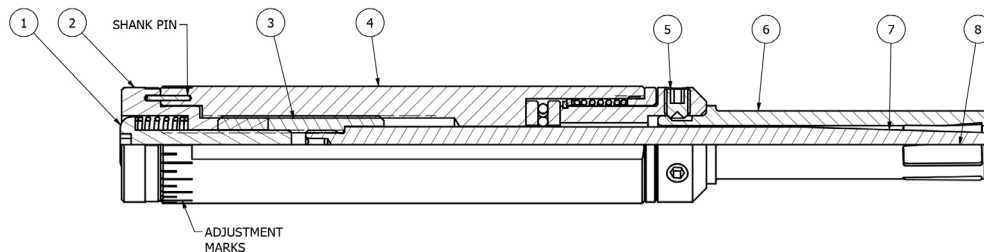


MONAGHAN COMPACT ROLLER BURNISHING TOOL

SETTING AND OPERATING INSTRUCTIONS

| PARTS LIST | | |
|------------|-----|-----------------------------------|
| ITEM | QTY | DESCRIPTION |
| 1 | 1 | BUTTON HEAD CAP SCREW, #10-32 X 1 |
| 2 | 1 | MICRO ADJUSTMENT NUT |
| 3 | 1 | MICROMETER NUT |
| 4 | 1 | SHANK, 3/4 OR 20mm |
| 5 | 1 | CAGE SLEEVE |
| 6 | 1 | CAGE |
| 7 | 1 | MANDREL TIP |
| 8 | 5 | ROLL |



Setting the burnishing tool:

Our Compact Burnishing Tool is designed to be used in a machine that uses a gang block to hold the tooling and allows access to the rear of the tool to make adjustments. When first setting the tool it will be easier to make the first adjustments outside the machine on a work bench.

1. Begin with using a part to be burnished as a reference (a finished part or gage ring can be used as well).
2. Slide the end of the tool with the rolls into the part. If the tool won't fit, pull the knurled micro adjustment nut (2) back and adjust the tool smaller using the arrow marked on the housing (4) as reference.
3. Once the tool easily slides into the part to be burnished, pull out the knurled micro-adjustment nut (2) and begin to rotate the nut to increase the diameter of the tool until the rolls (8) come in contact with the surface of the part. There should be some slight friction felt as the tool is withdrawn from the part.
4. Using the incremental adjustment marks on the housing (4), adjust the diameter of the tool for the amount of stock left in the bore (per chart on back). The longer marks are 0.0001" (0.0025 mm) and the shorter marks are 0.00005" (0.0012 mm). If using a finished part or gage ring, no additional adjustment is required. For some materials, the initial size can be increased slightly due to spring back in the part after burnishing. However, there is no set rule for how much to increase the size. The exact amount will have to be determined by trial and error.
5. Install the burnishing tool into the machine's gang tool block. Make sure the micro-adjustment nut (2) is sticking out far enough out the back to allow for easy access for size changes. Do not overtighten the clamp screws or the tool may not function properly. Use the operating data on the back to burnish a test part.

The final setting is determined by burnishing a test part and measuring the size and surface finish. Adjust the tool as required. It is not recommended to burnish a part more than twice (see "Notes" below).

Alignment:

It is important that the tool and work piece be properly aligned. A minimal misalignment of .003" to .004" (.076mm - .101mm) will not adversely affect the tool or surface finish. The higher the alignment deviation, the more bending stresses can occur. This can lead to fatigue and failure of the mandrel tip.

Notes:

- All burnishing tools must be used/operated in a clockwise direction.
- Do not burnish a piece more than twice, due to workhardening of the material. This may cause flaking and incorrect tool setting.
- For optimal results when burnishing harder materials, the RPM may need to be reduced below recommended values.
- Always call us with questions or concerns if something is unclear.

Stock Allowance/Surface Finish (OD surfaces)

High ductility materials
(under 40Rc):
annealed steel,
stainless steel,
aluminum,
brass and
bronze

| Work piece size range | | Pre-burnished finish | | Stock left on dia.* | | Burnished finish | | | |
|-----------------------|---------|----------------------|---------|---------------------|-----------|------------------|---------------|------|----------|
| inch | mm | μ inch | μ meter | inch | mm | μ inch | μ meter | | |
| 0.154 | - 0.484 | 3.91 | - 12.29 | 80 - 125 | 2.0 - 3.1 | 0.0004 - 0.0007 | 0.010 - 0.018 | 4-10 | 0.1-0.25 |

Low ductility materials
(greater than 41Rc):
grey cast iron, nodular iron, heat treated steel, magnesium alloys and hard copper alloys

| Work piece size range | | Pre-burnished finish | | Stock left on dia.* | | Burnished finish | | | |
|-----------------------|---------|----------------------|---------|---------------------|-----------|------------------|---------------|-------|-----------|
| inch | mm | μ inch | μ meter | inch | mm | μ inch | μ meter | | |
| 0.154 | - 0.484 | 3.91 | - 12.29 | 80 - 100 | 2.0 - 2.5 | 0.0004 - 0.0007 | 0.010 - 0.018 | 12-24 | 0.3 - 0.6 |

** For example: if your desired finish diameter is 0.375" (9.525mm) and your pre-burnish finish is 125Ra, subtract 0.0007" (0.018mm) on diameter (0.00035" or 0.0088mm per side), resulting in 0.3743" (9.507mm) starting diameter. For smoother finishes, use less stock.*

Recommended feeds and speeds

| Diameter | | Feed rate* | | Speed** |
|---------------|--------------|---------------|---------------|--------------|
| Inch | Metric | inch/rev | mm/rev | RPM |
| 0.154 - 0.246 | 3.91 - 6.25 | 0.005 - 0.009 | 0.127 - 0.229 | 1500 to 3000 |
| 0.247 - 0.371 | 6.27 - 9.42 | 0.008 - 0.012 | 0.203 - 0.305 | 1500 to 3000 |
| 0.372 - 0.484 | 9.45 - 12.29 | 0.012 - 0.019 | 0.305 - 0.483 | 1000 to 2000 |

**Do not run the tool slower than the minimum recommended feed rate.*

***For optimal results when burnishing harder materials, the RPM may need to be reduced below recommended values.*

Lubrication:

- A continuous stream of clean lubricant, in sufficient volume to clean and flush the tool and work piece, should be provided during operation.
- Use any standard grade of lightweight, low viscosity lubricating oil for most metals. Water soluble liquids are acceptable (an 8%+ concentration is recommended). For aluminum or magnesium alloys, a highly refined paraffin base oil of low viscosity will work well.

Routine Maintenance:

When properly used, the burnishing tool requires only routine maintenance.

- Examine rolls, cages and mandrels for wear or damage at regular intervals and replace when necessary.
- Replace a complete set of rolls each time
- Before storing the tool, clean the tool and apply rust preventative to entire tool.
- Before returning the tool to service, double-check the rolls and mandrels for pitting or rusting. Replace parts as needed.

For additional technical support:

