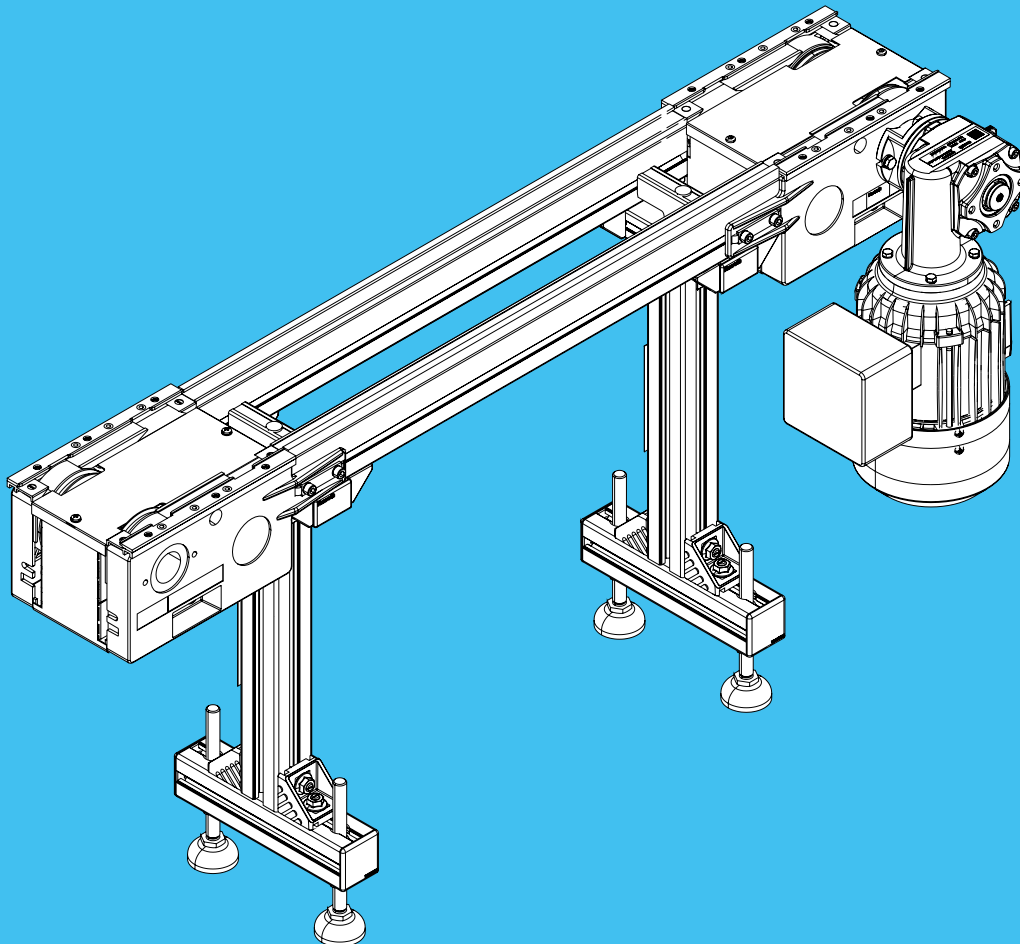


Section ST 1 / Drive module AS 1 / Return unit UM 1



The information in this manual is for product description purposes only. Any information in this manual on how to use the product only constitute 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 installation instructions are in German.

- DE Die vorliegende Montageanleitung ist in den hier angegebenen Sprachen verfügbar. Weitere Sprachen auf Anfrage.
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1 About this documentation

1.1 Validity of the documentation

This documentation applies to the following products:

- 3 842 999 779, section ST 1
- 3 842 999 759, drive station AS 1
- 3 842 999 760, return unit UM 1

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

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

- Fully read this documentation and particularly chapter 2 "Safety instructions" before working with the product.

1.2 Required and supplementary documentation

- Only commission 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 ¹⁾	3 842 527 147	
Transfer system TS 1 ¹⁾	3 842 528 596	Catalog
MTpro ²⁾	3 842 539 057	With spare parts list on CD

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

²⁾ 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 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:

 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 danger
- Consequences: describes the consequences of non-compliance
- Prevention: states how the danger can be avoided

Table 2: Types of risk according to ANSI Z535.6-2006

Warning sign, signal word	Meaning
	Indicates a hazardous situation that will result in severe injury or death if not avoided.
	Indicates a hazardous situation that may result in severe injury or death if not avoided.
	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.	Numbered steps:
2.	The numbers indicate that the action steps are subsequent.
3.	

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 an electrical system component.

You may use the product as follows:

- For workpiece transport on Bosch Rexroth workpiece pallets WT 1 in the Bosch transfer system TS 1.

This product is intended only 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.

If unsuitable products are installed or used in safety-relevant applications, unexpected operating conditions may occur in the application that could result in injury or property damage. Products should only be used in safety-relevant applications that are expressly specified and approved in the product documentation. For example, in ex-protection areas or in safety-related parts of a control system (functional safety).

The following foreseeable misuses also constitute improper use:

- Climbing onto the product.
 - Keep off the product.
- Transportation of persons.

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

2.4 Personnel qualifications

The activities described in this documentation require basic knowledge of mechanical and electrical systems, as well as knowledge of the appropriate 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 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 react.
- Only use genuine, manufacturer-approved accessories and spare parts to ensure there is no risk to personnel from unsuitable spare parts.
- Observe the technical data and ambient conditions specified in the product documentation.
- If unsuitable products are installed or used in safety-relevant applications, unexpected operating conditions may occur in the application which could result in injury or property damage. Products should only be used in safety-relevant applications that are expressly specified and approved 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 and technology-specific safety instructions

- | | |
|----------------------------|---|
| General | <ul style="list-style-type: none"> • "Employee safety training", 3 842 527 147 must be carried out! • 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. Do not step onto the product. • Always ensure that the product cannot topple over. • When handling the product, wear appropriate protective equipment (e.g. safety shoes). See "Employee safety training". • Observe the applicable accident prevention regulations. • The surfaces of motors and gears (see Fig. 20) can reach temperatures of over 60 °C under certain load and operating conditions. In these cases, the respective applicable accident prevention regulations must be complied with by taking appropriate constructive measures (safety guards) or by affixing/displaying appropriate safety signs! |
| During transport | <ul style="list-style-type: none"> • Observe the transport instructions on the packaging. |
| During installation | <ul style="list-style-type: none"> • 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 start-up | <ul style="list-style-type: none"> • 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. • Before switching on the system, always ensure that there are no objects on the product, except for the workpiece pallets to be transported. Failure to do so may result in injuries caused by falling objects. |

- 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 maintenance and servicing**
- Make sure that access to maintenance and inspection points is kept unobstructed.
 - 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.
 - The motor heats up heavily during operation. Let the motor cool down and wear suitable protective clothing (e.g. heat-resistant protective gloves) to protect yourself against burns.

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

2.6.1 Residual risks during operation

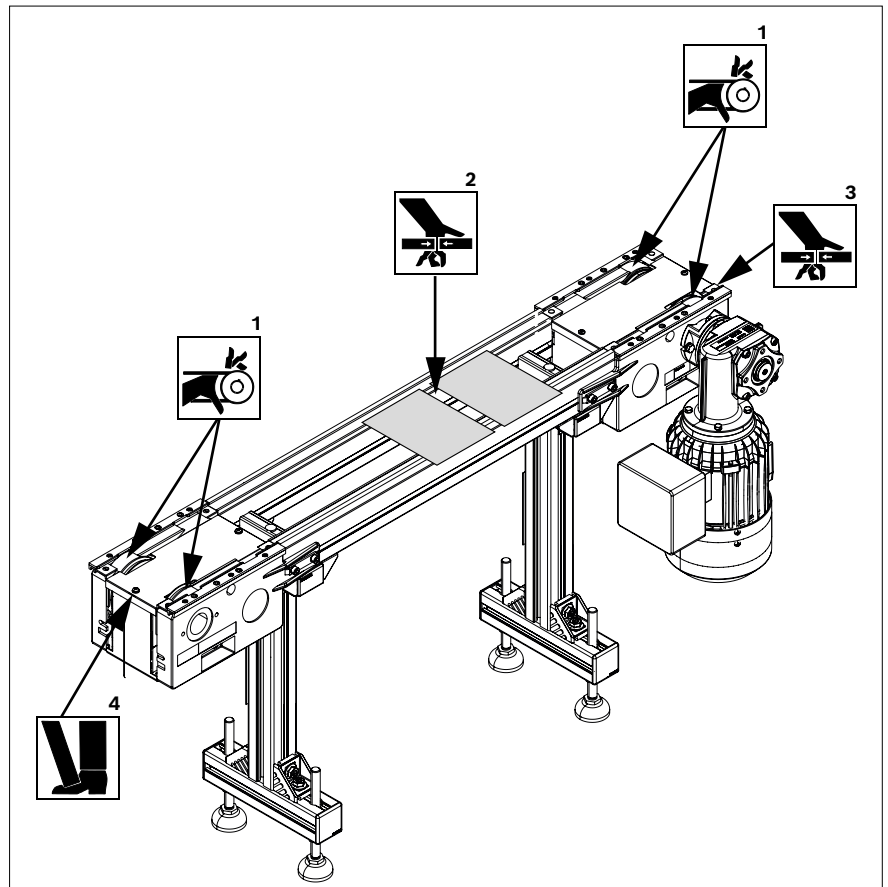


Fig. 1: Residual risks

Location	Situation	Hazard	Action
1 Conveyor medium pinch point	Clothing or long hair can become entangled		Crushing and tearing out of hair Do not reach into the system while it is running. Wear protective clothing.
2 Between workpiece pallets	Limbs can become trapped		Crushing Do not reach into the system while it is running. Structural solution required in working area.
3 Section transfers	Trapping of body parts between conveyor equipment (belt, flat top chain, roller chain) and workpiece carrier		Crushing Do not reach into the system while it is running. Structural solution required in working area.
4 End of belt section	Pinching of body parts caused by falling parts		Crushing Structural solution, e.g. by stopper

2.7 Personal protective equipment

The personal protective equipment for the user of the product consists of:

- Safety gloves, safety shoes, tight-fitting clothes, hair net for long, open hair during assembly, installation, commissioning and operation.

