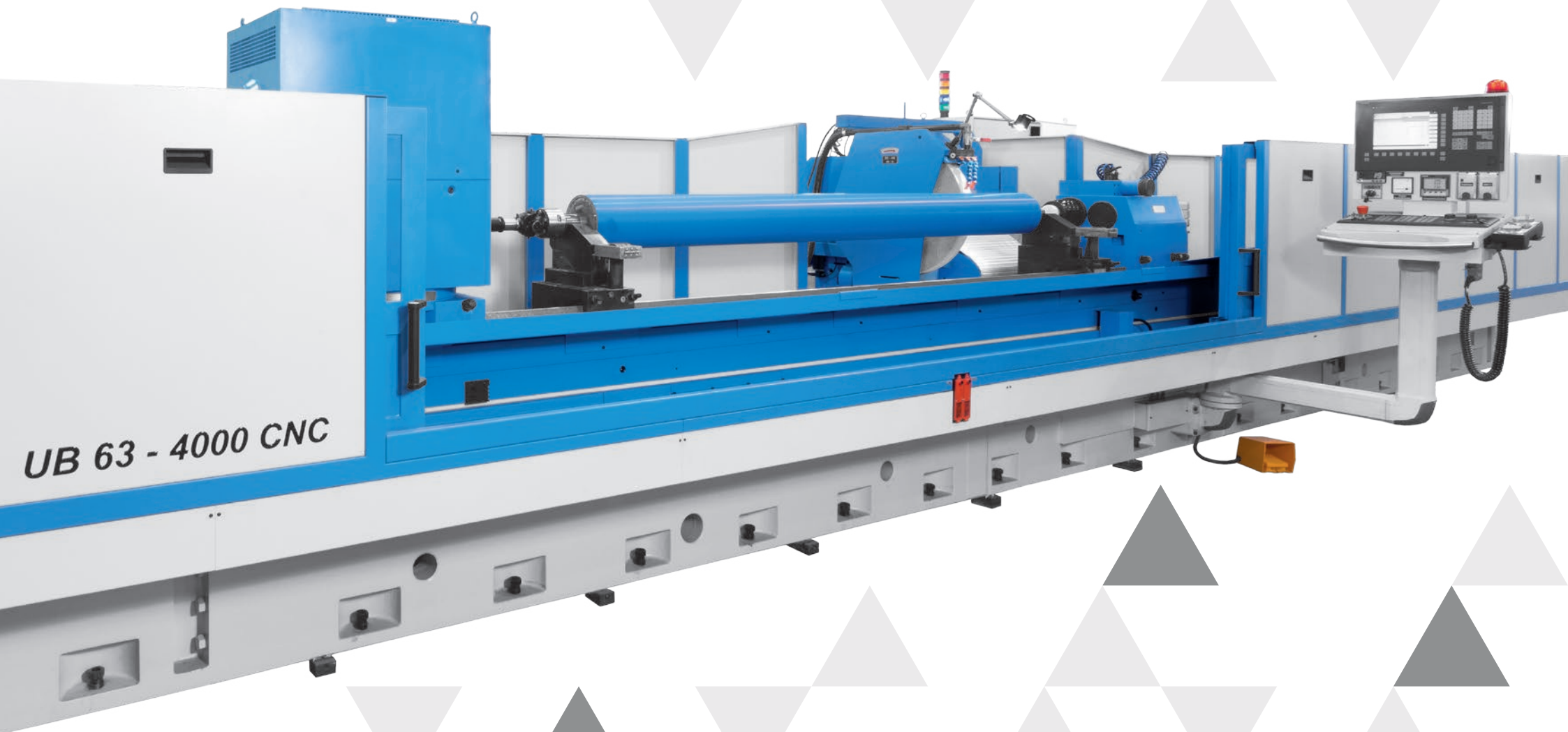


# UB 63, 85, 90





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## A BRIEF INTRODUCTION OF THE COMPANY



