

**SGS**  
**PROTOOL**

SZERSZÁMIPARI Kft. BUDAPEST

**SGS**  
**SKI-CARB+**

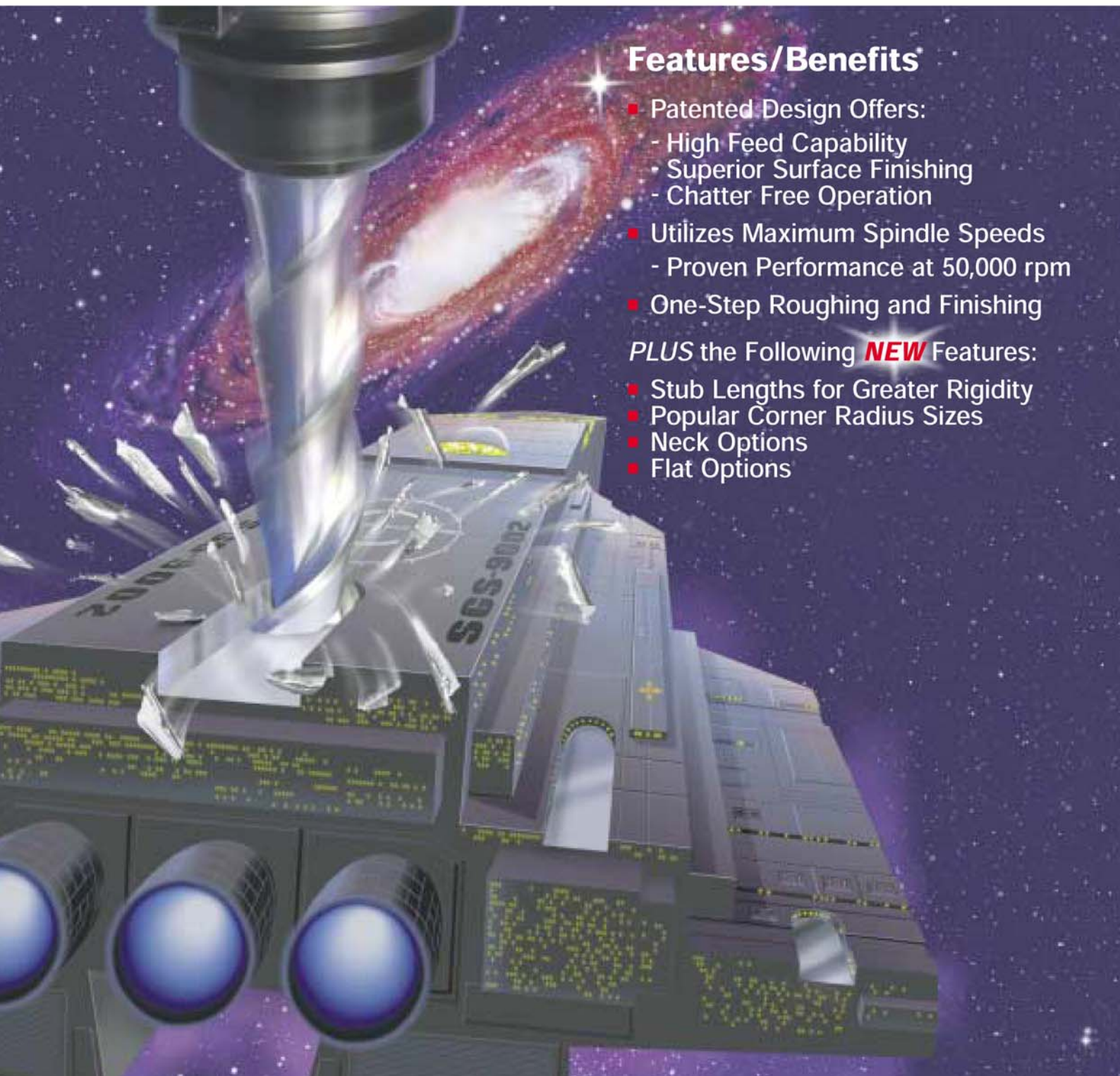
# The Original High Performance End Mill For Aluminum Just Got Better!!

