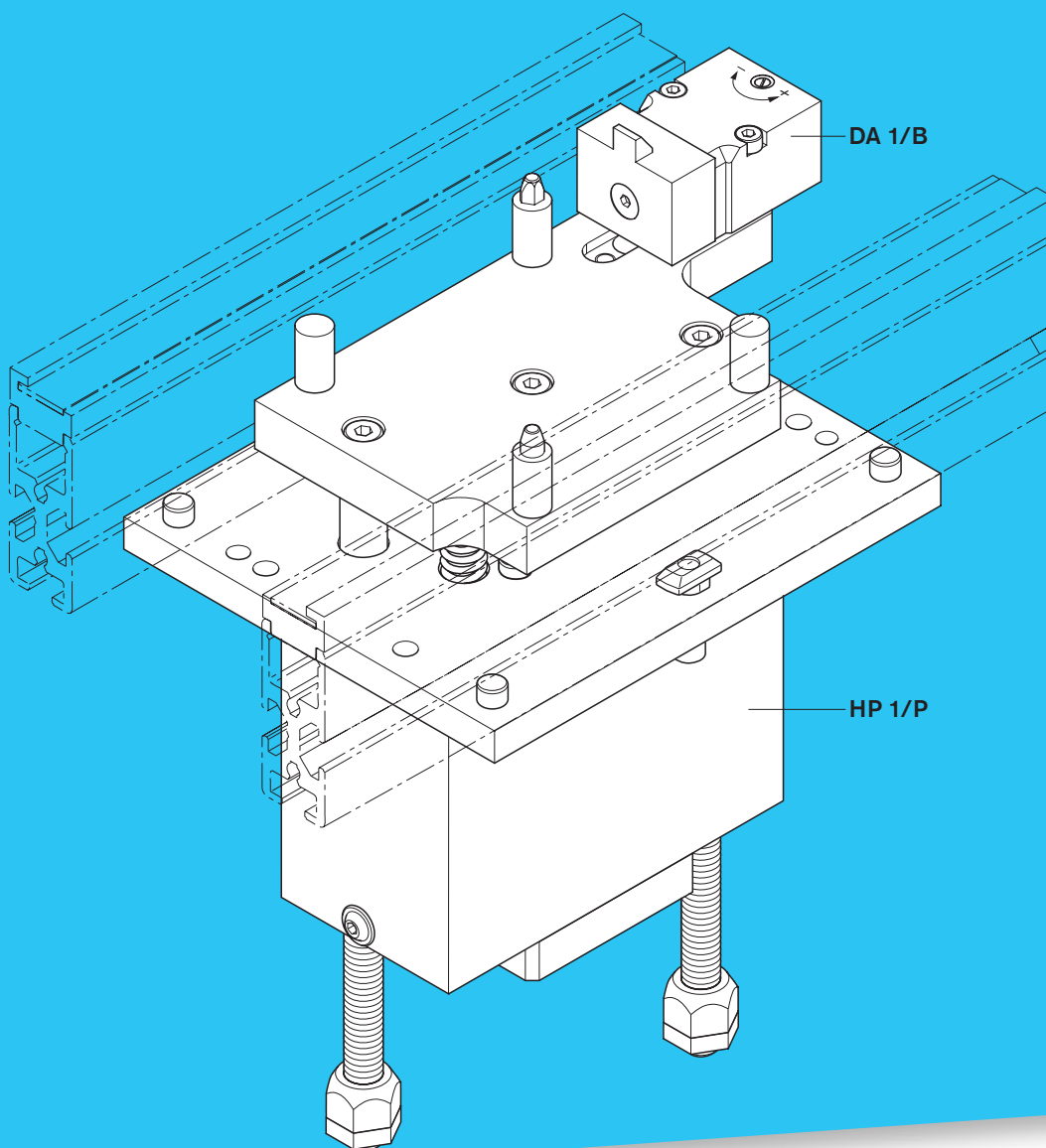


# Lifting and positioning unit HP 1/P

3 842 998 493  
3 842 988 494



The information in these instructions is for product description purposes only. Any information in these instructions on how to use the product only constitutes examples and recommendations. Catalog information is not binding. The information given does not exempt the user from the obligation of own judgment and verification. Our products are subject to natural wear and aging.

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An example configuration is shown on the title page. The delivered product may thus vary from the illustration.

The original assembly instructions are in German.

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# 1 About this documentation

## 1.1 Validity of the documentation

This document applies to the following product:


- Lifting and positioning unit HP 1/P

This document is intended for fitters, operators, and system owners.


It contains important information on the safe and proper assembly, operation, maintenance, disassembly, and simple troubleshooting of the product.

- ▶ Read this documentation completely and especially the chapter "Safety instructions" on page 7 before working with the product.

## 1.2 Required documentation

You must have completely read the documentation that is labeled with the book icon  and observed it before starting work on the product:

**Table 1: Required documentation**

Title	Document number	Application
System documentation		Optional if the product is integrated in a system.
 Employee safety training <sup>1)</sup>	<b>3 842 527 147</b>	
MT <sub>pro</sub> <sup>2)</sup> Spare parts list software download		

<sup>1)</sup> Download at: [www.boschrexroth.com/mediadirectory](http://www.boschrexroth.com/mediadirectory)

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## 1.3 Presentation of information

Standardized safety instructions, symbols, terms and abbreviations are used so that you can use this documentation to work quickly and safely with this product. These are explained in the following sections to help you understand them better.

### 1.3.1 Safety instructions

This document includes safety instructions before a sequence whenever there is a risk of injury or damage to property. Be sure to observe all safety precautions.

Safety instructions are set out as follows:




 <b>SIGNAL WORD</b>
<b>Type and source of danger</b> Consequences of non-compliance <ul style="list-style-type: none"> <li>▶ Measures to prevent danger</li> <li>▶ ...</li> </ul>

- **Warning sign:** Points out the danger
- **Signal word:** Indicates the severity of the danger
- **Type and source of danger:** Indicates the type and source of danger
- **Consequences:** Describes what happens if safety instructions are not complied with
- **Prevention:** States how the danger can be avoided

The safety instructions include the following risk classes.

The risk class describes the risk if you ignore the warning notice.


**Table 2: Risk classes according to ANSI Z535.6**

Warning sign, signal word	Meaning
 <b>DANGER</b>	Indicates a hazardous situation that will result in serious injury or death if not avoided.
 <b>WARNING</b>	Indicates a hazardous situation that may result in serious injury or death if not avoided.
 <b>CAUTION</b>	Indicates a hazardous situation that may result in minor to moderate injury if not avoided.
<b>NOTICE</b>	Property damage: The product or the surrounding area could get damaged.

### 1.3.2 Symbols

The following symbols indicate important information that is not safety-relevant but increases the comprehensibility of the documentation.

**Table 3: Meaning of the symbols**

Symbol	Meaning
	If you do not follow this information, you cannot use/operate the product optimally.
▶	Single, independent action
1.	Numbered steps: The numbers indicate that the action steps are sequential.
2.	
3.	
• ...	List format
• ...	

### 1.3.3 Designations

This document uses the following designations:

**Table 4: Designations**

Abbreviation	Meaning
HP 1/P	Lifting and positioning unit
ST 1	Section
SP 1	Section profile
WT 1	Workpiece pallets
DA 1	Damped stop
SH 1/S	Switch bracket, at side
SZ 1	Leg sets

## 2 Safety instructions

### 2.1 About this chapter

The product has been manufactured in accordance with the generally accepted rules of current technology. Nevertheless, there is a risk of injury or damage to property when using this product if this chapter and the safety and warning information contained in this document are not observed.

- ▶ Read this documentation carefully and completely before you start working with the product.
- ▶ Keep the documentation accessible to all users at all times.
- ▶ Always include them when giving the product to a third party.

### 2.2 Intended use

The product is an incomplete machine (according to EU Machinery Directive 2006/42/EC).

You may use the product as follows:

- For installation in a Rexroth transfer system TS 1.
- For positioned lifting and lowering of Rexroth workpiece pallets WT 1/P.

This product is intended for commercial and not private use.

The intended use also includes having read and understood these instructions, especially chapter "Safety instructions".

## 2.3 Improper use

Any use other than that described in the section "Intended use" is considered improper and is not permitted.

Bosch Rexroth AG is not liable for any damage resulting from improper use. The user alone bears any risks associated with improper use.

Improper use of the product includes:

- Transporting goods other than those specified.
- Transporting personnel on the product or the transported material.
- Personnel climbing on the product
  - keep off the product.
- Non-commercial use.
- Using the product without securing against tipping.

## 2.4 Personnel qualifications

The activities described in this document require basic knowledge of mechanical and electrical principles, as well as knowledge of the corresponding technical terms. To ensure safe use, these activities should therefore only be performed by qualified personnel or by an instructed person acting under the direction of such a person.

"Qualified personnel" refers to those who can recognize potential hazards and take appropriate safety measures based on their technical training, knowledge, experience, and understanding of the relevant regulations pertaining to the work being performed.

Qualified personnel must observe all specific professional rules.

## 2.5 General safety instructions

- Observe the applicable accident prevention and environmental protection regulations.
- Observe the safety directives and regulations of the country in which the product is used or operated.
- Only use Rexroth products that are in proper working order.
- Observe all the notices on the product.
- Persons who assemble, operate, disassemble or maintain Rexroth products should not be under the influence of alcohol, drugs or medication that may affect their ability to react.
- Only use accessories and replacement parts approved by the manufacturer.
- Observe the technical data and ambient conditions specified in the product documentation.
- Inspect the product for obvious transport damage.

