

HQ 5, HQ 5/H, HQ 5/XH

Lift transverse unit

3 842 998 930

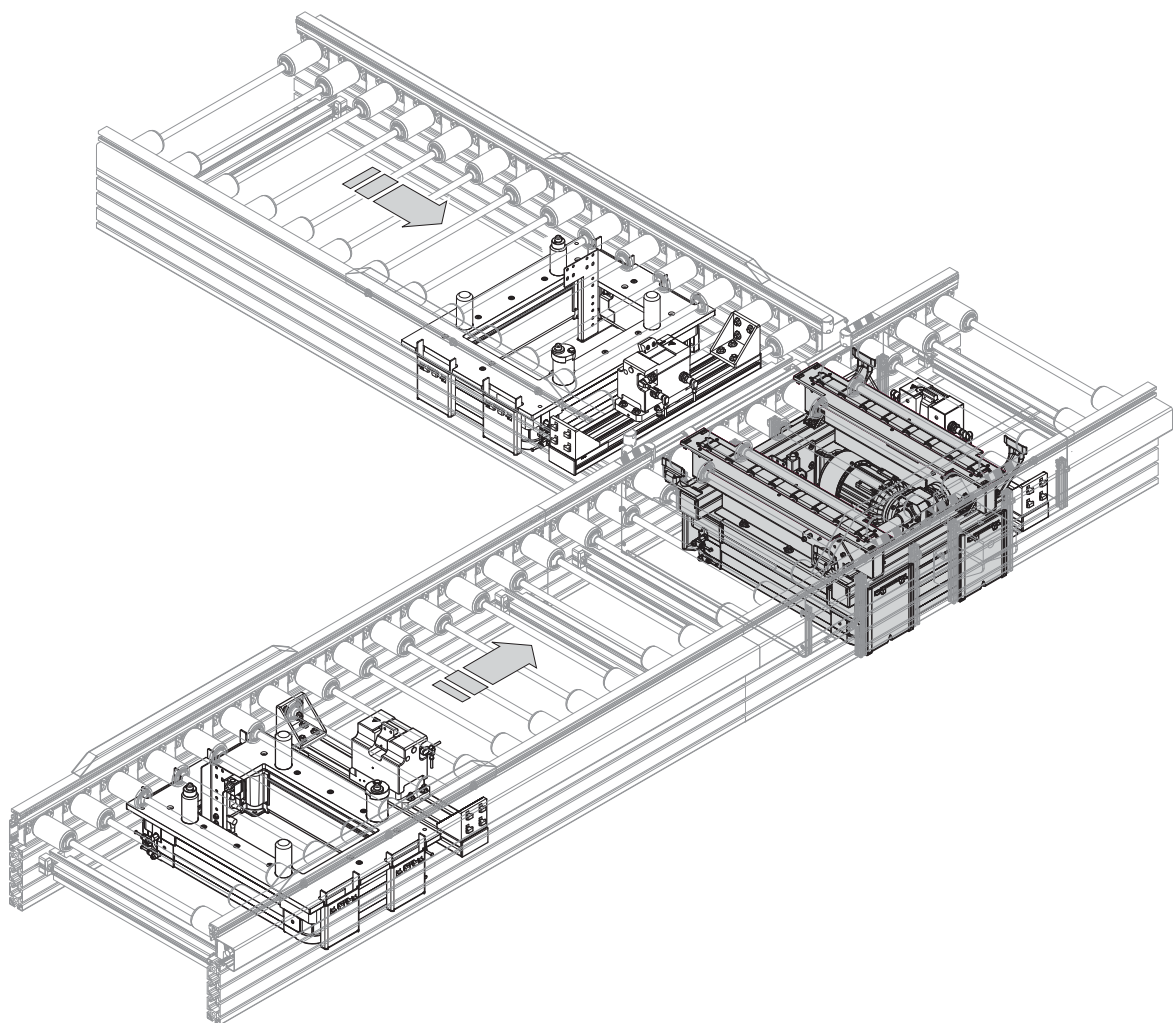
3 842 998 928

3 842 998 929

Assembly instructions
3 842 564 505/2021-06

Replaces: 3842562830
ENGLISH

ENGLISH



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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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DE	3 842 564 504	HQ 5, HQ 5/H, HQ 5/XH	Hub-Quereinheit	Deutsch
EN	3 842 564 505	HQ 5, HQ 5/H, HQ 5/XH	Lift transverse unit	English
FR	3 842 564 506	HQ 5, HQ 5/H, HQ 5/XH	Unité de levée transversale	Français
IT	3 842 564 507	HQ 5, HQ 5/H, HQ 5/XH	Unità di svincolo	Italiano
ES	3 842 564 508	HQ 5, HQ 5/H, HQ 5/XH	Unidad de elevación y transporte transversal	Español
PT	3 842 564 509	HQ 5, HQ 5/H, HQ 5/XH	Unidade de elevação e transporte transversal	Português
ZH	3 842 564 510	HQ 5, HQ 5/H, HQ 5/XH	顶升横移单元	中文
CS	MTCS 564 504	1) HQ 5, HQ 5/H, HQ 5/XH	Zvedací příčná jednotka	Česky
PL	MTPL 564 504	1) HQ 5, HQ 5/H, HQ 5/XH	Jednostka przesuwu poprzecznego	Polski
HU	MTHU 564 504	1) HQ 5, HQ 5/H, HQ 5/XH	Keresztirányú emelőegység	Magyar
RO	MTRO 564 504	1) HQ 5, HQ 5/H, HQ 5/XH	Unitate transversală de ridicare	Română
		1)	Only as PDF / Not available in print.	

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1 About this documentation

1.1 Validity of the documentation

This documentation applies to the following products:

- 3 842 998 930, HQ 5 lift transverse unit
- 3 842 998 928, HQ 5/H lift transverse unit
- 3 842 998 929, HQ 5/XH lift transverse unit

This documentation is intended for fitters, operators, service engineers and system owners.

This documentation contains important information relating to the safe and proper assembly, transportation, commissioning, operation, use, maintenance and disassembly of the product, and on how to rectify simple faults yourself.

- Read this documentation in full prior to working with the product, particularly chapter 2 "Safety instructions" and chapter 3 "General notes on property and product damage".

1.2 Required and supplementary documentation

- Only start up the product if the documentation marked with the book symbol  is available and you have understood and followed the instructions in it.

Table 1: Required and supplementary documentation

Title	Document number	Document type
 Employee safety training	3 842 527 147	
 Declaration of incorporation	3 842 564 511	
MT _{pro} ¹⁾	3 842 539 057	With list of spare parts

¹⁾ Download at: www.boschrexroth.com/mtpro

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 your product. These are explained in the following sections to help you understand them better.

1.3.1 Safety instructions

This document contains safety instructions in section 2.6 "Product-specific safety instructions" and section 3 "General notes on property and product damage", as well as before any sequence of actions or any required action which involves a risk of personal injury or property damage. Be sure to observe all safety precautions.

Safety instructions are set out as follows:

 SIGNAL WORD
Type and source of danger! Consequences of non-compliance ► Measures to prevent danger ► ...

- **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 the danger
- **Consequences:** Describes the consequences of non-compliance
- **Prevention:** States how the danger can be avoided

Table 2: Risk classes according to ANSI Z535.6-2006

Warning sign, signal word	Meaning
 DANGER	Indicates a hazardous situation that will result in severe injury or death if not avoided.
 WARNING	Indicates a hazardous situation that may result in severe injury or death if not avoided.
 CAUTION	Indicates a hazardous situation that may result in minor to moderate injury if not avoided.
NOTICE	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 this information is not observed, the product cannot be used and/or operated as designed.
►	Single, independent action
1. 2. 3.	Numbered steps: The numbers indicate that the action steps are sequential.

1.3.3 Designations

This document uses the following designations:

Table 4: Designations

Designation	Meaning
AS 5/...	Drive unit from the Rexroth TS 5 transfer system
CU 5/...	Curve from the Rexroth TS 5 transfer system
DA 5/...	Damper from the Rexroth TS 5 transfer system
DI 5/...	Diverter from the Rexroth TS 5 transfer system
HQ 5/...	Lift transverse unit from the Rexroth TS 5 transfer system
JU 5/...	Junction from the Rexroth TS 5 transfer system
PE 5/...	Positioning unit from the Rexroth TS 5 transfer system
ST 5/...	Conveyor unit from the Rexroth TS 5 transfer system
SZ 5/...	Section support from the Rexroth TS 5 transfer system
TS 5	Transfer system from the Rexroth TS 5 transfer system
VE 5/...	Stop gate from the Rexroth TS 5 transfer system
WT 5	Workpiece pallet from the Rexroth TS 5 transfer system
.../H	Support profile: 45x90 mm
.../XH	Support profile: 45x180 mm
.../OC	Open center; section with open center; support profile: 135x90 mm

2 Safety instructions

2.1 About this section

The product has been manufactured in accordance with the generally accepted rules of current technology. Nevertheless, there is a risk of personal injury and property damage if you do not read this section and follow the safety instructions in this document.

- 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 a partly completed machinery.

You may use the product as follows:

- For use / installation in a Rexroth TS 5 transfer system
- Maximum load/section load: See technical data on page 61.
- For ambient conditions, see page 61.

The product is strictly intended for professional use and not for private use. The intended use also includes having read and understood these instructions, especially section 2 "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.

The following foreseeable misuses also constitute improper use:

- Transporting goods other than those specified.
- Using the product without a safeguard (provided by the customer).
- Using the product in accumulation operation.
- Transporting people on the product or transported material.
- Climbing onto the product.
 - The product is not accessible.
- Private use.

2.4 Personnel qualifications

The activities described in this document require basic knowledge of mechanical, electrical and pneumatic systems, as well as familiarity with the corresponding technical terms. Additional knowledge regarding the use of lifting gear and corresponding slings is required for transporting and handling the product. 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 comply with the relevant technical regulations and have the necessary expertise.



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2.5 General safety instructions

- Observe the applicable accident prevention and environmental protection regulations.
- Observe the safety rules and regulations of the country in which the product is being used.
- Only use Rexroth products that are in proper working order.
- Heed 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 respond.
- Use only original accessories and spare parts from Rexroth in order to prevent hazards to people due to unsuitable spare parts.
- Observe the technical data and ambient conditions specified in the product documentation.
- Only start up the product if it has been determined that the end product (for example, a machine or system) into which the Rexroth products have been installed complies with national provisions, safety regulations and application standards.

2.6 Product-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.
During transport	• Always ensure that the product cannot topple over.
During assembly	• Observe the transport instructions on the packaging. • Inspect the product for obvious transport damage. • 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 screwed connections are correctly installed and undamaged 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 start up 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 STOP controls. – All delivery points, workstations and passages are kept clear. • Do not use EMERGENCY STOP controls for routine stopping. • Regularly check the EMERGENCY STOP controls to ensure that they are functioning properly. • Following an EMERGENCY STOP or in the event of a fault or other irregularity, turn the product off and secure it against being switched back on. • 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 servicing and repair	• Make sure that access to maintenance and inspection points is kept unobstructed. • Perform the prescribed maintenance work at the intervals specified in chapter 10.3 "Maintenance". • 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.
During disposal	• Dispose of the product in accordance with the regulations in your country.

2.7 Personal protective equipment

- Appropriate protective clothing should be worn when handling/using the product (e.g. safety shoes, close-fitting clothing, a hair net for long, loose hair).
As the system owner or operator, you are personally responsible for ensuring the use of appropriate protective equipment when the product is being used.
All component parts of the personal protective equipment must be free of damage.

2.8 Owner responsibilities

- Before the initial commissioning or re-commissioning of a conveyor system, carry out a risk assessment in accordance with DIN EN ISO 12100.
- Please also observe the residual risks of the individual components (see section 8.2 "Residual risks" on page 49).
- Before the initial commissioning, ensure that there are no protruding or sharp-edged parts that may be a hazard to personnel working or moving in the area.
- Provide safety-related instructions to the operating personnel before initial commissioning or re-commissioning, and then at regular intervals.

3 General notes on property and product damage

The warranty only applies to the delivered configuration.

During cleaning

- The warranty is void in the event of incorrect assembly, commissioning and operation, as well as improper use and/or improper handling.
- Prevent cleaning agents from getting into the system.
- Never use solvents or corrosive cleaning agents.
- Do not use a pressure washer for cleaning.

4 Scope of delivery

The scope of delivery includes the following:

- 1 HQ 5 lift transverse unit (only modular unit without conveyor unit)
incl. assembly material for installation in an ST 5/... conveyor unit.
or
- 1 HQ 5/H lift transverse unit completely assembled in an ST 5/H conveyor unit
or
- 1 HQ 5/XH lift transverse unit completely assembled in an ST 5/XH conveyor unit
- fastening material
- Pneumatic elements such as fittings, throttle check valves, etc.
- Position monitoring kit
- 1 assembly instructions for "HQ 5, HQ 5/H, HQ 5/XH lift transverse unit"

4.1 Condition on delivery

- HQ 5 lift transverse unit
- HQ 5/H lift transverse unit assembled in an ST 5/H conveyor unit
- HQ 5/XH lift transverse unit assembled in an ST 5/XH conveyor unit

5 About this product

5.1 Specifications

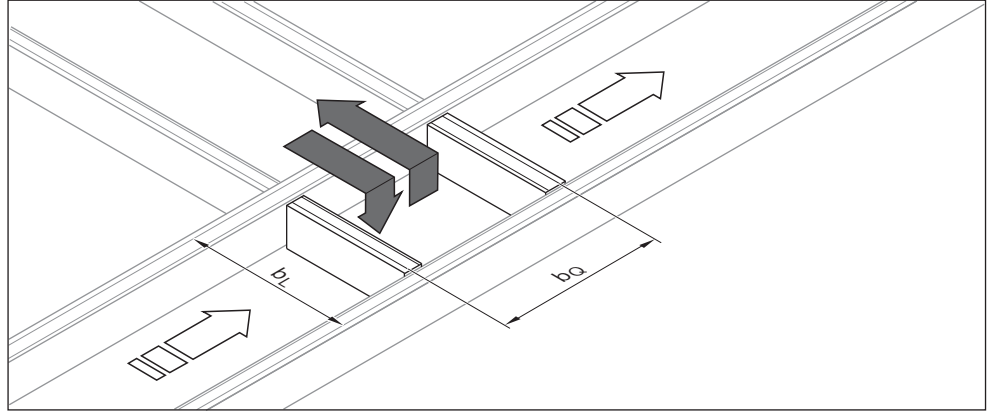


Fig. 1: Specifications for the HQ 5/H and HQ 5/XH lift transverse unit

5.1.1 Utilization of the HQ 5, HQ 5/H and HQ 5/XH lift transverse unit

- HQ 5: Use/assembly in ST 5/H or ST 5/XH conveyor units and AS 5/H or AS 5/XH drive modules
- HQ 5/H: Use assembled in ST 5/H conveyor units
- HQ 5/XH: Use assembled in ST 5/XH conveyor units
- Offset of height difference between main and transverse section to the transverse conveyor of workpiece pallets when
 - Outfeeding from the main section
 - Infeeding to the main section

5.1.2 Version of the HQ 5, HQ 5/H and HQ 5/XH lift transverse unit

- Extremely compact construction. Suitable for tight spaces.
- Pneumatic drive (lifting)/electric drive (transverse conveyor)
- Conveyor medium: Toothed belt/roller section
- Suitable for reversible operation
- Cable/plug or terminal box motor connection

5.2 Product description



Please note:

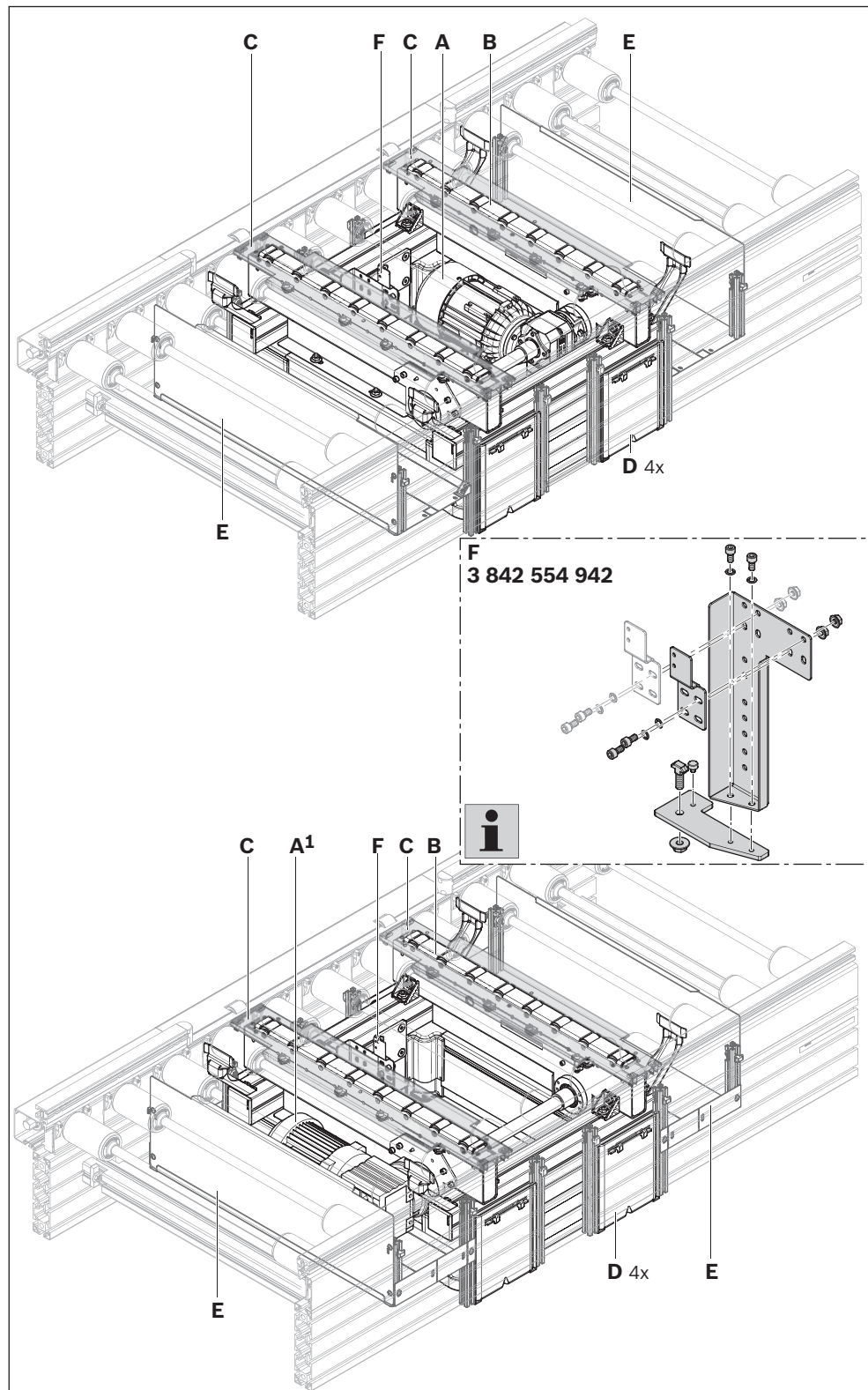
- The HQ 5 lift transverse unit is delivered without a conveyor unit.
- The HQ 5/H and HQ 5/XH lift transverse units are delivered assembled in an appropriate ST 5/... conveyor unit.

- A:** Standard motor mounting
- A¹:** External motor mounting
- B:** Toothed belt/ Roller section
- C:** Transverse conveyor module protective covers (preassembled)
- D:** Mounting bracket (4x)
- E:** Protective case
- For HQ 5/H and HQ 5/XH fully assembled
- F:** Position monitoring kit
3 842 554 942



Please note:

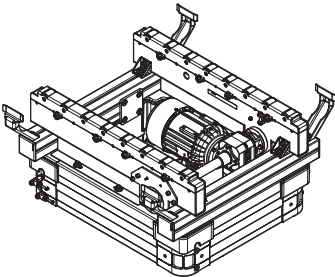
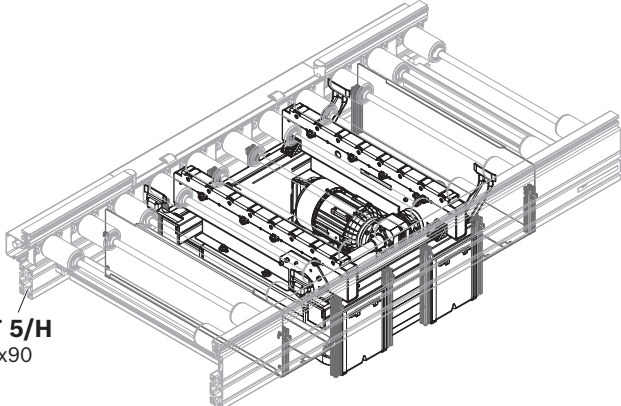
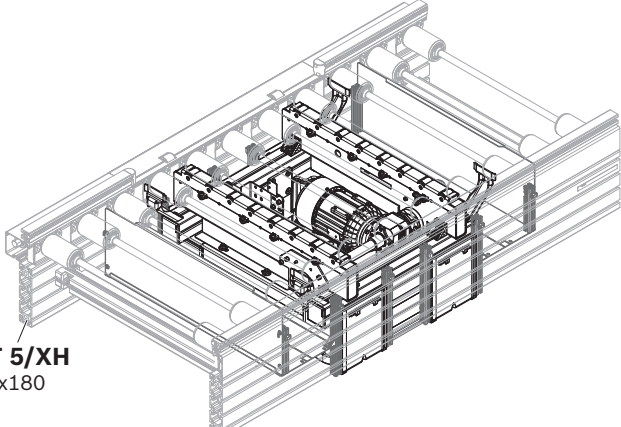
- The mounting position of the position monitoring kit is derived from the dimensions C1 and C2 (position of the proximity switch for querying the WT) in the dimensions table on Page 38.
- The preassembled protective covers of the transverse conveyor module (C) will no longer be shown in the rest of the assembly instructions for illustrative purposes.



562 829-02

Fig. 2: Product description using the HQ 5/XH lift transverse unit as an example

Table 5: Usable conveyor units and workpiece pallets

Lift transverse unit	Usable conveyor units/ drive modules	Applicable workpiece pallets
HQ 5 3 842 998 930  Load up to 300 kg*	ST 5/H ST 5/XH AS 5/H AS 5/XH	WT 5
HQ 5/H 3 842 998 928  ST 5/H 45x90 Load up to 300 kg*	Assembled in ST 5/H conveyor unit	WT 5
HQ 5/XH 3 842 998 929  ST 5/XH 45x180 Load up to 300 kg*	Assembled in ST 5/XH conveyor unit	WT 5

* Observe the conveyor section's permissible section load (see section 16 "Technical data" on page 61)

5.3 Identification of the product

- A:** Material number
(order number)
- B:** Designation
- C:** Information on the version
and dimensions

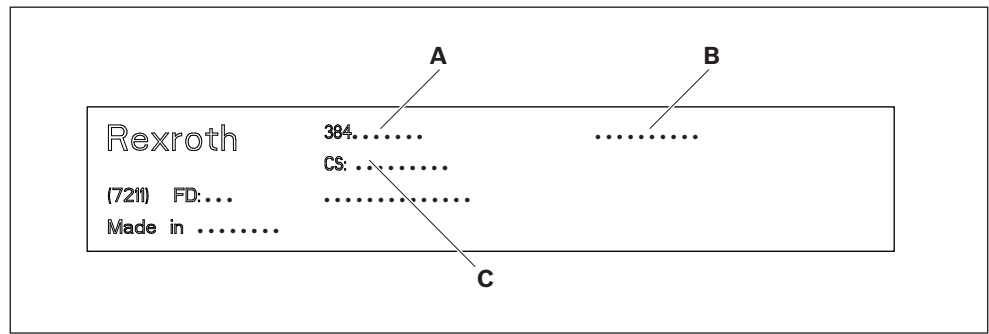


Fig. 3: Nameplate

6 Transport and storage

- Observe the transport instructions on the packaging.
- Transport weight: see delivery documents.
- Secure the product against tipping over!
- Always maintain ambient conditions during loading and transport, see page 61.

6.1 Transporting the product

WARNING

Suspended loads may 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 danger zone during lifting and lowering!

6.2 Storing the product

- Only set the product down on a flat surface.
- Protect the product from mechanical stress.
- Protect the product from environmental influences, such as dirt and moisture.
- Observe the ambient conditions, see page 61.
- Support the product so that suspended motors/actuators/cylinders will not be strained.

7 Assembly

7.1 Unpacking

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

7.2 Installation requirements

- ▶ During installation, be sure to maintain the ambient conditions specified in the Technical data (see page 61).

