



100AB  
SERIES



# HP1000A

CONVENTIONAL HORIZONTAL  
BORING MILL – FLOOR TYPE

**RETOS**  
VARNSDORF

[www.retos.cz](http://www.retos.cz)

## GENERAL INFORMATION

### FEATURES

- manually controlled floor type of horizontal boring machine
- transversal travelling column with headstock
- 3 linear axes
- sliding workspindle
- facing head with tool slide
- machine designed for piece and low-volume engineering production
- suitable for roughing as well as for finishing
- option of fitting with digital optical measuring, tool cooling, spindle clamping / guiding support, milling head etc.
- workpiece is clamped on clamping plate or on rotary table (not part of the machine – optional accessories)

## STANDARD VERSION

### TRAVELLING GROUPS

- X – transversal travel of column slide on bed
- Y – vertical headstock travel on column
- Z – spindle stroke
- U – travel of tool slide of facing head
- S – rotation of workspindle and facing head

### GROUP GUIDANCE

- guideways on all linear axes are grinded, counterways casted by plastic
- guideways of bed are reinforced with hardened steel plates
- guideways of facing head are scrapped

### LUBRICATION

- HYTOS lubrication set
- central, time powered
- lubricates X, Y, Z axes – all at once
- U axis lubricated by grease nipples

### CLAMPING

- X, Y, Z axes – manually by levers

### HEADSTOCK

- same headstock as the W100A machine
- sliding workspindle + facing head
- hydraulic tool unclamping ISO50 (HUN) – lever clamp
- HYTOS hydraulic set
- asynchronous motor for driving the spindle speed and the feeds of all axes
- spindle speed and feeds driven in speed ranges – gears
- mechanical shifting of spindle speed and feeds
- most control elements are on the headstock
- operator platform mounted on headstock
- headstock balancing – chain and counterweight led in column

### ENERGY DISTRIBUTION

- X, Z axes – chain energy carriers
- Y axis – protective tube

### COVERAGE OF MACHINE

- X axis guideways fully enclosed

### VOLTAGE OPTIONS

- 50Hz – 3 x 400V, 3 x 415V, 3 x 500V
- 60Hz – 3 x 220V, 3 x 440V, 3 x 460V, 3 x 480V, 3 x 575V
- parameters of electric parts given in the tables are valid for option 3 x 400V / 50Hz

## OPTIONALLY

### HEIDENHAIN POSITION MEASUREMENT

- digital optical measuring with DRO
- DRO ND7013 for measuring of X, Y, Z axes
- X, Y, Z axes – incremental linear encoders

### CE – COMPLUSORY IN EU

- comprehensive safety elements according to the applicable legislation and technical standards
- adjustable operator cover on headstock
- original spoke handwheel replaced by new filled one
- working area of the machine is fenced off

### TOOL CLAMPING OPTIONS

- clamping Morse MK6 too
- motorical tool clamping ISO50 (MUN) – ball clamp
- Beds can be joined to reach the requested X axis travel

- Beds can be joined to reach the requested X axis travel.
- machine design can be customized

# PARAMETERS

MACHINE PARAMETERS		
Workspindle diameter	100	mm
Clamping taper	50	ISO
Spindle speed range – 23 gears	7,1 - 1120	rpm
Main motor power	11	kW
Main motor speed	1460	rpm
Maximum torque of the spindle – Nmin	3350	Nm
Maximum torque of the spindle – Nmax	78,5	Nm
X... transversal travel of column – bed 3600 mm – standard	2000	mm
X... transversal travel of column – bed 4100 mm	2500	mm
X... transversal travel of column – bed 4600 mm	3000	mm
X... transversal travel of column – bed 5100 mm	3500	mm
X... transversal travel of column – bed 5600 mm	4000	mm
X... transversal travel of column – bed 2000 mm – extension	+2000	mm
Y... vertical travel of headstock	1600 / 2000	mm
Z... spindle stroke	900	mm
Feeds... X, Y, Z, U – 18 gears	18 – 900	mm / min
Feeds... X, Y, Z, U – 32 gears	0,02 – 12	mm / rev
Thread feeds... X, Y, Z, U – metric – 18 gears	0,25 – 12	mm / rev
Thread feeds... X, Y, Z, U – inch – 18 gears	120 – 2,5	threads / 1"
Rapid traverse... X, Y, Z, U	2800	mm / min
Total power consumption	15	kVA
Machine and accessories standard colour	white 9010 / green 6018	RAL
Fence standard colour	black 9011 / yellow 1018	RAL
Machine weight – for X = 2000 mm	12000	kg
Total area including CE – approximate	---	mm x mm

