

# ***Milling Tools***

REVISED JAN 2026



**ICS | USA**

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2 Flute.....	1
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.....	31
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2 Flute.....	21
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## HIGH SPEED STEEL 2 FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2R
1/8	3/8	3/8	2-5/16	10.88
5/32	3/8	3/8	2-5/16	10.88
11/64	3/8	7/16	2-5/16	10.88
3/16	3/8	7/16	2-5/16	10.88
7/32	3/8	1/2	2-5/16	10.88
15/64	3/8	1/2	2-5/16	12.10
1/4	3/8	1/2	2-5/16	10.88
17/64	3/8	9/16	2-5/16	12.10
9/32	3/8	1/2	2-5/16	12.10
5/16	3/8	9/16	2-5/16	12.10
21/64	3/8	9/16	2-5/16	12.10
11/32	3/8	9/16	2-5/16	12.10
3/8	3/8	9/16	2-5/16	12.10
25/64	3/8	13/16	2-1/2	16.00
13/32	3/8	13/16	2-1/2	15.30
7/16	3/8	13/16	2-1/2	15.30
29/64	3/8	13/16	2-1/2	18.00
15/32	3/8	13/16	2-1/2	18.00
31/64	3/8	13/16	2-1/2	18.00
1/2	3/8	13/16	2-1/2	15.30
1/2	1/2	1	3	15.30
33/64	1/2	1	3	18.00
17/32	1/2	1-1/8	3-1/8	20.50
35/64	1/2	1-1/8	3-1/8	20.50
9/16	1/2	1-1/8	3-1/8	20.72
37/64	1/2	1-1/8	3-1/8	24.88
19/32	1/2	1-1/8	3-1/8	24.88
5/8	1/2	1-1/8	3-1/8	22.70
5/8	5/8	1-5/16	3-7/16	22.70
21/32	5/8	1-5/16	3-7/16	24.88
11/16	1/2	1-5/16	3-5/16	24.88
11/16	5/8	1-5/16	3-7/16	24.88
3/4	1/2	1-5/16	3-5/16	26.10
3/4	5/8	1-5/16	3-7/16	26.10
3/4	3/4	1-5/16	3-9/16	26.10
25/32	3/4	1-1/2	3-3/4	32.56

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2R
13/16	1/2	1-1/2	3-1/2	32.56
13/16	5/8	1-1/2	3-5/8	32.56
7/8	1/2	1-1/2	3-1/2	34.72
7/8	5/8	1-1/2	3-5/8	34.72
7/8	3/4	1-1/2	3-3/4	34.72
7/8	7/8	1-1/2	3-3/4	34.72
15/16	1/2	1-1/2	3-1/2	40.18
15/16	5/8	1-1/2	3-5/8	40.18
15/16	3/4	1-1/2	3-3/4	40.18
1	1/2	1-1/2	3-1/2	41.18
1	5/8	1-1/2	3-5/8	41.18
1	3/4	1-1/2	3-3/4	41.18
1	7/8	1-1/2	3-1/2	41.18
1	1	1-5/8	4-1/8	41.18
1-1/16	3/4	1-1/2	3-3/4	60.60
1-1/8	3/4	1-5/8	3-7/8	60.60
1-1/8	7/8	1-5/8	3-7/8	60.60
1-1/8	1	1-5/8	4-1/8	60.60
1-3/16	1	1-5/8	4-1/8	70.00
1-1/4	3/4	1-5/8	3-7/8	67.06
1-1/4	7/8	1-5/8	3-7/8	67.06
1-1/4	1	1-5/8	4-1/8	67.06
1-1/4	1-1/4	1-5/8	3-7/8	67.06
1-3/8	3/4	1-5/8	3-7/8	72.48
1-3/8	1	1-5/8	4-1/8	72.48
1-1/2	3/4	1-5/8	3-7/8	82.06
1-1/2	1	1-5/8	4-1/8	82.06
1-1/2	1-1/4	1-5/8	4-1/8	82.06
1-5/8	3/4	1-5/8	3-7/8	92.92
1-5/8	1-1/4	1-5/8	4-1/8	92.92
1-3/4	3/4	1-5/8	3-7/8	105.96
1-3/4	1-1/4	1-5/8	4-1/8	105.96
1-7/8	3/4	1-5/8	3-7/8	113.36
1-7/8	1-1/4	1-5/8	4-1/8	113.36
2	1-1/4	1-5/8	4-1/8	124.22

## HIGH SPEED STEEL 2 FLUTE KEYWAY TOLERANCE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

Commonly used to make keyways in rotary shafts, these end mills have a -0.0015" to 0.0000" mill diameter tolerance for creating a precise fit.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2K
1/8	3/8	3/8	2-5/16	17.00
3/16	3/8	7/16	2-5/16	18.34
1/4	3/8	1/2	2-5/16	18.34
5/16	3/8	9/16	2-5/16	18.34
11/32	3/8	9/16	2-5/16	18.34
3/8	3/8	9/16	2-5/16	18.34
7/16	3/8	13/16	2-1/2	25.00

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2K
1/2	1/2	1	3	23.88
9/16	1/2	1-1/8	3-1/8	32.00
5/8	5/8	1-5/16	3-7/16	34.00
3/4	3/4	1-5/16	3-9/16	40.00
7/8	7/8	1-1/2	3-3/4	50.00
1	1	1-5/8	4-1/8	62.00

# HIGH SPEED STEEL 2 FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

LONG FLUTE

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	EM-2L
5/16	3/8	3/4	3-5/16	23.84
3/8	3/8	1-1/2	3-1/4	12.56
1/2	1/2	2	4	19.22
5/8	5/8	2	4-1/8	28.34
3/4	3/4	2-1/4	4-1/2	44.14
7/8	7/8	2-1/2	4-3/4	79.08
1	1	3	5-1/2	90.46

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	EM-2L
1-1/4	1-1/4	3	5-1/2	90.46
1-3/8	1	3	5-1/2	90.46
1-1/2	1-1/4	3	5-1/2	112.86
1-5/8	1-1/4	3	5-1/2	135.52
1-3/4	1-1/4	3	5-1/2	141.12
1-7/8	1-1/4	3	5-1/2	163.86
2	1-1/4	3	5-1/2	169.30



EXTENDED FLUTE

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	EM-2XF
5/16	3/8	1-3/8	3-1/8	20.54
7/8	7/8	3-1/2	6-1/2	53.94

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	EM-2XF
1	1	4	6-1/2	79.20



EXTENDED LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	EM-2X
1/8	3/8	3/8	2-3/8	23.36
3/16	3/8	3/4	2-5/8	20.40
1/4	3/8	5/8	3-1/16	14.08
9/32	3/8	1-3/8	3-1/8	24.30
5/16	3/8	3/4	3-5/16	14.08
11/32	3/8	1-1/2	3-1/4	20.50
3/8	3/8	3/4	3-5/16	14.08

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	EM-2X
1/2	1/2	1	4	21.70
9/16	1/2	2-1/2	4-1/2	36.00
5/8	5/8	1-3/8	4-5/8	29.36
3/4	3/4	1-5/8	5-3/8	37.98
7/8	7/8	2	6	53.94
1	1	2-1/2	7-1/4	67.06
1-1/4	1-1/4	3	7-1/4	91.92

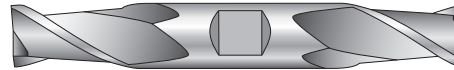
# HIGH SPEED STEEL 2 FLUTE DOUBLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	DEM-2R
7/64	3/8	3/8	3-1/16	17.48
1/8	3/8	3/8	3-1/16	17.48
5/32	3/8	7/16	3-1/8	17.48
3/16	3/8	7/16	3-1/8	17.48
13/64	3/8	1/2	3-1/8	17.48
7/32	3/8	1/2	3-1/8	17.48
15/64	3/8	1/2	3-1/8	17.48
1/4	3/8	1/2	3-1/8	17.48
17/64	3/8	9/16	3-1/8	20.78
9/32	3/8	9/16	3-1/8	18.48
19/64	3/8	9/16	3-1/8	20.78
5/16	3/8	9/16	3-1/8	18.48
21/64	3/8	9/16	3-1/8	20.78
11/32	3/8	9/16	3-1/8	18.48
3/8	3/8	9/16	3-1/8	18.48

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	DEM-2R
25/64	1/2	13/16	3-3/4	31.76
13/32	1/2	13/16	3-3/4	26.10
27/64	1/2	13/16	3-3/4	31.76
7/16	1/2	13/16	3-3/4	26.10
15/32	1/2	13/16	3-3/4	26.10
1/2	1/2	13/16	3-3/4	26.10
17/32	5/8	1-1/8	4-1/2	44.68
9/16	5/8	1-1/8	4-1/2	34.72
5/8	5/8	1-1/8	4-1/2	34.72
11/16	3/4	1-5/16	5	43.36
3/4	3/4	1-5/16	5	43.36
13/16	7/8	1-9/16	5-1/2	54.00
7/8	7/8	1-9/16	5-1/2	54.00
15/16	1	1-5/8	5-7/8	66.04
1	1	1-5/8	5-7/8	68.00

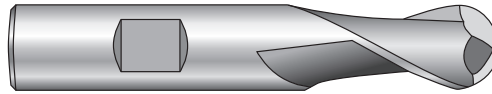
TO ORDER END MILLS: Specify item no., size, & shank dia. Example: EM-2R 1/8 x 3/8

## HIGH SPEED STEEL 2 FLUTE BALL NOSE SINGLE END MILLS

**ICS USA**  
**WELDON SHANK**

**GENERAL PURPOSE**

**CENTER CUTTING**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EM-2B	EM-2BT
1/8	3/8	3/8	2-5/16	17.78	24.12
3/16	3/8	1/2	2-3/8	17.78	24.12
1/4	3/8	5/8	2-7/16	17.78	24.12
5/16	3/8	3/4	2-1/2	19.72	26.06
3/8	3/8	3/4	2-1/2	19.72	26.06
7/16	1/2	1	3	27.86	35.70
1/2	1/2	1	3	27.86	35.70
9/16	1/2	1	3	34.28	42.12

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EM-2B	EM-2BT
5/8	5/8	1-3/8	3-1/2	40.92	52.12
3/4	3/4	1-3/8	3-3/8	44.48	57.74
7/8	7/8	2	4-1/4	51.76	75.10
1	1	2-1/4	4-3/4	68.78	91.72
1-1/8	1	2-1/4	4-3/4	82.18	105.52
1-1/4	1-1/4	2-1/2	5	92.02	121.14
1-1/2	1-1/4	2-1/2	5	103.12	149.78

## HIGH SPEED STEEL 2 FLUTE BALL NOSE SINGLE END MILLS (EXTENDED LENGTH)

**ICS USA**  
**WELDON SHANK**

**SPECIAL PURPOSE**

**CENTER CUTTING**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EM-2BX	EM-2BXT
1/4	3/8	5/8	3-1/16	28.00	36.24
5/16	3/8	3/4	3-5/16	29.42	37.64
3/8	3/8	3/4	3-5/16	30.46	38.68
1/2	1/2	1	4	40.96	50.86

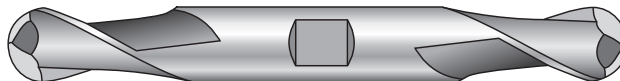
SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EM-2BX	EM-2BXT
5/8	5/8	1-3/8	4-5/8	53.20	66.64
3/4	3/4	1-5/8	5-3/8	73.50	85.82
1	1	2-1/2	7-1/4	113.40	146.06
1-1/4	1-1/4	3	7-1/4	208.60	245.94

## HIGH SPEED STEEL 2 FLUTE BALL NOSE DOUBLE END MILLS

**ICS USA**  
**WELDON SHANK**

**SPECIAL PURPOSE**

**CENTER CUTTING**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEM-2B	DEM-2BT
1/8	3/8	3/8	3-1/16	20.84	32.48
3/16	3/8	7/16	3-1/8	20.84	32.48
1/4	3/8	1/2	3-3/16	20.84	32.48
5/16	3/8	9/16	3-3/16	20.84	32.48
3/8	3/8	9/16	3-3/16	20.84	32.48
7/16	1/2	13/16	3-7/8	31.10	47.90


SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEM-2B	DEM-2BT
1/2	1/2	13/16	3-7/8	31.10	47.90
5/8	5/8	1-1/8	4-9/16	52.34	71.76
3/4	3/4	1-5/16	5	65.88	89.22
7/8	7/8	1-9/16	5-1/2	83.24	109.38
1	1	1-5/8	5-7/8	101.58	143.58

**TOLERANCES**  
Flute Dia.: + .000 - .0015"  
Shank Dia.: + .0005 - .0005"

# HIGH SPEED STEEL 2 FLUTE SINGLE END MILLS - METRIC

**ICS USA**  
**WELDON SHANK**

**GENERAL PURPOSE**



**CENTER CUTTING**  
**RIGHT HAND CUT  
RIGHT HAND HELIX**

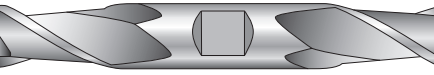
SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EMM-2R	EMM-2T
2.00	3/8	5/16	2-5/16	16.00	21.08
2.50	3/8	5/16	2-5/16	16.00	21.08
3.00	3/8	5/16	2-5/16	16.00	21.08
3.50	3/8	7/16	2-5/16	16.00	21.08
4.00	3/8	7/16	2-5/16	16.00	21.08
4.50	3/8	1/2	2-5/16	16.00	21.08
5.00	3/8	1/2	2-5/16	16.00	21.08
5.50	3/8	1/2	2-5/16	16.00	21.08
6.00	3/8	1/2	2-5/16	16.00	21.08
6.50	3/8	9/16	2-5/16	16.00	21.08
7.00	3/8	9/16	2-5/16	16.00	21.08
7.50	3/8	9/16	2-5/16	16.00	21.08
8.00	3/8	9/16	2-5/16	16.00	21.08
8.50	3/8	9/16	2-5/16	16.00	21.08
9.00	3/8	9/16	2-5/16	16.00	21.08
9.50	3/8	13/16	2-1/2	16.00	21.08
10.00	3/8	13/16	2-1/2	24.04	29.12
10.50	3/8	13/16	2-1/2	24.04	29.12
11.00	3/8	13/16	2-1/2	24.04	29.12
11.50	3/8	13/16	2-1/2	24.04	29.12
12.00	3/8	13/16	2-1/2	24.04	29.12
12.50	1/2	1	3	30.02	39.82
13.00	1/2	1	3	30.02	39.82
13.50	1/2	1-1/8	3-1/8	30.02	39.82
14.00	1/2	1-1/8	3-1/8	30.02	39.82

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EMM-2R	EMM-2T
14.50	1/2	1-1/8	3-1/8	33.02	42.82
15.00	1/2	1-1/8	3-1/8	33.02	42.82
16.00	1/2	1-5/16	3-5/16	34.86	44.66
16.00	5/8	1-5/16	3-7/16	34.86	46.64
17.00	5/8	1-5/16	3-7/16	40.64	52.32
18.00	1/2	1-5/16	3-5/16	40.64	52.32
18.00	5/8	1-5/16	3-7/16	40.64	52.32
19.00	3/4	1-1/2	3-3/4	45.32	60.18
20.00	5/8	1-1/2	3-3/4	45.32	57.00
20.00	3/4	1-1/2	3-3/4	52.24	67.10
21.00	7/8	1-1/2	3-3/4	52.24	70.96
22.00	3/4	1-1/2	3-3/4	52.24	67.10
22.00	7/8	1-1/2	3-3/4	52.24	70.96
23.00	7/8	1-1/2	3-3/4	62.64	81.36
24.00	3/4	2	4-1/2	62.64	78.92
24.00	1	2	4-1/2	62.64	84.74
25.00	3/4	1-5/8	3-7/8	62.64	77.50
25.00	1	1-5/8	4-1/8	62.64	84.74
26.00	3/4	2	4-1/2	86.68	108.78
30.00	1	2	4-1/2	98.08	120.18
32.00	1	2	4-1/2	98.08	120.18
36.00	1	2	4-1/2	121.60	159.58
40.00	1-1/4	2	4-1/2	143.48	181.48
45.00	1-1/4	2	4-1/2	173.50	224.72

# HIGH SPEED STEEL 2 FLUTE DOUBLE END MILLS - METRIC

**ICS USA**  
**WELDON SHANK**

**GENERAL PURPOSE**



**CENTER CUTTING**  
**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEMM-2R	DEMM-2T
3.00	3/8	3/8	3-1/16	22.64	32.20
4.00	3/8	7/16	3-1/8	22.64	32.20
5.00	3/8	1/2	3-1/8	22.64	32.20
6.00	3/8	1/2	3-1/8	22.64	32.20
7.00	3/8	9/16	3-1/8	24.26	33.84
8.00	3/8	9/16	3-1/2	22.64	32.20
10.00	1/2	13/16	3-1/2	33.60	49.42
11.00	1/2	13/16	3-3/4	41.24	55.94
12.00	1/2	13/16	3-3/4	41.24	55.94

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEMM-2R	DEMM-2T
13.00	5/8	1-1/8	4-1/2	52.74	70.64
14.00	5/8	1-1/8	4-1/2	52.74	70.64
15.00	5/8	1-1/8	4-1/2	58.00	75.90
16.00	3/4	1-5/16	5	58.00	82.44
18.00	3/4	1-5/16	5	72.12	96.56
20.00	7/8	1-9/16	5-1/2	72.12	107.98
22.00	1	1-5/8	5-7/8	81.72	117.58
24.00	1	1-5/8	5-7/8	99.36	135.22

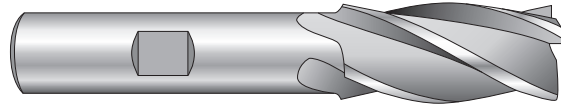
# HIGH SPEED STEEL 4, 6, & 8 FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**NON-CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

4, 6, & 8 FLUTE - REGULAR LENGTH

ITEM NO.	DESCRIPTION
<b>EM-4R</b>	HSS Single End Mill - 4 Flute - Regular Length
<b>EM-6R</b>	HSS Single End Mill - 6 Flute - Regular Length
<b>EM-8R</b>	HSS Single End Mill - 8 Flute - Regular Length
<b>EM-4T</b>	TiN Coated Single End Mill - 4 Flute - Regular Length
<b>EM-6T</b>	TiN Coated Single End Mill - 6 Flute - Regular Length
<b>EM-8T</b>	TiN Coated Single End Mill - 8 Flute - Regular Length

**TO ORDER**

SPECIFY ITEM NO.,  
SIZE, AND  
SHANK DIA.