7.2.1 Installation position

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

7.3 Required tools

- Hex wrench (open-end) SW13.
- Allen keys, sizes 3, 4, 5, 6.
- Posidriv screwdriver, PZ2
- Rubber mallet
- Level

7.4
Symbols used

Table 6: Symbols used

1 2	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. Tightening torque: 25 Nm
SW13 M_D = 20Nm	Hex wrench SW = wrench size ... mm M_D = required tightening torque ... Nm
SW5 M_D = 8Nm	Hex socket wrench SW = wrench size ... mm M_D = required tightening torque ... Nm
PZ2 PH3	Screwdrivers for cross-head screws PZ ... = Pozidriv screw driver, size ... PH ... = Phillips screw driver, size ...
gleitmo 585 K Anti-Seize	Grease/grease with specified grease lubricant: • gleitmo 585 K: gleitmo 585 K, www.fuchs-lubritech.com • Anti-Seize: Food Grade Anti-Seize/Loctite 8014, www.henkel.com
GHD V 68	Oil/oil with specific mineral oil: • GHD: Structovis GHD, www.klueber.com • V 68: Mineral oil with a viscosity of 68
Loctite 243 Loctite 601	Secure the screws with: • Loctite 243: Medium strength (detachable), www.loctite.de • Loctite 601: High-strength screw retention (non-detachable), www.loctite.de
	The marked parts are not required for the described assembly. Dispose of the parts or use them for other purposes.
1 2 3	Graphical depiction of the assembly steps. The numbers correspond to the sequence of assembly steps, in accordance with the instructions in the accompanying text.
A B C X	Graphical depiction of the designation of components. The letters denote the components mentioned in the accompanying text.
	Detail view from a different direction, for example, the back or the bottom side of the product.

7.5 Lifting with lift aids

NOTICE

Risk of damage to the HQ 5 lift transverse unit due to incorrect lifting

Lifting the lift transverse unit by the upper part can damage the lift transverse unit or reduce its service life.

- Only lift the HQ 5 lift transverse unit using the lifting lugs (X) or
- lift the HQ 5 lift transverse unit with a suitable forklift in the lifting area (Y) specified in the graphic.

- For lifting, use a lift aid suitable for the weight of the HQ 5 lift transverse unit.



Please note:

- Use the lifting lugs (X) e.g. for a round sling.
- The drive shaft must not be loaded by the lift aid.
- Remove the lifting lugs after the assembly.
- Keep the lifting lugs for modification or disassembly.
- For reassembly, ensure correct fitting of the T-bolt in the profile slot.



Please note:

- When using a forklift, disassemble the lifting lugs (X) before lifting.
- Lift the HQ 5 lift transverse unit with a forklift in the specified lifting areas only (Y).

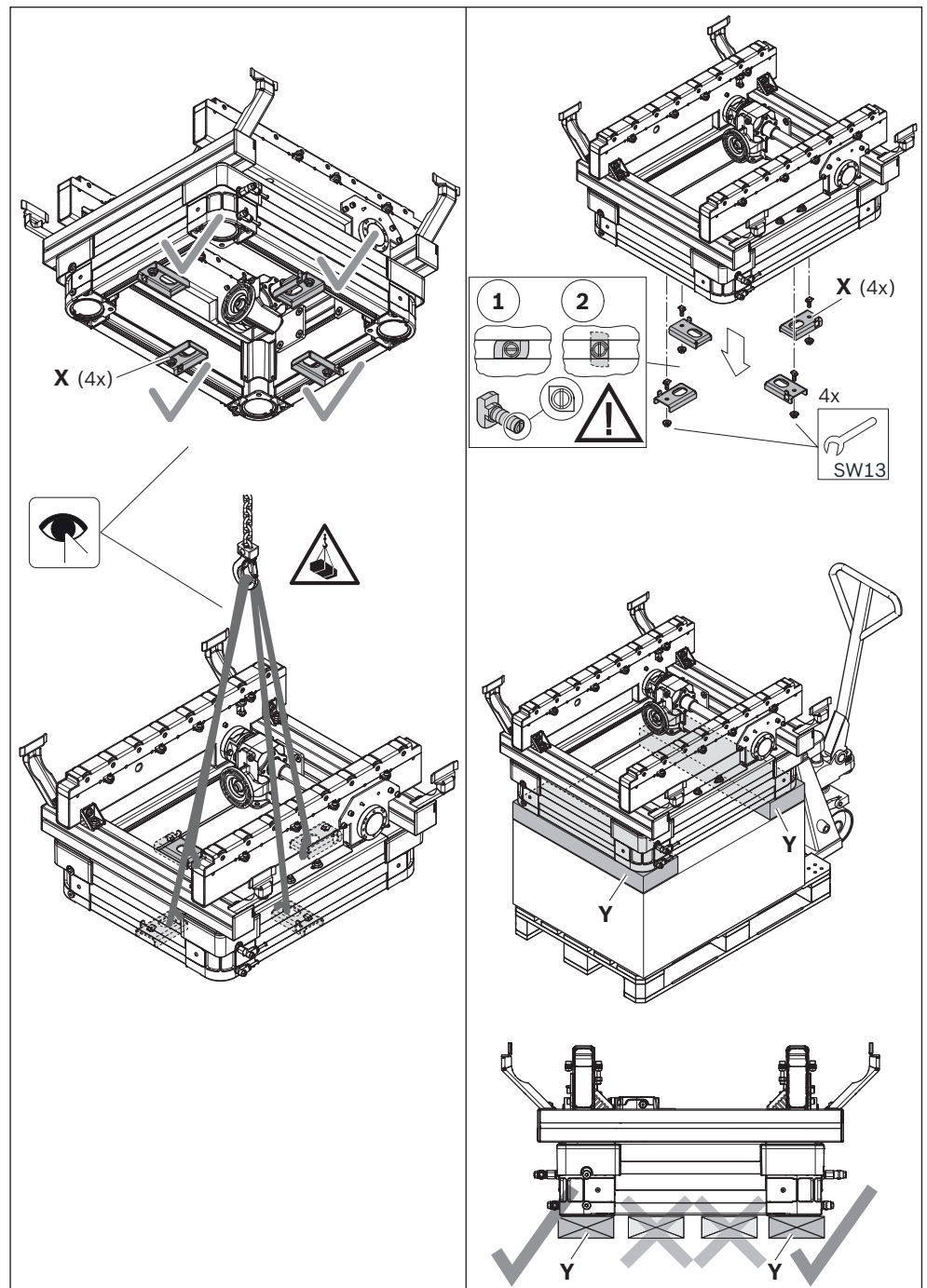


Fig. 4: Lifting the HQ 5 lift transverse units

NOTICE

Risk of damage to the HQ 5/... lift transverse unit due to incorrect lifting

Lifting the lift transverse unit by the upper part can damage the lift transverse unit or reduce its service life.

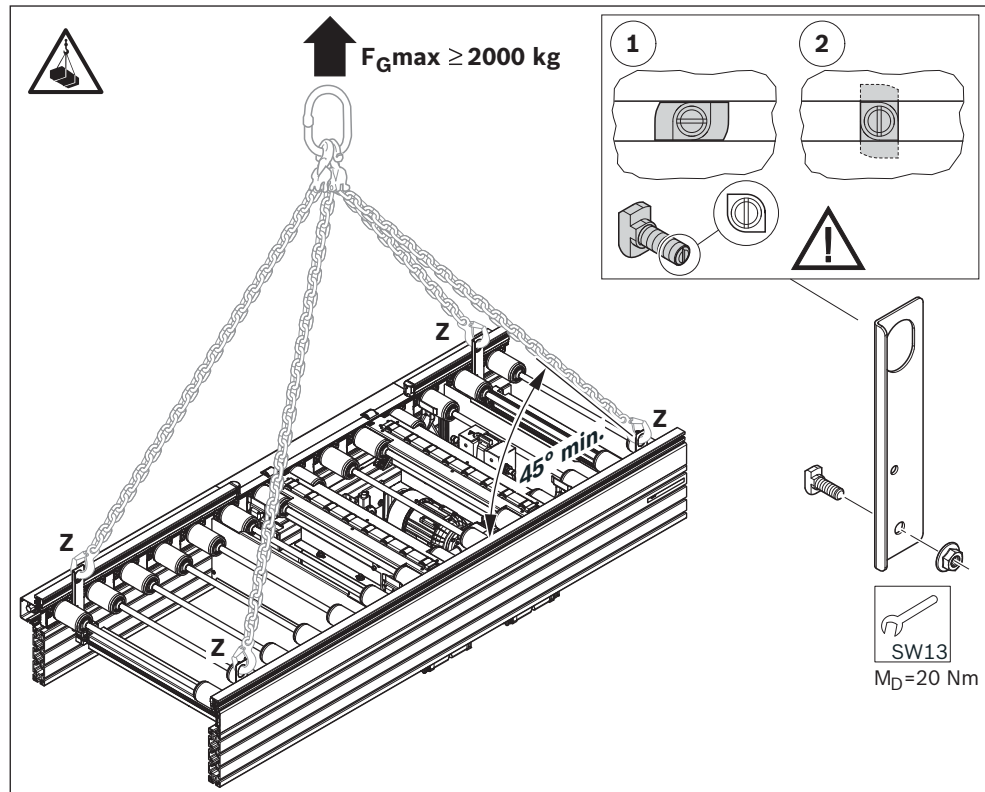
- Only lift the HQ 5/... lift transverse unit by the lifting lugs of the ST 5/... (Z) conveyor unit.

- For lifting, use a lift aid suitable for the weight of the HQ 5/... lift transverse unit.



Please note:

- Only use lifting lugs (Z) e.g. to hook a 4-strand hoisting chain.
- Remove the lifting lugs after the assembly.
- Keep the lifting lugs for modification or disassembly.
- For reassembly, ensure correct fitting of the T-bolt in the profile slot.



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Fig. 5: Specifications for the HQ 5/H and HQ 5/XH lift transverse units



Please note:

If the HQ 5 lift transverse unit is already assembled in an ST 5/... conveyor unit, it may be necessary to remove rollers (see page 59) or remove the HQ 5 lift transverse unit from the ST 5/... conveyor unit, depending on the system width and the installation situation.

Required tools

- Hex wrench SW8

1. Remove the protective cap from the shaft of the new motor.
2. Lubricate the motor shaft.
3. Install the new motor.



Please note:

- The end faces of the motor and gear must be undamaged.
- Do **not** tilt the motor and make sure it has the necessary clearance area.
- Install the motor in the proper position (terminal box) and connect it to the gear.
- If the motor is not in the proper position: Do **NOT** rotate the motor. Disconnect the motor from the gear and reconnect it.

7.6 Assemble standard gear motor (GM = 0/1)

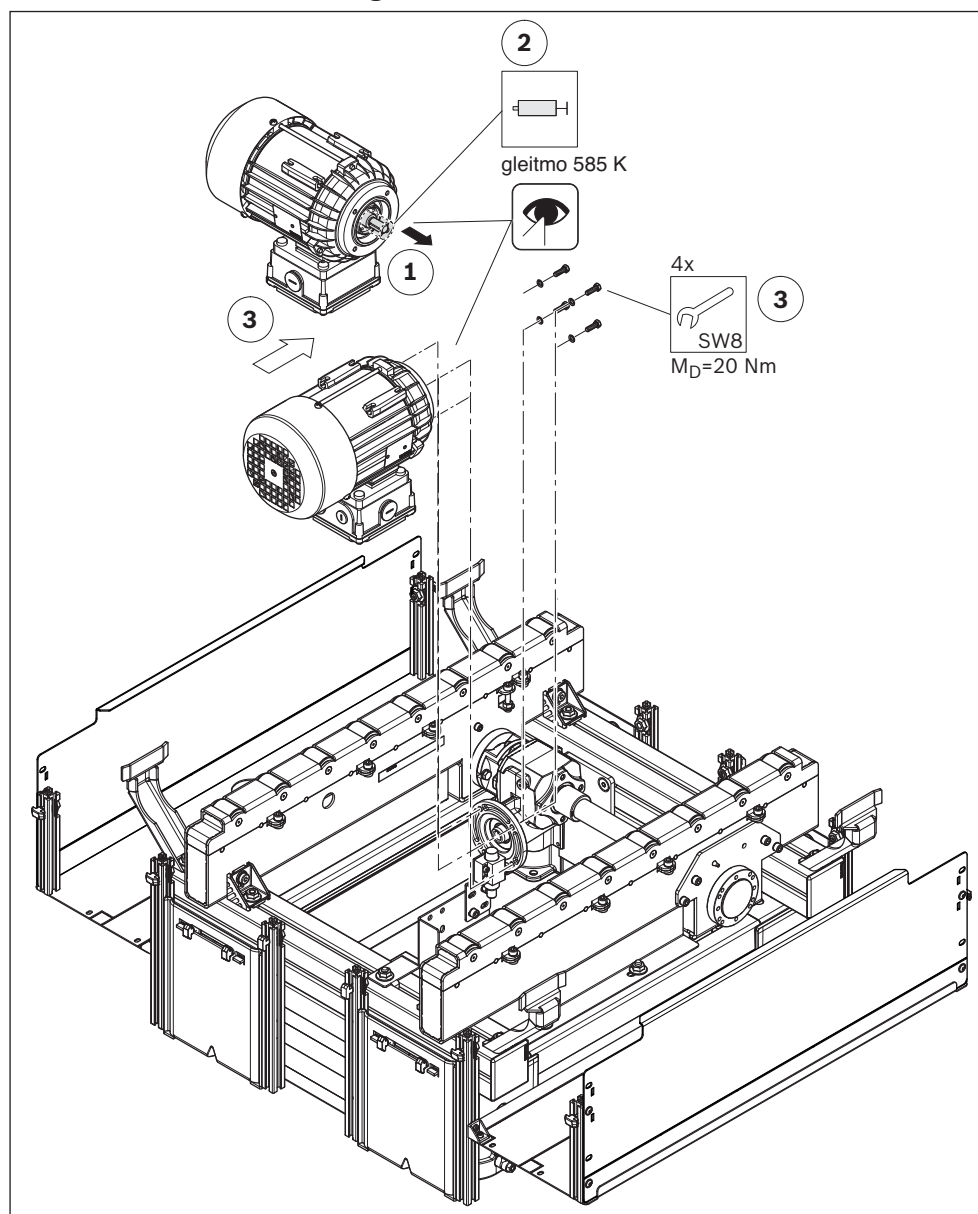


Fig. 6: Assemble gear motor (GM = 0/1)

**Please note:**

If the HQ 5 lift transverse unit is already assembled in an ST 5/... conveyor unit,

- the protective case on the motor side must be removed.
- it may be necessary to remove rollers (see page 59) or remove the HQ 5 lift transverse unit from the ST 5/... conveyor unit, depending on the system width and the installation situation.

Required tools

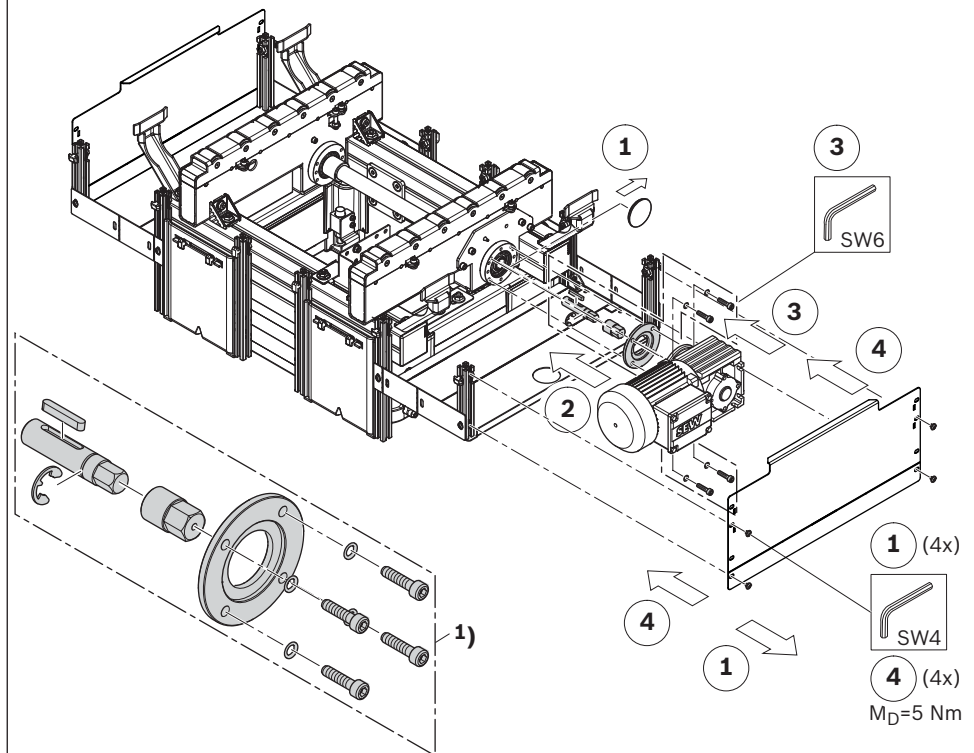
- Hex wrench SW8
- Hex socket wrench SW6

1. Remove the protective case on the motor side.
2. Install the flange and the drive shaft.
3. Install the gear motor.
4. Install the protective case.

¹⁾ Included in the scope of delivery if GM = 2

7.7 Assembling external gear motor (GM = 2)

$b_L = 455 \text{ mm}$



$b_L = 650/845 \text{ mm}$

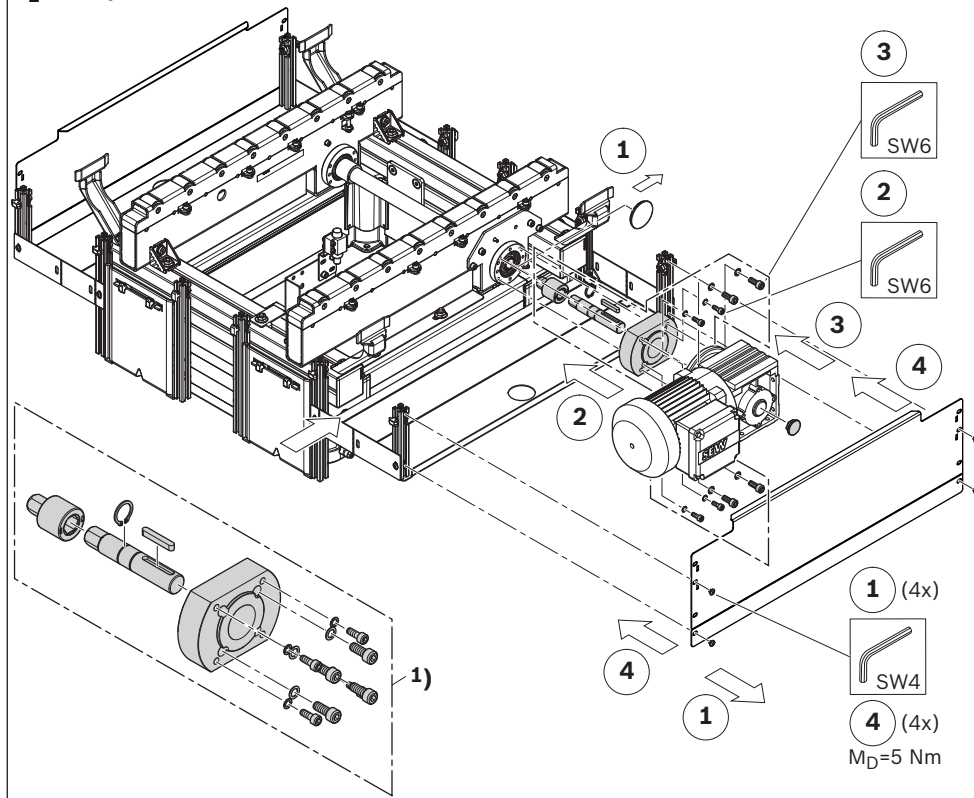


Fig. 7: Assembling external gear motor (GM = 2)

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7.8 Assembly dimensions



Please note:

- The HQ 5 lift transverse unit is delivered without a conveyor unit.
 - The HQ 5/H and HQ 5/XH lift transverse units are delivered assembled in an appropriate ST 5/... conveyor unit.
- Connect the HQ 5 lift transverse unit with the ST 5/... conveyor unit, AS 5/... drive unit, CU 5/... curve, DI 5/... diverter and JU 5/... junction, refer to the assembly instructions of these components.
- Assembling the VE 5/... stop gate see page 32.
- Assembling the DA 5/... damper see page 35.



Please note:

Depending on the length of the workpiece pallet (l_{WT}) and the roller pattern (p), the HQ 5 lift transverse unit is installed at a predefined distance from a roller axle. This gives rise to the mounting dimensions for the VE 5/... stop gate and DA 5/... damper.

Reference points for installation (in the conveying direction):

- Trailing edge of the roller bearing pedestal before HQ (1)
- Leading edge of the roller bearing pedestal after HQ (2)

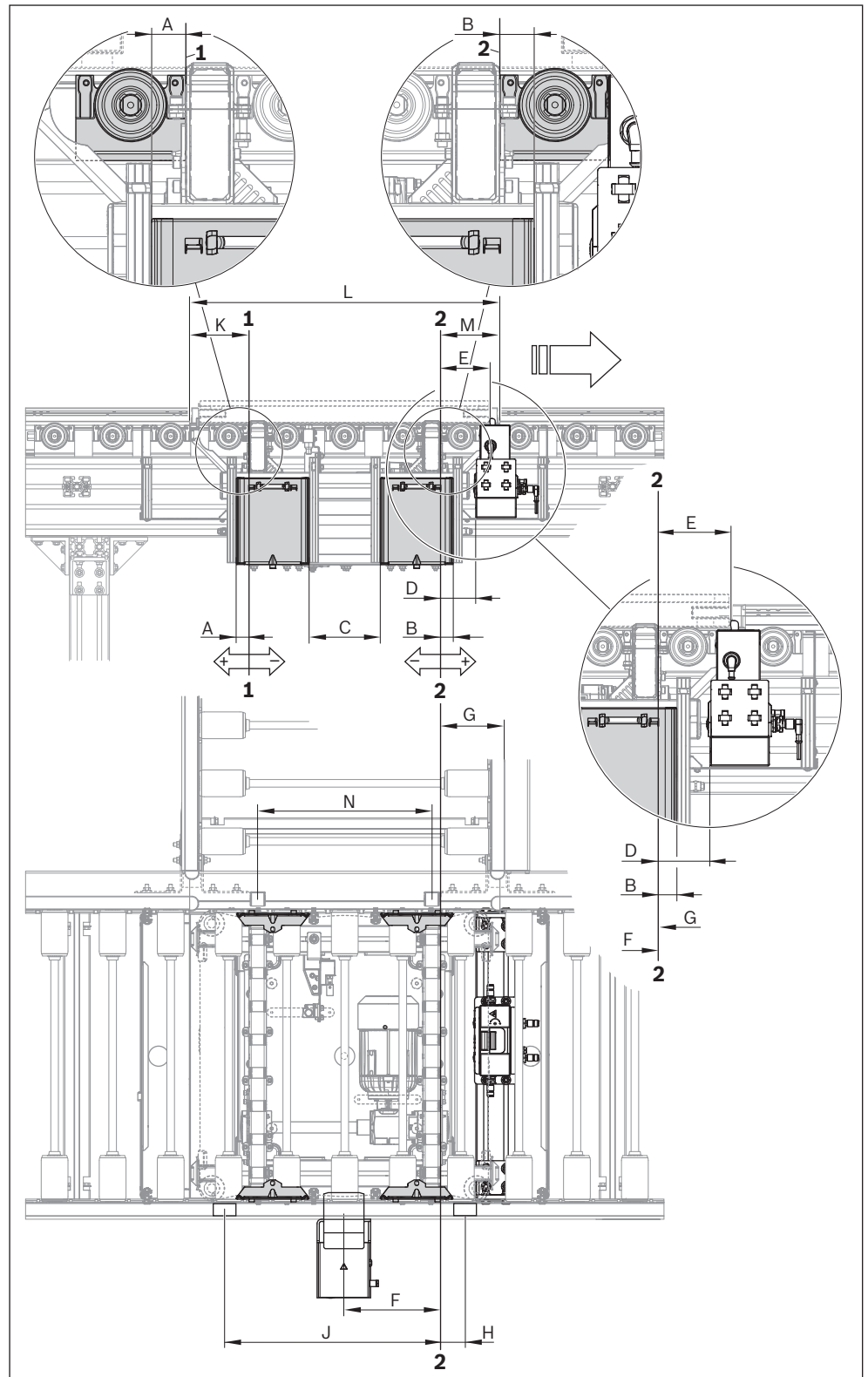


Fig. 8: HQ 5 lift transverse unit assembly dimensions

Table 7: HQ 5 assembly dimensions

	b_a [mm]	455	650		845		1040				
	p [mm]	130	130	195	130	195	260	130	195	260	325
HQ 5	A [mm]	27.9	27.9	-4.7	27.9	27.9	27.9	27.9	-4.7	67.9	-4.7
	B [mm]	27.9	27.9	-4.7	27.9	27.9	27.9	27.9	-4.7	27.9	-4.7
	C [mm]	29.3	159.3	159.3	419.3	419.3	419.3	549.3	549.3	549.3	549.3
VE5/D-300	D [mm]	46.5	79	46.5	46.5	46.5	46.5	79	46.5	79	46.5
VE5/D-301	D [mm]	49.5	82	49.5	49.5	49.5	49.5	82	49.5	82	49.5
VE5/D-1000	D [mm]	43	75.5	43	43	43	43	75.5	43	75.5	43
	E [mm]	77.5	110	77.5	77.5	77.5	77.5	110	77.5	110	77.5
	F [mm]	150	215	247.5	345	345	345	410	442.5	410	442.5
	G [mm]	117.5	150	117.5	117.5	117.5	117.5	150	117.5	150	117.5
	H [mm]	45	77.5	45	45	45	45	77.5	45	77.5	45
	J [mm]	345	507.5	540	735	735	735	897.5	930	897.5	930
	K [mm]	101	133	133	101	101	101	133	133	133	133
	L [mm]	500	695	695	890	890	890	1085	1085	1085	1085
	M [mm]	101	133	133	101	101	101	133	133	133	133
	N [mm]	260	390	390	650	650	650	780	780	780	780



Please note:

- The ST 5/... conveyor unit or the AS 5/... drive module must be reworked according to the ordering parameters DSM and OFD on the outfeed side(s).
- The following parts need to be reworked:
 - Lateral guide(s)
 - Cover of passive side and/or king shaft
- New components required, such as:
 - Lateral guide cover
 - Passive side cover
 - King shaft cover
 - Support rollers
 - Guide kit
 are included in the scope of delivery according to the customer order.
- Depending on the variant, the cover of the king shaft on the AS 5/... drive unit is connected to the covers of the adjoining modular units (X).

