Tolerance Compensation Unit
TCU-Z 50-200
Assembly and Operating Manual
Dear customer,

congratulations on choosing a SCHUNK product. By choosing SCHUNK, you have opted for the highest precision, top quality and best service.

You are going to increase the process reliability of your production and achieve best machining results – to the customer's complete satisfaction.

SCHUNK products are inspiring.

Our detailed assembly and operation manual will support you.

Do you have further questions? You may contact us at any time – even after purchase.

Kindest Regards

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1 About this manual

This instruction is an integral part of the product and contains important information for a safe and proper assembly, commissioning, operation, maintenance and help for easier trouble shooting.

Before using the product, read and note the instructions, especially the chapter "Basic safety notes".

1.1 Warnings

The following key words and symbols are used to highlight dangers.

1.1.1 Key words

DANGER Dangers for persons.
Non-compliance will inevitably cause irreversible injury or death.

WARNING Dangers for persons.
Non-compliance may cause irreversible injury or death.

CAUTION Dangers for persons.
Non-observance may cause minor injuries.

NOTICE Information about avoiding material damage

1.1.2 Symbols

⚠️ Warning about a danger point

⚠️ Warning about hand injuries

⚠️ General mandatory sign to prevent material damage

1.2 Applicable documents

- General terms of business
- SCHUNK catalog Robot accessories
- Assembly and Operating Manuals for sensors

The documents listed here, can be download on our homepage www.schunk.com
2 Basic safety notes

2.1 Intended use

The module is intended for installation in a machine/system. The requirements of the applicable guidelines must be observed and complied with.

The module may be used only in the context of its defined application parameters (☞ 6, Page 11).

To use this unit as intended, it is also essential to observe the technical data and installation and operation notes in this manual and to comply with the maintenance intervals.

2.2 Not intended use

It is not an intended use if the module is used, for example, as a pressing tool, stamping tool, lifting gear, guide for tools, cutting tool, clamping device or a drilling tool.

2.3 Environmental and operating conditions

- Make sure that the module and the top jaws are a sufficient size for the application.
- Make sure that the module has a sufficient size for the application.
- Observe Maintenance and lubrication intervals (☞ 9.2, Page 22).
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Excepted are modules that are designed especially for contaminated environments.
2.4 **Product safety**

Dangers arise from the module, if:

- the module is not used in accordance with its intended purpose.
- the module is not installed or maintained properly.
- the safety and installation notes are not observed.

Avoid any manner of working that may interfere with the function and operational safety of the module.

Wear protective equipment.

**NOTE**

More information are contained in the relevant chapters.

2.4.1 **Protective equipment**

Provide protective equipment per EC Machinery Directive.

2.4.2 **Demands on the top jaws**

Arrange the top jaws such that when the module is depressurized it can reach one of the end positions either open or closed and therefore no residual energy can be released when changing the top jaws.

2.4.3 **Constructional changes, attachments, or modifications**

Additional drill holes, threads, or attachments that are not offered as accessories by SCHUNK may be attached only with permission of SCHUNK.

2.5 **Personnel qualification**

The assembly, initial commissioning, maintenance, and repair of the module may be performed only by trained specialist personnel. Every person called upon by the operator to work on the module must have read and understood the complete assembly and operating manual, especially the chapter "Basic safety notes" (☞ 2, Page 6). This applies particularly to personnel only used occasionally, such as maintenance personnel.
2.6 Using personal protective equipment

When using this product, observe the relevant industrial safety regulations and use the personal protective equipment (PPE) required!

- Use protective gloves, safety shoes and safety goggles.
- Observe safe distances.
- Minimal safety requirements for the use of equipment.

2.7 Notes on particular risks

Generally valid:

- Remove the energy supplies before installation, modification, maintenance, or adjustment work.
- Make sure, that no residual energy remains in the system.
- Do not move parts by hand when the energy supply is connected.
- Do not reach into the open mechanism or the movement area of the module.
- Perform maintenance, modifications, and additions outside the danger zone.
- For all work, secure the unit against accidental operation.
- Take a precautionary approach by maintenance and disassembly.
- Only specially trained staff should disassemble the module.