EXAMPLE: **EM-4R 5/8 x 1/2**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE EACH	
					HSS	TIN COAT
1/8	3/8	3/8	2-5/16	4	10.38	16.72
5/32	3/8	3/8	2-5/16	4	10.38	16.72
3/16	3/8	1/2	2-3/8	4	10.38	16.72
7/32	3/8	5/8	2-7/16	4	10.38	16.72
1/4	3/8	5/8	2-7/16	4	10.38	16.72
9/32	3/8	3/4	2-1/2	4	10.38	16.72
5/16	3/8	3/4	2-1/2	4	11.32	17.66
11/32	3/8	3/4	2-1/2	4	11.32	17.66
3/8	3/8	3/4	2-1/2	4	11.32	17.66
13/32	3/8	1	2-11/16	4	13.06	19.40
7/16	3/8	1	2-11/16	4	13.06	19.40
15/32	3/8	1	2-11/16	4	13.06	19.40
1/2	3/8	1	2-11/16	4	13.06	19.40
1/2	1/2	1-1/4	3-1/4	4	13.06	22.96
9/16	1/2	1-3/8	3-3/8	4	19.58	29.48
5/8	1/2	1-3/8	3-3/8	4	21.70	31.60
5/8	5/8	1-5/8	3-3/4	4	21.70	32.90
11/16	1/2	1-5/8	3-5/8	4	23.94	33.84
11/16	5/8	1-5/8	3-3/4	4	23.94	35.14
3/4	1/2	1-5/8	3-5/8	4	24.88	34.78
3/4	5/8	1-5/8	3-3/4	4	24.88	36.08
3/4	3/4	1-5/8	3-3/4	4	24.88	38.14
3/4	3/4	1-5/8	3-3/4	6	24.88	38.14
13/16	1/2	1-7/8	4	4	30.80	42.00
13/16	5/8	1-7/8	4	4	30.80	42.00
13/16	5/8	1-7/8	4	6	30.80	42.00
13/16	3/4	1-7/8	4-1/8	4	30.80	44.08
7/8	1/2	1-7/8	4	4	33.04	44.24
7/8	1/2	1-7/8	4	6	33.04	44.24
7/8	5/8	1-7/8	4	6	33.04	44.24
7/8	3/4	1-7/8	4-1/8	4	33.04	48.72
7/8	3/4	1-7/8	4-1/8	6	33.04	48.72
7/8	7/8	1-7/8	4-1/8	4	34.02	57.36
15/16	1/2	1-7/8	4	6	36.74	53.66
15/16	5/8	1-7/8	4	6	36.74	53.66
15/16	3/4	1-7/8	4-1/8	4	37.98	53.66
15/16	7/8	1-7/8	4-1/8	4	37.98	61.32

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE EACH	
					HSS	TIN COAT
1	1/2	1-7/8	4	4	38.94	55.56
1	1/2	1-7/8	4	6	38.94	55.56
1	5/8	1-7/8	4	4	38.94	55.56
1	5/8	1-7/8	4	6	38.94	55.56
1	3/4	1-7/8	4-1/8	4	38.94	54.62
1	3/4	1-7/8	4-1/8	6	38.94	54.62
1	7/8	1-7/8	4-1/8	4	41.18	64.52
1	1	2	4-1/2	4	42.12	65.46
1-1/8	3/4	2	4-1/4	6	61.60	73.58
1-1/8	7/8	2	4-1/4	6	61.60	81.24
1-1/8	1	2	4-1/2	6	61.60	84.96
1-1/4	3/4	2	4-1/4	6	63.84	87.20
1-1/4	7/8	2	4-1/4	4	63.84	87.20
1-1/4	7/8	2	4-1/4	6	63.84	87.20
1-1/4	1	2	4-1/2	6	66.04	89.38
1-1/4	1-1/4	2	4-1/2	4	66.04	95.16
1-1/4	1-1/4	2	4-1/2	6	66.04	95.16
1-3/8	3/4	2	4-1/4	6	69.00	92.33
1-3/8	1	2	4-1/2	6	72.92	96.26
1-3/8	1-1/4	2	4-1/2	6	72.92	119.58
1-1/2	3/4	2	4-1/4	6	77.84	101.18
1-1/2	1	2	4-1/2	4	80.08	103.44
1-1/2	1	2	4-1/2	6	80.08	103.44
1-1/2	1-1/4	2	4-1/2	4	80.08	126.74
1-1/2	1-1/4	2	4-1/2	6	80.08	126.74
1-5/8	3/4	2	4-1/4	6	88.72	135.38
1-5/8	1-1/4	2	4-1/2	4	88.72	135.38
1-5/8	1-1/4	2	4-1/2	6	88.72	135.38
1-3/4	3/4	2	4-1/4	6	100.54	147.20
1-3/4	1-1/4	2	4-1/2	4	100.54	147.20
1-3/4	1-1/4	2	4-1/2	6	100.54	147.20
1-7/8	1-1/4	2	4-1/2	6	107.92	154.58
1-7/8	1-1/4	2	4-1/2	8	107.92	154.58
2	3/4	2	4-1/4	8	117.78	164.44
2	1-1/4	2	4-1/2	4	117.78	164.44
2	1-1/4	2	4-1/2	6	117.78	164.44
2	1-1/4	2	4-1/2	8	117.78	164.44

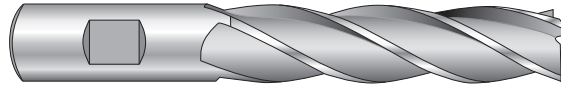
# HIGH SPEED STEEL 4, 6, & 8 LONG FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**NON-CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

4, 6, & 8 FLUTE - LONG FLUTE

ITEM NO.	DESCRIPTION
<b>EM-4L</b>	HSS Single End Mill - 4 Flute - Long Flute
<b>EM-6L</b>	HSS Single End Mill - 6 Flute - Long Flute
<b>EM-8L</b>	HSS Single End Mill - 8 Flute - Long Flute

**TO ORDER**  
SPECIFY ITEM NO., SIZE, AND SHANK DIA.  
EXAMPLE: **EM-4L 5/8 x 1/2**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE
					HSS
1/4	3/8	1-1/4	3-1/16	4	12.74
5/16	3/8	1-3/8	3-1/8	4	12.74
3/8	3/8	1-1/2	3-1/4	4	12.74
7/16	1/2	1-3/4	3-3/4	4	18.40
1/2	1/2	2	4	4	19.46
5/8	1/2	2-1/2	4-5/8	4	28.54
5/8	5/8	2-1/2	4-5/8	4	35.26
3/4	1/2	3	5-1/4	4	35.26
3/4	3/4	3	5-1/4	4	35.26
7/8	7/8	3-1/2	5-3/4	4	44.34
1	3/4	4	6-1/2	4	56.84
1	1	4	6-1/2	4	56.84

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE
					HSS
1-1/8	3/4	4	6-1/2	6	79.64
1-1/8	1	4	6-1/2	6	79.64
1-1/4	3/4	4	6-1/2	4	91.02
1-1/4	1	4	6-1/2	6	91.02
1-1/4	1-1/4	4	6-1/2	4	91.02
1-1/4	1-1/4	4	6-1/2	6	91.02
1-3/8	1	4	6-1/2	6	91.02
1-1/2	1	4	6-1/2	6	108.18
1-1/2	1-1/4	4	6-1/2	6	113.60
1-3/4	1-1/4	4	6-1/2	6	142.14
2	1-1/4	4	6-1/2	4	170.42
2	1-1/4	4	6-1/2	6	170.42
2	1-1/4	4	6-1/2	8	170.42

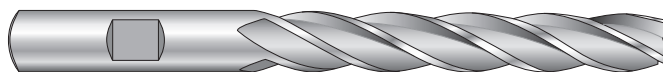
# HIGH SPEED STEEL 4 & 6 EXTRA LONG FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**NON-CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

4 & 6 FLUTE - EXTRA LONG FLUTE

ITEM NO.	DESCRIPTION
<b>EM-4XL</b>	HSS Single End Mill - 4 Flute - Extra Long Flute
<b>EM-6XL</b>	HSS Single End Mill - 6 Flute - Extra Long Flute

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE
					HSS
1/4	3/8	1-3/4	3-9/16	4	16.24
5/16	3/8	2	3-3/4	4	18.00
3/8	3/8	2-1/2	4-1/4	4	18.48
1/2	1/2	3	5	4	25.16
5/8	1/2	4	6-1/8	4	35.18
5/8	5/8	4	6-1/8	4	35.18
3/4	1/2	4	6-1/4	4	44.60

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE
					HSS
3/4	3/4	4	6-1/4	4	44.60
7/8	7/8	5	7-1/4	4	56.46
1	1	6	8-1/2	4	68.78
1-1/4	1-1/4	6	8-1/2	4	115.20
1-1/4	1-1/4	6	8-1/2	6	115.20
1-1/2	1-1/4	8	10-9/16	6	174.24
2	2	8	11-3/4	6	246.40

**TOLERANCES**  
Flute Dia.: + .003 - .000"  
Shank Dia.: + .0005 - .0005"

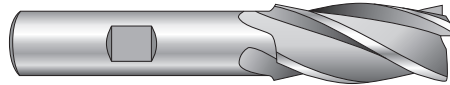
# HIGH SPEED STEEL 4 FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



REGULAR LENGTH

**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-4C
1/8	3/8	3/8	2-5/16	10.38
3/16	3/8	1/2	2-3/8	10.38
7/32	3/8	5/8	2-7/16	15.00
1/4	3/8	5/8	2-7/16	10.38
9/32	3/8	5/8	2-7/16	16.00
5/16	3/8	3/4	2-1/2	11.32
11/32	3/8	3/4	2-1/2	15.00
3/8	3/8	3/4	2-1/2	11.32
13/32	3/8	1	2-11/16	22.40
7/16	3/8	1	2-11/16	13.06
7/16	1/2	1-3/4	3-3/4	-
15/32	3/8	1	2-11/16	15.50
1/2	3/8	1	2-11/16	13.06
1/2	1/2	1-1/4	3-1/4	13.06
9/16	1/2	1-3/8	3-3/8	19.58
5/8	1/2	1-3/8	3-3/8	21.70
5/8	5/8	1-5/8	3-3/4	21.70
11/16	1/2	1-5/8	3-3/4	23.94

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-4C
11/16	5/8	1-5/8	3-5/8	23.94
3/4	1/2	1-5/8	3-5/8	24.88
3/4	5/8	1-5/8	3-3/4	24.88
3/4	3/4	1-5/8	3-3/4	24.88
13/16	5/8	1-7/8	4	30.80
13/16	3/4	1-7/8	4-1/8	30.80
7/8	1/2	1-7/8	4	33.04
7/8	3/4	1-7/8	4-1/8	33.04
7/8	7/8	1-7/8	4-1/8	34.02
15/16	3/4	1-7/8	4-1/8	37.98
15/16	7/8	1-7/8	4-1/8	37.98
1	1/2	1-7/8	4	38.94
1	5/8	1-7/8	4	38.94
1	3/4	1-7/8	4-1/8	38.94
1	1	2	4-1/2	42.12
1-1/8	1	2	4-1/2	73.92
1-1/4	1-1/4	2	4-1/2	81.00
1-1/2	1-1/4	2	4-1/2	102.00

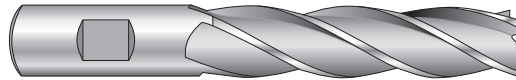
# HIGH SPEED STEEL 4 LONG FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



LONG LENGTH

**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-4CL
3/16	3/8	3/4	2-5/8	21.50
1/4	3/8	1-1/4	3-1/16	12.74
9/32	3/8	1-3/8	3-1/8	21.50
5/16	3/8	1-3/8	3-1/8	12.74
11/32	3/8	1-1/2	3-1/4	-
3/8	3/8	1-1/2	3-1/4	12.74
13/32	3/8	2-5/8	4-5/16	34.34
7/16	1/2	1-3/4	3-3/4	18.40

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-4CL
1/2	1/2	2	4	19.46
17/32	1/2	2-1/2	4-1/2	39.00
5/8	5/8	2-1/2	4-5/8	35.26
3/4	1/2	3	5-1/4	35.26
3/4	3/4	3	5-1/4	35.26
7/8	3/4	3-1/2	5-3/4	44.56
7/8	7/8	3-1/2	5-3/4	44.56
1	1	4	6-1/2	56.84

# HIGH SPEED STEEL 4 EXTRA LONG FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



EXTRA LONG LENGTH

**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-4CX
1/4	3/8	1-3/4	3-9/16	16.24
9/32	3/8	2	3-3/4	27.36
5/16	3/8	2	3-3/4	18.00
11/32	3/8	1-1/2	3-1/4	21.50
3/8	3/8	2-1/2	4-1/4	18.48
7/16	3/8	2-5/8	4-5/16	-
1/2	1/2	3	5	25.16

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-4CX
9/16	1/2	4	6	46.14
5/8	1/2	4	6-1/8	35.18
5/8	5/8	4	6-1/8	35.18
3/4	3/4	4	6-1/4	44.60
7/8	7/8	5	7-1/4	56.46
1	1	6	8-1/2	68.78

TOLERANCES • Flute Dia.: + .003 - .000" • Shank Dia.: + .0005 - .0005"

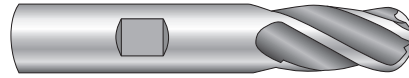
# HIGH SPEED STEEL 4 FLUTE BALL NOSE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EM-4B	EM-4BT
1/4	3/8	5/8	2-7/16	22.92	29.26
5/16	3/8	3/4	2-1/2	22.92	29.26
3/8	3/8	3/4	2-1/2	22.92	29.26
7/16	1/2	1	3	29.98	36.32
1/2	1/2	1-1/4	3-1/4	29.98	36.32
9/16	1/2	1-1/4	3-1/4	49.26	59.16

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EM-4B	EM-4BT
5/8	5/8	1-5/8	3-3/4	49.26	60.46
3/4	3/4	1-5/8	3-7/8	62.24	75.50
7/8	7/8	1-7/8	4-1/8	79.92	103.26
1	1	2	4-1/2	98.32	121.66
1-1/4	1-1/4	2	4-1/2	114.60	143.72
1-1/2	1-1/4	2	4-1/2	149.80	196.46

# HIGH SPEED STEEL 4 FLUTE BALL NOSE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

LONG LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EM-4BL	EM-4BLT
1/4	3/8	1-1/4	3-1/16	22.92	31.14
5/16	3/8	1-3/8	3-1/8	22.92	31.14
3/8	3/8	1-1/2	3-1/4	28.26	36.48
1/2	1/2	2	4	44.50	54.40

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EM-4BL	EM-4BLT
5/8	5/8	2-1/2	4-5/8	65.98	77.92
3/4	3/4	3	5-1/4	85.24	100.92
1	1	4	6-1/2	124.22	152.22

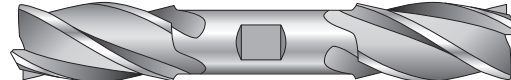
# HIGH SPEED STEEL 4 FLUTE DOUBLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**NON-CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEM-4R	DEM-4T
1/8	3/8	3/8	3-1/16	17.48	29.12
5/32	3/8	7/16	3-1/8	17.48	29.12
3/16	3/8	1/2	3-1/4	17.48	29.12
13/64	3/8	9/16	3-1/4	17.48	29.12
7/32	3/8	9/16	3-1/4	17.48	29.12
15/64	3/8	9/16	3-1/4	17.48	29.12
1/4	3/8	5/8	3-3/8	17.48	29.12
9/32	3/8	11/16	3-3/8	18.48	30.14
5/16	3/8	3/4	3-1/2	18.48	30.14
11/32	3/8	3/4	3-1/2	18.48	30.14
3/8	3/8	3/4	3-1/2	18.48	30.14
13/32	1/2	1	4-1/8	26.10	42.90

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEM-4R	DEM-4T
7/16	1/2	1	4-1/8	26.10	42.90
15/32	1/2	1	4-1/8	26.10	42.90
1/2	1/2	1	4-1/8	26.10	42.90
9/16	5/8	1-3/8	5	34.72	54.16
5/8	5/8	1-3/8	5	34.72	54.16
11/16	3/4	1-5/8	5-5/8	43.36	66.70
3/4	3/4	1-5/8	5-5/8	43.36	66.70
13/16	7/8	1-7/8	6-1/8	54.00	80.14
7/8	7/8	1-7/8	6-1/8	54.00	80.14
15/16	1	1-7/8	6-3/8	66.04	108.04
1	1	1-7/8	6-3/8	68.00	110.00

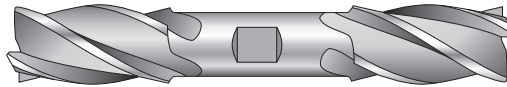
TOLERANCES • Flute Dia.: + .003 - .000" • Shank Dia.: + .0005 - .0005"

# HIGH SPEED STEEL 4 FLUTE DOUBLE END MILLS

**ICS USA**  
**WELDON SHANK**

**GENERAL PURPOSE**

**CENTER CUTTING**  
**RIGHT HAND CUT**  
**RIGHT HAND HELIX**



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEM-4C	DEM-4CT
1/8	3/8	3/8	3-1/16	17.48	26.00
5/32	3/16	15/64	3-1/8	14.80	26.50
3/16	3/8	1/2	3-1/4	17.48	26.00
13/64	3/8	9/16	3-1/4	24.40	-
7/32	3/8	9/16	3-1/4	24.40	26.50
15/64	3/8	5/8	3-3/8	24.40	26.50
1/4	3/8	5/8	3-3/8	17.48	26.00
17/64	3/8	11/16	3-3/8	24.40	26.50
9/32	3/8	11/16	3-3/8	24.40	26.50
5/16	3/8	3/4	3-1/2	18.48	30.14
21/64	3/8	3/4	3-1/2	24.40	-
11/32	3/8	3/4	3-1/2	24.40	26.50

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEM-4C	DEM-4CT
3/8	3/8	3/4	3-1/2	18.48	26.00
13/32	1/2	1	4-1/8	41.64	43.72
7/16	1/2	1	4-1/8	34.00	38.30
1/2	1/2	1	4-1/8	26.10	38.30
17/32	5/8	1-3/8	5	42.00	-
9/16	5/8	1-3/8	5	31.00	48.34
5/8	5/8	1-3/8	5	31.00	48.34
11/16	3/4	1-5/8	5-5/8	56.08	-
3/4	3/4	1-5/8	5-5/8	43.36	59.64
7/8	7/8	1-7/8	6-1/8	54.00	71.54
1	1	1-7/8	6-3/8	68.00	98.20

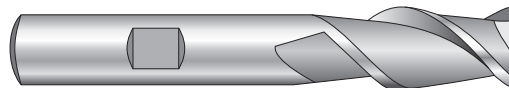
TOLERANCES  
Flute Dia.: + .003 - .000"  
Shank Dia.: + .0005 - .0005"

# HIGH SPEED STEEL 2 FLUTE SINGLE END MILLS FOR ALUMINUM

**ICS USA**  
**WELDON SHANK**

**SPECIAL PURPOSE**

**CENTER CUTTING**  
**RIGHT HAND CUT**  
**RIGHT HAND HELIX**



REGULAR LENGTH

These Two Flute High Speed Steel End Mills are designed for milling aluminum, aluminum alloys, "aviation aluminum", copper, copper alloys, soft steels, and thermoplastics. Special high helix angle for maximum chip removal. Order zirconium nitride coated end mills to minimize packing of chips in the flutes and for very fast removal of material. Zirconium nitride is harder than titanium nitride and can be subjected to higher operating temperatures. Performance reports show a 200%-500% improvement over titanium nitride when machining the aforementioned materials.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE
				EM-2A
1/8	3/8	3/8	2-5/16	14.04
3/16	3/8	1/2	2-3/8	14.04
1/4	3/8	5/8	2-1/2	16.40
5/16	3/8	3/4	2-1/2	16.40
3/8	3/8	3/4	2-1/2	16.40
7/16	3/8	1	2-11/16	18.48
1/2	1/2	1-1/4	3-1/4	20.04
5/8	1/2	1-3/8	3-3/8	30.50

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE
				EM-2A
5/8	5/8	1-5/8	3-3/4	26.12
3/4	1/2	1-5/8	3-5/8	34.50
3/4	3/4	1-5/8	3-7/8	30.54
13/16	3/4	1-7/8	4-1/8	44.00
7/8	3/4	1-7/8	4-1/8	45.04
7/8	7/8	1-7/8	4-1/8	45.04
1	3/4	1-7/8	4-1/8	55.74
1	1	2	4-1/2	55.74

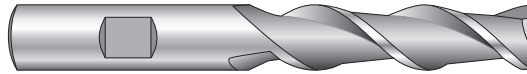
# 2 LONG FLUTE SINGLE END MILLS FOR ALUMINUM

ICS USA

SPECIAL PURPOSE

CENTER CUTTING

WELDON SHANK



RIGHT HAND CUT  
RIGHT HAND HELIX

LONG FLUTE LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2AL
1/4	3/8	1-1/4	3-1/8	17.30
5/16	3/8	1-3/8	3-1/8	17.30
3/8	3/8	1-1/2	3-1/4	17.30
7/16	1/2	1-3/4	3-1/4	23.40
1/2	1/2	2	4	24.72

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2AL
5/8	5/8	2-1/2	4-5/8	33.28
3/4	3/4	3	5-1/4	47.60
7/8	7/8	3-1/2	5-3/4	59.92
1	1	4	6-1/2	81.84

TOLERANCES  
Flute Dia.: +.001 -.000"  
Shank Dia.: +.0005 -.0005"

## HIGH SPEED STEEL

# EXTRA LONG 2 FLUTE SINGLE END MILLS FOR ALUMINUM

ICS USA

SPECIAL PURPOSE

CENTER CUTTING

WELDON SHANK



RIGHT HAND CUT  
RIGHT HAND HELIX

EXTRA LONG LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2AX
1/4	3/8	1-3/4	3-9/16	21.00
5/16	3/8	2	3-3/4	21.00
3/8	3/8	2-1/2	4-1/4	22.50
1/2	1/2	3	5	30.50

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2AX
5/8	5/8	4	6-1/8	42.00
3/4	3/4	4	6-1/4	57.00
1	1	6	8-1/2	103.00

## HIGH SPEED STEEL

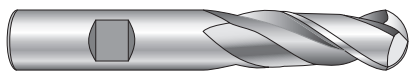
# 2 FLUTE BALL NOSE SINGLE END MILLS FOR ALUMINUM

ICS USA

SPECIAL PURPOSE

CENTER CUTTING

WELDON SHANK



REGULAR LENGTH



LONG LENGTH

RIGHT HAND CUT  
RIGHT HAND HELIX

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2AB
1/4	3/8	5/8	2-7/16	27.48
3/8	3/8	3/4	2-1/2	29.48
1/2	1/2	1-1/4	3-1/4	40.82

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-2ABX
1/4	3/8	1-3/4	3-9/16	39.46
3/8	3/8	2-1/2	4-1/4	41.90
1/2	1/2	3	5	57.56
3/4	3/4	1-5/8	3-7/8	62.98

## HIGH SPEED STEEL 3 FLUTE SINGLE END MILLS FOR ALUMINUM

**ICS USA**

**WELDON SHANK**

**SPECIAL PURPOSE**



**CENTER CUTTING**

**RIGHT HAND CUT  
RIGHT HAND HIGH HELIX**

REGULAR LENGTH

Three Flute High Speed Steel End Mills are designed especially for milling aluminum, aluminum alloys, “aviation aluminum”, copper, copper alloys, soft steels, and thermoplastics. Special high helix angle for maximum chip removal. Three flute design removes more material per revolution, tracks straighter, mills at very high feed rates, and creates a smoother finish than 2 flute end mills.

