

Modular units for transfer system TS 5

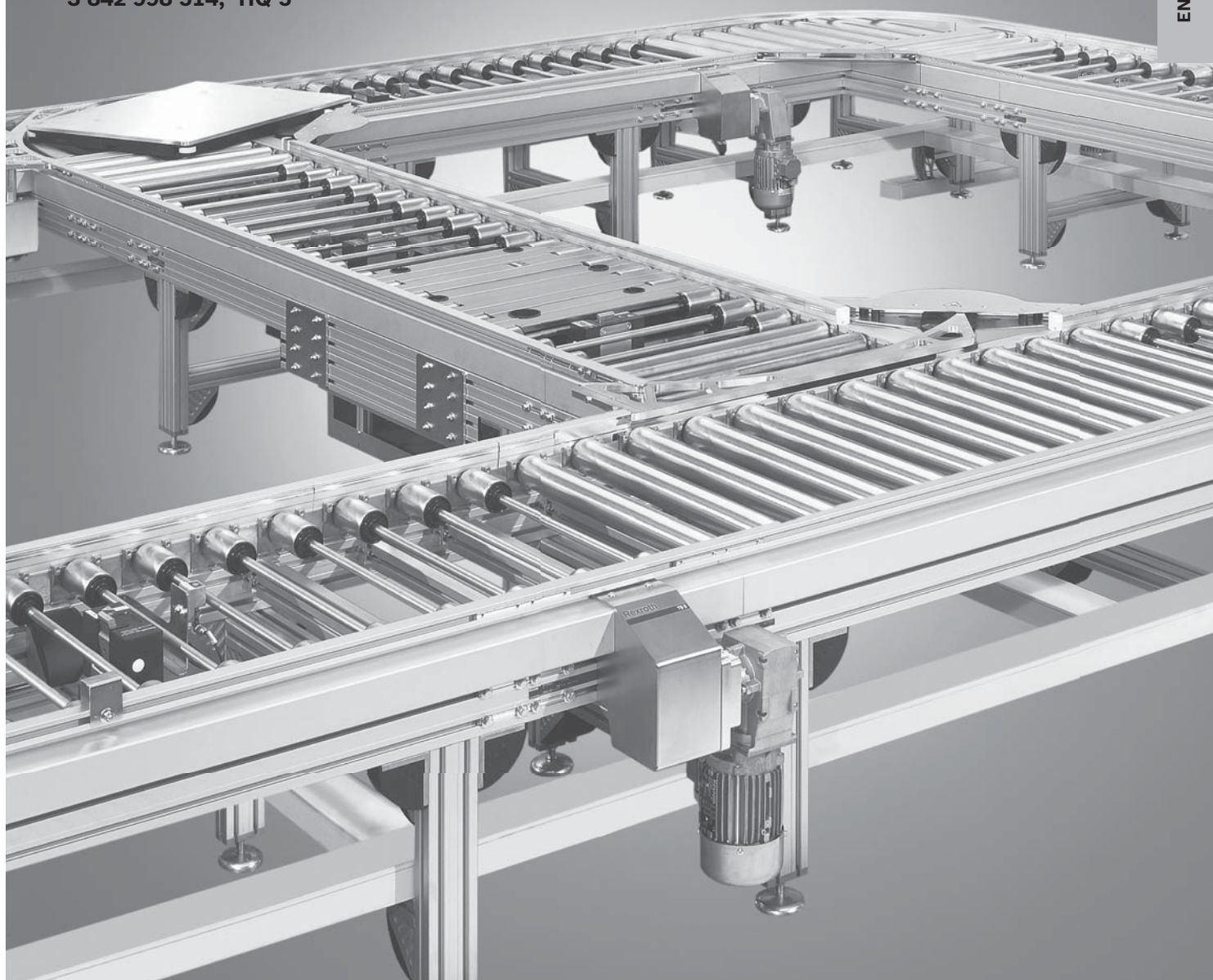
3 842 539 959/2012-08

Replaces: 2011-11
EN



Assembly instructions

3 842 998 532, AS 5/XH
3 842 998 533, AS 5/H
3 842 998 534, AS 5/XH-FR
3 842 998 535, AS 5/H-FR
3 842 998 575, AS 5/OC
3 842 998 514, HQ 5



The data specified above only serve to describe the product. The information provided in the instructions on how to use the supplied product should only be considered application examples and suggestions. Catalog information is not binding. The information given does not release the user from the obligation of own judgment and verification. Our products are subject to a natural process of wear and aging.

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Translation of the original operating instructions.

- DE Die vorliegende Montageanleitung ist in folgenden Sprachen verfügbar.
(Als PDF-Datei zum Download aus dem Medienverzeichnis, www.boschrexroth.com/medienverzeichnis)
- EN These assembly instructions are available in the following languages.
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- FR Les présentes instructions de montage sont disponibles dans les langues suivantes.
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- IT Le presenti istruzioni di montaggio sono disponibili nelle lingue seguenti.
(Scaricabile come file PDF dal Rexroth Media Directory, www.boschrexroth.com/mediadirectory)
- ES El presente manual de instrucciones de montaje está disponible en los siguientes idiomas.
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- ZH 本安装说明书有下列语言版本供使用。
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(W postaci pliku PDF do pobrania z zasobów mediów na: www.boschrexroth.com/mediadirectory)

3 842 540 375	Transfersystem TS 5 – Baueinheiten	DE	Deutsch (original assembly instructions)
3 842 539 959	Modular units for transfer system TS 5	EN	English
3 842 539 960	Composants du système de transfert TS 5	FR	Français
3 842 539 962	Componenti del sistema di trasferimento TS 5	IT	Italiano
3 842 539 963	Unidades constructivas del sistema transfer TS 5	ES	Español
3 842 539 964	Unidades de construção do sistema transfer TS 5	PT	Português
3 842 539 954	Konstrukční jednotky dopravníkového systému TS 5	CS	Česky
3 842 546 324	输送系统 TS 5 – 组建单元	ZH	中文
3 842 547 425	System transportowy TS 5 - elementy konstrukcyjne	PL	Polski

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1 About This Documentation

1.1 Scope of the documentation

This documentation applies to the following product:

-

This documentation is intended for installers, operators, and system owners.

This documentation contains important information on the safe and appropriate assembly, operation, maintenance, disassembly and simple troubleshooting of the product.

- These instructions, especially Chapter 2, are to be read completely before working with the product.

1.2 Required documentation

Documentation identified with a book symbol  must be provided and read before working with the product.

Tab. 1: Required documentation

	Title	Document number	Application
	Instructions for Employees on Safety	3 842 527 147	
	MTparts	3 842 529 770	Spare parts list on CD

ENGLISH

1.3 Presentation of information

Uniform safety instructions, symbols, terms, and abbreviations have been used in this documentation in order to ensure that you can get to work quickly and safely with the product. They are discussed in more detail in the following sections.

1.3.1 Abbreviations used

Abbreviation	Meaning
AS 5/...	Drive unit
CU 5/...	Curve
DI 5/...	Diverter
HQ 5	Lift transverse unit
JU 5/...	Junction
PE 5	Positioning unit
ST 5/...	Conveyor unit
SZ 5/...	Leg set
TS 5	Transfer system
VE 5/...	Stop gate
.../OC	Section with open center

1.3.2 Safety Instructions

In this documentation, there are safety instructions before the steps whenever there is a danger of personal injury or damage to the equipment. The danger prevention measures described must be observed.

Warning notes are set out as follows:

 SIGNAL WORD
Type and source of risk Consequences ► Precautions

- **Safety sign:** draws attention to the risk
- **Signal word:** identifies the degree of hazard
- **Type of risk:** identifies the type or source of the hazard
- **Consequences:** describes what occurs when the safety instructions are not complied with
- **Precautions:** states how the hazard can be avoided

The safety instructions include the following hazard classes. The hazard class describes the risk if the safety instructions are not complied with.

Tab. 2: Hazard classes acc. to ANSI Z535.6

Safety sign, signal word	Meaning
 DANGER	Indicates an imminently hazardous situation which, if not avoided, will certainly result in death or serious injury.
 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTE	Damage to equipment: The product or surrounding equipment may be damaged.

1.3.3 Symbols

The following symbols identify information that is not relevant for safety, but which increases the comprehensibility of the documentation.

Tab. 3: Meaning of the symbols

Symbol	Meaning
	If this information is disregarded, the operating procedure may be impaired.
►	Individual, independent action.
1.	Numbered steps.
2.	The numbers indicate the order for the steps.
3.	
• ...	List format
• ...	

2 Safety Instructions

2.1 About this chapter

The product has been manufactured according to the accepted rules of current technology. Even so, there is a risk of injury or damage when using the product if this chapter and the safety and warning information in these instructions are not observed.

- ▶ Read these instructions completely and thoroughly before working with the product.
- ▶ Keep these instructions in a location where they are accessible to all users at all times.
- ▶ Always include the operating instructions when you pass the product on to third parties.

2.2 Intended use

The modular units are incomplete machines (in accordance with the EU Machinery Directive 2006/42/EC).

The modular units may be used as follows:

- For installation exclusively in a Rexroth TS 5 transfer system.
- For transporting WT 5 workpiece pallets.
- Only when using conveyor units with full rollers to transport workpieces without workpiece pallets.
- The modular units:
 - CU 5/... curve
 - DI 5/... diverter
 - JU 5/... junction
 - VE 5/... stop gate
 - PE 5 positioning unit
 - HQ 5 lift transverse unit

are not intended for direct use in the work area (for a definition, please see DIN EN 619, Safety and EMC requirements for equipment for mechanical handling of unit loads). If these units are used in the work area, the system owner must take precautions to ensure safe operation. Examples for this can be found in the sections covering the respective unit.

The product is intended for the industrial sector and not designed for private use.

Intended use includes having read and understood these instructions, especially the chapter "Safety Instructions".

2.3 Improper use

Any use other than that described in the section “Intended Use” is considered improper and is not permitted. Bosch Rexroth AG is not liable for any damages resulting from improper use; the user alone bears the risks of improper use of the product.

Improper use of the modular units includes:

- Commissioning a system containing modular units without conducting a risk analysis beforehand from which appropriate measures are derived for safe operation.
- Operation in the non-industrial sector.

2.4 Personnel qualifications

The work described in this documentation requires basic mechanical and electrical knowledge, as well as knowledge of the appropriate technical terms. In order to ensure operating safety, these activities may therefore only be carried out by qualified technical personnel or an instructed person under the direction and supervision of qualified personnel

Qualified personnel are those who can recognize possible hazards and institute the appropriate safety measures due to their professional training, knowledge, and experience, as well as their understanding of the relevant conditions pertaining to the work to be done. Qualified personnel must observe the rules relevant to the subject area.

2.5 General safety instructions

- Observe the regulations for accident prevention and environmental protection.
- Observe the safety instructions and regulations applicable in the country in which the product is used.
- Exclusively use Rexroth products in good technical order and condition.
- Follow all instructions printed on the product.
- Persons who assemble, operate, or disassemble Rexroth products must not consume any alcohol, drugs, or pharmaceuticals that may affect their ability to respond.
- Only use accessories and spare parts approved by the manufacturer.
- Comply with the technical data and ambient conditions listed in the product documentation.
- Check the product for visible transport damage.

2.6 Safety instructions related to the product and technology

- | | |
|----------------------|---|
| General | <ul style="list-style-type: none"> • Do not modify or convert the product. • Do not expose the product to any mechanical loads under any circumstances. Never use the product as a handle or step. Do not place any objects on the product. • Always secure the product to prevent toppling. |
| During transport | <ul style="list-style-type: none"> • Observe the transport instructions on the packaging. |
| During assembly | <ul style="list-style-type: none"> • Lay cables and lines so that they cannot be damaged and no one can trip over them. • Make sure the relevant system component is not under pressure or voltage before assembling the product or when connecting and disconnecting plugs. • Protect the system component against being switched on. • Before commissioning, make sure that all seals and caps for the screwed connections are correctly installed and undamaged to prevent fluids and foreign bodies from penetrating the product. |
| During commissioning | <ul style="list-style-type: none"> • Let the product acclimate itself for several hours before commissioning, otherwise water may condense in the housing. • Make sure that all electrical connections are either used or covered. • Check the safety requirements in accordance with DIN EN 619. • Commission the product only if it is installed completely. • Make sure that all safety equipment belonging to the product is present, has been installed properly, and is fully functional. Do not displace, bypass, or disable the safety equipment. • Do not reach into moving parts. • Check the product for malfunctions. |
| During operation | <ul style="list-style-type: none"> • Ensure that only authorized personnel use the product within the scope of its intended use <ul style="list-style-type: none"> – Start or operate the system, or intervene in its normal functioning – Activate adjustment devices on components. • Only allow persons who are authorized by the system owner to access the product's direct operating area. This also applies when the product is standing still. • Make sure that <ul style="list-style-type: none"> – There are no obstacles preventing access to the emergency-off switches. – All delivery points, workstations and passages remain freely accessible. • Do not use the emergency-off switching device for routine stops. • Regularly check the proper functioning of the emergency-off switching device. • In case of an emergency, fault, or any other anomalies, switch the product off and protect it against being switched on again. • Do not reach into moving parts. • An idle system is not a safe system, as stored energy can be released unintentionally or through improper maintenance procedures. |

- | | |
|-------------------------------|---|
| Emergency stops, malfunctions | <ul style="list-style-type: none">• After an emergency stop or a malfunction, only switch on the system once the cause of the fault has been determined and the error removed. |
| During cleaning | <ul style="list-style-type: none">• Prevent cleaning agents from entering the system.• Never use solvents or aggressive detergents. Only clean the product using a slightly damp, lint-free cloth. Only use water to do this and, if necessary, a mild detergent.• Do not use a high-pressure cleaner for cleaning. |
| During maintenance and repair | <ul style="list-style-type: none">• Make sure that there are no obstacles blocking access to maintenance and inspection points.• Perform the prescribed maintenance work at the intervals specified in the operating instructions.• Make sure that no lines, connectors or components are disconnected as long as the system is under pressure and voltage. Protect the system against being switched on. |
| During disposal | <ul style="list-style-type: none">• Dispose of the product in accordance with the currently applicable national regulations in your country. |

2.7 Safety equipment

Make sure that all safety equipment belonging to the product is present, has been installed properly, and is fully functional. Do not displace, bypass, or disable the safety equipment.

Observe the information in the following documents when arranging the safety equipment:

- Machinery Directive 2006/42/EC
- DIN EN 619
- DIN EN 60204-1

2.8 Personal protective equipment

Wear appropriate protective equipment (e.g. safety shoes) when working with the product. As a plant operator, you are responsible for appropriate protective equipment when working with the product. All personal protective equipment must be intact.

2.9 Operator workstations

No special operator workstations are foreseen for this product.

3 Scope of Delivery

The delivery contents include:

- Various modular units according to your order. Please consult the shipping documents to make sure that the delivery is complete.
- 1 set of assembly instructions for the modular units.

4 Product Description

4.1 Performance description

Application of the modular units:

The TS 5 transfer system transports loads of up to 300 kg. Rexroth offers you a comprehensive system of conveyor modules: drive modules, workpiece pallets, roller sections, curves, diverters, positioning units and components for traffic control. Everything is designed for modular flexibility and pre-assembled and can be combined as needed using a single interface.

Driven by high-quality technology: the king shaft

The TS 5 transfer system with king shaft offers you considerable advantages compared to the normal chain drives:

- Absolutely maintenance-free
- Noise-free operation
- High energy efficiency through effective performance with low drive force requirements
- Friction can be adjusted by hand (after removing the protective cover on the king shaft).

New possibilities in all directions

As opposed to a chain driven conveyor system, the TS 5 can be used without any limitations. Its drive concept gives you a great amount of planning freedom. You can, for example, branch the system off to the right or to the left. This is very economical because no additional drive modules are needed in many system layouts.

Flexible planning, simple set-up, quick commissioning

As a system supplier for all areas of automation, we offer you an extensive, industrially manufactured modular product line-up. The new TS 5 transfer system is also based on a flexible system of modular components. As a Rexroth customer, this offers you many advantages, including the fact that you will be operating in a familiar environment right from the start of assembly – with everything proceeding quickly and smoothly. As the components for the TS 5 are included in our MT*pro* program, the parts list is generated automatically, which considerably simplifies the entire planning process.

A choice of transport types

Different products require different types of sections. Accordingly, you can choose whether to transport your goods on a workpiece pallet or directly on a continuous roller conveyor.

Advantages at a glance

- Fast, cost-effective system planning and expansion: The conveyor section design allows branching in both directions. And because the assembly space required for the drive is lower than the conveyor height, you can choose to have the drive mounted on either side. As always, all components are available in the MT*pro* planning tool.
- Reliable construction and fast commissioning: Industrially manufactured modular system with standardized components, resulting in short delivery times.
- High system uptime thanks to the maintenance-free king shaft drive concept. Advantages: No more need for lubrication and greasing.
- Sturdy design: Suitable for particularly harsh production environments and heavy loads.
- Everything from a single source: Easy ordering thanks to compatibility with the entire assembly technology product range.

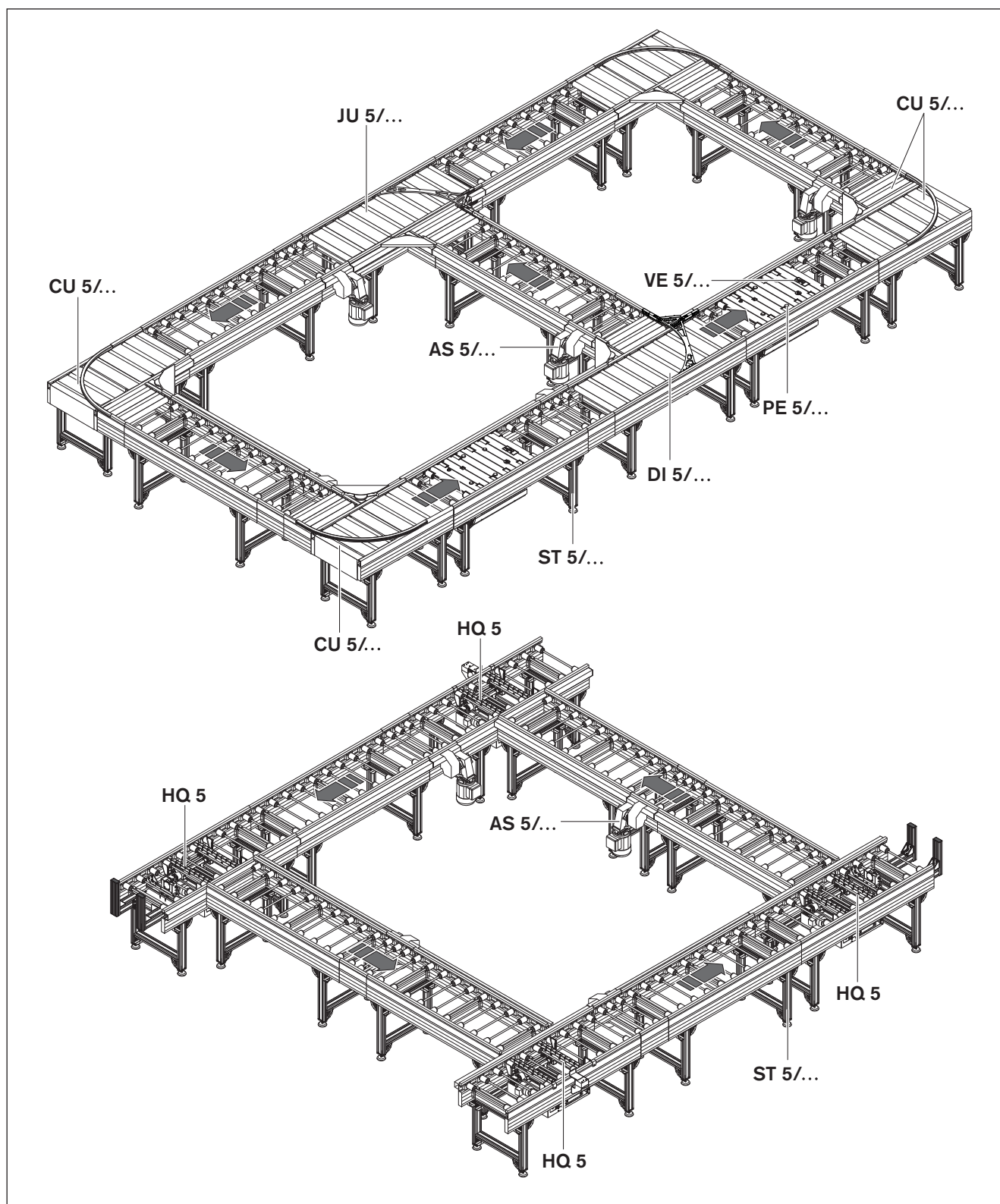


Fig. 1 Circuit with curve/diverter/junction, circuit with lift transverse unit

540 375-02

Depending on the expansion stage, the TS 5 transfer system consists of the following modular units:

- AS 5/... drive unit
- SZ 5/... leg set
- ST 5/... conveyor unit
- CU 5/... curve
- DI 5/... diverter
- JU 5/... junction
- PE 5 positioning unit
- HQ 5 lift transverse unit
- VE 5/... stop gate

See also the TS 5 transfer system sales catalog, **3 842 540 380**.

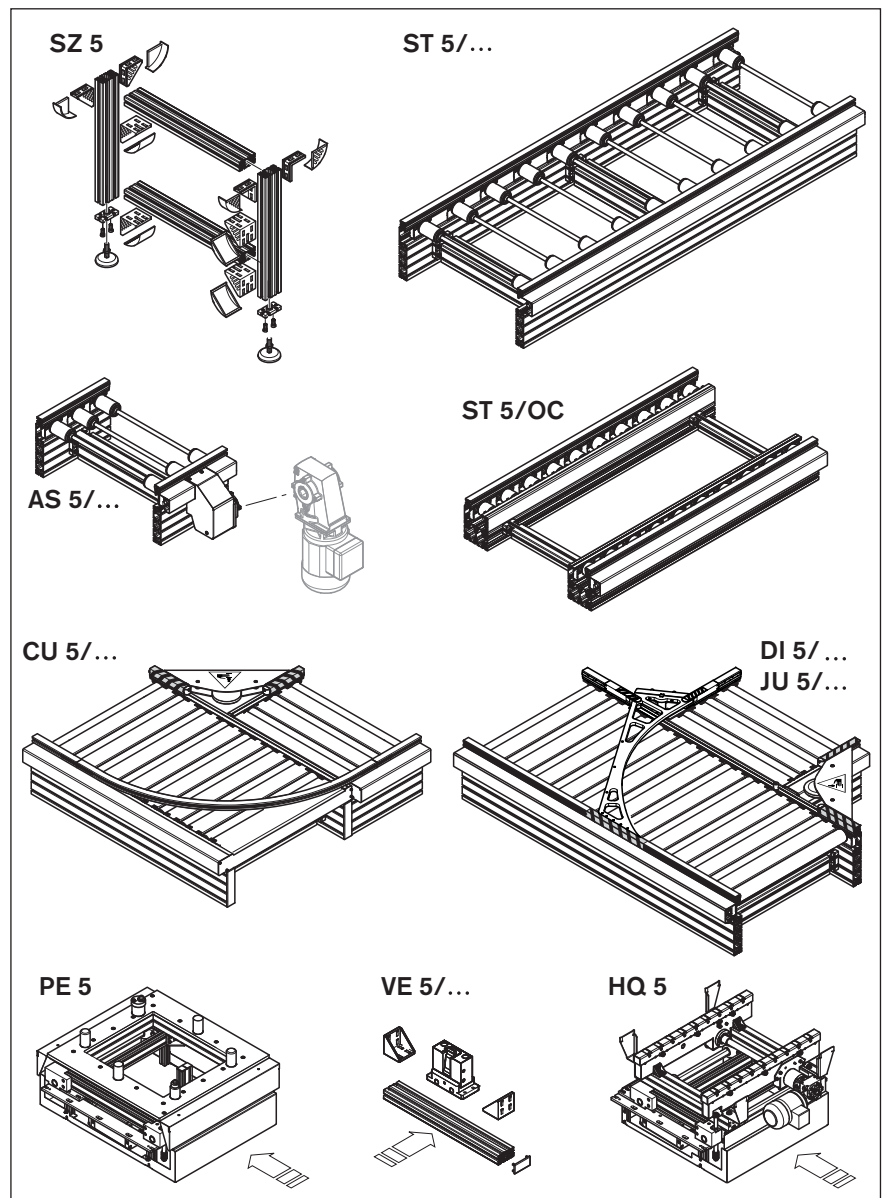


Fig. 2 Overview of TS 5 modular units

4.2 Product identification

Name plate

- 1: Order number
- 2: Designation
- 3: Information about version and dimensions

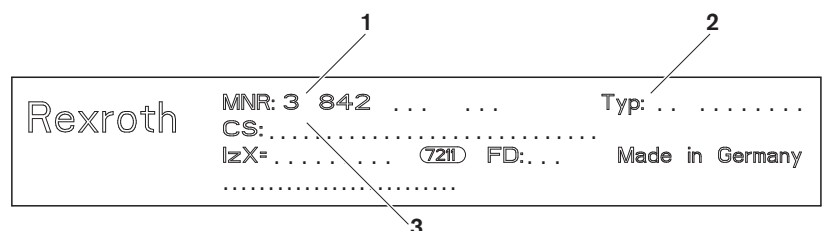


Fig. 3 Name plate

5 Transport and Storage

Observe the transport instructions on the packaging.

When storing and transporting the product, always observe the ambient conditions specified in the Technical Data (☞ 127).

5.1 Lifting and positioning the product



WARNING

Lifted loads may fall!

Falling objects may result in severe injuries (or even death).

- ▶ Use lifting equipment with a sufficiently high bearing load (see the shipping documents for product weight)
- ▶ Before lifting the product, make sure that the carrying straps are correctly fastened!
- ▶ Secure the product to prevent toppling while lifting!
- ▶ Make sure that no one is in the danger area when raising and lowering, with the exception of the operator!

5.2 Storing the modular units

- Always store the modular units on a flat surface.
- Always set down the DI 5/... diverter and JU 5/... junction with a support (min. height 100 mm)! (☞ 21)

6 Assembly

6.1 Unpacking

NOTE

Damage due to incorrect lifting

Do not lift by the rollers! This will damage the product and shorten the service life.

- ▶ Using lifting equipment, lift the TS 5 transfer system modular units out of the packaging at the lifting straps (🔗 20).
- ▶ As an alternative, lift from beneath the support profiles or cross connectors.

- ▶ Dispose of the packaging in accordance with the currently applicable national regulations in your country.

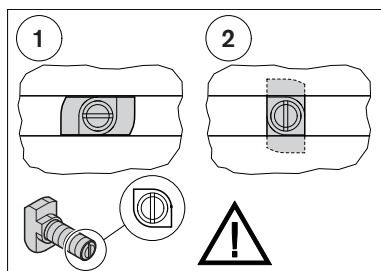
6.2 Installation requirements

When installing the product, always observe the ambient conditions specified in the Technical Data (🔗 127).

6.3 Mounting orientation

For reasons of functional safety and to prevent premature wear, the installation of TS 5 modular units on leg sets must be aligned and level at right angles and parallel to the axis.

6.4 Mounting with T-bolts



All transfer system (TS 1, TS 2*plus*, TS*solar*, TS 4*plus*, TS 5) and chain conveyor system (VarioFlow and VarioFlow S) modular units are assembled with T-bolts and flange nuts.

Make sure the T-bolt is in the correct position when inserting and tightening in the groove. The notch at the end of the bolt indicates the T-bolt orientation.

1 = T-bolt insertion orientation in the groove

2 = T-bolt clamping position in the groove

Maximum tightening torque: 25 Nm

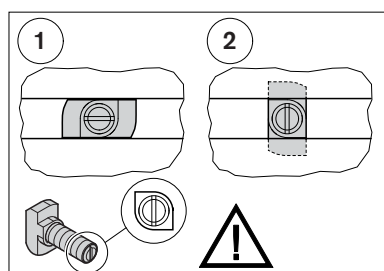
6.5 Required tools

- Hexagon wrench (open-end) WS 13, WS 24
- Hex socket wrenches WS 3, WS 4, WS 5, WS 6, WS 8
- Recessed head screwdriver PH3
- Level, minimum length 1200 mm
- Snap marking string
- Lifting equipment: 4-leg short lifting chain EN 818-4, load capacity ≥ 500 kg.
- Disassembly tool to remove the covers (on the king shaft and passive side): **3 842 545 836**
- Recommended for assembling the leg sets:
One screwdriver each for
 - Recessed head screws PH3
 - Hex socket screws WS 8.

6.6 Required accessories

- To connect the modular units  27
- To anchor to the floor  56
- For the proximity switches  39

6.7 Symbols used



Connect with T-bolt and flange nut.

Make sure the T-bolt is in the correct position when inserting and tightening in the groove. The notch at the end of the bolt indicates the T-bolt orientation.

1 = T-bolt insertion orientation in the groove

2 = T-bolt clamping position in the groove

Maximum tightening torque: 25 Nm



$M_D = 20\text{Nm}$

Wrench for hexagonal screw

SW = wrench size (WS) ... mm

M_D = required tightening torque ... Nm



$M_D = 8\text{Nm}$

Wrench for hex-socket screw

SW = wrench size (WS) ... mm

M_D = required tightening torque ... Nm



Screwdriver for recessed head screws

PZ ... = Pozidriv recessed head, size ...

PH ... = Recessed head, size ...



gleitmo 585 K Anti-Seize

Grease/grease with specified lubricant

• gleitmo 585 K: gleitmo 585 K, www.fuchs-lubritech.com

• Anti-Seize: Food Grade Anti-Seize/Loctite 8014, www.henkel.com



The identified parts are not required for the assembly situation described. Use the parts in another application or dispose of them.

4 damping elements are included with base pallet.

Insert them into the openings during assembly of the carrying plate.

6.8 WT 5 workpiece pallets

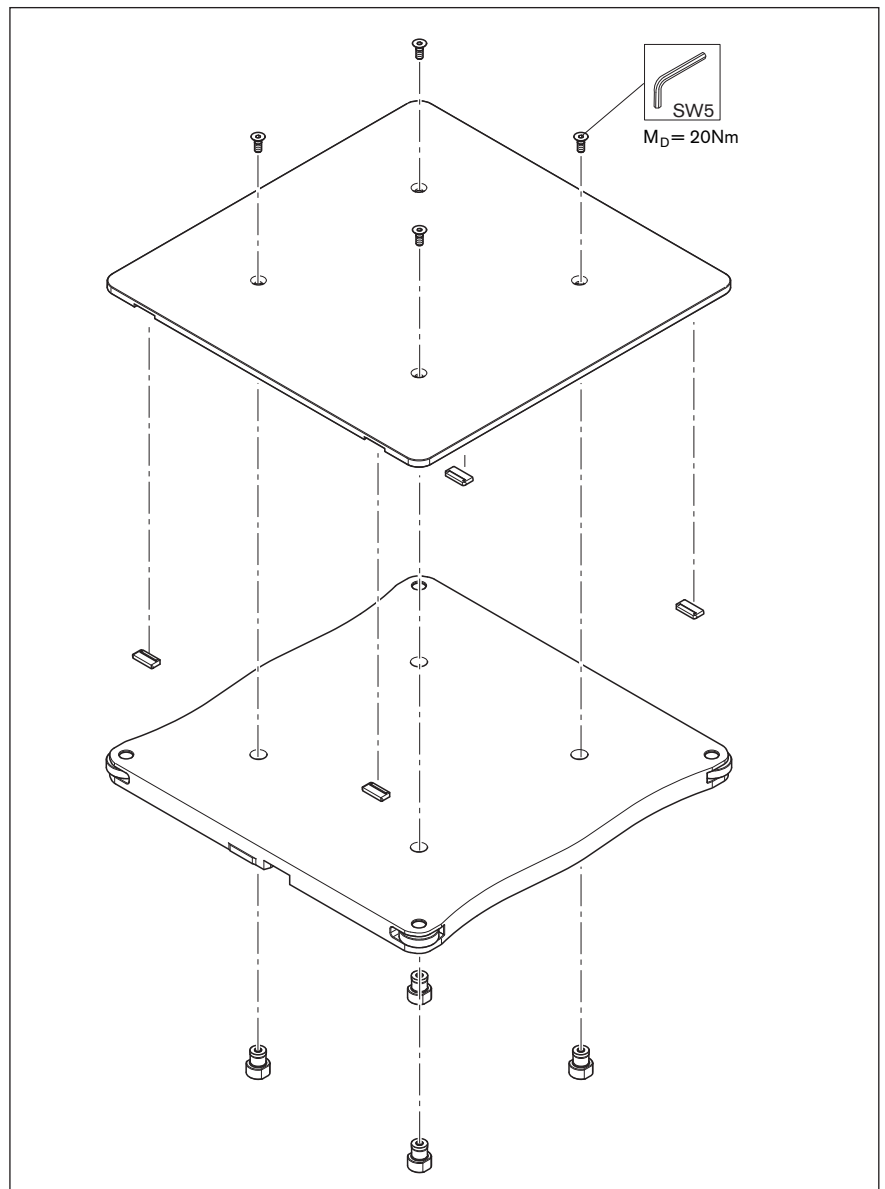


Fig. 4 WT 5 workpiece pallets

540 375-68

NOTE

Incorrect assembly influences the transport characteristics of the workpiece pallets, which may result in transport disruptions.

Fastening screws from workpiece fixtures provided by the customer that protrude beneath the carrying plate may deform the base pallet.

- Provide openings in the base pallet for protruding screws, max. depth of openings: 5 mm.

6.9 Lifting straps for lifting equipment

All modules are equipped with lifting straps to hook a 4-leg short lifting chain.

When delivered, the stacked modules are secured at the lifting straps. Release the connection to the bottom module before lifting a module from the stack.

Remove the lifting straps after you have positioned the modules.

Retain the lifting straps for conversion or disassembly purposes. If you are reassembling a module, make sure that the T-bolt is properly situated in the profile groove.

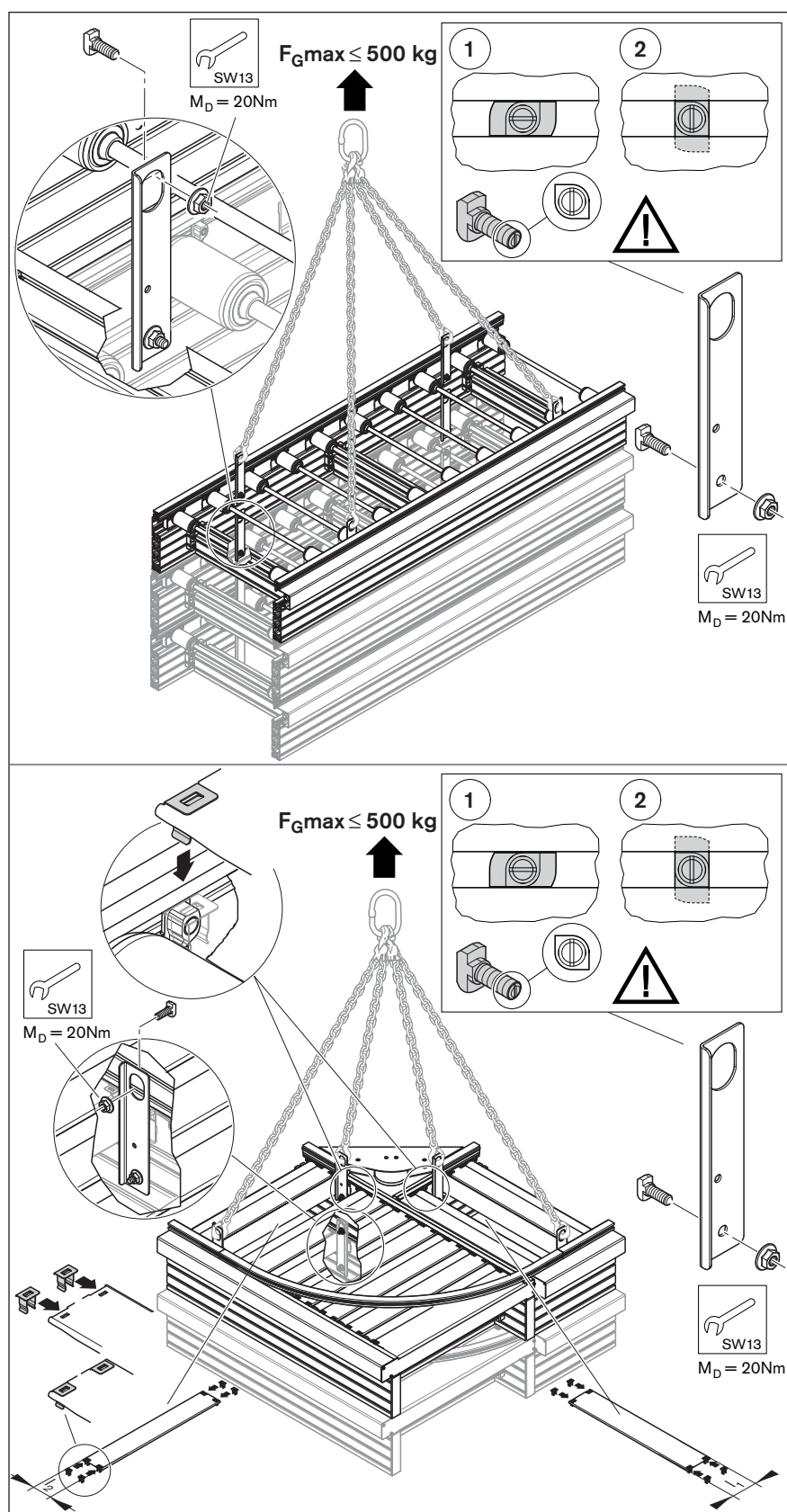


Fig. 5 Lifting straps for lifting equipment

540 375-03

6.10 Support when setting down diverter DI 5/... and junction JU 5/...

Do not set down without a support (min. height of 100 mm)!

The DI 5/... diverter and JU 5/... junction can be damaged if they are set down without a support. The actuating shaft of the diverter arm protrudes downwards beyond the support profile.

Only remove the brackets on the transport retainer when mounting the leg sets.

Retain the brackets on the transport retainer for conversion or disassembly purposes. If you are reassembling, make sure that the T-bolt is properly situated in the profile groove.

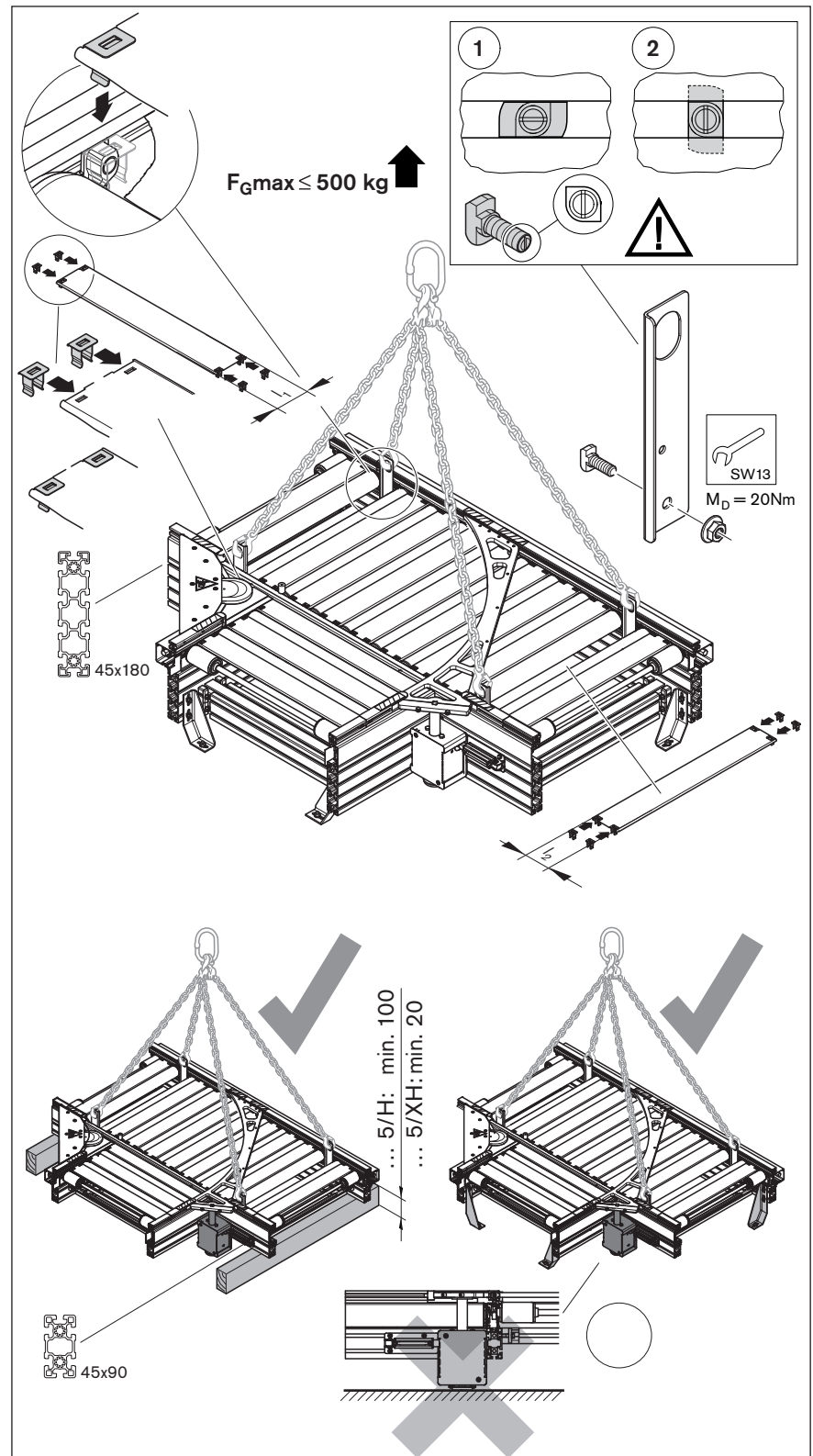


Fig. 6 Support when setting down diverter DI 5/... and junction JU 5/...

6.11 SZ 5/... leg set

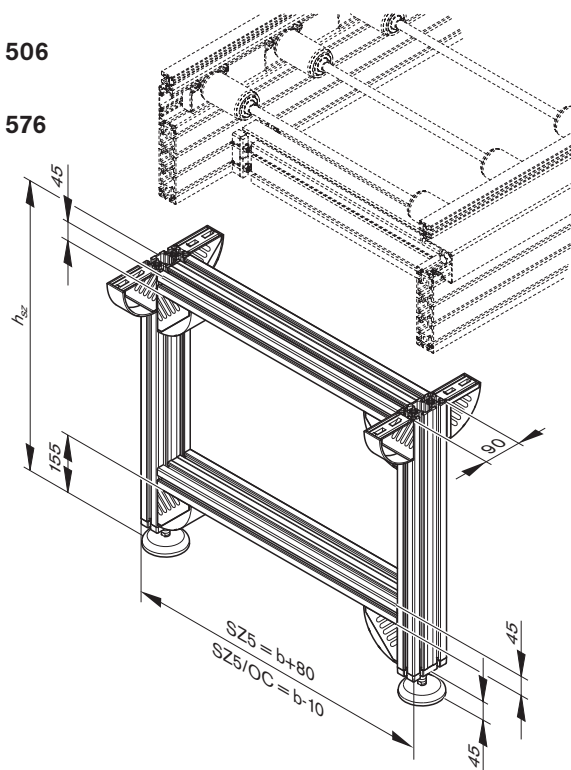
Version

b: Track width

h_{SZ} : Height of the leg set

SZ 5
3 842 998 506

SZ 5/OC
3 842 998 576



SZ 5/U
3 842 998 507

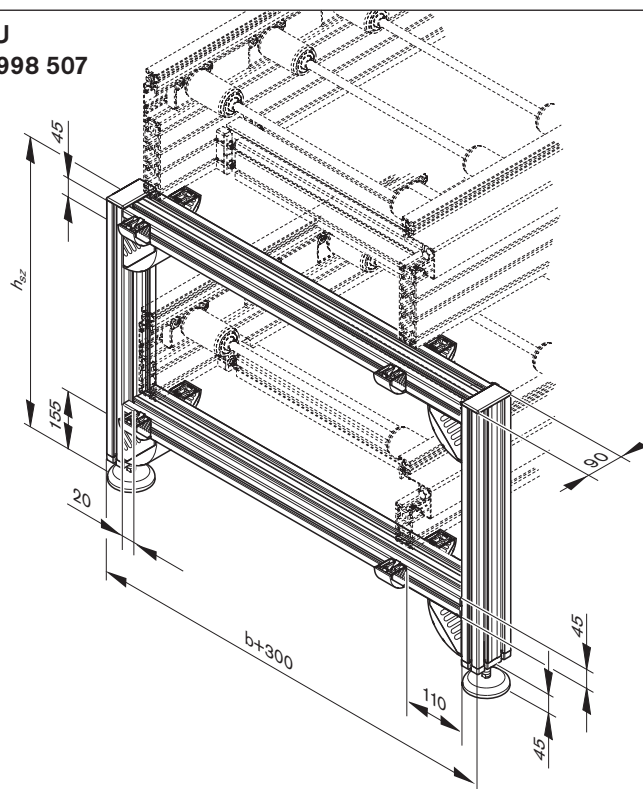


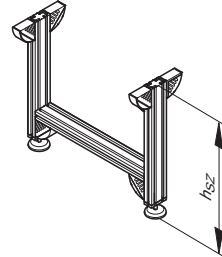
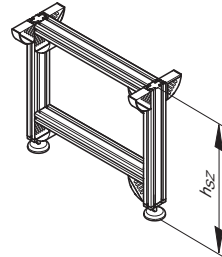
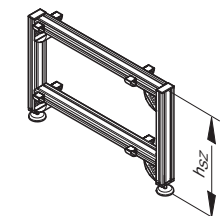
Fig. 7 SZ 5/... leg set

540 375-05

Scope of delivery

Not assembled, in single parts

- A:** Strut profile 45x90
- B:** Strut profile 45x90
- C:** Bracket 45x90 with fastening kit and cap
- D:** Bracket 90x90 with fastening kit and cap
- E:** Plate 45x90 with fastening kit
- F:** Leveling foot $\varnothing 90$

SZ 5**3 842 998 506****SZ 5/OC****3 842 998 576** $h_{sz} \leq 350$  $h_{sz} > 350$ **SZ 5/U****3 842 998 507****Fig. 8** SZ 5/... leg set, scope of delivery

Pre-assembling the vertical strut profiles

1. Grease the threaded spindle.
2. Pre-set the counter nut.
3. Assemble the plate.
4. Screw in the leveling foot.

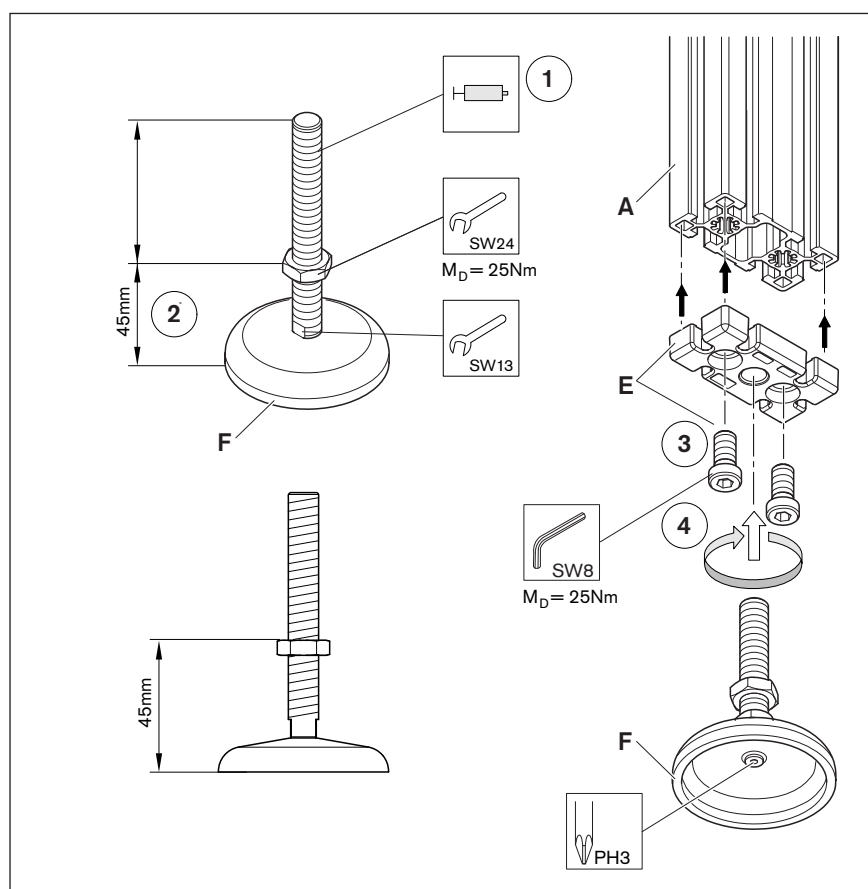


Fig. 9 SZ 5/... leg set, pre-assembling the vertical strut profiles

540 375-07

Assembly

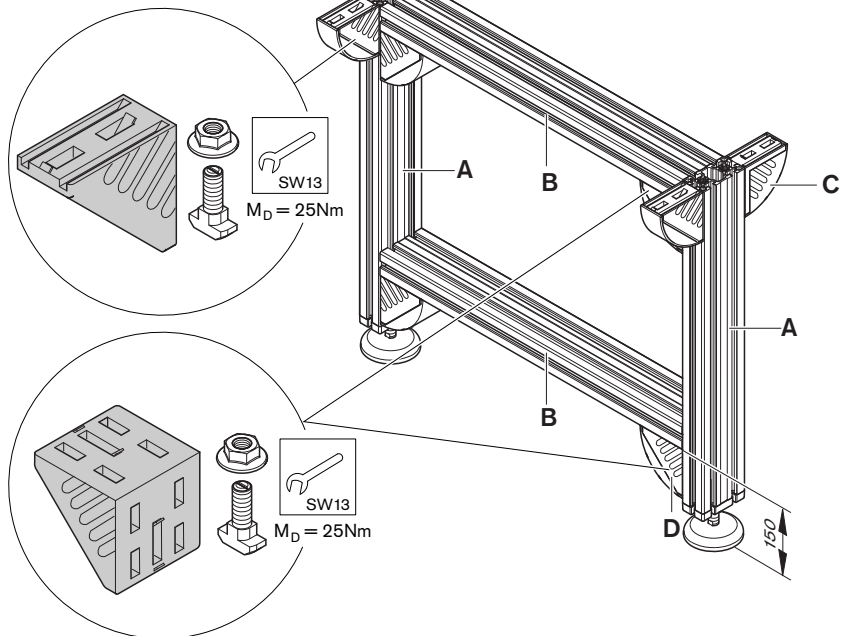
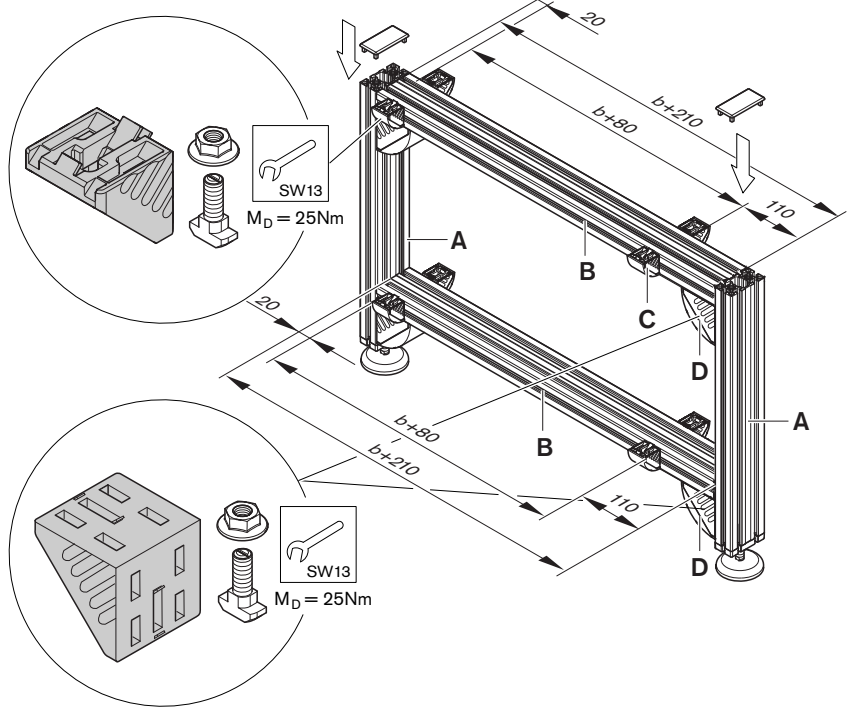
SZ 5**3 842 998 506****SZ 5/OC****3 842 998 576****SZ 5/U****3 842 998 507**

Fig. 10 SZ 5/... leg set, assembly

540 375-08

6.12 ST 5/... conveyor unit

1. Place each conveyor unit on leg sets.

Note: If you want to install a PE 5 positioning unit (☞ Fig. 59) or HQ 5 lift transverse unit (☞ Fig. 71) in the section, installation from below can now be done with less effort, before connecting the conveyor unit with the adjacent modules.

2. Align the first conveyor unit longitudinally, transversely, and vertically.
3. Insert the connector (☞ Fig. 12: A, B, Fig. 27) in the grooves, and insert the intermediate plates (☞ Fig. 12: C, Fig. 27).
4. Align the next conveyor unit longitudinally, transversely, and vertically with the already-standing conveyor unit and connect them (☞ Fig. 12, Fig. 27).
5. Connect the king shaft with the coupling (☞ Fig. 12, Fig. 27). To do this, disassemble the covers on the king shaft (☞ Fig. 12, Fig. 27).

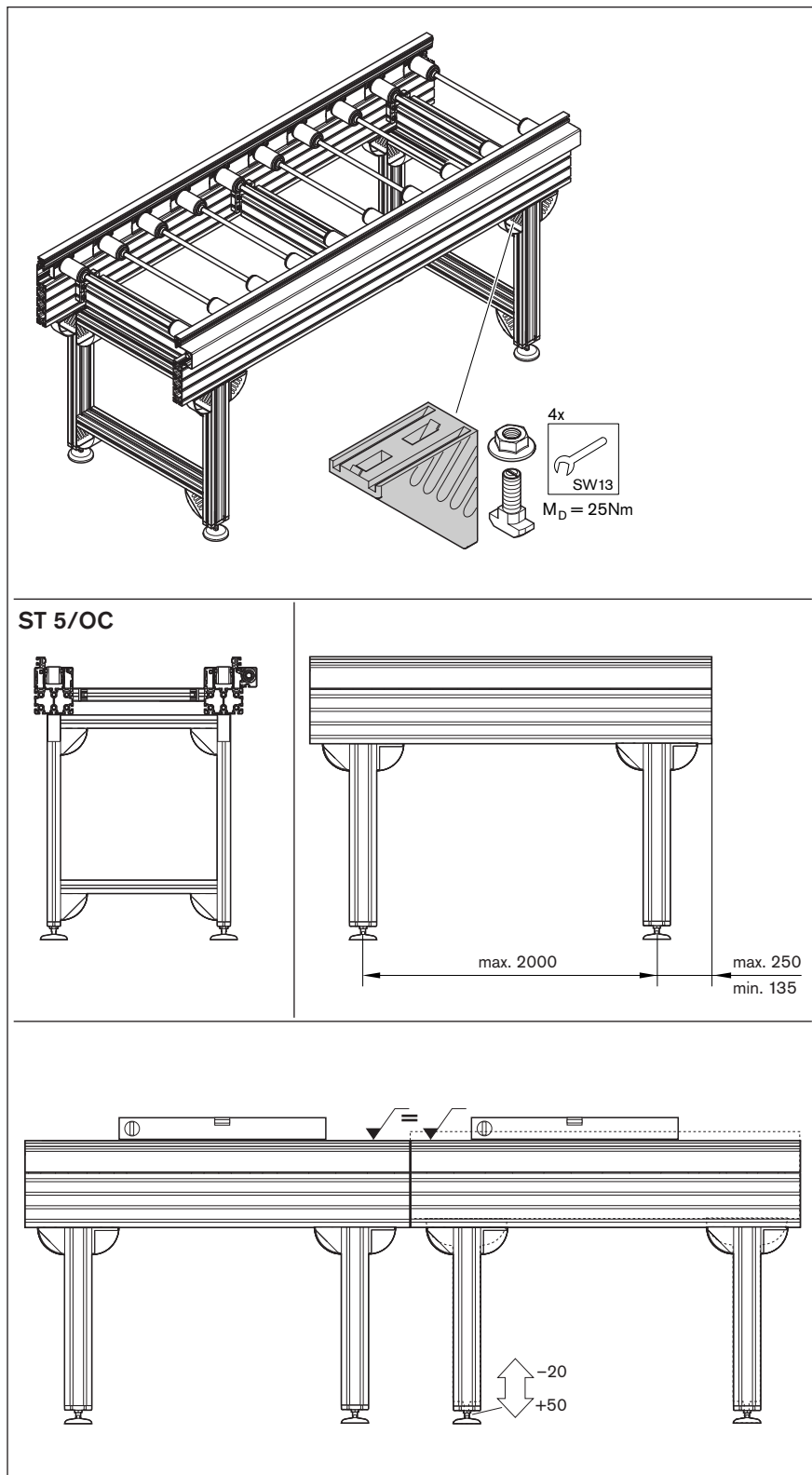


Fig. 11 ST 5/... conveyor unit

540 375-09

6.13 Connection kits

To connect two TS 5 modular units, you will need:

- 4 profile connectors for section profile (A), **3 842 528 746**
- 2 profile connectors for lateral guide (B), **3 842 545 699**
- 2 intermediate plates (C), p1/p2:
 - 130/130: **3 842 545 215**
 - 130/195: **3 842 545 354**
 - 130/260: **3 842 545 216**
 - 130/325: **3 842 545 355**
 - 195/195: **3 842 545 216**
 - 260/260: **3 842 545 217**
 - 325/325: **3 842 545 218**
- 1 coupling (D), **3 842 545 160**

Disassembling/assembling covers

- ▶ Place the disassembly tool **3 842 545 836** on the cover and lift up the cover (Fig. 12, x).
- ▶ Place the cover on the bearing pedestal and snap it in (Fig. 12, y).

