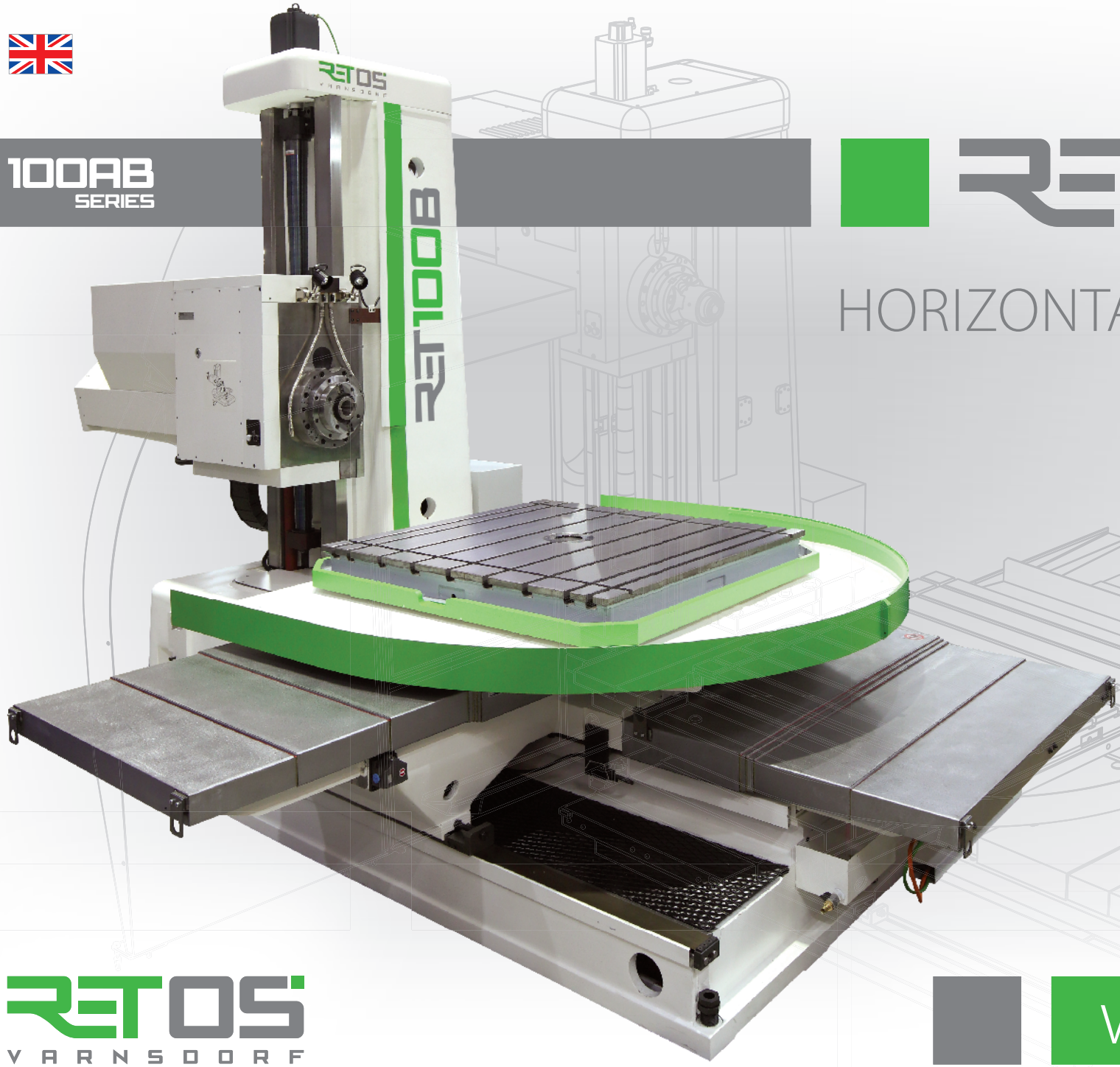
100AB
SERIES

RET100B

HORIZONTAL BORING MILL

TABLE TYPE



RETOS
VARNSDORF

www.retos.cz

GENERAL INFORMATION

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 for finishing
- optionally can be fitted with tool magazine with manipulator (ATC), tool cooling kit (CHZ), cooling through spindle axis (CHOV) or oil-mist cooling (CHM)
- ready for "Industry 4.0"