Titanium-carbonitride (TiCN) coated end mills work well in harder material and for longer production runs. The hard, smooth finish resists chipping and wear and prevents material from accumulating on the cutting edge. Titanium-carbonitride coating works especially well for cutting aluminum.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3A
1/4	3/8	5/8	2-7/16	20.50
5/16	3/8	3/4	2-1/2	20.50
3/8	3/8	3/4	2-1/2	20.50
7/16	1/2	1-1/4	3-1/4	26.00

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3A
1/2	1/2	1/2	2-1/2	24.50
5/8	5/8	5/8	2-3/4	32.50
3/4	3/4	3/4	3	35.00
1	1	1	3-1/2	54.00

## HIGH SPEED STEEL 3 FLUTE LONG LENGTH SINGLE END MILLS FOR ALUMINUM

**ICS USA**

**WELDON SHANK**

**SPECIAL PURPOSE**



**CENTER CUTTING**

**RIGHT HAND CUT  
RIGHT HAND HIGH HELIX**

LONG LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3AL
1/4	3/8	1-1/4	3-1/16	22.40
5/16	3/8	1-3/8	3-1/8	22.40
3/8	3/8	1-1/2	3-1/4	22.40
1/2	1/2	1-1/4	3-1/4	26.82

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3AL
5/8	5/8	1-5/8	3-3/4	33.70
3/4	3/4	1-5/8	3-7/8	35.40
1	1	2	4-1/2	57.72

## HIGH SPEED STEEL EXTRA LONG 3 FLUTE SINGLE END MILLS FOR ALUMINUM

**ICS USA**

**WELDON SHANK**

**SPECIAL PURPOSE**



**CENTER CUTTING**

**RIGHT HAND CUT  
RIGHT HAND HIGH HELIX**

EXTRA LONG LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3AX
1/4	3/8	1-3/4	3-9/16	26.42
5/16	3/8	2	3-3/4	26.42
3/8	3/8	2-1/2	4-1/4	26.42

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3AX
1/2	1/2	2	4	30.44
5/8	5/8	2	4-1/8	36.42
1	1	4	6-1/2	83.52

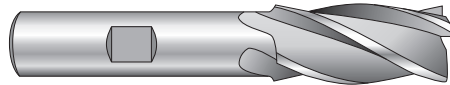
# HIGH SPEED STEEL METRIC 4 FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**NON-CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EMM-4R	EMM-4T
2.00	3/8	3/8	2-5/16	16.00	21.08
2.50	3/8	3/8	2-5/16	16.00	21.08
3.00	3/8	3/8	2-5/16	16.00	21.08
3.50	3/8	1/2	2-3/8	16.00	21.08
4.00	3/8	1/2	2-3/8	16.00	21.08
4.50	3/8	1/2	2-3/8	16.00	21.08
5.00	3/8	1/2	2-3/8	16.00	21.08
5.50	3/8	5/8	2-1/2	16.00	21.08
6.00	3/8	5/8	2-1/2	16.00	21.08
6.50	3/8	11/16	2-1/2	16.00	21.08
7.00	3/8	11/16	2-1/2	16.00	21.08
7.50	3/8	3/4	2-1/2	16.00	21.08
8.00	3/8	3/4	2-1/2	16.00	21.08
8.50	3/8	3/4	2-1/2	16.00	21.08
9.00	3/8	3/4	2-1/2	16.00	21.08
9.50	3/8	1	2-11/16	16.00	21.08
10.00	3/8	1	2-11/16	24.04	29.12
10.50	3/8	1	2-11/16	24.04	29.12
11.00	3/8	1	2-11/16	24.04	29.12
11.50	3/8	1	2-11/16	24.04	29.12
12.00	3/8	1	2-11/16	24.04	29.12
12.50	1/2	1-1/4	3-1/4	30.02	39.82
13.00	1/2	1-1/4	3-1/4	30.02	39.82
13.50	1/2	1-1/4	3-1/4	30.02	39.82
14.00	1/2	1-3/8	3-3/8	30.02	39.82

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				EMM-4R	EMM-4T
14.50	1/2	1-3/8	3-3/8	33.02	42.82
15.00	1/2	1-3/8	3-3/8	33.02	42.82
16.00	1/2	1-5/8	3-3/4	34.86	44.66
16.00	5/8	1-5/8	3-3/4	34.86	46.54
17.00	5/8	1-5/8	3-3/4	40.64	52.32
18.00	1/2	1-5/8	3-3/4	40.64	52.32
18.00	5/8	1-5/8	3-3/4	40.64	52.32
19.00	3/4	1-7/8	4-1/8	45.32	61.60
20.00	5/8	1-7/8	4-1/8	45.32	57.26
20.00	3/4	1-7/8	4-1/8	52.24	68.54
21.00	7/8	1-7/8	4-1/8	52.24	74.36
22.00	3/4	1-7/8	4-1/8	52.24	68.54
22.00	7/8	1-7/8	4-1/8	52.24	74.36
23.00	7/8	1-7/8	4-1/8	62.64	84.74
24.00	3/4	2	4-1/2	62.64	78.92
24.00	1	2	4-1/2	62.64	84.74
25.00	3/4	1-7/8	4-1/8	62.64	78.92
25.00	1	2	4-1/2	62.64	84.74
26.00	3/4	2	4-1/2	86.68	108.78
30.00	1	2	4-1/2	98.08	120.18
32.00	1	2	4-1/2	98.08	120.18
36.00	1	2	4-1/2	121.60	159.58
40.00	1-1/4	2	4-1/2	143.48	181.48
45.00	1-1/4	2	4-1/2	173.50	224.72

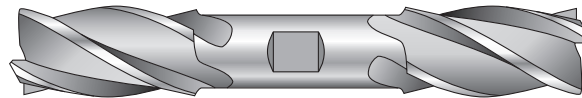
# HIGH SPEED STEEL METRIC 4 FLUTE DOUBLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**NON-CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEM-4R	DEM-4T
3.00	3/8	3/8	3-1/16	23.82	33.28
4.00	3/8	7/16	3-1/8	23.82	33.28
5.00	3/8	9/16	3-1/4	23.82	33.28
6.00	3/8	5/8	3-3/8	23.82	33.28
7.00	3/8	11/16	3-3/8	25.44	35.00
8.00	3/8	3/4	3-1/2	23.82	33.28
10.00	1/2	1	4-1/8	35.24	50.94
11.00	1/2	1	4-1/8	41.24	56.96
12.00	1/2	1	4-1/8	41.24	56.96

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TIN COAT
				DEM-4R	DEM-4T
13.00	5/8	1-3/8	5	52.74	70.64
14.00	5/8	1-3/8	5	52.74	70.64
15.00	5/8	1-3/8	5	58.00	75.90
16.00	3/4	1-5/8	5-5/8	58.00	83.52
18.00	3/4	1-5/8	5-5/8	73.98	99.48
20.00	7/8	1-7/8	6-1/8	73.98	116.62
22.00	1	1-7/8	6-3/8	84.24	126.88
24.00	1	1-7/8	6-3/8	102.52	145.16

TOLERANCES  
Flute Dia.: + .003 - .000"  
Shank Dia.: + .0005 - .0005"

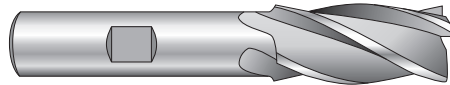
# HIGH SPEED STEEL METRIC 4 FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				EMM-4C	EMM-4CT
2.00	3/8	3/8	2-5/16	16.00	21.08
2.50	3/8	3/8	2-5/16	16.00	21.08
3.00	3/8	3/8	2-5/16	16.00	21.08
3.50	3/8	1/2	2-3/8	16.00	21.08
4.00	3/8	1/2	2-3/8	16.00	21.08
4.50	3/8	1/2	2-3/8	16.00	21.08
5.00	3/8	1/2	2-3/8	16.00	21.08
5.50	3/8	5/8	2-1/2	16.00	21.08
6.00	3/8	5/8	2-1/2	16.00	21.08
6.50	3/8	11/16	2-1/2	16.00	21.08
7.00	3/8	11/16	2-1/2	16.00	21.08
7.50	3/8	3/4	2-1/2	16.00	21.08
8.00	3/8	3/4	2-1/2	16.00	21.08
8.50	3/8	3/4	2-1/2	16.00	21.08
9.00	3/8	3/4	2-1/2	16.00	21.08
9.50	3/8	1	2-11/16	16.00	21.08
10.00	3/8	1	2-11/16	24.04	29.12
10.50	3/8	1	2-11/16	24.04	29.12
11.00	3/8	1	2-11/16	24.04	29.12
11.50	3/8	1	2-11/16	24.04	29.12
12.00	3/8	1	2-11/16	24.04	29.12
12.50	1/2	1-1/4	3-1/4	30.02	39.82
13.00	1/2	1-1/4	3-1/4	30.02	39.82
13.50	1/2	1-1/4	3-1/4	30.02	39.82
14.00	1/2	1-3/8	3-3/8	30.02	39.82

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				EMM-4C	EMM-4CT
14.50	1/2	1-3/8	3-3/8	33.02	42.82
15.00	1/2	1-3/8	3-3/8	33.02	42.82
16.00	1/2	1-5/8	3-3/4	34.86	44.66
16.00	5/8	1-5/8	3-3/4	34.86	46.54
17.00	5/8	1-5/8	3-3/4	40.64	52.32
18.00	1/2	1-5/8	3-3/4	40.64	52.32
18.00	5/8	1-5/8	3-3/4	40.64	52.32
19.00	3/4	1-7/8	4-1/8	45.32	61.60
20.00	5/8	1-7/8	4-1/8	45.32	57.26
20.00	3/4	1-7/8	4-1/8	52.24	68.54
21.00	7/8	1-7/8	4-1/8	52.24	74.36
22.00	3/4	1-7/8	4-1/8	52.24	68.54
22.00	7/8	1-7/8	4-1/8	52.24	74.36
23.00	7/8	1-7/8	4-1/8	62.64	84.74
24.00	3/4	2	4-1/2	62.64	78.92
24.00	1	2	4-1/2	62.64	84.74
25.00	3/4	1-7/8	4-1/8	62.64	78.92
25.00	1	2	4-1/2	62.64	84.74
26.00	3/4	2	4-1/2	86.68	108.78
30.00	1	2	4-1/2	98.08	120.18
32.00	1	2	4-1/2	98.08	120.18
36.00	1	2	4-1/2	121.60	159.58
40.00	1-1/4	2	4-1/2	143.48	181.48
45.00	1-1/4	2	4-1/2	173.50	224.72

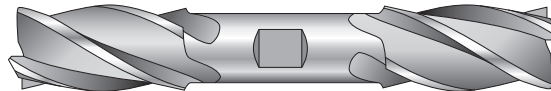
# HIGH SPEED STEEL METRIC 4 FLUTE DOUBLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				DEMM-4C	DEMM-4CT
3.00	3/8	3/8	3-1/16	23.82	33.28
4.00	3/8	7/16	3-1/8	23.82	33.28
5.00	3/8	9/16	3-1/4	23.82	33.28
6.00	3/8	5/8	3-3/8	23.82	33.28
7.00	3/8	11/16	3-3/8	25.44	35.00
8.00	3/8	3/4	3-1/2	23.82	33.28
10.00	1/2	1	4-1/8	35.24	50.94
11.00	1/2	1	4-1/8	41.24	56.96
12.00	1/2	1	4-1/8	41.24	56.96

SIZE (mm)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				DEMM-4C	DEMM-4CT
13.00	5/8	1-3/8	5	52.74	70.64
14.00	5/8	1-3/8	5	52.74	70.64
15.00	5/8	1-3/8	5	58.00	75.90
16.00	3/4	1-5/8	5-5/8	58.00	83.52
18.00	3/4	1-5/8	5-5/8	73.98	99.48
20.00	7/8	1-7/8	6-1/8	73.98	116.62
22.00	1	1-7/8	6-3/8	84.24	126.88
24.00	1	1-7/8	6-3/8	102.52	145.16

TOLERANCES  
Flute Dia.: + .003 - .000"  
Shank Dia.: + .0005 - .0005"

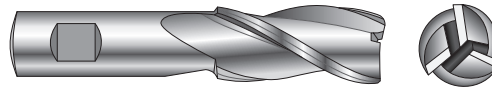
## HIGH SPEED STEEL 3 FLUTE SINGLE END MILLS

**ICS USA**

**SPECIAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



REGULAR LENGTH

**RIGHT HAND CUT  
RIGHT HAND HELIX**

Three Flute High Speed Steel End Mills are designed to remove more material per revolution than two flute end mills. They track straighter, mill at very high feed rates, and create a smoother finish than 2 flute end mills.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3C
1/8	3/8	3/8	2-5/16	17.74
3/16	3/8	1/2	2-3/8	17.74
1/4	3/8	5/8	2-7/16	17.74
5/16	3/8	3/4	2-1/2	17.74
3/8	3/8	3/4	2-1/2	21.04
7/16	3/8	1	2-11/16	26.00

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3C
1/2	1/2	1-1/4	3-1/4	26.00
9/16	1/2	1-3/8	3-3/8	34.00
5/8	5/8	1-5/8	3-3/4	34.00
3/4	3/4	1-5/8	3-7/8	43.00
7/8	3/4	1-7/8	4-1/8	53.50
1	1	2	4-1/2	58.18

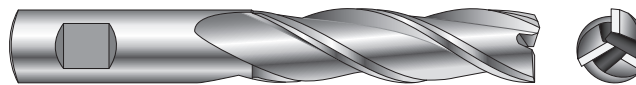
## HIGH SPEED STEEL 3 FLUTE LONG LENGTH SINGLE END MILLS

**ICS USA**

**SPECIAL PURPOSE**

**CENTER CUTTING**

**WELDON SHANK**



LONG LENGTH

**RIGHT HAND CUT  
RIGHT HAND HELIX**

Three Flute Long Length High Speed Steel End Mills are designed to remove more material per revolution than two flute end mills. They track straighter, mill at very high feed rates, and create a smoother finish than 2 flute end mills.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3CL
1/4	3/8	1-1/4	3-1/8	27.40
5/16	3/8	1-3/8	3-1/8	27.40
3/8	3/8	1-1/2	3-1/4	28.00
1/2	1/2	2	4	33.00

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EM-3CL
5/8	5/8	2-1/2	4-5/8	42.00
3/4	3/4	3	5-1/4	52.00
1	1	4	6-1/2	86.00

# HIGH SPEED STEEL MINIATURE 2 & 4 FLUTE SINGLE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

Miniature Single End Mills are small diameter (5/64" to 3/16") milling tools with a common 3/16" shank to provide rigidity when doing small diameter cutting.

## 2 Flute - Regular Length



**RIGHT HAND CUT  
RIGHT HAND HELIX**

## 4 Flute - Regular Length



SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				MEM-2R	MEM-2T
5/64	3/16	1/4	1-1/8	7.98	11.34
3/32	3/16	5/16	1-1/8	7.98	11.34
7/64	3/16	11/32	1-5/16	7.98	11.34
1/8	3/16	3/8	1-5/16	7.98	11.34
9/64	3/16	13/32	1-7/16	7.98	11.34
5/32	3/16	7/16	1-7/16	7.98	11.34
11/64	3/16	15/32	1-11/16	7.98	11.34
3/16	3/16	1/2	1-11/16	7.98	11.34

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				MEM-4R	MEM-4T
5/64	3/16	1/4	1-1/8	8.40	11.76
3/32	3/16	5/16	1-1/8	8.40	11.76
7/64	3/16	11/32	1-5/16	8.40	11.76
1/8	3/16	3/8	1-5/16	8.40	11.76
9/64	3/16	13/32	1-7/16	8.40	11.76
5/32	3/16	7/16	1-7/16	8.40	11.76
11/64	3/16	15/32	1-11/16	8.40	11.76
3/16	3/16	1/2	1-11/16	8.40	11.76

**TOLERANCES**  
Flute Dia.: +.000 -.0015"  
Shank Dia.: +.0005 -.0005"

**TOLERANCES**  
Flute Dia.: +.0003 -.000"  
Shank Dia.: +.0005 -.0005"

# HIGH SPEED STEEL MINIATURE 2 FLUTE BALL NOSE END MILLS

**ICS USA**

**GENERAL PURPOSE**

**CENTER CUTTING**

Miniature Single End Mills are small diameter (5/64" to 3/16") milling tools with a common 3/16" shank to provide rigidity when doing small diameter cutting.

## 2 Flute - Regular Length (Single End)



**RIGHT HAND CUT  
RIGHT HAND HELIX**

## 4 Flute - Regular Length (Double End)



SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				MEM-2B	MEM-2BT
5/64	3/16	1/4	1-1/8	15.56	18.92
3/32	3/16	5/16	1-1/8	15.56	18.92
7/64	3/16	11/32	1-5/16	15.56	18.92
1/8	3/16	3/8	1-5/16	15.56	18.92
9/64	3/16	13/32	1-7/16	15.56	18.92
5/32	3/16	7/16	1-7/16	15.56	18.92
11/64	3/16	15/32	1-11/16	15.56	18.92
3/16	3/16	1/2	1-11/16	15.56	18.92

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				MDEM-4B	MDEM-4BT
1/32	3/16	3/32	2-1/4	27.98	32.64
3/64	3/16	9/64	2-1/4	26.76	31.42
1/16	3/16	3/16	2-1/4	24.34	29.00
5/64	3/16	15/64	2-1/4	25.54	30.20
3/32	3/16	9/32	2-1/4	24.34	29.00
7/64	3/16	21/64	2-1/4	25.54	30.20
1/8	3/16	3/8	2-1/4	24.34	29.00
9/64	3/16	13/32	2-1/4	25.54	30.20
5/32	3/16	7/16	2-1/4	24.34	29.00
11/64	3/16	1/2	2-1/4	25.54	30.20
3/16	3/16	1/2	2-1/4	24.34	29.00

**TOLERANCES**  
Flute Dia.: +.0003 -.000"  
Shank Dia.: +.0005 -.0005"

# MINIATURE 2 FLUTE DOUBLE END MILLS

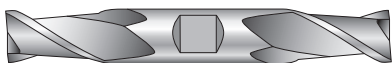
ICS USA

GENERAL PURPOSE

CENTER CUTTING

Miniature Double End Mills are small diameter (1/32" to 3/16") milling tools with a common 3/16" shank to provide rigidity when doing small diameter cutting.

