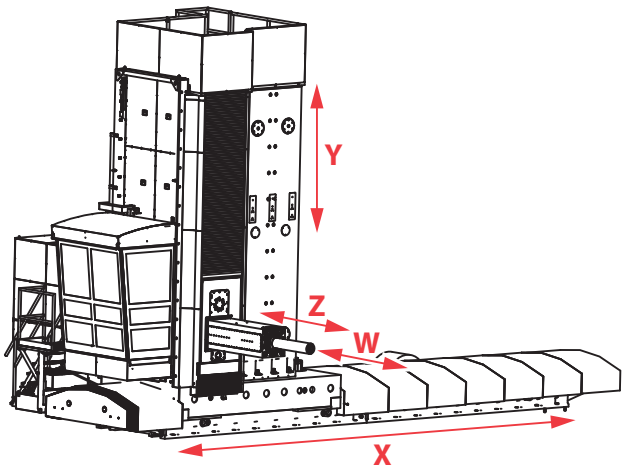
Floor-type machines

WRD 180 H

The largest, heaviest and most powerful, this is a representative of fully hydrostatic WRD 180 H machines. Thanks to excellent properties of hydrostatic guide, the machines are designed for the most demanding machining methods.

The WRD 180 H machines are designed for precise line-coordinate drilling, boring, milling and thread cutting. They are particularly suitable for machining of box- and plate-type workpieces and complicated workpieces from cast-iron, steel cast-iron, steel and other machinable materials, mainly large as well as the largest sizes up to 200 tons.



Machine configuration

- basic version of the machine without automatic tool change
- version with an automatic tool change
- machine with spindle diameter 160 mm
- machine with spindle diameter 180 mm
- machine with spindle diameter 200 mm

TECHNICAL PARAMETERS

Headstock		Ø 160 mm	Ø 180 mm	Ø 200 mm
Work spindle diameter	mm	160	180	200
RAM size	mm	550 x 550		
Spindle taper		ISO 50 / ISO 50 BIG+		
Work spindle speed range	1/min	10 – 2 200	10 – 2 200	10 – 2 000
Main motor power (at permanent operation of S1)	kW	74	101	
Torque on spindle (S1)	Nm	6 820	11 165	13 927
RAM stroke Z	mm	1 600		
Spindle stroke W	mm	1 200		
Column				
Headstock vertical travel Y	mm	3 000 – 6 000 (in steps of 500 mm)		
Column longitudinal travel X	mm	5 000 – 29 000 (in steps of 1 000 mm)		
Feeds				
Range of feeds (working and rapid traverse) – X, Y, Z, W	mm/min	1 – 20 000		

Example of an application at an Indian customer, where the machine has been operating under demanding conditions for almost 4 years.

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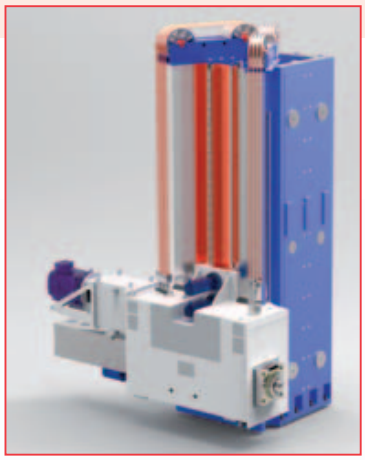
Drives of Y, Z, W axes
All 3 axes (Y, Z, W) are equipped with separate electric control servo drives. Traverse of the Y axis is achieved by a couple of electric servo motors. Transfer to straight motion of the W and Z axes is achieved by ball screws.
The primary level of the Z and W axis drives is provided by cogwheel gears.



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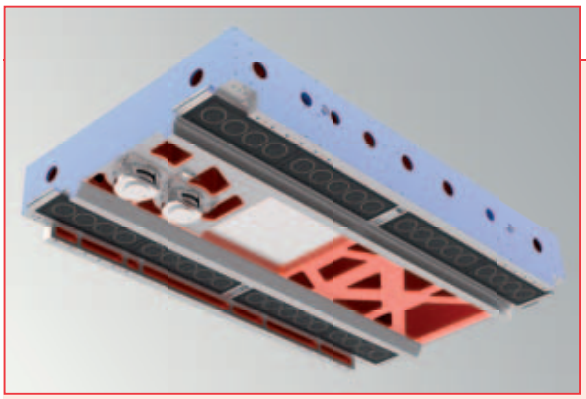
Balancing and compensation

Headstock compensation: By means of steel cables, which connect the headstock with a counter-weight.

Compensation of the column's deformation: By means of four rods passing through the rear wall of the column, which can be used for correction of the guide surfaces.

Thermal compensation: Special housing and cooling of bearings minimizes the amount of heat generated in the housing.

Compensation of deformation of the shape and incline of the RAM: Bending deformations of the RAM are prevented by four prestressing rods. The rods are pushed by hydraulic cylinders according to the RAM's position. The front hanger incorporates a hydraulic cylinder, which tensions cables according to the RAM's traverse.

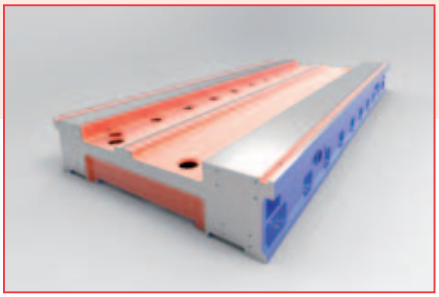


Guides of adjustable groups

The main support guide (X axis) consists of four sizeable bars inserted between the bed and the rails. Each bar incorporates 9 closed hydrostatic cells arranged in two separately powered sections. In total, the machine is carried by 36 closed cells.

Guide surfaces of the face, side and rear guides (the Y axis) are precisely ground. Guiding surfaces of the headstock housing consist of two rows of classic hydrostatic cells with separate pressure oil inlets.

Guide surfaces of the RAM (the Z axis) consist of sixteen bars lined by Biplast with hydrostatic chambers.



Headstock

The headstock housing is a rigid casting from high-quality grey cast iron, which is followed by other groups of the machine. The internal area of the casting has a horizontal square tunnel with precisely machined surfaces for guiding the RAM. The RAM housing is a prismatic casting from ductile cast iron with a hollow for housing the spindle in the machine's axis.