## 2.6 Product-specific and technology-specific safety instructions

- General**

  - Do not attempt to modify the product.
  - Do not expose the product to any mechanical loads under any circumstances. Never use the product as a handhold or step. Do not place any objects on the product.
  - Always ensure that the product cannot topple over.
- During transport**

  - Observe the transport instructions on the packaging.
- During installation**

  - The customer should attach a suitable protective cover for the HP 1/P, which protects the shear point created during the stroke via the band against access.
  - Lay cables and lines so that they cannot be damaged and no one can trip over them.
  - Make sure the system component you are working on is depressurized and de-energized before assembling the product or inserting or removing plugs.
  - Ensure that the system component cannot be switched back on.
  - Before commissioning, make sure that all seals and plugs for the plug-in connections are correctly installed and not damaged to prevent liquids and foreign bodies from entering the product.
- During commissioning**

  - Allow the product to acclimatize for a few hours prior to commissioning in order to prevent water condensation from forming in the housing.
  - Make sure that all electrical and pneumatic connections are either in use or covered.
  - Check the safety requirements according to DIN EN 619.
  - Only commission a product that has been completely installed.
  - Make sure that all the safety equipment which forms part of the product is present, has been properly installed, and is fully functional. Do not move, bypass or disable any safety equipment.
  - Do not reach into moving parts.
  - Check the product for malfunctions.
- During operation**

  - Make sure that only authorized personnel perform the following tasks within the scope of the product's intended use:
    - Starting or operating the system or interfering with its normal operation.
    - Operating component or part adjusters.
  - Only allow people to be in the immediate vicinity of the product when it is operating if they are authorized by the owner to be there. This also applies when the product is idle.
  - Make sure that:
    - There are no obstacles preventing access to the emergency off switches.
    - All delivery points, workstations and passages are kept clear.
  - Do not use emergency off switch feature for routine stopping.
  - Regularly check the emergency off switch feature to ensure that they are functioning properly.
  - In case of an emergency, fault, or any other anomaly, switch the product off and secure it against being switched on again.
  - Do not reach into moving parts.
  - An idle system is not necessarily a safe system, as stored energy can be released unintentionally or through improper maintenance procedures.
- EMERGENCY STOP, malfunction**

  - After an EMERGENCY STOP or a malfunction, only switch the system back on once you have established and rectified the cause of the fault.

- During cleaning**
- Prevent cleaning agents from getting into the system.
  - Never use solvents or corrosive cleaning agents. Only clean the product with a damp, lint-free cloth. Only clean with water and, if necessary, a mild cleaning agent.
  - Do not use a pressure washer for cleaning.

- During maintenance and servicing**
- Make sure that access to maintenance and inspection points is kept unobstructed.
  - Perform the required maintenance at the intervals specified in the operating instructions.
  - Make sure that no line connectors, connections or components are disconnected as long as the system is supplied with pressure and voltage. Secure the system against being switched back on. In addition, measures are required to secure the system against being unintentionally switched on again, e.g. affixing a corresponding "Maintenance work" warning sign, "Repair work", etc. at the main switch!
  - All safety covers that have been removed during maintenance must be refitted before commissioning!

- During disposal**
- Dispose of the product in accordance with the regulations in your country.

## 2.7 Safety equipment

- Make sure that all safety equipment belonging to the product is present, has been installed properly and is fully functional, and that access is not obstructed. Do not move, bypass or disable any safety equipment.
- Refer to the information in the following documents when designing safety equipment:
  - Directive 2006/42/EC (Machinery Directive)
  - DIN EN 619
  - DIN EN 60204-1

## 2.8 Personal protective equipment

- As the system owner or operator, you are personally responsible for ensuring the use of appropriate protective equipment when the product is being used (e.g. the wearing of safety shoes). All component parts of the personal protective equipment must be free of damage.

## 2.9 Operator workstations

This product does not come with a specific workstation for an operator.

# 3 Scope of delivery

The scope of delivery includes the following:

- Various products according to your order. Please use the shipping documents to check that the consignment is complete.
- 1 Assembly instructions "Lifting and positioning unit HP 1/P".

### 3.1 Condition on delivery

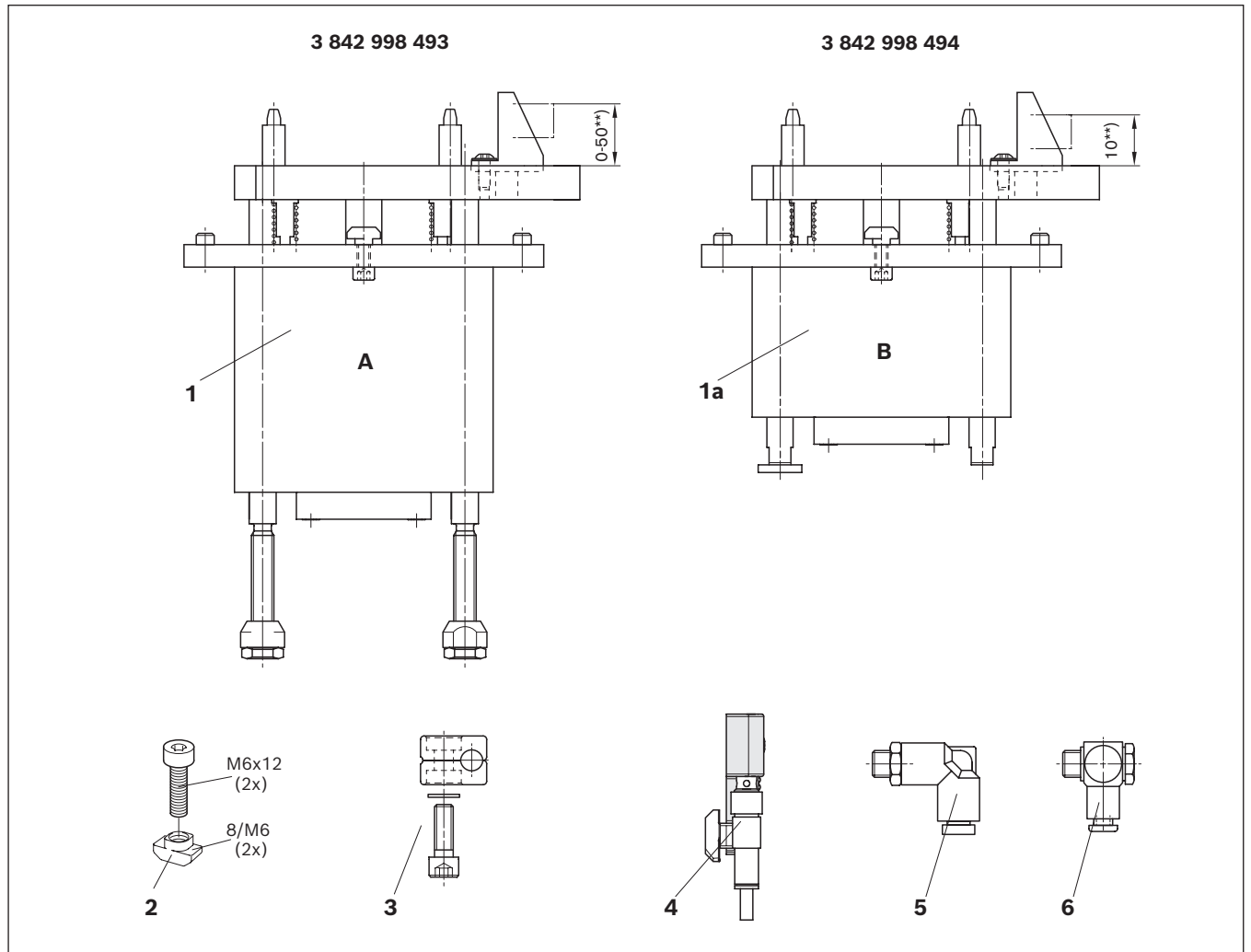


Fig. 1

- 1:** HP 1/P (**3 842 998 493**) with fixed stop and housing element (1x):  
A = stroke 0 – 50 mm adjustable or
- 1a:** HP 1/P (**3 842 998 494**) (1x): B = stroke 10 mm fixed.
- 2:** Mounting kit M6 (4x) for installation in section ST 1
- 3:** Switch bracket SH1/M-A **3 842 553 244** (1x)
- 4:** Switch bracket SH 1/S **3 842 542 556** (1x)
- 5:** Pneumatic connection (plug-in fix 5 mm)
- 6:** Throttle check valve NG 2.5 (M5)
- \*) Adjustable stroke
- \*\*) Fixed stroke



#### Please note:

Only use standard proximity switches  $\varnothing$  6.5 mm with a damping range  $\geq$  3mm for position sensing (no scope of delivery, to be ordered separately)!

### 3.2 Accessories

- Damper DA1/B **3 842 535 360**
- Proximity switch D6.5 mm **3 842 542 500**
- Stop gate VE1 **3 842 522 400**
- Stop gate VE1/V **3 842 522 399**
- Stop gate VE1/D **3 842 547 758**
- Stop gate VE1/20-E **3 842 563 101**
- Stop gate VE1/D10-E **3 842 563 102**
- Stop gate VE1/D-15 **3 842 567 561**

## 4 Product description

### 4.1 Specifications

#### 4.1.1 Using lifting and positioning unit HP 1/P:

- For positioned lifting and lowering of Rexroth workpiece pallets WT 1/P in the Rexroth transfer system TS 1
- Suitable for use in ESD applications.
- Permissible process force 400 N.
- Positioning accuracy  $\pm 0.025$  mm.

#### Lifting and positioning unit HP 1/P design:

- Workpiece pallet total weight 3 kg.
- The HP 1/P is available in two versions:
  - with variable stroke: The lifting height above the transport level is max. 50 mm. The lifting height is infinitely variable.
  - with fixed lifting height of 15 mm above transport level.

### 4.2 Device description

The lifting and positioning unit HP1/P is used to precisely position workpiece pallets together with workpiece in the production and assembly process.

