63(61.44)	**50.8**	19.1	11	38	72	10	4.6	4
	13200R	●	**200(202.9)**	214(210.8)	150	63(61.44)	**47.625**	25.4	14	35	130	12	7	6
	13250R	●	**250(252.9)**	264(260.8)	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 mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide		DLC	Cermet	
Process	High-speed/Light	P M S	P M K	P			K	K		M S		K N		N	P M
	Medium Cutting	P M S	P M K		P M	P M	K	K		M S			K S	N	P
	Roughing	P M S			P M	P M			K		M S				
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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

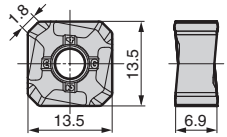
Fig 1


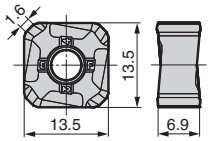
Fig 2


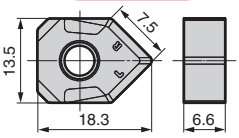
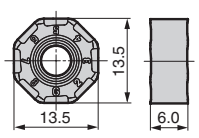
Fig 3 Wiper Insert


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 H29 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H29

Identification Code

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

Parts (Sold Separately)

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

Flat Insert Screw (*)	
BFTX0418IP	N·m 3.0

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

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

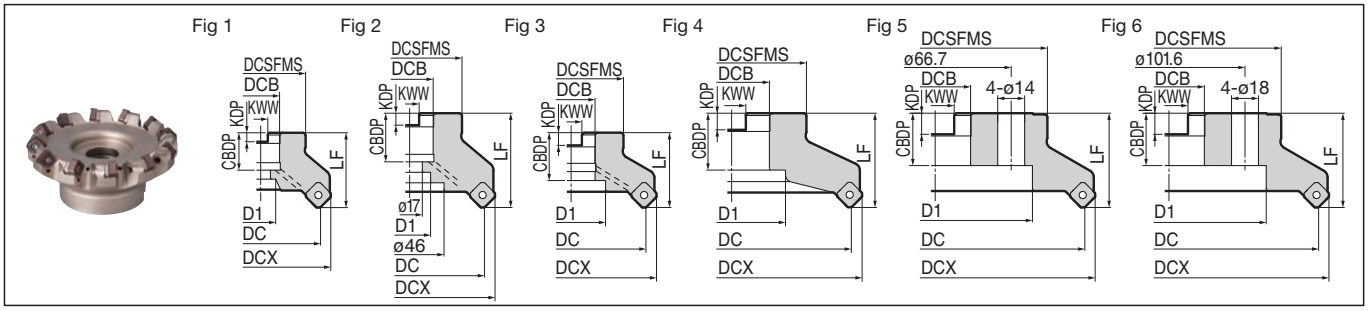
DGCF 13000R(S) Type

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

Expansion

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	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	DGCF 13050RS	●	50(52.9)	64(60.8)	40	40(38.44)	22	10.4	6.3	20	18	5	0.3	1
	13063RS	●	63(65.9)	77(73.8)	50	40(38.44)	22	10.4	6.3	20	18	6	0.5	1
	13080RS	●	*80(82.9)	94(90.8)	60	50(48.44)	27	12.4	7	25	20	8	1.1	1
	13100RS	●	100(102.9)	114(110.8)	70	50(48.44)	32	14.4	8.5	32	46	10	1.4	3
	13125RS	●	125(127.9)	139(135.8)	80	63(61.44)	40	16.4	9.5	29	52	12	2.7	1
	13160RS	●	160(162.9)	174(170.8)	130	63(61.44)	40	16.4	9.5	29	88	14	4.4	5
	13200RS	●	200(202.9)	214(210.8)	150	63(61.44)	60	25.7	14	35	130	16	6.9	6
	13250RS	●	250(252.9)	264(260.8)	190	63(61.44)	60	25.7	14	35	160	18	11	6
Inch	DGCF 13080R	●	*80(82.9)	94(90.8)	60	50(48.44)	25.4	9.5	6	25	20	8	1.1	1
	13100R	●	*100(102.9)	114(110.8)	70	63(61.44)	31.75	12.7	8	32.5	28	10	2.1	2
	13125R	●	125(127.9)	139(135.8)	80	63(61.44)	38.1	15.9	10	35.5	55	12	2.7	1
	13160R	●	160(162.9)	174(170.8)	100	63(61.44)	50.8	19.1	11	38	72	14	4.4	4
	13200R	●	200(202.9)	214(210.8)	150	63(61.44)	47.625	25.4	14	35	130	16	6.9	6
	13250R	●	250(252.9)	264(260.8)	190	63(61.44)	47.625	25.4	14	35	150	18	11	6

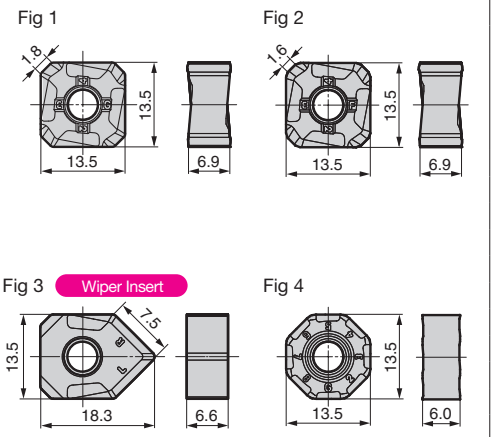
( ) indicates value for ONMT/ONET type inserts. Inserts are sold separately. Sizes ø160 mm and above do not have coolant holes.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

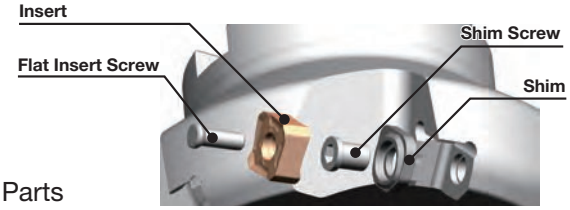
Grade Classification		Coated Carbide										Cermented Carbide		DLC	Cermet	
Process	High-speed/Light	●	●	●			●	●		●		●		●	●	
	Medium Cutting	●	●		●	●	●	●		●			●	●	●	
	Roughing	●			●	●			●		●					
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	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 H29 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H29



Identification Code

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

Parts (Sold Separately)

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

Flat Insert Screw (*)	
BFTX0418IP	N·m 3.0

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

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

DGC 13000EW Type

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

Expansion

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	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DGC 13040EW	●	**40(42.9)**	54(50.8)	32	40(38.44)	125	3	0.7	1
13050EW	●	**50(52.9)**	64(60.8)	32	40(38.44)	125	3	0.9	1
13063EW	●	**63(65.9)**	77(73.8)	32	40(38.44)	125	4	1.1	1

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

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide		DLC	Cermet	
Process	High-speed/Light	P M S	P M	P			K	K		M S	K N		N	P M	
	Medium Cutting	P M S	P M		P M	P M	K	K		M S		K S	N	P	
	Roughing	P M S			P M	P M			K		M S				
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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

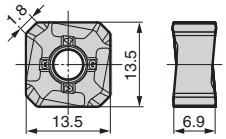


Fig 2

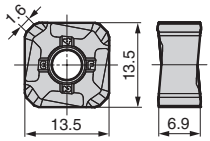


Fig 3 Wiper Insert

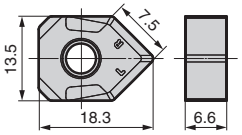
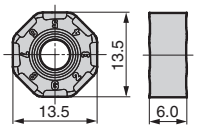


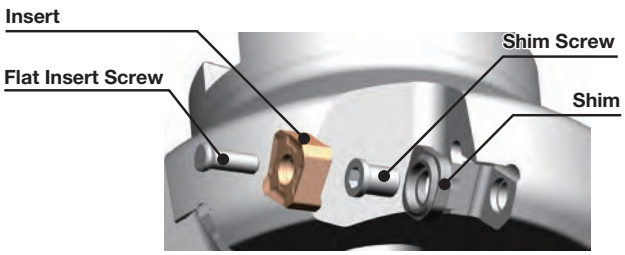
Fig 4



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 H29 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H29



Identification Code

DGC	13	040	EW
Series	Insert Size	Cutter Dia.	Shank Type

Parts

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

UFO 4000 Type

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

Rake Angle		
Radial	-7°	
Axial	27°	

5.5mm, 45°

Fig 1

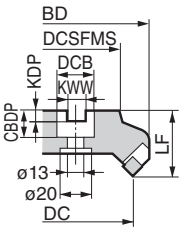


Fig 2

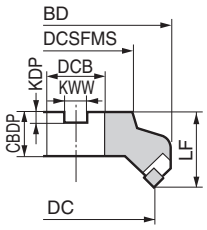


Fig 3

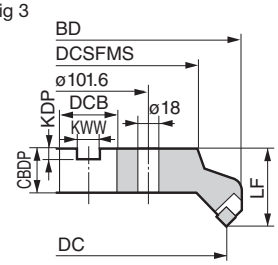
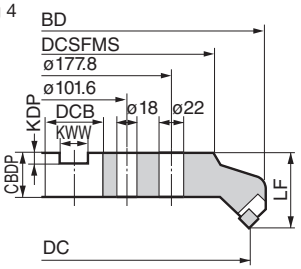


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Body Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented 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

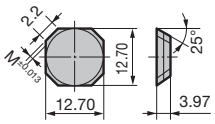


Fig 2 (Grades in ACP/ACK Series)

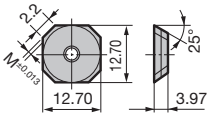


Fig 3

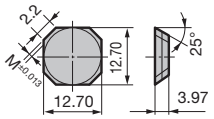


Fig 4

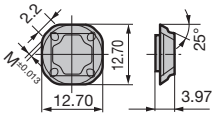
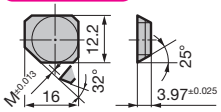
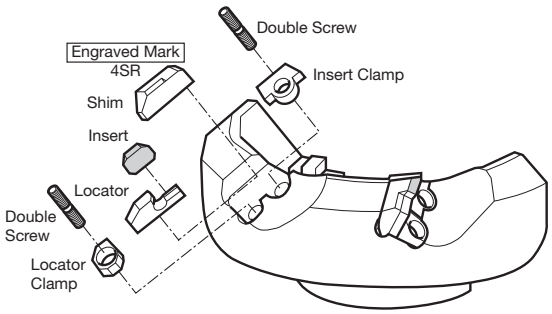


Fig 5 Wiper Insert



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



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.

Parts

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

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

N·m Recommended Tightening Torque (N·m)

UFO 5000 Type

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

Rake Angle		
Radial	-7°	
Axial	27°	

7.5mm 45°

Fig 1

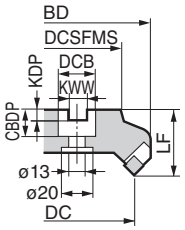


Fig 2

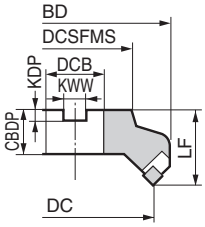


Fig 3

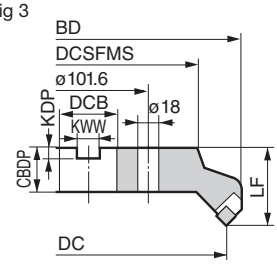
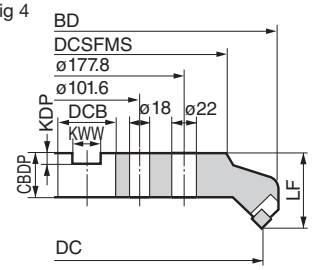


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Body Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented 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

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

Fig 1

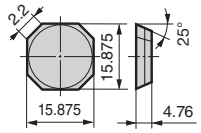


Fig 2 (Grades in ACP/ACK Series)

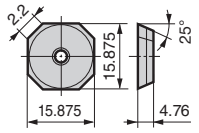


Fig 3

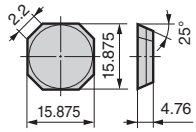
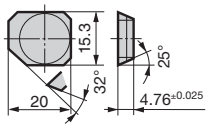
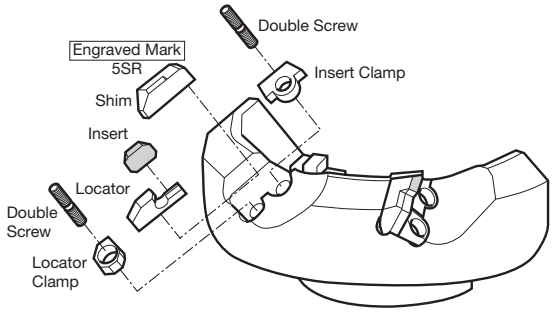


Fig 4 Wiper Insert





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
P	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.23**-0.30	ACP200
P	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.

Parts

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

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

SEC-SUMI UFO MILL (Shank Type)

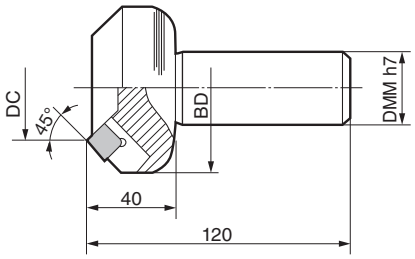
UFO 4000E Type

P Steel K Cast Iron N Non-Ferrous Metal

Rake Angle		
	Radial	-7°
	Axial	27°

5.5mm 45°

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Body Dia. BD	Shank DMM	Number of Teeth	Max. 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 Classification		Coated Carbide						Cemented Carbide				Cermet	
Process	High-speed/Light	P			K		M			K/N			
	General-purpose		PM	PM	K			P	K		K	P	
	Roughing		PM	PM		K							
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	H1	H10E	T250A	Fig
SFEN 12T3AZTN		●	●					●				●	1
12T3AZTN-S								●					1
12T3AZTN-W													1
12T3AZFN										●			1
SFKN 12T3AZTN		●	●	●				●				●	2(3)
12T3AZTN-S								●					3
12T3AZTN-W												●	3
12T3AZFN					●	●	●		●				2(3)
SFKR 12T3AZEN		●						●					4
UW 12500R											●		5

Fig 1

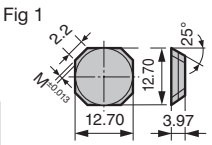


Fig 2 (For ACP/ACK Series)

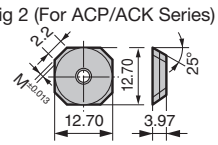


Fig 3

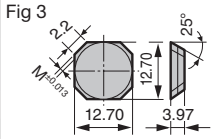


Fig 4

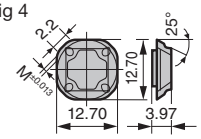
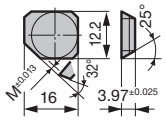
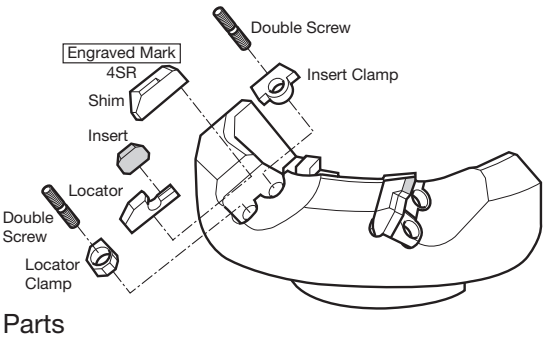


Fig 5



Wiper Insert



Parts

Shim	Locator	Locator Clamp	Insert Clamp	Double Screw			Wrench	Anti-seizure Cream
					Size	N·m		
UF4SR	UF4KR	UFKWR	UFTWR	WB7-15T	**M7**	**8.0**	TT25	SUMI-P

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
P	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
P	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 S Exotic Alloy

Rake Angle		
Radial	10°	
Axial	25°	

10mm

Fig 1

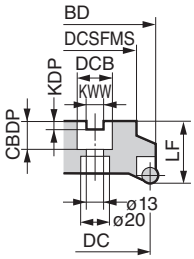


Fig 2

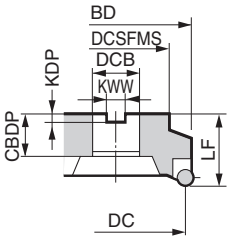
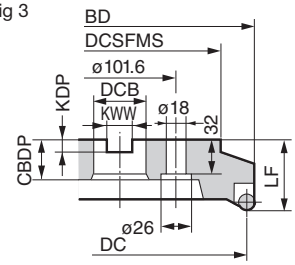


Fig 3



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Body Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**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.

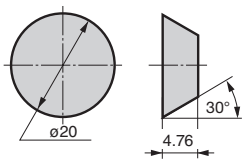
For securing the ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

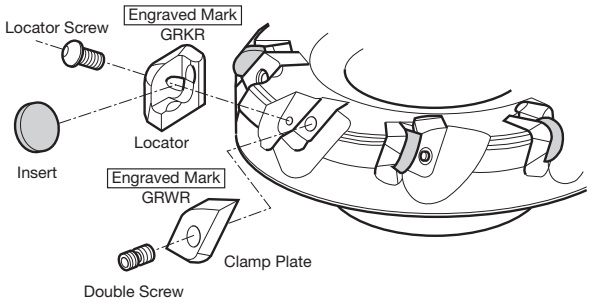
Dimensions (mm)

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

Fig 1



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



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	200to 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.

Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Double Screw	Size	N·m	Wrench	Anti-seizure Cream
GRC 6080R to GRC 6250R	GRKR	BH0410T	**M4**	3.0	GRWR	WB8-22T	**M8**	8.0	TT27 (TT15)	SUMI-P
GRC 6080L to GRC 6250L	GRKL	BH0410T	**M4**	3.0	GRWL	WB8-22T	**M8**	8.0	TT27 (TT15)	

FPG 4000/5000 Type

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

Rake Angle		
Radial	-4°	
Axial	15°	

6.5mm 45° (4000 Type)

8.5mm 45° (5000 Type)

Fig 1

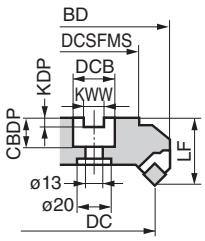


Fig 2

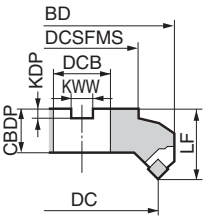


Fig 3

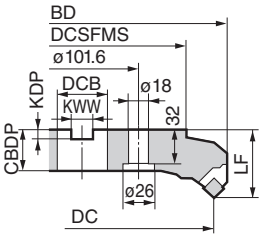
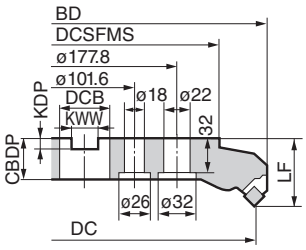


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Body Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented 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)

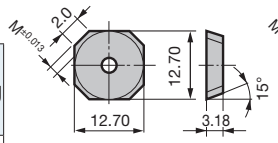


Fig 2

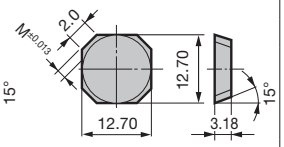


Fig 3

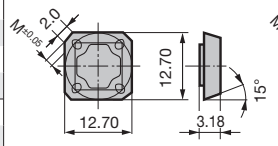


Fig 4 (Grades in ACP/ACK Series)

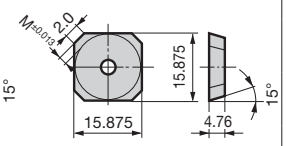
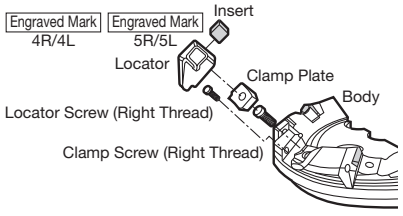


Fig 5: Same as Fig 4 without hole

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	Locator Screw	Size	N·m	Clamp Plate	Clamp Screw	Anti-seizure Cream
FPG4000R Type	LFP4R	FBH0512	M5	5.0	FPWR	FBX0817	SUMI-P
FPG4000L Type	LFP4L				FPWL		
FPG5000R Type	LFP5R				FPWR		
FPG5000L Type	LFP5L				FPWL		

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
P	Mild Steel	≤ 180HB	125-**210**-300	0.15-**0.28**-0.40	ACP200
P	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)

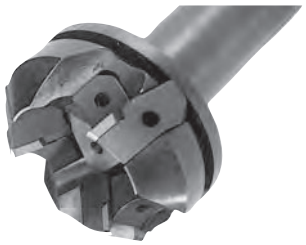
FPE 4000 Type

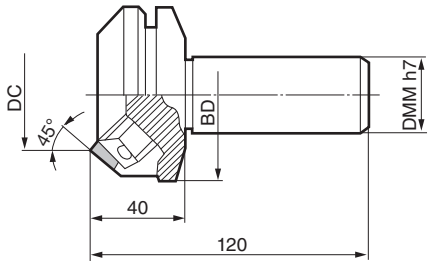
P Steel K Cast Iron

Rake Angle		
	Radial	-3°
	Axial	15°

6.5mm 45°

Fig 1





Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Body Dia. BD	Shank DMM	Number of Teeth	Max. 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 Classification		Coated Carbide						Cemented Carbide		Cermet		SUMIDIA		
Process	High-speed/Light	P			K		M			P		N	N	
	General-purpose		PM	PM	K			P	K		P	N	N	
	Roughing		PM	PM		K						N	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	G10E	T1500A	T250A	DA1000	DA2200	Fig
SDEX 42MT								●		●	●	—	—	2
SDKN 42M					●	●	●		●			—	—	1(2)
NF-SDKN 42M		—	—	—	—	—	—	—	—		—	●	▲	2
SDKN 42MT		●	●	●				●		●	●	—	—	1(2)
42MT-W											●	—	—	2
SDNN 1203AETN*		●	●	—	—	—	—	●	—	—	●	—	—	2
SDMR 1203AEEN		●	●					●			—	—	—	3
1203AETN		—	—	—	—	—	—	—	—	—	●	—	—	3

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

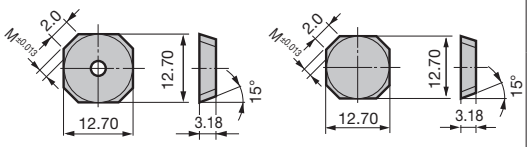
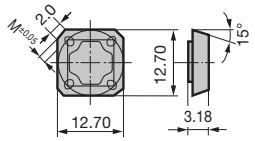


Fig 3



Cat. No. marked *: M ±0.08.

Parts

Locator	Locator Screw	Clamp Plate	Clamp Screw			Wrench	Anti-seizure Cream
				Size	N·m		
LFE4R	FBH0512	FEWR	FBX0817	**M8**	8.0	TH040	SUMI-P

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

Rake Angle		
Radial	-3°	
Axial	20°	

5.5mm 45° (4000 Type) | 7.5mm 45° (5000 Type)

Fig 1

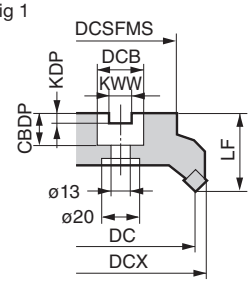


Fig 2

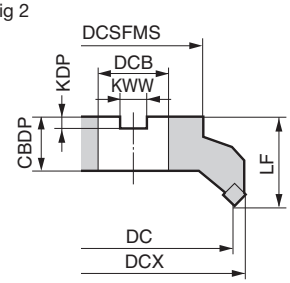
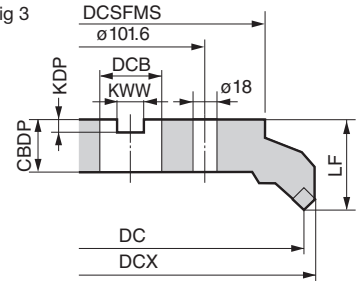


Fig 3



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole 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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

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

Fig 1

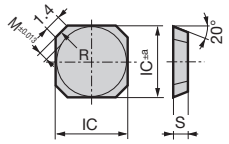


Fig 2 (Grades in ACP/ACK Series)

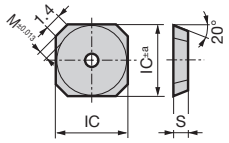


Fig 3

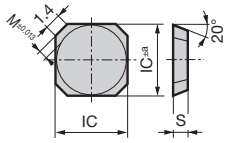
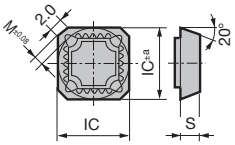


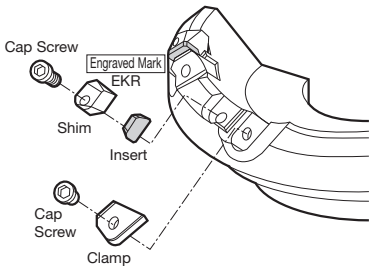
Fig 4



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

Insert Application Table

Body	Insert
EHG4000 Type	SE○N42·· SE○○12··
EHG5000 Type	SE○N53··



Parts

Applicable Cutter	Shim	Clamp Plate	Cap Screw	Size	N·m	Wrench	Anti-seizure Cream
EHG4000R Type	EHK4R	EHW4R	EHBX0512	**M5**	5.0	TH040	SUMI-P
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
P	Mild Steel	≤ 180HB	160-**230**-300	0.10-**0.18**-0.25	ACP200
P	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)

M E M O

DNX(F) Type/DNH Type/DNHS Type

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

■ Features

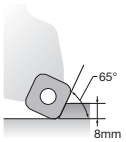
- Achieves high-efficiency milling with a max. 8 mm depth of cut
- Employs negative inserts with chipbreakers that have a strong cutting edge on the double negative type body. Economical design using 8 corners
- Supports general to high-efficiency high-feed milling with three body types. Same inserts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

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

■ Product Range

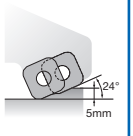
DNX(F) Type — General-purpose Type

Max. Depth of Cut		8mm
Cutting Angle		65°
Cutter Dia.	DNX 12000R(S) Standard Pitch	ø80 to ø250mm
	DNXF 12000R(S) Extra Fine Pitch	ø80 to ø160mm



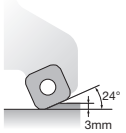
DNHS Type — Medium Depth of Cut High-Feed Type

Max. Depth of Cut		5mm
Cutting 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

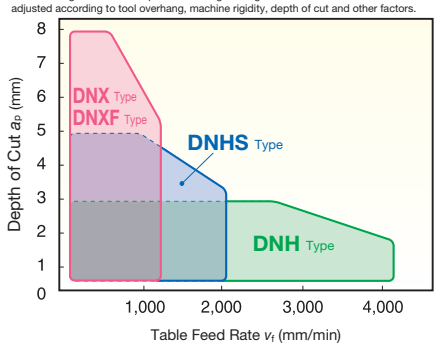
Max. Depth of Cut		3mm
Cutting Angle		24°
Cutter Dia.	DNH 12000R Small Depth of Cut High-Feed Type	ø80 to ø160mm



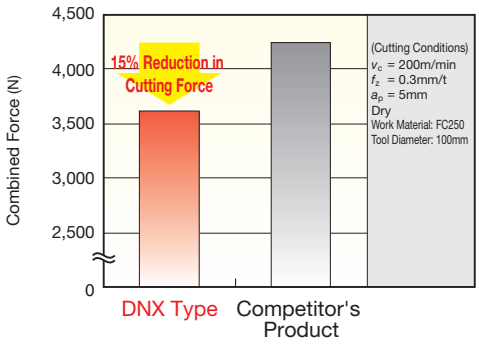
Large ◀ Depth of Cut — Feed Rate ▶ High

■ 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	180 to 280 HB	150-**175**-200	0.10-**0.15**-0.20	ACP200
P	Alloy Steel	180 to 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.

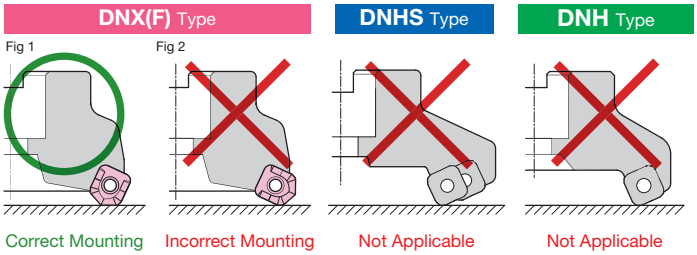
DNHS Type/DNH Type

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	180 to 280 HB	150-**175**-200	0.10-**0.45**-0.80	ACP200
P	Alloy Steel	180 to 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.

■ Precautions when Using Wiper Inserts with Holes

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



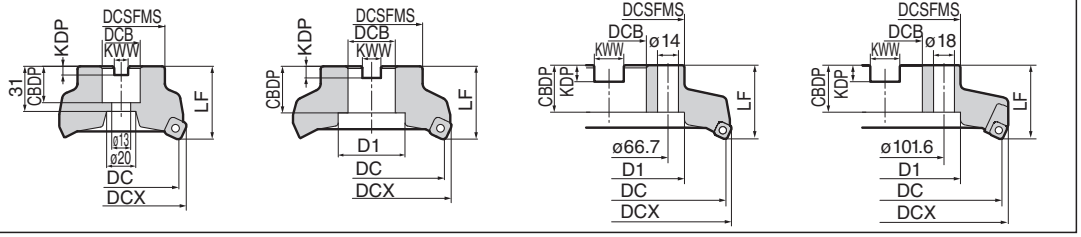
DNX(F)12000 Type

P Steel K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

8mm / 65°

Fig 1 Fig 2 Fig 3 Fig 4



Body (Standard Pitch) Cutting Angle 65°

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective No. 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 (Extra Fine Pitch) Cutting Angle 65°

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective No. 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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

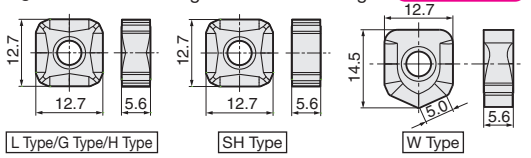
Insert

Dimensions (mm)

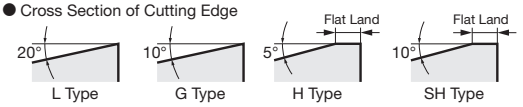
Grade Classification		Coated Carbide				
Process	High-speed/Light	K	K			
	General-purpose	K	K		PM	PM
	Roughing			K	PM	PM

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

Fig 1 Fig 2 Fig 3 Wiper Insert



● Cross Section of Cutting Edge



Refer to H42 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Recommended Cutting Conditions H42

Identification Code

DNX F 12 080 R S

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

Parts

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

N·m Recommended Tightening Torque (N·m)

DNH(S)12000 Type

P Steel K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

3mm 24° (DNH Type)

5mm 24° (DNHS Type)

Fig 1

Fig 2

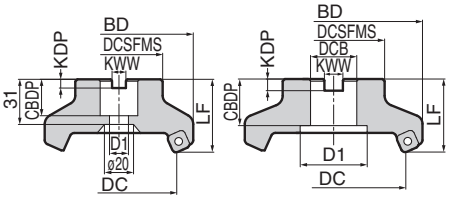
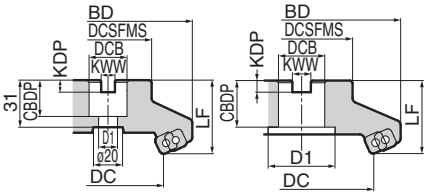


Fig 3

Fig 4



Body Cutting Angle 24° Shallow Depth of Cut High-Feed Type

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Body Dia. BD	Boss DCSFMS	Bolt D1	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective No. 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 Cutting Angle 24° Medium Depth of Cut High-Feed Type

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Body Dia. BD	Boss DCSFMS	Bolt D1	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective No. 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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

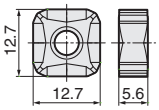
Insert

Dimensions (mm)

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

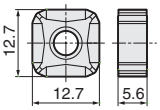
Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting edge Shape	Applications	Fig
SNMT 1205ZNEN-L		●	●	●		V-shaped Edge Type	Light Cutting	1
1205ZNEN-G	●	●	●	●			General-purpose	1
1205ZNEN-H	●	●	●	●			Heavy Cutting	1
SNMT 1205ZNEN-SH	●	●	●	●	●	Straight Edge Type	Improved Chip Control	2
XNGT 1205ZNEN-W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

Fig 1



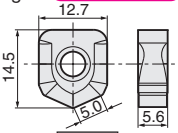
L Type/G Type/H Type

Fig 2



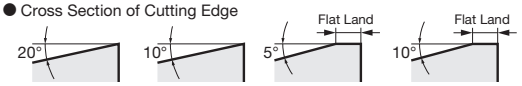
SH Type

Fig 3 Wiper Insert



W Type

● Cross Section of Cutting Edge



L Type G Type H Type SH Type

Refer to H42 (Precautions when Using Wiper Inserts With Holes) (Mounting Precautions).

Parts

Cat. No.	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
		N·m				
DNH(S) 12080R to DNH(S) 12100R	BFTX0412IP	3.0	—	HPS1015	TRB15IP	SUMI-P
DNH(S) 12125R to DNH(S) 12160R			TRDR15IP	—	—	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-**225**-300	0.10-**0.55**-1.00	ACK200 ACK300
	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.55**-1.00	ACK200 ACK300
P	Carbon Steel	180 to 280 HB	150-**175**-200	0.10-**0.45**-0.80	ACP200
	Alloy Steel	180 to 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.

N·m Recommended Tightening Torque (N·m)

DNF 4000 Type

P Steel K Cast Iron H Hardened Steel

Rake Angle	Radial	-6°
	Axial	-5°

6.5mm / 65°

Fig 1

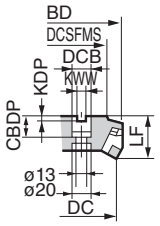


Fig 2

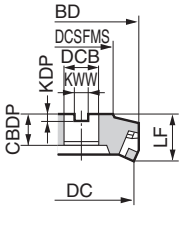


Fig 3

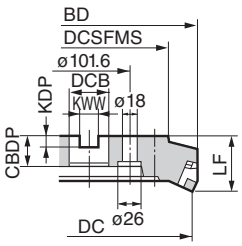
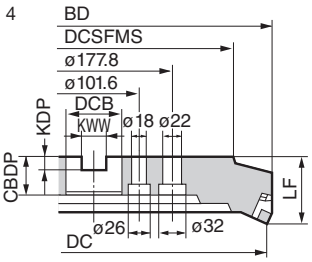


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Body Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**DNF 4080R/L**	●		***80**	96	60	50	**25.4**	9.5	6	25	6	1.8	1
	4100R/L	●	●	**100**	116	75	60	**31.75**	12.7	8	32	8	3.0	2
	4125R/L	●		**125**	141	75	60	**38.1**	15.9	10	38	10	4.3	2
	4160R/L	●		**160**	176	100	60	**50.8**	19.1	11	38	12	6.8	2
	4200R/L	●		**200**	216	130	60	**47.625**	25.4	13.5	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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet		SUMIBORON	
Process	High-speed/Light	P			K							P		H	
	General-purpose		PM		K			P	P	K	K		P	H	
	Roughing		PM	PM		K									
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30N	A30	H10E	G10E	T1500A	T250A	BN2000	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														—	4
SNMN 432TN-S														—	—
433TN-S														—	—
434TN-S														—	—
NW 100										●		●		—	5

Fig 1

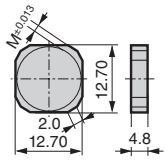


Fig 2

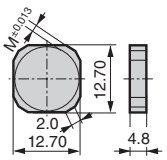


Fig 3

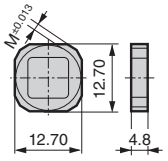


Fig 4

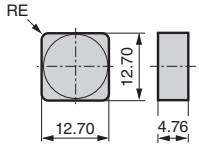
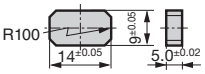
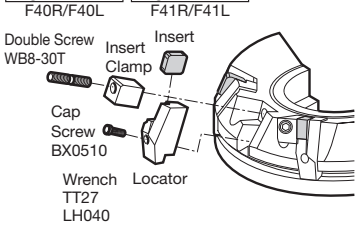


Fig 5 Wiper Insert



Parts

Applicable Cutter	Locator (*)	Insert Clamp	Anti-seizure Cream
DNF4080R DNF4100R	LNF40R	FTW40R	SUMI-P
DNF4125R to DNF4500R	LNF40R	FTW41R	SUMI-P
DNF4080L to DNF4100L	LNF40L	FTW40L	SUMI-P
DNF4125L to DNF4500L	LNF40L	FTW41L	SUMI-P



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
P	Mild Steel	≤ 180	100-**130**-160	0.10-**0.18**-0.25	T250A
K	Cast Iron	250HB	150-**200**-250	0.10-**0.15**-0.20	ACK200

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

APG 4000 Type

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

Rake Angle		
Radial	-2°	
Axial	18°	

7 mm / 65°

Fig 1

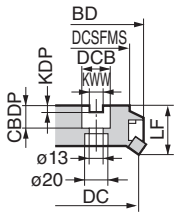


Fig 2

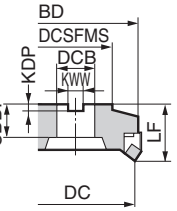


Fig 3

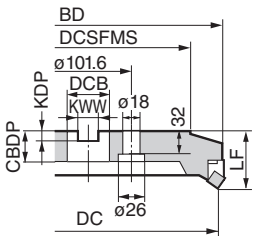
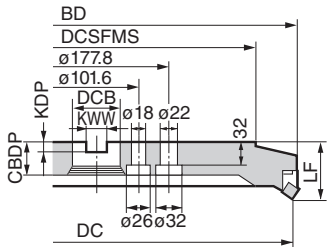


Fig 4



Body

Dimensions (mm)

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

Inserts are sold separately.

For securing the ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented 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

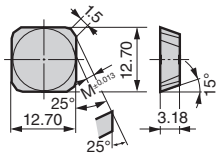


Fig 2

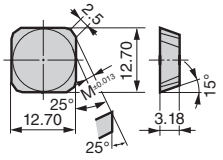
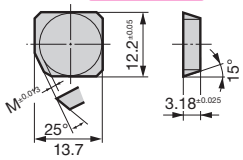
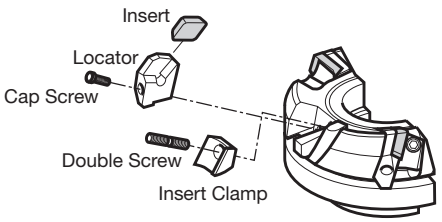


Fig 3 Wiper Insert



Double Screw (Common)	Size	N·m
	M8	**8.0**

Cap Screw	Size	N·m
	M5	**5.0**



Parts

Applicable Cutter	Locator	Cap Screw	Insert Clamp	Double Screw	Wrench	Anti-seizure Cream
APG4080R	LAP40R	BXF0520R	ATW45R	WB8-20	TH040	SUMI-P
APG4100R to APG4500R				WB8-22TL	TT27	
APG4080L	LAP40L	BXF0520R	ATW45L	WB8-20	TH040	
APG4100L 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
P	Mild Steel	≤ 180HB	120-**150**-180	0.10-**0.18**-0.25	A30N
P	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

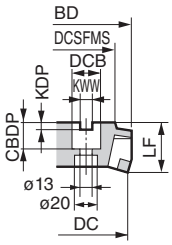


Fig 2

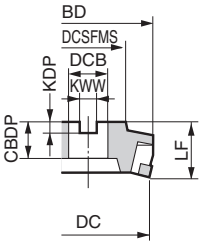
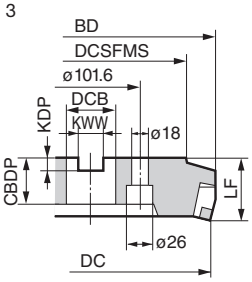


Fig 3



Body

Dimensions (mm)

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

Inserts are sold separately.

For securing the ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

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

Fig 1 (Grades in ACP/ACK Series)

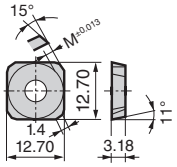


Fig 2

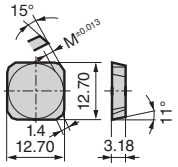


Fig 3

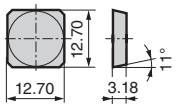
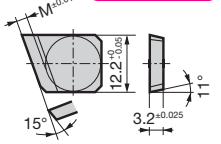
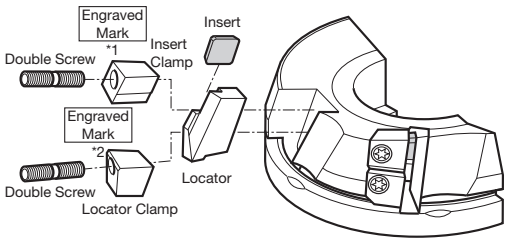


Fig 4 Wiper Insert



Double Screw (Common)	Size	N·m
	M8	8.0



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

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

Parts

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

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°

Fig 1

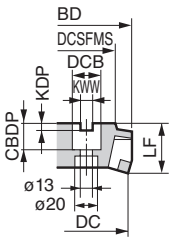


Fig 2

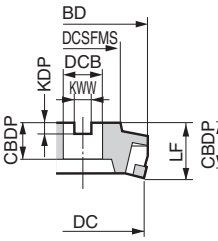


Fig 3

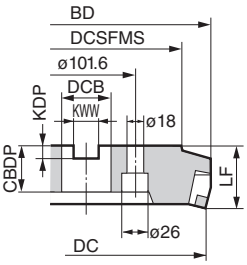
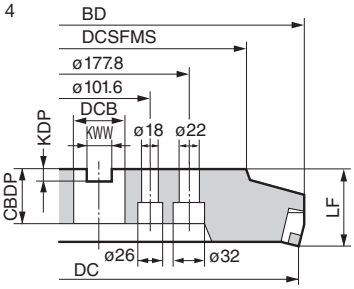


Fig 4



Body

Dimensions (mm)

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

Inserts are sold separately.

For securing the ø82 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented 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

Fig 1

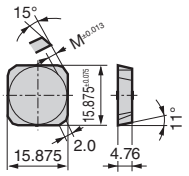


Fig 2

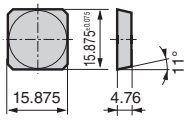
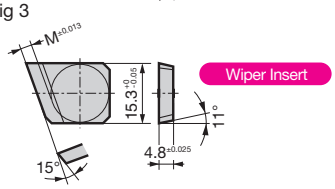
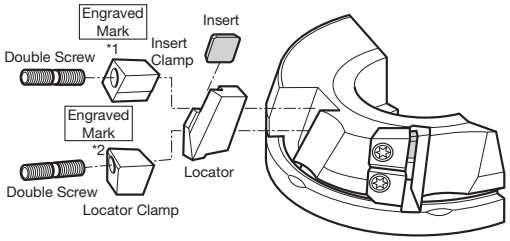


Fig 3



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	Anti-seizure Cream
DPG5080R	GL50R	GLW50R	GTW50R	WB8-22T	TT27	SUMI-P
DPG5100R to DPG5160R		GLW51R	GTW51R	WB8-30T		
DPG5200R to DPG5500R		GLW52R	GTW52R			
DPG5080L	GL50L	GLW50L	GTW50L	WB8-22T	TT27	SUMI-P
DPG5100L to DPG5160L		GLW51L	GTW51L	WB8-30T		
DPG5200L 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
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)

M E M O

WEZ Type

Expansion

■ Features

● **Supports A Variety of Machining Operations**

Lineup of cutter sizes range from ø14 to ø160mm which enable large ramping angles, series expansion of 33 items that include modular type and short-shanked type.

● **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**

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

● **General-purpose Grade ACU2500 Applicable to Any Work Material**

Superb stability and long tool life in a wide range of machining processes and work materials such as steel, stainless steel and cast iron.

■ Product Range (Body)

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

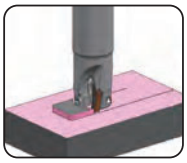
Number in ● shows the number of teeth (expanded items are shown in red with white borders) Inch Inch Bore

Modular Type ☞H214

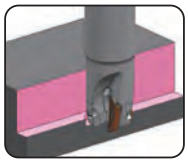
* mark: Different-diameter shanks in stock

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

Face Milling

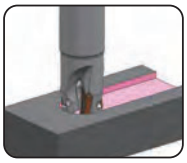


Shoulder Milling

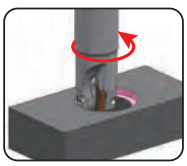


Side Milling

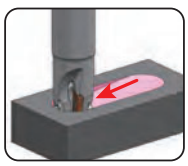
Groove Milling



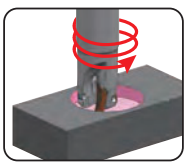
Hole Expansion



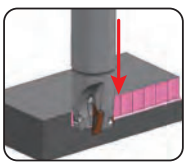
Ramping



Helical Milling



Plunge Milling



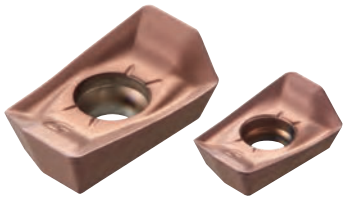
■ Optimized Body Design Wide Guide Face for Stable Insert Clamping

WEZ Type

■ Chipbreaker Selection

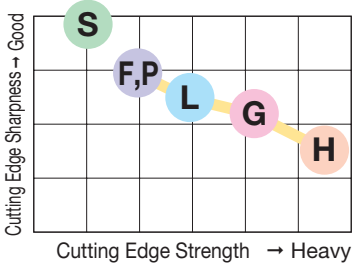
Work Material	P Steel, M Stainless Steel, K Cast Iron, S Heat-resistant Alloy, Titanium Alloy, H Hardened Steel					N Non-ferrous Metal
Applications	Light Cutting	General-purpose to Interrupted Milling	Heavy Cutting	Light Cutting	Light Cutting	Non-Ferrous Metals
Features	Low-rigidity Machining	Standard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

■ Insert Size Comparison



AO□T17 Type　AO□T11 Type

■ Chipbreaker Selection Guide



■ Product Range (Insert)

●: Standard stocked item

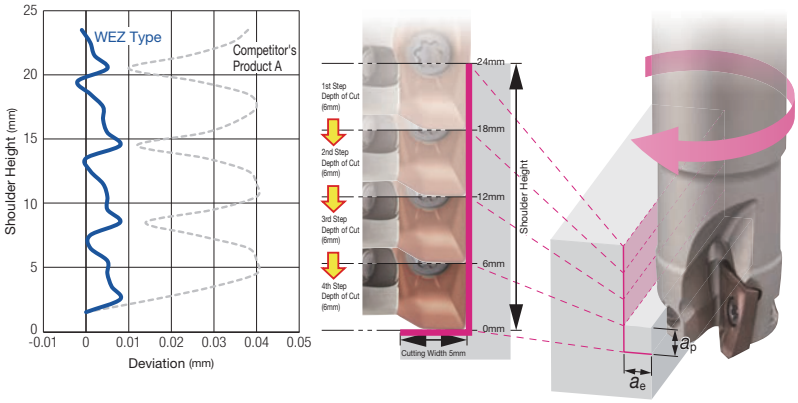
Cat. No.			Corner Radius (mm)												
			R0.2	R0.4	R0.5	R0.8	R1.0	R1.2	R1.6	R2.0	R2.4	R3.0	R3.2	R4.0	R5.0	R6.4
11 Type	M Class	AOMT11T3○○PEER-G	●	●	●	●	●	●	●	●	●	●	●			
		AOMT11T3○○PEER-H		●		●		●	●							
	E Class	AOET11T3○○PEER-F	●	●	●	●	●	●	●	●	●	●	●			
		AOET11T3○○PEER-P16	●	●	●	●	●	●							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

P type chipbreaker Cat. No. is specific to a range of cutter diameters. For details, see the P Type Chipbreaker Selection Guide on H54.

WEZ Type

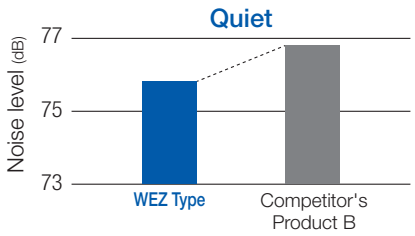
■ Cutting Performance

● Good Wall Accuracy



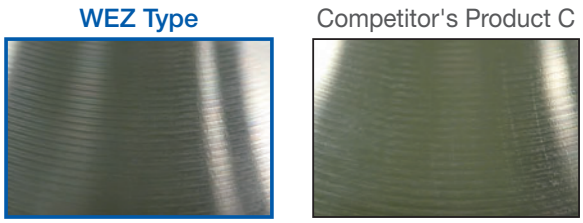
Machine	: Vertical Machining Centre BT40, Work Material: S50C
Tool	: WEZ 11020E03 (ø20, 3 flutes)
Insert	: AOMT 11T308PEER-G (ACU2500)
Cutting Conditions	: v_c = 150m/min, f_z = 0.15mm/t, a_p=6mm x 4 Passes, a_e= 5mm Dry

● 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

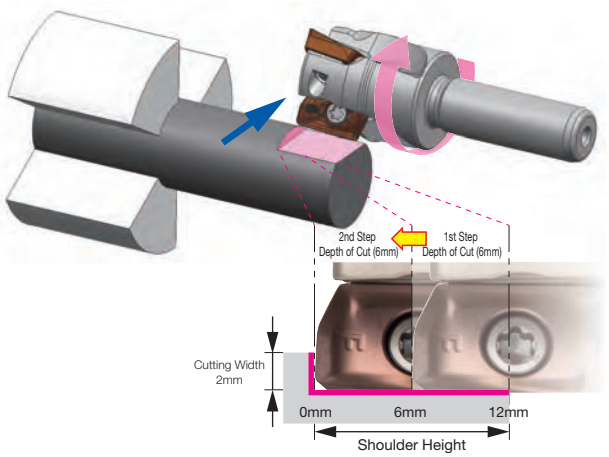
● Excellent Surface Quality

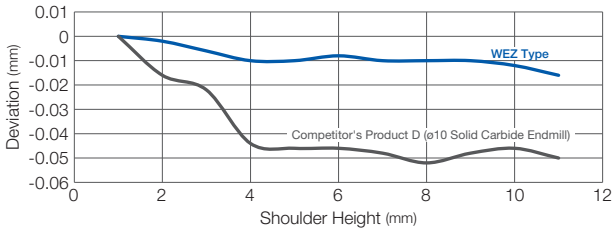


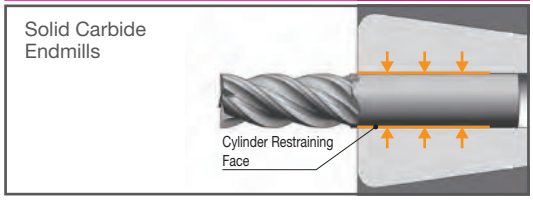
Machine	: Vertical Machining Centre BT50, Work Material: SCM440
Tool	: WEZ 17100RS08 (ø100, 8 flutes)
Insert	: AOMT 170508PEER-G (ACU2500)
Cutting Conditions	: v_c = 250m/min, f_z = 0.15mm/t, a_p=2mm, a_e= 85mm Dry

■ Cutting Performance (For Multi-tasking Machines)

● Good Wall Accuracy







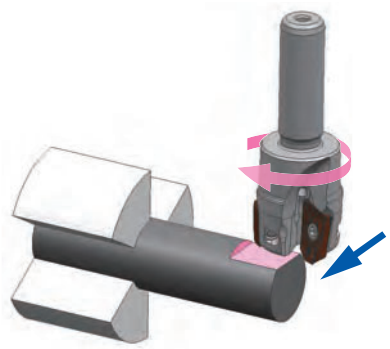
Machine	: Multi-tasking Machine, Work Material: SUS304 ø16 Round Bar
Tool	: WEZ11020ES03-10 (ø20, 3 flutes)
Insert	: AOET11T308PEER-F (ACU2500)
Cutting Conditions	: v_c=100m/min f_z=0.08mm/t a_p=6mm x 2 Passes a_e=2mm Wet

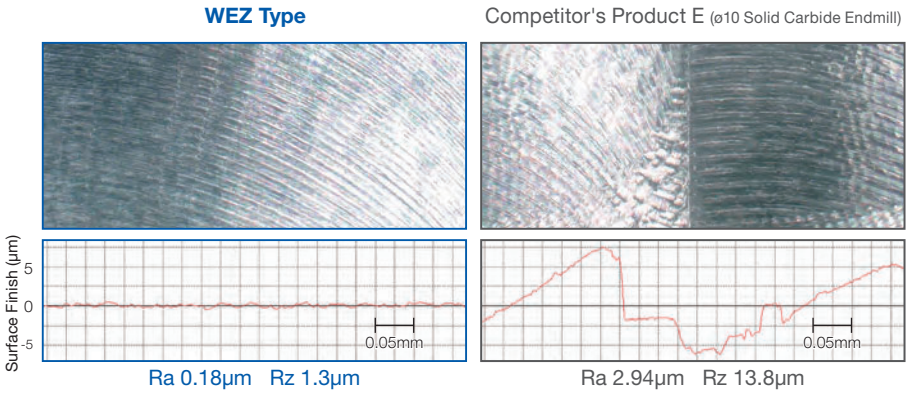
WEZ Type

● Excellent machined surface quality

Larger tool diameter than solid carbide endmills enables reduced number of passes for high-efficiency machining!

Good shoulder accuracy and machined surface quality, eliminating the finishing process!



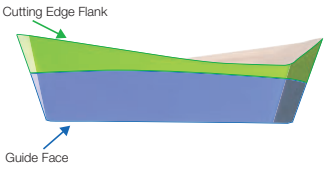


Machine	: Multi-tasking Machine Work Material: SUS304 ø16 Round Bar Tool: WEZ11020ES03-10 (ø20, 3 flutes)
Insert	: AOET11T308PEER-F (ACU2500)
Cutting Conditions	: WEZ Type v_c=100m/min f_z=0.05mm/t a_p=2mm a_e=12mm Wet
	Competitor's Product E v_c=100m/min f_z=0.05mm/t a_p=2mm a_e=6mm x 2 Passes Wet
	(Solid Carbide Endmill)

■ High-precision ground class insert with excellent sharpness

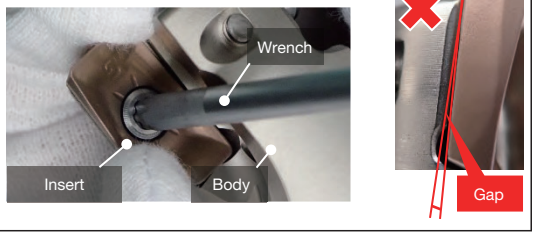
● Ground finish on cutting edge and guide face

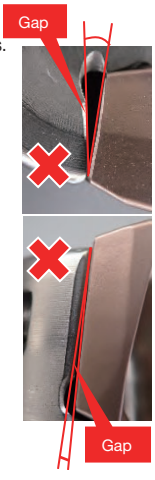
The guide face has a ground finish as well as the cutting edge, minimizing corner difference when mounting on the body. Stable runout precision and machining quality



Precautions for Mounting Inserts

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

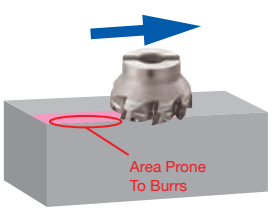




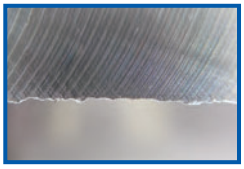
■ Lineup of Chipbreakers for Ground Inserts

● F type Chipbreaker - Emphasizes on Edge Sharpness

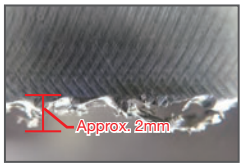
· Sharpness from ground finish enables burr control
· Good wall accuracy with all cutter diameters



WEZ Type



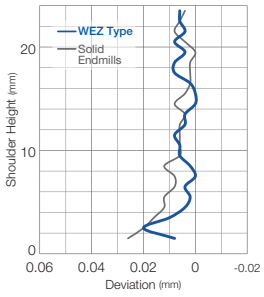
Competitor's Product F

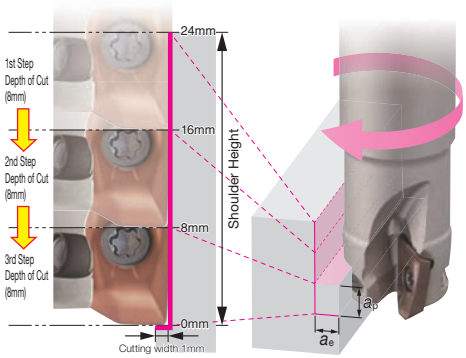


Machine	: Vertical Machining Centre BT50 Work Material (SUS304)
Tool	: WEZ 11050RS07 (ø50, 7 flutes)
Insert	: AOET 11T308PEER-F (ACU2500)
Cutting Conditions	: v_c = 120m/min, f_z = 0.12mm/t, a_p=1mm, a_e= 30mm Dry

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

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





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

P Type Chipbreaker Selection Guide

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

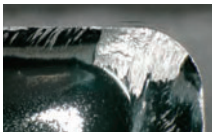
● S type Chipbreaker - Sharp-Edged Breaker for Non-Ferrous Metals with Excellent Adhesion Resistance

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

WEZ Type

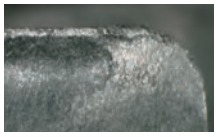
No Adhesion

Competitor's Product G



Adhesion

Competitor's Product H

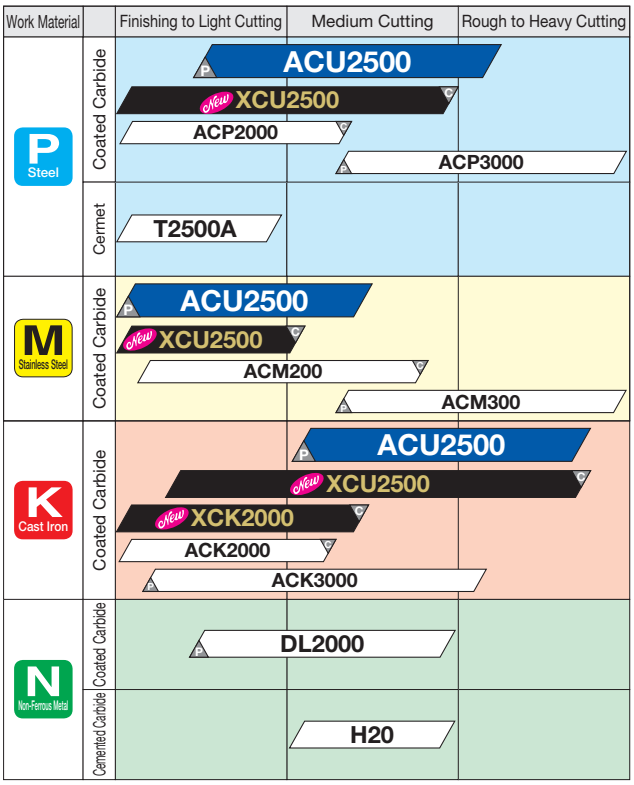


Adhesion

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

■ Grade Application Range

New-generation coated carbide grades **XCU2500/XCK2000** now available!
Enhanced lineup of coatings in addition to cemented carbide and cermet for milling steel, stainless steel, cast iron, and aluminum alloy.

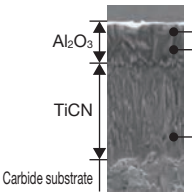


The letters "C" and "P" at the end of each grade indicate the coating type. ▽: CVD △: PVD

■ Grade Features

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

ABSOTECH CVD



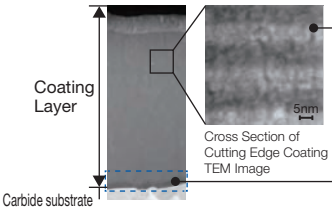
Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice as good as conventional types

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

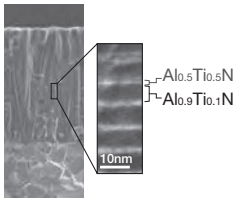


New Super Multi-Layered Structure
Higher hardness and twice the conventional wear resistance due to a fine crystal structure
AlTiCrBN-based nano-layered coating

High Adhesion Strength
Coating adhesion significantly increased
Twice or more the conventional chipping resistance

Applicable Grades: ACU2500, ACP3000, ACK3000

ABSOTECH X CVD



Pure cubic crystal AlTiN with high Al content:
With proprietary structural control technology, differently composed layers of AlTiN are stacked at the nanometre level.
With a high-Al composition containing over 80% Al on average, it also maintains a cubic crystalline structure to achieve excellent thermal resistance and high hardness.
Vastly improved wear resistance.

Special Surface Treatment:
Proprietary surface treatment introduces high compression stress to the coating, suppressing the development of cracks.
Greatly improved fracture and thermal crack resistance.

