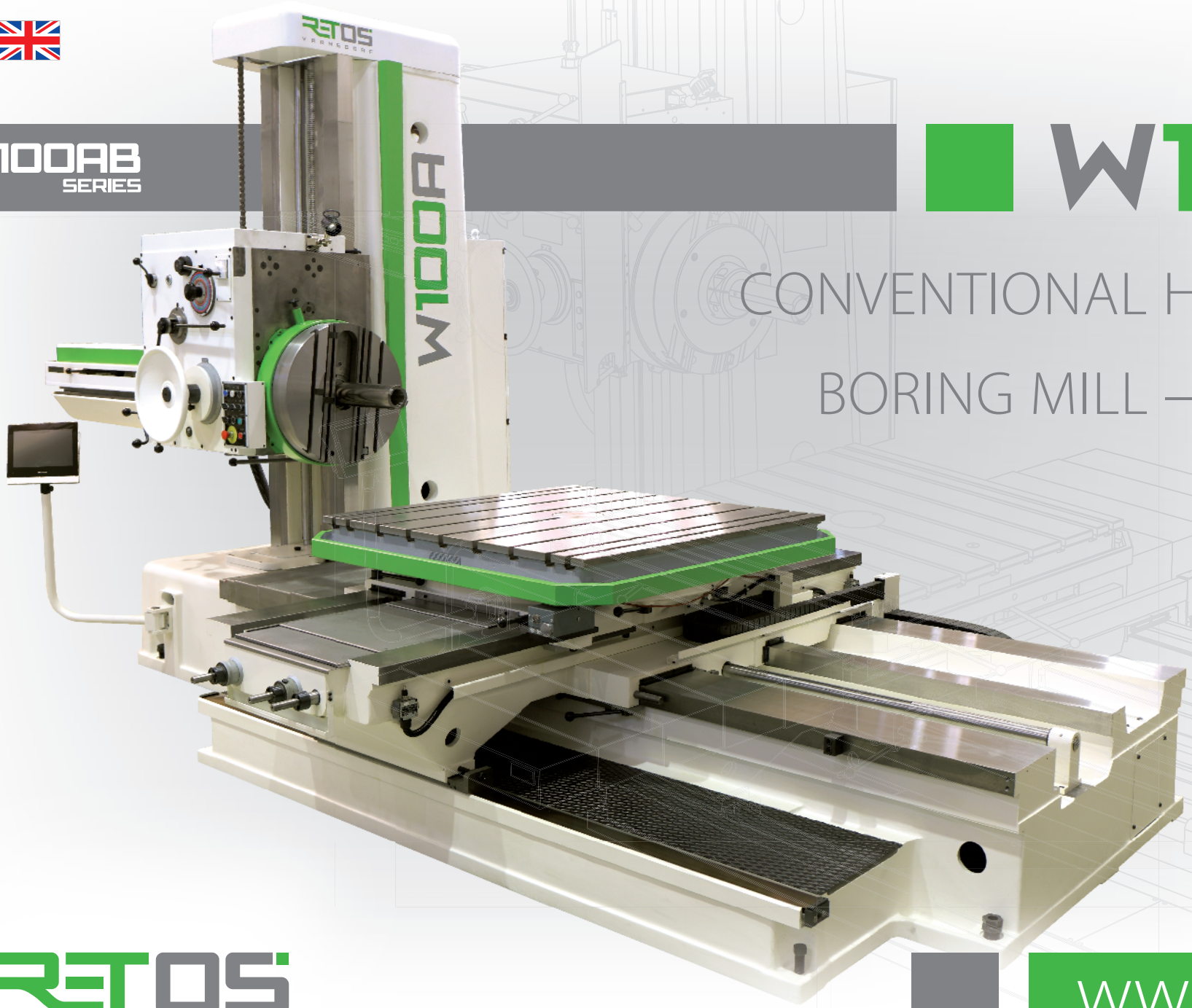
100AB SERIES

W100A

CONVENTIONAL HORIZONTAL BORING MILL – TABLE TYPE



RETOS VARNSDORF

www.retos.cz

GENERAL INFORMATION

FEATURES

- manually controlled horizontal boring machine
- fixed column, crosswise travelling table
- 4 linear axes, rotary table
- 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 kit, steady rest, spindle clamping / guiding support, milling head etc.

