BFP 130/5
Horizontal Boring, Drilling and Milling Machine Floor-Type, with Transversely Movable Column
UNION Horizontal Boring, Drilling and Milling Machine BFP 130/5 Floor-Type, with Transversely Movable Column

With our Model BFP 130/5 we offer you a boring, drilling and milling machine of increased operating accuracy and performance. Its column is arranged for cross and longitudinal traverse. The machine can be universally used with high labour productivity for the machining of medium and large-sized work. The firmly mounted facing head is immediately available besides the boring spindle.

The entire driving power of the main motor serves exclusively for the cutting process. Our BFP 130/5 machines are built and delivered to meet your special machining demands.

Optional:
- Floor plates
- Boring stay
- Portable worktable
- Coordinate readout to 0.1 or 0.01 mm
- Traverses according to p. 4 and 5
Features and Advantages

Main bearing arrangement equipped with precision antifriction bearings and circulation lubrication.

Increased stability and true-running accuracy of the boring spindle by fully circular boring spindle profile (without longitudinal grooves) in the working range.

Clearly-arranged machine operation from swivel-type control unit in conjunction with operating elements at the spindle head.

Fast and reliable moving into any position by finger-tip control of rapid traverse and creep motion. Diagonal traversing possible.

Rapid boring spindle traverse by independent drive motor (also with boring spindle standing).

Wide speed and feed ranges.

Short operating times due to preselectors at spindle head for speeds and axial boring spindle traverse.

at control unit for adjustment of column and spindle head
Remote reading devices for longitudinal and transverse movement.

0.1 mm reading accuracy for all slide traverses of the machine when designed with vernier and illuminated magnifier.

Increased accuracy of reading (0.01 mm) of coordinate setting by optional equipment with optical fine-reading device (FAE) or numerical position indicating devices for X and Y coordinates.

Power supply through current-carrying chain.

Projecting, rigid facing head guard for holding flange to special attachments.

Quick clamping and unclamping of the tools by electromechanically operating tool clamping device.

Simple aligning or subsequent adjusting of the bedways by means of adjusting keys.
Individual Deliveries

**Tool Carrier**
Traverses:
- X Column cross
- Y Spindle head vertical
- Z Boring spindle axial
- W Column longitudinal
- U Facing slide radial

**Floor plate**

3500 × 1750 × 350 mm

**Boring stay**
Traverses:
- End support column cross
- End support column vertical

1000 mm
1600/2000 mm

Supporting blocks

**Tool carriers**
Portable worktable
Boring stay
3 Floor plates

Enlarged floor plate section
Extended traverses

The machine bed, 4500 mm long, traverse X 2500 mm, can be optionally enlarged by bed extensions

- 700 mm
  (cast integrally)
- 1700 mm
- 3100 mm
- 4500 mm

**Portable Worktables**

Ti 1400
and Ti 1800, rotary-table design to enlarge capacity

**Special Design**
with several tool carriers and boring stays for the machining of large components in one setup.
Capacity Diagram

The characteristic lines show the motor output and the effective torques at the facing head and the boring spindle.

- $M_d$ \([\text{Nm}]\) = usable torque at facing head
- $N_{\text{sp}}$ = motor power/facing spindle drive
- $N_{\text{bp}}$ = motor power/boring head drive

BFP 130/5
with 3 floor plates, portable worktable, boring stay
Specifications

Toolholders
- Diameter of boring spindle: 130 mm (5.1"")
- Machine taper: 50 ISO
- Centre hole: ø H6/facing head

Traverses
- Z: Axial traverse of boring spindle 1000 mm (39.4"")
- Y: Vertical spindle head travel 1000 mm (39.4"")
- X: Column cross traverse 2500/3000/4200/5600/7000 mm (98.4"/118.1"/165.4"/220.5"/275.6"")
- W: Longitudinal column traverse 400 mm (15.7"")
- U: Radial facing slide traverse 320 mm (12.6"")

