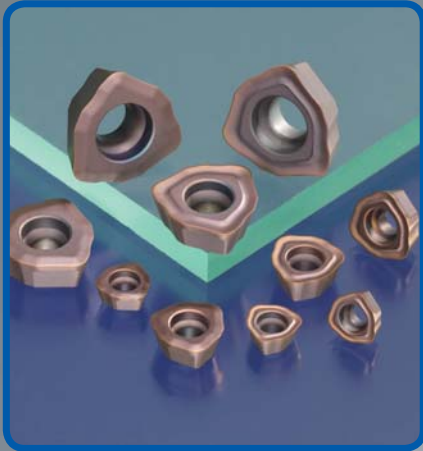


 **SUMITOMO**

CARBIDE - CBN - DIAMOND

High Feed Milling Cutter

# MSX Milling Series



High Feed Milling Cutter for applications of  
Steels, Stainless Steels and Cast Irons



Ingenious Dynamics

 **SUMITOMO ELECTRIC**

# MSX Mill

## High Feed Milling Cutter

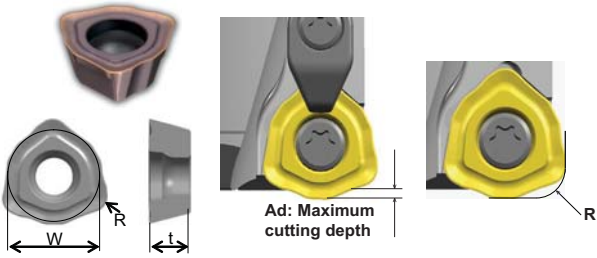


## Features & Benefits

- High feed rates- up to .055 IPT significantly reduces cycle time
- Higher clamping rigidity due to double clamping system
- Capable of ramping and helical applications
- Available in Weldon (EW) and Cylindrical (ELC) type shanks

**Up to  
0.055 IPT feed  
rates!**

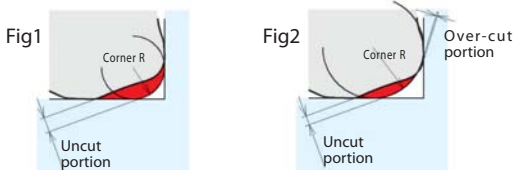
## Inserts



General Purpose Insert	Honed Type Insert	ACK200	ACK300	ACP200	ACP300	ACM200	ACM300	Insert Dimensions (in)			Max Depth of Cut (in.)
								W	R	t	
WDMT0603ZDTR	WDMT0603ZDTR-H	●	●	●	●	○	○	.250	.0591	.1181	0.039
WDMT0804ZDTR	WDMT0804ZDTR-H	●	●	●	●	○	○	.335	.0787	.1575	0.059
WDMT1205ZDTR	WDMT1205ZDTR-H	●	●	●	●	○	○	.472	.0787	.1969	0.079
WDMT1406ZDTR	WDMT1406ZDTR-H	●	●	●	●	○	○	.551	0.787	.2362	0.098

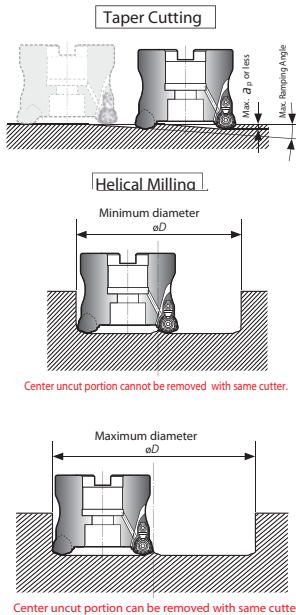
O: Available April 1, 2015

## Programmed Radius & Ramp Angle Chart



Corner R	MSX20000 Type			MSX30000 Type			MSX40000 Type			MSX50000 Type		
	Uncut portion	Over-cut portion	Fig	Uncut portion	Over-cut portion	Fig	Uncut portion	Over-cut portion	Fig	Uncut portion	Over-cut portion	Fig
0.079	0.016	0	1	0.029	0	1	0.052	0	1	0.065	0	1
0.098	0.010	0.0034	2	0.023	0	1	0.046	0	1	0.059	0	1
0.118				0.018	0.0012	2	0.041	0	1	0.054	0	1
0.138							0.035	0.001	2	0.048	0	1
0.158										0.042	0.0006	2

\* Actual machined corners will have uncut and over-cut portions due to the shape of the inserts.



