

**NEW
PRODUCT**

Vol. 1

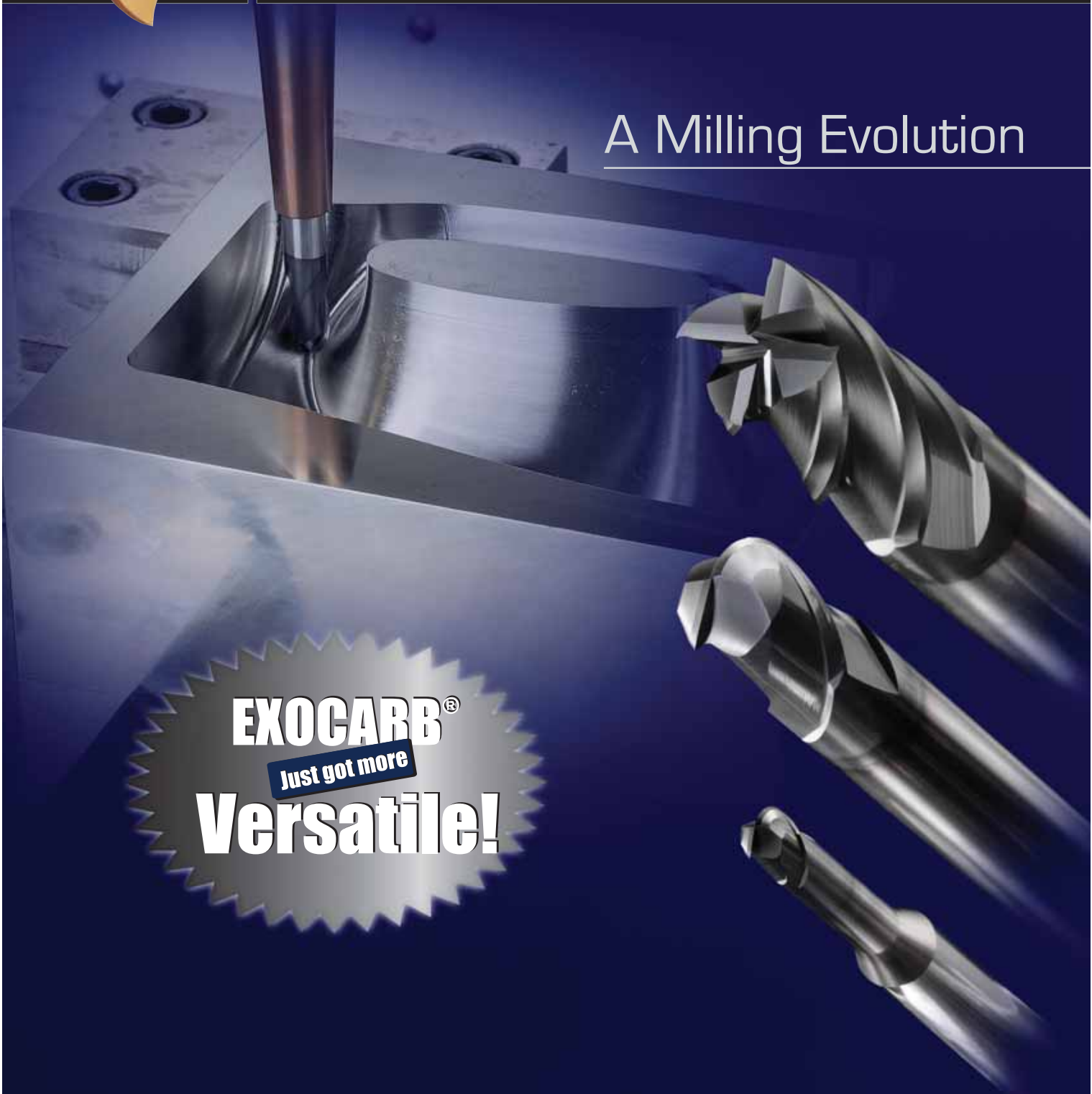


OSG
Tap & Die, Inc.

EXOCARB® - WXL™

A Milling Evolution

EXOCARB®
Just got more
Versatile!



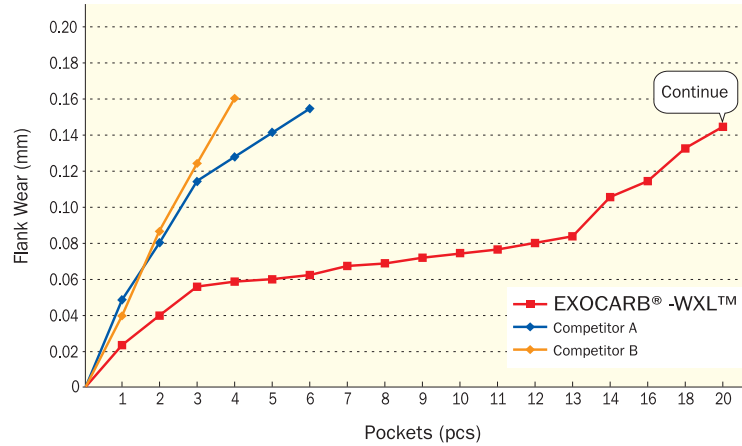
Cutting Data

Offers three times the durability in both dry or wet applications!

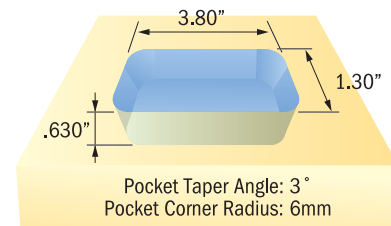
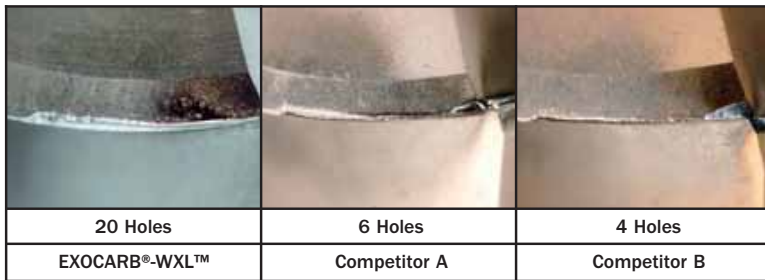
Dry Milling

Tool:	EXOCARB®-WXL™ 10mm
Material:	1050
Milling Speed:	6,366 RPM
Feed:	65 IPM
Milling Method:	Pocket Milling
Milling Depth:	$a_a=0.1D$; $a_r=0.2D$
Projection Length:	4D
Coolant:	Air Blow
Machine:	Vertical Machining Center

10mm Ball



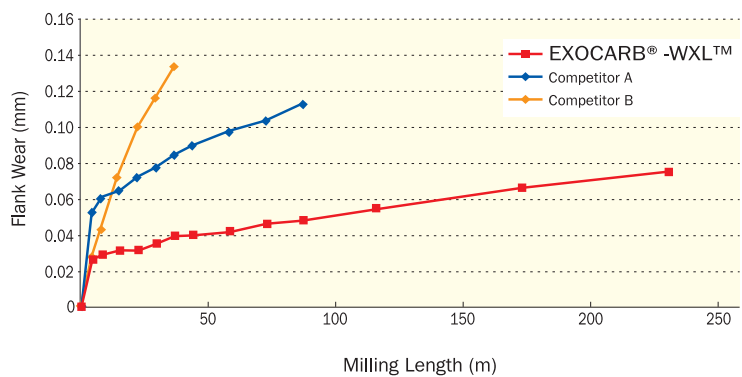
After Pocket Milling



Wet Milling

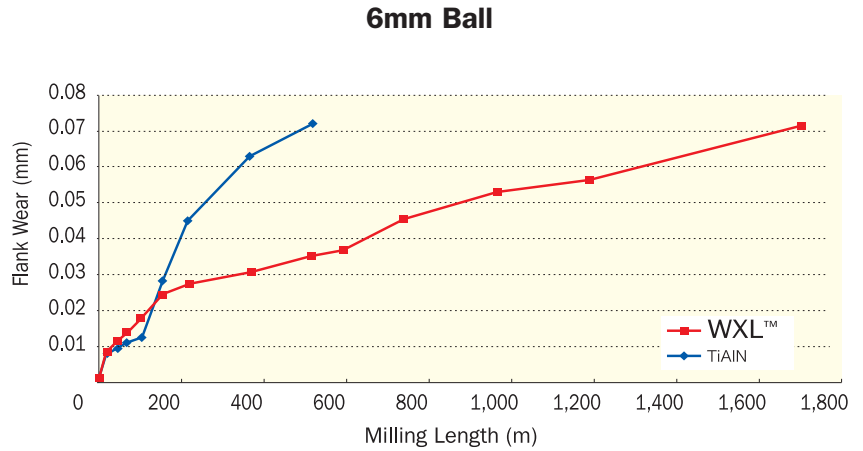
Tool:	EXOCARB®-WXL™ 6mm
Material:	1050
Milling Speed:	10,600 RPM
Feed:	101 IPM
Milling Method:	Pick Milling
Milling Depth:	$a_a=.011"$; $a_r=.024"$
Coolant:	Water Soluble
Machine:	Vertical Machining Center

6mm Ball

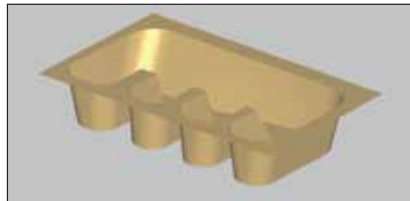
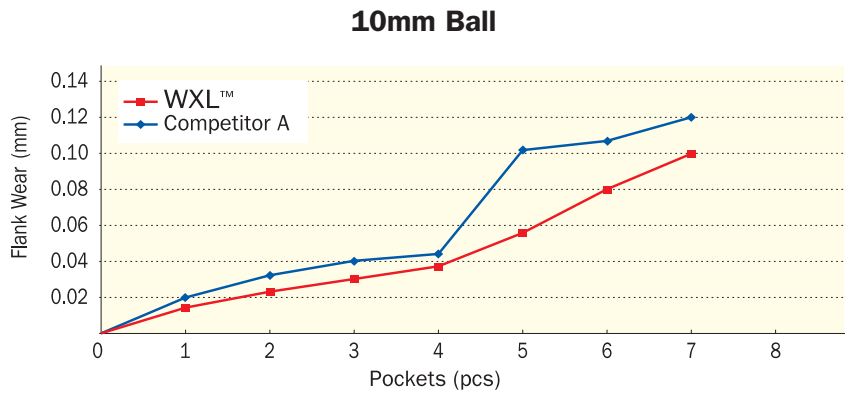


The WXL™ series handles a wide range of materials! Aside from hardened steels, WXL™ yields 3 times greater wear resistance in non-ferrous materials like copper, versus TiAIN.