## 2 Flute - Regular Length



RIGHT HAND CUT  
RIGHT HAND HELIX

## 2 Flute - Long Length



SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				MDEM-2R	MDEM-2T
1/32	3/16	3/32	2-1/4	15.12	19.78
1/16	3/16	7/32	2-1/4	15.12	19.78
5/64	3/16	1/4	2-1/4	15.12	19.78
3/32	3/16	5/16	2-1/4	15.12	19.78
7/64	3/16	11/32	2-1/4	15.12	19.78
1/8	3/16	3/8	2-1/4	15.12	19.78
9/64	3/16	13/32	2-1/4	15.12	19.78
5/32	3/16	7/16	2-1/4	15.12	19.78
11/64	3/16	15/32	2-1/4	15.12	19.78
3/16	3/16	1/2	2-1/4	15.12	19.78

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				MDEM-2L	MDEM-2LT
1/16	3/16	7/32	2-1/2	17.92	22.58
5/64	3/16	1/4	2-1/2	17.92	22.58
3/32	3/16	9/32	2-5/8	17.92	22.58
7/64	3/16	9/32	2-5/8	17.92	22.58
1/8	3/16	3/4	3-1/8	17.92	23.38
9/64	3/16	3/4	3-1/8	17.92	23.38
5/32	3/16	7/8	3-1/4	17.92	23.38
11/64	3/16	7/8	3-1/4	17.92	23.38
3/16	3/16	1	3-3/8	17.92	23.38

TOLERANCES  
Flute Dia.: +.000 - .0015"  
Shank Dia.: +.0005 - .0005"

TOLERANCES  
Flute Dia.: +.0003 - .000"  
Shank Dia.: +.0005 - .0005"

# MINIATURE 4 FLUTE DOUBLE END MILLS

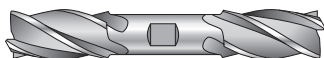
ICS USA

GENERAL PURPOSE

NON-CENTER CUTTING

Miniature Double End Mills are small diameter (1/32" to 3/16") milling tools with a common 3/16" shank to provide rigidity when doing small diameter cutting.

## 4 Flute - Regular Length



RIGHT HAND CUT  
RIGHT HAND HELIX

## 4 Flute - Long Length



SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				MDEM-4R	MDEM-4T
1/16	3/16	5/16	2-1/4	15.12	19.78
5/64	3/16	5/16	2-1/4	15.12	19.78
3/32	3/16	5/16	2-1/4	15.12	19.78
7/64	3/16	5/16	2-1/4	15.12	19.78
1/8	3/16	3/8	2-1/4	15.12	19.78
9/64	3/16	3/8	2-1/4	15.12	19.78
5/32	3/16	7/16	2-1/4	15.12	19.78
11/64	3/16	7/16	2-1/4	15.12	19.78
3/16	3/16	1/2	2-1/4	15.12	19.78

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				HSS	TiN COAT
				MDEM-4L	MDEM-4LT
1/16	3/16	7/32	2-5/8	17.92	22.58
5/64	3/16	1/4	2-5/8	17.92	22.58
3/32	3/16	9/32	2-5/8	17.92	22.58
7/64	3/16	9/32	2-5/8	17.92	22.58
1/8	3/16	3/4	3-1/8	17.92	22.58
9/64	3/16	3/4	3-1/8	17.92	22.58
5/32	3/16	7/8	3-1/4	17.92	22.58
11/64	3/16	7/8	3-1/4	17.92	22.58
3/16	3/16	1	3-3/8	17.92	22.58

TOLERANCES  
Flute Dia.: +.0003 - .000"  
Shank Dia.: +.0005 - .0005"

TOLERANCES  
Flute Dia.: +.0003 - .000"  
Shank Dia.: +.0005 - .0005"

# SUPER COBALT END MILLS

**ICS USA**

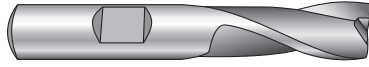
**HEAVY DUTY**

**CENTER CUTTING**

Super Cobalt End Mills have a high resistance to abrasion and will stay sharp even when the cutting edge is subjected to extreme temperatures. Ideal for stainless steels and other work hardening alloys.

TiN Coated Super Cobalt End Mills combine the best features of cobalt and TiN coating. While many dramatic improvements in tool life have been claimed for TiN coating, only when a very hard material such as super cobalt is used, can the full potential of TiN coating be realized. This is because the very high RC 80 hardness of the TiN coating cannot be effective under machining stresses which can deform or degrade the structure of the much less hard material which it overlays.

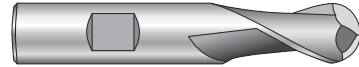
## 2 Flute - Single End



REGULAR LENGTH

**RIGHT HAND CUT  
RIGHT HAND HELIX**

## 2 Flute Ball Nose Single End



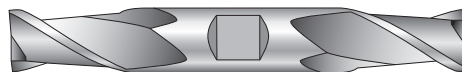
REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
				EMC-2R	EMC-2T
1/8	3/8	3/8	2-5/16	15.42	20.98
3/16	3/8	7/16	2-5/16	15.42	20.98
1/4	3/8	1/2	2-5/16	15.42	20.98
5/16	3/8	9/16	2-5/16	16.42	21.98
3/8	3/8	9/16	2-5/16	16.42	21.98
1/2	1/2	13/16	2-1/2	23.70	33.58
5/8	5/8	1-1/8	3-1/8	35.46	47.94
3/4	3/4	1-5/16	3-9/16	47.28	63.52
1	3/4	1-1/2	3-3/4	71.28	89.26
1	1	1-1/2	4-1/8	71.28	92.62
1-1/4	1-1/4	1-5/8	4-1/8	120.86	150.70
1-1/2	1-1/4	1-5/8	4-1/8	147.24	188.80

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
				EMC-2B	EMC-2BT
1/8	3/8	3/8	2-5/16	27.00	32.56
3/16	3/8	1/2	2-3/8	27.00	32.56
1/4	3/8	5/8	2-7/16	27.00	32.56
5/16	3/8	3/4	2-1/2	29.80	35.36
3/8	3/8	3/4	2-1/2	29.80	35.36
1/2	1/2	1	3	45.32	55.20
5/8	5/8	1-3/8	3-1/2	62.84	75.32
3/4	3/4	1-5/8	3-7/8	73.84	90.08
1	1	2-1/4	4-3/4	117.88	139.20
1-1/4	1-1/4	2-1/2	5	143.58	173.40
1-1/2	1-1/4	2-1/2	5	159.76	201.32

**TOLERANCES**  
 Flute Dia.: + .003 - .000"  
 Shank Dia.: + .0005 - .0005"

## 2 Flute - Double End



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
				DEMC-2R	DEMC-2T
1/8	3/8	3/8	3-1/16	24.04	33.60
5/32	3/8	7/16	3-1/8	24.04	33.60
3/16	3/8	7/16	3-1/8	24.04	33.60
7/32	3/8	1/2	3-1/8	24.04	33.60
1/4	3/8	1/2	3-1/8	24.04	33.60
9/32	3/8	9/16	3-1/8	25.44	35.00
5/16	3/8	9/16	3-1/8	25.44	35.00
11/32	3/8	9/16	3-1/8	25.44	35.00
3/8	3/8	9/16	3-1/8	25.44	35.00
13/32	1/2	13/16	3-3/4	34.50	50.54

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
				DEMC-2R	DEMC-2T
7/16	1/2	13/16	3-3/4	34.50	50.54
15/32	1/2	13/16	3-3/4	34.50	50.54
1/2	1/2	13/16	3-3/4	34.50	50.54
9/16	5/8	1-1/8	4-1/2	50.52	69.72
5/8	5/8	1-1/8	4-1/2	50.52	69.72
11/16	3/4	1-5/16	5	63.14	89.74
3/4	3/4	1-5/16	5	63.14	89.74
7/8	7/8	1-9/16	5-1/2	79.20	116.56
1	1	1-5/8	5-7/8	99.20	136.38

**TOLERANCES**  
 Flute Dia.: +.0000 -.0015"  
 Shank Dia.: +.0005 -.0005"

**NOTE:** All Cobalt End Mills are furnished with a Weldon flat on the shank.

# SUPER COBALT END MILLS

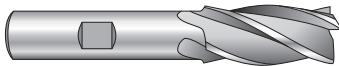
MT-18

ICS USA

HEAVY DUTY

CENTER CUTTING

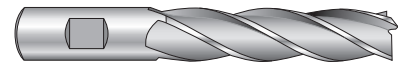
## 4 & 6 Flute - Single End



REGULAR LENGTH

RIGHT HAND CUT  
RIGHT HAND HELIX

## 4 & 6 Long Flute Single End



LONG LENGTH

ITEM NO.	DESCRIPTION
<b>EMC-4R</b>	Cobalt Single End Mill - 4 Flute - Center Cut
<b>EMC-6R</b>	Cobalt Single End Mill - 6 Flute - Center Cut
<b>EMC-4T</b>	TiN Coated Cobalt Single End Mill - 4 Flute - Center Cut
<b>EMC-6T</b>	TiN Coated Cobalt Single End Mill - 6 Flute - Center Cut

ITEM NO.	DESCRIPTION
<b>EMC-4L</b>	Cobalt Single End Mill - 4 Flute - Long - Center Cut
<b>EMC-6L</b>	Cobalt Single End Mill - 6 Flute - Long - Center Cut
<b>EMC-4LT</b>	TiN Coated Cobalt S. E. Mill - 4 Flute - Long - Center Cut
<b>EMC-6LT</b>	TiN Coated Cobalt S. E. Mill - 6 Flute - Long - Center Cut

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE EACH	
					SUPER COBALT	TiN COATED
1/8	3/8	3/8	2-5/16	4	15.92	21.46
3/16	3/8	7/16	2-3/8	4	15.92	21.46
1/4	3/8	5/8	2-7/16	4	15.92	21.46
5/16	3/8	3/4	2-1/2	4	16.98	22.54
3/8	3/8	3/4	2-1/2	4	16.98	22.54
1/2	1/2	1-1/4	3-1/4	4	23.66	34.34
5/8	5/8	1-5/8	3-3/4	4	37.52	50.00
3/4	3/4	1-5/8	3-3/4	4	51.60	67.84
7/8	3/4	1-7/8	4-1/8	4	63.62	81.44
7/8	3/4	1-7/8	4-1/8	6	63.62	81.44
1	3/4	1-7/8	4-1/8	4	84.00	101.82
1	1	2	4-1/2	4	84.00	105.34
1	1	2	4-1/2	6	84.00	105.34
1-1/4	1-1/4	2	4-1/2	4	133.84	163.68
1-1/4	1-1/4	2	4-1/2	6	133.84	163.68
1-1/2	1-1/4	2	4-1/2	4	161.92	203.46
1-1/2	1-1/4	2	4-1/2	6	161.92	203.46

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE EACH	
					SUPER COBALT	TiN COATED
1/4	3/8	1-1/4	3-1/16	4	17.14	23.50
5/16	3/8	1-3/8	3-1/8	4	17.14	23.50
3/8	3/8	1-1/2	3-1/4	4	17.92	24.30
1/2	1/2	2	4	4	26.10	36.80
5/8	5/8	2-1/2	4-5/8	4	39.20	51.98
3/4	3/4	3	5-1/4	4	54.32	76.48
7/8	7/8	3-1/2	5-3/4	4	75.04	99.94
1	1	4	6-1/2	4	106.40	132.88
1-1/4	1-1/4	4	6-1/2	6	180.48	222.88
1-1/2	1-1/4	4	6-1/2	6	221.76	274.96

TOLERANCES  
Flute Dia.: + .003 - .000"  
Shank Dia.: + .0005 - .0005"

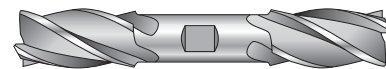
## 4 Flute Ball Nose Single End



REGULAR LENGTH

RIGHT HAND CUT  
RIGHT HAND HELIX

## 4 Flute Double End



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
3/8	3/8	3/4	2-1/2	<b>EMC-4B</b>	<b>EMC-4BT</b>
1/2	1/2	1-1/4	3-1/4	38.76	44.32
5/8	5/8	1-5/8	3-3/4	60.24	70.92
3/4	3/4	1-5/8	3-7/8	78.36	90.84
1	1	2	4-1/2	87.22	103.46
1	1	2	4-1/2	120.76	142.10

TOLERANCES  
Flute Dia.: +.003 -.000"  
Shank Dia.: +.0005 -.0005"

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
1/8	3/8	3/8	3-1/16	<b>DEMC-4R</b>	<b>DEMC-4T</b>
3/16	3/8	1/2	3-1/4	26.22	35.78
1/4	3/8	5/8	3-3/8	26.22	35.78
5/16	3/8	3/4	3-1/2	26.22	35.78
3/8	3/8	3/4	3-1/2	26.22	35.78
1/2	1/2	1	4-1/8	38.64	55.86
5/8	5/8	1-3/8	5	57.36	76.56
3/4	3/4	1-5/8	5-5/8	74.42	107.66
1	1	1-7/8	6-3/8	108.98	148.70

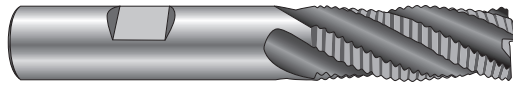
End Mill Holders and Milling Machine Adapters are on pages 288 & 289.  
**NOTE:** All Cobalt End Mills are furnished with a Weldon flat on the shank.

# HIGH SPEED STEEL SUPER (M2-AL) ROUGHING END MILLS

**ICS USA**  
**WELDON SHANK**

**HEAVY DUTY**

**NON-CENTER CUTTING**



COARSE TOOTH

**RIGHT HAND CUT  
RIGHT HAND HELIX**

Super (M2-AL) High Speed Steel Roughing End Mills are designed for roughing or “hogging” large amounts of metal prior to a finish milling operation. M2-AL High Speed Steel is a premium alloy formed by adding aluminum to the base chemical composition of M2 HSS to extend tool life and to dissipate heat. It is often referred to as “Super Steel”. Roughing End Mills are also known as Hogging End Mills.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE REMA
1/4	3/8	5/8	2-7/16	4	16.98
5/16	3/8	3/4	2-1/2	4	17.54
3/8	3/8	3/4	2-1/2	4	19.44
1/2	1/2	1-1/4	3-1/4	4	20.90
1/2	1/2	2	4	4	27.28
5/8	5/8	1-5/8	3-3/4	4	26.72
3/4	5/8	1-5/8	3-3/4	4	33.78
3/4	5/8	3	5-1/8	4	41.84
3/4	3/4	1-5/8	3-3/4	4	33.78
3/4	3/4	3	5-1/4	4	41.84
7/8	3/4	1-7/8	4-1/8	5	39.94
7/8	3/4	3-1/2	5-5/8	5	48.56
1	3/4	2	4	5	46.32
1	1	2	4-1/2	4	46.32
1	1	3	5-1/2	5	59.76
1	1	4	6-1/2	5	61.22

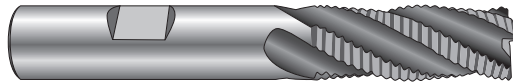
SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE REMA
1-1/8	1	2	4-1/2	6	61.04
1-1/4	1-1/4	2	4-1/2	5	61.22
1-1/4	1-1/4	3	5-1/2	6	70.96
1-1/4	1-1/4	4	6-1/2	6	85.12
1-1/2	1-1/4	2	4-1/2	6	118.72
1-1/2	1-1/4	3	5-1/2	6	111.62
1-1/2	1-1/4	4	6-1/2	6	134.02
1-3/4	1-1/4	2	4-1/2	6	148.96
1-3/4	1-1/4	4	6-1/2	6	152.72
2	1-1/4	2	5-3/4	8	164.26
2	1-1/4	4	6-1/2	8	176.40
2	2	4	7-3/4	8	231.84
2	2	6	9-3/4	8	251.06
2	2	8	11-3/4	8	313.60
2	2	10	13-3/4	8	369.60
2	2	12	15-1/2	8	582.40

# COBALT (M42) ROUGHING END MILLS

**ICS USA**  
**WELDON SHANK**

**HEAVY DUTY**

**NON-CENTER CUTTING**



COARSE TOOTH

**RIGHT HAND CUT  
RIGHT HAND HELIX**

Cobalt Roughing End Mills are designed for roughing or “hogging” large amounts of metal prior to a finish milling operation. They are used for deep slotting or heavy side cuts and require less power than conventional end mills. Ideal for machining high alloyed steels, titanium alloys, and cast alloys. Form-relieved edges stay constant and can be resharpened by grinding the faces. Roughing End Mills are also known as Hogging End Mills.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE REMC
1/4	3/8	5/8	2-7/16	4	26.48
5/16	3/8	3/4	2-1/2	4	26.48
3/8	3/8	3/4	2-1/2	4	26.48
1/2	1/2	1-1/4	3-1/4	4	40.96
1/2	1/2	2	4	4	53.38
5/8	5/8	1-5/8	3-3/4	4	55.04
3/4	5/8	1-5/8	3-3/4	4	62.62
3/4	5/8	3	5-1/8	4	71.92
3/4	3/4	1-5/8	3-3/4	4	62.62
3/4	3/4	3	5-1/4	4	71.92
7/8	3/4	1-7/8	4-1/8	5	83.74
7/8	3/4	3-1/2	5-5/8	5	87.30
1	3/4	2	4	5	92.96
1	1	2	4-1/2	4	92.96
1	1	3	5-1/2	5	102.66
1	1	4	6-1/2	5	111.94

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE REMC
1-1/8	1	2	4-1/2	6	114.24
1-1/4	1-1/4	2	4-1/2	5	148.40
1-1/4	1-1/4	3	5-1/2	6	165.88
1-1/4	1-1/4	4	6-1/2	6	178.38
1-1/2	1-1/4	2	4-1/2	6	177.12
1-1/2	1-1/4	3	5-1/2	6	200.44
1-1/2	1-1/4	4	6-1/2	6	211.76
1-3/4	1-1/4	2	4-1/2	6	237.38
1-3/4	1-1/4	4	6-1/2	6	269.10
2	1-1/4	2	5-3/4	8	270.90
2	1-1/4	4	6-1/2	8	327.54
2	2	4	7-3/4	8	453.00
2	2	6	9-3/4	8	505.64
2	2	8	11-3/4	8	691.64
2	2	10	13-3/4	8	831.60
2	2	12	15-1/2	8	970.22

**NOTE:**  
All 2" Shank Roughing End Mills have combination “Shur-Lock” shanks.

**TOLERANCES**  
Flute Dia.: +.005 - .005"  
Shank Dia.: +.0005 - .0005"

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE**  
**SOLID CARBIDE ROUGHING END MILLS**

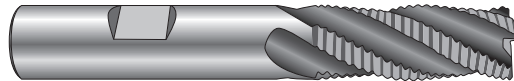
MT-20

**ICS USA**

**HEAVY DUTY**

**NON-CENTER CUTTING**

**WELDON SHANKS  
3/8" TO 1" DIA.**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

Type "N" for Nickel Alloys

Type "A" Solid Carbide Roughing End Mills are designed with a special tool geometry for maximum stock removal when milling aluminum, brass, and copper alloys. Corner radius design eliminates corner chipping.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE EACH		
					TiN COAT	TiCN COAT	TiAN COAT
					SCREMAT	SCREMATC	SCREMATA
1/4	1/4	3/4	2-1/2	3	93.94	99.48	101.60
5/16	5/16	3/4	2-1/2	3	106.76	115.26	115.26
3/8	3/8	7/8	2-1/2	3	122.12	131.08	135.26
1/2	1/2	1	3	4	167.54	177.60	193.08
5/8	5/8	1-1/4	3-1/2	4	239.10	257.44	264.66
3/4	3/4	1-5/8	4	4	305.76	323.86	331.30
1	1	1-3/4	4	5	485.38	511.26	516.02

**WELDON SHANKS  
3/8" TO 1" DIA.**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

Type "A" for Aluminum Alloys

Type "N" Solid Carbide Roughing End Mills are designed with a special tool geometry for maximum stock removal when milling Titanium, Inconel, Rene, Waspaloy and high temperature nickel base alloys. Corner radius design eliminates corner chipping.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE EACH		
					TiN COAT	TiCN COAT	TiAN COAT
					SCREMNT	SCREMNTC	SCREMNTA
1/4	1/4	3/4	2-1/2	3	93.94	99.48	101.60
5/16	5/16	3/4	2-1/2	3	106.76	115.26	115.26
3/8	3/8	7/8	2-1/2	3	122.12	131.08	135.26
1/2	1/2	1	3	4	167.54	177.60	193.08
5/8	5/8	1-1/4	3-1/2	4	239.10	257.44	264.66
3/4	3/4	1-5/8	4	4	305.76	323.86	331.30
1	1	1-3/4	4	5	485.38	511.26	516.02

**WELDON SHANKS  
3/8" TO 1" DIA.**



**RIGHT HAND CUT  
RIGHT HAND HELIX**

Type "S" for Steel Alloys

Type "S" Solid Carbide Roughing End Mills are designed with a special tool geometry for maximum stock removal when milling mild steel, steel alloys, stainless steel, and cast iron. Corner radius design eliminates corner chipping.