## Features/Benefits

- Patented Design Offers:
  - High Feed Capability
  - Superior Surface Finishing
  - Chatter Free Operation
- Utilizes Maximum Spindle Speeds
  - Proven Performance at 50,000 rpm
- One-Step Roughing and Finishing

## PLUS the Following **NEW** Features:

- Stub Lengths for Greater Rigidity
- Popular Corner Radius Sizes
- Neck Options
- Flat Options



## Versatility of SGS Ski-Carb+®

The SGS Ski-Carb+® end mills have been proven winners for rough and finish milling applications in aluminum, plastic and other nonferrous and non-metallic materials. The combination of unique patented\* features, blended with the new options now available, provides customers with unsurpassed versatility, making the purchase of several tools unnecessary to complete the job.

The SGS Ski-Carb+® now offers the following enhancements: stub lengths for increased rigidity in the most demanding applications; corner radius geometry for additional protection against chipping; neck options on stub length shanks for extended reach capabilities; and, set screw flats.

A wider range of feeds and speeds are possible with the exclusive SGS Ski-Carb+® design to increase your production rates and improve your productivity. The SGS Ski-Carb+® end mills give you clean, easy shearing action for chatter-free work finishes, better workpiece tolerances, and significantly longer tool life.

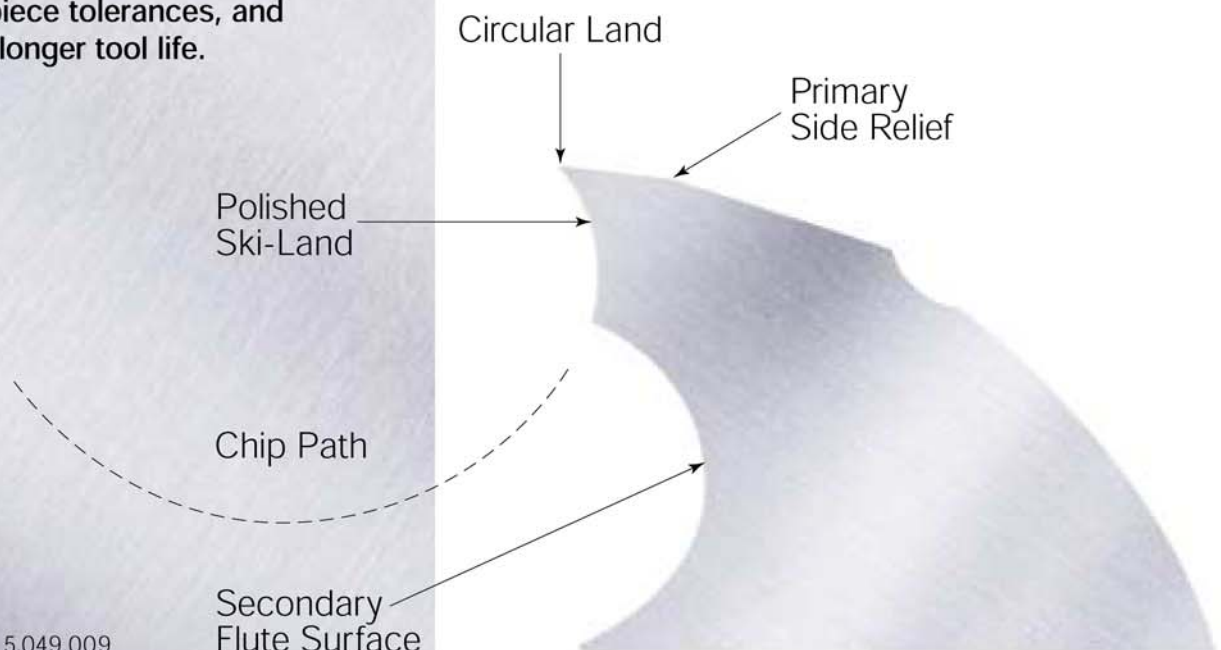
**Circular Land** – One of the unique features of the SGS Ski-Carb+® end mill design is the polished circular land. Tight control of the circular land width reduces edge aggressiveness, which allows the user to vary speed and feed rates, as well as mill into corners without inducing the chatter typical to conventional tools.

**Ski-Land** – Another unique feature of the SGS Ski-Carb+® end mill is the primary / secondary flute wall construction. Ski-Land is beneficial in avoiding chip interference by directing the chip away from the secondary flute.

**High-Helix** – The 45 degree helix angle increases effective rake for greater shearing ability without reducing edge strength. It also helps elevate the chip up and away from the work area.

**Stub Length** – The SGS Ski-Carb+® is now available in short flute lengths for increased rigidity in the most demanding roughing applications.

**Corner Radii** – The entire SGS Ski-Carb+® line is available with a corner radius to provide additional protection against chipping.



