

## Exchangeable Head Endmills

# Modular Tools with Steel and Carbide Arbors



Wave Mill  
**WEX** Type

Wave Radius Mill  
**WRCX** Type

Metal Slash Mill  
**MSX** Type

Suitable for extended reach milling



- ▶ Endmills
  - WEX** square endmill type (15 items)
  - WRCX** radius endmill type (7 items)
  - MSX** high feed endmill type (13 items)

- ▶ Arbors
  - Carbide** (16 items)
  - Steel** (4 items)

Easy to change screw-on endmill type WEX and carbide arbor

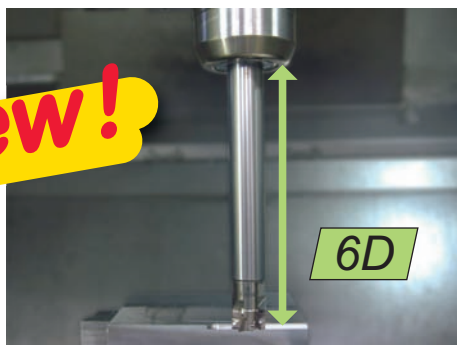
# Wavemill Series Modular Tools

## Characteristics

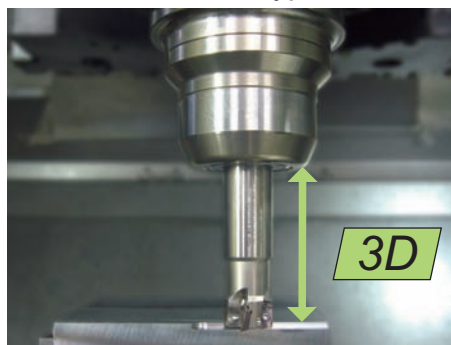
Up to 6 x D from Modular End Mill with Carbide Arbor

### Modular head + carbide arbor

**New!**



### Standard shank type endmill

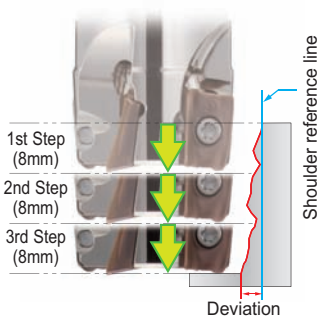


Work Material : C50  
 Tool : WEX2025M12Z4 ( $\phi D=25$ , 4 teeth)  
 Cutting conditions:  $v_c = 100\text{m/min}$ ,  $f_t = 0,1\text{mm/tooth}$   
 $d_{oc} = 8\text{mm} \times 3$  passes,  $w_{oc} = 2,0\text{mm}$ , Equipment: M/C BT50

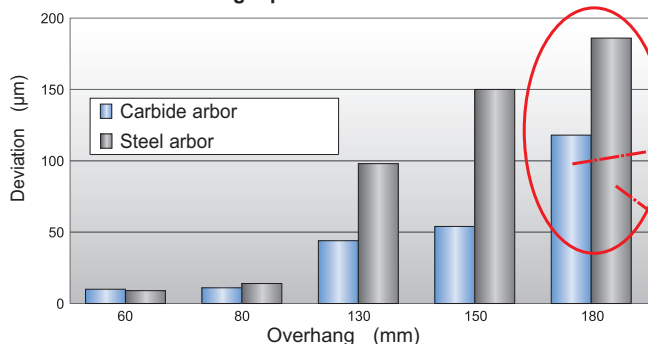
Note  
 Cutting conditions can vary according to cutter reach, rigidity of machine tool / workpiece etc.

## Performance

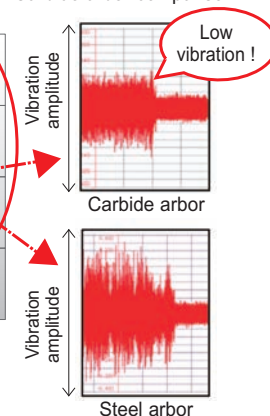
A Carbide Arbor improves feed rates, surface finish, sizing, and tool life.



