



Excellent Wave Cutting for
High Precision Milling

WaveMill WEX Series



*New WaveMill improves productivity
improves quality*

- Low cutting force and high strength
- Wide insert range
- High cutter body durability



SUMITOMO ELECTRIC

WaveMill WEX



For the smooth cutting of a wide variety of materials...



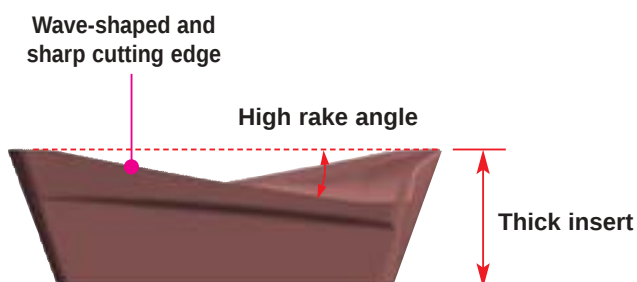
General Features

WEX is a new generation of indexable insert endmills and shoulder milling cutters based on the successful Sumitomo WaveMill concept. The wave shaped cutting edges generate lower cutting forces whilst the high shear cutting action ensures smooth reliable cutting even when deep slotting or milling with low rigidity machines. Strong cutting edges with heat and wear resistant nano technology coatings substantially improve machining accuracy and surface finish. In addition WEX cutter bodies benefit from a highly durable surface treatment and improved method of clamping the inserts into the seat.

Newly developed insert grades both CVD and PVD coated are on offer for steel and cast iron applications which can be used in conjunction with an air blast or coolant in slotting or deep cutting applications for improved chip control.

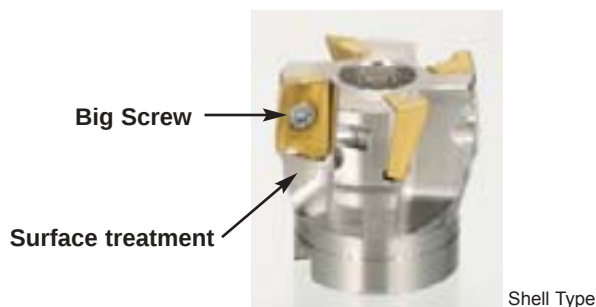
Advantages of WEX Inserts

- Unbeatable performance
- Smooth cutting due to high rake inserts
- High feed rates because of strong cutting edge
- Greatly extended tool life when specified with new PVD and CVD coated inserts
- Wave shaped cutting edge for excellent machined quality

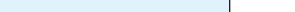
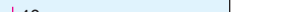
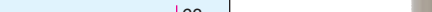


Advantages of WEX Cutter Bodies

- High durable surface treatment
- Improved method of clamping the inserts



Product range

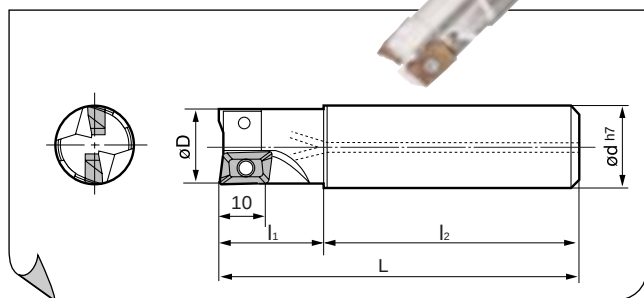
	Model	Type	ø10	ø20	ø32	ø40	ø63	Shank Type
"E" Shank Type	2000E	Standard type	14					
	2000EL	Long shank type	14					
	3000E	Standard type			25			
	3000EL	Long shank type			25			
	3000EW	Weldon shank type			25			
"F" Type	2000F	Shell type					40	
	3000F	Shell type					40	

Shank Type



New "Wave Mill" WEX 2000 E/EW

"Wave Mill"- E, Shank Type



■ Body (Short type "E")

