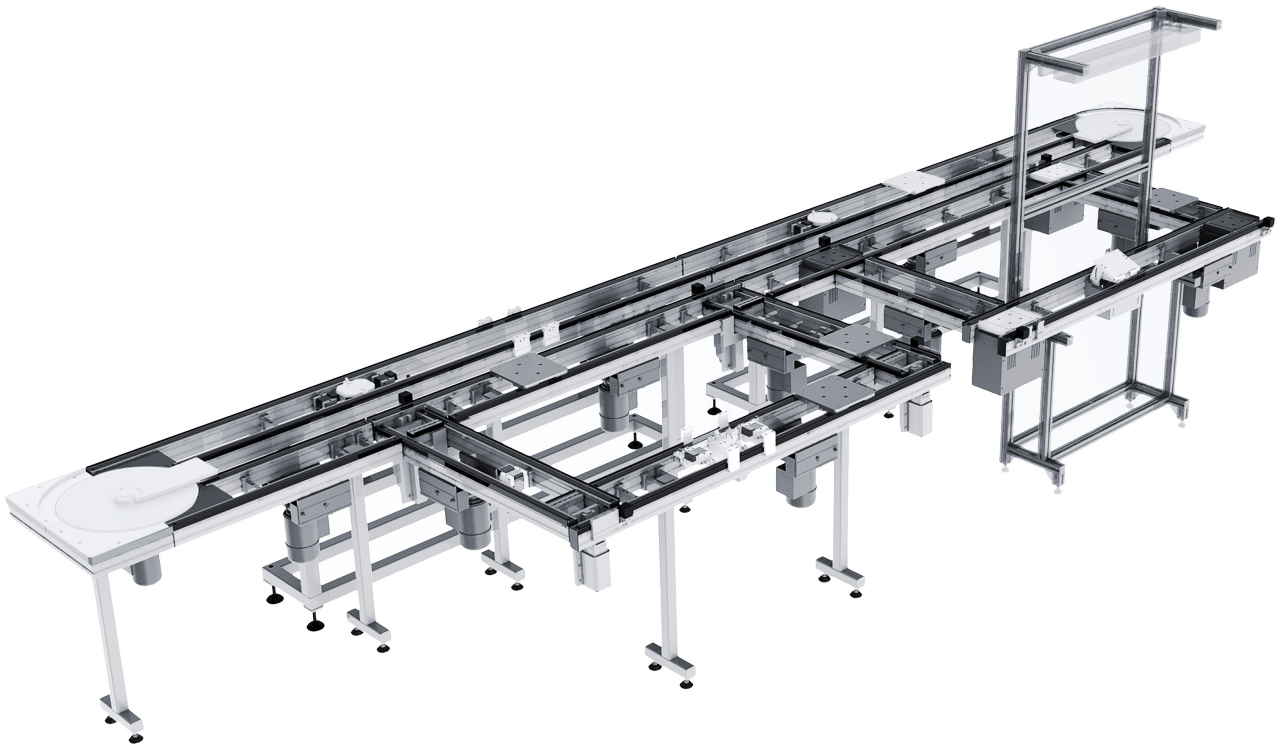
Assembly instructions (original)



posyART
Transport system
1068394

Version 6.0

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1 Declaration of Incorporation

Manufacturer

IEF-Werner GmbH
Wendelhofstr. 6
78120 Furtwangen, Germany

Incomplete machine (designation)	Material numbers	
posyART transfer section	■ 1800098	■ 1800051
posyART rotary lifting unit	■ WT400 1017206 ■ WT320 1017100 ■ WT280 1016533	■ WT240 1016283 ■ WT200 1016084 ■ WT160 1015682
posyART lifting unit	■ WT400 stroke 100 1016337 ■ WT400 stroke 175 1145256	■ WT240 stroke 50 1021858 ■ WT160 stroke 25 1023570
posyART curve	Curve 90° ■ WT400 1017451 ■ WT320 1018554 ■ WT280 1018627 ■ WT240 1019980 ■ WT200 1020174 ■ WT160 527609	Curve 180° ■ WT400 1018315 ■ WT320 1018574 ■ WT280 1018744 ■ WT240 1019981 ■ WT200 1020175
posyART stopper	TG1000148	
posyART switch	Switch (redirecting / moving in / moving through) ■ WT400 stroke 1085560 ■ WT320 stroke 526983 ■ WT280 stroke 526979 ■ WT240 stroke 526975 ■ WT200 stroke 1003756 ■ WT160 stroke 527616	Switch (moving out / moving through) ■ WT400 stroke 1047287 ■ WT320 stroke 526984 ■ WT280 stroke 526980 ■ WT240 stroke 526976 ■ WT200 stroke 1003503 ■ WT160 stroke 527615
posyART centring unit	■ WT400 527051 ■ WT320 527049 ■ WT280 527048	■ WT240 527046 ■ WT200 527045 ■ WT160 527711

Authorized documentation representative

IEF-Werner GmbH

The manufacturer hereby confirms that the incomplete machine named above complies with the following essential requirements of the Machinery Directive 2006/42/EC.

The technical documentation has been drawn up in accordance with Annex VII, Part B and may be sent to the national authorities in electronic form upon substantiated request.

The following harmonised standards have been applied:

- DIN EN ISO 12100 / 2011-03
  Safety of machinery, basic concepts, general principles of design
- DIN EN ISO 14120 / 2016-05
  Safety of machinery, guards, general requirements for the design and construction of fixed and movable guards.
- DIN EN ISO 13854:2020-01
  Safety of machinery, minimum gaps to avoid crushing of parts of the human body.

In addition to the standards listed above, the following harmonized standards were applied for posyART switch, posyART curve, posyART transfer section:

- DIN EN 60204 -1 / 2019-06
  Safety of machines, electrical equipment of machines, part 1: General requirements
- DIN EN ISO 13732-1 / 2008-12
  Safety of machines, temperatures of touchable surfaces
- DIN EN ISO 13849-1 / 2016-06
  Safety-related parts of controllers, Part 1: general principles for design

The partly completed machinery must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Machinery Directive 2006/42/EC.

Furtwangen, 25/08/2020

Stefan Deck (Managing Director)

Annex to the Declaration of Incorporation

Essential health and safety requirements according to the Machinery Directive 2006/42/EC, Annex I

Relevant

x Request is relevant.

- The request is not relevant.

Fulfilled

x The request is fulfilled.

- The request is not fulfilled.

		Relevant	Fulfilled
1.1	**General information**		
1.1.1	Definitions	X	X
1.1.2	Principles for the integration of safety	X	X
1.1.3	Materials and products	X	X
1.1.4	Illumination	-	-
1.1.5	Design of the machine with regard to handling	X	X
1.1.6	Ergonomics	-	-
1.1.7	Operator stations	-	-
1.1.8	Seats	-	-
1.2	**Controllers and command devices**		
1.2.1	Safety and reliability of controllers	X	-
1.2.2	Control devices	X	-
1.2.3	Start-up	X	-
1.2.4	Shutdown		
1.2.4.1	Normal shutdown	X	-
1.2.4.2	Shutdown for operational reasons	X	-
1.2.4.3	Emergency shutdown	X	-
1.2.4.4	Machinery in its entirety	X	-
1.2.5	Selection of control modes or operating modes	X	-
1.2.6	Power supply failure	X	-
1.3	**Protective measures against mechanical hazards**		
1.3.1	Risk of loss of stability	-	-
1.3.2	Risk of breakage during operation	X	X
1.3.3	Risks due to falling objects or ejected objects		
	■ posyART transfer section, rotary lifting unit	X	-
	■ posyART switch, lifting unit, stopper, centring unit, curve	-	-
1.3.4	Risks due to surfaces, edges and corners	X	X
1.3.5	Risks due to multiple combined machines	-	-
1.3.6	Risks due to changes in the use conditions	-	-
1.3.7	Risks due to moving parts	X	X
1.3.8	Selection of guards and protective devices to protect against risks from moving parts		
1.3.8.1	Moving parts of the force transmission	X	X
1.3.8.2	Moving parts involved in the work process	X	X

		Relevant	Fulfilled
1.3.9	Risk of uncontrolled movements	X	X
1.4	**Requirements for guards and protective devices**		
1.4.1	General requirements	X	X
1.4.2	Special requirements for guards		
1.4.2.1	Fixed guards		
	■ posyART transfer section, stopper, centring unit, curve	X	X
	■ posyART rotary lifting unit, switch, lifting unit	X	-
1.4.2.2	Movable guards with interlock	-	-
1.4.2.3	Adjustable guards and protective devices that restrict access	-	-
1.4.3	Special requirements for guards	-	-
1.5	**Risks due to other hazards**		
1.5.1	Electrical energy supply	X	X
1.5.2	Static electricity	X	X
1.5.3	Non-electrical energy supply	-	-
1.5.4	Installation faults	X	X
1.5.5	Extreme temperatures		
	■ posyART transfer section	X	X
	■ posyART rotary lifting unit, rotary unit, switch, stopper, centring unit, curve	-	-
1.5.6	Fire	-	-
1.5.7	Explosion	-	-
1.5.8	Noise	-	-
1.5.9	Vibrations	-	-
1.5.10	Radiation	-	-
01/05/2011	External radiation	-	-
01/05/2012	Laser radiation	-	-
01/05/2013	Emissions of hazardous materials and substances	-	-
01/05/2014	Risk of being enclosed within the machine	-	-
01/05/2015	Risk of slipping, tripping and falling	-	-
01/05/2016	Lightning strike	-	-
1.6	**Maintenance**		
1.6.1	Machine maintenance	X	X
1.6.2	Access to the operating stations and the servicing points for maintenance work	-	-
1.6.3	Disconnection from energy sources	X	X
1.6.4	Interventions by operating personnel	X	X
1.6.5	Cleaning of internal machine parts	X	X
1.7	**Information**		
1.7.1	Information and warnings on the machine		
1.7.1.1	Information and information devices	-	-
1.7.1.2	Warning devices	-	-

		Relevant	Fulfilled
1.7.2	Warning of residual risks	X	-
1.7.3	Machine markings	X	-
1.7.4	Operating instructions		
1.7.4.1	General principles for the drafting of the operating instructions	-	-
1.7.4.2	Content of the operating instructions	-	-
1.7.4.3	Sales literature	X	X

2 posyART (all components)

2.1 General information

This manual is part of the machine/product and provides information concerning safe handling. The manual must therefore be kept on hand for the entire life cycle and must be accessible at all times.

The manual must be read, understood and complied with in all respects by all persons who work on and with the machine/product and who are responsible for the machine/product.

The illustrations are intended to clarify the content and may therefore deviate from reality.

2.2 Disclaimer of liability

This machine/product has been designed and built in accordance with the applicable standards and regulations as well as the best available technology. Therefore, all information and instructions in this manual must be followed to ensure smooth operation. For personal injury and material damage resulting from the following cases, IEF-Werner GmbH accepts no liability:

- failure to follow the instructions in this manual;
- non-intended use of the machine/product;
- use of insufficiently qualified/trained personnel;
- modifications, alterations or additions to the machine/product made without the consent of IEF-Werner GmbH;
- failure to comply with maintenance and repair measures;
- use of non-approved spare parts and wear parts.

2.3 Customer service department

In case of questions or problems, please contact our customer service:

IEF-Werner GmbH

Wendelhofstr. 6, 78120 Furtwangen, Germany

Telephone: +49 7723 / 925 - 222**,** E-mail: service@ief-werner.de

2.4 Change history

Version	Changes	Date of issue
6	Complete revision	08.2020
7	Cycle times corrected	06.2022

2.5 Other applicable documents

Ensure that the complete documentation is available at all times for all tasks involving the machine.

In addition to this document, the following apply:

- The specific spare and wear parts lists that accompanies each component.
- The documentation of the installed supplier components.
- The models from the download area of IEF-Werner GmbH (www.ief.de).

2.6 Safety instructions

2.6.1 Explanation of symbols and safety markings

Presentation of the information (in the instructions)

⚠ DANGER

Warning – personal injury!

Failure to comply with the safety regulations will result in death or serious injury.

⚠ WARNING

Warning – personal injury!

Failure to comply with the safety regulations can result in death or serious injury.

⚠ CAUTION

Warning – personal injury!

Failure to comply with the safety regulations can result in minor or lesser injury.

NOTE

Warning – material damage!

Failure to comply with regulations will result in material damage.

Important information

Important information and helpful tips.

Representation of the marking elements (in the instructions)

Element	Description
■ ...	Designates bullet points.
✓	Designates prerequisites for instructions.
▶ ...	Designates instructions.
⇨ ...	Designates results of instructions.
Designation	Designates buttons from the software.
Designation	Designates switches and buttons.

Safety markings (in the instructions and on the machine)

⚠ WARNING

Danger of injury if safety markings are missing or illegible!

Removed or illegible safety markings (e.g. due to soiling or damage) lead to a high hazard potential.

- ▶ Immediately replace safety markings that have been removed or become illegible.

⚠ CAUTION

Risk of injury due to non-observance of the safety markings on the supplier components!

In addition to the safety markings listed here, further safety markings may be affixed to the installed supplier components.

- ▶ Be sure to observe the documentation of the respective manufacturer (supplier/component documentation), see folder "Component documentation" on the supplied USB stick.

Pictogram	Description	Position
	Warning – electrical voltage!	Control cabinet, sockets
	Warning – hand injuries or danger of crushing!	Instructions
	Warning – hot surface!	Electric drives
	Wear personal protective equipment, see Personal protective equipment [22].	Instructions

2.6.2 Organisational and staffing matters

2.6.2.1 Obligations of the operating company

The operating company must ensure that

- the instructions are always available and read by the personnel.
- when the machine/product is sold, the instructions are passed on to the new operating company.
- the applicable safety, operating, accident prevention and environmental protection requirements are met, and the personnel are regularly trained in accident prevention and contingency measures.
- only trained / authorised personnel work on the machine/product.
- areas of responsibility for the personnel are laid down and observed.
- work stations and escape routes are marked.
- the machine/product is only operated in technically faultless condition.
- damage, irregularities and faults are rectified immediately.
- no structural changes are made to the machine/product without the consent of IEF-Werner GmbH.
- the machine/product is only operated under the specified ambient conditions (see Intended use [▶ 27]) and within the specified capacity limits, connected loads and settings (see Technical data and ambient conditions for the transfer section [▶ 29]).
- personal protective equipment is provided (see Personal protective equipment [▶ 22].
- the safety devices are fully functional and complete.
- activities undertaken on the machine / product are logged so that violations or irregularities can be traced.
- damaged safety markings, or those that have become illegible, must be replaced immediately, see .

2.6.2.2 Obligations of the personnel

The personnel must ensure that

- the instructions have been read.
- the applicable safety, operating, accident prevention and environmental protection requirements are met and training sessions in accident prevention and contingency measures are attended.
- areas of responsibility are observed.
- work stations and escape routes are known.
- the machine/product is only operated in technically faultless condition.
- damage, irregularities and faults are reported and rectified immediately.
- no structural changes are made to the machine/product without the consent of IEF-Werner GmbH.
- the machine/product is only operated under the specified ambient conditions (see Intended use [▶ 27]) and within the specified capacity limits, connected loads and settings (see Technical data and ambient conditions for the transfer section [▶ 29]).
- the safety devices are fully functional and complete.
- personal protective equipment is worn (see Personal protective equipment [▶ 22].

2.6.2.3 Target groups and personnel qualifications

This manual is intended for the operating company and all persons who work on and with the machine / product and are responsible for the machine / product. The operating company is the company in which the machine / product is set up and operated. The following table lists the qualifications required for the various tasks. In addition to the table, observe the information on personnel qualification in the individual chapters of this manual.

Group of people	Qualifications	Tasks
Specialists	The specialist is able to carry out tasks on the machine/product due to his/her professional training, knowledge and experience. The specialist is specially trained for the environment in which he/she works and is familiar with the relevant standards and regulations. The specialist can also recognise and avoid possible dangers on his/her own. An example of a specialist is an electrician.	Transport, assembly, commissioning, servicing, maintenance, troubleshooting, disassembly

Tab. 1: Personnel qualifications

2.6.2.4 Personal protective equipment

Personal protective equipment (PPE) serves to protect persons from their safety and health being negatively impacted when at work.

Staff must wear PPE when undertaking certain work on and with the machine/product. In addition, observe the applicable guidelines and accident prevention regulations.

PPE	To be worn if/when	Symbol
Hairnet	Wear a hairnet if you have longer hair. In addition, wear close-fitting clothing when working on the machine. Do not wear baggy or loose clothing (ties, shirt sleeves) and do not wear jewellery.	
Wear safety shoes	Wear safety shoes during transport and assembly/disassembly work.	

Tab. 2: Personal protective equipment

2.7 Transport, installation and disassembly

⚠ WARNING

Danger of injury due to product falling over/falling down!

When loading, unloading, when installing and transporting the machine, there is the risk of deadly injuries, fractures, crushing, property damage, etc. due to the product falling, tipping or toppling over, due to unsuitable equipment.

- ▶ Follow the instructions and notes in this chapter!

Requirements: Loading and transport work may only be performed by IEF-Werner GmbH or by personnel authorized by the operating company.

Important notes regarding transport

- Wear suitable protective clothing such as a protective helmet, protective gloves and safety shoes.
- Only load or unload the product on a level, even and firm surface.
- Use intact and adequately dimensioned devices and equipment (load-bearing capacity at least 1.5 times that of the weight to be loaded).
- Before starting the transport, check the transport routes: These must be free of obstacles, horizontal, level and solid.

Special transport instructions

Curve

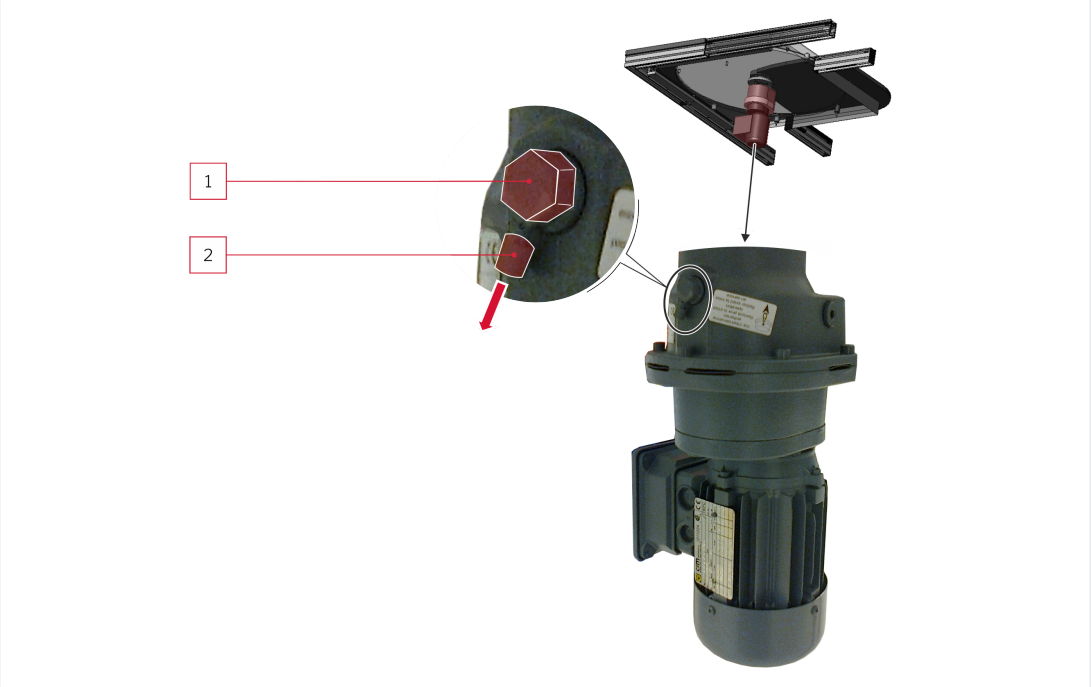


Fig. 1: Curve: Motor vent plugs

1 Oil drain plug	2 Vent plugs

- ▶ Before transport, place the vent plug on the oil drain plug of the curve motor.
- ▶ After transport, remove the vent plug again.

2.7.1 Unpacking

- ▶ Immediately after delivery, check the machine/product for transport damage.
- ▶ Notify the shipping company, insurance company and manufacturer immediately of any transport damage.
- ▶ Leave machine/product unpackaged at room temperature for 24 hours after delivery. This ensures that any condensation present evaporates and all components are at a temperature appropriate for operation.
- ▶ Dispose of packaging in accordance with the requirements applicable nationally.

2.7.2 Storage

Observe ambient conditions during storage:

Environmental conditions

Operating temperature	10 - 35°C
Change in temperature	maximum 10°C / h
Relative humidity	15 - 80% indoor, no condensation
Air pressure	(860...1060) hPa

Tab. 3: Environmental conditions

2.7.3 General installation instructions

- Lay cables and lines sufficiently protected against mechanical damage and ensure that no one can trip over them.

- Before installing the product, make sure that the relevant part of the system is de-energized, depressurised and secured against being switched on again.
- Before commissioning, ensure that all seals and closures of the plug connections are correctly installed and undamaged, to prevent liquids and foreign bodies from entering the product.
- Make sure that all electrical and pneumatic connections are occupied or closed.
- Check safety requirements in accordance with DIN EN 619.
- Only commission a fully installed/assembled product.
- Ensure that all safety devices belonging to the product are present, properly installed and fully functional. Safety devices must not be changed in their position, bypassed or rendered ineffective.

2.7.4 Disassembly

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

⚠ CAUTION

Risk of injury due to falling components!

The components are held in the support profile by the clamping strip. If the clamping strip is released, the components fall down and can injure people.

▶ Securely support components/mechanically secure them against falling down.

⚠ CAUTION

Risk of burns due to hot surfaces!

The motor housing and adjacent assemblies can heat up and cause burns when touched.

▶ Let motor housing and adjacent assemblies cool down before touching them.

▶ Disassembly is carried out in the reverse order of the assembly (see chapter “Assembly” of the respective component).

2.8 Decommissioning

2.8.1 Qualifications

The operating company can recycle or dispose of the machine/product himself, in due compliance with the statutory regulations. In order to dismantle the machine/product properly and to separate materials effectively, knowledge concerning the differentiation of waste materials is required.

If hazardous substances as defined in Directive 2006/12/EC are disposed of, the disposal company requires additional knowledge in the following areas:

- risks and hazards
- disposal requirements
- regulations for accident prevention
- first aid measures
- safety rules

Before disposing of the machine/product, observe this documentation and the technical documentation of the installed components (component documentation).

2.8.2 Legal basis

2.8.2.1 Responsibility

In accordance with Directive 2006/12/EC, the operating company is responsible for the proper disposal of the machine/product. For this purpose, the operating company can hand over the machine/product to a licensed private or public collection company, or he can carry out the recycling or disposal himself.

Note: If the operating company has the machine/product disposed of by a collection company, the owner must also provide the collection company with a copy of the manual. The manual contains important information concerning disposal of the machine/product.

2.8.2.2 Reporting obligation

Companies that dispose of or recycle their waste themselves are subject to government agency approval and control. This company may be exempted from the approval requirement under certain conditions, provided that they take environmental protection requirements into account. These companies are subject to the reporting obligation. For more information, please contact the responsible government authority for environmental protection. Outside the EU, comparable legal provisions generally apply.

2.8.2.3 Environmental requirements

Waste must be recovered or disposed of in such a manner that it does not endanger human health. Only processes or methods that do not harm the environment may be employed. In particular, care must be taken to ensure that

- air, water and soil are not polluted,
- the flora and fauna are not endangered,
- there is no noise or odour exposure,
- the surroundings and the landscape are not affected.

2.8.2.4 Sorting

After the machine/product has been disassembled, the individual parts must be sorted into waste groups according to the list of the current European Waste Catalogue (EWC) or comparable requirements. The EWC catalogue applies for all waste, irrespective of whether the waste is intended for disposal or recycling.

2.8.2.5 Waste management

Waste management must be carried out in accordance with official waste management plans. The waste management plans specifically include:

- Type, quantity and origin of waste;
- General technical requirements;
- Special provisions for certain wastes;
- Suitable areas for landfills and other disposal facilities.

Among other things, the waste management plans contain the following information:

- Natural or legal persons entitled to manage waste;
- The estimated costs of recycling and disposal;
- Measures to rationalise the collection, sorting and treatment of waste;
- Labelling for hazardous wastes.

2.8.3 Other components

The components of the machine/product are made of the following materials:

- aluminium (housings, cover plates, profiles etc.)
- copper (electric cables)
- steel (bearings, fastening material such as screws, etc.)
- plastics (operating elements, hoses, casings, etc.)
- rubber (gaskets, silicone hoses)
- electrical material (cables, components)
- electronic material (circuit boards, PLC)
- plastic (caps, foils)

2.8.4 Disposal of cleaning agents

Cleaning agent residues or impregnated rags must be disposed of in accordance with local regulations and in accordance with the regulations and laws applicable at the time of disposal.

3 Transfer section

3.1 Basic safety instructions for the transfer section

3.1.1 Intended use

Function

The workpiece carriers are transported along the transfer section.

Personnel qualifications

See Target groups and personnel qualifications [▶ 21].

Environment

- The component may only be used with other components of the posyART system.
- The component may only be used for commercial use. It is not suitable for operation in potentially explosive or chemically aggressive areas. Dust loads must also be avoided.
- Operation is only permitted in industrial buildings, on sufficiently load-bearing surfaces and in accordance with the defined ambient conditions (see Technical data and ambient conditions for the transfer section [▶ 29]).

Non-intended use

Any use beyond the intended use or any other use is considered misuse. Misuse includes:

- Failure to perform maintenance, service and repair measures.
- Use of components with different gauges (e.g. transfer section with a gauge of 200 may only be used together with workpiece carriers etc. with a gauge width of 200).
- Stepping onto the transfer section or climbing up onto the transfer section.
- Transportation of persons on the transfer section/the workpiece carriers.

3.1.2 Residual risks

Life-phase	Risk and avoidance	
Maintenance, fault rectification	Danger due to electrical voltage! ▶ De-energise the machine before maintenance work and secure it from being switched on again.	
With running belt	When the belt is running, there is a risk of hair, jewellery and loose clothing being pulled in. ▶ Wear a hairnet if you have longer hair. In addition, wear close-fitting clothing when working on the machine. Do not wear baggy or loose clothing (ties, shirt sleeves) and do not wear jewellery.	
Disassembly, maintenance, fault rectification	Risk of burns due to hot surfaces! Motor housings can heat up and cause burns when touched. ▶ Let motor housing cool down before maintenance tasks.	

Tab. 4: Residual risks

3.2 Transfer section description

3.2.1 Technical data and ambient conditions for the transfer section

A type plate with (further) data is located on the machine / product.

