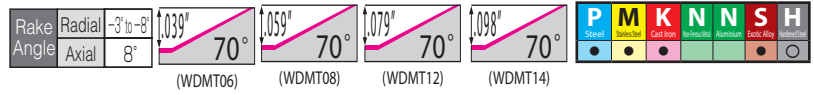


# SumiMill MSX SERIES

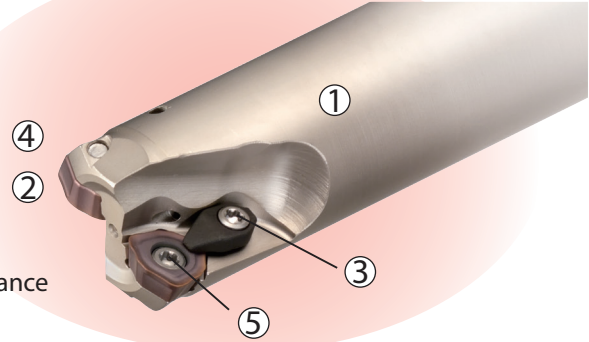
Applicable Insert: WDMT



## General Features

The Metal Slash Mill MSX Type is a multi-purpose cutter capable of roughing at ultra-high feeds. Its wide application range dramatically boosts efficiency. Inserts are available in four sizes to cover a wide variety of milling needs

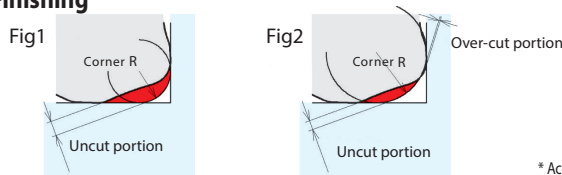
**Up to  
0.055 IPT feed  
rates!**



## Characteristics

- Highly Durable Body** Special surface treatment improves scratch resistance
- Versatile Machining Operations** Use for ramping, helical, and drilling work
- Double Lock** Extra-strong clamping ensures stable cutting performance (Single clamp for  $\phi 22\text{mm}$  or smaller diameters)
- With oil hole** Improved chip evacuation with air or coolant supply hole and specially shaped pocket design
- Insert Shape** Unique tool shape packs cutting performance and cutting edge strength

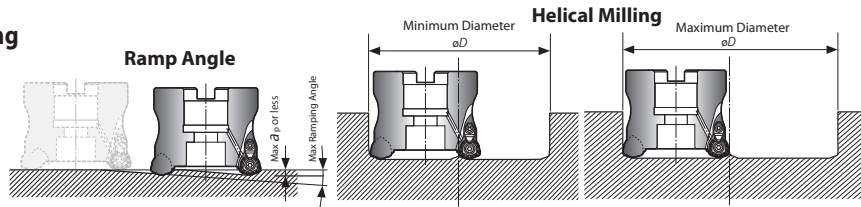
## Corner Finishing



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

Corner R	WDMT06 Type			WDMT08 Type			WDMT12 Type			WDMT14 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
.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

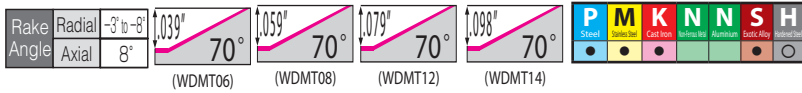
## Ramping & Helical Milling



$\phi D_c$	WDMT06 Type			WDMT08 Type			WDMT12 Type			WDMT14 Type		
	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



Indexable Milling  
Shoulder Milling  
Face Milling  
High Feed Milling  
Multi-purpose  
Modular Tooling  
UFO & SumiMill  
Discontinued



