VARNSDORF TOS

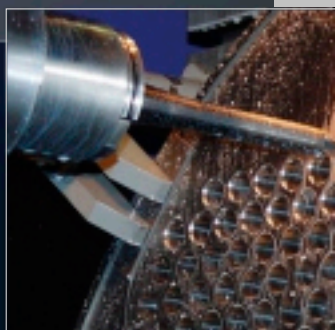
WH(Q) 105 CNC

HORIZONTAL MILLING AND BORING MACHINES

WH 105 CNC

WHQ 105 CNC

New goals need new solutions



Certifikovaný systém řízení VARNSDORF TOS SKQS reg. č. 12392-01 ISO 9001:2008

TOS VARNSDORF a.s.

11/2012

ABOUT COMPANY

www.tosvarnsdorf.com

Company TOS VARNSDORF a.s. situated in Varnsdorf, Czech Republic has a years-lasting tradition in machine tool production. The company was founded, under the name of Arno Plauert Machine Works, as early as 1903 and up to now it grew up into a big engineering company, known with its products all around the world.

The company's manufacturing program is based on the development, manufacture and sale of machine tools, integrated with a wide offer of services, such as:

- training for operators and maintenance workers
- technological studies
- installations of new machines
- warranty and after-warranty (extended) servicing
- spare parts sales
- overhauls and modernizations

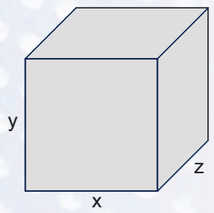
In addition, the company provides for the services in the form of outwork offers (Metalworking, Measuring services, Chemical and Heat Treatment of Metals).

High engineering standards of TOS VARNSDORF a. s. products were recognized in 1996 when the company was awarded the ISO 9001 certificate.

PRODUCTION PROGRAM

PRODUCTION OF MACHINE TOOLS

- HORIZONTAL MILLING AND BORING MACHINES
- FLOOR TYPE HORIZONTAL BORING MILLS
- MACHINING CENTRES
- PORTAL TYPE MACHINING CENTRES
- SPECIAL MACHINES
- ACCESSORIES

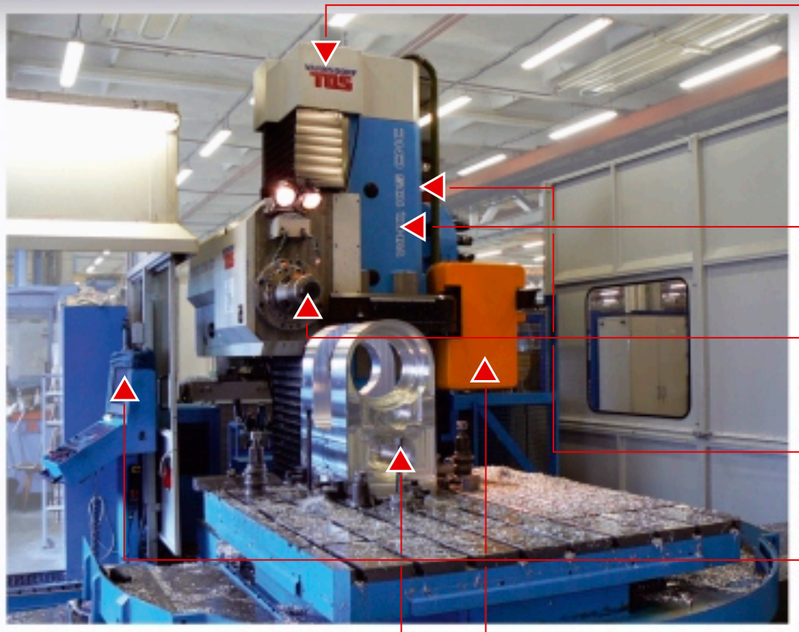


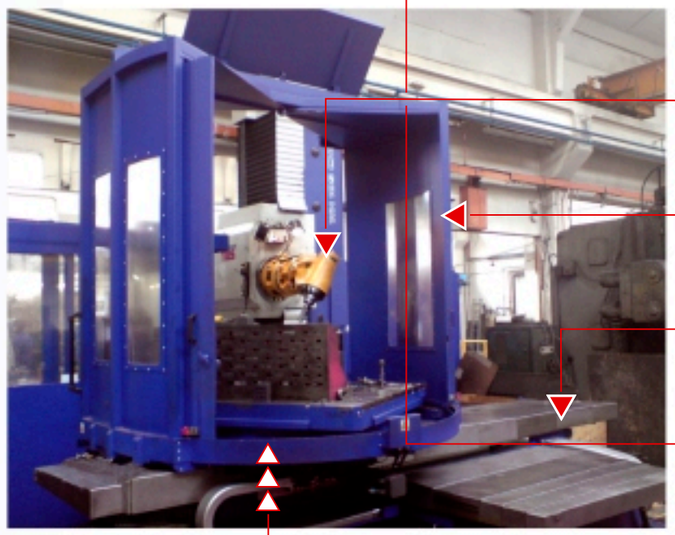
> 1 m³ (0.01mm)
x > 1 m
y > 1 m
z > 1 m

SERVICES

- TECHNOLOGICAL SUPPORT: TRAINING, TECHNOLOGICAL STUDIES, ETC.
- SPARE PARTS, OVERHAULS AND MODERNIZATIONS
- COOPERATION (METALWORKING, MEASURING SERVICES, CHEMICAL AND HEAT TREATMENT OF METALS)