Maximum length of a transfer section segment	4000 mm
Gradation of transfer section length	Gradation in millimetres (minimum length 400 mm)
Possible gauges / workpiece carrier sizes	160, 200, 240, 280, 320, 400 mm *
Belt design	■ Flat belt TT5/1 (anti-static) ■ Toothed belt 20AT5 PAR-PAZ
Maximum drive load per transfer section	■ Flat belt: 750 N ■ Toothed belt: 1200 N
Transport speed	6, 8, 13, 16 m/min *
Maximum gauge	400 mm *
Maximum accumulated load at the stopper	750 N flat belt, 1200 N toothed belt
Maximum workpiece carrier load (transport load)	200 N
Noise exposure	< 75 dB(A)

Tab. 5: Transfer section: Technical data

** others on request*

Geared motor

Drive	Three-phase geared motor
Nominal power	180 W
Nominal voltage	400 V
Frequency	50 Hz
Power consumption	0.7 A

Tab. 6: Geared motor for transfer section: Technical data

Environmental conditions

Operating temperature	10 - 35°C
Change in temperature	maximum 10°C / h
Relative humidity	15 - 80% indoor, no condensation
Air pressure	(860...1060) hPa

Tab. 7: Environmental conditions

3.2.2 Scope of delivery and accessories for the transfer section

Scope of delivery	Required accessories	Optional accessories
Transfer section	Substructure on which the transfer section can be installed	■ Support leg ■ posyART components

Tab. 8: Transfer section: Scope of delivery and accessories

3.2.3 Transfer section overview

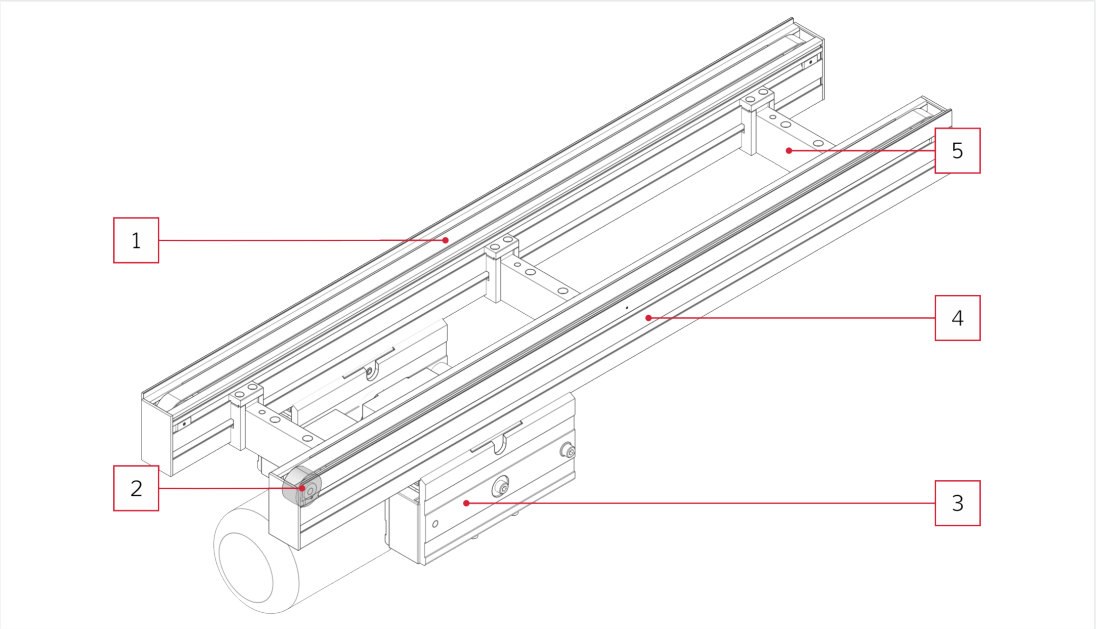


Fig. 2: Transfer section: Overview

1 Belts	2 Deflection pulley
3 Drive unit	4 Support profile
5 Spacer	

The workpiece carriers are transported along the transfer section.

The gauge of the transfer section is fixed by spacers.

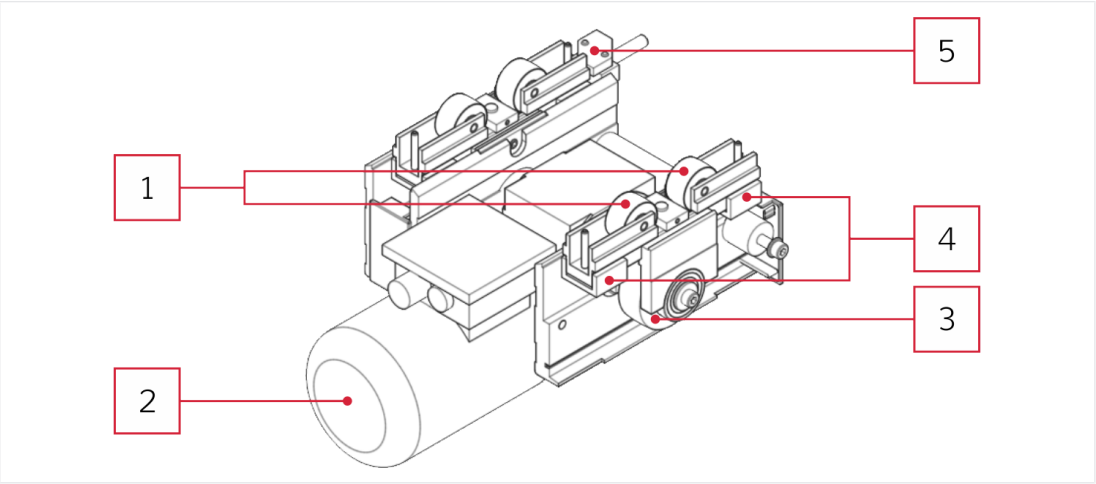


Fig. 3: Transfer section: Drive unit

1 Tension pulley	2 Drive Geared motor
3 Drive roller	4 Clamping bracket
5 Tensioning piece	

The drive unit can be mounted at any point in the transfer section. The geared motor of the drive unit is installed on the outside of the workpiece carrier size 160 mm. On larger workpiece carriers, the geared motor is located between the carrier profiles.

3.3 Transfer section mounting

Required clearances

When installing, the following clearances for belt replacement etc. must be taken into account:

- Between the support profile of the transfer section and the substructure: at least 30 mm
- Above the belt of the transfer section: at least 5 mm
- Lateral clearance of the transfer section on **any** side: at least the width of the workpiece carrier
- If further components (such as switches, ...) are installed, they require a clearance of at least 90 mm under the component.
- Lateral distance under the support profile of the drive: 125 mm on each side (for belt replacement)

Mechanical assembly

The transfer section **cannot** be mounted directly on the ground.

✓ The substructure must be designed to support at least 1.5 times the weight of the transfer section, including all components and workpiece carriers.

✓ The substructure must be level and stable.

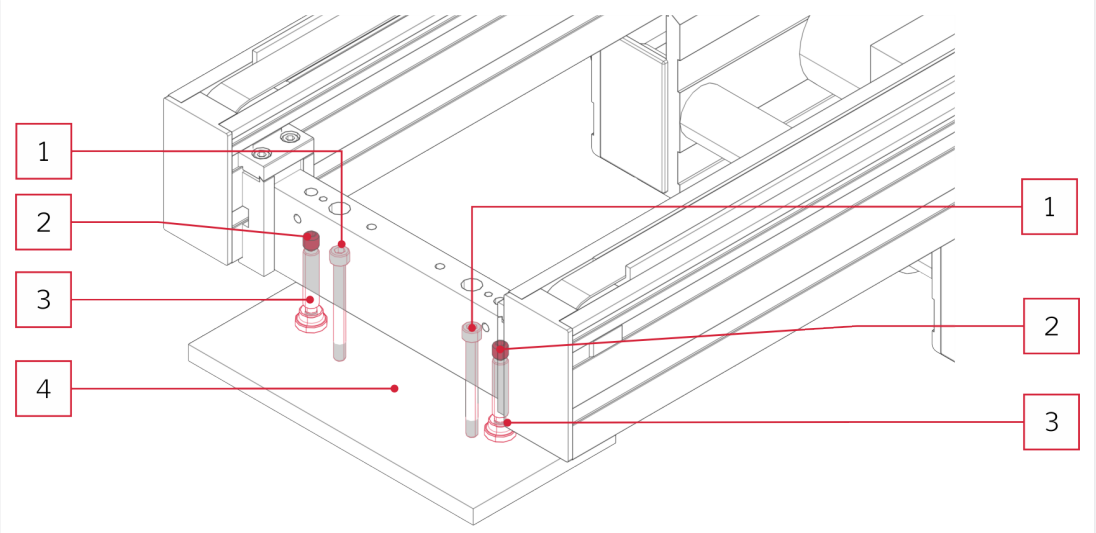


Fig. 4: Transfer section: Mount the transfer section on the substructure

1 Cheese head screws	2 Grub screws
3 Levelling feet	4 Substructure

▶ Place the transfer section on the substructure.

▶ Align the transfer section with the levelling feet of the spacers and fix it with the grub screws.

▶ Then connect it firmly to the substructure with cheese head screws.

3.3.1 Coupling transfer section

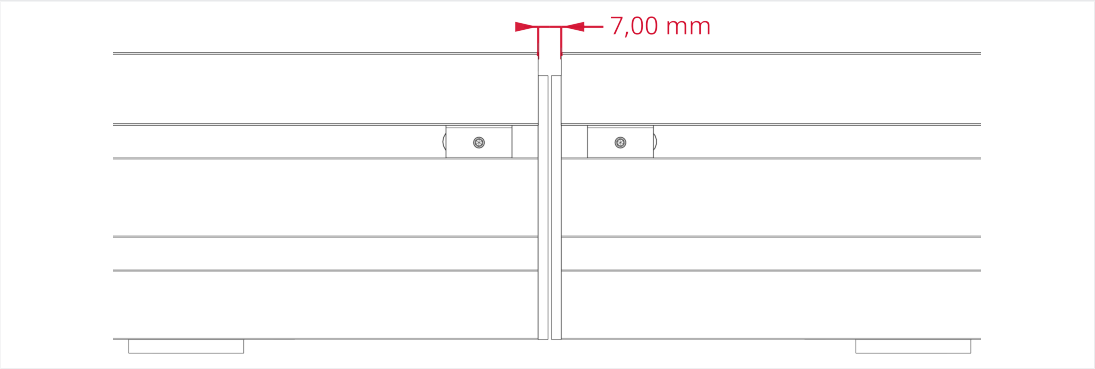


Fig. 5: Transfer section: Coupling transfer section

- ▶ Push the individual transfer sections together until they have a distance of 7 mm.
- ▶ Connect individual sections with clamping elements if necessary.

3.3.2 Geared motor pin assignment

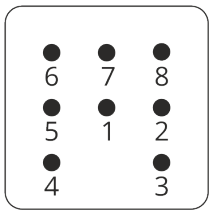


Fig. 6: Harting Han 7D (M)

Number	pin assignment
1	not used
2	Bimetallic switch (NC) T>155°C
3	Motor phase U
4	Motor phase V
5	Bimetallic switch (NC) T>155°C
6	Motor phase W
7	not used
8	protective conductor PE

Tab. 9: Geared motor pin assignment

3.4 Transfer section maintenance

Important notes on maintenance / component replacement

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

⚠ CAUTION

Risk of injury due to falling components!

The components are held in the support profile by the clamping strip. If the clamping strip is released, the components fall down and can injure people.

- ▶ Securely support components/mechanically secure them against falling down.

⚠ CAUTION

Risk of burns due to hot surfaces!

The motor housing and adjacent assemblies can heat up and cause burns when touched.

- ▶ Let motor housing and adjacent assemblies cool down before touching them.

Required qualifications:

Specialist/maintenance technician

Before all troubleshooting, maintenance and servicing work, ensure that:

- ▶ the relevant machine part is de-energised and depressurised.
- ▶ Ensure that dangerous machine movements are not possible due to stored energy.
- ▶ Lock all parts which could change their position, e.g. by means of a brake, backstop, check valve or supports.

Task	Cycle
Grease the drive shaft and its bearing seats with ME 31-52 paste.	Every 300 hours
Check belt tension.	Every 300 hours
Spray belts with care spray.	As necessary
The geared motors are provided with lifetime oil lubrication. First check for inadmissible loss of lubricant after 100 hours (then every 1000 hours).	First after 100 hours, then every 1000 hours

Tab. 10: Transfer section: Maintenance

3.4.1 Changing the transfer section belts

▶ Prepare machine/posyART system according to chapter Transfer section maintenance [▷ 32] .

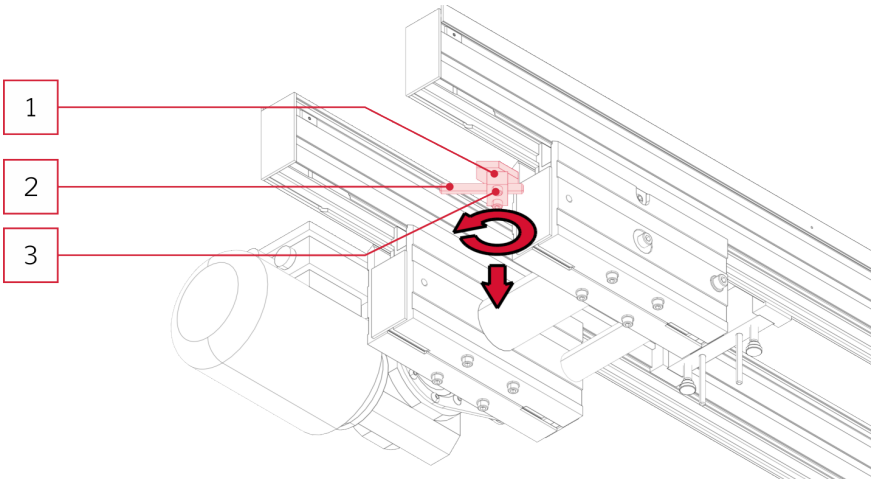


Fig. 7: Transfer section: Remove tensioning piece

1 Tensioning piece	2 Grub screw
3 Screws of the tensioning piece (M6x30)	

▶ Only for flat belts: Loosen the screws of the tensioning piece (M6x30).
Turn the tensioning piece in the support profile and remove it downwards.

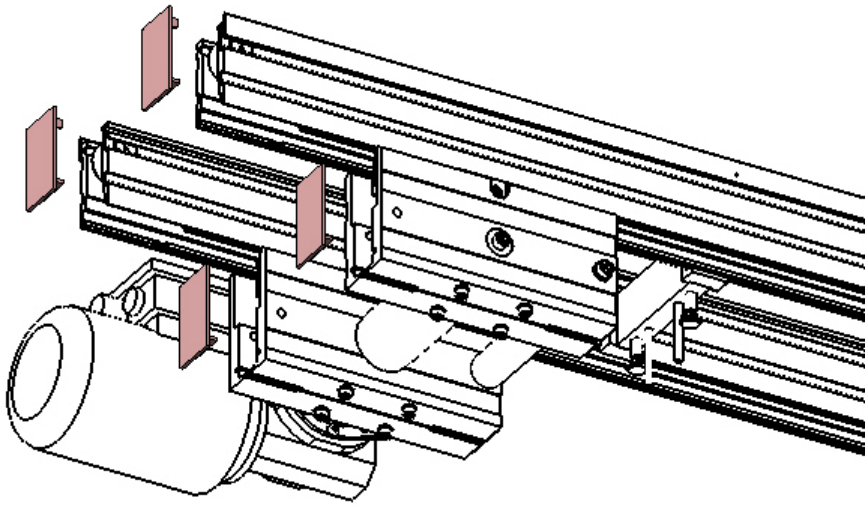


Fig. 8: Transfer section: Remove caps

▶ Remove caps.

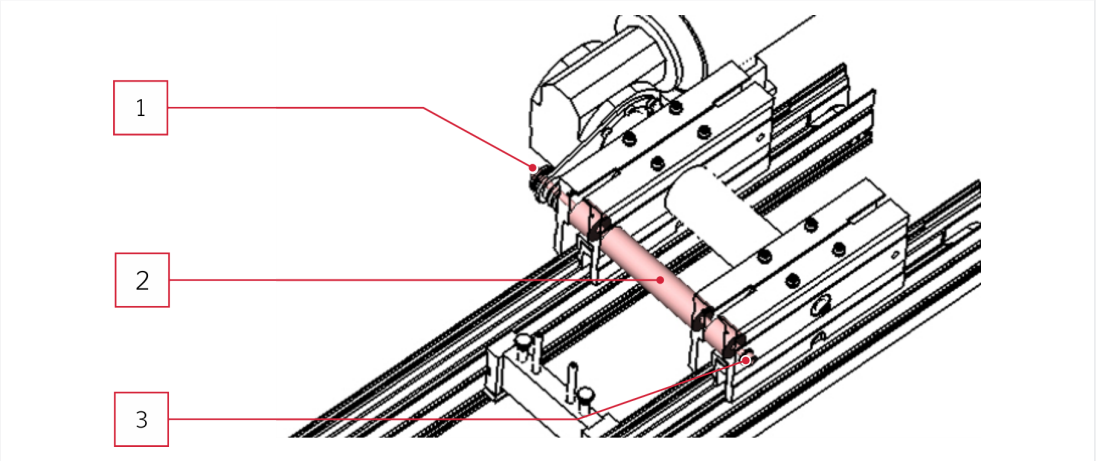


Fig. 9: Transfer section: Remove spacer

1 Screw, M8x120	2 Spacer
3 Screw, M8x75	

▶ Loosen screws (M8x120 and M8x75) and remove spacer.

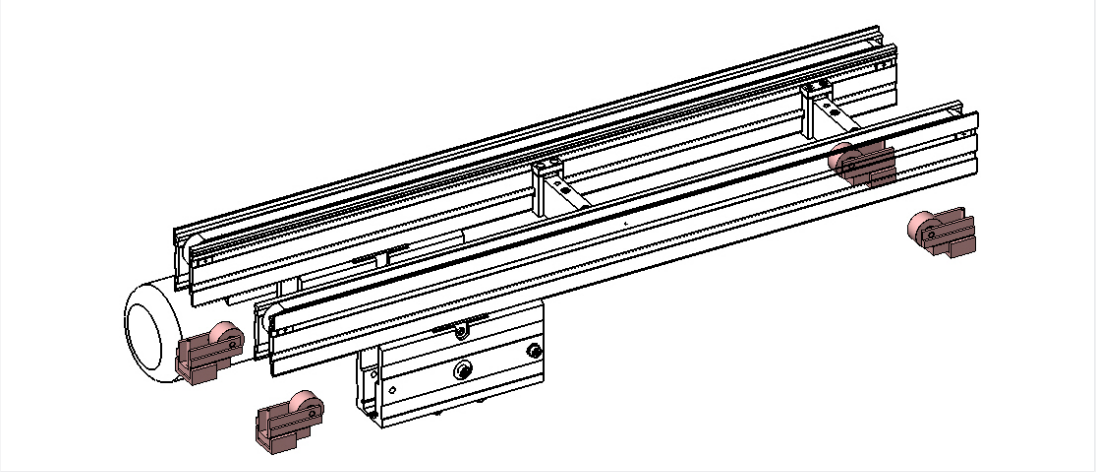


Fig. 10: Transfer section: Remove tension pulley

▶ Loosen the screws (M8x16) of the tension pulley, push the tension pulley to the end of the support profile and remove them downwards.

▶ Replace the belt, for details on the belt see the supplied spare parts list.

▶ Installation performed in reverse order.

▶ For information on how to tension the belt, see Tensioning the transfer section belts [▷ 36].

3.4.2 Tensioning the transfer section belts

▶ Prepare machine/posyART system according to chapter Transfer section maintenance [▷ 32] .

Flat belts

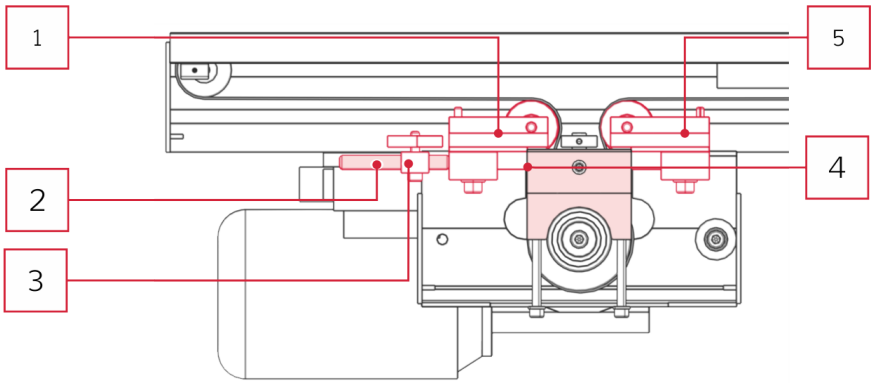


Fig. 11: Transfer section: Tensioning the belt, flat belt

1 Tension pulley 2	2 Grub screw of the tensioning piece
3 Tensioning piece	4 Limit stop
5 Tension pulley 1	

▶ Loosen the screws (M8x16) of tension pulley 1, push tension pulley 1 towards the drive pulley up to the limit stop of the support profile and retighten the screws.

▶ Loosen screws (M8x16) of tension pulley 2 and push tension pulley 2 as far as possible towards the drive pulley and retighten the screws.

▶ Make sure that the grub screw hexagon socket of the tensioning piece points away from the drive. Turn outwards if necessary.

▶ Loosen the screws of the tensioning piece (M6x30), push the tensioning piece against tension pulley 2 and tighten the screws again.

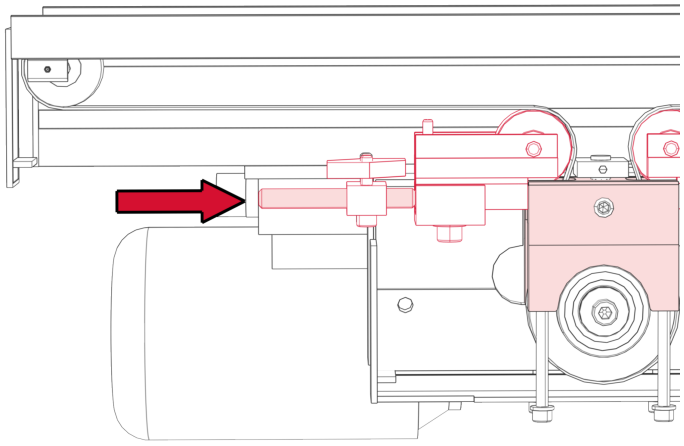


Fig. 12: Transfer section: Tension the belt, flat belt (set grub screw against tension pulley)

▶ Loosen the screws (M8x16) of tension pulley 2, push tension pulley 2 in the direction of the drive pulley using the grub screw of the tensioning piece up to the limit stop and retighten the screws of tension pulley 2.

⇨ Belt is tensioned.

Toothed belt

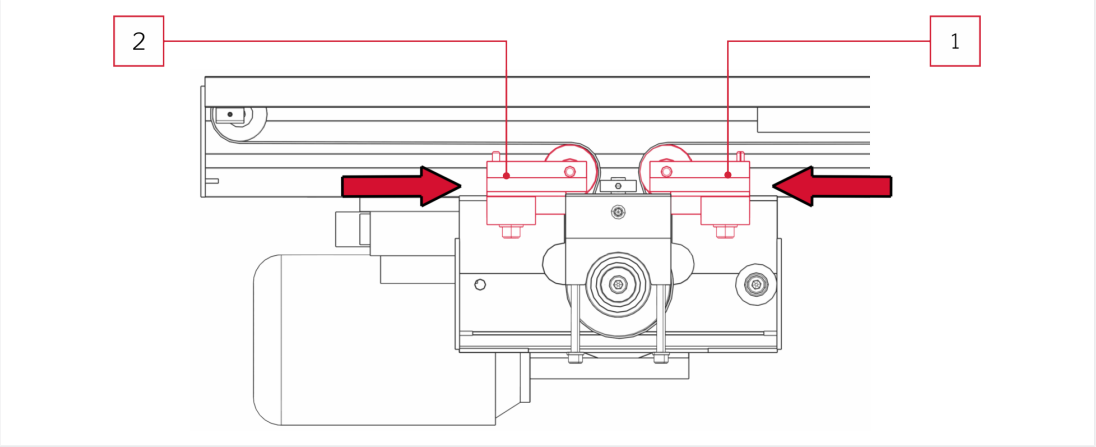


Fig. 13: Transfer section: Tensioning the belt, toothed belt

1 Tension pulley 1	2 Tension pulley 2

- ▶ Loosen the screws (M8x16) of tension pulley 1, push tension pulley 1 towards the drive pulley up to the limit stop of the support profile and retighten the screws.

NOTE

Belt is overstretched by excessive belt tension.

- ▶ Do not push the tension pulley 2 in the direction of the drive pulley until it reaches the limit stop.
- ▶ Tension of the belt should be about 200 N.

- ▶ Loosen screws (M8x16) of tension pulley 2 and push tension pulley 2 as far as possible towards the drive pulley (until approx. 200 N are reached) and retighten the screws.

⇨ Belt is tensioned.

3.4.3 Move the transfer section drive

▶ Prepare machine/posyART system according to chapter Transfer section maintenance [▷ 32] .

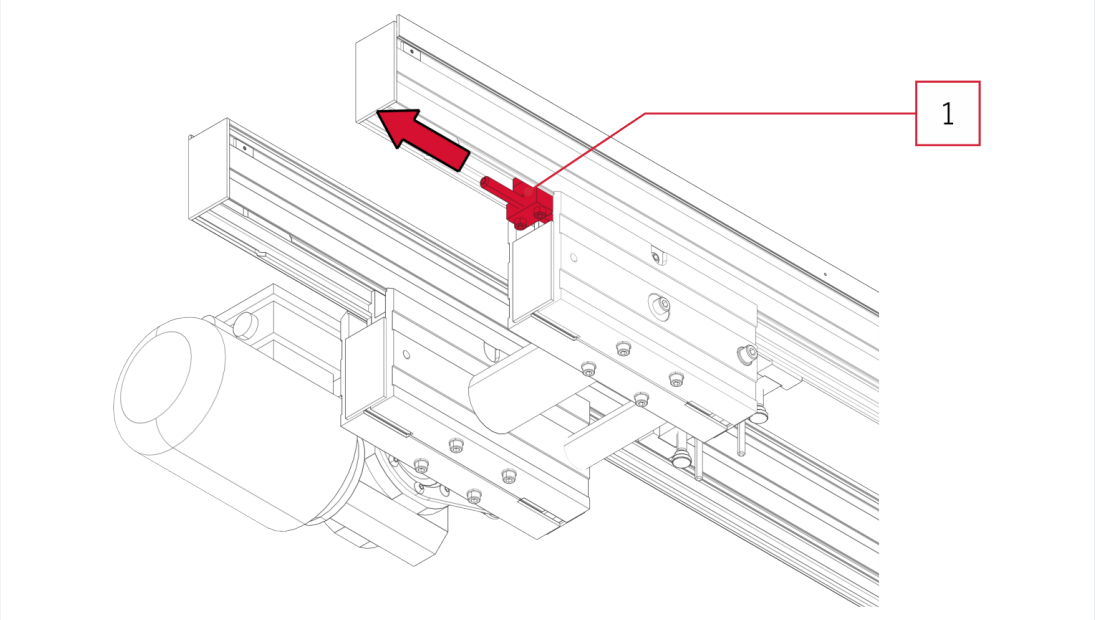


Fig. 14: Transfer section: Move drive, move tensioning piece

1 Tensioning piece

▶ Only for flat belts: Loosen the screws of the tensioning piece (M6x30). Move the tensioning piece in the support profile.

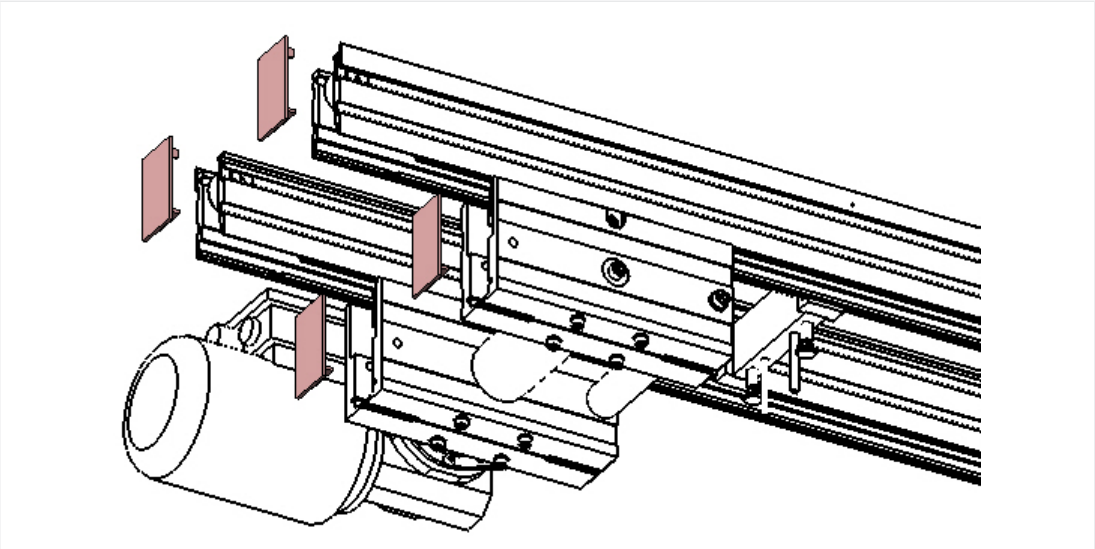


Fig. 15: Transfer section: Remove caps

▶ Remove caps.

