Milling Cutters H

H1 to H262

Milling Cutter Selection Guide H2
Selection Guide for Modular Tools H7
Selection Guide for Cast Iron High-feed and Milling Cutters (Special Purpose) ... H8
Indexable Endmill Selection Guide H9
Grades for Milling H12
Cutter Identification Table H14
Insert Identification Table H15

Face Milling	For General Steel, Cast Iron, Exotic Alloy and Non-Ferrous Metal	WGX	H18
	For General Steel, Cast Iron, Exotic Alloy and Non-Ferrous Metal	DGC	H32
	For High-efficiency Cast Iron / Cast Steel Milling	DNX(F) / DNH, DNHS	H44
Shoulder Milling	For High-precision Milling of Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	WEZ	H50
	For High-precision Milling of Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	WEX	H77
	For High-efficiency Deep-Step Shoulder Milling	WRX	H92
	For Titanium Alloys	WSE	H98
	For High-feed Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	WFX	H101
	For General Steel and Cast Iron	DFC	H114
	For High-efficiency Milling of Steel, Cast Iron and Stainless Steel	TSX	H126
	For Steel, Cast Iron and Stainless Steel	PWS(F) / PWSR	H151
High Feed	For High Feed Machining of Steel, Exotic Alloy, Stainless Steel, and Cast Iron	DMS	H154
	For High-speed, High-efficiency Milling of Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	WFXH	H164
	For High Feed Machining of Steel, Cast Iron and Stainless Steel	MSX	H170
Multi-Purpose		WMM	H175
Radius	For Stainless Steel and Exotic Alloy	RSE	H178
	For Steel, Die Steel, Cast Iron, Stainless Steel and Exotic Alloy	RSX	H182
	For Steel, Die Steel, Cast Iron, Stainless Steel and Non-Ferrous Metal	WRCX	H193
R / 3D Profiling	For Roughing	WBMR	H200
	For Finishing	WBMF	H203
Groove / T-Slot	For Groove Milling of Steel and Cast Iron	TGC	H205
	T-Slot Endmill	TSE	H208
Chamfering	For Chamfering	WFXC	H209
Non-ferrous Metal	For High-speed, High-efficiency Milling of Aluminum Alloy and Non-Ferrous Metal	ALNEX ANX	H213
	For High-efficiency Milling of Aluminum Alloy and Non-Ferrous Metal	HF	H221
	For High-speed Milling of Aluminum Alloy and Non-Ferrous Metal	RF	H227
	For Small Diameter Milling of Aluminum Alloy and Non-Ferrous Metal	SRF	H229
	For High-speed, High-efficiency Milling for Non-Ferrous Metal	WAX	H231
High-speed Cast Iron	For High-speed Finishing of Cast Iron	CBN BN Finish Mill EASY (FMU / FMU-E)	H236
	For High-speed, High-efficiency Milling of Cast Iron	Cutter RM for High-speed Milling of CBN Cast Iron	H237

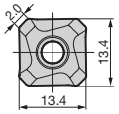
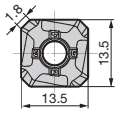
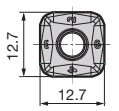
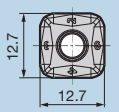
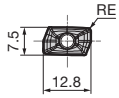
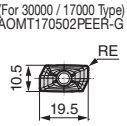
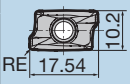
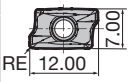
H Special Purpose Cutters ···H238

H Discontinued Milling Cutters ···H253

Stock Markings and Symbols		
	●: Standard stocked item ★: Worldwide Warehouse Item ▲: Limited Avaibility Item, made to order, or discontinued (please confirm stock availability).	Blank: Made-to-order item — mark: Not available

Indexable Milling Selection Guide

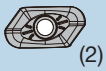
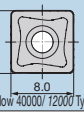
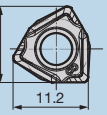
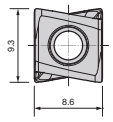
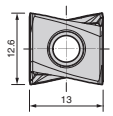
◎: 1st Recommendation ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in. / mm)	Shank Dia. (mm)	Series (Page)	Milling Cutter (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Chamfering	Drilling	Profiling	Profile Finishing	Work Material P: General Steel / Carbon Steel / Alloy Steel	P: Tempered Steel / Die Steel	M: Stainless Steel	K: Cast Iron / Ductile Cast Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy / Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Face Milling	.236" 45° *	ø2.000" to ø10.00" ø40 to ø250 mm	–	WGX →H23	WGX40000R WGXM40000R WGXF40000R WGX13000R(S) WGXM13000R(S) WGXF13000R(S)	SEMT13T3AGSR–G 	20° to 22°	–20° to –24°	◎	◎									◎	◎	◎	◎	◎	◎	○	
Face Milling	.236" 45° *	ø2.000" to ø2.500" ø32 to ø63 mm	ø1.25" ø32	WGX–EW →H26	WGX40000EW WGX13000EW	SEMT13T3AGSR–G	20° to 22°	–20° to –24°	◎	◎									◎	◎	◎	◎	◎	◎	○	
Face Milling	.236" 45° * .118" 45° *	ø2.000" to ø10.000" ø40 to ø250 mm	–	DGC →H36	DGC40000R DGCM40000R DGCF40000R DGC13000R(S) DGCM13000R(S) DGCF13000R(S)	SNMT13T6ANER–G 	–5°	–10°	◎	○									◎	◎	◎	◎	◎	◎	○	
Face Milling	.236" 45° * .118" 45° *	ø2.000" to ø2.500" ø40 to ø63 mm	ø1.25" ø32	DGC–EW →H39	DGC40000EW DGC13000EW	SNMT13T6ANER–G	–5°	–10°	◎	○									◎	◎	◎	◎	◎	◎	○	
Face Milling	.315" 25°	ø3.000" to ø8.000" ø80 to ø250 mm	–	DNX →H46	DNX40000 DNXF40000 DNX12000 DNXF12000	SNMT1205ZNEN 	–5°	–6°	○										○			◎				
Face Milling	.118" 66° .197" 66°	ø80 to ø160 mm	–	DNH(S) →H48	DNH12000 DNHS12000	SNMT1205ZNEN 	–5°	–6°			○								○			◎				
Shoulder Milling / Semi-Shoulder Milling	.394" 90°	ø1.5 - ø2.5" ø40 - ø100 mm	–	WEZ →H56	WEZ20000R WEZ11000R(S)	(For 20000 / 11000 Type) AOMT11T302PEER-G 	14° to 15°	–7° to –11°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling / Semi-Shoulder Milling	.591" 90°	ø2.00 - ø6.00" ø40 - ø160 mm	–		WEZ30000R WEZ17000R(S)	(For 30000 / 17000 Type) AOMT170502PEER-G 	–10° to –15°	–4° to –9°																		
Shoulder Milling / Semi-Shoulder Milling	.394" 90°	ø0.5 - ø1.25" ø14 - ø80mm	ø16 to ø32	WEZ–E →H58	WEZ20000EW / EMW WEZ20000ELC WEZ11000E WEZ11000EL		6° to 15°	–7° to –18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling / Semi-Shoulder Milling	.591" 90°	ø1.00 - ø2.00" ø25 - ø80mm	ø25 to ø42		WEZ30000EW / EMW WEZ30000ELC WEZ17000E WEZ17000EL		6° to 15°	–6° to –12°																		
Shoulder Milling / Semi-Shoulder Milling	.236" 90°	ø32 to ø63mm	–	WEX–F/R	WEX1000F	(For 3000 Type) AXMT170508PEER–G 	9° to 17°	7° to 17°	○	○		◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
Shoulder Milling / Semi-Shoulder Milling	.394" 90°	ø1.50 - ø2.50" ø40 - ø63mm	–		WEX20000R WEX2000F		23° to 25°	16° to 18°																		
Shoulder Milling / Semi-Shoulder Milling	.551" 90°	ø2.00 - ø8.00" ø40 - ø125mm	–	→H83	WEX3000F WEX30000R WEXF3000R	see H3 for AXMT11	19° to 24°	12° to 15°																		
	.236" 90°	ø32 to ø63mm	ø10 to ø20	WEX–E	WEX1000E WEX1000EL	(For 2000 Type) AXMT123504PEER–G 	9° to 17°	7° to 17°	○	○		◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	.394" 90°	ø0.500" to ø1.250" ø14 to ø63mm	ø.75 - ø1.25" ø16 - ø32mm		WEX20000EW/EMW WEX20000ELC WEX2000E/EL		14° to 25°	10° to 18°																		
	.551" 90°	ø1.000" to ø2.000" ø25 to ø63mm	ø1.0 - ø1.25" ø20 - ø42mm	→H87	WEX30000EW/EMW WEX30000ELC WEX3000E(–C) WEX3000ES(–C) WEX3000EL		16° to 24°	8° to 15°																		

*Use a chamfering tool for chamfering operations.

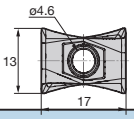
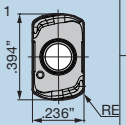
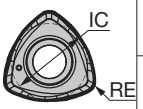
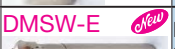
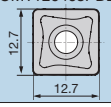
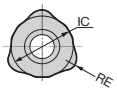
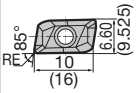
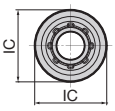
Indexable Milling Selection Guide

◎: 1st Recommendation ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in. / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Application: Face Milling: Finishing	Application: Face Milling: High Feed	Application: Shoulder Milling	Application: Slot Milling	Application: Ramping	Application: Chamfering	Application: Drilling	Application: Profiling	Application: Profile Finishing	Work Material P: General Steel / Carbon 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 55 HRC
	.709" to 1.417" 90°	ø40 to ø50	–	WRX–R →H94	WRX20000RS	(For 3000 Type) AXMT170508PEER–G	24°	16° to 17°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	.866" to 1.575" 90°	ø2.5" to ø3.0" ø50 to ø100	–		WRX30000R WRX3000RS	RE 17.54 10.2	22° 24°	13° 15°																		
	.709" to 1.417" 90°	ø1.000" to ø1.500" ø20 to ø40	ø1.0 - ø1.25" ø20 - ø42	WRX–E →H96	WRX20000E WRX2000E	(For 2000 Type) AXMT123504PEER–G	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	1.06-2.09" 90°	ø2.000" ø40 to ø50	ø1.25" ø32 - ø42		WRX30000E WRX3000E	RE 12.00 7.00	20° to 22°	12° to 13°																		
	15mm 90°	ø50 to ø63	–	WSE New →H98	WSE16000RS	 (2)	8° to 14°	-9° to -6°	○			◎	○	◎							◎				◎	
	15mm 90°	ø32	ø32	WSE-E New →H100	WSE16000E		8°	-9°																		
	.236" 90°	ø40 to ø100	–	WFX →H104	WFX08000R(S) WFXM08000R(S) WFXF08000R(S)	(For 08000 Type) SOMT080304PZER  (See below 40000/ 12000 Type)	12°	–6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	.394" 90°	ø2.000" to ø8.000" ø50 to ø250	–		WFX40000R WFXF40000R WFXX40000R WFX12000R(S) WFXF12000R(S)	8.0 8.0	8°	–8°																		
	.236" 90°	ø20 to ø63	ø16 to ø32	WFX–E →H111	WFX08000E WFXM08000E	(For 40000/ 12000 Type) SOMT120408PDER	12°	–6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎	○	
	.394" 90°	ø40 to ø80	ø32		WFX12000E WFXF12000E	12.7 12.7	8°	–8°																		
	.236" 90°	ø2.000" to ø8.000" ø50 to ø160	–	DFC →H119	DFC20000R DFCM20000R DFCF20000R DFC09000R(S) DFCM09000R(S) DFCF09000R(S)	XNMU060608PNER–G 	–5°	–9°	◎	○		◎	○						◎	◎	○	◎			○	
	.236" 90°	ø1.000" to ø2.500" ø25 to ø80mm	ø1.0 - 1.25" ø25 - ø42 mm	DFC–E →H125	DFC20000EW DFCM2000EW DFC09000E DFCM09000E	11.3 11.2	–5°	–9°																		
	.315" 90°	ø1.5"to ø2.5" ø40 to ø80	–	TSX →H131	TSX30000R TSXF30000R TSX08000R(S) TSXF08000R(S)	(For 08000 Type) LNEX080404PNER–G 	–6°	–20°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
	.472" 90°	ø1.5" to ø6.0"	–		TSX40000R TSXF40000R	9.3 8.6	–6°	–23° to –15°																		
		ø1.5" to ø4.0" ø40 to ø315mm	–	→H131	TSX13000R(S) TSXM13000R(S) TSXF13000R(S)																					
	.315" 90°	ø0.625" to ø1.5" ø16 to ø80mm	ø.625 - ø1.25" ø16 - ø32mm	TSX–E	TSX30000EW TSX08000E		–6° to –3°	–36° to –20°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
		ø0.750" to ø1.5" ø20 to ø80mm	ø.750 - ø1.25" ø20 - ø32mm		TSXF30000EW TSXF08000E																					
	.472" 90°	ø1.0" to ø1.5" ø25 to ø80mm	ø1.0 - ø1.25" ø25 - ø32mm		TSX40000EW TSXF40000EW	(For 13000 Type) LNEX130604PNER–L 		–31° to –15°																		
		ø32 to ø80mm	ø1.0"		TSX13000E TSXM13000E TSXF13000E	12.6 13																				
		ø1.25" to ø1.5" ø40 to ø80mm	ø32 mm	→H138																						
	1.614" to 2.362" 90°	ø32 to ø63mm	–	TSXR	TSXR08000RS		–6° to –3°	–20° to –15°	○			◎							◎	◎	◎	◎	◎	◎	◎	
	1.614" to 2.362" 90°	ø40 to ø125mm		→H142	TSXR13000RS			–23° to –15°																		
	.827" to 1.575" 90°	ø20 to ø40mm	ø20 to ø32mm	TSXR–E	TSXR08000E		–6° to –3°	–33° to –18°	○			◎							◎	◎	◎	◎	◎	◎	◎	
	1.614" to 2.362" 90°	ø40 to ø50mm	ø32 to ø42mm	→H146	TSXR13000E			–23° to –18°																		

Indexable Milling Selection Guide

◎: 1st Recommendation ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in. / mm))	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Application: Finishing	Application: Face Milling High Feed	Application: Shoulder Milling	Application: Slot Milling	Application: Ramping	Application: Chamfering	Application: Drilling	Application: Profiling	Application: Profile Finishing	Work Material P: General Steel / Carbon 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
Roughing	.630" 90°	ø3.0 - 10.0" ø80 - ø250 mm	–	PWS →H152	PWS4000 PWSF4000	LNMX170808PNSR-G 	–6°	–15°	○		◎	◎							◎	○	○	○				
High Feed	.0591 73°	ø1.500" to ø2.500" ø40 to ø50mm	–	DMSL New →H157	DMSL20000 DMSL06000	Fig 1 	-8°	-8° to -12.5°			◎	○	○	○					◎	◎	○	◎			○	○
High Feed	.0591 73°	ø.6250" to ø1.250" ø16 to ø35mm	ø16 to ø32	DMSL-E New →H158	DMSL20000EW DMSL20000ELC DMSL06000E		-8°	-12.5° to -16.5°			◎	○	○	○					◎	◎	○	◎			○	○
High Feed	.1181 75°	ø2.000" to ø4.000" ø50 to ø160mm	–	DMSW New →H160	DMSW20000 DMSW06000		-6°	-7° to -10°			◎	○	○	○					◎	◎	○	◎			○	○
High Feed	.1181 75°	ø1.500" to ø2.000" ø35 to ø63mm	ø3 to ø42 mm	DMSW-E New  →H161	DMSW20000EW DMSW20000ELC DMSW06000E		-6°	-10° to -13°			◎	○	○	○					◎	◎	○	◎			○	○
High Feed	0.059" 75°	ø40 to ø63mm	–	WFXH →H167	WFXH08000RS	(For 12000 Type) SOMT120408PDER 	–6°	6°			◎	○		○					◎	◎	◎	◎	◎	◎	○	
High Feed	0.098" 75°	ø50 to ø63mm	–		WFXH12000RS		–6°	6°																		
High Feed	.059" to .098" 70°	ø1.500" to ø6.000" ø40 to ø100	–	MSX–R →H172	MSX30000R MSX40000R MSX50000R MSX08000R MSX12000R MSX14000R	WDMT0603ZDTR (IC=6.35) WDMT0804ZDTR (IC=8.5) WDMT1204ZDTR (IC=12) 	8°	–3° to –8°			◎	○		○					◎	◎	◎	◎				○
High Feed	.039" to .098" 70°	ø0.750" to ø1.500" ø16 to ø63mm	ø16 to ø42 mm	MSX–E →H173	MSX20000EW/ELC MSX30000EW/ELC MSX40000EW/ELC MSX06000E MSX08000E MSX12000E		8°	–3° to –8°			◎	○		○					◎	◎	◎	◎				○
Multi–Purpose	.669 - 1.378" 90°	ø1.000" to ø1.50" ø20 to ø30mm	ø1.0 - ø1.25" ø20 - ø25 mm	WMM →H176	WMM10000M WMM2000E/EL WMM2000ELH	APMT103504PDER APMT160508PDER 	7° to 11°	15° to 16°	◎			◎	◎	◎		◎			◎	◎	◎	◎	◎	◎	◎	
Multi–Purpose	1.534" 90°	ø1.500" ø32 to ø40mm	ø1.25 ø32mm		WMM16000M WMM3000E/EL WMM3000ELH		7° to 11°	17° to 19°																		
Radius	5mm 4-cornered / 1.4mm 8-cornered	ø40 to ø50	–	RSE →H180	RSE10000RS	(4)	4°	-5°	○		○			○			○				◎				◎	
Radius	6mm 4-cornered / 1.7mm 8-cornered	ø40 to ø80			RSE12000R(S)		4°	-5°	○		○			○			○				◎				◎	
Radius	.197"	ø2.000" ø40 to ø52	–	RSX →H185	RSX30000 RSX10000 RSXF10000	RDET0803M0EN (IC=8) RDET10T3M0EN (IC=10) RDET1204M0EN (IC=12) 	10°	–5°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			◎	
Radius	.236"	ø2.000" ~6.000" ø40 to ø100			RSX40000 RSX12000 RSXF12000		10°	–5°																		
Radius	.315"	ø2.500" ~6.000" ø63 to ø160			RSX50000 RSX16000 RSXF16000		10°	–5°																		
Radius	0.394"	ø80 to ø160			RSX20000 RSXF20000		10°	–5°																		

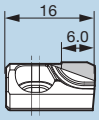
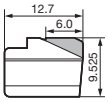
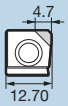
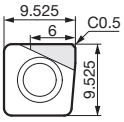
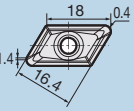
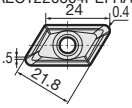
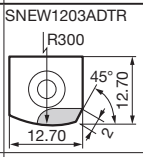
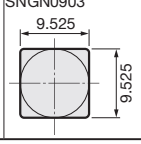
Indexable Milling Selection Guide

◎: 1st Recommendation ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in. / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Chamfering	Drilling	Profiling	Profile Finishing	Work Material P: General Steel / Carbon Steel / Alloy Steel	P: Tempered Steel / Die Steel	M: Stainless Steel	K: Cast Iron / Ductile Cast Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy / Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
	.157"	ø20 to ø25	ø20 - ø25mm	RSX–ES	**RSX**08000ES **RSXF**08000ES	(For 10000 Type) RDET10T3M0EN	10°	–8°																		
	.197"	ø1.000" to ø1.500" ø25 to ø32	ø1.25" ø25 - ø32mm		**RSX**30000EW **RSX**30000ELC **RSX**10000ES **RSXF**10000ES		10°	–5°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			◎	
	.236"	ø1.250" to ø1.500" ø32mm	ø32	→H191	**RSX**40000EW **RSX**40000ELC **RSX**12000ES **RSXF**12000ES		10°	–5°																		
Radius	.236"	ø2.000"	–	WRCX	**WRCX**30000	QPMT120440PPEN (IC=12) QPMT160660PPEN (IC=16) QPMT200670PPEN (IC=20)	–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			○	○
		ø2.000" ~ø4.000" ø40 to ø80mm	–		**WRCX**40000 **WRCX**16000 **WRCXF**16000																					
	.315"	ø3.000" ~ø6.000" ø63 to ø100mm	–		**WRCX**60000 **WRCX**16000 **WRCXF**16000		–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎		◎	○	○
	0.394"	ø4.000" ~ø6.000" ø125 to ø160mm	–	→H194	**WRCX**80000 **WRCX**20000		–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			○	○
	.157"	ø20 to ø25mm	ø20 to ø25	WRCX–E	**WRCX**08000E	QPMT080330PPEN (IC=8) QPMT10T335PPEN (IC=10) QPMT160660PPEN (IC=16)	–3°	0°																		
	.197"	ø1.000" to ø1.500" ø25 to ø32	ø1.000 - ø1.500" ø25 - ø32mm		**WRCX**30000E **WRCX**30000E **WRCX**10000E		–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎		◎	○	○
	.315"	ø1.250" to ø1.500" ø40 to ø50	ø1.000 - ø1.500" ø32 mm	→H198	**WRCX**40000E **WRCX**40000E **WRCX**16000E		–3°	0°																		
R / 3D Profiling	.787" to 1.693"	ø0.750" to ø2.000" R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR →H201	**WBMR** **WBMR**2000 **WBMR**2000L	ZNMT1804100–C	–10°	-					◎				◎		◎	◎	◎	◎			○	○
	.0039" to .016"	ø0.500" to ø1.250" R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H204	**WBMF** **WBMF**1000	ZPGU1551050	0°	-					◎				◎	◎	◎	◎	◎	◎				○
Side / T-Slot	17 to 24.6mm 90°	ø100 to ø200	–	TGC →H207 Standard Disc Shape	**TGC**13000	TGCX130704PNEN-G (4)	10°	-11.5° to -9.5	○			○	◎						◎	◎	○	◎				
	.354" to .866" 90°	ø21 to ø50	ø25 to ø32	TSE →H208	**TSE**	CPMT060204N–US	0°	0°					○						○	○	○					
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC–E	**WFXC**08000E	(For 12000 Type) SOMT120308PDER	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
	45°	ø25 to ø32	ø25 to ø32	→H210	**WFXC**12000E																					

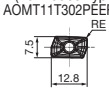
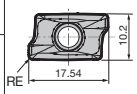
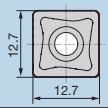
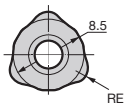
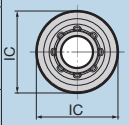
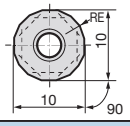
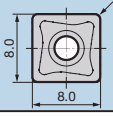
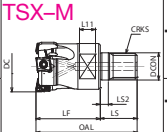
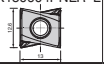
Indexable Milling Selection Guide

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

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Chamfering	Drilling	Profiling	Profile Finishing	Work Material P: General Steel / Carbon Steel / Alloy Steel	P: Tempered Steel / Die Steel	M: Stainless Steel	K: Cast Iron / Ductile Cast Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy / Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
Non-ferrous Metal	.118" 90°	ø40 to ø125	–	ANX →H215	ANXS16000R(S)	ANB1600R–L 	5°	5°	○	◎	◎	◎											◎	◎		
		ø80 to ø160			ANXA16000R(S)		5°	5°																		
		ø32 to ø40	ø20		ANXS16002E		5°	–2° to 0°																		
	.118" 90°	ø2.500" ~6.000" ø80 to ø125	–	HF →H223	HFMH40000 HFM12000 HFF12000	NF–LDEN12T3ZDFR 	10°	4°	◎	◎	○	○							X	X	X	X	○	◎		X
	.118" 90°	ø3.000" ~6.000" ø80 to ø125	–		HFFH40000 HFFH12000																					
	.118" 90°	ø80 to ø125	–		HFFH12000R–BBT30																					
	.118" 90°	ø80 to ø200	–	RF →H228	RF4000	NF–SNEW1204ADFR 	10°	4°	◎	◎	○	○							X	X	X	X	○	◎		X
	.197" 90°	ø30 to ø63	–	SRF →H230	SRF	NF–SNEW09T3ADTR 	6°	–2° to 4°	◎	◎	○	○							X	X	X	X	○	◎		X
			ø20		SRF–ST																					
	.63 - .71" 90°	ø2.000" to ø5.000"	–	WAX →H232	WAX30000 WAX40000	(For 3000 Type) AECT160404PEFRA 	19° to 25°	6°	○			◎	◎	◎			◎		X	X	X	X	○	◎		X
	.866"to.945" 90°	ø50 to ø125	–		WAX3000 WAX4000																					
	.63 - .71" 90°	ø.750" to ø1.500" ø20 to ø40mm	ø.750"-ø1.500" ø20 - ø32 mm	WAX–E →H234	WAX30000EW WAX30000ELC WAX3000E WAX3000EL	(For 4000 Type) AECT220604PEFRA 	19° to 25°	6°	○			◎	◎	◎			◎		X	X	X	X	○	◎		X
	.866"to.945" 90°	ø1.000" to ø1.500" ø25 to ø40mm	ø.750"-ø1.500" ø25 - ø32 mm		WAX40000EW WAX40000ELC WAX4000E WAX4000EL																					
High-speed Cast Iron	.019" 90°	ø37 to ø200	–	FMU →H236	FMU FMU–E	SNEW1203ADTR 	8°	2°		◎									X	X	X	◎ (FC)	X	X	X	X
	.118" 15°	ø80 to ø160	–	RM →H237	RM	SNGN0903 	–5° 45'	–6° 45'	○	◎									X	X	X	◎ (FC)	X	X	X	X

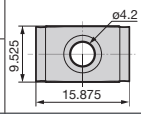
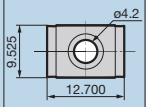
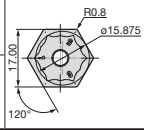
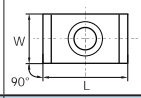
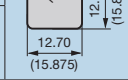
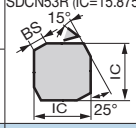
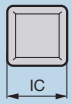
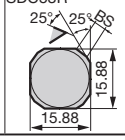
Selection Guide for Modular Tools

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

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Application: Finishing	Application: High Feed	Application: Shoulder Milling	Application: Slot Milling	Application: Ramping	Application: Chamfering	Application: Drilling	Application: Profiling	Application: Profile Finishing	Work Material P: General Steel / Carbon 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
	.394" 90°	ø0.750-ø1.500" ø20-ø40mm	ø18 to ø32 mm	WEZ–M Modular →H69	WEZ20000M WEZ11000M	(For 20000 Type) AOMT11T302PER-G 	14° to 15°	−7° to −11°	○	◎		◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	.591" 90°	ø1.00-ø1.500" ø25-ø40mm	ø18 to ø32 mm		WEZ30000M WEZ17000M	(For 30000 Type) AOMT170502PER-G	−10° to −15°	−4° to −9°																		
Shoulder Milling	.236" 90°	ø20 to ø40 mm	ø18 to ø32 mm	WFX–M Modular →H113	WFX08000M	SOMT080304PZER-G	12°	−6°	○	◎		◎	◎						◎	◎	◎	◎	◎	◎	○	
	1.5mm 17°	ø8.4 to ø34.3	–	DMSL–M Modular →H159	DMSL06000M		-8°	-12.5° to -16.5°			◎	○	○	○					◎	◎	○	◎			○	○
	.394" 90°	ø0.750" to ø1.500" ø16 to ø40mm	ø15 to ø32 mm	WEX–M Modular →H91	WEX20000M WEX2000M	(For 3000 Type) AXMT170504PEER-G 	14° to 25°	10° to 18°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	.551" 90°	ø1.000" to ø1.500" ø25 to ø40mm	ø23 to ø32 mm		WEX30000M WEX3000M		16° to 24°	8° to 15°																		
High Feed	0.059" 75°	ø25 to ø32 mm	ø23 to ø32 mm	WFXH–M Modular →H169	WFXH08000M	(For 12000 Type) SOMT120308PDER 	6°	−6°			◎	○	○	○					◎	◎	◎	◎	◎	◎	○	
	0.098" 75°	ø40 mm	ø28 to ø32 mm		WFXH12000M		6°	−6°																		
	.039" 70°	ø0.750" to ø1.000" ø16 to ø25mm	ø15 to ø25	MSX–M Modular →H174	MSX20000M MSX06000M	(For 08000 Type) WDMT0804ZDTR 	8°	−3° to −6°			◎	○	○	○					◎	◎	◎	◎				○
	.059" 70°	ø1.000-ø1.250" ø25 to ø35mm	ø23-ø32 mm		MSX30000M MSX08000M																					
	.079" 70°	ø32-ø40 mm	ø28-ø32 mm		MSX12000M																					
Radius	.157"	ø20-ø32 mm	ø18-ø32 mm	RSX–M Modular →H192	RSX08000M	RDET0803M0EN (IC=8) RDET10T3M0EN (IC=10) RDET1204M0EN (IC=12) 	10°	−8°	◎		○	○	○	◎			◎					◎			◎		
	.197"	ø1.000" to ø1.250" ø25 to ø32mm	ø23 to ø32 mm		RSX30000M RSX10000M RSXF10000M		10°	−5°																		
	.236"	ø1.250" to ø1.500" ø32 to ø40mm	ø28 to ø32 mm		RSX40000M RSX12000M RSXF12000M		10°	−5°																		
	.157"	ø20-ø25 mm	ø18 to ø25	WRCX–M Modular →H199	WRCX08000M	(For 10000 Type) QPMT10T335PPEN 	−3°	0°	◎		○	○	○	◎			◎		◎	◎	◎	◎		◎	○	○
	.197"	ø25-ø32 mm	ø23 to ø32		WRCX10000M																					
	.236"	ø40 mm	ø28 to ø32		WRCX12000M																					
Chamfering	45°	ø16 mm	ø15-ø16 mm	WFXC–M Modular →H212	WFXC08000M	(For 08000 Type) SOMT080308PZER-G 	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
		ø25 to ø32 mm	ø23-ø32 mm		WFXC12000M		0°	0°																		
Tangential	.315" 90°	ø0.750" to ø1.500"	ø18 to ø32 mm	TSX–M  →H150	TSXF30000M	(For 08000 Type) LNEX080404PNER-G	−6° to −3°	−36° to −20°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
	.472" 90°	ø1.000" to ø1.500"	ø23 to ø32 mm		TSX40000M	(For 13000 Type) LNEX130604PNER-L 		−31° to −15°																		

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

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

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Chamfering	Drilling	Profiling	Profile Finishing	Work Material P: General Steel / Carbon Steel / Alloy Steel	P: Tempered Steel / Die Steel	M: Stainless Steel	K: Cast Iron / Ductile Cast Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy / Heat-Resistant Alloy	H: Hardened Steel
High Feed Cast Iron Machining	1 mm, 89°~89°30'	ø80 to ø315	–	GFX →H240	GFX(C)13000	(For 16000 Type) LNGX160516PNFN-W 	−5°	−8°		◎	◎								X	X	X	◎	X	X	X	X
					GFX16000																					
High Feed Cast Iron Machining	.394" 90°	ø80 to ø160	–	GFS →H242	GFS13000	LNGX130508PNFN-W 	−3°	−11°		◎	◎	○							X	X	X	◎	X	X	X	X
High Feed Cast Iron Machining	.236" 30°	ø80 to ø315	–	GRHN →H243	GRHNF17000	HNEF100608DNEN-G 	−6°	−6.5° to −5°			◎								X	X	X	◎	X	X	X	X
					GRHNM17000		−6°	−6.5° to −5°																		
Cast Iron Machining		ø3.000" to ø8.000"	-	GFV	GFV5000	LNGX16 	−5°	−8°	◎	◎									X	X	X	◎	X	X	X	X
Milling Cutters (Special Purpose)	.216" 45° *	ø100 to ø450	–	NRV →H247	NRV4000	SNMN433 SNC535 	−5°	−6°			◎								X	X	X	◎	X	X	X	X
	.335" 45° *		–		NRV5000																					
	.275" 25°	ø100 to ø450	–	DPV →H248	DPV4000	SDCN42R (IC=12.70) SDCN53R (IC=15.875) 	10°	5°		○	◎								X	X	X	◎	X	X	X	X
	.295" 25°	ø100 to ø450	–		DPV5000		10°	5°																		
	.019" 90°	ø100 to ø450	–	NFV →H249	NFV4000	SNEF43W (IC=12.70) SNEF53W (IC=15.875) 	−5°	−6°		◎	◎								X	X	X	◎	X	X	X	X
	.019" 90°	ø100 to ø450	–		NFV5000		−5°	−6°		◎	◎								X	X	X	◎	X		X	X
	.394" 25°	ø200 to ø450	–	APV →H250	APV5000	SDC53R 	18°	−2°		◎	◎								X	X	X		◎	○		X

*Use a chamfering tool for chamfering operations.

Indexable Endmill Selection Guide

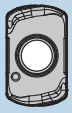
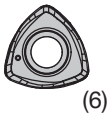
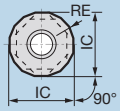
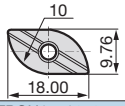
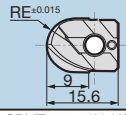
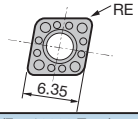
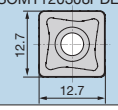
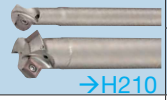
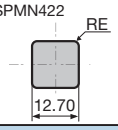
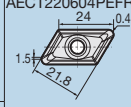
◎: Best ○: Suitable X: Unsuitable Blank: Not Recommended

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in / mm)	Shank Dia. (mm)	Series (inch / metric) (Page)	Model	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Chamfering	Drilling	Profiling	Profile Finishing	Work Material P: General Steel / Carbon Steel / Alloy Steel	P: Tempered Steel / Die Steel	M: Stainless Steel	K: Cast Iron / Ductile Cast Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy / Heat-Resistant Alloy	H: Hardened Steel
Face Milling	.236" 90°	ø1.000" to ø2.500" ø25 to ø80mm	ø1.0 - 1.25" ø25 - ø42 mm	DFC–E →H111	DFC20000EW DFCM2000EW DFC09000E DFCM09000E	XNMU060608PNER–G	–5°	–9°	◎	○		◎	○						◎	◎	○	◎			○	
Shoulder Milling	.394" 90°	ø0.5 - ø1.25" ø14 - ø80mm	ø16 to ø32	WEZ–E	WEZ11000E WEZ11000EL	AOMT11T302PEER–G	6° to 15°	–7° to –18°	◎	◎		◎	◎	◎					◎	◎	◎	◎	◎	◎	◎	
	.591" 90°	ø1.00 - ø2.00" ø25 - ø80mm	ø25 to ø42	→H58	WEZ17000E WEZ17000EL		6° to 15°	–6° to –12°																		
	.236" 90°	ø20 to ø63	ø16 to ø32	WFX–E	WFX08000E WFXM08000E	(For 12000 Type) SOMT120408PDER	12°	–6°	○	◎		◎	○						◎	◎	◎	◎	◎	◎		
	.394" 90°	ø40 to ø80	ø32	→H111	WFX12000E WFXF12000E		8°	–8°																		
	.315" 90°	ø0.625" to ø1.5" ø16 to ø80mm ø0.750" to ø1.5" ø20 to ø80mm	ø.625 - ø1.25" ø16 - ø32mm ø.750 - ø1.25" ø20 - ø32mm	TSX–E	TSX30000EW TSXF30000EW TSX08000E TSXF08000E	(For 08000 Type) LNEX080404PNER–G	–6° to –3°	–36° to –20°	◎	◎		◎	○						◎	◎	◎	◎	◎	◎	◎	
	.473" 90°	ø1.0" to ø1.5" ø25 to ø80mm ø32 to ø80mm ø1.25" to ø1.5" ø40 to ø80mm	ø1.0 - ø1.25" ø25 - ø32mm ø1.0" ø32 mm	→H138	TSX40000EW TSXF40000EW TSX13000E TSXM13000E TSXF13000E	(For 13000 Type) LNEX130604PNER–L		–31° to –15°																		
	.827" to 1.575" 90°	ø20 to ø40mm	ø20 to ø32mm	TSXR–E	TSXR08000E		–6° to –3°	–33° to –18°	○			◎							◎	◎	◎	◎	◎	◎	◎	
	1.614" to 2.362" 90°	ø40 to ø050mm	ø32 to ø42mm	→H146	TSXR13000E			–23° to –18°																		
	.236" 90°	ø32 to ø63mm	ø10 to ø20	WEX–E	WEX1000E WEX1000EL	(For 2000 Type) AXMT123504PEER–G	9° to 17°	7° to 17°	○	○		◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	.394" 90°	ø0.500" to ø1.250" ø14 to ø63mm	ø.75 - ø1.25" ø16 - ø32mm		WEX20000EW/EMW WEX20000ELC WEX2000E/EL		14° to 25°	10° to 18°																		
	.551" 90°	ø1.000" to ø2.000" ø25 to ø63mm	ø1.0 - ø1.25" ø20 - ø42mm	→H90	WEX30000EW/EMW WEX30000ELC WEX3000E(–C) WEX3000ES(–C) WEX3000EL		16° to 24°	8° to 15°																		
	.709" to 1.417" 90°	ø1.000" to ø1.500" ø20 to ø40	ø1.0 - ø1.25" ø20 - ø42	WRX–E	WRX20000E WRX2000E	(For 2000 Type) AXMT123504PEER–G	16° to 24°	13° to 16°	○			◎	◎	○					◎	◎	◎	◎	◎	◎	◎	
	1.06-2.09" 90°	ø2.000" ø40 to ø50	ø1.25" ø32 - ø42	→H96	WRX30000E WRX3000E		20° 22°	12° 13°																		
High Feed	.039" to .098" 70°	ø0.750" to ø1.500" ø16 to ø63mm	ø16 to ø42	MSX–E →H173	MSX20000EW/ELC MSX30000EW/ELC MSX40000EW/ELC MSX06000E MSX08000E MSX12000E	WDMT0603ZDTR (IC=6.35) WDMT0804ZDTR (IC=8.5) WDMT1204ZDTR (IC=12)	8°	–3° to –8°			◎	○	○	○					◎	◎	◎	◎				○
Radius	.157"	ø20 to ø25mm	ø20 - ø25mm	RSX–ES	RSX08000ES RSXF08000ES	RDET0803M0EN (IC=8) RDET10T3M0EN (IC=10) RDET1204M0EN (IC=12)	10°	–8°	◎		○	◎	○	◎			◎		◎	◎	◎	◎			◎	
	.197"	ø1.000" to ø1.500" ø25 to ø32mm	ø1.25" ø25 - ø32mm		RSX30000EW RSX30000ELC RSX10000ES RSXF10000ES		10°	–5°																		
	.236"	ø1.250" to ø1.500" ø32mm	ø32	→H191	RSX40000EW RSX40000ELC RSX12000ES RSXF12000ES		10°	–5°																		

*Use a chamfering tool for chamfering operations.

Indexable Endmill Selection Guide

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

Applications	Lead Angle / Maximum Depth of Cut	Cutting Edge Dia. (in. / mm)	Shank Dia. (mm)	Series (Page)	Model (inch / metric)	Insert Cat. No. / Diagram (Typical)	Rake Angle Axial	Rake Angle Radial	Application: General-purpose	Face Milling: Finishing	Face Milling: High Feed	Shoulder Milling	Slot Milling	Ramping	Chamfering	Drilling	Profiling	Profile Finishing	Work Material P: General Steel / Carbon Steel / Alloy Steel	P: Tempered Steel / Die Steel	M: Stainless Steel	K: Cast Iron / Ductile Cast Iron	N: Non-ferrous Metal	N: Aluminum Alloy	S: Ti Alloy / Heat-Resistant Alloy	H: Hardened Steel 45 to 55 HRC
High Feed	.0591 73°	ø.6250" to ø1.250" ø16 to ø35mm	ø16 to ø32	DMSL-E New →H158	DMSL06000E(L)	 (4)	-8°	-12.5° to -16.5°			◎	○	○	○					◎	◎	○	◎			○	○
High Feed	.1181 75°	ø1.500" to ø2.000" ø35 to ø63mm	ø3 to ø42 mm	DMSW-E New →H161	DMSW08000E(L)	 (6)	-6°	-10° to -13°			◎	○	○	○					◎	◎	○	◎				○
Radius	.157"	ø20 to ø25mm	ø20 to ø25	WRCX-E →H194	WRCX08000E	QPMT080330PPEN (IC=8) QPMT10T335PPEN (IC=10) QPMT160660PPEN (IC=16) 	–3°	0°	◎		○	◎	○	◎			◎		◎	◎	◎	◎		◎	○	○
Radius	.197"	ø1.000" to ø1.500" ø25 to ø32	ø1.000 - ø1.500" ø25 - ø32mm		WRCX30000E WRCX30000E WRCX10000E		–3°	0°																		
Radius	.315"	ø1.250" to ø1.500" ø40 to ø50	ø1.000 - ø1.500" ø32 mm		WRCX40000E WRCX40000E WRCX16000E		–3°	0°																		
R / 3D Profiling	.787" to 1.693"	ø0.750" to ø2.000" R10 (ø20) to R25 (ø50)	ø25 to ø50.8	WBMR →H201	WBMR WBMR2000 WBMR2000L	ZNMT1804100–C 	–10°	-					◎				◎		◎	◎	◎	◎			○	○
R / 3D Profiling	.0039" to .016"	ø0.500" to ø1.250" R5 (ø10) to R15 (ø30)	ø16 to ø32	WBMF →H203	WBMF WBMF1000	ZPGU1551050 	0°	-					◎				◎	◎	◎	◎	◎	◎				○
T-Slot	.354" to .866" 90°	ø21 to ø50	ø25 to ø32	TSE →H208	TSE	CPMT060204N-US 	0°	0°					○						○	○	○					
Chamfering	45°	ø8 to ø16	ø10 to ø16	WFXC-E	WFXC08000E	(For 12000 Type) SOMT120308PDER 	0°	0°							◎				◎	◎	◎	◎	◎	◎	○	
Chamfering	45°	ø25 to ø32	ø25 to ø32	 →H210	WFXC12000E																					
Chamfering	45°	ø7 to ø35	ø32	SMC →H262	SMC	SPMN422 	0°	0°							◎				○	○	○	○				
Non-ferrous Metal	.63 - .71" 90°	ø.750" to ø1.500" ø20 to ø40mm	ø.750"- ø1.500" ø20 - ø32 mm	WAX-E →H234	WAX30000EW WAX30000ELC WAX3000E WAX3000EL	(For 4000 Type) AECT220604PEFRA 	19° to 25°	6°	○			◎	◎	◎			◎		X	X	X	X	○	◎		X
Non-ferrous Metal	.866" to .945" 90°	ø1.000" to ø1.500" ø25 to ø40mm	ø.750"- ø1.500" ø25 - ø32 mm		WAX40000EW WAX40000ELC WAX4000E WAX4000EL																					

MEMO

Grades for Milling

Work Material	P General Steel (Carbon Steel, Alloy Steel), Mild Steel						M Stainless Steel						K Cast Iron				
Classification	Wear Resistance ← → Fracture Resistance						Wear Resistance ← → Fracture Resistance						Wear Resistance ← → Fracture Resistance				
	—	P01	P10	P20	P30	P40	—	M01	M10	M20	M30	M40	—	K01	K10	K20	K30
Coated Carbide (A26)			ACU2500						ACU2500						ACU2500		
								ACM100									
		ACP2000							New ACS2500					ACK2000			
										New ACS3000						ACK3000	
				ACP3000													
									ACM200				ACK100				
			ACP100														
											ACM300						
				ACP200											ACP200		
								ACK300									
									ACP300								
					ACP300											ACK300	
Cermet (A29)			T2500A						T2500A								
			T250A						T250A								
				T4500A							T4500A						
Cemented Carbide (A30)				A30N								A30N			G10E		
Uncoated CBN / Coated CBN (A32)														New BN7125			
																BNC8115	
																BNS8125	

Work Material	S Exotic Alloy						H Hardened Steel					N Non-Ferrous Metal				
Classification	Wear Resistance ← → Fracture Resistance						Wear Resistance ← → Fracture Resistance					Wear Resistance ← → Fracture Resistance				
	—	S01	S10	S20	S30	S40	—	H01	H10	H20	H30	—	N01	N10	N20	N30
Coated Carbide (A26)			ACU2500											DL1000		
			New ACS2500													
				New ACS3000												
		ACM100														
			ACM200													
					ACM300											
		ACK300												DL2000		
Cemented Carbide (A30)				EH520											H1	
															H20	
Uncoated CBN (A32)								BN2000	BN350							
PCD (A34)												DA1000				

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

Grades for Milling / Characteristic Values

CVD

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

PVD

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	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, providing stable long tool life with various work material grades	—
	ACP200	89.5	3.2	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	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 interrupted or unstable work holding conditions for milling steel · Carbide substrate with excellent thermal crack resistance, plus a new coating with excellent wear resistance and chipping resistance, realizes stable long tool life over a wide range of cutting conditions	ACP200 ACP300
M Stainless Steel	ACM100	91.4	3.3	Super ZX Coat	3	· For high-speed machining of stainless steel · Adopts high-hardness micro-grain carbide substrate and super multi-layered coating to realize outstanding wear resistance	ACZ310
	ACM300	89.8	3.4	Super ZX Coat	3	· Our 1st recommended grade for milling stainless steel · Adopts high-strength carbide substrate and super multi-layered coating for next-level wear resistance and fracture resistance	—
S Exotic Alloy	New ACS2500	90.8	4.2	ABSOTECH	3	· First recommendation for titanium alloy applications · Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping-resistant coating, balances excellent wear and fracture resistance	ACZ310
	New ACS3000	89.8	3.4	ABSOTECH	3	· Suitable for a wide range of exotic alloy machining applications · Realizes superb stability due to a high-toughness carbide substrate with a highly chipping-resistant coating	—
K Cast Iron	ACK300	91.4	3.3	Super ZX Coat	3	· General-purpose grade with an excellent balance of wear and fracture resistance	ACZ310
	ACK3000	91.7	3.1	Absotech	3	· Our 1st recommended grade for milling cast iron · Adopts a high thermal conductivity carbide substrate and a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life over a wide range of cast iron machining operations	ACK300
N Non-Ferrous Metal	DL1000	92.9	2.1	AURORA Coat (DLC)	0.5	· For milling non-ferrous metal, utilizing DLC coat with a low coefficient of friction and excellent adhesion resistance	—
	DL2000	91.6	3.8	AURORA Coat (DLC)	0.5	· For milling non-ferrous metal, utilizing DLC coat with a low coefficient of friction and excellent adhesion resistance	—

Cermet

Work Material	Grade	Hardness (HRA)	TRS (GPa)	Coating Type	Coating Thickness (μm)	Features	Old Grades
P Steel	T1500A	92.0	2.2	—	—	· For finishing of steel and stainless steel · Excellent balance of wear and fracture resistance, achieving excellent machined surface quality over a wide range of cutting conditions	T1200A
	T250A	91.4	2.1	—	—	· For finishing of steel and stainless steel · Tough grade with enhanced crack spread resistance	—
M Stainless Steel	T2500A	91.8	2.4	—	—	· For finishing of steel and stainless steel · Fine, uniform grain structure greatly improves toughness, realizing 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

Classification	Grade	Binder	Carbon Content (%)	Grain Size (μm)	Hardness HV (GPa)	TRS (GPa)	Main Coating Components	Coating Thickness (μm)	Features
K Cast Iron	BN7125	Co Compound	90 to 95	2	41 to 44	1.9 to 2.0	-	-	General-purpose grade with excellent wear resistance, fracture resistance, and thermal shock resistance, suitable for machining of cast iron and exotic alloys
	BNS800	Al Alloy	85 to 90	8	39 to 42	0.9 to 1.1	—	—	Grade with 100% solid CBN structure and excellent thermal shock resistance.
	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 optimized 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 (PCD)

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

Carbide A30 Ceramics A36

Cutter Identification Table

Standard Type

DFC (F) 2 2000 R (S)

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

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

Table 1: (1) Cutter Series

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

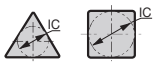
(Table 2) (2) Additional Symbols

Fine-Pitch Indication	
M	Fine pitch
F	Extra Fine Pitch

Table 3 (3) Insert Inscribed Circle Size

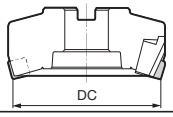
Inch	IC Dimensions (mm)
3	9.525
4	12.70
5	15.875
6	20.0
Millimeter	**IC Dimensions (mm)**
12	12.7
13	13.5
14	14.0
16	16.0
20	20.0

Inscribed Circle Example

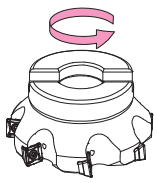
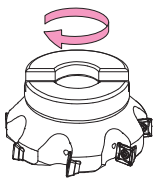


(Table 4) (4) Cutter Diameter

inch & mm



(Table 5) (5) Feed Direction

Left Hand (L)	Right Hand (R)
	

(Table 6) (6) Mounting

Bore Size Dimension	
S	Metric

High Feed Cutter Type

DPV (Z) 4 100 (Q) R

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

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

(7) 2-Piece Set Indication
Z

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

(8) Quick Change Type
Q

Insert Identification Table

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

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

Table 1: (1) Insert Shape

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

Table 2: (2) Relief Angle

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

Table 3: (3) Tolerance (mm)

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

Table 4: (4) Insert Hole

Symbol	Shape (Cross Section)
W	
M	
R	
N	
T	

Table 5: (5) Cutting Edge Length

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

Table 6: (6) Thickness

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

Table 7: (7) Cutting Edge Angle

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

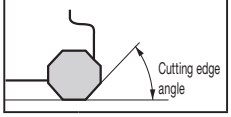


Table 8 (8) Wiper Edge Relief Angle

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

Table 9: (9) Edge Treatment

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

Table 10 (10) Feed Direction

Symbol	Feed Direction
N	No
R	Right Hand
L	Left Hand

Table 11 (11) Additional Information (Ex.)

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

* Exceptions

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

For example,

· although "H" and "K" indicate precision tolerances, the main cutting edges have general precision.

· "M" in this instance represents the Neutral Hand insert.

· "T" in this instance represents negative land edge treatment.

· "R" indicates the feed direction (right hand).

Modular Tools

■ Features

● 12 indexable modular head available!

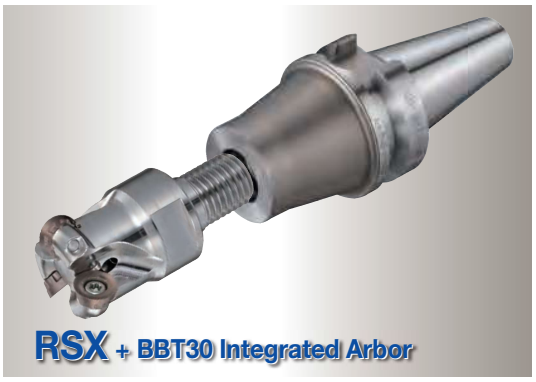
WEZ	**DMSL**	**RSX**
WEZR	**DMSW**	**WRCX**
WEX	**WFXH**	**WFXC**
WFX	**MSX**	**ANXS**

● In addition to carbide arbors and steel arbors, the lineup of integrated BBT types enables a variety of combinations

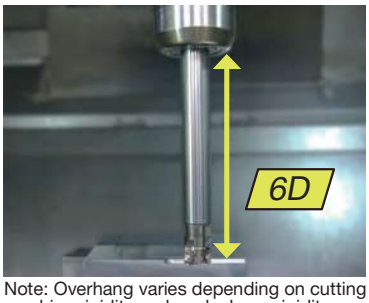
● General-purpose grade applicable to any work material Introducing the new grade ACU2500, which is applicable to a wide variety of processes and work materials such as steel, stainless steel and cast iron.

Suitable for milling with ***long overhangs*** *when combined with carbide or steel arbors*

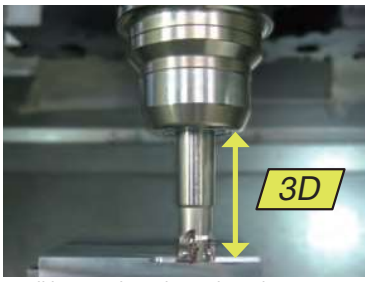
When combined with BBT integrated arbors, ***high load milling*** *is supported*



Modular + Carbide Arbor



Standard Type (Integrated Arbor)



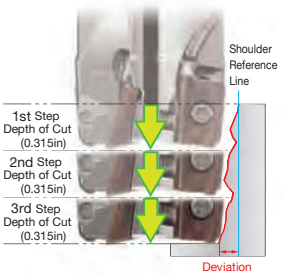
Note: Overhang varies depending on cutting conditions such as the tool used, machine rigidity and work clamp rigidity.

■ Screw Size and Mounting Cutter Size

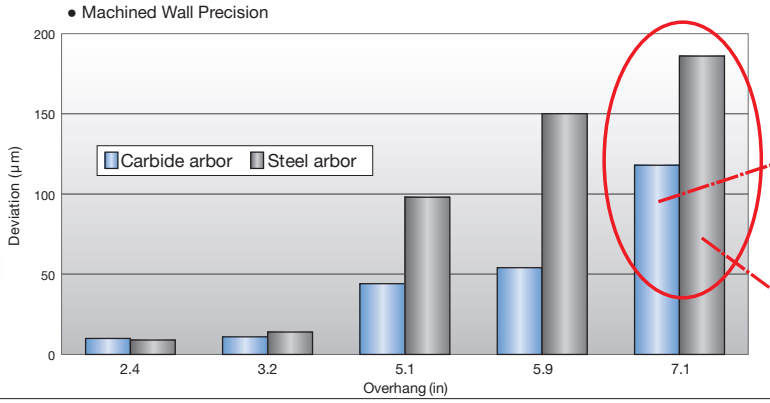
Screw CRKS	Applicable Cutter Size (DC)
M8	ø16, ø18
M10	ø20, ø22
M12	ø24, ø28
M16	ø30, ø32, ø35, ø40

■ Cutting Performance

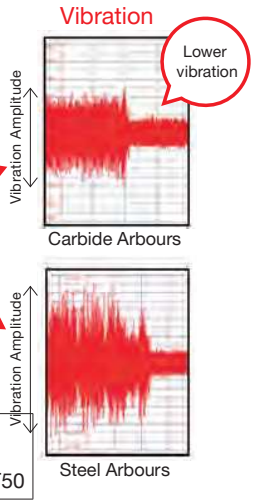
● Carbide arbors achieve greater precision and stable milling compared to steel arbors



● Machined Wall Precision



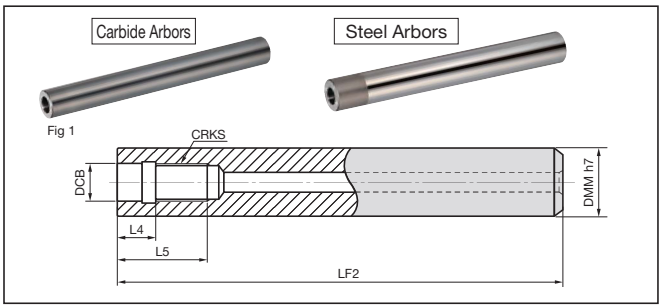
Vibration



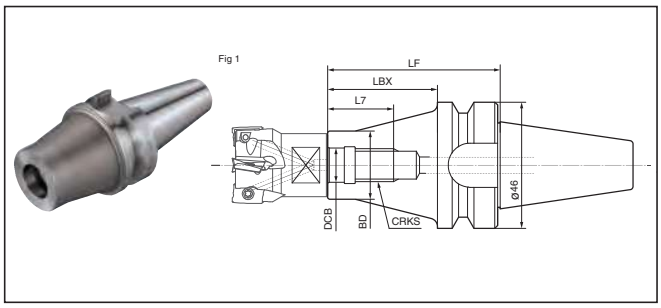
Work Material : 1050
Tool : WEX2025M12Z4 (ø25 x 4-flute)
Cutting Conditions: v_c = 328 SFM f_z = 0.004in/t a_e = 3.15in x 3 times a_p = 0.08in Machine: Machining center BT50

Modular Tools

Modular Tooling - Arbors (Carbide Arbors/Steel Arbors)



BBT Integrated Type - Modular Tooling Arbors



Steel Arbor

Dimensions (*mm*)

	Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*	Fig
Inch	**MA0625M08L475S**	●	**M8**	0.335	0.625	4.750	0.393	0.708	5.734	1
	MA0750M10L600S	●	**M10**	0.413	0.750	6.000	0.393	0.787	7.181	1
	MA1000M12L800S	●	**M12**	0.492	1.000	8.000	0.393	0.866	9.378	1
	MA1000M16L800S	●	**M16**	0.669	1.000	8.000	0.393	0.944	9.575	1
	MA1250M16L800S	●	**M16**	0.669	1.250	8.000	0.393	0.944	9.575	1
Metric	**MA16M08L120S**	★	**M8**	*8.5*	*16*	*120*	*10*	*18*	*145*	1
	MA20M10L150S	★	**M10**	*10.5*	*20*	*150*	*10*	*20*	*180*	1
	MA25M12L200S	★	**M12**	*12.5*	*25*	*200*	*10*	*22*	*235*	1
	MA32M16L200S	★	**M16**	*17.0*	*32*	*200*	*10*	*24*	*240*	1

BBT Integrated Arbor

Dimensions (*mm*)

Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	O.D. BD	Body Overhang L6	Length LBX	Thread Depth L7	Overhang LF*	Coolant Hole	Fig
BBT30-M8-50	★	**M8**	*8.5*	*15.9*	*73*	*50*	*18*	*98*	Yes	1
BBT30-M10-45	★	**M10**	*10.5*	*19.9*	*68*	*45*	*20*	*98*	Yes	1
BBT30-M12-40	★	**M12**	*12.5*	*24.9*	*63*	*40*	*22*	*98*	Yes	1
BBT30-M16-35	★	**M16**	*17*	*31.9*	*58*	*35*	*24*	*98*	Yes	1

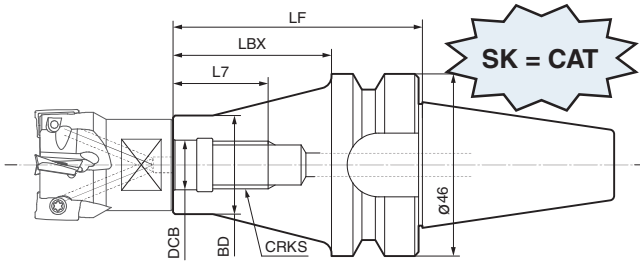
*Overhang length for LF is with head mounted.
Can also be used with BT30 spindle machines.

Carbide Arbor

Dimensions (*mm*)

Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*	Fig
MA15M08L120C	★	**M8**	*8.5*	*15*	*120*	*10*	*18*	*145*	1
MA15M08L160C	★	**M8**	*8.5*	*15*	*160*	*10*	*18*	*185*	1
MA16M08L120C	★	**M8**	*8.5*	*16*	*120*	*10*	*18*	*145*	1
MA16M08L160C	★	**M8**	*8.5*	*16*	*160*	*10*	*18*	*185*	1
MA18M10L150C	★	**M10**	*10.5*	*18*	*150*	*10*	*20*	*180*	1
MA18M10L200C	★	**M10**	*10.5*	*18*	*200*	*10*	*20*	*230*	1
MA20M10L150C	★	**M10**	*10.5*	*20*	*150*	*10*	*20*	*180*	1
MA20M10L200C	★	**M10**	*10.5*	*20*	*200*	*10*	*20*	*230*	1
MA23M12L200C	★	**M12**	*12.5*	*23*	*200*	*10*	*22*	*235*	1
MA23M12L250C	★	**M12**	*12.5*	*23*	*250*	*10*	*22*	*285*	1
MA25M12L200C	★	**M12**	*12.5*	*25*	*200*	*10*	*22*	*235*	1
MA25M12L250C	★	**M12**	*12.5*	*25*	*250*	*10*	*22*	*285*	1
MA28M16L200C	★	**M16**	*17.0*	*28*	*200*	*10*	*24*	*240*	1
MA28M16L300C	★	**M16**	*17.0*	*28*	*300*	*10*	*24*	*340*	1
MA32M16L200C	★	**M16**	*17.0*	*32*	*200*	*10*	*24*	*240*	1
MA32M16L300C	★	**M16**	*17.0*	*32*	*300*	*10*	*24*	*340*	1

Modular Tools - Modular Tool Adapters



Modular Adapters - SK40

Catalog Number	Stock	Dimension (mm) CRKS	DCB	DMM	BD	LF	L7	LBX
SMA-M8-69-SK40	★	**M8**	*8.5*	*13.8*	*23*	*69*	*12*	*49.9*
SMA-M8-94-SK40	★	**M8**	*8.5*	*13.8*	*25*	*94*	*12*	*74.9*
SMA-M8-119-SK40	★	**M8**	*8.5*	*13.8*	*30*	*119*	*12*	*99.9*
SMA-M10-69-SK40	★	**M8**	*8.5*	*18.0*	*25*	*69*	*12*	*49.9*
SMA-M10-94-SK40	★	**M10**	*10.5*	*18.0*	*30*	*94*	*12*	*74.9*
SMA-M10-119-SK40	★	**M10**	*10.5*	*18.0*	*35*	*119*	*12*	*99.9*
SMA-M10-169-SK40	★	**M10**	*10.5*	*18.0*	*45*	*169*	*12*	*149.9*
SMA-M12-69-SK40	★	**M10**	*12.5*	*21.0*	*30*	*69*	*12*	*49.9*
SMA-M12-94-SK40	★	**M12**	*12.5*	*21.0*	*35*	*94*	*12*	*74.9*
SMA-M12-119-SK40	★	**M12**	*12.5*	*21.0*	*38*	*119*	*12*	*99.9*
SMA-M12-169-SK40	★	**M12**	*12.5*	*21.0*	*48*	*169*	*12*	*149.9*
SMA-M16-69-SK40	★	**M12**	*17.0*	*29.0*	*34*	*69*	*12*	*49.9*
SMA-M16-94-SK40	★	**M16**	*17.0*	*29.0*	*35*	*94*	*12*	*74.9*
SMA-M16-119-SK40	★	**M16**	*17.0*	*29.0*	*40*	*119*	*12*	*99.9*
SMA-M16-169-SK40	★	**M16**	*17.0*	*29.0*	*48*	*169*	*12*	*149.9*

Note: The above holders require an M16 thread retention knob

Identification Code

MA 15 M8 L120 C

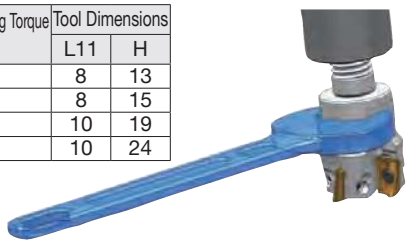
Cutter Series	Shank Dia. .625"	Mounting Screw Size	Arbor Overall Length	Grade C: Carbide S: Steel

Recommended Tightening Torque (N·m)

*Take care when tightening the head.

- When mounting the head to an arbor, follow the standard tightening torque in the table below.
- Check the mounting screw diameter for the head and arbor beforehand.

Screw Size	Regulated Tightening Torque (N·m)	Tool Dimensions L11	H
M8	23	8	13
M10	46	8	15
M12	80	10	19
M16	90	10	24



Modular Adapters - SK50

Catalog Number	Stock	Dimension (mm) CRKS	DCB	DMM	BD	LF	L7	LBX
SMA-M8-69-SK50	★	M8	8.5	13.8	23	69	12	49.9
SMA-M8-119-SK50	★	M8	8.5	13.8	30	119	12	74.9
SMA-M8-169-SK50	★	M8	8.5	13.8	45	169	12	99.9
SMA-M10-69-SK50	★	M10	10.5	18.0	25	69	12	49.9
SMA-M10-119-SK50	★	M10	10.5	18.0	35	119	12	99.9
SMA-M10-169-SK50	★	M10	10.5	18.0	45	169	12	149.9
SMA-M12-69-SK50	★	M12	12.5	21.0	30	69	12	49.9
SMA-M12-119-SK50	★	M12	12.5	21.0	38	119	12	99.9
SMA-M12-169-SK50	★	M12	12.5	21.0	52	169	12	149.9
SMA-M16-69-SK50	★	M16	17.0	29.0	34	69	12	49.9
SMA-M16-119-SK50	★	M16	17.0	29.0	40	119	12	99.9
SMA-M16-169-SK50	★	M16	17.0	29.0	48	169	12	149.9

Note: The above holders require an M24 thread retention knob

■ General Features

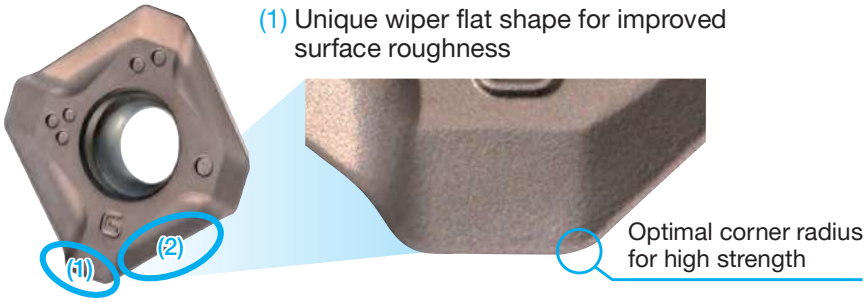
- WGX Series employs a unique chipbreaker design to provide lower cutting force and higher-quality surface finish than conventional cutters.
- Lineup of insert grades and chipbreakers has been significantly expanded. The ACM grades (Series) can be utilized for stainless steels and exotic alloys. Now available: ACU2500/Absotech coating universal grade for a wide range of materials.

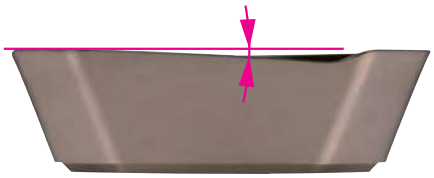
■ Features

- Reduced Cutting Force
  - High-rake chipbreaker designed for use with the WGX Series achieves low cutting force
- High Quality
  - Improved runout precision and unique wiper flat shape ensure excellent surface finish quality
  - Additional edge chamfer reduces burrs and edge chipping (only applies to FG chipbreaker)
- Wide Ranging Product Lineup
  - A wide selection of grades along with 4 types of chipbreakers and wiper inserts are available.
  - Can be used for a wide variety of machining applications.

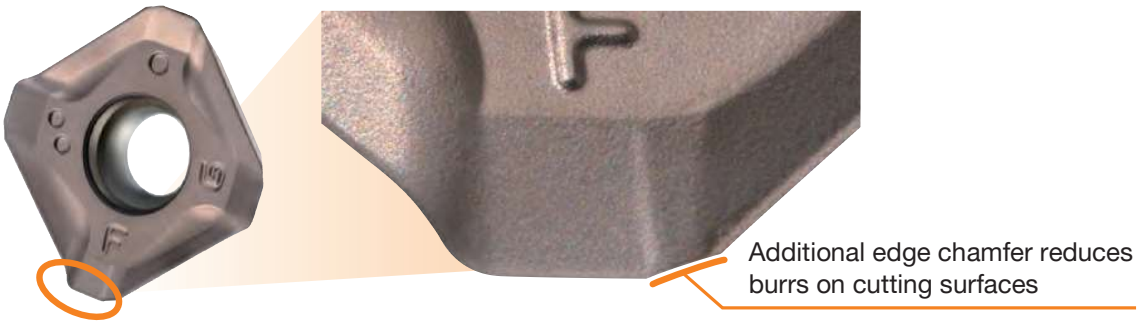
■ Insert Shape Features

- General-purpose G Chipbreaker





- FG Chipbreaker with Low-Burr Design



■ Product Range

WGX - R(S)
Standard Pitch

WGXM - R(S)
Fine Pitch

WGXF - R(S)
Extra Fine Pitch

WGX - EW
Endmill

Type		Cat. No.	Description	Diameter (Inch)									Diameter (*mm*)									
				ø2.0	ø2.5	ø3.0	ø4.0	ø4.0*	ø5.0	ø6.0	ø8.0	ø10.0	*ø32*	*ø40*	*ø50*	*ø63*	*ø80*	*ø100*	*ø125*	*ø160*	*ø200*	*ø250*
Inch	Shellmill	**WGX40000R**	Standard Pitch	3	4	4	5	5	6	7	8	10										
Inch	Shellmill	**WGXM40000R**	Fine Pitch	4	5	6	7	7	8	10	12											
Inch	Shellmill	**WGXF40000R**	Extra Fine Pitch	5	6	8	10	10	12	16	20											
Inch	Shank	**WGX40000EW**	Endmill	4	5																	
Metric	Shellmill	**WGX13000R** Inch Arbor	Standard Pitch														4	5	6	7	8	10
Metric	Shellmill	**WGX13000RS**	Standard Pitch											3	3	4	4	5	6	7	8	10
Metric	Shellmill	**WGXM13000R** Inch Arbor	Fine Pitch														6	7	8	10	12	14
Metric	Shellmill	**WGXM13000RS**	Fine Pitch												4	5	6	7	8	10	12	14
Metric	Shellmill	**WGXF13000R** Inch Arbor	Extra Fine Pitch														8	10	12	16	20	24
Metric	Shellmill	**WGXF13000RS**	Extra Fine Pitch												5	6	8	10	12	16	20	24
Metric	Shank	**WGX13000EW**	Endmill										3	3	4	5						

● Numbers inside are number of teeth - Inch Arbor Inch Arbor - Sizes of ø6.000" and 125mm and below have coolant holes, *: 4.000" cutter diameter with 1.500" arbor diameter

■ 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.

Fig 1

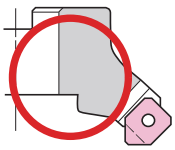
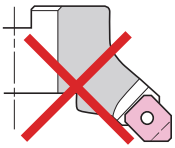


Fig 2

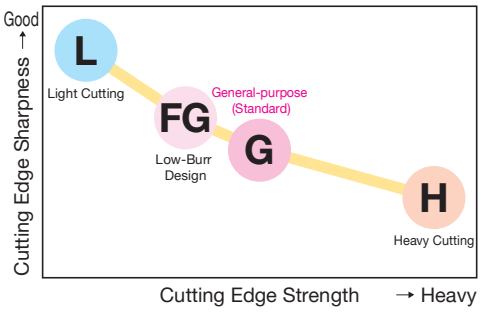


- The wiper insert has a single corner specification.
- For milling with wiper inserts, see "The Basics of Milling, Milling Edition" in Chapter N of the General Catalog.

■ Chipbreaker Selection

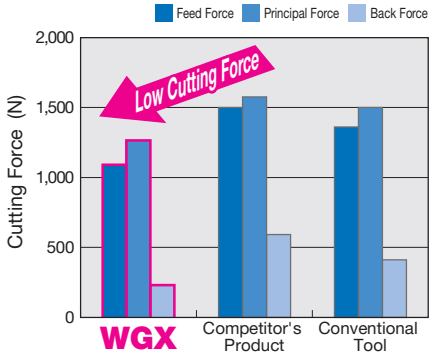
Part Material	P M K S N	P M K S			P K
Applications	Light Cutting	General-purpose/ Burr Prevention	General-purpose	Heavy Cutting	Surface Finish Emphasised
Features	Low Cutting Force	Standard / With Chamfer	Standard	High Strength	Wiper
Chipbreaker	L	FG	G	H	W
Chipbreaker					
Cutting Edge Cross Section	.0019” 25°	.0059” 20°	.0059” 20°	.0079” 15°	

■ Chipbreaker Selection Guide



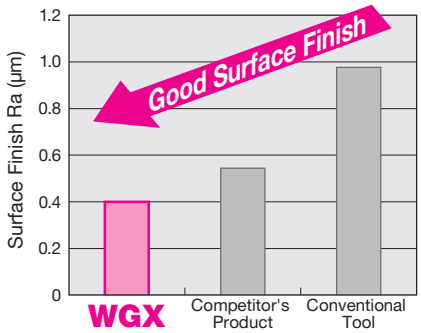
■ General-purpose G Chipbreaker

● Comparison of Cutting Force



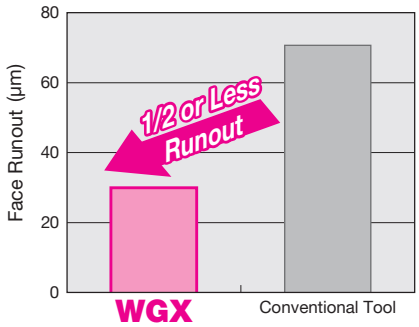
Part Material: 1050 Steel, Tool: ø4.000”
Cutting Conditions: v_C=660 SFM, f_Z=0.008 IPT, a_p=0.12”

● Surface Finish Comparison



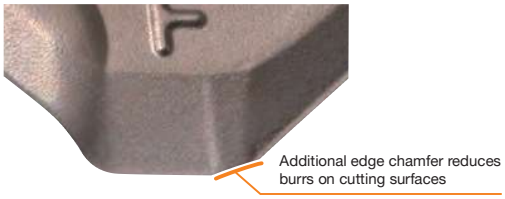
Part Material: 1050 Steel, Tool: ø4.000”
Cutting Conditions: v_C=660 SFM, f_Z=0.008 IPT, a_p=0.12”

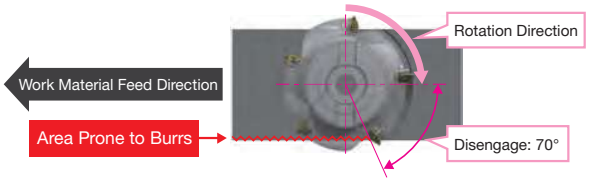
● Runout with Insert Attached



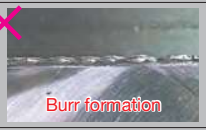
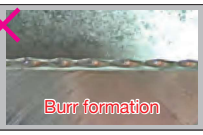
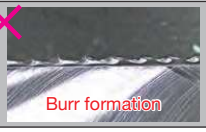
Tool: WGXM44000R
Number of Teeth: 7

■ FG Chipbreaker with Low-Burr Design





● Machined Surface Comparison

Work Material	FG Type	G Type	Conventional Tool	Competitor's Product
1050	○	○	○	× Burr formation
304	○	○	× Burr formation	×  Burr formation
4140	○	×  Burr formation	× Burr formation	×  Burr formation

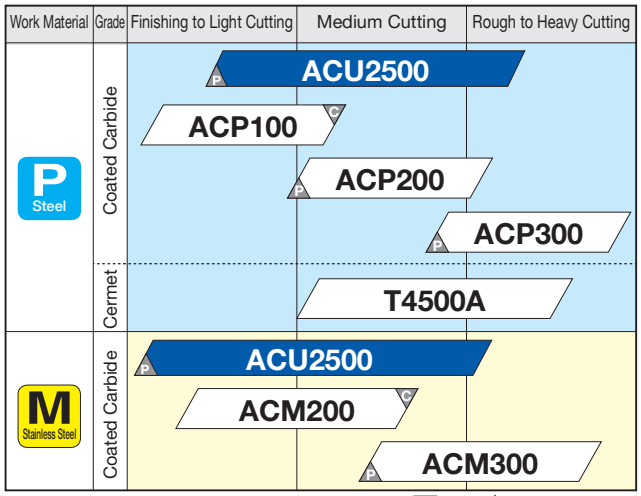
Machine:
Machining Center BT50

Tool: WGXM44000R

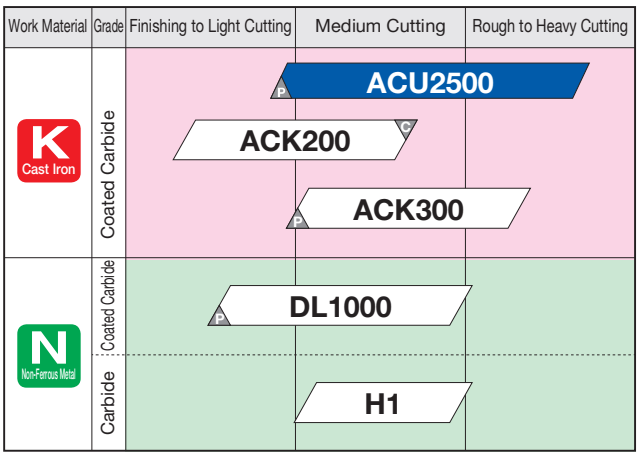
Insert Grade: ACP200

Cutting Conditions:
v_C=660 SFM,
f_Z=0.008 IPT,
a_p=0.12”,
a_e=3.15”
Dry

■ Grade Application Range



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



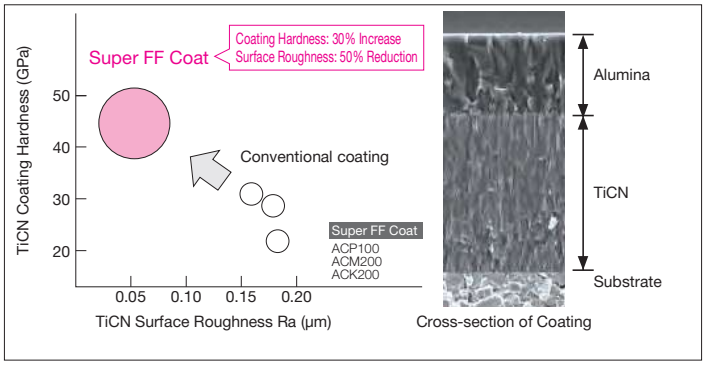
■ Coating Features

Super FF Coat (CVD: Chemical Vapor Deposition)

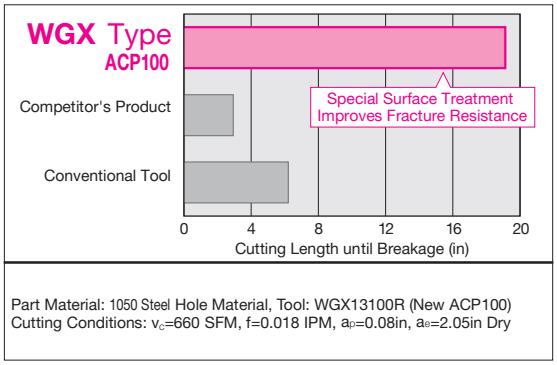
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary CVD process technology.

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

Characteristics of the Coating Layer



Fracture Resistance

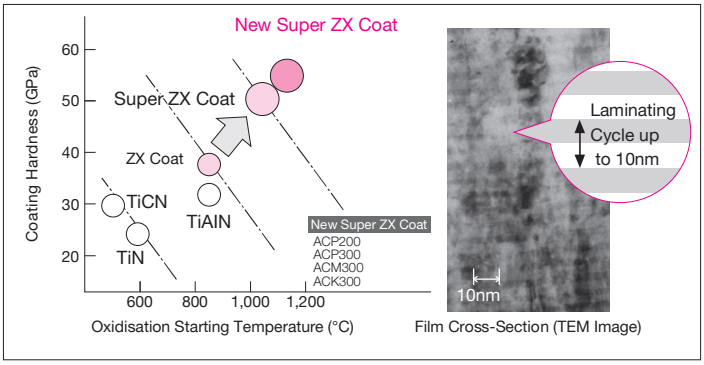


New Super ZX Coat (PVD: Physical Vapor Deposition)

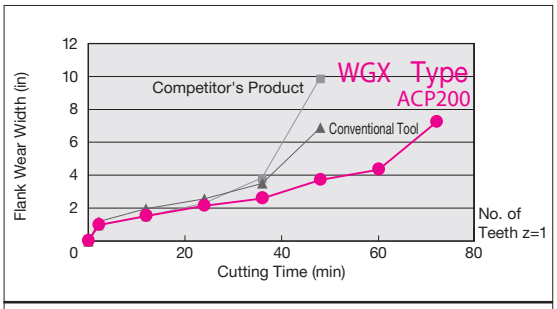
Employs our super multi-layered New Super ZX Coat, which utilizes our proprietary thin-layer coating technology and advanced nanotechnology. The coating consists of thousands of alternating, nanometer-thin (1 nanometer=1 billionth of a meter) layers.

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

Characteristics of the Coating Layer



Wear Resistance



Machine: Machining center BT50, Part Material: 1050 Steel, Tool: WGX13100R (New ACP200)
Cutting Conditions: v_c=660 SFM, f_z=0.011in/t, a_p=0.08in, a_e=2.05in Dry

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

WGX Recommended Cutting Conditions - Inch

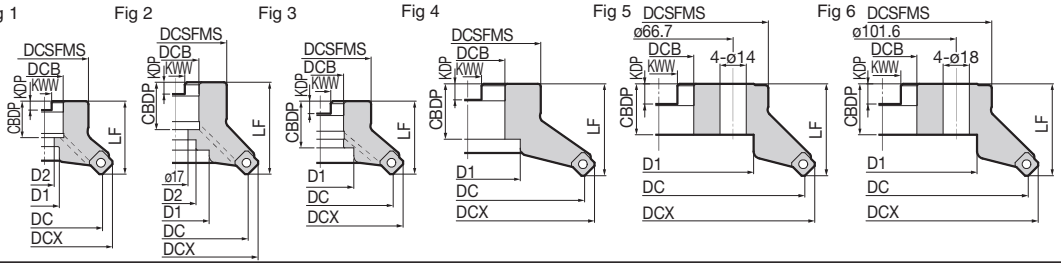
	Material	Hardness	Grade	Cutting Speed v_c (SFM) - Depth of Cut			Feed Rate (IPT)
				.002" -.050"	.050" - .125"	.125" & over	
P	Low and Medium Carbon Steels	<250 Bhn	ACU2500	935 - 1,410	885 - 1,335	750 - 1,250	.006 - .015
			ACP100	775 - 1300	725 - 1250	675 - 1200	.006 - .015
			ACP200	725 - 1200	675 - 1150	600 - 1125	.006 - .015
			ACP300	675 - 1075	650 - 1025	525 - 925	.006 - .015
	Medium Carbon Alloy Steels	<250 Bhn	ACU2500	590 - 1,030	560 - 975	475 - 825	.006 - .015
			ACP100	600 - 975	575 - 950	550 - 900	.006 - .015
			ACP200	550 - 900	525 - 900	500 - 875	.006 - .015
			ACP300	525 - 875	500 - 825	475 - 800	.006 - .015
	Medium-High Carbon Steels	<250 Bhn	ACU2500	475 - 830	460 - 800	440 - 760	.006 - .015
			ACP100	600 - 975	575 - 950	550 - 900	.006 - .015
			ACP200	575 - 950	550 - 925	500 - 875	.006 - .015
			ACP300	550 - 925	525 - 900	525 - 850	.006 - .015
	Free Machining Steels and Alloys	<250 Bhn	ACU2500	560 - 960	525 - 920	500 - 880	.006 - .015
			ACP100	775 - 1300	700 - 1250	675 - 1200	.006 - .015
			ACP200	750 - 1275	675 - 1225	650 - 1150	.006 - .015
			ACP300	675 - 1075	650 - 1050	650 - 1025	.006 - .015
	Tool Steels	<250 Bhn	ACU2500	475 - 830	460 - 800	430 - 750	.006 - .012
			ACP100	475 - 820	450 - 790	425 - 750	.006 - .012
			ACP200	450 - 800	435 - 775	400 - 725	.006 - .012
			ACP300	435 - 785	425 - 760	400 - 715	.006 - .012
		Bhn 220 - 350	ACU2500	440 - 780	425 - 750	400 - 700	.004 - .012
			ACP100	425 - 775	400 - 735	400 - 700	.004 - .012
			ACP200	415 - 750	400 - 725	375 - 690	.004 - .012
			ACP300	405 - 700	410 -690	375 - 680	.004 - .012
		>33 Hrc	ACU2500	340 - 670	325 - 650	325 - 590	.004 - .012
			ACP100	325 - 650	300 - 630	300 - 590	.004 - .012
			ACP200	315 - 640	300 - 625	300 - 580	.004 - .012
M	Martensitic and Ferritic Stainless Steels	<250 Bhn	ACU2500	380 - 630	360 - 620	340 - 600	.004 - .012
			ACM300	535 - 850	520 - 820	275 - 800	.004 - .012
			ACM300	525 - 825	515 - 800	250 - 775	.004 - .012
		>250 Bhn	ACU2500	345 - 560	330 - 550	300 - 520	.004 - .012
			ACM200	350 - 800	325 - 775	300 -750	.004 - .012
			ACM300	300 - 750	275 - 725	250 - 700	.004 - .012
	Austenitic and Precipitation Hardending Stainless Steels	<250 Bhn >250Bhn	ACU2500	410 - 685	400 - 650	375 - 600	.004 -.012
			ACM300	500 - 740	475 - 720	450 - 675	.004 -.012
			ACM200	250 - 705	225 - 705	200 - 700	.004 -.012
K	Grey Cast Iron	>250 Bhn	ACU2500	525 - 860	475 - 805	475 - 775	.004 - .012
			ACK200	600 - 950	525 - 825	490 - 800	.004 - .012
			ACK300	500 - 850	475 - 775	450 - 750	.004 - .012
		<250 Bhn	ACU2500	625 - 960	575 - 905	575 - 875	.004 - .015
			ACK200	700 - 1050	625 - 925	590 - 900	.004 - .015
			ACK300	600 - 950	575 - 875	550 - 850	.004 - .015
	Ductile Iron	>250 Bhn	ACU2500	550 - 825	500 - 775	450 - 750	.004 - .012
			ACK200	600 - 925	550 - 875	490 - 800	.004 - .012
			ACK300	550 - 825	500 - 775	450 - 750	.004 - .012
S	Exotic Alloys: Inconel, Hastalloy, Waspalloy, etc.	>300Bhn	ACU2500	100 - 220	100 - 200	100 - 180	.004 - .010
			ACM200	125 - 250	110 - 250	95 - 200	.004 - .010
			ACM300	100 - 160	70 - 150	60 - 135	.004 - .010
N	Non-Ferrous Material		H1 / DL1000	1000 - 4000	1000 - 4000	1000 - 4000	.006 - .015

WGX Shellmill Inch

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

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

.236" 45°



Shellmill Body (Standard)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	**WGX42000R**	●	2.000	2.461	1.500	1.750	**.750**	.312	.190	.750	.609	.406	3	.9	1
	WGX42500R	●	2.500	3.008	1.750	1.750	**1.000**	.375	.220	.750	.797	.531	4	1.3	1
	WGX43000R	●	3.000	3.504	2.250	1.750	**1.000**	.375	.220	.750	.787	.531	4	2.2	1
	WGX44000R	●	4.000	4.500	2.870	2.000	**1.250**	.500	.280	.750	1.000	1.000	5	3.5	2
	WGX44000R-1.50	●	4.000	4.500	3.750	2.500	**1.500**	.625	.380	1.000	2.000	1.181	5	4.5	2
	WGX45000R	●	5.000	5.496	3.750	2.500	**1.500**	.625	.380	1.000	2.000	0.781	6	7.2	1
	WGX46000R	●	6.000	6.496	4.380	2.500	**1.500**	.625	.380	1.060	2.000	—	7	9.5	4
	WGX48000R	●	8.000	8.496	5.906	2.500	**2.500**	1.000	.560	1.594	5.118	—	8	15.6	6
	WGX410000R	●	10.000	10.492	7.480	2.756	**2.500**	1.000	.531	1.575	6.299	—	10	23.5	6

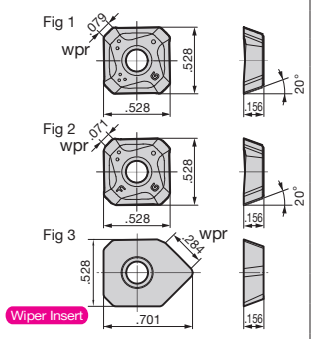
Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes ø6.000" and above do not have coolant holes. ● USA stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet
Process	High-speed / Light		P			K		M S		K N	N	
	General-purpose	K N M S		P M	P M	K		M S	M S		N	P
	Roughing	K N M S		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A
SEET13T3AGFR-L										●	●	
SEET13T3AGSR-L		●	●	●	●	●	●	●	●			●
SEET13T3AGSR-G		●	●	●	●	●	●	●	●			●
SEMT13T3AGSR-L		●	●	●	●	●	●	●	●			
SEMT13T3AGSR-G		●	●	●	●	●	●	●	●			
SEMT13T3AGSR-H		●	●	●	●	●	●	●	●			
SEMT13T3AGSR-FG		★	●	●	●	●	●	●	●			
XEEW13T3AGER-AWR		★		●			●					●

Cat. No.	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L	Light Cutting (For Non-Ferrous Metals)	—	1
SEET13T3AGSR-L	Light Cutting	—	1
SEET13T3AGSR-G	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L	Light Cutting	—	1
SEMT13T3AGSR-G	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H	Heavy Cutting	—	1
SEMT13T3AGSR-FG	Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR	Wiper Insert	.284" / *7.2*	3

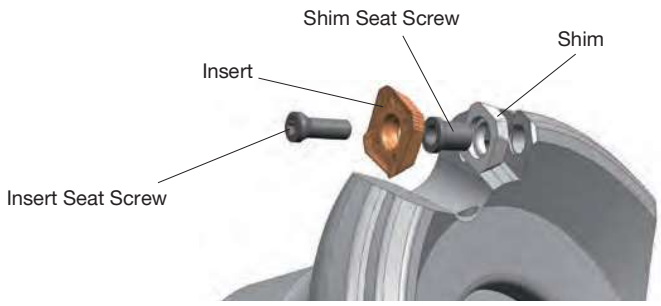


The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.

Identification Code

WGX 4 2000 R

Cutter Series | Insert Series | Cutter Dia. 2.000" | Feed Direction



Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

See Page H22 for Cutting Condition Recommendations

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

Parts

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

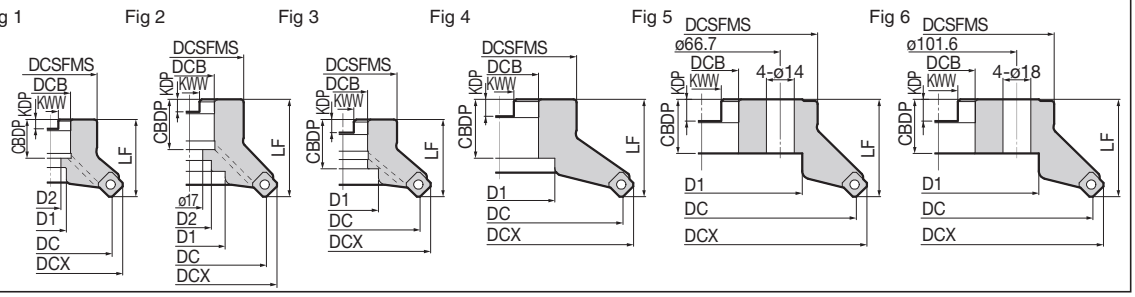
N·m Recommended Tightening Torque (N·m)

WaveMill
WGXM Shellmill Inch

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

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

.236" 45°



Shellmill Body (Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**WGXM42000R**	●	2.000	2.461	1.500	1.750	**.750**	.312	.190	.750	.609	.406	4	0.9	1
	WGXM42500R	●	2.500	3.008	1.750	1.750	**1.000**	.375	.220	.750	.797	.531	5	1.9	1
	WGXM43000R	●	3.000	3.504	2.250	1.750	**1.000**	.375	.220	.750	.787	.531	6	3.1	1
	WGXM44000R	●	4.000	4.500	2.870	2.000	**1.250**	.500	.280	.750	1.000	1.000	7	4.8	2
	WGXM44000R-1.50	●	4.000	4.500	3.750	2.500	**1.500**	.625	.380	1.000	2.000	1.181	7	5.5	2
	WGXM45000R	●	5.000	5.496	3.750	2.500	**1.500**	.625	.380	1.000	2.000	0.781	8	7.2	1
	WGXM46000R	●	6.000	6.496	4.380	2.500	**1.500**	0.625	.380	1.060	2.000	—	10	9.5	4
	WGXM48000R	●	8.000	8.496	5.906	2.500	**2.500**	1.000	.560	1.594	5.118	—	12	15.6	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes ø6.000" and above do not have coolant holes.

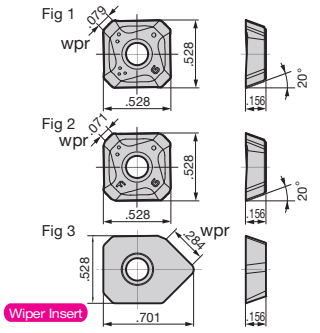
● USA stocked item

Insert

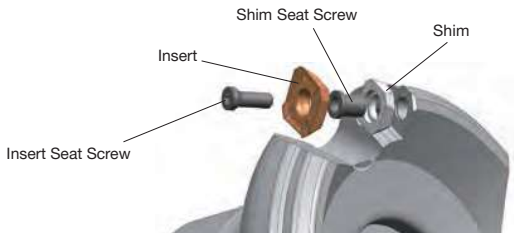
Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet
Process	High-speed / Light		P			K		M S		K N	N	
	General-purpose	P S K		P M	P M	K		M S	M S		N	P
	Roughing	P S K		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A
SEET13T3AGFR-L										●	●	
SEET13T3AGSR-L		●	●	●	●	●	●	●	●			●
SEET13T3AGSR-G		●	●	●	●	●	●	●	●			●
SEMT13T3AGSR-L		●	●	●	●	●	●	●	●			
SEMT13T3AGSR-G		●	●	●	●	●	●	●	●			
SEMT13T3AGSR-H		●	●	●	●	●	●	●	●			
SEMT13T3AGSR-FG		★	●	●	●	●	●	●	●			
XEEW13T3AGER-AWR		★		●			●					●

Cat. No.	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L	Light Cutting (For Non-Ferrous Metals)	—	1
SEET13T3AGSR-L	Light Cutting	—	1
SEET13T3AGSR-G	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L	Light Cutting	–	1
SEMT13T3AGSR-G	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H	Heavy Cutting	–	1
SEMT13T3AGSR-FG	Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR	Wiper Insert	.284" / *7.2*	3



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



Identification Code

WGX M 4 2000 R

WGX	M	4	2000	R
Cutter Series	Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Parts

N·m Recommended Tightening Torque (N·m)

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

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

See Page H22 for Cutting Condition Recommendations

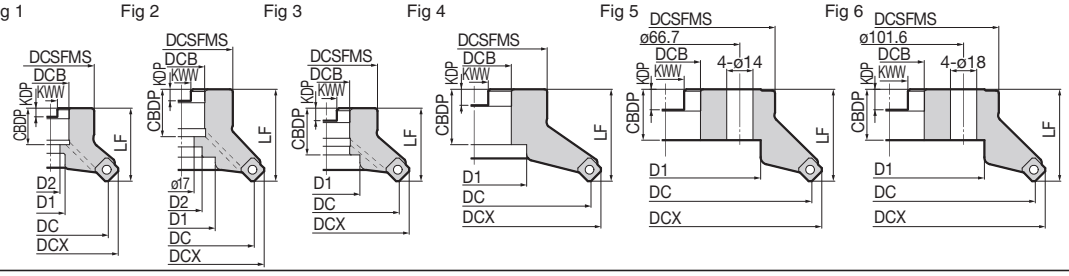
Note The cutting conditions are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WGXF Shellmill Inch

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

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

.236" 45°



Shellmill Body (Extra Fine Pitch)

Dimensions (inch)

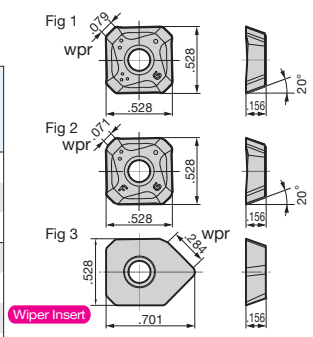
	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	**WGXF42000R**	●	2.000	2.461	1.500	1.750	**0.750**	.312	.190	.750	.609	.406	5	0.9	1
	WGXF42500R	●	2.500	3.008	1.750	1.750	**1.000**	.375	.220	.750	.797	.531	6	1.5	1
	WGXF43000R	●	3.000	3.504	2.250	1.750	**1.000**	.375	.220	.750	.787	.531	8	3.1	1
	WGXF44000R	●	4.000	4.500	2.870	2.000	**1.250**	.500	.280	.750	1.000	1.000	10	4.7	2
	WGXF44000R-1.50	●	4.000	4.500	3.750	2.500	**1.500**	.625	.380	1.000	2.000	1.181	10	6.5	2
	WGXF45000R	●	5.000	5.496	3.750	2.500	**1.500**	.625	.380	1.000	2.000	0.781	12	8.2	1
	WGXF46000R	●	6.000	6.496	4.380	2.500	**1.500**	.625	.380	1.060	2.000	—	16	10.5	4
	WGXF48000R	●	8.000	8.496	5.906	2.500	**2.500**	1.000	.560	1.594	5.118	—	20	15.2	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes ø6.000" and above do not have coolant holes. ● USA stocked item

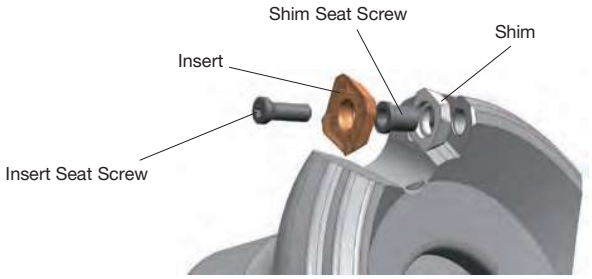
Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet
Process	High-speed / Light		P			K		M S		K N	N	
	General-purpose	K S M		P M	P M	K		M S	M S		N	P
	Roughing	K S M		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A
SEET13T3AGFR-L										●	●		Light Cutting (For Non-Ferrous Metals)	—	1
SEET13T3AGSR-L		●	●	●	●	●	●	●	●			●	Light Cutting	—	1
SEET13T3AGSR-G		●	●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L		●	●	●	●	●	●	●	●				Light Cutting	—	1
SEMT13T3AGSR-G		●	●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H		●	●	●	●	●	●	●	●				Heavy Cutting	—	1
SEMT13T3AGSR-FG		★	●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR		★		●			●					●	Wiper Insert	.284" / *7.2*	3



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



Identification Code - Inch

WGX F 4 2000 R

WGX	F	4	2000	R
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Parts

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

N·m Recommended Tightening Torque (N·m)

See Page H22 for Cutting Condition Recommendations

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

WaveMill

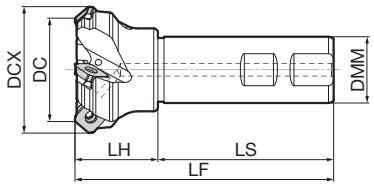
WGX Endmill Inch

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

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

.236" 45°

Fig 1



Body (Shank Endmill)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
Inch	**WGX42000EW**	●	**2.000**	2.461	1.250	1.591	2.379	3.970	4	1
	WGX42500EW	●	**2.500**	3.008	1.250	1.591	2.379	3.970	5	1

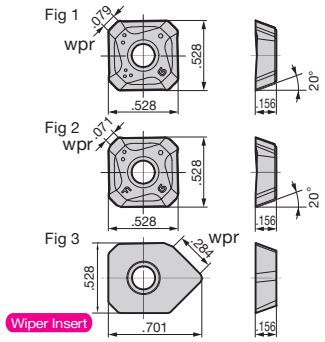
Inserts are sold separately. ø32 mm size does not have seats. ● USA stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet
Process	High-speed / Light		P			K		M S		K N	N	
	General-purpose	P M S		P M	P M	K		M S	M S		N	P
	Roughing	P M S		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A
SEET13T3AGFR-L										●	●	
SEET13T3AGSR-L		●	●	●	●	●	●	●	●			●
SEET13T3AGSR-G		●	●	●	●	●	●	●	●			●
SEMT13T3AGSR-L		●	●	●	●	●	●	●	●			
SEMT13T3AGSR-G		●	●	●	●	●	●	●	●			
SEMT13T3AGSR-H		●	●	●	●	●	●	●	●			
SEMT13T3AGSR-FG		★	●	●	●	●	●	●	●			
XEEW13T3AGER-AWR		★		●			●					●

Applications	Wiper Facet Length wpr	Fig
Light Cutting (For Non-Ferrous Metals)	—	1
Light Cutting	—	1
General-purpose	.079" / *2.0*	1
Light Cutting	—	1
General-purpose	.079" / *2.0*	1
Heavy Cutting	—	1
Low-burr design	.071" / *1.8*	2
Wiper Insert	.284" / *7.2*	3

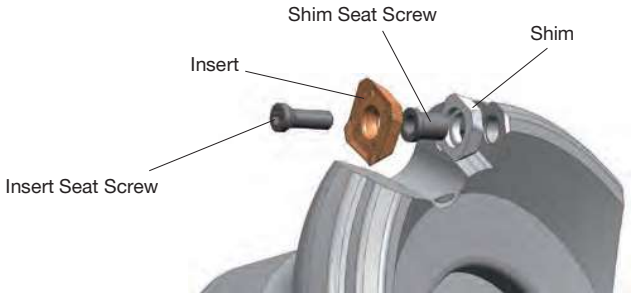


The ACP100 and ACK200 may vary in color, but these variations do not affect the performance.

Identification Code - Inch

WGX 4 2000 EW

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



See Page H22 for Cutting Condition Recommendations

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

Parts

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

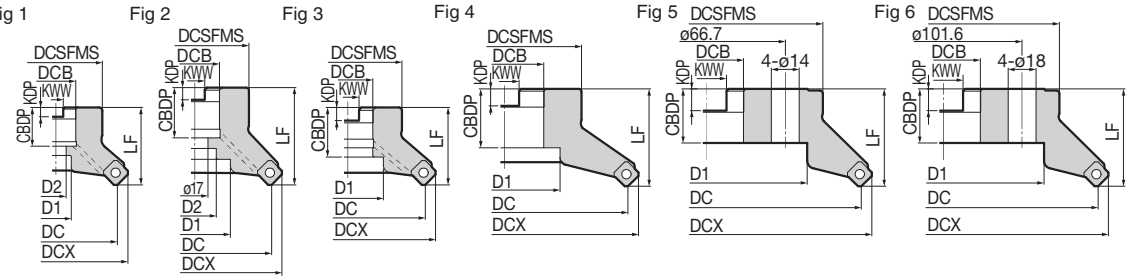
N·m Recommended Tightening Torque (N·m)

WGX Shellmill Metric

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

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

6mm 45° | .236" 45°



Body (Standard Shellmill)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGX13040RS**	★	40	52	32	40	**16**	8.4	5.6	18	14	9	3	0.3	1
	WGX13050RS	★	50	62	40	40	**22**	10.4	6.3	20	18	11	3	0.4	1
	WGX13063RS	★	63	76	50	40	**22**	10.4	6.3	20	18	11	4	0.6	1
	WGX13080RS	★	*80	93	55	50	**27**	12.4	7	25	20	13.5	4	1.2	1
	WGX13100RS	★	100	113	70	50	**32**	14.4	8.5	32	46	—	5	1.6	3
	WGX13125RS	★	125	138	80	63	**40**	16.4	9.5	29	52	29	6	2.8	1
	WGX13160RS	★	160	173	130	63	**40**	16.4	9.5	29	88	—	7	4.5	5
	WGX13200RS	★	200	213	150	63	**60**	25.7	14	35	130	—	8	7.1	6
	WGX13250RS	★	250	263	190	63	**60**	25.7	14	35	160	—	10	11.2	6
	WGX13080R	★	*80	93	60	50	**25.4**	9.5	6	25	20	13	4	1.2	1
	WGX13100R	★	*100	113	70	63	**31.75**	12.7	8	32.5	46	28	5	2.3	2
	WGX13125R	★	125	138	80	63	**38.1**	15.9	10	35.5	55	30	6	2.9	1
	WGX13160R	★	160	173	100	63	**50.8**	19.1	11	38	72	—	7	4.5	4
	WGX13200R	★	200	213	150	63	**47.625**	25.4	14	35	130	—	8	7.1	6
	WGX13250R	★	250	263	190	63	**47.625**	25.4	14	35	150	—	10	11.2	6

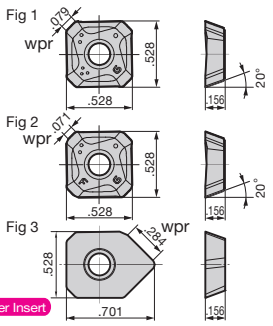
Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes *ø160 mm* and above do not have coolant holes.
For securing the *ø80mm* and *ø100mm* cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt *(ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).*

Insert

Dimensions (inch "/ *mm*)

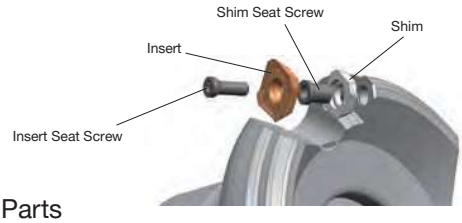
Grade		Coated Carbide								Carbide	DLC	Cermet
Process	High-speed / Light		P			K		M S		K N	N	
	General-purpose	K M S		P M	P M	K		M S	M S		N	P
	Roughing	K M S		P M	P M		K		M S			

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L									●	●		Light Cutting (For Non-Ferrous Metals)	—	1
SEET13T3AGSR-L	●	●	●	●	●	●	●	●			●	Light Cutting	—	1
SEET13T3AGSR-G	●	●	●	●	●	●	●	●			●	General-purpose	.079" / 2.0	1
SEMT13T3AGSR-L	●	●	●	●	●	●	●	●				Light Cutting	–	1
SEMT13T3AGSR-G	●	●	●	●	●	●	●	●				General-purpose	.079" / 2.0	1
SEMT13T3AGSR-H	●	●	●	●	●	●	●	●				Heavy Cutting	–	1
SEMT13T3AGSR-FG	★	●	●	●	●	●	●	●				Low-burr design	.071" / 1.8	2
XEEW13T3AGER-AWR	★		●			●					●	Wiper Insert	.284" / 7.2	3



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

●: USA Stocked Item
★: Worldwide Warehouse Item
Blank: Made-to-order item



Identification Code

WGX 13 040 R S

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

See Page H22 for Cutting Condition Recommendations

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

Parts

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

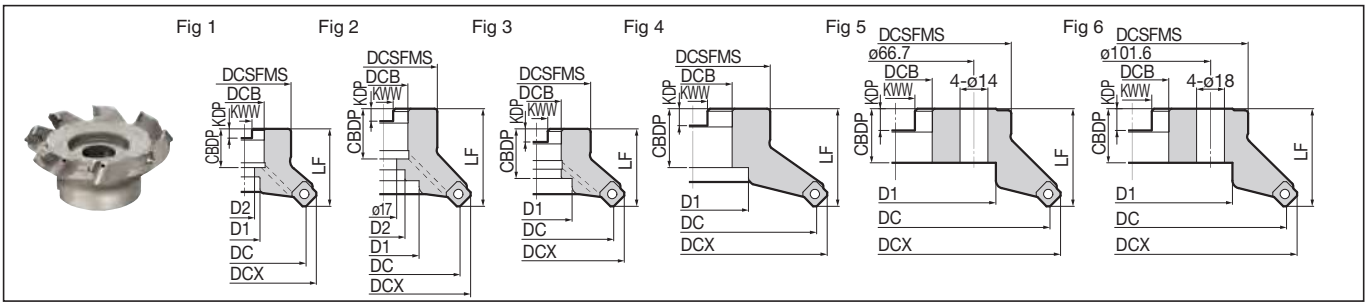
N·m Recommended Tightening Torque (N·m)

WaveMill
WGXM Shellmill Metric

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

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

6mm 45° | .236" 45°



Body (Fine Pitch)

Dimensions (*mm*)

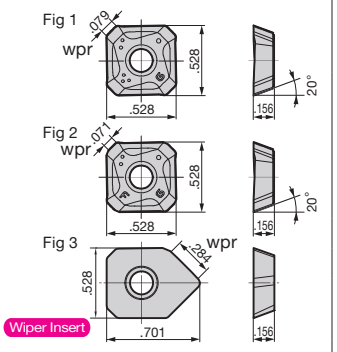
	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGXM13050RS**	★	50	62	40	40	**22**	10.4	6.3	20	18	11	4	0.4	1
	WGXM13063RS	★	63	77	50	40	**22**	10.4	6.3	20	18	11	5	0.6	1
	WGXM13080RS	★	*80	94	55	50	**27**	12.4	7	25	20	13.5	6	1.1	1
	WGXM13100RS	★	100	114	70	50	**32**	14.4	8.5	32	46	—	7	1.6	3
	WGXM13125RS	★	125	139	80	63	**40**	16.4	9.5	29	52	29	8	2.8	1
	WGXM13160RS	★	160	174	130	63	**40**	16.4	9.5	29	88	—	10	4.5	5
	WGXM13200RS	★	200	214	150	63	**60**	25.7	14	35	130	—	12	7.0	6
	WGXM13250RS	★	250	264	190	63	**60**	25.7	14	35	160	—	14	11.1	6
	WGXM13080R	★	*80	94	60	50	**25.4**	9.5	6	25	20	13	6	1.1	1
	WGXM13100R	★	*100	114	70	63	**31.75**	12.7	8	32.5	46	28	7	2.2	2
	WGXM13125R	★	125	139	80	63	**38.1**	15.9	10	35.5	55	30	8	2.9	1
	WGXM13160R	★	160	174	100	63	**50.8**	19.1	11	38	72	—	10	4.5	4
	WGXM13200R	★	200	214	150	63	**47.625**	25.4	14	35	130	—	12	7.0	6
	WGXM13250R	★	250	264	190	63	**47.625**	25.4	14	35	150	—	14	11.1	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes *ø160 mm* and above do not have coolant holes.
For securing the *ø80mm and ø100mm* cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (*ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm*).

Insert

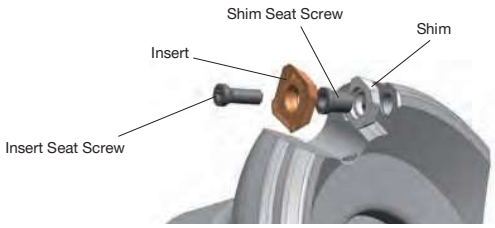
Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet		
Process	High-speed / Light		P			K		M S		K N	N			
	General-purpose	P K S M		P M	P M	K		M S	M S		N	P		
	Roughing	P K S M		P M	P M		K		M S					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L										●	●		Light Cutting (For Non-Ferrous Metals)	—	1
SEET13T3AGSR-L		●	●	●	●	●	●	●	●			●	Light Cutting	—	1
SEET13T3AGSR-G		●	●	●	●	●	●	●	●			●	General-purpose	.079" / 2.0	1
SEMT13T3AGSR-L		●	●	●	●	●	●	●	●				Light Cutting	–	1
SEMT13T3AGSR-G		●	●	●	●	●	●	●	●				General-purpose	.079" / 2.0	1
SEMT13T3AGSR-H		●	●	●	●	●	●	●	●				Heavy Cutting	–	1
SEMT13T3AGSR-FG		★	●	●	●	●	●	●	●				Low-burr design	.071" / 1.8	2
XEEW13T3AGER-AWR		★		●			●					●	Wiper Insert	.284" / 7.2	3



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

●: USA Stocked Item
★: Worldwide Warehouse Item
Blank: Made-to-order item



Identification Code

WGX M 13 050 R S

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

See Page H22 for Cutting Condition Recommendations

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

Parts

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

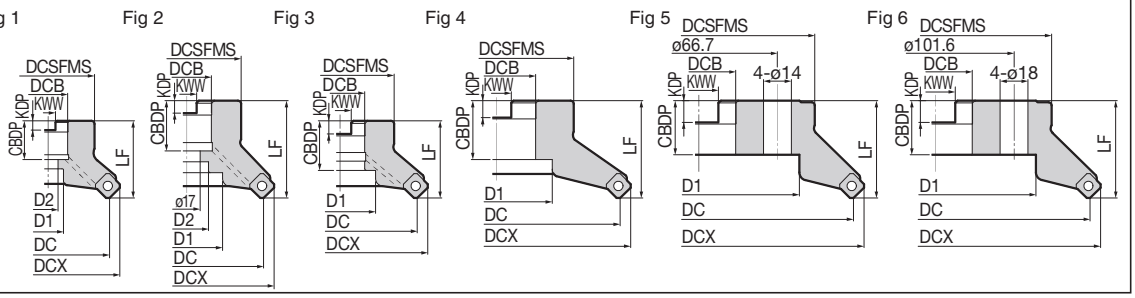
N·m Recommended Tightening Torque (N·m)

WGXF Shellmill Metric

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

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

6mm 45° | .236" 45°



Body (Extra Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WGXF13050RS**	★	50	62	40	40	**22**	10.4	6.3	20	18	11	5	0.4	1
	WGXF13063RS	★	63	77	50	40	**22**	10.4	6.3	20	18	11	6	0.6	1
	WGXF13080RS	★	*80	94	55	50	**27**	12.4	7	25	20	13.5	8	1.1	1
	WGXF13100RS	★	100	114	70	50	**32**	14.4	8.5	32	46	—	10	1.5	3
	WGXF13125RS	★	125	139	80	63	**40**	16.4	9.5	29	52	29	12	2.7	1
	WGXF13160RS	★	160	174	130	63	**40**	16.4	9.5	29	88	—	16	4.5	5
	WGXF13200RS	★	200	214	150	63	**60**	25.7	14	35	130	—	20	6.9	6
	WGXF13250RS	★	250	264	190	63	**60**	25.7	14	35	160	—	24	11.0	6
	WGXF13080R	★	*80	94	60	50	**25.4**	9.5	6	25	20	13	8	1.1	1
	WGXF13100R	★	*100	114	70	63	**31.75**	12.7	8	32.5	46	28	10	2.1	2
	WGXF13125R	★	125	139	80	63	**38.1**	15.9	10	35.5	55	30	12	2.8	1
	WGXF13160R	★	160	174	100	63	**50.8**	19.1	11	38	72	—	16	4.5	4
	WGXF13200R	★	200	214	150	63	**47.625**	25.4	14	35	130	—	20	6.9	6
	WGXF13250R	★	250	264	190	63	**47.625**	25.4	14	35	150	—	24	11.0	6

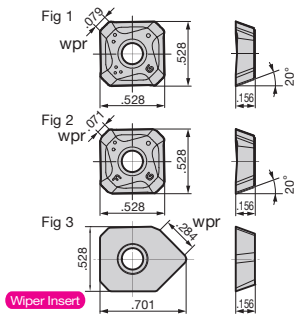
Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter. * Sizes *ø160 mm* and above do not have coolant holes.
For securing the *ø80mm and ø100mm* cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (*ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm*).

Insert

Dimensions (inch "/ *mm*)

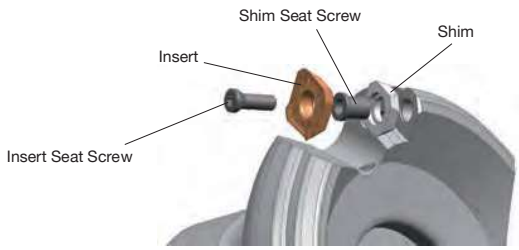
Grade	Coated Carbide								Carbide	DLC	Cermet
Process: High-speed / Light		P			K		M S		K N	N	
Process: General-purpose	K P M S		P M	P M	K		M S	M S		N	P
Process: Roughing	K P M S		P M	P M		K		M S			
Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A

Cat. No.	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L	Light Cutting (For Non-Ferrous Metals)	—	1
SEET13T3AGSR-L	Light Cutting	—	1
SEET13T3AGSR-G	General-purpose	.079" / 2.0	1
SEMT13T3AGSR-L	Light Cutting	–	1
SEMT13T3AGSR-G	General-purpose	.079" / 2.0	1
SEMT13T3AGSR-H	Heavy Cutting	–	1
SEMT13T3AGSR-FG	Low-burr design	.071" / 1.8	2
XEEW13T3AGER-AWR	Wiper Insert	.284" / 7.2	3



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

●: USA Stocked Item
★: Worldwide Warehouse Item
Blank: Made-to-order item



Identification Code

WGX F 13 050 R S

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

Parts

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

See Page H22 for Cutting Condition Recommendations

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

N·m Recommended Tightening Torque (N·m)

WaveMill

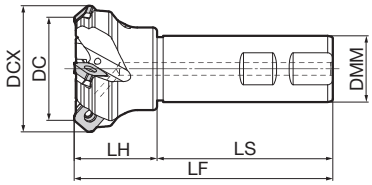
WGX Endmill Metric

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

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

6mm 45° | .236" 45°

Fig 1



Body (Endmill)

Dimensions (*mm*)

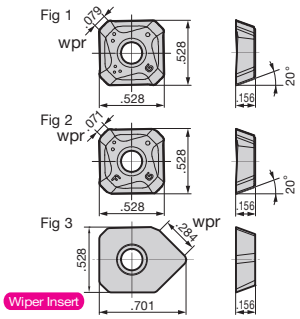
	Cat. No.	Stock	Diameter DC	Max. Diameter DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
Metric	**WGX13032EW**	★	*32*	*44*	*32*	*40*	*85*	*125*	3	*1*
	WGX13040EW	★	*40*	*52*	*32*	*40*	*85*	*125*	3	*1*
	WGX13050EW	★	*50*	*62*	*32*	*40*	*85*	*125*	4	*1*
	WGX13063EW	★	*63*	*76*	*32*	*40*	*85*	*125*	5	*1*

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

Insert

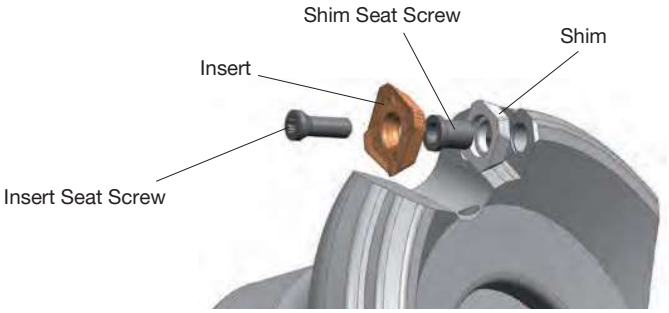
Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet			
Process	High-speed / Light		P			K		M S		K N	N				
	General-purpose	P M S		P M	P M	K		M S	M S		N	P			
	Roughing	P M S		P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Applications	Wiper Facet Length wpr	Fig
SEET13T3AGFR-L										●	●		Light Cutting (For Non-Ferrous Metals)	—	1
SEET13T3AGSR-L		●	●	●	●	●	●	●	●			●	Light Cutting	—	1
SEET13T3AGSR-G		●	●	●	●	●	●	●	●			●	General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-L		●	●	●	●	●	●	●	●				Light Cutting	–	1
SEMT13T3AGSR-G		●	●	●	●	●	●	●	●				General-purpose	.079" / *2.0*	1
SEMT13T3AGSR-H		●	●	●	●	●	●	●	●				Heavy Cutting	–	1
SEMT13T3AGSR-FG		★	●	●	●	●	●	●	●				Low-burr design	.071" / *1.8*	2
XEEW13T3AGER-AWR		★		●			●					●	Wiper Insert	.284" / *7.2*	3



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

● : USA Stocked Item
★ : Worldwide Warehouse Item
Blank: Made-to-order item



Identification Code

WGX 13 032 EW

Cutter Series	Insert Size	Cutter Dia.	Endmill Type

See Page H22 for Cutting Condition Recommendations

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

Parts

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

N·m Recommended Tightening Torque (N·m)

■ Application Examples

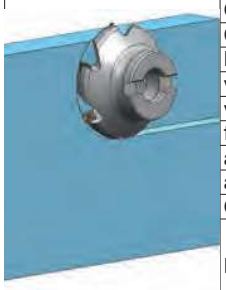
Cr-Mo Steel SAE4130 Block Material	Sumitomo	Competitor
Tool	WGX13125R	—
Grade	ACP200	—
Chipbreaker	G	—
Cutter Dia. (Inch)	5.000	5.000
Number of Teeth	6	6
v_c(SFM)	720	720
v_f(Inch/min)	33	33
f_z(IPT)	.0098	.0098
a_p(Inch)	.079	.0098
a_e(Inch)	5.00	5.00
Coolant	Dry	Dry
Results	Surface roughness was significantly improved. Cutting force was reduced. Stable cutting can be performed with a low cutting load.	

Carbon Steel 1050 Machine Component	Sumitomo	Competitor
Tool	WGX13063RS	—
Grade	ACP200	—
Chipbreaker	L	—
Cutter Dia. (Inch)	2.500	2.500
Number of Teeth	4	4
v_c(SFM)	990	990
v_f(Inch/min)	24	24
f_z(IPT)	.0039	.0039
a_p(Inch)	.1575	.1575
a_e(Inch)	.394 to 1.575	.394 to .787
Coolant	Dry	Dry
Results	Stable cutting was achieved with low-rigidity machines. Machining was also possible with radial depth of cut 1.18" to 1.57".	

M/C BT30

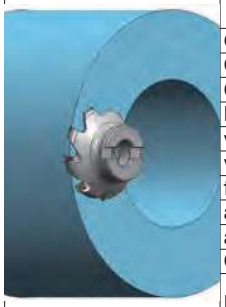
Low-rigidity Machine

General Structural Steel A283D A529 Gr.D Machine Component	Sumitomo	Conventional
Tool	WGX13125R	—
Grade	ACP200	—
Chipbreaker	FG	—
Cutter Dia. (Inch)	5.000	5.000
Number of Teeth	6	6
v_c(SFM)	660	660
v_f(Inch/min)	24	24
f_z(IPT)	.0079	.0079
a_p(Inch)	.0394	.0394
a_e(Inch)	4.000	4.000
Coolant	Wet	Wet
Results	Reduces chatter and exit burrs.	



Cr-Mo 4140 Steel Machine Component	Sumitomo	Competitor
Tool	WGX13080R	—
Grade	ACP200	—
Chipbreaker	H	—
Cutter Dia. (Inch)	3.000	3.000
Number of Teeth	4	4
v_c(SFM)	660	660
v_f(Inch/min)	19	19
f_z(IPT)	.0059	.0059
a_p(Inch)	.1181	.1181
a_e(Inch)	—	—
Coolant	Dry	Dry
Results	In heavy interrupted cutting, this tool achieved a longer tool life with good surface roughness.	

Pipe Steel Gr.65 Pipe	Sumitomo	Conventional
Tool	WGXM13125R	—
Grade	ACP200	—
Chipbreaker	G	—
Cutter Dia. (Inch)	5.000	5.000
Number of Teeth	8	8
v_c(SFM)	990	990
v_f(Inch/min)	29	29
f_z(IPT)	.0047	.0047
a_p(Inch)	.1575	.1575
a_e(Inch)	4.000	4.000
Coolant	Wet	Wet
Results	Tool life improved by more than 1.4 times per corner.	

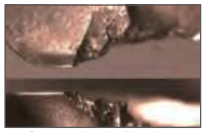


309S Liquid Level Gauge Component	Sumitomo	Conventional
Tool	WGX13160R	Single-Sided, 4 Corners
Grade	ACU2500	—
Chipbreaker	G	—
Cutter Dia. (Inch)	6.000	6.000
Number of Teeth	7	7
v_c(SFM)	660	660
v_f(Inch/min)	13	13
f_z(IPT)	.0051	.0051
a_p(Inch)	.0591	.0591
a_e(Inch)	—	—
Coolant	Dry	Dry
Results	Tool life extension of 300% achieved.	

304 Stainless Steel Machine Component	Sumitomo	Competitor
Tool	WGX13100RS	—
Grade	ACM300	—
Chipbreaker	G	—
Cutter Dia. (Inch)	4.000	4.000
Number of Teeth	5	5
v_c(SFM)	500	500
v_f(Inch/min)	14	14
f_z(IPT)	.0059	.0059
a_p(Inch)	.0787	.0787
a_e(Inch)	.7874	.7874
Coolant	Dry	Dry
Results	High hardness and the superior oxidation resistance of PVD coating provides at least double the tool life.	

Cutting Distance: 3.75m

WGX Series



Competitor's Product

17-4ph Stainless Steel Machine Component	Sumitomo	Competitor
Tool	WGX13100RS	—
Grade	ACM200	—
Chipbreaker	G	—
Cutter Dia. (Inch)	4.000	4.000
Number of Teeth	5	5
v_c(SFM)	500	500
v_f(Inch/min)	9.5	9.5
f_z(IPT)	.0039	.0039
a_p(Inch)	.0394	.0394
a_e(Inch)	2.953	2.953
Coolant	Dry	Dry
Results	The high wear resistance of CVD coating provides at least double the tool life.	

Cutting Distance: 7.5m

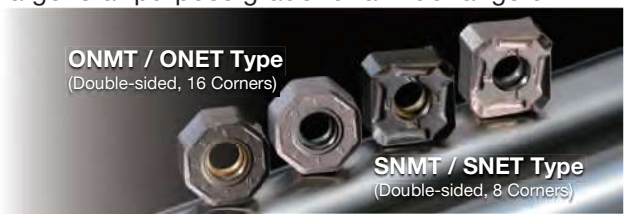
WGX Series

Competitor's Product

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

■ General Features

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. DGC also offers ACU2500, a general-purpose grade for a wide range of materials.

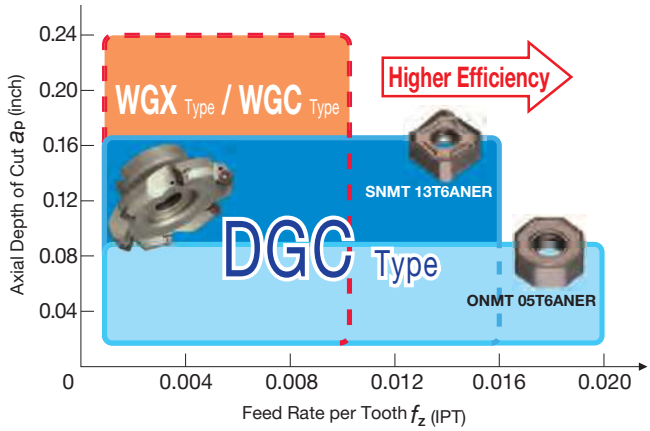


■ Features

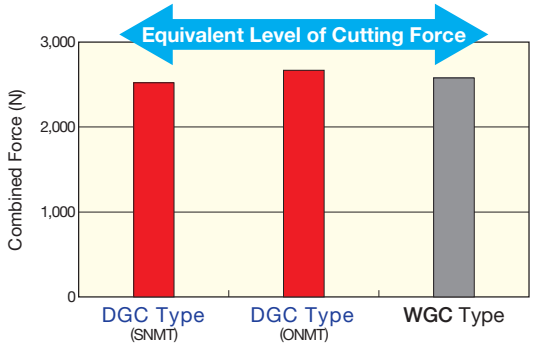
● Same cutting performance as single-sided inserts plus superior economy

Achieves levels of cutting edge sharpness and machined surface quality equivalent to single-sided cutters at a maximum depth of cut of a_p = 0.12".