Required tools

- Disassembly tool
3 842 545 836.

1. If necessary, remove the cross connectors in the area where the HQ 5 lift transverse unit is assembled.
 2. Mark the **dimension L** according to the installation position of the HQ 5 lift transverse unit. Assembly dimensions see Page 21.
 3. Remove the covers from the passive side.
 4. Remove the cover of the king shaft.
- The covers are assembled as shown in detail Y.

7.9 ST 5/... conveyor unit or AS 5/... drive module prepare for assembly of the HQ 5 lift transverse unit

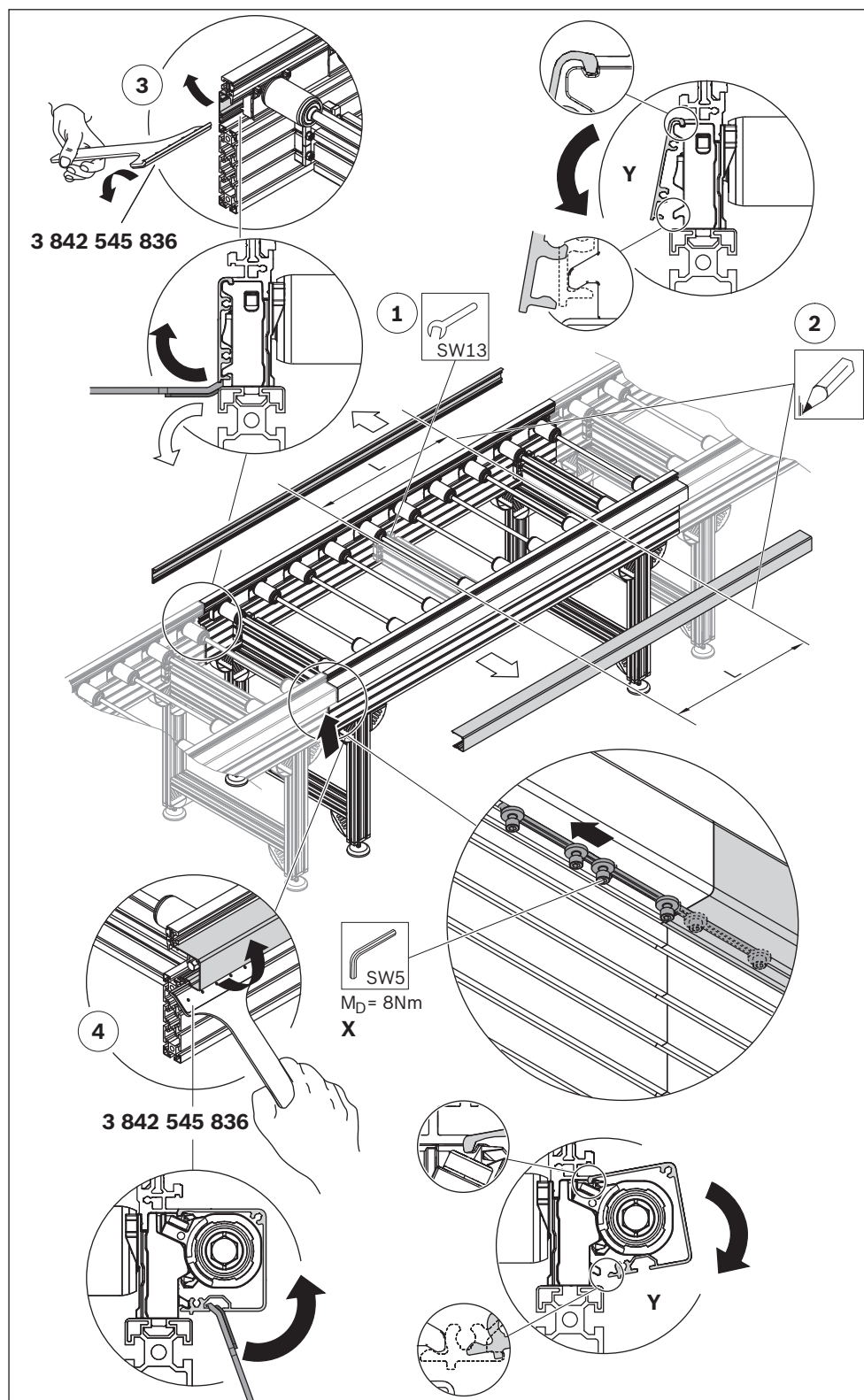


Fig. 9: Prepare ST 5/... conveyor unit or AS 5/... drive module, remove covers (DSM = 2, OFD = 3)

5. Loosen the profile connectors of the lateral guide (2 rotations).
6. Move the profile connectors into the adjacent module.
7. Loosen the headless setscrews of the lateral guide (2 rotations).
8. Remove the lateral guide.

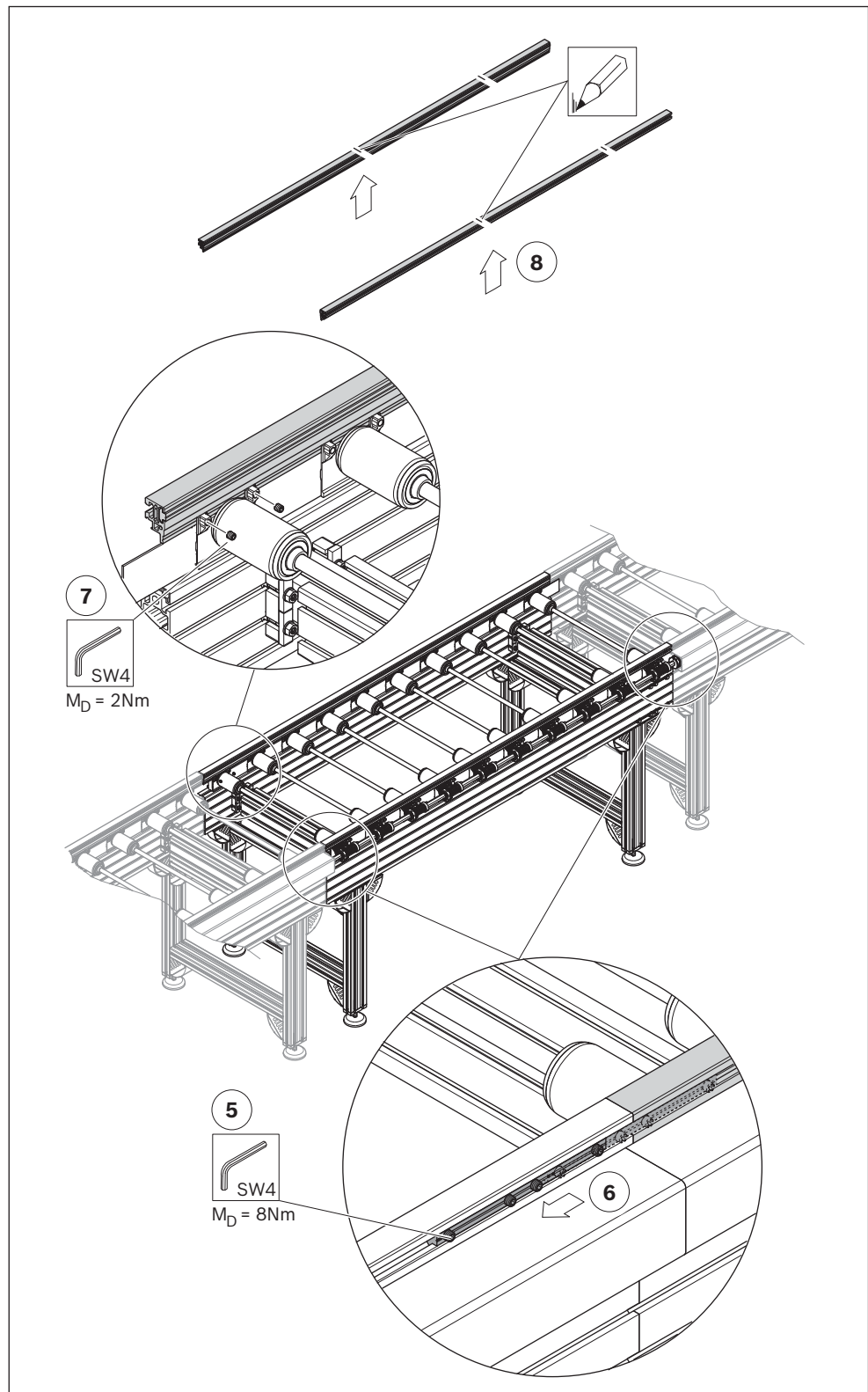


Fig. 10: Prepare ST 5/... conveyor unit or AS 5/... drive module, remove lateral guide (DSM = 2, OFD = 3)

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9. Separate the lateral guides and the covers according to the markings (dimension L).

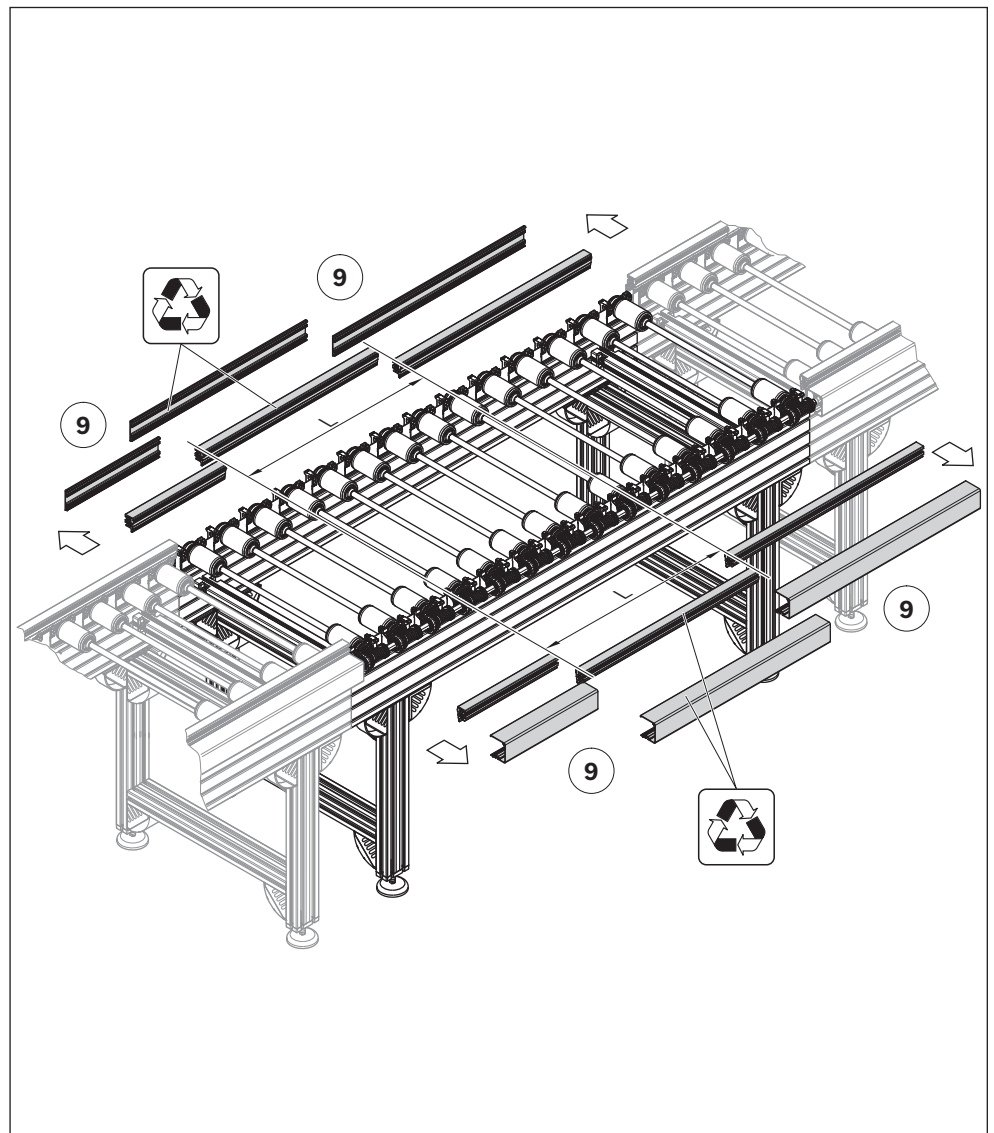


Fig. 11: Prepare ST 5/... conveyor unit or AS 5/... drive module, rework lateral guide and covers (DSM = 2, OFD = 3)

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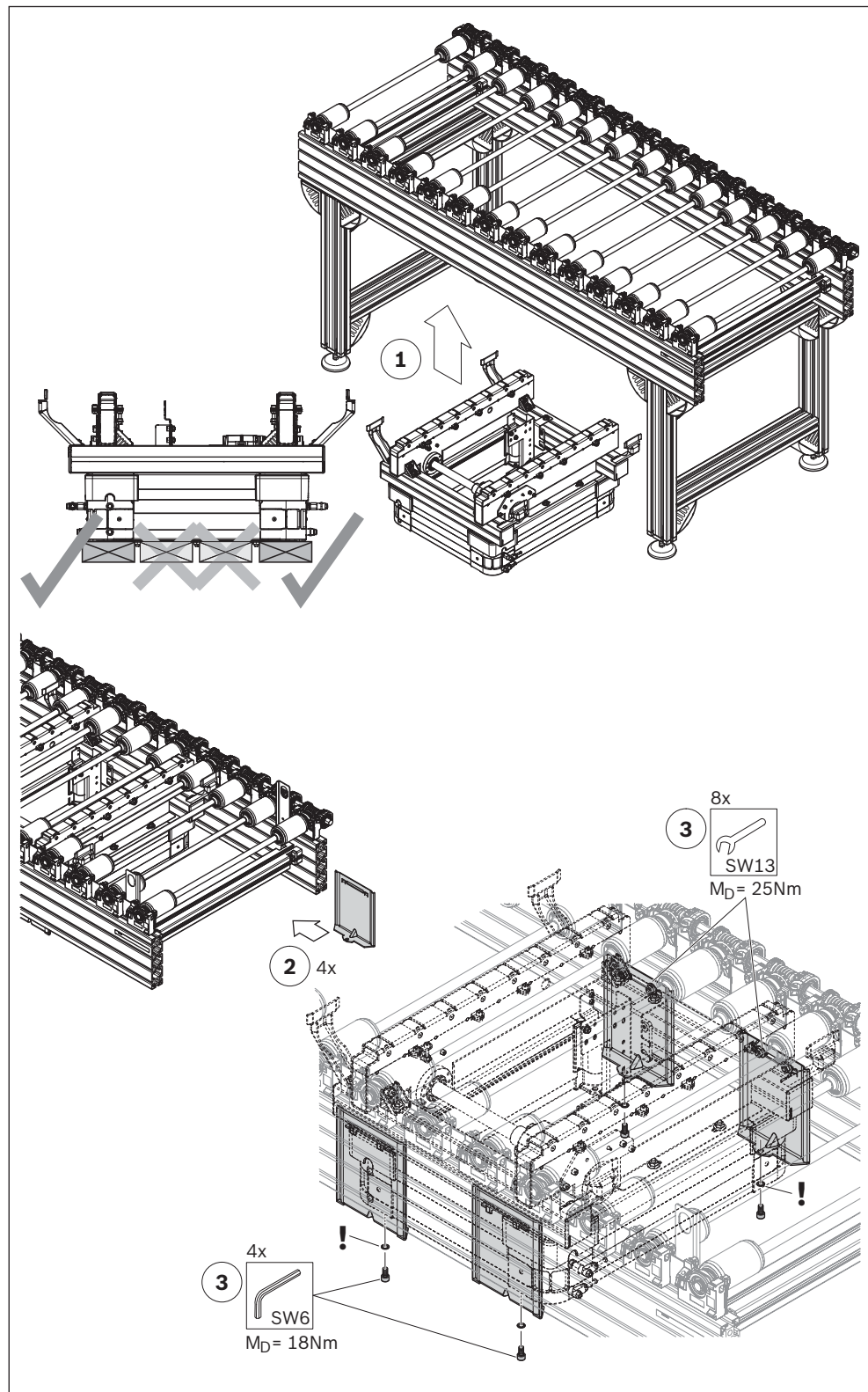
7.10 Assembly HQ 5 lift transverse unit from bottom



Please note:

- Use a lift aid to lift the HQ 5 lift transverse unit (see page 17).
- The split rollers must not be loaded by the lift aid.
- For better accessibility of the mounting brackets, it may be necessary to remove rollers, depending on the roller division. see page 59

1. Lift the HQ 5 lift transverse unit from the bottom into the ST 5/... conveyor unit.
2. Laterally slide the mounting brackets (4x) in between the conveyor unit and the lift transverse unit. The T-bolts must be located in the second groove from the top of the conveyor unit.
3. Align the mounting brackets and the HQ 5 lift transverse unit and tighten the mounting brackets. Assembly dimensions see Page 21.



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Fig. 12: Assembly HQ 5 from bottom (1/2)



Please note:

- Assembly dimensions see Page 21.
 - New components required, such as:
 - A:** Lateral guide cover
 - B:** Passive side cover
 - C:** King shaft cover
 - D:** Support rollers
 - E:** Guide kit
- are included in the scope of delivery according to the customer order.
- Two support rollers for bridging the conveyor trench are required with:
 - direct connection of the transverse section and

b_L [mm]	p [mm]
455	130
455	195
650	130
650	195
650	260
845	260
845	325

4. Assemble the lateral guides (see Page 24).
5. Assemble the covers (see Page 23).
6. Assemble the support rollers (D).
7. Set the support rollers (D) to the transport level of the transverse conveyor of the HQ 5.
8. Assemble the covers (A/B/C).
9. Assemble the guide kit (E).

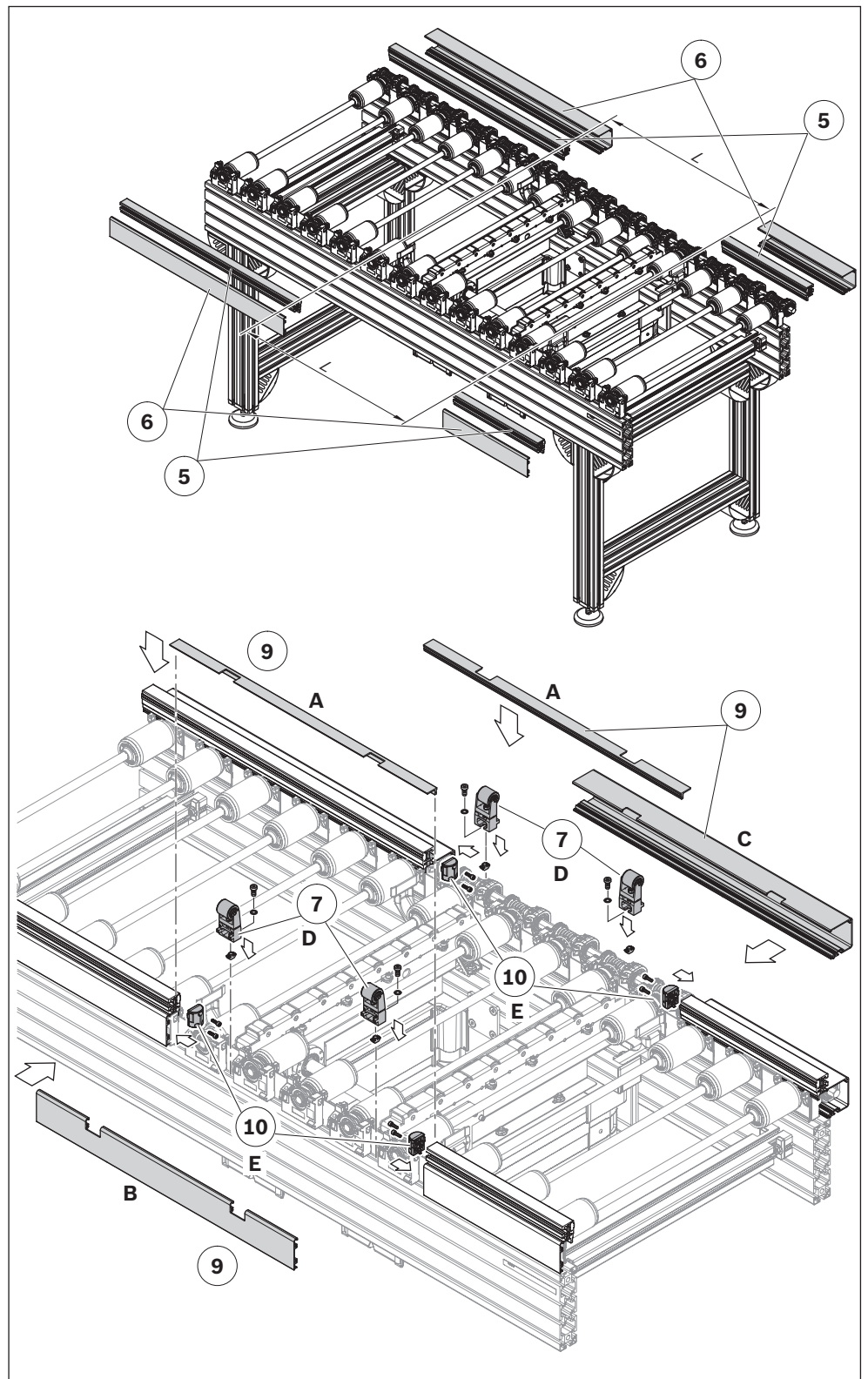


Fig. 13: Assembly HQ 5 from bottom, here DSM = 2, OFD = 3 (2/2)

7.11 Assembly HQ 5 lift transverse unit from top

7.11.1 Removing the split rollers



Please note:

- When assembling the HQ 5 lift transverse unit from the top, all split rollers in the assembly area must be removed.
 - Assembly dimensions see Page 21.
1. Remove the clamps.
 2. Remove the split rollers vertically upwards.
- After assembling the HQ 5, the split rollers are correspondingly assembled in the reverse order.

