



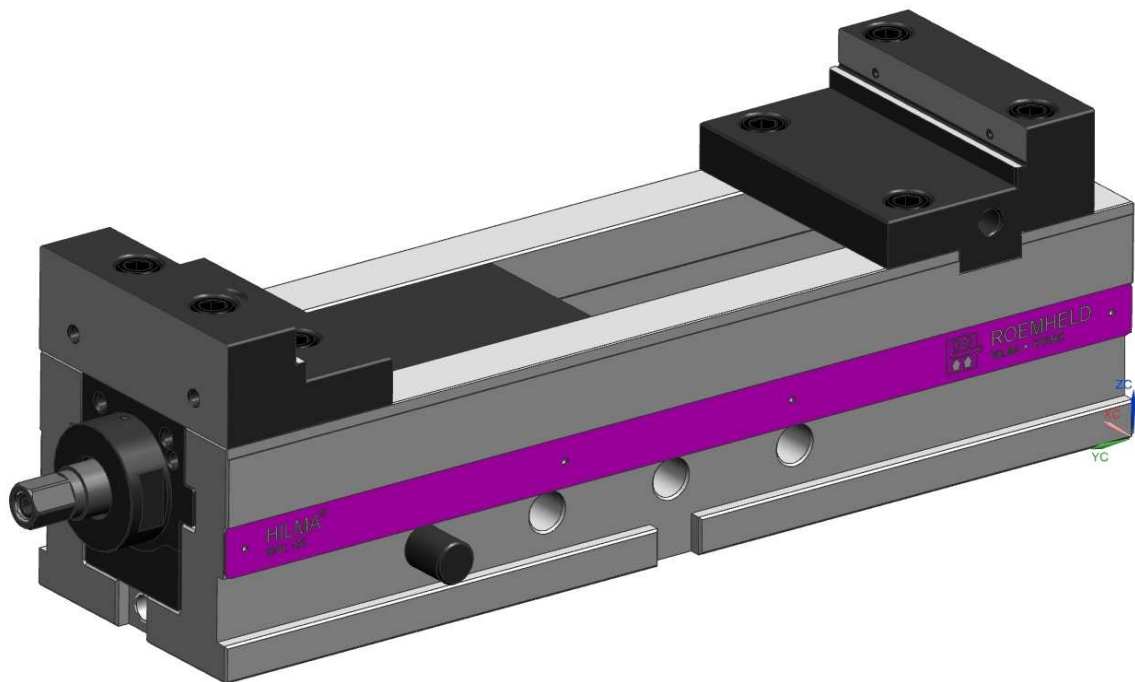
# Operating manual

Including installation and assembly instructions

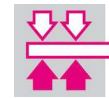
For incomplete machines as per Machinery Directive 2006/42E

KNC Machine vice  
Jaw width 100, 125, 160  
mechanical – hydraulic  
Product lines 0131 + 0141 + 7101

Type 9.3152.  
9.3153.  
9.3154.



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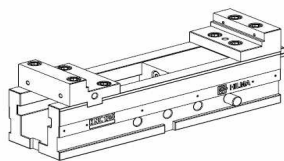


## TABLE OF CONTENTS

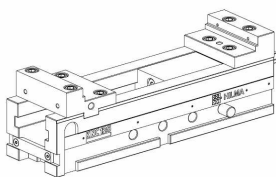
			PAGE
1. General	1.1	Product lines	2
	1.2	Description	3
	1.3	Safety information	3
	1.4	Scope of supply	4
	1.5	Technical data	4
2. Operation	2.1	Fastening to the machine bed	4
	2.2	Adjusting the clamping range	5
	2.3	Clamping and unclamping	5
	2.4	Clamping with gripper	5
	2.5	Clamping force pre-adjustment incl. locking bolt	5
	2.6	Locking bolt	6
	2.7	Angular drive + locking bolt for angular drive	6
	2.8	Vertical clamping	7
3. Appendix	3.1	Troubleshooting	7
	3.2	Maintenance and care	8
	3.3	Refilling with hydraulic oil	8
	3.4	Lubrication of the catch	8
	3.5	Lubrication of the spindle	9
	3.6	Service / Maintenance	9
	3.7	Spare parts	10
4. Including Installation			11

**In order to ensure safe and appropriate operation, read this operating manual thoroughly prior to installation and commissioning !**

