



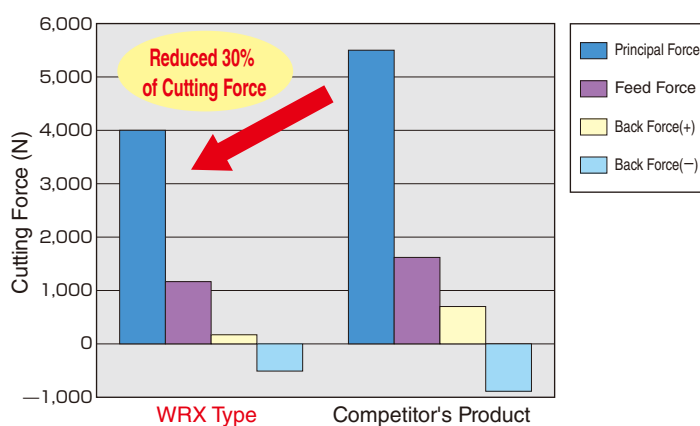
General Features

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

Characteristics

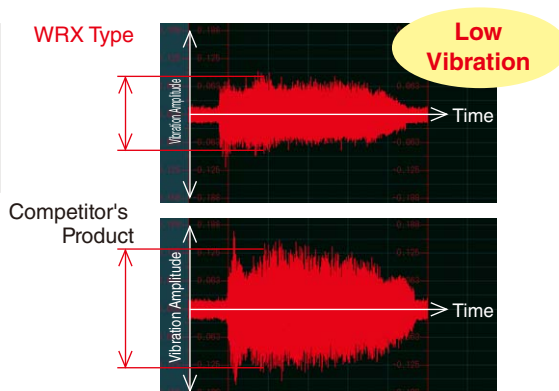
- Cutting edge positions are optimised to provide low cutting resistance and low vibration.

Cutting Force Comparison



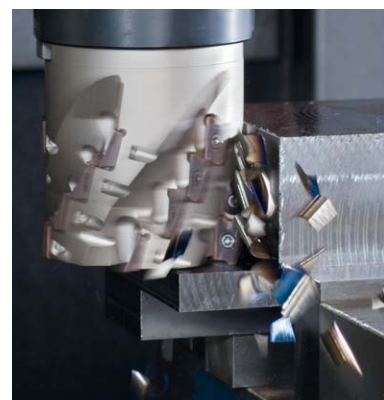
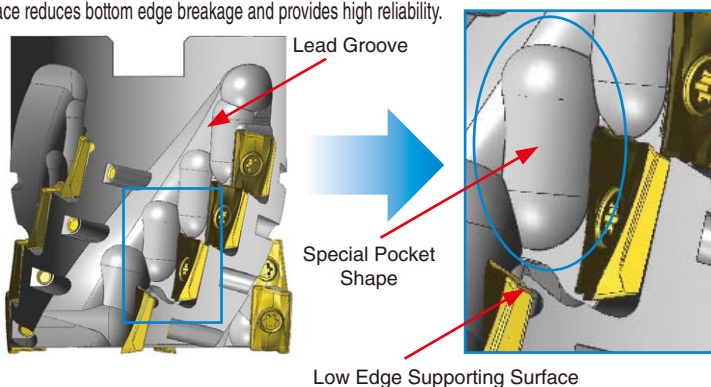
(Cutting Conditions)
Work Material: S50C
Tool: WRX2025E2725
Cutting Speed: $v_c=100\text{m/min}$ $f_z=0.15\text{mm/t}$ $a_e=10\text{mm}$ $a_p=25\text{mm}$ Dry

Vibration Comparison



(Cutting Conditions)
Work Material: S50C
Tool: WRX3080RS5332
Cutting Speed: $v_c=150\text{m/min}$ $f_z=0.20\text{mm/t}$ $a_e=5\text{mm}$ $a_p=40\text{mm}$ Dry

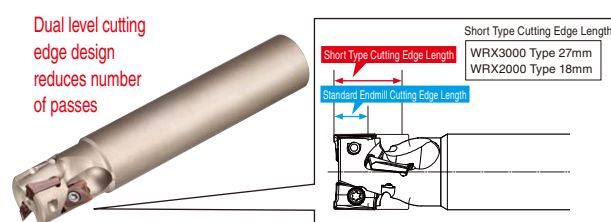
- Lead groove and special pocket shape provide smooth chip evacuation and high body rigidity.
- Low edge supporting face reduces bottom edge breakage and provides high reliability.



Product Range

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

Short Cutting Head Series



* Applicable inserts are the same as those for the popular SEC-WaveMill WEX type.

