

The logo for norelem, featuring the word "norelem" in a bold, white, sans-serif font. The letters are set against a background that is split into three vertical sections: a green section on the left, a black section in the middle, and a green section on the right.

norelem

OPERATING INSTRUCTIONS
5-AXIS CLAMPING SYSTEM
+ ACCESSORIES

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1. Introduction

Please read the information in these instructions carefully before using the compact 5-axis clamping system.

The compact 5-axis clamping system can cause serious material damage if it is operated or mounted incorrectly. norelem Normelemente KG is under no circumstances responsible for any type of damage regardless of how this damage is caused.

Description

The norelem 5-axis compact clamping system was designed for flexible milling and combined turning and milling of different workpieces. It has a long service life and is made of high quality steel.

The norelem 5-axis compact clamping system is ideal for machining 5 sides of single or series parts with a 320 mm maximum clamping width (standard version) that can be extended as required.

Only use original accessories suitable for the 5-axis compact clamping system.

2. Safety instructions and precautions

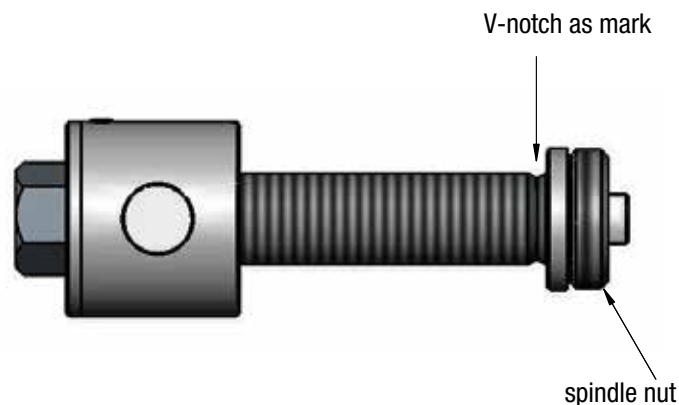


Attention: The following points must be observed!

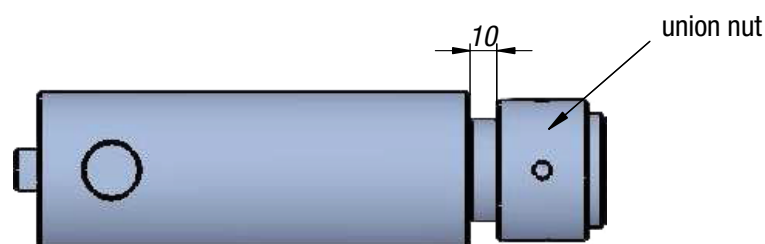
- Always observe the accident prevention regulations and general technical rules for handling, cleaning and operating the clamp and its accessories.
- Do not exceed the permissible tractive force of 52 kN (at 120 Nm).
- The vice must also not be tightened without a workpiece.
- Check that everything is correctly and securely assembled before any milling work.
- Always clamp the workpiece in the centre of the jaw.
- Check that all the screw connections are completely tightened with the proper torque.
- The clamped workpiece may only have a maximum parallel displacement of 0.5 mm across the entire clamping width.
- Pin 0.2 with cup point \varnothing 6 mm; universal pin for form-fit clamping without pre-embossing (e.g. raw part machining)



- The spindle nut may not be moved over the marking (V-notch) on the shaft. This ensures that a sufficient number of threads is always used.