CONTENT





HORIZONTAL MILLING AND BORING MACHINE WH(Q) 105 CNC

www.tosvarnsdorf.com

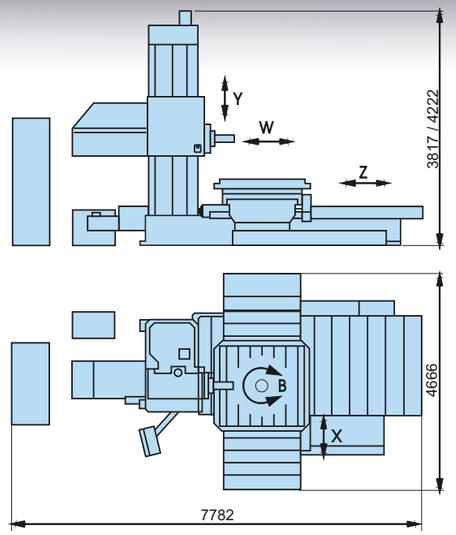
The WH(Q) 105 CNC horizontal boring machine has been designed using the latest technology to ensure that it is suitable for the most demanding applications. The high cutting performance and outstanding product reliability make this machine ideal for One- off Applications or Volume Production in the most difficult operations. The continuous control of X, Y, Z and W axes and rotary positioning of the table allow for the machining of both simple and complex components.

Machines can be extended with a wide selection of technological accessories that significantly widen the machine technological utility value.

Basic design options of these machines are defined by the work cycle automation level:

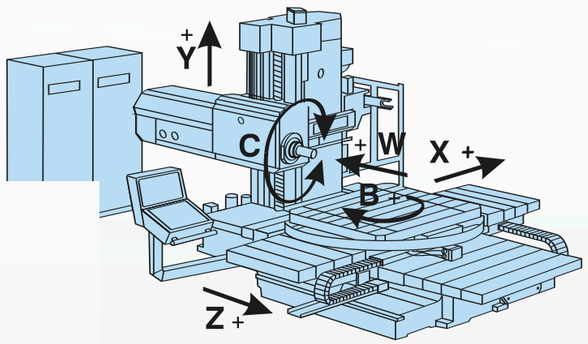
WH 105 CNC - the basic design

WHQ 105 CNC - the Automatic Tool Changer (ATC) equipped design



MAX. TRAVELS

X	1,800 mm	71 inch
Y	1,600 mm	63 inch
Z	1,250 mm	49 inch
W	630 mm	25 inch



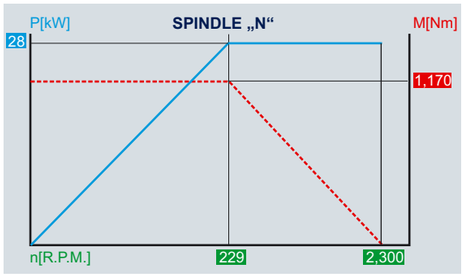
NEW DESIGN FOR 2012

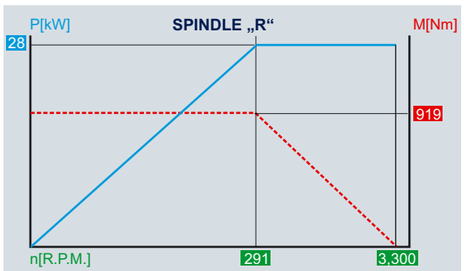
WH(Q) 105 CNC – DESIGN OF MACHINE GROUPS

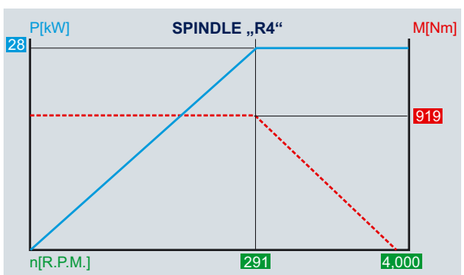
HEADSTOCK

The headstock contains all the spindle bearings and the spindle driving mechanisms (C-axis) as well as the ones for the longitudinal travel of the live spindle (W-axis). The tool clamping system is also there. Various items of standard or optional equipment such as spindle leading support, facing or milling heads etc., may be mounted on the headstock face. Precise spindle type, preloaded, multiple setup ball bearings have been used for the spindle. The spindle is driven via two sets of gears changed over with hydraulic actuated shifters. The headstock weight is compensated for by a counterweight moving inside the hollow of the column.

Technical parameters	Headstock N	Headstock R	Headstock R4
Spindle diameter	105 mm	4.1 inch	
Spindle taper	ISO 50		
Spindle speed range	10 - 2,300 RPM	10 - 3,300 RPM	10 - 4,000 RPM
Main motor power (S1 / S6-60)	28 / 35 kW	37.55 / 46.9 HP	
Max. spindle torque (S1 / S6-60)	1,170 / 1,462 Nm 863 / 1,078 ft lb	919 / 1,148 Nm 678 / 846 ft lb	919 / 1,148 Nm 678 / 846 ft lb
Spindle stroke **W**	630 mm	24.8 inch	

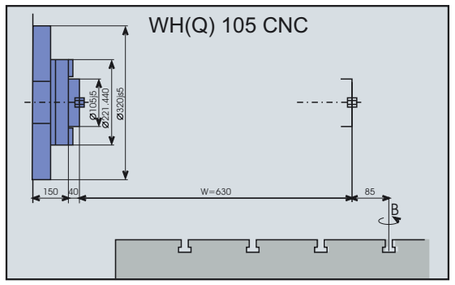






BEARINGS of world-famous manufacturer

SKF



HEADSTOCK „N“
is suitable especially for power machining.
The maximum speed is suitable for finishing operations. The torque characteristic of the spindle predetermines the machines equipped with the „N“ headstock to use of roughing cutters and faceplates

HEADSTOCK „R“
Option with higher spindle speed is suitable especially for the precision power machining of high cutting speed and using the maximum machine capacity at the same time.