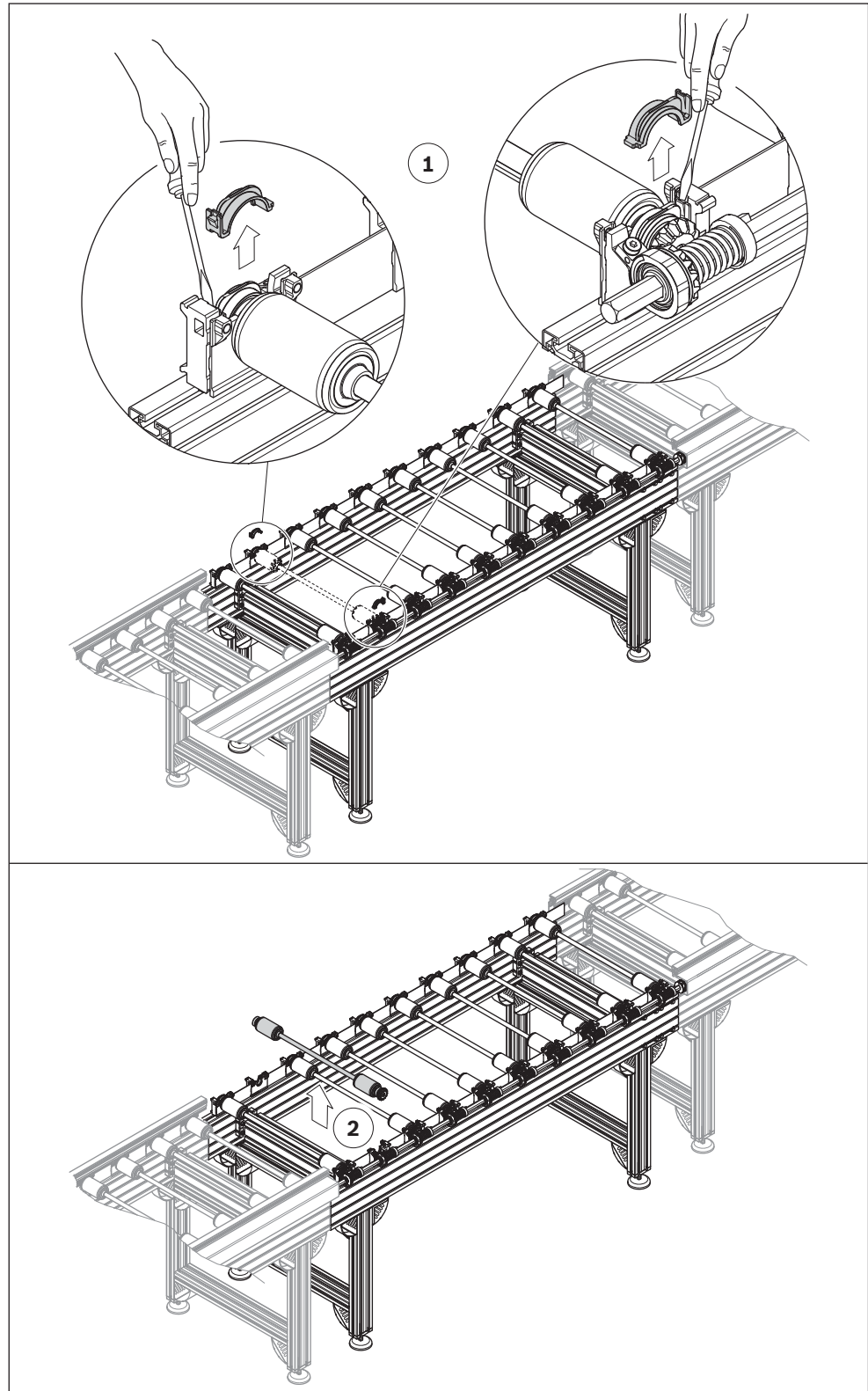


Fig. 14: Assembly HQ 5 lift transverse unit from top, remove split rollers

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7.11.2 Preassembling the mounting bracket

1. Mark the assembly position of the mounting bracket. Assembly dimensions see Page 21.
2. Hang the mounting brackets from the top into the second groove of the section profile.
3. Insert the T-bolts into the section profiles and tighten the flange nuts.

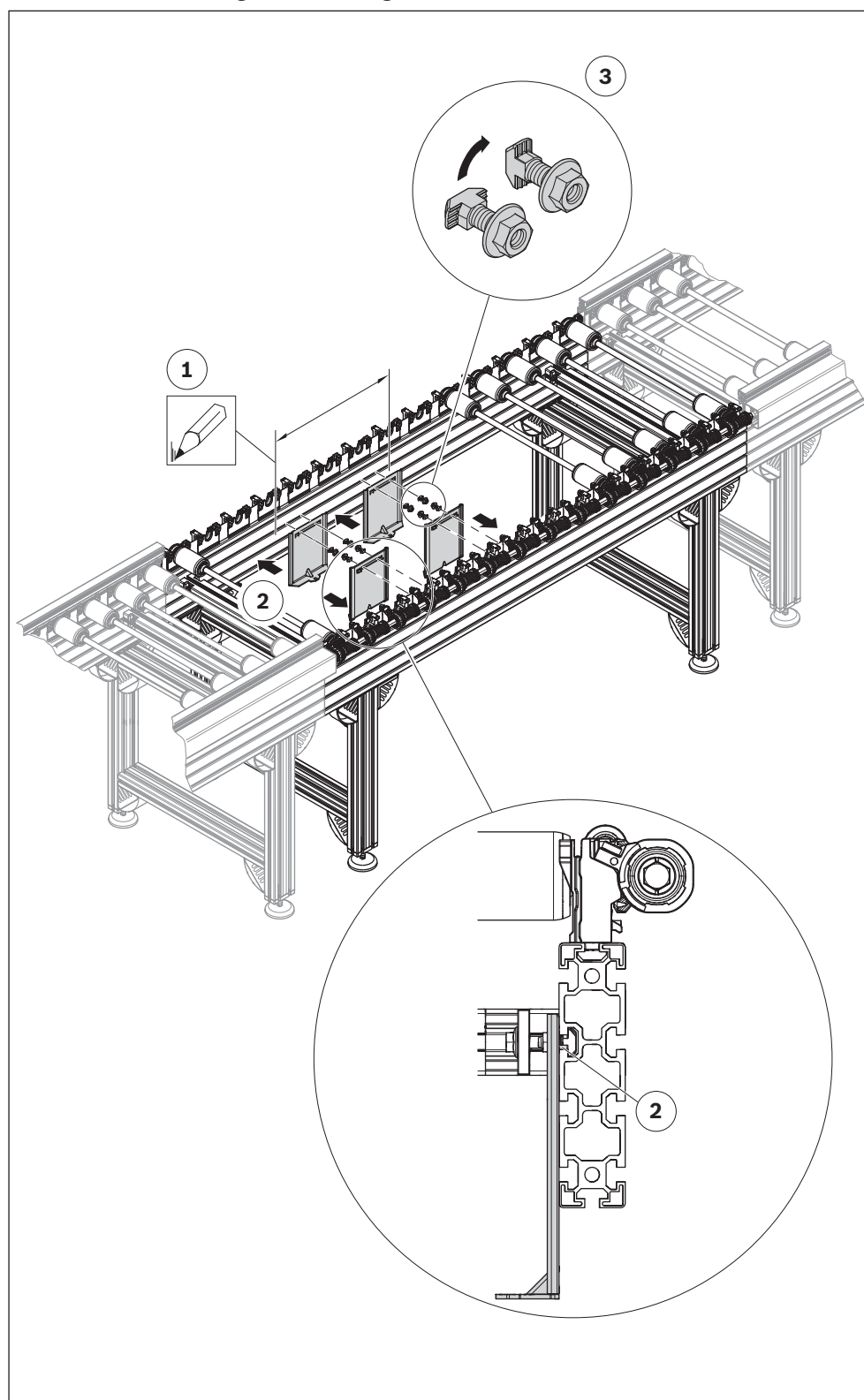


Fig. 15: Assembly HQ 5 lift transverse unit from top; preassemble mounting bracket

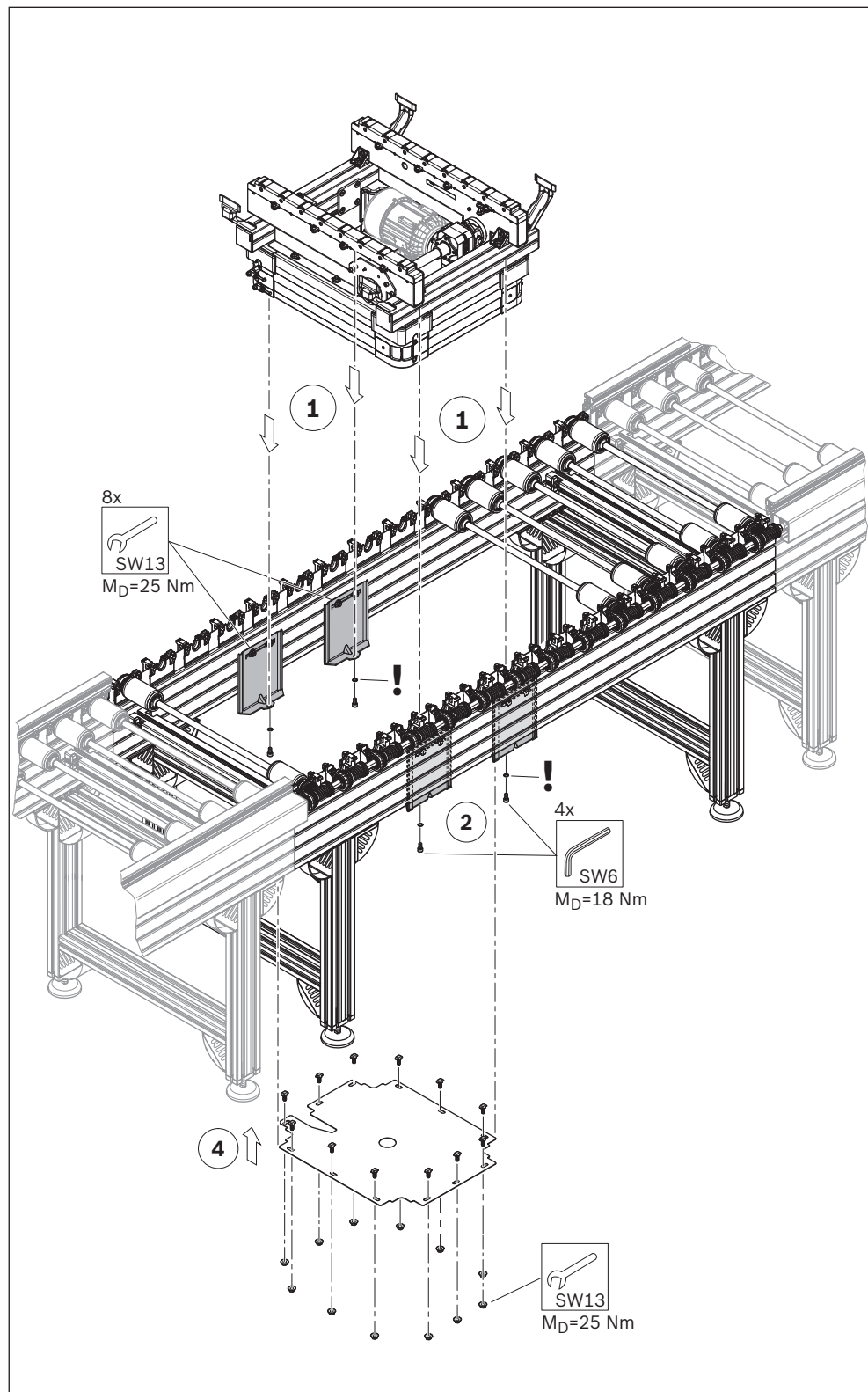
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7.11.3 Assembling HQ 5

**Please note:**

Use a lift aid to lift the HQ 5 lift transverse unit (see page 17).

1. Lift the HQ 5 into the section profile from the top.
2. Tighten the fastening screws of the mounting bracket.
3. Remove the lifting lugs.
4. Assemble the guard plate.
5. Assemble the split rollers (see Page 28).
6. Assemble the lateral guides (see Page 24).
7. Assemble the covers (see Page 23).
8. Assemble the support rollers (D, see page 27).
9. Set the support rollers (D) to the transport level of the transverse conveyor of the HQ 5.
10. Assemble the covers (A/B/C, see page 27).
11. Assemble the guide kit (E, see page 27).



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Fig. 16: Assembly HQ 5 from top

7.12 Further assembly work

7.12.1 Assembling the position monitoring device kit

Required accessories

- Proximity switch A
3 842 545 972
- Proximity switches B + C
3 842 549 811 or
3 842 549 814
- Switch brackets, 2 pieces
3 842 537 289



Please note:

The mounting position of the position monitoring kit (F) is derived from the dimensions C1 and C2 (position of the proximity switch A for querying the WT) in the dimensions table on Page 38.

1. Install the switching element on the lift frame of the lift transverse unit.
2. Assemble the position monitoring kit including switch bracket.
3. Install the position monitoring kit from below on the lift frame.
4. Install the proximity switches.

Proximity switches	Query
A	WT
B	Upper end position
C	Lower end position

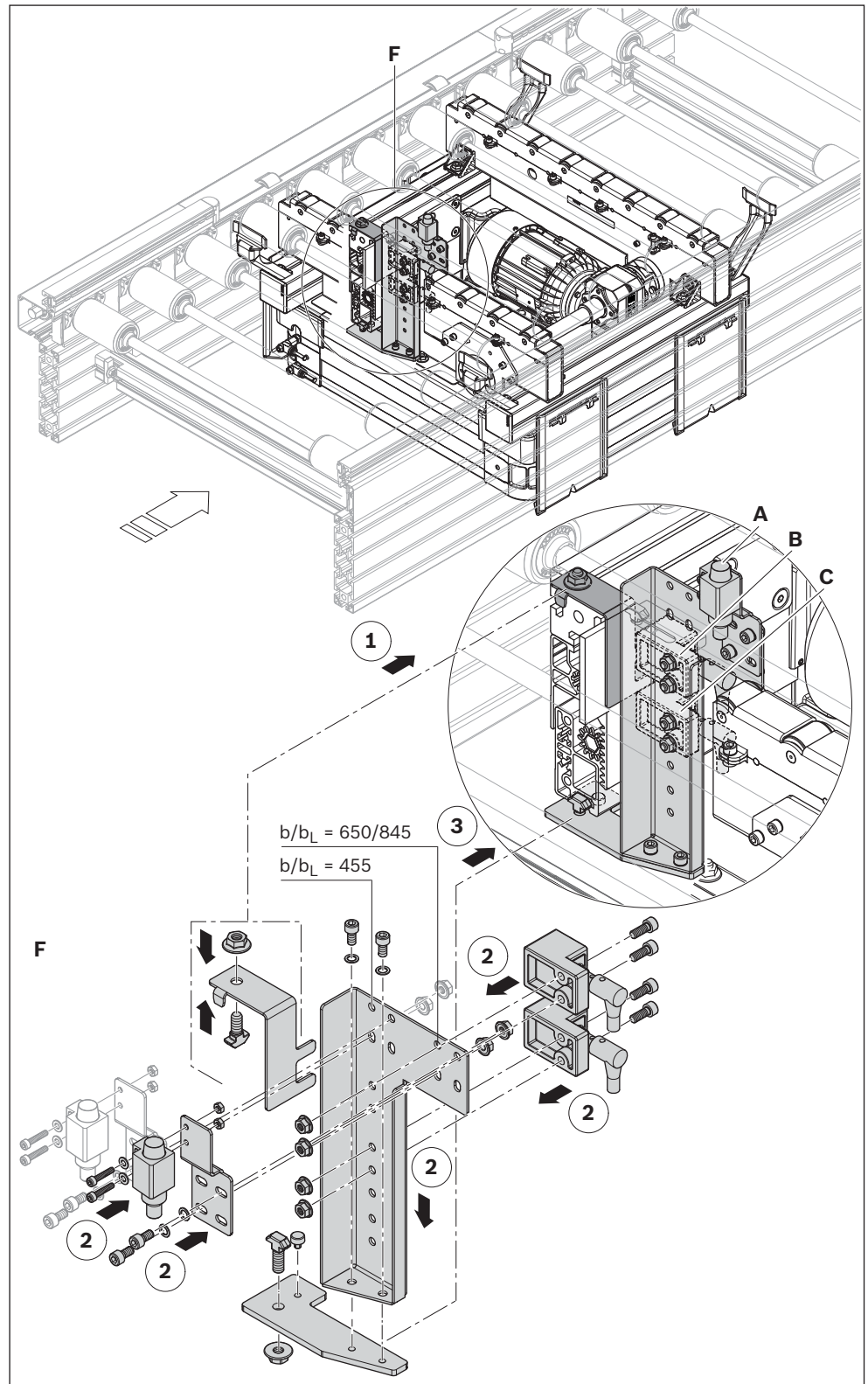


Fig. 17: Assembling the position monitoring kit (example shown here with standard motor mounting)

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7.12.2 Assembling the VE 5/... stop gate

Required accessories

- Stop gate VE 5/D-300
3 842 998 517
- Stop gate VE 5/D-1000
3 842 998 805

- Install the VE 5/... stop gate (for the mounting dimensions see page 21).

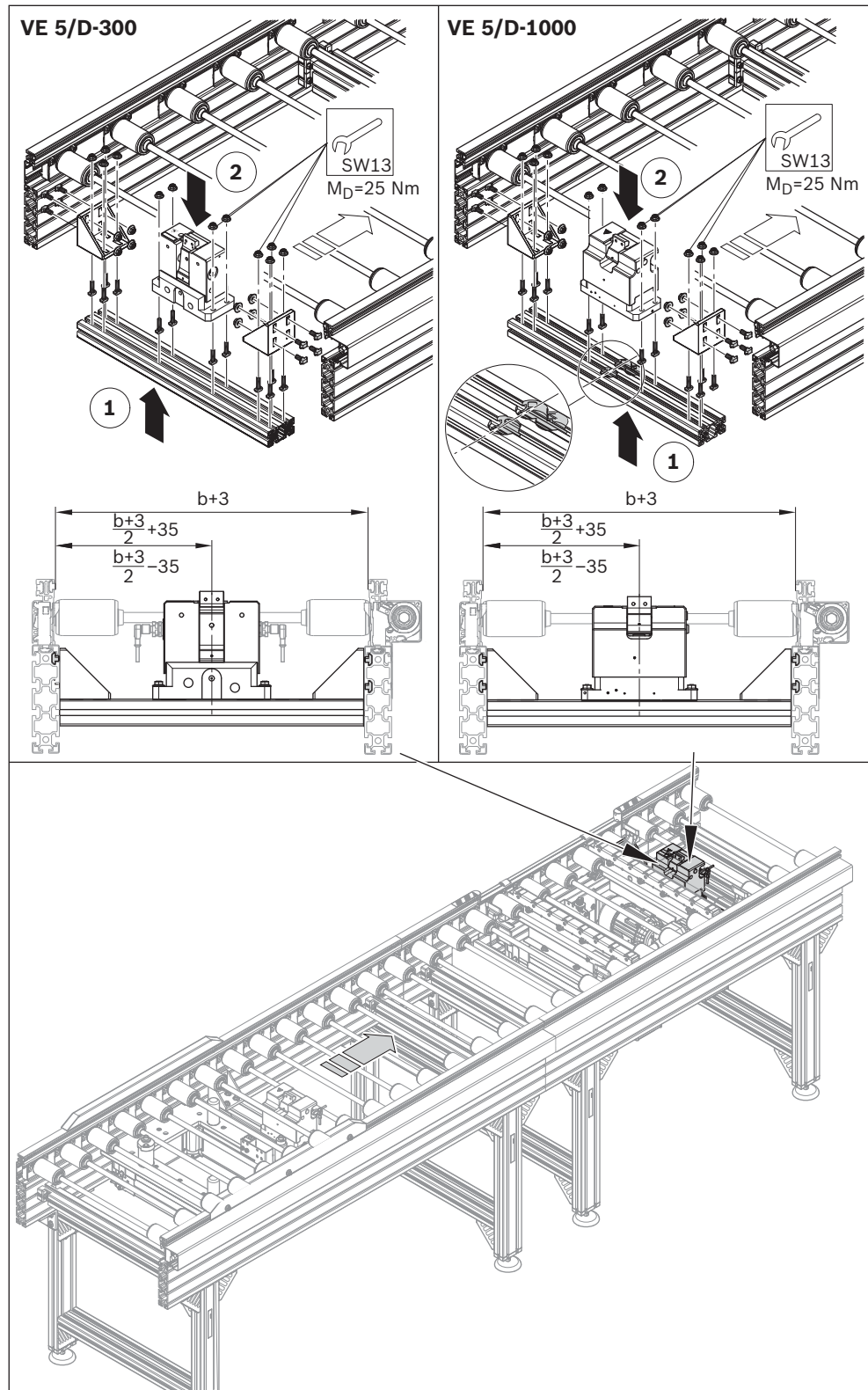


Fig. 18: Assembling the VE 5/... stop gate on the HQ 5

7.12.3 Connecting the transverse section (ST 5/XH, ST 5/H: 3 842 545 869)



Please note:

- If a circuit consists solely of lift transverse units, the transverse sections are mounted directly on the longitudinal section.
- For parallel transverse sections with lift transverse units and curves / diverters, use the electrostatic discharges **3 842 998 604** or **3 842 998 605** to offset the length.
- Always support the transverse section, irrespective of its length.
- Height difference between main section and transverse section: 4.5 mm.

1. Close off open section ends with end plates and end caps.
2. Mount the transverse section or connection bridge (for the mounting dimensions see page 21).
Assembly tip: Insert a bolt or screw in the support bracket to act as a stop for the transverse section.
3. Only when directly connecting a transverse section: Install the guide kit (A, 3 842 545 975).

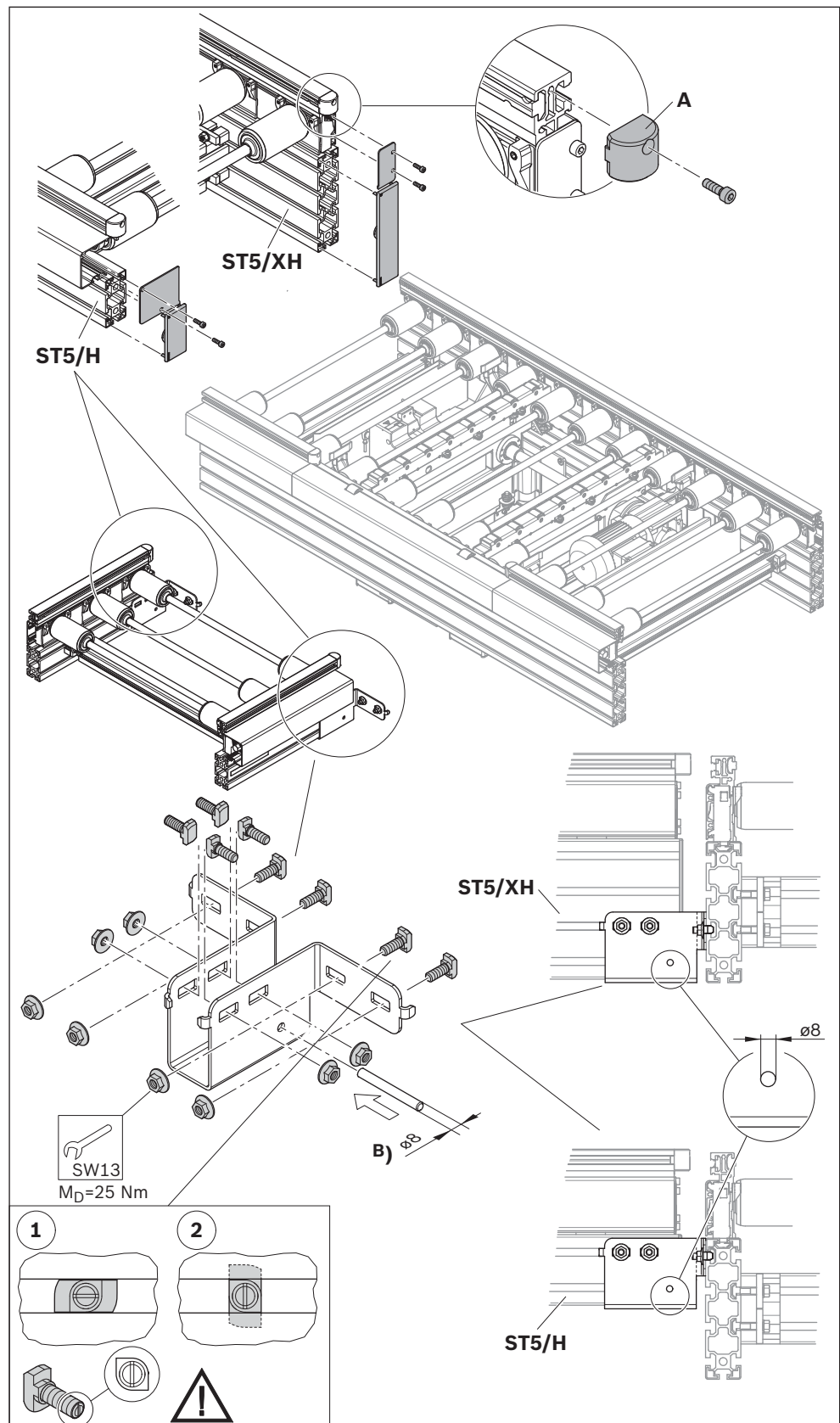


Fig. 19: Connecting the transverse section on the HQ 5 (ST 5/XH, ST 5/H: 3 842 545 869)