Applicable Grades: XCU2500, XCK2000

■ Grade Characteristic Values

CVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACP2000**	89.5	3.2	ABSOTECH	10	· For high-speed machining of steel · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal crack resistance	ACP100
P Steel	New **XCU2500**	89.5	3.2	ABSOTECH X	6	· General-purpose grade for a wide variety of materials such as steel, cast iron and stainless steel · New coating combining wear and fracture resistance realises long tool life in medium-speed to high-speed machining	—
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 substrate with excellent wear resistance and thermal resistance, realizing outstanding stability when machining hardened stainless steel	AC230
K Cast Iron	**ACK2000**	91.7	3.1	ABSOTECH	10	· For high-speed cast iron milling · Stable long tool life in high-speed machining is realised by adopting a tough carbide substrate and a new coating with excellent thermal resistance	ACK100 ACK200
K Cast Iron	New **XCK2000**	91.7	2.5	ABSOTECH X	6	· For high-speed cast iron milling · Along with a high-hardness carbide substrate, the new coating combining wear and fracture resistance realises superb long tool life in medium-speed to high-speed machining	—

PVD

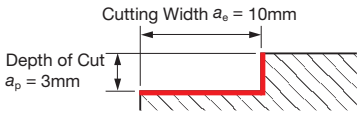
Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grade
P Steel	**ACU2500**	91.6	3.8	ABSOTECH	3	· General-purpose grade supporting steel, stainless steel, and cast iron machining · Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realising stable long tool life with various work material grades	—
P Steel	**ACP3000**	89.5	3.2	ABSOTECH	3	· Our 1st recommended grade for milling steel · Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realises stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	**ACM300**	89.8	3.4	(New) Super ZX Coat	3	· Our 1st recommended grade for milling stainless steel · Adopts high-strength cemented carbide substrate and super multi-layered coating for next-level wear resistance and fracture resistance	—
K Cast Iron	**ACK3000**	91.7	3.1	ABSOTECH	3	· Our 1st recommended grade for milling cast iron · Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	**DL2000**	91.6	3.8	AURORA Coat (DLC)	0.5	· Grade 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 Grade
P Steel M Stainless Steel	**T2500A**	91.8	2.4	—	—	· For finishing of steel and stainless steel · Fine, uniform grain structure greatly improves toughness, realising long tool life and excellent surface finishes	T250A

■ Recommended Cutting Conditions

WEZ11 Type



Tool: WEZ11020E03, Insert: AO□T11T3 Type

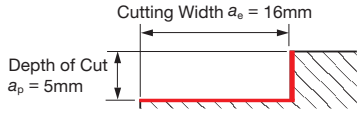
Cutting Conditions: Depth of Cut a_p = 3mm, Cutting Width a_e = 10mm Dry

ISO Classification	Work Material		Work Material Hardness (HB)	Chipbreaker	Grade										
					ACU2500	XCU2500	ACP2000	ACP3000	T2500A	XCK2000	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 - **0.15** - 0.20	0.08 - **0.12** - 0.18	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.08 - **0.15** - 0.20	0.05 - **0.10** - 0.15
					Cutting Speed v_c (m/min) Min. - **Optimum** - Max.										
P	Steel, Carbon Steel	S15C	125	G	270 - **320** - 370	300 - **350** - 400	300 - **350** - 400	250 - **300** - 350	230 - **280** - 330						
		S45C	190	G	170 - **220** - 270	200 - **250** - 300	200 - **250** - 300	150 - **200** - 250	130 - **180** - 230						
		S45C Hardened	250	G	140 - **180** - 220	160 - **200** - 245	160 - **200** - 245	120 - **160** - 200	105 - **145** - 185						
		S75C	270	G	110 - **145** - 175	130 - **165** - 195	130 - **165** - 195	100 - **130** - 165	85 - **115** - 150						
		S75C Hardened	300	G	70 - **90** - 110	80 - **100** - 120	80 - **100** - 120	60 - **80** - 100	50 - **70** - 90						
	Low-alloy Steel	SCM, SNCM	180	G	160 - **205** - 255	190 - **235** - 280	190 - **235** - 280	140 - **190** - 235	120 - **170** - 215						
		SCM, SNCM Hardened	275	G	95 - **120** - 150	110 - **135** - 165	110 - **135** - 165	80 - **110** - 140	70 - **100** - 125						
		SCM, SNCM Hardened	300	G	85 - **110** - 130	100 - **125** - 150	100 - **125** - 150	75 - **100** - 125	65 - **90** - 115						
		SCM, SNCM Hardened	350	G	60 - **80** - 100	70 - **90** - 110	70 - **90** - 110	50 - **70** - 90	45 - **65** - 85						
	High-alloy Steel	SKD, SKT, SKH	200	G	140 - **180** - 220	160 - **200** - 245	160 - **200** - 245	120 - **160** - 205							
		SKD, SKT, SKH Hardened	325	G	55 - **70** - 85	60 - **80** - 100	60 - **80** - 100	50 - **65** - 80							
M	Stainless Steel	SUS430, Others (Martensitic/Ferritic)	200	G	110 - **140** - 170	160 - **190** - 210							140 - **170** - 190	90 - **110** - 140	
		SUS403 and Others (Martensitic Hardened)	240	G	100 - **125** - 150	145 - **170** - 190							125 - **150** - 170	80 - **100** - 125	
		SUS304, SUS316 (Austenitic)	180	G	120 - **150** - 180	170 - **200** - 220							150 - **180** - 200	100 - **120** - 150	
K	Cast Iron			G	150 - **200** - 250	250 - **300** - 350				250 - **300** - 350	250 - **300** - 350	170 - **220** - 270			
	Ductile Cast Iron			G	90 - **120** - 150	150 - **180** - 210				150 - **180** - 210	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 content of 12.6% or less		S											500 - **750** - 1000
		Si content of over 12.6%		S											170 - **200** - 250
	Copper Alloy			S											300 - **330** - 350

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

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

WEZ17 Type



Tool: WEZ17032E03, Insert: AO□T1705 Type

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

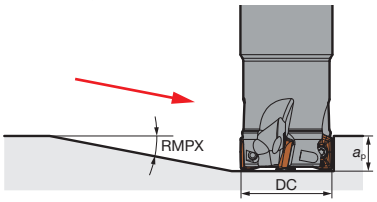
ISO Classification	Work Material		Work Material Hardness (HB)	Chipbreaker	Grade										
					ACU2500	XCU2500	ACP2000	ACP3000	T2500A	XCK2000	ACK2000	ACK3000	ACM200	ACM300	DL2000
					Feed Rate per Tooth f_z (mm/t) Min. - **Optimum** - Max.										
					0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.15** - 0.22	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.10 - **0.20** - 0.28	0.05 - **0.10** - 0.15
					Cutting Speed v_c (m/min) Min. - **Optimum** - Max.										
P	Steel, Carbon Steel	S15C	125	G	285 - **335** - 390	315 - **360** - 420	315 - **360** - 420	265 - **315** - 370	240 - **295** - 345						
		S45C	190	G	180 - **230** - 285	210 - **265** - 315	210 - **265** - 315	160 - **210** - 265	135 - **190** - 240						
		S45C Hardened	250	G	145 - **190** - 230	170 - **210** - 255	170 - **210** - 255	130 - **170** - 215	110 - **155** - 195						
		S75C	270	G	115 - **150** - 185	135 - **170** - 205	135 - **170** - 205	100 - **135** - 170	90 - **125** - 155						
		S75C Hardened	300	G	70 - **90** - 115	85 - **105** - 125	85 - **105** - 125	65 - **85** - 105	55 - **75** - 95						
	Low-alloy Steel	SCM, SNCM	180	G	170 - **220** - 265	200 - **245** - 295	200 - **245** - 295	150 - **200** - 250	130 - **180** - 225						
		SCM, SNCM Hardened	275	G	100 - **130** - 155	115 - **145** - 175	115 - **145** - 175	85 - **115** - 145	75 - **105** - 135						
		SCM, SNCM Hardened	300	G	90 - **115** - 140	105 - **130** - 155	105 - **130** - 155	75 - **105** - 130	65 - **90** - 120						
		SCM, SNCM Hardened	350	G	65 - **85** - 100	75 - **95** - 115	75 - **95** - 115	55 - **75** - 95	50 - **70** - 85						
	High-alloy Steel	SKD, SKT, SKH	200	G	145 - **185** - 230	170 - **215** - 255	170 - **215** - 255	130 - **170** - 215							
		SKD, SKT, SKH Hardened	325	G	55 - **75** - 90	65 - **85** - 100	65 - **85** - 100	50 - **65** - 85							
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200	G	115 - **145** - 175	165 - **195** - 215							145 - **175** - 195	100 - **115** - 145	
		SUS403 and Others (Martensitic Hardened)	240	G	105 - **130** - 155	150 - **175** - 195							130 - **155** - 175	85 - **105** - 130	
		SUS304, SUS316 (Austenitic)	180	G	125 - **155** - 190	180 - **210** - 230							160 - **190** - 210	105 - **125** - 160	
K	Cast Iron			G	160 - **210** - 265	265 - **315** - 370				265 - **315** - 370	265 - **315** - 370	180 - **230** - 285			
	Ductile Cast Iron			G	95 - **125** - 160	160 - **190** - 220				160 - **190** - 220	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 content of 12.6% or less		S											500 - **750** - 1000
		Si content of over 12.6%		S											170 - **200** - 250
	Copper Alloy			S											300 - **330** - 350

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

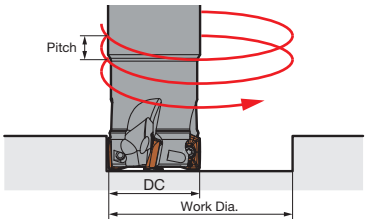
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Ramping/Helical Milling Upper Limit

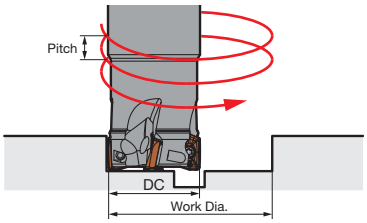
Ramping



Flat bottom machining



Machining with prepared hole



WEZ11 Type

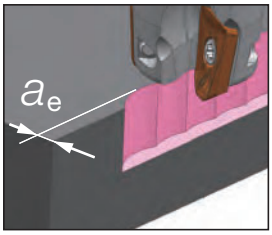
Dia. DC	Max. Ramping Angle RMPX(°)	Flat bottom machining				Machining with prepared hole	
		Max. Machining Dia. (mm)	Maximum Pitch (mm/rev)	Min. Machining Dia. (mm)	Maximum Pitch (mm/rev)	Min. Machining Dia. (mm)	Maximum Pitch (mm/rev)
14	8.0	25.3	5.0	23.1	3.4	19.0	1.5
16	10.5	29.3	7.6	27.0	5.6	21.7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

WEZ17 Type

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
80	1.2	156.0	5.0	149.4	4.1	141.8	1.5
100	0.9	197.3	4.7	190.7	4.0	183.1	1.5
125	Not recommended						
160	Not recommended						

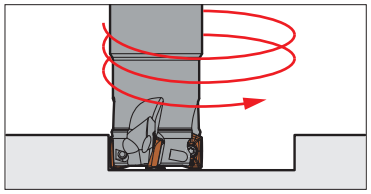
*The table above shows values with corner radius 0.8mm.

■ Plunge Cutting Upper Limit



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

■ Precautions for Flat Bottom Machining



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

WEZ 11000R(S) Type

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

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

10mm 90°

Fig 1

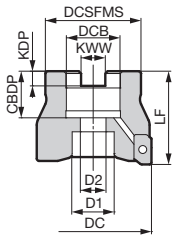


Fig 2

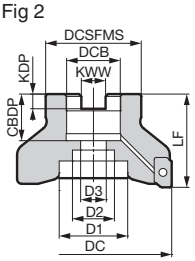
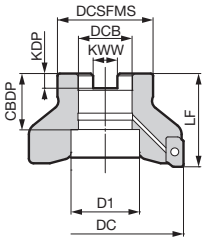


Fig 3



Body (Shell Type)

Dimensions (mm)

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

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

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Parts

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

Identification Code

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

* Modification of the cutter body is required when mounting a corner radius 2.4 or higher insert.

Modify this portion.

WEZ11 Type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C1 (AOMT11T330PEER)
Corner radius = 3.2: C1 (AOMT11T332PEER)

WEZ17 Type

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

Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZ 11000R(S) Type

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

Expansion

Insert

Dimensions (mm)

Material Classification		Coated Carbide								Cemented Carbide	DLC	Cermet		
Process	High-speed/Light		P KM	P		K	K		MS		N	P		
	General-purpose	K KM S	P KM		P	K		K	MS	MS	N	N		
	Roughing	K KM S			P			K		MS				
Cat. No.		ACU2500	XCU2500	ACP2000	ACP3000	XCK2000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●			●			●	●	●	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.4	1
11T305PEER-G		●							●	●	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.8	1
11T310PEER-G		●							●	●	—	—		1.0	1
11T312PEER-G		●			●			●	●	●	—	—		1.2	1
11T316PEER-G		●			●			●	●	●	—	—		1.6	1
11T320PEER-G		●			●			●	●	●	—	—		2.0	1
11T324PEER-G		●							●	●	—	—		2.4	1
11T330PEER-G		●			●			●	●	●	—	—		3.0	2
11T332PEER-G		●							●	●	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.8	1
11T312PEER-H		●							●	●	—	—	—	1.2	1
11T316PEER-H		●							●	●	—	—	—	1.6	1
AOET 11T302PEER-F		●		—			—		—		—	—	—	0.2	1
11T304PEER-F		●		—			—		—		—	—	—	0.4	1
11T305PEER-F		●		—			—		—		—	—	—	0.5	1
11T308PEER-F		●		—			—		—		—	—	—	0.8	1
11T310PEER-F		●		—			—		—		—	—	—	1.0	1
11T312PEER-F		●		—			—		—		—	—	—	1.2	1
11T316PEER-F		●		—			—		—		—	—	—	1.6	1
11T320PEER-F		●		—			—		—		—	—	—	2.0	1
11T324PEER-F		●		—			—		—		—	—	—	2.4	1
11T330PEER-F		●		—			—		—		—	—	—	3.0	2
11T332PEER-F		●		—			—		—		—	—	—	3.2	2
AOET 11T302PEER-P16		●		—			—		—		—	—	—	0.2	1
11T304PEER-P16		●		—			—		—		—	—	—	0.4	1
11T305PEER-P16		●		—			—		—		—	—	—	0.5	1
11T308PEER-P16		●		—			—		—		—	—	—	0.8	1
11T310PEER-P16		●		—			—		—		—	—	—	1.0	1
11T312PEER-P16		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEER-P20		●		—			—		—		—	—	—	0.2	1
11T304PEER-P20		●		—			—		—		—	—	—	0.4	1
11T305PEER-P20		●		—			—		—		—	—	—	0.5	1
11T308PEER-P20		●		—			—		—		—	—	—	0.8	1
11T310PEER-P20		●		—			—		—		—	—	—	1.0	1
11T312PEER-P20		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEER-P25		●		—			—		—		—	—	—	0.2	1
11T304PEER-P25		●		—			—		—		—	—	—	0.4	1
11T305PEER-P25		●		—			—		—		—	—	—	0.5	1
11T308PEER-P25		●		—			—		—		—	—	—	0.8	1
11T310PEER-P25		●		—			—		—		—	—	—	1.0	1
11T312PEER-P25		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

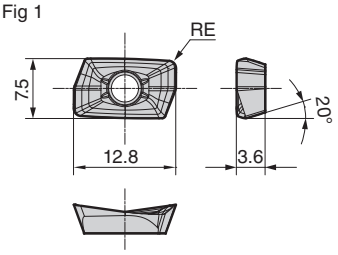
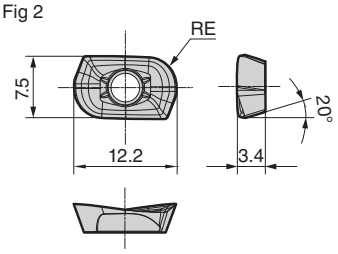


Fig 2



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

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

Recommended Cutting Conditions H56

● mark: Standard stocked item (new product/expanded item)

WEZ 17000R(S) Type

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

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

15mm, 90°

Fig 1

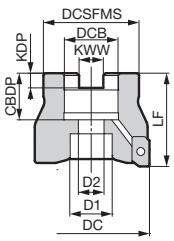


Fig 2

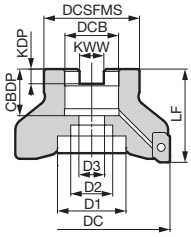


Fig 3

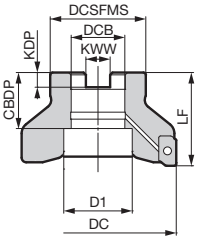


Fig 4

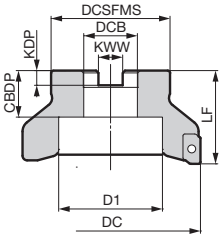
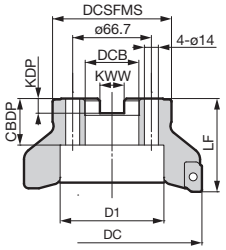


Fig 5



Body (Shell Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEZ 17040RS03**	●	**40**	33	40(39.3)	**16**	8.4	5.6	18	14	9	—	3	0.19	1
	17040RS04	●	**40**	33	40(39.3)	**16**	8.4	5.6	18	14	9	—	4	0.16	1
	17050RS03	●	**50**	41	40(39.3)	**22**	10.4	6.3	20	18	11	—	3	0.30	1
	17050RS05	●	**50**	41	40(39.3)	**22**	10.4	6.3	20	18	11	—	5	0.26	1
	17063RS04	●	**63**	50	40(39.3)	**22**	10.4	6.3	20	18	11	—	4	0.54	1
	17063RS06	●	**63**	50	40(39.3)	**22**	10.4	6.3	20	18	11	—	6	0.51	1
	17080RS04	●	***80**	55	50(49.3)	**27**	12.4	7	22	20	14	—	4	1.10	1
	17080RS07	●	***80**	55	50(49.3)	**27**	12.4	7	22	20	14	—	7	1.05	1
	17100RS05	●	**100**	70	50(49.3)	**32**	14.4	8	32	46	—	—	5	1.58	3
	17100RS08	●	**100**	70	50(49.3)	**32**	14.4	8	32	46	—	—	8	1.57	3
	17125RS06	●	**125**	80	63(62.3)	**40**	16.4	9	29	52	29	—	6	3.04	1
	17125RS09	●	**125**	80	63(62.3)	**40**	16.4	9	29	52	29	—	9	3.07	1
	17125RS11	●	**125**	80	63(62.3)	**40**	16.4	9	29	52	29	—	11	3.02	1
	17160RS08	●	**160**	130	63(62.3)	**40**	16.4	9	29	90	—	—	8	5.24	5
	17160RS10	●	**160**	130	63(62.3)	**40**	16.4	9	29	90	—	—	10	5.31	5
	17160RS12	●	**160**	130	63(62.3)	**40**	16.4	9	29	90	—	—	12	5.26	5
Inch	**WEZ 17080R04**	●	***80**	55	50(49.3)	**25.4**	9.5	6	25	20	14	—	4	1.10	1
	17080R07	●	***80**	55	50(49.3)	**25.4**	9.5	6	25	20	14	—	7	1.06	1
	17100R05	●	***100**	70	63(62.3)	**31.75**	12.7	8	32	46	27	18	5	2.08	2
	17100R08	●	***100**	70	63(62.3)	**31.75**	12.7	8	32	46	27	18	8	2.07	2
	17125R06	●	**125**	80	63(62.3)	**38.1**	15.9	10	35.5	55	30	—	6	3.09	1
	17125R09	●	**125**	80	63(62.3)	**38.1**	15.9	10	35.5	55	30	—	9	3.11	1
	17125R11	●	**125**	80	63(62.3)	**38.1**	15.9	10	35.5	55	30	—	11	3.06	1
	17160R08	●	**160**	100	63(62.3)	**50.8**	19.1	11	38	72	—	—	8	5.04	4
	17160R10	●	**160**	100	63(62.3)	**50.8**	19.1	11	38	72	—	—	10	5.09	4
	17160R12	●	**160**	100	63(62.3)	**50.8**	19.1	11	38	72	—	—	12	5.04	4

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

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Parts

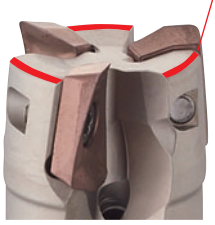
Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
WEZ17040RS03	BFTX0409IP	3.0	—	HPS1015	TRB15IP	SUMI-P
WEZ17040RS04						
WEZ17050RS03						
WEZ17050RS05						
WEZ17063RS04						
WEZ17063RS06						
WEZ17080R(S)04						
WEZ17080R(S)07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

Identification Code

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

* Modification of the cutter body is required when mounting a corner radius 2.4 or higher insert.

Modify this portion.



WEZ11 Type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C1 (AOMT11T330PEER)
Corner radius = 3.2: C1 (AOMT11T332PEER)

WEZ17 Type

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

N·m Recommended Tightening Torque (N·m)

WEZ 17000R(S) Type

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

Expansion

Insert

Dimensions (mm)

Material Classification		Coated Carbide								Cemented Carbide	DLC	Cermet		
Process	High-speed/Light		PKM	P		K	K		MS		N	P		
	General-purpose	PKMS	PKM		P	K		K	MS	MS	N	N		
	Roughing	PKMS			P			K		MS				
Cat. No.		ACU2500	XCU2500	ACP2000	ACP3000	XCK2000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 170502PEER-L		●		—			—		●	●	—	—		0.2	1
170504PEER-L		●	●	—	●	●	—	●	●	●	—	—	●	0.4	1
170508PEER-L		●	●	—	●	●	—	●	●	●	—	—	●	0.8	1
170512PEER-L		●		—			—		●	●	—	—		1.2	1
170516PEER-L		●		—			—		●	●	—	—		1.6	1
AOMT 170502PEER-G		●			●			●	●	●	—	—		0.2	1
170504PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.4	1
170505PEER-G		●							●	●	—	—		0.5	1
170508PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.8	1
170510PEER-G		●							●	●	—	—		1.0	1
170512PEER-G		●			●			●	●	●	—	—		1.2	1
170516PEER-G		●			●			●	●	●	—	—		1.6	1
170520PEER-G		●			●			●	●	●	—	—		2.0	1
170524PEER-G		●							●	●	—	—		2.4	1
170530PEER-G		●			●			●	●	●	—	—		3.0	1
170532PEER-G		●			●			●	●	●	—	—		3.2	1
170540PEER-G		●			●			●	●	●	—	—		4.0	1
170550PEER-G		●			●			●	●	●	—	—		5.0	2
170564PEER-G		●							●	●	—	—		6.4	2
AOMT 170504PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.4	1
170508PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.8	1
170512PEER-H		●							●	●	—	—	—	1.2	1
170516PEER-H		●							●	●	—	—	—	1.6	1
AOET 170502PEER-F		●		—			—		—		—	—	—	0.2	1
170504PEER-F		●		—			—		—		—	—	—	0.4	1
170505PEER-F		●		—			—		—		—	—	—	0.5	1
170508PEER-F		●		—			—		—		—	—	—	0.8	1
170510PEER-F		●		—			—		—		—	—	—	1.0	1
170512PEER-F		●		—			—		—		—	—	—	1.2	1
170516PEER-F		●		—			—		—		—	—	—	1.6	1
170520PEER-F		●		—			—		—		—	—	—	2.0	1
170524PEER-F		●		—			—		—		—	—	—	2.4	1
170530PEER-F		●		—			—		—		—	—	—	3.0	1
170532PEER-F		●		—			—		—		—	—	—	3.2	1
170540PEER-F		●		—			—		—		—	—	—	4.0	1
170550PEER-F		●		—			—		—		—	—	—	5.0	2
170564PEER-F		●		—			—		—		—	—	—	6.4	2
AOET 170502PEER-P25		●		—			—		—		—	—	—	0.2	1
170504PEER-P25		●		—			—		—		—	—	—	0.4	1
170505PEER-P25		●		—			—		—		—	—	—	0.5	1
170508PEER-P25		●		—			—		—		—	—	—	0.8	1
170510PEER-P25		●		—			—		—		—	—	—	1.0	1
170512PEER-P25		●		—			—		—		—	—	—	1.2	1
AOET 170502PEER-P32		●		—			—		—		—	—	—	0.2	1
170504PEER-P32		●		—			—		—		—	—	—	0.4	1
170505PEER-P32		●		—			—		—		—	—	—	0.5	1
170508PEER-P32		●		—			—		—		—	—	—	0.8	1
170510PEER-P32		●		—			—		—		—	—	—	1.0	1
170512PEER-P32		●		—			—		—		—	—	—	1.2	1
AOET 170502PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
170505PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
170508PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
170510PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
170512PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
170516PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
170520PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
170524PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
170530PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
170532PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
170540PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
170550PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
170564PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

Fig 1

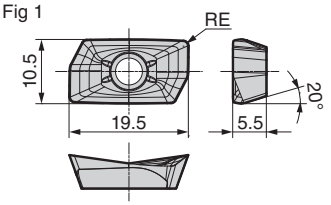
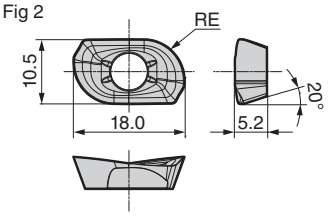


Fig 2



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

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

Recommended Cutting Conditions H56

● mark: Standard stocked item (new product/expanded item)

WEZ 11000E Type

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

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

10mm 90°

Fig 1

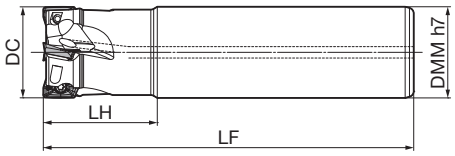
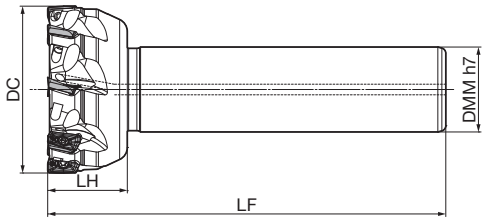


Fig 2



Body (Shank Type)

Dimensions (mm)

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

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

Parts

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

Identification Code

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

* Modification of the cutter body is required when mounting a corner radius 2.4 or higher insert.

WEZ11 Type	WEZ17 Type
Reworking guidelines	Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)	Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1 (AOMT11T330PEER)	Corner radius = 3.0: C1 (AOMT170530PEER)
Corner radius = 3.2: C1 (AOMT11T332PEER)	Corner radius = 3.2: C1 (AOMT170532PEER)
	Corner radius = 4.0: C2 (AOMT170540PEER)
	Corner radius = 5.0: C5 (AOMT170550PEER)
	Corner radius = 6.4: C5 (AOMT170564PEER)
	Standard: R1.

N·m Recommended Tightening Torque (N·m)

WEZ 11000E Type

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

Expansion

Insert

Dimensions (mm)

Material Classification		Coated Carbide								Cemented Carbide	DLC	Cermet		
Process	High-speed/Light		P M	P		K	K		M S		N	P		
	General-purpose	K P M S	P M		P	K		K	M S	M S	N	N		
	Roughing	K P M S			P			K		M S				
Cat. No.		ACU2500	XCU2500	ACP2000	ACP3000	XCK2000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●			●			●	●	●	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.4	1
11T305PEER-G		●							●	●	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.8	1
11T310PEER-G		●							●	●	—	—		1.0	1
11T312PEER-G		●			●			●	●	●	—	—		1.2	1
11T316PEER-G		●			●			●	●	●	—	—		1.6	1
11T320PEER-G		●			●			●	●	●	—	—		2.0	1
11T324PEER-G		●							●	●	—	—		2.4	1
11T330PEER-G		●			●			●	●	●	—	—		3.0	2
11T332PEER-G		●							●	●	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.8	1
11T312PEER-H		●							●	●	—	—	—	1.2	1
11T316PEER-H		●							●	●	—	—	—	1.6	1
AOET 11T302PEER-F		●		—			—		—		—	—	—	0.2	1
11T304PEER-F		●		—			—		—		—	—	—	0.4	1
11T305PEER-F		●		—			—		—		—	—	—	0.5	1
11T308PEER-F		●		—			—		—		—	—	—	0.8	1
11T310PEER-F		●		—			—		—		—	—	—	1.0	1
11T312PEER-F		●		—			—		—		—	—	—	1.2	1
11T316PEER-F		●		—			—		—		—	—	—	1.6	1
11T320PEER-F		●		—			—		—		—	—	—	2.0	1
11T324PEER-F		●		—			—		—		—	—	—	2.4	1
11T330PEER-F		●		—			—		—		—	—	—	3.0	2
11T332PEER-F		●		—			—		—		—	—	—	3.2	2
AOET 11T302PEER-P16		●		—			—		—		—	—	—	0.2	1
11T304PEER-P16		●		—			—		—		—	—	—	0.4	1
11T305PEER-P16		●		—			—		—		—	—	—	0.5	1
11T308PEER-P16		●		—			—		—		—	—	—	0.8	1
11T310PEER-P16		●		—			—		—		—	—	—	1.0	1
11T312PEER-P16		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEER-P20		●		—			—		—		—	—	—	0.2	1
11T304PEER-P20		●		—			—		—		—	—	—	0.4	1
11T305PEER-P20		●		—			—		—		—	—	—	0.5	1
11T308PEER-P20		●		—			—		—		—	—	—	0.8	1
11T310PEER-P20		●		—			—		—		—	—	—	1.0	1
11T312PEER-P20		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEER-P25		●		—			—		—		—	—	—	0.2	1
11T304PEER-P25		●		—			—		—		—	—	—	0.4	1
11T305PEER-P25		●		—			—		—		—	—	—	0.5	1
11T308PEER-P25		●		—			—		—		—	—	—	0.8	1
11T310PEER-P25		●		—			—		—		—	—	—	1.0	1
11T312PEER-P25		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

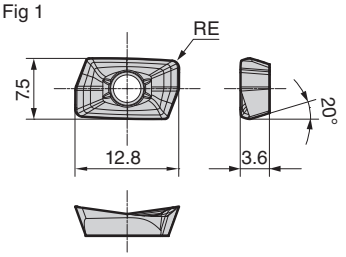
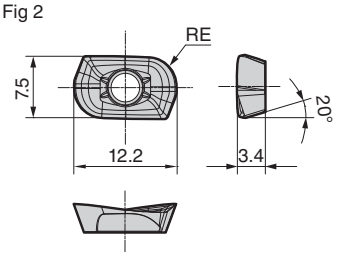


Fig 2



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

Recommended Cutting Conditions H56

● mark: Standard stocked item (new product/expanded item)

WEZ 11000ES Type for Multi-tasking Machines

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

New

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

10mm 90°

Fig 1

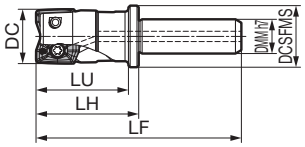
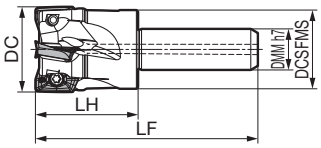


Fig 2



Body (Short Shank Type)

Dimensions (mm)

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

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

Parts

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

Identification Code

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

* Modification of the cutter body is required when mounting a corner radius 2.4 or higher insert.

WEZ11 Type

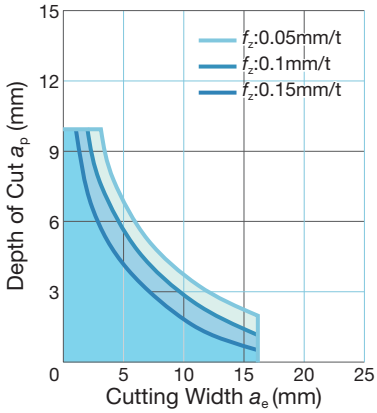
Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C1 (AOMT11T330PEER)
Corner radius = 3.2: C1 (AOMT11T332PEER)

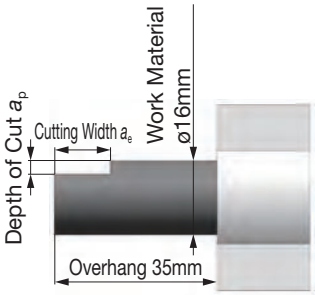
WEZ17 Type

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

Recommended Cutting Conditions

Tool: WEZ11016ES02-10
Insert: AOET11T3○○PEER-F





· For cutting conditions for each work material, see H56.
· The cylindrical shank may slip when using G type breakers, as they have comparably higher cutting force than F type breakers shown in the graph above.
· The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).

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

WEZ 11000ES Type for Multi-tasking Machines

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

Expansion

Insert

Dimensions (mm)

Material Classification		Coated Carbide								Cemented Carbide	DLC	Cermet		
Process	High-speed/Light		PKM	P		K	K		MS		N	P		
	General-purpose	PKMS	PKM		P	K		K	MS	MS	N	N		
	Roughing	PKMS			P			K		MS				
Cat. No.		ACU2500	XCU2500	ACP2000	ACP3000	XCK2000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●			●			●	●	●	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.4	1
11T305PEER-G		●							●	●	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.8	1
11T310PEER-G		●							●	●	—	—		1.0	1
11T312PEER-G		●			●			●	●	●	—	—		1.2	1
11T316PEER-G		●			●			●	●	●	—	—		1.6	1
11T320PEER-G		●			●			●	●	●	—	—		2.0	1
11T324PEER-G		●							●	●	—	—		2.4	1
11T330PEER-G		●			●			●	●	●	—	—		3.0	2
11T332PEER-G		●							●	●	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.8	1
11T312PEER-H		●							●	●	—	—	—	1.2	1
11T316PEER-H		●							●	●	—	—	—	1.6	1
AOET 11T302PEER-F		●		—			—		—		—	—	—	0.2	1
11T304PEER-F		●		—			—		—		—	—	—	0.4	1
11T305PEER-F		●		—			—		—		—	—	—	0.5	1
11T308PEER-F		●		—			—		—		—	—	—	0.8	1
11T310PEER-F		●		—			—		—		—	—	—	1.0	1
11T312PEER-F		●		—			—		—		—	—	—	1.2	1
11T316PEER-F		●		—			—		—		—	—	—	1.6	1
11T320PEER-F		●		—			—		—		—	—	—	2.0	1
11T324PEER-F		●		—			—		—		—	—	—	2.4	1
11T330PEER-F		●		—			—		—		—	—	—	3.0	2
11T332PEER-F		●		—			—		—		—	—	—	3.2	2
AOET 11T302PEER-P16		●		—			—		—		—	—	—	0.2	1
11T304PEER-P16		●		—			—		—		—	—	—	0.4	1
11T305PEER-P16		●		—			—		—		—	—	—	0.5	1
11T308PEER-P16		●		—			—		—		—	—	—	0.8	1
11T310PEER-P16		●		—			—		—		—	—	—	1.0	1
11T312PEER-P16		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEER-P20		●		—			—		—		—	—	—	0.2	1
11T304PEER-P20		●		—			—		—		—	—	—	0.4	1
11T305PEER-P20		●		—			—		—		—	—	—	0.5	1
11T308PEER-P20		●		—			—		—		—	—	—	0.8	1
11T310PEER-P20		●		—			—		—		—	—	—	1.0	1
11T312PEER-P20		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEER-P25		●		—			—		—		—	—	—	0.2	1
11T304PEER-P25		●		—			—		—		—	—	—	0.4	1
11T305PEER-P25		●		—			—		—		—	—	—	0.5	1
11T308PEER-P25		●		—			—		—		—	—	—	0.8	1
11T310PEER-P25		●		—			—		—		—	—	—	1.0	1
11T312PEER-P25		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

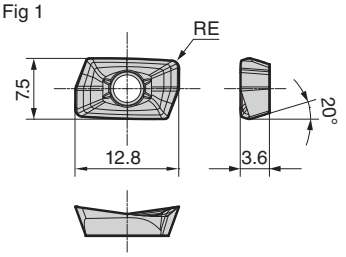
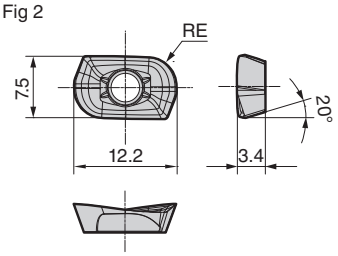


Fig 2



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

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.

● mark: Standard stocked item (new product/expanded item)

WEZ 11000EL Type

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

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

10mm 90°

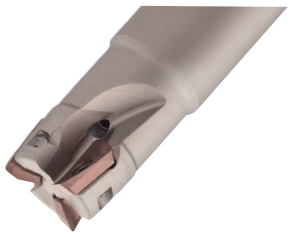


Fig 1

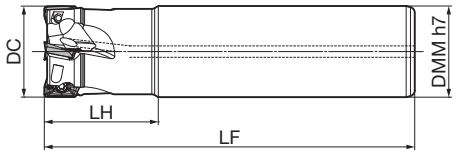
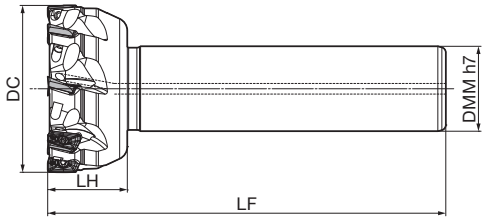


Fig 2



Body (Long Type)

Dimensions (mm)

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

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

Parts

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

Identification Code

WEZ 11 025 E L 02 -22

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

* Modification of the cutter body is required when mounting a corner radius 2.4 or higher insert.

Modify this portion.

WEZ11 Type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C1 (AOMT11T330PEER)
Corner radius = 3.2: C1 (AOMT11T332PEER)

WEZ17 Type

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

N·m Recommended Tightening Torque (N·m)

WEZ 11000EL Type

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

Expansion

Insert

Dimensions (mm)

Material Classification		Coated Carbide								Cemented Carbide	DLC	Cermet		
Process	High-speed/Light		PKM	P		K	K		MS		N	P		
	General-purpose	PKMS	PKM		P	K		K	MS	MS	N	N		
	Roughing	PKMS			P			K		MS				
Cat. No.		ACU2500	XCU2500	ACP2000	ACP3000	XCK2000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 11T302PEER-G		●			●			●	●	●	—	—	●	0.2	1
11T304PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.4	1
11T305PEER-G		●							●	●	—	—		0.5	1
11T308PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.8	1
11T310PEER-G		●							●	●	—	—		1.0	1
11T312PEER-G		●			●			●	●	●	—	—		1.2	1
11T316PEER-G		●			●			●	●	●	—	—		1.6	1
11T320PEER-G		●			●			●	●	●	—	—		2.0	1
11T324PEER-G		●							●	●	—	—		2.4	1
11T330PEER-G		●			●			●	●	●	—	—		3.0	2
11T332PEER-G		●							●	●	—	—		3.2	2
AOMT 11T304PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.4	1
11T308PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.8	1
11T312PEER-H		●							●	●	—	—	—	1.2	1
11T316PEER-H		●							●	●	—	—	—	1.6	1
AOET 11T302PEER-F		●		—			—		—		—	—	—	0.2	1
11T304PEER-F		●		—			—		—		—	—	—	0.4	1
11T305PEER-F		●		—			—		—		—	—	—	0.5	1
11T308PEER-F		●		—			—		—		—	—	—	0.8	1
11T310PEER-F		●		—			—		—		—	—	—	1.0	1
11T312PEER-F		●		—			—		—		—	—	—	1.2	1
11T316PEER-F		●		—			—		—		—	—	—	1.6	1
11T320PEER-F		●		—			—		—		—	—	—	2.0	1
11T324PEER-F		●		—			—		—		—	—	—	2.4	1
11T330PEER-F		●		—			—		—		—	—	—	3.0	2
11T332PEER-F		●		—			—		—		—	—	—	3.2	2
AOET 11T302PEER-P16		●		—			—		—		—	—	—	0.2	1
11T304PEER-P16		●		—			—		—		—	—	—	0.4	1
11T305PEER-P16		●		—			—		—		—	—	—	0.5	1
11T308PEER-P16		●		—			—		—		—	—	—	0.8	1
11T310PEER-P16		●		—			—		—		—	—	—	1.0	1
11T312PEER-P16		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEER-P20		●		—			—		—		—	—	—	0.2	1
11T304PEER-P20		●		—			—		—		—	—	—	0.4	1
11T305PEER-P20		●		—			—		—		—	—	—	0.5	1
11T308PEER-P20		●		—			—		—		—	—	—	0.8	1
11T310PEER-P20		●		—			—		—		—	—	—	1.0	1
11T312PEER-P20		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEER-P25		●		—			—		—		—	—	—	0.2	1
11T304PEER-P25		●		—			—		—		—	—	—	0.4	1
11T305PEER-P25		●		—			—		—		—	—	—	0.5	1
11T308PEER-P25		●		—			—		—		—	—	—	0.8	1
11T310PEER-P25		●		—			—		—		—	—	—	1.0	1
11T312PEER-P25		●		—			—		—		—	—	—	1.2	1
AOET 11T302PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
11T304PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
11T305PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
11T308PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
11T310PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
11T312PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
11T316PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
11T320PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
11T324PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
11T330PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.0	2
11T332PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.2	2

Fig 1

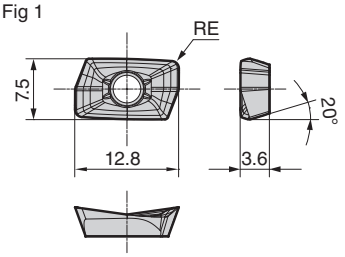
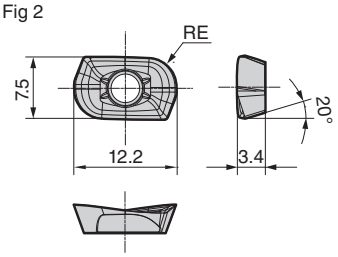


Fig 2



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

Recommended Cutting Conditions H56

● mark: Standard stocked item (new product/expanded item)

WEZ 17000E Type

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

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

15mm 90°

Fig 1

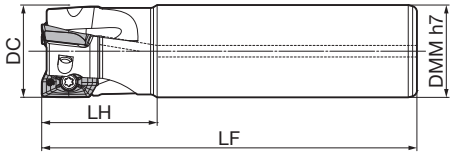
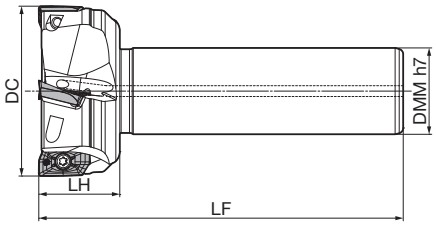


Fig 2



Body (Shank Type)

Dimensions (mm)

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

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

Parts

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

Identification Code

WEZ 17 025 E 02 -20

WEZ	17	025	E	02	-20
Series	Insert Size	Dia.	Shank Type	Number of Teeth	Shank Dia.

* Modification of the cutter body is required when mounting a corner radius 2.4 or higher insert.

Modify this portion.

WEZ11 Type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C1 (AOMT11T330PEER)
Corner radius = 3.2: C1 (AOMT11T332PEER)

WEZ17 Type

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

N·m Recommended Tightening Torque (N·m)

WEZ 17000E Type

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

Expansion

Insert

Dimensions (mm)

Material Classification		Coated Carbide								Cemented Carbide	DLC	Cermet		
Process	High-speed/Light		PKM	P		K	K		MS		N	P		
	General-purpose	PKMS	PKM		P	K		K	MS	MS	N	N		
	Roughing	PKMS			P			K		MS				
Cat. No.		ACU2500	XCU2500	ACP2000	ACP3000	XCK2000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT 170502PEER-L		●		—			—		●	●	—	—		0.2	1
170504PEER-L		●	●	—	●	●	—	●	●	●	—	—	●	0.4	1
170508PEER-L		●	●	—	●	●	—	●	●	●	—	—	●	0.8	1
170512PEER-L		●		—			—		●	●	—	—		1.2	1
170516PEER-L		●		—			—		●	●	—	—		1.6	1
AOMT 170502PEER-G		●			●			●	●	●	—	—		0.2	1
170504PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.4	1
170505PEER-G		●							●	●	—	—		0.5	1
170508PEER-G		●	●	●	●	●	●	●	●	●	—	—	●	0.8	1
170510PEER-G		●							●	●	—	—		1.0	1
170512PEER-G		●			●			●	●	●	—	—		1.2	1
170516PEER-G		●			●			●	●	●	—	—		1.6	1
170520PEER-G		●			●			●	●	●	—	—		2.0	1
170524PEER-G		●							●	●	—	—		2.4	1
170530PEER-G		●			●			●	●	●	—	—		3.0	1
170532PEER-G		●			●			●	●	●	—	—		3.2	1
170540PEER-G		●			●			●	●	●	—	—		4.0	1
170550PEER-G		●			●			●	●	●	—	—		5.0	2
170564PEER-G		●							●	●	—	—		6.4	2
AOMT 170504PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.4	1
170508PEER-H		●	●	●	●	●	●	●	●	●	—	—	—	0.8	1
170512PEER-H		●							●	●	—	—	—	1.2	1
170516PEER-H		●							●	●	—	—	—	1.6	1
AOET 170502PEER-F		●		—			—		—		—	—	—	0.2	1
170504PEER-F		●		—			—		—		—	—	—	0.4	1
170505PEER-F		●		—			—		—		—	—	—	0.5	1
170508PEER-F		●		—			—		—		—	—	—	0.8	1
170510PEER-F		●		—			—		—		—	—	—	1.0	1
170512PEER-F		●		—			—		—		—	—	—	1.2	1
170516PEER-F		●		—			—		—		—	—	—	1.6	1
170520PEER-F		●		—			—		—		—	—	—	2.0	1
170524PEER-F		●		—			—		—		—	—	—	2.4	1
170530PEER-F		●		—			—		—		—	—	—	3.0	1
170532PEER-F		●		—			—		—		—	—	—	3.2	1
170540PEER-F		●		—			—		—		—	—	—	4.0	1
170550PEER-F		●		—			—		—		—	—	—	5.0	2
170564PEER-F		●		—			—		—		—	—	—	6.4	2
AOET 170502PEER-P25		●		—			—		—		—	—	—	0.2	1
170504PEER-P25		●		—			—		—		—	—	—	0.4	1
170505PEER-P25		●		—			—		—		—	—	—	0.5	1
170508PEER-P25		●		—			—		—		—	—	—	0.8	1
170510PEER-P25		●		—			—		—		—	—	—	1.0	1
170512PEER-P25		●		—			—		—		—	—	—	1.2	1
AOET 170502PEER-P32		●		—			—		—		—	—	—	0.2	1
170504PEER-P32		●		—			—		—		—	—	—	0.4	1
170505PEER-P32		●		—			—		—		—	—	—	0.5	1
170508PEER-P32		●		—			—		—		—	—	—	0.8	1
170510PEER-P32		●		—			—		—		—	—	—	1.0	1
170512PEER-P32		●		—			—		—		—	—	—	1.2	1
AOET 170502PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
170505PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
170508PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
170510PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
170512PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
170516PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
170520PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
170524PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
170530PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
170532PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
170540PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
170550PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
170564PEFR-S		—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

Fig 1

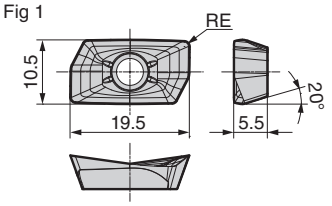
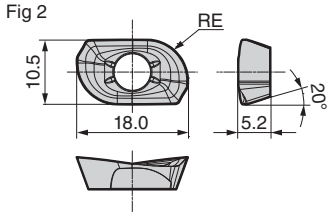


Fig 2



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

Recommended Cutting Conditions ☞H56

● mark: Standard stocked item (new product/expanded item)

WEZ 17000ES Type for Multi-tasking Machines

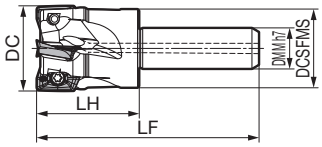
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

New

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

15mm 90°

Fig 1



Body (Short Shank Type)

Dimensions (mm)

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

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

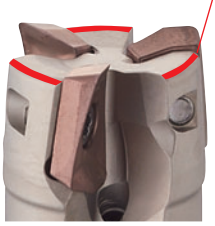
Parts

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

Identification Code

WEZ Series | **17** Insert Size | **025** Dia. | **E** Shank Type | **S** Short Shank | **02** Number of Teeth | **-16** Shank Dia.

* Modification of the cutter body is required when mounting a corner radius 2.4 or higher insert.



WEZ11 Type

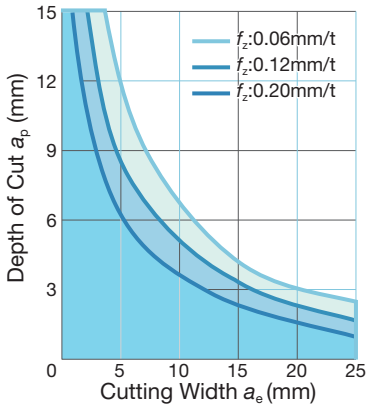
Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C1 (AOMT11T330PEER)
Corner radius = 3.2: C1 (AOMT11T332PEER)

WEZ17 Type

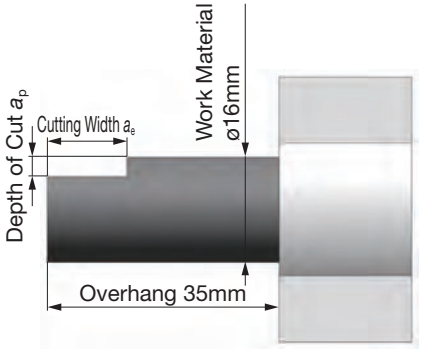
Reworking guidelines
Corner radius = 2.4: C1 (AOMT170524PEER)
Corner radius = 3.0: C1 (AOMT170530PEER)
Corner radius = 3.2: C1 (AOMT170532PEER)
Corner radius = 4.0: C2 (AOMT170540PEER)
Corner radius = 5.0: C5 (AOMT170550PEER)
Corner radius = 6.4: C5 (AOMT170564PEER)
Standard: R1.

Recommended Cutting Conditions

Tool: WEZ17025ES02-16
Insert: AOET1705○○PEER-F



· For cutting conditions for each work material, see H56.
· The cylindrical shank may slip when using G type breakers, as they have comparably higher cutting force than F type breakers shown in the graph above.
· The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).



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

WEZ 17000ES Type for Multi-tasking Machines

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

Expansion

Insert

Dimensions (mm)

Material Classification		Coated Carbide								Cemented Carbide	DLC	Cermet		
Process	High-speed/Light		P M	P		K	K		M S		N	P		
	General-purpose	K P M S	P M		P	K		K	M S	M S	N	N		
	Roughing	K P M S			P			K		M S				
Cat. No.		ACU2500	XCU2500	ACP2000	ACP3000	XCK2000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	170502PEER-L	●		—			—		●	●	—	—		0.2	1
	170504PEER-L	●	●	—	●	●	—	●	●	●	—	—	●	0.4	1
	170508PEER-L	●	●	—	●	●	—	●	●	●	—	—	●	0.8	1
	170512PEER-L	●		—			—		●	●	—	—		1.2	1
	170516PEER-L	●		—			—		●	●	—	—		1.6	1
AOMT	170502PEER-G	●			●			●	●	●	—	—		0.2	1
	170504PEER-G	●	●	●	●	●	●	●	●	●	—	—	●	0.4	1
	170505PEER-G	●							●	●	—	—		0.5	1
	170508PEER-G	●	●	●	●	●	●	●	●	●	—	—	●	0.8	1
	170510PEER-G	●							●	●	—	—		1.0	1
	170512PEER-G	●			●			●	●	●	—	—		1.2	1
	170516PEER-G	●			●			●	●	●	—	—		1.6	1
	170520PEER-G	●			●			●	●	●	—	—		2.0	1
	170524PEER-G	●							●	●	—	—		2.4	1
	170530PEER-G	●			●			●	●	●	—	—		3.0	1
	170532PEER-G	●			●			●	●	●	—	—		3.2	1
	170540PEER-G	●			●			●	●	●	—	—		4.0	1
	170550PEER-G	●			●			●	●	●	—	—		5.0	2
	170564PEER-G	●							●	●	—	—		6.4	2
AOMT	170504PEER-H	●	●	●	●	●	●	●	●	●	—	—	—	0.4	1
	170508PEER-H	●	●	●	●	●	●	●	●	●	—	—	—	0.8	1
	170512PEER-H	●							●	●	—	—	—	1.2	1
	170516PEER-H	●							●	●	—	—	—	1.6	1
AOET	170502PEER-F	●		—			—		—		—	—	—	0.2	1
	170504PEER-F	●		—			—		—		—	—	—	0.4	1
	170505PEER-F	●		—			—		—		—	—	—	0.5	1
	170508PEER-F	●		—			—		—		—	—	—	0.8	1
	170510PEER-F	●		—			—		—		—	—	—	1.0	1
	170512PEER-F	●		—			—		—		—	—	—	1.2	1
	170516PEER-F	●		—			—		—		—	—	—	1.6	1
	170520PEER-F	●		—			—		—		—	—	—	2.0	1
	170524PEER-F	●		—			—		—		—	—	—	2.4	1
	170530PEER-F	●		—			—		—		—	—	—	3.0	1
	170532PEER-F	●		—			—		—		—	—	—	3.2	1
	170540PEER-F	●		—			—		—		—	—	—	4.0	1
	170550PEER-F	●		—			—		—		—	—	—	5.0	2
	170564PEER-F	●		—			—		—		—	—	—	6.4	2
AOET	170502PEER-P25	●		—			—		—		—	—	—	0.2	1
	170504PEER-P25	●		—			—		—		—	—	—	0.4	1
	170505PEER-P25	●		—			—		—		—	—	—	0.5	1
	170508PEER-P25	●		—			—		—		—	—	—	0.8	1
	170510PEER-P25	●		—			—		—		—	—	—	1.0	1
	170512PEER-P25	●		—			—		—		—	—	—	1.2	1
AOET	170502PEER-P32	●		—			—		—		—	—	—	0.2	1
	170504PEER-P32	●		—			—		—		—	—	—	0.4	1
	170505PEER-P32	●		—			—		—		—	—	—	0.5	1
	170508PEER-P32	●		—			—		—		—	—	—	0.8	1
	170510PEER-P32	●		—			—		—		—	—	—	1.0	1
	170512PEER-P32	●		—			—		—		—	—	—	1.2	1
AOET	170502PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
	170524PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
	170530PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
	170532PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
	170540PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
	170550PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
	170564PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

Fig 1

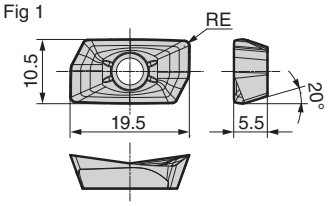
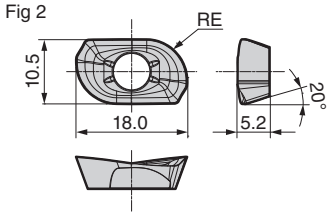


Fig 2



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

Recommended Cutting Conditions ☞H56

● mark: Standard stocked item (new product/expanded item)

WEZ 17000EL Type

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

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

15mm, 90°

Fig 1

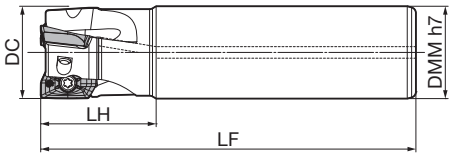
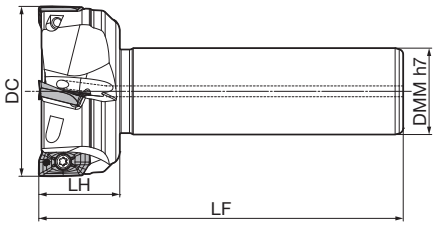


Fig 2



Body (Long Type)

Dimensions (mm)

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

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

Parts

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

Identification Code

WEZ (Series) **17** (Insert Size) **032** (Dia.) **E** (Shank Type) **L** (Long Type) **02** (Number of Teeth) **-30** (Shank Dia.)

* Modification of the cutter body is required when mounting a corner radius 2.4 or higher insert.