Shank	Cat. No.	Stock	Dimensions(mm)					No.of teeth
			øD	ød	l ₁	l ₂	L	
	WEX 2014 E	●	14	16	25	55	80	1
	WEX 2016 E	●	16	16	25	75	100	2
	WEX 2018 E		18	16	25	75	100	2
	WEX 2020 E	●	20	20	30	80	110	3
	WEX 2022 E		22	25	30	80	110	3
	WEX 2025 E	●	25	25	35	85	120	4
	WEX 2028 E		28	25	35	85	120	4
	WEX 2030 E		30	32	35	85	120	4
	WEX 2032 E	●	32	32	40	90	130	5
	WEX 2040 E		40	32	50	120	170	6
	WEX 2050 E		50	32	50	120	170	7
	WEX 2063 E		63	32	50	120	170	8

■ Body (Long type "EL")

Shank	Cat. No.	Stock	Dimensions(mm)					No.of teeth
			øD	ød	l ₁	l ₂	L	
	WEX 2014 EL	●	14	16	25	95	120	1
	WEX 2016 EL	●	16	16	25	120	145	2
	WEX 2018 EL		18	16	25	120	145	2
	WEX 2020 EL	●	20	20	40	110	150	3
	WEX 2022 EL		22	20	40	110	150	3
	WEX 2025 EL	●	25	25	50	120	170	4
	WEX 2030 EL		30	25	50	120	170	4
	WEX 2032 EL	●	32	32	60	120	180	5
	WEX 2040 EL		40	32	80	120	200	6

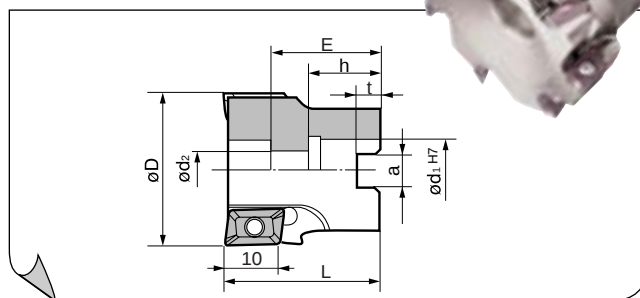
● = Euro stock
○ = Delivery on request

■ Spare Parts

Screw	Wrench	Applicable endmill
BFTX 0305 IP	TRDR 08 IP	2014 - 2018
BFTX 0306 IP		2020 - 2063

New "Wave Mill" WEX 2000 F

"Wave Mill"- F, Shell Type



■ Body (Shell type "F")

Cat. No.	Stock	Dimensions(mm)							No.of teeth
		øD	ød ₁	ød ₂	t	L	E	h	
WEX 2040 F	●	40	16	9	5,6	40	28	18	6
WEX 2050 F	●	50	22	11	6,3	40	26	20	7
WEX 2063 F	●	63	22	11	6,3	40	26	20	8
WEX 2080 F		80	27	13,5	7,0	50	31	25	9
WEX 2100 F		100	32	—	8,5	63	31	—	10

■ Inserts for WEX 2000 E/EW/F

(mm)

Cat. No.	Coated					Diamond like ¹ coated	Un- coated	Dimensions	
	ACP100	ACP200	ACP300	ACK200	ACK300	DL1000	H1	r	a
AXMT 123504 PEER-G	●	●	●	●				0,4	0,08
AXMT 123508 PEER-G	●	●		●				0,8	0,08
AXMT 123504 PEER-H	●	●	●					0,4	0,08
AXMT 123508 PEER-H	●	●						0,8	0,08
AXMT 123512 PEER-H		●						1,2	0,08
AXET 123504 PEFR-S						○	○	0,4	0,025
AXET 123508 PEFR-S								0,8	0,025

