



**NEW!**

**Vol. 1**

**OSG**  
Tap & Die, Inc.

**EXOCARB®-AERO™ SUS**

**Aerospace**



**Medical**



**Features:**

**Anti-Vibration Flute Design**

Reduces vibration thus improving surface finish

**Optimum Metal Removal Rate (MRR)**

Deeper Depths of Cut & Faster Feed Rates

**Maximum Rigidity**

Stub & Regular Length Offering Stocked

**Longer Tool Life**

TiAlN, Corner Radii, Eccentric Relief

**Material Applications:**

**Stainless Steel**

300 series, 400 series, PH series

**Titanium Alloy**

6Al-4V, 5Al-2.5Sn, 8Al-1Mo

**High Temp. Alloys**

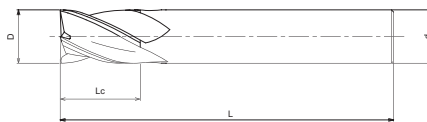
Inconel, Waspaloy, Hastelloy, Rene,  
Carpenter, Stellite, MAR-M200

## List 2044 NEW!



Stub Length, 4 Flute

Tolerance for milling diameter  
0 ~ -0.0015



EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	List Price (Each)
	D	L	Lc	d	
20440111	1/8	1-1/2	1/4	1/8	\$11.07
20440211	3/16	2	3/8	3/16	\$14.80
20440311	1/4	2	7/16	1/4	\$21.22
20440411	5/16	2	1/2	5/16	\$26.54
20440511	3/8	2	5/8	3/8	\$30.79

EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	List Price (Each)
	D	L	Lc	d	
20440611	1/2	2-1/2	5/8	1/2	\$46.95
20440711	5/8	3	3/4	5/8	\$84.02
20440811	3/4	3	1	3/4	\$124.04
20440911	1	3-1/2	1-1/8	1	\$207.40

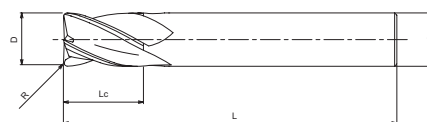
Packed: 1 pc. Available TiAIN coating only.

## List 2045 NEW!



Stub Length, 4 Flute, Corner Radius

Tolerance for milling diameter  
0 ~ -0.0015



EDP Number	Mill Dia.	Corner Radius	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	R	L	Lc	d	
20450111	1/8	0.010	1-1/2	1/4	1/8	\$12.73
20450211	3/16	0.010	2	3/8	3/16	\$17.01
20450311	1/4	0.020	2	7/16	1/4	\$24.41
20450411	5/16	0.020	2	1/2	5/16	\$32.71
20450511	3/8	0.020	2	5/8	3/8	\$35.80

EDP Number	Mill Dia.	Corner Radius	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	R	L	Lc	d	
20450611	1/2	0.030	2-1/2	5/8	1/2	\$54.01
20450711	5/8	0.040	3	3/4	5/8	\$96.61
20450811	3/4	0.040	3	1	3/4	\$142.63
20450911	1	0.040	3-1/2	1-1/8	1	\$238.56

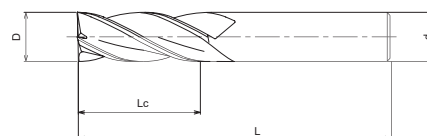
Packed: 1 pc. Available TiAIN coating only.