EXOCARB®-WXL™ Performance:	
Tool:	EXOCARB®-WXL™ 6mm
Material:	C11000 Copper Alloy
Milling Speed:	13,000 RPM
Feed:	155 IPM
Milling Method:	Pick Milling
Milling Depth:	$a_a=.011"$; $a_r=.024"$
Coolant:	Water-Soluble
Machine:	Vertical Machining Center



EXOCARB®-WXL™ Performance:	
Tool:	EXOCARB®-WXL™ 10mm
Material:	H13 (48HRC)
Milling Speed:	5,700 RPM
Feed:	54 IPM
Milling Method:	Model Milling
Milling Depth:	$a_a=0.1D$; $a_r=0.2D$
Projection Length:	5D
Coolant:	Air Blow
Machine:	Horizontal Machining Center



Pocket Taper Angle:	3°
Pocket Corner Radius:	6mm
Pocket Size:	86.25 x 48.75mm
Pocket Depth:	16mm

EXOCARB® - WXL™

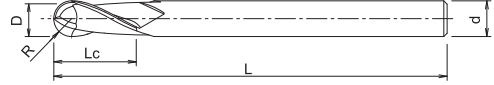
List 3610

NEW!



Ball End, Regular Length, 2 Flute

Tolerance for milling diameter
 $R \leq 1/4 \pm 0.0002''$
 $R > 1/4 \pm 0.0004''$



EDP Number	Mill Dia.	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	L	Lc	d	
36100111	1/32	2-1/2	1/32	1/4	36.34
36100211	1/16	2-1/2	1/16	1/4	40.34
36100311	3/32	2-1/2	3/32	1/4	45.42
36100411	1/8	3	1/8	1/4	36.19
36100511	3/16	3	3/16	1/4	40.96

EDP Number	Mill Dia.	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	L	Lc	d	
36100611	1/4	3	1/4	1/4	43.74
36100711	5/16	4	5/16	5/16	64.51
36100811	3/8	4	3/8	3/8	82.71
36100911	1/2	4	1/2	1/2	106.55

Packed: 1 pc. Available WXL™ coating only.

List 3710

NEW!



Ball End, Regular Length, 2 Flute

Tolerance for milling diameter
 $R \leq 6 \pm 0.005''$
 $R > 6 \pm 0.010''$



EDP Number	Mill Dia.	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	L	Lc	d	
3105010	0.1	40	0.2	4	73.79
3105020	0.2	40	0.4	4	51.91
3105030	0.3	40	0.6	4	42.46
3105040	0.4	40	0.8	4	40.35
3105050	0.5	40	1.1	4	38.03
3105060	0.6	40	1.1	4	38.03
3105080	0.8	40	2.0	4	36.33
3105100	1.0	50	1.5	4	34.50
3106100	1.0	60	2.5	6	34.50
3105120	1.2	50	3.0	4	40.35
3105140	1.4	50	3.5	4	40.35
3105150	1.5	50	2.0	4	47.40
3105151	1.5	50	4.0	6	40.35
3105160	1.6	50	4.0	4	40.35
3105200	2.0	50	3.0	4	30.34
3106200	2.0	50	5.0	6	30.34
3105250	2.5	50	3.0	4	45.42
3106250	2.5	60	6.0	6	45.42
3105300	3.0	60	4.5	4	36.18
3106301	3.0	60	8.0	6	36.18

EDP Number	Mill Dia.	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	L	Lc	d	
3106350	3.5	70	8.0	6	52.97
3106400	4.0	70	6.0	6	40.15
3105400	4.0	70	8.0	4	35.11
3106500	5.0	80	8.0	6	40.95
3106502	5.0	80	12.0	6	44.47
3106600	6.0	90	10.0	6	43.73
3106601	6.0	90	12.0	6	49.82
3106610	7.0	90	14.0	6	80.35
3106620	8.0	100	12.0	8	64.52
3106621	8.0	100	14.0	8	73.93
3106630	9.0	100	18.0	8	111.64
3106640	10.0	100	15.0	8	86.16
3106641	10.0	100	18.0	10	82.18
3106650	11.0	100	22.0	10	146.28
3106660	12.0	110	18.0	12	106.54
3106661	12.0	110	22.0	12	129.96
3106670	14.0	110	26.0	12	298.09
3106680	16.0	140	30.0	16	389.24
3106690	18.0	140	34.0	16	486.55
3106700	20.0	160	38.0	20	607.27

Packed: 1 pc. Available WXL™ coating only.

The prices listed in this flyer are in US Dollars and are good only in the United States. OSG reserves the right to change prices at any time without prior notice.



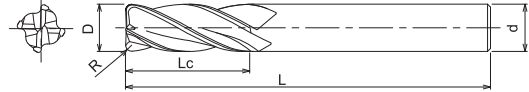
EXOCARB® -WXL™

List 3670 **NEW!**

Regular Length, 4 Flute, Corner Radius



Tolerance for milling diameter
 R<1/2 0~-0.0008"
 1/2 D 0~-0.0012"



EDP Number	Mill Dia.	Corner Radius	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	R	L	Lc	d	
36700111	1/16	0.010	1-1/2	3/16	1/8	30.24
36700211	5/64	0.010	1-1/2	1/4	1/8	30.24
36700311	3/32	0.010	1-1/2	3/8	1/8	30.24
36700411	7/64	0.010	1-1/2	3/8	1/8	30.24
36700511	1/8	0.010	1-1/2	1/2	1/8	30.24
36700611	1/8	0.020	1-1/2	1/2	1/8	30.24
36700711	1/8	0.030	1-1/2	1/2	1/8	30.24
36700811	5/32	0.020	2	9/16	3/16	45.08
36700911	5/32	0.030	2	9/16	3/16	45.08
36701011	3/16	0.020	2	5/8	3/16	45.08
36701111	3/16	0.030	2	5/8	3/16	45.08
36701211	7/32	0.020	2-1/2	5/8	1/4	57.30
36701311	7/32	0.030	2-1/2	5/8	1/4	57.30
36701411	1/4	0.020	2-1/2	3/4	1/4	51.80
36701511	1/4	0.030	2-1/2	3/4	1/4	51.80

EDP Number	Mill Dia.	Corner Radius	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	R	L	Lc	d	
36701611	1/4	0.045	2-1/2	3/4	1/4	51.80
36701711	1/4	0.060	2-1/2	3/4	1/4	51.80
36701811	5/16	0.020	2-1/2	13/16	5/16	27.51
36701911	5/16	0.030	2-1/2	13/16	5/16	27.51
36702011	3/8	0.020	2-1/2	1	3/8	90.36
36702111	3/8	0.030	2-1/2	1	3/8	90.36
36702211	3/8	0.045	2-1/2	1	3/8	90.36
36702311	3/8	0.060	2-1/2	1	3/8	90.36
36702411	7/16	0.020	2-3/4	1	7/16	103.15
36702511	7/16	0.030	2-3/4	1	7/16	103.15
36702611	1/2	0.020	3	1	1/2	116.80
36702711	1/2	0.030	3	1	1/2	116.80
36702811	1/2	0.045	3	1	1/2	116.80
36702911	1/2	0.060	3	1	1/2	116.80

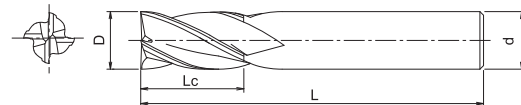
Packed: 1 pc. Available WXL™ coating only.

List 3604 **NEW!**

Regular Length, 4 Flute



Tolerance for milling diameter
 R<1/2 0~-0.0008"
 1/2 D 0~-0.0012"



EDP Number	Mill Dia.	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	L	Lc	d	
36040111	1/16	1-1/2	3/16	1/8	16.66
36040211	5/64	1-1/2	1/4	1/8	16.66
36040311	3/32	1-1/2	3/8	1/8	16.66
36040411	7/64	1-1/2	3/8	1/8	16.66
36040511	1/8	1-1/2	1/2	1/8	16.66
36040611	5/32	2	9/16	3/16	24.86
36040711	3/16	2	5/8	3/16	24.86
36040811	7/32	2-1/2	5/8	1/4	31.60

EDP Number	Mill Dia.	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	L	Lc	d	
36040911	1/4	2-1/2	3/4	1/4	33.18
36041011	9/32	2-1/2	3/4	5/16	39.79
36041111	5/16	2-1/2	13/16	5/16	41.53
36041211	3/8	2-1/2	1	3/8	49.82
36041311	7/16	2-3/4	1	7/16	66.36
36041411	1/2	3	1	1/2	83.02
36041511	5/8	3-1/2	1-1/4	5/8	162.06
36041611	3/4	4	1-1/2	3/4	278.14

Packed: 1 pc. Available WXL™ coating only.

The prices listed in this flyer are in US Dollars and are good only in the United States. OSG reserves the right to change prices at any time without prior notice.

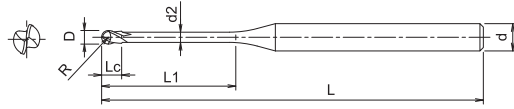


List 3790 NEW!

Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing



±0.005 Radius Tolerance



EDP Number	Mill Dia. D	OAL L	Length of Cut Lc	Neck Dia. d2	Neck Length L1	Shank Dia. d	List Price (Each)
3110103	0.1	45	0.1	0.085	0.3	4	94.78
3110105	0.1	45	0.1	0.085	0.5	4	102.86
3110203	0.2	45	0.2	0.18	0.3	4	79.77
3110205	0.2	45	0.2	0.18	0.5	4	79.77
3110210	0.2	45	0.2	0.18	1	4	78.98
3110215	0.2	45	0.2	0.18	1.5	4	85.91
3110310	0.3	45	0.2	0.28	1	4	78.98
3110315	0.3	45	0.2	0.28	1.5	4	78.98
3110320	0.3	45	0.2	0.28	2	4	85.91
3110410	0.4	45	0.3	0.37	1	4	52.66
3110415	0.4	45	0.3	0.37	1.5	4	52.66
3110420	0.4	45	0.3	0.37	2	4	57.28
3110425	0.4	45	0.3	0.37	2.5	4	57.28
3110430	0.4	45	0.3	0.37	3	4	63.74
3110520	0.5	45	0.4	0.45	2	4	52.66
3110530	0.5	45	0.4	0.45	3	4	52.66
3110540	0.5	45	0.4	0.45	4	4	52.66
3110550	0.5	45	0.4	0.45	5	4	52.66
3110560	0.5	45	0.4	0.45	6	4	57.28
3110580	0.5	45	0.4	0.45	8	4	66.52
3110620	0.6	45	0.5	0.55	2	4	40.95
3110630	0.6	45	0.5	0.55	3	4	40.95
3110640	0.6	45	0.5	0.55	4	4	44.34
3110650	0.6	45	0.5	0.55	5	4	44.34
3110660	0.6	45	0.5	0.55	6	4	44.34
3110680	0.6	45	0.5	0.55	8	4	58.20
3110820	0.8	45	0.6	0.75	2	4	40.95
3110840	0.8	45	0.6	0.75	4	4	44.34
3110850	0.8	45	0.6	0.75	5	4	44.34
3110860	0.8	45	0.6	0.75	6	4	44.34
3110870	0.8	45	0.6	0.75	7	4	44.34
3110880	0.8	45	0.6	0.75	8	4	44.34
3110900	0.8	45	0.6	0.75	10	4	58.20
3111030	1.0	45	0.8	0.95	3	4	35.11
3111040	1.0	45	0.8	0.95	4	4	39.11
3111050	1.0	45	0.8	0.95	5	4	39.11
3111060	1.0	45	0.8	0.95	6	4	42.65
3111070	1.0	45	0.8	0.95	7	4	42.65
3111080	1.0	45	0.8	0.95	8	4	42.65
3111090	1.0	45	0.8	0.95	9	4	42.65
3111100	1.0	45	0.8	0.95	10	4	42.65
3111112	1.0	45	0.8	0.95	12	4	42.65
3111114	1.0	50	0.8	0.95	14	4	42.66
3111116	1.0	50	0.8	0.95	16	4	58.20

EDP Number	Mill Dia. D	OAL L	Length of Cut Lc	Neck Dia. d2	Neck Length L1	Shank Dia. d	List Price (Each)
3111120	1.0	55	0.8	0.95	20	4	70.69
3111260	1.2	45	1.0	1.15	6	4	49.12
3111280	1.2	45	1.0	1.15	8	4	49.12
3111300	1.2	45	1.0	1.15	10	4	49.12
3111312	1.2	45	1.0	1.15	12	4	49.12
3111480	1.4	45	1.1	1.35	8	4	49.12
3111512	1.4	45	1.1	1.35	12	4	49.12
3111516	1.4	50	1.1	1.35	16	4	49.12
3111580	1.5	45	1.2	1.45	8	4	42.65
3111612	1.5	45	1.2	1.45	12	4	49.12
3111616	1.5	55	1.2	1.45	16	4	49.12
3111620	1.5	55	1.2	1.45	20	4	49.12
3111680	1.6	45	1.3	1.55	8	4	49.12
3111712	1.6	45	1.3	1.55	12	4	49.12
3111716	1.6	50	1.3	1.55	16	4	49.12
3111720	1.6	55	1.3	1.55	20	4	49.12
3111880	1.8	45	1.4	1.75	8	4	49.12
3111912	1.8	45	1.4	1.75	12	4	49.12
3111916	1.8	50	1.4	1.75	16	4	49.12
3111920	1.8	55	1.4	1.75	20	4	49.12
3112040	2.0	45	1.6	1.95	4	4	35.11
3112060	2.0	45	1.6	1.95	6	4	39.11
3112080	2.0	45	1.6	1.95	8	4	42.65
3112100	2.0	45	1.6	1.95	10	4	42.65
3112112	2.0	45	1.6	1.95	12	4	42.65
3112114	2.0	50	1.6	1.95	14	4	42.66
3112116	2.0	50	1.6	1.95	16	4	42.65
3112118	2.0	55	1.6	1.95	18	4	42.66
3112120	2.0	55	1.6	1.95	20	4	42.65
3112122	2.0	60	1.6	1.95	22	4	58.20
3112125	2.0	65	1.6	1.95	25	4	58.20
3112130	2.0	70	1.6	1.95	30	4	67.28
3112135	2.0	75	1.6	1.95	35	4	76.48
3112140	2.0	80	1.6	1.95	40	4	83.52
3112560	2.5	45	2.0	2.45	6	4	49.12
3112600	2.5	50	2.0	2.45	10	4	49.12
3112615	2.5	55	2.0	2.45	15	4	51.23
3112620	2.5	60	2.0	2.45	20	4	55.38
3112625	2.5	65	2.0	2.45	25	4	59.42
3112630	2.5	70	2.0	2.45	30	4	59.42
3112635	2.5	70	2.0	2.45	35	4	67.15
3123080	3.0	50	2.4	2.85	8	6	42.65
3123100	3.0	50	2.4	2.85	10	6	49.12
3123112	3.0	55	2.4	2.85	12	6	49.12

Packed: 1 pc. Available WXL™ coating only.

The prices listed in this flyer are in US Dollars and are good only in the United States. OSG reserves the right to change prices at any time without prior notice.



List 3790

EDP Number	Mill Dia.	OAL	Length of Cut	Neck Dia.	Neck Length	Shank Dia.	List Price (Each)
	D	L	Lc	d2	L1	d	
3123114	3	55	2.4	2.85	14	6	49.12
3123116	3	55	2.4	2.85	16	6	56.67
3123120	3	60	2.4	2.85	20	6	56.67
3123125	3	65	2.4	2.85	25	6	56.67
3123130	3	70	2.4	2.85	30	6	61.44
3123135	3	80	2.4	2.85	35	6	79.77
3123140	3	85	2.4	2.85	40	6	85.70
3123600	3.5	60	2.8	3.35	10	6	49.12
3123615	3.5	60	2.8	3.35	15	6	49.12
3123620	3.5	65	2.8	3.35	20	6	55.38
3123625	3.5	65	2.8	3.35	25	6	55.38
3123630	3.5	70	2.8	3.35	30	6	59.43
3123635	3.5	80	2.8	3.35	35	6	71.02
3123640	3.5	90	2.8	3.35	40	6	79.11
3123645	3.5	90	2.8	3.35	45	6	86.87
3124080	4	60	3.2	3.85	8	6	42.65
3124100	4	60	3.2	3.85	10	6	42.65

EDP Number	Mill Dia.	OAL	Length of Cut	Neck Dia.	Neck Length	Shank Dia.	List Price (Each)
	D	L	Lc	d2	L1	d	
3124112	4	60	3.2	3.85	12	6	47.04
3124114	4	60	3.2	3.85	14	6	51.32
3124116	4	60	3.2	3.85	16	6	56.67
3124120	4	65	3.2	3.85	20	6	56.67
3124125	4	70	3.2	3.85	25	6	56.67
3124130	4	80	3.2	3.85	30	6	56.67
3124135	4	80	3.2	3.85	35	6	63.13
3124140	4	90	3.2	3.85	40	6	70.21
3124145	4	90	3.2	3.85	45	6	90.09
3124150	4	100	3.2	3.85	50	6	96.99
3125120	5	70	4.0	4.85	20	6	90.09
3125125	5	70	4.0	4.85	25	6	90.09
3125130	5	80	4.0	4.85	30	6	96.99
3125135	5	80	4.0	4.85	35	6	96.99
3126130	6	80	4.8	5.85	30	6	69.29
3126140	6	90	4.8	5.85	40	6	76.58
3126150	6	120	4.8	5.85	50	6	83.15

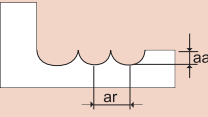
Packed: 1 pc. Available WXL™ coating only.



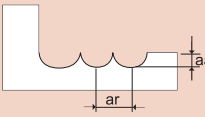
The prices listed in this flyer are in US Dollars and are good only in the United States. OSG reserves the right to change prices at any time without prior notice.

