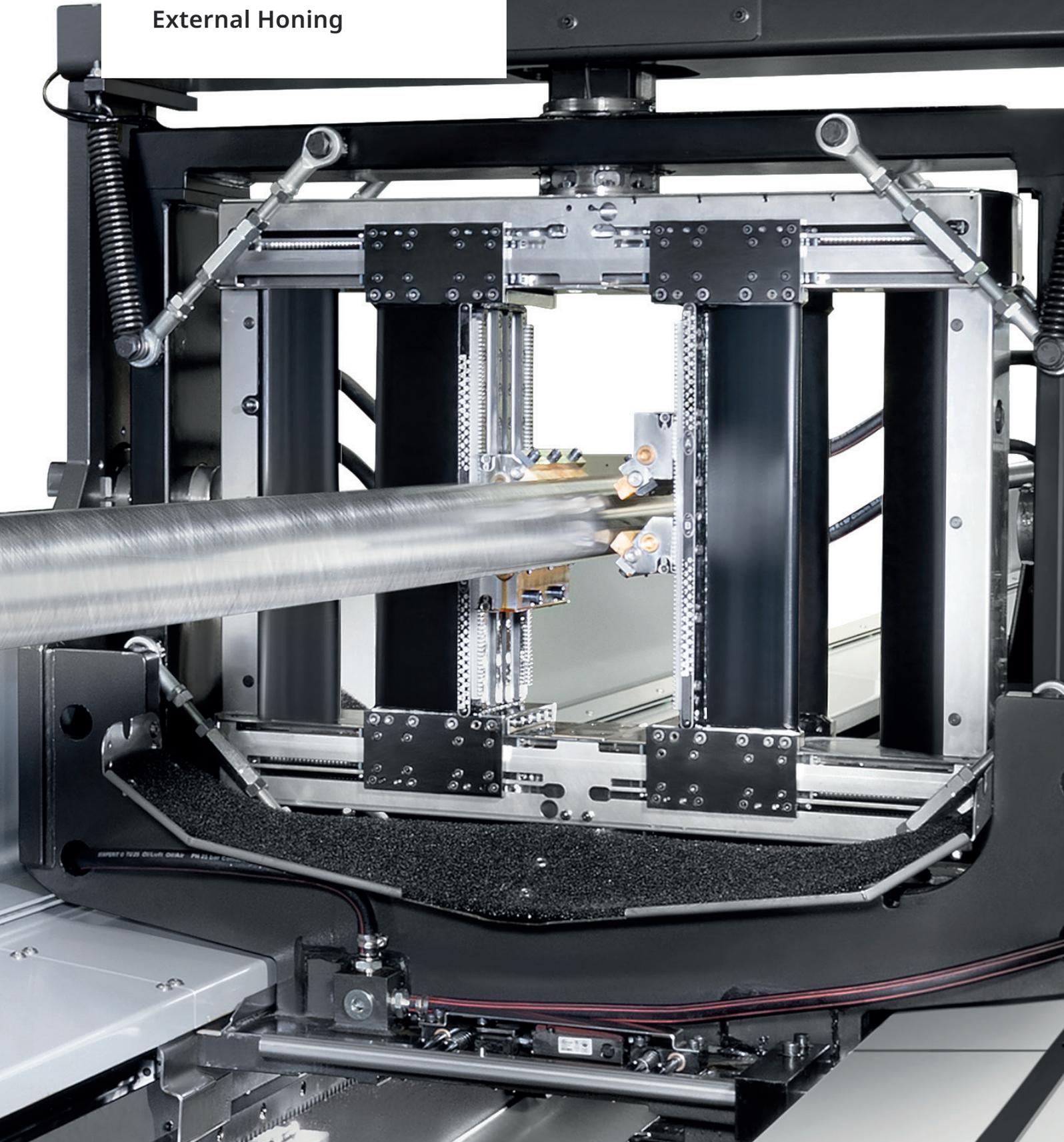




HES SERIES

External Honing



Built for highest production efficiency

Piston rods for hydraulic cylinders and cylindrical parts in general



The Sunnen HES external hone series

Sunnen's innovative external hone series HES continues the success of our well-known tube hone family and is designed to meet the ever-increasing demands of the industry. Over thirty years of experience, coupled with state-of-the-art design and solid, advanced engineering, characterize our HES. It's dynamic rack-and-pinion stroke system and optimized spindle drive system ensure optimum and constant performance over the entire diameter range.