CONTROLLING OF THE MACHINE

- all functions of the machine, except for tool clamping and unclamping, are controlled via the control panel, which consists of a keyboard, a switch panel and an LCD monitor
- the tool clamping and unclamping is controlled by switches on the headstock
- the control panel is supplemented by a portable control panel (handwheel), which duplicates some basic of the functions of the control of the machine
- the control panel is swivellingly connected to the wall inside the operator housing
- the control system allows manual, semiautomatic and fully automatic modes
- the standard communication interface allows a connection with the Ethernet for easy administration and distribution of technological programs as well as diagnostics or servicing of the control system

STANDARD VERSION ▶

RET100B

CONTROL SYSTEM

- HEIDENHAIN TNC 640 + handwheel
- HEIDENHAIN drives
- SIEMENS motors

POWERED AXES

- X – travel of rotary table slide on saddle
- Z – travel of saddle on bed
- Y – vertical headstock travel on column
- W – spindle stroke
- 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 out 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 use of a compensating bushing

KINEMATICS OF THE W AXIS

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

KINEMATICS OF THE X, Y, Z AXES

- brushless digital servomotor with servo-drive
- ball screw – directly driven by motor

KINEMATICS OF THE B AXIS

- brushless digital servomotor with servo-drive
- planetary gearbox with minimum clearance
- gear set + gear ring

GROUP GUIDANCE

- X, Y, Z axes – guideways reinforced with hardened steel plates, counterways with plastic casts, TURCITE-coated jibs
- W axis – sliding guideway, cast-iron / steel
- B axis – guideways of the rotary table are scrapped

LUBRICATION

- central, axial lubrication
- frequency of lubrication cycles correlates with travelled track of the particular group

CLAMPING

- B axis – hydraulically
- X, Y, Z, W axes – not clamped – positional feedback

HEADSTOCK

- sliding workspindle
- spindle cavity blown with air during tool-changing cycle
- spindle driven in two/four speed ranges – gears
- hydraulic shifting of each range
- headstock balancing – hydraulic cylinder with hydropneumatic accumulator
- setup of tool cooling by jets on headstock front side

STANDARD VERSION

RET100B

HYDRAULIC POWER PACK

- HYTOS hydraulic and lubrication set
- lubrication of all axes
- clamping B
- unclamping of the tool

POSITION MEASUREMENT

- HEIDENHAIN digital optical admeasuring
- X, Y, Z axes – absolute linear encoders
- W axis – absolute rotary encoder in motor
- B axis – absolute angle encoder
- S axis – incremental rotary encoder

ENERGY DISTRIBUTION

- IGUS chain energy carriers

COVERAGE OF MACHINE

- complete coverage of guideways of X axis
- partial coverage of Z, Y axes

MACHINE PARAMETERS					
Workspindle diameter	100	mm	Width of T-slots	22 H8	mm
Clamping taper	50	ISO	Table loading capacity – 1250 x 1250	3000	kg
Tool shank	69871	DIN	Table loading capacity – 1500 x 1500	2500	kg
Clamping adapter – screw	4100793	TOS	Feeds… X, Y, Z, W – manual mode	4 - 500	mm / min
Spindle speed range	10 - 3000	rpm	Feeds… X, Y, Z – automatic mode	4 - 15000	mm / min
Main motor power (S1/S6-40%)	22 / 34	kW	Feeds… W – automatic mode	4 - 6800	mm / min
Maximum torque of the spindle (S1/S6-40%) – two speed range	1097 / 1645	Nm	Rapid traverse… X, Y, Z	15000	mm / min
Maximum torque of the spindle (S1/S6-40%) – four speed range	2173 / 3250	Nm	Rapid traverse… W	6800	mm / min
X… transversal travel of table	1600	mm	Rapid traverse of table rotation… B	1,6	rpm
Z… longitudinal travel of table	900 / 1710	mm	Total power consumption	70	kVA
Y… vertical travel of headstock	1220	mm	Machine weight	13000	kg
W… spindle stroke	710	mm	Machine and accessories standard colour	white 9010 / green 6018	RAL
Table clamping surface	1250 x 1250	mm x mm	Fence standard colour	black 9011 / yellow 1018	RAL
	1500 x 1500	mm x mm	Total area including CE – approximate	7000 x 5500	mm x mm