● Recommended Cutting Conditions for **General Steel**



● Comparison of Cutting Force

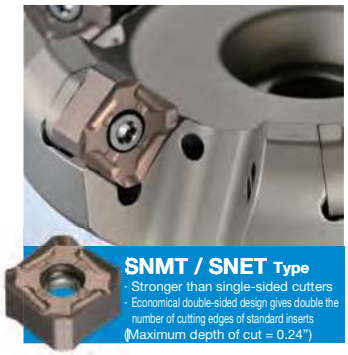


Work Material: 4130 Structural Steel Tool: ø4.000"
Cutting Conditions: V_c = 650 SFM, f_z = 0.012 IPR, a_p = 0.12", a_e = 3.35"

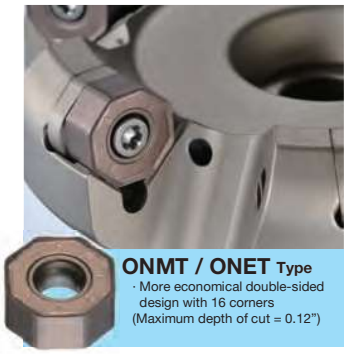
● Common Body Features

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

Use two types of insert for different applications



SNMT / SNET Type
· Stronger than single-sided cutters
· Economical double-sided design gives double the number of cutting edges of standard inserts
(Maximum depth of cut = 0.24")

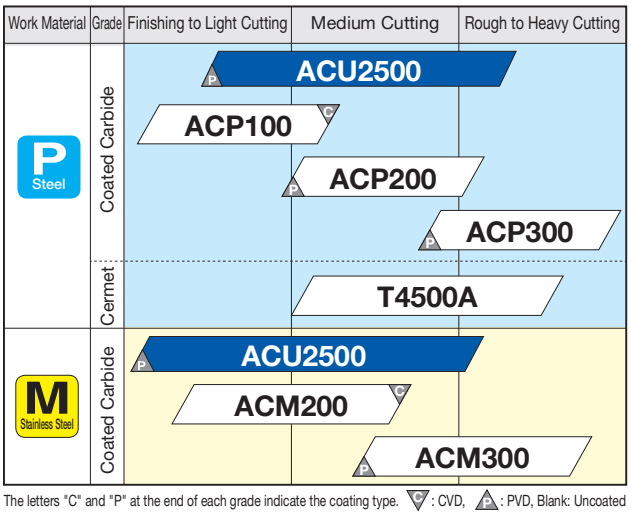


ONMT / ONET Type
· More economical double-sided design with 16 corners
(Maximum depth of cut = 0.12")

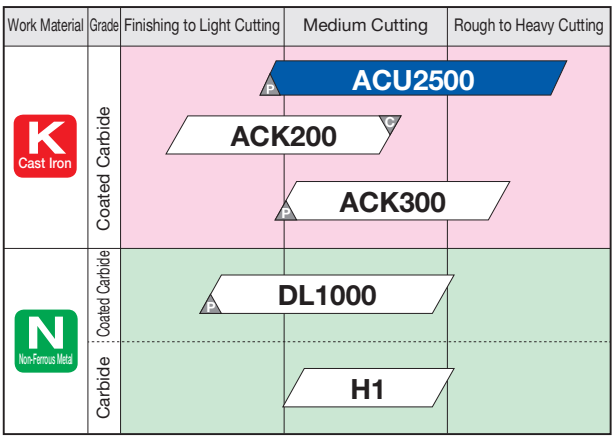
● Choose a tool to suit your application from a comprehensive lineup

Cutter Diameter: ø2.000" to ø10.000" ø40mm to ø250mm No. of Teeth: 3 to 10 Mounting: Metric/Inch	Cutter Diameter: ø2.000" to ø8.000" ø50mm to ø250mm No. of Teeth: 4 to 14 Mounting: Metric/Inch	Cutter Diameter: ø2.000" to ø8.000" ø50mm to ø250mm No. of Teeth: 5 to 18 Mounting: Metric/Inch	Cutter Diameter: ø2.000" to ø2.500" ø40mm to ø63mm No. of Teeth: 3 to 5 Mounting: Metric/Inch
DGC40000R DGC13000R(S)	DGCM40000R DGCM13000R(S)	DGCF40000R DGCF13000R(S)	DGC 40000EW DGC 13000EW
Standard Pitch	Fine Pitch	Extra Fine Pitch	Endmill Type

■ Grade Application Range



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



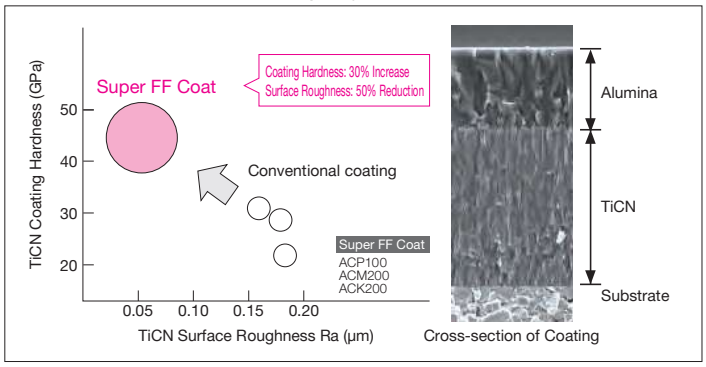
■ Coating Features

Super FF Coat (CVD: Chemical Vapor Deposition)

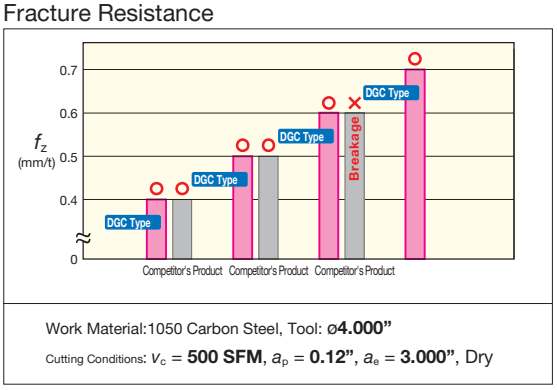
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary CVD process technology

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

Characteristics of the Coating Layer



Fracture Resistance

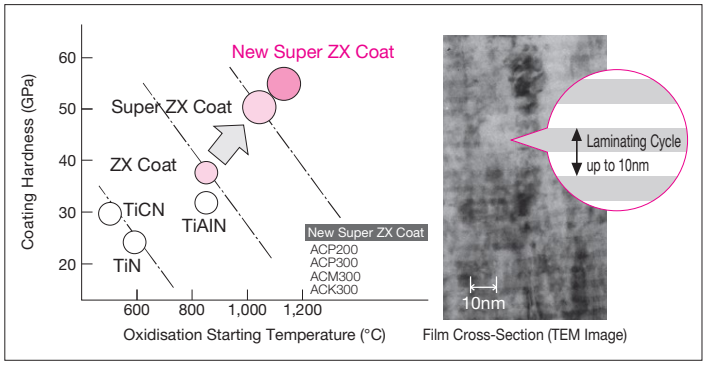


New Super ZX Coat (PVD: Physical Vapor Deposition)

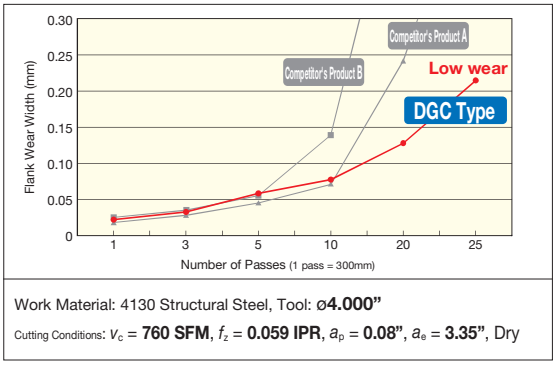
Employs our super multi-layered New Super ZX Coat, which utilizes our proprietary thin-layer coating technology and advanced nanotechnology. The coating consists of thousands of alternating, nanometer-thin (1 nanometer = 1 billionth of a meter) layers.

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

Characteristics of the Coating Layer



Wear Resistance

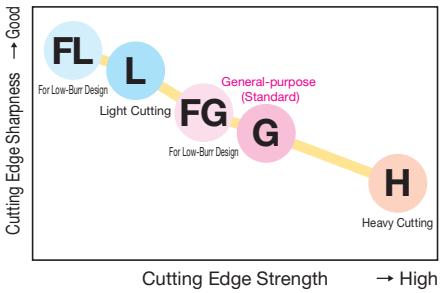


■ Chipbreaker Selection

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

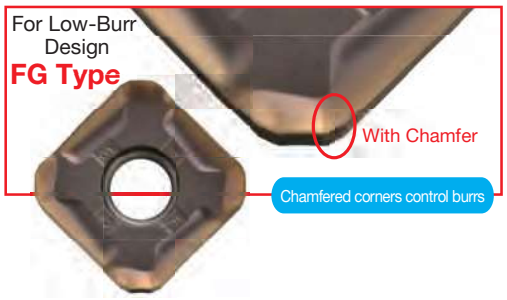
*Can only be used in conjunction with 8 corner inserts

■ Chipbreaker Selection Guide

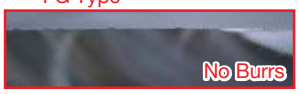


● Improved Milling Quality

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



● FG Type

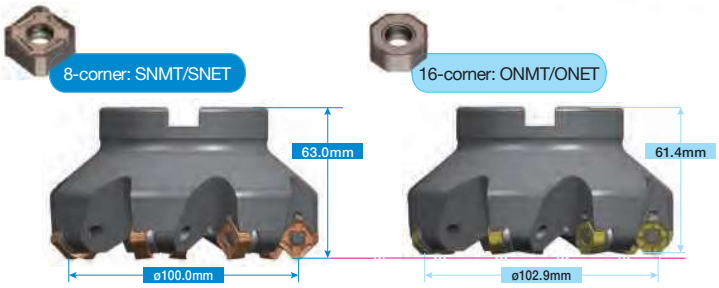


● Competitor's Product

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

Work Material : 4135
Tool : ø100
Cutting Conditions : v_c=660 SFM, f_z =0.008 IPT
a_p=0.12in, a_e=3.35in

Cutter Diameter And Cutting Edge Height

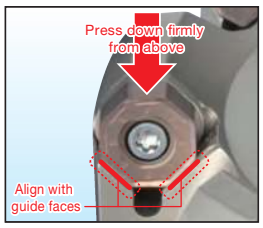


Note that while the 8-corner and 16-corner types can be used interchangeably on the same body, they have different cutter diameters, cutting edge heights and maximum cutting depths.

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

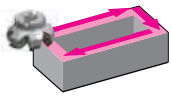
Insert	Cutter Dia. DC (mm)	Cutting Edge Height LF (mm)	Maximum Depth of Cut APMX (mm)	Maximum Depth of Cut APMX (in)
SNMT / SNET	100.0	63.0	6.0	0.236
ONMT / ONET	102.9	61.4	3.0	0.118

16-corner Mounting Method



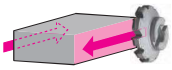
Firmly align insert with guide faces, press down in the direction of the arrow, and tighten the screw to fix the insert.

■ Application Examples



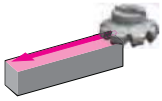
Part/ Work Material		Machine Components / 1050	
Tool	Type	DGC Type	Conventional Tool
	Body	DGC13080R (ø80)	ø80
	Insert	SNET13T6ANER-G (8 Corners)	Single-Sided Specification (4 Corners)
	Number of Teeth	6	6
	Insert Grade	ACP200	PVD Grade
Cutting Conditions	Cutting Speed (SFM)	525	525
	Feed Rate per Tooth (IPT)	0.012	0.012
	Feed Rate (IPM)	47	47
	Axial Depth of Cut (in)	0.12	0.12
	Number of Workpieces (pcs/corner)	2	2
	Dry/Wet	Wet	Wet

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



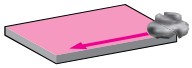
Part/ Work Material		Machine Components / 1050	
Tool	Type	DGC Type	Conventional Tool
	Body	DGC13160R (ø160)	ø160
	Insert	SNET13T6ANER-G (8 Corners)	Single-Sided Specification (8 Corners)
	Number of Teeth	10	10
	Insert Grade	ACP200	PVD Grade
Cutting Conditions	Cutting Speed (SFM)	440	440
	Feed Rate per Tooth (IPT)	0.005	0.005
	Feed Rate (IPM)	14	14
	Axial Depth of Cut (in)	0.1	0.1
	Cutting Time	287 min	287 min
	Dry/Wet	Dry	Dry

Reduces burrs and achieves higher milling quality compared to conventional tools



Part/ Work Material		Machine Components / 1050	
Tool	Type	DGC Type	Conventional Tool
	Body	DGC13125R (ø100)	ø125
	Insert	SNET13T6ANER-G (16 Corners)	Single-Sided Specification (8 Corners)
	Number of Teeth	8	8
	Insert Grade	ACM300	PVD Grade
Cutting Conditions	Cutting Speed (SFM)	525	525
	Feed Rate per Tooth (IPT)	0.01	0.01
	Feed Rate (IPM)	37	37
	Axial Depth of Cut (in)	0.1	0.1
	Cutting Time	-	-
	Dry/Wet	Dry	Dry

Reduces tool cost by doubling the number of cutting edges



Part/ Work Material		Machine Components / 1050	
Tool	Type	DGC Type	Conventional Tool
	Body	DGC13100R (ø100)	ø100
	Insert	SNET13T6ANER-G (8 Corners)	Single-Sided Specification (4 Corners)
	Number of Teeth	5	5
	Insert Grade	ACM300	PVD Grade
Cutting Conditions	Cutting Speed (SFM)	492	492
	Feed Rate per Tooth (IPT)	0.006	0.006
	Feed Rate (IPM)	14	14
	Axial Depth of Cut (in)	0.08	0.08
	Cutting Time	-	-
	Dry/Wet	Wet	Wet

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

Recommended Cutting Conditions (SNMT/SNET)

ISO	Material	Hardness	Cutting Speed Vc (SFM) Min. - Max.	Feed Rate fz (IPT) Min. - Max.	Depth of Cut ap (inch)	Insert Grade
P	General Steel	180 to 280 HB	490 - 820	.0039 - .016	< .12	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	590 - 1150	.0039 - .018	< .12	
	Die Steel	200 to 220 HB	490 - 660	.0059 - .014	< .12	
M	Stainless Steel	—	160 - 820	.0059 - .012	< .12	ACU2500 ACM300
K	Cast Iron	250HB	490 - 820	.0039 - .016	< .12	ACU2500 ACK200 ACK300
N	Non-Ferrous Metals	—	1640 - 3300	.0059 - .014	< .12	DL1000
S	Titanium	—	100 - 250	.003 - .0075	< .12	ACU2500 ACM300
	Exotic Alloy	—	100 - 250	.003 - .012	< .12	
		250 to 350 HB	60 - 135	.003 - .008	< .12	ACU2500 ACK300

Recommended Cutting Conditions (SNMT/SNET)

ISO	Material	Hardness	Cutting Speed Vc (SFM) Min. - Max.	Feed Rate fz (IPT) Min. - Max.	Depth of Cut ap (inch)	Insert Grade
P	General Steel	180 to 280 HB	490 - 820	.0039 - .016	< .078	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	590 - 1150	.0039 - .018	< .078	
	Die Steel	200 to 220 HB	490 - 660	.0059 - .014	< .078	
M	Stainless Steel	—	160 - 820	.0059 - .012	< .078	ACU2500 ACM300
K	Cast Iron	250HB	490 - 820	.0039 - .016	< .078	ACU2500 ACK200 ACK300
S	Titanium	—	100 - 250	.003 - .0075	< .078	ACU2500 ACM300
	Exotic Alloy	—	100 - 250	.003 - .012	< .078	
		250 to 350 HB	60 - 135	.003 - .008	< .078	ACU2500 ACK300

Recommended Cutting Conditions (SNMT/SNET)

ISO	Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.25**-0.40	< 4	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.30**-0.45	< 4	
	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
N	Non-Ferrous Metals	—	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

Recommended Cutting Conditions (ONMT/ONET)

ISO	Material	Hardness	Cutting Speed vc (m/min) Min. - **Optimum** - Max.	Feed Rate fz (mm/t) Min. - **Optimum** - Max.	Depth of Cut ap (mm)	Insert Grade
P	General Steel	180 to 280 HB	150-**200**-250	0.10-**0.30**-0.50	< 2	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180-**250**-350	0.10-**0.50**-0.50	< 2	
	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
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.

Sumi Dual Mill

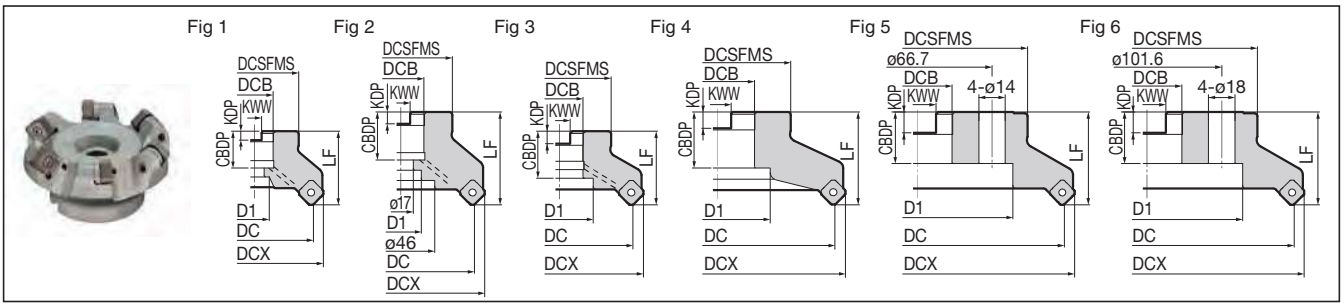
DGC Shellmill Inch

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

Rake Angle		
	Radial	-10°
	Axial	-5°

.236" 45° (SNMT / SNET)

.118" 45° (ONMT / ONET)



Body (Standard Type)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (lbs)	Fig
Inch	DGC42000R	●	2.000 (2.114)	2.567	1.500	1.750 (1.689)	0.750	0.312	0.190	0.750	0.609	3	0.904	1
	DGC42500R	●	2.500 (2.614)	3.067	1.750	1.750 (1.689)	1.000	0.375	0.220	0.750	0.797	4	1.279	1
	DGC43000R	●	3.000 (3.114)	3.567	2.250	1.750 (1.689)	1.000	0.375	0.220	0.750	0.787	4	1.918	1
	DGC44000R	●	4.000 (4.114)	4.567	2.870	2.000 (1.939)	1.250	0.500	0.280	0.750	1.000	5	3.968	1
	DGC44000R-1.50	●	4.000 (4.114)	4.000	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	5	5.688	3
	DGC45000R	●	5.000 (5.114)	5.567	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	6	7.893	1
	DGC46000R	●	6.000 (6.114)	6.567	4.380	2.500 (2.439)	1.500	0.625	0.380	1.060	2.000	7	11.530	5
	DGC48000R	●	8.000 (8.114)	8.567	5.906	2.500 (2.439)	2.500	1.000	0.560	1.594	5.118	8	15.895	6
	DGC410000R	●	10.000 (10.114)	10.567	7.480	2.500 (2.439)	2.500	1.000	0.531	1.575	6.299	10	29.189	6

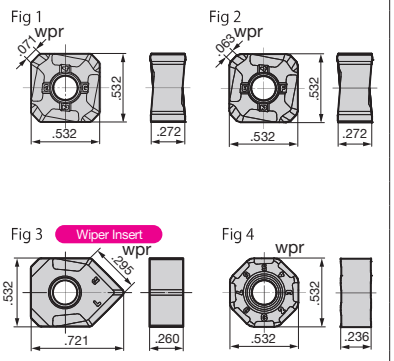
( ) indicates value for ONMT / ONET inserts.
Inserts are sold separately. * Sizes ø6.000" and above do not have coolant holes.

● USA stocked item

Insert

Dimensions (inch "/ *mm*)

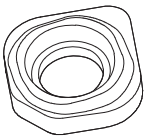
Grade		Coated Carbide								Carbide		DLC	Cermet		
Process	High-speed / Light		P			K		M S		K N		N	P M		
	General-purpose	K S M		P M	P M	K		M S	M S		K S	N	P		
	Roughing			P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		★	●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●	●							-	1
SNMT13T6ANER-FL		★	●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L								●	●					-	1
SNET13T6ANER-G								●	●					.071" / *1.8*	1
SNET13T6ANER-FL								●	●					-	2
SNET13T6ANER-FG								●	●					-	2
SNET13T6ANFR-S										●		●		.063" / *1.6*	1
XNEU13T6ANEN-W		★		●			●						●	.295" / *7.5*	3
ONMT05T6ANER-L		★	●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L								●	●					-	4
ONET05T6ANER-G								●	●					.059" / *1.5*	4



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

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

● USA stocked item ★ Worldwide Warehouse item

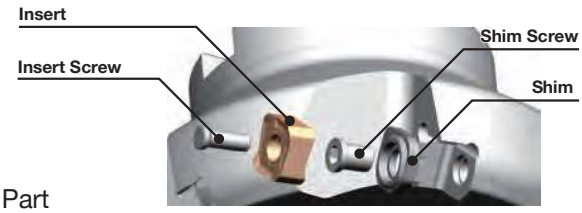


DGC Seat

Identification Code - Inch

DGC 4 2000 R

Cutter Series	Insert Series	Cutter Dia. 2.000"	Feed Direction



Part

(Optional)

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

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

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

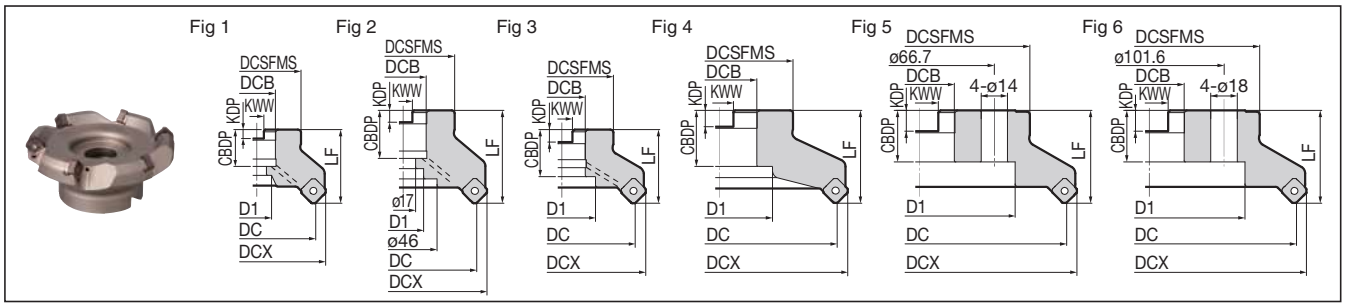
N·m Recommended Tightening Torque (N·m)

DGCM Shellmill Inch

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

Rake Angle		
	Radial	-10°
	Axial	-5°

.118" 45° (ONMT / ONET) | .236" 45°



Body (Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Inch	DGCM42000R	●	2.000 (2.114)	2.567	1.500	1.750 (1.689)	0.750	0.312	0.190	0.750	0.609	4	0.794	1
	DGCM42500R	●	2.500 (2.614)	3.067	1.750	1.750 (1.689)	1.000	0.375	0.220	0.750	0.797	5	1.257	1
	DGCM43000R	●	3.000 (3.114)	3.567	2.250	1.750 (1.689)	1.000	0.375	0.220	0.750	0.787	6	1.742	1
	DGCM44000R	●	4.000 (4.114)	4.567	2.870	2.000 (1.939)	1.250	0.500	0.280	0.750	1.000	7	3.682	3
	DGCM44000R-1.50	●	4.000 (4.114)	4.000	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	7	5.401	1
	DGCM45000R	●	5.000 (5.114)	5.567	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	8	7.474	5
	DGCM46000R	●	6.000 (6.114)	6.567	4.380	2.500 (2.439)	1.500	0.625	0.380	1.060	2.000	10	10.957	6
	DGCM48000R	●	8.000 (8.114)	8.567	5.906	2.500 (2.439)	2.500	1.000	0.560	1.594	5.118	12	15.432	6

( ) indicates value for ONMT / ONET inserts.
Inserts are sold separately. * Sizes ø6.000" and above do not have coolant holes.

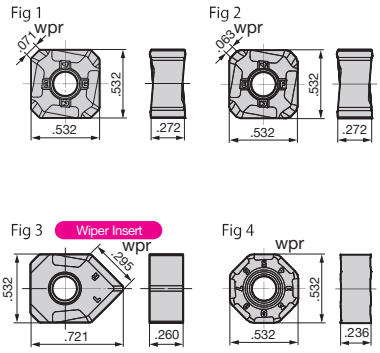
● USA stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide		DLC	Cermet
Process	High-speed / Light		P			K		M S		K N		N	P M
	General-purpose	K M S		P M	P M	K		M S	M S		K S	N	P
	Roughing			P M	P M		K		M S				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A

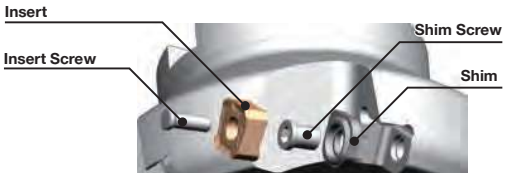
Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L	★	●	●	●	●	●							-	1
SNMT13T6ANER-G	●	●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H	●	●	●	●	●	●							-	1
SNMT13T6ANER-FL	★	●	●	●	●	●							-	2
SNMT13T6ANER-FG	●	●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L							●	●					-	1
SNET13T6ANER-G							●	●					.071" / *1.8*	1
SNET13T6ANER-FL							●	●					-	2
SNET13T6ANER-FG							●	●					-	2
SNET13T6ANFR-S									●		●		.063" / *1.6*	1
XNEU13T6ANEN-W	★		●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L	★	●	●	●	●	●							-	4
ONMT05T6ANER-G	●	●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L							●	●					-	4
ONET05T6ANER-G							●	●					.059" / *1.5*	4



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

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

● USA stocked item ★ Worldwide Warehouse item



Identification Code

DGC	M	4	2000	R
Cutter Series	Fine Pitch	Insert Series	Cutter Dia 2.000".	Feed Direction

Part (Optional)

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

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

N·m Recommended Tightening Torque (N·m)

Sumi Dual Mill

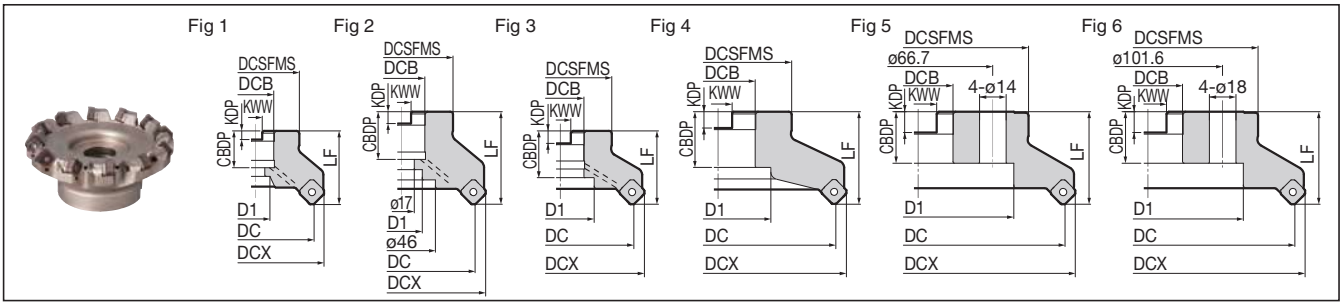
DGCF Shellmill Inch

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

Rake Angle		
	Radial	-10°
	Axial	-5°

.236" 45° (SNMT / SNET)

.118" 45° (ONMT / ONET)



Body (Extra Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (lbs)	Fig
Inch	DGCF42000R	●	2.000 (2.114)	2.567	1.500	1.750 (1.689)	0.750	0.312	0.190	0.750	0.609	5	0.838	1
	DGCF42500R	●	2.500 (2.614)	3.067	1.750	1.750 (1.689)	1.000	0.375	0.220	0.750	0.797	6	1.190	1
	DGCF43000R	●	3.000 (3.114)	3.567	2.250	1.750 (1.689)	1.000	0.375	0.220	0.750	0.787	8	1.786	1
	DGCF44000R	●	4.000 (4.114)	4.567	2.870	2.000 (1.939)	1.250	0.500	0.280	0.750	1.000	10	3.836	3
	DGCF44000R-1.50	●	4.000 (4.114)	4.000	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	10	5.534	1
	DGCF45000R	●	5.000 (5.114)	5.567	3.750	2.500 (2.439)	1.500	0.625	0.380	1.000	2.000	12	7.804	5
	DGCF46000R	●	6.000 (6.114)	6.567	4.380	2.500 (2.439)	1.500	0.625	0.380	1.060	2.000	14	11.310	6
	DGCF48000R	●	8.000 (8.114)	8.567	5.906	2.500 (2.439)	2.500	1.000	0.560	1.594	5.118	16	15.653	6

( ) indicates value for ONMT / ONET inserts.
Inserts are sold separately. * Sizes ø6.000" and above do not have coolant holes.

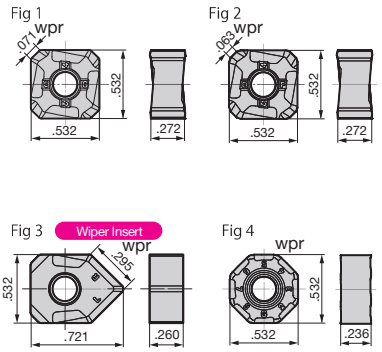
● USA stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide		DLC	Cermet
Process	High-speed / Light		P			K		M S		K N		N	P M
	General-purpose	K S M		P M	P M	K		M S	M S		K S	N	P
	Roughing			P M	P M		K		M S				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A
SNMT13T6ANER-L		★	●	●	●	●	●						
SNMT13T6ANER-G		●	●	●	●	●	●				●		●
SNMT13T6ANER-H		●	●	●	●	●	●						
SNMT13T6ANER-FL		★	●	●	●	●	●						
SNMT13T6ANER-FG		●	●	●	●	●	●						
SNET13T6ANER-L								●	●				
SNET13T6ANER-G								●	●				
SNET13T6ANER-FL								●	●				
SNET13T6ANER-FG								●	●				
SNET13T6ANFR-S										●		●	
XNEU13T6ANEN-W		★		●			●						●
ONM 05T6ANER-L		★	●	●	●	●	●						
ONMT05T6ANER-G		●	●	●	●	●	●						
ONET05T6ANER-L								●	●				
ONET05T6ANER-G								●	●				

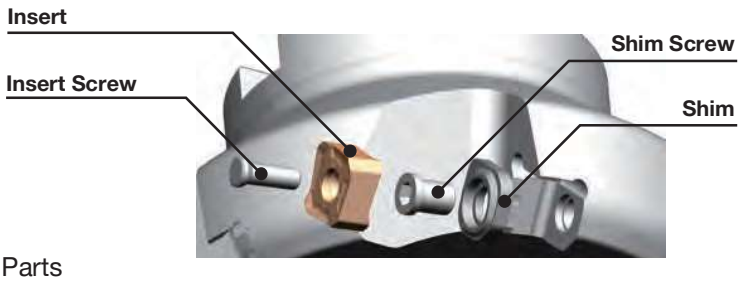
Cat. No.	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L	-	1
SNMT13T6ANER-G	.071" / *1.8*	1
SNMT13T6ANER-H	-	1
SNMT13T6ANER-FL	-	2
SNMT13T6ANER-FG	.063" / *1.6*	2
SNET13T6ANER-L	-	1
SNET13T6ANER-G	.071" / *1.8*	1
SNET13T6ANER-FL	-	2
SNET13T6ANER-FG	-	2
SNET13T6ANFR-S	.063" / *1.6*	1
XNEU13T6ANEN-W	.295" / *7.5*	3
ONM 05T6ANER-L	-	4
ONMT05T6ANER-G	.059" / *1.5*	4
ONET05T6ANER-L	-	4
ONET05T6ANER-G	.059" / *1.5*	4



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

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

● USA stocked item ★Worldwide Warehouse item



Parts

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

N·m Recommended Tightening Torque (N·m)

Identification Code - Inch

DGC	F	4	2000	R
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

DGC Endmill Inch

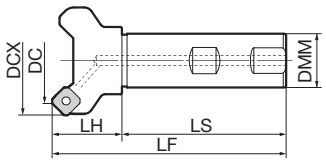
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

.236" 45° (SNMT / SNET)

.118" 45° (ONMT / ONET)

Fig 1



Body (Shank Type)

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs)	Fig
DGC42000EW	●	2.000	2.567	1.250	1.591	2.379	3.970	4	1.54	1
DGC42500EW	●	2.500	2.567	1.250	1.591	2.379	3.970	5	2.43	1

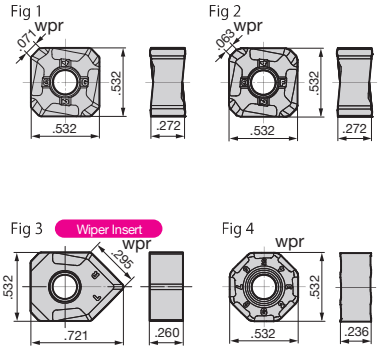
( ) indicates value for ONMT / ONET inserts.
Inserts are sold separately.

● USA stocked item

Insert

Dimensions (inch "/ *mm*)

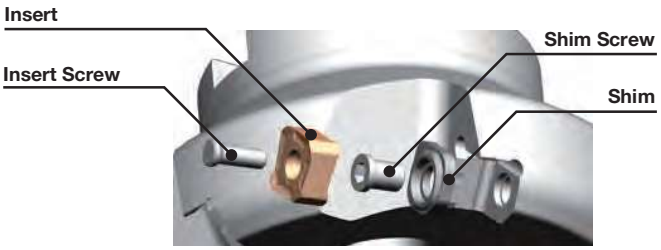
Grade		Coated Carbide								Carbide		DLC	Cermet		
Process	High-speed / Light		P			K		M S		K N		N	P M		
	General-purpose	K P M S		P M	P M	K		M S	M S		K S	N	P		
	Roughing			P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		★	●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●	●							-	1
SNMT13T6ANER-FL		★	●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L								●	●					-	1
SNET13T6ANER-G								●	●					.071" / *1.8*	1
SNET13T6ANER-FL								●	●					-	2
SNET13T6ANER-FG								●	●					-	2
SNET13T6ANFR-S										●		●		.063" / *1.6*	1
XNEU13T6ANEN-W		★		●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		★	●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L								●	●					-	4
ONET05T6ANER-G								●	●					.059" / *1.5*	4



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

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

● USA stocked item ★Worldwide Warehouse item



Identification Code - Inch

DGC 4 2000 EW

Cutter Series	Insert Series	Cutter Dia. 2.000"	Endmill Type

Parts

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

N·m Recommended Tightening Torque (N·m)

Sumi Dual Mill

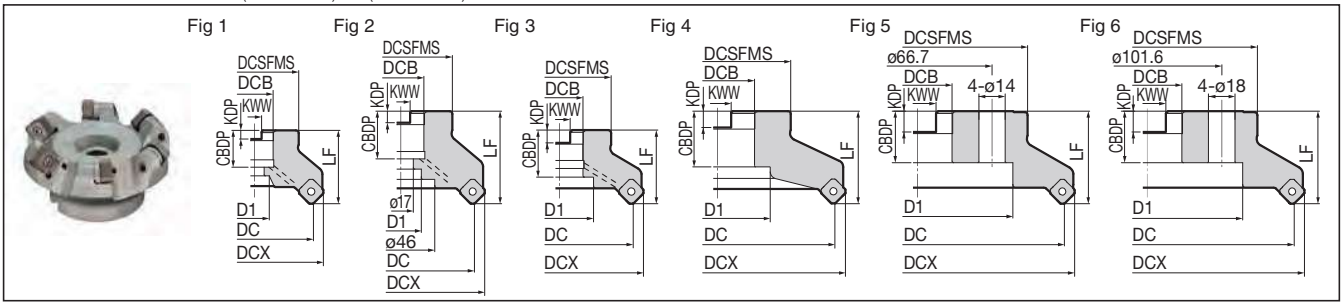
DGC Shellmill Metric

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

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT / SNET)

3mm 45° (ONMT / ONET)



Body (Standard Shellmill)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	DGC13040RS	★	40(42.9)	54	36	40(38.44)	16	8.4	5.6	18	13.5	3	0.3	1
	DGC13050RS	★	50(52.9)	64	40	40(38.44)	22	10.4	6.3	20	18	3	0.4	1
	DGC13063RS	★	63(65.9)	77	50	40(38.44)	22	10.4	6.3	20	18	4	0.5	1
	DGC13080RS	★	*80(82.9)	94	60	50(48.44)	27	12.4	7	25	20	4	1.2	1
	DGC13100RS	★	100(102.9)	114	70	50(48.44)	32	14.4	8.5	32	46	5	1.6	3
	DGC13125RS	★	125(127.9)	139	80	63(61.44)	40	16.4	9.5	29	52	6	2.8	1
	DGC13160RS	★	160(162.9)	174	130	63(61.44)	40	16.4	9.5	29	88	7	4.5	5
	DGC13200RS	★	200(202.9)	214	150	63(61.44)	60	25.7	14	35	130	8	7.1	6
	DGC13250RS	★	250(252.9)	264	190	63(61.44)	60	25.7	14	35	160	10	11.2	6
	DGC13080R	★	*80(82.9)	94	60	50(48.44)	25.4	9.5	6	25	20	4	1.2	1
	DGC13100R	★	*100(102.9)	114	70	63(61.44)	31.75	12.7	8	32.5	28	5	2.2	2
	DGC13125R	★	125(127.9)	139	80	63(61.44)	38.1	15.9	10	35.5	55	6	2.8	1
	DGC13160R	★	160(162.9)	174	100	63(61.44)	50.8	19.1	11	38	72	7	4.5	4
	DGC13200R	★	200(202.9)	214	150	63(61.44)	47.625	25.4	14	35	130	8	7.1	6
	DGC13250R	★	250(252.9)	264	190	63(61.44)	47.625	25.4	14	35	150	10	11.2	6

( ) indicates value for ONMT / ONET inserts.

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

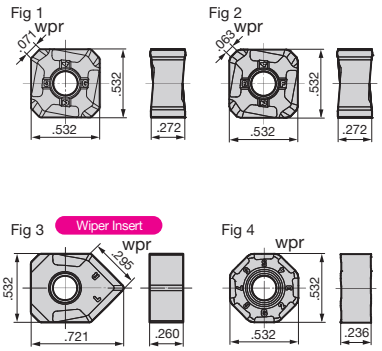
★ Worldwide Warehouse item

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

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide		DLC	Cermet		
Process	High-speed / Light		P			K		M S		K N		N	P M		
	General-purpose	P M S		P M	P M	K		M S	M S		K S	N	P		
	Roughing			P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		★	●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●	●							-	1
SNMT13T6ANER-FL		★	●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L								●	●					-	1
SNET13T6ANER-G								●	●					.071" / *1.8*	1
SNET13T6ANER-FL								●	●					-	2
SNET13T6ANER-FG								●	●					-	2
SNET13T6ANFR-S										●		●		.063" / *1.6*	1
XNEU13T6ANEN-W		★		●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		★	●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L								●	●					-	4
ONET05T6ANER-G								●	●					.059" / *1.5*	4

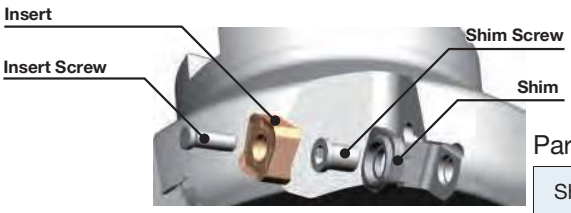


Wiper inserts can only be used in combination with 8-cornered inserts.

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

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

● USA stocked item ★ Worldwide Warehouse item



Identification Code - Metric

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

Part

(Optional)

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

N·m Recommended Tightening Torque (N·m)

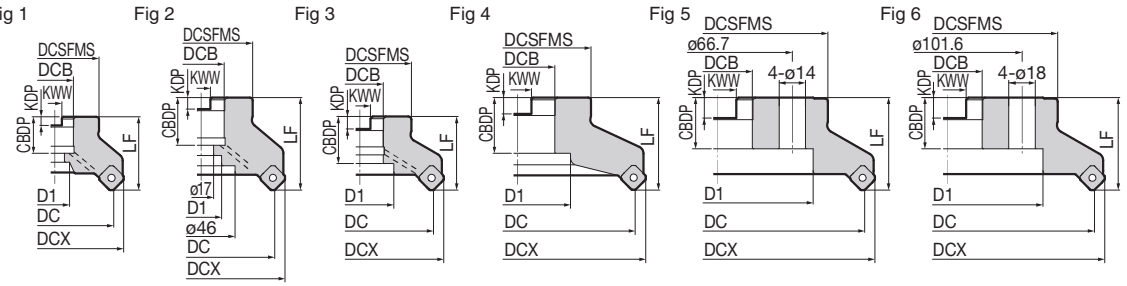
*Insert corners can be changed simply by loosening the screw. Only applies to ø80mm size DGC / DGCM.

DGCM Shellmill Metric

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

Rake Angle		
	Radial	-10°
	Axial	-5°

3mm 45° (ONMT / ONET) | 6mm 45°



Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	**DGCM13050RS**	★	*50(52.9)*	*64*	*40*	*40(38.44)*	*22*	*10.4*	*6.3*	*20*	*18*	*4*	*0.3*	1
	DGCM13063RS	★	*63(65.9)*	*77*	*50*	*40(38.44)*	*22*	*10.4*	*6.3*	*20*	*18*	*5*	*0.5*	1
	DGCM13080RS	★	**80(82.9)*	*94*	*60*	*50(48.44)*	*27*	*12.4*	*7*	*25*	*20*	*6*	*1.1*	1
	DGCM13100RS	★	*100(102.9)*	*114*	*70*	*50(48.44)*	*32*	*14.4*	*8.5*	*32*	*46*	*7*	*1.5*	3
	DGCM13125RS	★	*125(127.9)*	*139*	*80*	*63(61.44)*	*40*	*16.4*	*9.5*	*29*	*52*	*8*	*2.8*	1
	DGCM13160RS	★	*160(162.9)*	*174*	*130*	*63(61.44)*	*40*	*16.4*	*9.5*	*29*	*88*	*10*	*4.6*	5
	DGCM13200RS	★	*200(202.9)*	*214*	*150*	*63(61.44)*	*60*	*25.7*	*14*	*35*	*130*	*12*	*7*	6
	DGCM13250RS	★	*250(252.9)*	*264*	*190*	*63(61.44)*	*60*	*25.7*	*14*	*35*	*160*	*14*	*11.1*	6
	DGCM13080R	★	**80(82.9)*	*94*	*60*	*50(48.44)*	*25.4*	*9.5*	*6*	*25*	*20*	*6*	*1.1*	1
	DGCM13100R	★	**100(102.9)*	*114*	*70*	*63(61.44)*	*31.75*	*12.7*	*8*	*32.5*	*28*	*7*	*2.2*	2
	DGCM13125R	★	*125(127.9)*	*139*	*80*	*63(61.44)*	*38.1*	*15.9*	*10*	*35.5*	*55*	*8*	*2.8*	1
	DGCM13160R	★	*160(162.9)*	*174*	*100*	*63(61.44)*	*50.8*	*19.1*	*11*	*38*	*72*	*10*	*4.6*	4
	DGCM13200R	★	*200(202.9)*	*214*	*150*	*63(61.44)*	*47.625*	*25.4*	*14*	*35*	*130*	*12*	*7*	6
	DGCM13250R	★	*250(252.9)*	*264*	*190*	*63(61.44)*	*47.625*	*25.4*	*14*	*35*	*150*	*14*	*11.1*	6

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

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

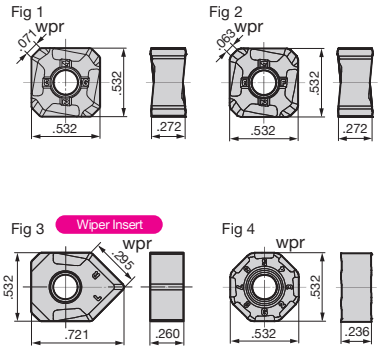
★ Worldwide Warehouse item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide		DLC	Cermet
Process	High-speed / Light		P			K		M S		K N		N	P M
	General-purpose	K M S		P M	P M	K		M S	M S		K S	N	P
	Roughing			P M	P M		K		M S				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A
SNMT13T6ANER-L		★	●	●	●	●	●						
SNMT13T6ANER-G		●	●	●	●	●	●				●		●
SNMT13T6ANER-H		●	●	●	●	●	●						
SNMT13T6ANER-FL		★	●	●	●	●	●						
SNMT13T6ANER-FG		●	●	●	●	●	●						
SNET13T6ANER-L								●	●				
SNET13T6ANER-G								●	●				
SNET13T6ANER-FL								●	●				
SNET13T6ANER-FG								●	●				
SNET13T6ANFR-S										●		●	
XNEU13T6ANEN-W		★		●			●						●
ONM 05T6ANER-L		★	●	●	●	●	●						
ONMT05T6ANER-G		●	●	●	●	●	●						
ONET05T6ANER-L								●	●				
ONET05T6ANER-G								●	●				

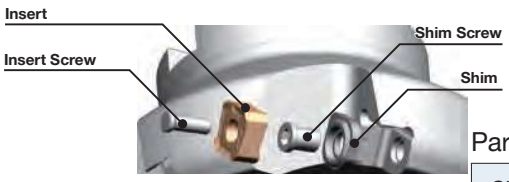
Cat. No.	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L	-	1
SNMT13T6ANER-G	.071" / *1.8*	1
SNMT13T6ANER-H	-	1
SNMT13T6ANER-FL	-	2
SNMT13T6ANER-FG	.063" / *1.6*	2
SNET13T6ANER-L	-	1
SNET13T6ANER-G	.071" / *1.8*	1
SNET13T6ANER-FL	-	2
SNET13T6ANER-FG	-	2
SNET13T6ANFR-S	.063" / *1.6*	1
XNEU13T6ANEN-W	.295" / *7.5*	3
ONM 05T6ANER-L	-	4
ONMT05T6ANER-G	.059" / *1.5*	4
ONET05T6ANER-L	-	4
ONET05T6ANER-G	.059" / *1.5*	4



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

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

● USA stocked item ★ Worldwide Warehouse item



Identification Code - Metric

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

Part

(Optional)

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

N·m Recommended Tightening Torque (N·m)

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

Sumi Dual Mill

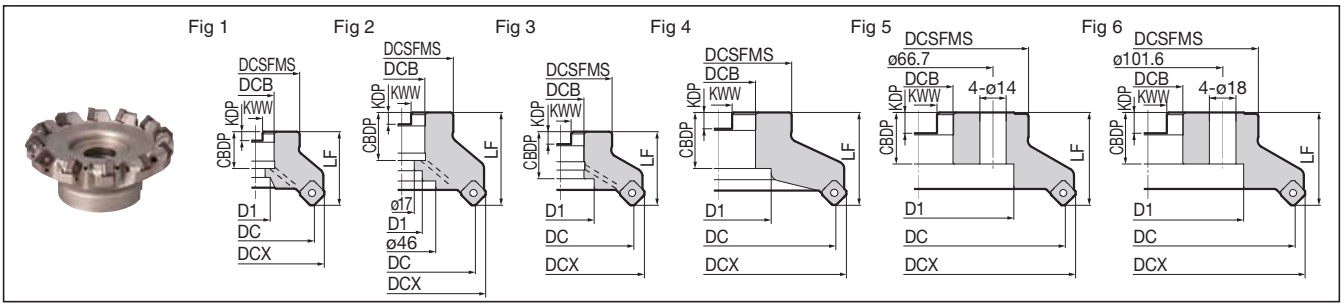
DGCF Shellmill Inch

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

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT / SNET)

3mm 45° (ONMT / ONET)



Body (Extra Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Number of Teeth	Weight (kg)	Fig
Metric	DGCF13050RS	●	50(52.9)	64	40	40(38.44)	22	10.4	6.3	20	18	5	0.3	1
	DGCF13063RS	●	63(65.9)	77	50	40(38.44)	22	10.4	6.3	20	18	6	0.5	1
	DGCF13080RS	●	*80(82.9)	94	60	50(48.44)	27	12.4	7	25	20	8	1.1	1
	DGCF13100RS	●	100(102.9)	114	70	50(48.44)	32	14.4	8.5	32	46	10	1.4	3
	DGCF13125RS	●	125(127.9)	139	80	63(61.44)	40	16.4	9.5	29	52	12	2.7	1
	DGCF13160RS	●	160(162.9)	174	130	63(61.44)	40	16.4	9.5	29	88	14	4.4	5
	DGCF13200RS	●	200(202.9)	214	150	63(61.44)	60	25.7	14	35	130	16	6.9	6
	DGCF13250RS	●	250(252.9)	264	190	63(61.44)	60	25.7	14	35	160	18	11	6
	DGCF13080R	●	*80(82.9)	94	60	50(48.44)	25.4	9.5	6	25	20	8	1.1	1
	DGCF13100R	●	*100(102.9)	114	70	63(61.44)	31.75	12.7	8	32.5	28	10	2.1	2
	DGCF13125R	●	125(127.9)	139	80	63(61.44)	38.1	15.9	10	35.5	55	12	2.7	1
	DGCF13160R	●	160(162.9)	174	100	63(61.44)	50.8	19.1	11	38	72	14	4.4	4
	DGCF13200R	●	200(202.9)	214	150	63(61.44)	47.625	25.4	14	35	130	16	6.9	6
	DGCF13250R	●	250(252.9)	264	190	63(61.44)	47.625	25.4	14	35	150	18	11	6

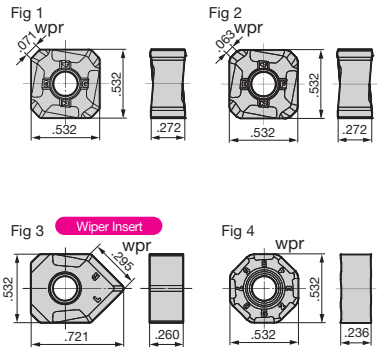
( ) indicates value for ONMT / ONET inserts. Inserts are sold separately. * Sizes ø160 mm and above do not have coolant holes.

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

Insert

Dimensions (inch "/ *mm*)

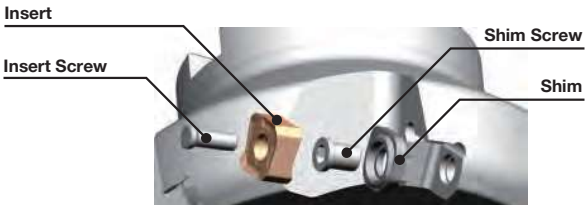
Grade		Coated Carbide								Carbide		DLC	Cermet		
Process	High-speed / Light		P			K		M S		K N		N	P M		
	General-purpose	K N S		P M	P M	K		M S	M S		K S	N	P		
	Roughing			P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L		★	●	●	●	●	●							-	1
SNMT13T6ANER-G		●	●	●	●	●	●				●		●	.071" / *1.8*	1
SNMT13T6ANER-H		●	●	●	●	●	●							-	1
SNMT13T6ANER-FL		★	●	●	●	●	●							-	2
SNMT13T6ANER-FG		●	●	●	●	●	●							.063" / *1.6*	2
SNET13T6ANER-L								●	●					-	1
SNET13T6ANER-G								●	●					.071" / *1.8*	1
SNET13T6ANER-FL								●	●					-	2
SNET13T6ANER-FG								●	●					-	2
SNET13T6ANFR-S										●		●		.063" / *1.6*	1
XNEU13T6ANEN-W		★		●			●						●	.295" / *7.5*	3
ONM 05T6ANER-L		★	●	●	●	●	●							-	4
ONMT05T6ANER-G		●	●	●	●	●	●							.059" / *1.5*	4
ONET05T6ANER-L								●	●					-	4
ONET05T6ANER-G								●	●					.059" / *1.5*	4



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

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

● USA stocked item



Recommended Tightening Torque (N·m)

Identification Code

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

Parts

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

DGC Endmill Metric

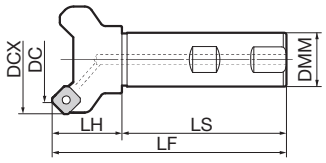
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-10°
	Axial	-5°

6mm 45° (SNMT / SNET)

3mm 45° (ONMT / ONET)

Fig 1



Body (Shank Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
DGC13040EW	●	*40(42.9)*	*54*	*32*	*40(38.44)*	*85*	*125*	3	*0.7*	1
DGC13050EW	●	*50(52.9)*	*64*	*32*	*40(38.44)*	*85*	*125*	3	*0.9*	1
DGC13063EW	●	*63(65.9)*	*77*	*32*	*40(38.44)*	*85*	*125*	4	*1.1*	1

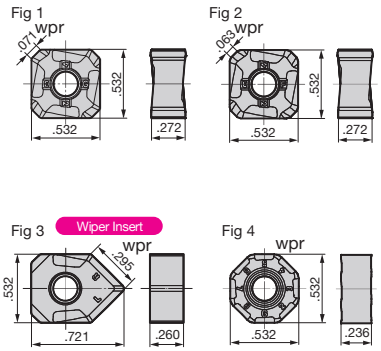
( ) indicates value for ONMT / ONET inserts.
Inserts are sold separately.

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide								Carbide		DLC	Cermet
Process	High-speed / Light		P			K		M S		K N		N	P M
	General-purpose	K N S		P M	P M	K		M S	M S		K S	N	P
	Roughing			P M	P M		K		M S				
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	EH520	DL1000	T4500A
SNMT13T6ANER-L		★	●	●	●	●	●						
SNMT13T6ANER-G		●	●	●	●	●	●				●		●
SNMT13T6ANER-H		●	●	●	●	●	●						
SNMT13T6ANER-FL		★	●	●	●	●	●						
SNMT13T6ANER-FG		●	●	●	●	●	●						
SNET13T6ANER-L								●	●				
SNET13T6ANER-G								●	●				
SNET13T6ANER-FL								●	●				
SNET13T6ANER-FG								●	●				
SNET13T6ANFR-S										●		●	
XNEU13T6ANEN-W		★		●			●						●
ONM 05T6ANER-L		★	●	●	●	●	●						
ONMT05T6ANER-G		●	●	●	●	●	●						
ONET05T6ANER-L								●	●				
ONET05T6ANER-G								●	●				

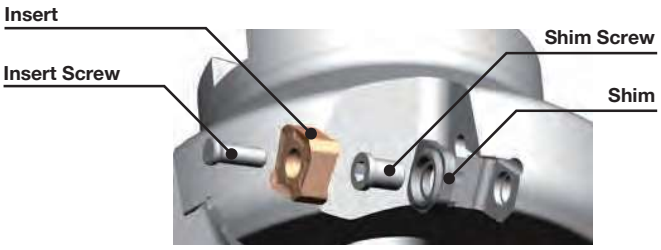
Cat. No.	Wiper Facet Length wpr	Fig
SNMT13T6ANER-L	-	1
SNMT13T6ANER-G	.071" / *1.8*	1
SNMT13T6ANER-H	-	1
SNMT13T6ANER-FL	-	2
SNMT13T6ANER-FG	.063" / *1.6*	2
SNET13T6ANER-L	-	1
SNET13T6ANER-G	.071" / *1.8*	1
SNET13T6ANER-FL	-	2
SNET13T6ANER-FG	-	2
SNET13T6ANFR-S	.063" / *1.6*	1
XNEU13T6ANEN-W	.295" / *7.5*	3
ONM 05T6ANER-L	-	4
ONMT05T6ANER-G	.059" / *1.5*	4
ONET05T6ANER-L	-	4
ONET05T6ANER-G	.059" / *1.5*	4



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

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

● USA stocked item



Identification Code

DGC 13 040 EW

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

Parts

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

N·m Recommended Tightening Torque (N·m)

DNX(F) / DNH / DNHS

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

■ Features

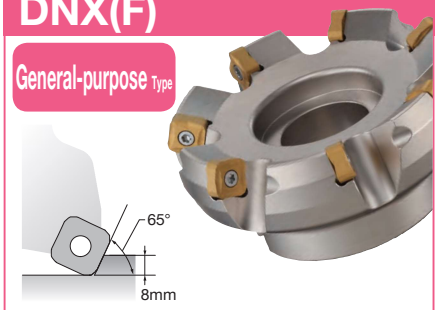
- Achieves high efficiency milling with a max. 0.31" depth of cut
- Employs negative inserts with chipbreakers that have a strong cutting edge on the double negative type body. Economical design using 8 corners
- Supports general to high-efficiency high-feed milling with three body types. Inserts can be used with all types

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

■ Product Range

DNX(F)

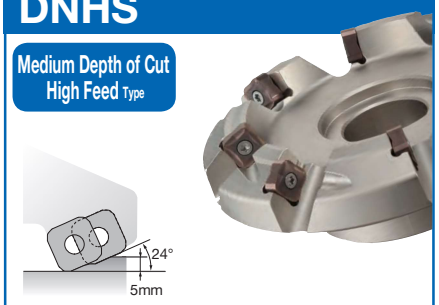
General-purpose Type



Maximum Depth of Cut		0.3"	8mm
Cutting edge angle		65°	
Cutter Dia.	DNX General-purpose type	ø3.0" to ø8.0"	ø80 to ø250mm
	DNXF General-purpose Fine-pitch Type	ø3.0" to ø8.0"	ø80 to ø160mm

DNHS

Medium Depth of Cut High Feed Type



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

DNH

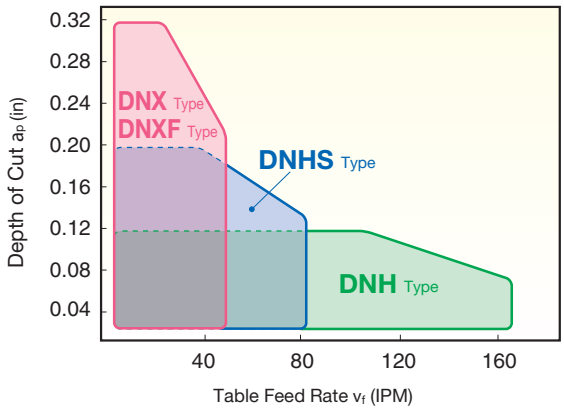
Small Depth of Cut High Feed Type

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

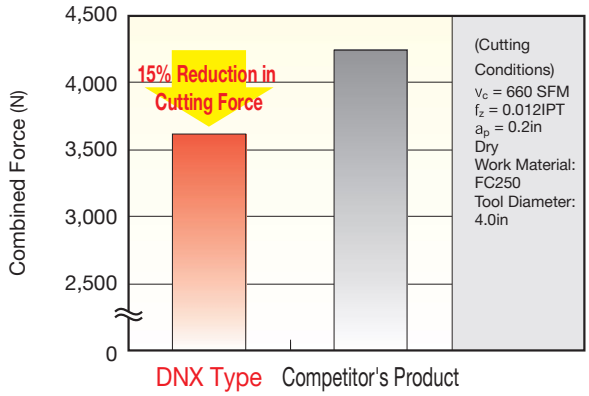
Large ← **Depth of Cut** — **Feed Rate** → Large

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

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



■ Comparison of Cutting Force



■ Recommended Cutting Conditions (See page H46 for Inch Parameters)

DNX / 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
	Ductile Cast Iron	250HB	150-**200**-250	0.10-**0.18**-0.25	ACK200 ACK300
P	Carbon Steel	180to 280 HB	150-**175**-200	0.10-**0.15**-0.20	ACP200
	Alloy Steel	180to 280 HB	150-**175**-200	0.10-**0.15**-0.20	ACP200

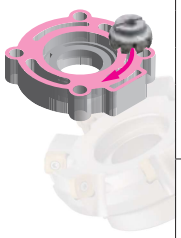
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

DNHS / DNH

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	180to 280 HB	150-**175**-200	0.10-**0.45**-0.80	ACP200
	Alloy Steel	180to 280 HB	150-**175**-200	0.10-**0.35**-0.60	ACP200

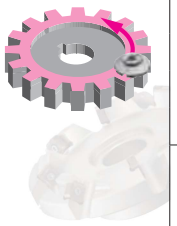
Note: For DNHS Type, insert heights are alternatively placed, so the actual feed rate per tooth is double. Use with f_z = 0. 5 mm/t (actual feed rate 1.0 mm/t) as the upper limit.
The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Application Examples



Part Material		Automotive Components Grey Cast Iron	
Used Equipment		Machining Center (BT30)	
Tool	Type	DNXF Type	Conventional Tool
	Body	DNXF 43000R	Cutter for C.I.
	Insert	G Type	Negative Insert
	Tool Dia. (in)	3	3
	Number of Teeth	8	8
	Insert Grade	ACK200	K Class CVD
Cutting Conditions	Cutting Speed (SFM)	656	656
	Feed Rate per Tooth (IPT)	0.0025 (v_f = 16.5 IPM)	0.0025 (v_f = 16.5 IPM)
	Axial Depth of Cut (in)	0.06	0.06
	Cutting Width (in)	2.4	2.4
	Dry/Wet	Wet	Wet

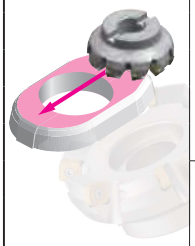
Double the tool life of conventional tools under the same conditions.



Part Material		Construction Machine Component / Cast Steel	
Used Equipment		Machining Center (BT50)	
Tool	Type	DNHS Type	Conventional Tool
	Body	DNHS 12100R	General-purpose Cutter
	Insert	H Type	Negative Insert
	Tool Dia. (mm)	100	100
	Number of Teeth	8 (4)*	7
	Insert Grade	ACP200	P Class CVD
Cutting Conditions	Cutting Speed (SFM)	560	560
	Feed Rate per Tooth (IPTt)	0.01 (v_f = 17.7 IPM)	0.003 (v_f = 11.8 IPM)
	Axial Depth of Cut (in)	0.12" to 0.16"	0.12" to 0.16"
	Cutting Width (in)	1.97	1.97
	Dry/Wet	Dry	Dry

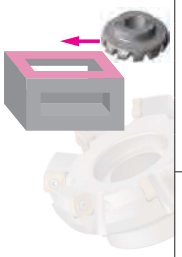
Enables 1.5 times the efficiency of conventional tools.

*( ) indicates effective no. of teeth



Part Material		Electrical Appliance Component Grey Cast Iron	
Used Equipment		Machining Center (BT50)	
Tool	Type	DNXF Type	Conventional Tool
	Body	DNXF 44000R	Cutter for C.I.
	Insert	H Type	Negative Insert
	Tool Dia. (in)	4	4
	Number of Teeth	10	10
	Insert Grade	ACK200	K Class CVD
Cutting Conditions	Cutting Speed (SFM)	1030	1030
	Feed Rate per Tooth (IPT)	0.006 (v_f = 60 IPM)	0.004 (v_f = 43.3 IPT)
	Axial Depth of Cut (in)	0.06	0.06
	Cutting Width (in)	3	3
	Dry/Wet	Wet	Wet

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



Part Material		Housing - Grey Cast Iron	
Used Equipment		Machining Center (BT50)	
Tool	Type	DNX Type	Conventional Tool
	Body	DNX 46000R	General-purpose Cutter
	Insert	G Type	Positive Insert
	Tool Dia. (inch)	6	6
	Number of Teeth	10	10
	Insert Grade	ACK200	K Class CVD
Cutting Conditions	Cutting Speed (SFM)	790	790
	Feed Rate per Tooth (IPT)	0.0047 (v_f = 23.5 IPM)	0.003 (v_f = 15.6 IPM)
	Axial Depth of Cut (in)	0.12	0.12
	Cutting Width (in)	5.3	5.3
	Dry/Wet	Wet	Wet

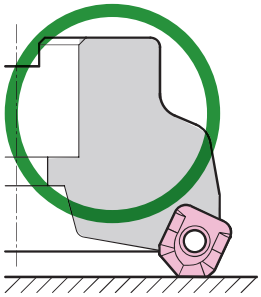
1.5 times longer tool life than conventional tools.

■ Precautions when Using Wiper Inserts with Holes

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

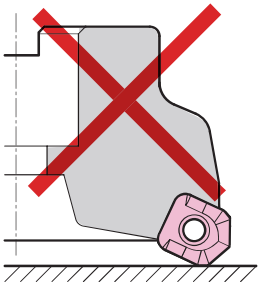
DNX(F) Type

Fig 1



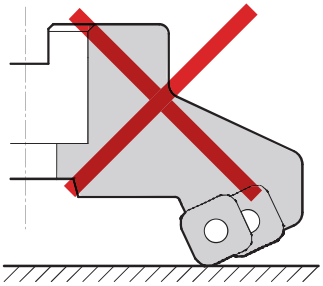
Correct Mounting

Fig 2



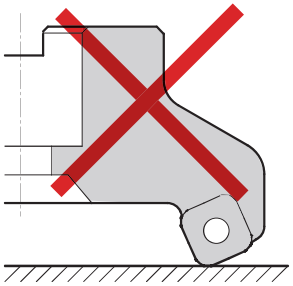
Incorrect Mounting

DNHS Type



Inappropriate

DNH Type



Inappropriate

DNX(F) Shellmill Inch

P Steel | K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

Maximum Depth of Cut .315" / 25°

Fig 1

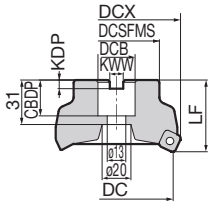


Fig 2

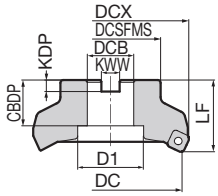


Fig 3

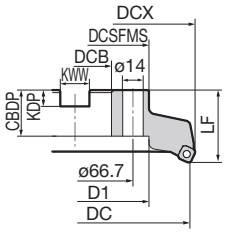
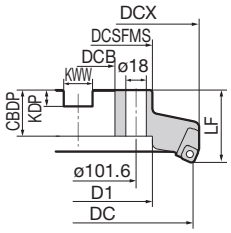


Fig 4



Body (DNX40000R) Lead Angle 25° General-purpose Type

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (lbs)	Fig
Inch	**DNX43000R**	●	3.000	3.303	2.250	0.797	1.750	1.000	0.375	0.220	1.020	6	6	2.65	1
	DNX44000R	●	4.000	4.315	2.870	1.000	2.000	1.250	0.500	0.280	1.020	7	7	3.53	1
	DNX44000R-1.50	●	4.000	4.303	3.750	2.000	2.500	1.500	0.625	0.380	1.000	7	7	3.53	5
	DNX45000R	●	5.000	5.303	3.750	2.000	2.500	1.500	0.625	0.380	1.060	8	8	6.17	2
	DNX46000R	●	6.000	6.303	4.380	2.000	2.500	1.500	0.625	0.380	1.060	10	10	9.70	2
	DNX48000R		8.000	8.303	5.120	5.118	2.500	2.500	1.000	0.560	1.595	12	12	18.75	4

● USA stocked item
Blank: Made-to-order item

Body (DNXF40000R) Lead Angle 25° Fine Pitch Type

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (lbs)	Fig
Inch	**DNXF43000R**	●	3.000	3.303	2.250	0.797	1.750	1.000	0.375	0.220	1.020	8	8	2.65	1
	DNXF44000R	●	4.000	4.315	2.870	1.000	2.000	1.250	0.500	0.280	1.020	10	10	3.53	1
	DNXF44000R-1.50	●	4.000	4.303	3.750	2.000	2.500	1.500	0.625	0.380	1.000	10	10	3.53	5
	DNXF45000R	●	5.000	5.303	3.750	2.000	2.500	1.500	0.625	0.380	1.060	11	11	6.17	2
	DNXF46000R	●	6.000	6.303	4.380	2.000	2.500	1.500	0.625	0.380	1.060	12	12	9.70	2
	DNXF48000R		8.000	8.303	5.120	5.118	2.500	2.500	1.000	0.560	1.595	14	14	18.75	4

Inserts are sold separately.

● USA stocked item
Blank: Made-to-order item

Insert

Dimensions (inch" / *mm*)

Grade		Coated Carbide				
Process	High-speed / Light	K	K			
	General-Purpose	K	K		P M	P M
	Roughing			K	P M	P M
Cat. No.		ACK100	ACK200	ACK300	ACP200	ACP300

Cat. No.	Cutting Edge Shape	Applications	Wiper Facet Length wpr	Fig
SNMT1205ZNEN-L	V-shaped Blade Type	Light Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-G		General-purpose	.039"/ *1.0*	1
SNMT1205ZNEN-H		Heavy Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-SH	Straight Type	Improved Chip Control	.039"/ *1.0*	2
XNGT1205ZNEN-W	Wiper Type	Improved Surface Roughness	.197"/ *5.0*	3

Fig 1

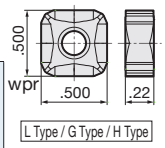


Fig 2

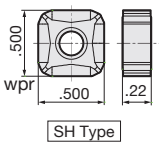
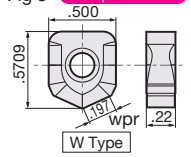
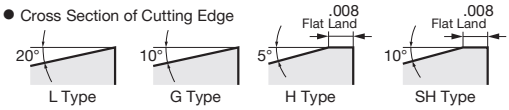


Fig 3 Wiper Insert



● Cross Section of Cutting Edge



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

Recommended Cutting Conditions (see below)

Parts

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

* mark is included with ø8 in or larger sizes.

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

Identification Code -Inch

DNX	F	4	3000	R
Cutter Series	Fine-Pitch Indication	Insert Series	Cutter Dia. 3.000"	Feed Direction

■ Recommended Cutting Conditions

	Cast Iron				Steel	
	Gray Cast Iron		Ductile Cast Iron		Carbon Steel	Alloy Steel
Grade	ACK200	ACK300	ACK100	ACK200	ACP200	ACP200
SFM	400 ~ 1100	400 ~ 950	350 ~ 950	350 ~ 850	350 ~ 875	350 ~ 950
IPT	.004 ~ .014	.004 ~ .014	.004 ~ .012	.004 ~ .012	.004 ~ .010	.004 ~ .010
Max. D.O.C.	~ 0.314	~ 0.314	~ 0.314	~ 0.314	~ 0.314	~ 0.314

N·m Recommended Tightening Torque (N·m)

DNX(F) Shellmill Metric

P Steel | K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

Maximum Depth of Cut: .315" / 25°

Fig 1

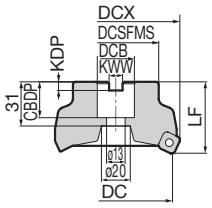


Fig 2

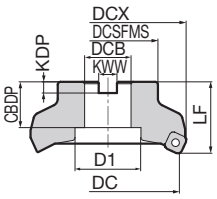


Fig 3

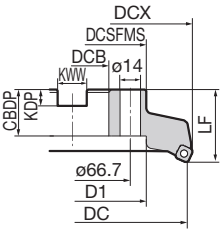
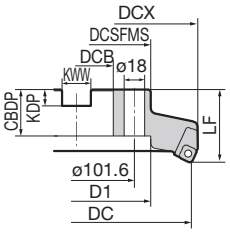


Fig 4



Body (DNX 12000R) Lead Angle 25° General-purpose Type

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Metric	**DNX12080RS**	★	*80	88	60	13.5	50	27	12.4	7	25	6	6	1.2	1
	DNX12100RS	★	100	108	80	46	50	32	14.4	8.5	29	7	7	1.6	2
	DNX12125RS	★	125	133	80	56	63	40	16.4	9.5	29	8	8	2.8	2
	DNX12160RS	★	160	168	100	88	63	40	16.4	9.5	29	10	10	4.4	3
	DNX12080R	★	*80	88	60	13	50	25.4	9.5	6	25	6	6	1.2	1
	DNX12100R	★	100	108	70	46	50	31.75	12.7	8	32	7	7	1.6	2
	DNX12125R	★	125	133	80	56	63	38.1	15.9	10	38	8	8	2.8	2
	DNX12160R	★	160	168	100	72	63	50.8	19.1	11	38	10	10	4.4	2

★ Worldwide Warehouse item

Body (DNXF 12000R) Lead Angle 25° Fine Pitch Type

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Metric	**DNXF12080RS**	★	*80	88	60	13.5	50	27	12.4	7	25	8	8	1.2	1
	DNXF12100RS	★	100	108	80	46	50	32	14.4	8.5	29	10	10	1.6	2
	DNXF12125RS	★	125	133	80	56	63	40	16.4	9.5	29	11	11	2.7	2
	DNXF12160RS	★	160	168	100	88	63	40	16.4	9.5	29	12	12	4.4	3
	DNXF12080R	★	*80	88	60	13	50	25.4	9.5	6	25	8	8	1.2	1
	DNXF12100R	★	100	108	70	46	50	31.75	12.7	8	32	10	10	1.6	2
	DNXF12125R	★	125	133	80	56	63	38.1	15.9	10	38	11	11	2.7	2
	DNXF12160R	★	160	168	100	72	63	50.8	19.1	11	38	12	12	4.4	2

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

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

★ Worldwide Warehouse item

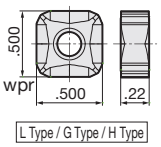
Insert

Dimensions (inch" / *mm*)

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

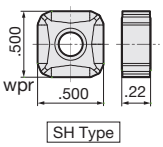
Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Wiper Facet Length wpr	Fig
SNMT1205ZNEN-L		●	●	●		V-shaped Blade Type	Light Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-G	●	●	●	●			General-purpose	.039"/ *1.0*	1
SNMT1205ZNEN-H	●	●	●	●			Heavy Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-SH	●	●	●	●	●	Straight Type	Improved Chip Control	.039"/ *1.0*	2
XNGT1205ZNEN-W		●	●			Wiper Type	Improved Surface Roughness	.197"/ *5.0*	3

Fig 1



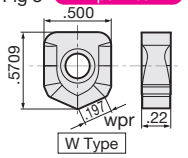
L Type / G Type / H Type

Fig 2



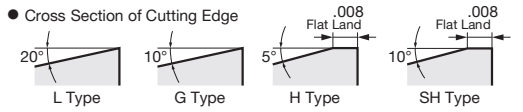
SH Type

Fig 3 Wiper Insert



W Type

● Cross Section of Cutting Edge



L Type | G Type | H Type | SH Type

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

● USA stocked item

Parts

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

* mark is included with ø200 mm or larger sizes.

Identification Code - Metric

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

N·m Recommended Tightening Torque (N·m)

DNH(S) Shellmill Metric

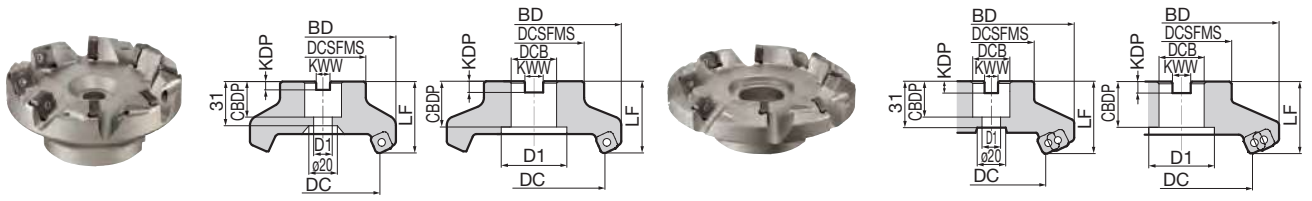
P Steel K Cast Iron

Rake Angle		
	Radial	-6°
	Axial	-5°

Maximum Depth of Cut .118" 66° (DNH Type)

Maximum Depth of Cut .197" 66° (DNHS Type)

Fig 1 Fig 2 Fig 3 Fig 4



Body (DNH 12000R) Lead Angle 66° Shallow Depth of Cut High Feed Type

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	O.D. BD	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Metric	**DNH12080R**	★	*80	104	60	13	50	25.4	9.5	6	25	6	6	1.5	1
	DNH12100R	★	100	124	70	46	50	31.75	12.7	8	32	7	7	1.9	2
	DNH12125R	★	125	149	80	56	63	38.1	15.9	10	38	8	8	3.2	2
	DNH12160R	★	160	184	100	72	63	50.8	19.1	11	38	10	10	5.1	2

Body (DNHS 12000R) Lead Angle 66° Medium Depth of Cut High Feed Type

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	O.D. BD	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective Number of Teeth	Weight (kg)	Fig
Metric	**DNHS12080R**	★	*80	116	60	13	50	25.4	9.5	6	25	6	3	1.7	3
	DNHS12100R	★	100	136	70	46	50	31.75	12.7	8	32	8	4	2.3	4
	DNHS12125R	★	125	161	80	56	63	38.1	15.9	10	38	10	5	3.2	4
	DNHS12160R	★	160	196	100	72	63	50.8	19.1	11	38	12	6	6.2	4

Inserts are sold separately.

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

Insert

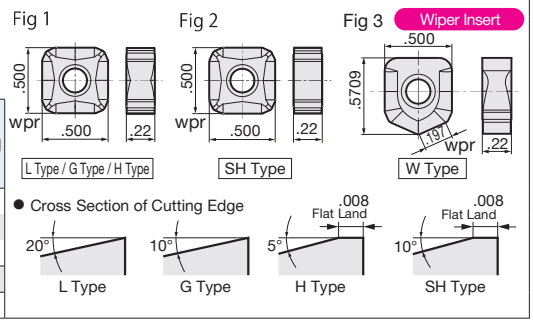
Dimensions (inch " / *mm*)

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

Cat. No.	ACK100	ACK200	ACK300	ACP200	ACP300	Cutting Edge Shape	Applications	Wiper Facet Length wpr	Fig
SNMT1205ZNEN-L		●	●	●		V-shaped Blade Type	Light Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-G	●	●	●	●			General-purpose	.039"/ *1.0*	1
SNMT1205ZNEN-H	●	●	●	●			Heavy Cutting	.039"/ *1.0*	1
SNMT1205ZNEN-SH	●	●	●	●	●	Straight Type	Improved Chip Control	.039"/ *1.0*	2
XNGT1205ZNEN-W		●	●			Wiper Type	Improved Surface Roughness	.197"/ *5.0*	3

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

Fig 1 Fig 2 Fig 3 Wiper Insert



Parts

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

* mark is included with ø200 mm or larger sizes.

N·m Recommended Tightening Torque (N·m)

MEMO

WEZ Series

■ Features

- **Supports Wide Range of Machining Operations**

Applicable to various machining applications, the cutter lineup includes diameters of .500” -6.000” inch bodies (ø14 to ø160mm metric bodies), enabling large ramping angles.

- **Excellent Machining Quality**

A combination of optimized cutting edge design and high-precision molding technology result in superb wall surface accuracy and surface finish quality.

- **Outstanding Sharpness with Low Resistance**

Reduces machining noise and suppresses burrs. Lineup includes ground inserts with a focus on sharpness.

- **ACU2500 General-purpose Grade for a Wide Range of Materials**

Introducing the new grade ACU2500, supports machining in a wide range of applications and materials.

- **WEZR - Repeater Milling**

Introducing WEZR, High-efficiency shoulder milling of deep steps. Inserts for WEZR are arranged in multiple steps forming a long cutting edge, to enable high-efficiency shoulder milling of deep steps.

■ Product Range (Body)

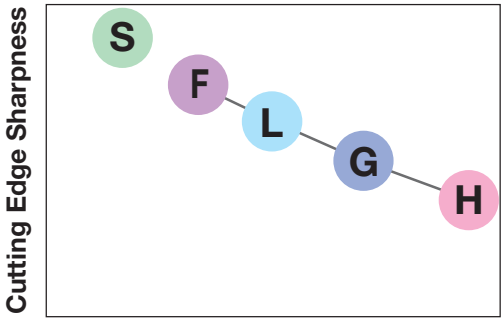
Type	Type	Diameters in Stock (inch)										
		ø0.500”	ø0.625”	ø0.750”	ø1.000”	ø1.250”	ø1.500”	ø2.000”	ø2.500”	ø3.000”	ø4.000”	ø6.000”
Shell Mills	WEZ20000R						6	7	8			
Shell Mills	WEZ30000R							5	6	5 7	6 8	8
Endmills	WEZ20000EW	1	2*	2 3*	3 4*	5*						
Endmills	WEZ20000EMW		2	2 3	3							
Endmills	WEZ20000ELC		2*	2 3*	3 4*	3						
Endmills	WEZ30000EW				2*	3*	4	5				
Endmills	WEZ30000EMW				2	3						
Endmills	WEZ30000ELC				2*	3*	3 4					

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

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

■ Chipbreaker Lineup

Work Material	P M K S H N				
Chipbreaker	L	G	H	F	S
Cutting Edge Cross Section: 11 Type	Not Available	28°	20°	28°	28°
Cutting Edge Cross Section: 17 Type	28°	20°	10°	28°	28°
Applications	Light Cutting Low-rigidity Milling	Main Chipbreaker General-purpose to Interrupted Milling	Heavy Cutting Heavy interrupted machining Hardened Steel	Light Cutting Medium Finishing Low-burr design	For Non-Ferrous Metals

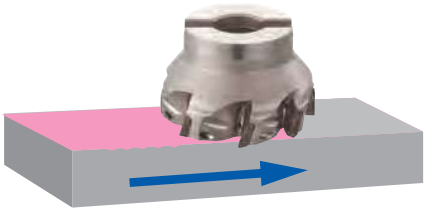


■ Product Range - WEZ Inserts

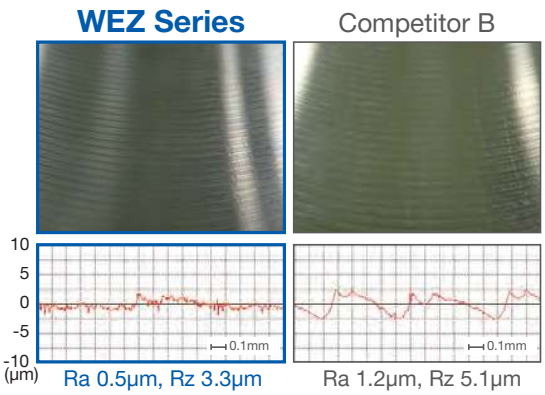
Type		Nose Radius (inch / *mm*)													
		.008 / *0.2*	.016 / *0.4*	.020 / *0.5*	.031 / *0.8*	.039 / *1.0*	.047 / *1.2*	.063 / *1.6*	.079 / *2.0*	.094 / *2.4*	.118 / *3.0*	.126 / *3.2*	.157 / *4.0*	.197 / *5.0*	.252 / *6.4*
11 Type, M Class	AOMT11T3○○PEER-G	●	●		●	●	●	●	●	●	●	●			
11 Type, M Class	AOMT11T3○○PEER-H		●		●		●	●							
11 Type, E Class	AOET11T3○○PEER-F	●	●	●	●	●	●	●	●	●	●	●			
11 Type, E Class	AOET11T3○○PEFR-S	●	●	●	●	●	●	●	●	●	●	●			
17 Type, M Class	AOMT1705○○PEER-L	●	●		●		●	●							
17 Type, M Class	AOMT1705○○PEER-G	●	●		●	●	●	●	●	●	●	●	●	●	●
17 Type, M Class	AOMT1705○○PEER-H		●		●		●	●							
17 Type, E Class	AOET1705○○PEER-F	●	●	●	●	●	●	●	●	●	●	●	●	●	●
17 Type, E Class	AOET 1705○○PEFR-S	●	●	●	●	●	●	●	●	●	●	●	●	●	●

●: Standard stock

■ Outstanding Surface Quality

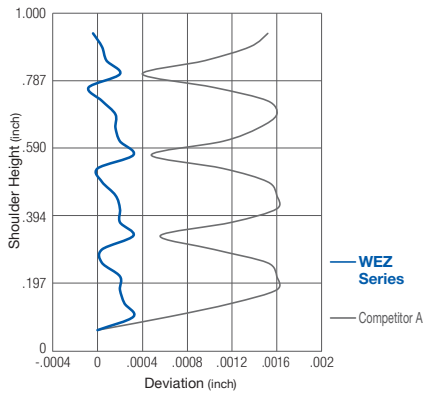


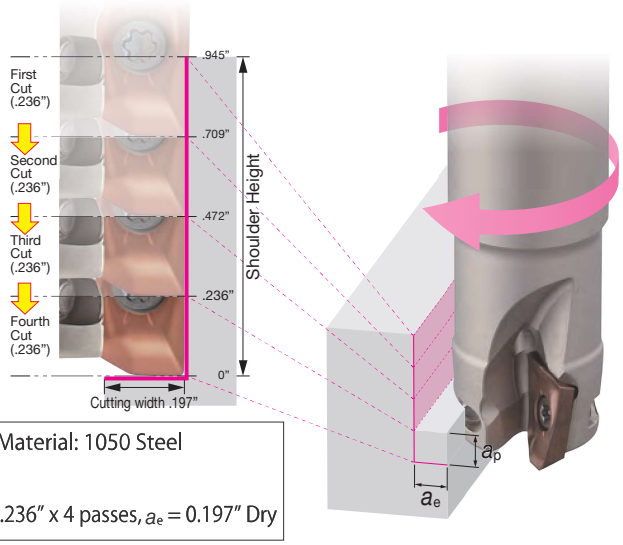
Machine: Vertical Machining Center BT50,
Part Material: 4140 Steel
Tool: WEZ 17100RS08 (ø100, 8 flutes)
Insert: AOMT 170508PEER-G (ACU2500)
Cutting conditions: v_c = 820 SFM, f_z = .006 IPT,
a_p = .079", a_e = 3.35" Dry



■ Insert Size Comparison

■ Excellent Squareness

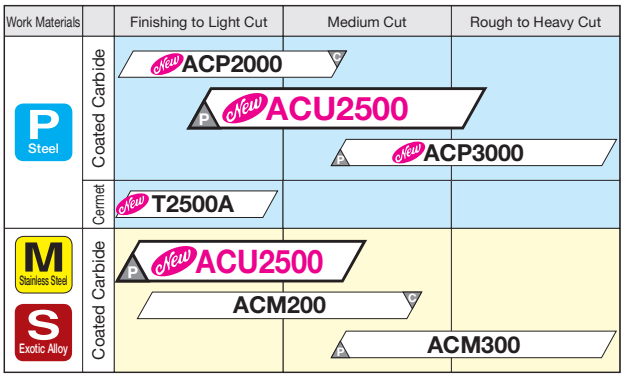


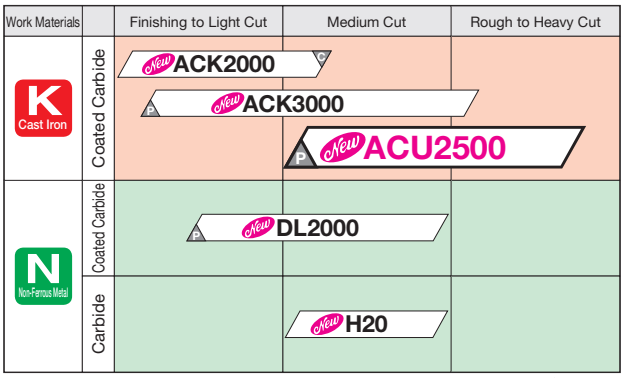


Machine: Vertical Machining Center BT40, Part Material: 1050 Steel
Tool: WEZ 11020E03 (ø20, 3 flutes)
Insert: AOMT 11T308PEER-G (ACU2500)
Cutting conditions: v_c = 500 SFM, f_z = .006 IPT, a_p = .236" x 4 passes, a_e = 0.197" Dry

■ Insert Grades Selection Guide

The WEZ Series debuts with brand new inserts grades: ACP2000, ACP3000, ACK2000, ACK3000, DL2000, H20, T2500A & ACU2500.
Highlighted by the newly developed general-purpose **ACU2500 Grade,** suitable for a wide range of materials.
Enhanced lineup of coatings in addition to carbide and cermet for milling steel, stainless steel, cast iron, exotic materials, and aluminum alloy.



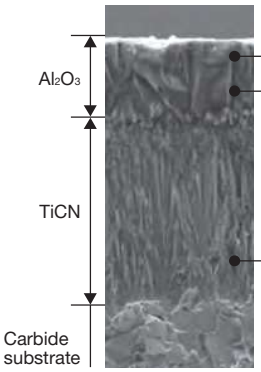


The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD P: PVD

■ Coating Features

New Absotech™ (absolute technology) coating technology for absolute stability

ABSOTECH CVD



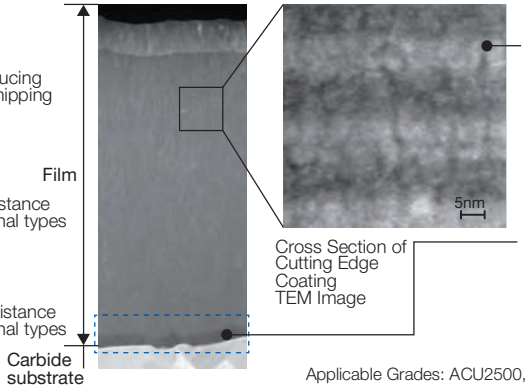
Special Surface Treatment
Suppresses thermal cracking by introducing high compressive stress, resulting in chipping resistance more than twice as good as conventional types

Crystal Orientation Control Al_2O_3
By controlling the growth direction, Al2O3 is reinforced for crater wear resistance more than twice as good as conventional types

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

Applicable Grades: ACP2000, ACK2000

ABSOTECH PVD



Cross Section of Cutting Edge Coating TEM Image

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

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

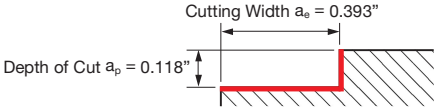
Applicable Grades: ACU2500, ACP3000, ACK3000

Work Materials	Grades	Coating Thickness (μm)	Features
P Steel, M Stainless Steel, K Cast Iron, S Exotic Allo	ACU2500	3	General-purpose grade for steel, stainless steel, and cast iron Adopts a carbide substrate with excellent fracture resistance and wear resistance, plus a new coating with excellent wear resistance and chipping resistance, realizing stable long tool life with various work materials.
P Steel	ACP2000	10	Stable long tool life in high-speed machining is acheived with a new coating and a tough carbide substrate with excellent thermal crack resistance.
	ACP3000	3	Adopts a very tough carbide substrate, plus a new coating with excellent wear resistance and chipping resistance, results in stable long tool life for wet machining of steel.
	T2500A	—	Thanks to the excellent thermal crack resistance conferred by high thermal conductivity and the improved toughness due to the finer and more uniform structure. This cermet grade produces high levels of fracture resistance and wear resistance.
M Stainless Steel, S Exotic Alloy	ACM200	6	Manages superb stability in machining of high-hardness stainless steel, due to a high-strength carbide substrate and highly wear-resistant coating.
	ACM300	3	Executes superb stability in machining of stainless steel, due to a high-strength carbide substrate and highly chipping-resistant coating.
K Cast Iron	ACK2000	10	Stable long tool life with high-speed machining of cast iron is attained by adopting a new coating with excellent thermal resistance and a tough carbide substrate.
	ACK3000	3	Utilizes a carbide substrate with excellent wear resistance, in addition to a new coating with excellent wear resistance and chipping resistance, resulting in stable long tool life in dry machining of cast iron.
N Non-Ferrous Metal	DL2000	0.5	DLC coating grade for non-ferrous metal machining with a low coefficient of friction and excellent adhesion resistance.
	H20	—	Uncoated grade for non-ferrous metal machining with excellent wear resistance and fracture resistance.

■ Recommended Cutting Conditions

WEZ11 Type

Tool: WEZ11020E03, Insert: AO□T11T3



Cutting Conditions: Depth of Cut a_p = 0.118", Cutting Width a_e = 0.393", Dry

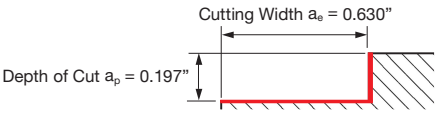
ISO Classification	Part Material	Work Material Hardness (HB)	Chipbreaker	Grade								
				ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACM200	ACM300	DL2000
				Feed Rate per Tooth f_z (IPT) Min. - Max.								
				0.003 - 0.008	0.003 - 0.008	0.003 - 0.008	0.003 - 0.007	0.003 - 0.008	0.003 - 0.008	0.003 - 0.008	0.003 - 0.008	0.004 - 0.014
				Cutting Speed v_c (SFM) Min. - Max.								
P	Steel, Carbon Steel 1015	125	G	885 - 1,335	985 - 1,450	820 - 1,265	755 - 1,190					
	1045	190	G	560 - 975	660 - 1085	500 - 905	430 - 830					
	1045 Hardened	250	G	460 - 800	525 - 885	400 - 725	345 - 670					
	High Carbon Steel	270	G	360 - 635	430 - 705	330 - 600	280 - 545					
	High Carbon Steel, Hardened	300	G	230 - 400	265 - 440	200 - 360	165 - 325					
	Low-alloy Steel 4140, 8620	180	G	525 - 920	625 - 1015	460 - 850	400 - 775					
	4140, 8620 Hardened	275	G	310 - 550	360 - 600	265 - 500	230 - 450					
	4140, 8620 Hardened	300	G	280 - 475	330 - 550	250 - 450	215 - 415					
	4140, 8620 Hardened	350	G	200 - 365	230 - 400	165 - 325	150 - 310					
	High Alloy Steel, D2, H13, A2	200	G	460 - 800	525 - 885	400 - 740						
	D2, H13, A2 Hardened	325	G	180 - 310	200 - 365	165 - 290						
M	Stainless Steel 430 & others (Martensitic / Ferritic)	200	G	360 - 620						460 - 685	300 - 505	
	Stainless Steel 403 & Others (Martensitic Hardened)	240	G	330 - 550						410 - 620	265 - 450	
	304/316 Stainless Steel (Austenitic)	180	G	400 - 650						500 - 725	330 - 550	
K	Cast Iron		G	500 - 905				820 - 1,265	560 - 975			
	Ductile Cast Iron		G	300 - 550				500 - 760	330 - 580			
S	Exotic Alloy Heat-resistant Alloy		G	100 - 200						115 - 220	85 - 180	
	Ti Alloy		G	200 - 365						230 - 400	165 - 325	
N	Aluminum Alloy Si less than 12.6%		S									1,640 - 3,610
	Aluminum Alloy Si more than 12.6%		S									560 - 905
	Copper Alloy		S									985 - 1,265

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

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

WEZ17 Type

Tool: WEZ17032E03, Insert: AO□T1705



Cutting Conditions: Depth of Cut a_p = 0.197", Cutting Width a_e = 0.630", Dry

ISO Classification	Part Material	Work Material Hardness (HB)	Chipbreaker	Grade								
				ACU2500	ACP2000	ACP3000	T2500A	ACK2000	ACK3000	ACM200	ACM300	DL2000
				Feed Rate per Tooth f_z (IPT) Min. - Max.								
				0.004 - 0.012	0.004 - 0.012	0.004 - 0.012	0.004 - 0.008	0.004 - 0.012	0.004 - 0.012	0.004 - 0.012	0.004 - 0.012	0.004 - 0.014
				Cutting Speed v_c (SFM) Min. - Max.								
P	Steel, Carbon Steel 1015	125	G	935 - 1,410	1,035 - 1,520	870 - 1,335	790 - 1,245					
	1045	190	G	590 - 1,030	690 - 1,140	525 - 960	445 - 865					
	1045 Hardened	250	G	475 - 830	560 - 920	430 - 775	360 - 705					
	High Carbon Steel	270	G	380 - 670	445 - 740	330 - 615	300 - 560					
	High Carbon Steel, Hardened	300	G	230 - 420	280 - 455	215 - 380	180 - 350					
	Low-alloy Steel 4140, 8620	180	G	560 - 960	660 - 1,065	495 - 905	430 - 815					
	4140, 8620 Hardened	275	G	330 - 560	380 - 635	280 - 525	250 - 490					
	4140, 8620 Hardened	300	G	300 - 505	345 - 560	250 - 470	215 - 430					
	4140, 8620 Hardened	350	G	215 - 360	250 - 420	180 - 345	165 - 310					
	High Alloy Steel, D2, H13, A2	200	G	475 - 830	560 - 920	430 - 775						
	D2, H13, A2 Hardened	325	G	180 - 325	215 - 360	165 - 310						
M	Stainless Steel 430 & others (Martensitic / Ferritic)	200	G	380 - 630						475 - 705	330 - 525	
	Stainless Steel 403 & Others (Martensitic Hardened)	240	G	345 - 560						430 - 635	280 - 470	
	304/316 Stainless Steel (Austenitic)	180	G	410 - 685						525 - 760	345 - 580	
K	Cast Iron		G	525 - 960				870 - 1,335	590 - 1,030			
	Ductile Cast Iron		G	315 - 580				525 - 800	345 - 620			
S	Exotic Alloy Heat-resistant Alloy		G	100 - 220						115 - 220	85 - 180	
	Ti Alloy		G	200 - 380						250 - 420	165 - 350	
N	Aluminum Alloy Si less than 12.6%		S									1,640 - 3,610
	Aluminum Alloy Si more than 12.6%		S									560 - 905
	Copper Alloy		S									985 - 1,265

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

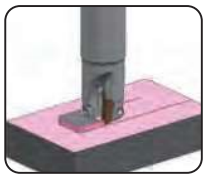
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work material rigidity, depth of cut and other factors.

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

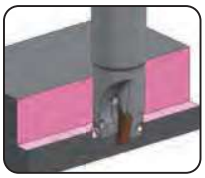
■ Wide Range of Applications

● Supports Ramping/Helical Milling/Plunge Cutting

Face Milling

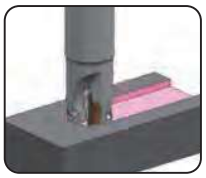


Shoulder Milling



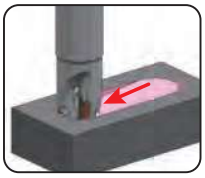
Side Milling

Slot Milling

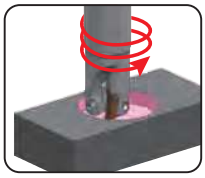


Hole Expansion Drilling

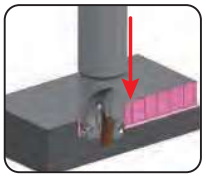
Ramping



Helical Milling



Plunge Cutting

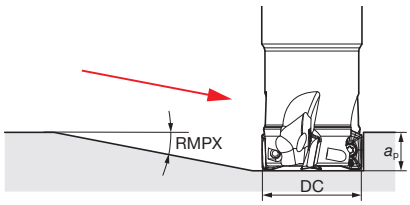


■ Optimized Body Design

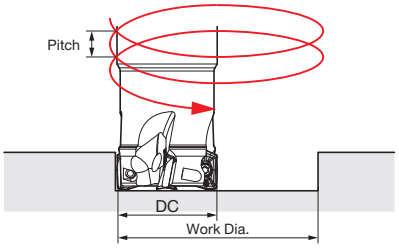
● Stable Insert Clamping

■ Ramping / Helical Milling Upper Limits

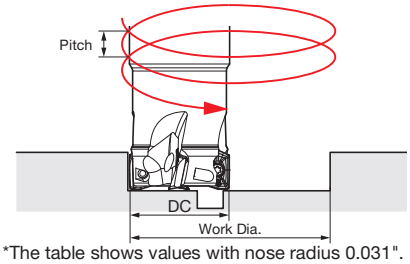
Ramping



Machining From Solid



Machining with prepared hole



*The table shows values with nose radius 0.031".

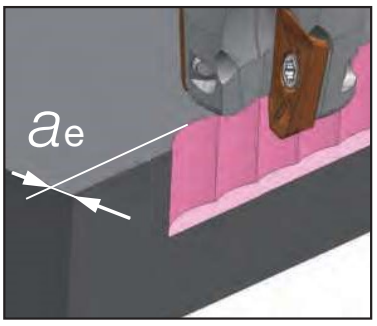
WEZ11

Tool Dia. DC	Max. Ramping Angle RMPX (°)	Machining From Solid				Machining with prepared hole	
		Max. Machining Dia. (inch)	Maximum Pitch	Min. Machining Dia. (inch)	Maximum Pitch	Min. Machining Dia. (inch)	Maximum Pitch
0.500"	6.5	0.892''	0.141''	0.772''	0.092''	0.710''	0.062''
0.625"	10.5	1.142''	0.300''	1.014''	0.220''	0.805''	0.057''
0.750"	7.1	1.392''	0.245''	1.258''	0.186''	1.030''	0.052''
1.000"	4.0	1.892''	0.186''	1.754''	0.149''	1.523''	0.050''
1.250"	2.7	2.392''	0.157''	2.251''	0.130''	2.021''	0.048''
1.500"	1.9	2.892''	0.138''	2.749''	0.116''	2.520''	0.046''
2.000"	1.2	3.892''	0.117''	3.747''	0.101''	3.520''	0.043''
2.250"	0.9	4.892''	0.109''	4.746''	0.096''	4.520''	0.044''

WEZ17

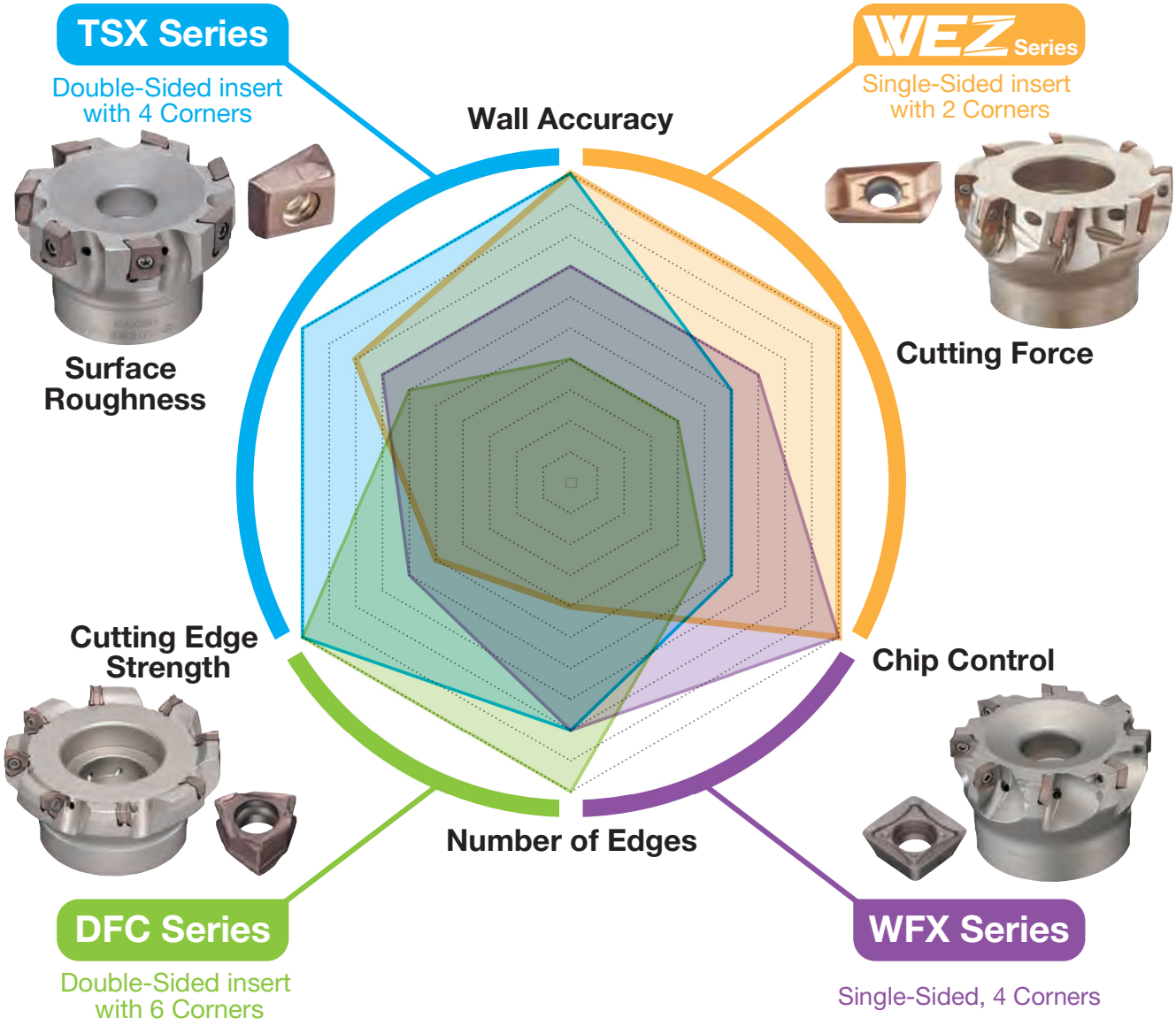
Tool Dia. DC	Max. Ramping Angle RMPX (°)	Machining From Solid				Machining with prepared hole	
		Max. Machining Dia. (inch)	Maximum Pitch	Min. Machining Dia. (inch)	Maximum Pitch	Min. Machining Dia. (inch)	Maximum Pitch
1.000"	10.0	1.892''	0.488''	1.605''	0.316''	1.293''	0.068''
1.250"	6.0	2.392''	0.367''	2.101''	0.256''	1.792''	0.067''
1.500"	4.2	2.892''	0.308''	2.599''	0.225''	2.292''	0.065''
2.000"	2.5	3.892''	0.246''	3.596''	0.191''	3.293''	0.062''
2.500"	1.7	4.892''	0.211''	4.595''	0.170''	4.293''	0.059''

■ Plunge Cutting Upper Limit



	Max. a_e (inch)
WEZ11 Type	0.118"
WEZ17 Type	0.197"

■ Shoulder Milling Tool Selection Guide



★★★: Top Recommendation

	Surface finish	Shoulder accuracy	Cutting resistance	Chip control	Number of corners	Cutting edge strength
WEZ Series	★★★	★★★	★★★	★★★	★	★½
TSX Series	★★★	★★★	★★	★½	★★	★★★
DFC Series	★½	★	★	★½	★★★	★★★
WFX Series	★½	★★	★★	★★★	★★	★★

More details on TSX / DFC / WFX Milling Cutters at www.sumicarbide.com

WaveMill

WEZ Shellmill - *11mm* Insert

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

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

.394" 90°

Fig 1

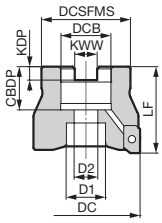


Fig 2

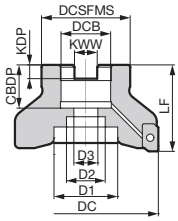
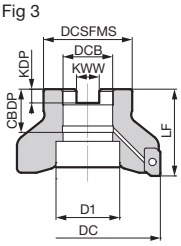


Fig 3



Body (Shellmill)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs/ *kg*)	Fig
Inch	**WEZ21500R06**	●	1.500	1.339	1.750	.750	.312	.190	.750	.609	.406	-	6	.441	1
Inch	**WEZ22000R07**	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	-	7	.816	1
Inch	**WEZ22500R08**	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	-	8	1.213	1
Metric	**WEZ11040RS04**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	-	4	*.21*	1
Metric	**WEZ11040RS06**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	-	6	*.20*	1
Metric	**WEZ11050RS05**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	5	*.32*	1
Metric	**WEZ11050RS07**	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	7	*.31*	1
Metric	**WEZ11063RS06**	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	6	*.58*	1
Metric	**WEZ11063RS08**	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	8	*.57*	1
Metric	**WEZ11080RS07**	★	*·80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	7	*1.08*	1
Metric	**WEZ11080RS10**	★	*·80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	10	*1.07*	1
Metric	**WEZ11100RS09**	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	-	9	*1.57*	3
Metric	**WEZ11100RS12**	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	-	12	*1.56*	3
Metric	**WEZ11080R07**	★	*·80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	-	7	*1.09*	1
Metric	**WEZ11080R10**	★	*·80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	-	10	*1.08*	1
Metric	**WEZ11100R09**	★	*·100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	*18*	9	*2.12*	2
Metric	**WEZ11100R12**	★	*·100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	*18*	12	*2.10*	2

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

Identification Code - Inch

WEZ	2	2000	R	05
Cutter Series	Insert Size	Cutter Dia. 2.000"	Feed Direction	Number of Teeth

Identification Code - Metric

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

Parts

Applicable Cutter		Torx Screw		Integrated Wrench	Anti-seizure Paste
Inch	Metric				
WEZ20000 Series	WEZ11000 Series	BFTX0306IP	1.5	TRDR08IP	SUMI-P

Applicable Cutter	Coolant Through Bolts
WEZ21500R06	BFXH 3/8 X 1
WEZ22000R07	BFXH 3/8 X 1
WEZ22500R08	BFXH 1/2 X 11/4

N·m Recommended Tightening Torque (N·m) ● : USA stocked item ★: worldwide warehouse item

WEZ Shellmill - *17mm* Insert

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

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

.591" 90°

Fig 1

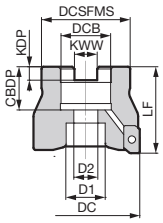


Fig 2

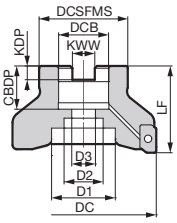


Fig 3

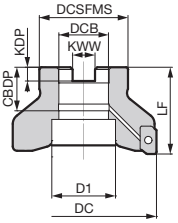


Fig 4

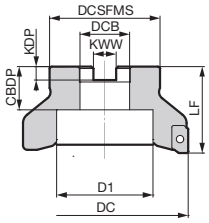
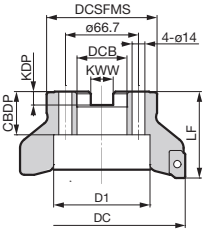


Fig 5



Body (Shellmill)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**WEZ32000R05**	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	-	5	.728	1
	WEZ32500R06	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	-	6	1.124	1
	WEZ33000R05	●	3.000	2.250	1.750	1.000	.375	.220	.750	.797	.531	-	5	1.940	1
	WEZ33000R07	●	3.000	2.250	1.750	1.000	.375	.220	.750	.797	.531	-	7	1.918	1
	WEZ34000R06	●	4.000	3.543	2.500	1.500	.625	.380	1.000	2.000	1.181	0.781	6	4.982	3
	WEZ34000R08	●	4.000	3.543	2.500	1.500	.625	.380	1.000	2.000	1.181	0.781	8	5.115	3
	WEZ36000R08	●	6.000	4.380	2.500	1.500	.625	.380	1.000	2.000	1.181	0.781	8	11.861	5
Metric	**WEZ17040RS03**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	-	3	*.19*	1
	WEZ17040RS04	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	-	4	*.16*	1
	WEZ17050RS03	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	3	*.30*	1
	WEZ17050RS05	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	5	*.26*	1
	WEZ17063RS04	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	4	*.54*	1
	WEZ17063RS06	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	6	*.51*	1
	WEZ17080RS04	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	4	*1.10*	1
	WEZ17080RS07	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	7	*1.05*	1
	WEZ17100RS05	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	-	5	*1.58*	3
	WEZ17100RS08	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	-	8	*1.57*	3
	WEZ17125RS06	★	*125*	*80*	*63*	*40*	*16.4*	*9*	*29*	*52*	*29*	-	6	*3.04*	1
	WEZ17125RS09	★	*125*	*80*	*63*	*40*	*16.4*	*9*	*29*	*52*	*29*	-	9	*3.07*	1
	WEZ17125RS11	★	*125*	*80*	*63*	*40*	*16.4*	*9*	*29*	*52*	*29*	-	11	*3.02*	1
	WEZ17160RS08	★	*160*	*130*	*63*	*40*	*16.4*	*9*	*29*	*90*	-	-	8	*5.24*	5
	WEZ17160RS10	★	*160*	*130*	*63*	*40*	*16.4*	*9*	*29*	*90*	-	-	10	*5.31*	5
	WEZ17160RS12	★	*160*	*130*	*63*	*40*	*16.4*	*9*	*29*	*90*	-	-	12	*5.26*	5
	WEZ17080R04	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	-	4	*1.10*	1
	WEZ17080R07	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	-	7	*1.06*	1
	WEZ17100R05	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	*18*	5	*2.08*	2
	WEZ17100R08	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	*18*	8	*2.07*	2
	WEZ17125R06	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	-	6	*3.09*	1
	WEZ17125R09	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	-	9	*3.11*	1
	WEZ17125R11	★	*125*	*80*	*63*	*38.1*	*15.9*	*10*	*35.5*	*55*	*30*	-	11	*3.06*	1
	WEZ17160R08	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	-	8	*5.04*	4
	WEZ17160R10	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	-	10	*5.09*	4
	WEZ17160R12	★	*160*	*100*	*63*	*50.8*	*19.1*	*11*	*38*	*72*	-	-	12	*5.04*	4

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

Identification Code - Inch

WEZ 3 2000 R 05

Cutter Series | Insert Size | Cutter Dia. | Feed Direction | Number of Teeth

Identification Code - Metric

WEZ 17 100 R S 05

Cutter Series | Insert Size | Cutter Dia. | Feed Direction | Metric | Number of Teeth

Parts - Inch

Applicable Cutter	Coolant Through Bolt	Torx Screw	N·m	Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seize Paste
WEZ32000R05	BFXH 3/8 X 1	BFTX0409IP	3.0	—	HPS1015	TRB15IP	SUMI-P
WEZ32500R06	BFXH 1/2 X 11/4						
WEZ33000R05	BFXH 1/2 X 11/4						
WEZ33000R07	BFXH 1/2 X 11/4						
WEZ34000R06	BFXH 3/4 X 2						
WEZ34000R08	BFXH 3/4 X 2						
WEZ36000R08	—			TRDR15IP	—		

Parts - Metric

Applicable Cutter	Torx Screw	N·m	Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seize Paste
WEZ17100R(S)05	BFTX0409IP	3.0	—	HPS1015	TRB15IP	SUMI-P
WEZ17100R(S)08						
WEZ17125R(S)06						
WEZ17125R(S)09						
WEZ17125R(S)11						
WEZ17160R(S)08						
WEZ17160R(S)10			TRDR15IP	—	—	
WEZ17160R(S)12						

N·m Recommended Tightening Torque (N·m) ● USA stocked item ★: worldwide warehouse item

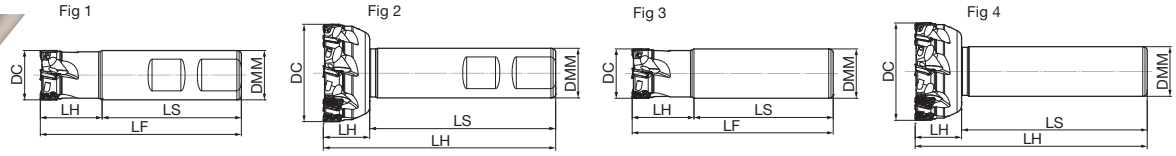
WaveMill

WEZ Endmill - *11mm* Insert

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

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

.394" 90°



Body (Endmill - Weldon)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**WEZ20500EW01**	●	.500	.625	1.312	1.906	3.218	1	.198	1
	WEZ20625EW02-0.500	●	.625	.500	1.142	1.781	2.923	2	.132	2
	WEZ20625EW02	●	.625	.625	1.312	1.906	3.218	2	.220	1
	WEZ20625EMW02	●	.625	.625	2.312	1.906	4.218	2	.287	1
	WEZ20750EW02-0.625	●	.750	.625	1.142	1.906	3.048	2	.198	2
	WEZ20750EW02	●	.750	.750	1.533	2.030	3.563	2	.331	1
	WEZ20750EMW02	●	.750	.750	2.533	2.030	4.563	2	.419	1
	WEZ20750EW03-0.625	●	.750	.625	1.142	1.906	3.048	3	.198	2
	WEZ20750EW03	●	.750	.750	1.533	2.030	3.563	3	.331	1
	WEZ20750EMW03	●	.750	.750	2.533	2.030	4.563	3	.419	1
	WEZ21000EW03-0.750	●	1.000	.750	1.918	2.030	3.947	3	.419	2
	WEZ21000EW03	●	1.000	1.000	1.666	2.281	3.947	3	.397	1
	WEZ21000EMW03	●	1.000	1.000	2.666	2.281	4.947	3	.882	1
	WEZ21000EW04-0.750	●	1.000	.750	1.918	2.030	3.947	4	.419	2
	WEZ21000EW04	●	1.000	1.000	1.666	2.281	3.947	4	.705	1
	WEZ21250EW05-1.000	●	1.250	1.000	2.060	2.281	4.341	5	.838	2
	WEZ21250EW05	●	1.250	1.250	2.060	2.281	4.341	5	1.257	1
Metric	**WEZ11014E01**	★	*14*	*16*	*25*	*55*	*80*	1	*.10*	3
	WEZ11016E02	★	*16*	*16*	*25*	*75*	*100*	2	*.13*	3
	WEZ11016E02-12	★	*16*	*12*	*25*	*75*	*100*	2	*.07*	4
	WEZ11018E02	★	*18*	*16*	*25*	*75*	*100*	2	*.13*	4
	WEZ11020E02	★	*20*	*20*	*30*	*80*	*110*	2	*.23*	3
	WEZ11020E02-16	★	*20*	*16*	*30*	*80*	*110*	2	*.15*	4
	WEZ11020E03	★	*20*	*20*	*30*	*80*	*110*	3	*.22*	3
	WEZ11020E03-16	★	*20*	*16*	*30*	*80*	*110*	3	*.14*	4
	WEZ11022E03	★	*22*	*20*	*30*	*80*	*110*	3	*.23*	3
	WEZ11025E02	★	*25*	*25*	*35*	*85*	*120*	2	*.40*	3
	WEZ11025E03	★	*25*	*25*	*35*	*85*	*120*	3	*.40*	3
	WEZ11025E03-20	★	*25*	*20*	*35*	*85*	*120*	3	*.26*	4
	WEZ11025E04	★	*25*	*25*	*35*	*85*	*120*	4	*.39*	4
	WEZ11025E04-20	★	*25*	*20*	*35*	*85*	*120*	4	*.26*	4
	WEZ11028E04	★	*28*	*25*	*35*	*85*	*120*	4	*.41*	3
	WEZ11030E04	★	*30*	*25*	*40*	*90*	*130*	4	*.46*	3
	WEZ11032E02	★	*32*	*32*	*40*	*90*	*130*	2	*.74*	3
	WEZ11032E03	★	*32*	*32*	*40*	*90*	*130*	3	*.73*	3
	WEZ11032E04	★	*32*	*32*	*40*	*90*	*130*	4	*.73*	4
	WEZ11032E05	★	*32*	*32*	*40*	*90*	*130*	5	*.72*	4
	WEZ11032E05-25	★	*32*	*25*	*40*	*90*	*130*	5	*.46*	4
	WEZ11035E05	★	*35*	*32*	*40*	*90*	*130*	5	*.75*	4
	WEZ11040E02	★	*40*	*32*	*30*	*120*	*150*	2	*.96*	4
	WEZ11040E04	★	*40*	*32*	*30*	*120*	*150*	4	*.94*	4
	WEZ11040E06	★	*40*	*32*	*30*	*120*	*150*	6	*.93*	4
	WEZ11050E05	★	*50*	*32*	*30*	*120*	*150*	5	*1.04*	4
	WEZ11050E07	★	*50*	*32*	*30*	*120*	*150*	7	*1.04*	4
	WEZ11063E08	★	*63*	*32*	*30*	*120*	*150*	8	*1.24*	4
	WEZ11080E10	★	*80*	*32*	*30*	*120*	*150*	10	*1.52*	4

Inserts are sold separately.

Parts - Inch

Applicable Cutters	Torx Screw	N·m	Integrated Wrench	Anti-seize Paste
WEZ20500EW01 WEZ20625EW02-0.500 WEZ20625EW02 WEZ20625EMW02	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEZ20750EW02-0.625 WEZ20750EW02 WEZ20750EMW02 WEZ20750EW03-0.625 WEZ20750EW03 WEZ20750EMW03 WEZ21000EW03-0.750 WEZ21000EW03 WEZ21000EMW03 WEZ21000EW04-0.750 WEZ21000EW04 WEZ21250EW05 WEZ21250EW05-1.000	BFTX0306IP	1.5		

N·m Recommended Tightening Torque (N·m)

● : USA stocked item

★ : worldwide warehouse item

Parts - Metric

Applicable Cutters	Torx Screw	N·m	Integrated Wrench	Anti-seize Paste
WEZ11032E03 WEZ11032E04 WEZ11032E05(-25) WEZ11035E05 WEZ11040E02 WEZ11040E04 WEZ11040E06 WEZ11050E05 WEZ11050E07 WEZ11063E08 WEZ11080E10	BFTX0306IP	1.5	TRDR08IP	SUMI-P

Identification Code - Inch

WEZ 2 1000 EW 02 - 0.750

WEZ	2	1000	EW	02	- 0.750
Cutter Series	Insert Size	Cutter Dia. 1.000"	Weldon Shank	Number of Teeth	Shank Dia. 0.750"

Identification Code - Metric

WEZ 11 025 E 02 -22

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

WEZ Endmill - *11mm* Insert

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

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

.394" 90°

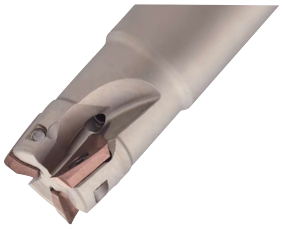


Fig 1

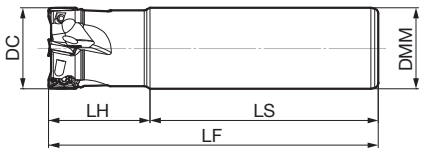
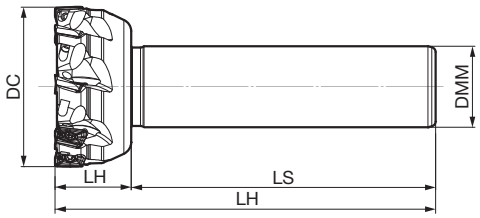


Fig 2



Body (Endmill - Cylindrical)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**WEZ20625ELC02-0.500**	●	.625	.500	.945	7.055	8.000	2	.331	2
	WEZ20625ELC02	●	.625	.625	2.624	5.376	8.000	2	.551	1
	WEZ20750ELC02-0.625	●	.750	.625	1.142	6.858	8.000	2	.573	2
	WEZ20750ELC02	●	.750	.750	3.067	4.933	8.000	2	.794	1
	WEZ20750ELC03-0.625	●	.750	.625	1.142	6.858	8.000	3	.573	2
	WEZ20750ELC03	●	.750	.750	3.067	4.933	8.000	3	.794	1
	WEZ21000ELC03-0.750	●	1.000	.750	1.339	6.661	8.000	3	.882	2
	WEZ21000ELC03	●	1.000	1.000	3.332	6.669	10.000	3	1.896	1
	WEZ21000ELC04-0.750	●	1.000	.750	1.339	6.661	8.000	4	.882	2
	WEZ21000ELC04	●	1.000	1.000	3.332	6.669	10.000	4	1.874	1
	WEZ21250ELC03-1.000	●	1.250	1.000	1.535	6.465	8.000	3	1.742	2
	WEZ21250ELC03	●	1.250	1.250	4.120	5.880	10.000	3	3.064	1
Metric	**WEZ11014EL01**	★	*14*	*16*	*25*	*95*	*120*	1	*.16*	1
	WEZ11016EL02	★	*16*	*16*	*25*	*120*	*145*	2	*.19*	1
	WEZ11016EL02-14	★	*16*	*14*	*25*	*120*	*145*	2	*.15*	2
	WEZ11018EL02	★	*18*	*16*	*25*	*120*	*145*	2	*.20*	2
	WEZ11020EL02	★	*20*	*20*	*40*	*110*	*150*	2	*.31*	1
	WEZ11020EL02-18	★	*20*	*18*	*25*	*125*	*150*	2	*.26*	2
	WEZ11022EL02	★	*22*	*20*	*30*	*120*	*150*	2	*.32*	2
	WEZ11025EL02	★	*25*	*25*	*50*	*120*	*170*	2	*.57*	1
	WEZ11025EL02-22	★	*25*	*22*	*30*	*140*	*170*	2	*.46*	2
	WEZ11025EL03	★	*25*	*25*	*50*	*120*	*170*	3	*.57*	1
	WEZ11028EL02	★	*28*	*25*	*30*	*140*	*170*	2	*.60*	2
	WEZ11030EL02	★	*30*	*25*	*30*	*140*	*170*	2	*.62*	2
	WEZ11032EL02	★	*32*	*32*	*60*	*110*	*170*	2	*.97*	1
	WEZ11032EL02-30	★	*32*	*30*	*30*	*140*	*170*	2	*.88*	2
	WEZ11032EL03	★	*32*	*32*	*60*	*110*	*170*	3	*.96*	1
	WEZ11035EL02	★	*35*	*32*	*30*	*140*	*170*	2	*1.02*	2
	WEZ11035EL03	★	*35*	*32*	*30*	*140*	*170*	3	*1.00*	2
	WEZ11040EL02	★	*40*	*32*	*30*	*140*	*170*	2	*1.08*	2
	WEZ11050EL03	★	*50*	*32*	*30*	*140*	*170*	3	*1.19*	2

Inserts are sold separately.

● USA stocked item ★: worldwide warehouse item

Parts- Inch

Applicable Cutter	Torx Screw	N·m	Integrated Wrench	Anti-seize Cream
WEZ20625ELC02-0.500 WEZ20625ELC02	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEZ20750ELC02-0.625 WEZ20750ELC02 WEZ20750ELC03-0.625 WEZ20750ELC03 WEZ21000ELC03-0.750 WEZ21000ELC03 WEZ21000ELC04-0.750 WEZ21000ELC04 WEZ21250ELC03-1.000 WEZ21250ELC03	BFTX0306IP	1.5		

N·m Recommended Tightening Torque (N·m)

Identification Code - Inch

WEZ (Cutter Series) **2** (Insert Size) **1000** (Cutter Dia. 1.000") **ELC** (Cylindrical Shank) **02** (Number of Teeth) **- 0.750** (Shank Dia. 0.750")

Parts - Metric

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

Identification Code - Metric

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

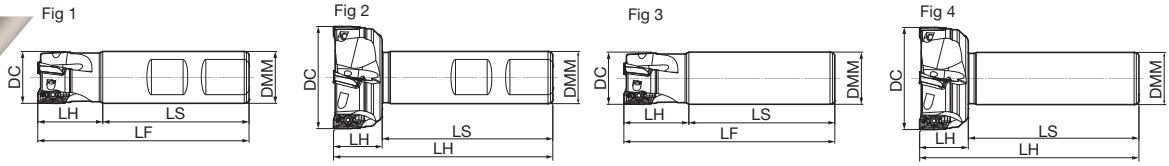
WaveMill

WEZ Endmill - *17mm* Insert

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

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

.591" 90°



Body (Endmill - Weldon)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**WEZ31000EW02-0.750**	●	1.000	.750	1.666	2.281	3.947	2	.397	2
	WEZ31000EW02	●	1.000	1.000	1.666	2.281	3.947	2	.683	1
	WEZ31000EMW02	●	1.000	1.000	2.666	2.281	4.947	2	.860	1
	WEZ31000ELW02	●	1.000	1.000	4.060	2.281	6.341	2	1.100	1
	WEZ31250EW03-1.000	●	1.250	1.000	2.060	2.281	4.341	3	.816	2
	WEZ31250EW03	●	1.250	1.250	2.060	2.281	4.341	3	1.190	1
	WEZ31250EMW03	●	1.250	1.250	3.000	2.281	5.281	3	1.477	1
	WEZ31500EW04	●	1.500	1.250	2.060	2.281	4.341	4	1.411	1
	WEZ32000EW05	●	2.000	1.250	2.060	2.281	4.341	5	2.050	1
Metric	**WEZ17025E02**	★	*25*	*25*	*35*	*85*	*120*	2	*.38*	3
	WEZ17025E02-20	★	*25*	*20*	*35*	*85*	*120*	2	*.25*	4
	WEZ17028E02	★	*28*	*25*	*35*	*85*	*120*	2	*.40*	4
	WEZ17030E03	★	*30*	*25*	*40*	*90*	*130*	3	*.43*	4
	WEZ17032E02	★	*32*	*32*	*40*	*90*	*130*	2	*.71*	3
	WEZ17032E03	★	*32*	*32*	*40*	*90*	*130*	3	*.69*	3
	WEZ17032E03-25	★	*32*	*25*	*40*	*90*	*130*	3	*.44*	4
	WEZ17035E03	★	*35*	*32*	*40*	*90*	*130*	3	*.72*	4
	WEZ17040E03	★	*40*	*32*	*30*	*105*	*135*	3	*.81*	4
	WEZ17040E04	★	*40*	*32*	*30*	*105*	*135*	4	*.79*	4
	WEZ17050E03	★	*50*	*32*	*30*	*105*	*135*	3	*.93*	4
	WEZ17050E03-42	★	*50*	*42*	*30*	*105*	*135*	3	*1.41*	4
	WEZ17050E05	★	*50*	*32*	*30*	*105*	*135*	5	*.89*	4
	WEZ17050E05-42	★	*50*	*42*	*30*	*105*	*135*	5	*1.37*	4
	WEZ17063E04	★	*63*	*32*	*30*	*105*	*135*	4	*1.10*	4
	WEZ17063E04-42	★	*63*	*42*	*30*	*105*	*135*	4	*1.58*	4
	WEZ17063E06	★	*63*	*32*	*30*	*105*	*135*	6	*1.08*	4
	WEZ17063E06-42	★	*63*	*42*	*30*	*105*	*135*	6	*1.56*	4
	WEZ17080E07	★	*80*	*32*	*30*	*105*	*135*	7	*1.39*	4

Inserts are sold separately.

