

Burr-Rx™ Brushes

Introducing the most aggressive line of compliant brushing tools ever!



*Brush
Mounts Directly
onto Shell Mill
Holder!*



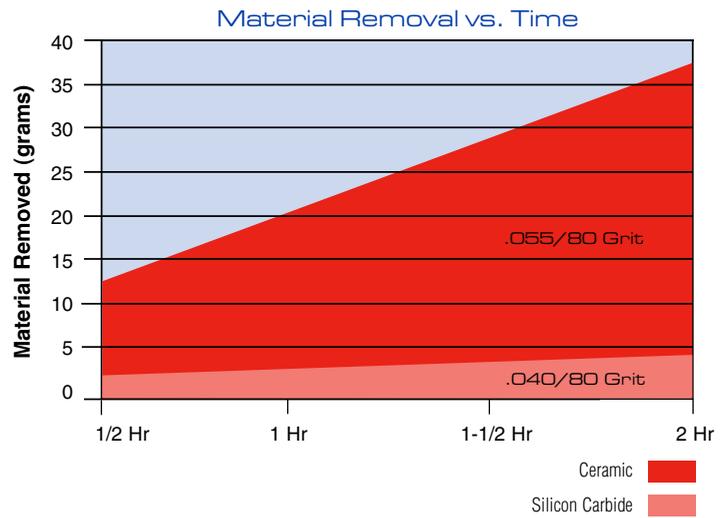
New Filament Cuts 400% Faster For Minimum Cycle Times!

New Filament Technology

New Filament Cuts 400% Faster!

Introducing the ultimate in high aggression, compliant deburring tools - the newly enhanced Burr-Rx™ brush. The latest addition to Weiler's Nylox® abrasive filament product line, **Burr-Rx brushes now utilize advanced filament technology, resulting in maximum aggression.** The black nylon filaments are co-extruded with high aggression ceramic grains providing cut rates never seen before with abrasive filament brushes!

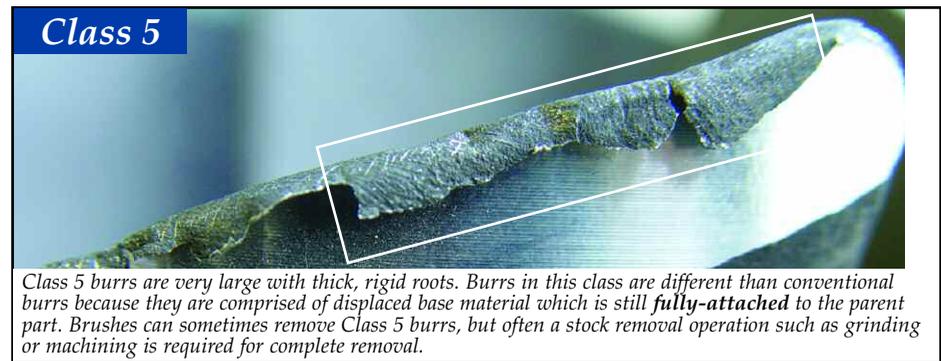
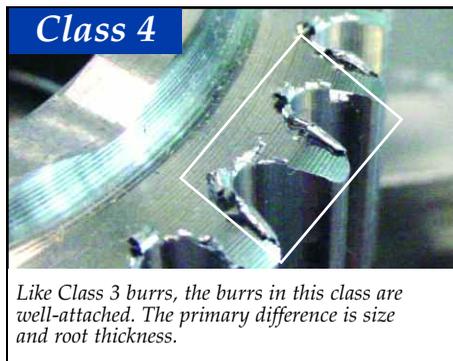
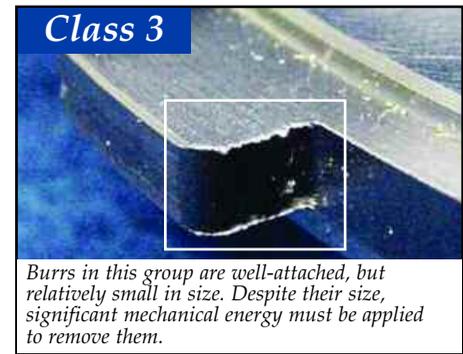
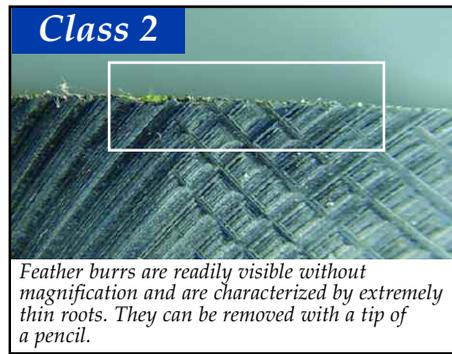
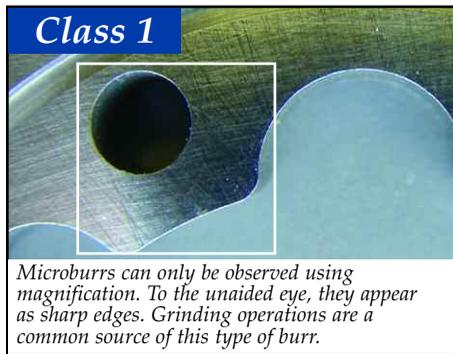
As the chart to the right illustrates, this new filament cuts 400% faster than conventional filaments with silicon carbide grain.