7.12.4 Connecting the transverse section (ST 5/OC: 3 842 546 979, ...547 398)



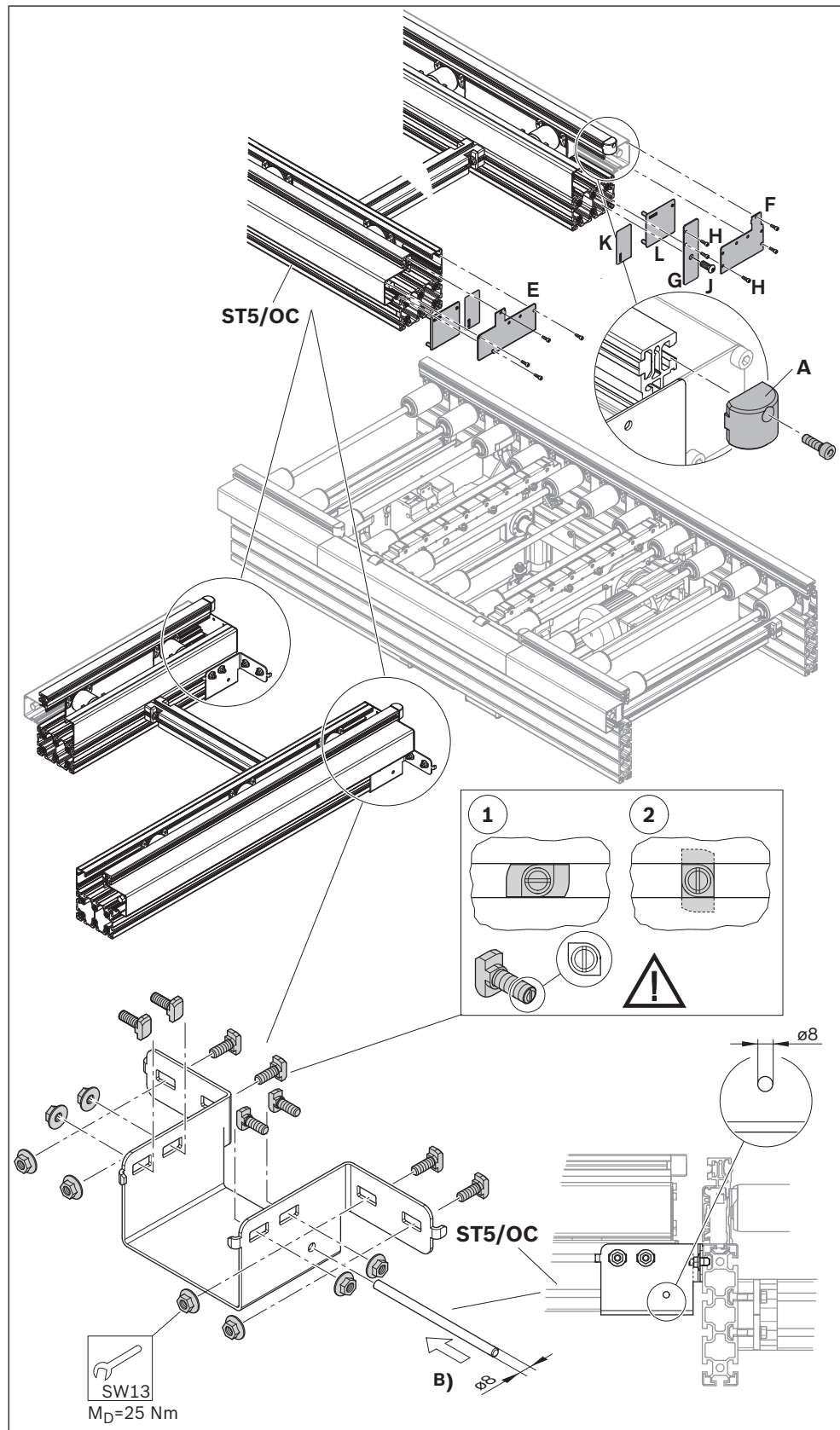
Please note:

- If a circuit consists solely of lift transverse units, the transverse sections are mounted directly on the longitudinal section.
- For parallel transverse sections with lift transverse units and curves / diverters, use the electrostatic discharges **3 842 998 604** or **3 842 998 605** to offset the length.
- Always support the transverse section, irrespective of its length.
- Height difference between main section and transverse section: 4.5 mm.

1. Close off open section ends with end plates and end caps.
2. Mount the transverse section or connection bridge (for the mounting dimensions see page 21).

Assembly tip: Insert a bolt or screw in the support bracket to act as a stop for the transverse section.

3. Only when directly connecting a transverse section: Install the guide kit (A, 2x).



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Fig. 20: Connecting the transverse section on the HQ 5 (ST 5/OC: 3 842 546 979, ...547 398)

7.12.5 Assembling the DA 5/... damper

Required accessories

- Damper DA 5/200
3 842 545 128
- Damper DA 5/D1000
3 842 545 130

- Installing the DA 5/... damper and stop (for the mounting dimensions see page 21).

Use a WT 5 workpiece pallet as a positioning aid:

- Align the DA 5/... damper with the center of the workpiece pallet.
- Align the stop with the guide rollers of the workpiece pallet.
- If applicable, Assemble the lateral guide cover (A) (see page 41).



Please note:

The stop (B) is no longer required when the lateral guide cover (A) is installed.

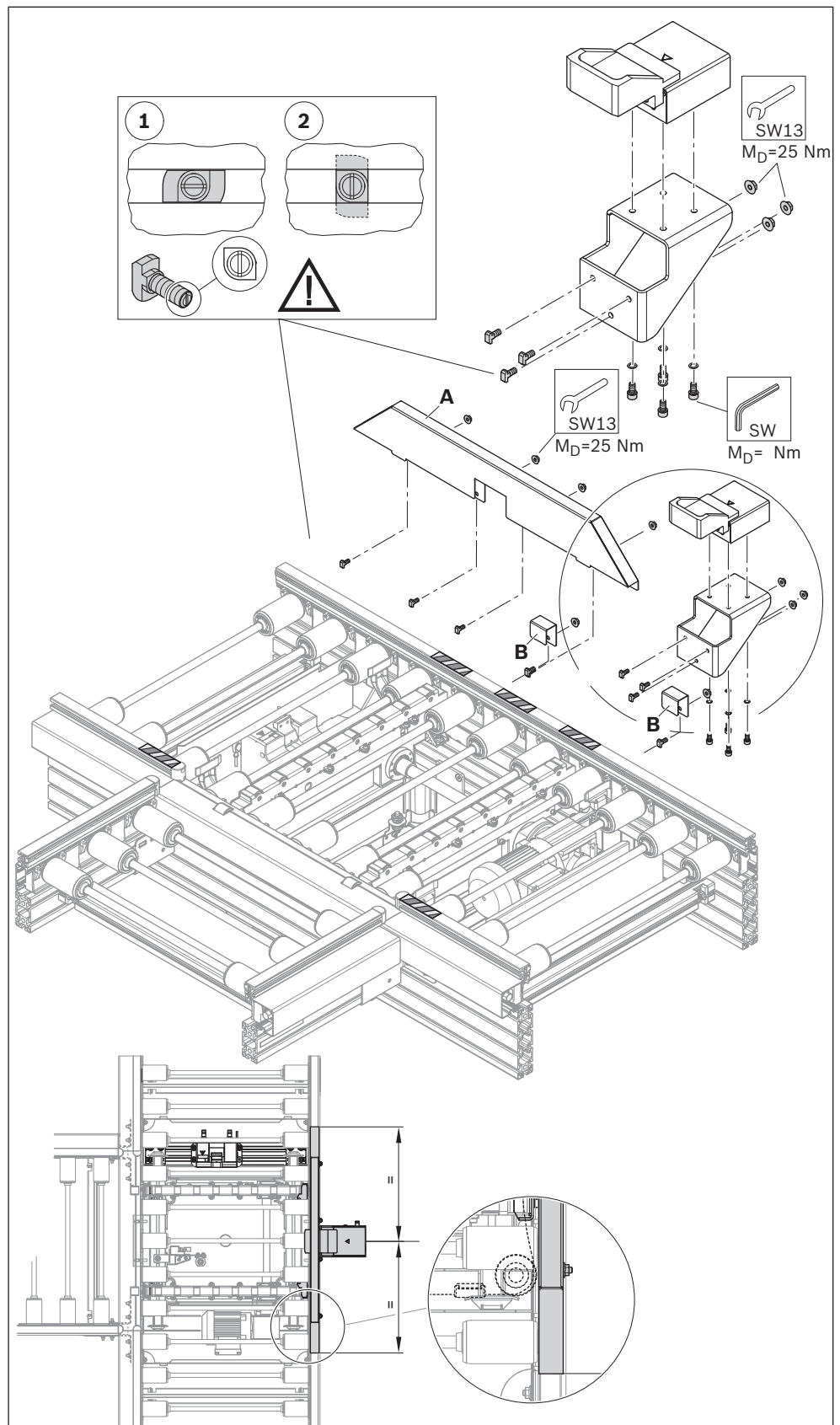
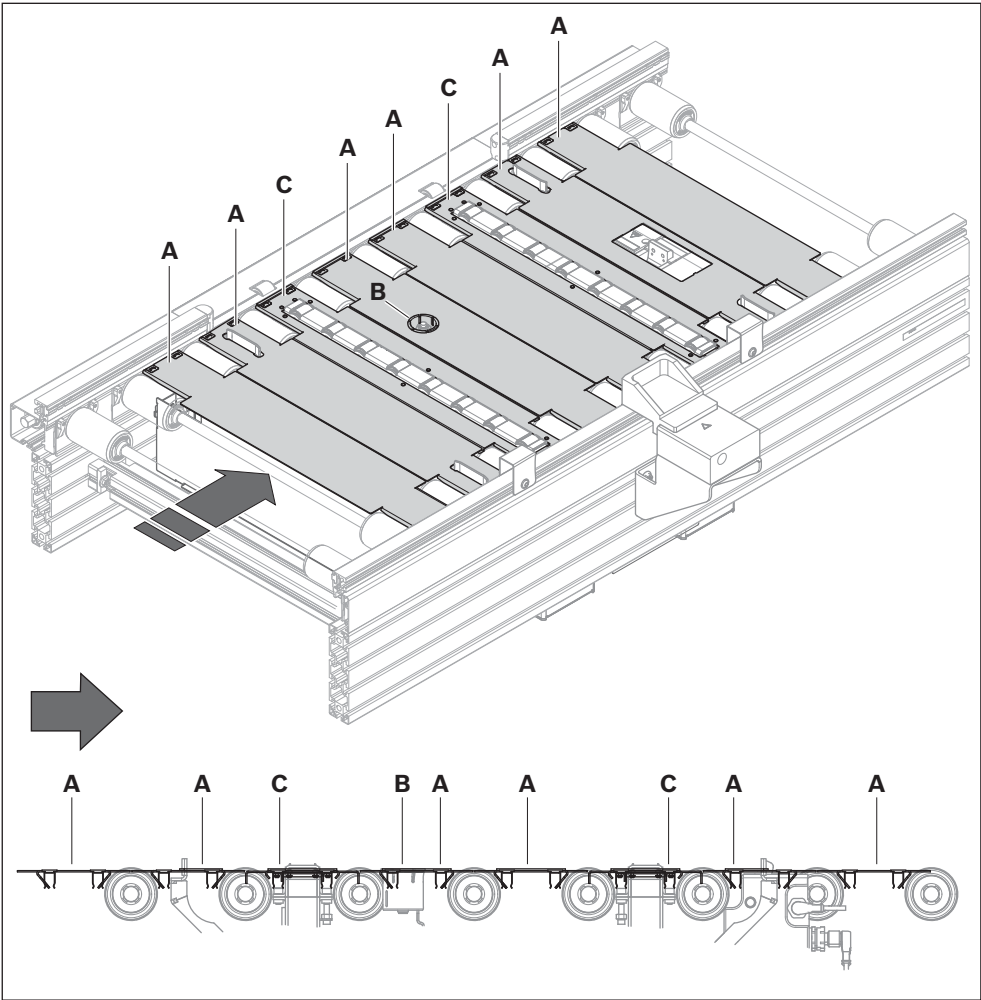


Fig. 21: DA 5/... damper on the HQ 5

7.12.6 HQ 5 lift transverse unit protective covers



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Fig. 22: HQ 5 lift transverse unit protective covers

b _L [mm]	b ₀ [mm]	p [mm]	A		B		C	
455	455	130	8x	3 842 545 404	1x	3 842 545 966	2x	Included in the scope of delivery, preassembled.
455	650	130	9x	3 842 545 404	1x	3 842 545 966		
455	650	195	6x	3 842 545 609	1x	3 842 545 966		
650	650	130	9x	3 842 545 405	1x	3 842 545 966		
650	650	195	6x	3 842 545 360	1x	3 842 545 966		
650	845	130	11x	3 842 545 405	1x	3 842 545 966		
650	845	195	7x	3 842 545 360	1x	3 842 545 966		
650	845	260	5x	3 842 545 612	1x	3 842 545 966		
845	845	130	11x	3 842 545 361	1x	3 842 545 966		
845	845	195	7x	3 842 545 362	1x	3 842 545 966		
845	845	260	5x	3 842 545 363	1x	3 842 545 966		
845	1040	130	12x	3 842 545 361	1x	3 842 545 966		
845	1040	195	8x	3 842 545 362	1x	3 842 545 966		
845	1040	260	6x	3 842 545 363	1x	3 842 545 966		
845	1040	325	4x	3 842 545 403	1x	3 842 545 966		

7.12.7 Protective cover cutouts for an HQ 5

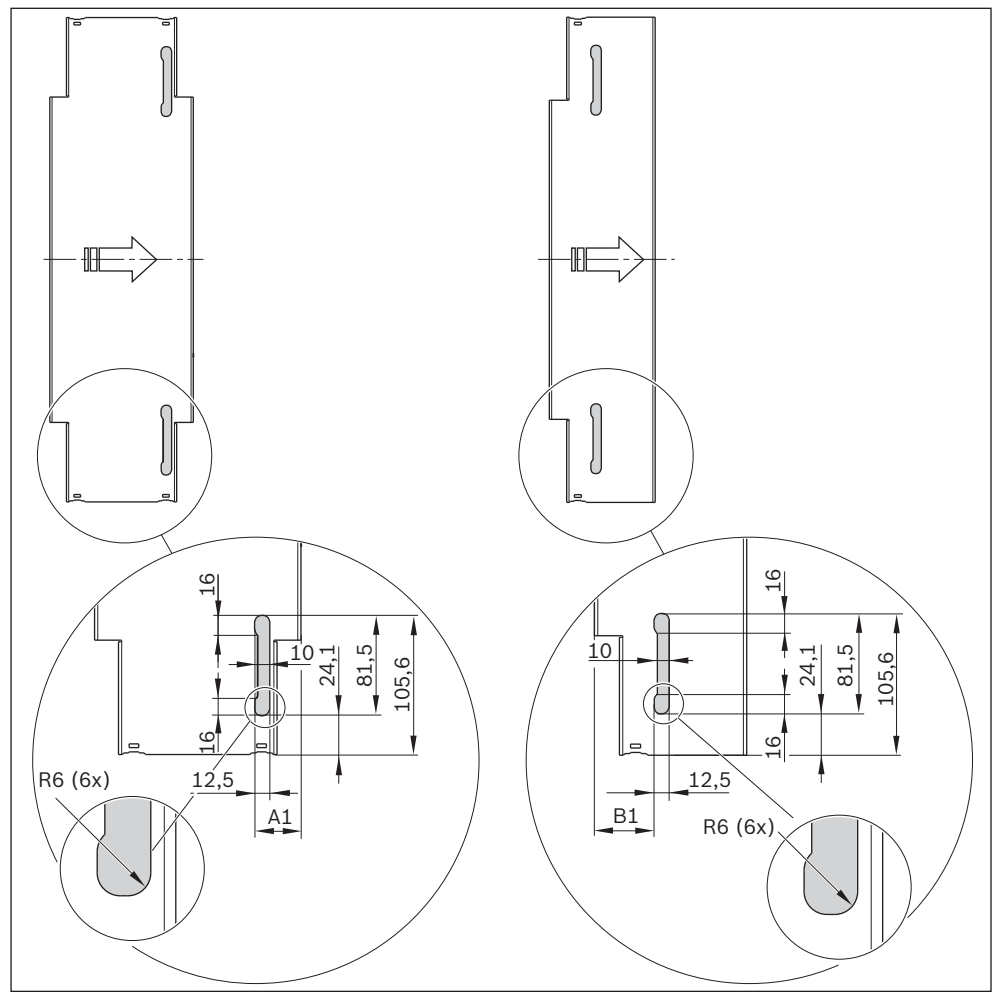


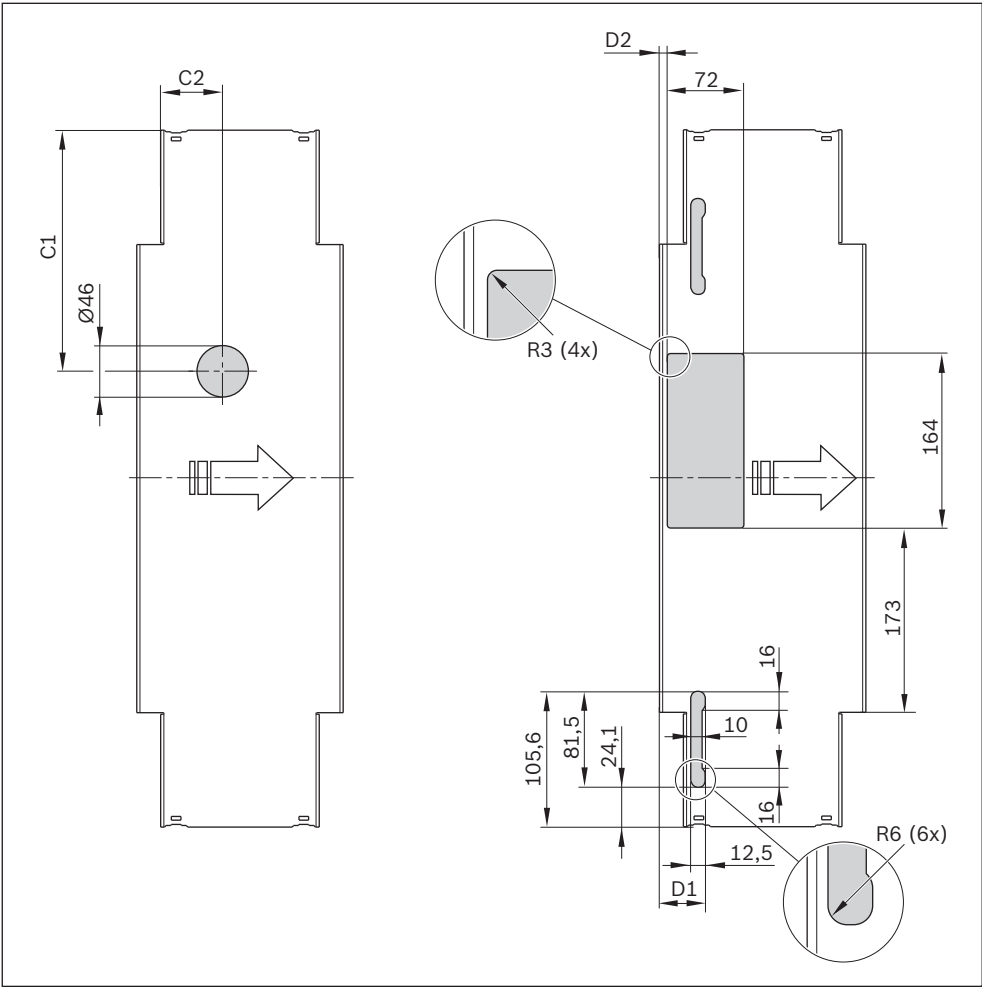
Fig. 23: Protective cover cutouts for an HQ 5 (1/2)



Please note:

Illustration = shown from above. Cutouts are made from the bottom side. If the cutout intersects a joint, first cut through the bar on the bottom side near the cutout.

b _{WT} [mm]	l _{WT} [mm]	p [mm]	A1 [mm]	B1 [mm]
455	455	130	43	—
455	650	130	75.5	—
455	650	195	43	—
650	650	130	75.5	—
650	650	195	43	—
650	845	130	43	—
650	845	195	43	—
650	845	260	43	—
845	845	130	43	—
845	845	195	43	—
845	845	260	43	—
845	1040	130	75.5	—
845	1040	195	43	—
845	1040	260	—	53.5
845	1040	325	43	—



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Fig. 24: Protective cover cutouts for an HQ 5 (2/2)



Please note:

Illustration = shown from above. Cutouts are made from the bottom side. If the cutout intersects a joint, first cut through the bar on the bottom side near the cutout.

b _{WT} [mm]	l _{WT} [mm]	p [mm]	C1 [mm]	C2 [mm]	D1 [mm]	D2 [mm]
455	455	130	166.15	66.7	43	8
455	650	130	166.15	98.7	75.5	40.5
455	650	195	166.15	66.7	43	8
650	650	130	230	98.7	75.5	40.5
650	650	195	230	66.7	43	8
650	845	130	230	66.7	43	8
650	845	195	230	49.7	43	8
650	845	260	—	—	43	8
845	845	130	230	66.7	43	8
845	845	195	230	49.7	43	8
845	845	260	—	—	43	8
845	1040	130	230	98.7	75.5	40.5
845	1040	195	230	66.7	43	8
845	1040	260	230	—	75.5	40.5
845	1040	325	—	98.7	43	8

7.12.8 Safety guard under workpiece pallet 5

- Attach the rubber tape in the marked locations (1) as finger protection against reaching under the workpiece pallet.

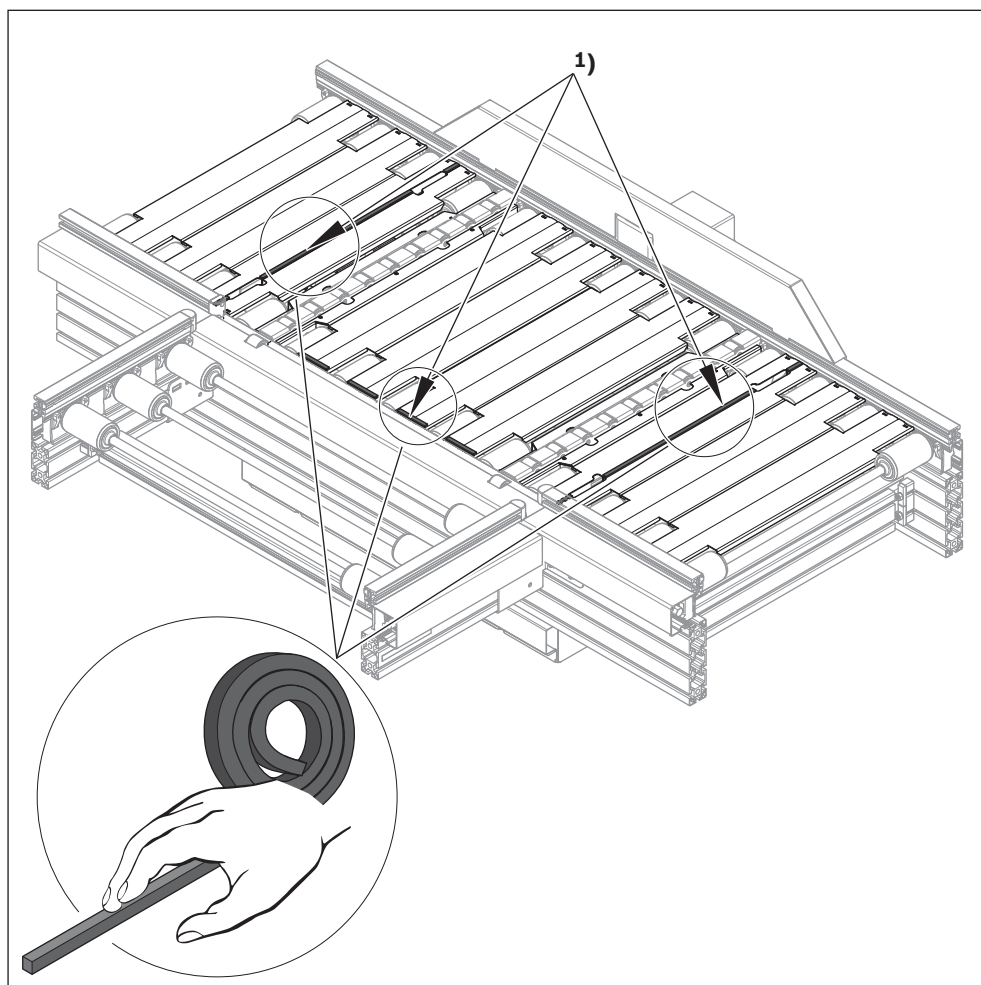


Fig. 25: Assembly of rubber band as safety guard under workpiece pallet 5

7.12.9 Assembling protective covers for the section ends

! CAUTION

Do not walk on the protective covers!

Protective covers are only safety guards to prevent hand injuries.

- Do not step on protective covers.



Please note:

Working ranges must be secured with protective covers in accordance with DIN EN 619. The user shall provide openings with a circumferential gap of ≤ 5 mm in the protective covers for the stop gates, switch brackets and identification system.

Dimensioned illustrations of the openings, suitable for the installation of

- Stop gate
 - Switch brackets and identification systems
 - Positioning unit
- can be found in the corresponding sections.

1. Close off the open section ends with end plates and end caps.
2. Put the spring elements on the protective covers.
3. Swing the protective cover into the section.

The spring elements snap into place in the centering lugs of the bearing pedestals.

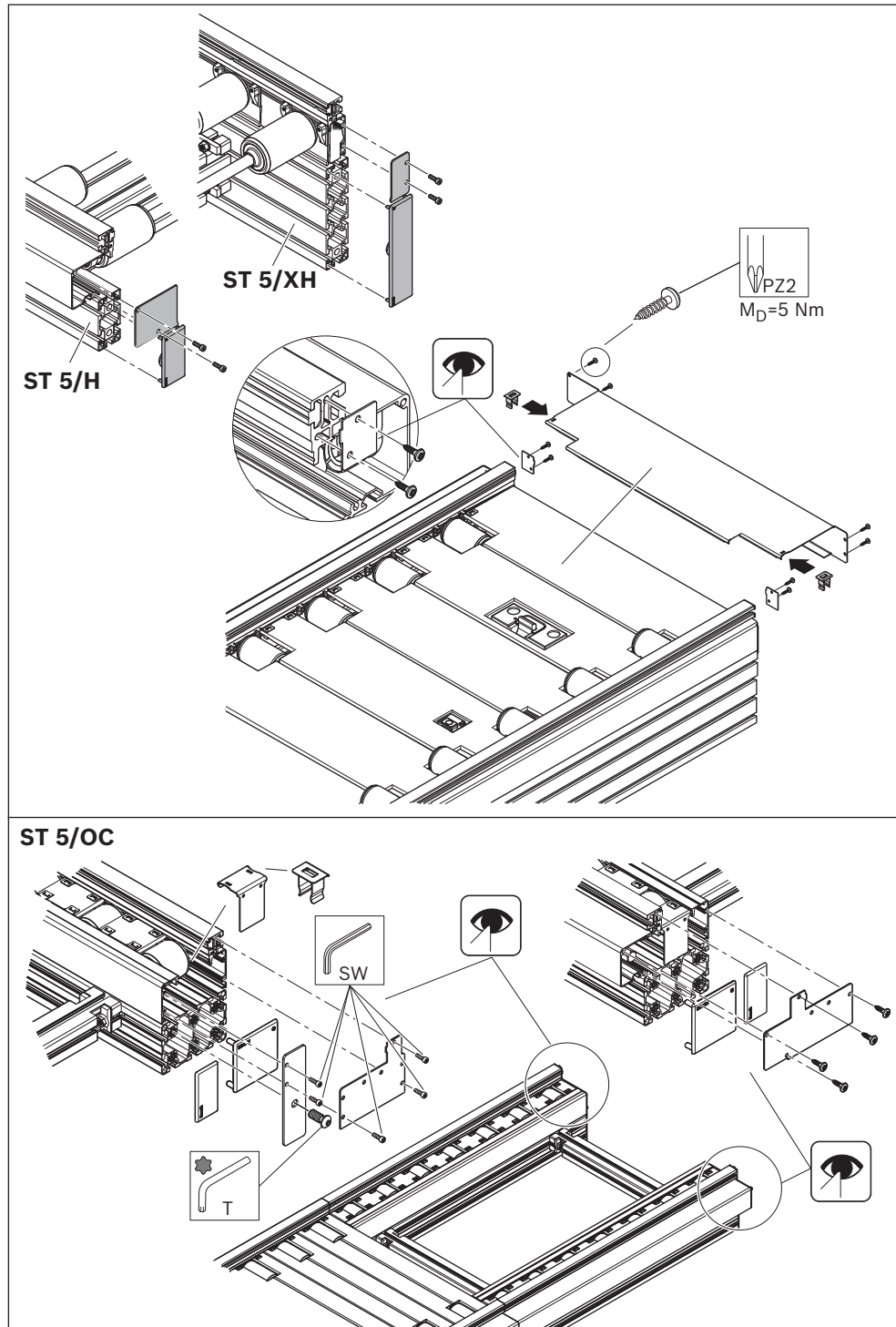


Fig. 26: Protective covers for the section ends of an HQ 5

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7.12.10 HQ 5 lateral guide cover

- Install the cover on the lateral guide.
 - Cover A with a slot for DA 5/... dampers
 - Cover B without a slot

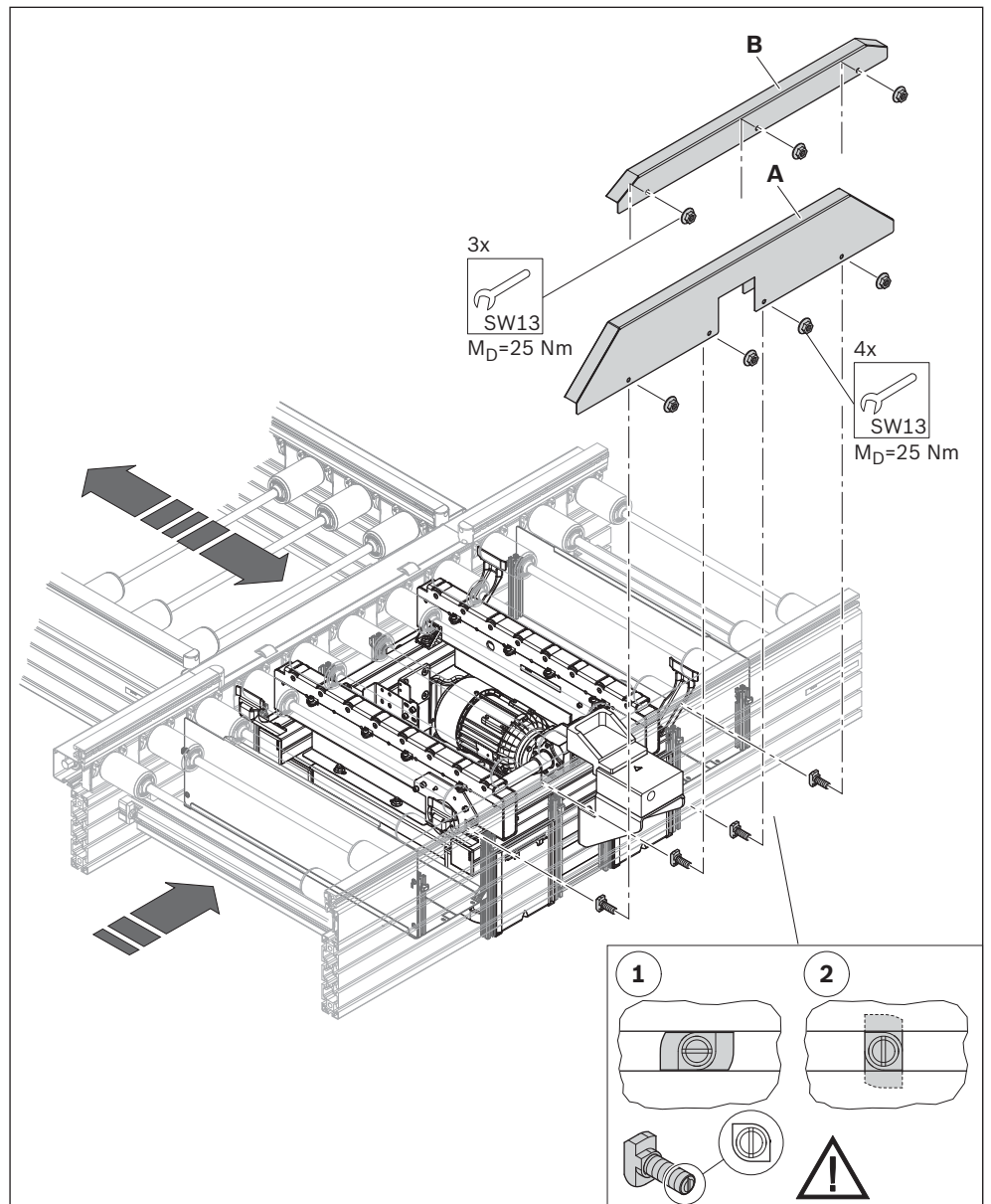


Fig. 27: HQ 5 lateral guide cover

7.12.11 Pneumatic connection of the product



WARNING

High pneumatic pressure!

Risk of severe injury or death.

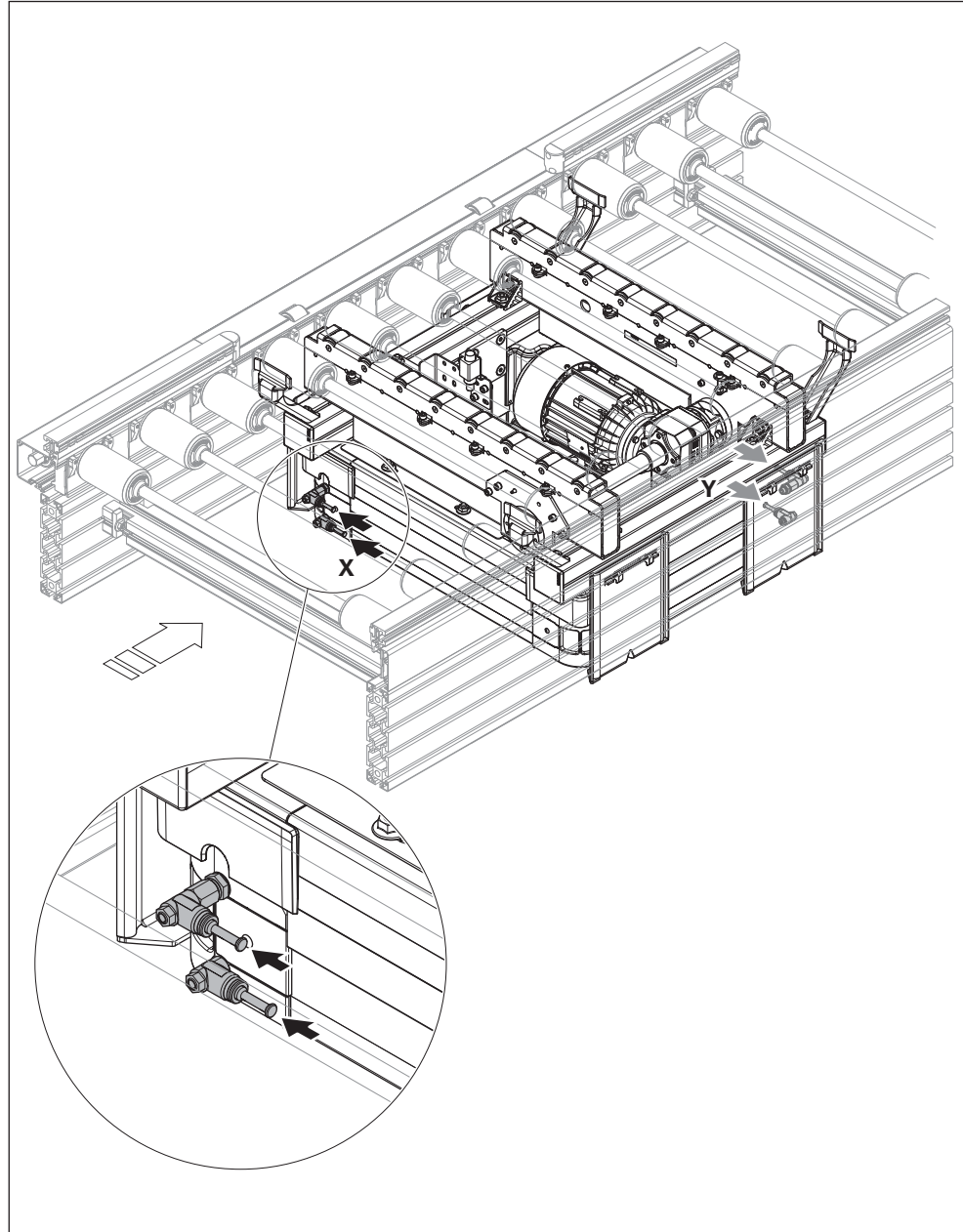
- ▶ Switch off the compressed air supply to the relevant system component before assembling, disassembling or connecting the product to the pneumatic system.
- ▶ Secure the system against being unintentionally switched on again.

- For the compressed air and operating pressure specifications, see page 61.



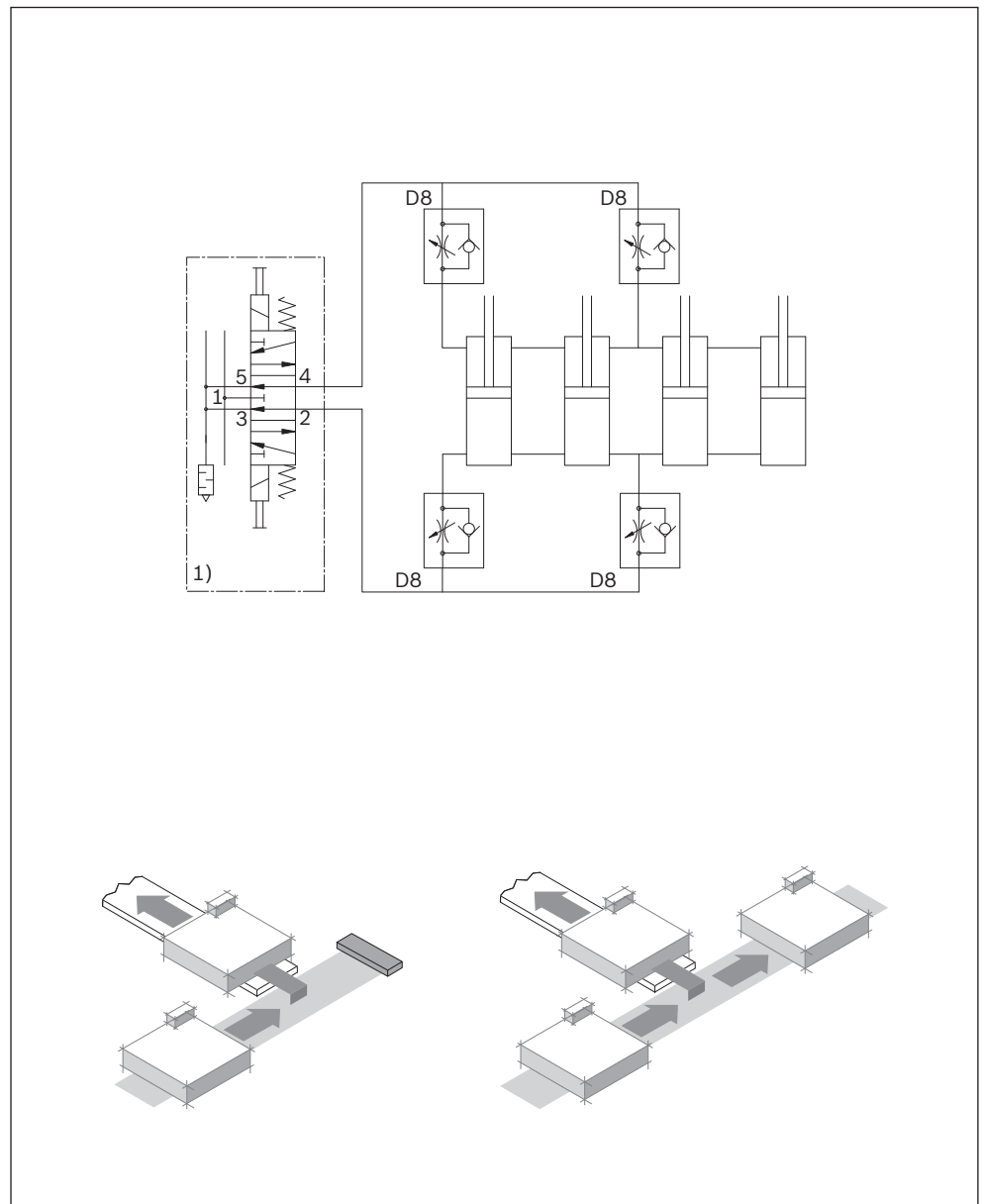
Please note:

- Connect the pneumatics at X and Y. This charges the system more quickly and evenly (better synchronization).
- The pneumatic hoses on all 4 ports must be the same length!
- ▶ Connect the lift transverse unit to the compressed air supply.



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Fig. 28: Pneumatic connection (here example HQ 5/XH)



562 829-16

Fig. 29: Pneumatic connection diagram

7.12.12 Electrical connection of the product



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.

- Choose control and sensor elements in accordance with EN ISO 13849. Factor in the load being transported and the transport speed.
- Electrical work may only be carried out by qualified personnel! (e.g. connecting the motor)
- Comply with the standard DIN EN 60204 (previously: VDE regulation VDE 0100) for Germany, or the corresponding regulations in the country of use.

Motor connection

- Observe the available line voltage!
- Observe the electrical connector information on the motor nameplate, see Fig. 30 on page 45.
- Connect the motor in either a wye or a delta configuration in accordance with the wiring diagrams, see Fig. 31 on page 45, and the wiring diagram in the terminal box.
- The motor is fitted with a bimetal temperature monitoring switch (potential-free thermal contact, 230 V AC, 300 mA). Wire the motor so that it is de-energized when the switch is triggered.
- Insert the cable so that it cannot get damaged during operation.
- Optional motor connection with plug (AT = S), see Fig. 32 on page 45. Observe the pre-fuse!

Checking the rotational direction of the motor

- Let the system run for no more than 2 secs., then ensure the correct rotational direction of the motor.
- Switch any two wires (U1, V1 or W1, see Fig. 31 on page 45) to change the motor's rotational direction.



Please note:

For motors that come with a fitted plug, correct the rotational direction in the control cabinet or at the socket contact (socket side). This makes replacement easier.

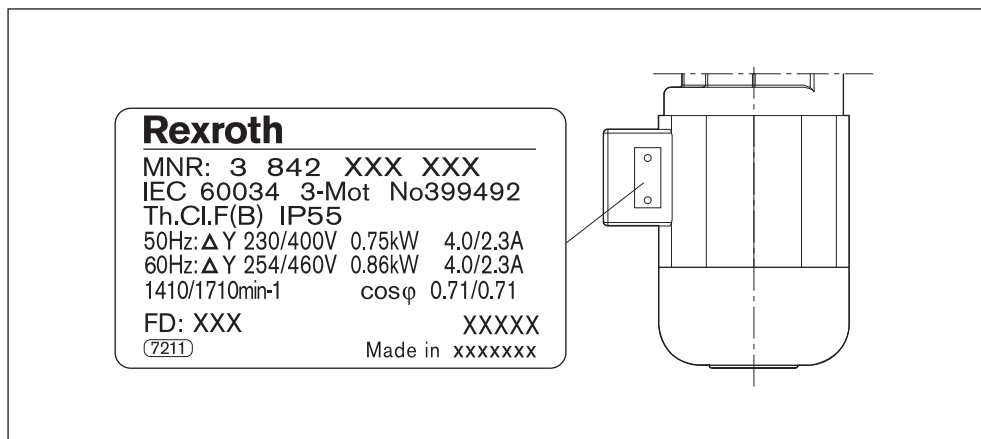


Fig. 30: Motor nameplate (example)

Installation_A

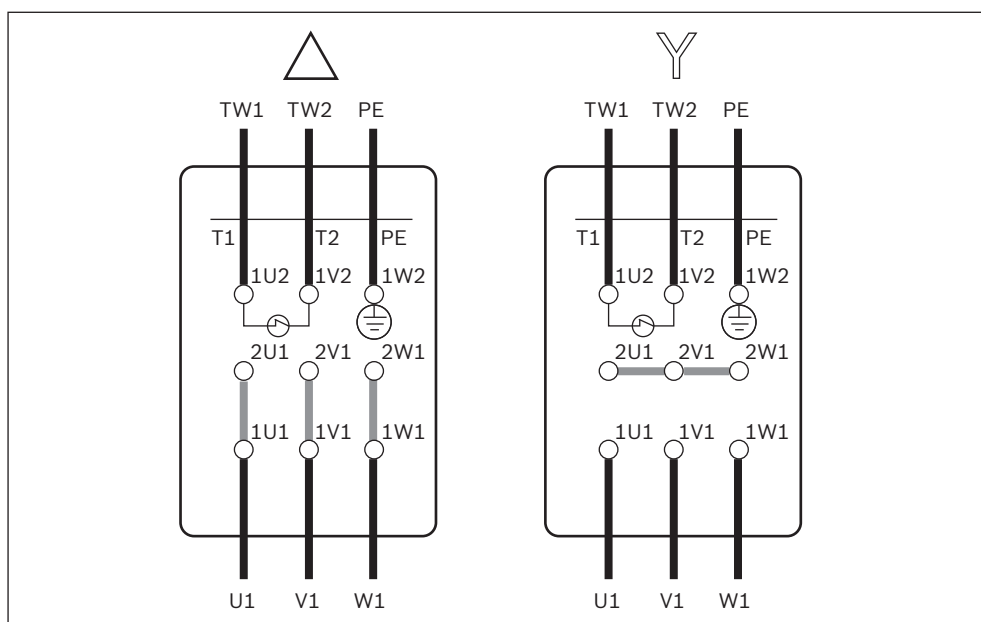


Fig. 31: Delta/ye wiring diagrams

Installation_DY

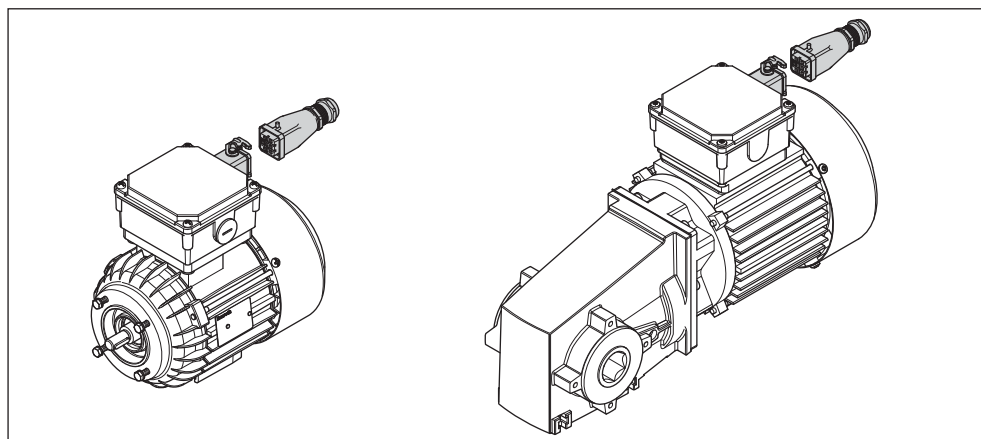


Fig. 32: Optional motor connection with plug (AT = S)

Installation_IEC

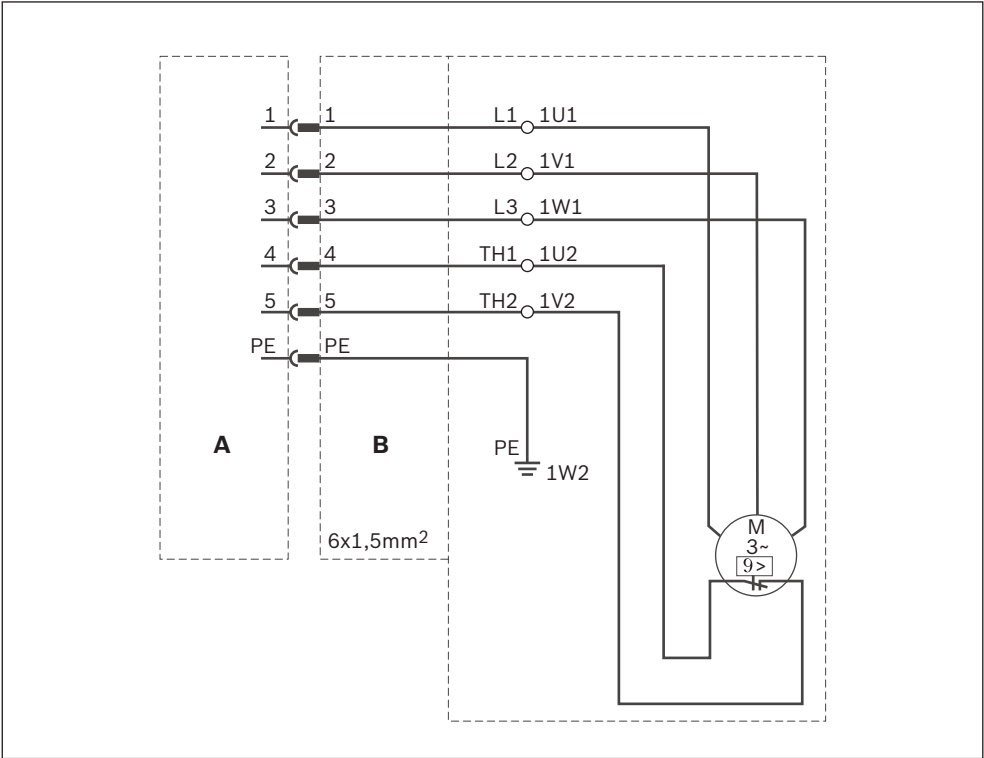


Fig. 33: Motor connection with plug (AT = 1), circuit diagram
A: Connection cable side
B: Motor side

The push-in fitting consists of UL components.