### 4.3 Product identification

- 1: Order number
- 2: Designation
- 3: Information on the design and dimensions

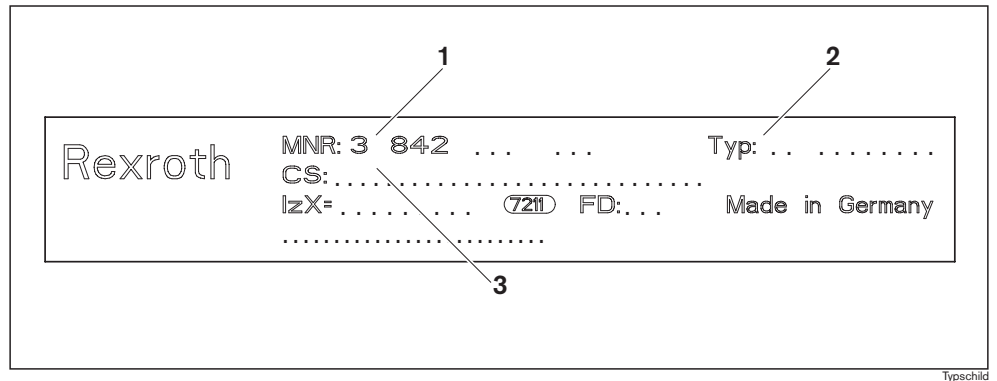



Fig. 2 Nameplate

## 5 Transport and storage

- Observe the transport instructions on the packaging.
- Transport weight: See delivery documents.
- Secure the product to prevent toppling!
- Always observe ambient conditions when storing and transporting the product, see chapter "Ambient conditions" on page 34.

### 5.1 Raising and lowering the product


WARNING

**Suspended loads can fall!**

Falling objects can result in severe injury (or even death).

- ▶ Use only slings with sufficiently high bearing loads (for product weight, see delivery documents).
- ▶ Make sure the lifting straps are correctly fastened before lifting the product!
- ▶ Secure the product against tipping over when lifting!
- ▶ Make sure that no one but the operator is in the hazard area during lifting and lowering!

### 5.2 Storing lifting and positioning unit HP 1/P

- Only set the product down on a flat surface.
- Observe ambient conditions, see chapter "Ambient conditions" on page 34.
- For belt sections with mounted motor:  
Support the belt section so that the motor is not overloaded.

## 6 Assembly

### 6.1 Unpacking

- ▶ Lift the product out of its packaging.
- ▶ Dispose of the packaging material in accordance with the applicable regulations in your country.

### 6.2 Installation requirements

- ▶ Always observe ambient conditions when installing the product, see chapter "Ambient conditions" on page 34.

### 6.3 Installation position

- ▶ Install the product level and plumb, at right angles, and axially parallel.  
This ensures proper functioning and prevents premature wear.

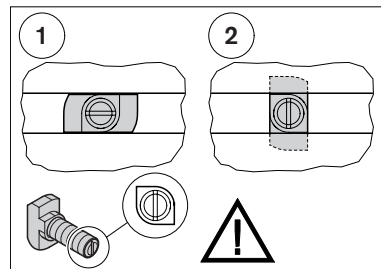
### 6.4 Fastening with T-bolts

You mount the transfer system TS 1 with T-bolt and flange nut.

- ▶ Make sure the T-bolt is in the correct position when inserting it into the slot and tightening it. The notch at the head of the screw indicates the orientation of the T-bolt.

- 1: T-bolt insertion position in the slot
- 2: T-bolt clamping position in the slot

Maximum tightening torque:  
10 Nm



### 6.5 Required tools

- Hex wrench (open-ended wrench), SW10, SW13, SW19, SW24
- Hex socket wrenches SW3, SW4, SW5, SW6, SW8
- Phillips screwdriver PH3
- Spirit level, minimum length 1200 m

## 6.6 Symbols used

Table 5: Symbols used	
	<p>Connection with T-bolt and flange nut.                      Make sure the T-bolt is in the correct position when inserting it into the slot and tightening it. The notch at the head of the screw indicates the orientation of the T-bolt.                      1 = T-bolt insertion position in the slot.                      2 = T-bolt clamping position in the slot.                      Maximum tightening torque: 10 Nm</p>
<p>SW... M<sub>D</sub>=XX Nm</p>	<p>Hex wrench                      SW ... = wrench size ... mm                      M<sub>D</sub> = xxNm = required torque xx Nm</p>
<p>SW... M<sub>D</sub>=X Nm</p>	<p>Hex socket wrench                      SW ... = wrench size ... mm                      M<sub>D</sub> = xNm = required torque x Nm</p>
	<p>Screwdrivers for cross-head screws                      PZ ... = Pozidriv cross-head screw driver, size ...                      PH ... = Phillips cross-head screw driver, size ...</p>
	<p>Lubricate with specific grease:</p> <ul style="list-style-type: none"> <li>• gleitmo 585 K: gleitmo 585 K, <a href="http://www.fuchs-lubritech.com">www.fuchs-lubritech.com</a></li> <li>• Anti-Seize: Food Grade Anti-Seize/Loctite 8014, <a href="http://www.henkel.com">www.henkel.com</a></li> </ul>
<p>Loctite 243    Loctite 601</p>	<p>Secure the screws with:</p> <ul style="list-style-type: none"> <li>• Loctite 243: Medium strength (detachable), <a href="http://www.loctite.de">www.loctite.de</a></li> <li>• Loctite 601: High-strength screw retention (non-detachable), <a href="http://www.loctite.de">www.loctite.de</a></li> </ul>
	<p>The marked parts are not required for the described assembly.                      Dispose of the parts or use them for other purposes.</p>
	<p>Graphical depiction of the installation steps.                      The numbers correspond to the sequence of installation steps, in accordance with the instructions in the accompanying text.</p>
	<p>Graphical depiction of the designation of components.                      The letters denote the components mentioned in the accompanying text.</p>
	<p>Detail view from a different direction, for example, the back or the bottom side of the product.</p>

### 6.7 Installing HP 1/P in section ST 1 (Fig. 3)

1. Pre-assemble HP 1/P with two M6 mounting kits.
2. Insert four centering bolts into the holes.
3. Mark the installation location in section ST 1.
4. Align the T-nuts in the longitudinal direction.
5. Lift the pre-assembled HP 1/P from below to the ST 1 and lightly secure it by hand in the T-slots of the SP 1.  
If necessary, support HP 1/P until final attachment (step 6)!
6. Align HP 1/P in longitudinal and transverse direction and tighten cylinder head screws with  $M_D = 5 \text{ Nm}$ .

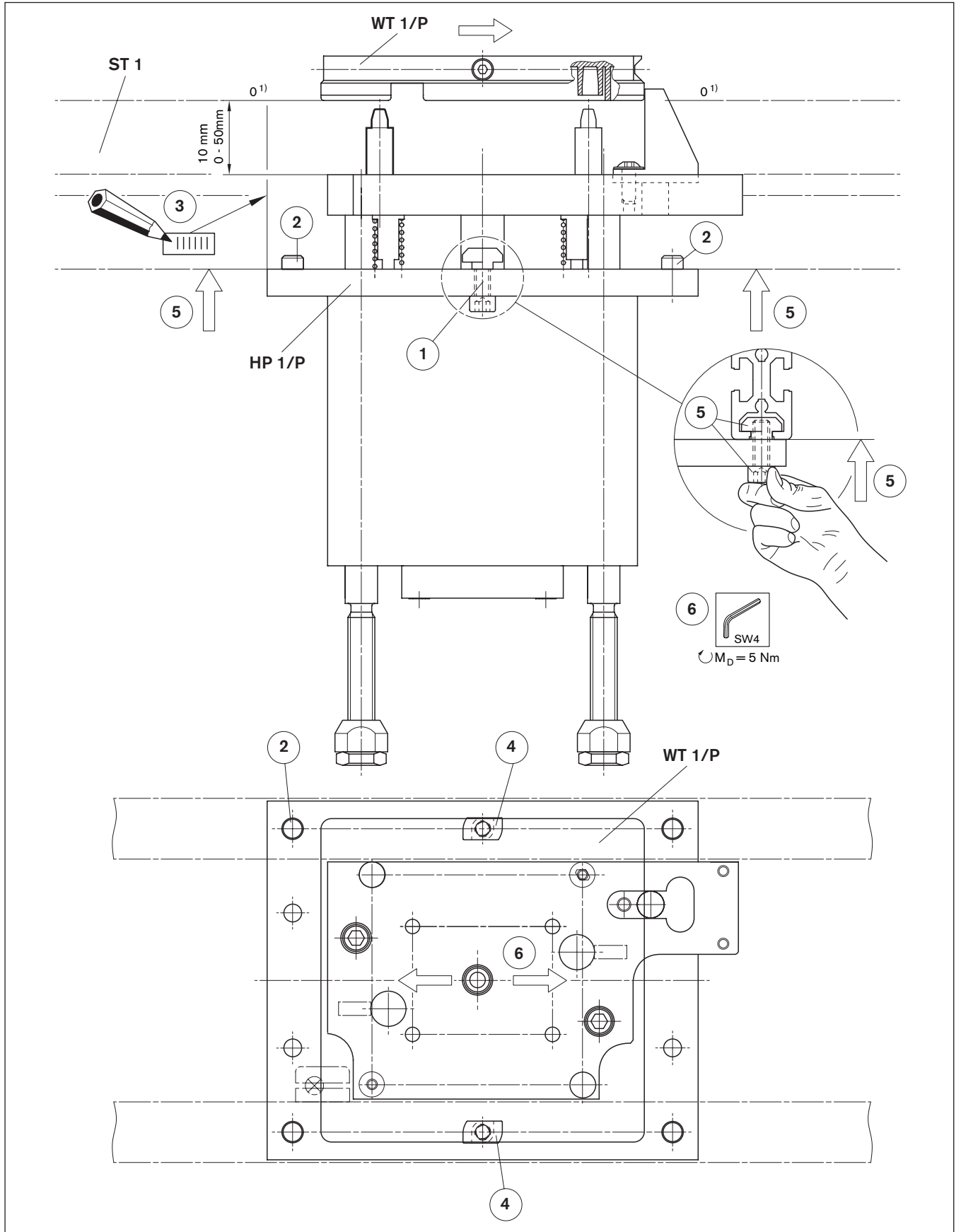


Fig. 3

1) Transport level

### 6.8 Mounting DA 1/B on HP 1/P

For further details on the damper, see "assembly instructions DA 1/B", 3 842 535 360.

