

Simplify with Smart 10



The intelligent
centerless grinder.

smart 10



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Simplify. With a ground-breaking project, BONELLI's Smart 10 centerless grinder is unbeatable in performance. Designed to reach a new level in grinding, the machine simplified operations once complex. The result is a machine with much higher precision, easy to operate, lean, with low and simple maintenance and, best of all, a much lower cost. It is an intelligent machine. It is Smart 10.



10 reasons to simplify

With innovative characteristics, the Smart 10 represents the best cost/benefit ratio of the market for high precision grinding.

The machine reaches a grinding speed of 120 m/sec (23500 sfpm) and regulating wheel dressing speed up to 1000 RPM.

The machine uses electro-spindles with integrated water-cooled motors which eliminate vibration and thermal distortions, providing better grinding results.

The headstocks and dressers travel through servomotors connected by fiber optics and coupled directly to high precision ball screws and linear guide ways.

For throughfeed grinding, the machine is able to create automatically the hyperbolic profile on the regulating wheel, eliminating the need of dressing height adjustments or swiveling of the dresser.

Sensors indicate on the CNC screen the exact inclination of the regulating wheel headstock and the taper adjustments of the swivel table.

The OpenCNC software makes it incredibly easy to create dressing profiles without the knowledge of programming languages.

The OpenCNC software allows the operator to save all setup data of each workpiece, making it simple to achieve that exact same setup in the future.

The machine is extremely compact and the electrical cabinet is incorporated on the machine's body, saving floor space and simplifying installation.

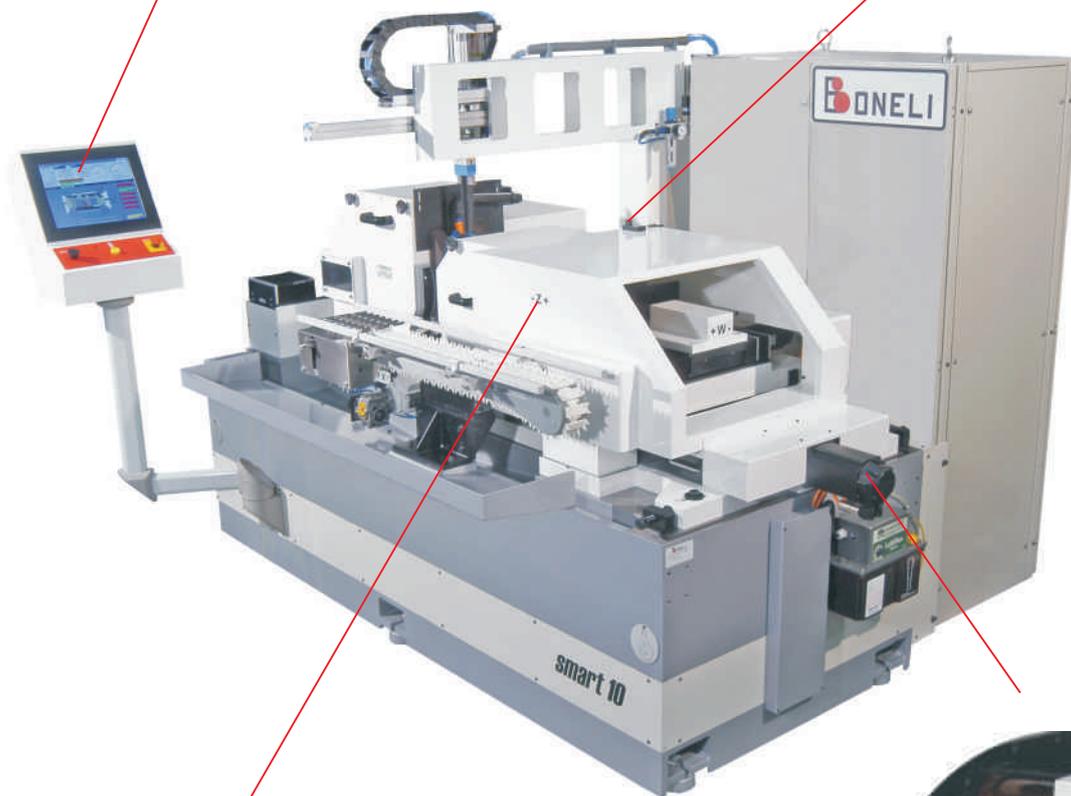
The machine is extremely lean and has very few mechanical parts, minimizing the need of maintenance.

Features -

The OpenCNC with touch screen makes it incredibly easy to operate the machine and allows the operator to use resources not yet seen on conventional CNCs.



The machine is provided with sensors which indicate on the CNC screen the exact inclination of the regulating wheel headstock and the taper adjustments of the swivel table, making it easier to setup the machine and to make taper corrections.



The BONELI Smart 10 uses imported electro-spindles with integrated motors for both the grinding and regulating wheels, eliminating motors, belts and pulleys. The spindles are water-cooled, with constant temperature of 12°C (54°F). By using electro-spindles, vibrations and thermal distortions are eliminated, resulting in superior grinding performance.



All travels of the machine are performed by servomotors connected by fiber optics and coupled directly to high precision ball screws and linear guide ways, resulting in precision, repeatability and resolution within 1 μm (0,00004").

The radical change in the dressing concept.