# SumiMill - Inch MSX SERIES

Applicable Insert: WDMT

Indexable Milling

Shoulder Milling

Face Milling

High Feed Milling

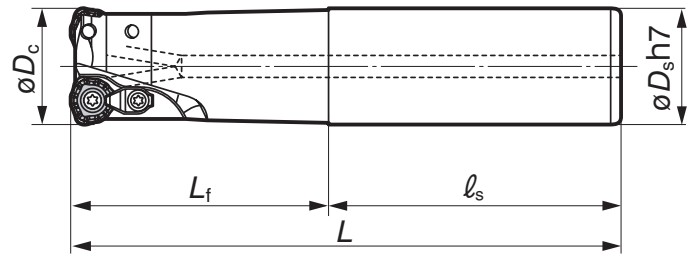
Multi-purpose

Modular Tooling

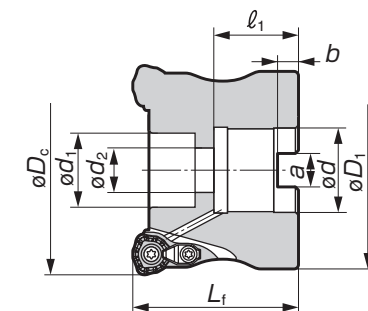
UFO & SumiMill

Discontinued

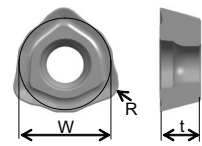
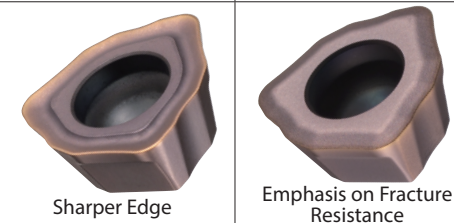
MSX Endmills - Inch							
Catalog Number	$\phi D_c$	$\phi D_s$	L	$L_f$	$l_s$	Teeth	Insert Type
MSX20750EW	0.750	0.750	5.125	2.000	2.031	3	WDMT06
MSX20750ELC	0.750	0.750	8.000	2.000	6.000	3	
MSX31000EW	1.000	1.000	4.781	2.500	2.281	2	WDMT08
MSX31000ELC	1.000	1.000	10.000	2.500	7.500	2	
MSXF31000EW	1.000	1.000	4.781	2.500	2.281	3	
MSXF31250EW	1.250	1.250	4.781	2.500	2.281	3	
MSXF31500EW	1.500	1.500	4.781	2.500	2.281	4	WDMT12
MSX41250EW	1.250	1.250	4.781	2.500	2.281	2	
MSX41250ELC	1.250	1.250	10.000	2.500	7.500	2	
MSX41500EW	1.500	1.250	4.781	2.500	2.281	2	
MSX41500ELC	1.500	1.500	10.000	2.500	7.500	2	
MSXF41500EW	1.500	1.500	4.781	2.500	2.281	3	



MSX Shell Mill - INCH												
Catalog Number	Stock	Dimensions (in)									No. of Teeth	Insert
		$\phi D_c$	$\phi D_1$	$L_f$	$\phi d$	a	b	$l_1$	$\phi d_1$	$\phi d_2$		
MSX31500R	●	1.500	1.339	1.530	0.750	0.312	0.190	0.750	0.609	0.406	4	WDMT08
MSX32000R	●	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	5	
MSX42000R	●	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	4	WDMT12
MSX42500R	●	2.500	2.362	2.000	1.000	0.375	0.220	0.750	0.797	0.530	5	
MSX43000R	●	3.000	2.756	2.000	1.000	0.375	0.220	0.750	0.797	0.530	6	
MSX44000R-1.25	●	4.000	3.740	2.500	1.250	0.500	0.280	0.750	1.000	0.656	7	
MSX44000R-1.50	●	4.000	3.740	2.500	1.500	0.625	0.380	1.000	2.000	0.781	7	
MSXM42000R	●	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	5	
MSX52000R	●	2.000	1.850	2.000	0.750	0.312	0.190	0.750	0.609	0.406	4	WDMT14
MSX52500R	●	2.500	2.362	2.000	1.000	0.375	0.220	0.750	0.797	0.531	5	
MSX53000R	●	3.000	2.756	2.000	1.000	0.375	0.220	0.750	0.797	0.531	5	
MSX54000R-1.25	●	4.000	3.740	2.500	1.250	0.500	0.280	0.750	1.000	0.656	6	
MSX54000R-1.50	●	4.000	3.740	2.500	1.500	0.625	0.380	1.000	2.000	0.781	6	
MSX55000R	●	5.000	3.937	2.500	1.500	0.625	0.380	1.000	2.000	0.781	7	
MSX56000R	●	6.000	3.937	2.500	1.500	0.625	0.380	1.000	2.000	0.781	8	