FACING HEAD PARAMETERS		
Facing head diameter	600	mm
Centring hole diameter / depth	280H6 / 8	mm
U... tool slide travel	210	mm
Maximal facing diameter	900	mm
Facing head speed range – 16 gears	7,1 - 224	rpm

## LIST OF SUPPORTED STANDARDS OF TOOL SHANKS / CLAMPING ADAPTERS (HUN)

Tool shank	Standard	Adapter
Long shank – metric	ČSN 220432	4100744
Long shank – metric	DIN 2080	4100744
Long shank – inch	NMTB 50	4100988
Short shank – metric	ČSN 220434	4100793
Short shank – metric	DIN 69871	4100793
Short shank – metric	MAS BT 403-1982	4100793
Short shank – inch	CAT ANSI / ASME B5.50-1985	4100917

## LIST OF SUPPORTED STANDARDS OF TOOL SHANKS / CLAMPING ADAPTERS (MUN)

Tool shank	Standard	Adapter
Long shank – metric	ČSN 220432	4100597
Long shank – metric	DIN 2080	4100597
Long shank – inch	NMTB 50	4100892
Short shank – metric	ČSN 220434	4100809
Short shank – metric	DIN 69871	4100809
Short shank – metric	MAS BT 403-1982	4100809
Short shank – inch	CAT ANSI / ASME B5.50-1985	4100913

## ACCESSORIES ►

### STANDARDLY DELIVERED ACCESSORIES

- SP100-100 spindle clamping support
- small DN100 tool holder
- VK-ISO50 cleaning brush
- clamping adapters – 15 pieces
- KM anchoring kit
- basic tool kit for operation and maintenance of the machine
- basic spares kit
- accompanying technical documentation

### OPTIONAL ACCESSORIES

- PP100 portable control panel
- CHZ100P tool cooling kit by emulsion
- CHZ-V tool cooling by air
- spindle cavity blown with air
- PVD100-550 spindle guiding support
- SP100-500 spindle clamping support
- SP100-200/800 spindle clamping support up to 800 rpm
- FP40-100 vertical milling head
- UFP40-100 universal milling head
- RZ100 change gear kit for thread cutting
- TD50 telescopic tool holder
- VHU-ISO50 universal boring heads
- MT03/MT03X rotary table
- UK500, UK1000, UK1500, UK2000, UK2500, UK3000 clamping cube
- UU800, UU950, UU1120, UU1450, UU1620, UU2000, UU2500, UU3000 clamping angle plates
- spares kit for 3-year operation
- KT130 HEIDENHAIN touch probe
- transport bars (necessary in the container)

# HP100A

### SP100-100 – SPINDLE CLAMPING SUPPORT



The SP100 spindle clamping support increases the rigidity of the workspindle bearing. Thus, with a fixed spindle stroke in the W axis of over 110 mm, the machining parameters can be raised, while the spindle speed range is reduced.

### PP100 – PORTABLE CONTROL PANEL



The portable control panel enables you to use selected machine functions, when it is not suitable to operate machine from main panel situated on the headstock, e.g. while tool setting or run into cut.

### CHZ100 – TOOL COOLING KIT – FLUID



This system cools tools by using coolant, which is externally supplied by a jet.