## TOS Hostivař

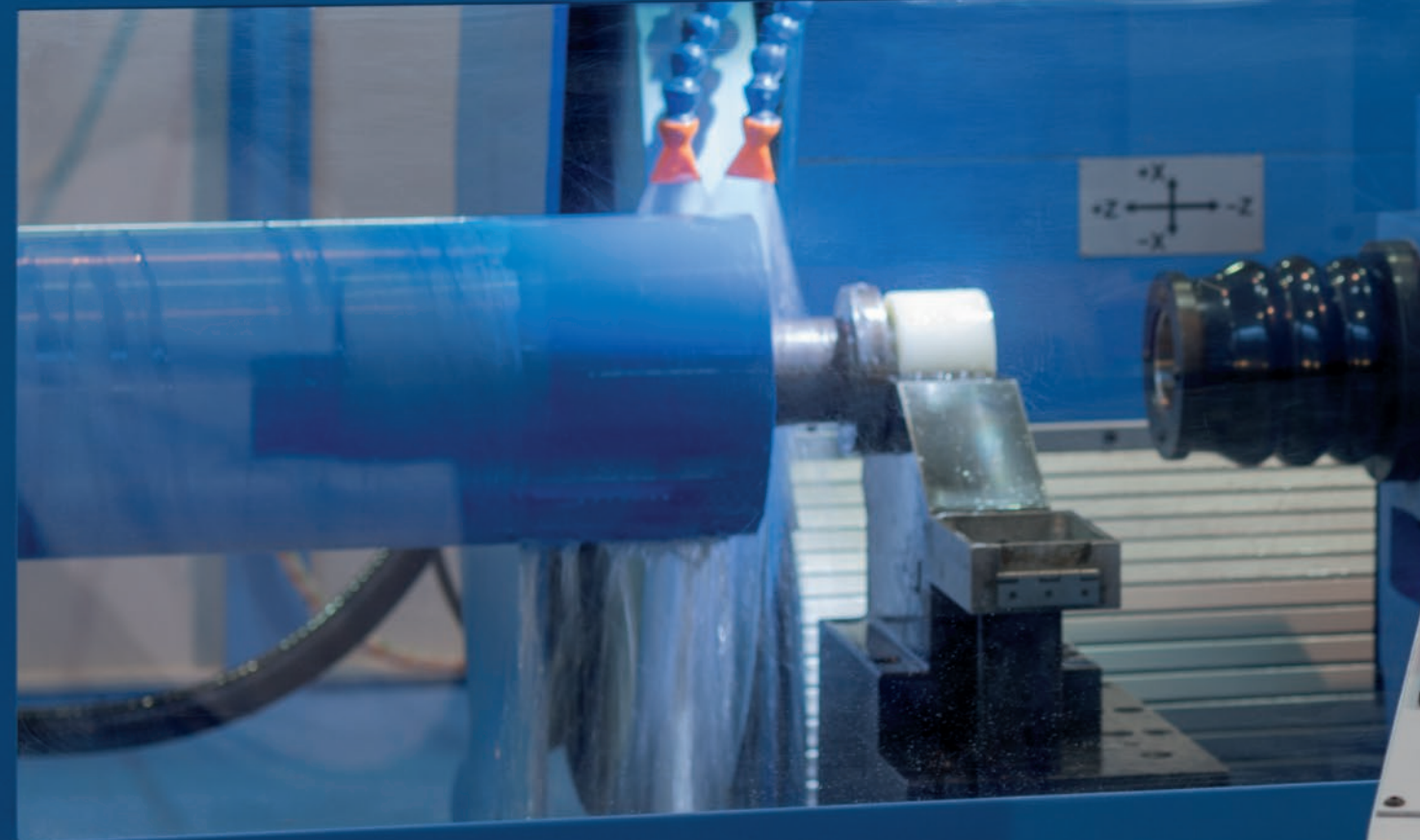
TOS Hostivař offers a wide production programme ranging from small universal cylindrical grinders to large grinders for grinding large cylinders and shafts, weighing several tonnes. The company also provides all accessories for its grinders to ensure machines' maximum efficiency for the technology and customer's requirements. The supplier programme also includes any necessary installation, servicing work, repair work, reconstruction and additional equipment for cylindrical grinders within the range of the whole production programme.

TOS Hostivař grinders are based on the tradition of very successful and reliable design of cylindrical grinders. At the moment there is an intensive innovation in progress. It will bring our customers even more utility value while its objective is to keep the TOS Hostivař among the brands of the world's leading producers.





