



P-Series

K-Series

T-Series

F-Series

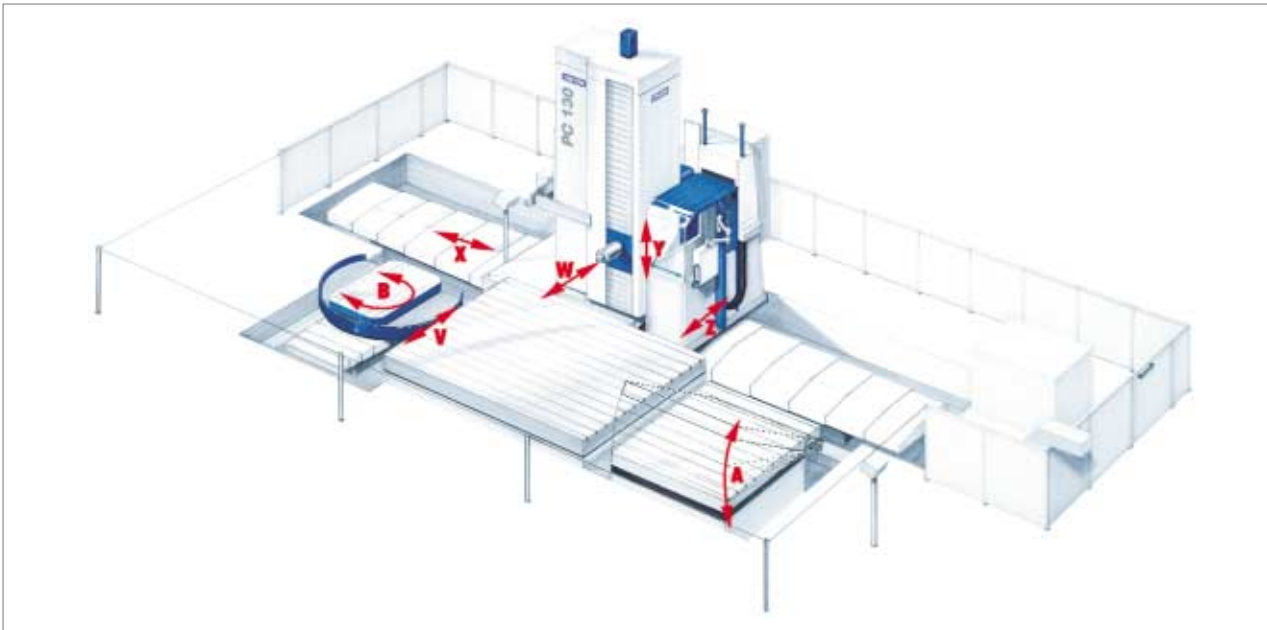
UNION P 130 **UNION P 150**

Horizontal Boring and Milling Machine
Floor Type

UNION
boring & milling

UNION CNC floor type boring mill P 130 and P 150 travelling column machine

Multiple side machining of large parts by integration of floor plates fields, rotary, traversing and tilting tables and trunnion devices. Automatic change of different milling and boring heads and heavy tools via pick up station.



Classification

P = floor type

U = with integrated NC facing head

C = with automatic tool changer

130 or 150 = diameter of the boring spindle in mm

Example: **PCU 130** = floor type machine with integrated NC facing head and automatic tool changer; diameter of the boring spindle 130 mm



Main features

- Machine can be supplied in boring spindle- or built-in NC facing head version
- Integration of rotary, traversing and tilting tables with different size and load
- Speed ranges up to 6000 rpm
- Nitrated axially traversing boring spindle
- Compact precision roller guides in all axes ensure highest machining accuracy

