WABECO

MASCHINENMANUFAKTUR seit 1885


# OPERATING INSTRUCTIONS

Drilling milling stands **BF1240 | BF1242 | BF1243 | BF1244**

Drilling stands **B1200 | B1230**

2-axis coordinate tables **K400 | K600**

and accessories

wabeco-rs.de

Walter Blombach GmbH Am Blaffertsberg 13, 42899 Remscheid, Germany

Phone +49 (0)2191 597-0 Fax +49 (0)2191 597-42 E-Mail info@wabeco-remscheid.de

**Please read before commissioning!**

Anyone who operates, repairs or performs maintenance on the unit must have read the operating instructions (in particular the safety provisions) prior to commissioning.

We would like to point out that we cannot be held liable for damage which arises as a result of non-compliance with these operating instructions.

The operator of the unit must ensure that at least one copy of the operating instructions is kept in the immediate vicinity of the unit and is accessible to persons working with the unit.

English translation from German
Version from 08/2022

Dear Customer,

By purchasing this WABECO unit, you have chosen a quality product. The unit was manufactured with the greatest of care and subjected to precise quality control.

These operating instructions are intended to help you carry out work in a safe and proper manner. We therefore ask you to carefully read and observe the relevant instructions.

After unpacking the unit, check whether any kind of transport damage has occurred. Reported complaints, no matter what kind, must be reported immediately. Complaints made later on cannot be accepted.

We reserve the right to make changes to the design, equipment and accessories in the interest of ongoing development. For this reason, no claims can be derived from specifications, figures or descriptions. If anything is unclear, we would be happy to provide you with additional information

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## 1. Delivery

After delivery, check:

1. whether the packaging has been damaged.
2. whether the product has transport damage or is subject to any complaints. In this case, we ask you to notify us immediately. Complaints made later on cannot be accepted.

## 2. Important safety information

1. Nicht ohne Schutzbrille arbeiten
2. We recommend wearing a dust mask
3. Gloves may not be worn while working with power-driven tools and workpieces
4. Hearing protection must be worn if the noise emission sound pressure level at the workplace is 80 dB(A) or higher.
5. Wear snug-fitting clothing and, in case of long hair, a hair net
6. Do not wear any ample or loose items of clothing (shirt sleeves, jewelry etc.)
7. Workpieces must be secured using suitable clamping means, e.g. V-blocks, clamping jaws, a machine vice etc.
8. Do not remove accumulating chips while the drive unit is running or with your hands. Use an appropriate tool (hand broom, hook, brush etc.) for this purpose.
9. Workpieces must be secured in such a way that they cannot be moved out of position by the torque of the tools, e.g. drill or milling cutter.
10. When working with flammable materials, smoking and open flames are prohibited.
11. Always work in well-ventilated rooms and use an extraction system if possible.
12. Check to make sure that all attachments, tools and workpieces are properly secured before switching on the drive unit.
13. Do not make measurements etc. in the work area of the workpieces when the drive unit is switched on
14. Do not brake workpieces or tools with your hands or other objects.
15. Stay at the turning unit until the drive unit has come to a full stop.

## 3. Important safety information for turning work with the BF drilling milling stand

1. Turn the clamped workpiece by hand and ensure that it can rotate freely before switching on the drive unit.
2. Look out for any foreign objects (wires, nails etc.) or irregularities (e.g. knot holes) in the material to be processed.
3. Use only turning tools suitable for the intended purpose and ensure that the tools are in excellent condition.
4. Unbalanced workpieces and large workpieces must be processed within a low speed range
5. The rest must be removed for sanding and polishing tasks (risk of accidents).

## 4. Explanation of the pictograms

**RISK OF BREAKAGE!**
In the case of die-cast aluminum parts, the clamping screws may only be **tightened by hand (torque: max. 6 Nm)**

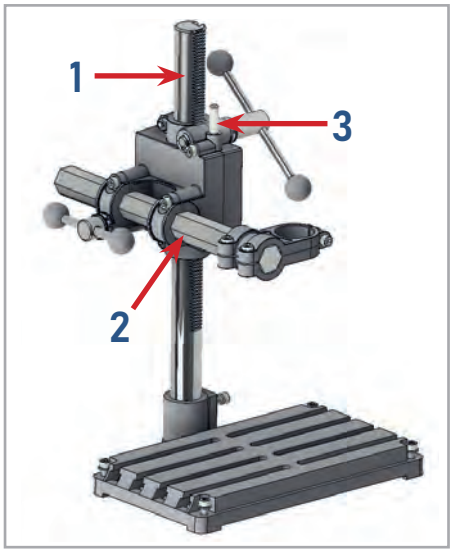
**IMPORTANT!**

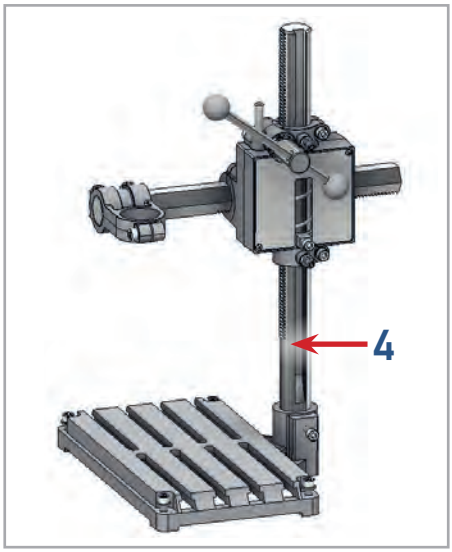
## 5. BF drilling milling stands

### 5.1 Lubrication

The following parts are to be lubricated with commercially available lubricating oil on a regular basis

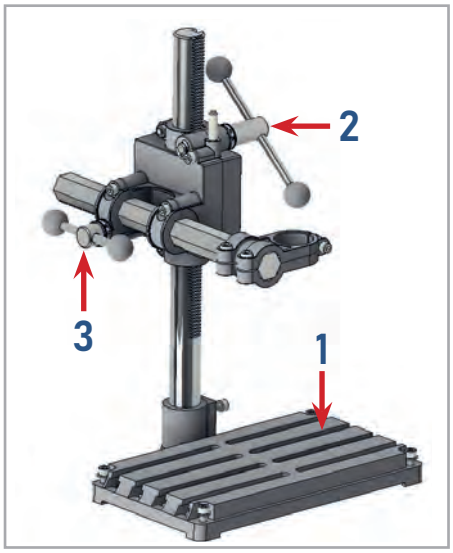
1. Steel column
2. Hexagonal steel boom
3. Depth stop
4. Guide groove of the steel column




Protect against corrosion

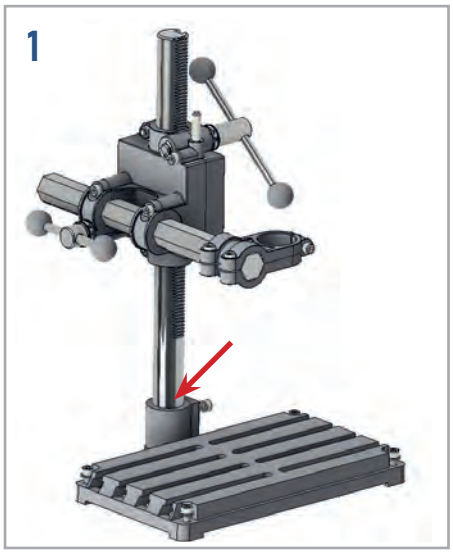
1. Base plate
2. Z-axis feed lever
3. Y-axis feed lever

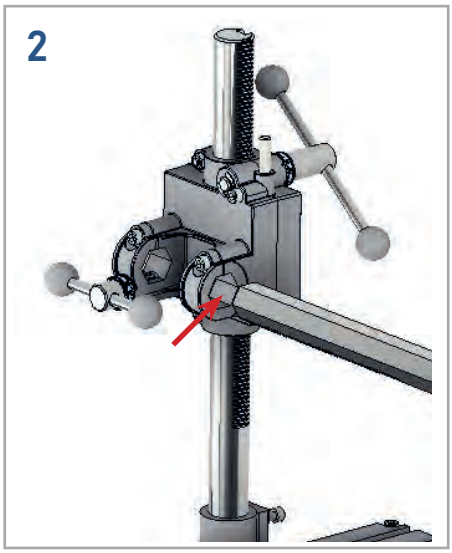


## 5. Bohrständer Fräsständer BF

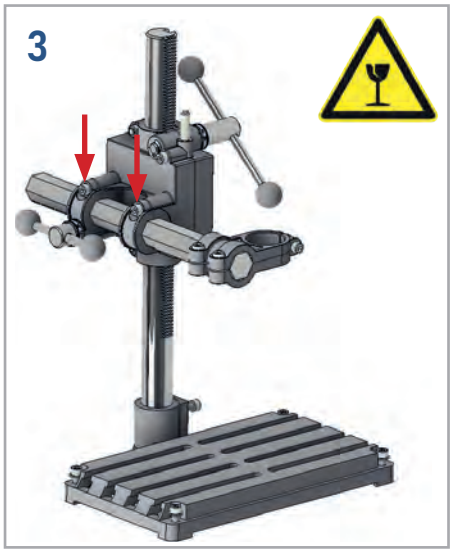
### 5.2 Montage

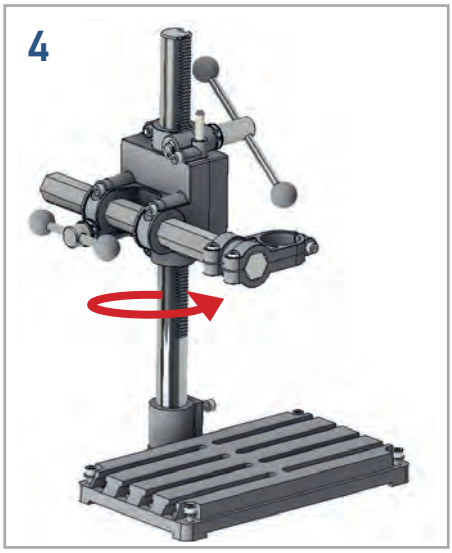
1. Insert the guide housing with the steel column into the location bore of the base plate
2. Guide the hexagonal steel boom into the hexagonal mount of the guide housing. The toothing of the hexagonal steel boom and the feed shaft must mesh. The hexagonal steel boom should be easy to move with the feed lever.



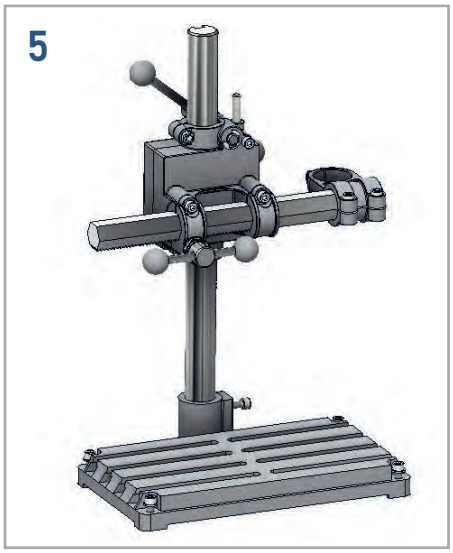



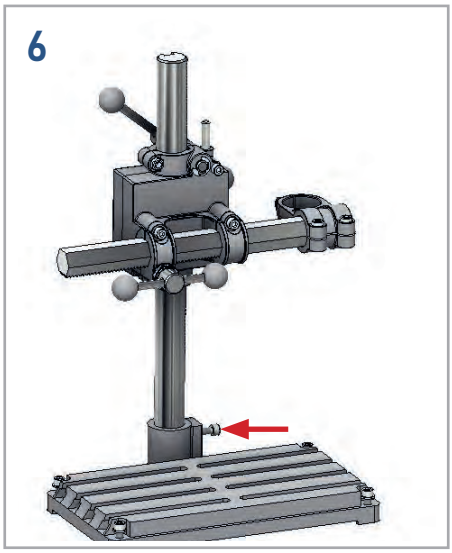

3. Tighten the two clamping screws of the hexagonal steel boom **by hand**.
4. The guide housing with the steel column can be rotated 360° in the base plate.




5. Move the guide housing with the steel column to the desired position (in this case, a 90° angle).
6. Tighten the clamping screw of the base plate so the steel column does not rotate in the location bore.

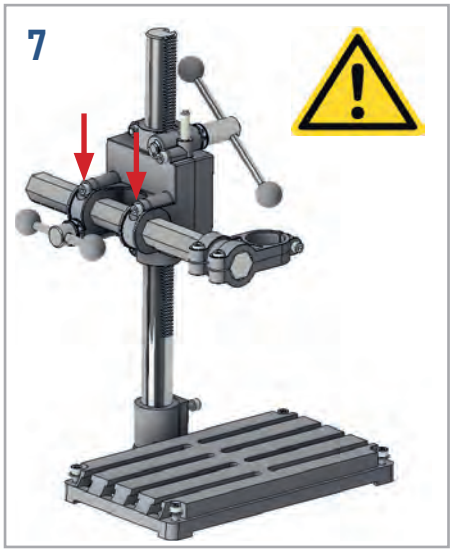


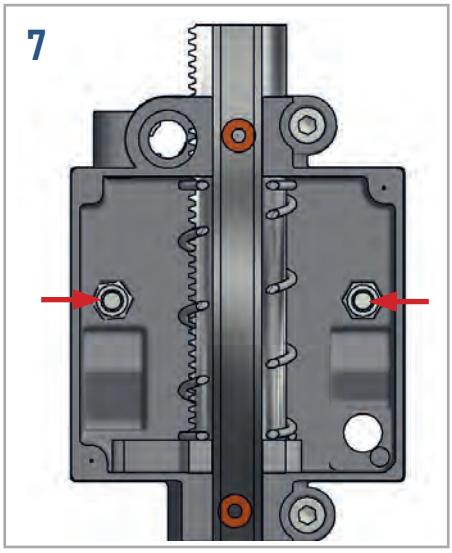



## 5. BF drilling milling stands

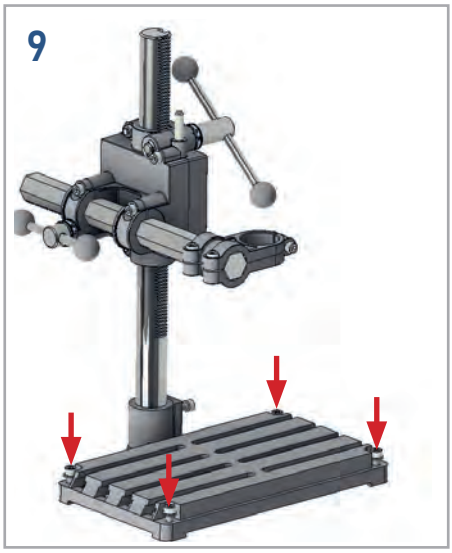
### 5.2 Installation

7. The two clamping screws of the hexagonal steel boom are screwed into two nuts inside the guide housing. If the two clamping screws are loosened too much, the two nuts will fall into the guide housing.
   If this happens, the housing cover of the guide housing must be unscrewed and the clamping screws must be screwed into the nuts.
8. In the case of BF drilling milling stands with a 3-spoke hub, the feed levers for the Z- and/or Y-axis must be screwed in.
9. Secure the BF drilling milling stand to a solid and level surface with four screws.







# 5. BF drilling milling stands

## 5.3 Machine support

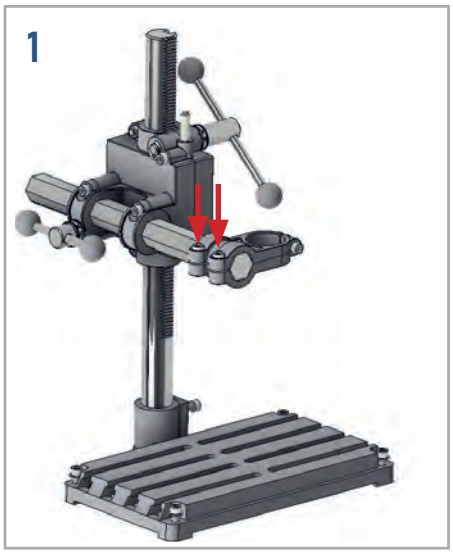
The machine support can be swiveled 360° around the hexagonal steel boom and can be locked every 15°

**Use:**

Milling in various angle settings, e.g.

- Milling angled surfaces
- Milling bevels etc.

1. Loosen the two clamping screws of the machine support.
2. Pull the machine support off the hexagonal steel boom.
3. Rotate the machine support by the desired angle and slide it back onto the hexagonal steel boom.
4. Tighten the two clamping screws of the machine support by hand.

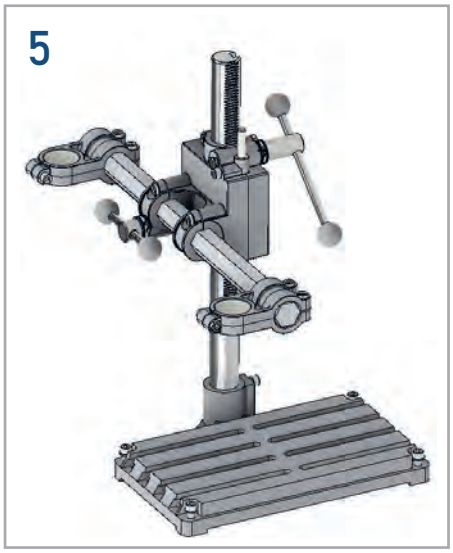


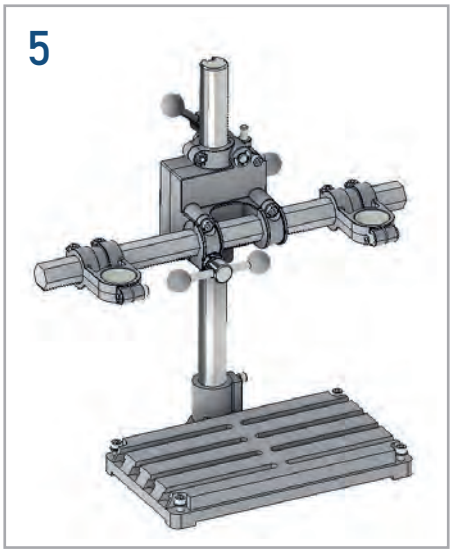




Second machine support (optional item number 24460) for two work areas

5. Install the second machine sup port (see above) and move the hexagonal steel boom with the machine supports to the desired position.

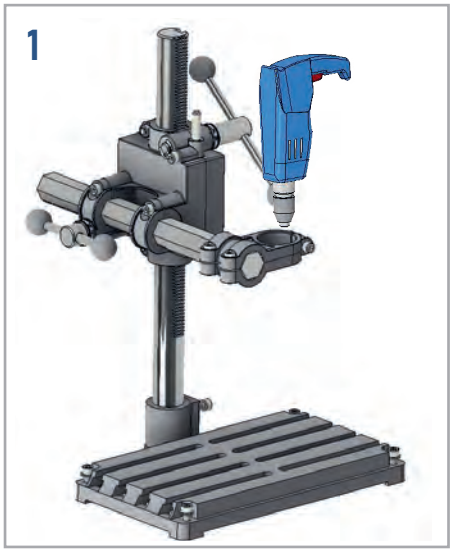


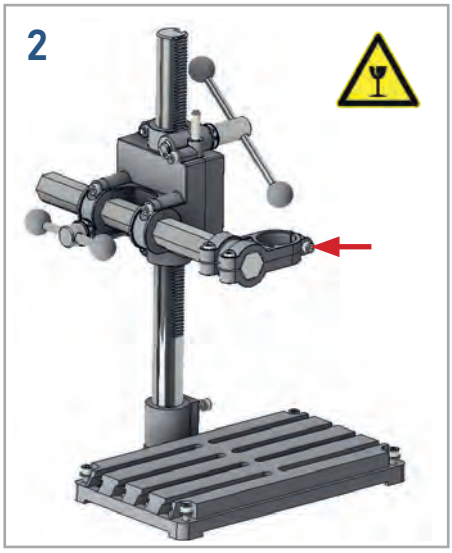



# 5. BF drilling milling stands

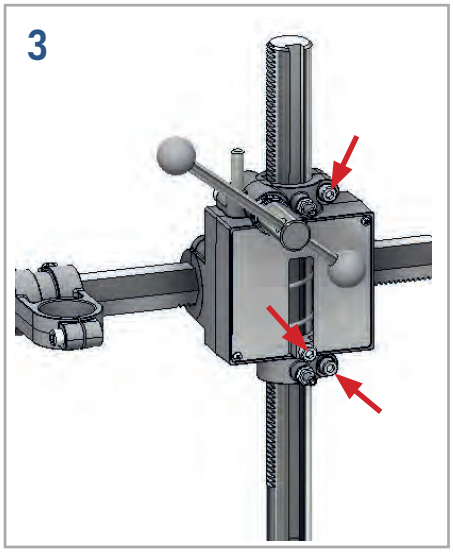
## 5.4 Vertical drilling

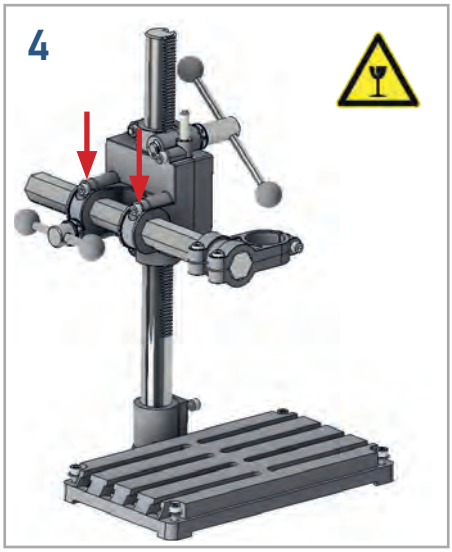
1. Insert the drive unit (European standard 43 mm dia.) straight into the machine support..
2. Tighten the clamping screw of the machine support **by hand**.



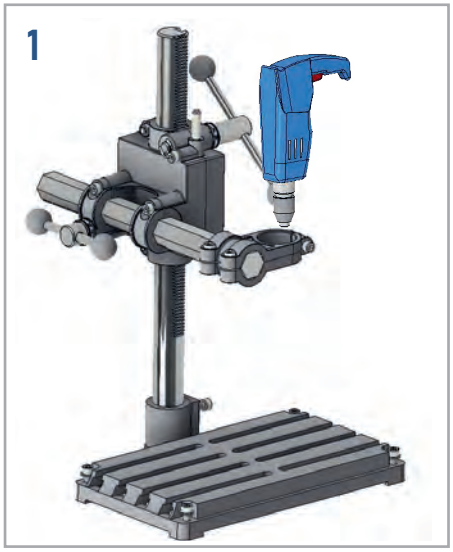

3. If necessary, loosen the two clamping screws of the guide housing and the clamping screw of the lock ring.
4. To lock the hexagonal steel boom, tighten the two clamping screws of the hexagonal steel boom by hand.

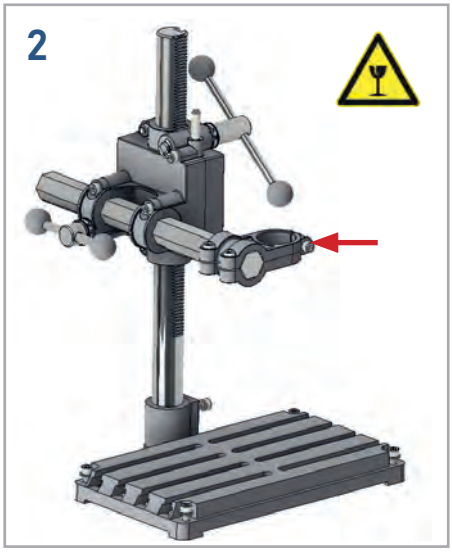



## 5.5 Milling

1. Insert the drive unit (European standard 43 mm dia.) straight into the machine support.
2. Tighten the clamping screw of the machine support by hand.



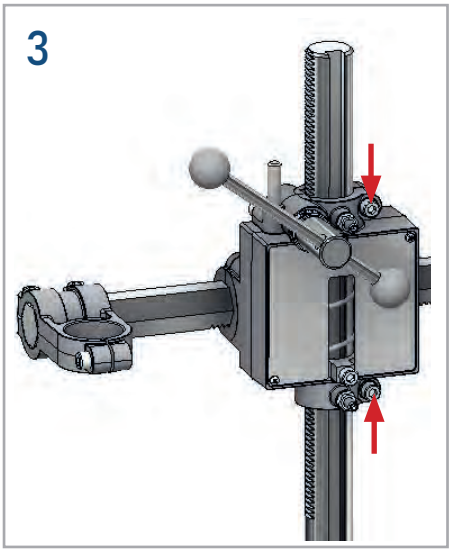



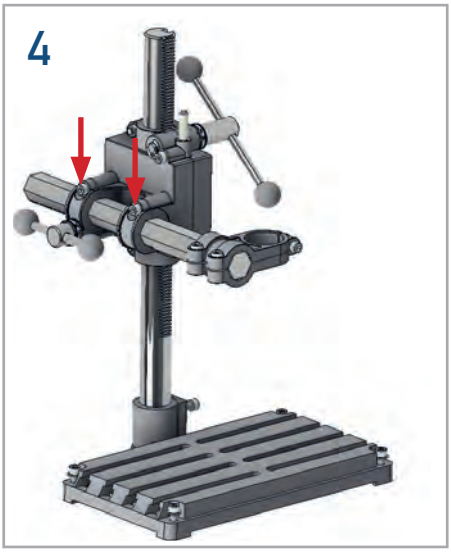
## 5. BF drilling milling stands

### 5.5 Milling

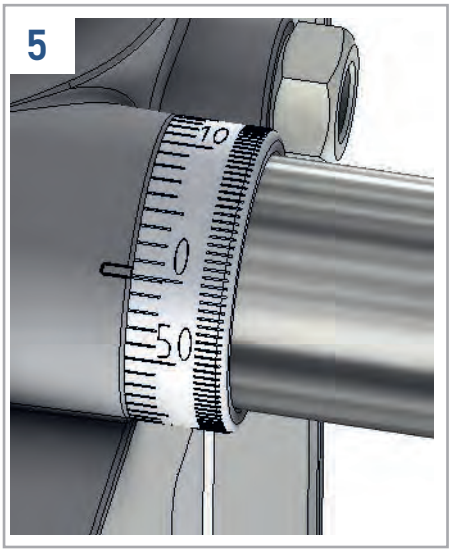
3. If necessary, loosen the two clamping screws of the guide housing.
4. Loosen the two clamping screws of the hexagonal steel boom.

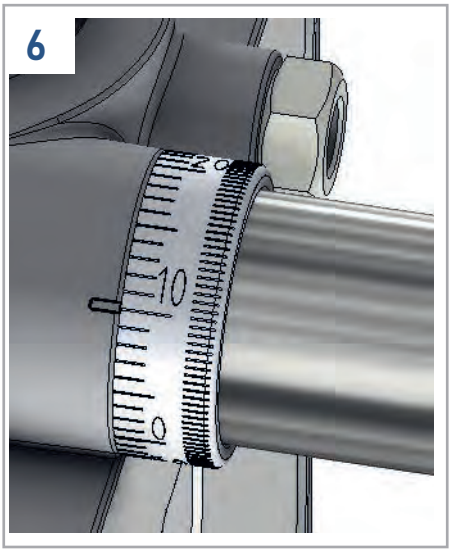
   The hexagonal steel boom must be easy to move with the feed lever of the Y-axis.



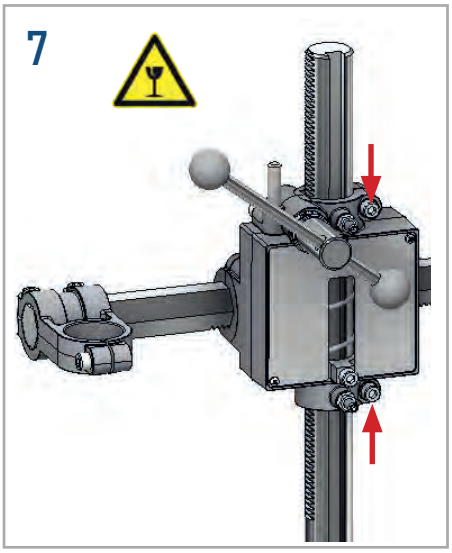




5. The scale ring of the Z-axis is adjustable. Turn the zero on the scale ring to the zero line of the guide housing.
6. Lower the guide housing with the feed lever of the Z-axis until the desired processing depth (e.g. 10 mm) can be read on the scale ring.



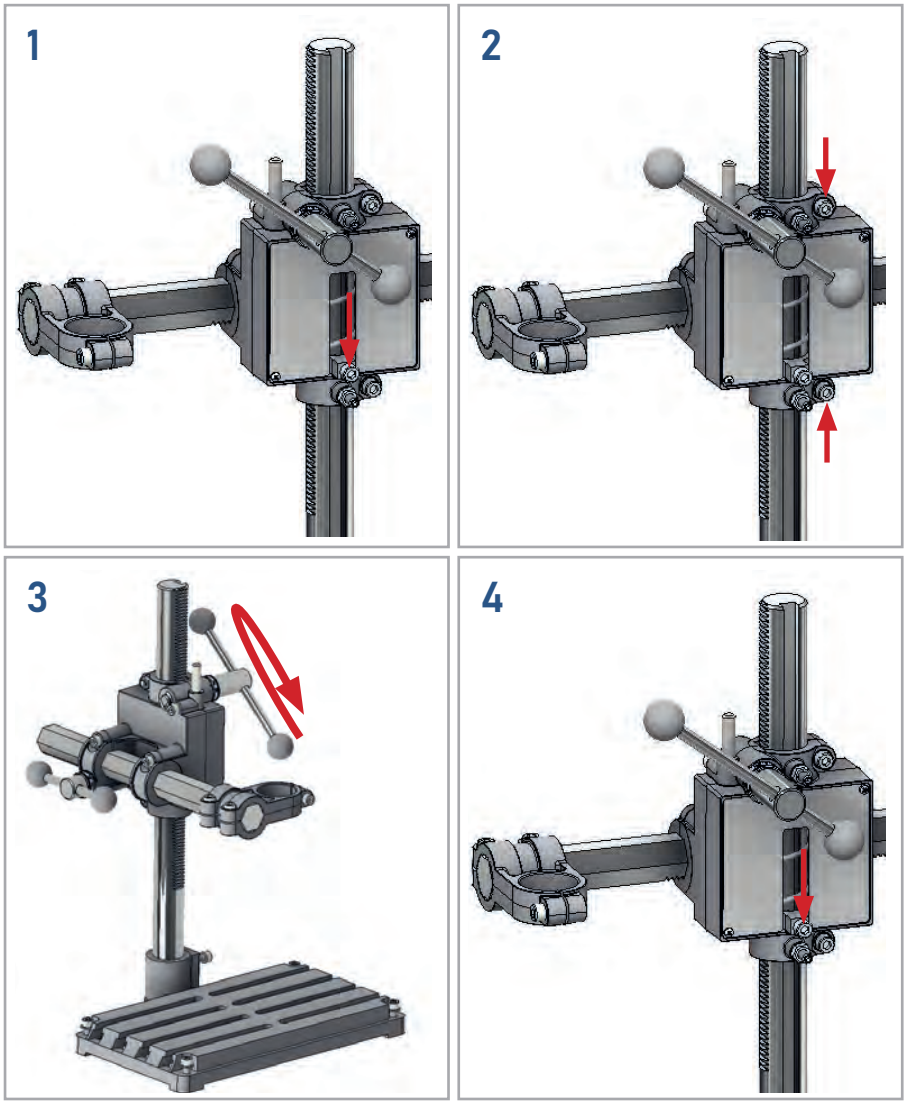

7. Tighten the two clamping screws of the guide housing by hand so the guide housing cannot drop down.
8. You can now mill with the hexagonal steel boom.




## 5. BF drilling milling stands

### 5.6 Working with the return spring

1. Tighten the clamping screw of the lock ring.
2. Loosen the two clamping screws of the of the guide housing.



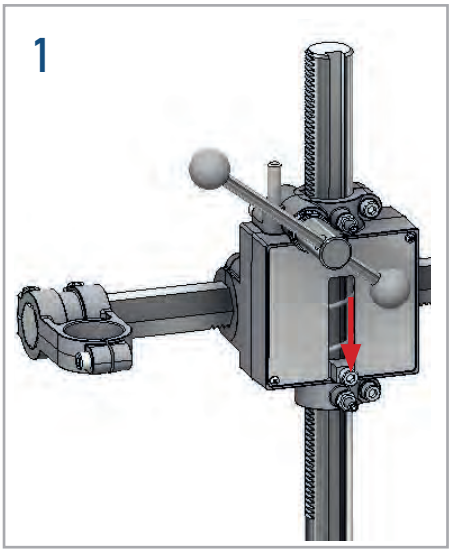

3. Using the feed lever of the Z-axis, you can move the guide housing downward by up to 55 mm. The return spring brings the guide housing back to the initial position.
4 To deactivate the return spring, loosen the clamping screw of the lock ring again.

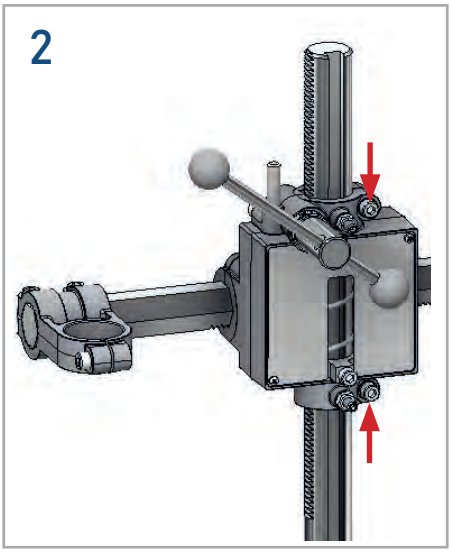
# 5. BF drilling milling stands

## 5.7 Working with the depth stop and drilling stroke

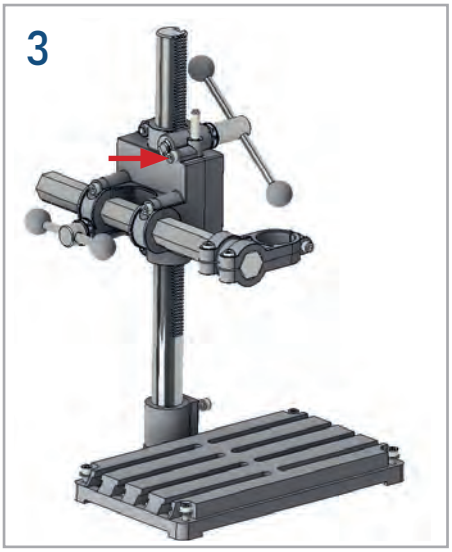
**By activating the depth stop, multiple workpieces can be processed with the same depth.**

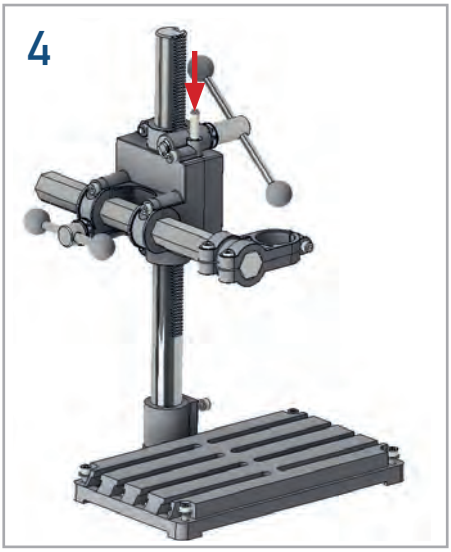
1. Tighten the clamping screw of the lock ring.
2. If necessary, loosen the two clamping screws of the guide housing.