## MACHINES' SPECIFICATION OF UB 63, 85, 90 RANGES



## Machines' specification of UB 63–90 ranges

The universal cylindrical grinders UB 63 CNC, UB 85 CNC, UB 90 CNC are machines based on a design tried and tested over the years with modern features added. These are cylindrical grinders for workpieces of 630, 850, 900 mm in diameter and maximum length of 6,000 mm, with possibility to use of internal grinding. During grinding the machines can be controlled manually or they can work in a fully automatic grinding cycle (grinding multiple diameters, plunge grinding or longitudinal grinding, grinding convex or concave diameters of a cone surface with automatic dressing of the grinding wheel). The workpieces are clamped between the centres, or clamped on one side in the chuck or permanent magnetic plate. The machines are designed for an accurate and efficient grinding of individual pieces as well as for grinding in serial production.

The grinder can be modified for using controlled gauges which, in connection with an automatic working cycle, enables the control of multiple machines.





## DESCRIPTION OF THE MAIN PARTS OF THE MACHINE



### Bed

The basic parts of the machine bed are made of high-quality grey cast iron. Given the high demands of grinders as regards dimensional stability of castings, strength and vibration damping we use GG 25 cast iron for manufacturing the load-bearing parts of the machine tools.

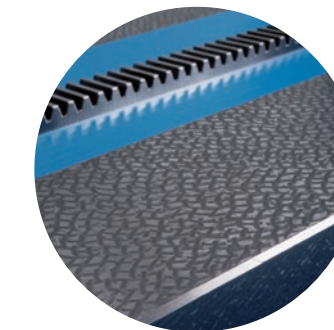
Before the casting is used in the machine, it is heat-treated several times to provide very precise machining of the machine bed.

High rigidity of an ideally dimensioned cast-iron machine bed guarantees a high performance and productivity of the machining process while at the same time ensuring first-rate geometric accuracy of the workpiece.

Having been machined, all the essential areas of the machine bed are ground manually for the required accuracy.

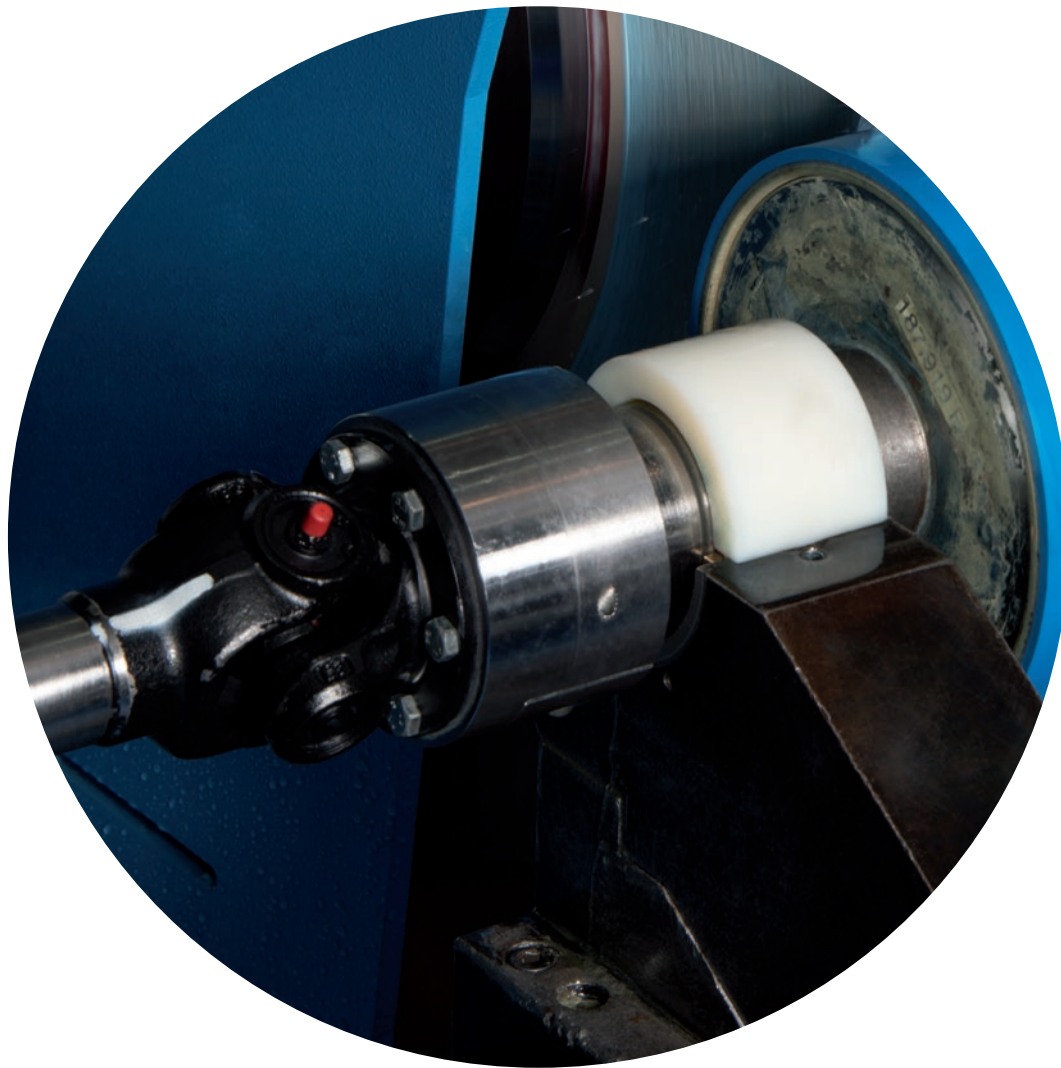
The scraping areas, on which the table and wheel-head are located, is moved on the manually ground slide ways. If the table is divided, it enables the workpiece to be turned within the given range. The ways are lubricated by an automatic lubrication system that combines hydrostatic and hydrodynamic lubrication.