HEADSTOCK „R4“
Option with max. spindle speed of 4,000 R.P.M. – this execution is suitable to be equipped with compressor cooling system OLAER KRO 30D or SCHIMPKE DK 28-V.

WH(Q) 105 CNC – DESIGN OF MACHINE GROUPS

www.tosvarnsdorf.com

THE MACHINE FRAME
is designed in the sense with a fixed column, traveling spindle and cross traveling spindle and cross traveling rotary table. The basic slideways are fitted with hardened and ground steel plates, counter ways are coated with a layer of low friction material. The guideways of the longitudinal slides are through anti-friction unit.

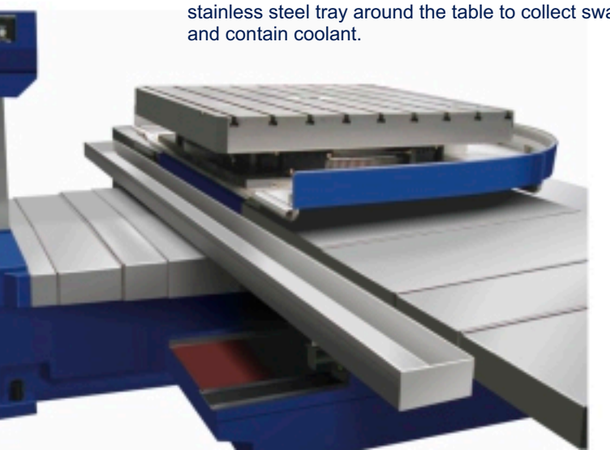
COLUMN

The column body is made of optimally dimensioned castings of gray iron. In the hollow of the column there is a counterweight for compensation of the headstock weight.

Technical parameters		
Headstock vertical travel **Y**	1,250; 1,600 mm	49; 63 inch

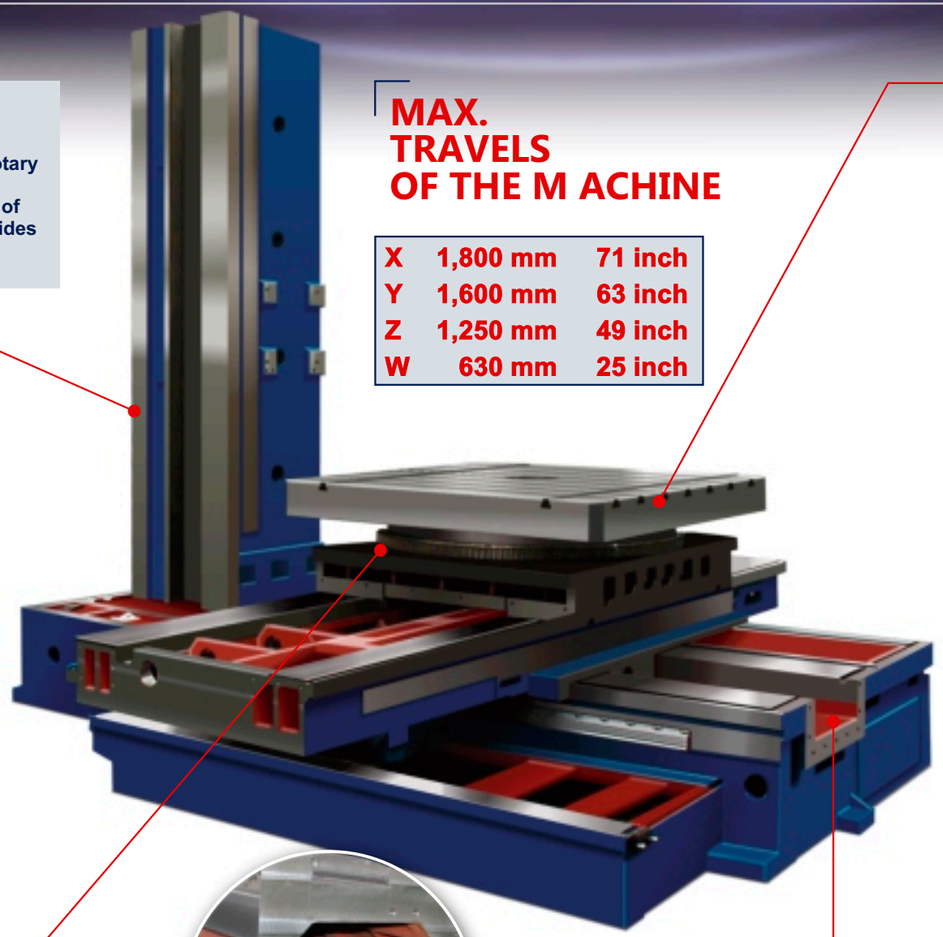
STAINLESS STEEL TRAY

The standard machine execution is fitted with stainless steel tray around the table to collect swarf and contain coolant.