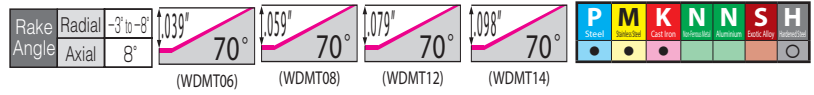


Type	Insert	Insert Dimensions (in)						Max Depth of Cut (In.)	Edge Type				
		P	K	M	S	W	R		t	General Purpose Edge	H : Strong Edge		
General Purpose	WDMT0603ZDTR	●	●	●	●	●	●	.250	.0591	.1181	.039	General (First choice)	Interrupted Cutting
	WDMT0804ZDTR	●	●	●	●	●	●	.335	.0787	.1575	.059		
	WDMT1205ZDTR	●	●	●	●	●	●	.472	.0787	.1969	.079		
	WDMT1406ZDTR	●	●	●	●	●	●	.551	.0787	.2362	.098		
Strong Edge	WDMT0603ZDTR-H	●	●	●	●	●	●	.250	.0591	.1181	.039	Sharper Edge	Emphasis on Fracture Resistance
	WDMT0804ZDTR-H	●	●	●	●	●	●	.335	.0787	.1575	.059		
	WDMT1205ZDTR-H	●	●	●	●	●	●	.472	.0787	.1969	.079		
	WDMT1406ZDTR-H	●	●	●	●	●	●	.551	.0787	.2362	.098		

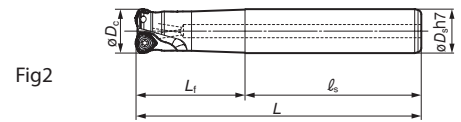
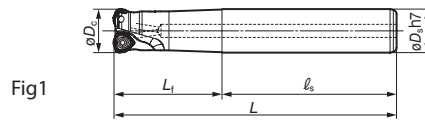


Hardware					
Screw	Wrench	Clamp	Ring	Clamp Screw	Applicable Cutter
BFTX02505IP	TRDR08IP	-	-	-	MSX20000
BFTX03051P	TRDR08IP	CCH3.5	CR3	BFTX03510IP08	MSX30000 ≤1.0"
BFTX03061P	TRDR08IP	CCH3.5	CR3	BFTX03510IP08	MSX30000 >1.0"
BFTX04091P	TRDR15IP	CCH3.5	CR3	BFTX03510IP15	MSX40000
BFTX05111P	TRDR20IP	CCH4.5	CR3	BFTX04513IP20	MSX50000





### MSX End Mill - Metric



#### Body Insert: WDMT06 Type

Cat. No.	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)	Fig
		øDc	øDs	Lf	ℓs	L			
MSX 06016ES	★	16	16	30	80	110	2	0.2	1
MSX 06016EM	★	16	16	70	80	150	2	0.2	1
MSX 06017EM	★	17	16	20	130	150	2	0.2	1
MSX 06018EM	★	18	16	20	130	150	2	0.2	1
MSX 06020ES	★	20	20	50	80	130	3	0.3	1
MSX 06020EM	★	20	20	100	80	180	3	0.4	1
MSX 06022EM	★	22	20	30	150	180	3	0.4	1
MSX 06025ES	★	25	25	60	80	140	3	0.5	1
MSX 06025EM	★	25	25	120	130	250	3	0.8	1