⚠️ WARNING

Danger of injury due to spring forces!
Parts are under spring tension on modules which clamp using spring force or which have a gripping force maintenance.

- Only specially trained staff should disassemble the module.
3 Warranty

The warranty is valid for 24 months from the delivery date to the production facility under the following conditions:

- Intended use in 1-shift operation
- Observe the mandatory maintenance and lubrication intervals
- Observe the environmental and operating conditions

Parts touching the work piece and wear parts are not part of the warranty.

4 Scope of delivery

The scope of delivery includes:

- Tolerance Compensation Unit TCU-Z in the ordered model.
- Accessory pack
5 Accessories

The following accessories that are required for the module must be ordered separately:

- Sensors, plus extension cables as an option

A wide range of accessories is available for this module. For information about which accessories can be used with the appropriate product version, see catalog.

5.1 Sensors

Overview of the compatible sensors

<table>
<thead>
<tr>
<th>Designation</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programmable magnetic switch</td>
<td>MMS-P</td>
</tr>
</tbody>
</table>

- Exact type designation of the compatible sensors see catalog
- If you require further information on sensor operation, contact your SCHUNK contact person or download information from our homepage.
6 Technical data

Further technical data can be found in the catalog data sheet. The most recent version applies.

6.1 With “Locking” (MV)

<table>
<thead>
<tr>
<th>Size</th>
<th>64</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight [kg]</td>
<td>0.2</td>
<td>0.3</td>
<td>0.5</td>
<td>0.9</td>
<td>1.6</td>
<td>2.8</td>
</tr>
<tr>
<td>permissible operating temperature [°C]</td>
<td>-10 bis + 90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pressure medium</td>
<td>Compressed air, standard for quality of the compressed air according to ISO 8573-1: 644</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. pressure [bar]</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. pressure [bar]</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise emission [dB(A)]</td>
<td>≤ 70</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.2 Without “Locking” (OV)

<table>
<thead>
<tr>
<th>Size</th>
<th>50</th>
<th>64</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight [kg]</td>
<td>0.09</td>
<td>0.15</td>
<td>0.3</td>
<td>0.5</td>
<td>0.7</td>
<td>1.4</td>
<td>2.5</td>
</tr>
<tr>
<td>permissible operating temperature [°C]</td>
<td>-10 bis + 90</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Noise emission [dB(A)]</td>
<td>≤ 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7 Assembly

7.1 Assembly example

![Assembly example diagram]

Fig. 1 Assembly example

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>robot or gantry axis</td>
</tr>
<tr>
<td>2</td>
<td>adapter plate (optional from SCHUNK or provided by customer)</td>
</tr>
<tr>
<td>3</td>
<td>tolerance compensation unit</td>
</tr>
<tr>
<td>4</td>
<td>handling device e.g. Gripper</td>
</tr>
</tbody>
</table>

Optional, SCHUNK can provide an adapter plate with hole pattern for mounting holes.

The adapter plate (2) is mounted to the robot (1) and to the TCU-Z (3) (see our catalog for mounting data).

SCHUNK gripper types PGN-plus, DPG, PGB and JPG are attached directly to the TCU-Z.

For all other handling devices (4) is an adapter plate required.

Air connection and electrical cables must be fixed and bundled with cable clamp, in order that during use the greatest possible freedom of movement is possible.
7.2 Mechanical connection

**NOTICE**

Break of the module because of faulty installation is possible! Observe maximum depth of engagement at robot side and handling device.

### 7.2.1 Check the evenness of the bolting surface

**Check the evenness of the bolting surface**

The values relate to the entire bolting surface.

Requirements for levelness of the bolting surface (Dimensions in mm)

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Permissible unevenness</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 100</td>
<td>&lt; 0.02</td>
</tr>
<tr>
<td>&gt; 100</td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

### 7.2.2 Assembly at the robot

![Fig. 2 Möglichkeiten der Montage](image)

The cylindrical pin, needed to fix the module, is not included in the delivery. The mounting screws (51) are pre-assembled in the module.
1. Fix the module on the fixing bore, using the cylindrical pin.