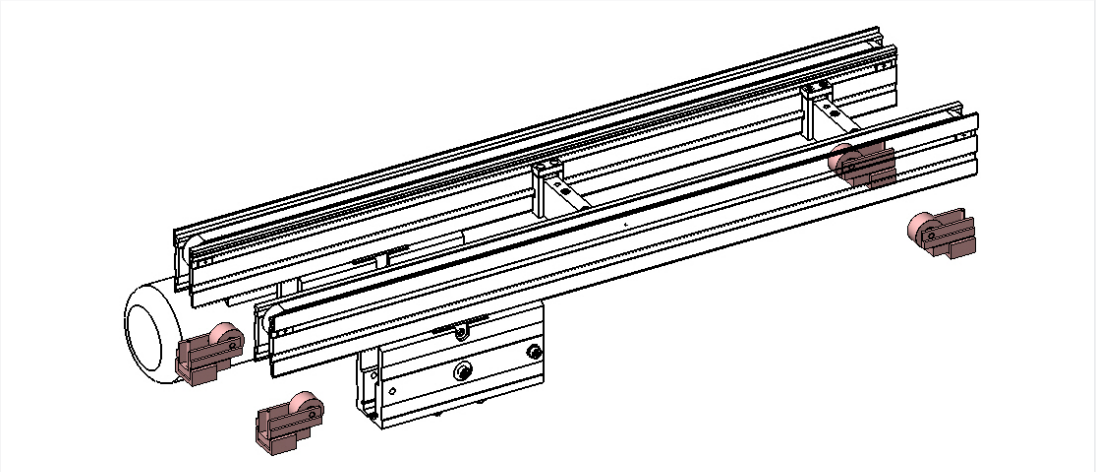


Fig. 16: Transfer section: Move tensioning pieces

- ▶ Loosen the screws (M8x16) of the tension pulley, move the tension pulley.

⚠ CAUTION

Risk of injury from falling drive if the grub screws between the drive set and the support profile are turned out too far.

- ▶ Do not unscrew the grub screws by more than one turn.
- ▶ Securely support drive/mechanically secure against falling down.

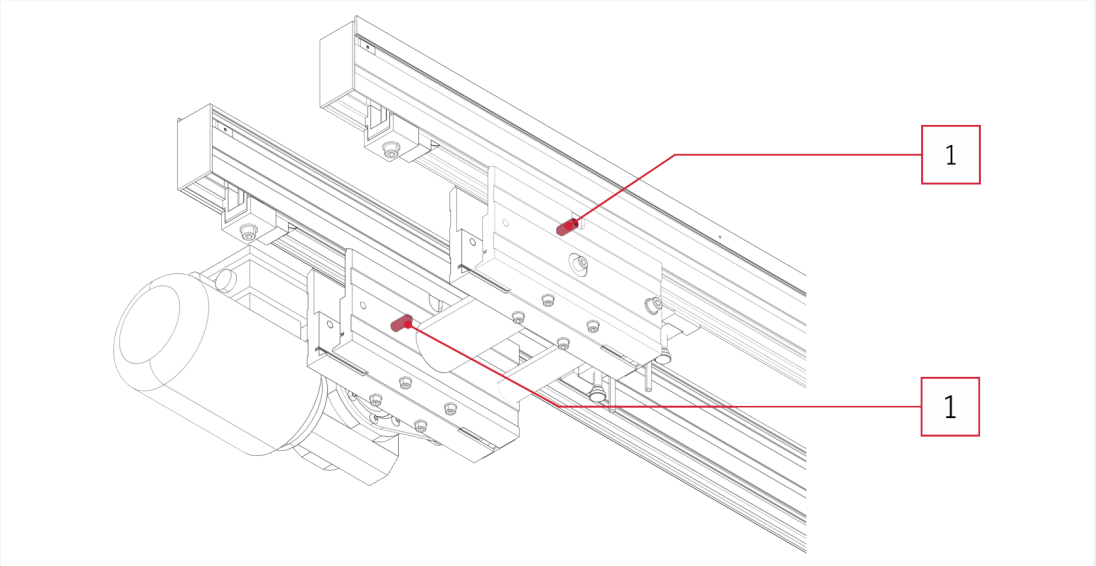
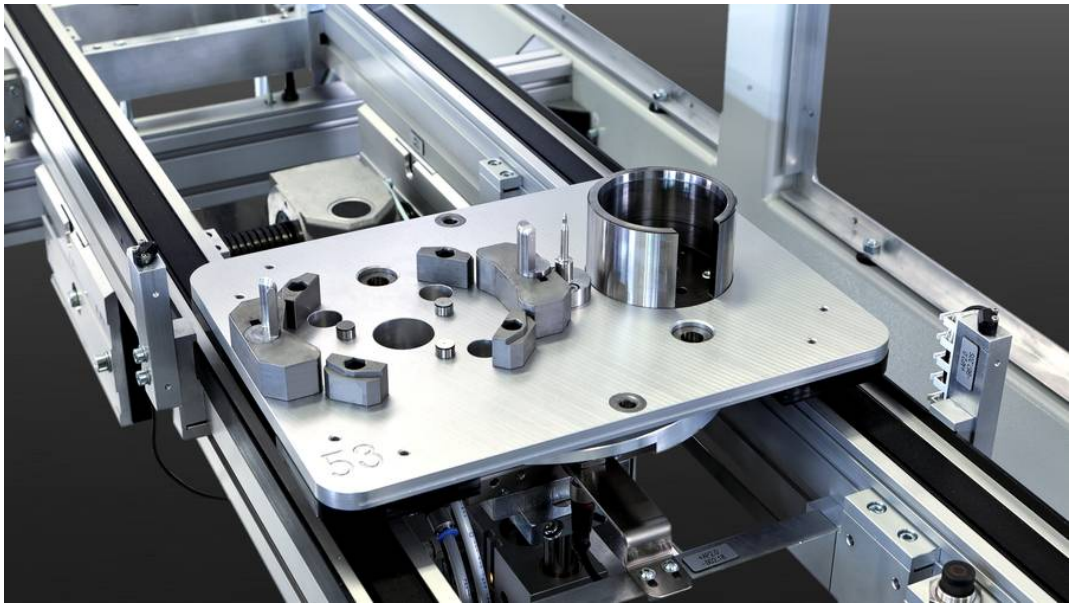


Fig. 17: Transfer section: Move drive

1	Grub screw M10x12 (clamping between drive and support profile)

- ▶ Do not loosen the grub screws by more than one turn.
- ▶ Move the drive and retighten the grub screws.
- ▶ For information on how to tension the belt, see Tensioning the transfer section belts [▷ 36].

4 Workpiece carriers



4.1 Intended use of workpiece carrier

Function

Workpiece carriers transport products on a transfer section.

Personnel qualifications

See Target groups and personnel qualifications [▶ 21].

Environment

- The component may only be used with other components of the posyART system.
- The component may only be used for commercial use. It is not suitable for operation in potentially explosive or chemically aggressive areas. Dust loads must also be avoided.
- Operation is only permitted in industrial buildings, on sufficiently load-bearing surfaces and in accordance with the defined ambient conditions (see Technical data and ambient conditions for the transfer section [▶ 29]).

Non-intended use

Any use beyond the intended use or any other use is considered misuse. Misuse includes:

- Failure to perform maintenance, service and repair measures.
- Use of components with different gauges (e.g. transfer section with a gauge of 200 may only be used together with workpiece carriers etc. with a gauge width of 200).

4.2 Description of workpiece carrier

4.2.1 Scope of delivery and accessories of workpiece carrier

Scope of delivery	Required accessories	Optional accessories
■ Workpiece carriers	■ Transfer section	■ Code carrier

Tab. 11: Workpiece carriers: Scope of delivery and accessories

4.2.2 Technical data of workpiece carrier

Workpiece carrier sizes	■ 160 x 160 mm ■ 200 x 200 mm ■ 240 x 240 mm ■ 280 x 280 mm ■ 320 x 320 mm ■ 400 x 400 mm *
Guide accuracy on the transfer section	± 0.5 mm with lateral positioning: ± 0.07 mm
Maximum workpiece carrier load (transport load)	200 N

Tab. 12: Workpiece carriers: Technical data

** others on request*

4.2.3 Overview of workpiece carrier

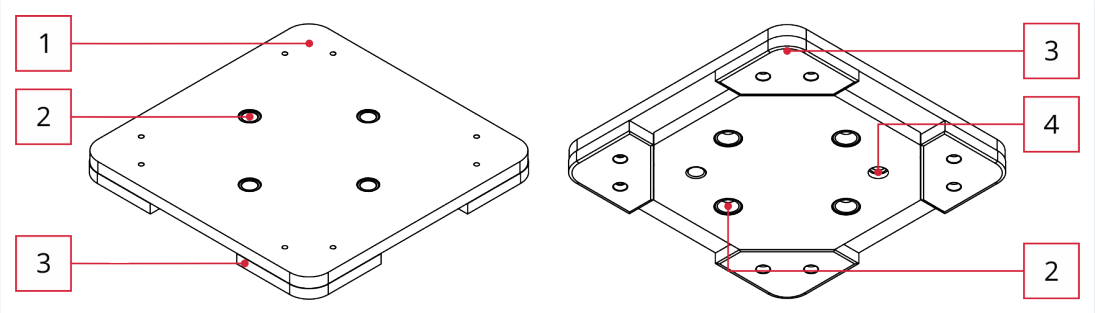


Fig. 18: Workpiece carriers

1 Base plate	2 Centring bushes
3 Insert for workpiece carrier	4 Holder for code carrier

The workpiece carrier takes up the parts to be transported. Optionally, it has a code carrier for identification/allocation of stored data.

The upper side of the workpiece carrier is used for fixing the parts/workpiece holder.

The four centring bushes have two functions:

- Underside of the centring bushes: Positioning of the workpiece carrier in X and Y direction (e.g. in lift or centring units).
- Upper side: Centring of the workpiece holder.

On the lower side of the workpiece carrier there are four lateral surfaces, each with a recess for separation.

4.3 Mounting the workpiece holder

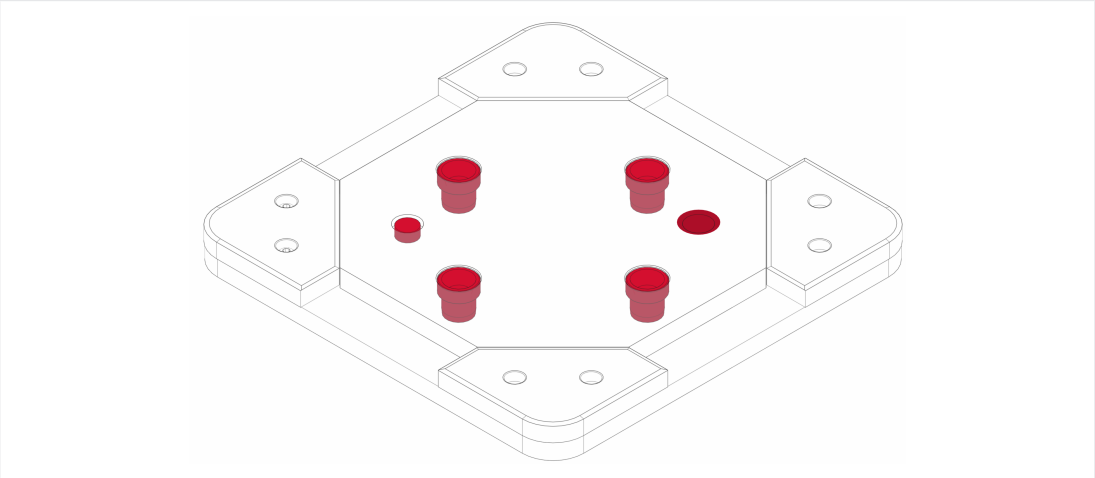


Fig. 19: Workpiece carriers: Taboo zones

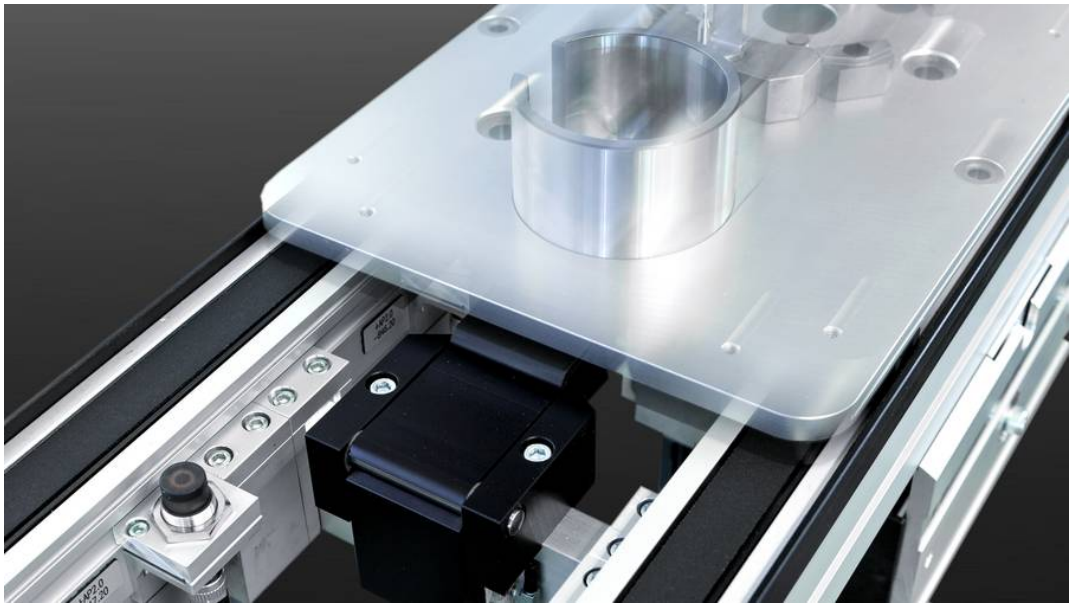
NOTE

Material damage

- No new holes etc. may be drilled in the area with already existing holes (marked red in the drawing).

- Mount the specific workpiece holder on the workpiece carrier. Make sure that no new holes are drilled in the area with already existing holes (marked red in the drawing),

5 Stopper



5.1 Basic safety instructions for the stopper

5.1.1 Intended use

This component is only intended to be installed in the posyART transfer section in order to form a complete machine, in the sense of the Machinery Directive, together with it and other components of the posyART system.

Function Stopper

Stoppers can stop and separate workpiece carriers at any point while the belt is running.

Personnel qualifications

See Target groups and personnel qualifications [▷ 21].

Environment

- The component may only be used with other components of the posyART system.
- The component may only be used for commercial use. It is not suitable for operation in potentially explosive or chemically aggressive areas. Dust loads must also be avoided.
- Operation is only permitted in industrial buildings, on sufficiently load-bearing surfaces and in accordance with the defined ambient conditions (see Technical data and ambient conditions for the stopper [▷ 46]).

Non-intended use

Any use beyond the intended use or any other use is considered misuse. Misuse includes:

- Failure to perform maintenance, service and repair measures.
- Use of components with different gauges (e.g. transfer section with a gauge of 200 may only be used together with workpiece carriers etc. with a gauge width of 200).

5.1.2 Residual risks

Life-phase	Risk and avoidance	
Maintenance, fault rectification	Danger due to electrical voltage! ▶ De-energise the machine before maintenance work and secure it from being switched on again.	
Installation, disassembly, maintenance, fault rectification	Pneumatic lines are pressurised with compressed air. ▶ Depressurise the machine before performing any tasks.	

Tab. 13: Residual risks

5.2 Description of stopper

5.2.1 Scope of delivery and accessories of stopper

Scope of delivery	Required accessories
■ Stopper	■ Transfer section
■ Spacer	■ Sensor

Tab. 14: Stopper: Scope of delivery and accessories

5.2.2 Technical data and ambient conditions for the stopper

A type plate with (further) data is located on the machine / product.

	Noise exposure	< 75 dB(A)
Pneumatics	Operating pressure	4-6 bar, filtered

Tab. 15: Pneumatics specifications

Environmental conditions	Operating temperature	10 - 35°C
	Change in temperature	maximum 10°C / h
	Relative humidity	15 - 80% indoor, no condensation
	Air pressure	(860...1060) hPa

Tab. 16: Environmental conditions

5.2.3 Overview of stopper

Stoppers can stop and separate workpiece carriers at any point while the belt is running.

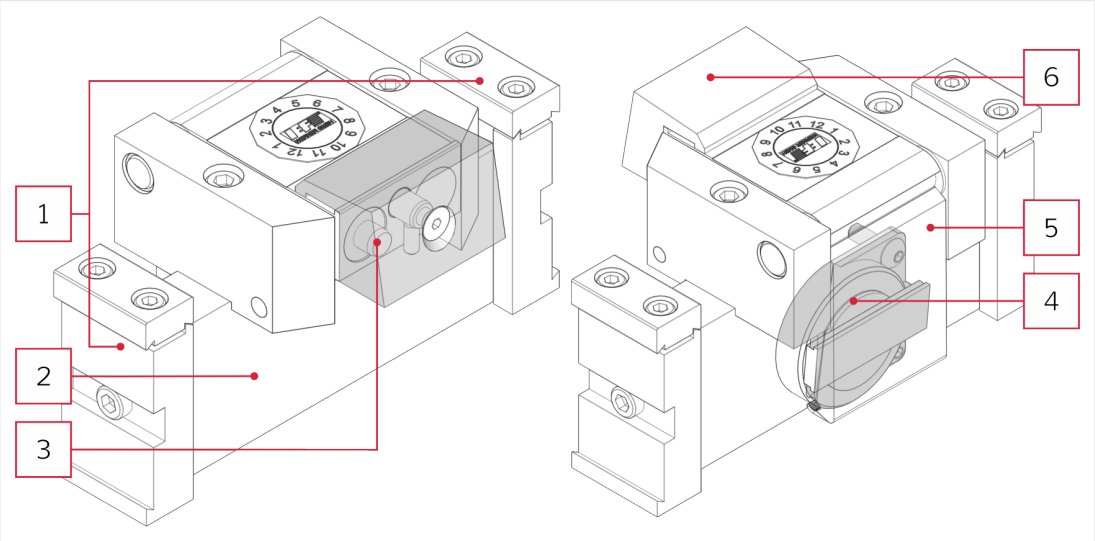


Fig. 20: Stopper

1	Holder – stopper	2	Spacer
3	Damping element	4	Clamping module
5	Rocker	6	Limit stop

A stopper consists of a spacer and a rocker which is pneumatically lowered. The normal position of the stopper is extended. This automatically stops the workpiece carriers in case of an emergency stop.

Stoppers are differentiated according to their function into workstation and pre-stopper:

- Workplace stoppers stop a workpiece carrier (in exact position)
- Pre-stoppers stop several workpiece carriers (not in exact position).

Depending on the weight of the workpiece carrier and the belt speed, the stoppers are hydraulically or air damped. The sticker on the stopper indicates the damping variant.

Stoppers have two positions:

- Work position: the clamping module of the stopper is retracted, the rocker is up, the stopper stops the workpiece carrier.
- Home position: the clamping module of the stopper is extended, the rocker is down, the stopper allows the workpiece carrier to pass through.

5.3 Stopper mounting

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

Important information

If the stopper is to be used as a supplement to another assembly (e.g. with a switch), the specified distances must be observed during installation.

- ▶ Observe the installation instructions in the respective assembly drawings.

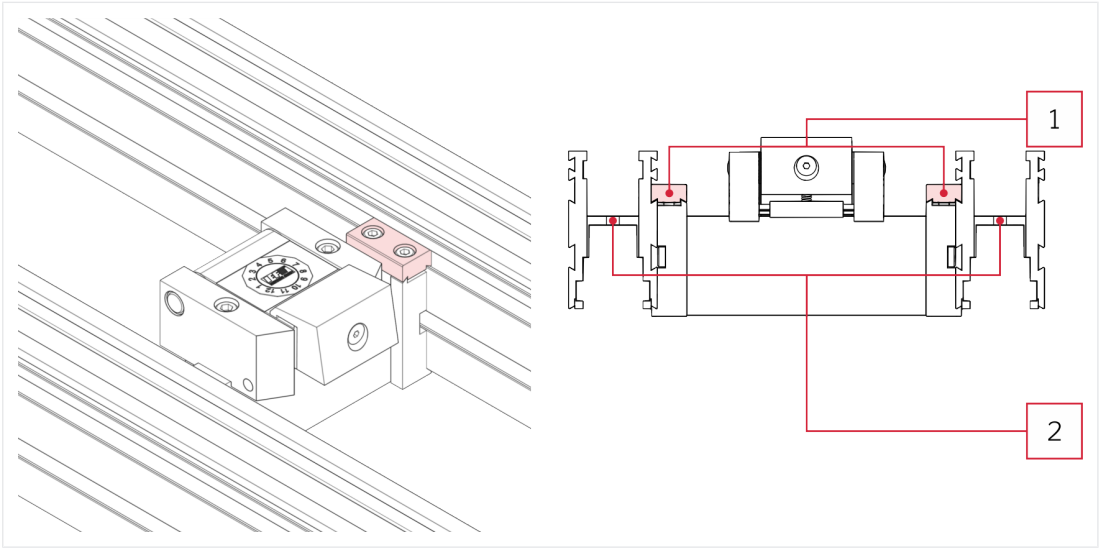


Fig. 21: Stopper: Installation

1	Clamping strip	2	Carrier profile

- ▶ Insert stopper vertically into the transfer section from below.

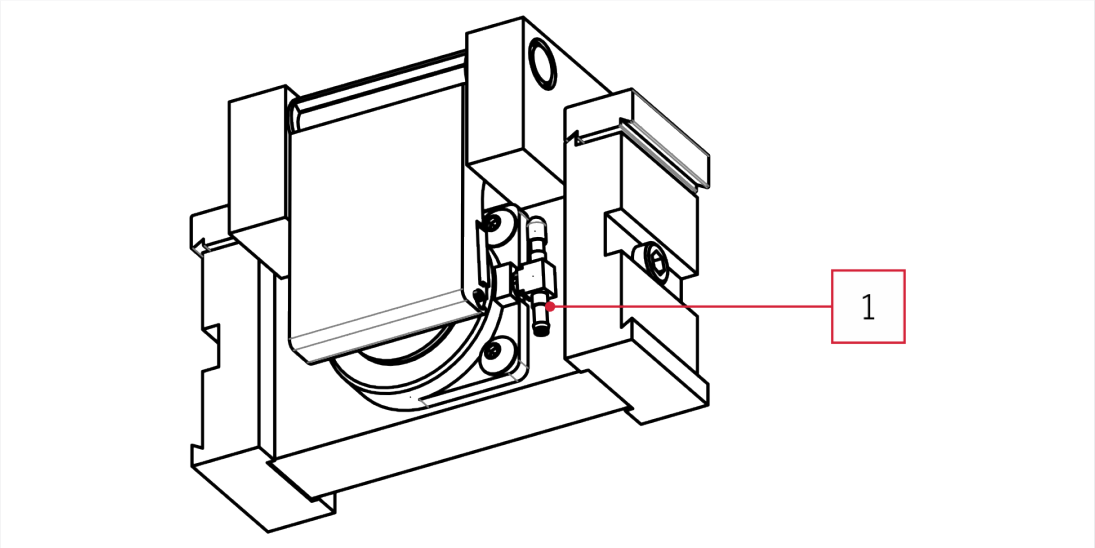
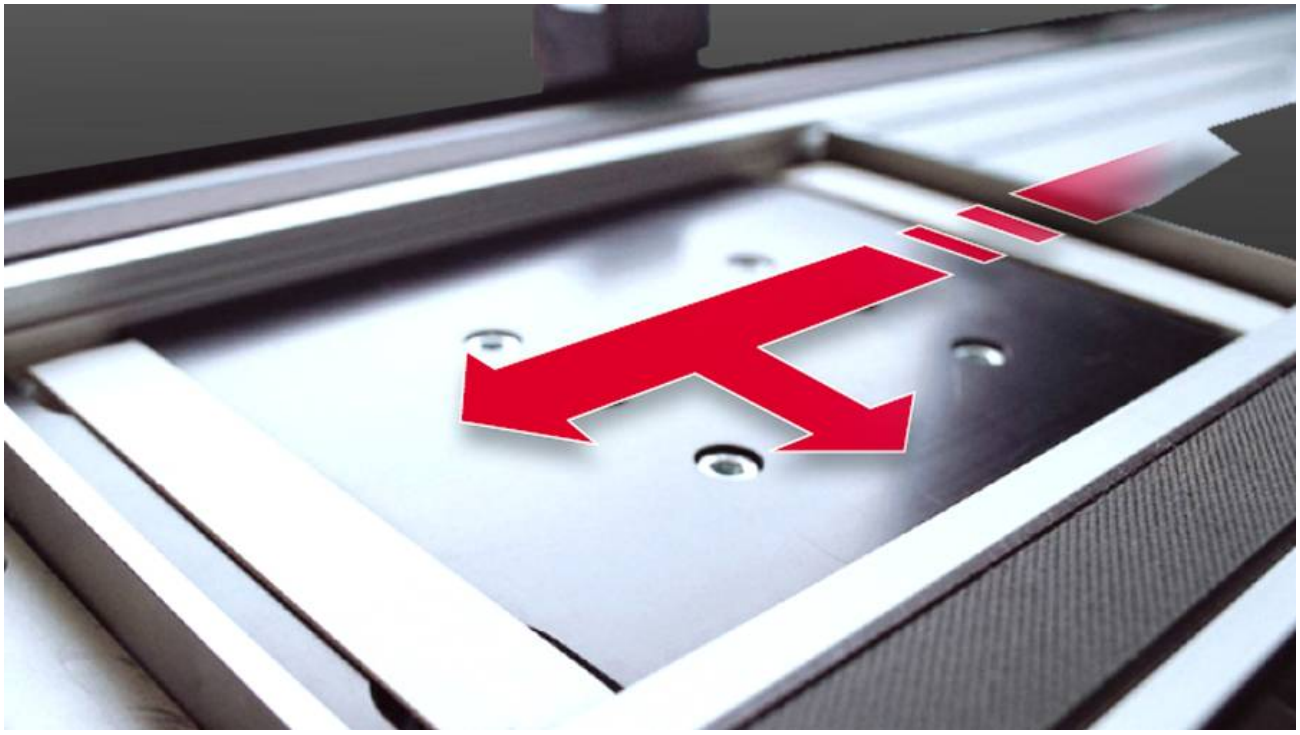


Fig. 22: Stopper: connect pneumatically

1	T-connector nipple

▶ Pneumatic hose (diameter: 4 mm) to the T-connector nipple.

6 Switch



6.1 Basic safety instructions for the switch

6.1.1 Intended use

This component is only intended to be installed in the posyART transfer section in order to form a complete machine, in the sense of the Machinery Directive, together with it and other components of the posyART system.

If the switch is installed in the posyART transfer section, the still open danger area is secured (for details see the enclosed declaration of incorporation).

Function

With switches, workpiece carriers can be transported straight ahead on transfer sections, and can be transferred in or out at right angles.

Personnel qualifications

See Target groups and personnel qualifications [▷ 21].

Environment

- The component may only be used with other components of the posyART system.
- The component may only be used for commercial use. It is not suitable for operation in potentially explosive or chemically aggressive areas. Dust loads must also be avoided.
- Operation is only permitted in industrial buildings, on sufficiently load-bearing surfaces and in accordance with the defined ambient conditions (see Technical data and ambient conditions for the switch [▷ 54]).

Non-intended use

Any use beyond the intended use or any other use is considered misuse. Misuse includes:

- Failure to perform maintenance, service and repair measures.
- Use of components with different gauges (e.g. transfer section with a gauge of 200 may only be used together with workpiece carriers etc. with a gauge width of 200).

6.1.2 Danger zone to be secured by the operator

The danger zone shown in the following figure (red area) is secured by installing the switch in the transfer section.