The table with the work head and tailstock is moved on the front bed, while the wheel head is located on the rear bed. The table has two parts, lower and upper. The lower table moves horizontally in the ways on the bed. Its travel is carried out by a ball screw and servomotor with a special flexible coupling. The upper table can be tilted to compensate for cylindricity aberrations. A micrometer indicator is used for fine adjustments.



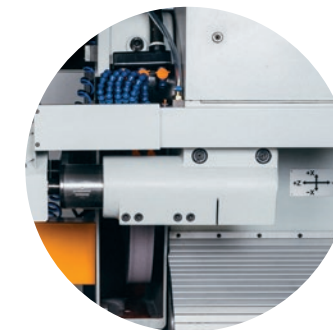


## DESCRIPTION OF THE MAIN PARTS OF THE MACHINE



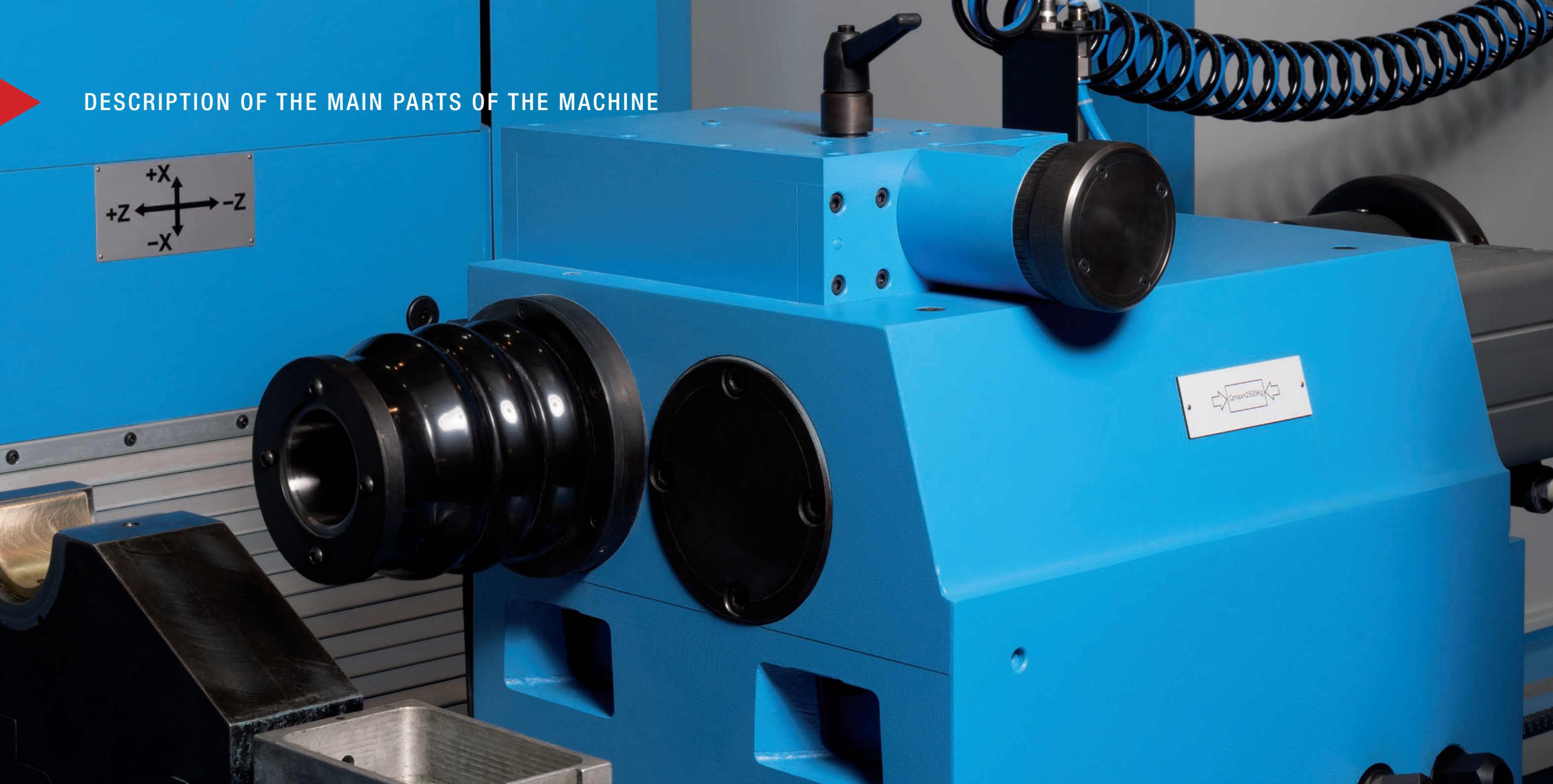
### Wheel-head

Wheel-head box consists of a rigid casting made of high-quality grey cast iron. The grinding spindle goes through the whole grinding wheel-head unit. The grinding wheel-head is characterised by rigidity and accuracy of the grinding spindle, which is placed in radial hydrodynamic flexible slide bearings and in an axial slide bearing. The leading wedges of the radial bearings are formed by the bearing shell being deformed by the constant pressure of the spring. The bearing areas of the spindle are surrounded by an oil film in three places evenly placed around the circumference. Apart from the sliding mount of the wheel-head grinding spindle we also make a rolling mount. That is carried out by very precise and accurately adjusted spindle ball bearings. The lubrication of the grinding spindle bearings is circulating, using a separate tank. The lubrication system is fitted with electric indication of lubrication oil flow, which shuts down the grinding wheel drive motor if there is insufficient flow. In order to ensure thermal stability the headstock is fitted with a cooling system. The drive of the grinding spindle is ensured by a three-phase asynchronous motor located on the wheel head's body top. The torque