High Aggression Means Minimum Cycle Time

The extreme aggression of Burr-Rx brushes reduces processing time by allowing the use of high feed rates and short dwell times, resulting in increased throughput and lower deburring costs. In addition, Burr-Rx brushes can remove burrs which were previously impossible to remove with conventional nylon abrasive filament brushes.

The pictures below show Weiler's burr classification system which qualitatively describes burr types produced by common metalworking processes. Burr-Rx brushes are especially well-suited for applications involving Class 3 and Class 4 burrs.

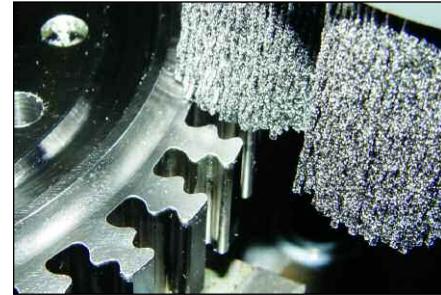


Technical Information

General Operating Guidelines

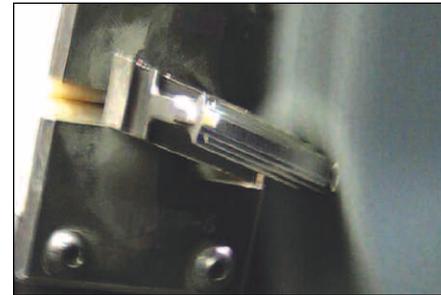
Ceramic Cut Rate

Burr-Rx brushes are especially well-suited for deburring materials such as inconel, stainless steel and titanium due to the unique cutting characteristics of the ceramic grain. Because they contain this ceramic abrasive, Burr-Rx brushes can also be used in the medical and aerospace industries where conventional silicon carbide brushes are often prohibited.



Operating Speed

Burr-Rx abrasive brushes work with a wiping and filing action. They are like a collection of flexible files and work best when operated at speeds that allow fairly deep penetration of the workpiece into the tips of the brush filaments. **The maximum RPM marked on the brush is not the optimum working speed.** Faster speeds do not work as well as slower speeds because the filaments do not maintain contact with an edge. A good rule of thumb is to stay under 3,000 SFPM.



Coolants

Burr-Rx brushes can be run dry, without coolants. However, certain deburring conditions, such as high speeds and depth of penetrations can create excessive heat buildup, causing the filaments to transfer nylon to the workpiece. If the speed or depth of penetration cannot be changed, coolants are recommended to overcome nylon transfer. The use of coolants will also improve surface finish.



Wear Compensation for Automated Systems

On dedicated equipment, it is possible to automate wear compensation by using electronic controls to monitor the load on drive motors and adjust the position of the brushing tool to maintain a relatively consistent amount of interference or pressure. Since this is typically not possible with standard CNC machine tools and robots, automatic indexing, probing and manual adjustment are three other possible methods of compensating for tool wear.

Please refer to page 73 of our Solutions Resource Guide for additional information on automated systems.



Programming Warning

Unlike conventional nylon abrasive filament brushes, **Burr-Rx brushes can change part dimensions if they are allowed to dwell in one area for an excessive time period.** To prevent this, the depth of penetration and feed rate guidelines in this brochure should be carefully followed. In addition, test runs using low-aggression operating parameters are recommended.

Deburring & Radiusing Targeted Edges

Operating Parameters

Wheel Brush Penetration

When using nylon abrasive wheel brushes, optimum aggression is obtained and wheel life maximized when the workpiece penetrates into the face of the brush approximately 10% of the trim length. The sides of the Burr-Rx filament do the work. To achieve a maximum edge radius and complete burr removal, parts should be penetrated into the brush face at a low RPM following the recommendations listed below.