**NOTE**
Observe tightening torque

2. Tighten mounting screws (51) with a hexagon screwdriver.

### Data for mounting at the robot-side adapter plate

<table>
<thead>
<tr>
<th>Item</th>
<th>Mounting</th>
<th>50</th>
<th>64</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z</td>
<td>maximum depth [mm]</td>
<td>3.2</td>
<td>6.5</td>
<td>11.5</td>
<td>13.5</td>
<td>10.5</td>
<td>14.5</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>pan screw DIN 7984</td>
<td>M3</td>
<td>M4</td>
<td>M6</td>
<td>M8</td>
<td>M10</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tightening torque [Nm]</td>
<td>1.27</td>
<td>3.0</td>
<td>10.1</td>
<td>10.1</td>
<td>24.6</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td></td>
<td>cylindrical pin fit diameter</td>
<td>Ø6</td>
<td>Ø8</td>
<td>Ø10</td>
<td>h6</td>
<td>h6</td>
<td>h6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>max. fitting depth [mm]</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 7.2.3 Mounting at the handling device

#### Data for mounting at the handling device

<table>
<thead>
<tr>
<th>Item</th>
<th>Mounting</th>
<th>50</th>
<th>64</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>thread diameter</td>
<td>M3</td>
<td>M5</td>
<td>M6</td>
<td>M6</td>
<td>M8</td>
<td>M8</td>
<td>M10</td>
</tr>
<tr>
<td></td>
<td>Max. screw-in depth [mm]</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>
7.3 Air connection

**NOTICE**
The maximum permissible mass per jaw is exceeded:
- Attach flow control couplings to the module.

**NOTICE**
Observe the requirements for the air supply.
(☞ 6, Page 11) "Technical Data"

Fig. 4 Air connection

<table>
<thead>
<tr>
<th>Item</th>
<th>64</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure medium</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>standard for quality of the compressed air</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Druckluft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>according to ISO 8573: <strong>6 4 4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hose connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>connect pressure line to the air connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread diameter hose connection (A = unlocked, B= locked)</td>
<td>M5</td>
<td>M6</td>
<td>M8</td>
<td>G 1/8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Only open the air connections required.
- Seal air connections not required using the locking screws from the enclosed pack.
- For hose-free direct connections use the O-rings from the enclosed pack.
- If the maximum permissible finger weight is exceeded a throttle has to be carried out imperatively. The movement has to be without jerks and bounce.
7.4 Sensors

The module is prepared for a number of sensors. Other sensors can be used with a mounting kit.

- If you require further information on sensor operation, contact your SCHUNK contact person or download information from our homepage.
- Technical data for the sensors can be found in the data sheets (included in the scope of delivery).

7.4.1 Programmable magnetic switch (MMS-P)

![Diagram of magnetic switch](image)

---

**Fig. 5 Magnetic switch (MMS-P 22)**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th></th>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mounting screw</td>
<td>4</td>
<td>Teach-button</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Center sensor elements</td>
<td>5</td>
<td>LED display</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>LED display</td>
<td>6</td>
<td>Rips for cable tires</td>
<td></td>
</tr>
</tbody>
</table>
Types available for order (see catalog):
- MMS-P 22-S-M8-PNP
- MMSK-P 22-S-PNP
- V2-M8-4-2XM8-3

The MMSK-P 22-S-PNP features a cable with open strands so that it can be connected by means of terminal contacts.

The V2-M8-4-2XM8-3 distributor is used to convert the 4-pin connector plug of the MMS-P 22-S-M8-PNP sensor to two standard M8 plugs with 3 pins each.

**NOTICE**

Sensor can be damaged during assembly.
- Do not exceed the maximum tightening torque of 10 Ncm for the set screws.

**NOTE**

Ferromagnetic material changes the switching positions of the sensor. For example: Adapter plate made of ordinary steel.
At ferromagnetic adapter plates:
- The module must firstly be mounted on the adapter plate
- Then, the positions of the magnetic switch have to be set
1 Push the magnetic switch (1) into the groove until it bears against the stop (2) (if applicable).