between the motor and the grinding spindle is ensured by a belt drive. The wheel-head grinding is located on the carriage ensuring its cross feed on the X axis. The movement of the carriage along the X axis is carried out by a servomotor and an accurate ball screw. The maximum accuracy of the X axis is ensured by a linear optical ruler. The wheel-head grinding can also be tilted within the given range. The grinding wheel is covered by a safety cover that ensures the grinder's safety and prevents the cooling liquid from spurting out. The angle of the cover opening and the thickness of the walls of the cover comply with the ČSN EN 13218 standard. The whole cover consists of the base unit and opening lid secured by the end switch, which prevents the grinding spindle motor from being turned on when the cover is open.





## DESCRIPTION OF THE MAIN PARTS OF THE MACHINE



### Work-head

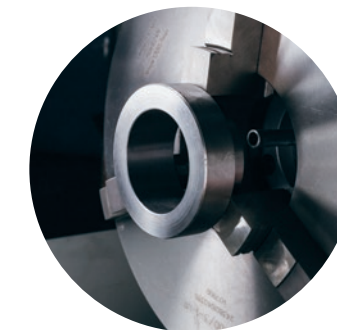
The work-head is used for clamping and rotating workpieces. The plate with the work-head is attached to the grinder's table by two T-bolts and nuts. The base of the work-head consists of a casting made of grey cast iron in which the spindle is placed. This placing consists of accurate rolling bearings and is adjusted to comply with the prescribed geometrical tolerances even at the highest load. The drive of the spindle (C axis) is ensured by an asynchronous motor or by a servomotor (controlled axis). The body of the work-head can be turned towards the wheel-head grinding by 90° at the most according to the scale. The work-head is designed universally to make it possible for a fixed centre to grind between centres, a chuck to grind workpieces clamped on one side, an obverse plate or electromagnetic plate with permanent magnets or special clamping devices to be clamped.