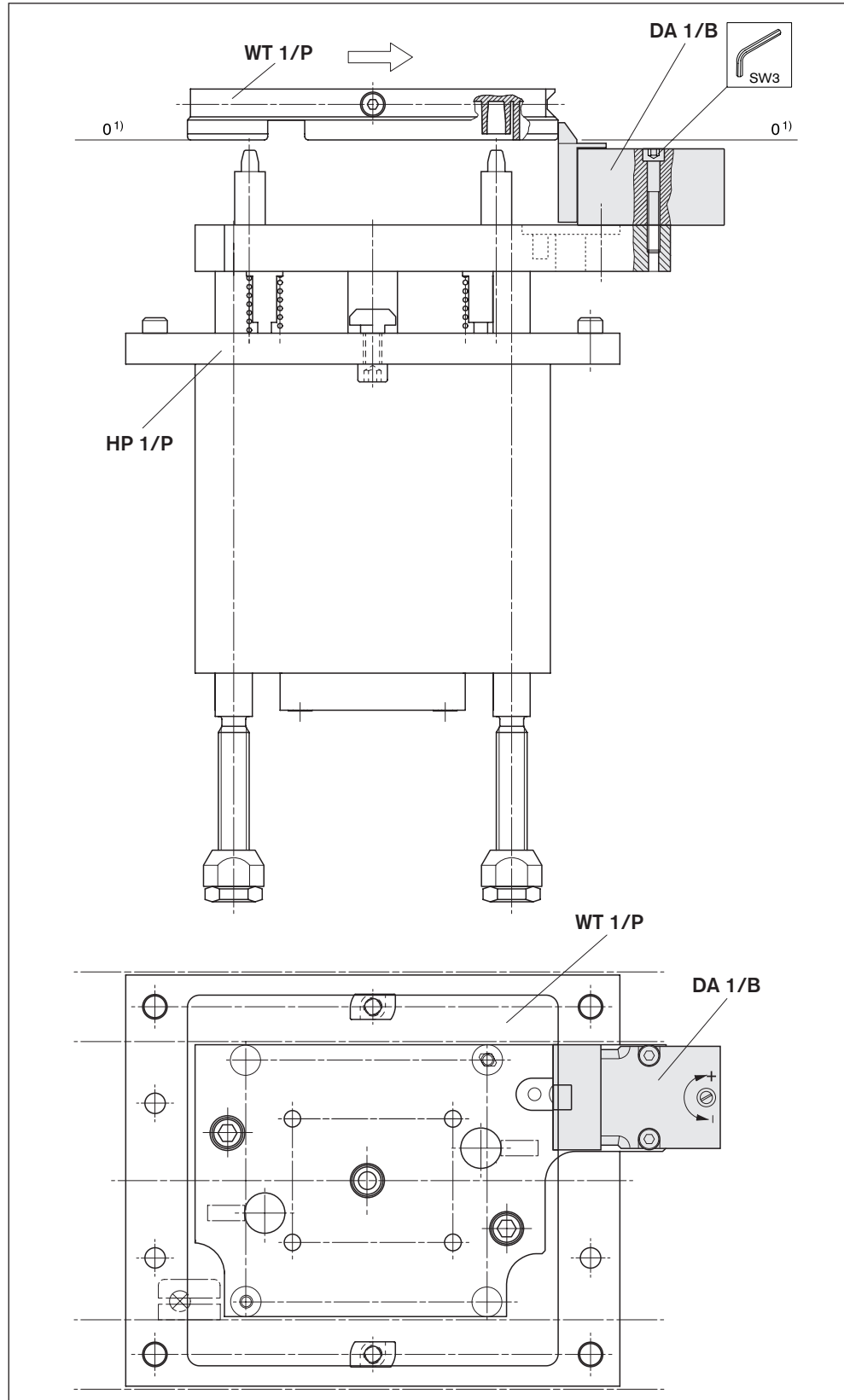


Fig. 4

¹) Transport level

## 6.9 Assembling the protective case

- Install the housing element **after** installation and test run, but **before** commissioning!

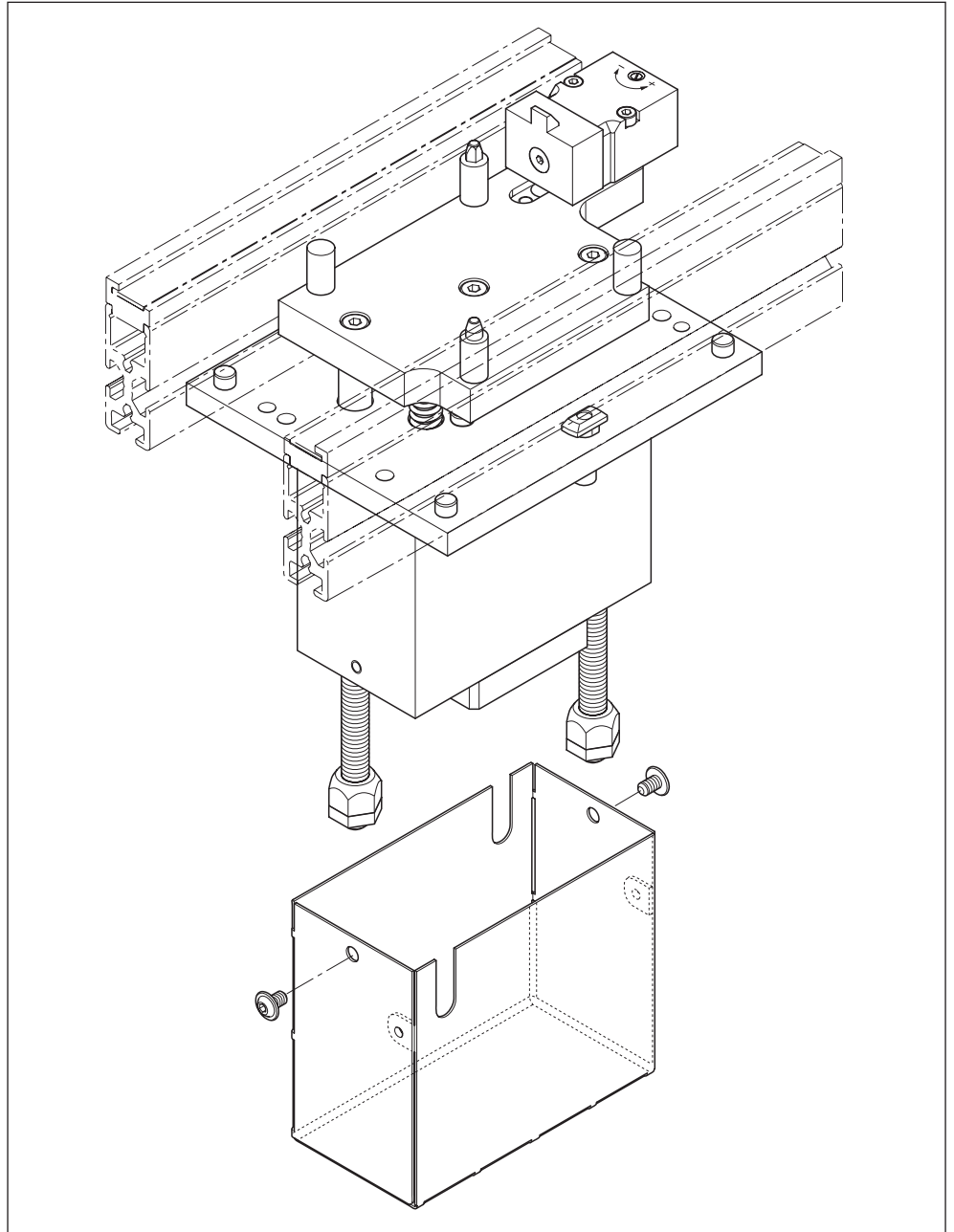


Fig. 5

## 7 Installation

### 7.1 Connecting the compressed air supply

#### **! WARNING**

##### **High pneumatic pressure!**

Risk of severe injury or death.

- ▶ Switch off the compressed air supply to the relevant system component before assembling, disassembling or connecting the product to the pneumatic system.
- ▶ Secure the system against being unintentionally switched on again.

Oiled or non-oiled, filtered, dry compressed air.  
Operating pressure: 4 to 6 bar

#### **HP 1/P:**

- ▶ Connect the compressed air connections "a" to the associated control valve or to the maintenance unit via throttle check valve and "b" via plug-in fixing connection M5 (pipe outer diameter 4 mm).

#### **DA 1/B:**

- ▶ Connect the compressed air connection "a" to the associated control valve or to the maintenance unit via plug-in fixing connection M5 (pipe outer diameter 4 mm).