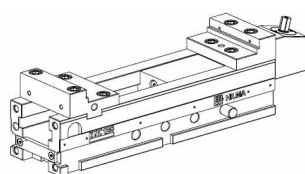
### 1.1 Product lines



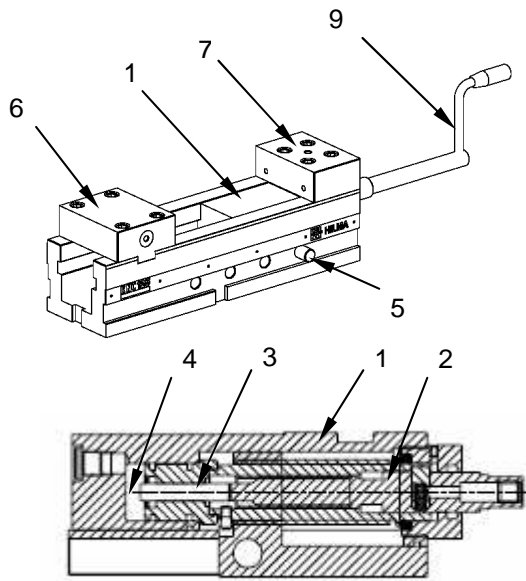
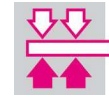
**KNC Standard (-0131)**  
for horizontal clamping



**KNC Universal (-0141)**  
for vertical clamping



**Planned version of KNC (-7101)**  
for horizontal and vertical clamping

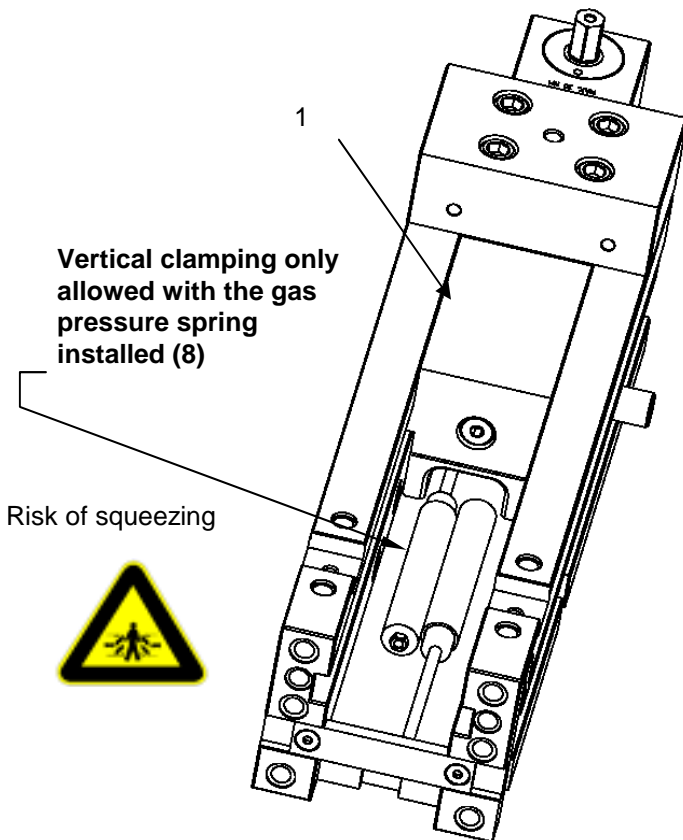


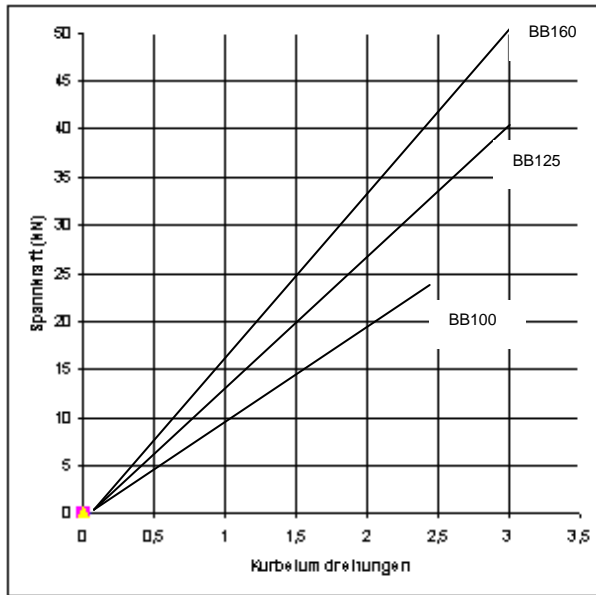
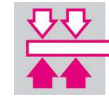
**1.2 Description**

- o The machine vices are designed for universal workpiece clamping on machine tools. They are provided with **fully encapsulated** mechanical - hydraulic clamping slides (1) with hydraulic power amplifier.
- o When building up the clamping force, the primary piston (3) is pressed into the oil chamber (4) by the inner pressure spindle (2). A high hydraulic pressure and thus clamping force is generated.
- o After removal of the socket pin (5) the clamping slide (1) can either be placed into another clamping range or completely removed.
- o The fixed jaw (6) and the movable jaw (7) are interchangeable.