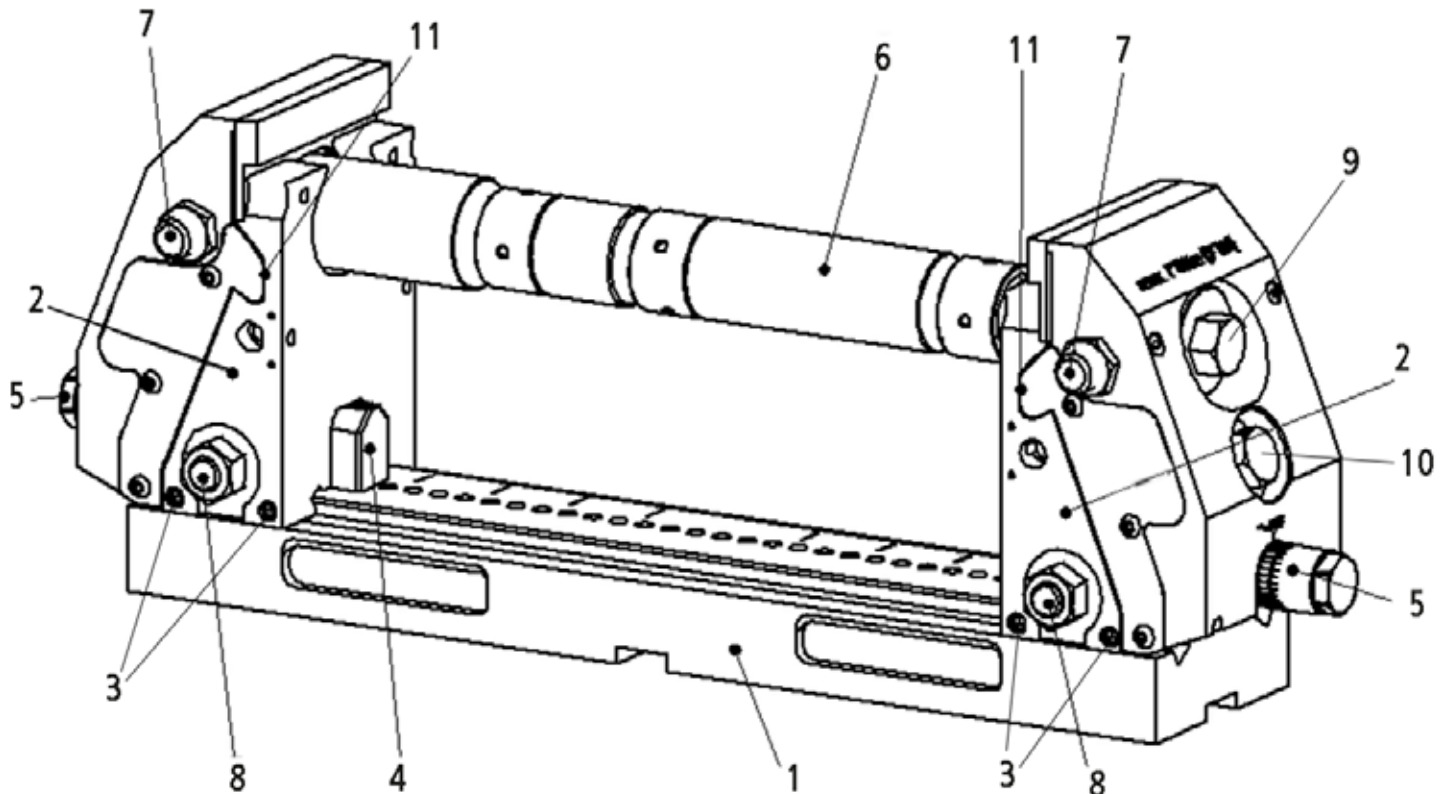


- The union nut must contact the face of the extension rod before assembly.
- When assembled, the distance between the union nut and the extension rod may not exceed max.10 mm in order to avoid damage to the thread.