List 3610

Standard Milling

Hardness	Up to 32 HRC			33 to 41 HRC		42 to 50 HRC		
Work Material	Aluminum Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels		Hardened Steels Prehardened Steels, P20, H13, S7, A2			
Cutting Speed	388 SFM		324 SFM		263 SFM		233 SFM	
Depth of Cut	Dia		aa		ar			
	D<1/16		0.05D		0.2D			
	1/16≤D≤1/2		0.1D		0.2D		$a_a=0.1D$ $a_r=0.2D$	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/32	40,000	26.0	32,000	18.4	31,500	16.5	27,650	11.4
1/16	23,500	29.5	21,000	24.4	16,800	15.7	14,800	11.3
3/32	16,500	29.7	13,600	24.6	10,050	15.8	9,625	11.4
1/8	12,000	29.9	10,050	24.8	8,100	16.2	7,075	12.0
3/16	8,300	30.5	6,925	25.4	5,550	17.8	4,850	14.8
1/4	6,000	32.5	5,050	27.2	4,025	18.9	3,550	15.8
5/16	4,800	37.2	4,000	31.0	3,175	21.7	2,780	17.8
3/8	4,025	35.6	3,300	29.8	2,650	21.1	2,330	17.2
1/2	3,025	32.3	2,500	26.4	2,010	18.5	1,770	16.2

High Speed Light Milling

Hardness	Up to 32 HRC			33 to 41 HRC		42 to 50 HRC		
Work Material	Copper Copper Alloy		Mild Steels, Carbon Steels FC250		Hardened Steels Prehardened Steels, SKT, SKD61, NAK80, HPM1, DH			
Cutting Speed	659 SFM		713 SFM		651 SFM		561 SFM	
Depth of Cut	$a_a=0.02D$ $pf=0.05D$		Dia		aa		ar	
			D≤3/16		0.02D		0.05D	
			1/4≤D≤3/8		0.05D		0.1D	
			D=1/2		0.4D		0.2D	
							$a_a=0.02D$ $a_r=0.05D$	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/16	37,850	131.9	33,580	110.2	33,250	98.4	31,750	88.6
3/32	27,500	131.9	21,750	110.2	21,250	98.4	20,450	88.6
1/8	20,050	136.9	16,325	114.4	15,825	100.1	15,150	90.0
3/16	13,600	176.8	14,750	147.4	13,675	108.3	11,975	93.5
1/4	10,050	194.1	12,900	161.7	11,050	103.8	9,090	84.8
5/16	7,975	152.8	10,100	127.4	9,030	629.4	7,320	67.6
3/8	6,680	129.6	8,670	108.0	7,580	70.7	6,050	56.4
1/2	5,200	94.5	6,370	78.8	5,690	52.7	4,540	41.4



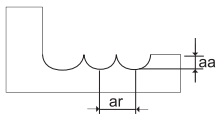
List 3710

Standard Milling

Hardness					Up to 32 HRC				33 to 41 HRC				42 to 50 HRC			
Work Material	Aluminum Copper Alloy				Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels				Hardened Steels Prehardened Steels, P20, H13, S7, A2							
Cutting Speed	388 SFM				324 SFM				263 SFM				233 SFM			
Mill Dia.	Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut	
			aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)
0.1	40,000	150	0.003	0.005	32,000	75	0.005	0.005	32,000	50	0.005	0.005	32,000	35	0.005	0.005
0.2	40,000	300	0.01	0.02	32,000	200	0.01	0.01	32,000	200	0.01	0.01	32,000	200	0.005	0.005
0.4	40,000	490	0.02	0.08	32,000	410	0.02	0.08	32,000	330	0.04	0.08	32,000	205	0.02	0.04
0.6	40,000	580	0.03	0.12	32,000	490	0.03	0.12	32,000	420	0.06	0.12	32,000	265	0.03	0.06
0.8	40,000	660	0.04	0.16	32,000	550	0.04	0.16	31,500	420	0.08	0.16	27,500	290	0.04	0.08
1	32,000	750	0.05	0.2	31,500	620	0.05	0.2	25,000	400	0.1	0.2	22,000	285	0.05	0.1
2	19,000	750	0.2	0.4	15,500	620	0.2	0.4	12,500	400	0.2	0.4	11,000	290	0.1	0.2
3	12,500	760	0.3	0.6	10,500	630	0.3	0.6	8,450	405	0.3	0.6	7,400	290	0.15	0.3
4	9,500	760	0.4	0.8	7,950	630	0.4	0.8	6,350	445	0.4	0.8	5,500	370	0.2	0.4
6	6,300	800	0.6	1.2	5,300	670	0.6	1.2	4,200	465	0.6	1.2	3,700	390	0.3	0.6
8	4,750	950	0.8	1.6	3,950	790	0.8	1.6	3,150	555	0.8	1.6	2,750	455	0.4	0.8
10	3,800	890	1.0	2.0	3,150	745	1.0	2.0	2,500	525	1.0	2.0	2,200	430	0.5	1.0
12	3,170	840	1.2	2.4	2,650	700	1.2	2.4	2,100	490	1.2	2.4	1,850	430	0.6	1.2
16	2,400	630	1.6	3.2	1,990	525	1.6	3.2	1,580	370	1.6	3.2	1,390	325	0.8	1.6
20	1,900	500	2.0	4.0	1,590	420	2.0	4.0	1,260	290	2.0	4.0	1,110	260	1.0	2.0

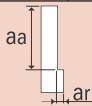
High Speed Light Milling

Hardness					Up to 32 HRC				33 to 41 HRC				42 to 50 HRC			
Work Material	Aluminum Copper Alloy				Cast Iron, Carbon Steel FC250, SS400, S55C				Hardened Steels Prehardened Steels, SKT, SKD61, NAK80, HPM1. DH							
Cutting Speed	388 SFM				324 SFM				263 SFM				233 SFM			
Mill Dia.	Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut	
			aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)
1	50,000	3,350	0.02	0.05	50,000	2,800	0.02	0.05	50,000	2,500	0.02	0.05	47,500	2,250	0.02	0.05
2	31,500	3,350	0.04	0.1	25,000	2,800	0.04	0.1	24,500	2,500	0.04	0.1	23,500	2,250	0.04	0.1
3	21,000	3,350	0.06	0.15	16,500	2,800	0.06	0.15	16,000	2,500	0.06	0.15	15,500	2,250	0.06	0.15
4	15,500	4,080	0.08	0.2	15,500	3,400	0.08	0.2	15,000	2,750	0.08	0.2	13,500	2,450	0.08	0.2
6	10,500	5,160	0.12	0.3	13,500	4,300	0.3	0.6	11,500	2,750	0.3	0.6	9,500	2,250	0.12	0.3
8	7,900	3,840	0.16	0.4	10,000	3,200	0.4	0.8	8,950	2,100	0.4	0.8	7,150	1,700	0.16	0.4
10	6,300	3,120	0.2	0.5	8,250	2,600	0.5	1.0	7,150	1,700	0.5	1.0	5,700	1,350	0.2	0.5
12	5,250	2,580	0.24	0.6	6,850	2,150	0.5	2.4	5,950	1,400	0.5	2.4	4,750	1,100	0.24	0.6
16	4,950	1,550	0.32	0.8	4,110	1,290	0.5	3.2	4,460	1,050	0.5	3.2	3,560	820	0.32	0.8
20	3,950	1,240	0.4	1.0	3,290	1,030	0.5	4.0	3,570	840	0.5	4.0	2,850	660	0.32	1.0



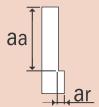
List 3670

Side Milling

Hardness	Tensile Strength: Up to 750N/mm ²		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Prehardened Steels		Hardened Steels Prehardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	396 SFM		294 SFM		258 SFM		192 SFM		156 SFM		96 SFM	
Depth of Cut	$a_a=1.2D$ $a_r=0.2D$ 						$a_a=1D$ $a_r=0.1D$		$a_a=1D$ $a_r=0.05D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/16	24,000	36.0	18,000	33.6	15,600	18.0	12,000	3.6	9,600	3.6	6,000	1.2
5/64	19,200	37.2	14,400	36.0	12,480	19.2	9,600	3.6	7,680	3.6	4,800	1.2
3/32	16,080	39.6	12,000	37.2	10,380	21.6	7,980	3.6	6,420	3.6	4,020	1.2
7/64	13,740	40.8	10,320	37.2	8,940	21.6	6,900	4.8	5,520	4.8	3,480	1.2
1/8	12,000	42.0	9,000	38.4	7,800	21.6	6,000	4.8	4,800	4.8	3,000	2.4
5/32	9,600	43.2	7,200	39.6	6,240	24.0	4,800	6.0	3,840	4.8	2,400	2.4
3/16	8,040	44.4	6,000	40.8	5,220	25.2	4,020	6.0	3,180	4.8	1,980	3.6
7/32	6,900	44.4	5,160	42.0	4,440	19.2	3,420	6.0	2,760	4.8	1,740	3.6
1/4	6,000	38.4	4,500	38.4	3,900	12.0	3,000	7.2	2,400	6.0	1,500	3.6
5/16	4,800	34.8	3,600	33.6	3,120	20.4	2,400	7.2	1,920	6.0	1,200	3.6
3/8	4,020	34.8	3,000	31.2	2,640	14.4	1,980	7.2	1,620	6.0	1,020	3.6
7/16	3,480	33.6	2,580	28.8	2,280	13.2	1,740	7.2	1,380	6.0	840	3.6
1/2	3,000	32.0	2,280	28.8	1,980	13.0	1,500	7.2	1,200	6.0	750	3.6

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High-Speed Light Milling

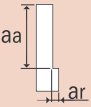
Hardness	Bhn up to 226 HRC up to 20		Bhn 226 to 286 HRC 20 to 30		Bhn 286 to 353 HRC 30 to 38		Bhn 353 to 421 HRC 38 to 45		Bhn 421- HRC 45 to 55																						
Work Material	Carbon Steels 1045, 1055		Alloy Steels 4140, 4340		Hardened Steels Prehardened Steels D2, H13, 17-4PH		Tool Steels Hardened Steels Prehardened Steels D2, H13		Hardened Steels Heat Resistant Steels																						
Cutting Speed	1,560 SFM		1,380 SFM		960 SFM		600 SFM		130 SFM																						
Depth of Cut	a_a 						<table border="1"> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> <tr><td>$D < 1/8$</td><td>1.5D</td><td>0.05D</td></tr> <tr><td>$1/8 \leq D$</td><td>1.5D</td><td>0.02D</td></tr> <tr><td>$5/8 < D$</td><td>1.5D</td><td>0.05D</td></tr> </table>		Dia	a_a	a_r	$D < 1/8$	1.5D	0.05D	$1/8 \leq D$	1.5D	0.02D	$5/8 < D$	1.5D	0.05D	<table border="1"> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> <tr><td>$D \leq 1/16$</td><td>1.0D</td><td>0.01D</td></tr> <tr><td>$5/16 < D$</td><td>1.0D</td><td>0.02D</td></tr> </table>		Dia	a_a	a_r	$D \leq 1/16$	1.0D	0.01D	$5/16 < D$	1.0D	0.02D
Dia	a_a	a_r																													
$D < 1/8$	1.5D	0.05D																													
$1/8 \leq D$	1.5D	0.02D																													
$5/8 < D$	1.5D	0.05D																													
Dia	a_a	a_r																													
$D \leq 1/16$	1.0D	0.01D																													
$5/16 < D$	1.0D	0.02D																													
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																					
1/4	24,000	110	21,000	96	14,760	67	9,000	36	4,800	19																					
9/32	20,400	114	18,000	98	13,200	68	7,920	37	4,200	19																					
5/16	18,840	118	16,320	100	12,000	70	7,200	38	3,840	20																					
3/8	15,600	122	13,800	103	9,960	72	6,000	44	3,120	20																					
7/16	13,200	115	12,000	100	8,640	68	5,160	40	2,760	19																					
1/2	11,880	109	10,440	94	7,440	65	4,440	35	2,400	18																					

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using Air Blow. When using cutting fluids, use a high-quality fluid with high smoke retardant.