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.
- Before initial commissioning, make sure 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.

- The warranty is void in the event of incorrect assembly, commissioning and operation, as well as improper use and/or improper handling and/or use of non-original spare parts.
Spare parts list MTparts.: 3 842 529 770
- 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 and condition on delivery

4.1 Drive module AS 1

Included:

- Fastening material,
- Gear motor,
- Coupling,
- Hexagonal shaft,
- Shaft retaining ring(s)

The drive module AS 1 is ready for assembly.

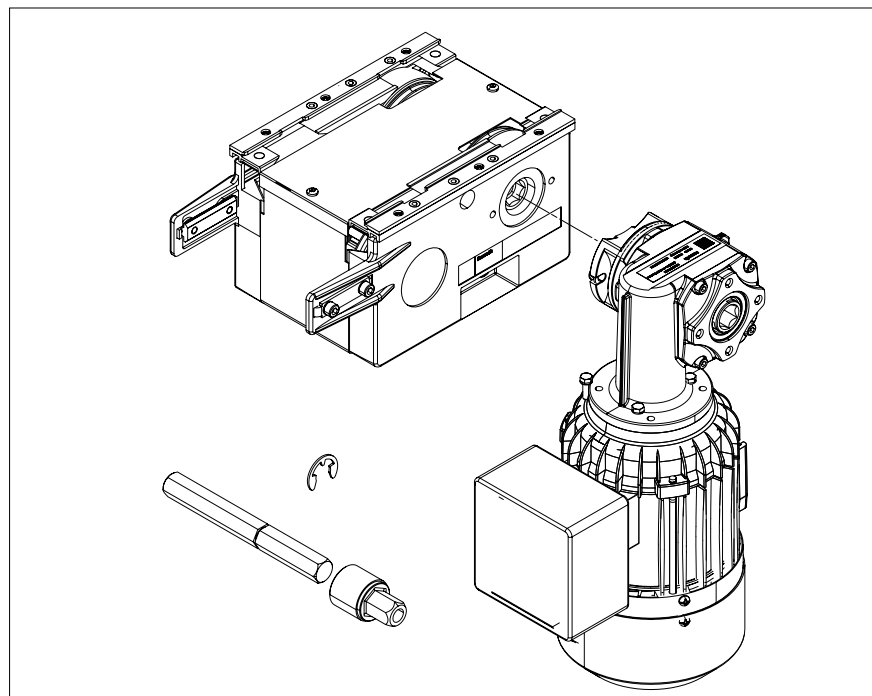


Fig. 2: Condition on delivery of drive module AS 1/... (motor mounting right)

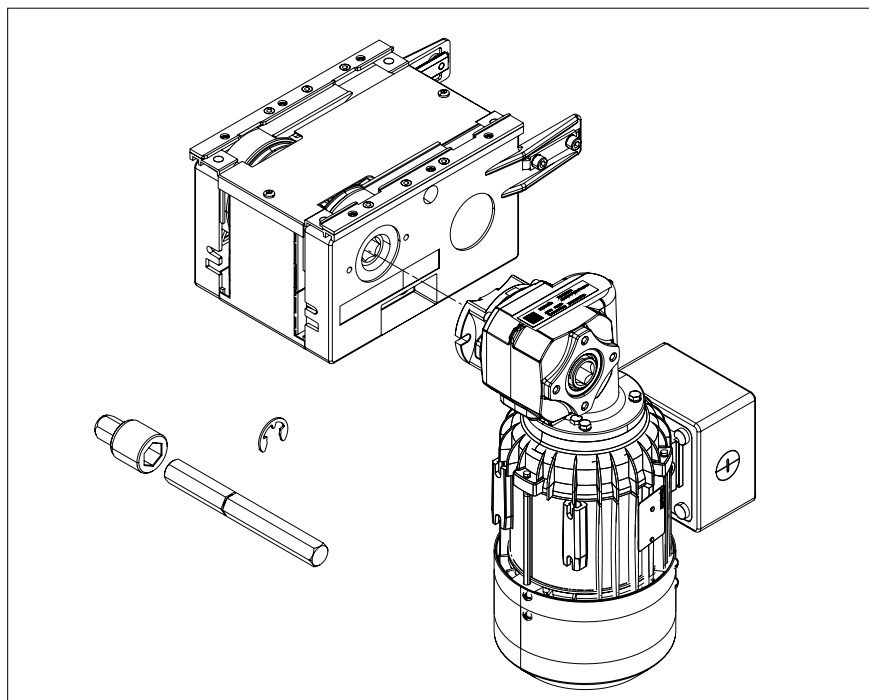


Fig. 3: Condition on delivery of drive module AS 1/... (motor mounting left)

4.2 Return unit UM 1

Fastening material is included.

The return unit UM 1 is ready for assembly.

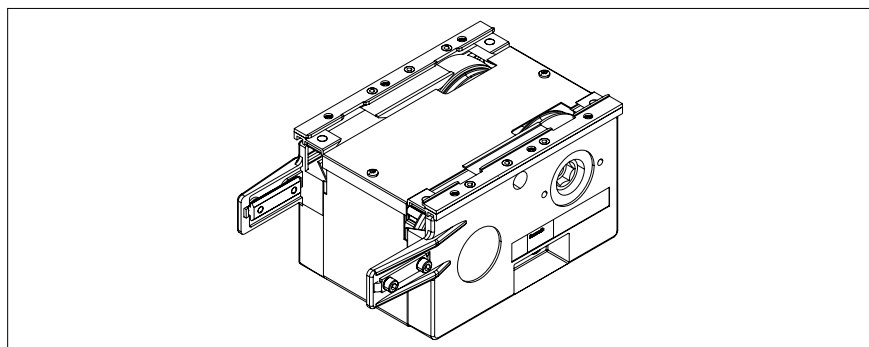


Fig. 4: Condition on delivery of return unit UM 1

4.3 Section ST 1

Scope of delivery:

- 2x Section profile SP 1
- 2x Guide profile GP 1
- Cross connector QV 1
- Profile connector PV

Section ST 1 is available as unassembled kit.

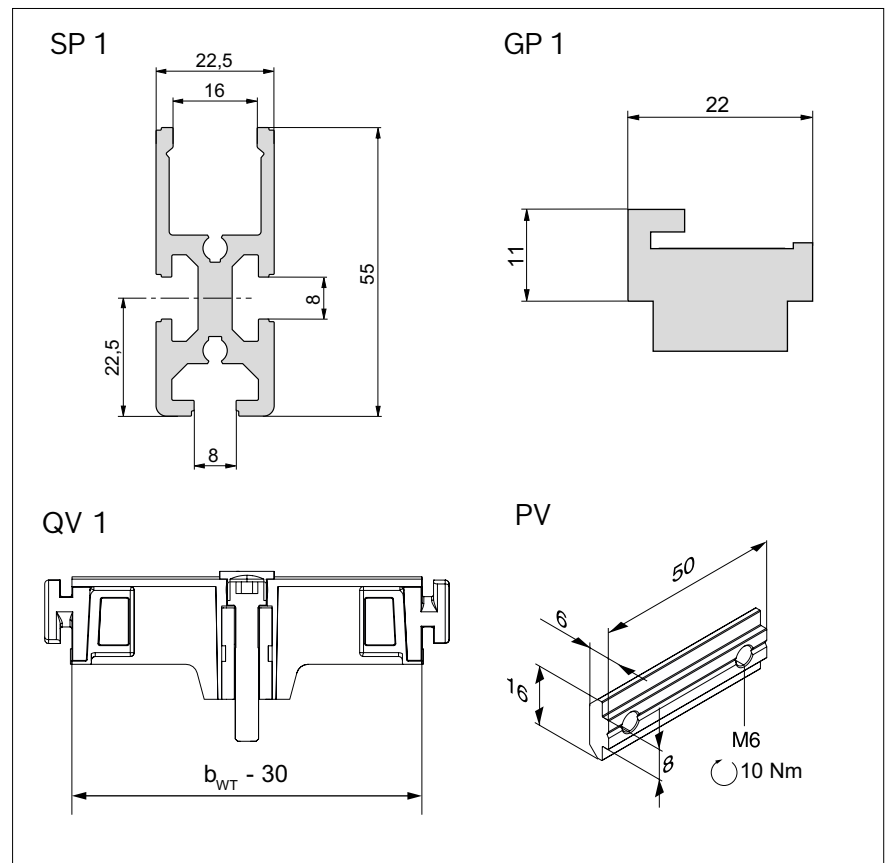


Fig. 5: Scope of delivery of section ST 1

4.4 Accessories

Kit 3 842 521 260 for connection of two conveyor units to AS 1 and UM 1 (head to head connection).