### Tailstock

The tailstock is used for clamping workpieces between the centres. It is attached to the upper table by two T-bolts with nuts. During set-up, after the nuts have been loosened, the tailstock is moved along the upper area of the upper table.

The pinole in the tailstock body is placed slidingly. Its movement along the axis is pneumatic – controlled by an electric pedal or mechanically. In the tailstock there is a conical hole for Morse clamping centres. The clamping power of the centre affecting the workpiece is adjustable and is controlled by the pressure of a spring. The tailstock is fitted with a device to provide fine compensation for the workpiece's cylindricity enabling the centring of the pinole within a small range.

The holder of the central dressing unit which forms grinding wheel is mounted on the rear part of the tailstock.





## DESCRIPTION OF THE MAIN PARTS OF THE MACHINE



### Control system and control panel

The whole grinding process is controlled by a control system. As a standard the machines are fitted with CNC control system Siemens Sinumerik 840 D sl or, upon the customer's request, with the Kavalir K51-2 NC system. All machine control features are located on the main panel. All controls are clearly and ergonomically designed.

The electric cabinet is located behind the machine. There are control and performance features in the cabinet, whose arrangement is in compliance with the respective safety standards and complies with the EMC tests.

### Covers

The cover of UB 63, 85, 90 is designed to meet all environmental, ergonomic and safety standards. The main emphasis is put on the safety of operation. The cover ensures the operator's safety. Through a window the cover makes it possible, to control the working process optimally, to change the workpiece and the grinding wheel and to carry out maintenance and servicing. All cover parts are in compliance with ČSN EN 13218.

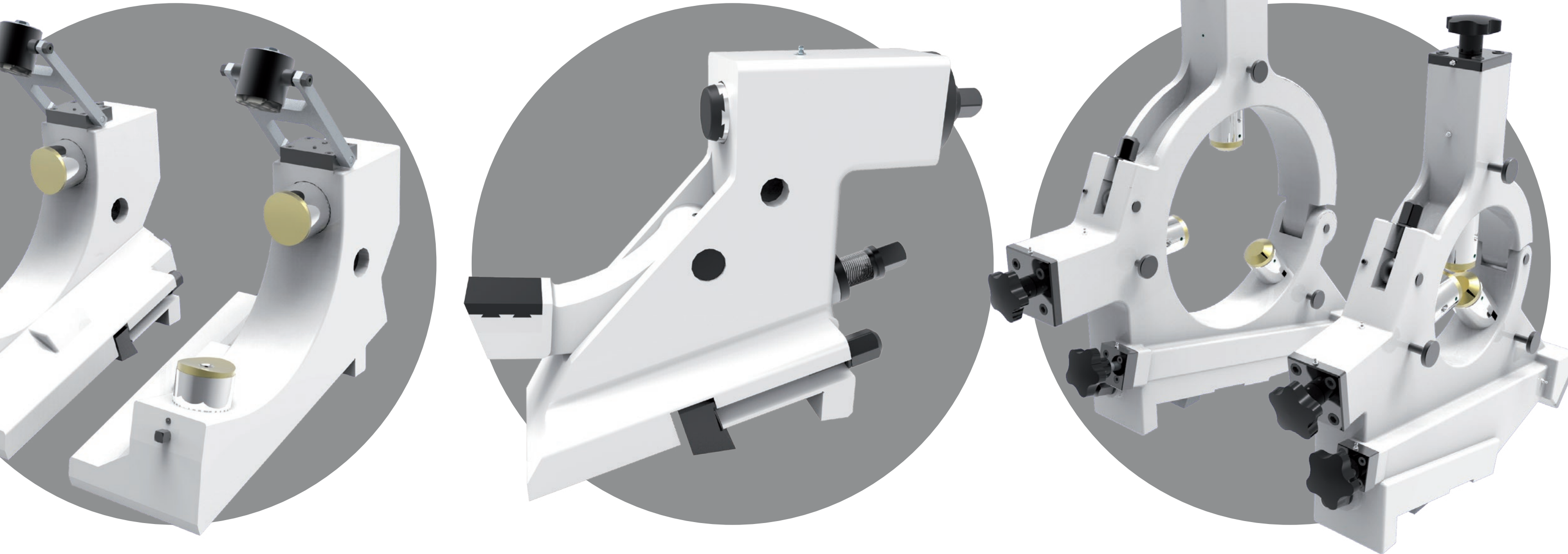
Another function of the cover is to conduct the emulsions back into the filtration tank and to prevent its leaking into the environment as a liquid or aerosol. The same purpose is served by the extraction system of the bonnet area.

