

SUPERFINISH

Finishing of Cylindrical, Tapered, Spherical, Self-Aligning Roller Bearings, CARB® Bearings, Angle-Setting Cylindrical Bearings, Inner and Outer Races



For inner and outer races with one or more tracks

- generation of any required cross-sections such as concave, convex, semi-barrel shaped, hollow, logarithmic; using patented NC controlled overlay motion
- correction of existing grinding or hard-turned defects using patented NC controlled overlay action
- NC controlled pressure rolls
- NC controlled centering unit
- Loading and unloading via 3- or 4-way gripper
- CNC control with digital drives for linear and rotary motion
- Single-stage or multiple processing with multiple stone-change unit
- workpieces are machined in easy access position, no rolling or knocking
- re-tooling takes less than 9 minutes
- stone pressures variable across a wide range using hydraulic bypass technology
- optional flange face, shoulder or IR hole machining using SUPERFINISH stones
- optional IR flange face and OR outside contour machining SUPERFINISH tape

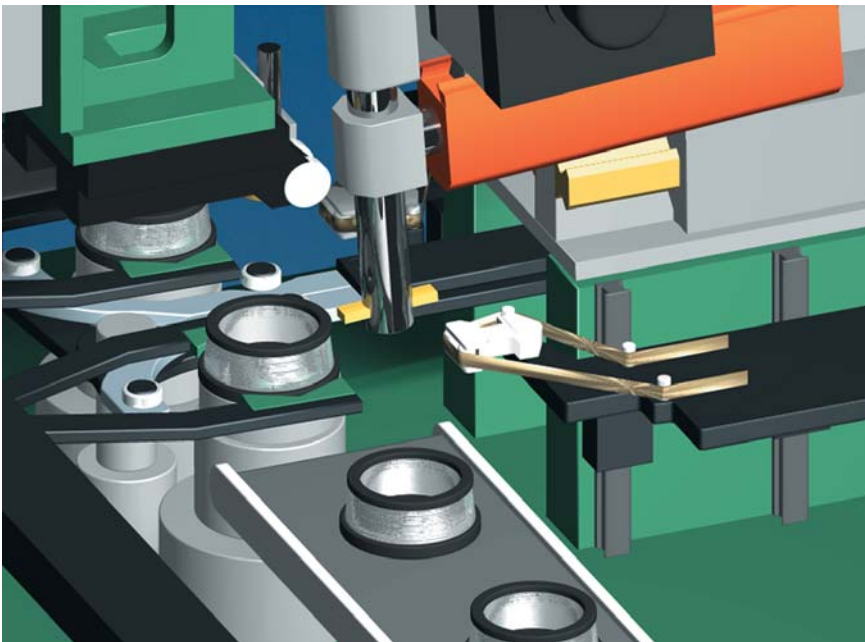
supfina 725/2 NC

Technical specifications:

Machine model:	Type A	Type B
Operations:	2	2
Cross slides:	2	1
Race diameter:	45–200 mm	90–240 mm
Race height:	10–100 mm	20–100 mm
Track angle:	0°–35°	non-adjustable
Bore diameter:	20–170 mm	55–190 mm

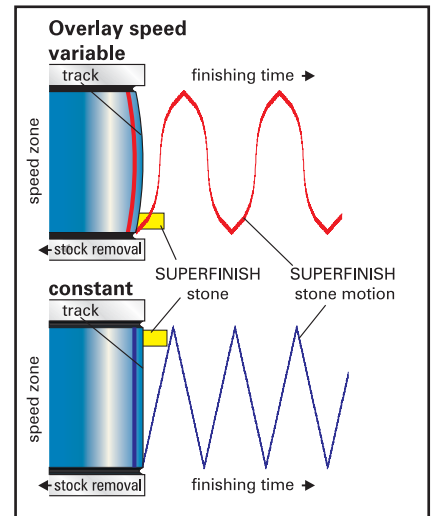


The machining process



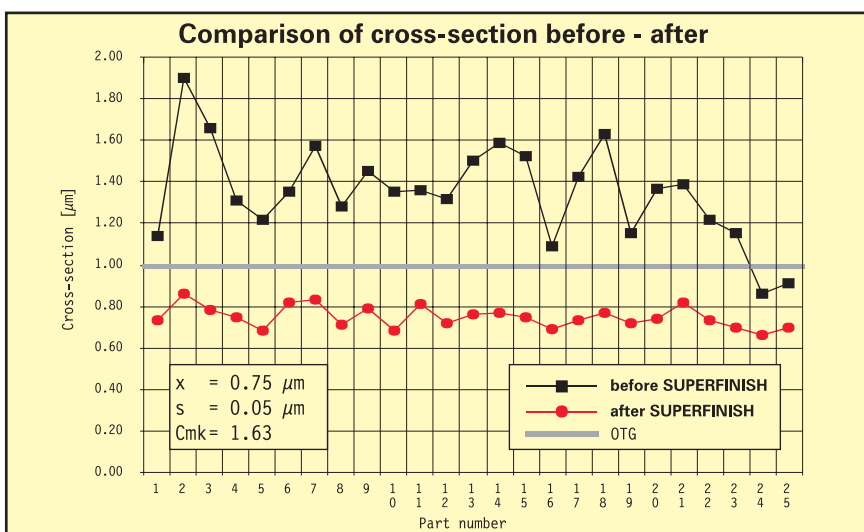
The antifriction roller bearings inner and outer races are fed to the machining station by an incremental indexing conveyor belt and a 3- or 4-way gripper. The finished parts are then fed via conveyor belt to the customer-supplied interface position. Depending on the machine equipment and program selected, the pre-

machining is performed in Op. 1 and final machining in Op. 2 or, if a stone-turning unit is in use, simultaneously in both operations. Additional tape-finishing units can be supplied as an option to SUPERFINISH the IR flange faces or the OR outer diameters or shoulders at the same time as the tracks are being superfinished.



Thanks to the patented SUPFINA overlay action, tracks can be manufactured to produce any desired cross-section, e.g. a $15\ \mu\text{m}$ spherical shape, or to correct existing grinding defects. For this purpose, a stone is selected which is approximately 20% of the width of the track.

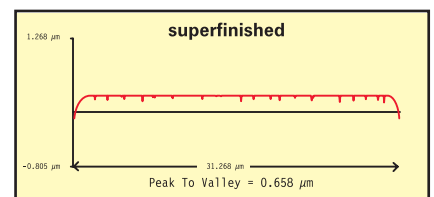
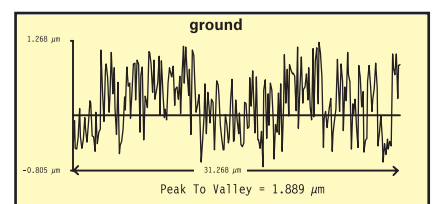
The results



Conical roller bearing inner race
 race outer diameter approx.: 90 mm
 track diameter approx.: 75 mm
 track width approx.: 32 mm
 race width: 43 mm
 material: 100 Cr 6

processing time
 with 2-step machining: 15 sec.
 surface roughness Ra: $0.03\ \mu\text{m}$,
 surface roughness Ra s typ.: $0.005\ \mu\text{m}$
 $D\ q$ at 90° to line of travel: $< 2^\circ$
 $D\ q$ along line of travel: $< 1^\circ$

Cross-section



concentricity: $< 1.5\ \mu\text{m}$
 cross-section: $< 1\ \mu\text{m}$
 waviness (order of magnitude):
 1st - 3rd: improvement up to 25 %
 4th - 8th: improvement up to 50 %
 9th upwards: improvement 50-100 %