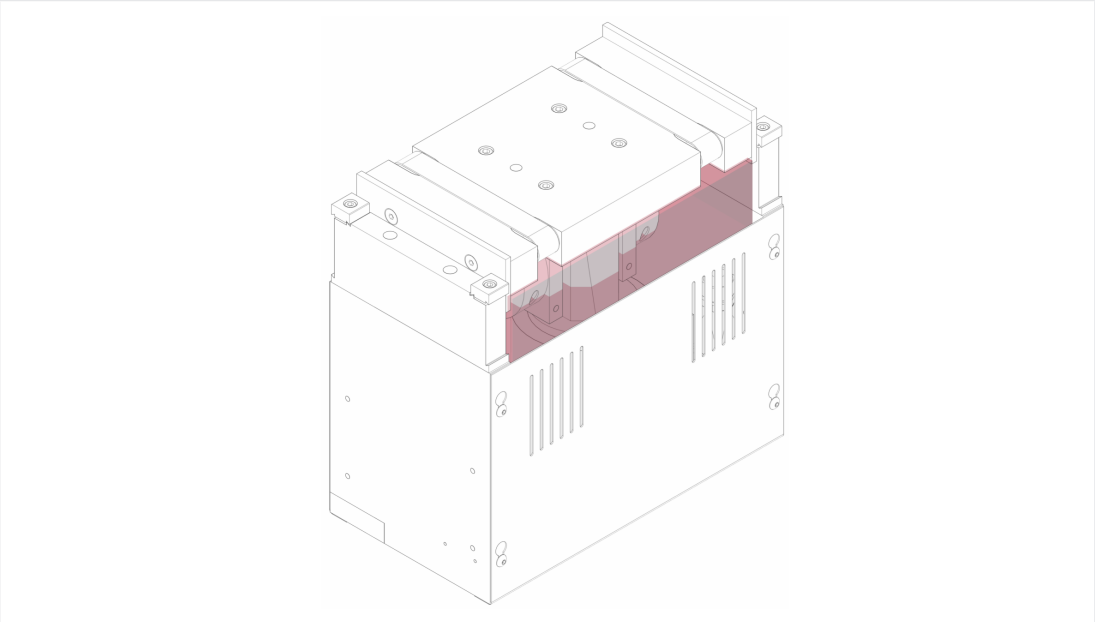


Fig. 23: Switch: Danger zone

6.1.3 Residual risks

Life-phase	Risk and avoidance	
Maintenance, fault rectification	Danger due to electrical voltage! ▶ De-energise the machine before maintenance work and secure it from being switched on again.	
With running belt	When the belt is running, there is a risk of hair, jewellery and loose clothing being pulled in. ▶ Wear a hairnet if you have longer hair. In addition, wear close-fitting clothing when working on the machine. Do not wear baggy or loose clothing (ties, shirt sleeves) and do not wear jewellery.	
Operation	The danger area is not secured. Persons can reach into the danger area and suffer crushing. ▶ Secure open danger area. ▶ Only after a conformity assessment procedure, in accordance with the Machinery Directive, has been carried out for the complete machine in which the product is installed, may the machine/product be put into operation.	
Disassembly, maintenance, fault rectification	Risk of burns due to hot surfaces! Motor housings can heat up and cause burns when touched. ▶ Let motor housing cool down before maintenance tasks.	
Installation, disassembly, maintenance, fault rectification	Pneumatic lines are pressurised with compressed air. ▶ Depressurise the machine before performing any tasks.	

Tab. 17: Residual risks

6.2 Description of switch

6.2.1 Scope of delivery and switch accessories

Function	Scope of delivery		Required accessories		Optional accessories	
To redirect workpiece carrier	■ Switch (redirecting / moving in / moving through)	1	■ Transfer section	1		
	■ Presence sensor	1	■ Stopper	1		
	■ Limit stop	2*	■ Sensor	2		
To move workpiece carrier in/out	■ Switch (redirecting / moving in / moving through)	1	■ Transfer section	1		
	■ Presence sensor	1	■ Stopper	2		
	■ Limit stop	2*	■ Sensor	3		
To move workpiece carrier out / through	■ Switch (moving out / moving through)	1	■ Transfer section	1	■ Belt fixing (left, right)	2
	■ Presence sensor	1	■ Stopper	1		
	■ Limit stop	2*	■ Sensor	3		

Tab. 18: Switch: Scope of delivery and accessories

* For the workpiece carrier size 160 there is only one limit stop

6.2.2 Technical data and ambient conditions for the switch

A type plate with (further) data is located on the machine / product.

Transport speed	12 m/min
Maximum gauge	400 mm*
Maximum workpiece carrier load (transport load)	200 N
Noise exposure	< 75 dB(A)

Tab. 19: Switch: technical data

** others on request*

Geared motor

Drive	Three-phase geared motor
Nominal power	45 W
Nominal voltage	400 V
Frequency	50 Hz
Power consumption	0.25 A

Tab. 20: Geared motor switch: Technical data

Pneumatics

Operating pressure	4-6 bar, filtered

Tab. 21: Pneumatics specifications

Environmental conditions		
	Operating temperature	10 - 35°C
	Change in temperature	maximum 10°C / h
	Relative humidity	15 - 80% indoor, no condensation
	Air pressure	(860...1060) hPa

Tab. 22: Environmental conditions

6.2.3 Overview of switch

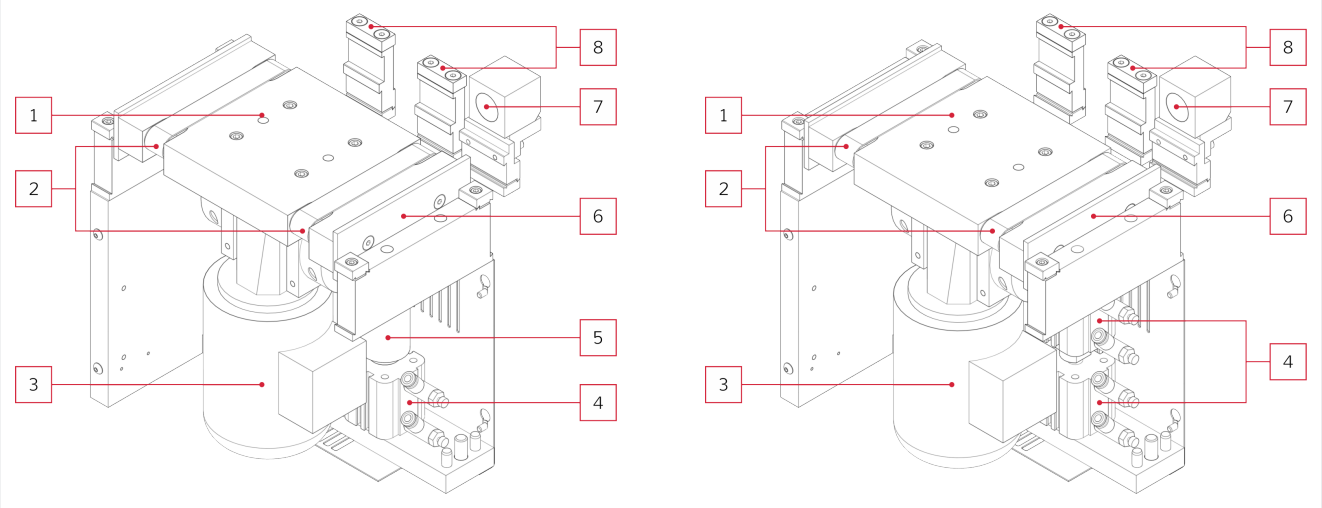


Fig. 24: On the left: Switch (redirecting / moving in / moving through), right: Switch (moving out / moving through)

1 Lifting plate	2 Belts
3 Switch drive: Geared motor	4 Cylinder Festo: Compact cylinder ADN / ADVU
5 Distance bolt	6 Stop edge
7 Presence sensor	8 Limit stops

6.2.4 Description of operational workflow of switch

The following describes the intended sequence. Depending on the application, not all assemblies are absolutely necessary.

6.2.4.1 Switch (redirecting / moving in / moving through): Redirecting workpiece carrier

Brief description

- The workpiece carrier moves to the stop edge of the switch and is thus stopped.
- The cylinder extends and lifts the workpiece carrier to the height of the connected transfer section.
- The belt of the switch transports the workpiece carrier to the transfer section connected at a right-angle. The moving direction of the workpiece carrier is changed by 90°.

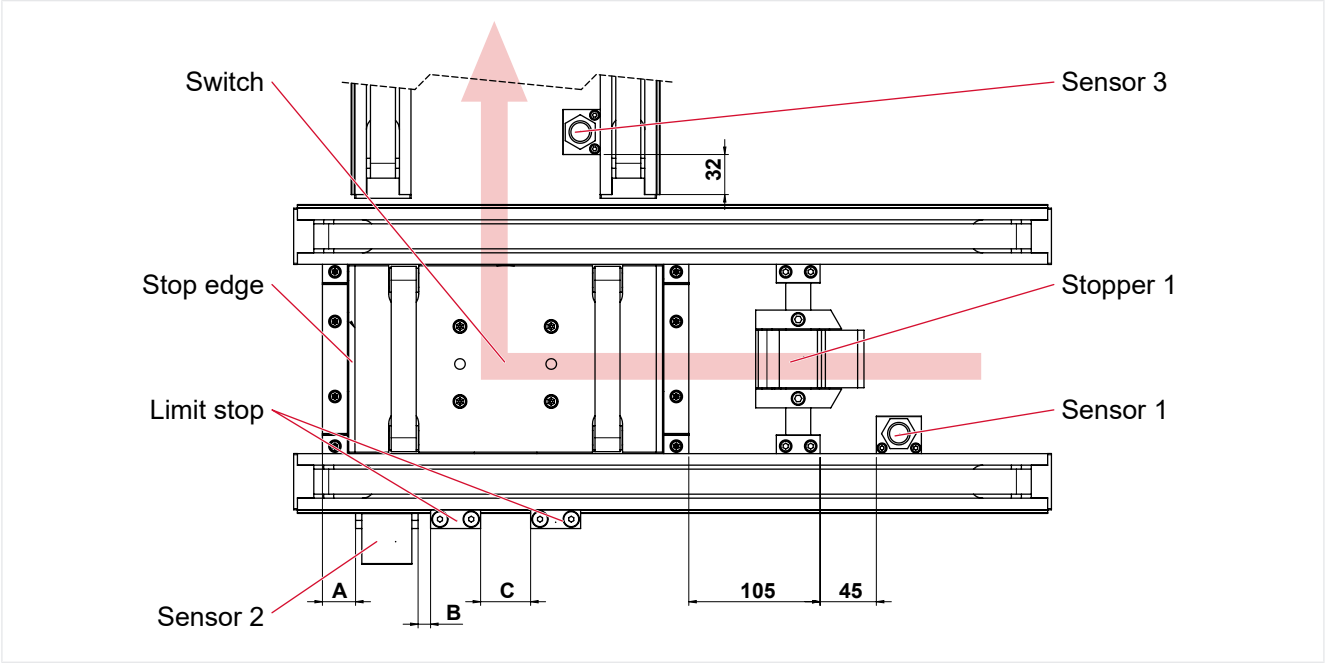


Fig. 25: Switch (redirecting / moving in / moving through): Redirecting workpiece carrier – design

Workpiece carrier size	A	B	C
160	7	5	-
200	36	10	25
240	26	10	40
280	46	10	40
320	46	10	80
400	26	5	210

Tab. 23: Switch: Design

1. **Initial position:**
   - The belt of the switch runs permanently so that the service life of the geared motor is not affected.
   - The cylinder(s) of the switch is/are below.

2. The workpiece carrier moves to stopper 1. Stopper 1 is in the work position and stops the workpiece carrier.
   Sensor 1 detects workpiece carrier.
3. Stopper 1 moves to the home position and allows the stopped workpiece carrier to continue.
4. After 0.5 s, stopper 1 moves to the work position so that the following workpiece carriers are stopped immediately.
5. The workpiece carrier moves onto the switch up to the stop edge and is thus stopped.
   Sensor 2 (presence sensor of the switch) detects the workpiece carrier.
6. The switch cylinder moves upwards and lifts the workpiece carrier to the height of the connected transfer section.
7. The belt of the switch transports the workpiece carrier to the transfer section connected at a right-angle. The moving direction of the workpiece carrier is changed by 90°.
   Sensor 3 detects the workpiece carrier.
8. As soon as the workpiece carrier has left sensor 3, the switch cylinder moves downwards.

6.2.4.1.1 Cycle times

The cycle times include the workpiece carrier infeed, the redirection and the outfeed up to the outfeed sensor.

Belt speed	Workpiece carrier size					
	160	200	240	280	320	400
6 m/min		5.8 s	6.6 s	7.4 s	8.2 s	9.8 s
8 m/min		4.5 s	5.1 s	5.7 s	6.3 s	7.5 s
13 m/min		3.0 s	3.4 s	3.7 s	4.1 s	4.8 s
16 m/min		2.5 s	2.8 s	3.1 s	3.4 s	4.0 s

Tab. 24: Cycle times

6.2.4.2 Switch (redirecting / moving in / moving through): Moving workpiece carrier in / through

Brief description

- The cylinder is extended and the switch is thereby lifted to the level of the inward transfer section.
- The workpiece carrier is transported from the inward transfer section to the switch and is moved to the limit stop with the switch belt.
- The cylinder is retracted. The workpiece carrier is now on the main section.

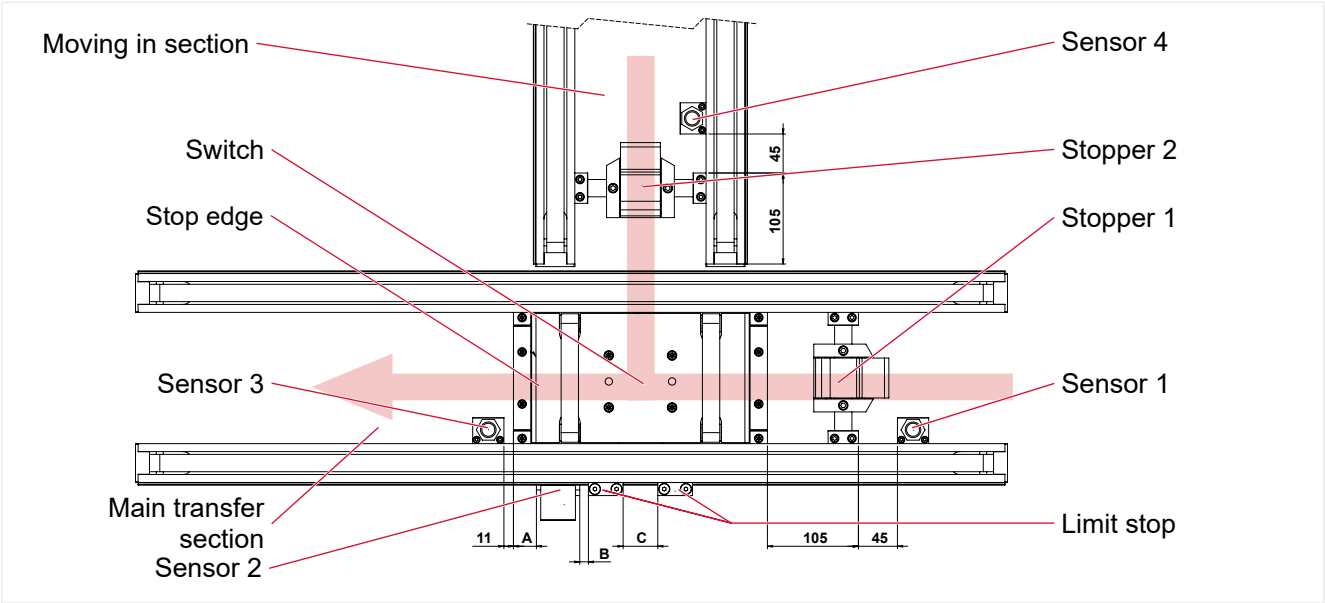


Fig. 26: Switch (redirecting / moving in / moving through): Moving workpiece carrier in – design

Workpiece carrier size	A	B	C
160	7	5	-
200	36	10	25
240	26	10	40
280	46	10	40
320	46	10	80
400	26	5	210

Tab. 25: Switch: Design

Moving in

1. **Initial position:**
   - The belt of the switch runs permanently so that the service life of the geared motor is not affected.
   - The cylinder(s) of the switch is/are below.
   - Stopper 1 is in the work position.
2. The workpiece carrier moves to stopper 2. The stopper is in the work position and stops the workpiece carrier.
   Sensor 4 detects workpiece carrier.

3. The switch cylinder moves upwards and lifts the switch to the height of the inward transfer section.
4. Stopper 2 moves to the home position and allows the stopped workpiece carrier to continue.
5. After 0.5 s, stopper 2 moves to the work position so that the following workpiece carriers are stopped immediately.
6. The switch transports the workpiece carrier up to the limit stop.
   Sensor 2 (presence sensor of the switch) detects the workpiece carrier.
7. The switch cylinder moves down and lowers the switch to the height of the main transfer section.
8. The workpiece carrier moves onwards, on the main section.
   Sensor 3 detects the workpiece carrier.
9. If sensor 3 is free, the next workpiece carrier may be released by a stopper.

Moving through

1. **Initial position:**
   - The belt of the switch runs permanently so that the service life of the geared motor is not affected.
   - The cylinder(s) of the switch is/are below.
   - Stopper 1 is in the work position.
   - Stopper 2 is in the work position (at the top).
2. The workpiece carrier moves to stopper 1. Stopper 1 is in the work position and stops the workpiece carrier.
   Sensor 1 detects workpiece carrier.
3. Stopper 1 moves to the home position and allows the stopped workpiece carrier to continue.
4. After 0.5 s, stopper 1 moves to the work position so that the following workpiece carriers are stopped immediately.
5. The workpiece carrier moves over the switch.
6. The workpiece carrier moves onwards, on the main section.
   Sensor 3 detects the workpiece carrier.
7. If sensor 3 is free, the next workpiece carrier may be released by a stopper.

6.2.4.3 Switch (moving out / moving through): Moving workpiece carrier out / through

Short description of moving out

- Before the workpiece carrier moves onto the switch, the stop edge of the switch moves to the middle position/up.
- The workpiece carrier moves to the switch and is stopped by the stop edge.
- The switch with the workpiece carrier moves upwards and lifts the workpiece carrier to the height of the outward transfer section.
- The belt of the switch transports the workpiece carrier to the outward transfer section.

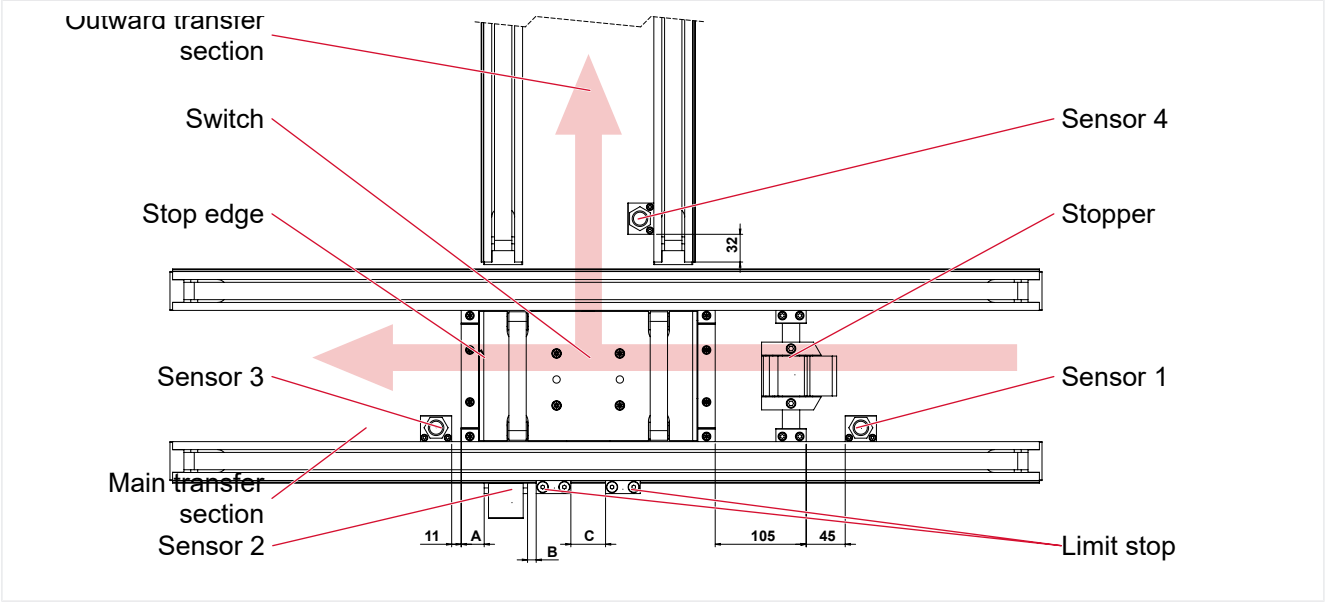


Fig. 27: Switch (moving out / moving through): Moving workpiece carrier out – design

Workpiece carrier size	A	B	C
160	7	5	-
200	36	10	25
240	26	10	40
280	46	10	40
320	46	10	80
400	26	5	210

Tab. 26: Switch: Design

Moving out

1. **Initial position:**
   - The belt of the switch runs permanently so that the service life of the geared motor is not affected.
   - The cylinder(s) of the switch is/are below.
2. The workpiece carrier moves to stopper 1. Stopper 1 is in the work position and stops the workpiece carrier.
   Sensor 1 detects workpiece carrier.

3. The switch receives the signal “Move out workpiece carrier”.
4. Cylinder 1 of the switch (lower cylinder) moves upwards and moves the stop edge into the stop position.
5. Stopper 1 moves to the home position and allows the stopped workpiece carrier to continue.
6. After 0.5 s, stopper 1 moves to the work position so that the following workpiece carriers are stopped immediately.
7. The workpiece carrier moves onto the switch up to the stop edge and is thus stopped.
   Sensor 2 (presence sensor of the switch) detects the workpiece carrier.
8. Switch cylinder 2 (upper cylinder) moves upwards and lifts the workpiece carrier to the height of the outward transfer section.
9. The belt of the switch transports the workpiece carrier to the outward transfer section.
   Sensor 4 detects the workpiece carrier.
10. As soon as the workpiece carrier has left sensor 4, both of the switch’s cylinders move downwards.

Moving through

1. **Initial position:**
   - The belt of the switch runs permanently so that the service life of the geared motor is not affected.
   - The cylinder(s) of the switch is/are below.
2. The workpiece carrier moves to stopper 1. Stopper 1 is in the work position and stops the workpiece carrier.
   Sensor 1 detects workpiece carrier.
3. The switch receives the signal “Move through workpiece carrier”.
4. Stopper 1 moves to the home position and allows the stopped workpiece carrier to continue.
5. After 0.5 s, stopper 1 moves to the work position so that the following workpiece carriers are stopped immediately.
6. The workpiece carrier moves over the switch.
7. The workpiece carrier moves onwards, on the main section.
   Sensor 3 detects the workpiece carrier.
8. If sensor 3 is free, the next workpiece carrier may be released by a stopper.

6.3 Mounting the switch

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

⚠ CAUTION

Risk of burns due to hot surfaces!

The motor housing and adjacent assemblies can heat up and cause burns when touched.

- ▶ Let motor housing and adjacent assemblies cool down before touching them.

⚠ CAUTION

Risk of injury due to falling components!

The components are held in the support profile by the clamping strip. If the clamping strip is released, the components fall down and can injure people.

- ▶ Securely support components/mechanically secure them against falling down.

⚠ CAUTION

Danger of crushing between switch insert and housing!

- ▶ Hold the switch insert only by the belts.

6.3.1 Removing the switch insert

✓ Belt system is de-energised and depressurised.

✓ Required number of persons: 2

⚠ CAUTION

Danger of crushing between switch insert and housing!

▶ Hold the switch insert only by the belts.

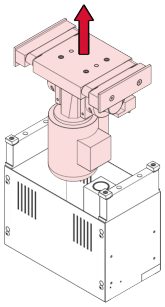


Fig. 28: Switch insert from housing

▶ Observe safety instructions in chapter Mounting the switch [▷ 62] .

▶ Hold the switch insert by the belt and lift it out of the housing.

▶ Disconnect the switch insert from the housing by disconnecting the electrical connection between the drive and the switch (unplug the Harting plug).

▶ Set down the switch insert.

6.3.2 Aligning stop/guide edge

The switch has two edges, both edges are identical in construction but can be raised or lowered by turning. The stop edge (high-positioned edge) stops the workpiece carrier at the end of the switch. The guide edge (low-positioned edge) serves as a guide rail for the workpiece carrier.
Depending on the installation situation of the switch, the stop and guide edge must be turned to fulfil their function.

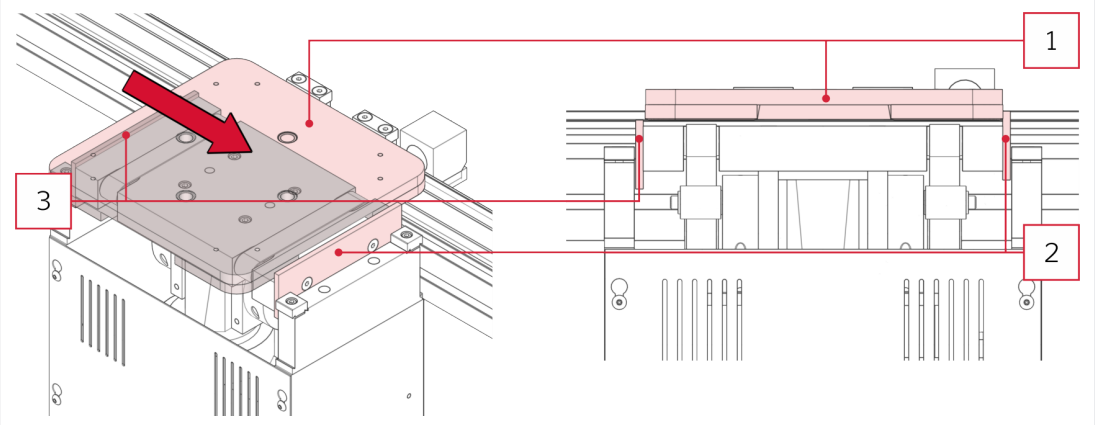


Fig. 29: Switch: Stop/guide edge

1 Workpiece carriers	2 Stop edge (high-positioned edge)
3 Guide edge (low-positioned edge)	

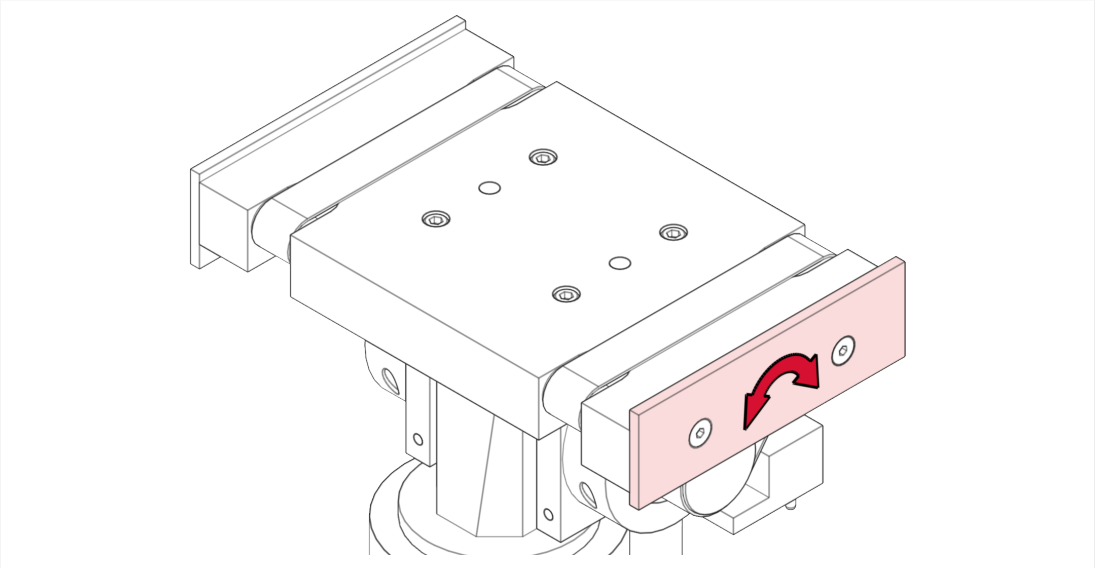


Fig. 30: Switch: Aligning stop/guide edge

- ▶ Observe safety instructions in chapter Mounting the switch [▷ 62] .
- ▶ To remove switch, see Removing the switch insert [▷ 63].
- ▶ Loosen all screws of the stop and/or guide edge.
- ▶ Turn the stop and/or guide edge and screw it tight again.

6.3.3 Installing the switch in the transfer section

Installation position requirements: There must be a clearance of approx. 90 mm under the switch.

For further dimensions and the installation positions of the required accessories, see Drawings [▶ 72].

Required tools

- Allen wrench/Allen key, size 4

✓ Belt system is de-energised and depressurised.

✓ Required number of persons: 2

▶ Observe safety instructions in chapter Mounting the switch [▶ 62] .

▶ To remove switch, see Removing the switch insert [▶ 63].

▶ As necessary: To align stop/guide edge, see Aligning stop/guide edge [▶ 63].