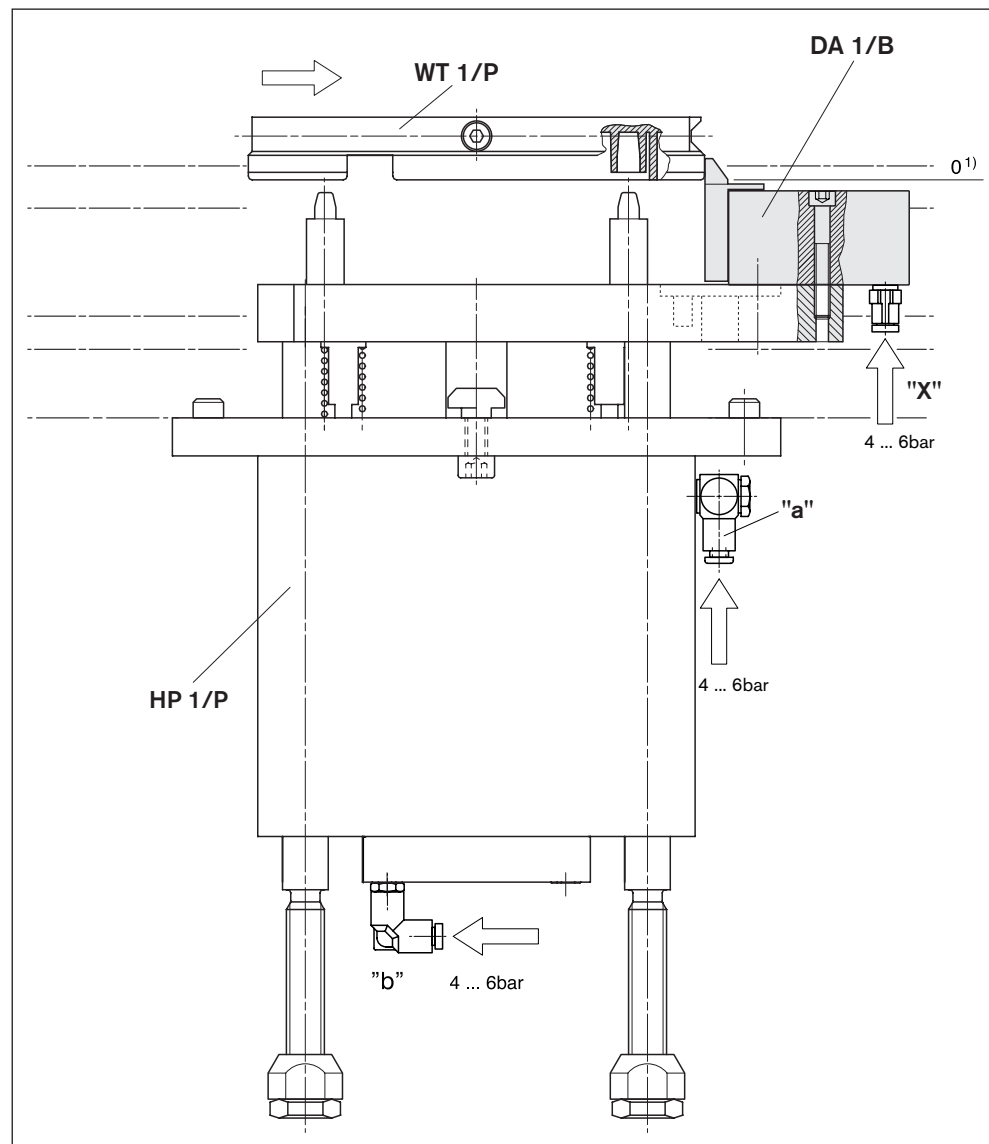


Fig. 6

1) Transport level

## 8 Commissioning

### 8.1 Initial commissioning

#### CAUTION

##### **Sudden movements, falling workpiece pallets**

Injuries caused by falling objects.

- ▶ Make sure that the product was properly assembled by qualified personnel (see chapter "Personnel qualifications" on page 8) before starting up the product.

#### **NOTICE**

##### **Malfunctions due to incorrect assembly and commissioning**



The product can be damaged; the service life may be adversely affected.

- ▶ Commissioning requires basic mechanical, pneumatic and electrical knowledge.
- ▶ The product should only be recommissioned by qualified personnel (see chapter "Personnel qualifications" on page 8).

- Under EU Machinery Directive 2006/42/EC, all transfer systems must be equipped with an emergency off feature.
- The surfaces of motors and gears can reach temperatures of over 65 °C under certain load and operating conditions. In these cases, you must comply with the respective applicable accident prevention regulations (UVV) by taking appropriate constructive measures (safety guards) or by affixing/displaying appropriate warning signs!
- Make sure that all electrical and pneumatic connections are either used or covered. Make sure that all bolted connections and plug-in connections are properly seated. All relevant protective covers must be fitted.
- Only inspect and adjust continuous conveyors that are in motion or operation when the protective equipment is in place.
- Observe DIN EN 13857 when you remove or replace protective equipment and/or bypass safety equipment.
- Test runs with open paneling should only be performed by a person with appropriate knowledge and experience using jog switches, and if there is no possibility of interference from other switching devices.
- Only commission the product if all safety equipment has been installed in the system and is ready for use.
- Only commission a product that has been completely installed.

## 8.2 Residual risks

Table 6: Residual risks

Location	Situation	Hazard	Action
1 Lifting plate, housing: Between moving parts	Trapping of body parts	 Crushing	The danger area in the working area must be removed by structural measures, e.g. by barriers.
2 Lifting plate: Between component and section profile (only for 3 842 999 805)	Body parts can be caught during lifting		

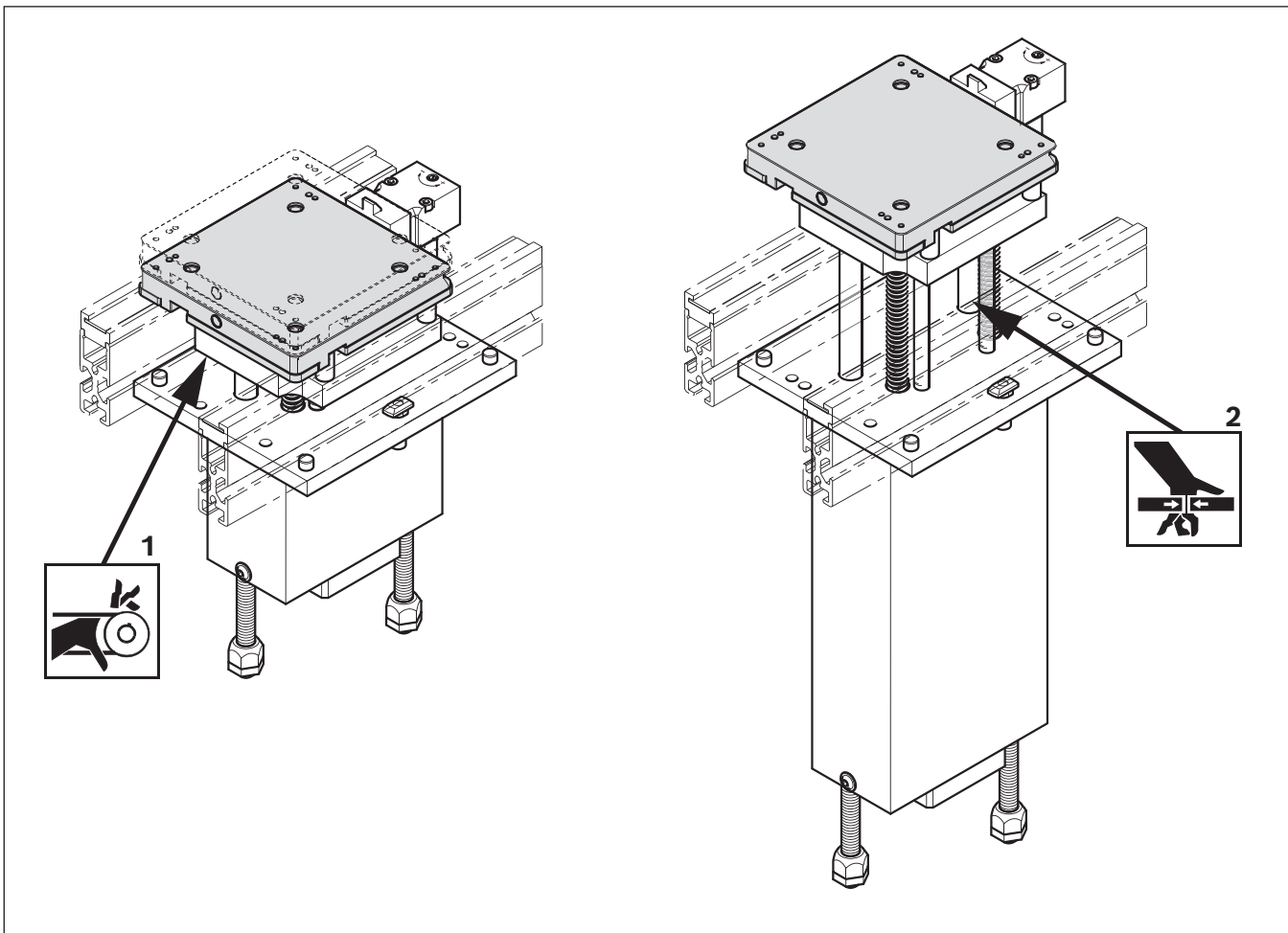


Fig. 7 Residual risks

## 8.3 Re-commissioning after a standstill

Follow the steps outlined for the initial commissioning.

## 8.4 Stoke adjustment



### Please note:

The HP 1/P may only be put into operation with suitable protective equipment, which must be provided by the customer. Safety against injury at the resulting shear point during stroke via belt!

The required stroke can be adjusted by a parallel adjustment of the stop nuts and lock nuts on the guide columns (Fig. 8).

## 8.5 HP 1/P: Setting the lifting speed

Only the upward stroke is adjustable!

Pre-adjust the throttle check valve via slotted screw (extract air throttling)

The following applies:

- **Upward stroke slower:**  
Screw in throttle screw "A".
- **Upward stroke faster:**  
Unscrew throttle screw "A".