OPTIONALLY

RET100B

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

CONTROL SYSTEM

- SIEMENS SIN 840D SL + handwheel
- SIEMENS drives and motors

ATC R03-30/40 – AUTOMATIC TOOL CHANGER

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

ATC Parameters	R03-30	R03-40	
Tool changing time	15	15	s
Number of tools	30	40	pcs
Tool pocket pitch	130	130	mm
Maximum tool diameter – unrestricted	125	125	mm
Maximum tool diameter – with free pockets	200	200	mm
Maximum tool length	500	480	mm
Maximum tool weight	15	15	kg
Maximum weight of tools in magazine – total	250	300	kg
Maximum tool unbalance in magazine wheel	50	70	kg
Maximum wheel speed	8	5	rpm
Operating air pressure	5	5	bar
Required air purity	40	40	µm
Weight without tools	1240	1380	kg

CHZ – TOOL COOLING KIT – EMULSION

- tool cooling kit with jets on headstock front side
- separate cooling unit – tank with pump, level gauge, pressure test
- tank volume 100 l
- maximum pressure 4 bar / 40 l/min
- setup for tool cooling always included – distribution pipes, jets

CHZ-V – TOOL COOLING – AIR

- cold air gun
- cooling without a thermal shock
- positive impact on the accuracy and the surface quality
- high reliability
- environmentally friendly and low-noise operation
- almost zero operating costs

CHOV-K – COOLING THROUGH SPINDLE AXIS – FLUID

- not possible to add into configuration, once the production has started
- separate cooling unit with filter and magnetic swarf separator required
- maximum pressure 40 bar – tank volume 1000 l
- other necessary alterations to machine and CE features
- for pressure higher than 10 bar a workpiece or machine cover is necessary

CHOV-V – COOLING THROUGH SPINDLE AXIS – AIR

- not possible to add into configuration, once the production has started
- maximum pressure 5 bar

CHOV-M – COOLING THROUGH SPINDLE AXIS – OIL-MIST

- not possible to add into configuration, once the production has started
- separate programmable cooling unit
- maximum pressure 5 bar

CHM – OIL-MIST COOLING

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

- machine design can be customized

ACCESSORIES ▶

RET100B

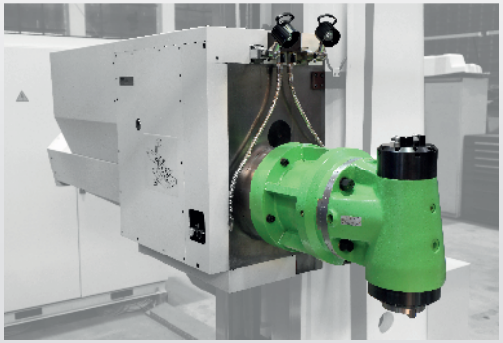
STANDARDLY DELIVERED ACCESSORIES

- VP170 spindle guiding support
- 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

- VP320 spindle guiding support
- VP470 spindle guiding support
- HPR50, FP40 vertical manual milling head
- UFP40 universal manual milling head
- LD650 facing head
- outboard support + technological accessories (limitation of the Z axis travel)
- UK500, UK1000, UK1500, UK2000 clamping cube
- UU800, UU950, UU1120, UU1450, UU1620 clamping angle plates
- spares kit for 3-year operation
- HEIDENHAIN DA400 compressed-air filter system
- 3D touch probes with radio/infrared signal transmission (Heidenhain/Renishaw/Hexagon)
- HEIDENHAIN HR 550 FS wireless handwheel
- HEIDENHAIN control system with options like DFX converter, collision monitoring etc.
- CE security mode 3 (for German market only)

HPR50 – VERTICAL MILLING HEAD



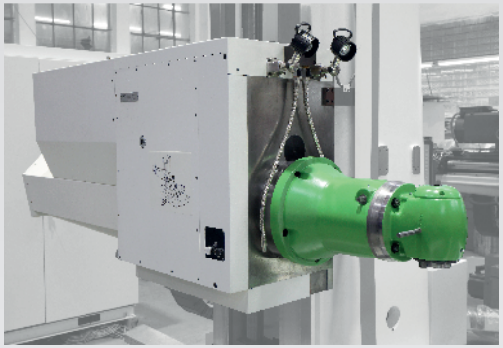
The HPR50 milling head can be used to mill in planes parallel to the machine's workspindle axis and to bore in planes vertical to the workspindle axis.