MAX. TRAVELS OF THE M ACHINE

X	1,800 mm	71 inch
Y	1,600 mm	63 inch
Z	1,250 mm	49 inch
W	630 mm	25 inch

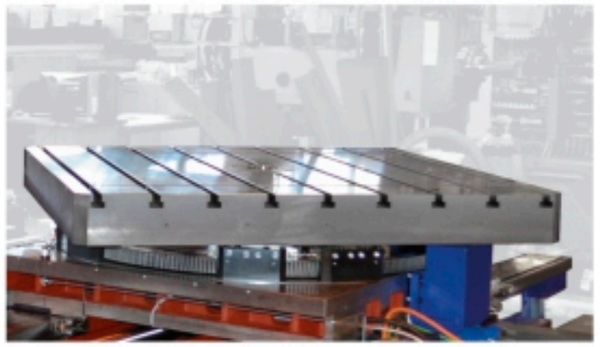


High-quality Czech CASTINGS

METALURGIE Rumburk s.r.o.

TABLE

Technical parameters		
Table longitudinal travel **Z**	1,250 mm	49 inch
Workpiece weight max.	5,000 kg	11,025 lbs
Table clamping surface	1,400 x 1,400, 1,400 x 1,600 mm	55 x 55; 55 x 63 inch
Table transverse travel **X**	1,800 mm	71 inch

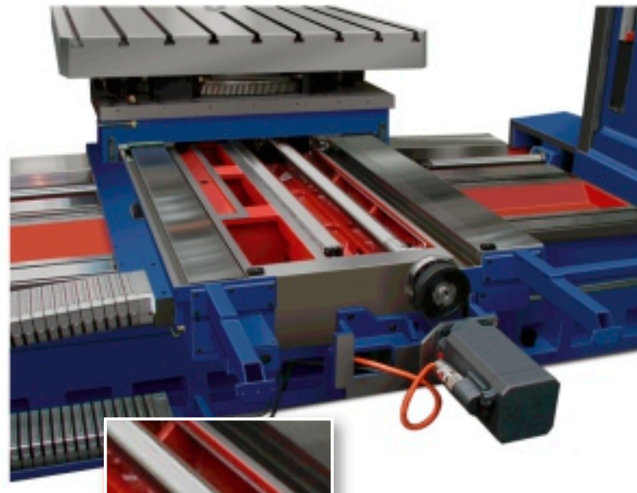


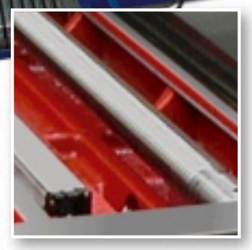
THE FEED DRIVES

of all linear axes are equipped with digitally controlled AC servo-drives manufactured by SIEMENS. The **X, Y, Z, W** axes are locked by an AC digital servo-drive in a closed position bond after reaching its final position. The **B** axis is automatically hydraulically clamped.

FEEDS

Technical parameters		
Feed range - **X, Y, Z, W**	2 - 5,000 mm.min^{-1}	0.08 - 197 inch.min^{-1}
Rapid traverse - **X, Y, Z**	10,000 mm.min^{-1}	394 inch.min^{-1}
Rapid traverse - **W**	8,000 mm.min^{-1}	315 inch.min^{-1}
Rapid traverse - **B**	2 RPM	





Ground BALLSCREWS

KSK KUŘIM SKUPINA ALTA

WH(Q) 105 CNC – DESIGN OF MACHINE GROUPS

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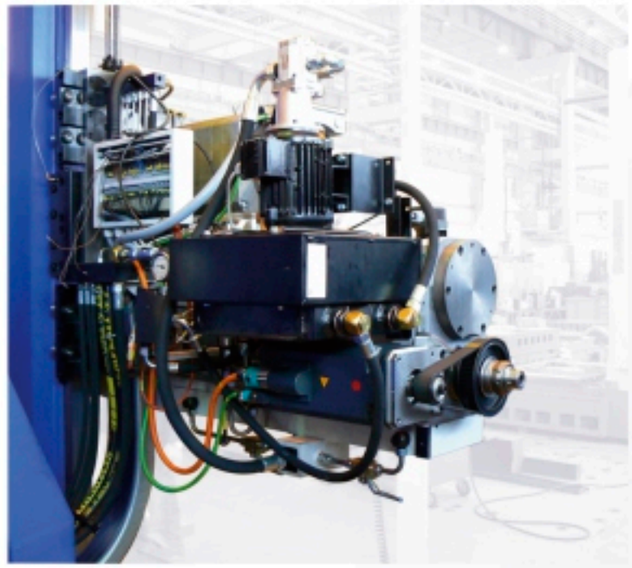
THE ELECTRIC OUTFIT
The electrical installation is mostly wired into an independent electrical box. It contains a basic control system module, components controlling the servo- and spindle-drives plus other electrical elements supplied by leading specialized companies. The electrical box is cooled by a unit integrated into the box door.

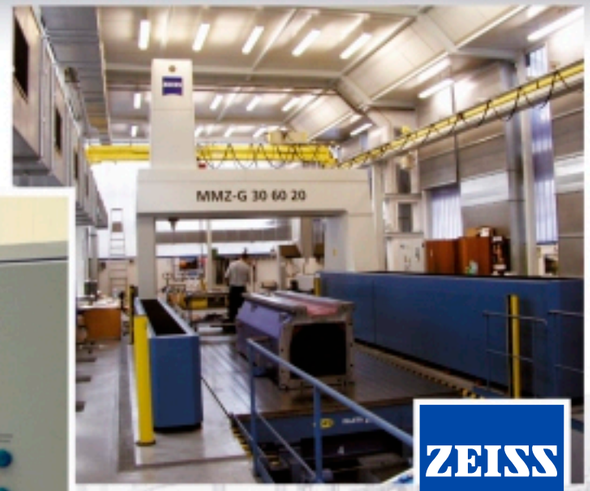


AIR COOLING
As standard the headstock oil is air cooled. On the customer's request the machine can be equipped with an oil refrigeration unit.