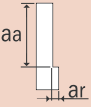


List 3604

Side Milling

Hardness					Up to 32 HRC	33 to 41 HRC	42 to 50 HRC			
Work Material	Aluminum Copper Alloy				Mild Steel Carbon Steel	Hardened Steels Prehardened Steels				
Cutting Speed	974 SFM				250 SFM	172 SFM		153 SFM		
Depth of Cut	Dia	aa	ar						$a_a=1.0D$ $a_r=0.02D$	
	D<7/64	1.5D	0.05D							
	7/64≤D	1.5D	0.1D							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min		
1/16	50,000	40	14,000	12.0	8,200	4.4	7,400	4.0		
5/64	47,500	43	12,000	12.0	7,000	4.5	6,350	3.9		
3/32	42,750	58	10,800	15.0	6,600	4.9	5,950	4.4		
7/64	35,000	68	8,900	18.0	5,750	5.2	5,150	4.6		
1/8	28,000	65	7,000	18.0	4,800	5.1	4,200	4.4		
5/32	25,000	66	6,050	18.0	4,250	5.3	3,700	4.5		
3/16	21,500	74	5,500	21.0	3,900	5.4	3,425	4.7		
7/32	17,500	78	4,100	20.5	2,950	5.7	2,650	5.1		
1/4	14,000	75	3,800	20.5	2,600	5.7	2,300	5.1		
9/32	12,500	75	3,400	20.0	2,400	5.7	2,100	5.1		
5/16	12,000	75	3,050	20.0	2,200	5.7	1,950	5.1		
3/8	10,100	75	2,750	20.0	1,975	5.7	1,750	5.1		
7/16	8,700	75	2,250	20.0	1,600	5.7	1,425	5.1		
1/2	7,400	75	1,900	19.5	1,350	5.7	1,200	5.0		
5/8	6,000	70	1,500	18.5	1,100	5.1	995	4.5		
3/4	5,000	68	1,275	18.0	950	4.3	850	3.9		

High Speed Light Milling

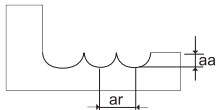
Hardness					Up to 32 HRC	33 to 41 HRC	42 to 50 HRC				
Work Material	Aluminum Copper Alloy				Mild Steel Carbon Steel	Hardened Steels Prehardened Steels					
Cutting Speed	1,627 SFM				1,231 SFM	803 SFM		482 SFM			
Depth of Cut	Dia	aa	ar						Dia	aa	ar
	D<5/16	1.5D	0.01D						D<5/16	1.0D	0.01D
	5/16≤D	1.5D	0.02D						5/16≤D	1.0D	0.02D
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min			
7/32	26,000	114	20,000	90	13,000	59	7,950	31			
1/4	22,500	116	19,000	90	11,500	58	7,000	30			
9/32	24,000	116	17,500	90	10,500	57	6,250	30			
5/16	19,500	118	14,500	90	9,900	57	5,950	30			
3/8	17,500	116	13,250	90	8,900	57	5,350	30			
7/16	14,250	116	10,950	90	7,275	57	4,350	30			
1/2	12,000	114	9,200	88	6,125	55	3,675	30			
5/8	9,700	106	7,450	82	4,950	53	2,950	28			
3/4	9,150	104	6,275	80	4,175	51	2,500	26			



List 3790

Standard Milling

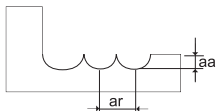
Hardness		Up to 32 HRC						33 to 41 HRC				42 to 50 HRC					
Work Material		Aluminum Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels						Hardened Steels Prehardened Steels, P20, H13, S7, A2							
Cutting Speed		388 SFM				324 SFM				263 SFM				233 SFM			
Mill Dia.	L1	Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut	
				aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)
0.1	0.3	32,000	5.9	0.0002	0.0002	32,000	3.0	0.0002	0.0002	32,000	2.0	0.0002	0.0002	32,000	1.4	0.0002	0.0002
	0.5	32,000	4.7	0.0002	0.0002	32,000	2.4	0.0002	0.0002	32,000	1.6	0.0002	0.0002	32,000	1.0	0.0002	0.0002
0.2	0.3	32,000	11.8	0.00079	0.00079	32,000	7.9	0.00039	0.00039	32,000	7.9	0.00039	0.00039	32,000	7.9	0.0002	0.0002
	0.5	32,000	11.8	0.00079	0.00079	32,000	7.9	0.00039	0.00039	32,000	7.9	0.00039	0.00039	32,000	7.9	0.0002	0.0002
	0.75	32,000	11.8	0.00079	0.00079	32,000	7.9	0.00039	0.00039	32,000	7.9	0.00039	0.00039	32,000	3.9	0.0002	0.0002
	1.0	32,000	5.9	0.00079	0.00079	32,000	3.9	0.00039	0.00039	32,000	3.9	0.00039	0.00039	32,000	3.1	0.0002	0.0002
	1.25	32,000	5.9	0.00079	0.00079	32,000	3.9	0.00039	0.00039	32,000	3.9	0.00039	0.00039	32,000	3.1	0.0002	0.0002
	1.5	32,000	5.9	0.00079	0.00079	32,000	3.9	0.00039	0.00039	32,000	3.9	0.00039	0.00039	32,000	3.1	0.0002	0.0002
	1.75	32,000	5.9	0.00079	0.00079	32,000	3.9	0.00039	0.00039	32,000	3.9	0.00039	0.00039	32,000	3.1	0.0002	0.0002
	2.0	32,000	5.9	0.00039	0.00039	32,000	3.9	0.00002	0.00002	32,000	3.9	0.00002	0.00002	32,000	3.1	0.0002	0.0002
	2.5	32,000	3.0	0.00039	0.00039	32,000	2.0	0.00002	0.00002	32,000	2.0	0.00002	0.00002	32,000	1.6	0.00012	0.0002
3.0	32,000	3.0	0.00039	0.00039	32,000	2.0	0.00002	0.00002	32,000	2.0	0.00002	0.00002	32,000	1.6	0.00012	0.0002	
0.3	0.5	32,000	23.6	0.00079	0.0012	32,000	15.7	0.00039	0.00059	32,000	11.8	0.00039	0.00059	32,000	11.8	0.0002	0.0002
	0.6	32,000	23.6	0.00079	0.0012	32,000	15.7	0.00039	0.00059	32,000	11.8	0.00039	0.00059	32,000	11.8	0.0002	0.0002
	0.75	32,000	23.6	0.00079	0.0012	32,000	15.7	0.00039	0.00059	32,000	11.8	0.00039	0.00059	32,000	11.8	0.0002	0.0002
	1.0	32,000	17.7	0.00079	0.0012	32,000	11.8	0.00039	0.00059	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
	1.25	32,000	17.7	0.00079	0.0012	32,000	11.8	0.00039	0.00059	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
	1.5	32,000	17.7	0.00079	0.0012	32,000	11.8	0.00039	0.00059	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
	1.75	32,000	17.7	0.00079	0.0012	32,000	11.8	0.00039	0.00059	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
	2.0	32,000	17.7	0.00079	0.0012	32,000	11.8	0.00039	0.00059	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
	2.25	32,000	17.7	0.00079	0.00079	32,000	11.8	0.00039	0.00039	32,000	7.9	0.00039	0.00039	32,000	7.9	0.00039	0.00039
	2.5	32,000	17.7	0.00079	0.00079	32,000	11.8	0.00039	0.00039	32,000	7.9	0.00039	0.00039	32,000	7.9	0.00039	0.00039
	2.75	32,000	17.7	0.00079	0.00079	32,000	11.8	0.00039	0.00039	32,000	7.9	0.00039	0.00039	32,000	7.9	0.00039	0.00039
	3.0	32,000	17.7	0.00079	0.00079	32,000	11.8	0.00039	0.00039	32,000	7.9	0.00039	0.00039	32,000	7.9	0.0002	0.00039
3.5	32,000	10.6	0.00079	0.00079	32,000	7.1	0.00039	0.00039	32,000	4.7	0.00039	0.00039	32,000	4.7	0.0002	0.00039	
4.0	32,000	10.6	0.00079	0.00079	32,000	7.1	0.00039	0.00039	32,000	4.7	0.00039	0.00039	32,000	4.7	0.0002	0.0002	
4.5	32,000	10.6	0.00079	0.00079	32,000	7.1	0.00039	0.00039	32,000	4.7	0.00039	0.00039	32,000	4.7	0.00012	0.0002	
5.0	32,000	5.9	0.00039	0.00079	32,000	3.9	0.00002	0.00039	32,000	2.8	0.00002	0.00039	32,000	2.8	0.00012	0.0002	
0.4	0.5	32,000	29.5	0.00098	0.002	32,000	19.7	0.00059	0.00098	32,000	15.7	0.00059	0.00079	32,000	15.7	0.00039	0.00039
	0.75	32,000	29.5	0.00098	0.002	32,000	19.7	0.00059	0.00098	32,000	15.7	0.00059	0.00079	32,000	15.7	0.00039	0.00039
	1.0	32,000	23.6	0.00098	0.002	32,000	15.7	0.00059	0.00098	32,000	11.8	0.00059	0.00079	32,000	11.8	0.00039	0.00039
	1.5	32,000	23.6	0.00098	0.002	32,000	15.7	0.00059	0.00098	32,000	11.8	0.00059	0.00079	32,000	11.8	0.00039	0.00039
	2.0	27,000	17.7	0.00098	0.002	27,000	11.8	0.00059	0.00098	27,000	7.9	0.00059	0.00079	27,000	7.9	0.00039	0.00039
	2.5	27,000	17.7	0.00098	0.002	27,000	11.8	0.00059	0.00098	27,000	7.9	0.00059	0.00079	27,000	7.9	0.00039	0.00039
	3.0	27,000	17.7	0.00098	0.002	27,000	11.8	0.00059	0.00098	27,000	7.9	0.00059	0.00079	27,000	7.9	0.00039	0.00039
	3.5	27,000	17.7	0.00098	0.002	27,000	11.8	0.00059	0.00098	27,000	7.9	0.00059	0.00079	27,000	7.9	0.00039	0.00039
	4.0	27,000	17.7	0.00039	0.0012	27,000	11.8	0.00002	0.00059	27,000	7.9	0.00002	0.00047	27,000	7.9	0.0002	0.00039
	4.5	24,000	11.8	0.00039	0.0012	27,000	7.9	0.00002	0.00059	27,000	3.9	0.00002	0.00047	27,000	3.9	0.0002	0.00039
	5.0	24,000	11.8	0.00039	0.0012	27,000	7.9	0.00002	0.00059	27,000	3.9	0.00002	0.00047	27,000	3.9	0.0002	0.00039
5.5	21,000	11.8	0.00039	0.00079	27,000	7.9	0.00002	0.0004	27,000	3.9	0.00002	0.00031	27,000	3.9	0.0002	0.0002	
6.0	21,000	5.9	0.00039	0.00059	27,000	3.9	0.00002	0.00031	27,000	3.1	0.00002	0.00024	27,000	3.1	0.00012	0.0002	
0.5	1.0	32,000	29.5	0.0016	0.002	32,000	19.7	0.00079	0.00098	32,000	15.7	0.00079	0.00079	32,000	15.7	0.00039	0.00039
	1.5	32,000	29.5	0.0016	0.002	32,000	19.7	0.00079	0.00098	32,000	15.7	0.00079	0.00079	32,000	15.7	0.00039	0.00039
	2.0	32,000	23.6	0.0016	0.002	32,000	15.7	0.00079	0.00098	32,000	11.8	0.00079	0.00079	32,000	11.8	0.00039	0.00039
	2.5	27,000	17.7	0.0016	0.002	27,000	11.8	0.00079	0.00098	27,000	7.9	0.00079	0.00079	27,000	7.9	0.00039	0.00039
	3.0	27,000	17.7	0.0016	0.002	27,000	11.8	0.00079	0.00098	27,000	7.9	0.00079	0.00079	27,000	7.9	0.00039	0.00039
	3.5	27,000	17.7	0.0016	0.002	27,000	11.8	0.00079	0.00098	27,000	7.9	0.00079	0.00079	27,000	7.9	0.00039	0.00039
	4.0	27,000	17.7	0.0016	0.002	27,000	11.8	0.00079	0.00098	27,000	7.9	0.00079	0.00079	27,000	7.9	0.00039	0.00039
	4.5	21,000	11.8	0.0016	0.002	20,000	7.9	0.00079	0.00098	20,000	7.9	0.00079	0.00079	20,000	7.9	0.00039	0.00039
	5.0	21,000	11.8	0.0016	0.002	20,000	7.9	0.00079	0.00098	20,000	5.9	0.00079	0.00079	20,000	5.9	0.00039	0.00039
	5.5	21,000	11.8	0.00079	0.0012	20,000	7.9	0.00039	0.00059	20,000	5.9	0.00039	0.00039	20,000	5.9	0.00039	0.00039
	6.0	21,000	11.8	0.00079	0.0012	20,000	7.9	0.00039	0.00059	20,000	5.9	0.00039	0.00039	20,000	5.9	0.00039	0.00039