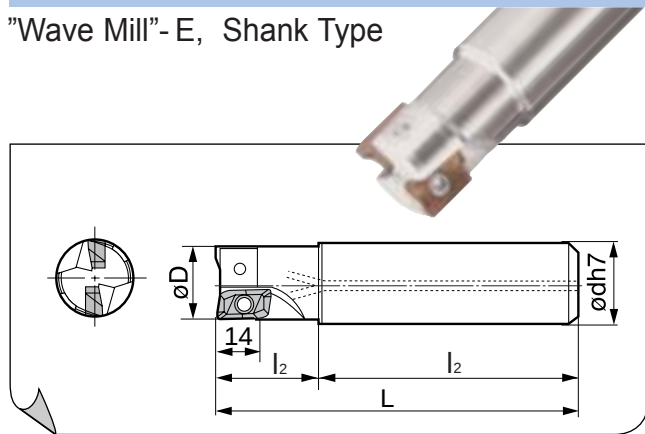
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■ Spare Parts

Screw	Wrench	Applicable endmill
BFTX 0306 IP	TRDR 08 IP	WEX 2000 F

New "Wave Mill" WEX 3000 E/EW

"Wave Mill"- E, Shank Type



■ Body (Short type "E")

Shank	Cat. No.	Stock	Dimensions(mm)					No. of teeth
			øD	ød	l ₁	l ₂	L	
	WEX 3025 E	●	25	25	35	85	120	2
	WEX 3032 E	●	32	32	40	90	130	3
	WEX 3040 E	●	40	32	50	120	170	4
	WEX 3050 E	●	50	32	50	120	170	5
	WEX 3063 E	●	63	32	50	120	170	6

■ Body (Long type "EL")

Shank	Cat. No.	Stock	Dimensions(mm)					No. of teeth
			øD	ød	l ₁	l ₂	L	
	WEX 3025 EL	●	25	25	50	120	170	2
	WEX 3030 EL	●	30	25	50	120	170	2
	WEX 3032 EL	●	32	32	60	120	180	2
	WEX 3040 EL	●	40	32	80	140	220	2
	WEX 3050 EL	●	50	32	100	120	220	3
	WEX 3063 EL	●	63	32	100	120	220	3

■ Body (Weldon shank short type)

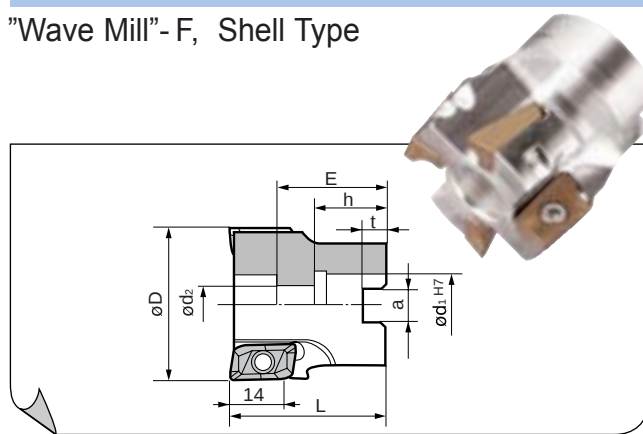
Shank	Cat. No.	Stock	Dimensions(mm)					No. of teeth
			øD	ød	l ₁	l ₂	L	
	WEX 3025 EW	●	25	25	35	85	120	2
	WEX 3032 EW	●	32	32	40	90	130	3

■ Spare Parts

Screw	Wrench	Applicable endmill
BFTX 0407 IP	TRDR 15 IP	3025
BFTX 0409 IP		3032 - 3063

New "Wave Mill" WEX 3000 F

"Wave Mill"- F, Shell Type



■ Body (Shell type "F")

Cat. No.	Stock	Dimensions(mm)								No. of teeth
		øD	ød ₁	ød ₂	t	L	E	h		
WEX 3040 F	●	40	16	9	5,6	40	28	18		6
WEX 3050 F	●	50	22	11	6,3	40	26	20		7
WEX 3063 F	●	63	22	11	6,3	40	26	20		8
WEX 3080 F	●	80	27	13,5	7,0	50	31	25		9
WEX 3100 F	●	100	32	—	8,5	63	31	—		10

