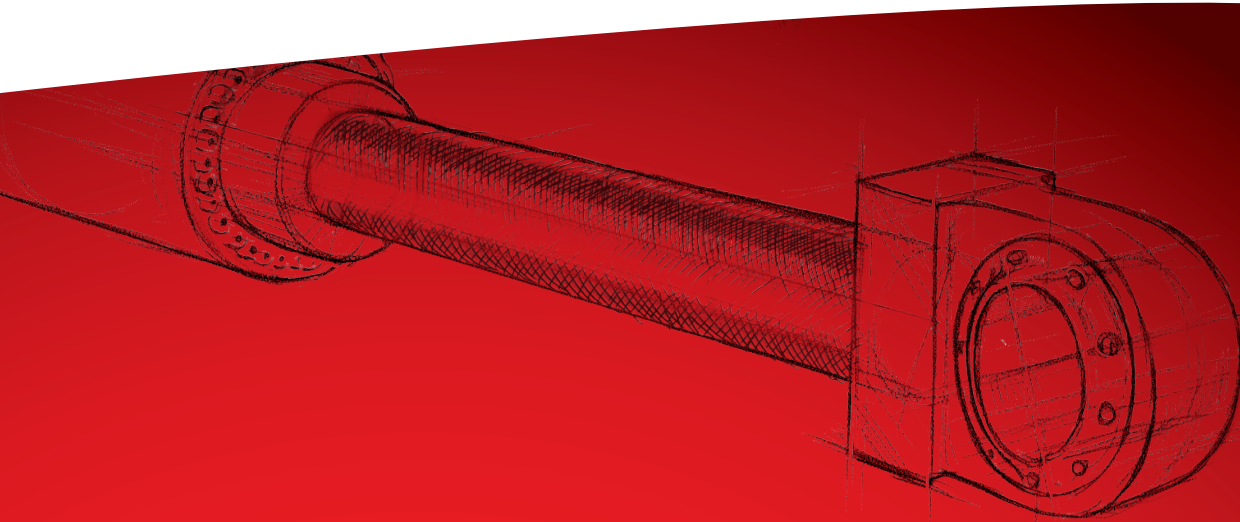




ABOVE AND BEYOND **HONING**



XTREME HONE

PRODUCTION EXTERNAL HONE



Built for **highest** **production** demands



Swiss Innovation

SUNNEN XTREME HONE The first External Honing Machine

Sunnan's first generation of external honing machines has been developed to meet the continuously increasing demands of the industry. Workpieces in the offshore, energy production and aviation sectors are exposed to extreme environments. Therefore electroplated hardchrome or plasma-spray coated surfaces are in operation. The new Xtreme Hone Machine cuts nearly all advanced materials without trouble, next to mild steel. Sunnen built an outstanding control with maximum comfort and safety as a result of over 30 years of experience.

Sunnan provides the major advantages for your future production.



Customer applications

BEFORE



Wolfram carbide



Soft steel



Hard chrome

SUPERFINISH



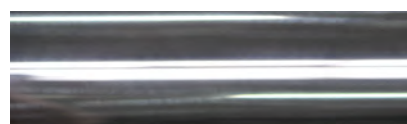
Surface
Stock removal

Ra 0.035 μm
0.08 mm



Surface
Stock removal

Ra 0.1 μm
1.1 mm



Surface
Stock removal

Ra 0.05 μm
0.03 mm

Customer benefits





FEATURES AND BENEFITS

- Large diameter range
- High stock removal up to 1'600 cm³/h on mild steel
- Superfinishing surfaces
- Automatic correction of roundness and parallelity up to H6 tolerances
- 2-speed automatic transmission for spindle drive
- Tool overload protection
- Operator-friendly, Windows®-based monitoring system
- Easy operation with industrial touch screen
- Programmable dimension monitoring
- Unique Sunnen software

YOUR BENEFITS WITH THE NEW XTREME HONE

The new Xtreme Hone-Series is proceeding the success of the wellknown HT (Tube Hone) family of Sunnen. Over 500 systems sold world-wide of its type, the new market driven Xtreme Hone is now featuring all inputs of our customers around the globe. With a state-of-the-art design, the rigid Xtreme Hone-Series is completely covered to the floor. The dynamic rack and pinion stroker system and the harmonized spindle gear box ensure optimal and constant power over the whole diameter range. No matter what diameter and length you might have, the system will do it. With Sunnen's new AutoShift gear box feature, the spindle speed will be adjusted automatically, which maximizes the operator's comfort and safety. In addition the Xtreme Hone works with a belt driven spindle drive which guarantees smooth working condition and shock protection for the gear box.

