Roller burnishing overview

Cogsdill Roll-a-Finish tools offer you a fast, clean, and economical method of sizing and finishing metal parts to exacting specifications. The tools can be operated on any spindle. Parts of virtually any configuration and material are accurately sized within “tenths,” with surface finishes as fine as 2 micro-inches (0.05 micrometers)... *in seconds!* An additional benefit: roller burnishing work hardens the part surface, producing a dense, compacted, wear-resistant surface for longer part life. Parts are improved, with faster production, and at a lower cost.

Burnishing
TOOLS & MACHINES

Universal Burnishing Tools

Boring-Bar Style

Turning-Holder Style

Bearingizing Tools

External Roll-a-Finish® Tools

CX® External Roller Burnishing Machines

Internal Roll-a-Finish® Tools

Diamond Burnishing Tools

We are pleased to offer the widest array of standard burnishing products in the industry, supported by the broadest range of experience in application engineering and custom tool design. Let us provide you with burnishing s o l u t i o n s *to meet your sizing and finishing needs, with faster production and at a lower cost.*

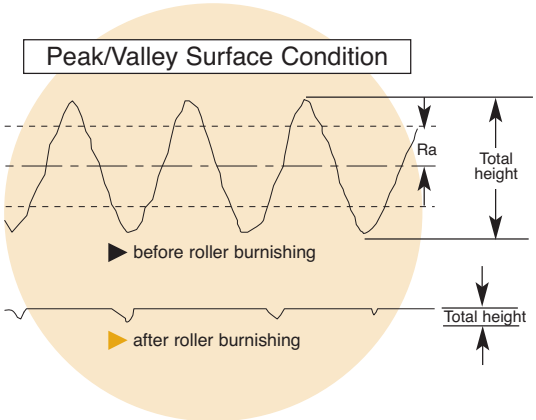
Roller burnishing overview

roll´•er burn´•i•shing defined

Roller burnishing is a surface finishing technique in which hardened, highly polished steel rollers are brought into pressure contact with a softer piece part. As the pressure generated through the rollers exceeds the yield point of the piece-part material, the surface is plastically deformed by cold flowing of sub-surface material. The result is a mirror-like finish and a tough, work-hardened surface with load-carrying characteristics which make the burnished surface superior to finishes obtained by abrasive metal-removal methods.

A roller burnished surface is smoother and more wear-resistant than an abraded surface of the same profilometer reading. Profilometers measure roughness height. Abrasive finishing processes remove metal by cutting or tearing it away, and while this usually lowers the roughness profile, it leaves sharp projections in the contact plane of the machined surface.

Roller burnishing displaces metal, rather than removing it. Material in microscopic "peaks" on the machined surface is caused to cold flow into the "valleys," creating a plateau-like profile in which sharpness is reduced or eliminated in the contact plane. A burnished surface is therefore smoother than an abraded surface with the same roughness height measurement. The burnished surface will last longer under working conditions in contact with a mating part.



Process advantages and benefits of burnishing

There are *four primary benefits* of the roller burnishing process:

1. Improved surface finish – as fine as 2 to 4 microinch (Ra)
2. Improved size control – tolerances within .0005 inch (.01mm) or better
3. Increased surface hardness – up to 5 to 10% or more
4. Improved fatigue life – as much as 300% or better

Other benefits include:

- Reduced friction
- Reduced noise level
- Enhanced corrosion resistance
- Elimination of tool marks and minor surface imperfections
- Replaces expensive secondary operations, such as grinding, honing, or lapping
- Cleaner than honing or other abrasive operations
- Faster production, at a lower cost, as compared to other finishing processes – parts are sized, finished, and work-hardened... in seconds!

CX external roller burnishing machines

diamond burnishing tools

KB Knurling-Burnishing Process

universal burnishing tools

bearingizing tools

Roll-a-Finish® tools for all types of part configurations

Cogsdill Roll-a-Finish tools are applied to a wide variety of part configurations, including:

- Inside diameters (holes)
- Outside diameters (shafts)
- Flat surfaces
- Tapers
- Spherical surfaces and contours
- Fillets (radii at shoulders)

Standard Roll-a-Finish tools are available from stock for inside diameters from .187 to 4.000 inches (4.75 to 101.6mm), and for outside diameters from .062 to 2.000 inches (1.57 to 50.8mm). The tools are easily adjustable over a typical range of .040 inch (1.02mm). Special designs are available for larger and smaller diameters, and for tapers, faces, contours, and virtually any part configuration.

Other Cogsdill burnishing tool products

In addition to Roll-a-Finish tools for IDs, ODs, and special part configurations, Cogsdill offers several other burnishing products and related items, including:

- *Bearingizing Tools*, for burnishing IDs in parts with thin walls or irregular wall thicknesses, or in applications where porosity retention or extremely close tolerances are required
- *CX® External Roller Burnishing Machines*, for sizing, finishing, and work-hardening cylindrical surfaces of any length
- *Diamond Burnishing Tools*, for generating mirror finishes on ODs, large IDs, or faces of virtually any diameter
- *Universal Burnishing Tools*, for burnishing ODs, large IDs, faces, tapers, contours, and irregular surfaces with a single roll
- *The KB Knurling-Burnishing Process*, for salvaging out-of-tolerance bores and shafts: a two-step process using Cogsdill knurling tools and Roll-a-Finish tools