### Shoulder milling squareness



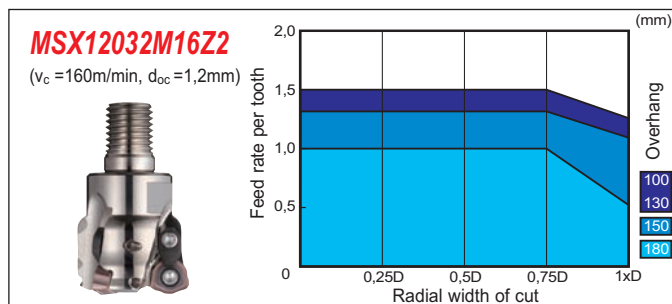
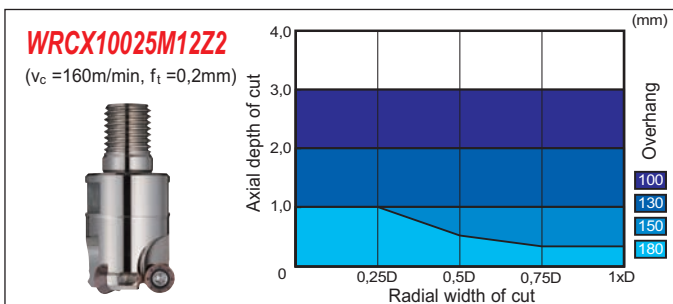
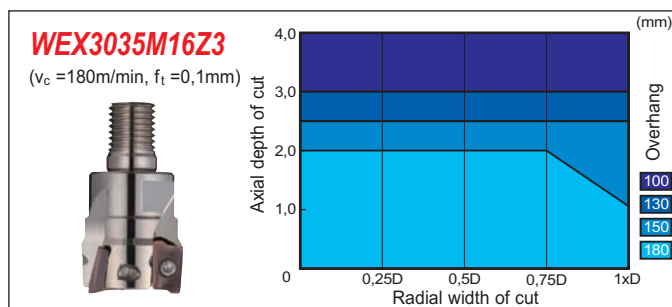
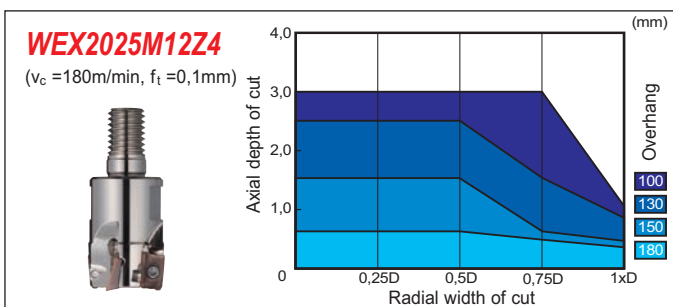
### Carbide arbor comparison ...



Work Material : C50  
 Tool : WEX2025M12Z4 ( $\phi D=25$ , 4 teeth)  
 Cutting conditions:  $v_c = 100\text{m/min}$ ,  $f_t = 0,1\text{mm/tooth}$   
 $d_{oc} = 8\text{mm} \times 3$  passes,  $w_{oc} = 2,0\text{mm}$ , Equipment: M/C BT50

## Application Range

Work Material: C50, Equipment : Vertical Machine M/C BT50 (Dry)

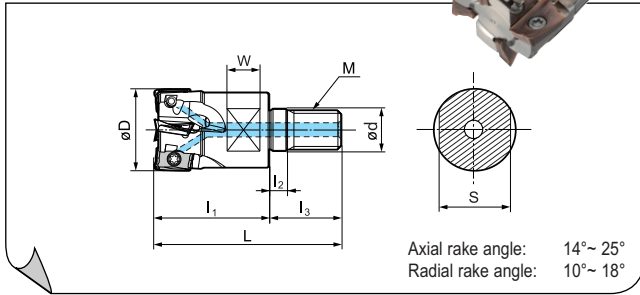


Note: These tables indicate reference machining conditions. Actual machining parameters should be adjusted based on machine rigidity and work clamp rigidity.

# Wavemill Series WEX 2000 M Type

10 mm 90°

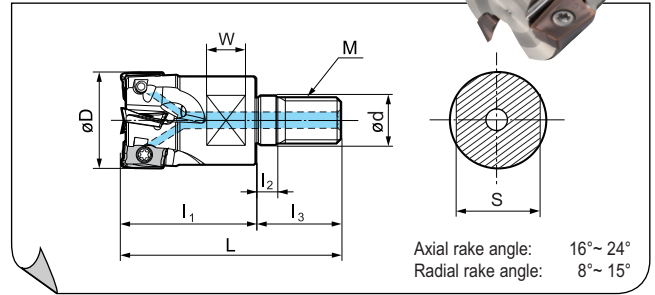
High speed and high efficiency machining endmills



# Wavemill Series WEX 3000 M Type

14 mm 90°

High speed and high efficiency machining endmills



## Heads

Cat. No.	Stock	Dimensions (mm)										No. of teeth
		øD	ød	M	L	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	W	S		
WEX2016M08Z2	●	16	8,5	M8	42	25	5	17	8	13	2	
WEX2018M08Z2	○	18	8,5	M8	42	25	5	17	8	13	2	
WEX2020M10Z3	●	20	10,5	M10	49	30	5	19	8	15	3	
WEX2022M10Z3	○	22	10,5	M10	49	30	5	19	8	15	3	
WEX2025M12Z4	●	25	12,5	M12	56	35	5	21	10	19	4	
WEX2028M12Z4	○	28	12,5	M12	56	35	5	21	10	19	4	
WEX2030M16Z4	○	30	17,0	M16	63	40	5	23	10	24	4	
WEX2032M16Z5	●	32	17,0	M16	63	40	5	23	10	24	5	
WEX2040M16Z6	○	40	17,0	M16	63	40	5	23	10	24	6	

Inserts are not included.

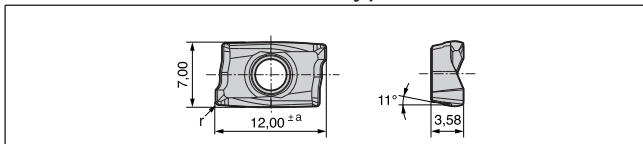
## Heads

Cat. No.	Stock	Dimensions (mm)										No. of teeth
		øD	ød	M	L	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	W	S		
WEX3025M12Z2	○	25	12,5	M12	56	35	5	21	10	19	2	
WEX3028M12Z2	○	28	12,5	M12	56	35	5	21	10	19	2	
WEX3030M16Z3	○	30	17,0	M16	63	40	5	23	10	24	3	
WEX3032M16Z3	○	32	17,0	M16	63	40	5	23	10	24	3	
WEX3035M16Z3	○	35	17,0	M16	63	40	5	23	10	24	3	
WEX3040M16Z4	○	40	17,0	M16	63	40	5	23	10	24	4	

Inserts are not included.

## Inserts for WEX 2000 Type

(mm)



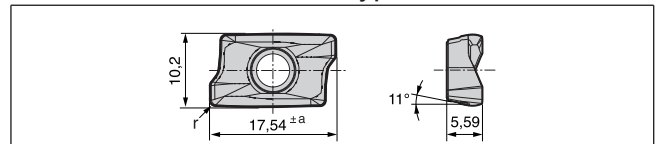
Cat. No.	Coated Carbide					DLC Coated DL1000	Un Coated H1	Dimensions (mm)	
	ACP 100	ACP 200	ACP 300	ACK 200	ACK 300			r	a
	AXMT 123504 PEER-G	●	●	●	●			●	
AXMT 123508 PEER-G	●	●	●	●	●		0,8	0,08	
AXMT 123512 PEER-G	●	●	●	●	●		1,2	0,08	
AXMT 123504 PEER-H	●	●	●	●	●		0,4	0,08	
AXMT 123508 PEER-H	●	●	●	●	●		0,8	0,08	
AXMT 123512 PEER-H	●	●	●	●	●		1,2	0,08	
AXET 123502 PEFR-S						●	0,2	0,025	
AXET 123504 PEFR-S						●	0,4	0,025	
AXET 123508 PEFR-S						●	0,8	0,025	

G - General Purpose  
H - Strong Cutting Edge  
S - Sharp Cutting Edge for Aluminium

● = Euro stock  
○ = Delivery on request

## Inserts for WEX 3000 Type

(mm)