**1.3 Safety information**

- o Before commissioning the system, make sure that there is no possibility of collisions occurring in the working area of the machine.
- o Fasten the machine vice firmly to the machine bed using bolts.
- o In order to prevent the slide (1) from falling when the socket pin (5) is removed, the planned KNC version will be provided with a gas-pressure spring (8). The gas pressure spring relieves the load on the slide and thus permits easy adjustment of the clamping range.
- o When delivered, the gas pressure spring is active and it must be removed for horizontal applications. **Attention! In a horizontal application the gas pressure spring will move the slide backwards when the socket pin is removed.** When the socket pin is pulled out, the gas pressure spring can be removed.
- o The workpiece clamping forces must be such as to ensure that there is no possibility of the workpiece being moved as a result of the machining forces.
- o Mechanical-hydraulic slides (1) have a limited high-pressure path for generating the clamping force. Therefore, flexible pieces are clamped with a lower clamping force, despite spindle operation as far as the stop, see 2.4.
- o The clamping force must be checked at regular intervals using a load cell (accessory).
- o Remove the crank handle (9) after clamping.
- o During unclamping the socket pin must engage, see 2.6.





## 1.4 Scope of supply

Machine vice complete with crank handle, operating manual and list of spare parts

## 1.5 Technical data

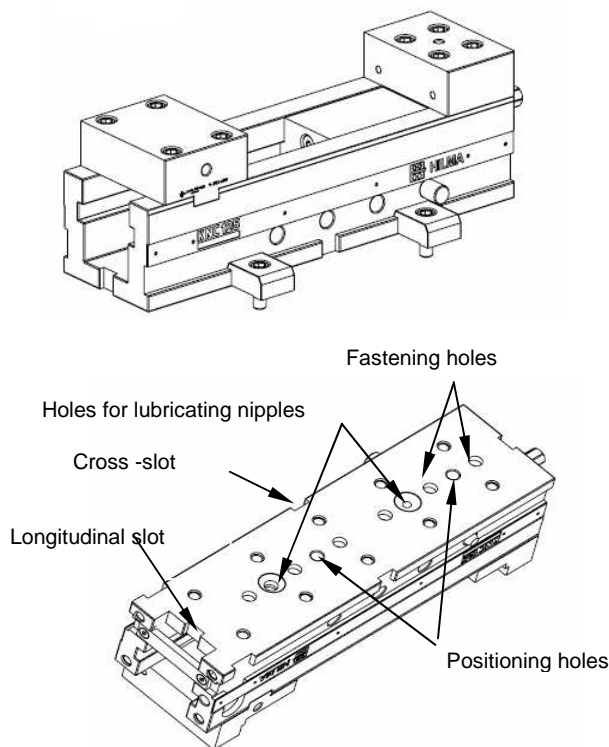
Jaw width mm	Clamping force kN	Crank throw mm
100	25	80
125	40	100
160	50	125