Last but not least, the cover also has an aesthetic and design function helping the operator to feel good and safe.





## DESCRIPTION OF THE MAIN PARTS OF THE MACHINE



## Accessories / Options

- ▶ Internal grinding unit
- ▶ Internal grinding spindle
- ▶ The wheel-head grinding spindle with a sliding or rolling bearings, with permanent lubrication of the roller bearings.
- ▶ Work-head and tailstock with air lifting
- ▶ Tilting dresser
- ▶ Closed steady rests
- ▶ Open steady rests
- ▶ Auxiliary steady rests
- ▶ Three-jaw chuck
- ▶ Magnetic plates
- ▶ Balance stand
- ▶ Cooling device with tank
- ▶ Continuous regulation of the revolutions of the grinding headstock spindle
- ▶ Electrodynamics balancing of the grinding wheel, spark grinding, emergency
- ▶ Remote control with two electronic wheels (separately for X-axis and Z-axis)
- ▶ Extraction unit
- ▶ Universal grinding wheel
- ▶ Measuring probe for horizontal positions of the workpiece made by **MARPOSS** or **RENISHAW**
- ▶ In-process gauge **MARPOSS UNIMAR S26** with different ranges of diameters measured.
- ▶ ISO Code programming
- ▶ Control system teleservice
- ▶ SW for shape dressing of the grinding wheel





## SERVICE

### Customer care

The grinders made by TOS Hostivař are tailored for each customer. Customer care begins with the first contact, when we try to gain as much information as possible from the customer about their products. We can tailor the machine for the customer so that their investment in the new machine is used optimally.

### What we provide for customers buying a new machine

- ▶ Assistance in choosing the machine and its accessories
- ▶ Assistance in technology debugging
- ▶ Training for machine operators
- ▶ Warranty and post-warranty service

### What we provide for the owners of older machines by TOS Hostivař

- ▶ General overhaul
- ▶ Regular service inspections to keep the machine in perfect condition throughout its lifetime
- ▶ Refurbishment of old conventional machines into modern ones with CNC control

For higher reliability for all our grinders go through a final inspection process. This process is intended to test the functionality and accuracy of the machine as much as possible.