\*U.S. Patent No. 5,049,009

# Performance Data

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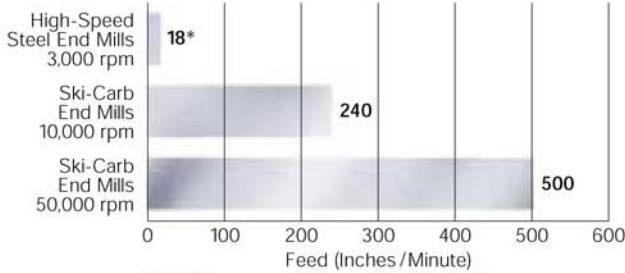
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## SGS Ski-Carb+® High Performance Carbide End Mills

### Greater Production Rates

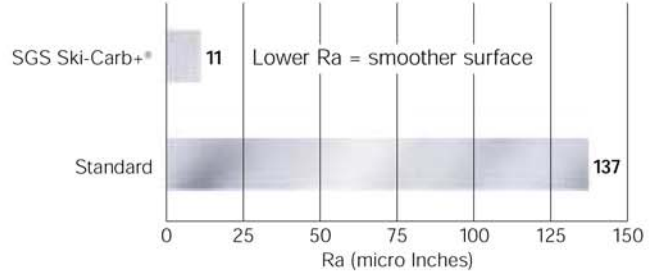
Operation: Profile Milling,  
2024 Aluminum, 1/2-inch diameter end mills  
Machine: CNC Vertical Mill.



\*Met Cut recommended speed/feed for aluminum

### Surface Finish Comparison

1/2-inch diameter  
6061T6 Aluminum  
10,000 rpm/225 ipm  
.200 radial width x .625 axial depth



**Roughing and Finishing Operations with a Single Pass** – SGS Ski-Carb+® provides a surface finish better than a finishing tool with the metal removal rates of a roughing tool!

## RPM–Use Maximum Available – No speed limits for SGS Ski-Carb+®

### Machining Recommendations – Starting Points

**Slotting Depth:** ≤ 1 x Diameter ■ **Profiling Width:** ≤ 1/2 x Diameter

Diameter		Aluminum Alloys	Plastics	Copper Alloys	Brass/Bronze
		1600-2000 sfm 488-610 m/min	1200-1600 sfm 366-488 m/min	800-1200 sfm 244-366 m/min	800-1500 sfm 244-457 m/min
Inch	mm	Feed per Tooth	Feed per Tooth	Feed per Tooth	Feed per Tooth
	3 mm	.04 mm	.08 mm	.04 mm	.04 mm
	4	.05	.10	.05	.05
	5	.06	.12	.06	.06
1/4"	6	.003" .07	.006" .14	.003" .07	.003" .07
5/16	8	.004 .10	.008 .20	.004 .10	.004 .10
3/8	10	.005 .12	.010 .24	.005 .12	.005 .12
1/2	12	.006 .15	.012 .30	.006 .15	.006 .15
	14	.17	.34	.17	.17
5/8	16	.007 .18	.014 .36	.007 .18	.007 .18
	18	.20	.40	.20	.20
3/4	20	.008 .22	.016 .44	.008 .22	.008 .22
1		.010	.018	.010	.010

Above are recommended starting points using regular or stub flute length versions – reduce feed accordingly when using long or extra-long flute lengths

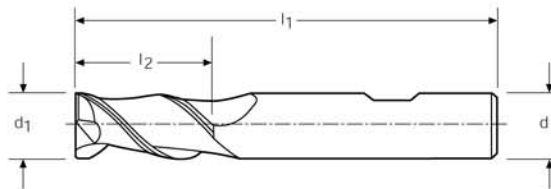
### Recommendations:

- Increase feed based on motor load
- Adjust feed appropriately when finish milling
- Use sufficient coolant, particularly in aluminum applications
- Mist may be advantageous when milling deep pockets
- For optimum performance balance holder/tool assembly