■ Inserts for WEX 3000 E/EW/F

Cat. No.	Coated						H1	Dimensions	
	ACP100	ACP200	ACP300	ACK200	ACK300	DL1000		r	a
	●	●	●	●	●	●			
AXMT 170508 PEER-L	●	●	●					0,4	0,08
AXMT 170508 PEER-G	●	●	●	●				0,8	0,08
AXMT 170512 PEER-G	●	●	●		●			1,2	0,08
AXMT 170516 PEER-G	●	●	●		●			1,6	0,08
AXMT 170508 PEER-H	●	●						0,8	0,08
AXMT 170512 PEER-H		●						1,2	0,08
AXMT 170516 PEER-H		●						1,6	0,08
AXET 170504 PEFR-S						○	○	0,4	0,025
AXET 170508 PEFR-S						○	○	0,8	0,025

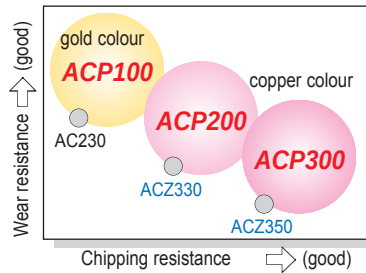
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■ Spare Parts

Screw	Wrench	Applicable endmill
BFTX 0409 IP	TRDR 15 IP	WEX 3000 F

New tough and reliable coated grades

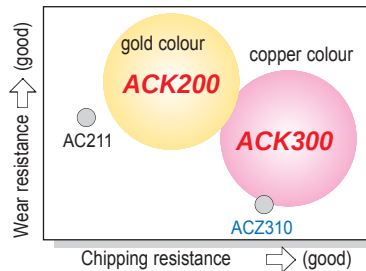
New Coated Grade for Steel



Steel (P), Stainless Steel (M)				
P 01	P 10 (M 10)	P 20 (M 20)	P 30 (M 30)	P 40 (M 40)
General to high speed and wet cutting				
General grade for steel				
Very tough grade for steel				

Grade	Characteristic · Application
ACP100	Excellent wear and thermal crack resistance with new CVD coating contains fine grain Ti-based layer
ACP200	Excellent balance of wear and chipping resistance by Cr-doped new PVD coating and tough carbide substrate.
ACP300	Excellent toughness by Cr-doped new PVD coating and extremely tough carbide substrate.

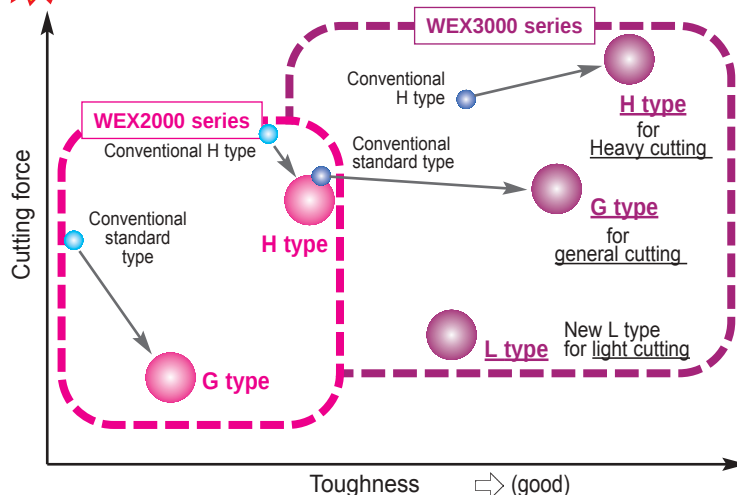
New Coated Grade for Cast Iron



Cast Iron (K) (GG, GGG)				
K 01	K 10	K 20	K 30	K 40
General cutting				
General to heavy cutting				

Grade	Characteristic · Application
ACK200	Excellent wear resistance with fine Ti-based and tough Al ₂ O ₃ CVD coating
ACK300	Excellent toughness with fine grain carbide substrate. Cr-doped new PVD coating could improve hardness and oxidation resistance.

Choice of inserts for the smooth and reliable cutting action ...