The main innovation of the BONELI Smart 10 is a ground-breaking change in the way the wheels are dressed, resulting in higher precision and lower cost. Instead of the dressers move towards the wheels, the grinding wheel and regulating wheel headstocks move against the dressers. Therefore, dressing is achieved through the interpolation of the wheels' headstocks and the dressers' longitudinal axes, eliminating the two usual dressing axes. The machine is also capable of dressing both wheels simultaneously. The headstocks and dressers travel through servomotors connected by fiber optics and coupled directly to high precision ball screws and linear guide ways, resulting in extremely precise dressing of complex profiles on the wheels.

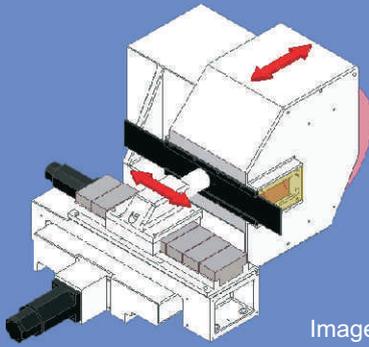


Image shows the dressing of the grinding wheel.

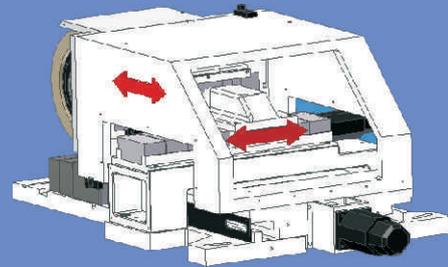


Image shows the dressing of the regulating wheel.

OpenCNC Touch Screen Control.

BONELI created a software especially developed for centerless grinding. The Windows-based software is easy to navigate and makes it simple to setup the machine through graphic, friendly screens. The control allows for the operator to create any dressing profile putting together lines and arcs, without any need of programming language knowledge. In addition, the software allows the operator to save all the grinding parameters and dressing profiles of each workpiece, including its regulating wheel headstock inclination angle, and load this data whenever necessary. With that, the setup time is reduced and the grinding precision is maintained.



Grinding Parameters Screen



Automatic Cycle Screen



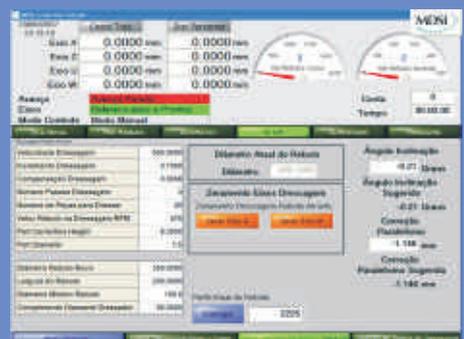
Dressing Profile Creating Screen



Loader Control Screen



Manual Control Screen



Dressing Parameters Screen

| CAPACITY | |
|--|---|
| Grinding diameter range | 1 to 80 mm (1/16" to 3") |
| Maximum infeed grinding length | 250 mm (10") |
| Floor space | 3.300 x 1.840 mm (11' x 6') |
| Total approximate weight | 8.000 kgs (17.600 pounds) |
| WHEEL DIMENSIONS | |
| Grinding wheel – OD, width, ID | 508 x 254 x 254 mm (20" x 10" x 10") |
| Regulating wheel – OD, width, ID | 355,6 x 254 x 203,2 mm (14" x 10" x 8") |
| SPEEDS | |
| Grinding wheel (constant peripheral speed) | up to 120 m/sec (23500 sfpm) |
| Regulating wheel | 0 to 1000 RPM |
| POWER | |
| Grinding wheel spindle | 20 kW |
| Regulating wheel spindle | 10 kW |
| SERVO-MOTORS | |
| Grinding wheel dressing servo-motor | INDRAMAT 2,4 Nm |
| Regulating wheel dressing servo-motor | INDRAMAT 2,4 Nm |
| Grinding wheel headstock motor | INDRAMAT 8 Nm |
| Regulating wheel headstock motor | INDRAMAT 8 Nm |
| GUARANTEED PRODUCTIVITY | |
| Throughfeed grinding | 1 to 25 m/minute (40 to 1.000"/minute) |
| Infeed grinding | 220 pieces/hour |

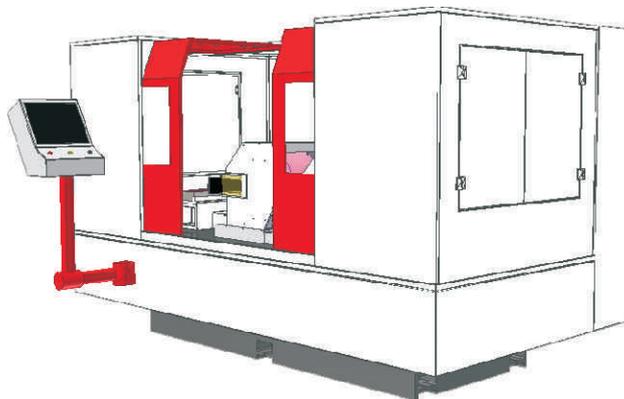


STANDARD ITEMS:

- I. Programmable constant peripheral grinding speed.
- II. Complete cover with safety locks.
- III. Spindle coolant unit with flow switch.
- IV. Electrical cabinet incorporated to the machine, with CNC, servo-drives and frequency converters.

OPTIONAL ITEMS:

- I. Automatic loading and unloading for throughfeed and infeed grinding.
- II. Coolant unit with paper filter.
- III. Automatic electronic balancer integrated to the grinding wheel spindle.
- IV. Automatic measuring and correction for throughfeed and infeed grinding.



Height – 2050 mm (6.7')
Width – 1850 mm (6')
Length - 3300 mm (10.8')



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