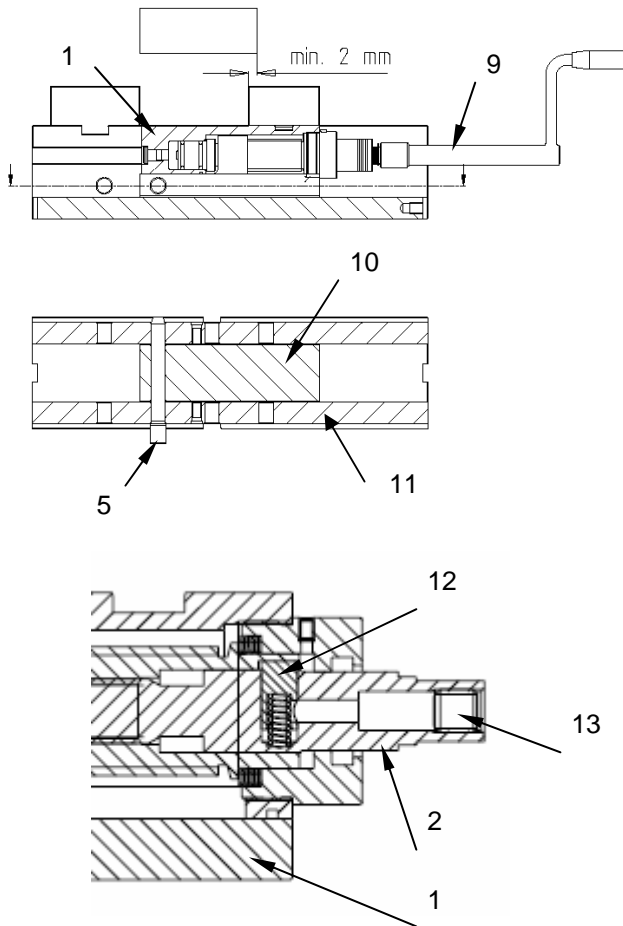
## 2.1 Fastening onto the machine bed

Machine vices must be fastened in such a way that they will not be moved by the machining forces.

- o Before commissioning the system, make sure that there is no possibility of a collision occurring in the working area of the machine.
- o Remove any unevenness and any swarf, which may be present between the locating surface and the base.
- o Aligning
  - a: by means of a dial gauge,
  - b: by means of T-slot nuts,
  - c: by means of positioning pins,
  - d: by means of a lubricating nipple.
- o Fastening
  - e: by means of bolts,
  - f: by means of clamping claws,
  - g: by means of a lubricating nipple.

For each product line special sets of fasteners can be ordered.





## 2.2 Adjusting the clamping range

- o Remove the socket pin (5) and move the clamping slide (1) until the workpiece can be inserted.
- o Move the clamping slide (1) so that it is against the workpiece.
- o Adjust the angular nut (10) in the base (11) by turning the crank handle (9) so as to allow the socket pin (5) to be inserted through the base and the angular nut as far as the stop.
- o Insert the socket pin (5).
- o Check the overlap of the clamping range (min. 2 mm).

## 2.3 Clamping and unclamping

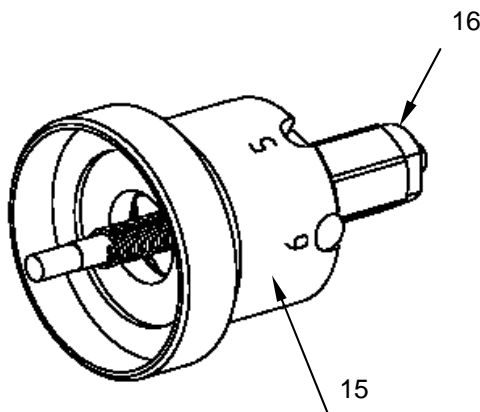
- o Clamping:  
By turning the crank handle (9) clockwise the slide (1) is moved against the workpiece until a noticeable resistance occurs. By increasing the power on the crank handle (9) the resistance of catch (12) is overcome, and the mechanical-hydraulic power transmission is released. By further turning of the inner pressure spindle (2) the clamping force is continuously built up until the max. value is reached.

Please note:  
Turning by applying force will damage the system.

## 2.4 Clamping with gripper

For balancing the plastic deformation of the workpiece a twice clamping by clamping with gripper is necessary, as described in 2.3.

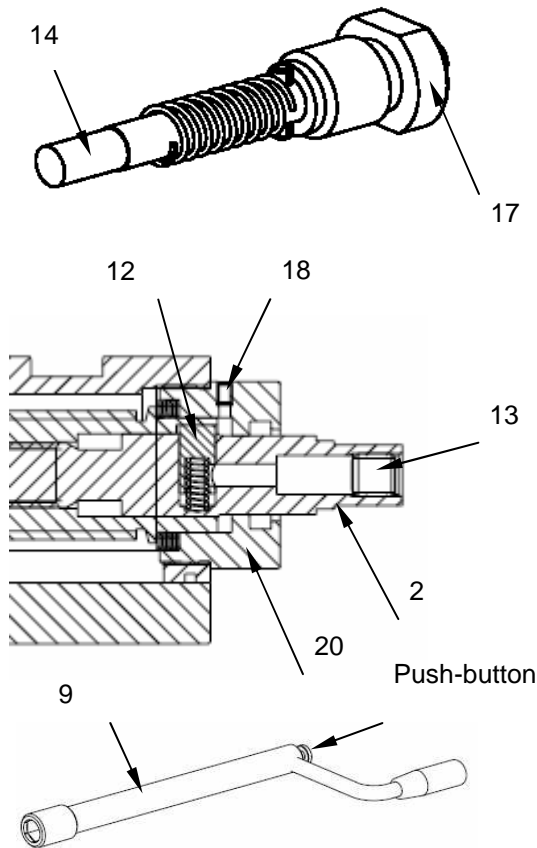
Please note:  
Between the two clamping cycles it is not allowed to remove the workpiece!