● USA stocked item ★: worldwide warehouse item

Identification Code - Inch

WEZ 3 1000 EW 02 - 0.750

Cutter Series | Insert Size | Cutter Dia. 1.000" | Weldon Shank | Number of Teeth | Shank Dia. 0.750"

Identification Code - Metric

WEZ 17 032 E L 02 -30

Cutter Series | Insert Size | Cutter Dia. | With Shank | Long Type | Number of Teeth | Shank Dia.

Parts - Inch

Applicable Cutter	Torx Screw	N·m	Integrated Wrench	Anti-seize Paste
WEZ31000EW02-0.750 WEZ31000EW02 WEZ31000EMW02	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ31250EW03-1.000 WEZ31250EW03 WEZ31250EMW03 WEZ31500EW04 WEZ32000EW05	BFTX0409IP			

N·m Recommended Tightening Torque (N·m)

Parts - Metric

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

WEZ Endmill - *17mm* Insert

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

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

.591" 90°

Fig 1

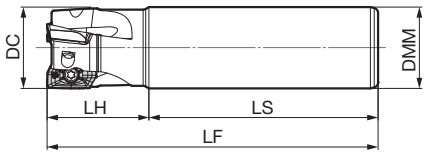
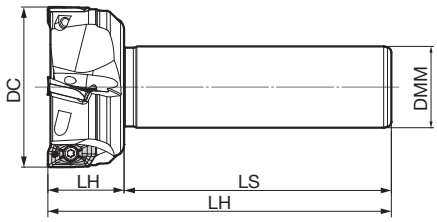


Fig 2



Body (Endmill - Cylindrical)

Dimensions (inch/ *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**WEZ31000ELC02-0.750**	●	1.000	.750	1.339	6.661	8.000	2	.882	2
	WEZ31000ELC02	●	1.000	1.000	2.666	7.334	10.000	2	1.896	1
	WEZ31250ELC03-1.000	●	1.250	1.000	1.535	8.465	10.000	3	1.984	2
	WEZ31250ELC03	●	1.250	1.250	3.000	7.000	10.000	3	3.042	1
	WEZ31500ELC03	●	1.500	1.250	1.535	8.465	10.000	3	3.285	1
	WEZ31500ELC04	●	1.500	1.250	1.535	8.465	10.000	4	3.219	1
Metric	**WEZ17025EL02**	★	*25*	*25*	*50*	*120*	*170*	2	*.55*	1
	WEZ17028EL02	★	*28*	*25*	*50*	*120*	*170*	2	*.57*	2
	WEZ17030EL02	★	*30*	*25*	*50*	*120*	*170*	2	*.59*	2
	WEZ17032EL02	★	*32*	*32*	*60*	*110*	*170*	2	*.94*	1
	WEZ17032EL02-30	★	*32*	*30*	*50*	*120*	*170*	2	*.85*	2
	WEZ17032EL03	★	*32*	*32*	*60*	*110*	*170*	3	*.92*	1
	WEZ17035EL02	★	*35*	*32*	*50*	*120*	*170*	2	*.98*	2
	WEZ17040EL02	★	*40*	*32*	*50*	*120*	*170*	2	*1.09*	2
	WEZ17040EL03	★	*40*	*32*	*50*	*120*	*170*	3	*1.08*	2
	WEZ17040EL04	★	*40*	*32*	*50*	*120*	*170*	4	*1.05*	2
	WEZ17050EL03	★	*50*	*32*	*50*	*120*	*170*	3	*1.29*	2
	WEZ17050EL03-42	★	*50*	*42*	*50*	*120*	*170*	3	*1.83*	2
	WEZ17050EL05	★	*50*	*32*	*50*	*120*	*170*	5	*1.25*	2
	WEZ17050EL05-42	★	*50*	*42*	*50*	*120*	*170*	5	*1.79*	2
	WEZ17063EL04	★	*63*	*32*	*50*	*120*	*170*	4	*1.61*	2
	WEZ17063EL04-42	★	*63*	*42*	*50*	*120*	*170*	4	*2.16*	2
	WEZ17063EL06	★	*63*	*32*	*50*	*120*	*170*	6	*1.58*	2
	WEZ17063EL06-42	★	*63*	*42*	*50*	*120*	*170*	6	*2.13*	2

Inserts are sold separately.

● : USA stocked item ★ : worldwide warehouse item

Identification Code - Inch

WEZ 3 **1000** **ELC** **02** - **0.750**

- WEZ: Cutter Series
- 3: Insert Size
- 1000: Cutter Dia. 1.000"
- ELC: Cylindrical Shank
- 02: Number of Teeth
- 0.750: Shank Dia. 0.750"

Identification Code - Metric

WEZ **17** **032** **E** **L** **02** **-30**

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

Parts - Inch

Applicable Cutter	Torx Screw	N·m	Integrated Wrench	Anti-seize Paste
WEZ31000ELC02-0.750	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ31000ELC02				
WEZ31250ELC03-1.000	BFTX0409IP			
WEZ31250ELC03				
WEZ31500ELC03				
WEZ31500ELC04				

N·m Recommended Tightening Torque (N·m)

Parts - Metric

Applicable Cutter	Torx Screw	N·m	Integrated Wrench	Anti-seize Paste
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)				

WEZR Repeater Milling Cutter

■ WEZR Repeater Milling Features

- **High-efficiency shoulder milling of deep steps**

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

- **Excellent chatter resistance**

  Sharp inserts and irregular pitched body helps to control chatter and vibration

- **Support for all types of applications**

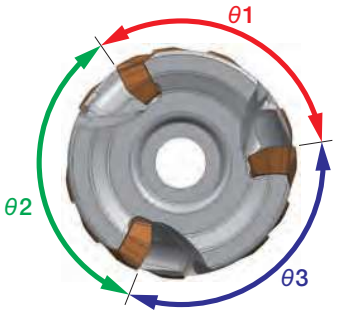
  A lineup of grades specific to each work material, as well as the general-purpose ACU2500 grade, which is applicable to most materials (steel, stainless steel and cast iron)

■ Body Features

- Flute shape ensures both rigidity and excellent chip evacuation performance

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

- Irregular pitched body suppresses chattering



$\theta 1 \neq \theta 2 \neq \theta 3$

Irregular pitch is used to improve chatter resistance

■ Product Range - WEZR Repeater New

	Type	Cat. No.	Diameter (Inch)						Diameter (*mm*)								
			ø1.000	ø1.250	ø1.500	ø2.000	ø2.500	ø3.000	*ø20*	*ø25*	*ø30*	*ø32*	*ø35*	*ø40*	*ø50*	*ø63*	*ø80*
Inch	Shell	**WEZR30000R**				3	4	5									
Inch	Shank	**WEZR20000EW**	2	3	3												
Metric	Shell	**WEZR11000RS**												4	4		
Metric	Shell	**WEZR17000RS**													2 3 4	3 4 5	5
Metric	Shank	**WEZR11000E**							1 2	2	2	2 3	3	3 4			
Metric	Shank	**WEZR17000E**												2 3	2 3		
Metric	Modular	**WEZR11000M**										3					
Metric	Modular	**WEZR17000M**												3			

● Numbers inside are effective number of teeth

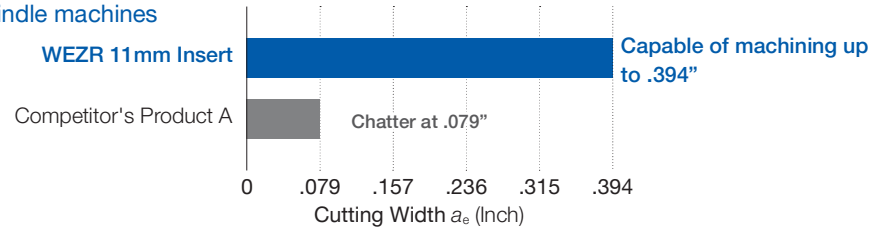
WEZR Repeater Milling Cutter

■ Cutting Performance

- Sharp inserts and irregular pitched body help provide low chatter resistance

Capable of stable machining with BT40 spindle machines

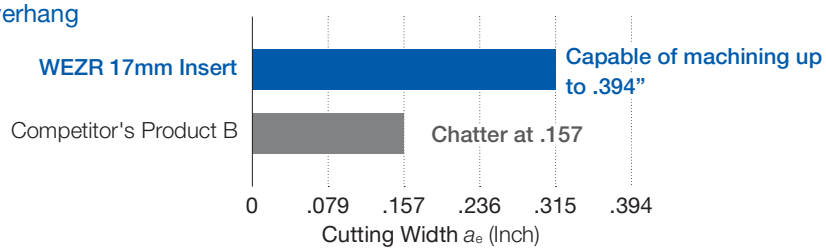
Vertical Machining Center BT40



Machine: Vertical Machining Center BT40, Part Material: 1050 Steel, Overhang amount: 2.36”
Tool: WEZR11032E3632Z03 (ø*32mm*, 3-tooth 4-step)
Insert: AOMT11T308PEER-G-ACU2500
Cutting Conditions: v_c = 500 SFM, f_z = .0039 IPR, a_p= 1.18”, Dry

Capable of stable machining with a long overhang

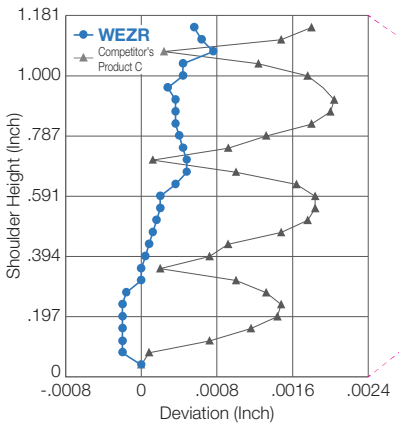
Vertical Machining Center BT50

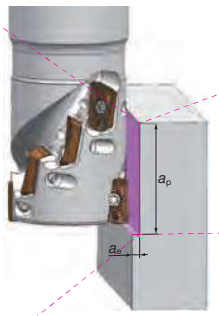


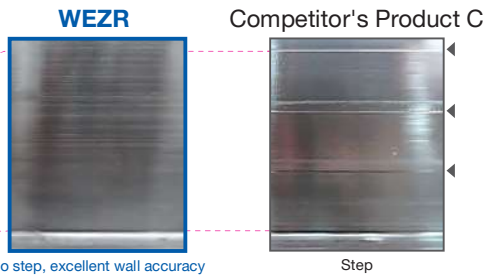
Machine: Vertical Machining Center BT50, Part Material: 4140 Steel, Overhang amount: 9.25”
Tool: WEZR 17063RS5727Z04 (ø*63mm*, 4-tooth 4-stage)
Insert: AOMT 170508PEER-G(ACU2500)
Cutting Conditions: v_c = 492 SFM, f_z = .006 IPT, a_p= 1.97”, Dry

■ Cutting Performance

Optimized cutting edge shape and high-precision molding technology help achieve excellent wall accuracy.







Machine: Vertical Machining Center BT50, Part Material: 4135 Steel, Overhang amount: 2.363”
Tool: WEZR11032E3632Z02 (ø32, 2-tooth 4-steps)
Insert: AOMT11T308PEER-G-ACU2500
Cutting Conditions: v_c = 530 SFM, f_z = .0059 IPR, a_p= 1.181”, a_e= .079”, Dry

■ Application Range Recommendation

Cutting parameters such as A_p (depth of cut) and A_e (width of cut) should be based on the operating conditions (e.g. Material, Machine Tool, Rigidity, Clamping)

WEZR Shellmill - *11mm* Insert

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

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

1.73" to 2.09" 90° | 44 to 53 mm 90°

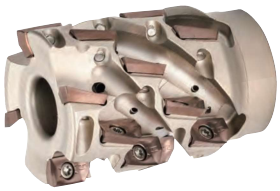
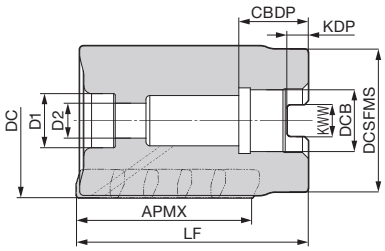


Fig 1



Body (Shellmill)

Dimensions (*mm*)

	Cat. No.	Stock	Diameter 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	Insert Steps	Effective Number of Teeth	Weight (*kg*)	Fig
Metric	**WEZR11040RS4416Z04**	★	*40*	*44(43)*	*37*	*60(59.7)*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	20	5	4	*.27*	1
	WEZR11050RS5322Z04	★	*50*	*53(52)*	*47*	*70(69.7)*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	24	6	4	*.57*	1

The APMX and LF dimensions in parentheses are dimensions using RE = .118"/.126", *3.0/3.2 mm* insert.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Parts

Applicable Cutter	Flat Insert Screw		Wrench	Bolt	Anti-seize Cream
		N·m			
WEZR11040RS4416Z04	BFTX0306IP	1.5	TRDR08IP	BX0850	SUMI-P
WEZR11050RS5322Z04				BX1060	

N·m Recommended Tightening Torque (N·m) ● : USA stocked item ★: worldwide warehouse item

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

Modify the C chamfering portion

WEZ11

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

Standard: R1.

WEZR Shellmill Identification Code - Metric

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

WEZR Recommended Cutting Conditions

ISO	Material	Hardness	Chipbreaker	Cutting Speed v_C (SFM) Min. - Max.	Feed Rate f_Z (IPT) Min. - Max.	Insert Grade
P	Carbon Steel	Up to 30 HRc	G	330 - 720	.0031 - .0079	ACU2500
		30 HRc and Above	G	265 - 435	.0031 - .0079	ACP2000
	Alloy Steel	Up to 30 HRc	G	330 - 650	.0031 - .0079	ACP3000
M	Stainless Steel	Up to 30 HRc	G	265 - 570	.0031 - .0079	ACU2500 ACM200 ACM300
K	Cast Iron/ Ductile Cast Iron	—	G	330 - 725	.0031 - .0079	ACU2500 ACK2000 ACK3000
S	Exotic Alloy	—	G	130 - 220	.0031 - .0079	ACU2500 ACM200 ACM300
N	Aluminum Alloy	Si ≤ 12.6%	S	980 - 2,890	.0020 - .0059	DL2000
		Si >12.6%	S	330 - 900	.0019 - .0059	H20*

Note
- The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
- There may be cases where machining cannot be performed under recommended cutting conditions, depending on the machine rigidity and work rigidity.
- *For H20, use coolant to prevent adhesion.

WEZR Shellmill - *17mm* Insert

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

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

2.50" to 3.50" 90° | 29 to 57 mm 90°

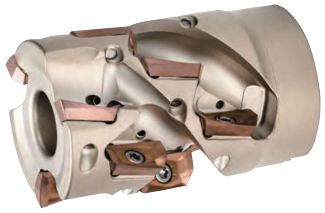
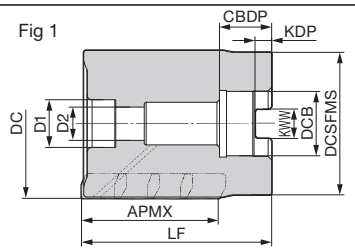


Fig 1



Body (Shellmill)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Diameter 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	Insert Steps	Effective Number of Teeth	Weight (lb/*kg*)	Fig
Inch	**WEZR32000R075-250Z03**	●	2.000	2.500	1.882	3.750	.750	.312	.190	.750	.609	.406	15	5	3	1.68	1
	WEZR32000R075-300Z03	●	2.000	3.000	1.882	4.250	.750	.312	.190	.750	.609	.406	18	6	3	1.76	1
	WEZR32500R100-250Z04	●	2.500	2.500	2.382	3.750	1.000	.375	.220	.750	.797	.531	20	5	4	2.82	1
	WEZR32500R100-300Z04	●	2.500	3.000	2.382	4.250	1.000	.375	.220	.750	.797	.531	24	6	4	3.09	1
	WEZR33000R100-300Z05	●	3.000	3.000	2.882	4.250	1.000	.375	.220	.750	.797	.531	30	6	5	5.07	1
	WEZR33000R100-350Z05	●	3.000	3.500	2.882	4.750	1.000	.375	.220	.750	.797	.531	35	7	5	5.58	1
Metric	**WEZR17050RS2922Z04**	★	*50*	*29(28)*	*47*	*50(49.3)*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	8	2	4	*.35*	1
	WEZR17050RS5722Z02	★	*50*	*57(56)*	*47*	*80(79.3)*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	8	4	2	*.70*	1
	WEZR17050RS5722Z03	★	*50*	*57(56)*	*47*	*80(79.3)*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	12	4	3	*.59*	1
	WEZR17063RS2927Z05	★	*63*	*29(28)*	*60*	*55(54.3)*	*27*	*12.4*	*7*	*22*	*20*	*14*	10	2	5	*.74*	1
	WEZR17063RS5727Z03	★	*63*	*57(56)*	*60*	*80(79.3)*	*27*	*12.4*	*7*	*22*	*20*	*14*	12	4	3	*1.11*	1
	WEZR17063RS5727Z04	★	*63*	*57(56)*	*60*	*80(79.3)*	*27*	*12.4*	*7*	*22*	*20*	*14*	16	4	4	*1.05*	1
	WEZR17080RS5627Z05	★	*80*	*56(55)*	*70*	*80(79.3)*	*27*	*12.4*	*7*	*22*	*20*	*14*	20	4	5	*1.85*	1
	WEZR17080RS5632Z05	★	*80*	*56(55)*	*70*	*80(79.3)*	*32*	*14.4*	*8*	*26*	*25*	*18*	20	4	5	*1.76*	1

The APMX and LF dimensions in parentheses are dimensions using RE = .197"/ .252", *5.0/6.4 mm* insert.
Take note of the cutter mounting size (DCB) when selecting a cutter. Inserts are sold separately.

Parts

	Applicable Cutter	Flat Insert Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Bolt	Anti-seize Cream
Inch	WEZR32000R075-250Z03	BFTX0409IP	3.0	—	HPS1015	TRB15IP	BFXH 3/8 X 3	SUMI-P
	WEZR32000R075-300Z03						BFXH 3/8 X3 1/2	
	WEZR32500R100-250Z04						BFXH 1/2 X 3 1/4	
	WEZR325000R100-300Z04						BFXH 1/2 X 3 3/4	
	WEZR33000R100-300Z05						BFXH 1/2 X 3 3/4	
	WEZR33000R100-350Z05						BFXH 1/2 X 4 1/4	
Metric	WEZR17050RS2922Z04						BX1265	
	WEZR17050RS5722Z02						BX1660	
	WEZR17050RS5722Z03							
	WEZR17063RS2927Z05						BX1240	
	WEZR17063RS5727Z03						BX1265	
	WEZR17063RS5727Z04							
	WEZR17080RS5627Z05			TRDR15IP	—	—	BX1265	
	WEZR17080RS5632Z05						BX1660	

N·m Recommended Tightening Torque (N·m)

● : USA stocked item ★ : worldwide warehouse item

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

Modify the C chamfering portion

WEZ17 Type

Reworking guidelines

Corner radius = 2.4: C1 (AOMT170524PEER)

Corner radius = 3.0: C1.5 (AOMT170530PEER)

Corner radius = 3.2: C1.5 (AOMT170532PEER)

Corner radius = 4.0: C2 (AOMT170540PEER)

Corner radius = 5.0: C5 (AOMT170550PEER)

Corner radius = 6.4: C5 (AOMT170564PEER)

Standard: R1.

WEZR Shellmill Identification Code - Inch

WEZR 2 2000 R 075 - 250 Z03

Series	Insert Size	Diameter	Feed Direction	Mounting Hole Diameter	Max. Depth of Cut	Effective No. of Teeth

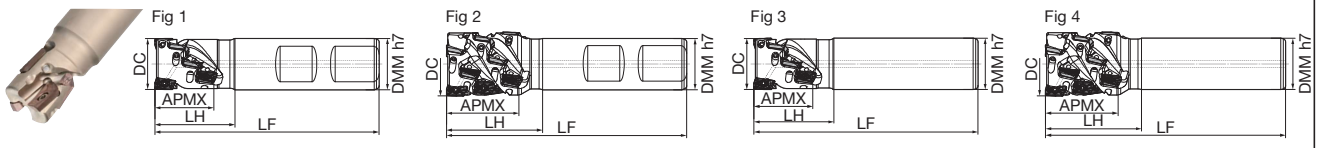
WaveMill

WEZR Endmill - *11mm* Insert

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

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

1.75" to 2.50" 90° | 19 to 61mm 90°



Body (Endmill)

Dimensions (*mm*)

Cat. No.	Stock	Diameter DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Insert Steps	Effective No. of Teeth	Weight (lb / *kg*)	Fig
WEZR21000EW100-175Z02	●	1.000	1.750	1.000	2.250	4.531	10	5	2	.71	1
WEZR21250EW125-200Z03	●	1.250	2.000	1.250	2.500	4.781	18	6	3	1.17	1
WEZR21500EW125-250Z03	●	1.500	2.500	1.250	3.000	5.281	21	7	3	1.54	2
WEZR11020E1920Z02	★	*20*	*19(18)*	*20*	*30(29.7)*	*110(109.7)*	4	2	2	*.22*	3
WEZR11020E3620Z01	★	*20*	*36(35)*	*20*	*45(44.7)*	*125(124.7)*	4	4	1	*.24*	3
WEZR11025E2725Z02	★	*25*	*27(26)*	*25*	*40(39.7)*	*130(129.7)*	6	3	2	*.41*	3
WEZR11025E3625Z02	★	*25*	*36(35)*	*25*	*50(49.7)*	*140(139.7)*	8	4	2	*.42*	3
WEZR11030E5325Z02	★	*30*	*53(52)*	*25*	*65(64.7)*	*155(154.7)*	12	6	2	*.52*	4
WEZR11032E3632Z02	★	*32*	*36(35)*	*32*	*50(49.7)*	*140(139.7)*	8	4	2	*.74*	3
WEZR11032E3632Z03	★	*32*	*36(35)*	*32*	*50(49.7)*	*140(139.7)*	12	4	3	*.71*	3
WEZR11032E5332Z02	★	*32*	*53(52)*	*32*	*70(69.7)*	*160(159.7)*	12	6	2	*.90*	3
WEZR11035E5332Z03	★	*35*	*53(52)*	*32*	*65(64.7)*	*155(154.7)*	18	6	3	*.88*	4
WEZR11040E4432Z03	★	*40*	*44(43)*	*32*	*60(59.7)*	*150(149.7)*	15	5	3	*.87*	4
WEZR11040E4432Z04	★	*40*	*44(43)*	*32*	*60(59.7)*	*150(149.7)*	20	5	4	*.85*	4
WEZR11040E6132Z03	★	*40*	*61(60)*	*32*	*75(74.7)*	*165(164.7)*	21	7	3	*.95*	4

The APMX, LH and LF dimensions in parentheses are dimensions using RE = .118"/.126", 3.0/3.2 mm insert. Inserts are sold separately.

Parts

Flat Insert Screw		Integrated Wrench	Anti-seize Cream
	N·m		
BFTX0306IP	1.5	TRDR08IP	SUMI-P

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

Modify the C chamfering portion

WEZ11

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

Standard: R1.

WEZR Endmill Identification Code - Inch

WEZR	2	1000	EW	100	-	175	Z02
Series	Insert Size	Diameter	Weldon Shank	Shank Dia.		Max. Depth of Cut	Effective No. of Teeth

WEZR Endmill Identification Code - Metric

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

WEZR Endmill - *17mm* Insert

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

1.14" to 3.31" 90° | 29 to 84mm 90°

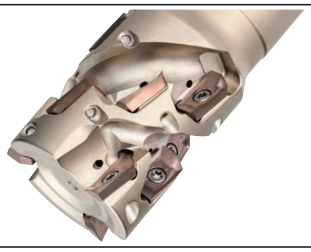
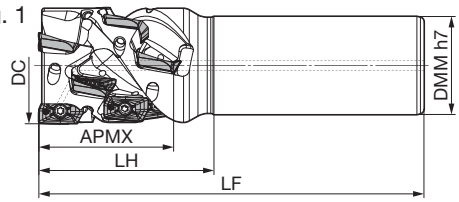


Fig. 1



Body (Endmill)

Dimensions (*mm*)

Cat. No.	Stock	Diameter DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Overall Length LF	Total No. of Teeth	Insert Steps	Effective No. of Teeth	Weight (*kg*)	Fig
WEZR17040E2932Z03	★	*40*	*29(28)*	*32*	*45(44.3)*	*135(134.3)*	6	2	3	*.75*	1
WEZR17040E4332Z02	★	*40*	*43(42)*	*32*	*60(59.3)*	*150(149.3)*	6	3	2	*.86*	1
WEZR17050E5742Z03	★	*50*	*57(56)*	*42*	*75(74.3)*	*165(164.3)*	12	4	3	*1.58*	1
WEZR17050E8442Z02	★	*50*	*84(83)*	*42*	*105(104.3)*	*195(194.3)*	12	6	2	*1.94*	1

The APMX, LH and LF dimensions in parentheses are dimensions using RE = .197"/ .252", 5.0/6.4 mm insert. Inserts are sold separately.

Parts

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

N·m Recommended Tightening Torque (N·m)

● : USA stocked item ★: worldwide warehouse item

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

Modify the C chamfering portion

WEZ17 Type

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

Standard: R1.

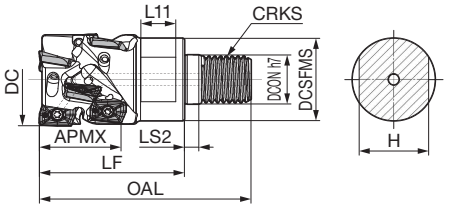
WEZR Endmill - *11 & 17mm* Insert

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

Rake Angle		
	Radial	-12°
	Axial	11°

1.06" 90° | 27mm 90°

Fig 1



WEZR Modular Head

Dimensions (*mm*)

Series	Cat. No.	Stock	Diameter DC	Max. Depth of Cut APMX	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Neck LS2	Flat L11	Width H	Total No. of Teeth	Insert Steps	Effective No. of Teeth	Weight (*kg*)	Fig
11	**WEZR11032M1627Z3**	★	*32*	*27(26)*	*28.5*	*17*	*M16*	*73(72.7)*	*50(49.7)*	*5*	*12*	*24*	9	3	3	*.21*	1
17	**WEZR17040M1629Z3**	★	*40*	*29(28)*	*28.5*	*17*	*M16*	*80(79.3)*	*57(56.3)*	*5*	*12*	*24*	6	2	3	*.29*	1

The APMX, OAL and LF dimensions in parentheses are dimensions using RE = .118"/.126", 3.0/3.2 mm insert. Inserts are sold separately.

Parts

Series	Flat Insert Screw		Integrated Wrench	Anti-seize Cream
		N·m		
11	BFTX0306IP	1.5	TRDR08IP	SUMI-P
17	BFTX0409IP	3.0	TRDR15IP	

N·m Recommended Tightening Torque (N·m)

● : USA stocked item ★ : worldwide warehouse item

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

Modify the C chamfering portion

WEZ11 Type

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

■ WEZR Application Examples

Carbon Steel 1215 Machine Component		Sumitomo	Competitor's Product
Multi-tasking machine	Tool	WEZR11032E3632Z03	Single-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*32*	*25*
	Number of Teeth	3×4 steps	2×3 steps
	v_c (SFM)	400	265
	v_f (IPM)	28	4
	f_z (IPT)	.0079	.0019
	a_p (Inch)	1.25	1.25
	a_e (Inch)	.118	.031
	Coolant	Wet	Wet
	Results	Less chatter, and efficiency increased 12x or more	

Grey Cast Iron Automotive Component		Sumitomo	Competitor's Product
Vertical Machining Center BT50	Tool	WEZR11032M1645Z3*	Single-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	32	32
	Number of Teeth	3×5 steps	3×5 steps
	v_c (SFM)	265	265
	v_f (IPM)	19.69	19.69
	f_z (IPT)	.0079	.0079
	a_p (Inch)	1.77	1.77
	a_e (Inch)	.019 to .236	.019 to .236
	Coolant	Dry	Dry
	Results	Capable of low-chatter machining at a tool overhang amount of 7.874"	

SEC-Modular Tool

Titanium Alloy Ti-6Al-4V Aerospace Component		Sumitomo	Competitor's Product
Vertical Machining Center HSK63	Tool	WEZR11032M1618Z3*	Single-Sided, 2 Corners
	Grade	ACM300	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	32	32
	Number of Teeth	3×2 steps	3×3 steps
	v_c (SFM)	130	130
	v_f (IPM)	4.69	3.31
	f_z (IPT)	.0039	.0027
	a_p (Inch)	.5905	.5905
	a_e (Inch)	.9449	.9449
	Coolant	Wet	Wet
	Results	Capable of machining at reduced cutting force, at 1.4 times the feed rate	

SEC-Modular Tool

*Made-to-Order Product

Aluminum Alloy Automotive Component		Sumitomo	Competitor's Product
Vertical Machining Center BT30	Tool	WEZR11033E4525Z03*	H's Solid Endmills
	Grade	DL2000	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	33	32
	Number of Teeth	3×5 steps	4
	v_c (SFM)	1,600	330
	v_f (IPM)	31.50	8.82
	f_z (IPT)	.0022	.0022
	a_p (Inch)	1.000	1.000
	a_e (Inch)	.0394	.0394
	Coolant	Wet	Wet
	Results	Efficiency increased 5x or more, for reduced tool costs	

*Made-to-Order Product

Contact Sheet for Custom WEZ Milling Cutter

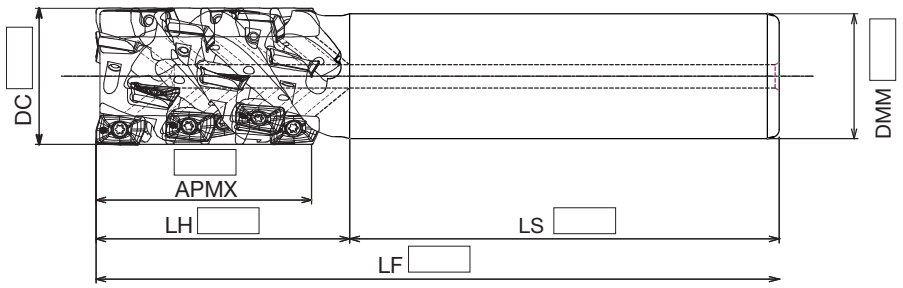
MADE TO ORDER

Fill in the ☐ with required special dimensions

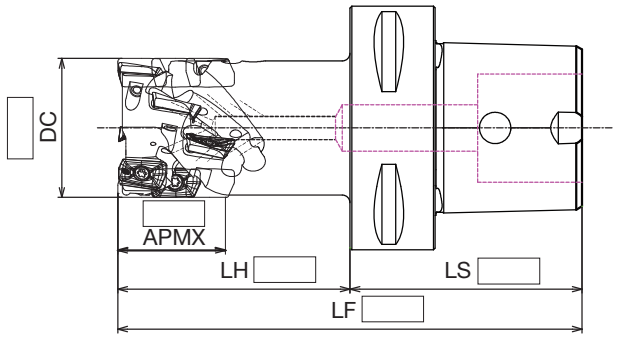
After completion, please submit to your local Sumitomo Sales Represenative or authorized distributor
Please include necessary additional information (shape, dimension, etc.)

Company Contact Information:

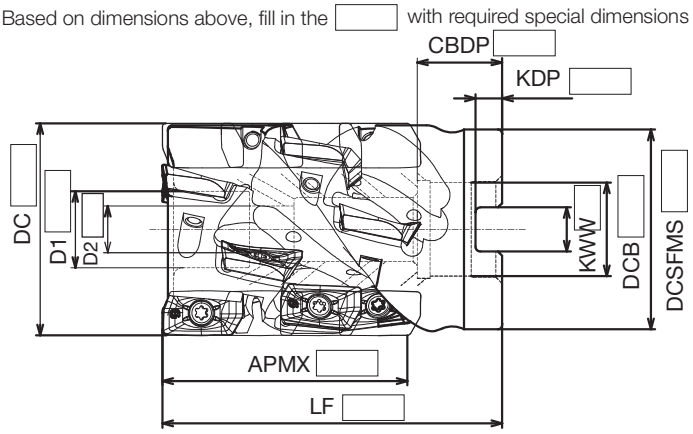
Shank Based on dimensions above, fill in the ☐ with required special dimensions



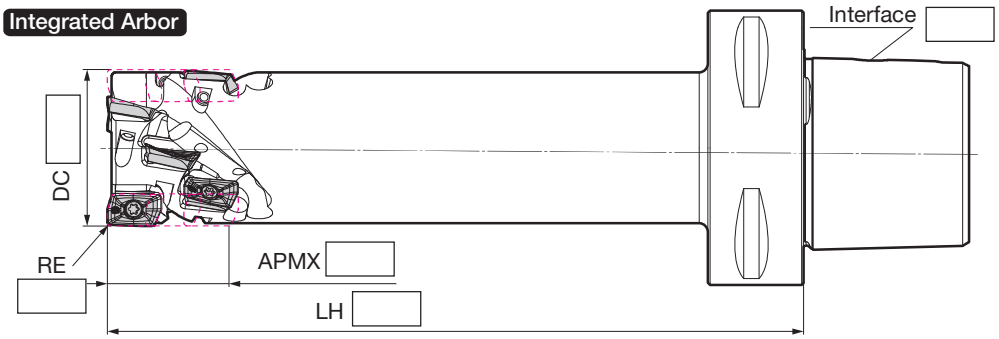
Polygon Shank Based on dimensions above, fill in the ☐ with required special dimensions



Shell Mill Based on dimensions above, fill in the ☐ with required special dimensions



Integrated Arbor



WEZ Modular - *11 & 17mm* Insert

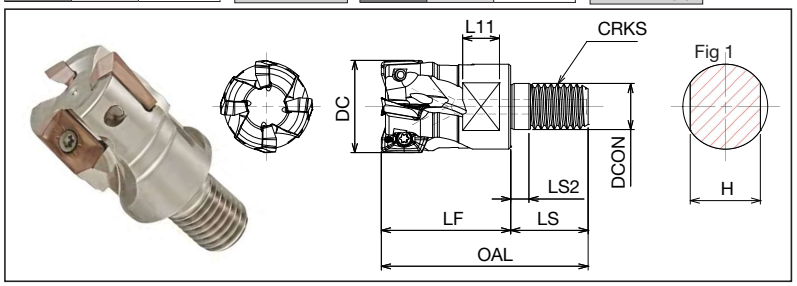
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

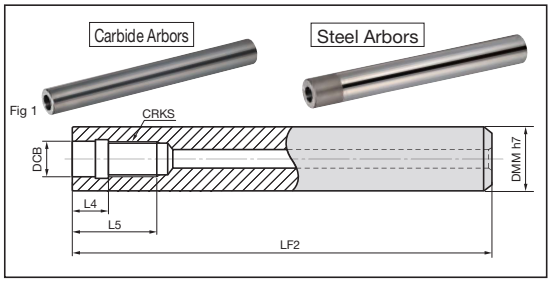
Rake Angle		
Radial	-7° to -18°	
Axial	6° to 15°	

.394" 90°

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

.591" 90°





WEZ Modular Head - *11mm* Insert

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Mounting Diameter DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	# of Teeth	Weight lbs / kg	Fig
Inch	WEZ20750M10Z3	●	.750	.413	M10	1.929	1.181	.197	.748	.315	.591	3	.088	1
	WEZ21000M12Z4	●	1.000	.492	M12	2.205	1.378	.197	.827	.394	.748	4	.198	1
	WEZ21250M16Z5	●	1.250	.669	M16	2.480	1.575	.197	.906	.394	.945	5	.419	1
	WEZ21500M16Z6	●	1.500	.669	M16	2.480	1.575	.197	.906	.394	.945	6	.507	1
Metric	WEZ11016M08Z2	★	16	8.5	M8	42	25	5	17	8	13	2	0.03	1
	WEZ11018M08Z2	★	18	8.5	M8	42	25	5	17	8	13	2	0.03	1
	WEZ11020M10Z2	★	20	10.5	M10	49	30	5	19	8	15	2	0.06	1
	WEZ11020M10Z3	★	20	10.5	M10	49	30	5	19	8	15	3	0.05	1
	WEZ11022M10Z3	★	22	10.5	M10	49	30	5	19	8	15	3	0.06	1
	WEZ11025M12Z2	★	25	12.5	M12	56	35	5	21	10	19	2	0.11	1
	WEZ11025M12Z3	★	25	12.5	M12	56	35	5	21	10	19	3	0.10	1
	WEZ11025M12Z4	★	25	12.5	M12	56	35	5	21	10	19	4	0.10	1
	WEZ11026M12Z4	★	26	12.5	M12	56	35	5	21	10	19	4	0.10	1
	WEZ11026M12Z5	★	26	12.5	M12	56	35	5	21	10	19	5	0.09	1
	WEZ11028M12Z4	★	28	12.5	M12	56	35	5	21	10	19	4	0.11	1
	WEZ11028M12Z5	★	28	12.5	M12	56	35	5	21	10	19	5	0.10	1
	WEZ11030M16Z2	★	30	17	M16	63	40	5	23	10	24	2	0.20	1
	WEZ11030M16Z4	★	30	17	M16	63	40	5	23	10	24	4	0.19	1
	WEZ11030M16Z5	★	30	17	M16	63	40	5	23	10	24	5	0.17	1
	WEZ11032M16Z2	★	32	17	M16	63	40	5	23	10	24	2	0.22	1
	WEZ11032M16Z3	★	32	17	M16	63	40	5	23	10	24	3	0.20	1
	WEZ11032M16Z4	★	32	17	M16	63	40	5	23	10	24	4	0.20	1
	WEZ11032M16Z5	★	32	17	M16	63	40	5	23	10	24	5	0.19	1
	WEZ11035M16Z2	★	35	17	M16	63	40	5	23	10	24	2	0.24	1
	WEZ11035M16Z5	★	35	17	M16	63	40	5	23	10	24	5	0.22	1
	WEZ11040M16Z2	★	40	17	M16	63	40	5	23	10	24	2	0.28	1
	WEZ11040M16Z4	★	40	17	M16	63	40	5	23	10	24	4	0.26	1
	WEZ11040M16Z5	★	40	17	M16	63	40	5	23	10	24	5	0.26	1
	WEZ11040M16Z6	★	40	17	M16	63	40	5	23	10	24	6	0.25	1

WEZ Modular Head - *17mm* Insert

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Mounting Diameter DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	# of Teeth	Weight lbs / kg	Fig
Inch	WEZ31000M12Z2	●	1.000	.492	M12	2.205	1.378	.197	.827	.394	.748	2	.176	1
	WEZ31250M16Z3	●	1.250	.669	M16	2.480	1.575	.197	.906	.394	.945	3	.353	1
	WEZ31500M16Z4	●	1.500	.669	M16	2.480	1.575	.197	.906	.394	.945	4	.419	1
Metric	WEZ17025M12Z2	★	25	12.5	M12	56	35	5	21	10	19	2	0.08	1
	WEZ17025M12Z3	★	25	12.5	M12	56	35	5	21	10	19	3	0.07	1
	WEZ17028M12Z2	★	28	12.5	M12	56	35	5	21	10	19	2	0.10	1
	WEZ17030M16Z2	★	30	17	M16	63	40	5	23	10	24	2	0.17	1
	WEZ17030M16Z3	★	30	17	M16	63	40	5	23	10	24	3	0.15	1
	WEZ17032M16Z2	★	32	17	M16	63	40	5	23	10	24	2	0.19	1
	WEZ17032M16Z3	★	32	17	M16	63	40	5	23	10	24	3	0.16	1
	WEZ17032M16Z4	★	32	17	M16	63	40	5	23	10	24	4	0.14	1
	WEZ17035M16Z2	★	35	17	M16	63	40	5	23	10	24	2	0.21	1
	WEZ17035M16Z3	★	35	17	M16	63	40	5	23	10	24	3	0.19	1
	WEZ17040M16Z2	★	40	17	M16	63	40	5	23	10	24	2	0.25	1
	WEZ17040M16Z3	★	40	17	M16	63	40	5	23	10	24	3	0.23	1
	WEZ17040M16Z4	★	40	17	M16	63	40	5	23	10	24	4	0.21	1

Inserts are sold separately.

Identification Code - Inch

WEZ 2 1000 M12 Z4

Cutter Series | Insert Size | Dia. 1.000" | Mounting Screw Size | Number of Teeth

Identification Code - Metric

WEZ 11 016 M08 Z2

Cutter Series | Insert Size | Dia. | Mounting Screw Size | Number of Teeth

Parts - 11mm Insert

Applicable Cutter		Torx Screw		Integrated Wrench	Anti-seize Cream
Inch	Metric				
WEZ20000 Series	WEZ11000 Series	BFTX0306IP	1.5	TRDR08IP	SUMI-P

Parts 17mm Insert - Inch

Applicable Cutter	Torx Screw		Integrated Wrench	Anti-seize Cream
WEZ31000M12Z2	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEZ31250M16Z3	BFTX0409IP			
WEZ31500M16Z4				

Steel Arbor

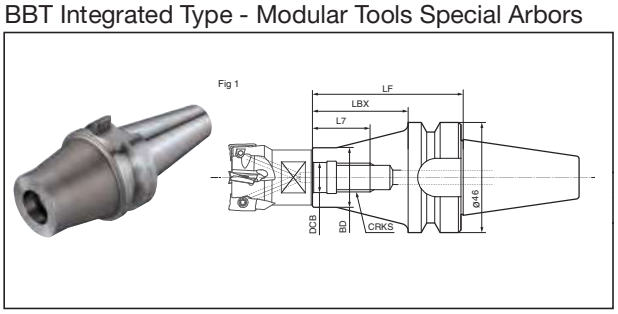
	Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*	Fig
Inch	MA0625M08L475S	●	M8	0.335	0.625	4.750	0.393	0.708	5.734	1
	MA0750M10L600S	●	M10	0.413	0.750	6.000	0.393	0.787	7.181	1
	MA1000M12L800S	●	M12	0.492	1.000	8.000	0.393	0.866	9.378	1
	MA1000M16L800S	●	M16	0.669	1.000	8.000	0.393	0.944	9.575	1
	MA1250M16L800S	●	M16	0.669	1.250	8.000	0.393	0.944	9.575	1
Metric	MA16M08L120S	★	M8	8.5	16	120	10	18	145	1
	MA20M10L150S	★	M10	10.5	20	150	10	20	180	1
	MA25M12L200S	★	M12	12.5	25	200	10	22	235	1
	MA32M16L200S	★	M16	17.0	32	200	10	24	240	1

Carbide Arbor

Dimensions (*mm*)

	Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*	Fig
Metric	MA15M08L120C	★	M8	8.5	15	120	10	18	145	1
	MA15M08L160C	★	M8	8.5	15	160	10	18	185	1
	MA16M08L120C	★	M8	8.5	16	120	10	18	145	1
	MA16M08L160C	★	M8	8.5	16	160	10	18	185	1
	MA18M10L150C	★	M1	10.5	18	150	10	20	180	1
	MA18M10L200C	★	M10	10.5	18	200	10	20	230	1
	MA20M10L150C	★	M10	10.5	20	150	10	20	180	1
	MA20M10L200C	★	M10	10.5	20	200	10	20	230	1
	MA23M12L200C	★	M12	12.5	23	200	10	22	235	1
	MA23M12L250C	★	M12	12.5	23	250	10	22	285	1
	MA25M12L200C	★	M12	12.5	25	200	10	22	235	1
	MA25M12L250C	★	M12	12.5	25	250	10	22	285	1
	MA28M16L200C	★	M16	17.0	28	200	10	24	240	1
	MA28M16L300C	★	M16	17.0	28	300	10	24	340	1
	MA32M16L200C	★	M16	17.0	32	200	10	24	240	1
	MA32M16L300C	★	M16	17.0	32	300	10	24	340	1

BBT Integrated Type - Modular Tools Special Arbors



BBT Integrated Arbor

Dimensions (*mm*)

Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	O.D. BD	Body Overhang L6	Length LBX	Thread Depth L7	Overhang LF*	Coolant Hole	Fig
BBT30-M8-50	★	M8	8.5	15.9	73	50	18	98	Yes	1
BBT30-M10-45	★	M10	10.5	19.9	68	45	20	98	Yes	1
BBT30-M12-40	★	M12	12.5	24.9	63	40	22	98	Yes	1
BBT30-M16-35	★	M16	17	31.9	58	35	24	98	Yes	1

*Overhang length for LF is with head mounted.
Can also be used with BT30 spindle machines.

Identification Code - Carbide Arbor

MA 15 M08 L120 C

Cutter Series | Shank Dia. | Mounting Screw Size | Arbor Overall Length | Grade C: Carbide S: Steel

N·m Recommended Tightening Torque (N·m) ● : USA stocked item ★: worldwide warehouse item

WEZ - AOMT / AOET *11mm & 17mm* Inserts

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

	Grade	Coated Carbide							Carbide	DLC	Cermet			
	Process: High-speed / Light		P		K		M S			N	P			
	Process: General-purpose	K P M S		P		K	M S	M K S	N	N				
	Process: Roughing	K P M S		P		K		M S						
	Cat. No.	ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACM200	ACM300	H20	DL2000	T2500A	Nose Radius RE (Dimensions inch" / *mm*)	Wiper Facet Length wpr	Fig
11mm Insert	**AOMT11T302PEER-G**	●		●		●	●	●	—	—	●	.008" / *0.2*	.118" / *3.0*	1
	AOMT11T304PEER-G	●	●	●	●	●	●	●	—	—	●	.016" / *0.4*	.110" / *2.8*	1
	AOMT11T305PEER-G	●					●	●	—	—		.020" / *0.5*	.106" / *2.7*	1
	AOMT11T308PEER-G	●	●	●	●	●	●	●	—	—	●	.031" / *0.8*	.091" / *2.3*	1
	AOMT11T310PEER-G	●					●	●	—	—		.039" / *1.0*	.083" / *2.1*	1
	AOMT11T312PEER-G	●		●		●	●	●	—	—		.047" / *1.2*	.079" / *2.0*	1
	AOMT11T316PEER-G	●		●		●	●	●	—	—		.063" / *1.6*	.067" / *1.7*	1
	AOMT11T320PEER-G	●		●		●	●	●	—	—		.079" / *2.0*	.051" / *1.3*	1
	AOMT11T324PEER-G	●					●	●	—	—		.094" / *2.4*	.035" / *0.9*	1
	AOMT11T330PEER-G	●		●		●	●	●	—	—		.118" / *3.0*	.024" / *0.6*	2
	AOMT11T332PEER-G	●					●	●	—	—		.126" / *3.2*	.024" / *0.6*	2
	AOMT11T304PEER-H	●	●	●	●	●	●	●	—	—	—	.016" / *0.4*	.110" / *2.8*	1
	AOMT11T308PEER-H	●	●	●	●	●	●	●	—	—	—	.031" / *0.8*	.091" / *2.3*	1
	AOMT11T312PEER-H	●					●	●	—	—	—	.047" / *1.2*	.079" / *2.0*	1
	AOMT11T316PEER-H	●					●	●	—	—	—	.063" / *1.6*	.067" / *1.7*	1
	AOET11T302PEER-F	●	—		—		—		—	—	—	.008" / *0.2*	.118" / *3.0*	1
	AOET11T304PEER-F	●	—		—		—		—	—	—	.016" / *0.4*	.110" / *2.8*	1
	AOET11T305PEER-F	●	—		—		—		—	—	—	.020" / *0.5*	.106" / *2.7*	1
	AOET11T308PEER-F	●	—		—		—		—	—	—	.031" / *0.8*	.091" / *2.3*	1
	AOET11T310PEER-F	●	—		—		—		—	—	—	.039" / *1.0*	.083" / *2.1*	1
	AOET11T312PEER-F	●	—		—		—		—	—	—	.047" / *1.2*	.079" / *2.0*	1
	AOET11T316PEER-F	●	—		—		—		—	—	—	.063" / *1.6*	.067" / *1.7*	1
	AOET11T320PEER-F	●	—		—		—		—	—	—	.079" / *2.0*	.051" / *1.3*	1
	AOET11T324PEER-F	●	—		—		—		—	—	—	.094" / *2.4*	.035" / *0.9*	1
	AOET11T330PEER-F	●	—		—		—		—	—	—	.118" / *3.0*	.024" / *0.6*	2
	AOET11T332PEER-F	●	—		—		—		—	—	—	.126" / *3.2*	.024" / *0.6*	2
	AOET11T302PEFR-S	—	—	—	—	—	—	—	●	●	—	.008" / *0.2*	.118" / *3.0*	1
	AOET11T304PEFR-S	—	—	—	—	—	—	—	●	●	—	.016" / *0.4*	.110" / *2.8*	1
	AOET11T305PEFR-S	—	—	—	—	—	—	—	●	●	—	.020" / *0.5*	.106" / *2.7*	1
	AOET11T308PEFR-S	—	—	—	—	—	—	—	●	●	—	.031" / *0.8*	.091" / *2.3*	1
	AOET11T310PEFR-S	—	—	—	—	—	—	—	●	●	—	.039" / *1.0*	.083" / *2.1*	1
	AOET11T312PEFR-S	—	—	—	—	—	—	—	●	●	—	.047" / *1.2*	.079" / *2.0*	1
	AOET11T316PEFR-S	—	—	—	—	—	—	—	●	●	—	.063" / *1.6*	.067" / *1.7*	1
	AOET11T320PEFR-S	—	—	—	—	—	—	—	●	●	—	.079" / *2.0*	.051" / *1.3*	1
	AOET11T324PEFR-S	—	—	—	—	—	—	—	●	●	—	.094" / *2.4*	.035" / *0.9*	1
	AOET11T330PEFR-S	—	—	—	—	—	—	—	●	●	—	.118" / *3.0*	.024" / *0.6*	2
	AOET11T332PEFR-S	—	—	—	—	—	—	—	●	●	—	.126" / *3.2*	.024" / *0.6*	2
17mm Insert	**AOMT170502PEER-L**	●	—		—		●	●	—	—		.008" / *0.2*	.193" / *4.9*	3
	AOMT170504PEER-L	●	—	●	—	●	●	●	—	—	●	.016" / *0.4*	.185" / *4.7*	3
	AOMT170508PEER-L	●	—	●	—	●	●	●	—	—	●	.031" / *0.8*	.169" / *4.3*	3
	AOMT170512PEER-L	●	—		—		●	●	—	—		.047" / *1.2*	.154" / *3.9*	3
	AOMT170516PEER-L	●	—		—		●	●	—	—		.063" / *1.6*	.138" / *3.5*	3
	AOMT170502PEER-G	●		●		●	●	●	—	—		.008" / *0.2*	.193" / *4.9*	3
	AOMT170504PEER-G	●	●	●	●	●	●	●	—	—	●	.016" / *0.4*	.185" / *4.7*	3
	AOMT170505PEER-G	●					●	●	—	—		.020" / *0.5*	.181" / *4.6*	3
	AOMT170508PEER-G	●	●	●	●	●	●	●	—	—	●	.031" / *0.8*	.169" / *4.3*	3
	AOMT170510PEER-G	●					●	●	—	—		.039" / *1.0*	.161" / *4.1*	3
	AOMT170512PEER-G	●		●			●	●	—	—		.047" / *1.2*	.154" / *3.9*	3
	AOMT170516PEER-G	●		●		●	●	●	—	—		.063" / *1.6*	.138" / *3.5*	3
	AOMT170520PEER-G	●		●		●	●	●	—	—		.079" / *2.0*	.122" / *3.1*	3
	AOMT170524PEER-G	●					●	●	—	—		.094" / *2.4*	.106" / *2.7*	3
	AOMT170530PEER-G	●		●		●	●	●	—	—		.118" / *3.0*	.079" / *2.0*	3
	AOMT170532PEER-G	●		●			●	●	—	—		.126" / *3.2*	.071" / *1.8*	3
	AOMT170540PEER-G	●		●		●	●	●	—	—		.157" / *4.0*	.039" / *1.0*	3
	AOMT170550PEER-G	●		●		●	●	●	—	—		.197" / *5.0*	.020" / *0.5*	4
	AOMT170564PEER-G	●					●	●	—	—		.252" / *6.4*	.020" / *0.5*	4
	AOMT170504PEER-H	●	●	●	●	●	●	●	—	—	—	.016" / *0.4*	.185" / *4.7*	3
	AOMT170508PEER-H	●	●	●	●	●	●	●	—	—	—	.031" / *0.8*	.169" / *4.3*	3
	AOMT170512PEER-H	●					●	●	—	—	—	.047" / *1.2*	.154" / *3.9*	3
	AOMT170516PEER-H	●					●	●	—	—	—	.063" / *1.6*	.138" / *3.5*	3
	AOET170502PEER-F	●	—		—		—		—	—	—	.008" / *0.2*	.193" / *4.9*	3
	AOET170504PEER-F	●	—		—		—		—	—	—	.016" / *0.4*	.185" / *4.7*	3
	AOET170505PEER-F	●	—		—		—		—	—	—	.020" / *0.5*	.181" / *4.6*	3
	AOET170508PEER-F	●	—		—		—		—	—	—	.031" / *0.8*	.169" / *4.3*	3
	AOET170510PEER-F	●	—		—		—		—	—	—	.039" / *1.0*	.161" / *4.1*	3
	AOET170512PEER-F	●	—		—		—		—	—	—	.047" / *1.2*	.154" / *3.9*	3
	AOET170516PEER-F	●	—		—		—		—	—	—	.063" / *1.6*	.138" / *3.5*	3
	AOET170520PEER-F	●	—		—		—		—	—	—	.079" / *2.0*	.122" / *3.1*	3
	AOET170524PEER-F	●	—		—		—		—	—	—	.094" / *2.4*	.106" / *2.7*	3
	AOET170530PEER-F	●	—		—		—		—	—	—	.118" / *3.0*	.079" / *2.0*	3
	AOET170532PEER-F	●	—		—		—		—	—	—	.126" / *3.2*	.071" / *1.8*	3
	AOET170540PEER-F	●	—		—		—		—	—	—	.157" / *4.0*	.039" / *1.0*	3
	AOET170550PEER-F	●	—		—		—		—	—	—	.197" / *5.0*	.020" / *0.5*	4
	AOET170564PEER-F	●	—		—		—		—	—	—	.252" / *6.4*	.020" / *0.5*	4
	AOET170502PEFR-S	—	—	—	—	—	—	—	●	●	—	.008" / *0.2*	.193" / *4.9*	3
	AOET170504PEFR-S	—	—	—	—	—	—	—	●	●	—	.016" / *0.4*	.185" / *4.7*	3
	AOET170505PEFR-S	—	—	—	—	—	—	—	●	●	—	.020" / *0.5*	.181" / *4.6*	3
	AOET170508PEFR-S	—	—	—	—	—	—	—	●	●	—	.031" / *0.8*	.169" / *4.3*	3
	AOET170510PEFR-S	—	—	—	—	—	—	—	●	●	—	.039" / *1.0*	.161" / *4.1*	3
	AOET170512PEFR-S	—	—	—	—	—	—	—	●	●	—	.047" / *1.2*	.154" / *3.9*	3
	AOET170516PEFR-S	—	—	—	—	—	—	—	●	●	—	.063" / *1.6*	.138" / *3.5*	3
	AOET170520PEFR-S	—	—	—	—	—	—	—	●	●	—	.079" / *2.0*	.122" / *3.1*	3
	AOET170524PEFR-S	—	—	—	—	—	—	—	●	●	—	.094" / *2.4*	.106" / *2.7*	3
	AOET170530PEFR-S	—	—	—	—	—	—	—	●	●	—	.118" / *3.0*	.079" / *2.0*	3
	AOET170532PEFR-S	—	—	—	—	—	—	—	●	●	—	.126" / *3.2*	.071" / *1.8*	3
	AOET170540PEFR-S	—	—	—	—	—	—	—	●	●	—	.157" / *4.0*	.039" / *1.0*	3
	AOET170550PEFR-S	—	—	—	—	—	—	—	●	●	—	.197" / *5.0*	.020" / *0.5*	4
	AOET170564PEFR-S	—	—	—	—	—	—	—	●	●	—	.252" / *6.4*	.020" / *0.5*	4

-L: Low Cutting Force
-G: General-purpose
-H: Strong Edge
-F: Medium Finishing
-S: Non-ferrous metals

Fig 1

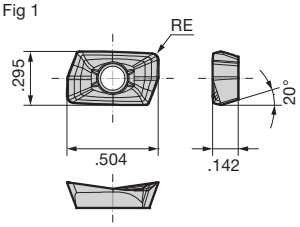
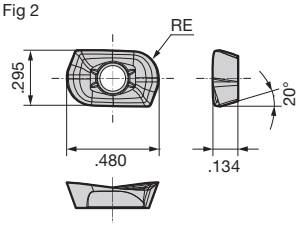


Fig 2



Precautions for Mounting Inserts

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

Fig 3

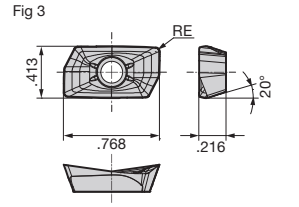
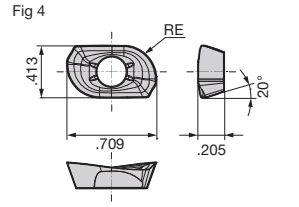


Fig 4



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

Modify this edge.

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

Modify this edge.

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

Small Endmill Milling Cutter for Medical and Lathe (Small Machining)

■ Features & Benefits

- ✓ **Version for multi-tasking machines now available**
  Short shank type ideal for low-rigidity multi-tasking machines
- ✓ **Superb machining quality**
  Shank design ideal for ER collets now has higher rigidity thanks to face contact effect, promotes excellent shoulder accuracy and finished surface quality
- ✓ **Abundant insert lineup**
  Supports various machining with ground chipbreakers with excellent cutting edge sharpness, various nose radii, and dedicated work material grades

■ Body Product Range

Type	Type	Diameters in Stock (*mm*)				
		ø14	*ø16*	*ø20*	*ø25*	*ø32*
Lathe	**WEZ110000ES**	1	2	3	4	
	WEZ170000ES				2	3

● Numbers inside are number of teeth

WEZ11 type

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

.394" 90°

WEZ17 type

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

.591" 90°

■ WEZ Lathe (Small Machining) Style - 11mm & 17mm Insert

Fig 1

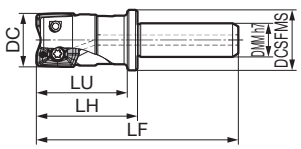
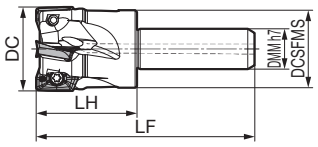


Fig 2



■ Body (Short Shank)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Shank DMM	Head LH	Neck LU	Overall Length LF	Number of Teeth	Weight (kg)	Fig
11 mm	**WEZ11014ES01-12**	●	*14*	*18*	*12*	*30(29.7)*	*27*	*65(64.7)*	1	0.05	1
	WEZ11016ES02-10	●	*16*	*18*	*10*	*25(24.7)*	*22*	*55(54.7)*	2	0.04	1
	WEZ11016ES02-12	●	*16*	*18*	*12*	*30(29.7)*	*27*	*65(64.7)*	2	0.05	1
	WEZ11020ES03-10	●	*20*	*18*	*10*	*25(24.7)*	—	*55(54.7)*	3	0.04	2
	WEZ11020ES03-12	●	*20*	*18*	*12*	*30(29.7)*	—	*65(64.7)*	3	0.06	2
	WEZ11020ES03-16	●	*20*	*23*	*16*	*30(29.7)*	*27*	*70(69.7)*	3	0.10	1
	WEZ11025ES04-12	●	*25*	*23*	*12*	*30(29.7)*	—	*65(64.7)*	4	0.09	2
	WEZ11025ES04-16	●	*25*	*23*	*16*	*30(29.7)*	—	*70(69.7)*	4	0.12	2
17 mm	**WEZ17025ES02-16**	●	**25**	23	16	30(29.3)	—	70(69.3)	2	0.11	1
	WEZ17032ES03-16	●	**32**	27	16	30(29.3)	—	70(69.3)	3	0.14	1

The LH and LF dimensions in parentheses are dimensions (for 11mm) using RE = 3.0/3.2 insert. When using RE = 3.0/3.2 inserts, the maximum depth of cut is 9.5. (For 17mm) 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.

● : USA stocked item

Identification Code - Metric

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

■ Spare Parts

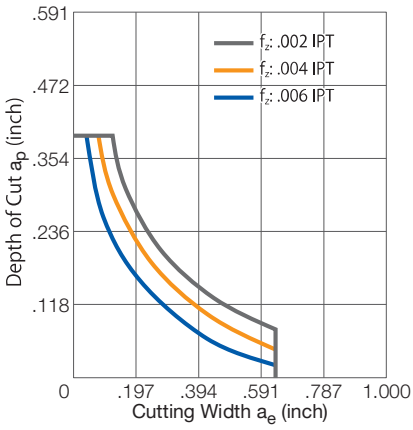
Applicable Cutter	Screw		Integrated Wrench	Anit-Seize Paste
		N·m		
WEZ11014ES01-12	BFTX0305IP	1.5	TRDR08IP	SUMI-P
WEZ11016ES02-10				
WEZ11016ES02-12				
WEZ11020ES03-10	BFTX0306IP			
WEZ11020ES03-12				
WEZ11020ES03-16				
WEZ11025ES04-12				
WEZ11025ES04-16				
WEZ17025ES02-16	BFTX0407IP	3.0	TRDR15IP	
WEZ17032ES03-16	BFTX0409IP			

Small Endmill Milling Cutter for Medical and Lathe (Small Machining)

■Feed Rate Recommendations

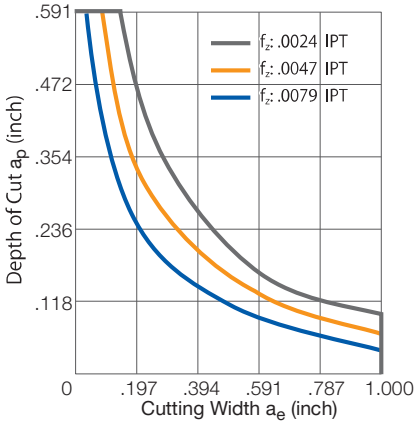
WEZ11

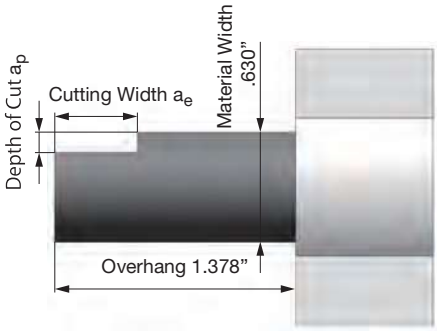
Tool: WEZ11016ES02-10
Insert: AOET11T3 ○○ PEER-F



WEZ17

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

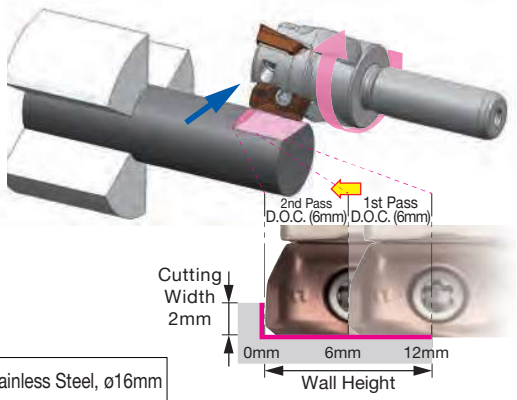


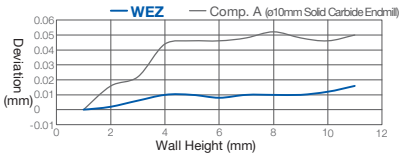


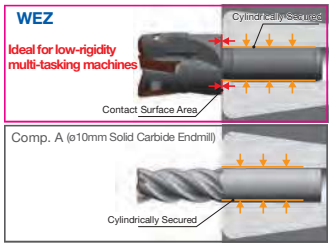
For cutting conditions by part material, see page H53. When using G type chipbreakers, set the efficiency to 80%. The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, work material shape, clamping system).

■ Excellent Squareness

✓ WEZ presents a significant cost advantage when compared against solid carbide endmills.

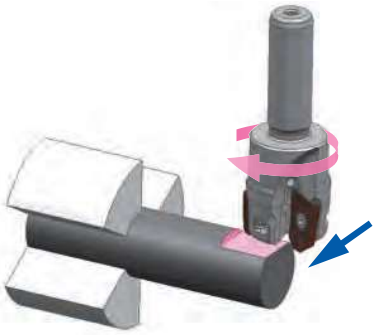


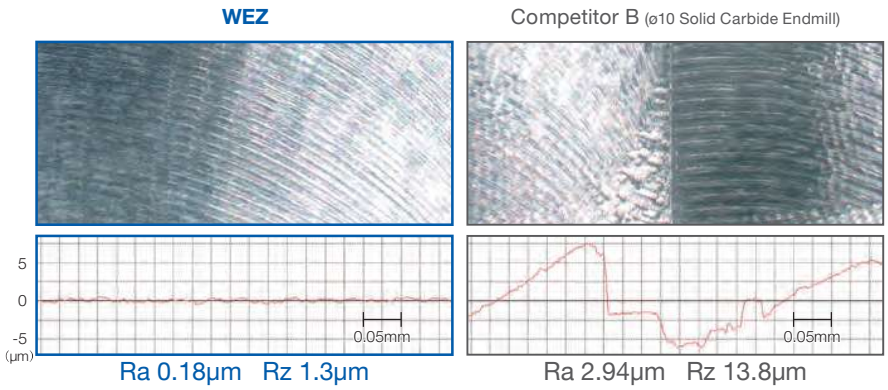




Machine: Multi-axis NC Lathe Part Material: 304 Stainless Steel, ø16mm
Tool: WEZ11020ES03-10 (ø20mm, 3 flutes)
Insert: AOET11T308PEER-F-ACU2500
Cutting Conditions: v_c = 330 SFM, f_z = .003 IPT,
a_p =.236" x 2 passes, a_e = .079"

■ Surface Quality





Machine: Compound NC Lathe Work Material: 304 Stainless Steel, ø16mm Round
Tool: WEZ11020ES03-10 (ø20mm, 3 flutes)
Insert: AOET11T308PEER-F (ACU2500)
Cutting Conditions: WEZ type, vc = 330 SFM, f_z = .002 IPT, a_p = .079", a_e = .472" Wet
Competitor's Product B: vc = 330 SFM, fz = .002 IPT, ap = .079, "ae = .236" x 2 Passes, Wet (Carbide Solid Endmill)

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

Good shoulder accuracy and machined surface quality which can eliminate a finishing pass.

■ WEZ Application Examples

1050 Steel Machine Component

Vertical Machining Center BT50

	Sumitomo	Competitor's Product
Tool	WEZ17032E03	Single-Sided 2 Corners
Grade	ACU2500	–
Chipbreaker	G	–
Cutter Dia. (*mm*)	*32*	*32*
Number of Teeth	3	3
v_c (SFM)	246	246
v_f (IPM)	8.86	8.86
f_z (IPT)	.004	.004
a_p (inch)	.157	.157
a_e (inch)	.866	.866
Coolant	Wet	Wet
Results	Cutting edge wear reduced drastically at same number of parts which increased tool life.	

1040 Steel Hub

Vertical Machining Center BT40

	Sumitomo	Competitor's Product
Tool	WEZ17025E02	Double-sided, 4 Corners
Grade	ACU2500	–
Chipbreaker	G	–
Cutter Dia. (*mm*)	*25*	*25*
Number of Teeth	2	2
v_c (SFM)	394	394
v_f (IPM)	11.81	11.81
f_z (IPT)	.0026	.0026
a_p (inch)	.354	.354
a_e (inch)	.197	.197
Coolant	Wet	Wet
Results	WEZ promoted stability with reduced cutting forces and quieter sound, which also lead to tool life improvement.	

1050 Steel Machine Component

5-axis Control Vertical Machining Center HSK-A100

SEC-Modular Tool

	Sumitomo	Competitor's Product
Tool	WEZ11020M10Z3	Single-Sided, 2 Corners
Grade	ACU2500	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*20*	*20*
Number of Teeth	3	3
v_c (SFM)	240	240
v_f (IPM)	157.50	157.50
f_z (IPT)	.0079	.0079
a_p (inch)	.02	.027
a_e (inch)	.787	.787
Coolant	Dry	Dry
Results	Stability improvement with reduced chatter in slot milling with a 4.72" overhang.	

1045 Steel Machine Component

Multi-tasking Machine

	Sumitomo	Competitor's Product
Tool	WEZ11025E03	Single-Sided, 2 Corners
Grade	ACU2500	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	25	25
Number of Teeth	3	3
v_c (SFM)	515	515
v_f (IPM)	11.81	11.81
f_z (IPT)	.0019	.0019
a_p (inch)	.197	.197
a_e (inch)	.138	.138
Coolant	—	—
Results	No chattering with excellent wall surface accuracy in a low rigidity fixture application	

Die Steel (Mild Steel) Mold Component

Vertical Machining Center BT40

	Sumitomo	Competitor's Product
Tool	WEZ11020E03	Double-Sided, 4 Corners
Grade	ACU2500	—
Chipbreaker	H	—
Cutter Dia. (*mm*)	*20*	*20*
Number of Teeth	3	3
v_c (SFM)	475	630
v_f (IPM)	4.75	118.11
f_z (IPT)	.0059	.1378
a_p (inch)	.236	.012
a_e (inch)	.236	.331
Coolant	Dry	Dry
Results	WEZ improved efficiency by 3x in helical milling which also improved the surface quality.	

Alloy Tool Steel L6 (45HRC) Machine Component

Vertical Machining Center HSK-A63

	Sumitomo	Competitor's Product
Tool	WEZ11022E03	Single-Sided, 2 Corners
Grade	ACU2500	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*22*	*22*
Number of Teeth	3	3
v_c (SFM)	165	100
v_f (IPM)	8.55	5.12
f_z (IPT)	.0039	.0039
a_p (inch)	.118	.118
a_e (inch)	.866	.866
Coolant	Wet	Wet
Results	WEZ was able to improve stable machining in 45 HRc Hardened steel	

Steel A572 Machine Component

Vertical Machining Center BT50

	Sumitomo	Competitor's Product
Tool	WEZ17032EL03	Double-Sided, 2 Corners
Grade	ACU2500	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*32*	*32*
Number of Teeth	3	2
v_c (SFM)	500	500
v_f (IPM)	26.42	17.60
f_z (IPT)	.0059	.0059
a_p (inch)	.049	.049
a_e (inch)	1.260	1.260
Coolant	Wet	Wet
Results	Efficiency improved 1.5x, quiet and stable machining	

1050 Steel Mold Component

Ram-type Milling Machine BT40

	Sumitomo	Competitor's Product
Tool	WEZ11022E03	Double-Sided, 2 Corners
Grade	T2500A	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*22*	*22*
Number of Teeth	3	3
v_c (SFM)	275	250
v_f (IPM)	12.60	11.42
f_z (IPT)	.0035	.0035
a_p (inch)	.098	.098
a_e (inch)	.394	.394
Coolant	—	—
Results	Improved machined surface quality and machining efficiency with cermet grades	

1045 Steel Machine Component

Autolathe

	Sumitomo	Competitor's Product
Tool	WEZ11020ES03-10	Double-Sided, 2 Corners
Grade	ACU2500	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*20*	*20*
Number of Teeth	3	3
v_c (SFM)	825	630
v_f (IPM)	70.87	70.87
f_z (IPT)	.0059	.0079
a_p (inch)	.039	.039
a_e (inch)	.394	.394
Coolant	Wet	Wet
Results	Surface roughness improved from Ra 4.1μm to Ra 0.7μm	

1035 Steel Machine Component

Multi-tasking Machine

	Sumitomo	Competitor's Product
Tool	WEZ17032ES03-16	Round Insert (R5.0)
Grade	ACU2500	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*32*	*32*
Number of Teeth	3	3
v_c (SFM)	725	530
v_f (IPM)	69.69	65.75
f_z (IPT)	.0106	.0138
a_p (inch)	.118	.118
a_e (inch)	.472	.472
Coolant	Wet	Wet
Results	High-rigidity and less chattering throughout facing operation.	

■ WEZ Application Examples

304 Stainless Steel Semiconductor Device		Sumitomo	Competitor's Product
Horizontal Machining Center BT50	Tool	WEZ17050RS05	Double-Sided, 4 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*50*	*50*
	Number of Teeth	5	5
	v_c (SFM)	265	265
	v_f (IPM)	320	320
	f_z (IPT)	12.60	12.60
	a_p (inch)	.0079	.0079
	a_e (inch)	1.575	1.575
	Coolant	Wet	Wet
	Results	Improved surface finish quality and reduced burrs, cutting post-processing time by 50%	

Duplex Stainless Steel Machine Component		Sumitomo	Competitor's Product
Multi-tasking Machine	Tool	WEZ11025ES02-16*	Double-Sided, 2 Corners
	Grade	ACU2500	-
	Chipbreaker	F	-
	Cutting Dia.(*mm*)	*25*	*25*
	# of Teeth	2	2
	v_c (SFM)	300	300
	v_f (IPM)	12	12
	f_z (IPT)	.005	.005
	a_p(inch)	.059	.059
	a_e(inch)	1.000	1.000
	Coolant	Wet	Wet
	Results * Made-to-Order Product	Eliminates burrs to extend tool life 1.6x	

304 Stainless Steel Machine Component		Sumitomo	Competitor's Product
Vertical Machining Center BT40	Tool	WEZ11028E04	–
	Grade	ACU2500	–
	Chipbreaker	G	–
	Cutter Dia. (*mm*)	*28*	*28*
	Number of Teeth	4	4
	v_c (SFM)	500	500
	v_f (IPM)	53.15	53.15
	f_z (IPT)	.0079	.0079
	a_p (inch)	.079	.079
	a_e (inch)	.394	.394
	Coolant	Dry	Dry
	Results	Tool life increased. Stable machining achieved.	

304 Stainless Steel Machine Component		Sumitomo	Competitor's Product
Vertical Machining Center BT30	Tool	WEZ11020E03	Double-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*20*	*20*
	Number of Teeth	3	3
	v_c (SFM)	500	500
	v_f (IPM)	33.86	33.86
	f_z (IPT)	.0047	.0047
	a_p (inch)	.079	.079
	a_e (inch)	.315	.315
	Coolant	Wet	Wet
	Results	WEZ promotes exceptional surface finish in applications were part fixture has low rigidity.	

304 Stainless Steel Machine Component		Sumitomo	Competitor's Product
Multi-tasking Machine	Tool	WEZ11022E03	Double-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*22*	*22*
	Number of Teeth	3	3
	v_c (SFM)	400	400
	v_f (IPM)	61.50	61.50
	f_z (IPT)	.012	.012
	a_p (inch)	.079	.079
	a_e (inch)	.866	.866
	Coolant	Wet	Wet
	Results	Since WEZ provided exceptional surface finish, finishing operation was removed achieving improved efficiency.	

Austenitic Stainless Steel Machine Component		Sumitomo	Competitor's Product
Vertical Machining Center BT50	Tool	WEZ11040E04	Single-Sided, 4 Corners
	Grade	ACM300	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*40*	*40*
	Number of Teeth	4	4
	v_c (SFM)	265	265
	v_f (IPM)	10	10
	f_z (IPT)	.0039	.0039
	a_p (inch)	.039	.039
	a_e (inch)	1.575	1.575
	Coolant	—	—
	Results	Improved tool life without chipping, even on mill-scale work	

Stainless Steel Machine Component		Sumitomo	Competitor's Product
Vertical Machining Center BT40	Tool	WEZ11032E03	Double-Sided, 2 Corners
	Grade	T2500A	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*32*	*32*
	Number of Teeth	3	3
	v_c (SFM)	510	510
	v_f (IPM)	20.87	15.75
	f_z (IPT)	.0047	.0035
	a_p (inch)	.020	.020
	a_e (inch)	.787	.787
	Coolant	—	—
	Results	Improved machined surface quality and machining efficiency with cermet grades	

304 Stainless Steel Machine Component		Sumitomo	Competitor's Product
Vertical Machining Center BT30	Tool	WEZ11020E03	H's (High Speed Steel) Roughing Endmill
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*20*	*20*
	Number of Teeth	3	4
	v_c (SFM)	500	200
	v_f (IPM)	33.85	13.40
	f_z (IPT)	.0047	.0035
	a_p (inch)	.079	.079
	a_e (inch)	.315	.315
	Coolant	—	—
	Results	Longer tool life with reduced machining time as compared to using HSS endmills	

■ WEZ Application Examples

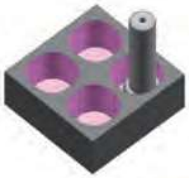
Ductile Cast Iron Straight Rail

Vertical Machining Center BT50

	Sumitomo	Competitor's Product
Tool	WEZ17040EL03	Double-Sided, 2 Corners
Grade	ACU2500	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*40*	*40*
Number of Teeth	3	3
v_c (SFM)	430	430
v_f (IPM)	18.31	18.31
f_z (IPT)	.0059	.0059
a_p (inch)	.315	.236
a_e (inch)	1.575	1.575
Coolant	Dry	Dry
Results	Reduces vibration during machining with 1.3 times the efficiency	

Ductile Cast Iron Machine Component

Vertical Machining Center BT40



	Sumitomo	Competitor's Product
Tool	WEZ11050E05	Double-Sided, 2 Corners
Grade	ACU2500	—
Chipbreaker	F	—
Cutter Dia. (*mm*)	*50*	*50*
Number of Teeth	5	5
v_c (SFM)	520	310
v_f (IPM)	11.81	10.63
f_z (IPT)	.002	.003
a_p (inch)	.047	.047
a_e (inch)	.394	.394
Coolant	Wet	Wet
Results	Optimized sharpness ensured chatter control, promoted increased efficiency and improved surface finish.	

Gray Cast Iron Machine Component

Vertical Machining Center BT50

	Sumitomo	Competitor's Product
Tool	WEZ17063RS06	Double-Sided, 2 Corners
Grade	ACK3000	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*63*	*63*
Number of Teeth	6	4
v_c (SFM)	500	575
v_f (IPM)	14.85	10.00
f_z (IPT)	.003	.002
a_p (inch)	.138	.138
a_e (inch)	2.000	2.000
Coolant	Wet	Wet
Results	Efficiency improved 1.5x in helical milling Tool life doubled	

Gray Cast Iron Mounting Base Frame

Vertical Machining Center BT50

	Sumitomo	Competitor's Product
Tool	WEZ11032E05	Double-Sided, 2 Corners
Grade	ACK3000	–
Chipbreaker	G	–
Cutter Dia. (*mm*)	*32*	*32*
Number of Teeth	5	4
v_c (SFM)	722	722
v_f (IPM)	43	43
f_z (IPT)	.004	.004
a_p (inch)	.079	.079
a_e (inch)	.787	.787
Coolant	Dry	Dry
Results	Efficiency increased. WEZ was able to machine thin areas without chatter.	

Gray Cast Iron Machine Component

Horizontal Machining Center BT50

	Sumitomo	Competitor's Product
Tool	WEZ11050RS07	Double-Sided, 2 Corners
Grade	ACU2500	–
Chipbreaker	G	–
Cutter Dia. (*mm*)	*50*	*50*
Number of Teeth	7	5
v_c (SFM)	591	591
v_f (IPM)	31.69	31.69
f_z (IPT)	.004	.004
a_p (inch)	.012	.012
a_e (inch)	.394	.394
Coolant	Wet	Wet
Results	WEZ provided quiet cutting pass with efficiency improvement for a finish quality with 3um parallelism and 4um flatness.	

Gray Cast Iron Table

5-axis Control Vertical Machining Center HSK-A63

	Sumitomo	Competitor's Product
Tool	WEZ11040E06	–
Grade	ACU2500	–
Chipbreaker	G	–
Cutter Dia. (*mm*)	*40*	*40*
Number of Teeth	6	6
v_c (SFM)	656	656
v_f (IPM)	51.18	51.18
f_z (IPT)	.005	.005
a_p (inch)	.004	.004
a_e (inch)	.787	.787
Coolant	Wet	Wet
Results	Stable machining is possible for thin workpieces or low-rigidity machines.	

Cast Steel for Welded Structure Product SCW480 Press Housing

Double Column 5-axis Machining Center BT50

	Sumitomo	Competitor's Product
Tool	WEZ17160R08	Double-Sided, 2 Corners
Grade	ACU2500	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*60*	*60*
Number of Teeth	8	8
v_c (SFM)	500	500
v_f (IPM)	19.69	19.69
f_z (IPT)	.008	.008
a_p (inch)	.275	.275
a_e (inch)	2.953	2.953
Coolant	—	—
Results	Reduces chipping on large workpieces, enabling stable machining	

Gray Cast Iron Railway Component

Vertical Machining Center

SEC-Modular Tool

	Sumitomo	Competitor's Product
Tool	WEZ11040M16Z6	Double-Sided, 4 Corners
Grade	ACK3000	—
Chipbreaker	G	—
Cutter Dia. (*mm*)	*40*	*40*
Number of Teeth	6	3
v_c (SFM)	122	160
v_f (IPM)	27.83	13.54
f_z (IPT)	.016	.012
a_p (inch)	.098 x 1 pass + 1	.059 x 2 passes + 0.5
a_e (inch)	—	—
Coolant	Wet	Wet
Results	Increased cutting edge sharpness enables stable machining with efficiency improved 4.5x	

■ WEZ Application Examples

Aluminum Alloy A2025 Machine Component		Sumitomo	Competitor's Product
Vertical Machining Center BT40	Tool	WEZ17063RS04	Double-Sided, 2 Corners
	Grade	H20	—
	Chipbreaker	S	—
	Cutting Dia.(*mm*)	*63*	*63*
	# of Teeth	4	4
	v_c (SFM)	3,915	3,915
	v_f (IPM)	75.59	75.59
	f_z (IPT)	.003	.003
	a_p(inch)	.039	1
	a_e(inch)	1.969	1.969
	Coolant	—	—
	Results	Little dimensional fluctuation was possible and precise machining was stable with WEZ	

Aluminum Alloy A5052 Machine Component		Sumitomo	—
5-axis Control Vertical Machining Center HSK-A100	Tool	WEZ17025M12Z2	—
	Grade	DL2000	—
	Chipbreaker	S	—
	Cutting Dia.(*mm*)	*25*	—
	# of Teeth	2	—
	v_c (SFM)	2,600	—
	v_f (IPM)	157.50	—
	f_z (IPT)	.008	—
	a_p(inch)	.154	—
	a_e(inch)	1.000	—
	Coolant	Wet	—
	Results	Stable machining with minimal chatter with an overhang of 3.94" (L/D=4)	

SEC-Modular Tool

Pure Copper (Mill-Scale) Electrical Machinery Component		Sumitomo	Competitor's Product
Vertical Machining Center BT40	Tool	WEZ17100R05	Double-Sided, 4 Corners
	Grade	DL2000	—
	Chipbreaker	S	—
	Cutting Dia.(*mm*)	*100*	*100*
	# of Teeth	5	5
	v_c (SFM)	1,040	1,040
	v_f (IPM)	15.75	15.75
	f_z (IPT)	.003	.003
	a_p(inch)	.020	.020
	a_e(inch)	3.150	3.150
	Coolant	Wet	Wet
	Results	Holes did not have burrs which reduced the finishing process.	

Resin Electronic Device		Sumitomo	Competitor's Product
Vertical Machining Center BT40	Tool	WEZ11080R07	Double-Sided, 2 Corners
	Grade	DL2000	—
	Chipbreaker	S	—
	Cutting Dia.(*mm*)	*80*	*80*
	# of Teeth	7	7
	v_c (SFM)	1,240	1,240
	v_f (IPM)	41.34	41.34
	f_z (IPT)	.004	.004
	a_p(inch)	.118	.118
	a_e(inch)	1.969	1.969
	Coolant	Wet	Wet
	Results	Improved cutting edge sharpness provides quiet machining noise.	

FRPP Resin Industrial Machine Component		Sumitomo	Competitor's Product
Horizontal Machining Center BT50	Tool	WEZ11020E02	Double-Sided, 2 Corners
	Grade	DL2000	—
	Chipbreaker	S	—
	Cutting Dia.(*mm*)	*20*	*20*
	# of Teeth	2	3
	v_c (SFM)	660	120
	v_f (IPM)	25.20	8.66
	f_z (IPT)	.004	.003
	a_p(inch)	.197 to .354 x 3 passes	.197 to .354 x 3 passes
	a_e(inch)	.037 x 1 pass	.037 x 1 pass
	Coolant	—	—
	Results	Minimized wall surface step which increased machining efficiency.	

Titanium Alloy Ti-6Al-4V Aerospace Component		Sumitomo	Competitor's Product
Vertical Machining Center BT50	Tool	WEZ11063RS08	Double-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutting Dia.(*mm*)	*63*	*63*
	# of Teeth	8	8
	v_c (SFM)	160	160
	v_f (IPM)	12.20	12.20
	f_z (IPT)	.006	.006
	a_p(inch)	.079	.079
	a_e(inch)	1.969	1.969
	Coolant	Wet	Wet
	Results	No chipping, longer tool life with reduced burrs.	

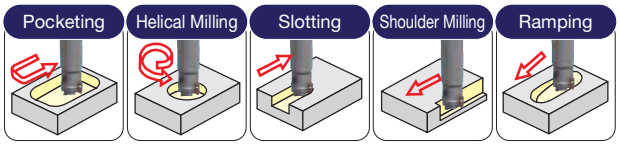
Nickel Based Alloy Inconel 718 Aerospace Component		Sumitomo	Competitor's Product
Vertical Machining Center BT50	Tool	WEZ17032E04 (Special Component)	Double-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	H	—
	Cutting Dia.(*mm*)	*32*	*32*
	# of Teeth	4	4
	v_c (SFM)	100	100
	v_f (IPM)	4.72	4.72
	f_z (IPT)	.004	.004
	a_p(inch)	.197	.197
	a_e(inch)	.394	.394
	Coolant	Wet	Wet
	Results	50% tool life improvement	

Titanium Alloy Aerospace Component		Sumitomo	Competitor's Product
Compound Lathe	Tool	WEZ17035E03	Double-Sided, 2 Corners
	Grade	ACM300	—
	Chipbreaker	L	—
	Cutting Dia.(*mm*)	*35*	*35*
	# of Teeth	3	3
	v_c (SFM)	150	150
	v_f (IPM)	—	—
	f_z (IPT)	.006	.006
	a_p(inch)	.118	.118
	a_e(inch)	.689	.689
	Coolant	Wet	Wet
	Results	Tool life improved	

■ General Features

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

Compatible with Wide Range of Milling

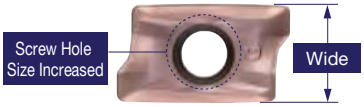


■ Features

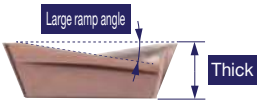
Higher Accuracy Cutting Edge with Both Sharpness and Cutting Edge Strength

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

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

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

Wide Variety of Inserts

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

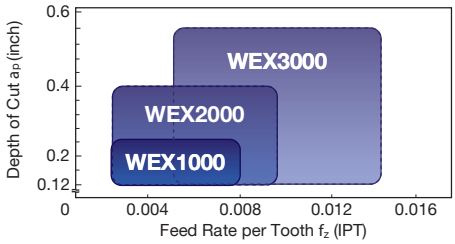
■ Product Range

	Cat. No.		Remarks	Cutter Diameters in Stock (inch) / Number of Teeth												Shape
				ø.500"	ø.625"	ø.750"	ø1.000"	ø1.250"	ø1.500"	ø2.000"	ø2.500"	ø3.000"	ø4.000"	ø6.000"	ø8.000"	
Shell Type	WEX2000R	H71	Standard Type						6	7	8					
Shell Type	WEX3000R	H72	Standard Type							5	6	7	8		12	
Shell Type	WEXC3000R	H72	Standard Type									5	6	8		
Shank Type	WEX2000EW	H75	Weldon Shank	1	2	3	4	5								
Shank Type	WEX2000EMW	H75	Weldon Shank Medium		2	3										
Shank Type	WEXC2000EW	H75	Weldon Shank			4	4									
Shank Type	WEXC2000EMW	H75	Weldon Shank Medium				3									
Shank Type	WEXC2000ELC	H75	Extra Long Type Cylindrical			2										
Shank Type	WEX2000ELW	H75	Weldon Shank Long			3										
Shank Type	WEX2000ELC	H75	Extra Long Type Cylindrical			3	4									
Shank Type	WEX3000EW	H76	Weldon Shank				2	3	4	5						
Shank Type	WEXC3000EMW	H76	Weldon Shank Medium						3							
Shank Type	WEX3000EMW	H76	Weldon Shank Medium				2	3								
Shank Type	WEX3000ELW	H76	Weldon Shank Long				2									
Shank Type	WEX3000ELC	H76	Extra Long Shank/ Clyindrical				2	3	4							
Modular Type	WEX20000M	H206	Modular Type			3	4	5	6							
Modular Type	WEX30000M	H207	Modular Type				2	3	4							

	Cat. No.		Remarks	Cutter Diameters in Stock (mm) / Number of Teeth																		Shape
				ø10	ø12	ø14	ø16	ø18	ø20	ø22	ø25	ø28	ø30	ø32	ø35	ø40	ø50	ø63	ø80	ø100	ø125	
Shell Type	WEX1000F	H75	Standard Type											8		10	12	14				
Shell Type	WEX2000F	H76	Standard Type													6	7	8				
Shell Type	WEX3000F	H77	Standard Type													4	5	6				
Shell Type	WEX3000R	H77	Standard Type																4	5	6	
Shell Type	WEXF3000R	H77	Fine pitch																7	8	9	
Shank Type	WEX1000E	H78	Standard Type	2	3	3	4	4	5		7											
Shank Type	WEX1000EL	H78	Long Type	2	2	3	3	3	4													
Shank Type	WEX2000E	H79	Standard Type			1	2	2	3	3	4	4	4	5		6	7	8				
Shank Type	WEX2000EL	H79	Long Type			1	2	2	2	2	2	2	2	2		2						
Shank Type	WEX3000E	H80	Standard Type								2	2	3	3	3	4	5	6				
Shank Type	WEX3000ES	H80	Short Type														5	6				
Shank Type	WEX3000EL	H80	Long Type								2	2	2	2	2	2						
Shank Type	WEX3000E-C	H80	Coarse Pitch Type													3	3	4				
Shank Type	WEX3000ES-C	H80	Short & Coarse Pitch Type														3	4				
Modular Type	WEX2000M	H213	Modular Type				2	2	3	3	4	4	4	5		6						
Modular Type	WEX3000M	H214	Modular Type								2	2	3	3	3	4						

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

■ WEX Type Series Application Range (Shoulder Milling)



■ WEX1000 Number of Teeth

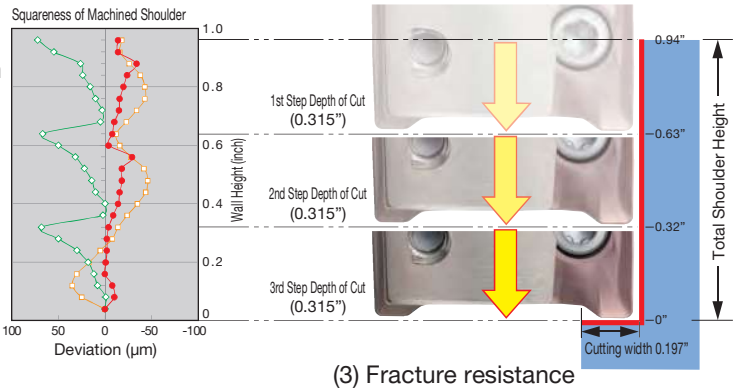
Cutter Dia.	Number of Teeth: WEX1000E Standard Type (APMX = 6.0mm)	WEX1000EL Long Type (APMX = 6.0mm)	WEX2000E Standard Type (APMX = 10.0mm)
ø10mm	2	2	—
ø12mm	3	2	—

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

■ Cutting Performance

(1) Shoulder milling precision

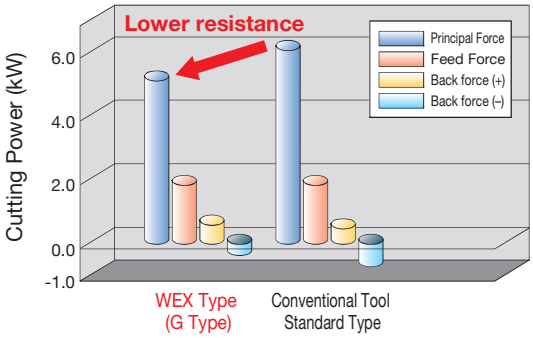
High-precision cutting edges provide very small step marks
(less than half that of competitors' products)



Cutting Conditions
Part Material: A36
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c=492 SFM
Feed Rate: f_z=0.006 IPT (v_f=26.57 IPM)
Cutting Width: a_e=0.197"
Depth of Cut: a_p=0.315" x 3 times
Dry

(2) Cutting force

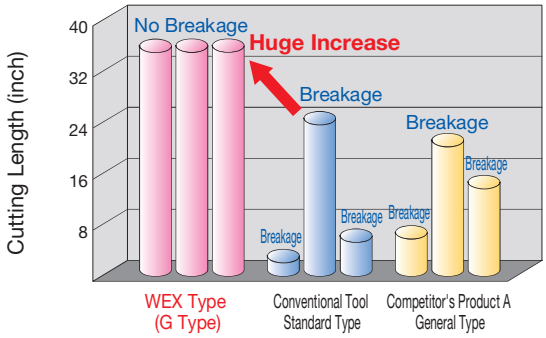
Cutting force (principal force) is approximately 15% lower than conventional tools



Cutting Conditions
Part Material: 1050
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c=656 SFM
Feed Rate: f_z=0.008" IPT (v_f=47 IPM)
Cutting Width: a_e=0.315"
Depth of Cut: a_p=0.40" , Dry

(3) Fracture resistance

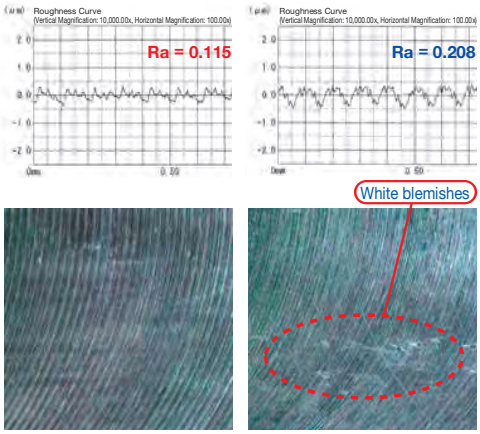
Huge increase in fracture resistance with improved cutting edge strength



Cutting Conditions
Part Material: 4140
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200
Cutting Speed: v_c=328 SFM
Feed Rate: f_z=0.016" IPT (v_f=49.6 IPM)
Cutting Width: a_e=0.984"
Depth of Cut: a_p=0.12, Dry

(4) Surface roughness (aluminum alloy milling)

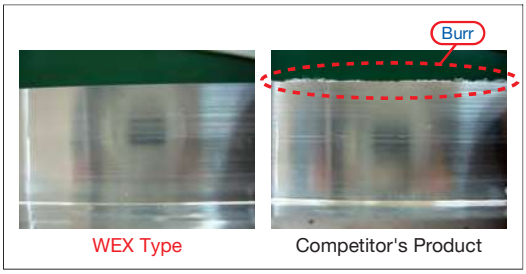
Smooth surface finish free of white blemishes



Cutting Conditions
Work Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: v_c=2,625 SFM
Feed Rate: f_z=0.004" IPT (v_f=94.5" IPM)
Cutting Width: a_e=0.63"
Depth of Cut: a_p=0.40" , Dry

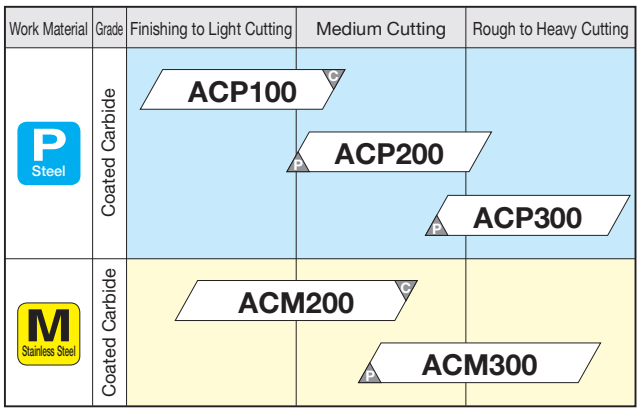
(5) Wall surface burrs (aluminum alloy milling)

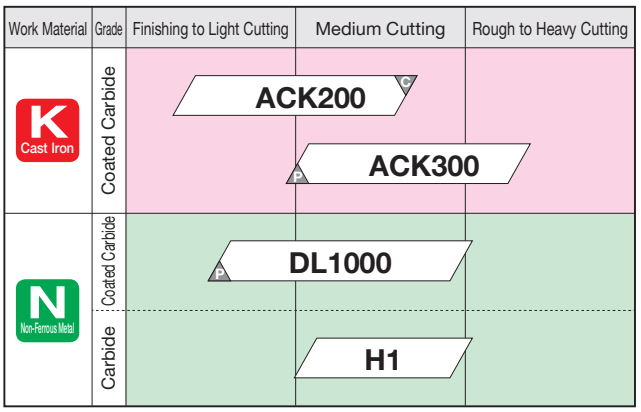
High rake edge significantly reduces burrs.



Cutting Conditions
Part Material: A5052
Tool: WEX3032E (ø32)
Insert: AXET170504PEFR-S (H1)
Cutting Speed: v_c=2,625 SFM
Feed Rate: f_z=0.004" IPT (v_f=94.5" IPM)
Cutting Width: a_e=0.197"
Depth of Cut: a_p=0.472" , Dry

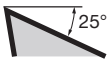
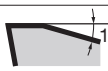
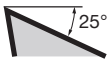
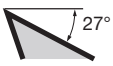
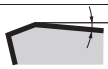
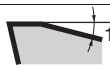
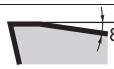
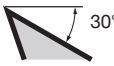
■ Grade Application Range





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

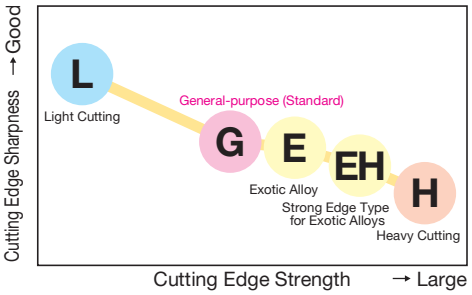
■ Chipbreaker Lineup

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

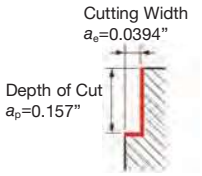
■ Recommended Cutting Conditions

ISO	Material	Hardness	Grade	Depth of Cut .002 -.050	Depth of Cut .050 - .125	Depth of Cut .125 & over	Feed per Tooth
P	Low and Medium Carbon Steels	<250 Bhn	ACP100	775-1310	725-1275	675-1225	.006-.0125
			ACP200	721-1213	675-1180	600-1125	.006-.0135
			ACP300	675-1075	650-1025	525-925	.006-.014
	Medium Carbon Alloy Steels	<250 Bhn	ACP100	600-975	575-950	550-900	.006-.0095
			ACP200	550-900	525-900	500-875	.006-.0115
			ACP300	525-875	500-825	475-800	.006-.0115
	Medium-High Carbon Steels	<250 Bhn	ACP100	600-975	575-950	550-900	.006-.011
			ACP200	575-950	550-925	500-875	.006-.012
			ACP300	575-950	550-925	500-875	.006-.012
	Free Machining Steels and Alloys	<250 Bhn	ACP100	725-1300	700-1250	675-1200	.006-.0135
			ACP200	750-1325	725-1275	675-1225	.006-.0135
			ACP300	675-1075	650-1050	650-1025	.006-.014
	Tool Steels	<250 Bhn	ACP100	475-820	450-790	425-750	.0047-.010
			ACP200	450-820	435-790	425-750	.0047-.011
			ACP300	450-820	425-790	400-725	.0047-.012
		bhn 220 - 350	ACP100	400-775	400-735	400-700	.004-.009
			ACP200	425-750	400-725	375-690	.0045-.010
			ACP300	420-700	420-695	375-685	.0047-.012
		>33 Hrc	ACP100	325-650	300-625	300-590	.003-.007
			ACP200	325-650	300-625	300-590	.0045-.0095
M	Stainless Steel: Martensitic and Ferritic	<250 Bhn	ACM300	535-850	520-830	275-820	.004-.011
		>250 Bhn	ACM200	425-740	415-720	375-675	.004-.012
	Stainless Steel: Austenitic	<250 Bhn	ACM300	325-875	300-850	275-825	.004-.012
	Stainless Steel: Precipitation Hardening	<250 Bhn	ACM200	525-850	500-825	175-675	.004-.012
K	Grey Cast Iron	>250 Bhn	ACK200	700-1050	625-925	590-900	.004-.014
			ACK300	600-950	575-875	550-850	.004-.014
		<250 Bhn	ACK200	600-950	525-825	490-800	.004-.014
			ACK300	500-850	475-775	450-750	.004-.014
	Ductile Iron	>250 Bhn	ACK200	600-925	550-875	490-800	.004-.012
			ACK300	550-825	550-825	450-750	.004-.012
S	Exotic Alloys: Inconel, Hastalloy, Waspalloy, etc.		ACK200	100-160	70-150	60-135	.003-.0075
			ACK300	100-160	70-150	60-135	.004-.0075
N	Non-Ferrous Material		H1	1500-3800	1300-3700	1200-3600	.004-.014
			DL1000	1500-4500	1475-4200	1275-4100	.004-.014

■ Chipbreaker Selection Guide



■ Recommended Cutting Conditions in Metric, please see H66 for Inch Parameters



WEX1000

Tool: WEX1012E, Insert: AX□T0602

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

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

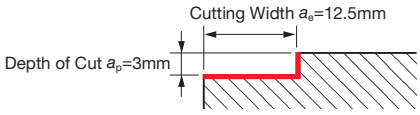
● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).
● For groove milling, adjust the feed rate to around 70% of the above values.

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

WEX2000

Tool: WEX2025E, Insert: AX□T1235

Cutting Conditions: Depth of Cut a_p=3mm, Width of Cut a_e=12.5mm, Dry



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

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

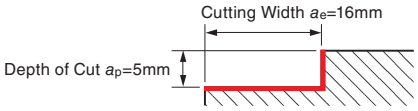
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ Recommended Cutting Conditions in Metric, please see H66 for Inch Parameters

WEX3000

Tool: WEX3032E Insert: AX□T1705

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



ISO Classification	Work Material		Work Hardness (HB)	Chipbreaker	Grades																							
					ACP100			ACP200			ACP300			ACK200			ACK300			ACM200			ACM300			DL1000		
					Feed 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, Ti Alloy, etc.)		330	E													50	30		50	30		45	25				
N	Aluminum Alloy, Si ≤ 12.6%			S																						1000	750	500
	Aluminum Alloy, Si > 12.6%			S																						250	200	170
	Copper Alloy			S																						350	330	300

■ The recommended cutting conditions may not be practical under certain operating conditions (i.e., machine, work shape, clamping system).

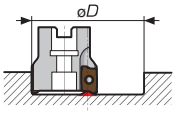
■ For groove milling, adjust feed rate to around 70% of the above values.

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

■ Recommended Values for Helical Milling and Ramping

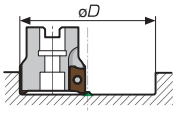
Precautions for Helical Milling

For Minimum Diameter and Below



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

For Maximum Diameter and Above



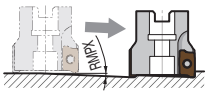
Center uncut portion can be removed by traverse cutting with the same cutter

Recommended Values for Helical Milling and Ramping

Cutter Dia. (in.) DC	WEX2000 (AX□T12···)			WEX3000 (AX□T17···)		
	Helical Milling (inch)		Ramping	Helical Milling (inch)		Ramping
	Work Dia. øD		Maximum Ramping Angle RMPX	Work Dia. øD		Maximum Ramping Angle RMPX
	Min. Diameter	Max. Diameter		Min. Diameter	Max. Diameter	
0.500	0.88	0.96	1°50'			
0.625	1.13	1.21	1°20'			
0.750	1.38	1.46	1°00'			
1.000	1.88	1.96	0°45'	1.78	1.92	1°30'
1.250	2.38	2.46	0°35'	2.28	2.42	1°00'
1.500	2.88	2.96	0°25'	2.78	2.92	0°45'
2.000	3.88	3.96	0°20'	3.78	3.92	0°30'
2.500	4.88	4.96	0°15'	4.78	4.92	0°20'
3.000				5.78	5.92	0°15'
4.000				Not Available	Not Available	Not Available
6.000				Not Available	Not Available	Not Available
8.000				Not Available	Not Available	Not Available

Precautions for Ramping

Use at the RMPX below or lower



Recommended Values for Helical Milling and Ramping

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

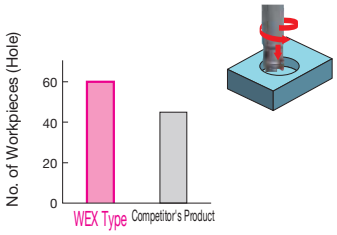
The above table shows the recommended values for 0.8mm nose radius bits.

■ Application Examples

• Machine Components 304 Stainless

WEX1000

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



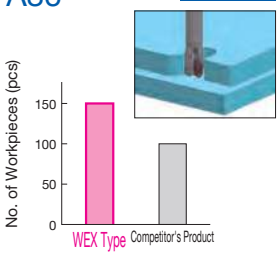
Tool: WEX1020E (ø20)
Insert: AXMT060204PDER-G
Grade: ACM300
Machine: Vertical machining centre BT30

(Cutting Conditions)
v_c=197 SFM
f_z =0.007" IPT
a_p=0.04"
Dry

• Machine Components A36

WEX1000

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



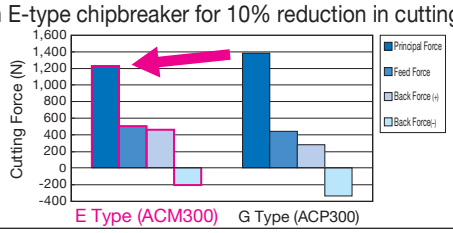
Tool: WEX1010EL (ø10)
Insert: AXMT060204PDER-L
Grade: ACP200
Machine: Vertical machining centre BT40

(Cutting Conditions)
v_c=525 SFM
f_z =0.003" IPT
a_p=0.197"
Dry

• Block Material 316 Stainless

WEX2000

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



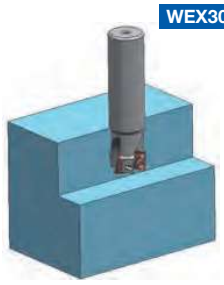
Tool: WEX2050F (ø50)
Insert: AXMT123508PEER-E
Grade: ACM300

(Cutting Conditions)
v_c=591 SFM
f_z =0.006" IPT
a_e=0.787"
a_p=0.12" Dry

• Block Material 4140

WEX3000

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



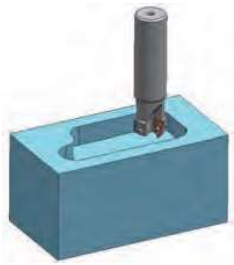
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP200

(Cutting Conditions)
v_c=656 SFM
f_z =0.006" IPT
a_e=0.197"
a_p=0.40" x 3 Times Dry

• Die Parts, Low Carbon Steel

WEX3000

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



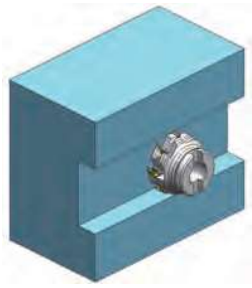
Tool: WEX3032E (ø32)
Insert: AXMT170508PEER-G
Grade: ACP100

(Cutting Conditions)
v_c=495 SFM
f_z =0.008" IPT
a_e=0.984"
a_p=0.197" Wet

• Extrusion Mold P5 Tool Steel

WEX3000

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



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

(Cutting Conditions)
v_c=246 SFM
f_z =0.0075" IPT
a_e=3.15"
a_p=0.197" Dry

• Machine Components 304 Stainless Steel

WEX3000

Cutting Distance: 177" | Cutting Distance: 65"

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

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

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

(Cutting Conditions)
v_c=492 SFM
f_z =0.006" IPT
a_e=0.40"
a_p=0.12"
Dry

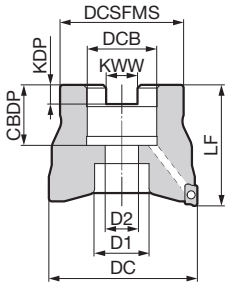
WEX Shellmill Metric Series - *6 mm* Inserts

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

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

6 mm 90° | .236" 90°

Fig 1



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WEX1032F**	★	32	31	40	16	8.4	5.6	18	14	9	8	0.16	1
	WEX1040F	★	40	32	40	16	8.4	5.6	18	14	9	10	0.21	1
	WEX1050F	★	50	38	40	22	10.4	6.3	20	18	11	12	0.30	1
	WEX1063F	★	63	48	40	22	10.4	6.3	20	18	11	14	0.52	1

Inserts are sold separately. ★ Worldwide Warehouse item

Insert

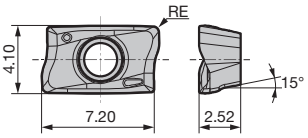
Dimensions (*mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Fig
AXMT060204PDER-L	★	★	★	★	★	★	★	-	-	0.4	1
AXMT060208PDER-L	★	★	★	★	★	★	★	-	-	0.8	1
AXMT060212PDER-L	★	★	★	★	★	★	★	-	-	1.2	1
AXMT060202PDER-G	★	★	★	★	★	★	★	-	-	0.2	1
AXMT060204PDER-G	★	★	★	★	★	★	★	-	-	0.4	1
AXMT060208PDER-G	★	★	★	★	★	★	★	-	-	0.8	1
AXMT060212PDER-G	★	★	★	★	★	★	★	-	-	1.2	1
AXMT060204PDER-H	★	★	★	★	★	★	★	-	-	0.4	1
AXMT060208PDER-H	★	★	★	★	★	★	★	-	-	0.8	1
AXMT060212PDER-H	★	★	★	★	★	★	★	-	-	1.2	1
AXMT060202PDFR-S	-	-	-	-	-	-	-	★	★	0.2	1

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

Fig 1



Parts

(Sold Separately)

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

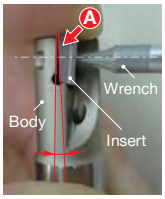
Identification Code

WEX 1 032 F

Cutter Series | Insert Size | Dia. | Metric Bore

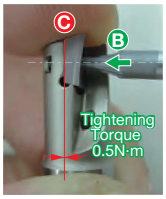
Precautions when Mounting WEX1000 Inserts

1



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

2



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

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

N·m Recommended Tightening Torque (N·m)

WaveMill

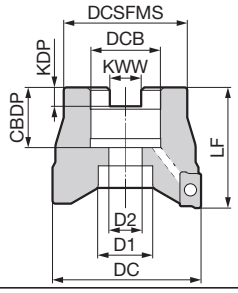
WEX Shellmill (Inch & Metric) - *12 mm* Inserts

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

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

10mm 90° | .236" 90°

Fig 1



Body (Standard)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs/ *kg*)	Fig
Inch	**WEX21500R**	●	1.500	1.339	1.562	0.750	0.312	0.187	0.750	0.609	0.453	6	0.42	1
Inch	**WEX22000R**	●	2.000	1.500	1.562	0.750	0.312	0.187	0.750	0.630	0.453	7	0.64	1
Inch	**WEX22500R**	●	2.500	1.750	1.562	1.000	0.375	0.218	0.750	0.797	0.531	8	1.12	1
Metric	**WEX2040F**	★	*40*	*32*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	6	*0.19*	1
Metric	**WEX2050F**	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	7	*0.29*	1
Metric	**WEX2063F**	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	8	*0.51*	1

Inserts are sold separately. ● USA stocked item ★ Worldwide Warehouse item

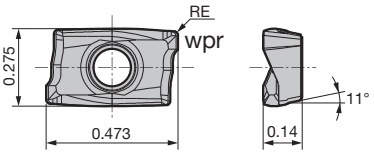
Insert

Dimensions (inch / *mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT123504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-G	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-H	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-H	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-E						●	●	-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-E						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-E						●	●	-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123508PEER-EH						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXET123502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.2*	-	1
AXET123504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET123508PEFR-S	-	-	-	-	-	-	-	●	●	.032" / *0.8*	-	1

Fig 1



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

● USA stocked item ★ Worldwide Warehouse item

Parts

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

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

Identification Code - Inch

WEX 2 2000 R

Cutter Series | Insert Series | Dia. 2.000" | Feed Direction

Identification Code - Metric

WEX 2 040 F

Cutter Series | Insert Size | Dia. | Metric Bore

N·m Recommended Tightening Torque (N·m)

WEX SHELLMILL INCH - *17mm* Inserts

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

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

.551" 90°

Fig 1

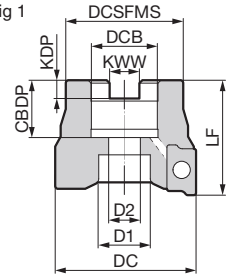
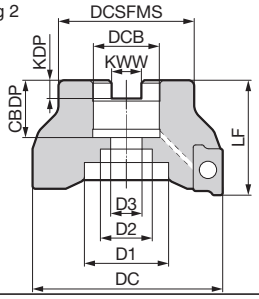


Fig 2



Body (Standard)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Inch	**WEX32000R**	●	2.000	1.575	1.562	.750	.312	.187	.750	.709	.406	-	5	0.48	1
	WEX32500R	●	2.500	1.969	1.562	1.000	.375	.218	.750	.797	.531	-	6	0.92	1
	WEXC33000R	●	3.000	2.362	1.750	1.000	.375	.218	.750	.797	.531	-	5	1.99	1
	WEX33000R	●	3.000	2.362	1.750	1.000	.375	.218	.750	.797	.531	-	7	1.99	1
	WEXC34000R	●	4.000	2.756	2.000	1.250	.500	.281	.750	1.000	.656	-	6	3.65	1
	WEXC34000R-150	●	4.000	3.750	2.000	1.500	.625	.380	1.535	2.000	.781	.781	6	3.65	2
	WEX34000R	●	4.000	2.756	2.461	1.250	.500	.281	0.750	1.000	.656	-	8	3.65	1
	WEX34000R-150	●	4.000	3.750	2.000	1.500	.625	.380	1.535	2.000	.781	.781	8	3.65	2
	WEXC36000R	●	6.000	4.370	2.500	1.500	.625	.380	1.060	2.000	1.500	-	8	7.27	1
	WEX38000R	●	8.000	5.118	2.500	2.500	1.000	.560	1.250	5.315	2.500	-	12	13.66	1

Inserts are sold separately.

● USA stocked item

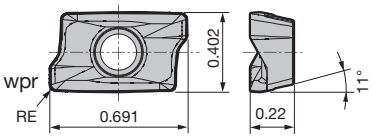
Insert

Dimensions (inch)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L	●	●	●	●	●			-	-	.031	.087	1
AXMT170504PEER-G	●	●	●	●	●			-	-	.016	.102	1
AXMT170508PEER-G	●	●	●	●	●			-	-	.031	.087	1
AXMT170512PEER-G	●	●	●	●	●			-	-	.047	.067	1
AXMT170516PEER-G	●	●	●	●	●			-	-	.063	.059	1
AXMT170520PEER-G*	●	●	●	●	●			-	-	.079	.047	1
AXMT170530PEER-G*	●	●	●	●	●			-	-	.118	-	1
AXMT170508PEER-H	●	●	●	●	●			-	-	.031	.087	1
AXMT170512PEER-H	●	●	●	●	●			-	-	.047	.067	1
AXMT170504PEER-E						●	●	-	-	.016	.102	1
AXMT170508PEER-E						●	●	-	-	.031	.087	1
AXMT170512PEER-E						●	●	-	-	.047	.067	1
AXMT170516PEER-E						●	●	-	-	.063	.059	1
AXMT170520PEER-E*						●	●	-	-	.079	.047	1
AXMT170530PEER-E*						●	●	-	-	.118	-	1
AXMT170508PEER-EH						●	●	-	-	.031	.087	1
AXET170502PEFR-S	-	-	-	-	-	-	-	●	●	.008	-	1
AXET170504PEFR-S	-	-	-	-	-	-	-	●	●	.016	-	1
AXET170508PEFR-S	-	-	-	-	-	-	-	●	●	.031	-	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Stainless Steel & Exotic Alloy, -ES: Aluminum & Non-ferrous Alloys.

* marked inserts require modification of the cutter body.

Parts

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

Identification Code

WEX 3 2000 R

WEX	3	2000	R
Cutter Series	Insert Series	Dia. 2.000"	Feed Direction

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

Modify this portion.

Reworking guidelines

For Nose Radius of 2.0: C1 (AXMT170520PEER)

For Nose Radius of 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m)

WEX SHELLMILL METRIC - *17mm* Inserts

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

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

14mm 90° | .551" 90°

Fig 1

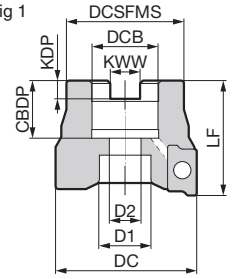
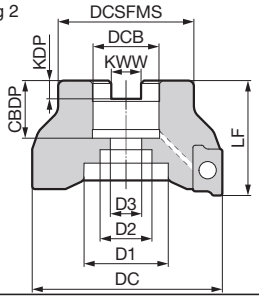


Fig 2



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEX3040F**	★	40	32	40	16	8.4	5.6	18	14	9	-	4	0.16	1
	WEX3050F	★	50	40	40	22	10.4	6.3	20	18	11	-	5	0.25	1
	WEX3063F	★	63	50	40	22	10.4	6.3	20	18	11	-	6	0.48	1
	WEX3080R	★	*80	60	50	25.4	9.5	6	25	35	26	13.5	4	1.06	2
	WEX3100R	★	*100	70	63	31.75	12.7	8	32.5	46	28	17	5	1.99	2
	WEX3125R	★	125	80	63	38.1	15.9	10	35.5	55	30	-	6	2.89	1

Body (Fine Pitch Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**WEXF3080R**	★	*80	60	50	25.4	9.5	6	25	35	26	13.5	7	0.98	2
	WEXF3100R	★	*100	70	63	31.75	12.7	8	32.5	46	28	17	8	1.91	2
	WEXF3125R	★	125	80	63	38.1	15.9	10	35.5	55	30	-	9	2.80	1

Inserts are sold separately.

★: Worldwide Warehouse item

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

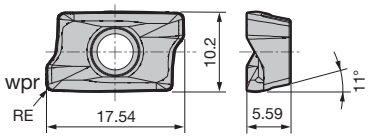
Insert

Dimensions (*mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L	●	●	●	●	●			-	-	0.8	2.2	1
AXMT170504PEER-G	●	●	●	●	●			-	-	0.4	2.6	1
AXMT170508PEER-G	●	●	●	●	●			-	-	0.8	2.2	1
AXMT170512PEER-G	●	●	●	●	●			-	-	1.2	1.7	1
AXMT170516PEER-G	●	●	●	●	●			-	-	1.6	1.5	1
AXMT170520PEER-G*	●	●	●	●	●			-	-	2.0	1.2	1
AXMT170530PEER-G*	●	●	●	●	●			-	-	3.0	-	1
AXMT170508PEER-H	●	●	●	●	●			-	-	0.8	2.2	1
AXMT170512PEER-H	●	●	●	●	●			-	-	1.2	1.7	1
AXMT170504PEER-E						●	●	-	-	0.4	2.6	1
AXMT170508PEER-E						●	●	-	-	0.8	2.2	1
AXMT170512PEER-E						●	●	-	-	1.2	1.7	1
AXMT170516PEER-E						●	●	-	-	1.6	1.5	1
AXMT170520PEER-E*						●	●	-	-	2.0	1.2	1
AXMT170530PEER-E*						●	●	-	-	3.0	-	1
AXMT170508PEER-EH						●	●	-	-	0.8	2.2	1
AXET170502PEFR-S	-	-	-	-	-	-	-	●	●	0.2	-	1
AXET170504PEFR-S	-	-	-	-	-	-	-	●	●	0.4	-	1
AXET170508PEFR-S	-	-	-	-	-	-	-	●	●	0.8	-	1

Fig 1



-L: Low Cutting force, -G: General-purpose, -H: Strong Edge, -E, -EH: Stainless Steel & Exotic Alloy, -ES: Aluminum & Non-ferrous Alloys.

* marked inserts require modification of the cutter body.

● USA stocked item

★ Worldwide Warehouse item

Parts

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

Identification Code-Metric

WEX 3 040 F

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

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

Modify this portion.

Reworking guidelines

For Nose Radius of 2.0: C1 (AXMT170520PEER)

For Nose Radius of 3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m)

WEX Endmill Metric- *6 mm* Inserts

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

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

6mm 90° | .236" 90°

Fig 1

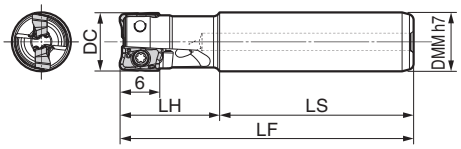
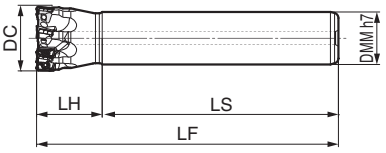


Fig 2



Body (Standard Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX1010E**	★	10	10	17	33	50	2	0.03	1
	WEX1012E	★	12	12	20	60	80	3	0.06	1
	WEX1014E	★	14	16	22	59	80	3	0.10	1
	WEX1016E	★	16	16	20	70	90	4	0.12	1
	WEX1018E	★	18	20	20	80	100	4	0.21	1
	WEX1020E	★	20	20	22	78	100	5	0.22	1
	WEX1025E	★	25	20	25	90	115	7	0.27	2

Inserts are sold separately.

★: Worldwide Warehouse item

Body (Long Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**WEX1010EL**	★	10	8	17	83	100	2	0.03	2
	WEX1012EL	★	12	10	20	100	120	2	0.06	2
	WEX1014EL	★	14	12	20	125	145	3	0.11	2
	WEX1016EL	★	16	14	20	140	160	3	0.17	2
	WEX1018EL	★	18	16	20	160	180	3	0.25	2
	WEX1020EL	★	20	18	25	175	200	4	0.36	2

Inserts are sold separately.

Insert

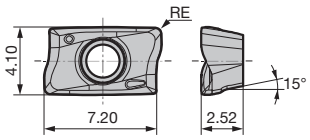
Dimensions (*mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Fig
AXMT060204PDER-L	★	★	★	★	★	★	★	-	-	0.4	1
AXMT060208PDER-L	★	★	★	★	★	★	★	-	-	0.8	1
AXMT060212PDER-L	★	★	★	★	★	★	★	-	-	1.2	1
AXMT060202PDER-G	★	★	★	★	★	★	★	-	-	0.2	1
AXMT060204PDER-G	★	★	★	★	★	★	★	-	-	0.4	1
AXMT060208PDER-G	★	★	★	★	★	★	★	-	-	0.8	1
AXMT060212PDER-G	★	★	★	★	★	★	★	-	-	1.2	1
AXMT060204PDER-H	★	★	★	★	★	★	★	-	-	0.4	1
AXMT060208PDER-H	★	★	★	★	★	★	★	-	-	0.8	1
AXMT060212PDER-H	★	★	★	★	★	★	★	-	-	1.2	1
AXMT060202PDFR-S	-	-	-	-	-	-	-	★	★	0.2	1

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

Fig 1



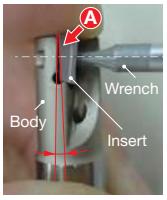
Parts

(Sold Separately)

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

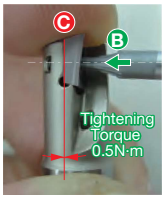
Precautions when Mounting WEX1000 Inserts

1



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

2



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

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

Identification Code

WEX 1 010 E L

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

WEX ENDMILL - *12 mm* Inserts

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

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

10mm 90° | .394" 90°

Fig 1

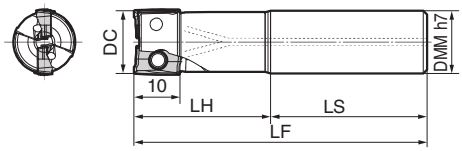
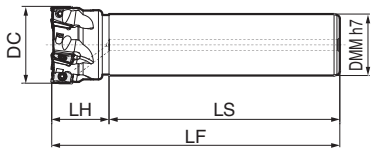


Fig 2



Inch Body (Standard & Long Type)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs)	Fig
Weldon	WEX20500EW	●	.500	.750	1.309	2.031	3.325	1	0.22	1
	WEX20625EW	●	.625	.625	1.312	1.906	3.218	2	0.29	1
	WEX20625EMW	●	.625	.625	1.685	1.906	3.591	2	0.31	1
	WEXC20750EW	●	.750	.750	1.530	2.031	3.561	2	0.49	1
	WEX20750EW	●	.750	.750	1.530	2.031	3.561	3	0.58	1
	WEX20750EMW	●	.750	.750	2.060	2.031	4.091	3	0.38	1
	WEX20750ELW	●	.750	.750	3.060	2.031	5.091	3	0.84	1
	WEXC21000EW	●	1.000	1.000	1.532	2.280	3.812	3	0.91	1
	WEXC21000EMW	●	1.000	1.000	2.560	2.281	4.841	4	1.54	1
	WEX21000EW	●	1.000	1.000	1.530	2.281	3.811	4	2.01	1
	WEX21250EW	●	1.250	1.250	2.250	2.281	4.531	5	2.25	1
Cylindrical	WEXC20750ELC	●	.750	.750	3.080	6.000	9.000	2	2.15	1
	WEX20750ELC	●	.750	.750	3.080	6.920	10.000	3	3.28	1
	WEX21000ELC	●	1.000	1.000	3.157	6.843	10.000	4	3.87	1

Inserts are sold separately. ● USA stocked item

Metric Body (Standard & Long Type)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Standard Type	WEX2014E	★	14	16	25	55	80	1	0.10	1
	WEX2016E	★	16	16	25	75	100	2	0.13	1
	WEX2018E	★	18	16	25	75	100	2	0.14	2
	WEX2020E	★	20	20	30	80	110	3	0.22	1
	WEX2022E	★	22	20	30	80	110	3	0.23	2
	WEX2025E	★	25	25	35	85	120	4	0.38	1
	WEX2028E	★	28	25	35	85	120	4	0.39	2
	WEX2030E	★	30	25	35	85	120	4	0.40	2
	WEX2032E	★	32	32	40	90	130	5	0.70	1
	WEX2040E	★	40	32	30	120	150	6	0.91	2
	WEX2050E	★	50	32	30	120	150	7	1.02	2
	WEX2063E	★	63	32	30	120	150	8	1.22	2
Long Type	WEX2014EL	★	14	16	25	95	120	1	0.14	1
	WEX2016EL	★	16	16	25	120	145	2	0.19	1
	WEX2018EL	★	18	16	25	120	145	2	0.19	2
	WEX2020EL	★	20	20	40	110	150	2	0.32	1
	WEX2022EL	★	22	20	30	120	150	2	0.33	2
	WEX2025EL	★	25	25	50	120	170	2	0.55	1
	WEX2028EL	★	28	25	30	140	170	2	0.59	2
	WEX2030EL	★	30	25	30	140	170	2	0.60	2
	WEX2032EL	★	32	32	60	120	180	2	0.99	1
	WEX2040EL	★	40	32	30	150	180	2	1.12	2

Inserts are sold separately. ★ Worldwide Warehouse item

Insert

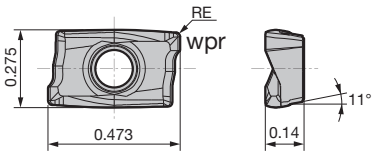
Dimensions (*mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT123504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-G	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-H	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-H	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-E						●	●	-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-E						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-E						●	●	-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123508PEER-EH						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXET123502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.2*	-	1
AXET123504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET123508PEFR-S	-	-	-	-	-	-	-	●	●	.032" / *0.8*	-	1

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

Fig 1



Identification Code -Inch

WEX 2 0625 E W

Cutter Series | Insert Series | Dia. 0.0625" | With Shank | M: Medium, L: Long, W: Weldon, C: Cylindrical

Identification Code - Metric

WEX 2 014 E L

Cutter Series | Insert Size | Dia. | With Shank | Long

Parts

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

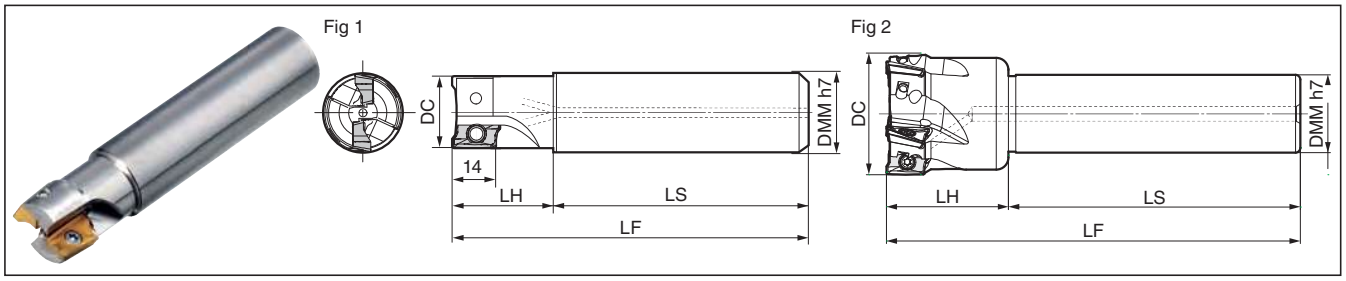
N·m Recommended Tightening Torque (N·m)

WEX ENDMILL INCH - *17mm* Inserts

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

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

.551" 90°



Body (Weldon Shank Type)

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs)	Fig
WEX31000EW	●	1.000	1.000	1.530	2.281	3.811	2	0.55	1
WEX31000EMW	●	1.000	1.000	2.560	2.281	4.841	2	0.82	1
WEX31000ELW	●	1.000	1.000	4.060	2.281	6.341	2	0.86	1
WEX31250EW	●	1.250	1.250	2.250	2.281	4.531	3	0.93	1
WEX31250EMW	●	1.250	1.250	4.100	2.281	6.381	3	0.97	1
WEXC31500EMW	●	1.500	1.500	4.140	2.281	6.421	3	1.32	1
WEX31500EW	●	1.500	1.500	2.250	2.281	4.531	4	1.39	1
WEX32000EW	●	2.000	2.000	2.250	2.281	4.531	5	3.31	1

Inserts are sold separately.