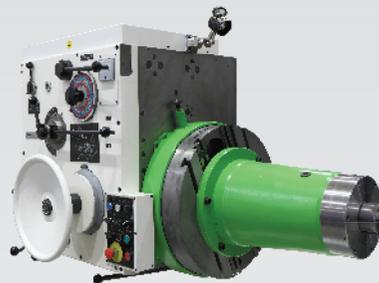
The whole system is turned on and off manually. The amount of fluid supplied to the jet is controlled manually.

As coolant container serves a pit in the machine's foundation.

### PARAMETERS

Volume of collection container	approx. 500	l
Nominal pump pressure	4	bar
Pump performance (supplied fluid)	32	l / min

### PVD100-550 – SPINDLE GUIDING SUPPORT



The spindle guiding support considerably increases the rigidity of the workspindle bearing and thus also the number of possible spindle applications, especially for high-power or high-precision machining with larger overhangs – using the full workspindle speed range and stroke.

The spindle guiding support is mounted on the front side of the installed facing head of the machine manually.

### PARAMETERS

Distance between guiding support front and steady rest front	541	mm
Total guiding support weight	150	kg

### TD50 – TELESCOPIC TOOL HOLDER



When using the facing head, the TD50 telescopic tool holder allows you to machine deep inner and outer surfaces of larger diameters.

### PARAMETERS

Max. speed	224	rpm
Max. torque	215	Nm
Min. overhang length of tool holder spindle	351	mm
Max. overhang length of tool holder spindle	511	mm
Min. inner machining diameter	51	mm
Max. outer machining diameter	990	mm
Total tool holder weight	24	kg

**SP100-500 – SPINDLE CLAMPING SUPPORT**



The SP100-500 spindle clamping support considerably increases the rigidity of the workspindle bearing. Thus, with a fixed spindle stroke in the W axis of over 500 mm, the machining parameters can be considerably raised, while the spindle speed range is reduced.

The spindle clamping support is mounted on the front side of the installed facing head of the machine manually.

**PARAMETERS**

Distance between clamping support front and steady rest front	500	mm
Max. permissible workspindle speed	224	rpm
Total clamping support weight	70	kg

**SP100-200/800 – SPINDLE CLAMPING SUPPORT**



The SP100-200/800 spindle clamping support increases the rigidity of the workspindle bearing. Thus, with a fixed spindle stroke in the W axis of over 200 mm, the machining parameters can be raised, while the spindle speed range is slightly reduced.

The spindle clamping support is mounted on the front side of the installed facing head of the machine manually.

**PARAMETERS**

Distance between clamping support front and steady rest front	196	mm
Max. permissible workspindle speed	800	rpm
Total clamping support weight	60	kg

**FP40-100 – MILLING HEAD**



The FP40-100 milling head can be used to mill in the basic and inclined planes parallel to the workspindle axis, or to bore in the basic planes rectangular to the workspindle axis.

The milling head is mounted on the front side of the head stock manually.

The milling head is positioned manually.

**PARAMETERS**

Clamping taper	40	ISO
Tool shank	2080	DIN
Max. speed (achievable on the W100A machine)	560	rpm
Max. permissible transmitted power	5	kW
Max. permissible torque on the spindle	250	Nm
Speed transmission from machine spindle to milling head spindle	2 : 1	
Milling head spindle stroke	40	mm
Rotatability of the rotatable milling head parts	360	deg
Total milling head weight	200	kg

**UFP40-100 – UNIVERSAL MILLING HEAD**



The UFP40-100 universal milling head can be used to mill in various inclined planes parallel to one of the machine's main axes (X, Y, Z) or to bore in the machine's main axes (X, Y, Z).

The milling head is mounted on the front side of the head stock manually.

The milling head is positioned manually.