Our external hone machine cuts nearly all advanced materials without trouble, but of course also mild steels. Workpieces with electroplated hard chrome or plasma sprayed surfaces, for use in offshore applications and energy production sectors, are one of the typical applications for external honing. High and fast stock removal as well as perfect surface finish characterises this machine. The HES is highly efficient and offers a non-comparable cost advantage over belt grinding systems. Sunnen provides the major advantages for your future production.

As an **all-inclusive supplier**, Sunnen takes full responsibility for the entire process.



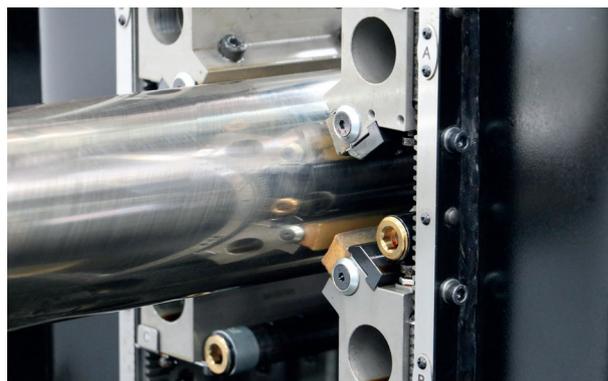


Intuitive touch control with clear, self-explanatory screen. It is the ideal system for optimized process control and fits in all production industries. No programming skills required. A new set-up can be made within 2 minutes, step-by-step. The system recommends the spindle speed and all necessary cycle parameters. All parameters can be stored.

Easy to operate - The 100% control of the process ensures optimal stock removal and protection of the tool. The system indicates high and low spots and corrects the geometry without operator intervention. For best stock removal and optimum stone wear the tool expansion is controlled continuously and avoids overloading of the tooling for maximum protection.



The **optional workpiece supports** retract automatically, designed to support small diameter parts. Up to 3 supports are possible.



The **stone holder system** allows the stones to be mounted with one screw with only 1/2 turn, which enables a short changeover time.



KEY FACTS

Highest demand honing

- Diameter up to 450 mm
- Stroke length up to 14'000 mm
- Stock removal rate up to 1'400 cm³/h
- Non-comparable cost advantage due to high efficiency

PRECISION PERFORMANCE

Reliable accuracy and consistency

- Perfect surface finish
- Automatic correction of roundness and parallelism
- Sizelock and stone wear compensation
- Dwell, oscillation feature and sparkout function
- 100% process control with tool overload protection

EASY OPERATION

Reduced cost per bore

- Quick stone changing system (roughing/finishing)
- Short setup and changeover time
- Variable stroke speed during cycle
- Easy to maintain

Technical specifications

CAPACITY

Stock removal power	up to 1'400 cm ³ /h
Diameter	50 - 450 mm
Distance between centers	6'500 / 8'500 / 10'500 / 12'500 / 14'500 mm

DIMENSIONS

Length	11'000 - 19'700 mm
Width	2'000 mm
Weight	6'000 - 11'000 kg

SPINDLE DRIVE SYSTEM

Motor (AC)	15 kW
Speed range (Infinitely variable)	10 - 325 RPM

STROKE SYSTEM

Motor (Servo)	10.8 kW
Speed range (Infinitely variable)	0.1 - 35 m/min

TOOL FEED SYSTEM

Motor (Servo)	3.5 kW
Motion	Ball screw drive

COMPUTER CONTROL

IPC, Windows[®] embedded control system, screen size 15"

PART FIXTURE SPINDLE

Chuck and tailstock

Work piece weight
Max. 12'000 kg

SUPPLY REQUIREMENTS

Electrical system	400 - 460 VAC, 50/60 Hz
Pneumatics	6 bar

COOLANT SYSTEM

Centrifugal filter unit with magnetic separator, oil chiller or customer solution

SAFETY FEATURES

CE / Front: Light curtain, Back: Light curtain (optional)

PAINT

Silver grey RAL 9006 / Anthracite 6482 / Red RAL 3001

OPTIONAL FEATURES

Quick stone changing system (roughing / finishing)
Workpiece supports (recommended from 8 m)
Taper option
Custom machine colors