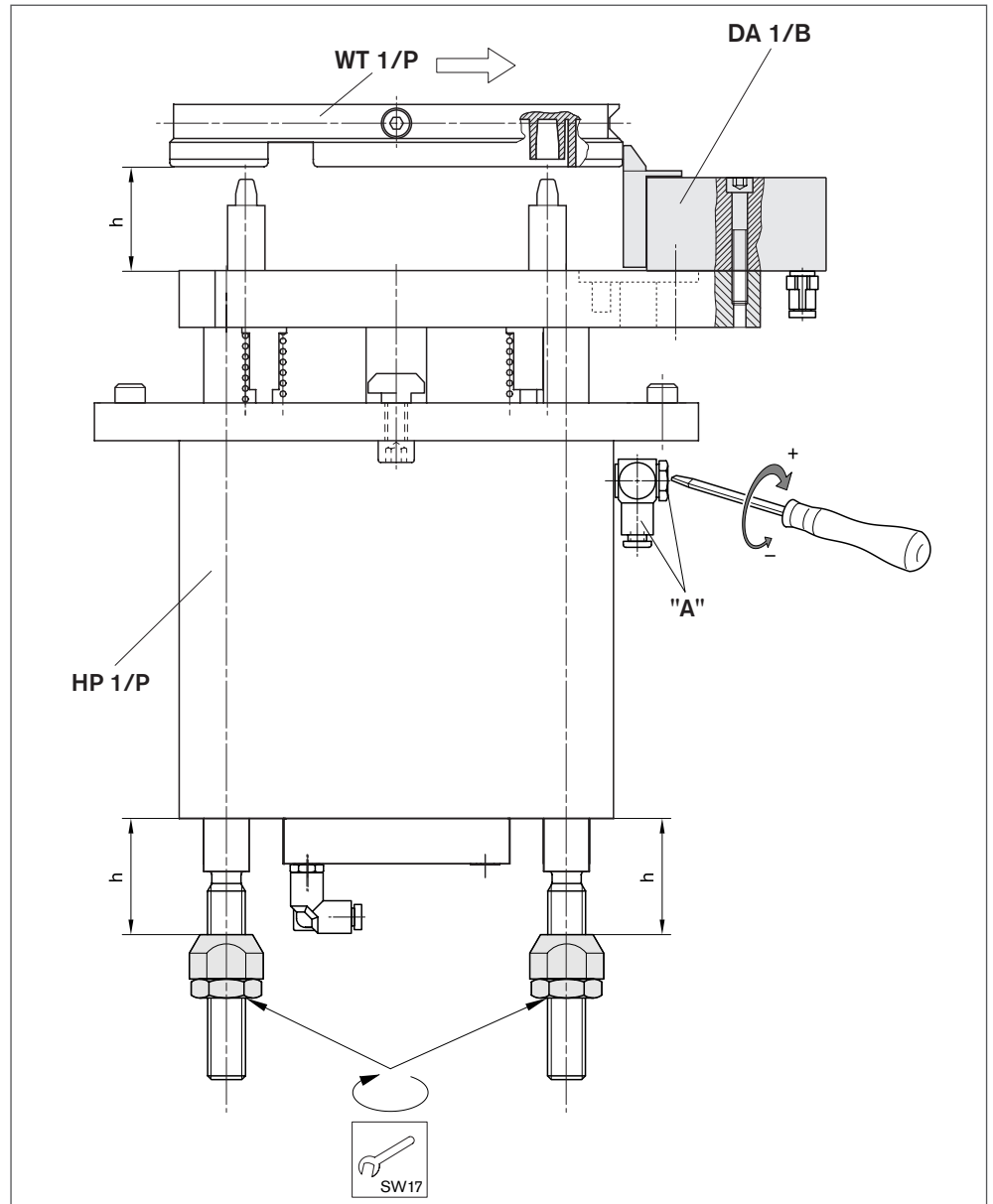


Fig. 8

## 8.6 DA 1/B: Adjusting the damping

The damping can be adjusted on the slot screw using a screwdriver.

- ▶ Screw in to +, damping harder.
- ▶ Unscrew to -, damping softer.

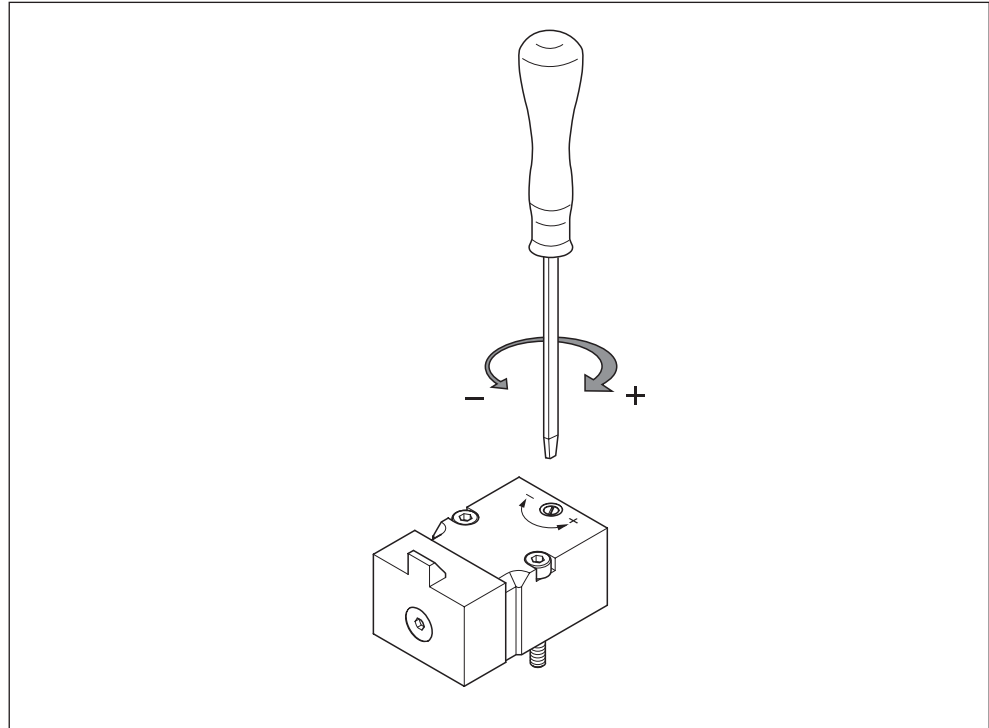


Fig. 9

## 8.7 Checking functionality

### 8.7.1 Function

#### With compressed air:

Down and forward stop.

#### Without pressure:

Stop upwards, WT 1/P pushes the stop back, damping!

### 8.7.2 Pneumatic diagram

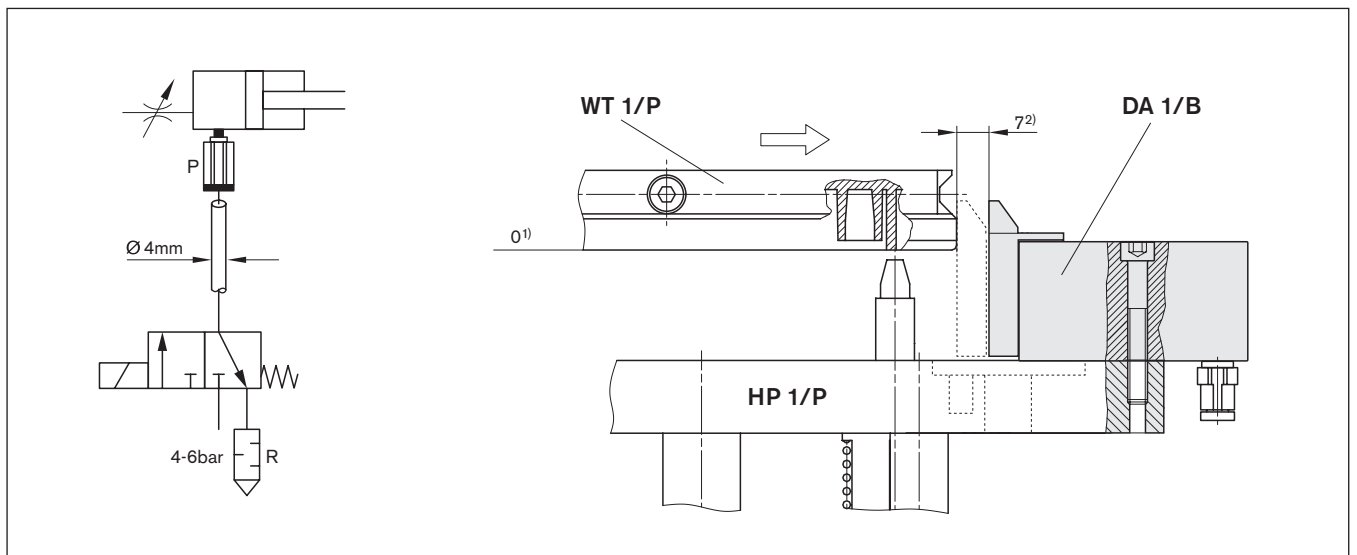


Fig. 10

- 1) Transport level
- 2) Damping stroke

## 8.8 Position sensing

### 8.8.1 Sensing proximity switch: "WT 1/P in upper position"

- ▶ Secure the proximity switch in the on-site switch brackets SH 1/M-A (3 842 553 244).
- ▶ Set switching distance  $1.5 \pm 0.5$  mm.

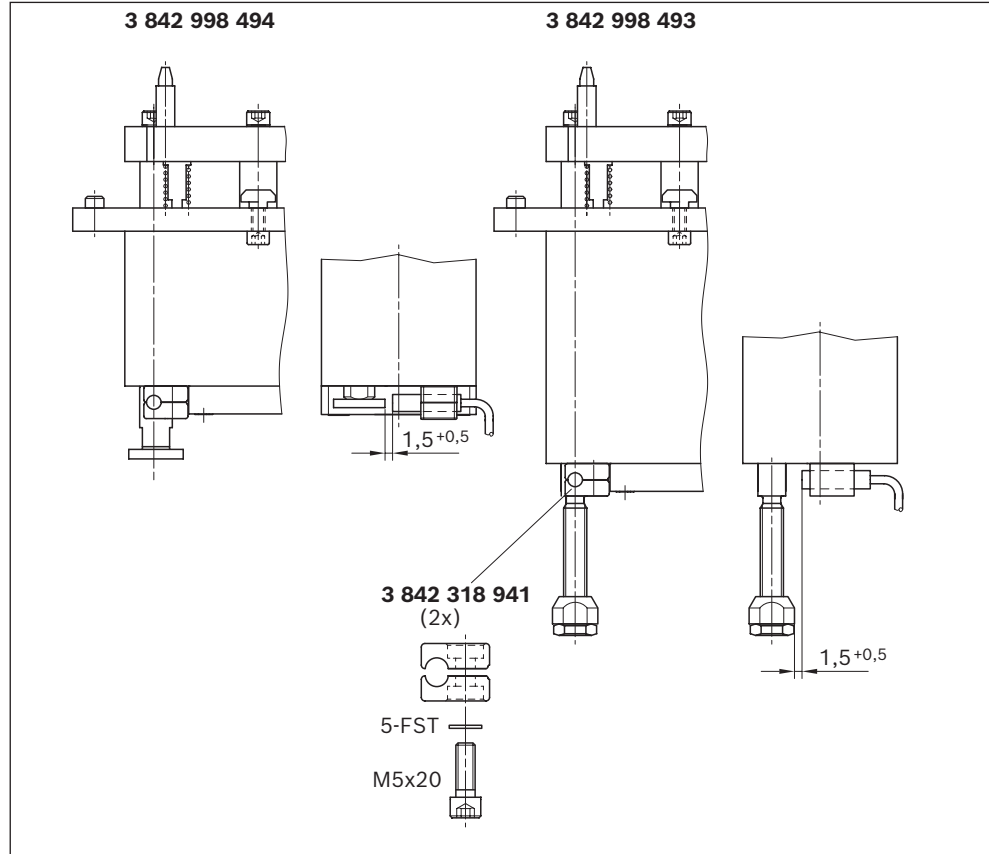


Fig. 11

### 8.8.2 Sensing proximity switch: "WT 1/P in position"

- ▶ Secure switch bracket SH 1/S on the outside in the T-slot of section profile ST 1.