Body (Cylindrical Shank Type)

Dimensions (inch)

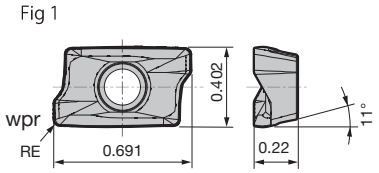
Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs)	Fig
WEX31000ELC	●	1.000	1.000	3.137	6.863	10.000	2	1.19	1
WEX31250ELC	●	1.250	1.250	3.149	6.851	10.000	3	1.23	1
WEX31500ELC	●	1.500	1.250	3.000	7.000	10.000	4	1.38	2

Inserts are sold separately. ● USA stocked item

Insert

Dimensions (inch)

Grade		Coated Carbide							Carbide	DLC			
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N			
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L		●	●	●	●	●			-	-	.031	.087	1
AXMT170504PEER-G		●	●	●	●	●			-	-	.016	.102	1
AXMT170508PEER-G		●	●	●	●	●			-	-	.031	.087	1
AXMT170512PEER-G		●	●	●	●	●			-	-	.047	.067	1
AXMT170516PEER-G		●	●	●	●	●			-	-	.063	.059	1
AXMT170520PEER-G*		●	●	●	●	●			-	-	.079	.047	1
AXMT170530PEER-G*		●	●	●	●	●			-	-	.118	-	1
AXMT170508PEER-H		●	●	●	●	●			-	-	.031	.087	1
AXMT170512PEER-H		●	●	●	●	●			-	-	.047	.067	1
AXMT170504PEER-E							●	●	-	-	.016	.102	1
AXMT170508PEER-E							●	●	-	-	.031	.087	1
AXMT170512PEER-E							●	●	-	-	.047	.067	1
AXMT170516PEER-E							●	●	-	-	.063	.059	1
AXMT170520PEER-E*							●	●	-	-	.079	.047	1
AXMT170530PEER-E*							●	●	-	-	.118	-	1
AXMT170508PEER-EH							●	●	-	-	.031	.087	1
AXET170502PEFR-S		-	-	-	-	-	-	-	●	●	.008	-	1
AXET170504PEFR-S		-	-	-	-	-	-	-	●	●	.016	-	1
AXET170508PEFR-S		-	-	-	-	-	-	-	●	●	.031	-	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.

Parts

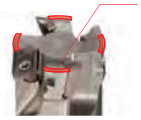
Applicable Cutter	Flat Screw		Wrench	Anti-seizure Cream
		N·m		
WEX3025E(EL) to 3030EL	BFTX0407IP	3.0	TRDR15IP	SUMI-P
WEX3032E(EL) to 3063E(ES)	BFTX0409IP	3.0	TRDR15IP	SUMI-P

Identification Code -Inch

WEX 3 0625 E W

- WEX: Cutter Series
- 3: Insert Series
- 0625: Dia. 0.0625"
- E: With Shank
- W: Type
  - M: Medium
  - L: Long
  - W: Weldon
  - C: Cylindrical

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



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

N·m Recommended Tightening Torque (N·m)

WEX Endmill Metric - *17mm* Inserts

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

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

14mm 90° | .551" 90°

Fig 1

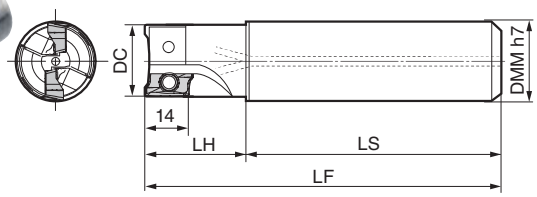
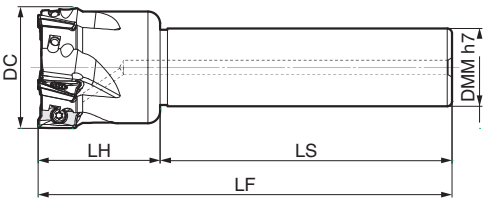


Fig 2



Body (Standard)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3025E-20	★	25	20	35	85	120	2	0.25	2
WEX3025E	★	25	25	35	85	120	2	0.37	1
WEX3028E	★	28	25	35	85	120	2	0.39	2
WEX3030E	★	30	25	40	90	130	3	0.42	2
WEX3032E-25	★	32	25	40	90	130	3	0.43	2
WEX3032E	★	32	32	40	90	130	3	0.67	1
WEX3035E	★	35	32	40	90	130	3	0.69	2
WEX3040E	★	40	32	50	120	170	4	1.01	2
WEX3050E	★	50	32	50	120	170	5	1.23	2
WEX3063E	★	63	32	50	120	170	6	1.58	2

Body (Short)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3050ES	★	50	32	25	110	135	5	0.86	2
WEX3050ES-42	★	50	42	25	110	135	5	1.36	2
WEX3063ES	★	63	32	25	110	135	6	1.02	2
WEX3063ES-42	★	63	42	25	110	135	6	1.52	2

Inserts are sold separately.

Body (Long)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3025EL	★	25	25	50	120	170	2	0.54	1
WEX3028EL	★	28	25	50	120	170	2	0.56	2
WEX3030EL	★	30	25	60	120	180	2	0.60	2
WEX3032EL	★	32	32	60	120	180	2	0.95	1
WEX3035EL	★	35	32	60	120	180	2	0.98	2
WEX3040EL	★	40	32	80	140	220	2	1.38	2

Body (Coarse Pitch)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3040E-C	★	40	32	50	120	170	3	1.04	2
WEX3050E-C	★	50	32	50	120	170	3	1.28	2
WEX3063E-C	★	63	32	50	120	170	4	1.64	2

Body (Short Coarse Pitch)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WEX3050ES-C	★	50	32	25	110	135	3	0.91	2
WEX3050ES-C-42	★	50	42	25	110	135	3	1.41	2
WEX3063ES-C	★	63	32	25	110	135	4	1.07	2
WEX3063ES-C-42	★	63	42	25	110	135	4	1.57	2

Inserts are sold separately. ★ Worldwide Warehouse item

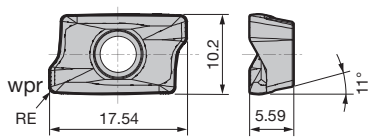
Insert

Dimensions (*mm*)

Grade		Coated Carbide							Carbide	DLC			
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N			
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L		●	●	●	●	●			-	-	0.8	2.2	1
AXMT170504PEER-G		●	●	●	●	●			-	-	0.4	2.6	1
AXMT170508PEER-G		●	●	●	●	●			-	-	0.8	2.2	1
AXMT170512PEER-G		●	●	●	●	●			-	-	1.2	1.7	1
AXMT170516PEER-G		●	●	●	●	●			-	-	1.6	1.5	1
AXMT170520PEER-G*		●	●	●	●	●			-	-	2.0	1.2	1
AXMT170530PEER-G*		●	●	●	●	●			-	-	3.0	-	1
AXMT170508PEER-H		●	●	●	●	●			-	-	0.8	2.2	1
AXMT170512PEER-H		●	●	●	●	●			-	-	1.2	1.7	1
AXMT170504PEER-E							●	●	-	-	0.4	2.6	1
AXMT170508PEER-E							●	●	-	-	0.8	2.2	1
AXMT170512PEER-E							●	●	-	-	1.2	1.7	1
AXMT170516PEER-E							●	●	-	-	1.6	1.5	1
AXMT170520PEER-E*							●	●	-	-	2.0	1.2	1
AXMT170530PEER-E*							●	●	-	-	3.0	-	1
AXMT170508PEER-EH							●	●	-	-	0.8	2.2	1
AXET170502PEFR-S		-	-	-	-	-	-	-	●	●	0.2	-	1
AXET170504PEFR-S		-	-	-	-	-	-	-	●	●	0.4	-	1
AXET170508PEFR-S		-	-	-	-	-	-	-	●	●	0.8	-	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.

Fig 1



Parts

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

N·m Recommended Tightening Torque (N·m)

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

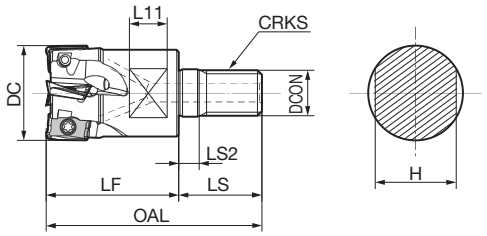
Modify this portion.
Reworking guidelines
For Nose Radius of 2.0: C1 (AXMT170520PEER)
For Nose Radius of 3.0: C1.5 (AXMT170530PEER)
Standard: C0.5.

Expansion

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

Maximum Depth of Cut: .394" 90° | 10mm 90°

Fig 1



Head

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
Inch	**WEX20750M10Z3**	●	0.750	0.413	M10	1.929	1.181	0.197	0.748	0.315	0.591	3	1
	WEX21000M12Z4	●	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	4	1
	WEX21250M16Z5	●	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	5	1
	WEX21500M16Z6	●	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	6	1
Metric	**WEX2016M08Z2**	★	*16*	*8.5*	M8	*42*	*25*	*5*	*17*	*8*	*13*	2	1
	WEX2018M08Z2	★	*18*	*8.5*	M8	*42*	*25*	*5*	*17*	*8*	*13*	2	1
	WEX2020M10Z3	★	*20*	*10.5*	M10	*49*	*30*	*5*	*19*	*8*	*15*	3	1
	WEX2022M10Z3	★	*22*	*10.5*	M10	*49*	*30*	*5*	*19*	*8*	*15*	3	1
	WEX2025M12Z4	★	*25*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	4	1
	WEX2028M12Z4	★	*28*	*12.5*	M12	*56*	*35*	*5*	*21*	*10*	*19*	4	1
	WEX2030M16Z4	★	*30*	*17.0*	M16	*63*	*40*	*5*	*23*	*10*	*24*	4	1
	WEX2032M16Z5	★	*32*	*17.0*	M16	*63*	*40*	*5*	*23*	*10*	*24*	5	1
	WEX2040M16Z6	★	*40*	*17.0*	M16	*63*	*40*	*5*	*23*	*10*	*24*	6	1

Inserts are sold separately. ● USA stocked item ★ Worldwide Warehouse item

Insert

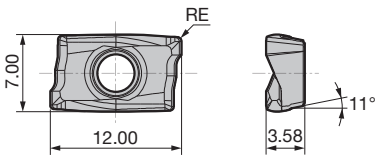
Dimensions (inch "/ *mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Fig
AXMT123504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	1
AXMT123508PEER-G	●	●	●	●	●			-	-	.032" / *0.8*	1
AXMT123512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	1
AXMT123504PEER-H	●	●	●	●	●			-	-	.016" / *0.4*	1
AXMT123508PEER-H	●	●	●	●	●			-	-	.032" / *0.8*	1
AXMT123512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	1
AXMT123504PEER-E						●	●	-	-	.016" / *0.4*	1
AXMT123508PEER-E						●	●	-	-	.032" / *0.8*	1
AXMT123512PEER-E						●	●	-	-	.047" / *1.2*	1
AXMT123508PEER-EH						●	●	-	-	.032" / *0.8*	1
AXET123502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.2*	1
AXET123504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	1
AXET123508PEFR-S	-	-	-	-	-	-	-	●	●	.032" / *0.8*	1

-G: General-purpose, -H: Strong Edge, -E, -EH: Stainless Steel & Exotic Alloy, -ES: Aluminum & Non-ferrous Alloys.

Fig 1



Parts

Applicable Endmills	Flat Screw		Wrench	Anti-seize Cream
		N·m		
WEX2016M, WEX2018M	BFTX0305IP	2.0	TRDR08IP	SUMI-P
WEX2020M to WEX2040M	BFTX0306IP			

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

Identification Code Inch

WEX 2 1000 M12 Z4

Cutter Series | Insert Size | Dia. 1.000" | Mounting Screw Size | Number of Teeth

Identification Code - Metric

WEX 2 016 M08 Z2

Cutter Series | Insert Size | Dia. | Mounting Screw Size | Number of Teeth

N·m Recommended Tightening Torque (N·m)

High Efficiency Shoulder Milling of Deep Steps

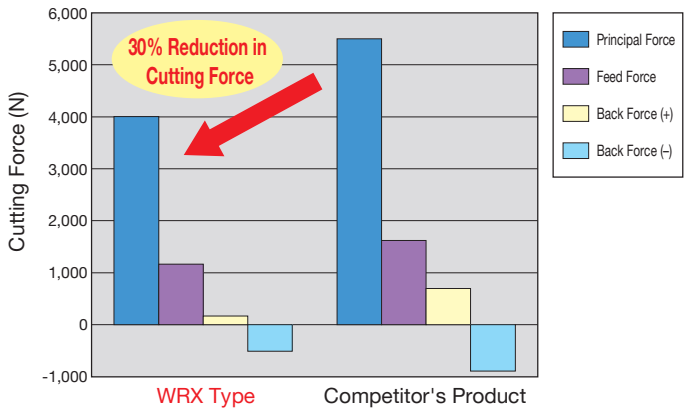
■ General Features

The WRX is an endmill that features cutting edges arranged in a repeater configuration. Its long cutting edges are arranged in multiple stages to enable high efficiency shoulder milling of deep steps.

■ Features

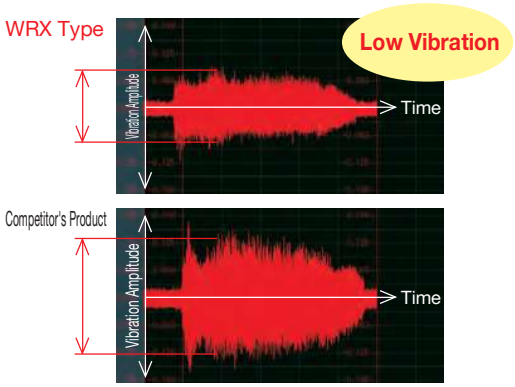
- Cutting edge positions are optimised to provide low resistance and low vibration

■ Comparison of Cutting Force



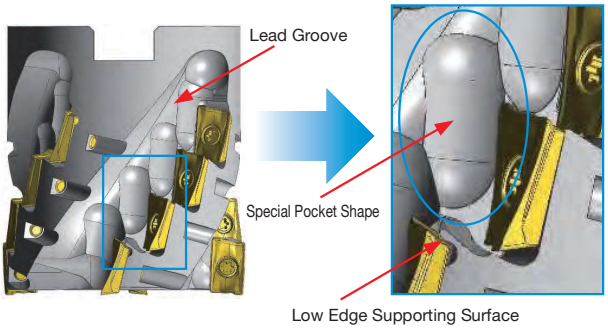
Cutting Conditions
Work Material: 1050
Tool: WRX2025E2725
Cutting Speed: v_c=330 SFM, f_z=0.006 IPT, a_e=0.4in, a_p=1.0in, Dry

■ Comparison of Vibration



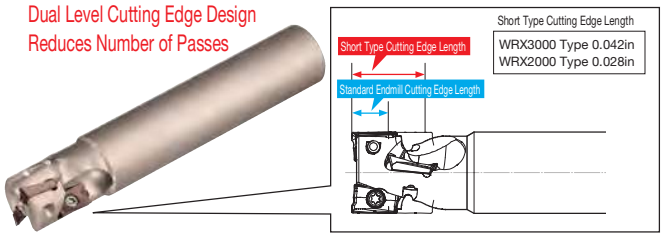
Cutting Conditions
Work Material: 1050
Tool: WRX3080RS5332
Cutting Speed: v_c=492 SFM, f_z=0.008 IPT, a_e=0.2in, a_p=1.6in, Dry

- 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



Short Cutting Head Series

Dual Level Cutting Edge Design
Reduces Number of Passes



■ Product Range - Inch

Type	Series Code	Cutting Edge Length (in.)	Dia. (in.)	Shape	Applicable Insert (*)
Shank Type	WRX2000E	1.5 - 2.126	ø1.0 to ø1.5	Weldon	AXMT1235
	WRX3000E	2.500	ø2.00		AXMT1705
Shell Type	WRX2300R	2.50 - 3.00	ø2.500 to ø3.00	Shellmill	

■ Product Range- Metric

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

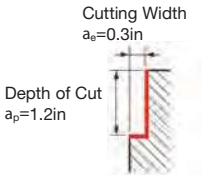
* Applicable inserts are common with the popular WEX type SEC-WaveMill

■ Recommended Cutting Conditions

WRX2000

Tool: WRX2040E3642, Insert: AXMT123504PEER

Cutting Conditions: Depth of Cut a_p=1.18in, Width of Cut a_e=0.315in, Dry



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

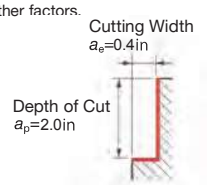
● The recommended cutting conditions may not be practical depending on the operating conditions (e.g. machine, workpiece shape, clamping system).

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

WRX3000

Tool: WRX3050E5342 Insert: AXMT170508PEER

Cutting Conditions: Depth of Cut ap=2.0in, Width of Cut ae=0.4in, Dry



Classification	Work Material	Hardness (HB)	Chipbreaker	Grades: ACP100			ACP200			ACP300			ACK200			ACK300			DL1000			ACM 200			ACM300		
				Feed Rate - IPT (mm/tooth)																							
				.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008	.004	.006	.008
				Cutting Speed - SFM (m/min)																							
P	Carbon steel	125	G	1049 (320)	984 (300)	918 (280)	984 (300)	918 (280)	853 (260)	918 (280)	853 (260)	787 (240)															
		190	G	787 (240)	721 (220)	656 (200)	721 (220)	656 (200)	590 (180)	656 (200)	590 (180)	524 (160)															
	Hardened carbon steel	250	G	656 (200)	590 (180)	524 (160)	590 (180)	524 (160)	459 (140)	524 (160)	459 (140)	393 (120)															
		270	G	524 (160)	459 (140)	393 (120)	492 (150)	426 (130)	360 (110)	426 (130)	360 (110)	328 (100)															
		300	G	393 (120)	328 (100)	262 (80)	328 (100)	262 (80)	196 (60)	262 (80)	196 (60)	164 (50)															
	Low alloy steel	180	G	721 (220)	656 (200)	590 (180)	656 (200)	590 (180)	557 (170)	590 (180)	557 (170)	492 (150)															
	Hardened alloy steel	275	G	459 (140)	393 (120)	328 (100)	426 (130)	360 (110)	328 (100)	360 (110)	328 (100)	262 (80)															
		300	G	426 (130)	360 (110)	295 (90)	360 (110)	295 (90)	262 (80)	328 (100)	262 (80)	196 (60)															
		350	G	341 (104)	262 (80)	209 (64)	288 (88)	236 (72)	183 (56)	236 (72)	183 (56)	131 (40)															
	High alloy steel	200	G	656 (200)	590 (180)	524 (160)	590 (180)	524 (160)	459 (140)	524 (160)	459 (140)	393 (120)															
	Hardened high alloy steel	325	G	328 (100)	262 (80)	196 (60)	262 (80)	196 (60)	164 (50)	196 (60)	164 (50)	98 (30)															
M	Stainless Steel 300 Series	200	G	582 SFM	517 SFM	451 SFM	484 SFM	451 SFM	385 SFM	451 SFM	385 SFM	353 SFM													625 SFM	575 SFM	525 SFM
		240	G	484 SFM	418 SFM	353 SFM	418 SFM	353 SFM	320 SFM	353 SFM	320 SFM	254 SFM													580 SFM	525 SFM	480 SFM
		180	G	615 SFM	549 SFM	484 SFM	549 SFM	484 SFM	451 SFM	484 SFM	451 SFM	385 SFM													650 SFM	600 SFM	550 SFM
	Stainless Steel Precipitation Hardening	>240																				300 ~ 800 SFM	275 ~ 775 SFM	250 ~ 750 SFM			
K	Cast iron	200	G										787 (240)	721 (220)	656 (200)	721 (220)	656 (200)	590 (180)									
	Nodular cast iron	280	G										524 (160)	459 (140)	393 (120)	459 (140)	393 (120)	328 (100)									
S	Super alloys		G										164 (50)	98 (30)		164 (50)	98 (30)										
N	Aluminum alloys																		3280 (1000)	2624 (800)	1968 (600)						

Wave Repeater

WRX Shell Mill (Metric)

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

Rake Angle		
	Radial	16° to 17°
	Axial	24°

18 to 36 mm 90°

.709" to 1.417" 90°

Fig 1

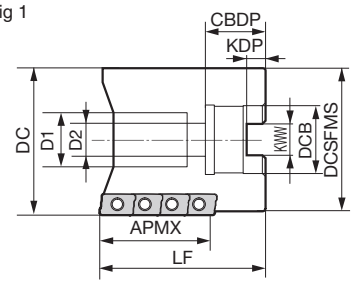
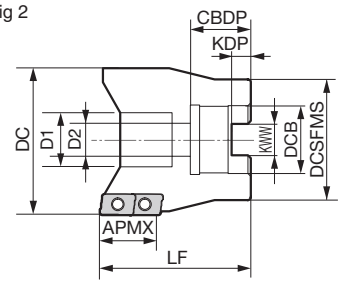


Fig 2



Body (Standard)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Metric	**WRX2040RS3616**	★	*40*	*36*	*37.5*	*55*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	16	4	4	0.3	1
	WRX2050RS3622	★	*50*	*36*	*47.5*	*55*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	16	4	4	0.5	1

Body (Short Cutting Edge)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Metric	**WRX2040RS1816**	★	*40*	*18*	*32*	*50*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	10	2	5	0.3	2
	WRX2050RS1822	★	*50*	*18*	*40*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	10	2	5	0.4	2

Inserts are sold separately.

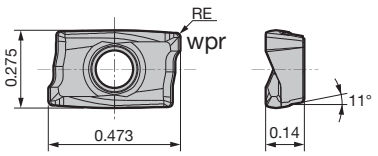
Insert

Dimensions (inch / *mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT123504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-G	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-H	●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-H	●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-E						●	●	-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-E						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-E						●	●	-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123508PEER-EH						●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXET123502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.2*	-	1
AXET123504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET123508PEFR-S	-	-	-	-	-	-	-	●	●	.032" / *0.8*	-	1

Fig 1



Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

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

Identification Code

WRX 2 040 R S 36 16

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

N·m Recommended Tightening Torque (N·m)

WRX Shell Mill (Inch & Metric)

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

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

27 to 53 mm 90° | 2.50-3.00" 90°

Fig 1

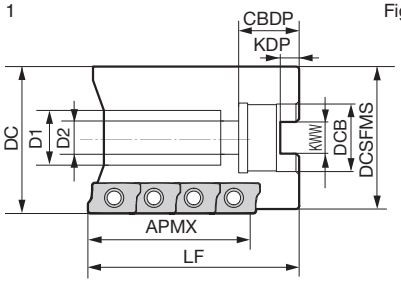


Fig 2

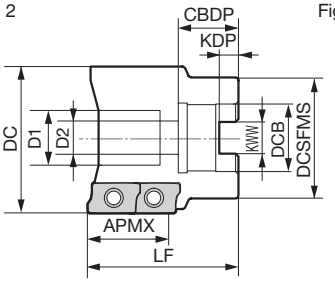
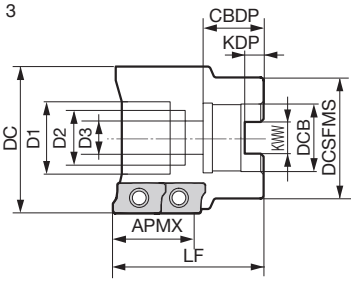


Fig 3



Body (Standard)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Inch	WRX32500R100-250	●	2.500	2.500	2.378	2.750	1.000	0.375	0.236	1.023	0.797	0.531	-	20	5	4	3.42	1
Inch	WRX33000R125-300	●	3.000	3.000	2.878	3.375	1.250	0.500	0.315	1.260	1.000	0.655	-	30	6	5	6.24	1
Metric	WRX3050RS5322	★	*50*	*53*	*47*	*70*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	12	4	3	0.6	1
Metric	WRX3063RS5327	★	*63*	*53*	*60*	*70*	*27*	*12.4*	*7*	*23*	*20*	*13.5*	-	16	4	4	1.0	1
Metric	WRX3080RS5332	★	**80*	*53*	*77*	*85*	*32*	*14.4*	*8*	*26*	*25*	*17*	-	20	4	5	2.2	1
Metric	WRX3100RS5340	★	*100*	*53*	*97*	*85*	*40*	*16.4*	*9.5*	*30*	*32*	*21*	-	24	4	6	3.5	1

Body (Short Cutting Edge)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Inch	WRX3080R27254	★	**80*	*27*	*60*	*50*	*25.4*	*9.5*	*6*	*25*	*35*	*26*	*13*	12	2	6	1.1	3
Inch	WRX3100R27317	★	**100*	*27*	*70*	*63*	*31.8*	*12.7*	*8*	*32.5*	*46*	*28*	*17*	14	2	7	2.0	3
Metric	WRX3050RS2722	★	*50*	*27*	*40*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	8	2	4	0.4	2
Metric	WRX3063RS2722	★	*63*	*27*	*50*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	10	2	5	0.7	2

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

● USA stocked item ★ Worldwide Warehouse item

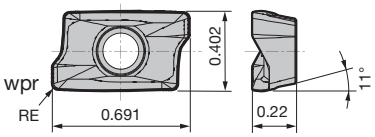
Insert

Dimensions (inch / *mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L	●	●	●	●	●			-	-	.031"/ *0.8*	.087"	1
AXMT170504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.102"	1
AXMT170508PEER-G	●	●	●	●	●			-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.067"	1
AXMT170516PEER-G	●	●	●	●	●			-	-	.063" / *1.6*	.059"	1
AXMT170520PEER-G*	●	●	●	●	●			-	-	.079" / *2.0*	.047	1
AXMT170530PEER-G*	●	●	●	●	●			-	-	.118" / *3.0*	-	1
AXMT170508PEER-H	●	●	●	●	●			-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.067"	1
AXMT170504PEER-E						●	●	-	-	.016" / *0.4*	.102"	1
AXMT170508PEER-E						●	●	-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-E						●	●	-	-	.047" / *1.2*	.067"	1
AXMT170516PEER-E						●	●	-	-	.063" / *1.6*	.059"	1
AXMT170520PEER-E*						●	●	-	-	.079" / *2.0*	.047"	1
AXMT170530PEER-E*						●	●	-	-	.118" / *3.0*	-	1
AXMT170508PEER-EH						●	●	-	-	.031" / *0.8*	.087"	1
AXET170502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.3*	-	1
AXET170504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET170508PEFR-S	-	-	-	-	-	-	-	●	●	.031" / *0.8*	-	1

Fig 1



* marked inserts require modification of the cutter body.

Parts

Flat Screw		Wrench
	N·m	
BFTX0409IP	3.0	TRDR15IP

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

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

Modify this portion.

Reworking guidelines

For RE=2.0: C1 (AXMT170520PEER)

For RE=3.0: C1.5 (AXMT170530PEER)

Standard: C0.5.

N·m Recommended Tightening Torque (N·m)

Wave Repeater

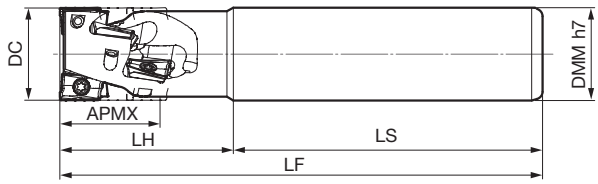
WRX ENDMILL (INCH & METRIC)

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

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

18 to 36mm 90° | 1.50-2.126" 90°

Fig 1



Body (Standard)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Inch	**WRX21000E100-150**	●	1.000	1.417	1.000	1.950	2.300	4.250	8	4	2	1.10	1
	WRX21250E125-175	●	1.250	1.750	1.250	2.200	2.300	4.500	15	5	3	1.48	1
	WRX21500E125-200	●	1.500	2.126	1.250	2.500	2.300	4.800	24	6	4	1.82	1
Metric	**WRX2020E3620**	★	*20*	*36*	*20*	*45*	*85*	*130*	4	4	1	0.3	1
	WRX2025E2725	★	*25*	*27*	*25*	*45*	*85*	*130*	6	3	2	0.4	1
	WRX2032E2732	★	*32*	*27*	*32*	*45*	*85*	*130*	9	3	3	0.7	1
	WRX2040E3642	★	*40*	*36*	*42*	*45*	*85*	*130*	16	4	4	1.2	1

Body (Short Cutting Edge)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
WRX2020E1820	★	*20*	*18*	*20*	*40*	*80*	*120*	4	2	2	0.3	1
WRX2025E1825	★	*25*	*18*	*25*	*45*	*85*	*130*	6	2	3	0.4	1
WRX2032E1832	★	*32*	*18*	*32*	*50*	*90*	*140*	8	2	4	0.8	1
WRX2040E1832	★	*40*	*18*	*32*	*40*	*120*	*160*	10	2	5	1.1	1

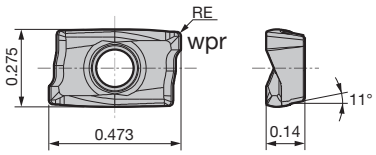
● USA stocked item ★ Worldwide Warehouse item

Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide							Carbide	DLC			
Process	High-speed / Light	P			K		M S		K N	N			
	General-purpose		P M	P M	K		M S	M S		N			
	Roughing		P M	P M		K		M S					
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT123504PEER-G		●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-G		●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-G		●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-H		●	●	●	●	●			-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-H		●	●	●	●	●			-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-H		●	●	●	●	●			-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123504PEER-E							●	●	-	-	.016" / *0.4*	.047" / *1.2*	1
AXMT123508PEER-E							●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXMT123512PEER-E							●	●	-	-	.047" / *1.2*	.016" / *.4*	1
AXMT123508PEER-EH							●	●	-	-	.032" / *0.8*	.031" / *.8*	1
AXET123502PEFR-S		-	-	-	-	-	-	-	●	●	.008" / *0.2*	-	1
AXET123504PEFR-S		-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET123508PEFR-S		-	-	-	-	-	-	-	●	●	.032" / *0.8*	-	1

Fig 1



Parts

Wrench	Flat Screw	
		N·m
TRDR08IP	BFTX0306IP	2.0

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

Identification Code

WRX 2 020 E 36 20

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

N·m Recommended Tightening Torque (N·m)

WRX Endmill (Inch & Metric)

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

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

27 to 53 mm 90° | 2.50" 90°

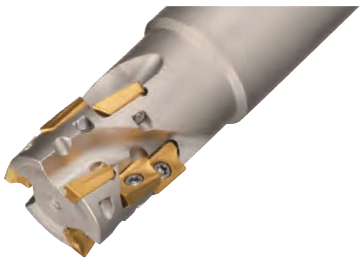
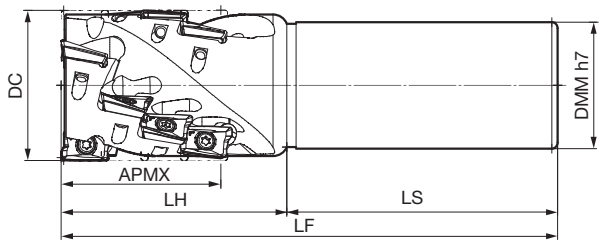


Fig 1



Body (Standard)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
Inch	**WRX32000E125-250**	●	2.000	2.500	1.250	2.700	2.300	5.000	15	5	3	2.56	1
Metric	**WRX3040E4042**	★	*40*	*40*	*42*	*65*	*85*	*150*	*9*	3	3	*1.3*	1
	WRX3050E5342	★	*50*	*53*	*42*	*75*	*90*	*165*	*12*	4	3	*1.8*	1

Body (Short Cutting Edge)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank DMM	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Steps	Effective Number of Teeth	Weight (kg)	Fig
WRX3040E2732	★	**40**	27	32	60	120	180	6	2	3	*1.2*	1
WRX3050E2732	★	**50**	27	32	60	120	180	8	2	4	*1.4*	1

Inserts are sold separately.

● USA stocked item ★ Worldwide Warehouse item

Insert

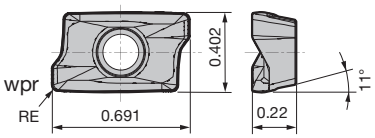
Dimensions (inch / *mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	Nose Radius RE	Wiper Facet Length wpr	Fig
AXMT170508PEER-L	●	●	●	●	●			-	-	.031"/ *0.8*	.087"	1
AXMT170504PEER-G	●	●	●	●	●			-	-	.016" / *0.4*	.102"	1
AXMT170508PEER-G	●	●	●	●	●			-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-G	●	●	●	●	●			-	-	.047" / *1.2*	.067"	1
AXMT170516PEER-G	●	●	●	●	●			-	-	.063" / *1.6*	.059"	1
AXMT170520PEER-G*	●	●	●	●	●			-	-	.079" / *2.0*	.047	1
AXMT170530PEER-G*	●	●	●	●	●			-	-	.118" / *3.0*	-	1
AXMT170508PEER-H	●	●	●	●	●			-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-H	●	●	●	●	●			-	-	.047" / *1.2*	.067"	1
AXMT170504PEER-E						●	●	-	-	.016" / *0.4*	.102"	1
AXMT170508PEER-E						●	●	-	-	.031" / *0.8*	.087"	1
AXMT170512PEER-E						●	●	-	-	.047" / *1.2*	.067"	1
AXMT170516PEER-E						●	●	-	-	.063" / *1.6*	.059"	1
AXMT170520PEER-E*						●	●	-	-	.079" / *2.0*	.047"	1
AXMT170530PEER-E*						●	●	-	-	.118" / *3.0*	-	1
AXMT170508PEER-EH						●	●	-	-	.031" / *0.8*	.087"	1
AXET170502PEFR-S	-	-	-	-	-	-	-	●	●	.008" / *0.3*	-	1
AXET170504PEFR-S	-	-	-	-	-	-	-	●	●	.016" / *0.4*	-	1
AXET170508PEFR-S	-	-	-	-	-	-	-	●	●	.031" / *0.8*	-	1

* marked inserts require modification of the cutter body.

Fig 1



Parts

Flat Screw		Wrench
	N·m	
BFTX0409IP	3.0	TRDR15IP

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

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

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

Identification Code

WRX 3 040 E 40 42

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

N·m Recommended Tightening Torque (N·m)

■ Features

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

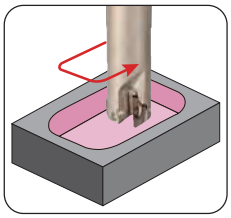
■ Product Range

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

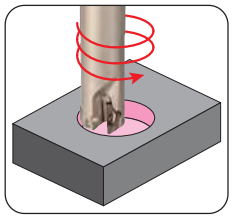
Number in ●● shows the number of teeth

■ Applicable to various applications!

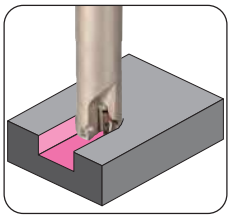
Pocket Expansion



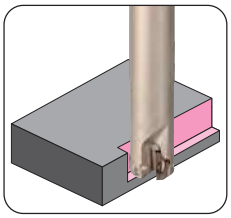
Helical Milling



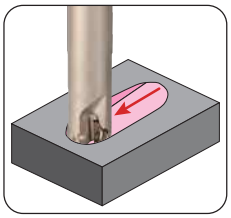
Slot Milling



Shoulder Milling

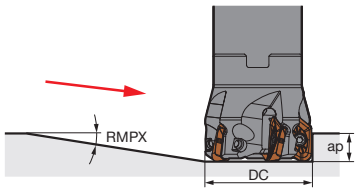


Ramping

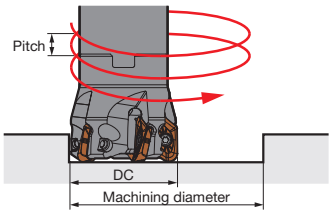


■ Ramping/Helical Milling Upper Limit

Ramping



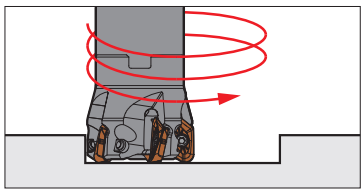
Helical Milling



Dia. DC ø (in)	Corner Radius RE	Max. Ramping Angle RMPX(°)
1.26	RE ≥ 5.0	8.4
	RE ≤ 4.0	12.2
1.97	RE ≥ 5.0	3.6
	RE ≤ 4.0	5.6
2.48	RE ≥ 5.0	2.5
	RE ≤ 4.0	3.9

Dia. DC ø (in)	Corner Radius RE	Max. Machining Dia. ø (in)	Max. Pitch (in/rev)	Standard Diameter ø (in)	Max. Pitch (in/rev)	Min. Machining Dia. ø (in)	Max. Pitch (in/rev)
1.26	4.0	2.18	0.51	2.17	0.51	1.81	0.12
	0.8	2.41	0.51	2.22	0.51	1.81	0.11
1.97	4.0	3.61	0.44	3.61	0.44	3.22	0.11
	0.8	3.83	0.51	3.63	0.43	3.22	0.11
2.48	4.0	4.63	0.40	4.63	0.40	4.25	0.11
	0.8	4.85	0.46	4.65	0.39	4.25	0.10

Precautions for Helical Milling



Helical Milling

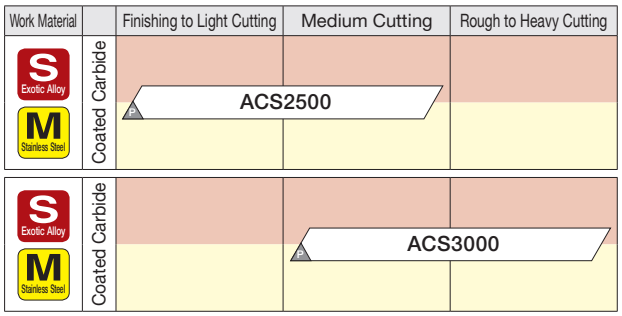
- For helical milling, if the work diameter is smaller than the standard diameter, there will be a center uncut portion.
- A prepared center hole should be made.
- Above the standard diameter, this portion can be removed by traverse cutting with the same cutter.

■ Grade Features

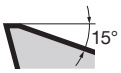
Work Material	Grade	Coating Thickness (μm)	Features
S Exotic Alloy / M Stainless Steel	ACS2500	3	Carbide substrate with excellent wear and adhesion resistance, coupled with a chipping resistant coating, provide outstanding performance especially in machining titanium alloys
S Exotic Alloy / M Stainless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

■ Grade Application Range

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

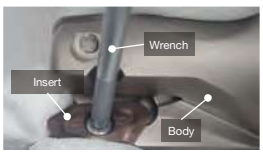


■ Chipbreaker Shape

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

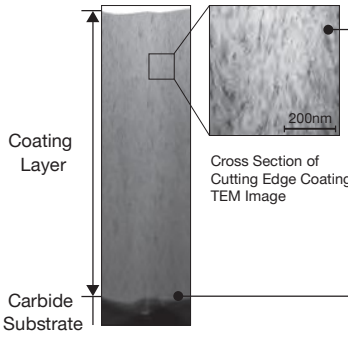
Precautions for Mounting Inserts

(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.



New PVD Coating Layer Features

ABSOTECH PVD

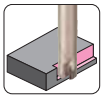
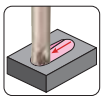
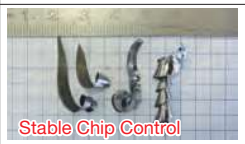
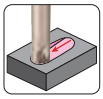


Cross Section of Cutting Edge Coating TEM Image

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

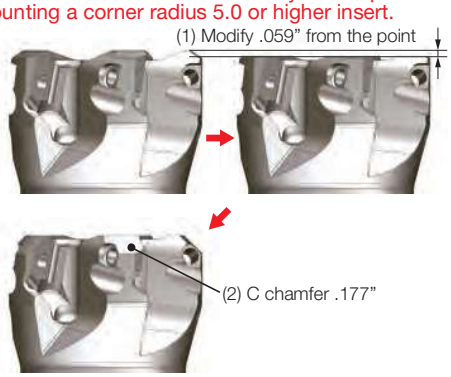
High Adhesion Strength
Significantly improved coating adhesion and more than 2x conventional chipping resistance

■ Excellent Chip Control

Cutting Conditions	Chip	
vc = 196 SFM fz = 0.005 IPT ap = 0.39in ae = 0.83in Wet (7MPa) Ramping Angle: 0° 	WSE	Competitor's Product
vc = 164 SFM fz = 0.005 IPT ap = 0.16in ae = 1.97in Wet (7MPa) Ramping Angle: 3° 	 WSE	Competitor's Product
vc = 164 SFM fz = 0.005 IPT ap = 0.16in ae = 1.97in Wet (7MPa) Ramping Angle: 5.5° 	WSE	× Machining Not Possible Competitor's Product

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

*Modification of the cutter body is required when mounting a corner radius 5.0 or higher insert.



■ Recommended Cutting Conditions

ISO	Material		Hardness	Chipbreaker	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	E	25 - 50	0.05 - 0.15	ACS2500/ACS3000
		Ti Alloy	—	E	30 - 90	0.05 - 0.15	ACS2500/ACS3000
M	Stainless Steel	430 Stainless and Others (Martensitic/Ferritic)	200	E	115 - 175	0.05 - 0.15	ACS2500/ACS3000
		403 Stainless and Others (Martensitic/Hardened)	240	E	105 - 155	0.05 - 0.15	ACS2500/ACS3000
		304 Stainless, 316 Stainless (Austenitic)	180	E	125 - 190	0.05 - 0.15	ACS2500/ACS3000

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

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

WaveMill
WSE Series

M Stainless Steel S Exotic Alloy

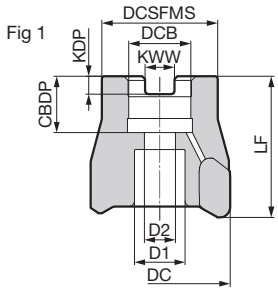
New

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

15mm 90°

Shoulder Milling, Slot Milling, Ramping, Helical Milling

Fig 1



Body (Shellmill)

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	WSE16050RS05	★	50	41	40(38.5)	22	10.4	6.3	20	18	11	5	0.24	1
	WSE16050RS05L	★	50	41	50(48.5)	22	10.4	6.3	20	18	11	5	0.33	1
	WSE16063RS06	★	63	50	40(38.5)	22	10.4	6.3	20	18	11	6	0.46	1
	WSE16063RS06L	★	63	50	50(48.5)	22	10.4	6.3	20	18	11	6	0.61	1

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

Identification Code

WSE 16 050 R S 05 L

Series Code | Insert Size | Dia. | Feed Direction | Metric Bore | Number of Teeth | Long Body

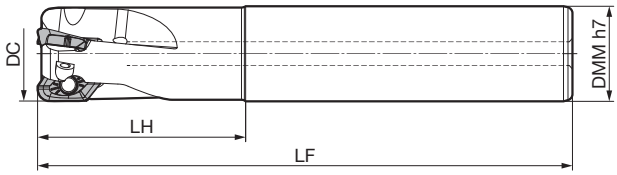
Rake Angle	Radial	-9°
	Axial	8°

15mm 90°

Parts

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

Fig 1



Body (Endmill)

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WSE16032E03	★	32	32	60 (58.4)	170 (168.4)	3	0.90	1

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

■ Identification Code

WSE 16 032 E 03

Series | Insert Size | Dia. (*mm*) | Shank | Number of Teeth

■ Parts

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

■ Insert

Dimensions (*mm*)

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

Cat. No.	ACS2500	ACS3000	Corner Radius RE	Fig
XOMT160508PEER-E	★	★	0.8	1
XOMT160512PEER-E	★	★	1.2	1
XOMT160516PEER-E	★	★	1.6	1
XOMT160520PEER-E	★	★	2.0	1
XOMT160530PEER-E	★	★	3.0	1
XOMT160540PEER-E	★	★	4.0	1
XOMT160550PEER-E	★	★	5.0	2
XOMT160560PEER-E	★	★	6.0	2
XOMT160564PEER-E	★	★	6.35	2

Fig1

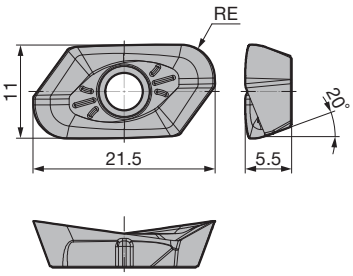
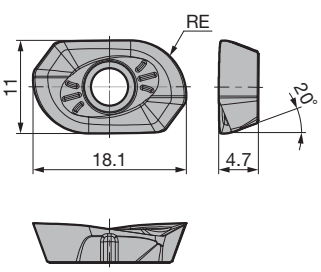


Fig2



N·m Recommended Tightening Torque (N·m)

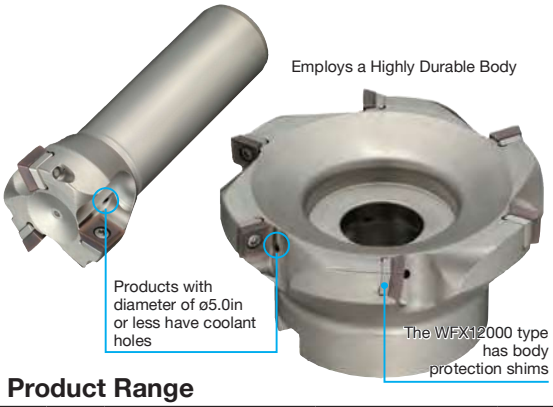
■ General Features

WaveMill WFX for shoulder milling is a screw-locking type cutter capable of using four corners.
Ideal cut edge design delivers good squareness.
Now with high-efficiency, multi-functional WFXH and chamfering WFXC.
Our wide range covers a wide variety of applications.
Now available in ACU2500.

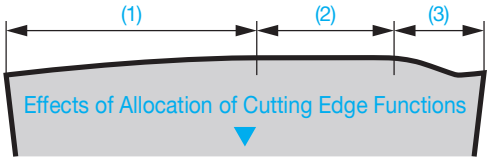
WFXH WFXC

■ Features

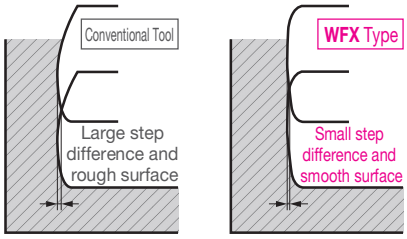
The insert shape optimized for shoulder milling and the high-precision body leave a superior machined surface finish.



• Optimized Edge Shape (For Shoulder Milling)



(1): The convex shape **ensures cutting edge strength**
(2): The flat shape **reduces step differences** in shoulder milling



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

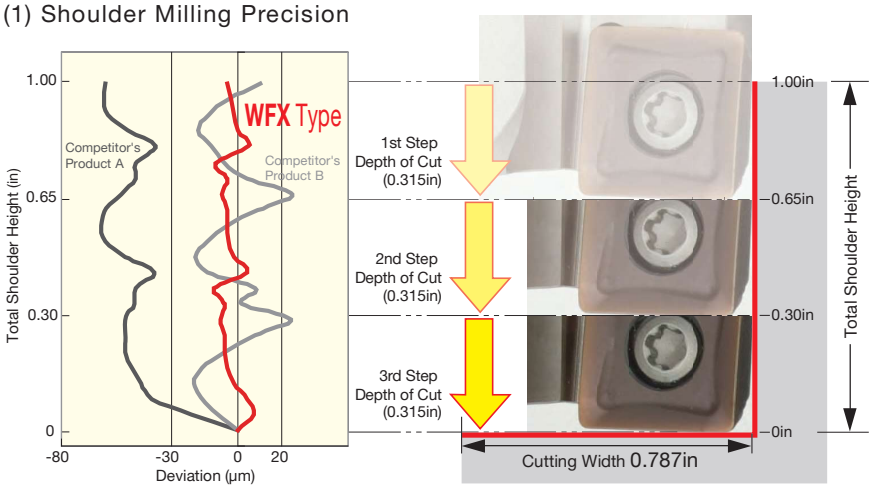
■ Product Range

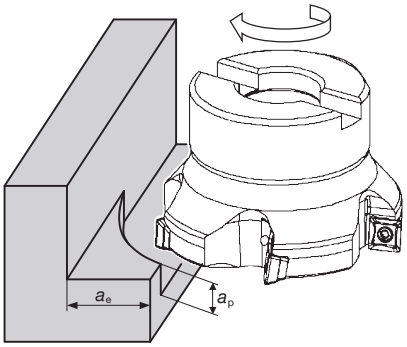
Applications	Type	Cat. No.	Description	Blade Diameters in Stock (inch) ø2.000 ø2.500 ø3.000 ø4.000 ø5.000 6.000 ø8.000	Shape
Shoulder Milling	Shell	WFX40000R	Standard	2.000 – 8.00	
		WFXF40000R	Fine Pitch	2.000 – 8.00	
		WFXX40000R	Extra Fine Pitch	2.000 – 5.00	

Applications	Type	Cat. No.	Description	Blade Diameters in Stock (mm) ø10 ø25 ø40 ø60 ø63 ø80 ø100 1254.92 ø250	Shape
Shoulder Milling	Shell	WFX08000RS	Standard	40 – 100	
		WFXM08000RS	Fine Pitch	40 – 100	
		WFXF08000RS	Extra Fine Pitch	40 – 100	
		WFX08000R	Standard	80 – 100	
		WFXM08000R	Fine Pitch	80 – 100	
		WFXF08000R	Extra Fine Pitch	80 – 100	
		WFX12000RS	Standard	50 – 100	
		WFXF12000RS	Extra Fine Pitch	50 – 100	
		WFX12000R	Standard	80 – 9.84	
		WFXF12000R	Extra Fine Pitch	80 – 9.84	
	Endmill	WFX08000E	Standard	20 – 63	
		WFXM08000E	Fine Pitch	25 – 63	
		WFX12000E	Standard	40 – 80	
		WFXF12000E	Extra Fine Pitch	50 – 80	
	Modular	WFX08000M	Modular	20 – 40	
High Efficiency	Shell	WFXH08000RS	Standard	40 – 63	
		WFXH12000RS	Standard	60 – 63	
	Modular	WFXH08000M	Modular	25 – 32	
		WFXH12000M	Modular	40	
Chamfering	Endmill	WFXC08000E	Standard	8 – 16	
		WFXC12000E	Standard	25 – 30	
	Modular	WFXC08000M	Modular	16	
		WFXC12000M	Modular	25 – 32	

■ Cutting Performance

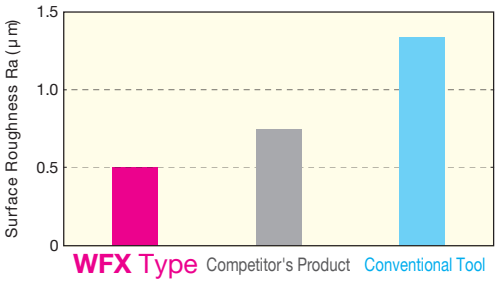
(1) Shoulder Milling Precision





Part Material: **1050 Steel** Tool: **WFX12100R** (ø100 x 5 flutes)
Cutting Conditions: v_c = **656** SFM, f_z = **0.006 IPT**,
a_p = **0.315"** x **3** times, a_e = **0.8"**

(2) Comparison of Surface Roughness



Part Material: **4140 Steel** Tool: **WFX12100R** (ø100 x 5 flutes)
Cutting Conditions: v_c = **656 SFM**, f_z = **0.004 IPT**,
a_p = **0.12in**, a_e = **3.54in**

(3) Comparison of Surface Properties

Part Material: **1050 Steel**
Cutting Conditions: a_p = **0.02"**

Glossy without Clouding

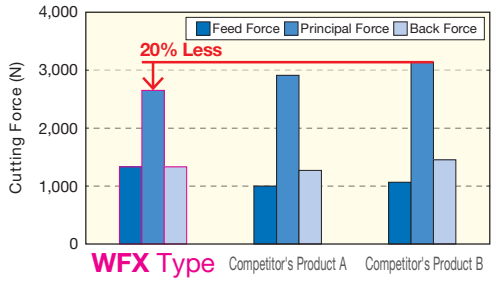
Clouded without Gloss

Part material: **304 Stainless**
Cutting Conditions: a_p = **0.02"**

WFX

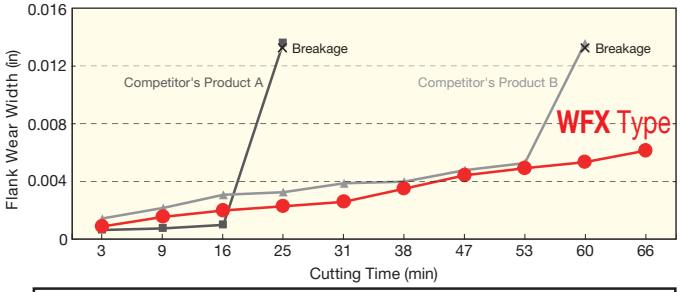
Competitor's Product

(4) Comparison of Cutting Force



Part Material: **1050 Steel** Tool: **WFX12100R** (ø100 x 5 flutes)
Cutting Conditions: v_c = **656 SFM** f_z = **0.006** IPT,
a_p = **0.4**in, a_e = **0.8in**

(5) Comparison of Wear Resistance



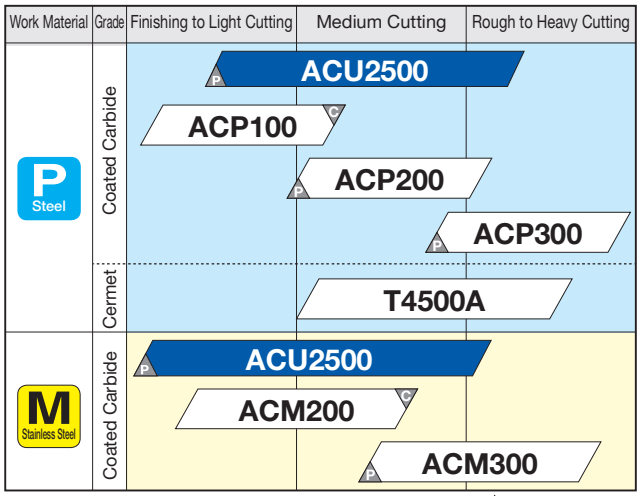
Part Material: **4140 Steel** Tool: **WFX12100R** (ø100 x 1 flute evaluation)
Cutting Conditions: v_c = **656 SFM**, f_z = **0.006 IPT**,
a_p = **0.2**in, a_e = **1.18in**

■ Application Examples

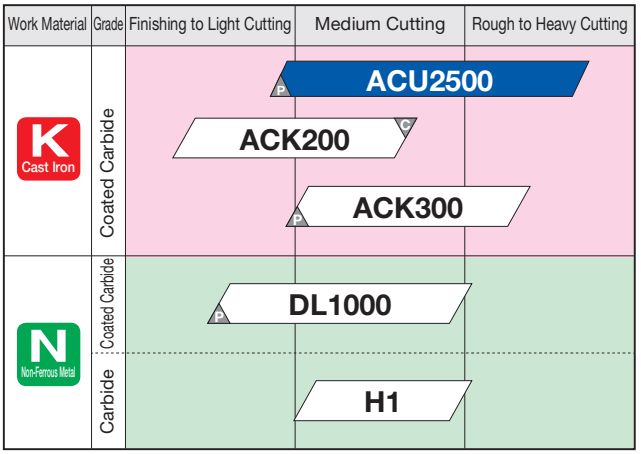
Workpiece (1050 Steel)		Sumitomo	Conventional Tool
	Tool	**WFXF08063RS**	
	Grade	**ACP200**	
	Tool Dia. (mm)	ø63	ø63
	Number of Teeth	8	5
	v_c (SFM)	720	720
	v_f (IPT)	43	43
	f_z (IPM)	0.006	0.008
	a_p (in)	0.12	0.16
	a_e (in)	1.97	1.97
	Coolant	Wet	Wet
	Results	· Vibration reduced by approximately 30% · Good machined surface · Tool life doubled	

Workpiece (Cast Iron - FCD450)		Sumitomo	Conventional Tool
	Tool	**WFXF12100R**	
	Grade	**ACK300**	
	Tool Dia. (mm)	ø100	ø100
	Number of Teeth	7	6
	v_c (SFM)	656	656
	v_f (IPM)	17.5	17.5
	f_z (IPT)	0.004	0.004
	a_p (in)	0.002	0.002
	a_e (in)	-	-
	Coolant	Dry	Dry
	Results	· Good surface roughness Ra 0.98 → 0.38μm, Rz 7.63 → 3.34μm · Cutting time shortened Insert life is extended by approximately 20%	

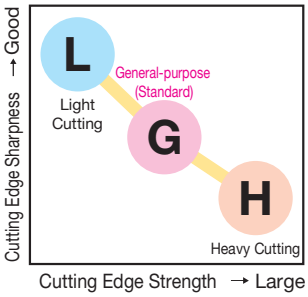
■ Grade Application Range



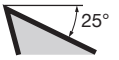
The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD, P: PVD, Blank: Uncoated



■ Chipbreaker Selection

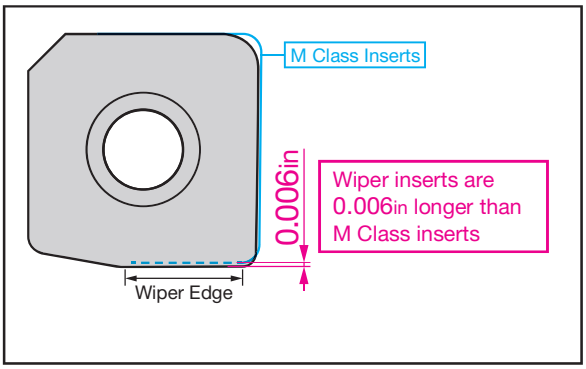


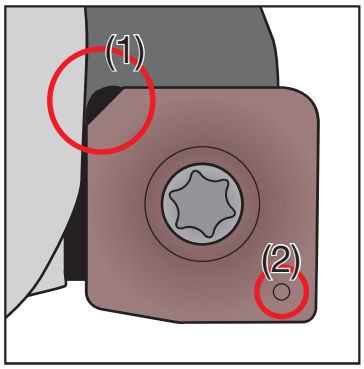
P M K S N

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

■ Wiper Insert

Optimized wiper edge shape provides superior surface roughness.





Precautions when Using Wiper Inserts

- The wiper insert has a single corner specification.
- Place 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 N55 for details about wiper inserts.

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c (SFM/m/min) Min. - Max	Feed Rate f_z (IPT/mm/t) Min. - Max	D.O.C. (In/mm)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	0.10 - 0.20	< 10.0	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	0.10 - 0.20	< 10.0	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	0.10 - 0.20	< 6.0	
M	Stainless Steel	175 - 675	0.004 - 0.008	< 0.394	ACM200
		55 - 300	0.10 - 0.20	< 10.0	
		525 - 820	0.004 - 0.008	< 0.394	ACU2500 ACM300
		160 - 250	0.10 - 0.20	< 10.0	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	0.10 - 0.20	< 10.0	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	0.10 - 0.20	< 10.0	

WFX Shellmill Metric - *8mm* Inserts

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

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90° | .236" 90°

Fig 1

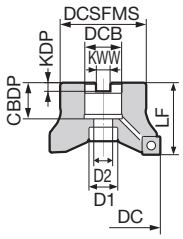


Fig 2

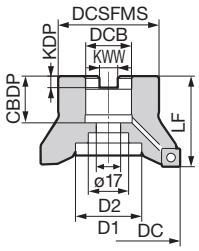
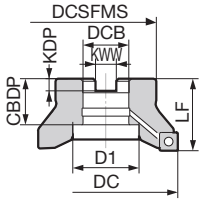


Fig 3



Body (Standard)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFX08040RS**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	3	*0.2*	1
	WFX08050RS	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
	WFX08063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.6*	1
	WFX08080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*14*	6	*1.0*	1
	WFX08100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	8	*1.4*	3
	WFX08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	6	*1.0*	1
	WFX08100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	8	*1.9*	2

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

Insert

Dimensions (*mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet			
Process	High-speed / Light		P			K		M S		K N	N				
	General-purpose	K N M S		P M	P M	K		M S	M S		N	P			
	Roughing	K N M S		P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-L			★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080304PZER-G		★	★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-G		★	★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-G		★	★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOMT080308PZER-H		★	★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-H		★	★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOET080304PZER-G		★	★	★	★	★	★	★	★	-	-	★	*0.4*	-	1
SOET080308PZER-G		★	★	★	★	★	★	★	★	-	-	★	*0.8*	-	1
SOET080312PZER-G		★	★	★	★	★	★	★	★	-	-	★	*1.2*	-	1
SOET080302PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.2*	-	1
SOET080304PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.4*	-	1
SOET080308PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.8*	-	1
XOEW080308PZTR-W		-	-	-	-		★			-	-	★	-	*3.3*	2

Fig 1

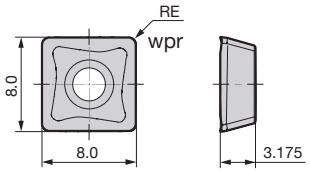
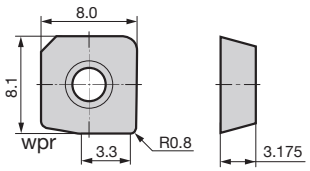


Fig 2 Wiper Insert



Refer to H103 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

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

Identification Code

WFX 08 040 R S

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

N·m Recommended Tightening Torque (N·m)

■ Cutting Conditions

ISO	Part Material	Cutting Speed vc ((SFM / m/min) Min. - Max	Feed Rate fz (IPT/ mm/t) Min. - Max	D.O.C. (Inch / *mm*)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	*0.10 - 0.20*	*< 10.0*	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	*0.10 - 0.20*	*< 10.0*	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	*0.10 - 0.20*	*< 6.0*	
M	Stainless Steel	175 - 675	.004 - .008	< 0.394	ACM200
		55 - 300	*0.10 - 0.20*	*< 10.0*	
		525 - 820	.004 - .008	< 0.394	ACU2500 ACM300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	*0.10-0.15-0.20*	*< 10.0*	

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

WFXM Shellmill Metric - *8mm* Inserts

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

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90° | .236" 90°

Fig 1

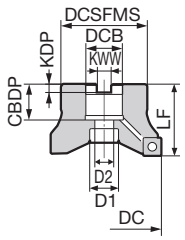


Fig 2

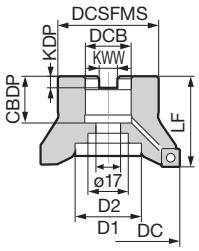
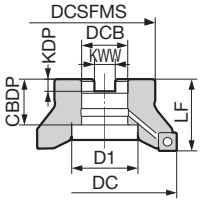


Fig 3



Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXM08040RS**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	4	*0.2*	1
	WFXM08050RS	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.3*	1
	WFXM08063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.5*	1
	WFXM08080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*14*	8	*1.0*	1
	WFXM08100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	10	*1.4*	3
	WFXM08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	8	*1.0*	1
	WFXM08100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	10	*1.9*	2

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

Insert

Dimensions (*mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet			
Process	High-speed/Light		P			K		M S		K N	N				
	General-purpose	K N M S		P M	P M	K		M S	M S		N	P			
	Roughing	K N M S		P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-L			★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080304PZER-G		★	★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-G		★	★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-G		★	★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOMT080308PZER-H		★	★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-H		★	★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOET080304PZER-G		★	★	★	★	★	★	★	★	-	-	★	*0.4*	-	1
SOET080308PZER-G		★	★	★	★	★	★	★	★	-	-	★	*0.8*	-	1
SOET080312PZER-G		★	★	★	★	★	★	★	★	-	-	★	*1.2*	-	1
SOET080302PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.2*	-	1
SOET080304PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.4*	-	1
SOET080308PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.8*	-	1
XOEW080308PZTR-W		-	-	-	-		★			-	-	★	-	*3.3*	2

Fig 1

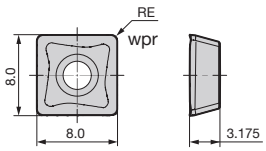
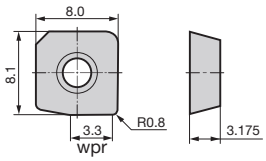


Fig 2 Wiper Insert



Refer to H103 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

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

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

Identification Code

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

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c ((SFM / m/min) Min. - Max	Feed Rate f_z (IPT/ mm/t) Min. - Max	D.O.C. (Inch / *mm*)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	*0.10 - 0.20*	*< 10.0*	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	*0.10 - 0.20*	*< 10.0*	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	*0.10 - 0.20*	*< 6.0*	
M	Stainless Steel	175 - 675	.004 - .008	< 0.394	ACM200
		55 - 300	*0.10 - 0.20*	*< 10.0*	
		525 - 820	.004 - .008	< 0.394	ACU2500 ACM300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	*0.10-0.15-0.20*	*< 10.0*	

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

N·m Recommended Tightening Torque (N·m)

WFXF Shellmill Metric - *8mm* Inserts

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

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90° | .236" 90°

Fig 1

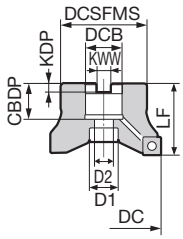


Fig 2

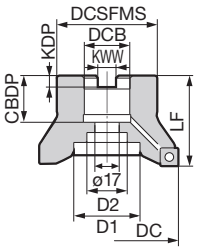
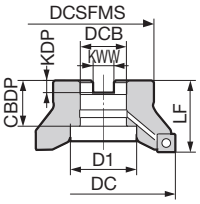


Fig 3



Body (Extra Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXF08040RS**	★	*40*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	6	*0.2*	1
	WFXF08050RS	★	*50*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	7	*0.3*	1
	WFXF08063RS	★	*63*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	8	*0.5*	1
	WFXF08080RS	★	**80*	*55*	*50*	*27*	*12.4*	*7*	*25*	*20*	*14*	10	*0.9*	1
	WFXF08100RS	★	*100*	*70*	*50*	*32*	*14.4*	*8*	*32*	*46*	-	12	*1.4*	3
	WFXF08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6*	*25*	*20*	*14*	10	*1.0*	1
	WFXF08100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8*	*32*	*46*	*27*	12	*1.9*	2

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

Insert

Dimensions (*mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet			
Process	High-speed / Light		P			K		M S		K N	N				
	General-purpose	P M S		P M	P M	K		M S	M S		N	P			
	Roughing	P M S		P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-L			★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080304PZER-G		★	★	★	★	★	★	★	★	-	-		*0.4*	*1.3*	1
SOMT080308PZER-G		★	★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-G		★	★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOMT080308PZER-H		★	★	★	★	★	★	★	★	-	-		*0.8*	*0.9*	1
SOMT080312PZER-H		★	★	★	★	★	★	★	★	-	-		*1.2*	*0.5*	1
SOET080304PZER-G		★	★	★	★	★	★	★	★	-	-	★	*0.4*	-	1
SOET080308PZER-G		★	★	★	★	★	★	★	★	-	-	★	*0.8*	-	1
SOET080312PZER-G		★	★	★	★	★	★	★	★	-	-	★	*1.2*	-	1
SOET080302PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.2*	-	1
SOET080304PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.4*	-	1
SOET080308PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.8*	-	1
XOEW080308PZTR-W		-	-	-	-		★			-	-	★	-	*3.3*	2

Refer to H103 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

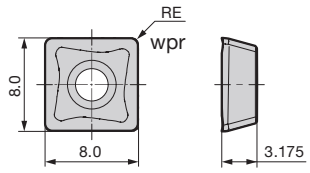
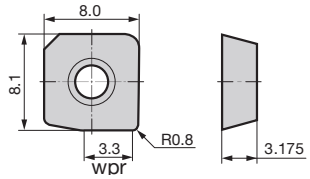


Fig 2 Wiper Insert



Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

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

N·m Recommended Tightening Torque (N·m)

Identification Code

WFX F 08 040 R S

Cutter Series	M: Fine Pitch F: Extra Fine Pitch	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

■ Cutting Conditions

ISO	Part Material	Cutting Speed vc ((SFM / m/min) Min. - Max	Feed Rate fz (IPT/ mm/t) Min. - Max	D.O.C. (Inch / *mm*)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	*0.10 - 0.20*	*< 10.0*	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	*0.10 - 0.20*	*< 10.0*	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	*0.10 - 0.20*	*< 6.0*	
M	Stainless Steel	175 - 675	.004 - .008	< 0.394	ACM200
		55 - 300	*0.10 - 0.20*	*< 10.0*	
		525 - 820	.004 - .008	< 0.394	ACU2500 ACM300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	*0.10-0.15-0.20*	*< 10.0*	

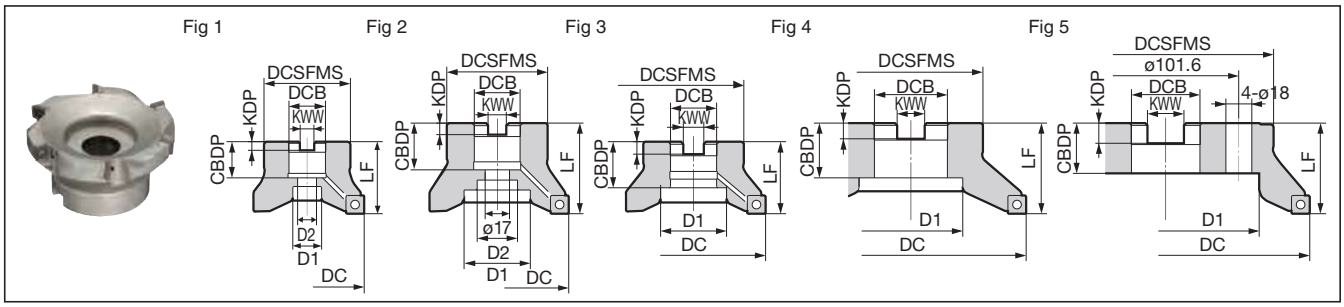
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WFX SHELLMILL INCH -12mm Inserts

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

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° | .394" 90°



Body (Standard)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	WFX42000R	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	3	.28	1
	WFX42500R	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	4	.41	1
	WFX43000R	●	3.000	2.250	1.750	1.000	.375	.220	.750	.797	.531	4	.74	1
	WFX44000R	●	4.000	2.870	2.000	1.250	.500	.280	.750	1.000	.656	5	1.50	1
	WFX44000R-1.50	●	4.000	3.750	2.500	1.500	.625	.380	1.000	2.000	1.181	5	2.24	3
	WFX45000R	●	5.000	3.750	2.500	1.500	.625	.380	1.000	2.000	.781	6	2.99	1
	WFX46000R	●	6.000	4.380	2.500	1.500	.625	.380	1.060	2.000	-	8	4.18	2

Inserts are sold separately. * Sizes ø6.000", ø8.000" & ø160 mm and above do not have coolant holes.

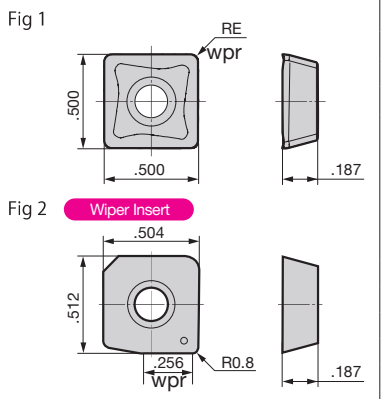
Insert

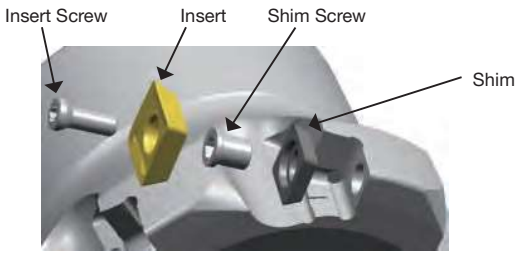
Dimensions (inch)

Grade		Coated Carbide								Carbide	DLC	Cermet
Process	High-speed / Light		P			K		M S		K N	N	
	General-purpose	P K S		P M	P M	K		M S	M S		N	P
	Roughing	P K S		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L	●	●	●	●	●	●	●	●	-	-	-	.031	.067	1
SOMT120404PDER-G	★	●	●	●	●	●	●	●	-	-	-	.016	.083	1
SOMT120408PDER-G	★	●	●	●	●	●	●	●	-	-	●	.031	.067	1
SOMT120412PDER-G	★	●	●	●	●	●	●	●	-	-	-	.047	.047	1
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	.063	.031	1
SOMT120408PDER-H	★	●	●	●	●	●	●	●	-	-	-	.031	.067	1
SOET120408PDFR-S	-	-	-	-	-	-	-	-	●	●	-	.031	-	1
XOEW120408PDTR-W	-	-	-	-	-	●			-	-	●	-	.256	2

Refer to H103 (Precautions when Using Wiper Inserts) (Mounting Precautions).





Identification Code

WFX 4 2000 R

Cutter Series | Insert Size | Cutter Dia. 2.000" | Feed Direction

Parts

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

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

N·m Recommended Tightening Torque (N·m)

■ Cutting Conditions

ISO	Part Material	Cutting Speed vc ((SFM / m/min) Min. - Max	Feed Rate fz (IPT/ mm/t) Min. - Max	D.O.C. (Inch / mm)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	*0.10 - 0.20*	*< 10.0*	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	*0.10 - 0.20*	*< 10.0*	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	*0.10 - 0.20*	*< 6.0*	
M	Stainless Steel	175 - 675	.004 - .008	< 0.394	ACM200
		55 - 300	*0.10 - 0.20*	*< 10.0*	
		525 - 820	.004 - .008	< 0.394	ACU2500 ACM300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	*0.10-0.15-0.20*	*< 10.0*	

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.

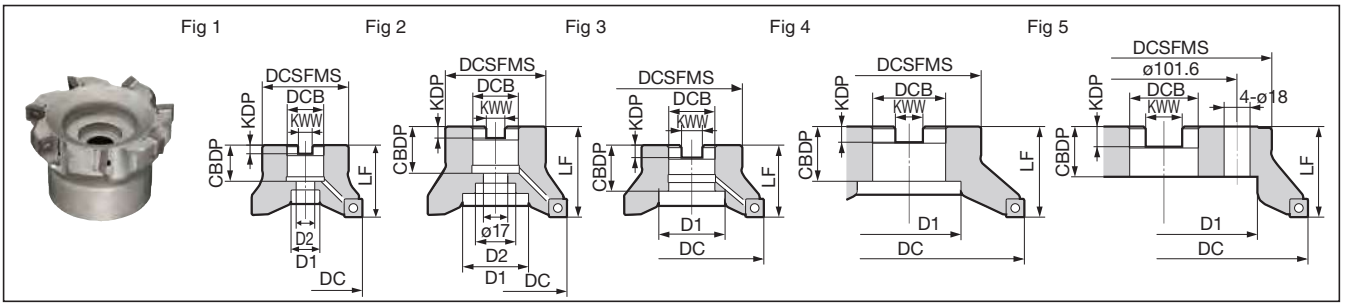
WaveMill

WFXF(X) SHELLMILL INCH - *12mm* Inserts

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

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° | .394" 90°



Body (Fine & Extra Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Fine Pitch - Inch	WFXF42000R	•	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	4	.28	1
	WFXF42500R	•	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	5	.42	1
	WFXF43000R	•	3.000	2.250	1.750	1.000	.375	.220	.750	.797	.531	6	.73	1
	WFXF44000R	•	4.000	2.870	2.000	1.250	.500	.280	.750	1.000	.656	7	1.46	1
	WFXF44000R-1.50	•	4.000	3.750	2.500	1.500	.625	.380	1.000	2.000	1.181	7	2.23	3
	WFXF45000R	•	5.000	3.750	2.500	1.500	.625	.380	1.000	2.000	.781	8	2.94	1
	WFXF46000R	•	6.000	4.380	2.500	1.500	.625	.380	1.060	2.000	-	12	4.11	2
	WFXF48000R	•	8.000	5.906	2.500	2.500	1.000	.560	1.594	5.118	-	16	6.41	3
Super Fine - Inch	WFXX42000R	•	2.000	1.500	1.750	.750	.312	.190	0.750	0.609	.406	5	0.29	1
	WFXX42500R	•	2.500	1.750	1.750	1.000	.375	.220	0.750	0.797	.531	6	0.44	1
	WFXX43000R	•	3.000	2.250	1.750	1.000	.375	.220	0.750	0.797	.531	8	0.74	1
	WFXX44000R	•	4.000	2.870	2.000	1.250	.500	.280	0.750	1.000	.656	10	1.46	1
	WFXX44000R-1.50	•	4.000	3.750	2.500	1.500	.625	.380	1.000	2.000	1.181	10	2.25	3
	WFXX45000R	•	5.000	3.750	2.500	1.500	.625	.380	1.000	2.000	.781	12	2.95	1

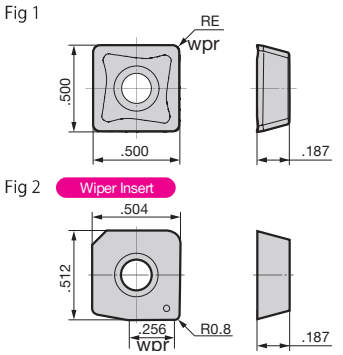
Inserts are sold separately. * Sizes ø6.000", ø8.000" & ø160 mm and above do not have coolant holes.

Insert

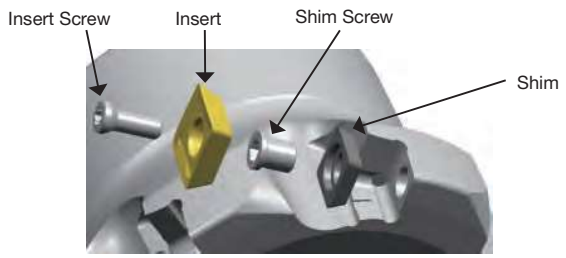
Dimensions (inch)

Grade		Coated Carbide								Carbide	DLC	Cermet
Process	High-speed / Light		P			K		M S		K N	N	
	General-purpose	K N M S		P M	P M	K		M S	M S		N	P
	Roughing	K N M S		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L	•	•	•	•	•	•	•	•	-	-	-	.031	.067	1
SOMT120404PDER-G	★	•	•	•	•	•	•	•	-	-	-	.016	.083	1
SOMT120408PDER-G	★	•	•	•	•	•	•	•	-	-	•	.031	.067	1
SOMT120412PDER-G	★	•	•	•	•	•	•	•	-	-	-	.047	.047	1
SOMT120416PDER-G		•	•	•	•	•	•	•	-	-	-	.063	.031	1
SOMT120408PDER-H	★	•	•	•	•	•	•	•	-	-	-	.031	.067	1
SOET120408PDFR-S	-	-	-	-	-	-	-	-	•	•	-	.031	-	1
XOEW120408PDTR-W	-	-	-	-	-	•			-	-	•	-	.256	2



Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).



Parts

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

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

N·m Recommended Tightening Torque (N·m)

Identification Code

WFX F 4 2000 R

Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia. 2.000"	Feed Direction

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c ((SFM / m/min) Min. - Max	Feed Rate f_z (IPT/ mm/t) Min. - Max	D.O.C. (Inch / *mm*)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	*0.10 - 0.20*	*< 10.0*	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	*0.10 - 0.20*	*< 10.0*	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	*0.10 - 0.20*	*< 6.0*	
M	Stainless Steel	175 - 675	.004 - .008	< 0.394	ACM200
		55 - 300	*0.10 - 0.20*	*< 10.0*	
		525 - 820	.004 - .008	< 0.394	ACU2500 ACM300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	*0.10-0.15-0.20*	*< 10.0*	

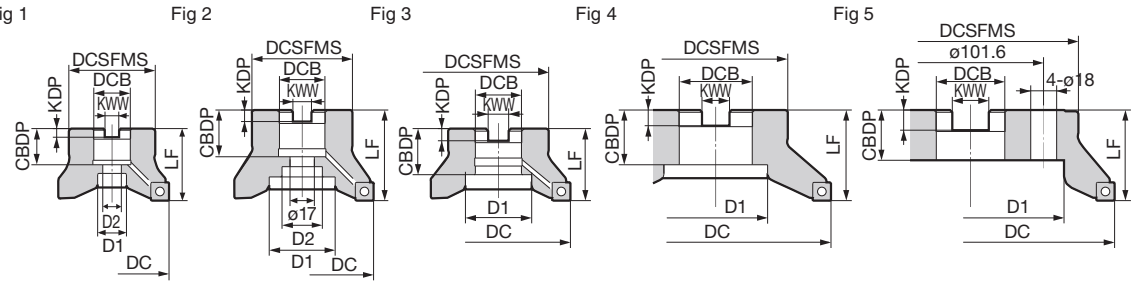
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WFX SHELLMILL METRIC - 12mm Inserts

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

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° | .394" 90°



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WFX12050RS	★	50	41	40	22	10.4	6.3	20	18	11	3	0.3	1
	WFX12063RS	★	63	50	40	22	10.4	6.3	20	18	11	4	0.5	1
	WFX12080RS	★	*80	55	50	27	12.4	7	25	20	14	4	0.9	1
	WFX12100RS	★	100	70	50	32	14.4	8	32	46	-	5	1.3	3
	WFX12080R	★	*80	55	50	25.4	9.5	6	25	20	14	4	0.9	1
	WFX12100R	★	*100	70	63	31.75	12.7	8	32.5	46	27	5	1.7	2
	WFX12125R	★	125	80	63	38.1	15.9	10	35.5	55	30	6	2.4	1
	WFX12160R	★	160	100	63	50.8	19.1	11	38	72	-	8	3.6	4
	WFX12200R	★	200	160	63	47.625	25.4	14	35	130	-	10	6.8	5
	WFX12250R	★	250	180	63	47.625	25.4	14	35	160	-	12	9.6	5

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

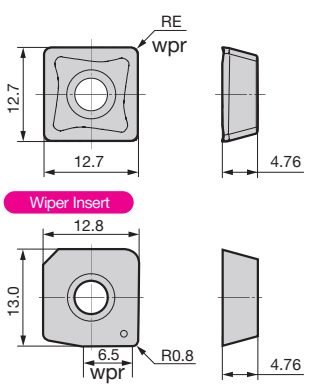
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

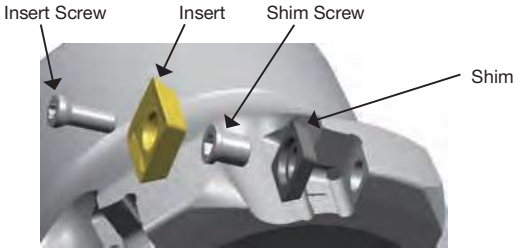
Insert

Dimensions (mm)

Grade		Coated Carbide								Carbide	DLC	Cermet			
Process	High-speed / Light		P			K		M S		K N	N				
	General-purpose	P K M S		P M	P M	K		M S	M S		N	P			
	Roughing	P K M S		P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	●	-	-	-	0.8	1.7	1
SOMT120404PDER-G		★	●	●	●	●	●	●	●	-	-	-	0.4	2.1	1
SOMT120408PDER-G		★	●	●	●	●	●	●	●	-	-	●	0.8	1.7	1
SOMT120412PDER-G		★	●	●	●	●	●	●	●	-	-	-	1.2	1.2	1
SOMT120416PDER-G			●	●	●	●	●	●	●	-	-	-	1.6	0.8	1
SOMT120408PDER-H		★	●	●	●	●	●	●	●	-	-	-	0.8	-	1
SOET120408PDFR-S		-	-	-	-	-	-	-	-	●	●	-	0.8	-	1
XOEW120408PDTR-W		-	-	-	-	-	●			-	-	●	-	6.5	2

Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).





Identification Code

WFX 12 050 R S

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

Parts

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

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

N·m Recommended Tightening Torque (N·m)

■ Cutting Conditions

ISO	Part Material	Cutting Speed vc ((SFM / m/min) Min. - Max	Feed Rate fz (IPT/ mm/t) Min. - Max	D.O.C. (Inch / mm)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	0.10 - 0.20	< 10.0	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	0.10 - 0.20	< 10.0	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	0.10 - 0.20	< 6.0	
M	Stainless Steel	175 - 675	.004 - .008	< 0.394	ACM200
		55 - 300	0.10 - 0.20	< 10.0	
		525 - 820	.004 - .008	< 0.394	ACU2500 ACM300
		160 - 250	0.10 - 0.20	< 10.0	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	0.10 - 0.20	< 10.0	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	0.10-0.15-0.20	< 10.0	

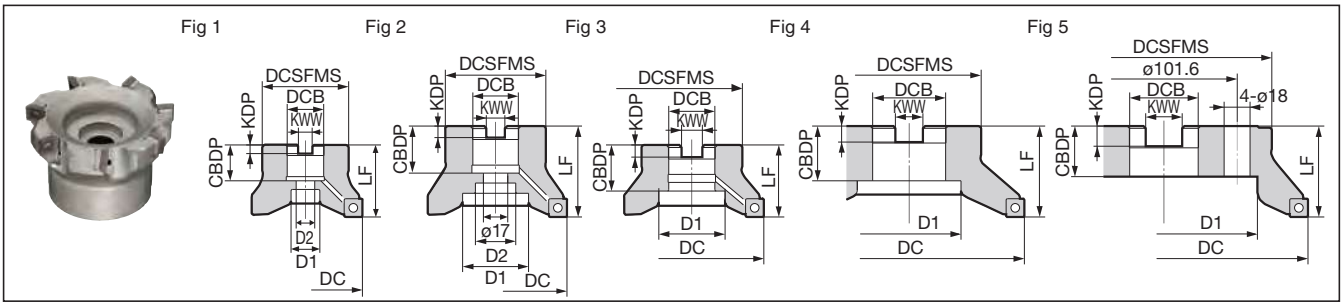
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

WFXF Shellmill Metric - *12mm* Inserts

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

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° | .394" 90°



Body (Extra Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXF12050RS**	★	50	41	40	22	10.4	6.3	20	18	11	4	0.3	1
	WFXF12063RS	★	63	50	40	22	10.4	6.3	20	18	11	5	0.5	1
	WFXF12080RS	★	*80	55	50	27	12.4	7	22	20	14	6	0.9	1
	WFXF12100RS	★	100	70	50	32	14.4	8	32	46	-	7	1.3	3
	WFXF12080R	★	*80	55	50	25.4	9.5	6	25	20	14	6	0.9	1
	WFXF12100R	★	*100	70	63	31.75	12.7	8	32.5	46	27	7	1.7	2
	WFXF12125R	★	125	80	63	38.1	15.9	10	35.5	55	30	8	2.3	1
	WFXF12160R	★	160	100	63	50.8	19.1	11	38	72	-	12	3.5	4
	WFXF12200R	★	200	160	63	47.625	25.4	14	35	135	-	16	6.7	5
	WFXF12250R		250	180	63	47.625	25.4	14	35	160	-	18	9.5	5

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

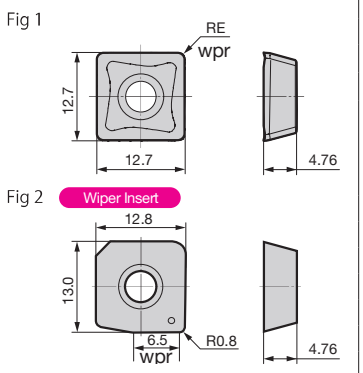
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

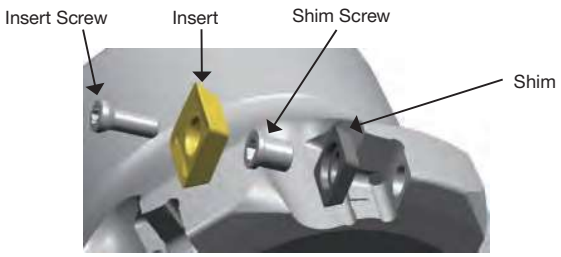
Insert

Dimensions (*mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet			
Process	High-speed / Light		P			K		M S		K N	N				
	General-purpose	K M S		P M	P M	K		M S	M S		N	P			
	Roughing	K M S		P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	●	-	-	-	0.8	1.7	1
SOMT120404PDER-G		★	●	●	●	●	●	●	●	-	-	-	0.4	2.1	1
SOMT120408PDER-G		★	●	●	●	●	●	●	●	-	-	●	0.8	1.7	1
SOMT120412PDER-G		★	●	●	●	●	●	●	●	-	-	-	1.2	1.2	1
SOMT120416PDER-G			●	●	●	●	●	●	●	-	-	-	1.6	0.8	1
SOMT120408PDER-H		★	●	●	●	●	●	●	●	-	-	-	0.8	-	1
SOET120408PDFR-S		-	-	-	-	-	-	-	-	●	●	-	0.8	-	1
XOEW120408PDTR-W		-	-	-	-	-	●			-	-	●	-	6.5	2

Refer to H103 (Precautions when Using Wiper Inserts) (Mounting Precautions).





Identification Code

WFX F 12 050 R S

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

Parts

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

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

N·m Recommended Tightening Torque (N·m)

■ Cutting Conditions

ISO	Part Material	Cutting Speed v_c (SFM / m/min) Min. - Max	Feed Rate f_z (IPT/ mm/t) Min. - Max	D.O.C. (Inch / *mm*)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	*0.10 - 0.20*	*< 10.0*	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	*0.10 - 0.20*	*< 10.0*	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	*0.10 - 0.20*	*< 6.0*	
M	Stainless Steel	175 - 675	.004 - .008	< 0.394	ACM200
		55 - 300	*0.10 - 0.20*	*< 10.0*	
		525 - 820	.004 - .008	< 0.394	ACU2500 ACM300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	*0.10-0.15-0.20*	*< 10.0*	

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

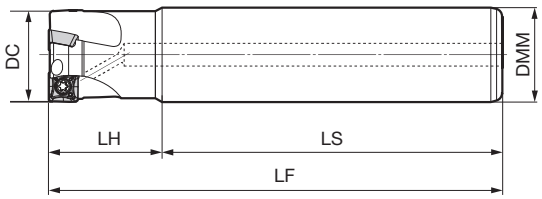
WFX Endmill Metric - *8mm* Inserts

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

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90° | .236" 90°

Fig 1



Body (Standard)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WFX08020E-16	★	*20*	*16*	*30*	*80*	*110*	2	1
WFX08020E	★	*20*	*20*	*30*	*80*	*110*	2	1
WFX08022E	★	*22*	*20*	*30*	*90*	*120*	2	1
WFX08025E-20	★	*25*	*20*	*30*	*90*	*120*	2	1
WFX08030E	★	*30*	*25*	*30*	*90*	*120*	3	1
WFX08032E	★	*32*	*32*	*30*	*90*	*120*	3	1
WFX08033E	★	*33*	*32*	*30*	*90*	*120*	3	1
WFX08040E	★	*40*	*32*	*30*	*90*	*120*	3	1
WFX08050E	★	*50*	*32*	*30*	*90*	*120*	4	1
WFX08063E	★	*63*	*32*	*30*	*90*	*120*	5	1

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WFXM08025E	★	*25*	*25*	*30*	*90*	*120*	3	1
WFXM08032E	★	*32*	*32*	*30*	*90*	*120*	4	1
WFXM08040E	★	*40*	*32*	*30*	*90*	*120*	4	1
WFXM08050E	★	*50*	*32*	*30*	*90*	*120*	5	1
WFXM08063E	★	*63*	*32*	*30*	*90*	*120*	6	1

Inserts are sold separately.

Insert

Dimensions (*mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet			
Process	High-speed / Light		P			K		M S		K N	N				
	General-purpose	P M S		P M	P M	K		M S	M S		N	P			
	Roughing	P M S		P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Wiper Facet Length wpr	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	★	-	-		0.4	*1.3*	1
SOMT080308PZER-L			★	★	★	★	★	★	★	-	-		0.8	*0.9*	1
SOMT080304PZER-G		★	★	★	★	★	★	★	★	-	-		0.4	*1.3*	1
SOMT080308PZER-G		★	★	★	★	★	★	★	★	-	-		0.8	*0.9*	1
SOMT080312PZER-G		★	★	★	★	★	★	★	★	-	-		1.2	*0.5*	1
SOMT080308PZER-H		★	★	★	★	★	★	★	★	-	-		0.8	*0.9*	1
SOMT080312PZER-H		★	★	★	★	★	★	★	★	-	-		1.2	*0.5*	1
SOET080304PZER-G		★	★	★	★	★	★	★	★	-	-	★	0.4	-	1
SOET080308PZER-G		★	★	★	★	★	★	★	★	-	-	★	0.8	-	1
SOET080312PZER-G		★	★	★	★	★	★	★	★	-	-	★	1.2	-	1
SOET080302PZFR-S		-	-	-	-	-	-	-	-	★	★	-	0.2	-	1
SOET080304PZFR-S		-	-	-	-	-	-	-	-	★	★	-	0.4	-	1
SOET080308PZFR-S		-	-	-	-	-	-	-	-	★	★	-	0.8	-	1
XOEW080308PZTR-W		-	-	-	-		★			-	-	★	-	*3.3*	2

Refer to H103 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

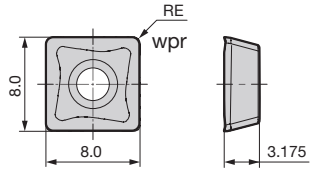
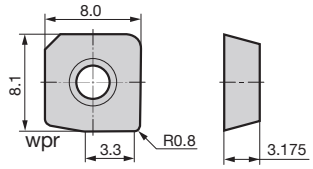


Fig 2 Wiper Insert



Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

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

Identification Code

WFX M 08 025 E

Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Endmill Type

N·m Recommended Tightening Torque (N·m)

■ Cutting Conditions

ISO	Part Material	Cutting Speed vc (SFM / m/min) Min. - Max	Feed Rate fz (IPT/ mm/t) Min. - Max	D.O.C. (Inch / *mm*)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	*0.10 - 0.20*	*< 10.0*	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	*0.10 - 0.20*	*< 10.0*	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	*0.10 - 0.20*	*< 6.0*	
M	Stainless Steel	175 - 675	.004 - .008	< 0.394	ACM200
		55 - 300	*0.10 - 0.20*	*< 10.0*	
		525 - 820	.004 - .008	< 0.394	ACU2500 ACM300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	*0.10-0.15-0.20*	*< 10.0*	

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

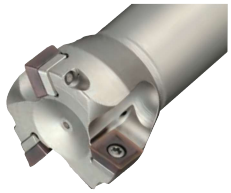
WFX(F) Endmill Metric - *12mm* Inserts

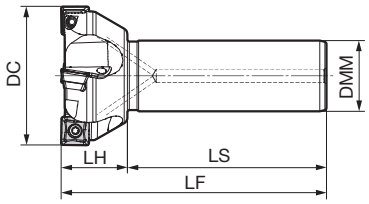
P Steel | M Stainless Steel | K Cast Iron | N Non-Ferrous Metal | N Aluminum Alloy | S Exotic Alloy

Rake Angle		
	Radial	-8°
	Axial	8°

10mm 90° | .394" 90°

Fig 1





Body (Standard)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFX12040E	★	*40*	*32*	*30*	*90*	*120*	3	0.68	1
WFX12050E	★	*50*	*32*	*30*	*90*	*120*	3	0.78	1
WFX12063E	★	*63*	*32*	*30*	*90*	*120*	4	0.94	1
WFX12080E	★	*80*	*32*	*30*	*90*	*120*	4	1.29	1

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

Body (Extra Fine Pitch)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WFXF12050E	★	*50*	*32*	*30*	*90*	*120*	4	0.78	1
WFXF12063E	★	*63*	*32*	*30*	*90*	*120*	5	0.96	1
WFXF12080E	★	*80*	*32*	*30*	*90*	*120*	6	1.22	1

Inserts are sold separately.

Insert

Dimensions (*mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet			
Process	High-speed / Light		P			K		M S		K N	N				
	General-purpose	K M S		P M	P M	K		M S	M S		N	P			
	Roughing	K M S		P M	P M		K		M S						
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Wiper Facet Length wpr	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	●	-	-	-	*0.8*	*1.7*	1
SOMT120404PDER-G		★	●	●	●	●	●	●	●	-	-	-	*0.4*	*2.1*	1
SOMT120408PDER-G		★	●	●	●	●	●	●	●	-	-	●	*0.8*	*1.7*	1
SOMT120412PDER-G		★	●	●	●	●	●	●	●	-	-	-	*1.2*	*1.2*	1
SOMT120416PDER-G			●	●	●	●	●	●	●	-	-	-	*1.6*	*0.8*	1
SOMT120408PDER-H		★	●	●	●	●	●	●	●	-	-	-	*0.8*	-	1
SOET120408PDFR-S		-	-	-	-	-	-	-	-	●	●	-	*0.8*	-	1
XOEW120408PDTR-W		-	-	-	-	-	●			-	-	●	-	*6.5*	2

Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

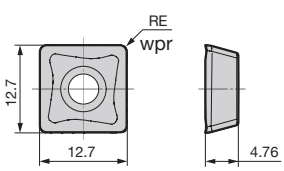
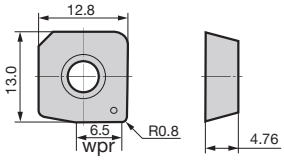
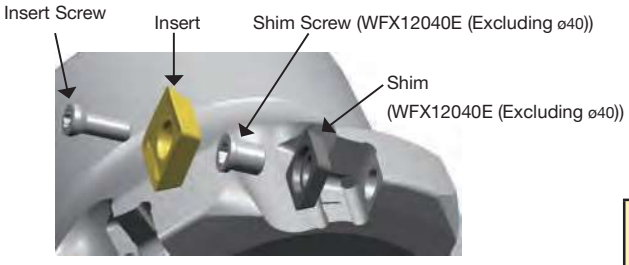


Fig 2 Wiper Insert





Identification Code

WFX F 12 050 E

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

Parts

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

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

N·m Recommended Tightening Torque (N·m)

■ Cutting Conditions

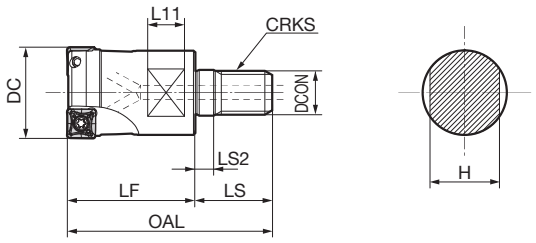
ISO	Part Material	Cutting Speed vc (SFM / m/min) Min. - Max	Feed Rate fz (IPT/ mm/t) Min. - Max	D.O.C. (Inch / *mm*)	Grades
P	General Steel	492 - 820	0.004 - 0.008	< 0.394	ACU2500 ACP200 ACP300
		150 - 250	*0.10 - 0.20*	*< 10.0*	
	Soft Steel	591 - 1148	0.004 - 0.008	< 0.394	
		180 - 350	*0.10 - 0.20*	*< 10.0*	
	Die Steel	328 - 656	0.004 - 0.008	< 0.236	
		100 - 200	*0.10 - 0.20*	*< 6.0*	
M	Stainless Steel	175 - 675	.004 - .008	< 0.394	ACM200
		55 - 300	*0.10 - 0.20*	*< 10.0*	
		525 - 820	.004 - .008	< 0.394	ACU2500 ACM300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
		525 - 820	0.004 - 0.008	< 0.394	ACP300
		160 - 250	*0.10 - 0.20*	*< 10.0*	
K	Cast Iron	328 - 820	0.004 - 0.008	< 0.394	ACU2500 ACK200 ACK300
		100 - 250	*0.10-0.15-0.20*	*< 10.0*	

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.

Rake Angle		
	Radial	-6°
	Axial	12°

6mm 90°

Fig 1



Head

Dimensions (mm)

Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
WFX08020M10Z2	★	20	10.5	**M10**	49	30	5	19	8	15	2	1
WFX08022M10Z2	★	22	10.5	**M10**	49	30	5	19	8	15	2	1
WFX08025M12Z2	★	25	12.5	**M12**	56	35	5	21	10	19	2	1
WFX08028M12Z2	★	28	12.5	**M12**	56	35	5	21	10	19	2	1
WFX08030M16Z3	★	30	17.0	**M16**	63	40	5	23	10	24	3	1
WFX08032M16Z3	★	32	17.0	**M16**	63	40	5	23	10	24	3	1
WFX08040M16Z3	★	40	17.0	**M16**	63	40	5	23	10	24	3	1

Inserts are sold separately. ★ Worldwide Warehouse item

Insert

Dimensions (mm)

Grade		Coated Carbide								Carbide	DLC	Cermet		
Process	High-speed / Light		P			K		M S		K N	N			
	General-purpose	P K S		P M	P M	K		M S	M S		N	P		
	Roughing	P K S		P M	P M		K		M S					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L		★	●	●	●	●	●	●	●	-	-		0.4	1
SOMT080308PZER-L			●	●	●	●	●	●	●	-	-		0.8	1
SOMT080304PZER-G		★	●	●	●	●	●	●	●	-	-		0.4	1
SOMT080308PZER-G		★	●	●	●	●	●	●	●	-	-		0.8	1
SOMT080312PZER-G		★	●	●	●	●	●	●	●	-	-		1.2	1
SOMT080308PZER-H		★	●	●	●	●	●	●	●	-	-		0.8	1
SOMT080312PZER-H		★	●	●	●	●	●	●	●	-	-		1.2	1
SOET080304PZER-G		★	●	●	●	●	●	●	●	-	-	●	0.4	1
SOET080308PZER-G		★	●	●	●	●	●	●	●	-	-	●	0.8	1
SOET080312PZER-G		★	●	●	●	●	●	●	●	-	-	●	1.2	1
SOET080302PZFR-S		-	-	-	-	-	-	-	-	●	●	-	0.2	1
SOET080304PZFR-S		-	-	-	-	-	-	-	-	●	●	-	0.4	1
SOET080308PZFR-S		-	-	-	-	-	-	-	-	●	●	-	0.8	1
XOEW080308PZTR-W		-	-	-	-		●			-	-	●	-	2

Refer to H86 (Precautions when Using Wiper Inserts) (Mounting Precautions).

Fig 1

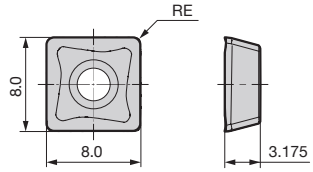
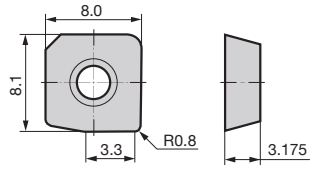


Fig 2 Wiper Insert



Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

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

Identification Code

WFX 08 020 M10 Z2

Cutter Series	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed $_C$ (m/min) Min. - Max.	Feed Rate $_z$ (mm/t) Min. - Max.	Depth of Cut $_p$ (mm)	Insert Grade
P	General Steel	180 to 280 HB	150 - 250	0.08 - 0.18	< 6	ACU2500 ACP200 ACP300
	Mild Steel	≤ 180HB	180 - 350	0.10 - 0.20	< 6	
	Die Steel	200 to 220 HB	100 - 200	0.08 - 0.18	< 4	ACP200 ACP300
M	Stainless Steel	-	160 - 250	0.10 - 0.20	< 6	ACU2500 ACM300
K	Cast Iron	250HB	100 - 250	0.10 - 0.20	< 6	ACU2500 ACK200 ACK300
N	Non-ferrous Metal	-	300 - 1,000	0.10 - 0.20	< 6	H1 DL1000

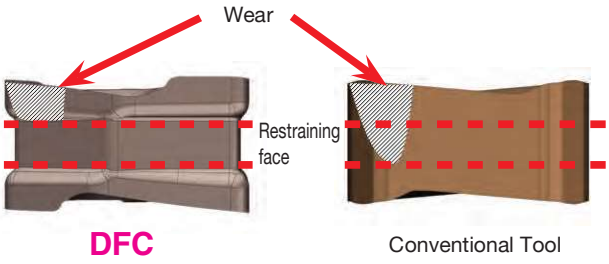
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

■ General Features

The high-efficiency general-purpose Sumi Dual Mill DFC 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 chipbreaker, suitable for a wide range of applications.
Now available in ACU2500.

■ Features

Unique insert shape delivers sharp cutting performance and cutting edge strength



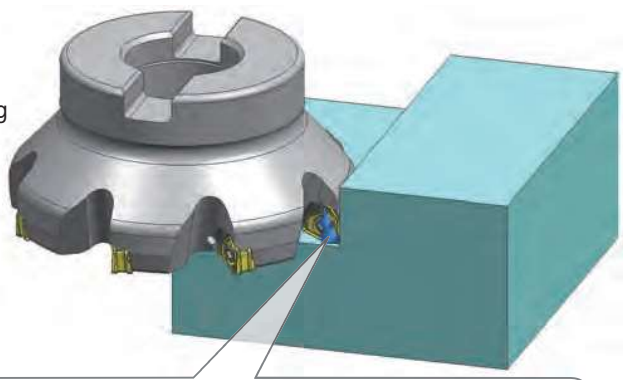
Flank wear of inserts for DFC does not reach the restraining face and thus mounting accuracy does not suffer.

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

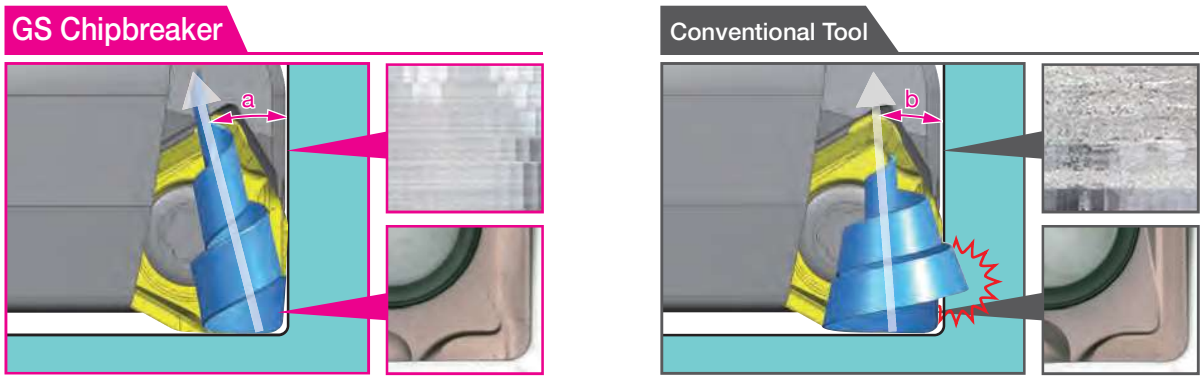
GS Chipbreaker for Shoulder Milling

· Excellent chip control
· Suppresses machined surface deterioration due to chip re-cutting

Part Material: 1050, Tool: ø4.000”
Cutting Conditions: v_c = 656 SFM, f_z = 0.008 IPT,
a_e = 1.97”, a_p = 0.12” x 6 passes, Dry



Chip generation image and machined surface comparison

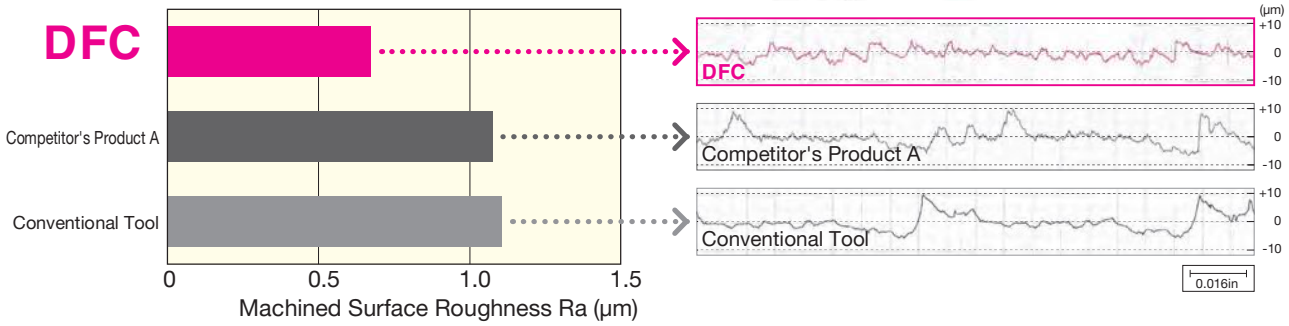


Chip flow direction control (a > b) ⟶ chip re-cutting suppressed

■ Cutting Performance

Face Milling

(1) Machined Surface Roughness Better than competitors' products



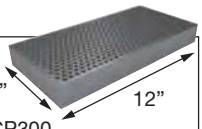
Part Material: 1050 Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: v_c = 656 SFM, f_z = 0.008 IPT, a_p = 0.12”, a_e = 3.35” Dry

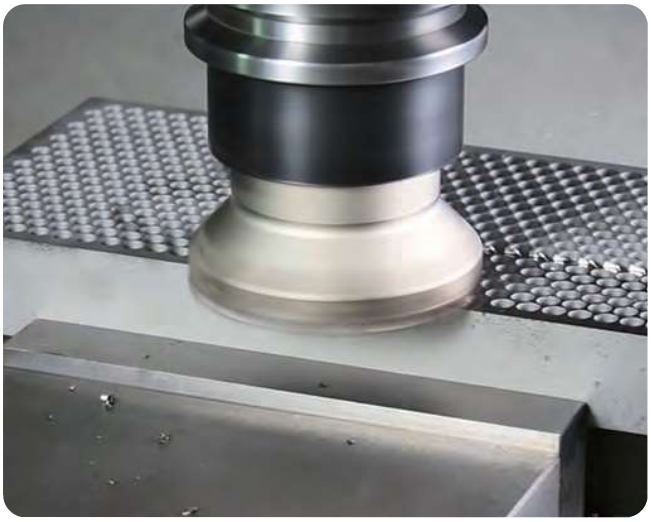
(2) Cutting edge strength: Cutting edge damage during heavy interrupted cutting
Cutting edge strength surpassing competitors' double-sided cutters

	f_z(IPT)		
	0.012	0.016	0.020
DFC	○	○	○
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)		

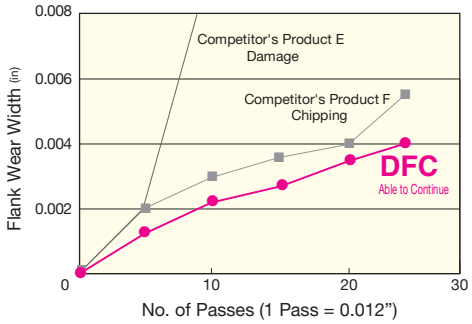
(Cutting Distance: 0.9m)

Part Material: 1050 (With Holes)
Tool: DFC 09100RS
Insert: XNMU 060608PNER-G Grade: ACP300
Cutting Conditions: v_c = 492 SFM a_p = 0.12”, a_e = 1.97” Dry





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



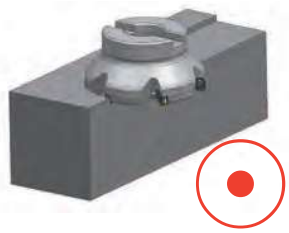
Comparison of cutting edge damage

Little damage / Able to continue | Breakage | Damaged

Work Material: 1050 Tool: DFC 09100RS Insert: XNMU 060608PNER-G Grade: ACP200 Cutting Conditions: v_c = 656 SFM, f_z = 0.008 IPT, a_p = 0.12”, a_e = 3.35” Dry

■ Applications and Recommended Chipbreakers

Face Milling	Shoulder Milling	Side Milling
G	GS	G/GS

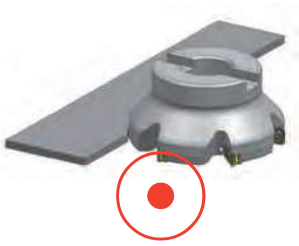


Guidelines for Shoulder Milling Conditions

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

Recommended Axial Depth of Cut $a_p = 0.120"$

Recommended Feed Rate $f_z \leq 0.008$ IPT
(for general steel)



Applications which are not applicable

Helical Milling

Ramping

■ Product Range

Number in ● is the number of teeth

	Cat. No.		Remarks	Cutter Diameters in Stock (Inch)										Shape
				ø1.00"	ø1.25"	ø1.50"	ø2.00"	ø2.50"	ø3.00"	ø4.00"	ø5.00"	ø6.00"	ø8.00"	
Shell Type	DFC20000R	H119	Standard Pitch	-	-	-	4	5	6	6	7	8	10	
	DFCM20000R	H120	Fine Pitch	-	-	-	5	6	8	10	12	14	15	
	DFCF20000R	H121	Extra Fine Pitch	-	-	-	6	7	9	11	14	16	20	
Shank Type	DFC20000EW	H125	Standard Pitch	2	3	3	4	5	-	-	-	-	-	
	DFCM20000EW	H125	Fine Pitch	-	-	4	5	7	-	-	-	-	-	

● : USA Stock Standard Item, - mark: Not available

	Cat. No.		Remarks	Cutter Diameters in Stock (mm)										Shape
				ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	
Shell Type	DFC09000R/RS	H122	Standard Pitch	-	-	-	4	4	5	6	7	8	10	
	DFCM09000R/RS	H123	Fine Pitch	-	-	-	5	6	7	8	11	12	16	
	DFCF09000R/RS	H124	Extra Fine Pitch	-	-	-	6	7	9	11	14	16	20	
Shank Type	DFC09000E	H125	Standard Pitch	2	2	3	3*	4*	5*	-	-	-	-	
	DFCM09000E	H125	Fine Pitch	-	3	4	5*	6*	7*	-	-	-	-	

● : metric available WWW ⊙ : Both metric and inch arbors available WWW * mark: Shank dia. 42mm type (made-to-order) - mark: Not available

■ Insert Mounting Precautions

No Gap

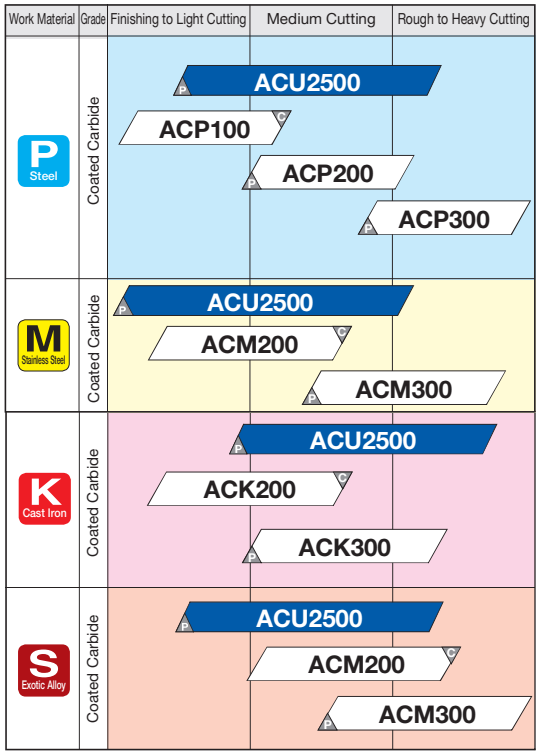
Prevent gaps from occurring

Gap

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

■ Insert Grade

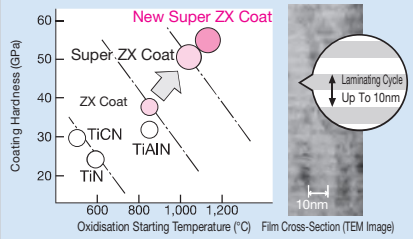
Lineup of Steel Milling Grades ACP100/ACP200/ACP300, Stainless Steel Milling Grades ACM200/ACM300, Cast Iron Milling Grades ACK200/ACK300 and more for a wide range of materials.