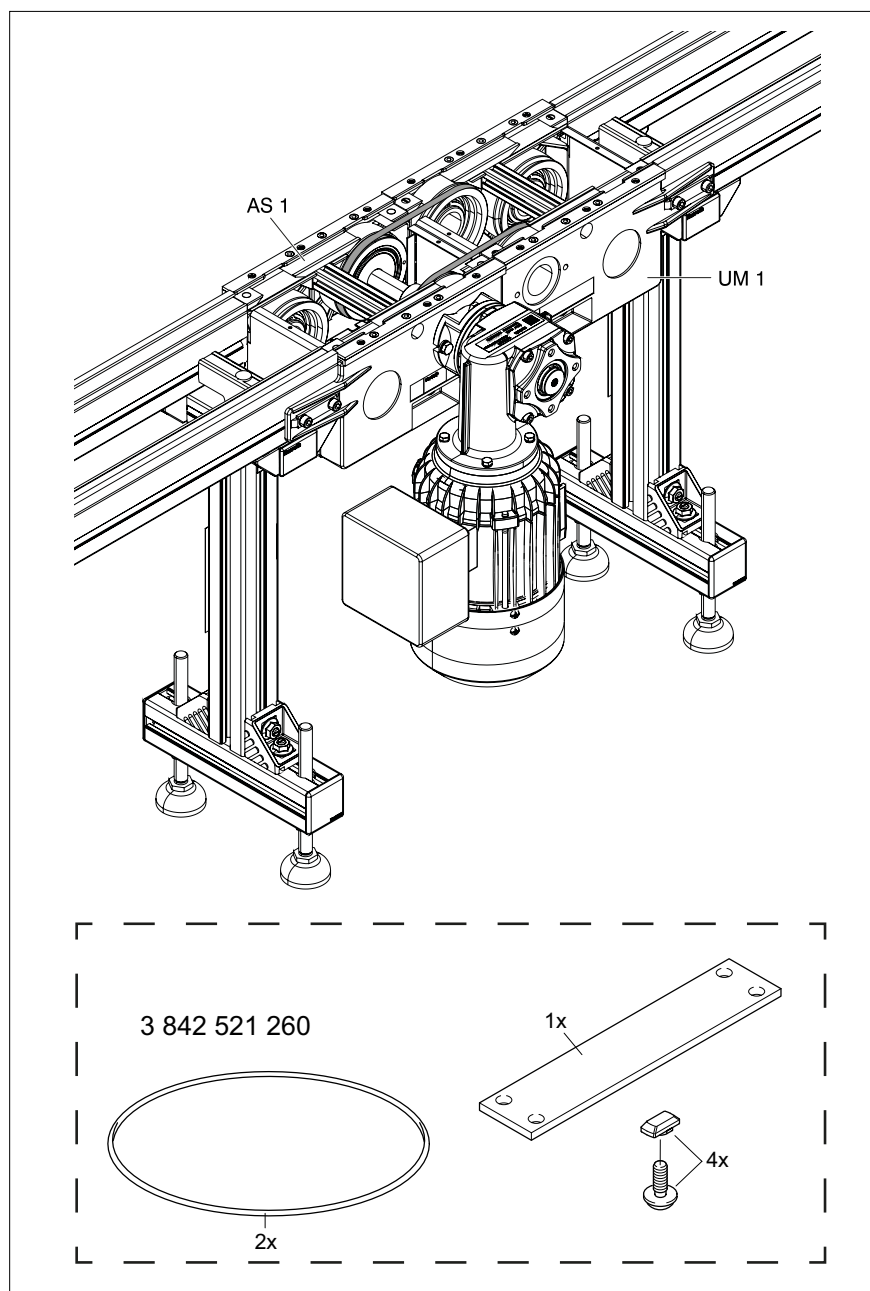


Fig. 6: Accessories

5 About this product

5.1 Main and functional dimensions

5.1.1 Drive module AS 1 and return unit UM 1

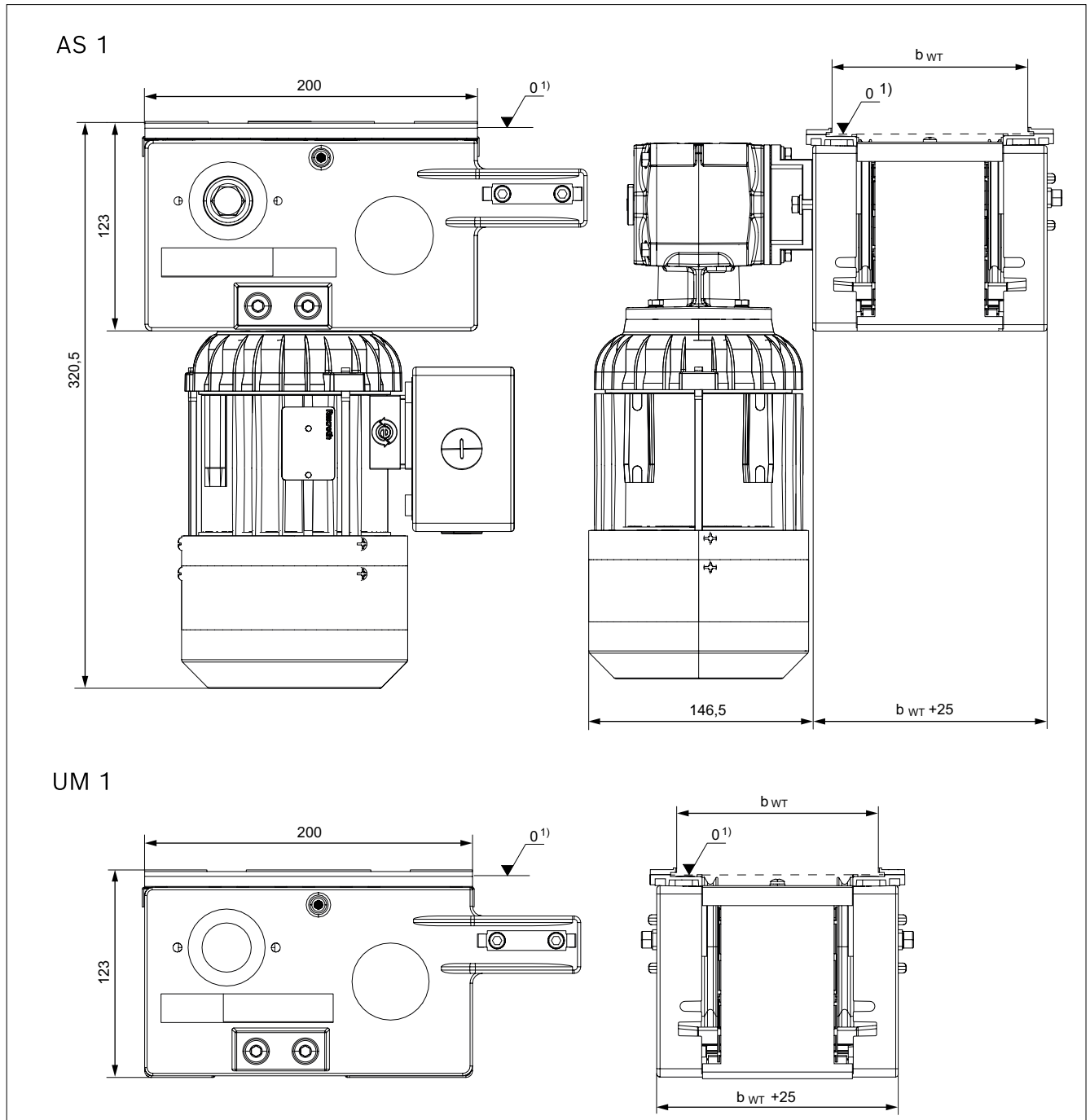


Fig. 7: Main and functional dimensions of AS 1 and UM 1

¹⁾ Transport level

5.1.2 Section ST 1

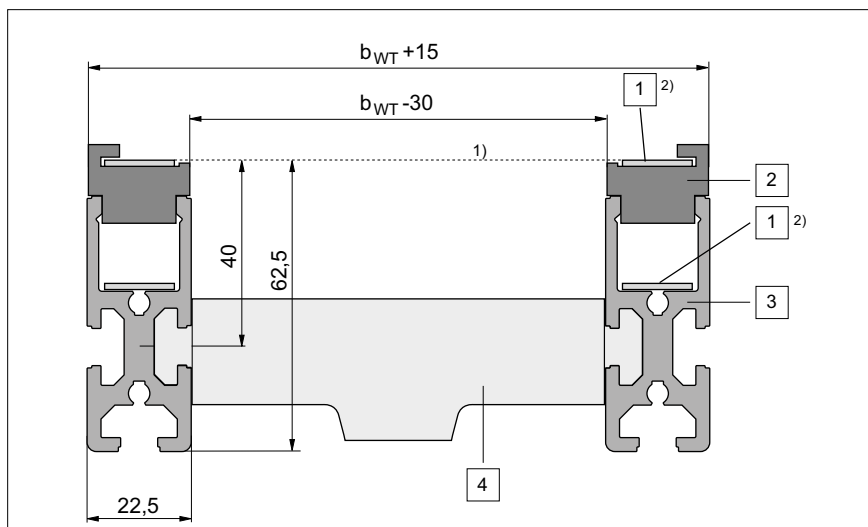


Fig. 8: Functional dimensions of ST 1

- | | |
|---------------------------|------------------------|
| 1 Belt GT 1 | 3 Section profile SP 1 |
| 2 Belt guide profile GP 1 | 4 Cross connector QV 1 |

1) Conveyor medium top edge

2) Separate assembly instructions for belt (3 842 521 456)

6 Transport



WARNING

Any transport of heavy objects is always a risk.

