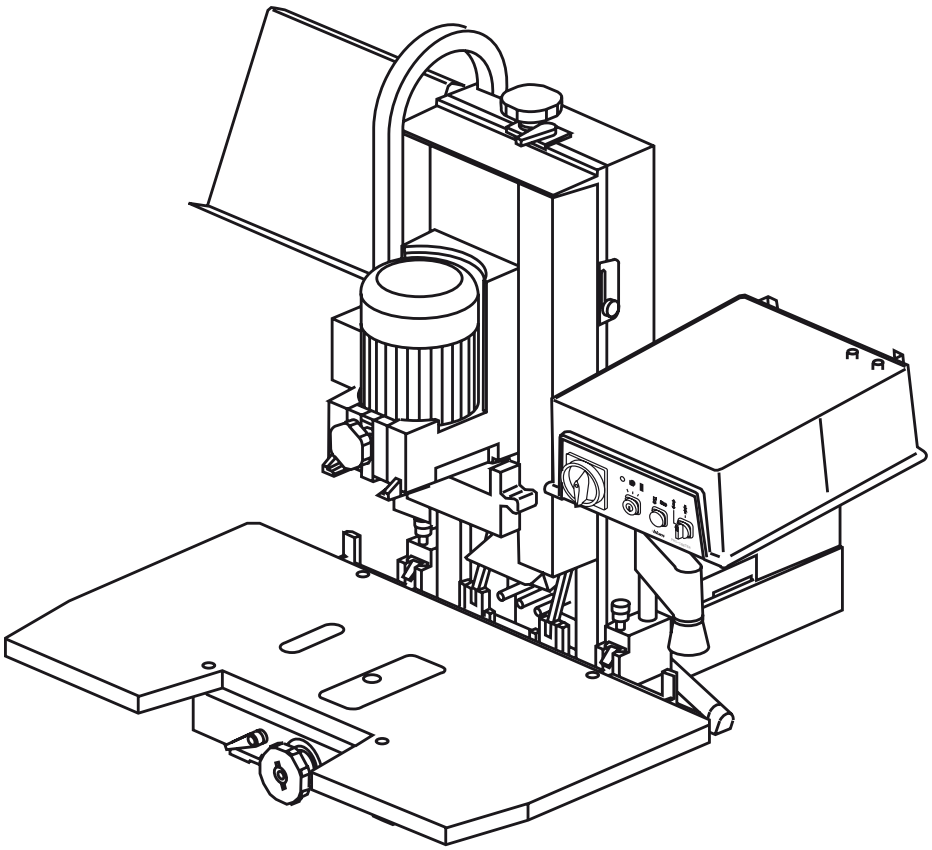
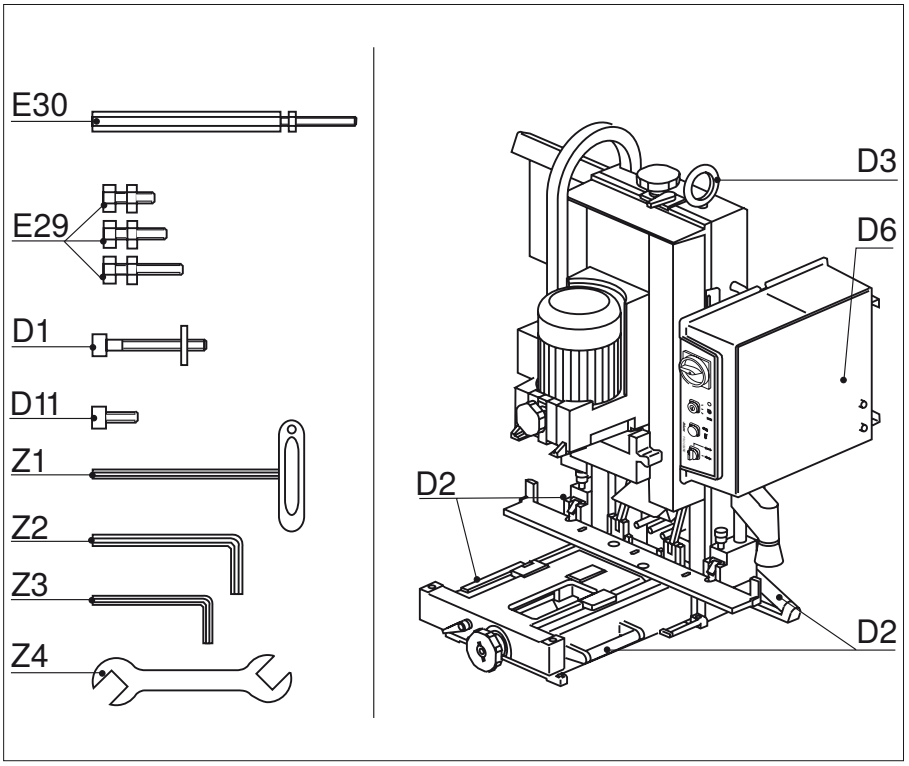


# Blum PRO-CENTER

Please keep a copy of the instruction leaflet.
The instruction leaflet contains the EC Declaration of Conformity, which must be produced for authorities upon request.

**EN**

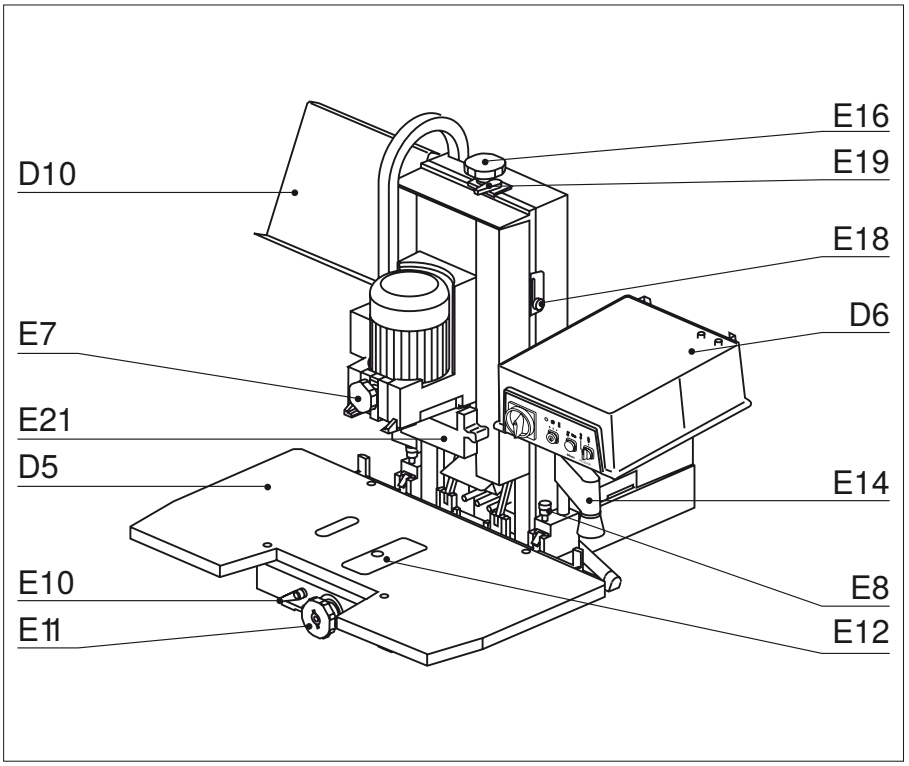
BA-077/1EN M6X.20XX




D1 Fixing screws (4pcs M8x80)
D2 Handles
D3 Crane eye
D6 Controller
D11 Hexagonal Allen key screws (4pcs M8x20)

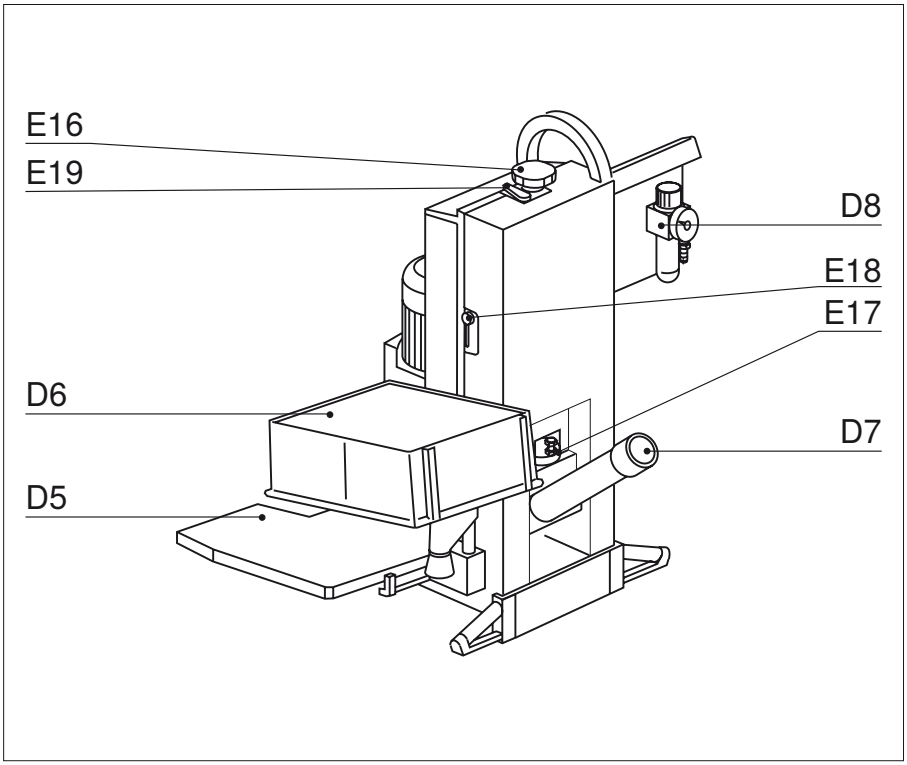
E29 Stop screw for drilling depth revolver (M8x30, M8x40, M8x50)
E30 Adjustable depth stop rod (3psc)

Z1 Allen key 4 with cross handle
Z2 Allen key 6
Z3 Allen key 4
Z4 Spanner SW10/13 (2psc)



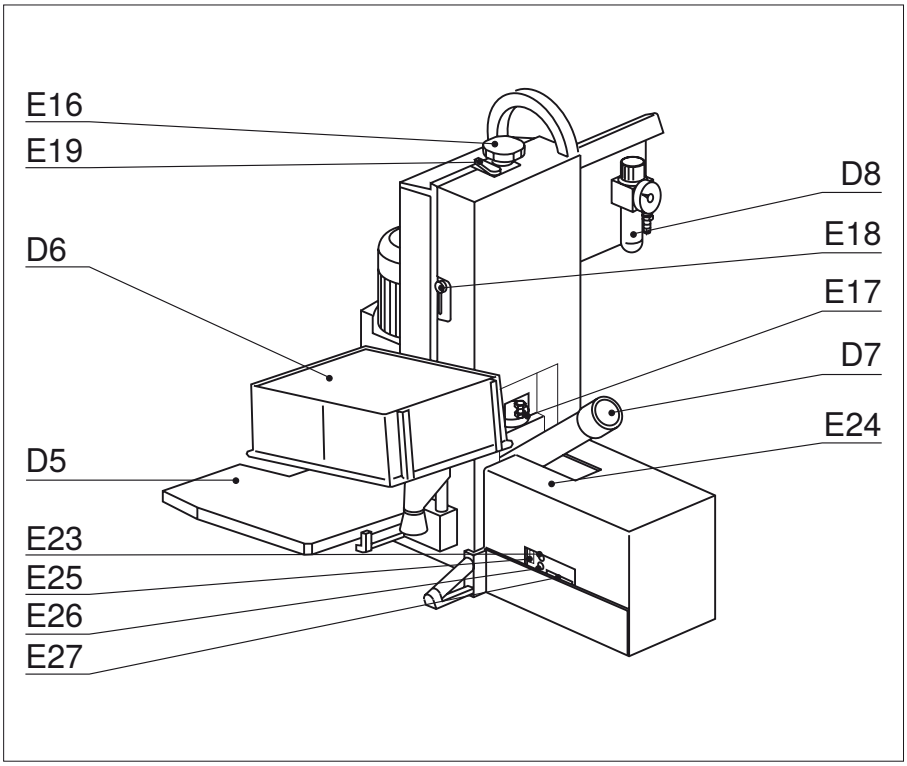

D5 Work table
D6 Controller
D10 Clipboard

E7 Locking device for drilling head
E8 Ruler clamping screws
E10 Work table lock
E11 Work table depth stop
E12 Cover
E16 Drill head depth stop
E18 Drill brake set screw
E19 Mode switch (vertical drilling and/or drilling and insertion)




D5 Work table
D6 Controller
D7 Extraction port
D8 Air filter unit

E16 Drill head depth stop
E17 Drill head depth adjuster
E18 Set screw (head brake)
E19 Mode switch
(Vertical drilling and/or drilling and insertion)




D5 Work top
D6 Controller
D7 Extraction port
D8 Air filter unit

E16 Revolving handle (drilling depth)
E17 Revolver (drilling depth)
E18 Clamping screw (cam brake)
E19 Mode switch
(Vertical drilling and/or drilling and insertion)

E23 Clamping screw (drilling distance)
E24 Adjustment screw
E25 Adjustment calibration (drilling distance)
E26 Clamping screw (drilling depth)
E27 Calibration (drilling depth)

## C.1 - How to use this instruction leaflet

- Please keep a copy of the operating instructions.
- Read all operating instructions and the safety information before operating the assembly machine.
- We recommend that you use the orientation diagram for easier identification of the parts being described.
- Individual sections are indicated by capital letters which makes it easier to navigate the instructions.

⚠ **Safety information:**
**This exclamation mark indicates important safety information that must be followed.**

! **Note:**
**This exclamation mark indicates a note. If this comment is not followed, then assembly machine components as well as the work piece itself may be damaged or the assembly machine may be rendered inoperable and/or the work piece unusable.**

(3.1) Component description codes correspond to the section where the component and its function is described. For example, (3.1) is described in section 3.

**Dear valued Blum customer,**
We would like to congratulate you on your decision to purchase the Blum assembly machine. You are now the owner of a modern, high-quality assembly machine that will give you years of productive use with the proper care and maintenance.

We realise that your time is valuable. However, you should carefully read this instruction leaflet before you set up and use the machine for the first time. In this way, you will best determine how to adjust the assembly machine to your needs as well as protect yourself against injury. In addition, the instruction leaflet also contains important information about machine maintenance.
At the time of printing, this instruction leaflet contained up-to-date information for this model. Small deviations due to continual development of the assembly machine design cannot be ruled out entirely. This instruction leaflet is an important component to the assembly machine and must be transferred to the new owner if the machine is sold.

For your own safety, you should only use Blum-approved replacement parts and accessories. Blum is not liable for any damages resulting from the use of unapproved products.

**Blum GmbH retains the right to make changes to and/or cancel without replacement the technical design, equipment, technical information, colour, materials, services provided and similar without prior notice and without explanation as well as the right to discontinue production of a specific model also without prior notice.**

## D.1- Remaining risks according to ISO EN 12100-2

- This machine complies with current safety standards. However, there are remaining risks.
- In the event of either pneumatic or electrical component failure ,it may be possible for the machine to make an unintended movement .for this reason safety guards should never be removed.
- Other remaining risks are indicated by the safety decals and in the following safety rules. It is therefore absolutely necessary to follow all safety instructions carefully.

## D.2 - Safety decals

| | |
|---|---|
|  | Completely read the instruction leaflet and the safety information before operating the assembly machine |
|  | Wear proper eye and face protection when operating this machine |
|  | Only one person at a time should operate the machine.<br>The work area is located in front of the machine. |
|  | Electrical connections and maintenance should only be performed by a qualified electrician.<br>Disconnect electrical and pneumatic connections before making any repairs (plug / rapid hose coupling). |
|  | Keep hands away from the drill or swing arm during the drilling or insertion process.<br>Do not remove safety devices - danger of injury. |
|  | Keep hands away from the danger zone of the clamps and knurled screws. - danger of being crushed |

## D.3 - Intended use

- The designated purpose of the assembly machine is the drilling and insertion of furniture fittings into work pieces made of wood, particle board or plastic coated wood. The assembly machine should only be used in manufacturing. The manufacturer does not assume liability for uses not described in the instruction manual.
- The machine is not explosion-proof. It should not be set up near a paint finishing system

## D.4 - Safety information

- Before retooling, cleaning, maintenance or performing any work on drill bits, turn the main switch (E1) to pos. 0 and disconnect the assembly machine from the pneumatic connection.