HYDRO-AGGREGATE
Guideways of **X, Y, Z** and **B** axes are lubricated automatically by means of oil metering unit placed together with hydro-aggregate on the column saddle.

WH(Q) 105 CNC – MACHINE TESTING

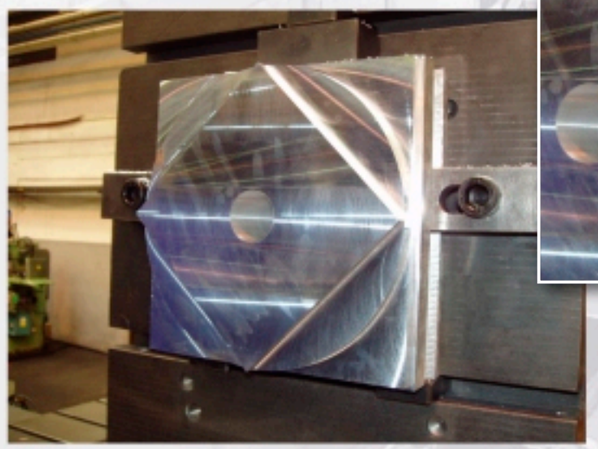
QUALITY CONTROL
Thorough checking of manufactured parts is ensured with a modern, climate-controlled measuring centre equipped with cutting-edge coordinate measuring machines.

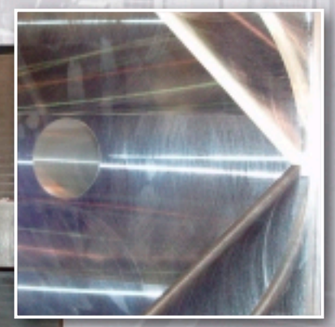


ZEISS

MEASURING DEVICES
from world-famous manufacturer

The fault-free functioning of machine is checked by a demanding output test consisting of:
- **checking of geometric accuracy of machine according to the international standard ISO 3070-1,2,3**
- **checking accuracy of machine position when running to a position pursuant to standard VDI/DGQ 3441**
- **checking of working accuracy of machine by machining the testing workpiece “NASA”**
- **maximum load machining test for machine**





Testing workpiece NASA

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WH(Q) 105 CNC – MACHINE CONTROL

www.tosvarnsdorf.com

CONTROL PANEL
OF SINUMERIK 840 D
CONTROL SYSTEM

CONTROL PANEL
OF HEIDENHAIN iTNC 530
CONTROL SYSTEM

CONTROL PANEL
OF FANUC 31i
CONTROL SYSTEM

PORTABLE
CONTROL PANEL
SINUMERIK

PORTABLE
CONTROL PANEL HEIDENHAIN
(OPTION TYPE HR 520)

WORKPIECE AND TOOL PROBES

WE DELIVER THE FOLLOWING PROBES AS STANDARD:

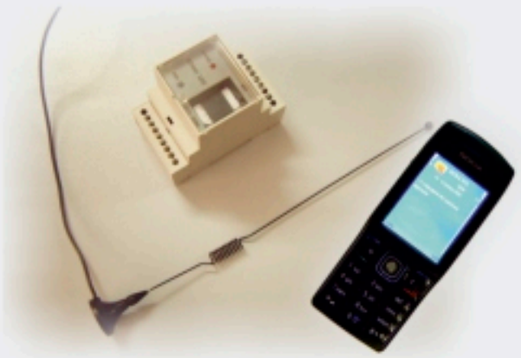
Measuring tool probe for the system:		
iTNC 530	HEIDENHAIN TT 140	measuring touch probe with cable transport
iTNC or Sinumerik 840D	RENISHAW TS 27 R	measuring touch probe with cable transport
Measuring workpiece probe for the system:		
iTNC 530	HEIDENHAIN TS 220	measuring touch probe with cable transport
	HEID. TS 640 + SE 640	measuring touch probe with optical transport
iTNC or Sinumerik 840D	RENISHAW OMP 60 - set	measuring touch probe with optical transport
	RENISHAW RMP 60 - set	measuring touch probe with wireless transport
	M+H 20.41 Multi	measuring touch probe with wireless transport

TOOL CONTROL PROBE

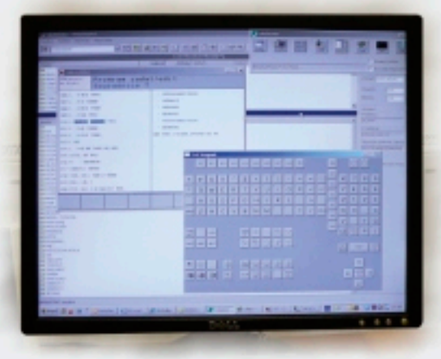
MEASURING TOUCH PROBE

WE ALSO OFFER A SYSTEM OF SERVICES FOR THE PERMANENT SUPPORT OF CUSTOMERS:

TOS*message*
- ensures communication between the machine's control system and the customer's mobile phone. The customer is informed about the predefined statuses of the machine, e.g. the completion of an automatic cycle or possibly program interruption.



TOS*wide*
- the remote diagnostic system allows our service engineer to obtain required data about the status of the machine necessary to specify possible diagnostic messages about the non-standard condition of the machine's control system.