List 3790 (continued)

Standard Milling

Hardness		Up to 32 HRC								33 to 41 HRC				42 to 50 HRC				
Work Material		Aluminum Copper Alloy				Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels				Hardened Steels Prehardened Steels, P20, H13, S7, A2								
Cutting Speed		388 SFM				324 SFM				263 SFM				233 SFM				
Mill Dia.	L1	Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		
				aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)	
0.5	7	21,000	11.8	0.00079	0.0012	20,000	7.9	0.00039	0.00059	20,000	5.9	0.00039	0.00039	20,000	5.9	0.00039	0.00039	
	8	21,000	11.8	0.00079	0.0012	15,000	7.9	0.00039	0.00059	15,000	5.9	0.00039	0.00039	15,000	5.9	0.0002	0.00039	
	9	18,000	5.9	0.00079	0.00079	15,000	3.9	0.00039	0.00039	15,000	3.1	0.00002	0.00039	15,000	3.1	0.0002	0.0002	
	10	18,000	5.9	0.00039	0.00039	15,000	3.9	0.00002	0.00002	15,000	3.1	0.00002	0.00002	15,000	3.1	0.00012	0.0002	
0.6	1	32,000	35.4	0.0018	0.0047	32,000	23.6	0.0012	0.0024	32,000	19.7	0.0012	0.002	32,000	19.7	0.0012	0.0012	
	1.5	32,000	35.4	0.0018	0.0047	32,000	23.6	0.0012	0.0024	32,000	19.7	0.0012	0.002	32,000	19.7	0.0012	0.0012	
	2	32,000	26.6	0.0018	0.0047	32,000	17.7	0.0012	0.0024	32,000	11.8	0.0012	0.002	32,000	11.8	0.0012	0.0012	
	2.5	30,000	26.6	0.0018	0.0047	32,000	17.7	0.0012	0.0024	32,000	11.8	0.0012	0.002	32,000	11.8	0.0012	0.0012	
	3	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.0012	0.002	24,000	7.9	0.0012	0.0012	
	3.5	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.0012	0.0016	24,000	7.9	0.0012	0.0012	
	4	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.0012	0.0016	24,000	7.9	0.0012	0.0012	
	4.5	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.0012	0.0016	24,000	7.9	0.0012	0.0012	
	5	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.0012	0.0016	24,000	7.9	0.00079	0.00079	
	5.5	25,000	11.8	0.0018	0.0047	20,000	7.9	0.0012	0.0024	20,000	7.9	0.0012	0.0016	20,000	7.9	0.00079	0.00079	
	6	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.0012	0.0016	20,000	5.9	0.00079	0.00079	
	6.5	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.0012	0.0016	20,000	5.9	0.00079	0.00079	
0.8	7	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.0012	0.0016	20,000	5.9	0.00079	0.00079	
	7.5	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.0012	0.0016	20,000	5.9	0.00079	0.00079	
	8	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.0012	0.0016	20,000	5.9	0.00079	0.00079	
	8.5	22,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.00079	0.0016	20,000	5.9	0.00039	0.00039	
	9	22,000	8.9	0.0012	0.0039	20,000	5.9	0.00079	0.002	20,000	5.9	0.00079	0.0016	20,000	5.9	0.00039	0.00039	
	9.5	22,000	8.9	0.0012	0.0039	17,000	5.9	0.00079	0.002	17,000	5.9	0.00079	0.0016	17,000	5.9	0.00039	0.00039	
	10	20,000	5.9	0.00098	0.002	17,000	3.9	0.00059	0.00098	17,000	3.9	0.00059	0.00079	17,000	3.9	0.0002	0.0002	
	11	20,000	5.9	0.00098	0.002	17,000	3.9	0.00059	0.00098	17,000	3.9	0.00039	0.00079	17,000	3.9	0.0002	0.0002	
	12	20,000	4.7	0.00098	0.002	17,000	3.1	0.00059	0.00098	17,000	3.1	0.00039	0.00047	17,000	3.1	0.0002	0.0002	
	1.0	2	27,000	26.6	0.0024	0.0063	23,000	17.7	0.0016	0.0031	21,000	11.8	0.0016	0.0024	21,000	11.8	0.0016	0.0016
		3	27,000	26.6	0.0024	0.0063	23,000	17.7	0.0016	0.0031	21,000	11.8	0.0016	0.0024	21,000	11.8	0.0016	0.0016
		4	27,000	26.6	0.0024	0.0063	23,000	17.7	0.0016	0.0031	21,000	11.8	0.0016	0.0024	21,000	11.8	0.0016	0.0016
5		24,000	14.8	0.0024	0.0047	21,000	9.8	0.0016	0.0024	19,000	7.9	0.0016	0.002	19,000	7.9	0.00079	0.00098	
6		24,000	14.8	0.0024	0.0047	21,000	9.8	0.0016	0.0024	19,000	7.9	0.0016	0.002	19,000	7.9	0.00079	0.00098	
7		24,000	14.8	0.0024	0.0047	21,000	9.8	0.0016	0.0024	19,000	7.9	0.0016	0.002	19,000	7.9	0.00079	0.00098	
8		22,000	8.9	0.0024	0.0047	19,000	5.9	0.0016	0.0024	17,000	5.9	0.0016	0.002	17,000	5.9	0.00079	0.00098	
9		22,000	8.9	0.0024	0.0047	19,000	5.9	0.0016	0.0024	17,000	5.9	0.0016	0.002	17,000	5.9	0.00079	0.00098	
10		22,000	8.9	0.0024	0.0047	19,000	5.9	0.0016	0.0024	17,000	5.9	0.0016	0.002	17,000	5.9	0.00079	0.00098	
12		22,000	8.9	0.0024	0.0047	19,000	5.9	0.0016	0.0024	17,000	5.9	0.0016	0.002	17,000	5.9	0.00079	0.00098	
1.2		2.5	28,000	35.4	0.003	0.0079	25,000	23.6	0.002	0.0039	21,000	15.7	0.002	0.0031	21,000	15.7	0.002	0.002
		3	28,000	29.5	0.003	0.0079	25,000	19.7	0.002	0.0039	21,000	11.8	0.002	0.0031	21,000	11.8	0.002	0.002
	4	28,000	29.5	0.003	0.0079	25,000	19.7	0.002	0.0039	21,000	11.8	0.002	0.0031	21,000	11.8	0.002	0.002	
	5	21,000	17.7	0.003	0.0079	19,000	11.8	0.002	0.0039	16,000	7.9	0.002	0.0031	16,000	7.9	0.002	0.002	
	6	21,000	17.7	0.003	0.0079	19,000	11.8	0.002	0.0039	16,000	7.9	0.002	0.0031	16,000	7.9	0.002	0.002	
	7	21,000	17.7	0.003	0.0059	19,000	11.8	0.002	0.003	16,000	7.9	0.002	0.003	16,000	7.9	0.0012	0.0012	
	8	21,000	17.7	0.003	0.0059	19,000	11.8	0.002	0.003	16,000	7.9	0.002	0.003	16,000	7.9	0.0012	0.0012	
	9	21,000	17.7	0.003	0.0059	19,000	11.8	0.002	0.003	16,000	7.9	0.002	0.003	16,000	7.9	0.0012	0.0012	
	10	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.002	14,000	5.9	0.0012	0.0018	14,000	5.9	0.00039	0.00059	
	12	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.002	14,000	5.9	0.0012	0.0018	14,000	5.9	0.00039	0.00059	
	14	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.002	14,000	5.9	0.0012	0.0018	14,000	5.9	0.00039	0.00059	
	16	16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.002	10,000	5.9	0.0012	0.0018	10,000	5.9	0.00039	0.00059	
18	16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.002	10,000	5.9	0.0012	0.0018	10,000	5.9	0.00039	0.00059		
20	16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.002	10,000	5.9	0.0012	0.0018	10,000	5.9	0.00039	0.00059		
22	16,000	8.9	0.002	0.002	13,000	5.9	0.00079	0.00098	10,000	3.9	0.00079	0.00079	10,000	3.9	0.0002	0.0002		
1.2	4	20,000	29.5	0.0035	0.0093	17,000	19.7	0.0024	0.0047	14,000	11.8	0.0024	0.0039	14,000	11.8	0.0024	0.0024	
	6	20,000	17.7	0.0035	0.0093	17,000	11.8	0.0024	0.0047	14,000	7.9	0.0024	0.0039	14,000	7.9	0.0024	0.0024	