øD <sub>c</sub>	MSX20000 Type			MSX30000 Type			MSX40000 Type			MSX50000 Type		
	Taper Cutting Max. Ramping Angle	Helical Milling Min.	Helical Milling Max.	Taper Cutting Max. Ramping Angle	Helical Milling Min.	Helical Milling Max.	Taper Cutting Max. Ramping Angle	Helical Milling Min.	Helical Milling Max.	Taper Cutting Max. Ramping Angle	Helical Milling Min.	Helical Milling Max.
16 mm	6° 00'	0.83	1.18									
17 mm	5° 00'	0.91	1.26									
18 mm	4° 30'	1.00	1.34									
20 mm	3° 30'	1.14	1.49	7° 30'	1.00	1.49						
22 mm	3° 00'	1.29	1.65	5° 30'	1.14	1.65						
25 mm	2° 00'	1.54	1.89	4° 00'	1.38	1.89						
28 mm				3° 00'	1.61	2.13						
32 mm				2° 30'	1.93	2.44	6° 30'	1.65	2.44			
35 mm				2° 00'	2.17	2.68	5° 00'	1.89	2.68			
40 mm				2° 00'	2.56	3.07	4° 00'	2.28	3.07	6° 00'	2.09	3.07
50 mm							2° 30'	3.07	3.86	3° 30'	2.87	3.86
63 mm							2° 00'	4.06	4.88	2° 00'	3.89	4.88
80 mm										1° 30'	5.24	6.22
100 mm										1° 00'	6.81	7.79
0.75 in.	4° 00'	1.11	1.42									
1.0 in.	2° 00'	1.58	1.92	4° 00'	1.42	1.92						
1.25 in.				2° 30'	1.93	2.40	6° 30'	1.62	2.40			
1.5 in.				1° 30'	2.45	2.91	4° 00'	2.13	2.91			
2.0 in.				1° 00'	3.39	3.91	2° 30'	3.08	3.91	3° 30'	2.90	3.91
2.5 in.							1° 30'	4.08	4.91	2° 30'	3.90	4.91
3.0 in.							1° 00'	5.08	5.91	1° 30'	4.90	5.91
4.0 in.							0° 30'	7.08	7.91	1° 00'	6.90	7.91
5.0 in.										0° 30'	8.90	9.91
6.0 in.										0° 30'	10.90	11.91

## Recommended Running Conditions

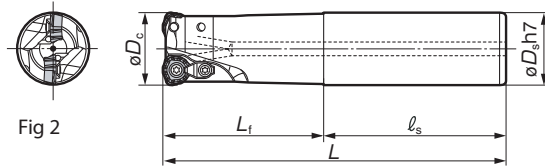
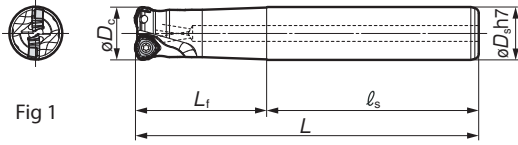
## Hardware

ISO	Work Material	Hardness	Cutting Speed v (sfm) Min - Max	Feed Rate f <sub>z</sub> (ipt) Min - Max	Recommended Grade
P	General Steel	>=200HB	330 ~ 660	<0.047	ACP200, ACP300
	Alloy Steel	>=HRC45	260 ~ 590	<0.047	ACP200, ACP300
M	Stainless Steel	-	260 ~ 490	<0.031	ACM200, ACM300
K	Cast Iron	-	330 ~ 660	<0.055	ACK200, ACP300

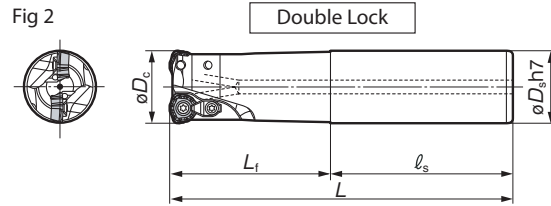
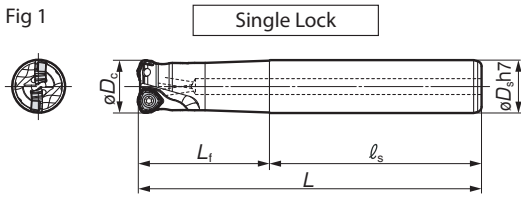
Hardware	Screw	Wrench	Clamp	Ring	Clamp Screw	Applicable Cutter
BFTX02505IP	TRDR08IP	-	-	-	-	MSX20000
BFTX0305IP	TRDR08IP	CCH3.5	CR3	BFTX03510IP08		MSX30000 ≤1.0"
BFTX0306IP	TRDR08IP	CCH3.5	CR3	BFTX03510IP08		MSX30000 >1.0"
BFTX0409IP	TRDR15IP	CCH3.5	CR3	BFTX03510IP15		MSX40000
BFTX0511IP	TRDR20IP	CCH4.5	CR3	BFTX04513IP20		MSX50000

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.