- Only use sharp, clean drill bits.
- Particular care must be taken when working on sections that jut out over the work top. Attach a larger work table or use extensions. Work pieces should not affect the stability of the assembly machine. Work pieces should be secured against tipping or falling. Use suitable clamps or support brackets. Operating elements must remain accessible and their accessibility should be not obstructed.
- Secure the work piece during drilling/insertion. Use the assembly machine clamps or if these are not sufficient for the particular job, use suitable clamping equipment.
- Wear appropriate work clothing.
- You should always check that all safety devices and machine parts are functioning properly before use. Replace damaged parts with original Blum parts.
- Make sure that no other tools or objects are on the work table aside from your work piece before turning on the assembly machine.
- Always turn the main switch (E1) to POS. 0 after finishing work
- CAUTION: For your own safety, use only those accessories which are recommended or indicated in the manual or Blum sales literature.
- Do not make any alterations or modifications to the assembly machine.
- If there are any questions and/or problems, please contact the BLUM Customer Service Department.
- All national regulations regarding labour law, industrial safety as well as all disposal guidelines must be followed.

## D.5 - Noise emission

Noise emission levels as per EN ISO 11202 (11204) are:
Work place noise level is (work cycle): 80.4 dB(A) (measured at a height of 1.5 m and at 1 m forward of the worktable edge. The ambient correction factor K3A is 4 dB and is calculated according to EN ISO 11204 Appendix A. The difference between the extraneous noise level and the sound intensity level at each measuring point is > 6dB)

The specified values are emission values, which means that they are not necessarily safe workplace values at the same time. Although there is a correlation between emission and emission values, the necessity of additional precautions cannot be deduced with certainty. Factors liable to influence current emission levels in the workplace include the length of exposure, the characteristics of the workroom, and other noise sources. Also, admissible workplace levels may vary from country to country. The information provided here is designed to enable users to assess the hazards and risks involved more accurately.

## D.6 - Dust emission

If connected properly to a dust extraction system, dust emissions fall clearly below the technical standard value. The assembly machine is equipped with a connecting piece for hoses with an inside diameter of 100 mm. This provides negative pressure of 2000 Pa for the maximum required average air velocity of 20 m/sec. If there is no extraction system connector with a diameter of 100 mm, the supplied adapter can be used. For connection, make sure that a minimum air velocity of 20 m/sec is provided at the cross-section of the 100 mm hose.

- The assembly machine must be connected to a dust extraction system. (The extraction system connection must be flexible and flame resistant)
- Regularly remove remaining dust and chips using a vacuum cleaner.

## E.1 - EC Declaration of Conformity

Julius Blum GmbH, Industriestr. 1, A-6973 Höchst herewith declare on our own responsibility that the product PRO-CENTER (M60.20xx and M65.20xx) with drilling heads (MZK.2000, MZK.2100, MZK.2110, MZK.2200, MZK.2210, MZK.2230, MZK.2400, MZK.2410, MZK.2800, MZK.2810, MZK.2880) to which this Declaration refers, complies with the following EC Directives:

| | |
|---|---|
| EC Machine Directive | 2006/42/EC |
| EC EMV Directive | 2004/108/EC |

The following harmonised European standards have been used to ensure proper implementation of the requirements specified in the EU Directives:
EN ISO 12100-1, EN ISO 12100-2, EN 13849-1, EN 349, EN 983

In addition, the following standards have also been applied:
EN ISO 11202, EN ISO 11204, DIN 33893-2

Höchst, 06.07.09

Dipl.-Ing. Herbert Blum
Managing Director
www.blum.com

Documentation authorised agent:
Dipl.-Ing. (FH) Thomas Maier
www.blum.com

## E.2 - Technical data

**General data:**

- Voltage: see serial tag
- Current: see serial tag

- Power input:
  Vertical motor: 1.1 kW
  Horizontal motor: 0.5 kW
  Stand By: 12 W
- RPM: see serial tag
- Compressed air: 5 - 7 bar
- Air consumption: 2 litres per cycle

**! Important**
**Provide a 16 A mains backup fuse.**

**Weight and measurements:**

**a) PRO-CENTER without horizontal drilling head**

| | | |
|---|---|---|
| Weight: | m= | 75 kg |
| Dimensions: | H= | 890 mm |
| | W= | 1000 mm |
| | D= | 900 mm |

**b) PRO-CENTER with horizontal drilling head**

| | | |
|---|---|---|
| Weight: | m= | 95 kg |
| Dimensions: | | |
| | H= | 890 mm |
| | W= | 1000 mm |
| | D= | 1300 mm |

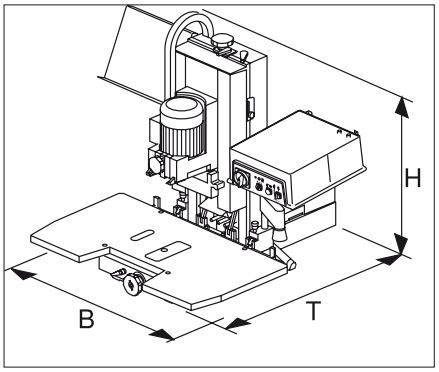
**Processing dimensions:**

**a) Vertical drilling head**

- max. workpiece thickness: 40 mm
- Drilling distance
  centre spindle: 5 - 124 mm
- Max.
  drill diameter: 35 mm

**b) Horizontal drilling head**

- max. workpiece thickness: 30 mm
- Drilling height: 5 - 16 mm
- Drilling depth: max. 50 mm
- Max. drill diameter 10 mm




## 2.1 - Unpacking and assembly

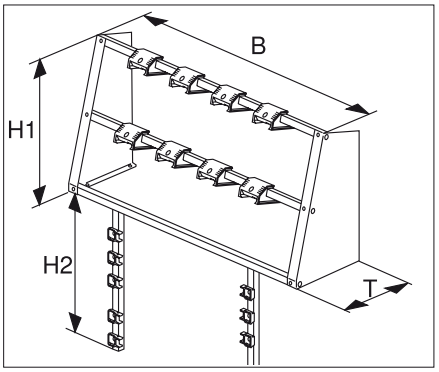
### 2.1.1) PRO-CENTER space requirement

- PRO-CENTER without horizontal drilling unit

| | | | |
|---|---|---|---|
| Height | H | = 890 | mm |
| | B | = 1000 | mm |
| | D | = 700 | mm |

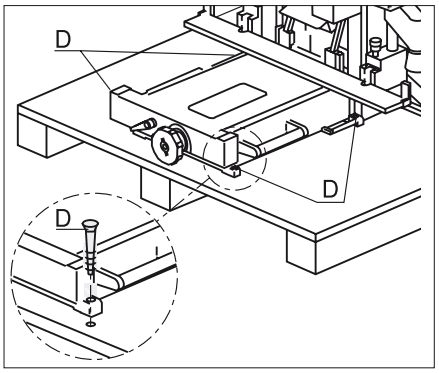
- PRO-CENTER with horizontal drilling unit

| | | | |
|---|---|---|---|
| Height | H | = 890 | mm |
| | B | = 1000 | mm |
| | D | = 1100 | mm |



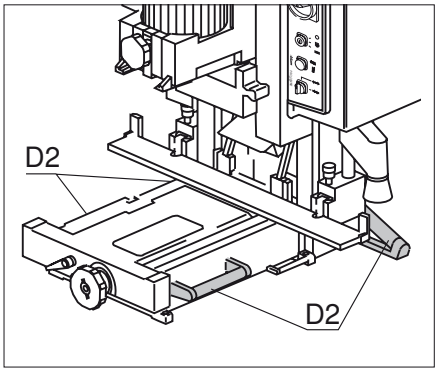

### 2.1.2) Space requirement of drilling head and ruler storage rack

| | | | |
|---|---|---|---|
| H1 | = | 613 | mm |
| H2 | = | 600 | mm |
| B | = | 1282 | mm |
| D | = | 350 | mm |




### 2.1.3) Unpacking PRO-CENTER

- Remove box
- Loosen fixing screws (D)

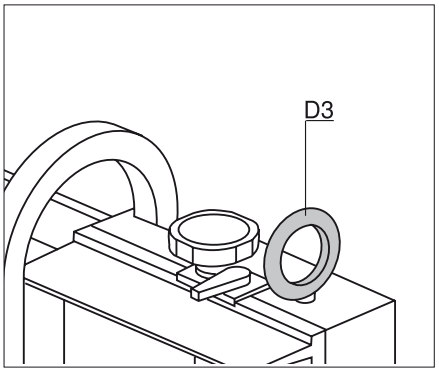



### 2.1.4) Setting up and securing machine to a suitable table

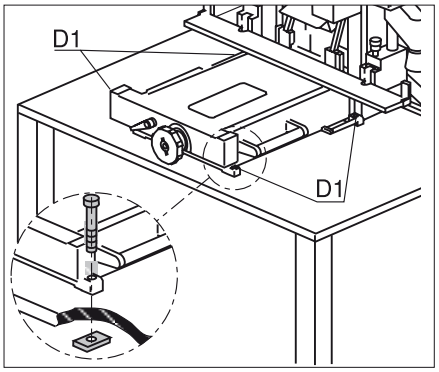
**ATTENTION**
**A machine with a horizontal gearbox weighs approx. 95 kg.**
**A machine without a horizontal gearbox weighs approx. 75 kg.**

**The table should have the proper dimensions**

**a) Two people should use the handles (D2) on the machine to lift it to the work top.**

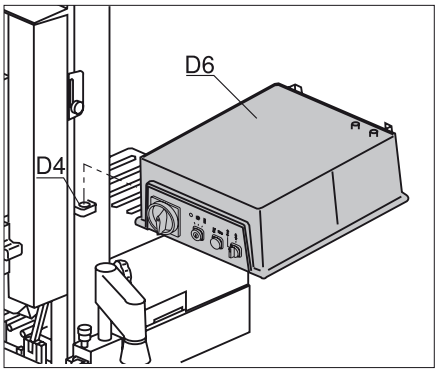



**b) If using a crane, the crane hooks (D3) should be used to lift the machine.**



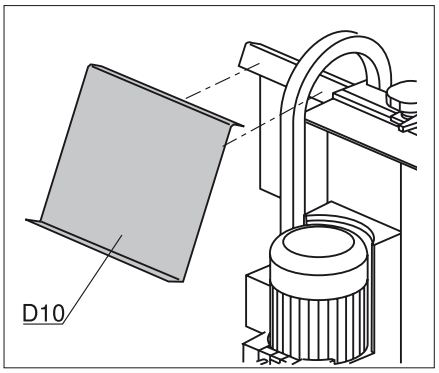

- Secure the machine to the work top using the fixing screws (D1)

**!** **Important**
**A horizontal drilling machine should not rest on the table so that the wood chips can fall downward**

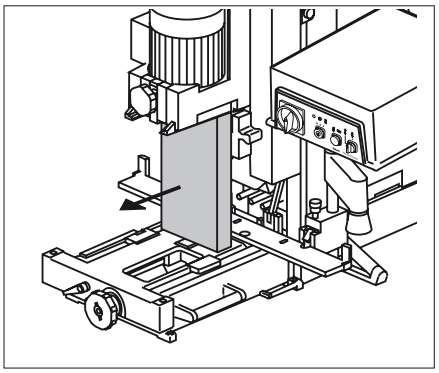



**2.1.5) Attaching the controller (D6)**

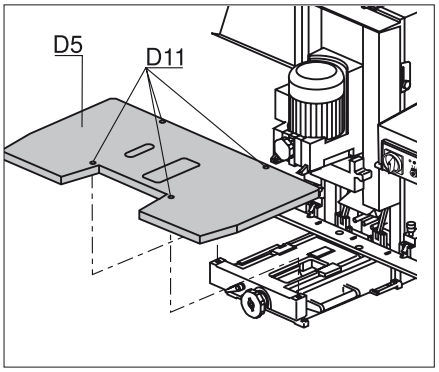
- Loosen screw (D4)
- Remove controller (D6) upwards from the bracket
- Turn the controller (D6) 90° and replace in the bracket
- Retighten screw (D4)




**2.1.6) Attaching the clipboard (D10)**

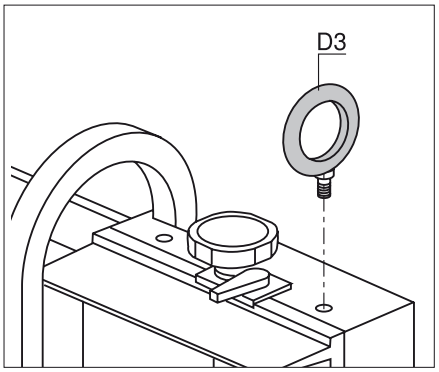


**2.1.7) Removing holding blocks**



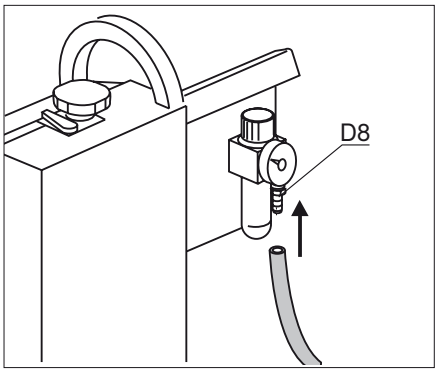

**2.1.8) Attaching (D5) work table**

- Place work table (D5) on the machine foot
- Secure work table (D5) using the included hexagonal Allen key screws (D11)




**2.1.9) Removing crane eye (D3)**

- Unscrew the crane eye

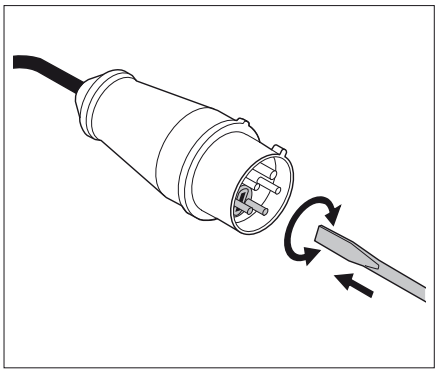



## 2.2 - Connecting to compressed air system

**2.2.1) Connecting the air supply to the air filter unit (D8) (Ø 6 mm)**

- Connect machine to air pressure system
- Air pressure is preset to 6 bar

**Important**
**A rapid hose coupling must be inserted a max. 3 m from the machine in the air pressure supply line.**



## 2.3 - Electrical connection

**2.3.1) Electrical connection**

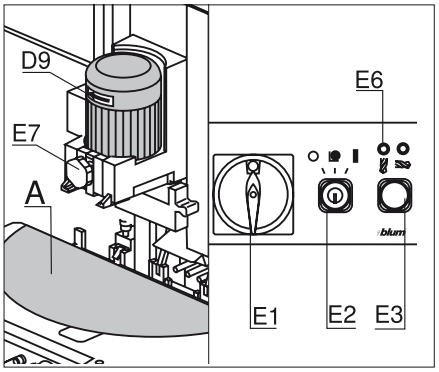
**ATTENTION**
**The electrical connection must be performed by a qualified electrician!**

- Set main switch to Pos. **0**
- Mount a plug conforming to DIN/VDE or IEC. Provide for mains backup fuse (see electrical diagram)

**Important**
**The machine is designed for the voltage printed on the label of the connection cable.**

**2.3.2) Reconnecting to the 2nd voltage level**

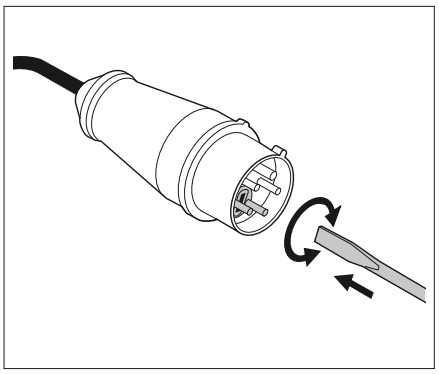
**Important**
**Along with the motor, the transformer controller must also be reconnected to the corresponding voltage. (See electrical diagram)**




**2.3.3) Checking motor rotation**

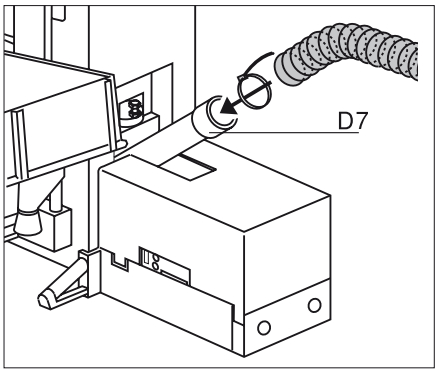
**ATTENTION**
**During the following procedure, keep your hands away from the work area (A) of the machine.**

- Main switch (E1) at Pos. **I**
- Set mode switch (E2) to Pos. **I** (operation)
- If the control light for vertical drilling (E6) is flashing, tighten the spindle clamp screw (E7)
- Briefly press the start button (E3)
- The motor fan must turn in the direction of the arrow (D9)



**2.3.4) Correcting motor rotation**

- If the motor rotation is wrong:
- Main switch (E1) at Pos. **0**
- Interchange two phases for connection cable (only by an authorised electrician)
- Recheck the motor rotation.