Connection list

Connection terminals, motor 3~	Pin no.	Code
U1	1	L1
V1	2	L2
W1	3	L3
TW1	4	Th1
TW2	5	Th2
	PE	PE

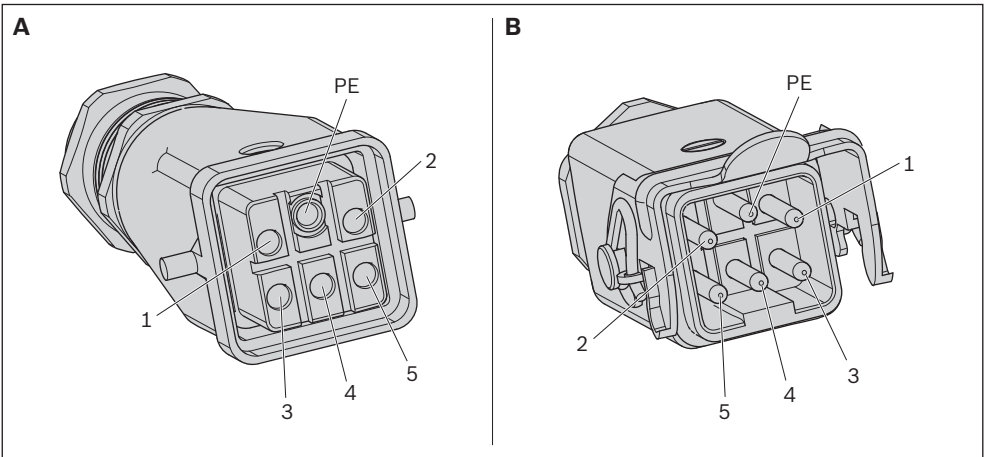


Fig. 34: Motor connection with plug (AT = 1), push-in fitting
A: Connection cable side
B: Motor side

7.12.13 Assembling the protective case



Please note:

- Depending on the assembly situation, the protective case can be shortened several times.
- When assembling the HQ at the start/end of the conveyor section and division $p = 130$, the lower horizontal guard plate can be shortened.
- The guard plates are perforated to make them easier to remove.
- Protect the cut surface against corrosion!
- Re-assemble the shortened individual plates.

A: Separate this part at the installation position at the start / end of the section and division $p = 130$.

B: Separate this part if the protective case is to be shortened to a minimum dimension (only if no stop gate or external motor is used).

C: Separate this part at division $p = 195$ and where the plate encounters a roller position and assemble the plate shifted downwards.

- Assemble the protective case according to Fig. 35. The gap dimensions must not exceed 5 mm.

¹⁾ ST 5/H or AS 5/H only

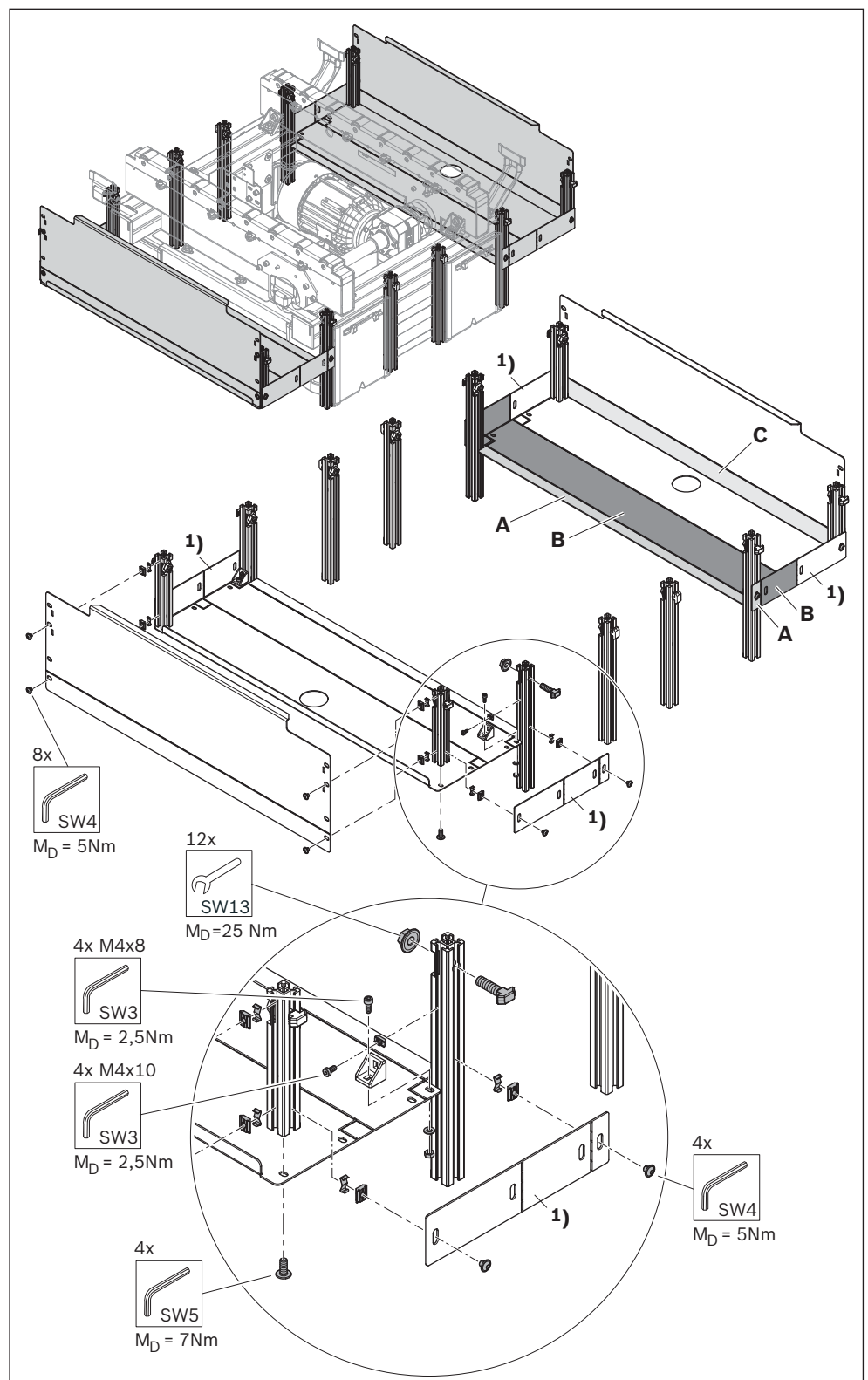


Fig. 35: Assembling the protective case

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8 Commissioning

8.1 Initial commissioning



CAUTION

Sudden movements, falling workpiece pallets

Risk of injury caused by sudden movements and falling objects.

- Make sure that the product has been assembled properly by qualified personnel (see page 8) before starting it up.

NOTICE

Malfunctions due to incorrect assembly and commissioning

The product can get damaged, shortening its service life.

- Commissioning requires basic mechanical, pneumatic and electrical knowledge.
- The product should only be started up by qualified personnel (see page 8).

- Before the initial commissioning or re-commissioning of a conveyor system, carry out a risk assessment in accordance with DIN EN ISO 12100.
- Before the initial commissioning, ensure that there are no protruding or sharp-edged parts that may be a hazard to personnel working or moving in the area.
- According to EU Machinery Directive 2006/42/EC, you must equip the transfer system with EMERGENCY STOP devices.
- 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 the electrical and pneumatic connections are either in use 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 ISO 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 tip 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 start up a product that has been completely installed.

8.2 Residual risks

Table 8: Residual risks

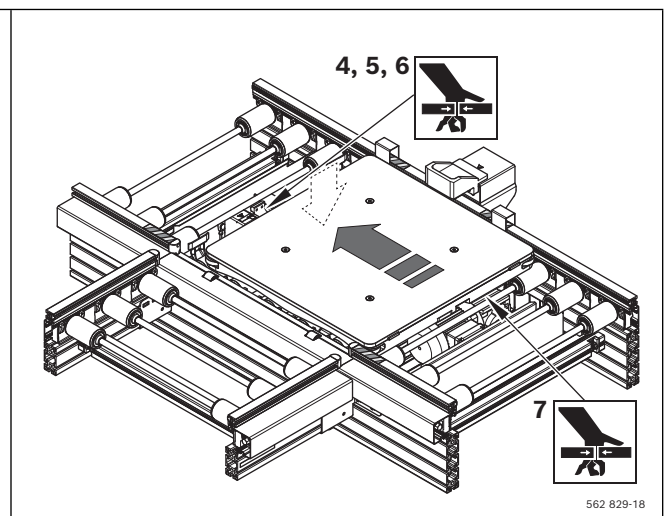
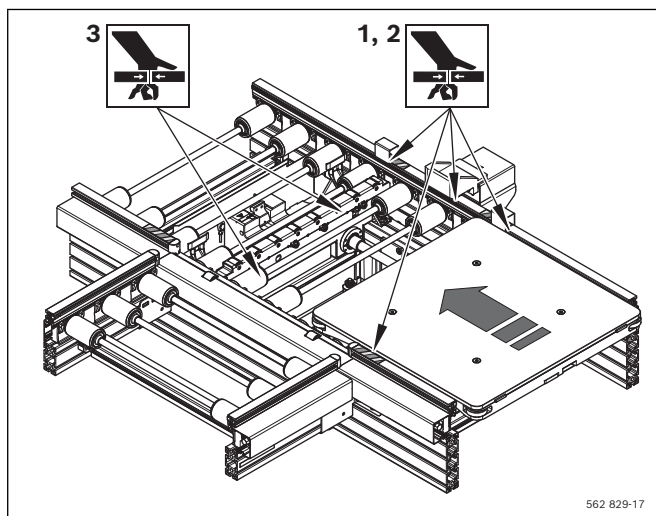
	Location	Situation	Hazard	Action
1	Between workpiece pallet and lateral guide.	Limbs can become trapped	 Crushing	Do not reach into the system while it is running. Safety measure required: e.g. safety guard.
2	Between workpiece pallet and damper/stops.	Limbs can become trapped	 Crushing	Do not reach into the system while it is running. Safety measure required: e.g. safety guard.
3	Between workpiece pallet and transverse conveyor module / rollers.	Limbs can become trapped	 Crushing	Do not reach into the system while it is running. Safety measure required: e.g. use protective covers (see page 36).
4	Between workpiece pallet and stop gate latch during approach	Limbs can become trapped	 Crushing	Pre-separate before working ranges. Do not reach into the system while it is running. Danger zone is to be marked.
5	When lowering: between workpiece pallet and stop gate	Limbs can become trapped	 Crushing	Do not reach into the system while it is running. Danger zone is to be marked.
6	When lowering: between workpiece pallet and stop gate	Limbs can become trapped	 Crushing	Do not reach into the system while it is running. Safety measure required: e.g. safety guard.
7	When lowering: between workpiece pallet and protective covers.	Limbs can become trapped	 Crushing	Do not reach into the system while it is running. Safety measure required: e.g. safety guard.



Please note:

The lift transverse unit is not designed for use in work areas.

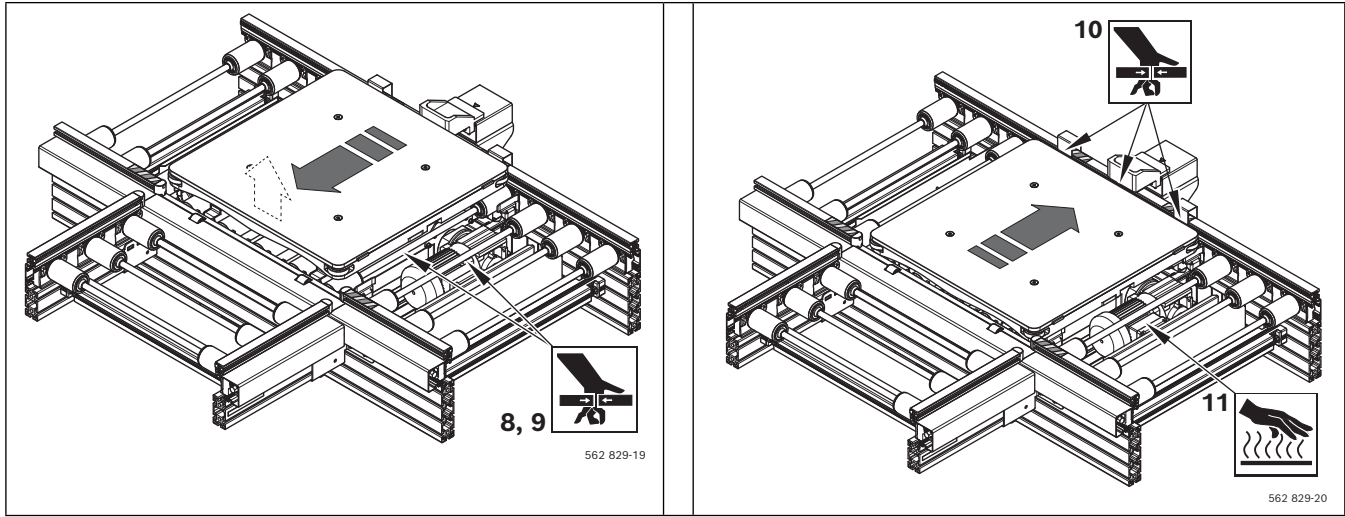
Further constructive measures are to be taken by the user for its use in work areas.



	Location	Situation	Hazard	Action
8	When lifting: between HQ lifting plate and rollers.	Limbs can become trapped	 Crushing	Do not reach into the system while it is running. Safety measure required: e.g. use protective covers (see page 36).
9	When lifting: between HQ motor and rollers.	Limbs can become trapped	 Crushing	Do not reach into the system while it is running. Safety measure required: e.g. use protective covers (see page 36).
10	Between infeeding workpiece pallet and damper/stops.	Limbs can become trapped	 Crushing	Do not reach into the system while it is running. Danger zone is to be marked.
11	Motor	Touching hot surfaces above 65 °C	 Burning	Install appropriate guards. Let the unit cool down for at least 30 minutes before performing maintenance and/or repair work.



Please note:
The lift transverse unit is not designed for use in work areas.
Further constructive measures are to be taken by the user for its use in work areas.



8.3 Re-commissioning after a standstill
Follow the steps outlined for the initial commissioning.

**Please note:**

- Mount the corresponding workpiece pallet WT (load) before setting the lifting speed.
- During configuration, aim at an even and smooth lifting movement of the HQ
- Throttle the supply air evenly using both throttles to adjust the speed of the lifting movement.
- Rotate in the "+" direction
The movement is slower.
- Rotate in the "-" direction
The movement is faster.

! WARNING

Sudden movements

Risk of severe injury or death.

- Final commissioning may only be performed with protective devices in place. These must be provided by the customer.

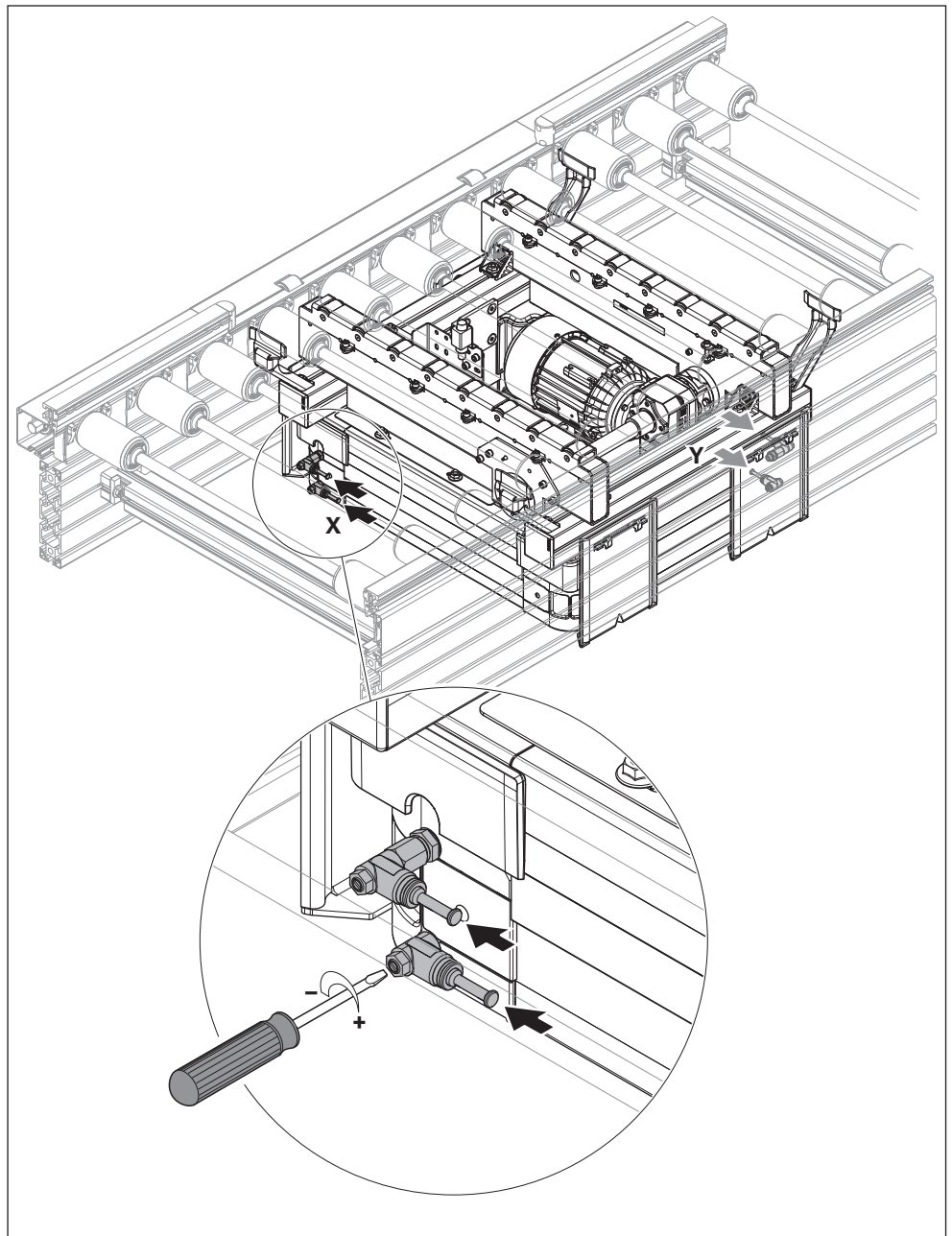


Fig. 36: Setting the lifting speed (example shown here on HQ 5/XH)

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

- Individual components are subject to unavoidable wear by their very nature. Constructive measures and the selection of materials help ensure functional reliability over the full service life. However, wear is also dependent on the operating, maintenance and ambient conditions at the place of use (resistance, contamination).
- Overloading the conveyor sections can cause the conveyor medium to malfunction and lead to the premature breakdown of motors and gears.
- If pneumatically activated components are overloaded, it is not possible to guarantee their function.

9.1.2 Measures to reduce wear

The following obvious measures will reduce wear:

- Switch off the conveyor section during line downtime, e.g. during breaks, at night and on weekends.
- Do not select a higher speed for the conveyor section than that required for the corresponding function.
- Avoid contamination caused by abrasive media, reduce contamination by cleaning on a regular basis.

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 are both loaded and unloaded.

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

- The permitted congestion length before stop gates.
- Damper functionality.
- dampened stop gates.

9.1.4 Environmental factors

- 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, aggressive cleaning agents, solvents or brake fluid.
- Avoid contact with highly reactive acidic or alkaline materials.
- Contamination can greatly increase wear – 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, waste parts, etc.). Maintenance intervals should be significantly shortened under these circumstances.

- 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 a lubricating effect can lead to a reduction in the drive power that is transmitted via friction.In such instances, special care must be taken when planning the system, and the maintenance intervals must be correspondingly shortened.

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 ISO 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 tip switches, and if there is no possibility of interference from other switching devices.

10.1 Cleaning and care

NOTICE

Failure of bearings

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

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

10.2 Inspection

Lift unit

Check the pneumatic connections regularly for leaks.

10.3 Maintenance

CAUTION

Sudden movements, falling workpiece pallets

Risk of injury caused by sudden movements and falling objects.

- ▶ Only work on the conveyor chain when the conveyor unit is stationary.
- ▶ Secure the system against being unintentionally switched on again.

Bearings

The bearings have lifelong lubrication and are maintenance-free under normal conditions of use.

Gear

The gear is maintenance-free.

Motor

To ensure adequate cooling of the motors, regularly remove dirt and dust deposits:

- From the surface of the motor
- From the intake openings on the fan hood
- From between the cooling ribs

The cleaning intervals depend on the ambient and operating conditions.

10.3.1 Toothed belt

The toothed belts of the HQ 5 lift transverse unit are oiled at the factory prior to delivery.

Periodically perform a visual inspection for signs of wear, especially in the area of the weld seam.

10.4 Replacing wear parts



Depending on the system width and the installation situation, it may be necessary to remove the rollers (see page 59) or the HQ 5 from the conveyor unit for better accessibility.

Required tools

- Hex wrenches (open-ended spanner), size 13, 24
- Allen keys, sizes 3, 4, 5, 6.

Required accessories

- Disassembly tool to remove the covers (on the king shaft and passive side):
3 842 545 836

10.4.1 Replacing the toothed belt

1. Slacken the toothed belt.
2. Remove the roller track.
3. Remove the guide rollers.
4. Only if required:
Remove the motor.
5. Remove the drive bearing.
6. Remove the toothed belt.
7. Install the new toothed belt in reverse order.
8. Pre-setting the belt tensioner:

– Turn the adjusting screw until the setting dimension X (guide value) is reached.

b = b ₁ [mm]	x [mm]
455	16.5
650	15.5
845	14

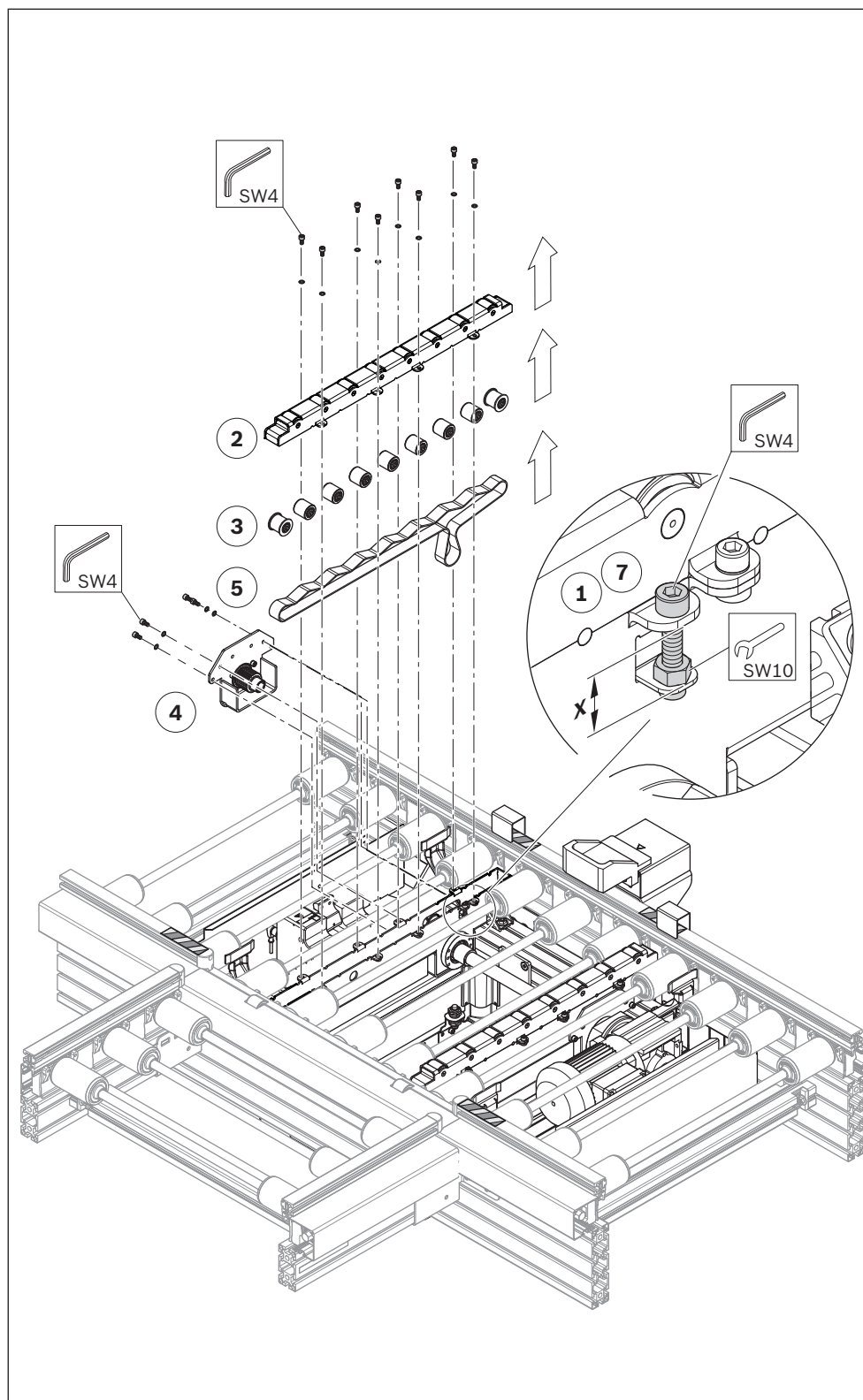
9. The correct belt tension then needs to be set with the frequency meter (see page 57).