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	FLUTES	PRICE EACH		
					TiN COAT	TiCN COAT	TiAN COAT
					SCREMST	SCREMSTC	SCREMSTA
1/4	1/4	3/4	2-1/2	3	93.94	99.48	101.60
5/16	5/16	3/4	2-1/2	3	106.76	115.26	115.26
3/8	3/8	7/8	2-1/2	3	122.12	131.08	135.26
1/2	1/2	1	3	4	167.54	177.60	193.08
5/8	5/8	1-1/4	3-1/2	4	239.10	257.44	264.66
3/4	3/4	1-5/8	4	4	305.76	323.86	331.30
1	1	1-3/4	4	5	485.38	511.26	516.02

**TOLERANCES**  
 Flute Dia.: + .000 - .004"  
 Shank Dia.: + .0001 - .0004"

**CORNER RADIUS**  
 1/4 to 5/16 = .045  
 3/8 to 1 = .060

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE**  
**SOLID CARBIDE 2 FLUTE END MILLS**

**ICS USA**

**HEAVY DUTY**

**CENTER CUTTING**

Micro-Grain Solid Carbide End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

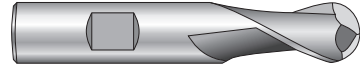
**2 Flute - Single End**



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
				SCEM-2R	SCEM-2T
1/16	1/8	3/16	1-1/2	14.46	17.26
3/32	1/8	3/8	1-1/2	14.46	17.26
1/8	1/8	1/2	1-1/2	13.78	16.58
5/32	3/16	9/16	2	18.82	21.62
3/16	3/16	5/8	2	18.82	21.62
7/32	1/4	5/8	2-1/2	24.54	29.64
1/4	1/4	3/4	2-1/2	24.34	29.44
9/32	5/16	3/4	2-1/2	31.82	38.60
5/16	5/16	13/16	2-1/2	31.82	38.60
11/32	3/8	1	2-1/2	42.06	48.84
3/8	3/8	1	2-1/2	42.06	48.84
7/16	7/16	1	2-3/4	61.76	72.64
1/2	1/2	1	3	71.76	82.62
9/16	9/16	1-1/4	3-1/2	125.00	138.74
5/8	5/8	1-1/4	3-1/2	130.02	143.76
11/16	3/4	1-1/2	4	212.80	230.68
3/4	3/4	1-1/2	4	212.80	230.68
7/8	7/8	1-1/2	4	315.84	335.74
1	1	1-1/2	4	350.00	369.78

**2 Flute Ball Nose Single End**



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
				SCEM-2B	SCEM-2BT
1/16	1/8	3/16	1-1/2	17.62	20.42
3/32	1/8	3/8	1-1/2	17.62	20.42
1/8	1/8	1/2	1-1/2	17.62	20.42
5/32	3/16	9/16	2	23.78	26.58
3/16	3/16	5/8	2	23.78	26.58
7/32	1/4	5/8	2-1/2	28.36	33.48
1/4	1/4	3/4	2-1/2	31.58	36.68
9/32	5/16	3/4	2-1/2	39.82	46.60
5/16	5/16	13/16	2-1/2	39.82	46.60
3/8	3/8	1	2-1/2	51.06	57.84
7/16	7/16	1	2-1/2	66.42	77.28
1/2	1/2	1	2-3/4	86.12	96.98
9/16	9/16	1-1/4	3	142.02	155.76
5/8	5/8	1-1/4	3-1/2	158.54	172.26
11/16	3/4	1-1/2	3-1/2	263.06	280.92
3/4	3/4	1-1/2	4	228.64	246.52
7/8	7/8	1-1/2	4	377.30	397.08
1	1	1-1/2	4	406.42	426.20

**2 Flute - Double End**



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
				SDCEM-2R	SCDEM-2T
1/8	3/8	3/8	3-1/16	31.00	40.38
5/32	3/8	7/16	3-1/8	44.18	53.56
3/16	3/8	1/2	3-1/4	44.18	53.56
7/32	3/8	9/16	3-3/8	48.50	57.88
1/4	3/8	5/8	3-3/8	49.00	58.38
9/32	3/8	11/16	3-1/2	65.94	75.32
5/16	3/8	3/4	3-1/2	58.50	67.88
3/8	3/8	3/4	3-1/2	75.68	85.06
7/16	1/2	7/8	4	107.20	122.96
1/2	1/2	1	4	120.84	136.60

**2 Flute Ball Nose Double End**



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COATED
				SCDEM-2B	SCDEM-2BT
1/8	3/8	3/8	3-1/16	37.72	47.10
5/32	3/8	7/16	3-1/8	53.70	63.08
3/16	3/8	1/2	3-1/4	53.70	63.08
7/32	3/8	9/16	3-3/8	58.96	68.34
1/4	3/8	5/8	3-3/8	59.60	68.98
9/32	3/8	11/16	3-1/2	83.10	92.48
5/16	3/8	3/4	3-1/2	67.68	77.06
3/8	3/8	3/4	3-1/2	87.60	96.98
7/16	1/2	7/8	4	124.40	140.16
1/2	1/2	1	4	139.82	155.58

**TOLERANCES**

1/32" - 1/4" Flute Dia.: + .000 - .002"  
 17/64" - 1" Flute Dia.: + .000 - .003"  
 All Sizes Shank Dia.: + .000 - .005"

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE**  
**SOLID CARBIDE 2 FLUTE END MILLS**

MT-22

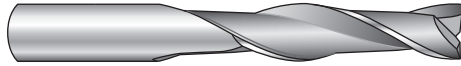
**ICS USA**

**HEAVY DUTY**

**CENTER CUTTING**

Micro-Grain Solid Carbide End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

**2 Flute - Single End  
(Long)**



LONG LENGTH

**2 Flute - Single End  
(Extra Long)**



EXTRA LONG LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COATED
				SCEM-2L	SCEM-2LT
1/8	1/8	3/4	2-1/4	18.60	21.06
3/16	3/16	3/4	2-1/2	22.00	25.10
1/4	1/4	1-1/8	3	28.22	31.92
5/16	5/16	1-1/8	3	37.82	42.74
3/8	3/8	1-1/8	3	44.40	49.34
1/2	1/2	2	4-1/2	85.02	95.20
5/8	5/8	2-1/4	5	159.00	170.36
3/4	3/4	2-1/4	5	211.22	227.06
1	1	2-1/4	5	380.40	399.44

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COATED
				SCEM-2XL	SCEM-2XLT
1/8	1/8	1	3	21.60	24.06
3/16	3/16	1-1/8	3	25.42	28.54
1/4	1/4	1-1/2	4	35.60	40.64
5/16	5/16	1-5/8	4	45.02	50.66
3/8	3/8	1-3/4	4	55.80	61.46
1/2	1/2	3	6	138.02	153.48
5/8	5/8	3	6	223.80	241.62
3/4	3/4	3	6	278.02	297.68
1	1	3	6	480.02	502.20

**2 Flute - Double End  
(Stub)**



STUB LENGTH

**2 Flute Ball Nose Double End  
(Stub)**



STUB LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COATED
				SCDEM-2S	SCDEM-2ST
1/16	1/8	1/8	1-1/2	16.60	19.40
3/32	1/8	3/16	1-1/2	16.60	19.40
1/8	1/8	1/4	1-1/2	15.80	18.60
5/32	3/16	5/16	2	21.02	24.02
3/16	3/16	3/8	2	22.62	25.60
7/32	1/4	1/2	2-1/2	27.80	33.40
1/4	1/4	1/2	2-1/2	27.80	33.40
5/16	5/16	1/2	2-1/2	31.82	39.20
3/8	3/8	9/16	2-1/2	39.00	46.40
7/16	7/16	5/8	2-3/4	65.02	78.18
1/2	1/2	5/8	3	77.02	90.20

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COATED
				SCDEM-2SB	SCDEM-2SBT
1/16	1/8	1/8	1-1/2	22.62	25.42
3/32	1/8	3/16	1-1/2	22.62	25.42
1/8	1/8	1/4	1-1/2	21.80	24.60
5/32	3/16	5/16	2	26.62	29.60
3/16	3/16	3/8	2	27.40	30.38
7/32	1/4	1/2	2-1/2	35.02	40.62
1/4	1/4	1/2	2-1/2	35.02	40.62
5/16	5/16	1/2	2-1/2	47.82	55.20
3/8	3/8	9/16	2-1/2	57.42	64.82
7/16	7/16	5/8	2-3/4	79.02	92.18
1/2	1/2	5/8	3	90.22	103.60

TOLERANCES  
 Flute Dia.: + .000 - .002"  
 Shank Dia.: - .0001 - .0004"

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE  
SOLID CARBIDE 4 FLUTE END MILLS**

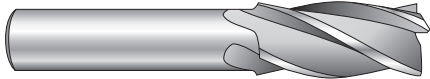
**ICS USA**

**HEAVY DUTY**

**CENTER CUTTING**

Micro-Grain Solid Carbide End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

**4 Flute - Single End**



REGULAR LENGTH

**4 Flute Ball Nose Single End**



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COATED
				SCEM-4R	SCEM-4T
1/16	1/8	3/16	1-1/2	14.46	17.26
3/32	1/8	3/8	1-1/2	14.46	17.26
1/8	1/8	1/2	1-1/2	13.78	16.58
5/32	3/16	9/16	2	18.82	21.62
3/16	3/16	5/8	2	18.82	21.62
7/32	1/4	5/8	2-1/2	24.54	29.64
1/4	1/4	3/4	2-1/2	24.34	29.44
9/32	5/16	3/4	2-1/2	31.82	38.60
5/16	5/16	13/16	2-1/2	31.82	38.60
11/32	3/8	1	2-1/2	42.06	48.84
3/8	3/8	1	2-1/2	42.06	48.84
7/16	7/16	1	2-3/4	61.76	72.64
1/2	1/2	1	3	71.76	82.62
9/16	9/16	1-1/4	3-1/2	125.00	138.74
5/8	5/8	1-1/4	3-1/2	130.02	143.76
11/16	3/4	1-1/2	4	212.80	230.68
3/4	3/4	1-1/2	4	212.80	230.68
7/8	7/8	1-1/2	4	315.84	335.74
1	1	1-1/2	4	350.00	369.78

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COATED
				SCEM-4B	SCEM-4BT
1/16	1/8	3/16	1-1/2	17.62	20.42
3/32	1/8	3/8	1-1/2	17.62	20.42
1/8	1/8	1/2	1-1/2	17.62	20.42
5/32	3/16	9/16	2	23.78	26.58
3/16	3/16	5/8	2	23.78	26.58
7/32	1/4	5/8	2-1/2	28.36	33.48
1/4	1/4	3/4	2-1/2	31.58	36.68
9/32	5/16	3/4	2-1/2	39.82	46.60
5/16	5/16	13/16	2-1/2	39.82	46.60
3/8	3/8	1	2-1/2	51.06	57.84
7/16	7/16	1	2-1/2	66.42	77.28
1/2	1/2	1	2-3/4	86.12	96.98
9/16	9/16	1-1/4	3	142.02	155.76
5/8	5/8	1-1/4	3-1/2	158.54	172.26
11/16	3/4	1-1/2	3-1/2	263.06	280.92
3/4	3/4	1-1/2	4	228.64	246.52
7/8	7/8	1-1/2	4	377.30	397.08
1	1	1-1/2	4	406.42	426.20

**4 Flute - Double End**



REGULAR LENGTH

**4 Flute Ball Nose Double End**



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COATED
				SDCEM-4R	SDCEM-4T
1/8	3/8	3/8	3-1/16	34.72	45.24
5/32	3/8	7/16	3-1/8	49.50	60.00
3/16	3/8	1/2	3-1/4	49.50	60.00
7/32	3/8	9/16	3-3/8	54.32	64.84
1/4	3/8	5/8	3-3/8	54.88	65.40
9/32	3/8	11/16	3-1/2	73.86	84.36
5/16	3/8	3/4	3-1/2	65.52	76.04
3/8	3/8	3/4	3-1/2	84.78	95.28
7/16	1/2	7/8	4	120.08	137.22
1/2	1/2	1	4	135.36	153.00

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COATED
				SCDEM-4B	SCDEM-4BT
1/8	3/8	3/8	3-1/16	42.26	52.76
5/32	3/8	7/16	3-1/8	60.16	70.66
3/16	3/8	1/2	3-1/4	60.16	70.66
7/32	3/8	9/16	3-3/8	66.04	76.56
1/4	3/8	5/8	3-3/8	66.76	77.26
9/32	3/8	11/16	3-1/2	93.08	103.58
5/16	3/8	3/4	3-1/2	75.82	86.32
3/8	3/8	3/4	3-1/2	98.12	108.62
7/16	1/2	7/8	4	139.34	156.98
1/2	1/2	1	4	156.60	174.26

**TOLERANCES**  
 1/32" - 1/4" Flute Dia.: + .000 - .002"  
 17/64" - 1" Flute Dia.: + .000 - .003"  
 All Sizes Shank Dia.: + .000 - .005"

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE**  
**SOLID CARBIDE 4 FLUTE END MILLS**

MT-24

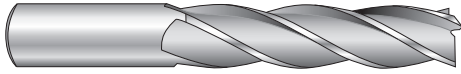
**ICS USA**

**HEAVY DUTY**

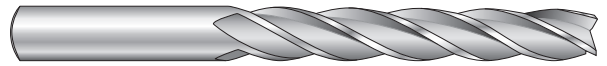
**CENTER CUTTING**

Micro-Grain Solid Carbide End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

**4 Flute - Single End (Long)**



**4 Flute - Single End (Extra Long)**



SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT SCEM-4L	TiN COATED SCEM-4LT
1/8	1/8	3/4	2-1/4	18.60	21.06
3/16	3/16	3/4	2-1/2	22.00	25.10
1/4	1/4	1-1/8	3	28.22	31.92
5/16	5/16	1-1/8	3	37.82	42.74
3/8	3/8	1-1/8	3	44.40	49.34
1/2	1/2	2	4-1/2	85.02	95.20
5/8	5/8	2-1/4	5	159.00	170.36
3/4	3/4	2-1/4	5	211.22	227.06
1	1	2-1/4	5	380.40	399.44

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT SCEM-4XL	TiN COATED SCEM-4XLT
1/8	1/8	1	3	21.60	24.06
3/16	3/16	1-1/8	3	25.42	28.54
1/4	1/4	1-1/2	4	35.60	40.64
5/16	5/16	1-5/8	4	45.02	50.66
3/8	3/8	1-3/4	4	55.80	61.46
1/2	1/2	3	6	138.02	153.48
5/8	5/8	3	6	223.80	241.62
3/4	3/4	3	6	278.02	297.68
1	1	3	6	480.02	502.20

**4 Flute - Double End (Stub)**



**4 Flute Ball Nose Double End (Stub)**



SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT SCDEM-4S	TiN COATED SCDEM-4ST
1/16	1/8	1/8	1-1/2	16.60	17.32
3/32	1/8	3/16	1-1/2	16.60	17.32
1/8	1/8	1/4	1-1/2	15.80	16.60
5/32	3/16	5/16	2	21.02	21.42
3/16	3/16	3/8	2	22.62	22.84
7/32	1/4	1/2	2-1/2	27.80	29.82
1/4	1/4	1/2	2-1/2	27.80	29.82
5/16	5/16	1/2	2-1/2	31.82	35.00
3/8	3/8	9/16	2-1/2	39.00	41.42
7/16	7/16	5/8	2-3/4	65.02	69.80
1/2	1/2	5/8	3	77.02	80.52

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT SCDEM-4SB	TiN COATED SCDEM-4SBT
1/16	1/8	1/8	1-1/2	22.62	25.42
3/32	1/8	3/16	1-1/2	22.62	25.42
1/8	1/8	1/4	1-1/2	21.80	24.60
5/32	3/16	5/16	2	26.62	29.60
3/16	3/16	3/8	2	27.40	30.38
7/32	1/4	1/2	2-1/2	35.02	40.62
1/4	1/4	1/2	2-1/2	35.02	40.62
5/16	5/16	1/2	2-1/2	47.82	55.20
3/8	3/8	9/16	2-1/2	57.42	64.82
7/16	7/16	5/8	2-3/4	79.02	92.18
1/2	1/2	5/8	3	90.22	103.60

TOLERANCES  
 Flute Dia.: + .000 - .002"  
 Shank Dia.: - .0001 - .0004"

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE**  
**SOLID CARBIDE 2 FLUTE END MILLS - METRIC**

**ICS USA**

**HEAVY DUTY**

**CENTER CUTTING**

Micro-Grain Solid Carbide End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

**2 Flute Single End**



SIZE mm	SHANK DIA. mm	FLUTE LENGTH mm	OVERALL LENGTH mm	PRICE EACH	
				SUPER COBALT	TiN COATED
				SCEMM-2R	SCEMM-2T
1.0	3.0	4.0	38.0	16.58	18.82
1.5	3.0	4.5	38.0	16.58	18.82
2.0	3.0	6.3	38.0	16.58	18.82
2.5	3.0	9.5	38.0	16.58	18.82
3.0	3.0	12.0	38.0	15.80	18.04
3.5	4.0	12.0	50.0	21.76	24.00
4.0	4.0	14.0	50.0	21.76	24.00
4.5	6.0	16.0	50.0	27.36	30.50
5.0	6.0	16.0	50.0	27.36	30.50
6.0	6.0	19.0	50.0	28.66	31.80
7.0	8.0	19.0	63.0	31.10	36.02
8.0	8.0	20.0	63.0	32.36	37.28
9.0	10.0	22.0	75.0	48.32	57.28
10.0	10.0	22.0	75.0	60.18	69.14
11.0	12.0	25.0	75.0	66.26	75.22
12.0	12.0	25.0	75.0	69.88	78.84
14.0	14.0	32.0	89.0	118.56	129.76
16.0	16.0	32.0	89.0	132.66	147.22
18.0	18.0	38.0	100.0	195.80	210.36
20.0	20.0	38.0	100.0	282.10	298.10
25.0	25.0	38.0	100.0	369.32	385.34

**2 Flute Ball Nose Single End**



SIZE mm	SHANK DIA. mm	FLUTE LENGTH mm	OVERALL LENGTH mm	PRICE EACH	
				SUPER COBALT	TiN COATED
				SCEMM-2B	SCEMM-2BT
1.0	3.0	4.0	38.0	20.88	23.12
1.5	3.0	4.5	38.0	20.88	23.12
2.0	3.0	6.3	38.0	20.88	23.12
2.5	3.0	9.5	38.0	20.88	23.12
3.0	3.0	12.0	38.0	18.98	21.22
3.5	4.0	12.0	50.0	26.10	28.34
4.0	4.0	14.0	50.0	26.10	28.34
4.5	6.0	16.0	50.0	32.90	36.02
5.0	6.0	16.0	50.0	32.90	36.02
6.0	6.0	19.0	50.0	34.42	37.56
7.0	8.0	19.0	63.0	37.32	42.26
8.0	8.0	20.0	63.0	38.78	43.72
9.0	10.0	22.0	75.0	57.96	66.92
10.0	10.0	22.0	75.0	72.22	81.18
11.0	12.0	25.0	75.0	79.88	88.54
12.0	12.0	25.0	75.0	83.92	92.88
14.0	14.0	32.0	89.0	142.22	153.42
16.0	16.0	32.0	89.0	159.18	173.74
18.0	18.0	38.0	100.0	235.00	249.56
20.0	20.0	38.0	100.0	338.52	354.54
25.0	25.0	38.0	100.0	443.22	459.24

**2 Flute - Double End (Stub)**



SIZE mm	SHANK DIA. mm	FLUTE LENGTH mm	OVERALL LENGTH mm	PRICE EACH	
				SUPER COBALT	TiN COATED
				SCDEMM-2S	SCDEMM-2ST
1.0	3.0	2.0	38.0	24.54	27.34
1.5	3.0	3.0	38.0	24.54	27.34
2.0	3.0	4.0	38.0	20.58	23.38
2.5	3.0	5.0	38.0	20.58	23.38
3.0	3.0	6.0	38.0	19.20	22.00
3.5	4.0	7.0	50.0	27.36	30.38
4.0	4.0	8.0	50.0	27.36	30.38
4.5	4.5	9.5	63.0	31.62	36.32
5.0	5.0	10.0	63.0	31.62	37.22
6.0	6.0	12.0	63.0	35.88	41.48
7.0	8.0	12.0	63.0	42.60	49.98
8.0	8.0	12.0	63.0	49.58	56.68
9.0	9.0	14.0	75.0	61.92	69.32
10.0	10.0	14.0	75.0	74.58	88.02
11.0	12.0	14.0	75.0	82.12	95.56
12.0	12.0	16.0	75.0	89.58	103.02