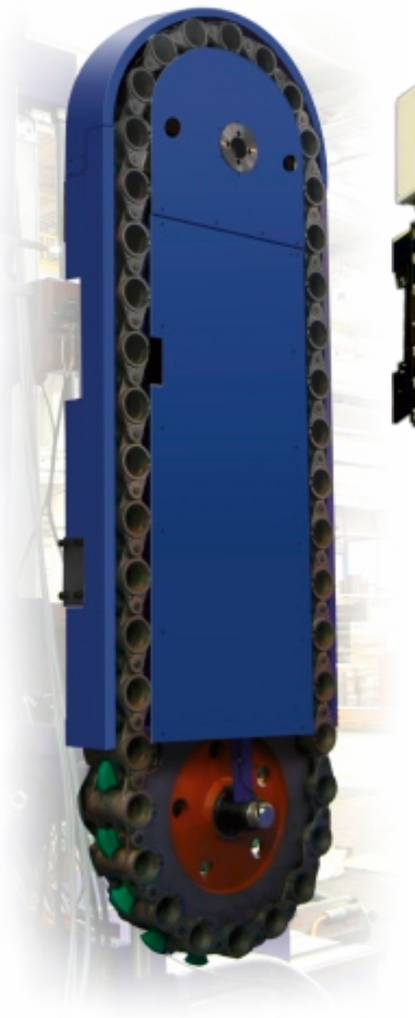


WH(Q) 105 CNC – AUTOMATIC TOOL CHANGE (ATC)

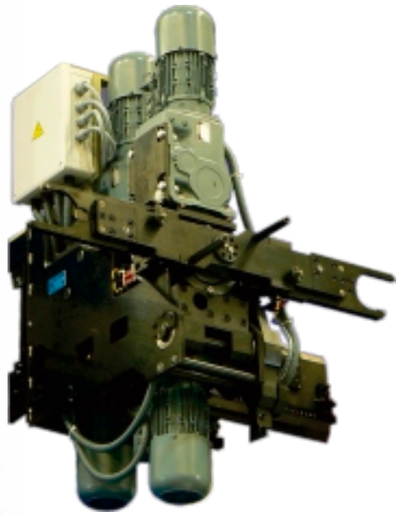
www.tosvarnsdorf.com

ATC consists of a chain or loop type tool magazine and horizontally traversing manipulator with rotating two-arm hand, manipulator is fitted to the back of the column (basic design for 40 or 60 tools).The ATC equipment adapted with respect to the tool standard can be as follows:
CSN 22 0432
CSN 22 0434
DIN 69871
BT 50 MAS 403-1982
CAT ANSI/ASME B5.50-1985

CHAIN MAGAZINE



TOOL MANIPULATOR



ATC CONTROL PANEL

Quantity of pockets in magazine	40, 60, 80, 120	
Pitch of pockets in magazine	130 mm	5.1 inch
Tool dia max		
- with fully loaded magazine	125 mm	4.9 inch
- with free neighbouring places	320 mm	12.6 inch
Tool length max.	500 mm	19.7 inch
Tool weight max.	25 kg	55.1 lbs
Total tool change time	15 sec	

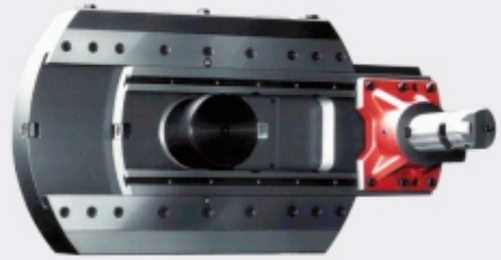
WH(Q) 105 CNC – OPTIONAL ACCESSORIES

MILLING HEADS

The heads are used for machining the surfaces that are oriented in the basic direction (also generally) with regard to the orthogonal system of the machine.

LD 650

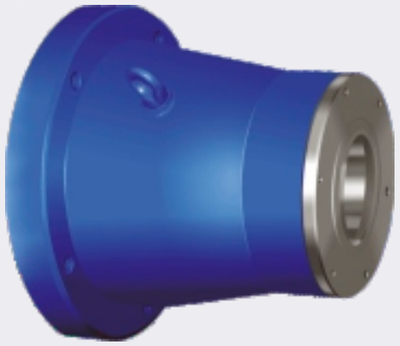
Facing head are used for demanding technological operations with the posibility of continuous CNC control of the slide position.



Manufactured in TOS VARNSDORF

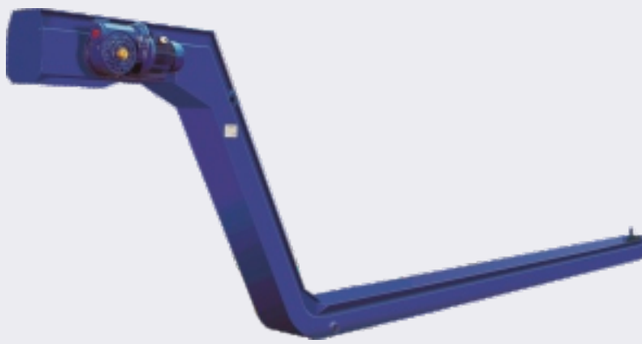
SPINDLE SUPPORT

The spindle support ensures a significant increase in the rigidity of the work spindle in the case of larger pullouts.



CHIP CONVEYOR

The length of a chip conveyer and its discharge height can be accommodated to user's needs.