Assembling the coupling (D):

1. Loosely pre-assemble the half-shells.
2. Place the pre-assembled half-shells on the shaft ends.
3. Bring the modular units together, while inserting the intermediate plate (C).
4. Align the coupling, **grease** and insert the coupling disk, tighten the screws.

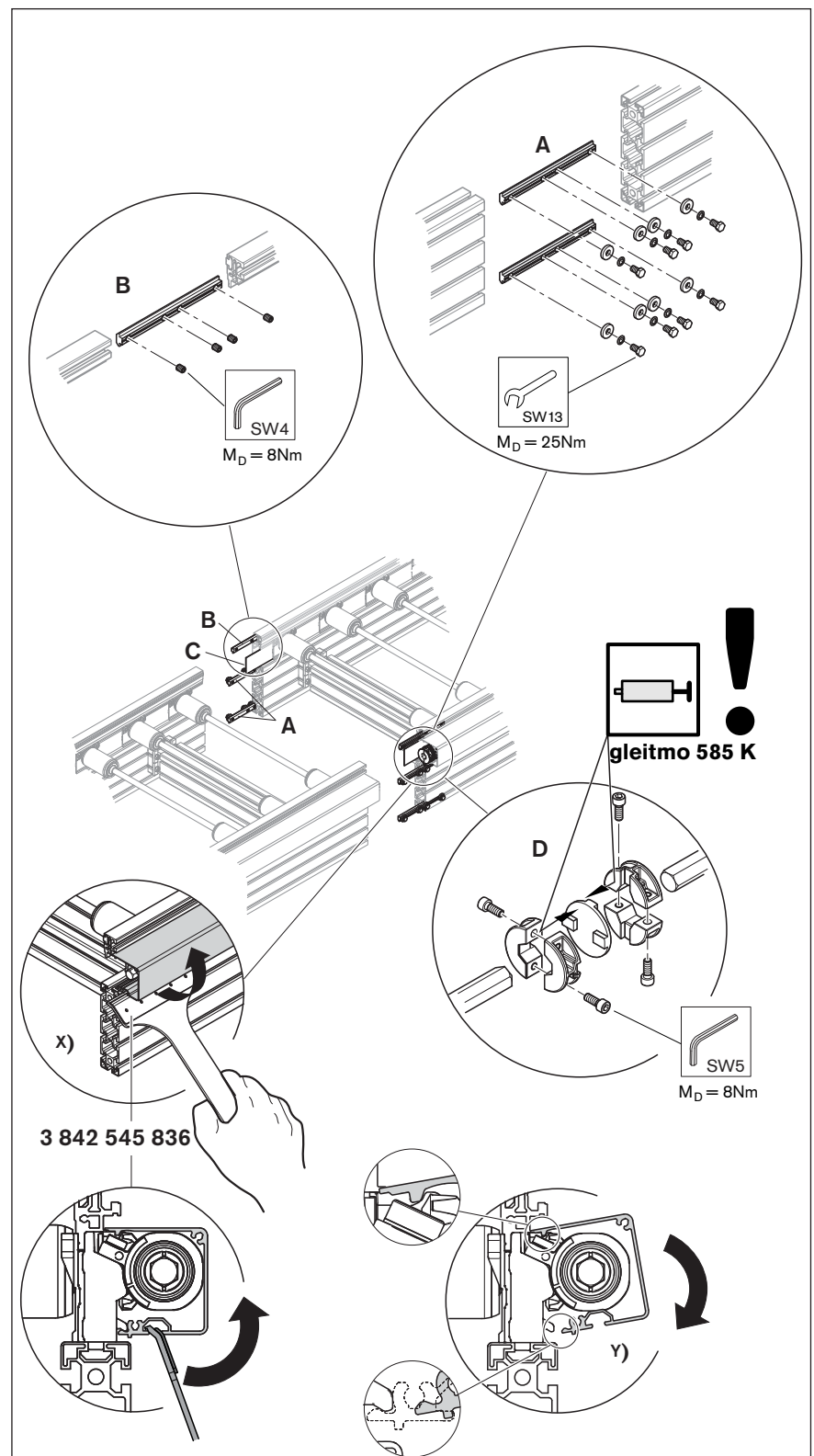


Fig. 12 Connection kits

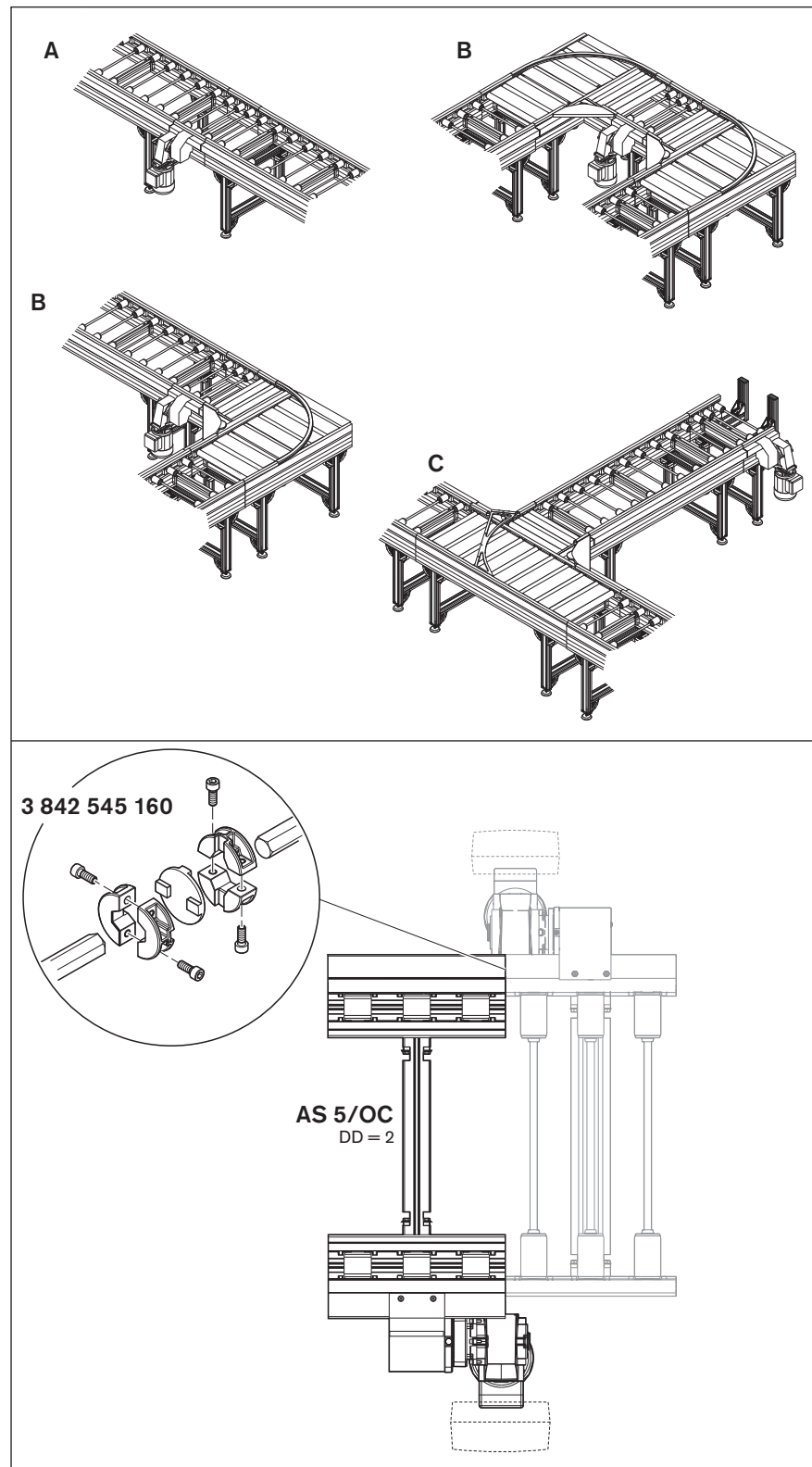
540 375-10

6.14 AS 5/... drive unit

The drive unit does not need to be supported if it is assembled between two conveyor units with adjacent legs (⇨ Fig. 13, A).

Exceptions:

- Assembled after a diverted section of a curve, diverter, or junction (⇨ Fig. 13, B).
- Assembled as a head drive at the end of a dead end section. Support with leg sets in these cases (⇨ Fig. 13, C).



AS 5/OC, DD = 2:

Join the drive side without the gear motor to an adjacent gear-driven section.

Fig. 13 AS 5/... drive unit, installation situations

The gear motor is provided separately. Gear motor assembly  56.

The toothed belt in the AS 5 drive unit has been tensioned at the factory. Do **NOT** change this pre-tension!

1. Insert the connector ( Fig. 12: A, B,  27) in the grooves of the already standing conveyor unit, and insert the intermediate plates ( Fig. 12: C,  27).
2. If necessary, place the drive unit on a leg set ( Fig. 12,  27).
3. Align the drive unit longitudinally, transversely, and vertically with the already-standing conveyor unit and connect them ( Fig. 12,  27).
4. Connect the king shaft with the coupling ( Fig. 12: D,  27). To do this, disassemble the covers on the king shaft ( Fig. 12,  27). The king shaft covers are connected to the adjacent covers for stabilization. The connectors are included in the scope of delivery.

Note: Only commission and operate with assembled protective covers.

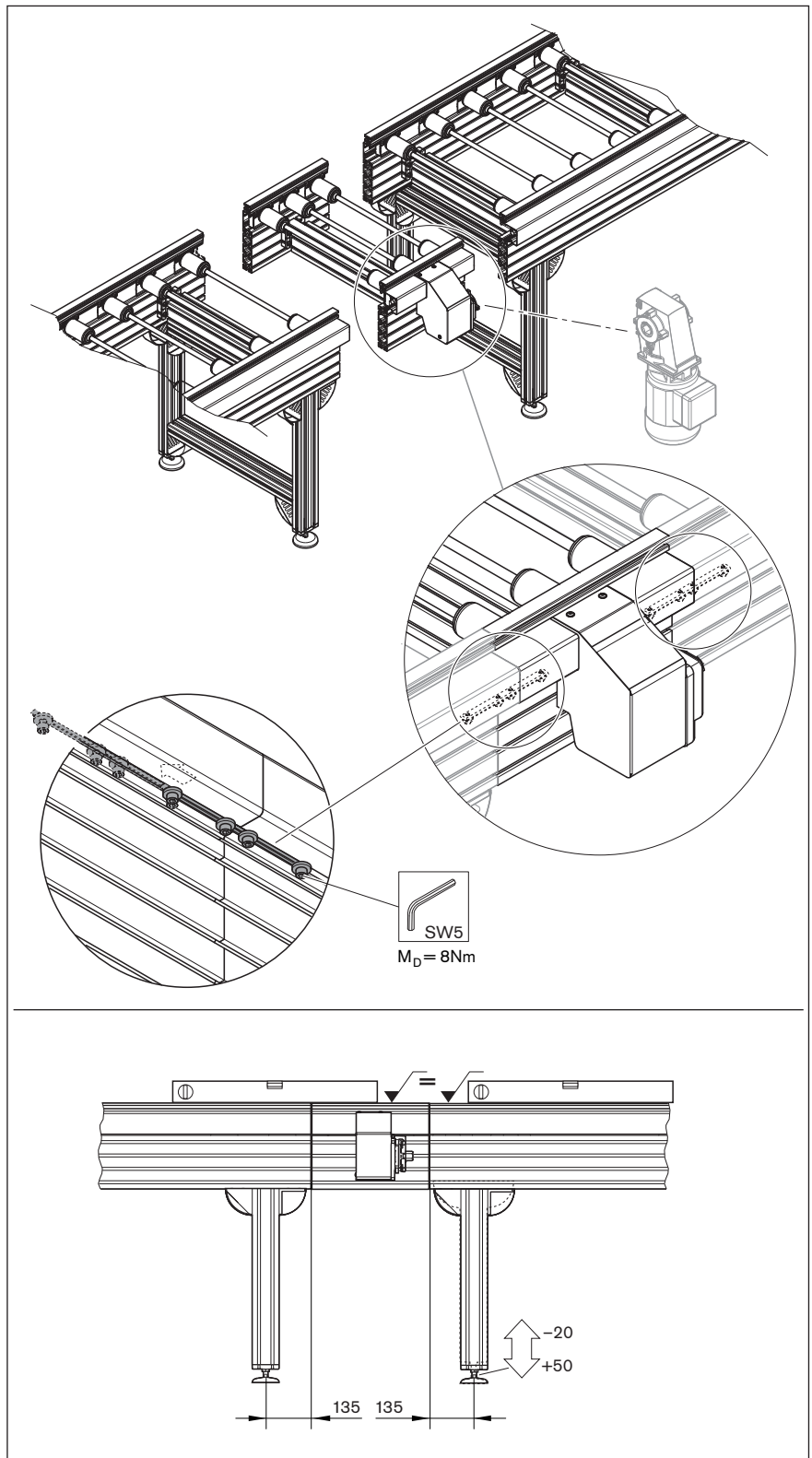


Fig. 14 AS 5/... drive unit, assembly

540 375-11

6.15 CU 5/... curve

Arrangement of

- CU 5/... curve
- DI 5/... diverter
- JU 5/... junction

Due the different functions, the transport heights of the main and secondary sections (inlet and outlet) differ for curves, diverters, and junctions.

Arrange modules with an opposite orientation; see the graphic (☞ Fig. 15).

For CD..., DD..., JU... ordering options, see the TS 5 transfer system sales catalog,

3 842 540 380, Chapter 5.

Take the offset in height into account when aligning the modules.

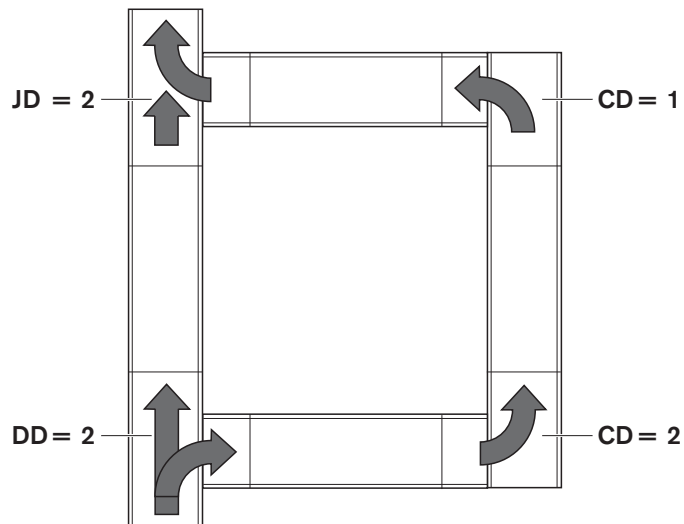
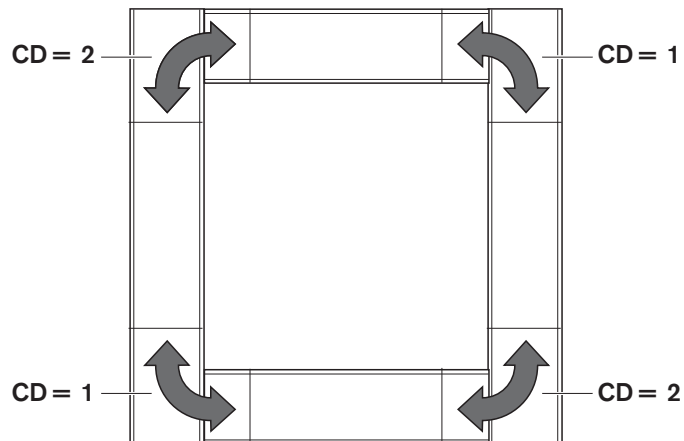


Fig. 15 Positioning of curve, diverter/junction

CU 5/... curve

1. Place the curve on two leg sets.
2. Insert the connector (☞ 27, ☞ Fig. 12: A, B) in the grooves, and insert the intermediate plates (☞ 27, ☞ Fig. 12: C).

Note: Profile connector B cannot always be assembled in the center on the inside of the curve (dependent on b_{WT} and l_{WT}).

3. Align the curve longitudinally, transversely, and vertically with the already-standing conveyor and connect them (☞ 27, ☞ Fig. 12).

Note: Due to the function, the transport heights of the main and secondary sections (inlet and outlet) differ by 0.5 mm at curves, diverters, and junctions (☞ 30, ☞ Fig. 15). Take into account when aligning (☞ Fig. 16: Z)).

4. Attach the following conveyor unit, align with the curve longitudinally, transversely, and vertically, and connect them (☞ 27, ☞ Fig. 12).

5. Connect the king shaft with the coupling (☞ 27, ☞ Fig. 12: D). To do this, disassemble the covers on the king shaft (☞ 27, ☞ Fig. 12: X), Y)).

Note: If the king shaft is on the inside of the curve, the curve segment must first be removed in order to disassemble the king shaft cover (☞ 32, ☞ Fig. 17: Y)).

Note: Before commissioning curves, diverters, and junctions, identify dangerous areas (☞ Fig. 16: X)):

- With a warning sign
- By marking in black/yellow

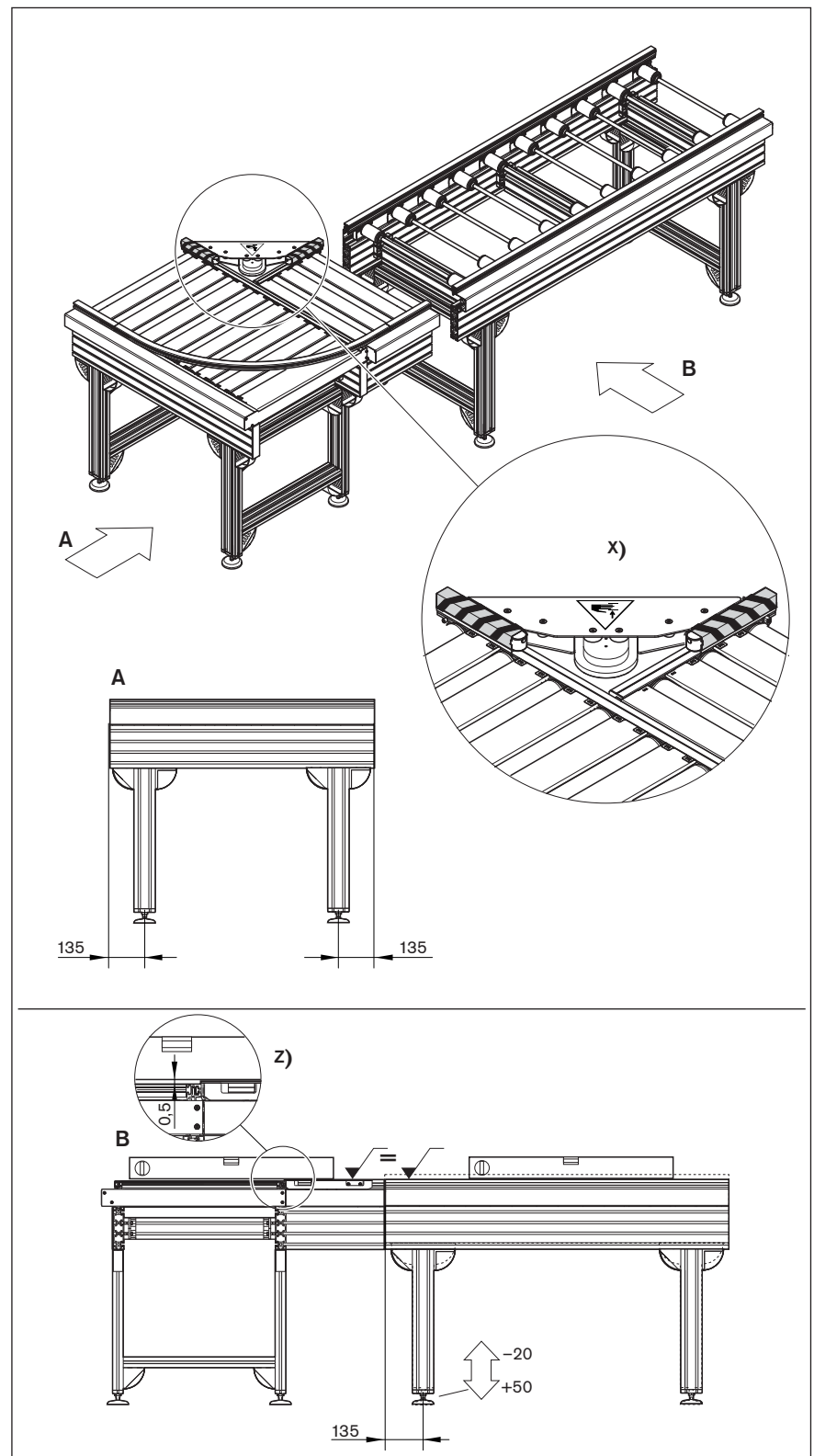


Fig. 16 CU 5/... curve

540 375-14

6.16 DI 5/... diverter, JU 5/... junction

1. Place the diverter/junction on two leg sets.
2. Insert the connector (☞ Fig. 12: A, B) in the grooves, and insert the intermediate plates (☞ Fig. 12: C).

Note: Profile connector B cannot always be assembled in the center on the inside of the curve (dependent on b_{WT} and l_{WT}).

3. Align the diverter/junction longitudinally, transversely, and vertically with the already-standing conveyor unit and connect them (☞ Fig. 12).

Note: Due to the function, the transport heights of the main and secondary sections (inlet and outlet) differ by 0.5 mm at curves, diverters, and junctions (☞ Fig. 15). Take into account when aligning (☞ Fig. 17: Z)).

4. Attach the following conveyor unit and align longitudinally, transversely, and vertically with the diverter/junction and connect them (☞ Fig. 12).

5. Connect the king shaft with the coupling (☞ Fig. 12: D). To do this, disassemble the covers on the king shaft (☞ Fig. 12: X), Y)).

Note: If the king shaft is on the inside of the diverter/junction, the curve segment must first be removed in order to disassemble the king shaft cover (☞ Fig. 17: Y)).

Note: Before commissioning curves, diverters, and junctions, identify dangerous areas (☞ Fig. 17: X)):

- With a warning sign
- By marking in black/yellow

6. Connecting the pneumatic supply ☞ Fig. 91.

P): PN connection

S): Installation of sensors possible

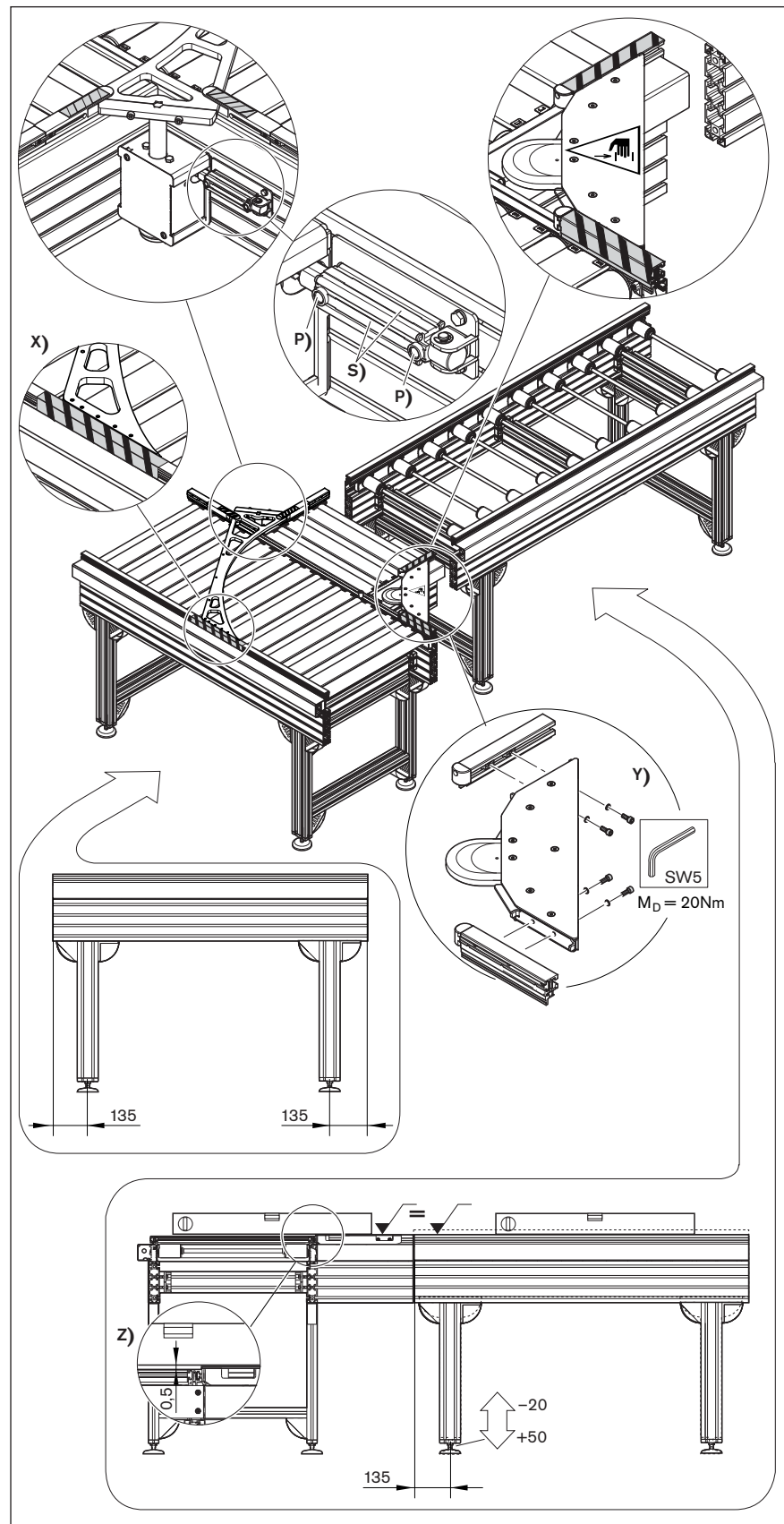


Fig. 17 DI 5/... diverter, JU 5/... junction

6.17 VE/... stop gate

- Position of the stop gate on the workpiece pallet  35...36
- Proximity switches  39
- Openings in the protective covers for VE 5/...  40...41

Product Description

VE 5/200 stop gate

- A:** Stop gate
B: 6 mm pushlock-type compressed air connection
C: Possible position inquiry of VE stop blade:
- Engaged = blade up

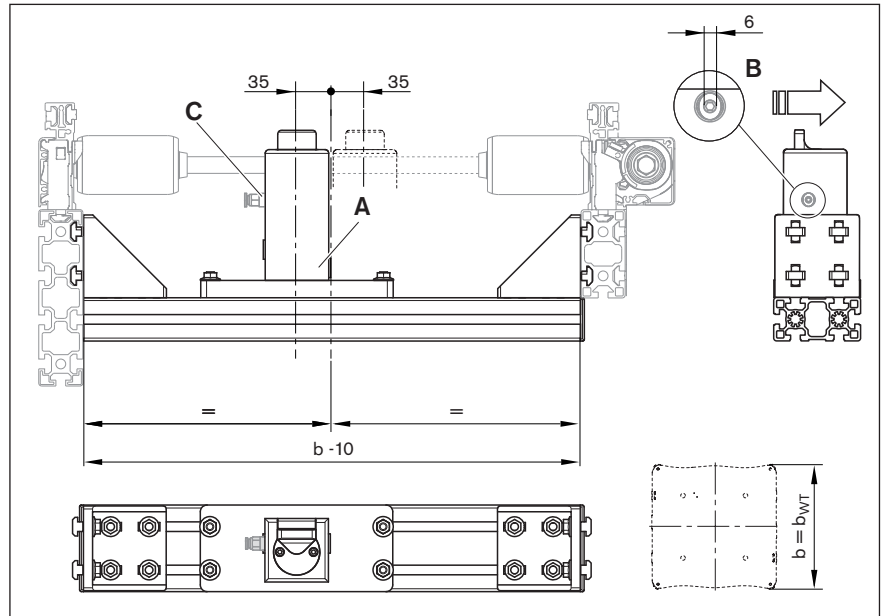


Fig. 18 VE 5/200 stop gate

540 375-16

VE 5/D-300 stop gate

- A:** Stop gate
B: 6 mm pushlock-type compressed air connection
C: Possible position inquiries of VE stop blade
- Engaged = blade up
 - Not engaged = blade down
- D:** Possible position inquiries of VE stop blade
- Damping retracted
- The proximity switch can be installed on the left or right.
- E:** Adjust the cushioning force:
- + = increase the cushioning force
 - = decrease the cushioning force

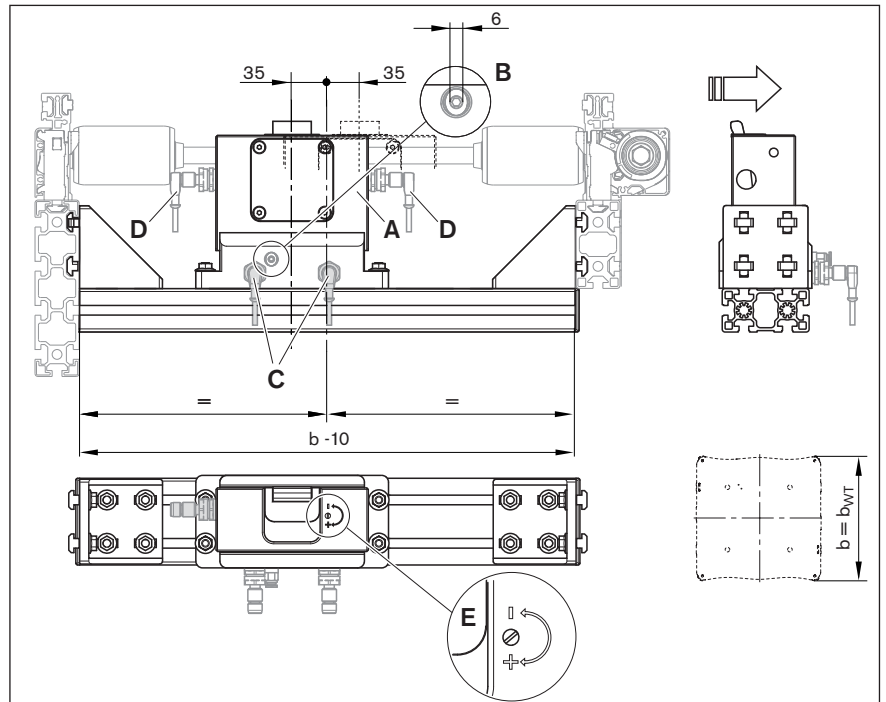
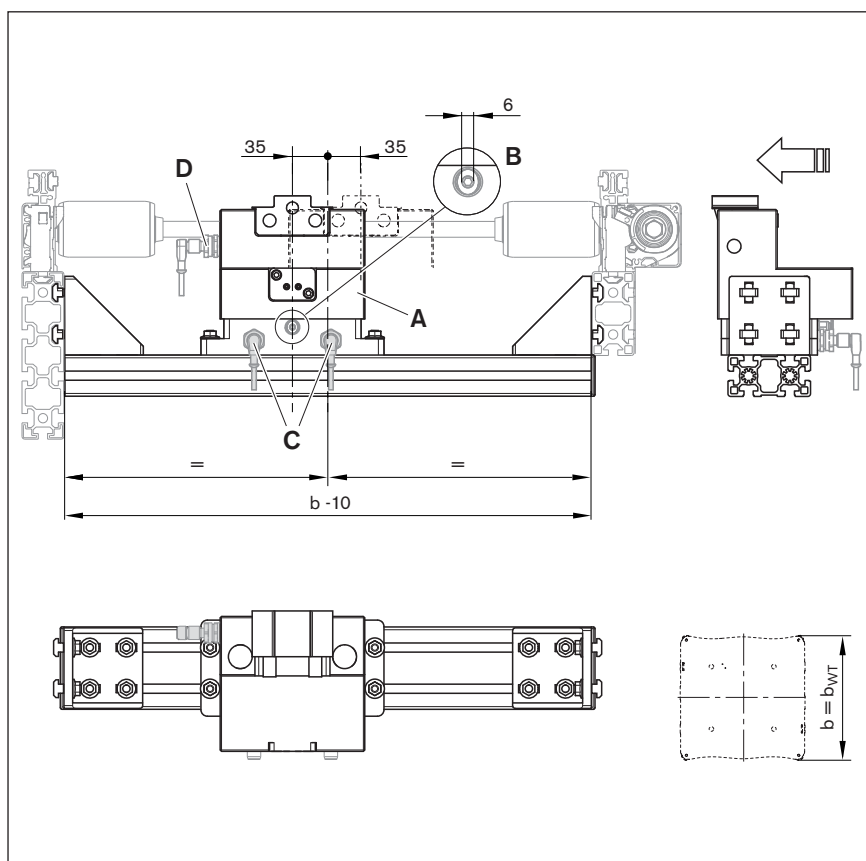


Fig. 19 VE 5/D-300 stop gate

540 375-17

VE 5/D-1000 stop gate

- A:** Stop gate
- B:** 6 mm pushlock-type compressed air connection
- C:** Possible position inquiries of VE stop blade
- Engaged = blade up
 - Not engaged = blade down
- D:** Possible position inquiry of VE stop blade, damper retracted: yes/no

**Fig. 20** VE 5/D-1000 stop gate

540 375-18

Position of the stop gate on the workpiece pallet

Work areas must be secured by protective covers in accordance with DIN EN 619. The user must make the openings in the protective covers for the stop gate and switch bracket, continuous gap ≤ 5 mm.

Dimensioned illustrations of the openings, for installation according to Fig. 21 Fig. 35, and for installation according to Fig. 24 Fig. 38.

Stop the workpiece pallet at the front in the longitudinal conveyor.

Reference points for installation (in the transport direction):

- Front edge of the bearing pedestal of a roller (1)
- Front edge of the support profile of the stop gate (2)

VE 5/200, VE 5/D-300 stop gates

l_{WT} [mm]	A [mm]	B [mm]
455	46.5	32.5
650	79	65
845	79	65
1040	79	65

VE 5/D-1000 stop gate

l_{WT} [mm]	A [mm]	B [mm]
455	73	59
650	105.5	91.5
845	105.5	91.5
1040	105.5	91.5

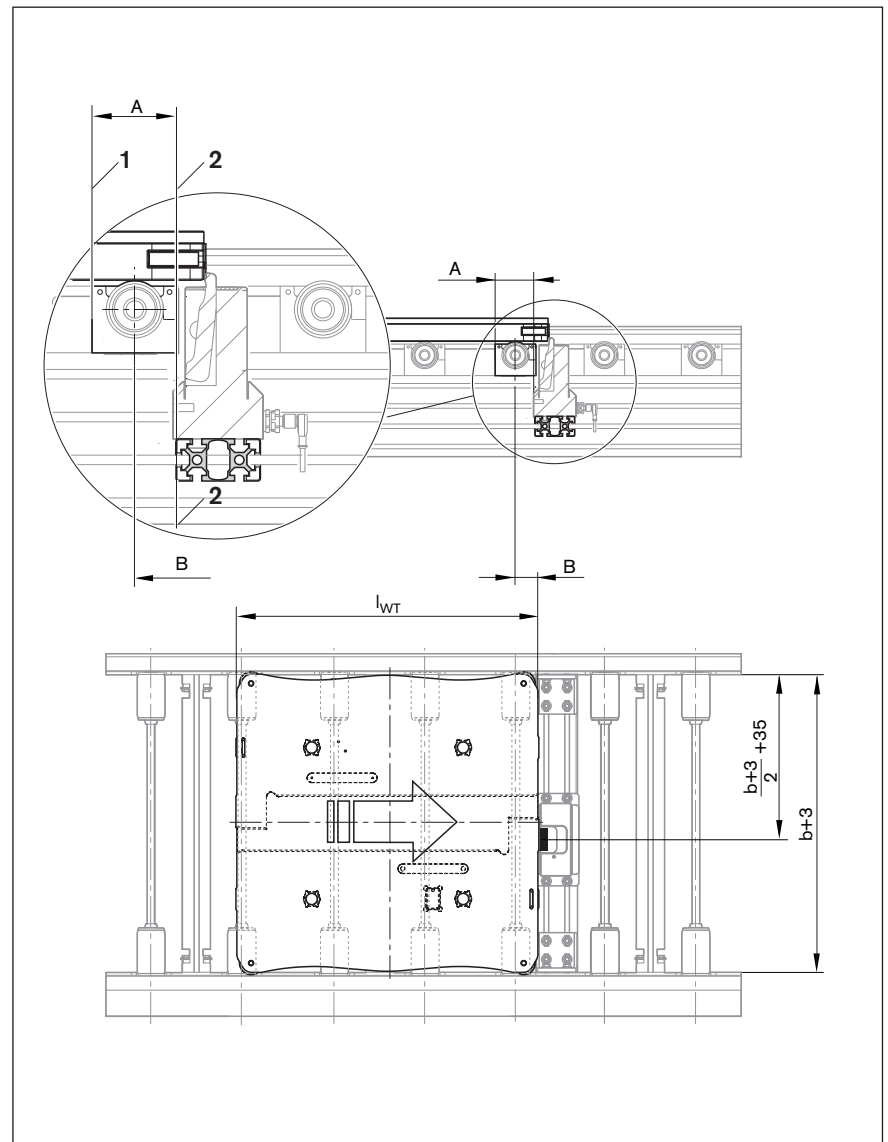


Fig. 21 Position of stop gate on workpiece pallet (stopping at the front in the longitudinal conveyor)

Stop the workpiece pallet at the rear in the longitudinal conveyor.

Reference points for installation
(in the transport direction):

- Front edge of the bearing pedestal of a roller (1)
- Front edge of the support profile of the stop gate (2)

VE 5/200, VE 5/D-300 stop gate

l_{WT} [mm]	A [mm]	B [mm]
455	46.5	32.5
650	79	65
845	79	65
1040	79	65

VE 5/D-1000 stop gate

l_{WT} [mm]	A [mm]	B [mm]
455	73	59
650	105.5	91.5
845	105.5	91.5
1040	105.5	91.5

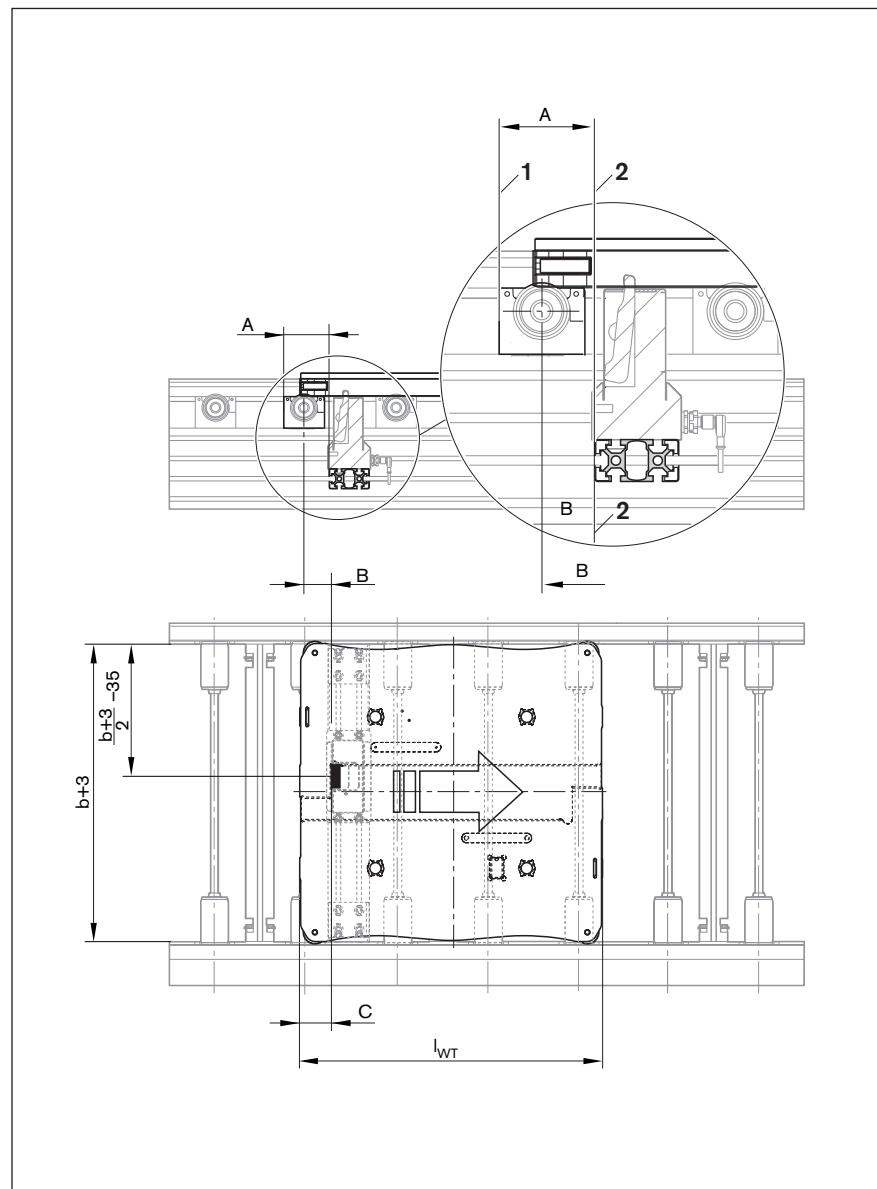


Fig. 22 Position of stop gate on workpiece pallet (stopping at the rear in the longitudinal conveyor)

540 375-67

Note the assembly dimensions (center offset, Fig. 21, 35, Fig. 22, 36 and Fig. 23, 37), depending on whether the VE 5/... stop gate stops the workpiece pallet in the longitudinal or transverse conveyor.

Assembling the VE 5/... stop gate in the ST 5/... conveyor unit

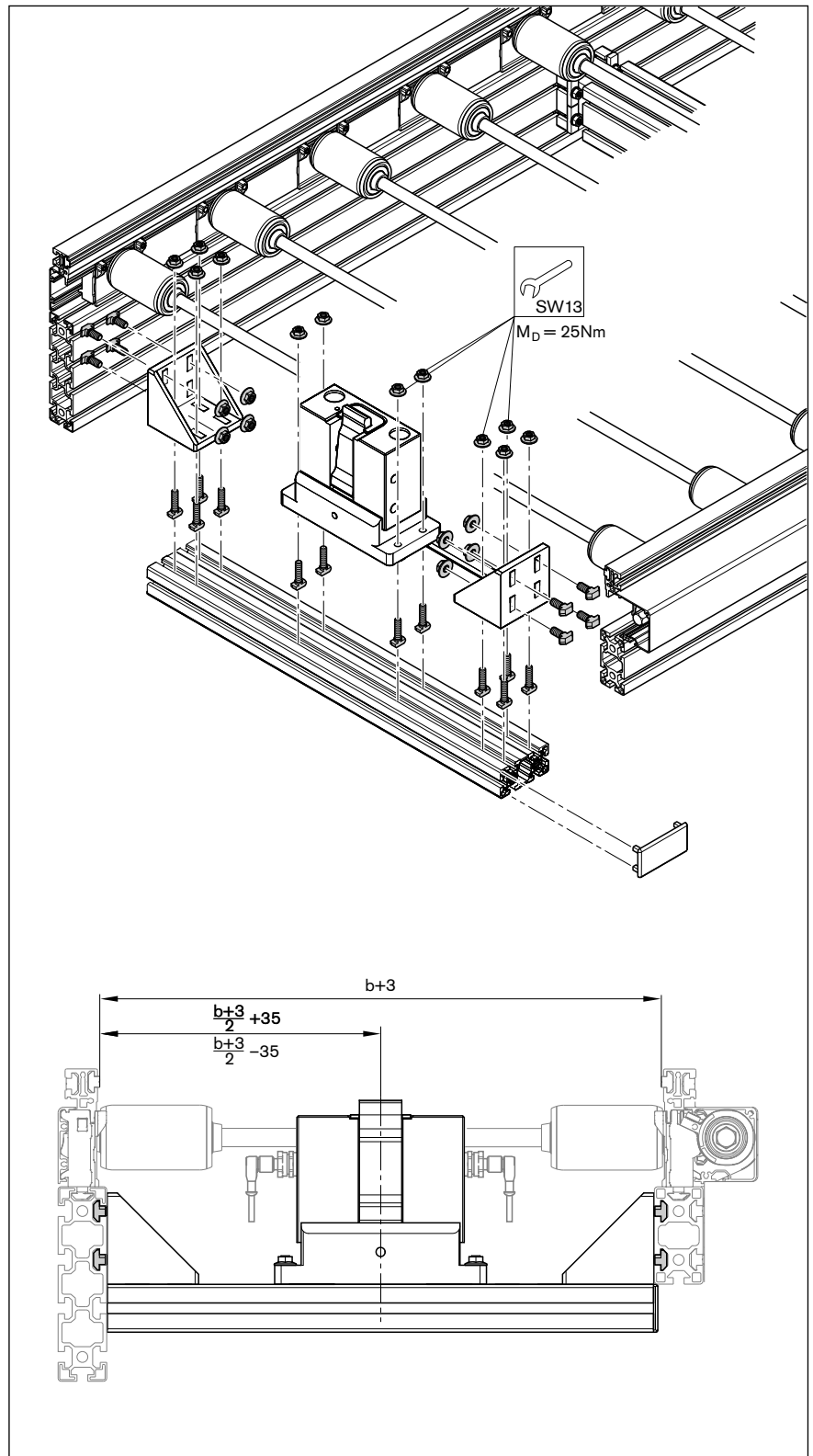


Fig. 23 Assembling the VE 5/... stop gate in the ST 5/... conveyor unit

540 375-21

Assembling the VE 5/OC-... stop gate in the ST 5/OC... conveyor unit

Note the assembly dimensions (center offset, Fig. 21, 35, Fig. 22, 36 and Fig. 24, 38), depending on whether the VE 5/OC-... stop gate stops the workpiece pallet in the longitudinal or transverse conveyor.

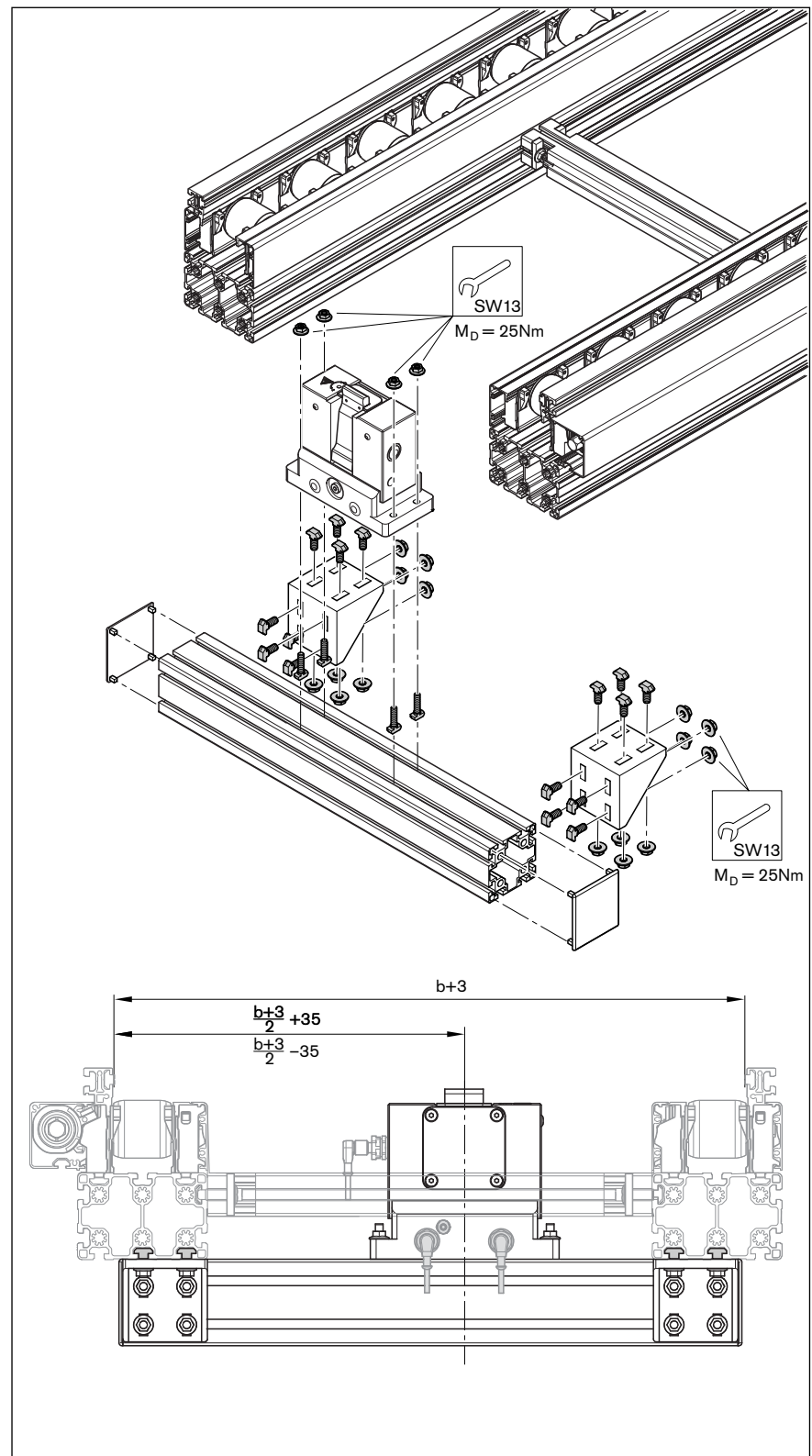


Fig. 24 Assembling the VE 5/OC-... stop gate in the ST 5/OC... conveyor unit

540 375-74

Proximity switches

The following is required for position inquiry of the VE 5/... stop gate:

- Proximity switch $\varnothing 12$ mm (M12x1)
 - VE 5/200 stop gate, **3 842 998 518**: 1
 - VE 5/D-300 stop gate, **3 842 998 517**: 3
 - VE 5/D-1000 stop gate, **3 842 998 516**: 2 or 3
- Clamping head for proximity switch $\varnothing 12$ mm, for screwing into the stop gate: **3 842 545 974**

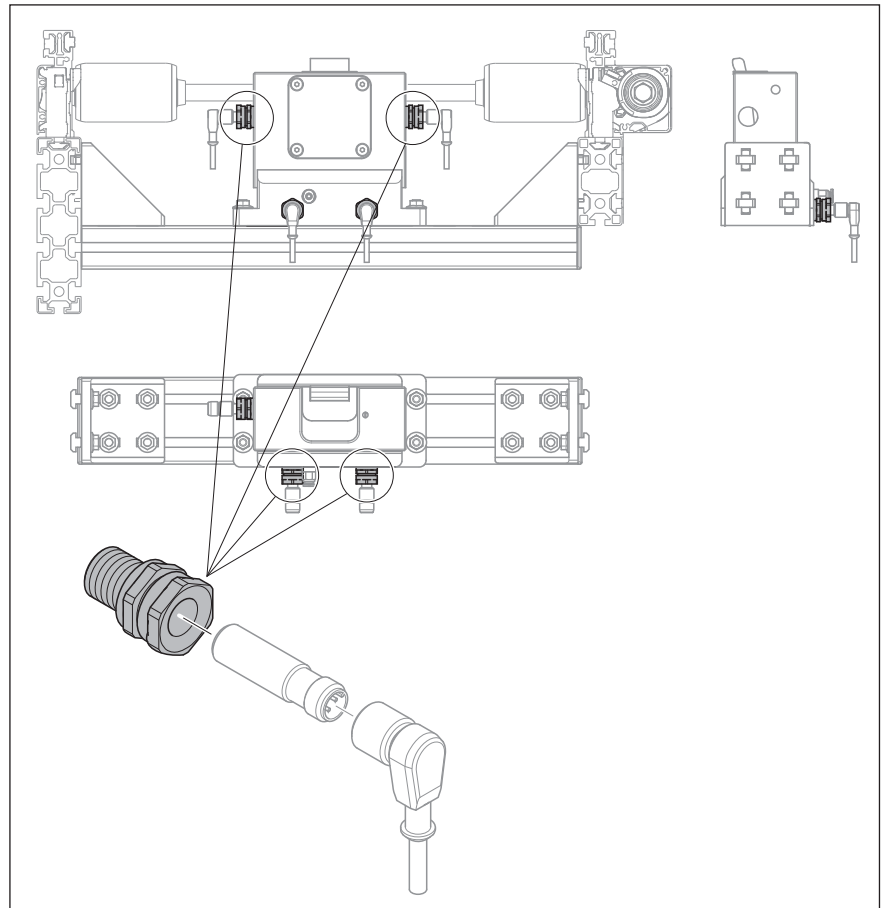
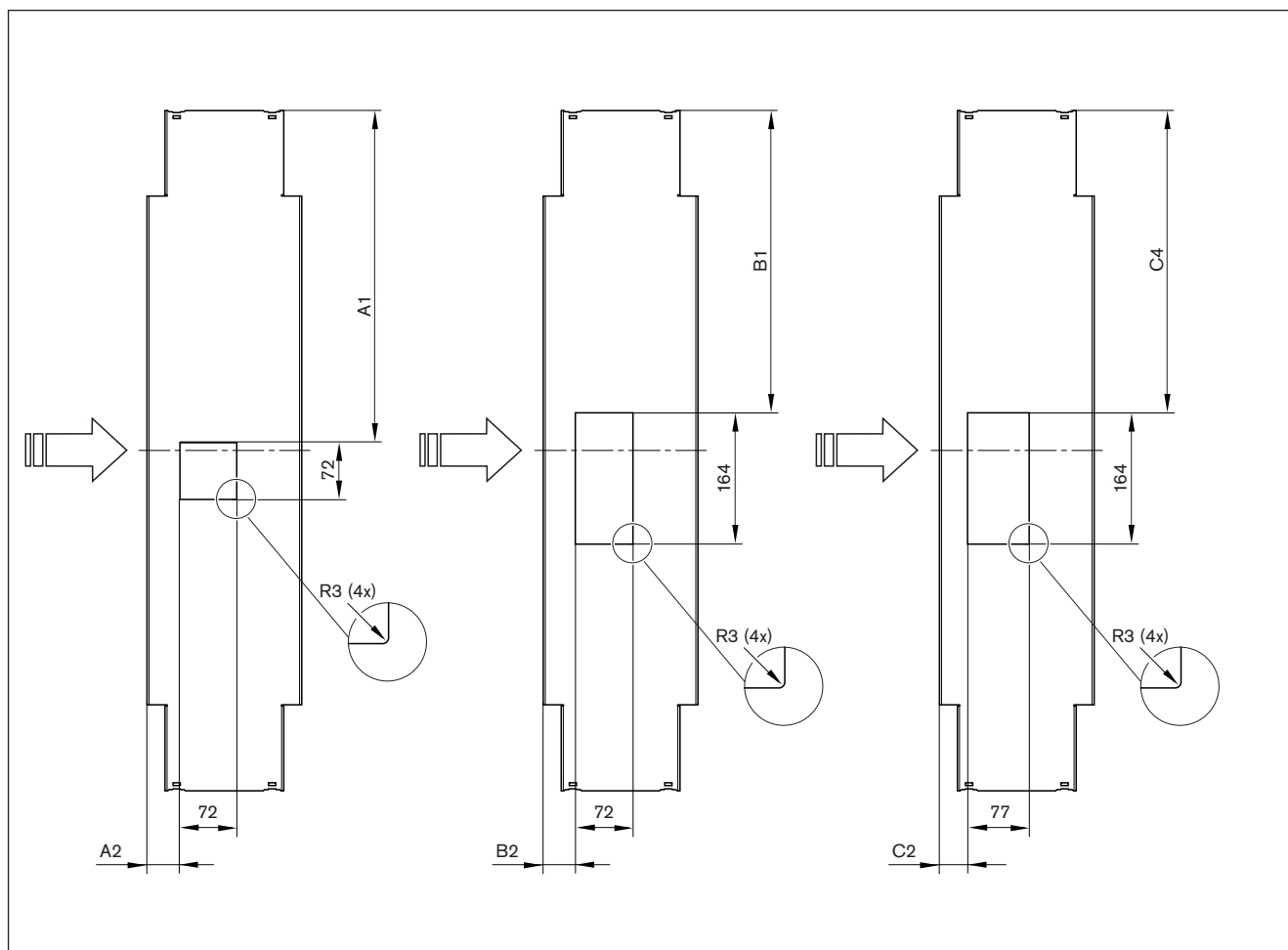


Fig. 25 Clamping head for proximity switch $\varnothing 12$ mm

540 375-22

Openings in the protective covers for VE 5/...

- Stop the workpiece pallet at the front in the longitudinal conveyor.
- Assemble the VE 5/... in accordance with Fig. 21, 35.



