microcut
swiss honing systems

UniBore 900

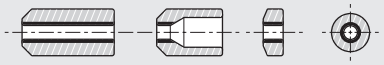
Honing machine with sonic-honing technology
for highest precision, productivity and autonomy
with integrated automation solution

Machine for bores
from Ø **0.25 – 8 mm**

UniBore 900

Typical workpieces

Rotationally symmetrical Workpiece



Non-rotationally symmetrical workpiece
Workpiece with several bores

Bore diameter:	ø 0.25 – 8 mm (in planning up to 15 mm)
Material:	PCD, sapphire, ceramic, carbide, steel, etc.

System description

- The modular machine concept enables an easy and customised configuration
- Single sided fixed conical tool
- Force controlled machining process

System advantages

- Geometric corrections: roundness, cylindricity, straightness
- Sizing of the bore dimension and the dimensional accuracy
- Surface finishing achievement
- No changes in the bore positioning alignment (concentricity, run-out, etc.)
- Only a minimum of oversize is necessary
- Flexible workpiece fixture
- Quality control by process analyses
- Stock removal of approx. 0.002 – 0.3 mm, depending on bore diameter, bore length and material

Workpiece handling, loading and unloading

- Several options of loading and unloading (see graphic)
- Serial or parallel machining
- Designed according to workpiece and customer requirements
- Precise and automatic centring of the workpiece (bore)

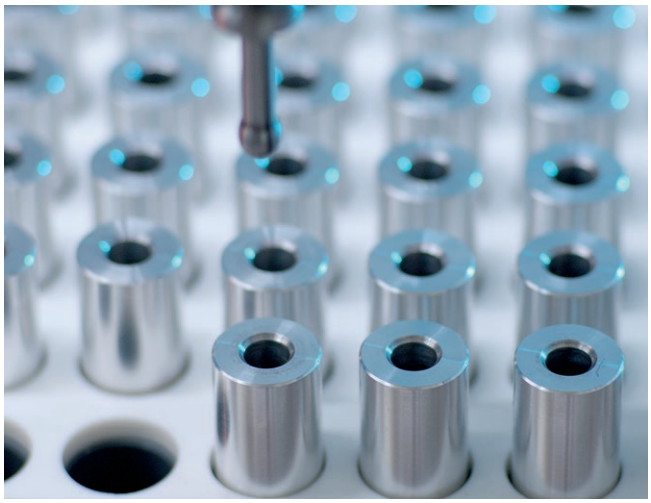
Technical data

- Machining unit: tool spindle with up to 10'000 min^{-1}
- Up to 4 Machining-Heads simultaneously applicable
- Different access levels for operators, setup- and maintenance staff
- Software controlled process parameters
- PLC-Controller: Beckhoff
- Remote diagnostics via Internet (optional)
- Library of parameter-profiles for several types of workpieces

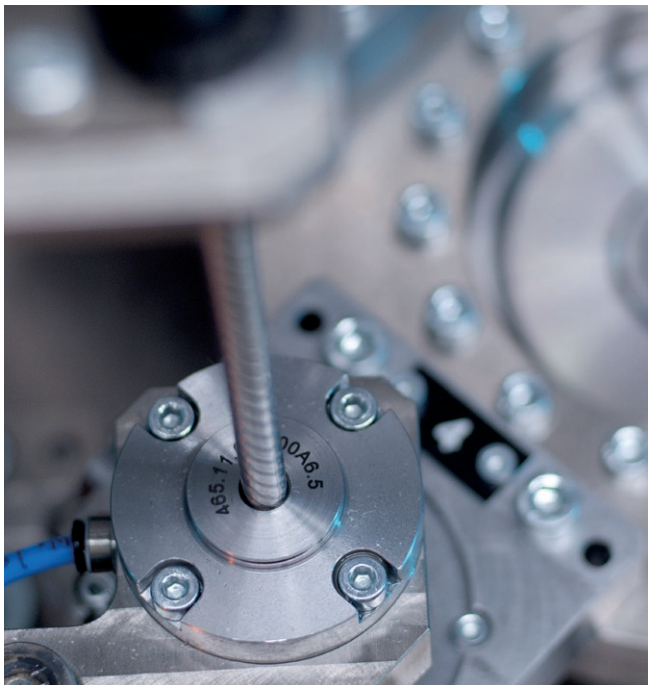
Electrical requirements:	3 X 400 V+N+E, 50/60 HZ
Power consumption:	up to 5kvA
Air requirements:	6 bar (dry, clean filtered air)
Dimensions L x W x H:	1310 x 1500 x 3002 mm
Weight:	up to 1500 kg