The milling head is mounted on the front side of the head stock (centering diameter of spindle bearing bushing) manually.

The milling head is positioned manually.

PARAMETERS		
Clamping taper	50	ISO
Tool shank	69871	DIN
Max. permissible spindle speed	3000	rpm
Max. permissible transmitted power	25	kW
Max. permissible torque on the spindle	1200	Nm
Speed transmission from machine spindle to milling head spindle	1 : 1	
Rotatability of the rotatable milling head parts	±180	deg
Pressure oil feed on the headstock front	min. 8	MPa
Total milling head weight (inclusive connecting flange)	ca. 250	kg

FP40-10 – VERTICAL MILLING HEAD



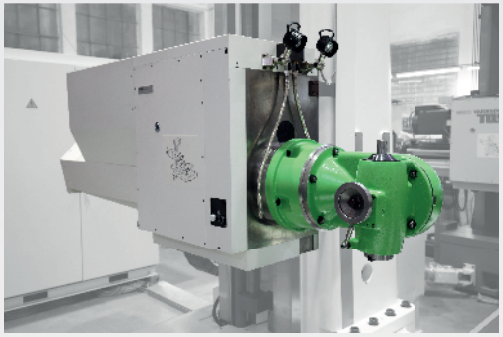
The FP40-10 milling head can be used to mill in planes parallel to the machine's workspindle axis and to bore in planes vertical to the workspindle axis.

The milling head is mounted on the front side of the head stock (centering diameter of spindle bearing bushing) manually.

The milling head is positioned manually.

PARAMETERS		
Clamping taper	40	ISO
Tool shank	2080	DIN
Max. speed (achievable on the RET100B)	900	rpm
Max. permissible transmitted power	10	kW
Max. permissible torque on the spindle	250	Nm
Speed transmission from machine spindle to milling head spindle	1 : 1	
Rotatability of the rotatable milling head parts	360	deg
Total weight	110	kg

UFP40-10 – UNIVERSAL MILLING HEAD



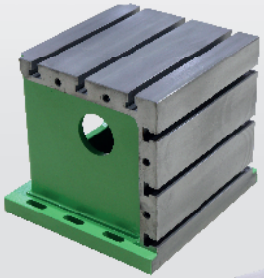
The UFP40-10 universal milling head can be used to mill and bore in arbitrarily inclined planes.

The milling head is mounted on the front side of the head stock (centering diameter of spindle bearing bushing) manually.

The milling head is positioned manually.

PARAMETERS		
Clamping taper	40	ISO
Tool shank	2080	DIN
Max. speed (achievable on the RET100B)	900	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 weight	130	kg

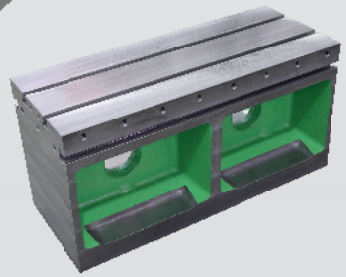
UK500-UK2000 – CLAMPING CUBE

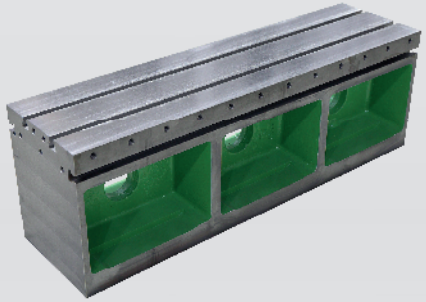


The UK clamping cube is a device used for workpiece clamping.

The clamping is performed on the machine's main clamping surface.

The cube's geometric precision can be enhanced by finishing on the machine on which it will be used.