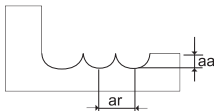
▶ continued on next page ▶



List 3790 (continued)

Standard Milling

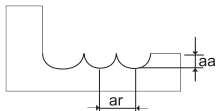
Hardness		Up to 32 HRC								33 to 41 HRC				42 to 50 HRC			
Work Material		Aluminum Copper Alloy				Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels				Hardened Steels Prehardened Steels, P20, H13, S7, A2							
Cutting Speed		388 SFM				324 SFM				263 SFM				233 SFM			
Mill Dia.	L1	Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut	
				aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)
1.2	8	20,000	17.7	0.0035	0.0093	17,000	11.8	0.0024	0.0047	14,000	7.9	0.0024	0.0039	14,000	7.9	0.0024	0.0024
	10	20,000	17.7	0.0035	0.0071	17,000	11.8	0.0024	0.0035	14,000	7.9	0.0024	0.0028	14,000	7.9	0.0012	0.0012
	12	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.0024	0.0028	11,000	5.9	0.0012	0.0012
	14	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.0024	0.0028	11,000	5.9	0.00039	0.0012
	16	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.0024	0.0028	11,000	5.9	0.00039	0.0012
	18	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.0024	0.0028	11,000	5.9	0.00039	0.0012
	20	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.0024	0.0028	11,000	5.9	0.00039	0.0012
24	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.0024	0.0028	11,000	5.9	0.00039	0.0012	
1.4	8	18,000	17.7	0.0039	0.011	15,500	11.8	0.0028	0.0055	12,000	9.8	0.0028	0.0039	12,000	9.8	0.0028	0.0028
	12	18,000	17.7	0.0039	0.0079	15,500	11.8	0.0028	0.0039	12,000	9.8	0.0028	0.0031	12,000	9.8	0.0028	0.0028
	16	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0035	9,000	5.9	0.0018	0.0028	9,000	5.9	0.00039	0.0012
1.5	3	20,000	35.4	0.0047	0.012	15,000	23.6	0.0031	0.0059	12,000	19.7	0.0031	0.0047	12,000	11.8	0.0031	0.0039
	4	20,000	35.4	0.0047	0.012	15,000	23.6	0.0031	0.0059	12,000	19.7	0.0031	0.0047	12,000	11.8	0.0031	0.0039
	6	18,000	29.5	0.0047	0.012	15,000	19.7	0.0031	0.0059	12,000	13.8	0.0031	0.0047	12,000	11.8	0.0031	0.0039
	8	17,000	17.7	0.0047	0.012	15,000	11.8	0.0031	0.0059	12,000	9.8	0.0031	0.0047	12,000	9.8	0.0031	0.0039
	10	17,000	17.7	0.0047	0.012	15,000	11.8	0.0031	0.0059	12,000	9.8	0.0031	0.0047	12,000	9.8	0.0031	0.0039
	12	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.0031	0.0035	12,000	9.8	0.002	0.0024
	14	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.0031	0.0035	12,000	9.8	0.002	0.0024
	16	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0028	9,500	5.9	0.00039	0.0012
	18	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0028	9,500	5.9	0.00039	0.0012
	20	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0028	9,500	5.9	0.00039	0.0012
	22	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0028	9,500	5.9	0.00039	0.0012
	30	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0028	9,500	5.9	0.00039	0.0012
	1.6	4	20,000	35.4	0.0047	0.013	14,000	23.6	0.0031	0.0063	11,000	19.7	0.0031	0.0051	11,000	13.8	0.0031
8		16,500	17.7	0.0047	0.013	14,000	11.8	0.0031	0.0063	11,000	9.8	0.0031	0.0051	11,000	9.8	0.0031	0.0039
12		16,500	17.7	0.0047	0.0094	14,000	11.8	0.0031	0.0047	11,000	9.8	0.0031	0.0031	11,000	9.8	0.002	0.002
16		11,500	11.8	0.0047	0.0094	11,000	7.9	0.0031	0.0047	9,000	5.9	0.0031	0.0031	9,000	5.9	0.002	0.002
20		11,500	11.8	0.0035	0.0079	11,000	7.9	0.0024	0.0047	9,000	5.9	0.0024	0.003	9,000	5.9	0.00059	0.0012
1.8	8	16,500	23.6	0.0051	0.014	14,000	15.7	0.0035	0.0071	11,000	11.8	0.0035	0.0063	11,000	11.8	0.0035	0.0047
	12	16,500	23.6	0.0051	0.014	14,000	15.7	0.0035	0.0071	11,000	11.8	0.0035	0.0063	11,000	11.8	0.0035	0.0047
	16	16,500	23.6	0.0051	0.0055	14,000	15.7	0.0035	0.0055	11,000	11.8	0.0035	0.0047	11,000	11.8	0.002	0.0024
	20	11,000	11.8	0.0039	0.0087	11,000	7.9	0.0024	0.0051	8,000	7.9	0.0024	0.0031	8,000	7.9	0.00079	0.0012
2.0	3	16,500	53.1	0.0059	0.022	16,500	35.4	0.0039	0.011	13,500	31.5	0.0039	0.011	13,500	27.6	0.0039	0.0079
	4	16,500	41.3	0.0059	0.022	16,500	27.6	0.0039	0.011	13,500	19.7	0.0039	0.011	13,500	19.7	0.0039	0.0079
	6	16,500	41.3	0.0059	0.022	16,500	27.6	0.0039	0.011	13,500	19.7	0.0039	0.011	13,500	19.7	0.0039	0.0079
	8	16,500	41.3	0.0059	0.022	16,500	27.6	0.0039	0.011	13,500	19.7	0.0039	0.011	13,500	19.7	0.0039	0.0079
	10	14,000	29.5	0.0059	0.022	13,000	19.7	0.0039	0.011	10,000	11.8	0.0039	0.011	10,000	11.8	0.0039	0.0079
	12	14,000	29.5	0.0059	0.022	13,000	19.7	0.0039	0.011	10,000	11.8	0.0039	0.011	10,000	11.8	0.0039	0.0079
	14	14,000	29.5	0.0059	0.022	13,000	19.7	0.0039	0.011	10,000	11.8	0.0039	0.011	10,000	11.8	0.0039	0.0079
	16	14,000	29.5	0.0059	0.017	13,000	19.7	0.0039	0.0083	10,000	11.8	0.0039	0.0083	10,000	11.8	0.0024	0.0039
	18	14,000	29.5	0.0059	0.017	13,000	19.7	0.0039	0.0083	10,000	11.8	0.0039	0.0083	10,000	11.8	0.0024	0.0039
	20	11,000	14.8	0.0059	0.017	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0083	8,000	7.9	0.0024	0.0039
	22	11,000	14.8	0.0059	0.017	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0083	8,000	7.9	0.0024	0.0039
	25	11,000	14.8	0.0059	0.017	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0083	8,000	7.9	0.0024	0.0039
	30	11,000	14.8	0.0059	0.017	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0083	8,000	7.9	0.0024	0.0039
	35	10,000	14.8	0.0059	0.017	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0083	8,000	7.9	0.0024	0.0039
40	10,000	11.8	0.0059	0.017	10,000	7.9	0.0039	0.0083	8,000	6.3	0.0039	0.0083	8,000	6.3	0.0024	0.0039	
2.5	6	16,000	41.3	0.0071	0.028	12,000	27.6	0.0047	0.014	10,000	23.6	0.0047	0.012	10,000	23.6	0.0039	0.0098
	10	14,000	41.3	0.0071	0.028	12,000	27.6	0.0047	0.014	10,000	23.6	0.0047	0.012	10,000	23.6	0.0039	0.0098
	15	14,000	23.6	0.0071	0.028	13,000	15.7	0.0047	0.014	8,500	11.8	0.0047	0.012	8,500	11.8	0.0039	0.0098
	20	12,000	23.6	0.0071	0.022	13,000	15.7	0.0047	0.011	8,500	11.8	0.0047	0.0079	8,500	11.8	0.0031	0.0059
	25	12,000	17.7	0.0071	0.022	8,000	11.8	0.0047	0.011	6,500	9.8	0.0047	0.0079	6,500	9.8	0.0031	0.0059



