

GUIDELINES FOR EFFECTIVE USE OF NYLOX BRUSHES FOR FACTORY APPLICATION ASSISTANCE, CALL 1-888-299-2777

USE OF NYLOX BRUSHES

Use Nylox brushes for deburring and surface finishing all types of machined and stamped metal components. They are most effective when the user takes steps to keep burr size to a minimum. Nylox brushes will not remove significant amounts of base material from large surface areas. They do not change dimensional tolerances or deteriorate machine finishes. They are edge specific. Nylox brushes refine surface finishes by reducing surface roughness. They typically deburr edges very quickly, while creating small edge radii. Radii vary from .001" - .002" for hard steel and carbide to .004" - .008" for soft materials like aluminum. The creation of larger edge radii takes a much greater amount of time. This self-limiting action allows fairly wide brush operating parameters with no danger of damaging expensive machined parts.

BRUSH SELECTION

Use round filaments when:

- Reduced aggression is required; especially when processing softer metals such as aluminum and brass
- The added conformability offered by round filaments is required to accommodate a part contour
- Rectangular cross-section cannot get into the edges of small holes/slots and other features on the part

Use rectangular filaments when:

- Processing harder metals such as steel and cast iron alloys
- Burrs are large
- Minimum deburring time is required
- Part geometry is not intricate and rectangular filaments can reach all edges

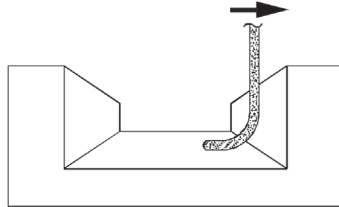
BRUSH OPERATION

Tool Path:

Think of Nylox brushes as your final cutting tools. For best results, the brush should be rotated in the opposite direction of the cutting tool that created the burrs. It is also critical to use proper speeds, feeds and depth of penetration. For disc brushes, the tool path can be similar to the cutting tool path. However, the centerline of the brush should be off-set from the centerline of the cutting tool. This increases the amount of perpendicular contact between the brush filaments and the burred edges.

Operating Speed:

Nylox abrasive brushes work with a wiping and filing action. Think of them as flexible files. They work best when operated at speeds that allow fairly deep penetration of the work piece into the brush filaments.



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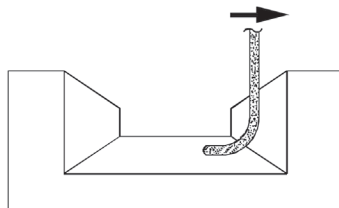
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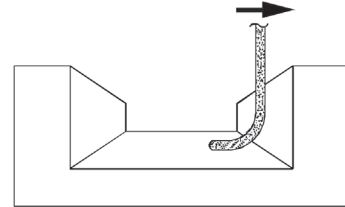
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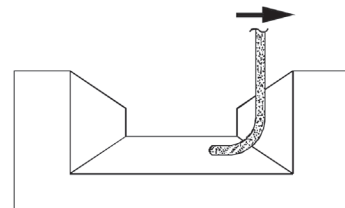
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BRUSH OPERATION (CONTINUED)

Usually, faster speeds don't work as well as slower speeds. The maximum safe speed marked on the brush is not the optimum working speed. The following table shows the most effective speed range for Nylox products. A good "rule of thumb" is to stay under 3500 SFPM.

| Brush Dia. | Disc Brush Spindle Speed (RPM) | Wheel Brush Spindle Speed (RPM) | *Wheel Brush Depth of Penetration | **Disc Brush Depth of Penetration | ***Steel/Harder Metals Feed Rate | ***Aluminum Feed Rate |
|------------|--------------------------------|---------------------------------|-----------------------------------|-----------------------------------|----------------------------------|--------------------------|
| 2" - 5" | 1500 - 1750 | 3200 - 6500 | 10% of trim length | .040" - .150" | 18"/minute (8mm/second) | 35"/minute (15mm/second) |
| 6" | 650 - 1750 | 2000 | 10% of trim length | .040" - .150" | 18"/minute (8mm/second) | 35"/minute (15mm/second) |
| 8" | 500 - 1300 | 1600 | 10% of trim length | .040" - .150" | 18"/minute (8mm/second) | 35"/minute (15mm/second) |
| 10" | 400 - 1100 | 1200 | 10% of trim length | .040" - .150" | 18"/minute (8mm/second) | 35"/minute (15mm/second) |
| 12" | 325 - 875 | 1000 | 10% of trim length | .040" - .150" | 18"/minute (8mm/second) | 35"/minute (15mm/second) |
| 14" | 300 - 750 | 900 | 10% of trim length | .040" - .150" | 18"/minute (8mm/second) | 35"/minute (15mm/second) |

*Call the Weiler Application Engineering Department if this depth of penetration is not aggressive enough
 Set depth of penetration when the brush is rotating at the operational speed. Use .100" depth of penetration as a starting point for all **disc brush applications.
 ***Feed rate is determined by the amount of deburring, edge radiusing or surface finishing required, as well as the type of material that is being processed. It is generally application specific. Slower feeds result in a more aggressive brushing action. Based on the brushing action desired for a specific application, feed rate can be increased or decreased.

Increasing brush speed does not result in a more aggressive action. If more aggression is required, the following steps will achieve the desired results:

- Reduce RPM and increase depth of penetration
- Reduce the feed rate
- Use rectangular filaments
- Increase the filament diameter and the grit size
- Use a brush with a shorter trim length

Coolants

Nylox brushes can be run dry, without coolants. However, certain deburring conditions such as higher speeds and greater depth of penetration can create excessive heat buildup, causing the nylon filaments to melt and smear on the work surface. If you can't change speed or depth of penetration, coolants are recommended to overcome heat smear. Coolants are also recommended when working with CNC's and other automated setups to flush the burrs/metal particles and worn abrasive grit away from the precision machine components such as bearings, guides and slideways. The worn abrasive particles and metal chips in the coolants can then be trapped and removed by using a good filtration system with at least a 50-micron filter. This will minimize machine wear and tear, keep machines running clean and keep airborne particles to a minimum. Water based coolants are desirable.



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