540 375-23

Fig. 26 Openings in the protective covers for VE 5/..., stopping WT at the front

b_{WT} [mm]	l_{WT} [mm]	p [mm]	VE 5/200		VE 5/D-300		VE 5/D-1000	
			A1 [mm]	A2 [mm]	B1 [mm]	B2 [mm]	C1 [mm]	C2 [mm]
455	455	130	229	8	183	8	183	6
455	650	130	229	40.5	183	40.5	183	38.5
455	650	195	229	40.5	183	40.5	183	38.5
650	650	130	326.5	40.5	280.5	40.5	280.5	38.5
650	650	195	326.5	40.5	280.5	40.5	280.5	38.5
650	845	130	326.5	40.5	280.5	40.5	280.5	38.5
650	845	195	326.5	40.5	280.5	40.5	280.5	38.5
650	845	260	326.5	40.5	280.5	40.5	280.5	38.5
845	845	130	424	40.5	378	40.5	378	38.5
845	845	195	424	40.5	378	40.5	378	38.5
845	845	260	424	40.5	378	40.5	378	38.5
845	1040	130	424	40.5	378	40.5	378	38.5
845	1040	195	424	40.5	378	40.5	378	38.5
845	1040	260	424	40.5	378	40.5	378	38.5
845	1040	325	424	40.5	378	40.5	378	38.5

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

Openings in the protective covers for VE 5/...

- Stop the workpiece pallet at the rear in the longitudinal conveyor.
- Assemble the VE 5/... in accordance with Fig. 22, 36.

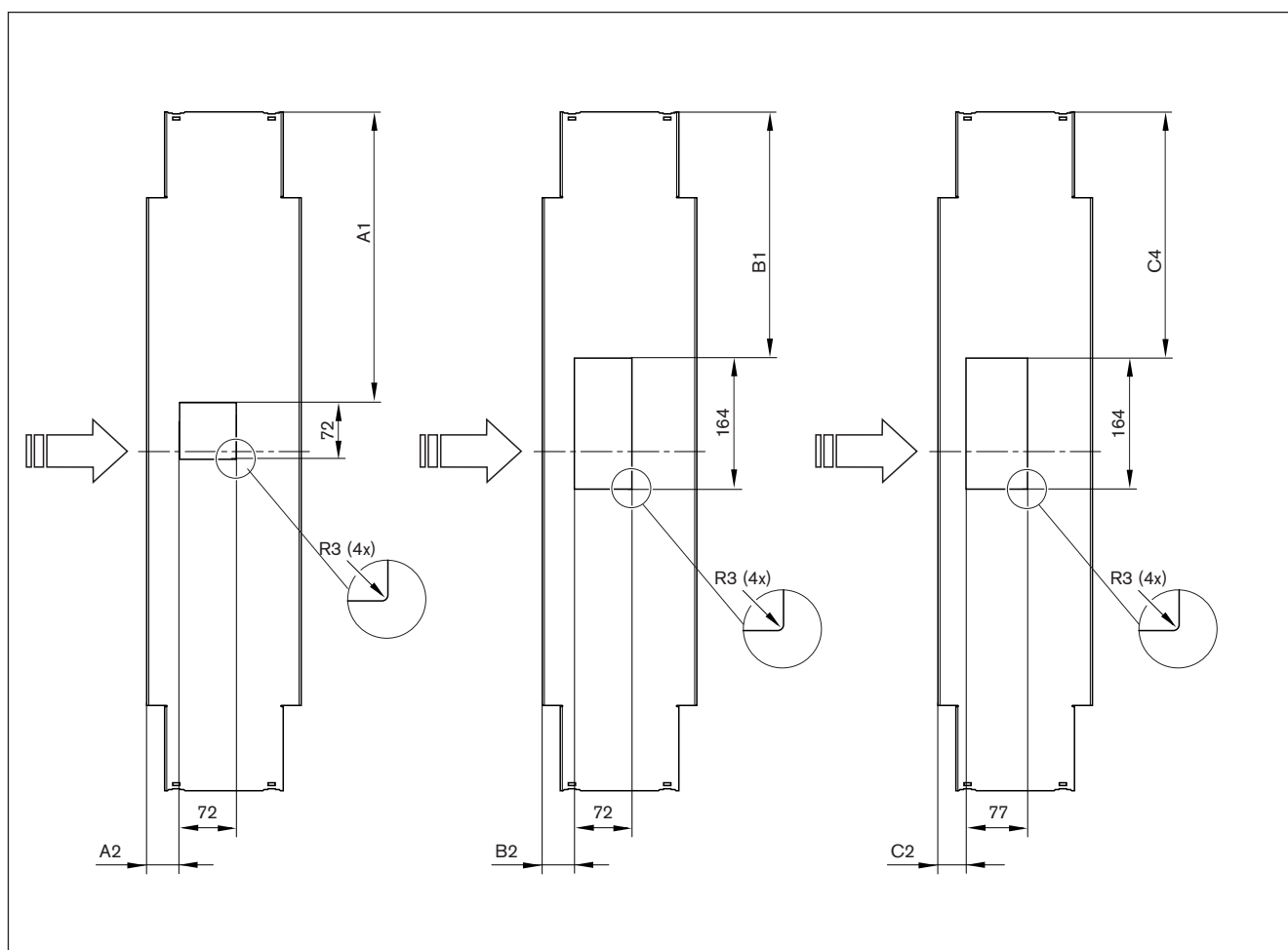


Fig. 27 Openings in the protective covers for VE 5/..., stopping WT at the rear

b _{WT} [mm]	l _{WT} [mm]	p [mm]	VE 5/200		VE 5/D-300		VE 5/D-1000	
			A1 [mm]	A2 [mm]	B1 [mm]	B2 [mm]	C1 [mm]	C2 [mm]
455	455	130	159	8	113	8	113	6
455	650	130	159	40.5	113	40.5	113	38.5
455	650	195	159	40.5	113	40.5	113	38.5
650	650	130	256.5	40.5	210.5	40.5	210.5	38.5
650	650	195	256.5	40.5	210.5	40.5	210.5	38.5
650	845	130	256.5	40.5	210.5	40.5	210.5	38.5
650	845	195	256.5	40.5	210.5	40.5	210.5	38.5
650	845	260	256.5	40.5	210.5	40.5	210.5	38.5
845	845	130	354	40.5	308	40.5	308	38.5
845	845	195	354	40.5	308	40.5	308	38.5
845	845	260	354	40.5	308	40.5	308	38.5
845	1040	130	354	40.5	308	40.5	308	38.5
845	1040	195	354	40.5	308	40.5	308	38.5
845	1040	260	354	40.5	308	40.5	308	38.5
845	1040	325	354	40.5	308	40.5	308	38.5

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

6.18 Switch brackets and ID 40, ID 200 identification systems

Assembly dimensions for switch brackets and identification systems:

- Stop the workpiece pallet at the front in the longitudinal conveyor  46.
- Stop the workpiece pallet at the rear in the longitudinal conveyor  48.

Openings in the protective covers for the switch brackets and identification systems:

- Stop the workpiece pallet at the front in the longitudinal conveyor  47.
- Stop the workpiece pallet at the rear in the longitudinal conveyor  49.

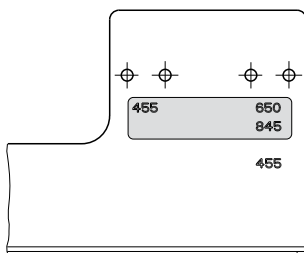
Work areas must be secured by protective covers in accordance with DIN EN 619. The user must make the openings in the protective covers for the stop gate, switch bracket, and identification systems, continuous gap ≤ 5 mm.

Application and assembly of the assembly kits for the switch brackets and identification systems:

- SH 2/U-H in the longitudinal conveyor:

$b_{WT} = 455; 650, 845:$

3 842 545 134
( Fig. 28)

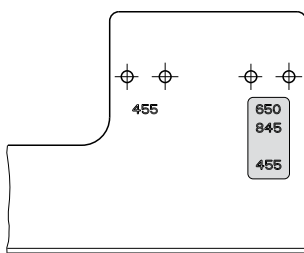


540 375-72

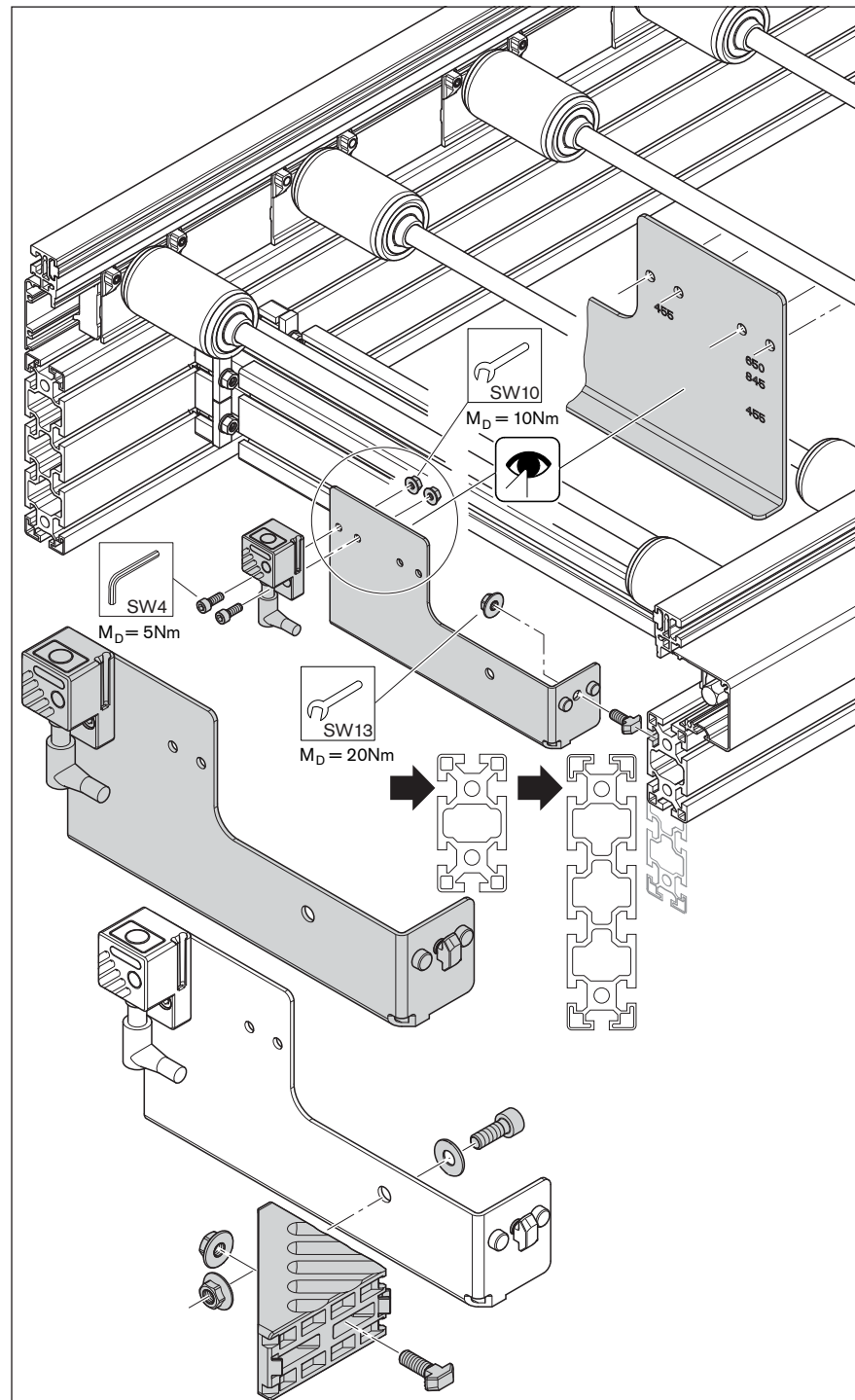
- SH 2/U-H in the transverse conveyor:

$b_Q = 455; 650, 845, 1040:$

3 842 545 134
( Fig. 28)



540 375-73



540 375-26

Fig. 28 Assembly kit for SH 2/U-H switch bracket

- ID 200 in the longitudinal conveyor:

$b_{WT} = 455$: **3 842 545 144**
(Fig. 29: A)

$b_{WT} = 650$: **3 842 545 144**
(Fig. 29: B)

$b_{WT} = 845$: **3 842 545 144**
(Fig. 29: B)

- ID 40 in the longitudinal conveyor:

$b_{WT} = 455$: **3 842 545 140**
(Fig. 29: C)

$b_{WT} = 650$: **3 842 545 142**
(Fig. 29: C)

$b_{WT} = 845$: **3 842 545 142**
(Fig. 29: C)

- 1) The arrow on the read head must point in the direction of the LED on the data tag.

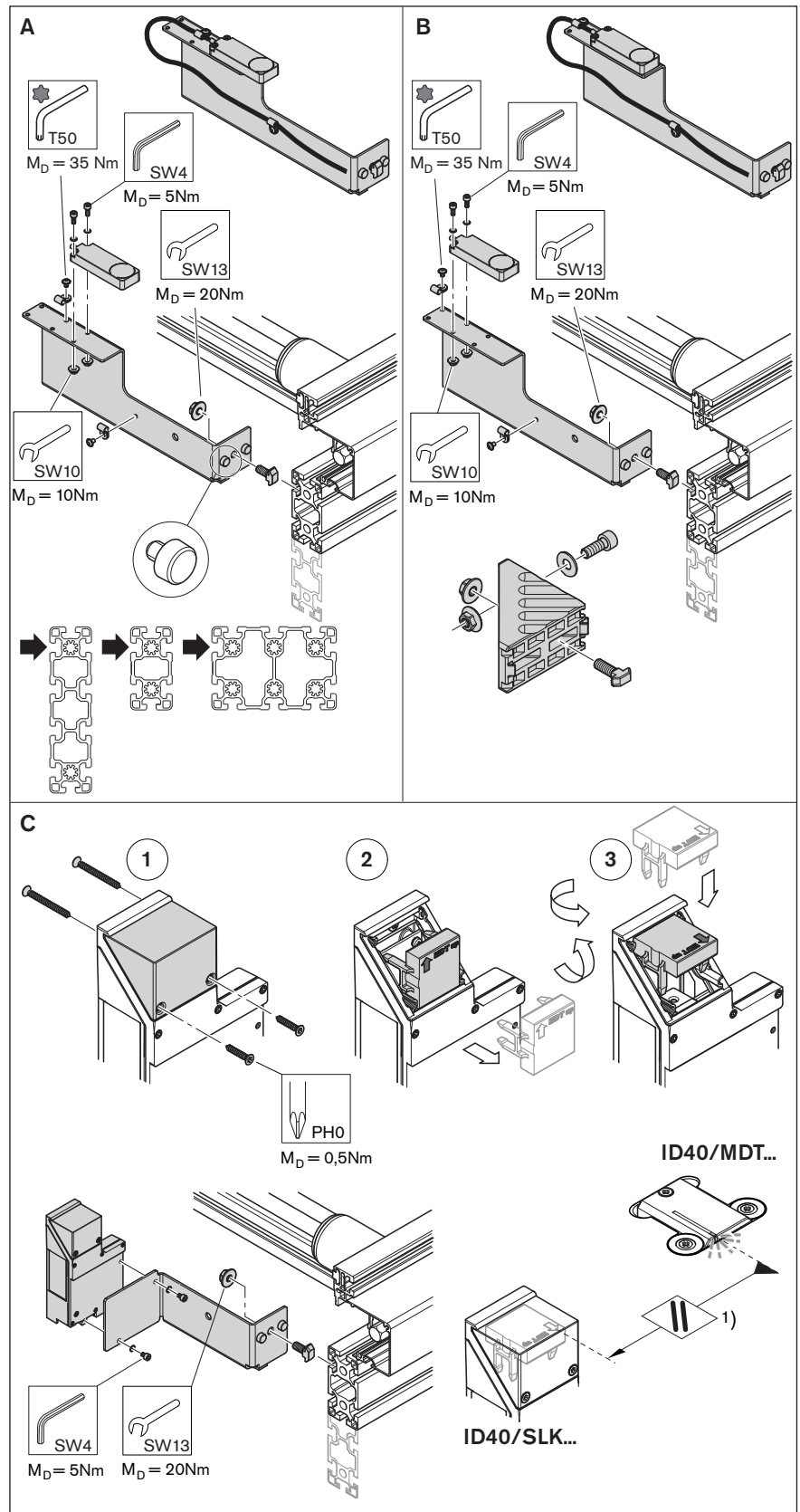


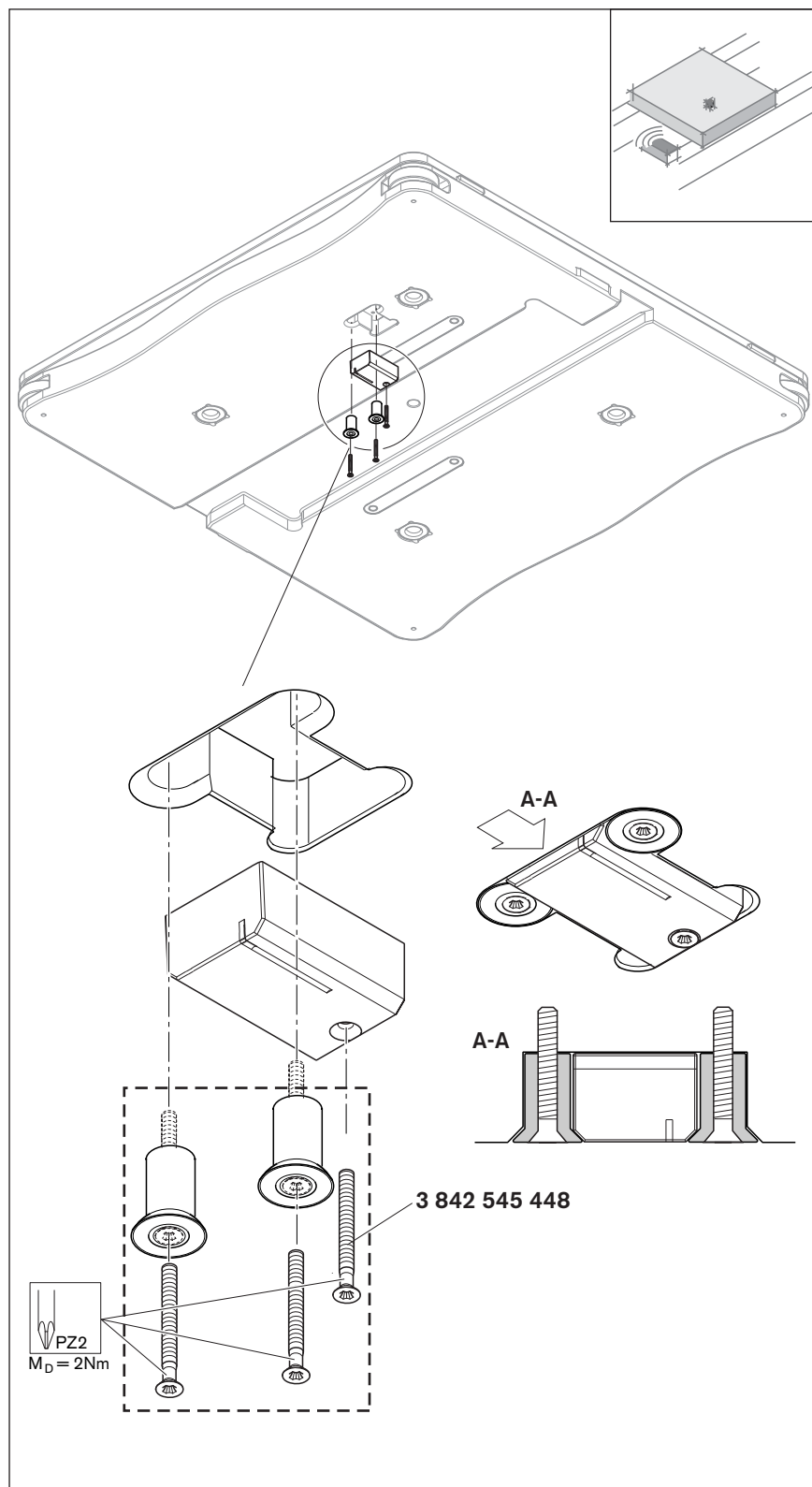
Fig. 29 Assembly kits for ID 40, ID 200 identification systems

540 375-27

ID 40/MDT...**3 842 406 150****3 842 406 160****3 842 406 170**

Required accessories:

- Fastening kit for ID 40:
3 842 545 448

Assembling the ID 40/MDT... data tags in the WT 5 workpiece pallet**Fig. 30 Assembling the ID 40/MDT... data tags in the WT 5 workpiece pallet**

540 375-36

Assembling the MDT... data tags in the WT 5 workpiece pallet

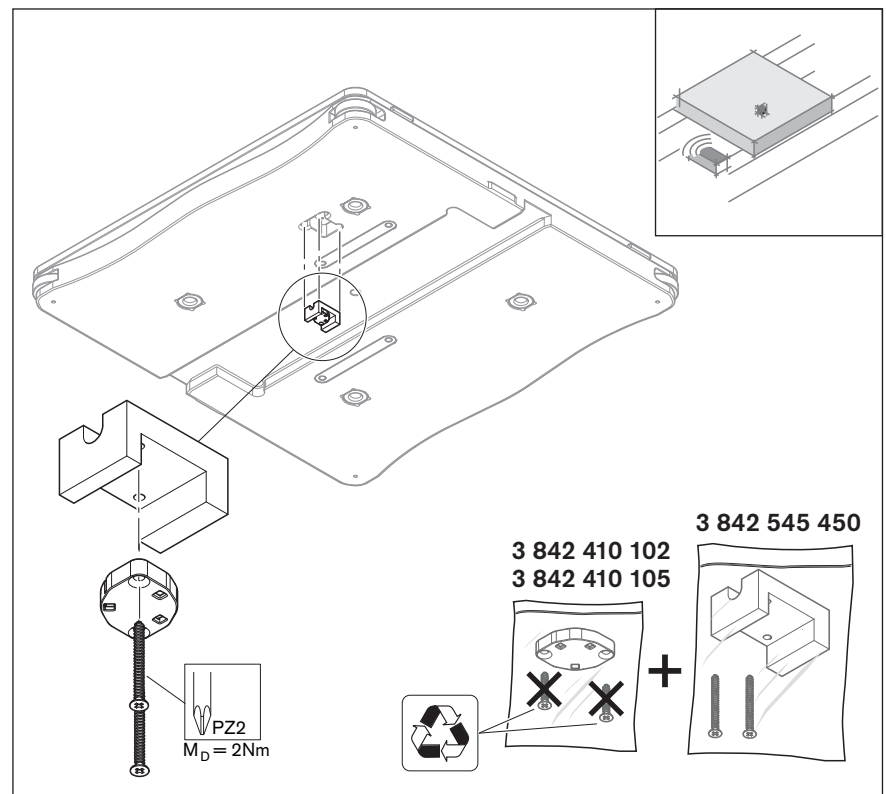
MDT 3

3 842 410 102

3 842 410 105

Required accessories:

- Fastening kit for ID 200:
3 842 545 450



MDT 23

3 842 535 442

Required accessories:

- Fastening kit for ID 200:
3 842 545 450

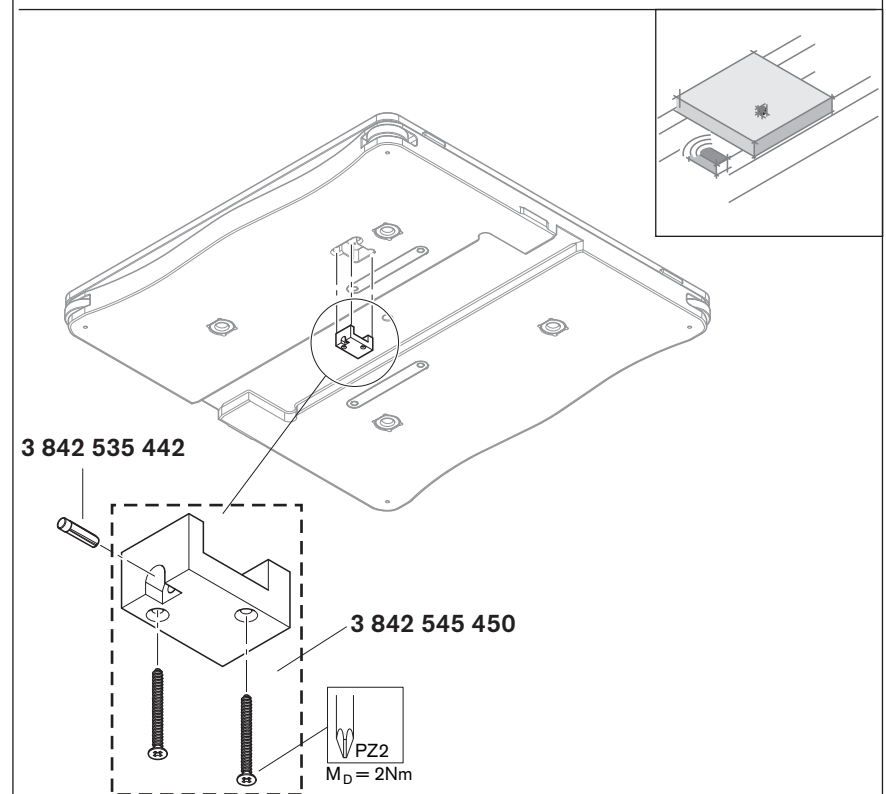


Fig. 31 Assembling the MDT... data tags in the WT 5 workpiece pallet

Assembly dimensions for switch bracket SH 2/U-H and ID 40, ID 200 identification systems

Stop the workpiece pallet at the **front** in the longitudinal conveyor.

Reference points for assembly
(in the transport direction):

- Front edge of the bearing pedestal of a roller (1)
- Front edge of the support profile of the stop gate (2)
- Center axes of the
 - Proximity switch in the SH 2/U-H
 - ID 40/SLK-... read/write head
 - ID 200/A-... antenna

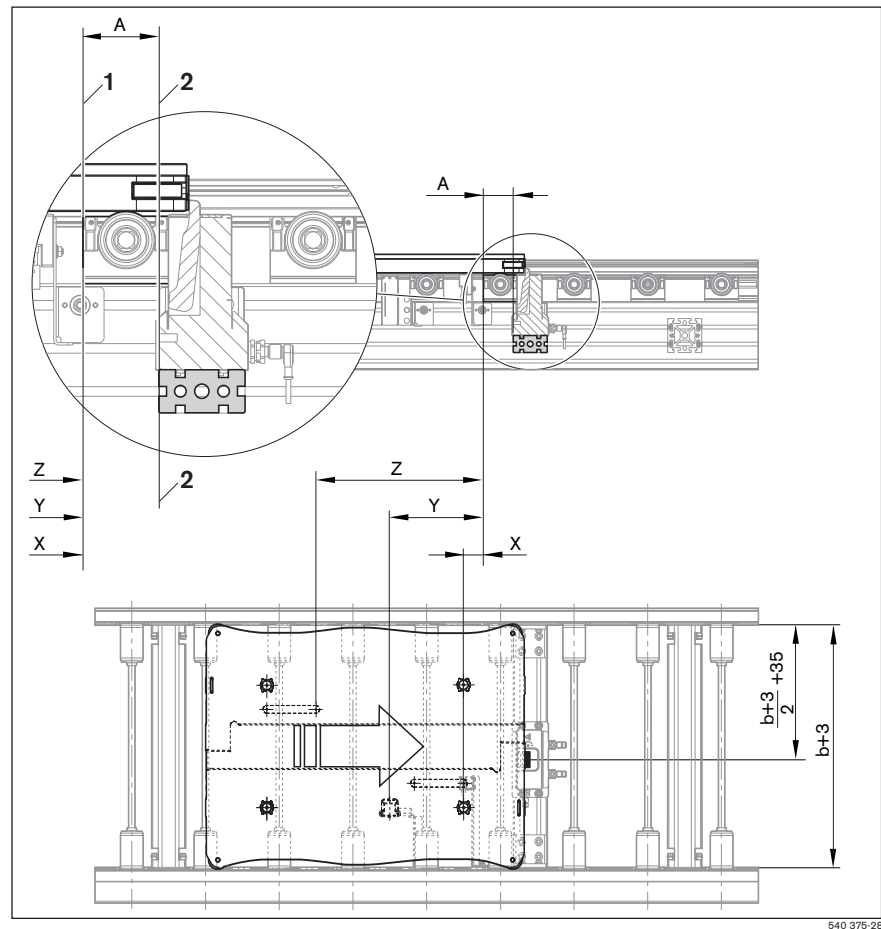


Fig. 32 Assembly dimensions for SH 2/U-H, ID 40, ID 200, stopping WT at the front

¹⁾ SH 2/U-H not possible in this position if using ID 40 or ID 200.

b_{WT} [mm]	l_{WT} [mm]	p [mm]	SH 2/U-H X [mm]	SH 2/U-H Z [mm]	ID 40 Y [mm]	ID 200 Y [mm]	VE 5/... A [mm]
455	455	130	85	117.5	150	150	46.5
455	650	130	(52.5) ¹⁾	247.5	122	122	79
455	650	195	(52.5) ¹⁾	247.5	112	113	79
650	650	130	(52.5) ¹⁾	247.5	117.5	117.5	79
650	650	195	(52.5) ¹⁾	247.5	117.5	117.5	79
650	845	130	52.5	497.5	247.5	247.5	79
650	845	195	52.5	442.5	247.5	247.5	79
650	845	260	52.5	497.5	247.5	247.5	79
845	845	130	52.5	497.5	247.5	247.5	79
845	845	195	52.5	442.5	247.5	247.5	79
845	845	260	52.5	497.5	247.5	247.5	79
845	1040	130	52.5	637.5	247.5	247.5	79
845	1040	195	52.5	637.5	247.5	247.5	79
845	1040	260	52.5	637.5	247.5	247.5	79
845	1040	325	52.5	637.5	247.5	247.5	79

Openings in the protective covers for switch bracket SH 2/U-H and ID 40, ID 200 identification systems

Stop the workpiece pallet at the **front** in the longitudinal conveyor.

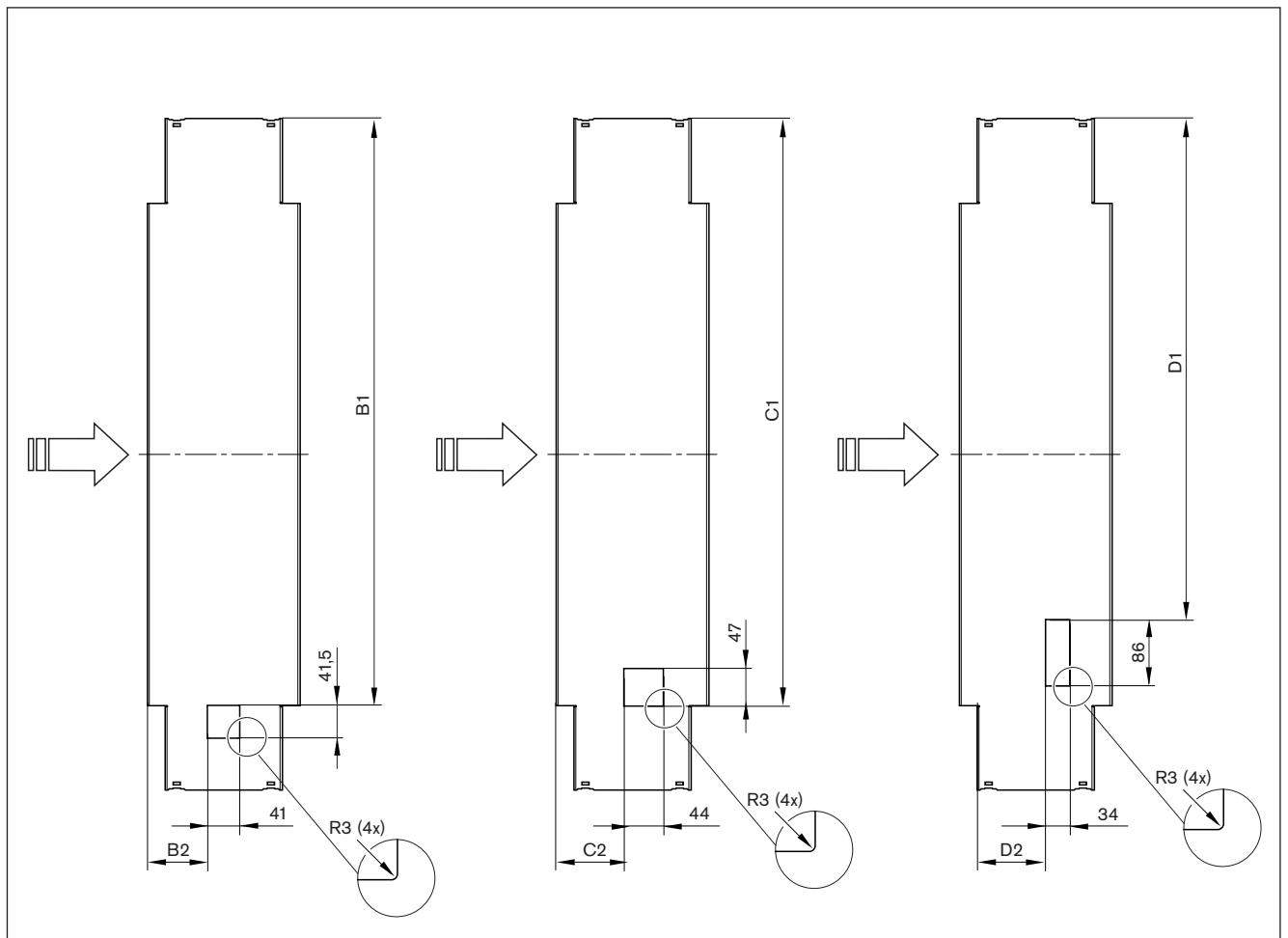


Fig. 33 Openings in the protective covers for SH 2/U-H, ID 40, ID 200, stopping WT at the front

540 375-29

b _{WT} [mm]	l _{WT} [mm]	p [mm]	SH 2/U-H (X)		SH 2/U-H (Z)		ID 40 (Y)		ID 200 (Y)		VE 5/... 40
			B1 [mm]	B2 [mm]	B1 [mm]	B2 [mm]	C1 [mm]	C2 [mm]	D1 [mm]	D2 [mm]	
455	455	130	277.1	44	182.9	11.5	305.3	39.5	259.1	47.5	
455	650	130	277.1	76.5	182.9	11.5	305.3	67.5	259.1	75.5	
455	650	195	(277.1)	(174)	182.9	(174)	305.3	12.5	422.1	20.5	
650	650	130	(404.75)	(17.8)	209.25	69.7	467.3	72	422.1	80	
650	650	195	(404.75)	(82.2)	209.25	69.7	467.3	7	422.1	15	
650	845	130	404.75	17.8	209.25	79.7	467.3	72	422.1	80	
650	845	195	404.75	82.2	209.25	69.7	467.3	72	422.1	80	
650	845	260	404.75	147.8	209.25	209.7	467.3	202	422.1	210	
845	845	130	599.75	17.8	209.25	79.7	662.3	72	617.1	80	
845	845	195	599.75	82.8	209.25	69.7	662.3	72	617.1	80	
845	845	260	599.75	147.8	209.25	209.7	662.3	202	617.1	210	
845	1040	130	599.75	82.8	209.25	69.7	662.3	72	617.1	80	
845	1040	195	599.75	82.8	209.25	69.7	662.3	72	617.1	80	
845	1040	260	599.75	147.8	209.25	69.7	662.3	202	617.1	210	
845	1040	325	599.75	212.8	209.25	264.7	662.3	7	617.1	15	

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

Assembly dimensions for switch bracket SH 2/U-H and ID 40, ID 200 identification systems

Stop the workpiece pallet at the **rear** in the longitudinal conveyor.

Reference points for assembly
(in the transport direction):

- Front edge of the bearing pedestal of a roller (1)
- Front edge of the support profile of the stop gate (2)
- Center axes of the
 - Proximity switch in the SH 2/U-H
 - ID 40/SLK-... read/write head
 - ID 200/A-... antenna

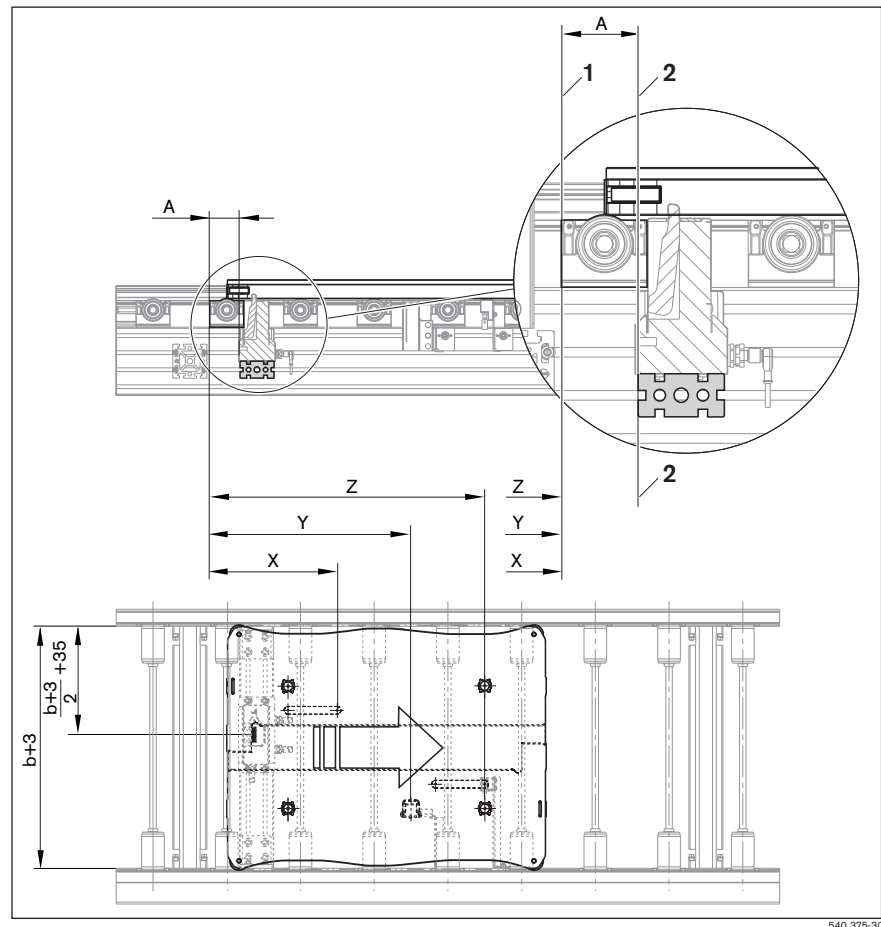


Fig. 34 Assembly dimensions for SH 2/U-H, ID 40, ID 200, stopping WT at the rear

¹⁾ SH 2/U-H not possible in this position if using ID 40 or ID 200.

b_{WT} [mm]	l_{WT} [mm]	p [mm]	SH 2/U-H X [mm]	SH 2/U-H Z [mm]	ID 40 Y [mm]	ID 200 Y [mm]	VE 5/... A [mm]
455	455	130	337.5	272.5	240	240	46.5
455	650	130	(532.5) ¹⁾	337.5	473	473	79
455	650	195	(532.5) ¹⁾	337.5	473	473	79
650	650	130	(522) ¹⁾	282.5	467.5	467.5	79
650	650	195	(532.5) ¹⁾	337.5	467.5	467.5	79
650	845	130	727.5	282.5	532.5	532.5	79
650	845	195	727.5	337.5	532.5	532.5	79
650	845	260	727.5	282.5	532.5	532.5	79
845	845	130	727.5	337.5	532.5	532.5	79
845	845	195	727.5	282.5	532.5	532.5	79
845	845	260	727.5	282.5	532.5	532.5	79
845	1040	130	915	337.5	727.5	727.5	79
845	1040	195	922.5	282.5	727.5	727.5	79
845	1040	260	922.5	282.5	727.5	727.5	79
845	1040	325	922.5	337.5	727.5	727.5	79

Openings in the protective covers for switch bracket SH 2/U-H and ID 40, ID 200 identification systems

Stop the workpiece pallet at the **rear** in the longitudinal conveyor.

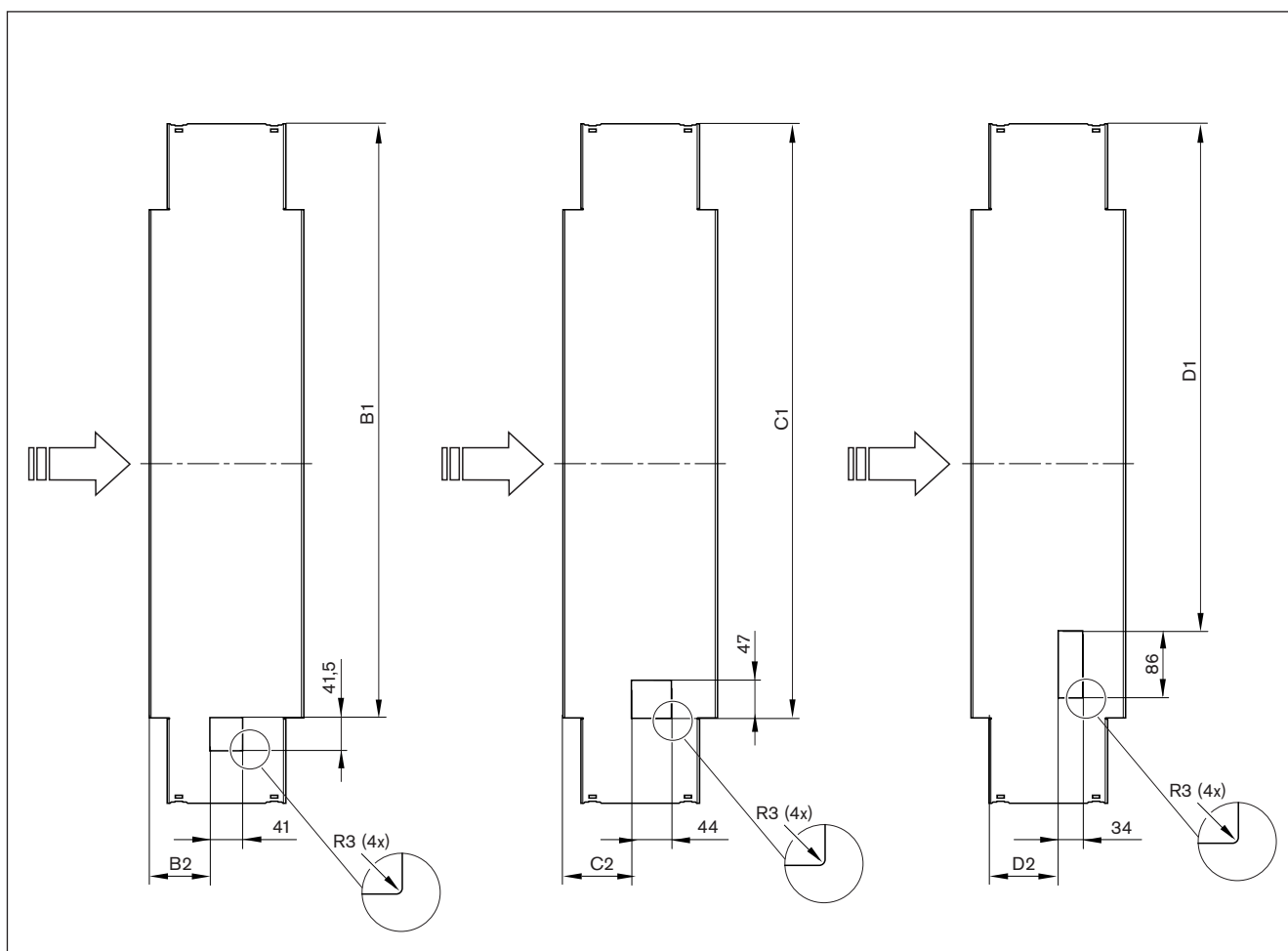


Fig. 35 Openings in the protective covers for SH 2/U-H, ID 40, ID 200, stopping WT at the rear

540 375-29

b _{WT} [mm]	l _{WT} [mm]	p [mm]	SH 2/U-H (X)		SH 2/U-H (Z)		ID 40 (Y)		ID 200 (Y)		VE 5/... 40
			B1 [mm]	B2 [mm]	B1 [mm]	B2 [mm]	C1 [mm]	C2 [mm]	D1 [mm]	D2 [mm]	
455	455	130	277.1	96.5	182.9	11.5	305.3	39.5	259.1	47.5	
455	650	130	277.1	11.5	182.9	96.5	305.3	12.5	259.1	20.5	
455	650	195	(277.1)	(174)	182.9	(174)	305.3	12.5	422.1	20.5	
650	650	130	(404.75)	(72.3)	209.25	79.7	467.3	7	422.1	15	
650	650	195	(404.75)	(82.8)	209.25	69.7	467.3	7	422.1	15	
650	845	130	404.75	17.8	209.25	79.7	467.3	72	422.1	80	
650	845	195	404.75	82.2	209.25	69.7	467.3	72	422.1	80	
650	845	260	404.75	147.8	209.25	209.7	467.3	202	422.1	210	
845	845	130	599.75	17.8	209.25	79.7	662.3	72	617.1	80	
845	845	195	599.75	82.8	209.25	69.7	662.3	72	617.1	80	
845	845	260	599.75	147.8	209.25	209.7	662.3	202	617.1	210	
845	1040	130	599.75	75.3	209.25	69.7	662.3	7	617.1	15	
845	1040	195	599.75	82.8	209.25	69.7	662.3	72	617.1	80	
845	1040	260	599.75	82.8	209.25	69.7	662.3	137	617.1	145	
845	1040	325	599.75	212.8	209.25	264.7	662.3	7	617.1	15	

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

Assembly dimensions for the switch bracket SH 2/U-H

Stop the workpiece pallet in the transverse conveyor, outfeed to the **left**.

Reference points for installation
(in the transport direction):

- Front edge of the bearing pedestal of a roller (1)
- Front edge of the support profile of the stop gate (2)
- Center axis of the proximity switch in the SH 2/U-H

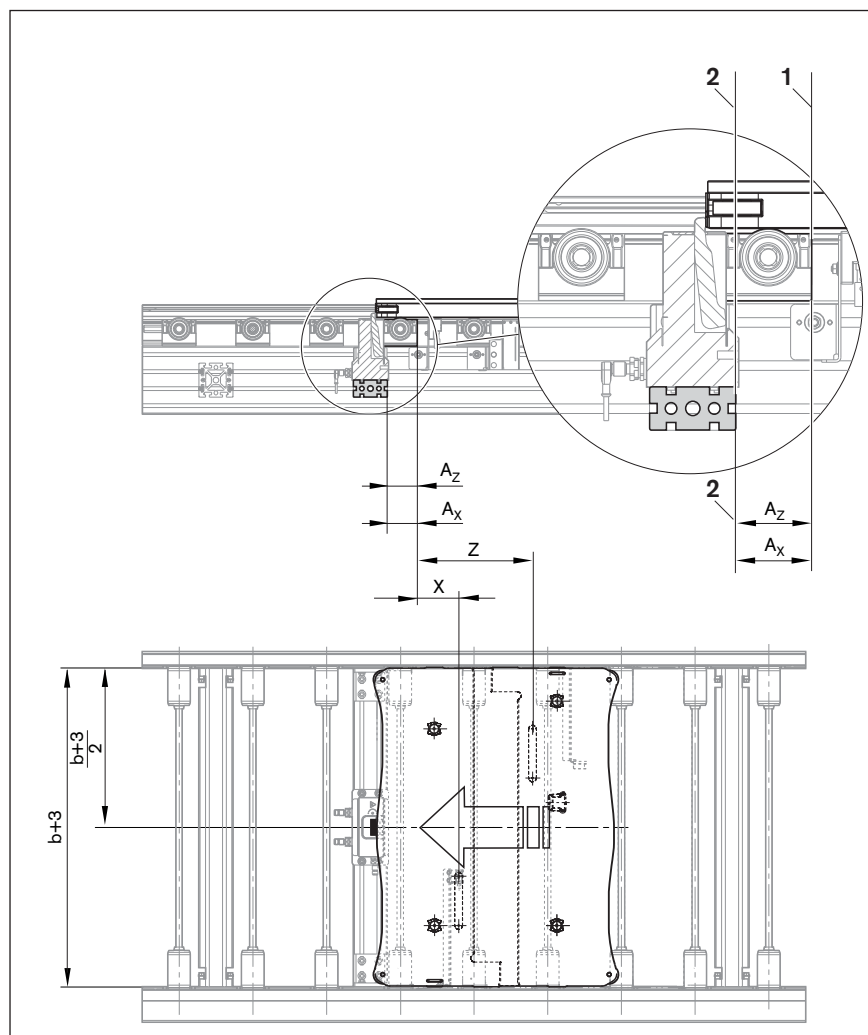


Fig. 36 Assembly dimensions for SH 2/U-H, WT outfeed to the left in the transverse conveyor

b_{WT} [mm]	l_{WT} [mm]	p [mm]	SH 2/U-H X [mm]	VE 5/200 A_x [mm]	VE 5/D-300 A_x [mm]	VE 5/D-1000 A_x [mm]	SH 2/U-H Z [mm]	VE 5/200 A_z [mm]	VE 5/D-300 A_z [mm]	VE 5/D-1000 A_z [mm]
455	455	130	52.5	48.9	48.9	75.4	182.5	43.2	43.2	69.7
455	650	130	52.5	43.2	43.2	69.7	182.5	37.4	37.4	63.9
455	650	195	—	—	—	—	—	—	—	—
650	650	130	117.5	40.7	40.7	67.2	312.5	40.7	40.7	67.2
650	650	195	117.5	40.7	40.7	67.2	312.5	40.7	40.7	67.2
650	845	130	117.5	39.6	39.6	66.1	312.5	39.6	39.6	66.1
650	845	195	117.5	39.6	39.6	66.1	312.5	39.6	39.6	66.1
650	845	260	—	—	—	—	—	—	—	—
845	845	130	117.5	42.1	42.1	68.6	507.5	42.1	42.1	68.6
845	845	195	117.5	42.1	42.1	68.6	507.5	42.1	42.1	68.6
845	845	260	117.5	42.1	42.1	68.6	507.5	42.1	42.1	68.6
845	1040	130	117.5	25.1	25.1	51.6	507.5	25.1	25.1	51.6
845	1040	195	117.5	25.1	25.1	51.6	507.5	25.1	25.1	51.6
845	1040	260	117.5	42.1	42.1	68.6	507.5	25.1	25.1	51.6
845	1040	325	—	—	—	—	—	—	—	—

Assembly dimensions for the switch bracket SH 2/U-H

Stop the workpiece pallet in the transverse conveyor, outfeed to the **right**.

Reference points for installation
(in the transport direction):

- Front edge of the bearing pedestal of a roller (1)
- Front edge of the support profile of the stop gate (2)
- Center axis of the proximity switch in the SH 2/U-H

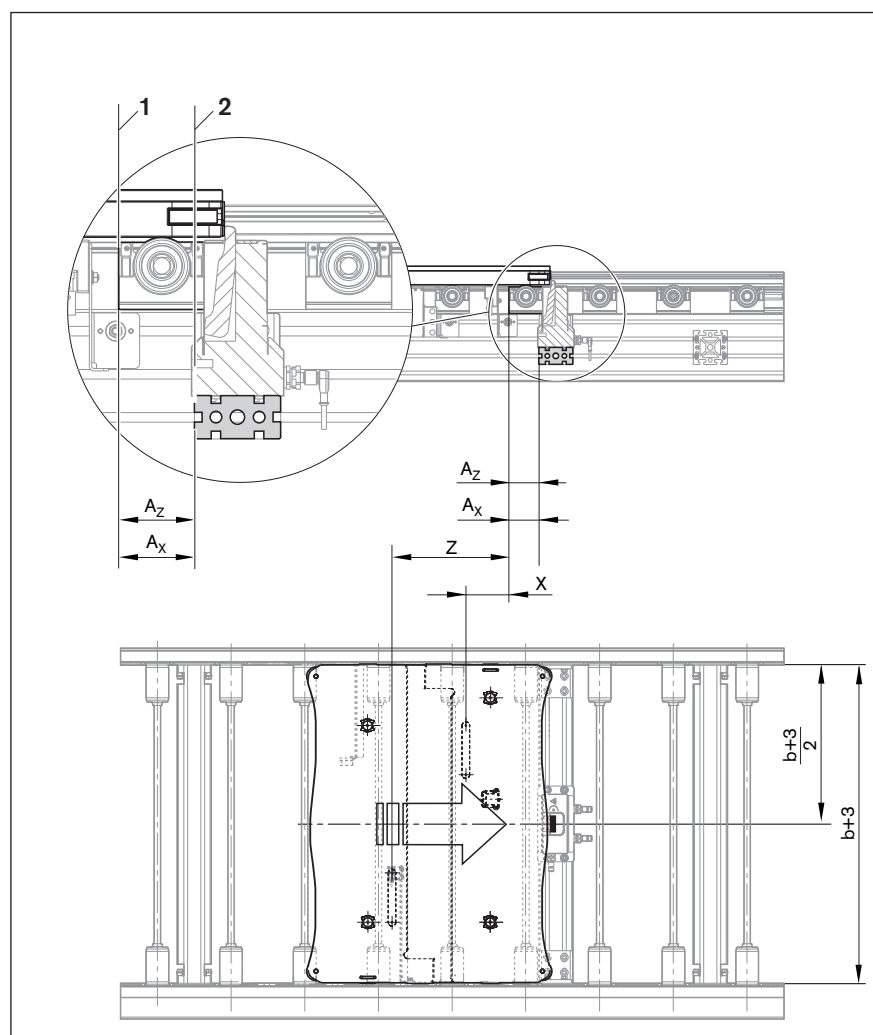


Fig. 37 Assembly dimensions for SH 2/U-H, WT outfeed to the right in the transverse conveyor

b_{WT} [mm]	l_{WT} [mm]	p [mm]	SH 2/U-H X [mm]	VE 5/200 A_X [mm]	VE 5/D-300 A_X [mm]	VE 5/D-1000 A_X [mm]	SH 2/U-H Z [mm]	VE 5/200 A_Z [mm]	VE 5/D-300 A_Z [mm]	VE 5/D-1000 A_Z [mm]
455	455	130	52.5	48.9	48.9	75.4	182.5	43.2	43.2	69.7
455	650	130	52.5	43.2	43.2	69.7	182.5	37.4	37.4	63.9
455	650	195	—	—	—	—	—	—	—	—
650	650	130	117.5	40.7	40.7	67.2	312.5	40.7	40.7	67.2
650	650	195	117.5	40.7	40.7	67.2	312.5	40.7	40.7	67.2
650	845	130	117.5	39.6	39.6	66.1	312.5	39.6	39.6	66.1
650	845	195	117.5	39.6	39.6	66.1	312.5	39.6	39.6	66.1
650	845	260	—	—	—	—	—	—	—	—
845	845	130	117.5	42.1	42.1	68.6	507.5	42.1	42.1	68.6
845	845	195	117.5	42.1	42.1	68.6	507.5	42.1	42.1	68.6
845	845	260	117.5	42.1	42.1	68.6	507.5	42.1	42.1	68.6
845	1040	130	117.5	25.1	25.1	51.6	507.5	25.1	25.1	51.6
845	1040	195	117.5	25.1	25.1	51.6	507.5	25.1	25.1	51.6
845	1040	260	117.5	42.1	42.1	68.6	507.5	25.1	25.1	51.6
845	1040	325	—	—	—	—	—	—	—	—

Openings in the protective covers for switch bracket SH 2/U-H

Stop the workpiece pallet in the transverse conveyor, outfeed to the left:
B1/B2.

Stop the workpiece pallet in the transverse conveyor, outfeed to the right:
C1/C2.