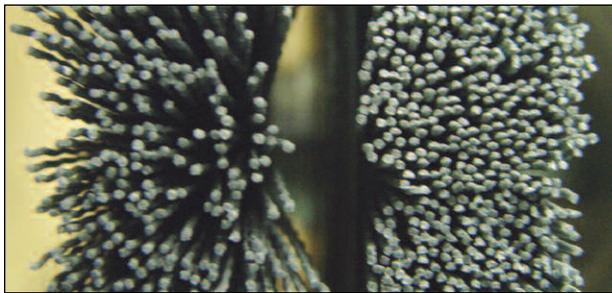
Parameter Recommendations

Brush Diameter	Wheel Brush Spindle Speed (RPM)	* Wheel Brush Depth of Penetration
2"	3,450 - 5,000	10% of trim length
3" - 4"	1,750 - 3,450	10% of trim length
6"	1,350 - 1,750	10% of trim length
8"	1,150 - 1,350	10% of trim length
10"	950 - 1,150	10% of trim length
12"	750 - 950	10% of trim length
14"	650 - 850	10% of trim length

Material	Feed Rate
Non-Ferrous	80 in. / min.
Cast Iron	60 in. / min.
Mild Steel & Ductile Iron	50 in. / min.
Alloy & Stainless Steels	30 in. / min.
Titanium & High Nickel Alloys	30 in. / min.

*Call Weiler's Application Engineering Department at 888-299-2777 if this depth of penetration is not aggressive enough.

Product Selection



Filament Density vs. Trim Length

Proper selection of brush density and trim length is a critical element in optimizing the output of a brushing operation. While high density / short trim brushes offer better cycle times and longer brush life, they are not effective in operations requiring a high degree of brush conformability. The picture above highlights the differences between 14" brushes with different densities.



Low density/long trim wheel brushes are best suited for operations requiring a high degree of conformability.



High density/short trim wheel brushes are ideal for users who need minimum cycle times and maximum brush life.

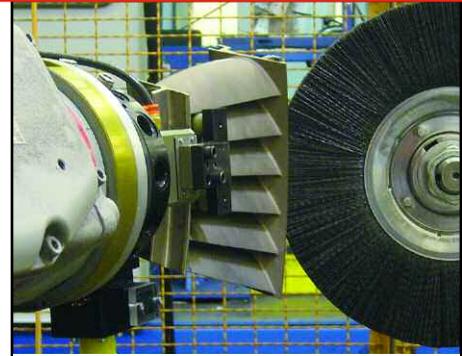


With Burr-Rx Radial Wheel Brushes

Product Selection

Composite Metal Hub Wheels

The Burr-Rx wheels offer a 50% higher filament density than traditional metal hub brushes - the highest in the marketplace. Constructed with a steel shell, these brushes provide increased accuracy and dimensional stability to ensure consistent, efficient performance with minimal vibration during use. Additionally, the brushes are produced with a two-inch arbor hole, which allows for direct mounting on various pieces of equipment without any need for adapters.



Robotic deburring applications using Burr-Rx brushes take advantage of the aggression and compliance of the product.

Dia.	Filament Dia./Grit	Arbor Hole	Face Width	Trim Length	Thickness At Face Plates	Max. RPM	Item No.
6"	.026/120	2"	3/4"	1"	15/16"	4,500	86123
	.043/120						86124
	.055/80						86120
8"	.026/120	2"	7/8"	2"	15/16"	4,500	86126
	.043/120						86127
	.055/80						86128
10"	.026/120	2"★	1-1/8"	2"	7/8"	1,800	86129
	.043/120						86130
	.055/80						86131
12"	.026/120	2"★	1-1/4"	3"	7/8"	1,800	86132
	.043/120						86133
	.055/80						86134
14"	.026/120	2"★	1"	1-3/4"	3/4"	1,800	86135
	.043/120						86136
	.055/80						86137
14"	.026/120	2"★	1-1/4"	4"	7/8"	1,800	86138
	.043/120						86139
	.055/80						86140

Patent Pending

Metal adapters are available, contact Customer Service.

★ 1/2" x 1/4" Double Keyway



86131



86135

Stem-Mounted Wheels for Crosshole Deburring

Designed for automated applications in CNC machining centers and dedicated machines, these brushes can be used to easily remove all burrs found at intersecting holes and other internal edges. Since these wheels eliminate off-hand deburring, they improve part-to-part consistency and reduce direct labor content.

Dia.	Filament Dia./Grit	Face Width	Stem Dia. *	Max. RPM	* * Item Number
3"	.026/120	1"	3/8"	6,000	86150
	.043/120				86151
	.055/80				86152
4"	.026/120	1"	3/8"	6,000	86154
	.043/120				86155
	.055/80				86156

*Different stem sizes available upon request.