## 2.4 - Dust extraction

**ATTENTION**
**The machine must be connected to a dust extraction system!**

**2.4.1) Connecting the extraction hose to the extraction system on the extraction port (D7) of the machine (Ø 50 mm)**

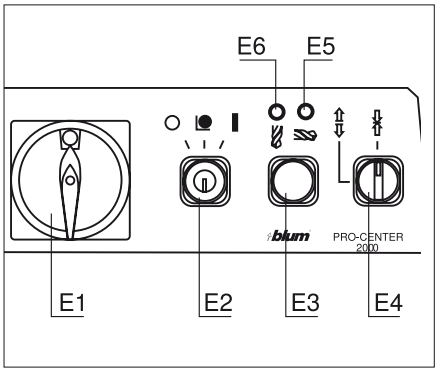
- Secure hose using the hose clamp
- Make sure that the air velocity for the extraction system is at least 20 m/s

**Important**
**The extraction hose must be laid so that the extraction port (D7) is not encumbered**

**2.4.2) Attaching the extraction system to the controller of PRO-CENTER 2000**

**ATTENTION**
**The electrical connection must be performed by a qualified electrician!**
- In order for the machine to be operated only with the extraction system

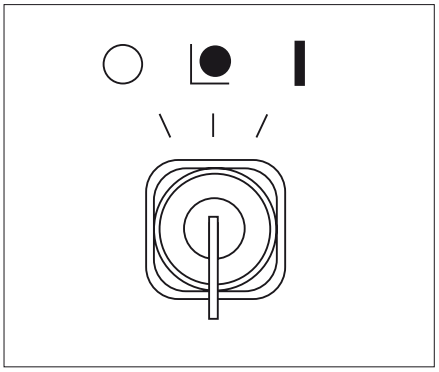
turned on, terminals 12 and 18 (see electrical diagram) must be connected to a potential-free contact of the dust extraction controller.




## 3.1 - Description of operator panels

### 3.1.1) Designation of operating elements

- (E1) ... Main switch= Emergency off switch
- (E2) ... Mode switch
- (E3) ... Start button
- (E4) ... Hold down clamp switch
- (E5) ... Control light for horizontal drilling
- (E6) ... Control light for vertical drilling



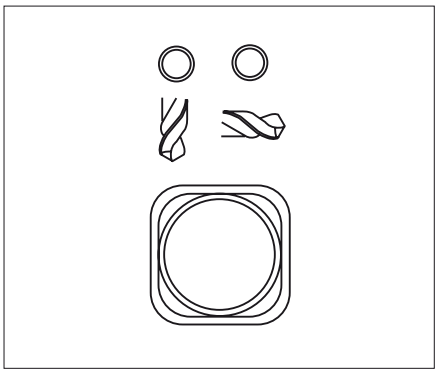
### 3.1.2) Mode switch (E2)

- Key switch version

**Pos. OFF**
Control lights are not lit
- The machine will not operate

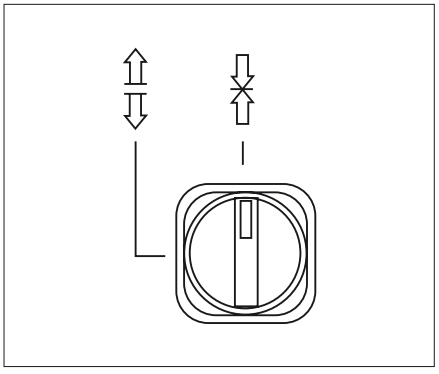
**Pos. Settings**
Control light (E5) or (E6) are lit
- Drill head movement is possible
- Drilling is not possible

**Pos. Operation**
Control light (E5) or (E6) are lit
- Drilling and the fitting insertion can be carried out



### 3.1.3) Start button (E3)

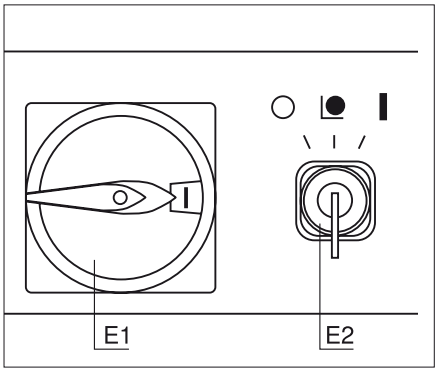
- Pressing the start button will carry out the currently selected work process (e.g.: setup, vertical drilling, horizontal drilling and fittings insertion)
- When you release the start button, the work process is cancelled and the vertical or horizontal drilling unit returns to the starting position. The hold down clamps remain extended.



### 3.1.4) Hold down clamp switch (E4)

**Pos. Clamps off and/or released**
(Hold down clamps are not extended and/or are released when they are already extended)

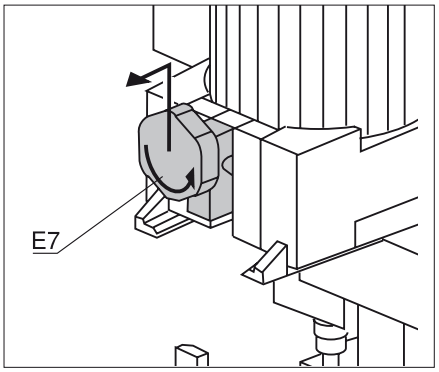
**Pos. Clamps on**
(When you push the start button, the hold down clamps are extended)



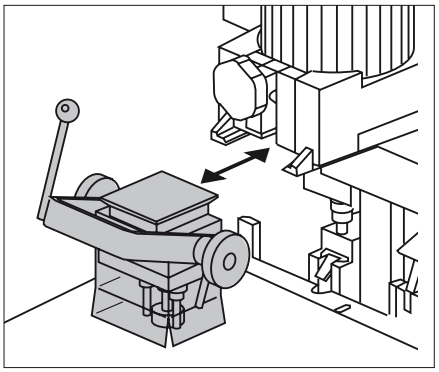

## 3.2 - Vertical drilling unit

### 3.2.1) Gearbox replacement

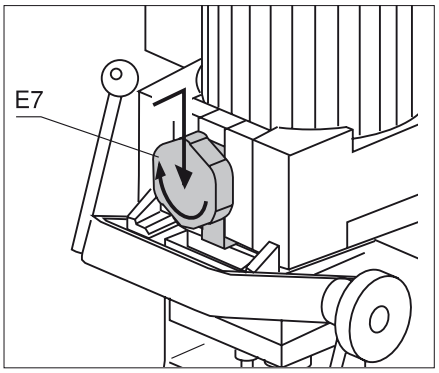
- Main switch (E1) at Pos. **I**
- Mode switch (E2) at Pos. symbol (setup)



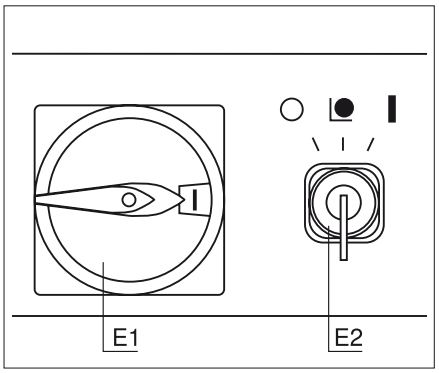

- Loosen locking device (E7) by turning to the left
- Lift the locking unit on the locking device (E7) and pull forward.



- Remove drilling head from the guide and place in the storage rack holder
- Insert the desired drilling head into the guide until the stop

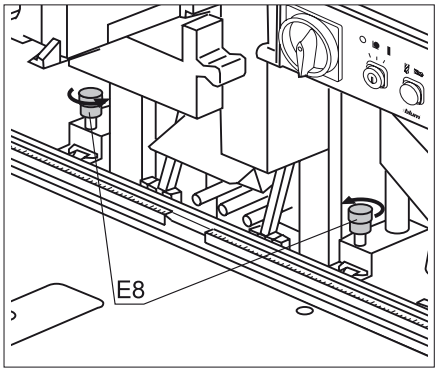



- Move the locking unit on the locking device (E7) down
- Tighten the locking device (E7) until the control light for vertical drilling stops flashing

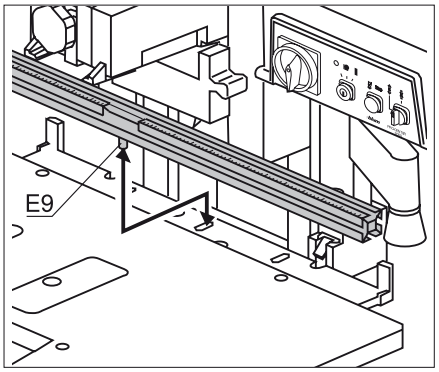



### 3.2.2) Ruler change

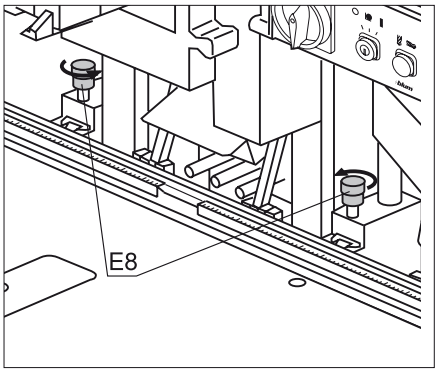
- Main switch (E1) at Pos. **I**
- Mode switch (E2) at Pos. symbol (setup)




- Loosen ruler clamping screws (E8) until the stop



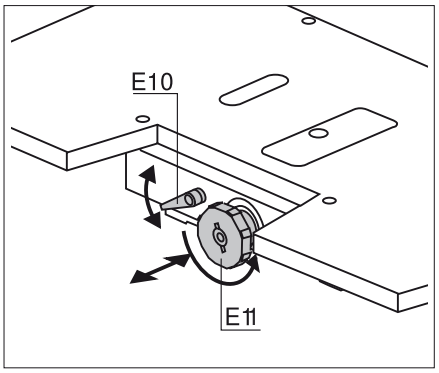

- Pull ruler forward and remove from the top
- Place ruler in the storage rack ruler holder.




- Insert desired ruler (E9) into the specified elongated hole with the indexing pegs and slide all the way back.
- Retighten clamping screws (E8)

**!** **Important**
**Make sure that the ruler is inserted and clamped cleanly and is not askew.**

**The gap in the standard ruler must point to the front.**

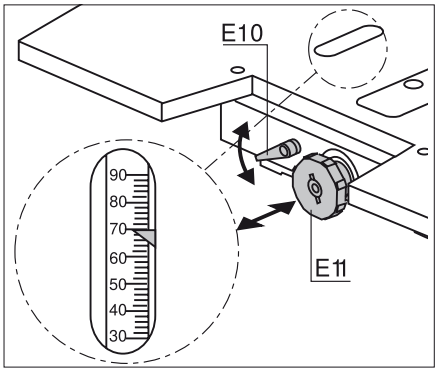



### 3.2.3) Setting work table to drilling distance

**a) Setting via the revolving stop**

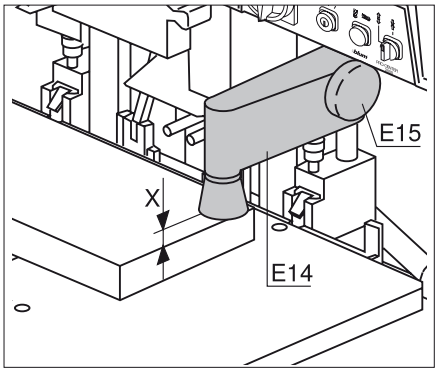
- The dimensions for drilling positions 9.5, 20, 22.5, 37 and for horizontal drilling are factory set
- Loosen the clamping lever (E10)
- Pull out work table completely
- Set revolving handle (E11) to the desired position
- Slide work table to the stop
- Retighten the clamping lever (E10)

**!** **Note**
**The Pre-setting revolver for work top section, describes how to pre-set the revolver stop.**



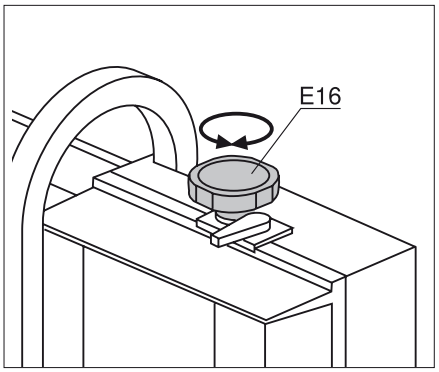

**b) Setting via calibration**

- Loosen the clamping lever (E10)
- Pull out work table completely
- Set revolving handle (E11) to position "H"
- Set the work table using the calibration
- Retighten the clamping lever (E10)




**3.2.4) Setting hold down clamps (E14) to the material thickness**

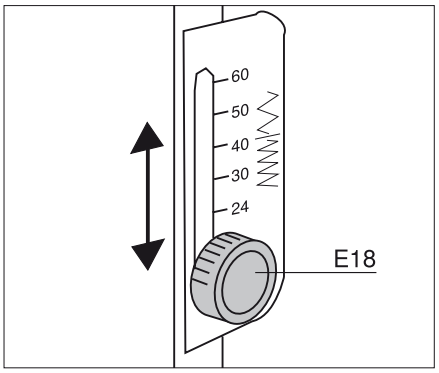
- Set hold down clamp (E4) to Pos. ⇕ (loosen)
- Open clamping screw (E15)
- Set the hold down clamps (E14) so that the distance between the door and the clamp guard is a max. x = 3 mm
- Loosely tighten clamping screw (E15)




**3.2.5) Setting drilling depth**

- The drilling depths for work piece thicknesses 16 and 19 mm are already pre-set
- Turn revolving handle (E16) to the desired position.
  => Drilling depth is set

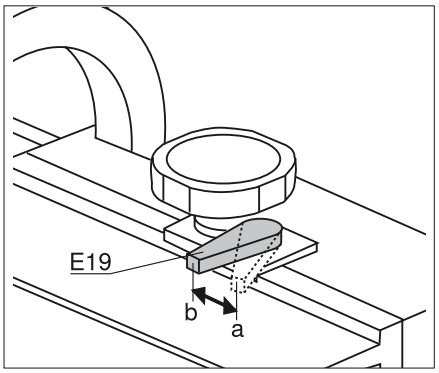
**!** **Note**
**How to set other dimensions is described in "Pre-setting revolver for drilling depth."**




**3.2.6) Setting the drill head brake point**

The drill head brake slows down the drill head stroke speed just before the drill enters the work piece.

