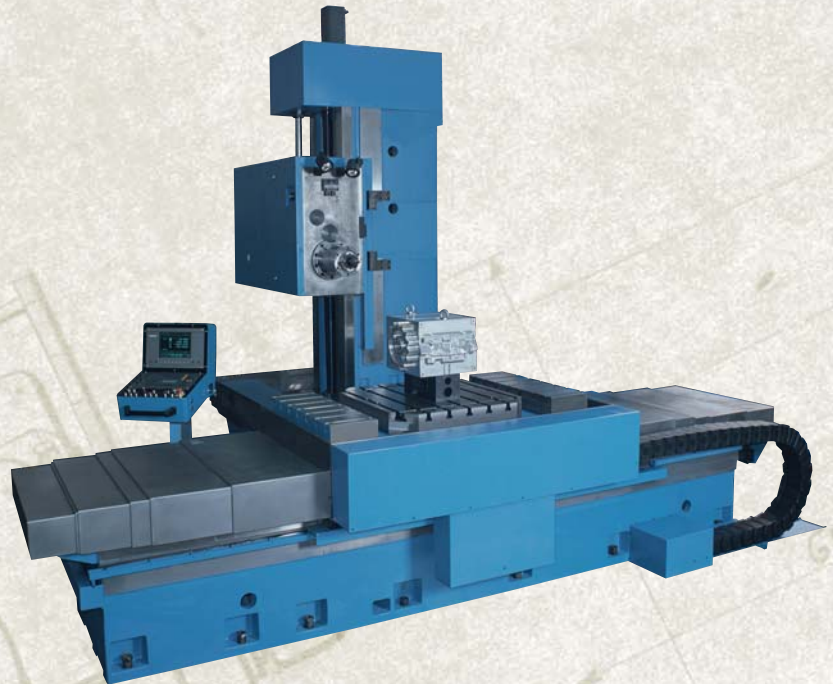


ReTOS Varnsdorf s.r.o., The Czech Republic, followed up with 40 years tradition in the field of horizontal boring machines overhauls. We use the most modern technologies as our parent company TOS Varnsdorf a.s.

Features

- contouring horizontal boring machine WFQ80NCA-CNC/50
- cross-shaped beds
- 3 linear axes, rotary table with additional supports and non-sliding workspindle
- machine designed for universal application in engineering production
- allows carousel usage of rotary table
- 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), oil-mist cooling, swarf conveyor or motorspindle



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, semi-automatic and fully automatic modes
- in case the machine is fitted with the automatic tool changer (ATC), the extra hand-held ATC control panel is needed. This is used when the magazine is loaded.
- 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 transversal bed
- Z – travel of column slide on longitudinal bed
- Y – vertical headstock travel on column
- B – table rotation
- S – rotation of non-sliding workspindle

Machine capabilities

- X, Y, Z, B axes powered in interpolation
- linear interpolation of three axes
- circular interpolation of two of three axes powered in interpolation
- spiral interpolation
- spacial interpolation - spline in space

- cylindrical interpolation by using of the rotary table

Kinematics of the movable X, Y, Z groups

- brushless digital servomotor with servo-drive
- clearance-free gearing of the timing belt
- ball screw – radiaxial bearing at both ends

Kinematics of the B axis

- principle of gears' pair mutually interacting on gear ring of the table
- 2 brushless digital servomotors with servo-drives
- 2 planetary gearboxes with minimum clearance
- gears inserted between gearboxes and 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, B axes – hydraulically
- spindle rotation clamped when changing tools – electromagnetic brake

This document covers only the WF80NCA and the WFQ80NCA machines, and does not include the previous development range of the WHQ9 and the WFQ80NC. The reconstruction of these machines is not under consideration because of the particularly low level volume of produced pieces and the fundamental difference in the design of the individual assemblies.



Headstock

- non-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 – hydraulic
- setup of tool cooling by four jets on headstock front side

Hydraulic power pack

- HYTOS hydraulic and lubrication set
- lubrication of all groups
- clamping X, Y, Z, B
- unclamping of the tool
- headstock balancing

Admeasurement of position

- HEIDENHAIN digital optical admeasuring
- X, Y, Z axes - LS 187 rules
- B axis – ROD 780
- S axis – ERM 280

Energy distribution

- IGUS chain energy carriers

Coverage of machine

- complete coverage of guideways of X, Z axes
 - partial coverage of Y axis
- ## CE
- comprehensive safety elements according to the applicable legislation and technical standards
 - operator housing
 - working area of the machine is fenced off partially with sliding doors for easy handling and transport of workpieces – e.g. driving in a forklift truck, etc.

Optionally

ATC

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

CHZ

- tool cooling set with four 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

Machine parameters

Control system + motors / drives		Heidenhain iTNC 530 + Heidenhain Siemens SIN 840 D + Siemens	
Workspindle diameter (front flange)	128.57	mm	
Clamping taper	50	ISO	
Tool shank	69871-A	DIN	
Clamping adapter - screw	69872-A	DIN	
Spindle speed range	0 - 5000	rpm	
Main motor power	20	kW	
Main motor nominal speed	2000	rpm	
Main motor maximal speed	8000	rpm	
X...transversal travel of table	1600	mm	
Z...longitudinal travel of column	950	mm	
Y...vertical travel of headstock	1020	mm	
Minimum height of spindle axis above table surface	-5	mm	
Minimum distance of spindle face from table axis	198	mm	
Table clamping surface	850 x 850	mm x mm	
Width of T-slots	24 H8	mm	
Table loading capacity	3000	kg	
Table clamping surface including additional supports	850 x 1600	mm x mm	
Table loading capacity including additional supports	5000	kg	
Feeds... X, Y, Z - manual mode	4 - 500	mm / min	
Feeds... X, Y, Z - automatic mode	4 - 17000	mm / min	
Rapid traverse...X, Y, Z	17000	mm / min	
Feeds of rotating table...B - manual mode	0-2	rpm	
Feeds of rotating table...B - automatic mode	0-10	rpm	
Rapid traverse of table rotation...B	10	rpm	
Nominal torque of feed motors... X, Z	38	Nm	
Nominal torque of feed motors... Y, B	22.5	Nm	
Nominal speed of feed motors	2000	rpm	
Total power consumption	71	kVA	
Machine weight	20000	kg	
Total area including CE - approximate	7000 x 7000	mm x mm	

ATC parameters

Tool changing time	10	s
Number of tools	60	pcs
Pitch of beds	130	mm
Maximal tool diameter – unrestricted	125	mm
Maximal tool diameter – with free beds	200	mm
Maximal tool length – restricted / unrestricted	500 / 420	mm
Maximal tool weight	25	kg
Maximal weight of tools in magazin	560	kg / wheel
Maximal weight of tools in magazin total	1120	kg
Maximal tool unbalance in magazine-wheel	150	kg
Maximal speed of wheel	8	rpm
Operating air pressure	5	bar
Required air purity	40	microns
Weight	1500	kg

- 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 must be used, minimally by copy of sliding table with mechanical-pneumatic opening of door and top

Oil-mist cooling

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

- easy to use

Motorspindle

- spindle parameters as specified by client

Swarf conveyor

- fixed to transversal bed between table and column

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