

ReTOS Varnsdorf s.r.o., The Czech Republic, followed up with 40 years tradition in the field of horizontal boring machines overhauls. We use the most modern technologies as our parent company TOS Varnsdorf a.s.

Features

- contouring horizontal boring machine
- fixed column, crosswise travelling table
- 4 linear axes, rotary table
- sliding workspindle
- machine designed for universal application in engineering production
- suitable for roughing as well as precision contouring
- optionally can be fitted by tool magazine with manipulator (ATC), tool cooling kit (CHZ), cooling through spindle axis (CHOV) or oil-mist cooling
- also can be fitted by non-sliding workspindle up to 5000 rpm or by motorspindle as specified by client

Controlling of the machine

- all functions of the machine, except tool clamping and unclamping, are controlled via the control panel, which consists of a keyboard, a switch panel and a LCD monitor
- the tool clamping and unclamping is controlled by switches on the headstock
- the control panel is completed with a portable control panel (handwheel), which duplicates some basic functions of the control of the machine
- the control panel is situated on the rotary console in front of the headstock
- the control system allows manual, semiautomatic and fully automatic modes
- the standard communication interface allows connection with ethernet for easy administration and distribution of technological programs as well as diagnostic or service works of the control system

Low-end version

Control system

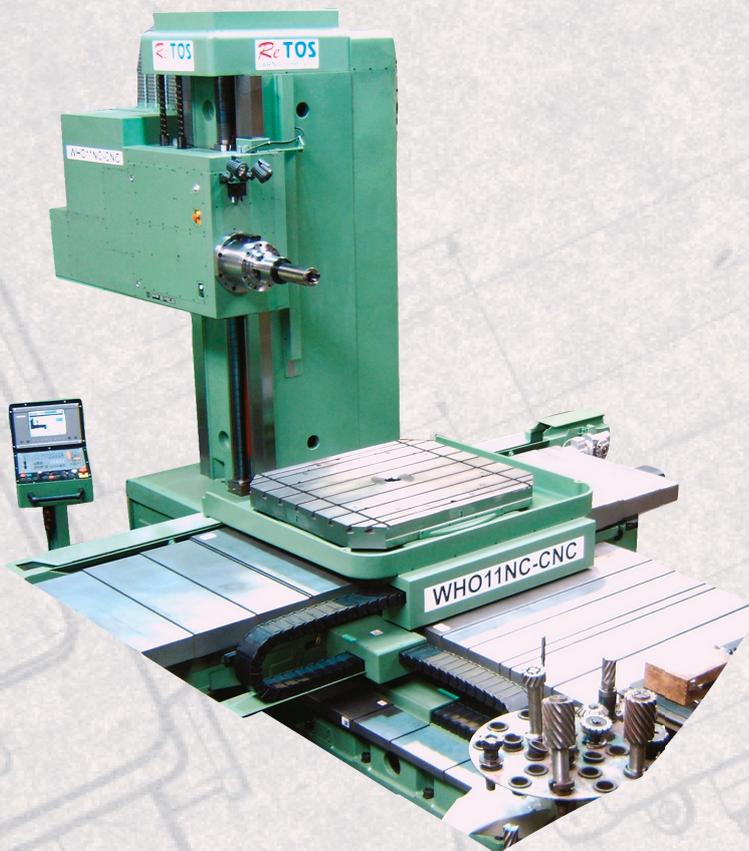
- HEIDENHAIN iTNC 530 + handwheel
- SIEMENS SIN 840D + handwheel

Powered Axes

- X - travel of rotary table slide on saddle
- Z - travel of saddle on bed
- Y - vertical headstock travel on column
- W - spindle travel
- B - table rotation
- S - workspindle rotation

Machine capabilities

- X, Y, Z, W axes powered in interpolation
- B axis powered only positionally



- linear interpolation of four axes
- circular interpolation of two of four axes powered in interpolation
- spiral interpolation
- spacial interpolation - spline in space
- interpolation of S and Z (W) axes - spindle turning depending on the Z (W) axis position - enables thread cutting without usage of a compensating bush

Kinematics of the X, Y, Z, W axes

- brushless digital servomotor with servo-drive
- clearance-free gearing of the timing belt
- ball screw