2 If there is no terminal stop, then push the magnetic switch according to dimension l2 (bottom edge of module up to front side of sensor) or according to dimension l1 (bottom edge of module up to double arrow on sensor) and then clamp.

<table>
<thead>
<tr>
<th>Size</th>
<th>50</th>
<th>64</th>
<th>80</th>
<th>100</th>
<th>125</th>
<th>160</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimension l₁ [mm]</td>
<td>-</td>
<td>32</td>
<td>40</td>
<td>50</td>
<td>62.5</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>dimension l₂ [mm]</td>
<td>-</td>
<td>40.9</td>
<td>48.9</td>
<td>58.9</td>
<td>71.4</td>
<td>88.9</td>
<td>108.9</td>
</tr>
</tbody>
</table>

1 To relieve the cable, the electronics have to be fixed in place using cable ties (7). There are ribs (6) in place on the electronics for mounting purposes.
2 Turn in the sensor (1 - 4).
   OR
   Push the sensor axially into the slot until it contacts
   the stop (5).

3 Fix the sensor with an Allen wrench (6).

1 Keep the Teach-Button (4) pressed for 2 seconds.
   ⇨ After 2 seconds LED 1 (3) is flashing

2 Move the module into position 1 (e.g. "0 - position").

3 Press the Teach-Button (4) briefly.
   ⇨ LED 1 (3) lights up and LED 2 (5) is flashing.

4 Move the module manually into position 2 (e.g. "-2mm").
   ⇨ LED 1 (3) should turn out as soon as the switching
   point 1 is left.

5 Press the Teach-Button (4) briefly.
   ⇨ LED 2 (5) lights up.
   ⇨ The switching points are set.
Adjusting the hysteresis

The hysteresis to both switching points will be adjusted automatically corresponding to the characteristics of the magnetic field. The user can set the switching and trigging points of each position a little bit closer than for the automatic mode. The trigging point is closer to the switching point. At the same time the susceptibility to trouble and damage increases. In the mode of the lowest hysteresis, an error signal (such as jitter or untimely switch off) can be avoided, if the sensor is protected against all types of disturbances (i.e. by shielding). Frequent types of disturbances are change in temperature and electro-magnetic influences. Within the closest fine-teach mode, SCHUNK cannot guarantee EMC-compatibility any more.

The hysteresis adjustment is used for the manual adjustment of the switching points (if necessary). In case that the hysteresis automatically determined by the sensor should be too high or too low after “the adjustment of the switching points”, you may correct the value as follows. The sensor avoids a too small hysteresis during hysteresis adjustment.

1. Press the Teach-button (4) for 5 seconds.
   - LED 1 (3) will flash up after 2 seconds.
   - LED 1 will stop after 5 seconds.
2. Release the Teach-button.
3. Put the module to position "switch-off point of switching point 1".
4. Press the Teach-Button (4) briefly. LED 1 (3) will light up twice.
5. Put the module to position "switch-off point of switching point 2".
6. Press the Teach-Button (4) briefly.
   - LED 2 (5) will light up twice.
   - The mounting of the sensor MMS-P is completed.
# 8 Troubleshooting

## 8.1 Module does not move?

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorrect air supply</td>
<td>Check the air lines for proper connection and function</td>
</tr>
</tbody>
</table>

## 8.2 Module does not lock itself?

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximity switch defective or set incorrect</td>
<td>Disassemble and clean module</td>
</tr>
<tr>
<td>Pressure drops below minimum.</td>
<td>Repair the proximity switch.</td>
</tr>
</tbody>
</table>

## 8.3 Module does not execute the full stroke for the locking?

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dirt between the cylinder and cylinder cover</td>
<td>Disassemble and clean module</td>
</tr>
<tr>
<td>Pressure drops below minimum.</td>
<td>Check the air supply.</td>
</tr>
</tbody>
</table>

## 8.4 The locking force decreases during locking?

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressed air can escape</td>
<td>Check seals, if necessary disassemble module and replace seals</td>
</tr>
<tr>
<td>Too much grease in the mechanical motion spaces of the module</td>
<td>Clean the module and relubricate it</td>
</tr>
<tr>
<td>Pressure drops below minimum.</td>
<td>Check the air supply.</td>
</tr>
</tbody>
</table>
9 Maintenance and Care

9.1 Notes

Original spare parts
When replacing damaged parts (wearing parts/spare parts) only use SCHUNK original spares.