WEZ11 Type

Reworking guidelines
Corner radius = 2.4: C1 (AOMT11T324PEER)
Corner radius = 3.0: C1 (AOMT11T330PEER)
Corner radius = 3.2: C1 (AOMT11T332PEER)

WEZ17 Type

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

N·m Recommended Tightening Torque (N·m)

WEZ 17000EL Type

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

Expansion

Insert

Dimensions (mm)

Material Classification		Coated Carbide								Cemented Carbide	DLC	Cermet		
Process	High-speed/Light		P M K	P		K	K		M S		N	P		
	General-purpose	P M K S	P M K		P	K		K	M S	M S	N	N		
	Roughing	P M K S			P			K		M S				
Cat. No.		ACU2500	XCU2500	ACP2000	ACP3000	XCK2000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Corner Radius RE	Fig
AOMT	170502PEER-L	●		—			—		●	●	—	—		0.2	1
	170504PEER-L	●	●	—	●	●	—	●	●	●	—	—	●	0.4	1
	170508PEER-L	●	●	—	●	●	—	●	●	●	—	—	●	0.8	1
	170512PEER-L	●		—			—		●	●	—	—		1.2	1
	170516PEER-L	●		—			—		●	●	—	—		1.6	1
AOMT	170502PEER-G	●			●			●	●	●	—	—		0.2	1
	170504PEER-G	●	●	●	●	●	●	●	●	●	—	—	●	0.4	1
	170505PEER-G	●							●	●	—	—		0.5	1
	170508PEER-G	●	●	●	●	●	●	●	●	●	—	—	●	0.8	1
	170510PEER-G	●							●	●	—	—		1.0	1
	170512PEER-G	●			●			●	●	●	—	—		1.2	1
	170516PEER-G	●			●			●	●	●	—	—		1.6	1
	170520PEER-G	●			●			●	●	●	—	—		2.0	1
	170524PEER-G	●							●	●	—	—		2.4	1
	170530PEER-G	●			●			●	●	●	—	—		3.0	1
	170532PEER-G	●			●			●	●	●	—	—		3.2	1
	170540PEER-G	●			●			●	●	●	—	—		4.0	1
	170550PEER-G	●			●			●	●	●	—	—		5.0	2
	170564PEER-G	●							●	●	—	—		6.4	2
AOMT	170504PEER-H	●	●	●	●	●	●	●	●	●	—	—	—	0.4	1
	170508PEER-H	●	●	●	●	●	●	●	●	●	—	—	—	0.8	1
	170512PEER-H	●							●	●	—	—	—	1.2	1
	170516PEER-H	●							●	●	—	—	—	1.6	1
AOET	170502PEER-F	●		—			—		—		—	—	—	0.2	1
	170504PEER-F	●		—			—		—		—	—	—	0.4	1
	170505PEER-F	●		—			—		—		—	—	—	0.5	1
	170508PEER-F	●		—			—		—		—	—	—	0.8	1
	170510PEER-F	●		—			—		—		—	—	—	1.0	1
	170512PEER-F	●		—			—		—		—	—	—	1.2	1
	170516PEER-F	●		—			—		—		—	—	—	1.6	1
	170520PEER-F	●		—			—		—		—	—	—	2.0	1
	170524PEER-F	●		—			—		—		—	—	—	2.4	1
	170530PEER-F	●		—			—		—		—	—	—	3.0	1
	170532PEER-F	●		—			—		—		—	—	—	3.2	1
	170540PEER-F	●		—			—		—		—	—	—	4.0	1
	170550PEER-F	●		—			—		—		—	—	—	5.0	2
	170564PEER-F	●		—			—		—		—	—	—	6.4	2
AOET	170502PEER-P25	●		—			—		—		—	—	—	0.2	1
	170504PEER-P25	●		—			—		—		—	—	—	0.4	1
	170505PEER-P25	●		—			—		—		—	—	—	0.5	1
	170508PEER-P25	●		—			—		—		—	—	—	0.8	1
	170510PEER-P25	●		—			—		—		—	—	—	1.0	1
	170512PEER-P25	●		—			—		—		—	—	—	1.2	1
AOET	170502PEER-P32	●		—			—		—		—	—	—	0.2	1
	170504PEER-P32	●		—			—		—		—	—	—	0.4	1
	170505PEER-P32	●		—			—		—		—	—	—	0.5	1
	170508PEER-P32	●		—			—		—		—	—	—	0.8	1
	170510PEER-P32	●		—			—		—		—	—	—	1.0	1
	170512PEER-P32	●		—			—		—		—	—	—	1.2	1
AOET	170502PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
	170504PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
	170505PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	0.5	1
	170508PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
	170510PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	1.0	1
	170512PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	1.2	1
	170516PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	1.6	1
	170520PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	2.0	1
	170524PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	2.4	1
	170530PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	3.0	1
	170532PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	3.2	1
	170540PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	4.0	1
	170550PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	5.0	2
	170564PEFR-S	—	—	—	—	—	—	—	—	—	●	●	—	6.4	2

Fig 1

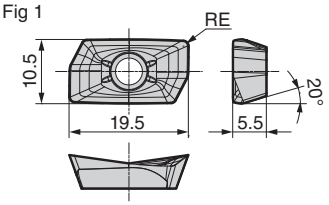
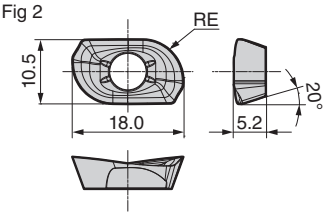


Fig 2



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

Recommended Cutting Conditions H56

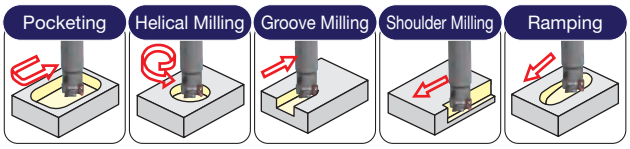
● mark: Standard stocked item (new product/expanded item)

WEX Type

General Features

Utilizing 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 a Wide Range of Milling

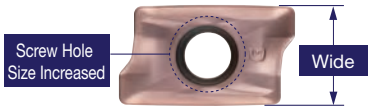


Features

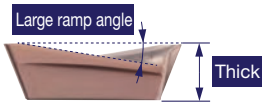
Higher Accuracy Cutting Edge with Both Sharpness and Cutting Edge Strength

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

High-precision Curved Cutting Edge



High Rake Wave Cutting Edge



Coolant Holes are a Standard Feature for the Whole Series

Improved chip evacuation with air or coolant supply

Highly Durable Body

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

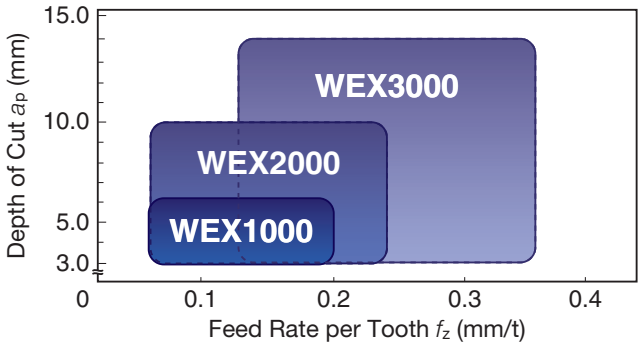
WEX1000 Series

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

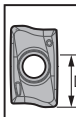
Wide Variety of Inserts

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

WEX Type Series Application Range (Shoulder Milling)

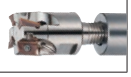


WEX1000 Number of Teeth



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

Product Range

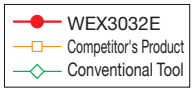
Type	Cat. No.	Description	Dia. (mm) ø10	ø12	ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125	Shape
Shell	**WEX 1000F**	Standard Type											8		10	12	14				
Shell	**WEX 2000F**	Standard Type													6	7	8				
Shell	**WEX 3000F**	Standard Type													4	5	6				
Shell	**WEX 3000R**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

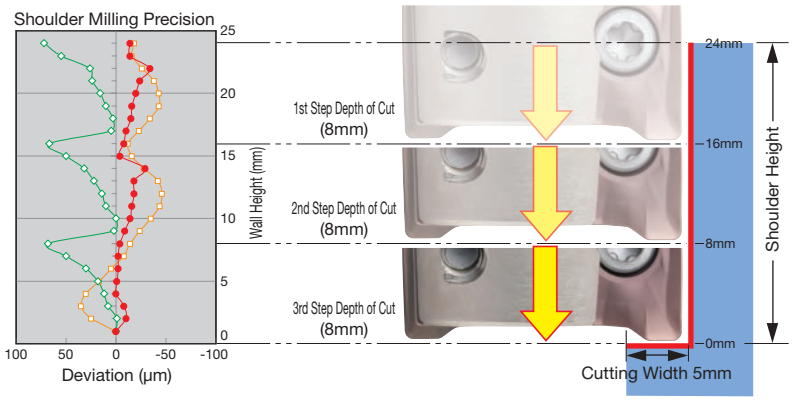
Number in ● shows the number of teeth Inch Inch Bore * mark: Different-diameter shanks in stock Modular Type ☞ H218

■ Cutting Performance

(1) Shoulder milling precision

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

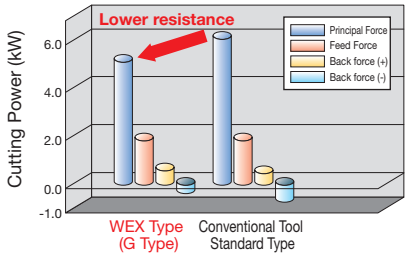




Cutting Conditions
Work Material: SS400
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c = 150m/min
Feed Rate: f_z = 0.15mm/t
(v_f = 675mm/min)
Cutting Width: a_e = 5mm
Depth of Cut: a_p = 8mm x 3 times
Dry

(2) Cutting force

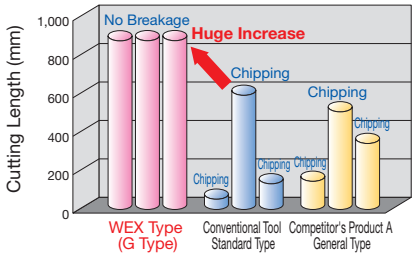
Cutting force (principal force) is approximately 15% lower than conventional tools



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

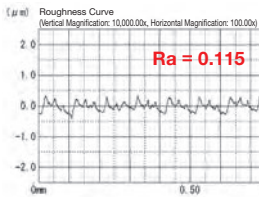
Huge increase in fracture resistance with improved cutting edge strength

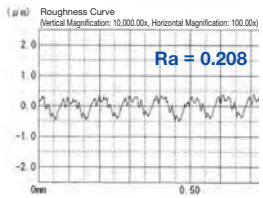


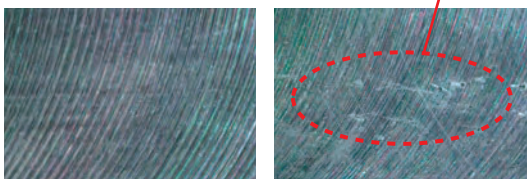
Cutting Conditions
Work Material: SCM440
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c = 100m/min
Feed Rate: f_z = 0.4mm/t
(v_f = 1,260mm/min)
Cutting Width: a_e = 25mm
Depth of Cut: a_p = 3mm Dry

(4) Surface roughness (aluminum alloy milling)

Smooth surface finish free of white blemishes





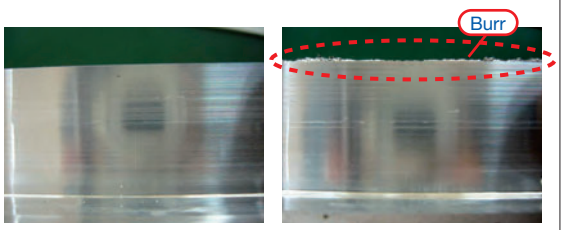


WEX Type | Competitor's Product

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)

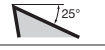
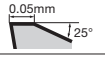
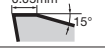
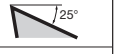
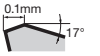
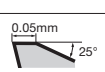
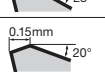
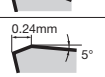
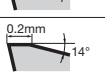
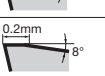
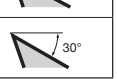
High rake edge significantly reduces burrs



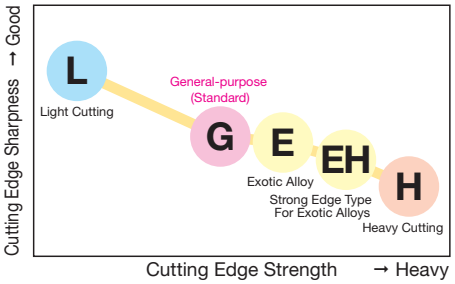
WEX Type | Competitor's Product

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

■ Chipbreaker Selection

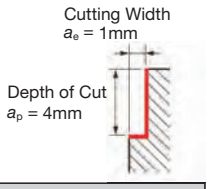
Work Material	P K			M S		N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	Light Cutting to General-purpose	Heavy Interrupted Machining	Aluminum Alloy and Non-Ferrous Metal
Features	Low Cutting Force	General-purpose Type	High Strength Type	General-purpose Type for Exotic Alloys	Strong Edge Type for Exotic Alloys	High Rake Type
	L Type	G Type	H Type	E Type	EH Type	S Type
Chipbreaker						
1000 Series Cross Section				–	–	
2000 Series Cross Section	–					
3000 Series Cross Section						

■ Chipbreaker Selection Guide



■ Recommended Cutting Conditions

WEX1000



Tool: WEX1012E, Insert: AX□T0602

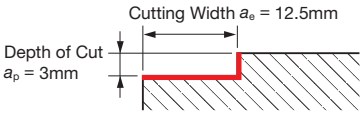
Cutting Conditions: Depth of Cut a_p = 4mm, Width of Cut a_e = 1mm Dry

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	Aluminum Alloy Si content of 12.6% or less		S																						800	600	400
	Si content of over 12.6%		S																						240	200	160
	Copper Alloy		S																						330	300	270

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

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

WEX2000



Tool: WEX2025E, Insert: AX□T1235

Cutting Conditions: Depth of Cut 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	Aluminum Alloy Si content of 12.6% or less		S																						1000	750	500
	Si content of over 12.6%		S																						250	200	170
	Copper Alloy		S																						350	330	300

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

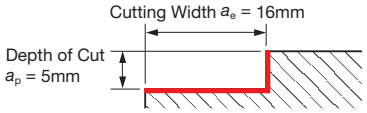
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Recommended Cutting Conditions

WEX3000

Tool: WEX3032E, Insert: AX□T1705

Cutting Conditions: Depth of Cut 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	Aluminum Alloy Si content of 12.6% or less		S																						1000	750	500			
	Si content of over 12.6%		S																						250	200	170			
	Copper Alloy		S																						350	330	300			

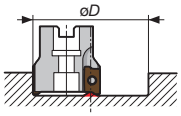
● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

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

■ Recommended Values for Helical Milling and Ramping

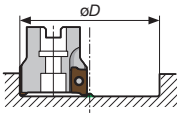
Precautions for Helical Milling

For Minimum Diameter and Below



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

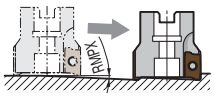
For Maximum Diameter and Above



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

Precautions for Ramping

Use at the RMPX at right or lower.



Recommended Values for Helical Milling and Ramping

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

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

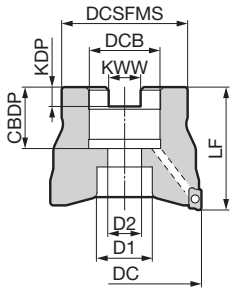
WEX 1000F Type

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

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

6mm 90°

Fig 1



Body

Dimensions (mm)

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

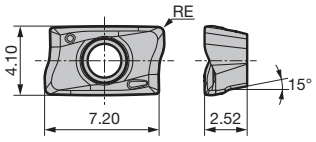
Inserts are sold separately.

Insert

Dimensions (mm)

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

Fig 1



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

Recommended Cutting Conditions H76

Parts

(Sold Separately)

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

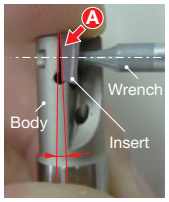
Identification Code

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

Series | Insert Size | Dia. | Metric Body

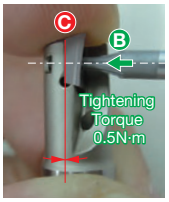
Precautions when Mounting WEX1000 Inserts

1



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

2



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

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

N·m Recommended Tightening Torque (N·m)

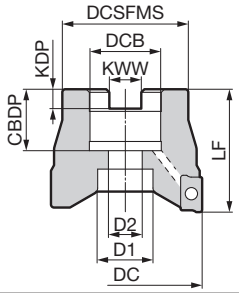
WEX 2000F Type

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

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

10mm 90°

Fig 1



Body

Dimensions (mm)

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

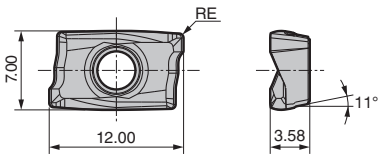
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light	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	Corner Radius RE	Fig
AXMT 123504PEER-G		●	●	●	●	●			—	—	0.4	1
123508PEER-G		●	●	●	●	●			—	—	0.8	1
123512PEER-G		●	●	●	●	●			—	—	1.2	1
AXMT 123504PEER-H		●	●	●	●	●			—	—	0.4	1
123508PEER-H		●	●	●	●	●			—	—	0.8	1
123512PEER-H		●	●	●	●	●			—	—	1.2	1
AXMT 123504PEER-E							●	●	—	—	0.4	1
123508PEER-E							●	●	—	—	0.8	1
123512PEER-E							●	●	—	—	1.2	1
AXMT 123508PEER-EH							●	●	—	—	0.8	1
AXET 123502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
123504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
123508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



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

Recommended Cutting Conditions H76

Parts

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

Identification Code

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

WEX: Series; 2: Insert Size; 040: Dia.; F: Metric Body

WEX 3000F/R Type WEXF 3000R Type

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

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

14mm 90°

Fig 1

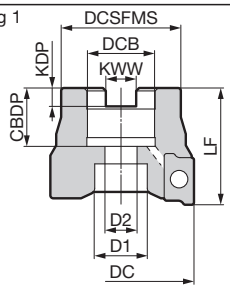
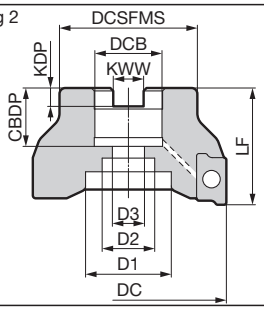


Fig 2



Body (Standard Pitch)

Dimensions (mm)

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

Body (Extra Fine Pitch)

Dimensions (mm)

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

Inserts are sold separately.

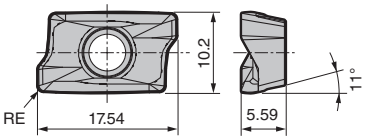
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light	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	Corner Radius RE	Fig
AXMT 170508PEER-L		●	●	●	●	●			—	—	0.8	1
AXMT 170504PEER-G		●	●	●	●	●			—	—	0.4	1
170508PEER-G		●	●	●	●	●			—	—	0.8	1
170512PEER-G		●	●	●	●	●			—	—	1.2	1
170516PEER-G		●	●	●	●	●			—	—	1.6	1
170520PEER-G*		●	●	●	●	●			—	—	2.0	1
170530PEER-G*		●	●	●	●	●			—	—	3.0	1
AXMT 170508PEER-H		●	●	●	●	●			—	—	0.8	1
170512PEER-H		●	●	●	●	●			—	—	1.2	1
AXMT 170504PEER-E							●	●	—	—	0.4	1
170508PEER-E							●	●	—	—	0.8	1
170512PEER-E							●	●	—	—	1.2	1
170516PEER-E							●	●	—	—	1.6	1
170520PEER-E*							●	●	—	—	2.0	1
170530PEER-E*							●	●	—	—	3.0	1
AXMT 170508PEER-EH							●	●	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



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

* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H77

Parts

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

Identification Code

WEX 3 040 F

- WEX: Series
- 3: Insert Size
- 040: Dia.
- F: Cutter Bore (F: Metric, R: Inch)

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

Modify this portion.

Reworking guidelines

For Corner Radius RE 2.0: C1 (AXMT170520PEER)

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

Standard: C0.5.

N·m Recommended Tightening Torque (N·m)

WEX 1000E/EL Type

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

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

6mm, 90°

Fig 1

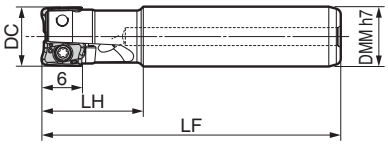
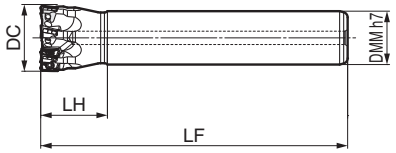


Fig 2



Body (Shank Type)

Dimensions (mm)

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

Inserts are sold separately.

Body (Long Type)

Dimensions (mm)

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

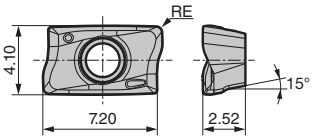
Inserts are sold separately.

Insert

Dimensions (mm)

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

Fig 1



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

Recommended Cutting Conditions ☞H76

Identification Code

WEX (Series) **1** (Insert Size) **010** (Dia.) **E** (Shank Type) **L** (Long Type)

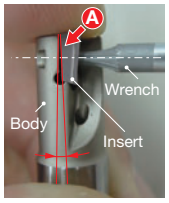
Parts

(Sold Separately)

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

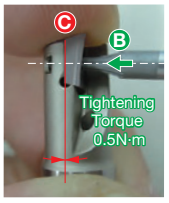
Precautions when Mounting WEX1000 Inserts

1



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

2



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

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

WEX 2000E/EL Type

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

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

10mm, 90°

Modular Type H218

Fig 1

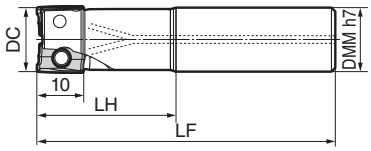
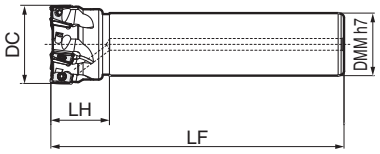


Fig 2



Body (Shank Type)

Dimensions (mm)

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

Inserts are sold separately.

Body (Long Type)

Dimensions (mm)

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

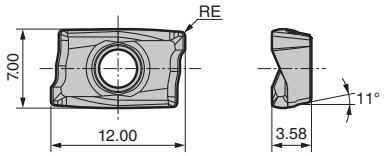
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light	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	Corner Radius RE	Fig
AXMT 123504PEER-G		●	●	●	●	●			—	—	0.4	1
123508PEER-G		●	●	●	●	●			—	—	0.8	1
123512PEER-G		●	●	●	●	●			—	—	1.2	1
AXMT 123504PEER-H		●	●	●	●	●			—	—	0.4	1
123508PEER-H		●	●	●	●	●			—	—	0.8	1
123512PEER-H		●	●	●	●	●			—	—	1.2	1
AXMT 123504PEER-E							●	●	—	—	0.4	1
123508PEER-E							●	●	—	—	0.8	1
123512PEER-E							●	●	—	—	1.2	1
AXMT 123508PEER-EH							●	●	—	—	0.8	1
AXET 123502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
123504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
123508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



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

Recommended Cutting Conditions H76

Parts

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

Identification Code

WEX 2 014 E L

WEX	2	014	E	L
Series	Insert Size	Dia.	Shank Type	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 S Exotic Alloy

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

14mm 90°

Modular Type H219

Fig 1

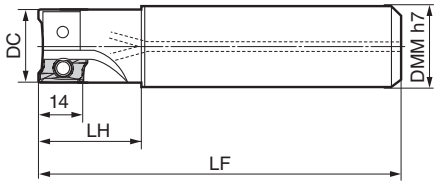
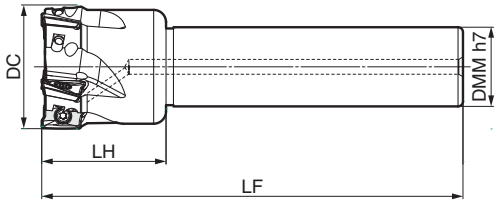


Fig 2



Body (Shank Type)

Dimensions (mm)

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

Body (Short Shank Type)

Dimensions (mm)

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

Inserts are sold separately.

Body (Long Type)

Dimensions (mm)

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

Body (Coarse Pitch Type)

Dimensions (mm)

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

Body (Short Coarse Pitch Type)

Dimensions (mm)

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

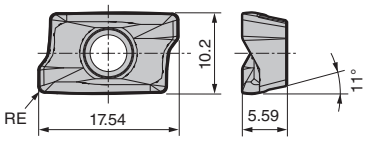
Inserts are sold separately.

Insert

Dimensions (mm)

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

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 H77

Parts

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

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

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

N·m Recommended Tightening Torque (N·m)

High-efficiency Shoulder Milling of Deep Steps

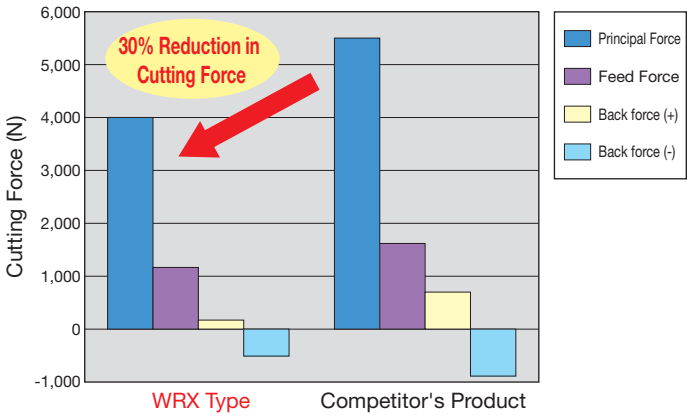
■ General Features

The WEX WaveMill is a cutter 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

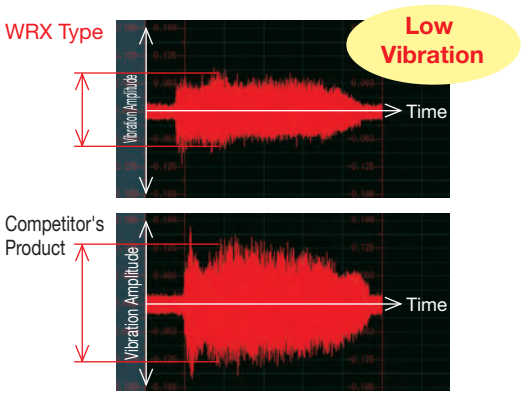
● Cutting edge positions are optimised to provide low resistance and low vibration

■ Comparison of Cutting Force



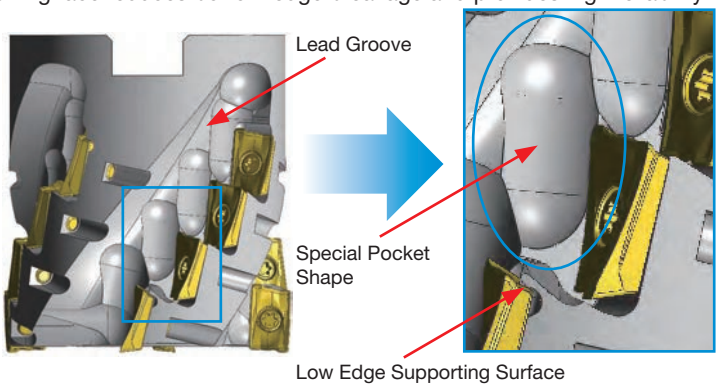
Cutting Conditions
Work Material : S50C
Tool : WRX2025E2725
Cutting Speed : v_c = 100m/min, f_z = 0.15mm/t, a_e = 10mm, a_p = 25mm Dry

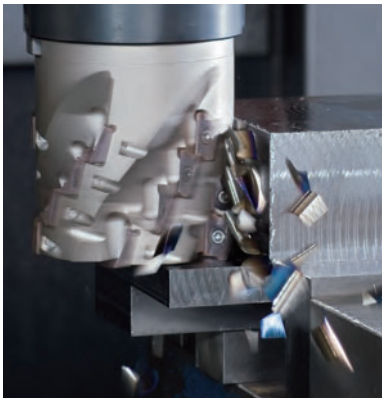
■ Comparison of Vibration



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





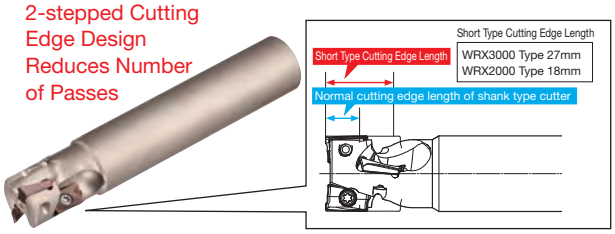
■ Product Range

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	Shell Type	
	WRX3000E	40 to 53	ø40 to ø50	Shank Type	AXMT1705 Type
	WRX3000R	53	ø50 to ø100	Shell Type	
Short Cutting Edge Type	WRX2000E	18	ø20 to ø40	Shank Type	AXMT1235 Type
	WRX2000R		ø40 to ø50	Shell Type	
	WRX3000E	27	ø40 to ø50	Shank Type	AXMT1705 Type
	WRX3000R		ø50 to ø100	Shell Type	

* Applicable inserts are common with the popular WEX type SEC-WaveMill

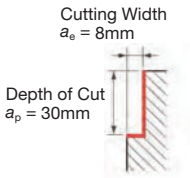
Short Cutting Edge Series

2-stepped Cutting Edge Design Reduces Number of Passes



■ Recommended Cutting Conditions

WRX2000



Tool: WRX2040E3642, Insert: AXMT123504PEER

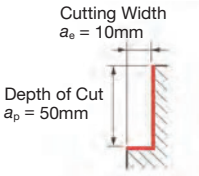
Cutting Conditions: Depth of Cut a_p = 30mm, Width of Cut a_e = 8mm Dry

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	Aluminum Alloy Si content of 12.6% or less		S																						1000	750	500
	Si content of over 12.6%		S																						250	200	170

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

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	Aluminum Alloy Si content of 12.6% or less		S																						1000	750	500
	Si content of over 12.6%		S																						250	200	170

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

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

WRX 2000RS Type

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

Rake Angle	Radial	16° to 17°
	Axial	24°

18 to 36 mm | 90°

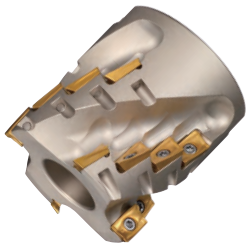


Fig 1

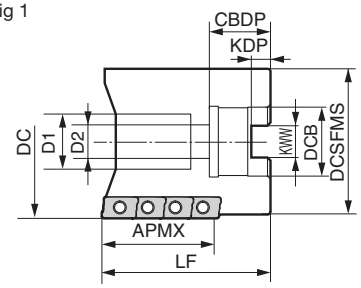
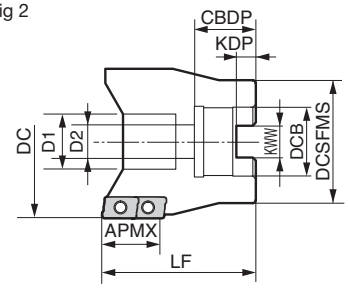


Fig 2



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole 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	**WRX 2040RS3616**	●	**40**	36	37.5	55	**16**	8.4	5.6	18	14	9	16	4	4	0.3	1
	2050RS3622	●	**50**	36	47.5	55	**22**	10.4	6.3	20	18	11	16	4	4	0.5	1

Body (Short Cutting Edge Type)

Dimensions (mm)

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

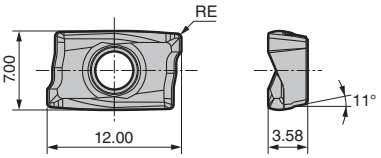
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light	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	Corner Radius RE	Fig
AXMT 123504PEER-G		●	●	●	●	●			—	—	0.4	1
123508PEER-G		●	●	●	●	●			—	—	0.8	1
123512PEER-G		●	●	●	●	●			—	—	1.2	1
AXMT 123504PEER-H		●	●	●	●	●			—	—	0.4	1
123508PEER-H		●	●	●	●	●			—	—	0.8	1
123512PEER-H		●	●	●	●	●			—	—	1.2	1
AXMT 123504PEER-E							●	●	—	—	0.4	1
123508PEER-E							●	●	—	—	0.8	1
123512PEER-E							●	●	—	—	1.2	1
AXMT 123508PEER-EH							●	●	—	—	0.8	1
AXET 123502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
123504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
123508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



Recommended Cutting Conditions H85

Parts

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

* 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**

WRX	2	040	R	S	36	16
Series	Insert Size	Tool Dia.	Feed Direction	Metric Body	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 | S Exotic Alloy

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

27 to 53mm | 90°

Fig 1

Fig 2

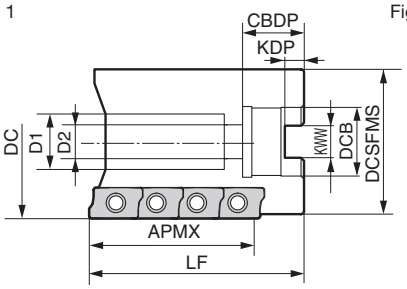
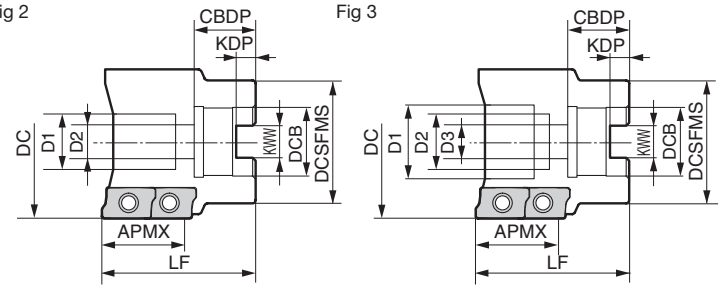


Fig 3



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole 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	Hole 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	Hole 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. Take note of the cutter mounting size (DCB) when selecting a cutter.

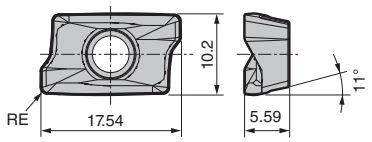
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide							Carbide	DLC		
Process	High-speed/Light	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	Corner Radius RE	Fig
AXMT 170508PEER-L		●	●	●	●	●			—	—	0.8	1
AXMT 170504PEER-G		●	●	●	●	●			—	—	0.4	1
170508PEER-G		●	●	●	●	●			—	—	0.8	1
170512PEER-G		●	●	●	●	●			—	—	1.2	1
170516PEER-G		●	●	●	●	●			—	—	1.6	1
170520PEER-G*		●	●	●	●	●			—	—	2.0	1
170530PEER-G*		●	●	●	●	●			—	—	3.0	1
AXMT 170508PEER-H		●	●	●	●	●			—	—	0.8	1
170512PEER-H		●	●	●	●	●			—	—	1.2	1
AXMT 170504PEER-E							●	●	—	—	0.4	1
170508PEER-E							●	●	—	—	0.8	1
170512PEER-E							●	●	—	—	1.2	1
170516PEER-E							●	●	—	—	1.6	1
170520PEER-E*							●	●	—	—	2.0	1
170530PEER-E*							●	●	—	—	3.0	1
AXMT 170508PEER-EH							●	●	—	—	0.8	1
AXET 170502PEFR-S		—	—	—	—	—	—	—	●	●	0.2	1
170504PEFR-S		—	—	—	—	—	—	—	●	●	0.4	1
170508PEFR-S		—	—	—	—	—	—	—	●	●	0.8	1

Fig 1



* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H85

Parts

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

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

* Modification of the cutter body is required when attaching a 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)

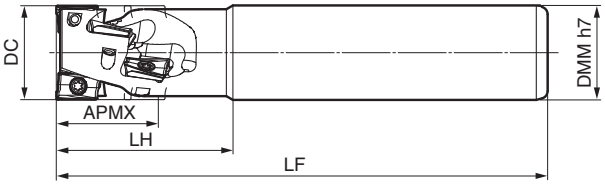
WRX 2000E Type

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

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

18 to 36 mm | 90°

Fig 1



Body (Shank Type)

Dimensions (mm)

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

Body (Short Cutting Edge Type)

Dimensions (mm)

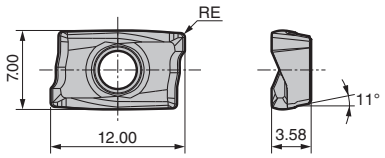
Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
WRX 2020E1820	●	**20**	18	20	40	120	4	2	2	0.3	1
2025E1825	●	**25**	18	25	45	130	6	2	3	0.4	1
2032E1832	●	**32**	18	32	50	140	8	2	4	0.8	1
2040E1832	●	**40**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

Insert

Dimensions (mm)

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

Fig 1



-G: General-purpose, -H: Strong Edge, -S: For Aluminum.

Recommended Cutting Conditions H85

Parts

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

* 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**

Series	Insert Size	Tool Dia.	Shank Type	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 | S Exotic Alloy

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

27 to 53 mm | 90°

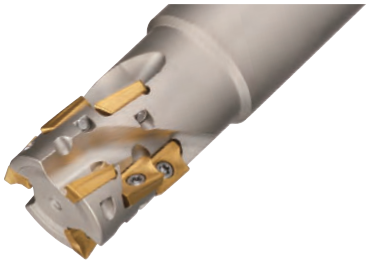
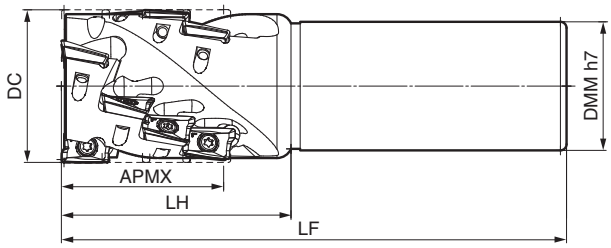


Fig 1



Body (Shank Type)

Dimensions (mm)

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

Body (Short Cutting Edge Type)

Dimensions (mm)

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

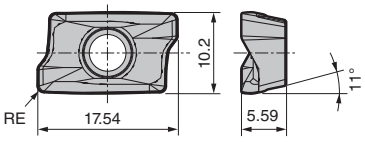
Inserts are sold separately.

Insert

Dimensions (mm)

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

Fig 1



* marked inserts require modification of the cutter body.

Recommended Cutting Conditions H85

Identification Code

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

Series	Insert Size	Tool Dia.	Shank Type	Cutting Edge Length	Shank Dia.

Parts

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

* 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 corner 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)

WFX Type

Expansion

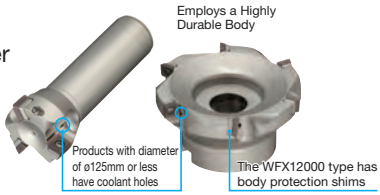
■ General Features

SEC-WaveMill WFX Type for shoulder milling is a screw-locking type cutter capable of using four corners.
Ideal cutting edge design delivers good squareness.
Now with high-efficiency, multi-functional WFXH type and chamfering WFXC type.
Our comprehensive range covers a wide variety of applications.
In addition, our new general-purpose grade ACU2500, which is applicable to any work material and a wide variety processes, is now available.

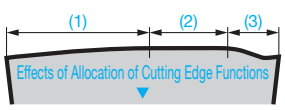
WFXH Type **WFXC** Type

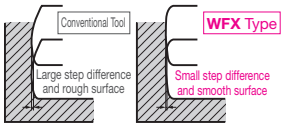
■ Features

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 flat function **improves the surface roughness**

■ Product Range

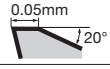
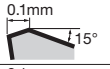
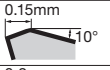
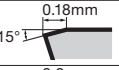
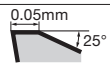
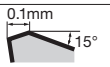
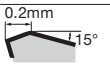
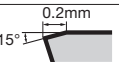
☞H14, H15

Applications	Type	Cat. No.	Description	Dia. (mm) ø8	ø16	ø20	ø22	ø25	ø28	ø30	ø32	ø33	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250	Shape
Shoulder Milling	Shell	WFX 08000R (inch)	Standard Pitch													6	8					
		WFX 08000RS	Standard Pitch										3	4	5	6	8					
		WFXM 08000R (inch)	Fine Pitch													8	10					
		WFXM 08000RS	Fine Pitch										4	5	6	8	10					
		WFXF 08000R (inch)	Extra Fine Pitch													10	12					
		WFXF 08000RS	Extra Fine Pitch										6	7	8	10	12					
		WFX 12000R (inch)	Standard Pitch													4	5	6	8	10	12	
		WFX 12000RS	Standard Pitch											3	4	4	5					
		WFXF 12000R (inch)	Extra Fine Pitch													6	7	8	12	16	18	
		WFXF 12000RS	Extra Fine Pitch											4	5	6	7					
	Shank	WFX 08000E	Standard Pitch			2*	2	2*	2	3	3	3	3	4	5							
		WFXM 08000E	Fine Pitch					3			4		4	5	6							
		WFX 12000E	Standard Pitch										3	3	4	4						
		WFXF 12000E	Extra Fine Pitch											4	5	6						
	Modular	WFX 08000M	Modular Type			2	2	2	2	3	3		3									
High Efficiency	Shell	WFXH 08000RS	Standard Pitch										4	5 6	6							
		WFXH 12000RS	Standard Pitch											4	5							
	Modular	WFXH 08000M	Modular Type					2			3											
		WFXH 12000M	Modular Type										3									
Chamfering	Shank	WFXC 08000E	Standard Pitch	1	2																	
		WFXC 12000E	Standard Pitch					3			3											
	Modular	WFXC 08000M	Modular Type		2																	
		WFXC 12000M	Modular Type					3			3											

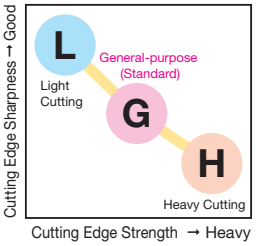
Number in ● shows the number of teeth (inch) Inch Bore * mark: Different-diameter shanks in stock

Modular Type ☞H211

■ Chipbreaker Selection

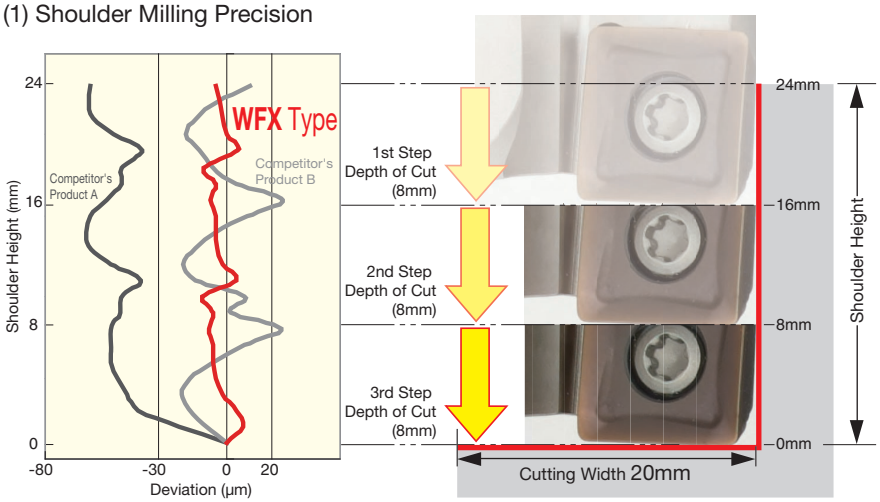
Work Material	P M K S				N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	High-precision Finish	Non-Ferrous Metals
Features	Low Cutting Force	General-purpose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

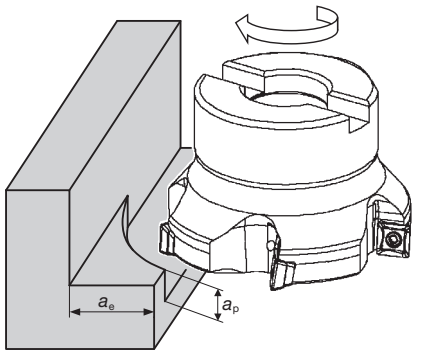
■ Chipbreaker Selection Guide



■ Cutting Performance

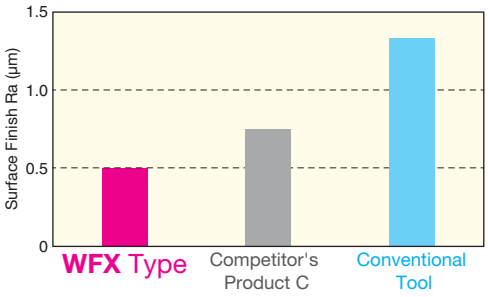
(1) Shoulder Milling Precision





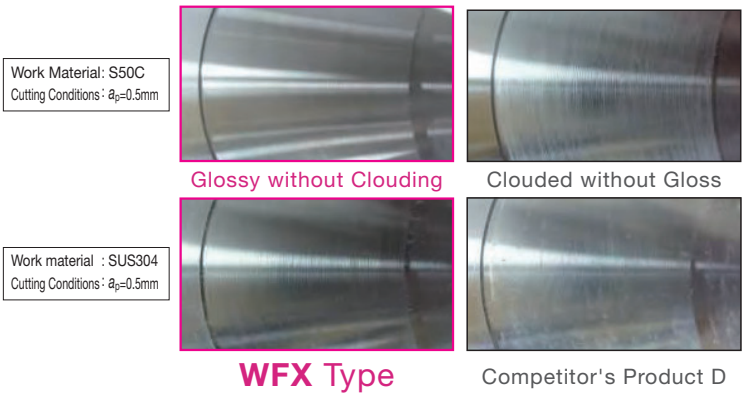
Work Material : S50C Tool: WFX12100R (ø100 x 5 flutes)
Cutting Conditions: v_c=200m/min, f_z=0.15mm/t,
a_p=8.0mm x 3 Passes, a_e=20mm

(2) Comparison of Surface Roughness

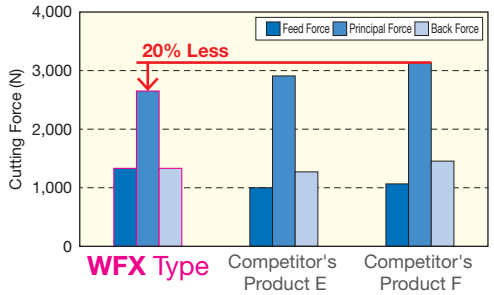


Work Material : SCM440 Tool: WFX12100R (ø100 x 5 flutes)
Cutting Conditions: v_c=200m/min, f_z=0.10mm/t,
a_p=3.0mm, a_e=90mm

(3) Comparison of Surface Properties

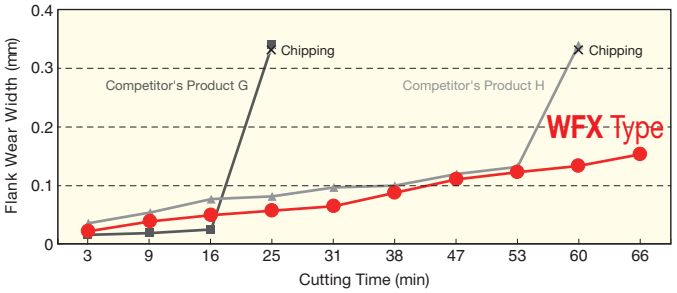


(4) Comparison of Cutting Force



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

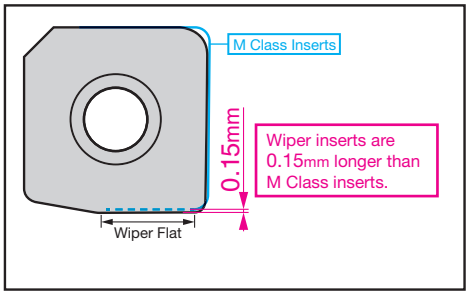
(5) Comparison of Wear Resistance

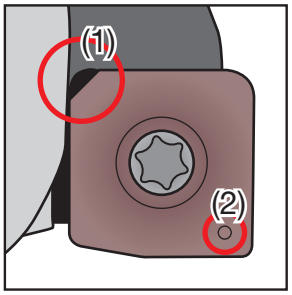


Work Material : SCM440 Tool: WFX12100R (ø100 x 1 flute evaluation)
Cutting Conditions: v_c=200m/min, f_z=0.15mm/t,
a_p=5.0mm, a_e=30mm

■ Wiper Insert

Optimised wiper flat 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 | S Exotic Alloy

Expansion

Rake Angle	Radial	-6°
	Axial	12°

6mm 90°

Fig 1

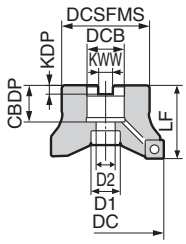


Fig 2

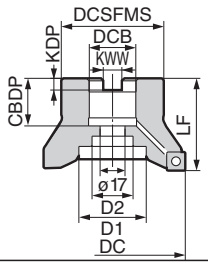
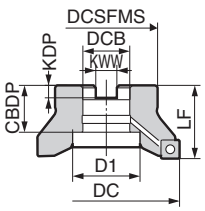


Fig 3



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFX 08040RS**	●	**40**	33	40	**16**	8.4	5.6	18	14	9	3	0.2	1
	08050RS	●	**50**	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	08063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	5	0.6	1
	08080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	6	1.0	1
	08100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	8	1.4	3
Inch	**WFX 08080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	6	1.0	1
	08100R	●	***100**	70	63	**31.75**	12.7	8	32	46	27	8	1.9	2

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

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	PS	PKM	P			K	K		MS		N			
	Medium Cutting	PS	PKM		PM	PM	K	K		MS	MS	N		PM	
	Roughing	PS			PM	PM			K		MS			P	
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-H		●		●	●	●		●	●	●	●	—	—		1.2	1
SOET 080304PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.4	1
080308PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 080308PZTR-W		●	—	—	—	—	—		●			—	—	●	—	2

Refer to H91 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

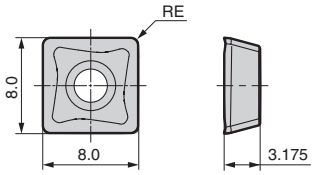
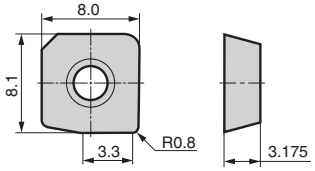


Fig 2 Wiper Insert



Identification Code

WFX Series | **08** Insert Size | **040** Cutter Dia. | **R** Feed Direction | **S** Metric Body

Parts

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

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed 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	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220 HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300 XCU2500 XCK2000
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACM200 ACM300

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

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

WFXM 08000R(S) Type

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

Expansion

Rake Angle	Radial	-6°
	Axial	12°

6mm 90°

Fig 1

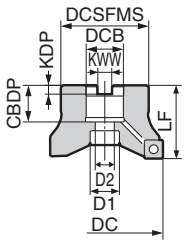


Fig 2

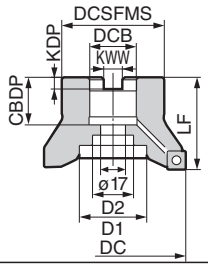
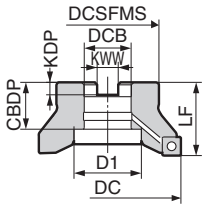


Fig 3



Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXM 08040RS**	●	**40**	33	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	08050RS	●	**50**	41	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	08063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.5	1
	08080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	8	1.0	1
	08100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	10	1.4	3
Inch	**WFXM 08080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	8	1.0	1
	08100R	●	***100**	70	63	**31.75**	12.7	8	32	46	27	10	1.9	2

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

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	●	●	P			K	K		M		K N	N			
	Medium Cutting	●	●		P M	P M	K	K		M	M		N	P M		
	Roughing	●			P M	P M			K		M			P		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-H		●		●	●	●		●	●	●	●	—	—		1.2	1
SOET 080304PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.4	1
080308PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 080308PZTR-W		●	—	—	—	—	—		●			—	—	●	—	2

Fig 1

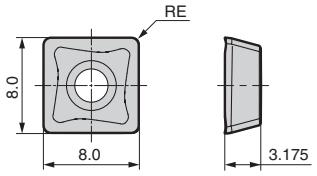
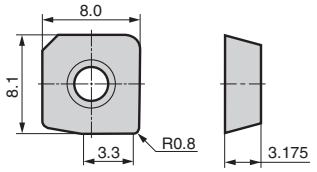


Fig 2 Wiper Insert



Refer to H91 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Identification Code

WFX **M** **08** **040** **R** **S**

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

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	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	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220 HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300 XCU2500 XCK2000
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACM200 ACM300

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

WFXF 08000R(S) Type

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

Expansion

Rake Angle	Radial	-6°
	Axial	12°

6mm 90°

Fig 1

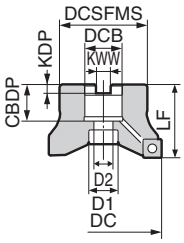


Fig 2

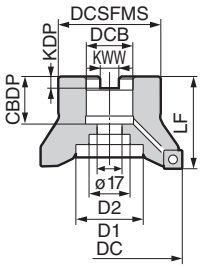
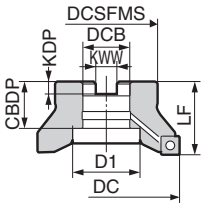


Fig 3



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WFXF 08040RS	●	40	33	40	16	8.4	5.6	18	14	9	6	0.2	1
	08050RS	●	50	41	40	22	10.4	6.3	20	18	11	7	0.3	1
	08063RS	●	63	50	40	22	10.4	6.3	20	18	11	8	0.5	1
	08080RS	●	*80	55	50	27	12.4	7	22	20	14	10	0.9	1
	08100RS	●	100	70	50	32	14.4	8	32	46	—	12	1.4	3
Inch	WFXF 08080R	●	*80	55	50	25.4	9.5	6	25	20	14	10	1.0	1
	08100R	●	*100	70	63	31.75	12.7	8	32	46	27	12	1.9	2

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

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	P M S	P K M	P			K	K		M S		K N	N		
	Medium Cutting	P M S	P K M		P M	P M	K	K		M S	M S		N	P M	
	Roughing	P M S			P M	P M			K		M S			P	
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-H		●		●	●	●		●	●	●	●	—	—		1.2	1
SOET 080304PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.4	1
080308PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 080308PZTR-W		●	—	—	—	—	—		●			—	—	●	—	2

Refer to H91 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

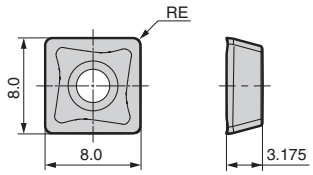
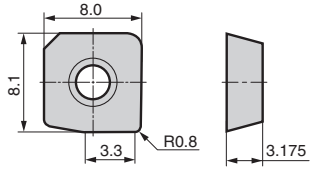


Fig 2 Wiper Insert



Identification Code

WFX Series | **F** Extra Fine Pitch | **08** Insert Size | **040** Cutter Dia. | **R** Feed Direction | **S** Metric Body

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0306IP	2.0	TRDR08IP	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	0.08-**0.12**-0.18	< 6	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220 HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300 XCU2500 XCK2000
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACM200 ACM300

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

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

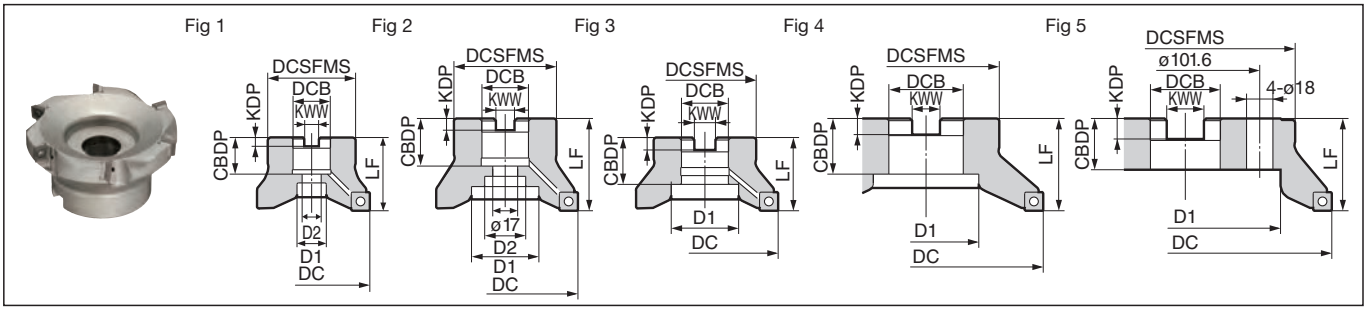
WFX 12000R(S) Type

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

Expansion

Rake Angle	Radial	-8°
	Axial	8°

10mm 90°



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFX 12050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	3	0.3	1
	12063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	12080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	4	0.9	1
	12100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	5	1.3	3
Inch	**WFX 12080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	4	0.9	1
	12100R	●	***100**	70	63	**31.75**	12.7	8	32.5	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.

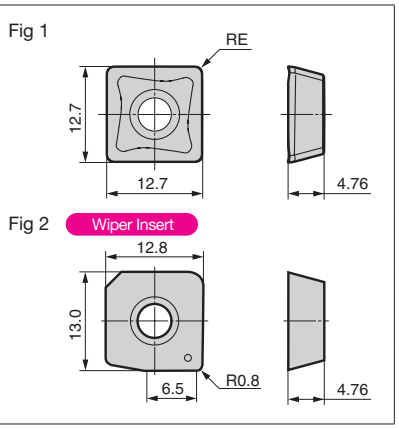
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

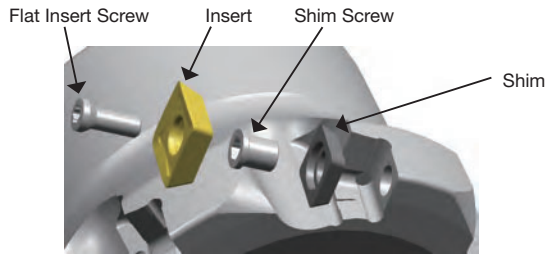
Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	K M S	P K M	P			K	K		M S		N			
	Medium Cutting	K M S	P K M		P M	P M	K	K		M S	M S	N		P M	
	Roughing	K M S			P M	P M			K		M S			P	
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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 H91 (Precautions when Using Wiper Inserts) (Mounting Precautions).





Identification Code

WFX Series | **12** Insert Size | **050** Cutter Dia. | **R** Feed Direction | **S** Metric Body

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
					N·m				
DC ø50 to 125	WFXS4R	BW0507F	LH035	BFTX03512IP	3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed 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	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	
	Die Steel	200 to 220 HB	100-**150**-200	0.10-**0.15**-0.20	< 6	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACK200 ACK300 XCU2500 XCK2000
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.15**-0.20	< 10	ACU2500 ACM200 ACM300

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

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

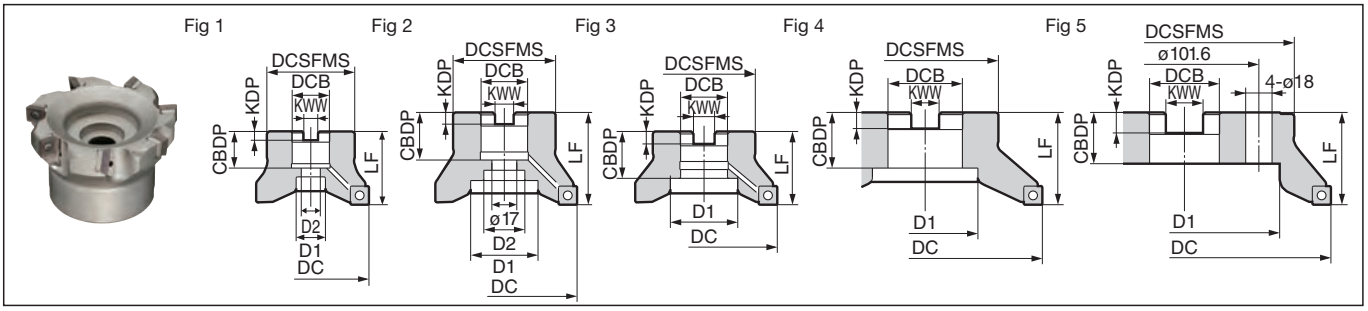
WFXF 12000R(S) Type

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

Expansion

Rake Angle	Radial	-8°
	Axial	8°

10mm 90°



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXF 12050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	5	0.5	1
	12080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	6	0.9	1
	12100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	7	1.3	3
Inch	**WFXF 12080R**	●	***80**	55	50	**25.4**	9.5	6	25	20	14	6	0.9	1
	12100R	●	***100**	70	63	**31.75**	12.7	8	32.5	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.

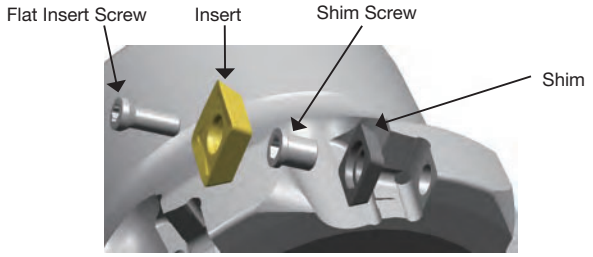
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	P M S	P M	P			K	K		M S	K N	N			
	Medium Cutting	P M S	P M		P M	P M	K	K		M S	M S	N	P M		
	Roughing	P M S			P M	P M			K	M S			P		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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 H91 (Precautions when Using Wiper Inserts) (Mounting Precautions).



Identification Code

WFX **F** **12** **050** **R** **S**

WFX	F	12	050	R	S
Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Body

Parts

Applicable Cutter	Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
DC ø50 to 125	WFXS4R	BW0507F	LH035	BFTX03512IP	3.0	—	HPS1015	TRB15IP	SUMI-P
Other than above						TRDR15IP	—	—	

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	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	
	Die Steel	200 to 220 HB	100-**150**-200	0.10-**0.15**-0.20	< 6	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACK200 ACK300 XCU2500 XCK2000
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.15**-0.20	< 10	ACU2500 ACM200 ACM300

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

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

WFX 08000E Type

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

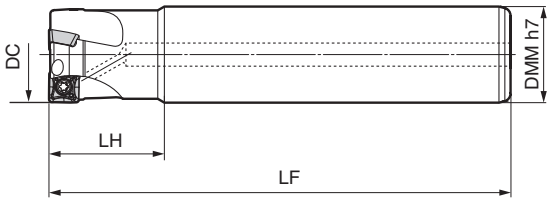
Expansion

Rake Angle	Radial	-6°
	Axial	12°

6mm 90°

Modular Type H220

Fig 1



Body (Standard Pitch)

Dimensions (mm)

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

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (mm)

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

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide									Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	K M S	P M	P			K	K		M S	K N	N			
	Medium Cutting	K M S	P M		P M	P M	K	K		M S	M S	N	P M		
	Roughing	K M S			P M	P M			K		M S			P	
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-H		●		●	●	●		●	●	●	●	—	—		1.2	1
SOET 080304PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.4	1
080308PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1
XOEW 080308PZTR-W		●	—	—	—	—	—		●			—	—	●	—	2

Refer to H91 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

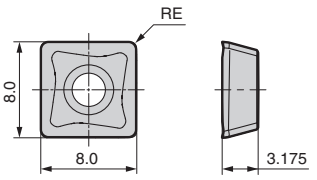
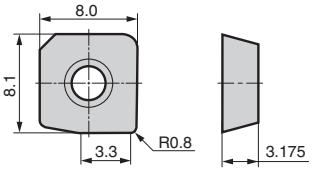


Fig 2 Wiper Insert



Identification Code

WFX **M** **08** **025** **E**

WFX	M	08	025	E
Series	Fine Pitch	Insert Size	Cutter Dia.	Shank Type

Parts

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

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed 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	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 6	
	Die Steel	200 to 220 HB	100-**150**-200	0.08-**0.12**-0.18	< 4	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 6	ACU2500 ACK200 ACK300 XCU2500 XCK2000
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 6	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.08-**0.13**-0.18	< 6	ACU2500 ACM200 ACM300

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

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

WFX(F) 12000E Type

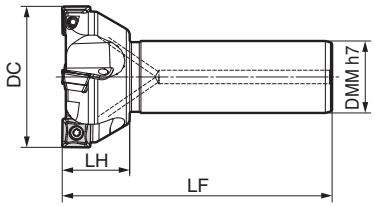
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy

Expansion

Rake Angle	Radial	-8°
	Axial	8°

10mm 90°

Fig 1



Body (Standard Pitch)

Dimensions (mm)

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

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

Body (Extra Fine Pitch)

Dimensions (mm)

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

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	M S	P M K N	P			K	K		M S		K N	N			
	Medium Cutting	M S	P M K N		P M	P M	K	K		M S	M S		N	P M		
	Roughing	M S			P M	P M			K		M S			P		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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 H91 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

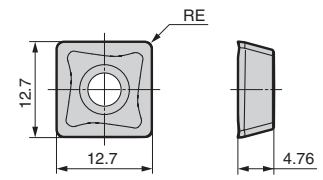
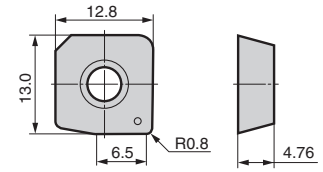
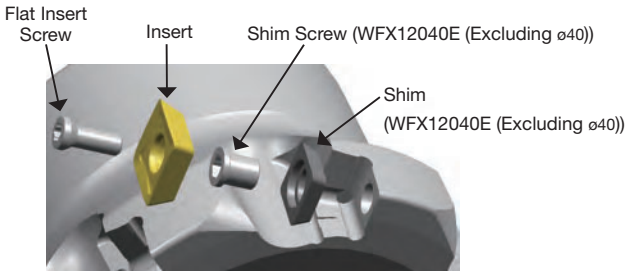


Fig 2 Wiper Insert





Identification Code

WFX **F** **12** **050** **E**

WFX	F	12	050	E
Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Shank Type

Parts

Shim	Shim Screw	Wrench	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WFXS4R	BW0507F	LH035	BFTX03512IP	3.0	TRDR15IP	SUMI-P

ø40 mm size does not have shims.

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	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.15**-0.20	< 10	
	Die Steel	200 to 220 HB	100-**150**-200	0.10-**0.15**-0.20	< 6	
M	Stainless Steel	—	160-**200**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACM300
K	Cast Iron	250HB	100-**175**-250	0.10-**0.15**-0.20	< 10	ACU2500 ACK200 ACK300 XCU2500 XCK2000
N	Non-ferrous Metal	—	300-**500**-1,000	0.10-**0.15**-0.20	< 10	H1 DL1000
S	Exotic Alloy	—	30- **50** -80	0.10-**0.15**-0.20	< 10	ACU2500 ACM200 ACM300

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

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

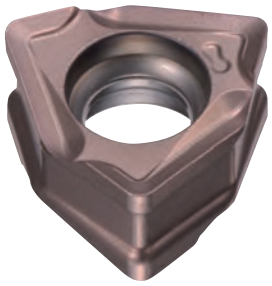
DFC Type

Expansion

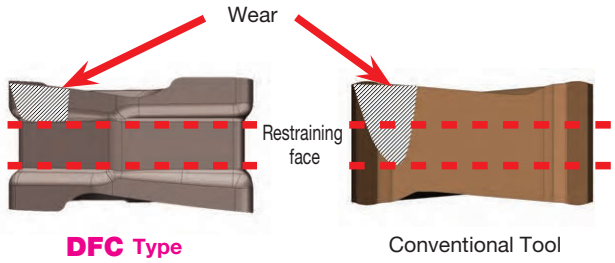
■ General Features

- The high-efficiency general-purpose/shoulder milling SEC-Sumi Dual Mill DFC Type cutter has a unique insert shape with both excellent sharpness and cutting edge strength, enabling it to be used for a wider range of applications from high-efficiency machining through to finishing. Further expansion of the shoulder milling GS Type chipbreaker, suitable for a wide range of applications.
- General-purpose Grade Applicable to Any Work Material
  Introducing the new grade ACU2500, which is applicable to a wide variety of processes and work materials such as steel, stainless steel and cast iron.