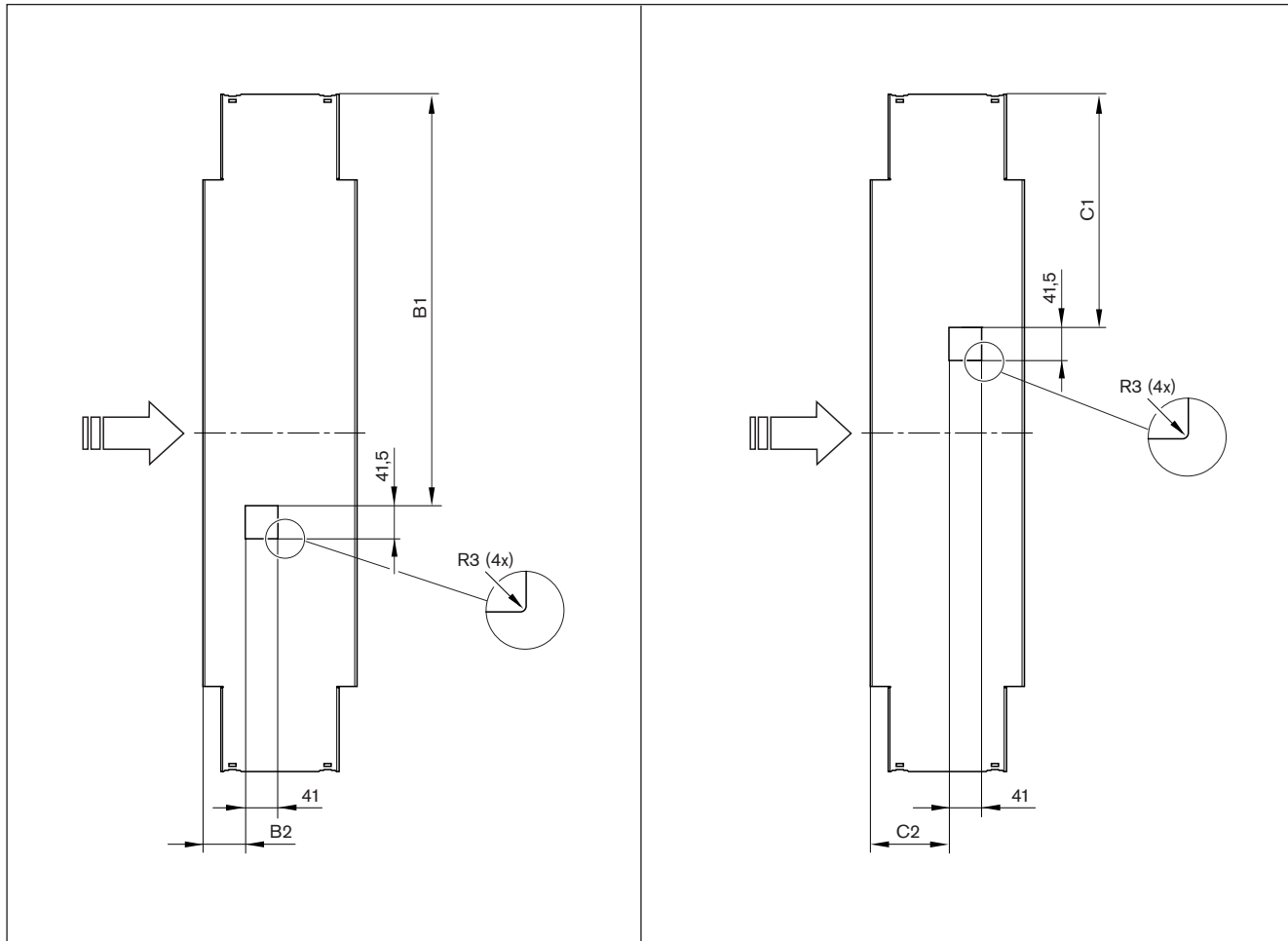


Fig. 38 Openings in the protective covers for SH 2/U-H in the transverse conveyor, WT outfeed to the left/right

540 375-32

b _{WT} [mm]	l _{WT} [mm]	p [mm]	SH 2/U-H (X)		SH 2/U-H (Z)		SH 2/U-H (X)		SH 2/U-H (Z)		VE 5/... 42
			B1 [mm]	B2 [mm]	B1 [mm]	B2 [mm]	C1 [mm]	C2 [mm]	C1 [mm]	C2 [mm]	
455	455	130	277.1	76.5	182.9	76.5	277.1	76.5	182.9	76.5	
650	455	130	277.1	76.5	182.9	76.5	277.1	76.5	182.9	76.5	
650	455	195	—	—	—	—	—	—	—	—	
650	650	130	(404.75)	76.5	209.25	(11.5)	(404.75)	(11.5)	209.25	76.5	
650	650	195	(404.75)	109	209.25	(109)	(404.75)	(109)	209.25	109	
845	650	130	404.75	76.5	209.25	11.5	404.75	11.5	209.25	76.5	
845	650	195	404.75	109	209.25	109	404.75	109	209.25	109	
845	650	260	—	—	—	—	—	—	—	—	
845	845	130	599.75	11.5	209.25	11.5	599.75	11.5	209.25	11.5	
845	845	195	599.75	109	209.25	109	599.75	109	209.25	109	
845	845	260	599.75	206.5	209.25	76.5	599.75	76.5	209.25	206.5	
1040	845	130	599.75	11.5	209.25	11.5	599.75	11.5	209.25	11.5	
1040	845	195	599.75	109	209.25	109	599.75	109	209.25	109	
1040	845	260	599.75	206.5	209.25	76.5	599.75	76.5	209.25	206.5	
1040	845	325	—	—	—	—	—	—	—	—	

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

Openings in the protective covers for VE 5/...

- Stop the workpiece pallet in the transverse conveyor.
- Assemble the VE 5/... in accordance with Fig. 24, 38.

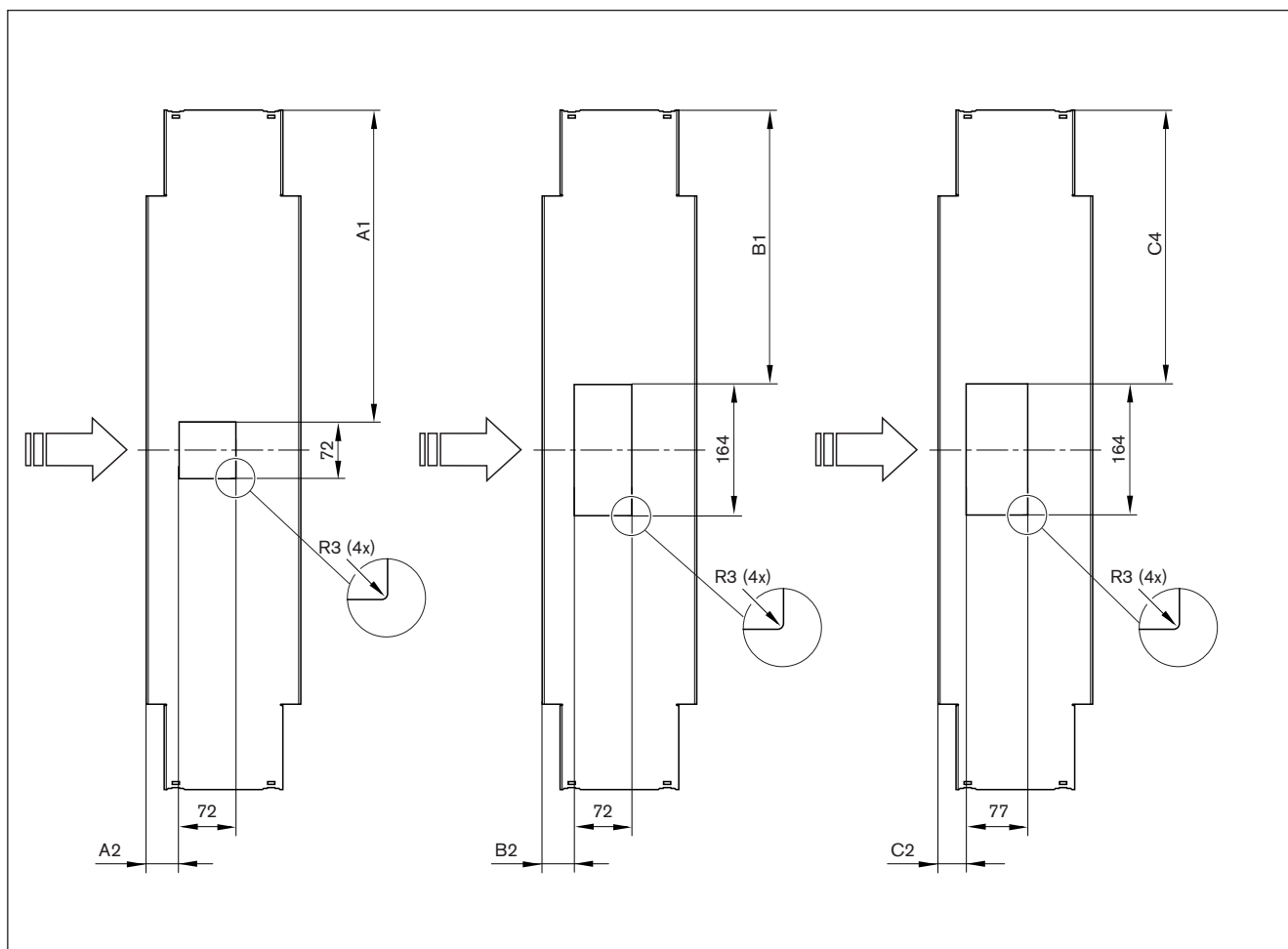


Fig. 39 Openings in the protective covers for VE 5/... in the transverse conveyor

540 375-25

b _Q [mm]	b _I [mm]	p [mm]	VE 5/200 (X)		VE 5/D-300 (X)		VE 5/D-1000 (X)		VE 5/200 (Z)		VE 5/D-300 (Z)		VE 5/D-1000 (Z)	
			A _{x1} [mm]	A _{x2} [mm]	B _{x1} [mm]	B _{x2} [mm]	C _{x1} [mm]	C _{x2} [mm]	A _{z1} [mm]	A _{z2} [mm]	B _{z1} [mm]	B _{z2} [mm]	C _{z1} [mm]	C _{z2} [mm]
455	455	130	424	40.4	148	40.4	148	38.4	424	34.7	148	34.7	148	32.7
650	455	130	424	34.7	148	34.7	148	32.7	424	28.9	148	28.9	148	26.9
650	455	195	—	—	—	—	—	—	—	—	—	—	—	—
650	650	130	291.5	32.2	245.5	32.2	245.5	30.2	291.5	32.2	245.5	32.2	245.5	30.2
650	650	195	291.5	32.2	245.5	32.2	245.5	30.2	291.5	32.2	245.5	32.2	245.5	30.2
845	650	130	389	31.1	343	31.1	343	29.1	389	31.1	343	31.1	343	29.1
845	650	195	389	31.1	343	31.1	343	29.1	389	31.1	343	31.1	343	29.1
845	650	260	—	—	—	—	—	—	—	—	—	—	—	—
845	845	130	389	33.6	343	33.6	343	31.6	389	33.6	343	33.6	343	31.6
845	845	195	389	33.6	343	33.6	343	31.6	389	33.6	343	33.6	343	31.6
845	845	260	389	33.6	343	33.6	343	31.6	389	33.6	343	33.6	343	31.6
1040	845	130	486.5	16.6	440.5	16.6	440.5	14.6	486.5	16.6	440.5	16.6	440.5	14.6
1040	845	195	486.5	16.6	440.5	16.6	440.5	14.6	486.5	16.6	440.5	16.6	440.5	14.6
1040	845	260	486.5	16.6	440.5	16.6	440.5	14.6	486.5	16.6	440.5	16.6	440.5	14.6
1040	845	325	—	—	—	—	—	—	—	—	—	—	—	—

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

6.19 Protective covers

CAUTION

Walking on the modular units is not permitted!

Protective covers only serve as trap guards to prevent hand injuries.

► Do not enter areas with protective covers.

Work areas must be secured by protective covers in accordance with DIN EN 619. The user must make the openings in the protective covers for the stop gate, switch bracket, and identification systems, continuous gap ≤ 5 mm.

Dimensioned illustrations of the openings for installation of

- Stop gates
- Switch brackets and identification systems
- Positioning unit

can be found in the respective sections.

1. Place the springs on the cover.
2. Swivel the protective cover in the section, the springs will snap into the centering lugs on the bearing pedestals.

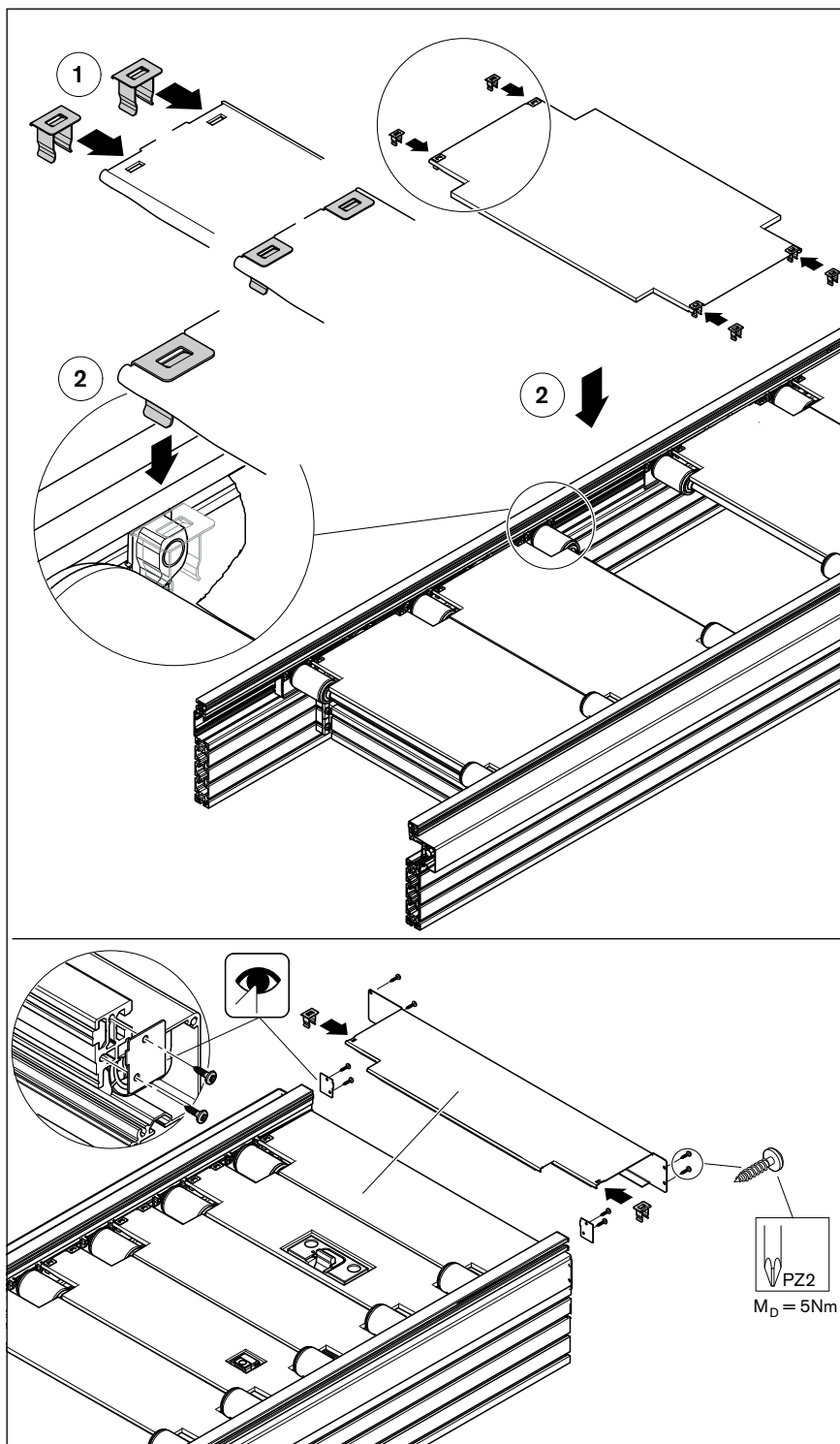


Fig. 40 ST 5/... protective covers

540 375-96

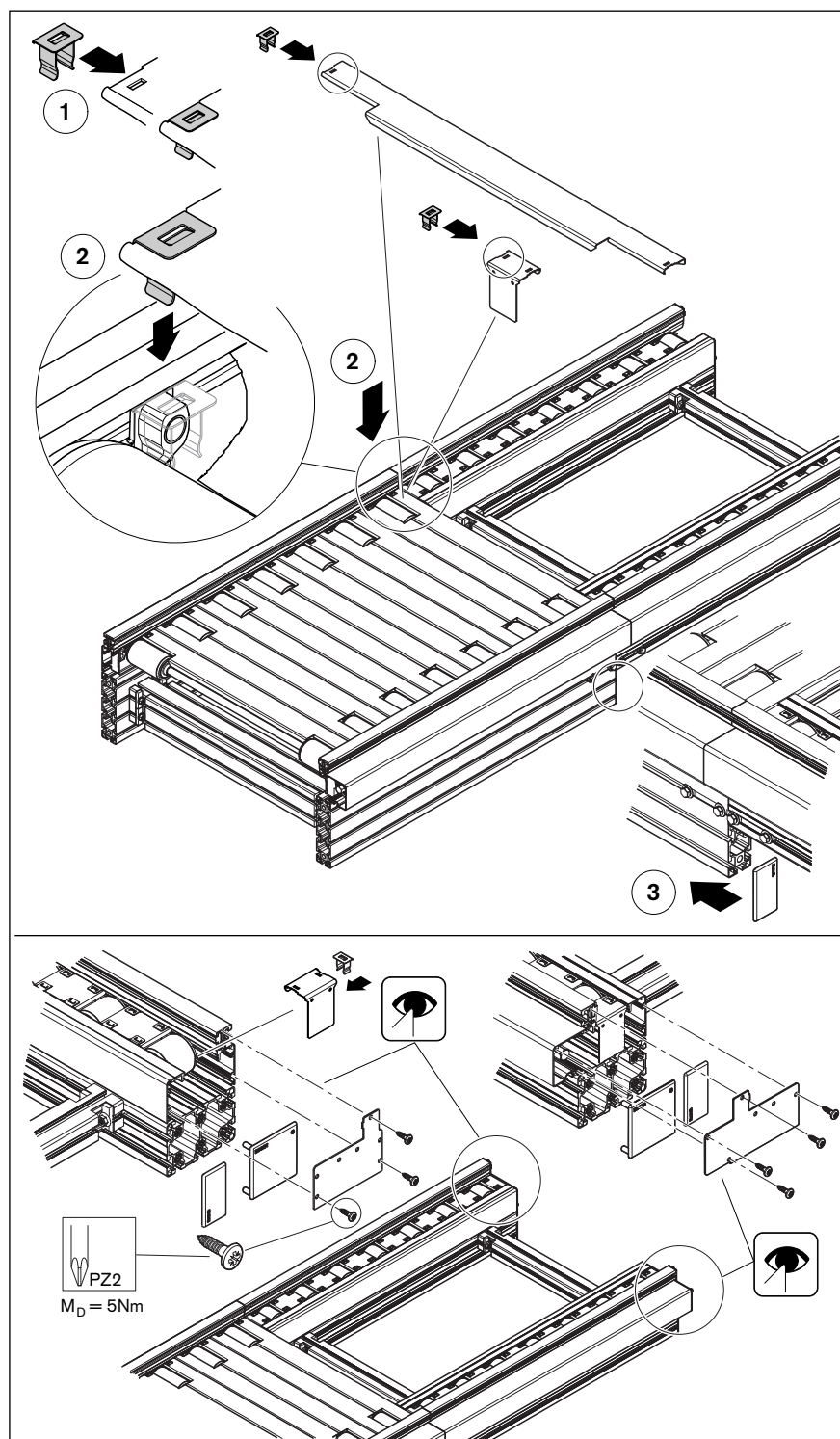


Fig. 41 ST 5/OC protective covers

540 375-75

6.20 Foundation brackets, dowels

After aligning each TS 5 modular unit, bolt each leg set to the floor 2x with foundation brackets and dowels to prevent the legs from moving.

The following is required per connection:

- 1 foundation bracket,
3 842 146 815
- 1 dowel,
3 842 526 560
- 2 T-bolts,
3 842 528 718
- 2 flange nuts,
3 842 345 081

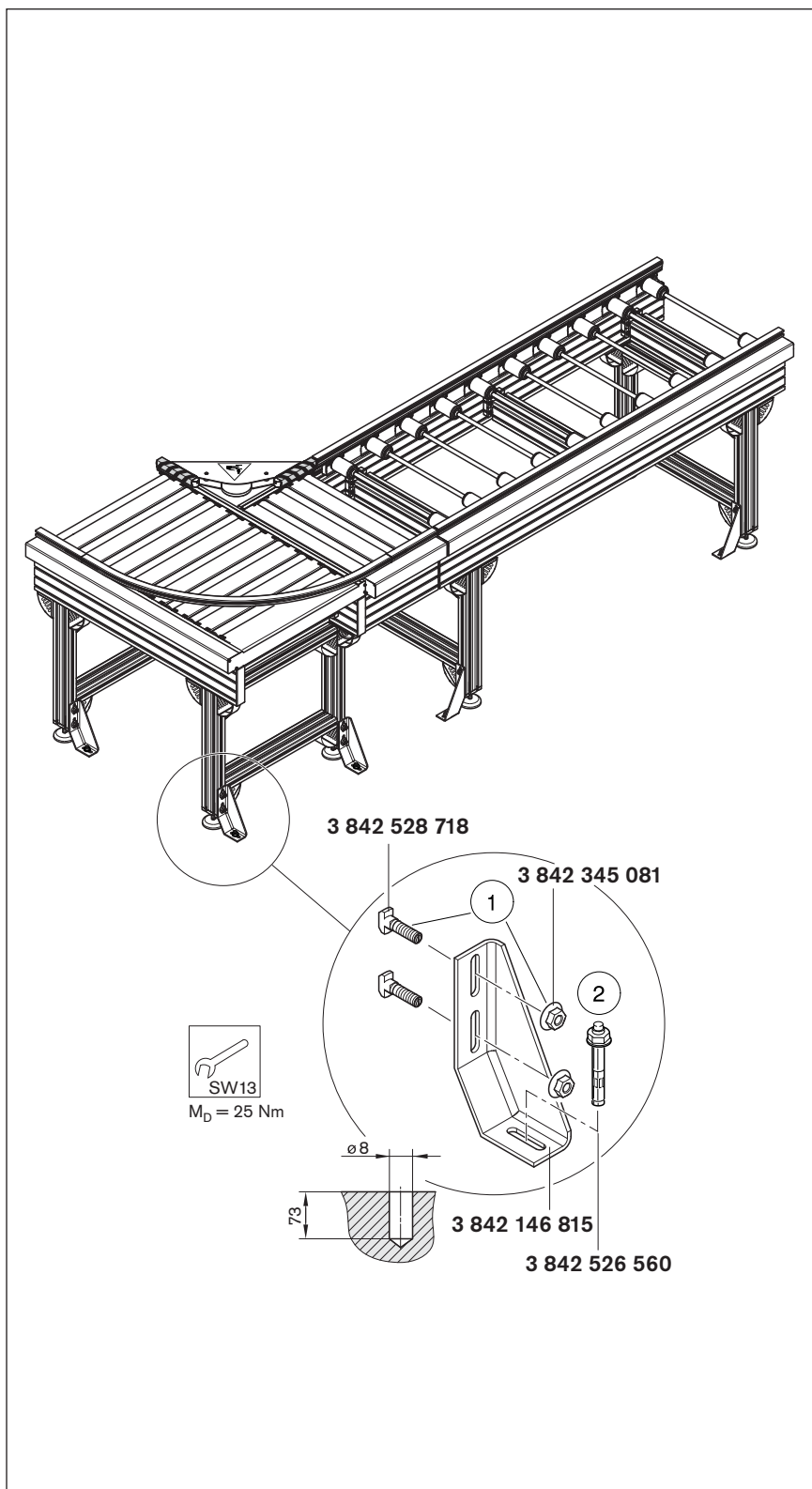


Fig. 42 Foundation brackets, dowels

6.21 Motor

Standard

1. Screw the adapter flange onto the gear motor.
2. Insert the hexagonal shaft greased at the factory into the drive shaft.
3. Attach the motor and bolt to the bearing flange. Insert the plugs.

Note: Only commission and operate with assembled protective covers.

Note: The toothed belt in the AS 5/... drive unit has been tensioned at the factory. Do **NOT** change this pre-tension!

Some blue ruboff from the toothed belt will appear during the start-up phase. This is intentional, as the blue PA coating on the toothed belt is being worked onto the tooth profiles to achieve higher belt stability.

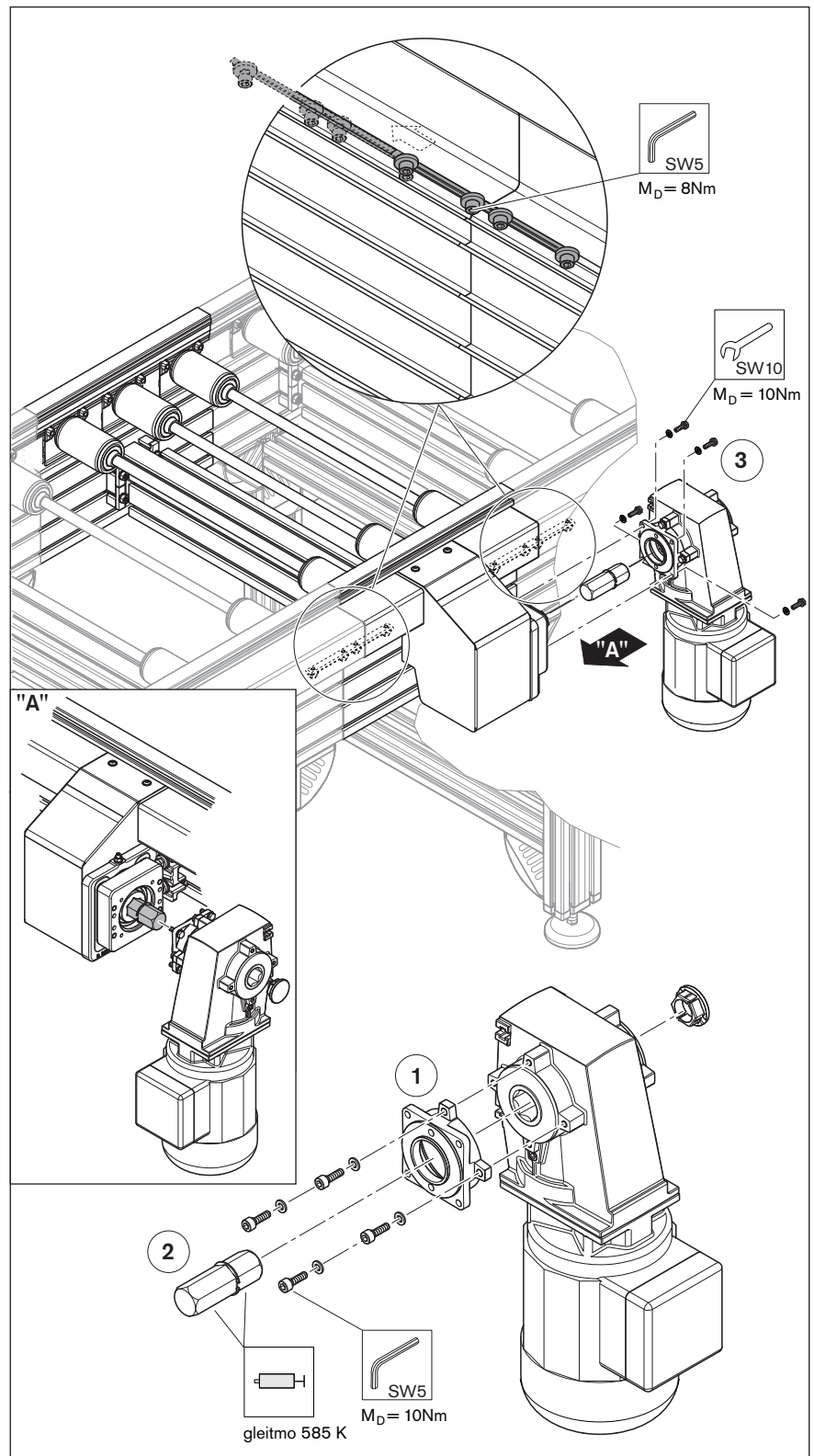


Fig. 43 Motor assembly (standard)

540 375-40

6.22 PE 5 positioning unit

The PE 5 positioning unit can be assembled from the top or bottom in a conveyor unit using split rollers.

- Assembly from the bottom  61
- Assembly from the top  65
- Openings in the protective covers for PE 5  68
- PE 5 lifting plunger trap guard  68

Assembly dimensions

The PE 5 positioning unit can only be assembled at a specified distance from a roller axis, depending on the length of the workpiece pallet (l_{WT}) and the roller dimensions (p).

Reference points for installation (in the transport direction):

- Front edge of the bearing pedestal of a roller (1)
- Rear edge of the support plate of the PE 5 (2)
- Front edge of the support profile of the stop gate (3)
- Note the minimum distance to the leg sets!

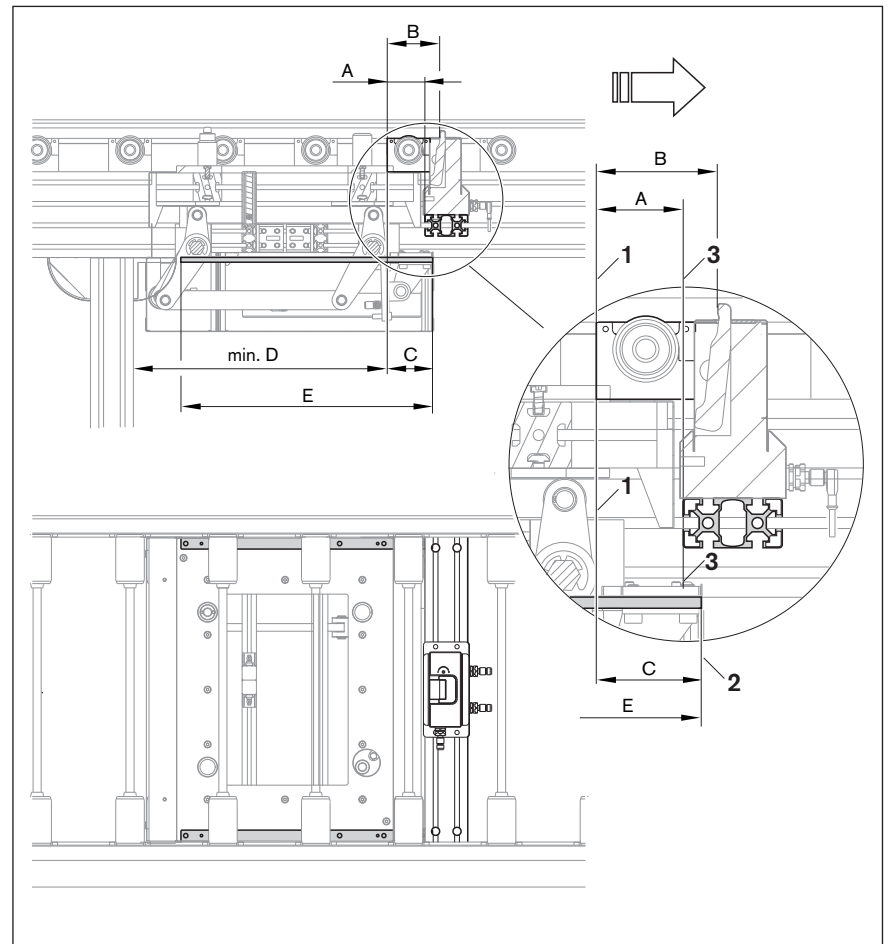


Fig. 45 Assembly dimensions for PE 5 positioning unit

540 375-42

Work areas must be secured by protective covers in accordance with DIN EN 619. The user must make the openings in the protective covers for the positioning unit, stop gate and switch bracket..

Dimensioned illustrations of the openings, for installation according to  Fig. 45  59.

	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]
$l_{WT} = 455$ p = 130	46.5	77.5	225	Min. 395	528
$l_{WT} = 650$ p = 130, 195	79	110	95	Min. 525	528
$l_{WT} = 845$ p = 130, 195, 260	79	110	5	Min. 722	635
$l_{WT} = 1040$ p = 130, 195, 260, 325	79	110	5	Min. 917	830

Lifting straps for lifting equipment

NOTE**Malfunctions due to incorrect assembly**

Lifting the PE 5 positioning unit by its upper section may cause the PE 5 positioning unit to be damaged or its service life to be shortened.

- Only lift the PE 5 positioning unit using the three lifting straps.
- As an alternative, lift from beneath the PE 5 positioning unit.

The PE 5 positioning unit is equipped with three lifting straps to hook a 4-leg short lifting chain.

Remove the lifting straps after you have positioned the PE 5 positioning unit.

Retain the lifting straps for conversion or disassembly purposes. If you are reassembling, make sure that the T-bolt is properly situated in the profile groove.

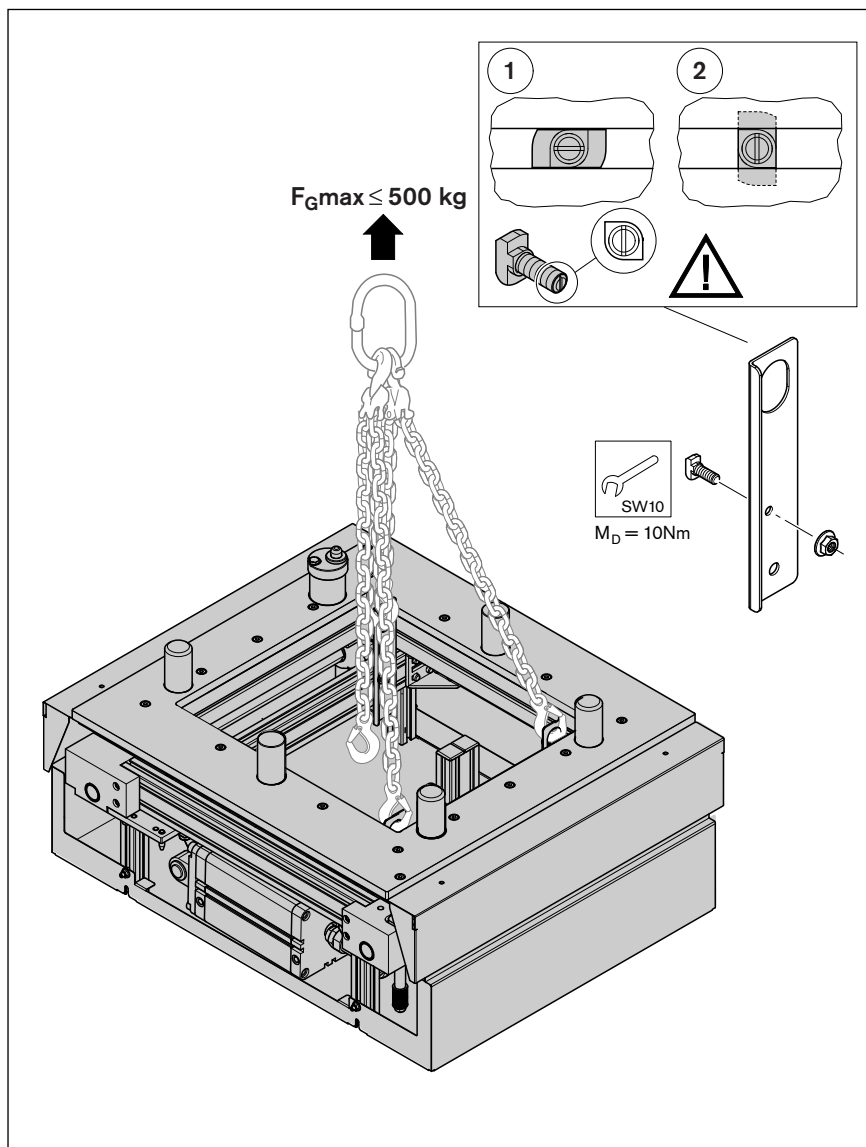


Fig. 46 PE 5, lifting straps for lifting equipment

540 375-65

Assembly from the bottom

1. Assemble the VE 5/... stop gate.
Position:  59.

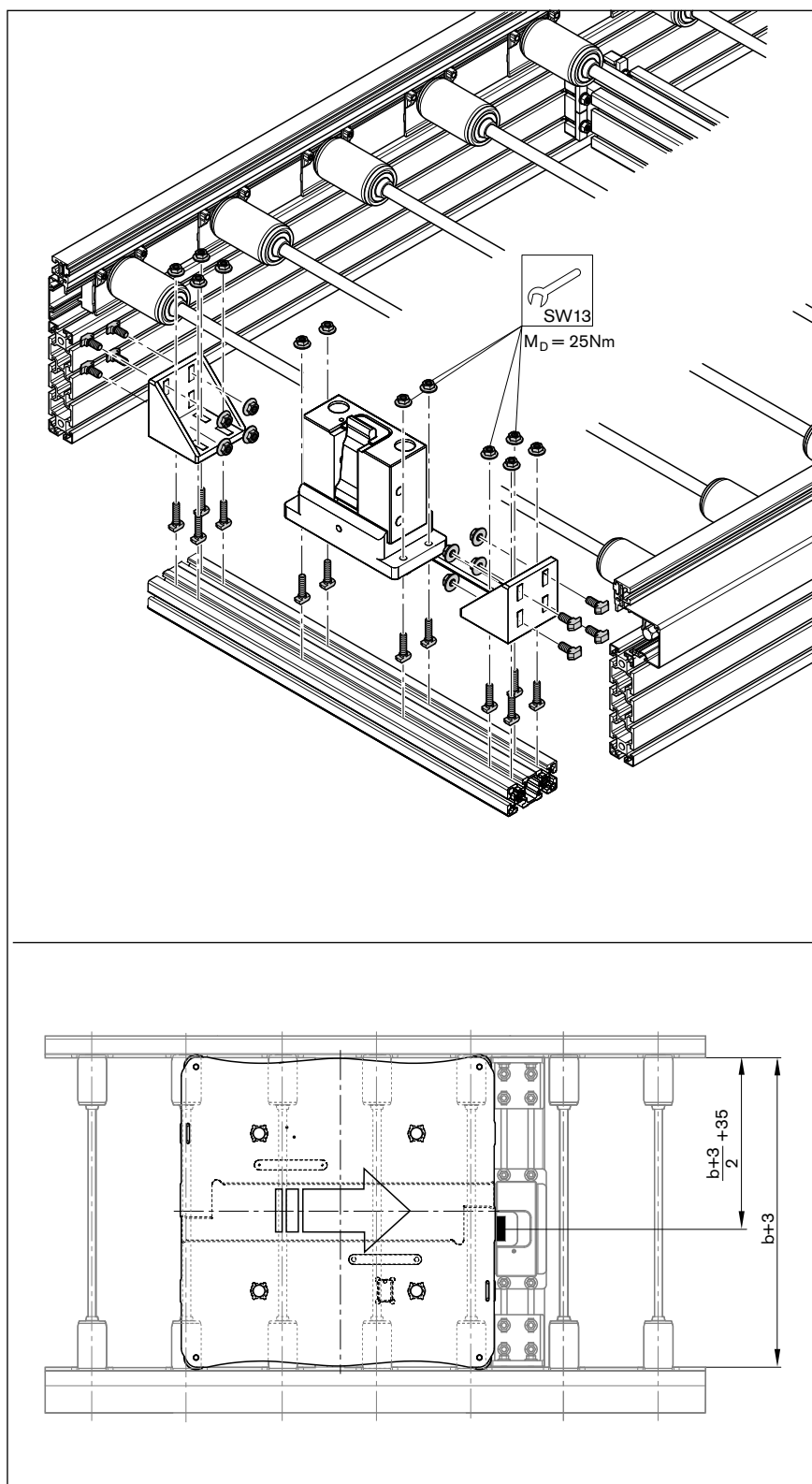


Fig. 47 PE 5, assembly from the bottom (1/4)

540 375-43

2. Assemble the support plate on the PE 5 positioning unit. The required openings are indicated by an arrow. The positioning pin (1) can be used as an insertion aid for pre-centering during assembly from the top.

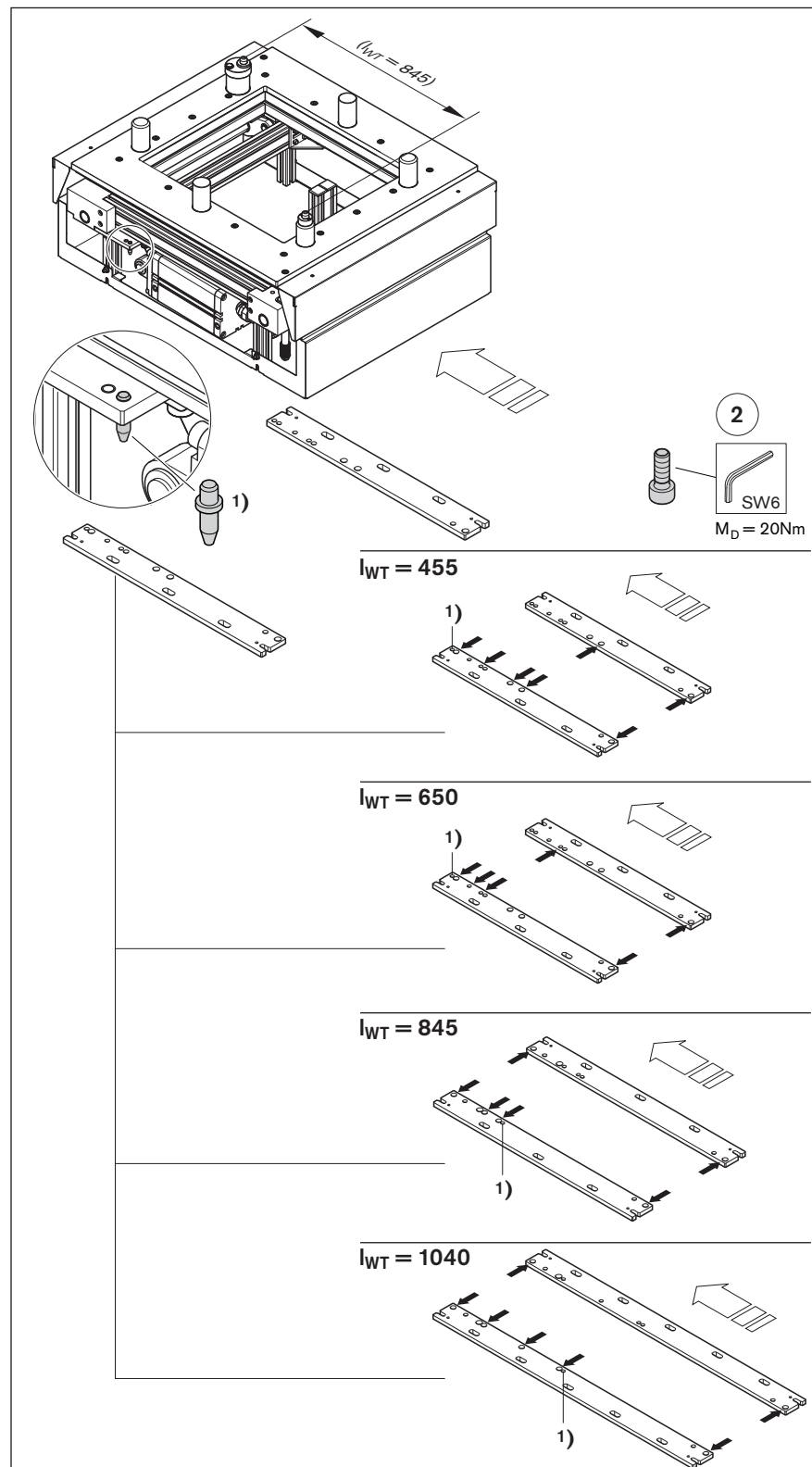


Fig. 48 PE 5, assembly from the bottom (2/4)

540 375-44

3. If necessary, relocate cross connectors for the conveyor unit in the area where the PE 5 is to be installed (Fig. 49: A).
4. Support the PE 5 positioning unit (Fig. 49, lower the ST 5/... conveyor unit onto it with a crane, align, and tighten together. The required openings are indicated by an arrow. Position of the PE 5: 59

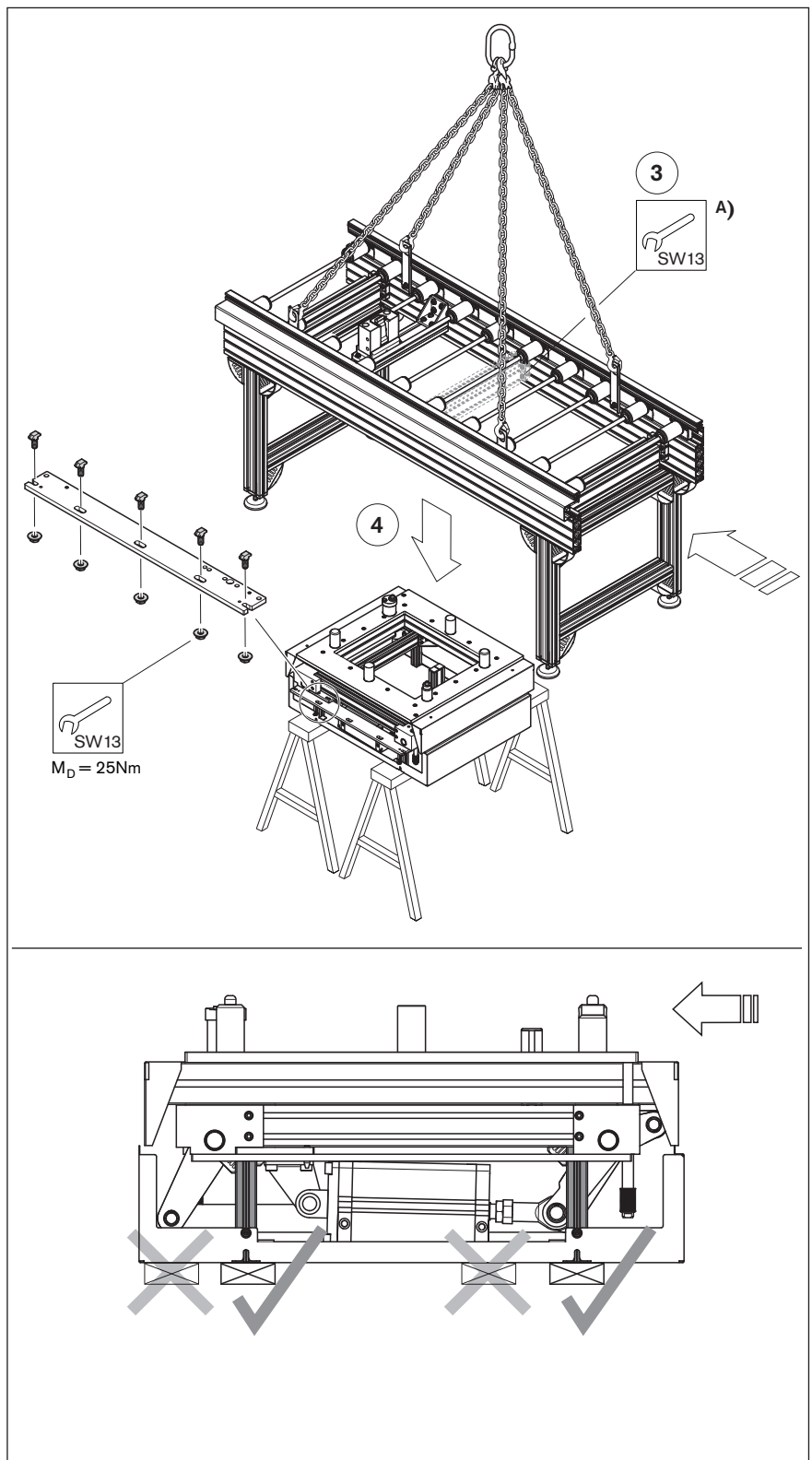


Fig. 49 PE 5, assembly from the bottom (3/4)

5. Screw the throttles (included in scope of delivery) into the cylinders, and connect the pneumatic supply  92.
P): PN connection
S): Installation of sensors possible
6. Screw the throttles (included in scope of delivery) into the cylinders, and connect the PE 5 pneumatics.
7. Assemble the covers.
8. Assemble the switch bracket and proximity switch, and adjust the position (except $b_{WT} = 455$ mm).

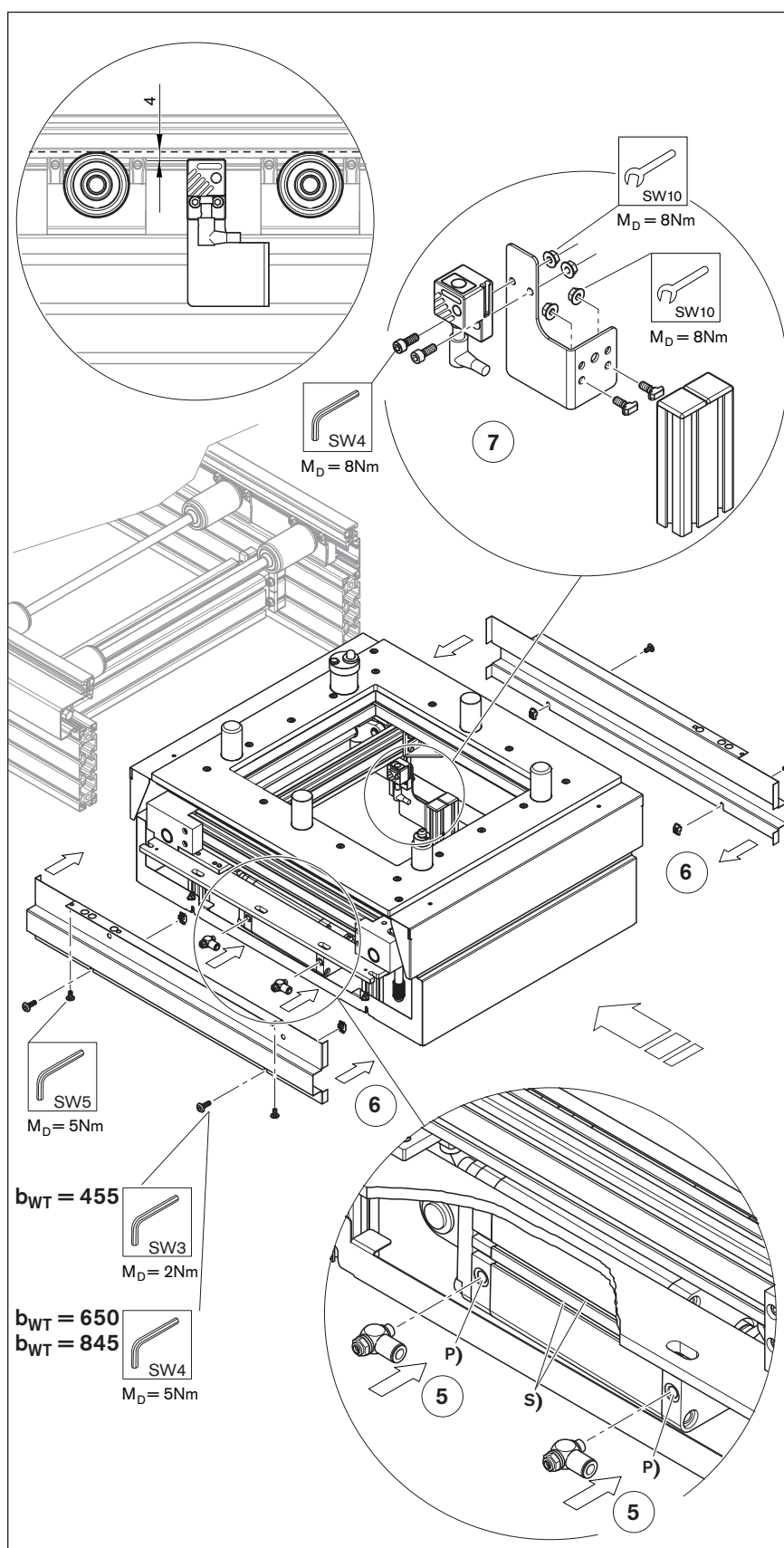


Fig. 50 PE 5, assembly from the bottom (4/4)

540 375-46

Assembly from the top

1. Remove the rollers above the area where the PE 5 positioning unit is to be installed:
 108...110.
2. Screw the threaded pins back into the lateral guide in the area where the PE 5 is to be installed until they no longer protrude inside.
3. If necessary, relocate cross connectors for the conveyor unit in the area where the PE 5 is to be installed ( Fig. 51: A).
4. Assemble the support plates underneath the conveyor unit. The required openings are indicated by an arrow. Position of the support plates:  59

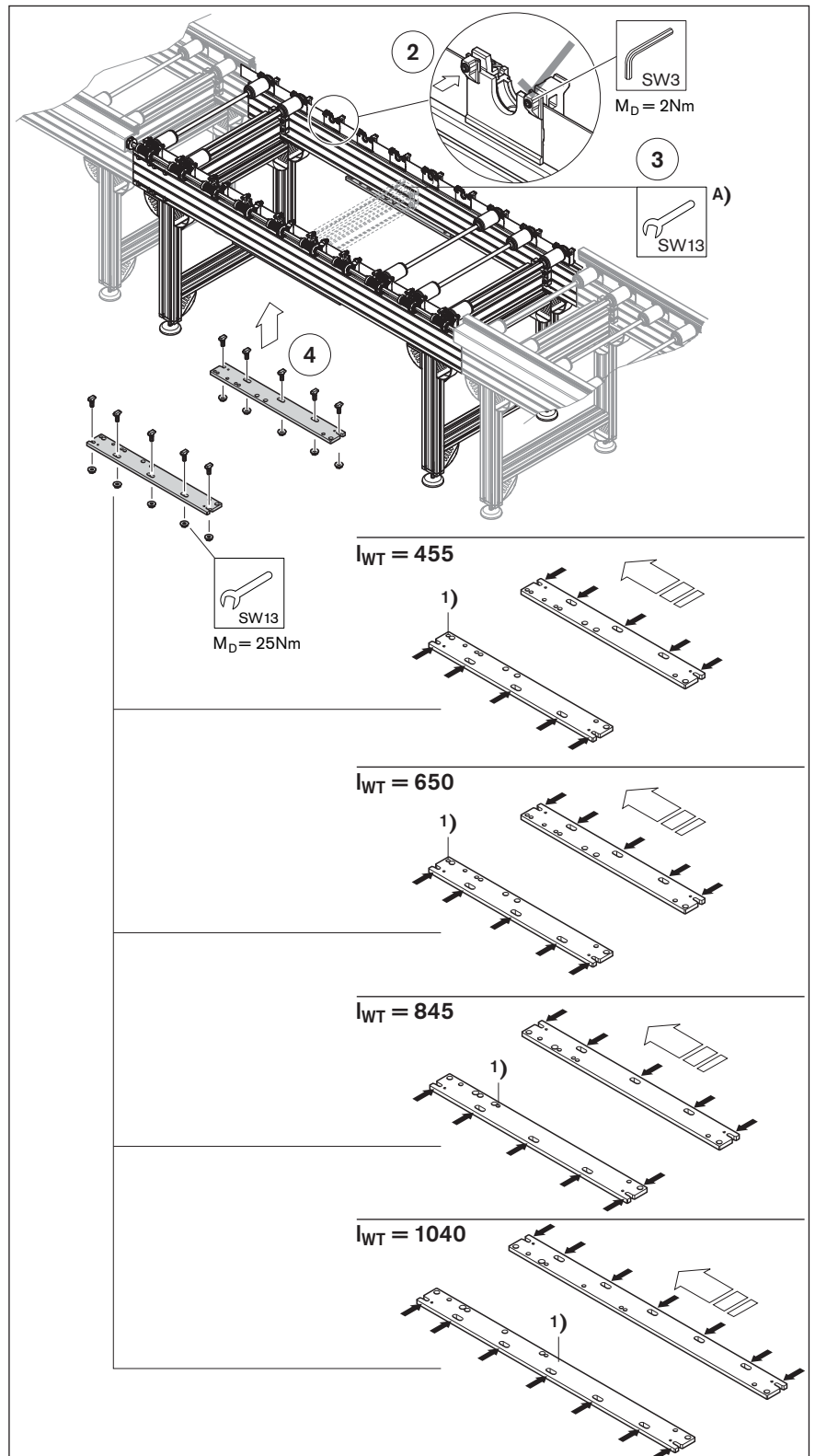


Fig. 51 PE 5, assembly from the top (1/3)

540 375-47

Note: Only lift the PE 5 positioning unit using the three lifting straps!

Insert the PE 5 positioning unit in the ST 5/... conveyor unit, align, and tighten together. The required openings are indicated by an arrow.

The positioning pin can be used as an insertion aid for pre-centering (Fig. 52: 1).

5. Screw the throttles (included in scope of delivery) into the cylinders, and connect the pneumatic supply (P): PN connection
S): Installation of sensors possible
6. Screw the throttles (included in scope of delivery) into the cylinders, and connect the PE 5 pneumatics.
7. Assemble the covers.
8. Assemble the switch bracket and proximity switch, and adjust the position (except $b_{WT} = 455 \text{ mm}$)
(Fig. 64, Fig. 50: step 7).