Clamping Dimensions/Other Dimensions
- Facing head external diameter: 785 mm (30.9"")
- Facing head width of T-slots: 22 mm
- Facing head spacing of T-slots: 375 mm
- Facing slide width of T-slots: 18 mm
- Lowest position of boring spindle above machine bed: 1025 mm (40.5"")
- Lowest position of boring spindle above floor plate: 725 mm
- Bed length: 4500 mm (177.2"")
- Boring, max. diameter: 800 mm
- Flange turning, max. diameter: 1400 mm

Speeds
- Boring spindle speed: 4.5–900 rpm
- Boring spindle number of increments: 27
- Facing head speed: 4.5–180 rpm
- Facing head number of increments: 18

Feeds
- Boring spindle, axial, according to speed range: 0.03–48 mm/rev.
- Boring spindle, axial, number of increments: 54

Facing slide, radial, according to speed range: 0.15–48 mm/rev.
- Number of increments: 36
- Boring spindle and facing slide, independently of speed range: 0.04–2 mm/rev.
- Number of increments: 10
- Spindle head, vertical, column cross: 0.63–2000 mm/min
- Number of increments: 4
- Column longitudinal (direction to boring spindle): 0.32–1000 mm/min
- Number of increments: 36

Thread leads without change gears
- Metric thread: 0.5–48 mm
- English thread: 1/48–2 ins

Rapid Traverse
- Boring spindle and facing slide: 2500 mm/min
- Spindle head, column cross: 2000 mm/min
- Column longitudinal (direction to boring spindle): 1000 mm/min

Electric Drive
- Connected load, approx.: 30 kW
- Main motor: 18.5 kW
- Motors of the two standardised feed drives, each: 4.2/5.3 kW
- Rapid traverse motor of boring spindle and facing slide: 3 kW

Weight incl. switch cabinet
- Net weight: 26000 kg
- Gross weight, packed for shipping: 31500 kg

Space and Weight
- Space required: s.p. 10
- Floor plates: s.p. 19
- Boring stay: s.p. 20
- Portable worktable: s.p. 31
### Description of Machine

UNION Horizontal Boring, Drilling and Milling Machines are efficient production machines operating with high accuracy. They ensure consistent quality of output to be obtained even in continuous operation.

The manufacturing accuracy of UNION Horizontal Boring, Drilling and Milling Machines has been improved.

Acceptance tests of floor-type machines are carried out in accordance with TGL 35718 (with limited tolerances as compared with DIN 8621).

Each machine is tested for its accuracy and performance on a test part and is provided with an inspection record stating the measuring method applied and the measured values.

The well-tried unit assembly principle permits the assembly of machines with extended traverses and different floor plates.

Many types of design as well as special equipment enlarge the field of application of the boring mills BFP 130/5.

Thus we are in a position to deliver machines optimally adapted to special machining tasks.

### General Data

- **Machine Foundation:** according to installation plan, the machine bed rests on adjusting keys.
- **Mains Connection:**
  - Three-phase current: 220 V, 50 cps, 220 V/50/60 cps, 380 V/50/60 cps, 420 V/50/60 cps, 440 V/50/60 cps, 500 V/50/60 cps.
Main Spindle Bearing Arrangement

The spindle system consists of external hollow spindle (carrying the facing head), internal hollow spindle, and the boring spindle traversing in it. The hollow spindles are running in precision antifriction bearings. The nitrided boring spindle is equipped with an electromechanically operating tool clamping device.

Boring spindle head:
- Major-diameter fit Ø 128.57 mm
- Minor-diameter fit ISO 50

The main spindle bearing system is provided with circulation lubrication. An oil cooling unit can be connected for stabilisation of the main bearing temperature in continuous high-speed operation.
Facing Head
The sturdy facing head, firmly mounted on the outer hollow spindle, is provided with a centre hole Ø 500 mm H6 for fastening large cutter heads. The projecting, annular facing head guard serves as screw-on surface for the flange to special attachments (s. p. 24). The stable design of the facing slide as well as the continuous feeds permit flange turning operations being performed up to diameter 1400 mm.