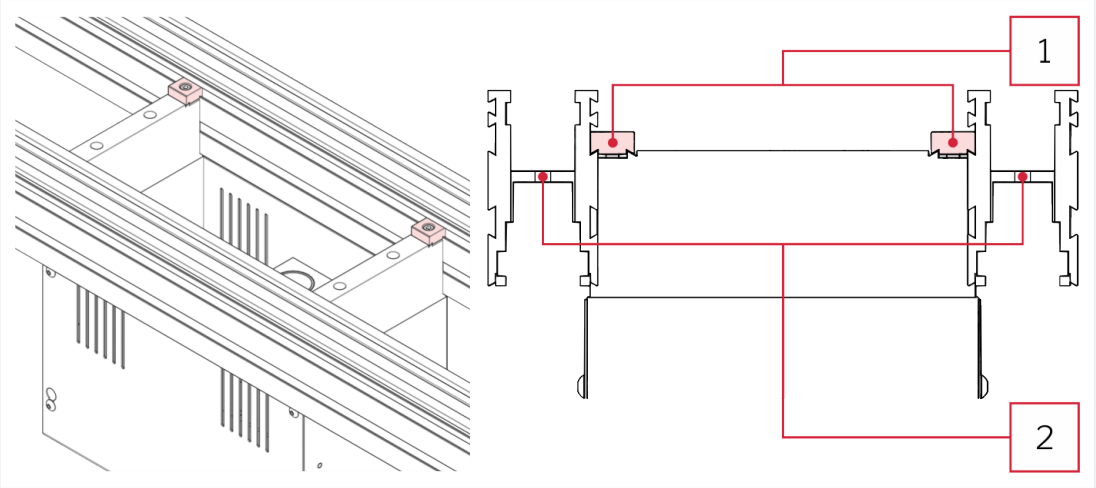


Fig. 31: Switch: Installation

1 Clamping strip	2 Support profile of the transfer section

▶ Lift the component from below into the support profile of the transfer section.

▶ Mount the clamping strip at the respective points on the inside of the support profile of the transfer section and screw it tight.

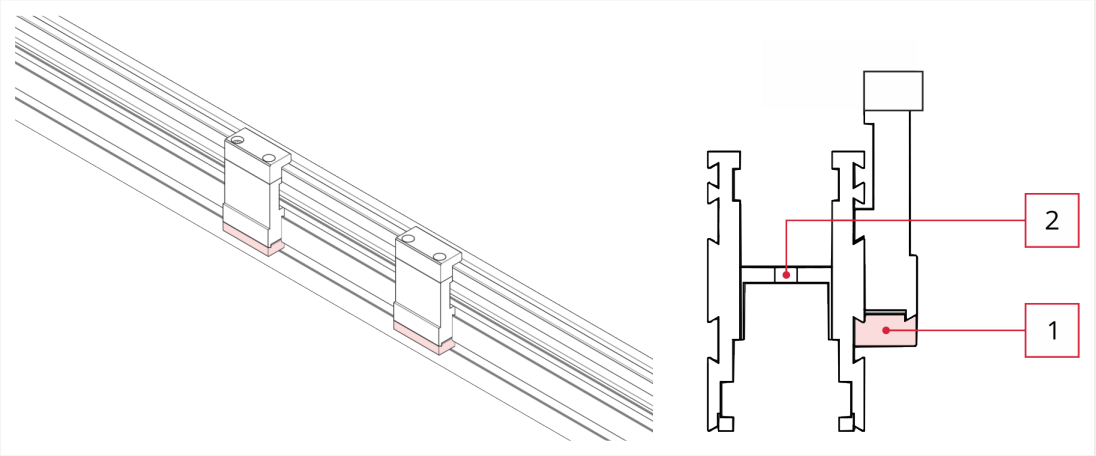


Fig. 32: Assembly limit stop

1 Clamping strip limit stop	2 Support profile of the transfer section

- ▶ Hook the clamping strip of the limit stops at the desired position on the outside of the support profile of the transfer section and screw it tight.
- ▶ Hold the switch by the belts and lift it into the housing but do not lower it completely.
- ▶ Restore electrical connection of drive and switch (insert Harting plug).
- ▶ Place the switch completely into the housing.
- ▶ Remove the cover plate of the switch on one side.
- ▶ Connect the pneumatics according to the pneumatics plan.
- ▶ Refit the cover plate.
- ▶ Connect sensor.
- ▶ Mount the required accessories.

Observe switch (moving out / moving through)

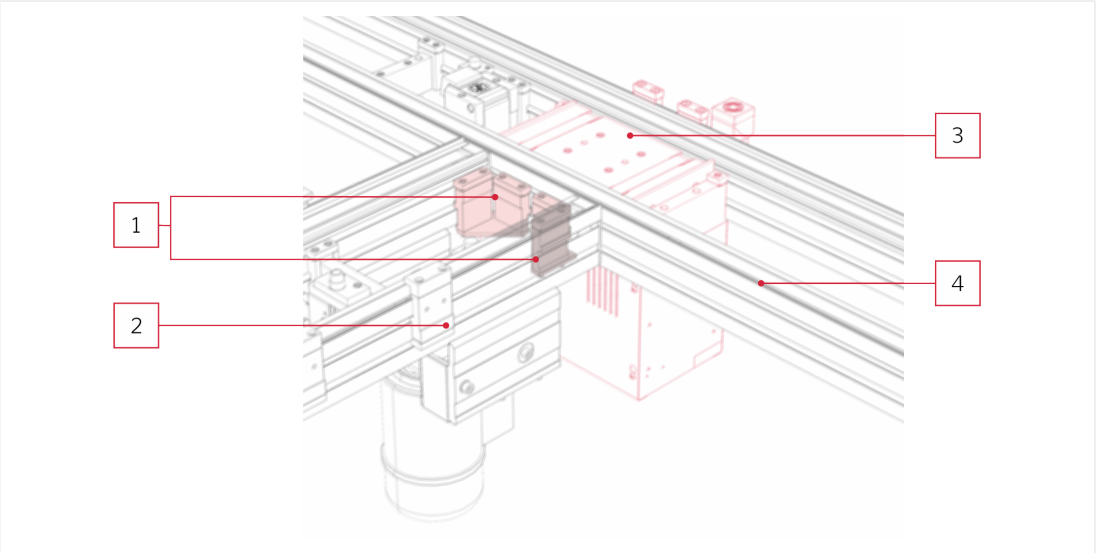


Fig. 33: Switch: Height offset via belt mounting

1 Belt mounting	2 Outward transfer section
3 Switch	4 Main transfer section

The outward transfer section must be 7.5 mm higher than the main section.

- ▶ Either: Adjust the height offset using the levelling feet of the transfer section (see Transfer section mounting [▷ 31]).
- ▶ Or: Use belt fixing (see figure).

6.3.4 Geared motor pin assignment

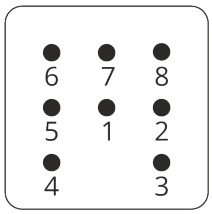


Fig. 34: Harting Han 7D (M)

Number	pin assignment
1	not used
2	Bimetallic switch (NC) T>155°C
3	Motor phase U
4	Motor phase V
5	Bimetallic switch (NC) T>155°C
6	Motor phase W
7	not used
8	protective conductor PE

Tab. 27: Geared motor pin assignment

6.4 Switch maintenance

Important notes on maintenance / component replacement

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

⚠ CAUTION

Risk of injury due to falling components!

The components are held in the support profile by the clamping strip. If the clamping strip is released, the components fall down and can injure people.

- ▶ Securely support components/mechanically secure them against falling down.

⚠ CAUTION

Risk of burns due to hot surfaces!

The motor housing and adjacent assemblies can heat up and cause burns when touched.

- ▶ Let motor housing and adjacent assemblies cool down before touching them.

Required qualifications:

Specialist/maintenance technician

Before all troubleshooting, maintenance and servicing work, ensure that:

- ▶ the relevant machine part is de-energised and depressurised.
- ▶ Ensure that dangerous machine movements are not possible due to stored energy.
- ▶ Lock all parts which could change their position, e.g. by means of a brake, backstop, check valve or supports.

Task	Cycle
Check belt tension.	
Check deflection pulley/tension pulley: Play or difficult to move? If so, replace the deflection pulley/tension pulley.	Annually
The geared motors are provided with lifetime oil lubrication. First check for inadmissible loss of lubricant after 100 hours (then every 1000 hours).	First after 100 hours, then every 1000 hours

Tab. 28: Switch: Maintenance

6.4.1 Tensioning the switch belts

▶ Prepare machine/posyART system according to chapter Switch maintenance [▷ 68] .

⚠ CAUTION

Danger of crushing between switch insert and housing!

▶ Hold the switch insert only by the belts.

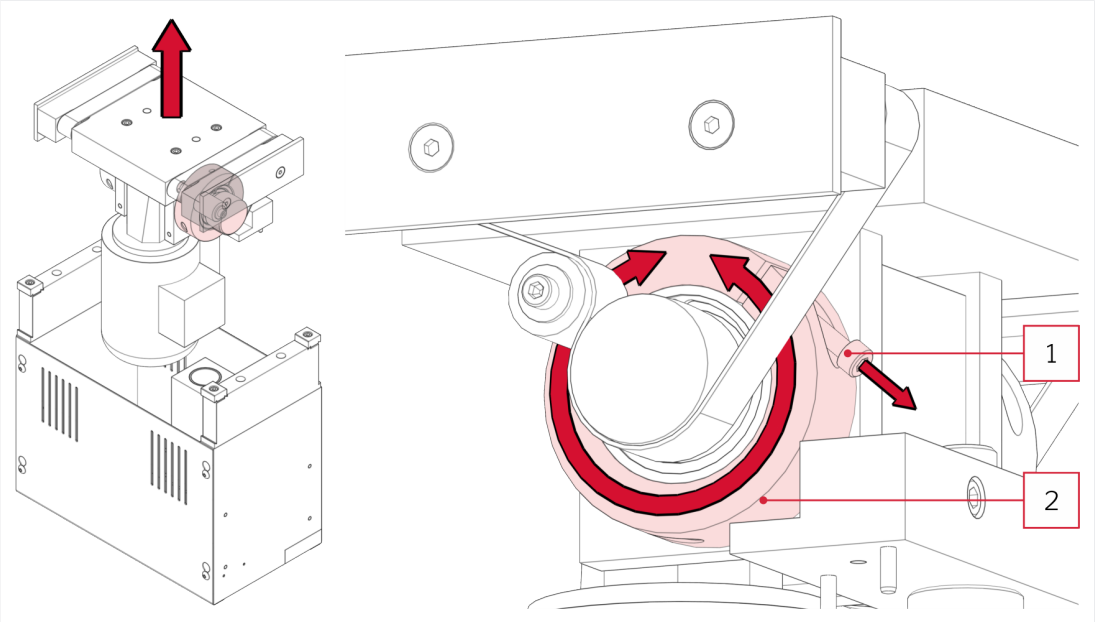


Fig. 35: Switch: Tensioning the belt

1	Cheese head screw of the clamping ring	2	Clamping ring

▶ To remove switch, see Removing the switch insert [▷ 63].

▶ Loosen the cheese head screw (M5) of the clamping ring.

⇨ The clamping ring can be turned.

▶ Turn the clamping ring until the belt has the desired tension.

▶ Re-tighten the cheese head screw of the clamping ring.

6.4.2 Changing the tension pulley of the switch

▶ Prepare machine/posyART system according to chapter Switch maintenance [▷ 68] .

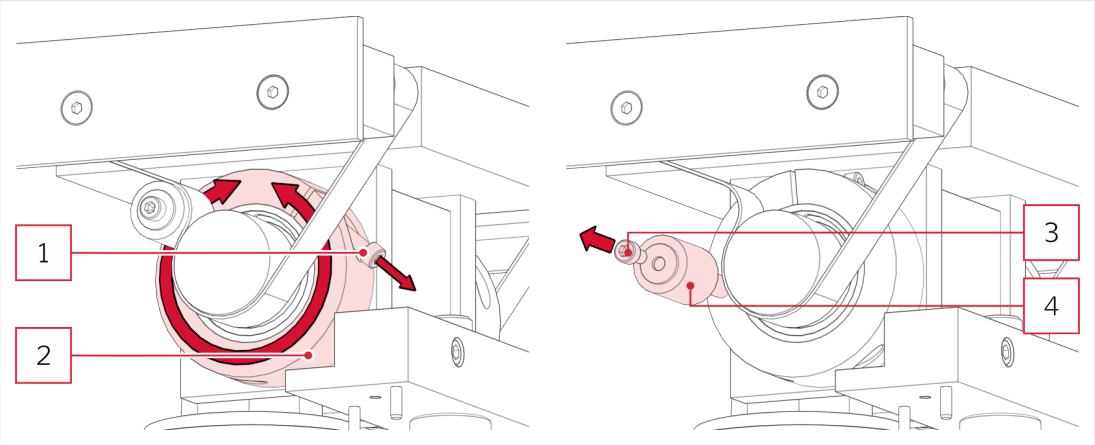


Fig. 36: Switch: Changing the tension pulley

1	Cheese head screw of the clamping ring	2	Clamping ring
3	Cheese head screw of cylinder pin (M5x10)	4	Tension pulley

▶ To remove switch, see Removing the switch insert [▷ 63].

▶ Loosen the cheese head screw (M5) of the clamping ring.

⇨ The clamping ring can be turned.

▶ Turn the clamping ring until the belt is loose.

▶ Remove the cheese head screw of the cylinder pin (M5x10).

▶ Remove the tension pulley.

▶ Installation performed in reverse order.

6.4.3 Changing deflection pulley of the switch

▶ Prepare machine/posyART system according to chapter Switch maintenance [▷ 68] .

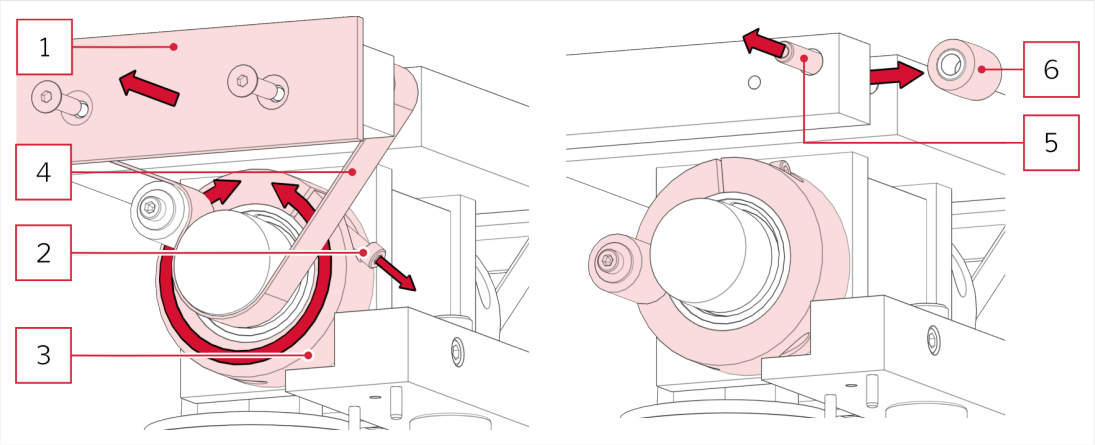


Fig. 37: Switch: Changing the deflection pulley

1	Stop or guide edge	2	Cheese head screw of the clamping ring
3	Clamping ring	4	Belts
5	Bolt (cylinder pin)	6	Deflection pulley

▶ To remove switch, see Removing the switch insert [▷ 63].

▶ Loosen the cheese head screw (M5) of the clamping ring.

⇨ The clamping ring can be turned.

▶ Turn the clamping ring until the belt is loose.

▶ Remove belt.

▶ Remove bolt (cylinder pin).

▶ Remove the deflection pulley.

▶ Installation performed in reverse order.

6.5 Switch drawings and plans

6.5.1 Drawings

Dimensions

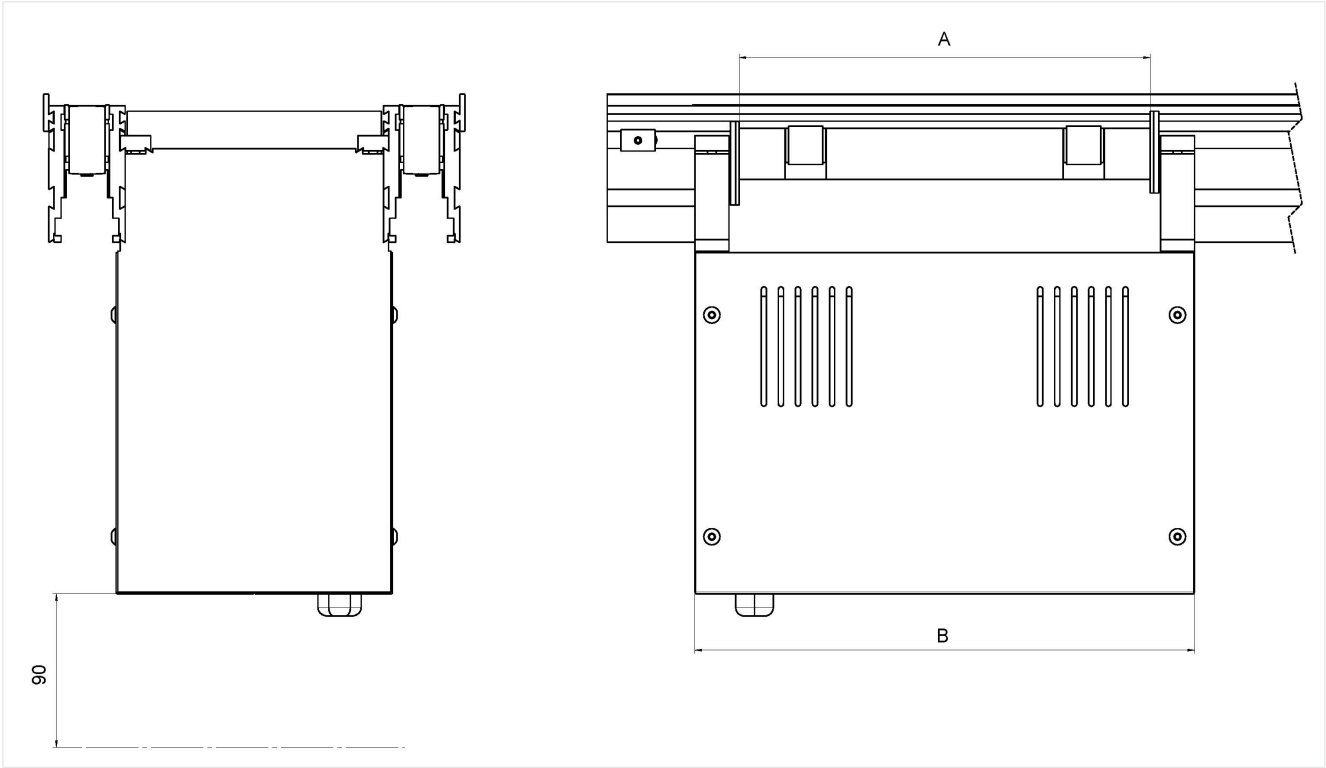


Fig. 38: Switch: Dimensions

Workpiece carrier size	A	B
160	161	213
200	201	253
240	241	293
280	281	333
320	321	373
400	401	453

Tab. 29: Switch: Dimensions

Construction dimensions

The following figure shows the relevant dimensions for mounting the component and its required accessories.

Switch (redirecting / moving in / moving through): Redirecting workpiece carrier

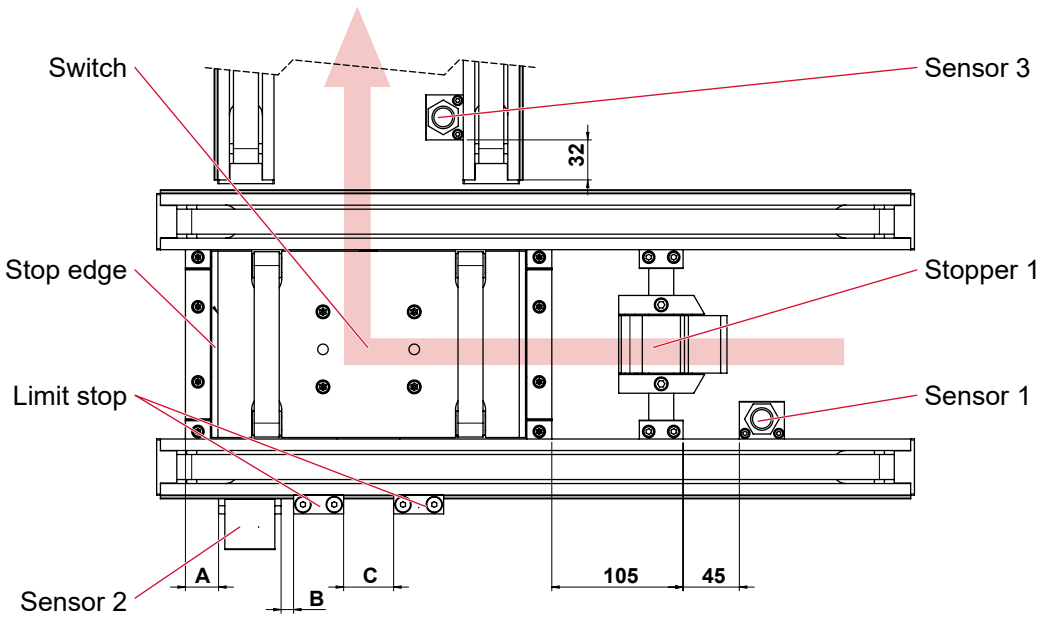


Fig. 39: Switch (redirecting / moving in / moving through): Redirecting workpiece carrier – design

Workpiece carrier size	A	B	C
160	7	5	-
200	36	10	25
240	26	10	40
280	46	10	40
320	46	10	80
400	26	5	210

Tab. 30: Switch: Design

Switch (redirecting / moving in / moving through): Moving workpiece carrier in / through

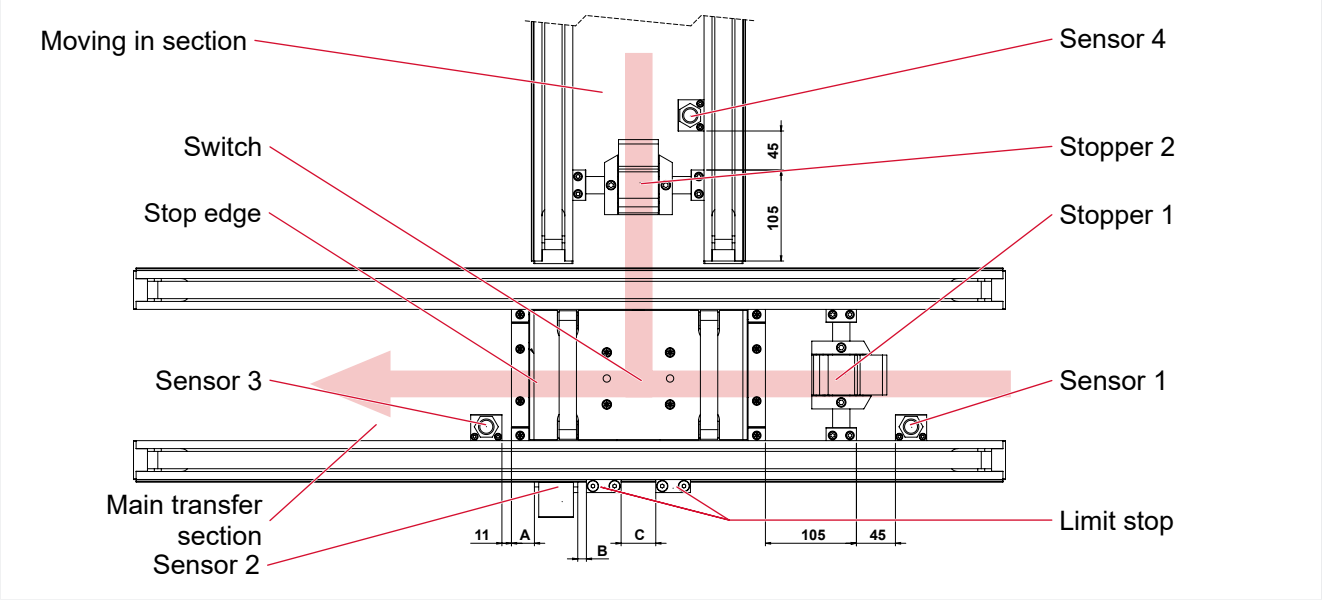


Fig. 40: Switch (redirecting / moving in / moving through): Moving workpiece carrier in – design

Workpiece carrier size	A	B	C
160	7	5	-
200	36	10	25
240	26	10	40
280	46	10	40
320	46	10	80
400	26	5	210

Tab. 31: Switch: Design

Switch (moving out / moving through): Moving workpiece carrier out / through

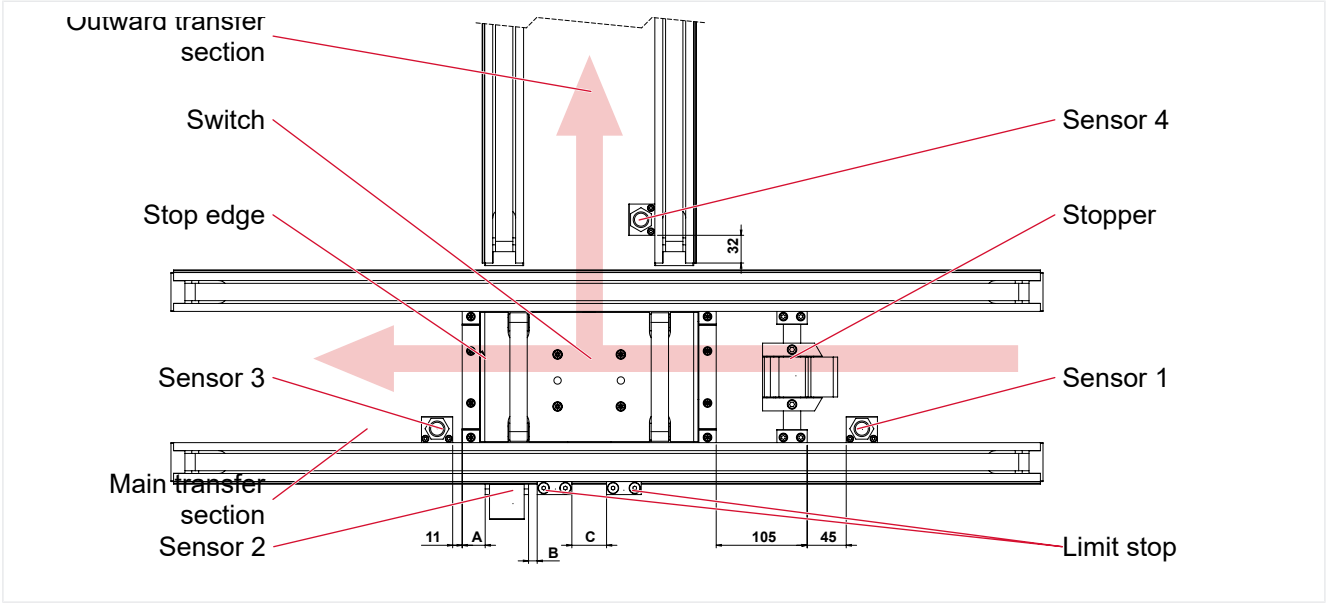


Fig. 41: Switch (moving out / moving through): Moving workpiece carrier out – design

Workpiece carrier size	A	B	C
160	7	5	-
200	36	10	25
240	26	10	40
280	46	10	40
320	46	10	80
400	26	5	210