**2 Flute Ball Nose Double End (Stub)**



SIZE mm	SHANK DIA. mm	FLUTE LENGTH mm	OVERALL LENGTH mm	PRICE	
				SUPER COBALT	TiN COATED
				SCDEMM-2SB	SCDEMM-2STB
1.0	3.0	2.0	38.0	29.48	
1.5	3.0	3.0	38.0	29.48	
2.0	3.0	4.0	38.0	24.76	
2.5	3.0	5.0	38.0	24.76	
3.0	3.0	6.0	38.0	23.08	
3.5	4.0	7.0	50.0	32.92	
4.0	4.0	8.0	50.0	32.92	
4.5	4.5	9.5	63.0	37.94	
5.0	5.0	10.0	63.0	37.94	
6.0	6.0	12.0	63.0	43.04	
7.0	8.0	12.0	63.0	51.10	
8.0	8.0	12.0	63.0	59.20	
9.0	9.0	14.0	75.0	74.36	
10.0	10.0	14.0	75.0	89.50	
11.0	12.0	14.0	75.0	98.56	
12.0	12.0	16.0	75.0	107.56	

TOLERANCES  
 Flute Dia.: + .000 - .005"  
 Shank Dia.: + .000 - .001"

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE**  
**SOLID CARBIDE 4 FLUTE END MILLS - METRIC**

MT-26

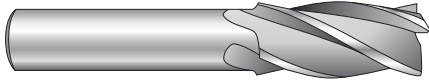
**ICS USA**

**HEAVY DUTY**

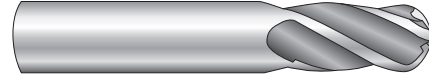
**CENTER CUTTING**

Micro-Grain Solid Carbide End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

**4 Flute Single End**



**4 Flute Ball Nose Single End**



SIZE mm	SHANK DIA. mm	FLUTE LENGTH mm	OVERALL LENGTH mm	PRICE EACH	
				SUPER COBALT	TiN COATED
				SCDEMM-4R	SCDEMM-4T
1.0	3.0	4.0	38.0	16.58	18.82
1.5	3.0	4.5	38.0	16.58	18.82
2.0	3.0	6.3	38.0	16.58	18.82
2.5	3.0	9.5	38.0	16.58	18.82
3.0	3.0	12.0	38.0	15.80	18.04
3.5	4.0	12.0	50.0	21.76	24.00
4.0	4.0	14.0	50.0	21.76	24.00
4.5	6.0	16.0	50.0	27.36	30.50
5.0	6.0	16.0	50.0	27.36	30.50
6.0	6.0	19.0	50.0	28.66	31.80
7.0	8.0	19.0	63.0	31.10	36.02
8.0	8.0	20.0	63.0	32.36	37.28
9.0	10.0	22.0	75.0	48.32	57.28
10.0	10.0	22.0	75.0	60.18	69.14
11.0	12.0	25.0	75.0	66.26	75.22
12.0	12.0	25.0	75.0	69.88	78.84
14.0	14.0	32.0	89.0	118.56	129.76
16.0	16.0	32.0	89.0	132.66	147.22
18.0	18.0	38.0	100.0	195.80	210.36
20.0	20.0	38.0	100.0	282.10	298.10
25.0	25.0	38.0	100.0	369.32	385.34

SIZE mm	SHANK DIA. mm	FLUTE LENGTH mm	OVERALL LENGTH mm	PRICE EACH	
				SUPER COBALT	TiN COATED
				SCDEMM-4B	SCDEMM-4BT
1.0	3.0	4.0	38.0	20.88	23.12
1.5	3.0	4.5	38.0	20.88	23.12
2.0	3.0	6.3	38.0	20.88	23.12
2.5	3.0	9.5	38.0	20.88	23.12
3.0	3.0	12.0	38.0	18.98	21.22
3.5	4.0	12.0	50.0	26.10	28.34
4.0	4.0	14.0	50.0	26.10	28.34
4.5	6.0	16.0	50.0	32.90	36.02
5.0	6.0	16.0	50.0	32.90	36.02
6.0	6.0	19.0	50.0	34.42	37.56
7.0	8.0	19.0	63.0	37.32	42.26
8.0	8.0	20.0	63.0	38.78	43.72
9.0	10.0	22.0	75.0	57.96	66.92
10.0	10.0	22.0	75.0	72.22	81.18
11.0	12.0	25.0	75.0	79.88	88.54
12.0	12.0	25.0	75.0	83.92	92.88
14.0	14.0	32.0	89.0	142.22	153.42
16.0	16.0	32.0	89.0	159.18	173.74
18.0	18.0	38.0	100.0	235.00	249.56
20.0	20.0	38.0	100.0	338.52	354.54
25.0	25.0	38.0	100.0	443.22	459.24

**4 Flute - Double End (Stub)**



**4 Flute Ball Nose Double End (Stub)**



SIZE mm	SHANK DIA. mm	FLUTE LENGTH mm	OVERALL LENGTH mm	PRICE EACH	
				SUPER COBALT	TiN COATED
				SCDEMM-4S	SCDEMM-4ST
1.0	3.0	2.0	38.0	24.54	27.34
1.5	3.0	3.0	38.0	24.54	27.34
2.0	3.0	4.0	38.0	20.58	23.38
2.5	3.0	5.0	38.0	20.58	23.38
3.0	3.0	6.0	38.0	19.20	22.00
3.5	4.0	7.0	50.0	27.36	30.38
4.0	4.0	8.0	50.0	27.36	30.38
4.5	4.5	9.5	63.0	31.62	36.32
5.0	5.0	10.0	63.0	31.62	37.22
6.0	6.0	12.0	63.0	35.88	41.48
7.0	8.0	12.0	63.0	42.60	49.98
8.0	8.0	12.0	63.0	49.58	56.68
9.0	9.0	14.0	75.0	61.92	69.32
10.0	10.0	14.0	75.0	74.58	88.02
11.0	12.0	14.0	75.0	82.12	95.56
12.0	12.0	16.0	75.0	89.58	103.02

SIZE mm	SHANK DIA. mm	FLUTE LENGTH mm	OVERALL LENGTH mm	PRICE	
				SUPER COBALT	TiN COATED
				SCDEMM-4SB	SCDEMM-4S
1.0	3.0	2.0	38.0	29.48	29.48
1.5	3.0	3.0	38.0	29.48	29.48
2.0	3.0	4.0	38.0	24.76	24.76
2.5	3.0	5.0	38.0	24.76	24.76
3.0	3.0	6.0	38.0	23.08	23.08
3.5	4.0	7.0	50.0	32.92	32.92
4.0	4.0	8.0	50.0	32.92	32.92
4.5	4.5	9.5	63.0	37.94	37.94
5.0	5.0	10.0	63.0	37.94	37.94
6.0	6.0	12.0	63.0	43.04	43.04
7.0	8.0	12.0	63.0	51.10	51.10
8.0	8.0	12.0	63.0	59.20	59.20
9.0	9.0	14.0	75.0	74.36	74.36
10.0	10.0	14.0	75.0	89.50	89.50
11.0	12.0	14.0	75.0	98.56	98.56
12.0	12.0	16.0	75.0	107.56	107.56

TOLERANCES  
 Flute Dia.: + .000 - .005"  
 Shank Dia.: + .000 - .001"

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE  
SOLID CARBIDE 3 FLUTE END MILLS**

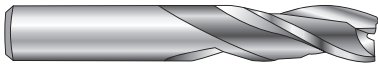
**ICS USA**

**HEAVY DUTY**

**CENTER CUTTING**

Micro-Grain Solid Carbide End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

**3 Flute Single End**



REGULAR LENGTH

**3 Flute Ball Nose Single End**



REGULAR LENGTH

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COAT
				SCEM-3R	SCEM-3T
1/64	1/8	1/32	1-1/2	34.90	37.92
1/32	1/8	5/64	1-1/2	20.32	23.30
3/64	1/8	7/64	1-1/2	20.32	23.30
1/16	1/8	3/16	1-1/2	16.56	19.56
5/64	1/8	3/16	1-1/2	16.56	19.56
3/32	1/8	9/32	1-1/2	16.56	19.56
7/64	1/8	3/8	1-1/2	16.56	19.56
1/8	1/8	1/2	1-1/2	15.80	18.78
9/64	3/16	1/2	2	21.70	25.70
5/32	3/16	1/2	2	21.70	25.70
11/64	3/16	5/8	2	22.28	26.28
3/16	3/16	5/8	2	22.28	26.28
13/64	1/4	5/8	2-1/2	27.32	34.88
7/32	1/4	5/8	2-1/2	27.32	34.88
15/64	1/4	3/4	2-1/2	28.60	36.16
1/4	1/4	3/4	2-1/2	28.60	36.16
17/64	5/16	3/4	2-1/2	30.92	38.92
9/32	5/16	3/4	2-1/2	30.92	38.92
19/64	5/16	13/16	2-1/2	32.18	40.18
5/16	5/16	13/16	2-1/2	32.18	40.18
21/64	3/8	1	2-1/2	40.76	52.34
11/32	3/8	1	2-1/2	40.76	52.34
23/64	3/8	1	2-1/2	40.76	52.34
3/8	3/8	1	2-1/2	40.76	52.34
25/64	7/16	1	2-3/4	59.88	73.86
13/32	7/16	1	2-3/4	59.88	73.86
27/64	7/16	1	2-3/4	59.88	73.86
7/16	7/16	1	2-3/4	59.88	73.86
29/64	1/2	1	3	59.88	83.56
15/32	1/2	1	3	69.58	83.56
31/64	1/2	1	3	69.58	83.56
1/2	1/2	1	3	69.58	83.56
9/16	9/16	1-1/8	3-1/2	117.92	137.84
5/8	5/8	1-1/4	3-1/2	117.92	155.90
11/16	3/4	1-3/8	4	132.00	218.76
3/4	3/4	1-1/2	4	194.86	218.76
7/8	7/8	1-1/2	4	337.40	372.36
1	1	1-1/2	4	345.14	380.10

SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TiN COAT
				SCEM-3B	SCEM-3BT
1/64	1/8	1/32	1-1/2	43.94	46.92
1/32	1/8	5/64	1-1/2	25.54	28.54
3/64	1/8	7/64	1-1/2	25.54	28.54
1/16	1/8	3/16	1-1/2	20.84	23.84
5/64	1/8	3/16	1-1/2	20.84	23.84
3/32	1/8	9/32	1-1/2	20.84	23.84
7/64	1/8	3/8	1-1/2	20.84	23.84
1/8	1/8	1/2	1-1/2	18.94	21.92
9/64	3/16	1/2	2	26.02	30.02
5/32	3/16	1/2	2	26.02	30.02
11/64	3/16	5/8	2	26.82	30.84
3/16	3/16	5/8	2	26.82	30.84
13/64	1/4	5/8	2-1/2	32.64	40.24
7/32	1/4	5/8	2-1/2	32.64	40.24
15/64	1/4	3/4	2-1/2	34.32	41.92
1/4	1/4	3/4	2-1/2	34.32	41.92
17/64	5/16	3/4	2-1/2	37.12	45.14
9/32	5/16	3/4	2-1/2	37.12	45.14
19/64	5/16	13/16	2-1/2	37.12	46.66
5/16	5/16	13/16	2-1/2	39.80	46.66
21/64	3/8	1	2-1/2	48.90	60.48
11/32	3/8	1	2-1/2	48.90	60.48
23/64	3/8	1	2-1/2	48.90	60.48
3/8	3/8	1	2-1/2	48.90	60.48
25/64	7/16	1	2-3/4	71.92	85.90
13/32	7/16	1	2-3/4	71.92	85.90
27/64	7/16	1	2-3/4	71.92	85.90
7/16	7/16	1	2-3/4	71.92	85.90
29/64	1/2	1	3	83.48	97.44
15/32	1/2	1	3	83.48	97.44
31/64	1/2	1	3	83.48	97.44
1/2	1/2	1	3	83.48	97.44
9/16	9/16	1-1/8	3-1/2	141.56	161.44
5/8	5/8	1-1/4	3-1/2	158.40	182.30
11/16	3/4	1-3/8	4	233.86	257.76
3/4	3/4	1-1/2	4	233.86	257.76
7/8	7/8	1-1/2	4	404.94	439.90
1	1	1-1/2	4	414.16	449.12

**TOLERANCES**  
All Sizes Cut Dia.: + .000 - .002"  
All Sizes Shank Dia.: - .0001 - .0004"

# SOLID CARBIDE 3 TAPERED FLUTE END MILLS

ICS USA

SPECIAL PURPOSE

NON-CENTER CUTTING

Solid Carbide Tapered End Mills are designed with a constant spiral to prevent chatter during use and to resist side thrusts and deflection. They are used primarily for milling die and mold cavities and are sometimes referred to as Taper Degree End Mills or Tapered Milling Cutters.

## 3 Flute Single End



## 3 Flute Ball Nose Single End



RIGHT HAND CUTTING

SHANK DIA.	TAPER ANGLE	RADIUS	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
					SUPER COBALT	TiN COAT
					SCTEM	SCTEMT
1/4	1°	1/8	1-1/2	3	56.62	60.20
	1-1/2°	1/8	1-1/2	3	50.90	54.48
	2°	1/8	1-1/4	3	56.62	60.20
	3°	1/8	1	3	50.90	54.48
	5°	1/8	3/4	3	50.90	54.48
	7°	1/8	1/2	3	50.90	54.48
	10°	3/32	1/2	3	56.62	60.20
3/8	1°	3/16	1-3/4	3-1/2	77.76	83.36
	1-1/2°	3/16	1-3/4	3-1/2	77.76	83.36
	2°	3/16	1-3/4	3-1/2	77.76	83.36
	3°	5/32	1-3/4	3-1/2	77.76	83.36
	5°	1/8	1-1/2	3-1/2	77.76	83.36
	7°	1/8	1	3-1/2	77.76	83.36
	10°	1/8	3/4	3-1/2	77.76	83.36
1/2	1°	1/4	2	4	118.14	127.22
	2°	1/4	2	4	118.14	127.22
	3°	1/4	2	4	118.14	127.22
	5°	1/4	1-1/4	4	118.14	127.22
	7°	3/16	1-1/4	4	118.14	127.22
	10°	1/8	1	4	118.14	127.22

SHANK DIA.	TAPER ANGLE	RADIUS	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
					SUPER COBALT	TiN COAT
					SCTEMB	SCTEMBT
1/4	1°	.062	1-1/2	3	62.90	66.50
	1-1/2°	.062	1-1/2	3	56.54	60.14
	2°	.062	1-1/4	3	60.20	66.50
	3°	.062	1	3	56.40	60.14
	5°	.062	3/4	3	56.40	60.14
	7°	.062	1/2	3	56.40	60.14
	10°	.047	1/2	3	62.90	66.50
3/8	1°	.093	1-3/4	3-1/2	86.42	92.02
	1-1/2°	.093	1-3/4	3-1/2	86.42	92.02
	2°	.093	1-3/4	3-1/2	86.42	92.02
	3°	.078	1-3/4	3-1/2	86.42	92.02
	5°	.062	1-1/2	3-1/2	86.42	92.02
	7°	.062	1	3-1/2	86.42	92.02
	10°	.062	3/4	3-1/2	86.42	92.02
1/2	1°	.125	2	4	131.28	140.34
	2°	.125	2	4	131.28	140.34
	3°	.125	2	4	131.28	140.34
	5°	.125	1-1/4	4	131.28	140.34
	7°	.093	1-1/4	4	131.28	140.34
	10°	.062	1	4	131.28	140.34

TOLERANCES  
 Flute Dia.: - .001 - .002"  
 Shank Dia.: - .0001 - .0004"

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE**  
**SOLID CARBIDE MINI-DECIMAL SIZE END MILLS**

**ICS USA**

**SPECIAL PURPOSE**

**CENTER CUTTING**

Micro-Grain Solid Carbide End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

**2 Flute Single End**



SIZE (dec.)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COAT
				SCDSEM-2R	SCDSEM-2T
.010	1/8	.030	1-1/2	21.02	23.26
.015	1/8	.045	1-1/2	21.02	23.26
.020	1/8	.060	1-1/2	21.02	23.26
.025	1/8	.075	1-1/2	21.02	23.26
.030	1/8	.090	1-1/2	21.02	23.26
.035	1/8	.105	1-1/2	21.02	23.26
.040	1/8	.120	1-1/2	21.02	23.26
.045	1/8	.135	1-1/2	15.98	18.22
.050	1/8	.150	1-1/2	15.98	18.22
.055	1/8	.165	1-1/2	15.98	18.22
.060	1/8	.180	1-1/2	15.98	18.22
.065	1/8	.195	1-1/2	15.98	18.22
.070	1/8	.210	1-1/2	15.98	18.22
.075	1/8	.225	1-1/2	15.98	18.22
.080	1/8	.240	1-1/2	15.98	18.22
.085	1/8	.255	1-1/2	15.98	18.22
.090	1/8	.270	1-1/2	15.98	18.22
.095	1/8	.285	1-1/2	15.98	18.22
.100	1/8	.300	1-1/2	15.98	18.22
.105	1/8	.315	1-1/2	15.98	18.22
.110	1/8	.330	1-1/2	15.98	18.22
.115	1/8	.345	1-1/2	15.98	18.22
.120	1/8	.360	1-1/2	15.98	18.22

**4 Flute Single End**



SIZE (dec.)	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH	
				SUPER COBALT	TIN COAT
				SCDSEM-4R	SCDSEM-4T
.010	1/8	.030	1-1/2	21.02	23.26
.015	1/8	.045	1-1/2	21.02	23.26
.020	1/8	.060	1-1/2	21.02	23.26
.025	1/8	.075	1-1/2	21.02	23.26
.030	1/8	.090	1-1/2	21.02	23.26
.035	1/8	.105	1-1/2	21.02	23.26
.040	1/8	.120	1-1/2	21.02	23.26
.045	1/8	.135	1-1/2	15.98	18.22
.050	1/8	.150	1-1/2	15.98	18.22
.055	1/8	.165	1-1/2	15.98	18.22
.060	1/8	.180	1-1/2	15.98	18.22
.065	1/8	.195	1-1/2	15.98	18.22
.070	1/8	.210	1-1/2	15.98	18.22
.075	1/8	.225	1-1/2	15.98	18.22
.080	1/8	.240	1-1/2	15.98	18.22
.085	1/8	.255	1-1/2	15.98	18.22
.090	1/8	.270	1-1/2	15.98	18.22
.095	1/8	.285	1-1/2	15.98	18.22
.100	1/8	.300	1-1/2	15.98	18.22
.105	1/8	.315	1-1/2	15.98	18.22
.110	1/8	.330	1-1/2	15.98	18.22
.115	1/8	.345	1-1/2	15.98	18.22
.120	1/8	.360	1-1/2	15.98	18.22

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE**

**SOLID CARBIDE MINI-STUB LENGTH SIZE END MILLS**

**ICS USA**

**SPECIAL PURPOSE**

**CENTER CUTTING**

Micro-Grain Solid Carbide End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

**2 Flute Double End (Stub)**



SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	SUPER COBALT
1/32	1/8	3/64	1-1/2	SCMDEM-2S002
3/64	1/8	1/16	1-1/2	SCMDEM-2S003
1/16	1/8	1/8	1-1/2	SCMDEM-2S004
5/64	1/8	1/8	1-1/2	SCMDEM-2S005
3/32	1/8	3/16	1-1/2	SCMDEM-2S006
7/64	1/8	11/64	1-1/2	SCMDEM-2S007
1/8	1/8	1/4	1-1/2	SCMDEM-2S008
9/64	3/16	7/32	2	SCMDEM-2S009
5/32	3/16	5/16	2	SCMDEM-2S010
11/64	3/16	17/64	2	SCMDEM-2S011
3/16	3/16	3/8	2	SCMDEM-2S012

**4 Flute Double End (Stub)**



SIZE	SHANK DIA.	FLUTE LENGTH	OVERALL LENGTH	SUPER COBALT
1/32	1/8	3/64	1-1/2	SCMDEM-4S002
3/64	1/8	1/16	1-1/2	SCMDEM-4S003
1/16	1/8	1/8	1-1/2	SCMDEM-4S004
5/64	1/8	1/8	1-1/2	SCMDEM-4S005
3/32	1/8	3/16	1-1/2	SCMDEM-4S006
7/64	1/8	11/64	1-1/2	SCMDEM-4S007
1/8	1/8	1/4	1-1/2	SCMDEM-4S008
9/64	3/16	7/32	2	SCMDEM-4S009
5/32	3/16	5/16	2	SCMDEM-4S010
11/64	3/16	17/64	2	SCMDEM-4S011
3/16	3/16	3/8	2	SCMDEM-4S012

**TOLERANCES**  
 Flute Dia.: + .000 - .002"  
 Shank Dia.: - .0001 - .0004"

**PREMIUM (10% COBALT) MICROGRAIN CARBIDE**  
**SOLID CARBIDE CORNER RADIUS END MILLS**

MT-30

**ICS USA**

**SPECIAL PURPOSE**

**CENTER CUTTING**

Micro-Grain Solid Carbide Corner Radius End Mills were developed for machining tough work hardening metals, stainless steel, titanium, monel, inconel, and super alloys. It is extremely shock resistant.