Technical features

Machine column

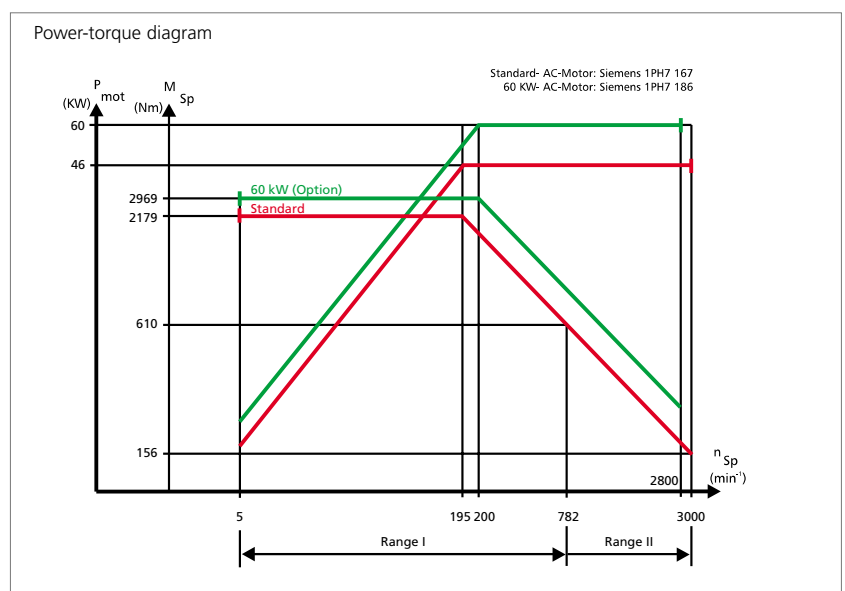
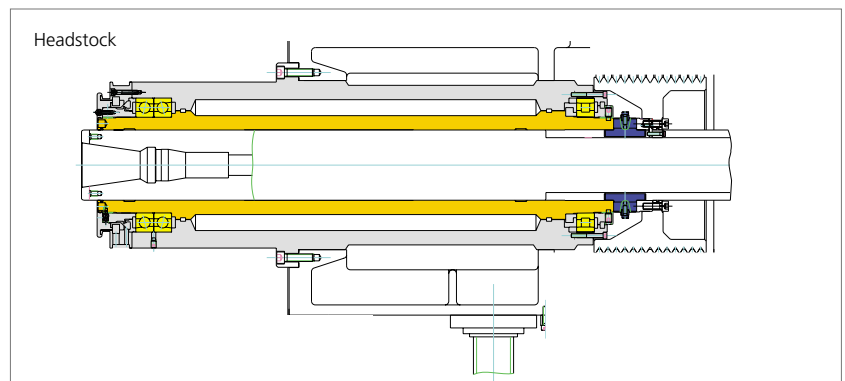
- Crosswise traversing, vibration resistant and strongly braced box-type cast column with greater rigidity over frame type versions
- Precision ball screws for linear axes-traverses up to 5 m; backlash-free double pinion/rack drive for traverses over 5 m
- Operator stand independently movable in vertical and horizontal direction

Machine bed /Cross slide

- Wide 3-way machine bed
- Machine bed extensions in steps of one meter are possible up to a total length of 25 m.
- Preloaded linear compact roller guides for the cross slide traverses guarantee a high machining accuracy especially on circular interpolation

Headstock

- Completely manufactured by UNION
- Front bearing of the boring spindle 370 mm outside of the casting ensure optimal power transmission for high cutting performance
- Precision spindle bearings with life time lubrication
- Gear circulating lubrication with oil cooler for temperature stabilization
- Thermic control of the precision spindle bearings by sensor



Machine options



NC controlled facing head

- Integrated within the headstock
- Using of the boring spindle without disassembly of the facing head
- Unbalance compensation by synchronously extending counter slider



Automatic tool changer

- Tool magazine up to 60 places travelling with the machine
- Tool taper SK 50 or HSK 100, another taper on request
- Automatic changing also possible in the NC-facing head



Pick up station

- For storage down and automatic change of vertical and universal milling heads and special tools



Compact coolant unit

- External coolant supply via adjustable nozzles put on the headstock
- Internal coolant supply through the centre of the boring spindle with high pressure up to 70 bar
- Coolant circulation with weekend cycle

CNC-control

- Heidenhain iTNC 530
- Siemens 840 D

Rotary, traversing and tilting tables

UNION rotary, traversing and tilting tables expand the capability of the CNC floor type boring mill. By using of diverse table sizes parts up to 60000 kg can be machined at five sides in one setting. CNC controlled trunnion devices for clamping of rotation-symmetric parts complete the clamping varieties.

Primary specifications

	DV 10	DV 20	DV 40	DV 60	DVK 5/20
Table size	1250 x 1600 mm	1800 x 2000 mm	2500 x 3000 mm	3000 x 3000 mm	2500 x 3000 mm
	1600 x 2000 mm	2000 x 2500 mm			
Traverse	1250 mm	1500 mm	2000 mm	3000 mm	1500 mm
Rotating	360.000°	360.000°	360.000°	360.000°	360.000°
Tilting range					0° up to 90°
Loading	12500 kg	25000 kg	40000 kg	60000 kg*	20000 kg (vertical) 50000 kg (horizontal)

* higher loading on request

UNION DVK 5/20

A rotary, traversing and tilting table with a size of 2,5 x 3,0 m. The tilting motion can be automatically positioned in the range of 0° up to 90°.



UNION DV 10/20/40/60

Portable rotary table enable a 4 side machining of parts up to 60000 kg.



Tilting tables

On request tilting and traversing tables with large clamping areas can be supplied.



Trunnion device

Special execution – machine with a NC-controlled trunnion device for peripheral processing of drumshaped parts in different sizes.



Milling heads Machine accuracies



Adapter for special accessories

for the automatic change of milling heads, spindle support etc.



Universal milling head

With automatic positioning (2 x 144 x 2,5°) and tool clamping, max. power 25 kW



Vertical milling head

With automatic positioning (144 x 2,5°) and tool clamping, max. power 30 kW



Orthogonal milling head

With automatic positioning in two right-angled planes (2 x 360 x 1°)

Further changeable special accessories (spindle support, manually operated milling heads) on request.