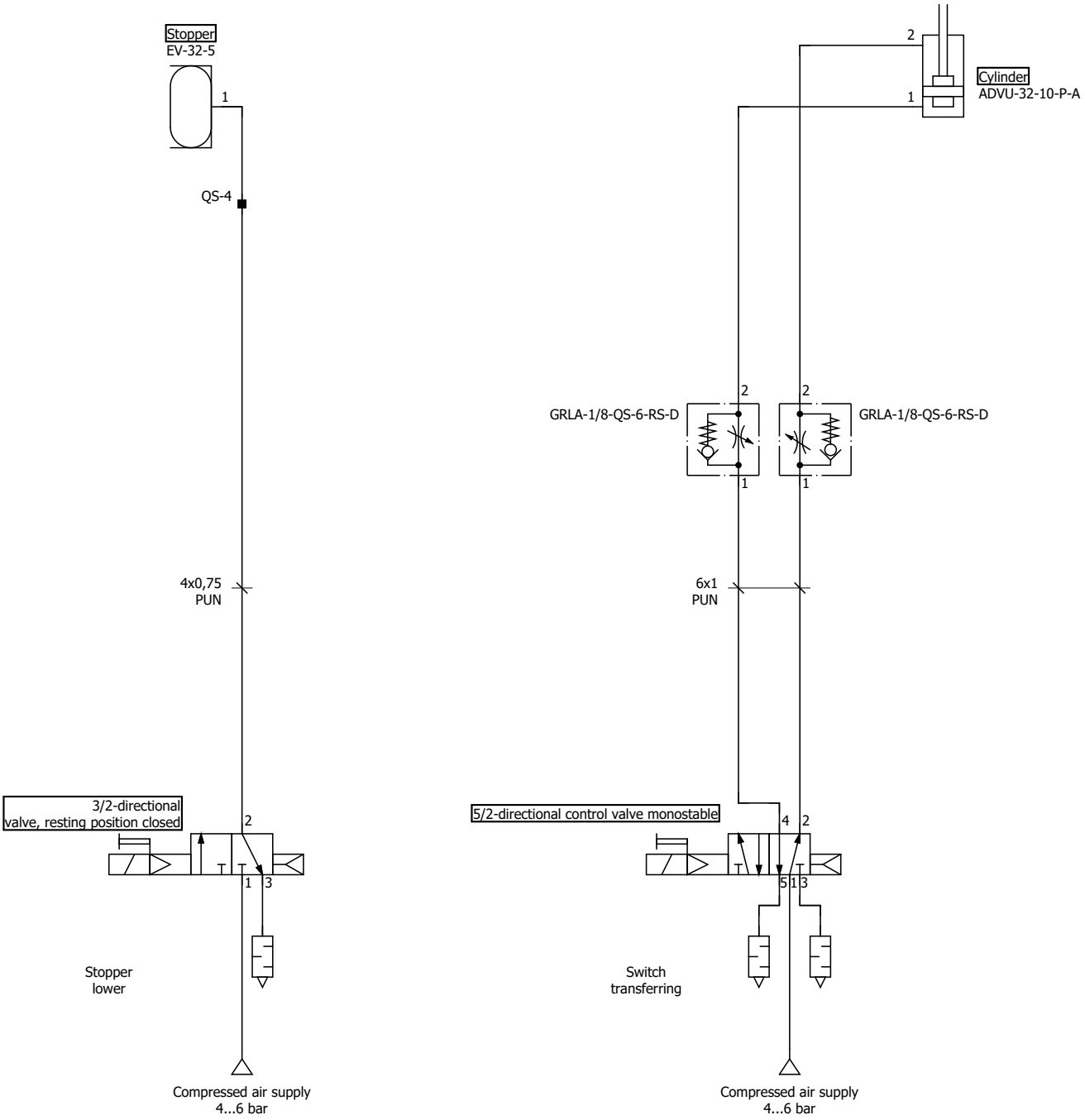
Tab. 32: Switch: Design

6.5.2 Pneumatics plan

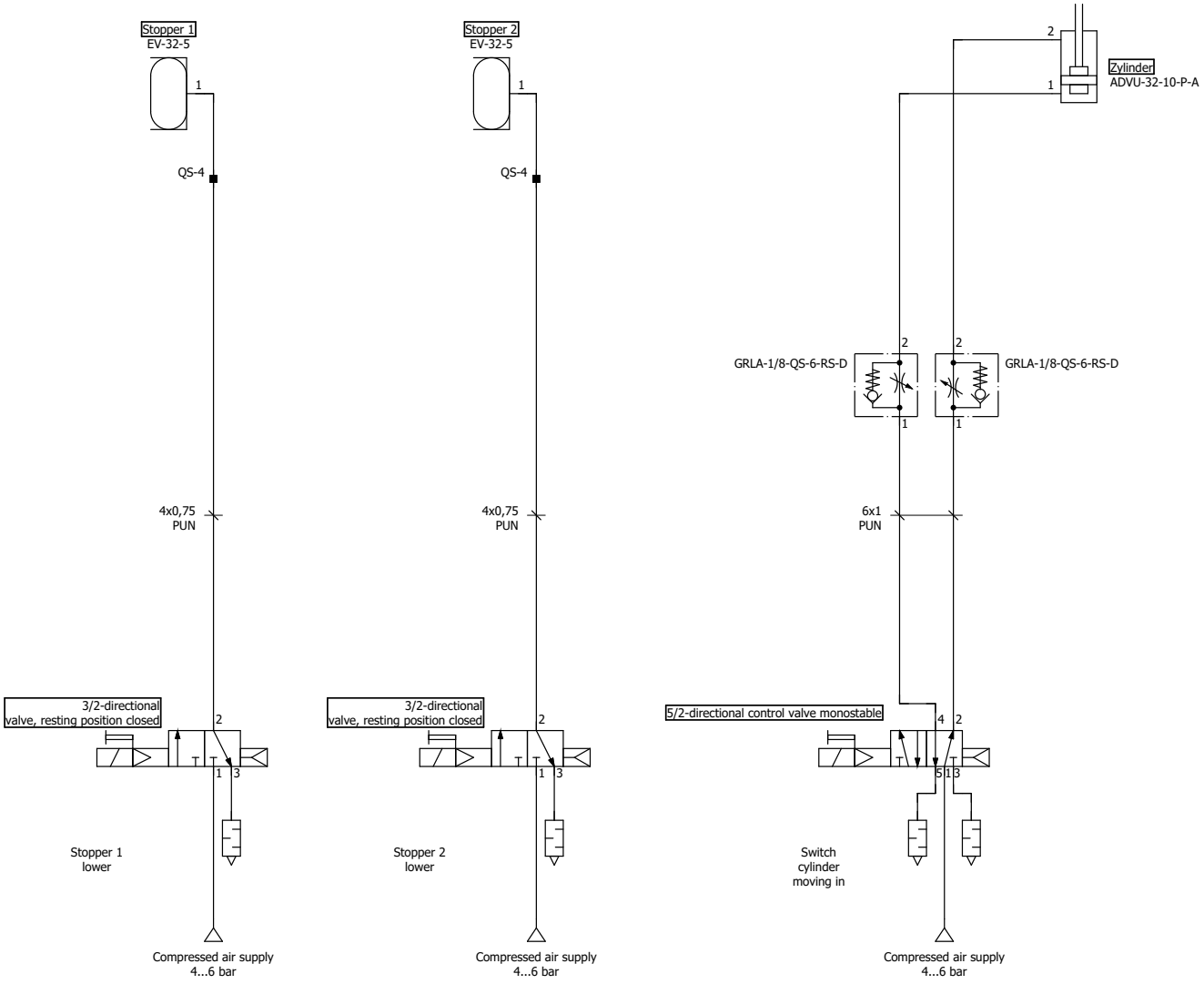
See also

- Switch (redirect / moving in / moving through): Redirect workpiece carrier [▶ 76]
- Switch (redirect / moving in / moving through): Moving in / moving through workpiece carrier [▶ 77]
- Switch (moving out / moving through): Moving out / moving through workpiece carrier [▶ 78]

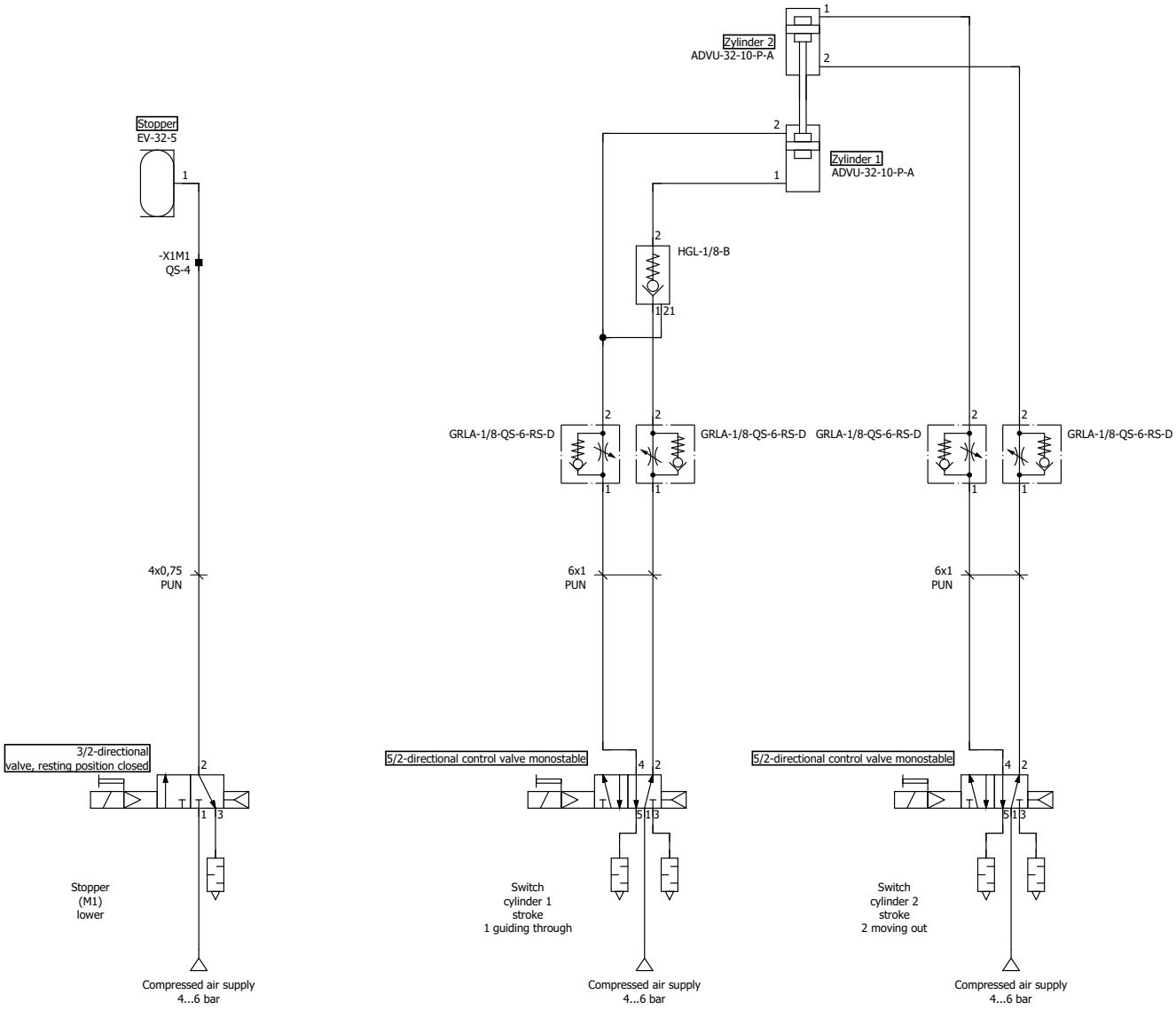
6.5.2.1 Switch (redirect / moving in / moving through): Redirect workpiece carrier



6.5.2.2 Switch (redirect / moving in / moving through): Moving in / moving through workpiece carrier



6.5.2.3 Switch (moving out / moving through): Moving out / moving through workpiece carrier



6.6 Spare parts of switch

NOTE

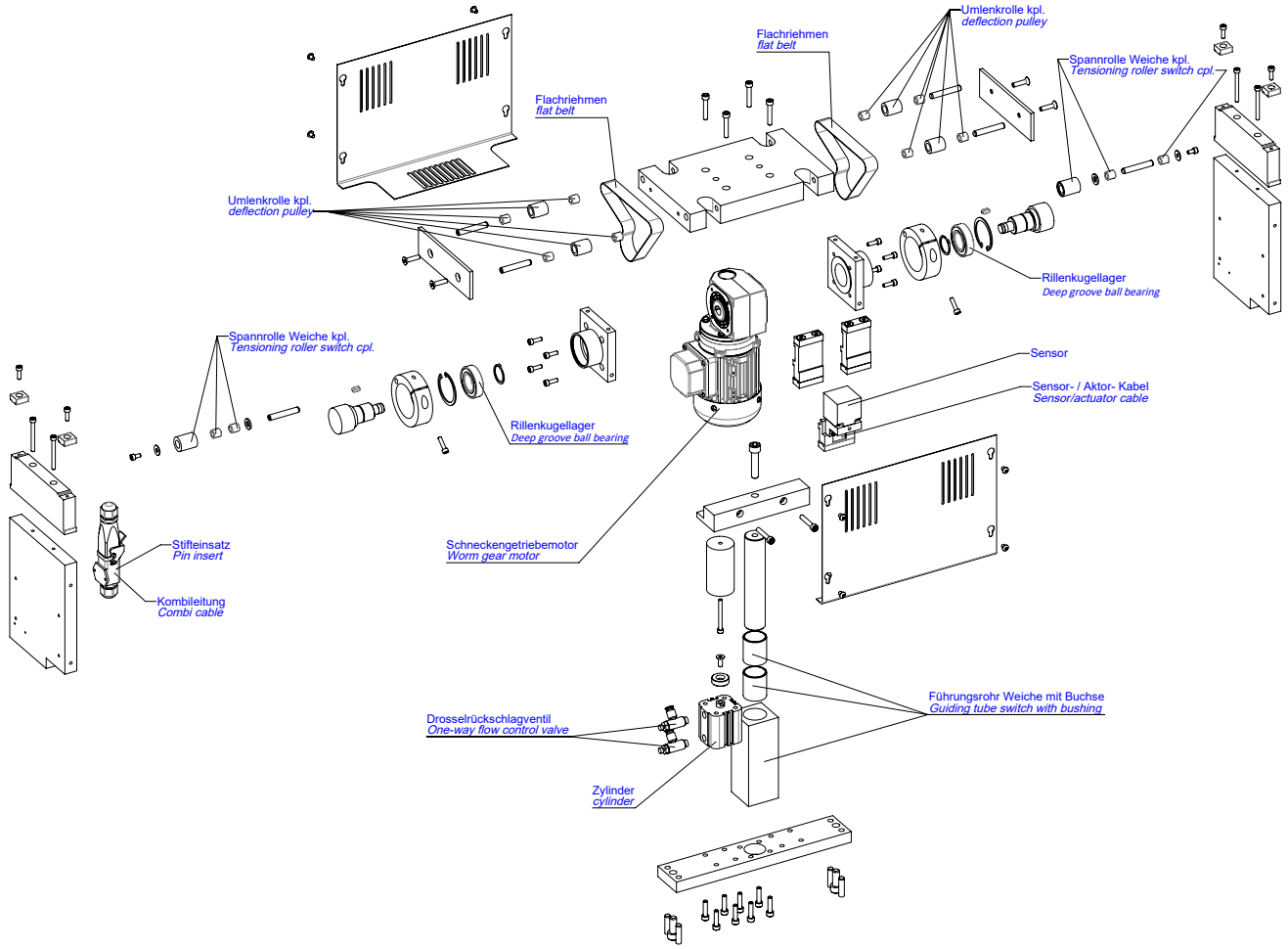
Important information

For more information on spare parts, see the specific spare parts list enclosed with the delivery.

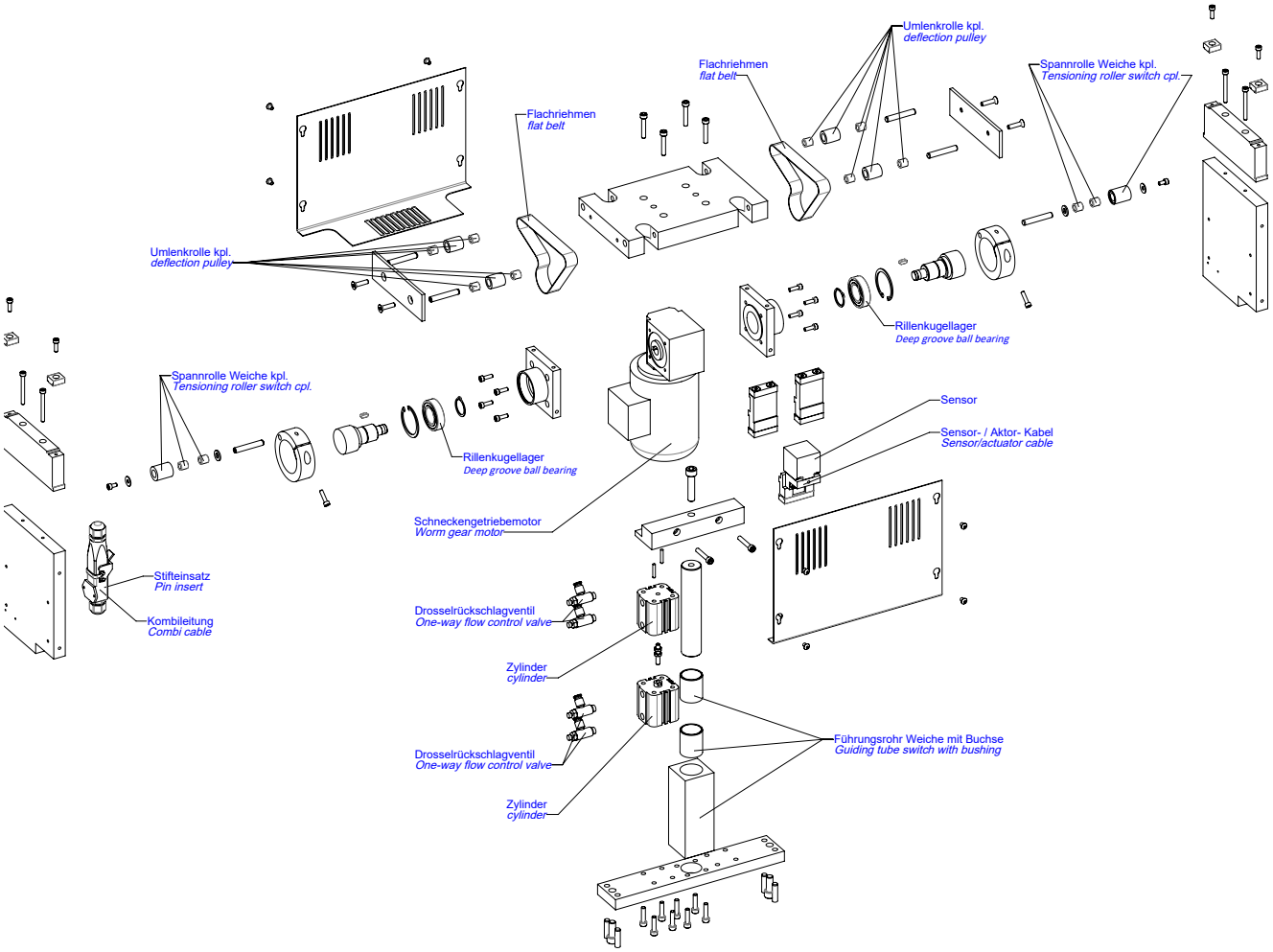
See also

- Spare parts overview switch (redirect / moving in / moving through) [▶ 79]
- Spare parts overview switch (moving out / moving through) [▶ 80]

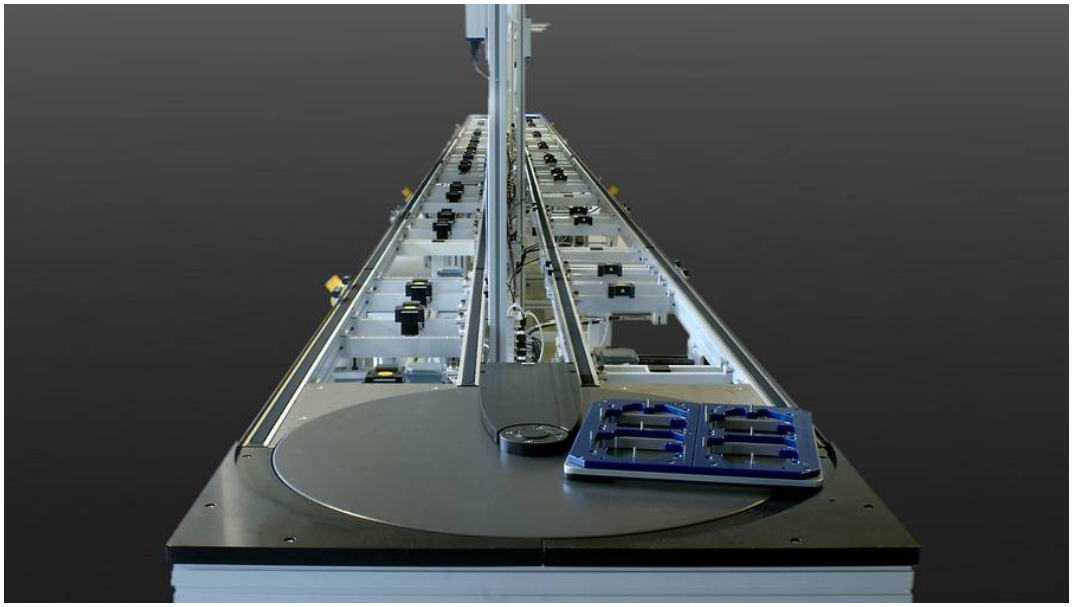
6.6.1 Spare parts overview switch (redirect / moving in / moving through)



6.6.2 Spare parts overview switch (moving out / moving through)



7 Curve



7.1 Basic safety instructions for the curve

7.1.1 Intended use

This component is only intended to be installed in the posyART transfer section in order to form a complete machine, in the sense of the Machinery Directive, together with it and other components of the posyART system.

Function

Curves rotate the workpiece carrier by 90° or 180°. The orientation of the workpiece carrier is maintained.

Personnel qualifications

See Target groups and personnel qualifications [▶ 21].

Environment

- The component may only be used with other components of the posyART system.
- The component may only be used for commercial use. It is not suitable for operation in potentially explosive or chemically aggressive areas. Dust loads must also be avoided.
- Operation is only permitted in industrial buildings, on sufficiently load-bearing surfaces and in accordance with the defined ambient conditions (see Technical data and ambient conditions for the curve [▶ 84]).

Non-intended use

Any use beyond the intended use or any other use is considered misuse. Misuse includes:

- Failure to perform maintenance, service and repair measures.
- Use of components with different gauges (e.g. transfer section with a gauge of 200 may only be used together with workpiece carriers etc. with a gauge width of 200).

7.1.2 Residual risks

Life-phase	Risk and avoidance	
Maintenance, fault rectification	Danger due to electrical voltage! ▶ De-energise the machine before maintenance work and secure it from being switched on again.	
With running belt	When the belt is running, there is a risk of hair, jewellery and loose clothing being pulled in. ▶ Wear a hairnet if you have longer hair. In addition, wear close-fitting clothing when working on the machine. Do not wear baggy or loose clothing (ties, shirt sleeves) and do not wear jewellery.	
Disassembly, maintenance, fault rectification	Risk of burns due to hot surfaces! Motor housings can heat up and cause burns when touched. ▶ Let motor housing cool down before maintenance tasks.	
Installation, disassembly, maintenance, fault rectification	Pneumatic lines are pressurised with compressed air. ▶ Depressurise the machine before performing any tasks.	

Tab. 33: Residual risks

7.2 Curve transport

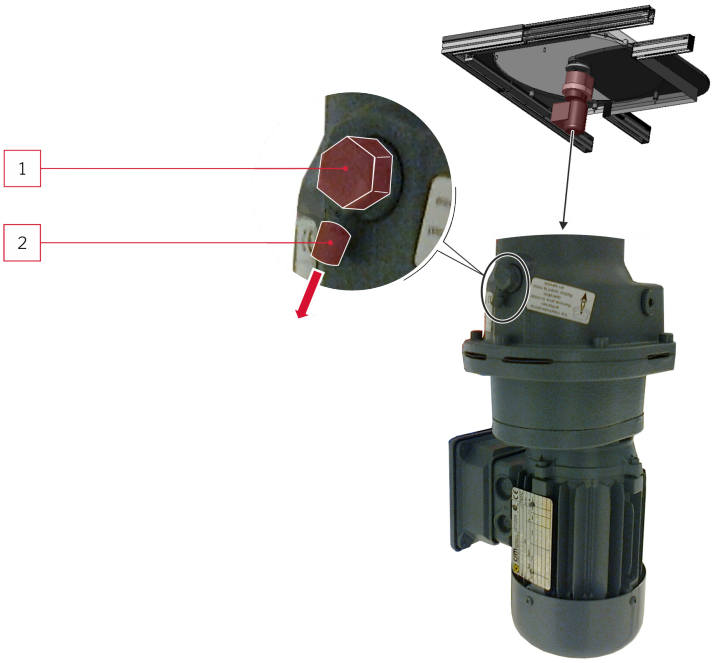


Fig. 42: Curve: Motor vent plugs

1 Oil drain plug	2 Vent plugs

▶ Before transport, place the vent plug on the oil drain plug of the curve motor.

▶ After transport, remove the vent plug again.

7.3 Curve description

7.3.1 Scope of delivery and accessories of curve

Scope of delivery	Required accessories	
■ Curve	■ Transfer section	2
	■ Stopper	1
	■ Sensor	2

Tab. 34: Curve: Scope of delivery and accessories

7.3.2 Technical data and ambient conditions for the curve

A type plate with (further) data is located on the machine / product.

Transport speed	12 m/min
Maximum gauge	400 mm
Maximum workpiece carrier load (transport load)	200 N
Noise exposure	< 75 dB(A)

Tab. 35: Curve: Technical data

Geared motor of the curve

Drive	Spur gear motor
Nominal power	90 W
Nominal voltage	400 V
Frequency	50 Hz
Protection class	IP 55
Power consumption	0.4 A

Tab. 36: Curve geared motor: Technical data

Pneumatics

Operating pressure	4-6 bar, filtered

Tab. 37: Pneumatics specifications

Environmental conditions

Operating temperature	10 - 35°C
Change in temperature	maximum 10°C / h
Relative humidity	15 - 80% indoor, no condensation
Air pressure	(860...1060) hPa

Tab. 38: Environmental conditions

7.3.3 Overview of curve

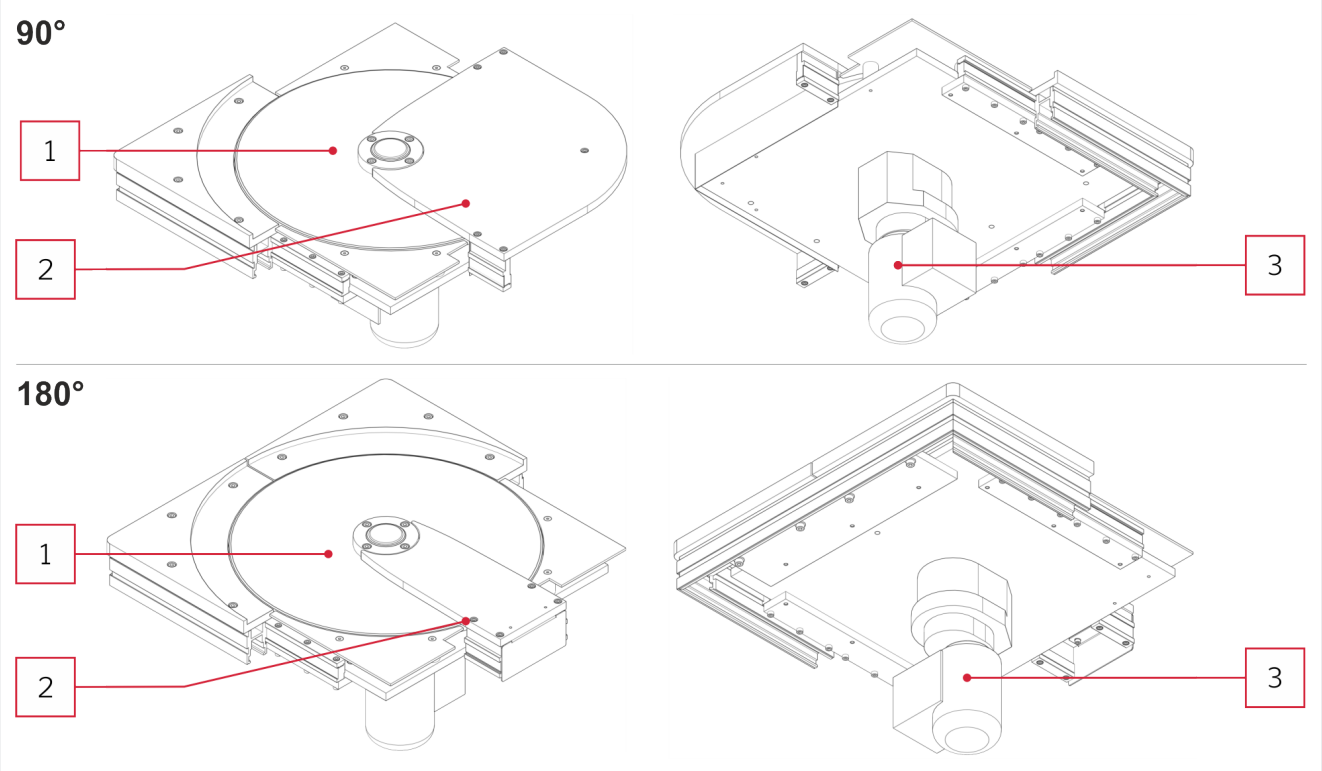


Fig. 43: Curve: Overview

1 Pane	2 Positioning plate
3 Drive of curve geared motor	

7.3.4 Description of operational workflow of curve

The disc takes the workpiece carrier from the transfer section and conveys it to a transfer section running at a right angle or running parallel. This takes the workpiece carrier.