Cat. No.	Coated Carbide					DLC Coated DL1000	Un Coated H1	Dimensions (mm)	
	ACP 100	ACP 200	ACP 300	ACK 200	ACK 300			r	a
	AXMT 170508 PEER-L	●	●	●	●			●	
AXMT 170504 PEER-G	●	●	●	●	●		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 170520 PEER-G*	●	●	●	●	●		2,0	0,08	
AXMT 170530 PEER-G*	●	●	●	●	●		3,0	0,08	
AXMT 170508 PEER-H	●	●	●	●	●		0,8	0,08	
AXMT 170512 PEER-H	○	●	●	○	○		1,2	0,08	
AXET 170502 PEFR-S						●	0,2	0,025	
AXET 170504 PEFR-S						●	0,4	0,025	
AXET 170508 PEFR-S						●	0,8	0,025	

L - Low Cutting Force  
G - General Purpose  
H - Strong Cutting Edge  
S - Sharp Cutting Edge for Aluminium

● = Euro stock  
○ = Delivery on request

## Identification of Catalogue No.

**WEX 2 016 M08 Z2**  
Cutter type | Diameter | Mounting screw | No. of teeth



\* ATTENTION: If nose radius of inserts is 2,0 mm or more please modify cutter body as indicated.

## Spare Parts

Wrench	Screw	Required torque (N·m)	Applicable endmill
TRDR 08 IP	BFTX 0305 IP BFTX 0306 IP	2,0 2,0	WEX 2016M ~ WEX 2018M WEX 2020M ~ WEX 2040M

## Spare Parts

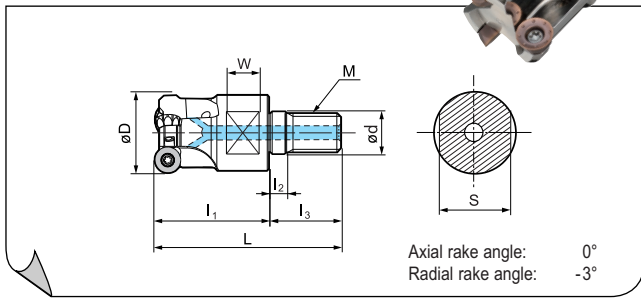
Wrench	Screw	Required torque (N·m)	Applicable endmill
TRDR 15 IP	BFTX 0407 IP BFTX 0409 IP	3,0 3,0	WEX 3025M ~ WEX 3030M WEX 3032M ~ WEX 3040M

# Wave Radius Mill WRCX 08000 M Type

# Wave Radius Mill WRCX 10000/12000 M Type



High efficiency multi purpose endmills

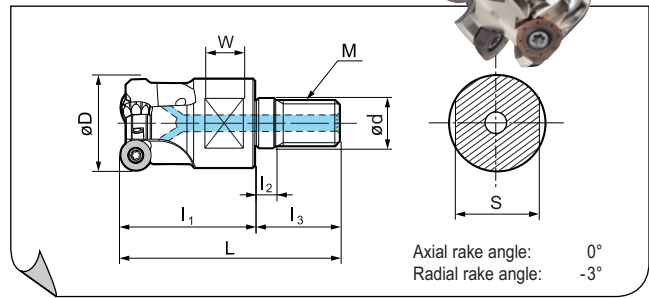


(WRCX 10000M)



(WRCX 12000M)

High efficiency multi purpose endmills



## Heads

For insert type : QPMT 0803

Cat. No.	Stock	Dimensions (mm)									No. of teeth
		øD	ød	M	L	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	W	S	
<b>WRCX08020M10Z2</b>	●	20	10,5	M10	49	30	5	19	8	15	2
<b>WRCX08025M12Z3</b>	●	25	12,5	M12	56	35	5	21	10	19	3

Inserts are not included.

## Heads

For insert type : QPOT 10T3

Cat. No.	Stock	Dimensions (mm)									No. of teeth
		øD	ød	M	L	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	W	S	
<b>WRCX10025M12Z2</b>	●	25	12,5	M12	56	35	5	21	10	19	2
<b>WRCX10028M12Z2</b>	○	28	12,5	M12	56	35	5	21	10	19	2
<b>WRCX10030M16Z3</b>	○	30	17,0	M16	63	40	5	23	10	24	3
<b>WRCX10032M16Z3</b>	●	32	17,0	M16	63	40	5	23	10	24	3

Inserts are not included.

## Heads

For insert type : QPOT 1204

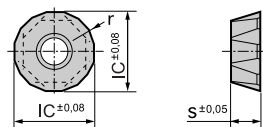
Cat. No.	Stock	Dimensions (mm)									No. of teeth
		øD	ød	M	L	I <sub>1</sub>	I <sub>2</sub>	I <sub>3</sub>	W	S	
<b>WRCX12040M16Z4</b>	○	40	17,0	M16	63	40	5	23	10	24	4

Inserts are not included.