STANDARD VERSION

TRAVELLING GROUPS

- X – travel of rotary table slide on saddle
- Z – travel of saddle on bed
- Y – vertical headstock travel on column
- W – spindle stroke
- U – travel of tool slide of facing head
- B – table rotation
- S – rotation of workspindle and facing head

GROUP GUIDANCE

- guideways on all linear axes are ground, counterways with plastic casts
- guideways on bed and saddle reinforced with hardened steel plates
- guideways of rotary table and facing head are scrapped

LUBRICATION

- HYTOS lubrication set
- central, time powered / according to travelled distance by PLC in distribution board
- lubricates X, Y, Z, W, B axes – all at once
- U axis lubricated by grease nipples

CLAMPING

- X, Y, Z, W, B axes – manually by levers

HEADSTOCK

- 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 with frequency convertor – ramp-up and ramp-down, overload protection, direction of rotation, speed control
- spindle speed and feeds driven in speed ranges – gears
- mechanical shifting of spindle speed and feeds
- most control elements are on the headstock
- headstock balancing – chain and counterweight led in column

TOUCH SCREEN PANEL ON HEADSTOCK

- machine operation status monitoring
- error status reporting
- regulation of spindle speed and feeds, spindletouch
- machine parameters setting

ENERGY DISTRIBUTION

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

COVERAGE OF MACHINE

- bed guideways between column and saddle partly protected by telescopic way covering

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 PT8016 for measuring of X, Y, Z, W, B axes
- DRO ND7013 for measuring of X, Y, Z axes
- X, Y, Z, W axes – incremental linear encoders
- B axis – incremental rotary encoder
- 4 x 90° optical table readout with automatic timeout

CE – VALID ONLY FOR THE EUROPEAN UNION

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

TOOL CLAMPING OPTIONS

- clamping Morse MK6 tool
- motorical tool clamping ISO50 (MUN) – ball clamp

TELESCOPIC X AXIS COVER

- full coverage of X axis guideways
- replaces partial sliding cover of saddle
- enlarges machine layout

- machine design can be customized

PARAMETERS

W100A

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 table	1600	mm
Z… longitudinal travel of table – short bed (without steady rest)	810	mm
Z… longitudinal travel of table – long bed (with / without steady rest)	1250	mm
Z… longitudinal travel of table – long bed (with / without steady rest)	1750	mm
Y… vertical travel of headstock – table 1250 x 1250	1120	mm
Y… vertical travel of headstock – table 1500 x 1500	1100	mm
W… spindle stroke	900	mm
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 / depth	180H6 / 10	mm
Feeds… X, Y, Z, W, U – 18 gears	18 - 900	mm / min
Feeds… X, Y, Z, W, U – 32 gears	0,02 - 12	mm / rev
Thread feeds… X, Y, Z, W, U – metric – 18 gears	0,25 - 12	mm / rev
Thread feeds… X, Y, Z, W, U – inch – 18 gears	120 - 2,5	threads / 1"
Rapid traverse… X, Y, Z, W, U	2800	mm / min
Rapid traverse of table rotation… B	1	rpm
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	14000	kg
Total area including CE – approximate	5000 x 7500	mm x mm

* the T-slot width of overhauled machines is usually 23/24 mm

FACING HEAD PARAMETERS		
Facing head diameter	600	mm
Centering 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

- portable control panel PP100
- CHZ100 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
- UK500, UK1000, UK1500, UK2000 clamping cube
- UU800, UU950, UU1120, UU1450, UU1620 clamping angle plates
- spares kit for 3-year operation
- touch probe KT130 HEIDENHAIN
- transport bars (necessary in the container)

OPTIONAL ACCESSORIES – MACHINE WITH STEADY REST

- steady rest (tailstock) LN100
- VT80-2500-ISO50 smooth boring bar
- VT80-3150-ISO50 smooth boring bar
- VT100-2500-ISO50 smooth boring bar
- VT100-3150-ISO50 smooth boring bar
- LLK-150/80 sliding bush of the steady rest
- LLK-150/100 sliding bush of the steady rest
- VH80, VH100 three-tool boring heads

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.

PARAMETERS		
Volume of collection container	50	l
Energy consumption of pump motor	90	W
Nominal pump pressure	4	bar
Pump performance (supplied fluid)	10	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

SP100-500 – SPINDLE CLAMPING SUPPORT

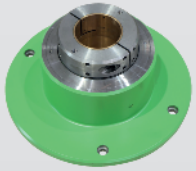


The SP100-500 spindle clamping support considerably increases the rigidity of the workspindle bearing. Thus, with a fixed spindle stroke in the W axis of over 500 mm, the machining parameters can be considerably raised, while the spindle speed range is reduced.

