

High Precision Wire – The Ideal Tool To Manufacture Perfect Bores!

acuwire-S

bore size range
0.04mm - 0.80mm

max. OD of part
10mm
(customized solutions are available
for larger diameters.)

usable arbor length
(wire-honing length)
250mm (optional 330mm)

wire-honing process control
NC control Siemens Simatic S7-300
user interface OMRON Touch
Screen

wire-honing spindle motor
rpm 0 – 3000

electrical specifications
voltage 200V – 230V
frequency 50Hz – 60Hz
load ~200 W

dimensions
metric (LxHxW)
1030 x 710 x 475mm
(without base frame)
1030 x 1510 x 475mm
(with base frame)

weight
100kg
130 kg



acuwire-S
"patent pending"



acucast-H
(Arbor Casting System)

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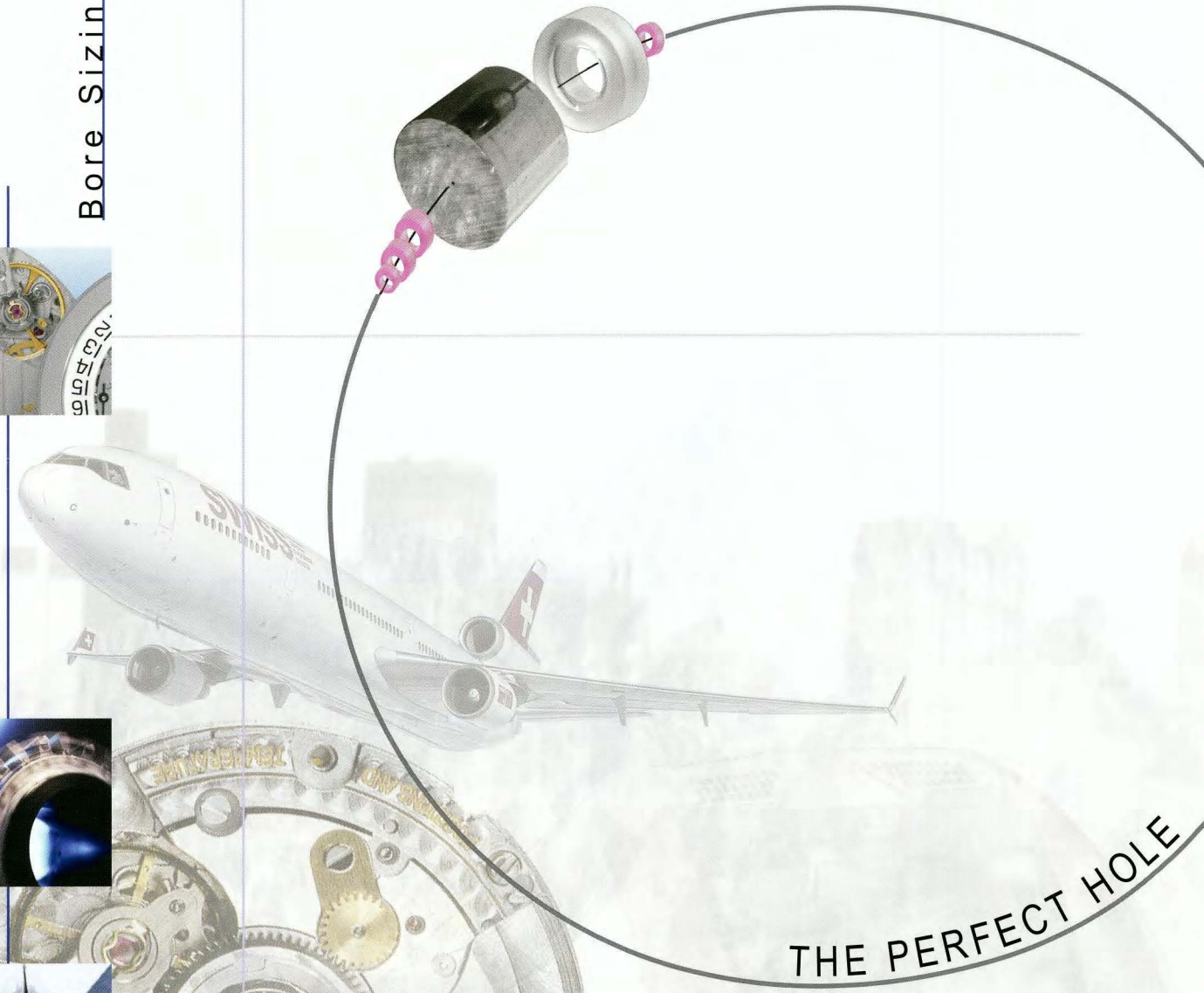
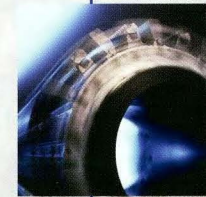
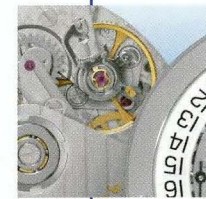
Schlafli Engineering LTD

Bahnhofstrasse 22
3294 Büren a. A.
Switzerland, Europe
Phone ++41 (32) 351 5070
Fax ++41 (32) 351 5105
info@schlafli.com
www.schlafli.com

ENGINEERING

Bore Sizing Solutions

acuwire-S
Bore Size Range 0.04 - 0.80 mm



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1 The carbide bushing

seen in the photograph is used in the manufacturing of industrial textile tooling (needles for automatic looms and knitting machines).