PARAMETERS

	UK500	UK500	UK1000	UK1500	UK2000	
Material	grey cast iron					
Version (standard)	PN243230	NPP 225				
Hardness of functional surfaces	190 ± 10					HB
Loading capacity [kg/0,25m2]	12000	15000				kg/0,25m²
Clamping slot width	22 H12					mm
Clamping slot pitch	160					mm
Clamping slot amount	3+3	2+1+1				
Thread holes	M20					
Height	500					mm
Width of clamping/foot surface	500 / 560	500	1000	1500	2000	mm
Depth of clamping/foot surface	480 / 530	400				mm
Weight	300	400	800	1200	1600	kg

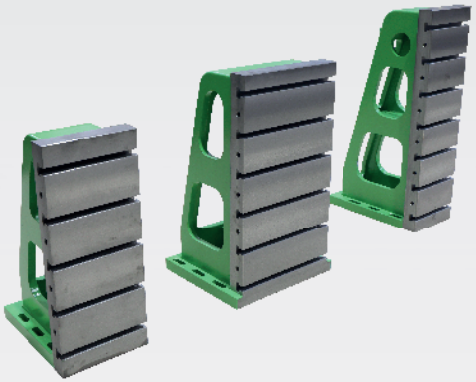
UU800-UU1620 – CLAMPING ANGLE PLATES



The UU clamping plate is a device used for workpiece clamping.

The clamping is performed on the machine's main clamping surface.

The angle's geometric precision can be enhanced by finishing on the machine on which it will be used.



PARAMETERS

	UU800	UU950	UU1120	UU1450	UU1620	
Material	grey cast iron					
Hardness of functional surfaces	190 ± 10					HB
Clamping slot width	22 H12					mm
Clamping slot pitch	160				175	mm
Clamping slot amount	5	6	7	9	9	
Thread holes	M20					
Height	800	950	1120	1450	1620	mm
Clamping surface width	320	500	320	1450	700	mm
Foot surface width	320	560	320	1450		mm
Depth	500	500	600	650	725	mm
Weight	230	440	400	780	1250	kg

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
- W100A – conventional table type boring mill
- customizable machine design with a wide range of technological accessories

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

CONTACTS AND ADDRESS

RET100B

MANAGING DIRECTOR

Ing. Jan Müller
Tel.: +420 413 039 103
E-mail: info@retos.cz

SALES

Ing. Jaroslav Dvořák / Martin Boháč
Tel.: +420 413 039 105
E-mail: sales@retos.cz

SERVICE

Martin Boháč
Tel.: +420 731 608 198
E-mail: service@retos.cz

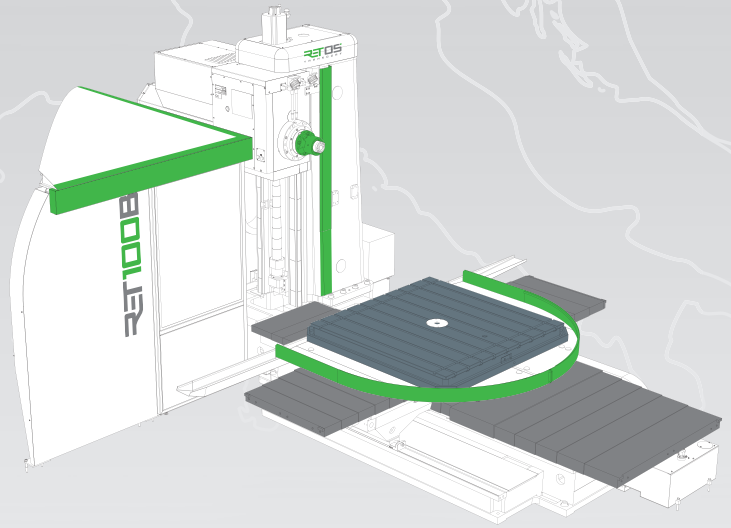
SPARE PARTS

Šárka Dinebierová
Tel.: +420 413 039 126
E-mail: spares@retos.cz



RETOS VARNSDORF s.r.o.

Žitavská 913, 407 47 Varnsdorf, Czech Republic
IČO: 62739204 | DIČ: CZ-62739204
www.retos.cz



CERTIFIED by QES Cert s.r.o. QESCERT ISO 9001

AWP MEDIA s.r.o. – v13.15 – 04/2022 – errors and omissions expected