■ Features



Unique insert shape delivers sharp cutting performance and cutting edge strength



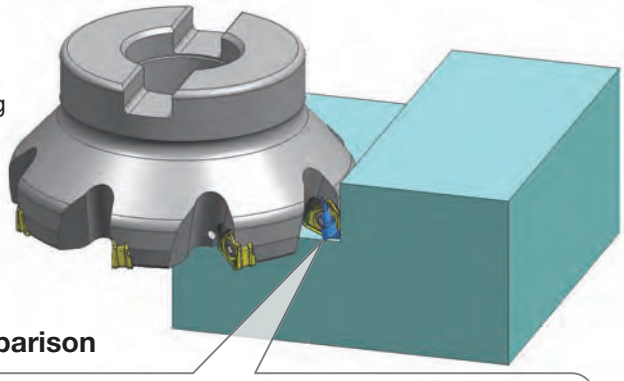
Flank wear of inserts for DFC Type does not reach the restraining face and thus mounting accuracy does not suffer

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

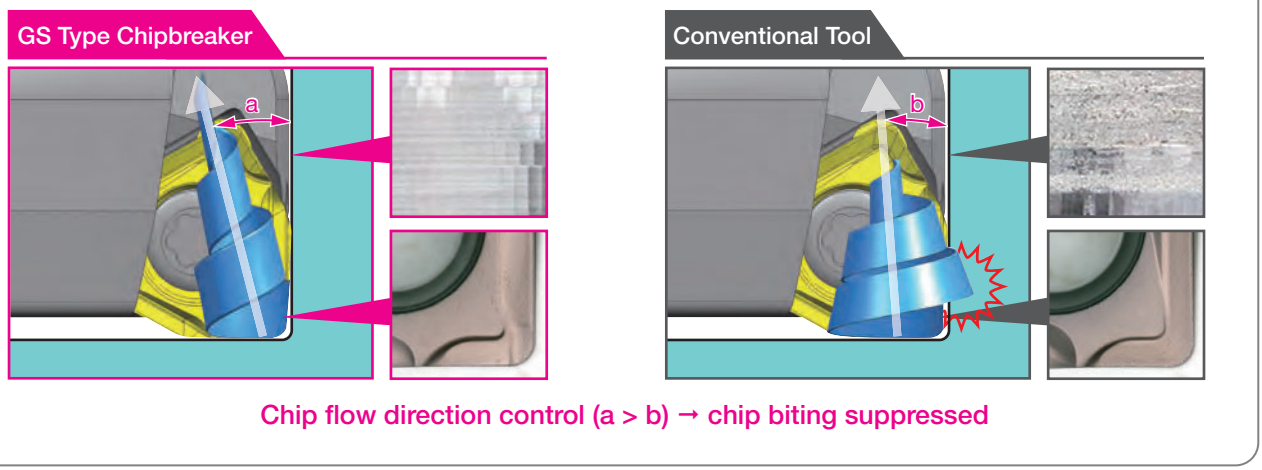
GS Type Chipbreaker for Shoulder Milling

· 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



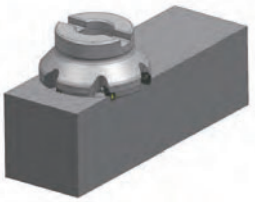
Chip generation image and machined surface comparison



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

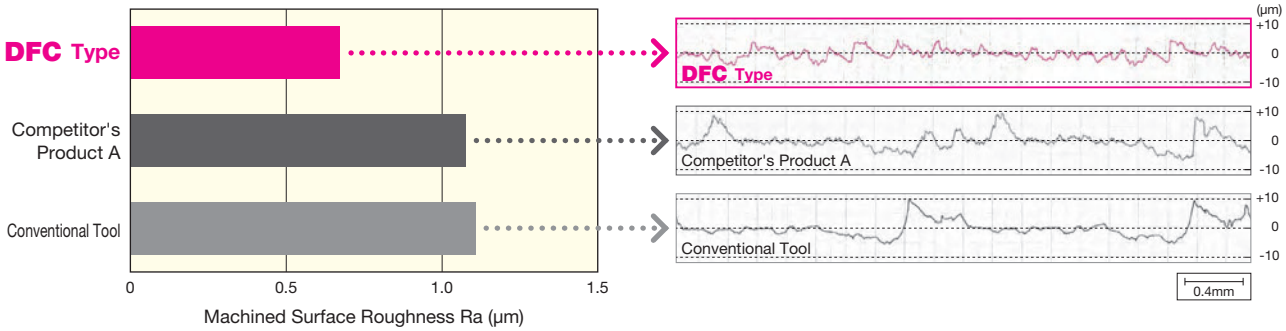
DFC Type

■ Cutting Performance



Face Milling

(1) Machined Surface Roughness
Better than competitors' products

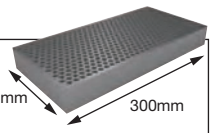


Work Material: S50C Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3mm, a_e = 85mm Dry

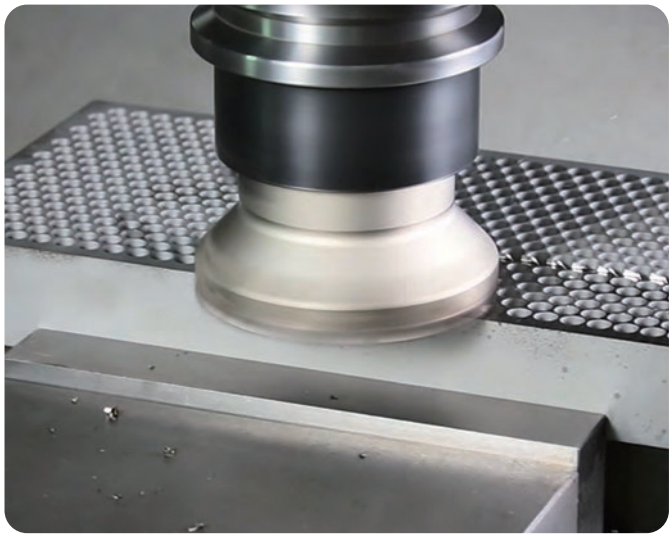
(2) Cutting edge strength: Cutting edge failure during heavy interrupted cutting
Cutting edge strength surpassing competitors' double-sided cutters

	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)		

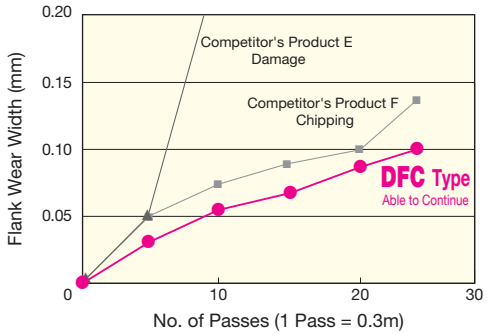
(Cutting Distance: 0.9m)



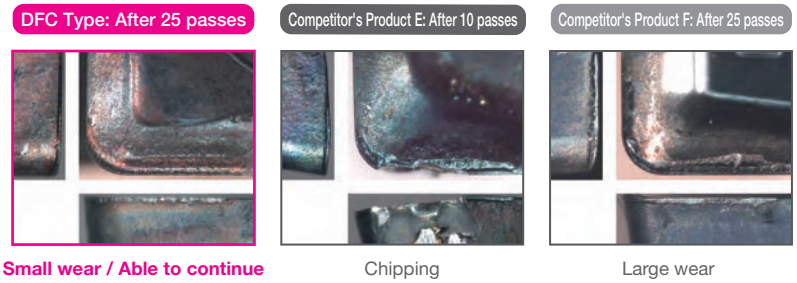
Work Material: S50C (With Holes)
Tool: DFC 09100RS
Insert: XNMU 060608PNER-G Grade: ACP300
Cutting Conditions: v_c = 150m/min, a_p = 3mm, a_e = 50mm Dry



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



Comparison of cutting edge failure

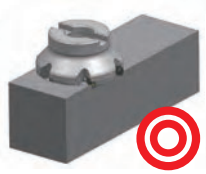


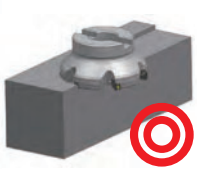
Work Material: S50C Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3mm, a_e = 85mm Dry

DFC Type

■ Applications and Recommended Chipbreakers

Face Milling	Shoulder Milling	Side Milling	Helical Milling	Ramping
G	GS	G/GS		





Guidelines for Shoulder Milling Conditions

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

Recommended Axial Depth of Cut
$a_p = 3$mm

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

⚠ Applications which are not applicable

■ Product Range

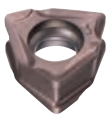
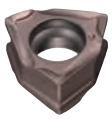
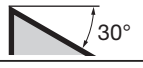
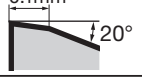
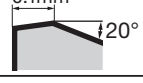
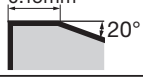
Type	Cat. No.	Description	Dia. (mm) ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	Shape
Shell	DFC 09000R (Inch)	Standard Pitch						5	6	7	8	10	
Shell	DFC 09000RS	Standard Pitch				4	4	5	6	7	8	10	
Shell	DFCM 09000R (Inch)	Fine Pitch						7	8	11	12	16	
Shell	DFCM 09000RS	Fine Pitch				5	6	7	8	11	12	16	
Shell	DFCF 09000R (Inch)	Extra Fine Pitch						9	11	14	16	20	
Shell	DFCF 09000RS	Extra Fine Pitch				6	7	9	11	14	16	20	
Shank	DFC 09000E	Standard Pitch	2	2	3	3*	4*	5*					
Shank	DFCM 09000E	Fine Pitch		3	4	5*	6*	7*					

Number in ● shows the number of teeth (Inch) Inch Bore * mark: Different-diameter shanks in stock

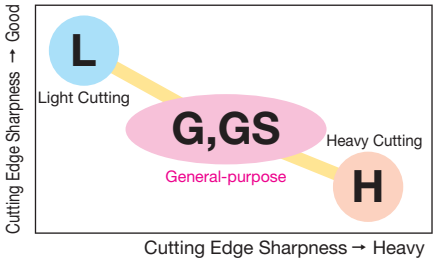
■ Insert Grade

The newly developed general-purpose ACU2500 grade suitable for various work materials has now been released.
Lineup of Steel Milling Grades ACP100/ACP200/ACP300, Stainless Steel Milling Grades ACM200/ACM300, Cast Iron Milling Grades ACK200/ACK300 and more to suit a wide range of work materials.

■ Chipbreaker Selection

Work Material	P M K S			
Applications	Light Cutting	General-purpose to Interrupted Milling	Shoulder Milling	Heavy Cutting
Features	Low Rigidity Milling, Reduction of Burrs	Face Milling	Shoulder Milling	Heavy Cross Section, Cutting Hardened Steel
Chipbreaker	L Type	G Type	GS Type	H Type
				
Cutting Edge Cross Section	 30°	 0.1mm 20°	 0.1mm 20°	 0.15mm 20°

■ Chipbreaker Selection Guide



■ Insert Mounting Precautions

Make sure there is no gap

No Gap

Gap

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

DFC 09000R(S) Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

Fig 1

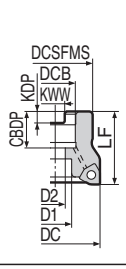


Fig 2

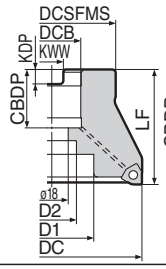


Fig 3

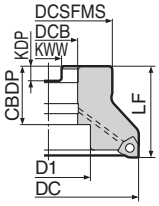


Fig 4

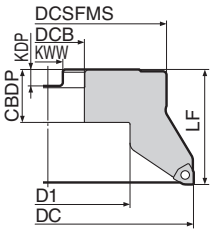


Fig 5

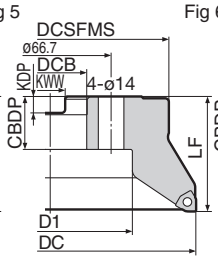
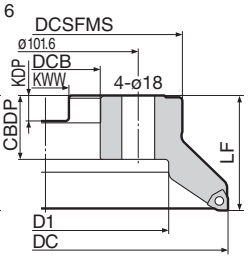


Fig 6



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFC 09050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	09063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	09080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	5	1.0	1
	09100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	6	1.4	3
	09125RS	●	**125**	80	63	**40**	16.4	9	29	52	29	7	2.8	1
	09160RS	●	**160**	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. Take note of the cutter mounting size (DCB) when selecting a cutter.

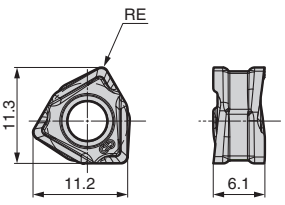
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	P K M S	P K M	P M			K	K		M S			
	Medium Cutting	P K M S	P K M	P M	P M		K	K		M S	M S		
	Roughing	P K M S			P M	P M			K		M S		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		●	●	—	●	●	●	—	●	—	●	0.4	1
060608PNER-L		●	●	—	●	●	●	—	●	—	●	0.8	1
XNMU 060604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
060608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
060612PNER-G		●		●	●	●		●	●	●	●	1.2	1
060616PNER-G		●		●	●	●		●	●	●	●	1.6	1
XNMU 060604PNER-GS		●		●	●	●				●	●	0.4	1
060608PNER-GS		●	●	●	●	●	●			●	●	0.8	1
060612PNER-GS		●		●	●	●				●	●	1.2	1
060616PNER-GS		●		●	●	●				●	●	1.6	1
XNMU 060608PNER-H		●	●	●	●	●	●	●	●	●	●	0.8	1
060612PNER-H		●		●	●	●		●	●	●	●	1.2	1
060616PNER-H		●		●	●	●		●	●	●	●	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC Series — **09** Insert Size — **050** Cutter Dia. — **R** Feed Direction — **S** Metric Body

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	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	XCU2500
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACM200 ACM300

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.

Parts

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

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

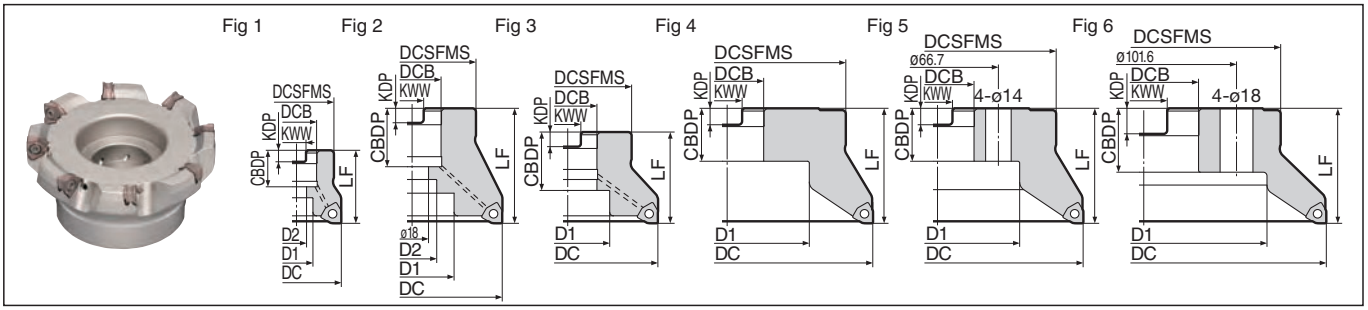
DFCM 09000R(S) Type

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	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFCM 09050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	09063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.5	1
	09080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	7	0.9	1
	09100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	8	1.4	3
	09125RS	●	**125**	80	63	**40**	16.4	9	29	52	29	11	2.7	1
	09160RS	●	**160**	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. Take note of the cutter mounting size (DCB) when selecting a cutter.

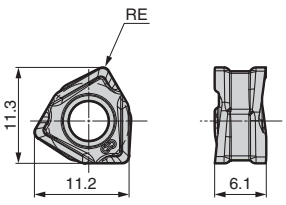
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	PSM	PKM	PM			K	K		MS			
	Medium Cutting	PSM	PKM	PM	PM		K	K		MS	MS		
	Roughing	PSM			PM	PM			K		MS		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		●	●	—	●	●	●	—	●	—	●	0.4	1
060608PNER-L		●	●	—	●	●	●	—	●	—	●	0.8	1
XNMU 060604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
060608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
060612PNER-G		●		●	●	●		●	●	●	●	1.2	1
060616PNER-G		●		●	●	●		●	●	●	●	1.6	1
XNMU 060604PNER-GS		●		●	●	●				●	●	0.4	1
060608PNER-GS		●	●	●	●	●	●			●	●	0.8	1
060612PNER-GS		●		●	●	●				●	●	1.2	1
060616PNER-GS		●		●	●	●				●	●	1.6	1
XNMU 060608PNER-H		●	●	●	●	●	●	●	●	●	●	0.8	1
060612PNER-H		●		●	●	●		●	●	●	●	1.2	1
060616PNER-H		●		●	●	●		●	●	●	●	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC Series | **M** Fine Pitch | **09** Insert Size | **050** Cutter Dia. | **R** Feed Direction | **S** Metric Body

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	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACM200 ACM300

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.

Parts

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

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

DFCF 09000R(S) Type

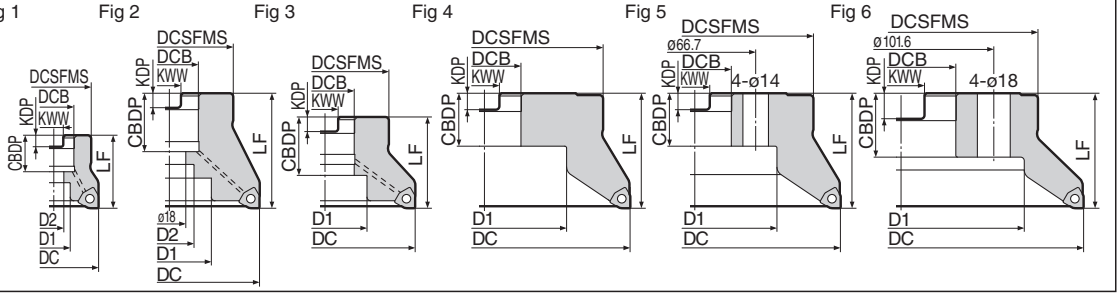
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Expansion

Rake Angle	Radial	-9°
	Axial	-5°

6mm 90°

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



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFCF 09050RS**	●	**50**	41	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	09063RS	●	**63**	50	40	**22**	10.4	6.3	20	18	11	7	0.5	1
	09080RS	●	***80**	55	50	**27**	12.4	7	22	20	14	9	0.9	1
	09100RS	●	**100**	70	50	**32**	14.4	8	32	46	—	11	1.3	3
	09125RS	●	**125**	80	63	**40**	16.4	9	29	52	29	14	2.6	1
	09160RS	●	**160**	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. Take note of the cutter mounting size (DCB) when selecting a cutter.

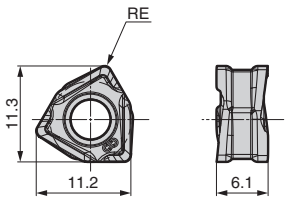
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	P M S	P M	P M			K	K		M S			
	Medium Cutting	P M S	P M	P M	P M		K	K		M S	M S		
	Roughing	P M S			P M	P M			K		M S		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		●	●	—	●	●	●	—	●	—	●	0.4	1
060608PNER-L		●	●	—	●	●	●	—	●	—	●	0.8	1
XNMU 060604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
060608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
060612PNER-G		●		●	●	●		●	●	●	●	1.2	1
060616PNER-G		●		●	●	●		●	●	●	●	1.6	1
XNMU 060604PNER-GS		●		●	●	●				●	●	0.4	1
060608PNER-GS		●	●	●	●	●	●			●	●	0.8	1
060612PNER-GS		●		●	●	●				●	●	1.2	1
060616PNER-GS		●		●	●	●				●	●	1.6	1
XNMU 060608PNER-H		●	●	●	●	●	●	●	●	●	●	0.8	1
060612PNER-H		●		●	●	●		●	●	●	●	1.2	1
060616PNER-H		●		●	●	●		●	●	●	●	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC **F** **09** **050** **R** **S**

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

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	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACM200 ACM300

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.

Parts

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

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

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

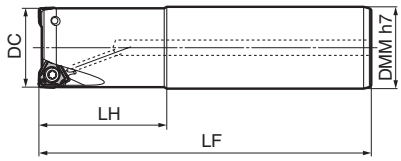
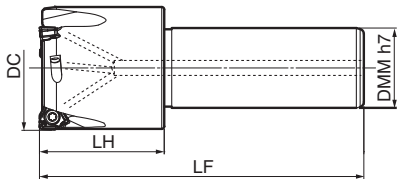


Fig 2



Body (Standard Pitch)

Dimensions (mm)

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

Body (Fine Pitch)

Dimensions (mm)

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

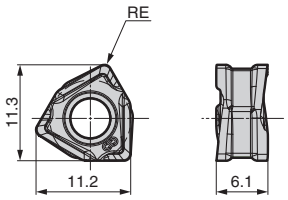
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	P M S	P K M	P M			K	K		M S			
	Medium Cutting	P M S	P K M	P M	P M		K	K		M S	M S		
	Roughing	P M S			P M	P M			K		M S		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
XNMU 060604PNER-L		●	●	—	●	●	●	—	●	—	●	0.4	1
060608PNER-L		●	●	—	●	●	●	—	●	—	●	0.8	1
XNMU 060604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
060608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
060612PNER-G		●		●	●	●		●	●	●	●	1.2	1
060616PNER-G		●		●	●	●		●	●	●	●	1.6	1
XNMU 060604PNER-GS		●		●	●	●				●	●	0.4	1
060608PNER-GS		●	●	●	●	●	●			●	●	0.8	1
060612PNER-GS		●		●	●	●				●	●	1.2	1
060616PNER-GS		●		●	●	●				●	●	1.6	1
XNMU 060608PNER-H		●	●	●	●	●	●	●	●	●	●	0.8	1
060612PNER-H		●		●	●	●		●	●	●	●	1.2	1
060616PNER-H		●		●	●	●		●	●	●	●	1.6	1

Fig 1



XNMU060608PNER-■

Identification Code

DFC Series — **M** Fine Pitch — **09** Insert Size — **025** Cutter Dia. — **E** Shank Type

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03512IP	3.0	TRDR15IP	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	ACU2500 ACP200 ACP300 XCU2500
	Mild Steel	≤ 180HB	180 - **250** - 350	0.15 - **0.25** - 0.35	< 6	
	Die Steel	200 to 220 HB	100 - **150** - 200	0.10 - **0.18** - 0.25	< 4	
M	Stainless Steel	—	160 - **205** - 250	0.12 - **0.18** - 0.25	< 6	ACU2500 ACM300
K	Cast Iron	250HB	100 - **175** - 250	0.10 - **0.20** - 0.30	< 6	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **50** - 80	0.10 - **0.20** - 0.30	< 6	ACU2500 ACM200 ACM300

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 Stock (new product/expanded item)

TSX Type

Expansion

■ 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.

● General-purpose Grade Applicable to Any Work Material
Introducing the new grade ACU2500, which is applicable to a wide variety of processes and work materials such as steel, stainless steel and cast iron.

■ Product Range (Face Mills)

Type	Cat. No.	Description	Dia. (mm) ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250	ø315	Shape
Shell	TSX 08000RS/LS	Standard Pitch					4	5	6	7							
	TSX 08000R/L Inch	Standard Pitch								7							
	TSXF 08000RS/LS	Extra Fine Pitch					6	8	10	11							
	TSXF 08000R/L Inch	Extra Fine Pitch								11							
	TSX 13000RS/LS	Standard Pitch					3	4	5	5	6	7	8	12	14	16	
	TSX 13000R/L Inch	Standard Pitch								5	6	7	8	12	14	16	
	TSXM 13000RS/LS	Fine Pitch					4	5	6	7	8	10	12	16	20	24	
	TSXM 13000R/L Inch	Fine Pitch								7	8	10	12	16	20	24	
	TSXF 13000RS/LS	Extra Fine Pitch					5	6	7	8	10	14	16				
	TSXF 13000R/L Inch	Extra Fine Pitch								8	10	14	16				
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 ● shows the number of teeth Inch Inch Bore * mark: Different-diameter shanks in stock

■ Product Range (Repeaters)

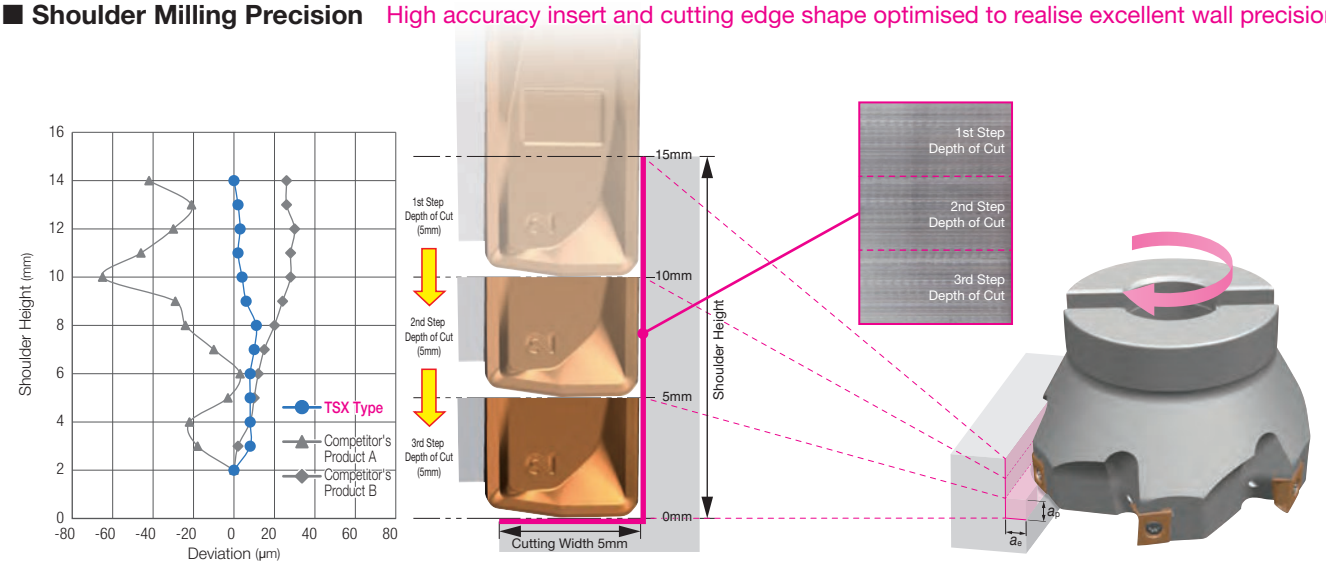
Type	Cat. No.	Dia. (mm) ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	Shape
Shell	TSXR 08000RS			2	3	3 4	5				
	TSXR 13000RS				2	3	3 4	4 5	5 6	7	
Shank	TSXR 08000E	1	2	2	3						
	TSXR 13000E				2	3					

Number in ● shows the number of teeth

TSX Type

■ Shoulder Milling Precision

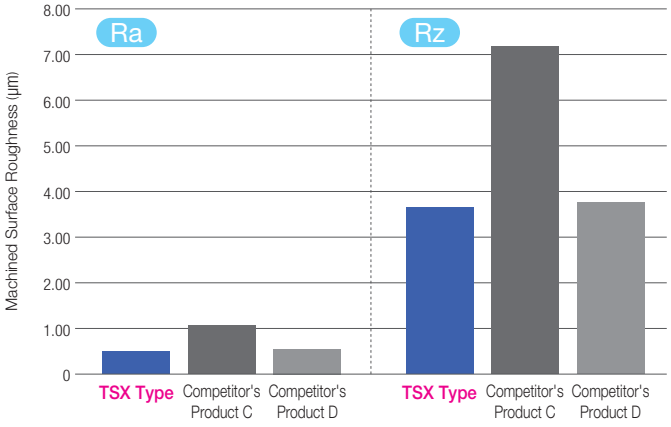
High accuracy insert and cutting edge shape optimised to realise excellent wall precision



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

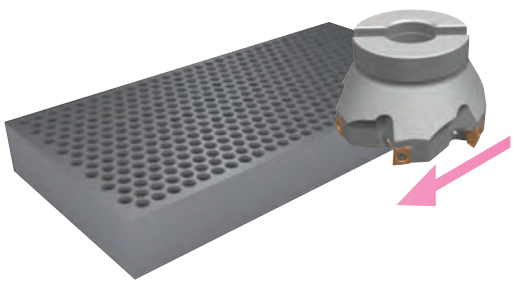
Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions	: v_c = 200m/min, f_z = 0.2mm/t, a_p = 3mm, a_e = 60mm Dry

■ Cutting Edge Strength

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

1 Pass = 300 mm

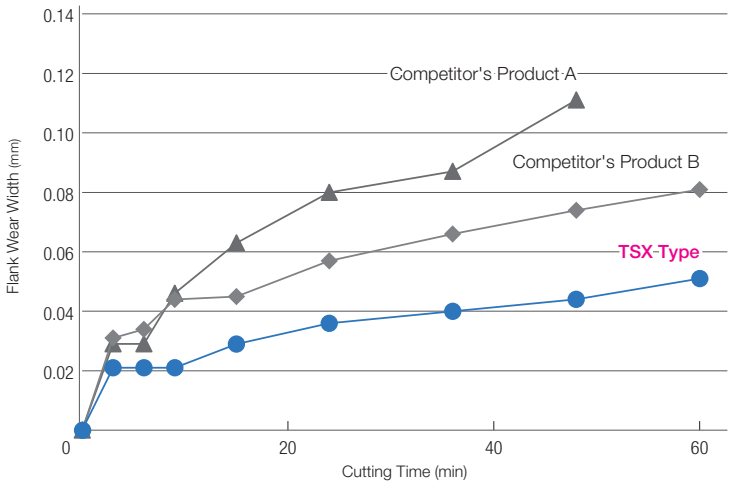
Cutting Length	4 Passes	8 Passes	12 Passes
TSX Type	Continued Machining Possible		
Competitor's Product E	Damage		
Competitor's Product F	Damage		



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

TSX Type

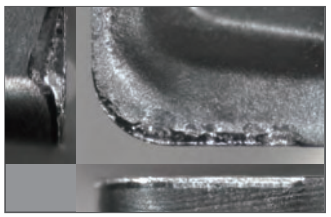
■ Tool Life Excellent Wear Resistance Realises Stable Tool Life



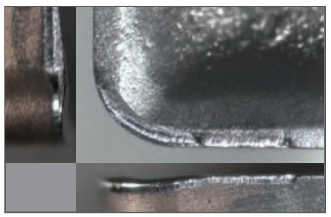
Machine	: Vertical Machining Centre BT50, Work Material: S50C
Tool	: TSX 08025E, Insert: LNEX 080408PNER-G (ACP200)
Cutting Conditions	: v_c = 200m/min, f_z = 0.1mm/t, a_p = 2mm, a_e = 5mm Dry

TSX Type
(After cutting for 60 minutes)

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

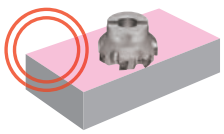


Competitor's Product B
(After cutting for 60 minutes)

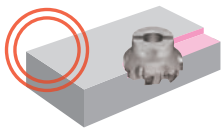


■ Applications

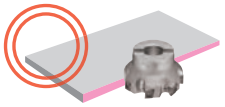
Face Milling



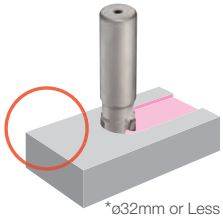
Shoulder Milling



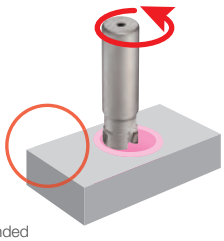
Side Milling



Groove Milling

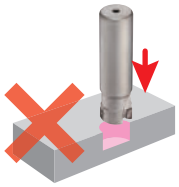


Hole Expansion

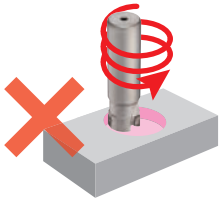


*ø32mm or Less Recommended

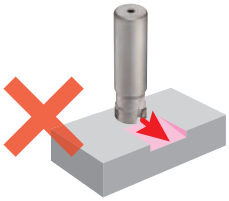
Plunge Milling



Helical Milling

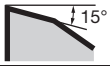
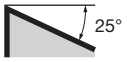
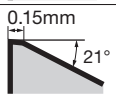
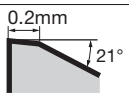


Ramping

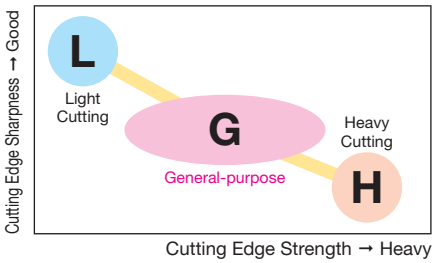


TSX Type

■ Chipbreaker Selection

Work Material	P M K S		
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
Features	Low Cutting Force	General-purpose Type	High Strength Type
	L Type	**G Type**	**H Type**
Chipbreaker			
LNEX08 Type Cross Section			Not Available
LNEX13 Type Cross Section			

■ Chipbreaker Selection Guide



■ Product Range

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804○○PNER/L-L	●	●	●	●	—	—	—
LNEX 0804○○PNER/L-G	●	●	●	●	—	—	—
LNEX 1306○○PNER/L-L	●	●	●	●	●	●	●
LNEX 1306○○PNER/L-G	●	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●	●

TSX(F) 08000R/L(S) Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle		
Radial	-20°	
Axial	-6°	

8mm 90°

Fig 1

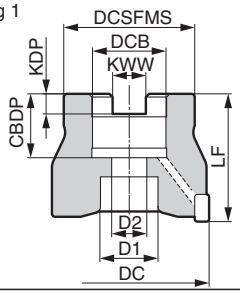


Figure shows right-hand (R) tool.

Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 08040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18	14	9	4	0.21	1
	08050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20	18	11	5	0.30	1
	08063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20	18	11	6	0.53	1
	08080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22	20	14	7	0.99	1
Inch	**TSX 08080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25	20	14	7	1.00	1

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

For securing the ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 08040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18	14	9	6	0.21	1
	08050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20	18	11	8	0.31	1
	08063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20	18	11	10	0.54	1
	08080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22	20	14	11	0.97	1
Inch	**TSXF 08080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25	20	14	11	0.98	1

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

For securing the ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0308IP	**2.0**	TRDR08IP	SUMI-P

Identification Code

TSX **F** **08** **050** **R** **S**

- TSX: Series
- F: Extra Fine Pitch
- 08: Insert Size
- 050: Cutter Dia.
- R: Right-Hand, L: Left-Hand
- S: Metric Body

N·m Recommended Tightening Torque (N·m)

TSX(F) 08000R/L(S) Type

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

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	P M K S	P K M	P M			K	K		M S			
	Medium Cutting	P M K S	P K M	P M	P M		K	K		M S	M S		
	Roughing	P K M S			P M	P M			K		M S		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX 080404PNER-L		●			●	●		●	●	●	●	0.4	1
080408PNER-L		●			●	●		●	●	●	●	0.8	1
080412PNER-L		●			●				●	●	●	1.2	1
080416PNER-L		●			●				●	●	●	1.6	1
LNEX 080404PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
080408PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
080412PNER-G		●		●	●	●		●	●	●	●	1.2	1
080416PNER-G		●		●	●	●		●	●	●	●	1.6	1
LNEX 080404PNEL-L					●				●			0.4	2
080408PNEL-L					●				●			0.8	2
080412PNEL-L					●				●			1.2	2
080416PNEL-L					●				●			1.6	2
LNEX 080404PNEL-G					●			●	●		●	0.4	2
080408PNEL-G					●			●	●		●	0.8	2
080412PNEL-G					●			●	●			1.2	2
080416PNEL-G					●			●	●			1.6	2

Fig 1 (Right-Hand)

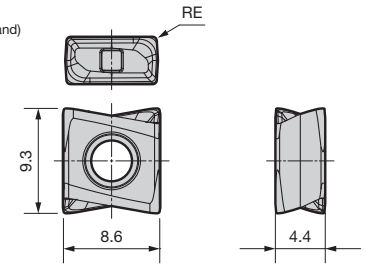
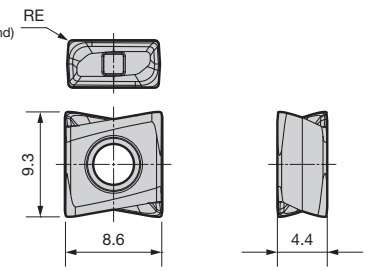


Fig 2 (Left-Hand)



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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 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.

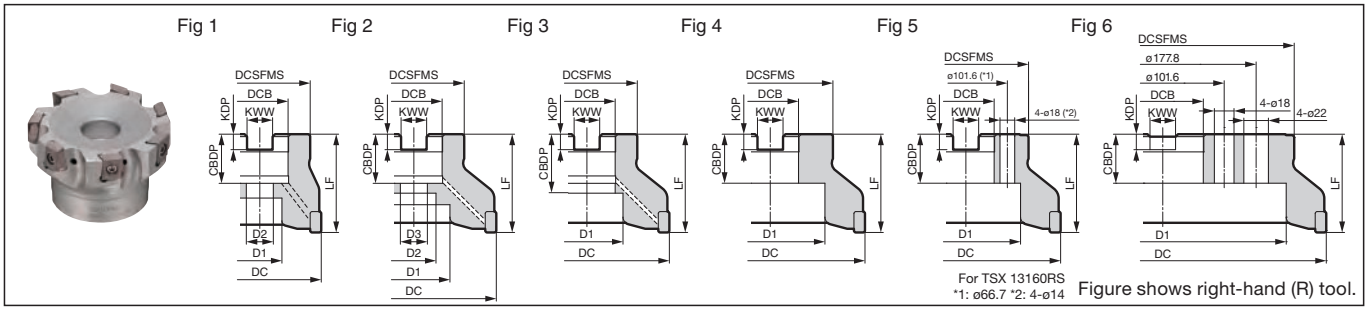
● mark: Standard stocked item (new product/expanded item)

TSX 13000R/L(S) Type

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

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

12mm, 90°



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 13040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18.0	14	9	—	3	0.20	1
	13050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20.0	18	11	—	4	0.30	1
	13063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20.0	18	11	—	5	0.50	1
	13080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22.0	20	14	—	5	0.92	1
	13100RS/LS	●		**100**	70	50	**32**	14.4	8.0	32.0	46	—	—	6	1.35	3
	13125RS/LS	●		**125**	80	63	**40**	16.4	9.0	29.0	52	29	—	7	2.55	1
	13160RS/LS	●		**160**	130	63	**40**	16.4	9.0	29.0	90	—	—	8	4.97	5
	13200RS/LS	●		**200**	160	63	**60**	25.7	14.0	35.0	135	—	—	12	6.20	5
	13250RS/LS	●		**250**	180	63	**60**	25.7	14.0	35.0	160	—	—	14	9.35	5
	13315RS/LS	●		**315**	240	63	**60**	25.7	14.0	35.0	230	—	—	16	16.42	6
Inch	**TSX 13080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	5	0.93	1
	13100R/L	●		***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	6	1.88	2
	13125R/L	●		**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	7	2.61	1
	13160R/L	●		**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	8	4.18	4
	13200R/L	●		**200**	160	63	**47.625**	25.4	14.0	35.0	135	—	—	12	6.36	5
	13250R/L	●		**250**	180	63	**47.625**	25.4	14.0	35.0	160	—	—	14	9.60	5
	13315R/L	●		**315**	240	63	**47.625**	25.4	14.0	35.0	230	—	—	16	16.68	6

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

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX Series | **13** Insert Size | **100** Cutter Dia. | **R** R: Right-Hand L: Left-Hand | **S** Metric Body

Parts

Applicable Cutter	Shim	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
TSX 13040RS/LS TSX 13050RS/LS TSX 13063RS/LS TSX 13080RS/LS TSX 13100RS/LS TSX 13125RS/LS TSX 13160RS/LS	—	BFTX03510IP	3.0	—	HPS1015	TRB15IP	SUMI-P
TSX 13200RS/LS TSX 13250RS/LS TSX 13315RS/LS	TSXS13R/L			TRDR15IP	—	—	
TSX 13080R/L TSX 13100R/L TSX 13125R/L TSX 13160R/L	—			—	HPS1015	TRB15IP	
TSX 13200R/L TSX 13250R/L TSX 13315R/L	TSXS13R/L			TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m)

TSX 13000R/L(S) Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	PKMS	PKM	PM			K	K		MS			
	Medium Cutting	PKMS	PKM	PM	PM		K	K		MS	MS		
	Roughing	PKMS			PM	PM			K		MS		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX 130604PNER-L		●			●	●		●	●	●	●	0.4	1
130608PNER-L		●			●	●		●	●	●	●	0.8	1
130612PNER-L		●			●				●	●	●	1.2	1
130616PNER-L		●			●				●	●	●	1.6	1
130620PNER-L		●			●				●	●	●	2.0	1
130624PNER-L		●			●				●	●	●	2.4	1
130632PNER-L		●			●				●	●	●	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
130608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
130612PNER-G		●		●	●	●		●	●	●	●	1.2	1
130616PNER-G		●		●	●	●		●	●	●	●	1.6	1
130620PNER-G		●		●	●	●		●	●	●	●	2.0	1
130624PNER-G		●		●	●	●		●	●	●	●	2.4	1
130632PNER-G		●		●	●	●		●	●	●	●	3.2	1
LNEX 130604PNER-H		●			●	●		●	●			0.4	1
130608PNER-H		●	●		●	●	●	●	●			0.8	1
130612PNER-H		●			●	●		●	●			1.2	1
130616PNER-H		●			●	●		●	●			1.6	1
130620PNER-H		●			●	●		●	●			2.0	1
130624PNER-H		●			●	●		●	●			2.4	1
130632PNER-H		●			●	●		●	●			3.2	1
LNEX 130604PNEL-L					●				●			0.4	2
130608PNEL-L					●				●			0.8	2
130612PNEL-L					●				●			1.2	2
130616PNEL-L					●				●			1.6	2
130620PNEL-L					●				●			2.0	2
130624PNEL-L					●				●			2.4	2
130632PNEL-L					●				●			3.2	2
LNEX 130604PNEL-G					●			●	●		●	0.4	2
130608PNEL-G					●			●	●		●	0.8	2
130612PNEL-G					●			●	●			1.2	2
130616PNEL-G					●			●	●			1.6	2
130620PNEL-G					●			●	●			2.0	2
130624PNEL-G					●			●	●			2.4	2
130632PNEL-G					●			●	●			3.2	2

Fig 1 (Right-Hand)

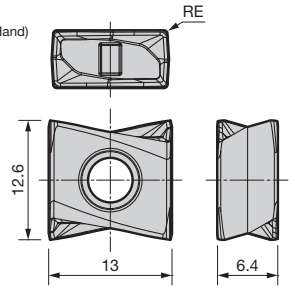
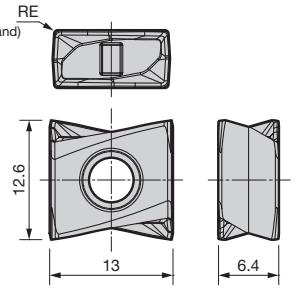


Fig 2 (Left-Hand)



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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 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/L(S) Type

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

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

12mm, 90°

Fig 1

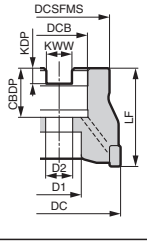


Fig 2

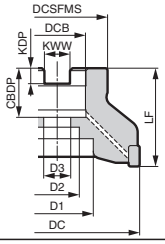


Fig 3

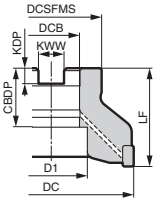


Fig 4

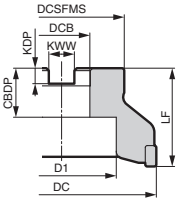
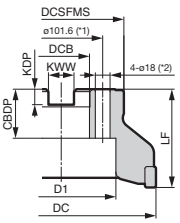


Fig 5



For TSXM 13160RS
*1: ø66.7 *2: 4-ø14

Fig 6

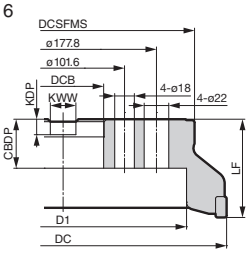


Figure shows right-hand (R) tool.

Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM 13040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18.0	14	9	—	4	0.19	1
	13050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20.0	18	11	—	5	0.28	1
	13063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20.0	18	11	—	6	0.50	1
	13080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22.0	20	14	—	7	0.92	1
	13100RS/LS	●		**100**	70	50	**32**	14.4	8.0	32.0	46	—	—	8	1.36	3
	13125RS/LS	●		**125**	80	63	**40**	16.4	9.0	29.0	52	29	—	10	2.57	1
	13160RS/LS	●		**160**	130	63	**40**	16.4	9.0	29.0	90	—	—	12	5.02	5^{-1}_{-2}
	13200RS/LS	●		**200**	160	63	**60**	25.7	14.0	35.0	135	—	—	16	6.32	5
	13250RS/LS	●		**250**	180	63	**60**	25.7	14.0	35.0	160	—	—	20	9.42	5
	13315RS/LS	●		**315**	240	63	**60**	25.7	14.0	35.0	230	—	—	24	16.37	6
Inch	**TSXM 13080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	7	0.93	1
	13100R/L	●		***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	8	1.90	2
	13125R/L	●		**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	10	2.62	1
	13160R/L	●		**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	12	4.22	4
	13200R/L	●		**200**	160	63	**47.625**	25.4	14.0	35.0	135	—	—	16	6.48	5
	13250R/L	●		**250**	180	63	**47.625**	25.4	14.0	35.0	160	—	—	20	9.68	5
	13315R/L	●		**315**	240	63	**47.625**	25.4	14.0	35.0	230	—	—	24	16.63	6

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

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX M 13 100 R S

- TSX: Series
- M: Fine Pitch
- 13: Insert Size
- 100: Cutter Dia.
- R: Right-Hand, L: Left-Hand
- S: Metric Body

Parts

Applicable Cutter	Shim	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seize Cream
TSXM 13040RS/LS TSXM 13050RS/LS TSXM 13063RS/LS TSXM 13080RS/LS TSXM 13100RS/LS TSXM 13125RS/LS TSXM 13160RS/LS	—	BFTX03510IP	3.0	—	HPS1015	TRB15IP	SUMI-P
TSXM 13200RS/LS TSXM 13250RS/LS TSXM 13315RS/LS	TSXS13R/L			TRDR15IP	—	—	
TSXM 13080R/L TSXM 13100R/L TSXM 13125R/L TSXM 13160R/L	—			—	HPS1015	TRB15IP	
TSXM 13200R/L TSXM 13250R/L TSXM 13315R/L	TSXS13R/L			TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m)

TSXM 13000R/L(S) Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	P M S	P K M	P M			K	K		M S			
	Medium Cutting	P M S	P K M	P M	P M		K	K		M S	M S		
	Roughing	P M S			P M	P M			K		M S		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX	130604PNER-L	●			●	●		●	●	●	●	0.4	1
	130608PNER-L	●			●	●		●	●	●	●	0.8	1
	130612PNER-L	●			●				●	●	●	1.2	1
	130616PNER-L	●			●				●	●	●	1.6	1
	130620PNER-L	●			●				●	●	●	2.0	1
	130624PNER-L	●			●				●	●	●	2.4	1
	130632PNER-L	●			●				●	●	●	3.2	1
LNEX	130604PNER-G	●	●	●	●	●	●	●	●	●	●	0.4	1
	130608PNER-G	●	●	●	●	●	●	●	●	●	●	0.8	1
	130612PNER-G	●		●	●	●		●	●	●	●	1.2	1
	130616PNER-G	●		●	●	●		●	●	●	●	1.6	1
	130620PNER-G	●		●	●	●		●	●	●	●	2.0	1
	130624PNER-G	●		●	●	●		●	●	●	●	2.4	1
	130632PNER-G	●		●	●	●		●	●	●	●	3.2	1
LNEX	130604PNER-H	●			●	●		●	●			0.4	1
	130608PNER-H	●	●		●	●	●	●	●			0.8	1
	130612PNER-H	●			●	●		●	●			1.2	1
	130616PNER-H	●			●	●		●	●			1.6	1
	130620PNER-H	●			●	●		●	●			2.0	1
	130624PNER-H	●			●	●		●	●			2.4	1
	130632PNER-H	●			●	●		●	●			3.2	1
LNEX	130604PNEL-L				●				●			0.4	2
	130608PNEL-L				●				●			0.8	2
	130612PNEL-L				●				●			1.2	2
	130616PNEL-L				●				●			1.6	2
	130620PNEL-L				●				●			2.0	2
	130624PNEL-L				●				●			2.4	2
	130632PNEL-L				●				●			3.2	2
LNEX	130604PNEL-G				●			●	●		●	0.4	2
	130608PNEL-G				●			●	●		●	0.8	2
	130612PNEL-G				●			●	●			1.2	2
	130616PNEL-G				●			●	●			1.6	2
	130620PNEL-G				●			●	●			2.0	2
	130624PNEL-G				●			●	●			2.4	2
	130632PNEL-G				●			●	●			3.2	2

Fig 1 (Right-Hand)

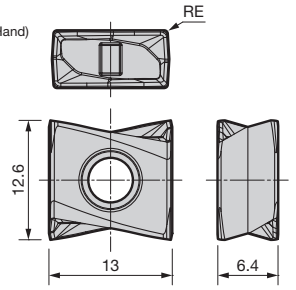
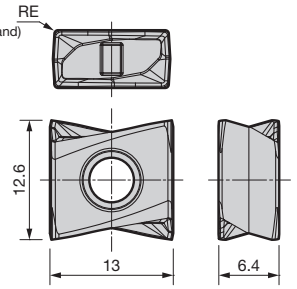


Fig 2 (Left-Hand)



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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 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.

● mark: Standard stocked item (new product/expanded item)

TSXF 13000R/L(S) Type

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

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

12mm 90°

Fig 1

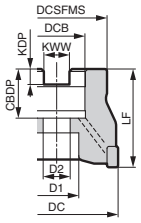


Fig 2

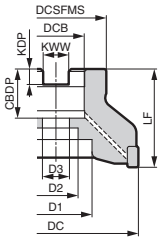


Fig 3

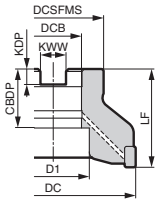


Fig 4

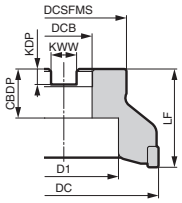


Fig 5

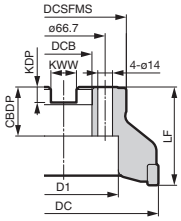


Figure shows right-hand (R) tool.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 13040RS/LS**	●		**40**	33	40	**16**	8.4	5.6	18.0	14	9	—	5	0.18	1
	13050RS/LS	●		**50**	41	40	**22**	10.4	6.3	20.0	18	11	—	6	0.29	1
	13063RS/LS	●		**63**	50	40	**22**	10.4	6.3	20.0	18	11	—	7	0.50	1
	13080RS/LS	●		***80**	55	50	**27**	12.4	7.0	22.0	20	14	—	8	0.92	1
	13100RS/LS	●		**100**	70	50	**32**	14.4	8.0	32.0	46	—	—	10	1.34	3
	13125RS/LS	●		**125**	80	63	**40**	16.4	9.0	29.0	52	29	—	14	2.58	1
	13160RS/LS	●		**160**	130	63	**40**	16.4	9.0	29.0	90	—	—	16	5.08	5
Inch	**TSXF 13080R/L**	●		***80**	55	50	**25.4**	9.5	6.0	25.0	20	14	—	8	0.93	1
	13100R/L	●		***100**	70	63	**31.75**	12.7	8.0	32.0	46	27	18	10	1.88	2
	13125R/L	●		**125**	80	63	**38.1**	15.9	10.0	35.5	55	30	—	14	2.60	1
	13160R/L	●		**160**	100	63	**50.8**	19.1	11.0	38.0	72	—	—	16	4.28	4

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

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Identification Code

TSX **F** **13** **100** **R** **S**

TSX	F	13	100	R	S
Series	Extra Fine Pitch	Insert Size	Cutter Dia.	R: Right-Hand L: Left-Hand	Metric Body

Parts

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
TSXF 13040RS/LS	BFTX03510IP	3.0	—	HPS1015	TRB15IP	SUMI-P
TSXF 13050RS/LS						
TSXF 13063RS/LS						
TSXF 13080RS/LS						
TSXF 13100RS/LS						
TSXF 13125RS/LS						
TSXF 13160RS/LS			TRDR15IP	—	—	
TSXF 13080R/L			—	HPS1015	TRB15IP	
TSXF 13100R/L						
TSXF 13125R/L						
TSXF 13160R/L			TRDR15IP	—	—	

N·m Recommended Tightening Torque (N·m)

TSXF 13000R/L(S) Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	PSM	PKM	PM			K	K		MS			
	Medium Cutting	PSM	PKM	PM	PM		K	K		MS	MS		
	Roughing	PSM			PM	PM			K		MS		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX 130604PNER-L		●			●	●		●	●	●	●	0.4	1
130608PNER-L		●			●	●		●	●	●	●	0.8	1
130612PNER-L		●			●				●	●	●	1.2	1
130616PNER-L		●			●				●	●	●	1.6	1
130620PNER-L		●			●				●	●	●	2.0	1
130624PNER-L		●			●				●	●	●	2.4	1
130632PNER-L		●			●				●	●	●	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
130608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
130612PNER-G		●		●	●	●		●	●	●	●	1.2	1
130616PNER-G		●		●	●	●		●	●	●	●	1.6	1
130620PNER-G		●		●	●	●		●	●	●	●	2.0	1
130624PNER-G		●		●	●	●		●	●	●	●	2.4	1
130632PNER-G		●		●	●	●		●	●	●	●	3.2	1
LNEX 130604PNER-H		●			●	●		●	●			0.4	1
130608PNER-H		●	●		●	●	●	●	●			0.8	1
130612PNER-H		●			●	●		●	●			1.2	1
130616PNER-H		●			●	●		●	●			1.6	1
130620PNER-H		●			●	●		●	●			2.0	1
130624PNER-H		●			●	●		●	●			2.4	1
130632PNER-H		●			●	●		●	●			3.2	1
LNEX 130604PNEL-L					●				●			0.4	2
130608PNEL-L					●				●			0.8	2
130612PNEL-L					●				●			1.2	2
130616PNEL-L					●				●			1.6	2
130620PNEL-L					●				●			2.0	2
130624PNEL-L					●				●			2.4	2
130632PNEL-L					●				●			3.2	2
LNEX 130604PNEL-G					●			●	●		●	0.4	2
130608PNEL-G					●			●	●		●	0.8	2
130612PNEL-G					●			●	●			1.2	2
130616PNEL-G					●			●	●			1.6	2
130620PNEL-G					●			●	●			2.0	2
130624PNEL-G					●			●	●			2.4	2
130632PNEL-G					●			●	●			3.2	2

Fig 1 (Right-Hand)

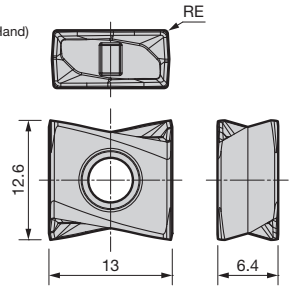
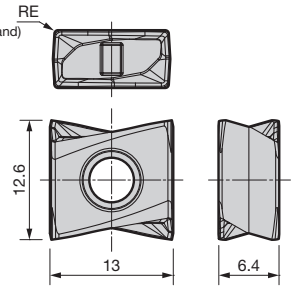


Fig 2 (Left-Hand)



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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - **150** - 230	0.10 - **0.30** - 0.40	
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.10 - **0.25** - 0.35	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.20** - 0.30	ACU2500 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.10 - **0.20** - 0.30	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.10 - **0.30** - 0.40	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.10 - **0.15** - 0.20	ACU2500 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.

● mark: Standard stocked item (new product/expanded item)

TSX(F) 08000E Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle	Radial	-36 to -20°
	Axial	-6°

8mm 90°

Fig 1

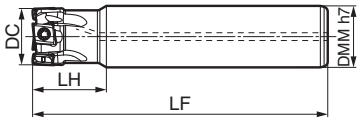
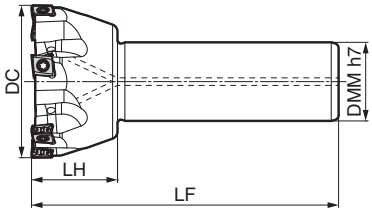


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 08016E**	●	**16**	16	25	100	2	0.13	1
	08020E	●	**20**	20	30	110	2	0.22	1
	08020E-16	●	**20**	16	30	110	2	0.15	2
	08025E	●	**25**	25	30	120	3	0.40	1
	08025E-20	●	**25**	20	30	120	3	0.26	2
	08032E	●	**32**	32	30	120	3	0.67	1
	08032E-25	●	**32**	25	30	120	3	0.43	2
	08040E	●	**40**	32	30	120	4	0.72	2
	08050E	●	**50**	32	30	120	5	0.85	2
	08063E	●	**63**	32	35	125	6	1.09	2
	08080E	●	**80**	32	35	125	7	1.44	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 08020E**	●	**20**	20	30	110	3	0.22	1
	08025E	●	**25**	25	30	120	4	0.40	1
	08032E	●	**32**	32	30	120	5	0.67	1
	08040E	●	**40**	32	30	120	6	0.73	2
	08050E	●	**50**	32	30	120	8	0.85	2
	08063E	●	**63**	32	35	125	10	1.10	2
	08080E	●	**80**	32	35	125	11	1.42	2

Inserts are sold separately.

Identification Code

TSX **F** **08** **032** **E** **(-25)**

Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Shank Type	Shank Dia.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
TSX 08016E, TSX 08020E, TSXF 08020E	BFTX0306IP	2.0	TRDR08IP	SUMI-P
TSX 08025E to 80E, TSXF 08025E to 80E	BFTX0308IP			

N·m Recommended Tightening Torque (N·m)

TSX(F) 08000E Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

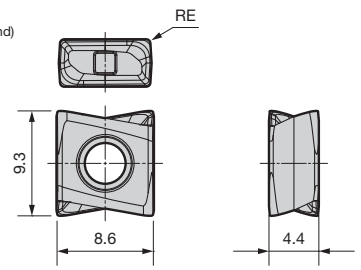
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	PKSM	PKM	PM			K	K		MS			
	Medium Cutting	PKSM	PKM	PM	PM		K	K		MS	MS		
	Roughing	PKSM			PM	PM			K		MS		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX 080404PNER-L		●			●	●		●	●	●	●	0.4	1
080408PNER-L		●			●	●		●	●	●	●	0.8	1
080412PNER-L		●			●				●	●	●	1.2	1
080416PNER-L		●			●				●	●	●	1.6	1
LNEX 080404PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
080408PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
080412PNER-G		●		●	●	●		●	●	●	●	1.2	1
080416PNER-G		●		●	●	●		●	●	●	●	1.6	1

Fig 1
(Right-Hand)



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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 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.

● mark: Standard stocked item (new product/expanded item)

TSX(M/F) 13000E Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle		
	Radial	-31 to -15°
	Axial	-6°

12mm 90°

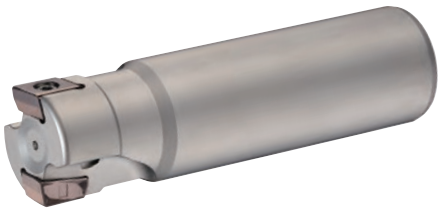


Fig 1

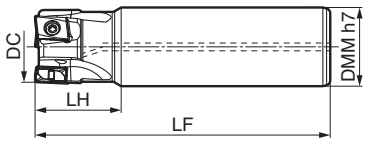
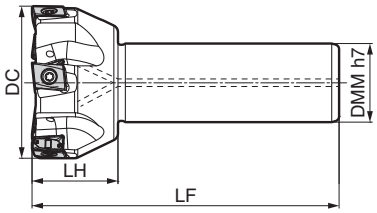


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSX 13025E**	●	**25**	25	35	120	2	0.38	1
	13032E	●	**32**	32	35	120	2	0.66	1
	13040E	●	**40**	32	30	120	3	0.71	2
	13050E	●	**50**	32	30	120	4	0.81	2
	13063E	●	**63**	32	35	125	5	1.08	2
	13080E	●	**80**	32	35	125	5	1.40	2

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM 13032E**	●	**32**	32	35	120	3	0.65	1
	13040E	●	**40**	32	30	120	4	0.71	2
	13050E	●	**50**	32	30	120	5	0.80	2
	13063E	●	**63**	32	35	125	6	1.07	2
	13080E	●	**80**	32	35	125	7	1.41	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXF 13040E**	●	**40**	32	30	120	5	0.70	2
	13050E	●	**50**	32	30	120	6	0.80	2
	13063E	●	**63**	32	35	125	7	1.07	2
	13080E	●	**80**	32	35	125	8	1.42	2

Inserts are sold separately.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03510IP	**3.0**	TRDR15IP	SUMI-P

Identification Code

TSX **M** **13** **050** **E**

Series	M : Fine Pitch F : Extra Fine Pitch	Insert Size	Cutter Dia.	Shank Type

N·m Recommended Tightening Torque (N·m)

TSX(M/F) 13000E Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

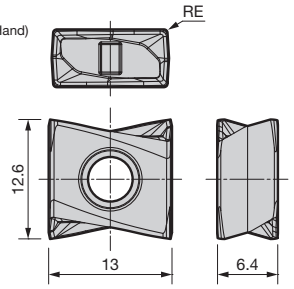
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	P M S	P K M	P M			K	K		M S			
	Medium Cutting	P M S	P K M	P M	P M		K	K		M S	M S		
	Roughing	P M S			P M	P M			K		M S		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX 130604PNER-L		●			●	●		●	●	●	●	0.4	1
130608PNER-L		●			●	●		●	●	●	●	0.8	1
130612PNER-L		●			●				●	●	●	1.2	1
130616PNER-L		●			●				●	●	●	1.6	1
130620PNER-L		●			●				●	●	●	2.0	1
130624PNER-L		●			●				●	●	●	2.4	1
130632PNER-L		●			●				●	●	●	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
130608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
130612PNER-G		●		●	●	●		●	●	●	●	1.2	1
130616PNER-G		●		●	●	●		●	●	●	●	1.6	1
130620PNER-G		●		●	●	●		●	●	●	●	2.0	1
130624PNER-G		●		●	●	●		●	●	●	●	2.4	1
130632PNER-G		●		●	●	●		●	●	●	●	3.2	1
LNEX 130604PNER-H		●			●	●		●	●			0.4	1
130608PNER-H		●	●		●	●	●	●	●			0.8	1
130612PNER-H		●			●	●		●	●			1.2	1
130616PNER-H		●			●	●		●	●			1.6	1
130620PNER-H		●			●	●		●	●			2.0	1
130624PNER-H		●			●	●		●	●			2.4	1
130632PNER-H		●			●	●		●	●			3.2	1

Fig 1
(Right-Hand)



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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 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.