The most difficult aspect in developing the wire-honing process for this application, was the required honing wire diameter which has to be smaller than the actual bore diameter after the sintering operation and before machining. The targeted bore diameter after sintering was 0.050mm, which would not have presented a problem providing we used a honing wire diameter of 0.040mm. However the sintered diameter varied between 0.035 and 0.050mm which meant using a much smaller starting wire diameter of 0.025 - 0.030mm to make sure the customer could use practically 100% of the sintered output. In order for the wire-honing process to work properly and achieve the required results the limited tensile strength of this small diameter wire had to be taken into consideration.



Example Part Data

Material	Tungsten Carbide
ID	0.080 mm
OD	3.500 mm
Length	3.600 mm

wire-honing Process Data

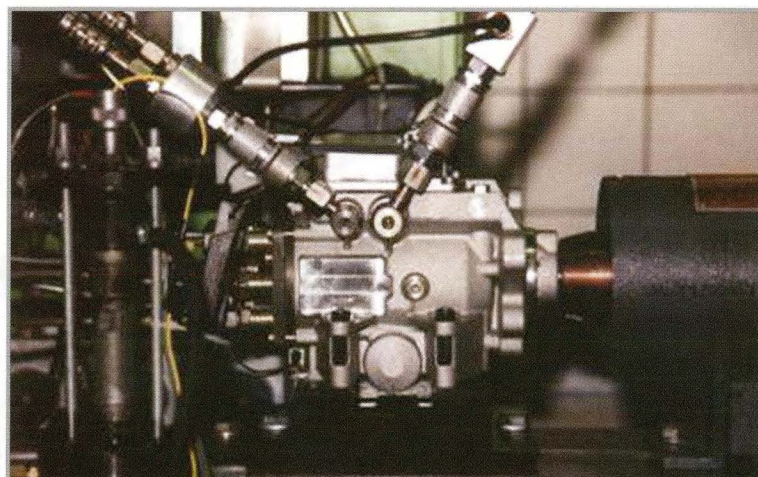
	<u>metric</u>	<u>inch</u>
Tolerances achieved		
Diameter	0.002	0.00008
	0.004	0.00016
Roundness	0.001	0.00004
Cylindricity	0.0015	0.00006
Stock removal	0.050	0.002
Diamond suspension grain size	0.0025	F1400 grit
Number of pieces per arbor load		58 pieces
Cycle time per arbor		35 min.
Cycle time per piece		36 sec.



2 Fuel Injection

machining of injection nozzles

The Injection nozzles are built directly into the cylinder head of the engine. The injection nozzles supply the engine with prepared fuel. To obtain exact proportioning the most essential factor is a precise bore with a high quality surface.



3 The ceramic

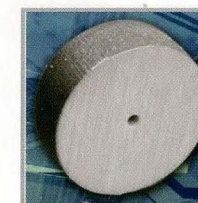
part seen in the photograph represents an other industry involved with small bores that require tight tolerances - the spraying nozzle industry.

The spraying nozzle's quality depends entirely on the accuracy of its spraying pattern. Should the nozzle's be used for air-brush painting, water jet cutting systems or for liquid injection all require a high tolerance of bore roundness and cylindricity to achieve the narrowly defined spray patterns for their individual applications.

The particular part seen in the photograph is the "nozzle" of a water jet system used to cut various materials (glass, metal, ...).

wire-honing Process Data

	<u>metric</u>	<u>inch</u>
Tolerances achieved		
Diameter	+/- 0.001	+/- 0.00004
Roundness	0.0005	0.00002
Cylindricity	0.0005	0.00002
Stock removal	0.100	0.004
Diamond suspension grain size	0.004	F1200 grit
Number of pieces per arbor load		210 pieces
Cycle time per arbor		90 min.
Cycle time per piece		27.7 sec.



Example Part Data

Material	Ceramic
ID	0.250 mm
OD	3.300 mm
Length	0.900 mm

wire-honing Process Data

machining of injection nozzles

	<u>metric</u>	<u>inch</u>
Tolerances achieved		
Diameter	+/- 0.002	+/- 0.00007
Surface Finish	Ra 0.05	Ra 0.05
Stock removal	0.012	0.0004
Diamond suspension grain size	0.004-0.006	F2000-1400 grit
Number of parts per clamping		1 part
Cycle time / clamping		45 sec.
Cycle time per part		45 sec.



Example Part Data

ID	0.148 mm (+/-0.002 mm)
Surface finish	Ra 0.05
OD	23.0 mm
Length	33.5 mm



Advantages acuwire-S against FineHone 250 / 600

- Newest innovative technologies
- High productivity
- A wide honing range ID 0,04 – 0,80 (replaces two machines)
- All parameters can be stored
- Control offers many new possibilities
- Various production processes possible
- Individual stop, selectable work lengths, i.e. exact position on wire can be set and therefore different finish diameters can be produced with the same wire
- Innovative menu guidance
- Intuitive operator guidance
- Simple, user-friendly operation
- Lower operating expenses
- Modern technology guaranteeing energy efficiency
- Without the use of pneumatic (most expensive energy)
- Statistics of latest processed parts can be checked and/or looked-up
- Modern and ergonomic design
- Quiet operation
- Well lit workarea