Risk of injury or damage to property!

- ▶ Never stand or walk under suspended loads.
- ▶ Make sure no one is in the danger zone.
- ▶ Only use suitable and tested lifting devices and slings.
- ▶ Always observe the maximum bearing load (see delivery documents for the product weight).
- ▶ Check that the slings are securely fastened.
- ▶ Secure the product against tipping over when lifting!

7 Installation

7.1 Installation requirements

- During installation, be sure to maintain the ambient conditions specified in the Technical Data (see page 36).

7.1.1 Installation position

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

7.2 Assembly of section ST 1

7.2.1 Assembly of section joint

- Install two profile connectors PV (3 842 518 427) according to Fig. 9, in the order (1) to (4).

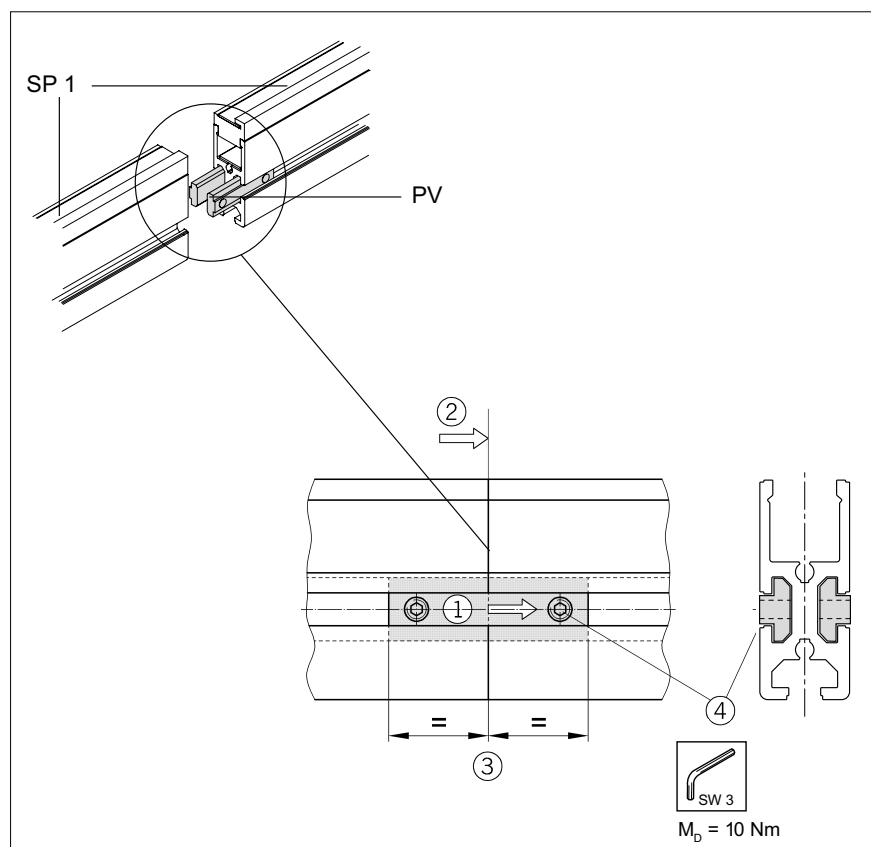


Fig. 9: Assembly of section joint

7.2.2 Assembly of cross connector QV 1

3 different widths of cross connectors can be used:

Width b [mm]	Number
80	3 842 521 342
120	3 842 521 343
160	3 842 521 344

For assembly steps, see Fig. 10:

1. Align ST 1 in right angle/parallel.
2. Screw in one clamping piece each in the T-slot.
3. Hammer in the spacer with a rubber mallet.

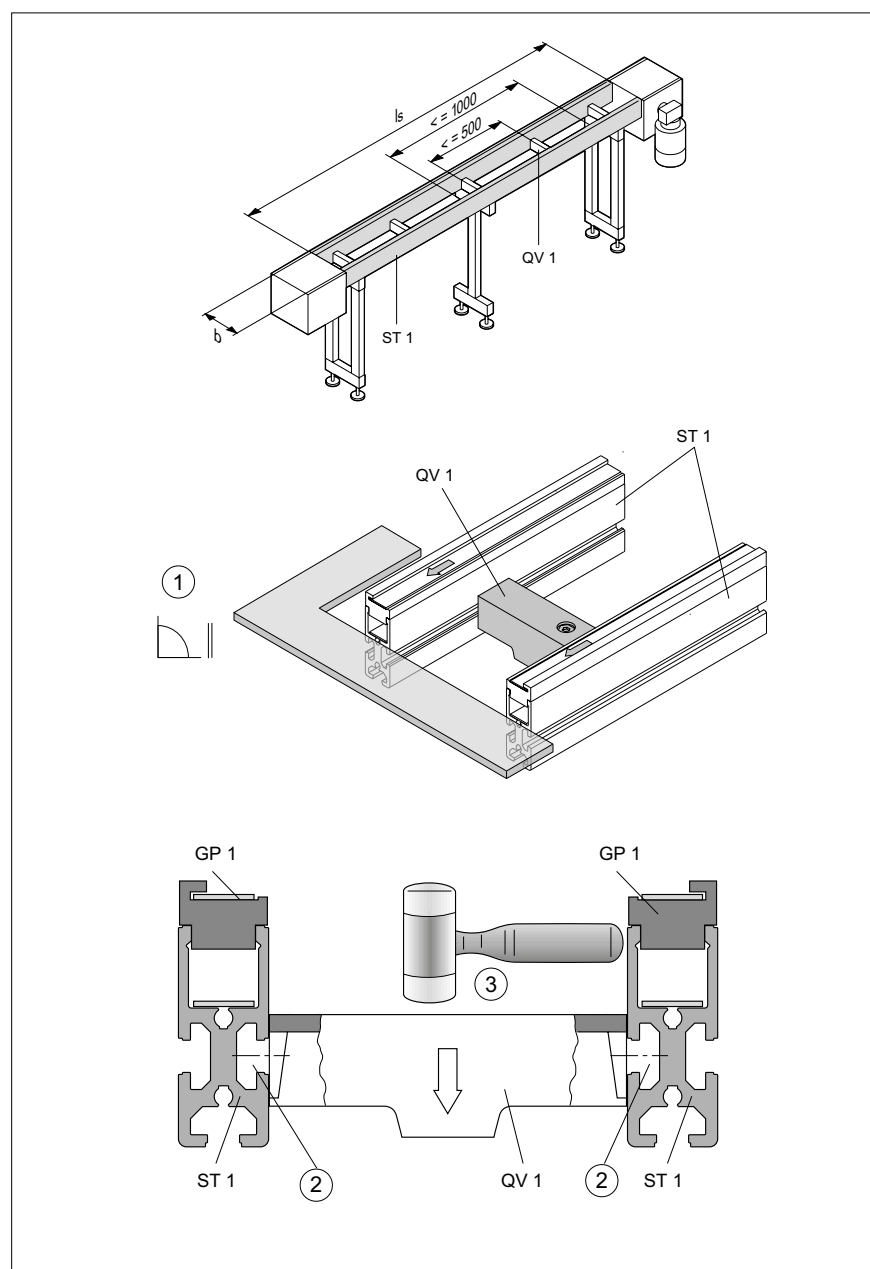


Fig. 10: Assembly of cross connector

7.2.3 Assembly of section ST 1 on section support SZ 1

- Drive modules and return units as well as section joints must be supported. Before belt assembly, the leg sets are anchored to the floor with foundation brackets (Fig. 11).