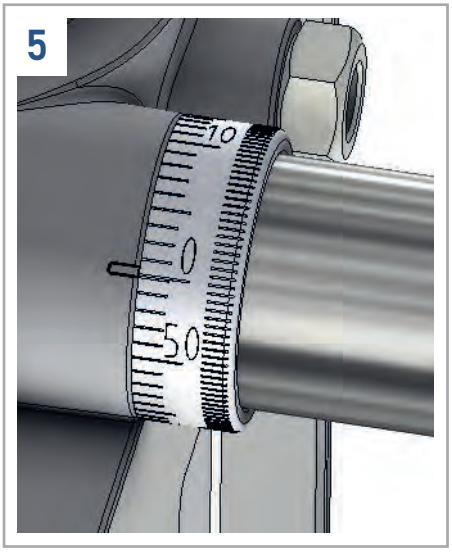



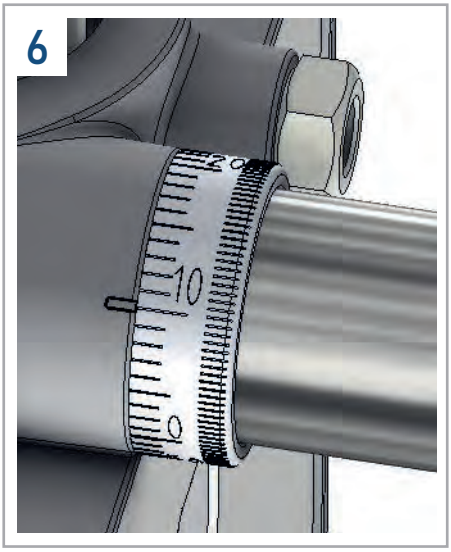

3. Loosen the clamping screw of the depth stop.
4. The depth stop automatically drops to the lock ring.
   If necessary, guide the depth stop downwards until it meets resistance (lock ring).




5. The scale ring of the Z-axis is adjustable. Turn the zero on the scale ring to the zero line of the guide housing.
6. Lower the guide housing with the feed lever of the Z-axis until the desired processing depth (e.g. 10 mm) can be read on the scale ring.

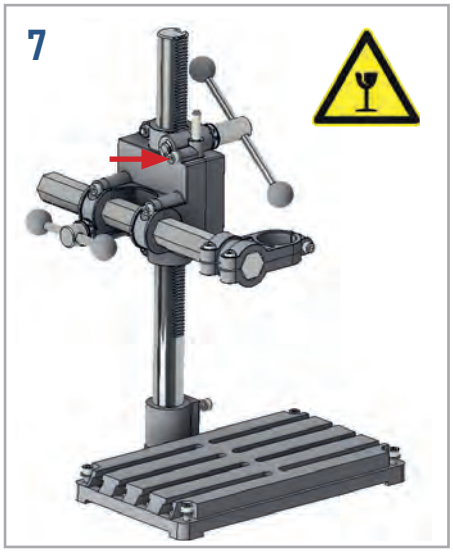


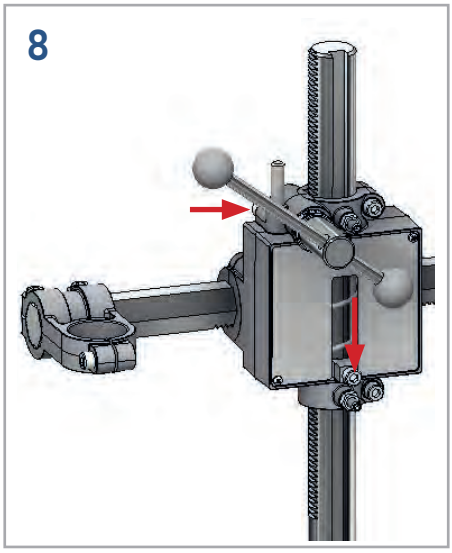



## 5. BF drilling milling stands

### 5.7 Working with the depth stop and drilling stroke

7. In this position, tighten the locking screw of the depth stop by hand.
8. To deactivate the depth stop, loosen the clamping screw of the lock ring and the clamping screw of the depth stop again.

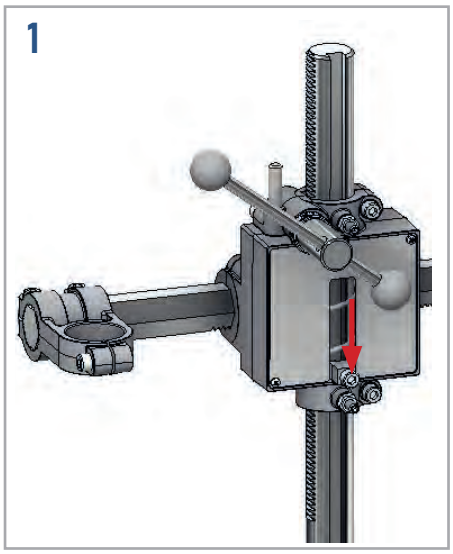



### 5.8 Adjusting the play of the guide housing

Before adjusting the guide housing, clean the toothing of the steel column with a wire brush.

1. Tighten the clamping screw of the lock ring so the guide housing cannot drop down.
2. Nut with threaded pin and eccentric

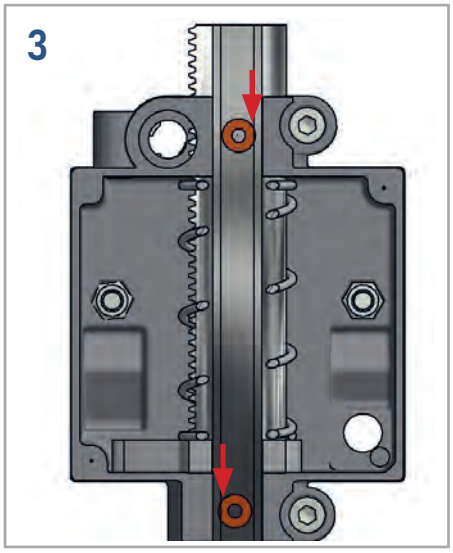


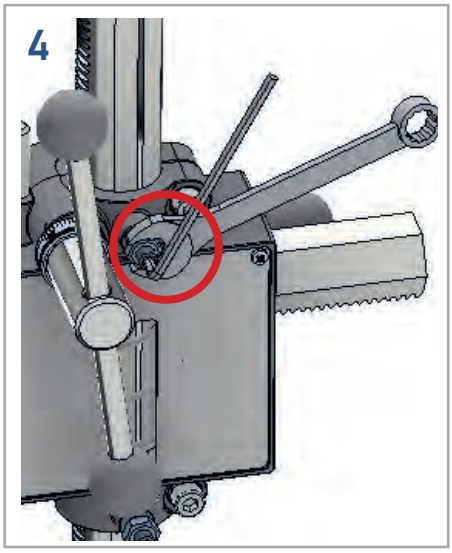

## 5. BF drilling milling stands

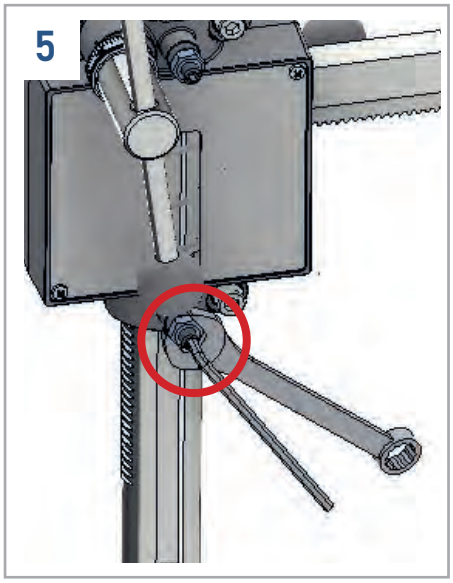
### 5.8 Adjusting the play of the guide housing

3. The two threaded pins with an eccentric have a guide roller facing thesteel column.
   The upper guide roller must contact the groove of the steel column on the right.
   The lower guide roller must contact the groove of the steel column on the left.
4. Loosen the upper nut of the threaded pin with the eccentric using a fork wrench while at the same time holding the threaded pin in place with an Allen wrench. Turn the Allen wrench with the threaded pin clockwise until slight resistance can be felt. Hold the nut in place. The threaded pin must be held in place with the Allen wrench here.
5. Loosen the lower nut of the threaded pin with the eccentric using a fork wrench while at the same time holding the threaded pin in place with an Allen wrench. Turn the Allen wrench with the threaded pin counterclockwise until slight resistance can be felt. Hold the nut in place. The threaded pin must be held in place with the Allen wrench here.

   If the guide housing is not optimally set for the application, repeat the procedure.



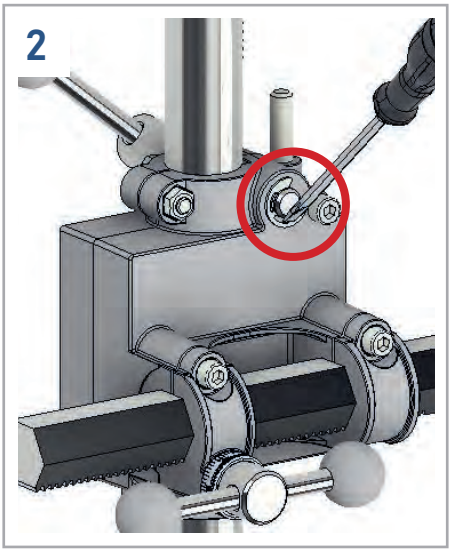



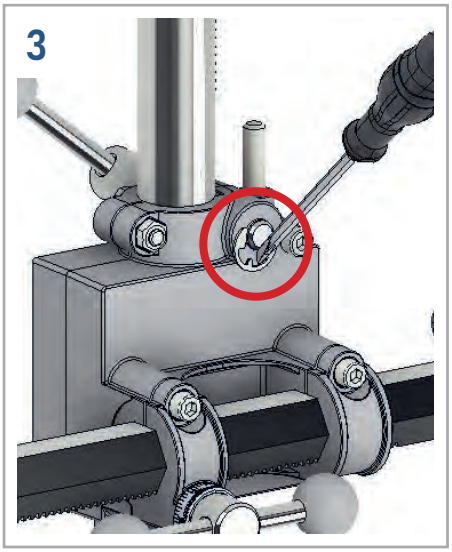
## 6. 3-spoke hubs

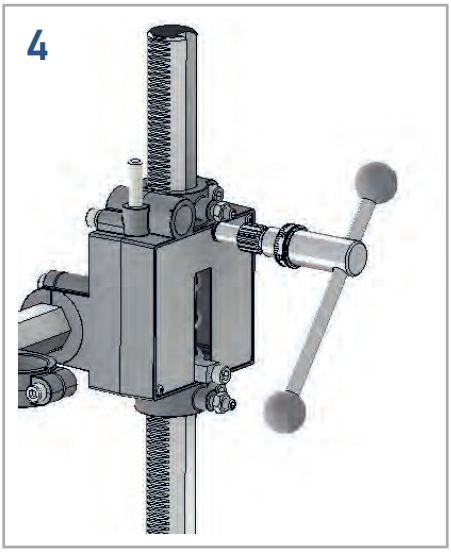
### 6.1 Installation of a Z-axis 3-stroke hub (optional item number 24462)

1. Screw the three feed levers into the holes of the feed shaft.
2. Insert a slotted screwdriver into one of the recesses of the locking washer.

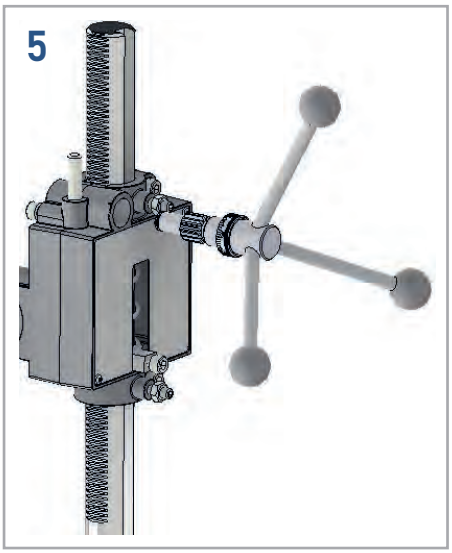



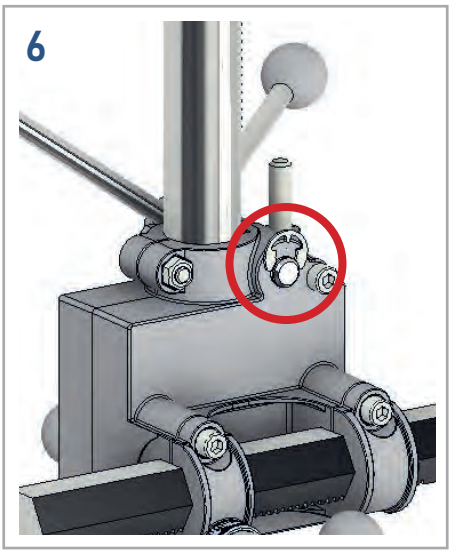

3. Press the locking washer out of the groove of the feed shaft by turning the slotted screwdriver.
4. Pull the feed shaft out of the guide housing.




5. Insert the feed shaft of the 3-spoke hub into the guide housing as far as it will go.
   Oil the feed shaft prior to insertion.
   The toothing of the steel column and the toothing of the feed shaft must mesh.
6. Insert the locking washer into the groove of the feed shaft of the 3-spoke hub and press it into position with a slotted screwdriver until it snaps into place.

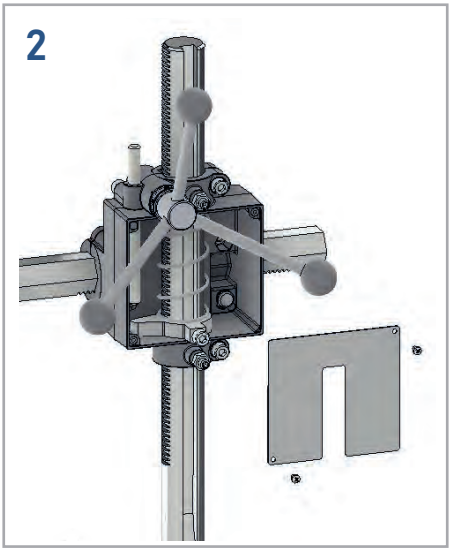


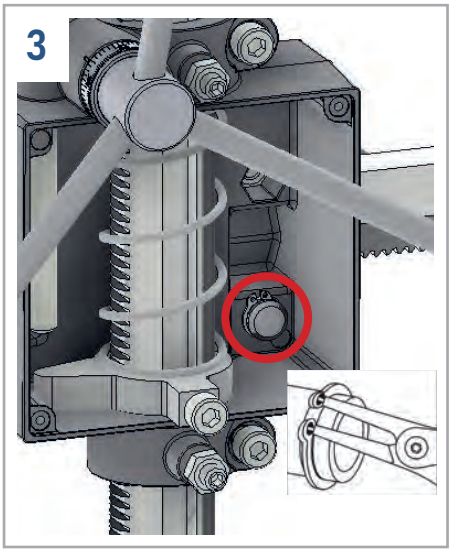
# 6. 3-spoke hubs

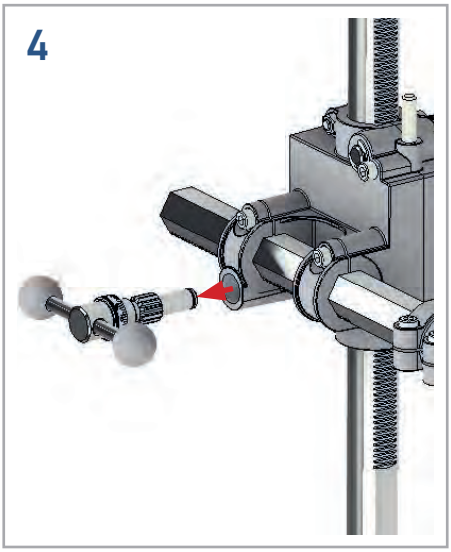
## 6.2 Installation of a Y-axis 3-stroke hub (optional item number 24464)

1. Screw the three feed levers into the holes of the feed shaft.
2. Unscrew the housing cover from the guide housing.

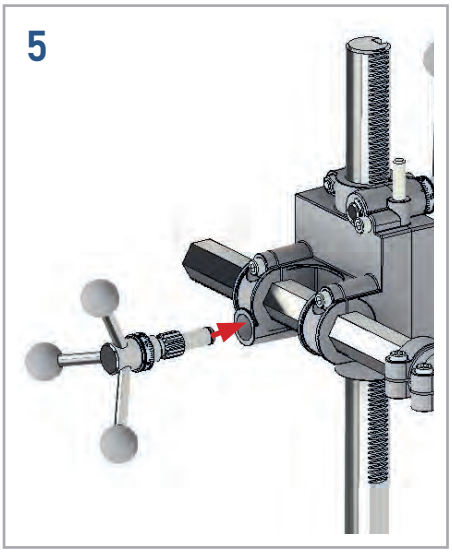



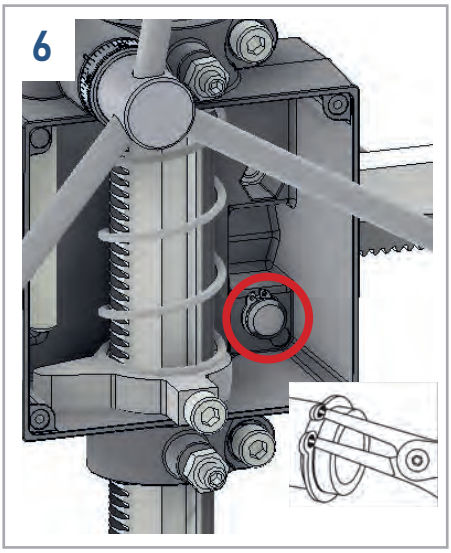

3. Remove the locking ring from the groove of the feed shaft using straight locking ring pliers (pin dia.: 1.2 mm).
4. Pull the feed shaft out of the guide housing.




5. Push the feed shaft of the 3-spoke hub into the guide housing as far as it will go.
   Oil the feed shaft prior to insertion.
   The toothing of the steel column and the toothing of the feed shaft must mesh
6. Insert the locking ring into the groove of the feed shaft of the 3-spoke hub using the straight locking ring pliers.



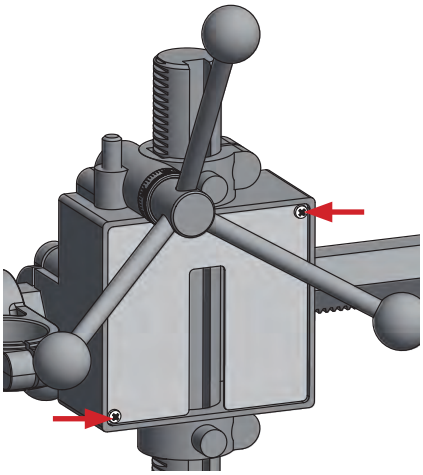



## 6. 3-spoke hubs

### 6.2 Installation of a Y-axis 3-stroke hub (optional item number 24464)

7. Tighten the housing cover of the guide housing.

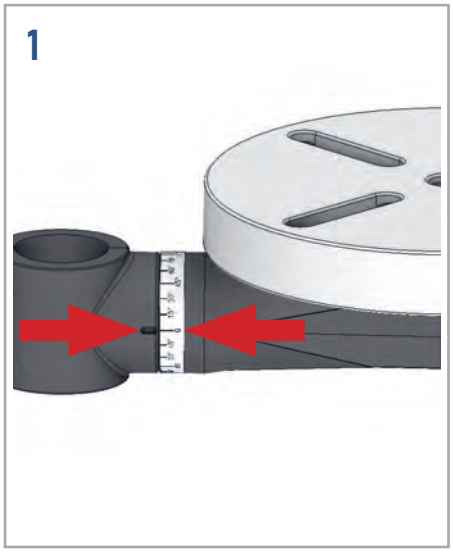
7

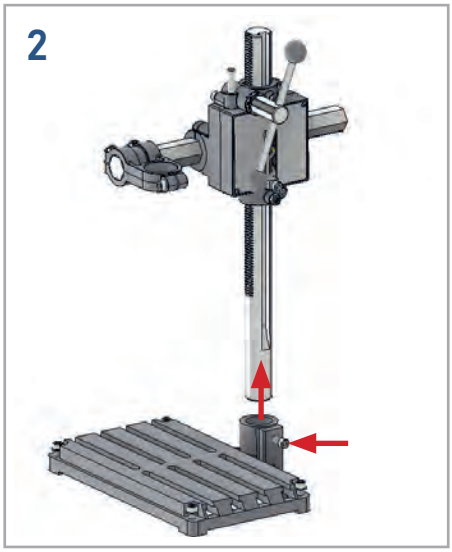


## 7. Milling work table (optional item number 22310)

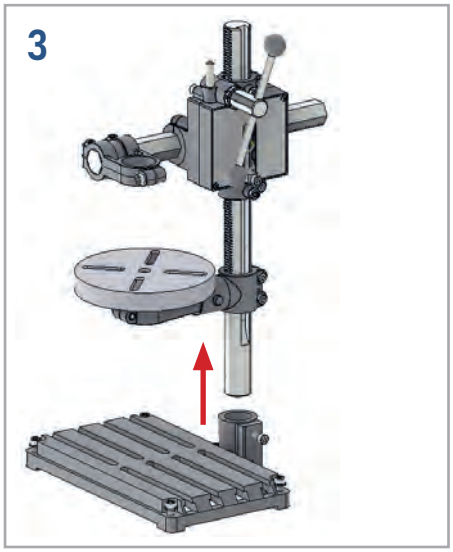
### 7.1 Installation

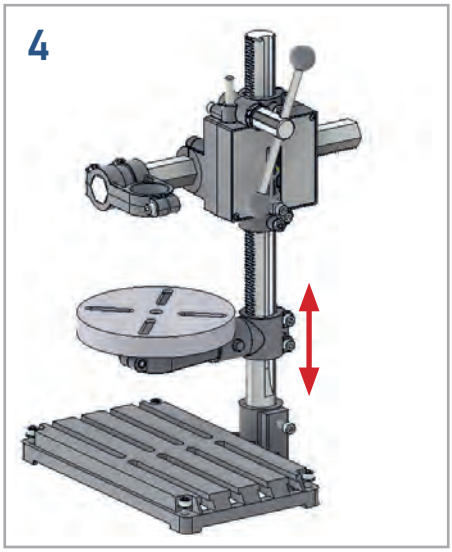
1. Prior to commissioning, place the 90-0-90 scale on the milling work table. The "0" of the scale must line up with the "zero line" of the milling work table.
2. Loosen and remove the clamping screw of the base plate. Pull the steel column out of the location bore of the base plate.



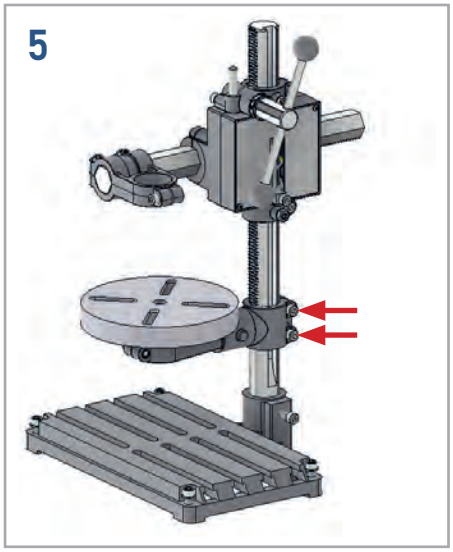



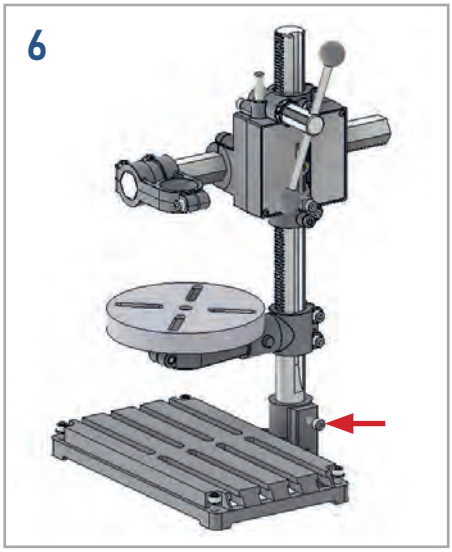

3. Slide the milling work table onto the steel column.
4. Insert the steel column into the location bore of the base plate. Push the milling work table to the required height.




5. Tighten the two clamping screws on the milling work table.
6. Insert and tighten the clamping screw of the base plate.

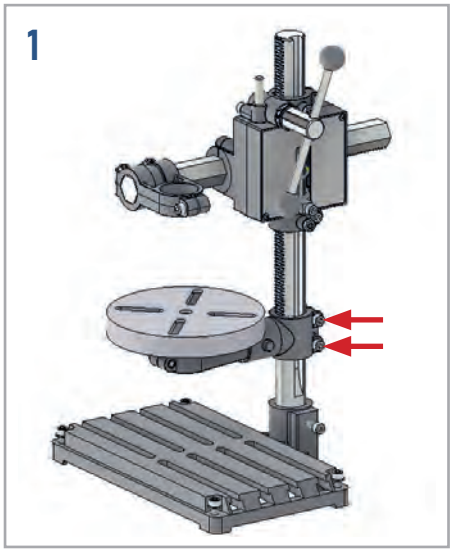


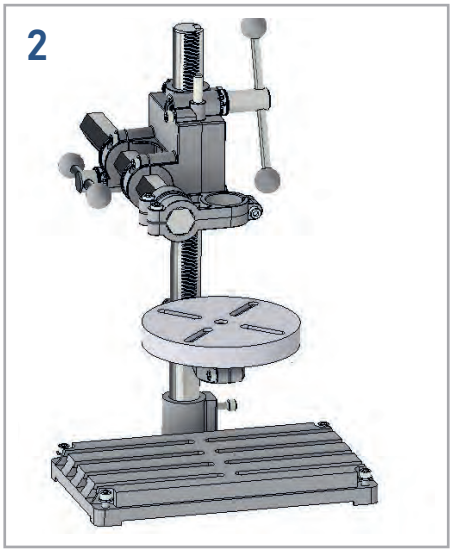



## 7. Milling work table (optional item number 22310)

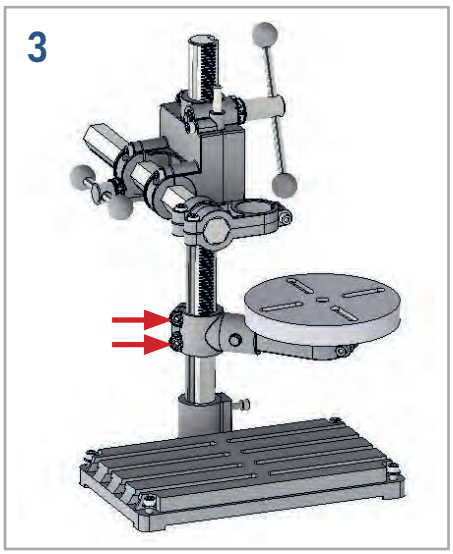
### 7.2 Rotating the milling work table 360° around the steel column

1. Loosen the two clamping screws of the milling work table.
2. Move the milling work table to the desired position.



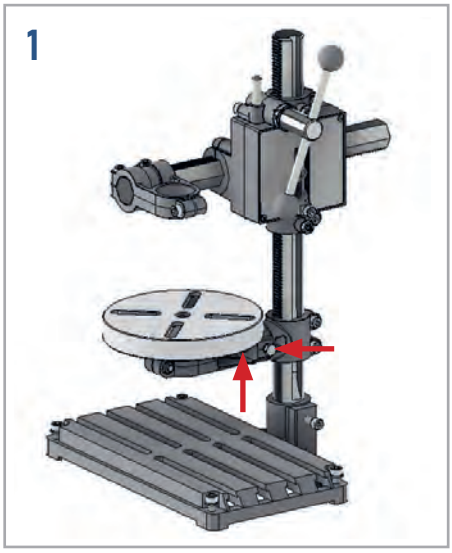

3. Tighten the two clamping screws of the milling work table.



## 7. Milling work table (optional item number 22310)

### 7.3 Swiveling the milling work table 360°

1. Loosen the two clamping screws of the mount for the clamping table.
2. The milling work table can be swiveled continuously 360°. Swivel the milling work table to the desired position



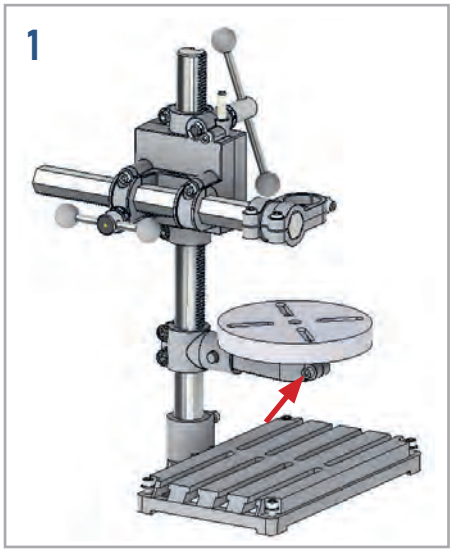


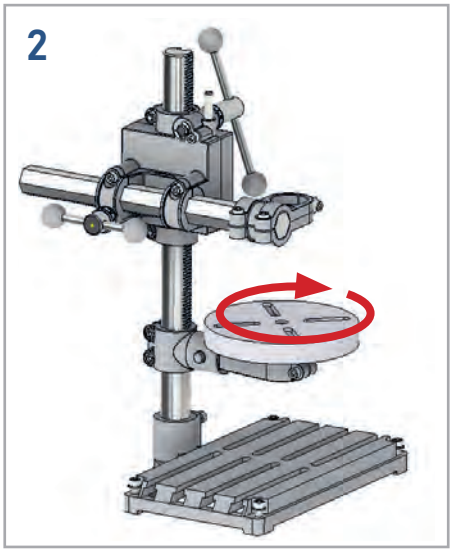
3. Tighten the two clamping screws of the mount for the clamping table.

## 7. Milling work table (optional item number 22310)

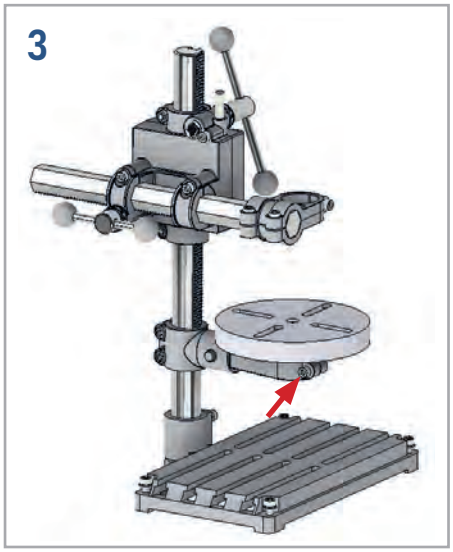
### 7.4 Rotating the clamping table 360° in the mount

1. Loosen the clamping screw of the mount for the clamping table.
2. Rotate the clamping table to the desired position.



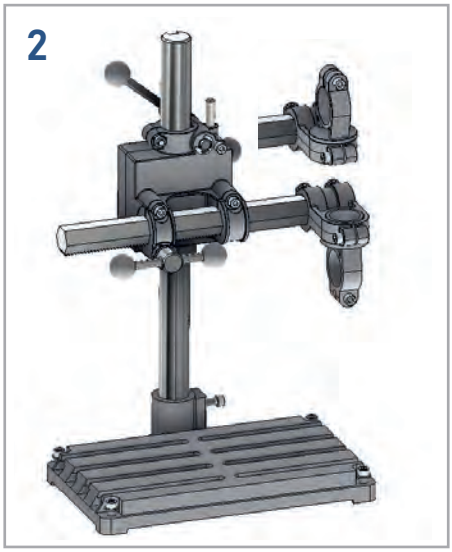

3. Tighten the clamping screw of the mount for the clamping table.



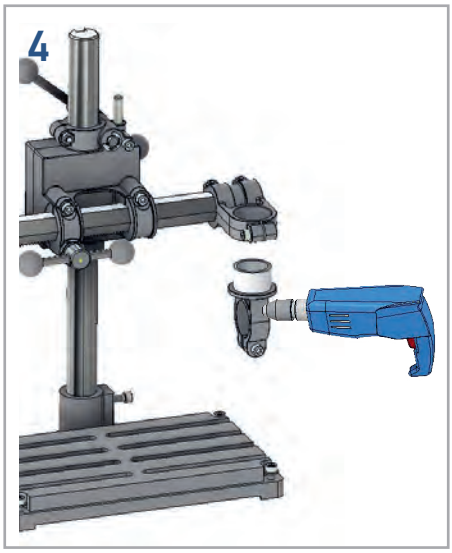
# 8. Clamping device for flexible clamping options (optional item number 22312)

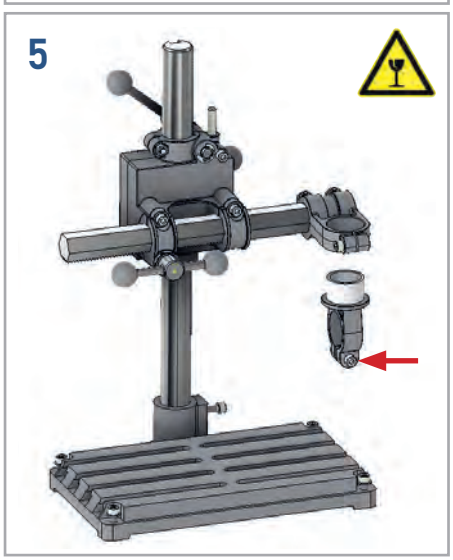
## 8.1 Use and installation

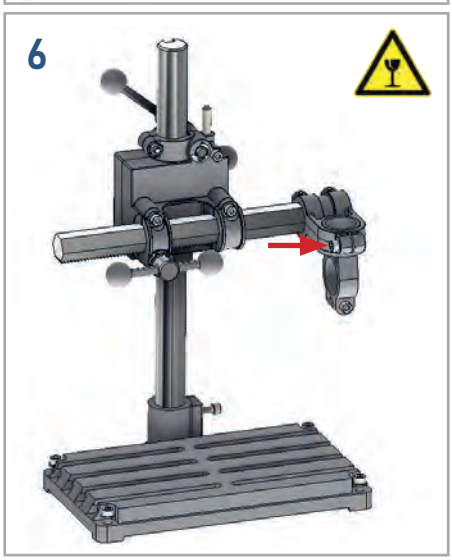
1. **Clamping device with European standard 43 mm-dia. mount for the horizontal mounting of drive units, tailstock centers etc. The clamping device is clamped in the machine support and can be rotated 360°.**
2. If necessary, loosen the clamping screw on the machine support. Clamp the clamping device into the machine support.
   **Depending on the application, the clamping device can be clamped in the machine support from above or below.**
3. Move the clamping device to the desired position.
4. Insert the drive unit (European standard 43 mm dia.) into the clamping device and align it there.
5. Tighten the clamping screw of the clamping device **by hand**.
6. Tighten the clamping screw of the machine support **by hand**.