## 2.5 Pre-adjustment of the clamping force with lock (optional)

- o Pre-selection of the clamping force:  
Pre-selection of the clamping force limits the stroke of the pressure spindle and thus enables stepwise adjustment of the clamping force. In step 6, the max. clamping force is reached.
- o Installation of the clamping force pre-selection unit
  1. Undo the set screw (13).
  2. Place the clamping force pre-selection unit (15) onto the pressure spindle (2).
  3. Tighten the bushing (16).

For an operation of the locking bolt, see 2.6



## 2.6 Locking bolt (optional extra)

- o Installation of the locking bolt
  1. Undo the set screw (13).
  2. Insert the locking bolt into the pressure spindle (2).
  3. Screw in the bushing (17) and tighten it.
- o Locking of the catch (12)
 

By pressing in the locking bolt (14) using the push-button on the crank handle (9) the catch mechanism can be locked.

Please note:

Once the locking bolt has been activated, changing over to the hydraulic power transmission is no longer possible. The max. permissible torque at the crank handle is then approx. 20 Nm. Turning by applying force will damage the system!

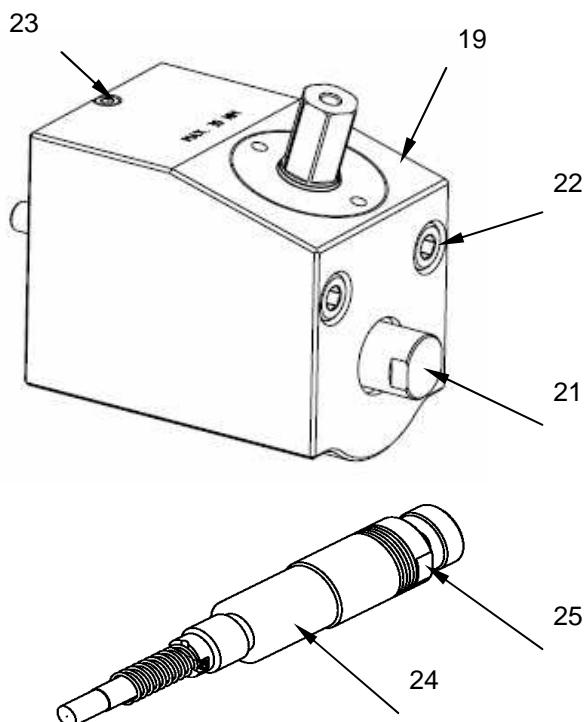
- o Unlocking
 

By turning the crank handle (9) counter-clockwise until the catch (12) noticeably engages, the clamping force is continuously reduced. By turning the crank handle further the vice will be opened.

The catch (12) must engage. If not, only a reduced clamping force will be achieved in the next clamping operation.

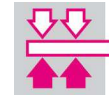
## 2.7 Angular drive (optional extra)

- o Installation of the angular drive
  1. Undo the set screw (13).
  2. Undo the grub screw (18).
  3. Slip the angular drive (19) onto the centring collar of the bearing cover (20).
  4. Screw the bolt (21) into the pressure spindle (2) and tighten it.
  5. Tighten the bolts (22).
  6. Undo the bolt (23) and introduce approx. 0.5 cm<sup>3</sup> of vactra 2.
  7. Retighten the bolt (23).

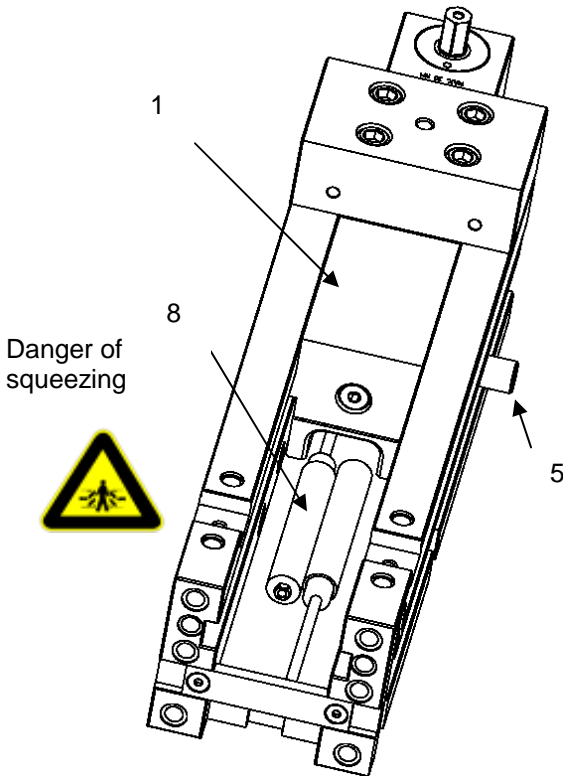


### 2.7.1 Lock for angular drive (optional extra)

- o Installation of the lock
  1. Undo the bolt (21).
  2. Insert the lock (24).
  3. Screw in the bushing (25) and tighten it.