UNIQUE TOUCH SCREEN CONTROL

Automatic bore geometry correction: The system indicates high and low spots and corrects the geometry with appropriate short strokes without operator intervention.

Easy set-up: All parameters are stored and the system recommends the required tool, sets the spindle speed and all necessary cycle parameters. A new set-up can be made within 2 minutes, step-by-step.

Tool overload protection: The 100% control of the process ensures optimal stock removal and protection of the tool.

Customer applications **Offshore,** **Energy Production and Aviation**



sectors



Typical Applications

Hydraulics:

Cylinders for Construction Machinery, Moving Dredging Unit, Lifting of Bridges, Moving of Stage Equipment, Mining Equipment (e.g. roof support)

Energy Production:

Oil & Gas Components, Wind Mills, Turbines

Aviation:

Landing Gears

Typical Requirements

H6 / H7 / H8 Tolerances

Advantages of Honing

High precision, long seal life, improves life time, higher pressure operation / efficiency due to high precision, no vibration due to temperature changes, Crosshatch pattern characteristic, outstanding surface quality leads tribology values, no influence of heat to material structure of the surface, no white layer, honing of exotic and advanced materials (Titanium, Inconel...)

Technical specifications

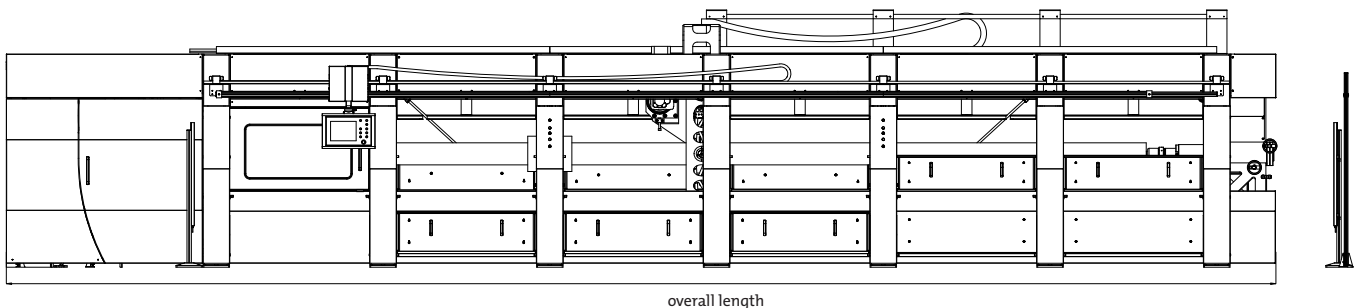
Xtreme Hone-Series	
Capacity <ul style="list-style-type: none"> • Stock removal • O.D. capacity 	up to 1'600 cm ³ /h 50 - 450 mm
Spindle Drive System <ul style="list-style-type: none"> • AC-Spindle Motor • Spindle speeds-infininitely variable 2-step spindle reducer with auto shift Standard adapter for chucks: Short taper, Size 8 	16 kW (22 HP) 10 to 240 RPM
Stroke System <ul style="list-style-type: none"> • Stroke Servo Motor • Speed control • Stroking Speeds-Infininitely variable • The tool carriage run's by linear roller bearing on two hardened and ground linear way bars on the gear table (left side) • Rack and pinion system guarantees most evenly carriage and tool movements 	14 kW (19 HP) Electronic - Variable 0.1 - 32 m/min
Tool Feed System <ul style="list-style-type: none"> • Feed Servo Motor 	1.0 kW (1.36 HP)
Computer Control <ul style="list-style-type: none"> • Sunnen IPC control (Industrial PC Control), based on Windows® EMBEDDED system • PC capacity: RAM (Random Access Memory) = 512 MB Hard disk = 40 MB • The 3-axis function control manage stroke positions, motion control, stone feed, spindle speed and cutting pressure guarantee the most favorable accuracy and bore geometry • The touch screen panel for the dialog programming has all the necessary functions to control the process 100% • Languages E/D/I/F/S/CN/TR • Air-condition for electrical enclosure included 	
Machine Base <ul style="list-style-type: none"> • Heavy duty reinforced welded steel construction of the whole machine base – no vibrations • Modular construction • Easy to extend stroke length on customers site • Full covered machine base • The machine base consists of two or more parts so they can easily be taken apart for transportation purposes 	10 or 12 meter (other lengths on request)
Part Fixture Spindle, Optional <ul style="list-style-type: none"> • Standard Version: Independent chuck D = 630, 4 jaws Short taper: Size 8 	
Part Fixture Tail Stock, Optional <ul style="list-style-type: none"> • Revolving tailstock center: Typ ME80 • Revolving tailstock center: Typ ME80 	for part weight up to 6'000 kg for part weight up to 10'000 kg
Supply Requirements <ul style="list-style-type: none"> • Electrical machine • Electrical centrifugal filter unit • Pneumatics 	3 PNE 400 - 460 Volt; 50/60 Hz; 100 Amp. (80 Amp. on 460 Volt) 3 PNE 400 - 460 Volt; 50/60 Hz; 25 Amp. (22 Amp. on 460 Volt) 6 bar, 100 liter per minute to 1/2" ID thread