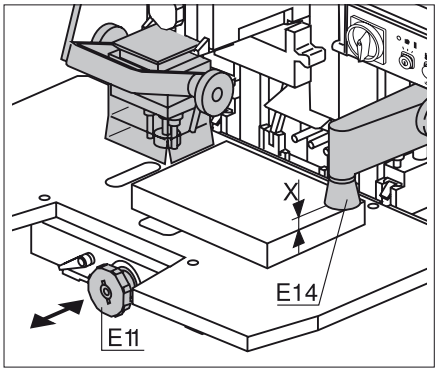
- The drill head brake point only has to be set for work pieces over 19 mm
- Loosen clamping screw (E18)
- Set the desired work piece thickness on the calibration
- Retighten clamping screw (E18)




**3.2.7) Mode switch (E19) "vertical drilling" and/or "vertical drilling and fittings insertion"**

**Pos. a Vertical drilling**
(The drill head of the vertical drilling unit is limited - the hold down clamps are released after every head movement)

**Pos. b Vertical drilling and fittings insertion**
(The vertical drilling unit goes the full stroke - the hold down clamps remain extended after drilling and are released once the swing arm resets)



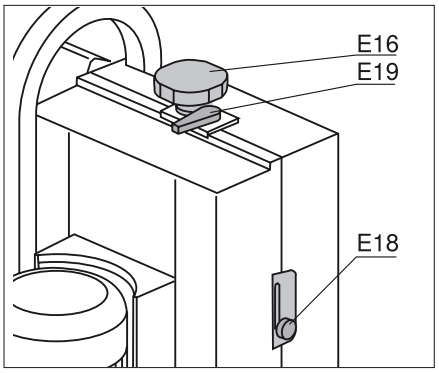

## 3.3 - Vertical drilling and fittings insertion

**3.3.1) Assembly of furniture hinges, furniture connectors, METABOX front fixing brackets, etc.**

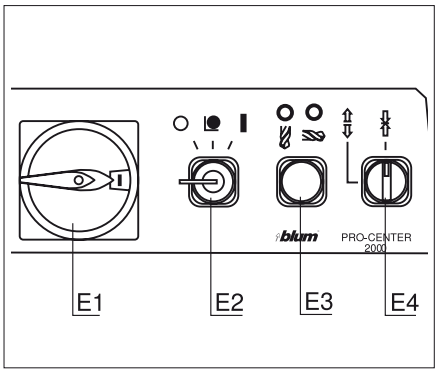
- Insert the gear box (see chapter 4 Gearbox replacement)
- Attach ruler
- Set work table (E11)

**!** **Important**
**Particular care must be taken when working on sections that jut out over the work table. Use extensions.**

- Set hold down clamp (E14)

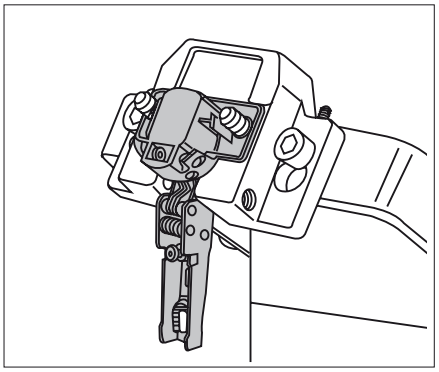



- Set drilling depth (E16)
- Set head brake point (E18)
- Set mode switch (E19) to Pos. “Drilling and insertion”

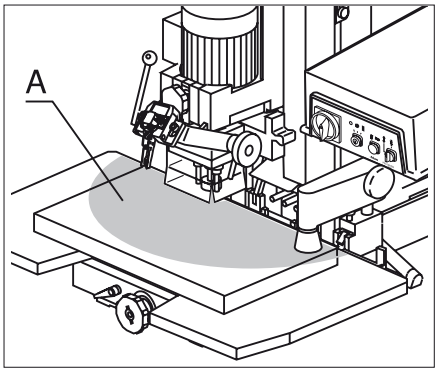



**3.3.2) Switch settings on the operator panel**

- Turn on extraction system
- Set main switch (E1) to Pos. **I**
- Set mode switch (E2) to Pos. **I** (operation)
- Set hold down clamp (E4) to Pos. ⇩⧓⇩ (clamp on)



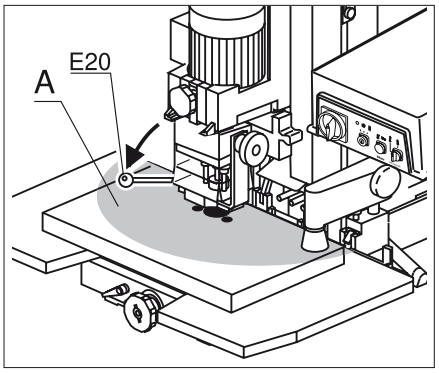
**3.3.3) Clipping fitting onto insertion ram**




### 3.3.4) Drilling

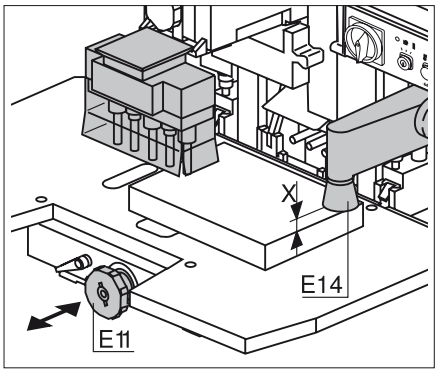
**ATTENTION**
**Make sure that only the work piece is in the working area of the machine.**
**Keep your hands out of working area (A) of the machine during drilling and insertion.**

- Press the start button (E3) until the drilling depth is reached
  - The hold down clamps secure the work piece
  - The vertical drilling unit moves downward
  - The drill bits rotate
- Release the start button (E3)
  - The vertical drilling unit returns to the starting position
  - The drill bits stop rotating
  - The hold down clamps remain extended
  - The drill hole is blown out




### 3.3.5) Inserting fittings

- Swivel down swing arm (E20) to the stop
- Press the start button (E3) until the fitting is completely inserted
  - The vertical drilling unit moves downward
- Release the start button (E3)
  - The vertical drilling unit returns to the starting position
- Swivel up swing arm (E20)
  - The hold down clamps are released



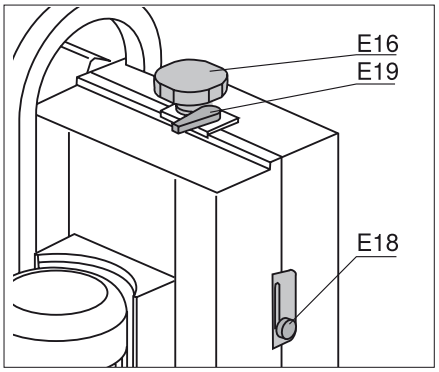

## 3.4 - Vertical drilling only

### 3.4.1) System drilling and drilling hole groups, etc.

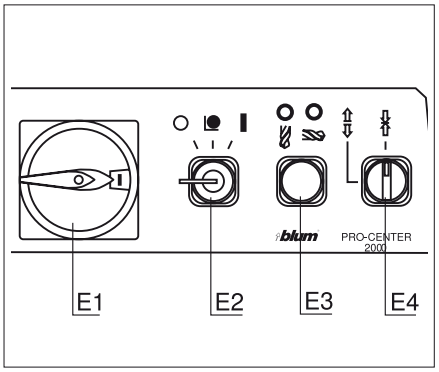
- Insert the drilling head (see chapter 4 Drilling head replacement)
- Attach ruler
- Set work table (E11)

**Important**
**Particular care must be taken when working on sections that jut out over the work table. Use extensions.**

- Set hold down clamp (E14)

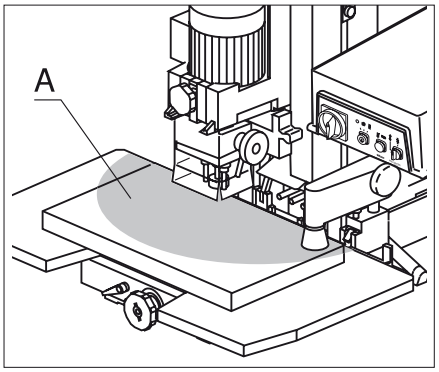



- Set drilling depth (E16)
- Set drill head brake point (E18)
- Set mode switch (E19) to Pos. “Drilling”




**3.4.2) Switch settings on the operator panel**

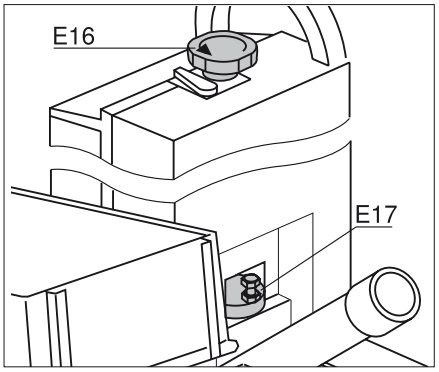
- Turn on extraction system
- Set main switch (E1) to Pos. **I**
- Set mode switch (E2) to Pos. **I** (operation)
- Set hold down clamp (E4) to Pos. ⇕ (clamp on)




**Drilling**

**Attention**
**Make sure that only the work piece is in the working area of the machine.**
**Keep your hands out of the working area (A) of the machine during drilling and insertion.**

- Press the start button (E3) until the drilling depth is reached
  - The hold down clamps secure the work piece
  - The vertical drilling unit moves downward
  - The drill bits rotate
- Release the start button (E3)
  - The vertical drilling unit does not return completely to the starting position (the work stroke is shorter)
  - The hold down clamps are released
  - The drill holes are blown out

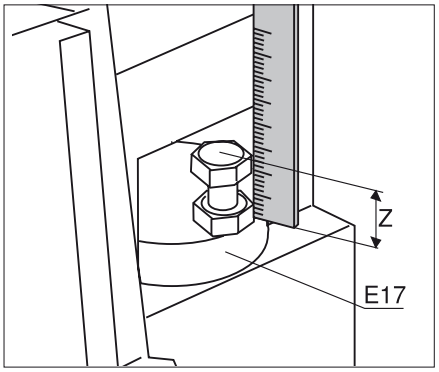



## 3.5 - Pre-setting revolver for drilling depth

**3.5.1) The drilling depths for panel thicknesses 16 and 19 mm are already pre-set**

- 2 additional dimensions can also be pre-set
- 3 screws (E29) with different lengths are enclosed
- The revolver (E17) is located on the back of the machine
- Turn the revolving handle (E16) to an open position on the revolver (E17)

**Note**
**The revolver can also be removed for setting.**
**To do so, lift the revolving handle (E16).**

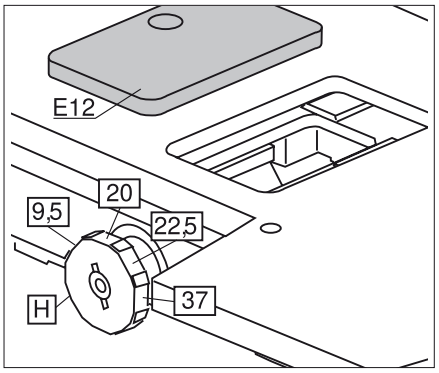



**3.5.2) Setting the stop dimension**

- Select a suitable screw (E29) depending on the desired drilling depth
- Turn screw to the desired dimension Z in the drill and lock using the counter nut

| | | | |
|---|---|---|---|
| a) Drilling depth | = | 13 | mm |
| Work piece thickness | = | X | mm |
| | = | > Z = X | |
| b) Drilling depth | = | Y | mm |
| Work piece thickness | = | X | mm |
| | = | > Z = X + 13 - Y | |

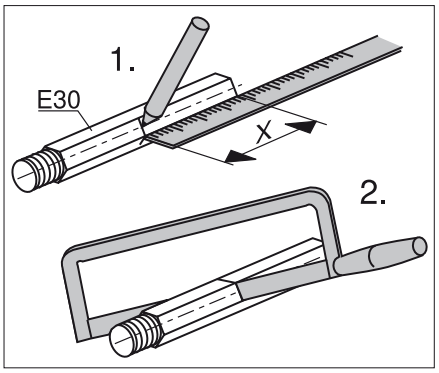
- Check dimension with a test drilling
- Label revolver handle (E16) using the included stickers




## 3.6 - Pre-setting revolver for work top setting

**3.6.1) The dimensions for drilling positions 9.5, 20, 22.5, 37 and for horizontal drilling (H) are factory set.**

- 3 additional dimensions can also be pre-set
- 3 stop rods (E30) are enclosed

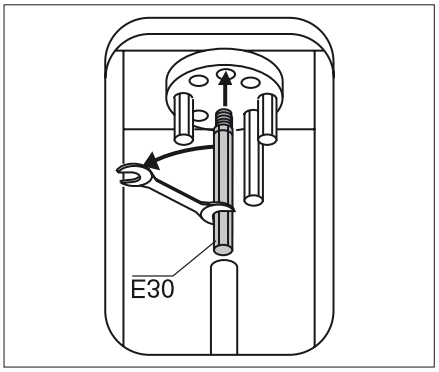



**3.6.2) Cutting stop rods to size**

- The desired drilling position should be pre-set:

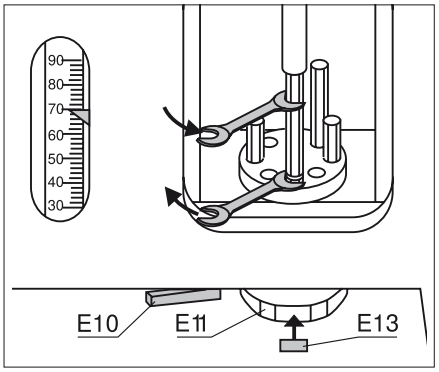
| Drilling position [mm] | X [mm] |
|---|---|
| 5 - 37 | 0 |
| 37 - 62 | 25 |
| 62 - 87 | 50 |
| 87 - 112 | 75 |
| 112 - 125 | 90 |

- Mark dimension X on the stop rod (E30) as shown in the top picture
- Cut the stop rod to the length using a hack saw and de-burr using a file




**3.6.3) Screwing the re-sized stop rod (E30) into the revolver**

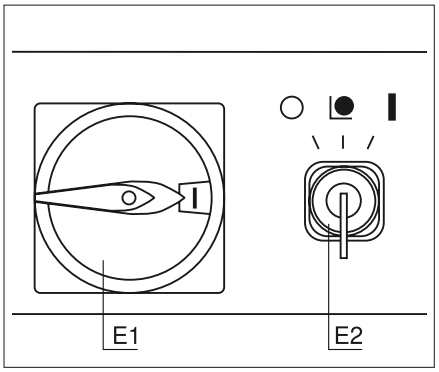
- Loosen the clamping lever (E10)
- Pull out work table completely
- Remove the cover (E12) in the work table
- Now fully screw the stop rod into a free drill hole in the revolver




**3.6.4) Setting the stop rod to the exact dimension**

- Set the work top to the desired drilling position using the calibration
- Retighten the clamping lever (E10)
- Unscrew stop rod to the stop and lock using the counter nut
- Check dimension with a test drilling
- Label revolver handle (E11) using the included stickers (E13)

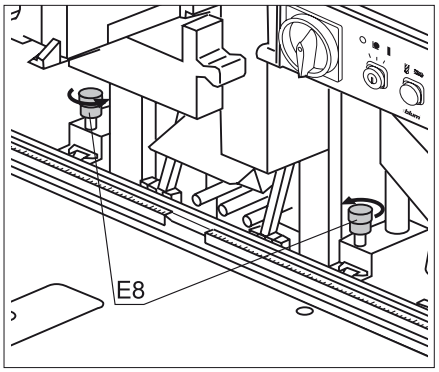
## 3.7 - Horizontal drilling unit



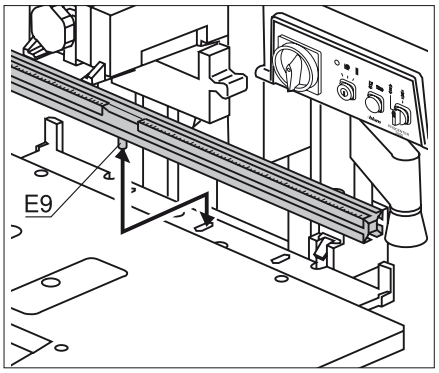

**3.7.1) Ruler change**

- Main switch (E1) at Pos. **I**
- Mode switch (E2) at Pos. symbol (setup)

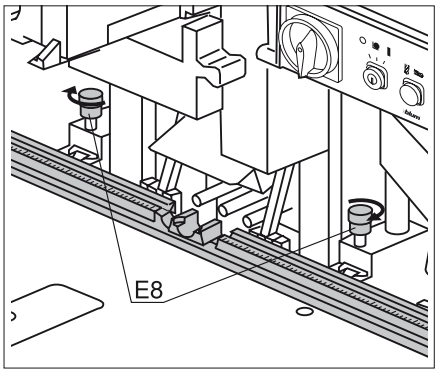
**!** **Important**
**Make sure that the mode switch (E19) is set to the Pos. "vertical drilling and fittings insertion" and the vertical drilling unit is completely set to the up position.**




- Loosen ruler clamping screws (E8) until the stop

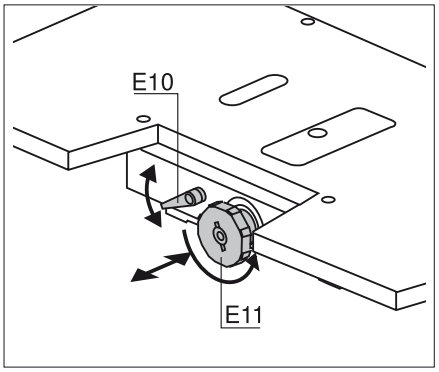



- Pull ruler forward and remove from the top
- Place ruler in the storage rack ruler holder




- Insert horizontal ruler (E9) into the specified elongated hole with the indexing pegs and slide all the way back.
- Retighten clamping screw (E8)

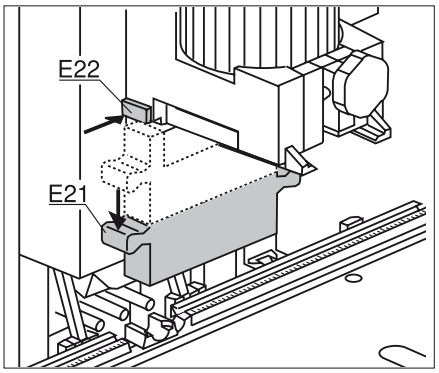
**!** **Important**
**Make sure that the ruler is inserted and clamped cleanly and is not askew.**




### 3.7.2) Setting the work table for horizontal drilling

- Loosen the clamping lever (E10)
- Pull out work table completely
- Set revolving handle (E11) to position “H”
- Slide work top to the stop
- Retighten the clamping lever (E10)