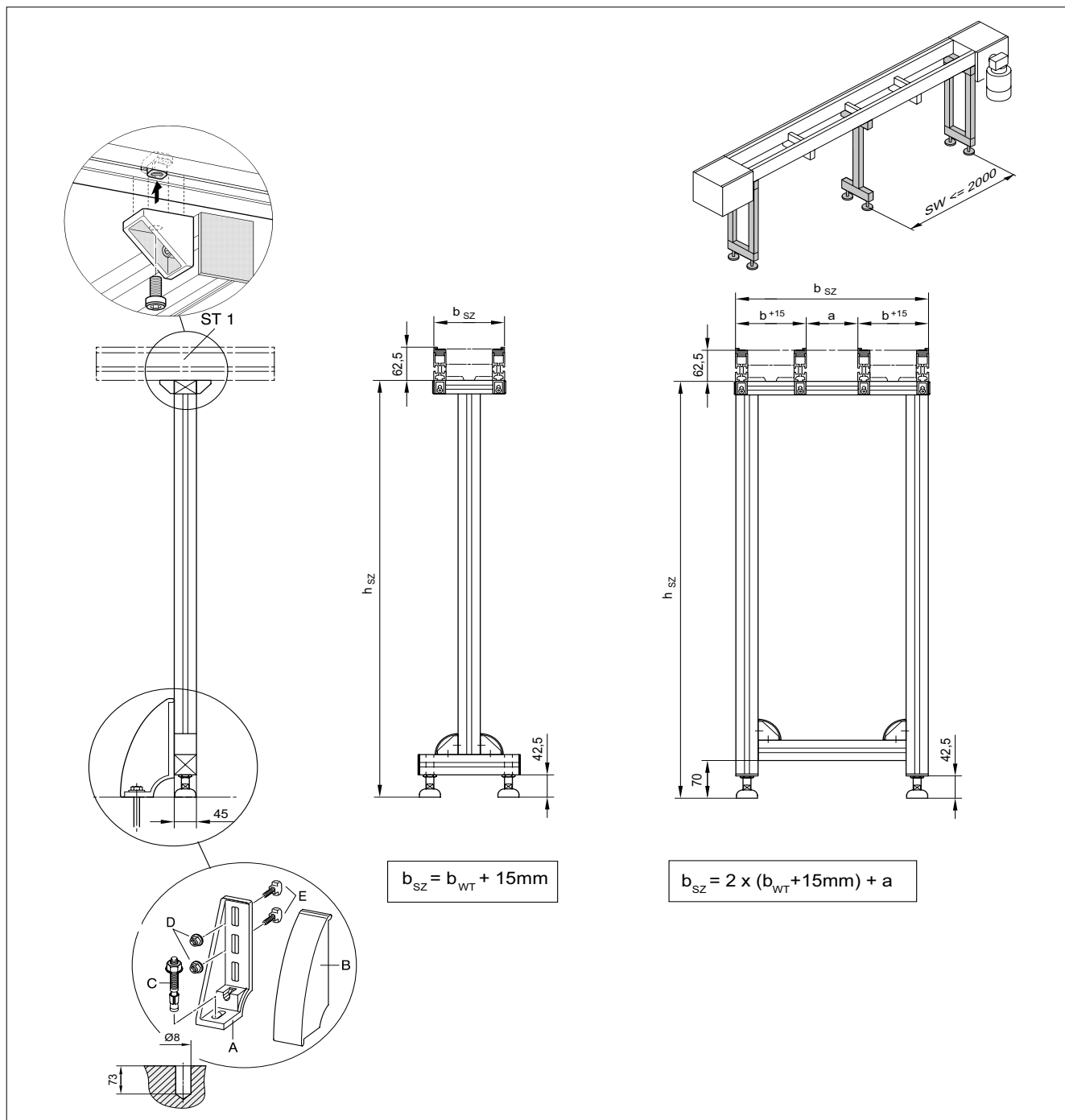


Fig. 11: Assembly of section ST 1 on section support SZ 1

b_{SZ} = Width of section support

h_{SZ} = Height of section support

7.3 Assembly of return unit UM 1 and drive station AS 1

7.3.1 Assembly of return unit UM 1 at section ST 1

1. Slide UM 1 at the front end with the sliding blocks into the T-slots of the section profile.
2. Tighten on both sides with two hexagon socket screws (WS 5) each.

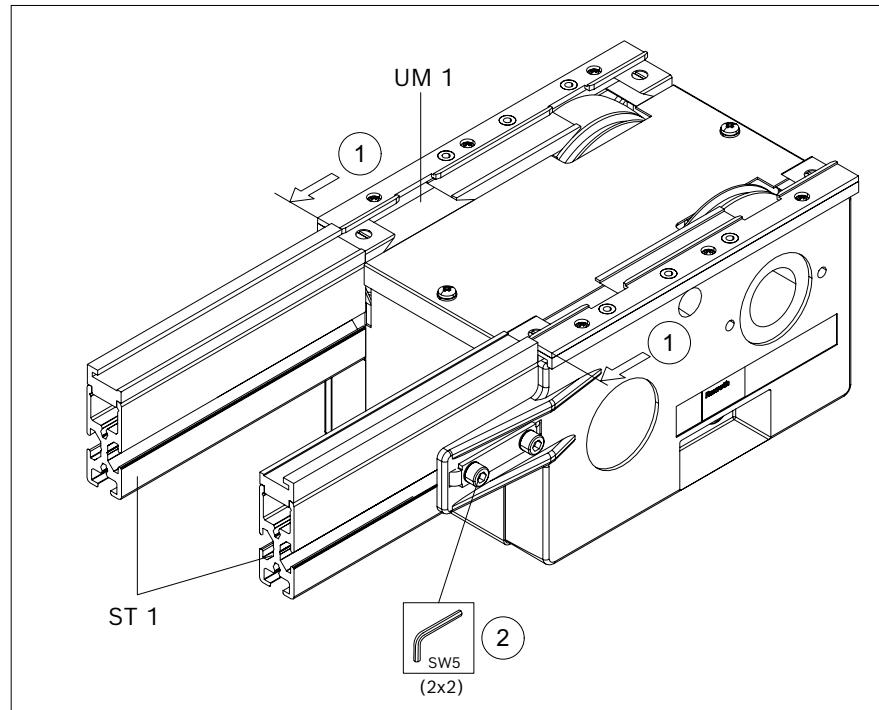


Fig. 12: Assembly of return unit at the section

7.3.2 Assembly of drive module AS 1 at section ST 1

For assembly steps, see Fig. 13 on the next page:

1. Slide AS 1 at the front end with the sliding blocks into the T-slots of the section profile.
2. Tighten on both sides with two hexagon socket screws (WS 5) each.
3. Remove the top cover sheet.

4. Insert the coupling into the hollow shaft of the drive wheel (see individual unit "X"), grease the hexagonal shaft (e.g. with "gleitmo 585 K" and push it into the hollow shaft.

NOTE! The hexagonal shaft can be damaged during assembly!

► Ensure that the hexagonal shaft does not wedge when being inserted!

5. Attach the shaft retaining ring(s).
6. Plug the gear motor to the hexagonal shaft and/or coupling and attach it to the flange. Insert the plug.
7. Secure the cover sheet.

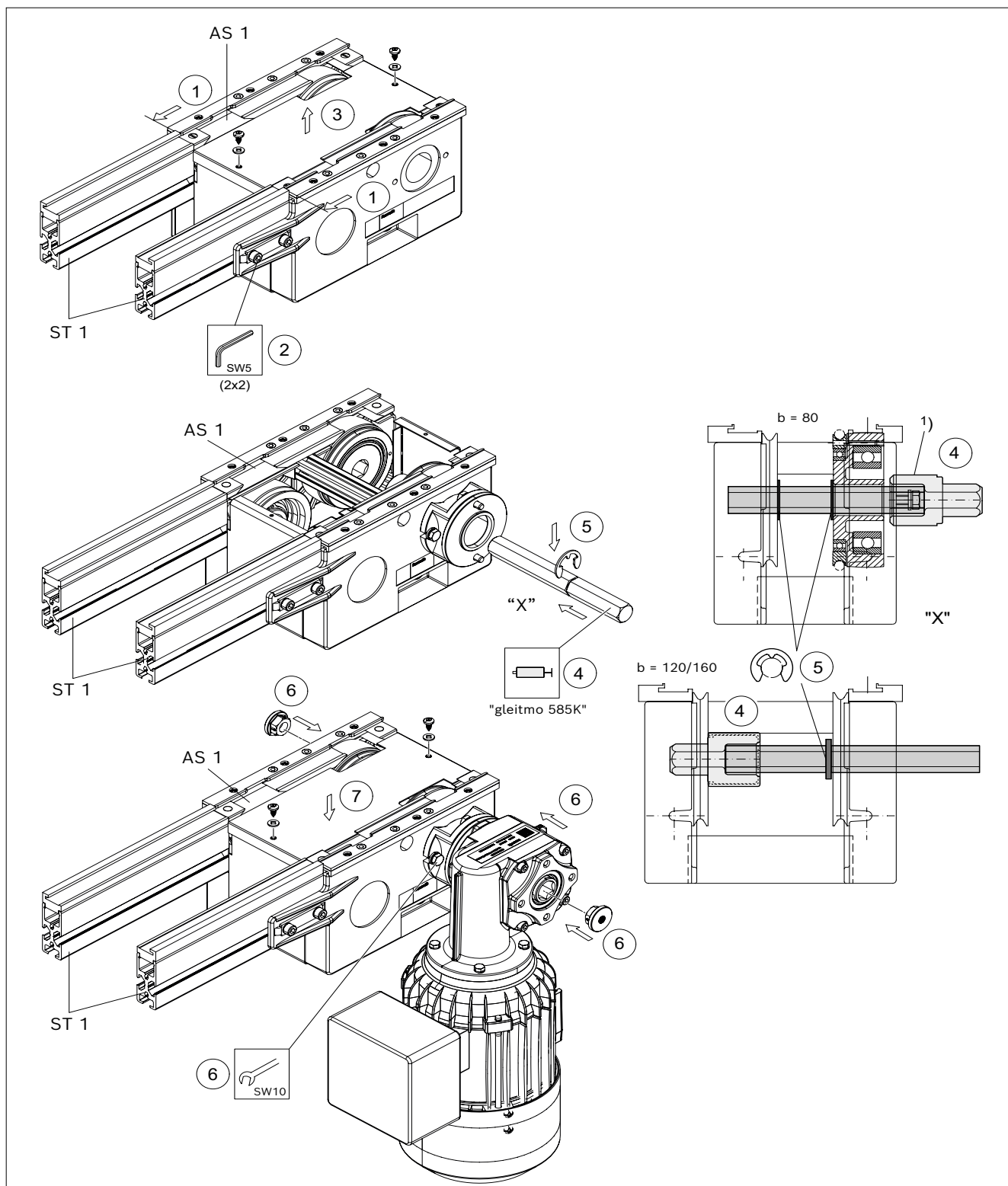


Fig. 13: Assembly of drive module at section

1) Pull off tube at size $b = 80$ mm

7.3.3 Assembly of section joint

Head connection AS 1 and UM 1 (Fig. 14) with accessory kit:
Order no.: 3 842 521 260

For assembly steps, see Fig. 14 on the next page:

1. Remove the top cover sheet to AS 1 and UM 1 by loosening the two oval flange head screws.
 2. Bend the top and bottom lugs by 180° at the rear cover sheets.
 3. Screw together AS 1 and UM 1 with the accessory kit ("X"; Fig. 14).
 4. Mount two round belts on the belt pulleys of AS 1 and UM 1.
 5. Insert the coupling into the hollow shaft of the drive wheel (see individual unit "Y"), grease the hexagonal shaft (e.g. with "gleitmo 585 K") and push it into the hollow shaft.
- NOTE!** The hexagonal shaft can be damaged during assembly!
- Ensure that the hexagonal shaft does not wedge when being inserted!
6. Attach the shaft retaining ring(s).
 7. Plug the gear motor to the hexagonal shaft and/or coupling and attach it to the flange. Insert the plug.
 8. Secure the cover sheet.