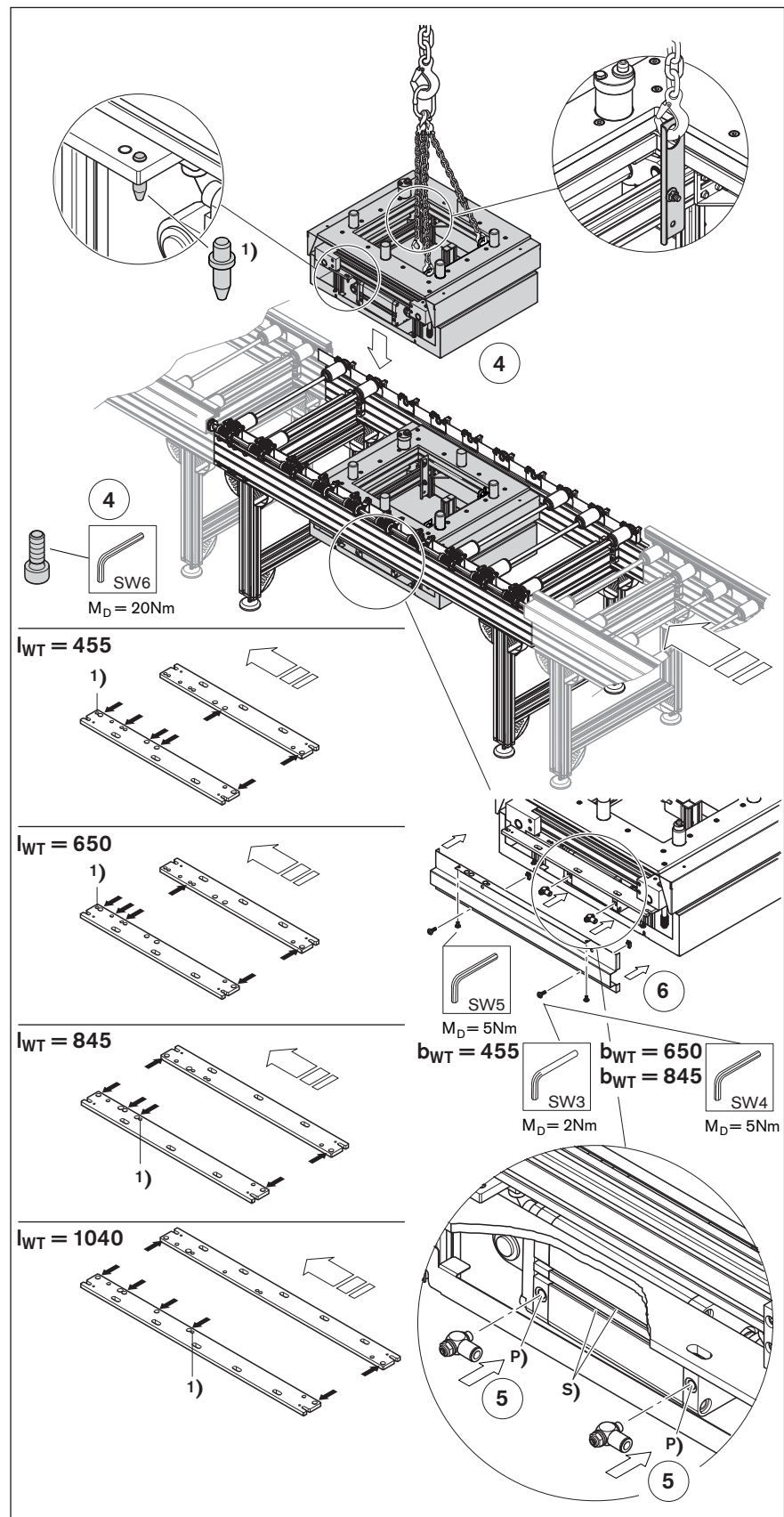


Fig. 52 PE 5, assembly from the top (2/3)

1. Assemble the VE 5/... stop gate.
Position:  59.
2. Assemble the rollers and lateral guides.

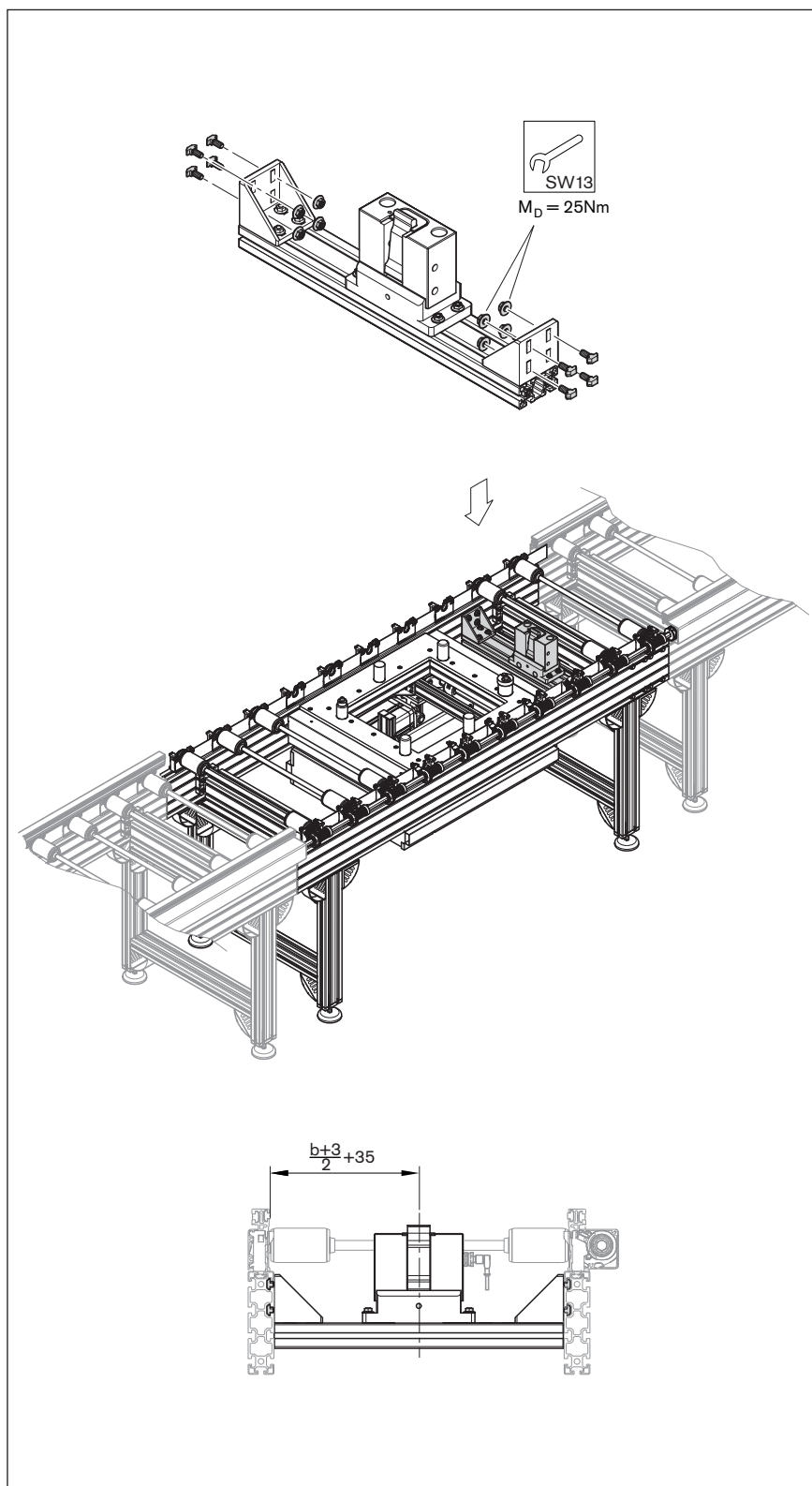


Fig. 53 PE 5, assembly from the top (3/3)

540 375-49

Openings in the protective covers for PE 5

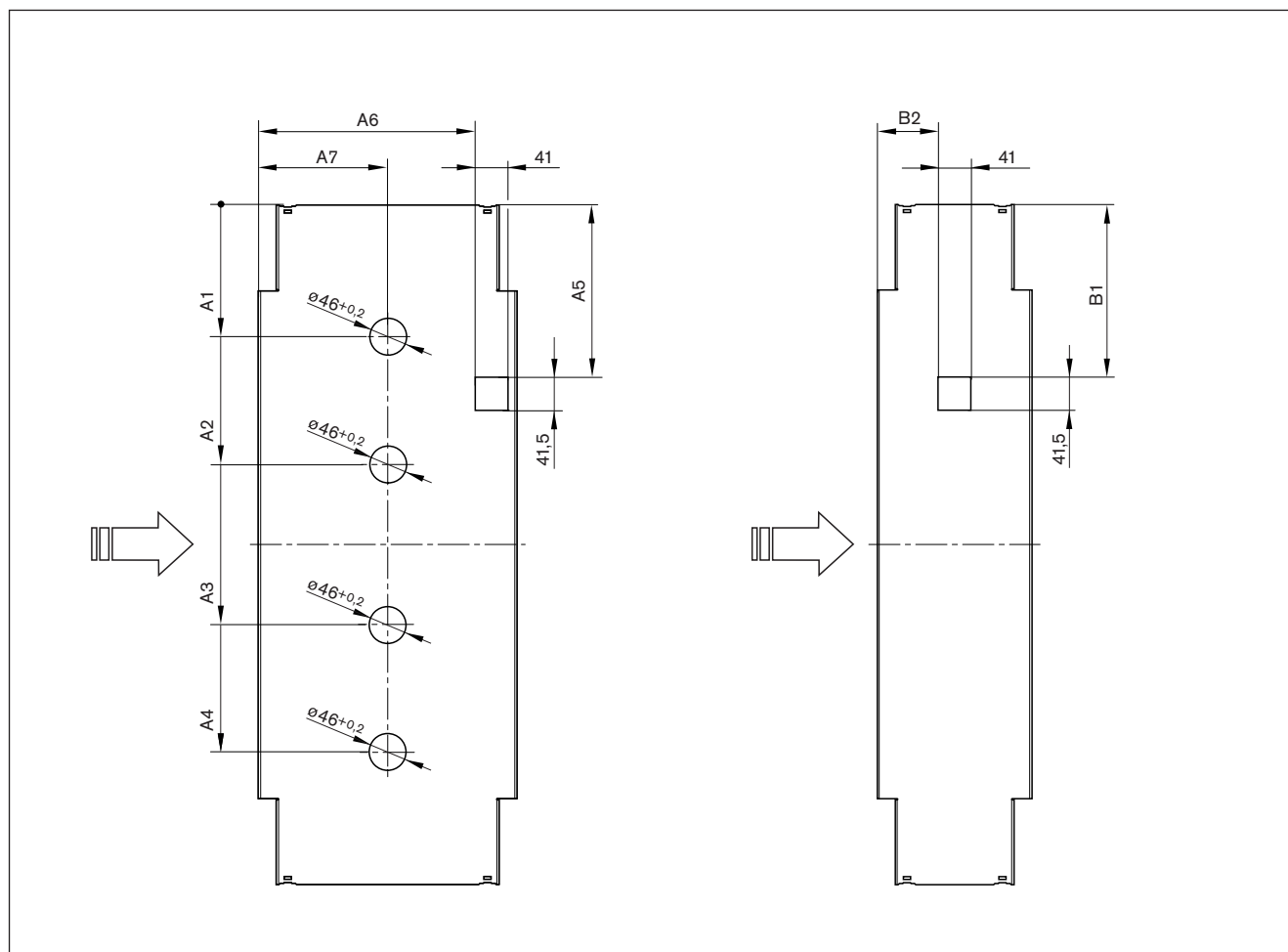


Fig. 54 Openings in the protective covers for PE 5 (1/2)

540 375-50

b_{WT} [mm]	l_{WT} [mm]	p [mm]	A1 [mm]	A2 [mm]	A3 [mm]	A4 [mm]	A5 [mm]	A6 [mm]	A7 [mm]	B1 [mm]	B2 [mm]	
455	455	130	132.5	–	–	327.5	–	–	97	–	–	
455	650	130	132.5	–	–	327.5	–	–	97	–	–	
455	650	195	132.5	–	–	327.5	–	–	162	–	–	
650	650	130	165	–	–	490	–	–	97	215.8	76.5	
650	650	195	165	–	–	490	–	–	162	215.8	76.5	
650	845	130	165	–	–	490	–	–	32	215.8	11.5	
650	845	195	165	–	–	490	–	–	162	215.8	76.5	
650	845	260	165	–	–	490	–	–	162	–	–	
845	845	130	165	325	525	685	–	–	32	215.8	11.5	
845	845	195	165	325	525	685	–	–	162	215.8	76.5	
845	845	260	165	325	525	685	–	–	162	–	–	
845	1040	130	165	325	525	685	–	–	97	215.8	76.5	
845	1040	195	165	325	525	685	–	–	162	215.8	76.5	
845	1040	260	165	325	525	685	–	–	227	215.8	76.5	
845	1040	325	165	325	525	685	215.8	271.5	162	–	–	

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

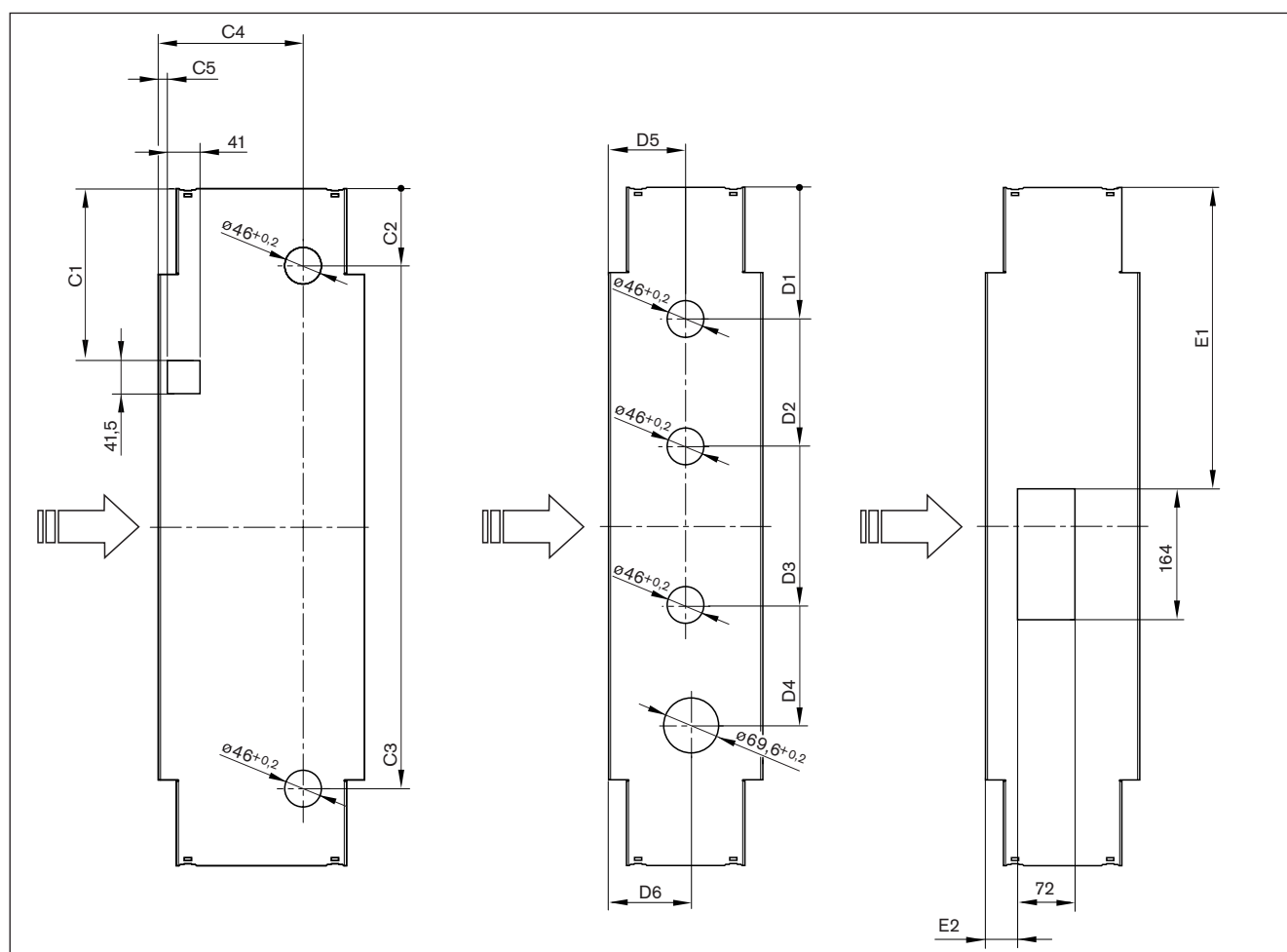


Fig. 55 Openings in the protective covers for PE 5 (2/2)

540 375-51

b _{WT} [mm]	l _{WT} [mm]	p [mm]	C1 [mm]	C2 [mm]	C3 [mm]	C4 [mm]	C5 [mm]	D1 [mm]	D2 [mm]	D3 [mm]	D4 [mm]	D5 [mm]	D6 [mm]	E1 [mm]	E2 [mm]
455	455	130	–	–	–	–	–	132.5	–	–	318.7	32	40.8	183	8
455	650	130	–	–	–	–	–	132.5	–	–	316.8	32	38.4	183	40.5
455	650	195	–	–	–	–	–	132.5	–	–	316.8	97	103.4	183	40.5
650	650	130	–	–	–	–	–	165	–	–	481.2	32	40.8	280.5	40.5
650	650	195	–	–	–	–	–	165	–	–	481.2	97	105.9	280.5	40.5
650	845	130	–	97	558	52	–	165	–	–	479.4	32	38.6	280.5	40.5
650	845	195	–	97	558	52	–	165	–	–	479.4	97	103.6	280.5	40.5
650	845	260	215.8	97	558	182	11.5	165	–	–	479.4	162	168.6	280.5	40.5
845	845	130	–	97	753	52	–	165	325	525	676.2	32	40.8	378	40.5
845	845	195	–	97	753	52	–	165	325	525	676.5	97	105.8	378	40.5
845	845	260	215.8	97	753	182	11.5	165	325	525	676.2	162	170.8	378	40.5
845	1040	130	–	97	753	64.5	–	165	325	525	674.9	32	39.4	378	40.5
845	1040	195	–	97	753	129.5	–	165	325	525	674.9	97	104.4	378	40.5
845	1040	260	–	97	753	64.5	–	165	325	525	674.9	162	169.4	378	40.5
845	1040	325	–	97	753	194.5	–	165	325	525	674.9	227	234.4	378	40.5

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

PE 5 lifting plunger trap guard

Snap the protective sleeves into the cut-outs of the protective covers to function as a trap guard above the lifting plungers of the PE 5.

Break out the protective sleeves if the shaft or roller protrudes into the necessary free area.

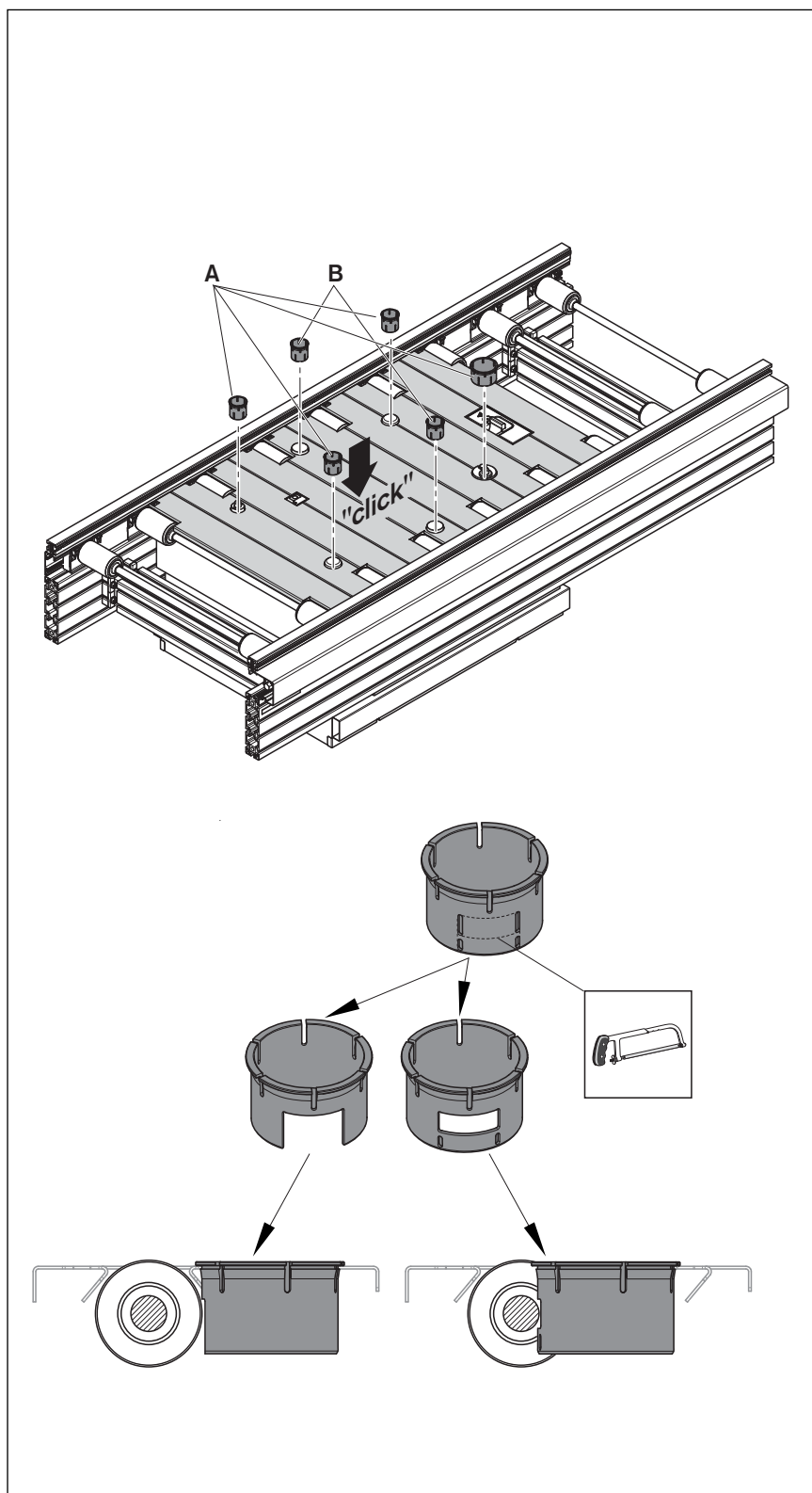


Fig. 56 PE 5 lifting plunger trap guard

540 375-52

6.23 HQ 5 lift transverse unit

The HQ 5 lift transverse unit can be assembled from the top or bottom in a conveyor unit.

- Assembly from the bottom  73
- Assembly from the top  77
- Accessory kit for support rollers  82
- DA 5/... damper  83

Assembly dimensions

The HQ 5 lift transverse unit can only be assembled at a specified distance from a roller axis, depending on the length of the workpiece pallet (l_{WT}) and the roller dimensions (p).

Reference points for installation (in the transport direction):

- Front edge of the bearing pedestal of a roller (1)
- Rear edge of the support plate of the HQ 5 (2)
- Front edge of the support profile of the stop gate (3)
- Note the minimum distance to the leg sets!

A) Support rollers only if:

- $b_{WT}T = 455$ mm.

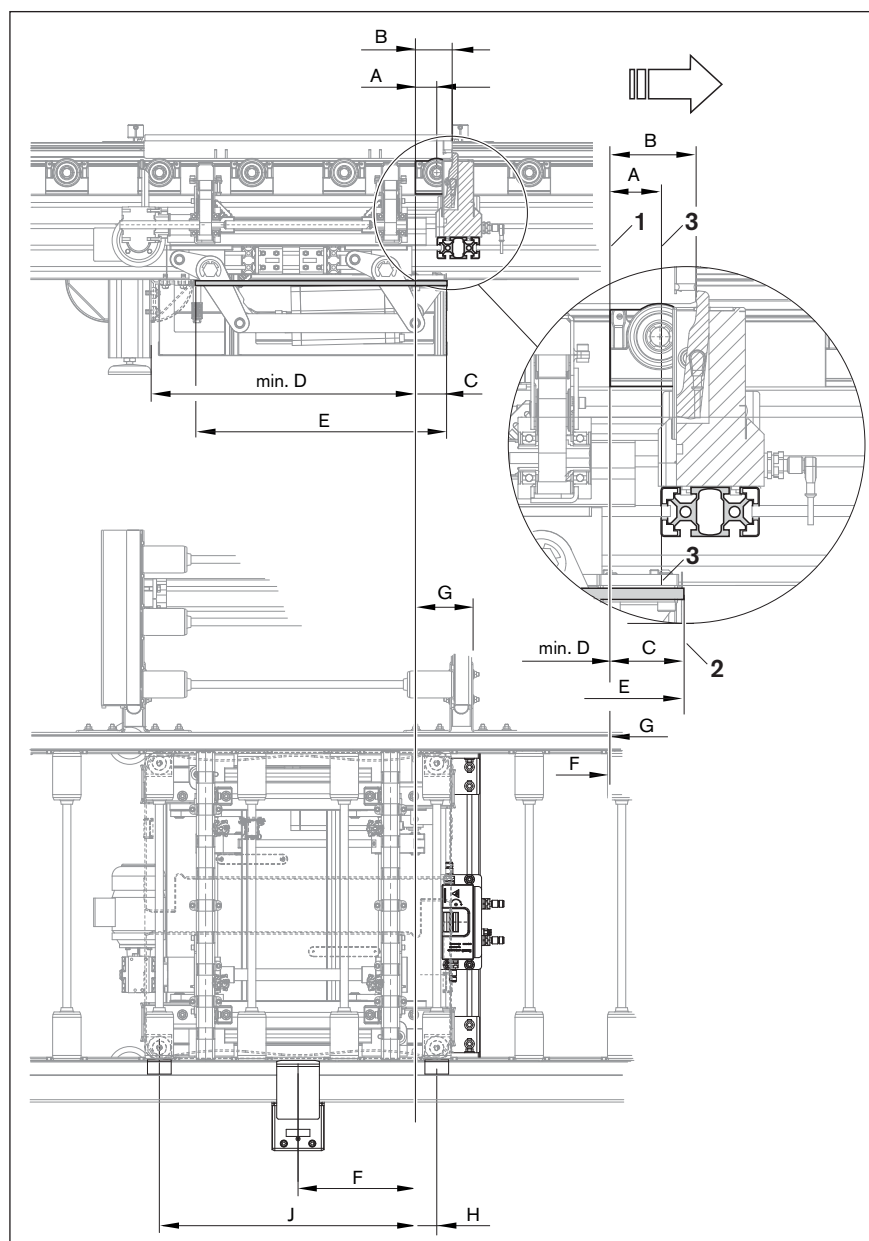


Fig. 57 Assembly dimensions for HQ 5 lift transverse unit

540 375-53

b_{WT} [mm]	l_{WT} [mm]	p [mm]	A [mm]	B [mm]	C [mm]	D [mm]	E [mm]	F [mm]	G [mm]	H [mm]	J [mm]
455	455	130	46.5	77.5	225	395	528	150	117.5	45	345
455	650	130	79	110	95	525	528	215	150	77.5	507.5
455	650	195	46.5	77.5	62.5	557.5	528	247.5	117.5	45	540
650	650	130	79	110	95	525	528	215	150	77.5	507.5
650	650	195	46.5	77.5	62.5	557.5	528	247.5	117.5	45	540
650	845	130, 195, 260	46.5	77.5	5	785	700	345	117.5	45	735
845	845	130, 195, 260	46.5	77.5	5	785	700	345	117.5	45	735
845	1040	130, 260	79	110	5	917	830	410	150	77.5	897.5
845	1040	195, 325	46.5	77.5	-27.5	949.5	830	442.5	117.5	45	930

Lifting straps for lifting equipment

NOTE**Malfunctions due to incorrect assembly**

Lifting the HQ 5 lift transverse unit by its upper section may cause the HQ 5 lift transverse unit to be damaged or its service life to be shortened.

- Only lift the HQ 5 lift transverse unit using the three lifting straps.
- As an alternative, lift from beneath the HQ 5 lift transverse unit.

The HQ 5 lift transverse unit is equipped with three lifting straps to hook a 4-leg short lifting chain.

Remove the lifting straps after you have positioned the HQ 5 lift transverse unit.

Retain the lifting straps for conversion or disassembly purposes. If you are reassembling, make sure that the T-bolt is properly situated in the profile groove.

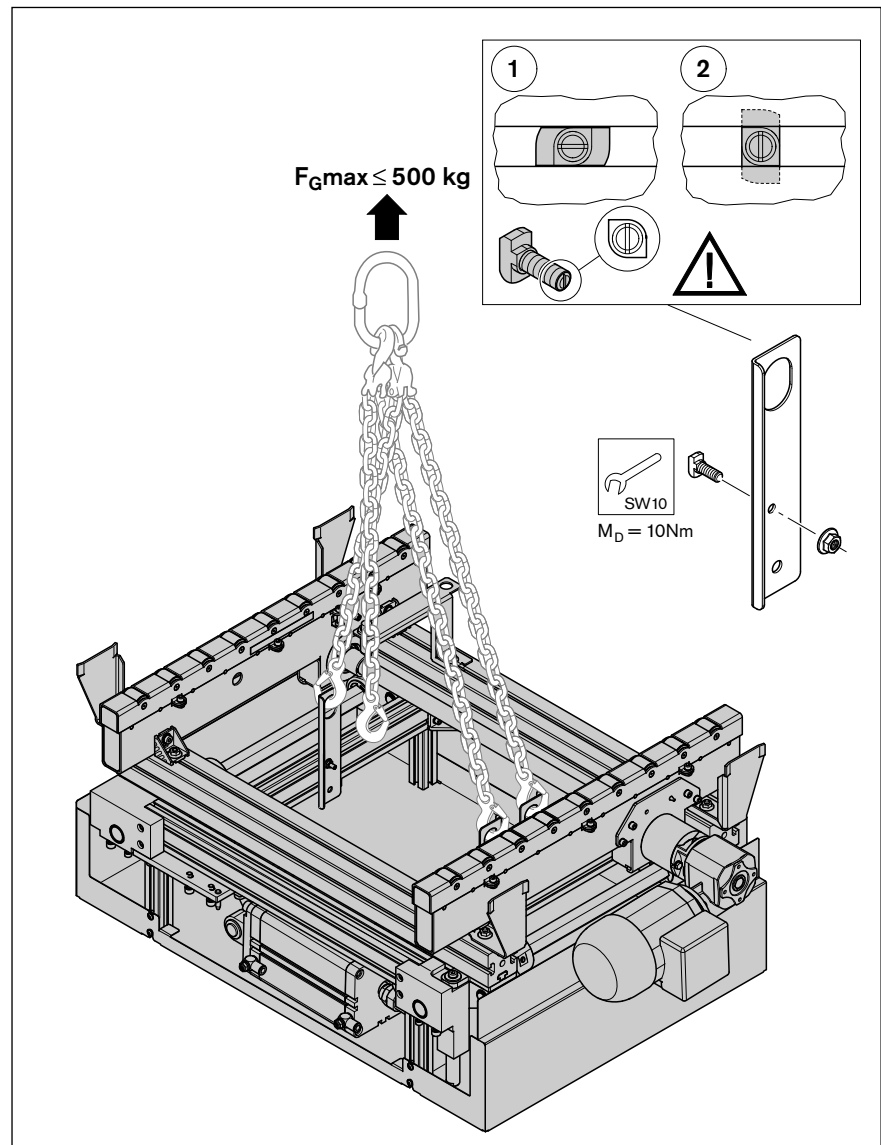


Fig. 58 HQ 5, lifting straps for lifting equipment

540 375-66

Assembly from the bottom

1. Assemble the VE 5/... stop gate.
Position:  71

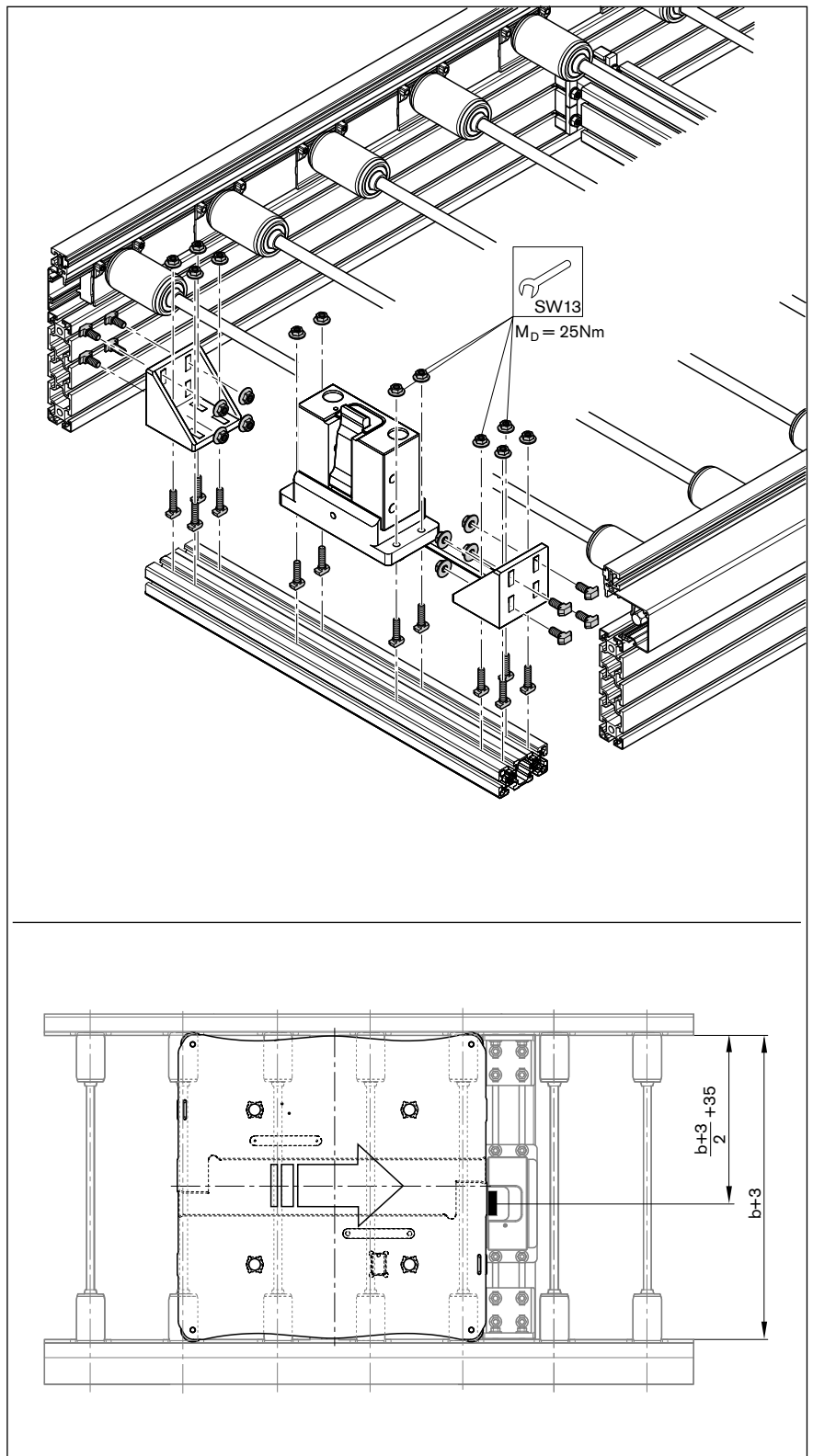


Fig. 59 HQ 5, assembly from the bottom (1/4)

540 375-43

2. Assemble the support plates on the HQ 5 lift transverse unit. The required openings are indicated by an arrow. The positioning pin (1) can be used as an insertion aid for pre-centering during assembly from the top.

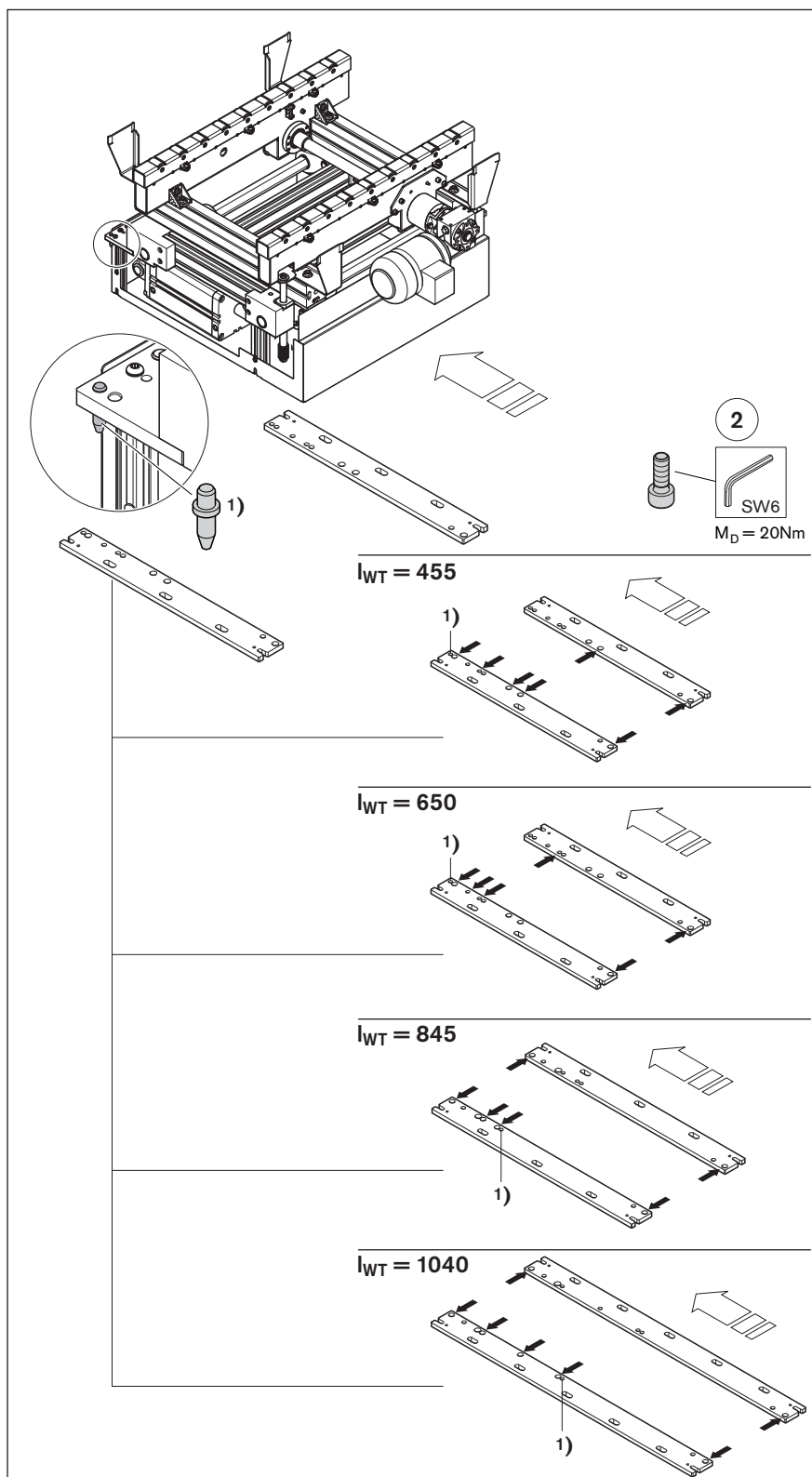


Fig. 60 HQ 5, assembly from the bottom (2/4)

540 375-54

3. If necessary, remove cross connectors for the conveyor unit in the area where the HQ 5 is to be installed (Fig. 61: A).
4. Support the HQ 5 lift transverse unit, lower the ST 5/... conveyor unit onto it with a crane and tighten together. The required openings are indicated by an arrow. Position of the HQ 5: Fig. 60, 74

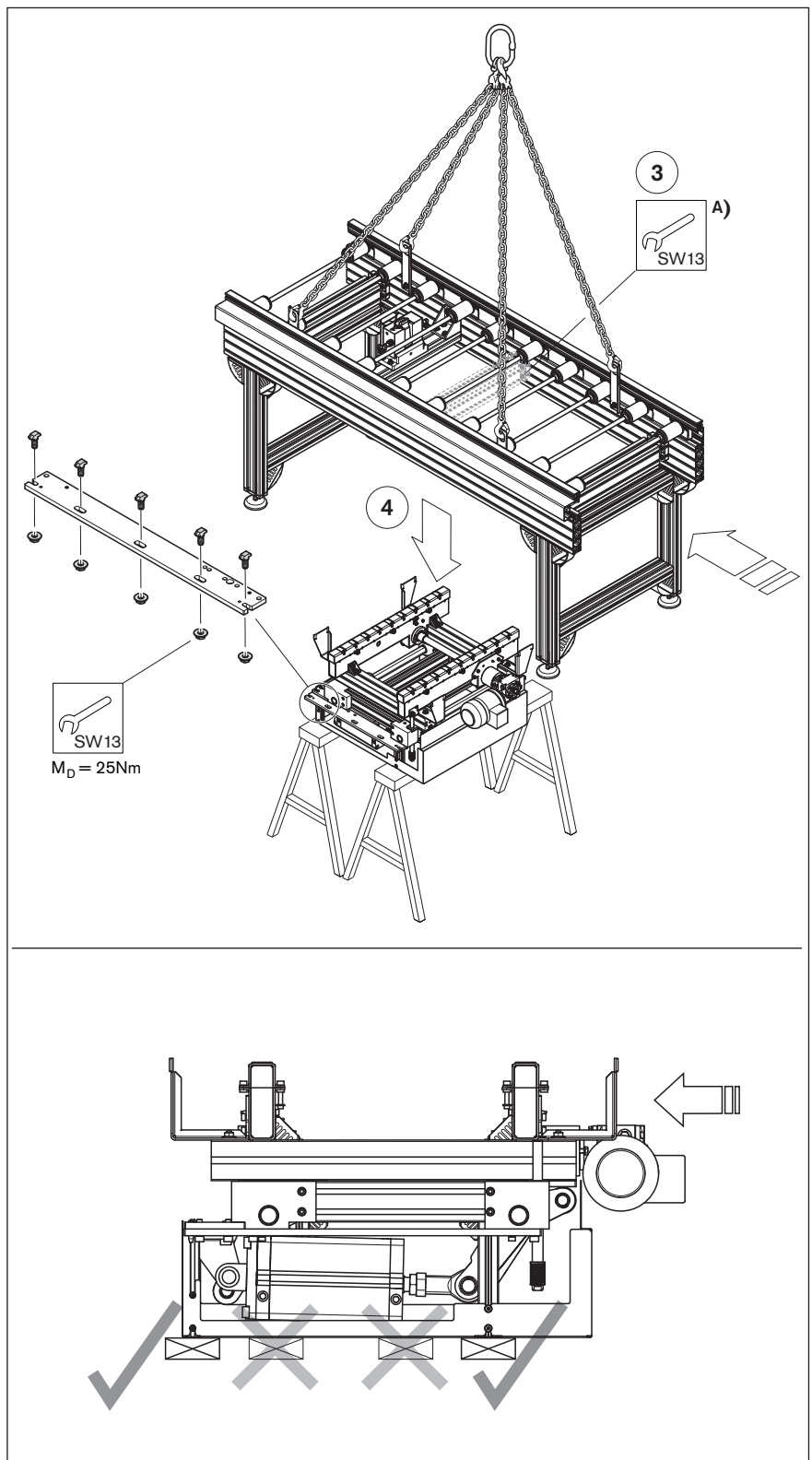


Fig. 61 HQ 5, assembly from the bottom (3/4)

540 375-55

5. Screw the throttles (included in scope of delivery) into the cylinders, and connect the pneumatic supply  92.
P): PN connection
S): Installation of sensors possible
6. Screw the throttles (included in scope of delivery) into the cylinders, and connect the HQ 5 pneumatics.
7. Assemble the covers.
8. Assemble the switch bracket and proximity switch, and adjust the position (except $b_{WT} = 455$ mm).

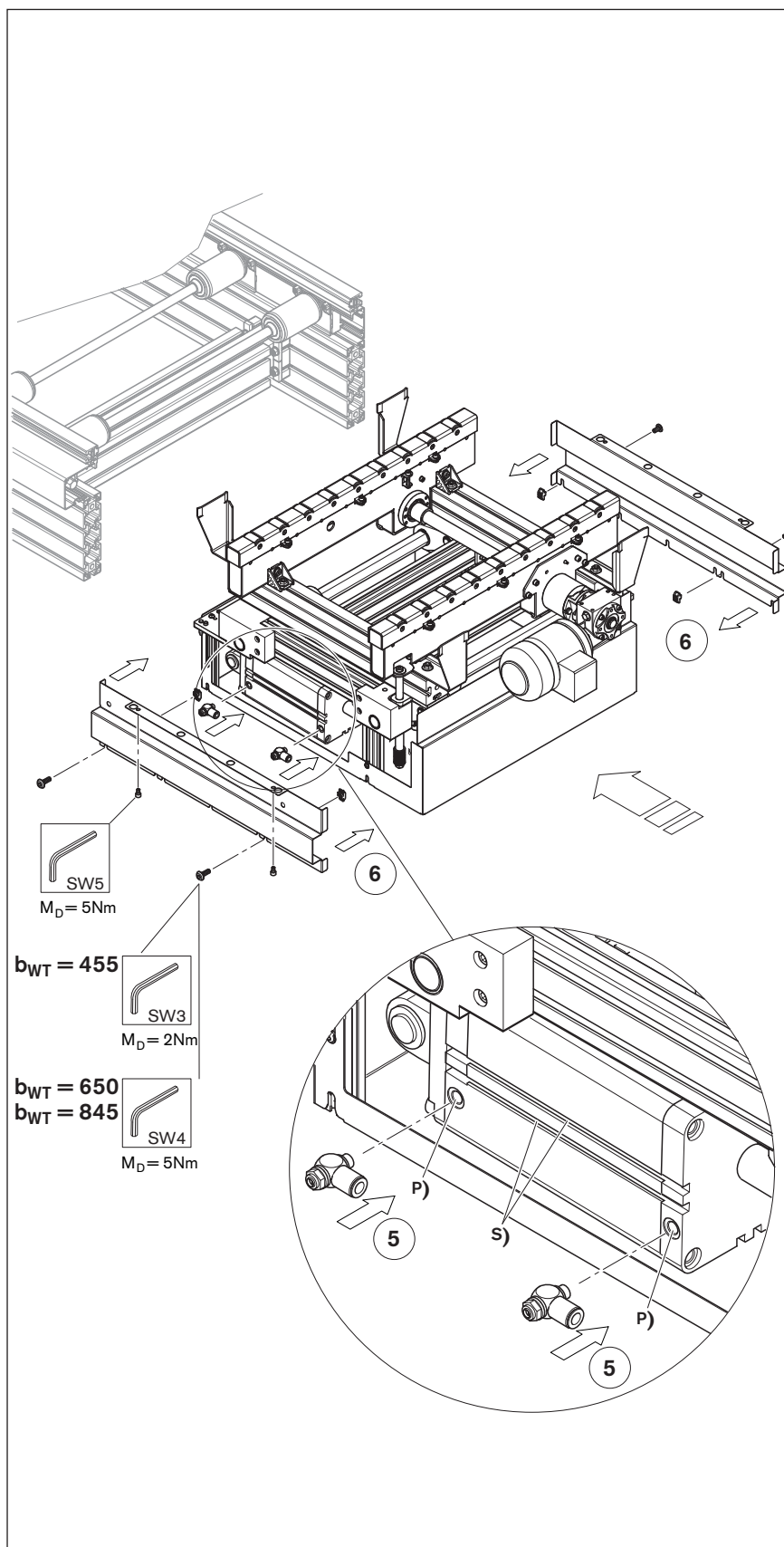


Fig. 62 HQ 5, assembly from the bottom (4/4)

Assembly from the top

1. Remove the rollers above the area where the HQ 5 lift transverse unit is to be installed: 108...110.
2. Screw the threaded pins back into the lateral guide in the area where the HQ 5 is to be installed until they no longer protrude inside.
3. If necessary, remove cross connectors for the conveyor unit in the area where the HQ 5 is to be installed (Fig. 51: A).
4. Assemble the support plates underneath the conveyor unit. The required openings are indicated by an arrow. Position of the support plates: 71

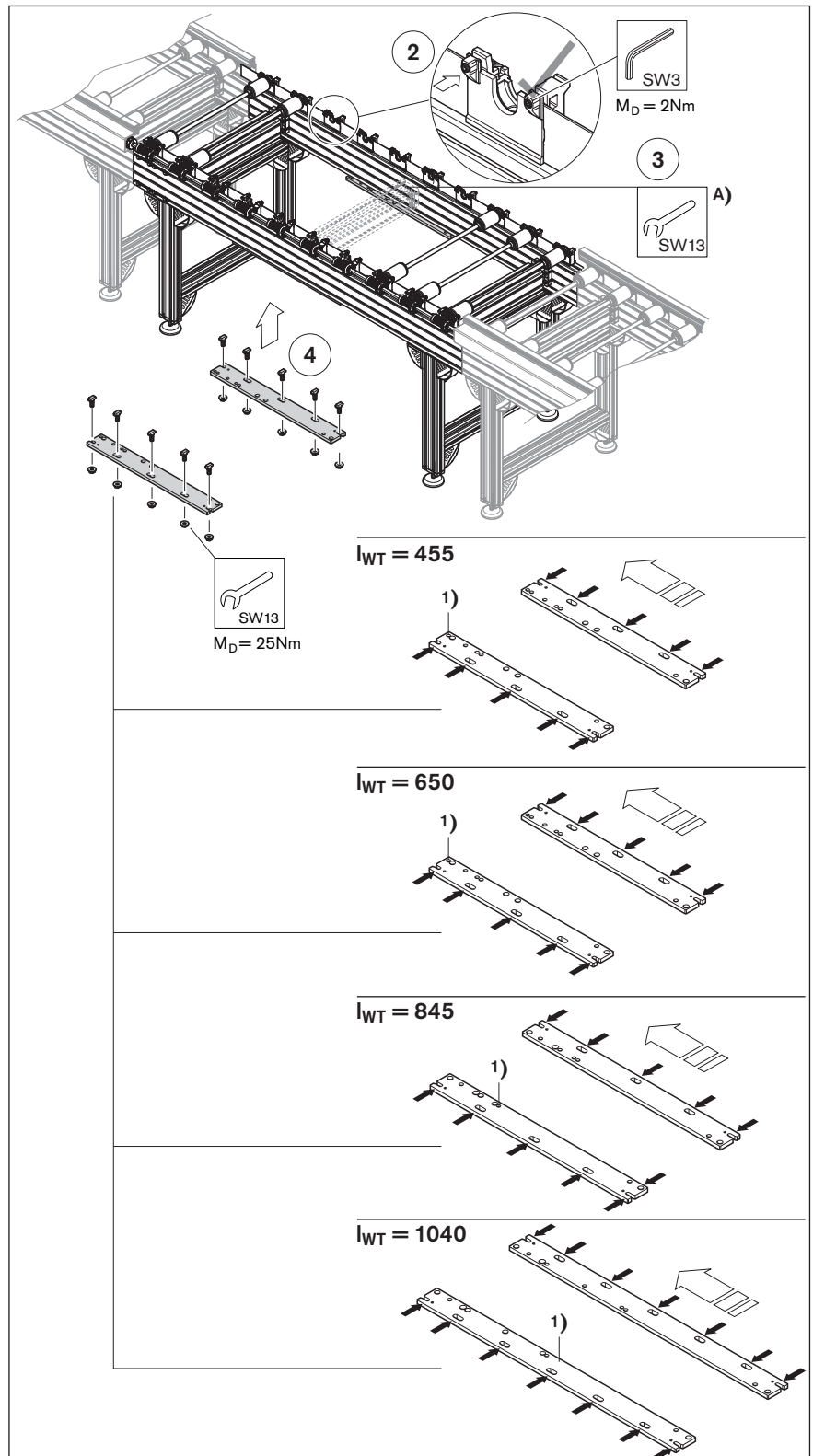


Fig. 63 HQ 5, assembly from the top (1/3)

540 375-47

Note: Only lift the HQ 5 positioning unit using the three lifting straps!

5. Insert the HQ 5 lift transverse unit in the ST 5/... conveyor unit, align, and tighten together. The required openings are indicated by an arrow.

Note: The positioning pin can be used as an insertion aid for pre-centering (Fig. 64: 1).

6. Screw the throttles (included in scope of delivery) into the cylinders, and connect the pneumatic supply (Fig. 64: 5).

P): PN connection

S): Installation of sensors possible

7. Screw the throttles (included in scope of delivery) into the cylinders, and connect the HQ 5 pneumatics.

8. Assemble the covers.

9. Assemble the switch bracket and proximity switch, and adjust the position (except $b_{WT} = 455$ mm) (Fig. 76, Fig. 62: step 7)

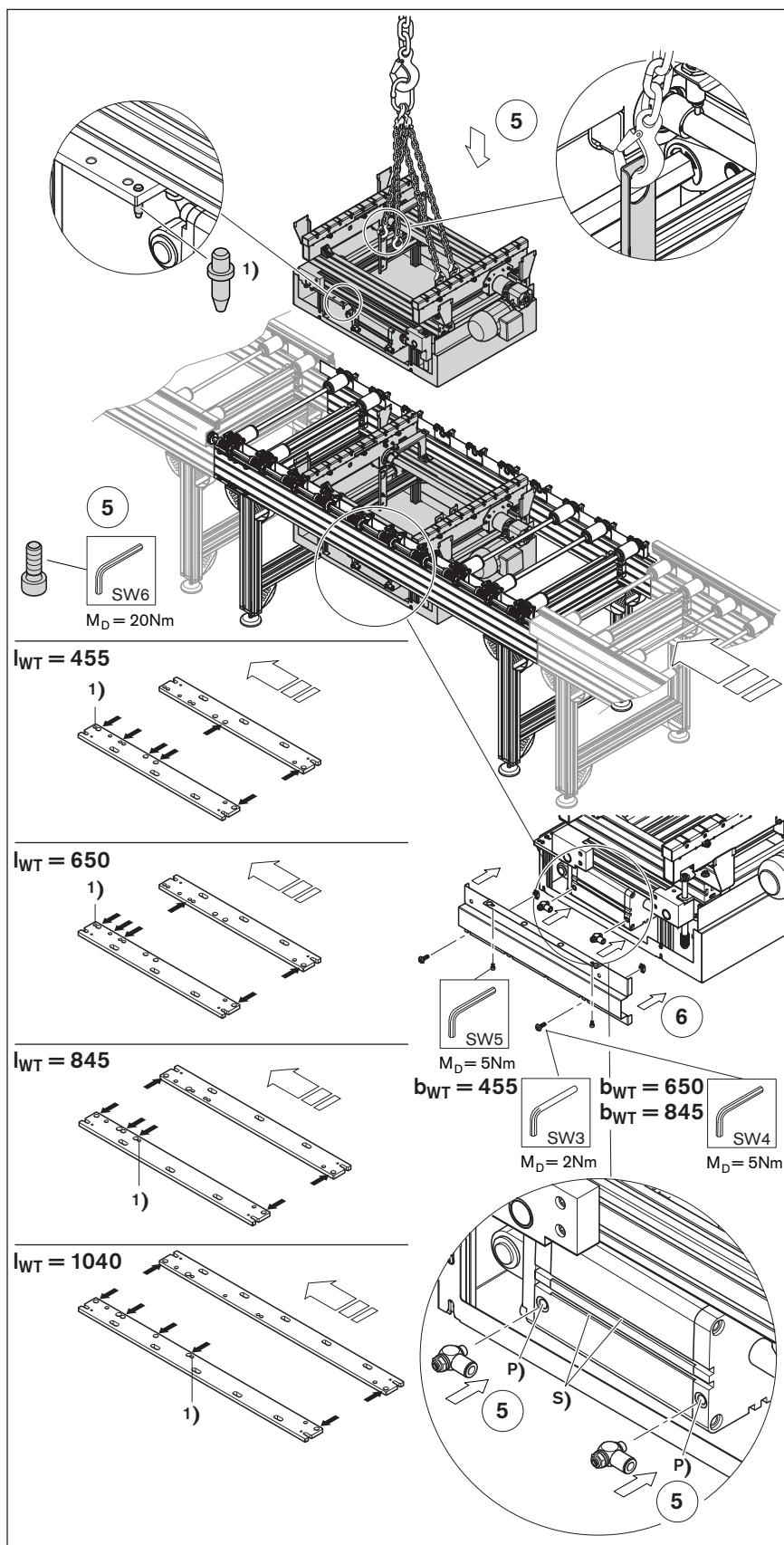


Fig. 64 HQ 5, assembly from the top (1/3)

540 375-57

10. Assemble the VE 5/... stop gate.
Position:  71

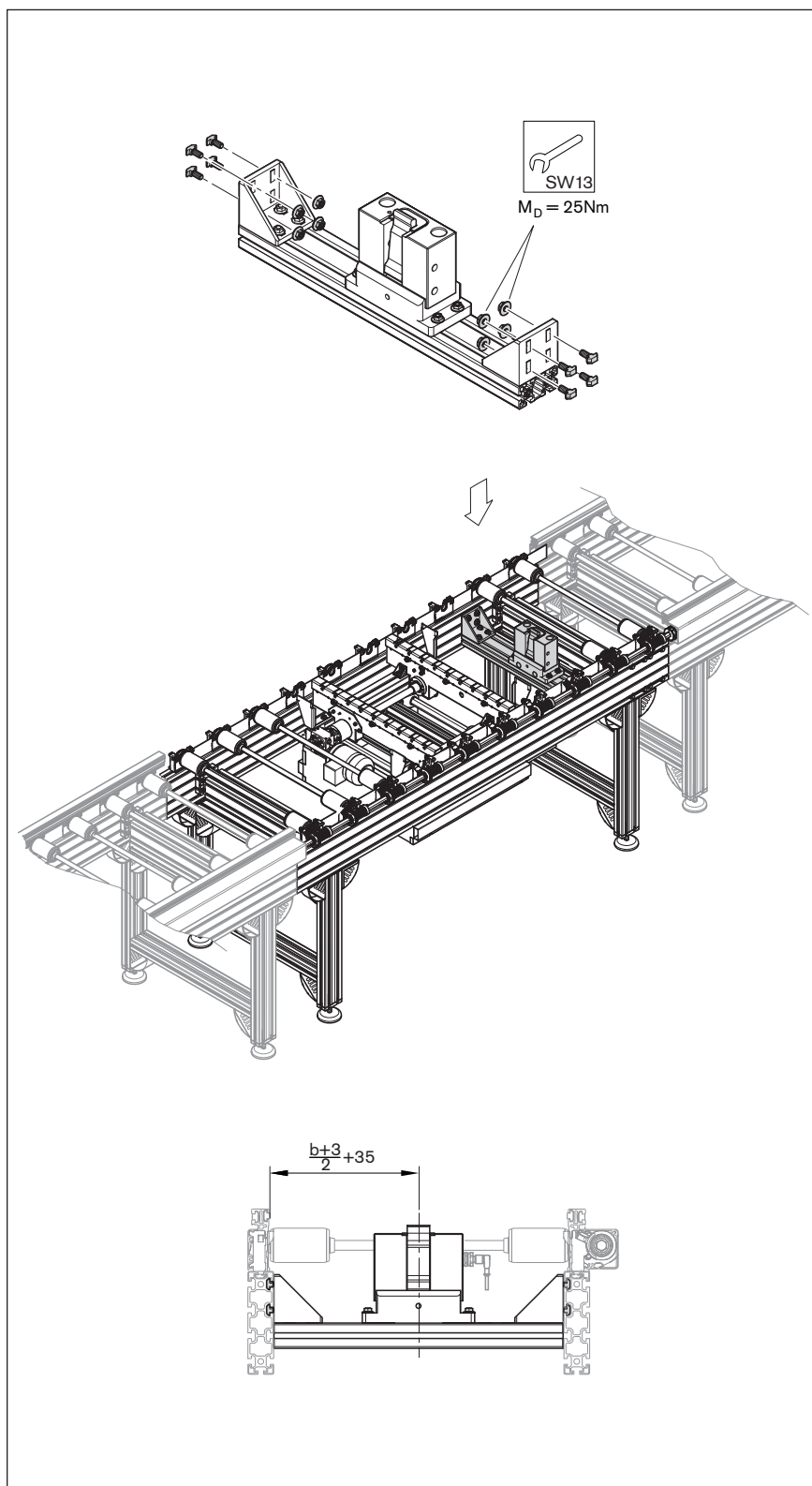


Fig. 65 HQ 5, assembly from the top (1/3)

540 375-56

If a circuit only consists of lift transverse units, assemble the transverse sections directly on the longitudinal section (☞ 14, ☞ Fig. 1).