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

ACP200/ACP300/ACK300/ACM300

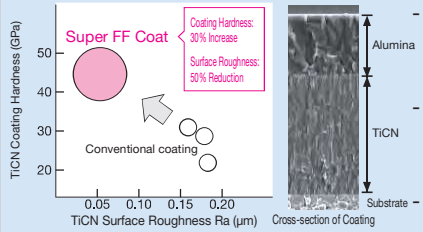
NEW SUPER ZX COAT



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

ACP100/ACK200/ACM200

SUPER FF COAT



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

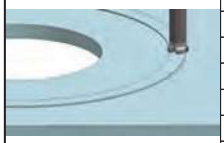
	L	G	GS	H
Chipbreaker				
Cutting Edge Cross Section	30°	20°	20°	20°
Nose Radius (in. / *mm*)	.016, .032 *0.4, 0.8*	.016, .032, .472, .063 *0.4, 0.8, 1.2, 1.6*	.016, .032, .472, .063 *0.4, 0.8, 1.2, 1.6*	.032, .472, .063 *0.8, 1.2, 1.6*
Features and Applications	Light Cutting, Low Rigidity Milling, Reduction of Burrs	Face Milling General-purpose to Interrupted Milling	Shoulder Milling	Heavy Cutting, Heavy Cross-Section Machining and Hardened Steel Milling

■ Application Examples

Ring Part Part Material 4140	Sumitomo	Competitor's Product
Tool	DFCM09050RS	Double-sided 6 Corners
Grade	ACP200	-
Chipbreaker	GS	-
Cutter Dia. (mm)	50	50
Number of Teeth	5	5
v_c (SFM)	460	460
v_f (IPM)	44	44
f_z (in./t)	.0098	.009
a_p (in.)	.098	.098
a_e (in.)	1.18	1.18
Coolant	Dry	Dry
Results	With no chip biting, tool life of 600%	

Machine Vise Part Material 1045	Sumitomo	Competitor's Product
Tool	DFCM09050E	Single-sided 2 Corners
Grade	ACP200	-
Chipbreaker	GS	-
Cutter Dia. (mm)	50	50
Number of Teeth	5	5
v_c (SFM)	615	615
v_f (IPM)	47	31.5
f_z (in./t)	.0079	.005
a_p (in.)	.197	.197
a_e (in.)	.511	.511
Coolant	Air Blow	Air Blow
Results	150% Machining Efficiency	

Block Simultaneous Milling Part Material High Manganese Steel Casting	Sumitomo	Competitor's Product
Tool	DFC09160RS	Double-sided 8 Corners
Grade	ACP300	-
Chipbreaker	G	-
Cutter Dia. (mm)	160	160
Number of Teeth	8	12
v_c (SFM)	500	500
v_f (IPM)	19.7	19.7
f_z (in./t)	0.008	0.005
a_p (in.)	.039	.0197
a_e (in.)	4.0	4.0
Coolant	Wet	Wet
Results	200% Machining Efficiency Tool Life 300%	



Construction Machinery Part, Part Material 1050	Sumitomo	Competitor's Product
Tool	DFC09063RS	Single-sided 2 Corners
Grade	ACP200	-
Chipbreaker	G	-
Cutter Dia. (mm)	63	63
Number of Teeth	4	5
v_c (SFM)	600	600
v_f (IPM)	43	35.8
f_z (in./t)	.012	.008
a_p (in.)	.079	.079
a_e (in.)	2.0	2.0
Coolant	Dry	Dry
Results	120% Machining Efficiency	

Automotive Part Work Material 1050	Sumitomo	Competitor's Product
Tool	DFC09080RS	Single-sided 4 Corners
Grade	ACP200	-
Chipbreaker	G	-
Cutter Dia. (mm)	80	80
Number of Teeth	5	5
v_c (SFM)	750	650
v_f (IPM)	50	31.5
f_z (in./t)	.011	.008
a_p (in.)	.079	.079
a_e (in.)	.197	.197
Coolant	Wet	Wet
Results	160% Machining Efficiency	

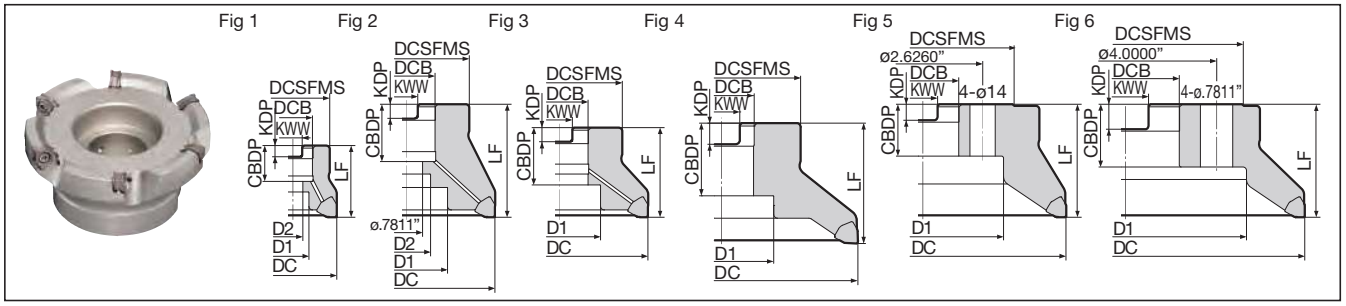
Pump Part Work Material Ductile Iron	Sumitomo	Competitor's Product
Tool	DFCF09100R	Double-sided 6 Corners
Grade	ACK300	-
Chipbreaker	G	-
Cutter Dia. (mm)	100	100
Number of Teeth	11	8
v_c (SFM)	1100	1100
v_f (IPM)	72	72
f_z (in./t)	.0059	.0083
a_p (in.)	.079	.079
a_e (in.)	3.0	3.0
Coolant	Dry	Dry
Results	Tool Life Over 150%	

DFC Shellmill Inch

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

Rake Angle		
	Radial	-9°
	Axial	-5°

.236" 90° | 6mm 90°



Body (Standard)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	**DFC22000R**	●	2.0000	1.5000	1.7500	0.7500	0.3120	0.1900	0.7500	0.6090	0.4060	4	0.75	1
	DFC22500R	●	2.5000	1.7500	1.7500	1.0000	0.3750	0.2200	0.7500	0.7970	0.5310	5	1.08	1
	DFC23000R	●	3.0000	2.2500	1.7500	1.0000	0.3750	0.2200	0.7500	0.7970	0.5310	6	1.81	1
	DFC24000R	●	4.0000	2.8700	2.0000	1.2500	0.5000	0.2800	0.7500	1.0000	0.6560	6	3.84	1
	DFC24000R-1.50	●	4.0000	3.1500	2.5000	1.5000	0.6250	0.3800	1.0000	2.0000	1.1810	6	4.76	2
	DFC25000R	●	5.0000	3.7500	2.5000	1.5000	0.6250	0.3800	1.0000	2.0000	1.1810	7	7.87	2
	DFC26000R	●	6.0000	4.3800	2.5000	1.5000	0.6250	0.3800	1.0000	2.0000	1.1810	8	11.64	2
	DFC28000R	●	8.0000	5.1200	2.5000	2.5000	1.0000	0.5600	1.5945	5.1180	-	10	15.00	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

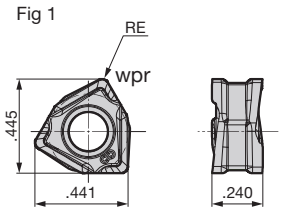
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (inch)

Grade		Coated Carbide										
Process	High-speed / Light		P M			K		M S				
	General-purpose	K S M	P M	P M		K		M S	M S			
	Roughing	K S M		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L		★		●	●		●		●	.016	.110	1
XNMU060608PNER-L		★		●	●		●		●	.031	.094	1
XNMU060604PNER-G		★	●	●	●	●	●	●	●	.016	.110	1
XNMU060608PNER-G		★	●	●	●	●	●	●	●	.031	.094	1
XNMU060612PNER-G		★	●	●	●	●	●	●	●	.047	.079	1
XNMU060616PNER-G		★	●	●	●	●	●	●	●	.063	.063	1
XNMU060604PNER-GS		★	●	●	●			●	●	.016	.110	1
XNMU060608PNER-GS		★	●	●	●			●	●	.031	.094	1
XNMU060612PNER-GS		★	●	●	●			●	●	.047	.079	1
XNMU060616PNER-GS		★	●	●	●			●	●	.063	.063	1
XNMU060608PNER-H		★	●	●	●	●	●	●	●	.031	.094	1
XNMU060612PNER-H		★	●	●	●	●	●	●	●	.047	.079	1
XNMU060616PNER-H		★	●	●	●	●	●	●	●	.063	.063	1

Fig 1



Parts

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

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"
BFXH3/4 X 2	5.00"*	1.50"

Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed (SFM) Min. - Max.	Feed Rate (IPT) Min. - Max.	D.O.C. (in.)	Grade
P	General Steel	180~280HB	500 - 820	0.004 - 0.012	<0.236	ACP200 ACP300
	Soft Steel	<180HB	600 - 1,150	0.006 - 0.014	< 0.236	ACP200 ACP300
	Die Steel	200~220HB	330 - 650	0.004 - 0.010	< 0.157	ACP200 ACP300
M	PH Stainless Steel	>220HB	300 - 750	0.004 - 0.010	<0.196	ACM200
	Austenitic Stainless	<250HB	525 - 820	0.005 - 0.010	<0.236	ACM300
K	Cast Iron	250HB	500 - 1150	0.004 - 0.012	<0.236	ACK200 ACK300

For shoulder milling, the GS Type breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT

Identification Code

DFC 2 2000 R

Cutter Series	Insert Series	Cutter Dia. 2.000"	Feed Direction

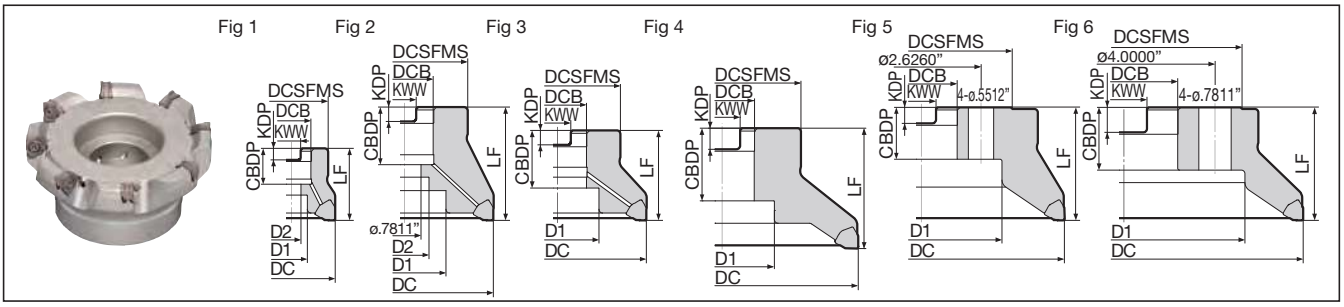
(N·m) Recommended Tightening Torque (N·m)

DFCM Shellmll Inch

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

Rake Angle		
	Radial	-9°
	Axial	-5°

.236" 90° | 6mm 90°



Body (Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	DFCM22000R	●	2.0000	1.5000	1.7500	0.7500	0.3120	0.1900	0.7500	0.6090	0.4060	5	0.75	1
	DFCM22500R	●	2.5000	1.7500	1.7500	1.0000	0.3750	0.2200	0.7500	0.7970	0.5310	6	1.05	1
	DFCM23000R	●	3.0000	2.2500	1.7500	1.0000	0.3750	0.2200	0.7500	0.7970	0.5310	8	1.79	1
	DFCM24000R	●	4.0000	2.8700	2.0000	1.2500	0.5000	0.2800	0.7500	1.0000	0.6560	10	3.79	1
	DFCM24000R-1.50	●	4.0000	3.1500	2.5000	1.5000	0.6250	0.3800	1.0000	2.0000	1.1810	10	4.67	2
	DFCM25000R	●	5.0000	3.7500	2.5000	1.5000	0.6250	0.3800	1.0000	2.0000	1.1810	12	7.78	2
	DFCM26000R	●	6.0000	4.3800	2.5000	1.5000	0.6250	0.3800	1.0000	2.0000	1.1810	14	11.55	2
	DFCM28000R	●	8.0000	5.1200	2.5000	2.5000	1.0000	0.5600	1.5945	5.1180	-	15	14.79	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

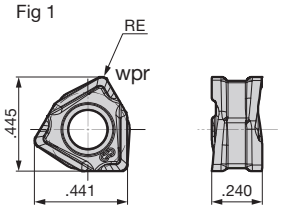
Insert

Dimensions (inch)

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

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L	★		●	●		●		●	.16	.110	1
XNMU060608PNER-L	★		●	●		●		●	.31	.094	1
XNMU060604PNER-G	★	●	●	●	●	●	●	●	.16	.110	1
XNMU060608PNER-G	★	●	●	●	●	●	●	●	.31	.094	1
XNMU060612PNER-G	★	●	●	●	●	●	●	●	.47	.079	1
XNMU060616PNER-G	★	●	●	●	●	●	●	●	.63	.063	1
XNMU060604PNER-GS	★	●	●	●			●	●	.16	.110	1
XNMU060608PNER-GS	★	●	●	●			●	●	.31	.094	1
XNMU060612PNER-GS	★	●	●	●			●	●	.47	.079	1
XNMU060616PNER-GS	★	●	●	●			●	●	.63	.063	1
XNMU060608PNER-H	★	●	●	●	●	●	●	●	.31	.094	1
XNMU060612PNER-H	★	●	●	●	●	●	●	●	.47	.079	1
XNMU060616PNER-H	★	●	●	●	●	●	●	●	.63	.063	1

Fig 1



Parts

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

Identification Code

DFC M 2 2000 R

Cutter Series	Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed (SFM) Min. - Max.	Feed Rate (IPT) Min. - Max.	D.O.C. (in.)	Grade
P	General Steel	180~280HB	500 - 820	0.004 - 0.012	<0.236	ACP200 ACP300
	Soft Steel	<180HB	600 - 1,150	0.006 - 0.014	< 0.236	ACP200 ACP300
	Die Steel	200~220HB	330 - 650	0.004 - 0.010	< 0.157	ACP200 ACP300
M	PH Stainless Steel	>220HB	300 - 750	0.004 - 0.010	<0.196	ACM200
	Austenitic Stainless	<250HB	525 - 820	0.005 - 0.010	<0.236	ACM300
K	Cast Iron	250HB	500 - 1150	0.004 - 0.012	<0.236	ACK200 ACK300

For shoulder milling, the GS breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT

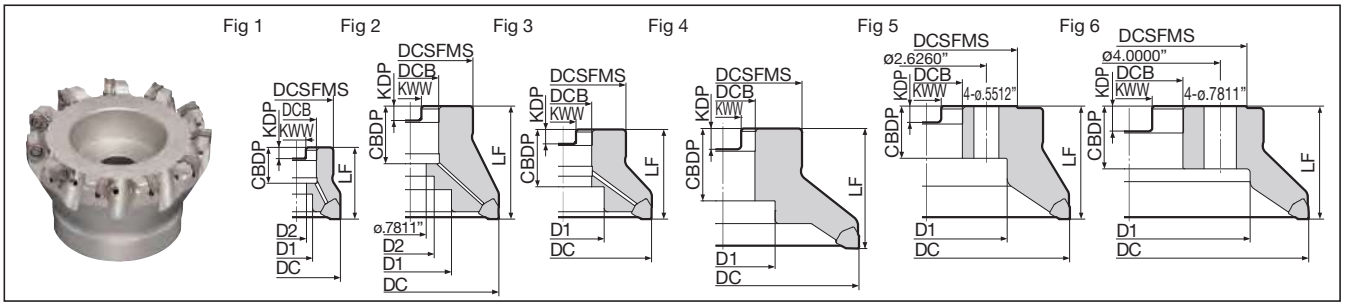
N·m Recommended Tightening Torque (N·m)

DFCF Shellmill Inch

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

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°



Body (Extra Fine Pitch)

Dimensions (inch)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**DFCF22000R**	●	2.0000	1.5000	1.7500	0.7500	0.3120	0.1900	0.7500	0.6090	0.4060	6	0.71	1
	DFCF22500R	●	2.5000	1.7500	1.7500	1.0000	0.3750	0.2200	0.7500	0.7970	0.5310	7	1.03	1
	DFCF23000R	●	3.0000	2.2500	1.7500	1.0000	0.3750	0.2200	0.7500	0.7970	0.5310	9	1.76	1
	DFCF24000R	●	4.0000	2.8700	2.0000	1.2500	0.5000	0.2800	0.7500	1.0000	0.6560	11	3.64	1
	DFCF24000R-1.50	●	4.0000	3.1500	2.5000	1.5000	0.6250	0.3800	1.0000	2.0000	1.1810	11	4.54	2
	DFCF25000R	●	5.0000	3.7500	2.5000	1.5000	0.6250	0.3800	1.0000	2.0000	1.1810	14	7.54	2
	DFCF26000R		6.0000	4.3800	2.5000	1.5000	0.6250	0.3800	1.0000	2.0000	1.1810	16	11.29	2
	DFCF28000R		8.0000	5.1200	2.5000	2.5000	1.0000	0.5600	1.5945	5.1180	-	20	14.59	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

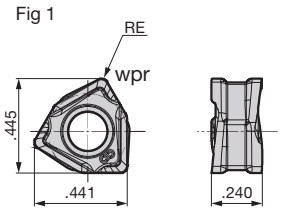
Insert

Dimensions (inch)

Grade		Coated Carbide							
Process	High-speed / Light		P M			K		M S	
	General-purpose	P M S K	P M	P M		K		M S	M S
	Roughing	P M S K		P M	P M		K		M S
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L	★		●	●		●		●	.16	.110	1
XNMU060608PNER-L	★		●	●		●		●	.31	.094	1
XNMU060604PNER-G	★	●	●	●	●	●	●	●	.16	.110	1
XNMU060608PNER-G	★	●	●	●	●	●	●	●	.31	.094	1
XNMU060612PNER-G	★	●	●	●	●	●	●	●	.47	.079	1
XNMU060616PNER-G	★	●	●	●	●	●	●	●	.63	.063	1
XNMU060604PNER-GS	★	●	●	●			●	●	.16	.110	1
XNMU060608PNER-GS	★	●	●	●			●	●	.31	.094	1
XNMU060612PNER-GS	★	●	●	●			●	●	.47	.079	1
XNMU060616PNER-GS	★	●	●	●			●	●	.63	.063	1
XNMU060608PNER-H	★	●	●	●	●	●	●	●	.31	.094	1
XNMU060612PNER-H	★	●	●	●	●	●	●	●	.47	.079	1
XNMU060616PNER-H	★	●	●	●	●	●	●	●	.63	.063	1

Fig 1



Parts

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

Identification Code

DFC F 09 2000 R

DFC	F	09	2000	R
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 2.000"	Feed Direction

Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed (SFM) Min. - Max.	Feed Rate (IPT) Min. - Max.	D.O.C. (in.)	Grade
P	General Steel	180~280HB	500 - 820	0.004 - 0.012	<0.236	ACP200 ACP300
	Soft Steel	<180HB	600 - 1,150	0.006 - 0.014	< 0.236	ACP200 ACP300
	Die Steel	200~220HB	330 - 650	0.004 - 0.010	< 0.157	ACP200 ACP300
M	PH Stainless Steel	>220HB	300 - 750	0.004 - 0.010	<0.196	ACM200
	Austenitic Stainless	<250HB	525 - 820	0.005 - 0.010	<0.236	ACM300
K	Cast Iron	250HB	500 - 1150	0.004 - 0.012	<0.236	ACK200 ACK300

For shoulder milling, the GS breaker is recommended. Use at $a_e \leq 50\%$ of cutter diameter and $f_z \leq 0.008$ IPT

N·m Recommended Tightening Torque (N·m)

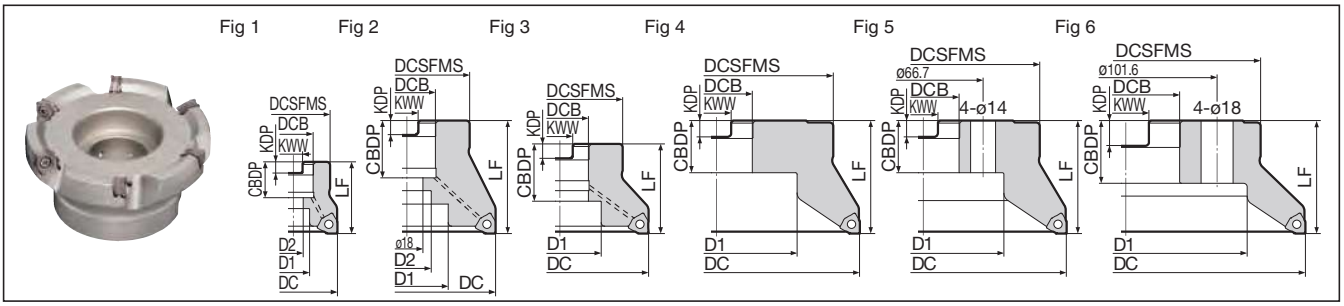
Sumi Dual Mill

DFC Shellmill Metric

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

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°



Body (Standard)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	DFC09050RS	★	50	41	40	22	10.4	6.3	20	18	11	4	0.3	1
	DFC09063RS	★	63	50	40	22	10.4	6.3	20	18	11	4	0.5	1
	DFC09080RS	★	*80	55	50	27	12.4	7	22	20	14	5	1.0	1
	DFC09100RS	★	100	70	50	32	14.4	8	32	46	-	6	1.4	3
	DFC09125RS	★	125	80	63	40	16.4	9	29	52	29	7	2.8	1
	DFC09160RS	★	160	130	63	40	16.4	9	29	90	-	8	4.6	5
	DFC09200RS	★	200	150	63	60	25.7	14	35	135	-	10	5.7	6
	DFC09080R	★	*80	55	50	25.4	9.5	6	25	20	14	5	1.0	1
	DFC09100R	★	*100	70	63	31.75	12.7	8	32	46	27	6	2.0	2
	DFC09125R	★	125	80	63	38.1	15.9	10	35.5	55	30	7	2.8	1
	DFC09160R	★	160	100	63	50.8	19.1	11	38	72	-	8	3.6	4
	DFC09200R	★	200	150	63	47.625	25.4	14	35	135	-	10	6.0	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

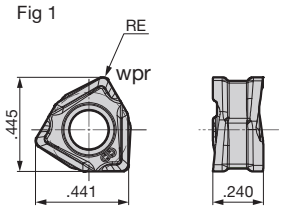
Insert

Dimensions (*mm*)

Grade		Coated Carbide							
Process	High-speed / Light		P M			K		M S	
	General-purpose	K S P	P M	P M		K		M S	M S
	Roughing	K S P		P M	P M		K		M S
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L	★		●	●		●		●	0.4	2.8	1
XNMU060608PNER-L	★		●	●		●		●	0.8	2.4	1
XNMU060604PNER-G	★	●	●	●	●	●	●	●	0.4	2.8	1
XNMU060608PNER-G	★	●	●	●	●	●	●	●	0.8	2.4	1
XNMU060612PNER-G	★	●	●	●	●	●	●	●	1.2	2	1
XNMU060616PNER-G	★	●	●	●	●	●	●	●	1.6	1.6	1
XNMU060604PNER-GS	★	●	●	●			●	●	0.4	2.8	1
XNMU060608PNER-GS	★	●	●	●			●	●	0.8	2.4	1
XNMU060612PNER-GS	★	●	●	●			●	●	1.2	2	1
XNMU060616PNER-GS	★	●	●	●			●	●	1.6	1.6	1
XNMU060608PNER-H	★	●	●	●	●	●	●	●	0.8	2.4	1
XNMU060612PNER-H	★	●	●	●	●	●	●	●	1.2	2	1
XNMU060616PNER-H	★	●	●	●	●	●	●	●	1.6	1.6	1

Fig 1



Parts

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

Recommended Cutting Conditions

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

For shoulder milling, the GS Type breaker is recommended. Use at a_e ≤ 50% of cutter diameter and f_z ≤ 0.008 IPT

(N·m) Recommended Tightening Torque (N·m)

Identification Code

DFC 09 050 R S

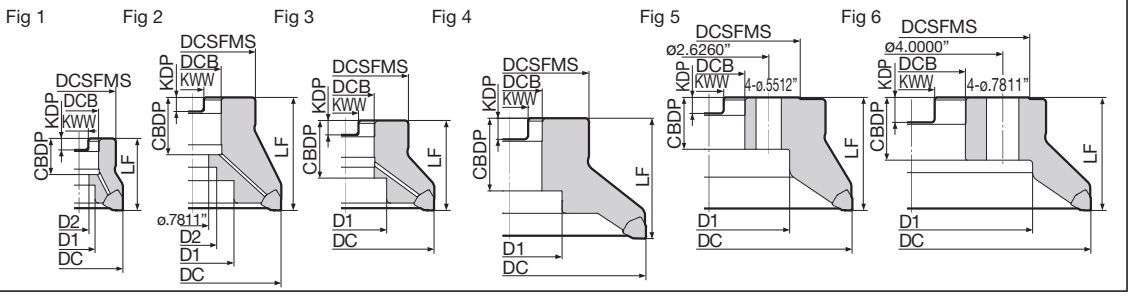
DFC	09	050	R	S
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore

DFCM Shellmill Metric

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

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°



Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**DFCM09050RS**	★	50	41	40	22	10.4	6.3	20	18	11	5	0.3	1
	DFCM09063RS	★	63	50	40	22	10.4	6.3	20	18	11	6	0.5	1
	DFCM09080RS	★	*80	55	50	27	12.4	7	22	20	14	7	0.9	1
	DFCM09100RS	★	100	70	50	32	14.4	8	32	46	-	8	1.4	3
	DFCM09125RS	★	125	80	63	40	16.4	9	29	52	29	11	2.7	1
	DFCM09160RS	★	160	130	63	40	16.4	9	29	90	-	12	4.5	5
	DFCM09200RS	★	200	150	63	60	25.7	14	35	135	-	16	5.6	6
	DFCM09080R	★	*80	55	50	25.4	9.5	6	25	20	14	7	0.9	1
	DFCM09100R	★	*100	70	63	31.75	12.7	8	32	46	27	8	1.9	2
	DFCM09125R	★	125	80	63	38.1	15.9	10	35.5	55	30	11	2.7	1
	DFCM09160R	★	160	100	63	50.8	19.1	11	38	72	-	12	3.5	4
	DFCM09200R	★	200	150	63	47.625	25.4	14	35	135	-	16	5.9	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

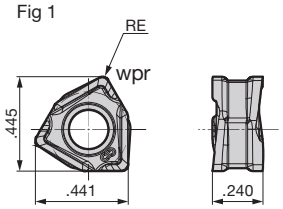
Insert

Dimensions (*mm*)

Grade		Coated Carbide							
Process	High-speed / Light		P M			K		M S	
	General-purpose	P K S	P M	P M		K		M S	M S
	Roughing	P K S		P M	P M		K		M S
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L	★		●	●		●		●	0.4	2.8	1
XNMU060608PNER-L	★		●	●		●		●	0.8	2.4	1
XNMU060604PNER-G	★	●	●	●	●	●	●	●	0.4	2.8	1
XNMU060608PNER-G	★	●	●	●	●	●	●	●	0.8	2.4	1
XNMU060612PNER-G	★	●	●	●	●	●	●	●	1.2	2	1
XNMU060616PNER-G	★	●	●	●	●	●	●	●	1.6	1.6	1
XNMU060604PNER-GS	★	●	●	●			●	●	0.4	2.8	1
XNMU060608PNER-GS	★	●	●	●			●	●	0.8	2.4	1
XNMU060612PNER-GS	★	●	●	●			●	●	1.2	2	1
XNMU060616PNER-GS	★	●	●	●			●	●	1.6	1.6	1
XNMU060608PNER-H	★	●	●	●	●	●	●	●	0.8	2.4	1
XNMU060612PNER-H	★	●	●	●	●	●	●	●	1.2	2	1
XNMU060616PNER-H	★	●	●	●	●	●	●	●	1.6	1.6	1

Fig 1



Parts

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

Identification Code

DFC M 09 050 R S

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

Recommended Cutting Conditions

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

For shoulder milling, the GS Type breaker is recommended. Use at a_e ≤ 50% of cutter diameter and f_z ≤ 0.008 IPT

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

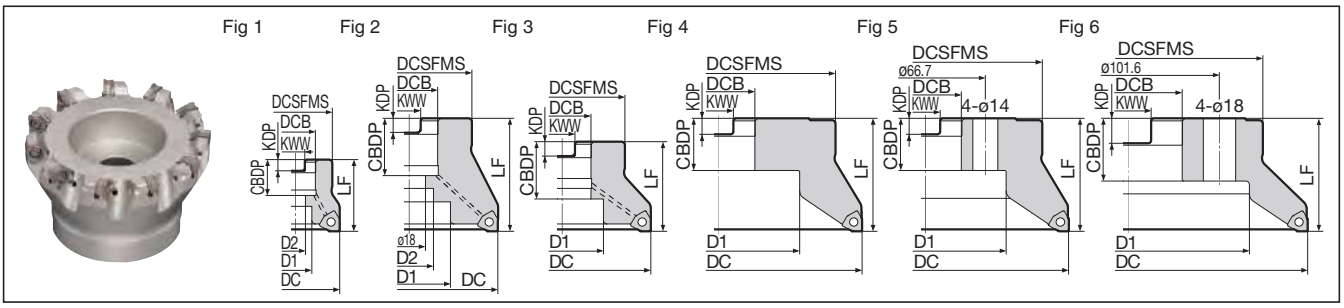
Sumi Dual Mill

DFCF Shellmill Metric

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

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°



Body (Extra Fine Pitch)

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	DFCF09050RS	★	50	41	40	22	10.4	6.3	20	18	11	6	0.3	1
	DFCF09063RS	★	63	50	40	22	10.4	6.3	20	18	11	7	0.5	1
	DFCF09080RS	★	*80	55	50	27	12.4	7	22	20	14	9	0.9	1
	DFCF09100RS	★	100	70	50	32	14.4	8	32	46	-	11	1.3	3
	DFCF09125RS	★	125	80	63	40	16.4	9	29	52	29	14	2.6	1
	DFCF09160RS	★	160	130	63	40	16.4	9	29	90	-	16	4.5	5
	DFCF09200RS	★	200	150	63	60	25.7	14	35	135	-	20	5.5	6
	DFCF09080R	★	*80	55	50	25.4	9.5	6	25	20	14	9	0.9	1
	DFCF09100R	★	*100	70	63	31.75	12.7	8	32	46	27	11	1.9	2
	DFCF09125R	★	125	80	63	38.1	15.9	10	35.5	55	30	14	2.7	1
	DFCF09160R	★	160	100	63	50.8	19.1	11	38	72	-	16	3.5	4
	DFCF09200R	★	200	150	63	47.625	25.4	14	35	135	-	20	5.8	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

★ Worldwide Warehouse item

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

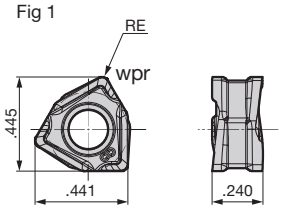
Insert

Dimensions (mm)

Grade		Coated Carbide							
Process	High-speed / Light		P M			K		M S	
	General-purpose	K S M	P M	P M		K		M S	M S
	Roughing	K S M		P M	P M		K		M S
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L	★		●	●		●		●	0.4	2.8	1
XNMU060608PNER-L	★		●	●		●		●	0.8	2.4	1
XNMU060604PNER-G	★	●	●	●	●	●	●	●	0.4	2.8	1
XNMU060608PNER-G	★	●	●	●	●	●	●	●	0.8	2.4	1
XNMU060612PNER-G	★	●	●	●	●	●	●	●	1.2	2	1
XNMU060616PNER-G	★	●	●	●	●	●	●	●	1.6	1.6	1
XNMU060604PNER-GS	★	●	●	●			●	●	0.4	2.8	1
XNMU060608PNER-GS	★	●	●	●			●	●	0.8	2.4	1
XNMU060612PNER-GS	★	●	●	●			●	●	1.2	2	1
XNMU060616PNER-GS	★	●	●	●			●	●	1.6	1.6	1
XNMU060608PNER-H	★	●	●	●	●	●	●	●	0.8	2.4	1
XNMU060612PNER-H	★	●	●	●	●	●	●	●	1.2	2	1
XNMU060616PNER-H	★	●	●	●	●	●	●	●	1.6	1.6	1

Fig 1



Parts

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

Recommended Cutting Conditions

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

For shoulder milling, the GS Type breaker is recommended. Use at a_e ≤ 50% of cutter diameter and f_z ≤ 0.008 IPT

Identification Code

DFC F 09 050 R S

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

N·m Recommended Tightening Torque (N·m) ●: USA Standard stocked item

DFC(M) ENDMILL (Inch & Metric)

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

Rake Angle		
	Radial	-9°
	Axial	-5°

6mm 90° | .236" 90°

Fig 1

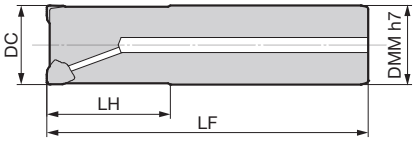
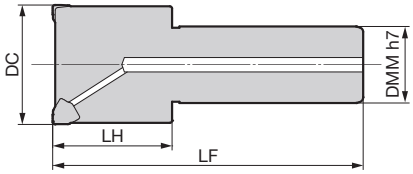


Fig 2



Body (Standard)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	# of Teeth	Fig
Inch	**DFC21000EW**	●	1.0000	1.0000	2.0591	4.3409	2	1
	DFC21250EW	●	1.2500	1.2500	2.0598	4.3409	3	1
	DFC21500EW	●	1.5000	1.2500	2.0598	4.3409	3	1
	DFC22000EW	●	2.0000	1.2500	2.0598	4.3409	4	1
	DFC22500EW	●	2.5000	1.2500	2.0598	4.3409	5	1
Metric	**DFC09025E**	★	*25*	*25*	*40*	*120*	2	1
	DFC09032E	★	*32*	*32*	*50*	*130*	2	1
	DFC09040E	★	*40*	*32*	*50*	*130*	3	2
	DFC09050E	★	*50*	*32*	*50*	*130*	3	2
	DFC09050E-42		*50*	*42*	*50*	*150*	3	2
	DFC09063E	★	*63*	*32*	*50*	*130*	4	2
	DFC09063E-42		*63*	*42*	*50*	*150*	4	2
	DFC09080E	★	*80*	*32*	*50*	*130*	5	2
	DFC09080E-42		*80*	*42*	*50*	*150*	5	2

Body (Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Head LH	Overall Length LF	# of Teeth	Fig
Inch	**DFCM21500EW**	●	1.5000	1.2500	2.0598	4.3409	4	1
	DFCM22000EW		2.0000	1.2500	2.0598	4.3409	5	1
	DFCM22500EW		2.5000	1.2500	2.0598	4.3409	7	1
Metric	**DFCM09032E**	★	*32*	*32*	*50*	*130*	3	1
	DFCM09040E	★	*40*	*32*	*50*	*130*	4	2
	DFCM09050E	★	*50*	*32*	*50*	*130*	5	2
	DFCM09050E-42		*50*	*42*	*50*	*150*	5	2
	DFCM09063E	★	*63*	*32*	*50*	*130*	6	2
	DFCM09063E-42		*63*	*42*	*50*	*150*	6	2
	DFCM09080E	★	*80*	*32*	*50*	*130*	7	2
	DFCM09080E-42		*80*	*42*	*50*	*150*	7	2

Inserts are sold separately.

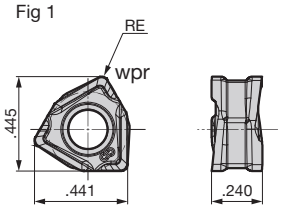
● USA stocked item ★ Worldwide Warehouse item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P M			K		M S				
	General-purposeg	K S M	P M	P M		K		M S	M S			
	Roughing	K S M		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
XNMU060604PNER-L		★		●	●		●		●	.016" / *0.4*	.110"	1
XNMU060608PNER-L		★		●	●		●		●	.032" / *0.8*	.094"	1
XNMU060604PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.110"	1
XNMU060608PNER-G		★	●	●	●	●	●	●	●	.032" / *0.8*	.094"	1
XNMU060612PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.079"	1
XNMU060616PNER-G		★	●	●	●	●	●	●	●	*.063"* / 1.6	.063"	1
XNMU060604PNER-GS		★	●	●	●			●	●	.016" / *0.4*	.110"	1
XNMU060608PNER-GS		★	●	●	●			●	●	.032" / *0.8*	.094"	1
XNMU060612PNER-GS		★	●	●	●			●	●	.047" / *1.2*	.079"	1
XNMU060616PNER-GS		★	●	●	●			●	●	*.063"* / 1.6	.063"	1
XNMU060608PNER-H		★	●	●	●	●	●	●	●	.032" / *0.8*	.094"	1
XNMU060612PNER-H		★	●	●	●	●	●	●	●	.047" / *1.2*	.079"	1
XNMU060616PNER-H		★	●	●	●	●	●	●	●	*.063"* / 1.6	.063"	1

Fig 1



Parts

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

Identification Code - Inch

DFC M 2 1000 EW

Cutter Series | Fine Pitch | Insert Series | Cutter Dia. 1.000" | Endmill Weldon Shank

Identification Code - Metric

DFC M 09 025 E

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

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions (for inch/ SFM, see page H101)

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

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

For shoulder milling, the GS breaker is recommended. Use at a_e ≤ 50% of cutter diameter and f_z ≤ 0.008 IPT.

Sumi Dual Mill

TSX Series

■ Features

- Excellent Machined Surface Quality

  Employs ground insert for high accuracy to produce excellent machined surface quality.

- Cutting Edge Designed for High Cutting Edge Strength and Sharpness

  Provides tangential insert and optimized 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.

- Now Available grade: ACU2500

■ Product Range

Type	Type	Description	Cutter Diameters in Stock (Inch)											Shape
			ø.625	ø.750	ø1.000	ø1.250	ø1.500	ø2.000	ø2.500	ø3.000	ø4.000	ø5.000	ø6.000	
Shellmills	TSX30000R	Standard Pitch					4	5	6					
	TSXF08000R	Fine Pitch					6	8	10					
	TSX40000R	Standard Pitch					4	5	6	7	9	12	14	
	TSXF40000R	Fine Pitch					5	6	8	10	13			
Endmills	TSX30000EW	Standard Pitch	2	2	3	3	4							
	TSXF30000EW	Fine Pitch			4	5	6							
	TSX40000EW	Standard Pitch			2	2	3							
	TSXF40000EW	Fine Pitch				3	4							

Type	Type	Description	Cutter Diameters in Stock (mm)														Shape
			ø16	ø20	ø25	ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160	ø200	ø250	ø315	
Shellmills	TSX08000RS	Standard Pitch					4	5	6	7							
	TSX08000R Inch	Standard Pitch								7							
	TSXF08000RS	Extra Fine Pitch					6	8	10	11							
	TSXF08000R Inch	Extra Fine Pitch								11							
	TSX13000RS	Standard Pitch					3	4	5	5	6	7	8	12	14	16	
	TSX13000R Inch	Standard Pitch								5	6	7	8	12	14	16	
	TSXM13000RS	Fine Pitch					4	5	6	7	8	10	12	16	20	24	
	TSXM13000R Inch	Fine Pitch								7	8	10	12	16	20	24	
	TSXF13000RS	Extra Fine Pitch					5	6	7	8	10	14	16				
	TSXF13000R Inch	Extra Fine Pitch								8	10	14	16				
Endmills	TSX08000E	Standard Pitch	2	2*	3*	3*	4	5	6	7							
	TSXF08000E	Extra Fine Pitch		3	4	5	6	8	10	11							
	TSX13000E	Standard Pitch			2	2	3	4	5	5							
	TSXM13000E	Fine Pitch				3	4	5	6	7							
	TSXF13000E	Extra Fine Pitch					5	6	7	8							

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

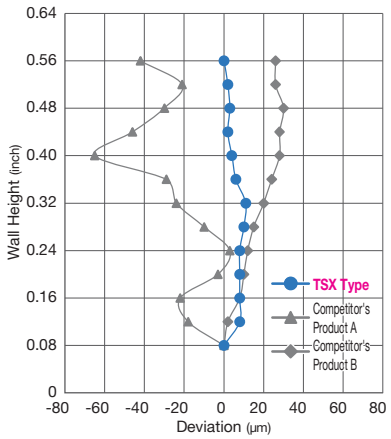
■ Product Range (Repeater Mills)

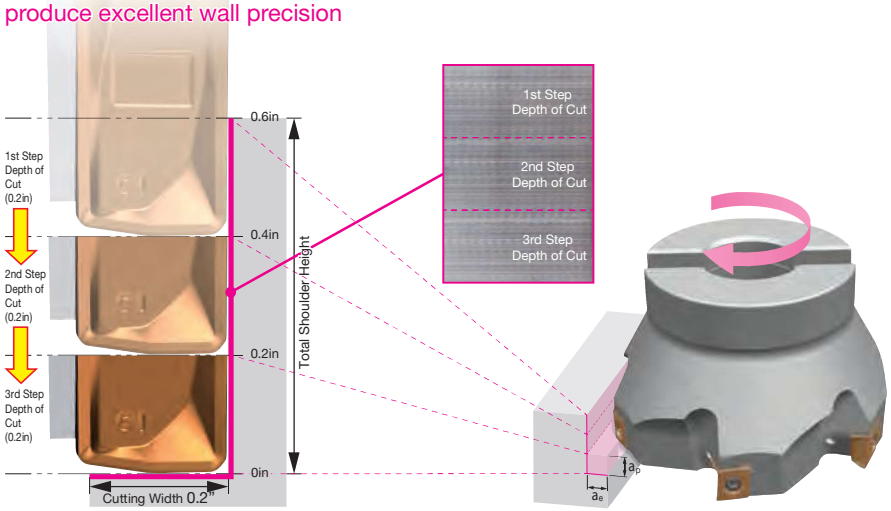
Type	Type	Cutter Diameters in Stock (mm)													Shape
		ø20	ø25	ø32	ø40	ø50		ø63		ø80		ø100		ø125	
Shells	TSXR08000RS			2	3	3	4	5							
	TSXR13000RS				2	3		3	4	4	5	5	6	7	
With Shank	TSXR08000E	1	2	2	3										
	TSXR13000E				2	3									

Number in ● is the number of teeth

■ Shoulder Milling Precision

High accuracy insert and cutting edge shape optimized to produce excellent wall precision

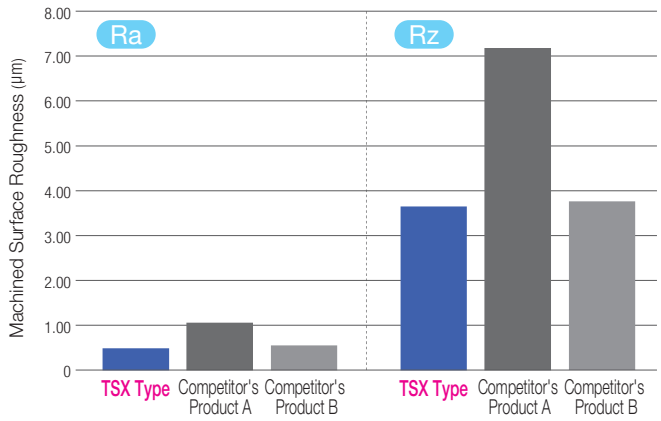




Machine: Vertical Machining Center BT50, Part Material: 1050 Steel
Tool: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions: v_c = 656 SFM, f_z = 0.008" IPT, a_p = 0.197" x 3 Passes, a_e = 0.20"

■ Machined Surface Roughness

Cutting edge shape optimized to produce excellent machined surface roughness



Machined Surface Comparison

TSX Type Without Cloudiness

Competitor's Product Cloudy

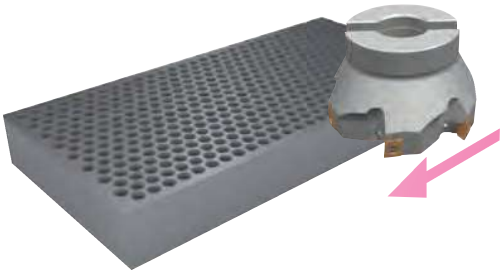
Machine: Vertical Machining Center BT50, Part Material: 1050 Steel
Tool: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions: v_c = 656 SFM, f_z = 0.008 IPT, a_p = 0.12", a_e = 2.36" Dry

■ Cutting Edge Strength

TSX has high cutting edge strength and enables high efficiency machining

1 Pass = 12"

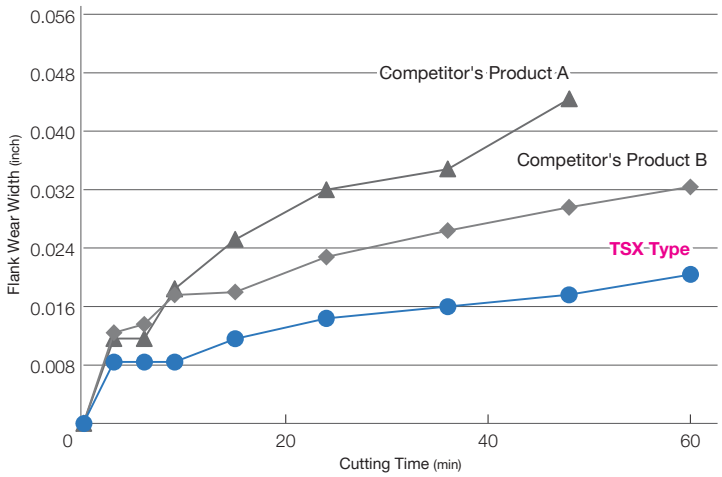
Cutting Length	4 Passes	8 Passes	12 Passes
TSX Type	Continued Machining Possible		
Competitor's Product A	Damage		
Competitor's Product B	Damage		



Machine: Vertical Machining Center BT50, Part Material: 1050 Steel
Tool: TSX 13100R, Insert: LNEX 130608PNER-G (ACP200)
Cutting Conditions: v_c = 492 SFM, f_z = 0.024 IPT (Accelerating)
a_p = 0.12", a_e = 1.57" Dry

■ Tool Life

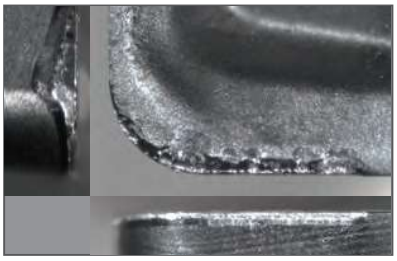
Excellent Wear Resistance Provides Stable Tool Life



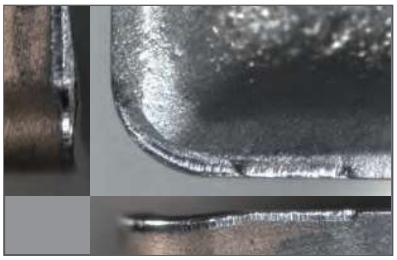
Machine: Vertical Machining Center BT50, Part Material: 1050 Steel
Tool: TSX 08025E, Insert: LNEX 080408PNER-G (ACP200)
Cutting Conditions: v_c = 656 SFM, f_z = 0.004 IPT, a_p = 0.08" a_e = 0.20" Dry

TSX
(After cutting for 60 minutes)

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

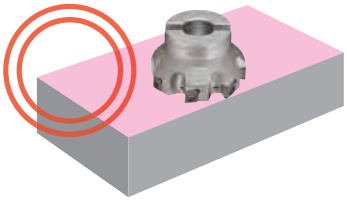


Competitor's Product B
(After cutting for 60 minutes)

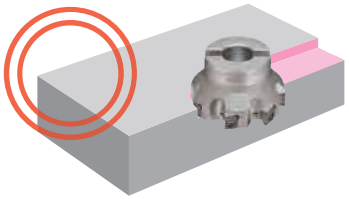


■ Applications

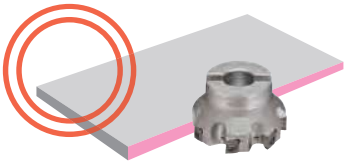
Face Milling



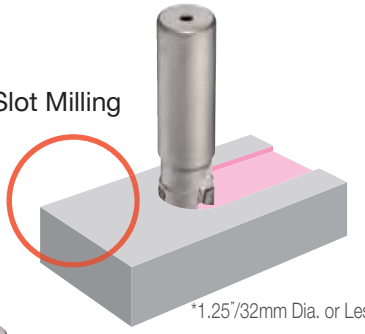
Shoulder Milling



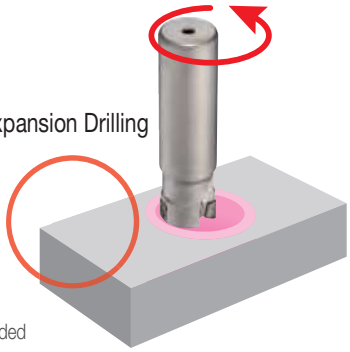
Side Milling



Slot Milling

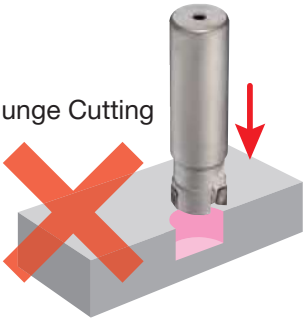


Hole Expansion Drilling

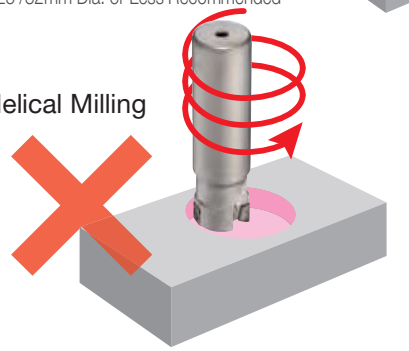


*1.25"/32mm Dia. or Less Recommended

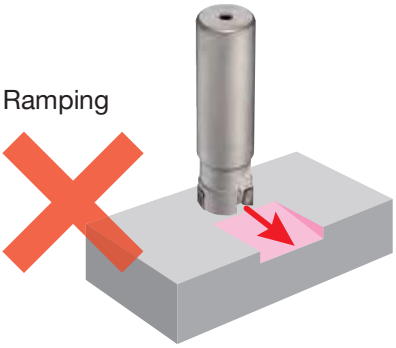
Plunge Cutting



Helical Milling

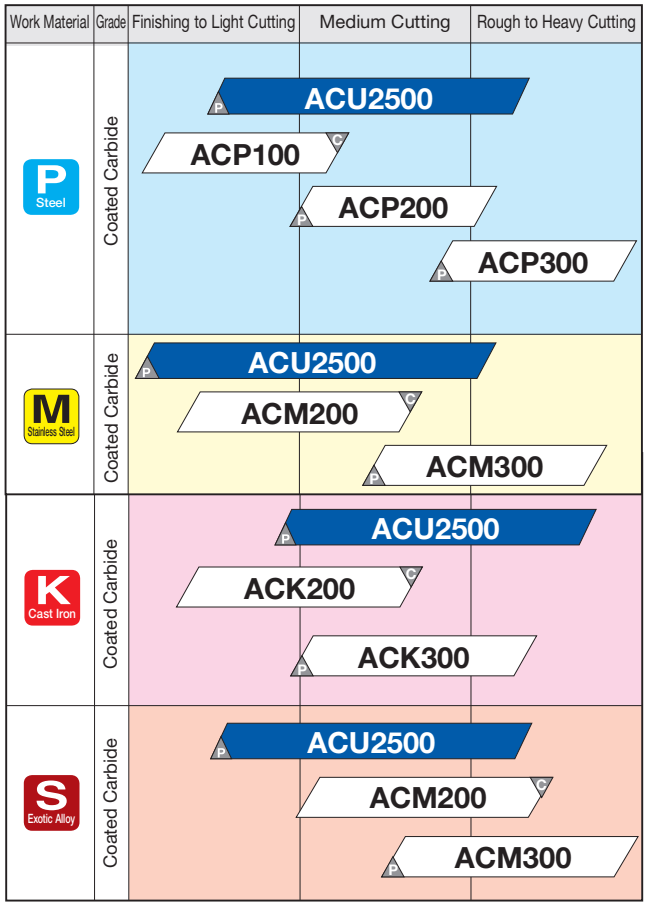


Ramping



■ Insert Grade Selection

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



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

■ Product Range

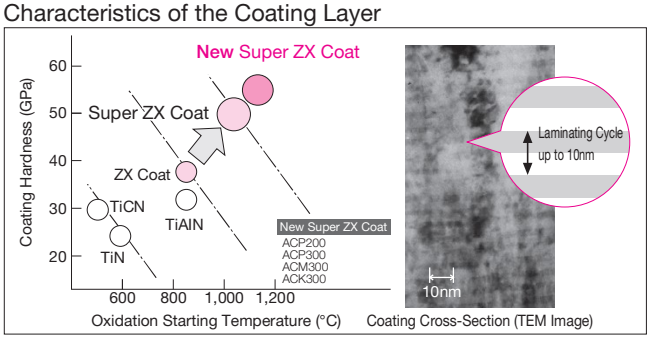
Cat. No.	Nose Radius (inch)					
	R.016	R.031	R.047	R.063	R.094	R.126
LNEX 0804○○PNER-L	●	●	●	●		
LNEX 0804○○PNER-G	●	●	●	●		
LNEX 1306○○PNER-L	●	●	●	●	●	●
LNEX 1306○○PNER-G	●	●	●	●	●	●
LNEX 1306○○PNER-H	●	●	●	●	●	●

■ Coating Features

P Super ZX Coat
(PVD: Physical Vapor Deposition)

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

Characteristics of the Coating Layer

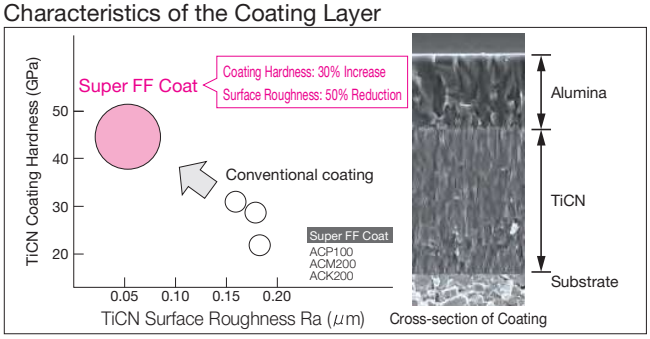


- ▸ Compared to conventional tools, the coating hardness has been increased by 40% and the oxidation starting temperature has been increased by 200°C
- ▸ Enables more than 1.5 times the machining speed and efficiency of conventional tools
- ▸ Achieves more than double the tool life of conventional tools

C Super FF Coat
(CVD: Chemical Vapor Deposition)

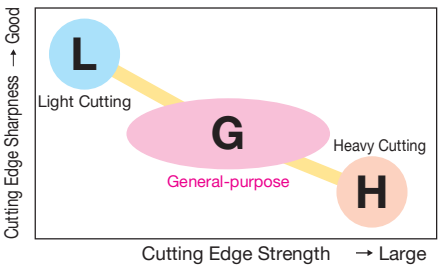
Provides excellent wear resistance and high reliability thanks to our coating stress control technology and the ultra-fine crystal grain coating layer of the Super FF Coat achieved through our proprietary CVD process technology

Characteristics of the Coating Layer

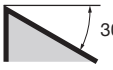
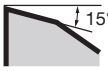
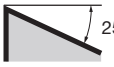
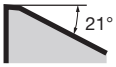


- ▸ Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- ▸ High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- ▸ Achieves more than double the tool life of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

■ Chipbreaker Selection

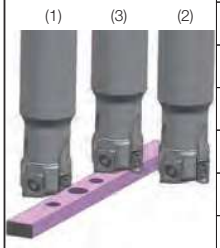


■ Chipbreaker Lineup

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

■ Application Examples

4140 Machine Components		Sumitomo	Conventional Tool
Machining Center: BT30	Tool	TSXF08020E	Vertical Type 4 Corners
	Grade	ACP200	-
	Chipbreaker	G	-
	Cutter Dia. (mm)	20	20
	Number of Teeth	3	3
	v_c (SFM)	886	886
	v_f (IPM)	26	26
	f_z (IPT)	0.002	0.002
	a_p (inch)	0.315	0.315
	a_e (inch)	0.025	0.028
	Coolant	Wet	Wet
	Results	Reduced finishing processes thanks to wall surface accuracy superior to conventional tools.	



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

304 Stainless Steel Guide		Sumitomo	Conventional Tool
Machining Center: BT50	Tool	TSXM13125RS	-
	Grade	ACM200	-
	Chipbreaker	L	-
	Cutter Dia. (mm)	125	125
	Number of Teeth	10	8
	V_c (SFM)	230	230
	V_f (IPM)	3.15	1.57
	f_z (IPT)	0.0018	0.0011
	a_p (inch)	0.197	0.197
	a_e (inch)	3.74	3.74
	Coolant	Wet	Wet
	Results	2 times the machining efficiency and 2 times longer tool life.	

Gray Cast Iron Cylinder Block		Sumitomo	Conventional Tool
Machining Center: BT40	Tool	TSX13050RS	-
	Grade	ACK300	-
	Chipbreaker	L	-
	Cutter Dia. (mm)	50	50
	Number of Teeth	4	4
	V_c (SFM)	771	771
	V_f (IPM)	23.6	23.6
	f_z (IPT)	.004	.004
	a_p (inch)	0.0315	0.0315
	a_e (inch)	0.0315	0.0315
	Coolant	Wet	Wet
	Results	Dimensional tolerance and surface roughness superior to conventional tools.	

Cast Steel Shaft Housing		Sumitomo	Conventional Tool
Machining Center: BT40	Tool	TSX13100R	-
	Grade	ACP200	-
	Chipbreaker	G	-
	Cutter Dia. (mm)	100	100
	Number of Teeth	6	8
	V_c (SFM)	600	450
	V_f (IPM)	37.87	39.37
	f_z (IPT)	0.011	0.011
	a_p (inch)	Roughing: 0.12", Finishing: 0.04"	Roughing: 0.12", Finishing: 0.04"
	a_e (inch)	-	-
	Coolant	Wet	Wet
	Results	Machined surface superior to conventional tools.	

Ductile Cast Iron Housing		Sumitomo	Conventional Tool
Machining Center: BT40	Tool	TSXM13050RS	Single-Sided 4 Corners
	Grade	ACK300	-
	Chipbreaker	G	-
	Cutter Dia. (mm)	50	50
	Number of Teeth	5	5
	V_c (SFM)	787	787
	V_f (IPM)	45.3	45.3
	f_z (IPT)	0.006	0.006
	a_p (inch)	0.04	0.04
	a_e (inch)	1.18	1.18
	Coolant	Dry	Dry
	Results	Tool life extension of 131% achieved.	

4130 Bearing Cover		Sumitomo	Competitor's Product
Horizontal Machining Center: BT50	Tool	TSXM13080RS	-
	Grade	ACP200	-
	Chipbreaker	H	-
	Cutter Dia. (mm)	80	80
	Number of Teeth	7	6
	V_c (SFM)	591	591
	V_f (IPM)	37.4	37.4
	f_z (IPT)	0.005	0.008
	a_p (inch)	0.031	0.031
	a_e (inch)	1.97	1.97
	Coolant	Dry	Dry
	Results	Tool life extension of 333% achieved.	

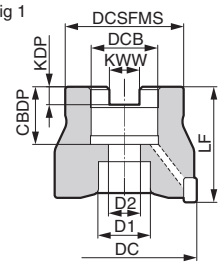
TSX(F) SHELL MILL - *8mm* Inserts

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

Rake Angle		
	Radial	-20°
	Axial	-6°

8mm 90° | .315" 90°

Fig 1



Body (Standard Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lb / *kg*)	Fig
Inch	**TSX31500R**	●	1.500	1.339	1.750	.750	.312	.190	.750	.609	.406	4	0.44	1
	TSX32000R	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	5	0.88	1
	TSX32500R	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	6	1.10	1
Metric	**TSX08040RS**	★	*40*	*33*	*40*	*16.0*	*8.4*	*5.6*	*18*	*14*	*9*	4	*0.21*	1
	TSX08050RS	★	*50*	*41*	*40*	*22.0*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.30*	1
	TSX08063RS	★	*63*	*50*	*40*	*22.0*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.53*	1
	TSX08080RS	★	**80*	*55*	*50*	*27.0*	*12.4*	*7.0*	*22*	*20*	*14*	7	*0.99*	1
	TSX08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25*	*20*	*14*	7	*1.00*	1

Body (Extra Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lb / *kg*)	Fig
Inch	**TSXF31500R**	●	1.500	1.339	1.750	.750	.312	.190	.750	0.609	.406	6	0.44	1
	TSXF32000R	●	2.000	1.500	1.750	.750	.312	.190	.750	.609	.406	8	0.88	1
	TSXF32500R	●	2.500	1.750	1.750	1.000	.375	.220	.750	.797	.531	10	1.10	1
Metric	**TSXF08040RS**	★	*40*	*33*	*40*	*16.0*	*8.4*	*5.6*	*18*	*14*	*9*	6	*0.21*	1
	TSXF08050RS	★	*50*	*41*	*40*	*22.0*	*10.4*	*6.3*	*20*	*18*	*11*	8	*0.31*	1
	TSXF08063RS	★	*63*	*50*	*40*	*22.0*	*10.4*	*6.3*	*20*	*18*	*11*	10	*0.54*	1
	TSXF08080RS	★	**80*	*55*	*50*	*27.0*	*12.4*	*7.0*	*22*	*20*	*14*	11	*0.97*	1
	TSXF08080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25*	*20*	*14*	11	*0.98*	1

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

● USA stocked item ★ Worldwide Warehouse item

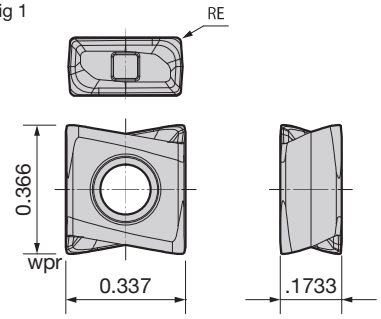
Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide							
Process	High-speed / Light		P M			K		M S	
	General-purpose	K P M S	P M	P M		K		M S	M S
	Roughing	K P M S		P M	P M		K		M S
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX080404PNER-L	★		●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-L	★		●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-L	★		●			●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-L	★		●			●	●	●	.063" / *1.6*	.024" / *.6*	1
LNEX080404PNER-G	★	●	●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-G	●	●	●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-G	★	●	●	●	●	●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-G	★	●	●	●	●	●	●	●	.063" / *1.6*	.024" / *.6*	1

Fig 1



Parts

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

Identification Code - Inch

TSX F 3 2000 R

Cutter Series | Extra Fine Pitch | Insert Series | Cutter Dia. 2.000" | Feed Direction

Identification Code - Metric

TSX F 08 050 R S

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

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c(sfm)Min-Max	Feed Rate f_z(IPT) Min-Max	Recommended Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACU2500 ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACU2500 ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACU2500 ACK300 ACK200

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/CAT40/HSK63A machine tools.

N·m Recommended Tightening Torque (N·m)

Sumi Dual Mill

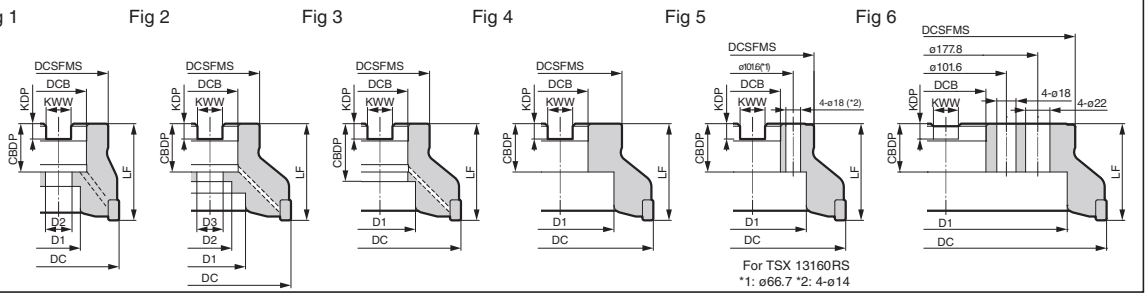
TSX SHELL MILL -13mm Inserts

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

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

.473" 90°

12mm 90°



Body (Standard Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lb / *kg*)	Fig
Inch	**TSX41500R**	●	1.500	1.339	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	4	0.44	1
	TSX42000R	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	5	0.66	1
	TSX42500R	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	6	1.10	1
	TSX43000R	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	7	1.76	1
	TSX44000R	●	4.000	2.870	2.000	1.500	0.625	0.380	1.000	2.000	0.781	-	9	4.85	1
	TSX45000R	●	5.000	3.750	2.500	1.500	0.625	0.380	1.000	2.000	0.781	-	12	7.50	1
	TSX46000R	●	6.000	4.380	2.500	1.500	0.625	0.380	1.000	2.000	0.781	-	14	11.0	1
Metric	**TSX13040RS**	★	*40*	*33*	*40*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	-	*3*	*0.20*	1
	TSX13050RS	★	*50*	*41*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	*4*	*0.30*	1
	TSX13063RS	★	*63*	*50*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	*5*	*0.50*	1
	TSX13080RS	★	**80*	*55*	*50*	*27.0*	*12.4*	*7.0*	*22.0*	*20*	*14*	-	*5*	*0.92*	1
	TSX13100RS	★	*100*	*70*	*50*	*32.0*	*14.4*	*8.0*	*32.0*	*46*	-	-	*6*	*1.35*	3
	TSX13125RS	★	*125*	*80*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*52*	*29*	-	*7*	*2.55*	1
	TSX13160RS	★	*160*	*130*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*90*	-	-	*8*	*4.97*	5*
	TSX13200RS	★	*200*	*160*	*63*	*60.0*	*25.7*	*14.0*	*35.0*	*135*	-	-	*12*	*6.20*	5
	TSX13250RS	★	*250*	*180*	*63*	*60.0*	*25.7*	*14.0*	*35.0*	*160*	-	-	*14*	*9.35*	5
	TSX13315RS	★	*315*	*240*	*63*	*60.0*	*25.7*	*14.0*	*35.0*	*230*	-	-	*16*	*16.42*	6
	TSX13080R	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25.0*	*20*	*14*	-	*5*	*0.93*	1
	TSX13100R	★	**100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32.0*	*46*	*27*	*18*	*6*	*1.88*	2
	TSX13125R	★	*125*	*80*	*63*	*38.1*	*15.9*	*10.0*	*35.5*	*55*	*30*	-	*7*	*2.61*	1
	TSX13160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11.0*	*38.0*	*72*	-	-	*8*	*4.18*	4
	TSX13200R	★	*200*	*160*	*63*	*47.625*	*25.4*	*14.0*	*35.0*	*135*	-	-	*12*	*6.36*	5
	TSX13250R	★	*250*	*180*	*63*	*47.625*	*25.4*	*14.0*	*35.0*	*160*	-	-	*14*	*9.60*	5
	TSX13315R	★	*315*	*240*	*63*	*47.625*	*25.4*	*14.0*	*35.0*	*230*	-	-	*16*	*16.68*	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

● USA stocked item ★ Worldwide Warehouse item

Identification Code - Inch

TSX 4 2000 R

Cutter Series | Insert Series | Cutter Dia. 2.000" | Feed Direction

Identification Code - Metric

TSX 13 100 R S

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

Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c(SFM)Min-Max	Feed Rate f_z(IPT) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

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/CAT40/HSK63A machine tools.

Recommended Cutting Conditions - Metric

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

Note · The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
· The above figures are guidelines for use with BT50/CAT50/HSK100A machine tools.

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

TSX SHELL MILL - *13mm* Inserts

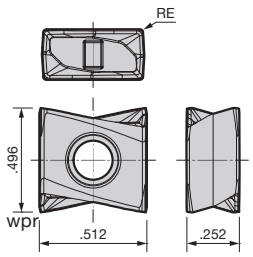
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P/M			K		M/S				
	General-purpose	K/P/S		P/M		K		M/S	M/S			
	Roughing	K/P/S		P/M	P/M		K		M/S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L		★		●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L		★		●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L		★		●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L		★		●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L		★		●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L		★		●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L		★		●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		★	●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		★	●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		★	●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		★	●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H		★		●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H		★		●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H		★		●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H		★		●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H		★		●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H		★		●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H		★		●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Parts

Applicable Cutter	Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Seat	Anti-seize Cream
TSX41500R	BFTX03510IP	3.0	TRDR15IP	HPS1015	TRB15IP	-	SUMI-P
TSX42000R							
TSX42500R							
TSX43000R							
TSX44000R							
TSX45000R							
TSX46000R							
TSX13040RS			-			-	
TSX13050RS							
TSX13063RS							
TSX13080RS							
TSX13100RS							
TSX13125RS							
TSX13160RS			TRDR15IP	-	-	TSXS13R	
TSX13200RS							
TSX13250RS							
TSX13315RS							
TSX13080R			-	HPS1015	TRB15IP	-	
TSX13100R							
TSX13125R							
TSX13160R			TRDR15IP	-	-	TSXS13R	
TSX13200R							
TSX13250R							
TSX13315R							

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

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

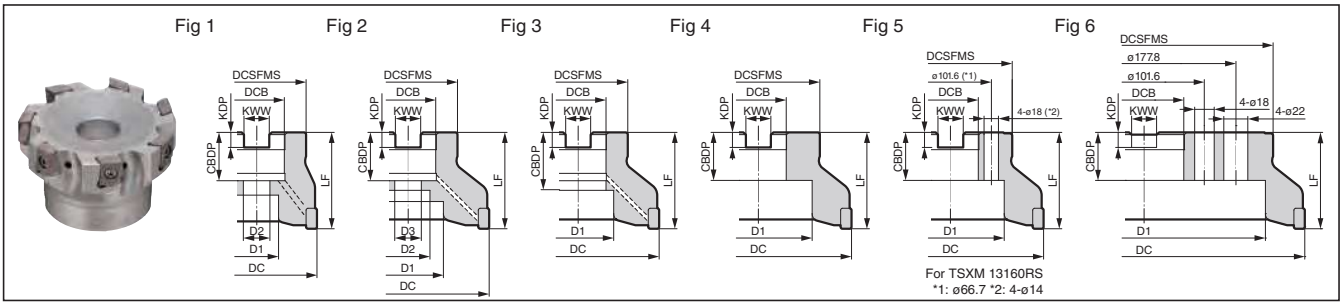
Sumi Dual Mill

TSXM Shell Mill -*13mm* Inserts

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

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

.473" 90° | 12mm 90°



Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM13040RS**	★	40	33	40	16.0	8.4	5.6	18.0	14	9	-	4	0.19	1
	TSXM13050RS	★	50	41	40	22.0	10.4	6.3	20.0	18	11	-	5	0.28	1
	TSXM13063RS	★	63	50	40	22.0	10.4	6.3	20.0	18	11	-	6	0.50	1
	TSXM13080RS	★	*80	55	50	27.0	12.4	7.0	22.0	20	14	-	7	0.92	1
	TSXM13100RS	★	100	70	50	32.0	14.4	8.0	32.0	46	-	-	8	1.36	3
	TSXM13125RS	★	125	80	63	40.0	16.4	9.0	29.0	52	29	-	10	2.57	1
	TSXM13160RS	★	160	130	63	40.0	16.4	9.0	29.0	90	-	-	12	5.02	5*
	TSXM13200RS	★	200	160	63	60.0	25.7	14.0	35.0	135	-	-	16	6.32	5
	TSXM13250RS	★	250	180	63	60.0	25.7	14.0	35.0	160	-	-	20	9.42	5
	TSXM13315RS	★	315	240	63	60.0	25.7	14.0	35.0	230	-	-	24	16.37	6
	TSXM13080R	★	*80	55	50	25.4	9.5	6.0	25.0	20	14	-	7	0.93	1
	TSXM13100R	★	*100	70	63	31.75	12.7	8.0	32.0	46	27	18	8	1.90	2
	TSXM13125R	★	125	80	63	38.1	15.9	10.0	35.5	55	30	-	10	2.62	1
	TSXM13160R	★	160	100	63	50.8	19.1	11.0	38.0	72	-	-	12	4.22	4
	TSXM13200R	★	200	160	63	47.625	25.4	14.0	35.0	135	-	-	16	6.48	5
	TSXM13250R	★	250	180	63	47.625	25.4	14.0	35.0	160	-	-	20	9.68	5
	TSXM13315R	★	315	240	63	47.625	25.4	14.0	35.0	230	-	-	24	16.63	6

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

Identification Code

TSX M 13 100 R S

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

Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c(SFM) Min-Max	Feed Rate f_z(IPT) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500 - 1000	.004-.014	ACU2500 ACP200 ACP300 ACP100
		> 280 HB	250 - 750	.004-.014	
	Alloy Steel	180-280HB	330 - 815	.004-.012	
M	Stainless Steel	220-280HB	300 - 600	.004-.010	ACU2500 ACM300 ACM200
		> 280HB	250 - 550	.004-.010	
S	Exotic Material	-	100 - 300	.004-.008	
K	Cast Iron/Ductile Cast Iron	250HB	330 - 815	.004-.014	ACU2500 ACK300 ACK200

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/CAT40/HSK63A machine tools.

Recommended Cutting Conditions - Metric

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

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50/CAT50/HSK100A machine tools.

N·m Recommended Tightening Torque (N·m) ● mark: Standard stocked item

TSXM SHELL MILL -*13mm* Inserts

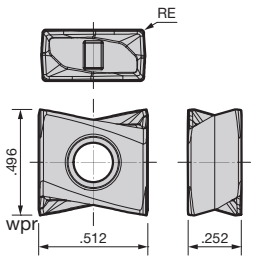
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P M			K		M S				
	General-purpose	K P M S		P M		K		M S	M S			
	Roughing	K P M S		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L		★		●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L		★		●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L		★		●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L		★		●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L		★		●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L		★		●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L		★		●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		★	●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		★	●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		★	●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		★	●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H		★		●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H		★		●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H		★		●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H		★		●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H		★		●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H		★		●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H		★		●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



●: USA stocked item

Parts

Applicable Cutter	Screw		Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Seat	Anti-seize Cream
		N·m					
TSXM13040RS TSXM13050RS TSXM13063RS TSXM13080RS TSXM13100RS TSXM13125RS TSXM13160RS TSXM13200RS TSXM13250RS TSXM13315RS	BFTX03510IP	3.0	-	HPS1015	TRB15IP	-	SUMI-P
			TRDR15IP	-	-	TSXS13R	
TSXM13080R TSXM13100R TSXM13125R TSXM13160R TSXM13200R TSXM13250R TSXM13315R			-	HPS1015	TRB15IP	-	
			TRDR15IP	-	-	TSXS13R	

Sumi Dual Mill

TSXF SHELL MILL - *13mm* Inserts

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

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

12mm 90°

.473" 90°

Fig 1

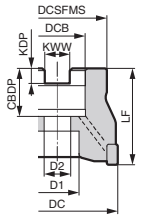


Fig 2

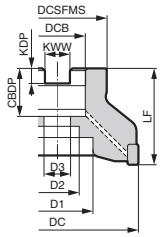


Fig 3

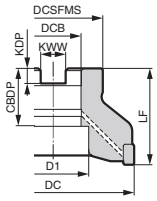


Fig 4

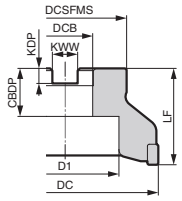
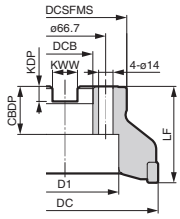


Fig 5



Body (Extra Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**TSXF41500R**	●	1.500	1.339	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	5	0.44	1
Inch	**TSXF42000R**	●	2.000	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	-	6	0.66	1
Inch	**TSXF42500R**	●	2.500	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	8	1.10	1
Inch	**TSXF43000R**	●	3.000	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	-	10	1.76	1
Inch	**TSXF44000R**	●	4.000	2.870	2.000	1.500	0.625	0.380	1.000	2.000	0.781	-	13	4.85	1
Metric	**TSXF13040RS**	★	*40*	*33*	*40*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	-	5	*0.18*	1
Metric	**TSXF13050RS**	★	*50*	*41*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	6	*0.29*	1
Metric	**TSXF13063RS**	★	*63*	*50*	*40*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	-	7	*0.50*	1
Metric	**TSXF13080RS**	★	**80*	*55*	*50*	*27.0*	*12.4*	*7.0*	*22.0*	*20*	*14*	-	8	*0.92*	1
Metric	**TSXF13100RS**	★	*100*	*70*	*50*	*32.0*	*14.4*	*8.0*	*32.0*	*46*	-	-	10	*1.34*	3
Metric	**TSXF13125RS**	★	*125*	*80*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*52*	*29*	-	14	*2.58*	1
Metric	**TSXF13160RS**	★	*160*	*130*	*63*	*40.0*	*16.4*	*9.0*	*29.0*	*90*	-	-	16	*5.08*	5
Inch	**TSXF13080R**	★	**80*	*55*	*50*	*25.4*	*9.5*	*6.0*	*25.0*	*20*	*14*	-	8	*0.93*	1
Inch	**TSXF13100R**	★	**100*	*70*	*63*	*31.75*	*12.7*	*8.0*	*32.0*	*46*	*27*	*18*	10	*1.88*	2
Inch	**TSXF13125R**	★	*125*	*80*	*63*	*38.1*	*15.9*	*10.0*	*35.5*	*55*	*30*	-	14	*2.60*	1
Inch	**TSXF13160R**	★	*160*	*100*	*63*	*50.8*	*19.1*	*11.0*	*38.0*	*72*	-	-	16	*4.28*	4

Inserts are sold separately. Check the pilot diameter (DCB) when selecting the cutter.

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

Identification Code - Inch

TSX F 4 2000 R

Cutter Series | Extra Fine Pitch Series | Insert | Cutter Dia. 2.000" | Feed Direction

Identification Code - Metric

TSX F 13 100 R S

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

Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c(sfm)Min-Max	Feed Rate f_z(ipt) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500 - 1000	.004-.014	ACP200 ACP300 ACP100
P	Carbon Steel	> 280 HB	250 - 750	.004-.014	
P	Alloy Steel	180-280HB	330 - 815	.004-.012	
M	Stainless Steel	220-280HB	300 - 600	.004-.010	ACM300 ACM200
M	Stainless Steel	> 280HB	250 - 550	.004-.010	
S	Exotic Material	-	100 - 300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330 - 815	.004-.014	ACK300 ACK200

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.

Recommended Cutting Conditions - Metric

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

Note
· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
· The above figures are guidelines for use with BT50/CAT50/HSK100A machine tools.

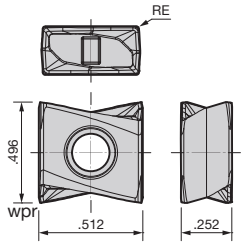
N·m Recommended Tightening Torque (N·m)

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P/M			K		M/S				
	General-purpose	P/M/K/S		P/M		K		M/S	M/S			
	Roughing	P/M/K/S		P/M	P/M		K		M/S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L		★		●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L		★		●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L		★		●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L		★		●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L		★		●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L		★		●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L		★		●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		★	●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		★	●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		★	●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		★	●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H		★		●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H		★		●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H		★		●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H		★		●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H		★		●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H		★		●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H		★		●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Parts

Applicable Cutter	Screw		Integrated Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Anti-seize Cream
		N·m				
TSXF41500R	BFTX03510IP	3.0	TRDR15IP	HPS1015	TRB15IP	SUMI-P
TSXF42000R						
TSXF42500R						
TSXF43000R						
TSXF44000R						
TSXF13040RS			-			
TSXF13050RS						
TSXF13063RS						
TSXF13080RS						
TSXF13100RS						
TSXF13125RS						
TSXF13160RS			TRDR15IP	-	-	
TSXF13080R			-	HPS1015	TRB15IP	
TSXF13100R						
TSXF13125R						
TSXF13160R			TRDR15IP	-	-	

●: USA stocked item

TSX(F) ENDMILL - 8mm Inserts

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

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

8mm 90° | .315" 90°

Fig 1

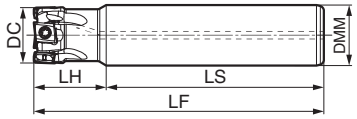
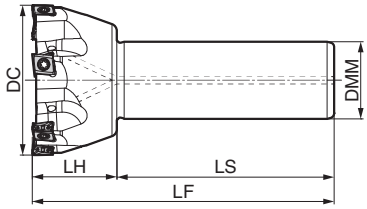


Fig 2



Body (Standard Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (lbs/kg)	Fig
Inch	**TSX30625EW**	●	0.625	0.625	1.312	1.906	3.218	2	0.22	1
	TSX30750EW	●	0.750	0.750	1.534	2.030	3.563	2	0.35	1
	TSX31000EW	●	1.000	1.000	2.060	2.281	4.341	3	0.88	1
	TSX31250EW	●	1.250	1.250	2.060	2.281	4.341	3	1.32	1
	TSX31500EW	●	1.500	1.250	2.060	2.281	4.341	4	1.54	2
Metric	**TSX08016E**	★	*16*	*16*	*25*	*75*	*100*	2	*0.13*	1
	TSX08020E	★	*20*	*20*	*30*	*80*	*110*	2	*0.22*	1
	TSX08020E-16	★	*20*	*16*	*30*	*80*	*110*	2	*0.15*	2
	TSX08025E	★	*25*	*25*	*30*	*90*	*120*	3	*0.40*	1
	TSX08025E-20	★	*25*	*20*	*30*	*90*	*120*	3	*0.26*	2
	TSX08032E	★	*32*	*32*	*30*	*90*	*120*	3	*0.67*	1
	TSX08032E-25	★	*32*	*25*	*30*	*90*	*120*	3	*0.43*	2
	TSX08040E	★	*40*	*32*	*30*	*90*	*120*	4	*0.72*	2
	TSX08050E	★	*50*	*32*	*30*	*90*	*120*	5	*0.85*	2
	TSX08063E	★	*63*	*32*	*35*	*90*	*125*	6	*1.09*	2
	TSX08080E	★	*80*	*32*	*35*	*90*	*125*	7	*1.44*	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (lbs/kg)	Fig
Inch	**TSXF30750EW**	●	0.750	0.750	1.534	2.030	3.563	3	0.44	1
	TSXF31000EW	●	1.000	1.000	2.060	2.281	4.341	4	0.88	1
	TSXF31250EW	●	1.250	1.250	2.060	2.281	4.341	5	1.32	1
	TSXF31500EW	●	1.500	1.250	2.060	2.281	4.341	6	1.54	2
Metric	**TSXF08020E**	★	*20*	*20*	*30*	*80*	*110*	3	*0.22*	1
	TSXF08025E	★	*25*	*25*	*30*	*90*	*120*	4	*0.40*	1
	TSXF08032E	★	*32*	*32*	*30*	*90*	*120*	5	*0.67*	1
	TSXF08040E	★	*40*	*32*	*30*	*90*	*120*	6	*0.73*	2
	TSXF08050E	★	*50*	*32*	*30*	*90*	*120*	8	*0.85*	2
	TSXF08063E	★	*63*	*32*	*35*	*90*	*125*	10	*1.10*	2
	TSXF08080E	★	*80*	*32*	*35*	*90*	*125*	11	*1.42*	2

Inserts are sold separately.

Identification Code - Inch

TSX F 3 1000 EW

TSX	F	3	1000	EW
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 1.000"	Weldon Shank Type

Identification Code - Metric

TSX F 08 032 E (-25)

TSX	F	08	032	E	(-25)
Cutter Series	Extra Fine Pitch	Insert Size	Cutter Dia.	Shank Type	Shank Dia.

Parts

Applicable Cutter	Screw	N·m	Wrench	Anti-seize Cream
TSX08016E, TSX08020E, TSXF08020E	BFTX0306IP	2.0	TRDR08IP	SUMI-P
TSX08025E to 80E, TSXF08025E to 80E	BFTX0308IP			

Insert Size	Catalog Number	Insert Screw	N·m	Wrench
TSX3000 (LNEX08)	TSX□30625□~TSX□30750□	BFTX0306IP	2.0	TRDR08IP
	TSX□31000□~TSX□32500□	BFTX0308IP		
TSX4000 (LNEX13)	TSX□41000□~TSX□44000□	BFTX03510IP	3.0	TRDR15IP

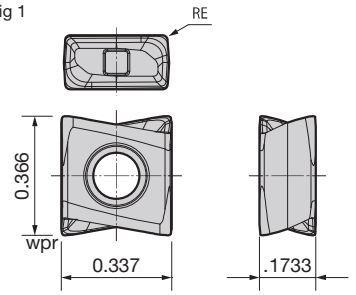
N·m Recommended Tightening Torque (N·m)

Insert

Dimensions (inch "/*mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P M			K		M S				
	General-purpose	K P M S	P M	P M		K		M S	M S			
	Roughing	K P M S		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX080404PNER-L		★		●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-L		★		●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-L		★		●			●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-L		★		●			●	●	●	.063" / *1.6*	.024" / *.6*	1
LNEX080404PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-G		●	●	●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-G		★	●	●	●	●	●	●	●	.063" / *1.6*	.024" / *.6*	1

Fig 1



Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c(sfm)Min-Max	Feed Rate f_z(ipt) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

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.

Recommended Cutting Conditions - Metric

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

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50/CAT50/HSK100A machine tools.

TSX(M/F) ENDMILL - *13mm* Inserts

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

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

12mm 90° | .472" 90°

Fig 1

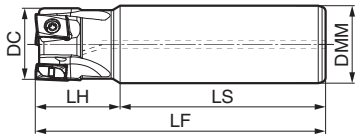
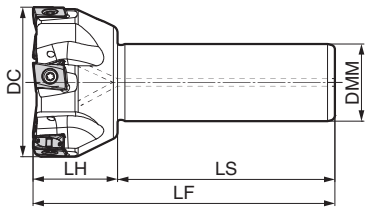


Fig 2



Body (Standard Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**TSX41000EW**	●	1.000	1.000	2.060	2.281	4.341	2	0.66	1
	TSX41250EW	●	1.250	1.250	2.060	2.281	4.341	2	1.32	1
	TSX41500EW	●	1.500	1.250	2.060	2.281	4.341	3	1.54	2
Metric	**TSX13025E**	★	*25*	*25*	*35*	*85*	*120*	2	*0.38*	1
	TSX13032E	★	*32*	*32*	*35*	*85*	*120*	2	*0.66*	1
	TSX13040E	★	*40*	*32*	*30*	*90*	*120*	3	*0.71*	2
	TSX13050E	★	*50*	*32*	*30*	*90*	*120*	4	*0.81*	2
	TSX13063E	★	*63*	*32*	*35*	*90*	*125*	5	*1.08*	2
	TSX13080E	★	*80*	*32*	*35*	*90*	*125*	5	*1.40*	2

Inserts are sold separately.

Body (Fine Pitch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**TSXM13032E**	★	*32*	*32*	*35*	*85*	*120*	3	*0.65*	1
	TSXM13040E	★	*40*	*32*	*30*	*90*	*120*	4	*0.71*	2
	TSXM13050E	★	*50*	*32*	*30*	*90*	*120*	5	*0.80*	2
	TSXM13063E	★	*63*	*32*	*35*	*90*	*125*	6	*1.07*	2
	TSXM13080E	★	*80*	*32*	*35*	*90*	*125*	7	*1.41*	2

Inserts are sold separately.

Body (Extra Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (lbs/kg)	Fig
Inch	**TSXF41250EW**	●	1.250	1.250	2.060	2.281	4.341	3	1.32	1
	TSXF41500EW	●	1.500	1.250	2.060	2.281	4.341	4	1.78	2
Metric	**TSXF13040E**	★	*40*	*32*	*30*	*90*	*120*	5	*0.70*	2
	TSXF13050E	★	*50*	*32*	*30*	*90*	*120*	6	*0.80*	2
	TSXF13063E	★	*63*	*32*	*30*	*90*	*125*	7	*1.07*	2
	TSXF13080E	★	*80*	*32*	*35*	*90*	*125*	8	*1.42*	2

Inserts are sold separately.

● USA stocked item ★ Worldwide Warehouse item

Identification Code - Inch

TSX F 4 1000 EW

TSX	F	4	1000	EW
Cutter Series	Extra Fine Pitch	Insert Series	Cutter Dia. 1.000"	Weldon Shank Type

Identification Code - Metric

TSX M 13 050 E

TSX	M	13	050	E
Cutter Series	M: Fine Pitch F : Extra Fine Pitch	Insert Size	Cutter Dia.	Shank Type

Parts

Screw		Wrench	Anti-seize Cream
	N·m		
BFTX03510IP	3.0	TRDR15IP	SUMI-P

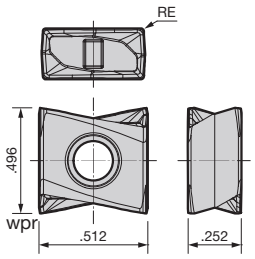
N·m Recommended Tightening Torque (N·m) ●: USA Standard stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P/M			K		M/S				
	General-purpose	K/P/S		P/M		K		M/S	M/S			
	Roughing	K/P/S		P/M	P/M		K		M/S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L		★		●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L		★		●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L		★		●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L		★		●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L		★		●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L		★		●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L		★		●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		★	●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		★	●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		★	●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		★	●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H		★		●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H		★		●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H		★		●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H		★		●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H		★		●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H		★		●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H		★		●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c(sfm)Min-Max	Feed Rate f_z(ipt) Min-Max	Insert Grade
P	Carbon Steel	180-280 HB	500-1000	.004-.014	ACP200 ACP300 ACP100
		> 280 HB	250-750	.004-.014	
	Alloy Steel	180-280HB	330-815	.004-.012	
M	Stainless Steel	220-280HB	300-600	.004-.010	ACM300 ACM200
		> 280HB	250-550	.004-.010	
S	Exotic Material	-	100-300	.004-.008	ACM300 ACM200
K	Cast Iron/Ductile Cast Iron	250HB	330-815	.004-.014	ACK300 ACK200

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.

Recommended Cutting Conditions - Metric

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

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50/CAT50/HSK100A machine tools.

TSXR Repeater Shellmill - *8mm* Inserts

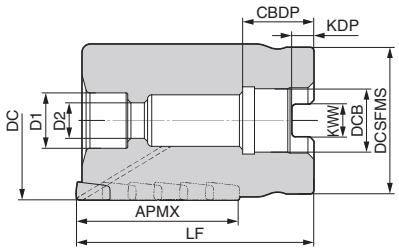
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

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

34 to 60 mm 90°

1.614" to 2.362" 90°

Fig 1



Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Weight (kg)	Fig
Metric	**TSXR08032RS3416Z02**	★	*32*	*34*	*33*	*55*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	10	5	*0.17*	1
	TSXR08040RS4016Z03	★	*40*	*40*	*37*	*60*	*16.0*	*8.4*	*5.6*	*18.0*	*14*	*9*	18	6	*0.32*	1
	TSXR08050RS5422Z03	★	*50*	*54*	*47*	*75*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	24	8	*0.70*	1
	TSXR08050RS5422Z04	★	*50*	*54*	*47*	*75*	*22.0*	*10.4*	*6.3*	*20.0*	*18*	*11*	32	8	*0.68*	1
	TSXR08063RS6027Z05	★	*63*	*60*	*60*	*80*	*27.0*	*12.4*	*7.0*	*22.0*	*20*	*14*	45	9	*1.25*	1

Inserts are sold separately.

★: Worldwide Warehouse Item

Identification Code

TSXR 08 050 R S 54 22 Z03

TSXR	08	050	R	S	54	22	Z03
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Hole Diameter	Effective No. of Teeth

Parts

Applicable Cutter	Screw		Wrench	Bolt	Anti-seize Cream
TSXR08032RS3416Z02	BFTX0308IP	2.0	TRDR08IP	BX0845	SUMI-P
TSXR08040RS4016Z03				BX0850	
TSXR08050RS5422Z03				BX1060	
TSXR08050RS5422Z04					
TSXR08063RS6027Z05				BX1265	

N·m Recommended Tightening Torque (N·m)

TSXR Repeater Shellmill - *8mm* Inserts

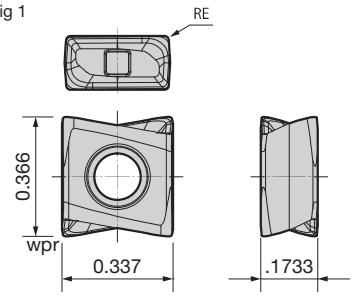
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Insert

Dimensions (inch "/*mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P/M			K		M/S				
	General-purpose	P/M/K/S	P/M	P/M		K		M/S	M/S			
	Roughing	P/M/K/S		P/M	P/M		K		M/S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX080404PNER-L		★		●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-L		★		●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-L		★		●			●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-L		★		●			●	●	●	.063" / *1.6*	.024" / *.6*	1
LNEX080404PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-G		●	●	●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-G		★	●	●	●	●	●	●	●	.063" / *1.6*	.024" / *.6*	1

Fig 1



Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - 280	0.10 - 0.30	ACP100
		> 280HB	70 - 200	0.10 - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - 220	0.10 - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - 180	0.10 - 0.25	ACM200
		> 280HB	70 - 160	0.10 - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - 225	0.10 - 0.30	ACK200 ACK300
S	Exotic Alloy	-	30 - 90	0.05 - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for a_e = diameter 20% or less.

● mark: Standard stocked item

TSXR Repeater Shellmill - *13mm* Inserts

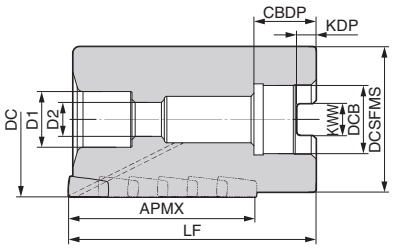
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

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

41 to 60 mm 90°

1.614" to 2.362" 90°

Fig 1



Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR13040RS4116Z02**	★	40	41	37	60	16.0	8.4	5.6	18.0	14	9	8	4	2	0.31	1
	TSXR13050RS6022Z03	★	50	60	47	80	22.0	10.4	6.3	20.0	18	11	18	6	3	0.66	1
	TSXR13063RS5027Z03	★	63	50	60	75	27.0	12.4	7.0	22.0	20	14	15	5	3	1.12	1
	TSXR13063RS6027Z04	★	63	60	60	80	27.0	12.4	7.0	22.0	20	14	24	6	4	1.15	1
	TSXR13080RS6032Z04	★	80	60	77	80	32.0	14.4	8.0	26.0	25	18	24	6	4	2.06	1
	TSXR13080RS6032Z05	★	80	60	77	80	32.0	14.4	8.0	26.0	25	18	30	6	5	2.04	1
	TSXR13100RS6040Z05	★	100	60	88	85	40.0	16.4	9.0	29.0	32	21	30	6	5	3.45	1
	TSXR13100RS6040Z06	★	100	60	88	85	40.0	16.4	9.0	29.0	32	21	36	6	6	3.44	1
	TSXR13125RS6040Z07	★	125	60	100	85	40.0	16.4	9.0	29.0	32	21	42	6	7	5.63	1

Inserts are sold separately.

★: Worldwide Warehouse Item

Identification Code

TSXR 13 050 R S 60 22 Z03

TSXR	13	050	R	S	60	22	Z03
Cutter Series	Insert Size	Cutter Dia.	Feed Direction	Metric Bore	Max. Depth of Cut	Mounting Hole Diameter	Effective No. of Teeth

Parts

Applicable Cutter	Screw		Wrench	Detachable Wrench Handle Grip	Detachable Wrench Bit	Bolt	Anti-seize Cream
TSXR13040RS4116Z02	BFTX03510IP	3.0	-	HPS1015	TRB15IP	BX0850	SUMI-P
TSXR13050RS6022Z03						BX1060	
TSXR13063RS5027Z03						BX1260	
TSXR13063RS6027Z04						BX1265	
TSXR13080RS6032Z04			TRDR15IP	-	-	BX1660	
TSXR13080RS6032Z05							
TSXR13100RS6040Z05						BX2065	
TSXR13100RS6040Z06							
TSXR13125RS6040Z07							

N·m Recommended Tightening Torque (N·m)

TSXR Repeater Shellmill - *13mm* Inserts

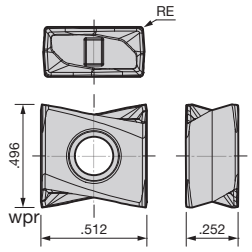
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P/M			K		M/S				
	General-purpose	K/P/S		P/M		K		M/S	M/S			
	Roughing	K/P/S		P/M	P/M		K		M/S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L		★		●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L		★		●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L		★		●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L		★		●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L		★		●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L		★		●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L		★		●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		★	●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		★	●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		★	●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		★	●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H		★		●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H		★		●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H		★		●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H		★		●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H		★		●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H		★		●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H		★		●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - 280	0.10 - 0.30	ACP100
		> 280HB	70 - 200	0.10 - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - 220	0.10 - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - 180	0.10 - 0.25	ACM200
		> 280HB	70 - 160	0.10 - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - 225	0.10 - 0.30	ACK200 ACK300
S	Exotic Alloy	-	30 - 90	0.05 - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for a_e = diameter 20% or less.

●: USA Standard stocked item

TSXR Repeater Endmill - *8mm* Inserts

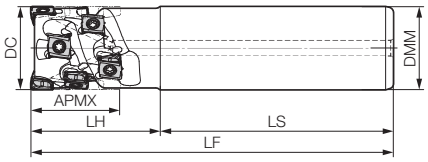
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

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

21 to 40 mm 90°

.827" to 1.575" 90°

Fig 1



Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR08020E2120Z01**	★	*20*	*21*	*20*	*30*	*80*	*110*	3	3	1	*0.22*	1
	TSXR08025E2725Z02	★	*25*	*27*	*25*	*35*	*90*	*125*	8	4	2	*0.39*	1
	TSXR08032E3432Z02	★	*32*	*34*	*32*	*50*	*90*	*140*	10	5	2	*0.74*	1
	TSXR08040E4032Z03	★	*40*	*40*	*32*	*60*	*90*	*150*	18	6	3	*0.92*	1

Inserts are sold separately.

★: Worldwide Warehouse Item

Identification Code

TSXR 08 025 E 27 25 Z02

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

Parts

Screw		Wrench	Anti-seize Cream
	N·m		
BFTX0308IP	2.0	TRDR08IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

TSXR Repeater Endmill - *8mm* Inserts

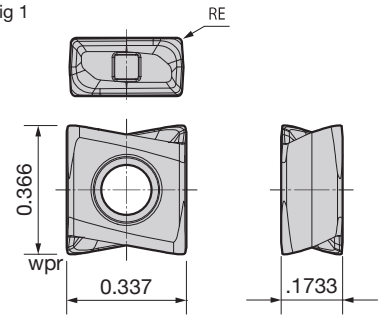
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

Insert

Dimensions (inch "/*mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P M			K		M S				
	General-purpose	K P M S	P M	P M		K		M S	M S			
	Roughing	K P M S		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX080404PNER-L		★		●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-L		★		●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-L		★		●			●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-L		★		●			●	●	●	.063" / *1.6*	.024" / *.6*	1
LNEX080404PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.067" / *1.7*	1
LNEX080408PNER-G		●	●	●	●	●	●	●	●	.032" / *0.8*	.055" / *1.4*	1
LNEX080412PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.039" / *1.0*	1
LNEX080416PNER-G		★	●	●	●	●	●	●	●	.063" / *1.6*	.024" / *.6*	1

Fig 1



Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - 280	0.10 - 0.30	ACP100
		> 280HB	70 - 200	0.10 - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - 220	0.10 - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - 180	0.10 - 0.25	ACM200
		> 280HB	70 - 160	0.10 - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - 225	0.10 - 0.30	ACK200 ACK300
S	Exotic Alloy	-	30 - 90	0.05 - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for a_e = diameter 20% or less.

●: USA Standard stocked item

TSXR Repeater Endmill - *13mm* Inserts

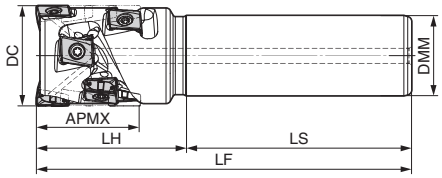
P Steel | M Stainless Steel | K Cast Iron | S Exotic Alloy

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

41 to 60 mm 90°

1.614" to 2.362" 90°

Fig 1



Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Depth of Cut APMX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Total No. of Teeth	Steps	Effective No. of Teeth	Weight (kg)	Fig
Metric	**TSXR13040E4132Z02**	★	*40*	*41*	*32*	*60*	*90*	*150*	8	4	2	*0.91*	1
	TSXR13050E6042Z03	★	*50*	*60*	*42*	*80*	*90*	*170*	18	6	3	*1.74*	1

Inserts are sold separately.

★: Worldwide Warehouse Item

Identification Code

TSXR 13 050 E 60 42 Z03

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

Parts

Screw		Wrench	Anti-seize Cream
	N·m		
BFTX03510IP	3.0	TRDR15IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

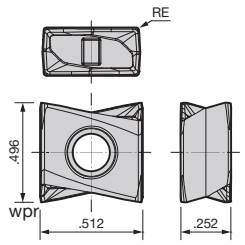
TSXR Repeater Endmill - *13mm* Inserts

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide										
Process	High-speed / Light		P M			K		M S				
	General-purpose	K P S		P M		K		M S	M S			
	Roughing	K P S		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Wiper Facet Length wpr	Fig
LNEX130604PNER-L		★		●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-L		★		●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-L		★		●			●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-L		★		●			●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-L		★		●			●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-L		★		●			●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-L		★		●			●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-G		★	●	●	●	●	●	●	●	.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-G		●	●	●	●	●	●	●	●	.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-G		★	●	●	●	●	●	●	●	.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-G		★	●	●	●	●	●	●	●	.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-G		★	●	●	●	●	●	●	●	.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-G		★	●	●	●	●	●	●	●	.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-G		★	●	●	●	●	●	●	●	.126" / *3.2*	.004" / *0.1*	1
LNEX130604PNER-H		★		●	●	●	●			.016" / *0.4*	.110" / *2.8*	1
LNEX130608PNER-H		★		●	●	●	●			.032" / *0.8*	.094" / *2.4*	1
LNEX130612PNER-H		★		●	●	●	●			.047" / *1.2*	.075" / *1.9*	1
LNEX130616PNER-H		★		●	●	●	●			.063" / *1.6*	.059" / *1.5*	1
LNEX130620PNER-H		★		●	●	●	●			.079" / *2.0*	.043" / *1.1*	1
LNEX130624PNER-H		★		●	●	●	●			.094" / *2.4*	.028" / *0.7*	1
LNEX130632PNER-H		★		●	●	●	●			.126" / *3.2*	.004" / *0.1*	1

Fig 1



Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	110 - 280	0.10 - 0.30	ACP100
		> 280HB	70 - 200	0.10 - 0.30	ACP200
	Alloy Steel	180 to 280 HB	90 - 220	0.10 - 0.25	ACP300
M	Stainless Steel	220 to 280 HB	90 - 180	0.10 - 0.25	ACM200
		> 280HB	70 - 160	0.10 - 0.25	ACM300
K	Cast Iron / Ductile Cast Iron	250HB	125 - 225	0.10 - 0.30	ACK200 ACK300
S	Exotic Alloy	-	30 - 90	0.05 - 0.15	ACM200 ACM300

Note
- The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity.
- The above figures are guidelines for use with BT50 machine tools.
- The above are the recommended cutting conditions for a_e = diameter 20% or less.

●: USA Standard stocked item

Wave Radius Mill

TSX(F) Modular - *8mm / 13mm* Inserts

SEC-Modular Tools

Rake Angle	Radial	-20°
	Axial	-6°

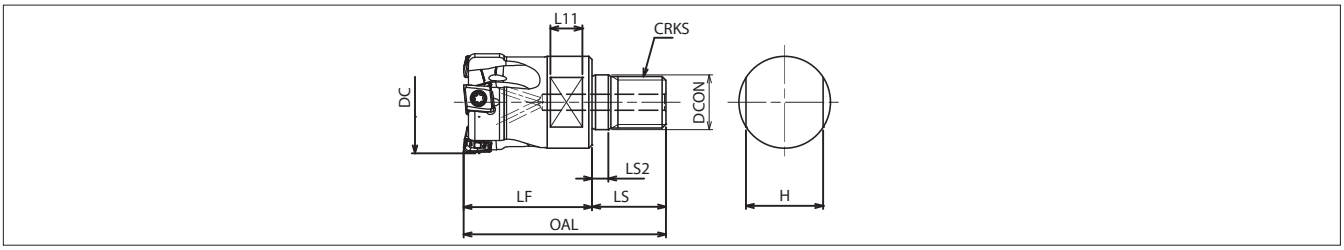
.315" 90° | 8mm 90°

TSX 08

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

.473" 90° | 12mm 90°

TSX 13



Head (TSXF30000M) Applicable Insert LNEX08

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
TSXF30750M10Z3	•	0.750	0.413	M10	1.929	1.181	0.197	0.748	0.315	0.591	3	1
TSXF31000M12Z4	•	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	4	1
TSXF31250M16Z5	•	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	5	1
TSXF31500M16Z6	•	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	6	1

Head (TSXF40000M) Applicable Insert LNEX13

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
TSX41000M12Z2	•	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	2	1
TSX41250M16Z3	•	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	3	1
TSX41500M16Z4	•	1.500	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	4	1

Inserts are sold separately.

• USA stocked item

Insert

Dimensions (inch "/ *mm*)

Grade		Coated Carbide									
Process	High-speed / Light		P/M			K		M/S			
	General-purpose	P/K/S	P/M	P/M		K		M/S	M/S		
	Roughing	P/K/S		P/M	P/M		K		M/S		
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Nose Radius RE	Fig
LNEX080404PNER-L		★		•	•	•	•	•	•	.016"/ *0.4*	1
LNEX080408PNER-L		★		•	•	•	•	•	•	0.032"/ *0.8*	1
LNEX080412PNER-L		★		•			•	•	•	0.047"/ *1.2*	1
LNEX080416PNER-L		★		•			•	•	•	0.063"/ *1.6*	1
LNEX080404PNER-G		★	•	•	•	•	•	•	•	0.016"/ *0.4*	1
LNEX080408PNER-G		•	•	•	•	•	•	•	•	0.032"/ *0.8*	1
LNEX080412PNER-G		★	•	•	•	•	•	•	•	0.047"/ *1.2*	1
LNEX080416PNER-G		★	•	•	•	•	•	•	•	0.063"/ *1.6*	1
LNEX130604PNER-L		★		•	•	•	•	•	•	0.016"/ *0.4*	2
LNEX130608PNER-L		★		•	•	•	•	•	•	0.032"/ *0.8*	2
LNEX130612PNER-L		★		•			•	•	•	0.047"/ *1.2*	2
LNEX130616PNER-L		★		•			•	•	•	0.063"/ *1.6*	2
LNEX130620PNER-L		★		•			•	•	•	0.079"/ *2.0*	2
LNEX130624PNER-L		★		•			•	•	•	0.094"/ *2.4*	2
LNEX130632PNER-L		★		•			•	•	•	0.126"/ *3.2*	2
LNEX130604PNER-G		★	•	•	•	•	•	•	•	0.016"/ *0.4*	2
LNEX130608PNER-G		•	•	•	•	•	•	•	•	0.032"/ *0.8*	2
LNEX130612PNER-G		★	•	•	•	•	•	•	•	0.047" / *1.2*	2
LNEX130616PNER-G		★	•	•	•	•	•	•	•	0.063" / *1.6*	2
LNEX130620PNER-G		★	•	•	•	•	•	•	•	0.079" / *2.0*	2
LNEX130624PNER-G		★	•	•	•	•	•	•	•	0.094" / *2.4*	2
LNEX130632PNER-G		★	•	•	•	•	•	•	•	0.126" / *3.2*	2
LNEX130604PNER-H		★		•	•	•	•			0.016"/ *0.4*	2
LNEX130608PNER-H		★		•	•	•	•			0.032" / *0.8*	2
LNEX130612PNER-H		★		•	•	•	•			0.047" / *1.2*	2
LNEX130616PNER-H		★		•	•	•	•			0.063" / *1.6*	2
LNEX130620PNER-H		★		•	•	•	•			0.079" / *2.0*	2
LNEX130624PNER-H		★		•	•	•	•			0.094" / *2.4*	2
LNEX130632PNER-H		★		•	•	•	•			0.126" / *3.2*	2

Fig 1

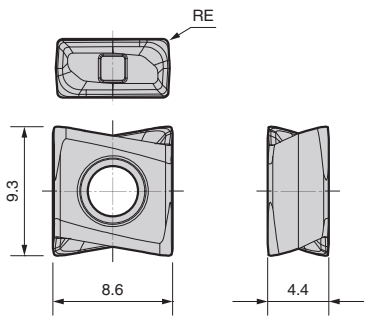
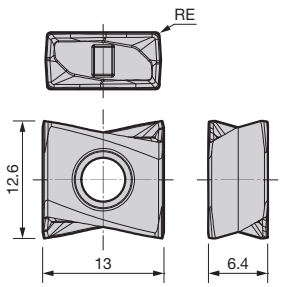


Fig. 2



Identification Code

TSX F 3 0750 M12 Z3

(1)	(2)	(3)	(4)	(5)	(6)
Cutter Series	Pitch Type	Insert Size 3: 08 4:13	Diameter	Mounting Screw	No. of Teeth

Parts

Insert Size	Catalog Number	Insert Screw	Wrench	Recommended Tightening Torque
TSX3000 (LNEX08)	TSX□30625□~TSX□30750□	BFTX0306IP	TRDR08IP	2.0Nm
	TSX□31000□~TSX□32500□	BFTX0308IP		
TSX4000 (LNEX13)	TSX□41000□~TSX□44000□	BFTX03510IP	TRDR15IP	3.0Nm

PWS(F) / PWSR

■ General Features

A highly reliable shoulder milling cutter with strong, sharp cutting edge and tangential inserts.

PWSR, with a 2-stage insert array structure supporting large depths of cut, has been added to the lineup.

*Made to Order Only

■ Features

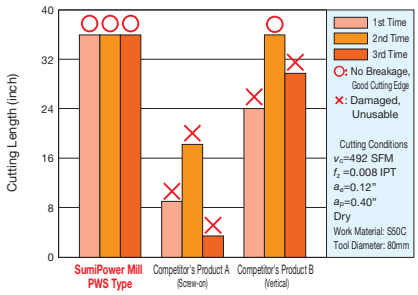
- Tangential inserts with excellent cutting edge strength and optimized breaker provide superb cutting edge and sharpness.
- Serrated insert design created with high-precision formation technology allows stable milling and low chatter even in applications with large tool overhang.
- ACP and ACK series allow a wide range of materials to be covered.

■ Performance

- General-purpose G Insert Performance Comparison

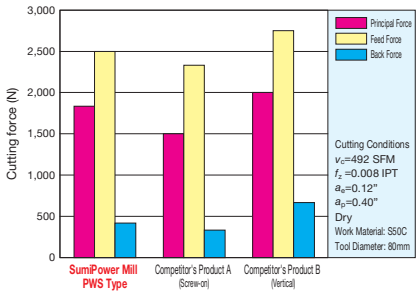
Comparison of Cutting Edge Strength

Strong cutting edge delivers superb stability



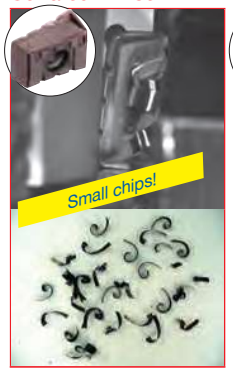
Comparison of Cutting Force

Sharpness approaching that of screw-on inserts



- Serrated R Insert Performance Comparison

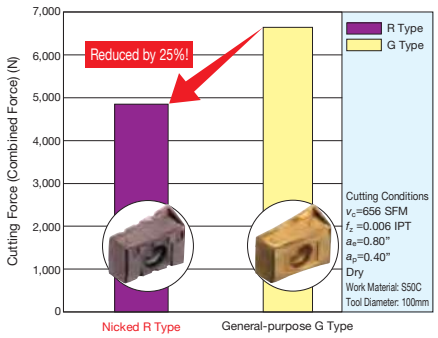
Serrated R Insert



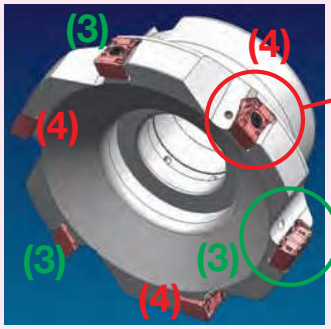
General-purpose G Type Insert

Comparison of Cutting Force

Reduced cutting power and excellent chatter resistance



⚠ Serrated R Insert Usage Precautions



1) Precautions when Mounting

When using the serrated R indexable inserts, mount them so that the serrated grooves alternate as shown in the image on the left.

2) Precautions for Cutting Conditions

As these are mounted as in the image on the left, compared to mounting inserts of the same shape for all blades, the feed rate per tooth is doubled. Accordingly,

f_z = 0..010 IPT

feed rate is set as the upper limit and can be adjusted for use.

Ex.) For use with f_z = 0.008"/t

With all regular blades: Feed Rate per Tooth 0.008 IPT

With serrated types: Feed Rate per Tooth 0.016 IPT

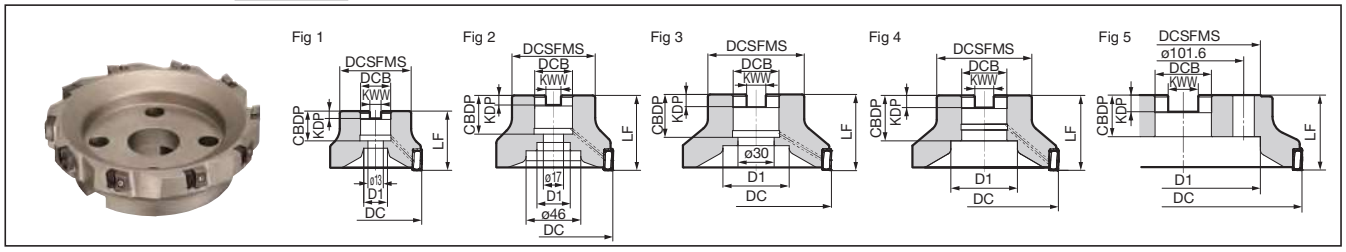
Using inserts incorrectly may damage tools.

PWS(F) Shell Mill

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	–15°
	Axial	–6°

.630" 90°



Body (Standard)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**PWS43000R**	●	3.000	1.000	2.250	.797	1.750	.375	.220	1.020	5	2.10	1
	PWS44000R-1.25	●	4.000	1.250	2.870	1.000	2.000	.500	.280	1.020	6	5.29	1
	PWS44000R-1.50	●	4.000	1.500	3.540	2.000	2.500	.625	.380	2.400	6	5.40	3
	PWS45000R	●	5.000	1.500	3.750	2.000	2.500	.625	.380	1.535	7	5.29	1
	PWS46000R	●	6.000	1.500	4.380	2.000	2.500	.625	.380	1.535	8	8.81	1
	PWS48000R	●	8.000	2.500	5.118	-	2.500	1.000	.560	1.594	10	14.33	2
	PWS410000R	●	10.000	2.500	7.087	-	2.756	1.000	.560	1.594	12	27.11	2
Metric	**PWS4080R**	★	**80*	*25.4*	*60*	*20*	*50*	*9.5*	*6*	*25*	*4*	*1.0*	1
	PWS4100R	★	**100*	*31.75*	*70*	*28*	*63*	*12.7*	*8*	*32.5*	*6*	*1.8*	2
	PWS4125R	★	*125*	*38.1*	*80*	*55*	*63*	*15.9*	*10*	*35.5*	*6*	*2.4*	3
	PWS4160R	★	*160*	*50.8*	*100*	*72*	*63*	*19.1*	*11*	*38*	*8*	*4.0*	4
	PWS4200R	★	*200*	*47.625*	*130*	*130*	*63*	*25.4*	*14*	*35*	*10*	*6.5*	5
	PWS4250R	★	*250*	*47.625*	*130*	*160*	*63*	*25.4*	*14*	*35*	*12*	*12.3*	5

Cutters with sizes of 8.00" or above come with seats (no coolant holes).
Inserts are sold separately.

Body (Fine Pitch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	**PWSF43000R**	●	3.000	1.000	2.250	.797	1.750	0.375	.220	1.020	7	1.95	1
	PWSF44000R-1.25	●	4.000	1.250	2.870	1.000	2.000	0.500	.280	1.020	9	5.07	1
	PWSF44000R-1.50	●	4.000	1.500	3.540	2.000	2.500	0.625	.380	2.400	9	5.10	3
	PWSF45000R	●	5.000	1.500	3.750	2.000	2.500	0.625	.380	1.535	10	5.07	1
	PWSF46000R	●	6.000	1.500	4.380	2.000	2.500	0.625	.380	1.535	13	8.59	1
	PWSF48000R	●	8.000	2.500	5.118	-	2.500	1.000	.560	1.594	16	14.10	2
	PWSF410000R	●	10.000	2.500	7.087	-	2.756	1.000	.560	1.594	20	26.90	2
Metric	**PWSF4080R**	★	**80*	*25.4*	*60*	*20*	*50*	*9.5*	*6*	*25*	*6*	*0.9*	1
	PWSF4100R	★	**100*	*31.75*	*70*	*28*	*63*	*12.7*	*8*	*32.5*	*8*	*1.7*	2
	PWSF4125R	★	*125*	*38.1*	*80*	*55*	*63*	*15.9*	*10*	*35.5*	*8*	*2.3*	3
	PWSF4160R	★	*160*	*50.8*	*100*	*72*	*63*	*19.1*	*11*	*38*	*10*	*3.9*	4
	PWSF4200R	★	*200*	*47.625*	*130*	*130*	*63*	*25.4*	*14*	*35*	*12*	*6.4*	5
	PWSF4250R	★	*250*	*47.625*	*130*	*160*	*63*	*25.4*	*14*	*35*	*14*	*12.2*	5

Cutters with sizes of 8.00" or above come with seats (no coolant holes).
Inserts are sold separately.

● USA stocked item ★Worldwide Warehouse item

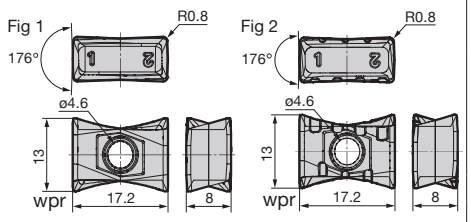
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (inch "/ *mm*)

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

Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	Wiper Facet Length wpr	Applications	Remarks	Fig
LNMX170808PNSR-L	●	●	●	●	●	0.118" / *3.0*	Light Cutting		1
LNMX170808PNSR-G	●	●	●	●	●	0.118" / *3.0*	General-purpose	1st Recommended	1
LNMX170808PNSR-R	●	●	●	●	●	0.118" / *3.0*	Heavy Cutting	Serrated	2



Parts

Flat Screw (For Inserts / Shims)		Wrench	Anti-seize Cream	Shim (*)
BFTX0412IP	3.0	TTR15IP	SUMI-P	PWSS4R

* mark is included with ø8.00" & ø200 mm or larger sizes.

Recommended Cutting Conditions - Metric

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 - 350	0.10-0.35	ACP200
	Alloy Steel	180 to 280 HB	100 - 250	0.10-0.25	ACP200
M	Stainless Steel	-	100 - 200	0.10-0.25	ACP300
K	Cast Iron Ductile Cast Iron	250HB	100 - 250	0.10-0.35	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.

Recommended Cutting Conditions - Inch

ISO	Part Material	Hardness	Cutting Speed v_c (SFM) Min-Max	Feed Rate f_z (IPT) Min-Max	Insert Grade
P	Carbon Steel	180-280HB	500–1,500	.004 – .014	ACP200
	Alloy Steel	180-280HB	330–815	.004 – .010	ACP200
M	Stainless Steel	-	330–650	.006 – .010	ACP300
K	Cast Iron/Ductile Cast Iron	250HB	330–815	.004 – .014	ACK200

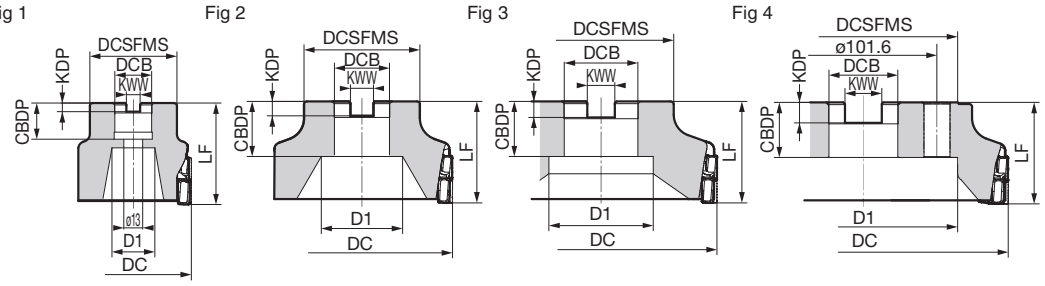
N·m Recommended Tightening Torque (N·m)

PWSR 2 Step Shellmill

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	–15°
	Axial	–6°

Maximum Depth of Cut: 31 mm 90° | 1.22" 90°



Body (2-Step)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Bore Dia. DCB	Boss DCSFMS	Bolt D1	Height LF	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Effective No. of Teeth	Weight (kg)	Fig
Metric	**PWSR4080R**		*80	25.4	60	29.5	70	9.5	6	25	8	4	1.4	1
	PWSR4100R		*100	31.75	70	46	70	12.7	8	32	12	6	2.0	2
	PWSR4125R		125	38.1	80	56	70	15.9	10	38	12	6	3.0	2
	PWSR4160R		160	50.8	100	72	70	19.1	11	38	16	8	5.2	3
	PWSR4200R		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.

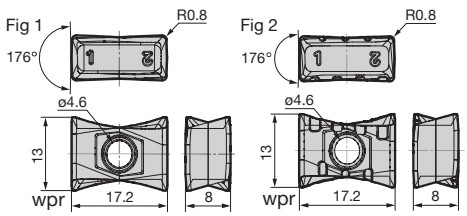
★ Worldwide Warehouse item

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

Insert

Dimensions (inch "/*mm*)

Grade		Coated Carbide								
Process	High-speed / Light	P			K					
	General-purpose		P M	P M	K					
	Roughing		P M	P M		K				
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	Wiper Facet Length wpr	Applications	Remarks	Fig
LNMX170808PNSR-L		●	●	●	●	●	0.118" / *3.0*	Light Cutting		1
LNMX170808PNSR-G		●	●	●	●	●	0.118" / *3.0*	General-purpose	1st Recommended	1
LNMX170808PNSR-R		●	●	●	●	●	0.118" / *3.0*	Heavy Cutting	Serrated	2



Parts

Flat Screw (For Inserts / Shims)		Wrench	Anti-seizure Cream	Shim (*)
BFTX0412IP	3.0	TTR15IP	SUMI-P	PWSS4R

* mark is included with ø200 mm or larger sizes.

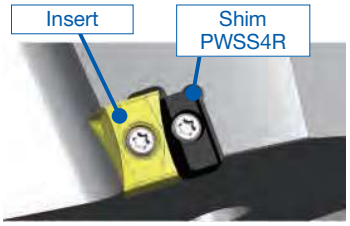
Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150-**250**-350	0.10-**0.23**-0.35	ACP200
	Alloy Steel	180 to 280 HB	100-**175**-250	0.10-**0.18**-0.25	ACP200
M	Stainless Steel	-	100-**150**-200	0.10-**0.18**-0.25	ACP300
K	Cast Iron Ductile Cast Iron	250HB	100-**175**-250	0.10-**0.23**-0.35	ACK200

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

Large Diameter Size
(ø8.00" & ø200 mm or larger sizes.)
Body Structure

Safety Shim Design to Protect Body



■ General Features and Benefits

- DMSW & DMSL inserts provide a complex arc-shape cutting edge which allows for feed rates up to 0.138" IPT at low axial depth of cuts.
- Cutting forces are reduced due to a large lead angle which promotes stable machining in long projection applications.
- Introducing the DMSL series for smaller diameters starting at 0.625".

■ Milling Cutter Product Range (*mm*)

Type	Product Code	ø16	ø18	ø20	ø22	ø25	ø26	ø28	ø30	ø32	ø35	ø40	ø42	ø50	ø52	ø63	ø66	ø80	ø85	ø100	ø125	ø160
Shell Mill	DMSL06000RS											5 6		5 8	8	8	8	9				
Shell Mill	DMSL06000R													5 8		8						
Shell Mill	DMSW08000RS													4 5	4 5	4 5* 6*	5 6	6 8	6 8	6	8	10
Shell Mill	DMSW08000R (Inch Arbor)													4 5		4 5 6		6 8		6	8	10
Endmill	DMSL06000E	2	2	3 4	3 4	4 5		4 5	5	5 6	5	6										
Endmill	DMSL06000EL	2	2	3	3	4		4	5	5	5	6										
Endmill	DMSW08000E										2	3		3		4						
Endmill	DMSW08000EL										2	3		3		4						
Modular	DMSL06000M	2	2	3 4	3 4	4 5	4	4 5	5	5 6	5	6	6									
Modular	DMSW08000M										2	3	3									

Diameters Available (*mm*)

Inch Arbor Inch Arbor ● Numbers inside are number of teeth * Different pilot diameters available

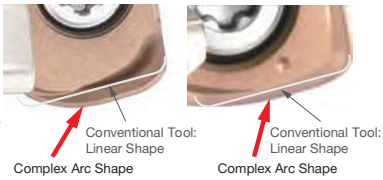
■ Milling Cutter Product Range (Inch)

Type	Product Code	ø0.625	ø0.75	ø1.0	ø1.25	ø1.5	ø2.0	ø2.5	ø3.0	ø4.0
Shell Mill	DMSL20000R					5 6	5 8	8		
Shell Mill	DMSW30000R						4	4 6	6 7	8
Endmill	DMSL20000EW	2	3	4 5	5 6					
Endmill	DMSL20000ELC	2	3	4 5	5 6					
Endmill	DMSW30000EW					3	3			
Endmill	DMSW30000ELC					3				
Modular	DMSL20000M	2	3	4 5	5 6					
Modular	DMSW30000M					3				

Diameters Available (Inch)

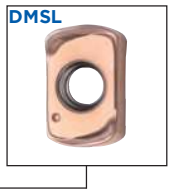
■ Insert Features

- The complex arc-shape cutting edge is capable of a high feed up to 0.138" IPT at low axial depth of cuts.



■ Chipbreaker (DMSL)

Work Material	P M K S		P M K H
Applications	Low Rigidity Milling	General Purpose	Heavy Interrupted, High-Hardness
Features	Low Cutting Force	General Purpose	High Strength
Chipbreaker	L	G	H
Cutting Edge Cross Section	.0039" 14° 24° 4-cornered	.0039" 10° 24° 4-cornered	.0039" -4° 18° 4-cornered



■ Chipbreaker (DMSW)

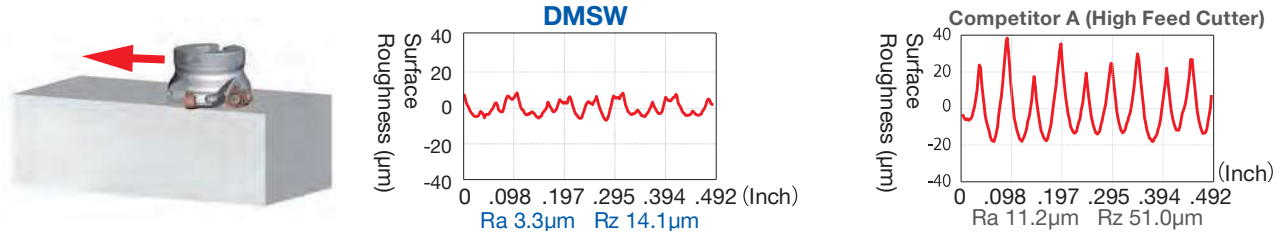
Work Material	P M K S		P M K H
Applications	Low-rigidity Milling	General-purpose	Heavy Interrupted, High-Hardness
Features	Low Cutting Force	General-purpose	High Strength
Chipbreaker	L	G	H
Cutting Edge Cross Section	.0059" 24° 6-cornered	.0047" 24° 6-cornered	.0087" 15° 6-cornered

■ Grade Application Range

Work Material	Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
P Steel	ACU2500, ACP2000	ACU2500, ACP2000, ACP3000	ACP3000
M Stainless Steel / S Exotic Alloy	ACU2500, ACS2500	ACS2500, ACS3000	ACS3000
K Cast Iron	ACU2500, ACK2000	ACU2500, ACK2000, ACK3000	ACK3000

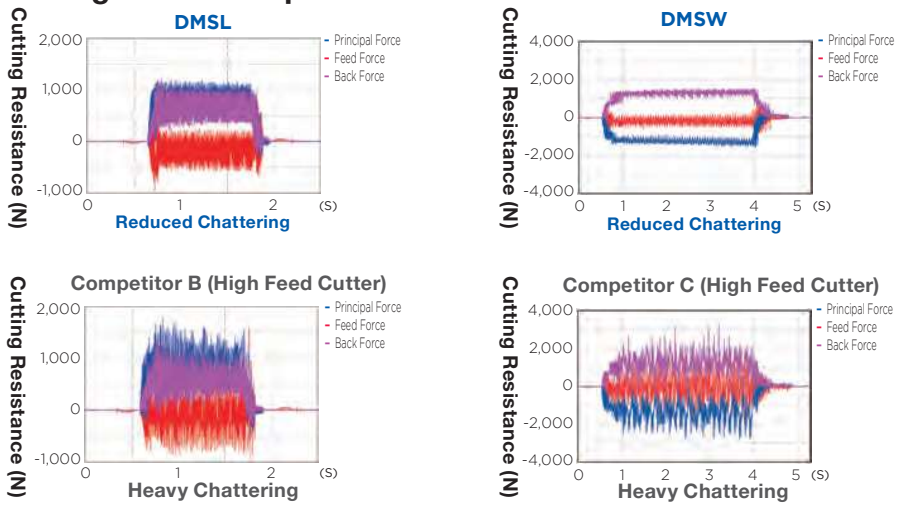
The letters "C" and "P" at the end of each grade indicate the coating type. C: CVD P: PVD

- Compared to conventional high feed mill cutter inert, DMSL and DMSW inserts provide improved surface finish due to the arc-shaped edge



Machine: Vertical Machining Center BT50, **Part Material:** 1050 Carbon Steel, **Insert:** WNMU0807ZNER-G-ACU2500
Milling Cutter: DMSW08063RS04 (*ø63* 4 teeth), **Cutting Conditions:** v_c= 500 SFM, f_z= .0984 IPT, a_p= .0197", a_e= 1.5748", Dry

■ Cutting Force Comparison

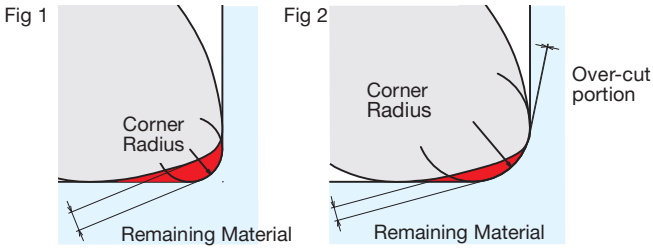


Machine: Vertical Machining Center BT50,
Part Material: 1050 Medium Carbon Steel,
Milling Cutter: DMSL06020E03 (*ø20* 3 teeth)
Insert: LNMU06T3ZNER-G-ACU2500
Cutting Conditions: v_c= 525 SFM, f_z= .0236 IPT, a_p= .0315", a_e= 0.787", L= 3.937, Dry

Machine: Vertical Machining Center BT50,
Part Material: 1050 Medium Carbon Steel,
Milling Cutter: DMSW08050RS04 (*ø50* 4 teeth)
Insert: WNMU0807ZNER-G-ACU2500
Cutting Conditions: v_c= 525 SFM, f_z= .0256 IPT, a_p= .0315", a_e= 1.772", L= 13.4", Dry

■ Precautions for Corner Finishing

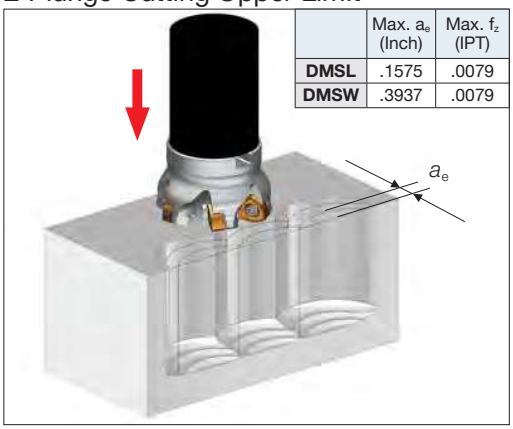
* Corners will have over-cut or under-cut material relative to the corner profile.



DMSL (*Programmable Radius)			
Corner Radius (Inch)	**Unmachined Surface**	**Over-Cut**	**Fig.**
.0197	.0346	0	1
.0394	.0272	0	1
.0591*	.0213	0	1
.0787	.0161	.0008	2

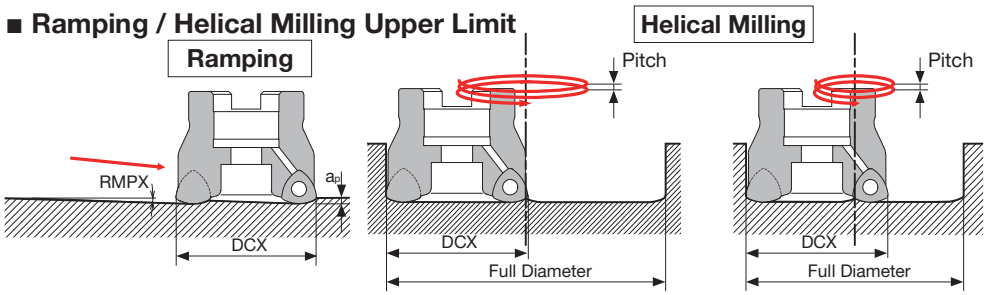
DMSW (*Programmable Radius)			
Corner Radius (Inch)	**Unmachined Surface**	**Over-Cut**	**Fig.**
.0789	.0480	0	1
.0984	.0425	0	1
.1181*	.0374	0	1
.1378	.0327	.0016	2

■ Plunge Cutting Upper Limit



	Max. a_e (Inch)	Max. f_z (IPT)
DMSL	.1575	.0079
DMSW	.3937	.0079

■ Ramping / Helical Milling Upper Limit



Precautions for Helical Milling

- Above the max. machining diameter, the center uncut portion can be removed by traverse cutting with the same cutter.
- Below the min. machining diameter, the center uncut portion cannot be removed with the same cutter.

