

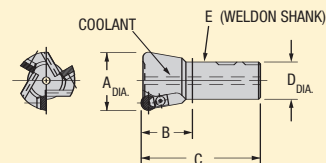
# Excelerator™ Mill

Greenleaf's new line of small-diameter end mills are designed for high-performance milling in difficult-to-machine materials using Greenleaf's advanced ceramic inserts.

The cutter bodies, shanks, and insert clamps have been developed to offer outstanding performance at elevated spindle speeds on the most demanding materials.

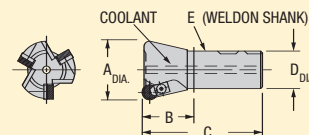
Typical application areas include most hardened materials above 40 R/c, and nickel and cobalt-based super alloys.

Hard milling applications in the Moldmaking and Tool & Die industries, pocket milling, ramping, and helical milling are now possible using indexable ceramic inserts.



## WSRP End Mill: Round Positive Inserts

Cutter Order Number	Insert	No. of Inserts	A	B	C	D	E	Furnished Components				Screw Torque Setting	Max RPM Carbide	Max RPM Ceramic
								Clamp	Clamp Screw	Anvil	Anvil Screw			
WSRP-60000.6-RH	RPGN-21.5	2	0.625	1.250	3.160	0.625	-	423978	#3-48 x 1/4 SHCS	-	-	15 In/lbs.	15,000	40,000
WSRP-60000.7-RH	RPGN-2.52	2	0.750	1.250	3.280	0.750	-	429323	SE02-01	-	-	30 In/lbs.	12,500	35,000
WSRP-60001A-RH	RPGN-2.52	3	1.000	1.250	3.280	0.750	-	429323	SE02-01	-	-	30 In/lbs.	9,500	26,000
WSRP-60001-RH	RPGN-32	3	1.000	1.250	3.280	0.750	-	425716	SE02-01	-	-	30 In/lbs.	9,500	26,000
WSRP-60001.2-RH	RPGN-32	3	1.250	1.250	3.530	1.000	7	425716	SE02-01	-	-	30 In/lbs.	7,500	21,000
WSRP-60001.5-RH	RPGN-43	3	1.500	1.720	4.000	1.250	8	3025-1	#10-32 x 1/2 LHCS	-	-	30 In/lbs.	6,200	19,500
WSRP-60002-RH	RPGN-43	3	2.000	1.720	4.000	1.250	8	3025-1	#10-32 x 1/2 LHCS	308341	#4-40 x 1/4 FHCS	30 In/lbs.	4,600	13,000
WSRP-60002.5-RH	RPGN-43	4	2.500	1.750	4.000	1.250	8	3025-1	#10-32 x 1/2 SHCS	308341	#4-40 x 1/4 FHCS	120 In/lbs.	3,800	10,000

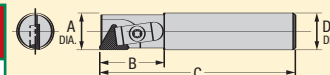


## WSRN End Mill: Round Negative Inserts

Cutter Order Number	Insert	No. of Inserts	A	B	C	D	E	Furnished Components				Screw Torque Setting	Max RPM Carbide	Max RPM Ceramic
								Clamp	Clamp Screw	Shim	Dowel Pin			
WSRN-60001-RH	RNGN-32	2	1.000	1.250	3.280	0.75	-	425716	SE02-01	-	-	30 In/lbs.	9,500	26,000
WSRN-60001.2-RH	RNGN-32	3	1.250	1.250	3.530	1.00	7	425716	SE02-01	-	-	30 In/lbs.	7,500	21,000
WSRN-60001.5-RH	RNGN-43	3	1.500	1.720	4.000	1.25	8	3025-1	#10-32 x 1/2 LHCS	-	-	120 In/lbs.	6,200	16,500
WSRN-60002-RH	RNGN-43	3	2.000	1.720	4.000	1.25	8	3025-1	#10-32 x 1/2 SHCS	303724	1/8" X 3/8	120 In/lbs.	4,600	13,000
WSRN-60002.5-RH	RNGN-43	4	2.500	1.750	4.000	1.25	8	3025-1	#10-32 x 1/2 SHCS	303724	1/8" X 3/8	120 In/lbs.	3,800	10,000

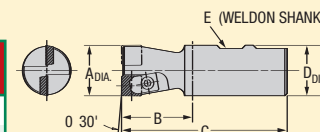
## WSTP Positive Rake End Mill: Triangle Inserts

Cutter Order Number	Insert	No. of Inserts	A	B	C	D	Furnished Components		Screw Torque Setting	Max RPM Carbide	Max RPM Ceramic
							Clamp	Clamp Screw			
WSTP-70.50 RH	TPGN-222	1	0.500	0.875	2.660	0.500	429871	PT-317T	20 In/lbs.	19,000	35,000
WSTP-70.56 RH	TPGN-222	1	0.562	1.000	2.780	0.500	429871	PT-317T	20 In/lbs.	17,000	35,000
WSTP-70.62 RH	TPGN-222	1	0.625	1.000	2.910	0.625	429871	PT-317T	20 In/lbs.	15,000	35,000