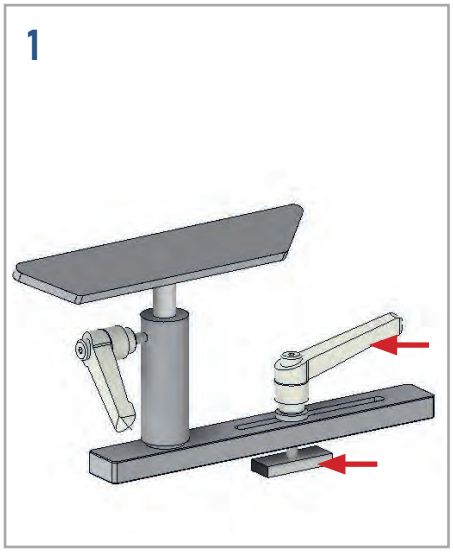



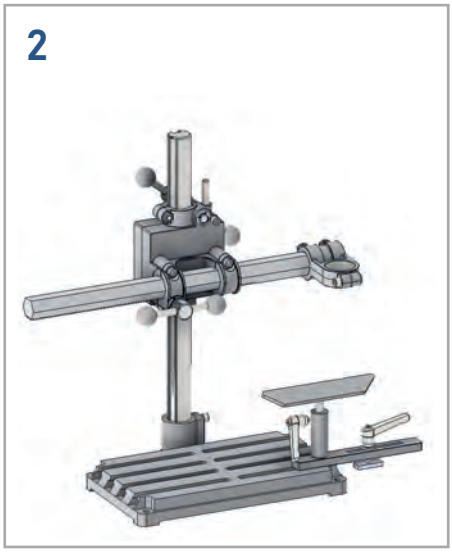



# 9. Hand steel rest (optional item number 24480)

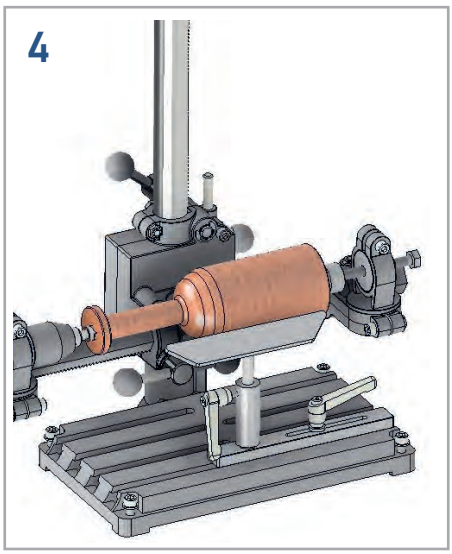
## 9.1 Use and installation

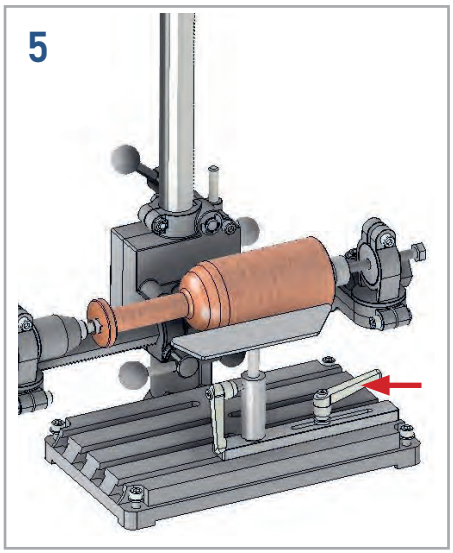
1. **The hand steel rest is used for positioning at the workpiece and for applying the turning tool.** Loosen the clamping lever until the threaded insert of the clamping lever contacts the clamping lug flush.
2. Loosen the clamping lever of the tool rest. This makes it possible to rotate the tool rest 360° and adjust it vertically.

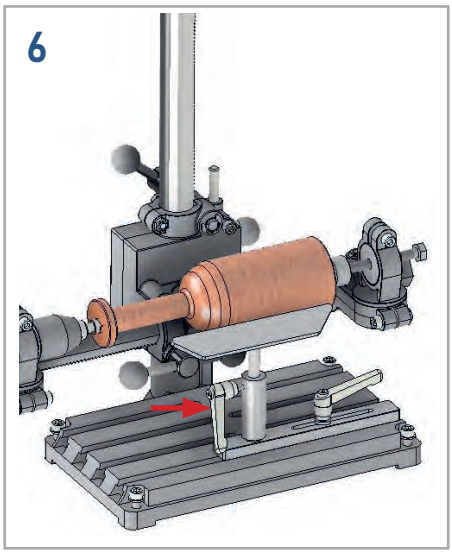



3. Loosen the clamping lever of the tool rest. This makes it possible to rotate the tool rest 360° and adjust it vertically.
4. Move the hand steel rest to the desired position. The retainer of the tool rest should not be located outside the base plate. The hand steel rest should be parallel to the workpiece at approximately the same height as the workpiece axis. The tool rest should be located as close as possible to the workpiece, but not contact it.
5. Tighten the clamping lever of the clamping lug.
6. Tighten the clamping lever for the tool rest.

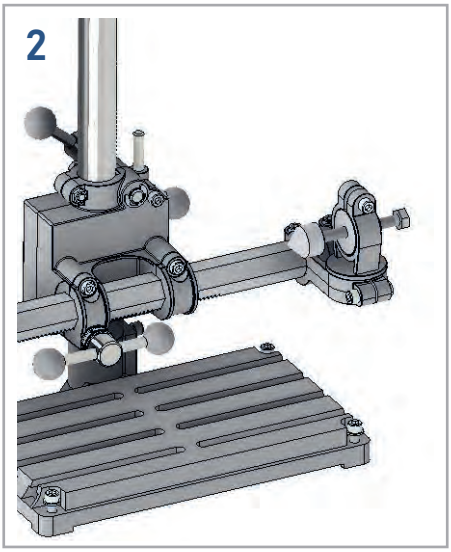



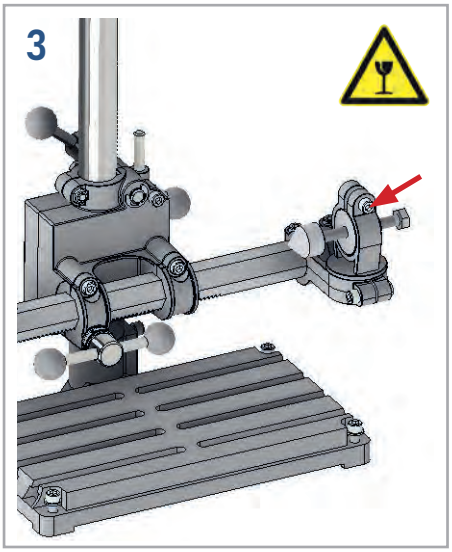
## 10. Tailstock center (optional item number 24484)

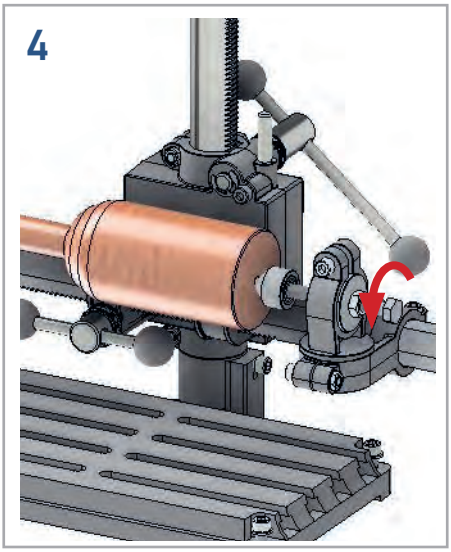
### 10.1 Use and installation

1. **The tailstock center is used for turning workpieces between two centers. The tailstock center can be moved continuously over a travel distance of 50 mm with the tailstock spindle.**
2. Insert the tailstock center into the clamping device.

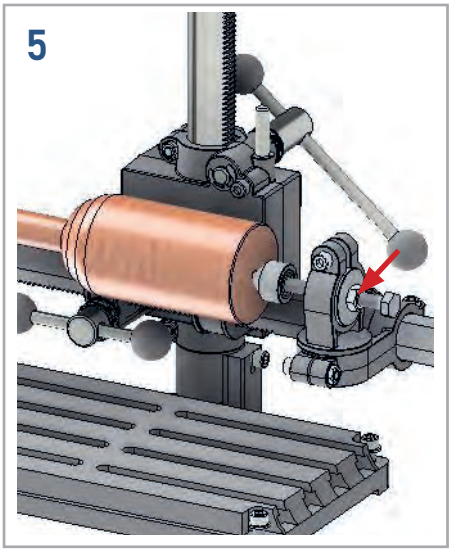



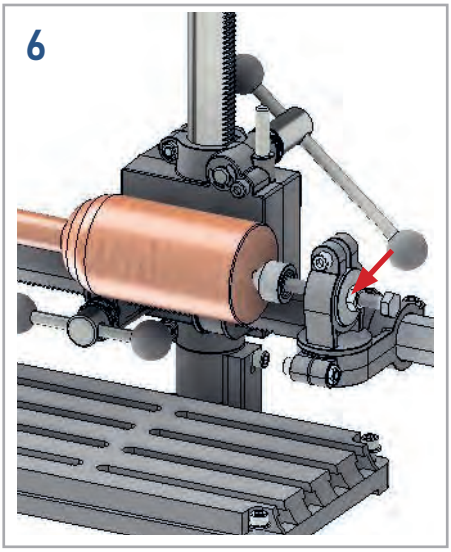

3. Align the tailstock center centrally and tighten the clamping screw of the clamping device **by hand**.
4. Rotate the spindle of the tailstock center until the tailstock center secures the workpiece.




5. Turn the nut of the tailstock center and hold it in place relative to the threaded bushing.
6. To loosen the workpiece, loosen the nut of the tailstock center. Rotate the spindle of the tailstock center until the workpiece can be removed.



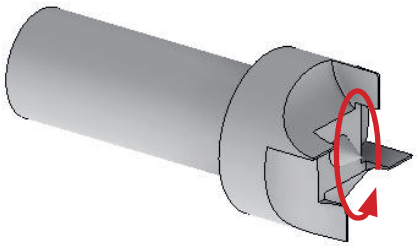



## 11. 4-prong drive center (optional item number 24486)

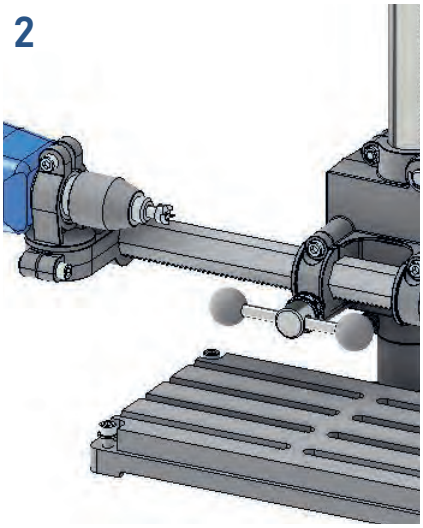
### 11.1 Use and installation

1. **The 4-prong drive center transfers the torque of the drive unit to the workpiece between two centers while turning.**
   **Note:**
   The 4-prong drive center may only be used in clockwise/right-hand rotation.
2. Clamp the 4-prong drive center into the mount of the drive unit (European standard 43 mm dia.). Determine and mark the center on both ends of the workpiece to be clamped

1



2

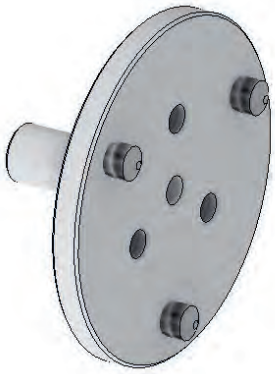


## 12. Face plate (optional item number 24482)

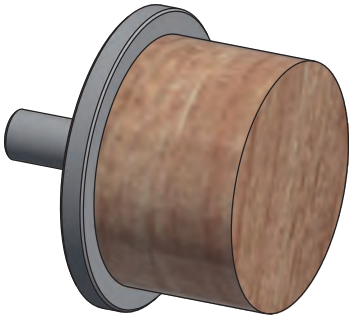
### 12.1 Use and installation

1. **The face plate is used to mount workpieces and is suitable for hollowing out plates and bowls, for example.**
2. Place the face plate centrally on the contact surface of the work piece. The face plate must have a level support surface at the work-piece.

1



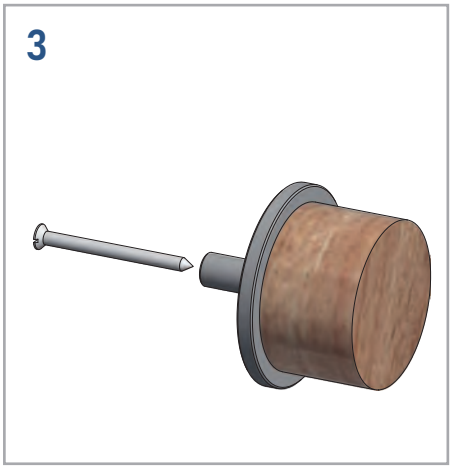
2



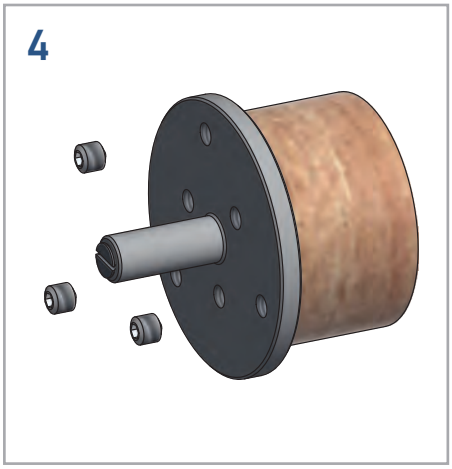
## 12. Face plate (optional item number 24482)

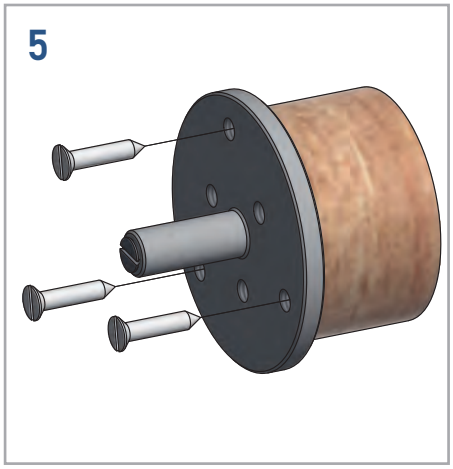
### 12.1 Use and installation

3. Secure the workpiece with a suitable wood screw through the 5 mm-dia. hole.
   **Note:**
   To avoid imbalances, the screw must be located in the center of the workpiece.

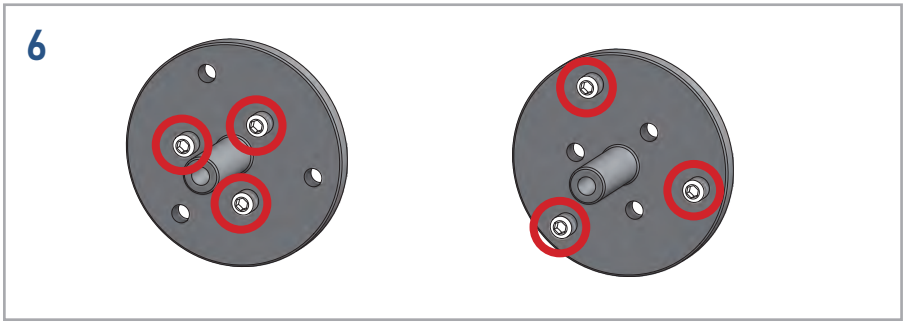


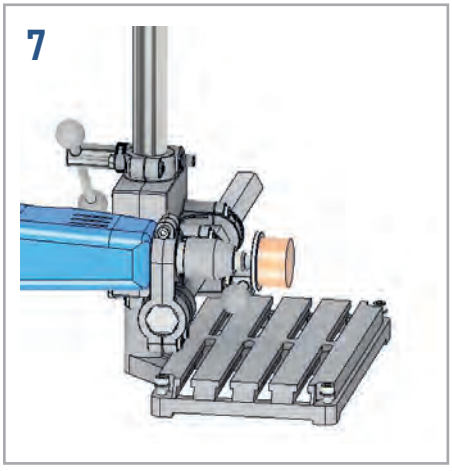

4. Screw the three threaded pins (included) securely into the threaded holes of the workpiece. This ensures that the workpiece will spin and prevents it from slipping.
5. Alternative
   Screw three suitable wood screws securely into the threaded holes of the workpiece.




6. In the case of workpieces with a **dia. ≤ 50 mm**, use the inner hole circle. In the case of workpieces with a **dia. > 50 mm**, use the outer hole circle.
7. Clamp the face plate into the mount of the drive unit.

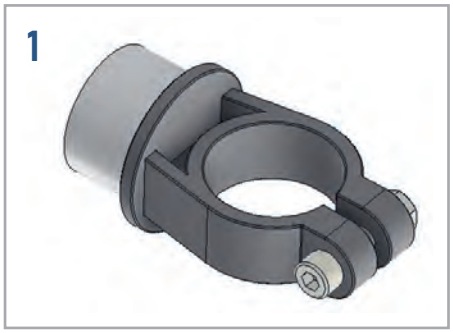


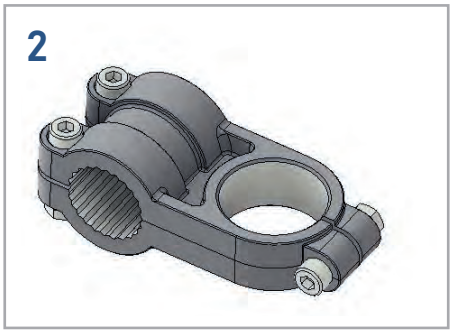



## 13. Turning between two centers

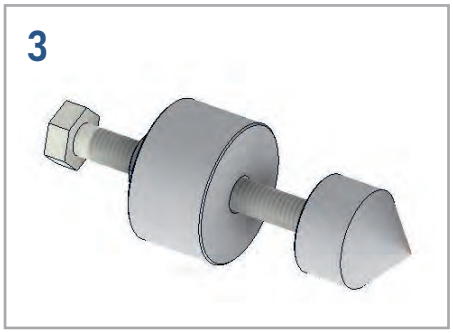
### 13.1 Required accessories

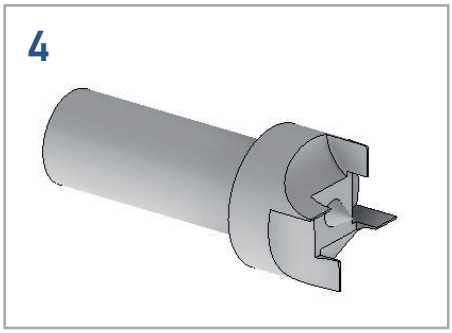
1. Clamping device, 2x
   Item number 22312
2. Machine support, 1x
   Item number 24460



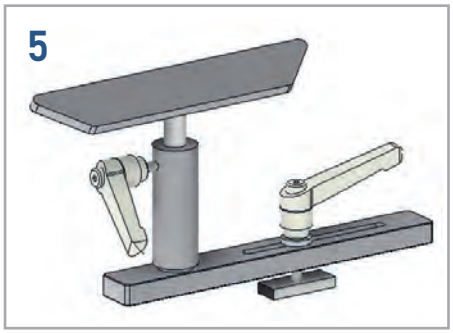




3. Tailstock center, 1x
   Item number 24484
4. 4-prong drive center, 1x
   Item number 24486



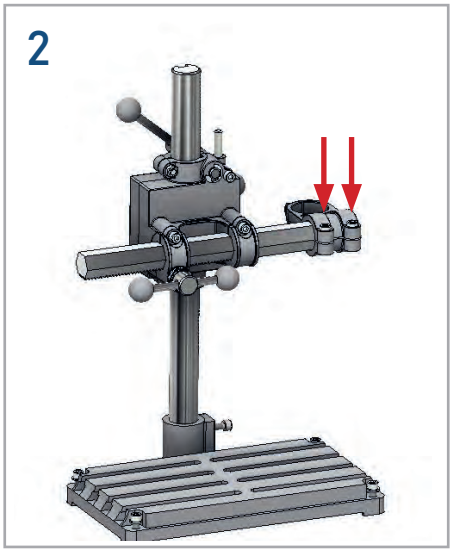

5. Hand steel rest, 1x
   Item number 24480



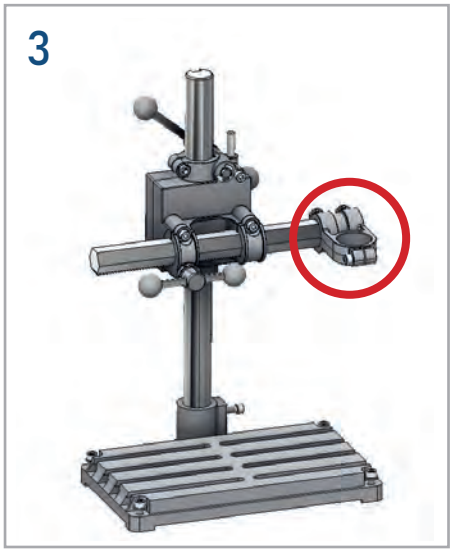
## 13. Turning between two centers

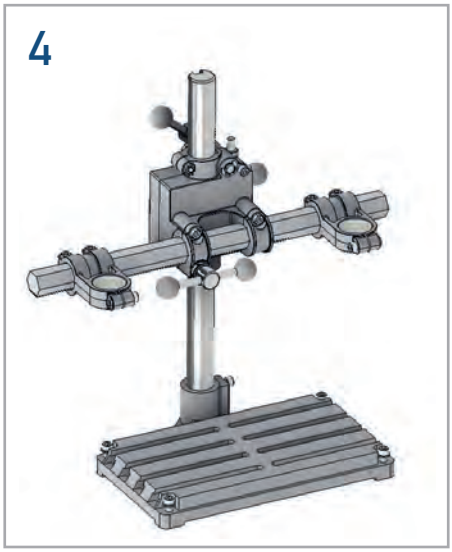
### 13.2 Machine support and clamping device

1. Rotate the guide housing with the steel column 90° (see also Item 5.2).
2. Loosen the two clamping screws of the machine support.

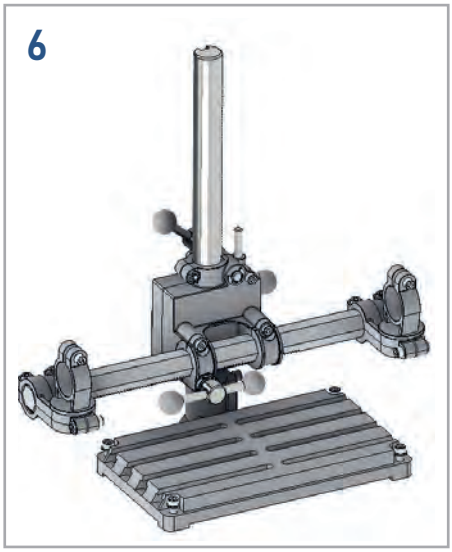




3. Pull the machine support off the hexagonal steel boom, rotate it 180° and slide it back on the hexagonal steel boom.
4. Slide the second machine support onto the hexagonal steel boom.
   Note:
   The screw heads of the clamping screws on the machine support must face upwards.



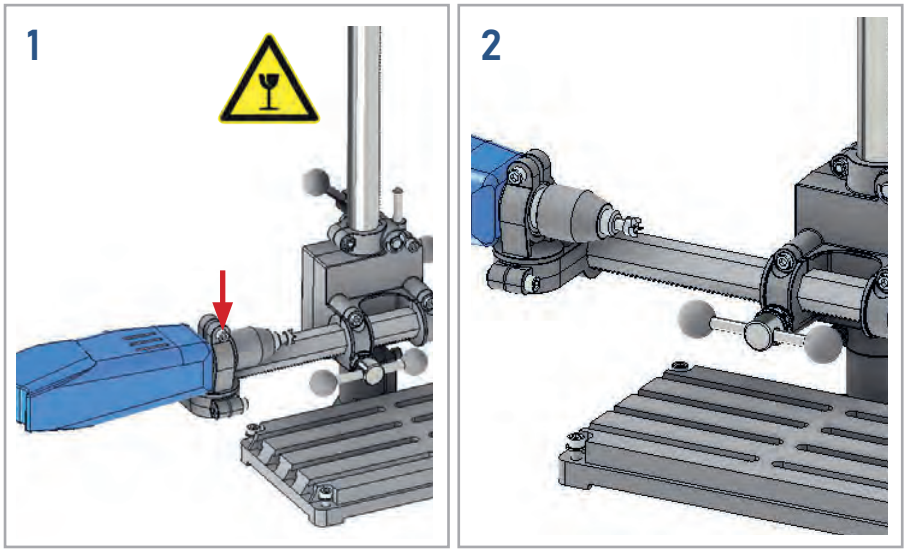

5. Clamp the clamping device in the machine support.
6. Clamp the second clamping device in the second machine support.
   Note
   The screw heads of the clamping screw of the clamping devices must face the front to enable better adjustment later on.

## 13. Turning between two centers

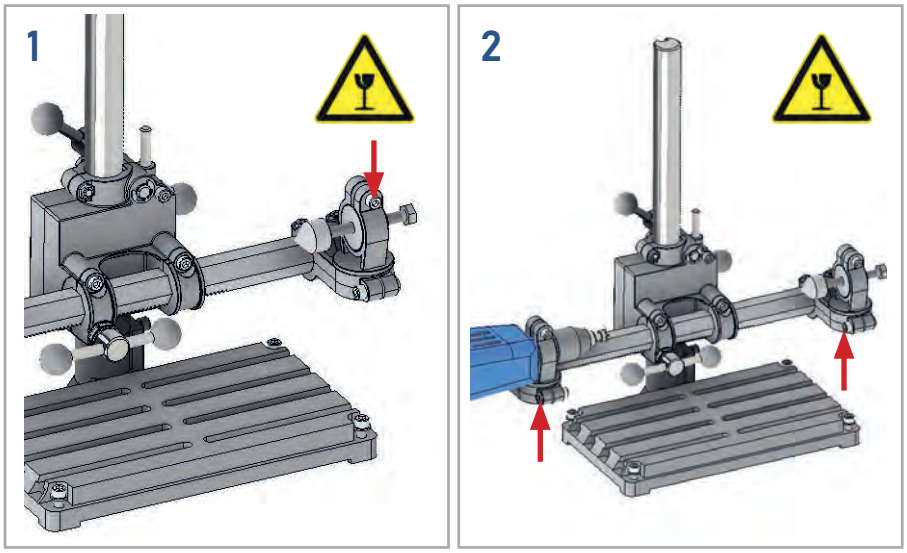
### 13.3 Clamping the drive unit and 4-prong drive center

1. Clamp the drive unit (European standard 43 mm dia.) in the clamping device. Tighten the clamping screw of the clamping device **by hand**.
2. Clamp the 4-prong drive center into the mount of the drive unit (see also Item 11.1). Determine and mark the center on both ends of the workpiece to be clamped.




### 13.4 Clamping the tailstock center

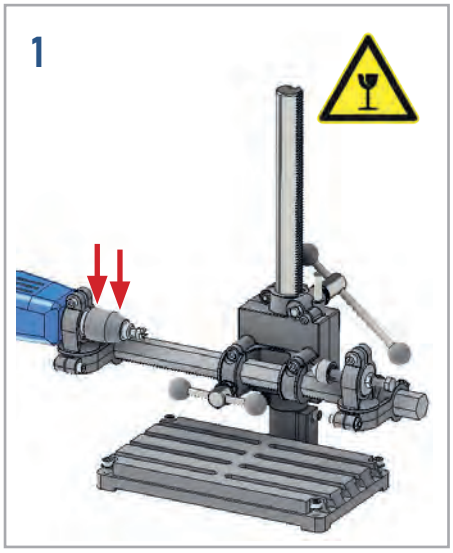
1. Clamp the tailstock center in the clamping device (see also Item 10.1). Tighten the clamping screw of the clamping device **by hand**.
2. The drive unit and tailstock center must be parallel to the hexagonal steel boom. Tighten the two clamping screws of the machine support **by hand**.

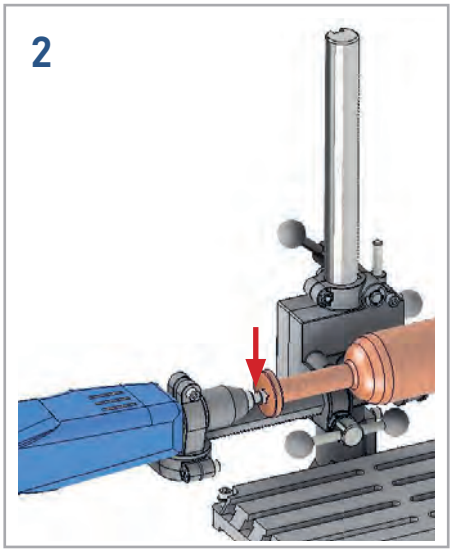


## 13. Turning between two centers

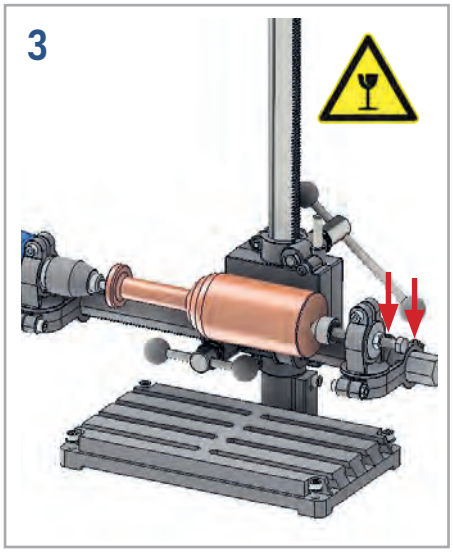
### 13.5 Clamping a workpiece

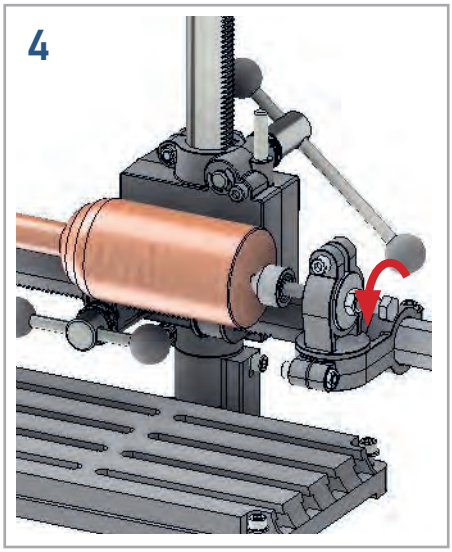
1. Position the machine support with clamped drive unit depending on the workpiece. Tighten the two clamping screws of the machine support **by hand**.
2. Center the workpiece on both short sides and hold it on the 4-prong drive center.

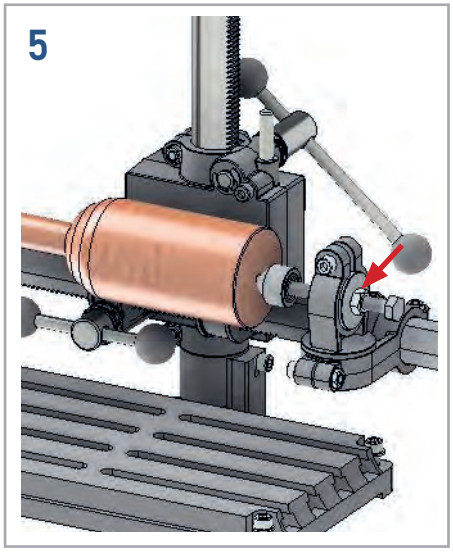



3. Move the machine support with the tailstock center to the workpiece. Tighten the two clamping screws of the machine support **by hand**.
4. Rotate the spindle of the tailstock center until the tailstock center pushes the workpiece into the 4-prong drive center.
5. Turn the nut of the tailstock center and hold it in place relative to the threaded bushing (see also Item 10.1).



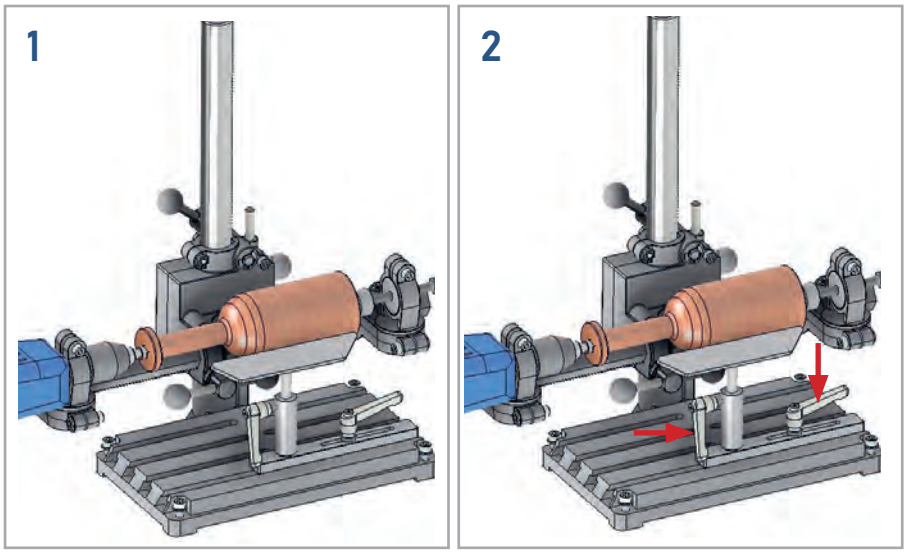



## 13. Turning between two centers

### 13.6 Mounting the hand steel rest

1. Mount the hand steel rest (see also Item 9.1).
2. After determining the height, tighten the clamping lever of the clamping lug and the tool rest.

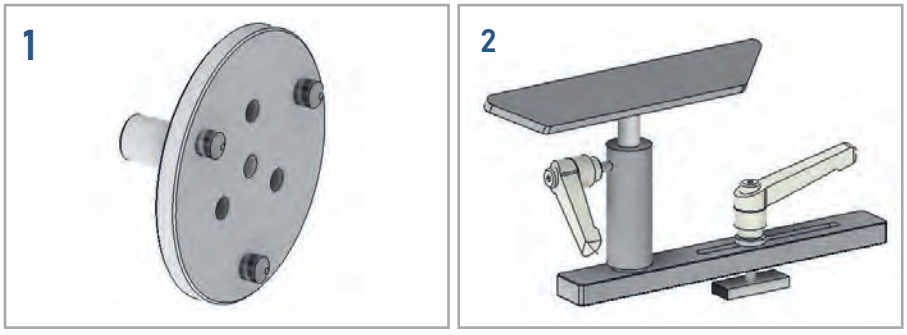



## 14. Turning with the face plate

### 14.1 Required accessories

Required accessories:

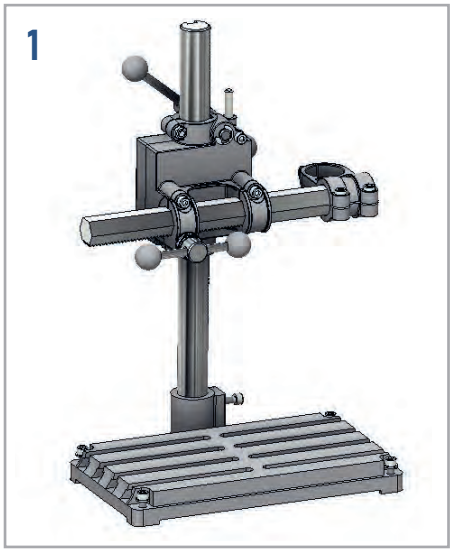
1. Face plate, 1x
   Item number 24482
2. Hand steel rest, 1x
   Item number 24480

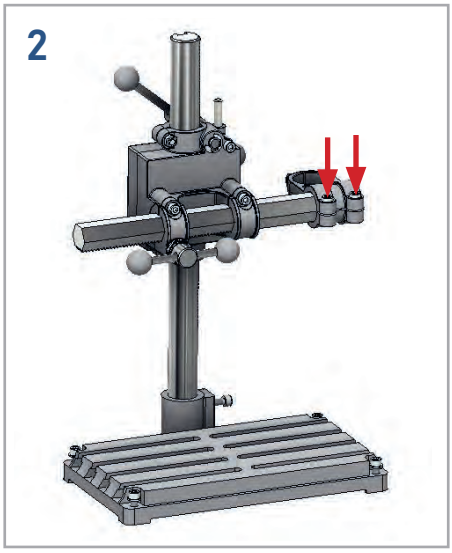


# 14. Turning with the face plate

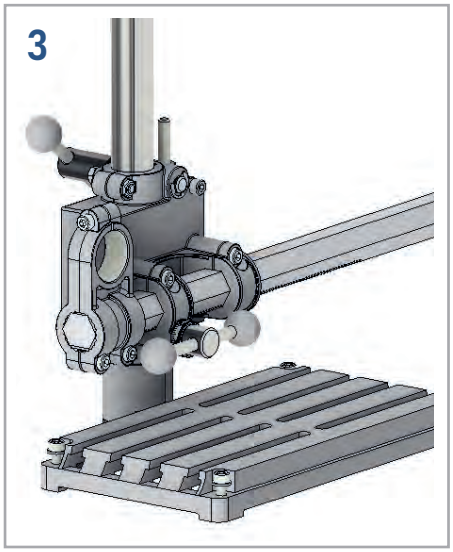
## 14.2 Installation

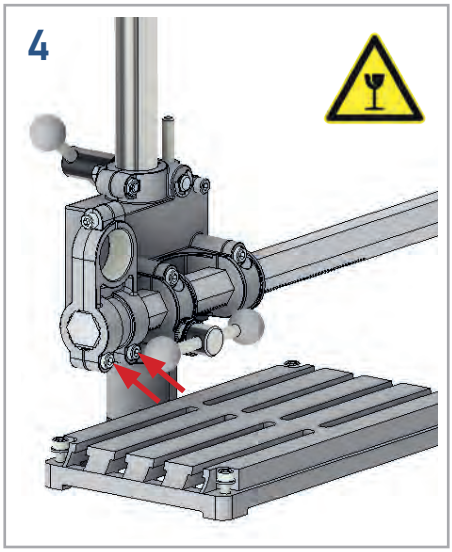
1. Rotate the guide housing with the steel column 90° (see also Item 5.2).
2. Loosen the two clamping screws of the machine support.