# MSX Endmills



MSX Endmill - Inch									
Catalog Number	Stock	Dimensions (in.)					Teeth	Figure	Insert
		D	D4	L1	L2	L3			
MSX20750EW	●	0.750	0.750	5.125	2.000	2.031	3	1	WDMT0603
MSX20750ELC	●	0.750	0.750	8.000	2.000	6.000	3	1	
MSX31000EW	●	1.000	1.000	4.781	2.500	2.281	2	2	WDMT0804
MSX31000ELC	●	1.000	1.000	10.000	2.500	7.500	2	2	
MSX41250EW	●	1.250	1.250	4.781	2.500	2.281	2	2	WDMT1205
MSX41250ELC	●	1.250	1.250	10.000	2.500	7.500	2	2	
MSX41500EW	●	1.500	1.250	4.781	2.500	2.281	2	2	
MSX41500ELC	●	1.500	1.500	10.000	2.500	7.500	2	2	
MSXF31000EW	●	1.000	1.000	4.781	2.500	2.281	3	2	WDMT0804
MSXF31250EW	●	1.250	1.250	4.781	2.500	2.281	3	2	
MSXF31500EW	●	1.500	1.500	4.781	2.500	2.281	4	2	
MSXF41500EW	●	1.500	1.500	4.781	2.500	2.281	3	2	WDMT1205



MSX Endmill - Metric Insert: WDMT06 Type									
Catalog Number	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)	Fig.
		øDc	øDs	Lf	ℓs	L			
MSX06016ES	★	16	16	30	80	110	2	0.2	1
MSX06016EM	★	16	16	70	80	150	2	0.2	1
MSX06017EM	★	17	16	20	130	150	2	0.2	1
MSX06018EM	★	18	16	20	130	150	2	0.2	1
MSX06020ES	★	20	20	50	80	130	3	0.3	1
MSX06020EM	★	20	20	100	80	180	3	0.4	1
MSX06022EM	★	22	20	30	150	180	3	0.4	1
MSX06025ES	★	25	25	60	80	140	3	0.5	1
MSX06025EM	★	25	25	120	130	250	3	0.8	1

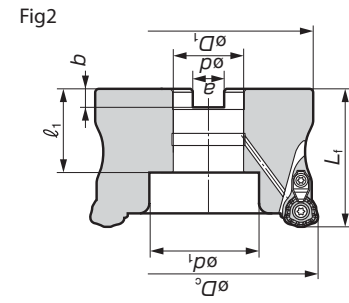
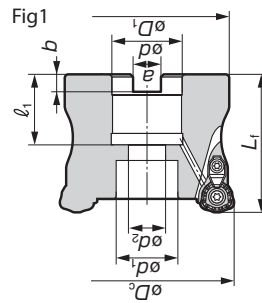
Body (MSX12000E) Insert: WDMT12 Type									
Catalog Number	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)	Fig.
		øDc	øDs	Lf	ℓs	L			
MSX12032ES	★	32	32	70	80	150	2	0.8	2
MSX12032EM	★	32	32	120	130	250	2	1.4	2
MSX12035EM	★	35	32	50	200	250	2	1.4	2
MSX12040ES	★	40	32	50	100	150	3	0.9	2
MSX12040EM	★	40	32	50	200	250	3	1.5	2
MSX12050EM	★	50	42	50	200	250	4	2.6	2

MSX Endmill - Metric Insert: WDMT08 Type									
Catalog Number	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)	Fig.
		øDc	øDs	Lf	ℓs	L			
MSX08020ES	★	20	20	50	80	130	2	0.3	1
MSX08020EM	★	20	20	100	80	180	2	0.3	1
MSX08022EM	★	22	20	30	150	180	2	0.4	1
MSX08025ES	★	25	25	60	80	140	2	0.4	2
MSX08025EM	★	25	25	120	130	250	2	0.8	2
MSX08028EM	★	28	25	40	210	250	2	0.9	2
MSX08032ES	★	32	32	70	80	150	3	0.8	2
MSX08032EM	★	32	32	120	130	250	3	1.4	2
MSX08035EM	★	35	32	50	200	250	3	1.5	2