#### Body Insert: WDMT12 Type

Cat. No.	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)	Fig
		øDc	øDs	Lf	ℓs	L			
MSX 12032ES	★	32	32	70	80	150	2	0.8	2
MSX 12032EM	★	32	32	120	130	250	2	1.4	2
MSX 12035EM	★	35	32	50	200	250	2	1.4	2
MSX 12040ES	★	40	32	50	100	150	3	0.9	2
MSX 12040EM	★	40	32	50	200	250	3	1.5	2
MSX 12050EM	★	50	42	50	200	250	4	2.6	2

#### Body Insert: WDMT08 Type

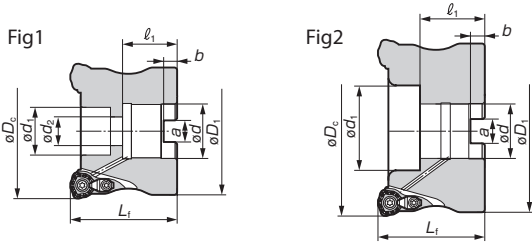
Cat. No.	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)	Fig
		øDc	øDs	Lf	ℓs	L			
MSX 08020ES	★	20	20	50	80	130	2	0.3	1
MSX 08020EM	★	20	20	100	80	180	2	0.3	1
MSX 08022EM	★	22	20	30	150	180	2	0.4	1
MSX 08025ES	★	25	25	60	80	140	2	0.4	2
MSX 08025EM	★	25	25	120	130	250	2	0.8	2
MSX 08028EM	★	28	25	40	210	250	2	0.9	2
MSX 08032ES	★	32	32	70	80	150	3	0.8	2
MSX08032EM	★	32	32	120	130	250	3	1.4	2
MSX 08035EM	★	35	32	50	200	250	3	1.5	2

#### Body Insert: WDMT14 Type

Cat. No.	Stock	Dimensions (mm)					No. of Teeth	Weight (kg)	Fig
		øDc	øDs	Lf	ℓs	L			
MSX 14040ES	★	40	32	50	100	150	2	0.9	2
MSX 14040EM	★	40	32	50	200	250	2	1.5	2
MSX 14050ES	★	50	42	50	100	150	3	1.5	2
MSX 14050EM	★	50	42	50	200	250	3	2.5	2
MSX 14063ES	★	63	42	50	100	150	4	1.7	2
MSX 14063EM	★	63	42	50	200	250	4	2.8	2

Inserts are not included.

### MSX Shell Mill - Metric



Catalog Number	Stock	Dimensions (mm)									No. of Teeth	Weight (kg)	Fig.	Insert
		øDc	øD1	Lf	ød	a	b	ℓ1	ød1	ød2				
MSX08040RS	★	40	37	45	16	8.4	5.6	18	13.5	9	4	0.2	1	WDMT08
MSX12050RS	★	50	47	50	22	10.4	6.3	20	18	11	4	0.3	1	WDMT12
MSX12063RS	★	63	60	50	22	10.4	6.3	20	18	11	5	0.6	1	WDMT12
MSX14050RS	★	50	47	50	22	10.4	6.3	20	17	11	3	0.3	1	WDMT14
MSX14063RS	★	63	60	50	22	10.4	6.3	20	18	11	4	0.6	1	WDMT14
MSX14080RS	★	80	76	63	27	12.4	7.0	25	20	13.5	5	1.4	1	WDMT14
MSX14100RS	★	100	96	63	32	14.4	8.5	32	44	-	6	2.2	2	WDMT14
MSX14080R	★	80	76	63	31.75	12.7	8.0	32	28	17	5	1.3	1	WDMT14
MSX14100R	★	100	96	63	31.75	12.7	8.0	32	28	17	6	2.4	1	WDMT14

(ap: Depth of Cut fz: Feed Rate)