9.2 Maintenance and lubrication intervals

<table>
<thead>
<tr>
<th>Size</th>
<th>50 - 100</th>
<th>125 - 160</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval [Mio. cycles]</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

NOTICE
At ambient temperature above 60°C the lubricants cure out faster
- Interval decrease accordingly.

9.3 Lubricants/Lubrication points (basic lubrication)

We recommend the lubricants listed.
During maintenance, treat all greased areas with lubricant. Thinly apply lubricant with a lint-free cloth.

<table>
<thead>
<tr>
<th>Lubrication point</th>
<th>Lubricant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metallic sliding surfaces</td>
<td>microGLEIT GP 360</td>
</tr>
<tr>
<td>All seals</td>
<td>Renolit HLT 2</td>
</tr>
<tr>
<td>Bores on the piston</td>
<td>Renolit HLT 2</td>
</tr>
</tbody>
</table>
9.4 Disassembly of the module

9.4.1 Variant with locking (MV)

Position of the position numbers (☞ 10, Page 26)

![WARNING]

Risk of injury when the machine/system moves unexpectedly!
Remove the energy supplies.
Make sure that no residual energy remains in the system.

1 Disconnect cable connections.
2 Remove compressed air lines.
3 Remove module from handling device.
4 Remove screws (51) and separate module form the adapter plate.
5 Remove screws (52) from the housing-top (02).

![WARNING]

Danger of injury due to spring forces!
The cylinder piston is under spring tension.
Carefully disassemble the module.

6 Remove screws (53) then remove bolt (09).
7 Separate housing top (02) from the flange bottom (01).
8 UnscREW screws (49) and remove cylinder cover (04).
9 Remove cylinder piston (03) from the housing-top (02).
9.4.2 Variant without locking (OV)

Position of the position numbers (☞ 10, Page 26)

WARNING
Risk of injury when the machine/system moves unexpectedly!
Remove the energy supplies.
Make sure that no residual energy remains in the system.

1 Disconnect cable connections.
2 Remove compressed air lines.
3 Remove module from handling device.
4 Remove screws (51) and separate module from the adapter plate.
5 Remove screws (52) from the housing-top (02).
6 Remove screws (53) then remove bolt (09).
7 Separate housing top (22) from flange bottom (01).
9.5 Servicing and assembling the module

(☞ 10, Page 26)

**WARNING**

Risk of injury due to spring forces!
The lid is under spring tension.
**Carefully** disassemble the module.

<table>
<thead>
<tr>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Remove screws (52) from the flange-bottom (01) and replace shear-pads (15).</td>
</tr>
<tr>
<td>• Clean all parts thoroughly and check for damage and wear.</td>
</tr>
<tr>
<td>• Treat all grease areas with lubricant. (☞ 9.3, Page 22)</td>
</tr>
<tr>
<td>• Oil or grease bare outside steel parts.</td>
</tr>
<tr>
<td>• Replace all wearing parts / seals.</td>
</tr>
<tr>
<td>– Position of the wearing parts (☞ 10, Page 26)</td>
</tr>
<tr>
<td>– Sealing kit Link sealing kit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assembly takes place in the opposite order to disassembly.</td>
</tr>
<tr>
<td>Observe the following:</td>
</tr>
</tbody>
</table>
10 Assembly drawing

The following figures are example images. They serve for illustration and assignment of the spare parts. Variations are possible depending on size and variant.

10.1 Assembling of the variant with locking (MV)

![Diagram showing assembly of the variant with locking (MV)](image)

*Fig. 10 Assembling of the variant with locking (MV)*
10.2 Assembling of the variant without locking (OV)

Fig. 11 Assembling of the variant without locking (OV)

* Wearing part, replace during maintenance.
** contained in accessory pack.