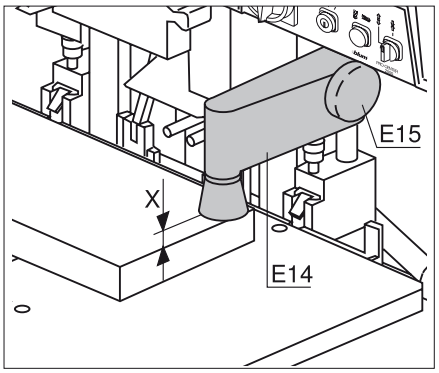
! **Note**
**Both control lights flash.**




### 3.7.3) Setting the horizontal hold down clamp (E21) to the down position

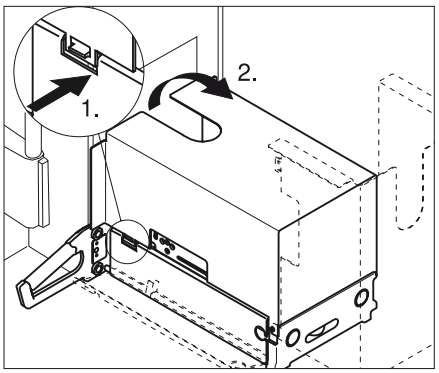
- Press in locking mechanism (E22)
- Use both hands to press down on the horizontal hold down clamp (E21) until it locks in this position

! **Note**
**The control light for horizontal drilling must light up.**



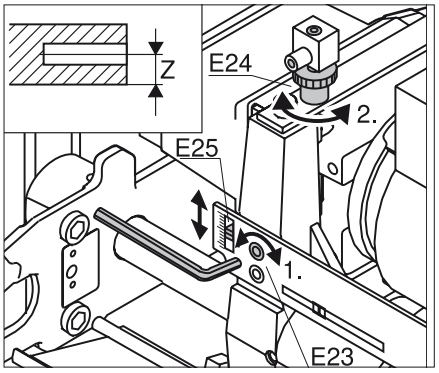

### 3.7.4) Setting hold down clamps (E14) to the material thickness

- Set hold down clamp (E4) to Pos. ⇕ (loosen)
- Open clamping screw (E15)
- Set the hold down clamps (E14) so that the distance between the door and the clamp guard is a max. x = 3 mm
- Tighten clamping screw (E15)



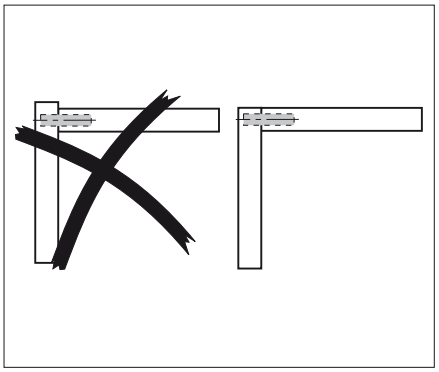

### 3.7.5) Opening the horizontal drilling unit cover

- Press in on the side cover and swivel back the cover hood.



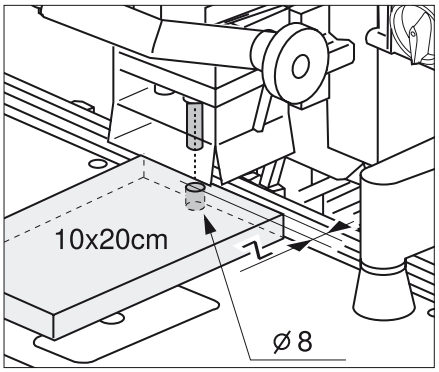

### 3.7.6) Setting the drilling distance (Z) (rough setting)

- Loosen the horizontal drilling unit clamping screw (E23)
- Set the desired dimension by turning the adjustment screw (E24). (Dimension can be read directly from the calibration (E25))
- Retighten fixing screw (E23)
- Close horizontal drilling unit cover

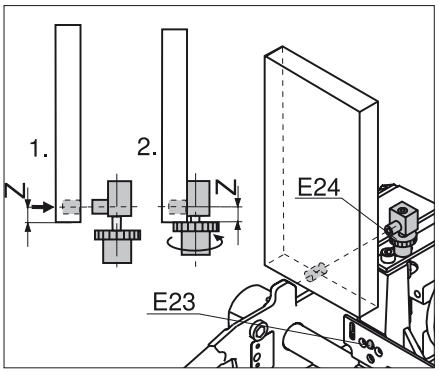


### 3.7.7) Setting the drilling distance (Z) (fine setting)

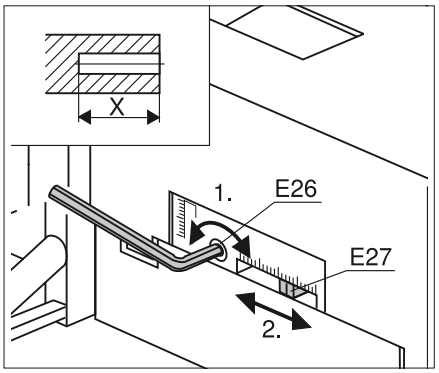
- For flush overlay connections




- Make vertical drilling (8 mm) in the sample board (approx.10 cm x 20 cm) using the desired drilling distance (z).

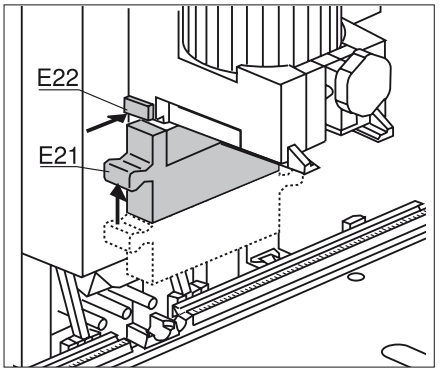



- Open horizontal drilling unit cover
- Loosen clamping screw (E23)
- Slide the sample board to the alignment pegs and turn the adjustment screw (E24) to the stop.
- Retighten clamping screw (E23)
- Remove sample board
- Close horizontal drilling unit cover




### 3.7.8) Setting the drilling depth (X)

- Loosen clamping screw (E26)
- Set the indicator (E27) to the desired dimension
- Retighten clamping screw (E26)

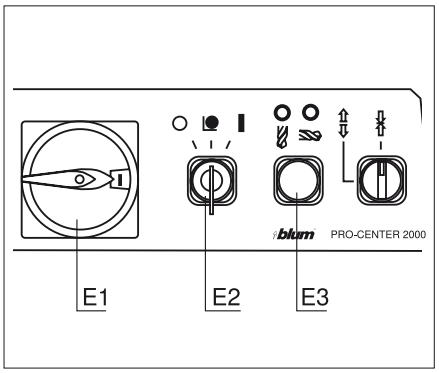



### 3.7.9) Drill bit change

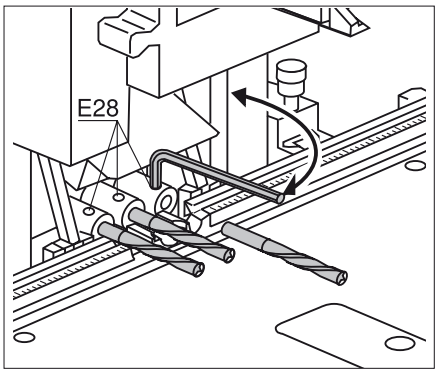
- Insert horizontal ruler
- Press in locking mechanism (E22)
- Push up horizontal ruler holder (E21) until it locks.

**! Note**
**Both control lights flash.**

- Loosen clamping screw (E26)
- Set the drilling depth (X) to 50 mm
- Retighten clamping screw (E26)

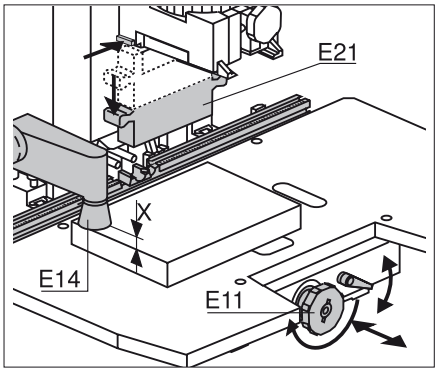



- Main switch (E1) at Pos. **I**
- Set mode switch (E2) to Pos. symbol (setup)
- Press the start button (E3) until the horizontal drilling unit is extended completely
  - The horizontal drilling unit extends
  - The drill bits do not rotate
- Release the start button (E3)
  - The horizontal drilling unit remains in this position




Use a hex wrench to loosed the grub screw (E28)

- Change drill bit
- Briefly press the start button (E3)
  - The horizontal drilling unit returns to the starting position




## 3.8 - Horizontal drilling

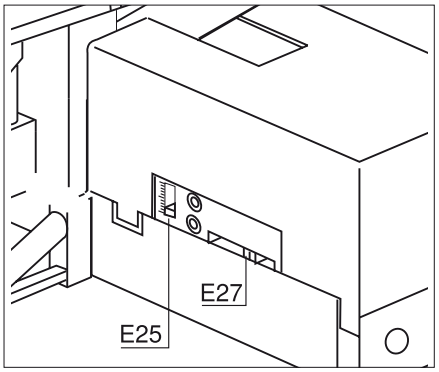
### 3.8.1) Drilling side holes

- Insert the horizontal ruler
- Set work top to Pos. “H” (E11)

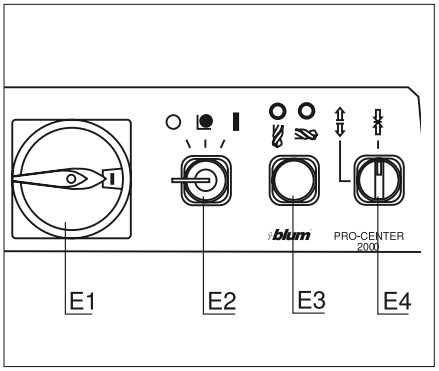
> **!** **Important**
> **Particular care must be taken when working on sections that jut out over the work table. Use extensions.**

- Set the horizontal hold down clamp (E21) to the down position
- Set hold down clamp (E14)

> **!** **Note**
> **Horizontal drilling is only possible with a closed horizontal drilling cover**

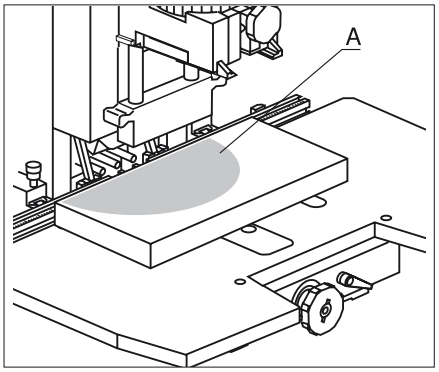



- Set the drilling distance (E25)
- Set drilling depth




### 3.8.2) Switch settings on the operator panel

- Turn on extraction system
- Set main switch (E1) to Pos. **I**
- Set mode switch (E2) to Pos. **I** (operation)
- Set hold down clamp (E4) to Pos. ⇳ (clamp on)




**Drilling**

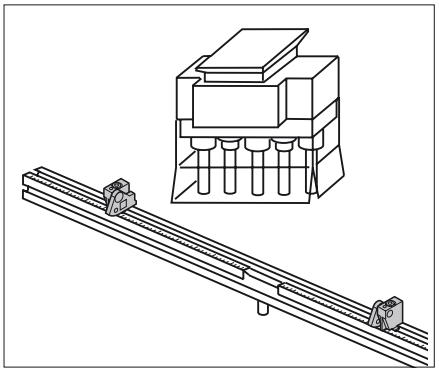
**ATTENTION**
**Make sure that only the work piece is in the working area of the machine.**
**Keep your hands out of working area (A) of the machine during drilling and insertion.**

- Press the start button (E3) until the drilling depth is reached

  - The vertical drilling unit moves downward and the horizontal hold down clamp secures the work piece
  - The horizontal drilling unit extends
  - The drill bits rotate

- Release the start button (E3)

  - The horizontal drilling unit returns to the starting position
  - The vertical drilling unit also returns to the starting position

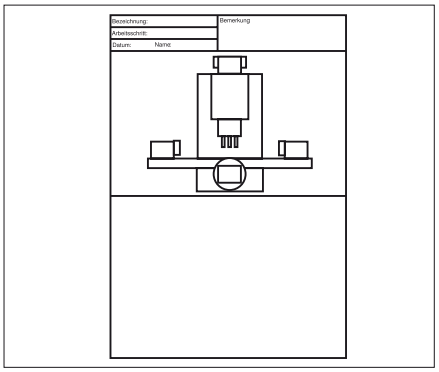


## 4.1 - Creating a setup plan

**Note**
**To better understand the following description and procedures, take a look at the included sample setup plan.**

### 4.1.1) Identifying drilling head and ruler

- In the overview on pages 38 and 39, select the required gearbox and ruler for the desired assembly application.




### 4.1.2) Template set-up plan

- Fill out header data

Explanation of symbols

 .. Enter partial description

 --- Enter work procedure

 ... Enter creation date

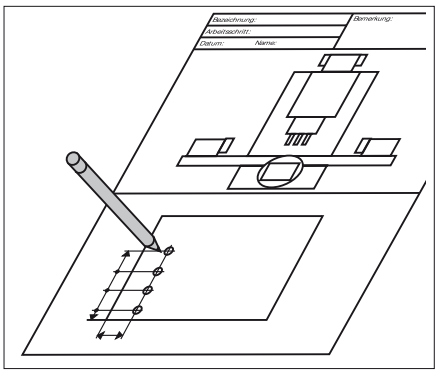
 ... Enter comments

 ... Enter page no.

 ... Enter number of pages

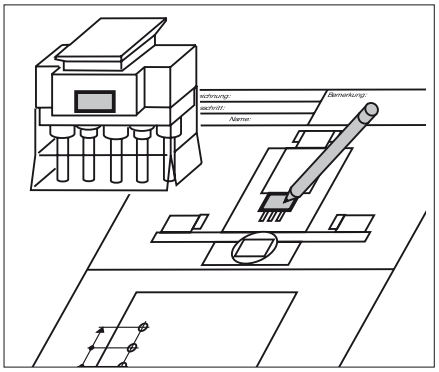
 ... Vertical drilling

 ... Horizontal drilling




### 4.1.3) Creating work piece drawings on the set-up plan

- Make hand drawings on set-up plan
  or
  Coping drawing to set-up plan



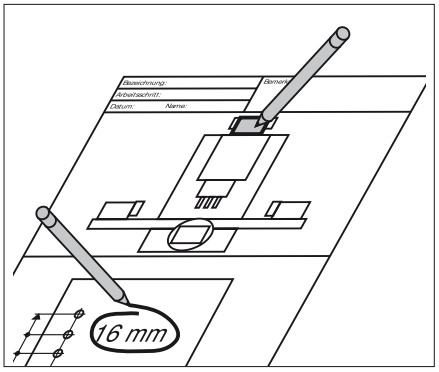
**4.1.4) Inserting the drilling head into the PRO-CENTER**

- Add the colour description for the selected drilling head to the setup plan
- In the fields

☐ ... Drilling

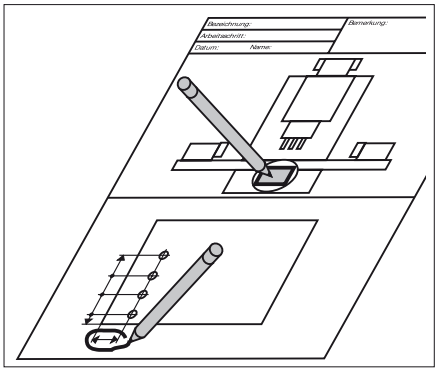
☐ + ... Drilling and insertion

check whether or not mode switch (E19) is set to vertical drilling or vertical drilling and fittings insertion.



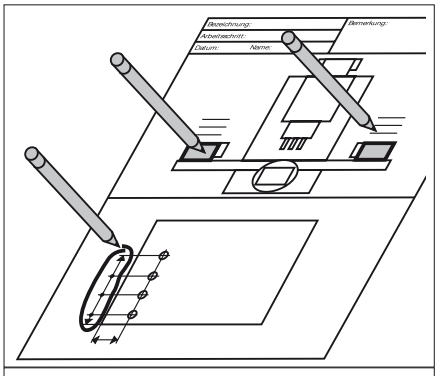

**4.1.5) Setting drilling depth**

- Add drilling depth description (colour) to the setup plan
- The drilling depth 12.7 mm for work piece thicknesses 16 and 19 mm is already pre-set and identified with the colours red and yellow.
- The setup for other work piece thicknesses is described in chapter 3.