● mark: Standard stocked item (new product/expanded item)

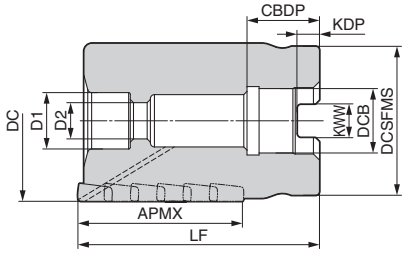
TSXR 08000RS Type

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

Rake Angle		
	Radial	-20 to -15°
	Axial	-6 to -3°

34 to 60 mm | 90°

Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 08032RS3416Z02**	●	**32**	34	33	55	**16**	8.4	5.6	18.0	14	9	10	5	2	0.17	1
	08040RS4016Z03	●	**40**	40	37	60	**16**	8.4	5.6	18.0	14	9	18	6	3	0.32	1
	08050RS5422Z03	●	**50**	54	47	75	**22**	10.4	6.3	20.0	18	11	24	8	3	0.70	1
	08050RS5422Z04	●	**50**	54	47	75	**22**	10.4	6.3	20.0	18	11	32	8	4	0.68	1
	08063RS6027Z05	●	**63**	60	60	80	**27**	12.4	7.0	22.0	20	14	45	9	5	1.25	1

Inserts are sold separately.

Identification Code

TSXR	08	050	R	S	54	22	Z03
Series	Insert Size	Cutter Dia.	Right-Hand	Metric Body	Max. Depth of Cut	Mounting Hole Dia.	Effective No. of Teeth

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Bolt	Anti-seizure Cream
TSXR 08032RS3416Z02	BFTX0308IP	2.0	TRDR08IP	BX0845	SUMI-P
TSXR 08040RS4016Z03				BX0850	
TSXR 08050RS5422Z03				BX1060	
TSXR 08050RS5422Z04					
TSXR 08063RS6027Z05				BX1265	

N·m Recommended Tightening Torque (N·m)

TSXR 08000RS Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

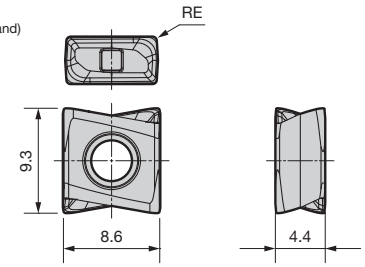
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	PKMS	PKM	PM			K	K		MS			
	Medium Cutting	PKMS	PKM	PM	PM		K	K		MS	MS		
	Roughing	PKMS			PM	PM			K		MS		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX 080404PNER-L		●			●	●		●	●	●	●	0.4	1
080408PNER-L		●			●	●		●	●	●	●	0.8	1
080412PNER-L		●			●				●	●	●	1.2	1
080416PNER-L		●			●				●	●	●	1.6	1
LNEX 080404PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
080408PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
080412PNER-G		●		●	●	●		●	●	●	●	1.2	1
080416PNER-G		●		●	●	●		●	●	●	●	1.6	1

Fig 1 (Right-Hand)



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

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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	75 - **150** - 230	0.08 - **0.20** - 0.30	
	Alloy Steel	180 to 280 HB	100 - **175** - 250	0.08 - **0.15** - 0.25	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.08 - **0.15** - 0.25	ACU2500 ACM200 ACM300
		> 280HB	75 - **125** - 170	0.08 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	150 - **175** - 250	0.08 - **0.20** - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 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 DC 20% or less.

● mark: Standard stocked item (new product/expanded item)

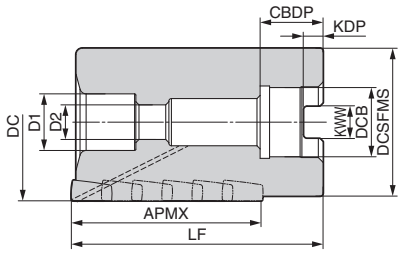
TSXR 13000RS Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle		
	Radial	-23 to -15°
	Axial	-6 to -3°

41 to 60 mm 90°

Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 13040RS4116Z02**	●	**40**	41	37	60	**16**	8.4	5.6	18.0	14	9	8	4	2	0.31	1
	13050RS6022Z03	●	**50**	60	47	80	**22**	10.4	6.3	20.0	18	11	18	6	3	0.66	1
	13063RS5027Z03	●	**63**	50	60	75	**27**	12.4	7.0	22.0	20	14	15	5	3	1.12	1
	13063RS6027Z04	●	**63**	60	60	80	**27**	12.4	7.0	22.0	20	14	24	6	4	1.15	1
	13080RS6032Z04	●	**80**	60	77	80	**32**	14.4	8.0	26.0	25	18	24	6	4	2.06	1
	13080RS6032Z05	●	**80**	60	77	80	**32**	14.4	8.0	26.0	25	18	30	6	5	2.04	1
	13100RS6040Z05	●	**100**	60	88	85	**40**	16.4	9.0	29.0	32	21	30	6	5	3.45	1
	13100RS6040Z06	●	**100**	60	88	85	**40**	16.4	9.0	29.0	32	21	36	6	6	3.44	1
	13125RS6040Z07	●	**125**	60	100	85	**40**	16.4	9.0	29.0	32	21	42	6	7	5.63	1

Inserts are sold separately.

Identification Code

TSXR	13	050	R	S	60	22	Z03
Series	Insert Size	Cutter Dia.	Right-Hand	Metric Body	Max. Depth of Cut	Mounting Hole Dia.	Effective No. of Teeth

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Bolt	Anti-seizure Cream
TSXR 13040RS4116Z02	BFTX03510IP	3.0	—	HPS1015	TRB15IP	BX0850	SUMI-P
TSXR 13050RS6022Z03						BX1060	
TSXR 13063RS5027Z03						BX1260	
TSXR 13063RS6027Z04						BX1265	
TSXR 13080RS6032Z04			TRDR15IP	—	—	BX1660	
TSXR 13080RS6032Z05							
TSXR 13100RS6040Z05						BX2065	
TSXR 13100RS6040Z06							
TSXR 13125RS6040Z07							

N·m Recommended Tightening Torque (N·m)

TSXR 13000RS Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

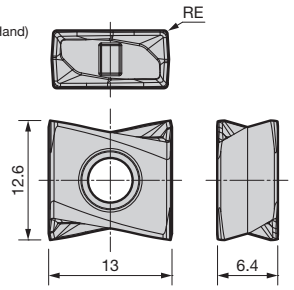
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	P M S	P K M	P M			K	K		M S			
	Medium Cutting	P M S	P K M	P M	P M		K	K		M S	M S		
	Roughing	P K M S			P M	P M			K		M S		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX 130604PNER-L		●			●	●		●	●	●	●	0.4	1
130608PNER-L		●			●	●		●	●	●	●	0.8	1
130612PNER-L		●			●				●	●	●	1.2	1
130616PNER-L		●			●				●	●	●	1.6	1
130620PNER-L		●			●				●	●	●	2.0	1
130624PNER-L		●			●				●	●	●	2.4	1
130632PNER-L		●			●				●	●	●	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
130608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
130612PNER-G		●		●	●	●		●	●	●	●	1.2	1
130616PNER-G		●		●	●	●		●	●	●	●	1.6	1
130620PNER-G		●		●	●	●		●	●	●	●	2.0	1
130624PNER-G		●		●	●	●		●	●	●	●	2.4	1
130632PNER-G		●		●	●	●		●	●	●	●	3.2	1
LNEX 130604PNER-H		●			●	●		●	●			0.4	1
130608PNER-H		●	●		●	●	●	●	●			0.8	1
130612PNER-H		●			●	●		●	●			1.2	1
130616PNER-H		●			●	●		●	●			1.6	1
130620PNER-H		●			●	●		●	●			2.0	1
130624PNER-H		●			●	●		●	●			2.4	1
130632PNER-H		●			●	●		●	●			3.2	1

Fig 1
(Right-Hand)



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

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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACU2500 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 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 DC 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

Rake Angle		
	Radial	-33 to -18°
	Axial	-6° to -3°

21 to 40 mm 90°

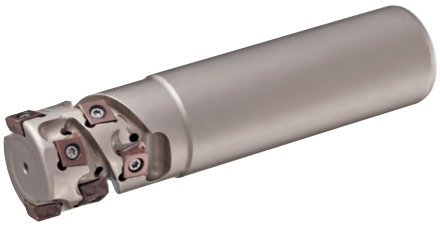


Fig 1

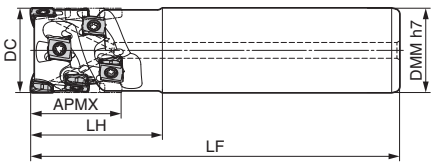
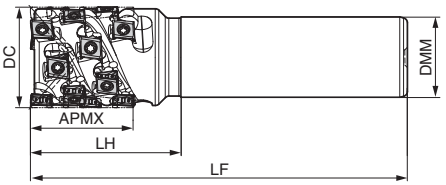


Fig 2



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 08020E2120Z01**	●	**20**	21	20	30	110	3	3	1	0.22	1
	08025E2725Z02	●	**25**	27	25	35	125	8	4	2	0.39	1
	08032E3432Z02	●	**32**	34	32	50	140	10	5	2	0.74	1
	08040E4032Z03	●	**40**	40	32	60	150	18	6	3	0.92	2

Inserts are sold separately.

Identification Code

TSXR	08	025	E	27	25	Z02
Series	Insert Size	Cutter Dia.	Shank Type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Parts

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

N·m Recommended Tightening Torque (N·m)

TSXR 08000E Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

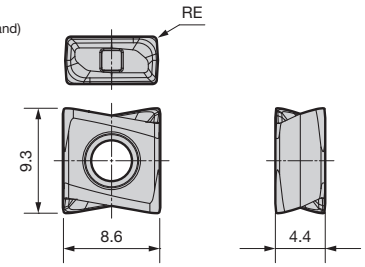
Expansion

Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	P M K S	P M K	P M			K	K		M S			
	Medium Cutting	P M K S	P M K	P M	P M		K	K		M S	M S		
	Roughing	P M K S			P M	P M			K		M S		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX 080404PNER-L		●			●	●		●	●	●	●	0.4	1
080408PNER-L		●			●	●		●	●	●	●	0.8	1
080412PNER-L		●			●				●	●	●	1.2	1
080416PNER-L		●			●				●	●	●	1.6	1
LNEX 080404PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
080408PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
080412PNER-G		●		●	●	●		●	●	●	●	1.2	1
080416PNER-G		●		●	●	●		●	●	●	●	1.6	1

Fig 1 (Right-Hand)



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

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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACU2500 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 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 DC 20% or less.

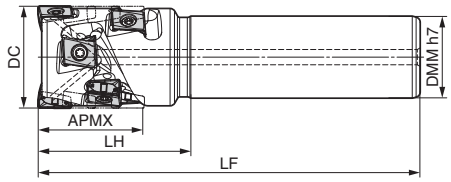
TSXR 13000E Type

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

Rake Angle		
	Radial	-23 to -18°
	Axial	-6° to -3°

41 to 60 mm | 90°

Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR 13040E4132Z02**	●	**40**	41	32	60	150	8	4	2	0.91	1
	13050E6042Z03	●	**50**	60	42	80	170	18	6	3	1.74	1

Inserts are sold separately.

Identification Code

TSXR	13	050	E	60	42	Z03
Series	Insert Size	Cutter Dia.	Shank Type	Max. Depth of Cut	Shank Dia.	Effective No. of Teeth

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX03510IP	**3.0**	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

TSXR 13000E Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Expansion

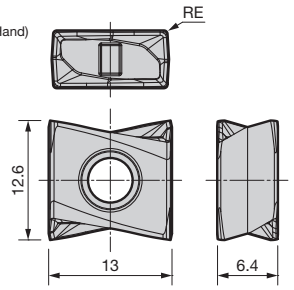
Insert

Dimensions (mm)

Grade Classification		Coated Carbide											
Process	High-speed/Light	P M K S	P M K	P M			K	K		M S			
	Medium Cutting	P M K S	P M K	P M	P M		K	K		M S	M S		
	Roughing	P M K S			P M	P M			K		M S		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	Corner Radius RE	Fig
LNEX 130604PNER-L		●			●	●		●	●	●	●	0.4	1
130608PNER-L		●			●	●		●	●	●	●	0.8	1
130612PNER-L		●			●				●	●	●	1.2	1
130616PNER-L		●			●				●	●	●	1.6	1
130620PNER-L		●			●				●	●	●	2.0	1
130624PNER-L		●			●				●	●	●	2.4	1
130632PNER-L		●			●				●	●	●	3.2	1
LNEX 130604PNER-G		●	●	●	●	●	●	●	●	●	●	0.4	1
130608PNER-G		●	●	●	●	●	●	●	●	●	●	0.8	1
130612PNER-G		●		●	●	●		●	●	●	●	1.2	1
130616PNER-G		●		●	●	●		●	●	●	●	1.6	1
130620PNER-G		●		●	●	●		●	●	●	●	2.0	1
130624PNER-G		●		●	●	●		●	●	●	●	2.4	1
130632PNER-G		●		●	●	●		●	●	●	●	3.2	1
LNEX 130604PNER-H		●			●	●		●	●			0.4	1
130608PNER-H		●	●		●	●	●	●	●			0.8	1
130612PNER-H		●			●	●		●	●			1.2	1
130616PNER-H		●			●	●		●	●			1.6	1
130620PNER-H		●			●	●		●	●			2.0	1
130624PNER-H		●			●	●		●	●			2.4	1
130632PNER-H		●			●	●		●	●			3.2	1

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

Fig 1 (Right-Hand)



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	ACU2500 ACP100 ACP200 ACP300 XCU2500
		> 280HB	70 - **135** - 200	0.10 - **0.20** - 0.30	
	Alloy Steel	180 to 280 HB	90 - **155** - 220	0.10 - **0.15** - 0.25	
M	Stainless Steel	220 to 280 HB	90 - **135** - 180	0.10 - **0.15** - 0.25	ACU2500 ACM200 ACM300
		> 280HB	70 - **115** - 160	0.10 - **0.15** - 0.25	
K	Cast Iron/ Ductile Cast Iron	250HB	125 - **175** - 225	0.10 - **0.20** - 0.30	ACU2500 ACK200 ACK300 XCU2500 XCK2000
S	Exotic Alloy	—	30 - **60** - 90	0.05 - **0.10** - 0.15	ACU2500 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 DC 20% or less.

● mark: Standard stocked item (new product/expanded item)

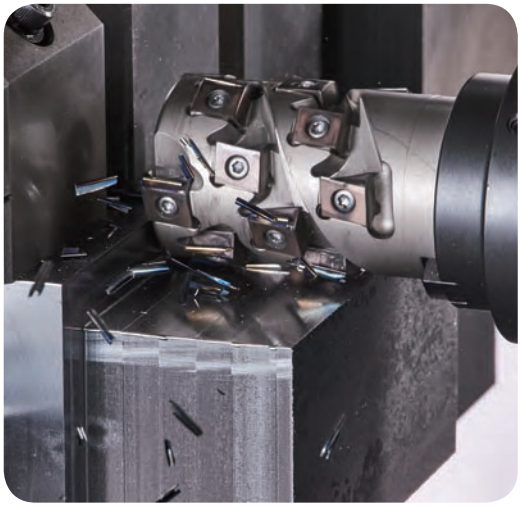
SEC-Sumi Dual Mill TSX Type Repeater Made-To-Order Request Sheet (1)

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.

Feel free to contact us for other shapes or dimensions or with other requests.

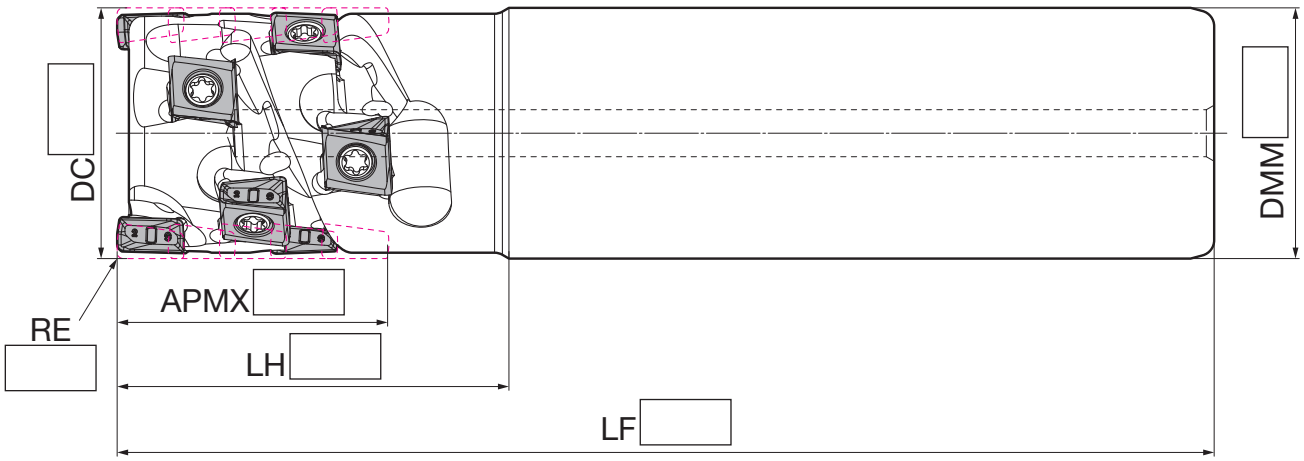
Company Name/Contact



Reference Specifications

Applicable Insert	Dia. (mm) DC	Max. Depth of Cut (mm) APMX	Total No. of Teeth	Steps	Max. Effective No. of Teeth	Specifications: Shell Type	Specifications: Shank Type
LNEX08 (Refer to H123)	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 H125)	40	41	8	4	2	○	○
	50	60	18	6	3	○	○
	63	60	24	6	4	○	
	80	60	30	6	5	○	
	100	60	36	6	6	○	
	125	60	42	6	7	○	

☑ **Shank Type** Refer to the reference specifications above when completing.



■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

- The tip insert corner radius (RE) can be selected. (Refer to Applicable Size: H109 ■ Product Range) Other inserts are all RE = 0.8mm or less.
- Effective No. of Teeth Desired: ☐
- Coolant Hole: Yes ☑ No ☑

SEC-Sumi Dual Mill TSX Type Repeater Made-To-Order Request Sheet (2)

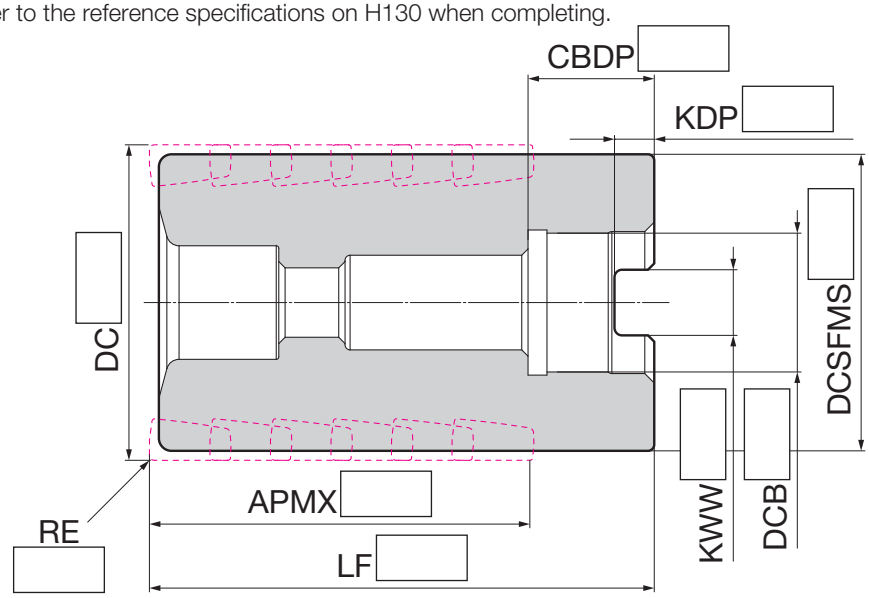
Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.

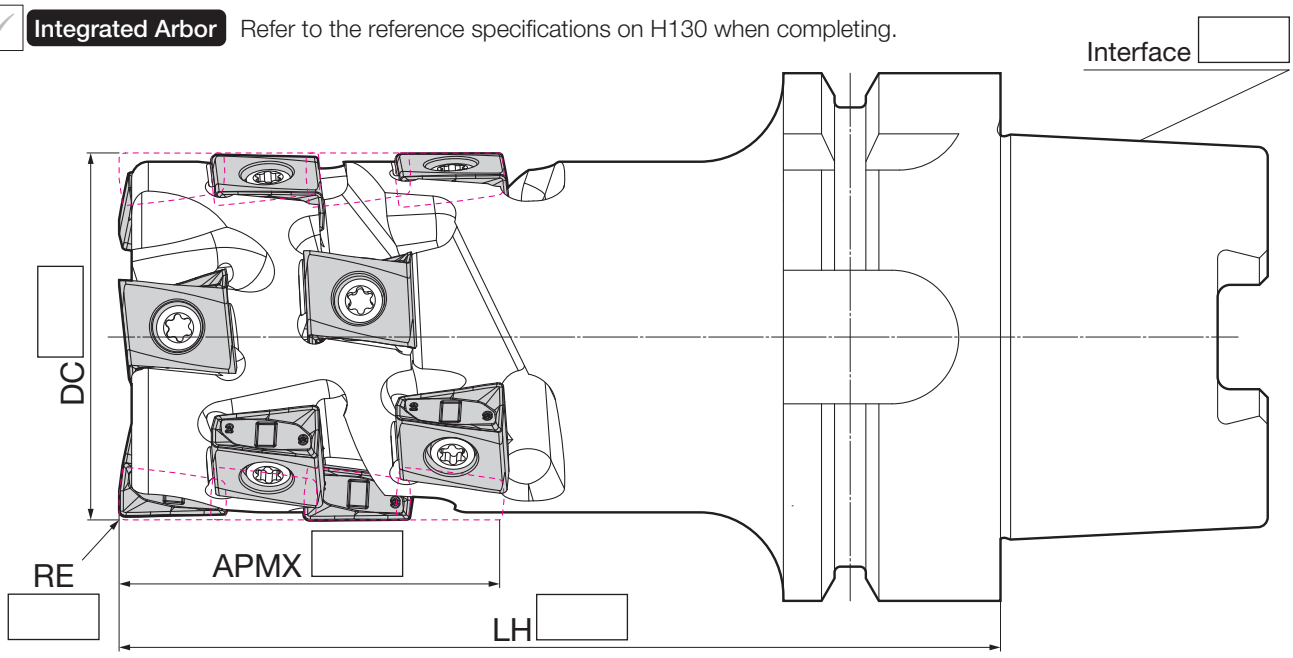
Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

☑ **Shell Type** Refer to the reference specifications on H130 when completing.



☑ **Integrated Arbor** Refer to the reference specifications on H130 when completing.



■ Accessories

Flat Insert Screw	Wrench	Bolt	Anti-seizure Cream
		 *Shell Type Only	

- The tip insert corner radius (RE) can be selected. (Refer to Applicable Size: H109 ■ Product Range) Other inserts are all RE = 0.8mm or less.
- Effective No. of Teeth Desired: ☐
- Coolant Hole: Yes ☑ No ☑

SEC-Sumi Dual Mill TSX Type Side Cutter Made-To-Order Sheet

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.

Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

■ Insert Product Range

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804○○PNER/L-L	●	●	●	●	—	—	—
LNEX 0804○○PNER/L-G	●	●	●	●	—	—	—
LNEX 1306○○PNER/L-L	●	●	●	●	●	●	●
LNEX 1306○○PNER/L-G	●	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●	●

— mark: Not available

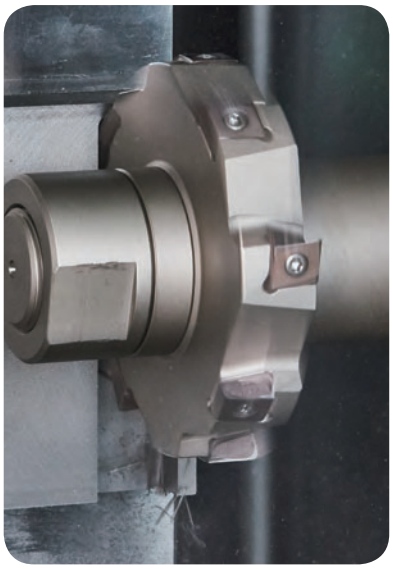
[Insert Special Orders]
LNEX08 has Corner Radius (RE) = 0.4 to 1.6mm
LNEX13 has Corner Radius (RE) = 0.4 to 3.2mm. Both right-hand and left-hand types are supported.
(Radius shape after machining may differ from the mounted insert corner radius RE size.)
LNEX1306○○PNEL-H (left-handed H Type chipbreaker) is not available.

CW Size Reference Specification	
14mm	LNEX08 (Refer to H123)
18 to 22mm	LNEX13 (Refer to H125)

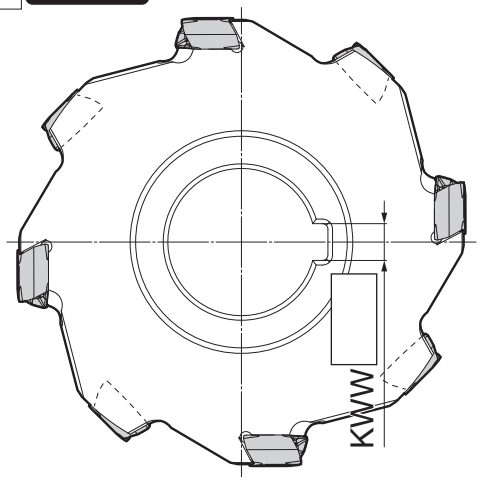
A multi-step design is required if the CW size exceeds the above.

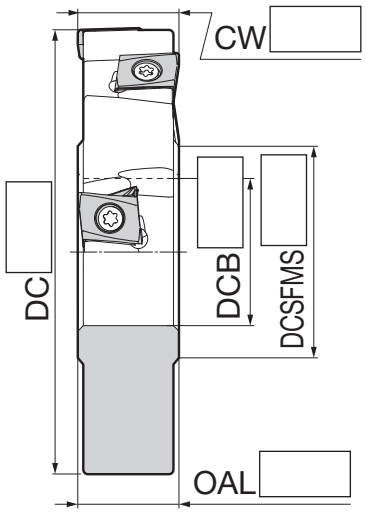
■ Accessories

Flat Insert Screw	Wrench	Anti-seizure Cream
		

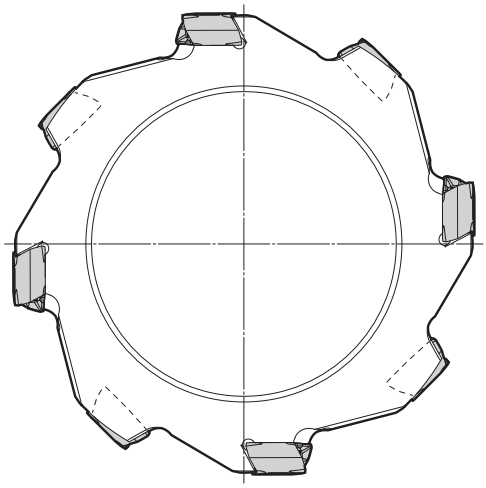


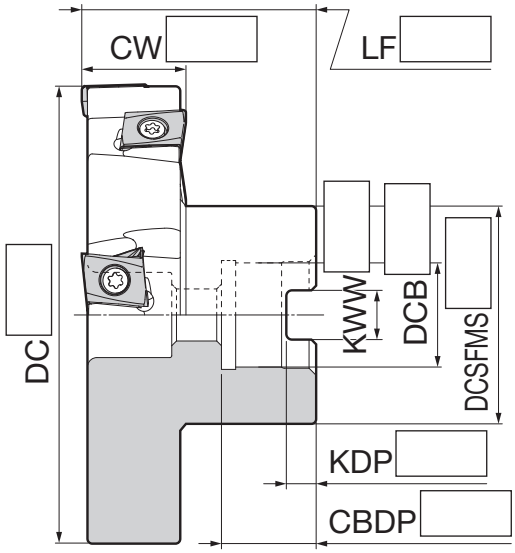
✓ Disc Type





✓ Boss Type





· Effective No. of Teeth Desired: ☐

SEC-Sumi Dual Mill TSX Type Made-To-Order Request Sheet

Select a cutter design and enter the dimensions in ☐.

After completion, send the sheet to our nearest sales office or distributor.

Feel free to contact us for other shapes or dimensions or with other requests.

Company Name/Contact

■ Insert Product Range

Cat. No.	Corner Radius RE (mm)						
	0.4	0.8	1.2	1.6	2.0	2.4	3.2
LNEX 0804○○PNER/L-L	●	●	●	●	—	—	—
LNEX 0804○○PNER/L-G	●	●	●	●	—	—	—
LNEX 1306○○PNER/L-L	●	●	●	●	●	●	●
LNEX 1306○○PNER/L-G	●	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●	●

— mark: Not available

[Insert Special Orders]
LNEX08 has Corner Radius (RE) = 0.4 to 1.6mm
LNEX13 has Corner Radius (RE) = 0.4 to 3.2mm. Both right-hand and left-hand types are supported.
(Radius shape after machining may differ from the mounted insert corner radius RE size.)
LNEX1306○○PNEL-H (left-handed H Type chipbreaker) is not available.

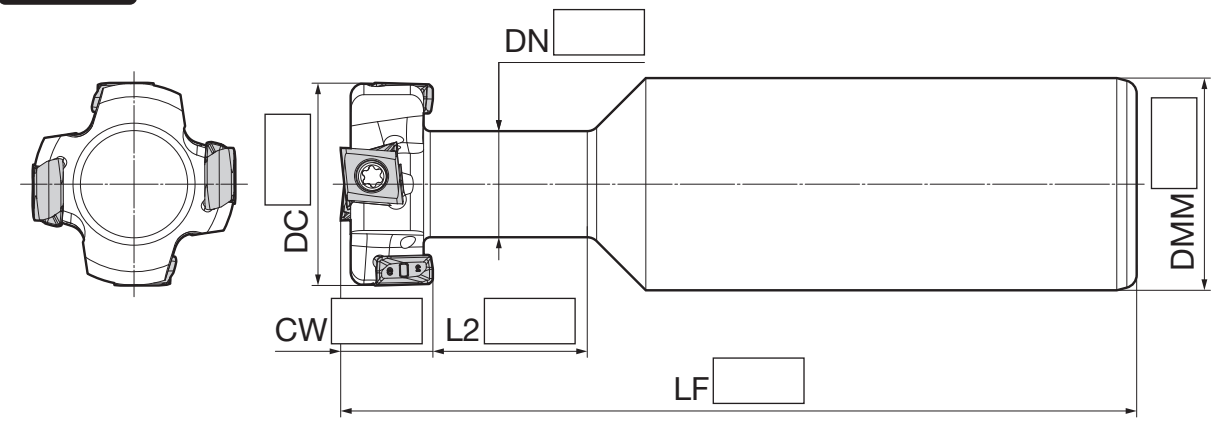
CW Size Reference Specification	
14mm	LNEX08 (Refer to H123)
18 to 22mm	LNEX13 (Refer to H125)

A multi-step design is required if the CW size exceeds the above.

■ Accessories

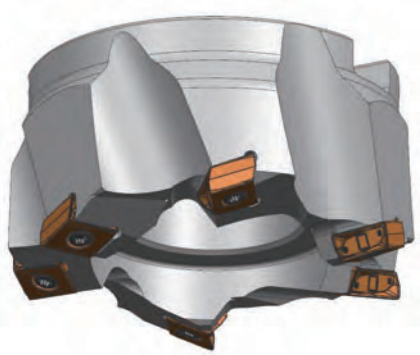
Flat Insert Screw	Wrench	Anti-seizure Cream
		

☑ T-Slot Type



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

■ Angled cutters, high-feed cutters and bore cutters can be designed. For details, please contact us.



PWC(F) 4000 Type

K Cast Iron

Rake Angle		
	Radial	-15°
	Axial	-5°

15mm, 88°

Fig 1

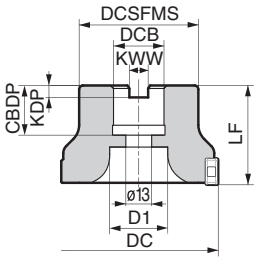


Fig 2

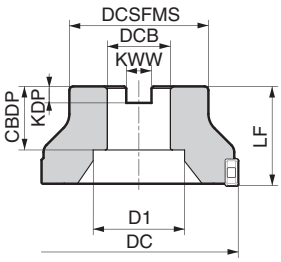
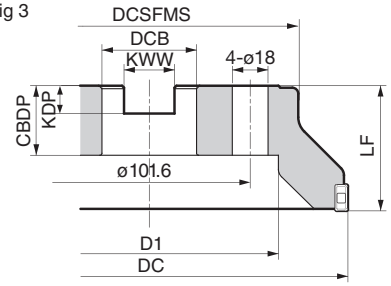


Fig 3



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Hole 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 (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Hole 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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		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 Machining	1st Recommendation	1
160608PNSN-H	●	●	●	Heavy interrupted cutting and other unstable applications		2

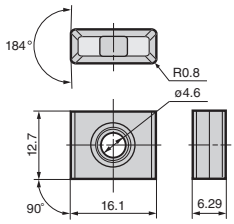


Fig 1
(General-purpose G Type)

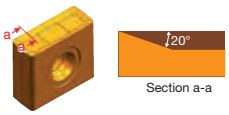
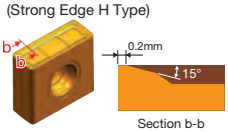


Fig 2
(Strong Edge H Type)



Parts

Flat Insert 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 highly reliable cutter equipped with tangentially-mounted inserts that combines unprecedented high cutting edge strength and sharpness.

PWSR Type, with a 2-stage insert array structure supporting large depths of cut, has been added to the lineup.

■ Features

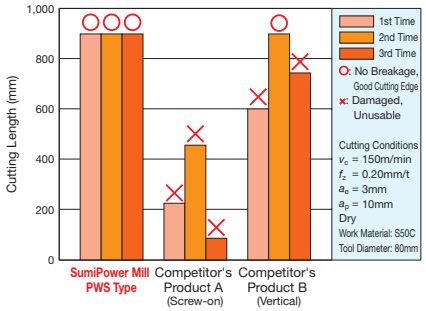
- Tangential inserts with excellent cutting edge strength and optimised breaker provide superb cutting edge and sharpness.
- Nicked insert design created with high-precision formation technology allows stable milling and low chatter even in applications with large tool overhang.
- ACP and ACK series allow a wide range of work materials to be covered.

■ Performance

● General-purpose G Type Insert Performance Comparison

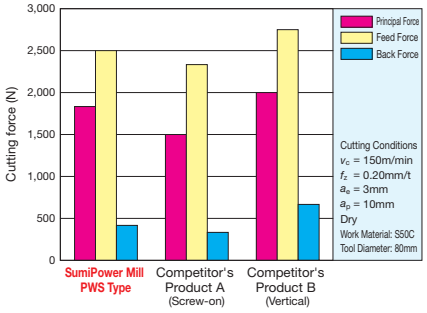
Comparison of Cutting Edge Strength

Strong cutting edge delivers superb stability



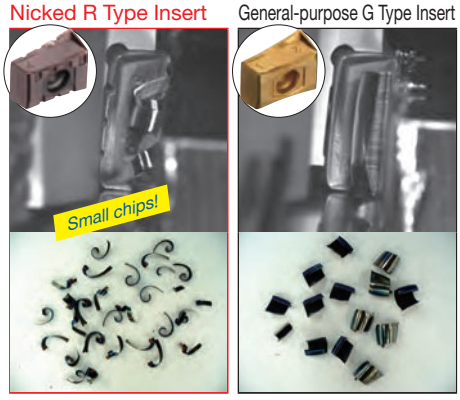
Comparison of Cutting Force

Sharpness approaching that of screw-on inserts



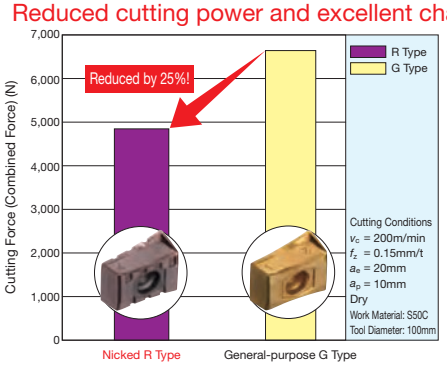
● Nicked R Type Insert Performance Comparison

Nicked R Type Insert | General-purpose G Type Insert

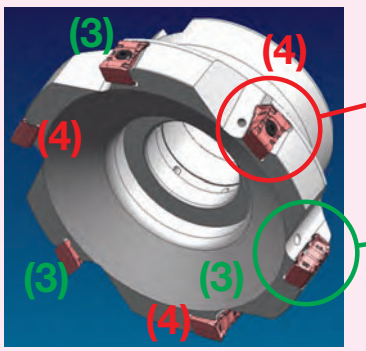


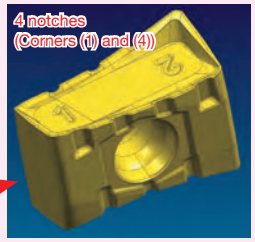
Comparison of Cutting Force

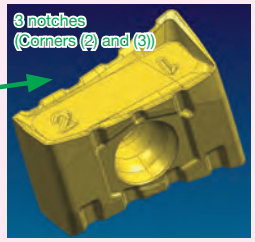
Reduced cutting power and excellent chatter resistance



⚠ 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
When the inserts are mounted as shown in the left figure, the feedrate per tooth should be doubled that of mounting inserts with the same edge design. As such

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 inserts : Feed Rate per Tooth 0.2mm/t
With nicked type inserts : Feed Rate per Tooth 0.4mm/t

Using inserts incorrectly may damage tools.

PWS(F) 4000 Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	-15°
	Axial	-6°

16mm 90°

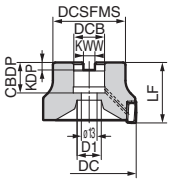
Fig 1


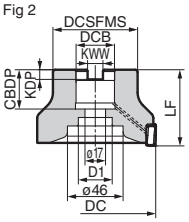
Fig 2


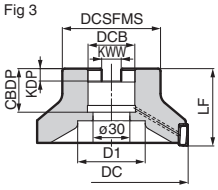
Fig 3


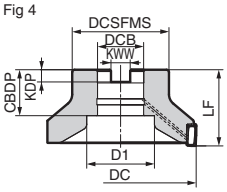
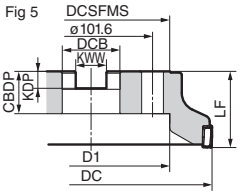
Fig 4


Fig 5


Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Hole Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**PWS 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 (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Hole 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 mounting the ø80 and ø100mm sized cutters marked with * to an arbor , use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light	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 Recommendation	1
170808PNSR-R	●	●	●	●	●	Heavy Cutting	Nicked	2

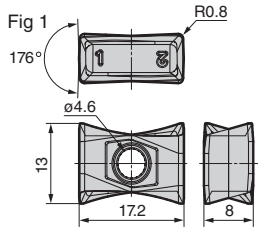
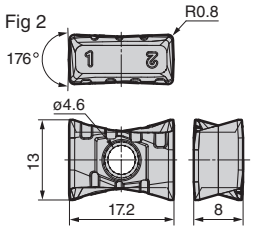
Fig 1


Fig 2


Parts

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)

SEC-Sumi Power Mill

PWSR 4000 Type

P Steel M Stainless Steel K Cast Iron

Rake Angle	Radial	-15°
	Axial	-6°

31 mm 90°

Fig 1

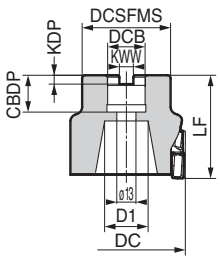


Fig 2

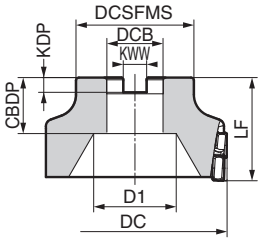


Fig 3

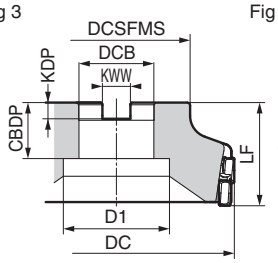
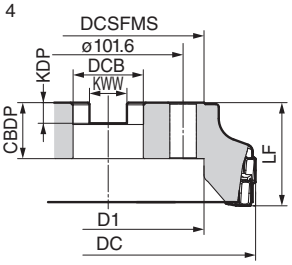


Fig 4



Body (2-Step Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Hole 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.

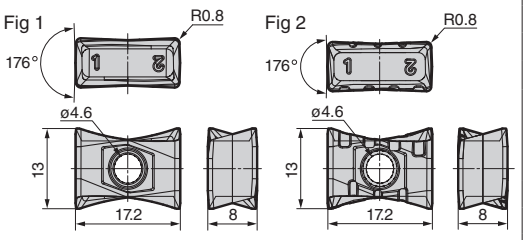
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor , use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light	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 Recommendation	1
170808PNSR-R	●	●	●	●	●	Heavy Cutting	Nicked	2



Parts

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.

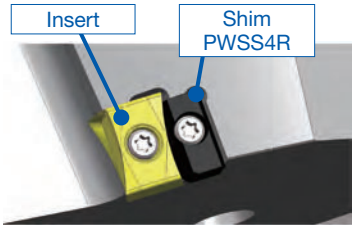
Recommended Cutting Conditions

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

Rake Angle		
	Radial	4°
	Axial	15°

16mm 90°

Fig 1

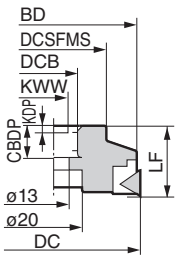


Fig 2

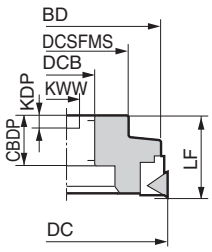


Fig 3

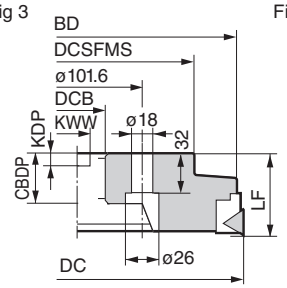
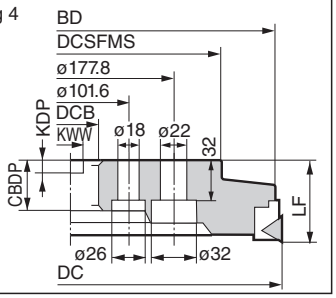


Fig 4



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Body Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**CHG 4080R**	●	***80**	78	60	50	**25.4**	9.5	6	25	4	1.3	1
	4100R	●	**100**	96	70	63	**31.75**	12.7	8	32	5	2.0	2
	4125R	●	**125**	120	80	63	**38.1**	15.9	10	38	6	3.1	2
	4160R	●	**160**	154	100	63	**50.8**	19.1	11	38	8	5.3	2
	4200R	●	**200**	193	130	63	**47.625**	25.4	13.5	38	10	8.1	3
	4250R		**250**	242	180	63	**47.625**	25.4	13.5	40	12	13.8	3
	4315R		**315**	307	240	63	**47.625**	25.4	13.5	40	14	21.9	4

Inserts are sold separately.

For securing the ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented 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

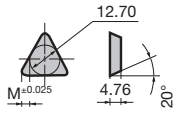
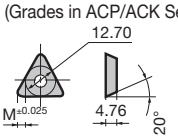


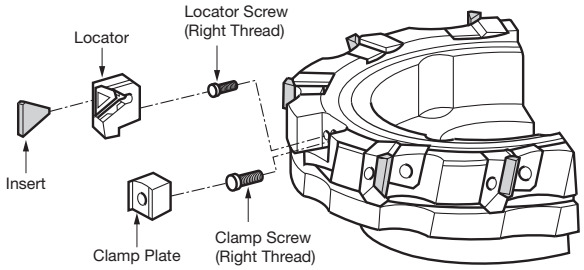
Fig 2 (Grades in ACP/ACK Series)



Cutting Edge A

Cutting Edge B

DL1000 is also available for *-marked TEEN43R.
Top face and wiper flat 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	Locator Screw	Size	N·m	Clamp Plate	Clamp Screw	Size	N·m	Wrench	Anti-seizure Cream
CHG 4080R to CHG 4125R	LCH4R	FBH0512	**M5**	5.0	CHWR	FBX0811	**M8**	8.0	TH030	SUMI-P
CHG 4160R to CHG 4315R						FBX0817			TH040	

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)

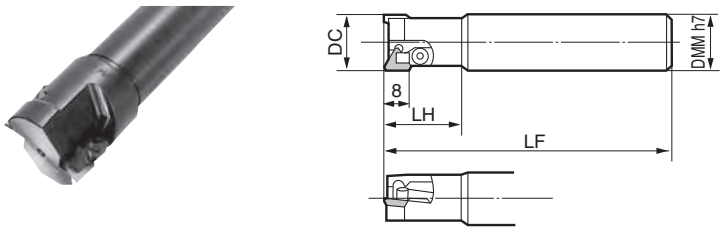
CHE 2000 Type

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

Rake Angle	Radial	-3° to 0°
	Axial	6° to 15°

8mm 90°

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
CHE 2016R	●	**16**	16	25	100	1	+6°	-3°	1
2018R	●	**18**	20	30	110	1	+8°	-2°	1
2020R	●	**20**	20	30	110	2	+10°	-2°	1
2022R	●	**22**	20	30	110	2	+12°	-1°	1
2025R	●	**25**	25	35	120	2	+15°	-1°	1
2028R	●	**28**	25	35	120	2	+15°	0°	1

Inserts are sold separately.

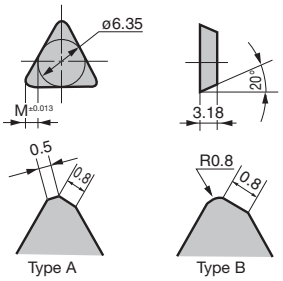
Insert

Dimensions (mm)

Grade Classification		Coated Carbide	Cemented Carbide			Cermet	SUMIDIA	
Process	High-speed/Light				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	Cutting Edge Shape	Fig
TEEN 22R	—	—	—	—	—	—	—	A	1
NF-TEEN 22R	—	—	—	—	—	●	▲	A	1
TECN 22R			●	●		—	—	A	1
22TR		●				—	—	B	1
TEKN 22R			●			—	—	A	1
22TR		●			●	—	—	B	1

Fig 1



Parts

Clamp Plate	Bolt		Ring	Wrench	Anti-seizure Cream
		N·m			
CCH4R	BHE0407	**1.8**	ER03	TH025	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	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.

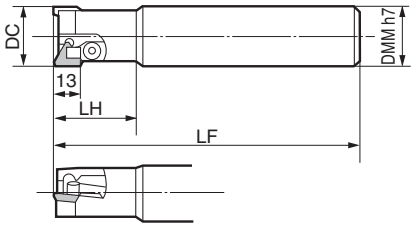
CHE 3000 Type

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

Rake Angle	Radial	-3° to 0°
	Axial	15°

13mm 90°

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Axial Rake	Radial Rake	Fig
CHE 3030R	●	**30**	32	45	160	2	+15°	-3°	1
3032R	●	**32**	32	45	160	2	+15°	-2°	1
3036R	●	**36**	32	45	160	2	+15°	-1°	1
3040R	●	**40**	32	45	160	2	+15°	0°	1

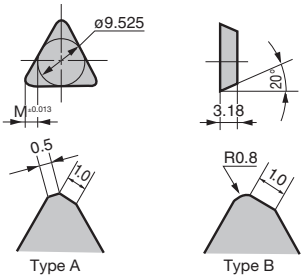
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		Cemented Carbide			Cermet	SUMIDIA			
Process	High-speed/Light		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 Plate	Bolt		Ring	Wrench	Anti-seizure Cream
		N·m			
CCH5R	BHE0510	**2.7**	ER04	LH030	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	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)

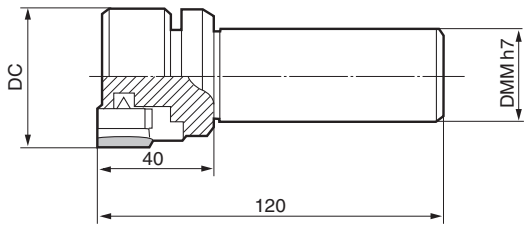
CHE 4000 Type

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

Rake Angle	Radial	2° to 4°
	Axial	15°

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 Classification		Coated Carbide						Cemented 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

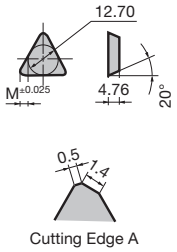
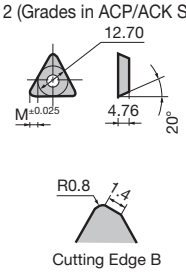


Fig 2 (Grades in ACP/ACK Series)



DL1000 is also available for *-marked TEEN43R.
Top face and wiper flat of H1 insert have a mirror finish.
Some E class precision inserts have different shapes.

Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Screw	Size	N·m	Wrench	Anti-seizure Cream
CHE4050R CHE4063R	LCE4R	FBH0512	**M5**	5.0	CEWR	WB8R-16T	**M8**	8.0	TT27	SUMI-P

Parts

Applicable Cutter	Locator	Locator Screw	Size	N·m	Clamp Plate	Clamp Screw	Size	N·m	Wrench	Anti-seizure Cream
CHE4080R CHE4100R CHE4080RS42 CHE4100RS42	LCH4R	FBH0512	**M5**	5.0	CHWR	FBX0811	**M5**	5.0	TH040	SUMI-P

* 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

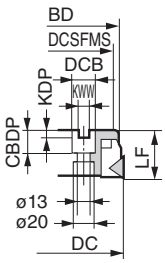


Fig 2

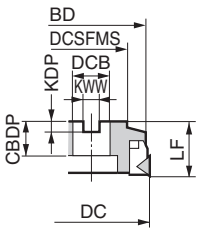
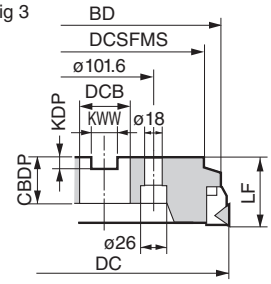


Fig 3



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Body Dia. BD	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**CPG 4080R/L**	●		***80**	77	60	50	**25.4**	9.5	6	25	5	1.2	1
	4100R/L	●		**100**	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 ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						Cemented Carbide				Cermet			
Process	High-speed/Light	P			K		M					P	P		
	General-purpose		PM	PM	K			P	P	K	K			P	
	Roughing		PM	PM		K									
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	EH20Z	A30	A30N	H10E	G10E	T1500A	T130A	T250A	Fig
TPCH 43R					●	●	●				●				1(2)
43L											●				2
43TR		●	●	●					●	●		●		●	1(2)
43TL									●						2
TPMN 432								●			●	●	●		3
433								●			●				3

Fig 1 (Grades in ACP/ACK Series)

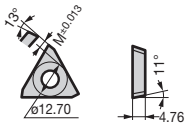
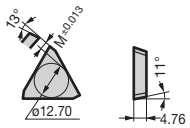
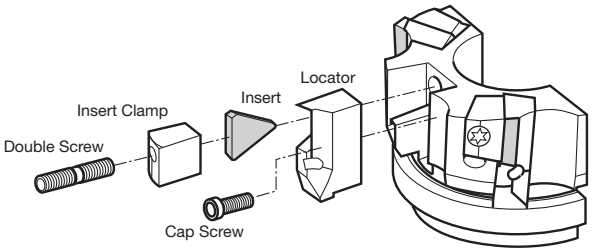


Fig 2



(Close-up of Cutting Edge for Figures 1 & 2)

Fig 3



Parts

Applicable Cutter	Locator	Cap Screw	Insert Clamp	Double Screw	Wrench
CPG4080R	LCP40R	BX0508	PTW40R	WB8-22T	TT27 LH040
CPG4100R to CPG4125R	LCP40R	BX0510	PTW41R	WB8-22T	TT27 LH040
CPG4160R to CPG4315R	LCP40R	BX0510	PTW41R	WB8-30T	TT27 LH040
CPG4080L	LCP40L	BX0508	PTW40L	WB8-22T	TT27 LH040
CPG4100L to CPG4125L	LCP40L	BX0510	PTW41L	WB8-22T	TT27 LH040
CPG4160L to CPG4315L	LCP40L	BX0510	PTW41L	WB8-30T	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
P	Mild Steel	≤ 180HB	100-**125**-150	0.10-**0.15**-0.20	ACP200
P	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.

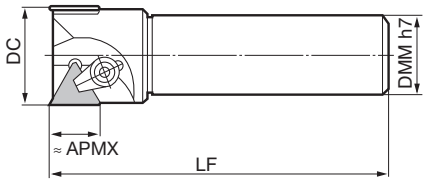
FMS Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	-4° to -6°
	Axial	3° to 7°

8 to 19 mm | 90°

Fig 1



Body

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Overall Length LF	Shank DMM	Max. Depth of Cut APMX	Number of Teeth	Axial Rake	Radial Rake	Applicable Insert	Fig
FMS 216	●	**16**	70	16	8	1	+3°	-6°		1
220	●	**20**	100	20	8	2	+3°	-4°	TPKN 22TR	1
225	●	**25**	110	25	8	2	+7°	-4°		1
FMS 330	●	**30**	160	32	13	2	+7°	-4°		1
332	●	**32**	160	32	13	2	+7°	-4°	TPKN 32TR	1
335	●	**35**	160	32	13	2	+7°	-4°		1
FMS 440	●	**40**	160	32	19	2	+7°	-4°		1
450	●	**50**	160	32	19	2	+7°	-4°	TPCH 43TR	1
460	●	**60**	160	32	19	3	+7°	-4°		1
440B		**40**	160	42	19	2	+7°	-4°		1

Inserts are sold separately.

Insert

Common to Figs. 1 to 3

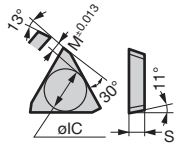
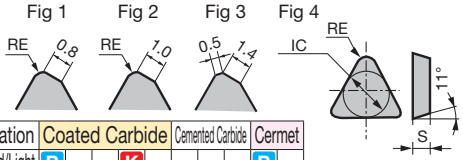


Fig 1 Fig 2 Fig 3 Fig 4



Grade Classification		Coated Carbide					Cemented Carbide			Cermet	
Process	High-speed/Light	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	Corner Radius RE	Fig	Applicable Cutter
TPKN 22TR						●				●	6.35	3.18	0.8	1	FMS 216
22R								●			6.35	3.18	0.8	1	to
TPMN 222							●	●			6.35	3.18	0.8	4	FMS 225
TPKN 32TR						●				●	9.525	3.18	0.8	2	FMS 330
32R								●			9.525	3.18	0.8	2	to
TPMN 322							●	●	●		9.525	3.18	0.8	4	FMS 335
TPCH 43TR	●	●	●			●			●	●	12.70	4.76	—	3	FMS
43R				●	●			●			12.70	4.76	—	3	440(B)
TPMN 432							●	●	●		12.70	4.76	0.8	4	to
433							●	●			12.70	4.76	1.2	4	FMS 460

H10E is also in stock for TPCH43TR.
EH10Z 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

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 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

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 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 Cutter	Clamp Plate	Double Screw	Size	N·m	Shim	Spring Pin	Wrench	Anti-seizure Cream
FMS216 / FMS220	CCM5BSL	WB5-10	**M5**	**5.0**	—	—	TH025	SUMI-P
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)

DMSW Type

New

■ General Features

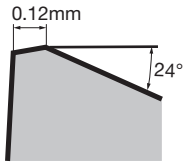
- Complex arc-shaped cutting edge achieves a smaller cutting angle and a larger depth of cut simultaneously.
  High-efficiency machining at maximum feed rate per tooth of 3.5mm/t is possible.
- Small cutting angle controls cutting force toward the back force direction.
  Stable machining without chatter even with long tool overhang.

■ Product Range

Type	Cat. No.	Max. Diameter (mm) ø35	ø40	ø42	ø50	ø52	ø63	ø66	ø80	ø85	ø100	ø125	ø160	Shape
Shell	DMSW 08000RS				4 5	4 5	4 5* 6*	5 6	6 8	6 8	6	8	10	
Shell	DMSW 08000R (Inch)				4 5		4 5 6		6 8		6	8	10	
Shank	DMSW 08000E	2	3		3		4							
Shank	DMSW 08000EL	2	3		3		4							
Modular	DMSW 08000M	2	3	3										

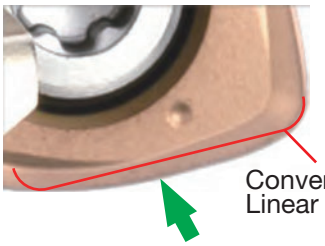
Number in ● shows the number of teeth Inch Inch Bore * mark: Different-diameter mounting sizes in stock Modular Type H221

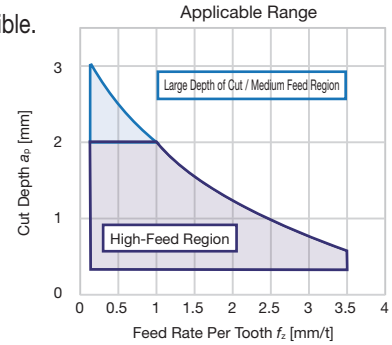
■ Chipbreaker

Work Material	P M K H
Chipbreaker	G Type 
Cutting Edge Cross Section	

■ Features

- Complex arc-shaped cutting edge achieves a smaller cutting angle and a larger depth of cut simultaneously.
  High-efficiency machining at maximum feed rate per tooth of 3.5mm/t is possible.

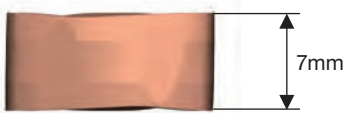




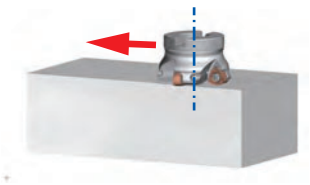
- Economical double-sided insert with 6-corner specification. Reassuringly thick at 7mm.

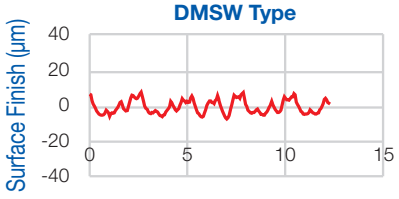
Conventional Tool

DMSW Type

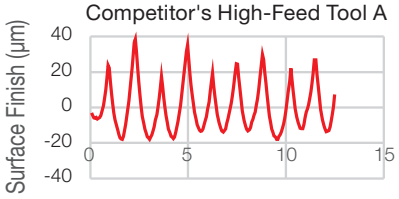


- Even at high feedrates of 2.0mm/t or more, a reasonable surface finish can be attained without a wiper insert.





Ra 3.3μm Rz 14.1μm



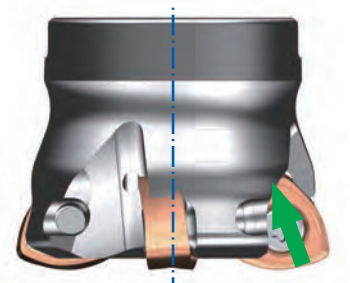
Ra 11.2μm Rz 51.0μm

Machine : Vertical Machining Centre BT50, Work Material: S50C Insert : WNMU0807ZNER-G (ACU2500)
Tool : DMSW08063RS04 (ø63, 4-teeth) Cutting Conditions : v_c = 150m/min, f_z = 2.5mm/t, a_p=0.5mm, a_e= 40mm Dry

DMSW Type

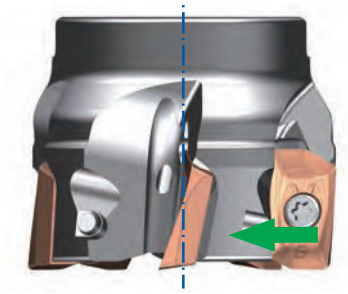
● Small cutting angle controls cutting force direction toward back force.
Suppresses chatter in long tool overhang machining, increasing efficiency.