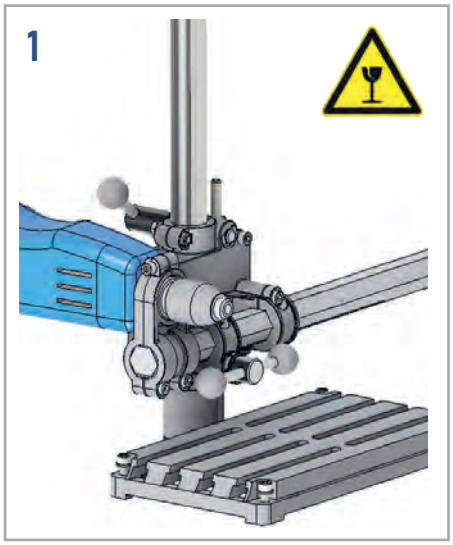

3. Pull the machine support off the hexagonal steel boom, rotate it 90° upward and slide it back on the hexagonal steel boom.
   The screw heads of the clamping screws on the machine support must face the front.
4. Tighten the two clamping screws of the machine support **by hand**.

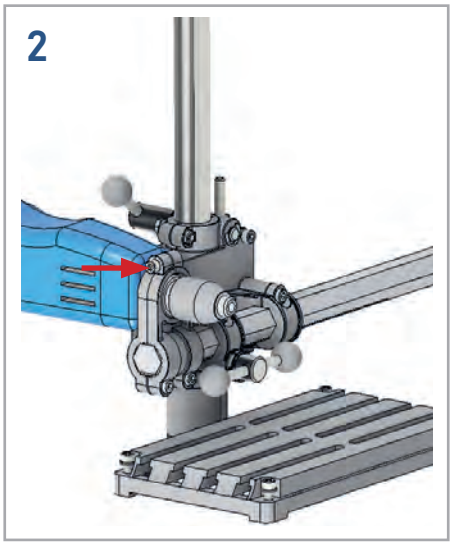



## 14.3 Clamping the drive unit

1. Clamp the drive unit (European standard 43 mm dia.) in the machine support.
2. Tighten the clamping screw of the machine support **by hand**.

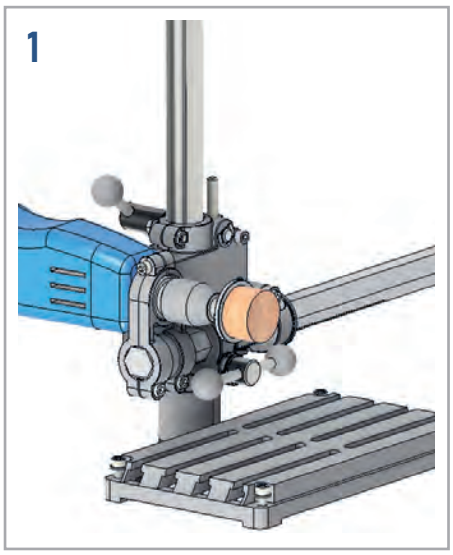


## 14. Turning with the face plate

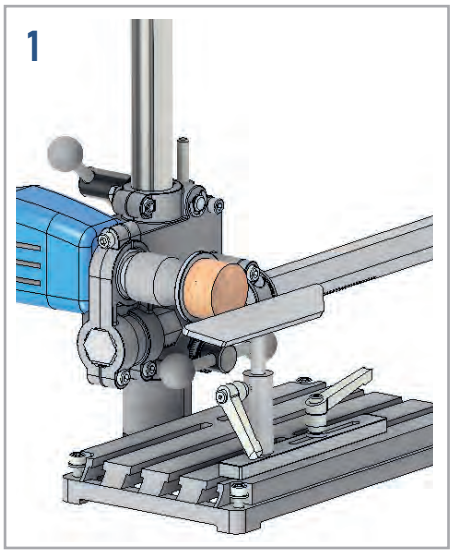
### 14.4 Clamping the face plate

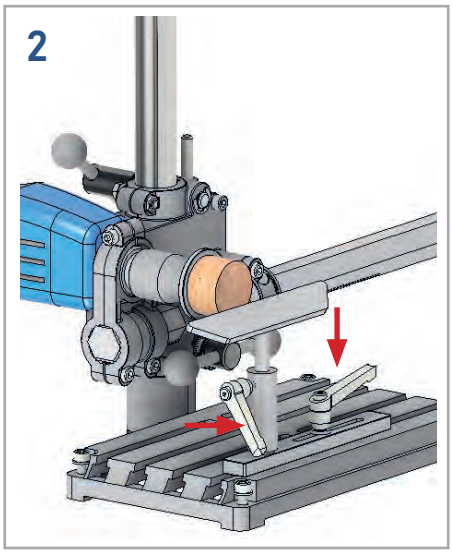
1. Clamp the face plate with the clamped workpiece in the drive unit.




### 14.5 Mounting the hand steel rest

1. Mount the hand steel rest (see also Item 9.1).
2. After determining the height, tighten the clamping lever of the clamping lug and the tool rest.



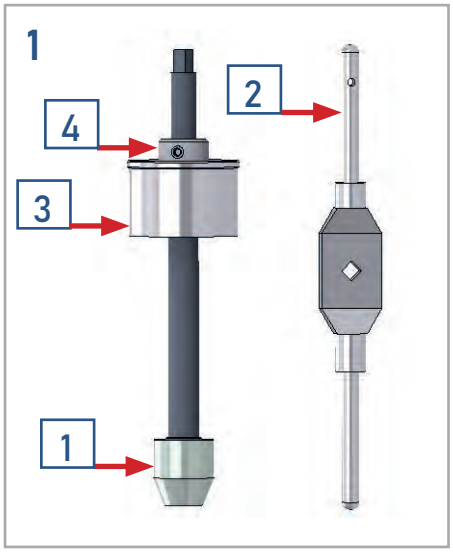



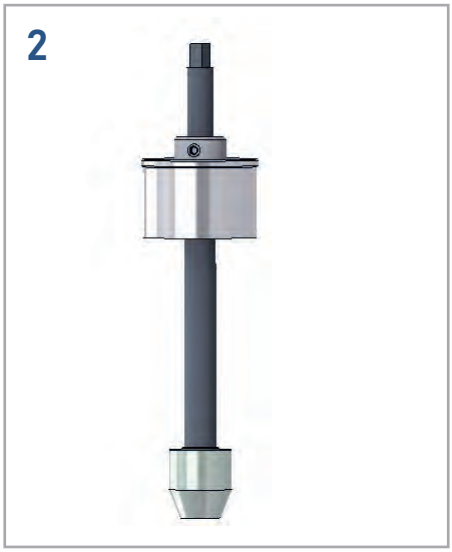
## 15. Tapping jig (optional item number 35805)

### 15.1 Use and installation

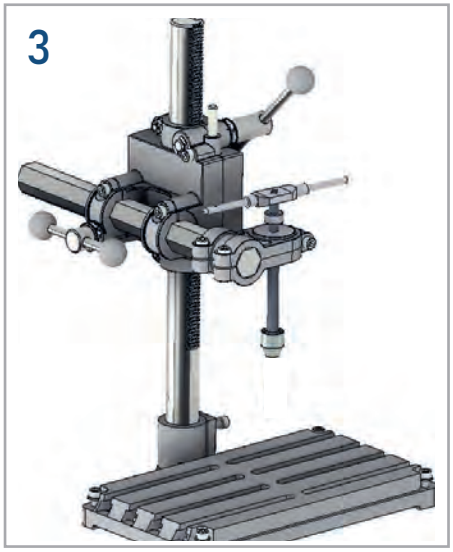
**Gewindeschneidvorrichtung dient zum winkelgenauen Positionieren des Gewindebohrers. Gewindetiefe ist mit dem Stellring justierbar.**

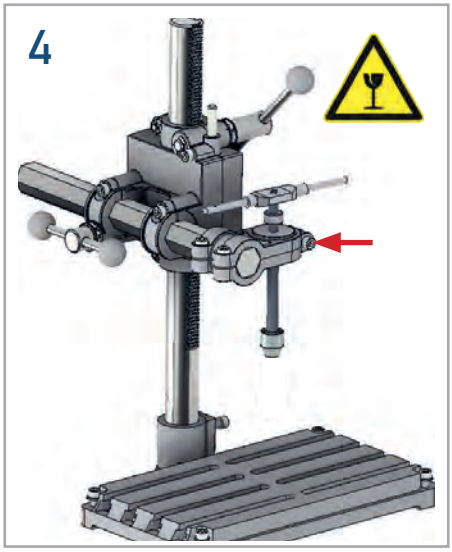
1. Scope of delivery
   1. Tool retainer for thread tap of M1 to M8 square clamping range of 2.0 to 5.0 mm
   2. Adjustable tap wrench, size 1½
   3. Adapter for European standard 43 mm
   4. Adjusting ring



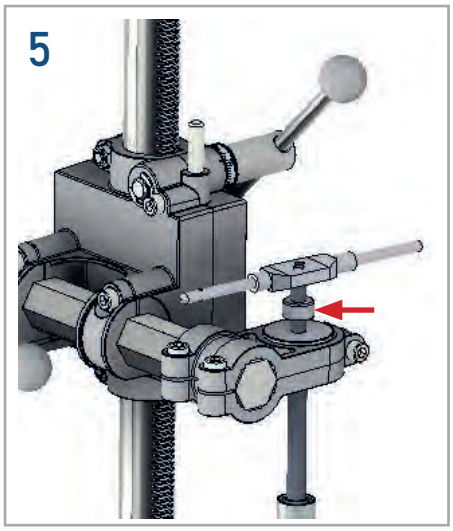



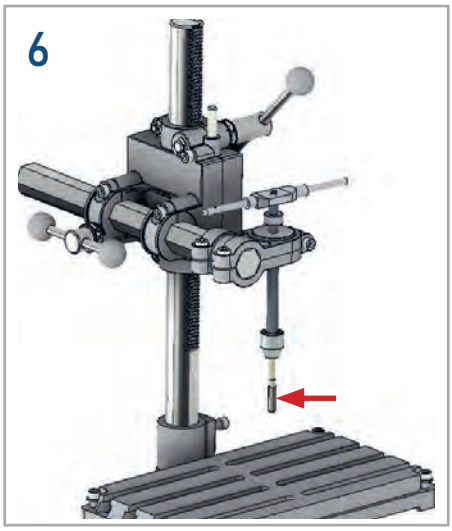

2. Mount the adapter and adjusting ring onto the tool retainer.
3. Clamp the tapping jig into the machine support. Mount the tap wrench onto the square of the tool retainer.
4. Tighten the clamping screw on the machine support **by hand**.




5. The thread depth can be precisely adjusted using the adjusting ring.
6. Mount the thread tap into the mount of the tool retainer.

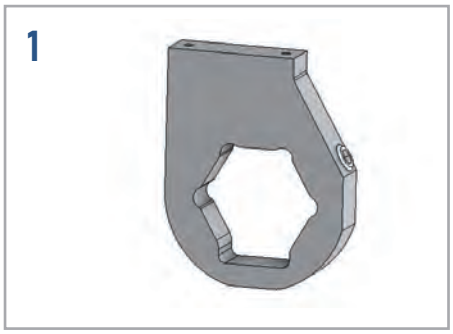


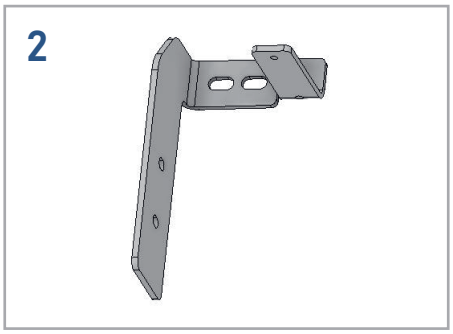



# 16. Mounting kit for BF drilling milling stands (optional item number 24599)

## 16.1 Scope of delivery

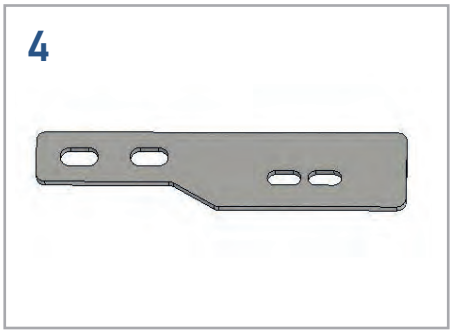
1. Y-axis lock ring
2. Vernier holder for Y- and Z-axes




3. Z-axis lock ring
4. Z-axis vernier holder

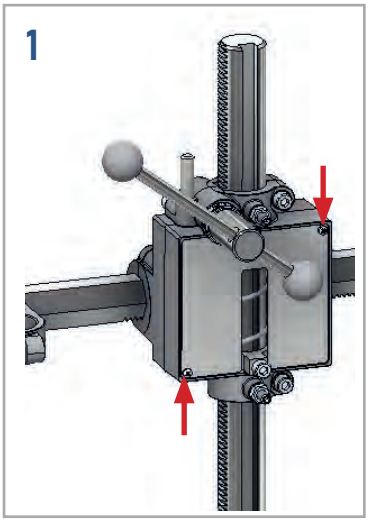
Fasteners
(see drawing and legend)

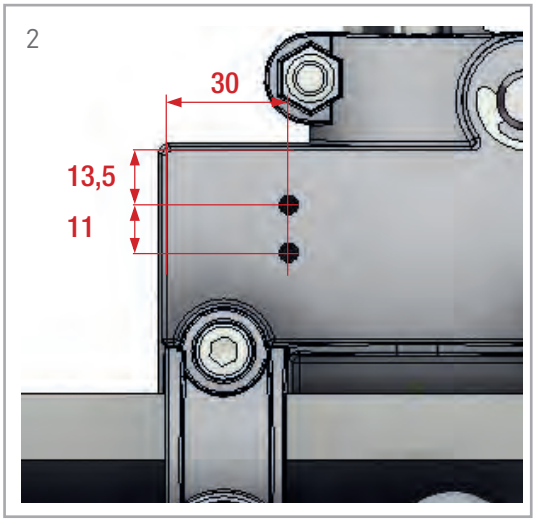



## 16. Mounting kit for BF drilling milling stands (optional item number 24599)

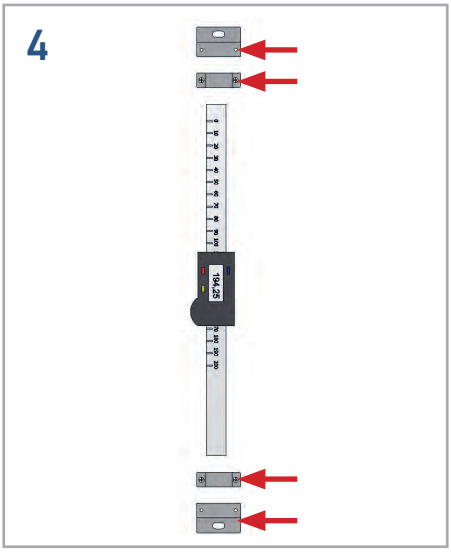
### 16.2 Installation of the Y-axis lock ring and Y- and Z-axis vernier holder

1. Unscrew the housing cover from the guide housing.
2. To fit the mounting kit, two holes with a 4.5 mm diameter must be drilled in the guide housing.

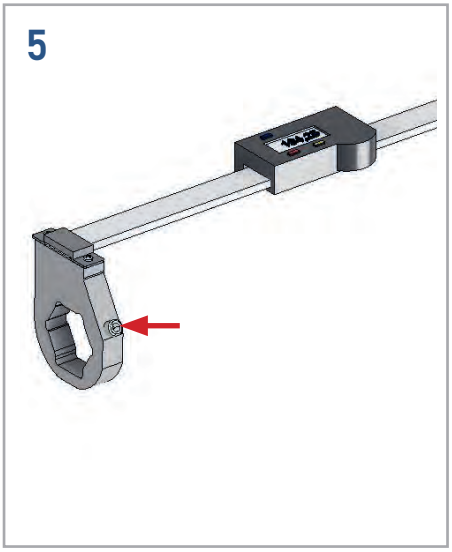


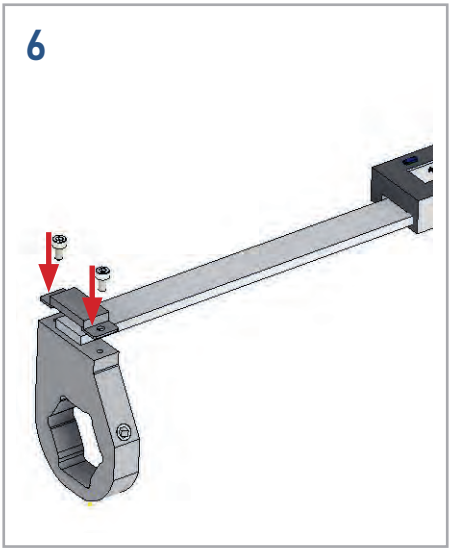




3. Screw the threaded pin into the Y-axis lock ring.
4. Unscrew the two fastening straps of the vernier scale for the Y-axis, consisting of a top and bottom part.


5. Position the vernier scale in such a way that you can read the numbers in the display. Position the Y-axis lock ring in such a way that the threaded pin faces forward.
6. Screw a top part of the fastening straps to the lock ring of the Y-axis with two screws M3x6.

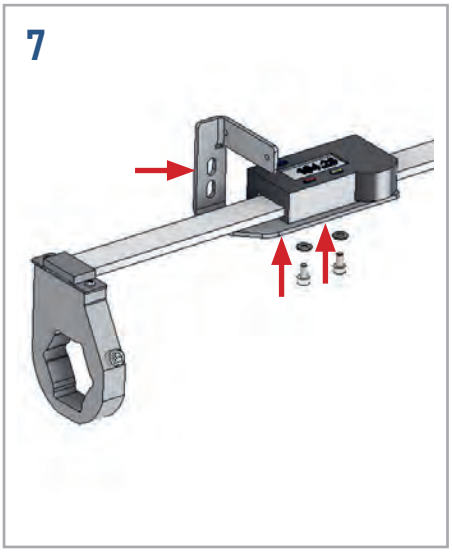


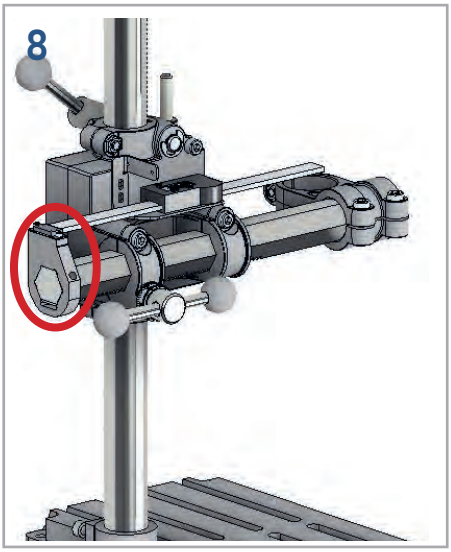



## 16. Mounting kit for BF drilling milling stands (optional item number 24599)

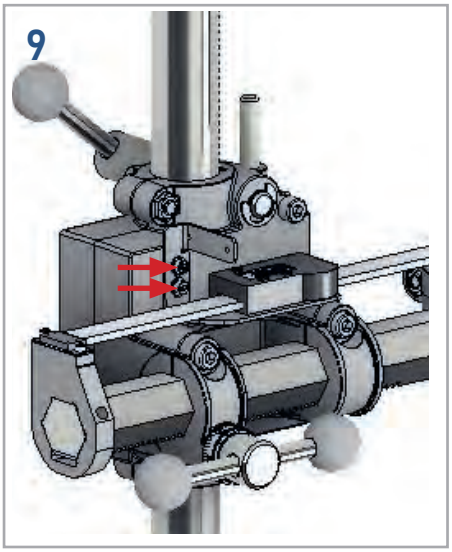
### 16.2 Installation of the Y-axis lock ring and Y- and Z-axis vernier holder

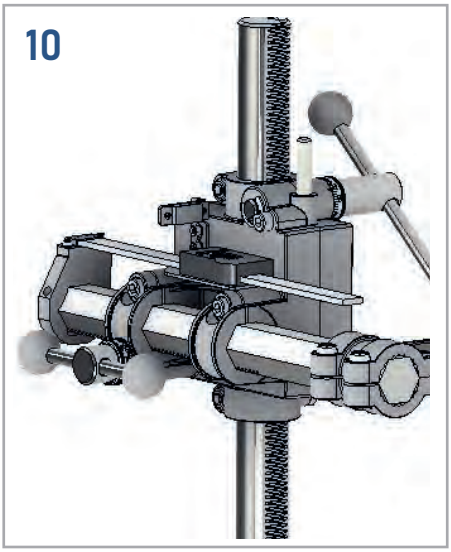
7. Screw the Y- and Z-axis vernier holder to the bottom of the vernier scale with two screws M3x6 and washers A3.2. If the screws pinch the vernier holder, use more washers.
8. Push the pre-mounted vernier scale onto the hexagonal steel boom flush with the lock ring and tighten the threaded pin.



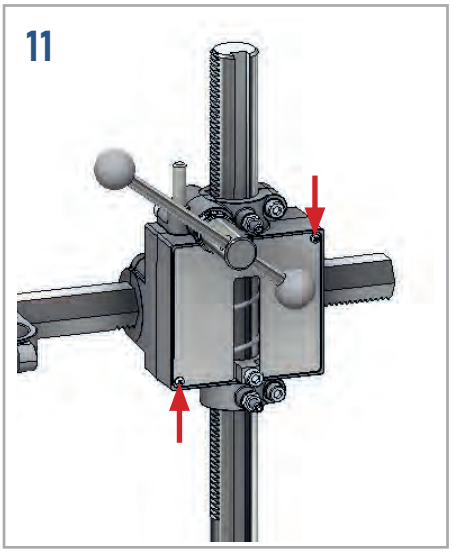




9. Position the vernier holder in such a way that the slots are located on the appropriate holes. Tighten the vernier holder with two screws M4x12, two nuts M4 and four washers A4.3.
10. The vernier scale must be installed parallel to the hexagonal steel boom.To make adjustments, loosen the screws, correct the alignment and tighten the screws again.



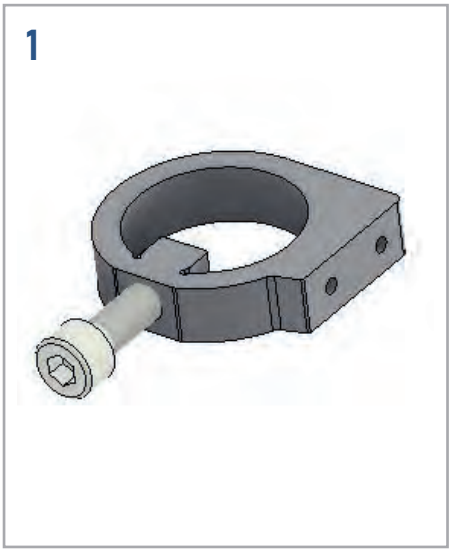

11. Screw the housing cover to the guide housing.

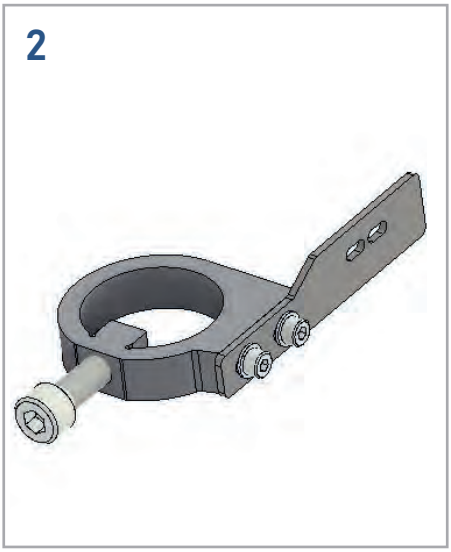


## 16. Mounting kit for BF drilling milling stands (optional item number 24599)

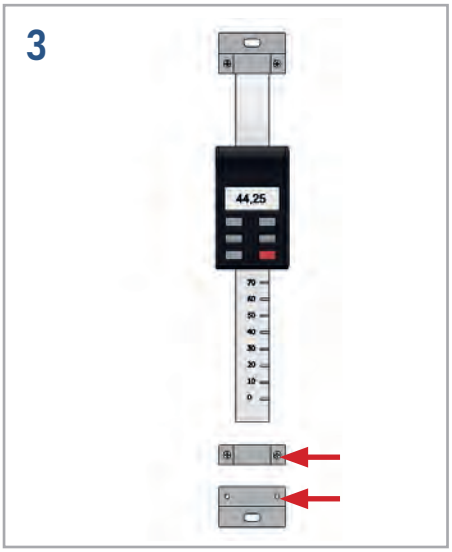
### 16.3 Installation of the Z-axis lock ring and vernier holder

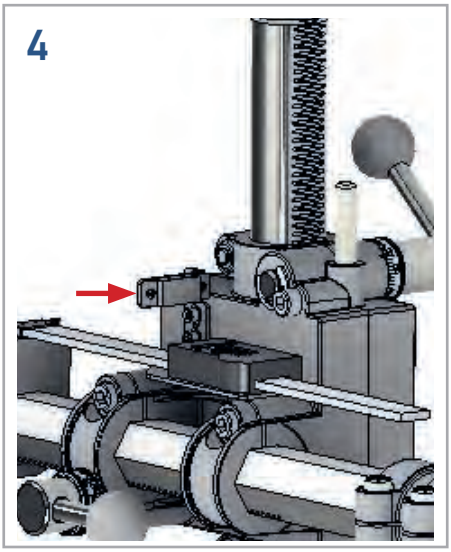
1. Screw the clamping screw M8x25 into the Z-axis lock ring.
2. Screw the Z-axis vernier holder to the Z-axis lock ring with two screws M4x10 and washers A4.3.



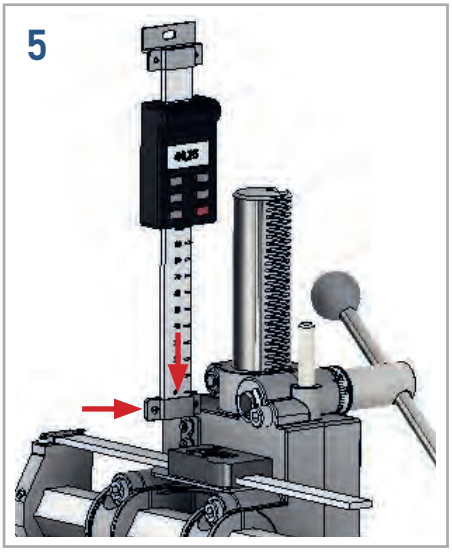



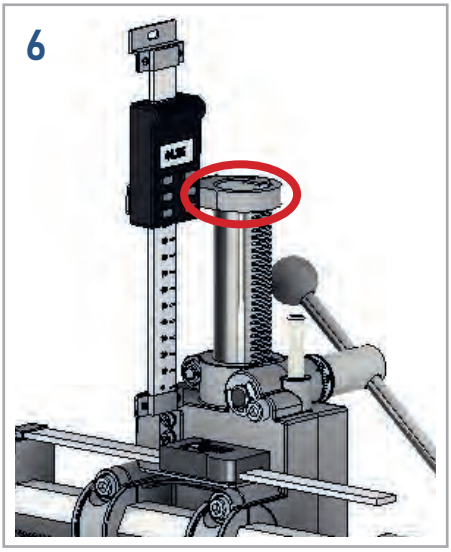

3. Position the vernier scale in such a way that you can read the numbers in the display. Unscrew the lower fastening strap comprised of a top and bottom part.
4. Screw the top part of the fastening strap of the vernier scale to the vernier holder for the Y- and Z-axis using two screws M3x6, but not too tightly.




5. Insert the vernier scale into the fastening strap and tighten the two screws.
6. Slide the lock ring with the Z-axis vernier holder onto the steel column.

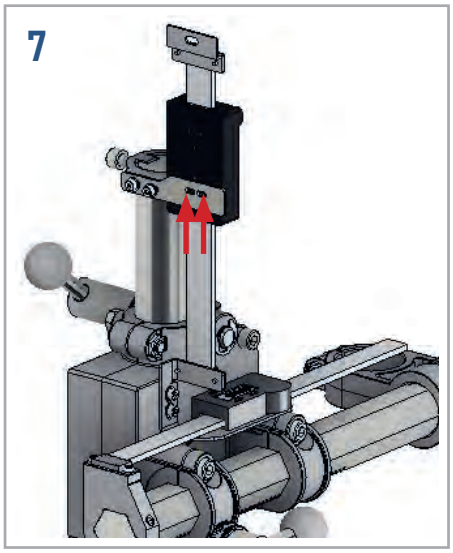


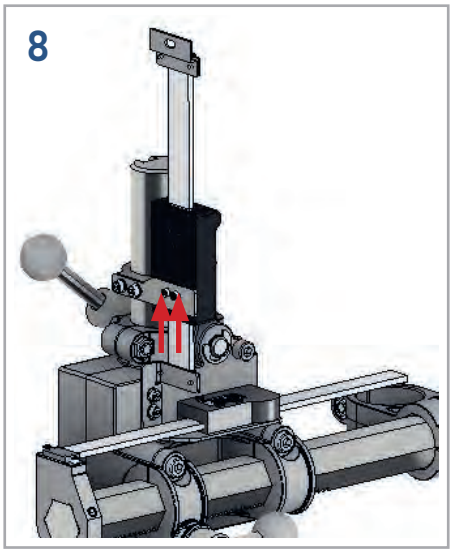



## 16. Mounting kit for BF drilling milling stands (optional item number 24599)

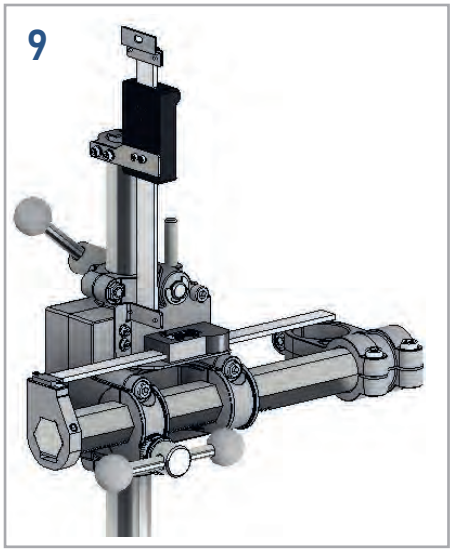
### 16.3 Installation of the Z-axis lock ring and vernier holder

7. Position the Z-axis vernier holder in such a way that the slots line up with the bottom threaded holes of the vernier scale.
8. Screw the Z-axis vernier holder to the vernier scale with two screws M3x6 and two washers A3.2. If the screws pinch the vernier holder, use more washers.



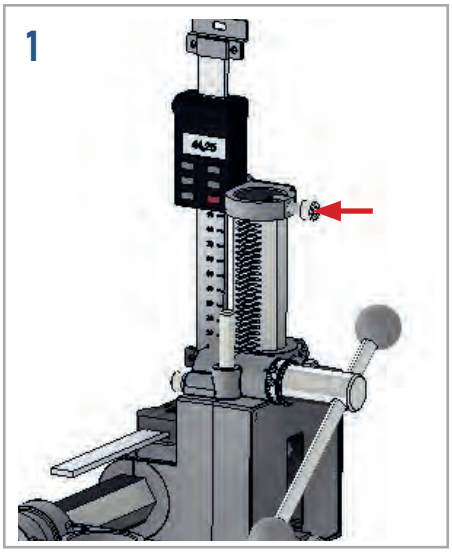



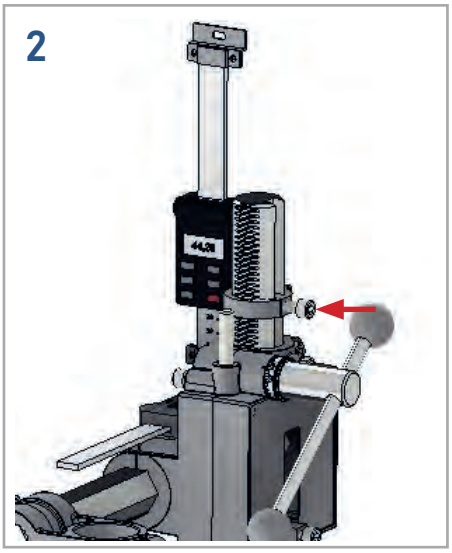

9. The vernier scale must be installed parallel to the steel column (Z-axis). To make adjustments, loosen the screws in the slots of the vernier holder for the Z-axis, correct the alignment and tighten the screws again.




### 16.4 Z-axis travel

1. **Working with the read function in the display of the vernier scale**
   Tighten the clamping screw in the Z-axis lock ring. The travel can be read in the display.
2. **Working without the read function in the display of the vernier scale**
   Loosen the clamping screw in the Z-axis lock ring. The entire Z-axis travel can be used.



# 17. B1200 and B1230 drilling stands

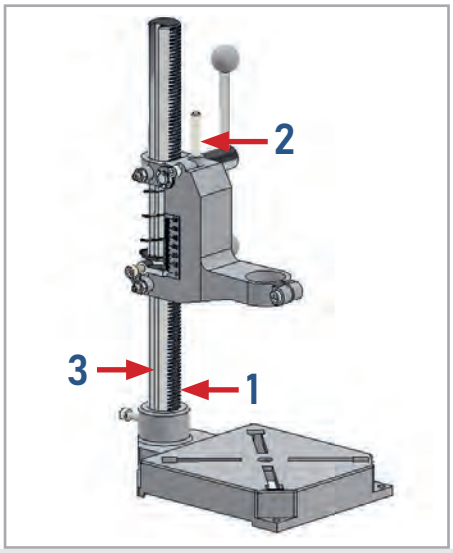
## 17.1 Lubrication

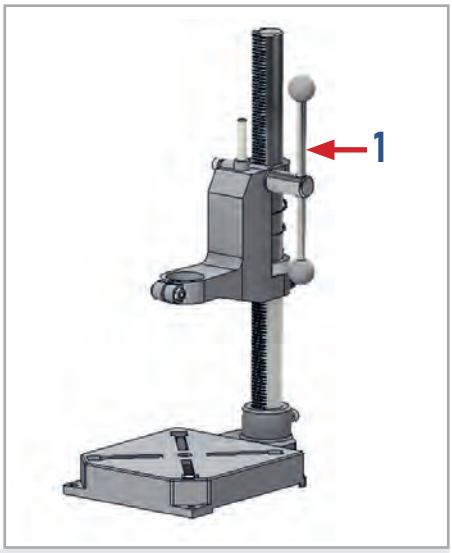
The following parts are to be lubricated with commercially available lubricating oil on a regular basis

1. Steel column
2. Depth stop
3. Guide groove of the steel column

Protect against corrosion

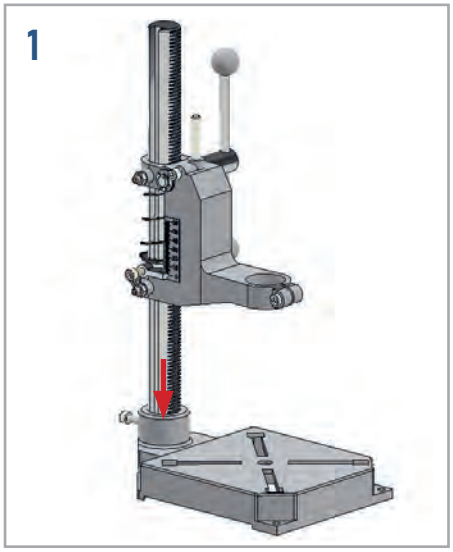
4. Z-axis feed lever

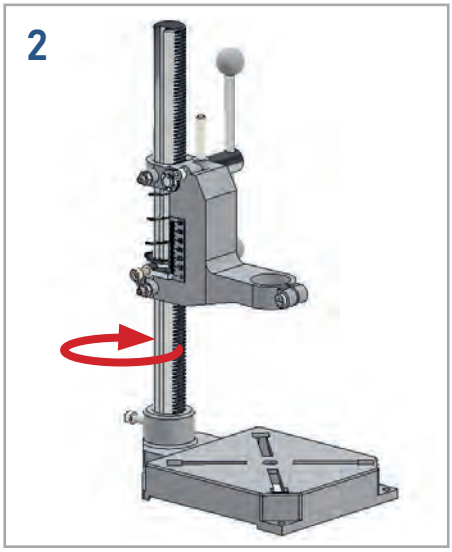


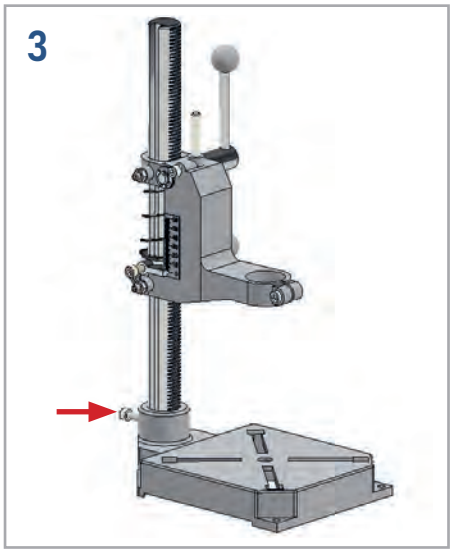

## 17.2 Installation

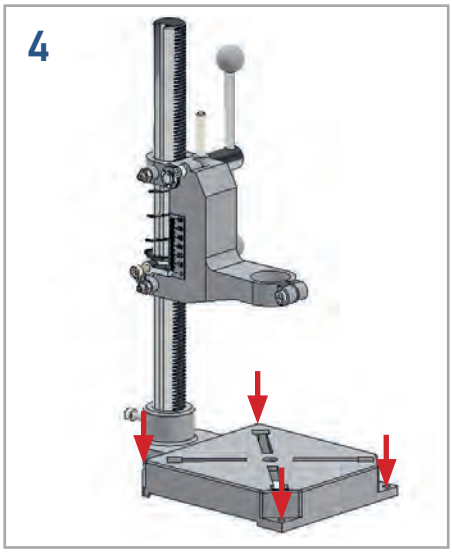
1. Insert the guide housing with the steel column into the location bore of the base plate.
2. The guide housing with the steel column can be rotated 360° in the base plate.