## Inserts

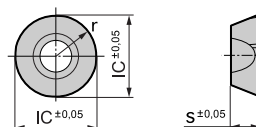
- QPMT – 16 corner insert for General Purpose Application
- QPMT ... H 16 corner insert with Strong cutting edge

Fig. 1



- QPET...S Round insert with Sharp cutting edge for Aluminium

Fig. 2



Rake angle: 25°

4 corners use

Cat. No.	Coated Carbide					DLC Coated DL1000	Uncoated Carbide H1	IC (mm)	r (mm)	s (mm)	Max. d <sub>oc</sub>		Fig.	Applicable endmill
	ACP 100	ACP 200	ACP 300	ACK 200	ACK 300						4 corners application	8 corners application		
<b>QPMT 080330 PPEN</b>	●	●	●	●	●			8	3,0	3,18	3,8	1,0	1	WRCX 08000M
<b>QPMT 080330 PPEN-H</b>	●	●	●	●	●									
<b>QPMT 10T335 PPEN</b>	●	●	●	●	●			10	3,5	3,97	4,7	1,2	1	
<b>QPMT 10T335 PPEN-H</b>	●	●	●	●	●				5,0			–	2	
<b>QPMT 120440 PPEN</b>	●	●	●	●	●			12	4,0	4,76	5,6	1,5	1	WRCX 12000M
<b>QPMT 120440 PPEN-H</b>	●	●	●	●	●									
<b>QPET 120460 PPFR-S</b>						●	●		6,0			–	2	

- = Euro stock
- = Delivery on request

## Identification of Catalogue No.

**WRCX 08 020 M10 Z2**

Cutter type

Diameter

No. of teeth

insert size

Mounting screw



## Spare Parts

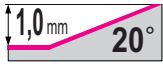
Wrench	Screw	Required torque (N·m)	Applicable endmill
TRDR 08 IP	BFTX 02506 IP	1,5	WRCX 08020M ~ WRCX 08025M

## Spare Parts

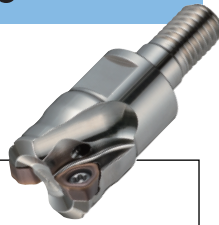
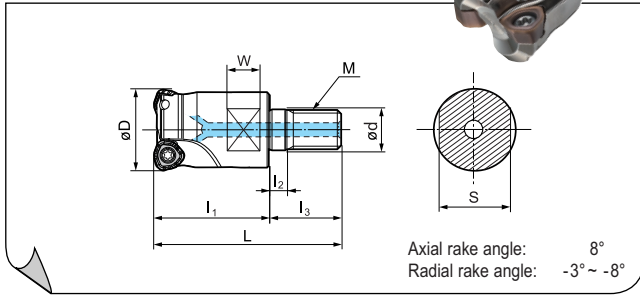
Wrench	Screw	Required torque (N·m)	Applicable endmill
TRDR 15 IP	BFTX 03584 IP	3,0	WRCX 10025M ~ WRCX 10032M
	BFTX 0409 IP	3,0	WRCX 12040M



# "METAL SLASH MILL" MSX 06000 M Type



High feed and high efficiency machining endmills



## Heads

For insert type : WDMT 0603

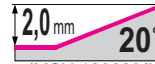
Cat. No.	Stock	Dimensions (mm)										No. of teeth
		øD	ød	M	L	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	W	S		
MSX06016M08Z2	●	16	8,5	M8	42	25	5	17	8	13	2	
MSX06018M08Z2	○	18	8,5	M8	42	25	5	17	8	13	2	
MSX06020M10Z3	●	20	10,5	M10	49	30	5	19	8	15	3	
MSX06022M10Z3	○	22	10,5	M10	49	30	5	19	8	15	3	
MSX06025M12Z3	●	25	12,5	M12	56	35	5	21	10	19	3	

Inserts are not included.