Work Material	Grade	Cutting Speed vc (SFM)	Insert Type	Endmill Type								Shell Type					
				ø16		ø20		ø25		ø32		ø40		ø50/ø63		ø80/ø100	
				ap (in.)	fz (in./t)	ap (in.)	fz (in./t)	ap (in.)	fz (in./t)	ap (in.)	fz (in./t)	ap (in.)	fz (in./t)	ap (in.)	fz (in./t)	ap (in.)	fz (in./t)
General Steel Below 200HB	ACP200	330-500-650	WDMT 06	0.032	0.032	0.032	0.032	-	-	-	-	-	-	-	-	-	
			WDMT 08	-	-	0.039	0.039	0.039	0.047	0.039	0.047	-	-	-	-	-	
			WDMT 12	-	-	-	-	-	-	0.047	0.055	0.047	0.055	-	-	-	
			WDMT 14	-	-	-	-	-	-	-	0.059	0.059	0.059	0.059	0.059	0.059	
Alloy Steel Below 45HRC	ACP200	260-430-590	WDMT 06	0.028	0.032	0.028	0.032	-	-	-	-	-	-	-	-		
			WDMT 08	-	-	0.032	0.039	0.032	0.047	0.032	0.047	-	-	-	-		
			WDMT 12	-	-	-	-	-	-	0.039	0.055	0.039	0.055	-	-		
			WDMT 14	-	-	-	-	-	-	-	0.051	0.059	0.051	0.059	0.051	0.059	
Stainless Steel SUS304, Others	ACP300	260-400-500	WDMT 06	0.032	0.028	0.032	0.028	-	-	-	-	-	-	-	-		
			WDMT 08	-	-	0.039	0.032	0.039	0.032	0.039	0.032	-	-	-	-		
			WDMT 12	-	-	-	-	-	-	0.047	0.047	0.047	0.047	-	-		
			WDMT 14	-	-	-	-	-	-	-	0.059	0.051	0.059	0.051	0.059	0.051	
Cast Iron FC, FCD	ACK200 ACK300	330-500-650	WDMT 06	0.032	0.039	0.032	0.039	-	-	-	-	-	-	-	-		
			WDMT 08	-	-	0.039	0.047	0.039	0.055	0.039	0.055	-	-	-	-		
			WDMT 12	-	-	-	-	-	-	0.047	0.059	0.047	0.059	0.047	0.059		
			WDMT 14	-	-	-	-	-	-	-	0.059	0.071	0.059	0.071	0.059	0.071	
Hardened Steel Below 50HRC	ACK200 ACK300	130-260-330	WDMT 06	0.020	0.020	0.020	0.020	-	-	-	-	-	-	-			
			WDMT 08	-	-	0.020	0.024	0.020	0.032	0.020	0.032	-	-	-	-		
			WDMT 12	-	-	-	-	-	-	0.024	0.039	0.024	0.039	-	-		
			WDMT 14	-	-	-	-	-	-	-	0.039	0.047	0.039	0.047	0.039	0.047	

The above recommended cutting conditions may require adjustment according to machine rigidity and work rigidity. The above figures are guidelines for use with the BT50 machine tool. The above cutting conditions assume a tool overhang length of L/D=3 (i.e. overhang length is 3 times tool diameter) or less.

When tool overhang is more than L/D=3 and less than or equal L/D=5, settings should be adjusted to approximately 70 to 80% of those indicated in the above cutting conditions (i.e. ap and fz).

When tool overhang is more than L/D=5 and less than or equal L/D=8, settings should be adjusted to approximately 50 to 60% of those indicated in the above cutting conditions (i.e. ap and fz).