3. Operating the clamp

3.1 Mounting the clamp

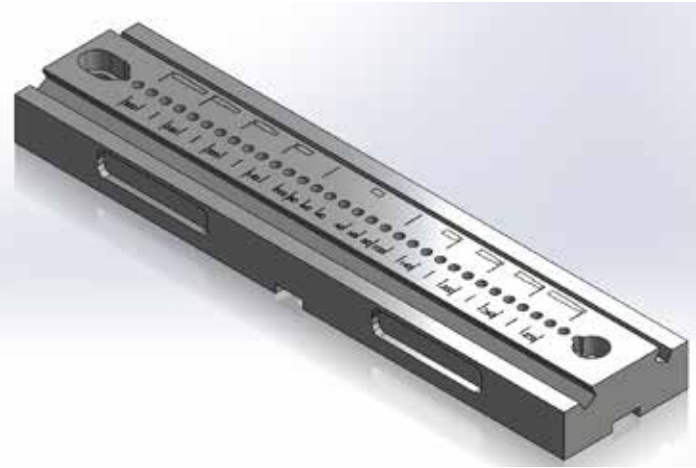


- Mount the base rail (1) on the machine table with bolts or clamps
- Slide both jaws (2) onto the base rail.
For this, the jaws are pre-tensioned on the base rail using preset thrust pads(3).
- Plug the positioning block (4) into the base rail at the desired position (markings on the base rail and the positioning block aid the adjustment of the clamping width --> scale). For smooth jaws, the distance between the vice jaw to the workpiece should be approx 0.5 mm. The step on the positioning block faces the jaw (outwards).
- Slide the jaw in until it is stopped by the positioning block
- Make a fine adjustment with the adjusting spindle (5). The fine adjustment screw must be in contact with the positioning block.
- Mount the clamping rod (6) with the appropriate joined together shafts. The suitable length can be checked before installation on both hex bolts (7). To do this hold the traction rod, together with the shafts with the lateral notches against the knurled pins. Instructions on assembling the shafts, see 3.3
- To lock the traction rod in the clamp, turn both hex head bolts (7) clockwise until they engage (make sure the bolts are engaged!)
- Clamp the jaws using the 19mm AF hexagon nuts (8). Attention! Make sure that the jaw is not tilted on the base rail. For support, the jaws should be lightly pressed against the guide from the rear.
- Attention: Before each workpiece clamping, the clamping of the jaws with the hexagon nuts must be completed.
- Clamp the workpiece by tightening the traction rod (9) with the desired torque (observe torque / clamping force chart)
- The retaining screw (10) must not be over tightened. Hand tight is sufficient.
- The max. clamping stroke is shown and limited by the lateral plates (11). The max. clamping stroke is achieved when there is no more air gap on the leading edge of the plate (see diagram on page 10)

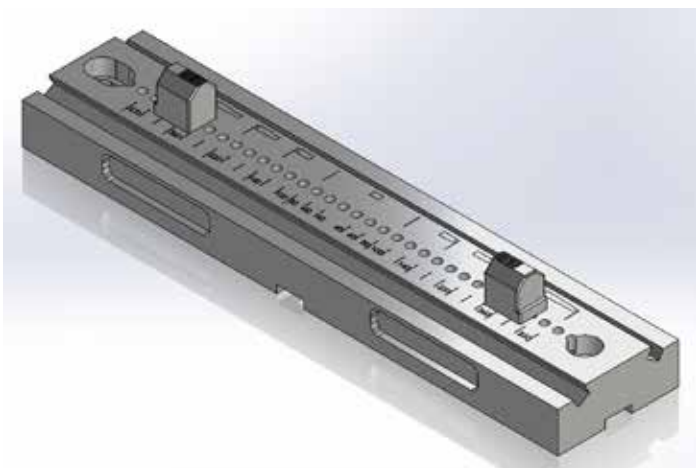
3. Operating the clamp

3.2 Sequence for clamp set up

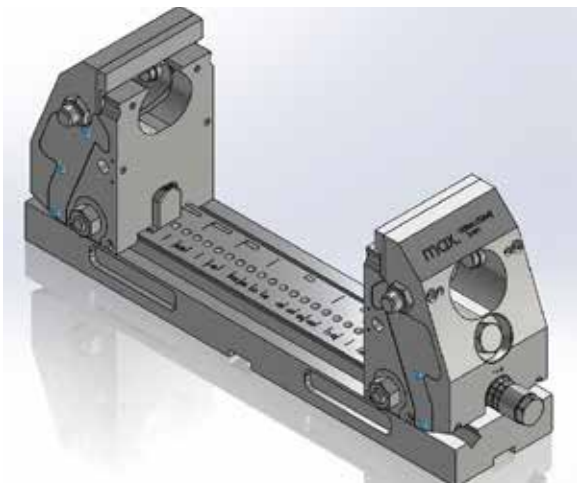
I. → Position the base rail on the machine table, grid plate or zero point clamping system