**2 Flute Single End**



**RIGHT HAND CUTTING**

**4 Flute Single End**



NOMINAL DIAMETER	RADIUS	ACTUAL DIAMETER	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	PRICE EACH			
						SUPER CARBIDE	TIN COAT	SOLID CARBIDE	TIN COAT
						2 FLUTE	2 FLUTE	4 FLUTE	4 FLUTE
						<b>SCCEM2R</b>	<b>SCCEM2T</b>	<b>SCCEM4R</b>	<b>SCCEM4T</b>
1/8	.015 .020	.1240/.1230	1/8	1/2	1-1/2	20.24	22.48	20.24	22.48
3/16	.015 .020 .030	.1865/.1855	3/16	5/8	2	28.66	30.90	28.66	30.90
1/4	.015 .020 .030 .045	.2490/.2480	1/4	3/4	2-1/2	36.88	40.40	36.68	40.40
5/16	.015 .020 .030 .045	.3115/.3105	5/16	13/16	2-1/2	41.32	46.24	41.32	46.24
3/8	.015 .020 .030 .045	.3740/.3730	3/8	1	2-1/2	52.24	57.18	52.24	57.18
1/2	.015 .020 .030 .045 .060	.4990/.4980	1/2	1	3	89.18	98.14	89.18	98.14
5/8	.015 .020 .030 .045 .060 .090	.6240/.6230	5/8	1-1/4	3-1/2	169.24	180.44	169.24	180.44
3/4	.015 .020 .030 .045 .060 .090 .125	.7490/.7480	3/4	1-1/2	4	249.86	264.42	249.86	264.42
1	.015 .020 .030 .045 .060 .090 .125	.9990/.9980	1	1-1/2	4	442.52	458.76	442.52	458.76

**TOLERANCES**  
 Flute Dia.: - .001 - .002"  
 Shank Dia.: - .0001 - .0004"

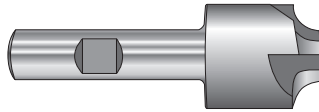
# HIGH SPEED STEEL CORNER ROUNDING END MILLS

**ICS USA**

**GENERAL PURPOSE**

**FORM RELIEVED**

**WELDON SHANK**



**RIGHT HAND CUT**

Corner Rounding End Mills are designed for milling convex (male) quarter round edges on most metals. Form relieved cutters have side and radial clearance and can be sharpened by grinding the face of the teeth without changing their form.

RADIUS DIA.	SHANK DIA.	CUTTER DIA.	OVERALL LENGTH	NO. OF FLUTES	ITEM NO.	PRICE
1/16	3/8	7/16	2-1/2	4	CREM004X024	44.90
3/32	3/8	1/2	2-1/2	4	CREM006X032	48.04
1/8	1/2	5/8	3	4	CREM008X032	61.16
5/32	1/2	3/4	3	4	CREM010X032	63.32
3/16	1/2	7/8	3	4	CREM012X032	74.70
3/16	3/4	7/8	3-1/8	4	CREM012X048	74.70
1/4	1/2	1	3	4	CREM016X032	82.74
1/4	3/4	1	3-1/4	4	CREM016X048	82.74
9/32	5/8	1	3	4	CREM018X040	100.36
5/16	1/2	1-1/8	3-1/4	4	CREM020X032	101.72
5/16	5/8	1-1/8	3-1/2	4	CREM020X040	101.72
5/16	3/4	1-1/8	3-1/4	4	CREM020X048	101.72
5/16	7/8	1-1/8	3-1/2	4	CREM020X056	117.22
3/8	1/2	1-1/4	3-1/2	4	CREM024X032	117.22
3/8	3/4	1-1/4	3-1/2	4	CREM024X048	117.22
3/8	7/8	1-1/4	3-3/4	4	CREM024X056	117.22
7/16	3/4	1-3/8	3-3/4	4	CREM028X048	127.02
7/16	1	1-3/8	4	4	CREM028X100	127.02
1/2	3/4	1-1/2	3-7/8	4	CREM032X048	137.42
1/2	1	1-1/2	4-1/8	4	CREM032X100	137.42
5/8	3/4	1-5/8	4	4	CREM040X048	199.10
5/8	1	1-5/8	4	4	CREM040X100	199.10
3/4	3/4	1-7/8	4	4	CREM048X048	236.06
3/4	1	1-7/8	4	4	CREM048X100	236.06

# HIGH SPEED STEEL CONCAVE AND CONVEX (SHANK) CUTTERS

**ICS USA**

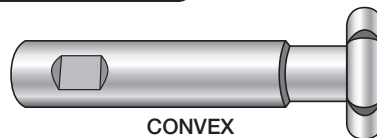
**SPECIAL PURPOSE**

**FORM RELIEVED**

**WELDON SHANK**



CONCAVE



CONVEX

**RIGHT HAND CUT**

Concave Cutters are designed for milling concave (male) half circles in most metals and may be sharpened without changing their form by grinding the face of the teeth.

Convex Cutters are designed for milling convex (female) half circles in most metals and may be sharpened without changing their face by grinding the face of the teeth.

RADIUS	DIA.	DIA.	LENGTH	NO. OF FLUTES	ITEM NO.	PRICE
1/32	1/2	3/4	3	6	CSCM002	77.20
1/16	1/2	3/4	3	6	CSCM004	65.68
3/32	1/2	3/4	3	6	CSCM006	65.68
1/8	3/4	1	3-1/2	6	CSCM008	79.28
5/32	3/4	1	3-1/2	6	CSCM010	79.28
3/16	3/4	1	3-1/2	6	CSCM012	79.28
1/4	3/4	1-1/4	4	4	CSCM016	112.90
5/16	3/4	1-1/4	4	4	CSCM020	140.62
3/8	3/4	1-1/2	4-3/16	4	CSCM024	156.80

RADIUS	DIA.	DIA.	LENGTH	NO. OF FLUTES	ITEM NO.	PRICE
1/32	1/2	3/4	3	6	CSCF002	78.40
1/16	1/2	3/4	3	6	CSCF004	66.74
3/32	1/2	7/8	3	6	CSCF006	70.40
1/8	3/4	1-1/4	3-1/2	6	CSCF008	91.46
5/32	3/4	1-5/16	3-1/2	6	CSCF010	93.58
3/16	3/4	1-3/8	3-1/2	6	CSCF012	99.66
1/4	3/4	1-1/2	4	6	CSCF016	127.90
5/16	3/4	1-5/8	4	6	CSCF020	163.60
3/8	3/4	1-3/4	4	6	CSCF024	177.70

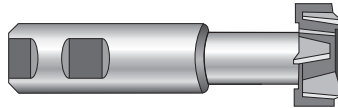
# HIGH SPEED STEEL T-SLOT CUTTERS

**ICS USA**

**SPECIAL PURPOSE**

**STAGGERED TEETH**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT/LEFT HAND HELIX**

High Speed Steel T-Slot Cutters are designed for milling T-slots into tables and beds of machine tools and similar applications where a good surface finish is required. A vertical slot must be cut first so that neck and shank may enter the cut. Use with standard end mill arbors.

BOLT SIZE	CUTTER DIAMETER	CUTTER THICKNESS	NECK DIAMETER	SHANK DIAMETER	OVERALL LENGTH	ITEM NO.	PRICE EACH
1/4	9/16	15/64	17/64	1/2	2-19/32	TSC016	40.78
5/16	21/32	17/64	21/64	1/2	2-11/16	TSC020	44.36
3/8	25/32	21/64	13/32	3/4	3-1/4	TSC024	63.02
1/2	31/32	25/64	17/32	3/4	3-7/16	TSC032	70.96
5/8	1-1/4	31/64	21/32	1	3-15/16	TSC040	96.62
3/4	1-15/32	5/8	25/32	1	4-7/16	TSC048	108.82
1	1-27/32	53/64	1-1/32	1-1/4	4-13/16	TSC100	182.18
1-1/4	2-7/32	1-3/32	1-9/32	1-1/4	5-3/8	TSC116	230.00
1-1/2	2-21/32	1-11/32	1-17/32	1-1/4	5-29/32	TSC132	303.14

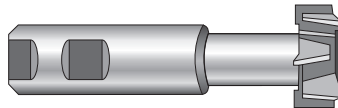
## COBALT T-SLOT CUTTERS

**ICS USA**

**SPECIAL PURPOSE**

**STAGGERED TEETH**

**WELDON SHANK**



**RIGHT HAND CUT  
RIGHT/LEFT HAND HELIX**

Cobalt T-Slot Cutters are designed for milling T-slots into tougher materials where a good surface finish is required. They are used for machining hard, high strength materials up to a hardness of 40RC. A vertical slot must be cut first so that neck and shank may enter cut. Use with standard end mill arbors.

BOLT SIZE	CUTTER DIAMETER	CUTTER THICKNESS	NECK DIAMETER	SHANK DIAMETER	OVERALL LENGTH	ITEM NO.	PRICE EACH
1/4	9/16	15/64	17/64	1/2	2-19/32	TSCC016	57.06
5/16	21/32	17/64	21/64	1/2	2-11/16	TSCC020	61.68
3/8	25/32	21/64	13/32	3/4	3-1/4	TSCC024	87.66
1/2	31/32	25/64	17/32	3/4	3-7/16	TSCC032	99.02
5/8	1-1/4	31/64	21/32	1	3-15/16	TSCC040	134.86
3/4	1-15/32	5/8	25/32	1	4-7/16	TSCC048	151.60
1	1-27/32	53/64	1-1/32	1-1/4	4-13/16	TSCC100	255.36
1-1/4	2-7/32	1-3/32	1-9/32	1-1/4	5-3/8	TSCC116	321.06
1-1/2	2-21/32	1-11/32	1-17/32	1-1/4	5-29/32	TSCC132	421.12

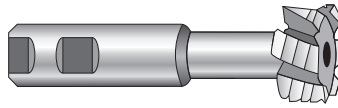
## COBALT ROUGHING T-SLOT CUTTERS

**ICS USA**

**SPECIAL PURPOSE**

**HELICAL TEETH**

**WELDON SHANK**



**RIGHT HAND CUT**

Cobalt Roughing T-Slot Cutters are designed for rapid milling T-slots into tougher materials where finish is not as important. They are used for most metals, even hardened steel and aerospace alloys. A vertical slot must be cut first so that neck and shank may enter cut. Use with standard end mill arbors.

BOLT SIZE	CUTTER DIAMETER	CUTTER THICKNESS	NECK DIAMETER	SHANK DIAMETER	OVERALL LENGTH	ITEM NO.
1/2	31/32	25/64	17/32	3/4	3-7/16	RTSC032
5/8	1-1/4	31/64	21/32	1	3-15/16	RTSC040
3/4	1-15/32	5/8	25/32	1	4-7/16	RTSC048
1	1-27/32	53/64	1-1/32	1-1/4	4-13/16	RTSC100
1-1/4	2-7/32	1-3/32	1-9/32	1-1/4	5-3/8	RTSC116
1-1/2	2-21/32	1-11/32	1-17/32	1-1/4	5-29/32	RTSC132

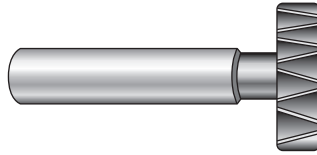
# HIGH SPEED STEEL WOODRUFF KEY SEAT (SHANK) CUTTERS

**ICS USA**

**SPECIAL PURPOSE**

**STAGGERED TEETH**

**1/2" SHANK**



**RIGHT HAND CUT  
RIGHT/LEFT HAND HELIX**

Woodruff Key Seat Cutters with staggered teeth are designed to mill standard Woodruff keyways in steel and other metals. A staggered teeth design cutter reduces chatter, has more chip clearance, and removes more metal at higher speeds and feeds than straight teeth cutters.

CUTTER NO.		NOMINAL CUTTER DIAMETER	OVERALL LENGTH	NO. OF TEETH	WOODRUFF KEY NO.	ITEM NO.	PRICE
AMER. NATL. STANDARD	OLD STANDARD				AMER. NATL. STANDARD		
<b>1/16" FACE WIDTH</b>							
*202	201	1/4	2-1/16	8	202	WKSSCS#202	31.64
*202 -1/2	206	5/16	2-1/16	8	202-1/2	WKSSCS#2025	31.64
*203	211	3/8	2-1/16	8	203	WKSSCS#203	31.64
*204	1	1/2	2-1/16	10	204	WKSSCS#204	28.74
<b>3/32" FACE WIDTH</b>							
*302 -1/2	207	5/16	2-3/32	8	302-1/2	WKSSCS#3025	31.64
*303	212	3/8	2-3/32	8	303	WKSSCS#303	31.64
*304	2	1/2	2-3/32	10	304	WKSSCS#304	28.74
*305	4	5/8	2-3/32	10	305	WKSSCS#305	28.74
<b>1/8" FACE WIDTH</b>							
*403	213	3/8	2-1/8	8	403	WKSSCS#403	31.64
*404	3	1/2	2-1/8	10	404	WKSSCS#404	28.74
405	5	5/8	2-1/8	10	405	WKSSCS#405	28.74
406	7	3/4	2-1/8	10	406	WKSSCS#406	31.54
<b>5/32" FACE WIDTH</b>							
505	6	5/8	2-5/32	10	505	WKSSCS#505	28.74
506	8	3/4	2-5/32	10	506	WKSSCS#506	31.54
507	10	7/8	2-5/32	12	507	WKSSCS#507	38.34
<b>3/16" FACE WIDTH</b>							
605	61	5/8	2-3/16	10	605	WKSSCS#605	28.74
606	9	3/4	2-3/16	10	606	WKSSCS#606	31.54
607	11	7/8	2-3/16	12	607	WKSSCS#607	38.34
608	13	1	2-3/16	12	608	WKSSCS#608	42.86
609	16	1-1/8	2-3/16	12	609	WKSSCS#609	47.22
610	19	1-1/4	2-3/16	14	610	WKSSCS#610	51.58
<b>7/32" FACE WIDTH</b>							
707	12	7/8	2-7/32	12	707	WKSSCS#707	38.34
708	14	1	2-7/32	12	708	WKSSCS#708	42.86
709	17	1-1/8	2-7/32	12	709	WKSSCS#709	47.22
710	20	1-1/4	2-7/32	14	710	WKSSCS#710	51.58
<b>1/4" FACE WIDTH</b>							
806	91	3/4	2-1/4	10	806	WKSSCS#806	31.54
807	A	7/8	2-1/4	12	121, 807	WKSSCS#807	38.34
808	15	1	2-1/4	12	141, 808	WKSSCS#808	42.86
809	18	1-1/8	2-1/4	12	809	WKSSCS#809	47.22
810	21	1-1/4	2-1/4	14	810	WKSSCS#810	51.58
811	22	1-3/8	2-1/4	14	811	WKSSCS#811	57.34
812	24	1-1/2	2-1/4	16	812	WKSSCS#812	62.04
<b>5/16" FACE WIDTH</b>							
1008	B	1	2-5/16	12	131, 1008	WKSSCS1008	42.86
1009	C	1-1/8	2-5/16	12	161, 1009	WKSSCS1009	47.22
1010	D	1-1/4	2-5/16	14	1010	WKSSCS1010	55.88
1011	23	1-3/8	2-5/16	14	1011	WKSSCS1011	61.16
1012	25	1-1/2	2-5/16	16	1012	WKSSCS1012	66.56
<b>3/8" FACE WIDTH</b>							
1208	152	1	2-3/8	12	1208	WKSSCS1208	42.86
1210	E	1-1/4	2-3/8	14	1210	WKSSCS1210	55.88
1211	F	1-3/8	2-3/8	14	1211	WKSSCS1211	61.16
1212	G	1-1/2	2-3/8	16	1212	WKSSCS1212	66.56

\* These cutters are made with extended centers on outer end for strength.

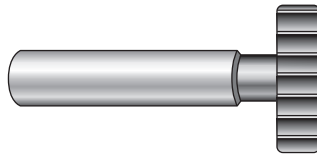
# HIGH SPEED STEEL WOODRUFF KEY SEAT (SHANK) CUTTERS

**ICS USA**

**SPECIAL PURPOSE**

**STRAIGHT TEETH**

**1/2" SHANK**



**RIGHT HAND CUT**

Woodruff Key Seat Cutters are designed to mill standard Woodruff keyways in steel and other metals. They are the correct dimensions for Woodruff keys and are made oversize to allow for resharpening. Keys and cutters correspond in size and number as shown below.

CUTTER NO.		NOMINAL CUTTER DIAMETER	OVERALL LENGTH	NO. OF TEETH	WOODRUFF KEY NO.	ITEM NO.	PRICE
AMER. NATL. STANDARD	OLD STANDARD				AMER. NATL. STANDARD		
<b>1/16" FACE WIDTH</b>							
*202	201	1/4	2-1/16	8	202	WKSSC#202	22.56
*202 -1/2	206	5/16	2-1/16	8	202-1/2	WKSSC#2025	22.56
*203	211	3/8	2-1/16	8	203	WKSSC#203	22.56
*204	1	1/2	2-1/16	10	204	WKSSC#204	19.18
<b>3/32" FACE WIDTH</b>							
*302 -1/2	207	5/16	2-3/32	8	302-1/2	WKSSC#3025	22.56
*303	212	3/8	2-3/32	8	303	WKSSC#303	22.56
*304	2	1/2	2-3/32	10	304	WKSSC#304	19.18
*305	4	5/8	2-3/32	10	305	WKSSC#305	19.18
<b>1/8" FACE WIDTH</b>							
*403	213	3/8	2-1/8	8	403	WKSSC#403	22.56
*404	3	1/2	2-1/8	10	404	WKSSC#404	19.18
405	5	5/8	2-1/8	10	405	WKSSC#405	19.18
406	7	3/4	2-1/8	10	406	WKSSC#406	19.18
<b>5/32" FACE WIDTH</b>							
505	6	5/8	2-5/32	10	505	WKSSC#505	19.18
506	8	3/4	2-5/32	10	506	WKSSC#506	23.80
507	10	7/8	2-5/32	12	507	WKSSC#507	26.76
<b>3/16" FACE WIDTH</b>							
605	61	5/8	2-3/16	10	605	WKSSC#605	19.18
606	9	3/4	2-3/16	10	606	WKSSC#606	26.76
607	11	7/8	2-3/16	12	607	WKSSC#607	26.76
608	13	1	2-3/16	12	608	WKSSC#608	29.72
609	16	1-1/8	2-3/16	12	609	WKSSC#609	32.58
610	19	1-1/4	2-3/16	14	610	WKSSC#610	36.44
<b>7/32" FACE WIDTH</b>							
707	12	7/8	2-7/32	12	707	WKSSC#707	26.76
708	14	1	2-7/32	12	708	WKSSC#708	29.72
709	17	1-1/8	2-7/32	12	709	WKSSC#709	32.58
710	20	1-1/4	2-7/32	14	710	WKSSC#710	36.44
<b>1/4" FACE WIDTH</b>							
806	91	3/4	2-1/4	10	806	WKSSC#806	26.76
807	A	7/8	2-1/4	12	121, 807	WKSSC#807	26.76
808	15	1	2-1/4	12	141, 808	WKSSC#808	29.72
809	18	1-1/8	2-1/4	12	809	WKSSC#809	32.58
810	21	1-1/4	2-1/4	14	810	WKSSC#810	36.44
811	22	1-3/8	2-1/4	14	811	WKSSC#811	39.20
812	24	1-1/2	2-1/4	16	812	WKSSC#812	43.04
<b>5/16" FACE WIDTH</b>							
1008	B	1	2-5/16	12	131, 1008	WKSSC1008	31.54
1009	C	1-1/8	2-5/16	12	161, 1009	WKSSC1009	34.42
1010	D	1-1/4	2-5/16	14	1010	WKSSC1010	38.34
1011	23	1-3/8	2-5/16	14	1011	WKSSC1011	42.16
1012	25	1-1/2	2-5/16	16	1012	WKSSC1012	46.00
<b>3/8" FACE WIDTH</b>							
1208	152	1	2-3/8	12	1208	WKSSC1208	32.58
1210	E	1-1/4	2-3/8	14	1210	WKSSC1210	38.34
1211	F	1-3/8	2-3/8	14	1211	WKSSC1211	42.16
1212	G	1-1/2	2-3/8	16	1212	WKSSC1212	46.00

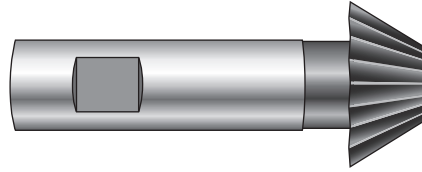
\* These cutters are made with extended centers on outer end for strength.