**PARAMETERS**

Clamping taper	40	ISO
Tool shank	2080	DIN
Max. speed (achievable on the W100A machine)	560	rpm
Max. permissible transmitted power	10	kW
Max. permissible torque on the spindle	250	Nm
Speed transmission from machine spindle to milling head spindle	2 : 1	
Milling head spindle stroke	40	mm
Rotatability of the rotatable milling head parts in the C axis	360	deg
Rotatability of the rotatable milling head parts in the A axis	-30 / +180	deg
Total milling head weight	270	kg

**RZ100 – CHANGE GEAR KIT FOR THREAD CUTTING**

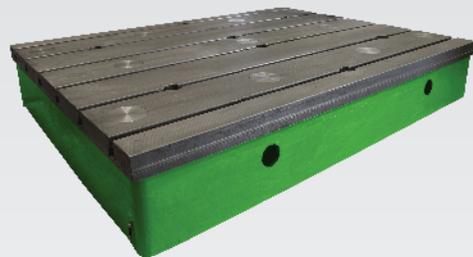


The RZ100 gear kit enables you to cut further 47 metric and Whitworth inch threads, which cannot be cut using the machine's standard kinematics (18 basic gears) for shifting the machine's thread feeds.

The gears are changed manually.

PARAMETERS																	
STANDARD		RZ100 – CHANGE GEAR KIT FOR THREAD CUTTING						STANDARD		RZ100 – CHANGE GEAR KIT FOR THREAD CUTTING							
28 : 33		30 : 26	36 : 34	43 : 44	39 : 43	24 : 34	22 : 33	37 : 67	28 : 33		30 : 26	36 : 34	43 : 44	39 : 43	24 : 34	22 : 33	37 : 67
2 1/2			2						20			16					
3									24								
3 3/4		2 3/4	3	3 1/4	3 1/2	4 1/2	4 3/4	5 3/4	30	22	24	26	28	36	38	46	
5			4						40			32					
6									48								
7 1/2		5 1/2	6	6 1/2	7	9	9 1/2	11 1/2	60	44	48	52	56	72	76	92	
10			8						80								
12									96								
15		11	12	13	14	18	19	23	120	88	96	104	112	144	152	184	

**UD4C / UD4D – CLAMPING PLATE**



A clamping plate is a device used for workpiece clamping.

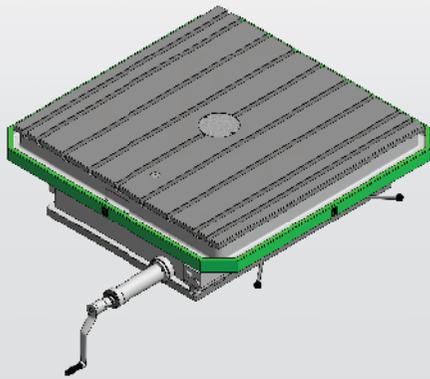
You can create large clamping fields by combining several clamping plates. Clamping fields can be created by using clamping plates of the same type only.

Clamping plates or clamping fields enable clamping of extra large and heavy workpieces or further accessories such as clamping tables, angle plates, cubes, devices etc.

The clamping plate is solidly anchored in the concrete foundation using anchoring material similarly to the actual machine.

PARAMETERS	UD4C	UD4D	
Clamping plate surface length	4020	2420	mm
Clamping plate surface width	1875		mm
Clamping plate width	1885		mm
Height	400		mm
Loading capacity	80	45	t
Width of T-slots	36 H12		mm
Weight	8200	5000	kg

MT03 – ROTARY TABLE



This rotary table is used as a secondary horizontal clamping surface for workpiece clamping and angular positioning in vertical axis. Table positioning is performed manually.