Application Examples

WRX2000 Type

Tool: WRX2040E3642 Insert: AXMT123504PEER-G

Cutting Conditions: Depth of Cut 30mm, Cutting Width 8mm

ISO Classification	Work Material	Work Hardness (HB)	Chipbreaker	Grades																							
				ACP100		ACP200		ACP300		ACK200		ACK300		ACM200		ACM300		DL1000									
				Per Edge Feed Rate f_e (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			
				v_c Cutting Speed (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															
P	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 SUS403 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	Al Alloy Si<12.6%		S																				1000	750	500		
	Si>12.6%		S																				250	200	170		

● The recommended cutting conditions may not be practical under certain operating conditions (i.e., machine, work 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, cutting depth, and other factors.

WRX3000 Type

Tool: WRX3050E5342 Insert: AXMT170508PEER-G

Cutting Conditions: Depth of Cut 50mm, Cutting Width 10mm

ISO Classification	Work Material	Work Hardness (HB)	Chipbreaker	Grades																											
				ACP100		ACP200		ACP300		ACK200		ACK300		ACM200		ACM300		DL1000													
				Per Edge Feed Rate f_e (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				
v_c Cutting Speed (m/min)																															
P	Steel, Carbon Steel S15C	125	G	320	300	280	300	280	260	280	260	240																			
	S45C	190	G	240	220	200	220	200	180	200	180	160																			
	S45C Hardened	250	G	200	180	160	180	160	140	160	140	120																			
	S75C	270	G	160	140	120	150	130	110	130	110	110																			
	S75C Hardened	300	G	120	100	80	100	80	60	80	60	50																			
	Low Alloy Steel SCM, SNCM	180	G	220	200	180	200	180	170	180	170	150																			
	SCM, SNCM Hardened	275	G	140	120	100	130	110	100	110	100	80																			
	SCM, SNCM Hardened	300	G	130	110	90	110	90	80	100	80	60																			
	SCM, SNCM Hardened	350	G	100	80	60	90	70	60	70	60	40																			
High Alloy Steel SKD, SKT, SKH	200	G	200	180	160	180	160	140	160	140	120																				
	SKD, SKT, SKH Hardened	325	G	100	80	60	80	60	50	60	50	30																			
M	Stainless Steel SUS403 and Others (Martensitic/Ferritic)	200	E															170	150	130	140	130	110								
	SUS403 and Others (Martensitic, Hardened)	240	E															140	120	100	120	100	90								
	SUS304, SUS316 (Austenitic)	180	E															180	160	140	160	140	130								
K	Cast Iron		G										240	220	200	220	200	180													
	Ductile Cast Iron		G										160	140	120	140	120	100													
S	Exotic Alloy		E															50	30		45	25									
N	Al Alloy Si<12.6%		S																												
	Si>12.6%		S																								1000	750	500		
																											250	200	170		

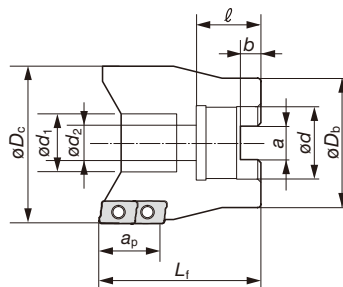
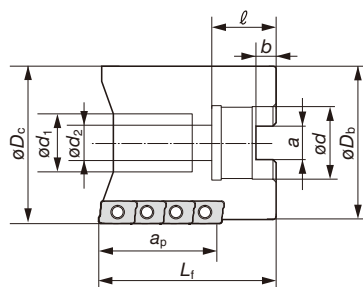
● The recommended cutting conditions may not be practical under certain operating conditions (i.e., machine, work shape, clamping system.

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

18 to 36mm **90°**



Fig2

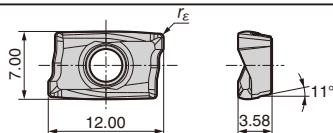


Cat. No.	Stock	Dimensions (mm)										Total Teeth	Steps	Effective Teeth	Weight (kg)	Fig
		ϕD_c	a_p	ϕD_b	L_t	ϕd	a	b	ℓ	ϕd_1	ϕd_2					
WRX 2040RS3616	●	40	36	37.5	55	16	8.4	5.6	18	14	9	16	4	4	0.3	1
2050RS3622	●	50	36	47.5	55	22	10.4	6.3	20	18	11	16	4	4	0.5	1