WH(Q) 105 CNC – OPTIONAL ACCESSORIES

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CLAMPING ANGLE PLATES
Clamping angle plates are supplied in the following sizes as standard: 800; 950; 1,120; 1,450 mm // 31.5; 37.4; 44.1; 57.1 inch.

CLAMPING CUBES
UK 500, UK 1000

Manufactured in TOS VARNSDORF

TOOL COOLING DEVICE
Customer may choose ether CHZ 105 outer tool cooling kit or CHOV 105 through spindle tool cooling kit which brings coolant to the cutting edge through outsider nozzles as well.
Possible choose is 10, 20, 30 or 40 bar.

WH(Q) 105 CNC – MACHINE COVERS

MACHINE COVERS
It is desirable to prevent against coolant and chip splash. It is recommended particularly for the machines fitted with the cooling through the spindle. On the customer's request we deliver following types of covers:

MOBILE / MOVABLE
protective partitions

KVR CABIN
protective covers for working space.

C-COVER
compact and technically advanced design.

ANOTHER OPTIONAL ACCESSORIES YOU CAN FIND ON **www.tosvarnsdorf.cz/en/products/accessories/**

WH(Q) 105 CNC – MACHINE LAYOUT

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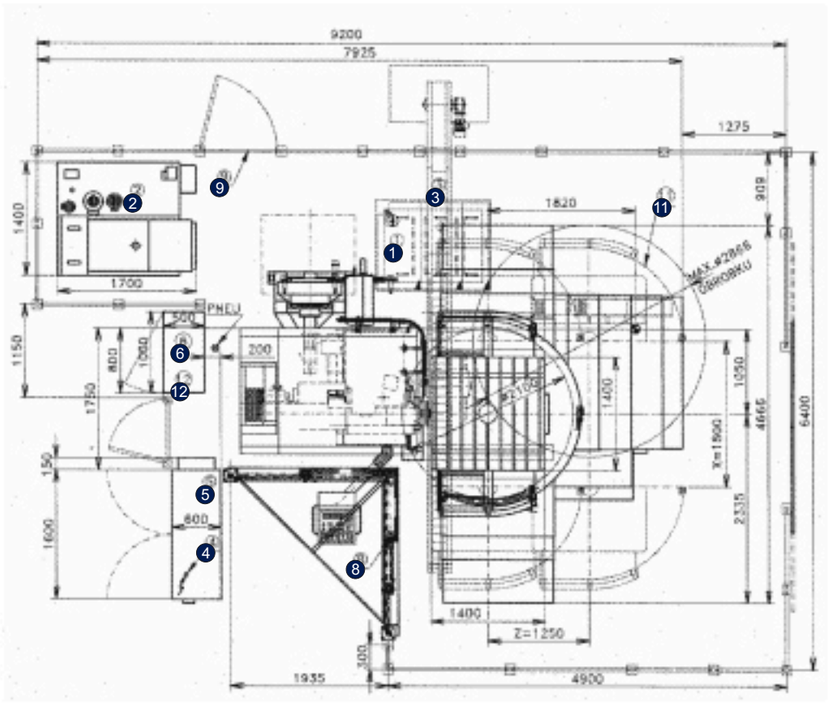