II. → Plug the positioning blocks into the desired holes on the base rail

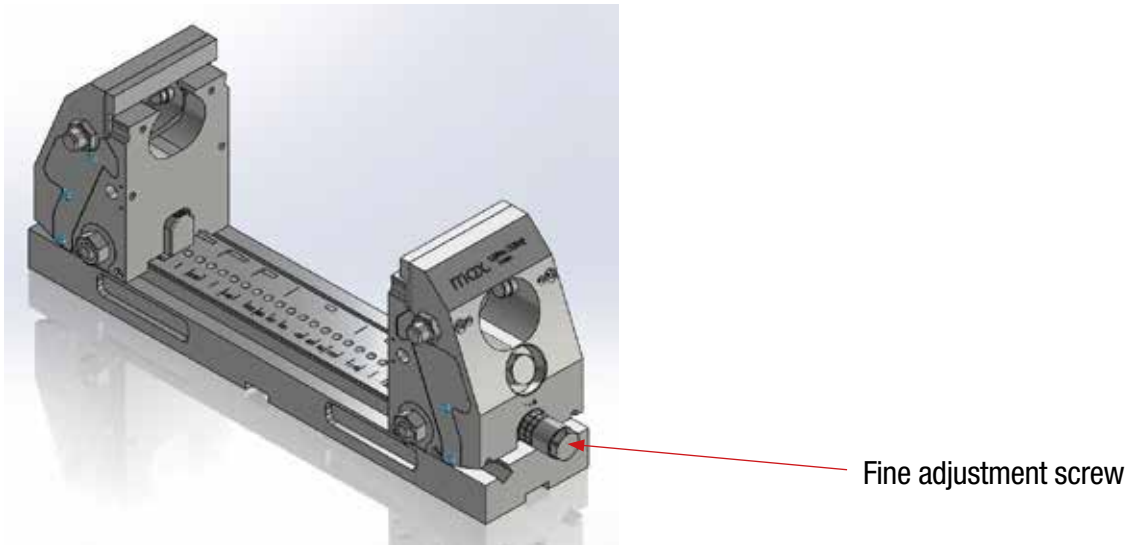


III. → Slide the jaws onto the rail. Slide up to the positioning blocks

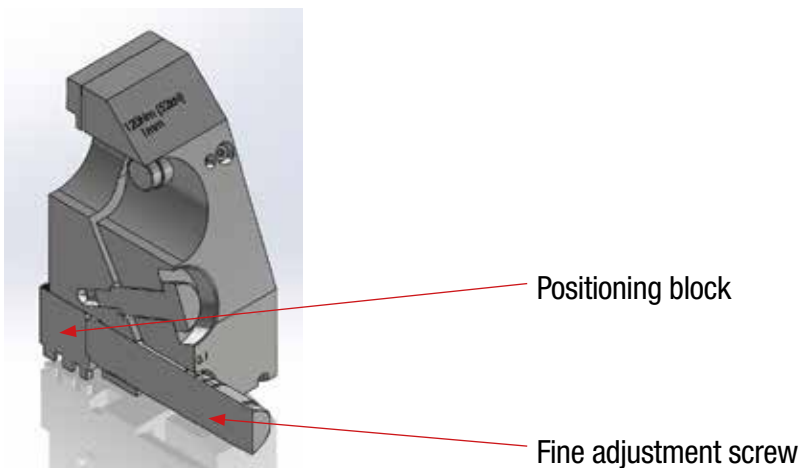


3. Operating the clamp

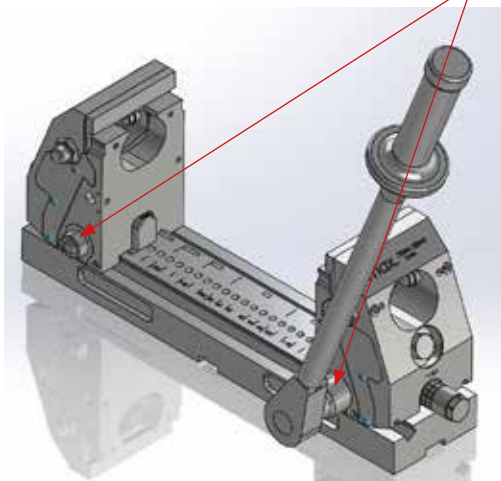
- IV. → Use the fine adjustment screw to set the exact clamping width.
Observe the the clamping travel of max. 1 mm per jaw



The fine adjustment screw must remain in contact with the positioning block

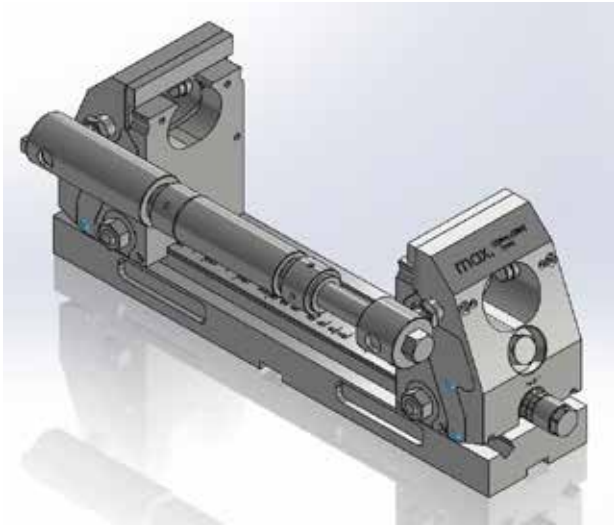


- V. → Clamp both jaws with max. 100Nm using the hexagon nuts and a torque wrench