A stopper, in front of the curve, prevents more than one workpiece carrier from moving onto the curve. A sensor, after the curve, monitors whether the workpiece carrier has left the curve.

The disc runs continuously so that the service life of the geared motor is not affected.

7.4 Installation

For further dimensions and the installation positions of the required accessories, see Curve drawings [▶ 88].

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

- ✓ Belt system is de-energised and depressurised.
- ✓ Required number of persons: 2
- ▶ Couple the support profile of the curve to the support profile of the transfer section. Make sure that there is a clearance of 3.5 mm between the support profiles.

NOTE

Material damage

Only one workpiece carrier may be on the curve.

- ▶ Mount a stopper before the curve, which releases the workpiece carrier only if the workpiece carrier, on the curve, has left the curve (query via sensor after the curve).

- ▶ Mount the required accessories.

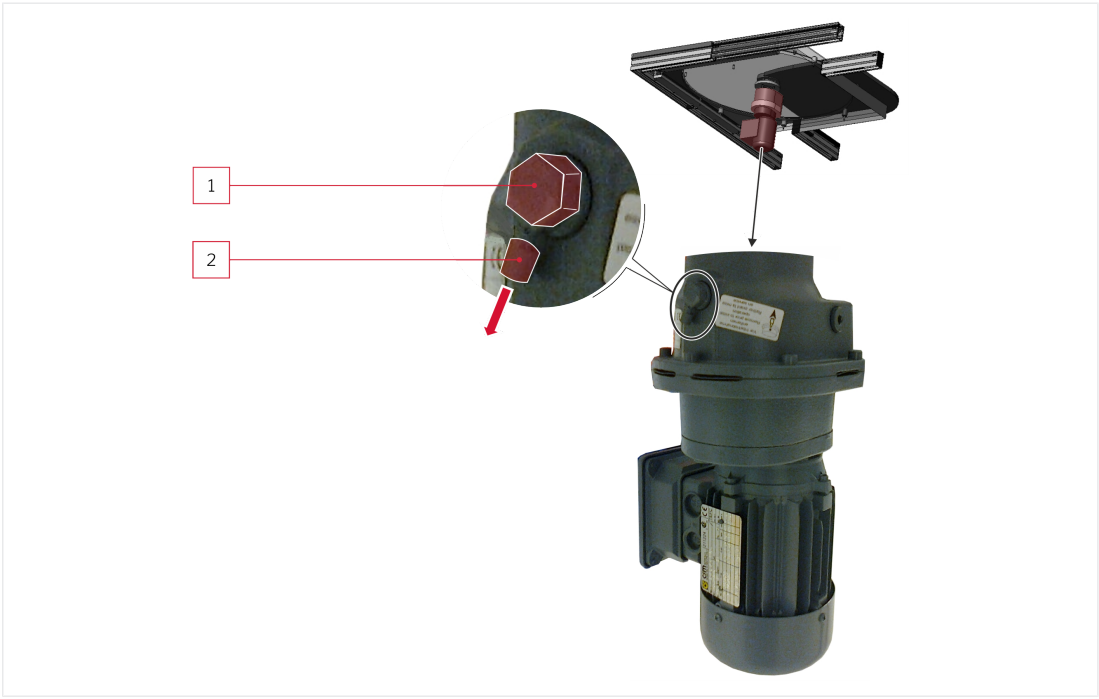


Fig. 44: Curve: Motor vent plugs

1 Oil drain plug	2 Vent plugs

- ▶ After mounting the curve (**before** commissioning), remove the vent plug from the motor oil drain plug.

7.4.1 Geared motor pin assignment

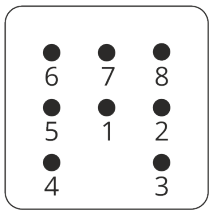


Fig. 45: Harting Han 7D (M)

Number	pin assignment
1	not used
2	Bimetallic switch (NC) T>155°C
3	Motor phase U
4	Motor phase V
5	Bimetallic switch (NC) T>155°C
6	Motor phase W
7	not used
8	protective conductor PE

Tab. 39: Geared motor pin assignment

7.5 Curve maintenance

Important notes on maintenance / component replacement

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

⚠ CAUTION

Risk of injury due to falling components!

The components are held in the support profile by the clamping strip. If the clamping strip is released, the components fall down and can injure people.

- ▶ Securely support components/mechanically secure them against falling down.

⚠ CAUTION

Risk of burns due to hot surfaces!

The motor housing and adjacent assemblies can heat up and cause burns when touched.

- ▶ Let motor housing and adjacent assemblies cool down before touching them.

Required qualifications:

Specialist/maintenance technician

Before all troubleshooting, maintenance and servicing work, ensure that:

- ▶ the relevant machine part is de-energised and depressurised.

- ▶ Ensure that dangerous machine movements are not possible due to stored energy.
- ▶ Lock all parts which could change their position, e.g. by means of a brake, backstop, check valve or supports.

Task	Cycle
The geared motors are provided with lifetime oil lubrication. First check for inadmissible loss of lubricant after 100 hours (then every 1000 hours).	First after 100 hours, then every 1000 hours
■ Change oil as required: ■ Change roller bearing grease ■ Replace shaft seal	Every 5 years at the latest

Tab. 40: Curve: Maintenance

7.6 Curve drawings

Curve 90°

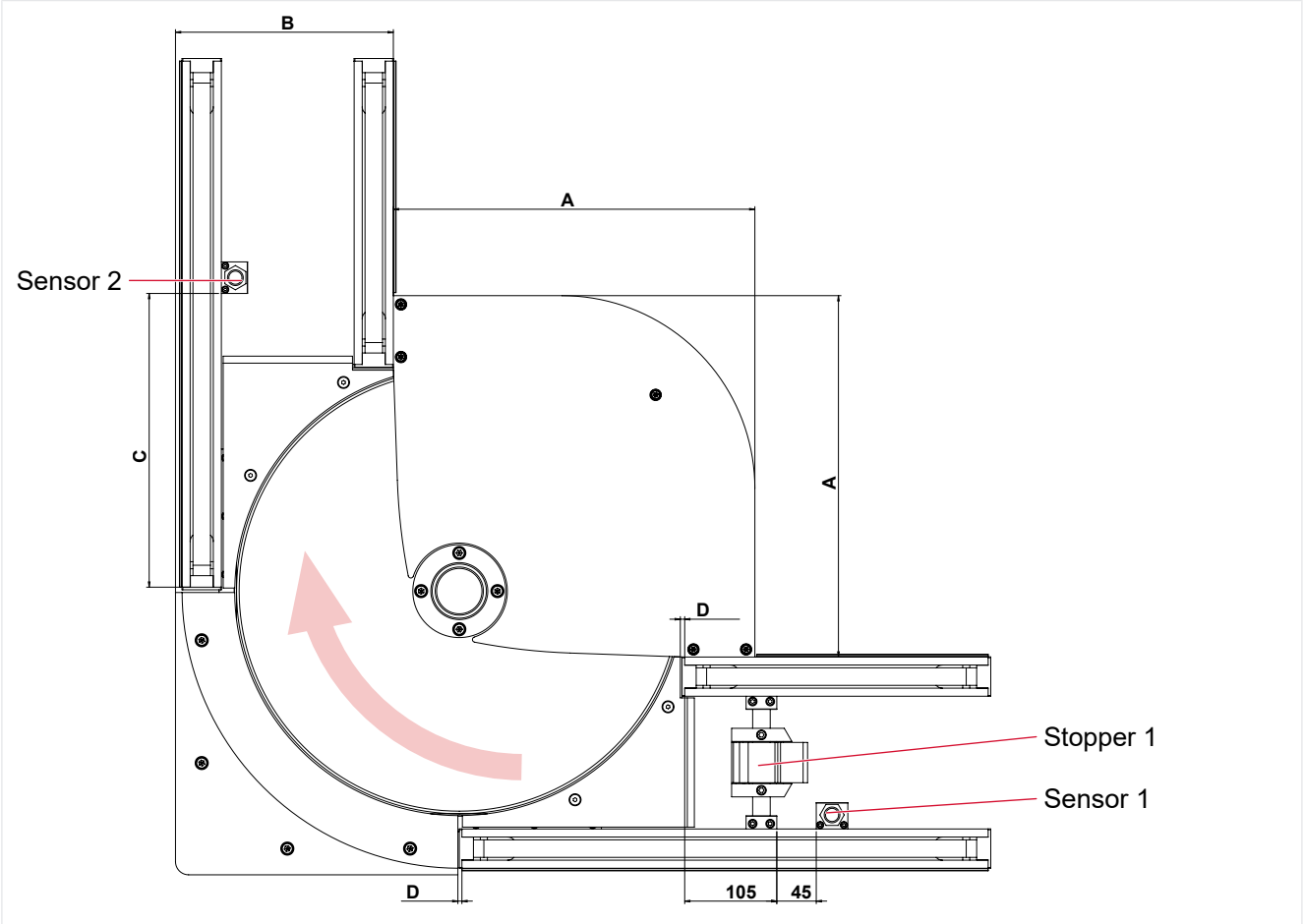


Fig. 46: Curve 90°: Design

Workpiece carrier size	A	B	C	D
160	387	168	275	at least 3.5
200	387	208	315	
240	412	248	355	

Workpiece carrier size	A	B	C	D
280	522	288	395	
320	562	328	435	
400	642	408	515	

Tab. 41: Curve 90°: Dimensions

Curve 180°

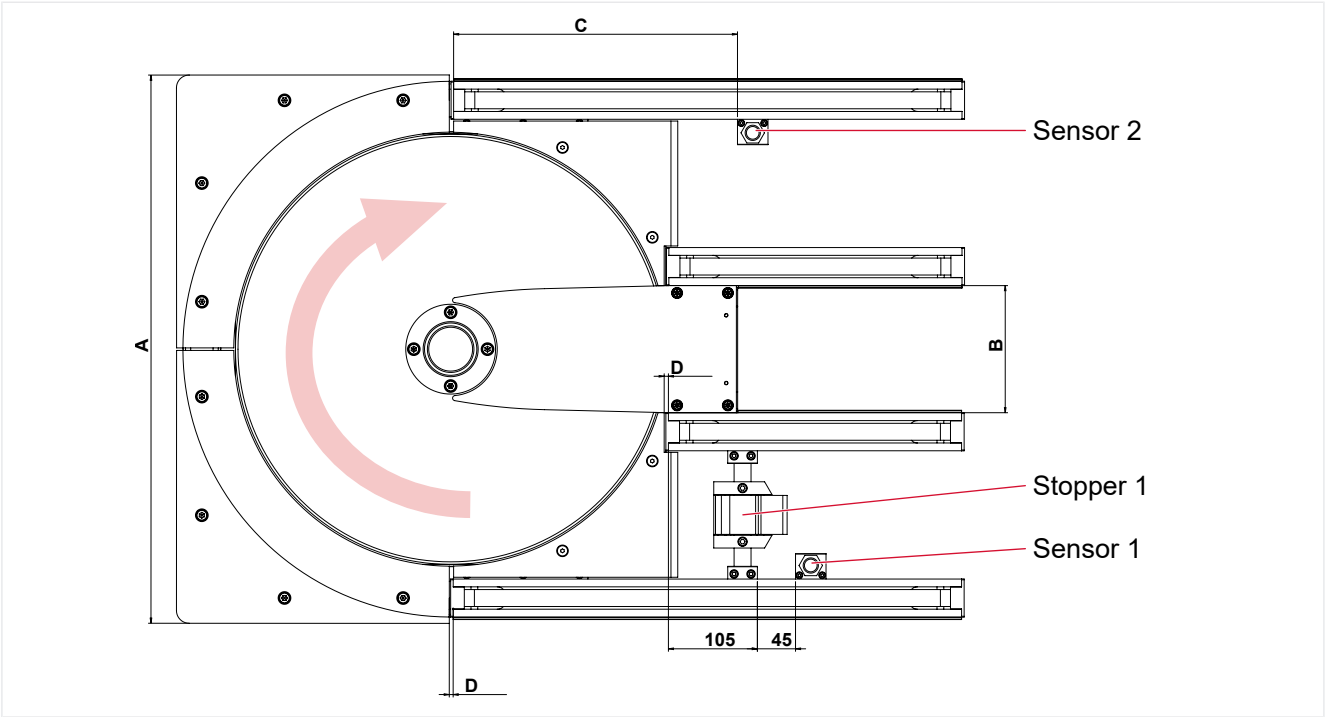


Fig. 47: Curve 180°: Design

Workpiece carrier size	A	B	C	D
160	562	165	275	at least 3.5
200	566	150	315	
240	646	150	355	
280	776	200	395	
320	856	200	435	
400	1016	200	515	

Tab. 42: Curve 180°: Dimensions

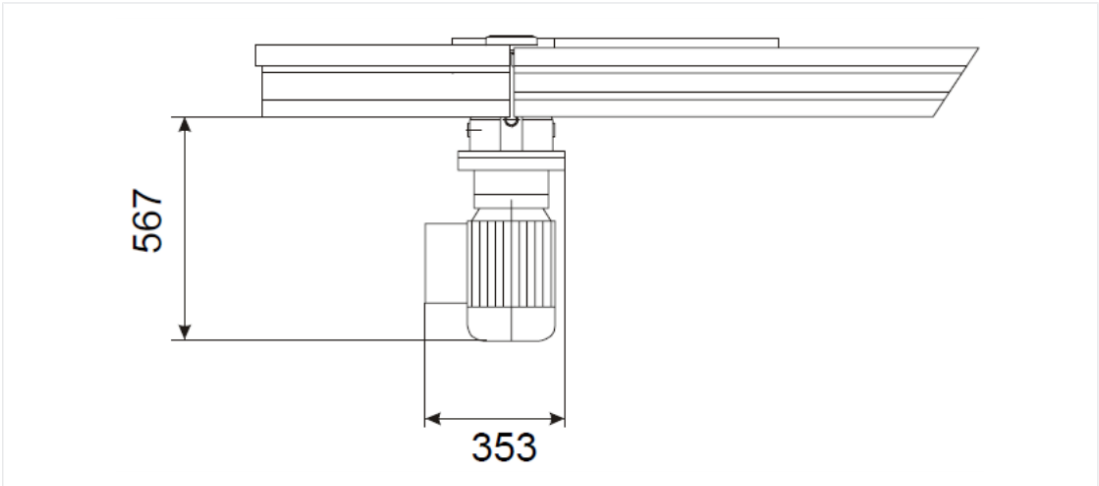


Fig. 48: Curve 90°and 180°: Dimensions

7.7 Spare parts of curve

NOTE

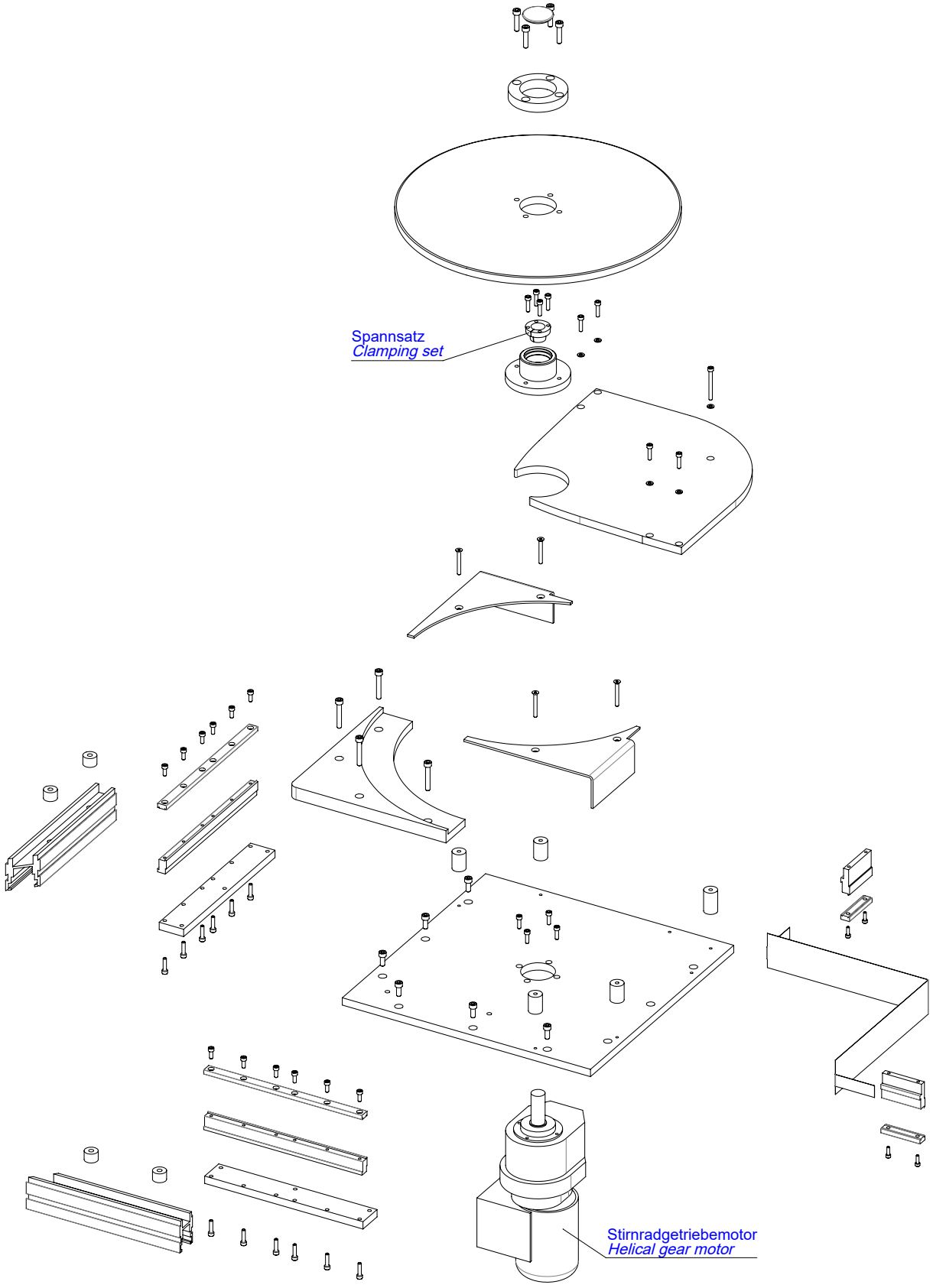
Important information

For more information on spare parts, see the specific spare parts list enclosed with the delivery.

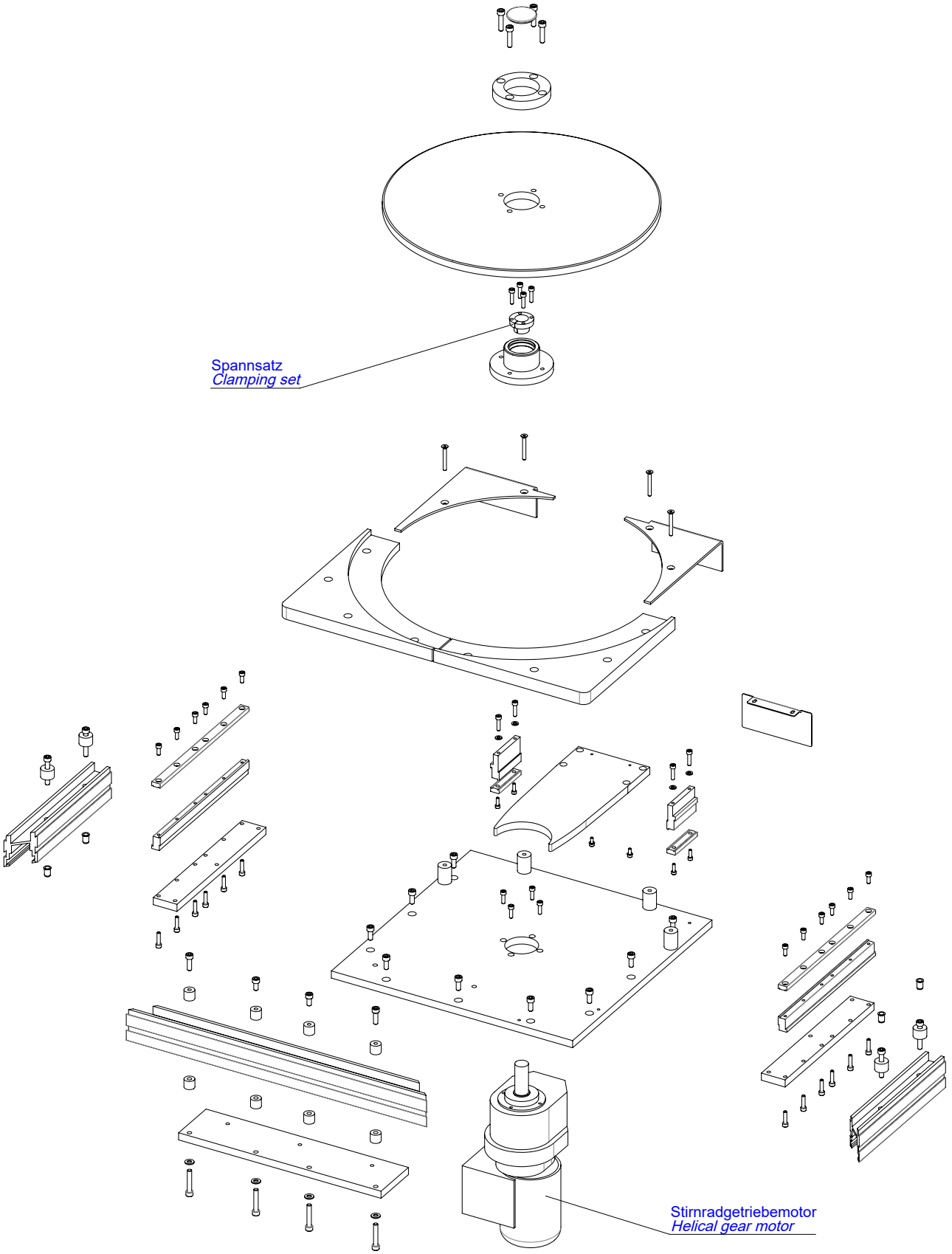
See also

- Spare parts overview curve 90° [▶ 92]
- Spare parts overview curve 180° [▶ 93]

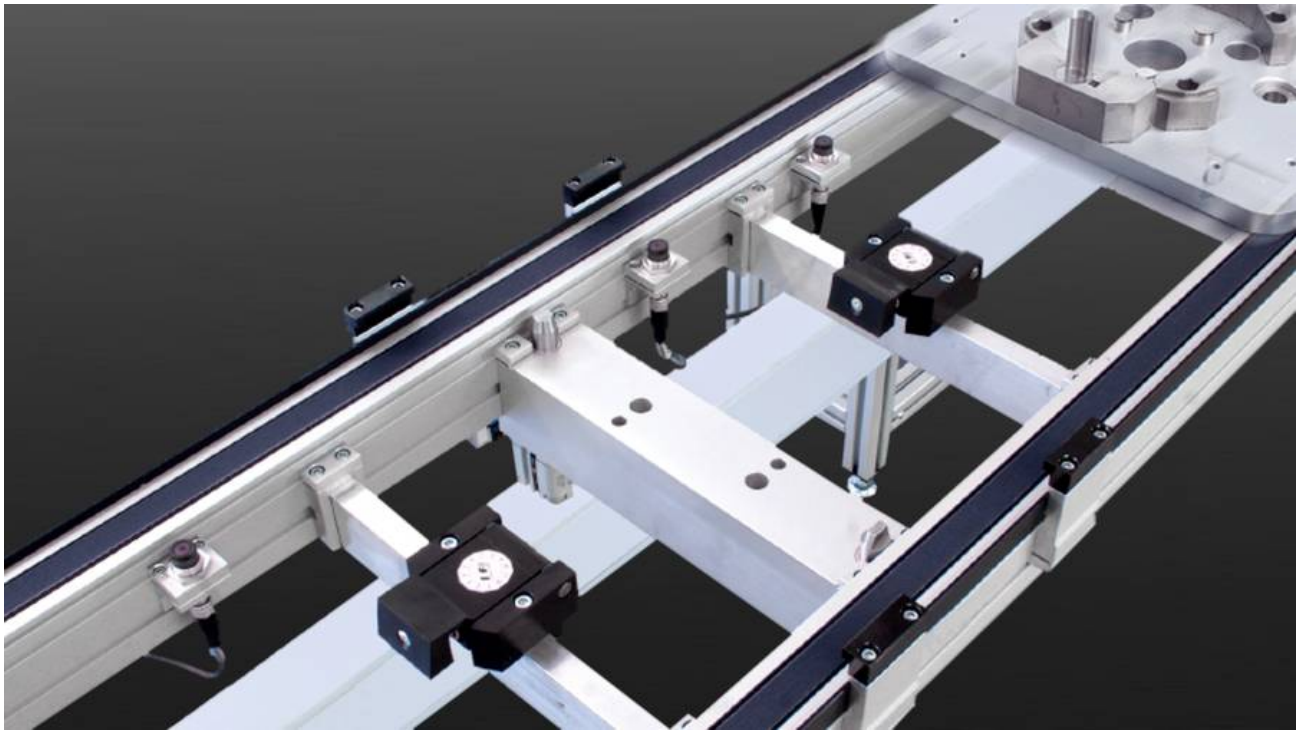
7.7.1 Spare parts overview curve 90°



7.7.2 Spare parts overview curve 180°



8 Centring unit



8.1 Basic safety instructions for the centring unit

8.1.1 Intended use

This component is only intended to be installed in the posyART transfer section in order to form a complete machine, in the sense of the Machinery Directive, together with it and other components of the posyART system.

Function

Centring units fix workpiece carriers at a defined position on the transfer section.

Personnel qualifications

See Target groups and personnel qualifications [▷ 21].

Environment

- The component may only be used with other components of the posyART system.
- The component may only be used for commercial use. It is not suitable for operation in potentially explosive or chemically aggressive areas. Dust loads must also be avoided.
- Operation is only permitted in industrial buildings, on sufficiently load-bearing surfaces and in accordance with the defined ambient conditions (see Technical data and ambient conditions for the centring unit [▷ 96]).

Non-intended use

Any use beyond the intended use or any other use is considered misuse. Misuse includes:

- Failure to perform maintenance, service and repair measures.
- Use of components with different gauges (e.g. transfer section with a gauge of 200 may only be used together with workpiece carriers etc. with a gauge width of 200).

8.1.2 Residual risks

Life-phase	Risk and avoidance	
Maintenance, fault rectification	Danger due to electrical voltage! ▶ De-energise the machine before maintenance work and secure it from being switched on again.	
With running belt	When the belt is running, there is a risk of hair, jewellery and loose clothing being pulled in. ▶ Wear a hairnet if you have longer hair. In addition, wear close-fitting clothing when working on the machine. Do not wear baggy or loose clothing (ties, shirt sleeves) and do not wear jewellery.	
Operation	The danger area is not secured. Persons can reach into the danger area and suffer crushing. ▶ Secure open danger area.	

Life-phase	Risk and avoidance	
	▶ Only after a conformity assessment procedure, in accordance with the Machinery Directive, has been carried out for the complete machine in which the product is installed, may the machine/product be put into operation.	
Disassembly, maintenance, fault rectification	Risk of burns due to hot surfaces! Motor housings can heat up and cause burns when touched. ▶ Let motor housing cool down before maintenance tasks.	
Installation, disassembly, maintenance, fault rectification	Pneumatic lines are pressurised with compressed air. ▶ Depressurise the machine before performing any tasks.	

Tab. 43: Residual risks

8.2 Description of centring unit

8.2.1 Scope of delivery and accessories of centring unit

Scope of delivery	Required accessories	
■ Centring unit ■ 4 skips	■ Transfer section	1
	■ Stopper	2
	■ Sensor	3

Tab. 44: Centring unit: Scope of delivery and accessories

8.2.2 Technical data and ambient conditions for the centring unit

A type plate with (further) data is located on the machine / product.