**Items have 2" long flat for use in end mill holders or can be mounted in 3/8" collets.

For detailed operating parameters, see Weiler brochure WC124.

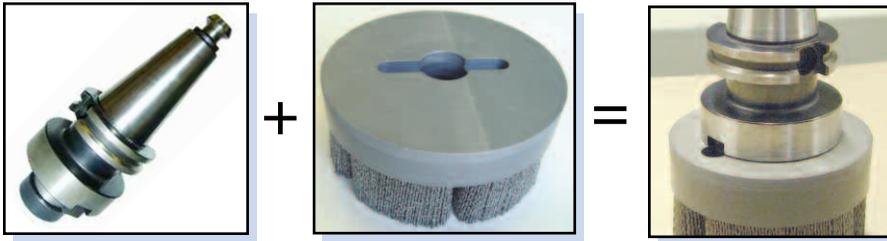


86155

For Free Application Assistance Call 888-299-APPS (2777)

Deburring Flat Parts and Milled Surfaces

New Product Features



No Drive Arbor Required
 Weiler's 4" diameter and larger Burr-Rx high aggression disc brushes can be mounted in CNC machines without a separate drive arbor. All of the brushes are designed with a 1-1/4" arbor hole and 1/2" wide keyways which should be compatible with most 3" diameter shell mill holders.

Precision Brush Face

All of the Burr-Rx disc brushes are manufactured using a new process which results in a very consistent, flat brush face in comparison to traditional construction which utilizes a molded backing. The high dimensional precision of these new tools means that the brushes are suitable for the most critical applications and perform more consistently from first part to last.



Operating Parameters

Disc Brush Penetration



When using Burr-Rx disc brushes, a good starting point for a depth of penetration between the brush face and work surface is 0.075". This depth of interference produces the best compromise between aggression and brush life.

Feed Rate

Feed rate is determined by the amount of deburring, edge radiusing or surface finishing required, and the type of material that is being processed. It is generally application specific. The feed rate starting point of Burr-Rx disc brushes on various materials is listed below. This feed rate should be adjusted to achieve optimum operating conditions. On soft materials and parts with small burrs, much higher feed rates can be achieved. Slower feeds result in a more aggressive brushing action.

Parameter Recommendations

Brush Diameter	Disc Brush Spindle Speed (RPM)	**Disc Brush Depth of Penetration
2"	1750 - 2000	.050" - .125"
3" - 4"	1500 - 1750	.050" - .125"
6"	1250 - 1500	.050" - .125"
8"	800 - 1000	.050" - .125"
10"	700 - 800	.050" - .125"
12"	N/A	.050" - .125"
14"	N/A	.050" - .125"

Material	Feed Rate
Non-Ferrous	80 in./min.
Cast Iron	60 in./min.
Mild Steel & Ductile Iron	50 in./min.
Alloy & Stainless Steels	30 in./min.
Titanium & High Nickel Alloys	30 in./min.

*Call Weiler's Application Engineering Department at 888-299-2777 if the 0.125" depth of penetration is not aggressive enough.

**Set depth of penetration when the brush is rotating at the operational speed. Use 0.075" depth of penetration as a starting point for all disc brush applications.



With Burr-Rx Disc Brushes

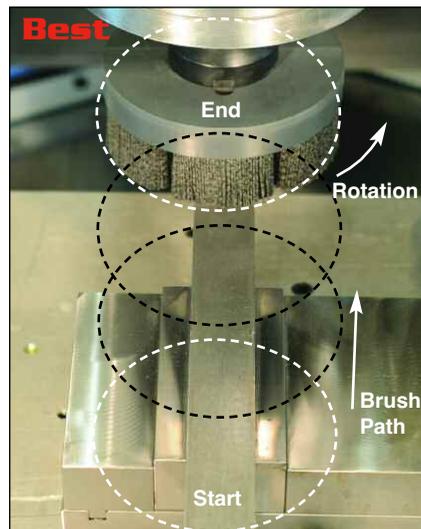
Operating Parameters

Tool Path

The ideal tool path for a Burr-Rx Disc brush is very similar to the path of the face mill that produced the burr. However, three differences exist:

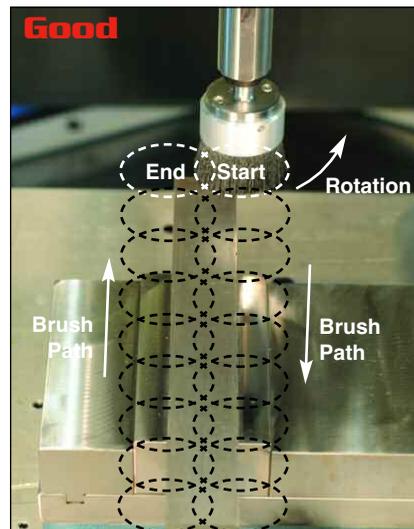
- The rotation direction of the brush should be opposite of the cutting tool that created the burr.
- The length of the path must be longer than the part. Unlike a cutter path that can stop when the leading edge of the cutter reaches the end of the part, the tool path of a brush should continue until the trailing edge of the brush reaches the end of the part.
- The centerline of the brush may need to be off-set from the center of the part in order to maximize the number of filaments that strike the part at a perpendicular angle. This is especially important when the diameter of the brush is similar to the width of the part.