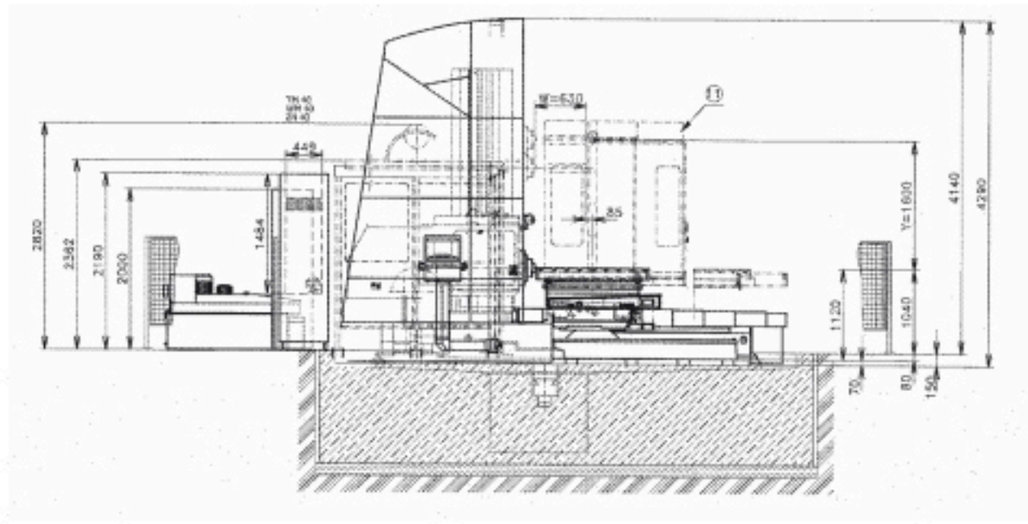

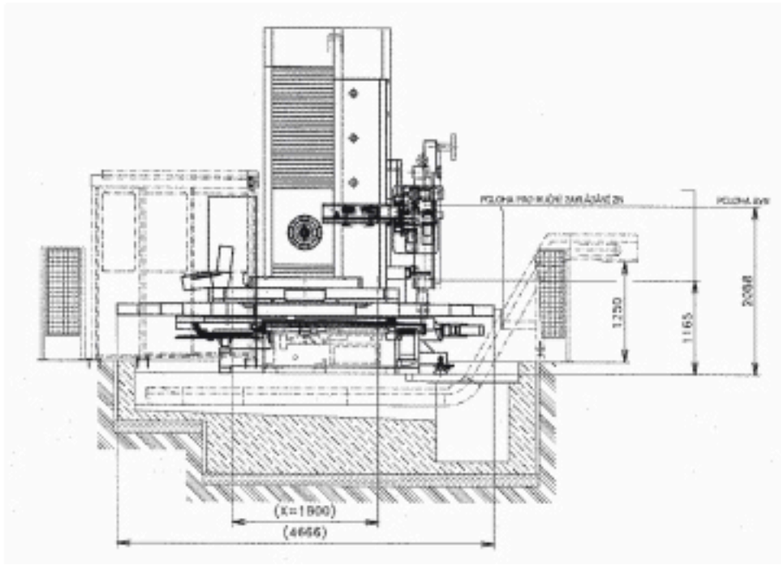

1	REPUMPING UNIT	8	PROT. GUARD OF OPER. STAND
2	COOLING AND FILTER UNIT	9	PROTECTIVE FENCING
3	CHIP CONVEYOR	10	FILTER FOR CHOV
4	MAIN CABLES	11	KVR 105 CABINE
5	ELECTRIC CABINET	12	ENERGOBOX
6	HYDRO-AGGREGAT		

WH(Q) 105 CNC – TECHNOLOGIES

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DEEP DRILLING

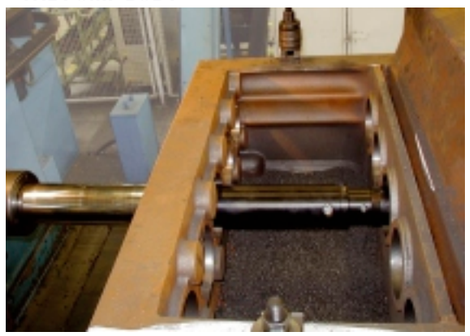
DEEP DRILLING

MILLING OF A MILLING HEAD ALUMINIUM BODY

MILLING OF A MACHINE TOOL PART

MILLING AND DEEP DRILLING INTO THE PUMP BODY

MILLING AND DEEP DRILLING INTO THE PUMP BODY



UPON THE CUSTOMER'S REQUEST, IT IS POSSIBLE TO EQUIP THE MACHINE WITH ADDITIONAL DEVICE OR PROCES ACCESSORIES.

Data and features in the present catalogue are not binding. The producer reserves the right to alter them without advance notice at any time.

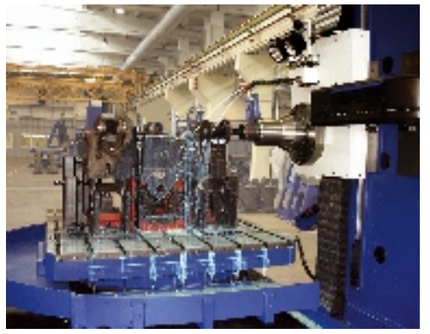
WH(Q) 105 CNC – TECHNOLOGIES / REFERENCES

DRILLING OF A TUBE PLATE

DRILLING OF A TUBE PLATE

PRODUCTION OF A BUILDING MACHINE ARM

MILLING AND DRILLING OF CRANE PART



MORE TECHNOLOGIES YOU CAN FIND ON **www.tosvarnsdorf.cz/en/technologies/**

268 STATISTICS OF SOLD WH(Q) 105 CNC OF ALL TYPES: 1998 - 2011

Germany	68	France	7	Croatia	1
Czech Republic	27	Netherlands	7	Egypt	1
Finland	24	Switzerland	7	Estonia	1
Slovenia	13	Ukraine	6	Hungary	1
Austria	12	Brazil	3	India	1
Canada	11	Argentina	2	Kuwait	1
Italy	11	Belgium	2	Luxembourg	1
Poland	11	China	2	Mexico	1
Russia	11	Kazakhstan	2	Singapore	1
U.S.A.	10	Sweden	2	Turkey	1
Spain	9	Australia	1	United Kingdom	1
Slovakia	8	Belarus	1	**T o t a l**	**268**

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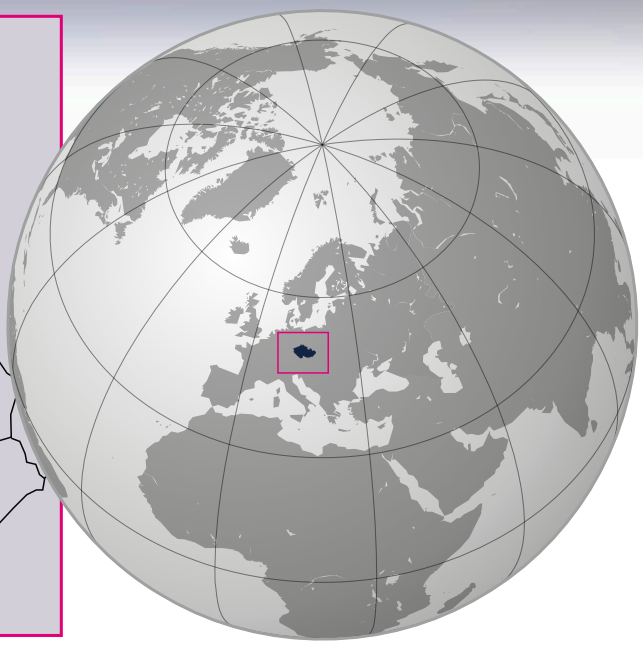

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