Kinematics of the B axis

- brushless digital servomotor with inbuilt gearbox with servo-drive
- gear set + gear ring

Group guidance

- guideways on all linear axes are reinforced with hardened steel plates
- counterways are lined with TURCITE including keys
- guideways of the rotary table are scrapped

Lubrication

- central, axial lubrication
- frequency of lubrication cycles correlates to travelled track of a particular group

Clamping

- X, Y, Z, W, B axes - hydraulically

Headstock

- sliding workspindle
- spindle cavity blown with air during tool-changing cycle
- spindle driven by four mechanical lines - gears
- hydraulic shifting of each line
- headstock balancing - ropes and counterweight led on side-wall of column
- setup of tool cooling by jets on headstock front side

Hydraulic power pack

- HYTOS hydraulic and lubrication set
- lubrication of all axes
- clamping X, Y, Z, W, B
- unclamping of the tool

Admeasurement of position

This document relates only to the machine WHO11NC, it does not cover the machines in the development range WHO11.1 and WHO11.2, which are of very different concept.



TÜVRheinland®
COTI
ISO 9001
ISO 14001

ReTOS
VARNSDORF s.r.o.

- HEIDENHAIN digital optical admeasuring
- X, Y, Z axes - LS 187 rules
- W axis - LS 487 rule
- B axis - ROD 280
- S axis - ROD 486

Energy distribution

- IGUS chain energy carriers

Coverage of machine

- complete coverage of guideways of X, Z axes

- partial coverage of Y axis

CE - valid only for the European Union

- comprehensive safety elements according to the applicable legislation and technical standards
- operator housing
- working area of the machine is fenced off

Optionally

ATC

- ATC facility is a separate unit
- magazine with servodrive for tool beds positioning
- changer driven electrically / pneumatically

CHZ

- tool cooling set with jets on headstock front side
- separate cooling unit - tank with pump, level gauge, pressure test
- tank volume approx. 150 l
- maximal pressure 4 bars / 32 l/min
- setup for tool cooling always included - distribution pipes, jets

CHOV

- once production has started is not possible to add into configuration
- separate cooling unit with filter and magnetic swarf separator required
- maximal pressure 40 bars - emulsion - tank volume 1000 l
- maximal pressure 80 bars - oil - tank volume 100 l
- both emulsion and oil may not be used for one particular machine
- other necessary alterations to machine and CE features depend on the required cooling pressure
- for pressure higher than 10 bars the cover of the workpiece or of the machine must be used

Machine parameters		
Control system + motors / drives	Heidenhain iTNC 530 + Heidenhain Siemens SIN 840 D + Siemens	
Workspindle diameter	112	mm
Clamping taper	50	ISO
Tool shank	2080	DIN
Clamping adapter - screw	69872-A	DIN
Spindle speed range	10 - 3500	rpm
Main motor power - Heidenhain / Siemens	24 / 28	kW
Maximum torque of the spindle	1500	Nm
X...transversal travel of table	1600	mm
Z...longitudinal travel of table	1500	mm
Y...vertical travel of headstock	1470	mm
W...spindle stroke	450	mm
Table clamping surface	1250 x 1400	mm x mm
Width of T-slots	23 H8	mm
Table loading capacity	4500	kg
Feeds... X, Y, Z, W - manual mode	4 - 2000	mm / min
Feeds... X, Y, Z - automatic mode	4 - 12000	mm / min
Feeds... W - automatic mode	4 - 17000	mm / min
Rapid traverse...X, Y, Z	12000	mm / min
Rapid traverse...W	17000	mm / min
Rapid traverse of table rotation...B	4,7	rpm
Total power consumption	80	kVA
Machine weight	23000	kg
Total area including CE - approximate	7000 x 7000	mm x mm

Oil-mist cooling

- can be added to machine at any time
- easy to assemble
- easy to use

Non-sliding spindle

- non-sliding spindle up to 5000 rpm
- distance of spindle face from headstock face c. 400 mm
- spinle drive with four hydraulically switched mechanical lines remains principally the same

Motorspindle

- spindle parameters as specified by client

- Machine design can be tailored to suit the needs of the client