3. Tighten the clamping screw of the base plate so the steel co lumn does not rotate in the location bore.
4. Secure the drilling stand to a solid and level surface with four screws.

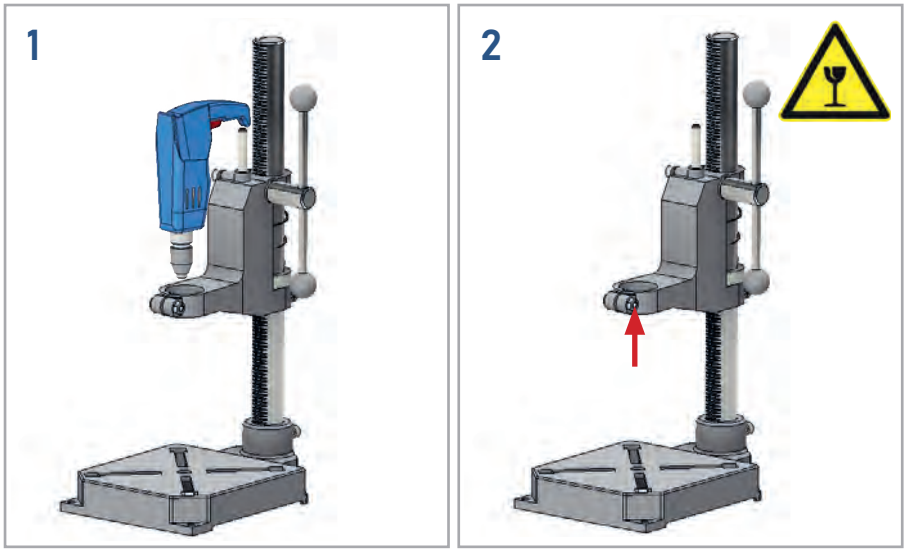


# 17. B1200 and B1230 drilling stands

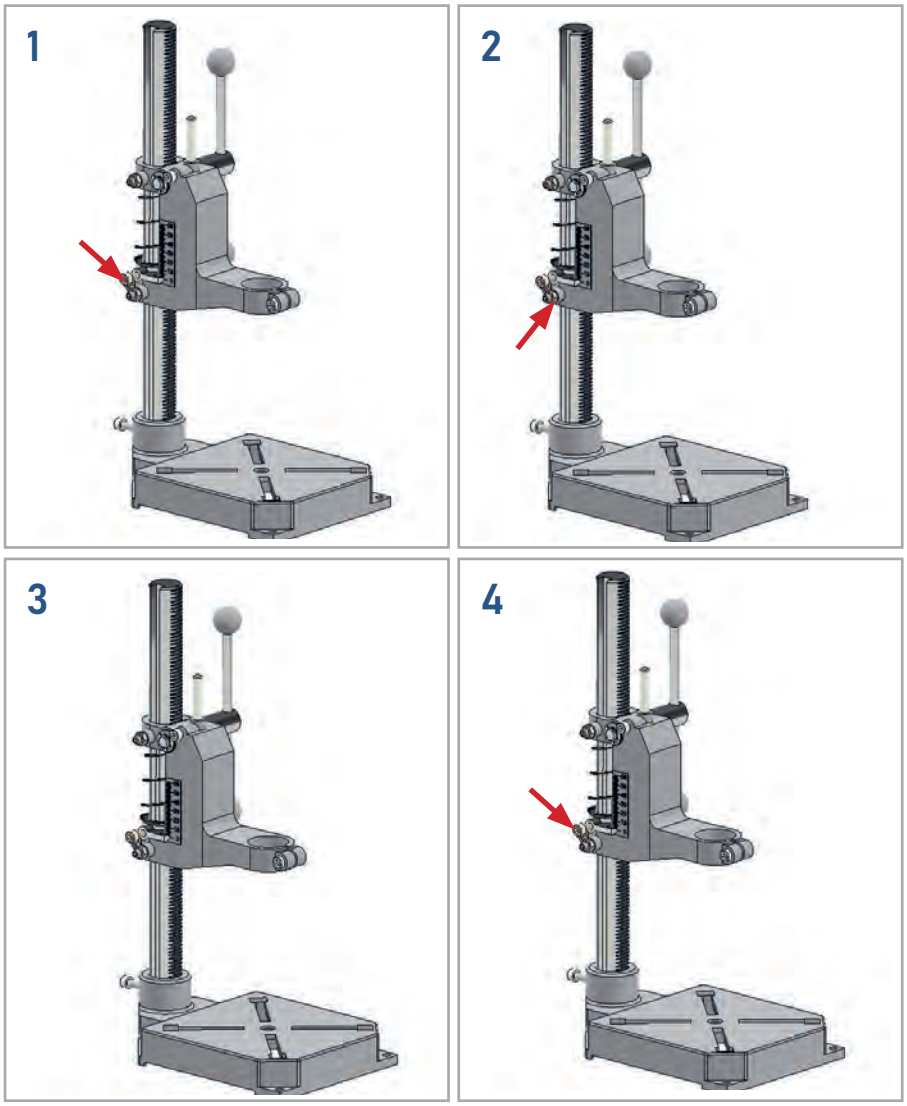
## 17.3 Inserting the drive unit

1. Insert the drive unit (European standard 43 mm dia.) straight into the guide housing.
2. Tighten the clamping screw of the guide housing **by hand**.




## 17.4 Working with the return spring

1. Tighten the clamping screw of the lock ring.
2. Loosen the clamping screw of the steel column.
3. Using the feed lever of the Z-axis, you can move the guide housing downward by up to 60 mm. The return spring brings the guide housing back to the initial position.
4. To deactivate the return spring, loosen the clamping screw of the lock ring again.

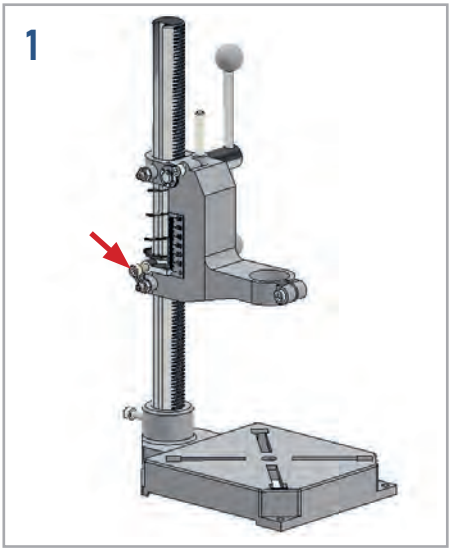


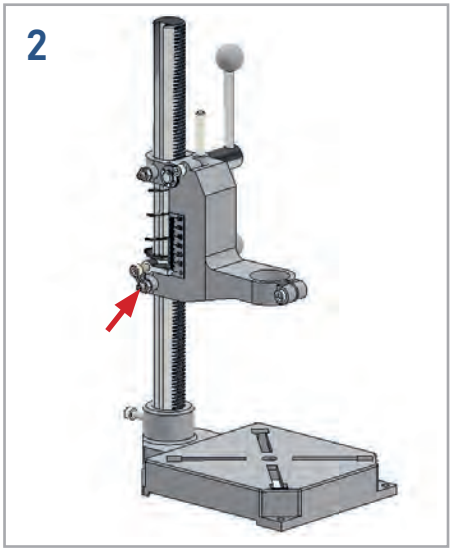
# 17. B1200 and B1230 drilling stands

## 17.5 Working with the depth stop

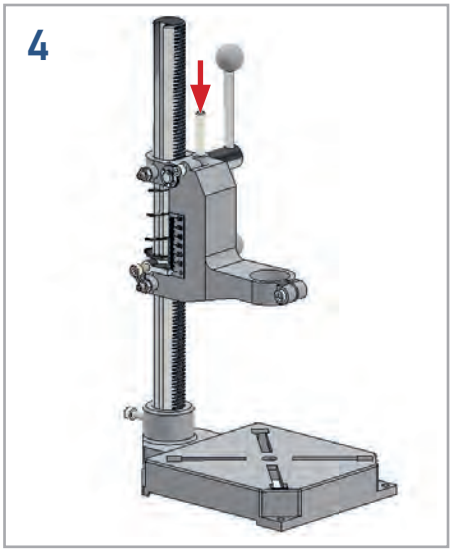
**By activating the depth stop, multiple workpieces can be processed with the same depth.**

1. Tighten the clamping screw of the lock ring.
2. If necessary, loosen the clamping screw of the steel column.

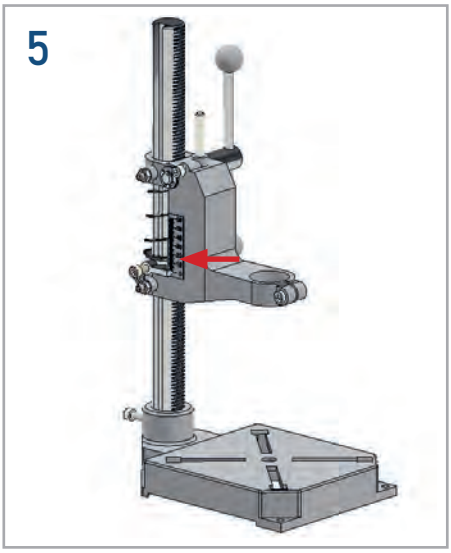



3. Loosen the clamping screw of the depth stop.
4. The depth stop automatically drops to the lock ring. If necessary, guide the depth stop downwards until it meets resistance (lock ring).

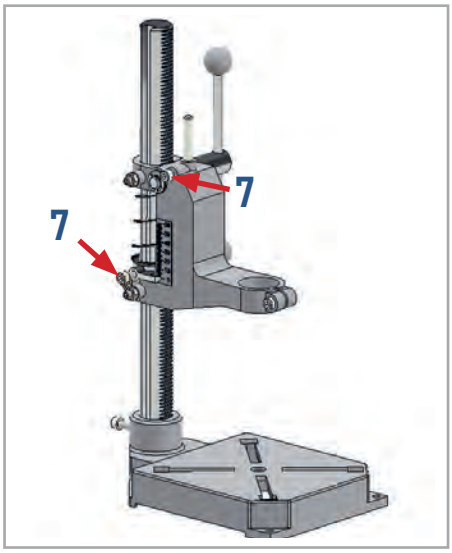

5. Lower the guide housing with the feed lever of the Z-axis until the desired drilling depth (e.g. 10 mm) can be read on the scale.
6. In this position, tighten the locking screw of the depth stop **by hand**.




## 17. B1200 and B1230 drilling stands

### 17.5 Working with the depth stop

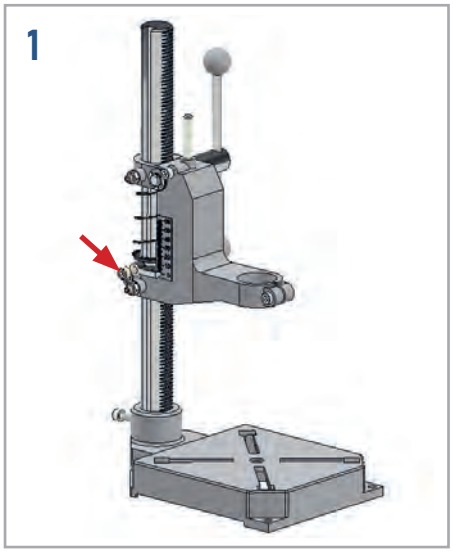
7. To deactivate the depth stop, loosen the clamping screw of the lock ring and the clamping screw of the depth stop again.




### 17.6 Adjusting the play of the guide housing

Before adjusting the guide housing, clean the toothing of the steel column with a wire brush.

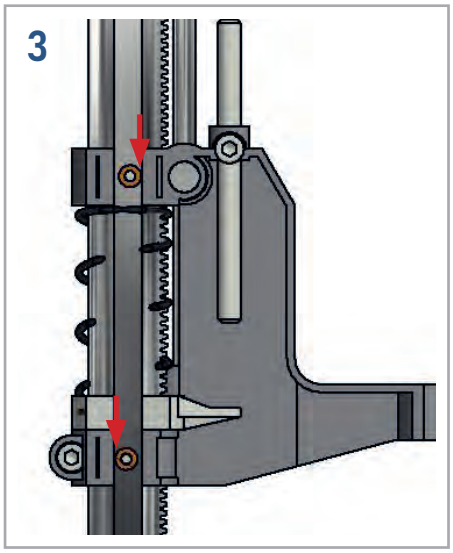
1. Tighten the clamping screw of the lock ring so the guide housing cannot drop down.
2. Nut with threaded pin and eccentric

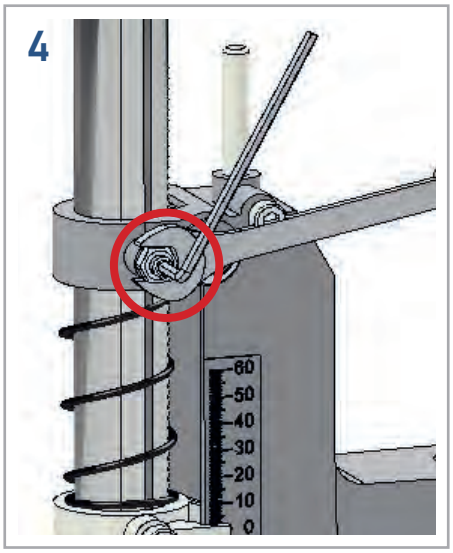



## 17. B1200 and B1230 drilling stands

### 17.6 Adjusting the play of the guide housing

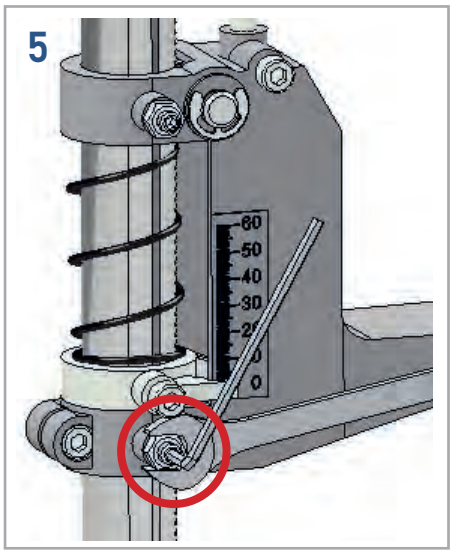
3. The two threaded pins with an eccentric have a guide roller facing the steel column.
   The upper guide roller must contact the groove of the steel column on the right.
   The lower guide roller must contact the groove of the steel column on the left.




4. Loosen the upper nut of the threaded pin with the eccentric using a fork wrench while at the same time holding the threaded pin in place with an Allen wrench. Turn the Allen wrench with the threaded pin clockwise until slight resistance can be felt. Hold the nut in place. The threaded pin must be held in place with the Allen wrench here.
5. Loosen the lower nut of the threaded pin with the eccentric using a fork wrench while at the same time holding the threaded pin in place with an Allen wrench. Turn the Allen wrench with the threaded pin counterclockwise until slight resistance can be felt. Hold the nut in place. The threaded pin must be held in place with the Allen wrench here.

   If the guide housing is not optimally set for the application, repeat the procedure.



# 18. K400 and K600 2-axis coordinate tables

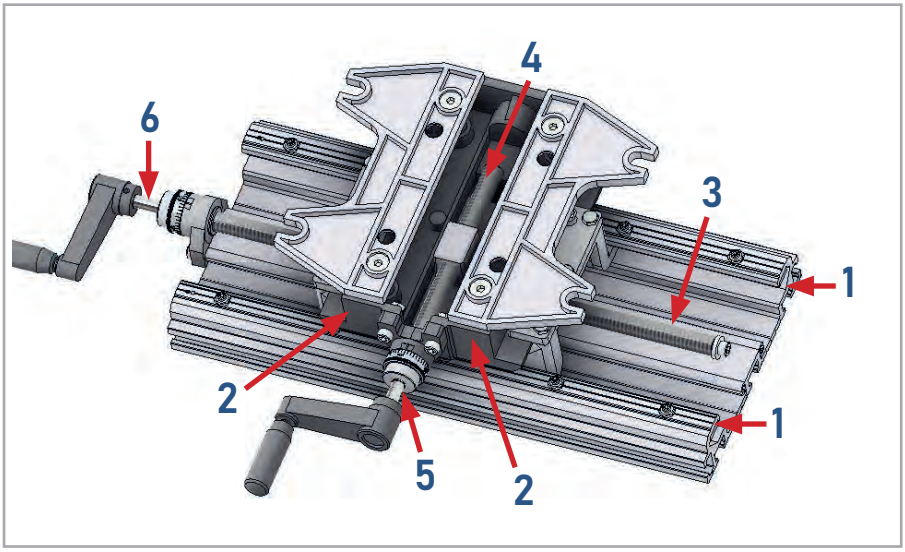
## 18.1 Lubrication

The following parts are to be lubricated with commercially available lubricating oil on a regular basis

1. X-axis guide
2. Y-axis guide
3. X-axis threaded spindle
4. Y-axis threaded spindle

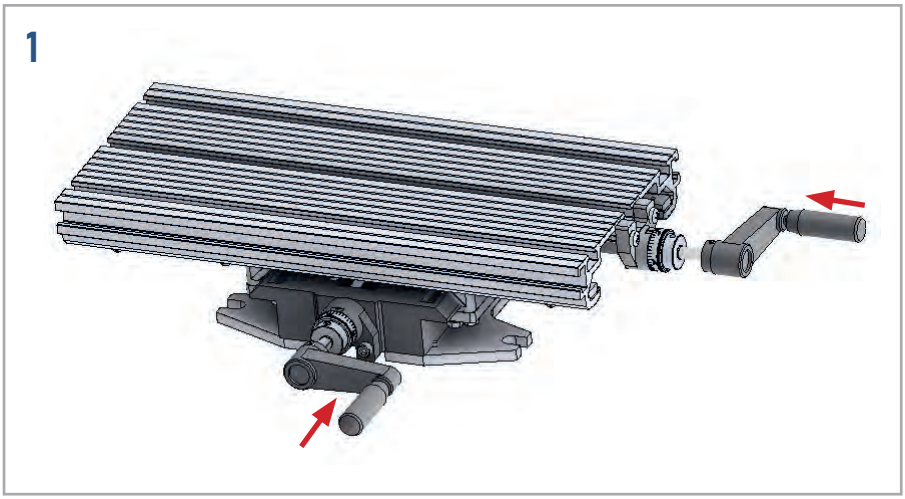
Protect against corrosion

5. Adjusting ring with X-axis spindle attachment
6. Adjusting ring with Y-axis spindle attachment

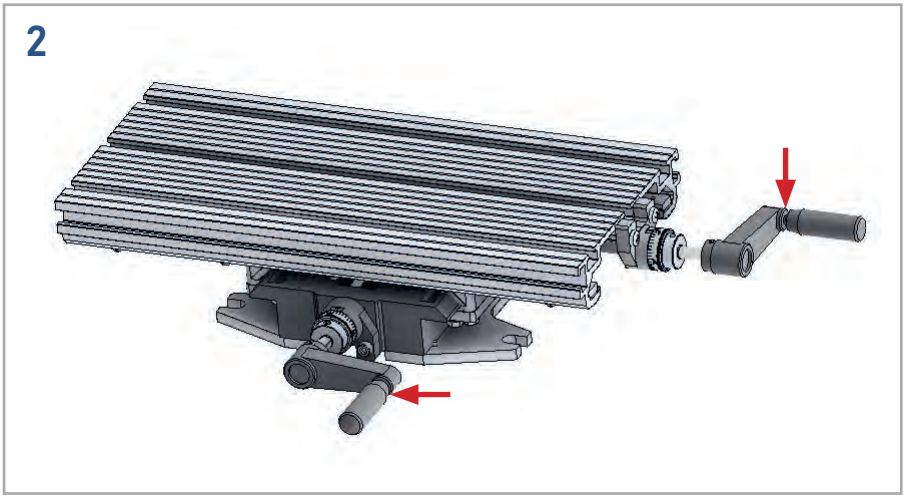



## 18.2 Installation

1. The two rotating handles for the hand cranks must be screwed on. Screw in the screws in the handles on the hand crank until the nut contacts the hand crank.



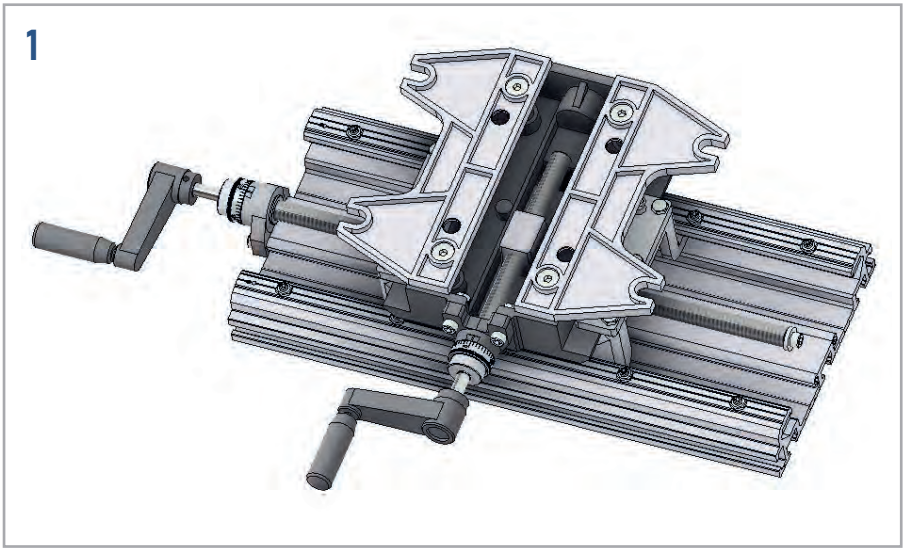

2. Using an Allen wrench, hold the screw in the handle and hold the nut in place with a fork wrench. This prevents the handle from loosening.



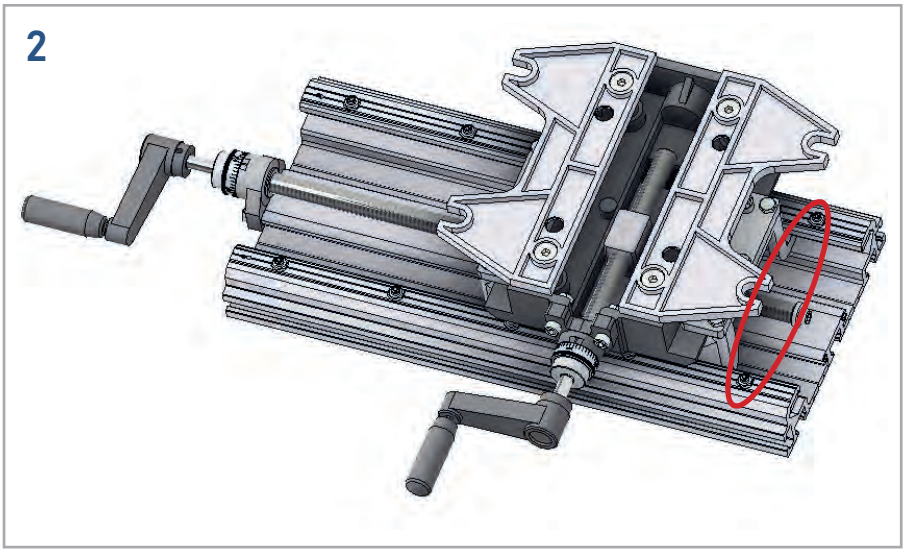
## 18. K400 and K600 2-axis coordinate tables

### 18.3 Adjusting the X-axis guide

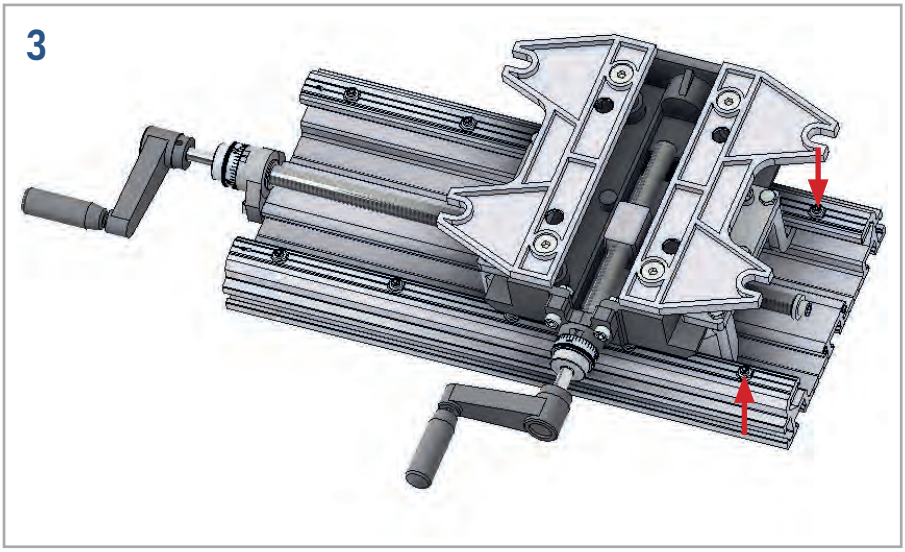
1. Place the 2-axis coordinate table onto the clamping surface of the top slide.




2. Move the cross slide in such a way that the front edge of the cross slide is in alignment with the first pair of screws.




3. On both sides, loosen the nut with a fork wrench and the threaded pin with an Allen wrench.

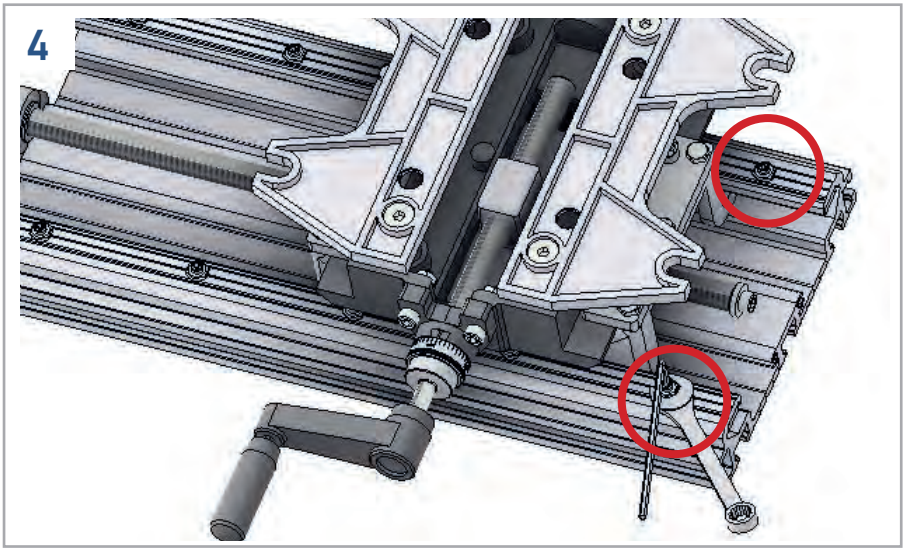


# 18. K400 and K600 2-axis coordinate tables

## 18.3 Adjusting the X-axis guide

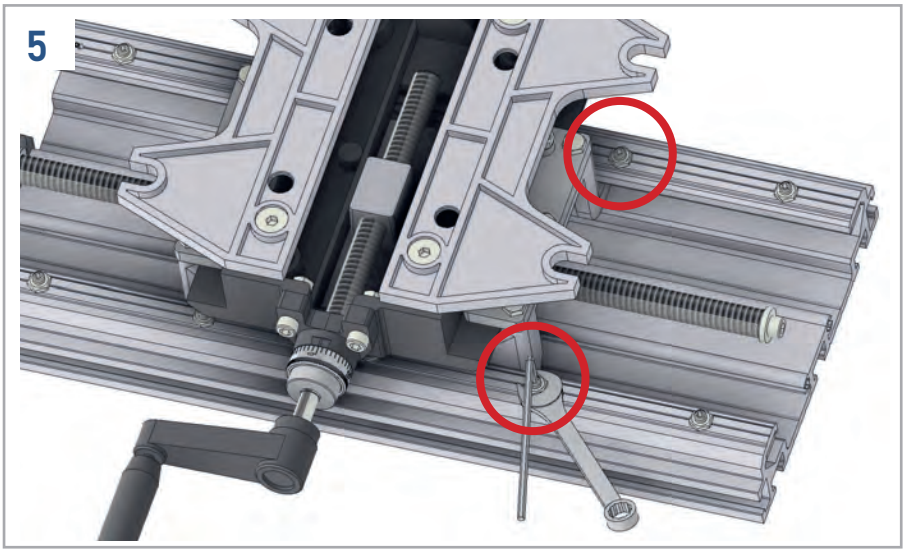
4. Rotate the threaded pin with an Allen wrench clockwise until slight resistance can be felt. Hold the threaded pin in place with the Allen wrench and hold the nut in place with a fork wrench.

   Repeat Steps 3 and 4 on the opposite side.



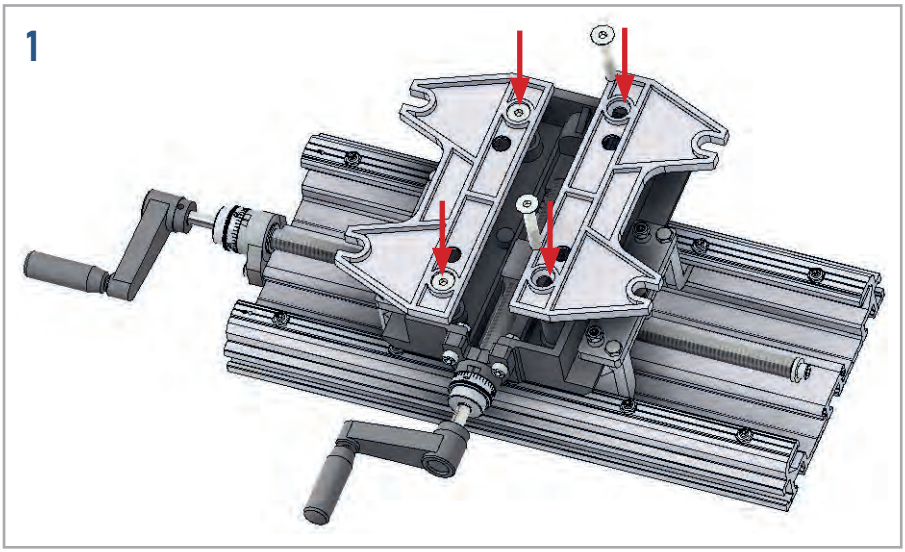

5. Repeat this procedure for all screw pairs of the X-axis until all threaded pins and nuts are adjusted. When doing so, move the cross slide in such a way that the front edge of the cross slide is located below the next pair of screws.

   If the X-axis is not optimally set for the application, repeat the procedure.




## 18.4 Adjusting the Y-axis guide

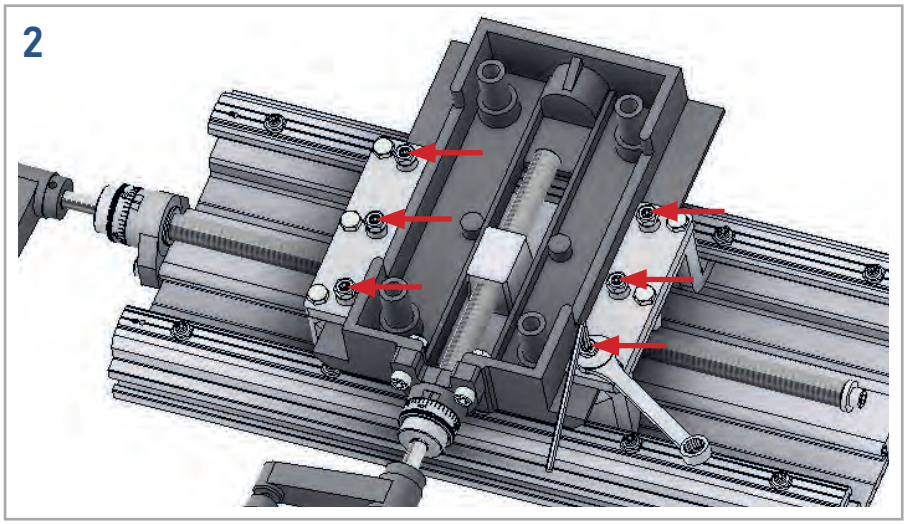
1. Unscrew the two clamping retainers from the base plate. Set the screws and nuts aside.