# "METAL SLASH MILL" MSX 08000/12000 M Type

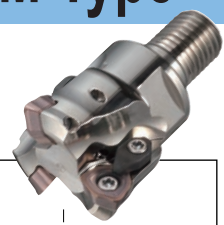
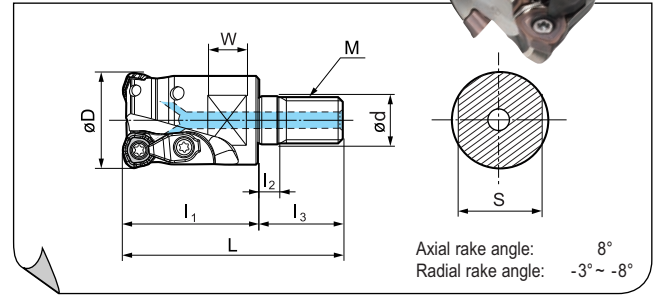


(MSX 08000M)



(MSX 12000M)

High feed and high efficiency machining endmills



## Heads

For insert type : WDMT 0804

Cat. No.	Stock	Dimensions (mm)										No. of teeth
		øD	ød	M	L	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	W	S		
MSX08025M12Z2	●	25	12,5	M12	56	35	5	21	10	19	2	
MSX08028M12Z2	○	28	12,5	M12	56	35	5	21	10	19	2	
MSX08030M16Z3	○	30	17,0	M16	63	40	5	23	10	24	3	
MSX08032M16Z3	●	32	17,0	M16	63	40	5	23	10	24	3	
MSX08035M16Z3	○	35	17,0	M16	63	40	5	23	10	24	3	

Inserts are not included.

## Heads

For insert type : WDMT 1205

Cat. No.	Stock	Dimensions (mm)										No. of teeth
		øD	ød	M	L	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	W	S		
MSX12032M16Z2	●	32	17,0	M16	63	40	5	23	10	24	2	
MSX12035M16Z2	○	35	17,0	M16	63	40	5	23	10	24	2	
MSX12040M16Z3	●	40	17,0	M16	63	40	5	23	10	24	3	

Inserts are not included.

## Inserts for MSX 06000M Type

Cat. No.	Coated Carbide			Dimensions (mm)			Max. d <sub>oc</sub>
	ACP 100	ACP 200	ACP 300	ød	s	r	
	WDMT 0603 ZDTR	●	●	●	6,35	3,0	
WDMT 0603 ZDTR-H	●	●	●				

H – Strong Cutting Edge

● = Euro stock  
○ = Delivery on request

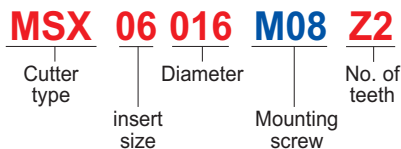
## Inserts for MSX 08000M/12000M Type

Cat. No.	Coated Carbide			Dimensions (mm)			Max. d <sub>oc</sub>
	ACP 100	ACP 200	ACP 300	ød	s	r	
	WDMT 0804 ZDTR	●	●	●	8,5	4,0	
WDMT 0804 ZDTR-H	●	●	●				
WDMT 1205 ZDTR	●	●	●	12	5,0	2,0	2,0
WDMT 1205 ZDTR-H	●	●	●				

H – Strong Cutting Edge

● = Euro stock  
○ = Delivery on request

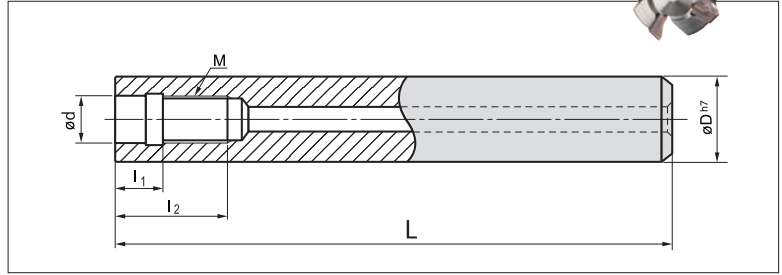
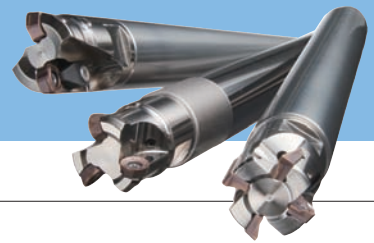
## Identification of Catalogue No.