Thread Cutting
is carried out by use of the feed gear mechanism. The most commonly used leads of thread can be set without change gears by operating elements at the spindle head.

Only when shifting from metric to English thread, there has to be changed a pair of gears (easily accessible in the gearbox).

On Request:
Change gears for additional thread leads

Control unit
with control panel
at spindle head

Control unit
Pushbuttons for adjustment of boring spindle and facing slide
Preselectors for inching and continuous operation
Pushbuttons for releasing boring spindle drive for each direction of rotation
Preselectors for directions of adjustment and column feeds
Pushbuttons for releasing column adjustment in inching and continuous operation
Preselectors for directions of adjustment and feeds of spindle head
Pushbuttons for releasing spindle head traverse in inching and continuous operation
Pushbuttons for actuating the electromechanical tool clamping mechanism
Emergency key "ALL OFF"

Control panel at spindle head
Optical fine-reading device (0.01 mm) for Y coordinate
Ammeter and control lamp
Pushbuttons:
Dial illumination (pulsed operation)
Lubrication
Boring spindle rotation
Emergency key "ALL OFF"

Switches:
Machine lamp
Coolant supply
Automatic clamping
Thread setting
The gearing in the spindle head effects direct control of the speeds of facing head and/or boring spindle, feeds for axial boring spindle travel.

Short operating times are obtained by use of preselectors. While the machine cycle is running, it is possible to set the next speed and feed rates (then released by manual control).

Speed adjustment is within three ranges.

According to the gear setting selected, the following operations will be performed:

- facing head and boring spindle at the same speed,
- facing head individually, boring spindle individually,
- facing head and boring spindle at different speeds.

An independent rapid traverse motor serves for rapid boring spindle travel.

**Feed Gear Mechanism**

The Model BFP 130/5 is provided with a standardised UNION feed gear mechanism for vertical adjustment of the spindle head and both transverse and longitudinal column traverse. Both the electrically operated gear mechanisms are fitted with 36 increments incl. rapid traverse and creep motion.

The 1:3150 control range is equipped with maintenance-free, electromagnetic clutches without slip rings.

Both the feed gearings are of easy access.
Machine Bed

Machine bed (X axis) and the ways of the column slide (W axis) have been designed with three ways.

A central way ensures accurately aligned shifting.

Surfaced front ends of the machine bed guarantee accurate attachment of table extensions.

Cross traverse of the compound slide on the machine bed (X axis) is performed by means of a high-quality, helically toothed pinion drive.

All the other traverses are effected by screw drives.

The machine bed rests on adjusting keys.
21 pcs. with traverse X 2500 mm
24 pcs. with traverse X 3200 mm
30 pcs. with traverse X 4200 mm
36 pcs. with traverse X 5600 mm
42 pcs. with traverse X 7000 mm

This ensures the three guideways being exactly aligned.

Switch Cabinet

The four-door switch cabinet accessible from two sides accommodates facilities for power supply, actuation of control elements, and fuses.

Operating elements at the switch cabinet:
- Rear front end:
  - Main switch for entire installation
- Front side:
  - Socket for hand lamp

Floor Plate Section

The floor plate section carries the components, the boring stay and/or the portable worktable.
It consists of individual, factory-standardised floor plates and is mounted independently of the machine. The plates are capable of being located higher or lower according to operational requirements. The box-like, ribbed base permits to load even heaviest work.

Draw-in bolts and thrust screws ensure exact aligning of the plates.
The floor plates can be located in such a way that the T-slots are arranged either longitudinally or transversely to the direction of the boring spindle.

Three floor plates are required for operations using boring stay and portable worktable.

