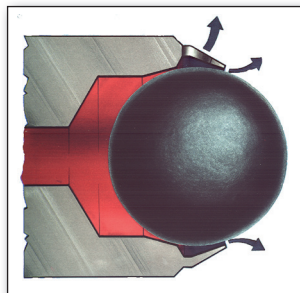


Hydrostatic Tools

ECOROLL's HG Product Line: For Complex Contours and High Hardnesses

ECOROLL's hydrostatic HG tools can roller burnish and deep roll even the most complex contours and free-form surfaces. Also designed for hard roller burnishing and deep rolling, the HG tools can be applied with CNC-controlled lathes, drills, milling machines and machining centers as well as with manually controlled machines. This group of tools includes types HG1.2 - HG28.

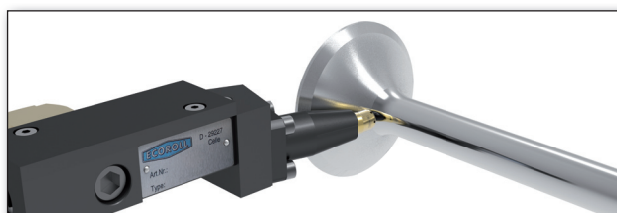


HG burnishing ball and ball retainer

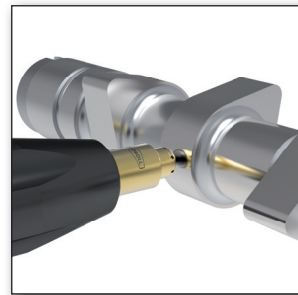


High pressure pump HGP 6.5

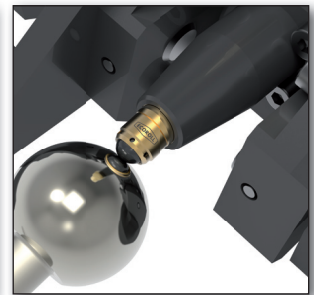
The unique HG tool design is based on a burnishing ball made of an especially hard material. This ball is hydrostatically suspended by pressurized liquid, either water soluble coolant or oil. The ECOROLL HGP line of pumps supply the tools with consistent, controllable operating pressure up to 400 bar. This pressure generates the burnishing force that is applied as the ball rotates against the workpiece surface.



Deep rolling of lower shaft, radius and disc of a valve



Hard roller burnishing of a cam shaft

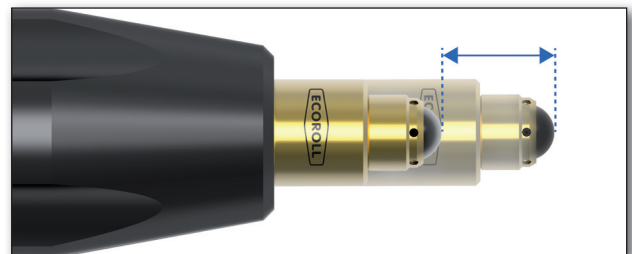


Roller burnishing of a ball joint

Type HG Tool Applications

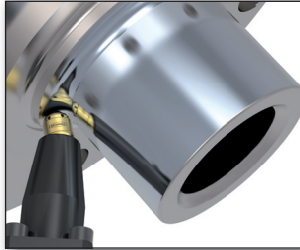
Roller burnishing/Deep rolling complex contours

The ECOROLL HG tools can often machine complex shapes that standard roller burnishing tools cannot. The hydrostatically loaded ball can freely rotate in any direction, even at high speed, due to the low friction environment.

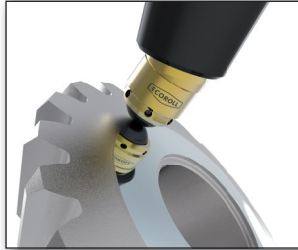


Following system

The hydrostatic bearing maintains a supporting fluid film between the ball and the ball seat, independent of the distance between tool and workpiece. The HG tool's unique following system enables the ball to follow the contour while maintaining a constant burnishing force.



Deep rolling of a wheel flange's fillet radius



Roller burnishing of a bevel gear's spherical zone

Deep rolling with HG tools dramatically increases the fatigue strength and operating life of dynamically loaded parts and components constructed of light-weight materials. It is the only process which combines

- the generation of residual compressive stresses in the component's surface layer,
- improving the material's strength and
- smoothing a component's surface and thus removing micro notches.

Type HG Tool Applications

Hard roller burnishing

With the exception of HG2 and HG25, the entire HG tool line can burnish hardened steel and other alloys with hardnesses up to 65 HRC. Using the HG line of tools reduces overall production costs. One HG tool can be used for multiple applications.



Hydrostatic Tool Design and Specifications

The HG line features tools in a wide range of sizes, with burnishing balls from 1.2 – 28 mm in diameter. The tools are classified according to ball size.

For example: an HG2 tool has a ball with a diameter of approximately 2 mm.

To maximize the level of compressive residual stresses, choose the tool with the largest possible ball diameter.

Note: Workpiece contours and finish requirements ultimately determine the burnishing ball size.

Because HG tools can be used across a wide spectrum of applications, the tool line features many different models. Several versions are pictured here.

However, the design possibilities are endless. Please contact us regarding your specific application.