DMSW Type

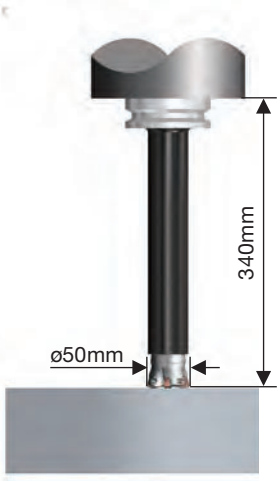


Cutting Force Direction

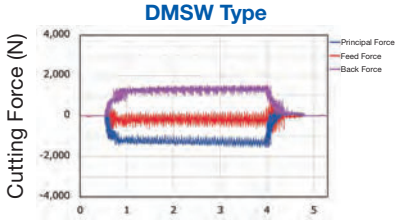
(Reference) Shoulder Milling Tool



Cutting Force Direction

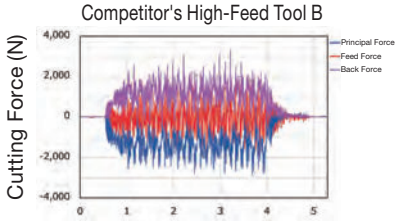


DMSW Type



No chattering

Competitor's High-Feed Tool B



Heavy Chattering

Machine : Vertical Machining Centre BT50, Work Material: S50C
Tool : DMSW08050RS04 (ø50, 4 flutes)
Insert : WNMU0807ZNER-G (ACU2500)
Cutting Conditions: v_c = 160m/min, f_z = 0.65mm/t, a_p=0.8mm, a_e= 45mm Dry

■ Precautions for Corner Finishing

*Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

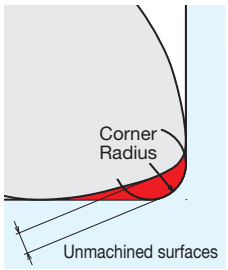
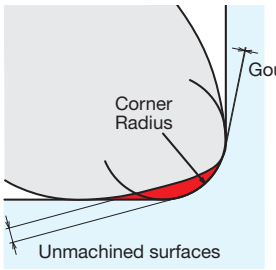


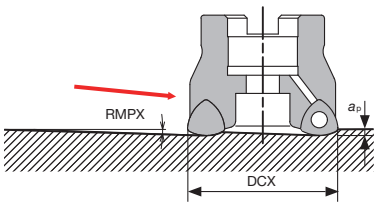
Fig 2



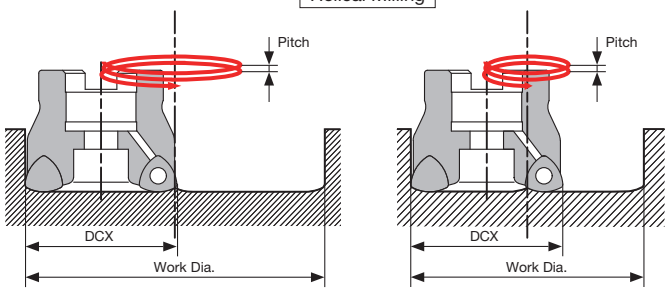
Corner Radius	Unmachined surfaces	Gouging	Fig
2.0	1.22	0	1
2.5	1.08	0	1
3.0	0.95	0	1
3.5	0.83	0.04	2

■ Ramping/Helical Milling Upper Limit

Ramping



Helical Milling



● Precautions for Helical Milling

- Above the max. machining diameter, the centre uncut portion can be removed by traverse cutting with the same cutter.
- Below the min. machining diameter, the centre uncut portion cannot be removed with the same cutter.

Max. Dia. DCX	Ramping	Helical Milling					
	Max. Ramping Angle RMPX	Max. Machining Dia. (mm)	Pitch (mm/rev)	Standard Diameter (mm)	Pitch (mm/rev)	Min. Machining Dia. (mm)	Pitch (mm/rev)
35	0°30'	69.3	1.3	53.5	0.5	52.0	0.5
40	0°48'	79.3	2.0	63.4	1.0	60.2	0.5
42	0°48'	83.3	2.0	67.4	1.0	63.9	0.5
50	1°24'	99.3	2.0	83.3	2.0	79.1	1.0
52	1°24'	103.3	2.0	87.3	2.0	82.8	1.0
63	1°12'	125.3	2.0	109.3	2.0	103.6	1.0
66	1°12'	131.3	2.0	115.3	2.0	109.4	1.0
80	1°12'	159.3	2.0	143.2	2.0	134.0	1.0
85	1°12'	169.3	2.0	153.2	2.0	144.0	1.0
100	0°48'	199.3	2.0	183.2	2.0	174.0	1.0
125	Not recommended						
160	Not recommended						

DMSW08000R(S) Type

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel

New

Rake Angle	Radial	-7° to -10°
	Axial	-6°

3mm 15°

Fig 1

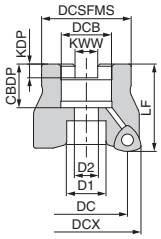


Fig 2

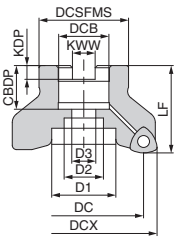


Fig 3

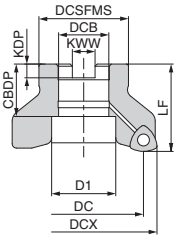


Fig 4

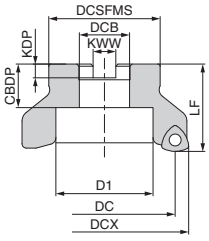
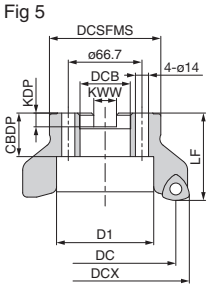


Fig 5



Body (Shell Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**DMSW 08050RS04**	○	**50**	33.4	41	40	**22**	10.4	6.3	20	16.7	11	—	4	0.24	1
	08050RS05	○	**50**	33.4	41	40	**22**	10.4	6.3	20	16.7	11	—	5	0.23	1
	08052RS04		**52**	35.4	41	40	**22**	10.4	6.3	20	17	11	—	4	0.25	1
	08052RS05		**52**	35.4	41	40	**22**	10.4	6.3	20	17	11	—	5	0.25	1
	08063RS04	○	**63**	46.4	50	40	**22**	10.4	6.3	20	18	11	—	4	0.43	1
	08063RS05	○	**63**	46.4	50	40	**22**	10.4	6.3	20	18	11	—	5	0.43	1
	08063RS06	○	**63**	46.4	50	40	**22**	10.4	6.3	20	18	11	—	6	0.42	1
	08063RS05-27	○	**63**	46.4	50	50	**27**	12.4	7	22	20	14	—	5	0.53	1
	08063RS06-27	○	**63**	46.4	50	50	**27**	12.4	7	22	20	14	—	6	0.52	1
	08066RS05-27		**66**	49.4	50	50	**27**	12.4	7	22	20	14	—	5	0.58	1
	08066RS06-27		**66**	49.4	50	50	**27**	12.4	7	22	20	14	—	6	0.57	1
	08080RS06	○	***80**	63.3	55	50	**27**	12.4	7	22	20	14	—	6	0.86	1
	08080RS08	○	***80**	63.3	55	50	**27**	12.4	7	22	20	14	—	8	0.83	1
	08085RS06		***85**	68.3	55	50	**27**	12.4	7	22	20	14	—	6	0.94	1
	08085RS08		***85**	68.3	55	50	**27**	12.4	7	22	20	14	—	8	0.90	1
	08100RS06	○	**100**	83.3	70	50	**32**	14.4	8	32	46	—	—	6	1.25	3
	08125RS08		**125**	108.3	80	63	**40**	16.4	9	29	52	29	—	8	2.37	1
	08160RS10		**160**	143.3	130	63	**40**	16.4	9	29	90	—	—	10	4.69	5
Inch	**DMSW 08050R04**	○	**50**	33.4	41	40	**22.225**	8.4	5	20	16.7	11	—	4	0.24	1
	08050R05	○	**50**	33.4	41	40	**22.225**	8.4	5	20	16.7	11	—	5	0.23	1
	08063R04	○	**63**	46.4	50	40	**22.225**	8.4	5	20	18	11	—	4	0.44	1
	08063R05	○	**63**	46.4	50	40	**22.225**	8.4	5	20	18	11	—	5	0.44	1
	08063R06	○	**63**	46.4	50	40	**22.225**	8.4	5	20	18	11	—	6	0.42	1
	08080R06	○	***80**	63.3	70	63	**31.75**	12.7	8	32	27	18	—	6	1.32	1
	08080R08	○	***80**	63.3	70	63	**31.75**	12.7	8	32	27	18	—	8	1.29	1
	08100R06	○	***100**	83.3	70	63	**31.75**	12.7	8	32	46	27	18	6	1.77	2
	08125R08		**125**	108.3	80	63	**38.1**	15.9	10	35.5	55	30	—	8	2.48	1
	08160R10		**160**	143.3	100	63	**50.8**	19.1	11	38	72	—	—	10	4.19	4

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

For mounting the ø80, ø85, and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (metric specification: M12 x 30 to 35mm, inch specification: M16 x 40 to 45mm).

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
		N·m				
DMSW08160R(S)10			TRDR20IP	—	—	
Cutters other than above	BFTX0513IP	5.0	—	HPL2025	TRB20IP	SUMI-P

Identification Code

DMSW **08** **063** **R** **S** **05** - **27**

Series	Insert Size	Dia.	Feed Direction	Metric Body	Number of Teeth	Mounting Size

N·m Recommended Tightening Torque (N·m) ○ mark: Planned Stock (stock confirmation requested)

DMSW08000E(L) Type

P Steel M Stainless Steel K Cast Iron H Hardened Steel

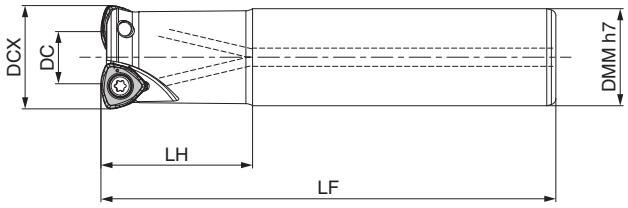
New

Rake Angle	Radial	-10° to -13°
	Axial	-6°

3mm 15°

Modular Type H221

Fig 1



Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSW 08035E02	○	**35**	18.6	32	50	150	2	0.83	1
08040E03	○	**40**	23.5	32	50	150	3	0.85	1
08050E03-42	○	**50**	33.4	42	50	150	3	1.50	1
08063E04-42		**63**	46.4	42	50	150	4	1.63	1

Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DMSW 08035EL02	○	**35**	18.6	32	60	210	2	1.19	1
08040EL03	○	**40**	23.5	32	60	210	3	1.21	1
08050EL03-42	○	**50**	33.4	42	50	250	3	2.52	1
08063EL04-42		**63**	46.4	42	50	250	4	2.66	1

Inserts are sold separately.

Parts

Flat Insert Screw		Integrated Wrench	Anti-seizure Cream
			
BFTX0513IP	5.0	TRDR20IP	SUMI-P

Identification Code

DMSW 08 050 E L 03 - 42

DMSW	08	050	E	L	03	42
Series	Insert Size	Dia.	Shank Type	Long Type	Number of Teeth	Shank Dia.

New

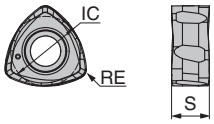
Insert

Dimensions (mm)

Grade Classification		Coated Carbide
Process	High-speed/Light	
	General-purpose	
	Rough Cutting	

Cat. No.	ACU2500	Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
WNMU 0807ZNER-G	○	13	7	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.
P	General Steel	Below 280HB	100 - **160** - 250	1.0 - **1.5** - 2.0
P	Alloy Steel	Below 280HB	100 - **160** - 200	1.0 - **1.5** - 1.8
P	Alloy Steel	Below 42HRC	100 - **150** - 180	0.8 - **1.0** - 1.2
M	Stainless Steel	—	80 - **120** - 150	0.8 - **1.0** - 1.2
K	Cast Iron	—	100 - **160** - 250	1.0 - **1.5** - 1.8
H	Hardened Steel	Below 52HRC	80 - **100** - 120	0.3 - **0.5** - 0.7

Note
- The above figures are guidelines for use with BT50 machine tools at depth of cut (a_p) of 1.5mm.
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.

N·m Recommended Tightening Torque (N·m) ○ mark: Planned Stock (stock confirmation requested)

WFXH Type

Expansion

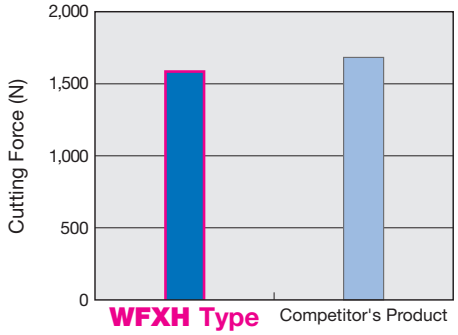
■ General Features

SEC-WaveMill WFXH Types are high performance multi-functional cutters that use a WFX Type 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 Type series can be used
(4) General-purpose grade applicable to any work material
Introducing the new grade ACU2500, which is applicable to a wide variety of processes and work materials such as steel, stainless steel and cast iron

Cutting force: High sharpness realises stable cutting

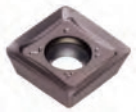
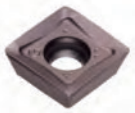
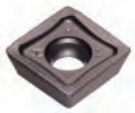
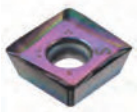
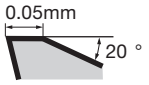
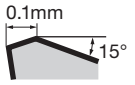
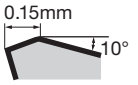
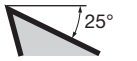
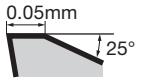
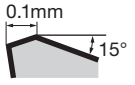
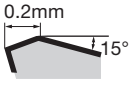
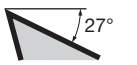


Work Material : S50C
Tool : WFXH12063RS (5 fluted)
Cutting Conditions: v_c = 200m/min, f_z = 1.0mm/t, a_p = 0.5mm, a_e = 44mm Dry

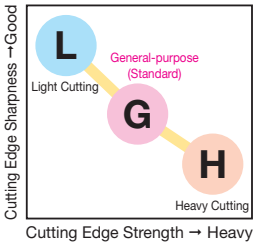
Chips: Small and curled, low cutting temperatures

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

■ Chipbreaker Selection

Work Material	P M K S			N
Applications	Light Cutting, Low Rigidity Milling and Reduction of Burrs	Main Chipbreaker General-purpose to Interrupted Milling	Roughing, Heavy Interrupted Cutting and Hardened Steel Milling	For Non-Ferrous Metals
Features	Low Cutting Force	General-purpose Type	High Strength Type	Sharp Edge
	L Type	G Type	H Type	S Type
Chipbreaker				
08 Series Cross Section				
12 Series Cross Section				

■ Chipbreaker Selection Guide



■ Precautions for Use (1) Precautions for Corner Finishing

* Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

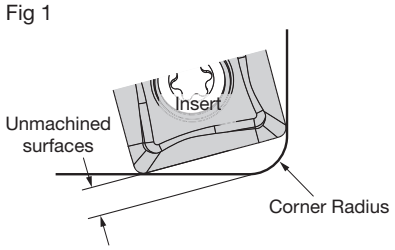
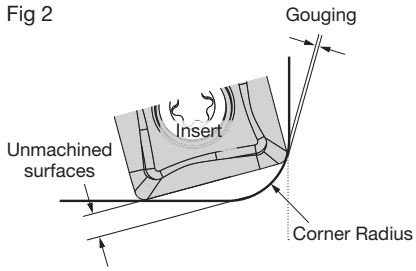


Fig 2



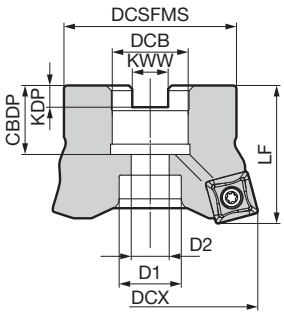
WFXH08000RS Type

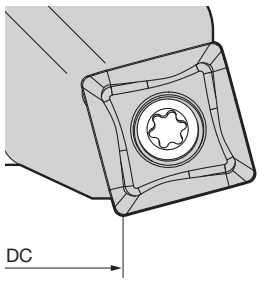
Corner Radius	SOMT08○○04-□			SOMT08○○08-□			SOMT08○○12-□		
	Unmachined surfaces	Gouging	Shape	Unmachined surfaces	Gouging	Shape	Unmachined surfaces	Gouging	Shape
2.0	1.41	0	Fig 1	1.30	0	Fig 1	1.21	0	Fig 1
2.5	1.30	0.02	Fig 2	1.19	0.01	Fig 2	1.09	0	Fig 1
3.0	—	—	—	—	—	—	0.98	0.05	Fig 2

WFXH12000RS Type

Corner Radius	SOMT12○○04-□			SOMT12○○08-□			SOMT12○○12-□			SOMT08○○16-□		
	Unmachined surfaces	Gouging	Shape	Unmachined surfaces	Gouging	Shape	Unmachined surfaces	Gouging	Shape	Unmachined surfaces	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 cutting diameter DC differs depending on the insert used. We recommend using WFXH Type with large corner radius inserts.



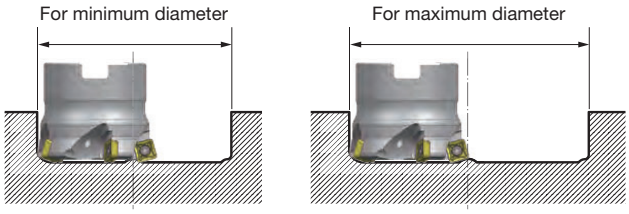


	Body Cat. No.	DCX	DC			
			R0.4	R0.8	R1.2	R1.6
*	WFXH 08025M12Z2	25	10.4	10.9	11.5	—
*	08032M12Z3	32	17.4	17.9	18.5	—
	WFXH 08040RS	40	25.4	25.9	26.5	—
	08050RS	50	35.4	35.9	36.5	—
	08050RS-Z6	50	35.4	35.9	36.5	—
	08063RS	63	48.4	48.9	49.5	—
*	WFXH 12040M12Z3	40	16.6	17.1	17.5	18.1
*	WFXH 12050RS	50	26.6	27.2	27.7	28.2
	12063RS	63	39.5	40.0	40.4	41.1

* mark: Modular Tools H222

WFXH Type

■ Helical Milling and Ramping



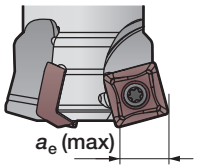
Min. Diameter, Max. Diameter

Ramp Angle

Insert Cat. No.	DC	Helical Milling (mm)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramp 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.	DC	Helical Milling (mm)		Ramping
		Min. Dia.	Max. Dia.	Maximum Ramp 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.	Max. 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	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	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	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	0.8	1.0
			SOMT12	—	—	—	—	1.0	1.2	1.0	1.2	1.0	1.2
H Hardened Steel Below 50HRC	ACK300	40- **80**-100	**SOMT08**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
			SOMT12	—	—	—	—	0.6	0.8	0.6	0.8	0.6	0.8

· 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

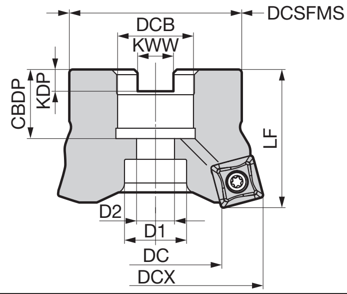
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | S Exotic Alloy | H Hardened Steel

Expansion

Rake Angle	Radial	-6°
	Axial	6°

1.5mm 15°

Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WFXH 08040RS	●	40	*26.5	33	40	16	8.4	5.6	18	14	9	4	0.2	1
	08050RS	●	50	*36.5	41	40	22	10.4	6.3	20	18	11	5	0.3	1
	08050RS-Z6	●	50	*36.5	41	40	22	10.4	6.3	20	18	11	6	0.3	1
	08063RS	●	63	*49.5	50	40	22	10.4	6.3	20	18	11	6	0.5	1

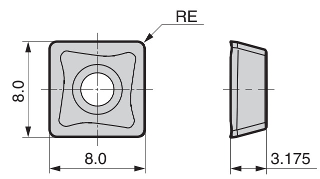
Inserts are sold separately.
* indicates value with corner radius 1.2 inserts mounted. Refer to H149 for details.

Insert

Dimensions (mm)

Grade Classification	Coated Carbide										Cemented Carbide	DLC	Cermet		
Process: High-speed/Light	P K S M	P K M	P			K	K		M S		K N	N			
Process: Medium Cutting	P K S M	P K M		P M	P M	K	K		M S	M S		N	P M		
Process: Roughing	P K S M			P M	P M			K		M S			P		
Cat. No.	**ACU2500**	**XCU2500**	**ACP100**	**ACP200**	**ACP300**	**XCK2000**	**ACK200**	**ACK300**	**ACM200**	**ACM300**	**H1**	**DL1000**	**T4500A**	**Corner Radius RE**	**Fig**
SOMT 080304PZER-L	●(red)	●(red)	●	●	●	●(red)	●	●	●	●	—	—		0.4	1
080308PZER-L	●(red)	●(red)	●	●	●	●(red)	●	●	●	●	—	—		0.8	1
SOMT 080304PZER-G	●(red)	●(red)	●	●	●	●(red)	●	●	●	●	—	—		0.4	1
080308PZER-G	●(red)	●(red)	●	●	●	●(red)	●	●	●	●	—	—		0.8	1
080312PZER-G	●(red)		●	●	●		●	●	●	●	—	—		1.2	1
SOMT 080308PZER-H	●(red)	●(red)	●	●	●	●(red)	●	●	●	●	—	—		0.8	1
080312PZER-H	●(red)		●	●	●		●	●	●	●	—	—		1.2	1
SOET 080304PZER-G	●(red)		●	●	●		●	●	●	●	—	—	●	0.4	1
080308PZER-G	●(red)		●	●	●		●	●	●	●	—	—	●	0.8	1
080312PZER-G	●(red)		●	●	●		●	●	●	●	—	—	●	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 ☞ H150
Precautions for Use ☞ H149

Parts

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

Identification Code

WFXH 08 040 RS - Z6

WFXH	08	040	RS	Z6
Series	Insert Size	Dia.	Metric Body	Fine Pitch Type (with no. of teeth)

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

WFXH 12000RS Type

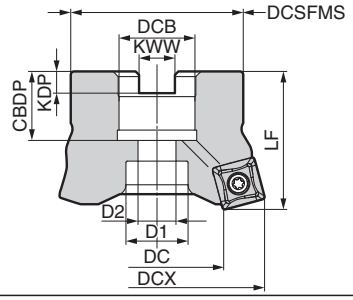
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy | H Hardened Steel

Expansion

Rake Angle	Radial	-6°
	Axial	6°

2.5mm 15°

Fig 1



Body

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXH 12050RS**	●	**50**	***28.2**	41	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	●	**63**	***41.1**	50	40	**22**	10.4	6.3	20	18	11	5	0.4	1

Inserts are sold separately.

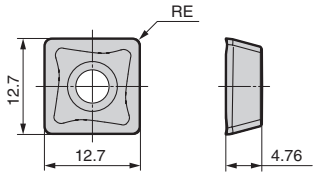
* indicates value with corner radius 1.6 inserts mounted. Refer to H149 for details.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	KS M	PK M	P			K	K		MS		KN	N			
	Medium Cutting	KS M	PK M		PM	PM	K	K		MS	MS		N	PM		
	Roughing	KS M			PM	PM			K		MS			P		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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



* If the cutting edge strength for high-efficiency milling of non-ferrous metal is insufficient, try a G-type chipbreaker (ACK300).

Recommended Cutting Conditions H150
Precautions for Use H149

Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
	N·m			
BFTX03512IP	**3.0**	HPS1015	TRB15IP	SUMI-P

Identification Code

WFXH **12** **050** **RS**

WFXH: Series | 12: Insert Size | 050: Dia. | RS: Metric Body

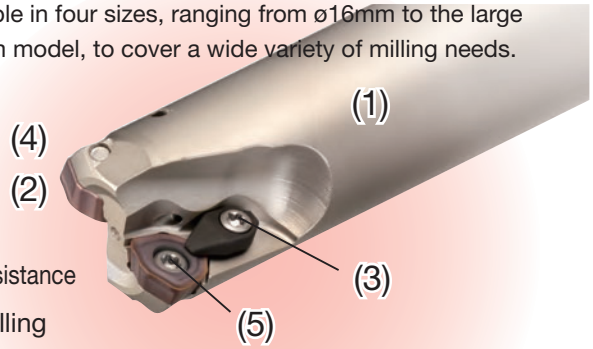
N·m Recommended Tightening Torque (N·m) ● mark: Standard Stock (new product/expanded item)

M E M O

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.

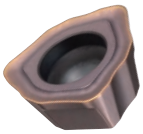
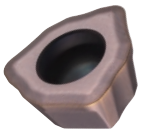


■ Features

(1) **Highly Durable Body** Special surface treatment improves scratch resistance
(2) **Versatile Machining Operations** Enables ramping, helical milling, and drilling
(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

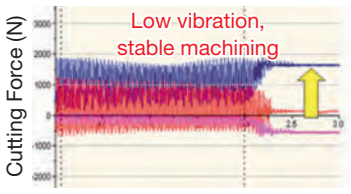
■ Insert Applications and Types

· Insert utilises a special cutting edge profile
· Economical, three-cornered insert

Type	General-purpose Type	Strong Edge Type
Applications	General Milling (First Recommendation)	Interrupted Cutting
Appearance / Features	 Sharper Edge	 Emphasis on Fracture Resistance

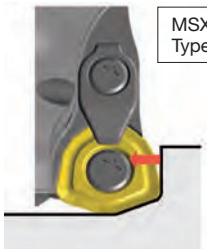
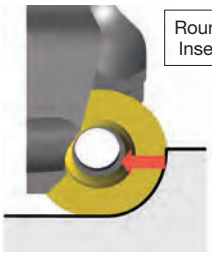
■ Cutting Performance

● 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	Prone to chatter
	
Cutting force is consistent even when depth of cut is increased, for stable cutting performance.	Greater depth of cut increases contact length, which increases cutting force.

■ Product Range

Type	Cat. No.	Max. Diameter (mm) ø16	ø17	ø18	ø20	ø21.7	ø22	ø24.7	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	Applicable Insert
Shell	MSX 08000RS													4					WDMT 08 Type
Shell	MSX 12000RS														4	5			WDMT 12 Type
Shell	MSX 14000R inch																5	6	WDMT 12 Type
Shell	MSX 14000RS														3	4	5	6	WDMT 14 Type
Shank	MSX 06000E(S/M)	2	2	2	3		3		3										WDMT 06 Type
Shank	MSX 08000E(S/M)				2		2		2	2		3	3						WDMT 08 Type
Shank	MSX 12000E(S/M)											2	2	3	4				WDMT 12 Type
Shank	MSX 14000E(S/M)													2	3	4			WDMT 14 Type
Modular	MSX 06000M	2		2	3	3		3											WDMT 06 Type
Modular	MSX 08000M								2	2	3	3	3						WDMT 08 Type
Modular	MSX 12000M											2	2	3					WDMT 12 Type

Number ● in shows the number of teeth inch Inch Bore

Modular Type ☞ H223

MSX Type

■ Precautions for Corner Finishing

*Corners will have unmachined surfaces or gouges with respect to the expected corner profile.

Fig 1

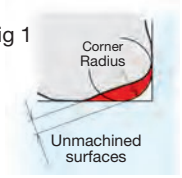
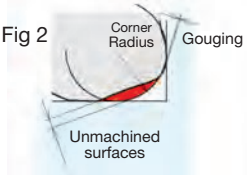


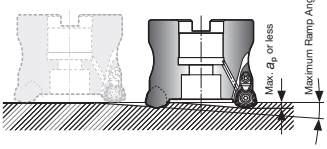
Fig 2



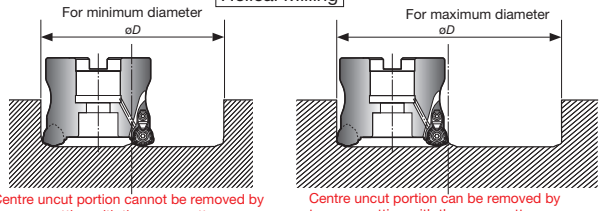
Corner Radius	MSX06000			MSX08000			MSX12000			MSX14000		
	Unmachined surfaces	Gouging	Fig	Unmachined surfaces	Gouging	Fig	Unmachined surfaces	Gouging	Fig	Unmachined surfaces	Gouging	Fig
2.0	0.403	0	1	0.735	0	1	1.312	0	1	1.642	0	1
2.5	0.263	0.087	2	0.593	0	1	1.171	0	1	1.501	0	1
3.0				0.451	0.031	2	1.030	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



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

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

DC	MSX06000			MSX08000			MSX12000			MSX14000		
	Ramping	Helical Milling		Ramping	Helical Milling		Ramping	Helical Milling		Ramping	Helical Milling	
	Max. Ramp Angle	Min. Dia.	Max. Dia.	Max. Ramp Angle	Min. Dia.	Max. Dia.	Max. Ramp Angle	Min. Dia.	Max. Dia.	Max. Ramp 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.	Shank 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 cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors. The above figures are guidelines for use with BT50 machine tools.

· The above recommended cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length of 3 times tool diameter) or less.

When tool overhang is more than L/D=3 and less than or equal to L/D=5, settings should be adjusted to approximately 70 to 80% of those indicated in the above recommended cutting conditions (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

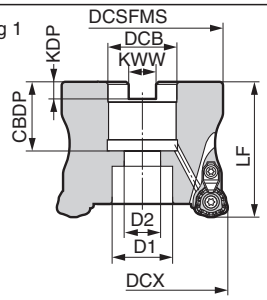
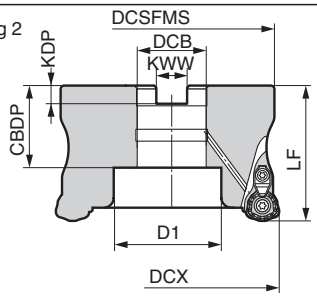


Fig 2



Body (Applicable Insert WDMT08 Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**MSX 08040RS**	●	**40**	37	45	**16**	8.4	5.6	18	13.5	9	4	0.2	1

Body (Applicable Insert WDMT12 Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**MSX 12050RS**	●	**50**	47	50	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	●	**63**	60	50	**22**	10.4	6.3	20	18	11	5	0.6	1

Body (Applicable Insert WDMT14 Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**MSX 14050RS**	●	**50**	47	50	**22**	10.4	6.3	20	17	11	3	0.3	1
	14063RS	●	**63**	60	50	**22**	10.4	6.3	20	18	11	4	0.6	1
	14080RS	●	***80**	76	63	**27**	12.4	7.0	25	20	13.5	5	1.4	1
	14100RS	●	**100**	96	63	**32**	14.4	8.5	32	44	—	6	2.2	2
Inch	**MSX 14080R**	●	***80**	76	63	**31.75**	12.7	8.0	32	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 mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

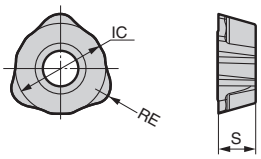
Insert

Dimensions (mm)

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

Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
General-purpose	**WDMT 0804ZDTR**	●	●	●	●	8.5	4.0	2.0	MSX08000R Type	1
	1205ZDTR	●	●	●	●	12.0	5.0	2.0	MSX12000R Type	1
	1406ZDTR	●	●	●	●	14.0	6.0	2.0	MSX14000R Type	1
Honed Type	**WDMT 0804ZDTR-H**	●	●	●	●	8.5	4.0	2.0	MSX08000R Type	1
	1205ZDTR-H	●	●	●	●	12.0	5.0	2.0	MSX12000R Type	1
	1406ZDTR-H	●	●	●	●	14.0	6.0	2.0	MSX14000R Type	1

Fig 1



Recommended Cutting Conditions H155

Identification Code

MSX 08 040 R S

Series	Insert Size	Cutter Dia.	Feed Direction	Metric Body
MSX	08	040	R	S

Parts

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Clamp Plate	C-Ring	Cap Screw	Anti-seizure Cream
MSX08000R Type	BFTX0306IP	2.0	TRDR08IP	—	—	CCH3.5	CR03	BFTX03510IP08	SUMI-P
MSX12000R Type	BFTX0409IP	3.0	—	HPS1015	TRB15IP	CCH3.5	CR03	BFTX03510IP15	
MSX14000R Type	BFTX0511IP	5.0	—	HPL2025	TRB20IP	CCH4.5	CR03	BFTX04513IP20	

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 H223

Fig 1 (Single Clamp)

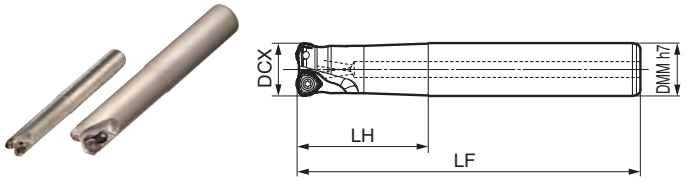
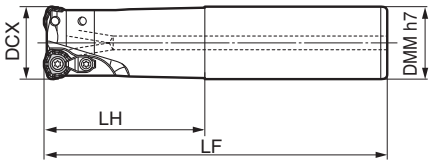


Fig 2 (Double Clamp)



Body (Applicable Insert WDMT06 Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 06016ES	●	**16**	16	30	110	2	0.2	1
06016EM	●	**16**	16	70	150	2	0.2	1
06017EM	●	**17**	16	20	150	2	0.2	1
06018EM	●	**18**	16	20	150	2	0.2	1
06020ES	●	**20**	20	50	130	3	0.3	1
06020EM	●	**20**	20	100	180	3	0.4	1
06022EM	●	**22**	20	30	180	3	0.4	1
06025ES	●	**25**	25	60	140	3	0.5	1
06025EM	●	**25**	25	120	250	3	0.8	1

Body (Applicable Insert WDMT08 Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 08020ES	●	**20**	20	50	130	2	0.3	1
08020EM	●	**20**	20	100	180	2	0.3	1
08022EM	●	**22**	20	30	180	2	0.4	1
08025ES	●	**25**	25	60	140	2	0.4	2
08025EM	●	**25**	25	120	250	2	0.8	2
08028EM	●	**28**	25	40	250	2	0.9	2
08032ES	●	**32**	32	70	150	3	0.8	2
08032EM	●	**32**	32	120	250	3	1.4	2
08035EM	●	**35**	32	50	250	3	1.5	2

Body (Applicable Insert WDMT12 Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 12032ES	●	**32**	32	70	150	2	0.8	2
12032EM	●	**32**	32	120	250	2	1.4	2
12035EM	●	**35**	32	50	250	2	1.4	2
12040ES	●	**40**	32	50	150	3	0.9	2
12040EM	●	**40**	32	50	250	3	1.5	2
12050EM	●	**50**	42	50	250	4	2.6	2

Body (Applicable Insert WDMT14 Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
MSX 14040ES	●	**40**	32	50	150	2	0.9	2
14040EM	●	**40**	32	50	250	2	1.5	2
14050ES	●	**50**	42	50	150	3	1.5	2
14050EM	●	**50**	42	50	250	3	2.5	2
14063ES	●	**63**	42	50	150	4	1.7	2
14063EM	●	**63**	42	50	250	4	2.8	2

Inserts are sold separately.

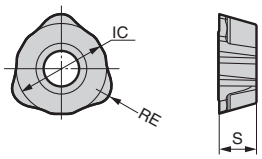
Insert

Dimensions (mm)

Grade Classification		Coated Carbide			
Process	High-speed/Light			●	
	General-purpose	●	●	●	
	Roughing	●	●		●

Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
General-purpose	**WDMT 0603ZDTR**	●	●	●	●	6.35	3.0	1.5	MSX06000E Type	1
	0804ZDTR	●	●	●	●	8.5	4.0	2.0	MSX08000R Type	1
	1205ZDTR	●	●	●	●	12.0	5.0	2.0	MSX12000R Type	1
	1406ZDTR	●	●	●	●	14.0	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	●	●	●	●	12.0	5.0	2.0	MSX12000R Type	1
	1406ZDTR-H	●	●	●	●	14.0	6.0	2.0	MSX14000R Type	1

Fig 1



Recommended Cutting Conditions H155

Identification Code

MSX 06 016 E S

Series	Insert Size	Cutter Dia.	Shank Type	S : Short M : Medium

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Clamp Plate	C-Ring	Cap Screw	Anti-seizure Cream
MSX06000E Type	BFTX02505IP	1.5	TRDR08IP	—	—	—	SUMI-P
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	

N·m Recommended Tightening Torque (N·m)

WMM Type

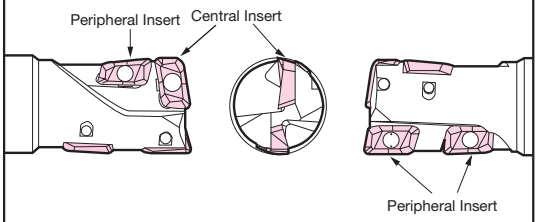
■ General Features

The WaveMill performs a variety of operations such as groove milling, shoulder milling, ramping, pocketing, drilling, helical milling, etc., all with a single shank type cutter.
With low cutting force and excellent chip evacuation, it is also effective for consolidating tools.

■ Features

- 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

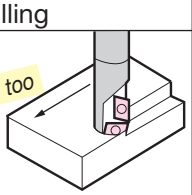


■ Applications: WMM2025E

● Shoulder Milling

SUS304

Cuts stainless steel too

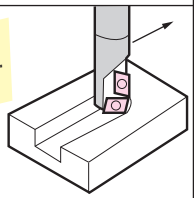


Diameter of Tool : ø25
Insert : APMT103504PDER (ACZ350)
Depth of Cut : a_p = 25mm , a_e = 5mm
Cutting Speed : v_c = 120m/min, Feed Rate: f_z = 0.15mm/t
Air Blow

● Slot Milling

FC250

Deep slot milling can be performed easily. Easy chip removal

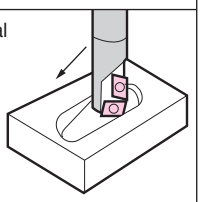


Diameter of Tool : ø25
Insert : APMT103504PDER (ACZ310)
Depth of Cut : a_p = 15mm , a_e = 25mm
Cutting Speed : v_c = 180m/min, Feed Rate: f_z = 0.12mm/t
Air Blow

● Ramping

S50C Block Material

Capable of tapered recess cutting without prepared holes

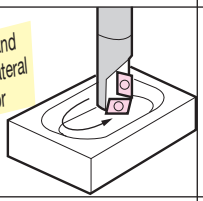


Diameter of Tool : ø25
Insert : APMT103504PDER (ACZ350)
Cutting Width : a_e = 25mm, Depth: a_p = 15mm
Cutting Speed : v_c = 200m/min, Feed Rate: f_z = 0.1mm/t
Ramp Angle : θ = 15°
Air Blow

● Pocketing

S50C Block Material

Capable of traverse cutting and pocketing with continuous lateral feed from the initial drilling or ramping process

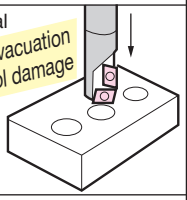


Diameter of Tool : ø25
Insert : APMT103504PDER (ACZ350)
Machining done continuously from a deep drilling process with a depth of 15mm
Cutting Width : a_e = 25mm, Depth: a_p = 15mm
Cutting Speed : v_c = 200m/min, Feed Rate: f_z = 0.1mm/t
Air Blow

● Drilling

S50C Block Material

Capable of easy chip evacuation and drilling without tool damage

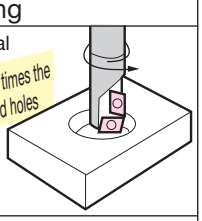


Diameter of Tool : ø25
Insert : APMT103504PDER (ACZ350)
Bore Diameter : ø25mm, Depth: a_p = 15mm
Cutting Speed : v_c = 200m/min, Feed Rate: f = 0.1mm/rev
Step Feed : 0.5mm
Air Blow

● Helical Milling

S50C Block Material

Capable of large boring with diameters 1.2 to 1.8 times the cutter diameter without prepared holes



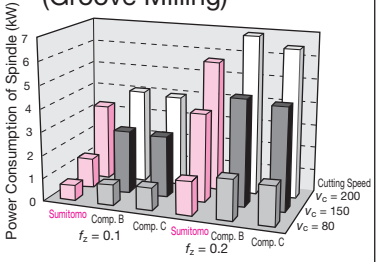
Diameter of Tool : ø25
Insert : APMT103504PDER (ACZ350)
Bore Diameter : ø40mm, Depth: a_p = 20mm
Cutting Speed : v_c = 300m/min, Feed Rate: f = 0.1mm/rev
Axial Feed : 15mm/Pitch
Air Blow

■ Product Range and Performance

Type	Cat. No.	Description	Dia. (mm) ø20	ø21	ø22	ø24.7	ø25	ø26	ø27	ø28	ø30	ø32	ø33	ø35	ø40
Shank	WMM 2000E	Standard Type	1	1			1	1			1				
	WMM 2000EL	Long Type	1	1			1	1			1				
	WMM 2000ELH	Long Type w/ Coolant Hole	1	1			1	1			1				
	WMM 2000EXLH	Extra-Long Type w/ Coolant Hole			(1)				(1)		(1)				
	WMM 3000E	Standard Type										1	1	1	1
	WMM 3000EL	Long Type										1	1	1	1
	WMM 3000ELH	Long Type w/ Coolant Hole										1	1	1	1
	WMM 3000EXLH	Extra-Long Type w/ Coolant Hole												(1)	(1)

Number in ●○ shows the number of teeth ○ mark: Made-to-order item

● 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

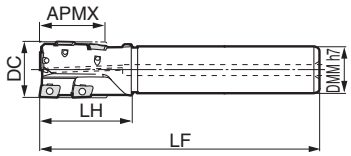
WMM 2000E/EL/ELH/EXLH Type

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

Rake Angle		
	Radial	15° to 16°
	Axial	7° to 11°

17 to 35 mm 90°

Fig 1



Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2020E	●	**20**	20	17	35	130	3	1	1
2021E	●	**21**	20	17	35	130	3	1	1
2025E	●	**25**	25	26	40	140	4	1	1
2026E	●	**26**	25	26	40	140	4	1	1
2030E	●	**30**	25	35	50	150	5	1	1

Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2020EL	●	**20**	20	17	60	185	3	1	1
2021EL	●	**21**	20	17	35	185	3	1	1
2025EL	●	**25**	25	26	75	220	4	1	1
2026EL	●	**26**	25	26	40	220	4	1	1
2030EL	●	**30**	25	35	50	230	5	1	1

Body (Long Shank Type/With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2020ELH	●	**20**	20	17	60	185	3	1	1
2021ELH	●	**21**	20	17	35	185	3	1	1
2025ELH	●	**25**	25	26	75	220	4	1	1
2026ELH	●	**26**	25	26	40	220	4	1	1
2030ELH	●	**30**	25	35	50	230	5	1	1

Body (Extra Long Shank Type/With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 2022EXLH		**22**	20	17	35	250	3	1	1
2027EXLH		**27**	25	26	40	320	4	1	1
2030EXLH		**30**	25	35	50	350	5	1	1

Inserts are sold separately.

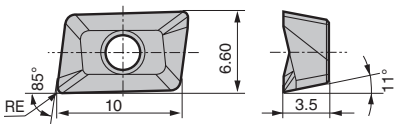
Insert

Dimensions (mm)

Grade Classification		Coated Carbide						
Process	High-speed/Light				K N	N		
	General-purpose	M	P	K		N		
	Roughing							
Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Corner Radius RE	Fig
APMT 103504PDER		●	●	●	—	—	0.4	1
103508PDER		●	●	●	—	—	0.8	1
103512PDER		●	●	●	—	—	1.2	1
APMT 103504PDER-H		●	●	●	—	—	0.4	1
103508PDER-H		●	●	●	—	—	0.8	1
103512PDER-H		●	●	●	—	—	1.2	1
APET 103504PDER-F		●	●	●	—	—	0.4	1
APET 103504PDFR-S		—	—	—	●	●	0.4	1

-H: Strong Edge Type, F: Ground Insert, S: For Aluminum Alloy.

Fig 1



Parts (Common)

Applicable Cutter	Flat Insert 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	

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.

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)

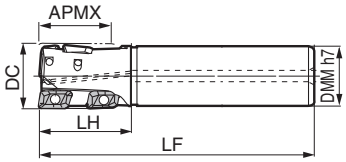
WMM 3000E/EL/ELH/EXLH Type

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

Rake Angle		
	Radial	17° to 19°
	Axial	7° to 11°

39mm 90°

Fig 1



Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3032E	●	**32**	32	39	50	150	4	1	1
3033E	●	**33**	32	39	50	150	4	1	1
3035E	●	**35**	32	39	50	150	4	1	1
3040E	●	**40**	32	39	55	160	4	1	1

Body (Long Type)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3032EL	●	**32**	32	39	90	230	4	1	1
3033EL	●	**33**	32	39	50	230	4	1	1
3035EL	●	**35**	32	39	50	230	4	1	1
3040EL	●	**40**	32	39	55	240	4	1	1

Body (Long Shank Type/With Coolant Holes)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3032ELH	●	**32**	32	39	90	230	4	1	1
3033ELH	●	**33**	32	39	50	230	4	1	1
3035ELH	●	**35**	32	39	50	230	4	1	1
3040ELH	●	**40**	32	39	55	240	4	1	1

Body (Extra Long Shank Type/With Coolant Holes)

Dimensions (mm)

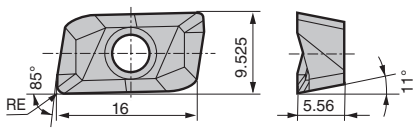
Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Overall Length LF	Total No. of Teeth	Effective No. of Teeth	Fig
WMM 3035EXLH		**35**	32	39	50	370	4	1	1
3040EXLH		**40**	32	39	55	420	4	1	1

Insert

Dimensions (mm)

Grade Classification		Coated Carbide						
Process	High-speed/Light				K N	N		
	General-purpose	M	P	K		N		
	Roughing							
Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Corner Radius RE	Fig
APMT 160508PDER		●	●	●	—	—	0.8	1
160512PDER		●	●	●	—	—	1.2	1
160516PDER		●	●	●	—	—	1.6	1
APMT 160508PDER-H		●	●	●	—	—	0.8	1
160512PDER-H		●	●	●	—	—	1.2	1
160516PDER-H		●	●	●	—	—	1.6	1
160520PDER-H*		●	●	●	—	—	2.0	1
160530PDER-H*		●	●	●	—	—	3.0	1
160540PDER-H*		●	●	●	—	—	4.0	1
160550PDER-H*		●	●	●	—	—	5.0	1
160560PDER-H*		●	●	●	—	—	6.0	1
APET 160508PDER-F		●	●	●	—	—	0.8	1
APET 160508PDFR-S		—	—	—	●	●	0.8	1

Fig 1



-H: Strong 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 Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WMM2000 Type	BFTX02506N	1.5	TRD08	SUMI-P
WMM3000 Type	BFTX03584	3.0	TRD15	SUMI-P

■ Recommended Cutting Conditions Diameter ø30 to ø40mm (Not for extra-long type)

ISO	Work Material	Hardness	Cutting Speed 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)

M E M O

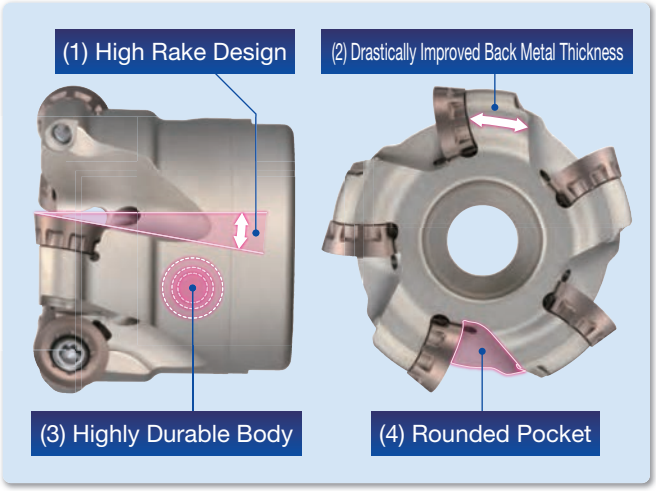
RSX Type

■ 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

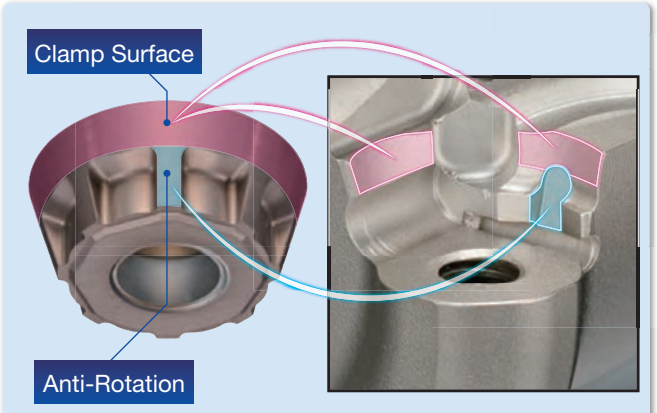
■ Low-resistance, Low-vibration Design

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	Cat. No.	Description	Max. Diameter (mm) ø20	ø25	ø32	ø40	ø50	ø52	ø63	ø66	ø80	ø100	ø125	ø160	Shape
Shell	RSX1000RS	Standard Pitch				4	5	5							
	RSXF1000RS	Extra Fine Pitch				5	6	6							
	RSX12000RS	Standard Pitch				3	4	4	5	6	6	6			
	RSX12000R (Inch)	Standard Pitch									6	6			
	RSXF12000RS	Extra Fine Pitch				4	5	5	6	7	7	10			
	RSXF12000R (Inch)	Extra Fine Pitch									7	10			
	RSX16000RS	Standard Pitch							4		5	6	6		
	RSX16000R (Inch)	Standard Pitch									5	6	6		
	RSXF16000RS	Extra Fine Pitch							5		6	7	8	10	
	RSXF16000R (Inch)	Extra Fine Pitch									6	7	8	10	
	RSX20000RS	Standard Pitch									4	5	6	7	
	RSX20000R (Inch)	Standard Pitch									4	5	6	7	
	RSXF20000RS	Extra Fine Pitch									5	6	7	9	
	RSXF20000R (Inch)	Extra Fine Pitch									5	6	7	9	
Shank	RSX08000ES	Standard Pitch	2	3											
	RSXF08000ES	Extra Fine Pitch	3	4											
	RSX10000ES	Standard Pitch		2	3										
	RSXF10000ES	Extra Fine Pitch		3	4										
	RSX12000ES	Standard Pitch			2										
	RSXF12000ES	Extra Fine Pitch			3										
Modular	RSX08000M	Standard Pitch	2	3	4										
	RSXF08000M	Extra Fine Pitch	3	4	5										
	RSX10000M	Standard Pitch		2	3										
	RSXF10000M	Extra Fine Pitch		3	4										
	RSX12000M	Standard Pitch			2	3									
	RSXF12000M	Extra Fine Pitch			3	4									

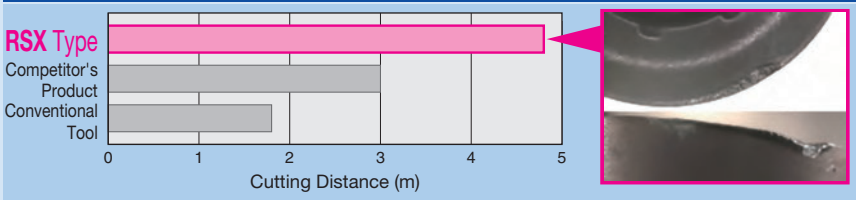
Number in ● shows the number of teeth (Inch) Inch Bore

Modular Type ☞ H224

RSX Type

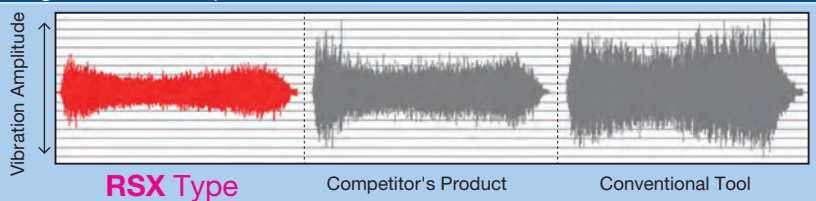
■ Cutting Performance

Tool Life Comparison (Fracture Resistance)



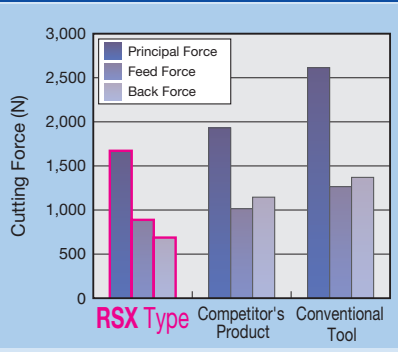
Achieves a tool life approximately 1.6 times longer than that of our competitors' products.

Cutting Vibration Comparison



Reduced by approximately 15% compared to competitors' products.

Comparison of Cutting Force



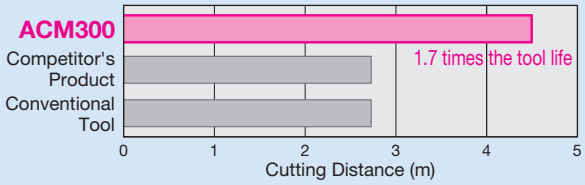
Work Material: SUS304 Tool: ø50

Cutting Conditions: V_c = 200m/min, f_z = 0.5mm/t

a_p = 2.0mm, a_e = 10.0mm Wet

■ Long, Stable Tool Life

Tool Life (SUS304 Machining)



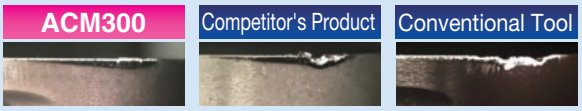
Cutter: RSXF12050RS

Insert: RDET1204M0EN-G

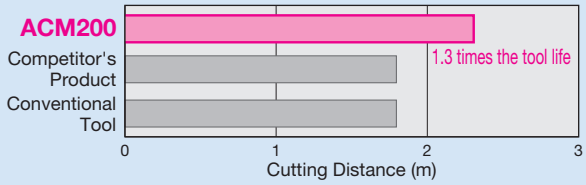
Cutting Conditions: V_c = 200m/min, f_z = 0.5mm/t

a_p = 2mm, a_e = 10mm Wet

(Cutting Distance: 2.7m)



Tool Life (SUS630-H900 Machining)



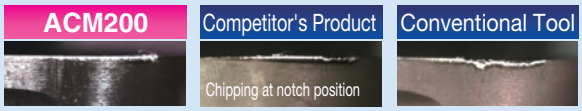
Cutter: RSXF12050RS

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)



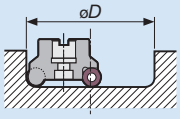
RSX Type

■ Machining Applications

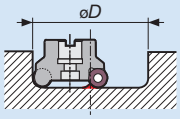
Can be used for various types of high-efficiency machining such as deep shoulder milling of molds, ramping, and helical milling.

Precautions for Helical Milling

Standard Diameter

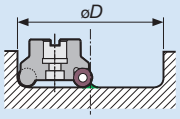


Standard Diameter or Below



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

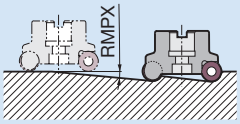
Standard Diameter or Above



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

Precautions for Ramping

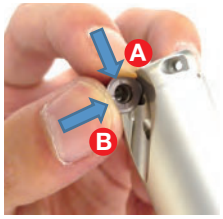
Use at the RMPX below or lower.



Recommended Values for Helical Milling and Ramping

Insert Cat. No.	Helical Milling (mm)				Ramping
	Max. Dia. DCX	Machining Dia. øD			Maximum Ramp Angle RMPX
		Min.	Standard Diameter	Max.	
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.

Precautions for RSX08000 Type

Align either insert rake face marking position Ⓒ with the marking position Ⓓ on the body.

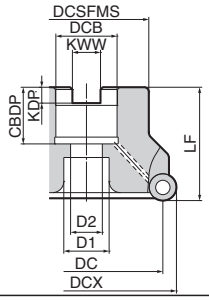
RSX(F) 10000RS Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle	Radial	-5°
	Axial	10°

5mm

Fig 1



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 10040RS**	●	**40**	**30**	34	40	**16**	8.4	5.6	18	14	9	4	0.2	1
	10050RS	●	**50**	**40**	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	10052RS	●	**52**	**42**	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 10040RS**	●	**40**	**30**	34	40	**16**	8.4	5.6	18	14	9	5	0.2	1
	10050RS	●	**50**	**40**	40	40	**22**	10.4	6.3	20	18	11	6	0.3	1
	10052RS	●	**52**	**42**	40	40	**22**	10.4	6.3	20	18	11	6	0.3	1

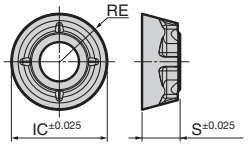
Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide								
Process	High-speed/Light			MS	MS					
	General-purpose	PM		MS	MS	MS				
	Roughing	PM	K			MS				
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 10T3M0EN-G		●	●	●	●	●	10	5.0	3.97	1
10T3M0EN-H		●	●	●	●	●	10	5.0	3.97	1

Fig 1



● Cross Section of Cutting Edge

Precautions for Mounting Inserts H164

Identification Code

RSX **F** **10** **040** **R** **S**

RSX	F	10	040	R	S
Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Body

Parts

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

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
			Martensitic	200 to 330HB	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
			Duplex (Austenitic/Ferritic)	230 to 270HB	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 350HB	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	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10-**0.20**-0.30	

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.