Subject to modifications

3 machining units, robot handling and trays with workpieces



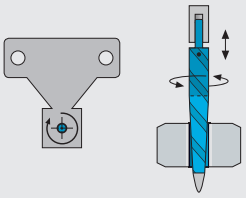
Workpieces in trays



Honing tool with upper tool guide

UniBore 900 Configuration options

Machining unit
Modular system



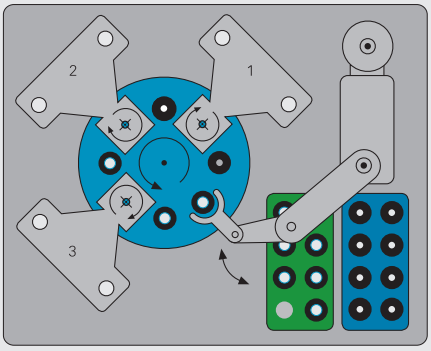
Honing spindles

XS: 0.25 – 0.9 mm
S: 0.6 – 2.5 mm
M: 1.5 – 4 mm
L: 2.5 – 8 mm
XL: up to 15 mm (in planning)

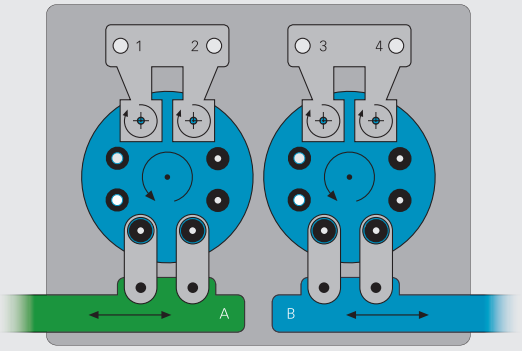
The most modern honing technology

The **«sonic-honing»** technology includes an oscillation of the workpiece in addition to the rotary and feed motion of the tool.

Basic Machines

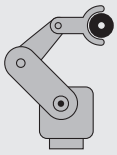


Typ 943-C
- 1-3 machining units
- Automation integrated into the machine housing
- Possible equipment: turret, vibratory bowl feeder, robot

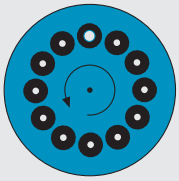


Typ 944-2C
High volume serial production machine with 4 machining units and external automation

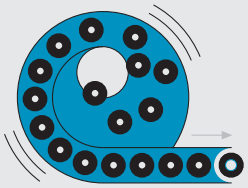
Workpiece Handling, (Options)



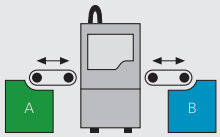
Robot



Turret



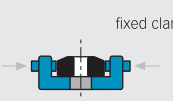
Vibratory bowl feeder



External handling

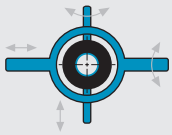
Manual loading

Workpiece Fixation



radially

axially

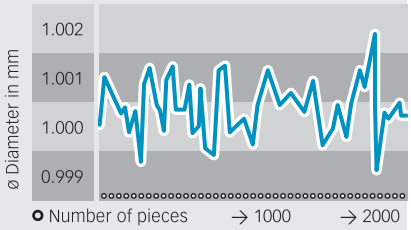


The cardanic clamping device enables the customer to easily manufacture his own clamping devices.

Customised solution

Other technologies

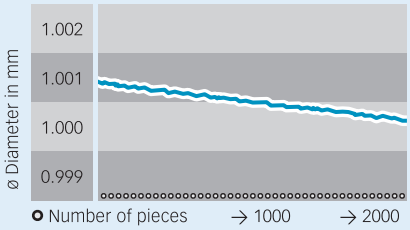
Conventional honing, internal grinding



- Measurement control required
- Corrections to machining parameters required

Advantages of the Microcut Honing System

Microcut Honing System



- Without measurement control

High reproducibility of dimension and bore quality

- Independent on machine, employee and temperature.
- The tool with many abrasive grains offers the best conditions for the longest possible tool life.