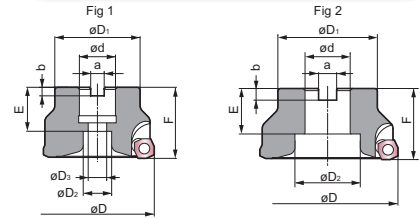
# Metal Slash Mill High Feed Milling Cutter

## SumiMill MS SERIES

Applicable Insert: SDMWS/DEW

### Features & Benefits

- Screw-on insert assembly
- U.S. stock standard bodies available in 2.000" - 4.000" diameters  
Worldwide stock includes 63.0 mm - 125 mm
- High feed rates (Maximum feed rate = 0.078" IPT) result in high productivity milling
- Four corner insert design yields low tooling costs per part
- Unique design directs cutting forces into the machine spindle to facilitate high feed rates even in low rigidity conditions
- Insert grades available for carbon steel, stainless steel, cast iron, & die steel



MS Mill Availability		Dimensions (Inch / mm)										No. of Teeth	Fig.
Sumitomo Cat. No.	Stock	D	D1	D2	D3	F	d	a	b	E			
MS14020SR	•	2.000	1.500	0.609	0.406	1.750	0.750	0.319	0.190	1.020	4	1	
MS14025SR	•	2.500	1.750	0.797	0.531	1.750	1.000	0.375	0.220	1.020	4	1	
MS14030R	•	3.000	2.250	0.797	0.531	1.750	1.000	0.375	0.220	1.020	5	1	
MS14040R	•	4.000	2.870	1.000	0.656	2.000	1.250	0.500	0.280	1.020	6	1	
MS14063RS	★	63.0	59.0	18.0	11.0	40.0	22.0	10.4	6.3	26.0	4	1	
MS14080R	★	80.0	60.0	20.0	13.0	50.0	25.4	9.5	6.0	31.0	5	1	
MS14100R	★	100.0	70.0	46.0	-	50.0	31.8	12.7	8.0	32.0	6	2	
MS14125R	★	125.0	80.0	56.0	-	63.0	38.1	15.9	10.0	38.0	7	2	

• USA stocked item ★ Worldwide Warehouse item

Programmed Radius Chart						
Fig. 1		Fig. 2		Over Cut		
Remains		Remains				
SDMW (SDEW)1406ZDTR						
R		Remains		Over Cut		Fig.
in	mm	in	mm	in	mm	
.079	2.0	0.064	1.628	0	0	1
.098	2.5	0.058	1.464	0	0	1
.118	3.0	0.051	1.300	0	0	1
.138	3.5	0.0455	1.136	0	0	1
.158	4.0	0.038	0.972	0.0005	0.014	2
.177	4.5	0.032	0.808	0.005	0.118	2
.197	5.0	0.025	0.644	0.010	0.258	2

Ramp Angle				
Cutting Edge dia.	SDMW (SDEW)1406ZDTR			
	Max. Ad: .039 in (.015mm) R: .079 in (.003mm)			
	Ramp Angle	Helical Milling		
		Min øD	Max øD	
2.0	2° 00'	3.189	3.858	
2.5	1° 30'	4.213	4.882	
3.0	1° 10'	5.197	5.866	
4.0	0° 49'	7.205	7.874	
63	1° 00'	106	123	
80	0° 50'	140	157	
100	0° 30'	180	197	
125	0° 30'	230	247	

Inserts						
Sumitomo Cat. No.	Coated	Dimensions (Inches)				Fig.
		I.C.	T	R2	R5	
SDEW1406ZDTR	★	0.551	0.236	0.079	0.197	4
SDMW1406ZDTR	•	0.551	0.236	0.079	0.197	3

SDEW = Ground tolerance inserts

• USA stocked item ★ Worldwide Warehouse item

Hardware		
Applicable Cutter	Insert Screw	Wrench
MS 1400 series	BFTX0513N	TTX20

Torque specifications for BFTX0513N is 45-55 in/lbs.

### Recommended Running Conditions

Material	Cutting Speed (SFM)	Feed Rate (IPT)	Depth of Cut (Inch)	Recommended Grades
Carbon Steel	500 ~ 820	< 0.078	< 0.059	ACP200, ACP300
Die Steel	325 ~ 650	< 0.059	< 0.059	ACP200, ACP300
Stainless Steel	525 ~ 650	< 0.039	< 0.059	ACM300, ACM200
Cast Iron	325 ~ 650	< 0.059	< 0.078	ACK200, ACK300