DMSL

	Max. Dia. DCX (inch / mm)	Ramping	Helical Ramping					
		Max. Ramping Angle RMPX (°)	Max. Machining Dia. (Inch / mm)	Max Pitch	Standard Diameter (Inch)	Max Pitch	Min. Machining Dia. (Inch / mm)	Max Pitch
Inch	0.625	0.6	1.224	0.024	0.949	0.019	0.929	0.010
	0.750	1.0	1.472	0.039	1.197	0.024	1.134	0.019
	1.000	0.9	1.972	0.039	1.693	0.035	1.602	0.019
	1.250	0.7	2.472	0.039	2.193	0.035	2.091	0.019
	1.500	0.6	2.972	0.039	2.693	0.039	2.575	0.019
	2.000	Not recommended						
	2.500	Not recommended						
Metric	*16*	*0.6*	*31.3*	*0.6*	*24.4*	*0.3*	*23.8*	*0.25*
	18	*0.8*	*35.3*	*0.8*	*28.3*	*0.4*	*27.2*	*0.3*
	20	*1.0*	*39.3*	*1.0*	*32.3*	*0.6*	*30.5*	*0.3*
	22	*1.0*	*43.3*	*1.0*	*36.3*	*0.7*	*34.3*	*0.3*
	25	*1.0*	*49.3*	*1.0*	*42.3*	*0.9*	*39.9*	*0.3*
	26	*1.0*	*51.3*	*1.0*	*44.3*	*0.9*	*41.8*	*0.3*
	28	*0.9*	*55.3*	*1.0*	*48.2*	*0.9*	*45.7*	*0.3*
	30	*0.8*	*59.3*	*1.0*	*52.2*	*1.0*	*49.6*	*0.3*
	32	*0.7*	*63.3*	*1.0*	*56.2*	*1.0*	*53.6*	*0.3*
	35	*0.6*	*69.3*	*1.0*	*62.2*	*1.0*	*59.5*	*0.3*
	40	*0.5*	*79.3*	*1.0*	*72.2*	*1.0*	*69.6*	*0.3*
	42	*0.5*	*83.3*	*1.0*	*76.2*	*1.0*	*73.5*	*0.3*
	50	Not recommended						
	52	Not recommended						
	63	Not recommended						
	66	Not recommended						
	80	Not recommended						

DMSW

	Max. Dia. DCX (inch / mm)	Ramping	Helical Ramping					
		Max. Ramping Angle RMPX (°)	Max. Machining Dia. (Inch / mm)	Max Pitch	Standard Diameter (Inch)	Max Pitch	Min. Machining Dia. (Inch / mm)	Max Pitch
Inch	1.500	0.8	2.972	0.063	2.346	0.031	2.252	0.020
	2.000	1.4	3.972	0.079	3.343	0.079	3.185	0.039
	2.500	1.2	4.972	0.079	4.343	0.079	4.118	0.039
	3.000	1.2	5.972	0.079	5.339	0.079	4.976	0.039
	4.000	0.8	7.972	0.079	7.339	0.079	6.976	0.039
Metric	*35*	*0.5*	*69.3*	*1.3*	*53.5*	*0.5*	*52.0*	*0.5*
	40	*0.8*	*79.3*	*2.0*	*63.4*	*1.0*	*60.2*	*0.5*
	42	*0.8*	*83.3*	*2.0*	*67.4*	*1.0*	*63.9*	*0.5*
	50	*1.4*	*99.3*	*2.0*	*83.3*	*2.0*	*79.1*	*1.0*
	52	*1.4*	*103.3*	*2.0*	*87.3*	*2.0*	*82.8*	*1.0*
	63	*1.2*	*125.3*	*2.0*	*109.3*	*2.0*	*103.6*	*1.0*
	66	*1.2*	*131.3*	*2.0*	*115.3*	*2.0*	*109.4*	*1.0*
	80	*1.2*	*159.3*	*2.0*	*143.2*	*2.0*	*134.0*	*1.0*
	85	*1.2*	*169.3*	*2.0*	*153.2*	*2.0*	*144.0*	*1.0*
	100	*0.8*	*199.3*	*2.0*	*183.2*	*2.0*	*174.0*	*1.0*
	125	Not recommended						
	160	Not recommended						

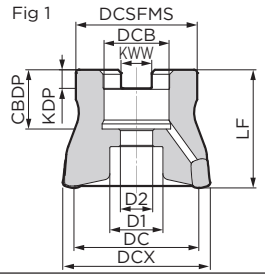
DMSL Shellmill

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

Rake Angle		
	Radial	-8° to -12.5°
	Axial	-8°

.0591 73° | 1.5mm 73°

Fig 1



■ Body (Shelmill)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lb / *kg*)	Fig
Inch	**DMSL21500R05**	●	1.5000	1.1965	1.4409	1.5000	0.5000	0.2520	0.1575	0.6220	0.4213	0.2811	5	0.44	1
	DMSL21500R06	●	1.5000	1.1965	1.4409	1.5000	0.5000	0.2520	0.1575	0.6220	0.4213	0.2811	6	0.44	1
	DMSL22000R05	●	2.0000	1.6969	1.7520	1.7500	0.7500	0.3118	0.1902	0.7500	0.6091	0.4059	5	0.88	1
	DMSL22000R08	●	2.0000	1.6969	1.7520	1.7500	0.7500	0.3118	0.1902	0.7500	0.6091	0.4059	8	0.86	1
	DMSL22500R08	●	2.5000	2.1965	2.1890	1.7500	1.0000	0.3752	0.2201	0.7500	0.7969	0.5311	8	1.37	1
Metric	**DMSL06040RS05**	★	*40*	*32.3*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	*5*	*0.20*	*1*
	DMSL06040RS06	★	*40*	*32.3*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	*6*	*0.20*	*1*
	DMSL06050RS05	★	*50*	*42.3*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	*5*	*0.31*	*1*
	DMSL06050RS08	★	*50*	*42.3*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	*8*	*0.30*	*1*
M/In	**DMSL06050R05**	★	*50*	*42.3*	*41*	*40*	*22.225*	*8.4*	*5*	*20*	*18*	*11*	*5*	*0.32*	*1*
	DMSL06050R08	★	*50*	*42.3*	*41*	*40*	*22.225*	*8.4*	*5*	*20*	*18*	*11*	*8*	*0.30*	*1*

●: USA Stocked Item
★: Worldwide Warehouse Item

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

Recommended Tightening Torque (N·m)

Flat Insert Screw		Integrated Wrench	Anti-seize Cream
BFTX02507IP	2.0	TRDR08IP	SUMI-P

■ Identification Code - Inch

DMSL 2 2000 R 05

Series | Insert Series | Cutter Dia. | Feed Direction | Number of Teeth

■ Identification Code - Metric

DMSL 06 066 R S 08 - 27

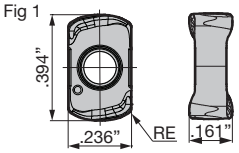
Series | Insert Size | Cutter Dia. | Feed Direction | Metric Bore | Number of Teeth | Mounting Size

■ Insert

Dimensions (Inch)

Material Classification		Coated Carbide								
Process	High-speed/Light		P		K					
	General-purpose	K P M S	P	P H	K	K	M S	M S		
	Roughing	K P M S		P H		K	M S	M S		
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS2500	ACS3000	Corner Radius RE	Fig
LNMU06T3ZNER-L		★	★	★			★	★	.039	1
LNMU06T3ZNER-G		●	●	●	●	●	●	●	.039	1
LNMU06T3ZNER-H		●	●	●			●	●	.039	1

Fig 1



■ Recommended Cutting Conditions (DMSL)

ISO	Material	Hardness	Cutting Speed v_c (SFM)	Feed Rate Fz (IPT)	Grade
P	General Steel	Up to 30HRC	350 - 900	0.039 - 0.138	ACU2500/ACP2000/ACP3000
	Alloy Steel	Up to 30HRC	350 - 725	0.039 - 0.070	ACU2500/ACP2000/ACP3000
	Alloy Steel	Up to 45HRC	350 - 650	0.031 - 0.047	ACU2500/ACP2000/ACP3000
M	Stainless Steel	—	265 - 550	0.031 - 0.047	ACU2500/ACS2500/ACS3000
K	Cast Iron	—	350 - 900	0.039 - 0.070	ACU2500/ACK2000/ACK3000
S	Heat Resistant Alloy	—	100 - 260	0.016 - 0.031	ACU2500/ACS2500/ACS3000
	Titanium Alloy	—	65 - 150	0.012 - 0.028	ACU2500/ACS2500/ACS3000
H	Hardened Steel	Up to 52HRC	265 - 430	0.012 - 0.028	ACU2500/ACP3000

Note

- The conditions are guidelines for use with CAT50, BT50, and HSK100A machine tools at depth of cut (a_p) of .030".
- The recommended cutting conditions may require adjustment depending on machine rigidity, workpiece rigidity and projection.

Sumi Dual Mill

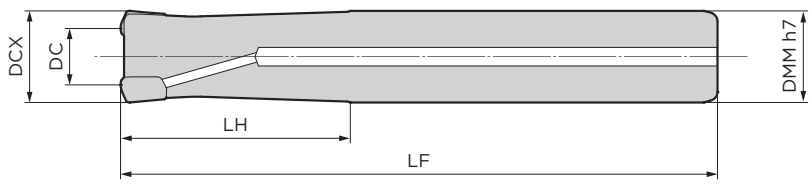
DMSL Endmill

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

Rake Angle	Radial	-12.5° to -16.5°
	Axial	-8°

.0591 73° | 1.5mm 73°

Fig 1



■ Body (Weldon Shank)

Dimensions (inch /mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (lb / kg)	Fig
Inch	**DMSL20625EW02**	●	0.6250	0.3276	0.6250	1.2500	4.0000	2	0.29	1
	DMSL20750EW03	●	0.7500	0.4488	0.7500	2.0000	5.0000	3	0.52	1
	DMSL21000EW04	●	1.0000	0.6976	1.0000	2.5000	5.0000	4	0.93	1
	DMSL21000EW05	●	1.0000	0.6976	1.0000	2.5000	5.0000	5	0.93	1
	DMSL21250EW05	●	1.2500	0.9476	1.2500	3.0000	6.0000	5	1.74	1
	DMSL21250EW06	●	1.2500	0.9476	1.2500	3.0000	6.0000	6	1.74	1
Metric	**DMSL06016E02**	★	*16*	*8.4*	*16*	*30*	*110*	*2*	*0.15*	1
	DMSL06018E02	★	*18*	*10.4*	*16*	*30*	*110*	*2*	*0.15*	1
	DMSL06020E03	★	*20*	*12.4*	*20*	*50*	*130*	*3*	*0.27*	1
	DMSL06020E04	★	*20*	*12.4*	*20*	*50*	*130*	*4*	*0.27*	1
	DMSL06022E03	★	*22*	*14.3*	*20*	*50*	*130*	*3*	*0.29*	1
	DMSL06022E04	★	*22*	*14.3*	*20*	*50*	*130*	*4*	*0.29*	1
	DMSL06025E04	★	*25*	*17.3*	*25*	*60*	*140*	*4*	*0.46*	1
	DMSL06025E05	★	*25*	*17.3*	*25*	*60*	*140*	*5*	*0.46*	1
	DMSL06028E04	★	*28*	*20.3*	*25*	*60*	*140*	*4*	*0.49*	1
	DMSL06028E05	★	*28*	*20.3*	*25*	*60*	*140*	*5*	*0.48*	1
	DMSL06030E05	★	*30*	*22.3*	*32*	*70*	*150*	*5*	*0.81*	1
	DMSL06032E05	★	*32*	*24.3*	*32*	*70*	*150*	*5*	*0.82*	1
	DMSL06032E06	★	*32*	*24.3*	*32*	*70*	*150*	*6*	*0.82*	1
	DMSL06035E05	★	*35*	*27.3*	*32*	*50*	*150*	*5*	*0.88*	1

Inserts are sold separately.

■ Body (Long Shank)

Dimensions (inch /mm)

	Cat. No.	Stock	Max. Dia. DCX	Diameter DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (lb / kg)	Fig
Inch	**DMSL20625ELC02**	●	0.6250	0.3276	0.6250	2.0000	8.0000	2	0.60	1
	DMSL20750ELC03	●	0.7500	0.4488	0.7500	3.0000	8.0000	3	0.84	1
	DMSL21000ELC04	●	1.0000	0.6976	1.0000	4.0000	10.0000	4	1.83	1
	DMSL21000ELC05	●	1.0000	0.6976	1.0000	4.0000	10.0000	5	1.83	1
	DMSL21250ELC05	●	1.2500	0.9476	1.2500	5.0000	10.0000	5	2.98	1
	DMSL21250ELC06	●	1.2500	0.9476	1.2500	5.0000	10.0000	6	2.98	1
Metric	**DMSL06016EL02**	★	*16*	*8.4*	*16*	*70*	*150*	*2*	*0.19*	*1*
	DMSL06018EL02	★	*18*	*10.4*	*16*	*50*	*150*	*2*	*0.21*	*1*
	DMSL06020EL03	★	*20*	*12.4*	*20*	*80*	*160*	*3*	*0.33*	*1*
	DMSL06022EL03	★	*22*	*14.3*	*20*	*60*	*160*	*3*	*0.36*	*1*
	DMSL06025EL04	★	*25*	*17.3*	*25*	*100*	*170*	*4*	*0.54*	*1*
	DMSL06028EL04	★	*28*	*20.3*	*25*	*60*	*170*	*4*	*0.60*	*1*
	DMSL06030EL05	★	*30*	*22.3*	*32*	*120*	*200*	*5*	*1.01*	*1*
	DMSL06032EL05	★	*32*	*24.3*	*32*	*120*	*200*	*5*	*1.06*	*1*
	DMSL06035EL05	★	*35*	*27.3*	*32*	*60*	*210*	*5*	*1.21*	*1*

Inserts are sold separately.

●: USA Stocked Item
★: Worldwide Warehouse Item

■ Parts

Flat Insert Screw		Integrated Wrench	Anti-seize Cream
	N·m		
BFTX02507IP	2.0	TRDR08IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

■ Identification Code - Inch

DMSL 2 1000 EW 05

DMSL: Series
2: Insert Series
1000: Cutter Dia.
EW: Shank Type "Weldon"
05: Number of Teeth

■ Identification Code - Metric

DMSL 06 025 E L 04

DMSL: Series
06: Insert Size
025: Max. Dia.
E: Shank Type
L: Long Type
04: Number of Teeth

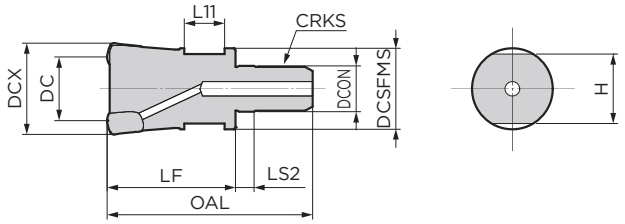
DMSL Modular

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

Rake Angle		
	Radial	-12.5° to -16.5°
	Axial	-8°

.0591 73° | 1.5mm 73°

Fig 1



■ Modular Head

●: USA Stocked Item ★: Worldwide Warehouse Item Blank: Made-to-order item

Dimensions (inch / mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Chamfer L11	Width H	Number of Teeth	Weight (lb / kg)	Fig
Inch	**DMSL20625M08Z2**	●	0.6250	0.3276	0.3346	M08	1.6535	0.9843	0.1969	0.3150	0.5118	2	0.07	1
	DMSL20750M10Z3	●	0.7500	0.4488	0.4134	M10	1.9291	1.1811	0.1969	0.3937	0.5906	3	0.11	1
	DMSL21000M12Z4	●	1.0000	0.6976	0.4921	M12	2.2047	1.3780	0.1969	0.4331	0.7480	4	0.22	1
	DMSL21000M12Z5	●	1.0000	0.6976	0.4921	M12	2.2047	1.3780	0.1969	0.4331	0.7480	5	0.22	1
	DMSL21250M16Z5	●	1.2500	0.9476	0.6693	M16	2.4803	1.5748	0.1969	0.4724	0.9449	5	0.42	1
	DMSL21250M16Z6	●	1.2500	0.9476	0.6693	M16	2.4803	1.5748	0.1969	0.4724	0.9449	6	0.42	1
Metric	**DMSL06016M08Z2**	★	*16*	*8.4*	*8.5*	*M8*	*42*	*25*	*5*	*8*	*13*	*2*	*0.03*	*1*
	DMSL06018M08Z2	★	*18*	*10.4*	*8.5*	*M8*	*42*	*25*	*5*	*8*	*13*	*2*	*0.03*	*1*
	DMSL06020M10Z3	★	*20*	*12.4*	*10.5*	*M10*	*49*	*30*	*5*	*10*	*15*	*3*	*0.05*	*1*
	DMSL06020M10Z4	★	*20*	*12.4*	*10.5*	*M10*	*49*	*30*	*5*	*10*	*15*	*4*	*0.05*	*1*
	DMSL06022M10Z3	★	*22*	*14.3*	*10.5*	*M10*	*49*	*30*	*5*	*10*	*15*	*3*	*0.06*	*1*
	DMSL06022M10Z4	★	*22*	*14.3*	*10.5*	*M10*	*49*	*30*	*5*	*10*	*15*	*4*	*0.06*	*1*
	DMSL06025M12Z4	★	*25*	*17.3*	*12.5*	*M12*	*56*	*35*	*5*	*11*	*19*	*4*	*0.10*	*1*
	DMSL06025M12Z5	★	*25*	*17.3*	*12.5*	*M12*	*56*	*35*	*5*	*11*	*19*	*5*	*0.10*	*1*
	DMSL06026M12Z4	★	*26*	*18.3*	*12.5*	*M12*	*56*	*35*	*5*	*11*	*19*	*4*	*0.10*	*1*
	DMSL06028M12Z4	★	*28*	*20.3*	*12.5*	*M12*	*56*	*35*	*5*	*11*	*19*	*4*	*0.11*	*1*
	DMSL06028M12Z5	★	*28*	*20.3*	*12.5*	*M12*	*56*	*35*	*5*	*11*	*19*	*5*	*0.11*	*1*
	DMSL06030M16Z5	★	*30*	*22.3*	*17*	*M16*	*63*	*40*	*5*	*12*	*24*	*5*	*0.18*	*1*
	DMSL06032M16Z5	★	*32*	*24.3*	*17*	*M16*	*63*	*40*	*5*	*12*	*24*	*5*	*0.20*	*1*
	DMSL06032M16Z6	★	*32*	*24.3*	*17*	*M16*	*63*	*40*	*5*	*12*	*24*	*6*	*0.20*	*1*
	DMSL06035M16Z5	★	*35*	*27.3*	*17*	*M16*	*63*	*40*	*5*	*12*	*24*	*5*	*0.21*	*1*

Inserts are sold separately.

●: USA Stocked Item
★: Worldwide Warehouse Item

■ Parts

Flat Insert Screw		Integrated Wrench	Anti-seize Cream
	N·m		
BFTX02507IP	2.0	TRDR08IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

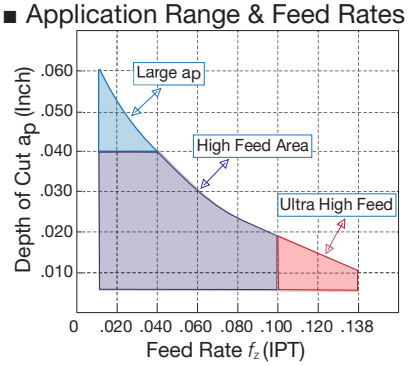
■ Identification Code - Inch

DMSL (Series) **2** (Insert Series) **1000** (Cutter Dia.) **M12** (Mounting Screw Size) **Z4** (Number of Teeth)

■ Identification Code - Metric

DMSL (Series) **06** (Insert Size) **025** (Max. Dia.) **M12** (Mounting Screw Size) **Z4** (Number of Teeth)

■ Application Range & Feed Rates

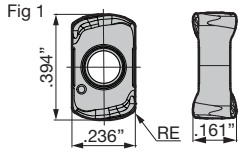


■ Insert

Material Classification		Coated Carbide								
Process	High-speed/Light		P		K					
	General-purpose	M P S	P	P H	K	K	M S	M S		
	Roughing	M P S		P H		K	M S	M S		
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS2500	ACS3000	Corner Radius RE	Fig
LNMU06T3ZNER-L		★	★	★			★	★	.039	1
LNMU06T3ZNER-G		●	●	●	●	●	●	●	.039	1
LNMU06T3ZNER-H		●	●	●			●	●	.039	1

Dimensions (Inch)

Fig 1



Precaution:
- Please adjust axial depth of cut (ap) based on the feed rate (IPT).
- Do not exceed the recommended depth of cut based on the feed rate (IPT).

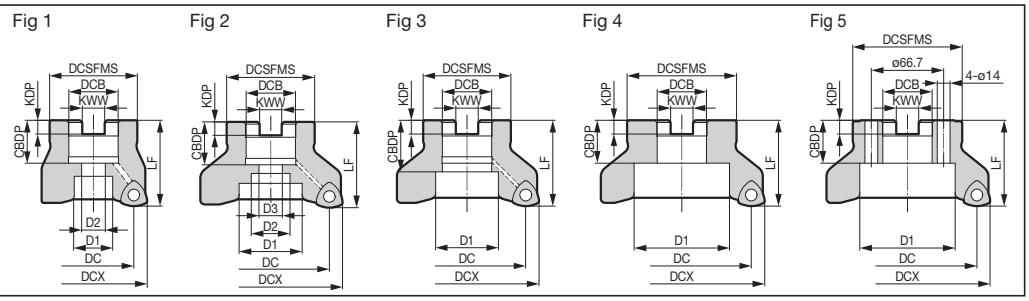
Sumi Dual Mill

DMSW Shellmill

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

Rake Angle		
	Radial	-7° to -10°
	Axial	-6°

.1181 75° | 3mm 75°



■ Body (Shellmill)

Dimensions (inch / mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lb / kg)	Fig
Inch	DMSW32000R04	●	2.000	1.346	1.500	1.750	0.750	0.312	0.190	0.750	0.609	0.406	—	4	0.640	1
	DMSW32500R04	●	2.500	1.846	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	—	4	0.992	1
	DMSW32500R06	●	2.500	1.846	1.750	1.750	1.000	0.375	0.220	0.750	0.797	0.531	—	6	0.948	1
	DMSW33000R06	●	3.000	2.342	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	—	6	1.650	1
	DMSW33000R07	●	3.000	2.342	2.250	1.750	1.000	0.375	0.220	0.750	0.797	0.531	—	7	1.630	1
	DMSW34000R08	●	4.000	3.342	3.543	2.500	1.500	0.625	0.380	1.000	2.000	1.181	0.781	8	4.894	2
Metric	DMSW08050RS04	★	50	33.4	41	40	22	10.4	6.3	20	16.7	11	—	4	0.25	1
	DMSW08050RS05	★	50	33.4	41	40	22	10.4	6.3	20	16.7	11	—	5	0.24	1
	DMSW08063RS04	★	63	46.4	50	40	22	10.4	6.3	20	18	11	—	4	0.46	1
	DMSW08063RS05	★	63	46.4	50	40	22	10.4	6.3	20	18	11	—	5	0.46	1
	DMSW08063RS06	★	63	46.4	50	40	22	10.4	6.3	20	18	11	—	6	0.44	1
	DMSW08063RS05-27	★	63	46.4	50	50	27	12.4	7	22	20	14	—	5	0.55	1
	DMSW08063RS06-27	★	63	46.4	50	50	27	12.4	7	22	20	14	—	6	0.53	1
	DMSW08080RS06	★	* 80	63.3	55	50	27	12.4	7	22	20	14	—	6	0.88	1
	DMSW08080RS08	★	* 80	63.3	55	50	27	12.4	7	22	20	14	—	8	0.84	1
	DMSW08100RS06	★	100	83.3	70	50	32	14.4	8	32	46	—	—	6	1.29	3
	DMSW08125RS08	★	125	108.3	x80	63	40	16.4	9	29	52	29	—	8	2.41	1
	DMSW08160RS10	★	160	143.3	100	63	40	16.4	9	29	90	—	—	10	4.73	5
Metric - Inch Arbor	DMSW08050R04	★	50	33.4	41	40	22.225	8.4	5	20	16.7	11	—	4	0.25	1
	DMSW08050R05	★	50	33.4	41	40	22.225	8.4	5	20	16.7	11	—	5	0.24	1
	DMSW08063R04	★	63	46.4	50	40	22.225	8.4	5	20	18	11	—	4	0.46	1
	DMSW08063R05	★	63	46.4	50	40	22.225	8.4	5	20	18	11	—	5	0.46	1
	DMSW08063R06	★	63	46.4	50	40	22.225	8.4	5	20	18	11	—	6	0.44	1
	DMSW08080R06	★	* 80	63.3	70	63	31.75	12.7	8	32	27	18	—	6	1.32	1
	DMSW08080R08	★	* 80	63.3	70	63	31.75	12.7	8	32	27	18	—	8	1.28	1
	DMSW08100R06	★	* 100	83.3	70	63	31.75	12.7	8	32	46	27	18	6	1.75	2
	DMSW08125R08	★	125	108.3	80	63	38.1	15.9	10	35.5	55	30	—	8	2.55	1
	DMSW08160R10	★	160	143.3	100	63	50.8	19.1	11	38	72	—	—	10	4.18	4

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

● : USA Stocked Item
★: Worldwide Warehouse Item

■ Parts

N·m Recommended Tightening Torque (N·m)

Applicable Cutter	Flat Insert Screw	N·m	Integrated Wrench	Detachable Wrench: Handle Grip	Detachable Wrench: Bit	Anti-seize Cream
DMSW08160R(S)10	BFTX0513IP	5.0	TRDR20IP	—	—	SUMI-P
Other than above			—	HPL2025	TRB20IP	

■ Identification Code - Inch

DMSW 3 2000 R S 05

Series | Insert Series | Cutter Dia. | Feed Direction | Metric Bore | Number of Teeth

■ Identification Code - Metric

DMSW 08 063 R S 05 - 27

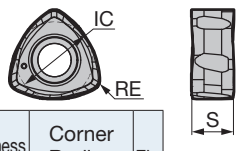
Series | Insert Size | Cutter Dia. | Feed Direction | Metric Bore | Number of Teeth | Mounting Size

■ Insert

Dimensions (Inch)

Grade Classification		Coated Carbide							Inscribed Circle IC	Thickness S	Corner Radius RE	Fig
Process	High-speed / Light		P		K							
	General-purpose	P M K H		P H		K	M S	M K S				
	Roughing	P M K H		P H		K		M K S				
Cat. No.		ACU2500	ACP2000	ACP3000	ACK2000	ACK3000	ACS2500	ACS3000				
WNMU0807ZNER-L		★	★	★			★	★	.512	.2756	.063	1
WNMU0807ZNER-G		●	●	●	●	●	●	●				
WNMU0807ZNER-H		●	●	●			●	●				

Fig. 1



Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"
BFXH3/4 X 2	5.00"*	1.50"

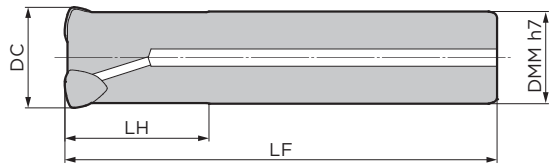
DMSW Endmill

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

Rake Angle		
	Radial	-10° to -13°
	Axial	-6°

.1181 75° | 3mm 75°

Fig 1



■ Body (Weldon Shank)

Dimensions (inch /mm)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (lb / kg)	Fig
Inch	**DMSW31500EW03**	●	1.500	0.852	1.250	2.498	4.780	3	1.433	1
	DMSW32000EW03	●	2.000	1.346	1.250	2.498	4.780	3	1.676	1
Metric	**DMSW08035E02**	★	*35*	*18.6*	*32*	*50*	*150*	2	*0.85*	1
	DMSW08040E03	★	*40*	*23.5*	*32*	*50*	*150*	3	*0.86*	1
	DMSW08050E03-42	★	*50*	*33.4*	*42*	*50*	*150*	3	*1.51*	1

Inserts are sold separately.

■ Body (Long Shank)

Dimensions (inch /mm)

	Cat. No.	Stock	Max. Dia. DCX	Diameter DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (lb / kg)	Fig
Inch	**DMSW31500ELC03**	●	1.500	0.852	1.250	2.498	10.000	3	3.197	1
Metric	**DMSW08035EL02**	★	*35*	*18.6*	*32*	*60*	*210*	2	*1.21*	1
	DMSW08040EL03	★	*40*	*23.5*	*32*	*60*	*210*	3	*1.22*	1
	DMSW08050EL03-42	★	*50*	*33.4*	*42*	*50*	*250*	3	*2.54*	1

Inserts are sold separately.

●: USA Stocked Item
★: Worldwide Warehouse Item

■ Parts

Flat Insert Screw		Integrated Wrench	Anti-seize Cream
	N·m		
BFTX0513IP	5.0	TRDR20IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

■ Identification Code - Inch

DMSW 3 2000 EW 03

DMSW: Series; 3: Insert Series; 2000: Cutter Dia.; EW: Shank Type "Weldon"; 03: Number of Teeth

■ Identification Code - Metric

DMSW 08 050 E L 03 - 42

DMSW: Series; 08: Insert Size; 050: Max. Dia.; E: Shank Type; L: Long Type; 03: Number of Teeth; 42: Shank Dia.

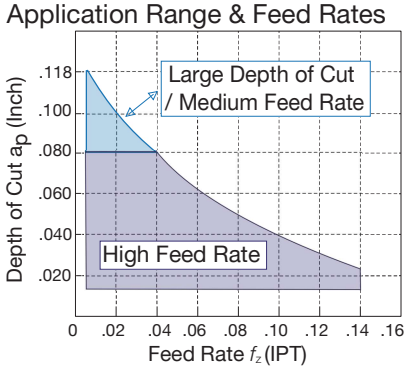
■ Recommended Cutting Conditions (DMSW)

ISO	Material	Hardness	Cutting Speed *v* (SFM)	Feed Rate Fz (IPT)	Grade
P	General Steel	Below 280HB	365 - 900	0.025 - 0.138	ACU2500/ACP2000/ACP3000
	Alloy Steel	Below 280HB	365 - 720	0.025 - 0.090	ACU2500/ACP2000/ACP3000
	Alloy Steel	Below 42HRC	365 - 650	0.025 - 0.050	ACU2500/ACP2000/ACP3000
M	Stainless Steel	—	330 - 550	0.025 - 0.050	ACU2500/ACS2500/ACS3000
K	Cast Iron	—	365 - 900	0.025 - 0.080	ACU2500/ACK2000/ACK3000
S	Heat Resistant Alloy	—	80 – 150	0.012 – 0.035	ACU2500/ACS2500/ACS3000
	Titanium Alloy	—	110 – 250	0.016 – 0.035	ACU2500/ACS2500/ACS3000
H	Hardened Steel	Below 52HRC	330 - 430	0.012 - 0.030	ACU2500/ACP3000

Precaution:
- Please adjust axial depth of cut (ap) based on the feed rate (IPT).
- Do not exceed the recommended depth of cut based on the feed rate (IPT).

Note
- The above figures are guidelines for use with CAT50, BT50, and HSK100A machine tools at depth of cut (a_p) of .060".
- The above recommended cutting conditions may require adjustment depending on machine rigidity, workpiece rigidity and projection.

■ Application Range & Feed Rates



Precaution:
- Please adjust axial depth of cut (ap) based on the feed rate (IPT).
- Do not exceed the recommended depth of cut based on the feed rate (IPT).

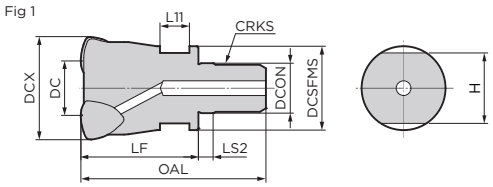
Sumi Dual Mill
DMSW Modular

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

Rake Angle		
	Radial	-11° to -13°
	Axial	-6°

.1181 75° | 3mm 75°

Fig 1



■ Modular Head

Dimensions (inch / *mm*)

Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Chamfer L11	Width H	Number of Teeth	Weight (lb / *kg*)	Fig
DMSW31500M16Z3	●	1.500	0.852	0.669	M16	2.480	1.575	0.197	0.472	0.945	3	0.441	1
DMSW08035M16Z2	★	*35*	*18.6*	*17*	*M16*	*63*	*40*	*5*	*10*	*24*	*2*	*0.19*	1
DMSW08040M16Z3	★	*40*	*23.5*	*17*	*M16*	*63*	*40*	*5*	*10*	*24*	*3*	*0.21*	1

Inserts are sold separately.

●: USA Stocked Item ★: Worldwide Warehouse Item

■ Parts

Recommended Tightening Torque (N·m)

Flat Insert Screw		Integrated Wrench	Anti-seize Cream
BFTX0513IP	5.0	TRDR20IP	SUMI-P

■ Identification Code - Inch

DMSW 3 1500 M16 Z3

Series | Insert Series | Cutter Dia. | Mounting Screw Size | Number of Teeth

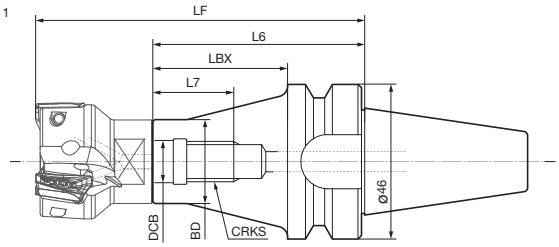
■ Identification Code - Metric

DMSW 08 040 M16 Z3

Series | Insert Size | Max. Dia. | Mounting Screw Size | Number of Teeth

Modular Tools Special Arbor (BBT Integrated)

Fig 1



■ BBT Integrated Arbor

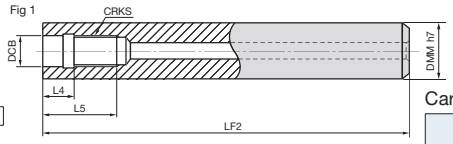
Dimensions (*mm*)

Cat. No.	Stock	Screws CRKS	Bore Dia. DCB	External BD	Body Overhang L6	Length LBX	Thread Depth L7	Overhang LF*1	Coolant Hole	Fig
BBT30-M8-50	★	M8	*8.5*	*15.9*	*73*	*50*	*18*	*98*	Yes	1
BBT30-M10-45	★	M10	*10.5*	*19.9*	*68*	*45*	*20*	*98*	Yes	1
BBT30-M12-40	★	M12	*12.5*	*24.9*	*63*	*40*	*22*	*98*	Yes	1
BBT30-M16-35	★	M16	*17*	*31.9*	*58*	*35*	*24*	*98*	Yes	1

*1 Overhang length for LF is with head mounted. Can also be used with BT30 spindle machines.

Modular Tools - Special Arbors (Carbide Arbors / Steel Arbors)

Fig 1



■ Identification Code

MA 32 M16 L200 C

Series | Shank Dia. 1.000" | Mounting Screw Size | Arbor Overall Length 8.000" | Arbor Materials C: Carbide S: Steel

Steel Arbor

Dimensions (inch / *mm*)

	Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*	Fig
Inch	**MA0625M08L475S**	•	**M8**	0.335	0.625	4.750	0.393	0.708	5.734	1
Inch	**MA0750M10L600S**	•	**M10**	0.413	0.750	6.000	0.393	0.787	7.181	1
Inch	**MA1000M12L800S**	•	**M12**	0.492	1.000	8.000	0.393	0.866	9.378	1
Inch	**MA1000M16L800S**	•	**M16**	0.669	1.000	8.000	0.393	0.944	9.575	1
Inch	**MA1250M16L800S**	•	**M16**	0.669	1.250	8.000	0.393	0.944	9.575	1
Metric	**MA16M08L120S**	★	**M8**	*8.5*	*16*	*120*	*10*	*18*	*145*	1
Metric	**MA20M10L150S**	★	**M10**	*10.5*	*20*	*150*	*10*	*20*	*180*	1
Metric	**MA25M12L200S**	★	**M12**	*12.5*	*25*	*200*	*10*	*22*	*235*	1
Metric	**MA32M16L200S**	★	**M16**	*17.0*	*32*	*200*	*10*	*24*	*240*	1

Recommended Tightening Torque (N·m)

* Caution when tightening the head.

· When mounting the head to an arbor, follow the standard tightening torque in the table below.

· Check the mounting screw size for the head and arbor beforehand.

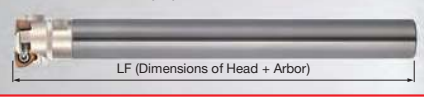
Screw Size	Regulated Tightening Torque k (N·m)	Tool Dimensions L11	Tool Dimensions H
M8	23	*8*	*13*
M10	46	*8*	*15*
M12	80	*10*	*19*
M16	90	*10*	*24*

Carbide Arbor

Dimensions (*mm*)

Cat. No.	Stock	Screw CRKS	Bore Dia. DCB	Shank DMM	Overall Length LF2	Depth L4	Thread Depth L5	Overhang LF*	Fig
MA15M08L120C	★	**M8**	*8.5*	*15*	*120*	*10*	*18*	*145*	1
MA15M08L160C	★	**M8**	*8.5*	*15*	*160*	*10*	*18*	*185*	1
MA16M08L120C	★	**M8**	*8.5*	*16*	*120*	*10*	*18*	*145*	1
MA16M08L160C	★	**M8**	*8.5*	*16*	*160*	*10*	*18*	*185*	1
MA18M10L150C	★	**M10**	*10.5*	*18*	*150*	*10*	*20*	*180*	1
MA18M10L200C	★	**M10**	*10.5*	*18*	*200*	*10*	*20*	*230*	1
MA20M10L150C	★	**M10**	*10.5*	*20*	*150*	*10*	*20*	*180*	1
MA20M10L200C	★	**M10**	*10.5*	*20*	*200*	*10*	*20*	*230*	1
MA23M12L200C	★	**M12**	*12.5*	*23*	*200*	*10*	*22*	*235*	1
MA23M12L250C	★	**M12**	*12.5*	*23*	*250*	*10*	*22*	*285*	1
MA25M12L200C	★	**M12**	*12.5*	*25*	*200*	*10*	*22*	*235*	1
MA25M12L250C	★	**M12**	*12.5*	*25*	*250*	*10*	*22*	*285*	1
MA28M16L200C	★	**M16**	*17.0*	*28*	*200*	*10*	*24*	*240*	1
MA28M16L300C	★	**M16**	*17.0*	*28*	*300*	*10*	*24*	*340*	1
MA32M16L200C	★	**M16**	*17.0*	*32*	*200*	*10*	*24*	*340*	1
MA32M16L300C	★	**M16**	*17.0*	*32*	*300*	*10*	*24*	*340*	1

● Set Dimensions (*2)



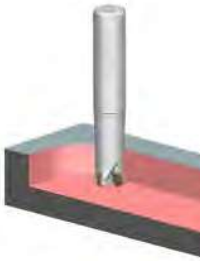
■ Application Examples (DMSL)

General Steel A36 Machine Component		Sumitomo	Competitor's Product
Vertical Machining Center: BT50	Tool	DMSL06020M10Z3	Single-sided, 2 edges
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*20*	*20*
	Number of Teeth	3	2
	v_c (SFM)	308	308
	v_f (IPM)	157	79
	f_z (IPT)	.035	.026
	a_p (Inch)	.039	.039
	a_e (inch)	.787	.787
	Coolant	Wet	Wet
	Results	Less chatter at an overhang amount of 4.72" (carbide arbor), efficiency 2x	

Carbon Steel Automotive Component		Sumitomo	Competitor's Product
Vertical Machining Center: BT40	Tool	DMSL06020M10Z3	—
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*20*	*20*
	Number of Teeth	3	3
	v_c (SFM)	656	525
	v_f (IPM)	354	154
	f_z (IPT)	.037	.020
	a_p (Inch)	.014	.020
	a_e (inch)	.787	.984
	Coolant	Dry	Wet
	Results	Stable milling at an overhang length of 5.12" (carbide arbor), efficiency 2x	

Heat Treated (40HRc) Die/Mold Component		Sumitomo	Competitor's Product
Vertical Machining Center: BT40	Tool	DMSL06025E04	Single-sided, 4 edges
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*25*	*32*
	Number of Teeth	4	4
	v_c (SFM)	623	492
	v_f (IPM)	378	235
	f_z (IPT)	.039	.039
	a_p (Inch)	.016	.016
	a_e (inch)	.709	.985
	Coolant	Dry	Wet
	Results	Suggested running DMSL dry. Tool life doubled and provided more stability.	

Titanium Alloy Ti-6Al-4V Aerospace Component		Sumitomo	Competitor's Product
Vertical Machining Center: BT40	Tool	DMSL06025E04	Double-sided, 4 edges
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*25*	*25*
	Number of Teeth	4	4
	v_c (SFM)	164	197
	v_f (IPM)	78.7	47.2
	f_z (IPT)	.031	.016
	a_p (Inch)	.028	.028
	a_e (inch)	.59	.59
	Coolant	Wet	Wet
	Results	DMSL provided lower vibration and improved stability. Over 40% efficiency increase.	



■ Application Examples (DMSW)

Cast Steel Machine Component		Sumitomo	Competitor's Product
Horizontal Machining Center: BT50	Tool	DMSW08080RS06	Single-Sided, 2 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*80*	*80*
	Number of Teeth	6	5
	v_c (SFM)	262	262
	v_f (IPM)	35	35
	f_z (IPT)	.0185	.022
	a_p (Inch)	.039	.039
	a_e (inch)	2.36	2.36
	Coolant	Wet	Wet
	Results	Stable with no sudden fractures in mill-scale work, achieving 1.3x longer tool life.	

Carbon Steel S45C Machine Component		Sumitomo	Competitor's Product
Boring Machine BT50	Tool	DMSW08050RS05	Single-Sided, 4 Corners
	Grade	ACU2500	—
	Chipbreaker	G	—
	Cutter Dia. (*mm*)	*50*	*50*
	Number of Teeth	5	5
	v_c (SFM)	620	620
	v_f (IPM)	197	197
	f_z (IPT)	.033	.033
	a_p (Inch)	.039	.039
	a_e (inch)	1.97	1.97
	Coolant	Dry	Dry
	Results	Achieved 240 min of cutting without indexing the inserts.	

WaveMill
WFXH Series

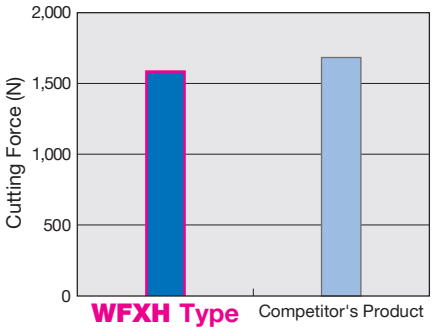
■ General Features

WFXH Series are high performance multi-functional cutters that use a WFX series insert to support roughing at high feed rates and other milling applications.
Now available in ACU2500.

■ Features

(1) Stable, high-efficiency machining due to insert's superior sharpness
(2) Various milling applications are supported (ramping, helical milling)
(3) Various inserts for the WFX series can be used

Cutting force: High sharpness provides stable cutting

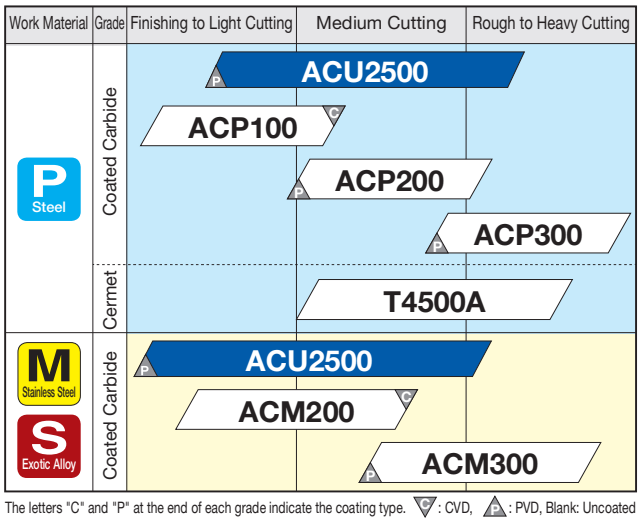


Part Material: 1050
Tool: WFXH12063RS (5 flutes)
Cutting Conditions: v_c=656 SFM, f_z=0.039"/t, a_p=0.019", a_e=1.73", Dry

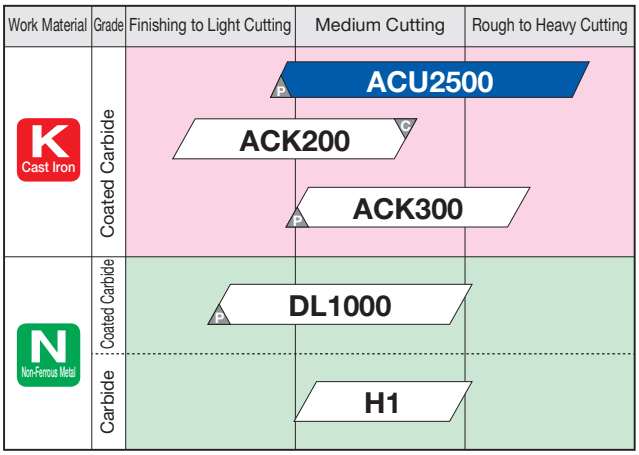
Chips: Small, curly chips at low cutting temperature

Part Material: 1050
Tool: WFXH12063RS, SOMT120416PDER-G (ACP200)
Cutting Conditions: v_c=656 SFM, f_z=0.039"/t, a_p=0.039", a_e=1.38", Dry

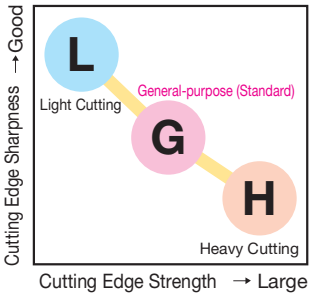
■ Grade Application Range



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



■ Chipbreaker Selection



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

■ Precautions for Use (1) Precautions for Corner Finishing

* Corners have remaining material or over-cut portion with respect to the expected corner profile.

Fig 1

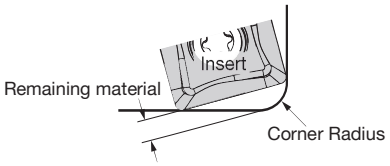
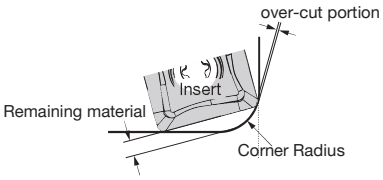


Fig 2



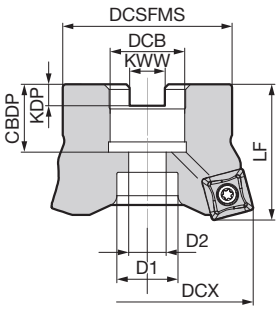
WFXH08000RS

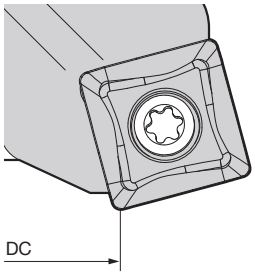
Corner Radius	SOMT08○○04-□			SOMT08○○08-□			SOMT08○○12-□		
	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape
2.0	1.41	0	Fig 1	1.30	0	Fig 1	1.21	0	Fig 1
2.5	1.30	0.02	Fig 2	1.19	0.01	Fig 2	1.09	0	Fig 1
3.0	-	-	-	-	-	-	0.98	0.05	Fig 2

WFXH12000RS

Corner Radius	SOMT12○○04-□			SOMT12○○08-□			SOMT12○○12-□			SOMT08○○16-□		
	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape	Remaining material	over-cut portion	Shape
2.0	2.58	0	Fig 1	2.48	0	Fig 1	2.37	0	Fig 1	2.25	0	Fig 1
2.5	2.47	0	Fig 1	2.37	0	Fig 1	2.25	0	Fig 1	2.14	0	Fig 1
3.0	2.36	0	Fig 1	2.26	0	Fig 1	2.14	0	Fig 1	2.11	0	Fig 1
3.5	2.24	0.01	Fig 2	2.14	0	Fig 1	2.03	0	Fig 1	1.91	0	Fig 1
4.0	-	-	-	2.03	0.04	Fig 2	1.91	0.03	Fig 2	1.8	0.01	Fig 2

■ Precautions for Use (2) The minimum machining diameter DC differs depending on the insert used. We recommend using WFXH Type large nose radius inserts.





Inch Size (Inch)

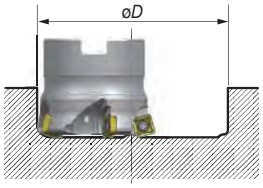
Body Cat. No.	DCX	DC		
		R0.4	R0.8	R1.2
WFXH31000EW03	1.0000	.4252	.4449	.4685
WFXH31250EW04	1.2500	.6752	.6949	.7185
WFXH31500R	1.5000	.9252	.9449	.9685
WFXH32000R	2.0000	1.4134	1.4331	1.4567

Metric Size (*mm*)

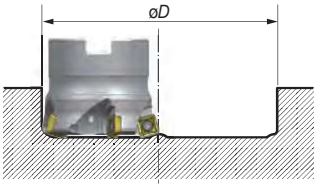
Body Cat. No.	DCX	DC			
		R0.4	*R0.8*	*R1.2*	*R1.6*
WFXH08025M12Z2	25	10.4	10.9	11.5	—
WFXH08032M12Z3	32	17.4	17.9	18.5	—
WFXH08040RS	40	25.4	25.9	26.5	—
WFXH08050RS	50	35.4	35.9	36.5	—
WFXH08050RS-Z6	50	35.4	35.9	36.5	—
WFXH08063RS	63	48.4	48.9	49.5	—
WFXH12040M12Z3	40	16.6	17.1	17.5	18.1
WFXH12050RS	50	26.6	27.2	27.7	28.2
WFXH12063RS	63	39.5	40.0	40.4	41.1

■ Ramping and Helical Milling

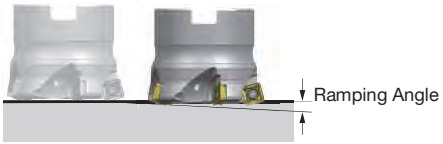
For minimum diameter



For maximum diameter



Min. Diameter, Max. Diameter

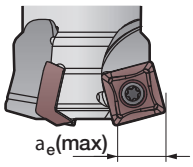


Ramping Angle

Insert Cat. No.	Max Diameter DCX (Inch/mm)	Helical Milling (inch) Min. Dia.	Helical Milling (inch) Max. Dia.	Ramping Maximum Ramping Angle
SOMT08○○04-□	**1.000**	1.419	1.934	1.5°
	1.250	1.916	2.434	0.5°
	1.500	2.414	2.934	0.5°
	2.000	Impossible	Impossible	Impossible
	25	1.378	1.929	1°30'
	32	1.929	2.480	0°30'
	40	2.559	3.110	0°30'
	50	Impossible	Impossible	0°30'
	63	Impossible	Impossible	Impossible
SOMT08○○08-□	**1.000**	1.405	1.921	3.0°
	1.250	1.901	2.421	1.5°
	1.500	2.400	2.921	1.0°
	2.000	3.379	3.902	0.5°
	25	1.378	1.850	3°
	32	1.929	2.441	1°30'
	40	2.559	3.071	1°
	50	3.346	3.858	0°30'
	63	4.370	4.882	0°30'
SOMT08○○12-□	**1.000**	1.390	1.908	4.0°
	1.250	1.887	2.408	2.5°
	1.500	2.385	2.908	1.5°
	2.000	3.365	3.889	1.0°
	25	1.339	1.850	4°30'
	32	1.889	2.402	2°30'
	40	2.519	3.032	1°30'
	50	3.307	3.819	1°
	63	4.331	4.842	0°30'

Insert Cat. No.	Max Diameter DCX	Helical Milling (inch) Min. Dia.	Helical Milling (inch) Max. Dia.	Ramping Maximum Ramping Angle
SOMT12○○04-□	***40***	2.204	3.110	1°
	50	2.992	3.898	0°30'
	63	Impossible	Impossible	Impossible
SOMT12○○08-□	***40***	2.204	3.071	1°30'
	50	2.992	3.858	1°
	63	4.016	4.882	0°30'
SOMT12○○12-□	***40***	2.165	3.032	2°30'
	50	2.953	3.819	1°30'
	63	3.976	4.843	1°
SOMT12○○12-□	***40***	2.165	2.992	3°30'
	50	2.953	3.779	2°
	63	3.976	4.803	1°30'

■ Maximum Depth of Cut when Plunging



Lower the feed rate when plunging.

Insert Cat. No.	Maximum Depth of Cut a_e(max)
SOMT08	0.236"
SOMT12	0.394"

■ Recommended Cutting Conditions

Work Material	Insert Grade	Cutting Speed v_c(SFM)	Insert Cat. No.	ø25 a_p (inch)	ø25 f_z (IPT)	ø32 a_p (inch)	ø32 f_z (IPT)	ø40 a_p (inch)	ø40 f_z (IPT)	ø50 a_p (inch)	ø50 f_z (IPT)	ø63 a_p (inch)	ø63 f_z (IPT)
P General Steel Below 200HB	ACP200	330-720	**SOMT08**	0.0315	0.0315	0.0315	0.0315	-	-	0.0315	0.0315	0.0315	0.0315
			SOMT12	-	-	-	-	0.0394	0.0394	0.394	0.0394	0.0394	0.0394
P Alloy Steel Below 45HRC	ACP200	260-650	**SOMT08**	0.0275	0.0315	0.0275	0.0315	-	-	0.0275	0.0315	0.0275	0.0315
			SOMT12	-	-	-	-	0.0315	0.0394	0.0315	0.0394	0.0315	0.0394
M Stainless Steel 304, etc.	ACM300	260-540	**SOMT08**	0.0315	0.0275	0.0315	0.0275	-	-	0.0315	0.0275	0.0315	0.0275
			SOMT12	-	-	-	-	0.0394	0.0315	0.0394	0.0315	0.0394	0.0315
K Cast Iron FC, FCD	ACK300	330-720	**SOMT08**	0.0315	0.0394	0.0315	0.0394	-	-	0.0315	0.0394	0.0315	0.0394
			SOMT12	-	-	-	-	0.0394	0.0472	0.0394	0.0472	0.0394	0.0472
H Hardened Steel Below 50HRC	ACK300	135-360	**SOMT08**	0.0197	0.0197	0.0197	0.0197	-	-	0.0197	0.0197	0.0197	0.0197
			SOMT12	-	-	-	-	0.0236	0.0315	0.0236	0.0315	0.0236	0.0315

· 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 Shellmill & Endmill - *8mm* Inserts

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

Rake Angle		
	Radial	–6°
	Axial	6°

0.059" 15°

Fig 1

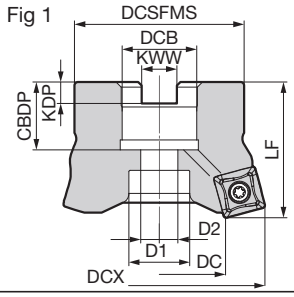
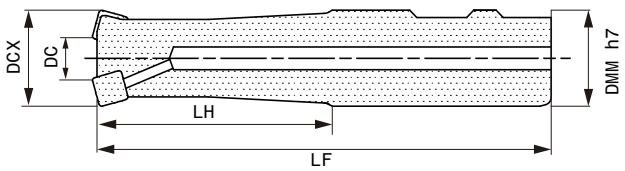


Fig 2



Shellmill Body with Applicable Insert: SOMT08

★: Worldwide Warehouse Item ● USA stocked item

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lb / *kg*)	Fig
Inch	**WFXH31500R** New	●	1.500	*.9685	1.338	1.530	.750	.312	.190	.750	.609	.406	5	.44	1
Inch	**WFXH32000R** New	●	2.000	*1.4567	1.500	1.750	.750	.312	.190	.750	.609	.406	6	.66	1
Metric	**WFXH08040RS**	★	*40*	**26.5*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	*4*	*.20*	1
Metric	**WFXH08050RS**	★	*50*	**36.5*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	*5*	*.30*	1
Metric	**WFXH08050RS-Z6**	★	*50*	**36.5*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	*6*	*.30*	1
Metric	**WFXH08063RS**	★	*63*	**49.5*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	*6*	*.50*	1

Inserts are sold separately. * DC value with corner radius: R1.2, see page H138 for details

Endmill Body with Applicable Insert: SOMT08

Dimensions (inch)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Shank DMM	Head LH	Overall Length LF	Number of Teeth	Weight (lb)	Fig
Inch	**WFXH31000EW03** New	●	1.000	*.4685	1.000	2.500	4.780	3	.88	2
Inch	**WFXH31250EW04** New	●	1.250	*.7185	1.250	2.500	4.780	4	1.32	2

Inserts are sold separately. * DC value with corner radius: R1.2, see page H138 for details

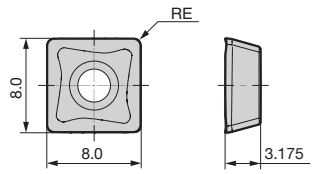
Insert

Dimensions (*mm*)

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

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L	★	★	★	★	★	★	★	★	-	-		*0.4*	1
SOMT080308PZER-L		★	★	★	★	★	★	★	-	-		*0.8*	1
SOMT080304PZER-G	★	★	★	★	★	★	★	★	-	-		*0.4*	1
SOMT080308PZER-G	★	★	★	★	★	★	★	★	-	-		*0.8*	1
SOMT080312PZER-G	★	★	★	★	★	★	★	★	-	-		*1.2*	1
SOMT080308PZER-H	★	★	★	★	★	★	★	★	-	-		*0.8*	1
SOMT080312PZER-H	★	★	★	★	★	★	★	★	-	-		*1.2*	1
SOET080304PZER-G	★	★	★	★	★	★	★	★	-	-	★	*0.4*	1
SOET080308PZER-G	★	★	★	★	★	★	★	★	-	-	★	*0.8*	1
SOET080312PZER-G	★	★	★	★	★	★	★	★	-	-	★	*1.2*	1
SOET080302PZFR-S *	-	-	-	-	-	-	-	-	★	★	-	*0.2*	1
SOET080304PZFR-S *	-	-	-	-	-	-	-	-	★	★	-	*0.4*	1
SOET080308PZFR-S *	-	-	-	-	-	-	-	-	★	★	-	*0.8*	1

Fig 1



★: Worldwide Warehouse Item

*If the cutting edge strength for high efficiency milling of non-ferrous metal is insufficient, try a G chipbreaker (ACK300).

Parts

Flat Screw		Wrench
	N·m	
BFTX0306IP	2.0	TRDR08IP

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

Identification Code

WFX H 08 040 RS - Z6

Cutter Series	For High Efficiency Milling	Insert Size	Dia.	Metric Bore	Fine Pitch Type (Number is no. of teeth)

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

N·m Recommended Tightening Torque (N·m)

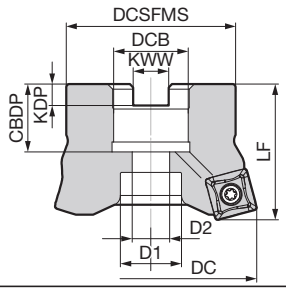
WFXH Shellmill -12mm Inserts

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

Rake Angle		
	Radial	−6°
	Axial	6°

2.5mm 15°

Fig 1



Body (WFXH12000RS) Applicable Insert: SOMT12

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WFXH12050RS**	★	*50*	**28.2*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
Metric	**WFXH12063RS**	★	*63*	**41.1*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.4*	1

Inserts are sold separately. * DC value with corner radius: R1.2, see page H138 for details

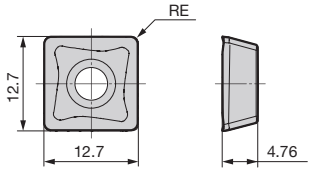
★: Worldwide Warehouse Item

Insert

Dimensions (*mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet		
Process	High-speed / Light		P			K		M S		K N	N			
Process	General-purpose	P M S		P M	P M	K		M S	M S		N	P		
Process	Roughing	P M S		P M	P M		K		M S					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	●	-	-	-	*0.8*	1
SOMT120404PDER-G		★	●	●	●	●	●	●	●	-	-	-	*0.4*	1
SOMT120408PDER-G		★	●	●	●	●	●	●	●	-	-	●	*0.8*	1
SOMT120412PDER-G		★	●	●	●	●	●	●	●	-	-	-	*1.2*	1
SOMT120416PDER-G			●	●	●	●	●	●	●	-	-	-	*1.6*	1
SOMT120408PDER-H		★	●	●	●	●	●	●	●	-	-	-	*0.8*	1
SOET120408PDFR-S *			-	-	-	-	-	-	-	●	●	-	*0.8*	1

Fig 1



● USA stocked item

*If the cutting edge strength for high efficiency milling of non-ferrous metal is insufficient, try a G-type chipbreaker (ACK300).

Parts

Insert Screw		Wrench
	N·m	
BFTX03512IP	3.0	TRDR15IP

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

Identification Code

WFX H 12 050 RS

Cutter Series	For High Efficiency Milling	Insert Size	Dia.	Metric Bore

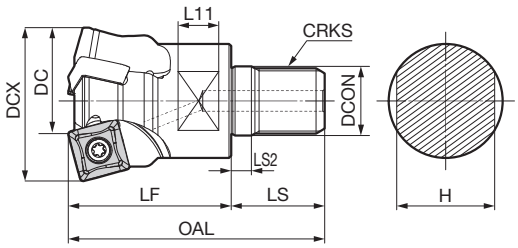
N·m Recommended Tightening Torque (N·m)

Rake Angle		
	Radial	-6°
	Axial	6°

1.5mm 15° (08000M Type)

2.5mm 15° (12000M Type)

Fig 1



Head (WFXH 08000M) Applicable Insert: SOMT08

Dimensions (mm)

Cat. No.	Stock	Max Dia. DCX	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXH08025M12Z2	★	25	*11.5	12.5	**M12**	56	35	5	21	10	19	2	0.1	1
WFXH08032M16Z3	★	32	*18.5	17.0	**M16**	63	40	5	23	10	24	3	0.2	1

Inserts are sold separately.* DC value with corner radius: R1.2, see page H138 for details

Head (WFXH 12000M) Applicable Insert: SOMT12

Dimensions (mm)

Cat. No.	Stock	Max Dia. DCX	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXH12040M16Z3	★	40	*18.1	17.0	**M16**	63	40	5	23	10	24	3	0.2	1

Inserts are sold separately.* DC value with corner radius: R1.2, see page H138 for details

Insert

★ Worldwide Warehouse item

Dimensions (mm)

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

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L	★	●	●	●	●	●	●	●	-	-		0.4	1
SOMT080308PZER-L		●	●	●	●	●	●	●	-	-		0.8	1
SOMT080304PZER-G	★	●	●	●	●	●	●	●	-	-		0.4	1
SOMT080308PZER-G	★	●	●	●	●	●	●	●	-	-		0.8	1
SOMT080312PZER-G	★	●	●	●	●	●	●	●	-	-		1.2	1
SOMT080308PZER-H	★	●	●	●	●	●	●	●	-	-		0.8	1
SOMT080312PZER-H	★	●	●	●	●	●	●	●	-	-		1.2	1
SOET080304PZER-G	★	●	●	●	●	●	●	●	-	-	●	0.4	1
SOET080308PZER-G	★	●	●	●	●	●	●	●	-	-	●	0.8	1
SOET080312PZER-G	★	●	●	●	●	●	●	●	-	-	●	1.2	1
SOET080302PZFR-S	-	-	-	-	-	-	-	-	●	●	-	0.2	1
SOET080304PZFR-S	-	-	-	-	-	-	-	-	●	●	-	0.4	1
SOET080308PZFR-S	-	-	-	-	-	-	-	-	●	●	-	0.8	1
SOMT120408PDER-L		●	●	●	●	●	●	●	-	-	-	0.8	2
SOMT120404PDER-G		●	●	●	●	●	●	●	-	-	-	0.4	2
SOMT120408PDER-G		●	●	●	●	●	●	●	-	-	●	0.8	2
SOMT120412PDER-G		●	●	●	●	●	●	●	-	-	-	1.2	2
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	1.6	2
SOMT120408PDER-H		●	●	●	●	●	●	●	-	-	-	0.8	2
SOET120408PDFR-S	-	-	-	-	-	-	-	-	●	●	-	0.8	2

Fig 1

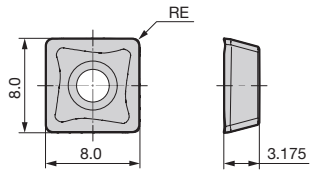
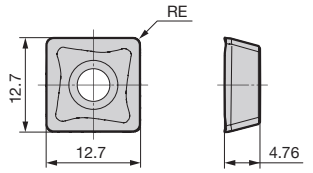


Fig 2



Identification Code

WFX H 08 025 M12 Z2

WFX	H	08	025	M12	Z2
Cutter Series	For High Efficiency Milling	Insert Size	Dia.	Mounting Screw Size	Number of Teeth

Recommended Cutting Conditions

Work Material	Insert Grade	Cutting Speed v_c (m/min)	Insert Cat. No.	ø25 a_p (mm)	ø25 Feed Rate (mm/rev)	ø32 a_p (mm)	ø32 Feed Rate (mm/rev)	ø40 a_p (mm)	ø40 Feed Rate (mm/rev)	ø50 a_p (mm)	ø50 Feed Rate (mm/rev)	ø63 a_p (mm)	ø63 Feed Rate (mm/rev)
P General Steel Below 200HB	ACP200	100-**150**-200	**SOMT08**	0.8	0.8	0.8	0.8	—	—	0.8	0.8	0.8	0.8
			SOMT12	—	—	—	—	1.0	1.0	1.0	1.0	1.0	1.0
P Alloy Steel Below HRC45	ACP200	80-**130**-180	**SOMT08**	0.7	0.8	0.7	0.8	—	—	0.7	0.8	0.7	0.8
			SOMT12	—	—	—	—	0.8	1.0	0.8	1.0	0.8	1.0
M Stainless Steel SUS304, etc.	ACM300	80-**120**-150	**SOMT08**	0.8	0.7	0.8	0.7	—	—	0.8	0.7	0.8	0.7
			SOMT12	—	—	—	—	1.0	0.8	1.0	0.8	1.0	0.8
K Cast Iron FC, FCD	ACK300	100-**150**-200	**SOMT08**	0.8	1.0	0.8	1.0	—	—	0.8	1.0	0.8	1.0
			SOMT12	—	—	—	—	1.0	1.2	1.0	1.2	1.0	1.2
H Hardened Steel Below HRC50	ACK300	40- **80**-100	**SOMT08**	0.5	0.5	0.5	0.5	—	—	0.5	0.5	0.5	0.5
			SOMT12	—	—	—	—	0.6	0.8	0.6	0.8	0.6	0.8

· The above recommended cutting conditions may require adjustment depending on machine rigidity and work rigidity. The above figures are guidelines for use with BT50 machine tools.

· The above recommended cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length of 3 times tool diameter) or less.
When tool overhang is more than L/D = 3 and less than or equal to L/D=5, settings should be adjusted to approximately 70 to 80% of those indicated in the above recommended cutting conditions (i.e. a_p and Feed Rate).
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 (i.e. a_p and feed rate).

Parts

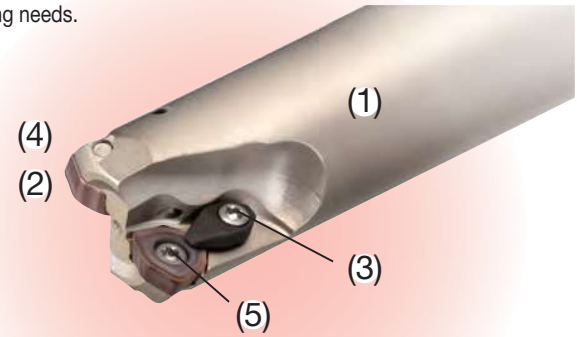
Applicable Endmill	Flat Screw	N·m	Wrench
WFXH08000M	BFTX0306IP	2.0	TRDR08IP
WFXH12000M	BFTX03512IP	3.0	TRDR15IP

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

N·m Recommended Tightening Torque (N·m)

■ General Features

The Metal Slash Mill MSX is a multi-purpose cutter capable of roughing at high feeds. Its wide application range dramatically boosts efficiency.
Inserts are available in four sizes, ranging from ø.750" to ø6.000" diameter, to cover a wide variety of milling needs.

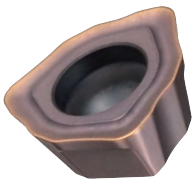
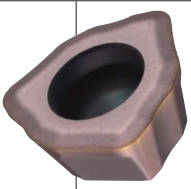


■ Features

(1) **Highly Durable Body** Special surface treatment improves scratch resistance
(2) **Versatile Machining Operations** Use for ramping, helical and pocketing
(3) **Double Clamp** Stable milling with a strong clamp is possible (MSX06000 or MSX08000 units with ø22mm or less use a single clamp)
(4) **With Coolant Hole** Improved chip evacuation with air or coolant supply hole and specially shaped pocket design
(5) **Insert Shape** Unique tool shape combines sharpness and cutting edge strength

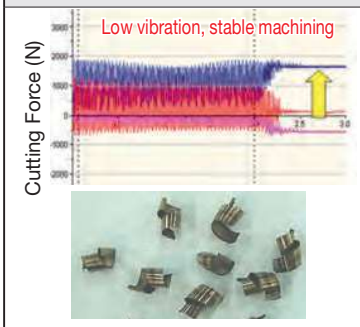
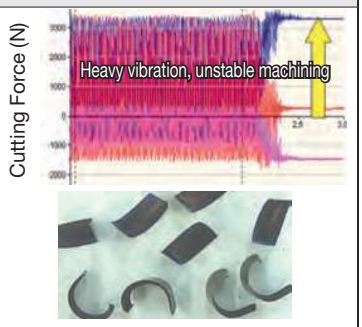
■ Insert Applications and Types

· Insert utilizes a special cutting edge profile.
· Economical, three-cornered insert

Type	General-Purpose	Strong Edge
Applications	General Milling (First Recommendation)	Interrupted Milling
Appearance / Features	 Sharper Edge	 Emphasis on Fracture Resistance

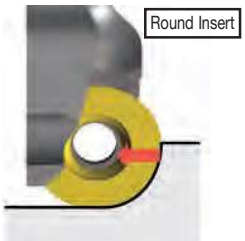
■ Cutting Performance

● Comparison of Cutting Force

MSX	Conventional Tool
	

Part Material: 1050
Cutting Conditions: v_c=492 SFM, f_z=0.04 IPT, a_p=0.984in, a_e=0.08in

● Shoulder Milling Comparison of MSX and Conventional Tool

MSX	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.

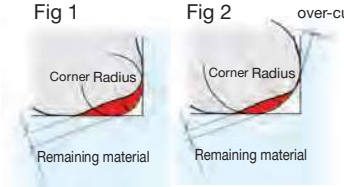
■ Product Range

	Type	External Diameter				Applicable Insert
		Inch	Number of Teeth	MM	Number of Teeth	
Shellmill	**MSX3/*08***	1.50" to 2.00"	4 to 5	ø40	4 to 5	WDMT 08
	MSX4/*12*	2.00" to 4.00"	4 to 7	ø50 to ø63	4 to 7	WDMT 12
	MSX5/*14*	2.00" to 6.00"	4 to 8	ø50 to ø100	3 to 8	WDMT 14
Endmill	**MSX2/*06***	0.75"	3	ø16 to ø25	2 to 3	WDMT 06
	MSX3/*08*	1.00" to 1.50"	2 to 4	ø20 to ø35	2 to 4	WDMT 08
	MSX4/*12*	1.25" to 1.50"	2 to 3	ø32 to ø50	2 to 4	WDMT 12
	MSX5/*14*	-	-	ø40 to ø63	2 to 4	WDMT 14
Modular	**MSX2/*06***	0.75" to 1.00"	3	ø16 to ø25	2 to 3	WDMT 06
	MSX3/*08*	1.00" to 1.25"	3	ø25 to ø35	2 to 3	WDMT 08
	MSX4/*12*	-		ø32 to ø40	2 to 3	WDMT 12

■ Precautions for Corner Finishing

* Corners will have remaining material or gouges with respect to the expected corner profile.

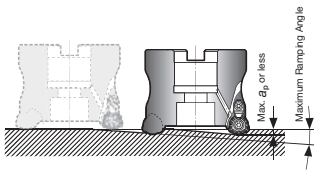
Fig 1 Fig 2 over-cut portion



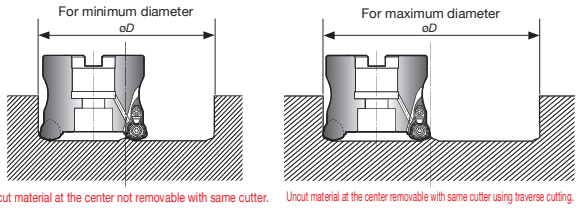
Corner Radius	MSX06000			MSX08000			MSX12000			MSX14000		
	Remaining Material	Over-Cut Portion	Fig	Remaining Material	Over-Cut Portion	Fig	Remaining Material	Over-Cut Portion	Fig	Remaining Material	Over-Cut Portion	Fig
.079	0.016	0	1	0.029	0	1	0.052	0	1	0.065	0	1
.098	0.010	0.003	2	0.023	0	1	0.046	0	1	0.059	0	1
.118				0.018	0.001	2	0.041	0	1	0.054	0	1
.138							0.035	0.00004	2	0.048	0	1
.157										0.042	0.00063	2

■ Ramping and Helical Milling

Ramping



Helical Milling



Uncut material at the center not removable with same cutter. Uncut material at the center removable with same cutter using traverse cutting.

øDc (mm / in.)	WDMT06			WDMT08			WDMT12			WDMT14		
	Ramping	Helical Milling		Ramping	Helical Milling		Ramping	Helical Milling		Ramping	Helical Milling	
	Max. Ramping Angle	Min.	Max.	Max. Ramping Angle	Min.	Max.	Max. Ramping Angle	Min.	Max.	Max. Ramping Angle	Min.	Max.
16	6° 00'	0.827	1.181									
17	5° 00'	0.905	1.259									
18	4° 30'	1	1.339									
20	3° 30'	1.142	1.496	7° 30'	1	1.496						
22	3° 00'	1.299	1.654	5° 30'	1.142	1.654						
25	2° 00'	1.535	1.889	4° 00'	1.378	1.889						
28				3° 00'	1.614	2.126						
32				2° 30'	1.929	2.441	6° 30'	1.654	2.441			
35				2° 00'	2.165	2.677	5° 00'	1.889	2.677			
40				2° 00'	2.559	3.071	4° 00'	2.284	3.071	6° 00'	2.087	3.071
50							2° 30'	3.071	3.858	3° 30'	2.874	3.858
63							2° 00'	4.055	4.882	2° 00'	3.898	4.882
80										1° 30'	5.236	6.221
100										1° 00'	6.811	7.795
0.750	4° 00'	1.11	1.417									
1.000	2° 00'	1.58	1.92	4° 00'	1.42	1.92						
1.250				2° 30'	1.93	2.4	6° 30'	1.62	2.4			
1.500				1° 30'	2.45	2.91	4° 00'	2.13	2.91			
2.000				1° 00'	3.39	3.91	2° 30'	3.08	3.91	3° 30'	2.90	3.91
2.500							1° 30'	4.08	4.91	2° 30'	3.90	4.91
3.000							1° 00'	5.08	5.91	1° 30'	4.90	5.91
4.000							0° 30'	7.08	7.91	1° 00'	6.90	7.91
5.000										0° 30'	8.90	9.91
6.000										0° 30'	10.90	11.91

*Programmed Radius

■ Recommended Cutting Conditions

Insert Cat. No.	Max. a_p	RE	Approx. RE
WDMT0603	1.0	1.5	2.0
WDMT0804	1.5	2.0	2.5
WDMT1205	2.0	2.0	3.0
WDMT1406	2.5	2.0	3.5

Insert Cat. No.	Max. a_p	RE (in)	Approx. RE (in.)*
WDMT0603	0.039"	0.0591"	0.0787"
WDMT0804	0.059"	0.0787"	0.098"
WDMT1205	0.079"	0.0787"	0.118"
WDMT1406	0.098"	0.0787"	0.138"

(a_p: Depth of Cut f_z: Feed Rate)

Work Material	Insert Grade	Cutting Speed v_c (SFM)	Insert Cat. No.	Endmill										Shellmill			
				ø16		ø20		ø25		ø32		ø40		ø50/ø63		ø80/ø100	
				a_p (in)	f_z (IPT)	a_p (in)	f_z (IPT)	a_p (in)	f_z (IPTt)	a_p (in)	f_z (IPT)	a_p (in)	f_z (IPT)	a_p (in)	f_z (IPT)	a_p (in)	f_z (IPT)
P General Steel Below 200HB	ACP200	330 - 650	WDMT0603	0.032	0.032	0.032	0.032	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.039	0.039	0.039	0.047	0.039	0.047	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.047	0.055	0.047	0.055	0.047	0.055	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.059	0.059	0.059	0.059	0.059	0.059
P Alloy Steel Below 45HRC	ACP200	260 - 590	WDMT0603	0.028	0.032	0.028	0.032	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.032	0.039	0.032	0.047	0.032	0.047	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.039	0.055	0.039	0.055	0.039	0.055	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.051	0.059	0.051	0.059	0.051	0.059
M Stainless Steel SUS304, etc.	ACP300	260 - 500	WDMT0603	0.032	0.028	0.032	0.028	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.039	0.032	0.039	0.032	0.039	0.032	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.047	0.047	0.047	0.047	0.047	0.047	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.059	0.051	0.059	0.051	0.059	0.051
K Cast Iron FC, FCD	ACK200 ACK300	330 - 650	WDMT0603	0.032	0.039	0.032	0.039	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.039	0.047	0.039	0.055	0.039	0.055	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.047	0.059	0.047	0.059	0.047	0.059	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.059	0.071	0.059	0.071	0.059	0.071
H Hardened Steel Below 50HRC	ACK200 ACK300	130 - 330	WDMT0603	0.020	0.020	0.020	0.020	-	-	-	-	-	-	-	-	-	-
			WDMT0804	-	-	0.020	0.020	0.020	0.032	0.020	0.032	-	-	-	-	-	-
			WDMT1205	-	-	-	-	-	-	0.024	0.039	0.024	0.039	0.024	0.039	-	-
			WDMT1406	-	-	-	-	-	-	-	-	0.039	0.047	0.039	0.047	0.039	0.047

· 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).

Metal Slash Mill

MSX SHELLMILL (8mm / 12mm / 14mm insert)

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

Rake Angle		
Radial	–3° to –8°	
Axial	8°	

1.5mm 20° (08000 Type) | .0591" 20° | 2.0mm 20° (12000 Type) | .079" 20° | 2.5mm 20° (14000 Type) | .096" 20°

Fig 1

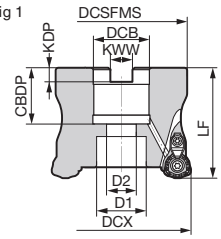
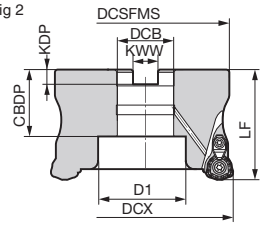


Fig 2



Body with Applicable Insert WDMT08

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**MSX31500R**	●	1.500	1.339	1.530	.750	.312	.190	.750	.609	.406	4	0.58	1
Inch	**MSX32000R**	●	2.000	1.850	2.000	.750	.312	.190	.750	.609	.406	5	0.74	1
Metric	**MSX08040RS**	★	*40*	*37*	*45*	*16*	*8.4*	*5.6*	*18*	*13.5*	*9*	4	*0.2*	1

Body with Applicable Insert WDMT12

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**MSX42000R**	●	2.000	1.850	2.000	.750	.312	.190	.750	.609	.406	4	0.74	1
Inch	**MSXM42000R**	●	2.000	1.850	2.000	.750	.312	.190	.750	.609	.406	5	0.77	1
Inch	**MSX42500R**	●	2.500	2.362	2.000	1.000	.375	.220	.750	.797	.530	5	1.10	1
Inch	**MSX43000R**	●	3.000	2.756	2.000	1.000	.375	.220	.750	.797	.530	6	1.76	1
Inch	**MSX44000R-1.25**	●	4.000	3.740	2.500	1.250	.500	.280	.750	1.000	.656	7	4.85	1
Inch	**MSX44000R-1.50**	●	4.000	3.740	2.500	1.500	.625	.380	1.000	2.000	.781	7	5.85	1
Metric	**MSX12050RS**	★	*50*	*47*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.3*	1
Metric	**MSX12063RS**	★	*63*	*60*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.6*	1

Body with Applicable Insert WDMT14

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**MSX52000R**	●	2.000	1.850	2.000	.750	.312	.190	.750	.609	.406	4	0.74	1
Inch	**MSX52500R**	●	2.500	2.362	2.000	1.000	.375	.220	.750	.797	.531	5	1.10	1
Inch	**MSX53000R**	●	3.000	2.756	2.000	1.000	.375	.220	.750	.797	.531	5	1.76	1
Inch	**MSX54000R-1.25**	●	4.000	3.740	2.500	1.250	.500	.280	.750	1.000	.656	6	4.85	1
Inch	**MSX54000R-1.50**	●	4.000	3.740	2.500	1.500	.625	.380	1.000	2.000	.781	6	5.85	1
Inch	**MSX55000R**	●	5.000	3.937	2.500	1.500	.625	.380	1.000	2.000	.781	7	7.41	1
Inch	**MSX56000R**	●	6.000	3.937	2.500	1.500	.625	.380	1.000	2.000	.781	8	9.63	1
Metric	**MSX14050RS**	★	*50*	*47*	*50*	*22*	*10.4*	*6.3*	*20*	*17*	*11*	3	*0.3*	1
Metric	**MSX14063RS**	★	*63*	*60*	*50*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	4	*0.6*	1
Metric	**MSX14080RS**	★	**80*	*76*	*63*	*27*	*12.4*	*7.0*	*25*	*20*	*13.5*	5	*1.4*	1
Metric	**MSX14100RS**	★	*100*	*96*	*63*	*32*	*14.4*	*8.5*	*32*	*44*		6	*2.2*	2
Metric	**MSX14080R**	★	**80*	*76*	*63*	*31.75*	*12.7*	*8.0*	*32*	*28*	*17*	5	*1.3*	1
Metric	**MSX14100R**	★	**100*	*96*	*63*	*31.75*	*12.7*	*8.0*	*32*	*28*	*17*	6	*2.4*	1

Inserts are sold separately. ● USA stocked item ★: Worldwide Warehouse Item

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

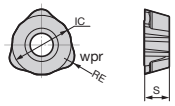
Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide					
Process	High-speed / Light			K		M S	
Process	General-purpose	P M	P M	K		M S	M S
Process	Roughing	P M	P M		K		M S
Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300
General-purpose	**WDMT0804ZDTR**	●	●	●	●	●	●
General-purpose	**WDMT1205ZDTR**	●	●	●	●	●	●
General-purpose	**WDMT1406ZDTR**	●	●	●	●	●	●
Honed Type	**WDMT0804ZDTR-H**	●	●	●	●	●	●
Honed Type	**WDMT1205ZDTR-H**	●	●	●	●	●	●
Honed Type	**WDMT1406ZDTR-H**	●	●	●	●	●	●

Cat. No.	Inscribed Circle IC	Thickness S	Nose Radius RE	Wiper Facet Length wpr	Applicable Cutter	Fig
WDMT0804ZDTR	.335" / *8.5*	.157" / *4.0*	.079" / *2.0*	0.035 / *0.9*	MSX08000R Type	1
WDMT1205ZDTR	.473" / *12*	.197" / *5.0*	.079" / *2.0*	0.063 / *1.6*	MSX12000R Type	1
WDMT1406ZDTR	.551" / *14*	.236" / *6.0*	.079" / *2.0*	0.079 / *2.0*	MSX14000R Type	1
WDMT0804ZDTR-H	.335" / *8.5*	.157" / 4.0	.079" / *2.0*	0.035 / *0.9*	MSX08000R Type	1
WDMT1205ZDTR-H	.473" / *12*	.197" / 5.0	.079" / *2.0*	0.063 / *1.6*	MSX12000R Type	1
WDMT1406ZDTR-H	.551" / *14*	.236" / 6.0	.079" / *2.0*	0.079 / *2.0*	MSX14000R Type	1

Fig 1



Applicable Body	Flat Screw	N·m	Wrench	Clamp	C-Ring	Clamp Screw
MSX08000R	BFTX0306IP	2.0	TRDR08IP	CCH3.5	CR03	BFTX03510IP08
MSX12000R	BFTX0409IP	3.0	TRDR15IP	CCH3.5	CR03	BFTX03510IP15
MSX14000R	BFTX0511IP	5.0	TRDR20IP	CCH4.5	CR03	BFTX04513IP20

N·m Recommended Tightening Torque (N·m)

Identification Code - Inch

MSX 3 2000 R

Cutter Series | Insert Size | Cutter Dia. 2.000" | Feed Direction

Identification Code - Metric

MSX 08 040 R S

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

MSX ENDMILL (8mm / 12mm / 14mm insert)

P Steel | M Stainless Steel | K Cast Iron | H Hardened Steel

Rake Angle		
	Radial	–3° to –8°
	Axial	8°

1.0mm	20°	.039"	20°	1.5mm	20°	.0591"	20°	2.0mm	20°	.079"	20°	2.5mm	20°	.096"	20°
(06000 Type)				(08000 Type)				(12000 Type)				(14000 Type)			

Fig. 1 (Single Clamp)

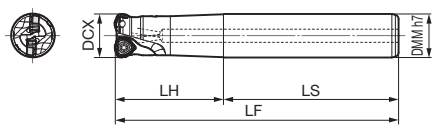
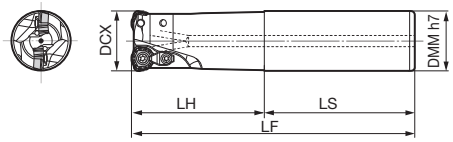


Fig. 2 (Double Clamp)



Body with Applicable Insert: WDMT06

Dimensions (inch / mm)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lb/kg)	Fig
Inch	**MSX20750EW**	●	.750	.750	2.000	2.031	4.000	3	.88	1
Inch	**MSX20750ELC**	●	.750	.750	2.000	6.000	8.000	3	.88	1
Metric	**MSX06016ES**	★	16	16	30	80	110	2	0.2	1
Metric	**MSX06016EM**	★	16	16	70	80	150	2	0.2	1
Metric	**MSX06017EM**	★	17	16	20	130	150	2	0.2	1
Metric	**MSX06018EM**	★	18	16	20	130	150	2	0.2	1
Metric	**MSX06020ES**	★	20	20	50	80	130	3	0.3	1
Metric	**MSX06020EM**	★	20	20	100	80	180	3	0.4	1
Metric	**MSX06022EM**	★	22	20	30	150	180	3	0.4	1
Metric	**MSX06025ES**	★	25	25	60	80	140	3	0.5	1
Metric	**MSX06025EM**	★	25	25	120	130	250	3	0.8	1

Body with Applicable Insert: WDMT12

Dimensions (inch / mm)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Inch	**MSX41250EW**	●	1.250	1.250	2.500	2.281	4.781	2	1.23	2
Inch	**MSX41250ELC**	●	1.250	1.250	2.500	7.500	10.000	2	2.31	2
Inch	**MSX41500EW**	●	1.500	1.250	2.500	2.281	4.781	2	1.47	2
Inch	**MSX41500ELC**	●	1.500	1.500	2.500	7.500	10.000	2	3.21	2
Inch	**MSXF41500EW**	●	1.500	1.500	2.500	2.281	4.781	3	1.53	2
Metric	**MSX12032ES**	★	32	32	70	80	150	2	0.8	2
Metric	**MSX12032EM**	★	32	32	120	130	250	2	1.4	2
Metric	**MSX12035EM**	★	35	32	50	200	250	2	1.4	2
Metric	**MSX12040ES**	★	40	32	50	100	150	3	0.9	2
Metric	**MSX12040EM**	★	40	32	50	200	250	3	1.5	2
Metric	**MSX12050EM**	★	50	42	50	200	250	4	2.6	2

Body with Applicable Insert: WDMT08

Dimensions (inch / mm)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Inch	**MSX31000EW**	●	1.000	1.000	2.500	2.281	4.781	2	1.04	1
Inch	**MSX31000ELC**	●	1.000	1.000	2.500	7.500	10.000	2	2.13	1
Inch	**MSXF31000EW**	●	1.000	1.000	2.500	2.281	4.781	3	1.09	1
Inch	**MSXF31250EW**	●	1.250	1.250	2.500	2.281	4.781	3	1.24	1
Inch	**MSXF31500EW**	●	1.500	1.500	2.500	2.281	4.781	4	1.31	1
Metric	**MSX08020ES**	★	20	20	50	80	130	2	0.3	1
Metric	**MSX08020EM**	★	20	20	100	80	180	2	0.3	1
Metric	**MSX08022EM**	★	22	20	30	150	180	2	0.4	1
Metric	**MSX08025ES**	★	25	25	60	80	140	2	0.4	2
Metric	**MSX08025EM**	★	25	25	120	130	250	2	0.8	2
Metric	**MSX08028EM**	★	28	25	40	210	250	2	0.9	2
Metric	**MSX08032ES**	★	32	32	70	80	150	3	0.8	2
Metric	**MSX08032EM**	★	32	32	120	130	250	3	1.4	2
Metric	**MSX08035EM**	★	35	32	50	200	250	3	1.5	2

Body with Applicable Insert: WDMT14

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**MSX14040ES**	★	40	32	50	100	150	2	0.9	2
Metric	**MSX14040EM**	★	40	32	50	200	250	2	1.5	2
Metric	**MSX14050ES**	★	50	42	50	100	150	3	1.5	2
Metric	**MSX14050EM**	★	50	42	50	200	250	3	2.5	2
Metric	**MSX14063ES**	★	63	42	50	100	150	4	1.7	2
Metric	**MSX14063EM**	★	63	42	50	200	250	4	2.8	2

Inserts are sold separately.

● USA stocked item ★: Worldwide Warehouse Item

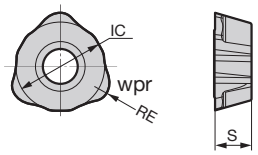
Insert

Dimensions (inch / mm)

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

Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	Inscribed Circle IC	Thickness S	Nose Radius RE	Wiper Facet Length wpr	Applicable Cutter	Fig
General-purpose	**WDMT0603ZDTR**	●	●	●	●	●	●	.250" / 6.35	.118" / 3.0	.071" / 1.5	.028" / 0.7	MSX06000E Type	1
General-purpose	**WDMT0804ZDTR**	●	●	●	●	●	●	.335" / 8.5	.157" / 4.0	.079" / 2.0	.035" / 0.9	MSX08000R Type	1
General-purpose	**WDMT1205ZDTR**	●	●	●	●	●	●	.473" / 12	.197" / 5.0	.079" / 2.0	.063" / 1.6	MSX12000R Type	1
General-purpose	**WDMT1406ZDTR**	●	●	●	●	●	●	.551" / 14	.236" / 6.0	.079" / 2.0	.079" / 2.0	MSX14000R Type	1
Honed Type	**WDMT0603ZDTR-H**	●	●	●	●	●	●	.250" / 6.35	.118" / 3.0	.071" / 1.5	.028" / 0.7	MSX06000E Type	1
Honed Type	**WDMT0804ZDTR-H**	●	●	●	●	●	●	.335" / 8.5	.157" / 4.0	.079" / 2.0	.035" / 0.9	MSX08000R Type	1
Honed Type	**WDMT1205ZDTR-H**	●	●	●	●	●	●	.473" / 12	.197" / 5.0	.079" / 2.0	.063" / 1.6	MSX12000R Type	1
Honed Type	**WDMT1406ZDTR-H**	●	●	●	●	●	●	.551" / 14	.236" / 6.0	.079" / 2.0	.079" / 2.0	MSX14000R Type	1

Fig 1



Parts

Applicable Inch Body	Applicable *Metric* Body	Flat Screw	N·m	Wrench	Clamp	C-Ring	Clamp Screw
MSX20000	*MSX06000E*	BFTX02505IP	1.5	TRDR08IP	-	-	-
MSX30000 ≤ 1.0"	–	BFTX0305IP	2.0	TRDR08IP	CCH3.5	CR03	BFTX03510IP08
—	*MSX08020E, MSX08022E*	BFTX0306IP	2.0	TRDR08IP	-	-	-
MSX30000 ≥ 1.0"	*Other MSX08000E not described above*	BFTX0306IP	2.0	TRDR08IP	CCH3.5	CR03	BFTX03510IP08
MSX40000	*MSX12000E*	BFTX0409IP	3.0	TRDR15IP	CCH3.5	CR03	BFTX03510IP15
MSX50000	*MSX14000E*	BFTX0511IP	5.0	TRDR20IP	CCH4.5	CR03	BFTX04513IP20

Identification Code - Inch

MSX 3 1000 E W

Cutter Series | Insert Series | Cutter Dia. 1.000" | Endmill Type | W: Weldon C: Cylindrical

Identification Code - Metric

MSX 06 016 E S

Cutter Series | Insert Size | Cutter Dia. | Endmill Type | S: Short M: Medium

N·m Recommended Tightening Torque (N·m)

Metal Slash Mill

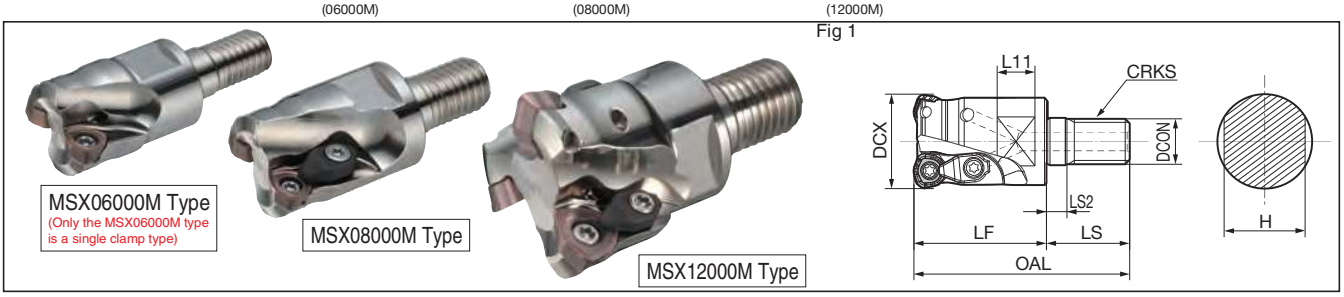
MSX Modular - *6mm / 8mm /12 mm* Inserts

SEC-Modular Tools

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	-3° to -6°
	Axial	8°

.039" 20° (06000M) | 1.0mm 20° | .0591" 20° (08000M) | 1.5mm 20° | .079" 20° (12000M) | 2.0mm 20°



Head (MSX 06000M) Applicable Insert: WDMT06

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
Inch	**MSX20750M10Z3**	●	0.750	0.413	**M10**	1.929	1.181	.197	.748	.315	.591	3	1
	MSX21000M12Z3	●	1.000	0.492	**M12**	2.205	1.378	.197	.827	.394	.748	3	1
Metric	**MSX06016M08Z2**	★	*16*	*8.5*	**M8**	*42*	*25*	*5*	*17*	*8*	*13*	2	1
	MSX06018M08Z2	★	*18*	*8.5*	**M8**	*42*	*25*	*5*	*17*	*8*	*13*	2	1
	MSX06020M10Z3	★	*20*	*10.5*	**M10**	*49*	*30*	*5*	*19*	*8*	*15*	3	1
	MSX06022M10Z3	★	*22*	*10.5*	**M10**	*49*	*30*	*5*	*19*	*8*	*15*	3	1
	MSX06025M12Z3	★	*25*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	3	1

Inserts are sold separately.

Head (MSX 08000M) Applicable Insert: WDMT08

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
Inch	**MSX31000M12Z2**	●	1.000	0.492	**M12**	2.205	1.378	.197	.827	.394	.748	2	1
	MSX31250M16Z3	●	1.250	0.669	**M16**	2.480	1.575	.197	.906	.394	.945	3	1
Metric	**MSX08025M12Z2**	★	*25*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	2	1
	MSX08028M12Z2	★	*28*	*12.5*	**M12**	*56*	*35*	*5*	*21*	*10*	*19*	2	1
	MSX08030M16Z3	★	*30*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1
	MSX08032M16Z3	★	*32*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1
	MSX08035M16Z3	★	*35*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1

Inserts are sold separately.

Head (MSX 12000M) Applicable Insert: WDMT12

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
MSX12032M16Z2	★	*32*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	2	1
MSX12035M16Z2	★	*35*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	2	1
MSX12040M16Z3	★	*40*	*17.0*	**M16**	*63*	*40*	*5*	*23*	*10*	*24*	3	1

Inserts are sold separately. ● USA stocked item ★Worldwide Warehouse item

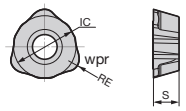
Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide					
Process	High-speed / Light			K		M S	
	General-purpose	P M	P M	K		M S	M S
	Roughing	P M	P M		K		M S
Applications	Cat. No.	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300
General-purpose	**WDMT0804ZDTR**	●	●	●	●	●	●
	WDMT1205ZDTR	●	●	●	●	●	●
	WDMT1406ZDTR	●	●	●	●	●	●
Honed Type	**WDMT0804ZDTR-H**	●	●	●	●	●	●
	WDMT1205ZDTR-H	●	●	●	●	●	●
	WDMT1406ZDTR-H	●	●	●	●	●	●

Cat. No.	Inscribed Circle IC	Thickness S	Nose Radius RE	Wiper Facet Length wpr	Applicable Cutter	Fig
WDMT0804ZDTR	.335" / *8.5*	.157" / *4.0*	.079" / *2.0*	0.035 / *0.9*	MSX08000R	1
WDMT1205ZDTR	.473" / *12*	.197" / *5.0*	.079" / *2.0*	0.063 / *1.6*	MSX12000R	1
WDMT1406ZDTR	.551" / *14*	.236" / *6.0*	.079" / *2.0*	0.079 / *2.0*	MSX14000R	1
WDMT0804ZDTR-H	.335" / *8.5*	.157" / 4.0	.079" / *2.0*	0.035 / *0.9*	MSX08000R	1
WDMT1205ZDTR-H	.473" / *12*	.197" / 5.0	.079" / *2.0*	0.063 / *1.6*	MSX12000R	1
WDMT1406ZDTR-H	.551" / *14*	.236" / 6.0	.079" / *2.0*	0.079 / *2.0*	MSX14000R	1

Fig 1



Applicable Endmill	Flat Screw	N·m	Wrench	Clamp	C-Ring	Clamp Screw
MSX06000M	BFTX02505IP	1.5	TRDR08IP	-	-	-
MSX08000M	BFTX0306IP	2.0		CCH3.5	CR03	BFTX03510IP08
MSX12000M	BFTX0409IP	3.0	TRDR15IP	CCH3.5	CR03	BFTX03510IP15

Identification Code - Inch

MSX 2 1000 M12 Z3

Cutter Series | Insert Size | Dia. 1.000" | Mounting Screw Size | Number of Teeth

Identification Code - Metric

MSX 06 016 M08 Z2

Cutter Series | Insert Size | Dia. | Mounting Screw Size | Number of Teeth

N·m Recommended Tightening Torque (N·m)

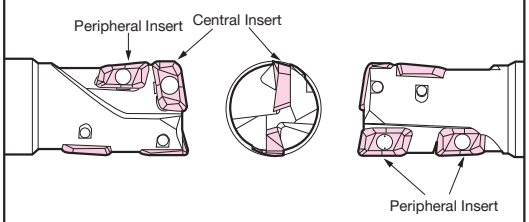
■ General Features

The WaveMill WMM Type performs a variety of operations such as groove milling, shoulder milling, ramping, pocketing, drilling, helical milling, etc., all with a single tool.
With low cutting force and excellent chip evacuation, it is also effective for consolidating tools.

■ Features and Applications

- The WMM Type alone can perform a number of operations such as shoulder milling, slot milling and drilling
- Excellent for high-efficiency ramping, helical drilling and pocketing
- Uses WaveMill inserts for sharpness and cutting edge strength
- The reduction in cutting force enables the same chip evacuation as conventional tools but with less force required
- Easy tool management as only 1 type of insert is used
- Also ideal for stainless steel machining

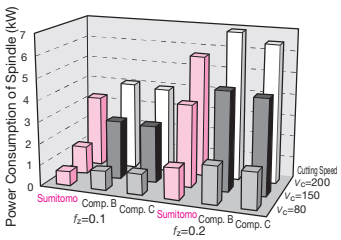
● WMM Type insert arrangement



■ Product Range and Performance

Type	Description	Cutter Dia. (mm) ø20 – ø30 – ø40
2000E	Standard Type	20 – 30
2000EL	Long Type	20 – 30
2000ELH	Long Type w / Coolant Hole	20 – 30
2000EXLH	Extra-Long Type w / Coolant Hole	22 – 30
3000E	Standard Type	32 – 40
3000EL	Long Type	32 – 40
3000ELH	Long Type w / Coolant Hole	32 – 40
3000EXLH	Extra-Long Type w / Coolant Hole	35 – 40

● Performance Comparison (Groove Milling)



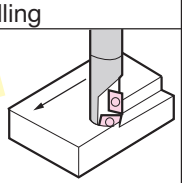
Diameter of Tool: ø25
Work Material: S50C
Cutting Conditions: v_c=80,150,200m/min, f_z=0.1, 0.2mm/t
a_p=15mm, Tool Overhang=40mm

■ Various Milling Examples Tool: WMM2025E

● Shoulder Milling

304 Stainless Steel

Also cuts stainless steel

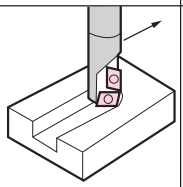


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Depth of Cut: a_p=1.00", a_e=0.20"
Cutting Speed: v_c=394 SFM, Feed Rate: f_z=0.006 IPT
Air Blast

● Slot Milling

Gray Cast Iron

Deep slot milling can be performed easily, Easy chip removal

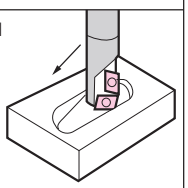


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ310)
Depth of Cut: a_p=0.60" , a_e=1.00"
Cutting Speed: v_c=590 SFM, Feed Rate: f_z=0.005 IPT
Air Blast

● Ramping

1050 Block Material

Capable of tapered recess cutting without prepared holes

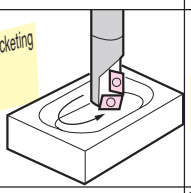


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Cutting Width: a_e=1.00", Depth: a_p=0.60"
Cutting Speed: v_c=656 SFM, Feed Rate: f_z=0.004 IPT
Ramp Angle: θ'=15°
Air Blast

● Pocketing

1050 Block Material

Capable of traverse cutting and pocketing with continuous lateral feed from the initial drilling or ramping process

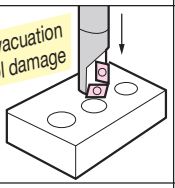


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Machining done continuously from a deep drilling process with a depth of 0.60"
Cutting Width: a_e=1.00", Depth: a_p=0.60"
Cutting Speed: v_c=656 SFM, Feed Rate: f_z=0.004 IPT
Air Blast

● Drilling

1050 Block Material

Capable of easy chip evacuation and drilling without tool damage

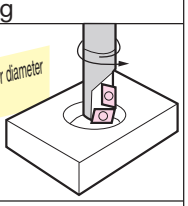


Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Bore Diameter: ø1.00", Depth: a_p=0.60"
Cutting Speed: v_c=656 SFM, Feed Rate: f=0.004 IPR
Step Feed: 0.20"
Air Blast

● Helical Milling

1050 Block Material

Capable of large boring with diameters 1.2-1.8 times the cutter diameter without prepared holes



Diameter of Tool: ø25
Insert: APMT103504PDER (ACZ350)
Bore Diameter: ø1.6", Depth: a_p=0.80"
Cutting Speed: v_c=984 SFM, Feed Rate: f=0.004 IPR
Axial Feed: 0.60in/Pitch
Air Blast

WaveMulti

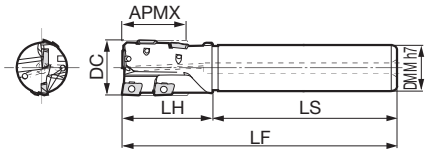
WMM Inch & Metric (*10mm* Insert)

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

Rake Angle		
	Radial	15° to 16°
	Axial	7° to 11°

1.05- 1.39" 90° | 17 to 35 mm 90°

Fig 1



Body (Standard / WMM2000E Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM2020E	★	*20*	*20*	*17*	*35*	*95*	*130*	3	1	1
WMM2021E	★	*21*	*20*	*17*	*35*	*95*	*130*	3	1	1
WMM2025E	★	*25*	*25*	*26*	*40*	*100*	*140*	4	1	1
WMM2026E	★	*26*	*25*	*26*	*40*	*100*	*140*	4	1	1
WMM2030E	★	*30*	*25*	*35*	*50*	*100*	*150*	5	1	1

Body (Long / With Coolant Holes)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM2020ELH	★	*20*	*20*	*17*	*60*	*125*	*185*	3	1	1
WMM2021ELH	★	*21*	*20*	*17*	*35*	*150*	*185*	3	1	1
WMM2025ELH	★	*25*	*25*	*26*	*75*	*145*	*220*	4	1	1
WMM2026ELH	★	*26*	*25*	*26*	*40*	*180*	*220*	4	1	1
WMM2030ELH	★	*30*	*25*	*35*	*50*	*180*	*230*	5	1	1

★Worldwide Warehouse Item ● USA stocked item

Milling Cutter Body (Inch)

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM10100M	●	1.000	1.000	1.05	1.719	2.281	4.000	4	1	1
WMM10125M	●	1.250	1.250	1.39	2.719	2.281	5.000	5	1	1

Milling Cutter Body (Long)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM2020EL	★	*20*	*20*	*17*	*60*	*125*	*185*	3	1	1
WMM2021EL	★	*21*	*20*	*17*	*35*	*150*	*185*	3	1	1
WMM2025EL	★	*25*	*25*	*26*	*75*	*145*	*220*	4	1	1
WMM2026EL	★	*26*	*25*	*26*	*40*	*180*	*220*	4	1	1
WMM2030EL	★	*30*	*25*	*35*	*50*	*180*	*230*	5	1	1

Body (Extra-Long / With Coolant Holes)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM2022EXLH		*22*	*20*	*17*	*35*	*215*	*250*	3	1	1
WMM2027EXLH		*27*	*25*	*26*	*40*	*280*	*320*	4	1	1
WMM2030EXLH		*30*	*25*	*35*	*50*	*300*	*350*	5	1	1

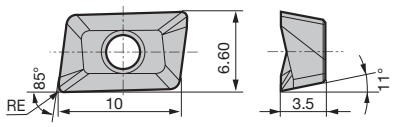
Inserts are sold separately.

Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide						
Process	High-speed / Light				K N	N		
	General-purpose	M	P	K		N		
	Roughing							
Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Nose Radius RE	Fig
APMT103504PDER		●	●	●	-	-	0.016 / *0.4*	1
APMT103508PDER		●	●	●	-	-	0.032 / *0.8*	1
APMT103512PDER		●	●	●	-	-	0.047 / *1.2*	1
APMT103504PDER-H		●	●	●	-	-	0.016 / *0.4*	1
APMT103508PDER-H		●	●	●	-	-	0.032 / *0.8*	1
APMT103512PDER-H		●	●	●	-	-	0.047 / *1.2*	1
APET103504PDER-F		●	●	●	-	-	0.016 / *0.4*	1
APET103504PDFR-S		-	-	-	●	●	0.016 / *0.4*	1

Fig 1



-H: Strong Edge Type, F: Ground Insert, S: For Aluminum Alloy.

Spare Parts (Common)

Applicable Endmill	Flat Screw		Wrench	Anti-seize Cream
WMM2000	BFTX02506N	N·m 1.5	TRD08	SUMI-P
WMM3000	BFTX03584	N·m 3.0	TRD15	SUMI-P

■ Recommended Cutting Conditions Diameter *ø20 to ø26mm* (Not for extra-long)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.		Insert Grade
P	Carbon Steel	180 to 280 HB	80 -160	Shoulder Milling	0.05-0.20	ACZ330
				Groove Milling	0.05-0.12	
				Drilling	0.05-0.18	
M	Stainless Steel	-	80 -120	Shoulder Milling	0.05-0.15	ACZ350
				Groove Milling	0.05-0.10	
				Drilling	0.05-0.12	
K	Cast Iron	250HB	70 -180	Shoulder Milling	0.05-0.20	ACZ310
				Groove Milling	0.05-0.12	
				Drilling	0.05-0.18	
N	Aluminum Alloy	-	200 - 500	Shoulder Milling	0.10-0.20	DL1000
				Groove Milling	0.05-0.10	
				Drilling	0.05-0.10	

■ Recommended Cutting Conditions Diameter *ø30 to ø40mm* (Not for extra-long)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.		Insert Grade
P	Carbon Steel	180 to 280 HB	80-160	Shoulder Milling	0.05-0.25	ACZ330
				Groove Milling	0.05-0.15	
				Drilling	0.05-0.20	
M	Stainless Steel	-	80-120	Shoulder Milling	0.05-0.20	ACZ350
				Groove Milling	0.05-0.12	
				Drilling	0.05-0.18	
K	Cast Iron	250HB	70-180	Shoulder Milling	0.05-0.25	ACZ310
				Groove Milling	0.05-0.15	
				Drilling	0.05-0.20	
N	Aluminum Alloy	-	200-500	Shoulder Milling	0.10-0.20	DL1000
				Groove Milling	0.05-0.10	
				Drilling	0.05-0.10	

N·m Recommended Tightening Torque (N·m)

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.

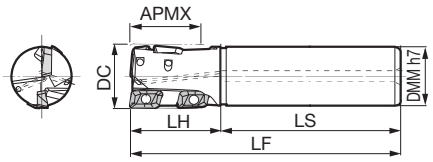
WMM Inch & Metric (*16mm* Insert)

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

Rake Angle		
	Radial	17° to 19°
	Axial	7° to 11°

1.54" 90° | 39mm 90°

Fig 1



Body (Standard / WMM3000E Type)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM3032E	★	*32*	*32*	*39*	*50*	*100*	*150*	4	1	1
WMM3033E	★	*33*	*32*	*39*	*50*	*100*	*150*	4	1	1
WMM3035E	★	*35*	*32*	*39*	*50*	*100*	*150*	4	1	1
WMM3040E	★	*40*	*32*	*39*	*55*	*105*	*160*	4	1	1
WMM2030E	★	*30*	*25*	*35*	*50*	*100*	*150*	5	1	1

Body (Long / With Coolant Holes)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM3032ELH	★	*32*	*32*	*39*	*90*	*140*	*230*	4	1	1
WMM3033ELH	★	*33*	*32*	*39*	*50*	*180*	*230*	4	1	1
WMM3035ELH	★	*35*	*32*	*39*	*50*	*180*	*230*	4	1	1
WMM3040ELH	★	*40*	*32*	*39*	*55*	*185*	*240*	4	1	1

Milling Cutter Body (Inch)

Dimensions (inch)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM16150M	●	1.500	1.250	1.54	2.719	2.281	5.000	4	1	1

Milling Cutter Body (Long)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM3032EL	★	*32*	*32*	*39*	*90*	*140*	*230*	4	1	1
WMM3033EL	★	*33*	*32*	*39*	*50*	*180*	*230*	4	1	1
WMM3035EL	★	*35*	*32*	*39*	*50*	*180*	*230*	4	1	1
WMM3040EL	★	*40*	*32*	*39*	*55*	*185*	*240*	4	1	1

Body (Extra-Long / With Coolant Holes)

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Total No. of Teeth	Effective Number of Teeth	Fig
WMM3035EXLH		*35*	*32*	*39*	*50*	*320*	*370*	4	1	1
WMM3040EXLH		*40*	*32*	*39*	*55*	*365*	*420*	4	1	1

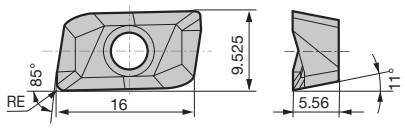
Insert

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		Coated Carbide						
Process	High-speed / Light				K N	N		
	General-purpose	M	P	K		N		
	Roughing							
Cat. No.		ACZ350	ACZ330	ACZ310	H1	DL1000	Nose Radius RE	Fig
APMT160508PDER		●	●	●	-	-	0.031 / *0.8*	1
APMT160512PDER		●	●	●	-	-	0.047 / *1.2*	1
APMT160516PDER		●	●	●	-	-	0.063 / *1.6*	1
APMT160508PDER-H		●	●	●	-	-	0.031 / *0.8*	1
APMT160512PDER-H		●	●	●	-	-	0.047 / *1.2*	1
APMT160516PDER-H		●	●	●	-	-	0.063 / *1.6*	1
APMT160520PDER-H*		●	●	●	-	-	0.079 / *2.0*	1
APMT160530PDER-H*		●	●	●	-	-	0.118 / *3.0*	1
APMT160540PDER-H*		●	●	●	-	-	0.157 / *4.0*	1
APMT160550PDER-H*		●	●	●	-	-	0.197 / *5.0*	1
APMT160560PDER-H*		●	●	●	-	-	0.236 / *6.0*	1
APET160508PDER-F		●	●	●	-	-	0.031 / *0.8*	1
APET160508PDFR-S		-	-	-	●	●	0.031 / *0.8*	1

Fig 1



-H: Strong Edge Type, F: Ground Insert, S: For Aluminum Alloy.
* marked inserts require modification of the cutter body.
Correct the tool diameter by +0.5mm before use.

Parts

Applicable Endmill	Flat Screw		Wrench	Anti-seize Cream
WMM2000	BFTX02506N	N·m 1.5	TRD08	SUMI-P
WMM3000	BFTX03584	N·m 3.0	TRD15	SUMI-P

N·m Recommended Tightening Torque (N·m)

■ Recommended Cutting Conditions

Blade Diameter ø30 to ø40mm (Not for extra-long)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.		Insert Grade
P	Carbon Steel	180 to 280 HB	80-160	Shoulder Milling	0.05-0.25	ACZ330
				Groove Milling	0.05-0.15	
				Drilling	0.05-0.20	
M	Stainless Steel	-	80-120	Shoulder Milling	0.05-0.20	ACZ350
				Groove Milling	0.05-0.12	
				Drilling	0.05-0.18	
K	Cast Iron	250HB	70-180	Shoulder Milling	0.05-0.25	ACZ310
				Groove Milling	0.05--0.15	
				Drilling	0.05-0.20	
N	Aluminum Alloy	-	200-500	Shoulder Milling	0.10-0.20	DL1000
				Groove Milling	0.05-0.10	
				Drilling	0.05-0.10	

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.

■ Features

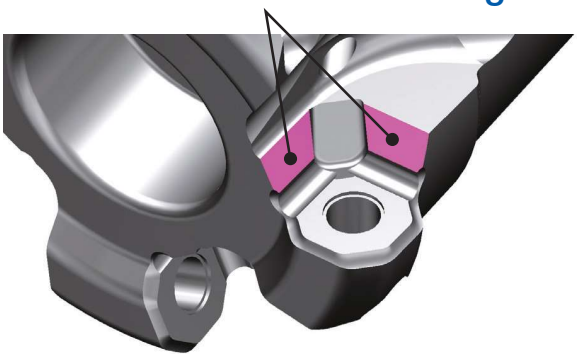
● **High-efficiency, high-rigidity radius cutter**
Wide insert seat face design achieves high efficiency machining of stainless steel etc.
Designed for superior durability
Ideal for roughing of aerospace components such as turbine blades

● **Lineup of ground and M class inserts**
In addition to the 4-cornered ground type inserts, economical 8-cornered M Class inserts are also available

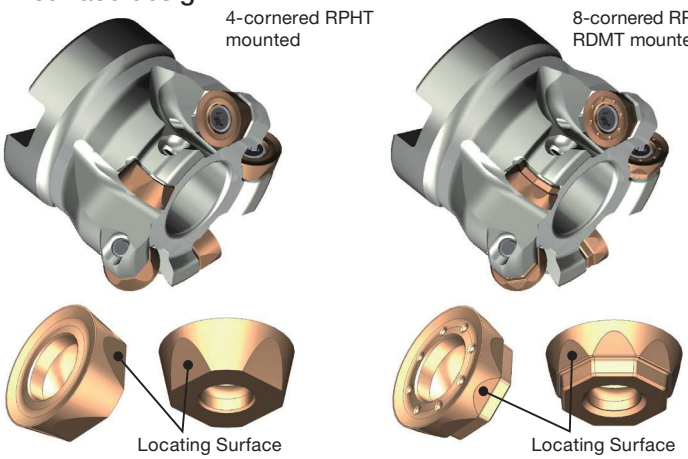
● **Uses new grades for exotic alloy machining**
New ACS2500/ACS3000 grades achieve stable and long tool life in machining exotic alloys, such as titanium alloys and Ni-based heat-resistant alloys, as well as stainless steel

■ High-rigidity clamp design

Wide Insert Seat Face Design



■ Cutter body can be shared by optimizing the locating surface design



4-cornered ground inserts or 8-cornered M Class inserts can be used on the same cutter body

■ Product Range

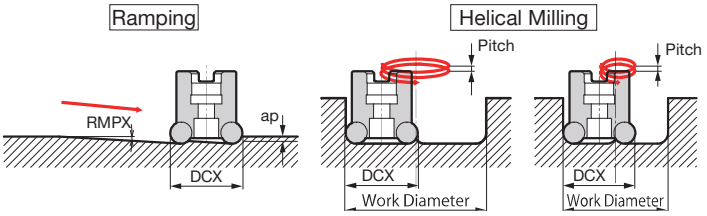
Number in ●● shows the number of teeth Inch Inch Bore

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

■ Chipbreaker Shape

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

■ Ramping / Helical Milling Upper Limit



Precautions for Helical Milling

● Above the max. machining diameter, the center uncut portion removed by traverse cutting with the same cutter.

● Below the minimum machining diameter, the center uncut portion cannot be removed with the same cutter.

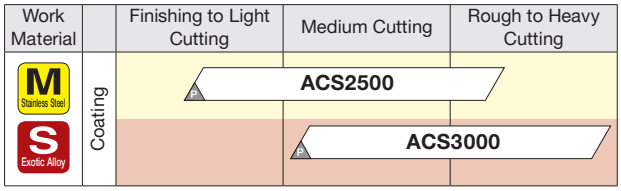
Insert Cat No.	Max Diameter DCX (mm)	Ramping	Helical Milling					
		Max. Ramping Angle RMPX (°)	Max. Machining Dia.	Max Pitch	Standard Diameter	Max Pitch	Min Machining Diameter	Max Pitch
R○○T10…	ø25	4.6	1.913	0.189	1.598	0.130	1.429	0.055
	ø32	2.8	2.465	0.181	2.150	0.114	1.980	0.055
	ø40	1.9	3.094	0.154	2.780	0.102	2.610	0.055
	ø50	1.3	3.882	0.134	3.567	0.098	3.398	0.055
R○○T12…	ø40	3.4	3.094	0.236	2.701	0.177	2.457	0.063
	ø42	3.1	3.252	0.236	2.858	0.173	2.614	0.063
	ø50	2.3	3.882	0.236	3.488	0.161	3.244	0.063
	ø52	2.2	4.039	0.236	3.646	0.161	3.402	0.063
	ø63	1.6	4.906	0.209	4.512	0.154	4.268	0.063
	ø80	1.1	6.244	0.189	5.850	0.146	5.606	0.063

■ Grade Features

Work Material	Grade	Coating Thickness (μm)	Features
M Stainless Steel / S Exotic Alloy	**ACS2500**	3	Coating with excellent wear and adhesion resistance provides outstanding performance especially in machining **titanium alloys**
	ACS3000	3	High toughness carbide substrate and a coating with excellent chipping resistance provide outstanding stability in a wide range of work materials such as **heat-resistant alloys, stainless steel**, and **titanium alloys**

■ Grade Application Range

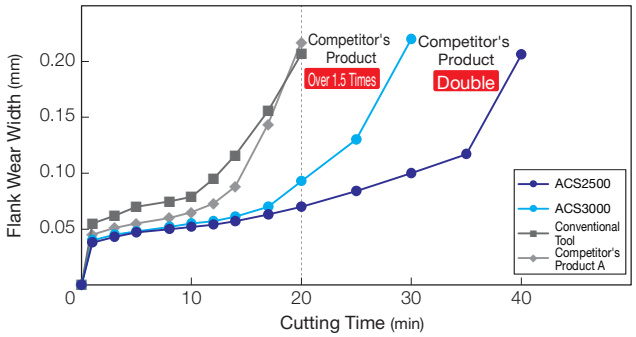
Newly developed **ACS2500/ACS3000** grades, ideal for machining titanium alloys, heat-resistant alloys and stainless steel, are now available!



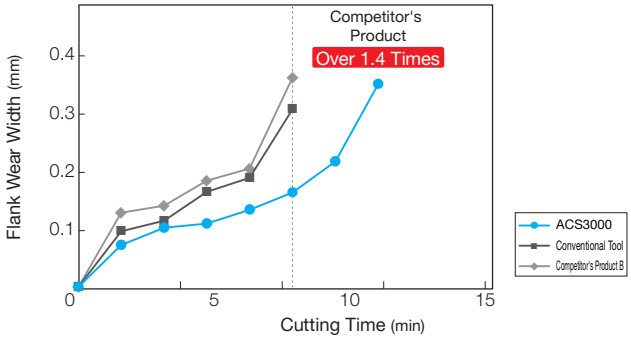
The letters "C" and "P" at the end of each grade indicate the coating.

▽: CVD △: PVD

■ Cutting Performance



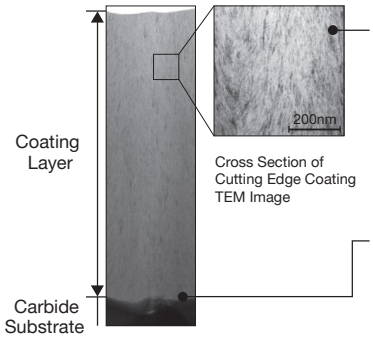
Machine	: Vertical Machining Center BT40, Work Material: Ti-6Al-4V
Tool	: RSE 12050RS05, Insert: RPHT1204M0EN-G
Cutting conditions	: vc = *70m/min* fz = *0.25mm/t* ap = *2mm* ae = *30mm* Wet



Machine	: Vertical Machining Center BT40, Work Material: Inconel 718 (44HRC)
Tool	: RSE 12050RS05, Insert: RPHT1204M0EN-G
Cutting conditions	: vc = *40m/min* fz = *0.3mm/t* ap = *2mm* ae = *30mm* Wet

New PVD Coating Layer Features

ABSOTECH **PVD**

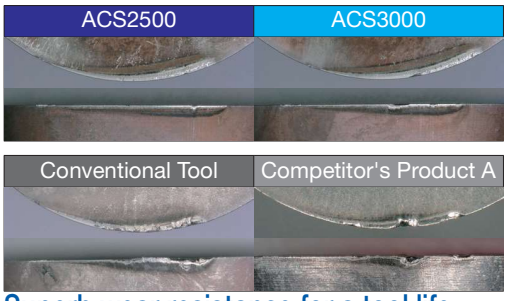


Ultra-fine Grained B Additive
- New AlTiBN coating, with an ultra-fine coating structure, achieves high strength and toughness
- Outstanding chipping resistance and wear resistance

High Adhesion Strength
Significantly improved coating adhesion and more than 2x conventional chipping resistance

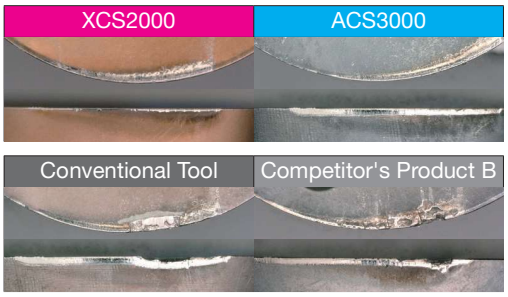
Applicable Grades: ACS2500, ACS3000

After cutting for 20 minutes



Superb wear resistance for a tool life 1.5 times greater than that of conventional tools and competitor's products

After cutting for 7.9 minutes



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

Wave Radius Mill

RSE Shellmill

M Stainless Steel | S Exotic Alloy

New

Rake Angle	Radial	-5°
	Axial	4°

RSE10 5mm 4-cornered | 1.4mm 8-cornered

RSE12 6mm 4-cornered | 1.7mm 8-cornered

Face Milling | Shoulder Milling | Slot Milling | Ramping | Profiling | Helical Milling

Fig 1

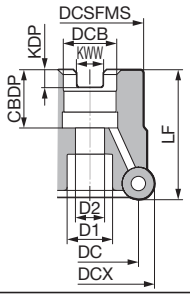
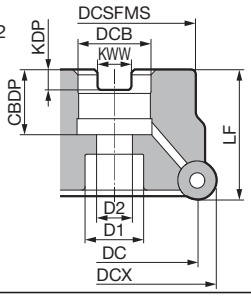


Fig 2



RSE10 (Shelmill)

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	**RSE10040RS05**	★	*40*	*30*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	5	0.16	1
	RSE10050RS06	★	*50*	*40*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	0.27	1

Inserts are sold separately.

RSE12 (Shellmill)

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	**RSE12040RS04**	★	*40*	*28*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*13.5*	*9*	4	0.15	2
	RSE12042RS04	★	*42*	*30*	*33*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	4	0.17	2
	RSE12050RS05	★	*50*	*38*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	0.24	2
	RSE12050RS06	★	*50*	*38*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	0.23	2
	RSE12052RS05	★	*52*	*40*	*41*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	0.26	2
	RSE12063RS06	★	*63*	*51*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	0.47	2
	RSE12080RS08	★	* *80*	*68*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	8	0.89	2
Inch Arbor	**RSE12080R08**	★	* *80*	*68*	*55*	*50*	*25.4*	*12.4*	*7*	*22*	*20*	*14*	8	0.9	2

Inserts are sold separately.

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

Parts

	Flat Insert Screw		Detachable Wrench		Anti-seize Cream
			Handle Grip	Bit	
RSE Size		N·m			
RSE10	BFTX03584IP	3.0	HPS1015	TRB15IP	SUMI-P
RSE12	BFTX04095IP	3.0	HPS1015	TRB15IP	SUMI-P

Identification Code

RSE 10 040 R S 05

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

Insert

Dimensions (inch / *mm*)

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

Cat. No.	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Relief Angle	Fig
RPHT10T3M0EN-G	★	★	.394 / *10*	.156 / *3.96*	11°	1
RPMT10T3M0EN-G	★	★	.394 / *10*	.156 / *3.96*	11°	2
RDMT10T3M0EN-G	★	★	.394 / *10*	.156 / *3.96*	15°	3
RPHT1204M0EN-G	★	★	.472 / *12*	.187 / *4.76*	11°	1
RPMT1204M0EN-G	★	★	.472 / *12*	.187 / *4.76*	11°	2
RDMT1204M0EN-G	★	★	.472 / *12*	.187 / *4.76*	15°	3

Fig 1 4 Cornered Insert

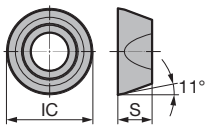


Fig 2 8 Cornered Insert

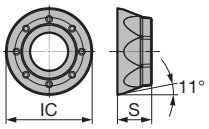
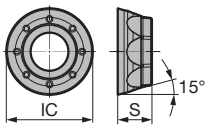


Fig 3 8 Cornered Insert



Recommended Cutting Conditions on next page

★Worldwide Warehouse Item

Wave Radius Mill

RSE Endmill

M Stainless Steel S Exotic Alloy

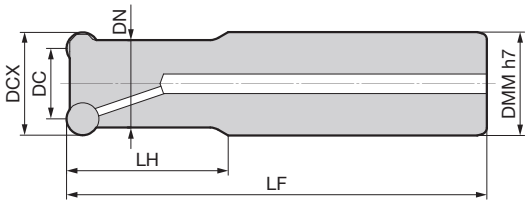
New

Rake Angle	Radial	0°
	Axial	4°

5mm 4-cornered | 1.4mm 8-cornered

Face Milling, Shoulder Milling, Slot Milling, Ramping, Profiling, Helical Milling

Fig 1



Body (Shank)

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
RSE10025E02	★	*25*	*15*	*25*	*20.3*	*50*	*130*	2	0.4	1
RSE10025E03	★	*25*	*15*	*25*	*20.3*	*50*	*130*	3	0.39	1
RSE10032E03	★	*32*	*22*	*32*	*27.1*	*50*	*130*	3	0.68	1
RSE10032E04	★	*32*	*22*	*32*	*27.1*	*50*	*130*	4	0.67	1

Inserts are sold separately.

Parts

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

Identification Code

RSE 10 032 E 03

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

Insert

Dimensions (inch / *mm*)

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

Cat. No.	ACS2500	ACS3000	Inscribed Circle IC	Thickness S	Relief Angle	Fig
RPHT10T3M0EN-G	★	★	.394 / *10*	.156 / *3.96*	11°	1
RPMT10T3M0EN-G	★	★	.394 / *10*	.156 / *3.96*	11°	2
RDMT10T3M0EN-G	★	★	.394 / *10*	.156 / *3.96*	15°	3

Fig 1 4 Cornered Insert

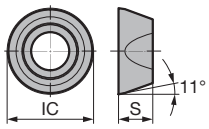


Fig 2 8 Cornered Insert

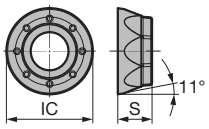
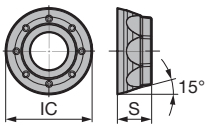


Fig 3 8 Cornered Insert



Recommended Cutting Conditions

ISO	Work Material		Hardness	Chipbreaker	Cutting Speed vc (SFM) Min. - Max.	Feed Rate fz (IPT) Min. - Max.	Grade
S	Exotic Alloy	Heat-Resistant Alloy	—	G	85 - 180	.006 - .014"	ACS2500/ACS3000
		Ti Alloy	—	G	105 - 320	.006 - .014"	ACS2500/ACS3000
M	Stainless Steel	SUS430 and Others (Martensitic/Ferritic)	200HB	G	380 - 630	.006 - .018"	ACS2500/ACS3000
		SUS403 and Others (Martensitic/Hardened)	240HB	G	350 - 560	.006 - .018"	ACS2500/ACS3000
		SUS304, SUS316 (Austenitic)	180HB	G	410 - 685	.006 - .018"	ACS2500/ACS3000

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

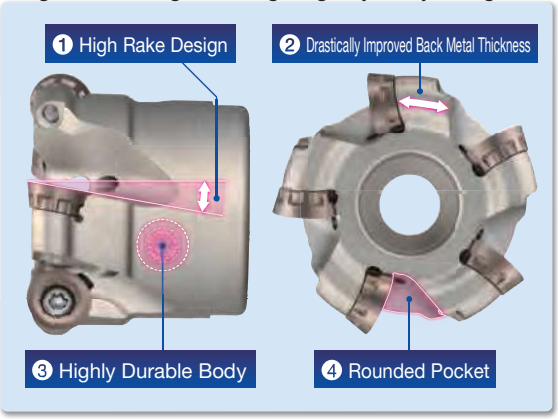
N·m Recommended Tightening Torque (N·m) ★Worldwide Warehouse Item

■ General Features

Wave Radius Mill RSX is a radius cutter that enables stable machining even when using machines with low clamp rigidity, thanks to a body design that achieves excellent sharpness and rigidity.
Lineup of ACM Series grades for stainless steel/exotic alloy, ACP200 grade for steel and ACK300 grade for cast iron to suit a wide range of work materials.
RSX08000 and RSX20000 lineup extended to support a wide range of machining.