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

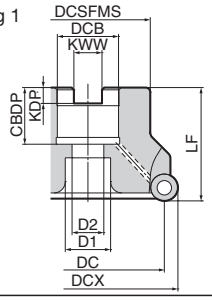


Fig 2

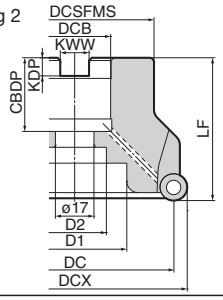
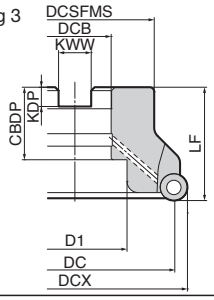


Fig 3



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 12040RS**	●	**40**	**28**	32	40	**16**	8.4	5.6	18	13.5	9	3	0.2	1
	12050RS	●	**50**	**38**	40	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12052RS	●	**52**	**40**	40	40	**22**	10.4	6.3	20	18	11	4	0.3	1
	12063RS	●	**63**	**51**	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	12066RS	●	**66**	**54**	55	50	**27**	12.4	7.0	25	20	14	6	0.7	1
	12080RS	●	***80**	**68**	55	50	**27**	12.4	7.0	25	20	14	6	1.0	1
	12100RS	●	**100**	**88**	70	50	**32**	14.4	8.5	32	46	—	6	1.4	3
Inch	**RSX 12080R**	●	***80**	**68**	55	50	**25.4**	9.5	6.0	25	20	13	6	1.0	1
	12100R	●	***100**	**88**	70	63	**31.75**	12.7	8.0	32.5	46	28	6	1.9	2

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 12040RS**	●	**40**	**28**	32	40	**16**	8.4	5.6	18	13.5	9	4	0.2	1
	12050RS	●	**50**	**38**	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	12052RS	●	**52**	**40**	40	40	**22**	10.4	6.3	20	18	11	5	0.3	1
	12063RS	●	**63**	**51**	40	40	**22**	10.4	6.3	20	18	11	6	0.4	1
	12066RS	●	**66**	**54**	55	50	**27**	12.4	7.0	25	20	14	7	0.7	1
	12080RS	●	***80**	**68**	55	50	**27**	12.4	7.0	25	20	14	7	0.9	1
	12100RS	●	**100**	**88**	70	50	**32**	14.4	8.5	32	46	—	10	1.3	3
Inch	**RSXF 12080R**	●	***80**	**68**	55	50	**25.4**	9.5	6.0	25	20	13	7	1.0	1
	12100R	●	***100**	**88**	70	63	**31.75**	12.7	8.0	32.5	46	28	10	1.8	2

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

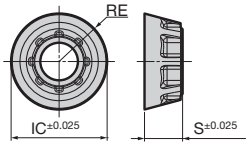
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide								
Process	High-speed/Light			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	Corner Radius RE	Thickness S	Fig
RDET 1204M0EN-G		●	●	●	●	●	12	6.0	4.76	1
1204M0EN-H		●	●	●	●	●	12	6.0	4.76	1

Fig 1



● Cross Section of Cutting Edge

Precautions for Mounting Inserts H164

Identification Code

RSX Series — **F** Extra Fine Pitch — **12** Insert Size — **040** Cutter Dia. — **R** Feed Direction — **S** Metric Body

Parts

Flat Insert Screw		Detachable Wrench		Anti-seizure Cream
	N·m	Handle Grip	Bit	
BFTX0409IP	3.0	HPS1015	TRB15IP	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	Carbon Steel			180 to 280HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
			Martensitic	200 to 330HB	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
			Duplex (Austenitic/Ferritic)	230 to 270HB	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 350HB	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	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10-**0.20**-0.30	

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)

RSX(F) 16000R(S) Type

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

Rake Angle		
Radial	-5°	
Axial	10°	

8mm

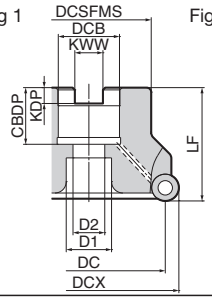
Fig 1


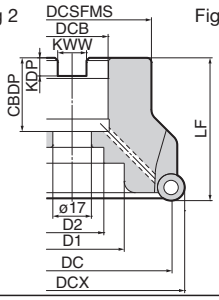
Fig 2


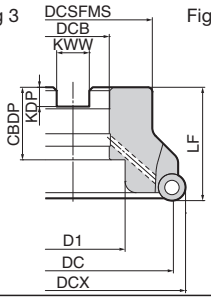
Fig 3


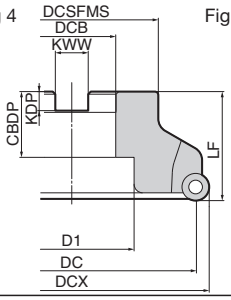
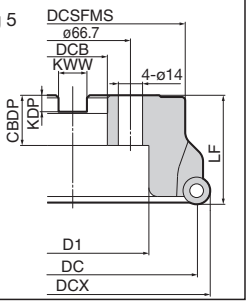
Fig 4


Fig 5


Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 16063RS**	●	**63**	**47**	50	40	**22**	10.4	6.3	20	18	11	4	0.5	1
	16080RS	●	***80**	**64**	55	50	**27**	12.4	7.0	25	20	14	5	0.9	1
	16100RS	●	**100**	**84**	70	50	**32**	14.4	8.5	32	46	—	6	1.3	3
	16125RS	●	**125**	**109**	80	63	**40**	16.4	9.5	29	52	29	6	2.6	1
Inch	**RSX 16080R**	●	***80**	**64**	55	50	**25.4**	9.5	6.0	25	20	13	5	0.9	1
	16100R	●	***100**	**84**	70	63	**31.75**	12.7	8.0	32.5	46	28	6	1.8	2
	16125R	●	**125**	**109**	80	63	**38.1**	15.9	10.0	35.5	55	30	6	2.7	1

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 16063RS**	●	**63**	**47**	50	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	16080RS	●	***80**	**64**	55	50	**27**	12.4	7.0	25	20	14	6	0.8	1
	16100RS	●	**100**	**84**	70	50	**32**	14.4	8.5	32	46	—	7	1.3	3
	16125RS	●	**125**	**109**	80	63	**40**	16.4	9.5	29	52	29	8	2.5	1
	16160RS		**160**	**144**	130	63	**40**	16.4	9.5	29	88	—	10	4.8	5
Inch	**RSXF 16080R**	●	***80**	**64**	55	50	**25.4**	9.5	6.0	25	20	13	6	0.8	1
	16100R	●	***100**	**84**	70	63	**31.75**	12.7	8.0	32.5	46	28	7	1.7	2
	16125R	●	**125**	**109**	80	63	**38.1**	15.9	10.0	35.5	55	30	8	2.6	1
	16160R		**160**	**144**	100	63	**50.8**	19.0	11.0	38	72	—	10	4.3	4

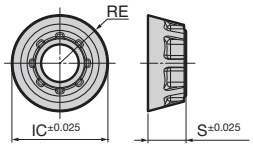
Inserts are sold separately. Take note of the cutter mounting size (DCB) when selecting a cutter.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide								
Process	High-speed/Light			MS	MS					
	General-purpose	PM		MS	MS	MS				
	Roughing	PM	K			MS				
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 1606M0EN-G		●	●	●	●	●	16	8.0	6.5	1
1606M0EN-H		●	●	●	●	●	16	8.0	6.5	1

Fig 1


● Cross Section of Cutting Edge


G Type


H Type

Precautions for Mounting Inserts H164

Identification Code

RSX Series | **F** Extra Fine Pitch | **16** Insert Size | **063** Cutter Dia. | **R** Feed Direction | **S** Metric Body

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
		N·m				
RSX(F) 16063RS RSX(F) 16080R(S) to RSX(F) 16125R(S)	BFTX0511IP	5.0	—	HPL2025	TRB20IP	SUMI-P
RSXF 16160R(S)	BFTX0511IP	5.0	TRDR20IP	—	—	SUMI-P

Recommended Cutting Conditions

ISO	Work Material			Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel			180 to 280HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
			Martensitic	200 to 330HB	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
			Duplex (Austenitic/Ferritic)	230 to 270HB	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 350HB	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	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10-**0.20**-0.30	

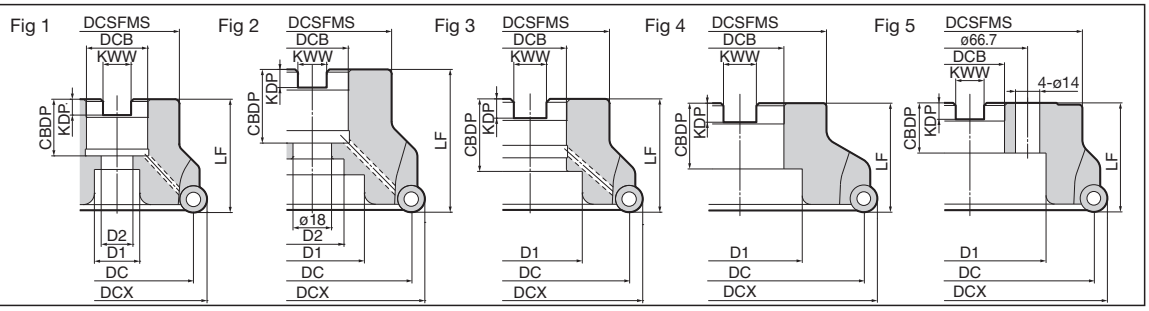
Note: The cutting conditions are guidelines. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

RSX(F) 20000R(S) Type

P Steel M Stainless Steel K Cast Iron S Exotic Alloy

Rake Angle		
Radial	-5°	
Axial	10°	

10mm



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX 20080RS**	●	***80**	**60**	55	50	**27**	12.4	7	22	20	14	4	0.9	1
	20100RS	●	**100**	**80**	70	50	**32**	14.4	8	32	46	—	5	1.8	3
	20125RS	●	**125**	**105**	80	63	**40**	16.4	9	29	52	29	6	2.6	1
	20160RS	●	**160**	**140**	130	63	**40**	16.4	9	29	90	—	7	4.7	5
Inch	**RSX 20080R**	●	***80**	**60**	55	50	**25.4**	9.5	6	25	20	14	4	0.9	1
	20100R	●	**100**	**80**	70	63	**31.75**	12.7	8	32	46	27	5	1.8	2
	20125R	●	**125**	**105**	80	63	**38.1**	15.9	10	35.5	55	30	6	2.6	1
	20160R	●	**160**	**140**	100	63	**50.8**	19.1	11	38	72	—	7	4.2	4

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF 20080RS**	●	***80**	**60**	55	50	**27**	12.4	7	22	20	14	5	0.9	1
	20100RS	●	**100**	**80**	70	50	**32**	14.4	8	32	46	—	6	1.8	3
	20125RS	●	**125**	**105**	80	63	**40**	16.4	9	29	52	29	7	2.6	1
	20160RS	●	**160**	**140**	130	63	**40**	16.4	9	29	90	—	9	4.6	5
Inch	**RSXF 20080R**	●	***80**	**60**	55	50	**25.4**	9.5	6	25	20	14	5	0.9	1
	20100R	●	***100**	**80**	70	63	**31.75**	12.7	8	32	46	27	6	1.8	2
	20125R	●	**125**	**105**	80	63	**38.1**	15.9	10	35.5	55	30	7	2.6	1
	20160R	●	**160**	**140**	100	63	**50.8**	19.1	11	38	72	—	9	4.1	4

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

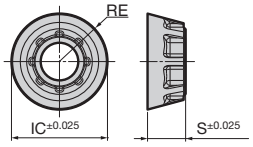
For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide								
Process	High-speed/Light			MS	MS					
	General-purpose	PM		MS	MS	MS				
	Roughing	PM	K			MS				
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
RDET 2006M0EN-G		●	●	●	●	●	20	10.0	6.5	1
2006M0EN-H		●	●	●	●	●	20	10.0	6.5	1

Fig 1



● Cross Section of Cutting Edge

Precautions for Mounting Inserts H164

Identification Code

RSX Series — **F** Extra Fine Pitch — **20** Insert Size — **080** Cutter Dia. — **R** Feed Direction — **S** Metric Body

Parts

Cat. No.	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
RSX(F) 20080R(S) to RSX(F) 20125R(S)	BFTX0615IP	5.0	—	HPL2025	TRB25IP	SUMI-P
RSX(F) 20160R(S)	BFTX0615IP	5.0	TRDR25IP	—	—	SUMI-P

Recommended Cutting Conditions

ISO	Work Material		Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel		180 to 280HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel		180 to 280HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel Cr-based	Ferritic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
		Martensitic	200 to 330HB	80-**120**-180	0.15-**0.25**-0.35	ACM300
	Stainless Steel Cr-Ni-based	Austenitic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
		Duplex (Austenitic/Ferritic)	230 to 270HB	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 350HB	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	
		α + β Alloy	(Rm1050)	40-**50**-60	0.10-**0.20**-0.30	

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)

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)

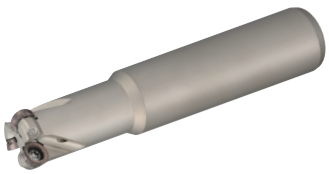
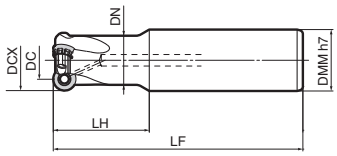


Fig 1



Body (Standard Pitch) Applicable Insert IC = 8mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSX 08020ES	●	**20**	**12**	20	16.9	30	100	2	0.3	1
08025ES	●	**25**	**17**	25	21.9	40	120	3	0.4	1

Body (Extra Fine Pitch) Applicable Insert IC = 8mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSXF 08020ES	●	**20**	**12**	20	16.9	30	100	3	0.3	1
08025ES	●	**25**	**12**	25	21.9	40	120	4	0.4	1

Body (Standard Pitch) Applicable Insert IC = 10mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSX 10025ES	●	**25**	**15**	25	20.3	50	130	2	0.4	1
10032ES	●	**32**	**22**	32	27.1	50	130	3	0.7	1

Body (Extra Fine Pitch) Applicable Insert IC = 10mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSXF 10025ES	●	**25**	**15**	25	20.3	50	130	3	0.4	1
10032ES	●	**32**	**22**	32	27.1	50	130	4	0.7	1

Body (Standard Pitch) Applicable Insert IC = 12mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSX 12032ES	●	**32**	**20**	32	25.6	50	130	2	0.7	1

Body (Extra Fine Pitch) Applicable Insert IC = 12mm Type

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
RSXF 12032ES	●	**32**	**20**	32	25.6	50	130	3	0.7	1

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide				
Process	High-speed/Light			MS	MS	
	General-purpose	PM		MS	MS	MS
	Roughing	PM	K			MS

Cat. No.	ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Corner Radius RE	Thickness S	Applicable Cutter	Fig
RDET 0803M0EN-G	●	●	●	●	●	8	4.0	3.18	RSX(F)08000ES	1
0803M0EN-H	●	●	●	●	●					1
RDET 10T3M0EN-G	●	●	●	●	●	10	5.0	3.97	RSX(F)10000RS/ES	1
10T3M0EN-H	●	●	●	●	●					1
RDET 1204M0EN-G	●	●	●	●	●	12	6.0	4.76	RSX(F)12000RS/ES	2
1204M0EN-H	●	●	●	●	●					2

Fig 1

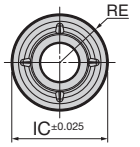
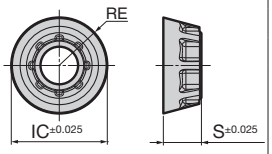


Fig 2



● Cross Section of Cutting Edge

Precautions for Mounting Inserts H164

Identification Code

RSX Series — **F** Extra Fine Pitch — **10** Insert Size — **025** Cutter Dia. — **ES** Shank Type

Parts

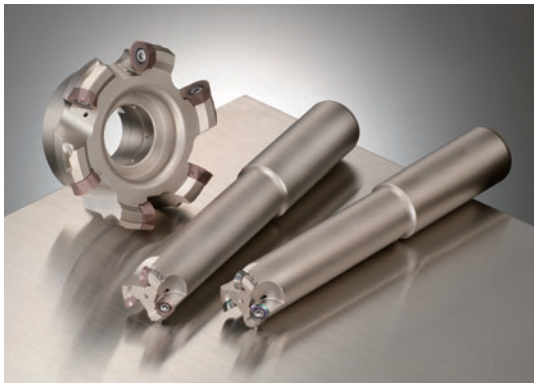
Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
RSX(F)08000ES	BFTX02506IP	1.5	TRDR08IP	SUMI-P
RSX(F)10000ES	BFTX03584IP	3.0	TRDR15IP	SUMI-P
RSX(F)12000ES	BFTX0409IP	3.0	TRDR15IP	SUMI-P

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	Carbon Steel			180 to 280HB	100-**160**-200	0.20-**0.40**-0.60	ACP200
	Alloy Steel			180 to 280HB	100-**140**-180	0.20-**0.30**-0.40	ACP200
M	Stainless Steel	Cr-based	Ferritic	200HB	150-**180**-200	0.15-**0.25**-0.35	ACM300
			Martensitic	200 to 330HB	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
			Duplex (Austenitic/Ferritic)	230 to 270HB	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 350HB	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	
			α + β Alloy	(Rm1050)	40- **50** - 60	0.10-**0.20**-0.30	

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.

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

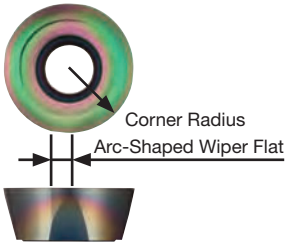
- Durable body with special surface treatment offers significantly improved tool life and reliability.
- Superb chatter resistance with anti-vibration edge design.
- All sizes come with coolant holes preventing chip build-up and jamming.
- Sturdy screw clamp with Torx Plus screw insert mounting ensures 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

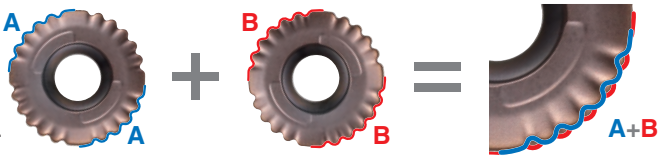
- Good surface roughness with arc-shaped wiper flat
- Sharp corners
- Four-cornered insert



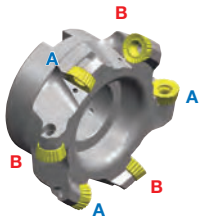
Surfing Insert QPMT ○○○○○○ PPER-R

- 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

Modular Type H225

	Cat. No.	Max. Dia. (mm)	Number of Teeth
Shell Type	**WRCX(F) 12000R(S)**	ø40 to ø80	4 to 6
	WRCX(F) 16000R(S)	ø63 to ø100	3 to 6
	WRCX 20000R(S)	ø125 to ø160	5 to 6
Shank Type	**WRCX 08000E**	ø20 to ø25	2 to 3
	WRCX 10000E	ø25 to ø32	2 to 3
	WRCX 16000E	ø40 to ø50	2 to 3
Modular Type	**WRCX 08000M**	ø20 to ø25	2 to 3
	WRCX 10000M	ø25 to ø32	2 to 3
	WRCX 12000M	ø40	4

● Maximum Allowable Spindle Speed when Milling Non-Ferrous Metal (Unit: min⁻¹)

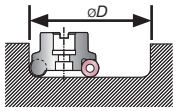
Max. Dia. DCX(mm)	Insert Cat. No.		
	QPET10·····-S	QPET12·····-S	QPET16·····-S
25	28,000		
32	25,000		
40		22,000	15,000
50		20,000	14,000
63		18,000	13,000
80		16,000	12,000
100			10,000

Even if the speed used is within the maximum allowable spindle 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 spindle speed and increase the speed gradually while checking for abnormalities.

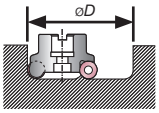
■ Usage Precautions

● Precautions for Helical Milling

Standard Diameter

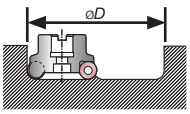


Standard Diameter or Below



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

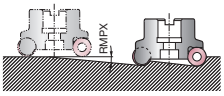
Standard Diameter or Above



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

● Precautions for Ramping

● Use at the RMPX below or lower.



● Recommended Values for Helical Milling and Ramping

Insert Cat. No.	Helical Milling (Dimensions in mm)				Ramping
	Max. Dia.	Machining Dia. øD			Max. Ramp Angle
	DCX	Min.	Standard Diameter	Max.	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'

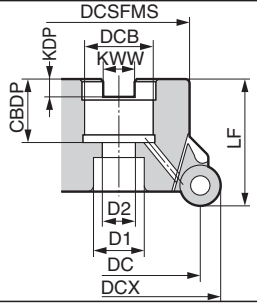
WRCX(F)12000 Type

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle	Radial	0°
	Axial	-3°

6mm

Fig 1



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX 12040RS**	●	**40**	**28**	36	40	**16**	8.4	5.6	18	13.5	9	4	0.2	1
	12050RS	●	**50**	**38**	40	40	**22**	10.4	6.3	20	18	11	4	0.2	1
	12063RS	●	**63**	**51**	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	12080RS	●	***80**	**68**	55	50	**27**	12.4	7.0	25	20	13.5	6	0.9	1

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCXF 12050RS**	●	**50**	**38**	40	40	**22**	10.4	6.3	20	18	11	5	0.2	1
	12063RS	●	**63**	**51**	40	40	**22**	10.4	6.3	20	18	11	6	0.4	1

Inserts are sold separately.

For securing the ø80 mm cutters to the arbors marked with *, use a JIS B1176 hex socket bolt (M12 x 30 to 35 mm).

Insert (Common)

Dimensions (mm)

Grade Classification		Coated Carbide					Cermented Carbide	DLC				
Process	High-speed/Light	P			K		N	N				
	General-purpose		PM	PM	K			N				
	Roughing		PM	PM		K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig
General-purpose	**QPMT 120440 PPEN**		●	●	●	●	—	—	12	4.0	4.76	1
	120440 PPEN-H*		●	●	●	●	—	—	12	4.0	4.76	1
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

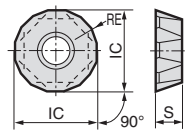


Fig 2 Non-Ferrous Metals

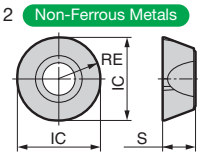
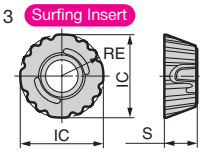


Fig 3 Surfing Insert



Parts

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

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

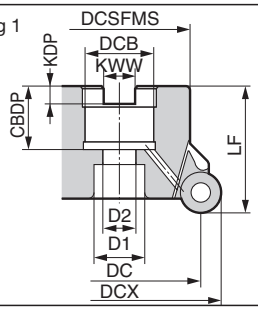
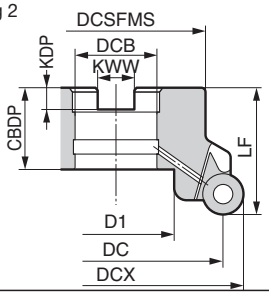


Fig 2



Body (Standard Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX 16063RS**	●	**63**	**47**	50	40	**22**	10.4	6.3	20	18	11	3	0.4	1
	16080RS	●	***80**	**64**	55	50	**27**	12.4	7.0	25	20	13.5	4	0.8	1
	16100RS	●	**100**	**84**	70	50	**32**	14.4	8.5	32	46	—	5	1.2	2
Inch	**16080R**	●	**80**	**64**	55	50	**25.4**	9.5	6.0	25	20	13	4	0.8	1
	16100R	●	**100**	**84**	70	63	**31.75**	12.7	8.0	32	46	17	5	1.4	1

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCXF 16063RS**	●	**63**	**47**	50	40	**22**	10.4	6.3	20	18	11	4	0.4	1
	16080RS	●	***80**	**64**	55	50	**27**	12.4	7.0	25	20	13.5	5	0.7	1
	16100RS	●	**100**	**84**	70	50	**32**	14.4	8.5	32	46	—	6	1.2	2

Inserts are sold separately.

For mounting the ø80 and ø100mm sized cutters marked with * to an arbor, use a JIS B1176 hex socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					Cemented Carbide	DLC				
Process	High-speed/Light	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
General-purpose	**QPMT 160660 PPEN**		●	●	●	●	—	—	16	6.0	6.5	1
	160660 PPEN-H*1		●	●	●	●	—	—	16	6.0	6.5	1
Anti-Vibration*2	**QPMT 160608 PPEN**		●	●	●	●	—	—	16	0.8	6.5	1
	160608 PPEN-CP		●	●	●	●	—	—	16	0.8	6.5	2
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

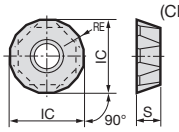


Fig 2 (CP Type)

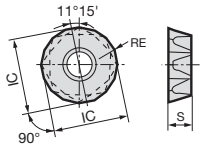


Fig 3 Non-Ferrous Metals

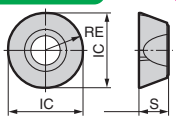
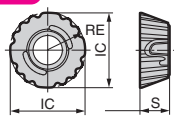


Fig 4 Surfing Insert



*1 -H at the end indicates strong cutting edge type.

*2 For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Only even numbers of cutting edges are usable.

Parts

Flat Insert Screw		Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seizure Cream
				
BFTX0511IP	5.0	HPL2025	TRB20IP	SUMI-P

Recommended Cutting Conditions

Diameter ø40 to 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 N Aluminum Alloy

Rake Angle		
Radial	0°	
Axial	-3°	

10mm

Fig 1

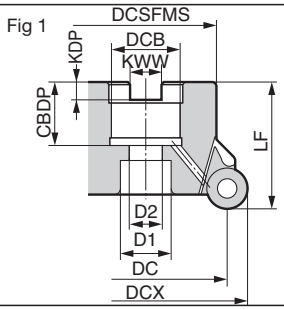
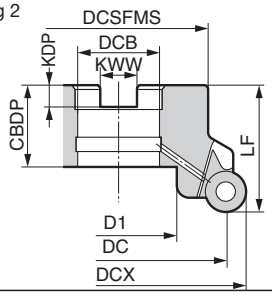


Fig 2



Body

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**WRCX 20125R**	●	**125**	**105**	80	63	**38.1**	15.9	10.0	35.5	55	30	5	2.3	1
	20160R	●	**160**	**140**	100	63	**50.8**	19.1	11.0	38	72	—	6	4.0	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide					Cemented 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
General-purpose	**QPMT 200670 PPEN**		●	●	●	●	—	—	20	7.0	6.5	1
	200670 PPEN-H*1		●	●	●	●	—	—	20	7.0	6.5	1
Anti-Vibration*2	**QPMT 200608 PPEN**		●	●	●	●	—	—	20	0.8	6.5	1
	200608 PPEN-CP		●	●	●	●	—	—	20	0.8	6.5	2
Surfing	**QPMT 2006100 PPER-R**		●	●			—	—	20	10.0	6.5	3

Fig 1

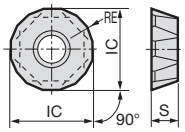


Fig 2 (CP Type)

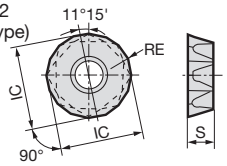
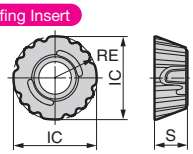


Fig 3 Surfing Insert



*1 -H at the end indicates strong cutting edge type.

*2 For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Parts

Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench		Anti-seizure Cream
				Handle Grip	Bit	
		N·m				
WRCX 20125R	BFTX0615IP	7.5	—	HPL2025	TRB25IP	SUMI-P
WRCX 20160R	BFTX0615IP	7.5	TRDR25IP	—	—	

Recommended Cutting Conditions

Diameter ø100 to ø160mm

ISO	Work Material	Hardness	Cutting Speed 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

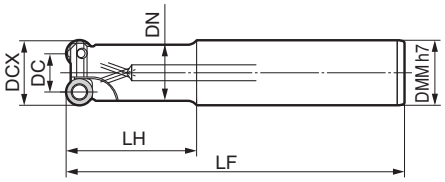
P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle		
	Radial	-3 to 0°
	Axial	-3°

4mm (08000E Type) | 5mm (10000E Type) | 8mm (16000E Type)

Modular Type H225

Fig 1



Body (Applicable Insert IC = 8mm Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX 08020ES	●	20	12	20	18	50	130	2	0.2	1
08020EM	●	20	12	20	18	100	180	2	0.3	1
08020EL		20	12	20	18	130	250	2	0.5	1
WRCX 08025ES	●	25	17	25	21	50	130	3	0.4	1
08025EM	●	25	17	25	21	100	180	3	0.5	1
08025EL		25	17	25	21	130	250	3	0.7	1

Body (Applicable Insert IC = 10mm Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX 10025ES	●	25	15	25	21	50	130	2	0.4	1
10025EM	●	25	15	25	21	100	180	2	0.5	1
10025EL		25	15	25	21	130	250	2	0.7	1
WRCX 10032ES	●	32	22	32	28	50	130	3	0.7	1
10032EM	●	32	22	32	28	120	200	3	1.0	1
10032EL		32	22	32	28	180	300	3	1.5	1

Body (Applicable Insert IC = 16mm Type)

Dimensions (mm)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Diameter DN	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX 16040ES	●	40	24	32	31.3	50	170	2	0.9	1
16040EM	●	40	24	32	31.3	50	250	2	1.4	1
WRCX 16050ES	●	50	34	32	40.8	50	170	3	1.0	1
16050EM	●	50	34	32	40.8	50	250	3	1.5	1

Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
WRCX08000E Type	BFTX02506IP	1.5	TRDR08IP	SUMI-P
WRCX10000E Type	BFTX03584IP	3.0	TRDR15IP	
WRCX16000E Type	BFTX0511IP	5.0	TRDR20IP	

Recommended Cutting Conditions

Outer Diameter ø20 to ø32 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	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.

Outer 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 Classification		Coated Carbide					Cermented 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	QPMT 080330 PPEN		●	●	●	●	—	—	8	3.0	3.18	1	WRCX08000E Type
	080330 PPEN-H*1		●	●	●	●	—	—	8	3.0	3.18	1	
	QPMT 10T335 PPEN		●	●	●	●	—	—	10	3.5	3.97	1	WRCX10000E Type
	10T335 PPEN-H*1		●	●	●	●	—	—	10	3.5	3.97	1	
	QPMT 160660 PPEN		●	●	●	●	—	—	16	6.0	6.5	1	WRCX16000E Type
	160660 PPEN-H*1		●	●	●	●	—	—	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	
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

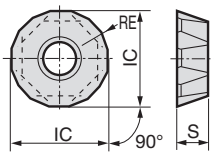


Fig 2 (CP Type)

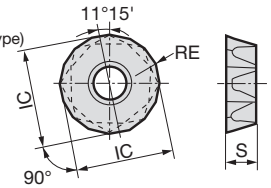


Fig 3 Non-Ferrous Metals

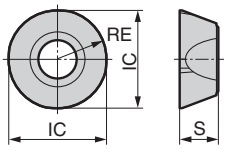
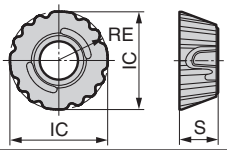


Fig 4 Surfing Insert



*1 -H at the end indicates strong cutting edge type. *2 For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

N·m Recommended Tightening Torque (N·m)

■ General Features

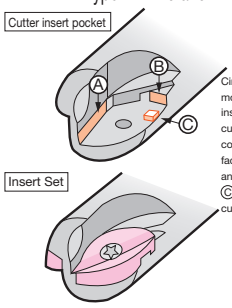
A lineup of ø20 to ø50mm ballnose shank type cutter models for 3D profile roughing of die molds and machine parts.

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

● WBMR Type Anti-Rotation Mechanism

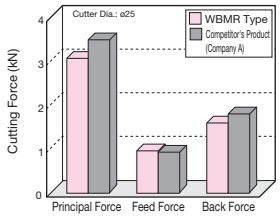


WBMR2000
(ø20 to ø50mm)

WBMR2000L
(ø20 to ø50mm)

■ Performance

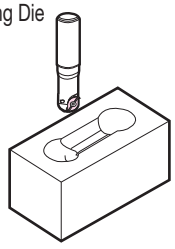
● Cutting Force



Work Material: S50C
Cutting Conditions
(Shoulder Milling, Down Cutting)
v_c = 200m/min
f_z = 0.15mm/t
a_p = 5mm
a_e = 5mm

■ Application Examples

● Cold Molding Die (SKD11)



Evaluation of 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
a_p = 0.3 to 2mm
Insoluble Cutting Oil

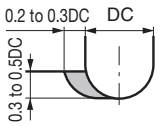
■ Spare Parts

Applicable Cutter ☐ indicates S/M/L Type	Part Name	Short Edge Type	Long Edge Type (-L)		Anti-seizure Cream
		For Tip Insert	For Tip Insert	For Peripheral Insert	
WBMR2200☐(L)	Flat Insert Screw	BFTX0307N (N·m) 2.0			SUMI-P
	Wrench	TRX10			
WBMR2250☐(L)	Flat Insert Screw	BFTX0409N (N·m) 3.0			
	Wrench	TRD15			
WBMR2300☐(L)	Flat Insert Screw	BFTX0511N (N·m) 5.0		BFTX0407N (N·m) 3.0	
	Wrench	TRD20		TRD15	
WBMR2400☐(L)	Flat Insert Screw	BFTX0619N (N·m) 7.5		BFTX0409N (N·m) 3.0	
	Wrench	TRD25		TRD15	
WBMR2500☐(L) WBMR2500☐(L)-C	Flat Insert Screw	BFTX0619N (N·m) 7.5		BFTX0409N (N·m) 3.0	
	Wrench	TRD25		TRD15	

Recommended Cutting Conditions

(A) Tip insert only

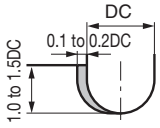
ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-**150**-200	0.10-**0.20**-0.30	ACP200
P	Alloy Steel	180 to 280 HB	70-**100**-120	0.10-**0.20**-0.30	ACP200
M	Stainless Steel, Die 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
P	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.

WBMR 2000 Type

P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	—
	Axial	-10°

20 to 47 mm

Fig 1

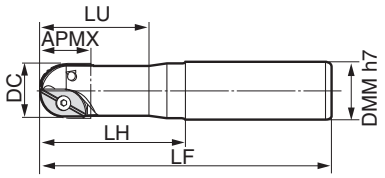
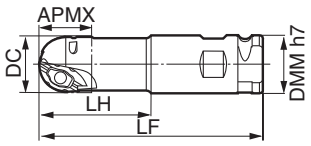


Fig 2



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	Length LU	Overall Length LF	Fig
WBMR 2200S	●	**20**	25	20	60	40	140	1
2200M	●	**20**	25	20	60	40	200	1
2200L	●	**20**	25	20	80	40	250	1
WBMR 2250S	●	**25**	32	23	70	50	150	1
2250M	●	**25**	32	23	73	50	220	1
2250L	●	**25**	32	23	100	50	300	1
WBMR 2300S	●	**30**	32	28	80	60	160	1
2300M	●	**30**	32	28	85	60	240	1
2300L	●	**30**	32	28	120	60	350	1
WBMR 2400S	●	**40**	42	35	100	—	200	1
2400M	●	**40**	42	35	180	—	280	1
2400L	●	**40**	42	35	250	—	350	1
WBMR 2500S	●	**50**	42	47	100	—	200	1
2500M	●	**50**	42	47	180	—	280	1
2500L	●	**50**	42	47	250	—	350	1
WBMR 2500S-C	●	**50**	50.8	47	100	—	200	2
2500M-C	●	**50**	50.8	47	180	—	280	2
2500L-C	●	**50**	50.8	47	250	—	350	2

Inserts are sold separately.

Insert

Dimensions (mm)

Fig 1

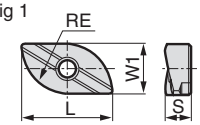


Fig 2

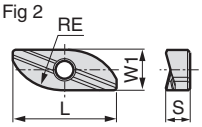


Fig 3

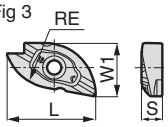
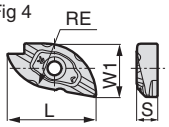


Fig 4



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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Length L	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Cutter	Remarks
ZNMT 1804100-C		●	●		●	18.00	9.76	4.76	10	1	WBMR 2200□	· Tip inserts are used in combination according to Fig 1 & 2.
2004100-S		●	●		●	20.00	7.50	4.37	10	2		
ZNMT 2205125-C		●	●		●	22.50	12.20	5.70	12.5	1	WBMR 2250□	· Tip inserts are used in combination according to Fig 1 & 2.
2305125-S		●	●		●	23.00	9.38	5.56	12.5	2		
ZNMT 2706150-C		●	●		●	27.00	14.64	6.75	15	1	WBMR 2300□	· Tip inserts are used in combination according to Fig 1 & 2.
2806150-S		●	●		●	28.00	11.25	6.35	15	2		
ZNMT 3608200		●	●		●	36.00	19.50	8.65	20	3	WBMR 2400□	· Use two of the items shown in Fig 3 as the tip inserts.
ZNMT 4310250		●	●		●	43.00	25.70	10.15	25	3	WBMR 2500□	· Use two of the items shown in Fig 3 or Fig 4 (nicked) as the tip inserts.
4310250-N		●	●		●	43.00	25.70	10.15	25	4		

Parts H175 | Recommended Cutting Conditions H175

WBMR 2000L Type

P Steel M Stainless Steel K Cast Iron

Rake Angle	Radial	—
	Axial	-10°

30 to 69 mm

Fig 1

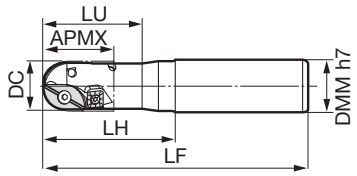
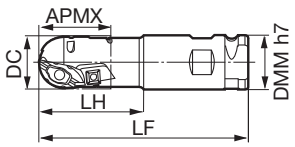


Fig 2



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	Length LU	Overall Length LF	Fig
WBMR 2200SL	●	**20**	25	30	60	40	140	1
2200ML	●	**20**	25	30	60	40	200	1
2200LL	●	**20**	25	30	80	40	250	1
WBMR 2250SL	●	**25**	32	38	70	50	150	1
2250ML	●	**25**	32	38	73	50	220	1
2250LL	●	**25**	32	38	100	50	300	1
WBMR 2300SL	●	**30**	32	42	80	60	160	1
2300ML	●	**30**	32	42	85	60	240	1
2300LL	●	**30**	32	42	120	60	350	1
WBMR 2400SL	●	**40**	42	50	100	—	200	1
2400ML	●	**40**	42	50	180	—	280	1
2400LL	●	**40**	42	50	250	—	350	1
WBMR 2500SL	●	**50**	42	69	100	—	200	1
2500ML	●	**50**	42	69	180	—	280	1
2500LL	●	**50**	42	69	250	—	350	1
WBMR 2500SL-C	●	**50**	50.8	69	100	—	200	2
2500ML-C	●	**50**	50.8	69	180	—	280	2
2500LL-C	●	**50**	50.8	69	250	—	350	2

Inserts are sold separately.

Insert

Dimensions (mm)

Fig 1

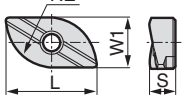


Fig 2

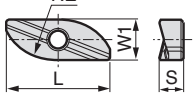


Fig 3

Fig 4

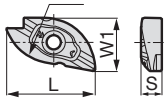
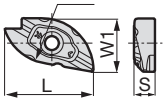


Fig 5

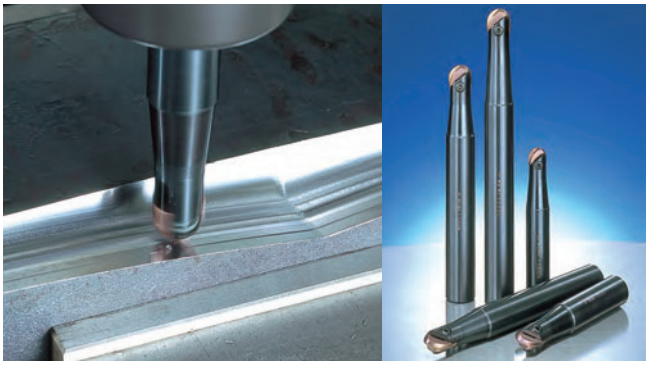


Grade Classification		Coated Carbide				
Process	High-speed/Light	P			K	
	General-purpose		P M	P M	K	
	Roughing		P M	P M		K

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Length L	Width W1	Thickness S	Corner Radius RE	Fig	Applicable Milling Cutters	Remarks
ZNMT 1804100-C		●	●		●	18.00	9.76	4.76	10	1	WBMR 2200□L	· Tip inserts are used in combination according to Fig 1 & 2. · Peripheral 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 H175 Recommended Cutting Conditions H175

WBMF Type



■ General Features

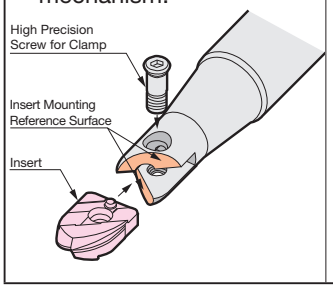
A lineup of ø10 to ø30mm ballnose shank type cutter models for 3D profile finishing of die molds and machine parts.

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.

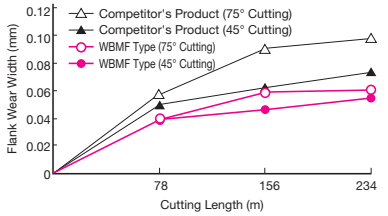
● WBMF Type clamp mechanism.



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

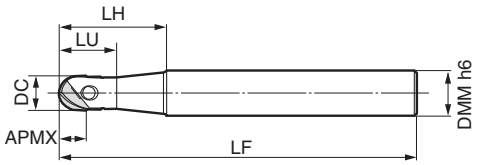
WBMF 1000 Type

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	Length LU	Overall Length LF	Fig
WBMF 1100S	●	**10**	16	9	30	17	100	1
1100M	●	**10**	16	9	35	17	130	1
1100L	●	**10**	16	9	50	17	180	1
1120S	●	**12**	16	10.5	40	19.5	110	1
1120M	●	**12**	16	10.5	40	19.5	150	1
1120L	●	**12**	16	10.5	60	19.5	200	1
1160S	●	**16**	20	12	50	25.5	130	1
1160M	●	**16**	20	12	50	25.5	180	1
1160L	●	**16**	20	12	70	25.5	220	1
1200S	●	**20**	25	15	60	32	140	1
1200M	●	**20**	25	15	60	32	200	1
1200L	●	**20**	25	15	80	32	250	1
1250S	●	**25**	32	18.5	70	36	150	1
1250M	●	**25**	32	18.5	73	36	220	1
1250L	●	**25**	32	18.5	100	36	300	1
1300S	●	**30**	32	22.5	80	43	160	1
1300M	●	**30**	32	22.5	85	43	240	1
1300L	●	**30**	32	22.5	120	43	350	1

Inserts are sold separately.

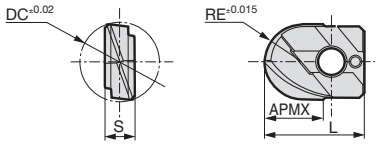
Insert

Dimensions (mm)

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

Cat. No.	ACZ120	Dia. DC	Length L	Max. Depth of Cut APMX	Thickness S	Corner Radius RE	Applicable Cutter	Fig
ZPGU 1551050	●	10	15.6	9	5.1	5.0	WBMF 1100	1
1856060	●	12	18	10.5	5.6	6.0	WBMF 1120	1
2061080	●	16	20.5	12	6.1	8.0	WBMF 1160	1
2471100	●	20	24.5	15	7.1	10.0	WBMF 1200	1
2876125	●	25	28.5	18.5	7.6	12.5	WBMF 1250	1
3486150	●	30	34.4	22.5	8.6	15.0	WBMF 1300	1

Fig 1



Parts

Applicable Cutter	Precision Screw	N·m	Wrench	Anti-seizure Cream
WBMF1100	BFTG0408F	3.0	TRD15	SUMI-P
WBMF1120	BFTG0409F			
WBMF1160	BFTG0513F	5.0	TRD20	
WBMF1200	BFTG0617F	7.5	TRD25	
WBMF1250	BFTG0621F			
WBMF1300	BFTG0825F			

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed 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.

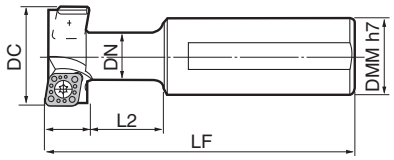
TSE Type

P Steel 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	Overall Length LF	Number of Teeth	Fig
TSE 2125	●	**21**	10.5	25	9	20	109	2	1
2525	●	**25**	12.5	25	11	21	112	2	1
3232	●	**32**	16.5	32	14	26	120	2	1
4032	●	**40**	20.5	32	18	32	130	2	1
5032	●	**50**	26.5	32	22	38	140	4	1

Inserts are sold separately.

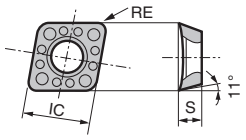
Insert

Dimensions (mm)

Grade Classification		Coated Carbide	Cemented Carbide	
Process	High-speed/Light			
	General-purpose	PM	PK	K
	Roughing			

Cat. No.	AC630M	A30	G10E	Inscribed Circle IC	Thickness S	Corner Radius RE	Applicable Cutter	Fig
CPMT 060204N-US	●	●	●	6.35	2.38	0.4	TSE 2125	1
080308N-US	●	●	●	7.938	3.18	0.8	TSE 2525	1
09T308N-US	●	●	●	9.525	3.97	0.8	TSE 3232	1
CPMH 120408N-US	●	●	●	12.7	4.76	0.8	TSE 4032 TSE 5032	1

Fig 1



Parts

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
		N·m		
TSE2125	BFTX02506N	1.5	TRX08	SUMI-P
TSE2525	BFTX0307N	2.0	TRX10	
TSE3232	BFTX0407N	3.0	TRX15	
TSE4032 TSE5032	BFN0511T	5.0	TRX20	

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed 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)

WFXC Type

Expansion

■ General Features

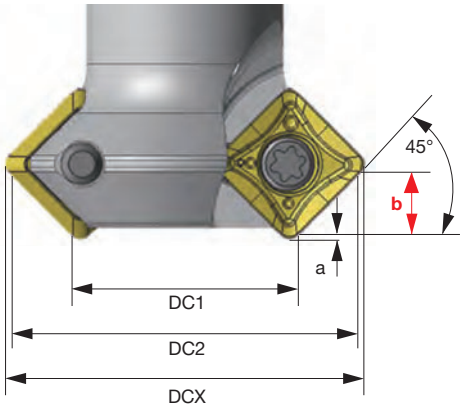
The SEC-WaveMill WFXC Type is a chamfering tool that uses a WFX series insert. A wide variety of grades supports various work materials.
In addition, our new general-purpose grade ACU2500, which is applicable to any work material and a wide variety processes, is now available.

■ Precautions for Use

Chamfering tools use a straight cutting edge that enables the chamfering range to be changed depending on the corner radius (RE) of the insert mounted to the body.
Chamfer 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. Chamfer Dia.	Max. Chamfer Dia.	Minimum Depth	Maximum Depth	Max. 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



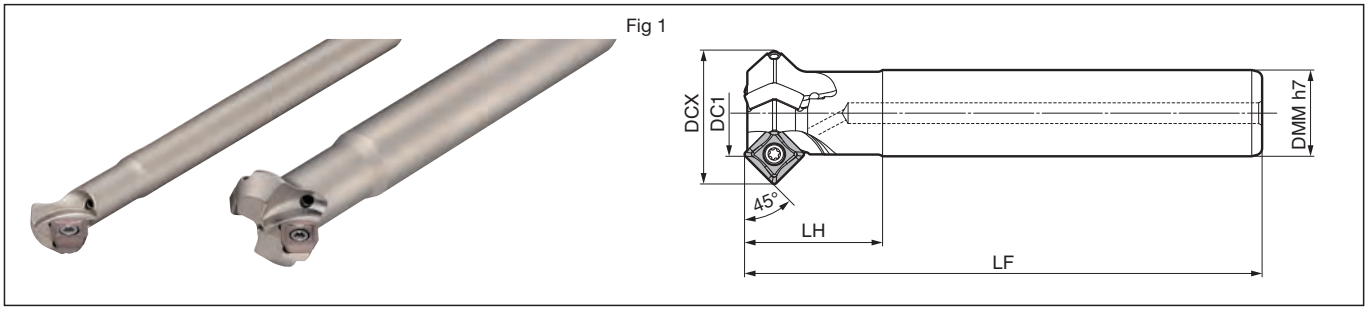
WFXC 08000E Type

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

Expansion

Rake Angle	Radial	0°
	Axial	0°

45°



Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Min. Chamfer Dia. DC1	Max. Dia. DCX	Overall Length LF	Head LH	Shank DMM	Number of Teeth	Weight (kg)	Fig
WFXC 08008E	●	8	17.5	120	30	10	1	0.1	1
08016E	●	16	25.5	120	30	16	2	0.2	1

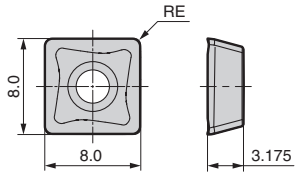
DC1 and DCX dimensions are values with an insert with 0.8 corner radius mounted.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	P M S	P K M	P			K	K		M S		K N	N			
	Medium Cutting	P M S	P K M		P M	P M	K	K		M S	M S		N	P M		
	Roughing	P M S			P M	P M			K		M S			P M		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT 080304PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-L		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
SOMT 080304PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.4	1
080308PZER-G		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—		1.2	1
SOMT 080308PZER-H		●	●	●	●	●	●	●	●	●	●	—	—		0.8	1
080312PZER-H		●		●	●	●		●	●	●	●	—	—		1.2	1
SOET 080304PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.4	1
080308PZER-G		●		●	●	●		●	●	●	●	—	—	●	0.8	1
080312PZER-G		●		●	●	●		●	●	●	●	—	—	●	1.2	1
SOET 080302PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.2	1
080304PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.4	1
080308PZFR-S		—	—	—	—	—	—	—	—	—	—	●	●	—	0.8	1

Fig 1



Precautions for Use H181

Parts

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

Identification Code

WFXC 08 016 E

Series | Insert Size | Dia. | Shank 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
P	Mild Steel	≤ 180HB	180-**265**-350	0.10- **0.15** -0.20
P	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
N	Non-ferrous Metal	—	300-**500**-1,000	0.10- **0.15** -0.20
S	Exotic Alloy	—	30- **50** -80	0.08- **0.13** -0.18

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

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

WFXC 12000E Type

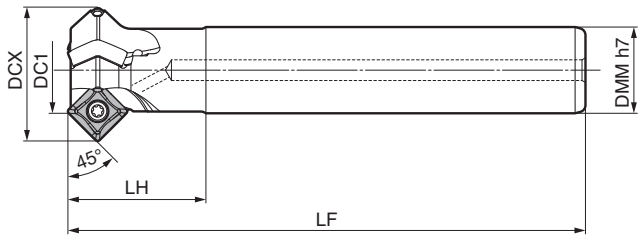
P Steel M Stainless Steel K Cast Iron N Non-Ferrous Metal S Exotic Alloy

Expansion

Rake Angle	Radial	0°
	Axial	0°

45°

Fig 1



Body (Shank Type)

Dimensions (mm)

Cat. No.	Stock	Min. Chamfer Dia. DC1	Max. Dia. DCX	Overall Length LF	Head LH	Shank DMM	Number of Teeth	Weight (kg)	Fig
WFXC 12025E	●	25	41.0	150	40	25	3	0.6	1
12032E	●	32	48.0	150	40	32	3	1.0	1

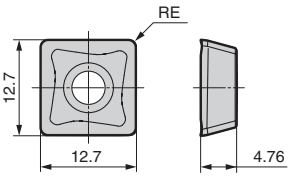
DC1 and DCX dimensions are values with an insert with 0.8 corner radius mounted.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide										Cemented Carbide	DLC	Cermet		
Process	High-speed/Light	K M S	P K M	P			K	K		M S		K N	N			
	Medium Cutting	K M S	P K M		P M	P M	K	K		M S	M S		N	P M		
	Roughing	K M S			P M	P M			K		M S			P		
Cat. No.		ACU2500	XCU2500	ACP100	ACP200	ACP300	XCK2000	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 H181

Parts

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

Identification Code

WFXC 12 025 E

Series | Insert Size | Dia. | Shank 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
P	Mild Steel	≤ 180HB	180-**265**-350	0.10- **0.15** -0.20
P	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
N	Non-ferrous Metal	—	300-**500**-1,000	0.10- **0.15** -0.20
S	Exotic Alloy	—	30- **50** -80	0.10- **0.15** -0.20

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

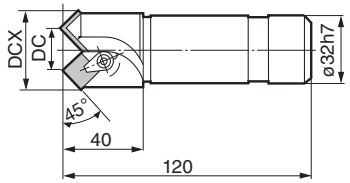
SMC Type

P Steel K Cast Iron

Rake Angle		
	Radial	0°
	Axial	0°

45°

Fig 1



(Figure shows SMC420)

Body

Dimensions (mm)

Cat. No.	Stock	Min. Chamfer Dia. DC	Max. Dia. DCX	Number of Teeth	Diameter to be Chamfered	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

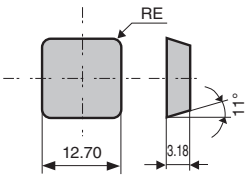
Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		Coated Carbide		Cemented 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	Corner Radius RE	Fig
SPMN 422				●	●	●	●	●	0.8	1
423		●	●		●	●	●		1.2	1
SPG 422				●	●	●	●		0.8	1

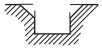
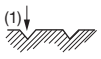
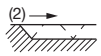
Fig 1



Parts

Clamp Plate	Flat Insert Screw			Wrench	Anti-seizure Cream
		Size	N·m		
CCM6BR	WB616	**M6**	**5.0**	LH030	SUMI-P

Applications

(1) Single Sided	(2) Double Sided	(3) Hole Chamfering	(4) Stepping	(5) Small Plunging, Traverse Cutting	
					

N·m Recommended Tightening Torque (N·m)

M E M O

ALNEX ANX Type

Expansion

■ Features

● **Drastically Reduced Runout Adjustment Time**

Simple screw-fastening structure enables fine adjustments to be made easily

● **Through-Blade Coolant**

Directs coolant supply to the cutting edge and effectively breaks chips

● **Lightweight Aluminum Alloy Body**

Utilizes aluminum alloy to achieve a total weight of less than 1.3kg for a ø125mm cutter with 22 teeth

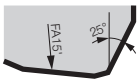
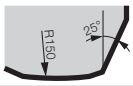
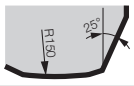
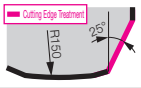
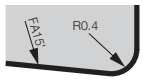
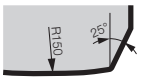
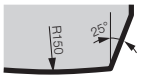
■ Product Range

Type	Cat. No.	Body Material	Max. Diameter (mm)									
			ø25	ø30	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shell	ANXA 16000R (Inch)	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
	ANXA 16000RS	Aluminum Alloy							6 10 14	8 12 18	10 14 22	12 20 28
	ANXS 16000R (Inch)	Steel						6 8 12	6 10 14	8 12 18	10 14 22	
	ANXS 16000RS	Steel				4 6	4 6 9	6 8 12	6 10 14	8 12 18	10 14 22	
Shank	ANXS 16000E	Steel	2	3 4	3 4	4 6	4 6 9					
Modular	ANXS 16000M	Steel	2	3 4	3 4	4 6						

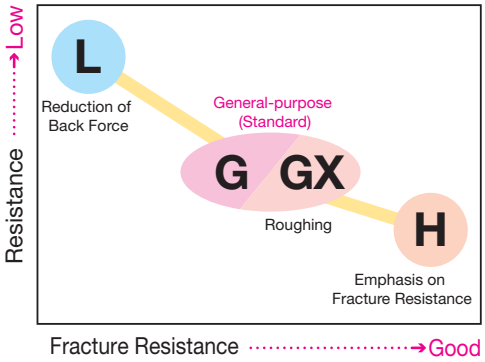
Number in ● shows the number of teeth (expanded items are shown in red with white borders) (Inch) Inch Bore

Modular Type H227

■ Blade Selection Guide

Work Material	N							
Applications	Finishing/ Light Cutting	General-purpose	Roughing		Corner Radius	Corner Radius	Finishing	Mirror Finish/ Burrless Finish
Features	Low Resistance	Standard	Long Edge	High Strength	Corner Radius 0.4	Corner Radius 0.8	Wiper	Wiper
Type	L	G	GX	H	—	—	W	WS
Cutting Edge Shape								
Edge Length (*)	6.0mm	6.0mm	9.0mm	6.0mm	6.0mm	6.0mm	2.0mm	—

■ Blade Selection Reference

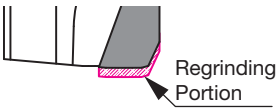


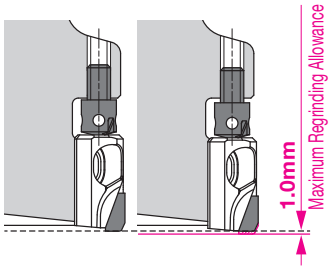
* Edge Length
GX Type 9.0mm

● **Regrinding possible up to 1.0mm. Reduced running costs**

Assuming 0.2mm of regrinding each time, an edge can be used up to 6 times.

(* Peripheral cutting edge cannot be reground.)



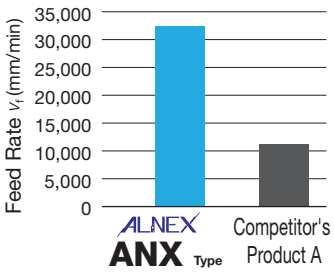


■ High-speed/High-efficiency Cutting

Realizes ultra-high-efficiency machining with V_f = 30,000mm/min

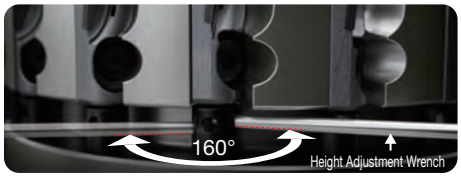
Cutter Diameter ø100mm Comparison

	Spindle Speed min^{-1}	Number of Teeth	Feed Rate V_f (mm/min)
ALNEX ANX Type	18,000	18	32,400
Competitor's Product A	9,500	12	11,400



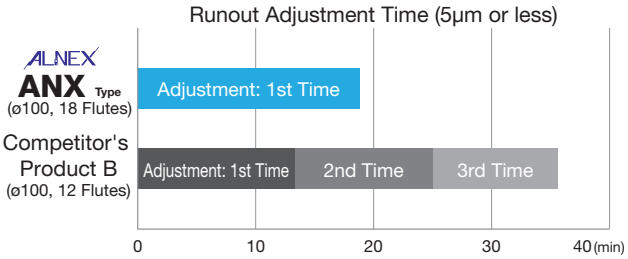
■ Drastically Reduced Runout Adjustment Time

● Simple screw-fastening structure ● Enables fine adjustments to be made easily ● High-rigidity body (reduces deformation due to tightening)



Adjustment is easy thanks to the large movable range of the height adjustment wrench.

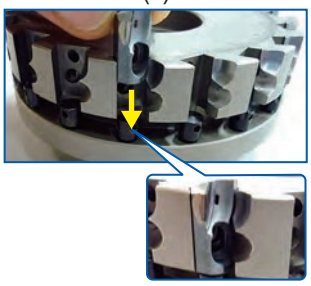
* We recommend keeping cutting edge height variation during runout adjustment to within 5μm.



1st Time Completed, Adjustment Time Reduced

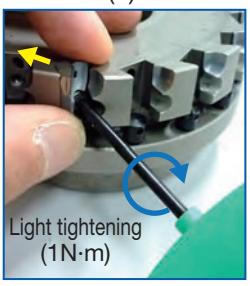
■ Blade Mounting/Runout Adjustment

(1)



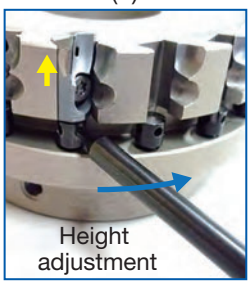
(1) Slide the blade into the cutter teeth groove.

(2)



(2) Lightly tighten (1N·m) the cap screw while pressing the blade against the restraining face.

(3)



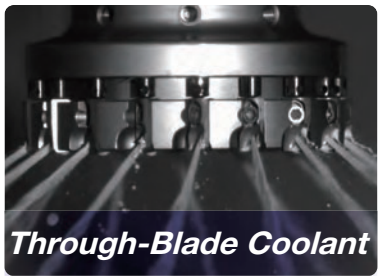
(3) Adjust the blade to the required height by using the dedicated wrench to turn the height adjustment screw.

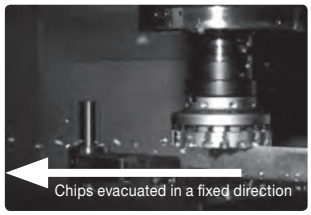
(4)

(4) Perform final tightening (2N·m) of the cap screw.

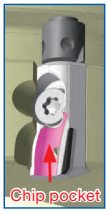
■ Chip Control

Through-Blade Coolant Chip Breaking





Controls the chip's scatter direction.



ALNEX ANX Type

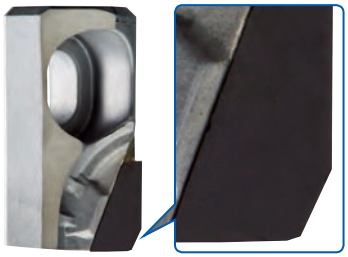
Competitor's Product C

The chip pocket catches the chips and suppresses damage to the body.

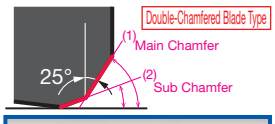
Work Material: ADC12, Cutting Conditions: v_c = 2,500m/min, f_z = 0.05mm/t, a_p = 0.5mm Wet

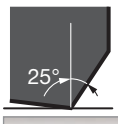
■ Burr Control

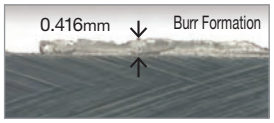
Reduces burrs by using a double-chamfered cutting edge.



Drastically reduces burrs by preventing plastic deformation that causes burrs.







Work Material: A6061 Sheet Metal
Cutting Conditions: v_c = 3,142m/min, f_z = 0.10mm/t
a_p = 0.5mm Dry

New CVD Single Crystal Diamond Wiper Blade

- Wiper blade adopts high-strength single-crystal diamond using Sumitomo Electric Hardmetal's vapour phase synthesis technology
- Sharp cutting edge realizes burr-free, mirror finish surface quality in aluminum alloy machining
- Superior wear resistance maintains cutting edge sharpness for a long time, reducing total tool costs

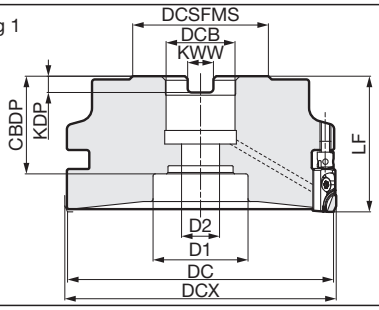
ANXA 16000R(S) Type

Expansion

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	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXA 16080RS06**	●	78	**80**	50	50	**27**	12.4	7	34	35	14	6	0.5	1
	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
	16100RS08	●	98	**100**	50	50	**27**	12.4	7	34	35	14	8	0.8	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
	16125RS10	●	123	**125**	50	50	**27**	12.4	7	34	35	14	10	1.2	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
	16160RS12	●	158	**160**	80	63	**40**	16.4	9	35	52	29	12	2.6	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 16080R06**	●	78	**80**	50	50	**25.4**	9.5	6	34	35	14	6	0.5	1
	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
	16100R08	●	98	**100**	50	50	**25.4**	9.5	6	34	35	14	8	0.8	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
	16125R10	●	123	**125**	50	50	**25.4**	9.5	6	34	35	14	10	1.2	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
	16160R12	●	158	**160**	80	63	**38.1**	15.9	10	42.5	55	30	12	2.3	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 blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).
All aluminum alloy cutter bodies from (DCX) ø80 to ø125 have similar bore diameter (DCB) (metric ø27/inch ø25.4).