Lubrication System <ul style="list-style-type: none"> • Way bearings • Rack and pinion • Spindle bearings • Gear reducers 	Manual forced grease Auto forced grease Grease Oil bath
Swarf and Coolant Handling <ul style="list-style-type: none"> • Sludge scrapper • Sump Pump 	100 l/min
Coolant and Filter system, Optional <ul style="list-style-type: none"> • Centrifugal filter unit Magnetic separator, oil chiller Supply pump • Paper filter system (in addition for above pre-filter system) 	700 l capacity 50 l/min
<ul style="list-style-type: none"> • Customer solution 	
Safety Features CE Version: <ul style="list-style-type: none"> • Standard 	1 Light curtain on front of machine 1 Light curtain on backside of machine
Paint <ul style="list-style-type: none"> • Silver Grey RAL 9006 / Anthracite 6482 / Red RAL 3001 	
Standard Features <ul style="list-style-type: none"> • Large diameter range with stock removal rate of 2'500 cm³/h and more • Automatic bar geometry correction • Direct honing of rough parts, without expensive grinding operations • 100% process control with tool overload protection • The 3-axis function control manages stroke positions, motion control, stone feed, spindle speed and the cutting pressure guarantees the most favourable accuracy and bore geometry • Repeat position of stroke within 0.1 mm during operation, independent of different stroke speeds • Stroke speed variable (stroke rate adjustable in 0.1 m/min increments through operator interface adjustable during cycle) • Size lock system with stone wear compensation • Dwell and oscillation feature • Spark out function • All axis are electrical driven (efficiency up to 90%) • Storage facility for over 200 programmed set-ups • Spindle jog, short stroke • Digital stroke position indicator • Digital stroke speed indicator • Digital spindle RPM readout 	

Technical specifications

Xtreme Hone DIMENSIONS

Xtreme Hone-Series	Xtreme Hone 10'000	Xtreme Hone 12'000
Maximum distance between centers (Chuck - Tail Stock)	10'209 mm	12'099 mm
Maximum stroke length	10'160 mm	12'050 mm
No. of stationary steady rests	2	2
Overall Length	14'390 mm	16'280 mm
Overall Width	2'600 mm	2'600 mm
Spindle center height to floor	1'285 mm	1'285 mm
Height	2'920 mm	2'920 mm
Weight	~ 10 t	~ 12 t
Coolant capacity	700 l	700 l





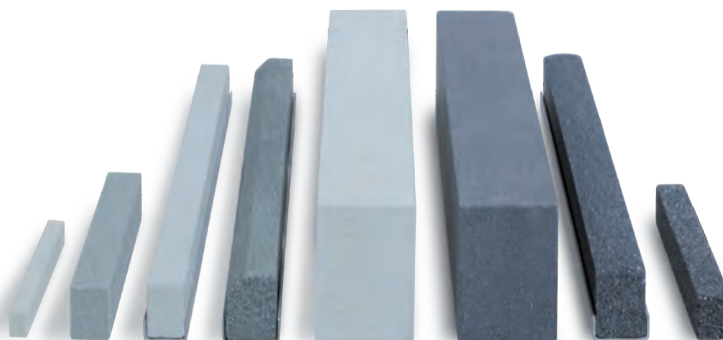
HONING OILS AND COOLANTS

Sunnen's specially formulated and tested honing oils and coolants optimize the performance of vitrified or bonded abrasives. These fluids cool the workpiece and flush chips from the work zone. Filters are designed to remove contamination from the coolants in various micron levels to ensure consistent honing performance.

- KG3X HONING OIL
- LT9X HONING OIL CONCENTRATE
- MAN-852 HONING OIL
- MAN-863 HONING OIL
- MB-30 HONING OIL
- MB-40 HONING OIL
- SCC HONING COOLANT
- SHO-500 VEGETABLE HONING OIL
- SHO-965 VEGETABLE HONING OIL

SUNNEN ABRASIVE

Besides lubricants and coolants for a optimum cutting action, Sunnen manufactures the largest selection of abrasives. The range goes from customized solutions for large series and μ -applications to standard.



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