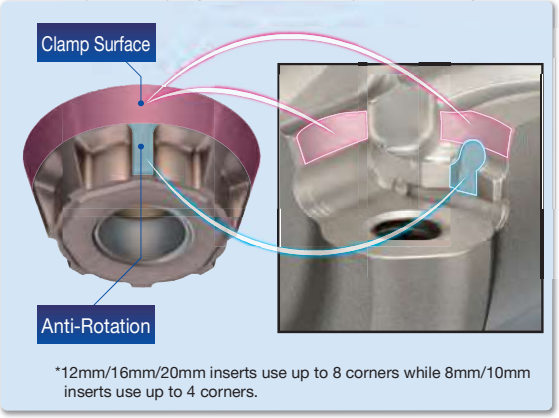
■ Low-resistance, Low-vibration Design

Achieves low-resistance, low-vibration machining thanks to ultra-high-rake design and high-rigidity body design



■ Excellent Operability

Enables easy corner control with high accuracy and operability by employing our proprietary positioning mechanism



*12mm/16mm/20mm inserts use up to 8 corners while 8mm/10mm inserts use up to 4 corners.

■ Product Range

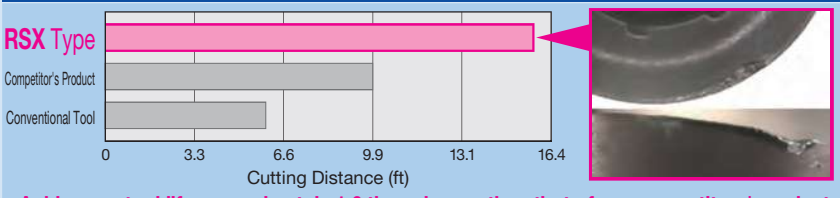
Type		Insert Size	Type	Cutter Dia. (inch) ø1.00	ø1.25	ø1.50	ø2.00	ø2.50	ø3.00	ø4.00	ø5.00	ø6.00
Shell Type	Standard	10	RSX32000 R				●					
		12	RSX40000 R				●	●	●	●	●	●
		16	RSX50000 R					●	●	●	●	●
	Fine-Pitch	10	RSXF32000 R				●					
		12	RSXF40000 R				●	●	●	●	●	●
		16	RSXF50000 R					●	●	●	●	●
Shank Type	Standard	10	RSX30000 EW	●	●	●						
		12	RSX40000 EW		●	●						
	FIne-Pitch	10	RSXF30000 EW	●	●	●						
		12	RSXF40000 EW		●	●						
Modular Type	Standard	10	RSX30000 M	●	●							
		12	RSX40000 M		●	●						
	Fine-Pitch	10	RSXF30000 M	●	●							
		12	RSXF40000 M		●	●						

Type		Insert Size	Type	Cutter Dia. (inch) ø1.00	ø1.25	ø1.50	ø2.00	ø2.50	ø3.00	ø4.00	ø5.00	ø6.00
Shell Type	Standard	10	RSX32000 R				●					
		12	RSX40000 R				●	●	●	●	●	●
		16	RSX50000 R					●	●	●	●	●
	Fine-Pitch	10	RSXF32000 R				●					
		12	RSXF40000 R				●	●	●	●	●	●
		16	RSXF50000 R					●	●	●	●	●
Shank Type	Standard	10	RSX30000 EW	●	●	●						
		12	RSX40000 EW		●	●						
	FIne-Pitch	10	RSXF30000 EW	●	●	●						
		12	RSXF40000 EW		●	●						
Modular Type	Standard	10	RSX30000 M	●	●							
		12	RSX40000 M		●	●						
	Fine-Pitch	10	RSXF30000 M	●	●							
		12	RSXF40000 M		●	●						

●: Inch in stock, Blank: Not available

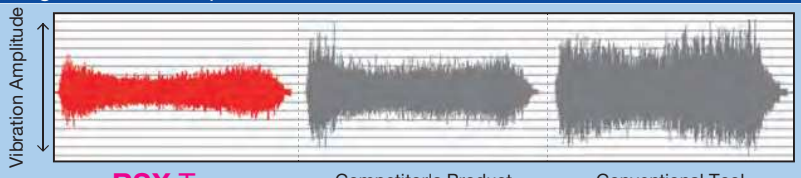
■ Cutting Performance

Tool Life Comparison (Fracture Resistance)



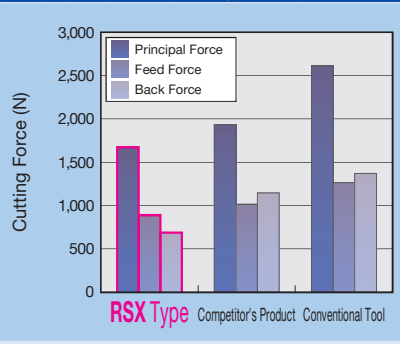
Achieves a tool life approximately 1.6 times longer than that of our competitors' products

Cutting Vibration Comparison



Reduced by approximately 15% compared to competitors' products

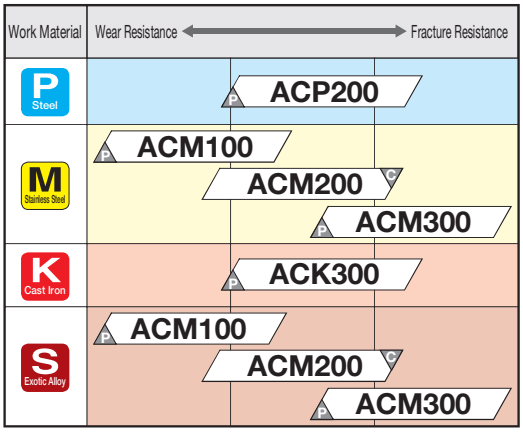
Comparison of Cutting Force



Part Material: 304 Stainless Tool: ø50
Cutting Conditions: Vc = 656 SFM, fz = 0.0197”
a_p = 0.08”, a_e = 0.40”, Wet

■ Long, Stable Tool Life

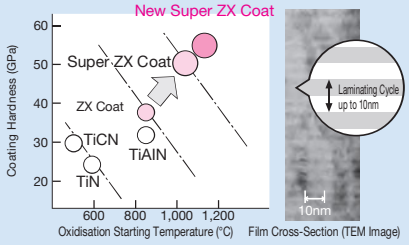
Adopts ACP200 grade for steel and ACK300 grade for cast iron machining, enabling milling of steel, stainless steel, cast iron and exotic alloys



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

P ACP200/ACM100/ACM300/ACK300

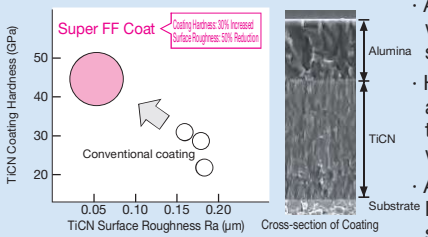
NEW SUPER ZX COAT



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

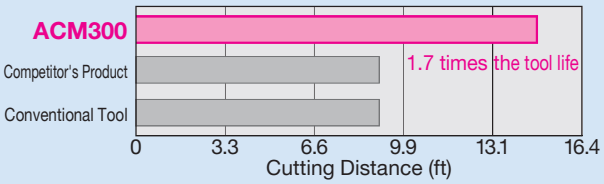
C ACM200

SUPER FF COAT



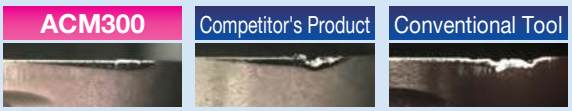
- Achieves excellent chipping resistance with smooth coating and our coating stress control technology
- High-speed, high-efficiency machining at a level more than 1.5 times higher than conventional tools is possible with a high hardness coating layer
- Achieves more than double the tool life of conventional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

Tool Life (304 Stainless Machining)

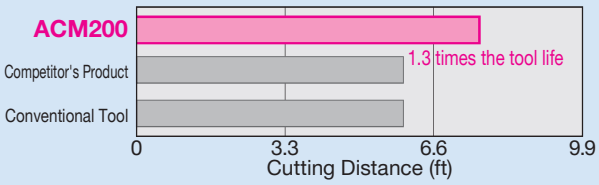


Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: v_c = 656 SFM, f_z = 0.02” IPT
a_p = 0.08”, a_e = 0.40” Wet

(Cutting Distance: 8.86ft)

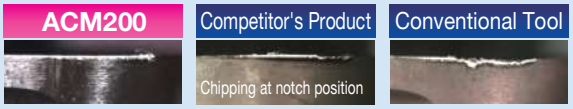


Tool Life (17-4 PH Machining)



Cutter: RSXF12050RS
Insert: RDET1204M0EN-G
Cutting Conditions: v_c = 492 SFM, f_z = 0.012 IPT
a_p = 0.08”, a_e = 0.40” Wet

(Cutting Distance: 5.91ft)

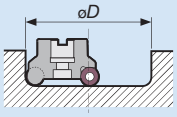


■ Machining Applications

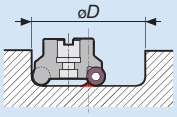
Can be used for various types of high-efficiency machining such as deep shoulder milling of molds, ramping, and helical milling.

Precautions for Helical Milling

Standard Diameter

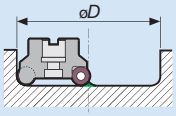


Standard Diameter or Below



Center uncut portion cannot be removed with the same cutter.

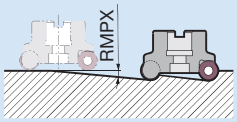
Standard Diameter or Above



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

Precautions for Ramping

Use at the RMPX below or lower.

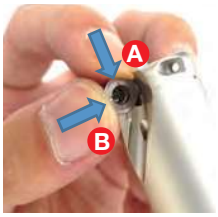


Recommended Values for Helical Milling and Ramping

Insert Cat. No.	Ramping	
	Cutter Dia. DC inch	Maximum Ramping Angle RMPX
RDET10...	**1.000**	10° 15'
	1.250	6° 45'
	1.500	4° 45'
	2.000	3° 15'
RDET12...	**1.250**	12° 30'
	1.500	8° 30'
	2.000	5° 30'
	2.500	4°
	3.000	3°
	4.000	2°
	5.000	1° 30'
	6.000	1°
RDET16...	**2.500**	5° 50'
	3.000	4° 20'
	4.000	2°
	5.000	1° 30'
	6.000	1°

Insert Cat. No.	Helical Milling (mm)				Ramping
	Cutter Dia. DC	Work Dia. *øD*			Maximum Ramping Angle RMPX
		Min. Dia.	Standard Diameter	Max. Dia.	
RDET08...	**20**	1.09	1.26	1.54	12°00'
	25	1.46	1.65	1.93	7°15'
	32	2.00	2.04	2.48	4°45'
RDET10...	**25**	1.30	1.57	1.93	10°30'
	32	1.81	2.13	2.48	6°45'
	40	2.44	2.76	3.11	4°30'
	50	3.23	3.54	3.90	3°15'
	52	3.39	3.70	4.06	3°10'
RDET12...	**32**	1.63	2.05	2.48	12°30'
	40	2.26	2.68	3.11	8°00'
	50	3.05	3.46	3.90	5°30'
	52	81.5	3.62	4.06	5°15'
	63	3.21	4.49	4.92	4°00'
	66	4.31	4.72	5.16	3°45'
	80	5.41	5.83	6.26	2°50'
	100	6.99	7.40	7.83	2°10'
RDET16...	**63**	3.78	4.33	4.92	6°00'
	80	5.12	5.67	6.26	4°10'
	100	6.69	7.24	7.83	3°00'
	125	8.66	9.21	9.80	2°20'
RDET20...	**80**	4.80	5.51	6.26	4°15'
	100	6.38	7.09	7.83	3°00'
	125	8.35	9.05	9.80	2°00'
	160	11.01	11.81	12.56	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.

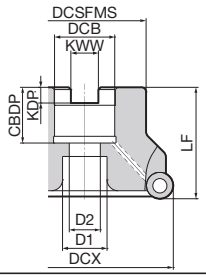
RSX(F) Shellmill -10mm Inserts

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

Rake Angle		
	Radial	-5°
	Axial	10°

5mm | .197"

Fig 1



Body (RSX32000R & RSX10000RS) Standard

Dimensions (lbs / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSX32000R**	●	2.000	1.500	1.750	0.750	0.312	0.221	0.750	0.609	0.406	4	0.80	1
Metric	**RSX10040RS**	★	*40*	*34*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	4	*0.2*	1
Metric	**RSX10050RS**	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.3*	1
Metric	**RSX10052RS**	★	*52*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	5	*0.4*	1

Body (RSXF32000R & RSXF10000RS) Fine Pitch

Dimensions (lbs / *mm*))

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**RSXF32000R**	●	2.000	1.500	1.750	0.750	0.312	0.221	0.750	0.609	0.406	4	0.80	1
Metric	**RSXF10040RS**	★	*40*	*34*	*40*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	5	*0.2*	1
Metric	**RSXF10050RS**	★	*50*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.3*	1
Metric	**RSXF10052RS**	★	*52*	*40*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	6	*0.3*	1

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

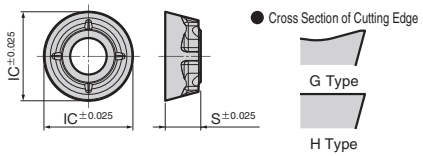
Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide				
Process	High-speed / Light			M S	M S	
	General-purpose	P M		M S	M S	M S
	Roughing	P M	K			M S
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300
RDET10T3MOEN-G		●	●	●	●	●
RDET10T3M0EN-H		●	●	●	●	●

Cat. No.	Inscribed Circle IC	Thickness S	Fig
RDET10T3MOEN-G	0.394 / *10*	0.156 / *3.97*	1
RDET10T3M0EN-H	0.394 / *10*	0.156 / *3.97*	1

Fig 1



★Worldwide Warehouse Item ● USA stocked item

Parts

N·m Recommended Tightening Torque (N·m)

Wrench	Flat Screw		Anti-seize Cream
TRDR15IP	BFTX03584IP	3.0	SUMI-P

Coolant Through Bolts		
Catalog Number	Cutter Diameter	Applicable Pilot Dia.
BFXH3/8 X 1	1.5", 2.00"	0.75"
BFXH1/2 X 1 1/4	2.50", 3.00"	1.00"
BFXH5/8 X 1 1/4	4.00"	1.25"
BFXH3/4 X 2	4.00"	1.50"
BFXH3/4 X 1 1/2	5.00"	1.50"

Identification Code - Inch

RSX F 3 2000 R

Cutter Series | Fine-Pitch Indication | Insert Series | Cutter Dia. 2.000" | Feed Direction

Identification Code - Metric

RSX F 10 040 R S

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

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**- 0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**- 0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**- 0.40	ACK300

			Work Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel	Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
M	Stainless Steel	Cr Based	Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
M	Stainless Steel	Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
M	Stainless Steel	Cr-Ni Based	400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
M	Stainless Steel	Cr-Ni Based	Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy		Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
S	Titanium		Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	ACM100 ACM200
S	Titanium		+ Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	ACM100 ACM200

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

Wave Radius Mill

RSX(F) SHELLMILL INCH -12mm Inserts

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

Rake Angle		
	Radial	-5°
	Axial	10°

.236"

Fig 1

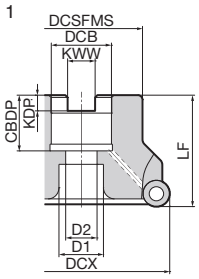


Fig 2

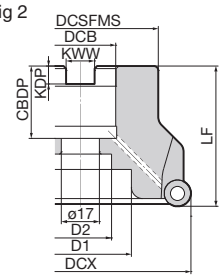
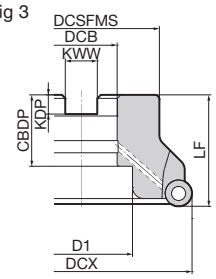


Fig 3



Body (RSX40000R) Standard

Dimensions (inch)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	RSX42000R	●	2.000	1.500	1.750	0.750	0.312	0.248	0.750	0.609	0.406	4	0.70	1
	RSX42500R	●	2.500	1.750	1.750	1.000	0.375	0.248	0.750	0.797	0.531	5	1.1	1
	RSX43000R	●	3.000	2.250	1.750	1.000	0.375	0.276	0.750	0.797	0.531	6	1.75	1
	RSX44000R-1.25	●	4.000	2.870	2.000	1.250	0.500	0.335	0.750	1.000	0.656	7	3.75	1
	RSX44000R-1.50	●	4.000	2.870	2.500	1.500	0.625	0.335	1.000	2.000	0.781	7	4.00	1
	RSX45000R	●	5.000	3.750	2.500	1.500	0.625	0.465	1.000	2.000	0.781	8	7.60	1
	RSX46000R	●	6.000	4.380	2.500	1.500	0.625	0.532	1.000	2.000	0.781	9	11.90	1

Body (RSXF40000R) Fine Pitch

Dimensions (inch)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (lbs)	Fig
Inch	RSXF42000R	●	2.000	1.500	1.750	0.750	0.312	0.248	0.750	0.609	0.406	5	0.65	1
	RSXF42500R	●	2.500	1.750	1.750	1.000	0.375	0.248	0.750	0.797	0.531	6	1.05	1
	RSXF43000R	●	3.000	2.250	1.750	1.000	0.375	0.276	0.750	0.797	0.531	8	1.75	1
	RSXF44000R-1.25	●	4.000	2.870	2.000	1.250	0.500	0.335	0.750	1.000	0.656	9	4.75	1
	RSXF44000R-1.50	●	4.000	2.870	2.500	1.500	0.625	0.335	1.000	2.000	0.781	9	5.25	1
	RSXF45000R	●	5.000	3.750	2.500	1.500	0.625	0.465	1.000	2.000	0.781	11	7.5	1
	RSXF46000R	●	6.000	4.380	2.500	1.500	0.625	0.532	1.000	2.000	0.781	12	11.75	1

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

● USA stocked item

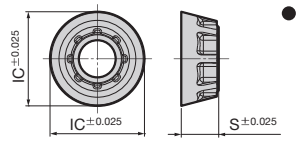
Insert

Dimensions (inch)

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

Cat. No.	ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET1204M0EN-G	●	●	●	●	●	.473	.187	1
RDET1204M0EN-H	●	●	●	●	●	.473	.187	1

Fig 1



● Cross Section of Cutting Edge

Parts

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

Identification Code

RSX F 4 2000 R

RSX	F	4	2000	R
Cutter Series	Fine-Pitch Indication	Insert Series	Cutter Dia. 2.000"	Feed Direction

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**-0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**-0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**-0.40	ACK300

			Work Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z (ipt) Min - Max	Recommended Grade
M	Stainless Steel	Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
			Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
		Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
			400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
			Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy		Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
	Titanium		Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
			α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

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

RSX(F) Shellmill Metric - *12mm* Inserts

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

Rake Angle		
	Radial	-5°
	Axial	10°

6mm

Fig 1

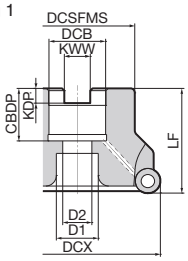


Fig 2

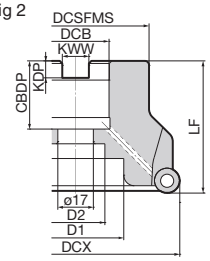
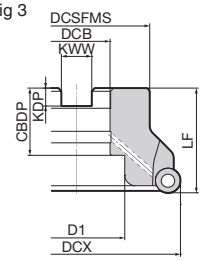


Fig 3



Body (RSX12000RS / R)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX12040RS**	★	40	32	40	16	8.4	5.6	18	13.5	9	3	0.2	1
	RSX12050RS	★	50	40	40	22	10.4	6.3	20	18	11	4	0.3	1
	RSX12052RS	★	52	40	40	22	10.4	6.3	20	18	11	4	0.3	1
	RSX12063RS	★	63	40	40	22	10.4	6.3	20	18	11	5	0.4	1
	RSX12066RS	★	66	55	50	27	12.4	7.0	25	20	14	6	0.7	1
	RSX12080RS	★	*80	55	50	27	12.4	7.0	25	20	14	6	1.0	1
	RSX12100RS	★	100	70	50	32	14.4	8.5	32	46	-	6	1.4	3
	RSX12080R	★	*80	55	50	25.4	9.5	6.0	25	20	13	6	1.0	1
	RSX12100R	★	*100	70	63	31.75	12.7	8.0	32.5	46	28	6	1.9	2

Body (RSXF12000RS / R) Fine Pitch

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF12040RS**	★	40	32	40	16	8.4	5.6	18	13.5	9	4	0.2	1
	RSXF12050RS	★	50	40	40	22	10.4	6.3	20	18	11	5	0.3	1
	RSXF12052RS	★	52	40	40	22	10.4	6.3	20	18	11	5	0.3	1
	RSXF12063RS	★	63	40	40	22	10.4	6.3	20	18	11	6	0.4	1
	RSXF12066RS	★	66	55	50	27	12.4	7.0	25	20	14	7	0.7	1
	RSXF12080RS	★	*80	55	50	27	12.4	7.0	25	20	14	7	0.9	1
	RSXF12100RS	★	100	70	50	32	14.4	8.5	32	46	-	10	1.3	3
	RSXF12080R	★	*80	55	50	25.4	9.5	6.0	25	20	13	7	1.0	1
	RSXF12100R	★	*100	70	63	31.75	12.7	8.0	32.5	46	28	10	1.8	2

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

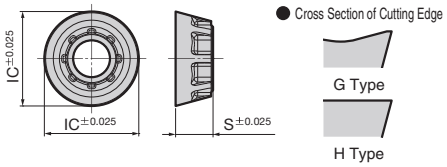
* For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							
Process	High-speed / Light			M S	M S				
	General-purpose	P M		M S	M S	M S			
	Roughing	P M	K			M S			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET1204M0EN-G		●	●	●	●	●	12	4.76	1
RDET1204M0EN-H		●	●	●	●	●	12	4.76	1

Fig 1



★Worldwide Warehouse Item ● USA stocked item

Parts

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

Identification Code

RSX F 12 040 R S

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

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**-0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**-0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**-0.40	ACK300

			Work Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel	Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
			Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
		Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
			400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
			Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy		Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
	Titanium		Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
			α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

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

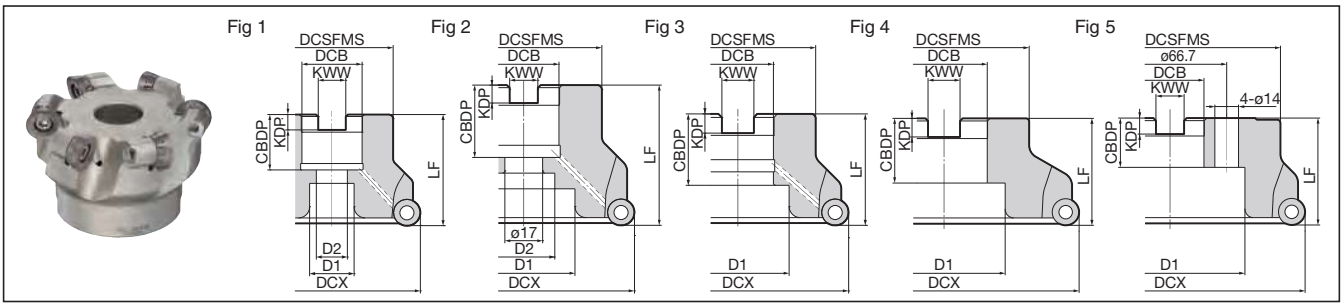
Wave Radius Mill

RSX(F) Inch SHELLMILL Type - 16mm Inserts

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

Rake Angle		
	Radial	-5°
	Axial	10°

.315"



Body (RSX50000R)

Dimensions (inch)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**RSX52500R**	●	2.500	1.750	1.750	1.000	0.375	0.248	0.750	0.797	0.531	4	0.95	1
	RSX53000R	●	3.000	2.250	1.750	1.000	0.375	0.248	0.750	0.797	0.531	5	1.50	1
	RSX54000R-1.25	●	4.000	2.870	2.000	1.250	0.500	0.276	0.750	1.000	0.656	7	4.25	1
	RSX54000R-1.50	●	4.000	2.870	2.500	1.500	0.625	0.335	1.000	2.000	0.781	7	4.90	1
	RSX55000R	●	5.000	3.750	2.500	1.500	0.625	0.335	1.000	2.000	0.781	8	7.1	1
	RSX56000R	●	6.000	4.380	2.500	1.500	0.625	0.465	1.000	2.000	0.781	9	11.2	5

Body (RSXF50000R) Fine Pitch

Dimensions (inch)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch	**RSXF52500R**	●	2.500	1.750	1.750	1.000	0.375	0.248	0.750	0.797	0.531	5	0.85	1
	RSXF53000R	●	3.000	2.250	1.750	1.000	0.375	0.248	0.750	0.797	0.531	6	1.55	1
	RSXF54000R-1.25	●	4.000	2.870	2.000	1.250	0.500	0.276	0.750	1.000	0.656	8	3.25	3
	RSXF54000R-1.50	●	4.000	2.870	2.500	1.500	0.625	0.335	1.000	2.000	0.781	8	4.35	1
	RSXF55000R	●	5.000	3.750	1.500	1.500	0.625	0.335	1.000	2.000	0.781	9	6.4	5
	RSXF56000R	●	6.000	6.000	4.380	1.500	0.625	0.465	1.000	0.781	1.500	10	10.5	1

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

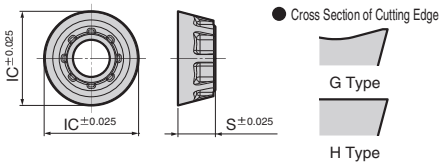
● USA stocked item

Insert

Dimensions (inch)

Grade		Coated Carbide							
Process	High-speed / Light			M S	M S				
	General-purpose	P M		M S	M S	M S			
	Roughing	P M	K			M S			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET1606M0EN-G		●	●	●	●	●	0.630	0.256	1
RDET1606M0EN-H		●	●	●	●	●	0.630	0.256	1

Fig 1



Parts

Wrench	Flat Screw		Anti-seize Cream
TRDR20IP	BFTX0511IP	5.0	SUMI-P

Identification Code

RSX F 5 3000 R

Cutter Series	Fine-Pitch Indication	Insert Series	Cutter Dia. 3.000"	Feed Direction

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**-0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**-0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**-0.40	ACK300

			Work Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel	Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
			Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
		Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
			400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
			Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy		Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
	Titanium		Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
			α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

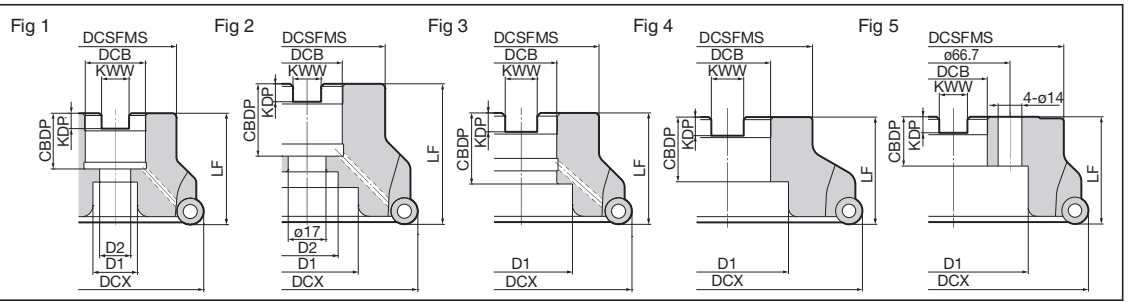
NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

RSX(F) Metric Shellmill Type - 16mm Inserts

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

Rake Angle		
	Radial	-5°
	Axial	10°

8mm



Body (RSX16000RS / R)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX16063RS**	★	63	50	40	22	10.4	6.3	20	18	11	4	0.5	1
	RSX16080RS	★	*80	55	50	27	12.4	7.0	25	20	14	5	0.9	1
	RSX16100RS	★	100	70	50	32	14.4	8.5	32	46	-	6	1.3	3
	RSX16125RS	★	125	80	63	40	16.4	9.5	29	52	29	6	2.6	1
	RSX16080R	★	*80	55	50	25.4	9.5	6.0	25	20	13	5	0.9	1
	RSX16100R	★	*100	70	63	31.75	12.7	8.0	32.5	46	28	6	1.8	2
	RSX16125R	★	125	80	63	38.1	15.9	10.0	35.5	55	30	6	2.7	1

Body (RSXF16000RS / R) Fine Pitch

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF16063RS**	★	63	50	40	22	10.4	6.3	20	18	11	5	0.4	1
	RSXF16080RS	★	*80	55	50	27	12.4	7.0	25	20	14	6	0.8	1
	RSXF16100RS	★	100	70	50	32	14.4	8.5	32	46	-	7	1.3	3
	RSXF16125RS	★	125	80	63	40	16.4	9.5	29	52	29	8	2.5	1
	RSXF16160RS		160	130	63	40	16.4	9.5	29	88	-	10	4.8	5
	RSXF16080R	★	*80	55	50	25.4	9.5	6.0	25	20	13	6	0.8	1
	RSXF16100R	★	*100	70	63	31.75	12.7	8.0	32.5	46	28	7	1.7	2
	RSXF16125R	★	125	80	63	38.1	15.9	10.0	35.5	55	30	8	2.6	1
	RSXF16160R		160	100	63	50.8	19.0	11.0	38	72	-	10	4.3	4

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

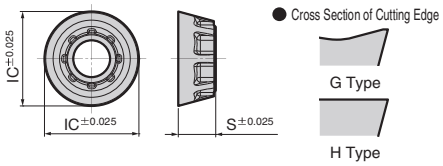
For securing the ø80mm and ø100mm cutters to the arbors marked with *, use a JIS B1176 hexagonal socket bolt (ø80: M12 x 30 to 35mm, ø100: M16 x 40 to 45mm).

Insert

Dimensions (*mm*)

Grade		Coated Carbide							
Process	High-speed / Light			M S	M S				
	General-purpose	P M		M S	M S	M S			
	Roughing	P M	K			M S			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET1606M0EN-G		●	●	●	●	●	16	6.5	1
RDET1606M0EN-H		●	●	●	●	●	16	6.5	1

Fig 1



● USA stocked item ★Worldwide Warehouse Item

Parts

Wrench	Flat Screw		Anti-seize Cream
TRDR20IP	BFTX0511IP	5.0	SUMI-P

Identification Code

RSX F 16 063 R S

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

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**- 0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**- 0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**- 0.40	ACK300

			Work Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel	Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
			Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
		Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
			400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
			Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy		Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
	Titanium		Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
			$\alpha+\beta$ Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

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

N·m Recommended Tightening Torque (N·m)

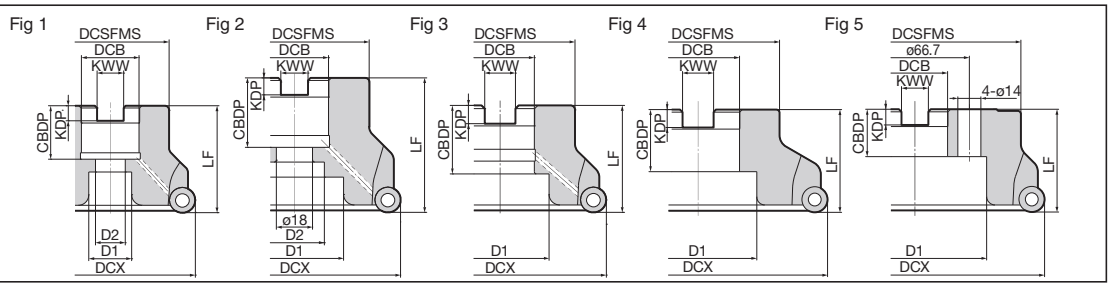
Wave Radius Mill

RSX(F) Metric Shellmill - *20mm* Inserts

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

Rake Angle		
	Radial	-5°
	Axial	10°

10mm



Body (RSX20000R / RS)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSX20080RS**	★	*80	55	50	27	12.4	7	22	20	14	4	0.9	1
	RSX20100RS	★	100	70	50	32	14.4	8	32	46	-	5	1.8	3
	RSX20125RS	★	125	80	63	40	16.4	9	29	52	29	6	2.6	1
	RSX20160RS	★	160	130	63	40	16.4	9	29	90	-	7	4.7	5
	RSX20080R	★	*80	55	50	25.4	9.5	6	25	20	14	4	0.9	1
	RSX20100R	★	100	70	63	31.75	12.7	8	32	46	27	5	1.8	2
	RSX20125R	★	125	80	63	38.1	15.9	10	35.5	55	30	6	2.6	1
	RSX20160R	★	160	100	63	50.8	19.1	11	38	72	-	7	4.2	4

Body (RSXF20000R / RS) Fine Pitch

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF20080RS**	★	*80	55	50	27	12.4	7	22	20	14	5	0.9	1
	RSXF20100RS	★	100	70	50	32	14.4	8	32	46	-	6	1.8	3
	RSXF20125RS	★	125	80	63	40	16.4	9	29	52	29	7	2.6	1
	RSXF20160RS	★	160	130	63	40	16.4	9	29	90	-	9	4.6	5
	RSXF20080R	★	*80	55	50	25.4	9.5	6	25	20	14	5	0.9	1
	RSXF20100R	★	*100	70	63	31.75	12.7	8	32	46	27	6	1.8	2
	RSXF20125R	★	125	80	63	38.1	15.9	10	35.5	55	30	7	2.6	1
	RSXF20160R	★	160	100	63	50.8	19.1	11	38	72	-	9	4.1	4

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

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

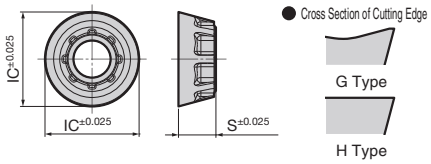
Insert

Dimensions (*mm*)

Grade		Coated Carbide							
Process	High-speed / Light			M S	M S				
	General-purpose	P M		M S	M S	M S			
	Roughing	P M	K			M S			
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Fig
RDET2006M0EN-G		★	★	★	★	★	20	6.5	1
RDET2006M0EN-H		★	★	★	★	★	20	6.5	1

★Worldwide Warehouse Item

Fig 1



Parts

Wrench	Flat Screw		Anti-seize Cream
		N·m	
TRDR25IP	BFTX0615IP	5.0	SUMI-P

Identification Code

RSX F 20 080 R S

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

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**-0.60	ACP200
	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**-0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**-0.40	ACK300

			Work Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z (ipt) Min - Max	Recommended Grade
M	Stainless Steel	Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
			Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
		Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
			400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
			Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy		Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
	Titanium		Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
			α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

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

RSX(F) ENDMILL - *8mm / 10mm / 12mm* Inserts

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

Rake Angle		
	Radial	-5° to -8°
	Axial	10°

4mm (08000ES) | 5mm (10000ES) | .197" | 6mm (12000ES) | .236"

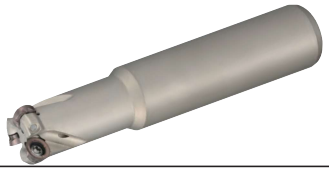
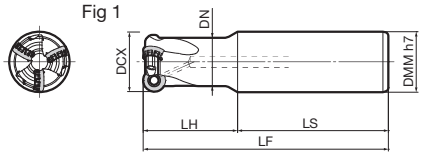


Fig 1



Body (*RSXF08*) Fine Pitch, Applicable Insert IC = *8mm*

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF08020ES**	★	*20*	*20*	*16.9*	*30*	*70*	*100*	3	*0.3*	1
	RSXF08025ES	★	*25*	*25*	*21.9*	*40*	*80*	*120*	4	*0.4*	1

Body (RSX3 / *RSX10*) Applicable Insert IC = 10mm

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSX31000EW**	●	1.000	1.000	0.799	2.060	2.280	4.340	2	0.95	1
	RSX31250EW	●	1.250	1.250	1.063	2.060	2.280	4.340	3	1.15	1
	RSX31500EW	●	1.500	1.250	1.334	2.060	2.280	4.340	3	1.25	1
Metric	**RSX10025ES**	★	*25*	*25*	*20.3*	*50*	*80*	*130*	2	*0.4*	1
	RSX10032ES	★	*32*	*32*	*27.1*	*50*	*80*	*130*	3	*0.7*	1

Body (RSXF3 / *RSX10*) Fine Pitch, Applicable Insert IC = *10mm*

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSXF31000EW**	●	1.000	1.000	0.799	2.060	2.280	4.340	3	1.00	1
	RSXF31000ELC	●	1.000	1.000	0.799	3.750	6.250	10.000	3	2.00	1
	RSXF31250EW	●	1.250	1.250	1.063	2.060	2.280	4.340	4	1.25	1
	RSXF31250ELC	●	1.250	1.250	1.063	3.750	6.250	10.000	4	2.75	1
	RSXF31500EW	●	1.500	1.250	1.334	2.060	2.280	4.340	4	1.40	1
	RSXF31500ELC	●	1.500	1.250	1.334	3.750	6.250	10.000	4	3.25	1
Metric	**RSXF10025ES**	★	*25*	*25*	*20.3*	*50*	*80*	*130*	3	*0.4*	1
	RSXF10032ES	★	*32*	*32*	*27.1*	*50*	*80*	*130*	4	*0.7*	1

Body (RSX4 / *RSX12*) Applicable Insert IC = 12mm

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSX41250EW**	●	1.250	1.250	1.063	2.060	2.280	4.340	2	1.20	1
	RSX41500EW	●	1.500	1.250	1.334	2.060	2.280	4.340	3	1.50	1
Metric	**RSX12032ES**	★	*32*	*32*	*25.6*	*50*	*80*	*130*	2	*0.7*	1

★Worldwide Warehouse Item ● USA stocked item

Body (RSXF4 / *RSXF12*) Fine Pitch, Applicable Insert IC = *12mm*

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (lbs / *kg*)	Fig
Inch	**RSXF41250EW**	●	1.250	1.250	1.063	2.060	2.280	4.340	3	1.40	1
	RSXF41250ELC	●	1.250	1.250	1.063	3.750	6.250	10.000	3	3.50	1
	RSXF41500EW	●	1.500	1.250	1.334	2.060	2.280	4.340	4	1.65	1
	RSXF41500ELC	●	1.500	1.250	1.334	3.750	6.250	10.000	4	4.00	1
Metric	**RSXF12032ES**	★	*32*	*32*	*25.6*	*50*	*80*	*130*	3	*0.7*	1

Inserts are sold separately.

Insert

Dimensions (inch / *mm*)

Grade		Coated Carbide				
Process	High-speed / Light			M S	M S	
	General-purpose	P M		M S	M S	M S
	Roughing	P M	K			M S
Cat. No.		ACP200	ACK300	ACM100	ACM200	ACM300

Cat. No.	Inscribed Circle IC	Thickness S	Applicable Cutters	Fig
RDET0803M0EN-G	0.315 / *8*	0.125 / *3.18*	RSX(F)08000ES	1
RDET0803M0EN-H				1
RDET10T3M0EN-G	0.394 / *10*	0.156 / *3.97*	RSX30000EW	1
RDET10T3M0EN-H			RSX(F)10000RS / ES	1
RDET1204M0EN-G	0.472 / *12*	0.187 / *4.76*	RSX40000EW	2
RDET1204M0EN-H			RSX(F)12000RS / ES	2

Fig 1

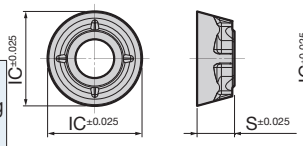
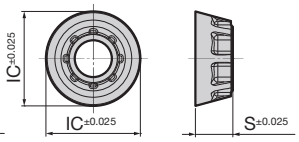


Fig 2



● Cross Section of Cutting Edge

G Type H Type

Parts

Applicable Cutter	Wrench	Flat Screw		Anti-seize Cream
			N·m	
RSX(F)08000ES	TRDR08IP	BFTX02506IP	1.5	SUMI-P
RSX(F)10000ES	TRDR15IP	BFTX03584IP	3.0	SUMI-P
RSX(F)12000ES	TRDR15IP	BFTX0409IP	3.0	SUMI-P

Identification Code - Inch

RSX F 3 1000 EW

Cutter Series	Fine-Pitch Indication	Insert Series	Cutter Dia. 1.000"	Endmill Type W: Weldon C: Cylindrical

Identification Code

RSX F 10 025 ES

Cutter Series	Fine-Pitch Indication	Insert Size	Cutter Dia.	Endmill Type

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

ISO	Part Material	Hardness	Cutting Speed v_c (SFM/ m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330-725 SFM 100-**160**-200	.008-.024 IPT 0.20-**0.40**- 0.60	ACP200
P	Alloy Steel	180 to 280 HB	330-650 SFM 100-**140**-180	.008-.016 IPT 0.20-**0.30**- 0.40	ACP200
K	Cast Iron	250HB	265-580 SFM 80-**120**-160	.004-.016 IPT 0.10-**0.30**- 0.40	ACK300

			Work Material	Hardness	Cutting Speed v_c (sfm) Min - Max	Feed Rate f_z(ipt) Min - Max	Recommended Grade
M	Stainless Steel	Cr Based	Ferrite System	200 HB	500 - 650	0.006 – 0.014	ACM300
			Martensitic	200~330HB	250 - 600	0.006 – 0.014	ACM300
		Cr-Ni Based	Austenitc	200 HB	500 - 650	0.006 - 0.014	ACM300
			400 Series	230~270HB	250 - 600	0.006 - 0.014	ACM200
			Precipitation Hardening	330HB	200 - 525	0.006 - 0.014	ACM200
S	Heat Resistant Alloy		Ni Based Material System	250~350HB	65 - 130	0.004 - 0.012	ACM100 ACM200
	Titanium		Pure Titanium	(Rm400)	200 - 325	0.004 – 0.012	
			α+β Alloy System	(Rm1050)	130 - 200	0.004 – 0.012	

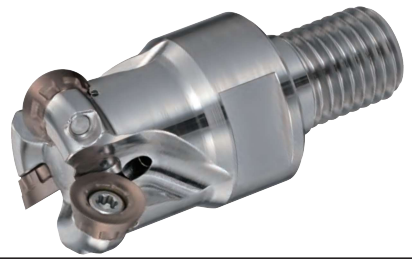
NOTE: The cutting conditions above are a guide.
Actual Conditions will need to be adjusted according to machine rigidity, work clamp rigidity, cutting depth and other factors.

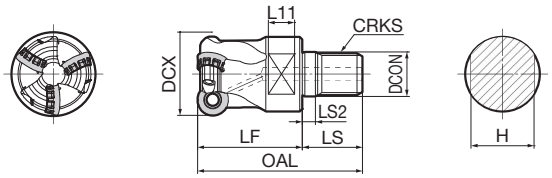
RSX(F) Modular - *8mm / 10mm / 12 mm* Inserts

Rake Angle		
	Radial	-5° to -8°
	Axial	10°

.157" | 4mm (08000M) | .197" | 5mm (10000M) | .236" | 6mm (12000M)

Fig 1





Head (RSX08000M) Applicable Insert RDET08

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**RSX08020M10Z2**	★	20	10.5	**M10**	49	30	5	19	8	15	2	0.1	1
	RSX08025M12Z3	★	25	12.5	**M12**	56	35	5	21	10	19	3	0.1	1
	RSX08032M16Z4	★	32	17.0	**M16**	63	40	5	23	10	24	4	0.2	1

Head (RSXF08000M) Fine Pitch Type, Applicable Insert RDET08

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**RSXF08020M10Z3**	★	20	10.5	**M10**	49	30	5	19	8	15	3	0.1	1
	RSXF08025M12Z4	★	25	12.5	**M12**	56	35	5	21	10	19	4	0.1	1
	RSXF08032M16Z5	★	32	17.0	**M16**	63	40	5	23	10	24	5	0.2	1

Head (RSX10000M) Applicable Insert RDET10

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**RSX10025M12Z2**	★	25	12.5	**M12**	56	35	5	21	10	19	2	0.1	1
	RSX10032M16Z3	★	32	17.0	**M16**	63	40	5	23	10	24	3	0.2	1

Head (RSXF3 & RSXF10) Fine Pitch Type, Applicable Insert RDET10

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Inch	**RSXF31000M12Z3**	●	1.000	0.492	M12	2.205	1.378	0.197	0.827	0.394	0.748	3	.22	1
	RSXF31250M16Z4	●	1.250	0.669	M16	2.480	1.575	0.197	0.906	0.394	0.945	4	.44	1
Metric	**RSXF10025M12Z3**	★	25	12.5	**M12**	56	35	5	21	10	19	3	0.1	1
	RSXF10032M16Z4	★	32	17.0	**M16**	63	40	5	23	10	24	4	0.2	1

Head (RSX12000M) Applicable Insert RDET12

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**RSX12032M16Z2**	★	32	17.0	**M16**	63	40	5	23	10	24	2	0.2	1
	RSX12040M16Z3	★	40	17.0	**M16**	63	40	5	23	10	24	3	0.3	1

● USA stocked item ★ Worldwide Warehouse item

Head (RSXF4 & RSX12) Fine Pitch Type, Applicable Insert RDET12

Dimensions (inch / *mm*)

	Cat. No.	Stock	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
Inch	**RSXF41250M16Z3**	●	1.250	0.669	**M16**	2.480	1.575	0.197	0.906	0.394	0.945	3	.44	1
	RSXF41500M16Z4	●	1.500	0.669	**M16**	2.480	1.575	0.197	0.906	0.394	0.945	4	.66	1
Metric	**RSXF12032M16Z3**	★	32	17.0	**M16**	63	40	5	23	10	24	3	0.2	1
	RSXF12040M16Z4	★	40	17.0	**M16**	63	40	5	23	10	24	4	0.3	1

Inserts are sold separately.

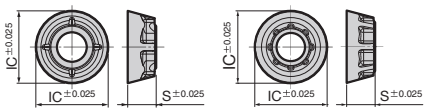
Insert

Dimensions (inch / *mm*)

Grade	Coated Carbide
Process: High-speed / Ligh	M S, M S
Process: General-purpose	P M, M S, M S, M S
Process: Roughing	P M, K, M S

Cat. No.	ACP200	ACK300	ACM100	ACM200	ACM300	Inscribed Circle IC	Thickness S	Applicable Cutter	Fig
RDET0803M0EN-G	●	●	●	●	●	*8*	*3.18*	RSX(F)08000ES/M	1
RDET0803M0EN-H	●	●	●	●	●	*8*	*3.18*		
RDET10T3M0EN-G	●	●	●	●	●	.394" / *10*	.156" / *3.97*	RSX(F)10000RS/ES/M	1
RDET10T3M0EN-H	●	●	●	●	●	.394" / *10*	.156" / *3.97*		
RDET1204M0EN-G	●	●	●	●	●	.472" / *12*	.187" / *4.76*	RSX(F)12000RS/ES/M	2
RDET1204M0EN-H	●	●	●	●	●	.472" / *12*	.187" / *4.76*		

Fig 1 Fig 2



● Cross Section of Cutting Edge

Parts

Applicable Endmill	Flat Screw	N·m	Wrench	Anti-seize Cream
RSX(F)08000M	BFTX02506IP	1.5	TRDR08IP	SUMI-P
RSX(F)10000M Type	BFTX03584IP	3.0	TRDR15IP	
RSX(F)12000M Type	BFTX0409IP	3.0		

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

Identification Code - Inch

RSX F 3 1000 M12 Z3

Cutter Series | Fine-Pitch Indication | Insert Size | Dia. 1.000" | Mounting Screw Size | Number of Teeth

Identification Code - Metric

RSX F 10 025 M12 Z2

Cutter Series | Fine-Pitch Indication | Insert Size | Dia. | Mounting Screw Size | Number of Teeth

N·m Recommended Tightening Torque (N·m)

■ General Features

The WRCX 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.

■ Product Range

	Metric Sizes	O.D. (mm)	# of Teeth
Shellmill	WRCX(F)12000R(S)	ø40 to ø80	4-6
	WRCX(F)16000R(S)	ø63 to ø100	3-6
	WRCX20000R(S)	ø125 to ø160	5-6
Endmill	WRCX08000E	ø20 to ø25	2-3
	WRCX10000E	ø25 to ø32	2-3
	WRCX16000E	ø40 to ø50	2-3
Modular	WRCX08000M	ø20 to ø25	2-3
	WRCX10000M	ø25 to ø32	2-3

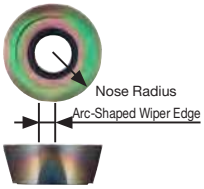
Inch Sizes	O.D. (Inch)	# of Teeth
WRCX30000R	ø2.000"	4
WRCX40000R	ø2.0 to ø4.0"	4-6
WRCX60000R	ø3.0 to ø6.0"	5-8
WRCX80000R	ø4.0 to ø6.0"	6-8
WRCX30000EW	ø1.0 to ø1.5"	2-4
WRCX30000ELC	ø1.0 to ø1.5"	2-4
WRCX40000EW	ø1.25 to ø1.5"	2-3
WRCX40000ELC	ø1.25 to ø1.5"	2-3

■ Abundant Insert Series

- In addition to conventional WRC Type inserts, the new lineup includes non-ferrous metal inserts and surfing inserts

Non-Ferrous Metal Inserts QPET ○○○○○○ PPFR-S

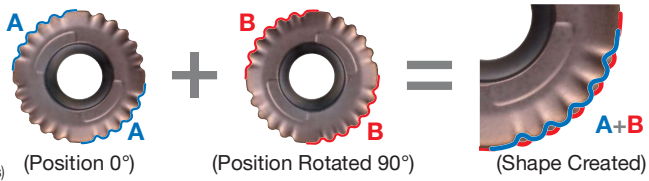
- Good surface roughness with arc-shaped wiper edge
- Sharp corners
- Four-cornered insert



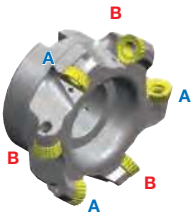
Surfing Insert QPMT ○○○○○○ PPER-R

- Cutting edges feature unique rippled design
- Four-cornered insert
- Low cutting force, enabling use on low-rigidity machines as well

*Use in combinations that alternate cutting edge **A** and cutting edge **B**.
(Only useable on cutters with an even number of cutting edges)



(Position 0°) (Position Rotated 90°) (Shape Created)



Shift the phase in 90° increments to mount inserts

- Maximum Allowable Spindle Speed when Milling Non-Ferrous Metal (Unit: RPM)

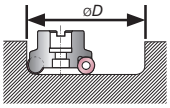
Cutter Dia. DC(*mm*)	Insert Cat. No. QPET10·····-S	QPET12·····-S	QPET16·····-S
25	28,000		
32	25,000		
40		22,000	15,000
50		20,000	14,000
63		18,000	13,000
80		16,000	12,000
100			10,000

Even if the speed used is within the maximum allowable revolution speeds listed above, abnormal vibrations may occur due to machine rigidity or other factors. Therefore, it is advisable to start operation at half the maximum allowable revolution speed and increase the speed gradually while checking for abnormalities.

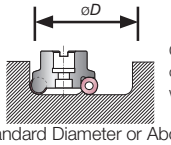
■ Usage Precautions

- Precautions for Helical Milling

Standard Diameter

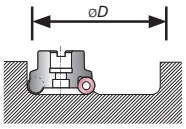


Standard Diameter or Below



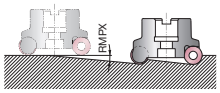
Center uncut portion cannot be removed with the same cutter.

Standard Diameter or Above



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

- Precautions for Ramping
  - Use at the RMPX below or lower.



- Recommended Values for Helical Milling and Ramping

Insert Cat. No. Inch	Cutter Dia. DCX	Ramping Maximum Ramping Angle RMPX(max)
QP□□32.510○○	1.00	11°. 30'
	1.25	7° 30'
	1.50	5° 30'
	2.00	5° 30'
QP□□4312○○	1.25	18° 30'
	1.50	12° 30'
	2.00	7° 30'
	2.50	5° 30'
	3.00	4°
	4.00	2° 30'
QP□□6416○○	3.00	7° 30'
	4.00	4° 30'
	5.00	3° 15'
	6.00	3° 15'
QP□□8424○○	4.00	6°
	5.00	4° 15'
	6.00	3° 15'

Insert Cat. No. *metric*	Helical Milling (Dimensions in inch) Cutter Dia. DCX	Work Dia. *øD* Min. Dia.	Standard Diameter	Max. Dia.	Ramping Maximum Ramping Angle RMPX(max)
QP□□08○○○○	**20**	0.98	1.26	1.54	13°
	25	1.38	1.65	1.93	8°20'
QP□□10○○○○	**25**	1.26	1.57	1.89	13°10'
	32	1.81	2.13	2.44	8°
QP□□12○○○○	**40**	2.24	2.68	3.11	10°
	50	3.03	3.46	3.90	7°30'
	63	4.06	4.49	4.92	5°10'
	80	5.39	5.83	6.26	3°50'
QP□□16○○○○	**40**	1.93	2.52	3.11	19°30'
	50	2.72	3.31	3.90	12°
	63	3.74	4.33	4.92	8°
	80	5.08	5.67	6.26	5°30'
	100	6.65	7.24	7.83	4°
QP□□20○○○○	**125**	8.35	9.06	9.76	3°30'
	160	11.10	11.81	12.52	2°30'

Wave Radius Mill

WRCX(F) Inch Shellmill & Endmill

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle		
	Radial	0°
	Axial	-3°

.1875" | .250" | .375" | .500"

Fig 1

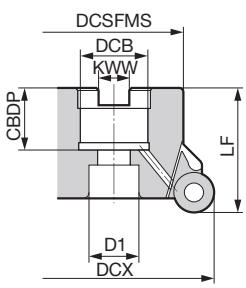
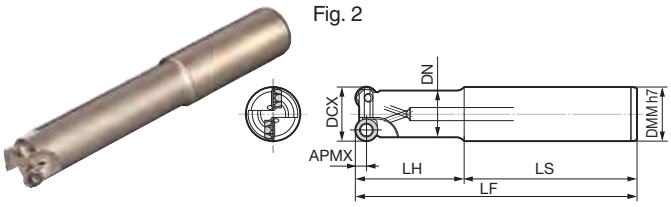


Fig. 2



Body (Shellmill)

Dimensions (inch)

Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Mounting Depth CBDP	Bolt D1	Number of Teeth	Insert	Insert Size	Fig
WRCX32000R	●	2.000	1.500	1.750	0.750	0.312	1.020	0.609	4	QPMT3	0.375	1
WRCX42000R	●	2.000	1.500	1.750	0.750	0.312	1.020	0.609	4	QPMT4	0.500	1
WRCX42500R	●	2.500	1.750	1.750	1.000	0.375	1.020	0.797	4			1
WRCX43000R	●	3.000	2.250	1.750	1.000	0.375	1.020	0.797	5			1
WRCX44000R	●	4.000	2.87	2.00	1.250	0.500	1.020	1.000	6			1
WRCX63000R	●	3.000	2.25	1.75	1.000	0.375	1.020	0.797	5	QPMT6	0.750	1
WRCX64000R	●	4.000	2.87	2.00	1.250	0.500	1.020	1.000	6			1
WRCX65000R	●	5.000	3.75	2.50	1.500	0.625	1.060	2.000	6			1
WRCX66000R	●	6.000	3.75	2.50	1.500	0.625	1.060	2.000	8			1
WRCX84000R	●	4.000	2.87	2.00	1.250	0.500	1.020	1.000	6	QPMT8	1.000	1
WRCX85000R	●	5.000	3.75	2.50	1.500	0.625	1.060	2.000	6			1
WRCX86000R	●	6.000	3.70	2.50	1.500	0.625	1.060	2.000	8			1

Inserts are sold separately.

Body (WRCX30000) Applicable Insert IC = 0.375

Dimensions (inch)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WRCX31000EW	●	1.000	1.000	1.000	0.157	2.060	2.281	4.341	2	2
WRCX31000ELC	●	1.000	1.000	1.000	0.157	3.750	6.250	10.000	2	2
WRCX31250EW	●	1.250	1.250	1.250	0.157	2.060	2.281	4.341	3	2
WRCX31250ELC	●	1.250	1.250	1.250	0.157	3.750	6.250	10.000	3	2
WRCX31500EW	●	1.500	1.500	1.500	0.157	2.060	2.281	4.341	4	2
WRCX31500ELC	●	1.500	1.500	1.500	0.157	3.750	6.250	10.000	4	2

Body (WRCX40000) Applicable Insert IC = 0.500

Dimensions (inch)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Fig
WRCX41250EW	●	1.250	1.250	1.250	0.197	2.060	2.281	4.341	2	2
WRCX41250ELC	●	1.250	1.250	1.250	0.197	3.750	6.250	10.000	2	2
WRCX41500EW	●	1.500	1.500	1.500	0.197	2.060	2.281	4.341	3	2
WRCX41500ELC		1.500	1.500	1.500	0.197	3.750	6.250	10.000	3	2

● USA stocked item

Insert (Common)

Dimensions (inch)

Grade		Coated Carbide				Carbide	DLC				
Process	High-speed / Light	P				K N	N				
	General-purpose		P M	P M			N				
	Roughing		P M	P M	K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK300	H1	DL1000	Inscribed Circle IC	Thickness S	Max Depth of Cut	Fig
General purpose*	**QPMT32.510PPEN**	●	●	●	●			0.375	0.156	0.1875	1
	QPMT32.510PPEN-H	●		●	●			0.375	0.156	0.1875	1
	QPMT4312PPEN	●	●	●	●			0.500	0.1875	0.250	1
	QPMT4312PPEN-H	●		●	●			0.500	0.1875	0.250	1
	QPMT6416PPEN	●	●	●	●			0.750	0.250	0.375	1
	QPMT6416PPEN-H	●		●	●			0.750	0.250	0.375	1
	QPMT8424PPEN	●	●	●	●			1.000	0.250	0.500	1
	QPMT8424PPEN-H	●		●	●			1.000	0.250	0.500	1
For Non-Ferrous Metals	**QPET32.510PPENS***					●	●	0.375	0.156	0.1875	2
	QPET4312PPENS*					●	●	0.500	0.1875	0.250	2

*: -H at the end indicates strong edge type.

Fig 1

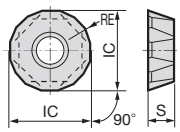
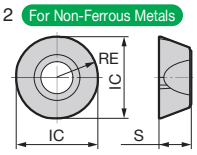


Fig 2 For Non-Ferrous Metals



Parts

Cutter	Flat Screw		Wrench	Anti-seize Cream
		N·m		
WRCX3□□□R	BFTX03584IP	3.0	TRDR15IP	SUMI-P
WRCX4□□□R	BFTX0409IP	3.0		
WRCX6□□□R	BFTX0511IP	5.0	TRDR20IP	
WRCX8□□□R	BFTX0615IP	7.5		

Coolant Through Bolts	
Catalog Number	Cutter Size
BFXH 3/8 x 1	2.00"
BFXH 1/2 x 1 1/4	2.50"
BFXH 1/2 x 1 1/4	3.00"
BFXH 5/8 x 1 1/4	4.00"
BFXH 3/4 x 1 1/2	5.00"

Recommended Cutting Conditions

	Part Material	Grade	øD = 1.00" - 1.25"		øD = 1.50" - 3.00"		øD = 4.00" - 6.00"	
			SFM	IPT	SFM	IPT	SFM	IPT
P	Carbon Steel	ACP200	260-395-525	.004-.012-.016	330-525-655	.008-.016-.024	490-655-820	.012-.016-.024
	Alloy Steel (HRC<40)	ACP200	195-330-460	.004-.008-.012	330-460-590	.008-.012-.016	330-525-655	.004-.012-.020
M	Stainless Steel (304)	ACP200, ACP300	195-330-395	.004-.006-.008	260-395-525	.004-.008-.012	525-590-655	.006-.008-.012
K	Gray Cast Iron	ACK200, ACK300	195-260-395	.004-.008-.012	260-395-525	.004-.008-.016	330-490-655	.004-.006-.008
N	Non-ferrous Metal	H1, DL1000	655-1640-3280	.004-.008-.012	655-1640-3280	.004-.012-.016	655-1640-3280	.008-.016-.024

N·m Recommended Tightening Torque (N·m)

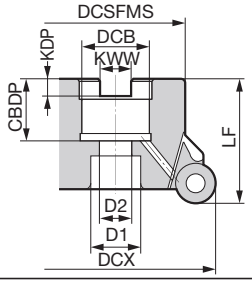
WRCX(F) Metric Shellmill Type -12mm

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle		
	Radial	0°
	Axial	-3°

6mm | .236"

Fig 1



Body (Standard Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WRCX12040RS	★	40	36	40	16	8.4	5.6	18	13.5	9	4	0.2	1
	WRCX12050RS	★	50	40	40	22	10.4	6.3	20	18	11	4	0.2	1
	WRCX12063RS	★	63	40	40	22	10.4	6.3	20	18	11	5	0.4	1
	WRCX12080RS	★	*80	55	50	27	12.4	7.0	25	20	13.5	6	0.9	1

Inserts are sold separately.

Body (Fine Pitch Type)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	WRCXF12050RS	★	50	40	40	22	10.4	6.3	20	18	11	5	0.2	1
	WRCXF12063RS	★	63	40	40	22	10.4	6.3	20	18	11	6	0.4	1

Inserts are sold separately.

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

★Worldwide Warehouse Item

Insert (Common)

Dimensions (mm)

Grade		Coated Carbide					Carbide	DLC				
Process	High-speed / Light	P			K		K/N	N				
	General-purpose		P/M	P/M	K			N				
	Roughing		P/M	P/M		K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Nose Radius RE	Thickness S	Fig
General-purpose*	QPMT120440 PPEN		●	●	●	●	-	-	12	4.0	4.76	1
	QPMT120440 PPEN-H		●	●	●	●	-	-	12	4.0	4.76	1
For Non-Ferrous Metals	QPET120460 PPFR-S	-	-	-	-	-	●	●	12	6.0	4.76	2
Surfing	QPMT120460 PPER-R		★	★			-	-	12	6.0	4.76	3

*: -H at the end indicates strong edge type.

Fig 1

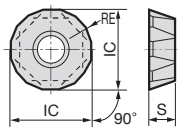


Fig 2 For Non-Ferrous Metals

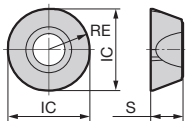
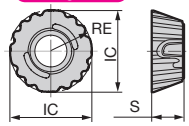


Fig 3 Surfing Insert



Parts

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

Recommended Cutting Conditions

External Diameter ø40 to ø80 mm

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100 - 200	0.20 - 0.60	ACP200
	Alloy Steel	180 to 280 HB	100 - 180	0.20 - 0.40	ACP200
M	Stainless Steel	-	80 - 160	0.10 - 0.30	ACP300
K	Cast Iron	250HB	80 - 160	0.10 - 0.40	ACK200
N	Non-ferrous Metal	-	200 - 1,000	0.10 - 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.

N·m Recommended Tightening Torque (N·m)

Wave Radius Mill

WRCX(F) Metric Shellmill -16mm Inserts

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle	Radial	0°
	Axial	-3°

8mm | .315"

Fig 1

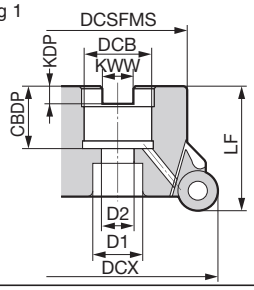
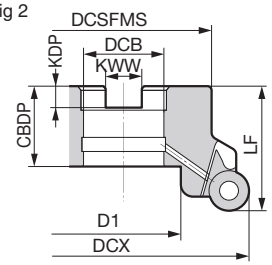


Fig 2



Body (WRCX16000RS / R)

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX16063RS**	★	63	50	40	22	10.4	6.3	20	18	11	3	0.4	1
	WRCX16080RS	★	*80	55	50	27	12.4	7.0	25	20	13.5	4	0.8	1
	WRCX16100RS	★	100	70	50	32	14.4	8.5	32	46	-	5	1.2	2
	WRCX16080R	★	80	55	50	25.4	9.5	6.0	25	20	13	4	0.8	1
	WRCX16100R	★	100	70	63	31.75	12.7	8.0	32	46	17	5	1.4	1

Inserts are sold separately.

Body (WRCXF16000RS / R) Fine Pitch

Dimensions (mm)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCXF16063RS**	★	63	50	40	22	10.4	6.3	20	18	11	4	0.4	1
	WRCXF16080RS	★	*80	55	50	27	12.4	7.0	25	20	13.5	5	0.7	1
	WRCXF16100RS	★	100	70	50	32	14.4	8.5	32	46	-	6	1.2	2

Inserts are sold separately.

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

Insert

★Worldwide Warehouse Item ● USA stocked item

Dimensions (mm)

Grade		Coated Carbide					Carbide	DLC				
Process	High-speed / Light	P			K		K N	N				
	General-purpose		P M	P M	K			N				
	Roughing		P M	P M		K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Nose Radius RE	Thickness S	Fig
General-purpose*1	**QPMT160660 PPEN**		●	●	●	●	-	-	16	6.0	6.5	1
	QPMT160660 PPEN-H		●	●	●	●	-	-	16	6.0	6.5	1
Anti-Vibration*2	**QPMT160608 PPEN**		●	●	●	●	-	-	16	0.8	6.5	1
	QPMT160608 PPEN-CP		●	●	●	●	-	-	16	0.8	6.5	2
For Non-Ferrous Metals	**QPET160680 PPFR-S**	-	-	-	-	-	●	●	16	8.0	6.5	3
Surfing	**QPMT160680 PPER-R**		★	★			-	-	16	8.0	6.5	4

*1: -H at the end indicates strong edge type.
*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Fig 1

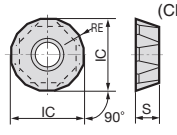


Fig 2 (CP Type)

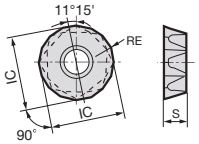


Fig 3 For Non-Ferrous Metals

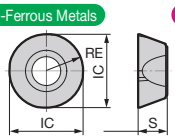
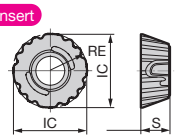


Fig 4 Surfing Insert



Parts

Flat Screw		Wrench	Anti-seize Cream
	N·m		
BFTX0511IP	5.0	TRDR20IP	SUMI-P

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

Diameter *ø40 to ø80 mm*

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100 -200	0.20-0.60	ACP200
	Alloy Steel	180 to 280 HB	100 -180	0.20-0.40	ACP200
M	Stainless Steel	-	80 -160	0.10-0.30	ACP300
K	Cast Iron	250HB	80 -160	0.10-0.40	ACK200
N	Non-ferrous Metal	-	200 -1,000	0.10-0.40	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	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 -250	0.30-0.60	ACP200
	Alloy Steel	180 to 280 HB	100 -200	0.10-0.50	ACP200
M	Stainless Steel	-	160 -200	0.15-0.30	ACP300
K	Cast Iron	250HB	100 -200	0.10-0.20	ACK200
N	Non-ferrous Metal	-	200 -1,000	0.20-0.60	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.

WRCX Metric Shellmill - *20mm* Inserts

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	0°
	Axial	-3°

10mm | 0.394"

Fig 1

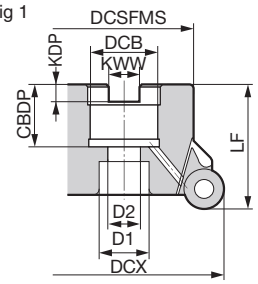
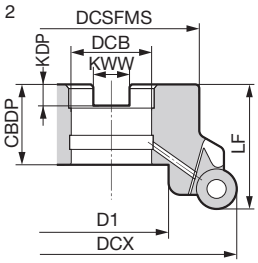


Fig 2



Body (WRCX20000R)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Boss DCSFMS	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**WRCX20125R**	★	*125*	*80*	*63*	*38.1*	*15.9*	*10.0*	*35.5*	*55*	*30*	5	*2.3*	1
	WRCX20160R	★	*160*	*100*	*63*	*50.8*	*19.1*	*11.0*	*38*	*72*	-	6	*4.0*	2

Inserts are sold separately.

Insert

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		Coated Carbide					Carbide	DLC				
Process	High-speed / Light	P			K		K N	N				
	General-purpose		P M	P M	K			N				
	Roughing		P M	P M		K						
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Nose Radius RE	Thickness S	Fig
General-purpose*1	**QPMT200670PPEN**		●	●	●	●	-	-	20	7.0	6.5	1
	QPMT200670PPEN-H		●	●	●	●	-	-	20	7.0	6.5	1
Anti-Vibration*2	**QPMT200608PPEN**		●	●	●	●	-	-	20	0.8	6.5	1
	QPMT200608PPEN-CP		●	●	●	●	-	-	20	0.8	6.5	2
Surfing	**QPMT2006100PPER-R**		★	★			-	-	20	10.0	6.5	3

Fig 1

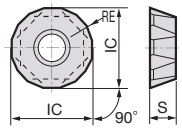


Fig 2 (CP Type)

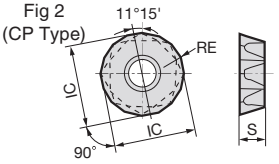
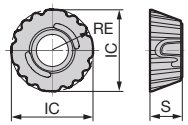


Fig 3

Surfing Insert



*1: -H at the end indicates strong edge type.

*2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

Parts

Flat Screw		Wrench	Anti-seize Cream
	N·m		
BFTX0615IP	7.5	TRDR25IP	SUMI-P

Recommended Cutting Conditions

Diameter *ø100 to ø160mm*

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	150 -250	0.30-0.60	ACP200
	Alloy Steel	180 to 280 HB	100 -200	0.10-0.50	ACP200
M	Stainless Steel	-	160 -200	0.15-0.30	ACP300
K	Cast Iron	250HB	100 -200	0.10-0.20	ACK200
N	Non-ferrous Metal	-	200 -1,000	0.20-0.60	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)

Wave Radius Mill

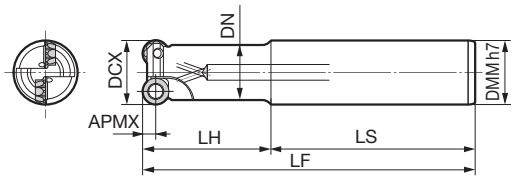
WRCX Endmill Metric - *8mm/ 10mm/ 16mm* Inserts

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

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

4mm (08000E Type) | .157" (10000E Type) | 5mm (16000E Type) | .197" | 8mm | .315"

Fig 1



Body (WRCX08000E) Applicable Insert IC = *8mm*

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX08020ES	★	20	20	18	4	50	80	130	2	0.2	1
WRCX08020EM	★	20	20	18	4	100	80	180	2	0.3	1
WRCX08020EL		20	20	18	4	130	120	250	2	0.5	1
WRCX08025ES	★	25	25	21	4	50	80	130	3	0.4	1
WRCX08025EM	★	25	25	21	4	100	80	180	3	0.5	1
WRCX08025EL		25	25	21	4	130	120	250	3	0.7	1

Body (WRCX10000E) Applicable Insert IC = *10mm*

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX10025ES	★	25	25	21	5	50	80	130	2	0.4	1
WRCX10025EM	★	25	25	21	5	100	80	180	2	0.5	1
WRCX10025EL		25	25	21	5	130	120	250	2	0.7	1
WRCX10032ES	★	32	32	28	5	50	80	130	3	0.7	1
WRCX10032EM	★	32	32	28	5	120	80	200	3	1.0	1
WRCX10032EL		32	32	28	5	180	120	300	3	1.5	1

Body (WRCX16000E) Applicable Insert IC = *16mm*

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Shank DMM	Diameter DN	Max. Depth of Cut APMX	Head LH	Shank LS	Overall Length LF	Number of Teeth	Weight (kg)	Fig
WRCX16040ES	★	40	32	31.3	8	50	120	170	2	0.9	1
WRCX16040EM	★	40	32	31.3	8	50	200	250	2	1.4	1
WRCX16050ES	★	50	32	40.8	8	50	120	170	3	1.0	1
WRCX16050EM	★	50	32	40.8	8	50	200	250	3	1.5	1

Inserts are sold separately.

Parts

Applicable Cutters	Flat Screw	N·m	Wrench
WRCX08000E	BFTX02506IP	1.5	TRDR08IP
WRCX10000E	BFTX03584IP	3.0	TRDR15IP
WRCX16000E	BFTX0511IP	5.0	TRDR20IP

Recommended Cutting Conditions

Diameter *ø20 to ø32mm*

ISO	Part Material	Hardness	Cutting Speed v_c (m/min) Min. - **Optimum** - Max.	Feed Rate f_z (mm/t) Min. - **Optimum** - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	80-**120**-160	0.10-**0.30**-0.40	ACP200
	Alloy Steel	180 to 280 HB	60-**100**-140	0.10-**0.20**-0.30	ACP200
M	Stainless Steel	-	60-**100**-120	0.10-**0.15**-0.20	ACP300
K	Cast Iron	250HB	60- **80** -120	0.10-**0.20**-0.30	ACK200
N	Non-ferrous Alloys	-	200-**500**-1,000	0.10-**0.20**-0.30	DL1000

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

Diameter *ø40 to ø50 mm*

ISO	Part 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

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

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

Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Corner Radius RE	Thickness S	Fig	Applicable Cutter
General-purpose*1	**QPMT080330PPEN**		●	●	●	●	-	-	8	3.0	3.18	1	WRCX08000E
	QPMT080330PPEN-H		●	●	●	●	-	-	8	3.0	3.18	1	
	QPMT10T335PPEN		●	●	●	●	-	-	10	3.5	3.97	1	WRCX10000E
	QPMT10T335PPEN-H		●	●	●	●	-	-	10	3.5	3.97	1	
	QPMT160660PPEN		●	●	●	●	-	-	16	6.0	6.5	1	WRCX16000E
	QPMT160660PPEN-H		●	●	●	●	-	-	16	6.0	6.5	1	
Anti-Vibration*2	**QPMT160608PPEN**		●	●	●	●	-	-	16	0.8	6.5	1	WRCX16000E
	QPMT160608PPEN-CP		●	●	●	●	-	-	16	0.8	6.5	2	
For Non-Ferrous Metals	**QPET10T350PPFR-S**	-	-	-	-	-	●	●	10	5.0	3.97	3	WRCX10000E
	QPET160680PPFR-S	-	-	-	-	-	●	●	16	8.0	6.5	3	WRCX16000E
Surfing	**QPMT160680PPER-R**		★	★			-	-	16	8.0	6.5	4	WRCX16000E

Fig 1

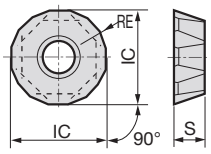


Fig 2 (CP Type)

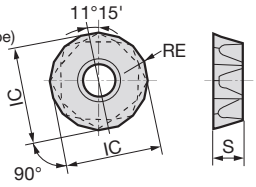


Fig 3 For Non-Ferrous Metals

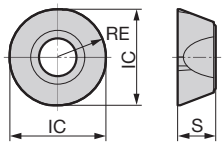
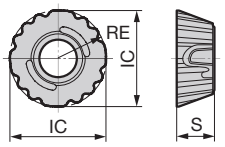


Fig 4 Surfing Insert



*1: -H at the end indicates strong edge type. *2: For insert arrangements in anti-vibration applications, place the 08 type and 08-CP type alternately.

N·m Recommended Tightening Torque (N·m)

WRCX Modular - *8mm / 10mm / 12mm* Inserts

SEC-Modular Tools

P Steel | M Stainless Steel | K Cast Iron | N Aluminum Alloy

Rake Angle		
	Radial	0°
	Axial	-3°

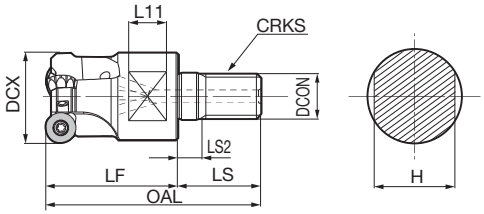
4mm (08000M) | 5mm (10000M) | 6mm (12000M)

WRCX08000M Type

WRCX10000M Type

WRCX12000M Type

Fig 1



Head (WRCX 08000M) Applicable Insert IC = *8mm*

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Mounting Dia DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
WRCX08020M10Z2	★	20	10.5	**M10**	49	30	5	19	8	15	2	1
WRCX08025M12Z3	★	25	12.5	**M12**	56	35	5	21	10	19	3	1

Inserts are sold separately.

Head (WRCX 10000M) Applicable Insert IC = *10mm*

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Mounting Dia DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
WRCX10025M12Z2	★	25	12.5	**M12**	56	35	5	21	10	19	2	1
WRCX10028M12Z2	★	28	12.5	**M12**	56	35	5	21	10	19	2	1
WRCX10030M16Z3	★	30	17.0	**M16**	63	40	5	23	10	24	3	1
WRCX10032M16Z3	★	32	17.0	**M16**	63	40	5	23	10	24	3	1

Inserts are sold separately.

Head (WRCX 12000M) Applicable Insert IC = *12mm*

Dimensions (*mm*)

Cat. No.	Stock	Max. Dia. DCX	Mounting Dia DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Fig
WRCX12040M16Z4	★	40	17.0	**M16**	63	40	5	23	10	24	4	1

Inserts are sold separately. ★ Worldwide Warehouse item

Parts

Applicable Endmill	Flat Screw		Wrench
		N·m	
WRCX08000M	BFTX02506IP	**1.5**	TRDR08IP
WRCX10000M	BFTX03584IP	**3.0**	TRDR15IP
WRCX12000M	BFTX0409IP	**3.0**	TRDR15IP

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

Identification Code

WRCX 08 020 M10 Z2

Cutter Series | Insert Size | Dia. | Mounting Screw Size | Number of Teeth

Insert

Dimensions (*mm*)

Grade		Coated Carbide					Carbide	DLC					
Process	High-speed / Light	P			K		K N	N					
	General-purpose		P M	P M	K			N					
	Roughing		P M	P M		K							
Applications	Cat. No.	ACP100	ACP200	ACP300	ACK200	ACK300	H1	DL1000	Inscribed Circle IC	Nose Radius RE	Thickness S	Applicable Endmill	Fig
General-purpose *1	**QPMT080330 PPEN**		●	●	●	●	-	-	8	3.0	3.18	WRCX08000M Type	1
	QPMT080330 PPEN-H		●	●	●	●	-	-					1
	QPMT10T335 PPEN		●	●	●	●	-	-	10	3.5	3.97	WRCX10000M Type	1
	QPMT10T335 PPEN-H		●	●	●	●	-	-					1
	QPMT120440 PPEN		●	●	●	●	-	-	12	4.0	4.76	WRCX12000M Type	1
	QPMT120440 PPEN-H		●	●	●	●	-	-					1
For Non-Ferrous Metals	**QPET10T350 PPFR-S**	-	-	-	-	-	●	●	10	5.0	3.97	WRCX10000M Type	2
	QPET120460 PPFR-S	-	-	-	-	-	●	●	12	6.0	4.76	WRCX12000M Type	2
Surfing	**QPMT120460 PPER-R**		●	●			-	-	12	6.0	4.76	WRCX12000M Type	3

*1 -H at the end means the strong edge type.

Fig 1

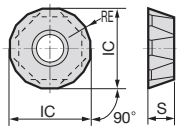


Fig 2

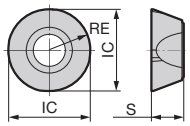
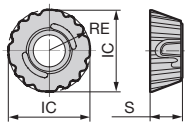


Fig 3

Surfing Insert



Recommended Cutting Conditions

O.D. *ø20 to ø32mm*

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180to 280 HB	80-160	0.10-0.40	ACP200
	Alloy Steel	180to 280 HB	60-140	0.10-0.30	ACP200
M	Stainless Steel	-	60-120	0.10-0.20	ACP300
K	Cast Iron	250HB	60-120	0.10-0.30	ACK200
N	Non-ferrous Metal	-	200-1,000	0.10-0.30	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.

O.D. *ø40mm*

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180to 280 HB	100-200	0.20-0.60	ACP200
	Alloy Steel	180to 280 HB	100-180	0.20-0.40	ACP200
M	Stainless Steel	-	80-160	0.10-0.30	ACP300
K	Cast Iron	250HB	80-160	0.10-0.40	ACK200
N	Non-ferrous Metal	-	200-1,000	0.10-0.40	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.

N·m Recommended Tightening Torque (N·m)

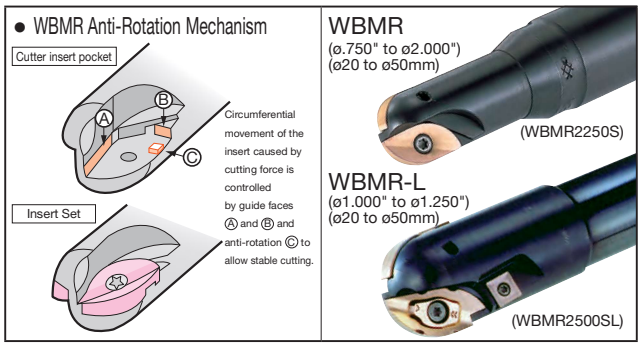
3D Profile Roughing

■ WBMR2000 / 2000L (ø.750" to ø2.000")

- 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, enabling easier tool management

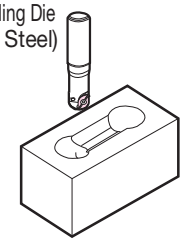
■ General Features

A lineup of ø.750" to ø2.000" ballnose endmill models for 3D profile roughing of die molds and machine parts.



■ Application Examples

● Cold Molding Die (D3 Tool Steel)



Evaluation
Flank wear width after continuous cutting for seven hours was less than competitor's product. Stable cutting was observed.

WBMR2200S (ø20)
Insert Grade: ACZ350
Cutting Conditions
n = 2,200min^{-1}
v_f = 500mm/min
Depth of Cut: 0.3 to 2mm
Insoluble Cutting Oil

■ Spare Parts

Endmill Cat. No. □ indicates S/M/L	Part Name	Short Edge For Tip Insert	Long Edge (-L) For Tip Insert	Long Edge (-L) For Peripheral Insert
WBMR2200□(L)	Flat Screw	BFTX0307N (N·m) 2.0		
	Wrench	TRX10		
WBMR2250□(L)	Flat Screw	BFTX0409N (N·m) 3.0		
	Wrench	TRD15		
WBMR2300□(L)	Flat Screw	BFTX0511N (N·m) 5.0		BFTX0407N (N·m) 3.0
	Wrench	TRD20		TRD15
WBMR2400□(L)	Flat Screw	BFTX0619N (N·m) 7.5		BFTX0409N (N·m) 3.0
	Wrench	TRD25		TRD15
WBMR2500□(L) WBMR2500□(L)-C	Flat Screw	BFTX0619N (N·m) 7.5		BFTX0409N (N·m) 3.0
	Wrench	TRD25		TRD15

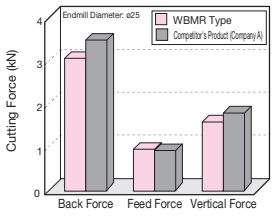
SUMI-P Anti-seize cream included in the package.

Inch Hardware

Catalog Number	Screw	Wrench
WBMR075□X	BFTX0307N	TRX10
WBMR100□X	BFTX0409N	TRD15
WBMR125□X	BFTX0511N	TRD20
WBMR150□X	BFTX0619N	TRD25
WBMR200□X	BFTX0619N	TRD25

■ Performance

● Cutting Force



Part Material: 1050 Steel
Cutting Conditions
(Shoulder Milling, Down Cut)
vc = 656 SFM
fz = 0.006 IPT
Axial Depth of Cut 0.197"
Radial Depth of Cut 0.197"

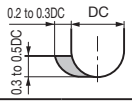
Recommended Cutting Conditions

(A) Tip insert only (Inch)

ISO	Part Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	330 - 660	0.004" - 0.012"	ACP200
	Alloy Steel	180 to 280 HB	230 - 400	0.004" - 0.012"	ACP200
M	Stainless Steel, Die Steel	-	165 - 330	0.004" - 0.008"	ACP300
K	Cast Iron	250HB	330 - 500	0.008" - 0.016"	ACK300

(A) Tip insert only (Metric)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-200	0.10-0.30	ACP200
	Alloy Steel	180 to 280 HB	70-120	0.10-0.30	ACP200
M	Stainless Steel, Die Steel	-	50-100	0.10-0.20	ACP300
K	Cast Iron	250HB	100-150	0.20-0.40	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.

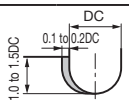
Recommended Cutting Conditions

(B) Tip insert and peripheral insert (Inch)

ISO	Part Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	265 - 500	0.004" - 0.012"	ACP200
	Alloy Steel	180 to 280 HB	165 - 330	0.004" - 0.012"	ACP200
M	Stainless Steel, Die Steel	-	135 - 265	0.004" - 0.008"	ACP300
K	Cast Iron	250HB	265 - 400	0.008" - 0.016"	ACK300

(B) Tip insert and peripheral insert (Metric)

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	80-150	0.10-0.30	ACP200
	Alloy Steel	180 to 280 HB	50-100	0.10-0.30	ACP200
M	Stainless Steel, Die Steel	-	40-80	0.10-0.20	ACP300
K	Cast Iron	250HB	80-120	0.20-0.40	ACK300



(N·m) Recommended Tightening Torque (N·m)

WBMR Endmill

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	-
	Axial	-10°

20~47 mm | .787" to 1.85"

Fig 1

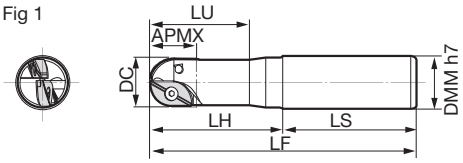
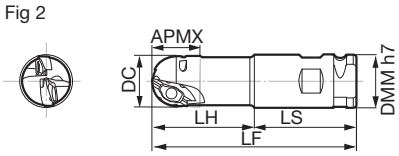


Fig 2



Note: Fig. 2 shows a combination clamped shank diagram (2500□-C).

Body

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Length LU	Overall Length LF	Fig
Inch	**WBMR075SX**	●	0.750	1.000	0.752	2.285	2.261	1.181	4.546	2
	WBMR075MX	●	0.750	1.000	0.752	3.785	2.261	1.181	6.046	2
	WBMR075LX	●	0.750	1.000	0.752	5.285	2.261	1.181	7.546	2
	WBMR100SX	●	1.000	1.250	0.917	2.535	2.261	1.378	4.796	2
	WBMR100MX	●	1.000	1.250	0.917	4.285	2.261	1.378	6.546	2
	WBMR100LX	●	1.000	1.250	0.917	6.035	2.261	1.378	8.296	2
	WBMR100LCX	●	1.000	1.250	0.917	2.535*	9.215**	1.378	11.75	1
	WBMR125SX	●	1.250	1.250	1.228	2.535	2.261	1.693	4.796	2
	WBMR125MX	●	1.250	1.250	1.228	4.535	2.261	1.693	6.796	2
	WBMR125LX	●	1.250	1.250	1.228	6.535	2.261	1.693	8.796	2
	WBMR125LCX	●	1.250	1.250	1.228	2.535*	11.215**	1.693	13.75	1
	WBMR150SX	●	1.500	1.500	1.543	2.535	2.688	1.94	5.223	2
	WBMR150MX	●	1.500	1.500	1.543	4.535	3.244	3.688	7.779	2
	WBMR150LX	●	1.500	1.500	1.543	6.535	3.244	5.488	9.779	2
	WBMR200SX	●	2.000	2.000	1.862	2.785	3.244	2.256	6.029	2
	WBMR200MX	●	2.000	2.000	1.862	5.035	3.244	4.138	8.279	2
	WBMR200LX	●	2.000	2.000	1.862	7.285	3.244	6.163	10.529	2
Metric	**WBMR2200S**	★	*20*	*25*	*20*	*60*	*80*	*40*	*140*	1
	WBMR2200M	★	*20*	*25*	*20*	*60*	*140*	*40*	*200*	1
	WBMR2200L	★	*20*	*25*	*20*	*80*	*170*	*40*	*250*	1
	WBMR2250S	★	*25*	*32*	*23*	*70*	*80*	*50*	*150*	1
	WBMR2250M	★	*25*	*32*	*23*	*73*	*147*	*50*	*220*	1
	WBMR2250L	★	*25*	*32*	*23*	*100*	*200*	*50*	*300*	1
	WBMR2300S	★	*30*	*32*	*28*	*80*	*80*	*60*	*160*	1
	WBMR2300M	★	*30*	*32*	*28*	*85*	*155*	*60*	*240*	1
	WBMR2300L	★	*30*	*32*	*28*	*120*	*230*	*60*	*350*	1
	WBMR2400S	★	*40*	*42*	*35*	*100*	*100*	-	*200*	1
	WBMR2400M	★	*40*	*42*	*35*	*180*	*100*	-	*280*	1
	WBMR2400L	★	*40*	*42*	*35*	*250*	*100*	-	*350*	1
	WBMR2500S	★	*50*	*42*	*47*	*100*	*100*	-	*200*	1
	WBMR2500M	★	*50*	*42*	*47*	*180*	*100*	-	*280*	1
	WBMR2500L	★	*50*	*42*	*47*	*250*	*100*	-	*350*	1
	WBMR2500S-C	★	*50*	*50.8*	*47*	*100*	*100*	-	*200*	2
	WBMR2500M-C	★	*50*	*50.8*	*47*	*180*	*100*	-	*280*	2
	WBMR2500L-C	★	*50*	*50.8*	*47*	*250*	*100*	-	*350*	2

Inserts are sold separately.

Insert

Dimensions (*mm*)

Fig 1

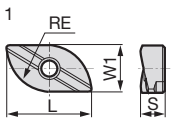


Fig 2

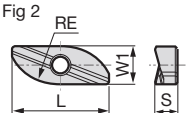


Fig 3

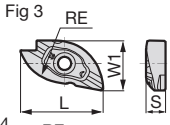
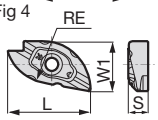


Fig 4



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

Cat. No.	ACP200	ACP300	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill	Remarks
ZNMT1804100-C	★	★	★	18.00	9.76	4.76	10	1	WBMR 2200□	· Tip inserts are used in combination according to Fig. 1 & 2.
ZNMT2004100-S	★	★	★	20.00	7.50	4.37	10	2		
ZNMT2205125-C	★	★	★	22.50	12.20	5.70	12.5	1	WBMR 2250□	· Tip inserts are used in combination according to Fig. 1 & 2.
ZNMT2305125-S	★	★	★	23.00	9.38	5.56	12.5	2		
ZNMT2706150-C	★	★	★	27.00	14.64	6.75	15	1	WBMR 2300□	· Tip inserts are used in combination according to Fig. 1 & 2.
ZNMT2806150-S	★	★	★	28.00	11.25	6.35	15	2		
ZNMT3608200	★	★	★	36.00	19.50	8.65	20	3	WBMR 2400□	· Use two of the items shown in Fig. 4 as the tip inserts.
ZNMT4310250	★	★	★	43.00	25.70	10.15	25	3	WBMR 2500□	· Use two of the items shown in Fig. 4 or Fig. 5 (nicked) as the tip inserts.
ZNMT4310250-N	★	★	★	43.00	25.70	10.15	25	4		

● USA stocked item ★ Worldwide Warehouse item

Insert

Dimensions (inch)

Fig 1

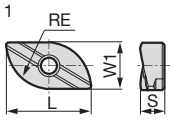


Fig 2

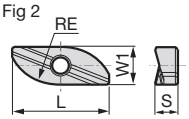
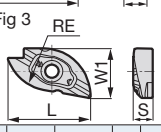


Fig 3



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

Cat. No.	ACP200	ACP300	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill
ZNMT3CX	●	●	●	0.720	0.361	0.189	0.375	1	WBMR075□
ZNMT3SX	●	●	●	0.795	0.280	0.167	0.375	2	
ZNMT4CX	●	●	●	0.887	0.480	0.224	0.500	1	WBMR100□
ZNMT4SX	●	●	●	0.913	0.369	0.217	0.500	2	
ZNMT5CX	●	●	●	1.150	0.615	0.281	0.625	1	WBMR125□
ZNMT5SX	●	●	●	1.185	0.472	0.263	0.625	2	
ZNMT6X	●	●	●	1.430	0.781	0.348	0.750	3	WBMR150□
ZNMT8X	●	●	●	1.705	1.012	0.400	1.000	3	WBMR200□

WaveBall (Long Roughing)

WBMR Endmill

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	-
	Axial	-10°

30 to 69 mm | 1.18" to 2.72"

Fig 1

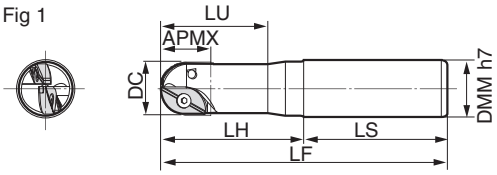


Fig 2

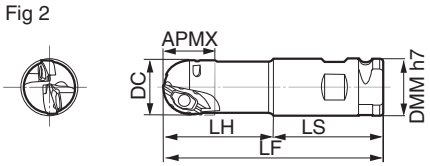
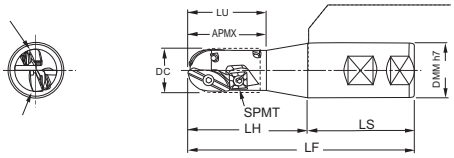


Fig 3 shown with SPMT insert



Note: Fig. 2 shows a combination clamped shank diagram (2500□-C).

Body

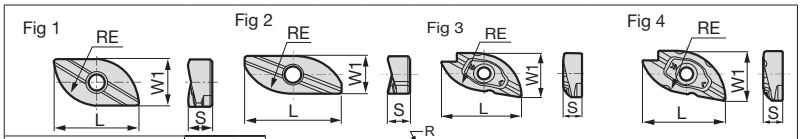
Dimensions (inch / *mm*)

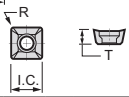
Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Length LU	Overall Length LF	Fig
WBMR100SLX	●	1.000	1.250	1.535	2.535	2.261	1.653	4.796	3
WBMR100MLX	●	1.000	1.250	1.535	4.285	2.261	1.653	6.546	3
WBMR100LLX	●	1.000	1.250	1.535	6.035	2.261	1.653	8.296	3
WBMR125SLX	●	1.250	1.250	1.835	2.535	2.261	1.968	4.796	3
WBMR125MLX	●	1.250	1.250	1.835	4.535	2.261	1.968	6.796	3
WBMR125LLX	●	1.250	1.250	1.835	6.535	2.261	1.968	8.796	3
WBMR2200SL	★	*20*	*25*	*30*	*60*	*80*	*40*	*140*	1
WBMR2200ML	★	*20*	*25*	*30*	*60*	*140*	*40*	*200*	1
WBMR2200LL	★	*20*	*25*	*30*	*80*	*170*	*40*	*250*	1
WBMR2250SL	★	*25*	*32*	*38*	*70*	*80*	*50*	*150*	1
WBMR2250ML	★	*25*	*32*	*38*	*73*	*147*	*50*	*220*	1
WBMR2250LL	★	*25*	*32*	*38*	*100*	*200*	*50*	*300*	1
WBMR2300SL	★	*30*	*32*	*42*	*80*	*80*	*60*	*160*	1
WBMR2300ML	★	*30*	*32*	*42*	*85*	*155*	*60*	*240*	1
WBMR2300LL	★	*30*	*32*	*42*	*120*	*230*	*60*	*350*	1
WBMR2400SL	★	*40*	*42*	*50*	*100*	*100*	-	*200*	1
WBMR2400ML	★	*40*	*42*	*50*	*180*	*100*	-	*280*	1
WBMR2400LL	★	*40*	*42*	*50*	*250*	*100*	-	*350*	1
WBMR2500SL	★	*50*	*42*	*69*	*100*	*100*	-	*200*	1
WBMR2500ML	★	*50*	*42*	*69*	*180*	*100*	-	*280*	1
WBMR2500LL	★	*50*	*42*	*69*	*250*	*100*	-	*350*	1
WBMR2500SL-C	★	*50*	*50.8*	*69*	*100*	*100*	-	*200*	2
WBMR2500ML-C	★	*50*	*50.8*	*69*	*180*	*100*	-	*280*	2
WBMR2500LL-C	★	*50*	*50.8*	*69*	*250*	*100*	-	*350*	2

Inserts are sold separately.

Insert

Dimensions (*mm*)





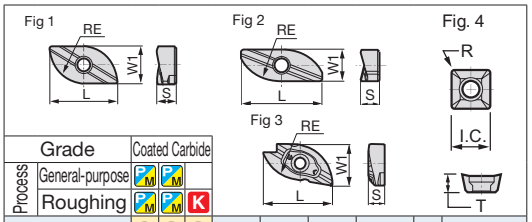
Grade		Coated Carbide		
Process	General-purpose	P M	P M	
	Roughing	P M	P M	K

Cat. No.	ACP200	ACP300	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill	Remarks
ZNMT1804100-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.
ZNMT2004100-S	★	★	★	20.00	7.50	4.37	10	2		
SPMT070308	★	★	★	7.94	-	3.18	-	3		
ZNMT2205125-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.
ZNMT2305125-S	★	★	★	23.00	9.38	5.56	12.5	2		
SPMT09T308	★	★	★	9.53	-	3.97	-	3		
ZNMT2706150-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.
ZNMT2806150-S	★	★	★	28.00	11.25	6.35	15	2		
SPMT09T308	★	★	★	9.53	-	3.97	-	3		
ZNMT3608200	★	★	★	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.
SPMT09T308	★	★	★	9.53	-	3.97	-	3		
ZNMT4310250	★	★	★	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.
ZNMT4310250-N	★	★	★	43.00	25.70	10.15	25	5		
SPMT120408	★	★	★	12.70	-	4.76	-	6		

● USA stocked item ★ Worldwide Warehouse item

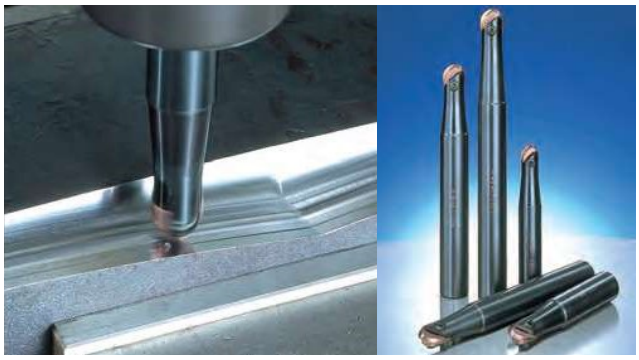
Insert

Dimensions (inch)



Grade		Coated Carbide		
Process	General-purpose	P M	P M	
	Roughing	P M	P M	K

Cat. No.	ACP200	ACP300	ACK300	Length L	Width W1	Thickness S	Nose Radius RE	Fig	Applicable Endmill
ZNMT3CX	●	●	●	0.720	0.361	0.189	0.375	1	WBMR075□
ZNMT3SX	●	●	●	0.795	0.280	0.167	0.375	2	
ZNMT4CX	●	●	●	0.887	0.480	0.224	0.500	1	WBMR100□
ZNMT4SX	●	●	●	0.913	0.369	0.217	0.500	2	
ZNMT5CX	●	●	●	1.150	0.615	0.281	0.625	1	WBMR125□
ZNMT5SX	●	●	●	1.185	0.472	0.263	0.625	2	
ZNMT6X	●	●	●	1.430	0.781	0.348	0.750	3	WBMR150□
ZNMT8X	●	●	●	1.705	1.012	0.400	1.000	3	WBMR200□
SPMT09T308	★	★	●	0.375	0.375	0.156	0.031	4	



■ General Features

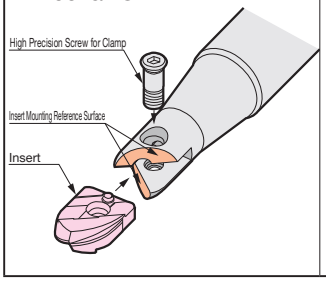
A lineup of ø0.5" to ø1.25" ballnose endmill models for 3D profile finishing of die molds and machine parts.

3D Profile Finishing

■ WBMF10000 Type (ø0.5" to ø1.25")

- 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

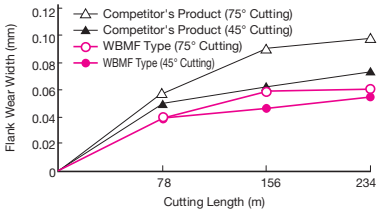
● WBMF Type clamp mechanism.



WBMF1000

■ Performance

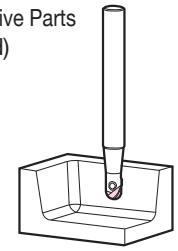
● Insert Life



Results
WBMF Type outperforms competitors' products in most processes including plan profiling, with better wear resistance.
Part Material: 1050
Machining Method: Ramping (45°, 75°)
Cutting Conditions
n = 2,000 RPM
v_f = 78.74 IPM
a_p = 0.012"
p_f = 0.024"
Dry

■ Application Examples

● Mold for Automotive Parts (Injection Mold)



Evaluation
Much better finishing as compared to competitors' products, with polishing time required reduced by half.
WBMF1000 Type
Work Material: 1055
Process: Contouring
Cutting Conditions
n = 2,500 RPM
v_f = 31.5 IPM
a_p = 0..028"
Overhang = 5.9"
Wet

Parts

Applicable Endmill	Precision Screw		Wrench
WBMF1100	BFTG0408F	N·m 3.0	TRD15
WBMF1120	BFTG0409F		
WBMF1160	BFTG0513F	N·m 5.0	TRD20
WBMF1200	BFTG0617F	N·m 7.5	TRD25
WBMF1250	BFTG0621F		
WBMF1300	BFTG0825F		

Hardware - Inch

Cat. Number	Screw	Wrench
WBMF10500□	BFTG0409F	TRD15
WBMF10625□	BFTG0513F	TRD20
WBMF10750□	BFTG0617F	TRD25
WBMF11000□	BFTG0621F	TRD25
WBMF11250□	BFTG0825F	TRD25

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	200-300	0.10-0.30	ACZ120
	Alloy Steel	180 to 280 HB	100-200	0.10-0.30	ACZ120

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	656-984	0.004"-0.012"	ACZ120
	Alloy Steel	180 to 280 HB	330-656	0.004"-0.012"	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.

WBMF Endmill Type

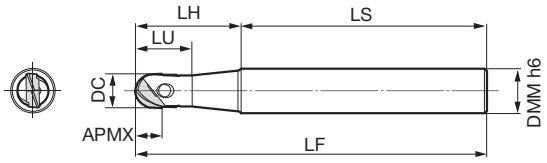
P Steel

Rake Angle	Radial	-
	Axial	0°

0.1 to 0.4 mm

.0039" to .016"

Fig 1



Body

Dimensions (inch /*mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Max. Depth of Cut APMX	Head LH	Shank LS	Length LU	Overall Length LF	Fig
Inch	**WBMF10500S**	•	0.5	0.625	0.427	1.772	1.906	0.782	3.678	1
	WBMF10500M	•	0.5	0.625	0.427	2.5222	1.906	0.782	4.428	1
	WBMF10500L	•	0.5	0.75	0.427	3.27	2.031	0.782	5.3	1
	WBMF10625S	•	0.625	0.75	0.47	1.77	2.0313	1	3.801	1
	WBMF10625M	•	0.625	0.75	0.47	2.52	2.0313	1	4.551	1
	WBMF10625L	•	0.625	1	0.47	3.265	2.2813	1	5.546	1
	WBMF10750S	•	0.75	1	0.572	2.265	2.2813	1.25	4.5459	1
	WBMF10750M	•	0.75	1	0.572	3.7647	2.2813	1.25	6.0459	1
	WBMF10750L	•	0.75	1	0.572	5.265	2.2813	1.25	7.546	1
	WBMF11000S	•	1	1.25	0.736	2.5117	2.2813	1.5	4.793	1
	WBMF11000M	•	1	1.25	0.736	4.265	2.2813	1.5	6.546	1
	WBMF11000L	•	1	1.25	0.736	6.0147	2.2813	1.5	8.296	1
	WBMF11250S	•	1.25	1.25	0.919	2.515	2.2813	1.75	4.796	1
	WBMF11250M	•	1.25	1.25	0.919	4.515	2.2813	1.75	6.796	1
	WBMF11250L	•	1.25	1.25	0.919	6.5147	2.2813	1.75	8.796	1
Metric	**WBMF1100S**	★	*10*	*16*	*9*	*30*	*70*	*17*	*100*	1
	WBMF1100M	★	*10*	*16*	*9*	*35*	*95*	*17*	*130*	1
	WBMF1100L	★	*10*	*16*	*9*	*50*	*130*	*17*	*180*	1
	WBMF1120S	★	*12*	*16*	*10.5*	*40*	*70*	*19.5*	*110*	1
	WBMF1120M	★	*12*	*16*	*10.5*	*40*	*110*	*19.5*	*150*	1
	WBMF1120L	★	*12*	*16*	*10.5*	*60*	*140*	*19.5*	*200*	1
	WBMF1160S	★	*16*	*20*	*12*	*50*	*80*	*25.5*	*130*	1
	WBMF1160M	★	*16*	*20*	*12*	*50*	*130*	*25.5*	*180*	1
	WBMF1160L	★	*16*	*20*	*12*	*70*	*150*	*25.5*	*220*	1
	WBMF1200S	★	*20*	*25*	*15*	*60*	*80*	*32*	*140*	1
	WBMF1200M	★	*20*	*25*	*15*	*60*	*140*	*32*	*200*	1
	WBMF1200L	★	*20*	*25*	*15*	*80*	*170*	*32*	*250*	1
	WBMF1250S	★	*25*	*32*	*18.5*	*70*	*80*	*36*	*150*	1
	WBMF1250M	★	*25*	*32*	*18.5*	*73*	*147*	*36*	*220*	1
	WBMF1250L	★	*25*	*32*	*18.5*	*100*	*200*	*36*	*300*	1
	WBMF1300S	★	*30*	*32*	*22.5*	*80*	*80*	*43*	*160*	1
	WBMF1300M	★	*30*	*32*	*22.5*	*85*	*155*	*43*	*240*	1
	WBMF1300L	★	*30*	*32*	*22.5*	*120*	*230*	*43*	*350*	1

Inserts are sold separately.

• USA stocked item ★ Worldwide Warehouse item

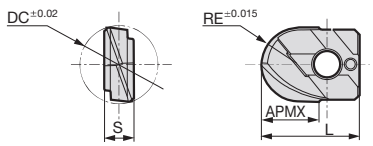
Insert

Dimensions (inch / *mm*)

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

Cat. No.	ACZ120	Dia. DC	Length L	Maximum Depth of Cut APMX	Thickness S	Nose Radius RE	Applicable Endmill	Fig
ZPGU2S	•	0.500	0.722	0.427	0.22	0.250	WBMF10500	1
ZPGU2.5S	•	0.625	0.805	0.470	0.24	0.313	WBMF10625	1
ZPGU3S	•	0.750	0.946	0.572	0.28	0.375	WBMF10750	1
ZPGU4S	•	1.000	1.130	0.736	0.30	0.500	WBMF11000	1
ZPGU5S	•	1.250	1.392	0.919	0.34	0.625	WBMF11250	1
ZPGU1551050	★	*10*	*15.6*	*9*	*5.1*	*5.0*	WBMF1100	1
ZPGU1856060	★	*12*	*18*	*10.5*	*5.6*	*6.0*	WBMF1120	1
ZPGU2061080	★	*16*	*20.5*	*12*	*6.1*	*8.0*	WBMF1160	1
ZPGU2471100	★	*20*	*24.5*	*15*	*7.1*	*10.0*	WBMF1200	1
ZPGU2876125	★	*25*	*28.5*	*18.5*	*7.6*	*12.5*	WBMF1250	1
ZPGU3486150	★	*30*	*34.4*	*22.5*	*8.6*	*15.0*	WBMF1300	1

Fig 1



• USA stocked item ★ Worldwide Warehouse item

N·m Recommended Tightening Torque (N·m)

■ Features

- ● Side Cutter Suitable For A Variety Of Applications
  Made-to-order bodies possible with cutting width of 17mm and up.
  Suitable for various applications such as groove milling and shoulder milling.
- ● Utilizes Low Resistance and Low Vibration Milling
  Design emphasizes cutting edge sharpness with +10° inclination angle.
  Excellent cutting edge sharpness suppresses chatter to enable stable machining.
- ● Excellent Machined Surface Quality
  Proprietary insert array design minimizes joint steps at the groove bottom for excellent machining quality.
- ● Neutral-handed 4-cornered Insert
  Easy management with neutral-handed insert design that eliminates the need to align right-hand and left-hand inserts.

■ Product Range (Body)

Body: Made-to-order (custom design)

Standard design

Multi-stage design

■ Chipbreaker

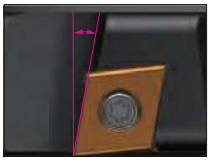
Work Material	P Steel, M stainless steel, K cast iron
Applications	General-purpose to roughing
Chipbreaker	G TGCX 13
Cutting Edge Cross Section	18°

Insert Cat. No.	Width of Cut CW (*mm*)						
	17	*21*	*22*	*22.8*	*23.7*	*24.6*	*Over 24.6*
TGCX130704PNEN-G	Standard design						Multi-stage design
TGCX130708PNEN-G	Standard design					Multi-stage design	
TGCX130712PNEN-G	Standard design				Multi-stage design		
TGCX130716PNEN-G	Standard design			Multi-stage design			
TGCX130720PNEN-G	Standard design		Multi-stage design				

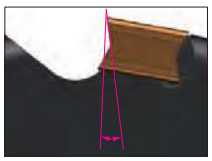
Standard design CW upper limit value varies with insert.

■ Sharp Edge Design

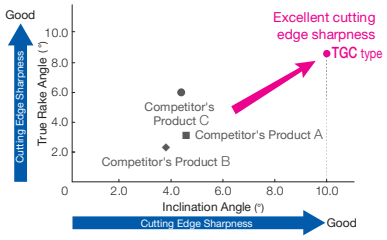
Design emphasizes cutting edge sharpness with +10° inclination angle.
Excellent cutting edge sharpness suppresses chatter to enable stable machining.

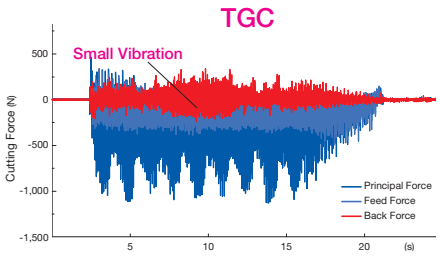


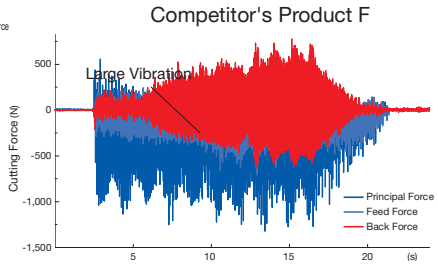
Inclination Angle



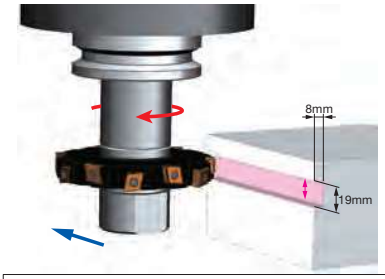
True Rake Angle

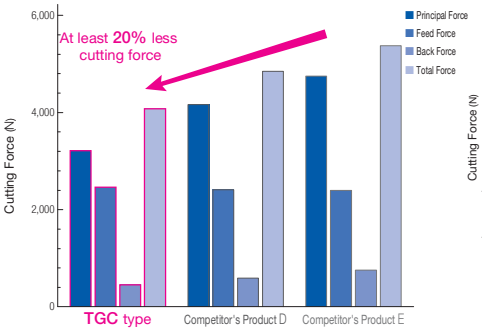






● Low Cutting Force





Machine : Vertical Machining Center BT50, Work Material: 1050 Steel
Tool : TGC 13125W19Z12RS
(*ø125mm*, Width of Cut *19mm*, 12 teeth)
Insert : TGCX 130708PNEN-G (ACU2500)
Cutting Conditions : vc = 660 SFM fz = .009 IPT
ap = .748" ae = .315",
Down Cut, Dry

Excellent cutting edge sharpness eliminates chatter to enable stable machining

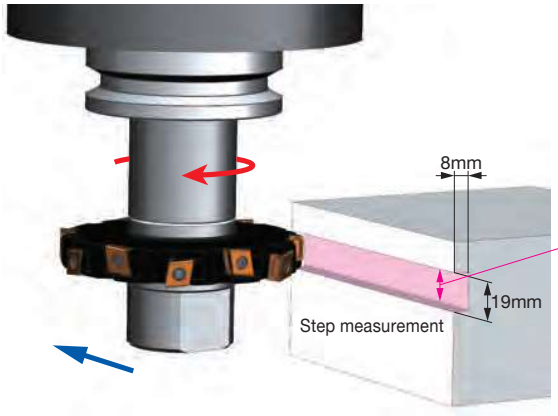
■ Product Range (Insert)

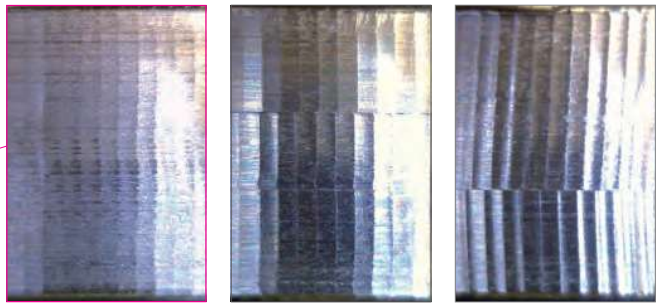
Cat. No.	Corner Radius RE (*mm*)				
	0.4	*0.8*	*1.2*	*1.6*	*2.0*
TGCX1307○○PNEN-G	★	★	★	★	★

★ Worldwide Warehouse item

● Small Joint Steps At Groove Bottom

Proprietary insert array design minimizes joint steps at groove bottom for excellent visual quality





TGC type	Competitor's Product A	Competitor's Product B
Less than 0.0004" step	Step 0.0010"	Step 0.00094"

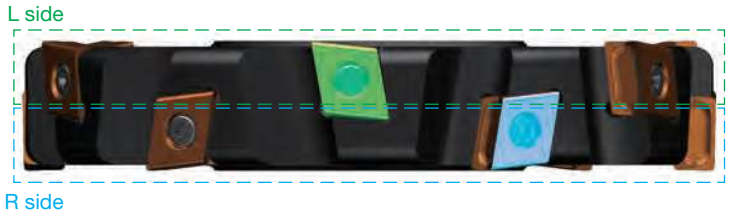
Machine	: Vertical Machining Centre BT50, Work Material: 1050
Tool	: TGC 13125W19Z12RS (ø125, Width of Cut 19mm, 12 teeth)
Insert	: TGCX 130708PNEN-G (ACU2500)
Cutting Conditions	: vc = 656 SFM, fz = 0.0078"/t, ap = 0.748", ae = 0.315", Down Cut, Dry

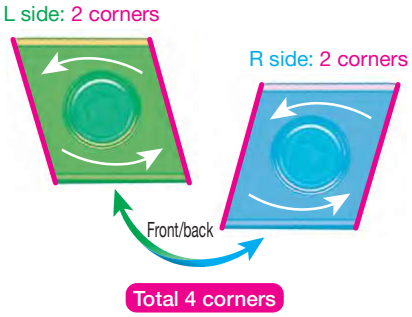
Excellent visual quality

*Results of in-house evaluation.

● Neutral-handed 4-cornered Insert

Easy management with neutral-handed insert design that eliminates the need to align right-hand and left-hand inserts



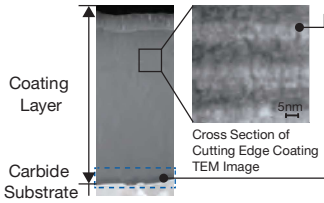


■ Grade Features

Work Material	Grade	Coating Thickness (μm)	Features
P M K S	ACU2500	3	Utilizes ABSOTECH™ coating technology with excellent wear and chipping resistance. Its carbide substrate, with excellent fracture and wear resistance, achieves stable and long tool life for a variety of work materials.

Coating Layer Features

ABSOTECH — PVD



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

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

■ Grade Application Range (TGC type)

Work Material		Finishing to Light Cutting	Medium Cutting	Rough to Heavy Cutting
P Steel	Coated Carbide	ACU2500		
M S	Coated Carbide	ACU2500		
K Cast Iron	Coated Carbide		ACU2500	

The letter "P" at the end of each grade indicates the coating type. ▲: PVD

TGC 13000

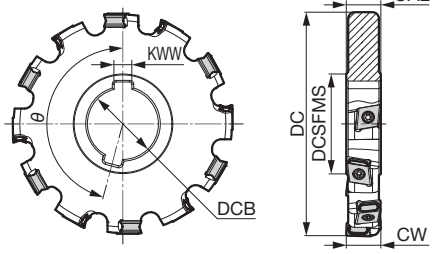
P Steel | M Stainless Steel | K Cast Iron

Rake Angle	Radial	-11.5° to -9.5°
	Axial	10°

17 to 24.6 mm | 90°

Face Milling | Shoulder Milling | Side Milling | Groove Milling | Back Spot Facing | Width Setting

Fig1



Body (Standard Disc Shape)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Width of Cut CW	Boss Thickness OAL	Hole Dia. DCB	Keyway Width KWW	Phase θ (°)	Total No. of Teeth	Weight (kg)	Fig
Metric	TGC13100W○○Z10RS		100	47	17 to 24.6	= CW	32	8	162	10	0.66 up	1
	TGC13125W○○Z12RS		125	55	17 to 24.6	= CW	40	10	165	12	1.29 up	1
	TGC13160W○○Z14RS		160	55	17 to 24.6	= CW	40	10	167.14	14	2.04 up	1
	TGC13200W○○Z16RS		200	69	17 to 24.6	= CW	50	12	168.75	16	3.33 up	1

Basic specifications have two keyways. (Also available with only one) Inserts are sold separately.
The upper limit of width of cut CW is the value of inserts with corner radius RE0.4. For the width of cut CW upper limit values for each corner radius RE, see the Insert Cat. No. Table.
Disc shapes other than the standard type can be designed.

Identification Code

TGC	13	125	W17	Z12	R	S
Series Code	Insert Size	Dia.	Width of Cut	Number of Teeth	Feed Direction	Metric Bore

Parts

Insert Screw		Wrench	Anti-seizure Cream
BFTX0412IP	3.0	TRDR15IP	SUMI-P

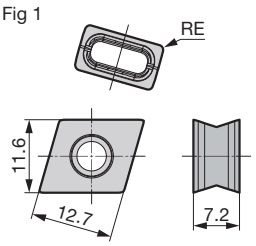
Insert

Dimensions (*mm*)

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

Cat. No.	ACU2500	Corner Radius RE	Width of Cut CW Upper Limit	Fig
TGCX130704PNEN-G	★	0.4	24.6	1
TGCX130708PNEN-G	★	0.8	23.7	1
TGCX130712PNEN-G		1.2	22.8	1
TGCX130716PNEN-G		1.6	22.0	1
TGCX130720PNEN-G		2.0	21.0	1

Fig 1



Recommended Cutting Conditions

ISO	Work Material	Hardness	Chipbreaker	Cutting Speed vc (SFM) Min. - Max.	Feed Rate fz (IPT) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280HB	G	330 - 984	0.004 - 0.010"	ACU2500
	Alloy Steel	180 to 280HB	G	262 - 855	0.004 - 0.010"	ACU2500
M	Stainless Steel	180 to 280HB	G	300 - 600	0.004 - 0.008"	ACU2500
K	Cast Iron/Ductile Cast Iron	250HB	G	330 - 984	0.004 - 0.010"	ACU2500

Note · The above figures are guidelines for simultaneous cutting with one R/L cutting tooth each, on a BT50 machine tool.
· The above recommended cutting conditions may require adjustment depending on machine rigidity and workpiece rigidity.

N·m Recommended Tightening Torque (N·m)

★Worldwide Warehouse item
Blank: Made-to-order item

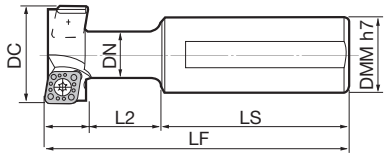
TSE

P Steel | M Stainless Steel | K Cast Iron

Rake Angle		
	Radial	0°
	Axial	0°

9 to 22 mm | 90°

Fig 1



Body

Dimensions (*mm*)

Cat. No.	Stock	Dia. DC	Diameter DN	Shank DMM	Width CW	Length L2	Shank LS	Overall Length LF	Number of Teeth	Fig
TSE2125	★	*21*	*10.5*	*25*	*9*	*20*	*80*	*109*	2	1
TSE2525	★	*25*	*12.5*	*25*	*11*	*21*	*80*	*112*	2	1
TSE3232	★	*32*	*16.5*	*32*	*14*	*26*	*80*	*120*	2	1
TSE4032	★	*40*	*20.5*	*32*	*18*	*32*	*80*	*130*	2	1
TSE5032	★	*50*	*26.5*	*32*	*22*	*38*	*80*	*140*	4	1

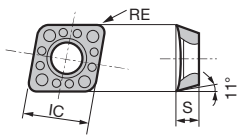
Inserts are sold separately.

Insert

Dimensions (*mm*)

	Grade		Coated Carbide	Carbide						
	Process	High-speed / Light								
		General-purpose	P M	P K	K					
		Roughing								
Cat. No. ANSI	ISO		AC630M	A30	G10E	Inscribed Circle IC	Thickness S	Nose Radius RE	Applicable Endmill	Fig
CPMT21.51ENS	**CPMT060204N-US**		•	•	•	6.35	2.38	0.4	TSE 2125	1
CPMT2.51.52ENS	**CPMT080308N-US**		•	•	•	7.938	3.18	0.8	TSE 2525	1
CPMT32.52ENX	**CPMT09T308N-US**		•	•	•	9.525	3.97	0.8	TSE 3232	1
CPMT432ENS	**CPMH120408N-US**		•	•	•	12.7	4.76	0.8	TSE 4032 TSE 5032	1

Fig 1



Parts

Flat Screw		Wrench	Applicable Endmill
BFTX02506N	N·m 1.5	TRX08	TSE2125
BFTX0307N	N·m 2.0	TRX10	TSE2525
BFTX0407N	N·m 3.0	TRX15	TSE3232
BFN0511T	N·m 5.0	TRX20	TSE4032 TSE5032

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
P	Carbon Steel	180 to 280 HB	100-150	0.05-0.10	AC630M
	Alloy Steel	180 to 280 HB	60-100	0.03-0.08	AC630M
K	Cast Iron	250HB	60-100	0.05-0.10	G10E

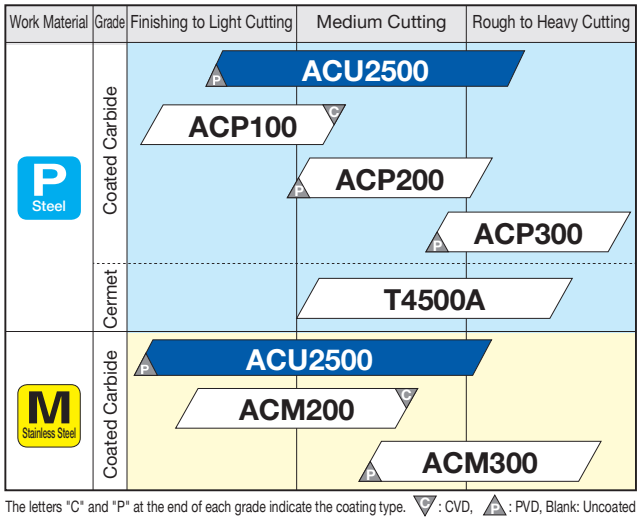
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

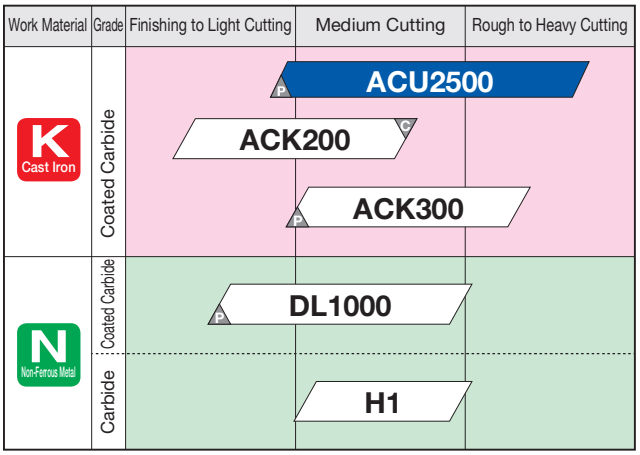
■ General Features

The WaveMill WFXC Series is a chamfering tool that uses a WFX series insert. A wide variety of grades support various work materials.

■ Grade Application Range



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

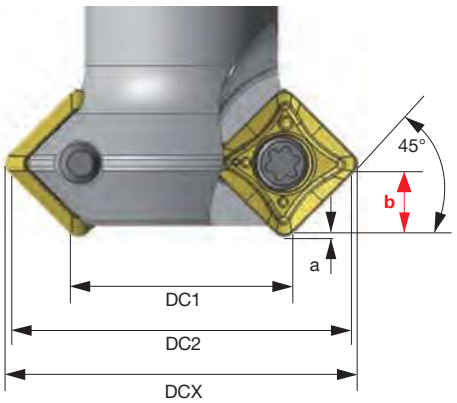


■ Precautions for Use

Chamfering tools use a straight cutting edge that enables the chamfering range to be changed depending on the nose radius (RE) of the insert mounted to the body.
Work diameter: Use within the range shown in the table below, no lower than DC1 and no higher than DC2.
Depth of cut: cutting to a depth shown by the distance from the tool tip (a) in a straight line to the cutting edge. (b) is possible.