List 3790 (continued)

Standard Milling

Hardness		Up to 32 HRC								33 to 41 HRC				42 to 50 HRC			
Work Material		Aluminum Copper Alloy				Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels				Hardened Steels Prehardened Steels, P20, H13, S7, A2							
Cutting Speed		388 SFM				324 SFM				263 SFM				233 SFM			
Mill Dia.	L1	Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut		Speed RPM	Feed in/min	Depth of Cut	
				aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)			aa (mm)	ar (mm)
2.5	30	12,000	14.8	0.0071	0.022	8,000	9.8	0.0047	0.011	6,500	7.9	0.0047	0.0079	6,500	7.9	0.0031	0.0059
	35	12,000	14.8	0.0071	0.022	8,000	9.8	0.0047	0.011	6,500	7.9	0.0047	0.0079	6,500	7.9	0.0031	0.0059
3.0	6	15,000	47.2	0.0079	0.033	9,500	31.5	0.0059	0.017	7,500	23.6	0.0059	0.017	7,500	23.6	0.0059	0.012
	8	12,000	35.4	0.0079	0.033	9,500	23.6	0.0059	0.017	7,500	15.7	0.0059	0.014	7,500	15.7	0.0059	0.012
	10	12,000	35.4	0.0079	0.033	9,500	23.6	0.0059	0.017	7,500	15.7	0.0059	0.014	7,500	15.7	0.0059	0.012
	12	10,000	35.4	0.0079	0.033	9,500	23.6	0.0059	0.017	7,500	15.7	0.0059	0.014	7,500	15.7	0.0059	0.012
	14	10,000	35.4	0.0079	0.033	9,500	23.6	0.0059	0.017	7,500	15.7	0.0059	0.014	7,500	15.7	0.0059	0.012
	15	10,000	23.6	0.0079	0.033	8,500	15.7	0.0059	0.017	6,500	9.8	0.0059	0.014	6,500	9.8	0.0059	0.012
	16	10,000	17.7	0.0079	0.033	8,500	11.8	0.0059	0.017	6,500	9.8	0.0059	0.014	6,500	9.8	0.0059	0.012
	20	10,000	17.7	0.0079	0.033	8,500	11.8	0.0059	0.017	6,500	9.8	0.0059	0.014	6,500	9.8	0.0059	0.012
	25	10,000	17.7	0.0079	0.033	8,500	11.8	0.0059	0.017	6,500	9.8	0.0059	0.012	6,500	9.8	0.0035	0.0059
	30	9,000	14.8	0.0079	0.033	7,500	9.8	0.0059	0.017	6,000	7.9	0.0059	0.012	6,000	7.9	0.0035	0.0059
	35	9,000	14.8	0.0079	0.033	7,500	9.8	0.0059	0.017	6,000	7.9	0.0059	0.012	6,000	7.9	0.0035	0.0059
	40	9,000	14.8	0.0079	0.033	7,500	9.8	0.0059	0.017	6,000	7.9	0.0059	0.012	6,000	7.9	0.0035	0.0059
3.5	10	10,000	41.3	0.016	0.039	8,500	27.6	0.0059	0.019	6,500	19.7	0.0059	0.017	6,500	19.7	0.0059	0.014
	15	10,000	35.4	0.016	0.039	8,500	23.6	0.0059	0.019	6,500	15.7	0.0059	0.017	6,500	15.7	0.0059	0.014
	20	8,000	29.5	0.016	0.039	7,500	19.7	0.0059	0.019	5,500	11.8	0.0059	0.017	5,500	11.8	0.0059	0.014
	25	8,000	23.6	0.016	0.039	7,500	15.7	0.0059	0.019	5,500	10.8	0.0059	0.017	5,500	10.8	0.0059	0.014
	30	8,000	17.7	0.016	0.039	7,500	11.8	0.0059	0.019	5,500	9.8	0.0059	0.014	5,500	9.8	0.0039	0.0079
	35	8,000	14.8	0.016	0.039	6,000	9.8	0.0059	0.019	5,000	7.9	0.0059	0.014	5,000	7.9	0.0039	0.0079
	40	6,000	14.8	0.012	0.039	6,000	9.8	0.0059	0.019	5,000	7.9	0.0059	0.014	5,000	7.9	0.0039	0.0079
4.0	8	11,000	47.2	0.02	0.05	7,500	31.5	0.0079	0.025	6,000	27.6	0.0079	0.024	6,000	27.6	0.0079	0.018
	10	9,000	35.4	0.02	0.05	7,500	23.6	0.0079	0.025	6,000	15.7	0.0079	0.024	6,000	15.7	0.0079	0.018
	12	9,000	35.4	0.02	0.05	7,500	23.6	0.0079	0.025	6,000	15.7	0.0079	0.024	6,000	15.7	0.0079	0.018
	14	9,000	35.4	0.02	0.05	7,500	23.6	0.0079	0.025	6,000	15.7	0.0079	0.024	6,000	15.7	0.0079	0.018
	15	9,000	35.4	0.02	0.05	7,500	23.6	0.0079	0.025	6,000	15.7	0.0079	0.024	6,000	15.7	0.0079	0.018
	16	9,000	35.4	0.02	0.05	7,500	23.6	0.0079	0.025	6,000	15.7	0.0079	0.024	6,000	15.7	0.0079	0.018
	20	7,000	23.6	0.02	0.05	6,000	15.7	0.0079	0.025	5,000	9.8	0.0079	0.024	5,000	9.8	0.0079	0.018
	25	7,000	23.6	0.02	0.05	6,000	15.7	0.0079	0.025	5,000	9.8	0.0079	0.024	5,000	9.8	0.0079	0.018
	30	7,000	23.6	0.016	0.05	6,000	15.7	0.0079	0.025	5,000	9.8	0.0079	0.022	5,000	9.8	0.0047	0.0079
	35	7,000	23.6	0.016	0.05	6,000	15.7	0.0079	0.025	5,000	9.8	0.0079	0.022	5,000	9.8	0.0047	0.0079
	40	5,000	14.8	0.014	0.05	5,000	9.8	0.0079	0.025	4,000	7.9	0.0079	0.022	4,000	7.9	0.0047	0.0079
5.0	10	9,000	53.1	0.024	0.071	6,500	35.4	0.0098	0.035	5,000	29.5	0.0098	0.028	5,000	29.5	0.0098	0.02
	15	9,000	53.1	0.024	0.071	6,500	35.4	0.0098	0.035	5,000	29.5	0.0098	0.028	5,000	29.5	0.0098	0.02
	20	7,000	29.5	0.024	0.071	6,500	19.7	0.0098	0.035	5,000	15.7	0.0098	0.028	5,000	15.7	0.0098	0.02
	25	6,000	29.5	0.024	0.071	5,000	19.7	0.0098	0.035	4,000	9.8	0.0098	0.028	4,000	9.8	0.0098	0.02
	30	6,000	29.5	0.024	0.071	5,000	19.7	0.0098	0.035	4,000	9.8	0.0098	0.028	4,000	9.8	0.0098	0.02
	35	6,000	29.5	0.024	0.071	5,000	19.7	0.0098	0.035	4,000	9.8	0.0098	0.028	4,000	9.8	0.0098	0.02
	40	5,000	23.6	0.016	0.071	4,000	15.7	0.0098	0.035	4,000	7.9	0.0098	0.024	4,000	7.9	0.0079	0.0098
	45	5,000	23.6	0.016	0.071	4,000	15.7	0.0098	0.035	4,000	7.9	0.0098	0.024	4,000	7.9	0.0079	0.0098
6.0	10	7,000	59.1	0.03	0.094	5,500	39.4	0.012	0.047	4,500	31.5	0.012	0.038	4,500	31.5	0.012	0.024
	20	7,000	47.2	0.03	0.094	5,500	31.5	0.012	0.047	4,500	23.6	0.012	0.038	4,500	23.6	0.012	0.024
	25	6,000	35.4	0.03	0.094	5,500	23.6	0.012	0.047	4,500	15.7	0.012	0.038	4,500	15.7	0.012	0.024
	30	5,000	23.6	0.03	0.094	4,000	15.7	0.012	0.047	4,000	11.8	0.012	0.038	4,000	11.8	0.012	0.024
	35	5,000	23.6	0.03	0.094	4,000	15.7	0.012	0.047	4,000	11.8	0.012	0.038	4,000	11.8	0.012	0.024
	40	5,000	23.6	0.024	0.094	4,000	15.7	0.012	0.047	4,000	11.8	0.012	0.038	4,000	11.8	0.012	0.024
	45	5,000	23.6	0.024	0.094	4,000	15.7	0.012	0.047	4,000	11.8	0.012	0.038	4,000	11.8	0.012	0.024
	50	5,000	23.6	0.024	0.094	4,000	15.7	0.012	0.047	4,000	11.8	0.012	0.038	4,000	11.8	0.012	0.024





- Use safety cover, safety glasses and safety shoes during operation.
- Do not touch cutting edges with bare hands.
- Do not touch cutting chips with bare hands. Chips will be hot after cutting.
- Stop Cutting when the tool becomes dull.
- Stop cutting operation immediately if you hear any strange sounds.
- Do not modify tools.
- Use correct tools for the operation. Check dimensions to ensure proper selection.



OSG TAP & DIE, INC.

676 E. Fullerton Avenue • Glendale Heights • IL 60139
800.837.2223 • FAX: 800.837.3334 • www.osgtool.com