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 SP100/800 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						
28 : 33	30 : 26	36 : 34	43 : 44	39 : 43	24 : 34	22 : 33	37 : 67
2 1/2		2					
3							
3 3/4	2 3/4	3	3 1/4	3 1/2	4 1/2	4 3/4	5 3/4
5		4					
6							
7 1/2	5 1/2	6	6 1/2	7	9	9 1/2	11 1/2
10		8					
12							
15	11	12	13	14	18	19	23

STANDARD	RZ100 – CHANGE GEAR KIT FOR THREAD CUTTING						
28 : 33	30 : 26	36 : 34	43 : 44	39 : 43	24 : 34	22 : 33	37 : 67
20		16					
24							
30	22	24	26	28	36	38	46
40		32					
48							
60	44	48	52	56	72	76	92
80							
96							
120	88	96	104	112	144	152	184

TD50 – TELESCOPIC TOOL HOLDER

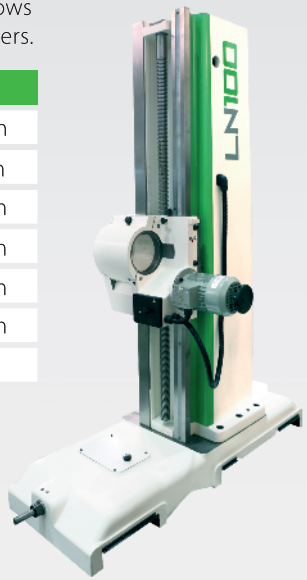


When using the facing head, the TD50 telescopic tool holder allows you to machine deep inner and outer surfaces of larger diameters.

PARAMETERS

Max. speed (achievable on the W100A machine)	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

LN100 – BORING BAR SUPPORT (STEADY REST)



The steady rest is essential for the use of the VT80 and VT100 boring bars.

The use of the steady rest and the boring bars allows you to bore out complicated and deep through holes – meeting the requirements for maximum precision and axial alignment.

The steady rest can only be fitted to a machine in a version with a long bed and remains installed permanently.

PARAMETERS

From hollow spindle face to steady rest bearing	2800	mm
Bearing axis height above table	0 - 1120	mm
Rapid traverse of bearing	696	mm / min
Bearing bore	150 H7	mm
Motor power of steady rest	0,55	kW
Motor speed of steady rest	2780	rpm

VT80, VT100 – ISO50 – SMOOTH BORING BARS



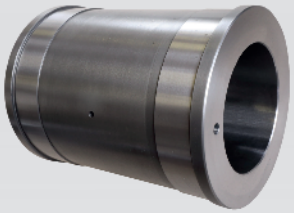
The smooth VT80 and VT100 boring bars with an ISO50 shank are optional accesssories for the W100A horizontal boring and milling machines in the version with a boring bar support (steady rest).

The use of the boring bars allows you to bore out complicated and deep through holes – meeting the requirements for maximum precision and axial alignment.

The boring bars cannot be used without the according sliding bush of the steady rest (LLK150).

PARAMETERS			
Boring bar diameter	80	100	mm
Boring bar working length	2500 / 3150	2500 / 3150	mm
Max. speed (achievable on the W100A machine)	560	560	rpm
Max. permissible transmitted power	10	10	kW
Max. permissible torque	250	250	Nm
Min. inner machining diameter	81	101	mm
Boring bar weight	180 / 230	190 / 240	kg

LLK150 – STEADY REST SLIDING BUSH

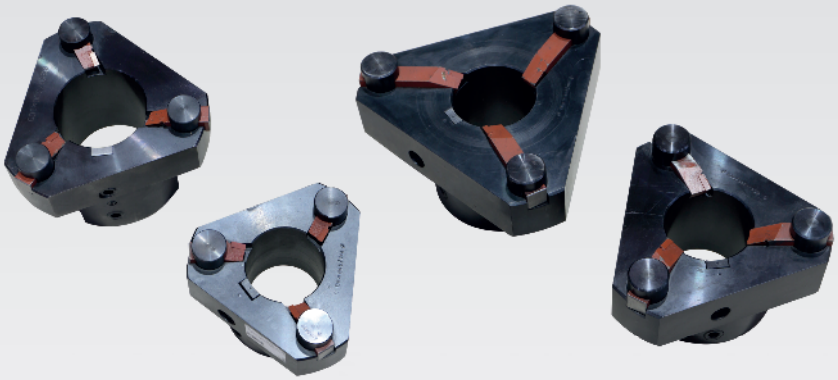


The sliding bush of the boring bar support restricts the movement and the axial straightness of the VT80 and VT100 boring bars.

Without the according sliding bush the boring bars cannot be used.

PARAMETERS		
Outer diameter of bush flange	155	mm
Outer centering diameter of bush	150	mm
Inner bush diameter	80 / 100	mm
Bush length	200	mm
Bush weight	15 / 14	kg

VH80, VH100 – THREE-TOOL BORING HEADS



Together with the boring bars VT80, VT100 the three-tool boring heads allow you to bore out complicated and deep through holes – meeting the requirements for maximum precision and axial alignment.

PARAMETERS									
Inner diameter (boring bar diameter)	80	80	80	80	80	100	100	100	mm
Min. boring diameter	180	212	250	300	355	250	300	355	mm
Max. boring diameter	212	250	300	355	425	300	355	425	mm
Length of head hub	88	125	125	125	160	125	125	160	mm
Tool measures (square cross-section)	20	20	20	25	25	20	25	25	mm
Weight	11	11	18	22	33	17	25	35	kg