Dimensions (*mm*)

Body	Insert		Min. Machining Dia.	Min. Machining Dia.	Minimum Depth	Maximum Depth	Maximum Dia.
	Cat. No.	RE	DC1	DC2	a	b	DCX
WFXC08008E	SOMT080304	0.4	7.5	15.8	0.1	4.1	17.8
	SOMT080308	0.8	8.0	15.8	0.2	3.9	17.5
	SOMT080312	1.2	8.5	15.8	0.4	3.6	17.2
WFXC08016E	SOMT080304	0.4	15.5	23.8	0.1	4.1	25.8
	SOMT080308	0.8	16.0	23.8	0.2	3.9	25.5
	SOMT080312	1.2	16.5	23.8	0.3	3.6	25.2
WFXC12025E	SOMT120404	0.4	24.6	38.3	0.1	6.8	41.3
	SOMT120408	0.8	25.0	38.3	0.2	6.6	41.0
	SOMT120412	1.2	25.6	38.3	0.4	6.3	40.7
	SOMT120416	1.6	26.1	38.3	0.5	6.1	40.4
WFXC12032E	SOMT120404	0.4	31.6	45.3	0.1	6.8	48.3
	SOMT120408	0.8	32.0	45.3	0.2	6.6	48.0
	SOMT120412	1.2	32.6	45.3	0.4	6.3	47.7
	SOMT120416	1.6	33.1	45.3	0.5	6.1	47.4



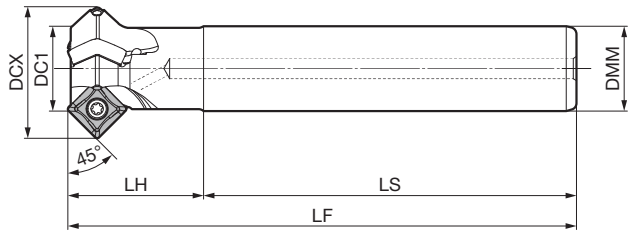
WFXC Endmill - *8mm* Inserts

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

Rake Angle		
	Radial	0°
	Axial	0°

45°

Fig 1



Body (Standard Type) Applicable Insert *8mm*

Dimensions (*mm*)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Overall Length LF	Head LH	Shank LS	Shank DMM	Number of Teeth	Weight (kg)	Fig
WFXC08008E	★	*8*	*17.5*	*120*	*30*	*90*	*10*	1	*0.1*	1
WFXC08016E	★	*16*	*25.5*	*120*	*30*	*90*	*16*	2	*0.2*	1

DC1 and DCX dimensions are values with an insert with 0.8 nose radius mounted.

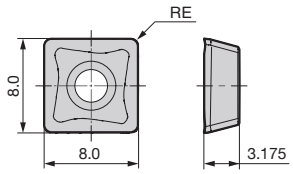
Insert

★Worldwide Warehouse Item

Dimensions (*mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet		
Process	High-speed / Light		P			K		M S		K N	N			
	General-purpose	K P M S		P M	P M	K		M S	M S		N	P		
	Roughing	K P M S		P M	P M		K		M S					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L		★	★	★	★	★	★	★	★	-	-		*0.4*	1
SOMT080308PZER-L			★	★	★	★	★	★	★	-	-		*0.8*	1
SOMT080304PZER-G		★	★	★	★	★	★	★	★	-	-		*0.4*	1
SOMT080308PZER-G		★	★	★	★	★	★	★	★	-	-		*0.8*	1
SOMT080312PZER-G		★	★	★	★	★	★	★	★	-	-		*1.2*	1
SOMT080308PZER-H		★	★	★	★	★	★	★	★	-	-		*0.8*	1
SOMT080312PZER-H		★	★	★	★	★	★	★	★	-	-		*1.2*	1
SOET080304PZER-G		★	★	★	★	★	★	★	★	-	-	★	*0.4*	1
SOET080308PZER-G		★	★	★	★	★	★	★	★	-	-	★	*0.8*	1
SOET080312PZER-G		★	★	★	★	★	★	★	★	-	-	★	*1.2*	1
SOET080302PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.2*	1
SOET080304PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.4*	1
SOET080308PZFR-S		-	-	-	-	-	-	-	-	★	★	-	*0.8*	1

Fig 1



Parts

Applicable Cutter	Flat Screw		Wrench
		N·m	
WFXC08000M	BFTX0306IP	2.0	TRDR08IP

SUMI-P Anti-seizure Cream is included in the package.

Identification Code

WFX C 08 016 E

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

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.
P	General Steel	180 to 280 HB	150-250	0.05-0.15
	Mild Steel	≤ 180HB	180-350	0.10-0.20
	Die Steel	200 to 220 HB	100-200	0.05-0.15
M	Stainless Steel	-	150-250	0.05-0.15
K	Cast Iron	250HB	100-250	0.05-0.15

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

N·m Recommended Tightening Torque (N·m)

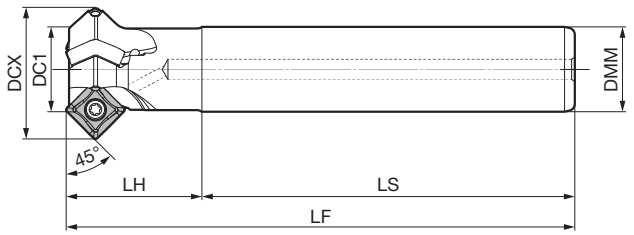
WFXC Endmill - *12mm* Inserts

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

Rake Angle		
	Radial	0°
	Axial	0°

45°

Fig 1



Body (Standard Type) Applicable Insert *12mm*

Dimensions (*mm*)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Overall Length LF	Head LH	Shank LS	Shank DMM	Number of Teeth	Weight (kg)	Fig
WFXC12025E	★	*25*	*41.0*	*150*	*40*	*110*	*25*	3	*0.6*	1
WFXC12032E	★	*32*	*48.0*	*150*	*40*	*110*	*32*	3	*1.0*	1

DC1 and DCX dimensions are values with an insert with 0.8 nose radius mounted.

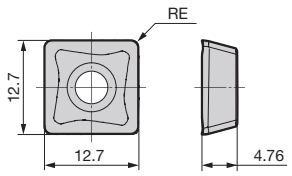
Insert

★Worldwide Warehouse Item ●USA stocked item

Dimensions (*mm*)

Grade		Coated Carbide								Carbide	DLC	Cermet		
Process	High-speed / Light		P			K		M/S		K/N	N			
	General-purpose	P/M/S		P/M	P/M	K		M/S	M/S		N	P		
	Roughing	P/M/S		P/M	P/M		K		M/S					
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Corner Radius RE	Fig
SOMT120408PDER-L		●	●	●	●	●	●	●	●	-	-	-	*0.8*	1
SOMT120404PDER-G		★	●	●	●	●	●	●	●	-	-	-	*0.4*	1
SOMT120408PDER-G		★	●	●	●	●	●	●	●	-	-	●	*0.8*	1
SOMT120412PDER-G		★	●	●	●	●	●	●	●	-	-	-	*1.2*	1
SOMT120416PDER-G			●	●	●	●	●	●	●	-	-	-	*1.6*	1
SOMT120408PDER-H		★	●	●	●	●	●	●	●	-	-	-	*0.8*	1
SOET120408PDFR-S			-	-	-	-	-	-	-	●	●	-	*0.8*	1

Fig 1



Parts

Applicable Cutter	Flat Screw		Wrench
		N·m	
WFXC12000M	BFTX03512IP	3.0	TRDR15IP

SUMI-P Anti-seizure Cream is included in the package.

Identification Code

WFX C 12 025 E

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

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.
P	General Steel	180 to 280 HB	150-250	0.05-0.15
	Mild Steel	≤ 180HB	180-350	0.10-0.20
	Die Steel	200 to 220 HB	100-200	0.05-0.15
M	Stainless Steel	-	150-250	0.05-0.15
K	Cast Iron	250HB	100-250	0.05-0.15

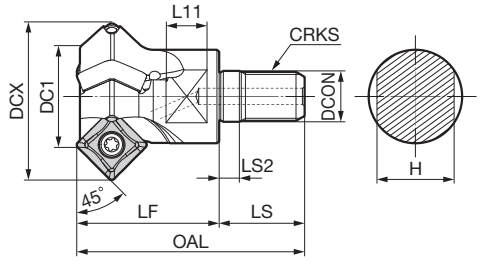
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

N·m Recommended Tightening Torque (N·m)

Rake Angle		
	Radial	0°
	Axial	0°

45°

Fig 1



Head (WFXC 08000M) Applicable Insert SOMT08

Dimensions (mm)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXC08016M08Z2	★	16	25.5	8.5	**M8**	42	25	5	17	8	13	2	0.1	1

DC1 and DCON dimensions are values with an insert with 0.8 nose radius mounted.

Head (WFXC 12000M) Applicable Insert SOMT12

Dimensions (mm)

Cat. No.	Stock	Min. Machining Dia. DC1	Max. Dia. DCX	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Shank LS	Chamfer L11	Width H	Number of Teeth	Weight (kg)	Fig
WFXC12025M12Z3	★	25	41.0	12.5	**M12**	56	32	5	21	10	19	3	0.1	1
WFXC12032M16Z3	★	32	48.0	17.0	**M16**	63	40	5	23	10	24	3	0.2	1

DC1 and DCON dimensions are values with an insert with 0.8 nose radius mounted.

★ Worldwide Warehouse item

Insert

Dimensions (mm)

Grade		Coated Carbide								Carbide	DLC	Cermet
Process	High-speed / Light		P			K		M S		K N	N	
	General-purpose	P K S		P M	P M	K		M S	M S		N	P
	Roughing	P K S		P M	P M		K		M S			
Cat. No.		ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A

Cat. No.	ACU2500	ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	DL1000	T4500A	Nose Radius RE	Fig
SOMT080304PZER-L	★	●	●	●	●	●	●	●	-	-		0.4	1
SOMT080308PZER-L		●	●	●	●	●	●	●	-	-		0.8	1
SOMT080304PZER-G	★	●	●	●	●	●	●	●	-	-		0.4	1
SOMT080308PZER-G	★	●	●	●	●	●	●	●	-	-		0.8	1
SOMT080312PZER-G	★	●	●	●	●	●	●	●	-	-		1.2	1
SOMT080308PZER-H	★	●	●	●	●	●	●	●	-	-		0.8	1
SOMT080312PZER-H	★	●	●	●	●	●	●	●	-	-		1.2	1
SOET080304PZER-G	★	●	●	●	●	●	●	●	-	-	●	0.4	1
SOET080308PZER-G	★	●	●	●	●	●	●	●	-	-	●	0.8	1
SOET080312PZER-G	★	●	●	●	●	●	●	●	-	-	●	1.2	1
SOET080302PZFR-S	-	-	-	-	-	-	-	-	●	●	-	0.2	1
SOET080304PZFR-S	-	-	-	-	-	-	-	-	●	●	-	0.4	1
SOET080308PZFR-S	-	-	-	-	-	-	-	-	●	●	-	0.8	1
SOMT120408PDER-L	●	●	●	●	●	●	●	●	-	-	-	0.8	2
SOMT120404PDER-G	★	●	●	●	●	●	●	●	-	-	-	0.4	2
SOMT120408PDER-G	★	●	●	●	●	●	●	●	-	-	●	0.8	2
SOMT120412PDER-G	★	●	●	●	●	●	●	●	-	-	-	1.2	2
SOMT120416PDER-G		●	●	●	●	●	●	●	-	-	-	1.6	2
SOMT120408PDER-H	★	●	●	●	●	●	●	●	-	-	-	0.8	2
SOET120408PDFR-S		-	-	-	-	-	-	-	●	●	-	0.8	2

Fig 1

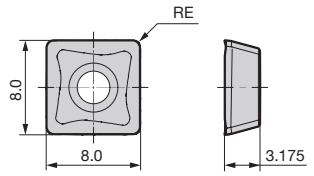
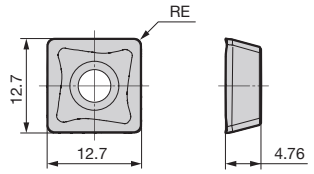


Fig 2



Parts

Applicable Endmill	Flat Screw		Wrench
		N·m	
WFXC08000M	BFTX0306IP	1.5	TRDR08IP
WFXC12000M	BFTX03512IP	3.0	TRDR15IP

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

Identification Code

WFX C 08 016 M08 Z2

Cutter Series | Chamfering | Insert Size | Dia. | Mounting Screw Size | Number of Teeth

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.
P	General Steel	180 to 280 HB	150-250	0.05-0.15
	Mild Steel	≤ 180HB	180-350	0.10-0.20
	Die Steel	200 to 220 HB	100-200	0.05-0.15
M	Stainless Steel	-	150-250	0.05-0.15
K	Cast Iron	250HB	100-250	0.05-0.15

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

N·m Recommended Tightening Torque (N·m)

ALNEX ANX

■ Features

- **Drastically Reduced Runout Adjustment Time**
  Simple screw-fastening structure enables fine adjustments to be made easily
- **Through-Tool Coolant**
  Secures a supply of coolant to the cutting edge and breaks chips thoroughly
- **Lightweight Aluminum Alloy Body**
  Utilizing aluminum alloy to achieve a total weight of less than 2.87lbs for a ø125mm cutter with 22 teeth.
- **Introducing the High-strength CVD Single Crystal Diamond SCV10 Wiper Blade: WS**

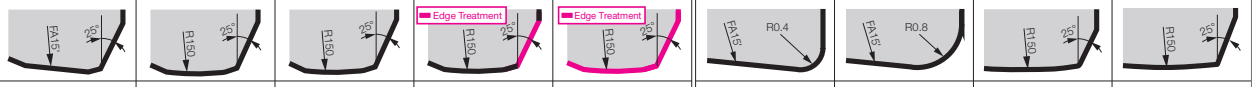
Series

Number in circle is the number of teeth Inch Arbor

Type	Cat. No.	Body Material	Diameter Range (*mm*) ø32	ø40	ø50	ø63	ø80	ø100	ø125	ø160
Shell type	ANXA16000RS	Aluminum Alloy					10 14	12 18	14 22	20 28
Shell type	ANXA16000R Inch	Aluminum Alloy					10 14	12 18	14 22	20 28
Shell type	ANXS16000RS	Steel		6	6 9	8 12	10 14	12 18	14 22	
Shell type	ANXS16000R Inch	Steel				8 12	10 14	12 18	14 22	
Shank type	ANXS16000E	Steel	4	6						

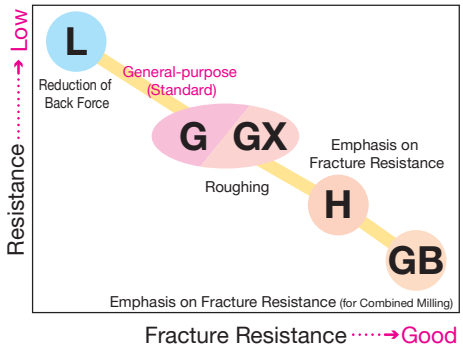
■ Insert Selection Guide

Work Material	N								
Applications	Finishing/ Light Cutting	General-purpose	Roughing		Composite Milling *1	Corner Radius Milling	Corner Radius Milling	Finishing	Burr-free Mirror Finish
Features	Low Cutting Force	Standard	Long Edge	High Strength	High Strength	Corner Radius 0.4	Corner Radius 0.8	Wiper	Wiper
Cutting Edge Shape	L	G	GX	H	GB	—	—	W	WS
Edge Length (*2)	6.0mm	6.0mm	9.0mm	6.0mm	6.0mm	6.0mm	6.0mm	2.0mm	1.0mm



*1 Machining of components combining aluminum alloy and cast iron. W type and WS type cannot be used together.

■ Blade Selection Reference

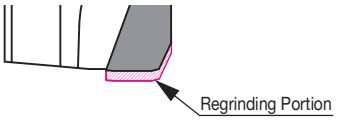


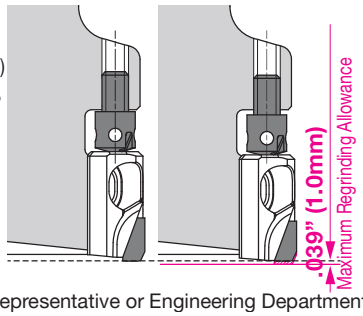
Sumitomo Services Offering in USA!

- Pre-setting
- Insert Reconditioning

Benefits of Reconditioning

- Reduces running costs by drastically increased insert regrinding allowance (to .039" / 1.0mm)
- Assuming .008" (0.2mm) of regrinding each time, an edge can be reground up to 5 times.
(*Peripheral edge cannot be reground.)





For service inquiries, please contact local Sumitomo Sales Representative or Engineering Department

■ Maximum Allowable Spindle Speed

(Aluminum alloy body)

Cat. No.	*n* max(RPM)
ANXA16080RS14	20,000
ANXA16100RS18	18,000
ANXA16125RS22	16,000
ANXA16160RS28	14,000
ANXA16080RS10	20,000
ANXA16100RS12	18,000
ANXA16125RS14	16,000
ANXA16160RS20	14,000
ANXA16080R14	20,000
ANXA16100R18	18,000
ANXA16125R22	16,000
ANXA16160R28	14,000
ANXA16080R10	20,000
ANXA16100R12	18,000
ANXA16125R14	16,000

Cat. No.	*n* max(RPM)
ANXA16160R20	14,000

(Steel body)

Cat. No.	*n* max(RPM)
ANXS16040RS06	25,000
ANXS16050RS09	25,000
ANXS16063RS12	22,000
ANXS16080RS14	20,000
ANXS16100RS18	18,000
ANXS16125RS22	16,000
ANXS16050RS06	25,000
ANXS16063RS08	22,000
ANXS16080RS10	20,000
ANXS16100RS12	18,000
ANXS16125RS14	16,000
ANXS16063R12	22,000
ANXS16080R14	20,000
ANXS16100R18	18,000
ANXS16125R22	16,000

Cat. No.	*n* max(RPM)
ANXS16063R08	22,000
ANXS16080R10	20,000
ANXS16100R12	18,000
ANXS16125R14	16,000
ANXS16032E04	10,000
ANXS16040E06	10,000

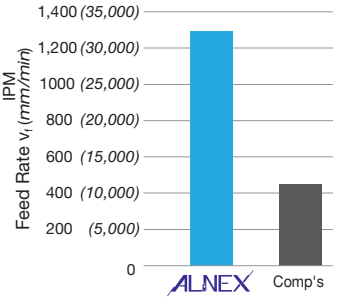
ALNEX ANX

High-speed/High-efficiency Cutting

Ultra-high efficiency machining with feed rates v_f = 1,200 IPM (*30,000 mm/min*)

Cutter diameter ø100mm comparison

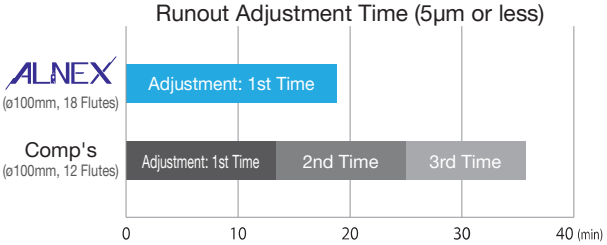
	Spindle Speed min^{-1}	Number of Teeth	Feed Rate IPM v_f (*mm/min*)
ALNEX	18,000	18	1,275 (*32,400*)
Comp's	9,500	12	450 (*11,400*)



Drastically Reduced Runout Adjustment Time

● Simple screw-fastening structure ● Enables fine adjustments to be made easily ● High-rigidity body

Runout Adjustment Time (5µm or less)



1st Time Completed, Adjustment Time Reduced

Chip Control

Coolant Through Inserts Chip Breaking

ALNEX

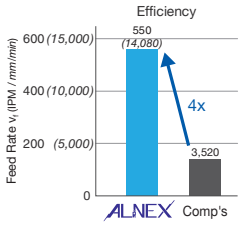
Competitor's

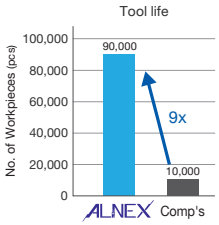
Part Material: ADC12
Cutting conditions:
v_c = *2,500m/min*,
f_z = *0.05mm/t*,
a_p = *0.5mm* Wet
Competitor: v_c = 8,200 SFM,
f_z = 0.002 IPT, a_p = 0.02"

■ Application Examples

Machine: Vertical Machining Center BT30, Part Material: ADC12 Automotive Component
Tool: ANXA 16125R22 (ø125, 22 teeth, aluminum alloy body *Total weight with arbor 1.75kg)
Insert: ANB 1600R-G (DA1000)
Cutting conditions: v_c = 10,300 SFM (*3,142m/min*),
v_f = 554 IPM (*14,080mm/min*),
a_p = .031" (*0.8mm*) Wet

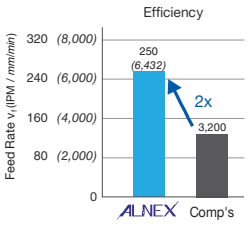
4 times the efficiency and 9 times the tool life

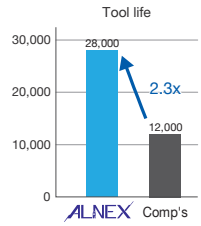




Machine: Vertical Machining Center HSK63, Part Material: ADC12 Cylinder Head Tool: ANXS 16063RS12 (ø63, 12 teeth, steel body)
Insert: ANB 1600R-G (DA1000)
Cutting conditions: v_c = 5,200 SFM (*1,583m/min*),
v_f = 250 IPM (*6,432mm/min*),
a_p = .02" (*0.5mm*) Wet

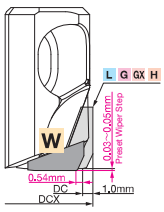
2 times the efficiency and 2.3 times the tool life





■ Precautions when Using Wiper Blades

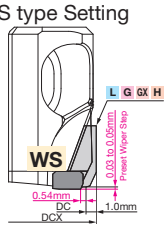
· W type Setting



⚠ Precautions

In order to maintain cutter balance when using the W type wiper blade, use a cutter with an even-number of cutting teeth and place another W type wiper blade at the opposite teeth position.

· WS type Setting



⚠ Precautions

(For more details, refer to the instruction manual included with the product)

In order to maintain cutter balance when using the WS type (SCV10 wiper blade), use a cutter with an even-number of cutting teeth and place another WS type wiper blade (or dummy blade ANBD) at opposite teeth positions.

*The dummy blade is dedicated for use with WS type.

ANXS R(S) Steel Shellmill

Rake Angle		
	Radial	5°
	Axial	5°

3mm 90°

Fig 1

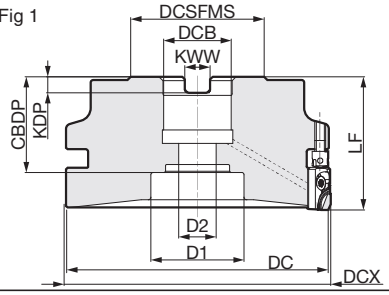
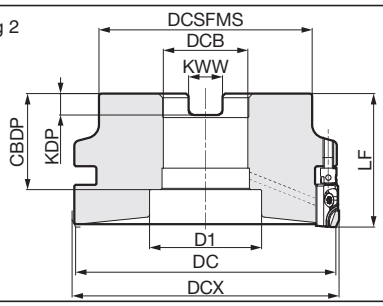


Fig 2



Body (Steel)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss Dia. DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Inch Arbors	ANXS16063R08	★	61	63	50	50	25.4	9.5	6	31	20	14	8	0.9	1
	ANXS16063R12	★	61	63	50	50	25.4	9.5	6	31	20	14	12	0.9	1
	ANXS16080R10	★	78	80	50	50	25.4	9.5	6	34	35	14	10	1.2	1
	ANXS16080R14	★	78	80	50	50	25.4	9.5	6	34	35	14	14	1.2	1
	ANXS16100R12	★	98	100	80	50	31.75	12.7	8	36	42	-	12	2.0	2
	ANXS16100R18	★	98	100	80	50	31.75	12.7	8	36	42	-	18	2.0	2
	ANXS16125R14	★	123	125	80	63	38.1	15.9	10	42.5	52	-	14	3.9	2
	ANXS16125R22	★	123	125	80	63	38.1	15.9	10	42.5	52	-	22	3.9	2
Metric Arbors	ANXS16040RS06	★	38	40	38.5	40	16	8.4	5.6	26	14	9	6	0.3	1
	ANXS16050RS06	★	48	50	48.5	40	22	10.4	6.3	26	18	11	6	0.4	1
	ANXS16050RS09	★	48	50	48.5	40	22	10.4	6.3	26	18	11	9	0.5	1
	ANXS16063RS08	★	61	63	50	40	22	10.4	6.3	26	18	11	8	0.7	1
	ANXS16063RS12	★	61	63	50	40	22	10.4	6.3	26	18	11	12	0.7	1
	ANXS16080RS10	★	78	80	50	50	27	12.4	7	34	35	14	10	1.2	1
	ANXS16080RS14	★	78	80	50	50	27	12.4	7	34	35	14	14	1.2	1
	ANXS16100RS12	★	98	100	80	50	32	14.4	8	32	46	-	12	2.0	2
	ANXS16100RS18	★	98	100	80	50	32	14.4	8	32	46	-	18	2.0	2
	ANXS16125RS14	★	123	125	80	63	40	16.4	9	35	52	-	14	3.9	2
	ANXS16125RS22	★	123	125	80	63	40	16.4	9	35	52	-	22	3.9	2

Inserts are sold separately. Center Bolt included with cutter purchase.
If using corner radius inserts (ANB1604R), DC = DCX.

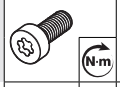
★= World Wide Warehouse Item

Parts Identification Code

ANX S 16 100 R S 18

Cutter Series | Steel Body | Blade Size | Cutter Dia. | Rotation | Metric Bore | Number of Teeth

(Sold Separately)

Applicable Cutter	Clamp Screw		Adjustment Screw	Wrench	Adjustment Wrench	Center Bolt	Assembly Wrench
							
ANXS16063R○○	BXA0310IP	2.0	HFJ	TRXW10IP	ANT	BXH1235-D18	HFVT
ANXS16080R○○						BXH1235-D33	
ANXS16100R○○						BXH1635-D40	
ANXS16125R○○						BXH2036-D50	
ANXS16040RS06						BXH0825-D13	
ANXS16050RS○○						BXH1030-D16	
ANXS16063RS○○							
ANXS16080RS○○						BXH1235-D33	
ANXS16100RS○○						BXH1635-D40	
ANXS16125RS○○						BXH2036-D50	

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS16063R08	22,000
ANXS16063R12	22,000
ANXS16080R10	20,000
ANXS16080R14	20,000
ANXS16100R12	18,000
ANXS16100R18	18,000
ANXS16125R14	16,000
ANXS16125R22	16,000
ANXS16040RS06	25,000
ANXS16050RS06	25,000
ANXS16050RS09	25,000
ANXS16063RS08	22,000
ANXS16063RS12	22,000
ANXS16080RS10	20,000
ANXS16080RS14	20,000
ANXS16100RS12	18,000
ANXS16100RS18	18,000
ANXS16125RS14	16,000
ANXS16125RS22	16,000

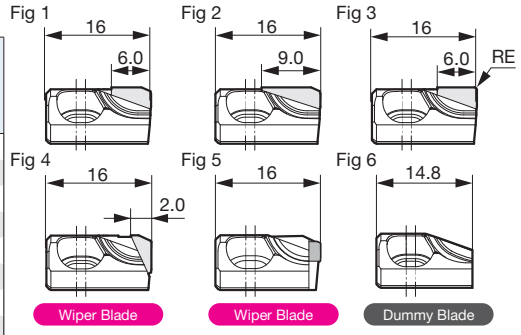
ANXS (RS) Steel Shellmill

Insert

Dimensions (*mm*)

Grade Classification		SUMIDIA		SUMICRYSTAL V
Process	High-speed/Light Cutting	N	K N	N
	General-purpose	N	K N	
	Roughing	N	K N	

Cat. No.	DA1000	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	●		—	*6.0*	—	Linear	Low Cutting Force	1
ANB 1600R-G	●		—	*6.0*	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	—	*6.0*	—	Arc-Shaped	Composite Milling*1	1
ANB 1600R-H	●	—	—	*6.0*	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●		—	*9.0*	—	Arc-Shaped	Long Edge	2
ANB 1604R	●		—	*6.0*	*0.4*	Linear	Corner Radius	3
ANB 1608R	●		—	*6.0*	*0.8*	Linear	Corner Radius	3
ANB 1600R-W	●		—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	●	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	●*2	—	—	—	Dummy Blade	6



Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (*m/min*) Min. - Max.	Feed Rate fz (*mm/t*) Min. - Max.	Blade Grade
N	Aluminum Alloy	—	*2,000 - 3,000*	*0.05 - 0.20*	DA1000 SCV10

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (*m/min*) Min. - Max.	Feed Rate fz (*mm/t*) Min. - Max.	Blade Grade
N	Aluminum Alloy	—	*400 - 800*	*0.05 - 0.20*	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (*m/min*) Min. - Max.	Feed Rate fz (*mm/t*) Min. - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	*300 - 500*	*0.05 - 0.20*	DA90

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
For combined milling of cast iron/aluminum alloy, we recommend DA90.
When using wiper blade WS type, see the table below.

■ Wiper Blade WS Recommended Feed Rate

WS Cutting Edge Feed Rate per Tooth*1 fz_{ws} (mm/t_{ws})	D ≤ 0.5	0.5 < D ≤ 1.7	1.7 < D
Burr-free Finish	◎ Excellent		Impossible
Mirror Finishing	◎ Excellent	○ Good	
Target Surface Roughness Ra (μm)	0.015 to 0.05	up to 0.6	

*1 Feed Rate per WS Cutting Edge Tooth fz_{ws}

$$fz_{ws}\ (mm/t_{ws}) = \frac{fz \times (\text{Total No. of Teeth})^{*2}}{(\text{WS type No. of Teeth})^{*3}}$$

Feed Rate per Tooth fz

$$fz\ (mm/t) = \frac{\text{Feed Rate (vf) (mm/min)}}{\text{Spindle Speed n (min}^{-1}) \times (\text{Total No. of Teeth})}$$

*2 Total number of teeth includes dummy blade and wiper blade (WS type).

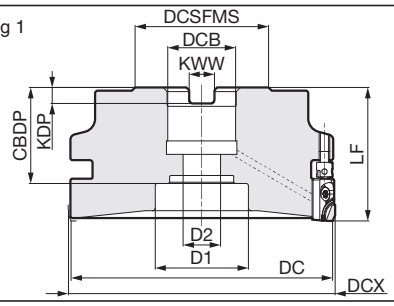
*3 WS type number of teeth does not include dummy blade.

ANXA R(S) Aluminum Shellmill

Rake Angle		
	Radial	5°
	Axial	5°

3mm 90°

Fig 1



Body (Aluminum Alloy)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss Dia. DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)
Inch Arbors	ANXA16080R10	●	78	80	50	50	25.4	9.5	6	34	35	14	10	0.5
	ANXA16080R14	●	78	80	50	50	25.4	9.5	6	34	35	14	14	0.5
	ANXA16100R12	●	98	100	50	50	25.4	9.5	6	34	35	14	12	0.9
	ANXA16100R18	●	98	100	50	50	25.4	9.5	6	34	35	14	18	0.9
	ANXA16125R14	●	123	125	50	50	25.4	9.5	6	34	35	14	14	1.2
	ANXA16125R22	●	123	125	50	50	25.4	9.5	6	34	35	14	22	1.3
	ANXA16160R20	●	158	160	80	63	38.1	15.9	10	42.5	55	30	20	2.4
	ANXA16160R28	●	158	160	80	63	38.1	15.9	10	42.5	55	30	28	2.6
Metric Arbors	ANXA16080RS10	★	78	80	50	50	27	12.4	7	34	35	14	10	0.5
	ANXA16080RS14	★	78	80	50	50	27	12.4	7	34	35	14	14	0.5
	ANXA16100RS12	★	98	100	50	50	27	12.4	7	34	35	14	12	0.8
	ANXA16100RS18	★	98	100	50	50	27	12.4	7	34	35	14	18	0.9
	ANXA16125RS14	★	123	125	50	50	27	12.4	7	34	35	14	14	1.2
	ANXA16125RS22	★	123	125	50	50	27	12.4	7	34	35	14	22	1.3
	ANXA16160RS20	★	158	160	80	63	40	16.4	9	35	52	29	20	2.6
	ANXA16160RS28	★	158	160	80	63	40	16.4	9	35	52	29	28	2.6

Inserts are sold separately. Center Bolt included with cutter purchase.
If using corner radius inserts (ANB1604R), DC = DCX.

●= USA Stocked Item ★= World Wide Warehouse Item

Identification Code

ANX A 16 100 R S 18

Cutter Series | Aluminum Alloy Body | Blade Size | Cutter Dia. | Rotation | Metric Bore | Number of Teeth

Parts

(Sold Separately)

Applicable Cutter	Clamp Screw		Adjustment Screw	Wrench	Adjustment Wrench	Center Bolt	Assembly Wrench
ANXA16080R○○	BXA0310IP	2.0	HFJ	TRXW10IP	ANT	BXH1235-D33	HFVT
ANXA16100R○○							
ANXA16125R○○							
ANXA16160R○○						BXH2036-D50	
ANXA16080RS○○						BXH1235-D33	
ANXA16100RS○○							
ANXA16125RS○○							
ANXA16160RS○○						BXH2036-D50	

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXA16080R10	20,000
ANXA16080R14	20,000
ANXA16100R12	18,000
ANXA16100R18	18,000
ANXA16125R14	16,000
ANXA16125R22	16,000
ANXA16160R20	14,000
ANXA16160R28	14,000
ANXA16080RS10	20,000
ANXA16080RS14	20,000
ANXA16100RS12	18,000
ANXA16100RS18	18,000
ANXA16125RS14	16,000
ANXA16125RS22	16,000
ANXA16160RS20	14,000
ANXA16160RS28	14,000

N·m Recommended Tightening Torque (N·m)

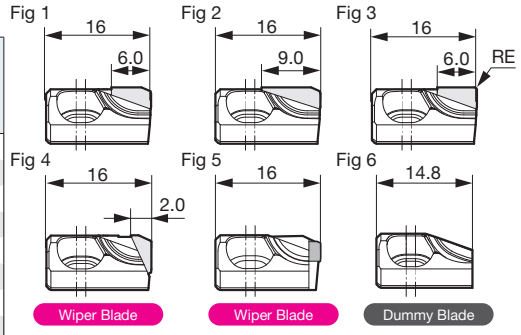
ANXA R(S) Aluminum Shellmill

Insert

Dimensions (*mm*)

Grade Classification		SUMIDIA		SUMICRYSTAL V
Process	High-speed/Light Cutting	N	K N	N
	General-purpose	N	K N	
	Roughing	N	K N	

Cat. No.	DA1000	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	●		—	*6.0*	—	Linear	Low Cutting Force	1
ANB 1600R-G	●		—	*6.0*	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	—	*6.0*	—	Arc-Shaped	Composite Milling*	1
ANB 1600R-H	●	—	—	*6.0*	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●		—	*9.0*	—	Arc-Shaped	Long Edge	2
ANB 1604R	●		—	*6.0*	*0.4*	Linear	Corner Radius	3
ANB 1608R	●		—	*6.0*	*0.8*	Linear	Corner Radius	3
ANB 1600R-W	●		—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	●	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	●	—	—	—	Dummy Blade	6



Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (*m/min*) Min. - Max.	Feed Rate fz (*mm/t*) Min. - Max.	Blade Grade
N	Aluminum Alloy	—	*2,000 - 3,000*	*0.05 - 0.20*	DA1000 SCV10

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (*m/min*) Min. - Max.	Feed Rate fz (*mm/t*) Min. - Max.	Blade Grade
N	Aluminum Alloy	—	*400 - 800*	*0.05 - 0.20*	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (*m/min*) Min. - Max.	Feed Rate fz (*mm/t*) Min. - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	*300 - 500*	*0.05 - 0.20*	DA90

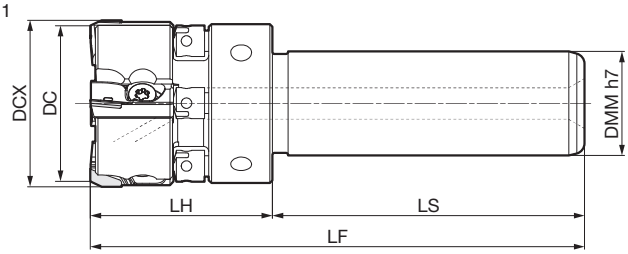
Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
For combined milling of cast iron/aluminum alloy, we recommend DA90.
When using wiper blade WS type, see the table below.

ANXS Steel Endmill

Rake Angle		
	Radial	-2° to 0°
	Axial	5°

3mm 90°

Fig 1



Body (Steel)

Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Shank Dia. DMM	Head LH	Shank Length LS	Overall Length LF	Number of Teeth	Weight (kg)
ANXS16032E04	★	30	32	20	35	60	95	4	0.3
ANXS16040E06	★	38	40	20	40	60	100	6	0.5

Dimensions (mm)

Inserts are sold separately.
If using corner radius inserts (ANB1604R), DC = DCX.

★= World Wide Warehouse Item

Identification Code

ANX S 16 032 E 04

Cutter Series | Steel Body | Blade Size | Cutter Dia. | With Shank | Number of Teeth

Parts

Applicable Cutter	Clamp Screw		Adjustment Screw	Wrench	Adjustment Wrench	Assembly Wrench (Sold Separately)
ANXS16032E04 ANXS16040E06	BXA0310IP	2.0	HFJ	TRXW10IP	ANT	HFVT

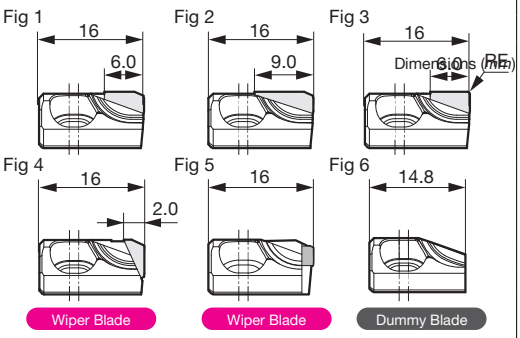
Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS16032E04	10,000
ANXS16040E06	10,000

Insert

Grade Classification		SUMIDIA		SUMICRYSTAL V
Process	High-speed/Light Cutting	N	K N	N
	General-purpose	N	K N	
	Roughing	N	K N	

Cat. No.	DA1000	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	●		—	6.0	—	Linear	Low Cutting Force	1
ANB 1600R-G	●		—	6.0	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	—	6.0	—	Arc-Shaped	Composite Milling*	1
ANB 1600R-H	●	—	—	6.0	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●		—	9.0	—	Arc-Shaped	Long Edge	2
ANB 1604R	●		—	6.0	0.4	Linear	Corner Radius	3
ANB 1608R	●		—	6.0	0.8	Linear	Corner Radius	3
ANB 1600R-W	●		—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	●	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	●	—	—	—	Dummy Blade	6



Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - Max.	Feed Rate fz (mm/t) Min. - Max.	Blade Grade
N	Aluminum Alloy	—	2,000 - 3,000	0.05 - 0.20	DA1000 SCV10

Si content of over 12.6%

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - Max.	Feed Rate fz (mm/t) Min. - Max.	Blade Grade
N	Aluminum Alloy	—	400 - 800	0.05 - 0.20	DA1000 DA90 SCV10

Combined Milling of Cast Iron/Aluminum Alloy

ISO	Work Material	Hardness	Cutting Speed vc (m/min) Min. - Max.	Feed Rate fz (mm/t) Min. - Max.	Blade Grade
K N	Cast Iron/ Aluminum Alloy	—	300 - 500	0.05 - 0.20	DA90

Note The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.
For combined milling of cast iron/aluminum alloy, we recommend DA90.
When using wiper blade WS type, see the table below.

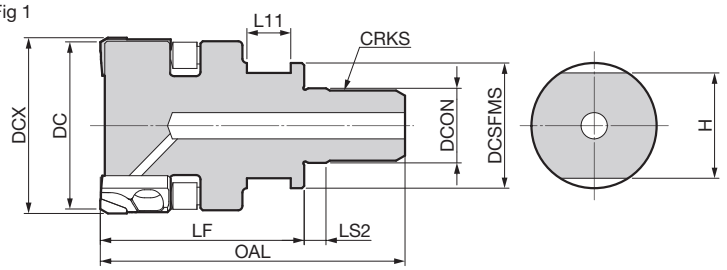
ANXS Modular

Rake Angle	Radial	-2° to 0°
	Axial	+5°

3mm 90°

Face Milling | Shoulder Milling | Slot Milling

Fig 1



Body (Steel)

Dimensions (*mm*)

	Cat. No.	Stock	Max. Dia. DCX	Dia. DC	Boss DCSFMS	Mounting Dia. DCON	Screw CRKS	Overall Length OAL	Effective Length LF	Length LS2	Flat L11	Width H	Number of Teeth	Weight (kg)	Fig
Metric	**ANXS16025M12Z02**	★	*25*	*23*	*23.0*	*12.5*	*M12*	*61*	*40*	*5*	*10*	*19*	2	0.1	1
	ANXS16030M16Z03	★	*30*	*28*	*28.5*	*17.0*	*M16*	*70*	*47*	*5*	*10*	*24*	3	0.2	1
	ANXS16030M16Z04	★	*30*	*28*	*28.5*	*17.0*	*M16*	*70*	*47*	*5*	*10*	*24*	4	0.2	1
	ANXS16032M16Z03	★	*32*	*30*	*28.5*	*17.0*	*M16*	*70*	*47*	*5*	*10*	*24*	3	0.3	1
	ANXS16032M16Z04	★	*32*	*30*	*28.5*	*17.0*	*M16*	*70*	*47*	*5*	*10*	*24*	4	0.3	1
	ANXS16040M16Z04	★	*40*	*38*	*28.5*	*17.0*	*M16*	*70*	*47*	*5*	*10*	*24*	4	0.4	1
	ANXS16040M16Z06	★	*40*	*38*	*28.5*	*17.0*	*M16*	*70*	*47*	*5*	*10*	*24*	6	0.4	1

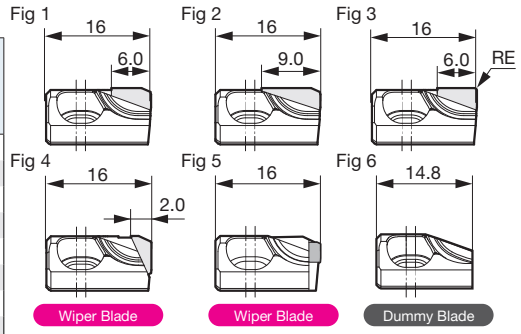
Blades are sold separately.
If using blades with corner radius (ANB1604R/ANB1608R), DC = DCX.
Weight indicated includes the weight with blades and other spare parts.

Insert

Dimensions (*mm*)

Grade Classification		SUMIDIA		SUMICRYSTAL V
Process	High-speed/Light Cutting	N	K N	N
	General-purpose	N	K N	
	Roughing	N	K N	

Cat. No.	DA1000	DA90	SCV10	Cutting Edge Length	Corner Radius RE	Wiper Edge Shape	Applications	Fig
ANB 1600R-L	●		—	*6.0*	—	Linear	Low Cutting Force	1
ANB 1600R-G	●		—	*6.0*	—	Arc-Shaped	General-purpose	1
ANB 1600R-GB		●	—	*6.0*	—	Arc-Shaped	Composite Milling*1	1
ANB 1600R-H	●	—	—	*6.0*	—	Arc-Shaped	Strong Edge	1
ANB 1600R-GX	●		—	*9.0*	—	Arc-Shaped	Long Edge	2
ANB 1604R	●		—	*6.0*	*0.4*	Linear	Corner Radius	3
ANB 1608R	●		—	*6.0*	*0.8*	Linear	Corner Radius	3
ANB 1600R-W	●		—	—	—	Arc-Shaped	Wiper	4
ANB 1600R-WS	—	—	●	—	—	Arc-Shaped	Wiper	5
ANBD	—	—	●*2	—	—	—	Dummy Blade	6



*1 Cast iron/aluminum alloy *2 Dummy blade for use with WS type (cemented carbide)
"Precautions when Using Wiper Blades" (Mounting Precautions). Se H218 for Recommended Cutting Conditions

Identification Code

ANX	S	16	032	M16	Z03
Series Code	Steel Body	Blade Size	Max. Dia.	Screw Size	Number of Teeth

Parts

Cap Screw		Adjustment Screw	Wrench	Adjustment Wrench
	N·m			
BXA0310IP	2.0	HFJ	TRXW10IP	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.

N·m Recommended Tightening Torque (N·m)

Maximum Allowable Spindle Speed

Cat. No.	n max(min^{-1})
ANXS16025M12Z02	10,000
ANXS16030M16Z03	10,000
ANXS16030M16Z04	10,000
ANXS16032M16Z03	10,000
ANXS16032M16Z04	10,000
ANXS16040M16Z04	10,000
ANXS16040M16Z06	10,000

*The maximum allowable spindle speeds are set to prevent the inserts from dislodging by centrifugal force.

■ General Features

The HF Type high-efficiency aluminum alloy cutter employs a unique blade design to achieve machining without burrs.
New HFFH with coolant holes is now available as a BBT30 (BIG-PLUS™) arbour integrated version.

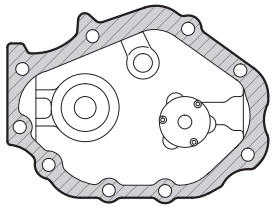
Work Material

· Aluminum and aluminum alloys
· Other non-ferrous metals
(Not suited for cast iron or steel.)

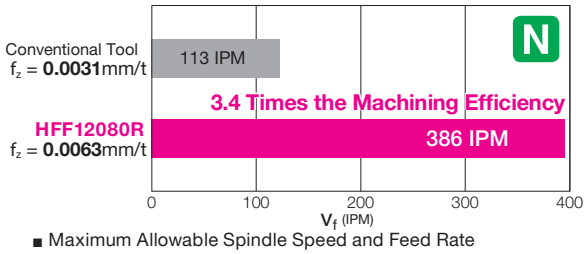
■ Features

● Achieves high-efficiency milling with v_f **of over 787 IPM** thanks to its multi-blade design (3 edges per inch)

High-feed, High-efficiency Milling by Multi-edge Design

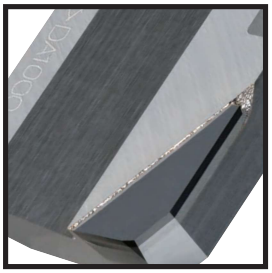


Workpiece: Aluminum Case (Frame Milling)
Tool: **HFF12080R-25.4** (ø80 10-flute),
Conventional Tool (ø80 6-flute)



■ Maximum Allowable Spindle Speed and Feed Rate

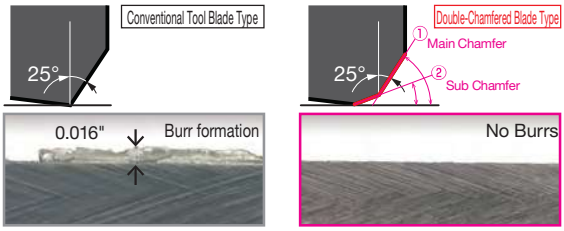
Cutter Dia. (mm)	nmax (RPM)	v_c (SFM)	f_z (IPT)	Maximum Number of Teeth	v_f (IPM)
ø80	11,000	9,065	up to 0.008"	10	up to 866"
ø100	9,500	9,787	up to 0.008"	12	up to 897"
ø125	7,500	9,659	up to 0.008"	15	up to 886"

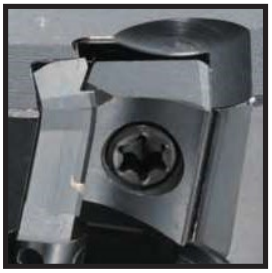


● Reduces burrs by using a double-chamfered blade

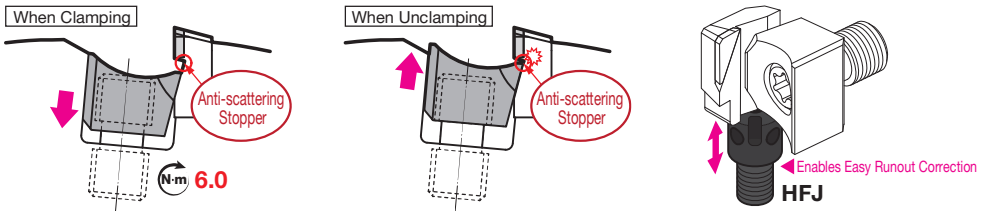
Drastically reduces burrs by preventing the plastic deformation that causes burrs.

Work Material: **A6061** Sheet Metal
Cutting Conditions: v_c = **10,308 SFM**, f_z = **0.004 IPT**, a_p = **0.02"**, Dry





● Wedge clamp with anti-scattering mechanism ensures safety and operability

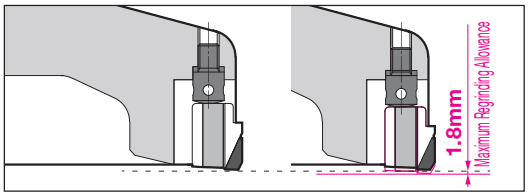


Ensure that the maximum allowable spindle speed (*n* max) specified for each cutter diameter is not exceeded. (See the table at upper right)

● Reduces running costs by drastically increasing blade regrinding allowance (to 0.071")

Assuming 0.008" of regrinding each time, an edge can be used up to 10 times.

(Given conditions of normal wear with a_p = **0.06"** or less)



The regrinding amount has been drastically increased compared to conventional screw-lock types

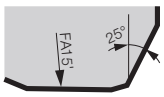
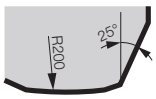
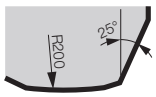
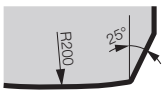
● Internal coolant improves chip evacuation performance (HFFH Type, HFFH-BBT30 Type)

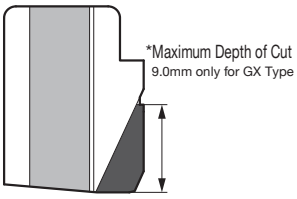
The internal coolant effectively prevents chips from becoming clogged or biting into the work material and achieves longer tool life. (Use an internal coolant compatible arbor)

*1 BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
*2 Can also be used with BT30 spindle machines.

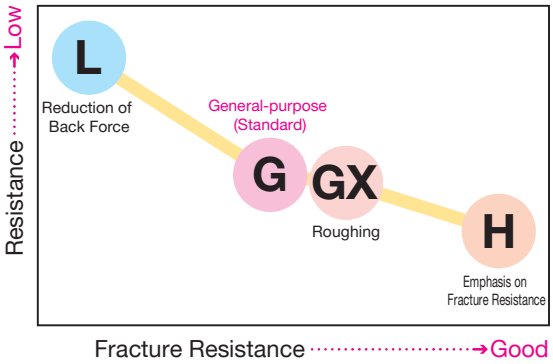
N·m Recommended Tightening Torque (N·m)

■ Chipbreaker Selection

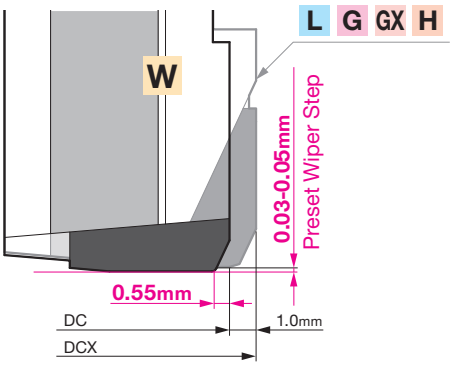
Work Material	N				
Type	L Type	G Type	GX Type	H Type	W Type
Cutting Edge Shape					
Features	Low Resistance	Standard	Long Edge	High Strength	Wiper
Applications	Reduction of Back Force	General-purpose	Roughing	Emphasis on Fracture Resistance	
Edge Length (*)	0.236”	0.236”	0.354”	0.236”	



■ Chipbreaker Selection Guide

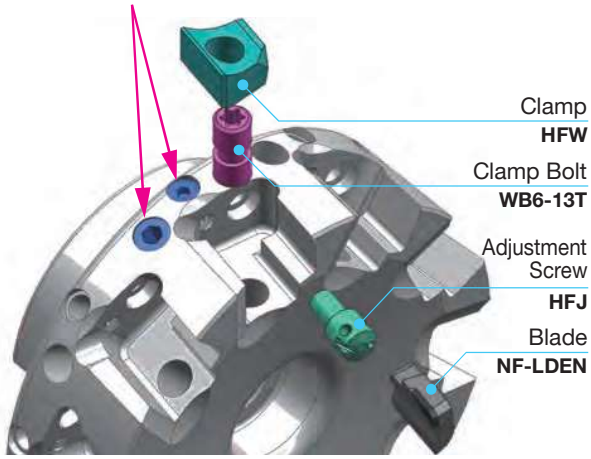


■ Wiper Blade Step Amount



■ Structure of HF

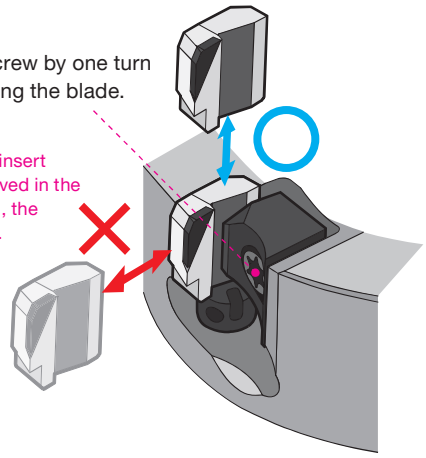
The axial set screw and balance adjustment screw hole have an embedded special part that prevents the insertion of screwdrivers or hex wrenches.



■ Blade Mounting Direction

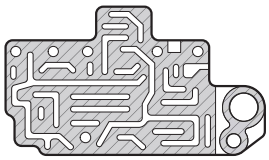
Loosen the screw by one turn before removing the blade.

⚠ Note that if the insert is forcibly removed in the wrong direction, the part may break.

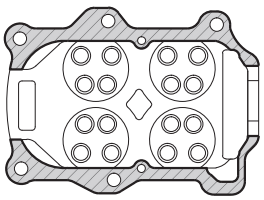


■ Application Examples

● Workpiece: Automotive Component		Sumitomo
Work Material: Aluminum Alloy	Body	HFFH12100R-25.4
	Blade Cat. No.	NF-LDEN12T3ZDTR-H
	Grade	DA1000
	Number of Teeth	12
	v_c(SFM)	6,181
	n(RPM)	6,000
	v_f(IPM)	236”
	f_z(IPT)	0.002”
	a_p(inch)	0.008”
	Coolant	Wet (Internal Coolant Supply)
	Results	Achieves 3,600 units, double the tool life of conventional external coolant supply types. Good machined surface



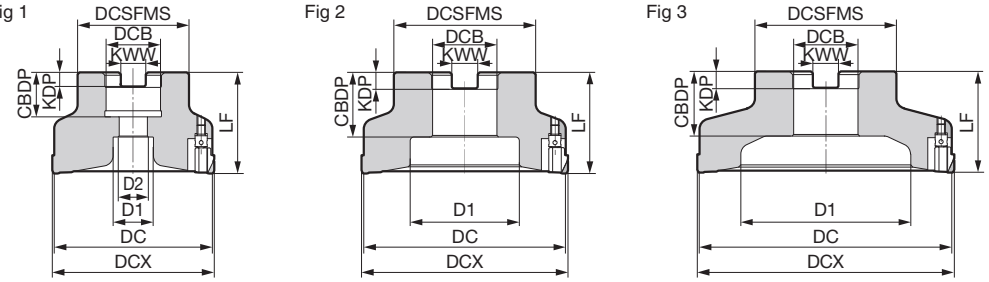
● Workpiece: Engine Component		Sumitomo
Work Material: Aluminum Alloy	Body	HFFH12125R-31.75
	Blade Cat. No.	NF-LDEN12T3ZDFR-G
	Grade	DA1000
	Number of Teeth	15
	v_c(SFM)	9,663
	n(RPM)	295
	v_f(IPM)	266”
	f_z(IPT)	0.0024”
	a_p(inch)	0.08”
	Coolant	Wet (Internal Coolant Supply)
	Results	In contrast to conventional external coolant supply types, the tool life has reached 1.7x greater at 17,000 units and creates finer chips



HFM SHELLMILL (Inch & Metric)

Rake Angle		
	Radial	4°
	Axial	10°

.118" 90° | 3mm 90°



Body (Fine Pitch: 2-teeth / Inch)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Coolant Bolt	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**HFMH42500R**	●	2.500	2.579	1.970	2.000	1.000	0.375	0.220	1.020	0.797	0.531	BFXH1/2X1 1/4	6	1.76	1
	HFMH43000R	●	3.000	3.079	1.970	2.000	1.000	0.375	0.220	1.020	0.797	0.531	BFXH1/2X1 1/4	6	2.42	1
	HFMH44000R	●	4.000	4.079	2.756	2.000	1.500	0.625	0.380	1.457	2.126	0.781	BFXH3/4X2	8	3.96	1
	HFMH45000R	●	5.000	5.079	3.150	2.000	1.500	0.625	0.380	1.457	2.126	0.781	BFXH3/4X2	10	6.17	1
	HFMH46000R	●	6.000	6.079	3.740	2.374	1.500	0.625	0.380	1.457	2.756	0.781	BFXH3/4X2	12	9.50	1
Metric	**HFM12080RS-22**	★	*80*	*82*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	-	6	*1.0*	1
	HFM12080RS-27	★	*80*	*82*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	-	6	*1.2*	1
	HFM12100RS-32	★	*100*	*102*	*70*	*50*	*32*	*14.4*	*8*	*32*	*54*	-	-	8	*1.7*	2
	HFM12125RS-32	★	*125*	*127*	*70*	*50*	*32*	*14.4*	*8*	*32*	*84*	-	-	10	*2.2*	3
	HFM12125RS-40	★	*125*	*127*	*90*	*63*	*40*	*16.4*	*9*	*35*	*84*	-	-	10	*2.8*	3
	HFM12080R-25.4	★	*80*	*82*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*35*	-	-	6	*1.0*	2
	HFM12100R-25.4	★	*100*	*102*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*54*	-	-	8	*1.5*	2
	HFM12100R-31.75	★	*100*	*102*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*54*	-	-	8	*1.7*	2
	HFM12125R-25.4	★	*125*	*127*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*84*	-	-	10	*2.0*	3
	HFM12125R-31.75	★	*125*	*127*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*84*	-	-	10	*2.2*	3
	HFM12125R-38.1	★	*125*	*127*	*80*	*63*	*38.1*	*15.9*	*10*	*36*	*84*	-	-	10	*2.5*	3

Inserts are sold separately.

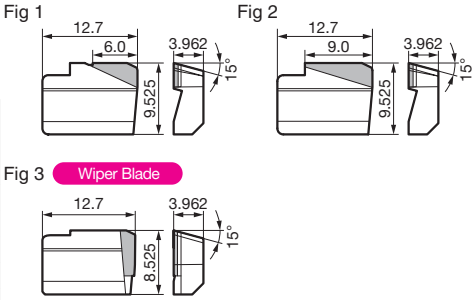
Inserts

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Length	Wiper Edge Shape	Applications	Fig
NF-LDEN12T3ZDFR-L	●	*6.0*	*2.2*	Linear	Low Resistance	1
NF-LDEN12T3ZDFR-G	●	*6.0*	*2.2*	Arc-Shaped	General-purpose	1
NF-LDEN12T3ZDTR-H	●	*6.0*	*2.2*	Arc-Shaped	Strong Edge	1
NF-LDEN12T3ZDFR-GX	●	*9.0*	*2.2*	Arc-Shaped	Long Edge	2
NF-LDEN12T3ZDFR-W	●	-	*4.0*	Arc-Shaped	Wiper	3



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code - Inch

HF M H 4 3000 R

Cutter Series | Course Pitch | Coolant | Insert Size | Cutter Dia. 3.000" | Feed Direction

Identification Code - Metric

HF M 12 080 R S - 22

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

Recommended Cutting Conditions - Metric

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	6,560 - 9,850	0.002 - 0.008	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	1,315 - 2,630	0.002 - 0.008	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)

Recommended Cutting Conditions - Metric

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2,000 -3,000	0.05-0.20	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	400-800	0.05-0.20	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.

HFF Shellmill Metric

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90°

Fig 1

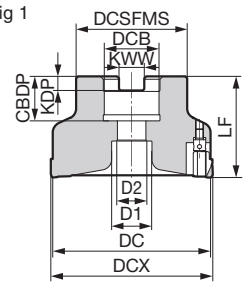


Fig 2

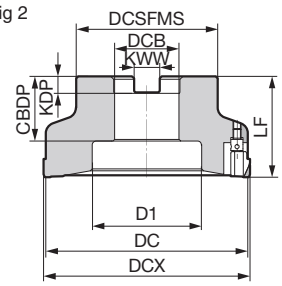
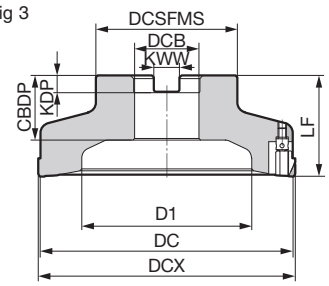


Fig 3



Body (Extra Fine Pitch: 3-teeth / Inch)

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Number of Teeth	Weight (kg)	Fig
Metric	**HFF12080RS-22**	★	80	82	50	40	22	10.4	6.3	20	18	11	10	1.0	1
	HFF12080RS-27	★	80	82	55	50	27	12.4	7	22	20	14	10	1.2	1
	HFF12100RS-32	★	100	102	70	50	32	14.4	8	32	54	-	12	1.7	2
	HFF12125RS-32	★	125	127	70	50	32	14.4	8	32	84	-	15	2.2	3
	HFF12125RS-40	★	125	127	90	63	40	16.4	9	35	84	-	15	2.8	3
	HFF12080R-25.4	★	80	82	50	50	25.4	9.5	6	30	35	-	10	1.0	2
	HFF12100R-25.4	★	100	102	50	50	25.4	9.5	6	30	54	-	12	1.5	2
	HFF12100R-31.75	★	100	102	70	50	31.75	12.7	8	32	54	-	12	1.7	2
	HFF12125R-25.4	★	125	127	50	50	25.4	9.5	6	30	84	-	15	2.0	3
	HFF12125R-31.75	★	125	127	70	50	31.75	12.7	8	32	84	-	15	2.2	3
	HFF12125R-38.1	★	125	127	80	63	38.1	15.9	10	36	84	-	15	2.5	3

Inserts are sold separately.

Inserts

★Worldwide Warehouse Item ● USA stocked item

Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Length	Wiper Edge Shape	Applications	Fig
NF-LDEN12T3ZDFR-L	●	6.0	2.2	Linear	Low Resistance	1
NF-LDEN12T3ZDFR-G	●	6.0	2.2	Arc-Shaped	General-purpose	1
NF-LDEN12T3ZDTR-H	●	6.0	2.2	Arc-Shaped	Strong Edge	1
NF-LDEN12T3ZDFR-GX	●	9.0	2.2	Arc-Shaped	Long Edge	2
NF-LDEN12T3ZDFR-W	●	-	4.0	Arc-Shaped	Wiper	3

Fig 1

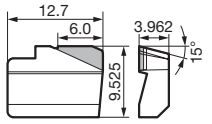


Fig 2

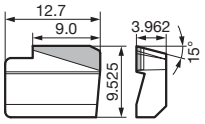
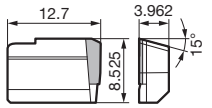


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code

HF F 12 080 R S - 22

HF	F	12	080	R	S	22
Cutter Series	Extra Fine Pitch	Blade Size	Cutter Dia.	Feed Direction	Metric Bore	Bore Dia.

Recommended Cutting Conditions - Metric

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Blade Grade
N	Aluminum Alloy	-	2,000- -3,000	0.05--0.20	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	400--800	0.05--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 SHELLMILL (Inch & Metric)

Rake Angle		
	Radial	4°
	Axial	10°

.118" 90° 3mm 90°

Fig 1

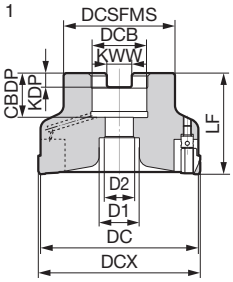


Fig 2

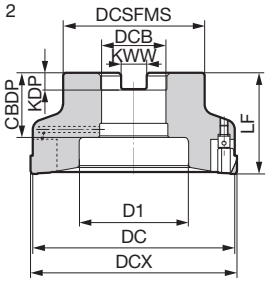
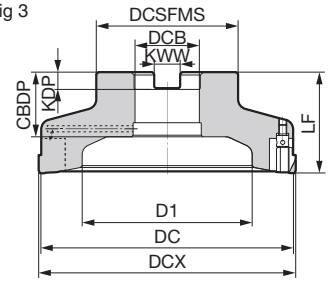


Fig 3



Body (Extra Fine Pitch: 3-teeth / Inch) With Coolant Holes

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Coolant Bolt	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**HFFH43000R**	●	3.000	3.079	1.970	2.000	1.000	0.375	0.220	1.020	0.797	0.531	BFXH1/2X1 1/4	9	2.20	1
	HFFH44000R	●	4.000	4.079	2.756	2.000	1.500	0.625	0.380	1.457	2.126	0.781	BFXH3/4X2	12	3.75	1
	HFFH45000R	●	5.000	5.079	3.150	2.000	1.500	0.625	0.380	1.457	2.126	0.781	BFXH3/4X2	15	5.95	1
	HFFH46000R	●	6.000	6.079	3.740	2.374	1.500	0.625	0.380	1.457	2.756	0.781	BFXH3/4X2	18	9.30	1
Metric	**HFFH12080RS-22**	★	*80*	*82*	*50*	*40*	*22*	*10.4*	*6.3*	*20*	*18*	*11*	* BFXH1025-D16	10	*1.0*	1
	HFFH12080RS-27	★	*80*	*82*	*55*	*50*	*27*	*12.4*	*7*	*22*	*20*	*14*	* BFXH1230-D18	10	*1.2*	1
	HFFH12100RS-32	★	*100*	*102*	*70*	*50*	*32*	*14.4*	*8*	*32*	*54*	-	* BFXH1635-D40	12	*1.7*	2
	HFFH12125RS-32	★	*125*	*127*	*70*	*50*	*32*	*14.4*	*8*	*32*	*84*	-	* BFXH1635-D40	15	*2.2*	3
	HFFH12125RS-40	★	*125*	*127*	*90*	*63*	*40*	*16.4*	*9*	*35*	*84*	-	* BFXH2036-D50	15	*2.8*	3
	HFFH12080R-25.4	★	*80*	*82*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*35*	-	* BFXH1/2-20X1 1/4-D33	10	*1.0*	2
	HFFH12100R-25.4	★	*100*	*102*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*54*	-	* BFXH1/2-20X1 1/4-D40	12	*1.5*	2
	HFFH12100R-31.75	★	*100*	*102*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*54*	-	* BFXH5/8-18X1 1/2-D50	12	*1.7*	2
	HFFH12125R-25.4	★	*125*	*127*	*50*	*50*	*25.4*	*9.5*	*6*	*30*	*84*	-	* BFXH1/2-20X1 1/4-D40	15	*2.0*	3
	HFFH12125R-31.75	★	*125*	*127*	*70*	*50*	*31.75*	*12.7*	*8*	*32*	*84*	-	* BFXH5/8-18X1 1/2-D50	15	*2.2*	3
	HFFH12125R-38.1	★	*125*	*127*	*80*	*63*	*38.1*	*15.9*	*10*	*36*	*84*	-	* BFXH3/4X2	15	*2.5*	3

Inersts are sold separately.

Inserts

★Worldwide Warehouse Item ● USA stocked item * Sold Separately

Dimensions (*mm*)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Length	Wiper Edge Shape	Applications	Fig
NF-LDEN12T3ZDFR-L	●	*6.0*	*2.2*	Linear	Low Resistance	1
NF-LDEN12T3ZDFR-G	●	*6.0*	*2.2*	Arc-Shaped	General-purpose	1
NF-LDEN12T3ZDTR-H	●	*6.0*	*2.2*	Arc-Shaped	Strong Edge	1
NF-LDEN12T3ZDFR-GX	●	*9.0*	*2.2*	Arc-Shaped	Long Edge	2
NF-LDEN12T3ZDFR-W	●	-	*4.0*	Arc-Shaped	Wiper	3

Fig 1

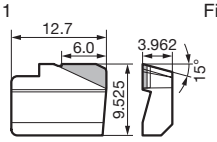


Fig 2

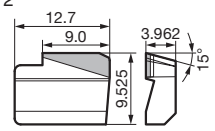
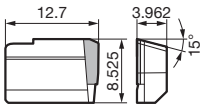


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Blade Grade
N	Aluminum Alloy	-	2,000- -3,000	0.05--0.20	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	400--800	0.05--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.

Identification Code - Inch

HF F H 4 3000 R

Cutter Series | Fine Pitch | Coolant | Insert Size | Cutter Dia. 3.000" | Feed Direction

Identification Code - Metric

HF F H 12 080 R S - 22

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

N·m Recommended Tightening Torque (N·m)

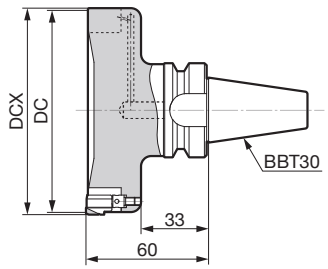
High-Efficiency Cutter for Aluminum Alloys

HFFH - BBT30 Series

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	**HFFH12080R-BBT30**	★	*80*	*82*	10	*1.6*	1
	HFFH12100R-BBT30	★	*100*	*102*	12	*2.4*	1
	HFFH12125R-BBT30	★	*125*	*127*	15	*2.9*	1

Inserts are sold separately.

Inserts

Dimensions (mm)

Grade		SUMIDIA
Process	High-speed / Light	N
	General-purpose	N
	Roughing	N

Cat. No.	DA1000	Cutting Edge Length	Wiper Length	Wiper Edge Shape	Applications	Fig
NF-LDEN12T3ZDFR-L	●	6.0	*2.2*	Linear	Low Resistance	1
NF-LDEN12T3ZDFR-G	●	6.0	*2.2*	Arc-Shaped	General-purpose	1
NF-LDEN12T3ZDTR-H	●	6.0	*2.2*	Arc-Shaped	Strong Edge	1
NF-LDEN12T3ZDFR-GX	●	9.0	*2.2*	Arc-Shaped	Long Edge	2
NF-LDEN12T3ZDFR-W	●	-	*4.0*	Arc-Shaped	Wiper	3

Fig 1

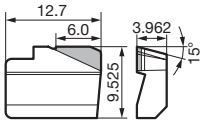


Fig 2

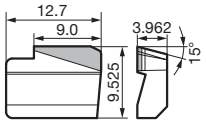
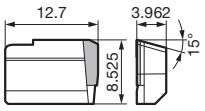


Fig 3 Wiper Blade



Parts

(Sold Separately)

Clamp	Bolt		Adjustment Screw	Wrench	Wrench	Assembly Wrench
		N·m				
HFW	WB6-13T	6.0	HFJ	TTX20	RFT	HFVT

Identification Code

HF F H 12 080 R - BBT30

HF	F	H	12	080	R	BBT30
Cutter Series	Extra Fine Pitch	With Oil Hole	Insert Size	Cutter Dia.	Feed Direction	Supported Arbor Symbol

Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2,000 -3,000	0.05-0.20	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	400-800	0.05-0.20	DA1000

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

* BIG-PLUS™ is a registered trademark of BIG DAISHOWA Co., Ltd.
* Can also be used with BT30 spindle machines.

N·m Recommended Tightening Torque (N·m)

RF Series

■ General Features

The RF cutter for aluminum alloy has a lightweight body designed for high-speed, high-performance roughing to finish milling of aluminum alloy and other non-ferrous metals.

■ Work Material

- Aluminum and aluminum alloys
- Other Non-Ferrous Metals

(Not suited for cast iron or steel.)

■ Features

- From Roughing to Finishing Processes: Roughing: Economical carbide insert / Finishing: High-precision SUMIDIA insert
- Strong and Lightweight Body: Special aluminum alloy body. 40% lighter than steel cutters. Hard anodizing. Improved efficiency with higher spindle speeds, lower spindle loads and shorter tool change time
- Safety Design: Prevents inserts from dislodging from cutter due to centrifugal force. (Speeds must be within max. recommended conditions) To prevent warping, wedges are not used in the cutter construction
- Easy Runout Adjustment: External setting gauge is used for easy tool presetting. High-precision cutter construction - units fitted are within 10μm runout even before setting

■ Application Examples

Workpiece (Work Material)	Tool Cutting Blade (Insert Grade)	Cutting Conditions v_c = Cutting Speed (SFM) v_f = Feed Rate (IPM) a_p = Depth of Cut (inch)	Results
Case (ADC12)	RF4160R SUMIDIA Blade (DA2200)	v_c = 9,843 v_f = 225 a_p = 0.004"	Finished Surface Roughness: Ra=0.2μm, Number of Workpieces: 30,000 pcs (30x tool life of carbide inserts)
Contact Surface of Transmission Case (ADC12)	RF4125R SUMIDIA Insert (DA1000)	v_c = 9,843 v_f = 300 a_p = 0.06"	Finished Surface Roughness: Ra=0.3μm, Number of Workpieces: 20,000 units
Contact Surface of Cylinder Head (AC4C)	RF4250R Carbide Insert (H1)	v_c = 6,562 v_f = 296 a_p = 0.14"	Rough Cutting Number of Workpieces: 10,000 units

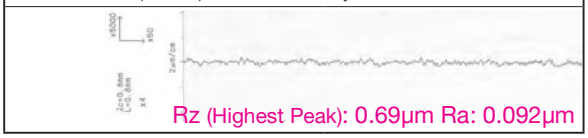
● Maximum Allowable Spindle Speed

Cat. No.	*n* max (RPM)
RF4080R	17,000
RF4100R	15,900
RF4125R	13,500
RF4160R	11,000
RF4200R	9,000
RF4250R	7,600
RF4315R	6,000

■ Finished Surface Roughness

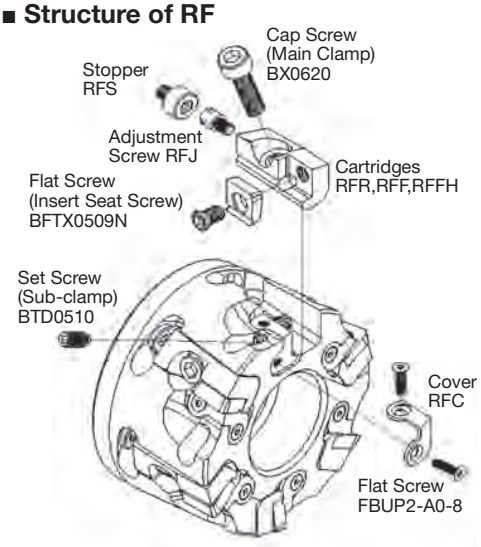
- Process: Finish Milling
- Machine: Vertical Machining Centre
- Arbour: HSK63A
- Work Material: Si 10 to 12% Al Alloy
- Cutter: RF4100R 6-Flute (1 Wiper)
- Grade: SUMIDIA (DA1000)

- v_c = 16,372 SFM
- n = 15,900 RPM
- v_f = 450 IPMn
- f_z = 0.0047 IPT
- a_p = 0.0197", Wiper a_p = 0.0012"
- Dry



Rz (Highest Peak): 0.69μm Ra: 0.092μm

■ Structure of RF



■ Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	6,560 - 16,400	0.002 - 0.008	DA1000 DA2200
		-	3,280 - 8,200	0.002 - 0.008	H1

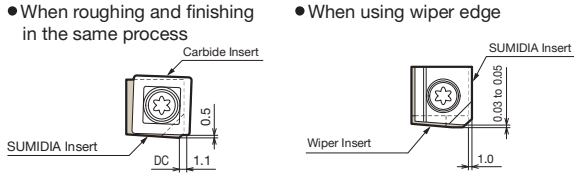
Si content of over 12.6%

N	Aluminum Alloy	-	1,320 - 2,630	0.002 - 0.008	DA1000 DA2200
		-	660 - 1,320	0.002 - 0.008	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).



⚠ CAUTIONS (For more details, refer to the instruction manual included with the product)

As it is possible to mix different types of inserts/blades, it is important to take note of the following.

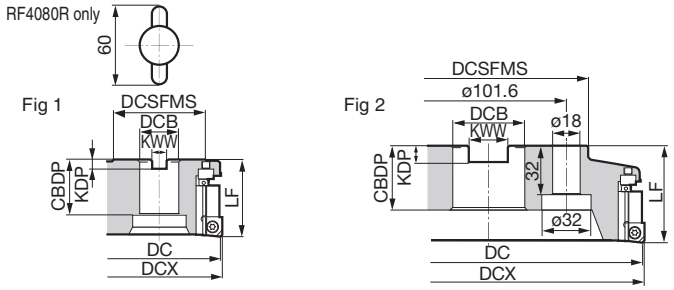
- Do not mix reground and new inserts or inserts with a different regrinding amount on the same cutter.
- Carbide and SUMIDIA inserts must be arranged alternately.
- Ensure proper balance by fixing the PCD inserts of the blades on opposite sides of the cutter.

RF Shellmill Metric

Rake Angle		
	Radial	4°
	Axial	10°

3mm 90° (SUMIDIA Insert)

10mm 87° (Carbide Insert)



Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	Maximum Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	RF4080R	★	80	82	60	50	25.40	9.5	6	30	6	0.7	1
	RF4100R	★	100	102	75	50	31.75	12.7	8	38	6	1.0	1
	RF4125R	★	125	127	75	63	38.10	15.9	10	38	8	1.6	1
	RF4160R	★	160	162	100	63	50.80	19.1	11	38	10	2.6	1
	RF4200R	★	200	202	130	63	47.625	25.4	14	42	12	3.6	2
	RF4250R		250	252	130	63	47.625	25.4	14	42	16	6.0	2
	RF4315R		315	317	240	80	47.625	25.4	14	42	18	11.0	2

Cartridges, blades and inserts are sold separately. Use a collar bolt to mount the cutter to the arbor.

Insert / Cartridge

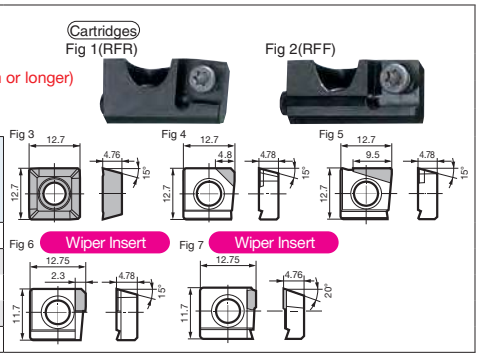
Dimensions (mm)

Grade		Carbide	DLC	SUMIDIA		SUMICRYSTAL
Process	High-speed / Light	N	N	N	N	N
	General-purpose	N	N	N	N	
	Roughing	N	N	N	N	

For SUMICRYSTAL details, refer to page M62

When using large depths of cut (a_p = 3mm or longer) with RF4080R, use the RFFH cartridge.
(RFF is possible for normal cutting.)

Cat. No.	H1	DL1000	DA1000	DA2200	SC10	Fig	Wiper Length	Cartridges Cat. No.	Cartridges Stock	Fig
SDET1204ZDFR	●	●	-	-	-	3	-	RFR	●	1
NF-SNEW1204ADFR	-	-	●	▲	-	4	2.2	RFF	●	2
NF-SNEW120404ADFR-H	-	-	●	-	-	5	1.4	RFF (Others) RFFH(RF4080R)	●	2
NF-SNEW1204ADFR-W	-	-	●	▲	-	6	3.0	RFF	●	2
SNEW1204ADFR-WS	-	-	-	-	●	7	2.0	RFF	●	2



An "H" at the end of the part number indicates large depth of cut type, while "W" or "WS" indicates a wiper insert.

Parts

Cover	Stopper	Cap Screw (Main Clamp)		Set Screw (Sub-clamp)		Flat Screw (Cover Mounting)	Adjustment Screw	Flat Screw (Insert Fastening)		Wrench	Wrench
RFC	RFS	BX0620	10.0	BTD0510	3.0	FBUP2 -A0-8	RFJ	BFTX0509N	5.0	TH050 TH025 RFT	TTX20

Description	Catalog No.	Stock	Appearance
Cartridge	RFF	●	
Coolant Through Arbor Bolt	RF-SCB80	●	
	RF-SCB100	●	
	RF-SCB125	●	
	RF-SCB160	●	

NOTES: Cartridges and inserts are sold separately.

Blades / Dummy Blades

Product Name	Cat. No.	SUMIDIA DA2200
SUMIDIA Blade	RFB	●
SUMIDIA Wiper Blade	RFBW	●
Dummy Blade	RFD	●(Steel)

Use dummy blades for unused teeth to protect the body as well as maintaining balance.

Setting Parts

Cartridge design allows inserts to be attached outside the machine with high precision.

Setting Gauge
RF-SET
(Sold Separately / Standard Stock)

Clamp Jig
RF-JIG
(Sold Separately / Standard Stock)

Internal Coolant Attachments

Use an internal coolant holder or a standard clamp bolt with a coolant hole when using internal coolant.
Typical examples are given in the table below. For standards, contact each manufacturer directly.

Body Cat. No.	Internal Coolant Holder	Standard Clamp Bolt with Coolant Hole (Example) MST Corporation	Standard Clamp Bolt with Coolant Hole (Example) Big Daishowa Seiki Co. Ltd.
RF 4080R	—	MBC-M12	TMBA-M12
RF 4100R	—	MBC-M16	TMBA-M16
RF 4125R	—	MBC-M20	TMBA-M20
RF 4160R	—	MBC-M24	TMBA-M24
RF 4200R	RF-CLT	—	—
RF 4250R	RF-CLT	—	—
RF 4315R	RF-CLT	—	—

Direction of Coolant Ejection

Internal Coolant Holders
RF-CLT (Standard Stock)

Standard Clamp Bolt with Coolant Hole
[Typical Example] MBC-M12 to M24 (Sold Separately)

N·m Recommended tightening torque (N·m)

SRF Series

■ General Features

The SRF small diameter aluminum alloy cutter is ideal for aluminum alloy machining on high-performance small machines.

■ Features

- Ideal for small machines
  Especially reliable on BT30 class small machines.
- From roughing to finishing processes
  Utilizes SUMIDIA DA1000 inserts
  with effective cutting edge length of 5mm
- Economical NF-type Inserts:
  NF Type SUMIDIA inserts with tough DA1000 grade lower tooling costs.
- High-speed Cutting with PCD-SUMIDIA:
  Maximum spindle speeds of up to n = 20,000 RPM
  (Actual spindle speeds must be set within the rotational limits of your machine and holder)
- Simple Runout Adjustment Mechanism:
  Simple insert direct mounting design
  for runout precision with easy fine adjustment

■ Application Examples

Workpiece (Work Material)	Tool Insert Cat. No. (Insert Grade)	Cutting Conditions n = Spindle Speed (RPM) v_f = Feed Rate (IPM) a_p = Depth of Cut (inch)	Results
Cam Case (ADC12)	SRF50R NF-SNEW09T3ADTR (DA1000)	n = 6,000 v_f = 95 a_p= 0.02"	12,000 pcs machined with no problems
Computer Case (ADC12)	SRF50R NF-SNEW09T3ADTR (DA1000)	n = 15,000 v_f = 295 a_p= 0.008"	2.5 times more efficient endmill operation
Differential Case (ADC12)	SRF63R NF-SNEW09T3ADTR (DA1000)	n = 8,000 v_f = 160 a_p= 0.02"	No obstructions on tool magazine when mounting ø63 cutter on small machines.

■ Recommended Cutting Conditions

Si content of 12.6% or less

ISO	Work Material	Hardness	Cutting Speed v_C (SFM) Min. - Max.	Feed Rate f_Z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	6,560 - 13,120	0.002 - 0.008	DA1000

Si content of over 12.6%

N	Aluminum Alloy	-	1,320 - 2,630	0.002 - 0.008	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 Series

Rake Angle		
	Radial	-2° to 4°
	Axial	6°

5mm 90°

Fig 1

Fig 2

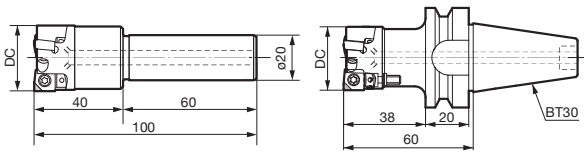


Fig 3

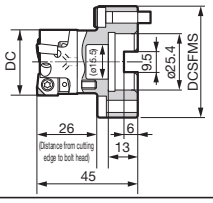
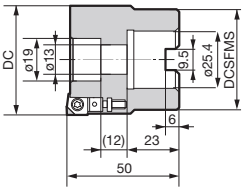


Fig 4

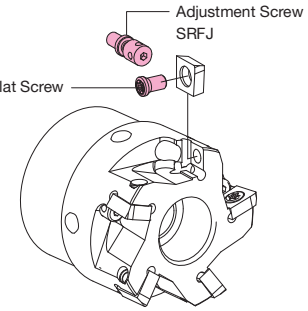


Body

Dimensions (*mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Number of Teeth	Weight (kg)	Fig
Metric	**SRF30R-ST**	★	*30*	-	3	*0.34*	1
	SRF40R-ST	★	*40*	-	4	*0.50*	1
	SRF30R-BT30	★	*30*	-	3	*0.57*	2
	SRF40R-BT30	★	*40*	-	4	*0.72*	2
	SRF30R	★	*30*	*50.0*	3	*0.27*	3
	SRF40R	★	*40*	*50.0*	4	*0.35*	3
	SRF50R	★	*50*	*46.5*	5	*0.59*	4
	SRF63R	★	*63*	*45.0*	6	*0.67*	4

Inserts are sold separately.



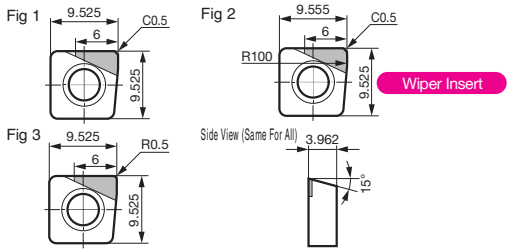
For securing the ø80mm and ø100mm cutters to the arbor, use a JIS B1176 hexagonal socket bolt (M12 x 1.18" to 1.38").

Insert

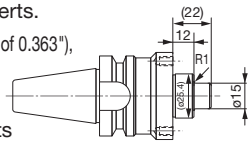
Dimensions (*mm*)

Grade		SUMIDIA	
Process	High-speed / Light	N	N
	General-purpose	N	N
	Roughing	N	N

Cat. No.	DA1000	DA2200	Wiper Length	Cutting Edge Shape	Fig
NF-SNEW09T3ADTR	●	▲	*2.0*	Standard	1
NF-SNEW09T3ADTR-U	●	▲	*2.2*	Wiper Edge	2
NF-SNEW09T3ADTR-R	●	▲	*2.0*	Nose Radius	3

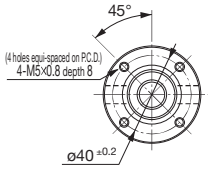


- Standard inserts and wiper inserts can be used on the same cutter body.
- Standard inserts with nose radius should be used where chatter is present. These cannot be used with wiper inserts.
- Inserts can be reground 3 times (up to minimum IC diameter of 0.363"), but the cutting edge height changes by the reground amount.
- Do not mix new and reground inserts or inserts with different regrind amounts on the same cutter.
- When using reground inserts, it is advisable to re-confirm cutting edge position with a tool pre-setter.



- Arbour for SRF30R, SRF40R

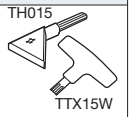
When using body SRF30R and SRF40R cutters, the arbor needs to be modified as shown above.



(1. Reduce part of the arbor's adapter shaft length from ø1.00" to ø0.590". Add 4 tap holes for (M5) mounting bolts.)

Use hex socket bolts M5 × 0.787" for securing the body.

Parts

Flat Screw		Adjustment Screw	Wrench
	N·m		TH015  TTX15W
BFTX0409N	4.0	SRFJ	TH015 TTX15W

N·m Recommended tightening torque (N/m)

● USA stocked item

★Worldwide Warehouse Item

Maximum Depth of Cut (SRF50R, 5-Flute)

The table below contains guidelines on the maximum depth of cut, determined from internal tests. 'O' marks indicate the possible application range. Actual cutting conditions should be set based on the actual machine and workpiece characteristics.

Depth of Cut a_p (inch) \ Feed Rate	Feed Rate v_f (IPM)		
	100	160	200
	Feed Rate Per Tooth f_z (IPT)		
	0.002	0.003	0.004
0.02	O	O	O
0.04	O	O	O
0.06	O	O	O
0.08	O	O	O
0.10	O	O	O
0.12	O	O	O
0.14	O	O	-
0.16	O	-	-
0.18	O	-	-
0.20	O	-	-

Cutting Conditions

Cutter: SRF50R

Insert: NF-SNEW 09T3ADTR (DA1000) n = 10,000 RPM

Arbour: BT30 FMA25.4-45

Workpiece: A-5052

Width: Maximum depth of cut at 1.38"

■ General Features

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.

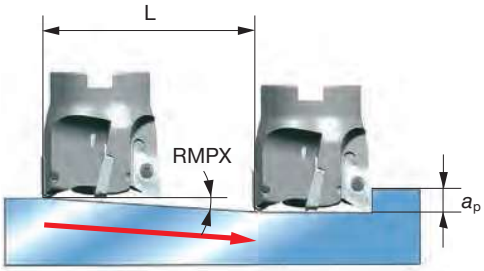
■ Features

- Ramping
- For Helical Milling
- Safety Design:
  · Prevents dislodging of inserts caused
  · by centrifugal force.
- Coolant Compatible:
  · Coolant holes are a standard feature for the WAX 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:

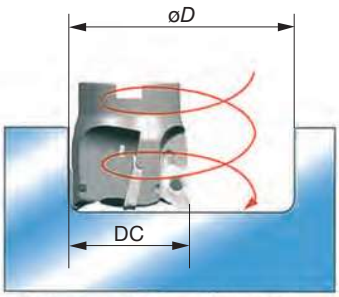
$$L = \frac{a_p}{\tan \text{RMPX}} \quad \text{(mm)}$$



■ Ramping Angle

Cutter Dia. DC(mm)	Maximum Ramping Angle RMPX	
	WAX3000 Type	WAX4000 Type
20	28°	
25	17°	26°
32	12°	18°30'
40	9°	13°
50	7°	9°30'
63	5°	7°
80	3°	5°
100	3°	4°
125	2°	3°

■ Helical Milling



■ Helical Milling Diameter

Cutter Dia. DC(mm)	WAX3000 Type		WAX4000 Type	
	Min. Dia.	Max. Dia.	Min. Dia.	Max. Dia.
20	0.87	1.30		
25	1.14	1.69	1.06	1.69
32	1.69	2.24	1.50	2.24
40	2.32	2.87	2.13	2.87
50	3.11	3.66	2.91	3.66
63	4.13	4.69	3.94	4.69
80	5.47	6.02	5.28	6.02
100	7.76	7.60	6.85	7.60
125	9.02	9.57	8.82	9.57

■ Maximum Allowable Spindle Speed

Cutter Dia. DC(mm)	WAX3000 Type		WAX4000 Type	
	n max(RPM)	v_c(SFM)	*n* max(RPM)	v_c(SFM)
20	14,000	2,625		
25	29,000	7,218	11,000	2,821
32	25,000	8,203	9,000	2,953
40	23,000	9,515	20,000	8,203
50	20,000	10,171	18,000	9,187
63	18,000	11,484	16,000	10,171
80	16,000	14,324	14,000	11,484
100	14,000	14,436	12,000	12,140
125	13,000	16,733	11,000	14,108

The *n* maximum speeds are set to prevent the inserts from dislodging by centrifugal force.

■ Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2000 - 4000	0.002 - 0.010	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.

WaveMill
WAX 3000 Shell Mill

N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	6°
	Axial	19° to 25°

.63 - .71" 90° | 16 to 18 mm 90°

Fig 1

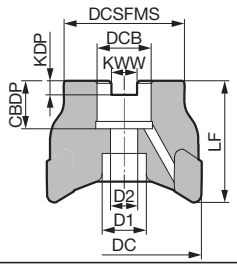


Fig 2

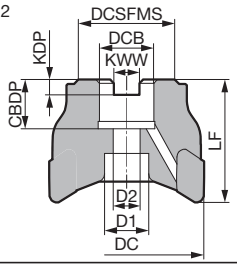
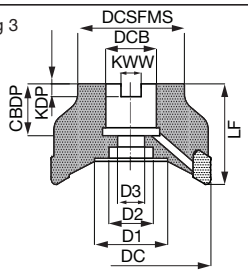


Fig 3



Body (RE = 3.2 or less)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**WAX32000-3.2**	●	2.000	1.772	1.750	0.750	0.312	0.187	0.750	.609	.406	—	4	0.75	1
Inch	**WAX32500-3.2**	●	2.500	1.772	1.750	1.000	0.375	0.220	0.750	.797	.531	—	5	0.95	1
Inch	**WAX33000-3.2**	●	3.000	2.205	2.000	1.000	0.375	0.220	0.750	1.260	.797	.531	5	1.94	3
Inch	**WAX34000-3.2**	●	4.000	3.386	2.500	1.250	0.500	0.280	0.750	1.969	1.000	.656	6	5.07	3
Inch	**WAX35000-3.2**	●	5.000	3.386	2.500	1.500	0.625	0.380	1.000	2.000	.781	—	7	6.61	1
Metric	**WAX3050-3.2**	★	*50*	*42*	*50*	*22*	*10.4*	*6.3*	*21*	*18*	*11*	—	4	*0.34*	1
Metric	**WAX3063-3.2**	★	*63*	*42*	*50*	*22*	*10.4*	*6.3*	*21*	*18*	*11*	—	5	*0.6*	2
Metric	**WAX3080-3.2**	★	*80*	*57*	*50*	*25.4*	*9.5*	*6*	*25*	*35*	*26*	*14*	5	*1.0*	3
Metric	**WAX3100-3.2**	★	*100*	*67*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*28*	*17*	6	*2.2*	3
Metric	**WAX3125-3.2**	★	*125*	*87*	*63*	*38.1*	*15.9*	*10*	*35.5*	*30*	*21*	—	7	*3.5*	1

Body (RE=4.0 or more)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**WAX32000-4.0**	●	2.000	1.772	1.750	0.750	0.312	0.187	0.750	.609	.406	—	4	0.79	1
Inch	**WAX32500-4.0**	●	2.500	1.772	1.750	1.000	0.375	0.220	0.750	.797	.531	—	5	1.04	1
Inch	**WAX33000-4.0**	●	3.000	2.205	2.000	1.000	0.375	0.220	0.750	1.260	.797	.531	5	1.98	3
Inch	**WAX34000-4.0**	●	4.000	3.386	2.500	1.250	0.500	0.280	0.750	1.969	1.000	.656	6	5.29	3
Inch	**WAX35000-4.0**	●	5.000	3.386	2.500	1.500	0.625	0.380	1.000	2.000	.781	—	7	6.61	1
Metric	**WAX3050-4.0**	★	*50*	*42*	*50*	*22*	*10.4*	*6.3*	*21*	*18*	*11*	—	4	*0.34*	1
Metric	**WAX3063-4.0**	★	*63*	*42*	*50*	*22*	*10.4*	*6.3*	*21*	*18*	*11*	—	5	*0.6*	2
Metric	**WAX3080-4.0**	★	*80*	*57*	*50*	*25.4*	*9.5*	*6*	*25*	*35*	*26*	*14*	5	*1.0*	3
Metric	**WAX3100-4.0**	★	*100*	*67*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*28*	*17*	6	*2.2*	3
Metric	**WAX3125-4.0**	★	*125*	*87*	*63*	*38.1*	*15.9*	*10*	*35.5*	*30*	*21*	—	7	*3.5*	1

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

Insert

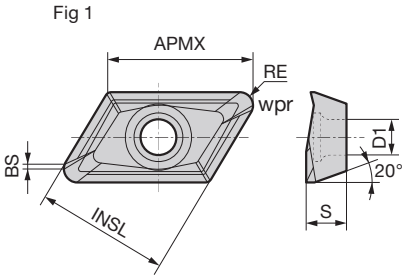
Dimensions (inch / *mm*)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

● USA stocked item
★ Worldwide Warehouse item

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Wiper Facet Length wpr	Thickness S	Bore Dia. D1	Fig
AECT160404PEFRA	●	●	0.708 (18)	0.6456 (16.4)	0.055 (1.4)	0.016 (0.4)	0.055 (1.4)	0.1968 (5)	0.1732 (4.4)	1
AECT160408PEFRA	●	●	0.708 (18)	0.6456 (16.4)	0.039 (1.0)	0.031 (0.8)	0.039 (1.0)	0.1968 (5)	0.1732 (4.4)	1
AECT160412PEFRA	●	●	0.708 (18)	0.6456 (16.4)	0.023 (0.6)	0.047 (1.2)	0.024 (0.6)	0.1968 (5)	0.1732 (4.4)	1
AECT160416PEFRA	●	●	0.689 (17.5)	0.6456 (16.4)	0.020 (0.5)	0.063 (1.6)	0.020 (0.5)	0.1968 (5)	0.1732 (4.4)	1
AECT160420PEFRA	●	●	0.689 (17.5)	0.6456 (16.4)	0.020 (0.5)	0.079 (2.0)	0.020 (0.5)	0.1968 (5)	0.1732 (4.4)	1
AECT160430PEFRA	●	●	0.669 (17)	0.6456 (16.4)	0.028 (0.7)	0.118 (3.0)	0.028 (0.7)	0.1968 (5)	0.1732 (4.4)	1
AECT160432PEFRA	●	●	0.669 (17)	0.6456 (16.4)	0.020 (0.5)	0.126 (3.2)	0.020 (0.5)	0.1968 (5)	0.1732 (4.4)	1
AECT160440PEFRA	●	●	0.649 (16.5)	0.6456 (16.4)	0.020 (0.5)	0.157 (4.0)	0.020 (0.5)	0.1968 (5)	0.1732 (4.4)	1
AECT160450PEFRA	●	●	0.630 (16)	0.6456 (16.4)	0.016 (0.4)	0.197 (5.0)	0.016 (0.4)	0.1968 (5)	0.1732 (4.4)	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Screw		Wrench	Anti-Seize Cream
		N·m		
WAX3000	BFTX0408	3.0	TRD15	SUMI-P

N·m Recommended Tightening Torque (N·m)

Recommended Cutting Conditions

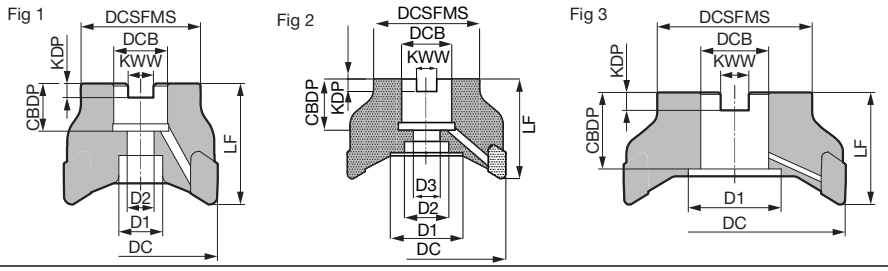
ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2,000 - 4,000	0.002 - 0.010	DL1000

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 4000 Shell Mill

Rake Angle		
	Radial	6°
	Axial	19° to 25°

.866" - .945" 90° | 22 to 24 mm 90°



Body (RE = 3.2 or less)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**WAX42000-3.2**	●	2.000	1.772	2.500	0.750	0.312	0.187	0.750	.609	.406	—	2	1.18	1
	WAX42500-3.2	●	2.500	2.205	2.000	1.000	0.375	0.220	0.750	.797	.531	—	3	1.31	1
	WAX43000-3.2	●	3.000	2.205	2.000	1.000	0.375	0.220	0.750	1.378	.797	.531	4	1.58	2
	WAX44000-3.2	●	4.000	2.874	2.500	1.250	0.500	0.280	0.750	1.811	1.000	.656	5	4.41	2
	WAX45000-3.2	●	5.000	3.386	2.500	1.500	0.625	0.380	1.000	2.000	.781	—	6	5.95	1
Metric	**WAX4050-3.2**	★	*50*	*42*	*50*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	—	2	*0.37*	1
	WAX4063-3.2	★	*63*	*49*	*50*	*22*	*10.4*	*6.3*	*21*	*18*	*11*	—	3	*0.54*	1
	WAX4080-3.2	★	*80*	*57*	*50*	*25.4*	*9.5*	*6*	*25*	*35*	*26*	*14*	4	*0.81*	2
	WAX4100-3.2	★	*100*	*67*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*28*	*17*	5	*1.70*	2
	WAX4125-3.2	★	*125*	*87*	*63*	*38.1*	*15.9*	*10*	*43*	*52*	-	—	6	*2.6*	3

Body (RE=4.0 or more)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Bolt D1	Bolt D2	Bolt D3	Number of Teeth	Weight (lbs / kg)	Fig
Inch	**WAX42000-4.0**	●	2.000	1.772	2.500	0.750	0.312	0.187	0.750	.609	.406	—	2	1.19	1
	WAX42500-4.0	●	2.500	2.205	2.000	1.000	0.375	0.220	0.750	.797	.531	—	3	1.37	1
	WAX43000-4.0	●	3.000	2.205	2.000	1.000	0.375	0.220	0.750	1.378	.797	.531	4	1.65	2
	WAX44000-4.0	●	4.000	2.874	2.500	1.250	0.500	0.280	0.750	1.811	1.000	.656	5	4.39	2
	WAX45000-4.0	●	5.000	3.386	2.500	1.500	0.625	0.380	1.000	2.000	.781	—	6	6.13	1
Metric	**WAX4050-4.0**	★	*50*	*42*	*50*	*16*	*8.4*	*5.6*	*18*	*14*	*9*	—	2	*0.38*	1
	WAX4063-4.0	★	*63*	*49*	*50*	*22*	*10.4*	*6.3*	*21*	*18*	*11*	—	3	*0.54*	1
	WAX4080-4.0	★	*80*	*57*	*50*	*25.4*	*9.5*	*6*	*25*	*35*	*26*	*14*	4	*0.83*	2
	WAX4100-4.0	★	*100*	*67*	*63*	*31.75*	*12.7*	*8*	*32.5*	*46*	*28*	*17*	5	*1.70*	2
	WAX4125-4.0	★	*125*	*87*	*63*	*38.1*	*15.9*	*10*	*43*	*52*	-	—	6	*2.8*	3

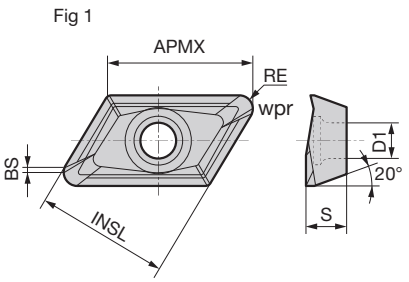
Note For securing the ø80mm and ø100mm cutters to the arbors marked with * to an arbor, use a JIS B1176 hexagonal socket bolt (ø80mm: M12 x 30 to 35mm, ø100mm: M16 x 40 to 45mm).

Insert

Dimensions (inch / *mm*)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Wiper Facet Length wpr	Thickness S	Bore Dia. D1	Fig
AECT220604PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.059 (1.5)	0.016 (0.4)	0.059 (*1.5*)	0.250 (6.35)	0.236 (6.0)	1
AECT220608PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.047 (1.2)	0.031 (0.8)	0.047 (*1.2*)	0.250 (6.35)	0.236 (6.0)	1
AECT220612PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.031 (0.8)	0.047 (1.2)	0.031 (*0.8*)	0.250 (6.35)	0.236 (6.0)	1
AECT220616PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.016 (0.4)	0.063 (1.6)	0.016 (*0.4*)	0.250 (6.35)	0.236 (6.0)	1
AECT220620PEFRA	•	•	0.945 (24)	0.8563 (21.8)	0.020 (0.5)	0.079 (2.0)	0.020 (*0.5*)	0.250 (6.35)	0.236 (6.0)	1
AECT220630PEFRA	•	•	0.905 (23)	0.8563 (21.8)	0.023 (0.6)	0.118 (3.0)	0.024 (*0.6*)	0.250 (6.35)	0.236 (6.0)	1
AECT220632PEFRA	•	•	0.905 (23)	0.8563 (21.8)	0.016 (0.4)	0.126 (3.2)	0.016 (*0.4*)	0.250 (6.35)	0.236 (6.0)	1
AECT220640PEFRA	•	•	0.866 (22)	0.8563 (21.8)	0.047 (1.2)	0.157 (4.0)	0.047 (*1.2*)	0.250 (6.35)	0.236 (6.0)	1
AECT220650PEFRA	•	•	0.866 (22)	0.8563 (21.8)	0.016 (0.4)	0.197 (5.0)	0.016 (*0.4*)	0.250 (6.35)	0.236 (6.0)	1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

■ Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_C (SFM) Min. - Max.	Feed Rate f_Z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2000 - 4000	0.002 - 0.010	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)

Parts

Applicable Cutter Diameter	Flat Screw	N·m	Wrench	Anti-Seize Cream
ø25 to ø32	BFTX0509N	5.0	TRD20	SUMI-P
ø40 to ø125	BFTX0511N			

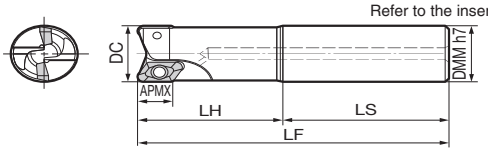
WaveMill
WAX 3000 ENDMILL

N Non-Ferrous Metal | N Aluminum Alloy

Rake Angle		
	Radial	6°
	Axial	19° to 25°

16 to 18 mm 90° | .63 - .71" 90°

Fig 1



Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (lbs/*kg*)	Fig
Inch	**WAX30750EW-3.2**	●	0.750	0.750	4.281	2.000	2.281	1	0.55	1
Inch	**WAX31000EW-3.2**	●	1.000	1.000	4.781	2.500	2.281	2	0.93	1
Inch	**WAX31250EW-3.2**	●	1.250	1.250	4.781	2.500	2.281	2	1.65	1
Inch	**WAX31500EW-3.2**	●	1.500	1.500	4.781	2.500	2.281	3	2.20	1
Inch	**WAX30750ELC-3.2**	●	0.750	0.750	8.000	2.000	6.000	1	0.91	1
Inch	**WAX31000ELC-3.2**	●	1.000	1.000	10.000	2.500	7.500	2	1.49	1
Inch	**WAX31250ELC-3.2**	●	1.250	1.250	10.000	2.500	7.500	2	2.17	1
Inch	**WAX31500ELC-3.2**	●	1.500	1.500	10.000	2.500	7.500	3	3.30	1
Metric	**WAX3020E-3.2**	★	*20*	*20*	*130*	*60*	*70*	1	*0.25*	1
Metric	**WAX3025E-3.2**	★	*25*	*25*	*140*	*60*	*80*	2	*0.42*	1
Metric	**WAX3025EL-3.2**	★	*25*	*25*	*200*	*60*	*140*	2	*0.63*	1
Metric	**WAX3032E-3.2**	★	*32*	*32*	*150*	*70*	*80*	2	*0.75*	1
Metric	**WAX3032EL-3.2**	★	*32*	*32*	*220*	*70*	*150*	2	*1.2*	1
Metric	**WAX3040E-3.2**	★	*40*	*32*	*160*	*70*	*90*	3	*1.0*	1
Metric	**WAX3040EL-3.2**	★	*40*	*32*	*220*	*70*	*150*	3	*1.4*	1

Body (RE=4.0 or more)

Dimensions (inch / *mm*)

	Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (lbs/*kg*)	Fig
Inch	**WAX30750EW-4.0**	●	0.750	0.750	4.281	2.000	2.281	1	0.55	1
Inch	**WAX31000EW-4.0**	●	1.000	1.000	4.281	2.000	2.281	2	0.93	1
Inch	**WAX31250EW-4.0**	●	1.250	1.250	4.781	2.500	2.281	2	1.65	1
Inch	**WAX31500EW-4.0**	●	1.500	1.500	4.781	2.500	2.281	3	2.20	1
Inch	**WAX30750ELC-4.0**	●	0.750	0.750	8.000	2.000	6.000	1	0.91	1
Inch	**WAX31000ELC-4.0**	●	1.000	1.000	10.000	2.500	7.500	2	1.49	1
Inch	**WAX31250ELC-4.0**	●	1.250	1.250	10.000	2.500	7.500	2	2.17	1
Inch	**WAX31500ELC-4.0**	●	1.500	1.500	10.000	2.500	7.500	3	3.30	1
Metric	**WAX3020E-4.0**	★	*20*	*20*	*130*	*60*	*70*	1	*0.25*	1
Metric	**WAX3025E-4.0**	★	*25*	*25*	*140*	*60*	*80*	2	*0.42*	1
Metric	**WAX3025EL-4.0**	★	*25*	*25*	*200*	*60*	*140*	2	*0.63*	1
Metric	**WAX3032E-4.0**	★	*32*	*32*	*150*	*70*	*80*	2	*0.75*	1
Metric	**WAX3032EL-4.0**	★	*32*	*32*	*220*	*70*	*150*	2	*1.2*	1
Metric	**WAX3040E-4.0**	★	*40*	*32*	*160*	*70*	*90*	3	*1.0*	1
Metric	**WAX3040EL-4.0**	★	*40*	*32*	*220*	*70*	*150*	3	*1.4*	1

● USA stocked item ★ Worldwide Warehouse item

Inserts are sold separately.

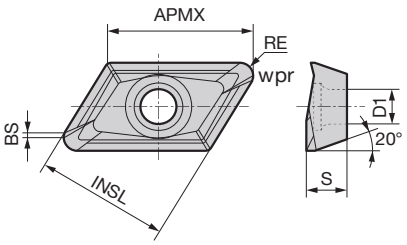
Insert

Dimensions (inch / *mm*)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Wiper Facet Length wpr	Thickness S	Bore Dia. D1	Fig
AECT160404PEFRA	●	●	0.708 (*18*)	0.6456 (*16.4*)	0.055 (*1.4*)	0.016 (*0.4*)	0.055 (*1.4*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160408PEFRA	●	●	0.708 (*18*)	0.6456 (*16.4*)	0.039 (*1.0*)	0.031 (*0.8*)	0.039 (*1.0*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160412PEFRA	●	●	0.708 (*18*)	0.6456 (*16.4*)	0.023 (*0.6*)	0.047 (*1.2*)	0.024 (*0.6*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160416PEFRA	●	●	0.689 (*17.5*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.063 (*1.6*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160420PEFRA	●	●	0.689 (*17.5*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.079 (*2.0*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160430PEFRA	●	●	0.669 (*17*)	0.6456 (*16.4*)	0.028 (*0.7*)	0.118 (*3.0*)	0.028 (*0.7*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160432PEFRA	●	●	0.669 (*17*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.126 (*3.2*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160440PEFRA	●	●	0.649 (*16.5*)	0.6456 (*16.4*)	0.020 (*0.5*)	0.157 (*4.0*)	0.020 (*0.5*)	0.1968 (*5*)	0.1732 (*4.4*)	1
AECT160450PEFRA	●	●	0.630 (*16*)	0.6456 (*16.4*)	0.016 (*0.4*)	0.197 (*5.0*)	0.016 (*0.4*)	0.1968 (*5*)	0.1732 (*4.4*)	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter	Flat Screw		Wrench	Anti-Seize Cream
		N·m		
WAX3000E/EL	BFTX0408	3.0	TRD15	SUMI-P

■ Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	2000 - 4000	0.002 - 0.010	DL1000

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

N·m Recommended Tightening Torque (N·m)

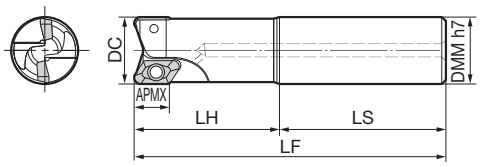
WAX 4000 ENDMILL

Rake Angle		
	Radial	6
	Axial	19° to 25°

.866" - .945" 90°

22 to 24 mm 90°

Fig 1



Refer to the insert dimensions for APMX.

Body (RE = 3.2 or less)

Dimensions (inch / *mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (lbs/*kg*)	Fig
WAX41000EW-3.2	●	1.000	1.000	4.781	2.500	2.281	1	1.49	1
WAX41250EW-3.2	●	1.250	1.250	4.781	2.500	2.281	1	1.65	1
WAX41500EW-3.2	●	1.500	1.500	4.781	2.500	2.281	2	2.20	1
WAX41000ELC-3.2	●	1.000	1.000	10.000	2.500	7.500	1	1.49	1
WAX41250ELC-3.2	●	1.250	1.250	10.000	2.500	7.500	1	2.17	1
WAX41500ELC-3.2	●	1.500	1.500	10.000	2.500	7.500	2	3.30	1
WAX4025E-3.2	★	*25*	*25*	*140*	*60*	*80*	1	*0.41*	1
WAX4025EL-3.2	★	*25*	*25*	*200*	*60*	*140*	1	*0.63*	1
WAX4032E-3.2	★	*32*	*32*	*150*	*70*	*80*	1	*0.72*	1
WAX4032EL-3.2	★	*32*	*32*	*220*	*70*	*150*	1	*1.2*	1
WAX4040E-3.2	★	*40*	*32*	*160*	*70*	*90*	2	*0.88*	1
WAX4040EL-3.2	★	*40*	*32*	*220*	*70*	*150*	2	*1.2*	1

Body (RE=4.0 or more)

Dimensions (inch / *mm*)

Cat. No.	Stock	Dia. DC	Shank DMM	Overall Length LF	Head LH	Shank LS	Number of Teeth	Weight (lbs/*kg*)	Fig
WAX41000EW-4.0	●	1.000	1.000	4.281	2.000	2.281	1	0.93	1
WAX41250EW-4.0	●	1.250	1.250	4.781	2.500	2.281	1	1.65	1
WAX41500EW-4.0	●	1.500	1.500	4.781	2.500	2.281	2	2.20	1
WAX41000ELC-4.0	●	1.000	1.000	10.000	2.500	7.500	1	1.49	1
WAX41250ELC-4.0	●	1.250	1.250	10.000	2.500	7.500	1	2.17	1
WAX41500ELC-4.0	●	1.500	1.500	10.000	2.500	7.500	2	3.30	1
WAX4025E-3.2	★	*25*	*25*	*140*	*60*	*80*	1	*0.41*	1
WAX4025EL-3.2	★	*25*	*25*	*200*	*60*	*140*	1	*0.63*	1
WAX4032E-3.2	★	*32*	*32*	*150*	*70*	*80*	1	*0.72*	1
WAX4032EL-3.2	★	*32*	*32*	*220*	*70*	*150*	1	*1.2*	1
WAX4040E-3.2	★	*40*	*32*	*160*	*70*	*90*	2	*0.88*	1
WAX4040EL-3.2	★	*40*	*32*	*220*	*70*	*150*	2	*1.2*	1

● USA stocked item ★ Worldwide Warehouse item

Inserts are sold separately.

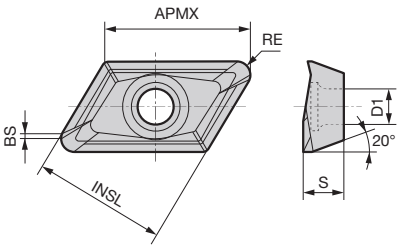
Insert

Dimensions (inch / *mm*)

Grade		Carbide	DLC
Process	High-speed / Light	N	N
	General-purpose		N
	Roughing		

Cat. No.	H1	DL1000	Max. Depth of Cut APMX	Length INSL	Wiper BS	Nose Radius RE	Thickness S	Bore Dia. D1	Fig
AECT220604PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.059 (1.5)	0.016 (0.4)	0.250 (6.35)	0.236 (6.0)	1
AECT220608PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.047 (1.2)	0.031 (0.8)	0.250 (6.35)	0.236 (6.0)	1
AECT220612PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.031 (0.8)	0.047 (1.2)	0.250 (6.35)	0.236 (6.0)	1
AECT220616PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.016 (0.4)	0.063 (1.6)	0.250 (6.35)	0.236 (6.0)	1
AECT220620PEFRA	●	●	0.945 (24)	0.8563 (21.8)	0.020 (0.5)	0.079 (2.0)	0.250 (6.35)	0.236 (6.0)	1
AECT220630PEFRA	●	●	0.905 (23)	0.8563 (21.8)	0.023 (0.6)	0.118 (3.0)	0.250 (6.35)	0.236 (6.0)	1
AECT220632PEFRA	●	●	0.905 (23)	0.8563 (21.8)	0.016 (0.4)	0.126 (3.2)	0.250 (6.35)	0.236 (6.0)	1
AECT220640PEFRA	●	●	0.866 (22)	0.8563 (21.8)	0.047 (1.2)	0.157 (4.0)	0.250 (6.35)	0.236 (6.0)	1
AECT220650PEFRA	●	●	0.866 (22)	0.8563 (21.8)	0.016 (0.4)	0.197 (5.0)	0.250 (6.35)	0.236 (6.0)	1

Fig 1



Inserts with a nose radius of RE = 4.0 or greater are for use with bodies that have a "-4.0" part number suffix.

Parts

Applicable Cutter Diameter	Flat Screw		Wrench	Anti-seize Cream
ø25 to ø32	BFTX0509N	5.0	TRD20	SUMI-P
ø40 to ø125	BFTX0511N			

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (m/min) Min. - Max.	Feed Rate f_z (mm/t) Min. - Max.	Insert Grade
N	Aluminum Alloy	-	600-1,200	0.05-0.25	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)

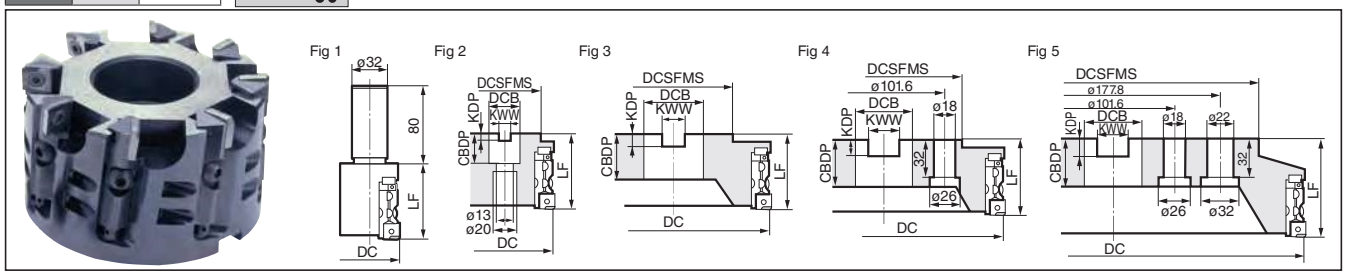
CBN BN Finish Mill EASY

FMU / FMU-E / FM

K Cast Iron

Rake Angle		
	Radial	2°
	Axial	8°

0.5mm 90°



Body

★ Worldwide Warehouse item

Dimensions (mm)

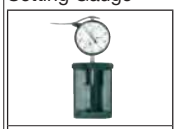
	Cat. No.	Stock	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Overall Length LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch	FMU4040ER	★	37	40	-	63	-	-	-	-	2	1.0	1
	FMU4050ER	★	47	50	-	63	-	-	-	-	3	1.2	1
	FMU4063ER	★	60	63	60	63	25.4	9.5	6	25	4	1.0	2
	FMU4080R	★	80	82.8	60	63	25.4	9.5	6	25	6	1.7	2
	FMU4100R	★	100	102.8	75	63	31.75	12.7	8	38	8	2.5	3
	FMU4125R	★	125	127.8	75	63	38.1	15.9	10	38	10	3.9	3
	FMU4160R	★	160	162.8	100	63	50.8	19.1	11	38	12	6.3	3
	FMU4200R	★	200	202.8	130	63	47.625	25.4	14	40	16	9.3	4
	FMU4250R		250	252.8	130	63	47.625	25.4	14	40	20	14.5	4
	FMU4315R		315	317.8	240	80	47.625	25.4	14	40	24	25.0	5

Inserts are sold separately.

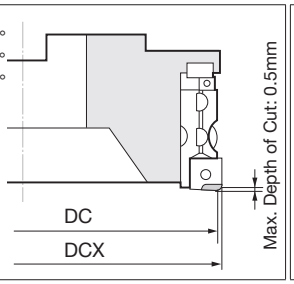
Maximum Depth of Cut

Approach Angle : 0°
Axial Rake Angle : +8°
Radial Rake Angle : +2°

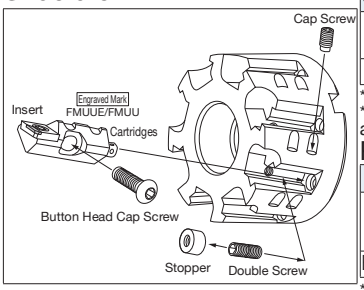
Setting Gauge



FMU-SET (Sold Separately)



Structure



Cartridges

Cartridges	Flat Screw		Adjustment Bolt	O-ring	Wrench	Wrench
		N·m			(For Flat Screws)	
FMUU(E)*	BFTX0509N	5.0	FMUJ	P3	TTX20	TH015

* FMU4040ER / 4050ER / 4063ER use FMUUE cartridges.
* FMUU / FMUUE are pre-assembled with flat screws and adjustment screws (with O-rings attached).

Parts

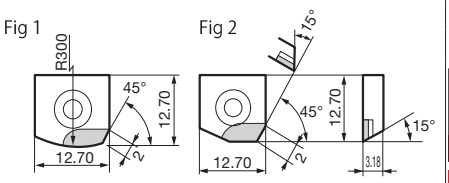
Bolt	Set Screw	Stopper	Double Screw	Wrench	Wrench	Wrench (Radial)
				(For Cartridges)	(For Cap Screws)	(For Stoppers)
BH0620*	BTD0609	FMUE	WB5-10	TH040	LH030	LH025

* FMU4040ER, 4050ER and 4063ER use BH0615 bolts.

Insert

Dimensions (mm)

	Grade	CBN - SUMIBORON			
Process	High-speed / Light	K	K	K	
	General-purpose	K	K	K	
	Roughing				
	Cat. No.	New BN7125	BN7000	BN700	Fig
	SNEW1203ADTR	★	●	●	1
	SNEW1203ADTR-S	★	●	●	2



Part number suffix -S denotes a low-thrust insert.

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
K	Gray Cast Iron	250HB	2,625 - 6,560	0.004 - 0.012	BN7000(Dry)

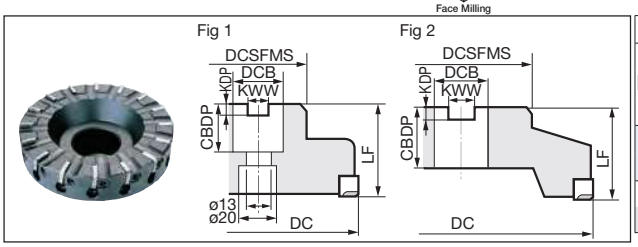
Note: The cutting conditions above are a guide. Actual conditions will need to be adjusted according to machine rigidity, work clamp rigidity, depth of cut and other factors.

Expansion

Rake Angle		
	Radial	2°
	Axial	8°

0.5mm 45°

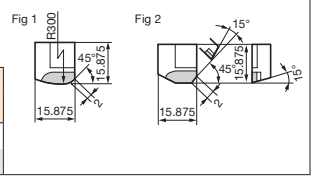
Face Milling



Insert

Dimensions (mm)

	Grade Classification	CBN - SUMIBORON				
Process	High-speed/Light Cutting	K		K		
	General-purpose	K		K		
	Roughing					
	Cat. No.	New BN7125		BN7000		Fig
		R	L	R	L	
	SNEN1504ADT R/L	★		★		1
	SNEN1504ADT R/L-S	★		★		2



Body

Dimensions (mm)

	Cat. No.	Stock R	Stock L	Dia. DC	Max. Dia. DCX	Boss DCSFMS	Height LF	Hole Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Weight (kg)	Fig
Inch Arbor	FM5080 R	★		80	82.8	60	50	25.4	9.5	6	25	6	1.6	1
	FM5125 R	★		125	127.8	75	63	38.1	15.9	10	38	10	3.4	2
	FM5160 R	★		160	162.8	100	63	50.8	19.1	11	38	12	5.6	2

Inserts are sold separately.

Parts

Applicable Cutter	Insert Clamp Plate	Adjustment Clamp	Adjustment Screw	Double Screw	Wrench	Wrench
FM5080R	FMW	–	FMJ	WB7F-20TL	TT25	1.8 x 45
FM5100R		FME	–			–
FM5315R						

N·m Recommended Tightening Torque (N·m)

Rake Angle		
	Radial	-6° 45'
	Axial	-5° 45'

3mm / 75°

Fig 1

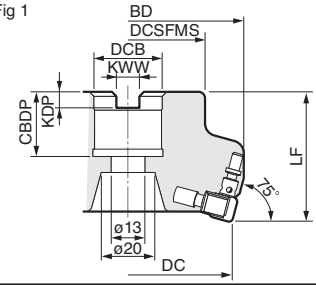
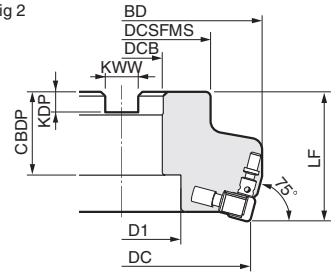


Fig 2



High-speed, High-efficiency Milling for Cast Iron

- High-Efficiency Milling of Gray Cast Iron
  - · Utilizes solid CBN - SUMIBORON BNS800 for high-speed cutting of v_c = 4,920 SFM.
  - · High speed roughing with depth of cut up to 0.118"
  - · Wiper insert for high-speed finishing
- Low Cost
  - · Economical double-sided insert with 8 usable corners
  - · Insert can be reground and used again
- Simple Runout Adjustment Mechanism
  - · Simple design for insert direct mounting
  - · Easy yet precise runout precision adjustment

Body

Dimensions (mm)

	Cat. No.	Stock	Dia. DC	O.D. BD	Boss DCSFMS	Bolt D1	Height LF	Bore Dia. DCB	Keyway Width KWW	Keyway Depth KDP	Mounting Depth CBDP	Number of Teeth	Maximum Spindle Speed (min⁻¹)	Weight (kg)	Fig
Inch	**RM3080R**	●	**80**	90	60	-	50	**25.40**	9.5	6	25	6	9,000	1.6	1
	RM3100R	●	**100**	110	70	46	50	**31.75**	12.7	8	32	8	8,000	2.1	2
	RM3125R	●	**125**	135	80	59	63	**38.10**	15.9	10	38	10	7,000	3.9	2
	RM3160R	●	**160**	170	100	80	63	**50.80**	19.1	11	38	12	6,000	5.9	2

Inserts are sold separately.

Insert

●USA Stock Standard Item

Dimensions (mm)

Grade		SUMIBORON
Process	High-speed / Light	K
	General-purpose	K
	Roughing	K

Cat. No.	BNS800	Fig
SNGN090308	●	1
SNGN090312	●	1
SNEN090308W	●	2

Fig 1

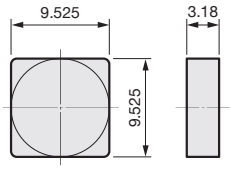
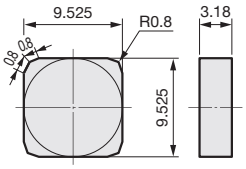
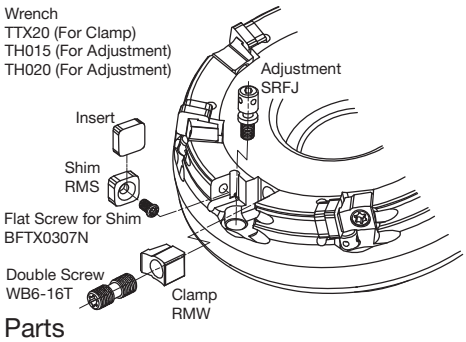


Fig 2 Wiper Insert





Parts

Clamp	Double Screw	Shim	Flat Screw for Shim		Adjustment Screw	Wrench (For Clamp)	Wrench (For Adjustment)	Wrench (For Adjustment)
RMW	WB6-16T	RMS	BFTX0307N	N·m 2.0	SRFJ	TTX20	TH015	TH020

N·m Recommended Tightening Torque (N·m)

⚠ CAUTION

- · Do not use inserts with different catalogue numbers, such as a mix of standard and wiper inserts, on a single cutter setting.
- · New and reground inserts cannot be mixed for use. Use either only new inserts or only reground inserts.
- · Inserts can only be reground once (inscribed circle dimension must be at least 9.125mm).

Recommended Cutting Conditions

ISO	Work Material	Hardness	Cutting Speed v_c (SFM) Min. - Max.	Feed Rate f_z (IPT) Min. - Max.	Insert Grade
K	Gray Cast Iron	250HB	2,625 - 5,000	0.002 - 0.008	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.