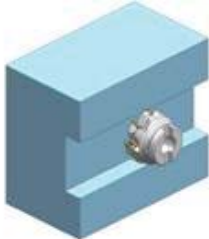
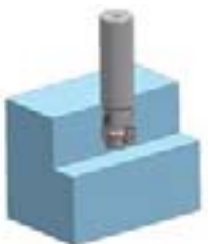


Insert type	Cutting edge geometry		
	L type	G type	H type
AXMT 12.... (WEX2000 series)			
AXMT 17.... (WEX3000 series)			
Application	Light cutting Low rigid cutting (vibration control)	General cutting Interrupted cutting	Interrupted cutting Heavy cutting

Recommended Cutting Conditions

ISO	Material	HB	Geometry	Grade														
				ACP100			ACP200			ACP300			ACK200			ACK300		
				Feed rate (mm/tooth)														
				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
Cutting speed (m/min)																		
P	Unalloyed steel, <0,15%C, annealed	125	G	400	370	350	370	350	330	350	330	310						
	" , <0,45%C, annealed	190	G	300	270	250	270	250	230	250	230	210						
	" , <0,45%C, tempered	250	G	250	220	200	220	200	180	200	180	160						
	" , <0,75%, annealed	270	G	200	170	150	180	160	140	160	140	120						
	" , <0,75%, tempered	300	G	150	120	100	120	100	80	100	80	60						
	Low alloyed steel ,annealed	180	G	280	250	230	250	230	210	230	210	190						
	" ,tempered	275	G	180	150	130	160	140	120	140	120	100						
	" ,tempered	300	G	160	130	110	140	120	100	120	100	80						
	" ,tempered	350	G	130	100	80	110	90	70	90	70	50						
High alloyed and tool steel, annealed	200	G	250	220	200	220	200	180	200	180	160							
	" , tempered	325	G	130	100	80	100	80	60	80	60	40						
M	Stainless steel, ferritic/martensitic, annealed	200	G	210	180	160	180	160	140	160	140	120						
	Martensitic, tempered	240	G	180	150	130	150	130	110	130	110	90						
	Austenitic, plunged	180	G	230	200	180	200	180	160	180	160	140						
K	Gray cast iron		G										300	270	250	270	250	230
	Nodular cast iron		G										200	170	150	170	150	130
S	High temperature resist. alloys, Fe base, annealed	200	G										50	30		50	30	
	" , hardened	280	G										50	30		50	30	

■ Application Example

● Die mould (55NiCrMoV7, 12713)  Lower cutting noise, better chip evacuation, better surface finish against existing tool. Stable cutting even double feed rate.	● Die mould (Low carbon steel)  Existing tool showed breakage, but WEX achieved double tool life.
Cutter: WEX 3080 F (ø80) Insert: AXMT170508PEER-G Grade: ACP200 Cutting condition: $v_c = 75$ m/min, $f_t = 0,19$mm/t $w_{oc} = 80$ mm, $d_{oc} = 5$ mm Dry	Cutter: WEX 3032 E (ø32) Insert: AXMT170508PEER-G Grade: ACP100 Cutting condition: $v_c = 151$ m/min, $f_t = 0,2$mm/t $w_{oc} = 25$ mm, $d_{oc} = 5$ mm Wet
● Screw rotor (X5CrNiMo1712 2 1.4401)  Existing tool had chipping with vibration, but WEX achieved 5 minutes tool life with no chip-ping and less cutting noise.	● Block (42CrMo4, 1.7225)  Existing tool showed breakage, but WEX achieved double tool life.
Cutter: WEX 3050 F (ø50) Insert: AXMT170508PEER-G Grade: ACP300 Cutting condition: $v_c = 80$ m/min, $f_t = 0,15$mm/t $w_{oc} = 15-50$ mm, $d_{oc} = 4$ mm Dry	Cutter: WEX 3032 E (ø32) Insert: AXMT170508PEER-G Grade: ACP200 Cutting condition: $v_c = 200$ m/min, $f_t = 0,15$mm/t $w_{oc} = 5$ mm, $d_{oc} = 10$ mm x 3 cuts Dry

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