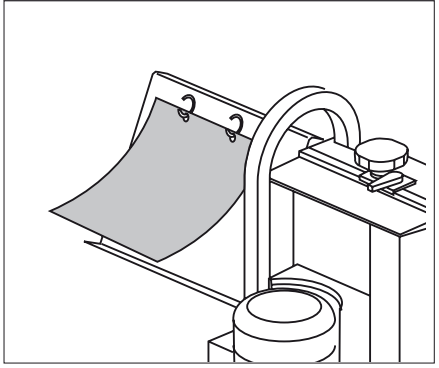
**4.1.6) Setting work top**

- Add drilling depth description (colour) to the setup plan
- The dimensions 9.5, 20, 22.5, 37 and those for the horizontal drilling are already preset and marked with the colours yellow, red, orange, green and white
- The set-up for other dimensions is described in chapter 3.
- The dimensions for the drilling depth (X) and drilling distance (Z) should also be entered in the set-up plan for the horizontal drilling



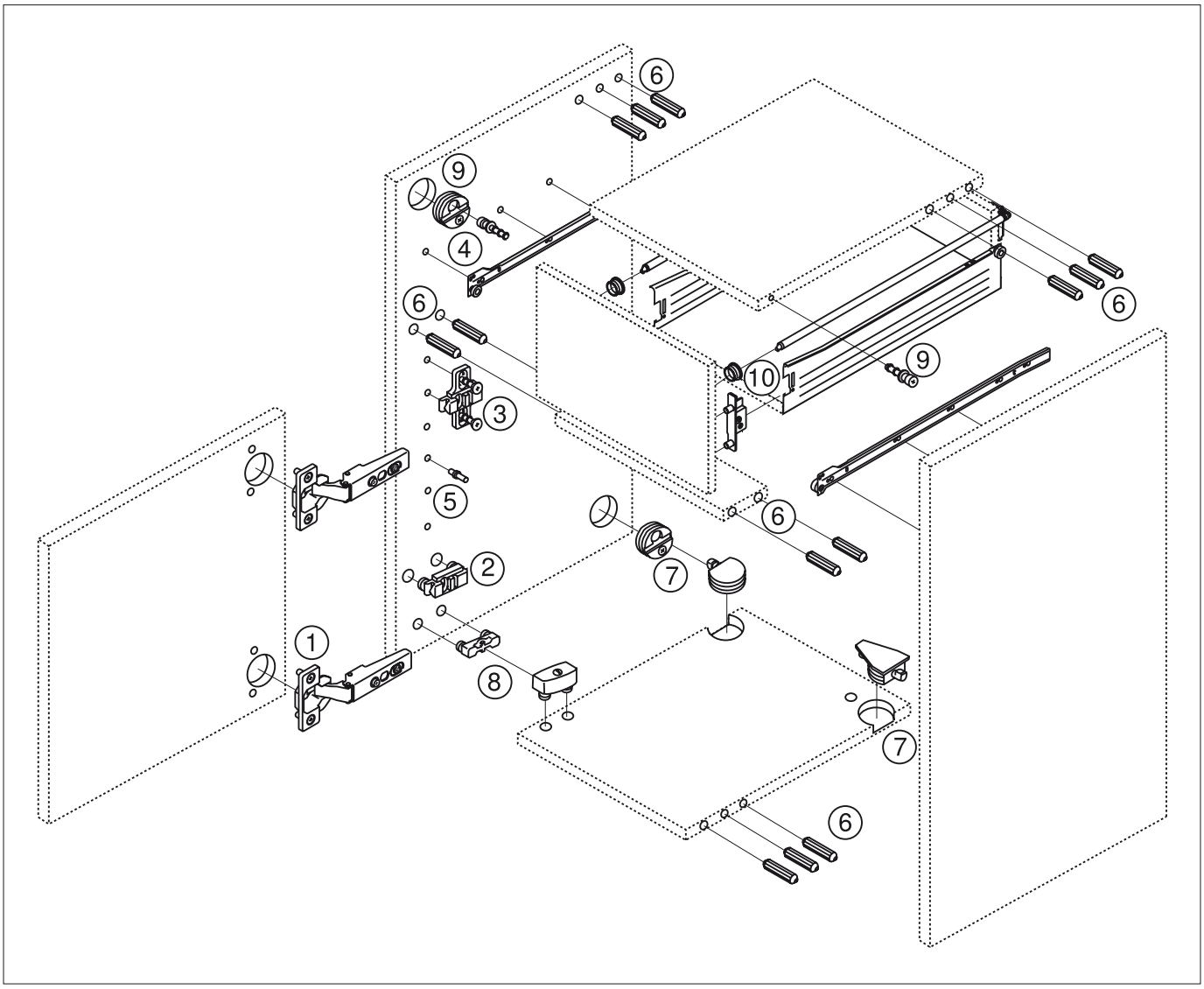
**4.1.7) Setting swivel stops**

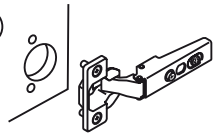
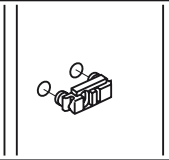
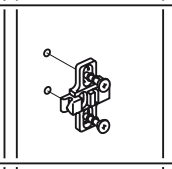
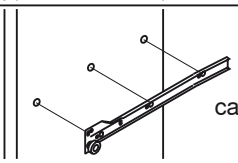
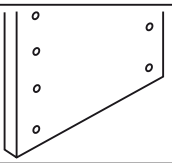
- Set the swivel stop to the ruler and label with the coloured stickers (The corresponding stickers are provided with PRO-CENTER 2000)
- Add ruler type and description to the setup plan
- Enter the dimensions of the ruler stops

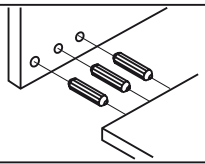
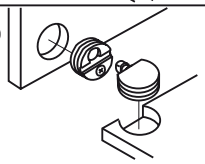
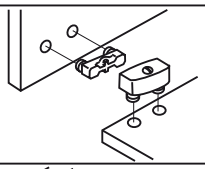
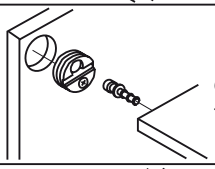
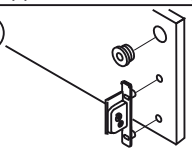


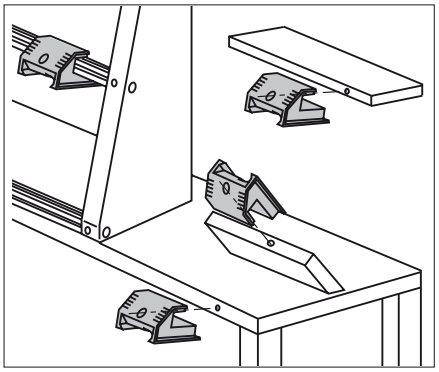
**4.1.8) Put the completed set-up plan into the clear plastic folder and store on the clipboard on the machine**

## 4.2 - Overview (assembly - drilling heads - rulers)



| | | Drilling head | | | | | | | | Ruler | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MB | MPH | MPV | D | SY-H | SY-V | BOX | H | ST | U | LR | H | V |
| ① |  hinge | ● | | | | | | | | ● | ○ | | ○ | ○ |
| ② |  Dowel mounting plates | | ● | | | | | | | ● | ○ | | ○ | ○ |
| ③ |  Cruciform mounting plate | | | ● | | | | | | ● | ○ | | ○ | ○ |
| ④ |  cabinet profile | | | | | ● | | | | ● | ○ | | ○ | ○ |
| ⑤ |  System drilling | | | | | | ● | | | ○ | ○ | ● | ○ | ○ |
| | | | | ● | | | | | | | ○ | | | |

| | | Drilling head | | | | | | | | Ruler | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MB | MPH | MPV | D | SY-H | SY-V | BOX | H | ST | U | LR | H | V |
| ⑥ |  dowel | | ○ | | ● | | | | ● | | | | ● | ○ |
| ⑦ |  cabinet connector | | ● | | | | | | | ● | ○ | | ○ | |
| ⑧ |  cabinet connector | | | ● | | | | | | ● | ○ | | ○ | |
| ⑨ |  cabinet connector | | ● | | | | | | ● | | | | ● | |
| ⑩ |  METABOX front fixing bracket | | | | | | | ● | | ● | ○ | | ○ | |
| | | | | ● | | | | | | | ○ | | | |

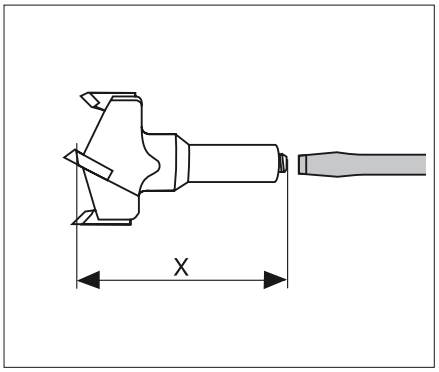


## 4.3 - Drilling heads overview

**4.3.1) General**

**a) Storing drilling heads**

- Attach drilling head holder to a wall, table or the storage rack

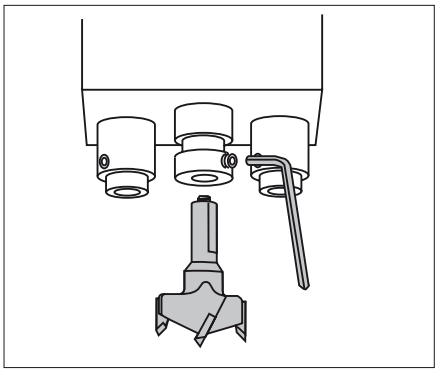



**b) Setting drill bit length**

**! Important**
**The total length of the drill bits (from bit-tip to adjustment screw) must be**
**- Vertical gearbox X=57 mm**
**- Horizontal gearbox X=77 mm**

**Adjustment**

- Set length by turning the drill bit adjustment screw using a screwdriver.

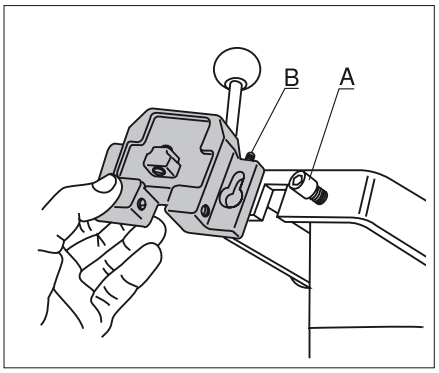


**c) Inserting drill bits into the chuck**

**⚠ Attention**
**Before changing drill bits, remove the drilling head from the machine.**

- Loosen the fixing screw using a hex wrench
- Insert drill bits into the chuck
  (The flat surface of the drill shaft must be placed in the direction of the fixing screw)
- Retighten fixing screw

**! Important**
**Insert cover caps into the unused chucks. This will keep the bits clean and prevent the fixing screws from coming out on their own.**

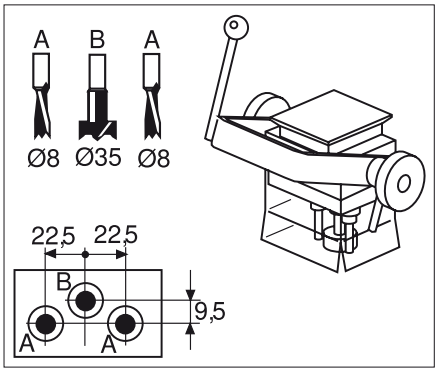



**d) Attaching insertion ram to the swing arm**

- Place insertion ram onto the two fixing screws (A) on the swing arm
- Tighten the fixing screws (A) so that the insertion ram is secure

**Setting insertion ram position**

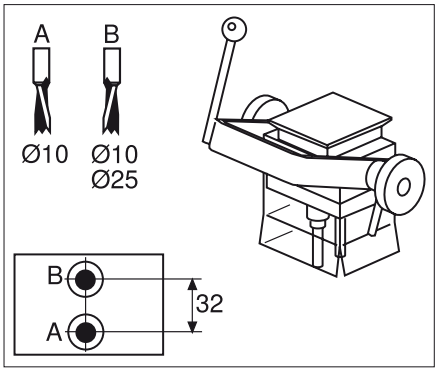
- Loosen fixing screws (A)
- Correct the position of the insertion ram by setting the adjustment screws (B)
- Retighten fixing screws (A)




**4.3.2) FH drilling head: MZK 2000**

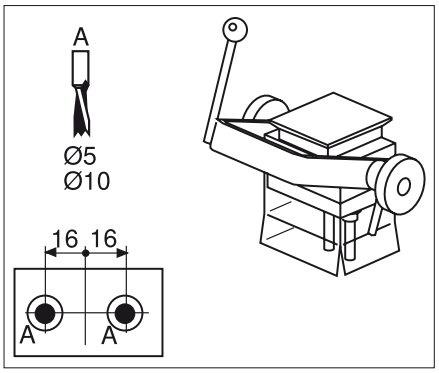
**a) Furniture hinge drilling head for standard hinges**

- Drilling head with 3 spindles
- With 13mm depth stop
- Swing arm for ram attachment
- Drill bits:
  (A) ... 2 x Ø 8 mm Counter clockwise
  (B) ... 1 x Ø 35 mm Clockwise
- Colour coded bits:
  Counter clockwise = red
  Clockwise = black



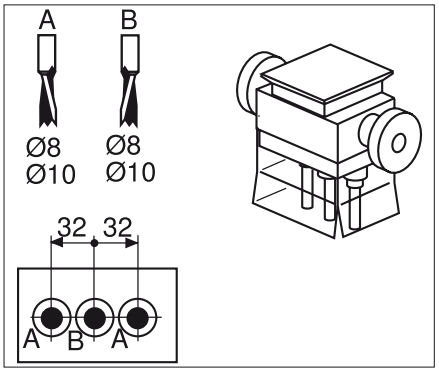

**4.3.3) MPH drilling head: MZK.2100 for dowel plates and furniture connectors**

- Drilling head with 2 spindles
- Swing arm for ram attachment
- Drill bits:
  (A) ... 1 x Ø 10 mm Counter clockwise
  (B) ... 1 x Ø 10 mm Clockwise
  or
  (B) ... 1 x Ø 25 mm Clockwise
- Colour coded bits:
  Counter clockwise = red
  Clockwise = black



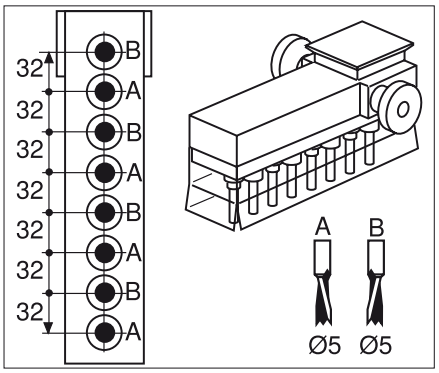

**4.3.4) MPV drilling head: MZK.2110 for cruciform mounting plates and furniture connectors**

- Drilling head with 2 spindles
- Swing arm for ram attachment
- Drill bits:
  (A) ... 2 x Ø 5 mm Counter clockwise
  or
  (A) ... 2 x Ø 10 mm Counter clockwise
- Colour coded bits:
  Counter clockwise = red
  Clockwise = black



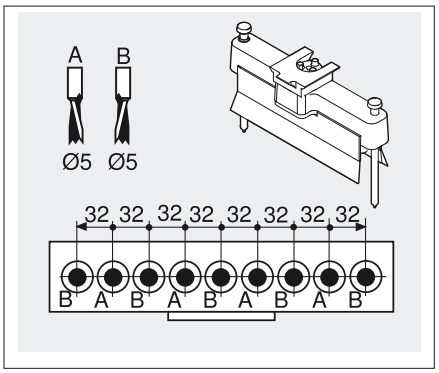

**4.3.5) D drilling head: MZK.2400 for wooden dowel connections**

- Drilling head with 3 spindles
- Drill bits:
  (A) ... 2 x Ø 8 mm Counter clockwise
  (B) ... 1 x Ø 8 mm Clockwise
  or
  (A) ... 2 x Ø 10 mm Counter clockwise
  (B) ... 1 x Ø 10 mm Clockwise
- Colour coded bits:
  Counter clockwise = red
  Clockwise = black



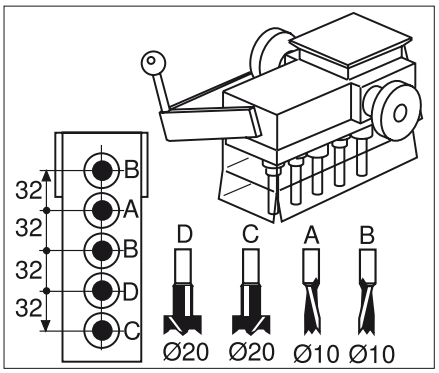

**4.3.6) SYH drilling head: MZK.2200.01 for all Blum cabinet profiles**

- Drilling head with 8 spindles
- Drill bits:
  (A) ... 4 x Ø 5 mm Counter clockwise
  (B) ... 4 x Ø 5 mm Clockwise
- Colour coded bits:
  Counter clockwise = red
  Clockwise = black