Cat. No.	Stock	Dimensions (mm)										Total Teeth	Steps	Effective Teeth	Weight (kg)	Fig
		ϕD_c	a_p	ϕD_b	L_f	ϕd	a	b	ℓ	ϕd_1	ϕd_2					
WRX 2040RS1816	●	40	18	32	50	16	8.4	5.6	18	14	9	10	2	5	0.3	2
2050RS1822	●	50	18	40	50	22	10.4	6.3	20	18	11	10	2	5	0.4	2

WRX 2 040 R S 36 16

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



Grade		Coated Carbide						Carbide	DLC	Dimensions	
Application	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	New ACM200	New ACM300	H1	DL1000	r_{ϵ}
AXMT 123504PEER-G		●	●	●	●	●			—	—	0.4
123508PEER-G		●	●	●	●	●			—	—	0.8
123512PEER-G		●	●	●	●	●			—	—	1.2
AXMT 123504PEER-H		●	●	●	●	●			—	—	0.4
123508PEER-H		●	●	●	●	●			—	—	0.8
123512PEER-H		●	●	●	●	●			—	—	1.2
AXMT 123504PEER-E							●	●	—	—	0.4
123508PEER-E				▲			●	●	—	—	0.8
123512PEER-E							●	●	—	—	1.2
AXMT 123508PEER-EH				▲			●	●	—	—	0.8
AXET 123502PEFR-S		—	—	—	—	—	—	—	●	●	0.2
123504PEFR-S		—	—	—	—	—	—	—	●	●	0.4
123508PEFR-S		—	—	—	—	—	—	—	●	●	0.8

Spanner	Screw
BFTX0306IP	TRDR08IP
Recommended Tightening Torque (N·m)	

* Use peripheral inserts with nose radii of 0.8 mm or below from the second step and above.

■ Recommended Cutting Conditions

● mark : Standard stocked item (expanded item) ▲ mark : To be replaced by new item (Please confirm stock availability)

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

27 to 53mm
90°



High Efficiency Machining for Steel, Stainless Steel, Cast Iron, Exotic Alloy, and Non-Ferrous Metal



Fig1

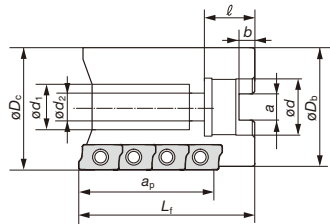


Fig2

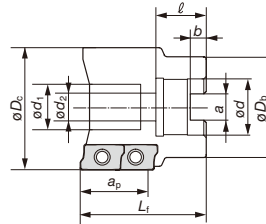
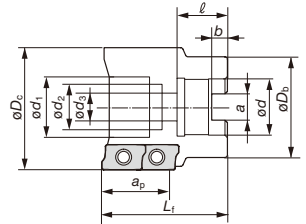


Fig3



Body (Standard Type) Metric

Cat. No.	Stock	Dimensions (mm)											Total Teeth	Steps	Effective Teeth	Weight (kg)	Fig
		ϕD_c	a_p	ϕD_b	L_f	ϕd	a	b	ℓ	ϕd_1	ϕd_2	ϕd_3					
WRX 3050RS5322	●	50	53	47	70	22	10.4	6.3	20	18	11	-	12	4	3	0.6	1
3063RS5327	●	63	53	60	70	27	12.4	7	23	20	13.5	-	16	4	4	1.0	1
3080RS5332	●	*80	53	77	85	32	14.4	8	26	25	17	-	20	4	5	2.2	1
3100RS5340	●	100	53	97	85	40	16.4	9.5	30	32	21	-	24	4	6	3.5	1

Body (Short Cutting Head) Metric

Cat. No.	Stock	Dimensions (mm)											Total Teeth	Steps	Effective Teeth	Weight (kg)	Fig
		ϕD_c	a_p	ϕD_b	L_f	ϕd	a	b	ℓ	ϕd_1	ϕd_2	ϕd_3					
WRX 3050RS2722	●	50	27	40	50	22	10.4	6.3	20	-	18	11	8	2	4	0.4	2
3063RS2722	●	63	27	50	50	22	10.4	6.3	20	-	18	11	10	2	5	0.7	2

Body (Short Cutting Head) Inch

Cat. No.	Stock	Dimensions (mm)											Total Teeth	Steps	Effective Teeth	Weight (kg)	Fig
		ϕD_c	a_p	ϕD_b	L_f	ϕd	a	b	ℓ	ϕd_1	ϕd_2	ϕd_3					
WRX 3080R27254	●	*80	27	60	50	25.4	9.5	6	25	35	26	13	12	2	6	1.1	3
3100R27317	●	*100	27	70	63	31.8	12.7	8	32.5	46	28	17	14	2	7	2.0	3



Inserts are not included. Check the collet attachment size (ϕd) when selecting the cutter.