## HIGH SPEED STEEL SINGLE ANGLE (SHANK) CUTTERS

ICS USA

GENERAL PURPOSE

PERIPHERAL CUTTING EDGES

WELDON  
SHANKRIGHT HAND  
CUT

Single Angle Cutters are designed for chamfering or beveling parts, e.g., a 60° cutter can be used to mill a 30° angle. They can be used on manual or CNC machining centers. They are ground for cutting steel.

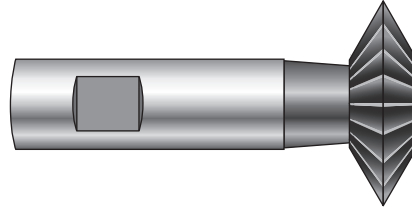
CUTTER DIAMETER	ANGLE (SINGLE)	CUTTER WIDTH	SHANK DIAMETER	OVERALL LENGTH	ITEM NO.	PRICE
1/2	45°	1/8	3/8	2-1/8	SASC45-032	48.64
3/4		3/16	3/8	2-1/8	SASC45-048	63.06
1		5/16	1/2	2-1/2	SASC45-100	72.66
1-1/2		1/2	3/4	2-3/4	SASC45-132	92.18
1/2	60°	7/32	3/8	2-1/8	SASC60-032	48.64
3/4		5/16	3/8	2-1/8	SASC60-048	63.06
1		7/16	1/2	2-1/2	SASC60-100	72.66
1-1/2		5/8	3/4	2-3/4	SASC60-132	92.18

## HIGH SPEED STEEL DOUBLE ANGLE (SHANK) CUTTERS

ICS USA

GENERAL PURPOSE

PERIPHERAL CUTTING EDGES

WELDON  
SHANKRIGHT HAND  
CUT

Double Angle Cutters are designed for milling threads, V-grooves, serrations, and other angular surfaces. These cutters can mill a double angle cut in one pass and can be used on manual or CNC machining centers. They are ground for cutting steel.

CUTTER DIAMETER	ANGLE (DOUBLE)	CUTTER THICKNESS	SHANK DIAMETER	OVERALL LENGTH	ITEM NO.	PRICE
3/4	60°	3/16	3/8	2-3/8	DASC60-048	52.44
1		5/16	1/2	2-27/32	DASC60-100	61.32
1-3/8		7/16	5/8	3-7/32	DASC60-124	81.20
1-1/2		1/2	5/8	3-3/8	DASC60-132	88.54
1-7/8		5/8	3/4	3-25/32	DASC60-156	98.78
2-1/4		3/4	7/8	4-5/32	DASC60-216	130.84
2-1/4		1/2	3/4	3-1/8	DASC60-216A	125.98
3/4	90°	1/4	3/8	2-7/16	DASC90-048	52.44
1		3/8	1/2	2-29/32	DASC90-100	61.32
1-3/8		1/2	5/8	3-9/32	DASC90-124	81.20
1-1/2		9/16	5/8	3-7/16	DASC90-132	88.54
1-7/8		5/8	3/4	3-25/32	DASC90-156	95.78
2-1/4		3/4	7/8	4-5/32	DASC90-216	150.00
2-1/4		1/2	3/4	3-1/8	DASC90-216A	125.98

# HIGH SPEED STEEL DOVETAIL (SHANK) CUTTERS

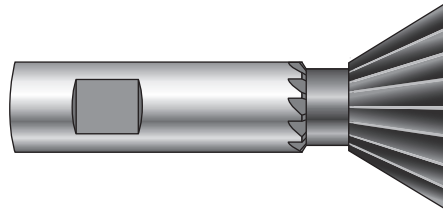
MT-36

**ICS USA**

**GENERAL PURPOSE**

**PROFILE SHARPENED**

**WELDON  
SHANK**



**RIGHT HAND  
CUT**

Dovetail Cutters are designed for milling angular surfaces and for milling slots shaped like a dovetail into tables and beds of machines. Shank Type Dovetail Cutters save set-up time whether they are used in production or the toolroom.

CUTTER DIAMETER	ANGLE	CUTTER WIDTH	SHANK DIAMETER	OVERALL LENGTH	NO. OF FLUTES	ITEM NO.	PRICE
3/8	45°	1/8	3/8	2-1/8	6	<b>DSC45-024</b>	51.08
1/2		5/32	3/8	2-1/8	6	<b>DSC45-032</b>	51.08
3/4		1/4	3/8	2-1/8	8	<b>DSC45-048</b>	52.42
1-3/8		7/16	5/8	2-7/8	10	<b>DSC45-124</b>	87.14
1-7/8		9/16	7/8	3-1/4	12	<b>DSC45-156</b>	187.28
2-1/4		5/8	1	3-3/4	12	<b>DSC45-216</b>	228.48
3/8	60°	3/16	3/8	2-1/8	6	<b>DSC60-024</b>	51.08
1/2		1/4	3/8	2-1/8	6	<b>DSC60-032</b>	51.08
3/4		5/16	3/8	2-1/8	8	<b>DSC60-048</b>	52.42
1-3/8		9/16	5/8	2-7/8	10	<b>DSC60-124</b>	87.14
1-7/8		13/16	7/8	3-1/4	12	<b>DSC60-156</b>	187.28
2-1/4		1-1/16	1	3-3/4	12	<b>DSC60-216</b>	228.48

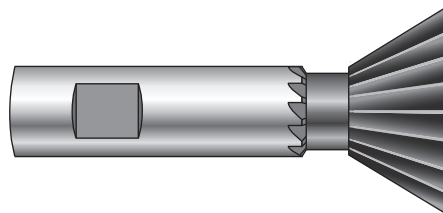
# COBALT DOVETAIL (SHANK) CUTTERS

**ICS USA**

**HEAVY DUTY**

**PROFILE SHARPENED**

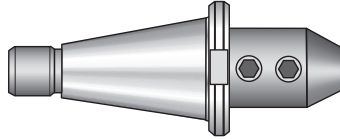
**WELDON  
SHANK**



**RIGHT HAND  
CUT**

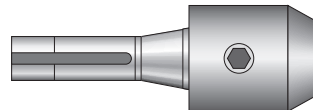
Cobalt Dovetail Cutters are designed for milling dovetails, angular surfaces, and special shapes. They are used for machining hard, high strength materials up to a hardness of 40 RC.

CUTTER DIAMETER	ANGLE	CUTTER WIDTH	SHANK DIAMETER	OVERALL LENGTH	NO. OF FLUTES	ITEM NO.	PRICE
3/8	45°	1/8	3/8	2-1/8	6	<b>DSCC45-024</b>	76.62
1/2		5/32	3/8	2-1/8	6	<b>DSCC45-032</b>	76.62
3/4		1/4	3/8	2-1/8	8	<b>DSCC45-048</b>	78.18
1-3/8		7/16	5/8	2-7/8	10	<b>DSCC45-124</b>	130.38
1-7/8		9/16	7/8	3-1/4	12	<b>DSCC45-156</b>	281.12
2-1/4		5/8	1	3-3/4	12	<b>DSCC45-216</b>	342.72
3/8	60°	3/16	3/8	2-1/8	6	<b>DSCC60-024</b>	76.62
1/2		1/4	3/8	2-1/8	6	<b>DSCC60-032</b>	76.62
3/4		5/16	3/8	2-1/8	8	<b>DSCC60-048</b>	78.18
1-3/8		9/16	5/8	2-7/8	10	<b>DSCC60-124</b>	130.38
1-7/8		13/16	7/8	3-1/4	12	<b>DSCC60-156</b>	281.12
2-1/4		1-1/16	1	3-3/4	12	<b>DSCC60-216</b>	342.72

**END MILL (NMTB) HOLDERS****ICS USA****ADAPTERS****PRECISION GROUND****NATIONAL  
STANDARD  
TAPER****MAXIMUM  
TIR  
.0006**

NMTB End Mill Holders are designed to fit milling machines using the National Machine Tool Builders (NMTB) spindle taper of 3-1/2" per foot, with manual or power draw bar. All holders are hardened and precision ground to ensure accurate size and concentricity. They will hold single or double end mills, except where noted. Set screws are furnished and are located according to weld on shank specifications.

END MILL SHANK DIA.	SHANK TAPER	SET SCREW SIZE	DRAW BAR THREAD SIZE	ITEM NO.
3/16 3/8 1/2 5/8 3/4 7/8 1	30	1/4-28 x 5/16 3/8-24 x 25/64 7/16-20 x 15/32 9/16-18 x 15/32 5/8-18 x 33/64 5/8-18 x 33/64 3/4-16 x 19/32	1/2-13	EMH-NST30X012 EMH-NST30X024 EMH-NST30X032 EMH-NST30X040 EMH-NST30X048 EMH-NST30X056 EMH-NST30X100
3/16 3/8 1/2 5/8 3/4 7/8 1 *1-1/4 *1-1/2	40	1/4-28 x 5/16 3/8-24 x 25/64 7/16-20 x 15/32 9/16-18 x 15/32 5/8-18 x 33/64 5/8-18 x 33/64 3/4-16 x 19/32 3/4-16 x 5/8 3/4-16 x 45/64	5/8-11	EMH-NST40X012 EMH-NST40X024 EMH-NST40X032 EMH-NST40X040 EMH-NST40X048 EMH-NST40X056 EMH-NST40X100 EMH-NST40X116 EMH-NST40X132
3/8 1/2 5/8 3/4 7/8 1 *1-1/4 *1-1/2 *2	50	3/8-24 x 25/64 7/16-20 x 15/32 9/16-18 x 15/32 5/8-18 x 33/64 5/8-18 x 33/64 3/4-16 x 19/32 3/4-16 x 5/8 3/4-16 x 45/64 1-14 x 15/16	1-8	EMH-NST50X024 EMH-NST50X032 EMH-NST50X040 EMH-NST50X048 EMH-NST50X056 EMH-NST50X100 EMH-NST50X116 EMH-NST50X132 EMH-NST50X200

**END MILL (R-8) HOLDERS****ICS USA****ADAPTERS****PRECISION GROUND****R-8  
SHANK****MAXIMUM  
TIR  
.0006**

R-8 End Mill Holders are designed to fit Bridgeport and other milling machines using the R-8 spindle taper. All holders are hardened and precision ground to ensure accurate size and concentricity. They will hold single or double end mills, except where noted. Set screws are furnished and are located according to Weldon Shank specifications.

END MILL SHANK DIA.	SHANK TAPER	SET SCREW SIZE	DRAW BAR THREAD SIZE	ITEM NO.
3/16 3/8 1/2 5/8 *3/4 *7/8 *1 *1-1/4 *1-1/2	R-8	1/4-28 x 5/16 3/8-24 x 25/64 7/16-20 x 15/32 9/16-18 x 15/32 5/8-18 x 33/64 5/8-18 x 33/64 3/4-16 x 19/32 3/4-16 x 5/8 3/4-16 x 45/64	7/16-20	EMH-R8X012 EMH-R8X024 EMH-R8X032 EMH-R8X040 EMH-R8X048 EMH-R8X056 EMH-R8X100 EMH-R8X116 EMH-R8X132

\* These holders are only for single end mills.

# R-8 TO MORSE TAPER MILLING MACHINE ADAPTERS

ICS USA

ADAPTERS

PRECISION GROUND

R-8 SHANK



MORSE TAPER HOLE

R-8 to Morse Taper Milling Machine Adapters are designed to adapt cutting tools with a morse taper shank to an R-8 shank. All adapters are hardened and precision ground to ensure accurate size and concentricity.

(OUTSIDE) SHANK TYPE	(INSIDE) SHANK TYPE	DRAW BAR THREAD SIZE	ITEM NO.	PRICE
R-8	MT2	7/16-20	MMA-R8M2	63.50
	MT3		MMA-R8M3	73.52

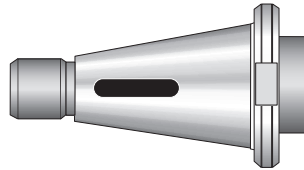
# NMTB TO MORSE TAPER MILLING MACHINE ADAPTERS

ICS USA

ADAPTERS

PRECISION GROUND

NATIONAL STANDARD TAPER SHANK



MORSE TAPER HOLE

NMTB to Morse Taper Milling Machine Adapters are designed to adapt cutting tools with a morse taper shank to a National Standard taper spindle. All adapters are hardened and precision ground to ensure accurate size and concentricity.

(OUTSIDE) SHANK TYPE	(INSIDE) SHANK TYPE	DRAW BAR THREAD SIZE	ITEM NO.	PRICE
NST40	MT2	5/8-11	MMA-NST40MT2	87.12
	MT3		MMA-NST40MT3	87.12
	MT4		MMA-NST40MT4	87.12
	MT5		MMA-NST40MT5	124.20
NST50	MT2	1-8	MMA-NST50MT2	123.00
	MT3		MMA-NST50MT3	129.00
	MT4		MMA-NST50MT4	129.00
	MT5		MMA-NST50MT5	153.00

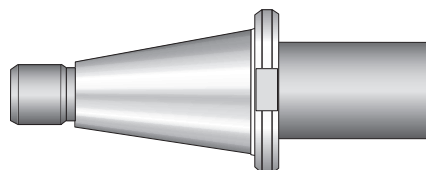
# NMTB TO R-8 MILLING MACHINE ADAPTERS

ICS USA

ADAPTERS

PRECISION GROUND

NATIONAL STANDARD TAPER SHANK



R-8 SHANK HOLE

NMTB to R-8 Milling Machine Adapters are designed to adapt R-8 holders for use on milling machines using an NMTB spindle taper. All adapters are hardened and precision ground to ensure accurate size and concentricity.

(OUTSIDE) SHANK TYPE	(INSIDE) SHANK TYPE	DRAW BAR THREAD SIZE	ITEM NO.	PRICE
NST 40	R8	5/8-11	MMA-NST40R8	177.98
NST 50	R8	1-8	MMA-NST50R8	250.20

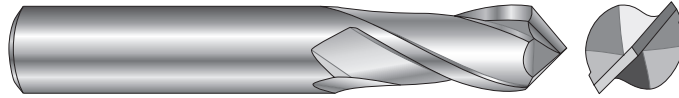
**PREMIUM (10% COBALT) MICROGRAIN CARBIDE  
SOLID CARBIDE 60° & 90° DRILL MILLS**

**ICS USA**

**HEAVY DUTY**

**RIGHT HAND CUT**

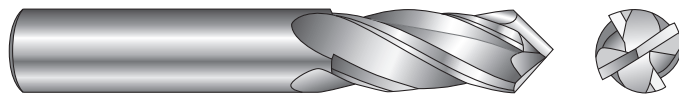
**2 Flute - Single End**



Solid Carbide Drill Mills are designed to be a 5 in 1 multi-purpose tool for drilling, chamfering, spotting, side milling, and countersinking.

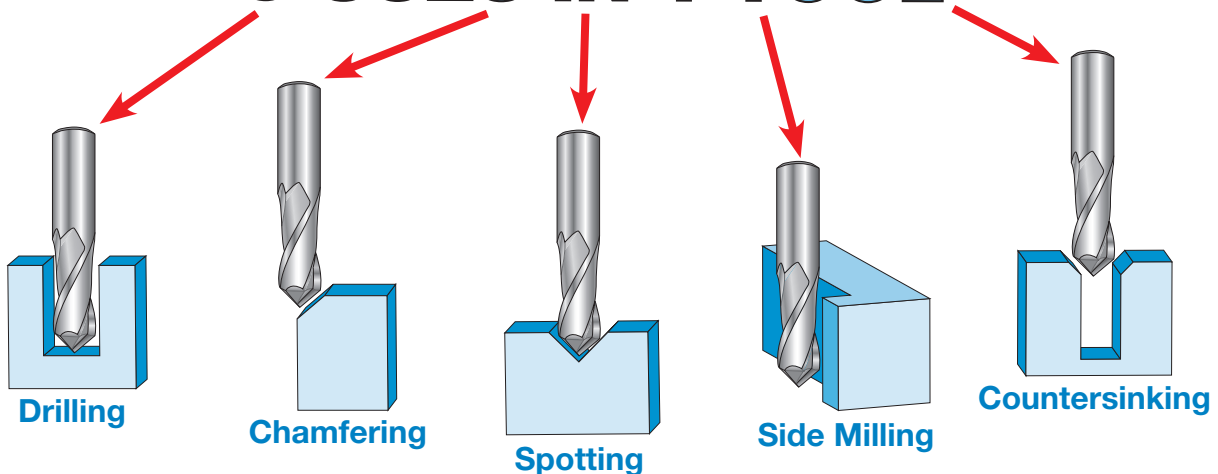
SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	2 FLUTE - 60° POINT ANGLE		2 FLUTE - 90° POINT ANGLE	
				ITEM NO.	PRICE	ITEM NO.	PRICE
1/8	1/8	1/2	1-1/2	SCDM260-008	17.02	SCDM290-008	17.02
3/16	3/16	5/8	2	SCDM260-012	22.68	SCDM290-012	22.68
1/4	1/4	3/4	2-1/2	SCDM260-016	30.46	SCDM290-016	30.46
5/16	5/16	13/16	2-1/2	SCDM260-020	41.16	SCDM290-020	41.16
3/8	3/8	1	2-1/2	SCDM260-024	42.64	SCDM290-024	42.64
7/16	7/16	1	2-3/4	SCDM260-028	43.44	SCDM290-028	43.44
1/2	1/2	1	3	SCDM260-032	79.60	SCDM290-032	79.60
5/8	5/8	1-1/4	3-1/2	SCDM260-040	133.78	SCDM290-040	133.78
3/4	3/4	1-1/2	4	SCDM260-048	220.92	SCDM290-048	220.92

**4 Flute - Single End**



SIZE	SHANK DIAMETER	FLUTE LENGTH	OVERALL LENGTH	4 FLUTE - 60° POINT ANGLE		4 FLUTE - 90° POINT ANGLE	
				ITEM NO.	PRICE	ITEM NO.	PRICE
1/8	1/8	1/2	1-1/2	SCDM460-008	17.02	SCDM490-008	17.02
3/16	3/16	5/8	2	SCDM460-012	22.68	SCDM490-012	22.68
1/4	1/4	3/4	2-1/2	SCDM460-016	30.46	SCDM490-016	30.46
5/16	5/16	13/16	2-1/2	SCDM460-020	41.16	SCDM490-020	41.16
3/8	3/8	1	2-1/2	SCDM460-024	42.64	SCDM490-024	42.64
7/16	7/16	1	2-3/4	SCDM460-028	43.44	SCDM490-028	43.44
1/2	1/2	1	3	SCDM460-032	79.60	SCDM490-032	79.60
5/8	5/8	1-1/4	3-1/2	SCDM460-040	133.78	SCDM490-040	133.78
3/4	3/4	1-1/2	4	SCDM460-048	220.92	SCDM490-048	220.92

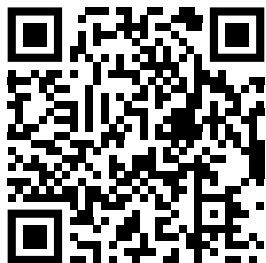
**5 USES IN 1 TOOL**



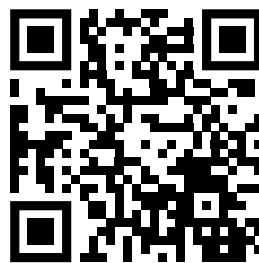
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