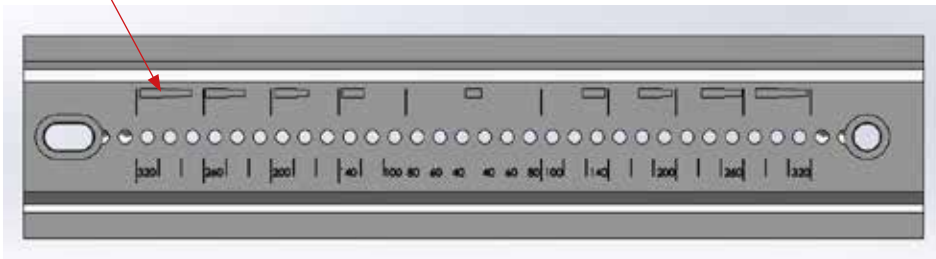


3. Operating the clamp

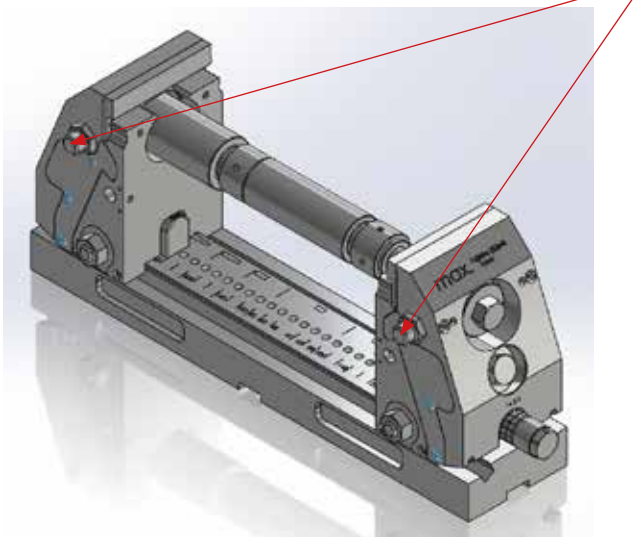
VI. → Set the rod length against the distance between the two quick-lock screws