## 18. K400 and K600 2-axis coordinate tables

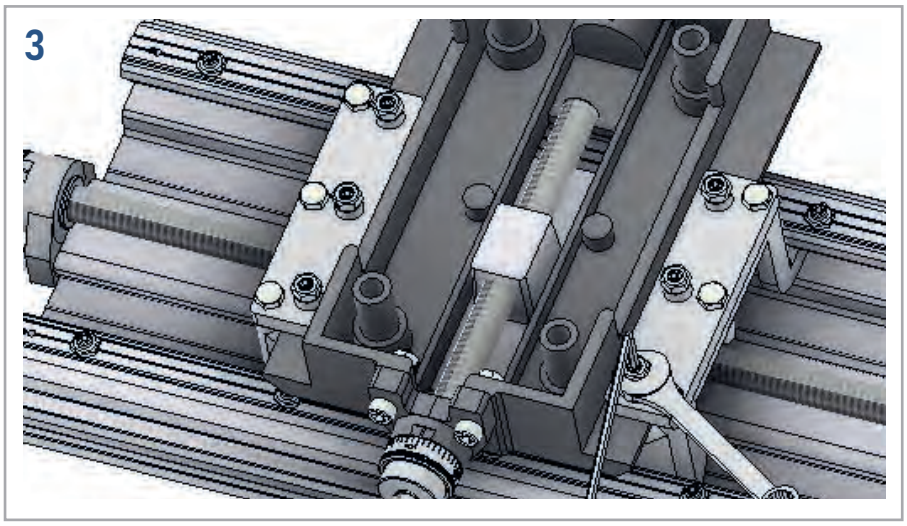
### 18.4 Adjusting the Y-axis guide

2. On both sides, loosen the nuts with a fork wrench and the threaded pins with an Allen wrench.

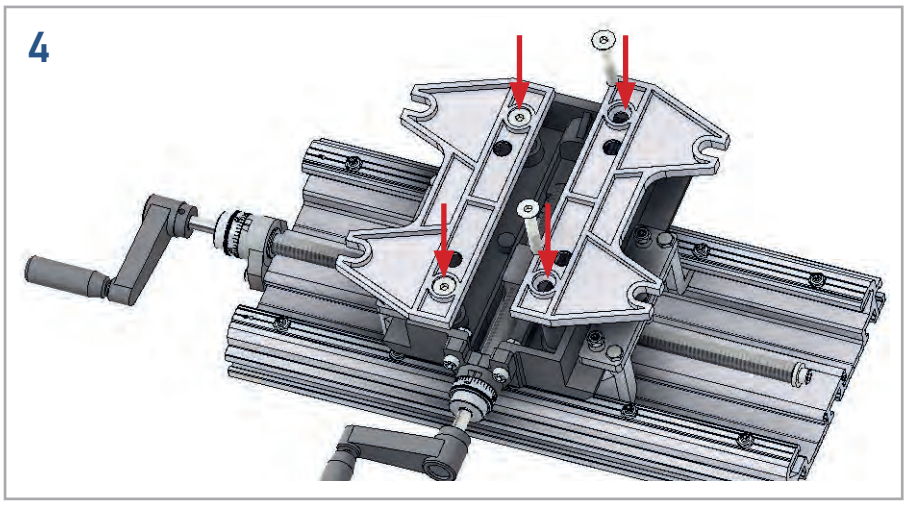



3. Rotate the threaded pin with an Allen wrench clockwise until slight resistance can be felt. Hold the threaded pin with an Allen wrench and hold the nut in place with a fork wrench. Repeat Steps 2 and 3 on the opposite side. Repeat this procedure for all screw pairs of the Y-axis until all threaded pins and nuts are adjusted.

   If the Y-axis is not optimally set for the application, repeat the procedure.




4. If the Y-axis of the 2-axis coordinate table is optimally set for the application, screw the two clamping retainers to the floor plate again with the screws and nuts set aside.

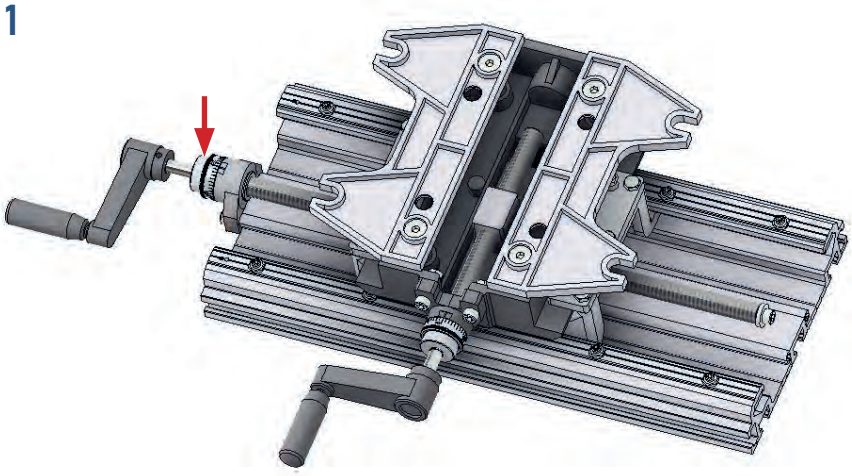


## 18. K400 and K600 2-axis coordinate tables

### 18.5 Fine adjustment of the play of the spindle bearing on the X-axis

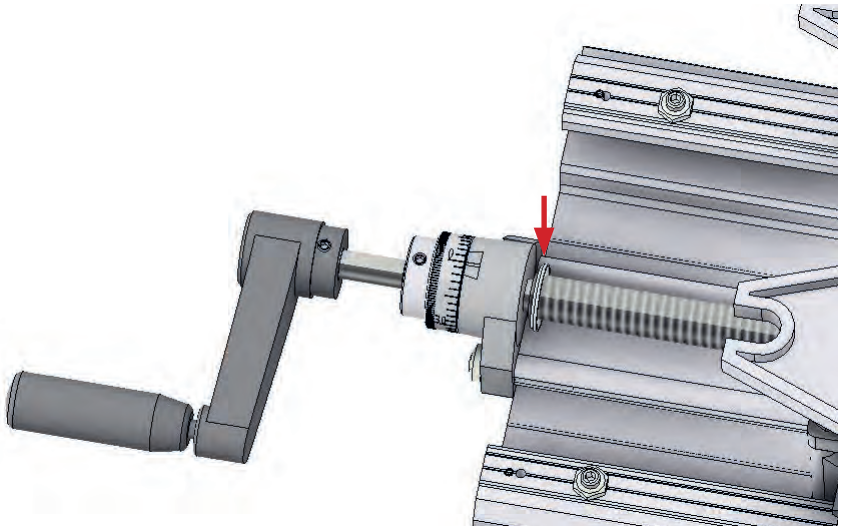
1. Place the 2-axis coordinate table onto the clamping surface of the top slide. Loosen the threaded pin in the adjusting ring.

1



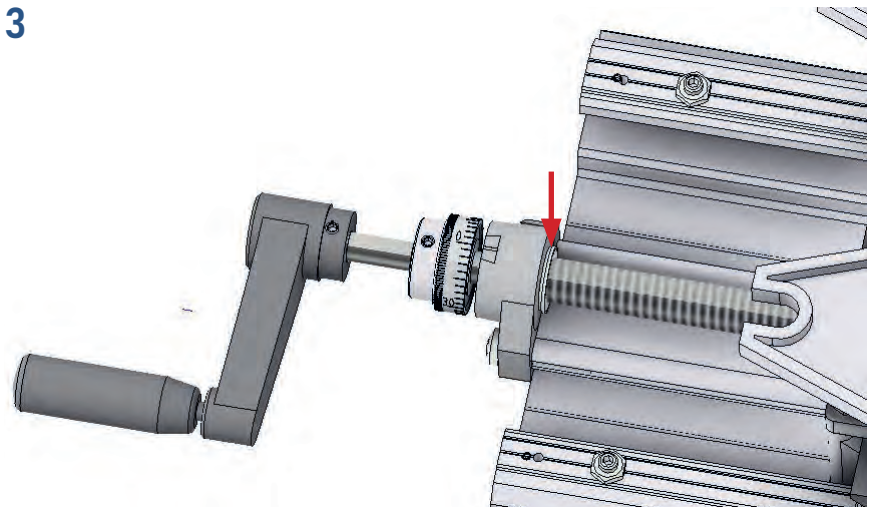
2. Rotate the X-axis feed spindle clockwise until the washer and disk spring are released from the spindle bearing.

2



3. Rotate the X-axis feed spindle counterclockwise until the washer and disk spring are on the spindle bearing again.

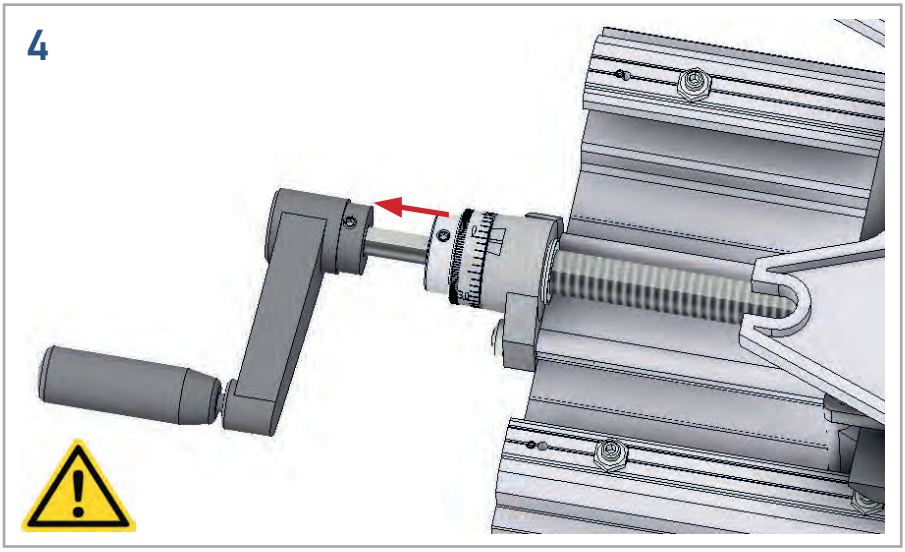
3



# 18. K400 and K600 2-axis coordinate tables

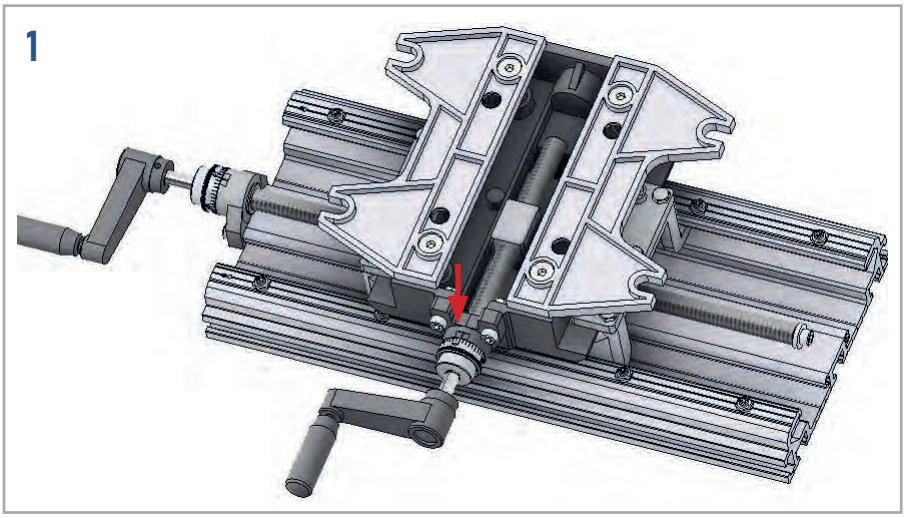
## 18.5 Fine adjustment of the play of the spindle bearing on the X-axis

4. Pull the adjusting ring with the scale ring toward the hand crank. There is a milled surface on the X-axis feed spindle. The hole of the adjusting ring must be located on the milled surface.
   In this position, push the adjusting ring back onto the spindle bearing. Tighten the threaded pin of the adjusting ring.

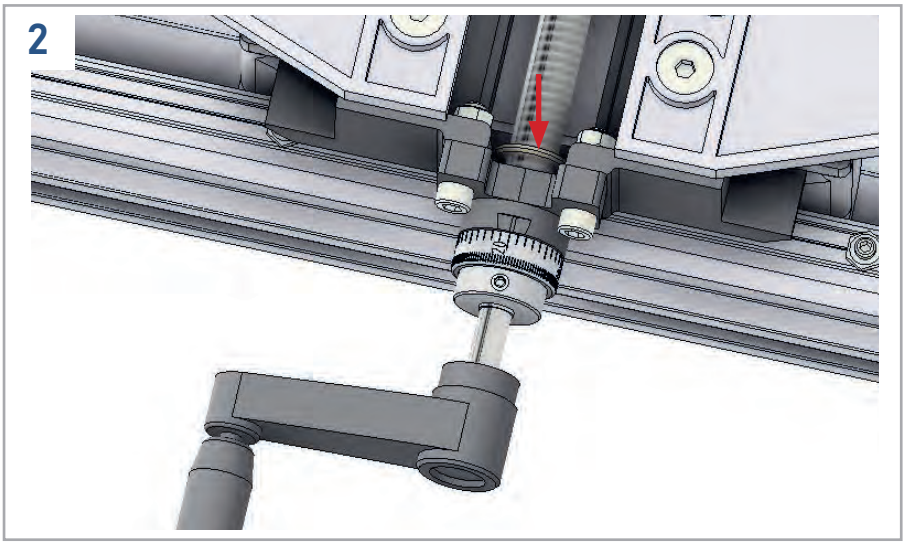



## 18.6 Fine adjustment of the play of the spindle bearing on the Y-axis

1. Place the 2-axis coordinate table onto the clamping surface of the top slide. Loosen the threaded pin in the adjusting ring.



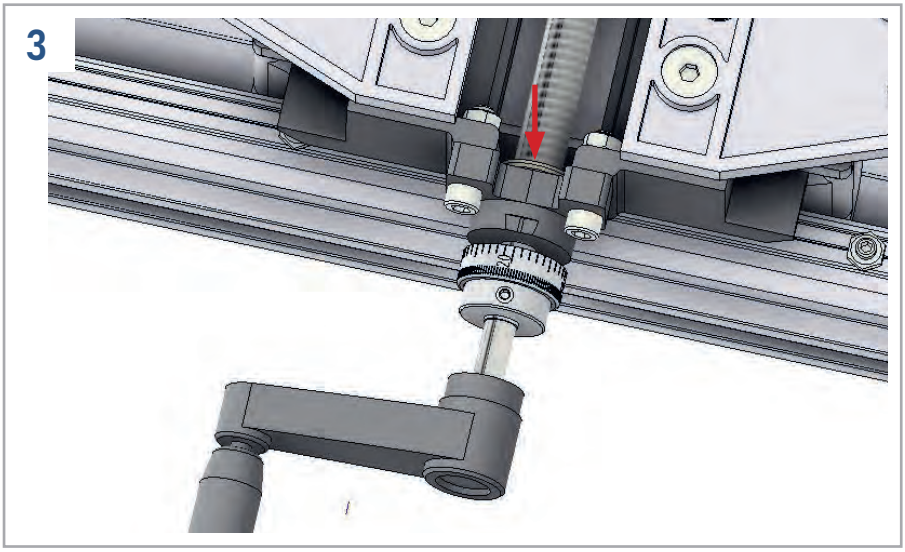

2. Rotate the Y-axis feed spindle counterclockwise until the washer and disk spring are released from the spindle bearing.



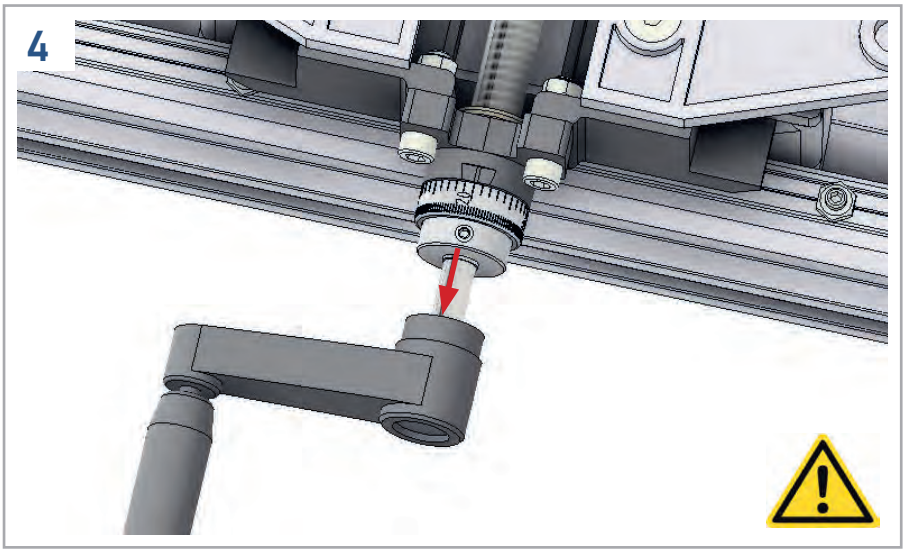
## 18. K400 and K600 2-axis coordinate tables

### 18.6 Fine adjustment of the play of the spindle bearing on the Y-axis

3. Rotate the Y-axis feed spindle clockwise until the washer and disk spring are on the spindle bearing again.



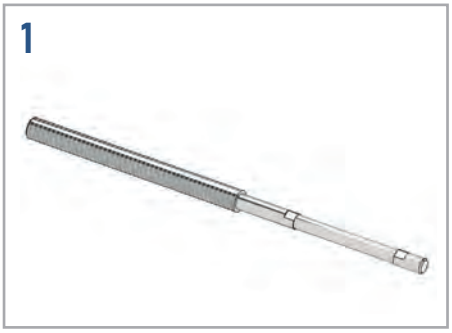

4. Pull the adjusting ring with the scale ring toward the hand crank. There is a milled surface on the Y-axis feed spindle. The hole of the adjusting ring must be located on the milled surface. In this position, push the adjusting ring back onto the spindle bearing. Tighten the threaded pin of the adjusting ring.



# 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

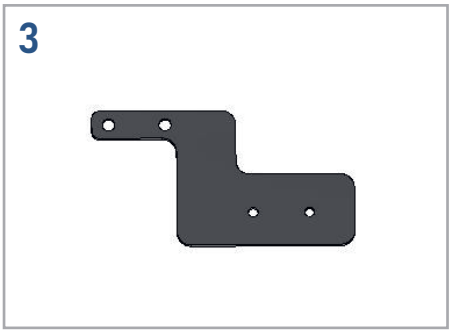
## 19.1 Scope of delivery

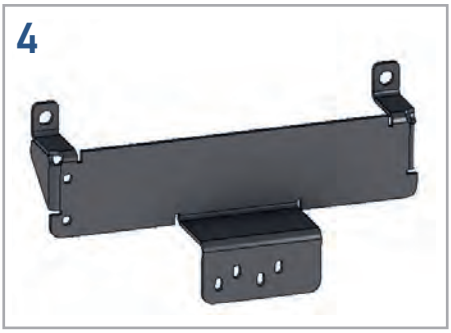
1. Extended feed spindle for Y-axis for maintaining the travel on the Y-axis and optimal spacing between the hand crank and the vernier scale
2. Y-axis vernier scale retainer



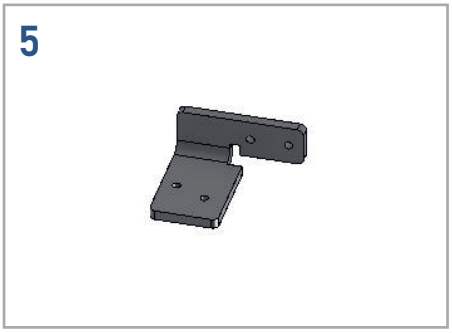


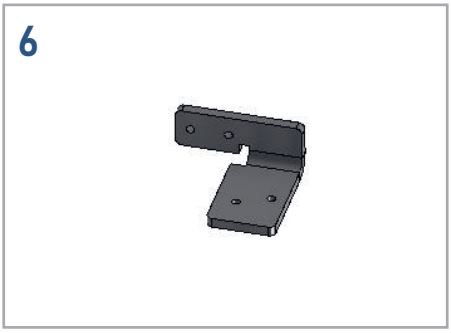
3. Y-axis vernier holder
4. X-axis vernier holder




5. X-axis vernier scale retainer on left
6. X-axis vernier scale retainer on right



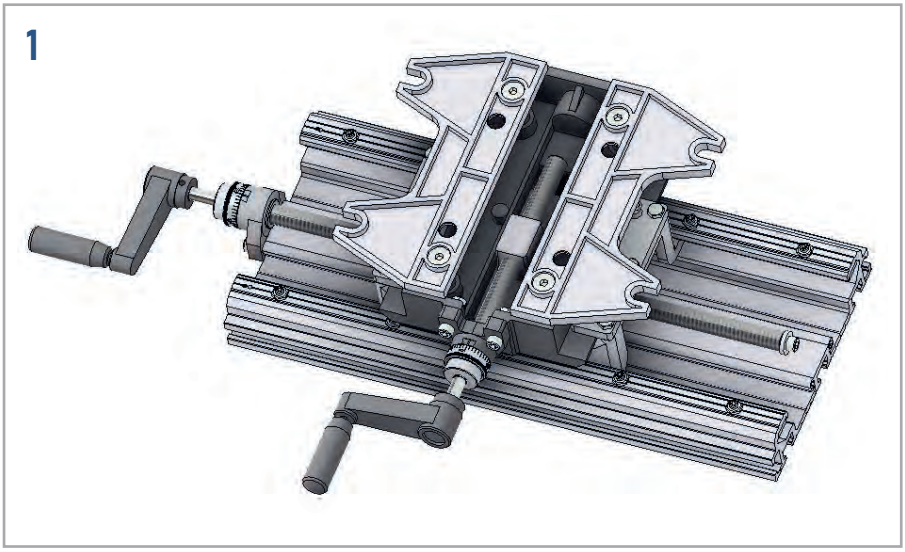




Fasteners
see drawing and legend

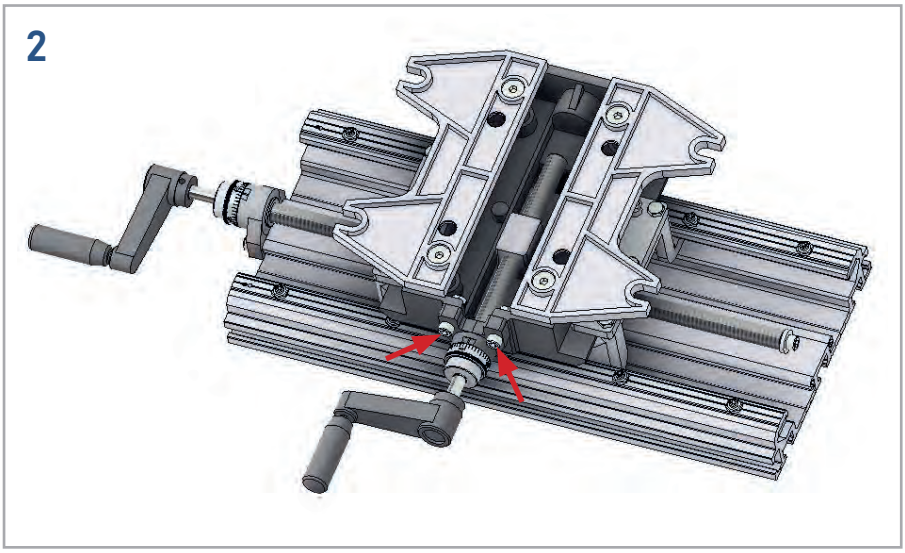
## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

### 19.2 Removal of the Y-axis feed spindle

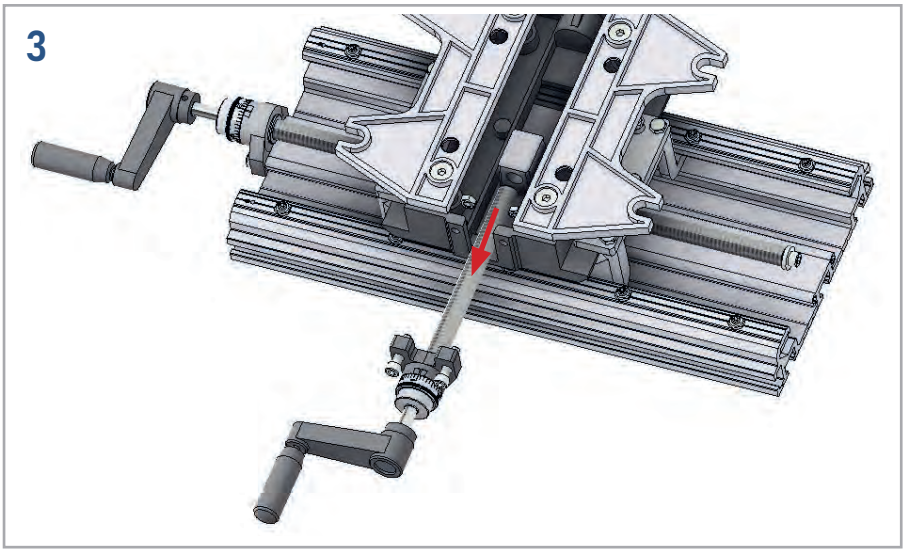
1. Place the 2-axis coordinate table onto the clamping surface of the top slide




2. Loosen and remove the two screws, serrated washers and nuts from the spindle bearing.




3. Unscrew the feed spindle of the Y-axis from the spindle nut.

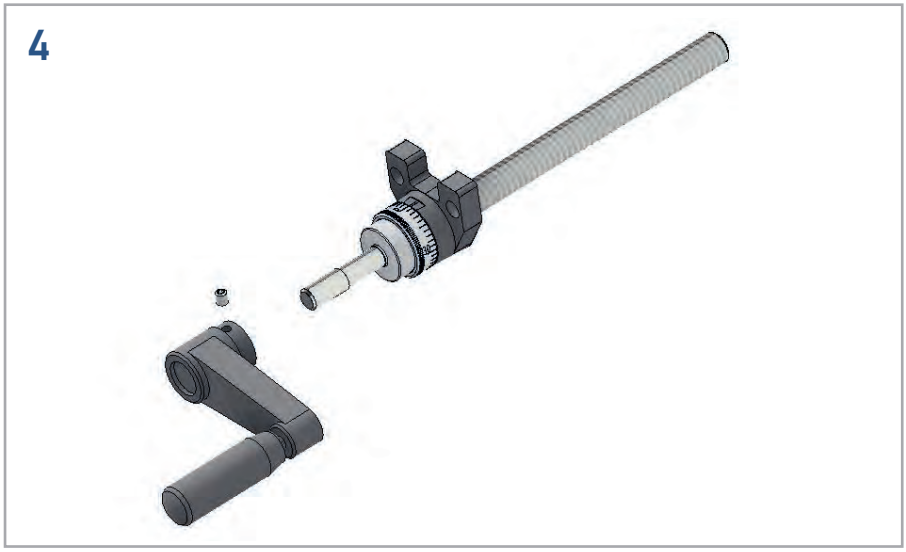


## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

### 19.2 Removal of the Y-axis feed spindle

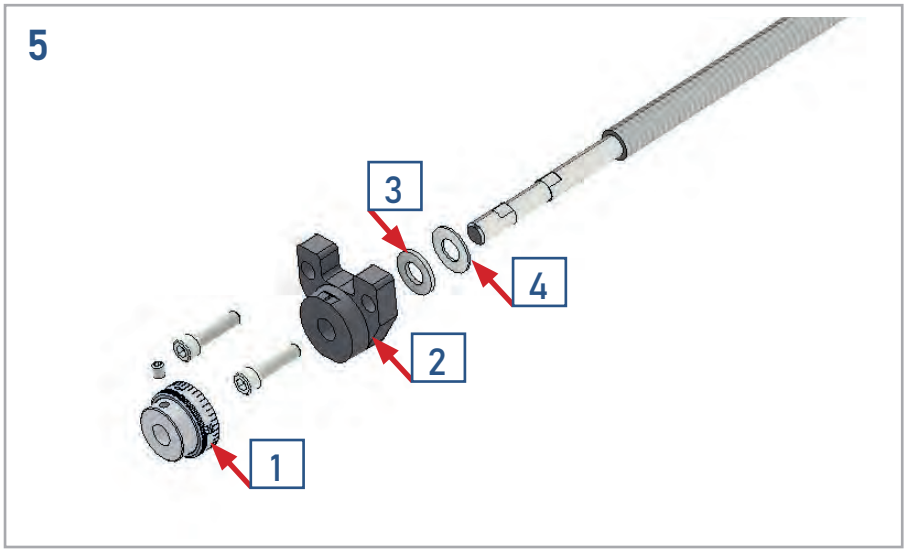
4. Loosen the threaded pin of the hand crank in such a way that the hand crank can easily be pulled off the Y-axis feed spindle.

4



5. Loosen the threaded pin in the adjusting ring and pull off the following parts from the Y-axis feed spindle
   1. Adjusting ring with scale ring
   2. Spindle bearing
   3. Disk spring
   4. Washer

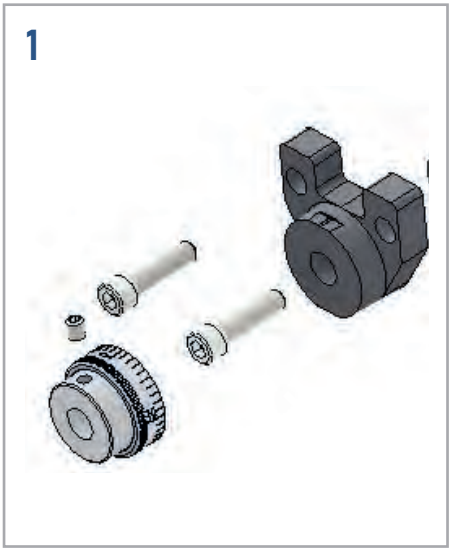
5

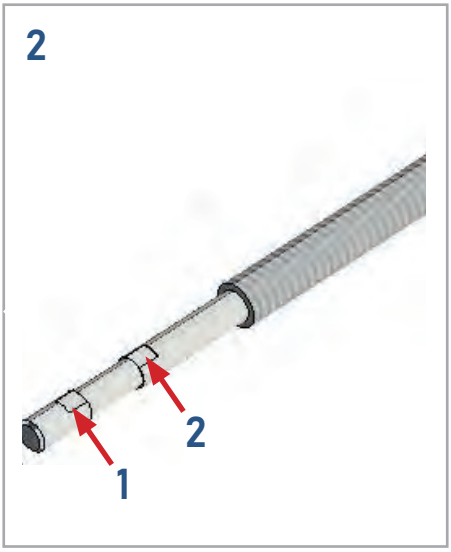


## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

### 19.3 Installation of the extended Y-axis feed spindle

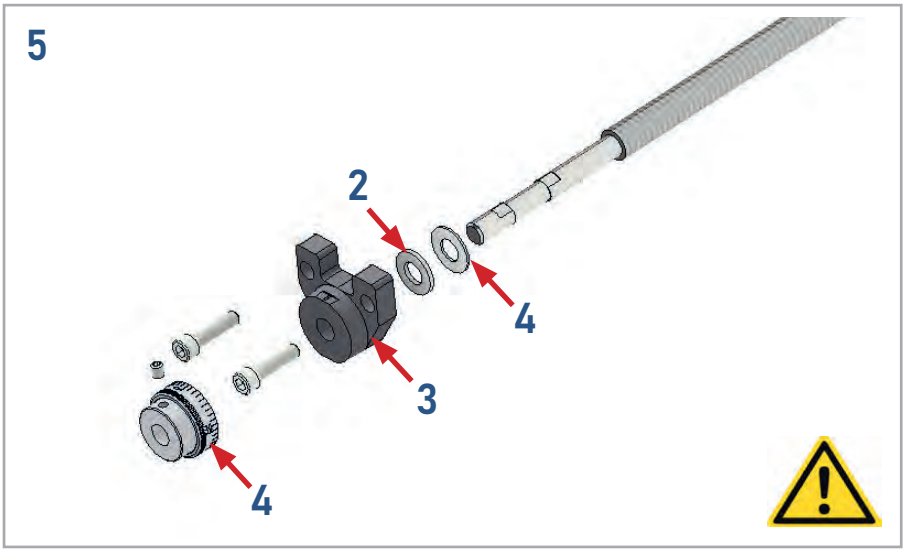
1. Lubricate the spindle bearing and adjustment ring with grease.
2. The extended feed spindle has two milled surfaces
   1. Milled surface for threaded pin hand crank
   2. Milled surface for threaded pin adjusting ring




3. Mount the following parts onto the extended Y-axis feed spindle
   1. Washer
   2. Disk spring (with bulge toward washer)
   3. Spindle bearing
   4. Adjusting ring with scale ring

   Note
   Both milled surfaces must face upwards.




4. Tighten the threaded pin of the adjusting ring. The end of the threaded pin must contact the milled surface.

## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

### 19.3 Installation of the extended Y-axis feed spindle

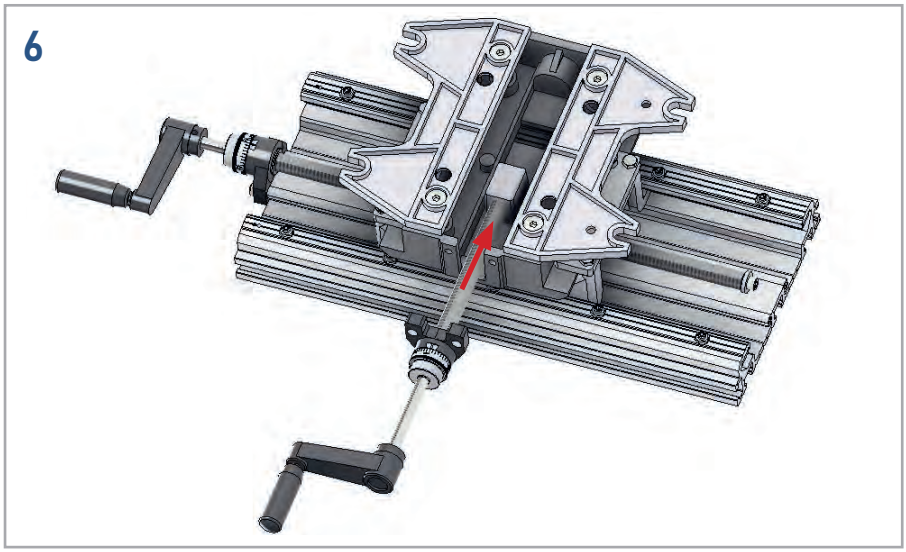
5. Mount the hand crank on the extended Y-axis feed spindle and tighten the threaded pin of the hand crank.

**Note:**
The end of the threaded pin must contact the milled surface.

5

6. Lubricate the extended feed spindle of the Y-axis with grease and screw it into the spindle nut. Screw in the feed spindle until the spindle bearing contacts the base plate.

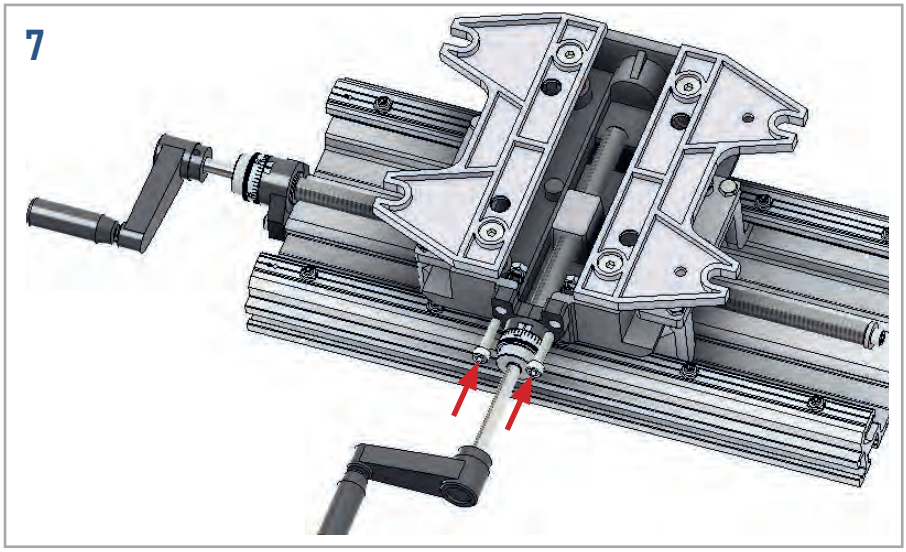
6



7. Screw back on the two screws, serrated washers and nuts from the spindle bearing which were set aside.

   Fine adjustment of the play of the spindle bearing on the X-axis (see Item 18.5).
   Fine adjustment of the play of the spindle bearing on the Y-axis (see Item 18.6).