A The part is deburred in the shortest cycle time with the lowest consumable cost-per-part.



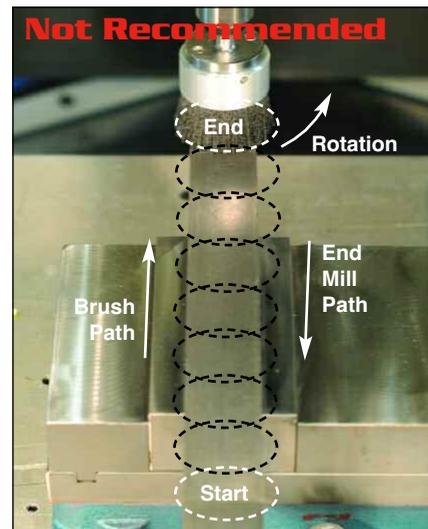
If a large diameter brush can be used, the centerline of the brush should be positioned on the center of the part. Ideally, the brush should be 3-4" wider than the part.

B The part is deburred, but requires a longer cycle time. When a large brush will not fit in the tool changer, this method is recommended.



If a small diameter brush must be used, the centerline of the brush should be positioned on the edge of the part. This maximizes aggression by increasing the amount of perpendicular contact between the brush filaments and the burred edge.

C Produces less deburring than A & B.



Positioning a small diameter brush with its centerline on the center of the part is not recommended. This configuration will not allow perpendicular contact of the filaments against the burred edge.



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Burr-Rx Disc Brushes - No Drive Arbor Required

Product Selection

Shell Mill Holder Disc Brushes

Dia.	Filament Dia./Grit	Arbor Hole	Trim Length	Max. RPM	Item Number
4"	.026/120	7/8"	1-1/2"	2,500	86112
	.043/120	7/8"	1-1/2"	2,500	86113
	.055/80	7/8"	1-1/2"	2,500	86114*
6"	.026/120	7/8"	1-1/2"	2,500	86115
	.043/120	7/8"	1-1/2"	2,500	86116
	.055/80	7/8"	1-1/2"	2,500	86117*
8"	.026/120	7/8"	1-1/2"	2,000	86141
	.043/120	7/8"	1-1/2"	2,000	86142
	.055/80	7/8"	1-1/2"	2,000	86143*
10"	.026/120	7/8"	1-1/2"	2,000	86125
	.043/120	7/8"	1-1/2"	2,000	86121
	.055/80	7/8"	1-1/2"	2,000	86122*

* Maximum Density



Mini Disc Brushes

Dia.	Filament Dia./Grit	Trim Length	Max. RPM	Item Number
2"	.026/120	1-1/4"	4,500	86106
	.043/120	1-1/4"	4,500	86107
	.055/80	1-1/4"	4,500	85733
3"	.026/120	1-1/4"	4,500	86109
	.043/120	1-1/4"	4,500	86110
	.055/80	1-1/4"	4,500	86111



85733

Mini Disc Brush Drive Arbor - For use with 2" & 3" Brushes

Stem Diameter	Stem Length	Max. RPM	Item Number *
1/2"	1-3/4"	6,000	89029
1/2"	1-3/4"	6,000	89033**

*Products supplied with set screw and wrench.

**Recommended for operations in which brush rotation alternates between forward and reverse.



89029



89033

End Brushes (Banded)

Dia.	Filament Dia./Grit	Trim Length *	Stem Size	Max. RPM	Item Number
3/8"	.026/120	1/4"	1/4"	10,000	86098
	.043/120	1/4"	1/4"	10,000	86099
1/2"	.026/120	1/4"	1/4"	10,000	86100
	.043/120	1/4"	1/4"	10,000	86101
3/4"	.026/120	1/4"	1/4"	10,000	86102
	.043/120	1/4"	1/4"	10,000	86103
1"	.026/120	1/4"	1/4"	10,000	86104
	.043/120	1/4"	1/4"	10,000	86105

*Trim length from bands



86104



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