## 2.8 Vertical clamping



### Risk of accidents

- o In order to prevent the slide (movable jaw 1) from falling when the socket pin (5) is removed, the planned KNC version will be provided with a gas-pressure spring (8). The gas pressure spring relieves the load on the slide and thus permits easy adjustment of the clamping range.
- o When delivered, the gas pressure spring is active and must be removed for horizontal applications.

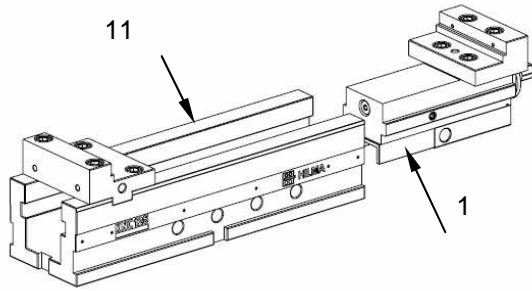
**Attention! In a horizontal application, the gas pressure spring will move the slide backwards when the socket pin is removed..**

When the socket pin is pulled out, the gas pressure spring can be removed.

**Safety information with respect to the gas pressure spring**  
Do not open – high pressure! Do not heat to over 80°C!  
After extended storage a functional test must be carried out!

## 3.1 Trouble shooting

Failure	Cause	Remedial action
No build-up of clamping force	The pressure spindle (2) is not in its home position	Turn the pressure spindle (2) back until the catch pin (12) engages, see 2.3
	The clamping range is incorrectly adjusted	See 2.2
	Premature changeover to hydraulic power transmission due to locked slide guidance	Remove the slide (1) from the base (11) after having removed the socket pin (5), clean the base and oil all slide faces.
	The high-pressure path has been used up by a protruding burr or by a flexible workpiece	Only clamp workpieces without burrs. Support flexible workpieces or clamp them using specific jaws. Lock the catch, apply a pre-tension of approx. 20 Nm, unlock the catch and continue to clamp using hydraulic power transmission, see 2.3
	Oil reserve is exhausted	Refill with hydraulic oil, see 3.3
The socket pin (5) is sluggish	Dirt between the base (11) and the angular nut (10)	Remove the slide (1) and clean the guide faces



### 3.2 Maintenance and care

Remove the slide (1) from the base (11) at regular intervals, clean the slide faces, grind them (if necessary) and oil them.

Check the oil reserve at distance "F" between the secondary piston (26) and the slide (1). F min. must not fall below 0.1 mm.

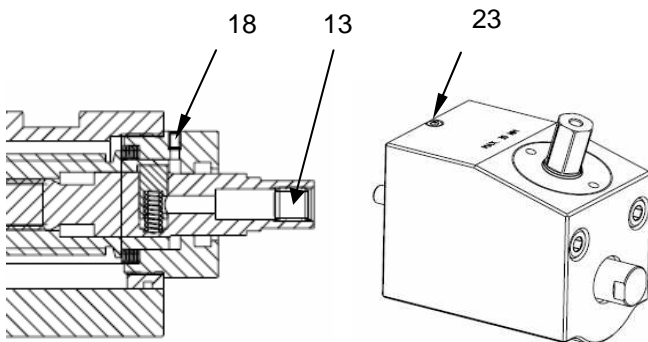
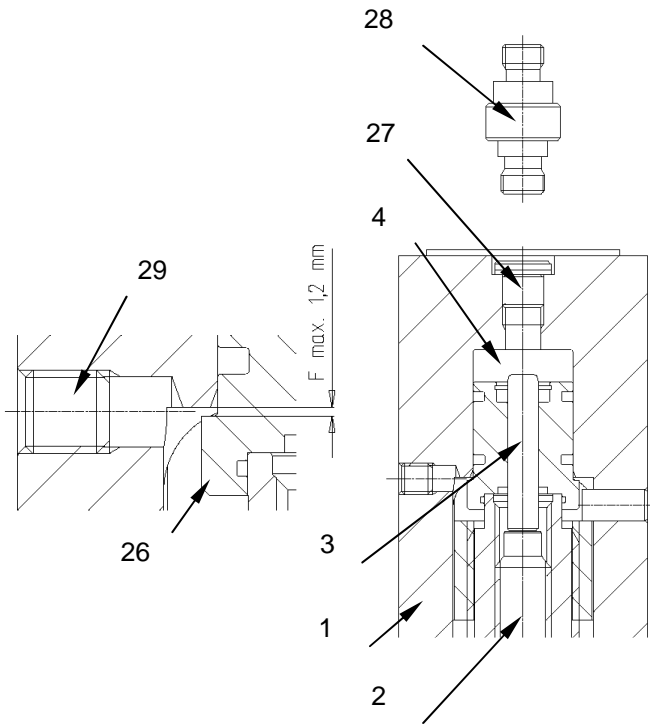
### 3.3 Refilling with hydraulic oil