## List 2046 NEW!



Regular Length, 4 Flute

Tolerance for milling diameter  
0 ~ -0.0015



EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	List Price (Each)
	D	L	Lc	d	
20460111	1/8	1-1/2	3/8	1/8	\$11.80
20460211	3/16	2	7/16	3/16	\$16.58
20460311	1/4	2-1/2	1/2	1/4	\$25.39
20460411	5/16	2-1/2	5/8	5/16	\$29.35
20460511	3/8	2-1/2	7/8	3/8	\$33.20

EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	List Price (Each)
	D	L	Lc	d	
20460611	1/2	3	1	1/2	\$51.03
20460711	5/8	3-1/2	1-1/8	5/8	\$99.87
20460811	3/4	4	1-1/2	3/4	\$147.10
20460911	1	4	1-1/2	1	\$243.59

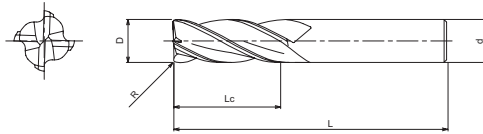
Packed: 1 pc. Available TiAIN coating only.

## List 2047 **NEW!**



Regular Length, 4 Flute, Corner Radius

Tolerance for milling diameter  
0 ~ -0.0015



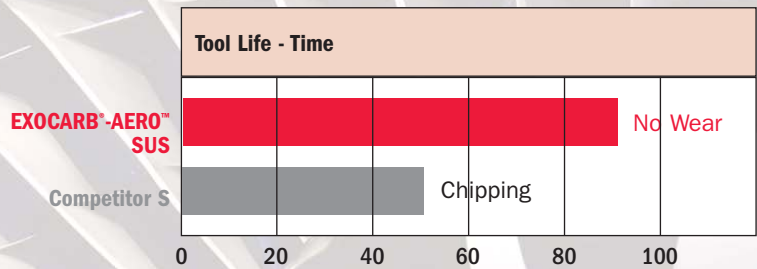
EDP Number	Mill Dia.	Corner Radius	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	R	L	Lc	d	
20470111	1/8	0.010	1-1/2	3/8	1/8	\$13.58
20470211	3/16	0.010	2	7/16	3/16	\$19.07
20470311	1/4	0.020	2-1/2	1/2	1/4	\$29.20
20470411	5/16	0.020	2-1/2	5/8	5/16	\$33.76
20470511	3/8	0.020	2-1/2	7/8	3/8	\$38.19

EDP Number	Mill Dia.	Corner Radius	OAL	Length of Cut	Shank Dia.	List Price (Each)
	D	R	L	Lc	d	
20470611	1/2	0.030	3	1	1/2	\$58.76
20470711	5/8	0.040	3-1/2	1-1/8	5/8	\$114.84
20470811	3/4	0.040	4	1-1/2	3/4	\$169.17
20470911	1	0.040	4	1-1/2	1	\$280.14

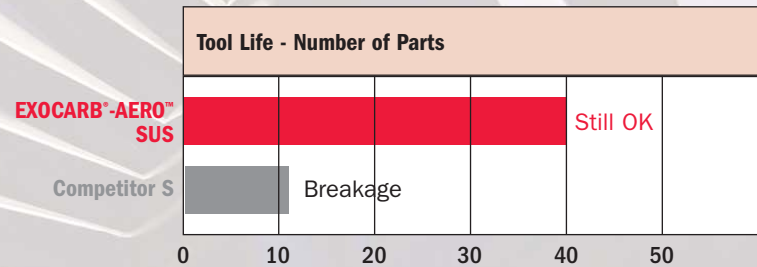
Packed: 1 pc. Available TiAlN coating only.

## Cutting Data

SUS End Mill Performance:	
Tool Ø:	1/2"
Material:	304ss
Speed:	2444 RPM
Feed:	14.6 IPM
Machine:	Horizontal MC
Depth:	0.47" Slotting



SUS End Mill Performance:	
Tool Ø:	1/2"
Material:	Ti 6Al-4V
Speed:	1500 RPM
Feed:	19 IPM
Machine:	Horizontal MC
Depth:	0.25" Slotting