The rod assembly can be read from the base rail

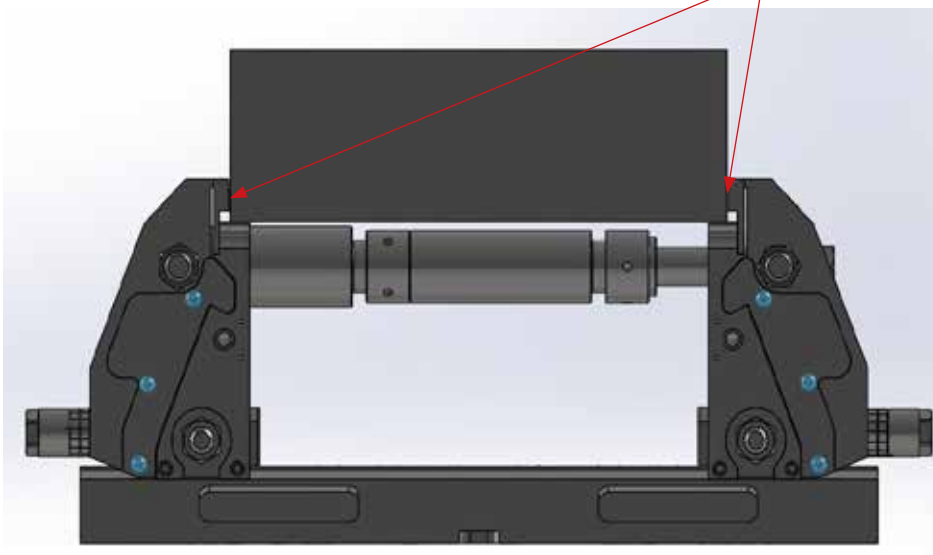


VII. → Mount the rod by closing the quick-lock screws

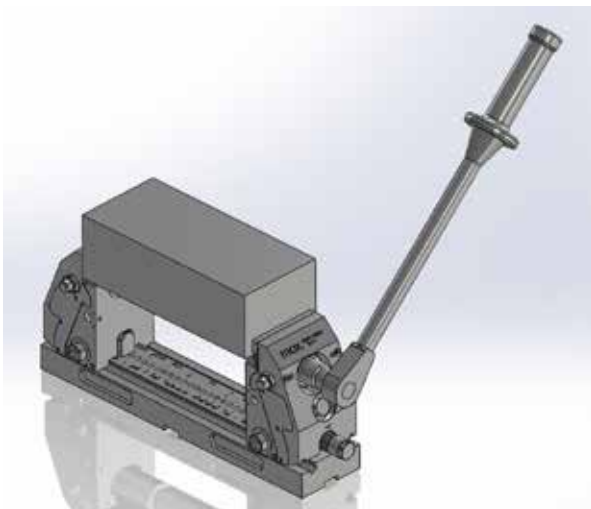


3. Operating the clamp

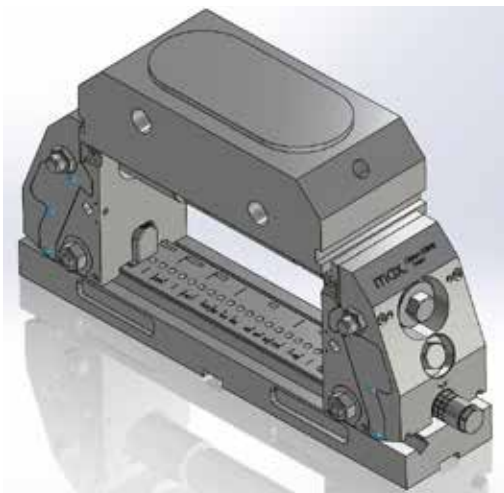
VIII. → Mount the workpiece and recheck the gap of max. 1mm per jaw.



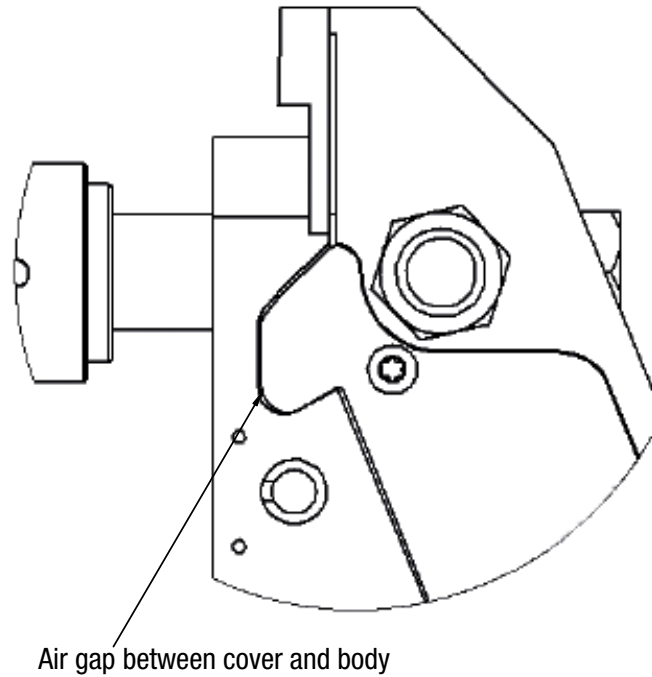
IX. → Clamp the workpiece by tightening the traction spindle to the desired torque.
(See the torque/clamping force graph on page 11)



X. → Machine the workpiece



3. Operating the clamp



3.3 Adjusting clamping rod length to suit the workpiece

- Clamping width 20 - 80 mm

Adapter shaft 60 mm + threaded spindle



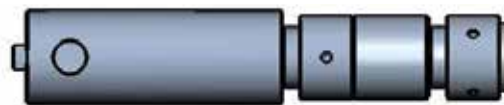
- Clamping width 80 - 140 mm

Adapter shaft 120 mm + threaded spindle



- Clamping width 140 - 200 mm

Adapter shaft 120 mm + expansion rod 60 mm + threaded spindle



- Clamping width 200 - 260 mm

Adapter shaft 120 mm + extension rod 120 mm + threaded spindle



- Clamping width 260 - 320 mm

Adapter shaft 120 mm + extension rod 120 mm + extension rod 60 mm + threaded spindle