Identification Code

ANX	A	16	100	R	S	18
Series	Aluminum Alloy Body	Blade Size	Cutter Dia.	Feed Direction	Metric Body	Number of Teeth

● mark: Standard stocked item (new product/expanded item)

ANXA 16000R(S) Type

Expansion

Blade

Dimensions (mm)

Grade Classification		SUMIDIA	CVD Single-crystal Diamond
Process	High-speed/Light	N	N
	General-purpose	N	
	Roughing	N	

Cat. No.	DA1000	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Flat 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	0.4	Linear	Corner Radius	3
1608R	●	—	6.0	0.8	Linear	Corner Radius	3
1600R-W	●	—	2.0	—	Arc-Shaped	Wiper	4
1600R-WS	—	○	—	—	Arc-Shaped	Wiper	5

Fig 1

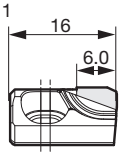


Fig 2

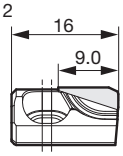


Fig 3

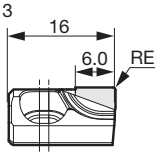
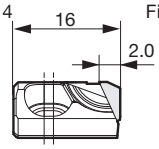
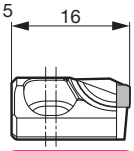


Fig 4



Wiper Blade

Fig 5



Wiper Blade

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	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

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.

Si content of over 12.6%

ISO	Work Material	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.

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXA 16080RS06	20,000
16080RS10	20,000
16080RS14	20,000
16100RS08	18,000
16100RS12	18,000
16100RS18	18,000
16125RS10	16,000
16125RS14	16,000
16125RS22	16,000
16160RS12	14,000
16160RS20	14,000
16160RS28	14,000
ANXA 16080R06	20,000
16080R10	20,000
16080R14	20,000
16100R08	18,000
16100R12	18,000
16100R18	18,000
16125R10	16,000
16125R14	16,000
16125R22	16,000
16160R12	14,000
16160R20	14,000
16160R28	14,000

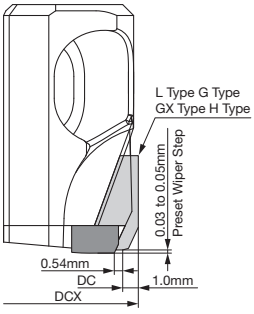
Parts

Applicable Cutter	Cap Screw	N·m	Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	N·m
ANXA 16080R(S)○○	BXA0310IP	2.0	TRXW10IP	HFJ	ANT	BXH1235-D33	50
ANXA 16100R(S)○○							
ANXA 16125R(S)○○							
ANXA 16160R(S)○○						BXH2036-D50	200

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF Type and High-efficiency Cutter HF Type.

SCV10 Wiper Blade Step Amount

WS Type



⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

When using the WS Type (SCV10 wiper blade), in order to maintain balance, be sure to use a cutter with an even number of cutting edges and place the WS Type blades at opposite positions.

ANXS 16000R(S) Type

Expansion

Rake Angle		
Radial	+5°	
Axial	+5°	

3mm 90°

Fig 1

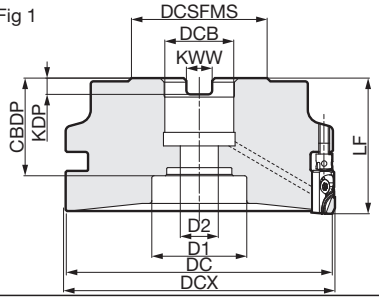
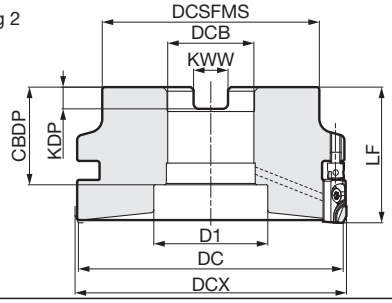


Fig 2



Body (Steel)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss Dia. DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16040RS04**	●	38	**40**	38.5	40	**16**	8.4	5.6	26	14	9	4	0.3	1
	16040RS06	●	38	**40**	38.5	40	**16**	8.4	5.6	26	14	9	6	0.3	1
	16050RS04	●	48	**50**	48.5	40	**22**	10.4	6.3	26	18	11	4	0.4	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
	16063RS06	●	61	**63**	50	40	**22**	10.4	6.3	26	18	11	6	0.7	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
	16080RS06	●	78	**80**	50	50	**27**	12.4	7	34	35	14	6	1.2	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
	16100RS08	●	98	**100**	80	50	**32**	14.4	8	32	46	—	8	1.9	2
	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
	16125RS10	●	123	**125**	80	63	**40**	16.4	9	35	52	—	10	3.8	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 16063R06**	●	61	**63**	50	50	**25.4**	9.5	6	31	20	14	6	0.9	1
	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
	16080R06	●	78	**80**	50	50	**25.4**	9.5	6	34	35	14	6	1.2	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
	16100R08	●	98	**100**	80	50	**31.75**	12.7	8	36	42	—	8	1.9	2
	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
	16125R10	●	123	**125**	80	63	**38.1**	15.9	10	42.5	52	—	10	3.9	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 blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts (excluding the centre bolt).

Identification Code

ANX	S	16	100	R	S	18
Series	Steel Body	Blade Size	Cutter Dia.	Feed Direction	Metric Body	Number of Teeth

● mark: Standard stocked item (new product/expanded item)

ANXS 16000R(S) Type

Expansion

Blade

Dimensions (mm)

Grade Classification		SUMIDIA	CVD Single-crystal Diamond
Process	High-speed/Light	N	N
	General-purpose	N	
	Roughing	N	

Cat. No.	DA1000	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Flat 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	0.4	Linear	Corner Radius	3
1608R	●	—	6.0	0.8	Linear	Corner Radius	3
1600R-W	●	—	2.0	—	Arc-Shaped	Wiper	4
1600R-WS	—	○	—	—	Arc-Shaped	Wiper	5

Fig 1

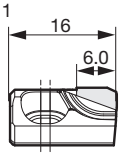


Fig 2

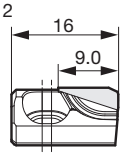


Fig 3

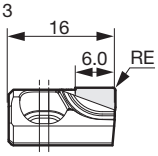
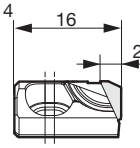
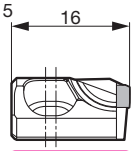


Fig 4



Wiper Blade

Fig 5



Wiper Blade

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	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

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.

Si content of over 12.6%

ISO	Work Material	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.

Maximum Allowable Spindle Speed

Cat. No.	n max (min^{-1})
ANXS 16040RS04	25,000
16040RS06	25,000
16050RS04	25,000
16050RS06	25,000
16050RS09	25,000
16063RS06	22,000
16063RS08	22,000
16063RS12	22,000
16080RS06	20,000
16080RS10	20,000
16080RS14	20,000
16100RS08	18,000
16100RS12	18,000
16100RS18	18,000
16125RS10	16,000
16125RS14	16,000
16125RS22	16,000
ANXS 16063R06	22,000
16063R08	22,000
16063R12	22,000
16080R06	20,000
16080R10	20,000
16080R14	20,000
16100R08	18,000
16100R12	18,000
16100R18	18,000
16125R10	16,000
16125R14	16,000
16125R22	16,000

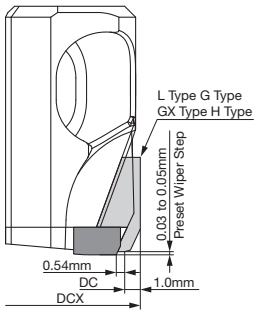
Parts

Applicable Cutter	Cap Screw	(N·m)	Wrench	Adjustment Screw	Adjustment Wrench	Centre Bolt	(N·m)
ANXS 16040RS○○	BXA0310IP	2.0	TRXW10IP	HFJ	ANT	BXH0825-D13	15
ANXS 16050RS○○						BXH1030-D16	25
ANXS 16063RS○○							
ANXS 16080RS○○						BXH1235-D33	50
ANXS 16100RS○○						BXH1635-D40	100
ANXS 16125RS○○						BXH2036-D50	200
ANXS 16063R○○	BXA0310IP	2.0	TRXW10IP	HFJ	ANT	BXH1235-D18	40
ANXS 16080R○○						BXH1235-D33	50
ANXS 16100R○○						BXH1635-D40	100
ANXS 16125R○○						BXH2036-D50	200

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF Type and High-efficiency Cutter HF Type.

SCV10 Wiper Blade Step Amount

WS Type



⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

When using the WS Type (SCV10 wiper blade), in order to maintain balance, be sure to use a cutter with an even number of cutting edges and place the WS Type blades at opposite positions.

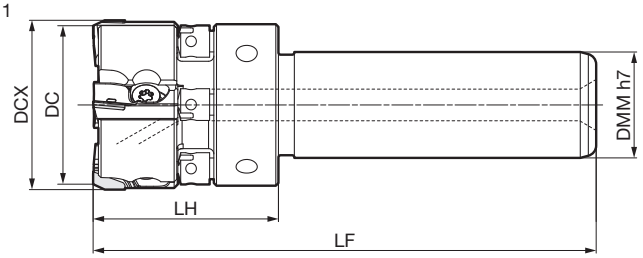
ANXS 16000E Type

Expansion

Rake Angle	Radial	-2° to 0°
	Axial	+5°

3mm 90°

Fig 1



Body (Steel)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank Dia. DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS 16025E02**	●	23	**25**	20	35	95	2	0.2	1
	16030E03	●	28	**30**	20	35	95	3	0.3	1
	16030E04	●	28	**30**	20	35	95	4	0.3	1
	16032E03	●	30	**32**	20	35	95	3	0.3	1
	16032E04	●	30	**32**	20	35	95	4	0.3	1
	16040E04	●	38	**40**	20	40	100	4	0.4	1
	16040E06	●	38	**40**	20	40	100	6	0.5	1
	16050E04	●	48	**50**	32	40	120	4	1.0	1
	16050E06	●	48	**50**	32	40	120	6	1.0	1
	16050E09	●	48	**50**	32	40	120	9	1.0	1

Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts.

Identification Code

ANX	S	16	032	E	04
Series	Steel Body	Blade Size	Cutter Dia.	Shank Type	Number of Teeth

● mark: Standard stocked item (new product/expanded item)

ANXS 16000E Type

Expansion

Blade

Dimensions (mm)

Grade Classification		SUMIDIA	CVD Single-crystal Diamond
Process	High-speed/Light	N	N
	General-purpose	N	
	Roughing	N	

Cat. No.	DA1000	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Flat 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	0.4	Linear	Corner Radius	3
1608R	●	—	6.0	0.8	Linear	Corner Radius	3
1600R-W	●	—	2.0	—	Arc-Shaped	Wiper	4
1600R-WS	—	○	—	—	Arc-Shaped	Wiper	5

Fig 1

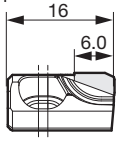


Fig 2

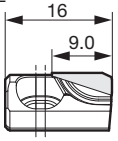


Fig 3

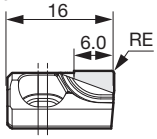
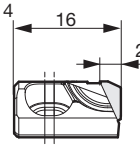
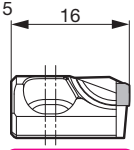


Fig 4



Wiper Blade

Fig 5



Wiper Blade

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	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

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.

Si content of over 12.6%

ISO	Work Material	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.

Maximum Allowable Spindle Speed

Cat. No.	n max (min^{-1})
ANXS 16025E02	10,000
16030E03	10,000
16030E04	10,000
16032E03	10,000
16032E04	10,000
16040E04	10,000
16040E06	10,000
16050E04	10,000
16050E06	10,000
16050E09	10,000

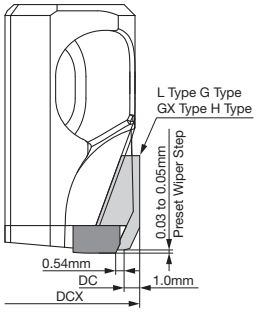
Parts

Cap Screw		Wrench	Adjustment Screw	Adjustment Wrench
				
BXA0310IP	**2.0**	TRXW10IP	HFJ	ANT

The adjustment wrench (ANT) can also be used for height adjustment of the High-speed Cutter RF Type and High-efficiency Cutter HF Type.

SCV10 Wiper Blade Step Amount

WS Type



⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

When using the WS Type (SCV10 wiper blade), in order to maintain balance, be sure to use a cutter with an even number of cutting edges and place the WS Type blades at opposite positions.

HF Type

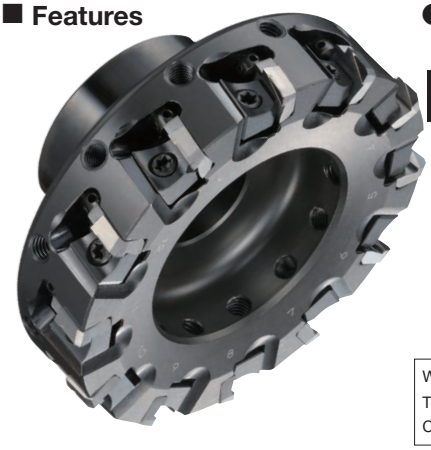
■ General Features

The HF Type high-efficiency aluminum alloy cutter employs a unique blade design to achieve machining without burrs.
HFFH Type with coolant holes is now available as a BBT30 (BIG-PLUS™) arbor integrated version.

Work Material

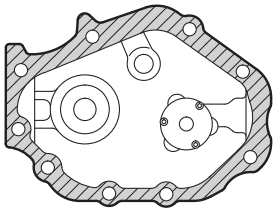
· Aluminum and aluminum alloys · Other non-ferrous metals	Not suited for cast iron or steel.

■ Features

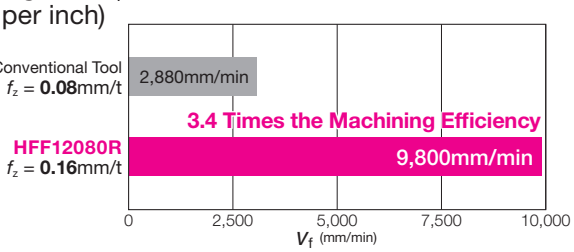


● Achieves high-efficiency milling with V_f **of over 20,000mm/min** thanks to its multi-blade design (3 edges per inch)

High-feed, High-efficiency Milling by Multi-edge Design

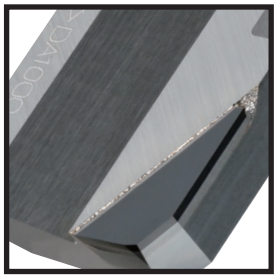


Workpiece: Aluminum Case (Frame Milling)
Tool: **HFF12080R-25.4** (ø80 10-teeth),
Conventional Tool (ø80 6-teeth)



● Maximum Allowable Spindle Speed and Feed Rate

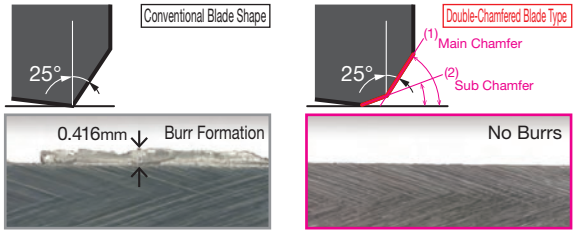
Cutter Dia. (mm)	nmax (min⁻¹)	V_c (m/min)	f_z (mm/t)	Maximum Number of Teeth (pcs.)	V_f (mm/min)
ø80	11,000	2,763	up to 0.2	10	up to 22,000
ø100	9,500	2,983	up to 0.2	12	up to 22,800
ø125	7,500	2,944	up to 0.2	15	up to 22,500

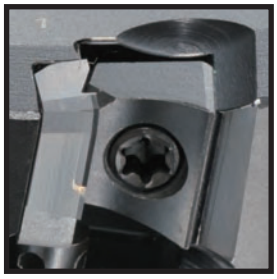


● Reduces burrs by using a double-chamfered blade type.

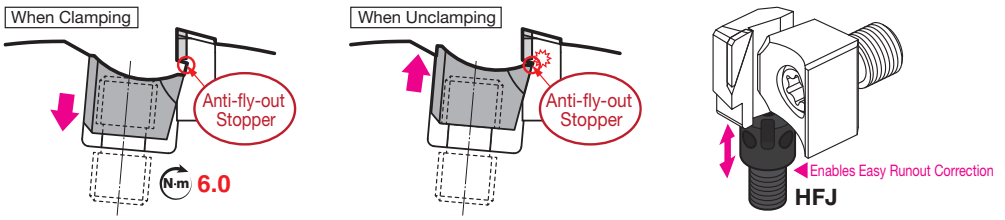
Drastically reduces burrs by preventing plastic deformation that causes burrs.

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

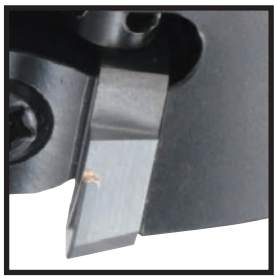




● Wedge clamp with anti-fly-out mechanism ensures safety and operability.



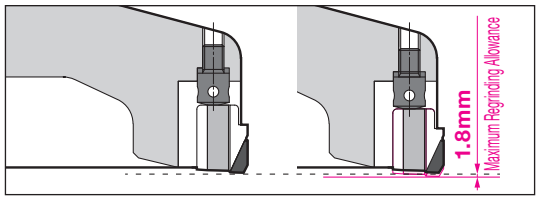
Ensure that the maximum allowable spindle speed (n max) specified for each cutter diameter is not exceeded. (See the table at upper right)



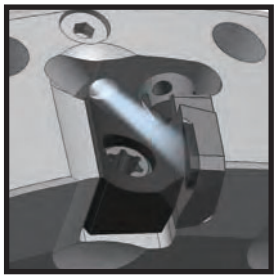
● Reduces running costs by drastically increasing blade regrinding allowance (to 1.8mm)

Assuming 0.2mm of regrinding each time, an edge can be used up to 10 times.

(Given conditions of normal wear with a_p = **1.4**mm or less)



The regrinding allowance has been drastically increased compared to conventional screw-lock types.



● Internal coolant improves chip evacuation performance (HFFH Type, HFFH-BBT30 Type)

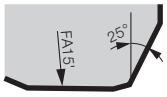
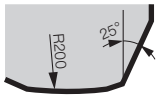
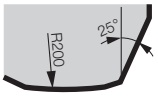
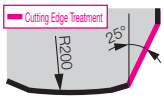
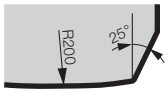
The internal coolant effectively prevents chips from becoming clogged or biting into the work material and achieves longer tool life. (Use an internal coolant compatible arbor)

*1 BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
*2 Can also be used with BT30 spindle machines.

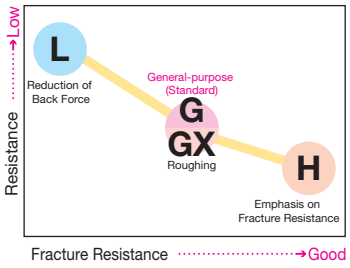
N·m Recommended Tightening Torque (N·m)

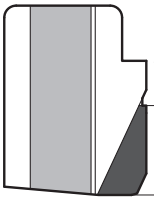
HF Type

■ Blade Selection Guide

Work Material	N				
Applications	Reduction of Back Force	General-purpose	Roughing	Emphasis on Fracture Resistance	Finishing
Features	Low Resistance	Standard	Long Edge	High Strength	Wiper
Type	**L** Type	**G** Type	**GX** Type	**H** Type	**W** Type
Cutting Edge Shape					
Edge Length (*)	6.0mm	6.0mm	9.0mm	6.0mm	2.0mm

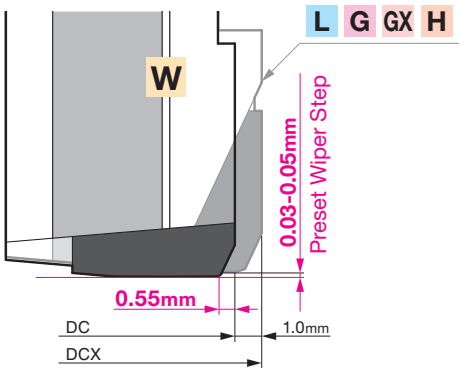
■ Blade Selection Reference





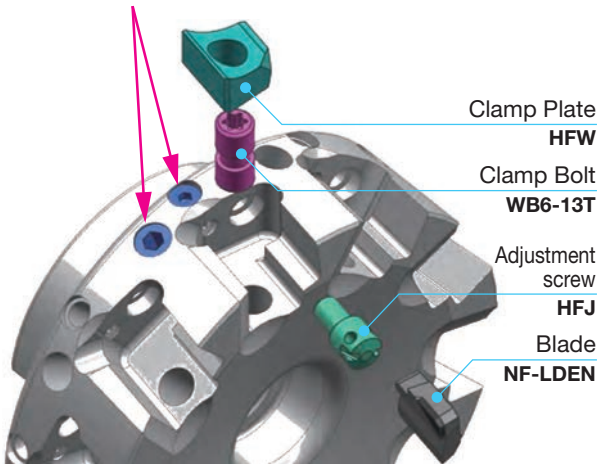
* Maximum Depth of Cut
9.0mm only for GX Type

■ Wiper Blade Step Amount



■ Structure of HF Type

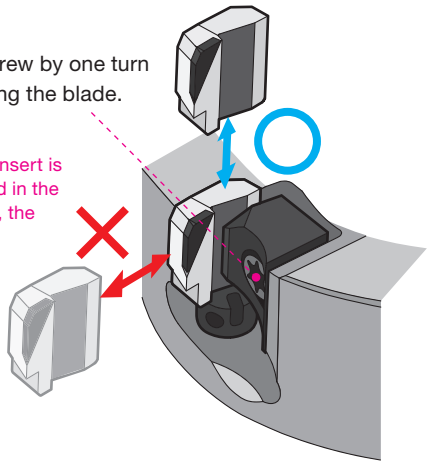
The axial set screw and balance adjustment screw hole have an embedded special part that prevents the insertion of screwdrivers or hex wrenches.



■ 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.



HFM 12000RS/R Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°

Fig 1

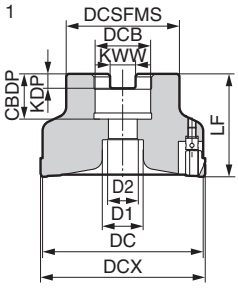


Fig 2

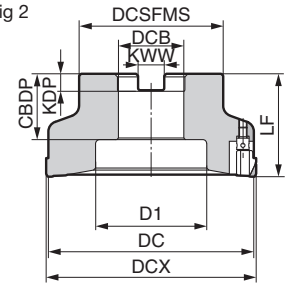
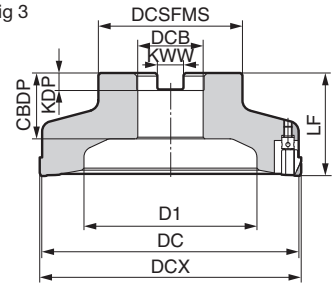


Fig 3



Body (Fine Pitch: 2-teeth/Inch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFM 12080RS-22**	●	**80**	82	50	40	**22**	10.4	6.3	20	18	11	6	1.0	1
	12080RS-27	●	**80**	82	55	50	**27**	12.4	7	22	20	14	6	1.2	1
	12100RS-32	●	**100**	102	70	50	**32**	14.4	8	32	54	—	8	1.7	2
	12125RS-32	●	**125**	127	70	50	**32**	14.4	8	32	84	—	10	2.2	3
	12125RS-40	●	**125**	127	90	63	**40**	16.4	9	35	84	—	10	2.8	3
Inch	**HFM 12080R-25.4**	●	**80**	82	50	50	**25.4**	9.5	6	30	35	—	6	1.0	2
	12100R-25.4	●	**100**	102	50	50	**25.4**	9.5	6	30	54	—	8	1.5	2
	12100R-31.75	●	**100**	102	70	50	**31.75**	12.7	8	32	54	—	8	1.7	2
	12125R-25.4	●	**125**	127	50	50	**25.4**	9.5	6	30	84	—	10	2.0	3
	12125R-31.75	●	**125**	127	70	50	**31.75**	12.7	8	32	84	—	10	2.2	3
	12125R-38.1	●	**125**	127	80	63	**38.1**	15.9	10	36	84	—	10	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Flat 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	●	2.0	Arc-Shaped	Wiper	3

Fig 1

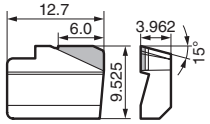


Fig 2

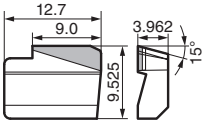
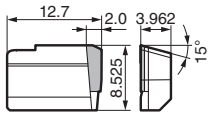


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code

HF M 12 080 R S - 22

Series	Fine Pitch	Blade Size	Cutter Dia.	Feed Direction	Metric Body	Hole Dia.

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	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

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.

Si content of over 12.6%

ISO	Work Material	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.

N·m Recommended Tightening Torque (N·m)

HFF 12000RS/R Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°

Fig 1

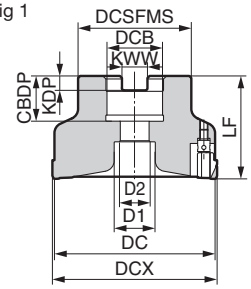


Fig 2

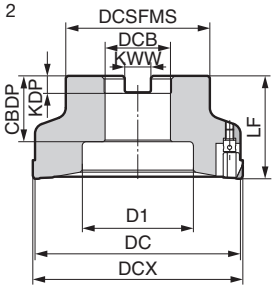
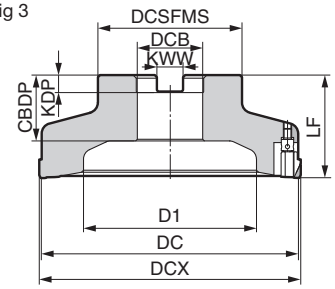


Fig 3



Body (Extra Fine Pitch: 3-teeth/Inch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFF 12080RS-22**	●	**80**	82	50	40	**22**	10.4	6.3	20	18	11	10	1.0	1
	12080RS-27	●	**80**	82	55	50	**27**	12.4	7	22	20	14	10	1.2	1
	12100RS-32	●	**100**	102	70	50	**32**	14.4	8	32	54	—	12	1.7	2
	12125RS-32	●	**125**	127	70	50	**32**	14.4	8	32	84	—	15	2.2	3
	12125RS-40	●	**125**	127	90	63	**40**	16.4	9	35	84	—	15	2.8	3
Inch	**HFF 12080R-25.4**	●	**80**	82	50	50	**25.4**	9.5	6	30	35	—	10	1.0	2
	12100R-25.4	●	**100**	102	50	50	**25.4**	9.5	6	30	54	—	12	1.5	2
	12100R-31.75	●	**100**	102	70	50	**31.75**	12.7	8	32	54	—	12	1.7	2
	12125R-25.4	●	**125**	127	50	50	**25.4**	9.5	6	30	84	—	15	2.0	3
	12125R-31.75	●	**125**	127	70	50	**31.75**	12.7	8	32	84	—	15	2.2	3
	12125R-38.1	●	**125**	127	80	63	**38.1**	15.9	10	36	84	—	15	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Flat 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	●	2.0	Arc-Shaped	Wiper	3

Fig 1

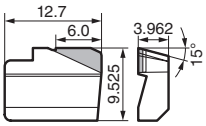


Fig 2

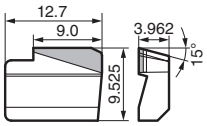
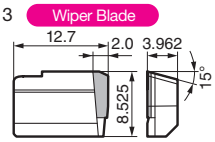


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
						
HFW	WB6-13T	**6.0**	HFJ	TTX20	RFT	HFVT

Identification Code

HF	F	12	080	R	S	-	22
Series	Extra Fine Pitch	Blade Size	Cutter Dia.	Feed Direction	Metric Body		Hole Dia.

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	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

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.

Si content of over 12.6%

ISO	Work Material	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.

HFFH 12000RS/R Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°

Fig 1

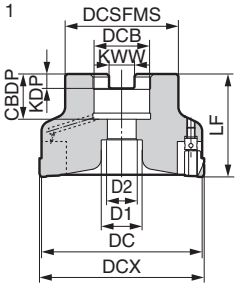


Fig 2

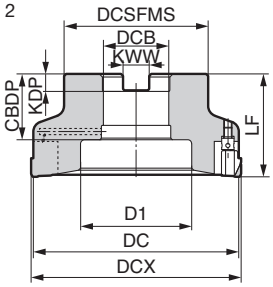
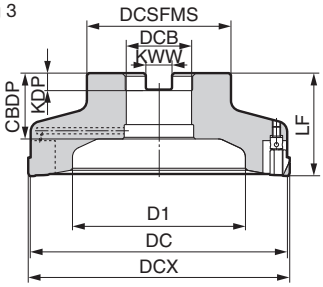


Fig 3



Body (Extra Fine Pitch: 3-teeth/Inch) With Coolant Holes

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFFH 12080RS-22**	●	**80**	82	50	40	**22**	10.4	6.3	20	18	11	10	1.0	1
	12080RS-27	●	**80**	82	55	50	**27**	12.4	7	22	20	14	10	1.2	1
	12100RS-32	●	**100**	102	70	50	**32**	14.4	8	32	54	—	12	1.7	2
	12125RS-32	●	**125**	127	70	50	**32**	14.4	8	32	84	—	15	2.2	3
	12125RS-40	●	**125**	127	90	63	**40**	16.4	9	35	84	—	15	2.8	3
Inch	**HFFH 12080R-25.4**	●	**80**	82	50	50	**25.4**	9.5	6	30	35	—	10	1.0	2
	12100R-25.4	●	**100**	102	50	50	**25.4**	9.5	6	30	54	—	12	1.5	2
	12100R-31.75	●	**100**	102	70	50	**31.75**	12.7	8	32	54	—	12	1.7	2
	12125R-25.4	●	**125**	127	50	50	**25.4**	9.5	6	30	84	—	15	2.0	3
	12125R-31.75	●	**125**	127	70	50	**31.75**	12.7	8	32	84	—	15	2.2	3
	12125R-38.1	●	**125**	127	80	63	**38.1**	15.9	10	36	84	—	15	2.5	3

Blades are sold separately.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Flat 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	●	2.0	Arc-Shaped	Wiper	3

Fig 1

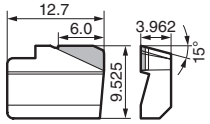


Fig 2

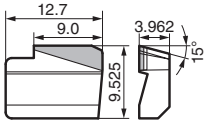
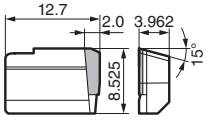


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Wrench	Adjustment Screw	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	**6.0**	TTX20	HFJ	RFT	HFVT

Identification Code

HF	F	H	12	080	R	S	-	22
Series	Extra Fine Pitch	With Oil Hole	Blade Size	Cutter Dia.	Feed Direction	Metric Body		Hole Dia.

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	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

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.

Si content of over 12.6%

ISO	Work Material	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.

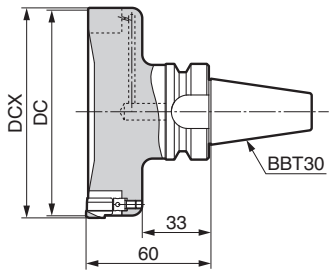
N·m Recommended Tightening Torque (N·m)

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.

Blade

Dimensions (mm)

Grade Classification		SUMIDIA
Process	High-speed/Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Flat 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	●	2.0	Arc-Shaped	Wiper	3

Fig 1

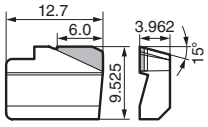


Fig 2

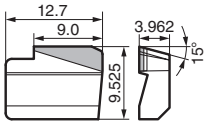
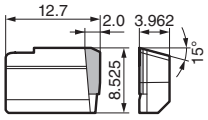


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp Plate	Bolt		Wrench	Adjustment Screw	Wrench	Assembly Wrench
						
HFW	WB6-13T	6.0	TTX20	HFJ	RFT	HFVT

Identification Code

HF Series — **F** Extra Fine Pitch — **H** With Oil Hole — **12** Blade Size — **080** Cutter Dia. — **R** Feed Direction — **- BBT30** Supported Arbor Symbol

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	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

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.

Si content of over 12.6%

ISO	Work Material	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.

* BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
* Can also be used with BT30 spindle machines.

N·m Recommended Tightening Torque (N·m)

RF 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

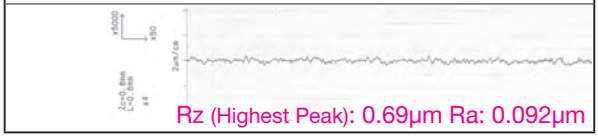
(Not suited for cast iron or steel.)

■ 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

■ Finished Surface Roughness

· Process: Finish Milling	· v_c = 4,990m/min
· Machine: Vertical Machining Centre	· n = 15,900min-1
· Arbor: HSK63A	· v_f = 11,400mm/min
· Work Material: Si 10 to 12% Al Alloy	· f_z = 0.12mm/t
· Cutter: RF4100R 6-teeth (1 Wiper)	· a_p = 0.5mm, Wiper a_p = 0.03mm
· Grade: SUMIDIA (DA1000)	Dry

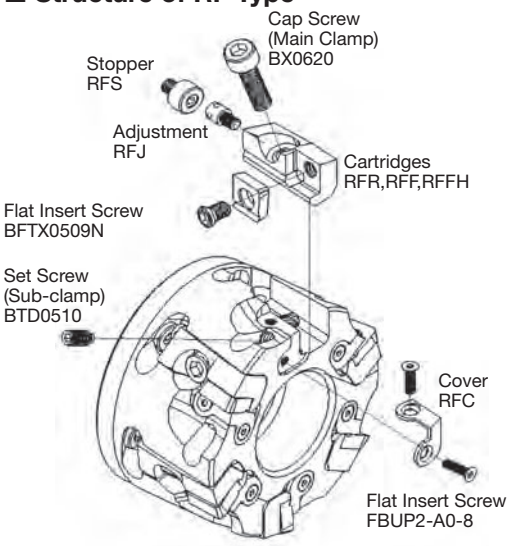


Rz (Highest Peak): 0.69µm Ra: 0.092µm

● 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

■ Structure of RF Type



■ Recommended Cutting Conditions

Si content of 12% or less

ISO	Work Material	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

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.

Si content of over 12%

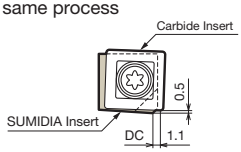
ISO	Work Material	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	400- **600** -800	0.05-**0.13**-0.20	DA1000 DA2200
		200- **300** -400	0.05-**0.13**-0.20	H1

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

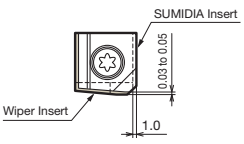
● Recommended Cutting Edge Position

We recommend positioning as in the figure below when mounting carbide inserts or SUMIDIA inserts (blades).

- When roughing and finishing in the same process



- When using wiper edge



⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

As it is possible to mix different types of inserts/blades, it is important to take note of the following.

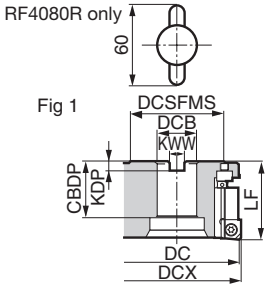
- Do not mix reground and new inserts or inserts with a different regrinding allowance on the same cutter.
- Carbide and SUMIDIA inserts must be arranged alternately.
- Ensure proper balance by fixing the SUMIDIA inserts of the blades on opposite sides of the cutter.

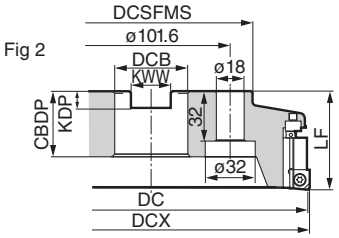
RF 4000R Type

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90° (SUMIDIA Insert)

10mm 87° (Carbide Insert)





Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**RF 4080R**	●	**80**	82	60	50	**25.4**	9.5	6	30	6	0.7	1
	4100R	●	**100**	102	75	50	**31.75**	12.7	8	38	6	1.0	1
	4125R	●	**125**	127	75	63	**38.1**	15.9	10	38	8	1.6	1
	4160R	●	**160**	162	100	63	**50.8**	19.1	11	38	10	2.6	1
	4200R	●	**200**	202	130	63	**47.625**	25.4	14	42	12	3.6	2
	4250R		**250**	252	130	63	**47.625**	25.4	14	42	16	6.0	2
	4315R		**315**	317	240	80	**47.625**	25.4	14	42	18	11.0	2

Cartridges, blades and inserts are sold separately.
Use a collar bolt to mount the cutter to the arbor.

Insert/Cartridge

Dimensions (mm)

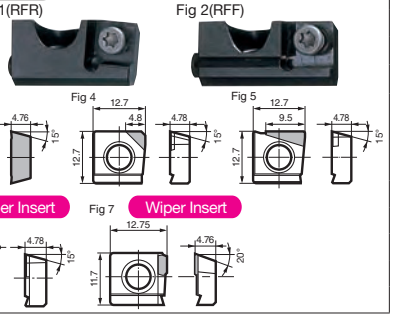
Grade Classification		Cemented Carbide	DLC	SUMIDIA		SUMICRYSTAL
Process	High-speed/Light	N	N	N	N	N
	General-purpose	N	N	N	N	
	Roughing	N	N	N	N	

Refer to page M62 for details of SUMICRYSTAL.

* When using large depth 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	Cartridge Cat. No.	Cartridges in Stock	Fig
SDET 1204ZDFR	●	●	—	—	—	3	RFR	●	1
NF-SNEW 1204ADFR	—	—	●	▲	—	4	RFF	●	2
120404ADFR-H	—	—	●	—	—	5	RFF (Others) ·RFFH(RF4080R)	●	2
1204ADFR-W	—	—	●	▲	—	6	RFF	●	2
SNEW 1204ADFR-WS	—	—	—	—	●	7	RFF	●	2

Cartridges



An "H" at the end of the part number indicates large depth of cut type, while "W" or "WS" indicates a wiper insert.

Parts

Cover	Stopper	Cap Screw		Set Screw		Flat Insert Screw	Adjustment	Flat Insert Screw		Wrench	Wrench
		Main Clamp	N·m	Sub-clamp	N·m	Cover Mounting			N·m		
RFC	RFS	BX0620	**10.0**	BTD 0510	**3.0**	FBUP2-A0-8	RFJ	BFTX 0509N	**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)

* Dial gauge is not included.

Internal Coolant Attachments

For internal coolant supply, use an internal coolant holder or a commercially available clamp bolt with coolant holes.
Typical examples are given in the table below. For specifications, contact each manufacturer directly.

Body Cat. No.	Internal Coolant Holder	Standard Clamp Bolt with Coolant Hole (Example)	
		MST Corporation	BIG DAISHOWA
RF 4080R	—	MBC-M12	TMBA-M12
RF 4100R	—	MBC-M16	TMBA-M16
RF 4125R	—	MBC-M20	TMBA-M20
RF 4160R	—	MBC-M24	TMBA-M24
RF 4200R	RF-CLT	—	—
RF 4250R	RF-CLT	—	—
RF 4315R	RF-CLT	—	—

Direction of Coolant Streams

Internal Coolant Holders
RF-CLT
(Standard Stock)

Standard Clamp Bolt with Coolant Hole
[Typical Example] MBC-M12 to M24
(Sold Separately)

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

SRF Type

■ General Features

The SRF Type 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
  Utilises SUMIDIA DA1000 inserts
  with effective cutting edge length of 5mm.
- Economical NF Type inserts:
  NF Type SUMIDIA inserts with tough DA1000 grade lower tooling costs.
- High-speed cutting with SUMIDIA:
  Maximum spindle speeds of up to n = 20,000min^{-1}
  (Please operate within the maximum allowable spindle speed of the machine and holder used)
- Simple Runout Adjustment Mechanism:
  Simple insert direct mounting design
  for runout precision with easy fine adjustment

■ Recommended Cutting Conditions

Si content of 12% or less

ISO	Work Material	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

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.

Si content of over 12%

ISO	Work Material	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
N	Aluminum Alloy	400- **600** -800	0.05- **0.13** -0.20	DA1000

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

SRF Type

Rake Angle		
	Radial	-2° to 4°
	Axial	6°

5mm 90°

Fig 1

Fig 2

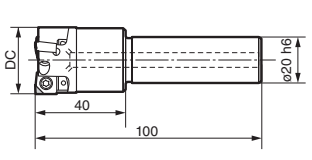


Fig 3

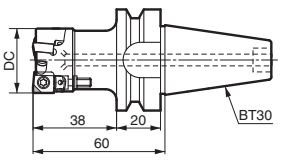
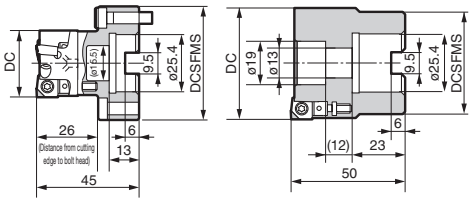


Fig 4

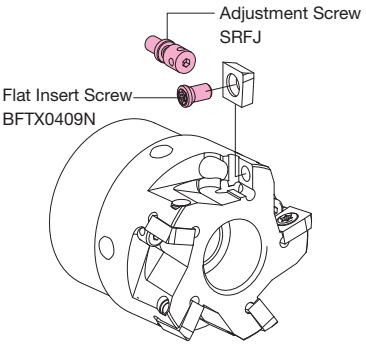


Body

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 mounting ø50 and ø63 mm cutter bodies to the arbor, use a JIS B1176 hex socket bolt (M12 x 30 to 35mm).

Insert

Dimensions (mm)

Grade Classification		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	●	▲	Corner Radius	3

Fig 1

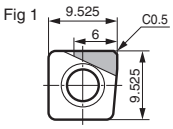
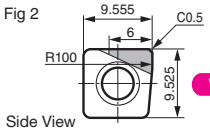
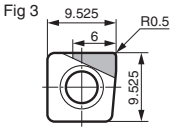


Fig 2

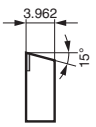


Wiper Insert

Fig 3

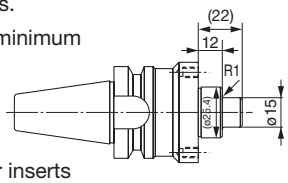


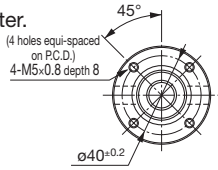
Side View (Same For All)



Recommended Cutting Conditions H204

- Standard inserts and wiper inserts can be used on the same cutter body.
- Standard inserts with corner radius should be used where chatter is present. These cannot be used with wiper inserts.
- Inserts can be reground 3 times (up to minimum IC diameter of 9.225mm), but the cutting edge height changes by the reground amount.
- Do not mix new and reground inserts or inserts with different regrind amounts on the same cutter.
- When using reground inserts, it is advisable to re-confirm cutting edge position with a tool pre-setter.
- Arbor for SRF30R, SRF40R





When using SRF30R and SRF40R cutters, the arbor needs to be modified as shown above.

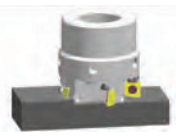
(1. Reduce part of the arbor's adapter shaft length from ø25.4 to ø15. 2. Add 4 tap holes for (M5) mounting bolts.) Use hex socket bolts M5 × 20 mm for securing the body.

Maximum Depth of Cut (SRF50R, 5-teeth)

The table below contains guidelines on the maximum depth of cut, determined from internal tests.
'O' marks indicate the possible application range.
Actual cutting conditions should be set based on the actual machine and workpiece characteristics.

Depth of Cut 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}
Arbor : BT30 FMA25.4-45
Workpiece : A-5052
Width : Maximum depth of cut at 35mm

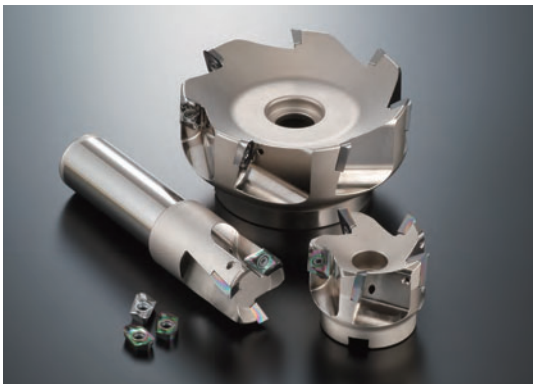


Parts

Flat Insert Screw		Adjustment Screw	Wrench
	N·m		TH015  TTX15W
BFTX0409N	**4.0**	SRFJ	TH015 TTX15W

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

WAX 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.

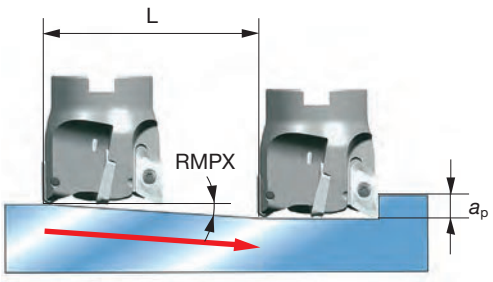
■ Features

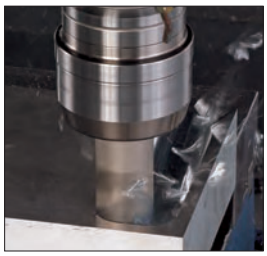
- Ramping Possible
- For Helical Milling
- Safety Design:
  Prevents dislodging of inserts caused by centrifugal force.
- Coolant Compatible:
  Coolant holes are a standard feature for the whole series.
- Excellent Adhesion Resistance
  - Top rake face of the insert has a lapped finish.
  - DLC Coat 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:

$$L = \frac{a_p}{\tan RMPX} \quad (mm)$$

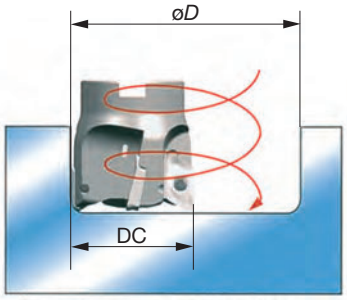




■ Ramping Angle

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

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	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

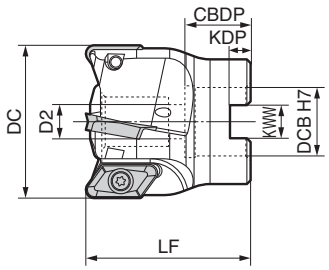
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WAX 3000 Type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

16 to 18 mm 90°

Fig 1



Body (RE = 3.2 or less)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Hole 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 more)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Hole 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.

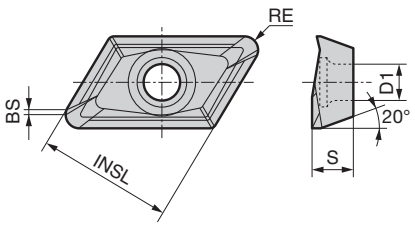
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Length INSL	Wiper BS	Corner Radius RE	Thickness S	Hole Dia. D1	Fig
AECT 160404PEFRA	●	●	16.4	1.4	0.4	5	4.4	1
160408PEFRA	●	●	16.4	1.0	0.8	5	4.4	1
160412PEFRA	●	●	16.4	0.6	1.2	5	4.4	1
160416PEFRA	●	●	16.4	0.5	1.6	5	4.4	1
160420PEFRA	●	●	16.4	0.5	2.0	5	4.4	1
160430PEFRA	●	●	16.4	0.7	3.0	5	4.4	1
160432PEFRA	●	●	16.4	0.5	3.2	5	4.4	1
AECT 160440PEFRA	●	●	16.4	0.5	4.0	5	4.4	1
160450PEFRA	●	●	16.4	0.4	5.0	5	4.4	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0408	3.0	TRD15	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed 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

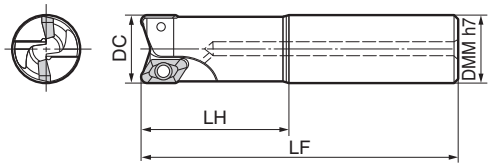
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WAX 3000E/EL Type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

16 to 18 mm 90°

Fig 1



Body (RE = 3.2 or less)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Number of Teeth	Weight (kg)	Fig
WAX 3020E -3.2	●	**20**	20	130	60	1	0.25	1
3025E -3.2	●	**25**	25	140	60	2	0.42	1
3025EL-3.2	●	**25**	25	200	60	2	0.63	1
3032E -3.2	●	**32**	32	150	70	2	0.75	1
3032EL-3.2	●	**32**	32	220	70	2	1.2	1
3040E -3.2	●	**40**	32	160	70	3	1.0	1
3040EL-3.2	●	**40**	32	220	70	3	1.4	1

Body (RE = 4.0 or more)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Number of Teeth	Weight (kg)	Fig
WAX 3020E -4.0	●	**20**	20	130	60	1	0.25	1
3025E -4.0	●	**25**	25	140	60	2	0.42	1
3025EL-4.0	●	**25**	25	200	60	2	0.63	1
3032E -4.0	●	**32**	32	150	70	2	0.75	1
3032EL-4.0	●	**32**	32	220	70	2	1.2	1
3040E -4.0	●	**40**	32	160	70	3	1.0	1
3040EL-4.0	●	**40**	32	220	70	3	1.4	1

Inserts are sold separately.

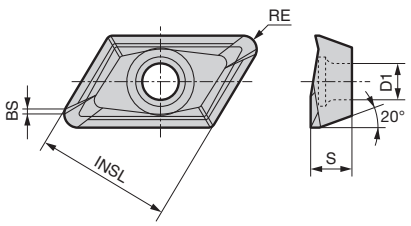
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Length INSL	Wiper BS	Corner Radius RE	Thickness S	Hole Dia. D1	Fig
AECT 160404PEFRA	●	●	16.4	1.4	0.4	5	4.4	1
160408PEFRA	●	●	16.4	1.0	0.8	5	4.4	1
160412PEFRA	●	●	16.4	0.6	1.2	5	4.4	1
160416PEFRA	●	●	16.4	0.5	1.6	5	4.4	1
160420PEFRA	●	●	16.4	0.5	2.0	5	4.4	1
160430PEFRA	●	●	16.4	0.7	3.0	5	4.4	1
160432PEFRA	●	●	16.4	0.5	3.2	5	4.4	1
AECT 160440PEFRA	●	●	16.4	0.5	4.0	5	4.4	1
160450PEFRA	●	●	16.4	0.4	5.0	5	4.4	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Flat Insert Screw		Wrench	Anti-seizure Cream
			
BFTX0408	3.0	TRD15	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed 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)

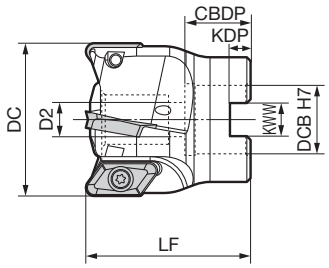
SEC-WaveMill

WAX 4000 Type

Rake Angle	Radial	6°
	Axial	19° to 25°

22 to 24 mm | 90°

Fig 1



Body (RE = 3.2 or less)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Hole 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 more)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Hole 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.

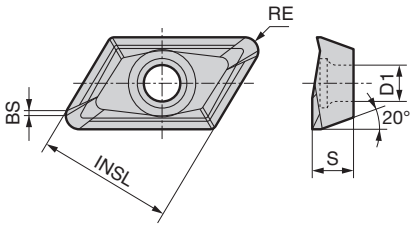
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Length INSL	Wiper BS	Corner Radius RE	Thickness S	Hole Dia. D1	Fig
AECT 220604PEFRA	●	●	21.8	1.5	0.4	6.35	6.0	1
220608PEFRA	●	●	21.8	1.2	0.8	6.35	6.0	1
220612PEFRA	●	●	21.8	0.8	1.2	6.35	6.0	1
220616PEFRA	●	●	21.8	0.4	1.6	6.35	6.0	1
220620PEFRA	●	●	21.8	0.5	2.0	6.35	6.0	1
220630PEFRA	●	●	21.8	0.6	3.0	6.35	6.0	1
220632PEFRA	●	●	21.8	0.4	3.2	6.35	6.0	1
AECT 220640PEFRA	●	●	21.8	1.2	4.0	6.35	6.0	1
220650PEFRA	●	●	21.8	0.4	5.0	6.35	6.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Insert Screw		Wrench	Anti-seizure Cream
				
WAX4000 Type	BFTX0511N	5.0	TRD20	SUMI-P

Recommended Cutting Conditions

ISO	Work Material	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

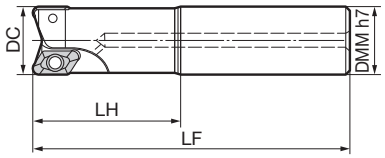
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WAX 4000E/EL Type

Rake Angle		
	Radial	6°
	Axial	19° to 25°

22 to 24 mm 90°

Fig 1



Body (RE = 3.2 or less)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Number of Teeth	Weight (kg)	Fig
WAX 4025E -3.2	●	**25**	25	140	60	1	0.41	1
4025EL-3.2	●	**25**	25	200	60	1	0.63	1
4032E -3.2	●	**32**	32	150	70	1	0.72	1
4032EL-3.2	●	**32**	32	220	70	1	1.2	1
4040E -3.2	●	**40**	32	160	70	2	0.88	1
4040EL-3.2	●	**40**	32	220	70	2	1.2	1

Body (RE = 4.0 or more)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Number of Teeth	Weight (kg)	Fig
WAX 4025E -4.0	●	**25**	25	140	60	1	0.41	1
4025EL-4.0	●	**25**	25	200	60	1	0.63	1
4032E -4.0	●	**32**	32	150	70	1	0.72	1
4032EL-4.0	●	**32**	32	220	70	1	1.2	1
4040E -4.0	●	**40**	32	160	70	2	0.88	1
4040EL-4.0	●	**40**	32	220	70	2	1.2	1

Inserts are sold separately.

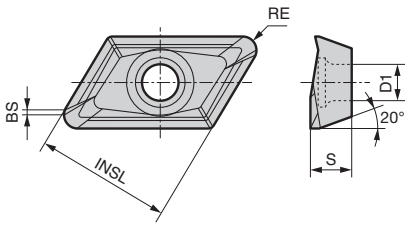
Insert

Dimensions (mm)

Grade Classification		Cemented Carbide	DLC
Process	High-speed/Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Length INSL	Wiper BS	Corner Radius RE	Thickness S	Hole Dia. D1	Fig
AECT 220604PEFRA	●	●	21.8	1.5	0.4	6.35	6.0	1
220608PEFRA	●	●	21.8	1.2	0.8	6.35	6.0	1
220612PEFRA	●	●	21.8	0.8	1.2	6.35	6.0	1
220616PEFRA	●	●	21.8	0.4	1.6	6.35	6.0	1
220620PEFRA	●	●	21.8	0.5	2.0	6.35	6.0	1
220630PEFRA	●	●	21.8	0.6	3.0	6.35	6.0	1
220632PEFRA	●	●	21.8	0.4	3.2	6.35	6.0	1
AECT 220640PEFRA	●	●	21.8	1.2	4.0	6.35	6.0	1
220650PEFRA	●	●	21.8	0.4	5.0	6.35	6.0	1

Fig 1



Inserts with a corner radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Insert Screw	N·m	Wrench	Anti-seizure Cream
WAX4025E/EL Type, WAX4032E/EL Type	BFTX0509N	5.0	TRD20	SUMI-P
WAX4040E/EL Type	BFTX0511N			

Recommended Cutting Conditions

ISO	Work Material	Cutting Speed 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

Rake Angle		
Radial	2°	
Axial	8°	

0.5mm 90°

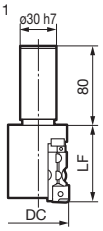
Fig 1


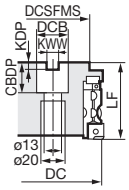
Fig 2


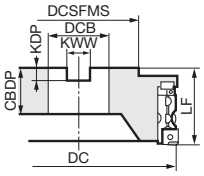
Fig 3


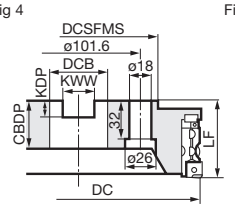
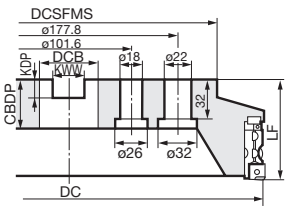
Fig 4


Fig 5


Body

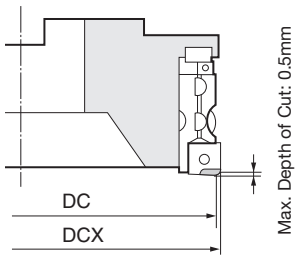
Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Hole 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

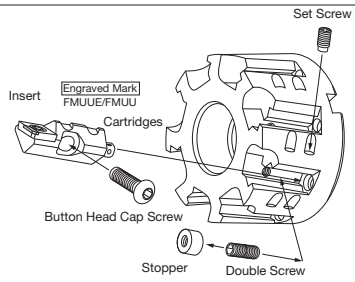
Inserts are sold separately.

Maximum Depth of Cut

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle : +2°



Structure



Insert

Dimensions (mm)

Grade Classification		SUMIBORON		
Process	High-speed/Light	K	K	
	General-purpose	K	K	
	Roughing			
Cat. No.		BN7000	BN700	Fig
SNEW1203ADTR		●	▲	1
1203ADTR-S		●	▲	2

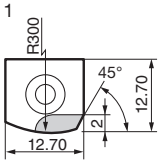
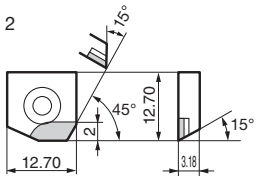
Fig 1


Fig 2


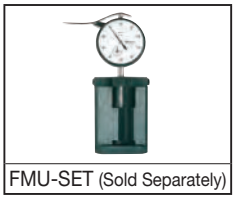
Part number suffix -S denotes a low-thrust insert.

Cartridges

Cartridges	Flat Insert Screw		Adjustment Bolt	O-ring	Wrench	Wrench
					 (For Flat Insert Screw)	
FMUU(E)*1	BFTX0509N	5.0	FMUJ	P3	TTX20	TH015

*1 FMU4040ER/4050ER/4063ER use FMUUE type cartridges.
*1 FMUU/FMUUE are pre-assembled with flat insert screws and adjustment screws (with O-rings attached).

Setting Gauge



FMU-SET (Sold Separately)
*Dial gauge is not included.

Parts

Bolt	Set Screw	Stopper	Double Screw	Wrench	Wrench	Wrench (Radial)	Anti-seizure Cream
				 (For Cartridges)	 (For Set Screws)	 (For Stoppers)	
BH0620*1	BTD0609	FMUE	WB5-10	TH040	LH030	LH025	SUMI-P

*1 FMU4040ER, 4050ER and 4063ER use BH0615 bolts.

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) ▲ mark: To be replaced by a new product, made to order, or discontinued (please confirm stock availability)

RM Type

Cast Iron

Expansion

Rake Angle		
	Radial	-6° 45'
	Axial	-5° 45'

3mm / 75°

Fig 1

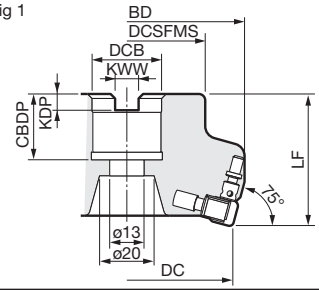
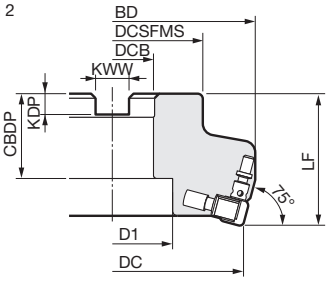


Fig 2



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	Body Dia. BD	Boss DCSFMS	Bolt D1	Height LF	Hole 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	**25.4**	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	**38.1**	15.9	10	38	10	7,000	3.9	2
	3160R		**160**	170	100	80	63	**50.8**	19.1	11	38	12	6,000	5.9	2

Inserts are sold separately.

Insert

Dimensions (mm)

Grade Classification		SUMIBORON			
Process	High-speed/Light	K	K	K	
	General-purpose	K	K	K	
	Roughing	K	K	K	
Cat. No.		BNS8125	BNS800	BNC8115	Fig
SNGN 090308		●	●	●	1
090312		●	●	●	1
SNEN 090308W		●	●	●	2

Fig 1

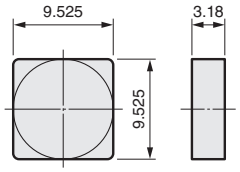
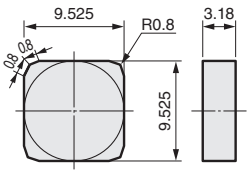
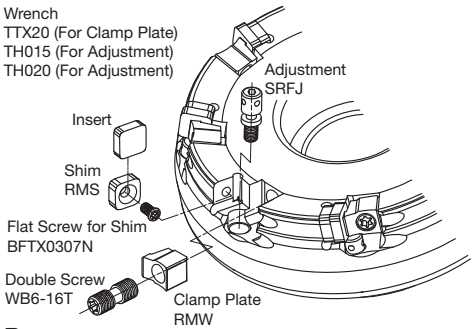


Fig 2 Wiper Insert





Parts

Shim	Shim Screw		Clamp Plate	Double Screw	Adjustment	Wrench (For Clamp Plate)	Wrench (For Adjustment)	Wrench (For Adjustment)
RMS	BFTX0307N	2.0	RMW	WB6-16T	SRFJ	TTX20	TH015	TH020

Precautions for Use

- · Do not use inserts with different catalogue numbers, such as a mix of standard and wiper inserts, on a single cutter setting.
- · New and reground inserts cannot be mixed for use. Use either only new inserts or only reground inserts.
- · Inserts can only be reground once (inscribed circle dimension must be at least 9.125mm).

For hardened steel machining, use the SEC-ACE MILL DNF Type.
Body: H45 Insert: L108

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) ● mark: Standard Stock (new product/expanded item)