## Spare Parts

Clamp	C Ring	Clamp screw	Wrench	Insert screw	Required torque (N·m)	Applicable endmill
–	–	–	TRDR 08 IP	BFTX 02505 IP	1,5	MSX 06016M ~ MSX 06025M
CCH 3,5	CR 03	BFTX 03510 IP 08	TRDR 08 IP	BFTX 0306 IP	2,0	MSX 08025M ~ MSX 08035M
CCH 3,5	CR 03	BFTX 03510 IP 15	TRDR 15 IP	BFTX 0409 IP	3,0	MSX 12032M ~ MSX 12040M

# Carbide and Steel Arbor for Modular Tools



## ■ Carbide Arbor

Cat. No.	Stock	Dimensions (mm)						
		M	ød	øD	L	l <sub>1</sub>	l <sub>2</sub>	L <sub>M</sub>
MA15M08L120C	●	M8	8,5	15	120	10	18	145
MA15M08L160C	●	M8	8,5	15	160	10	18	185
MA16M08L120C	●	M8	8,5	16	120	10	18	145
MA16M08L160C	●	M8	8,5	16	160	10	18	185
MA18M10L150C	●	M10	10,5	18	150	10	20	180
MA18M10L200C	●	M10	10,5	18	200	10	20	230
MA20M10L150C	●	M10	10,5	20	150	10	20	180
MA20M10L200C	●	M10	10,5	20	200	10	20	230
MA23M12L200C	●	M12	12,5	23	200	10	22	235
MA23M12L250C	●	M12	12,5	23	250	10	22	285
MA25M12L200C	●	M12	12,5	25	200	10	22	235
MA25M12L250C	●	M12	12,5	25	250	10	22	285
MA28M16L200C	●	M16	17,0	28	200	10	24	240
MA28M16L300C	●	M16	17,0	28	300	10	24	340
MA32M16L200C	●	M16	17,0	32	200	10	24	240
MA32M16L300C	●	M16	17,0	32	300	10	24	340

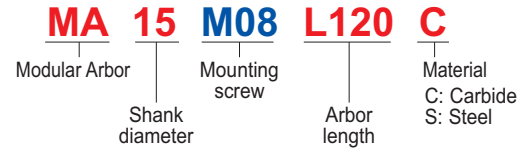
● = Euro stock

## ■ Steel Arbor

Cat. No.	Stock	Dimensions (mm)						
		M	ød	øD	L	l <sub>1</sub>	l <sub>2</sub>	L <sub>M</sub>
MA16M08L120S	●	M8	8,5	16	120	10	18	145
MA20M10L150S	●	M10	10,5	20	150	10	20	180
MA25M12L200S	●	M12	12,5	25	200	10	22	235
MA32M16L200S	●	M16	17,0	32	200	10	24	240

● = Euro stock

● Identification of catalogue No.



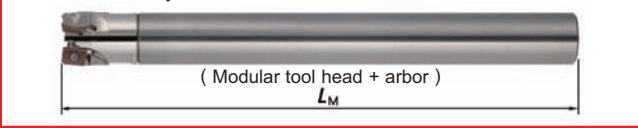
## ■ Recommended Tightening Torque

Screw	Wrench		Torque (N·m)
	W	S	
M 8	8	13	23
M10	8	15	46
M12	10	19	80
M16	10	24	90

Notes about tightening the head:

- Refer to the Head Cat. No. chart on pages 3 to 5 to select the arbor size in the table above.
- Check the mounting screw size of the head and arbor beforehand.
- When attaching head to an arbor, follow the standard tightening torque in the table above.

## ● Modular Tool System



(Germany)  
SUMITOMO ELECTRIC Hartmetall GmbH  
Siemensring 84, D-47877 Willich

Tel. (02154) 49 92-0, FAX (02154) 4 10 72  
e-Mail: [Info@SumitomoTool.com](mailto:Info@SumitomoTool.com)  
Internet: [www.SumitomoTool.com](http://www.SumitomoTool.com)



(UK and Ireland)  
SUMITOMO ELECTRIC Hardmetal Ltd.  
Summerleys Road, Princes Risborough  
Buckinghamshire HP27 9PW, UK

Tel. (01844) 342081, FAX: (01844) 342415  
e-Mail: [enquiries@sumitomo-hardmetal.co.uk](mailto:enquiries@sumitomo-hardmetal.co.uk)  
Internet: [www.sumitomo-hardmetal.co.uk](http://www.sumitomo-hardmetal.co.uk)



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