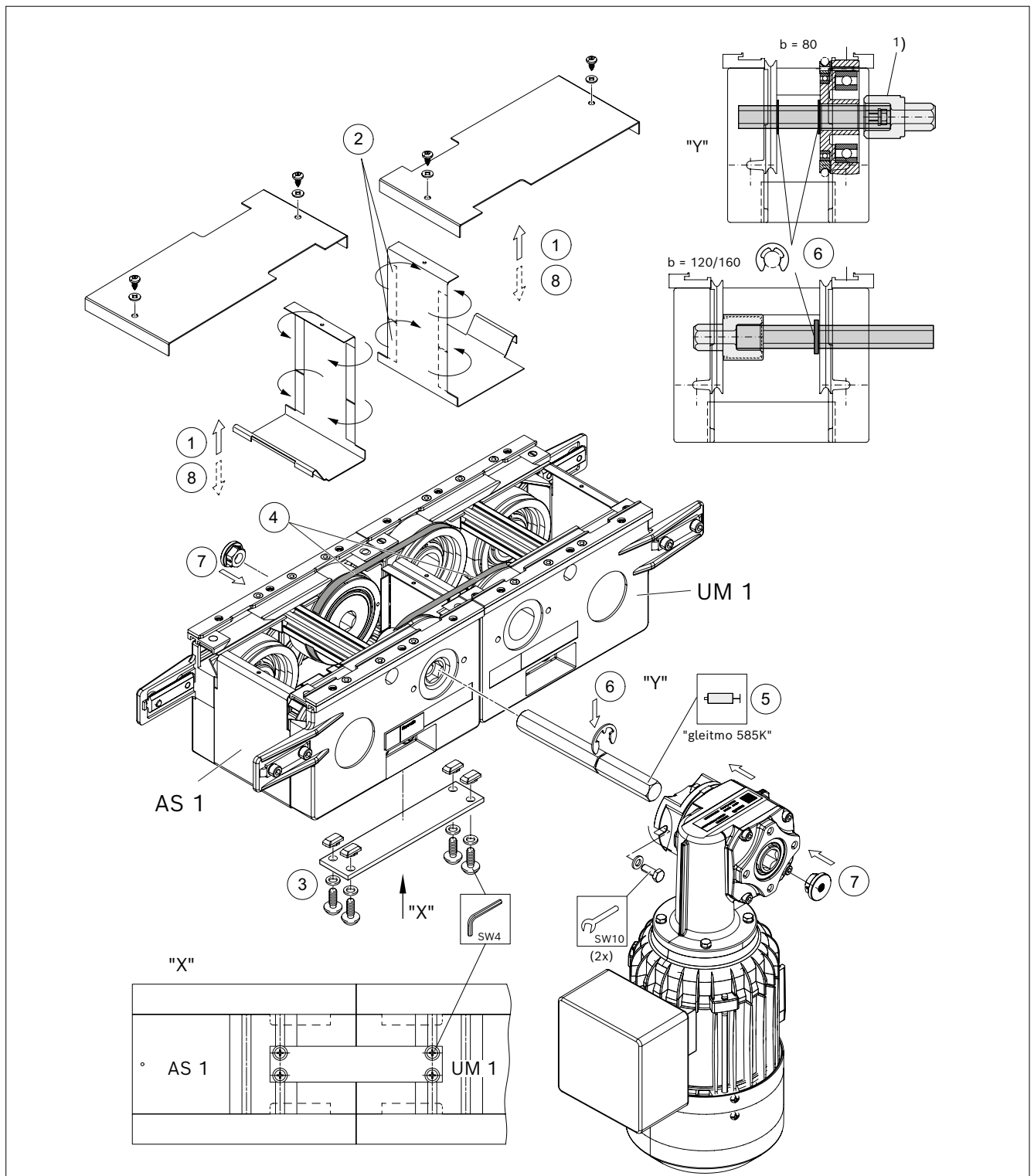


Fig. 14: Assembly of section joint

1) Pull off tube at size $b = 80 \text{ mm}$

7.4 Assembly information for mounting AS 1 at KE 1

Before the mounting of drive AS 1 at curve KE 1/90-0, KE 1/180-0, the freewheel must be fixed in the drive disks of AS 1!

- To do so, screw the headless setscrew M3 at the drive disks into the round belt disk until it is flush with the front edge (Fig. 15)!



Description of the assembly of drive AS 1 at curves KE 1 in assembly instructions KE1.

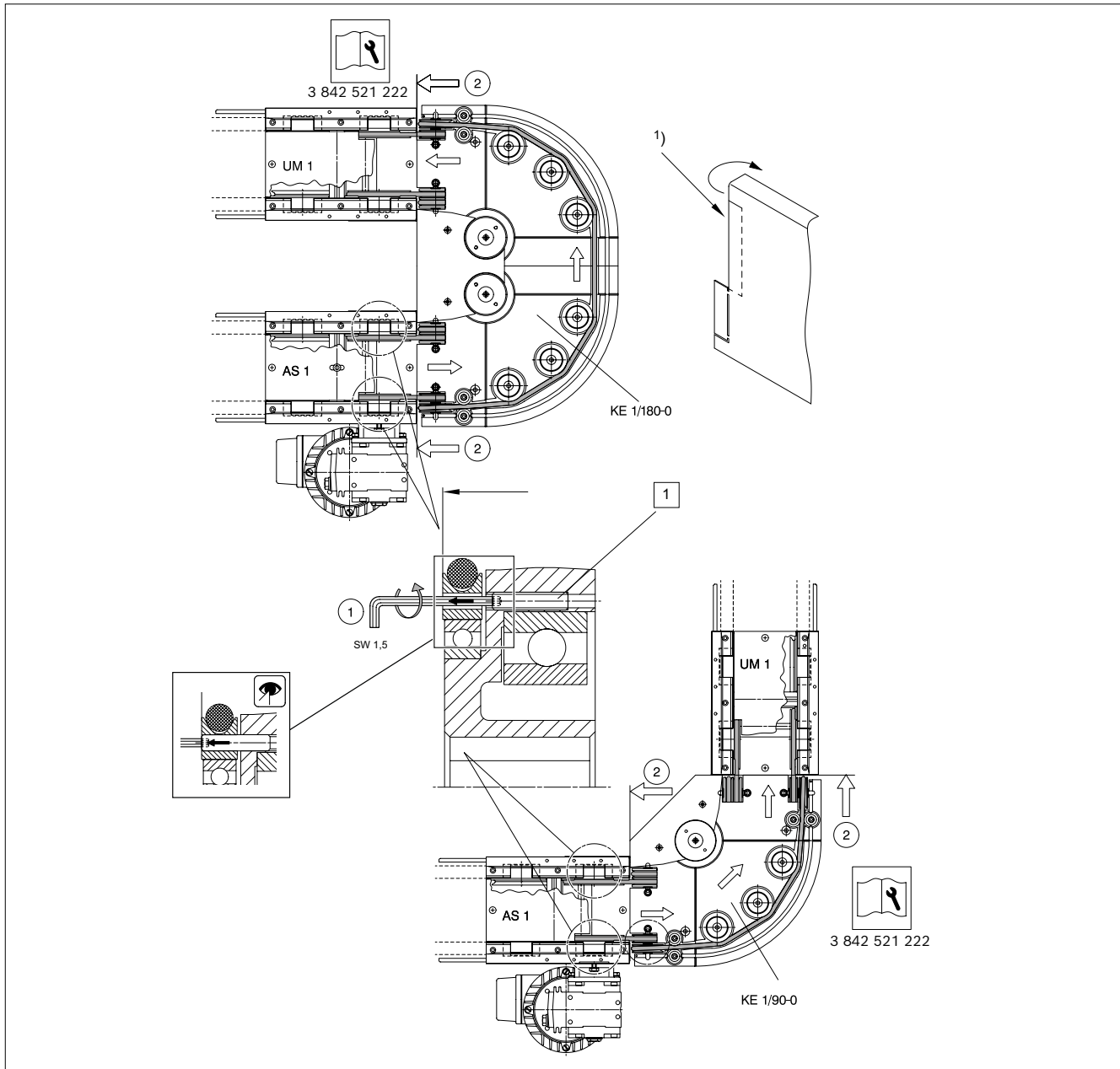


Fig. 15: Mounting of AS 1 at KE 1

1 Headless setscrew M3

1) Bend top part by 180°!

8 Installation

WARNING

Electric shock caused by touching live parts.

Risk of serious injury or death.

- ▶ Before carrying out any work, interrupt the voltage supply: Disconnect the power plug.
- ▶ Take suitable measures to prevent unintended restarting.
- ▶ An EMERGENCY OFF device for the transfer system must be provided by the customer!
- ▶ The motor connection must be performed by a qualified personnel (VDE regulation VDE 0100)!