Specifications of Floor Plate (1)
- Length: 3500 mm
- Width: 1750 mm
- Height: 350 mm
- Width of T-slots: 36 mm
- Spacing of T-slots: 250 mm
- Permissible load: 20 MPa/m²
- Net weight, approx.: 4000 kg
Boring Stay

The portable boring stay serves for guiding and supporting long boring bars and large special tools. Hinged-cap stay bearing.

Boring Bar Holder
Hole of stay bearing bush Ø H6 antifriction-mounted 125 mm
Bottom hole Ø H6 160 mm
of stay bearing 6.29

Traverses
Vertical stay bearing adjustment 1600/2000 mm
Adjustment 62.9 78.74
of end support column 1000 mm
Coordinate adjustment is by actuation of the pushbuttons on the end support column.

Rapid Traverse
Boring stay bearing 1600 mm/min
End support column 1600 mm/min
Electric Drive
Boring stay bearing - Motor 1.1 kW
Boring stay slide - Motor 0.75 kW

Weight
Net weight, approx. 2400 kg

Portable Worktables

Ti 1400 and Ti 1800
Portable Worktables built by UNION for their floor-type horizontal boring and milling machines
Both styles are provided with the same sturdy frame construction.

Optical length reading
6.1 or 0.01 mm
Optical angular reading
4×10°=2 angular seconds
Owing to their sturdy design and simple operation, our Portable Worktables Ti 1400 and Ti 1800 have proved to be successful for
- precision machining operation
- high loads
- angular- and parallel machining

Specifications

<table>
<thead>
<tr>
<th>Designation of Type</th>
<th>Ti 1400</th>
<th>Ti 1800</th>
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<tbody>
<tr>
<td>Dimensions:</td>
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<tr>
<td>Workholding area</td>
<td>mm</td>
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<td>Centre hole Ø H6</td>
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<td>Spacing of T-slots</td>
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<td>Longitudinal traverse</td>
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<td>Rapid traverse</td>
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<tr>
<td>Longitudinal adjustment</td>
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<td>S. p. 11 for voltages and frequency</td>
<td>(For details s. Leaflet Ti 1400(Ti 1800))</td>
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Examples of Machining

1. Drilling by use of twist drill
2. Boring by means of boring bar
3. Boring with multi-edge tool
4. Finish-boring by use of reamer
5. Tapping with tap
6. Milling, vertical milling attachment mounted on flange for special attachments
7. Boring with taper boring attachment
8. Boring of short, large-diameter holes by toolpost
9. Milling, cap bearing mounted on flange for special attachments
10. Thread cutting using universal boring head (suitable for external and internal threads)
11. Milling, cutter head mounted on facing head
12. Flange machining by use of toolpost
13. Double-sided facing by means of facing head and flange facing head
15. Simultaneous boring using boring tool and boring head
Extras and Versions of Equipment

Flange to extras with centre hole Ø H6 502 mm and T-slots for fastening of the cap bearing and the vertical milling attachment. This flange screwable to the spindle head wall encloses the facing head and transmits occurring cutting forces directly to the spindle head casing without loading the main bearing arrangement.

Optical fine-reading device for coordinate setting, 0.01 mm reading accuracy for vertical spindle head travel and column cross traverse.

Numerical position indicating devices for X and Y coordinates.

Coolant attachment of special advantage for machining of steel. Starting and stopping at control panel.

For further information, please see our Catalogue on Special Equipment.

Specifications, data and illustrations in this leaflet are not binding and subject to modification for improvement.
The range of products and services offered by the WMW manufacturing branch is based on systematic research and development utilizing the comprehensive resources of this branch of industry. It comprises machine tools of top quality, outstanding performance and operational reliability for the machining methods turning, grinding, gear cutting, drilling, milling, planing, as well as for the forming of solid and sheet metal components.

With its range of tools, toolholders and fixtures as modern rationalisation aids, WMW offers optimum problem solutions including process - machine - tool and rationalisation.