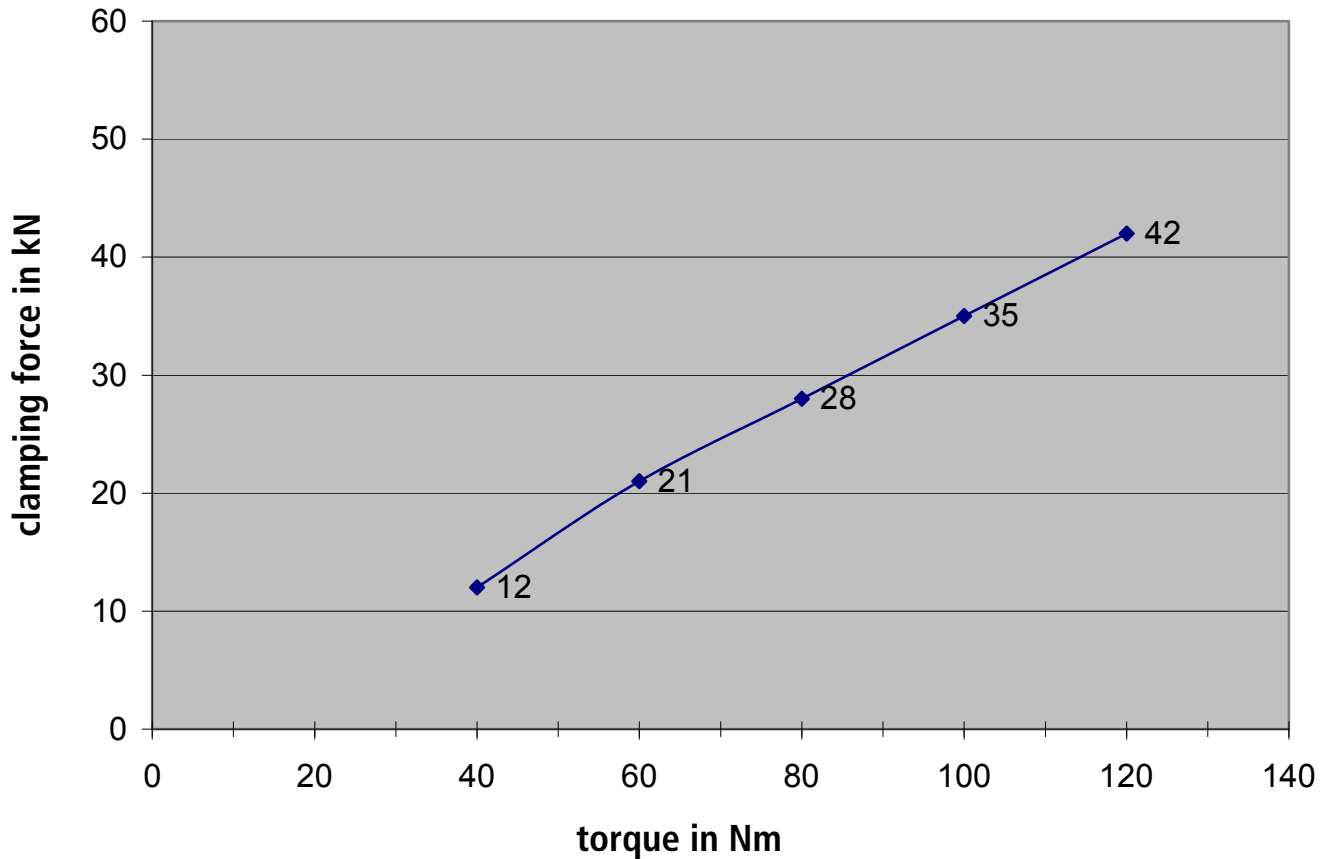


Wider clamping widths are made by joining more extension rods (accessories).

3. Operating the clamp

3.4 Specifications

clamping force



Do not exceed the permissible clamping force of 120 Nm!

- Clamping height above machine table 150 mm (without optional support)
- Clamping width 20 - 320 mm (optionally expandable)
- Clamping force according to chart
- Jaw width 90 mm or 125 mm
- Weight 21.5 / 29.8 kg (90 mm / 125 mm)
- Rail length 400 mm (basic configuration)

3. Operating the clamp

3.5 Stop (optional)

The stop can be mounted either fixed or to swivel. The stop can be swung down to allow machining on the workpiece stop face. It engages with a spring plunger.