For servicing reasons, we recommend setting the rotational direction of the motor (phase connection inversion) in the customer-side coupling or the control cabinet!

8.1 Motor connection

- ▶ Carry out the motor connection according to the information on the nameplate (Fig. 16) on voltage and current, according to Fig. 17 (Y) or Fig. 18 (Δ).

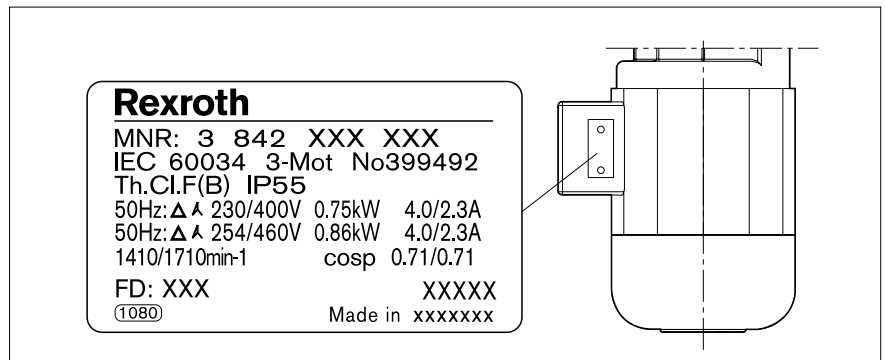


Fig. 16: Nameplate

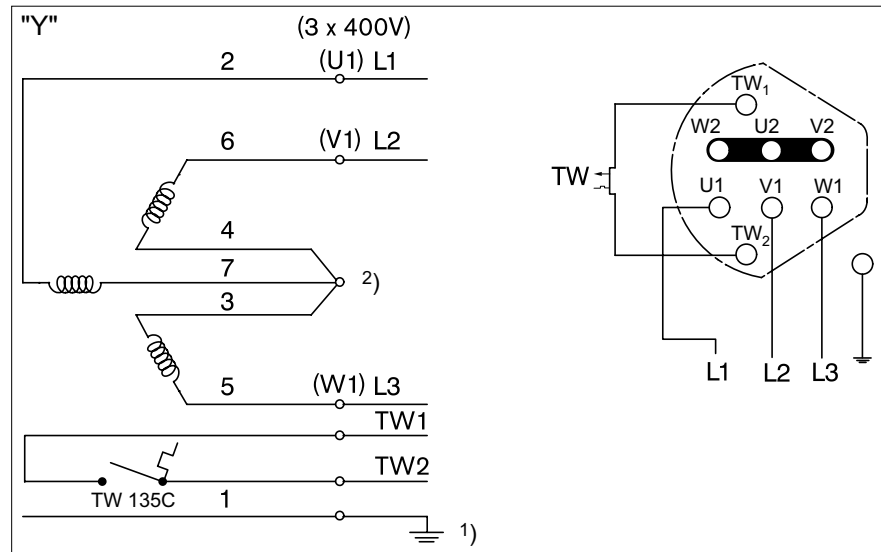


Fig. 17: Star circuitry

1) Ground

2) No power connection

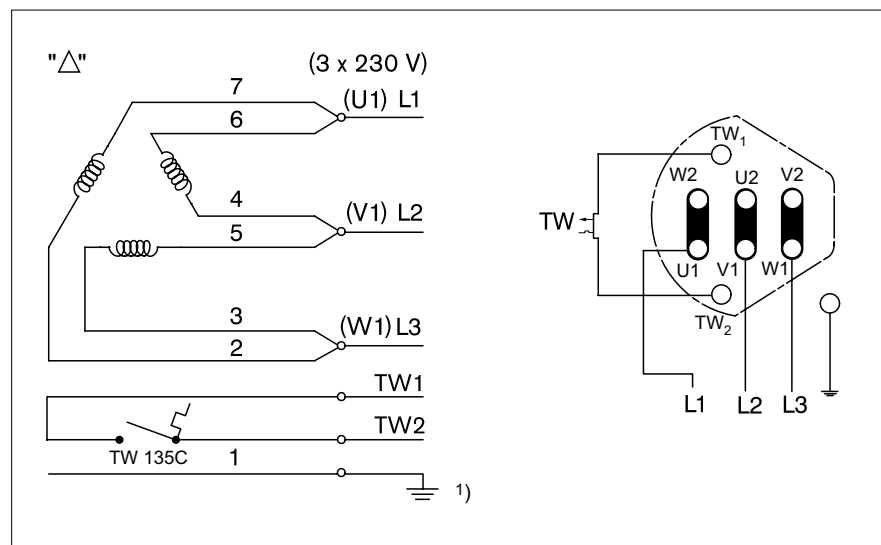


Fig. 18: Delta circuitry

1) Ground

The motor is fitted with a bimetal temperature monitoring switch (potential-free thermal contact).

- Wire the motor so that it is de-energized when the switch is opened.



Observe connection diagrams according to Fig. 17 and Fig. 18 as well as the connection diagram in the terminal box!

- Insert the cable so that it cannot get damaged during operation.

8.1.1 Optional connector cable

Observe the pre-fuse!

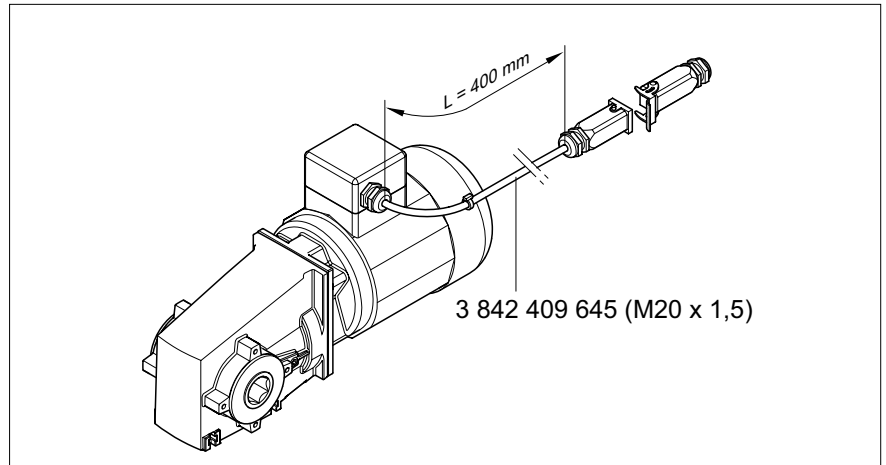


Fig. 19: Optional connector cable

9 Commissioning

1. Start the system only briefly and ensure the correct rotational direction of the motor.
2. Switch any two wires (L1, L2 or L3 in Fig. 17 and Fig. 18) to switch the motor's rotational direction.



For servicing reasons, we recommend setting the rotational direction of the motor (phase connection inversion) in the customer-side coupling or the control cabinet!

Star circuitry (Fig. 17)

Delta circuitry (Fig. 18)

TW: Integrated thermal contact, normally closed.

1-7 winding colors (Fig. 17 and Fig. 18):

- | | |
|---|--------------|
| 1 | green/yellow |
| 2 | black |
| 3 | red/yellow |
| 4 | blue/yellow |
| 5 | red |
| 6 | blue |
| 7 | black/yellow |

10 Operation

10.1 Environmental factors

- Avoid contact with highly acidic or alkaline substances.

Resistance to common media in the assembly area is provided.

These include:

- Water
- Mineral oil
- Lubricating greases
- Detergent

If in doubt about the resistance to certain chemicals, we recommend contacting your Rexroth specialist.

These include:

- Test oil
- Doped oils
- Aggressive cleaning agents
- Solvents
- Brake fluid

Liquids that thicken on evaporation and are highly viscous or sticky can lead to malfunctions.

In such instances, special care must be taken when planning the system and the maintenance and cleaning intervals must be shortened.

11 Maintenance and repair

WARNING

Electric shock caused by touching live parts.

Risk of serious injury or death.

- ▶ Before carrying out any work, interrupt the voltage supply: Disconnect the power plug.
- ▶ Take suitable measures to prevent unintended restarting.

CAUTION

Danger due to hot surfaces at motor or gear

Danger of burning

- ▶ Let the motor cool down
- ▶ Wear personal protective equipment
- ▶ Install safety guard

11.1 Cleaning and care

NOTICE

Cleaning agents and other liquids

Damage to components

- ▶ Close all openings with suitable protective devices so that no cleaning agent can penetrate 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.

11.2 Maintenance

All bearing points have lifelong lubrication and are maintenance-free under normal conditions of use, unless specified otherwise.



After contact with grease-dissolving substances, regular checking and, if necessary, relubrication is necessary with acid and resin-free lubricant (e.g. "gleitmo 585K" from Fuchs Lubritech)!

Gear (1, Fig. 20)

The gear is maintenance-free!

Motor (2, Fig. 20)

To ensure sufficient cooling, dirt and dust deposits on the surface of the motor, the air intake openings of the fan hood and at the spaces between the cooling ribs must be removed regularly, depending on the ambient and operating conditions.