The connection bridge is used for length compensation in the case of parallel transverse sections with lift transverse units and curves/diverters (☞ 14, ☞ Fig. 1).

¹⁾ ☞ 82, Fig. 68

11. Close open section ends with caps.

12. Assemble the transverse section or connection bridge.

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

13. Only for the direct connection of a transverse section: assemble guide kit (A, 3 842 545 975).

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

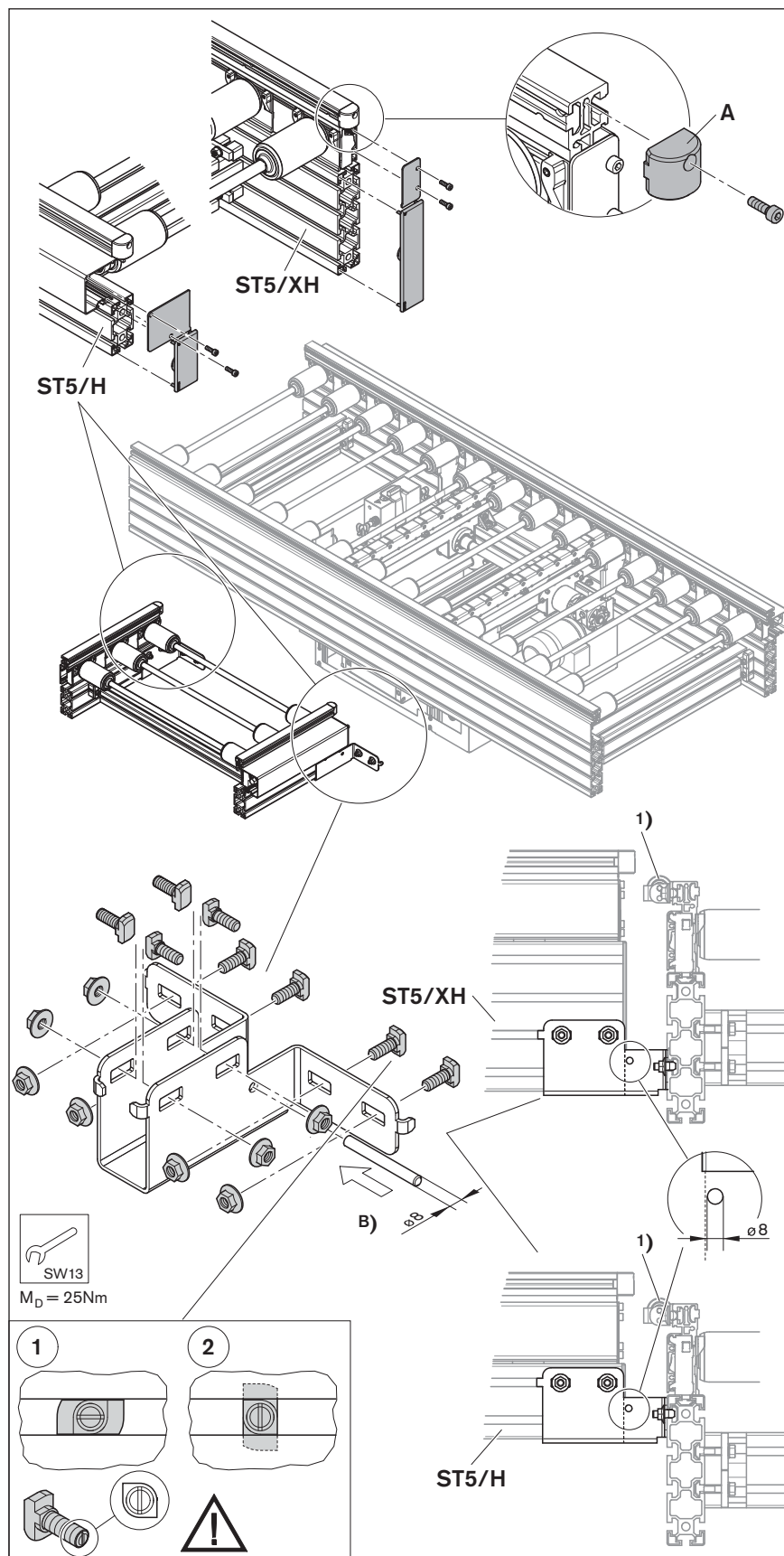


Fig. 66 HQ 5, connecting the transverse section
(ST 5/XH, ST 5/H: 3 842 545 869)

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

If a circuit only consists of lift transverse units, assemble the transverse sections directly on the longitudinal section (☞ 14, ☞ Fig. 1).

The connection bridge is used for length compensation in the case of parallel transverse sections with lift transverse units and curves/diverters (☞ 14, ☞ Fig. 1).

1) ☞ 82, Fig. 68

11. Close open section ends with caps.
12. Assemble the transverse section or connection bridge.
Assembly tip: Insert a bolt or screw in the support bracket as a stop for the transverse section.
13. Only for the direct connection of a transverse section: assemble guide kit (A, 3 842 545 975).

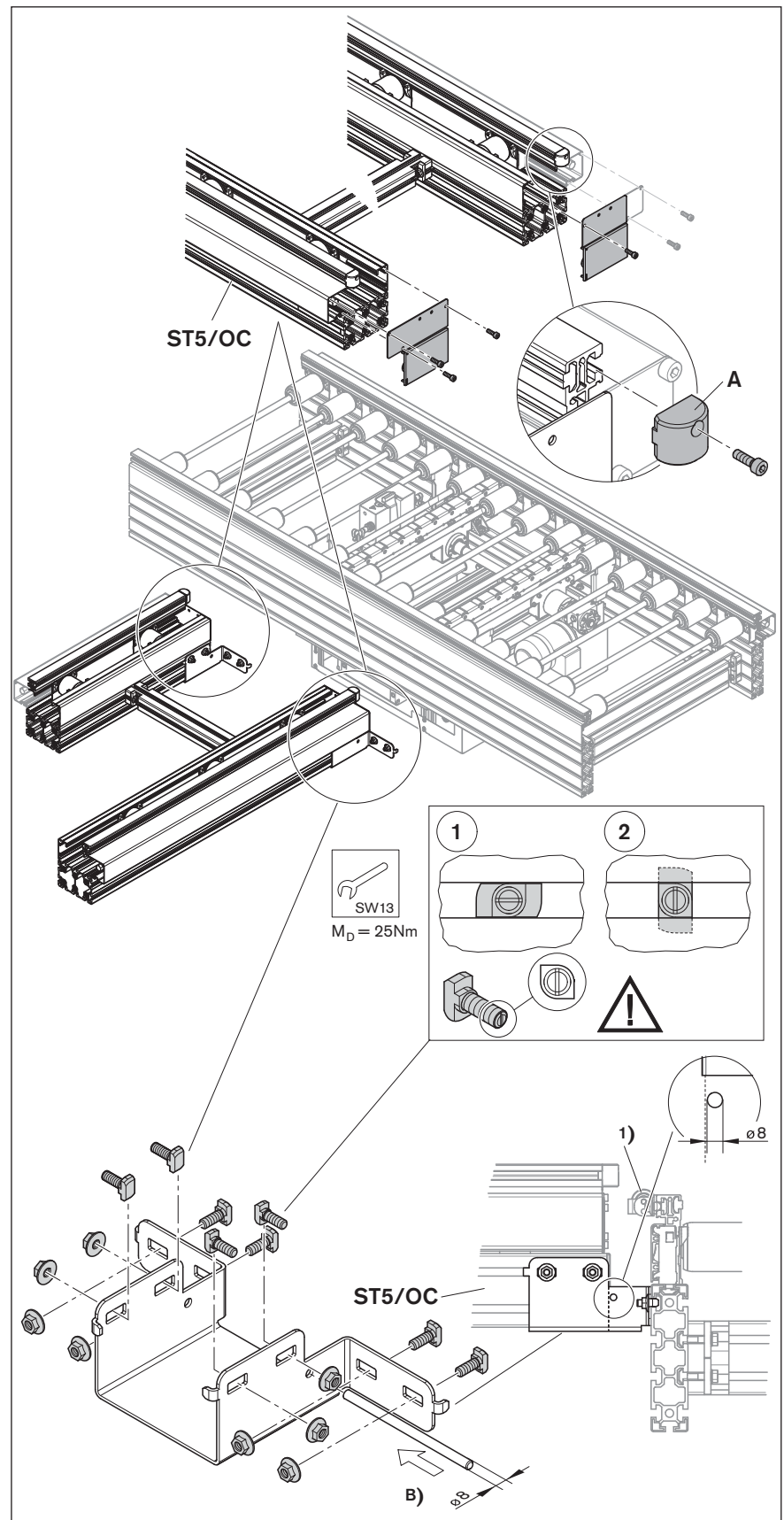


Fig. 67 HQ 5, connecting the transverse section
(ST 5/OC: 3 842 546 979, ...547 398)

Accessory kit for support rollers

Two support rollers are required to traverse the conveyor trench for:

- Direct connection of the transverse section and:

$b_{WT} (b_L)$ [mm]	p [mm]
455	130
650	130
650	195
845	260

- Connecting the connection bridge and:

$b_{WT} (b_L)$ [mm]	p [mm]
455	130

- 14.** Assemble two support rollers if necessary.

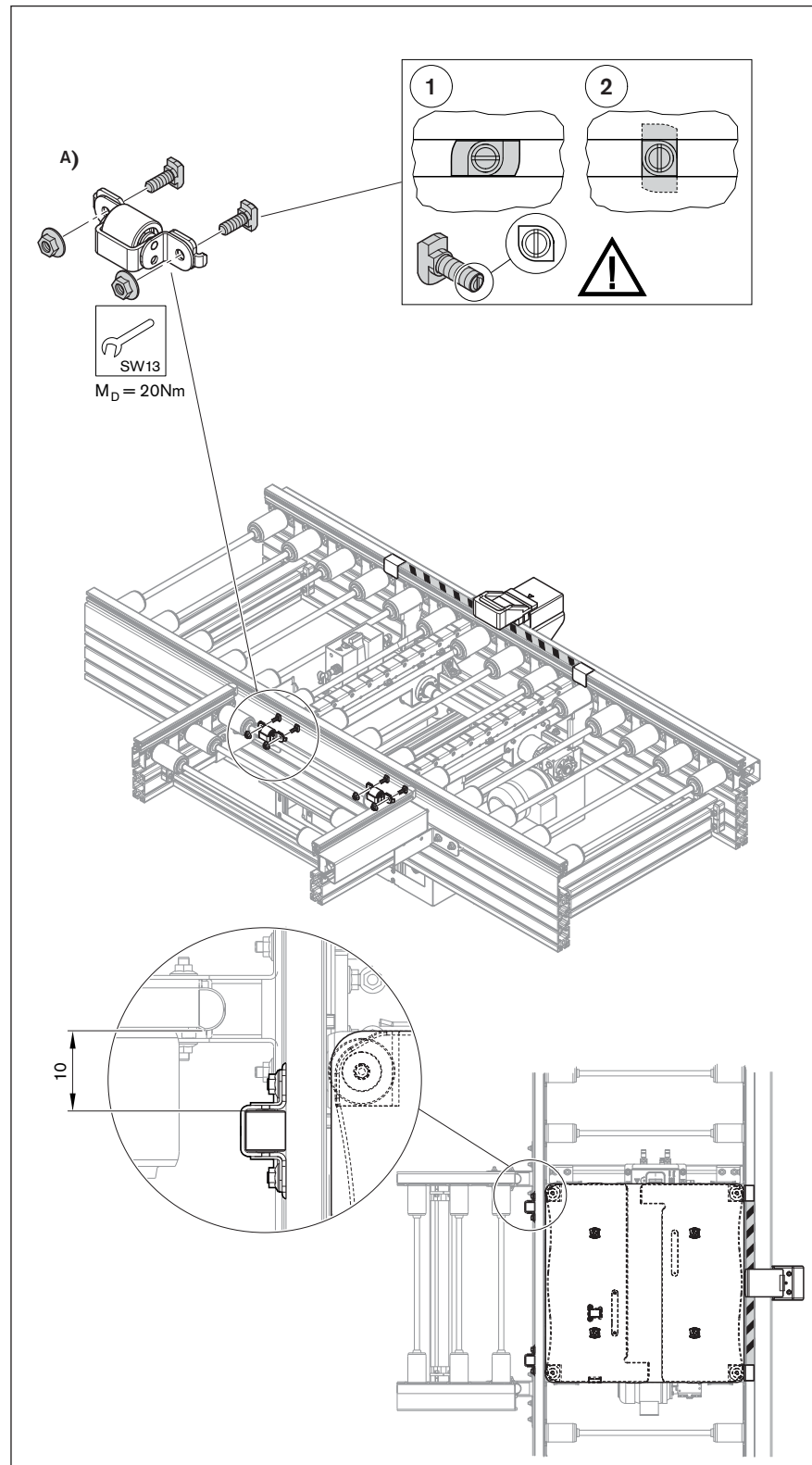


Fig. 68 HQ 5, accessory kit for support rollers

540 375-64

DA 5/... damper

15. Assemble the DA 5/... damper and stops. Use a WT 5 workpiece pallet as a positioning aid:

- Align the DA 5/... damper to the center of the WT.
- Align the stops to the guide rollers of the WT.

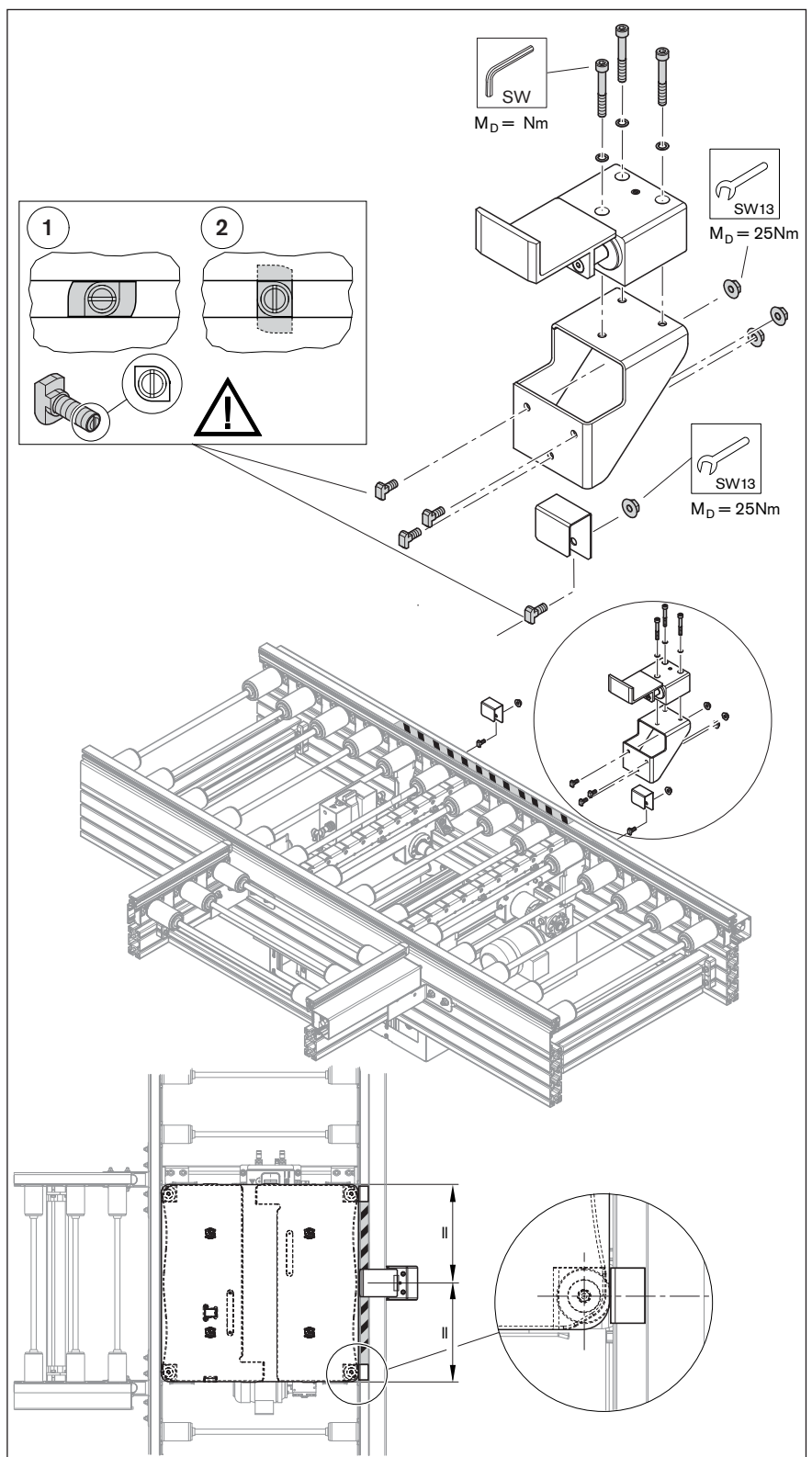


Fig. 69 HQ 5, DA 5/... damper

540 375-60

Protective covers for HQ 5 lift transverse unit

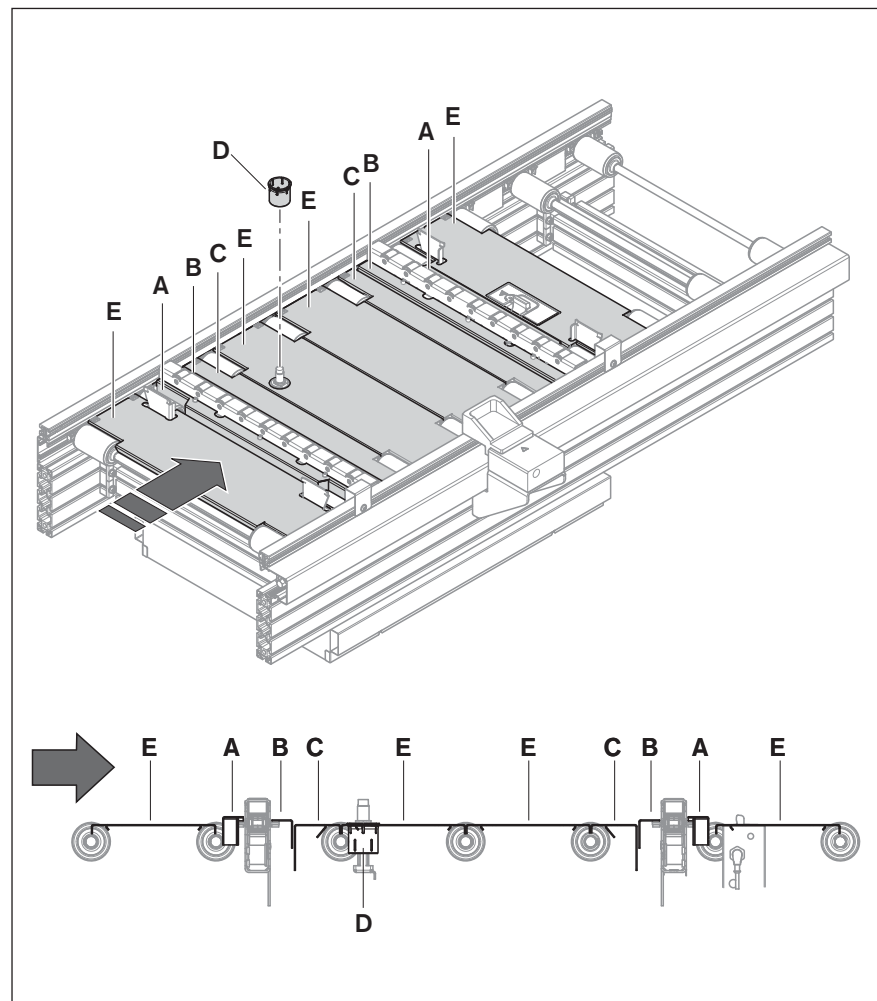


Fig. 70 Protective covers for HQ 5 lift transverse unit

540 375-69

b _L [mm]	b _Q [mm]	p [mm]	A	B	C	D	E
455	455	130	2x 3 842 545 989	2x 3 842 545 989	—	1x 3 842 545 966	3x 3 842 545 404
455	650	130	2x 3 842 545 989	2x 3 842 545 989	—	1x 3 842 545 966	4x 3 842 545 404
455	650	195	2x 3 842 545 992	2x 3 842 545 992	—	1x 3 842 545 966	3x 3 842 545 609
650	650	130	2x 3 842 545 990	2x 3 842 545 990	—	1x 3 842 545 966	4x 3 842 545 405
650	650	195	2x 3 842 545 993	2x 3 842 545 993	—	1x 3 842 545 966	1x 3 842 545 360
650	845	130	2x 3 842 545 990	2x 3 842 545 990	—	1x 3 842 545 966	6x 3 842 545 405
650	845	195	2x 3 842 545 990	2x 3 842 545 982	2x 3 842 545 984	1x 3 842 545 966	4x 3 842 545 360
650	845	260	2x 3 842 545 990	2x 3 842 545 982	2x 3 842 545 985	1x 3 842 545 966	3x 3 842 545 612
845	845	130	2x 3 842 545 991	2x 3 842 545 991	—	1x 3 842 545 966	6x 3 842 545 361
845	845	195	2x 3 842 545 991	2x 3 842 545 983	2x 3 842 545 986	1x 3 842 545 966	4x 3 842 545 362
845	845	260	2x 3 842 545 991	2x 3 842 545 983	2x 3 842 545 987	1x 3 842 545 966	3x 3 842 545 363
845	1040	130	2x 3 842 545 991	2x 3 842 545 991	—	1x 3 842 545 966	7x 3 842 545 361
845	1040	195	2x 3 842 545 994	2x 3 842 545 994	—	1x 3 842 545 966	5x 3 842 545 362
845	1040	260	2x 3 842 545 991	2x 3 842 545 983	2x 3 842 545 987	1x 3 842 545 966	4x 3 842 545 363
845	1040	325	2x 3 842 545 994	2x 3 842 545 998	2x 3 842 545 987	1x 3 842 545 966	3x 3 842 545 403

Openings in the protective covers for HQ 5

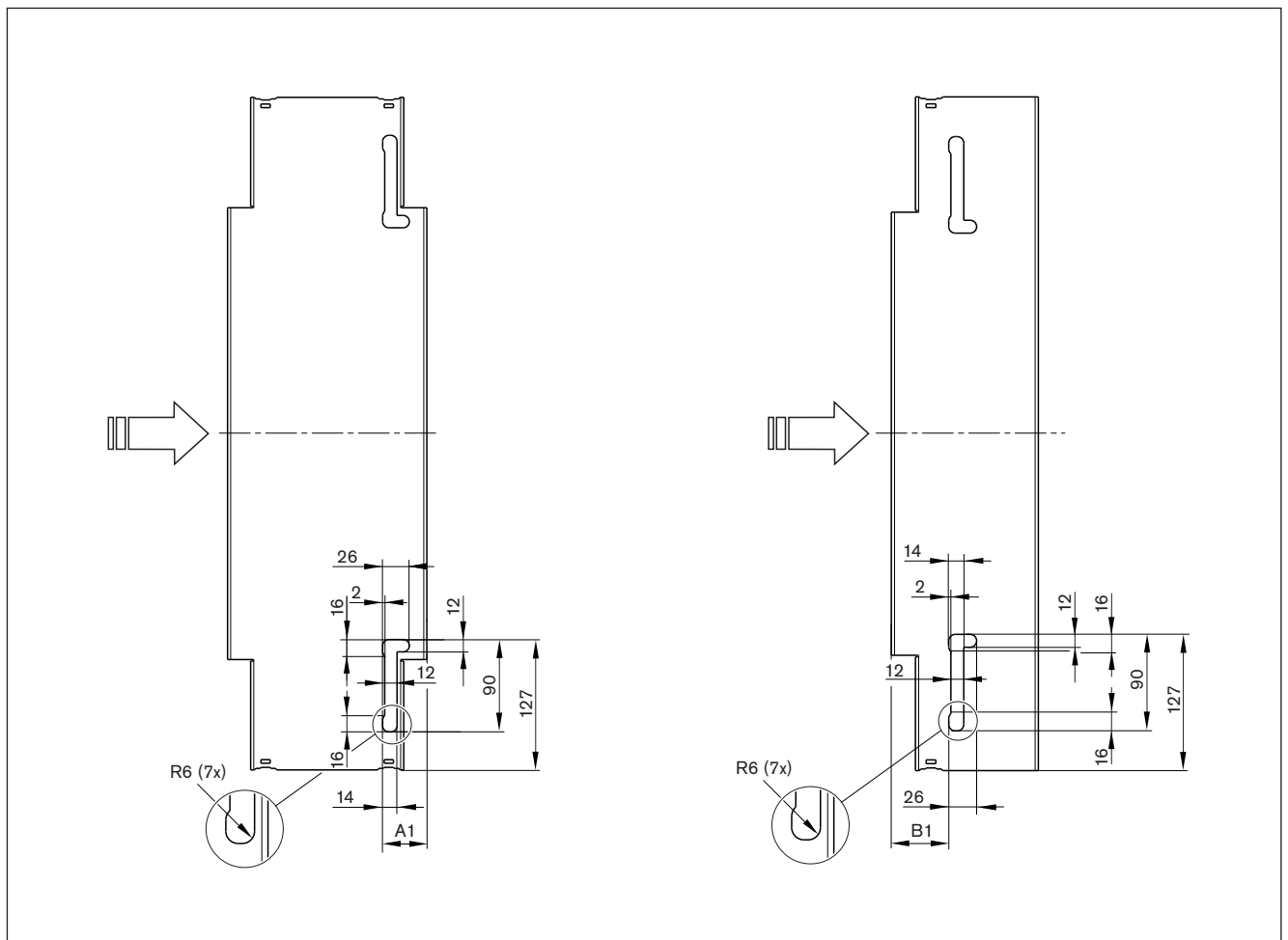


Fig. 71 Openings in the protective covers for HQ 5 (1/2)

540 375-70

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	—

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

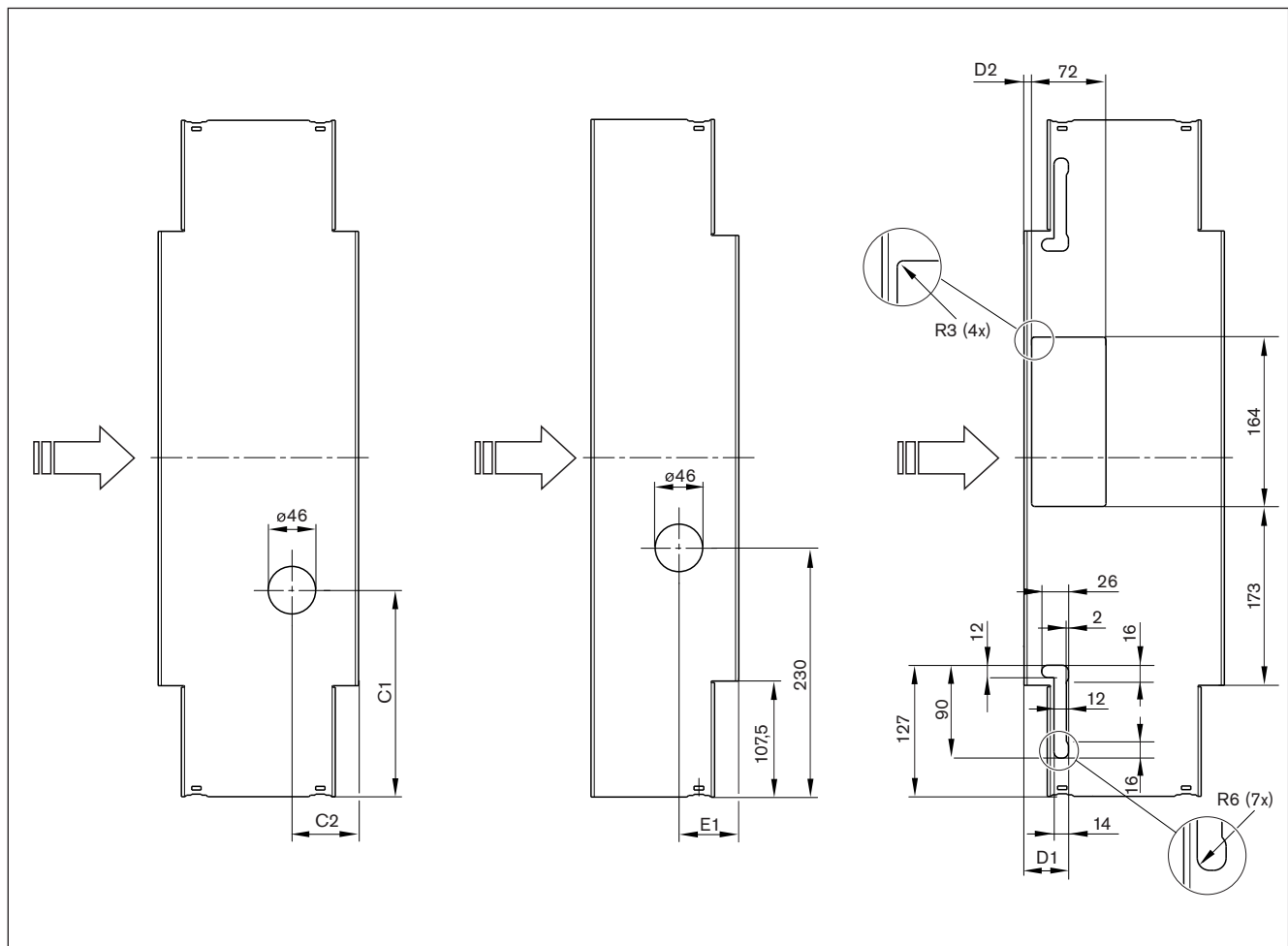


Fig. 72 Openings in the protective covers for HQ 5 (2/2)

540 375-71

b _{WT} [mm]	l _{WT} [mm]	p [mm]	C1 [mm]	C2 [mm]	E1 [mm]	D1 [mm]	D2 [mm]
455	455	130	166.15	64.5	—	43	8
455	650	130	166.15	97	—	75.5	40.5
455	650	195	166.15	64.5	—	43	8
650	650	130	230	97	—	75.5	40.5
650	650	195	230	64.5	—	43	8
650	845	130	230	97	—	43	8
650	845	195	230	32	—	43	8
650	845	260	—	—	32	43	8
845	845	130	230	97	—	43	8
845	845	195	230	32	—	43	8
845	845	260	—	—	32	43	8
845	1040	130	230	97	—	75.5	40.5
845	1040	195	230	64.5	—	43	8
845	1040	260	230	97	—	75.5	40.5
845	1040	325	—	—	32	43	8

Note: View shown is from the top, while work is performed on the bottom side. If the cut-out is interrupted by a separating joint, you should first remove the traverse on the bottom in the area of the cut-out.

6.24 PE 5/HQ 5 assembly kit for ST 5/H

PE 5 assembly kit for ST 5/H

Required to install the PE 5 positioning unit in an ST 5/H conveyor unit.

l_{WT} [mm]	F [mm]	G [mm]	H [mm]
455	296	468	390
650	166	598	260
845	87.5	806.5	181.5
1040	87.5	1001.5	181.5

- PE5 installation dimensions  59

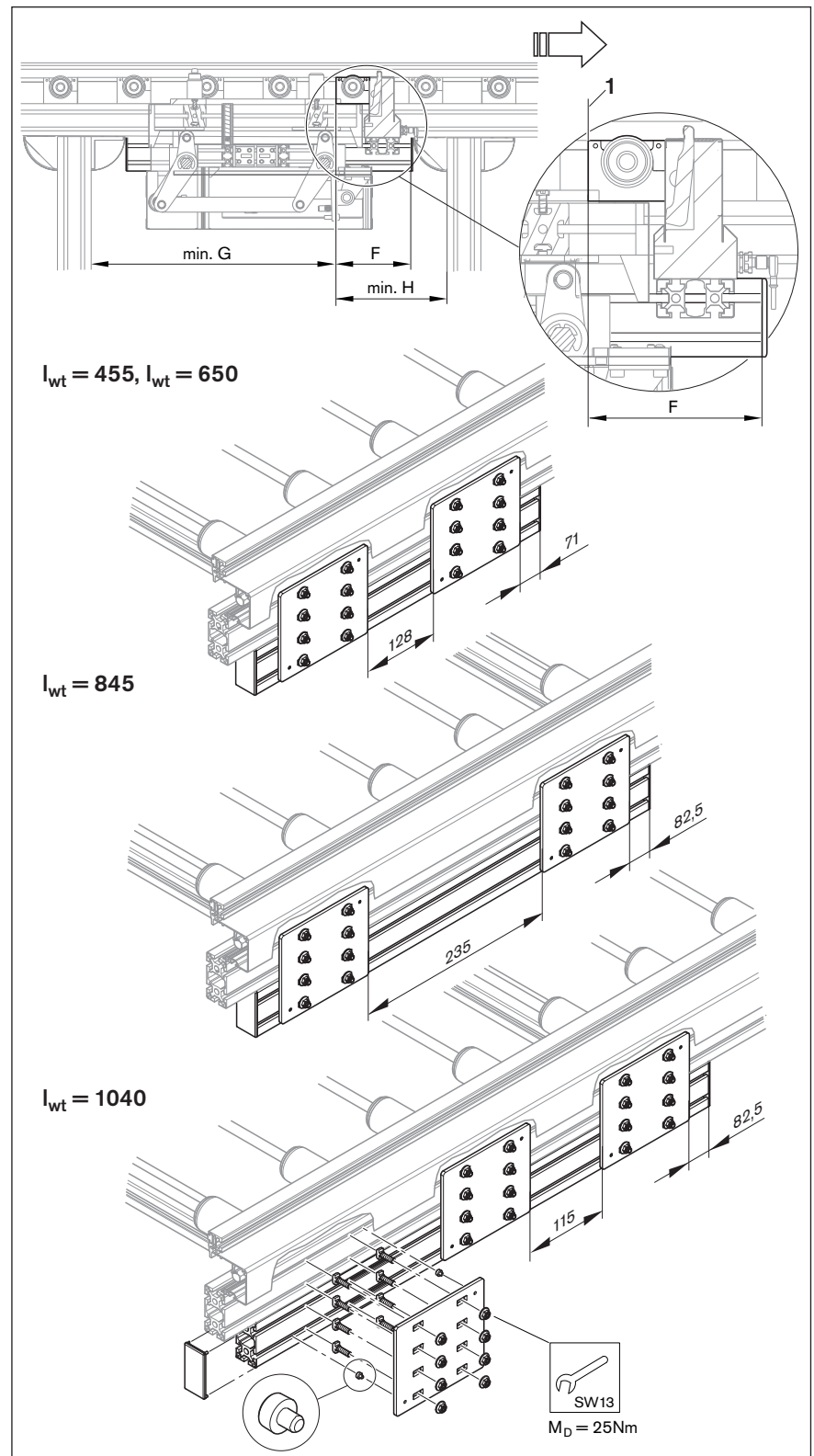


Fig. 73 PE 5 assembly kit for ST 5/H

540 375-61

HQ 5 assembly kit for ST 5/H

Required to install the HQ 5 lift transverse unit in an ST 5/H conveyor unit.

l_{wt} [mm]	F [mm]	G [mm]	H [mm]
455	296	468	390
650	166	598	260
845	87.5	871.5	181.5
1040	87.5	1001.5	181.5

- HQ 5 installation dimensions

71

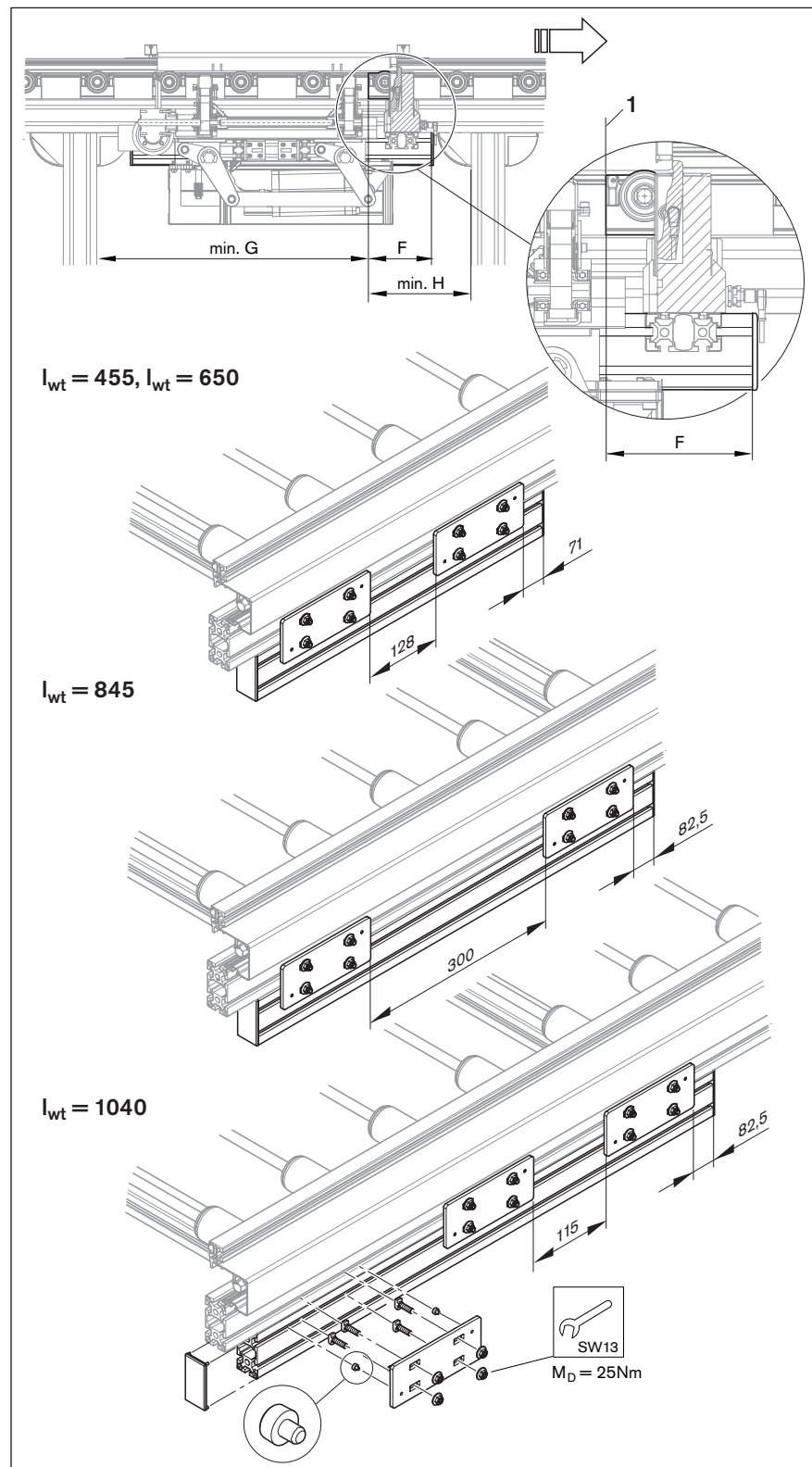


Fig. 74 HQ 5 assembly kit for ST 5/H

540 375-63

6.25 Dead end sections

NOTE

Open section ends!

The workpiece pallet can run over the open section ends and fall off. There is a danger of damage to property.

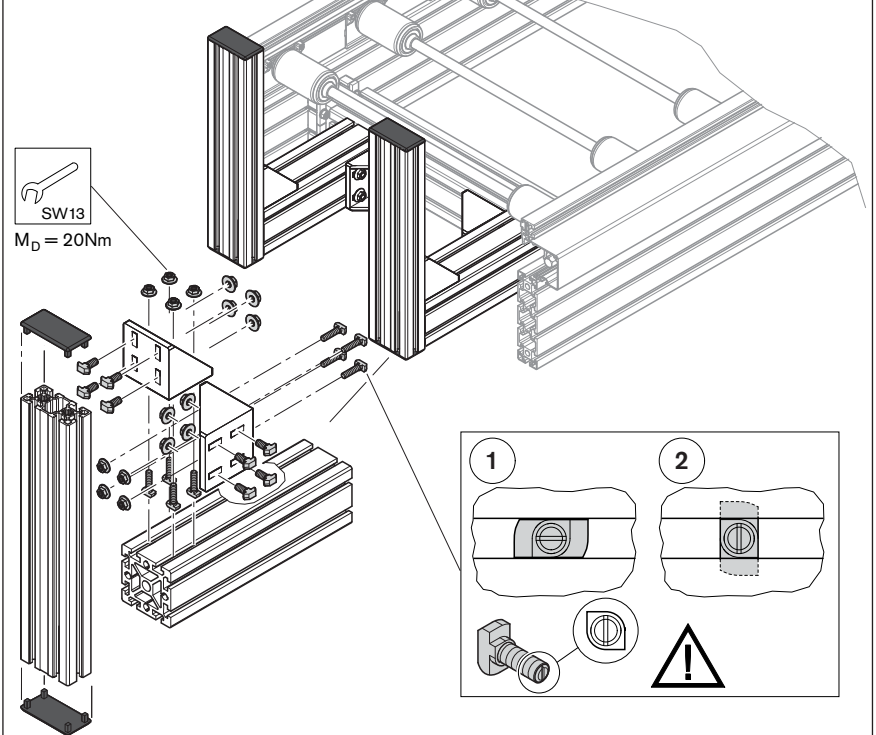
- The user must provide a mechanical overrun safety device.

Examples of mechanical overrun safety devices for open section ends.

To dampen the workpiece pallet stop, use the VE 5/D-300 stop gate.

☞ 33, 38

ST 5/XH



ST 5/H

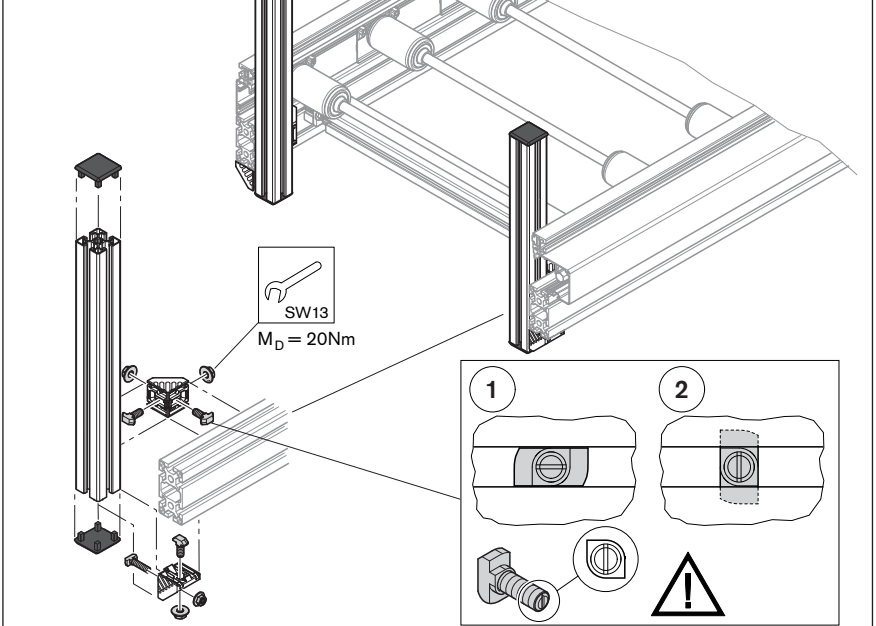


Fig. 75 Open section ends

540 375-62

6.26 Connecting the power supply

WARNING

High electrical voltage!

Danger of severe injuries or death due to electric shock.

- ▶ Make sure the relevant system component is not under pressure or voltage before performing any maintenance or repair work.
- ▶ Protect the system against being switched on.

Select the control and sensor elements taking into account the load to be transported and transportation speed in accordance with EN ISO 13849.

The motor must be connected by a specialist!

Observe regulation VDE 0100 for Germany or the appropriate regulations for the country where the product is used.

6.26.1 Motor connection

Note the existing line voltage!

Note the electrical connection parameters on the motor rating plate: see Fig. A,  91.

Connect the motor as a Y-connection or triangle connection in accordance with the connection plans; see Fig. B,  90 and the connection plan in the terminal box.

The motor is equipped with a bi-metal switch (potential-free thermal contact, 230 V AC, 300 mA) to monitor the temperature. The motor must be connected in such a manner that no current flows when the switch is actuated.

Select a cable entry that prevents damage to the cable during operation.

Connection cable option: **3 842 409 645** (M20x1.5); see Fig. C,  91.

Pay attention to the ballast fuse!

Checking the motor's direction of rotation

Start the system for a maximum of 2 s and check that the motor is rotating in the correct direction.

Exchange any two wires (L1, L2, or L3,  90, Fig. B) to change the motor's direction of rotation.

Note: In motors with a factory-installed plug, correct the direction of rotation in the switch cabinet or at the plug coupling (socket side). This will simplify exchanges.

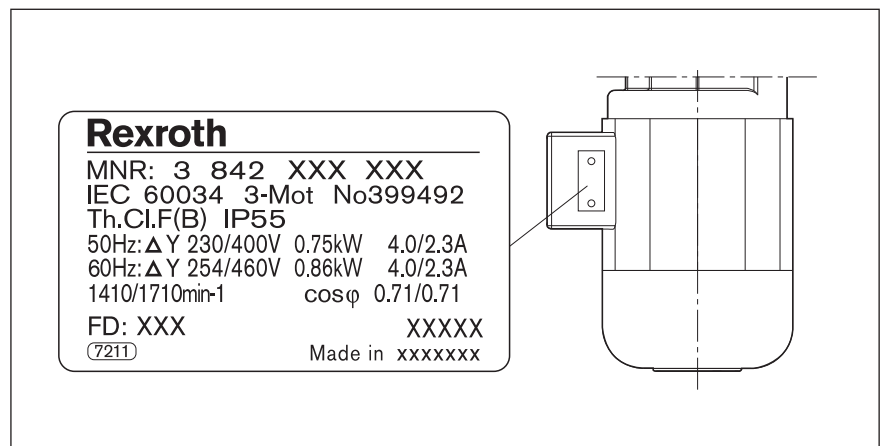


Fig. A: Motor rating plate (example)

Installation_A

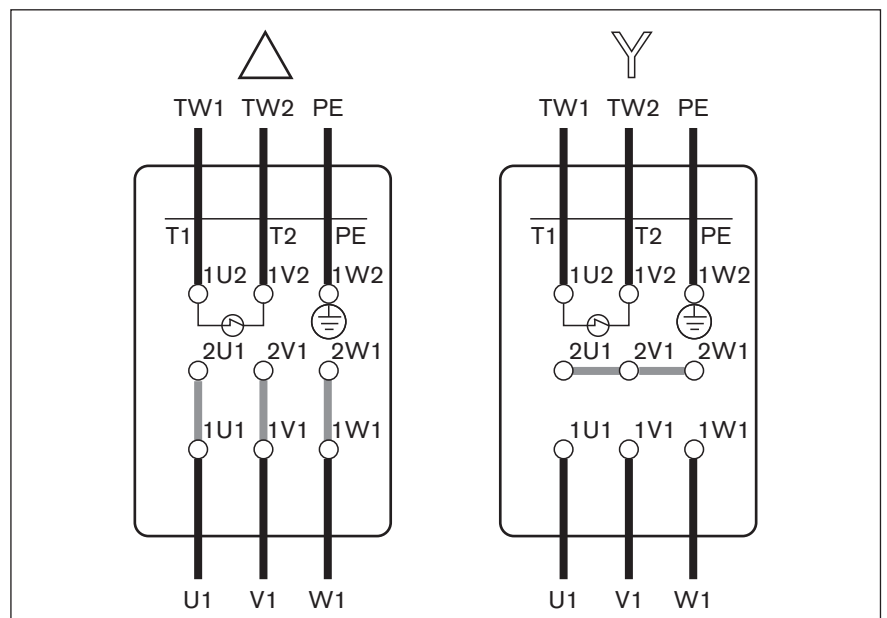


Fig. B: Connection plans: triangle connection/Y-connection

Installation_DY

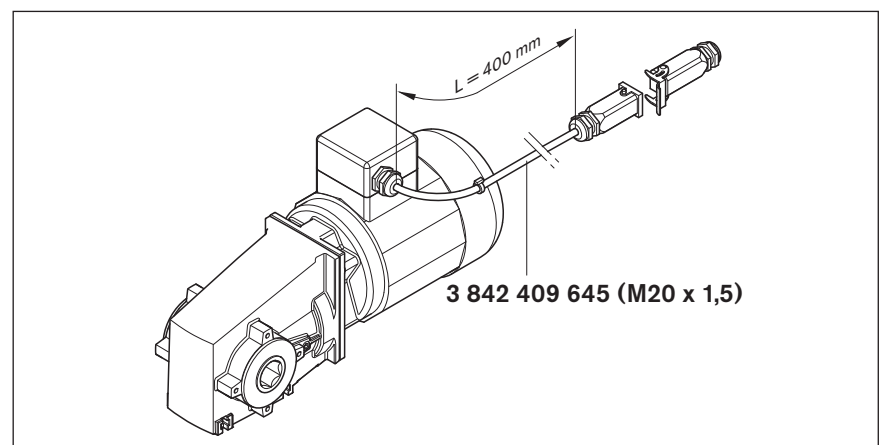
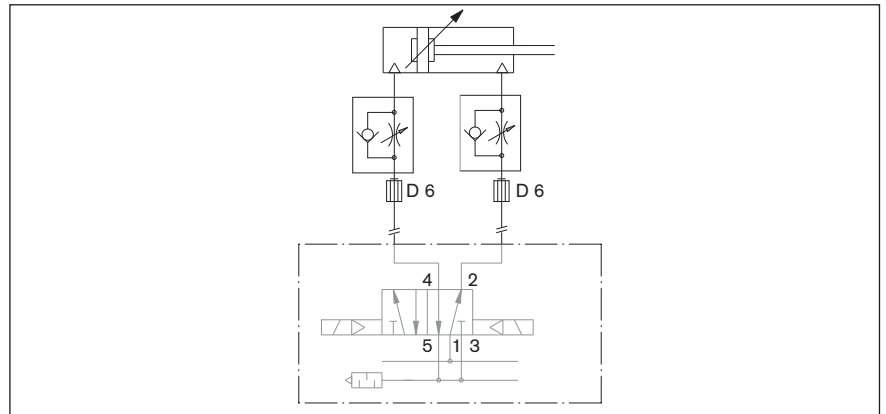


Fig. C: Cable connection option

Installation_D

6.27.2 HQ 5 lift transverse unit



540 375-77

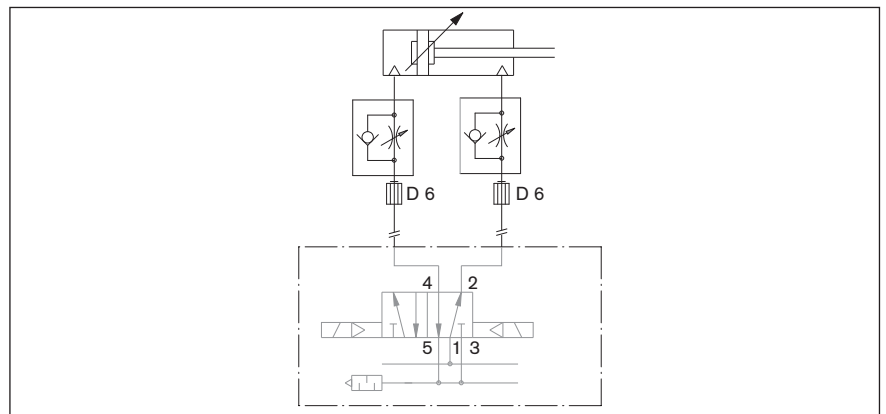
Fig. 77 Pneumatic diagram for HQ 5 lift transverse unit

To query the position of the HQ 5 lift transverse unit (engaged/not engaged) on the cylinder, 2 sensors are required:

Tab. 1: Sensors for HQ 5 lift transverse unit

Contact	Cable length (m)	No.
PNP	3	0 830 100 631
	5	0 830 100 632
	10	R 412 004 576
NPN	3	0 830 100 633
	5	0 830 100 634

6.27.3 PE 5 positioning unit



540 375-77

Fig. 78 Pneumatic diagram for PE 5 positioning unit

To query the position of the PE 5 positioning unit (engaged/not engaged) on the cylinder, 2 sensors are required:

Tab. 1: Sensors for PE 5 positioning unit

Contact	Cable length (m)	No.
PNP	3	0 830 100 631
	5	0 830 100 632
	10	R 412 004 576
NPN	3	0 830 100 633
	5	0 830 100 634

7 Commissioning



CAUTION

Unexpected movements, falling workpiece pallets

Injuries due to falling objects

- ▶ Make sure that the modular units have been correctly assembled by qualified personnel (☞ 8) before commissioning them.

NOTE

Malfunctions due to incorrect assembly and commissioning

The modular units may be damaged or their service life shortened.

- ▶ Commissioning requires basic mechanical, pneumatic, and electrical knowledge.
- ▶ The modular units may only be commissioned by qualified personnel (☞ 8).

Only commission the TS 5 modular units if all safety devices have been installed in the system and are functional. The user must equip the transfer system with an emergency-OFF device! Accident prevention regulations of the German Employers' Liability Insurance Association, continuous conveyors, VBG 10.

Make sure that all electrical and pneumatic connections are either used or covered. Make sure that all screwed connections and plugs are properly connected. All of the relevant protective covers must be assembled.

Before commissioning curves, diverters, and junctions, identify dangerous areas:

- With a warning sign
- By marking in black/yellow

The surfaces of motors and gears can reach temperatures of over 55°C under certain load and operating conditions. In such cases, the valid accident prevention regulations (in Germany: UVV) must be met by corresponding constructive measures (safety devices) or safety warning signs!

Work areas must be secured by protective covers in accordance with DIN EN 619. The user must make the openings in the protective covers for the stop gate and switch bracket, continuous gap ≤ 5 mm.

Continuous conveyors that are in motion or operation may only be inspected or adjusted if protective devices are present and correctly positioned.

Remove or replace protective devices and/or deactivate safety devices in accordance with EN ISO 13857.