for KNC 125 + 160

- o Turn the pressure spindle (2) back until the catch engages (12).
- o Remove the slide (1) from the base (11).
- o Undo the screw plug (27).
- o Move the primary piston (3) into its home position. To do this, use the filling nipple (28) and the oil gun or apply compressed air to the oil chamber (4).
- o Fill with hydraulic oil HLP 68 (ISO VG 68) until the emerging oil is free from bubbles, insert the screw plug (27) and tighten it.
- o Undo the set screw (29) and check distance "F". (F = 1mm)
- o Reinsert the set screw (29) and tighten it.

for KNC 100

- o Turn the pressure spindle (2) back until the catch engages (12).
- o Remove the slide (1) from the base (11).
- o Undo the screw plug (27) and the set screw (29).
- o Move the primary piston (3) into its home position. To do this, use the filling nipple (28) and the oil pressure or apply compressed air.
- o Insert a feeler gauge (0.7mm thick) between the slide housing and the piston (dimension "F").
- o Fill with hydraulic oil HLP 68 (ISO VG 68) until the emerging oil is free from bubbles, insert the screw plug (27) and tighten it.
- o Remove the feeler gauge and check dimension "F" (F = 1mm)
- o Reinsert the set screw (29) and tighten it.



### 3.4 Lubrication of the catch

- o Undo the screw plug (13, 18 or 23, respectively).
- o Introduce approx. 0.5 cm<sup>3</sup> of vactra 2.
- o Reinsert the screw plug (18 or 23, respectively).
- o Re-lubricate as may be necessary but at least one per month.



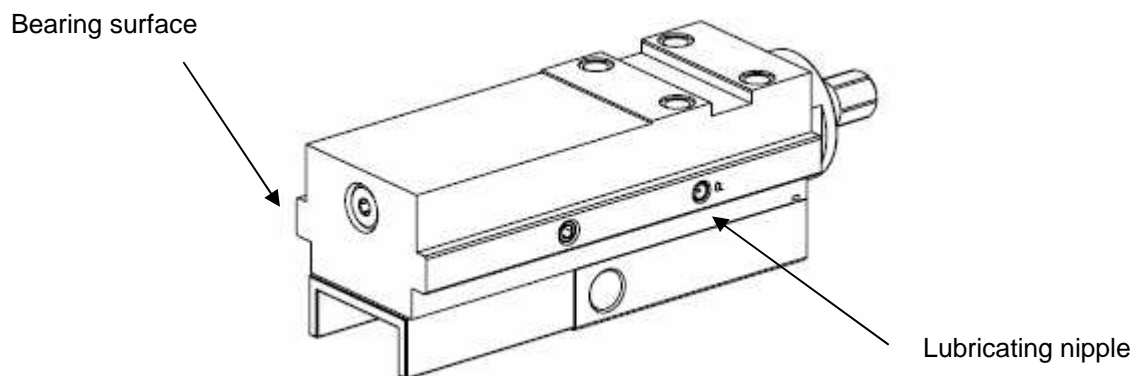
## 3.5 Lubrication of the spindle

Move the slide as far as the stop (max. clamping width) by turning the crank handle counter-clockwise.

Pull off the socket pin and remove the slide from the base.

Tilt the slide onto the side.

Then lubricate the spindle in the slide with slideway grease through the lubricating nipple using a grease gun.