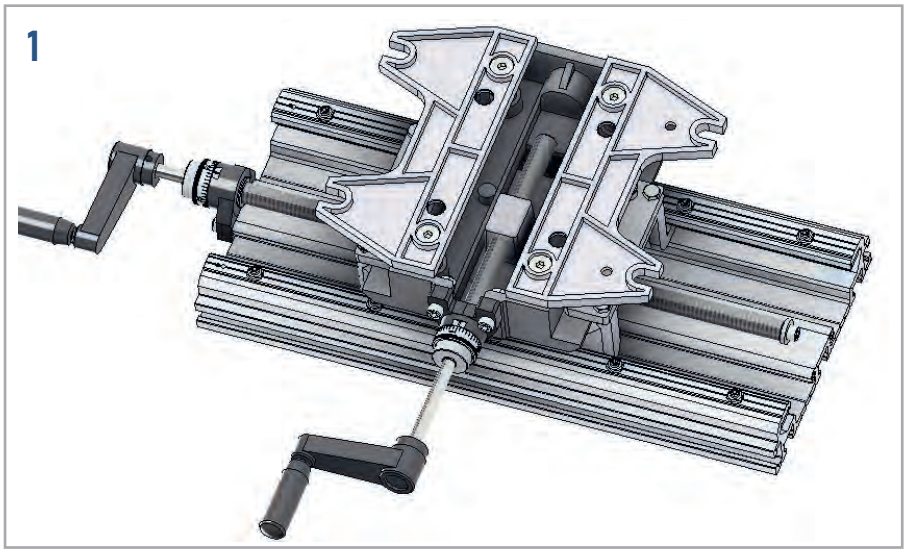
7



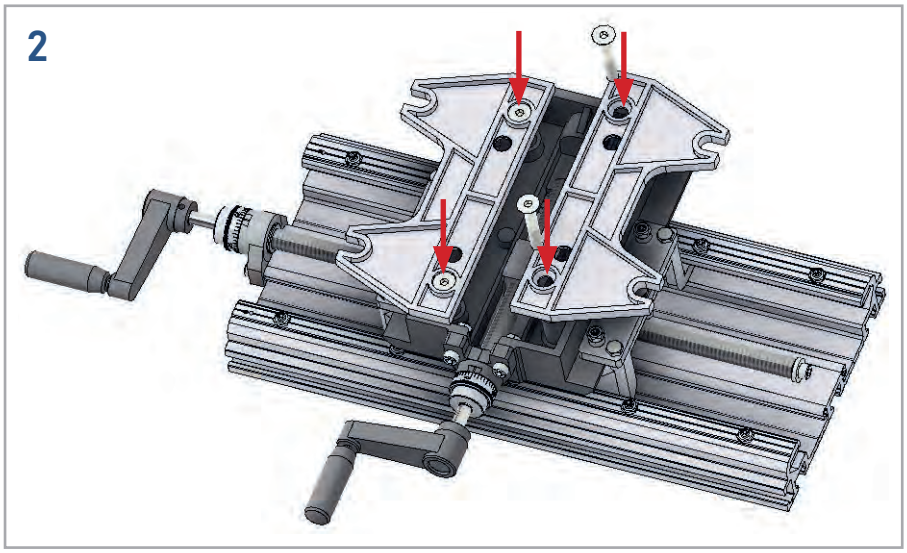
## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

### 19.4 Installation of the Y-axis vernier scale retainer

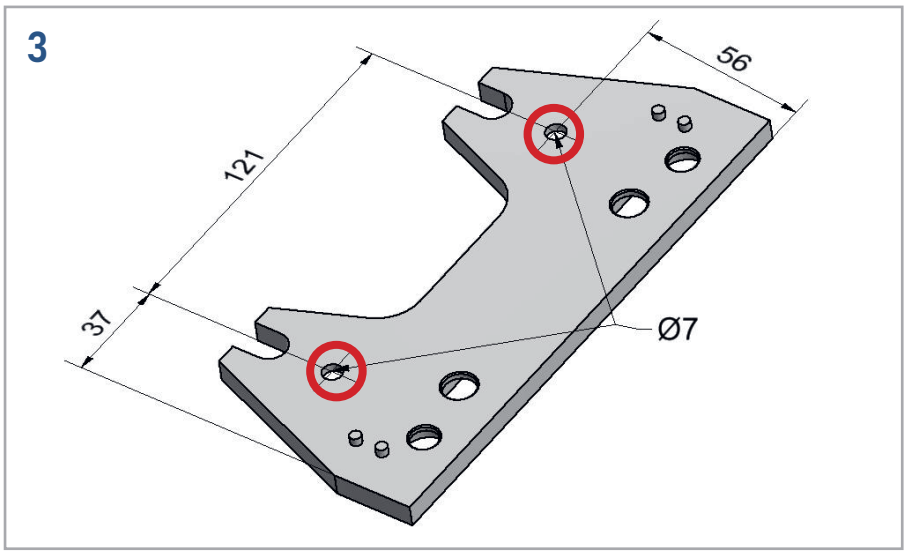
1. Place the 2-axis coordinate table onto the clamping surface of the top slide.




2. Unscrew the two clamping retainers from the base plate.
   Set the screws and nuts aside.



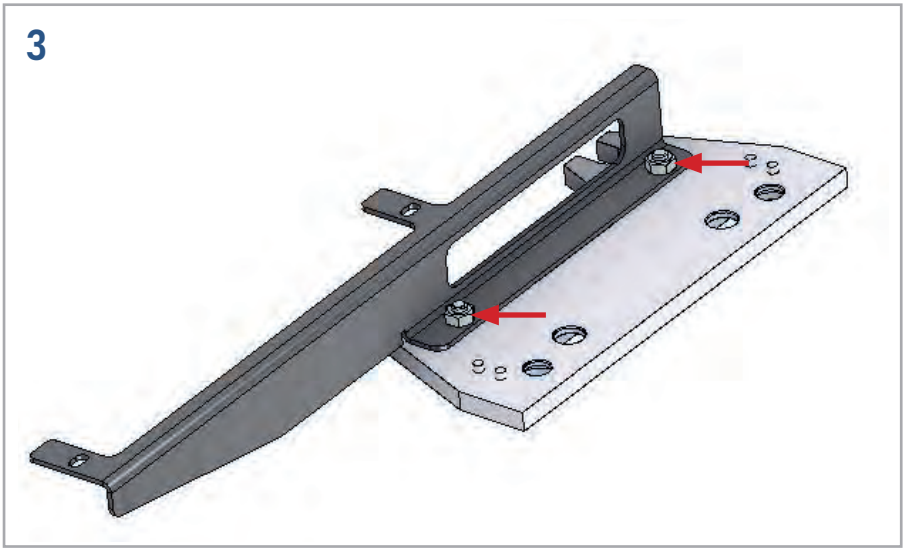

3. Drill two 7 mm-dia. holes into a clamping retainer.
   Mark the position of the two holes on the clamping retainer.
   To avoid drifting of the drill bit, center-punch the marked positions. Hold the Y-axis retainer and monitor the position of the holes.
   Deburr the holes.



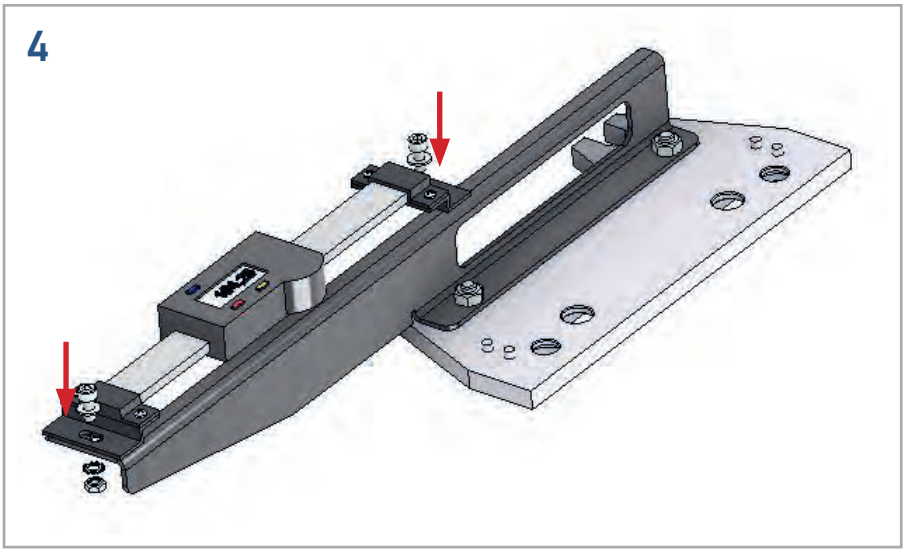
# 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

## 19.4 Installation of the Y-axis vernier scale retainer

3. Screw the Y-axis vernier scale retainer to the clamping retainer with two screws M6x12.

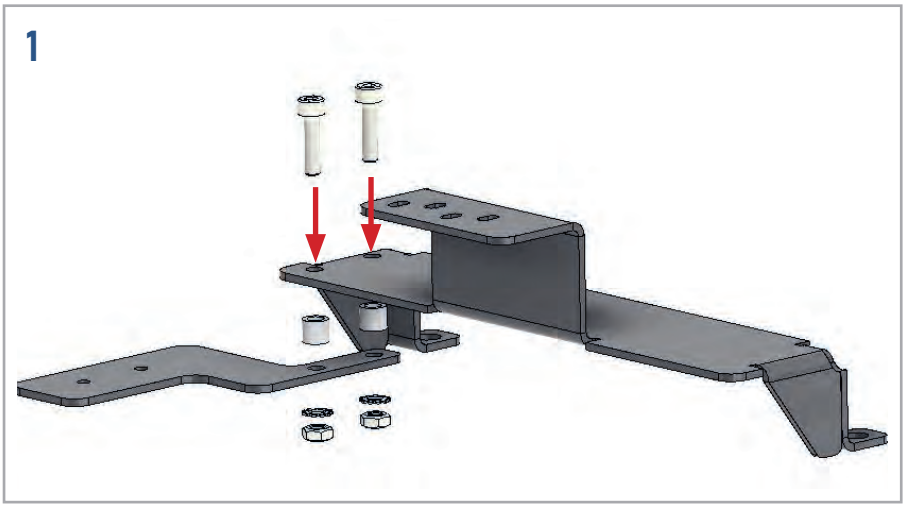



4. Screw the vernier scale of the Y-axis to the Y-axis vernier scale retainer with two screws M4x10, two washers A4.3, two serrated washers A4.3 and two nuts M4.




## 19.5 Installation of the X-axis vernier holder to the Y-axis vernier holder

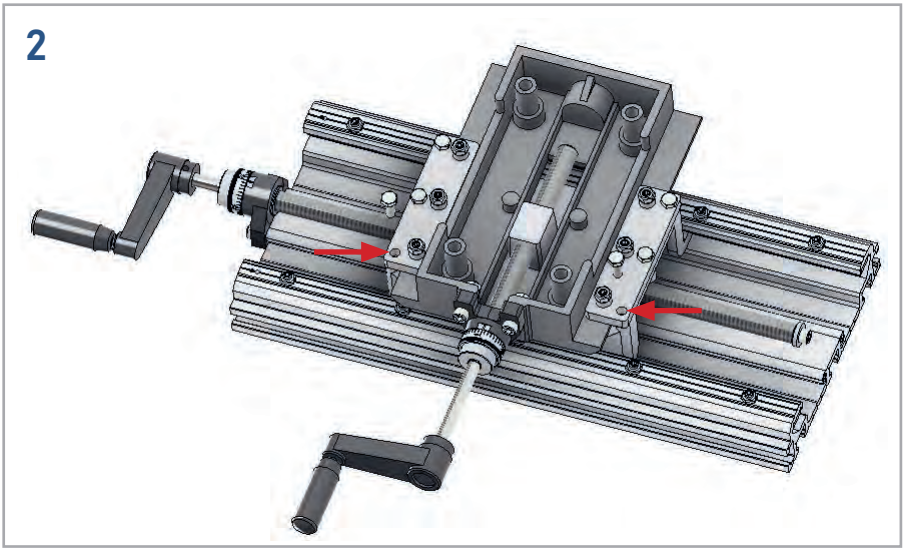
1. Screw the X-axis vernier holder to the Y-axis vernier holder with two screws M4x16, two spacer sleeves, two serrated washers A4.3 and two nuts M4.



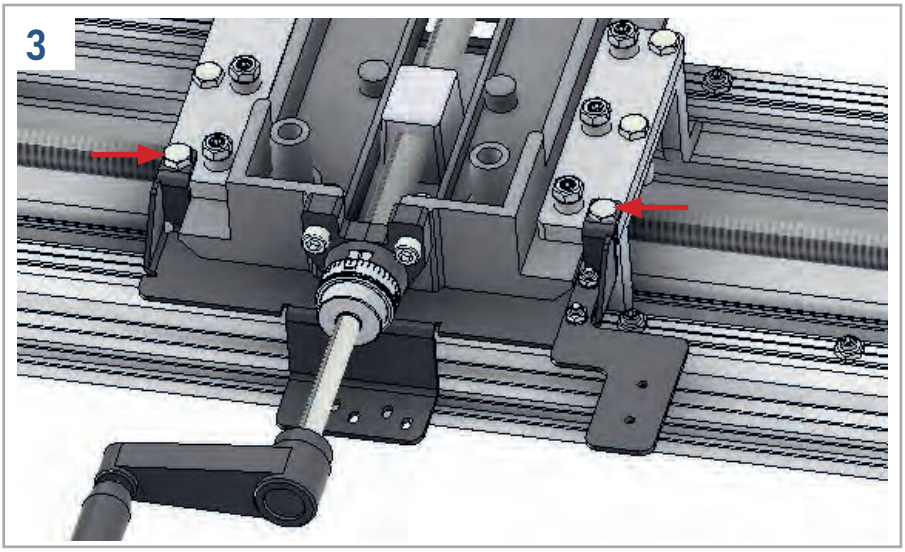
## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

### 19.5 Installation of the X-axis vernier holder to the Y-axis vernier holder

2. Unscrew and set aside the front screws from the two retainers for the Y-axis adjustment bar.

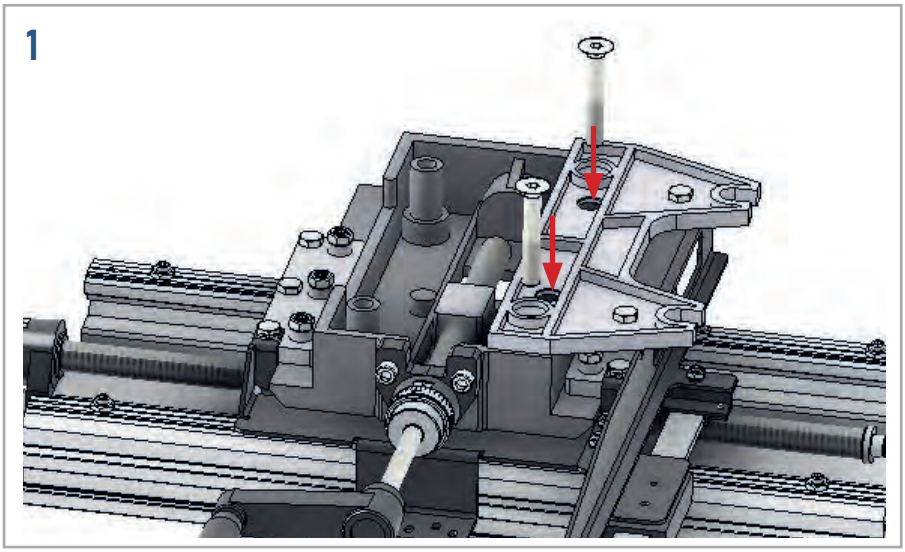



3. Screw the X-axis vernier holder with the screwed-on Y-axis vernier holder to the two retainers for the Y-axis adjustment bar using the two screws which were set aside.




### 19.6 Installation of the pre-mounted Y-axis vernier scale retainer

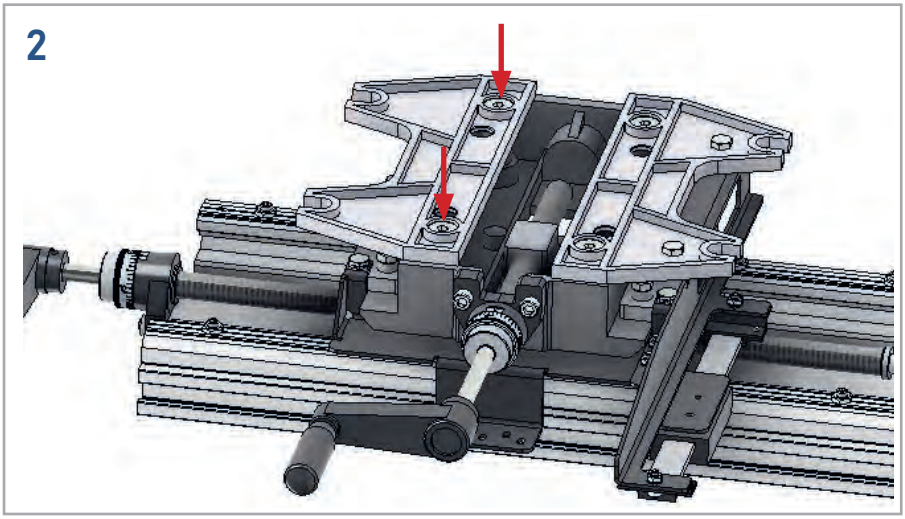
1. Screw the pre-mounted Y-axis vernier scale (see Item 19.4) to the base plate with the screws and nuts set aside.



## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

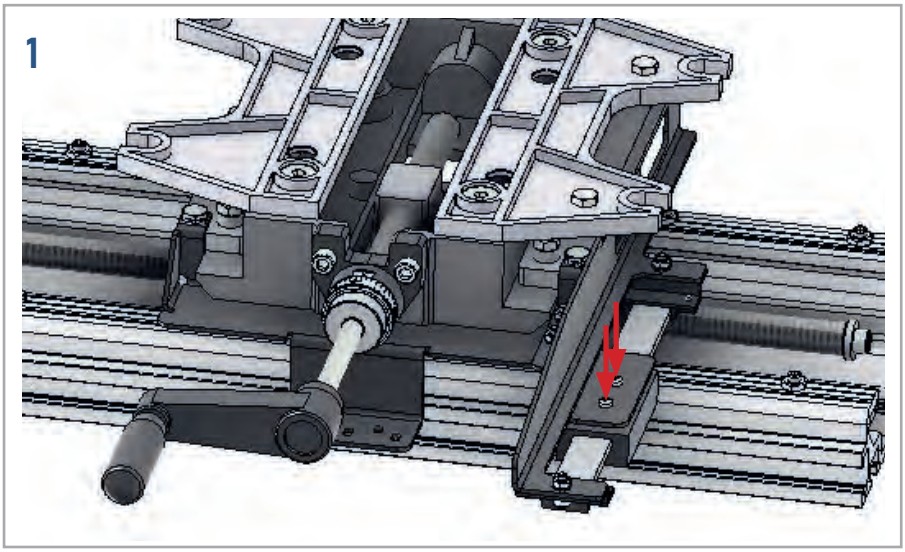
### 19.6 Installation of the pre-mounted Y-axis vernier scale retainer

2. Screw the second clamping retainer to the base plate with the screws and nuts set aside.

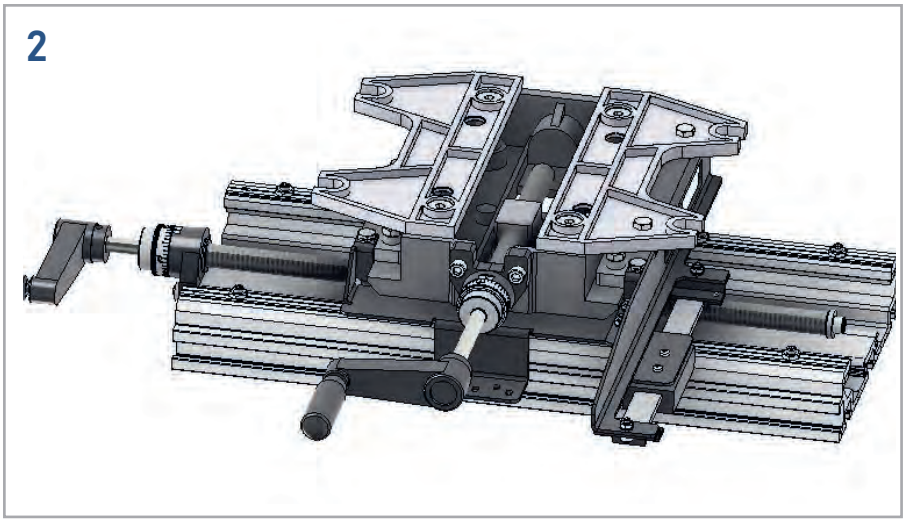



### 19.7 Screwing the Y-axis vernier scale to the Y-axis vernier holder

1. Position the display of the Y-axis vernier scale in such a way that the holes of the vernier holder line up with the holes in the display. Screw on the vernier scale with two screws.



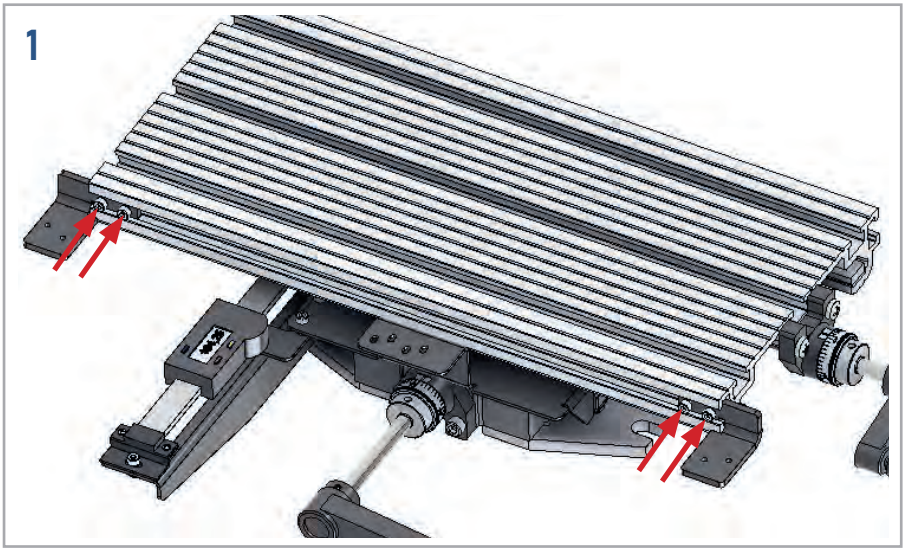

2. The vernier scale must be aligned parallel to the coordinate table. For this purpose, move the top slide across the entire Y-axis travel.
If necessary, loosen and tighten the screws again and repeat the procedure.



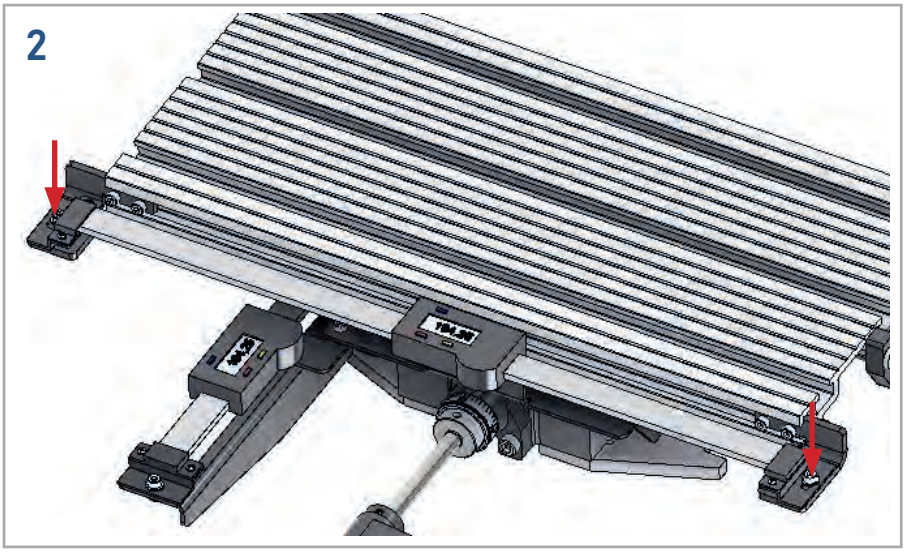
## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

### 19.8 Installation of the X-axis vernier scale retainer for the K400

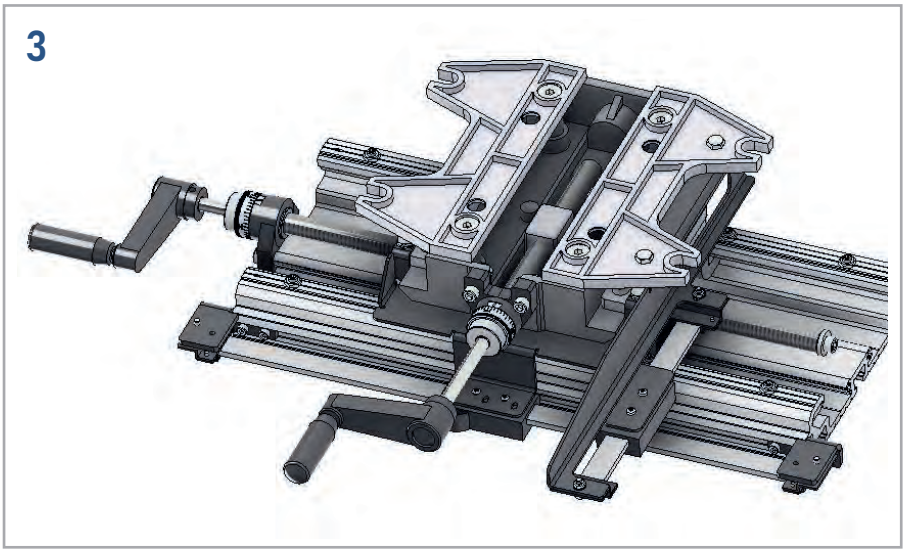
1. Slide the left and right X-axis retainers into the groove on the long side and clamp down with two screws M4x10 each.




2. Screw the vernier scale of the X-axis to the X-axis retainers on the left and right with one screw M4x10 and one washer A4.3 each to the outer hole.



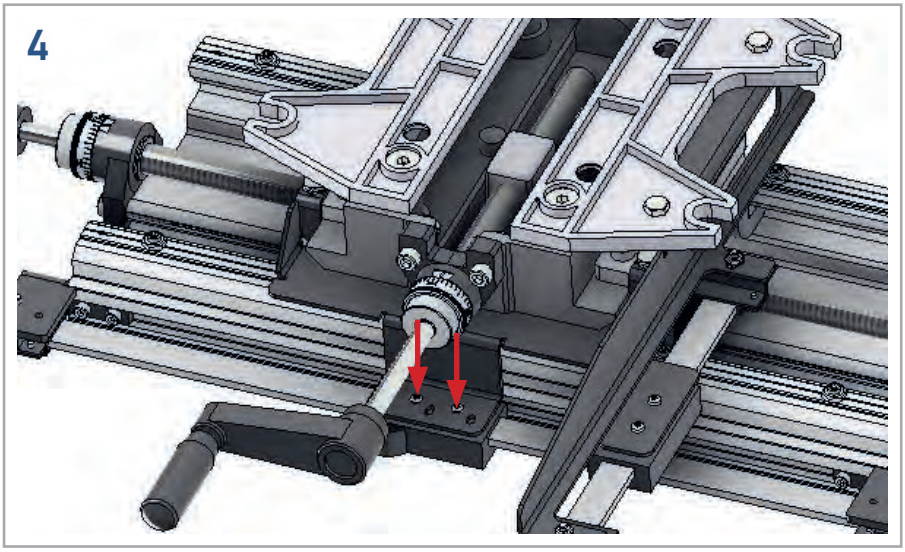

3. Place the 2-axis coordinate table onto the clamping surface of the top slide.



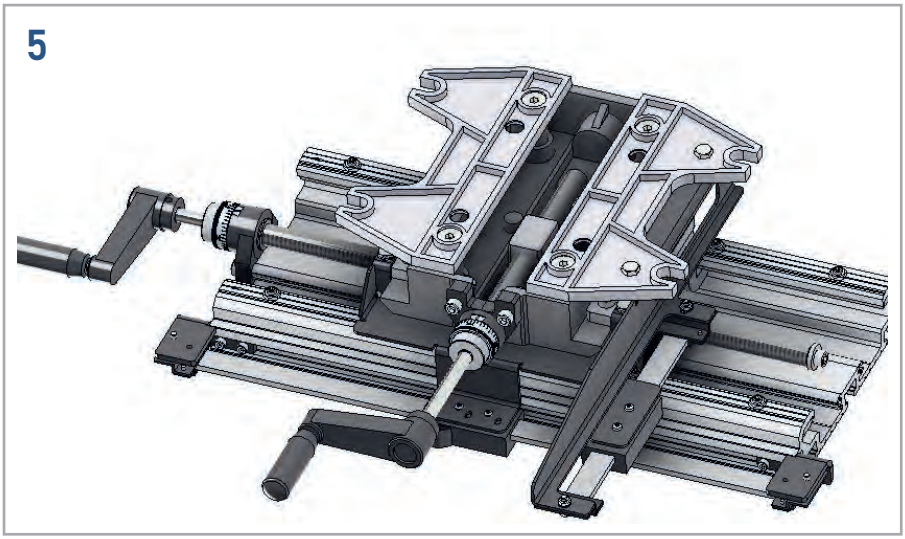
# 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

## 19.8 Installation of the X-axis vernier scale retainer for the K400

4. Position the display of the X-axis vernier scale in such a way that the holes of the vernier holder line up with the holes in the display. Screw on the vernier scale with two screws.

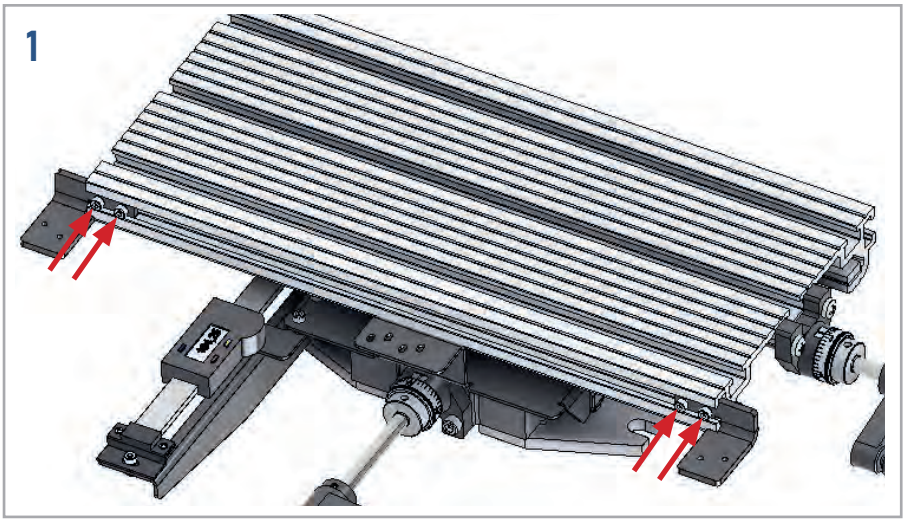



5. The vernier scale must be aligned parallel to the coordinate table. For this purpose, move the top slide across the entire X-axis travel.
   If necessary, loosen and tighten the screws again and repeat the procedure.




## 19.9 Installation of the X-axis vernier scale retainer for the K600

1. Slide the left and right X-axis retainers into the grooves on the long side and clamp down lightly with two screws M4x10 each.



## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

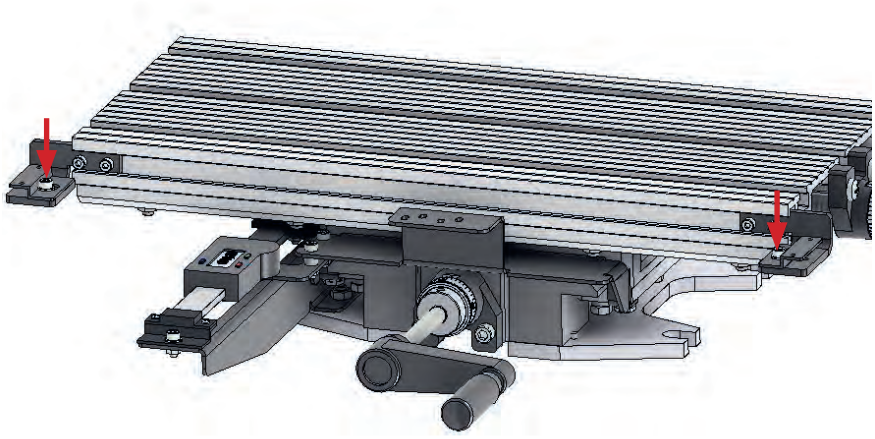
### 19.9 Installation of the X-axis vernier scale retainer for the K600

2. Unscrew the two fastening straps of the X-axis vernier scale, consisting of a top and bottom part.

2

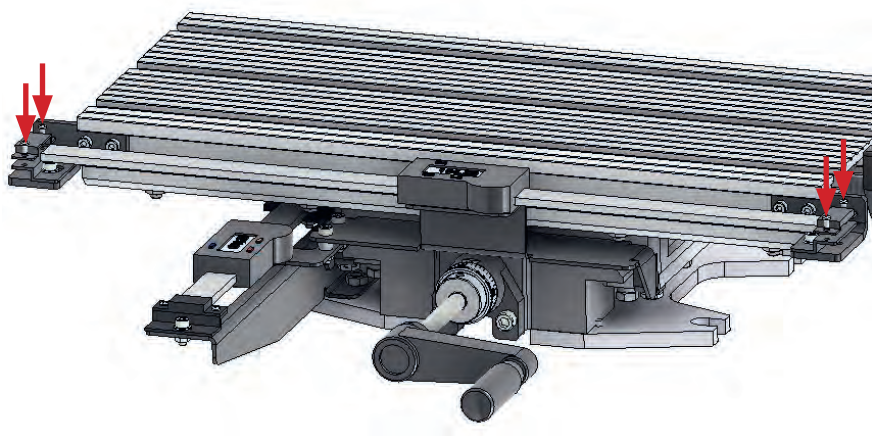
3. Secure the bottom parts of the fastening straps to the X-axis retainers on the left and right with one screw M4x10 and one washer A4.3 each to the inner hole of the retainer.

3



4. Place the X-axis vernier scale on the bottom part of the fastening straps and screw the top parts to the bottom parts.