Assembly dimensions:

- ▶ Fasten the switching element flush with the SH 1/S outer edge!
- ▶ Fasten the proximity switch flush with the switch bracket edge.

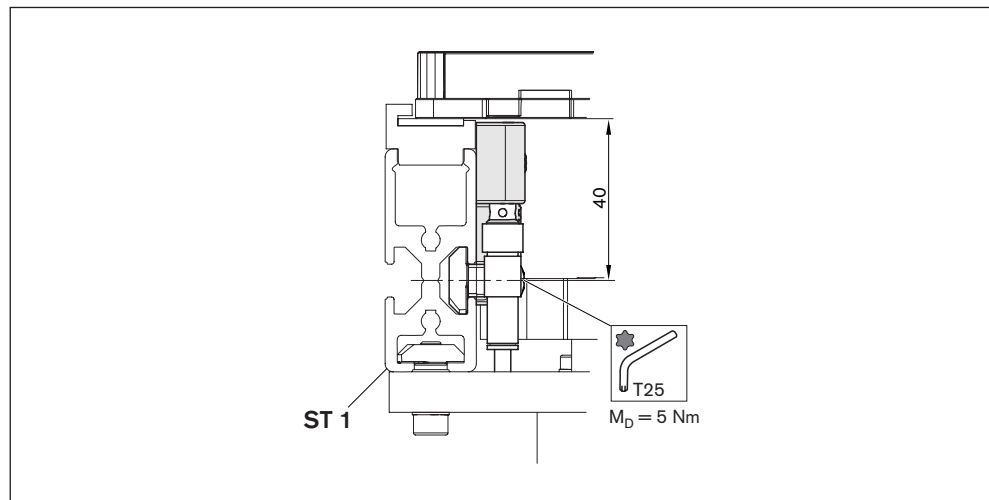


Fig. 12

## 8.9 Function plan

### Key Fig. 13

WT	Workpiece pallets
VE	Stop gate
1	Start pulse after end of start-up
2	Enable cyclic travel
A1	Enable edit workpiece
A2	Acknowledge workpiece processed
S1	WT after VE 1/1
S2	WT in station, WT before VE 1/2
S3	End position of lift
Y1	Open VE 1/1
Y3	WT lift

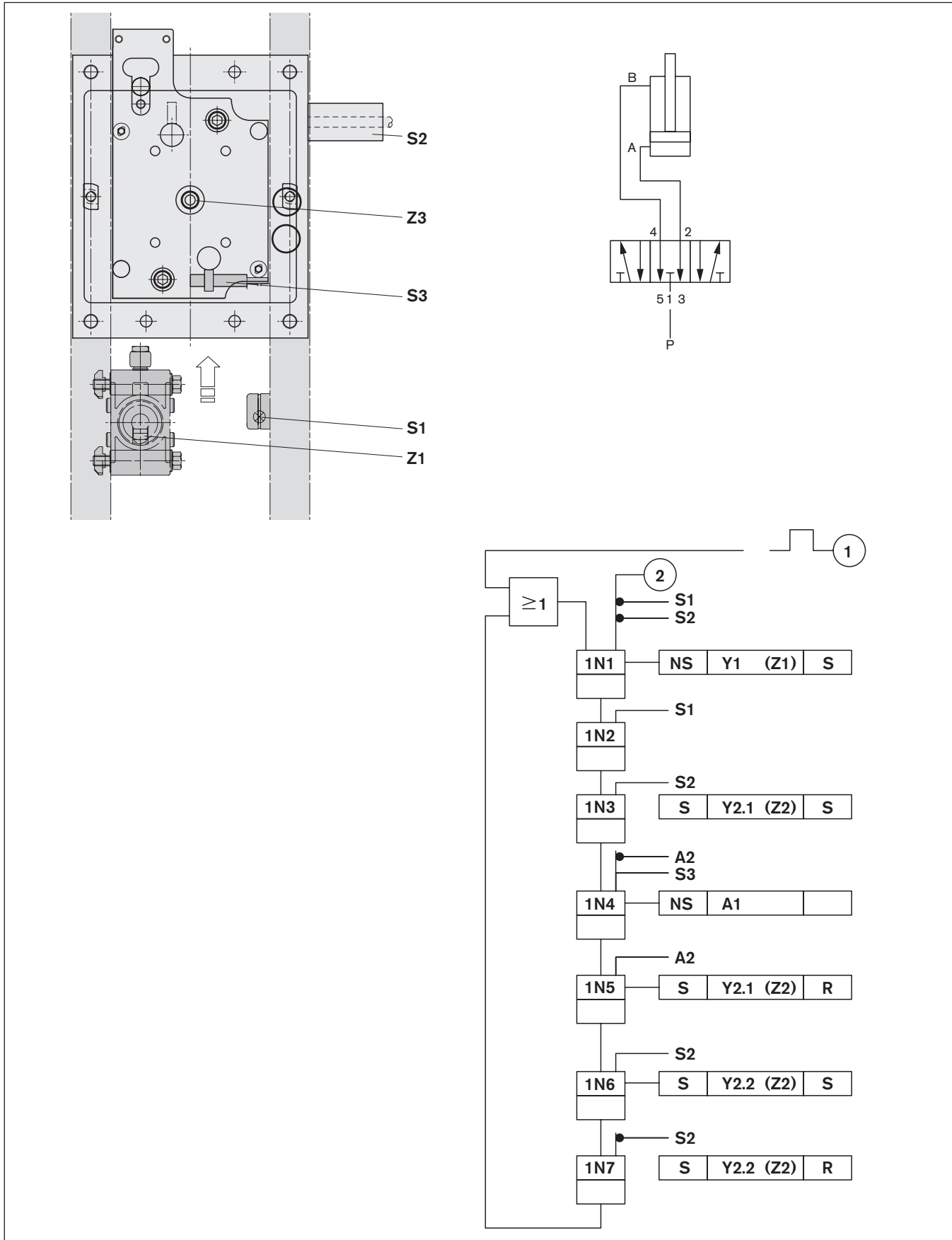


Fig. 13

For explanations, see key on page 27.

## 9 Operation

### CAUTION

#### **Hot electric motor surfaces during operation!**

Risk of burns from touching hot surfaces above 65 °C

- ▶ Install appropriate guards.
- ▶ Let the unit cool down for at least 30 minutes before performing maintenance and/or repair work.

### 9.1 Information on operation

#### 9.1.1 Wear

- Wear is caused by the basic principle of this system and cannot be avoided. Constructive measures and selection of the proper materials will help functional safety last for the service life of the system. However, wear depends on the operating, maintenance, and ambient conditions of the system and the location (resistance, contamination).
- When overloading of pneumatic components occurs, function cannot be guaranteed.

#### 9.1.2 Measures to reduce wear

The following obvious steps reduce wear:

- Very important: Avoid contamination from abrasive media; reduce contamination through regular cleaning.

#### 9.1.3 Loading the workpiece pallet

The modular units are designed and tested under the assumption that the workpiece pallets will not all have the same weight during one cycle on one conveyor section. Workpiece pallets (WT) are both loaded and unloaded.

Significantly different weights may require special measures to avoid malfunctions. This applies to:

- the permitted accumulation length before stop gates.
- the damper function.
- dampened stop gates.

#### 9.1.4 Ambient conditions

- Our products are resistant to many media that are commonly found in manufacturing, such as water, mineral oil, grease and detergents. Contact your Rexroth representative if you have any doubts about resistance to specific chemicals, such as test oil, doped oils, corrosive detergents, solvents or brake fluid.
- Avoid prolonged contact with highly reactive acidic or alkaline materials.

- Contamination – specifically from abrasive media from the surrounding area, such as sand and silicates, e.g. from construction as well as machining processes in the transfer system (e.g. welding beads, pumice dust, glass shards, chips, loose parts, etc.) – can greatly increase wear. The maintenance intervals should be considerably shortened under such conditions.
- Resistance to media and contamination does not mean that functional safety is guaranteed in every case.
  - Liquids that thicken as they evaporate and become highly viscous or adhesive (sticky) can lead to malfunctions.
  - If they get carried onto systems with rollers, media which have lubricating properties can lead to a reduction in the drive power that is transmitted via friction.

Such cases require special attention when planning the system and adjusting the maintenance intervals.

## 10 Maintenance and repair

### WARNING

#### High electrical voltage!

Risk of severe injury or death from electric shock.

- ▶ Disconnect the relevant system component before performing any maintenance or repair work.
- ▶ Secure the system against being unintentionally switched on again.

#### High pneumatic pressure!

Risk of severe injury or death.

- ▶ Switch off the compressed air supply to the relevant system component before performing any maintenance or repair work.
- ▶ Secure the system against being unintentionally switched on again.

### CAUTION

#### Hot electric motor surfaces during operation!

Risk of burns from touching hot surfaces above 65 °C

- ▶ Install appropriate guards.
- ▶ Let the unit cool down for at least 30 minutes before performing maintenance and/or repair work.