*Please use JIS B1176 hexagonal bolt ($\phi 80$: M12x30 to 35mm, $\phi 100$: M16x40 to 45mm) for securing $\phi 80/\phi 100$ cutter to the arbor.

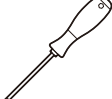
Inserts (Common)

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

Grade		Coated Carbide						Carbide	DLC	Dimensions
Application	High Speed/Light	P		K		M		N		
	General Purpose	P	M	K		M	S	N		
	Roughing	P	M	K		M	S	N		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	H1	r_ϵ
							New	New		
AXMT 170508PEER-L		●	●	●	●	●				0.8
AXMT 170504PEER-G		●	●	●	●	●				0.4
170508PEER-G		●	●	●	●	●				0.8
170512PEER-G		●	●	●	●	●				1.2
170516PEER-G		●	●	●	●	●				1.6
170520PEER-G *		●	●	●	●	●				2.0
170530PEER-G *		●	●	●	●	●				3.0
AXMT 170508PEER-H		●	●	●	●	●				0.8
170512PEER-H		●	●	●	●	●				1.2
AXMT 170504PEER-E							●	●		0.4
170508PEER-E			▲				●	●		0.8
170512PEER-E							●	●		1.2
170516PEER-E							●	●		1.6
170520PEER-E *							●	●		2.0
170530PEER-E *							●	●		3.0
AXMT 170508PEER-EH			▲				●	●		0.8
AXET 170502PEFR-S									●	0.2
170504PEFR-S									●	0.4
170508PEFR-S									●	0.8

* Cutter body modification is required.

Spare Parts

Spanner	Screw
	
BFTX0409IP	TRDR15IP
Recommended Tightening Torque (N·m)	
3.0	

* Use peripheral inserts with nose radii of 0.8 mm or below from the second step and above.

*Cutter body modification is required when attaching an R3.0 insert with a 2.0 nose radii.



Rework this edge.
Reworking guideines
For 2.0 nose radii: C1
(AXMT170520PEER)
For 3.0 nose radii: C1.5
(AXMT170530PEER)

Standard: C0.5.

Recommended Cutting Conditions H93

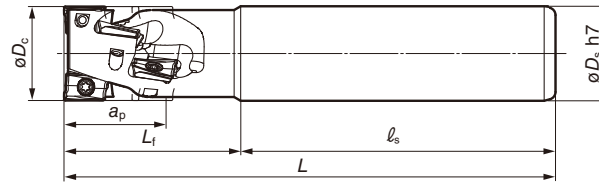
WRX 2000E Type

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

18 to 36mm	90°
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P	M	K	N	N	S	H
Steel	Stainless Steel	Cast Iron	Non-Ferrous Metal	Exotic Alloy	Hardened Steel	

High Efficiency Machining for Steel, Stainless Steel, Cast Iron, Exotic Alloy, and Non-Ferrous Metal



Body (Standard Type)

Cat. No.	Stock	Dimensions (mm)						Total Teeth	Steps	Effective Teeth	Weight (kg)
		ϕD_c	a_p	ϕD_s	L_f	ℓ_s	L				
WRX 2020E3620	●	20	36	20	45	85	130	4	4	1	0.3
2025E2725	●	25	27	25	45	85	130	6	3	2	0.4
2032E2732	●	32	27	32	45	85	130	9	3	3	0.7
2040E3642	●	40	36	42	45	85	130	16	4	4	1.2

Body (Short Cutting Head)

WRX 2020E1820	●	20	18	20	40	80	120	4	2	2	0.3
2025E1825	●	25	18	25	45	85	130	6	2	3	0.4
2032E1832	●	32	18	32	50	90	140	8	2	4	0.8
2040E1832	●	40	18	32	40	120	160	10	2	5	1.1

Identification Details

WRX 2 020 E 36 20

Insert Size (Insert Length 12mm) | Tool Diameter (mm) | Endmill Cutting Edge Length (mm) | Shank Diameter (mm)

Inserts

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

Grade		Coated Carbide						Carbide	DLC	Dimensions
Application	High Speed/Light	P			K		M	S	N	
	General Purpose		P	P	K		M	S	N	
	Roughing		P	P	K		M	S	N	
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	HI	DL1000
AXMT 123504PEER-G		●	●	●	●	●				0.4
123508PEER-G		●	●	●	●	●				0.8
123512PEER-G		●	●	●	●	●				1.2
AXMT 123504PEER-H		●	●	●	●	●				0.4
123508PEER-H		●	●	●	●	●				0.8
123512PEER-H		●	●	●	●	●				1.2
AXMT 123504PEER-E							●	●		0.4
123508PEER-E				▲			●	●		0.8
123512PEER-E							●	●		1.2
AXMT 123508PEER-EH				▲			●	●		0.8
AXET 123502PEFR-S									●	0.2
123504PEFR-S									●	0.4
123508PEFR-S									●	0.8