Achievable accuracies

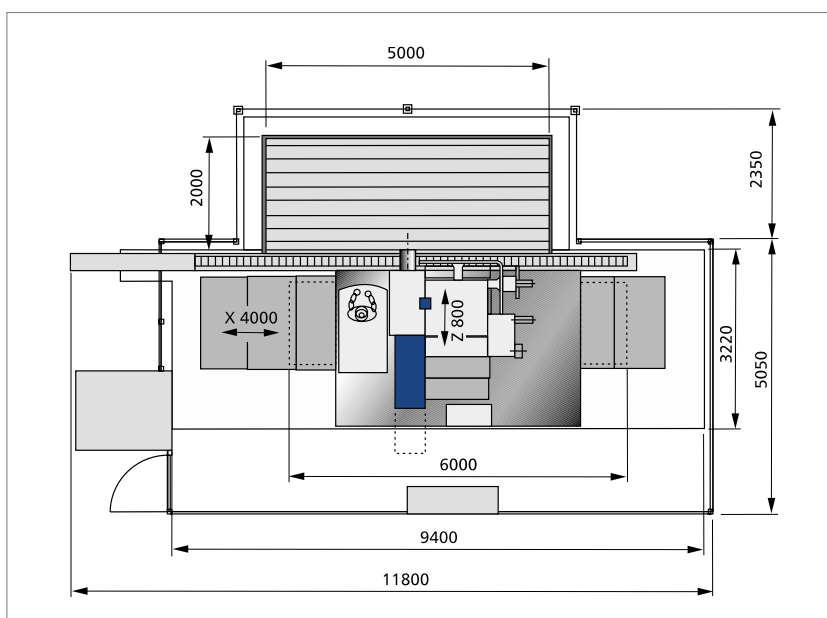
Achievable accuracies			
Deviation from a straight line (reference travers 630 mm)			$\leq 20 \mu\text{m}$
Diameter accuracy (internal boring)			IT 6
Deviation from true circle (internal boring) diameter 160 mm			$\leq 8 \mu\text{m}$
Deviation from true circle (external milling, circular) diameter 300 mm			$\leq 20 \mu\text{m}$
Coaxiality of above mentioned circles			$\leq 20 \mu\text{m}$
Positioning accuracy according to VDI/DGQ 3441			
Axes X, Y, Z		guaranteed values	achieved values (average)
Positioning uncertainty	P	0,025 mm	0,012 mm
Positioning uncertainty for X > 6000 mm	P	0,040 mm	0,018 mm
Positional scatter	P _{smax}	0,016 mm	0,008 mm
Reversal error	U _{max}	0,008 mm	0,003 mm
Positional deviation	P _a	0,010 mm	0,004 mm

Technical data Layout

Technical data

			P 130	P 150
Boring spindle		axis		
Diameter	mm		130	150
Drive power, max.	kW		46, optional 60	46, optional 60
Torque, max.	Nm		2179	2179
Spindle taper according to DIN 69871	ISO		50	50
Speed range	min ⁻¹		5...3000	5...2800
Facing head diameter*	mm		700	700
Facing head, speed range*	min ⁻¹		2,5...330	2,5...330
Traverses				
Column cross traverse	X	mm	4000	5000
optional extension in steps of	X	mm	1000	1000
Headstock vertical	Y	mm	2000	2500
optional	Y	mm	2500, 3000, 3500	3000, 3500
Column longitudinal	Z	mm	800	800
Facing slide radial*	U*	mm	200	200
Boring spindle axial	W	mm	750	750
Feeds/Rapid traverses				
Feed range of all axes	mm/min		1...15000	1...15000
Rapid travers	mm/min		15000	15000
Feed range of the facing slide*	U*	mm/min	1...1000	1...1000
Max. feed force of the main axes	N		25000	25000
Automatical tool changer				
Number of tool pockets in the magazin			40, optional 60	40, optional 60
Max. tool diameter if magazin is complete tipped	mm		125	125
Max. tool diameter if adjacent pockets are empty	mm		250	250
Max. tool lenght	mm		500	500
Max. tool weight	kg		30	30
Net weight of the basic machine	kg		28000	28500

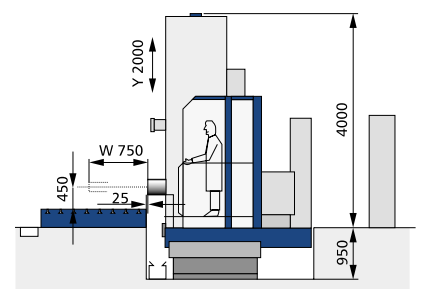
* for headstocks with integrated facing head only



Layout of a PC 130/150

in basic version with one floor plate 5000 x 2000 mm and chip conveyor.

UNION comes out with general recommendations for the height of the machine in relation to the floor plates. The lowest boring spindle position to the top of the floor plates can be modified according to your machining task.





UNION

Werkzeugmaschinen GmbH Chemnitz
Clemens-Winkler-Strasse 5
D-09116 Chemnitz
Phone: +49-371-8741-0
Fax: +49-371-8741-322
E-Mail: info@union-machines.com
www.union-machines.com

Postal address

UNION

Werkzeugmaschinen GmbH Chemnitz
Postfach 1142
D-09070 Chemnitz

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boring & milling