**4.3.7) SYH drilling head: MZK.2810.01 for hole groups and system drilling**

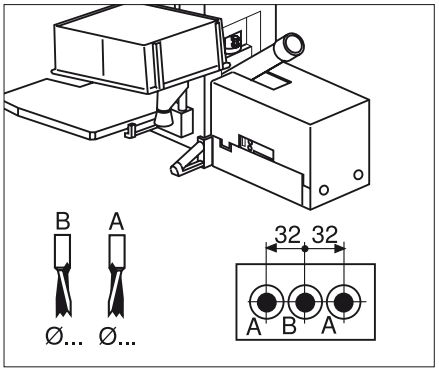
- Drilling head with 9 spindles
- Drill bits:
  (A) ... 4 x Ø 5 mm Counter clockwise
  (B) ... 5 x Ø 5 mm Clockwise
- Colour coded bits:
  Counter clockwise = red
  Clockwise = black




**4.3.8) BOX drilling head: MZK.2230 for all METABOX front fixing brackets and back fixing positions**

- Drilling head with 5 spindles
- With drilling depth stop
- Swing arm for ram attachment
- Drill bits:
  (A) ... 1 x Ø 10 mm Counter clockwise
  (B) ... 1 x Ø 10 mm Clockwise
  (C) ... 1 x Ø 20 mm Clockwise/
  (D) ... 1 x Ø 20 mm Counter clockwise
- Colour coded bits:
  Counter clockwise = red
  Clockwise = black

**Important**
**For assembly with a gallery fixing, the gallery fixing must be inserted first and then the front fixing bracket is inserted after the second insertion of the fitting.**

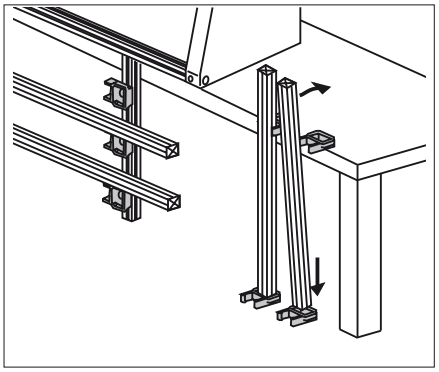



**4.3.9) H drilling head: M65.26XX horizontal drilling unit for dowel connections, cabinet connector screws and furniture connectors**

- Drilling head with 3 spindles
- Drilling head cannot be changed
- Drill bits:
  (A) ... 2 x Ø ... mm Counter clockwise
  (B) ... 1 x Ø ... mm Clockwise

**!** **Important**
**The drill bit length for Ø 8 and Ø 10 mm is 77 mm.**
**The 57 mm drill bit must be used for a Ø 5 mm drill bit (precision).**
**In this case, 20 mm must be calculated for the drilling depth setting (e.g. set 45 mm for a 25 mm drilling depth).**

- Colour coded bits:
  Counter clockwise = red
  Clockwise = black



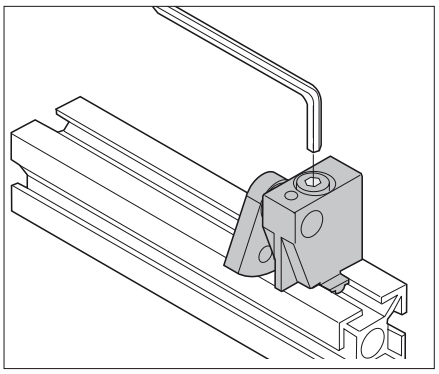
## 4.4 - Rulers overview

**4.4.1) General**

**a) Attaching rulers**

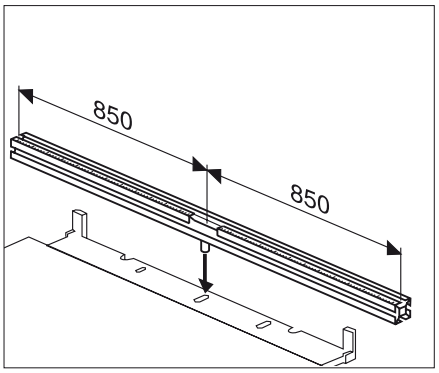
- Installing ruler holders to the work top:
- Attach a ruler holder to the work top surface.
- Attach the second to the floor
- Place the ruler vertically into the lower holder and clip into the top holder.

- Installing ruler holders to the storage rack:
- Secure the ruler holders to the vertical profiles of the storage rack on the left and right.
- Insert the rulers level in the holders.



**b) Presetting swivel stops**

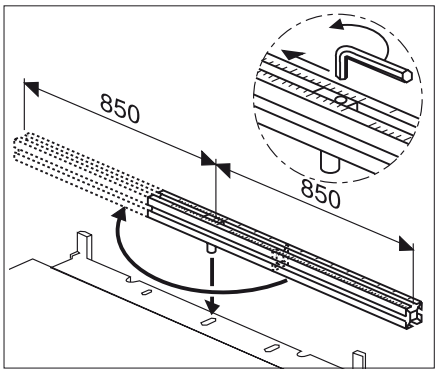
- Set the swivel stops to the desired dimension and clamp.




**4.4.2) ST ruler: MZL.2000 standard ruler**

- The scale is symmetrical starting from the 0 point going to 850 mm

- This ruler can be used universally for vertical drilling




**4.4.3) R ruler: MZL.2010 Reversible ruler**

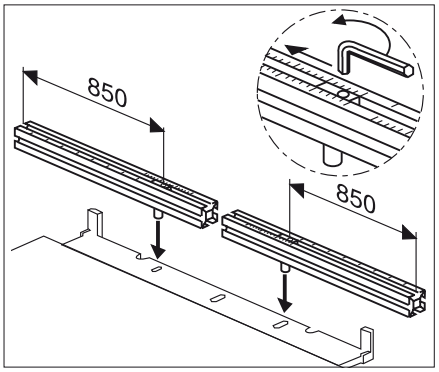
- One-sided scale starting from the 0 point to 850 mm

- This ruler is installed one-sided either on the right or left.
  It must be reversed to drill right or left pieces.
  This makes the results more exact since the stops only need to be set once.

- 0 point setting
  The 0 point can be set to compensate for differences between the door dimension and the cabinet dimension. The stops thus do not need to be adjusted.

Adjustment
- Loosen the clamping screw with a hex key and set the part to the desired dimension

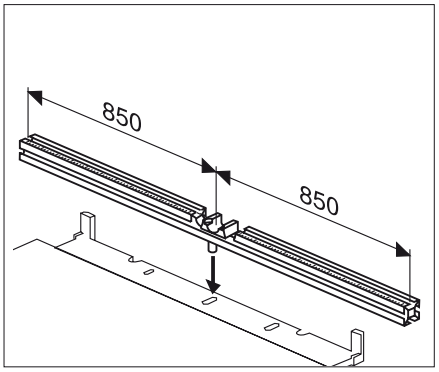
- Retighten clamping knob




**4.4.4) LR ruler: MZL.2080 system drilling ruler**

- two-piece
- Calibration per side is 850 mm
- The 0 position reference point starts from the outer spindle of the SYV drill head
- 0 point setting
  To set the first drilling, e.g. to 8 mm, the 0 point must be set to 8 mm. The stop settings do not need to be changed.

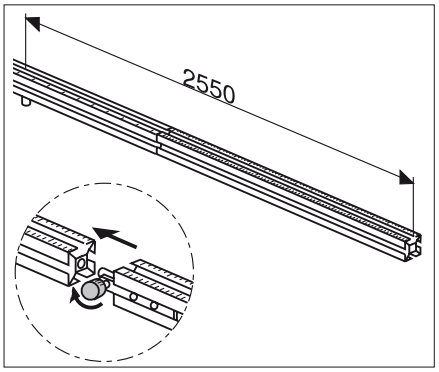
Adjustment
- Loosen the clamping screw with a hex key and set the part to the desired dimension
- Retighten clamping knob




**4.4.5) H ruler: MZL.2060 horizontal ruler**

- The calibration is symmetrical starting from the 0 point going to 850 mm
- Recesses for the horizontal drill bits
- This ruler must be inserted for horizontal drilling

**Note**
**The MZR.1200 centre stop can only be used for this ruler.**

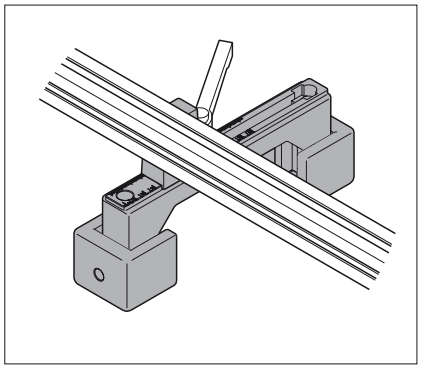



**4.4.6) V ruler: MZL.2090 extension ruler**

- Connecting extensions on the basic ruler from the 0 point to 2550 mm.

Assembly:
- Slide extension ruler onto the ruler on the machine
- Clamp with the clamping knob

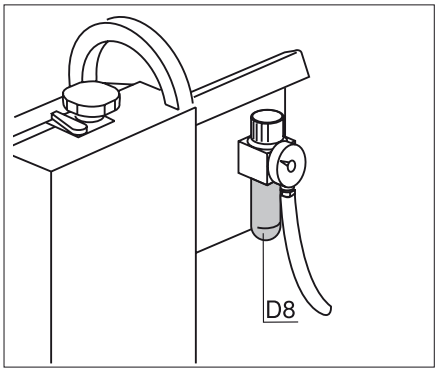
**Important**
**Support the extension ruler using ruler supports.**



**4.4.7) Ruler supports: MZV.2100 for extension ruler**

- Attach the ruler supports to the table at the outside third of the extension ruler. Place a 40 mm high block of wood underneath. (countersunk chipboard screws 6x50)

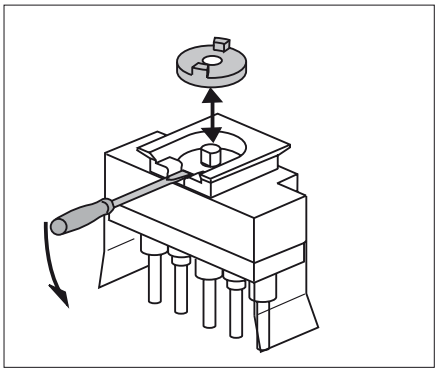
**Important**
**Make sure that the calibration on the ruler support corresponds to the one on the work table of the PRO-CENTER 2000. Pay attention to the adjustment area of the work table.**
- Before setting the work table, loosen the clamping lever on the ruler support. Then retighten.




## 5.1 - Maintenance

### 5.1.1) Maintenance

- Regularly remove drilling dust from the machine.
- Remove dirt and water residue that collects in the air filter unit (D8) on a regular basis
- Check the electrical and compressed air lines on a regular basis



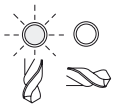
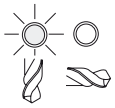
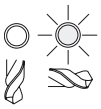
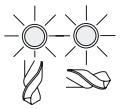
### 5.1.2) Replacing a damaged gearbox coupling

**ATTENTION**
**Replace broken or damaged parts immediately.**

**Only use Blum original parts.**

- Use a flathead screwdriver to remove the damaged coupling
- Slip the replacement coupling onto the shaft until it aligns with the shaft at the top

## 6.1 - What do the individual flashing signals mean?

| Error | Cause | Solution | Note |
|---|---|---|---|
| Control light for vertical drilling flashes quickly  | Gearbox is not clamped properly | Tighten the drilling head locking device (E7) until the control light stops flashing | See chapter 3 |
| Control light for vertical drilling flashes slowly  | Mode switch (E19) is set to "vertical drilling" and the drilling head swing arm has been set to the down position | Swivel up swing arm | none |
| Control light for horizontal drilling flashes slowly  | The machine was set for horizontal drilling, but the swing arm is swivelled downward | Swivel up swing arm | none |
| Both control lights are flashing slowly  | **a) If you have switched from vertical to horizontal drilling:** | | |
| | The horizontal hold down clamp was not set to the down position | Set the horizontal hold down clamp to the down position | See chapter 3 |
| | Horizontal ruler was not inserted | Insert horizontal ruler | See chapter 3 |
| | Work table was not set to the "H" position | Set work table to the "H" position | See chapter 3 |
| | **a) If you have switched from horizontal to vertical drilling:** | | |
| | The horizontal hold down clamp was not set to the top position | Set the horizontal hold down clamp to the top position | See chapter 3 |
| | Work table is still set to the "H" position | Set the work table to another dimension or replace the horizontal ruler with a standard ruler | See chapter 3 |

## 6.2 - Error during vertical drilling

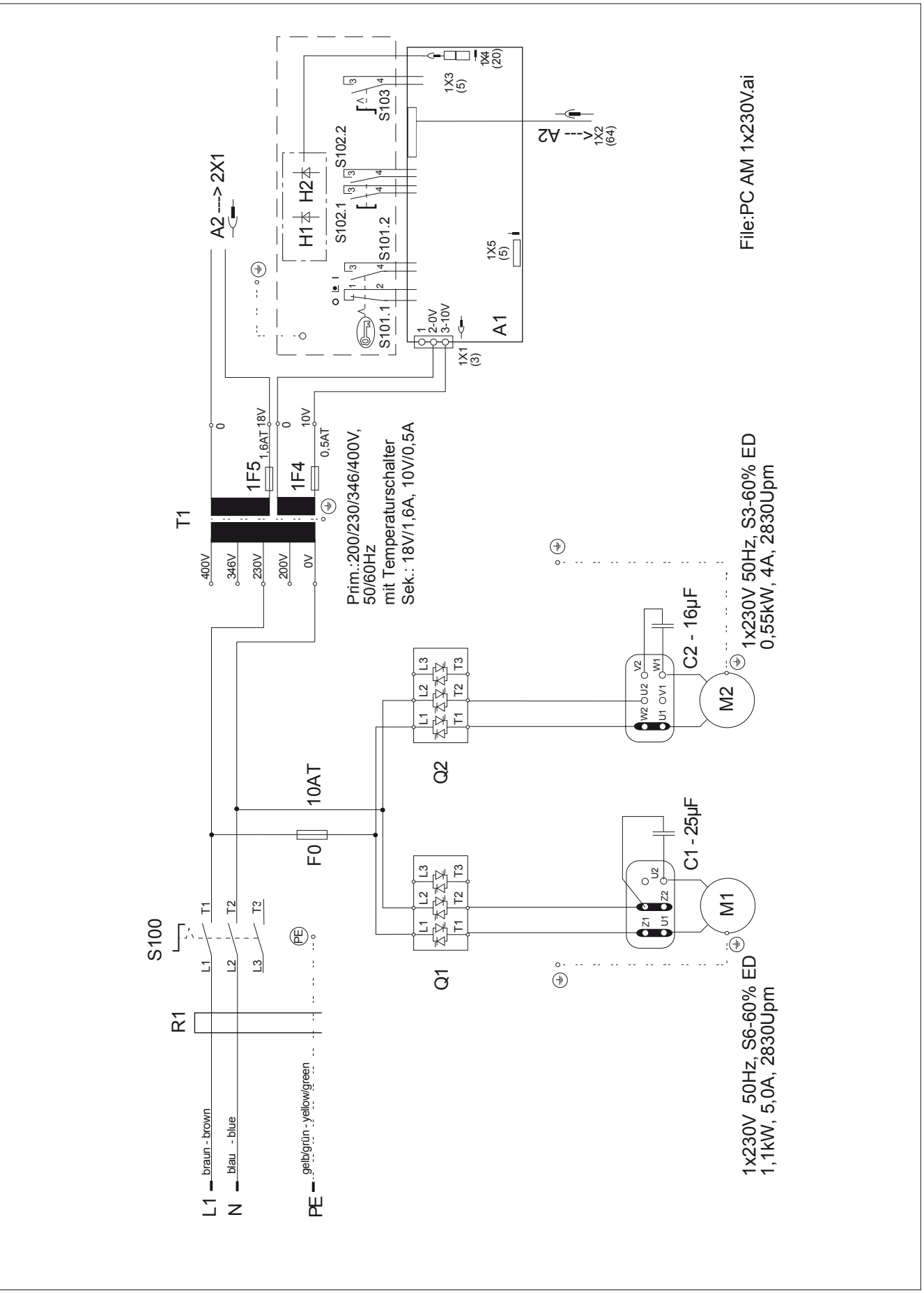
| Error | Cause | Solution | Note |
|---|---|---|---|
| Drilling depth does not match | Drilling depth revolver is set to the wrong position | Set the drilling depth revolver to the correct work piece thickness | See chapter 3 |
| | Drill bits are set too short or too long | Drilling length set to 57 mm | See chapter 4 |
| | Drill bits not completely inserted into the chuck | Clean dirt from chuck and completely insert drill bit | See chapter 4 |
| | Work piece thickness does not correspond to the given value (e.g. 15 mm instead of 16 mm) | Check work piece thickness<br>Reset any stops on the revolver | none<br>See chapter 3 |
| | Machine is somehow running into an object | Remove object | none |
| | Feed switch was released before the drilling depth was reached | Keep feed switch engaged until the drilling depth has been reached | none |
| Drillings are off centre or in the wrong position | The swivel stops were not set properly on the ruler | Check the position of the stops and correct if necessary | none |
| | The ruler is not clamped or not clamped cleaning | Make sure that the ruler is clamped securely | none |
| | There are chips between the ruler and the work piece | Remove dirt and chips | none |
| | The work table is not set correctly | Set work table to the correct position | See chapter 3 |
| | Extension ruler is not attached properly | Check ruler attachment and extension | none |
| | The work table was not clamped | Secure work table with the clamping lever | none |
| | The work piece was placed on the ruler properly and pressed to the stops | Make sure that the work piece is placed properly on the ruler and to the stops<br>Use hold down clamp | none |
| Fittings cannot be inserted or only with great difficulty | The air pressure is too low | Air pressure must be 6 bar | none |
| | Insertion ram or swing arm is running up against an object | Check the position of the insertion ram<br>Check the drilling distance | none |
| | The surface of the work piece is too hard | Bevel drillings | Use slip-on countersink |
| | Drillings are not deep enough | See point “Drilling depth not reached” | none |
| | The drilling diameters are too small | Check drill bits and replace if necessary | none |
| | The insertion ram has shifted or turned | Set insertion ram | See chapter 4 |
| | The work piece has shifted | Set the hold down clamp so that the it is held secure | See chapter 3 |