-G: General purpose, H: Strong edge, S: For aluminium alloy

Spare Parts

Spanner	Screw
TRDR08IP	BFTX0306IP
(N·m) Recommended Tightening Torque (N·m)	
2.0	

* Use peripheral inserts with nose radii of 0.8 mm or below from the second step and above.

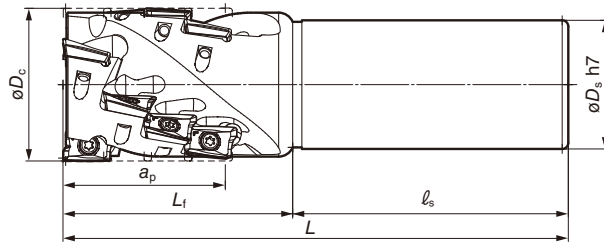
Recommended Cutting Conditions

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

27 to 53mm
90°

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

High Efficiency Machining for Steel, Stainless Steel, Cast Iron, Exotic Alloy, and Non-Ferrous Metal



Body (Standard Type)

Cat. No.	Stock	Dimensions (mm)						Total Teeth	Steps	Effective Teeth	Weight (kg)
		ϕD_c	a_p	ϕD_s	L_f	ℓ_s	L				
WRX 3040E4042	●	40	40	42	65	85	150	9	3	3	1.3
3050E5342	●	50	53	42	75	90	165	12	4	3	1.8

Body (Short Cutting Head)

Cat. No.	Stock	ϕD_c	a_p	ϕD_s	L_f	ℓ_s	L	Total Teeth	Steps	Effective Teeth	Weight (kg)
WRX 3040E2732	●	40	27	32	60	120	180	6	2	3	1.2
3050E2732	●	50	27	32	60	120	180	8	2	4	1.4

Milling Cutter Body Inserts are not included.

Identification Details

WRX 3 040 E 40 42

Insert Size (Insert Length 17mm) Tool Diameter (mm) Endmill Shank Diameter (mm) Cutting Edge Length (mm)

Inserts (Common)

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

		Coated Carbide						Carbide	DLC	Dimensions r_E
Grade		P	M	K	N	S	H			
Application	High Speed/Light	P		K		M		N		
	General Purpose	P	M	K		M		N		
	Roughing	P	M	K		M		N		
Cat. No.		ACP100	ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	HI	DL1000
AXMT 170508PEER-L		●	●	●	●	●			—	0.8
AXMT 170504PEER-G		●	●	●	●	●			—	0.4
170508PEER-G		●	●	●	●	●			—	0.8
170512PEER-G		●	●	●	●	●			—	1.2
170516PEER-G		●	●	●	●	●			—	1.6
170520PEER-G *		●	●	●	●	●			—	2.0
170530PEER-G *		●	●	●	●	●			—	3.0
AXMT 170508PEER-H		●	●	●	●	●			—	0.8
170512PEER-H		●	●	●	●	●			—	1.2
AXMT 170504PEER-E				▲			●	●	—	0.4
170508PEER-E							●	●	—	0.8
170512PEER-E							●	●	—	1.2
170516PEER-E							●	●	—	1.6
170520PEER-E *							●	●	—	2.0
170530PEER-E *							●	●	—	3.0
AXMT 170508PEER-EH				▲			●	●	—	0.8
AXET 170502PEFR-S		—	—	—	—	—	—	—	●	0.2
170504PEFR-S		—	—	—	—	—	—	—	●	0.4
170508PEFR-S		—	—	—	—	—	—	—	●	0.8

*Cutter body modification is required.

Spare Parts

Spanner	Screw
BFTX0409IP	TRDR15IP
(N·m)	(N·m)

Recommended Tightening Torque (N·m)

* Use peripheral inserts with nose radii of 0.8 mm or below from the second step and above.

*Cutter body modification is required when attaching an R3.0 insert with a 2.0 nose radii.



Rework this edge.

Reworking guideines

For 2.0 nose radii: C1

(AXMT170520PEER)

For 3.0 nose radii: C1.5

(AXMT170530PEER)

Standard: C0.5.

Recommended Cutting Conditions