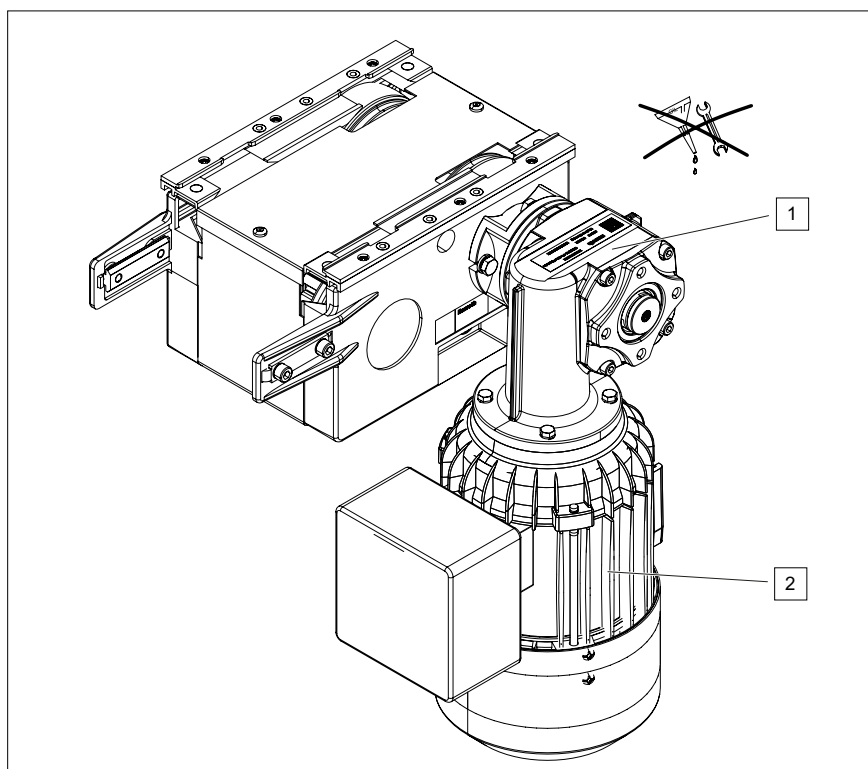


Fig. 20: Gear and motor

1 Gear

2 Motor

UM 1 and ST 1 are maintenance-free!

11.3 Repair of AS 1

11.3.1 Replacing the motor

1. Loosen the four hexagon screws (WS 8) at the gear flange and remove the motor to the bottom.
2. Before installation of the new motor, pull the protective cap "X" from the drive shaft.
3. Lubricate the drive shaft at the motor (e.g. with "gleitmo 585K").

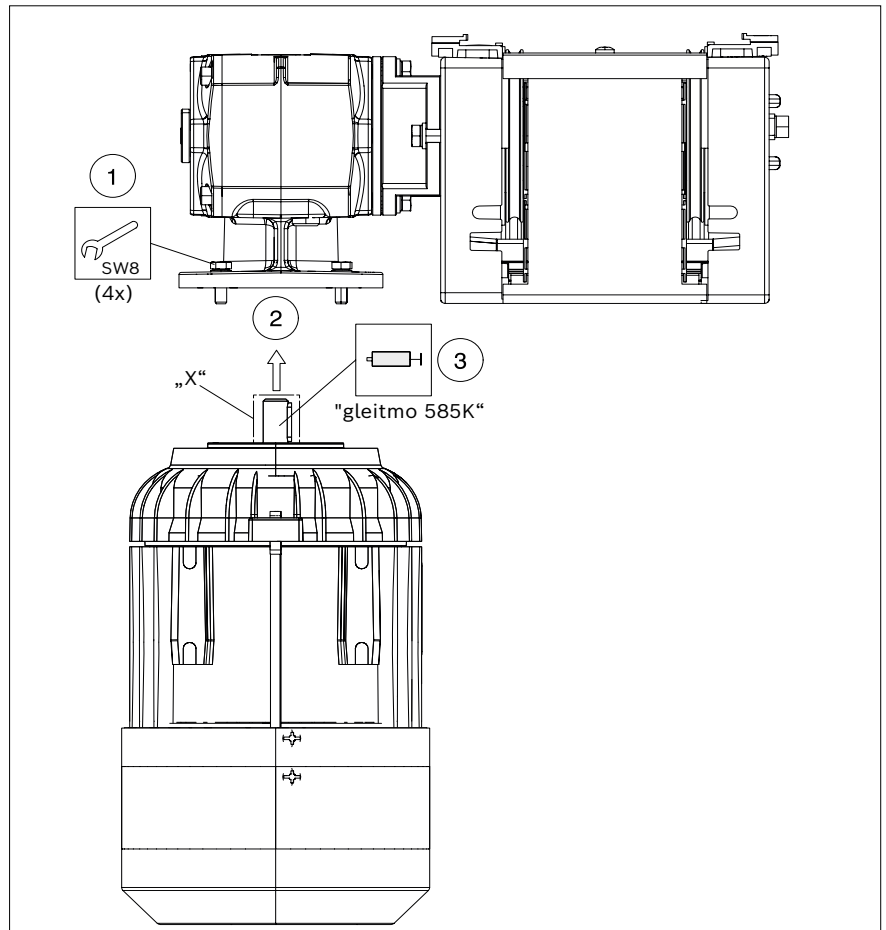


Fig. 21: Replacing the motor

11.3.2 Replacing the gear

1. Loosen the two hexagon screws at the flange.
2. Remove the gear motor.
3. Loosen the four hexagon screws (WS 8) at the gear flange and remove the motor to the bottom.
4. Lubricate the hexagonal shaft (e.g. with "gleitmo 585K").
5. Plug the new gear onto the motor drive shaft (the hub in the gear is lubricated before delivery) and tighten it.
6. Slide the gear motor to the hexagonal shaft and attach it to the flange.

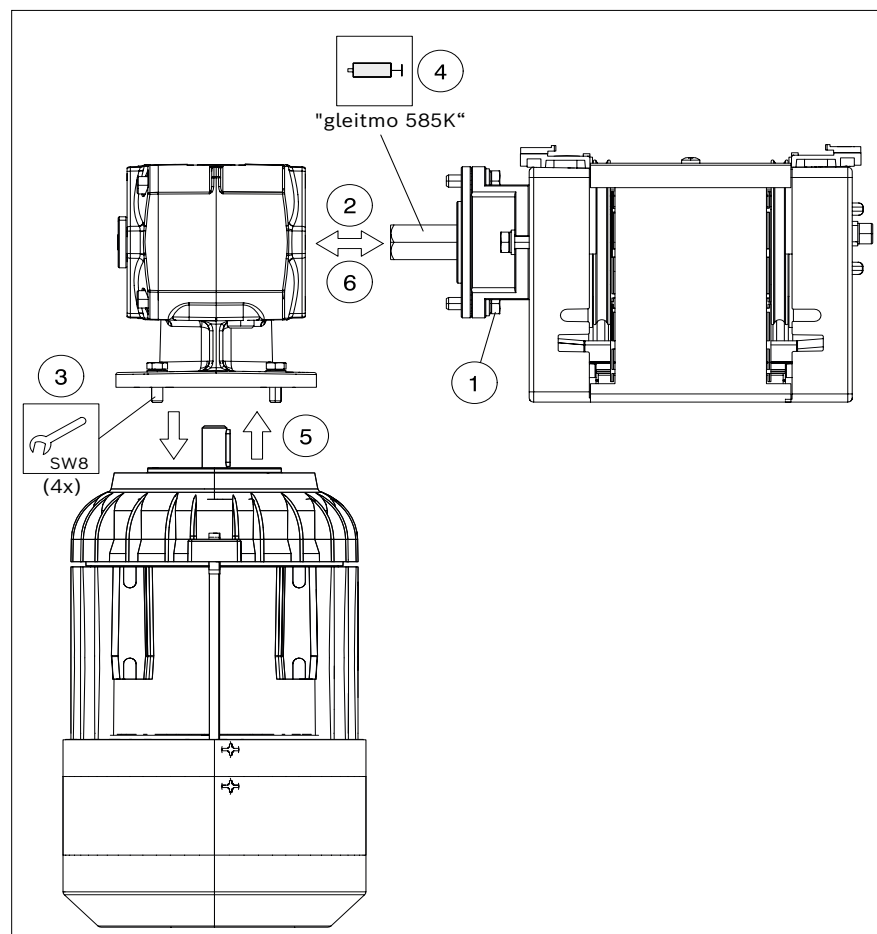


Fig. 22: Replacing the gear

12 Disassembly

WARNING

Electric shock caused by touching live parts.

Risk of serious injury or death.

- ▶ Before carrying out any work, interrupt the voltage supply:
Disconnect the power plug.
- ▶ Take suitable measures to prevent unintended restarting.

WARNING

Risk of fatal injury due to falling and toppling loads!

Falling objects can result in severe injury or even death.

- ▶ Only qualified personnel should transport the product.
- ▶ Never stand or walk under suspended loads.
- ▶ Make sure no one is in the danger zone.
- ▶ Only use suitable and inspected lifting gear, slings and forklifts.
- ▶ Observe bearing load (for product weight, see shipping documents).
- ▶ Check that the slings are securely fastened.
- ▶ Secure the load against toppling before you lift it.

13 Storage

- 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 ambient conditions, see section 16.1.

14 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.

15 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.

16 Technical data

16.1 Ambient conditions

- The section, drive module and return unit have been designed for stationary use in a location that is protected from the elements.
- Operating temperature: +5 °C to +40 °C
- Storage temperature: -25 °C to +70 °C
- Relative humidity: 5% to 85%, non-condensing
- Air pressure: > 84 kPa appropriate for an installation altitude < 1400 m above mean sea level.
- 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 common media used in production such as water, mineral oil, grease, and detergents. Contact your Rexroth representative if you have any doubts about resistance to specific chemicals, e.g. test oil, doped oils, aggressive detergents, solvents, or brake fluid.
- Avoid prolonged contact with highly reactive acidic or alkaline materials.

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