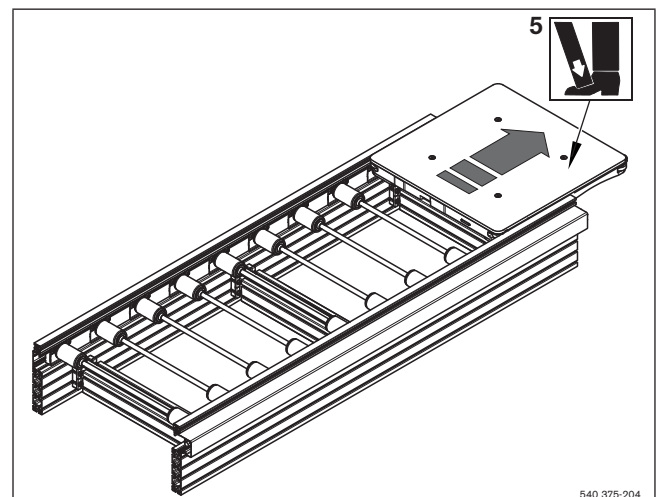
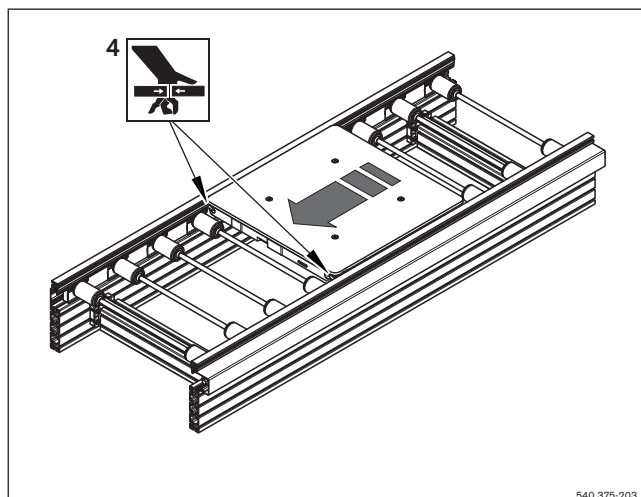
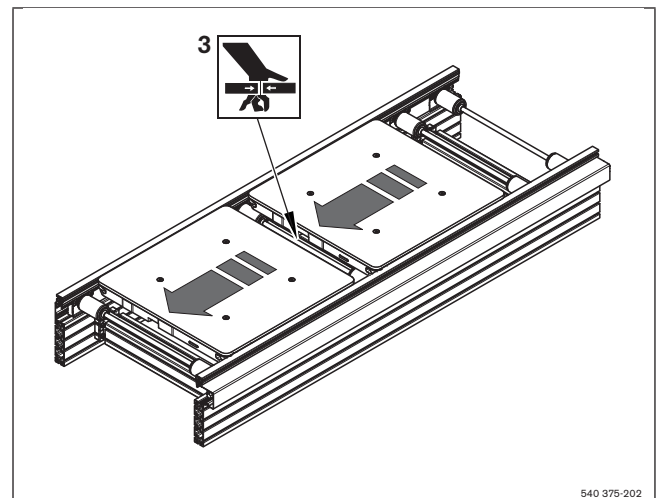
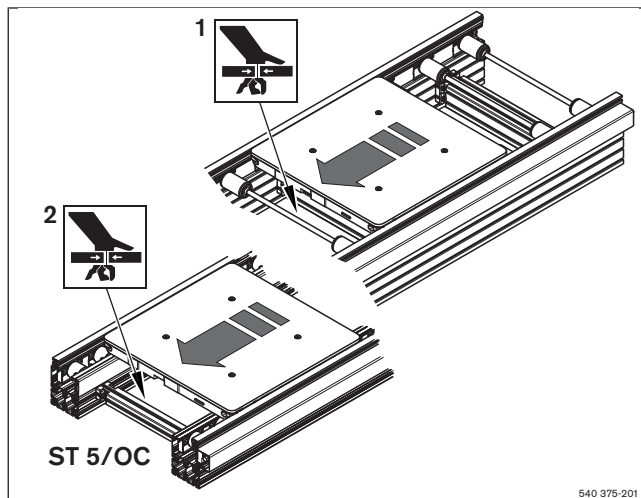
Test runs with open housing are only permitted when they are performed by skilled workers using hold-to-run controls and when the influence of all other switching devices can be excluded.

Commission the product only if it is installed completely.

7.1 Residual Hazards

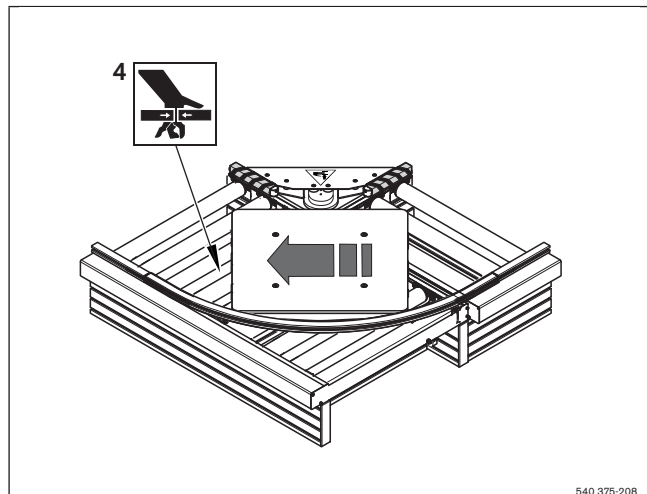
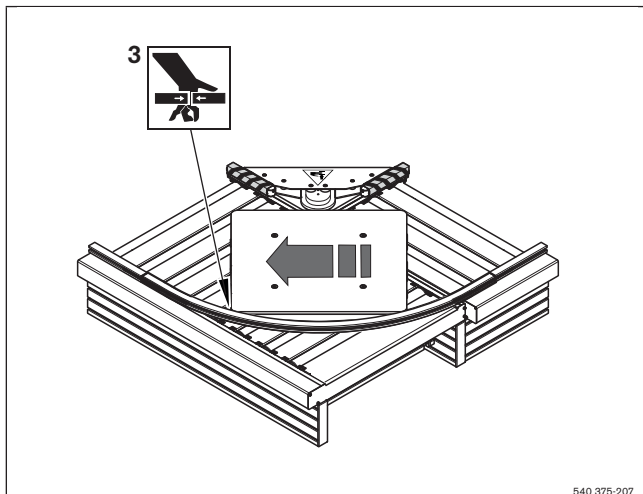
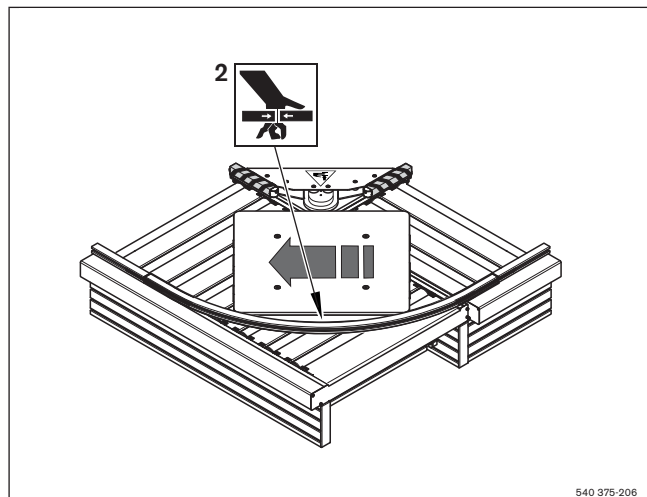
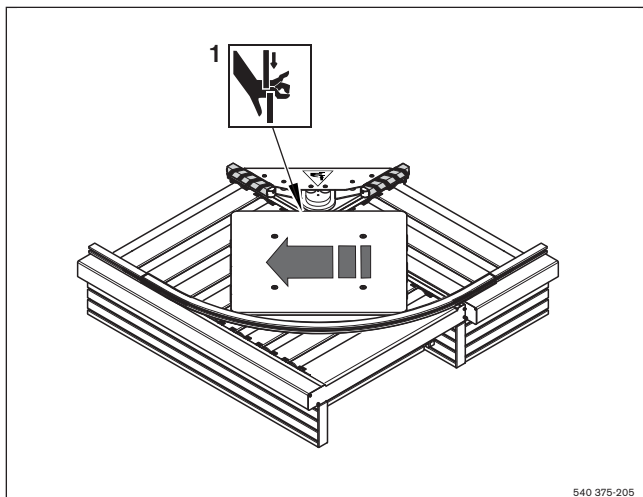
7.1.1 ST 5/... conveyor unit

	Location	Situation	Hazard	Measure
1	Between workpiece pallet and rollers	Catching of body parts	 Crushing	Use protective covers in work areas.
2	ST 5/OC: Between workpiece pallet and cross connector	Catching of body parts	 Crushing	Do not reach into the system during operation. In the work area: Secure the danger zone using a two-hand release.
3	Between workpiece pallet and workpiece pallet in accumulation operation	Catching of body parts	 Crushing	Do not reach into the system during operation. Provide a preliminary stop gate.
4	Between workpiece pallet and lateral guide	Catching of body parts	 Crushing	Do not reach into the system during operation. Provide a preliminary stop gate with manual release in front of the work area.
5	End of the conveyor unit	Catching of body parts due to falling parts	 Crushing	Provide a mechanical overrun safety device. Examples  89



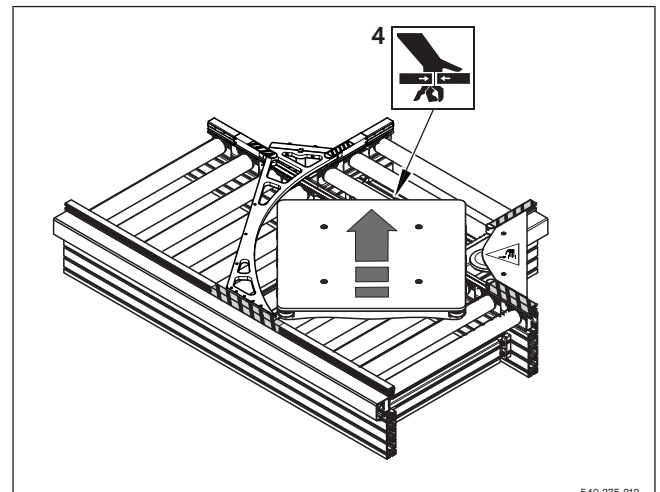
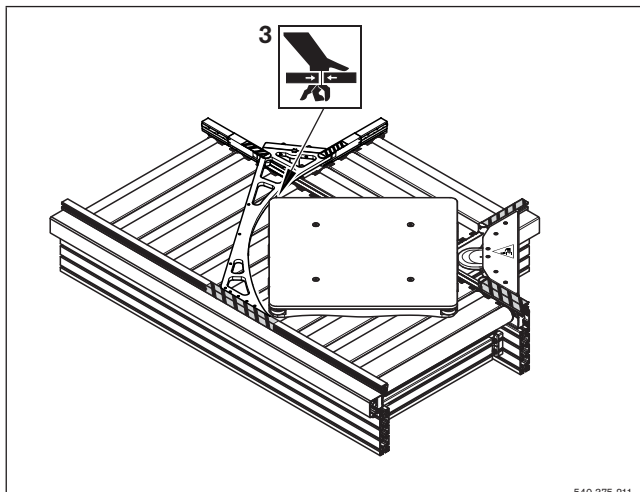
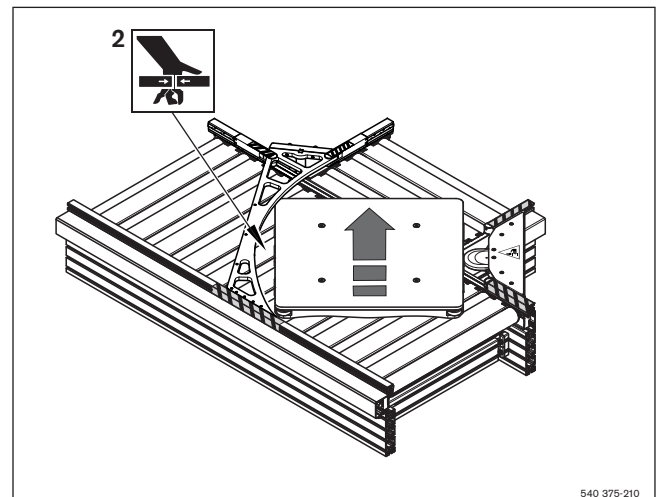
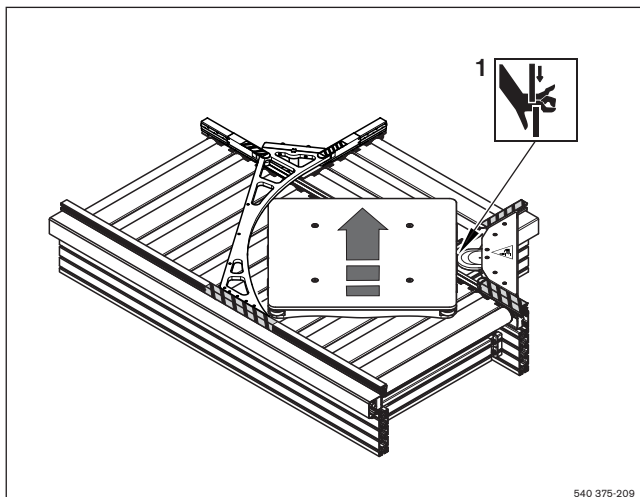
7.1.2 CU 5/... curve

	Location	Situation	Hazard	Measure
1	Overlap between the workpiece pallet and the curve inner guide.	Shearing of body parts		Cutting off Use not permitted in work area. Do not reach into the system during operation. Danger zone has been indicated at the factory.
2	Between workpiece pallet and curve outer guide	Catching of body parts		Crushing Do not reach into the system during operation. Secure access near work areas.
3	Between workpiece pallet and lateral guide	Catching of body parts		Crushing Do not reach into the system during operation. Secure access near work areas.
4	Between workpiece pallet and rollers	Catching of body parts		Crushing Use protective covers near work areas.



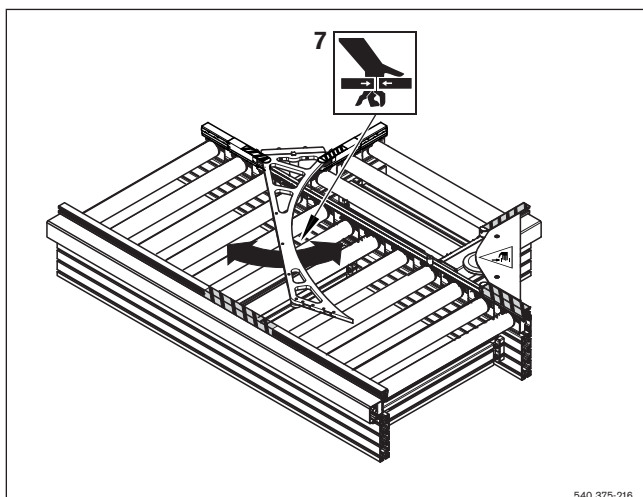
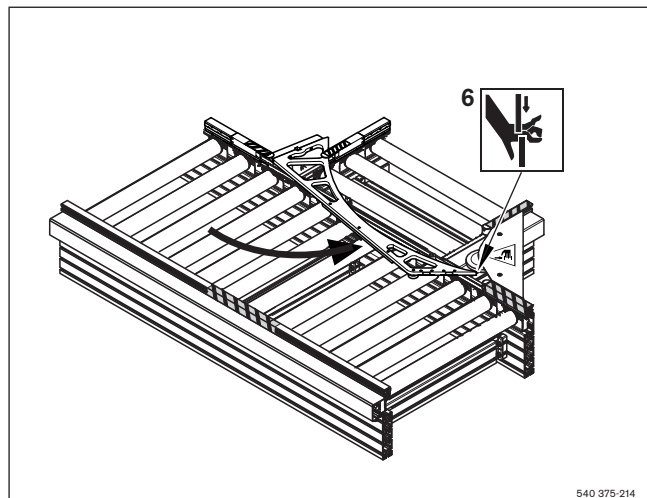
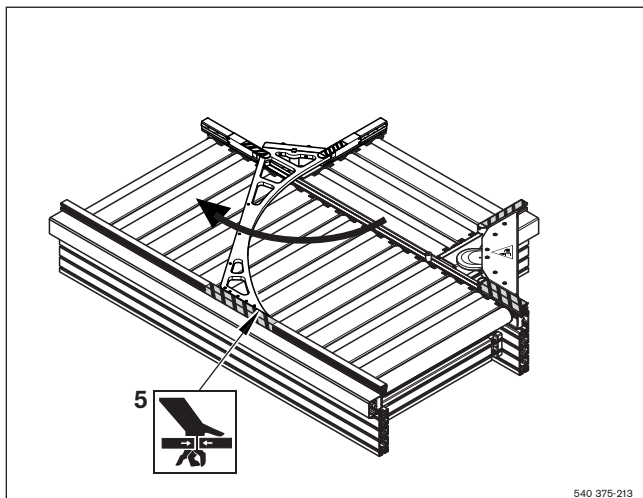
7.1.3 DI 5/... diverter, JU 5/... junction

	Location	Situation	Hazard	Measure
1	Overlap between the workpiece pallet and the curve inner guide.	Shearing of body parts		Cutting off Use not permitted in work area. Do not reach into the system during operation. Danger zone has been indicated at the factory.
2	Between workpiece pallet and curve outer guide (diverter arm)	Catching of body parts		Crushing Do not reach into the system during operation. Secure access near work areas.
3	Between workpiece pallet and lateral guide	Catching of body parts		Crushing Do not reach into the system during operation. Secure access near work areas.
4	Between workpiece pallet and rollers	Catching of body parts		Crushing Use protective covers near work areas.



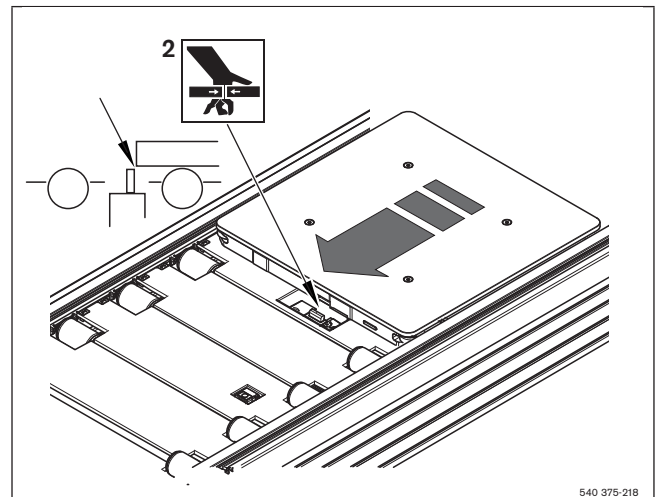
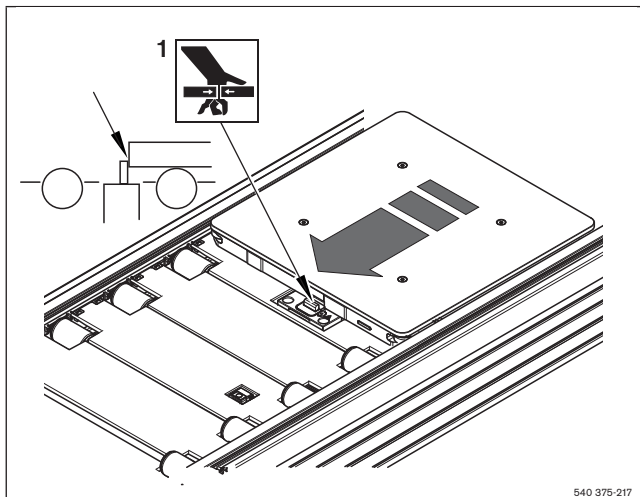
DI 5/... diverter, JU 5/... junction

	Location	Situation	Hazard	Measure
5	Between the diverter arm and (outer) lateral guide	Catching of body parts	 Crushing	Use not permitted in work area. Do not reach into the system during operation. Danger zone has been indicated at the factory.
6	Between the diverter arm and (inner) lateral guide	Shearing of body parts	 Cutting off	Use not permitted in work area. Do not reach into the system during operation. Danger zone has been indicated at the factory.
7	Between the diverter arm and rollers	Catching of body parts	 Crushing	Use protective covers near work areas.



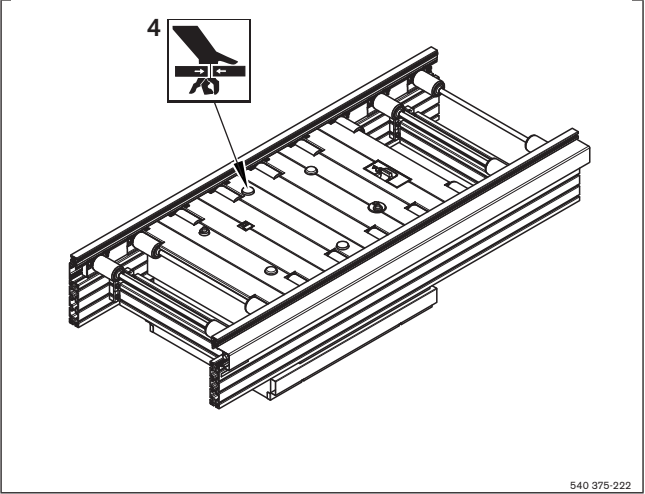
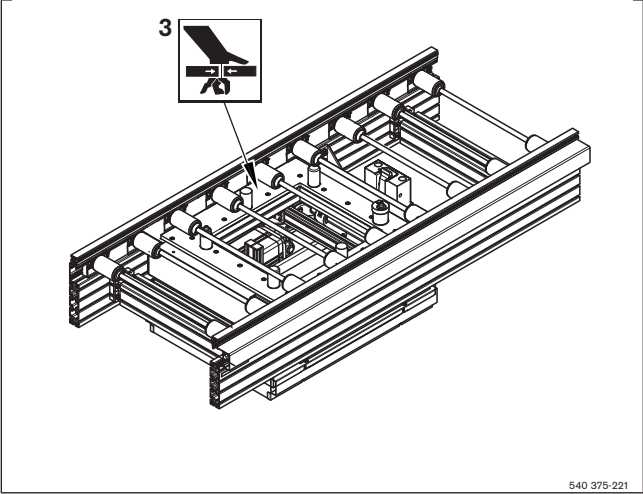
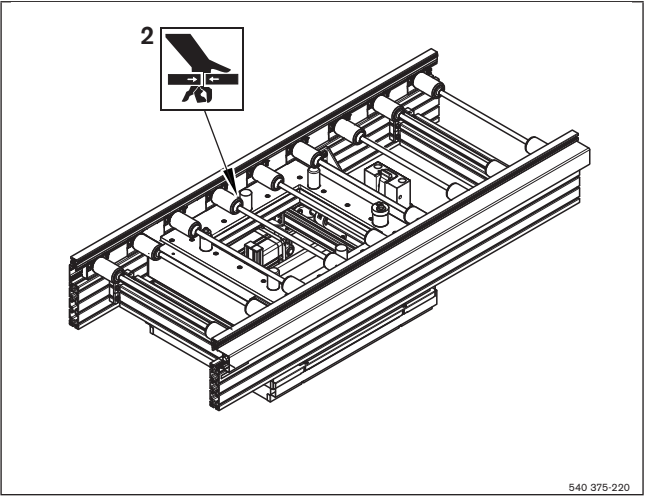
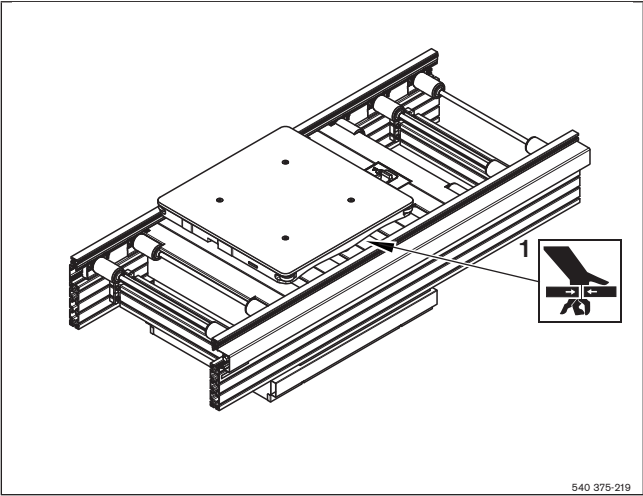
7.1.4 VE/... stop gate

	Location	Situation	Hazard	Measure
1	Between workpiece pallet and VE stop blade on impact	Catching of body parts	 Crushing	In the work area: Do not reach into the system during operation. Use protective covers near work areas.
2	Between workpiece pallet and VE stop blade during overrun	Catching of body parts	 Crushing	- In the area of traffic: Do not reach into the system during operation. Danger zone has been indicated at the factory. Always separate pallets ahead of the work area. - In the work area: Secure the danger zone using a two-hand release or stop gate sequence control.



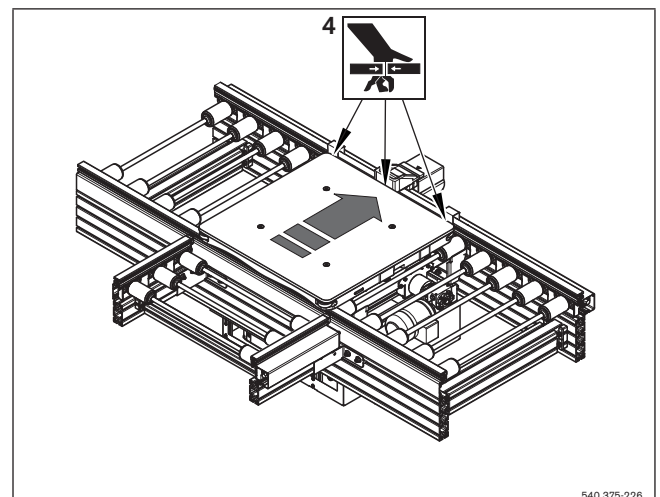
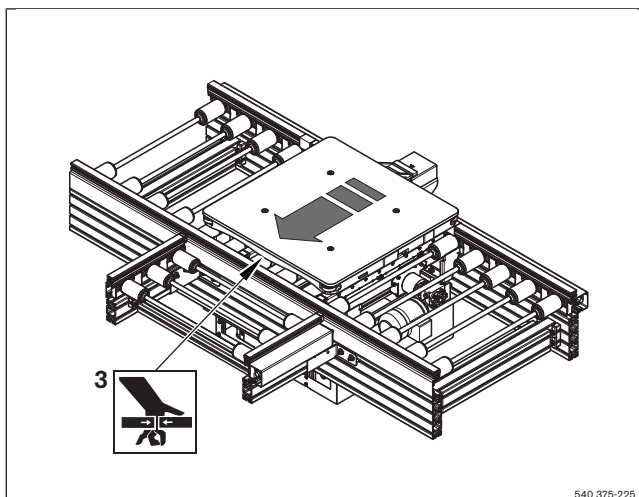
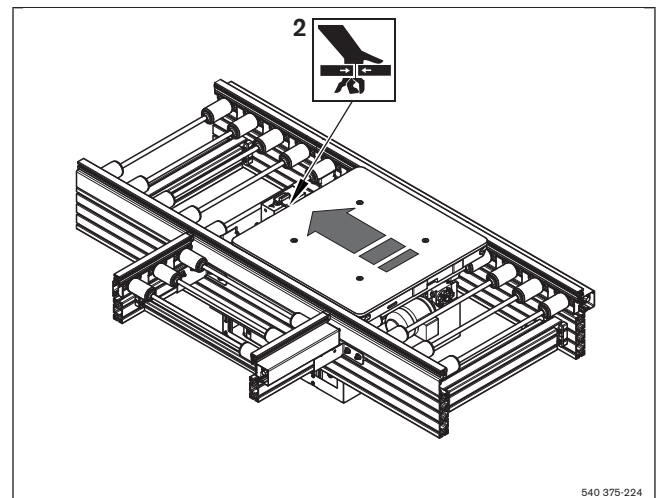
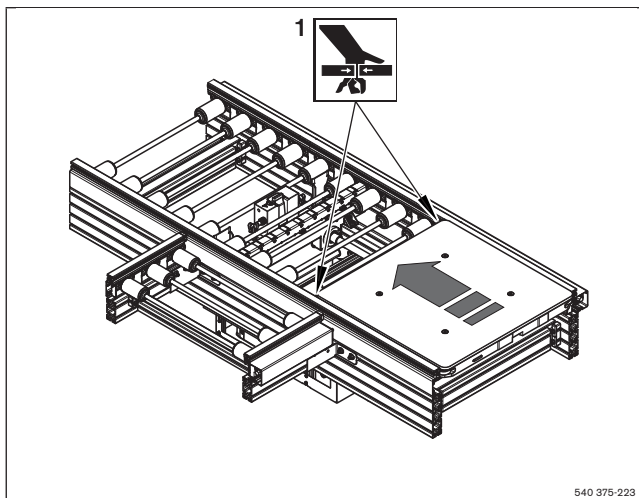
7.1.5 PE 5 positioning unit

	Location	Situation	Hazard	Measure
1	Between lifted workpiece pallet and upper edge of lateral guide	Catching of body parts	 Crushing	Do not reach into the system during operation. The user must provide trap guards.
2	Between the PE lift plate and rollers	Catching of body parts	 Crushing	Use protective covers near work areas.
3	Between PE mandrels and rollers	Catching of body parts	 Crushing	Use protective covers near work areas.
4	Between PE mandrels and protective covers	Catching of body parts	 Crushing	Use protective sleeves near work areas.



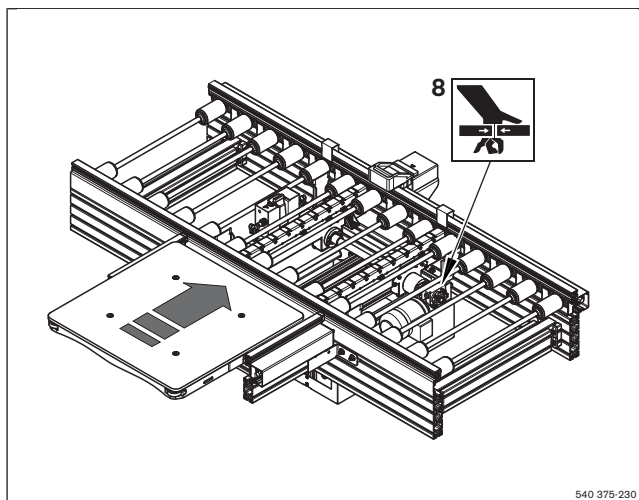
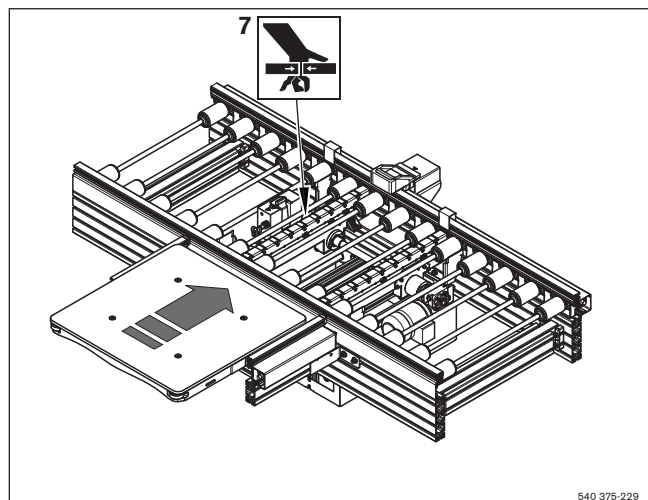
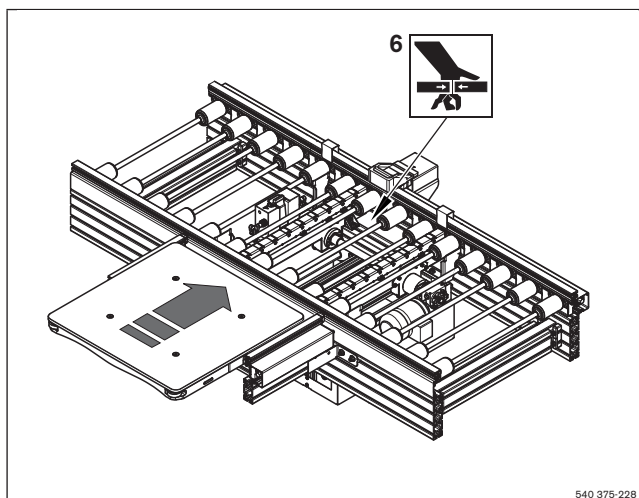
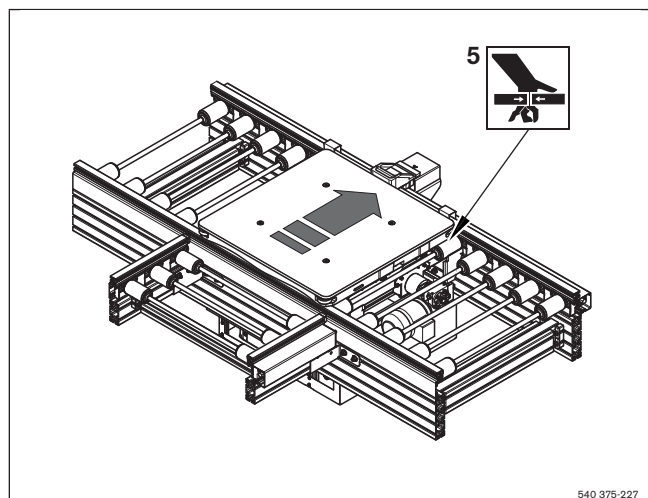
7.1.6 HQ 5 lift transverse unit

	Location	Situation	Hazard	Measure
1	Between workpiece pallet and lateral guide	Catching of body parts	 Crushing	Do not reach into the system during operation.
2	Between workpiece pallet and VE stop blade on impact	Catching of body parts	 Crushing	Do not reach into the system during operation.
3	During lowering: Between lifted workpiece pallet and upper edge of lateral guide	Catching of body parts	 Crushing	Do not reach into the system during operation. Danger zone must be indicated.
4	Between infeeding workpiece pallet and damper/stops	Catching of body parts	 Crushing	Do not reach into the system during operation.



HQ 5 transverse lift unit

	Location	Situation	Hazard	Measure
5	During lowering: Between lifted workpiece pallet and rollers	Catching of body parts	 Crushing	Do not reach into the system during operation.
6	During lifting: Between the HQ lift plate and rollers.	Catching of body parts	 Crushing	Use protective covers near work areas.
7	During lifting: Between the VE base and rollers (only for b = 455 mm).	Catching of body parts	 Crushing	Use protective covers near work areas.
8	During lifting: Between the HQ motor and rollers	Catching of body parts	 Crushing	Use protective covers near work areas.



8 Operation



CAUTION

Hot electric motor surfaces during operation!

Possible burns if the hot surface (max. 55°C) is touched.

- ▶ Provide appropriate safety devices to seal off the motors.
- ▶ Let the system cool off for at least 30 min. before performing any maintenance or repair work.

8.1 Notes on operation

8.1.1 Wear

Wear is caused by the basic principle of this system and cannot be avoided. Constructive measures and selection of the proper materials will help functional safety last for the lifetime of the system. However, wear depends on the operating, maintenance, and ambient conditions of the system, as well as the location (resistance, contamination).

Overloading the conveyor sections may damage the conveying medium and cause the motor and gears to fail.

Function cannot be guaranteed if the pneumatic components are overloaded.

When the conveying speed increases, impact forces with changes in direction and the rebound force on the stop gates also increase. This may require longer settling periods or shock absorbers before the next movement.

8.1.2 Measures to reduce wear

The following measures reduce wear:

- Switch off conveyor sections when the system is not running, e.g. during breaks, over night, on the weekend.
- Only select speeds that correspond with the particular function.
- Minimize the weight of the workpiece pallet – do not overload workpiece supports with material.
- Especially important: Avoid contamination by abrasive media or reduce contamination through regular cleaning.

8.1.3 Loading the workpiece pallet

When setting up and testing the modular units, the workpieces pallets should not all have the same weight on the conveyor sections, i.e. full and empty pallets should all come through the circuit.

Extreme differences in weight may require special measures to avoid functional disruptions. This applies, e.g. to the permitted accumulation length before stop gates, to the function of dampers and dampened stop gates.

8.1.4 Environmental conditions

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 long-term contact with acidic or basic reacting materials.

Wear may increase dramatically if the system is contaminated due to environmental factors, particularly with abrasive media such as sand and silicates, but also due to processes running on the transfer system (e.g. welding beads, pumice dust, glass shards, shavings, or lost parts...). In such cases, maintenance intervals must be substantially shortened.

Resistance to media and contamination does not mean that functional safety is guaranteed in every case.

- Liquids that thicken on evaporation and are highly viscous or adhesive (sticky) could lead to a disruption in function.
- Media with lubricating properties may reduce the driving power that is caused by friction if they are carried over onto systems with rollers.

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

8.2 Disruptions in transport due to deformed workpiece pallets

NOTE

Forces, loads, and position of the center of gravity influence the transport characteristics of the workpiece pallet, which may result in transport disruptions.

Fastening screws from workpiece fixtures provided by the customer that protrude beneath the carrying plate may deform the base pallet.

- Provide openings in the base pallet for protruding screws, max. depth of openings: 5 mm.

If the permissible deflection of the workpiece pallet is exceeded, the transport characteristics will be impaired.

- Observe the interdependency between the permissible load and the thickness of the carrying plate (☞ TS 5 transfer system sales catalog, **3 842 540 380**).

Disruptions may occur when going through diverters (junctions) if the center of gravity of the load on the WT is unfavorable (☞ Loading the workpiece pallet, 103).

- Observe limitations of the permissible center of gravity of the load on diverters (junctions) (☞ TS 5 transfer system sales catalog, **3 842 540 380**).

8.3 Overload protection in CU 5.... curve, DI 5/..., diverter, and JU 5/... junction

NOTE

Overload protection in curves, diverters, and junctions!

In curves, diverters, and junctions, the rollers are driven via a coupling with overload protection (bevel wheel drive). This overload protection audibly jumps (clicks) if the rollers are blocked. The bevel wheel drive may be damaged if the overload protection jumps for a longer period of time (more than 60 minutes).

The factory settings for the bevel wheel drive might shift due to vibrations caused by this jumping.

- ▶ If the overload protection jumps continuously (for more than 5 minutes), check the curve (diverter, junction) for possible causes (accumulation, jammed WT, etc.) and remedy the problem.
- ▶ After you have remedied the problem, check the settings on the bevel wheel drive (🔧 113).

9 Maintenance and Repair

WARNING

High electrical voltage!

Danger of severe injuries or death due to electric shock.

- ▶ Make sure the relevant system component is not under pressure or voltage before performing any maintenance or repair work.
- ▶ Protect the system against being switched on.

WARNING

High pneumatic pressure!

Danger of severe injuries or death.

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

CAUTION

Hot electric motor surfaces during operation!

Possible burns if the hot surface (max. 55°C) is touched.

- ▶ Provide appropriate safety devices to seal off the motors.
- ▶ Let the system cool off for at least 30 min. before performing any maintenance or repair work.

Continuous conveyors that are in motion or operation may only be inspected or adjusted if protective devices are present and correctly positioned.

Remove or replace protective devices and/or deactivate safety devices in accordance with EN ISO 13857.

Test runs with open housing are only permitted when they are performed by skilled workers using hold-to-run controls and when the influence of all other switching devices can be excluded.

9.1 Maintenance

9.1.1 Bearings

All bearings are provided with lifelong lubrication and are maintenance-free under normal conditions.

However, if grease-dissolving substances are applied to the system, e.g. for cleaning purposes, a regular check should be made, and, if necessary, the bearings should be relubricated with acid- and resin-free lubricant only (e.g. "gleitmo 585K" from Fuchs Lubritech)!

9.1.2 Gear

The gears in the AS 5/... drive unit and HQ 5 lift transverse unit are maintenance-free.

9.1.3 Motor

To ensure adequate motor cooling, dirt and dust must be removed at regular intervals from the:

- Motor surface
- Fan housing inlets
- Interior surfaces of the cooling fins

The cleaning intervals are based on the ambient conditions and operating conditions.

9.1.4 Toothed belt

The toothed belts in the HQ 5 lift transverse unit are oiled at the factory. Conduct regular visual inspections for wear, particularly near the weld seam.

9.2 Repairs

9.2.1 Required tools

- Hexagon wrench (open-end) WS13, WS24
- Hex socket wrenches WS 3, WS 4, WS 5, WS 6
- Disassembly tool to remove the covers (on the king shaft and passive side): **3 842 545 836**
- Spring tensioner to tension the toothed belt in the drive unit: **3 842 545 871**

9.2.2 Required accessories

For wear parts or spare parts, see the MTparts spare parts list, **3 842 529 770**

- Replacing the roller  108
- Replacing the friction clutch  111
- Factory settings for the couplings  114
- Replacing the toothed belt in the drive unit  115
- Tensioning the toothed belt in the drive unit  121
- Replacing the diverter arm shock absorber  122
- HQ 5, replacing the motor or gear  123
- HQ 5, replacing the toothed belt  124

9.2.3 Replacing the roller

1. Remove the covers on the king shaft and passive side.
- A) The cover on the king shaft in the AS 5/... drive unit is connected to the covers for the adjacent modular units.

Disassembling/assembling covers

- x) Place the disassembly tool **3 842 545 836** on the cover and lift up the cover.
- y) Place the cover on the bearing pedestal and snap it in.

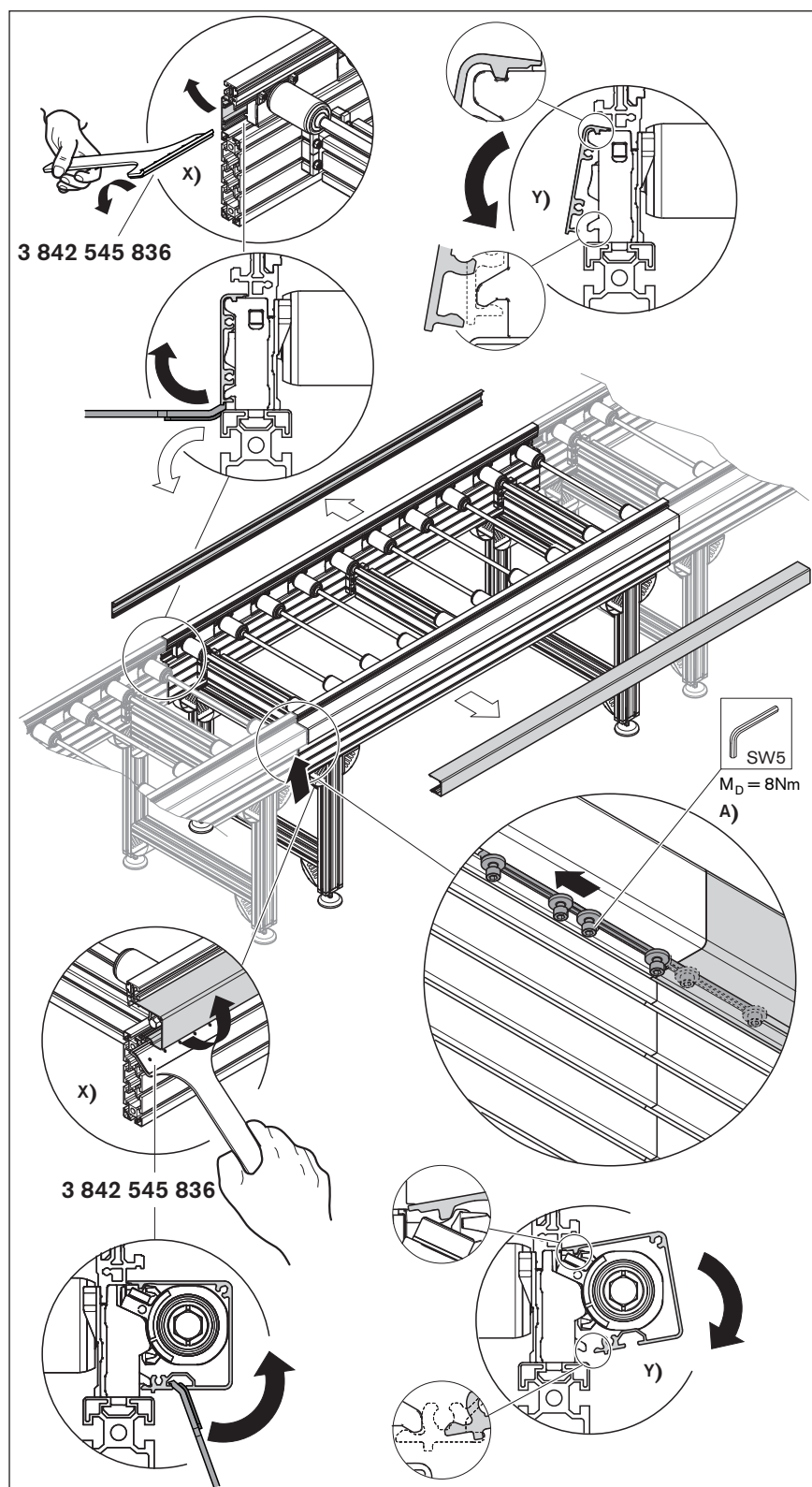


Fig. 79 Replacing the roller (1/3)

540 375-101

2. Loosen the threaded pins on the lateral guide profile connector by 2 rotations and slide the profile connector into the neighboring module.
3. Loosen the threaded pins on the lateral guide by 2 rotations and remove the lateral guide.

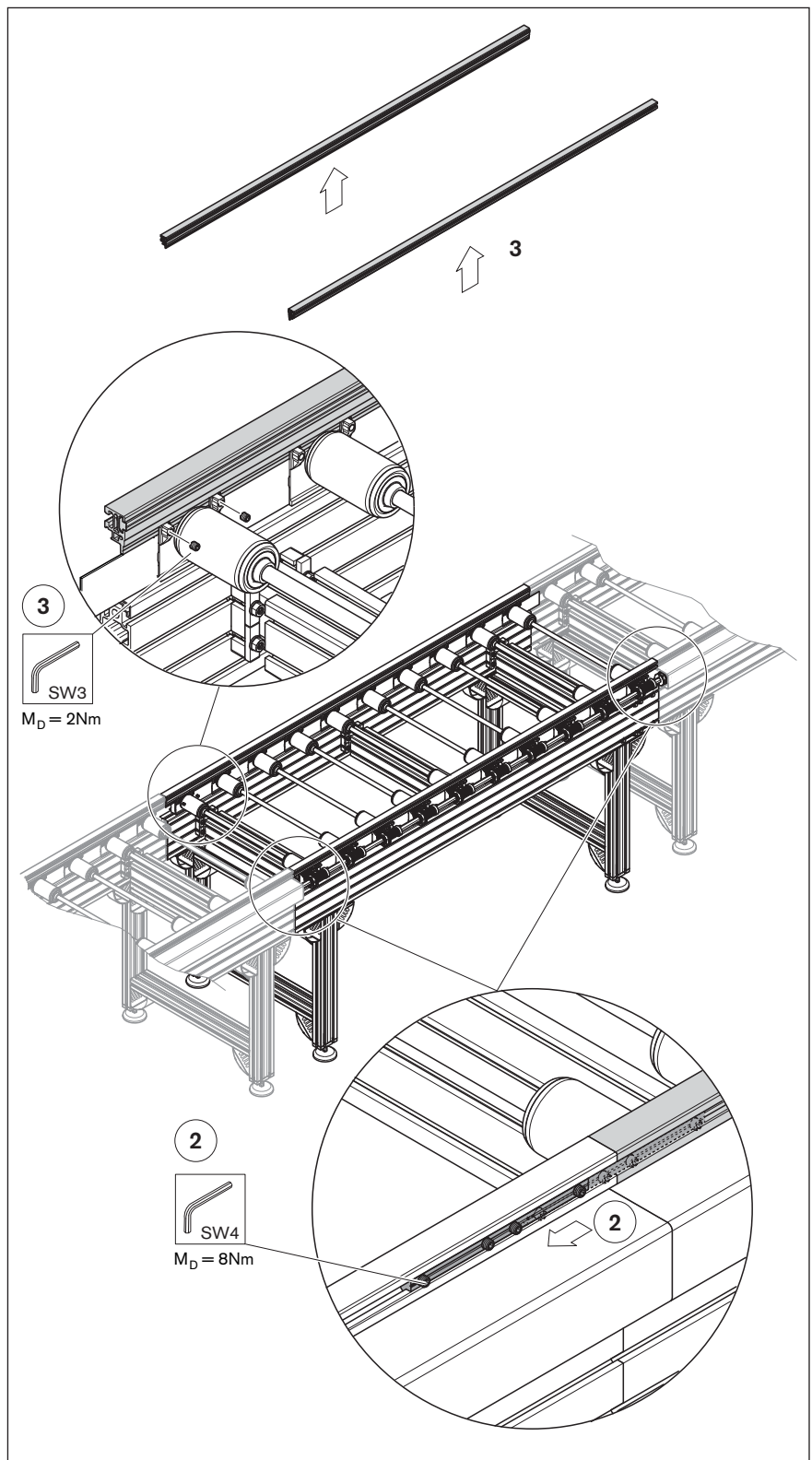


Fig. 80 Replacing the roller (2/3)

540 375-102

4. Remove clips and lift up the roller vertically.

Assemble the roller in the reverse order.

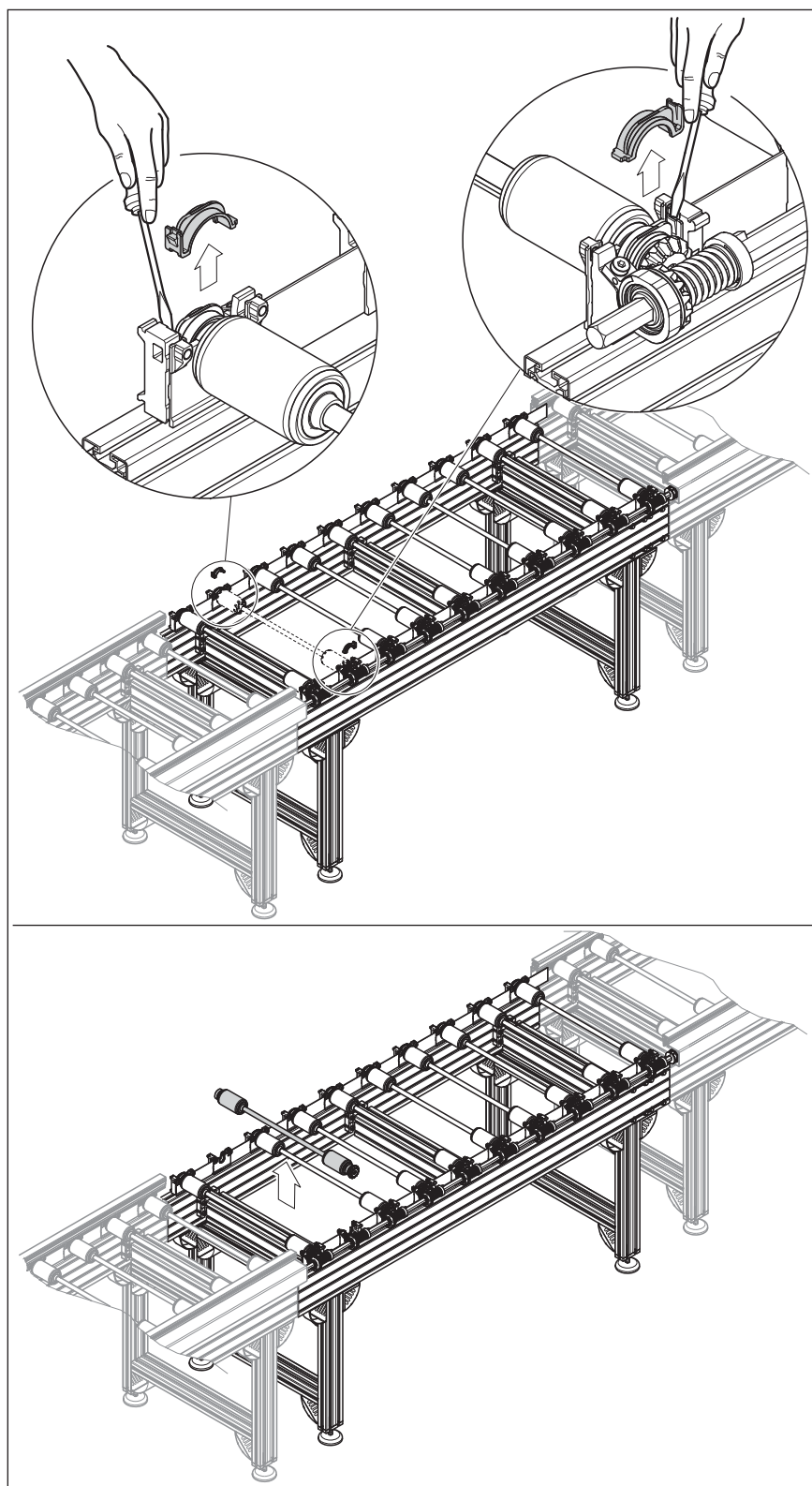


Fig. 81 Replacing the roller (3/3)

540 375-103

9.2.4 Replacing the friction clutch

1. Remove the king shaft cover.
- A) The cover on the king shaft in the AS 5/... drive unit is connected to the covers for the adjacent modular units.

Disassembling/assembling covers

- x) Place the disassembly tool **3 842 545 836** on the cover and lift up the cover.
- y) Place the cover on the bearing pedestal and snap it in.

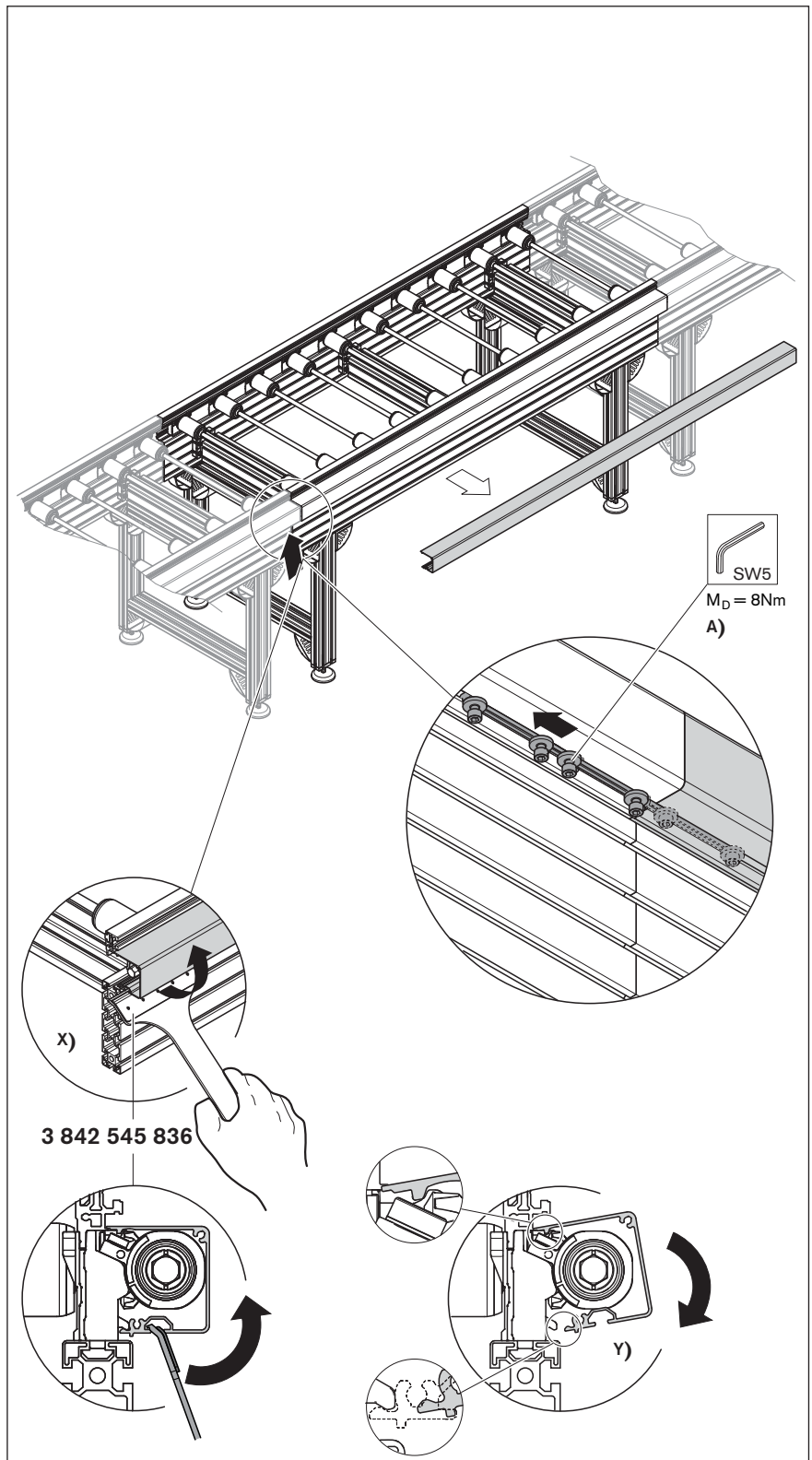


Fig. 82 Replacing the friction clutch (1/3)

2. Release the couplings for the affected section of the king shaft (the king shaft consists of sections, each max. 1500 mm long).
3. Unscrew the friction clutches on the affected section.

