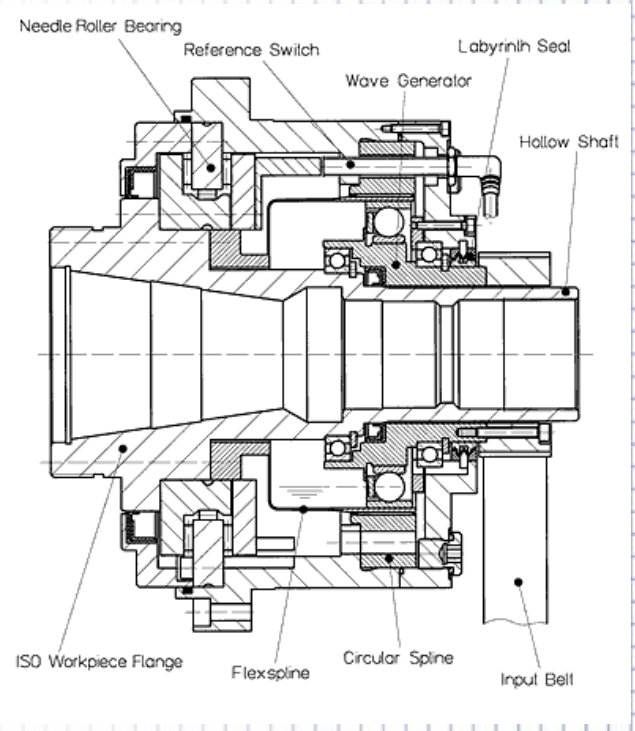
Application Handbook
Machine Tools

Harmonic Drive LLC
Tool Grinding Machine Indexing Axis

- Hollow-shaft
- Special Flexspline
- Special Wave Generator

In tool grinding machines the workpiece (e.x. milling cutter) must be rotated with high precision relative to the grinding disc, in order to achieve complex contours and also to provide a perfect surface finish. The key component of the indexing axis shown in the drawing is a special Harmonic Drive® CSF Series component set with a “wine-glass” design. The diaphragm of the Flexspline opens outwards, which enables a large hollow-shaft to be passed through the gear. In this example the hollow-shaft is used by the clamping mechanism that holds the tool in place during the grinding process (not shown in the drawing). The special ISO workpiece flange is supported by a high precision needle-roller bearing. This axis can also be used for cylindrical grinding, which requires high input speeds to the gear. In this case the gear is lubricated with oil. A labyrinth seal is mounted at the input side to reduce friction and to avoid a large temperature increase. The gear is driven via a toothed belt from a motor which is mounted parallel to the gear. Please note how the inductive reference switch (for measuring the output position) passes through the specially modified Circular Spline.



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