# Recommended Speeds & Feeds:

## Slotting

Hardness	< 285 Bhn		< 190 Bhn		< 325 Bhn		< 300 Bhn		< 300 Bhn		> 300 Bhn	
Work Material	Stainless Steel 300 series		Stainless Steel 400 series		Stainless Steel PH Series		Titanium Alloy 6Al-4V, 5Al-2.5Sn		High Temp. Alloys Inconel, Waspaloy, Hastelloy		High Temp. Alloys Inconel, Waspaloy, Hastelloy	
Depth of Cut	Slotting: Aa = 1D Profiling: Aa = 1.5D, Ar = .5D								Slotting: Aa=1D Profiling: Aa=1.5D, Ar=.25D			
Mill Diameter	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
1/8	9,241	5.3	12,850	8.1	7,810	5.0	9,465	7.2	1,725	3.4	1,428	2.6
3/16	6,200	9.2	8,825	12.5	5,235	9.0	6,154	10.5	1,655	3.8	1,330	2.8
1/4	4,720	15.0	6,940	21.2	4,015	13.4	4,822	16.4	1,450	4.5	1,250	3.0
5/16	3,850	17.4	5,475	26.0	3,244	15.6	3,854	18.2	1,254	4.8	1,126	3.1
3/8	3,224	24.0	4,500	34.4	2,864	22.0	3,156	24.0	1,126	5.0	1,014	3.3
1/2	2,444	23.2	3,550	32.0	2,204	20.5	2,428	23.6	950	4.4	865	3.2
5/8	2,010	20.5	2,675	28.5	1,906	18.2	2,100	20.4	624	4.2	526	3.1
3/4	1,620	19.0	2,300	25.0	1,632	18.0	1,626	19.5	520	4.2	365	3.0
1.0	1,254	16.5	1,835	22.5	1,258	16.4	1,322	16.2	482	4.0	325	3.0

## Side Milling

Hardness	< 285 Bhn		< 190 Bhn		< 325 Bhn		< 300 Bhn		< 300 Bhn		> 300 Bhn	
Work Material	Stainless Steel 300 series		Stainless Steel 400 series		Stainless Steel PH Series		Titanium Alloy 6Al-4V, 5Al-2.5Sn		High Temp. Alloys Inconel, Waspaloy, Hastelloy		High Temp. Alloys Inconel, Waspaloy, Hastelloy	
Depth of Cut	Slotting: Aa = 1D Profiling: Aa = 1.5D, Ar = .5D								Slotting: Aa=1D Profiling: Aa=1.5D, Ar=.25D			
Mill Diameter	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM	RPM	IPM
1/8	11,089	8.5	15,420	13.0	9,372	8	11,358	11.5	2,070	5.4	1,714	4.2
3/16	7,440	14.7	10,590	20.0	6,282	14.4	7,385	16.8	1,986	6.1	1,596	4.5
1/4	5,664	24.0	8,328	33.9	4,818	21.4	5,786	26.2	1,740	7.2	1,500	4.8
5/16	4,620	27.8	6,570	41.6	3,893	24.9	4,625	29.1	1,505	7.7	1,351	5.0
3/8	3,869	38.4	5,400	55.0	3,437	35.2	3,787	38.4	1,351	8.0	1,217	5.3
1/2	2,933	37.1	4,260	51.2	2,645	32.8	2,914	37.8	1,140	7.0	1,038	5.1
5/8	2,412	32.8	3,210	45.6	2,287	29.1	2,520	32.6	749	6.7	631	5.0
3/4	1,944	30.4	2,760	40.0	1,958	28.8	1,951	31.2	624	6.7	438	4.8
1.0	1,505	26.4	2,202	36.0	1,510	26.2	1,586	25.9	578	6.4	406	4.5

## Machining Tips:

- 1) When pocketing, avoid plunging. Use linear ramping or helical engagement.
- 2) For heavy milling applications, use solid holders with short gage lengths.
- 3) Tool holders with excellent gripping strength are recommended (Shrink Fit or Mill Chucks).
- 4) Avoid recutting chips.
- 5) Regrind service is available through OSG.
- 6) Rigid fixturing is critical when taking aggressive depths of cut.



## OSG TAP & DIE, INC.

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