Practical tip:

Increase the belt tension gradually (for each 1 revolution) by turning the tension bolt.

- Check using a workpiece pallet if the belt is moving.
- Check if the rollers can still be turned by hand, yet still exhibit a noticeable resistance.



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Fig. 37: Replacing the toothed belt on the HQ 5

10.4.2 Adjusting the belt tensioner with a frequency meter

Required accessories

- Frequency meter (C) with sensor head (B) for measuring the belt tension.

1. Determine the maximum frequency range (see table).
2. Turn on the frequency meter (C) and hold the sensor head (B) over the belt.
3. Strike the toothed belt gently to read the frequency f . Compare the frequency f with the table.

$b_L \times b_Q$ [mm]	f [Hz]
455 x 455	63 ± 5
455 x 650	81 ± 5
650 x 650	39 ± 4
650 x 845	43 ± 4
845 x 845	27 ± 3
845 x 1040	27 ± 3

If the frequency is within the specified range:

- Belt tension is correct.

If the frequency is not within the specified range:

- Tension/slacken the toothed belt with the adjusting screw (D) until the appropriate frequency is calibrated.

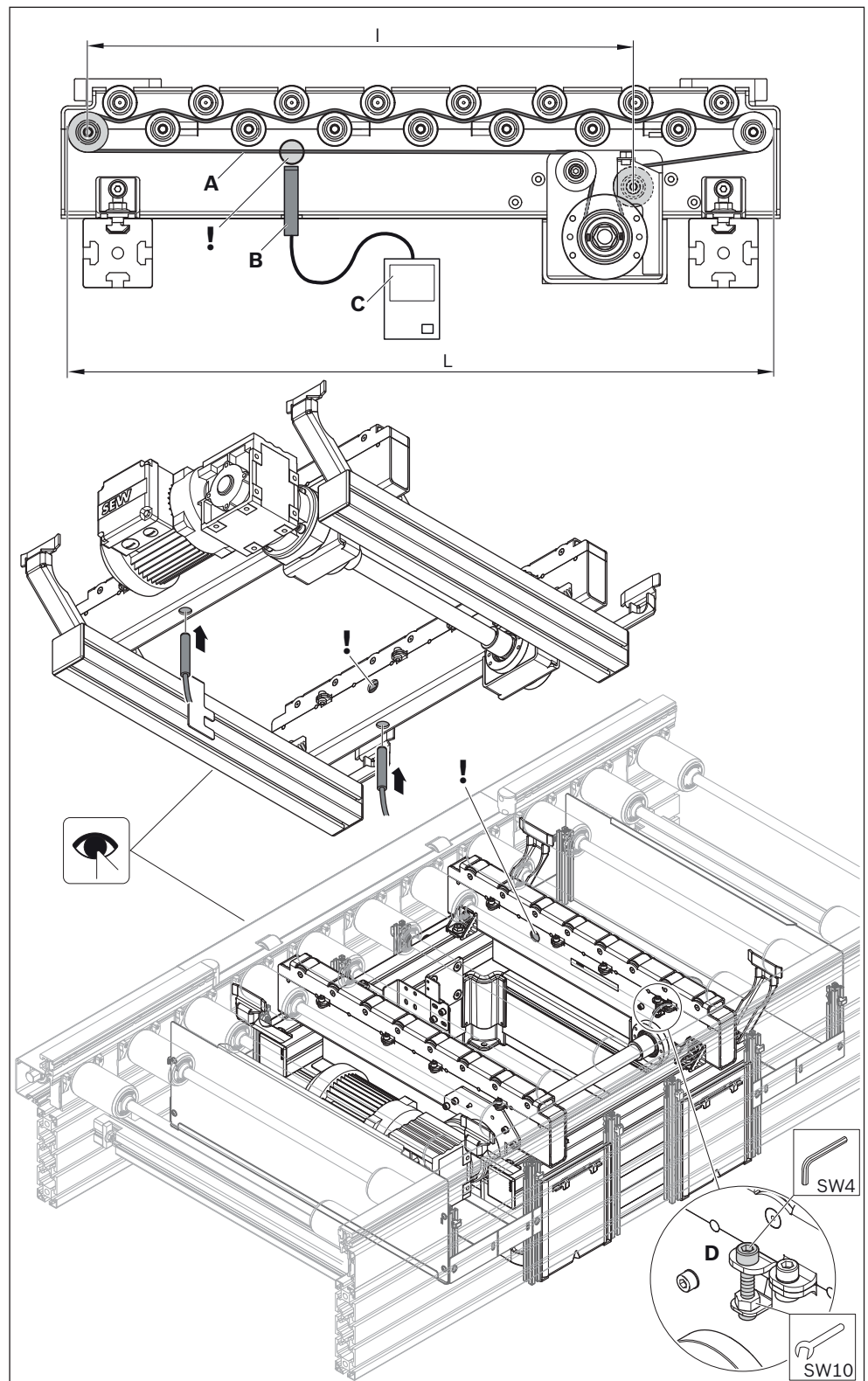


Fig. 38: Adjusting the belt tensioner on the HQ 5 with a frequency meter

10.4.3 Replacing a standard motor

See analogously Page 19.

10.4.4 Replacing the gear on a standard motor



Please note:

Depending on the system width and the installation situation, it may be necessary to remove the rollers (see page 59) or the HQ 5 from the conveyor unit for better accessibility.

Required tools

- Hex wrench SW8

1. Remove the motor (see page 19).
2. Remove the snap ring on the drive shaft.
3. Pull the drive shaft off the gear with the aid of an M8 screw.
4. Remove the adapter piece and the protective sleeve.
5. Remove the gear.

► Assembly is correspondingly done in the reverse order.

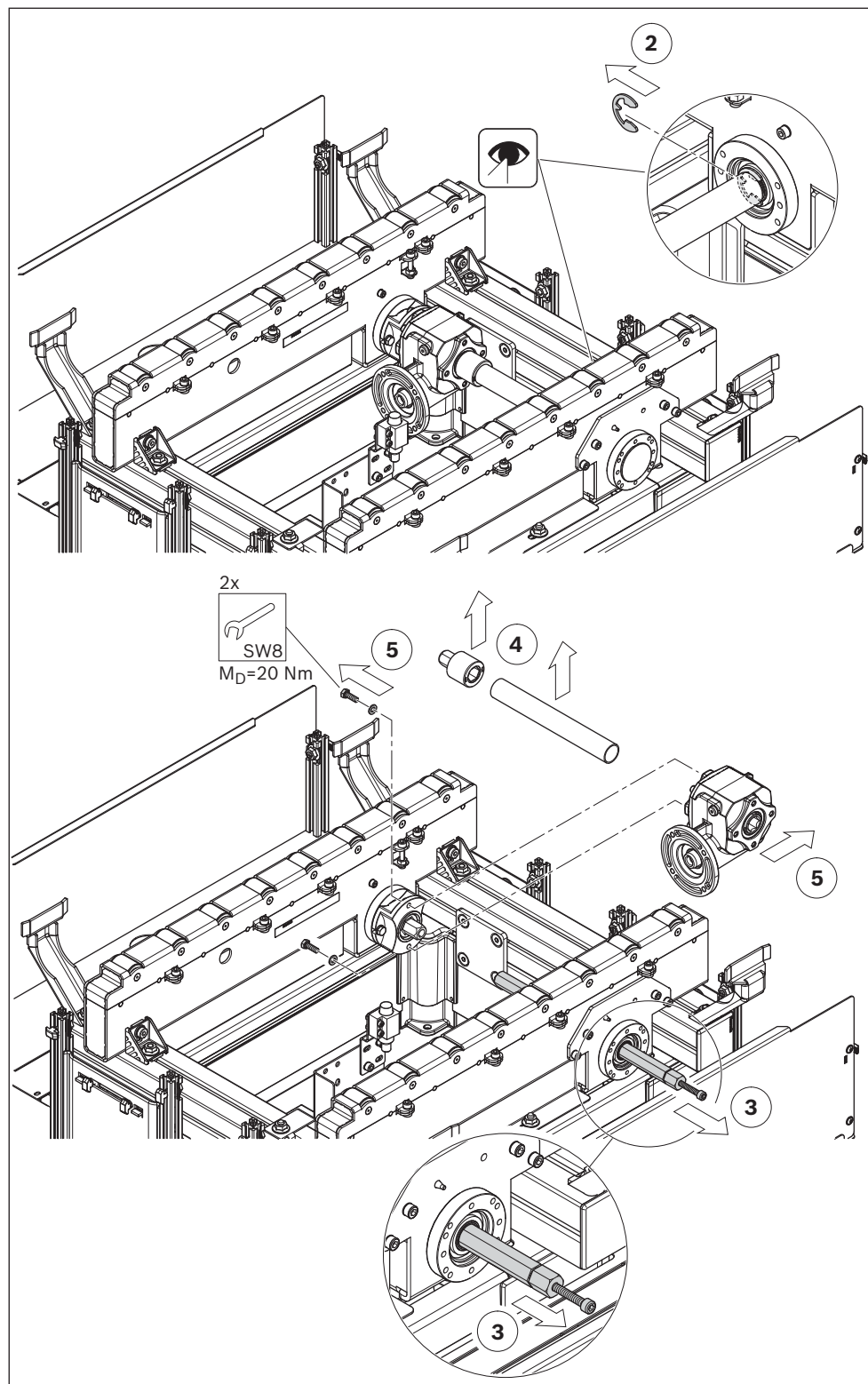


Fig. 39: Replacing the gear on a standard motor

562 829-25

10.4.5 Replacing the external gear motor (GM = 2)

See Page 20.

10.4.6 Replacing split rollers

See Page 28.

10.4.7 Spare parts

For spare parts, see MTpro spare parts list, **3 842 539 057**
(download: www.boschrexroth.com/mtpro)

11 Decommissioning

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

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 may 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 danger zone during lifting and lowering!

12.1 Preparing the product for storage/later use

- Only set the product down on a flat surface.
- Protect the product from mechanical stress.
- Protect the product from environmental influences, such as dirt and moisture.
- Observe the ambient conditions, see page 61.
- For products with assembled motor: Support the product so that the motor is not placed under mechanical load.

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.

16 Technical data

- For dimensions, see sales catalog TS 5, 3 842 540 379 .
- Permissible section load:

ST 5/H	200 kg/m
ST 5/XH	380 kg/m
- Maximum load:

HQ 5, HQ 5/H, HQ 5/XH	300 kg
-----------------------	--------
- Noise emission:

	< 70 dB (A)
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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 %, non-condensing

- Air pressure

> 84 kPa, corresponds to an installation altitude
< 1400 m above sea level
- Max. load capacity of floor: 1000 kg/m²
- At installation altitudes > 1400 m, the load values of the electric drives are reduced by 15 %.
- 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

- Solids

– Particle size	≤ 5 µm	(Class 6 as per ISO 8573-1:2010)
– Particle quantity	≤ 5 mg/m ³	(Class 6 as per ISO 8573-1:2010)
- Humidity – water content

– Pressure dew point ¹⁾	≤ +3 °C	(Class 4 as per ISO 8573-1:2010)
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¹⁾ The pressure dew point should be at least 15 °C below the ambient temperature.

- Oil content:

– Oil quantity	≤ 1 mg/m ³	(Class 3 as per ISO 8573-1:2010)
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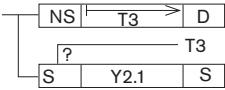
17 Appendix

17.1 Function plans

On the following pages, you can find proven fundamental function plans for control tasks in transfer systems.

Contrary to DIN IEC 61131-3, qualifiers are used in the action blocks, which are explained in the table below.

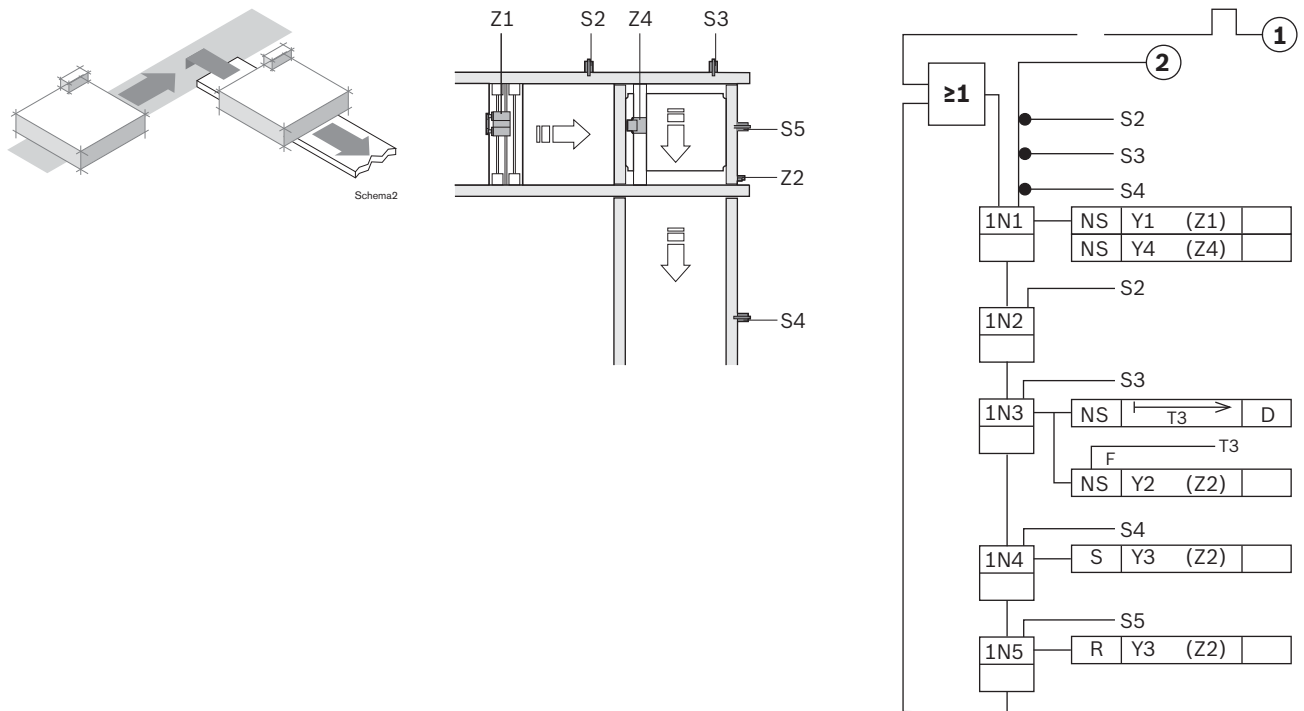
Simple VE 5 stop gates are used to stop the workpiece pallets. The position of the workpiece pallets is determined using separate proximity switches.

Action block	Explanation
	Storing
	Non-storing
	Set
	Reset
	Non-storing trigger of a time function (with runtime T), after which a switching function is triggered.

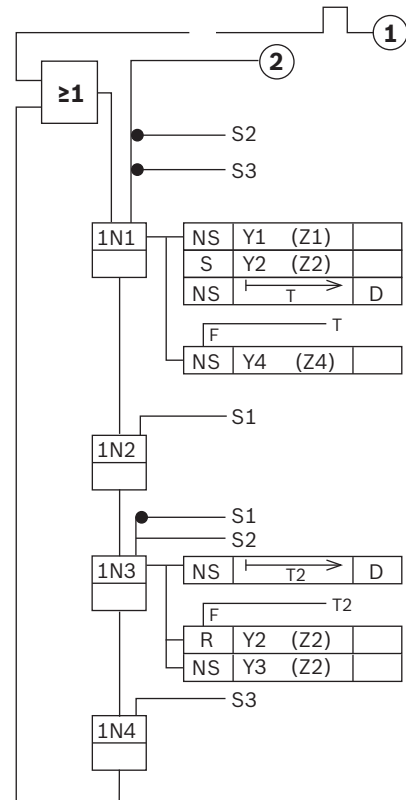
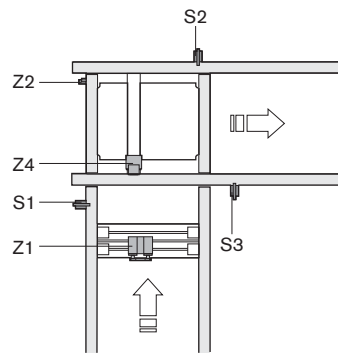
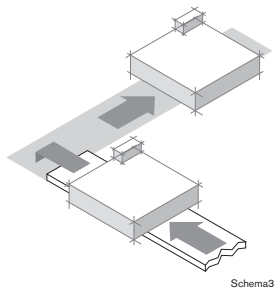
General abbreviations

- WT = Workpiece pallet
- VE = Stop gate
- S ... = Signal transmitter
- Y ... = Valve
- Z ... = Cylinder
- LT = Longitudinal conveyor (main section)
- QT = Transverse conveyor (secondary section)
- ① = Start pulse after end of start-up
- ② = Enable cyclic travel

17.1.1 Implementation in transverse section (TFE 3)



17.1.2 Implementation in longitudinal section (TFE 2)



① Start pulse after end of start-up

② Enable cyclic travel

S1 = WT after VE

S2 = WT in position on HQ

S3 = Release secondary section, HQ free

Y1 = Secondary section VE (Z1)

Y2 = HQ up (Z2)

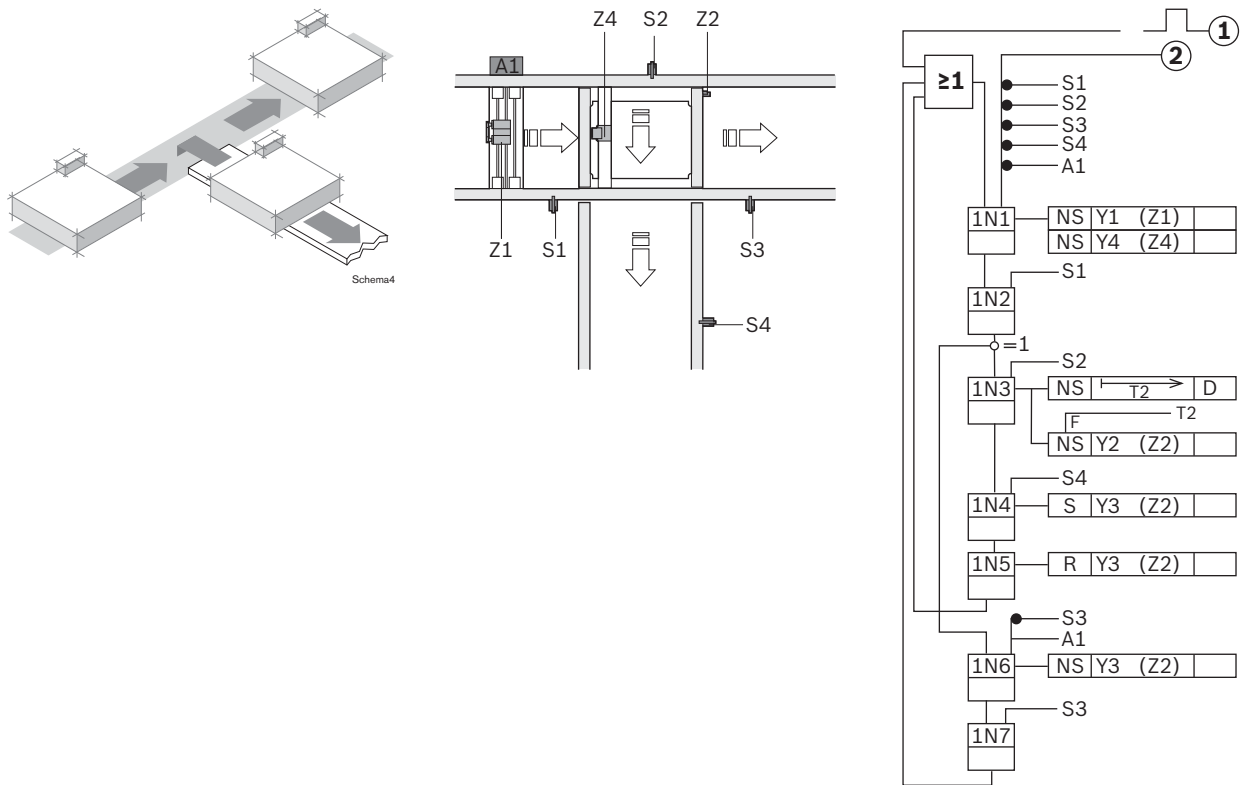
Y3 = HQ down (Z2)

Y4 = Extend DA damper (Z4)

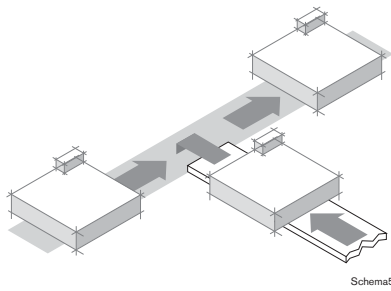
Note:

- Distance Z1 - Z3 = $b_{WT} + 200 \text{ mm}$

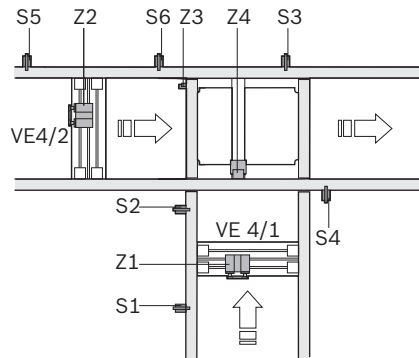
17.1.3 Outfeeding from longitudinal conveyor (TFE 1)



17.1.4 Outfeeding from longitudinal conveyor (TFE 1)



Schema5



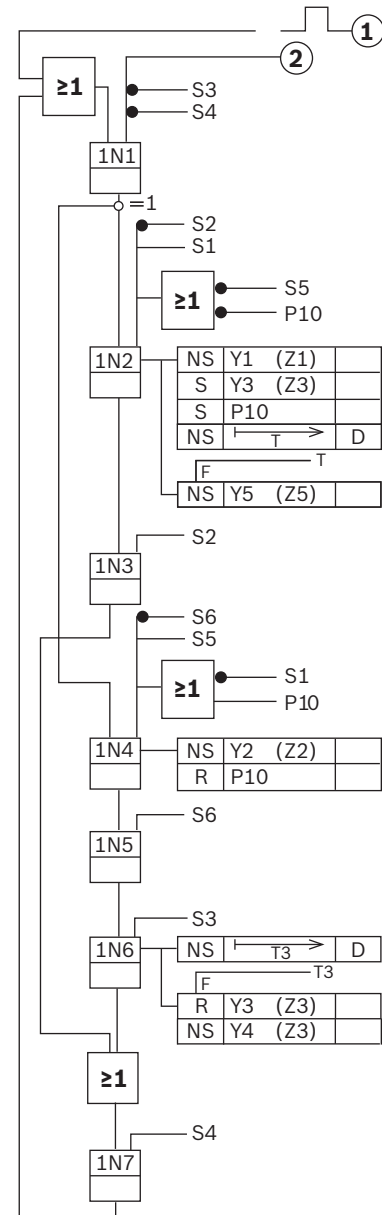
① Start pulse after end of start-up

② Enable cyclic travel

- S1 = WT after VE
 S2 = WT in position on HQ
 S3 = Release secondary section, HQ free
 S4 = Release main section, HQ free
 S5 = HQ down (Z2)

- Y1 = Main section VE (Z1)
 Y2 = HQ up (Z2)
 Y3 = HQ down (Z2)
 Y4 = Extend DA damper (Z4)

A1 = Straight-ahead signal



Note:

- Central position (WT 4 stop position) of HQ 4 is centered by springs (without pressurization)
- Distance Z1 - Z3 = $l_{WT} + 200$ mm
- Distance S2 - S3 = min. 200 mm

Bosch Rexroth AG

Postfach 30 02 07
70442 Stuttgart
Germany
Fax +49 711 811-7777
info@boschrexroth.de
www.boschrexroth.com