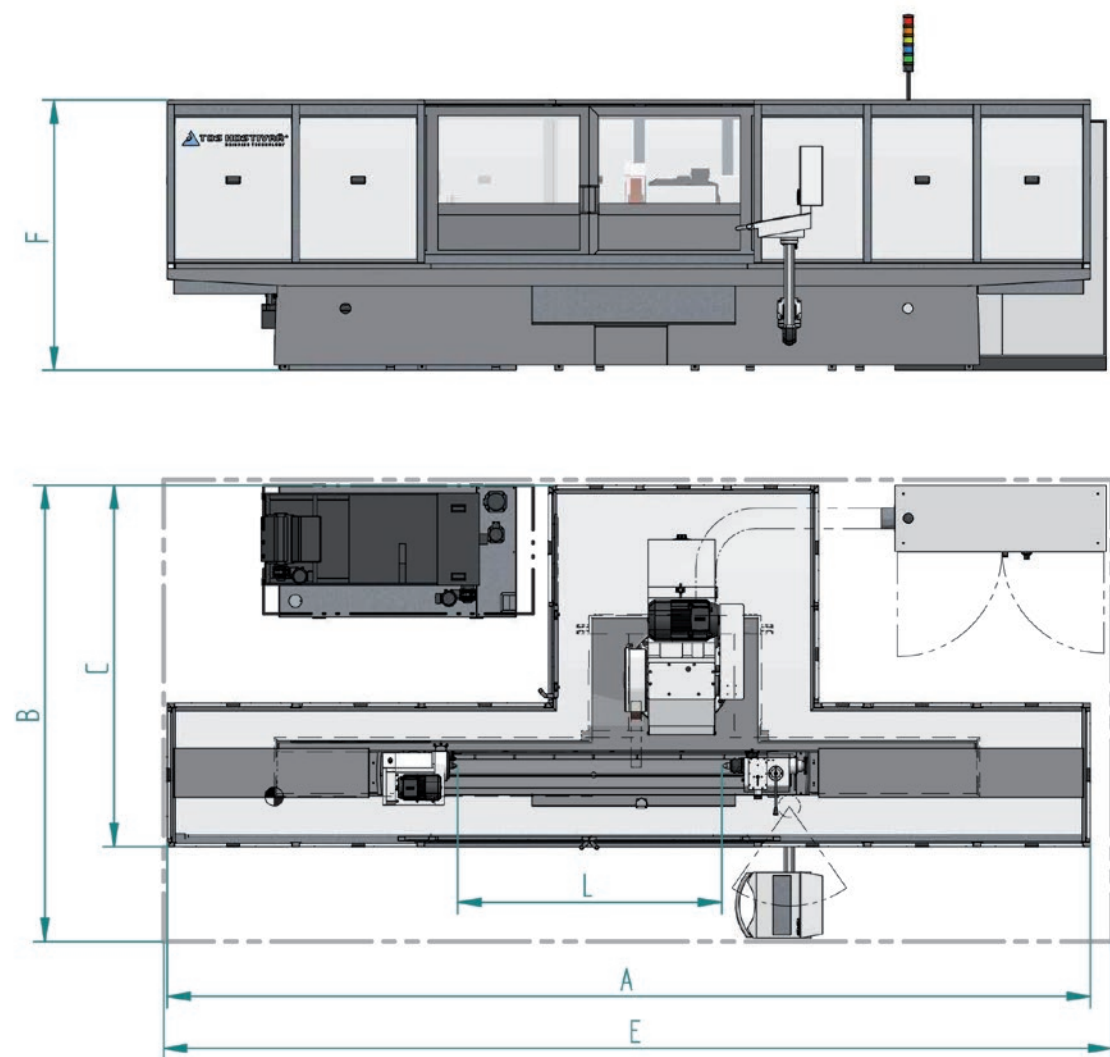
In the first step the machine is run in by means of an automatic cycle, which last up to a few days and which also checks the mechanical functions of the machine. During this automatic testing cycle our technicians also visually and aurally check whether there are any undesirable actions during the running of the machine.

In the second step the accuracy of the machine is tested. Standardized testing workpieces are ground to test the accuracy during the grinding of external cylindrical surfaces, front surfaces and internal cylindrical surfaces. On the customer's request, the testing workpieces can be measured by a certified device.

**Our service team is ready to work  
anywhere in the world.**



MACHINE DIMENSIONS AND PARAMETERS



Operating range of the machines		Unit	UB 63, 85, 90 CNC
Swing diameter	mm		630; 850
Distance between centres	mm		2,000; 3,000; 4,000; 5,000; 6,000
Maximum weight of the ground workpiece – in clamping centres / clamped on one side only, incl. fixtures	kg		2,500/250
Work-head swivel	°		90
Wheel-head swivel	°		+30 / –10
Table swivel	°		±6°30'/±5°/±4°/ ±3°/±2°
Taper spindle and tailstock	Morse		6
Wheel-head cross feed	m/min		4
Table feed	m/min		6
Maximum / minimum grinding wheel diameter	mm		750/570×100×305
Grinding spindle motor output	kW		22

Basic machine dimensions						
	Unit	Dimensions of UB 63, 85, 90 CNC machines				
L	mm	2,000	3,000	4,000	5,000	6,000
Workpiece diameter – D	mm	630 / 850 / 900				
A	mm	8,200	10,200	12,000	14,000	15,900
B	mm	4,100				
C	mm	3,200				
E	mm	8,200	10,200	12,000	14,000	16,000
F	mm	2,100				



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