Body (MSX14000E) Insert: WDMT14 Type									
Cat. No.	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)	Fig.
		øDc	øDs	Lf	ℓs	L			
MSX14040ES	★	40	32	50	100	150	2	0.9	2
MSX14040EM	★	40	32	50	200	250	2	1.5	2
MSX14050ES	★	50	42	50	100	150	3	1.5	2
MSX14050EM	★	50	42	50	200	250	3	2.5	2
MSX14063ES	★	63	42	50	100	150	4	1.7	2
MSX14063EM	★	63	42	50	200	250	4	2.8	2

★: Worldwide Warehouse Item

# MSX Shell Mill



## MSX Shell Mill - INCH

Catalog Number	Stock	Dimensions (in)									No. of Teeth	Fig.	Insert
		$\phi D_c$	$\phi D_1$	$L_f$	$\phi d$	$a$	$b$	$\ell_1$	$\phi d_1$	$\phi d_2$			
MSX31500R	○	1.500	1.339	1.530	0.750	0.312	0.190	0.750	0.609	0.406	4	1	WDMT0804
MSX32000R	○	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	5	1	
MSXM42000R	○	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	5	1	WDMT1205
MSX42000R	○	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	4	1	
MSX42500R	○	2.500	2.362	2.000	1.000	0.375	0.220	0.750	0.797	0.530	5	1	
MSX43000R	○	3.000	2.756	2.000	1.000	0.375	0.220	0.750	0.797	0.530	6	1	
MSX44000R-1.25	○	4.000	3.740	2.500	1.250	0.500	0.280	0.750	1.000	0.656	7	1	
MSX44000R-1.50	○	4.000	3.740	2.500	1.500	0.625	0.380	1.000	2.000	0.781	7	2	
MSX52000R	○	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	4	1	WDMT1406
MSX52500R	○	2.500	2.362	2.000	1.000	0.375	0.220	0.750	0.797	0.531	5	1	
MSX53000R	○	3.000	2.756	2.000	1.000	0.375	0.220	0.750	0.797	0.531	5	1	
MSX54000R	○	4.000	3.740	2.500	1.250	0.500	0.280	0.750	1.000	0.656	6	1	
MSX54000R-1.50	○	4.000	3.740	2.500	1.500	0.625	0.380	1.000	2.000	0.781	7	2	
MSX55000R	○	5.000	3.937	2.500	1.500	0.625	0.380	1.000	2.000	0.781	7	2	
MSX56000R	○	6.000	3.937	2.500	1.500	0.625	0.380	1.000	2.000	0.781	8	2	

○: Available 2nd Quarter 2015

## MSX Shell Mill - Metric

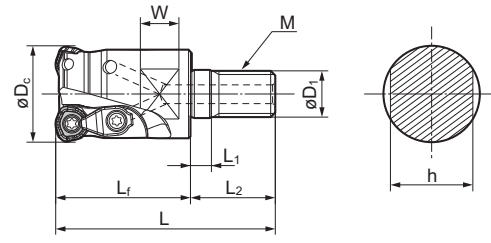
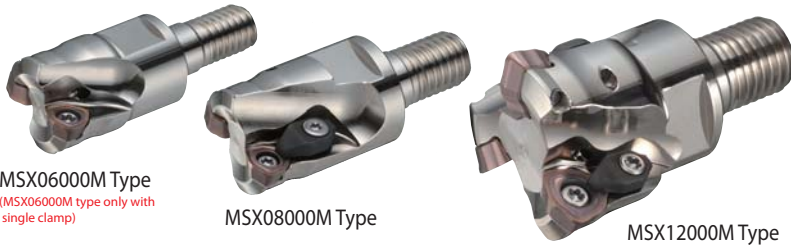
Catalog Number	Stock	Dimensions (mm)									No. of Teeth	Weight (lbs)	Fig.	Insert
		$\phi D_c$	$\phi D_1$	$L_f$	$\phi d$	$a$	$b$	$\ell_1$	$\phi d_1$	$\phi d_2$				
MSX08040RS	★	40	37	45	16	8.4	5.6	18	13.5	9	4	0.44	1	WDMT0804
MSX12050RS	★	50	47	50	22	10.4	6.3	20	18	11	4	0.66	1	WDMT1205
MSX12063RS	★	63	60	50	22	10.4	6.3	20	18	11	5	1.32	1	
MSX14050RS	★	50	47	50	22	10.4	6.3	20	17	11	3	0.66	1	WDMT1406
MSX14063RS	★	63	60	50	22	10.4	6.3	20	18	11	4	1.32	1	
MSX14080RS	★	80	76	63	27	12.4	7.0	25	20	13.5	5	3.09	1	
MSX14100RS	★	100	96	63	32	14.4	8.5	32	44	-	6	4.85	2	
MSX14080R	★	80	76	63	31.75	12.7	8.0	32	28	17	5	2.86	1	
MSX14100R	★	100	96	63	31.75	12.7	8.0	32	28	17	6	5.29	1	

Please use JISB1176 hexagonal bolt ( $\phi 80$ : M12  $\times$  30-35mm,  $\phi 100$ : M16  $\times$  40-45mm) for securing the  $\phi 80$  or  $\phi 100$  cutter to the arbour.