- Only inspect and adjust continuous conveyors that are in motion or operation when the protective equipment is in place.
- Observe DIN EN 13857 when you remove or replace protective equipment and/or bypass safety equipment.
- Test runs with open paneling should only be performed by a person with appropriate knowledge and experience using jog switches, and if there is no possibility of interference from other switching devices.

## 10.1 Cleaning and care

### **NOTICE**

#### **Bearing failure**

Applying grease-dissolving substances to the bearing points, e.g. when cleaning, leads to the failure of the bearings. There is a risk of damage to property, and service life may be reduced.

- ▶ Keep degreasers or aggressive cleaning agents away from the bearings!
- ▶ Only clean the product with water and a slightly damp cloth.

#### **Failure of the toothed belt**

Applying grease-dissolving substances to the toothed belt, e.g. when cleaning, leads to the failure of the toothed belt. There is a risk of damage to property.

- ▶ Keep degreasers or corrosive cleaning agents away from the toothed belt!
- ▶ Only clean the product with water and a slightly damp cloth.

## 10.2 Inspection

### **10.2.1 Pneumatic connections**

Check the pneumatic connections regularly for leaks!

## 10.3 Repair

### **10.3.1 Required tools**

- Hex wrench (open-ended wrench) SW8, SW10, SW13, SW17, SW19, SW24
- Hex socket wrenches SW3, SW4, SW5, SW6

### 10.3.2 Replacing the positioning plate with positioning pins (Fig. 14)

For reasons of functional reliability, it is recommended to replace the positioning pins only completely in conjunction with a new positioning plate!

The replacement of the positioning plate can be carried out when the HP 1/P is installed!

1. Remove the protective equipment.
2. Unscrew the hexagon nuts (stroke adjustment) from the piston rod.
3. Remove the stop or damper DA 1/B if required.
4. Unscrew the cylinder head screw from the piston rod of the cylinder.
5. Pull the positioning plate with guide rods upwards out of the guide sockets.
6. Unscrew the guide rods from the defective positioning plate and screw on the new positioning plate. Only slightly tighten screws!
7. Insert the new positioning plate with the guide rods from above into the guide sockets uniformly and parallel (not tilted) as far as they go.
8. Tighten three fastening screws with  $M_D = 8 \text{ Nm}$ .
9. Fit hexagon nuts for stroke adjustment, adjust stroke.
10. Attach stop or damper DA 1/B to positioning plate if required.
11. Mount the protective equipment.

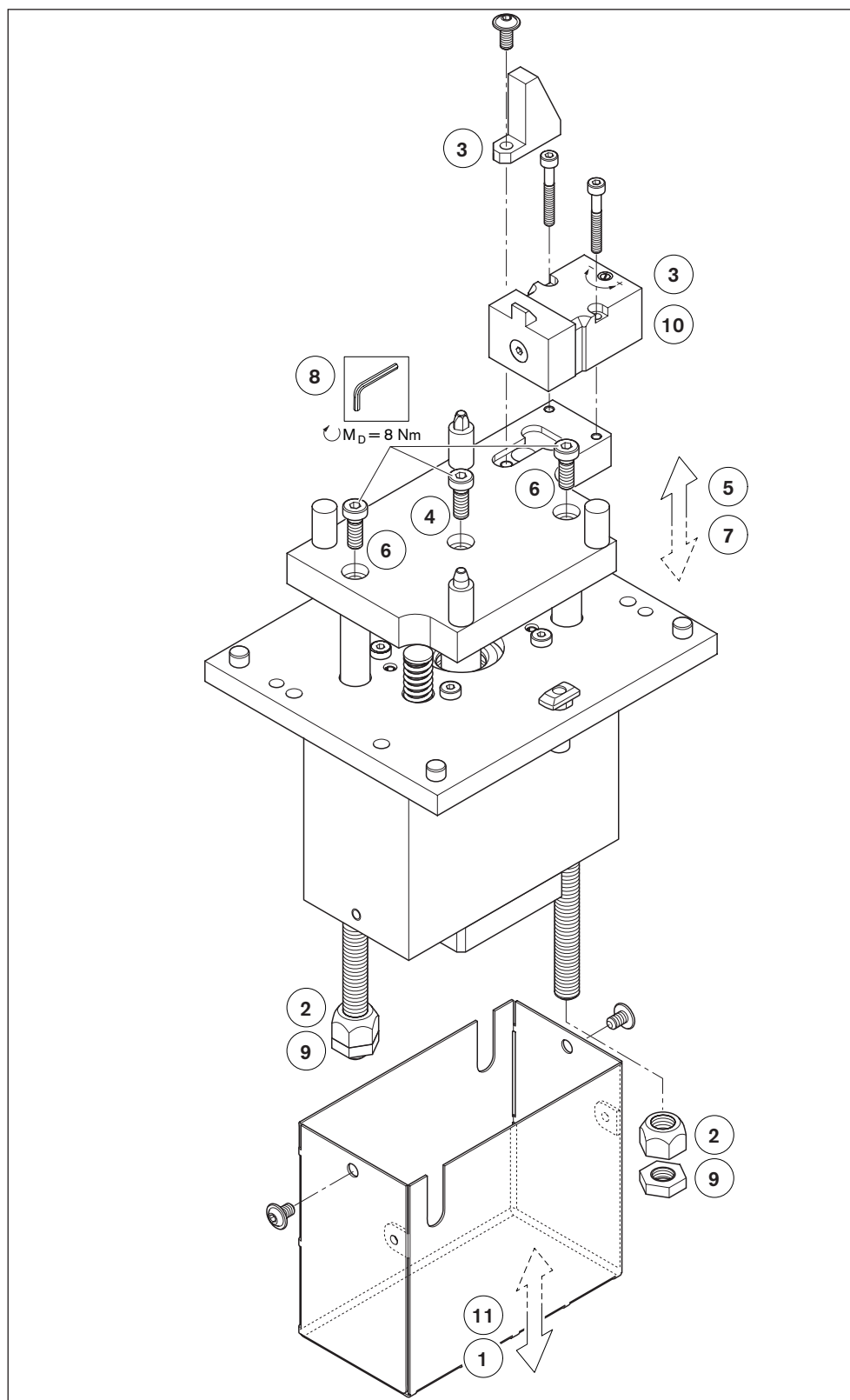


Fig. 14

## 10.4 Spare parts

For spare parts, see MTpro spare parts list **3 842 539 057**.

Download at [www.boschrexroth.de/mtpro](http://www.boschrexroth.de/mtpro).

# 11 Decommissioning

This product is a component which does not need to be decommissioned. Accordingly, this chapter has been left blank.

How to remove and replace the product is described in chapter "Disassembly and replacement" on page 33.

# 12 Disassembly and replacement

## WARNING

### High electrical voltage!

Risk of severe injury or death from electric shock.

- ▶ Disconnect the relevant system component before performing any maintenance or repair work.
- ▶ Secure the system against being unintentionally switched on again.

### High pneumatic pressure!

Risk of severe injury or death.

- ▶ Switch off the compressed air supply to the relevant system component before performing any maintenance or repair work.
- ▶ Secure the system against being unintentionally switched on again.

### Suspended loads can fall!

Falling objects can result in severe injury (or even death).

- ▶ Use only slings with sufficiently high bearing loads (for product weight, see delivery documents).
- ▶ Make sure the lifting straps are correctly fastened before lifting the product!
- ▶ Secure the product against tipping over when lifting!
- ▶ Make sure that no one but the operator is in the hazard area during lifting and lowering!

## 12.1 Preparing lifting and positioning unit HP 1/P for storage/later use

- Only set the products down on a flat surface.
- Protect the products from environmental influences, such as dirt and moisture.
- Protect the products from mechanical effects.
- Observe the ambient conditions.

## 13 Disposal

- The materials used are environmentally friendly.
- They can be recycled or reused (components may have to be processed and replaced).  
Recyclability is ensured by the selection of materials and the ability to take the components apart.
- Careless disposal may lead to environmental contamination.
- Dispose of the product in accordance with the regulations in your country.

## 14 Upgrading and modification

- Do not modify the product.
- The Bosch Rexroth warranty only applies to the configuration as delivered, and to approved upgrades. The manufacturer will not accept any warranty claims for systems with unapproved modifications or upgrades.

## 15 Troubleshooting

If you cannot correct a fault, please contact one of the addresses you can find at [www.boschrexroth.com](http://www.boschrexroth.com).

## 16 Technical data

- For the dimensions, please refer to the transfer system TS 1 sales catalog, **3 842 528 596**
- Workpiece pallet total weight: 3 kg
- Noise emissions: < 70 dB (A)

### 16.1 Ambient conditions

- The transfer systems have been designed for stationary use in a location that is protected from the elements.
- Operating temperature +5 °C to +40 °C  
–5 °C to +60 °C at 20% reduced load
- Storage temperature –25 °C to +70 °C
- Relative humidity 5% to 85%
- Air pressure > 84 kPa, corresponds to an installation altitude < 1400 m above sea level.
- Permissible load capacity of floor: 1000 kg/m<sup>2</sup>
- Load values are reduced by 15% when the system is set up at a location that is > 1400 m above sea level.
- The area should be kept free of mold, fungus, rodents and other vermin.
- Do not install or operate in the immediate vicinity of industrial equipment producing chemical emissions.
- Do not install or operate near sources of sand or dust.

- Do not install or operate in areas that are regularly subjected to high-energy forces caused, for example, by presses or heavy machinery.
- Resistant to many media that are commonly found in manufacturing, such as water, mineral oil, grease, and detergents. Contact your Rexroth representative if you have any doubts about resistance to specific chemicals, such as test oil, doped oils, corrosive detergents, solvents or brake fluid.
- Avoid prolonged contact with highly reactive acidic or alkaline materials.

## **16.2 Pneumatics**

- Oiled or non-oiled, filtered, dry compressed air.
- Operating pressure: 4 to 6 bar

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