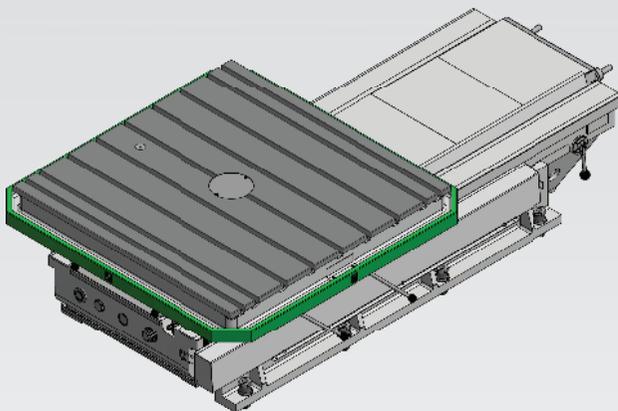
The clamping is performed on the main machine clamping surface (clamping plate).

MT03 rotary table is set with a lifting device and fastened via T-slots and standardized clamps manually.

PARAMETERS

Table clamping surface	1250 x 1250	mm x mm
	1500 x 1500	mm x mm
Width of T-slots	22 H8	mm
Table loading capacity – 1250 x 1250	3000	kg
Table loading capacity – 1500 x 1500	2500	kg
Centering hole diameter	180 H6 / 10	mm
Table drive ratio	1,41	deg / rev
Voltage	230	V
Table weight	1800	kg
Basic dimensions – length	1800	mm
Basic dimensions – width	1400 / 1650	mm
Basic dimensions – height	400	mm

MT03X – ROTARY TABLE



This rotary table is used as a secondary horizontal clamping surface for workpiece clamping and angular positioning in vertical axis (B axis) and shifting in one direction (V axis) including machine feed. Positioning in both axes is driven by motor or manually.

The clamping is performed on the main machine clamping surface (clamping plate) or on separate foundation.

MT03X rotary table is set on a clamping plate with a lifting device and fastened via T-slots and standardized clamps manually.

Anchoring to concrete foundation is performed using anchoring material similarly to the actual machine.

PARAMETERS

Table clamping surface	1250 x 1250	mm x mm
	1500 x 1500	mm x mm
Width of T-slots	22 H8	mm
Table loading capacity – 1250 x 1250	3000	kg
Table loading capacity – 1500 x 1500	2500	kg
Centering hole diameter	180 H6 / 10	mm
V... longitudinal travel of table	1200	mm
Voltage – manual version	230	V
Voltage – motor drive version	3 x 400	V
Table weight	—	kg
Basic dimensions – length	2705	mm
Basic dimensions – width	1400 / 1650	mm
Basic dimensions – height	630	mm

# RETOS VARNSDORF s.r.o.

## CZECH PRODUCER OF HORIZONTAL BORING MILLS WITH WORLDWIDE SALES NETWORK

The development of our new horizontal boring mills has benefitted from our long experience resulting from over 800 overhauls and modernisations. Therefore, we attach great importance to flexibility, easy maintenance, longevity and reliability of our products as well as to maximum environmental friendliness. We are a stable company founded in 1993 with about 100 motivated employees and a turnover of about 8 million €.

## WE ARE YOUR PARTNER

- Production
- Sale
- Consultation
- Modernisations
- Overhauls
- Second hand machines
- Service
- Spare parts

## PRODUCTION OF NEW MACHINES

- RET10X – CNC T-type boring mill
- RET10P – CNC floor type boring mill
- RET100B – CNC table type boring mill
- customizable machine design with a wide range of technological accessories
- W100A – conventional table type boring mill
- HP100A – conventional floor type boring mill

## SERVICE

- Customer service and machine maintenance during and after the warranty period with the option of a service contract
- Geometry measurement and accuracy and performance optimisation of your machine applying conventional methods as well as laser interferometers and ballbars
- Machine relocation (disassembly, transport, assembly, putting into operation)

## OVERHAULS AND MODERNISATIONS

- Partial and general overhauls of RETOS VARNSDORF and TOS VARNSDORF boring mills
- CNC and conventional machine types
- Overhauled or modernised machines have technological capabilities comparable with new machines of the same category

## MADE IN EUROPE

- Production and overhauls performed by experienced experts at our premises in the Czech Republic
- High-quality gray cast iron parts of traditional Czech production
- ISO 9001 certified

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