Highest precision, easy to control

The Microcut Honing System developed specifically for smaller bores guarantees shape accuracy, surface quality and dimensional accuracy at the highest level even in series production.

Our technology has fundamental technical and economic advantages over established processes such as internal cylindrical grinding and long-stroke honing.

Especially for bores smaller than Ø 2 mm, where conventional processes such as honing and internal cylindrical grinding reach their limits due to the system, our process delivers previously unattained results. With our unique innovative machining tools and the intelligent, force-sensitive control of the machining process, we offer an easily controllable and robust process with minimum dispersion.

The actual machining is carried out with tools coated with diamond or CBN grit (undefined cutting edge).

Our system is suitable for through holes.

UniBore 900

sonic honing®

sonic-Honing: the most modern honing technology

The sonic-honing technology is based on the Microcut Honing System and is suitable for specific applications.

We combine the adaptive feed control* of the tool with a fast stroke of the workpiece in the sound range. This enables us to achieve a massive reduction in cycle time, a longer tool life and finer surfaces with the same grain size.

*Adaptive feed control: The feed of the tool is controlled depending on the torque applied.

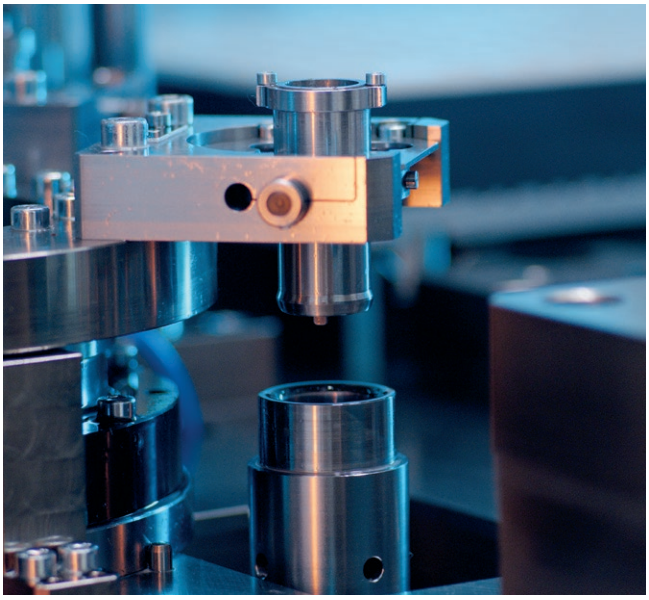
sonic honing®

The advantages

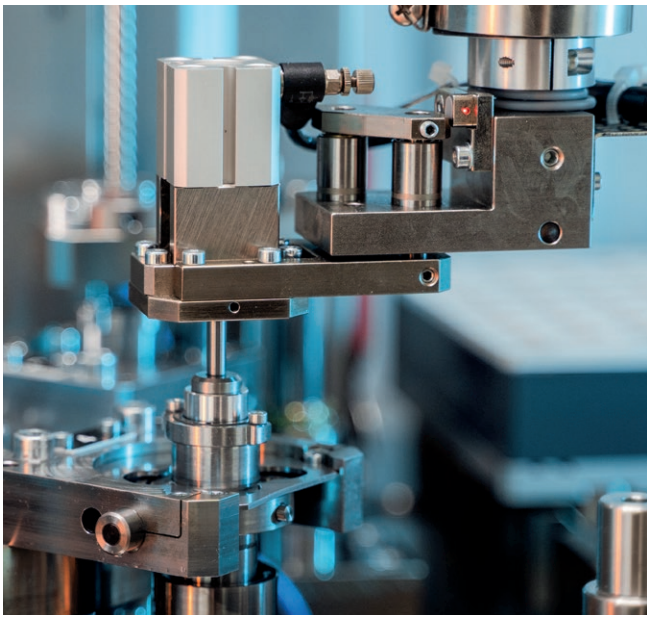
- Highest precision and stability/processing capability for shapes such as roundness, parallelism, straightness and cylinders, even with interrupted or cross bores
- Very short processing times
- Robust process even with bore diameters of less than 1 mm
- Simple operation of the machine, no measuring control required
- Little space required: the highest production capacity in the smallest space
- Low energy requirements

Subject to modifications

Detailed views



Cardanic unit for clamping the workpieces



Loading/unloading of the workpieces in the clamping unit by a robot handling

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