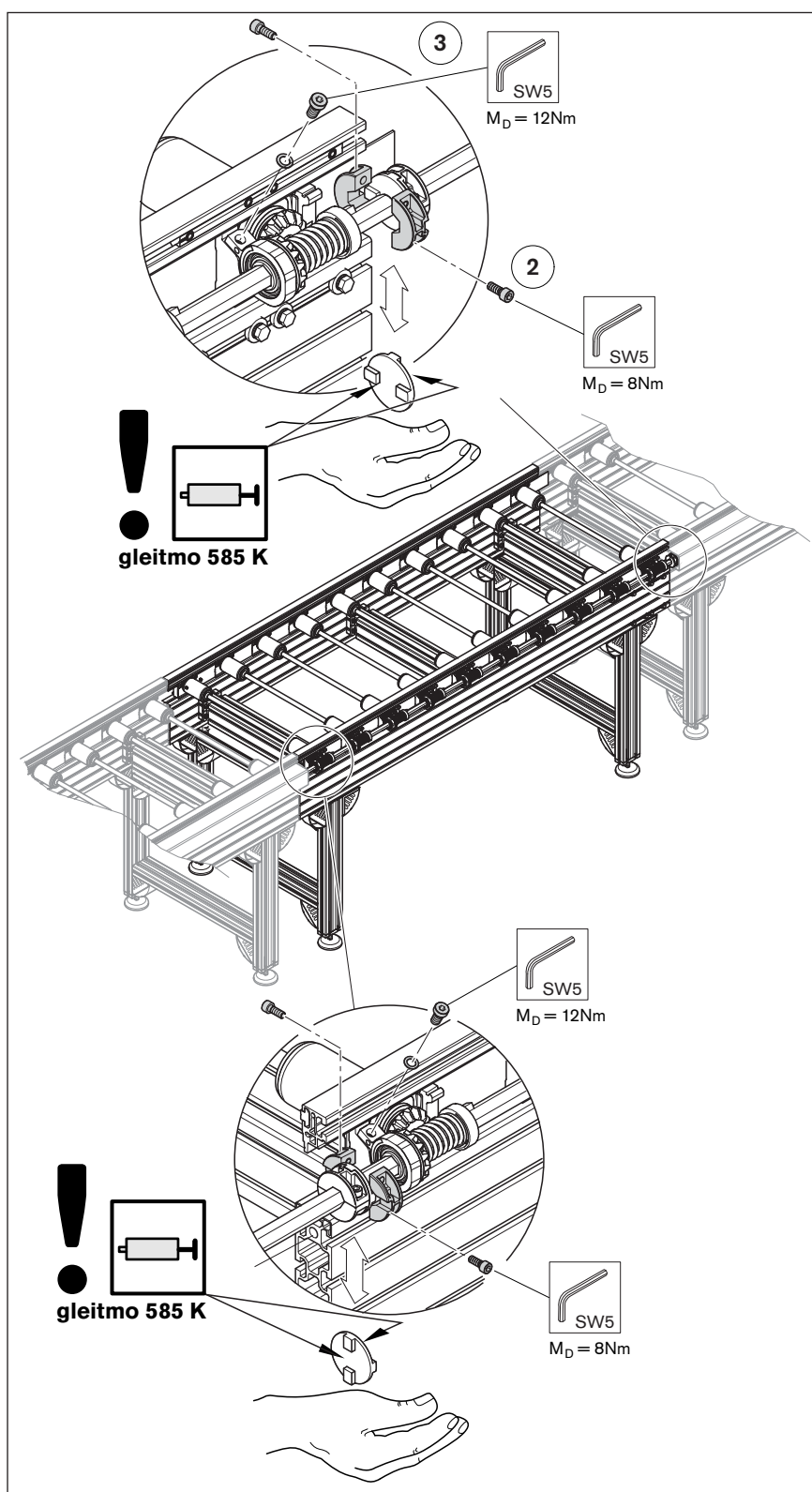


Fig. 83 Replacing the friction clutch (2/3)

540 375-105

4. Swivel the king shaft upwards.
5. Slide the friction clutches off the king shaft.
6. Place the new friction clutches on the king shaft and slide into position approximately.
7. Hook the friction clutches in the bearing pedestals, swivel the king shaft back in (☞ Fig. 80: A, B).
8. Tighten the friction clutches.
9. Connect the king shaft to couplings (☞ 112, Fig. 79).
10. Replace the king shaft cover (☞ 111, Fig. 78).

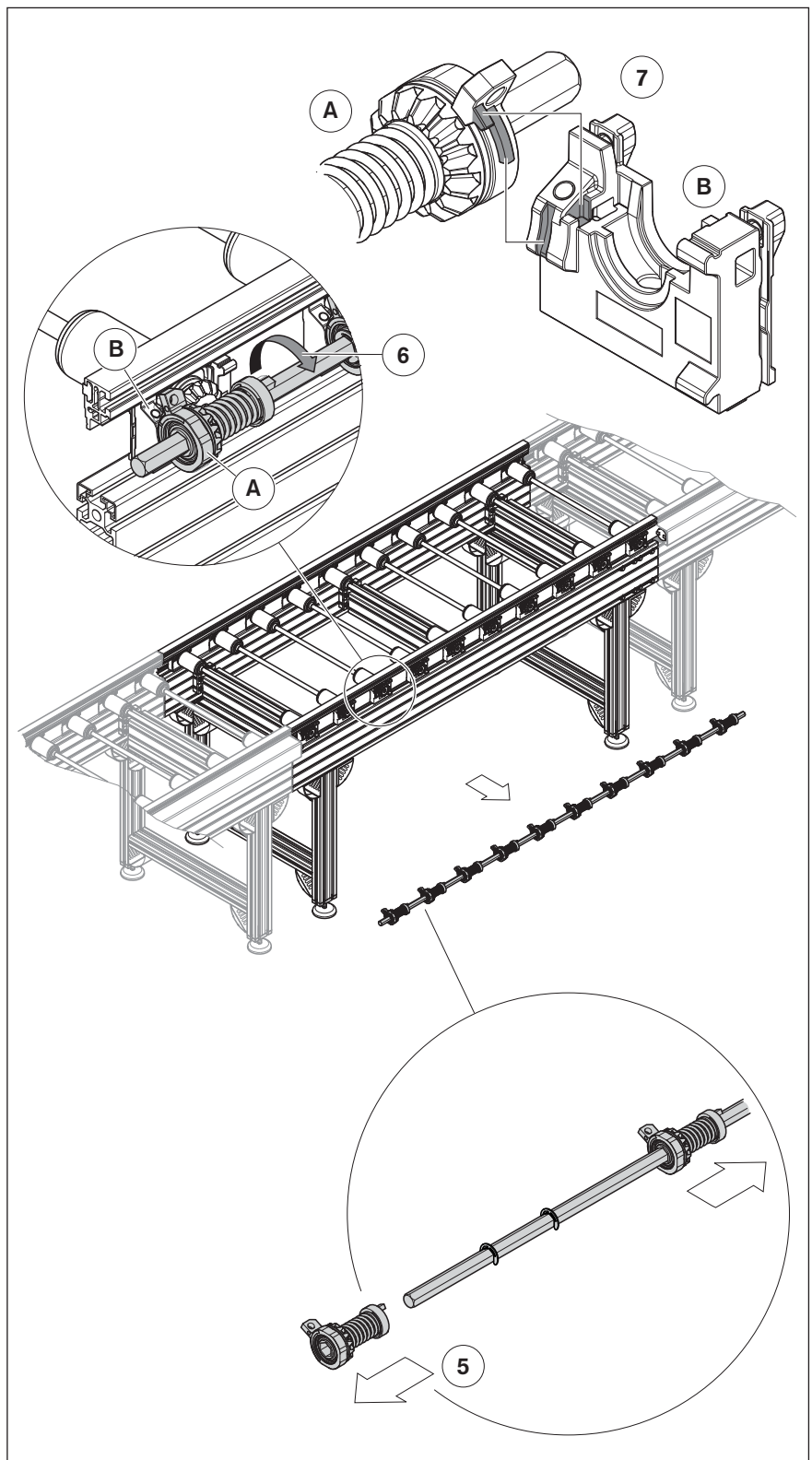


Fig. 84 Replacing the friction clutch (3/3)

540 375-106

Factory settings for the couplings

Friction clutch

- 3 842 545 046 (polymer)
- 3 842 545 222 (sintered metal)

Used in:

- ST 5/... conveyor unit
- AS 5/... drive unit

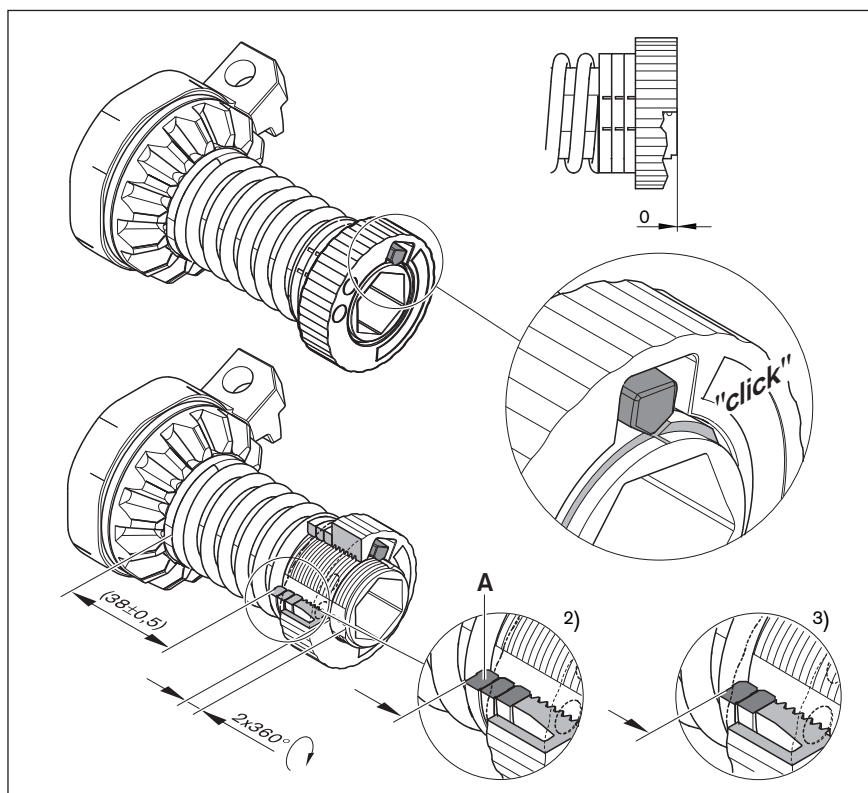
Factory settings and adjustment options:

...x 360°	+ "A" ²⁾ [Nm]	- "A" ³⁾ [Nm]
1x 360°	≈ 0.136	≈ 0.048
2x 360°	≈ 0.18 ¹⁾	≈ 0.092
3x 360°	≈ 0.224	≈ 0.136
4x 360°	≈ 0.268	≈ 0.18
5x 360°	≈ 0.312	≈ 0.224

1) Factory settings

2) Delivery condition, with ring "A"

3) Ring "A" removed



Bevel wheel drive

3 842 545 200

Used in:

- CU 5/... curve
- DI 5/... diverter
- JU 5/... junction

Factory settings: 3x 360°

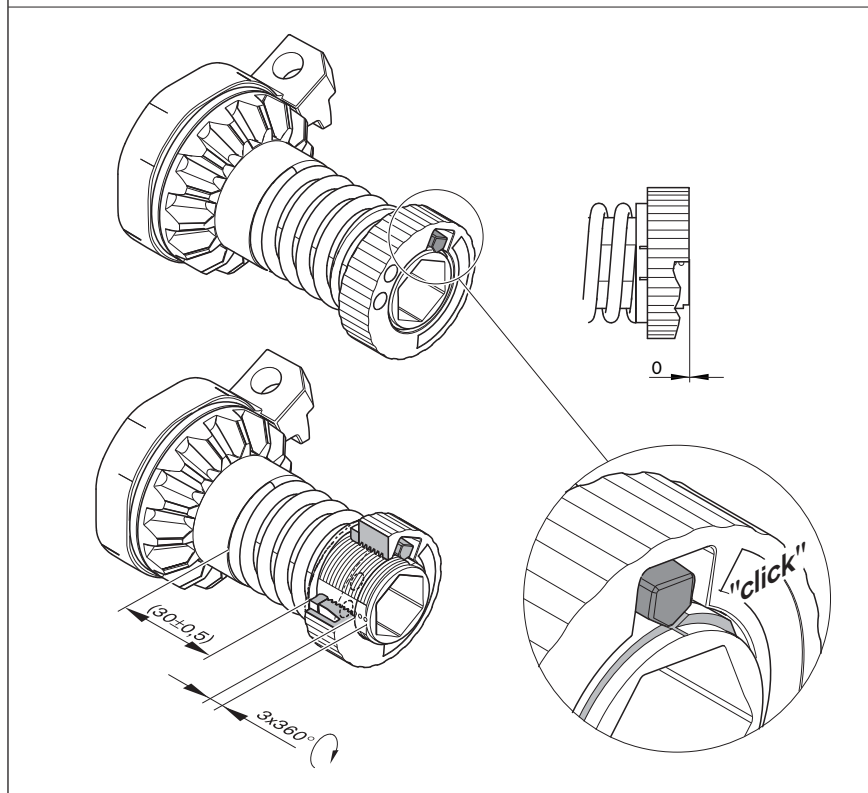


Fig. 85 Factory settings for the couplings

540 375-107

9.2.5 Replacing the toothed belt in the drive unit

1. Remove the covers on the king shaft and the passive side bearing. The cover on the king shaft is connected to the adjacent covers.

Disassembling/assembling covers

- x) Place the disassembly tool **3 842 545 836** on the cover and lift up the cover.
- y) Place the cover on the bearing pedestal and snap it in.

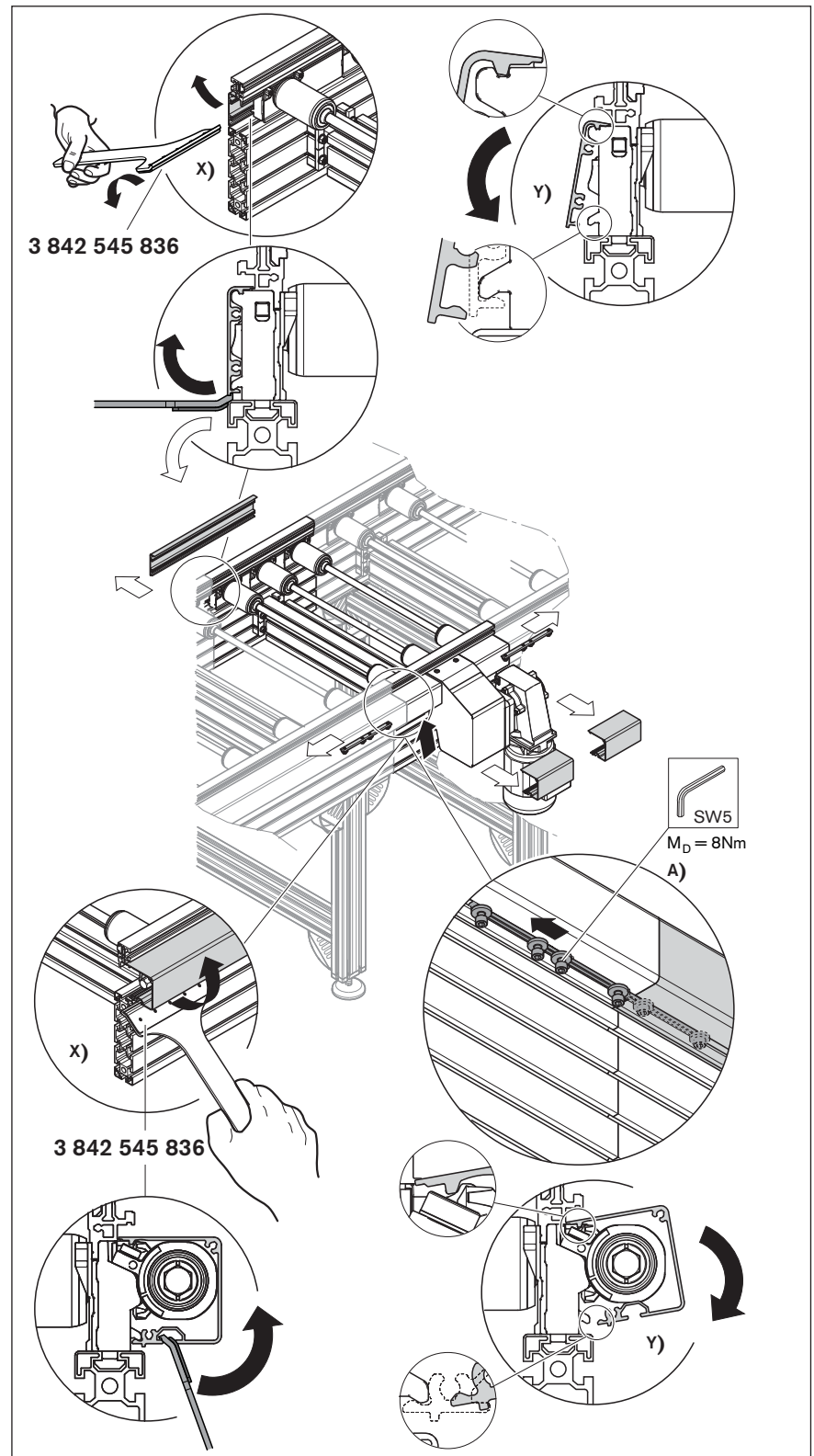


Fig. 86 Replacing the toothed belt in the drive unit (1/6)

540 375-108

2. Loosen the threaded pins on the lateral guide profile connector by 2 rotations and slide the profile connector into the neighboring module.
3. Loosen the threaded pins on the lateral guide by 2 rotations and remove the lateral guide.
4. Disassemble the motor and cover.

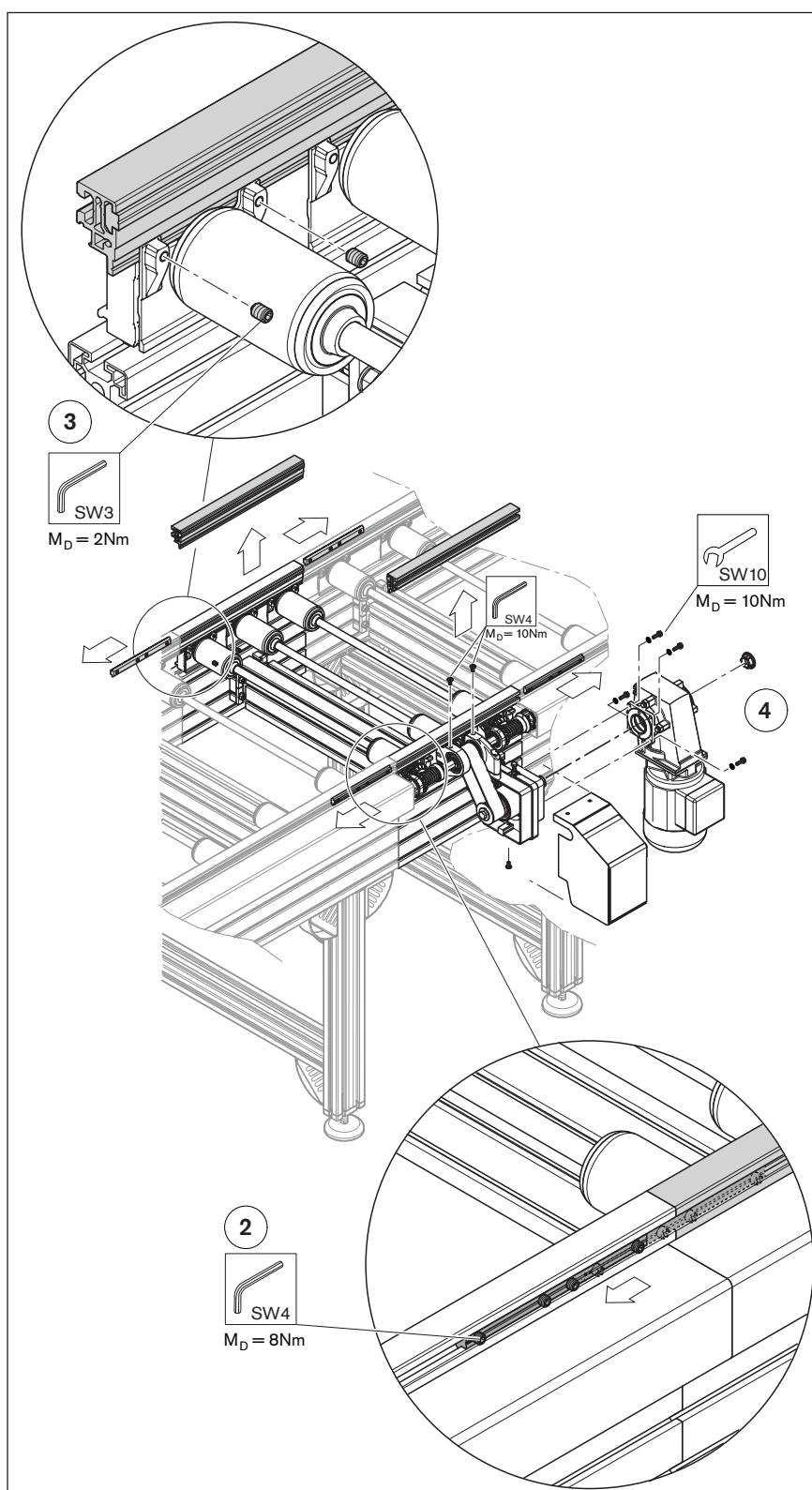


Fig. 87 Replacing the toothed belt in the drive unit (2/6)

540 375-109

5. Remove clips and lift up the roller vertically.

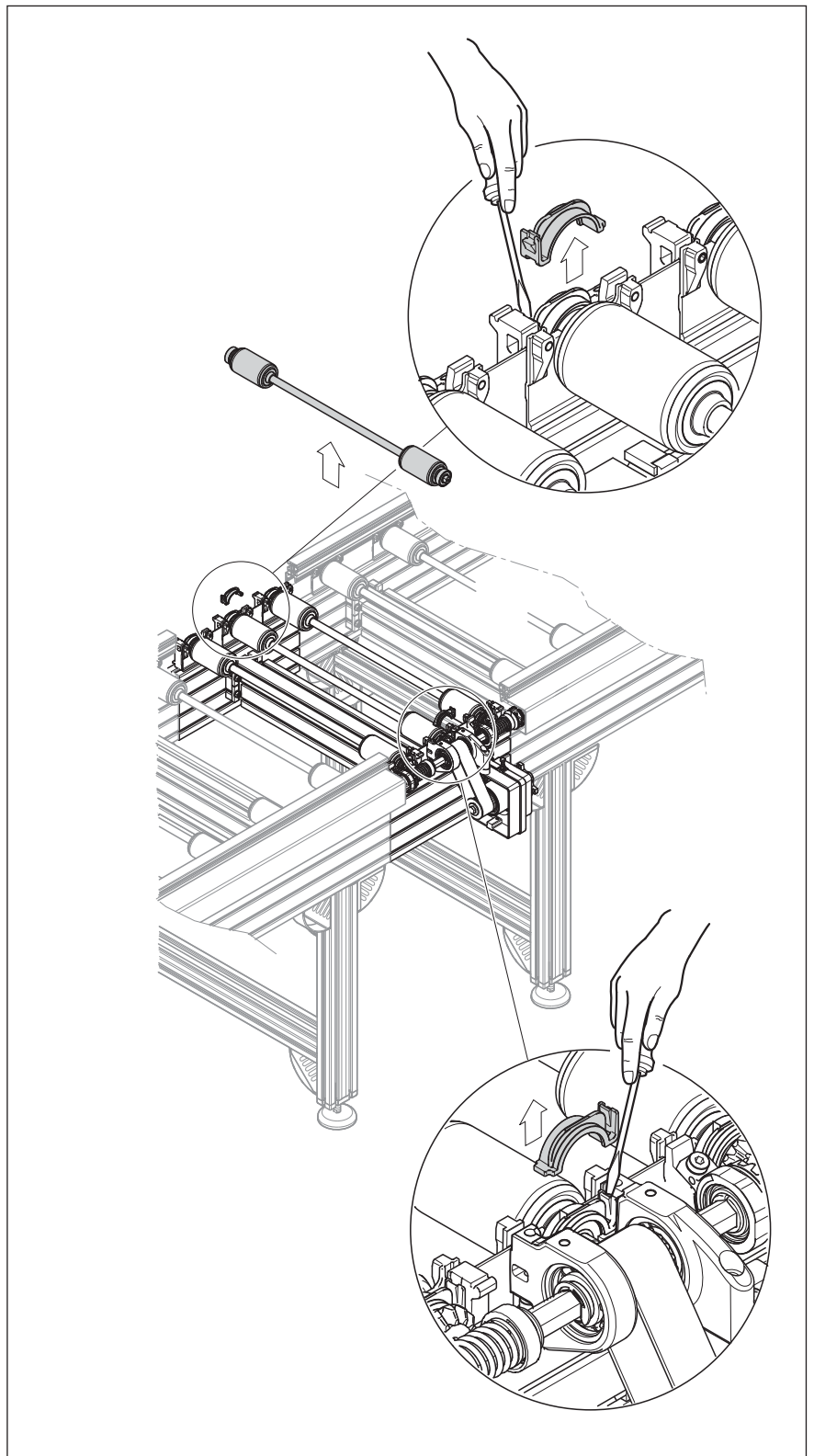


Fig. 88 Replacing the toothed belt in the drive unit (3/6)

540 375-110

6. Loosen the belt tensioning screw and screw out as far as possible.
7. Loosen the bearing, remove the screws.
8. Tilt the bearing upwards, slide the toothed belt off, remove the bearing.

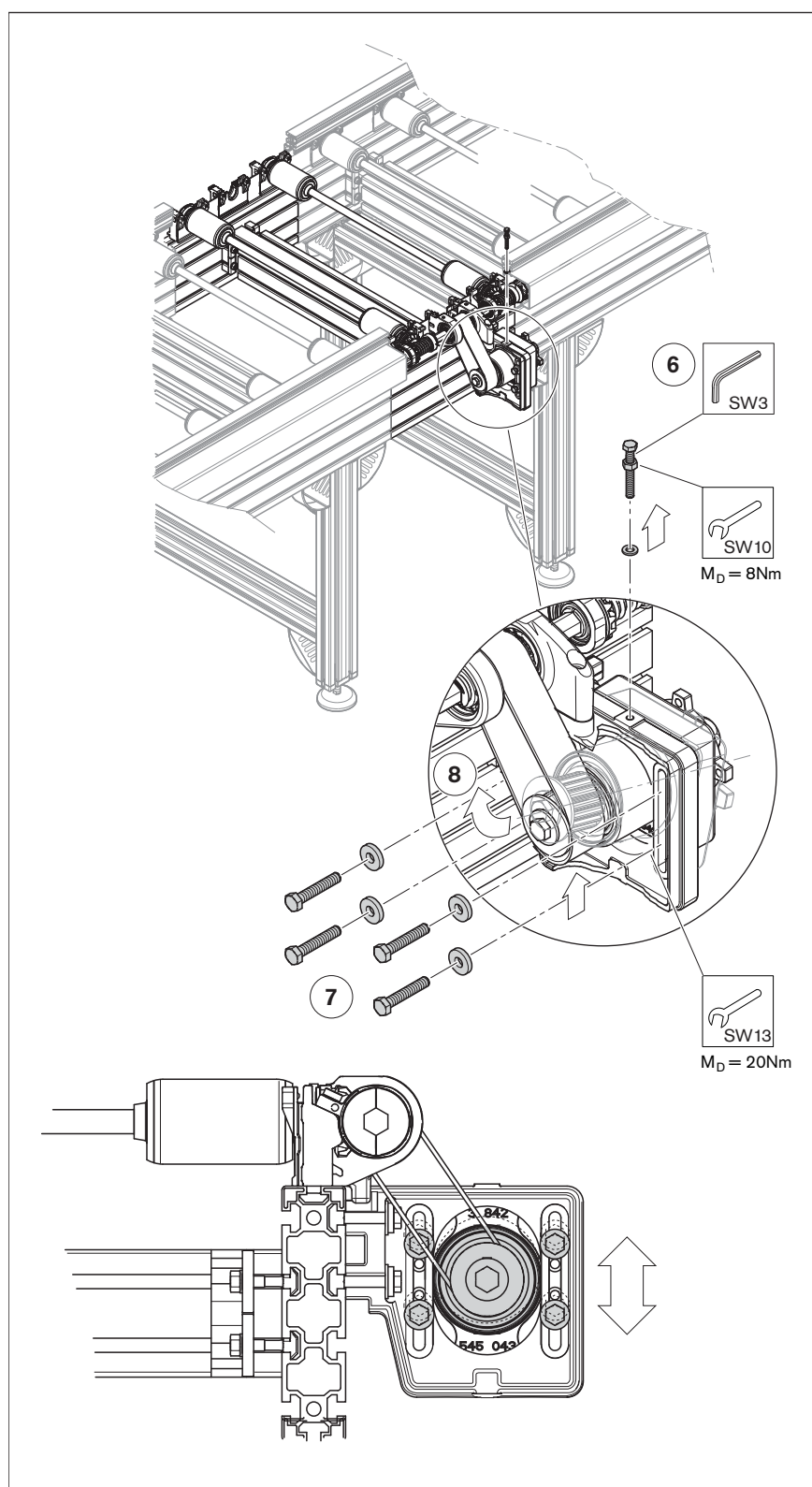


Fig. 89 Replacing the toothed belt in the drive unit (4/6)

540 375-111

9. Loosen the king shaft couplings.
10. Unscrew the friction clutches and bearing pedestal, lift the king shaft out.

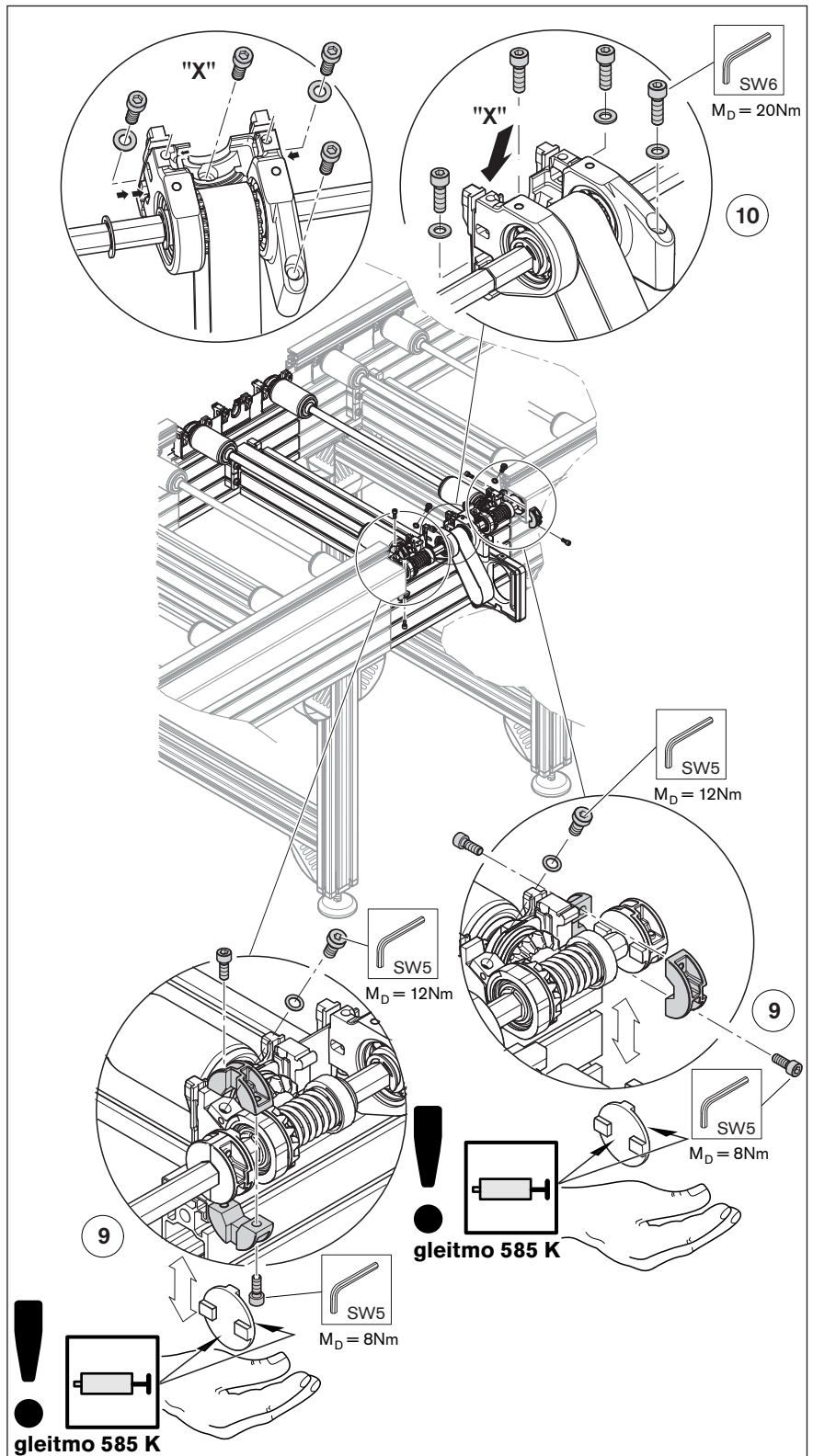


Fig. 90 Replacing the toothed belt in the drive unit (5/6)

540 375-112

- 11.** Slide the friction clutches off the king shaft.
- 12.** Pull the king shaft out of the bearing pedestal.
- 13.** Loosen the retainer ring and slide the toothed belt wheel and bearings out of the bearing pedestal.
- 14.** Check the toothed belt wheels for wear.

Assemble the new toothed belt **3 842 545 367** in the reverse order.
Tension the toothed belt  121.

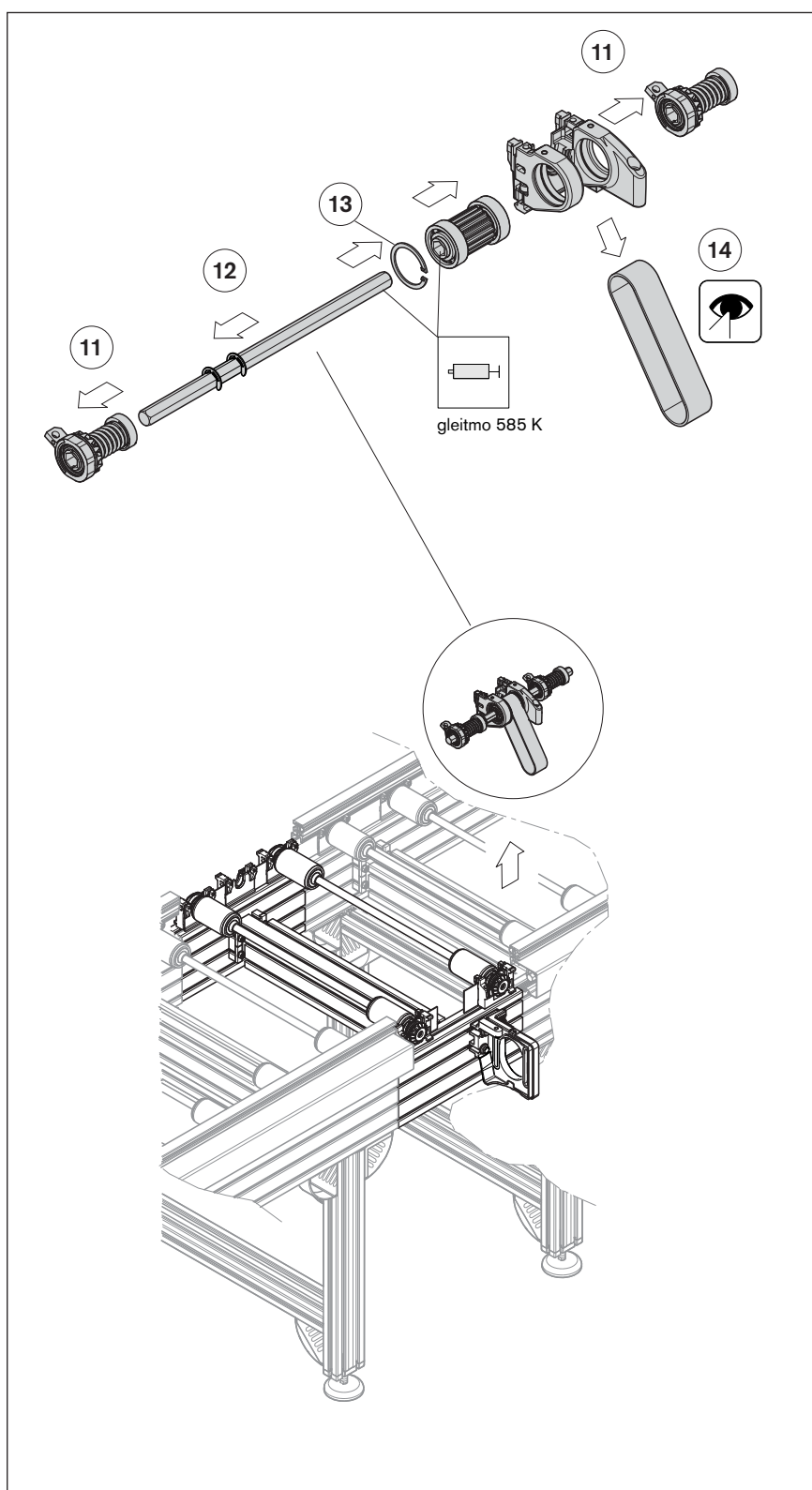


Fig. 91 Replacing the toothed belt in the drive unit (6/6)

540 375-113

9.2.6 Tensioning the toothed belt in the drive unit

Required tools

- Spring tensioner, **3 842 545 871**

1. Loosen the screws on the bearing.
2. Screw in the belt tensioning screw until a belt play of 10 mm is attained.
3. Tighten the bearing screws with 4 Nm, the bearing can now only be adjusted using the belt tensioning screw.
4. Visually inspect the belt course: rotate the king shaft by at least $2 \times 360^\circ$ – the toothed belt must not move up the flange of the toothed belt wheels.
5. Slide the spring tensioner between the toothed belts in the center up to the stop.

6. Tension the toothed belt by tightening the belt tensioning screw.
7. The belt tension is correct (1380 N +220 N/–60 N) if the spring tensioner is pressed together with play of 0.1 – 0.3 mm.
8. Secure the belt tensioning screw with a counter nut.
9. Tighten the screws on the bearing.

Note: The threaded pin in the spring tensioner has been set at the factory. Do **NOT** change this setting!

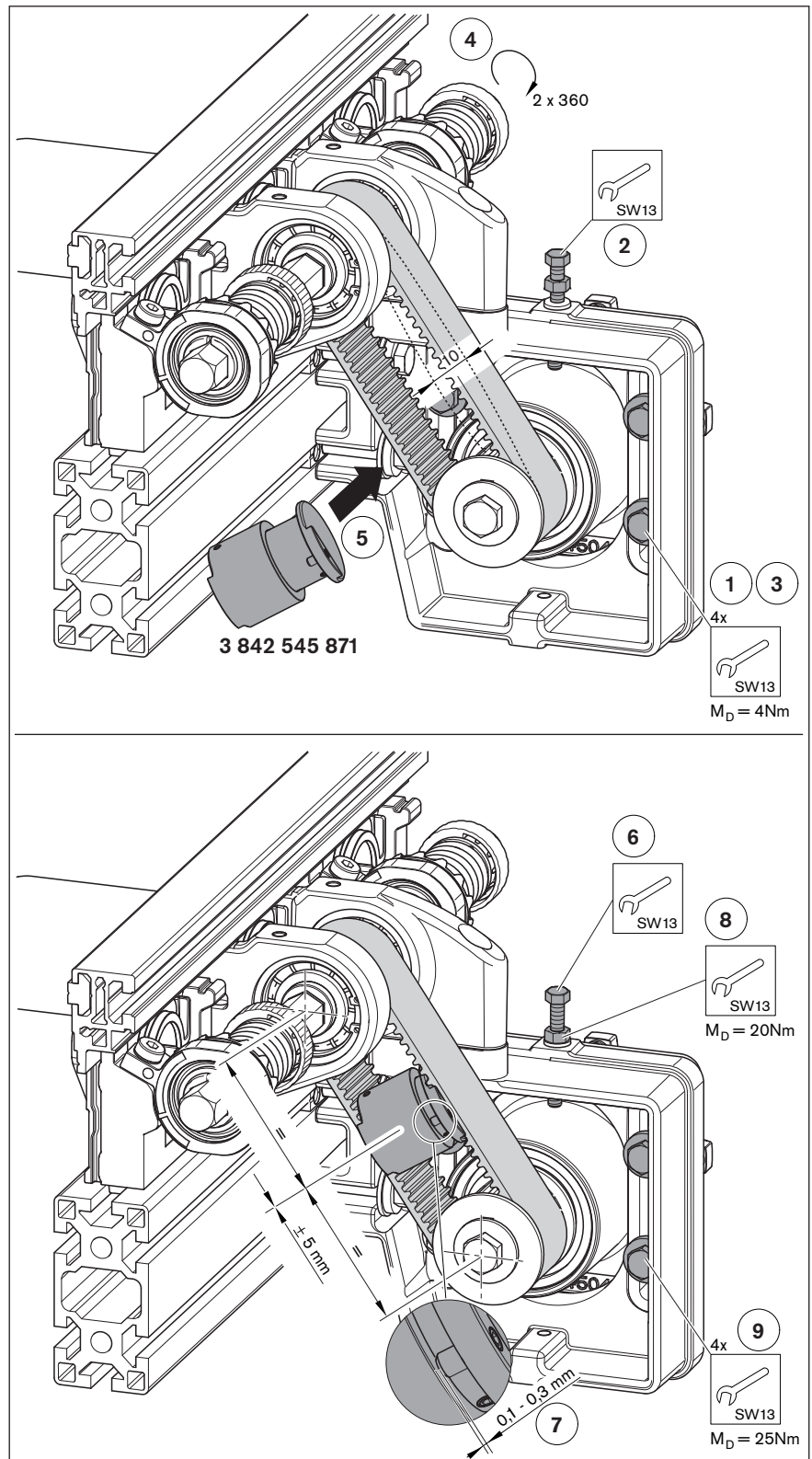


Fig. 92 Tensioning the toothed belt in the drive unit

540 375-114

9.2.7 Replacing the diverter arm shock absorber

1. Remove the protective covers in the swiveling range of the diverter arm.
2. Swivel the diverter arm out over the gap, replace wear parts.
3. Replace the protective covers.

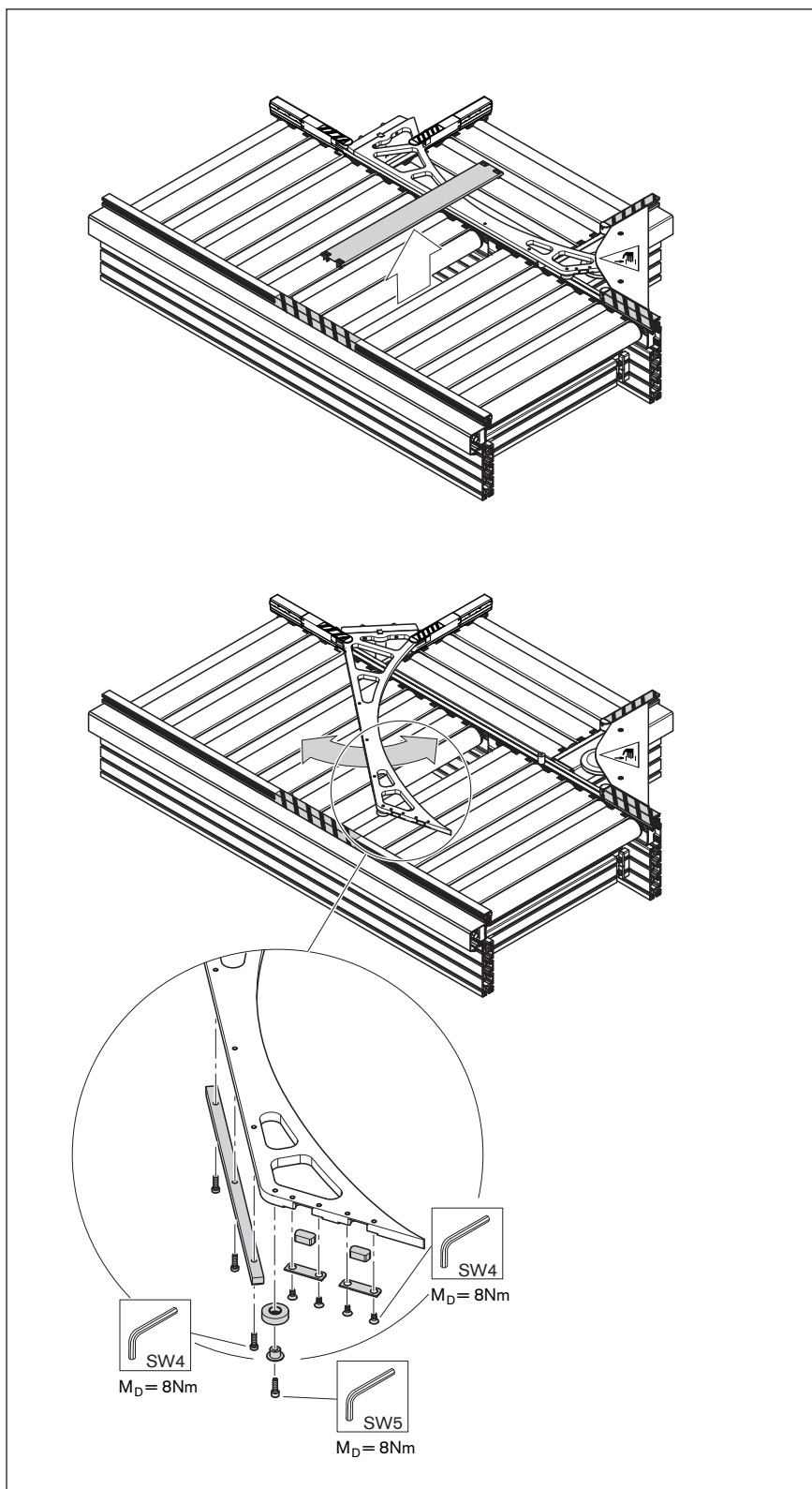


Fig. 93 Replacing the diverter arm shock absorber

540 375-115

9.2.8 HQ 5, replacing the motor or gear

Depending on the system width and the installation situation, it may be necessary to disassemble rollers (☞ 108) or remove the HQ 5 from the section to provide better access (☞ 77).

If only the motor is to be dismantled, begin with step 4.

1. Loosen the two hexagonal screws M6 (WS 10) on the flange.
2. Remove the gear motor from the hexagonal shaft.
3. Remove the cover plugs from the faulty gear and fit onto the new gear.
4. Loosen the four hexagonal screws M5 (WS 8) with locking washers on the gear flange.
5. Remove the faulty gear from the motor.

Assemble in the reverse order.

6. Remove the yellow protective cap "X" from the motor shaft on the new motor.
7. Grease the motor shaft and hexagonal gear shaft before assembly. The hub of the new gear has already been greased at the factory.

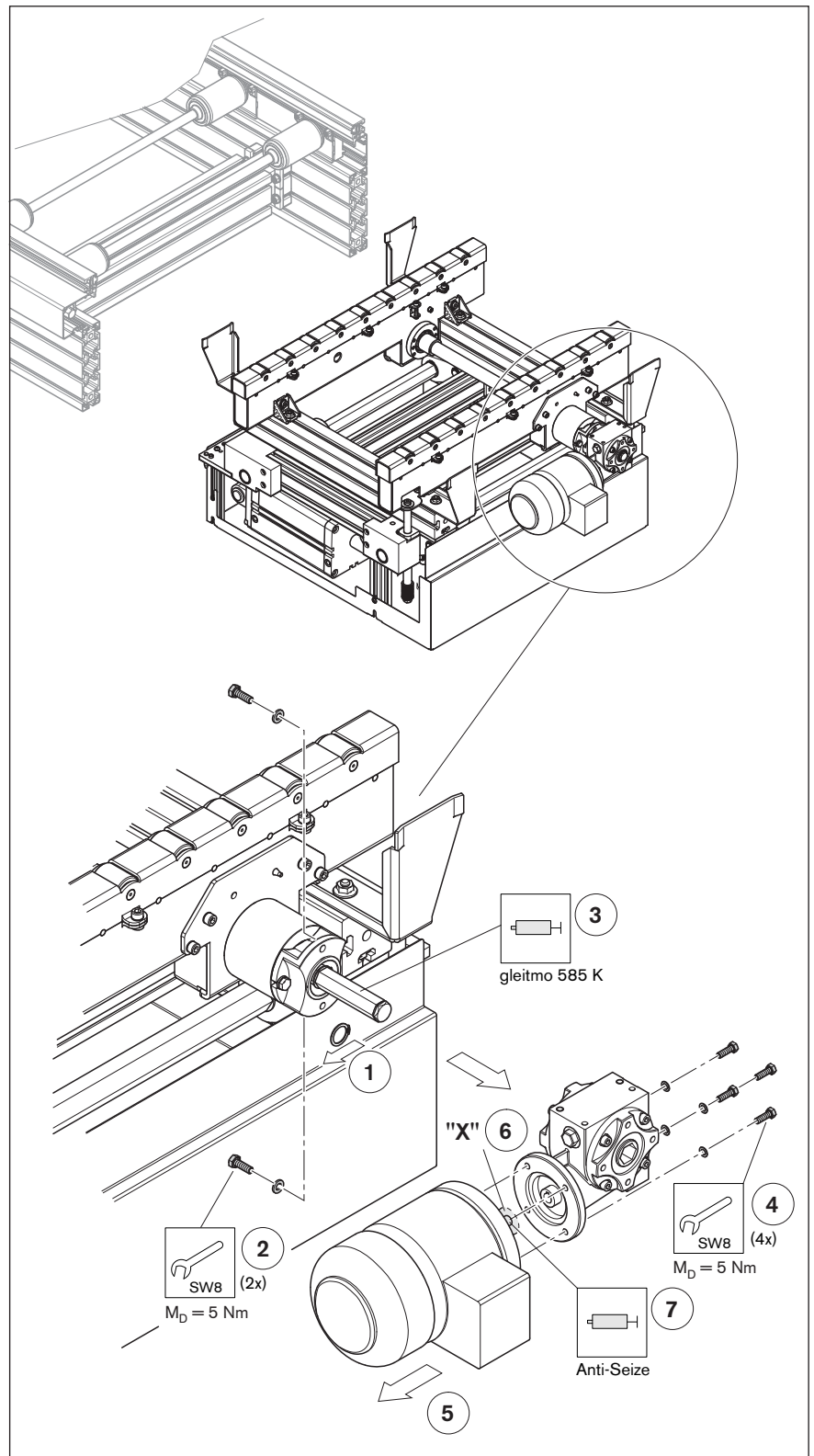


Fig. 94 HQ 5, replacing the motor or gear

540 375-116

9.2.9 HQ 5, replacing the toothed belt

1. Relieve the belt tension.
2. Remove the roller conveyor.
3. Remove the guide rollers.
4. Disassemble the drive bearing.
5. Remove the toothed belt.

Assemble the new toothed belt in the reverse order.

6. Tension the toothed belt until the adjusting measurement "x" has been obtained.

b = b _{WT} (mm)	x (mm)
455	18.5
650	15.5
845	19.5

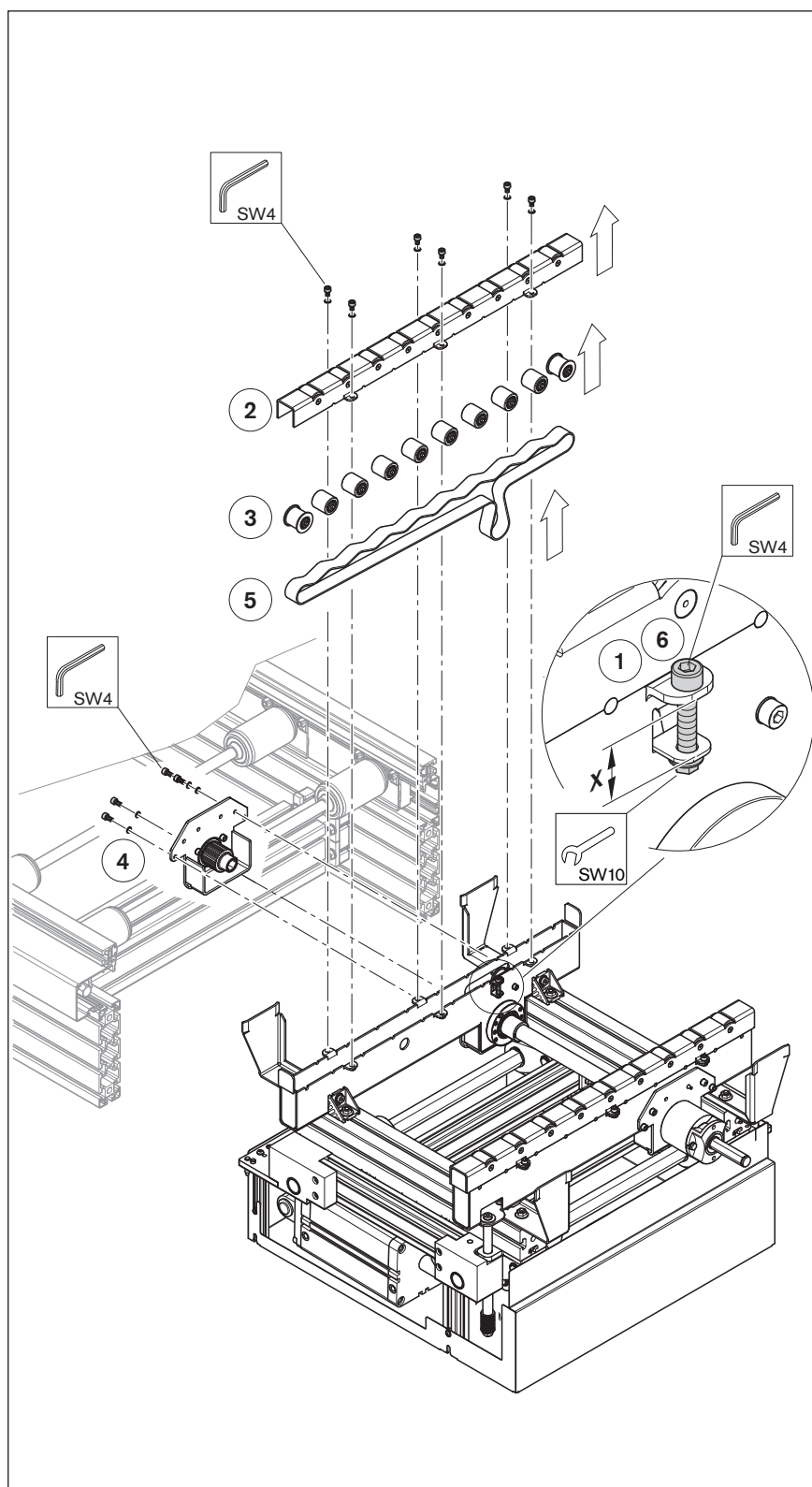


Fig. 95 HQ 5, replacing the toothed belt

540 375-117

10 Decommissioning

The TS 5 modular units are components that do not have to be decommissioned. As a result, this chapter in these instructions does not contain any information.

How to disassemble and exchange the TS 5 modular units is described in Chapter 11 Disassembly and Exchange  125.

11 Disassembly and Exchange

WARNING

High electrical voltage!

Danger of severe injuries or death due to electric shock.

- ▶ Make sure the relevant system component is not under pressure or voltage before performing any maintenance or repair work.
- ▶ Protect the system against being switched on.

WARNING

High pneumatic pressure!

Danger of severe injuries or death.

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

CAUTION

Hot electric motor surfaces during operation!

Possible burns if the hot surface (over 70°C) is touched.

- ▶ Provide appropriate safety devices to seal off the motors.
- ▶ Let the system cool off for at least 30 min. before performing any maintenance or repair work.

WARNING

Lifted loads may fall!

Falling objects may result in severe injuries (or even death).

- ▶ Use lifting equipment with a sufficiently high bearing load (see the shipping documents for product weight).
- ▶ Before lifting the product, make sure that the carrying straps are correctly fastened!
- ▶ Secure the product to prevent toppling while lifting!
- ▶ Make sure that no one is in the danger area when raising and lowering, with the exception of the operator!

Preparing the modular units for storage or further use

- Always store the modular units on a flat surface.
- Always set down the diverter DI 5/... and junction JU 5/... with a support (min. height 100 mm)!
- Observe the environmental conditions.

12 Disposal

The materials used are environmentally sustainable.

They may be recycled or reused (if components are converted or replaced). Recyclability is ensured by the selection of material and the possibility to take the components apart.

Careless disposal of the modular units may pollute the environment.

- Therefore, dispose of the modular units in accordance with the national regulations in your country.

13 Extension and Conversion

Do not convert the modular units.

The Bosch Rexroth warranty only applies to the delivered configuration and extensions taken into account in the configuration. The manufacturer can accept no warranty claims if the system is converted or extended in a manner not listed in these instructions.

14 Troubleshooting and Resolution

If you are unable to remedy the error, please get in touch with one of the contact addresses listed at www.boschrexroth.com.

15 Technical Data

- For dimensions, see the TS 5 transfer system sales catalog, **3 842 540 380**.
- Section load: ≤ 300 kg in accumulation operation
- Maximum load: ≤ 50 kg/roller
- Suitable for reversible operation
- Suitable for use in ESD sensitive areas. For more information, please contact your Rexroth representative.

15.1 Ambient conditions

- The transfer systems have been designed for stationary use in a location that is protected from the elements.
- Operating temperature $+5^{\circ}\text{C}$ to $+40^{\circ}\text{C}$
 -5°C to $+60^{\circ}\text{C}$ with 20% reduced load
- Storage temperature -25°C to $+70^{\circ}\text{C}$
- Relative humidity 5% to 85%
- Air pressure > 84 kPa, appropriate height < 1400 m above sea level
- Load values are reduced by 15% when the system is set up in a location that is > 1400 m.
- Avoid molds, fungi, rodents, and other vermin.
- Do not install or operate near industrial systems with chemical emissions.
- Do not install or operate near sandy or dusty sources.
- Do not install or operate in areas that are regularly jarred by high forces caused by e.g. 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 long-term contact with acidic or basic reacting materials.

15.2 Pneumatics

- Oiled or non-oiled, filtered, dry compressed air
- Operating pressure 4 to 6 bar
- Solids
 - Particle size $\leq 5 \mu\text{m}$
 - Particle quantity $\leq 5 \text{ mg/m}^3$
- Humidity – water content
 - Pressure dew point¹⁾ $\leq +3^{\circ}\text{C}$
 - Amount of water $— \text{ g/m}^3$
- Oil content
 - Oil quantity $\leq 1 \text{ mg/m}^3$

¹⁾ The pressure dew point should be at least 15°C below the ambient temperature.