| Error | Cause | Solution | Note |
|---|---|---|---|
| Drilled holes too large, oval or ragged | Drill diameter is too large | Check drill bits | none |
| | Drill bits are twisted | Replace drill bits | none |
| | Drill bits are dull | Repoint drill bits or replace | none |
| | Head speed for drilling is too high | Set proper head brake point | See chapter 3 |
| | Drilling through work pieces | Use roof tip drill bit to drill through | none |
| Drill blockage in wood | Improper material has been drilled | Only use work pieces made from wood, particle board or plastic coated wood | none |
| | Head speed for drilling is too high | Set proper head brake point | See chapter 3 |
| | Drill bits are dull | Repoint drill bits or replace | none |
| | Drill rotation not set properly | Install counter clockwise drill bits into chucks marked in red and clockwise drill bits into chucks marked in black | none |

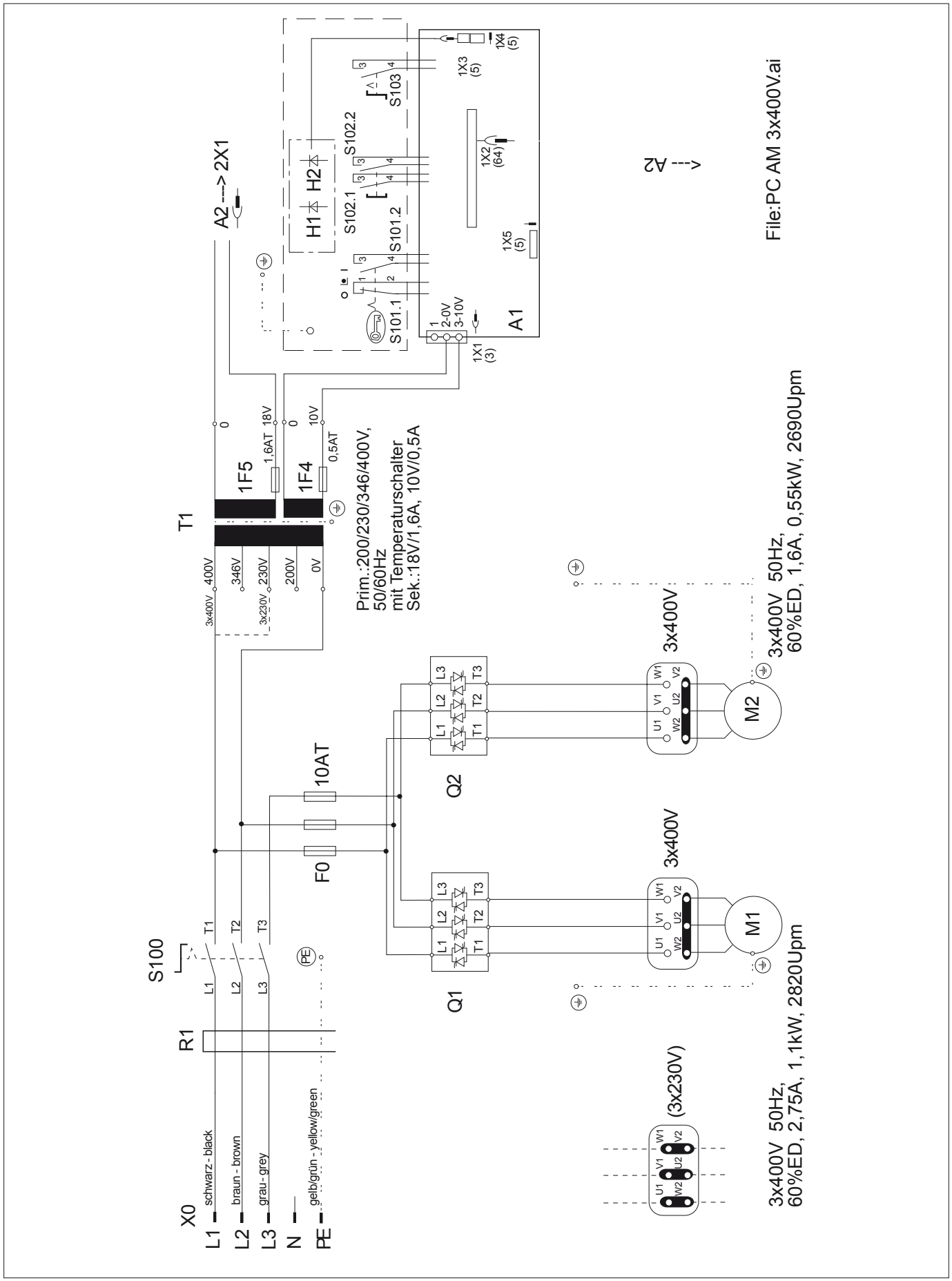
## 6.3 - Error during horizontal drilling

| Error | Cause | Solution | Note |
|---|---|---|---|
| Drilling depth not reached | Drilling depth was not set correctly | Set correct drilling depth | See chapter 3 |
| | Drilling length does not match | Drilling length should be 77 mm | none |
| | Drill bits not completely inserted into the chuck | Clean chuck and/or use cover caps if no drill bits are inserted | none |
| | The horizontal drilling unit is filled with chips | Open horizontal drilling unit and remove chips | none |
| Drilling position is incorrect | The drilling distance is not set properly | Correct setting, tighten clamping screw | See chapter 3 |
| | The stops were not set properly on the ruler. | Check the position of the stops and correct if necessary | none |
| | There are chips between the ruler and the work piece and/or under the work piece | Remove chips | none |

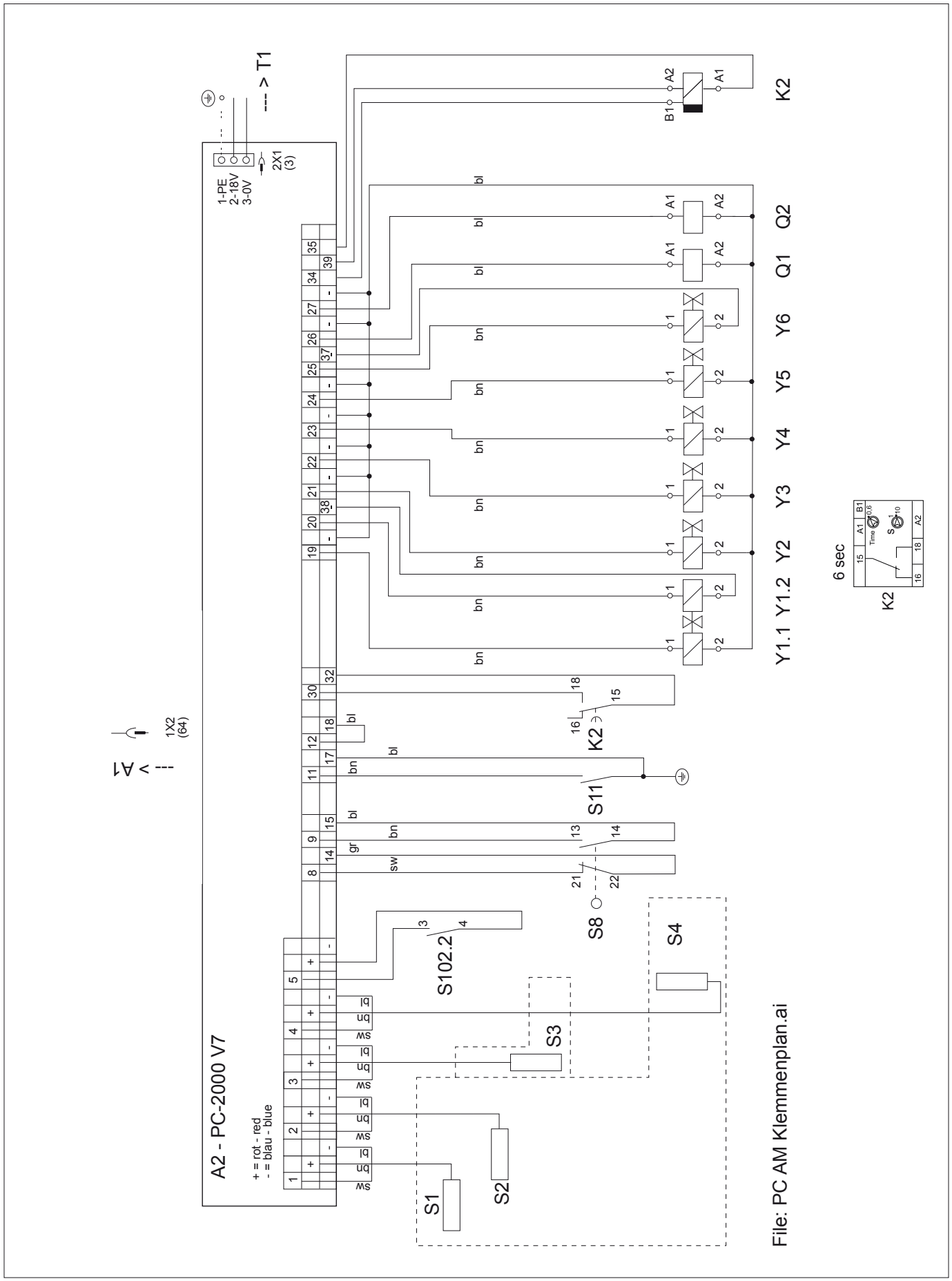
## 7.1 - Electrical diagram 1x230 V 50 Hz



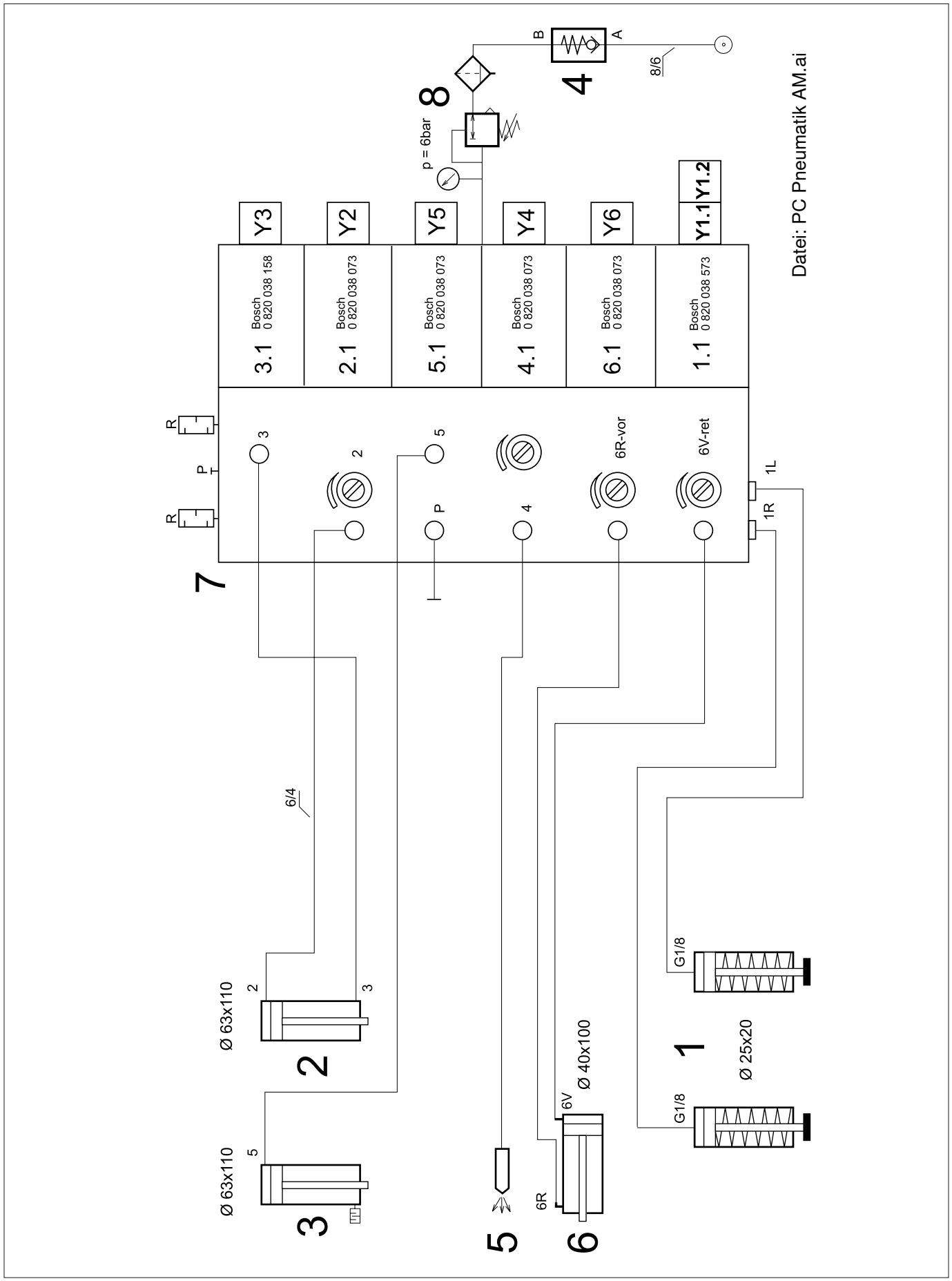
## 7.2 - Electrical diagram 3x400 V 50 Hz

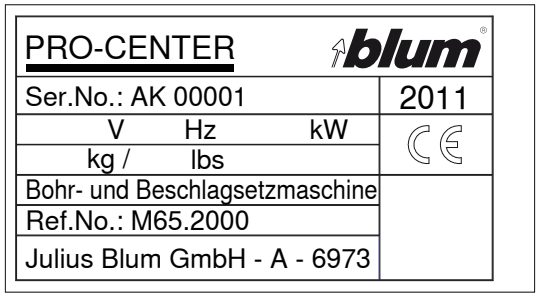


## 7.3 - Electrical diagram



## 7.4 - Pneumatic diagram






| | |
|---|---|
| RU | Сверлильно-присадочный станок |
| BG | Пробивни машини |
| DA | Bore- og beslagssætmaskiner |
| DE | Bohr- und Beschlagsetzmaschine |
| EN | Drilling and insertion machine |
| ET | Puurimis- ja sisestusmasinad |
| FI | Asennusporakoneet |
| FR | Machine pour percer et poser des ferrures |
| EL | Μηχάνημα διάτρησης και τοποθέτησης |
| IT | Macchina forainseritrice |
| LV | Urbšanas un furnitūras iestrādāšanas iekārta |
| LT | Gręžimo-montavimo staklės |
| NL | Boor- en beslagmachines |
| PL | Maszyna do nawiercania i osadzania okuć |
| PT | Furadeira e máquina para a montagem de ferragens |
| RO | Maşină de găurit şi montat feronerie |
| SV | Borr- och beslagsmonteringsmaskiner |
| SK | Vŕtací a lisovací stroj |
| SL | Vrtalni stroj in stroj za okovje |
| ES | Máquinas para taladrar y de instalación de herrajes |
| CS | Vrtací a lisovací stroje |
| HU | Fúró- és vasalatbepréselő gépek |

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