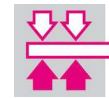


## 3.6 Service / Maintenance

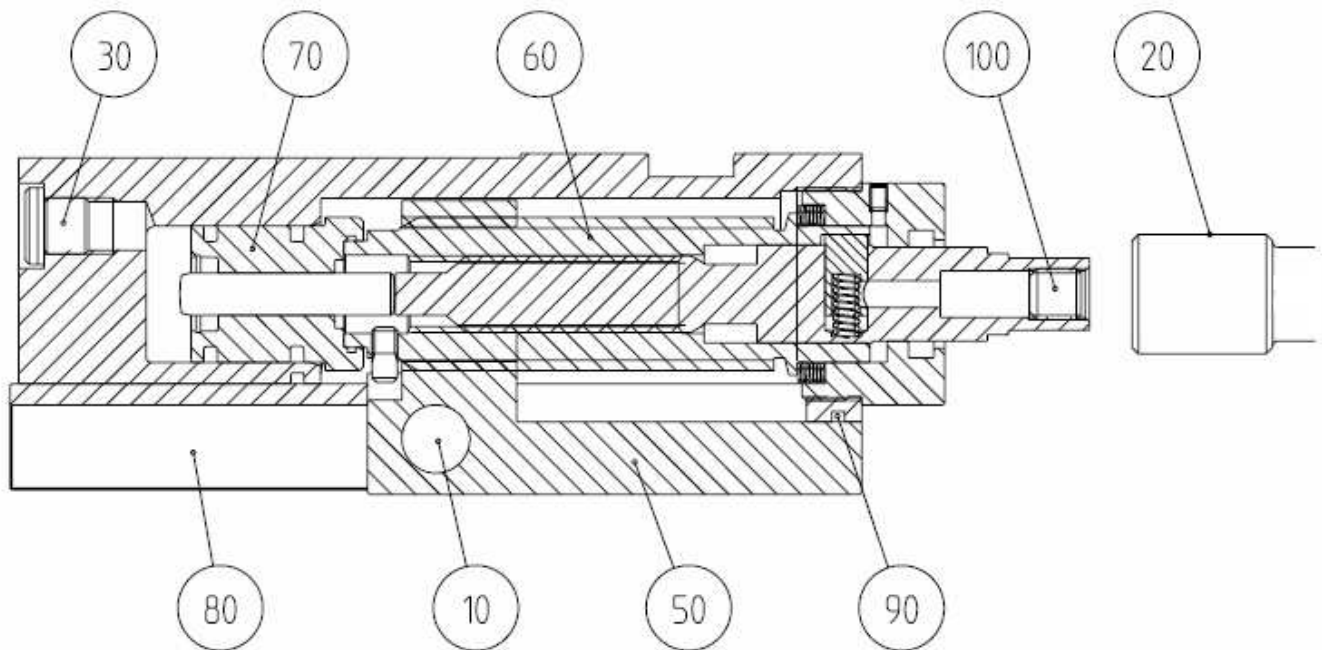
SERVICE HOTLINE + 49 (0) 2733 - 281 130

### Customers abroad

- Please contact the HILMA-RÖMHELD general importer or your local dealer.

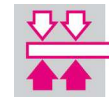


**3.7 Spare parts, applicable to version 0131 + 0141 + 7101**



Item	Designation	Qty.	Spare part no.		
			BB 100	BB 125	BB160
10	Socket pin	1	5.2054.0041	5.2054.0036	5.2054.0040
20	Crank handle	1	4.2056.0043	4.2056.0040	4.2056.0042
30	Screw plug	1	1.0908.1008	1.0908.1009	1.0908.1010
40					
50	Angular nut	1	5.2053.0062	5.2053.0060	5.2053.0061
60	Spindle, complete	1	9.3152.0524	9.3153.0524	9.3154.0524
70	Piston system	1	9.3073.0522	9.3073.0522	9.3074.0522
80	Gas pressure spring	2	2.6011.0018	2.6011.0015	2.6011.0017
90	Sealing	1	1.9516.0005	1.9516.0005	1.9516.0005
100	Set screw	1	1.0913.0097	1.0913.0113	1.0913.0113

Subject to modification.



## Declaration of incorporation

as per

**Machinery Directive EC-RL 2006/42/EC  
dated June 9, 2006.**

We, **Hilma- Römheld**  
**Schützenstrasse 74**  
**57271 Hilchenbach,** declare, that the incomplete machine and its variants:

**KNC Machine vice**

**type 9.3152.xxxx**

**type 9.3153.xxxx**

**type 9.3154.xxxx**

as supplied by us has been specifically designed for incorporation into a machine, taking full account of DIN EN ISO 13857 The documentation has been prepared in conformity with appendix VII B. If required, the national authority may receive the documentation as a hard copy by post or by e-mail as a PDF format file. The machine into which the parts are to be integrated must only be put into operation after the conformity of the machine with the above EC directive has been demonstrated.

The design of our products is in accordance with DIN EN ISO 4413 and EN 60204-1.

Responsible for the document:  
Reiner Hippenstiel  
Schützenstraße 74  
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Hilchenbach May 05, 2008  
Hans-Joachim Molka  
Managing Director