## WSSP End Mill: Square Positive Inserts

Cutter Order Number	Insert	No. of Inserts	A	B	C	D	E	Furnished Components		Screw Torque Setting	Max RPM Carbide	Max RPM Ceramic
								Clamp	Clamp Screw			
WSSP-70000.3-RH	SPGN-21.52	1	0.375	0.750	2.310	0.375	-	429871	PT-317T	20 In/lbs.	25,000	40,000
WSSP-70000.5-RH	SPGN-21.52	1	0.500	0.875	2.660	0.500	-	429871	PT-317T	20 In/lbs.	19,000	40,000
WSSP-70000.6-RH	SPGN-222	2	0.625	1.000	2.910	0.625	-	423978	#3-48 x 3/16 SHCS	15 In/lbs.	15,000	40,000
WSSP-70000.7-RH	SPGN-222	2	0.750	1.000	3.030	0.750	-	423978	#3-48 x 3/16 SHCS	15 In/lbs.	12,500	35,000
WSSP-70001-RH	SPGN-322	2	1.000	1.250	3.280	0.750	-	429706	SE02-01	30 In/lbs.	9,500	26,000
WSSP-70001.2-RH	SPGN-322	3	1.250	1.750	4.030	1.000	7	429706	SE02-01	30 In/lbs.	7,500	21,000
WSSP-70001.5-RH	SPGN-432	3	1.500	1.750	4.030	1.250	8	3127-C	#10-32 x 1/2 SHCS	120 In/lbs.	6,200	16,500



# Excelerator™ Mill

## Hard-Milling Application Data

Insert	Recommended Axial Depth	45-55 R/c		55-60 R/c		60-62 R/c	
		700-1200 SFM	.003-.006 IPT	500-900 SFM	.0025-.004 IPT	400-700 SFM	.002-.0035 IPT
		Starting Speed	Starting Feed	Starting Speed	Starting Feed	Starting Speed	Starting Feed
RPGN-21.5	0.031	850	0.0040	700	0.0030	550	0.0025
RPGN-2.52	0.040	850	0.0040	700	0.0030	550	0.0025
RPGN-32	0.045	850	0.0045	700	0.0030	550	0.0025
RPGN-43	0.050	850	0.0050	700	0.0035	550	0.0030
RNGN-32	0.045	850	0.0045	700	0.0030	550	0.0025
RNGN-43	0.050	850	0.0050	700	0.0035	550	0.0030
SPGN-21.52	0.030	850	0.0032	700	0.0025	550	0.0022
SPGN-222	0.035	850	0.0035	700	0.0025	550	0.0025
SPGN-322	0.035	850	0.0035	700	0.0025	550	0.0025
SPGN-432	0.040	850	0.0035	700	0.0030	550	0.0025
TPGN-222	0.030	850	0.0032	700	0.0025	550	0.0022

### Application Tips

- Air blast is highly recommended for hard milling applications.
- Maximum insert life can be achieved at a radial width of cut based on 40-60 percent of cutter diameter.
- As the width-of-cut ratio decreases, feed should be increased to maintain acceptable average chip thickness.
- Balanced toolholders are critical when operating at 10,000 RPM and higher.
- Keep tool length overhang as short as possible.
- Ramping or helical interpolation are the preferred methods of entry into the cut.
- Maintain cutter engagement as much as possible; frequent entry and exit into cuts can decrease insert life.
- When using round insert cutters, the effective cutting diameter depends on the actual depth of cut.
- **Do not exceed recommended maximum RPM.**  
Maximum RPMs for all Excelerator™ Mills can be found in Engineering Bulletin EM605. Contact Greenleaf for Engineering Bulletin EM605 at 1-800-458-1850.

### Formulas

$$\text{RPM} = 3.82 \times \text{SFM} / \text{effective dia.}$$

$$\text{SFM} = \text{Effective dia.} \times \text{RPM} / 3.82$$

$$\text{IPM} = \text{RPM} \times \text{no. of teeth} \times \text{chip load}$$

$$\text{IPT} = \text{IPM} / (\text{RPM} \times \text{no. of teeth})$$

Formula to Determine Eff. Cutting Dia.

$$Dw = 2 \times \sqrt{R^2 - (R - Ap)^2} + (D - 2R)$$

D = Cutter Diameter

R = Insert Radius

Ap = Depth of Cut

Dw = Eff. Cutting Dia.



**Greenleaf Sales**

Phone: 814-763-2915 • 800-458-1850 • Fax: 814-763-4423

sales@greenleafcorporation.com • www.greenleafcorporation.com