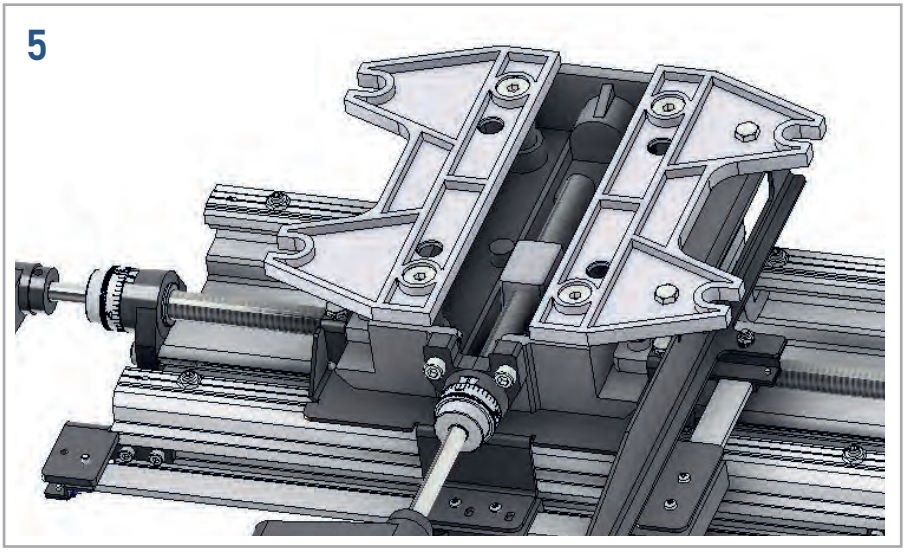
4



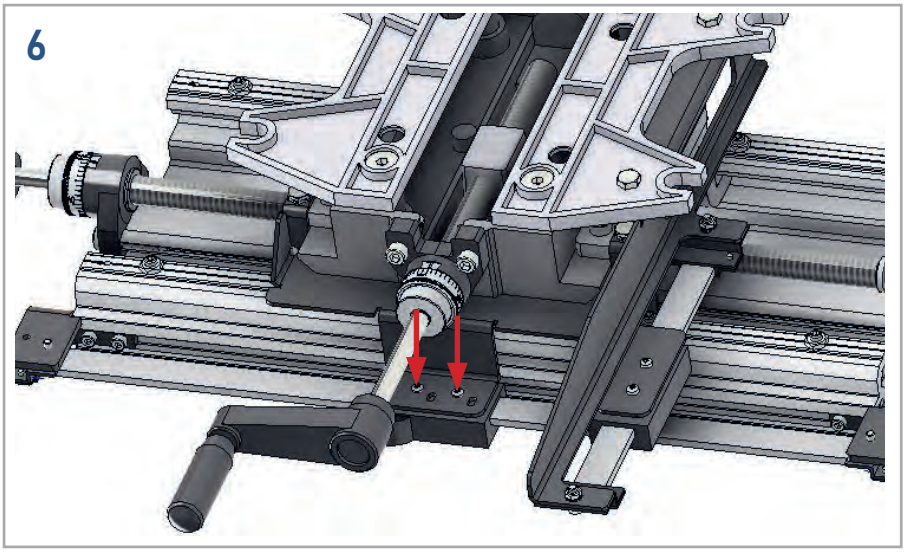
## 19. Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

### 19.9 Installation of the X-axis vernier scale retainer for the K600

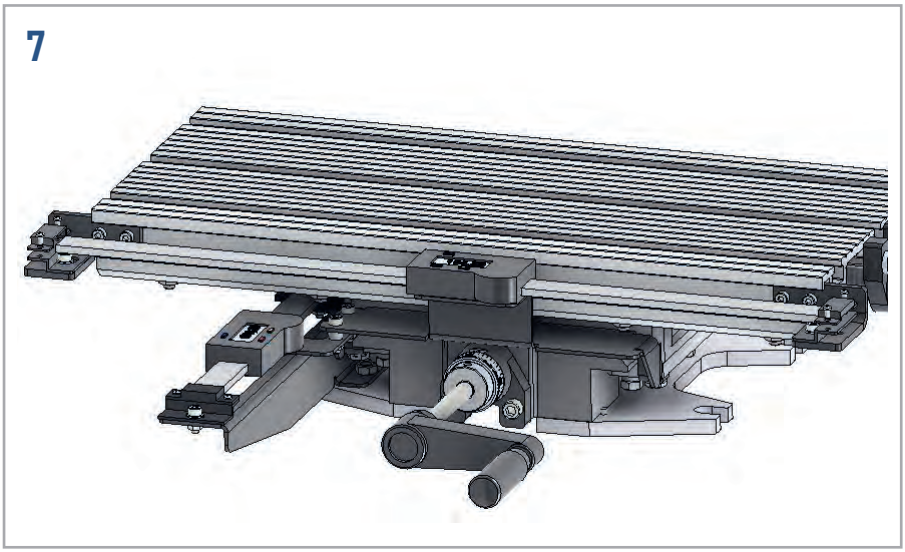
5. Place the 2-axis coordinate table onto the clamping surface of the top slide.




6. Position the display of the X-axis vernier scale in such a way that the holes of the vernier holder line up with the holes in the display. Screw on the vernier scale with two screws.

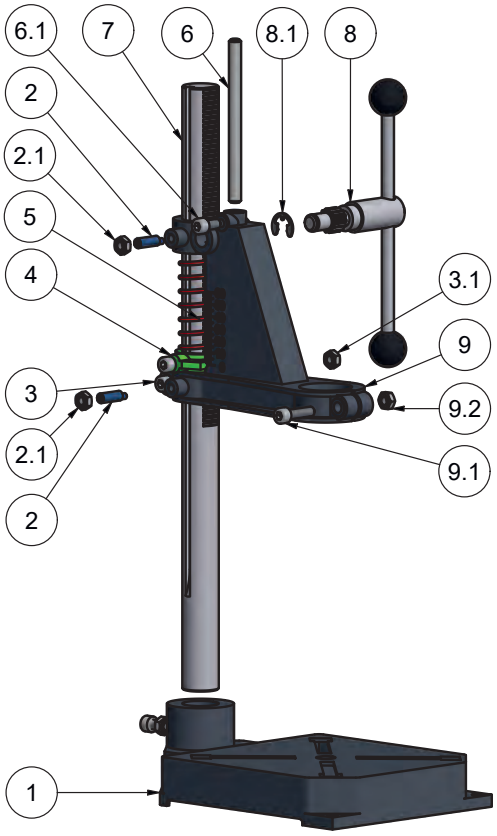



7. The vernier scale must be aligned parallel to the coordinate table
   For this purpose, move the top slide across the entire X-axis travel.
   If necessary, loosen and tighten the screws again and repeat the procedure.



# 20. Drawings and legend

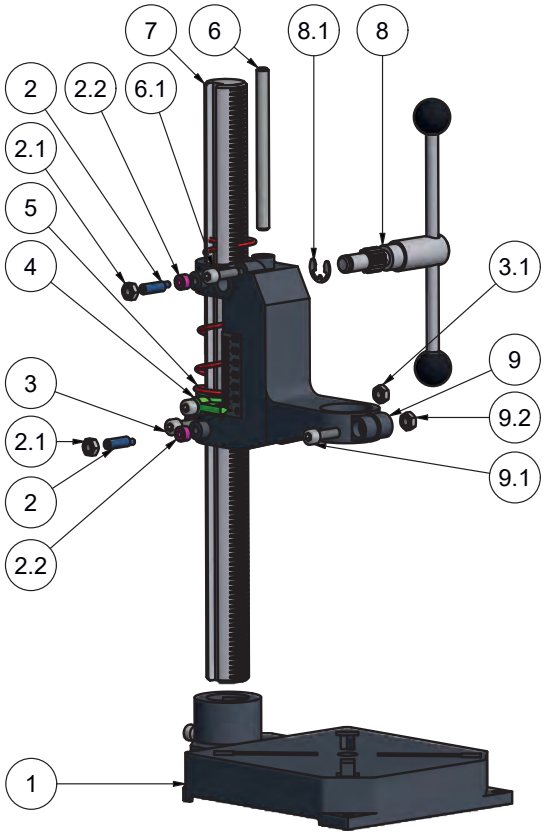
## 20.1 B1200 drilling stand




| Part No. | Quantity | Order No. | Designation |
|---|---|---|---|
| 1 | 1 | 51006831-00068 | Floor plate with clamping screw and nut |
| 2 | 2 | 51508591 | Threaded pin with eccentric |
| 2.1 | 2 | 16193400008000 | Nut |
| 3 | 1 | 16191200008020 | Clamping screw |
| 3.1 | 1 | 16198500008000 | Nut |
| 4 | 1 | 51006831-00055 | Lock ring with clamping screw |
| 5 | 1 | 51502030 | Return spring |
| 6 | 1 | 51507380 | Depth stop |
| 6.1 | 1 | 16191200008016 | Clamping screw |
| 7 | 1 | 51004030-00012 | Steel column |
| 8 | 1 | 51004025-00021 | Feed lever with ball and feed shaft |
| 8.1 | 1 | 16067990012000 | Locking washer |
| 9 | 1 | 51006831-000414 | Guide housing |
| 9.1 | 1 | 16191200008030 | Clamping screw |
| 9.2 | 1 | 16198500008000 | Nut |

## 20. Drawings and legend

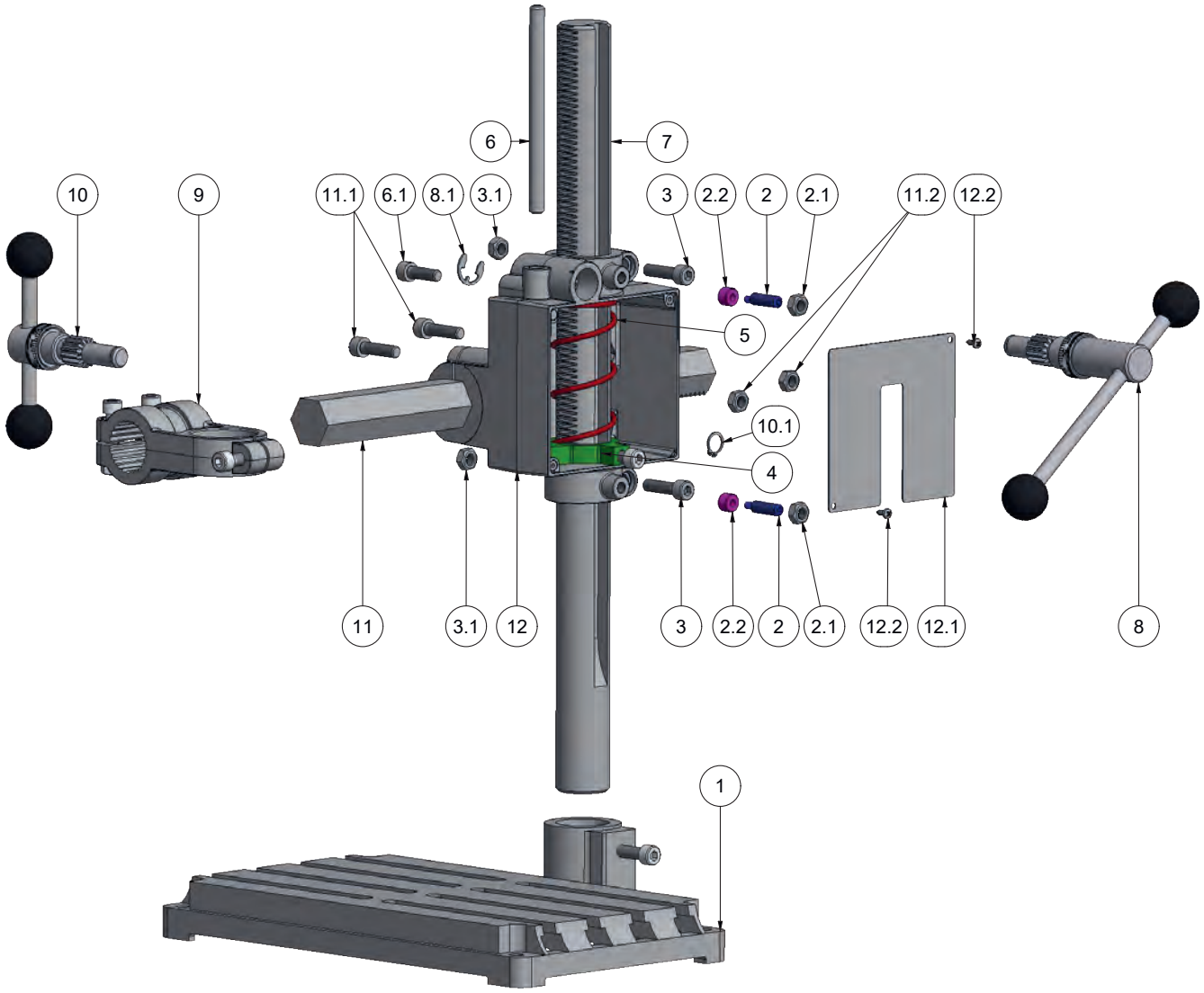
### 20.2 B1230 drilling stand




| Part No. | Quantity | Order No. | Designation |
|---|---|---|---|
| 1 | 1 | 51006831-00038 | Base plate with clamping screw |
| 2 | 2 | 51508591 | Threaded pin with eccentric |
| 2.1 | 2 | 16193400008000 | Nut |
| 2.2 | 2 | 51508019 | Guide roller |
| 3 | 1 | 16191200008025 | Clamping screw |
| 3.1 | 1 | 16198500008000 | Nut |
| 4 | 1 | 51006831-000206 | Lock ring with clamping screw |
| 5 | 1 | 51502028 | Return spring |
| 6 | 1 | 51507380 | Depth stop |
| 6.1 | 1 | 16191200008025 | Clamping screw |
| 7 | 1 | 51004035-00022 | Steel column |
| 8 | 1 | 51507360-0001 | Feed lever with ball and feed shaft |
| 8.1 | 1 | 16067990012000 | Locking washer |
| 9 | 1 | 51006831-00014 | Guide housing |
| 9.1 | 1 | 16191200008025 | Clamping screw |
| 9.2 | 1 | 16198500008000 | Nut |

## 20. Drawings and legend

### 20.3 BF drilling milling stands



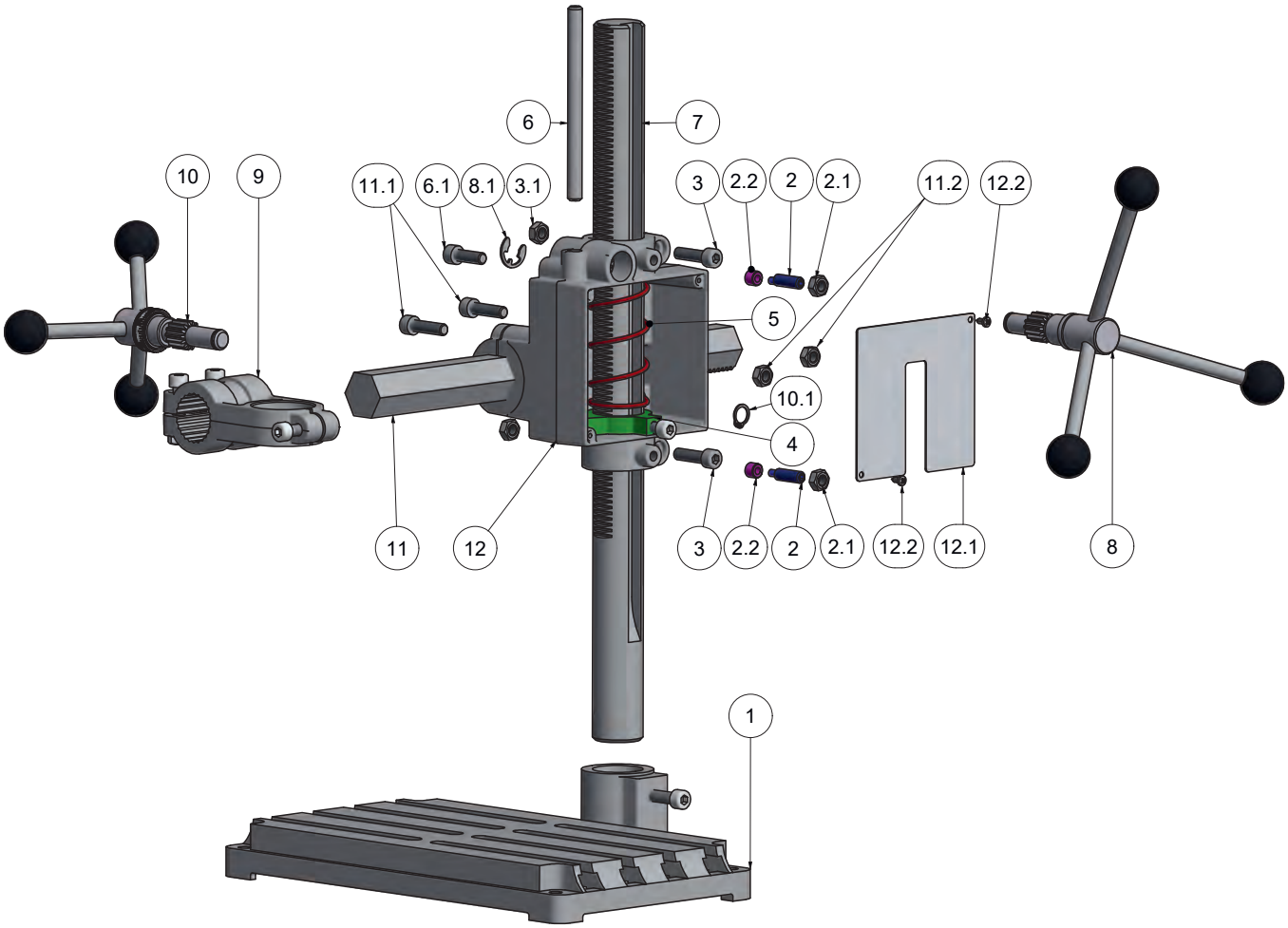
# 20. Drawings and legend

## 20.3 BF drilling milling stands

| Part No. | Quantity | Order No. | Designation |
|---|---|---|---|
| 1 | 1 | 51407040-000111 | Base plate with clamping screw |
| 2 | 2 | 51508591 | Threaded pin with eccentric |
| 2.1 | 2 | 16193400008000 | Nut |
| 2.2 | 2 | 51508019 | Guide roller |
| 3 | 2 | 16191200008030 | Clamping screw |
| 3.1 | 2 | 16198500008000 | Nut |
| 4 | 1 | 51401003-0001 | Lock ring with clamping screw |
| 5 | 1 | 51502029 | Return spring |
| 6 | 1 | 51507380 | Depth stop |
| 6.1 | 1 | 16191200008025 | Clamping screw |
| 7 | 1 | 24471 | Steel column, 500 mm |
| | 1 | 24451 | Steel column, 750 mm |
| | 1 | 24452 | Steel column, 1000 mm |
| 8 | 1 | 51507332-0001 | Feed shaft with scale ring, feed lever and ball |
| 8.1 | 1 | 16067990012000 | Locking washer |
| 9 | 1 | 24460 | Machine support with clamping screws |
| 10 | 1 | 51507330-0001 | Feed shaft with scale ring, feed lever and ball |
| 10.1 | 1 | 16047100014000 | Locking ring |
| 11 | 1 | 24470 | Hexagonal steel boom, 350 mm |
| | 1 | 24453 | Hexagonal steel boom, 500 mm |
| 11.1 | 2 | 16191200008035 | Clamping screw |
| 11.2 | 2 | 16198500008000 | Nut |
| 12 | 1 | 51407045-000111 | Guide housing |
| 12.1 | 1 | 51407070-0001 | Housing cover |
| 12.2 | 2 | 16179810003095 | Screw |

## 20. Drawings and legend

### 20.4 BF drilling milling stands with 3-spoke hubs



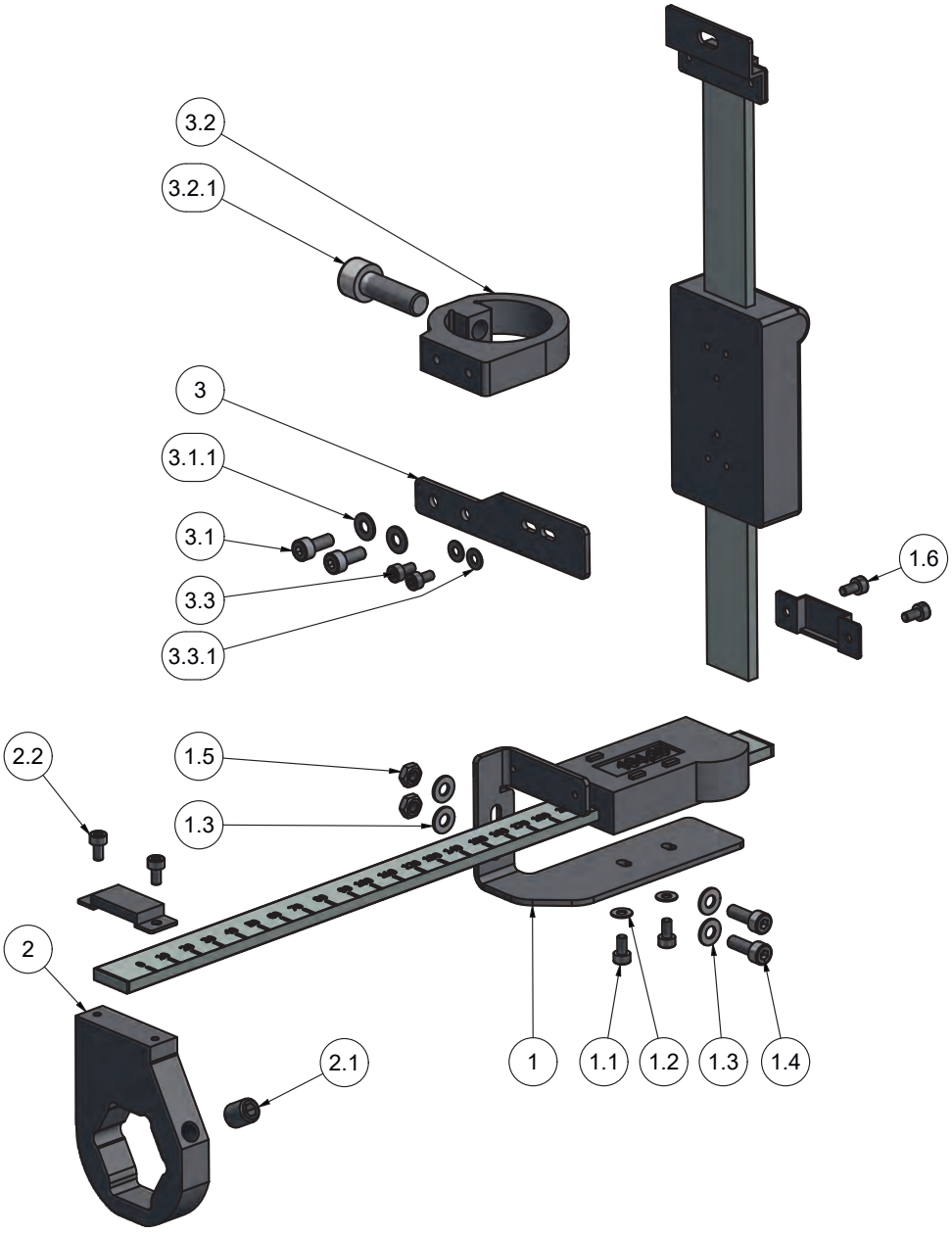
# 20. Drawings and legend

## 20.4 BF drilling milling stands with 3-spoke hubs

| Part No. | Quantity | Order No. | Designation |
|---|---|---|---|
| 1 | 1 | 51407040-000111 | Base plate with clamping screw |
| 2 | 2 | 51508591 | Threaded pin with eccentric |
| 2.1 | 2 | 16193400008000 | Nut |
| 2.2 | 2 | 51508019 | Guide roller |
| 3 | 2 | 16191200008030 | Clamping screw |
| 3.1 | 2 | 16198500008000 | Nut |
| 4 | 1 | 51401003-0001 | Lock ring with clamping screw |
| 5 | 1 | 51502029 | Return spring |
| 6 | 1 | 51507380 | Depth stop |
| 6.1 | 1 | 16191200008025 | Clamping screw |
| 7 | 1 | 24471 | Steel column, 500 mm |
| | 1 | 24451 | Steel column, 750 mm |
| | 1 | 24452 | Steel column, 1000 mm |
| 8 | 1 | 24462 | Feed shaft with scale ring, feed lever and ball |
| 8.1 | 1 | 16067990012000 | Locking washer |
| 9 | 1 | 24460 | Machine support with clamping screws |
| 10 | 1 | 24464 | Feed shaft with scale ring, feed lever and ball |
| 10.1 | 1 | 16047100014000 | Locking ring |
| 11 | 1 | 24470 | Hexagonal steel boom, 350 mm |
| | 1 | 24453 | Hexagonal steel boom, 500 mm |
| 11.1 | 2 | 16191200008035 | Clamping screw |
| 11.2 | 2 | 16198500008000 | Nut |
| 12 | 1 | 51407045-000111 | Guide housing |
| 12.1 | 1 | 51407070-0001 | Housing cover |
| 12.2 | 2 | 16179810003095 | Screw |

## 20. Drawings and legend

### 20.5 Mounting kit for BF drilling milling stands (optional item number 24599)



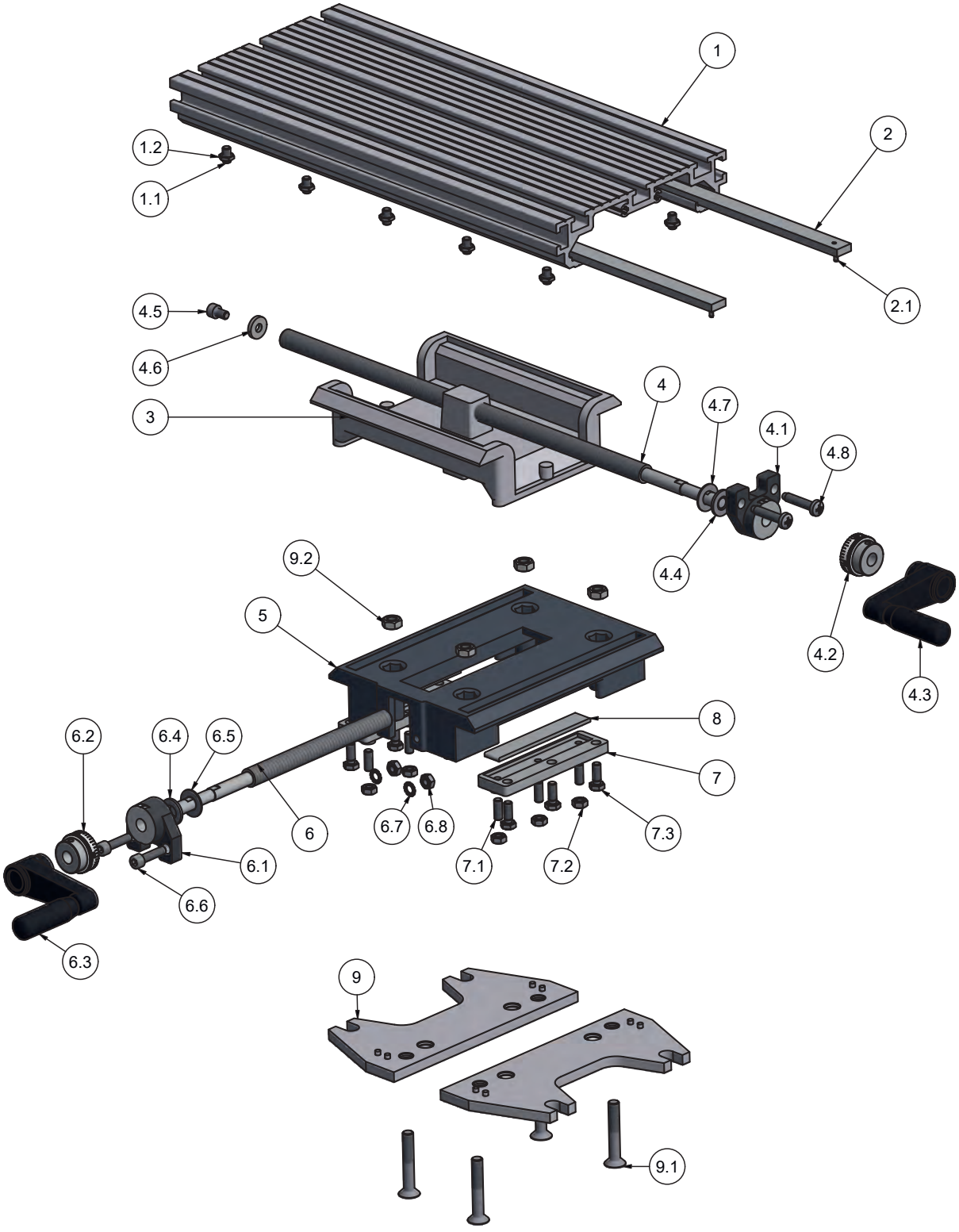
# 20. Drawings and legend

## 20.5 Mounting kit for BF drilling milling stands (optional item number 24599)

| Part No. | Quantity | Order No. | Designation |
|---|---|---|---|
| 1 | 1 | 51407163-0001 | Vernier holder for Y- and Z-axes |
| 1.1 | 2 | 16191200003006 | Screw |
| 1.2 | 2 | 16112500003000 | Washer |
| 1.3 | 4 | 16112500004000 | Washer |
| 1.4 | 2 | 16191200004012 | Screw |
| 1.5 | 2 | 16193400004000 | Nut |
| 1.6 | 2 | 16191200003006 | Screw |
| 2 | 1 | 51407160-00012 | Y-axis lock ring |
| 2.1 | 1 | 16091300008010 | Threaded rod |
| 2.2 | 2 | 16191200003006 | Screw |
| 3 | 1 | 51407162-0001 | Z-axis vernier holder |
| 3.1 | 2 | 16191200004010 | Screw |
| 3.1.1 | 2 | 16112500004000 | Washer |
| 3.2 | 1 | 51407161-00012 | Z-axis lock ring |
| 3.2.1 | 1 | 16191200008025 | Screw |
| 3.3 | 2 | 16191200003006 | Screw |
| 3.3.1 | 2 | 16112500003000 | Washer |

## 20. Drawings and legend

### 20.6 K400 and K600 2-axis coordinate tables



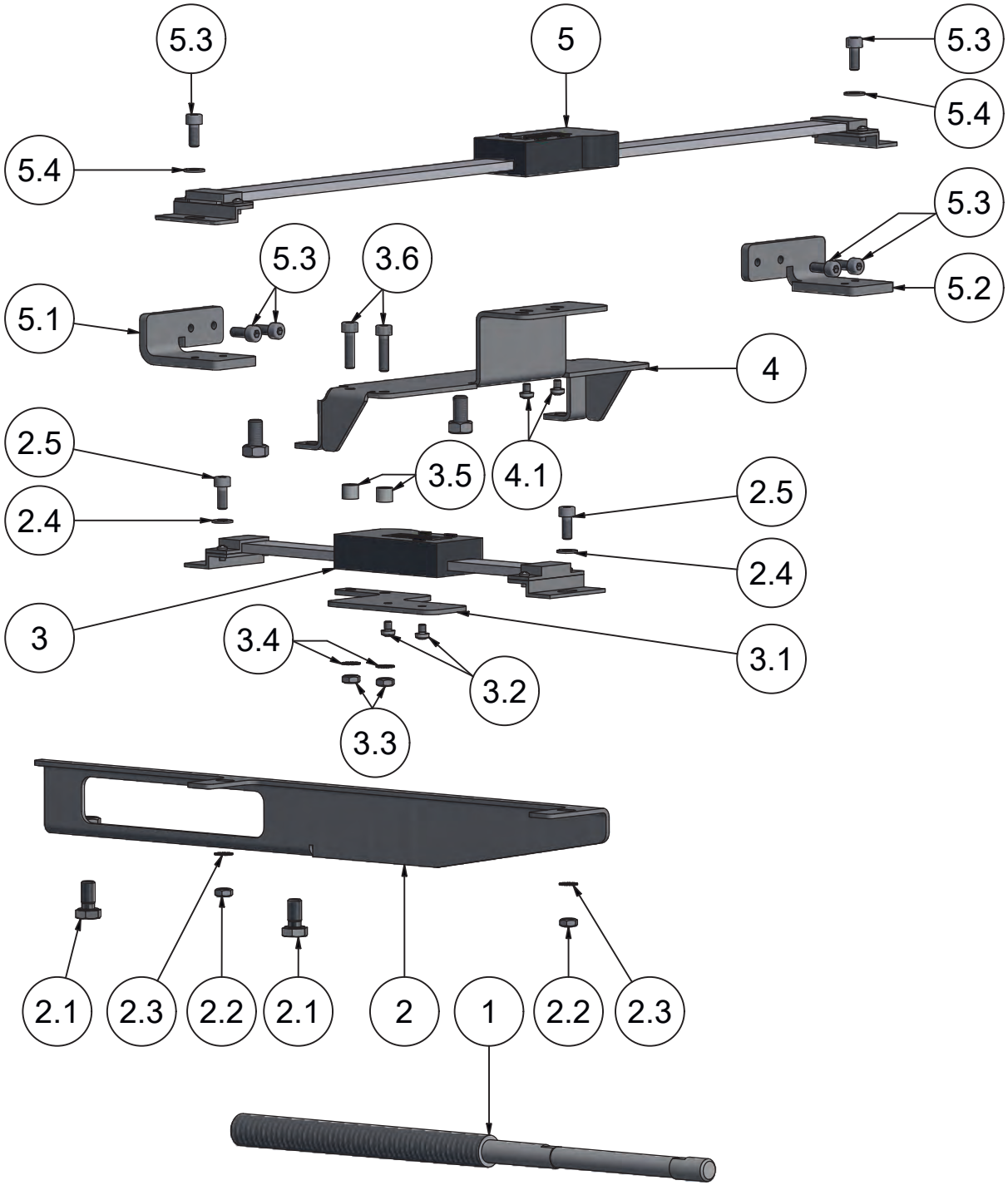
# 20. Drawings and legend

## 20.6 K400 and K600 2-axis coordinate tables

| Teile-Nr. | Stück | Bestell-Nr. | Bezeichnung |
|---|---|---|---|
| 1 | 1 | 51407180-0001 | Top slide with screws for K400 |
| | 1 | 51407180-0002 | Top slide with screws for K600 |
| 2 | 2 | 51001017-00012 | X-axis adjustment bar for K400 |
| | 2 | 51001017-00042 | X-axis adjustment bar for K600 |
| 2.1 | 2 | 16073430003010 | Coiled spring pin |
| 3 | 1 | 51006831-00222 | Cross slide |
| 4 | 1 | 51407186-00011 | X-axis spindle for K400 |
| | 1 | 51407186-00022 | X-axis spindle for K600 |
| 4.1 | 1 | 51407140-00011 | Spindle bearing |
| 4.2 | 1 | 51507310-0001 | Scale ring with adjustment ring |
| 4.3 | 1 | 51507010-0001 | Hand crank with threaded pin |
| 4.4 | 1 | 16020930020005 | Disk spring |
| 4.5 | 1 | 16191200006010 | Screw |
| 4.6 | 1 | 16173490176530 | Washer |
| 4.7 | 1 | 16112500010000 | Washer |
| 4.8 | 2 | 16179810006032 | Screw |
| 5 | 1 | 51006831-00203 | Base plate |
| 6 | 1 | 51407185-00010 | Y-axis spindle |
| 6.1 | 1 | 51407140-00011 | Spindle bearing |
| 6.2 | 1 | 51507310-0001 | Scale ring with adjustment ring |
| 6.3 | 1 | 51507010-0001 | Hand crank with threaded pin |
| 6.4 | 1 | 16020930020005 | Disk spring |
| 6.5 | 1 | 16112500010000 | Washer |
| 6.6 | 2 | 16191200006025 | Screw |
| 6.7 | 2 | 16167980006000 | Washer |
| 6.8 | 2 | 16193400006000 | Nut |
| 7 | 2 | 51006831-00211 | Retainer for Y-axis adjustment bar |
| 7.1 | 6 | 16091300006016 | Threaded rod |
| 7.2 | 6 | 16193400006000 | Nut |
| 7.3 | 6 | 16193300006016 | Screw |
| 8 | 2 | 51001015-0001 | Y-axis adjustment bar |
| 9 | 2 | 51006831-00233 | Clamping retainer |
| 9.1 | 4 | 16079910008045 | Screw |
| 9.2 | 4 | 16193400008000 | Nut |

## 20. Drawings and legend

### 20.7 Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)



# 20. Drawings and legend

## 20.7 Mounting kit for K400 and K600 2-axis coordinate tables (optional item number 24499)

| Part No. | Quantity | Order No. | Designation |
|---|---|---|---|
| 1 | 1 | 51407185-00021 | Y-axis spindle |
| 2 | 1 | 51407152-000103 | Y-axis vernier scale retainer |
| 2.1 | 2 | 16193300006012 | Screw |
| 2.2 | 2 | 16193400004000 | Nut |
| 2.3 | 2 | 16167980004000 | Serrated washer |
| 2.4 | 2 | 16112500004000 | Washer |
| 2.5 | 2 | 16191200004010 | Screw |
| 3 | 1 | 11360 | Y-axis vernier scale |
| 3.1 | 1 | 51407150-0001 | Y-axis vernier holder |
| 3.2 | 2 | | Screw (included in Y-axis vernier scale) |
| 3.3 | 2 | 16193400004000 | Nut |
| 3.4 | 2 | 16167980004000 | Serrated washer |
| 3.5 | 2 | 51508060 | Spacer sleeve |
| 3.6 | 2 | 16191200004016 | Screw |
| 4 | 1 | 51407151-000103 | X-axis vernier holder |
| 4.1 | 2 | | Screw (included in X-axis vernier scale) |
| 5 | 1 | 11363 | X-axis vernier scale **for K400** |
| | 1 | 11365 | X-axis vernier scale **for K600** |
| 5.1 | 1 | 51407153-000103 | X-axis vernier scale retainer, left |
| 5.2 | 1 | 51407154-0001033 | X-axis vernier scale retainer, right |
| 5.3 | 6 | 16191200004010 | Screw |
| 5.4 | 2 | 16112500004000 | Washer |