Contact SGS Tool Company for re-sharpening information

# Fractional Sizes

## Series 44 - Fractional Standard Lengths

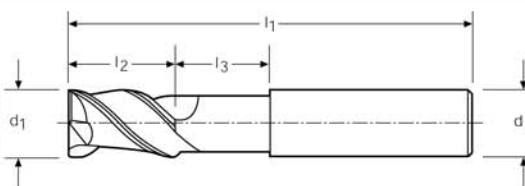


**Inch Tolerances**  
 $d_1 = +.0000 - .0005$   
 $d_2 = -.0001 - .0004$   
 Corner Radius:  $+.000 - .002$

$d_1$	$d_2$	$l_1$	$l_2$	EDP No. W/Flat	EDP No. W/O Flat	Radius* (Optional)
1/4"	3/8"	2-7/16"	3/4"	34501	32033	.015-.060
1/4"	3/8"	3-1/16"	1-1/4"	34503	32034	.015-.060
1/4"	3/8"	3-9/16"	1-3/4"	34505	32035	.015-.060
5/16"	3/8"	3-1/8"	1-3/8"	34507	32036	.015-.060
3/8"	3/8"	2-1/2"	3/4"	34509	32037	.015-.060
3/8"	3/8"	3-1/4"	1-1/2"	34511	32038	.015-.060
3/8"	3/8"	4-1/4"	2-1/2"	34513	32039	.015-.060
1/2"	1/2"	3-1/4"	1-1/4"	34515	32040	.015-.125
1/2"	1/2"	4"	2"	34517	32041	.015-.125
1/2"	1/2"	5"	3"	34519	32042	.015-.125
5/8"	5/8"	3-3/4"	1-5/8"	34521	32043	.015-.125
5/8"	5/8"	4-5/8"	2-1/2"	34523	32044	.015-.125
3/4"	3/4"	3-7/8"	1-5/8"	34525	32045	.015-.125
3/4"	3/4"	5-1/4"	3"	34527	32046	.015-.125
3/4"	3/4"	6-1/4"	4"	34529	32047	.015-.125
1"	1"	4-1/2"	2"	34531	32048	.015-.125
1"	1"	6-1/2"	4"	34533	32049	.015-.125

\*Contact your SGS Sales Representative for more information on Corner Radius Options.

## Series 45 - Fractional Stub Lengths



**Inch Tolerances**  
 $d_1 = +.0000 - .0005$   
 $d_2 = -.0001 - .0004$   
 Corner Radius:  $+.000 - .002$

$d_1$	$d_2$	$l_1$	$l_2$	Radius	EDP No. W/Flat	EDP No. W/O Flat	$l_3$
1/4"	3/8"	2-1/2"	3/8"	.010	91257	91250	9/16"
5/16"	3/8"	2-1/2"	7/16"	.012	91258	91251	5/8"
3/8"	3/8"	2-1/2"	9/16"	.015	91259	91252	9/16"
1/2"	1/2"	3"	3/4"	.020	91260	91253	3/4"
5/8"	5/8"	3-1/2"	7/8"	.025	91261	91254	7/8"
3/4"	3/4"	4"	1"	.030	91262	91255	1"
1"	1"	4"	1-1/4"	.040	91263	91256	7/8"

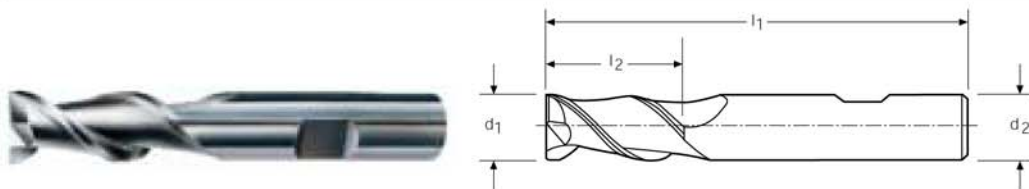
# Metric Sizes

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## Series 44M - Metric Standard Lengths



$d_1$ h <sub>6</sub>	$d_2$ h <sub>6</sub>	$l_1$	$l_2$	EDP No. W/Flat	EDP No. W/O Flat	Radius* (Optional)
3 mm	6 mm	52 mm	8 mm	44505	49663	,38-,.76mm
4	6	55	11	44509	49664	,38-,.76
5	6	57	13	44513	49665	,38-,.76
6	6	57	13	44517	49666	,38-1,52
8	10	69	19	44521	49667	,38-1,52
10	10	72	22	44525	49668	,38-1,52
12	12	83	26	44529	49669	,38-3,17
14	14	83	26	44533	49670	,38-3,17
16	16	92	32	44537	49671	,38-3,17
18	18	92	32	44541	49672	,38-3,17
20	20	104	38	44545	49673	,38-3,17

\*Contact your SGS Sales Representative for more information on Corner Radius Options.

### Metric Tolerances

$d_1$  &  $d_2$  mm  
 1 - 3 = +0,000-0,006  
 > 3 - 6 = +0,000-0,008  
 > 6 - 10 = +0,000-0,009  
 > 10 - 18 = +0,000-0,011  
 > 18 - 20 = +0,000-0,013  
 Corner Radius: +0,0-0,05mm



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