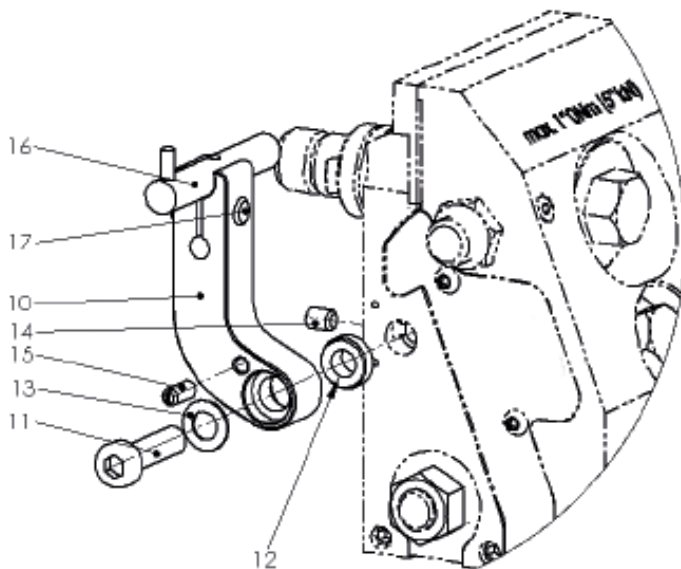
The stop can be mounted on both sides and front or rear.

3.5.1 Mounting the stop as shown in the illustration.

Make sure that only the ball of the spring plunger (15) is projecting from the back of the stop arm (10)!

3.5.2 When required, only tighten the screw (11) so much so that the stop can still swivel. Secure the screw (11) from becoming loose with the grub screw (14). The spring washer (13) exerts pressure on the stop arm. The centring ring (12) guides the stop.

3.5.3 Slide the stop pin (16) into position and clamp with the socket head screw (17).



10	Stop arm
11	Screw DIN 6912 8x30 10.9
12	Centring ring
13	Spring washer
14	Grub screw DIN 913 6x8
15	Spring plunger
16	Stop pin
17	Socket head screw DIN 6912 8x16 10.9

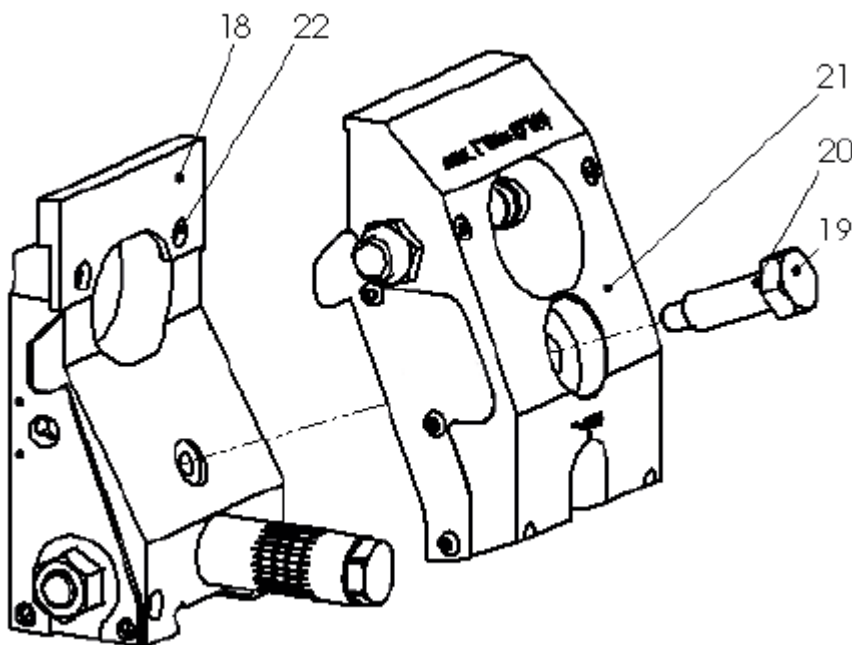
3. Operating the clamp

3.6 Exchanging the vice jaw (optional)

To exchange the jaw plates (18; smooth or with holes for pins) or for a thorough cleaning the jaws must be separated.

Proceed as follows:

- Remove the screw (19); make sure that the O-ring (20) is not damaged or lost
- Remove the jaw piece (21) from the base jaw by pulling obliquely upward
- To remove the jaw plate (18), loosen both screws (22)
- Reassemble in reverse order. Tighten screw (19) with approx. 25 Nm



4. CARE AND MAINTENANCE

Please clean the clamp regularly from accumulated swarf and dirt. The traction rod must be repeatedly lightly oiled during dry machining. Make sure that all threads are clean and not damaged. After cleaning and during long periods of non-use, lightly oil all parts to prevent corrosion. To reach the space between the jaw components, please note point 3.5 on dismantling the parts.

5. SERVICE

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