★: Worldwide Warehouse Item

# MSX Modular Tooling

Ultra-high speed, high efficiency machining endmill



MSX06000M Type  
(MSX06000M type only with single clamp)

MSX08000M Type

MSX12000M Type

■ **Arbor** (see page 333 of the 15/16 Sumitomo General Catalog for arbors)



Modular Head (MSX 06000M)		Applicable Insert WDMT06 Type										
Catalog Number	Stock	Dimensions (mm)										No. of Teeth
		øD <sub>c</sub>	øD <sub>1</sub>	M	L	L <sub>f</sub>	L <sub>1</sub>	L <sub>2</sub>	W	h		
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	

Modular Head (MSX 08000M)		Applicable Insert WDMT08 Type										
Catalog Number	Stock	Dimensions (mm)										No. of Teeth
		øD <sub>c</sub>	øD <sub>1</sub>	M	L	L <sub>f</sub>	L <sub>1</sub>	L <sub>2</sub>	W	h		
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	

Modular Head (MSX 12000M)		Applicable Insert WDMT12 Type										
Catalog Number	Stock	Dimensions (mm)										No. of Teeth
		øD <sub>c</sub>	øD <sub>1</sub>	M	L	L <sub>f</sub>	L <sub>1</sub>	L <sub>2</sub>	W	h		
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	

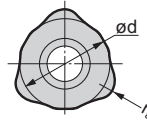
★ Worldwide Warehouse Item

Hardware						
Wrench	Screws	Clamp	C ring	Clamp Screw	Recommended Tightening Torque (N•m)	Applicable Head
TRDR08IP	BFTX02505IP	-	-	-	1.5	MSX06000M
	BFTX03061IP	CCH3.5	CR3	BFTX03510IP08	2.0	MSX08000M
TRDR15IP	BFTX04091IP	CCH3.5	CR3	BFTX03510IP15	3.0	MSX12000M

■ **Performance** Tool: MSX12032EM Insert: WDMT1205ZDTR-ACP200 \*Actual measurement for an integrated endmill type.

Helical Boring	Contour Machining
Work material : 1015 Cutting Conditions : v <sub>c</sub> =558 SFM n=1,700min <sup>-1</sup> f <sub>z</sub> =.059 IPT D.O.C.=.032" Radial=.276" OH=5.315"	Work material : 4137 Cutting Conditions : v <sub>c</sub> =492 SFM n=1,500min <sup>-1</sup> f <sub>z</sub> =.039 IPT D.O.C.=.032" Radial=.354"~.472" OH=5.315"
<b>Results: Some chattering but cut edge looks good and provides good chip control.                      20% better efficiency than competitor A.                      (Chipping found on Comp A's tool)</b>	<b>Results: 50% faster feed rate than competitor B.                      (Comp B's tool failed to perform at this rate)</b>

## Inserts



Usage	Catalog Number	Coated Carbide						Dimensions (mm)		
		ACP200	ACP300	ACK200	ACK300	ACM200	ACM300	ød	s	r <sub>ε</sub>
		●	●	●	●	○	○			
General Purpose	WDMT0603ZDTR	●	●	●	●	○	○	6.35	3.0	1.5
	WDMT0804ZDTR	●	●	●	●	○	○	8.50	4.0	2.0
	WDMT1205ZDTR	●	●	●	●	○	○	12.00	5.0	2.0
Honed Type	WDMT0603ZDTR-H	●	●	●	●	○	○	6.35	3.0	1.5
	WDMT0804ZDTR-H	●	●	●	●	○	○	8.50	4.0	2.0
	WDMT1205ZDTR-H	●	●	●	●	○	○	12.00	5.0	2.0

● USA stocked item

○ Available April 1, 2015

## Modular Head Identification

**MSX 06 016 M08 Z2**

(1) Cutter Series (2) Insert Size (3) Diameter (4) Mounting Screw (5) No. of Flutes



星隆貿易股份有限公司  
Sing-Lung Trading Co., Ltd.

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