Positioning accuracy	± 0.04 mm
Maximum absorption of vertical forces	500 N at 6 bar (for higher forces: Use centring unit with active skip)
Maximum workpiece carrier load (transport load)	200 N
Noise exposure	< 75 dB(A)

Tab. 45: Centring unit: Technical data

Pneumatics

Operating pressure	4-6 bar, filtered

Tab. 46: Pneumatics specifications

Environmental conditions

Operating temperature	10 - 35°C
Change in temperature	maximum 10°C / h
Relative humidity	15 - 80% indoor, no condensation
Air pressure	(860...1060) hPa

Tab. 47: Environmental conditions

8.2.3 Overview of centring unit

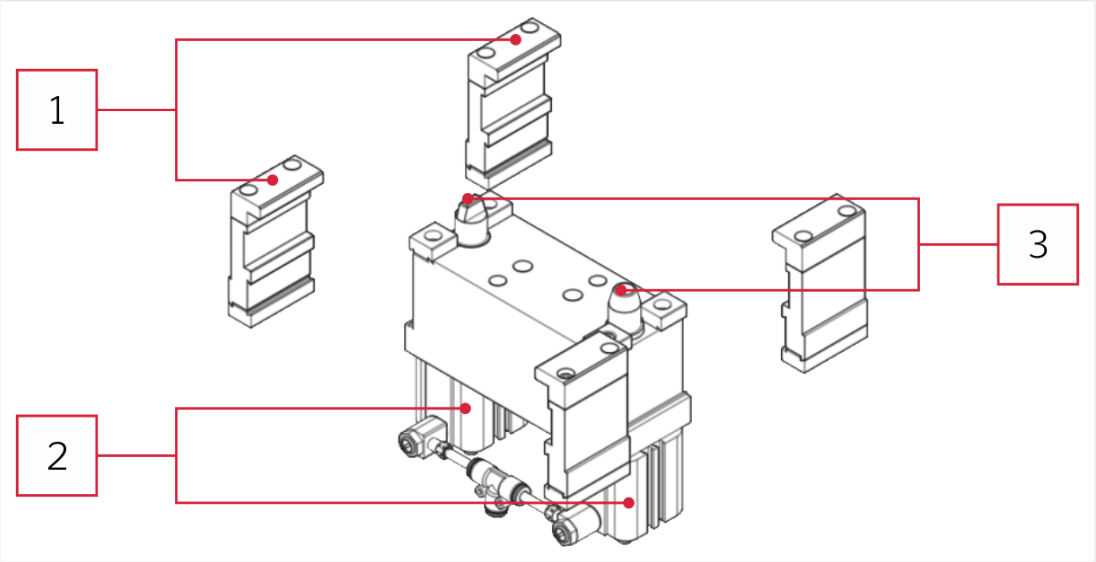


Fig. 49: Centring unit: Overview

1	Skip	2	Lifting cylinder
3	Centring bolt		Stopper (not shown)

In the centring unit, two centring bolts move into the centring bushes of the workpiece carrier and lift it by 0.5 mm. In this position, the workpiece carrier is pressed against the skips.

After machining, the centring bolts return to their initial position and the stopper is lowered. The workpiece carrier can be transported further.

8.2.4 Description of operational workflow of centring unit

The following describes the intended sequence. Depending on the application, not all assemblies are absolutely necessary.

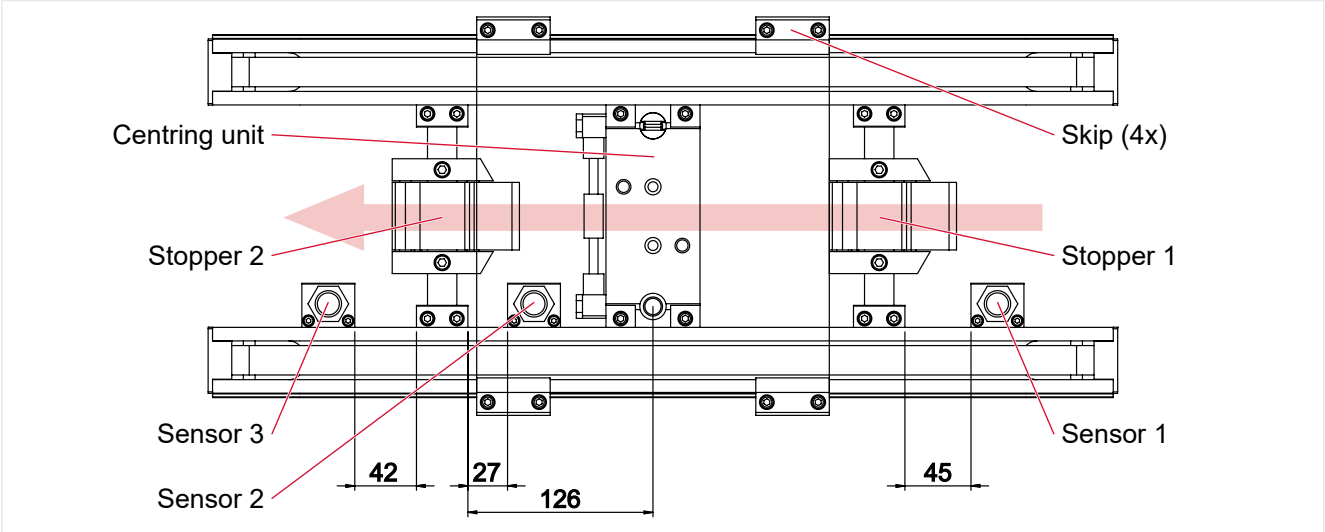


Fig. 50: Centring unit: Design

1. **Initial position:**
   - Stopper 1 is in the home position (below).
   - Stopper 2 is in the work position (at the top).
2. The workpiece carrier moves over sensor 1.
   0.5 s after sensor 1 has detected the workpiece carrier, stopper 1 moves back into the work position so that subsequent workpiece carriers are stopped immediately.
3. The workpiece carrier moves to the centring station. Sensor 2 detects workpiece carrier.
4. After 0.5 s the cylinders of the centring unit move the centring bolts upwards and lift the workpiece carrier to the machining height. The workpiece carrier is lifted by 0.5 mm and pressed against the skips.
5. After machining, the cylinders of the centring unit move the centring bolts downwards and lower the workpiece carrier to the belt height.
6. At the same time, stoppers 1 and 2 move to the home position and the stopped workpiece carriers continue on.
7. After 0.5 s, stopper 2 moves to the work position so that the following workpiece carriers are stopped immediately.

8.2.5 Cycle times

The processing time is set to the value 0 for the determined cycle times. The cycle time starts when the workpiece carrier is at the stopper and includes the workpiece carrier infeed, centring and the outfeed of the workpiece carrier up to the outfeed sensor.

Belt speed	Workpiece carrier size					
	160	200	240	280	320	400
6 m/min	2.9 s	3.1 s	3.5 s	3.9 s	4.3 s	5.1 s
8 m/min	2.3 s	2.5 s	2.8 s	3.1 s	3.4 s	4.0 s
13 m/min	1.5 s	1.7 s	1.9 s	2.1 s	2.3 s	2.7 s
16 m/min	1.3 s	1.5 s	1.7 s	1.9 s	2.0 s	2.3 s

Tab. 48: Cycle times

8.3 Mounting centring unit

Installation positions of the required accessories, see Drawings [▶ 72].

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

Required tools

- Allen wrench/Allen key, size 4

✓ Belt system is de-energised and depressurised.

Important information

The workpiece carrier requires a small amount of clearance for centring. Therefore, when mounting the stopper, first centre the workpiece carrier in the centring position and then align the stopper with 0.5 mm distance to the workpiece carrier.

- ▶ Remove clamping strip from component.

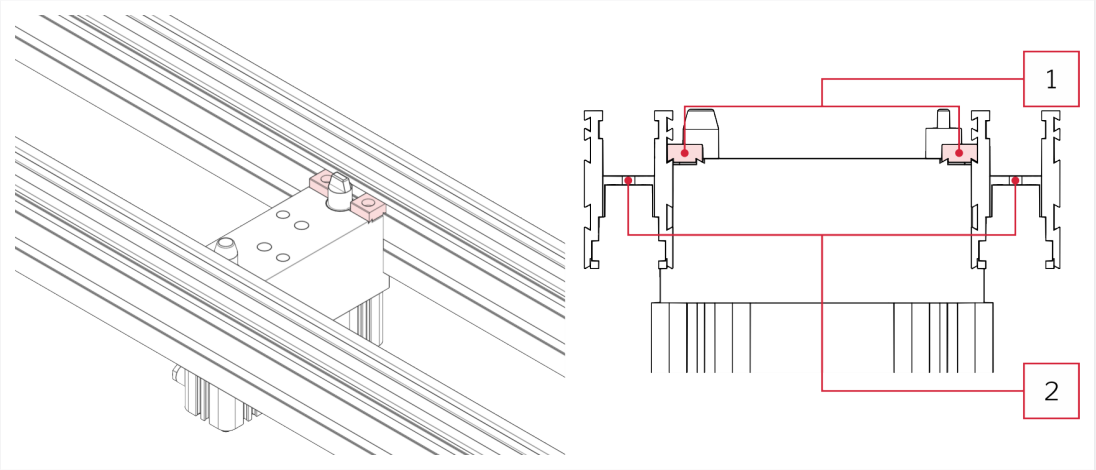


Fig. 51: Centring unit: Installation

1 Clamping strip	2 Support profile of the transfer section

- ▶ Lift the component from below into the support profile of the transfer section.
- ▶ Mount the clamping strip at the respective points on the inside of the support profile of the transfer section and screw it tight.

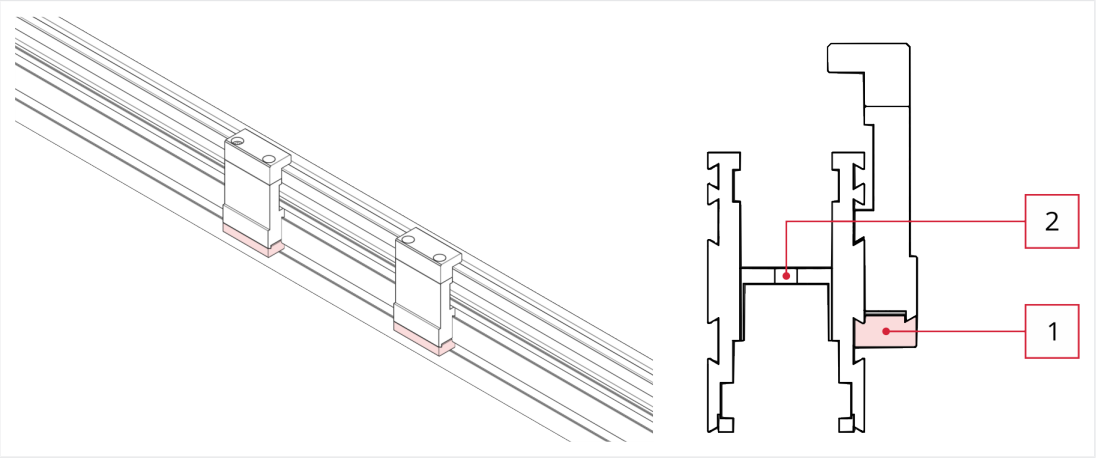


Fig. 52: Skips: Installation

1 Skip clamping element	2 Support profile of the transfer section

- ▶ Hang the skip clamping element on the outside in the support profile of the transfer section and screw it tight. For position, see Drawings [▷ 72].
- ▶ Connect the pneumatics according to the pneumatics plan.
- ▶ Connect sensor.
- ▶ Mount the required accessories.

8.4 Centring unit drawings and plans

See also

Pneumatics plan [▶ 102]

8.4.1 Drawings

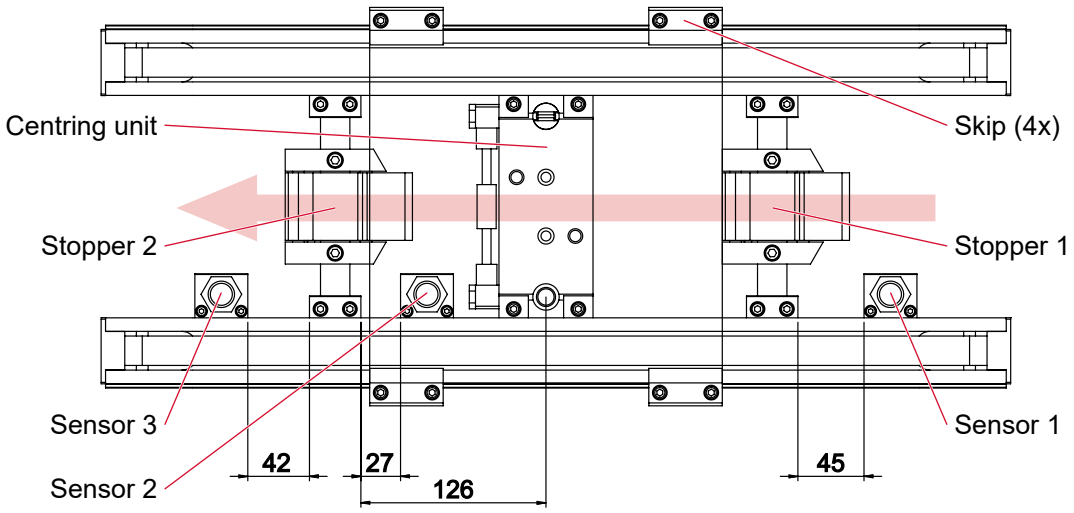
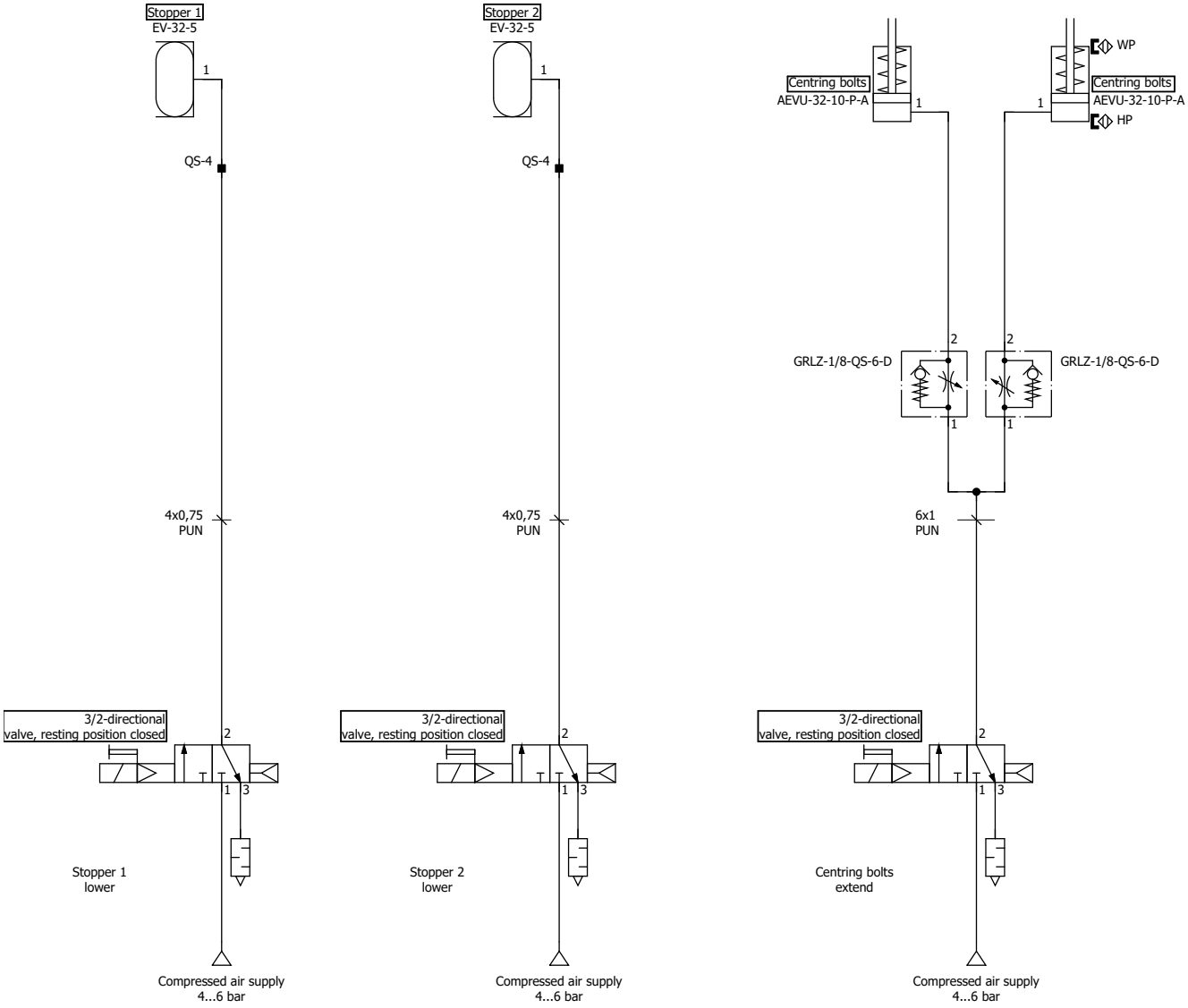


Fig. 53: Centring unit: Design

Important information

The workpiece carrier requires a small amount of clearance for centring. Therefore, when mounting the stopper, first centre the workpiece carrier in the centring position and then align the stopper with 0.5 mm distance to the workpiece carrier.

8.4.2 Pneumatics plan



8.5 Spare parts of centring unit

NOTE

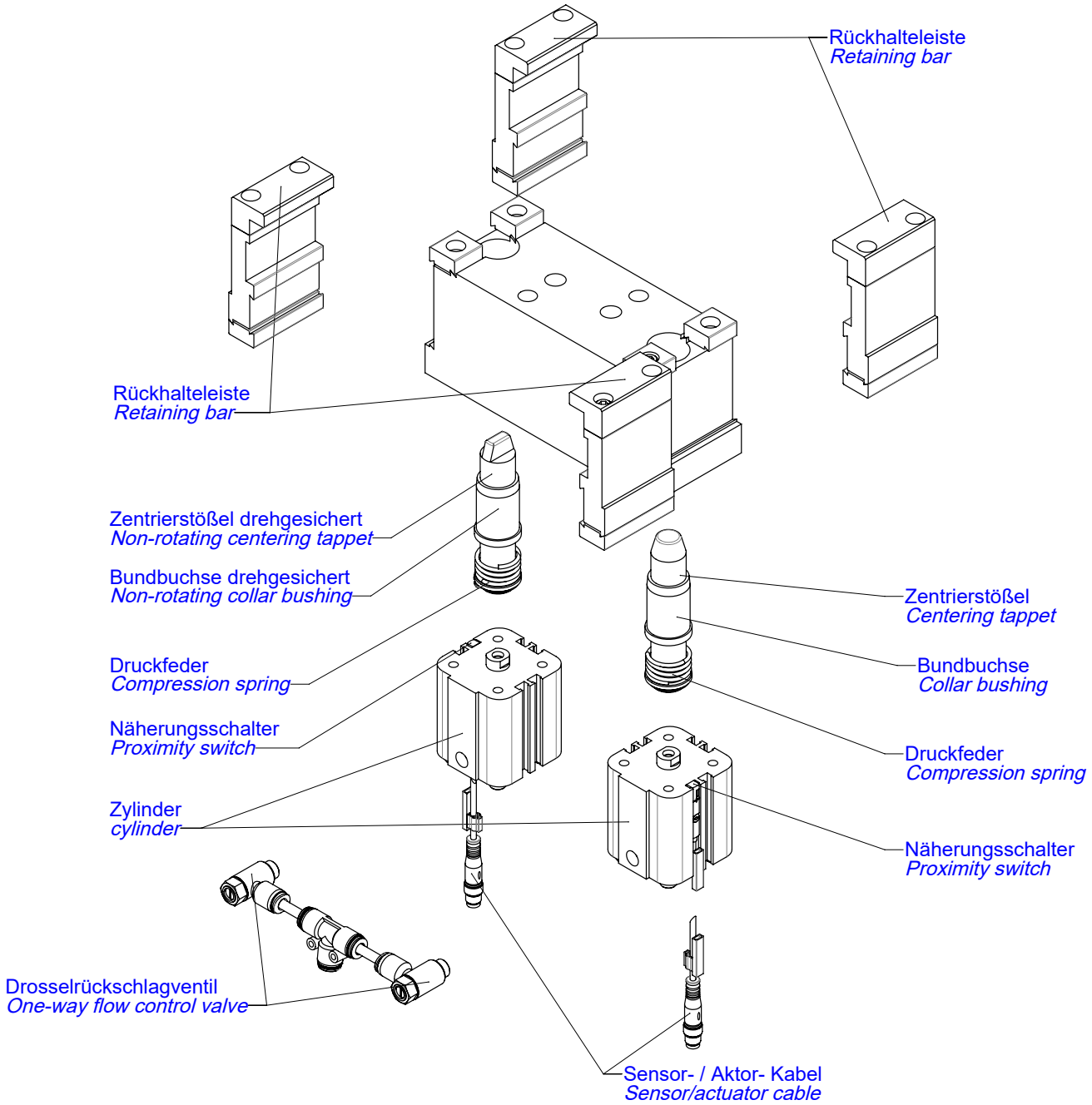
Important information

For more information on spare parts, see the specific spare parts list enclosed with the delivery.

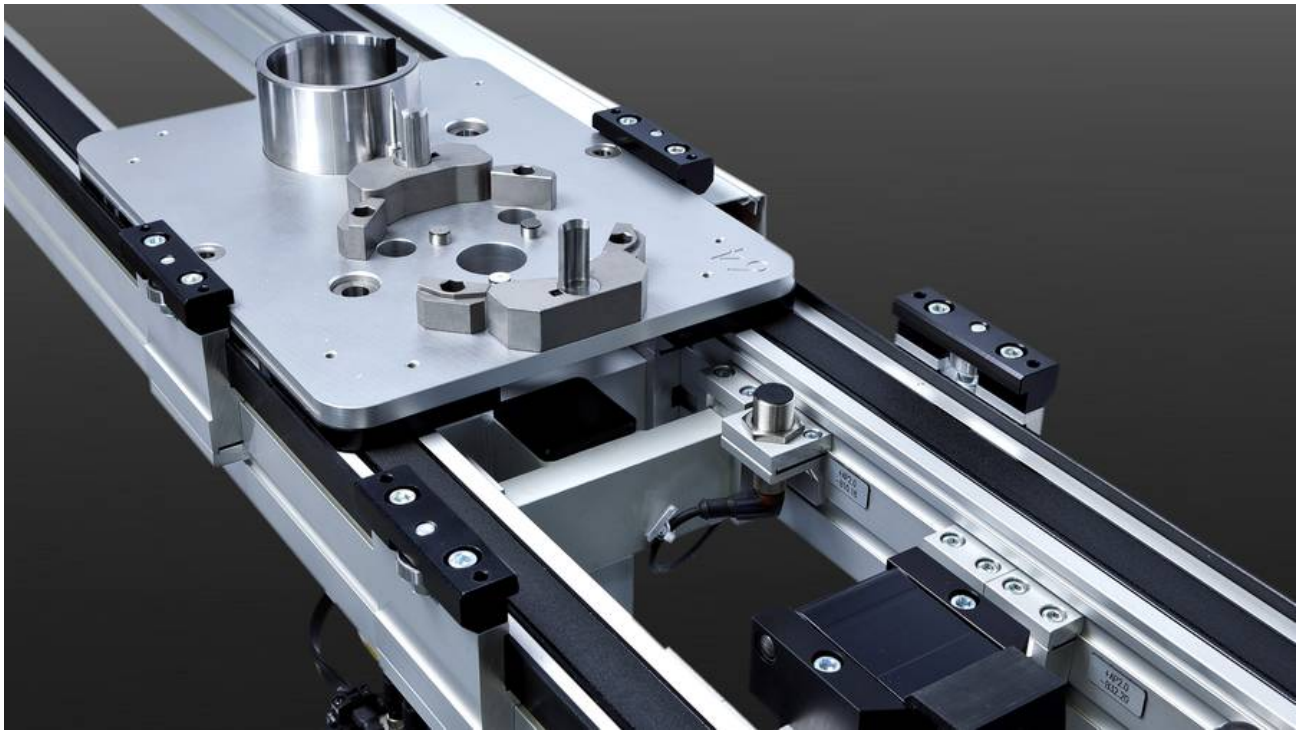
See also

Spare parts overview [▶ 103]

8.5.1 Spare parts overview



9 Lateral positioning



9.1 Description of lateral positioning

9.1.1 Scope of delivery and accessories of lateral positioning

Scope of delivery	Required accessories
■ 4 lateral positioning	■ Transfer section ■ Stopper ■ Sensor

Tab. 49: Lateral positioning: Scope of delivery and accessories

9.1.2 Technical data of lateral positioning

A type plate with (further) data is located on the machine / product.

Guide accuracy	+/- 0.07 mm

Tab. 50: Technical data: Lateral positioning

9.1.3 Overview of lateral positioning

The workpiece carrier is guided along the transfer section by lateral guide rails. In order to increase the guiding accuracy of the workpiece carrier, additional lateral positioning can be used.

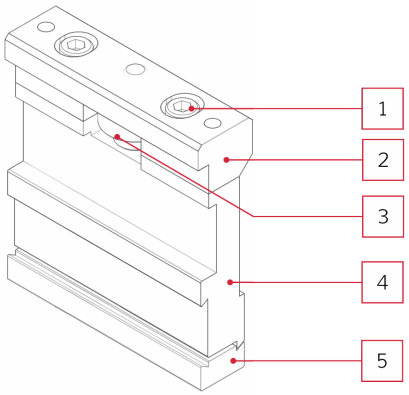


Fig. 54: Lateral positioning: Overview

1	Cheese head screw	2	Centring bar with ball bearing
3	Ball bearing	4	Clamping element
5	Clamping strip		

9.2 Mounting lateral positioning

✓ Lateral guide rails of the transfer section do not have to be disassembled.

▶ Mount the clamping strip of the side positioning at the desired position on the outside of the support profile of the transfer section and screw it tight.

▶ Position the stopper so that it stops the workpiece carrier in the lateral position.

Fine alignment of the lateral positioning

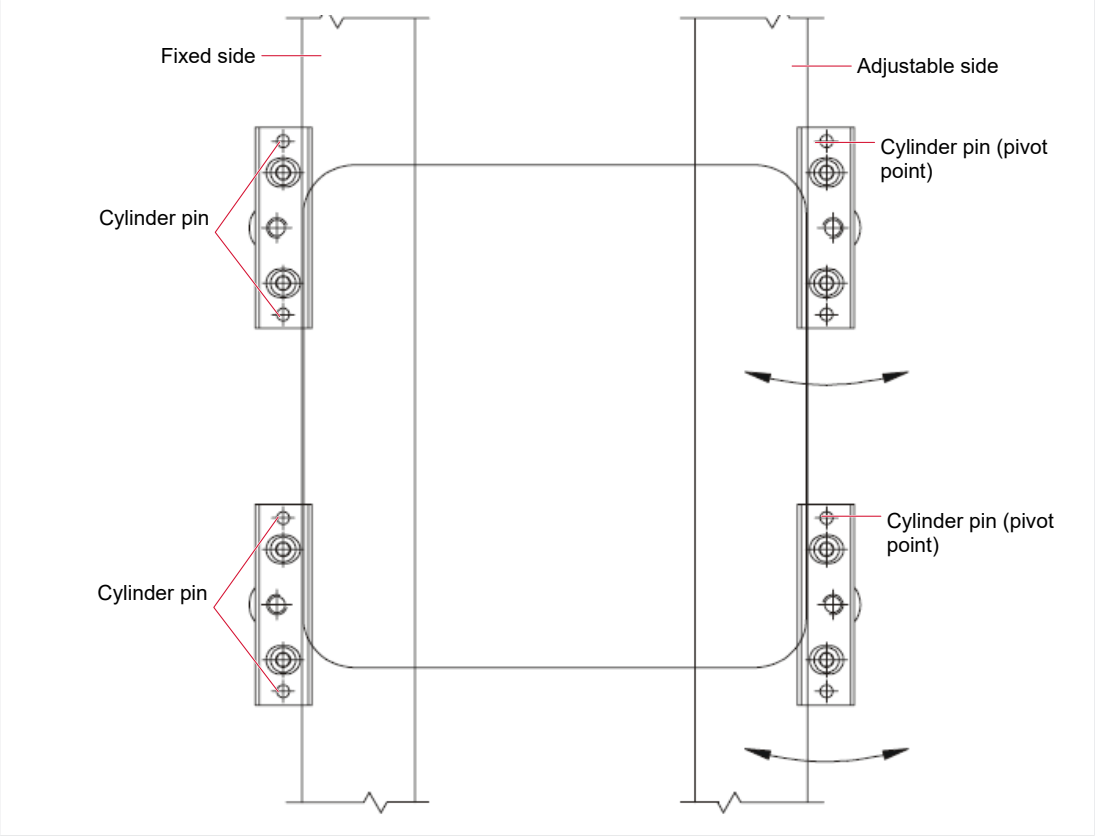
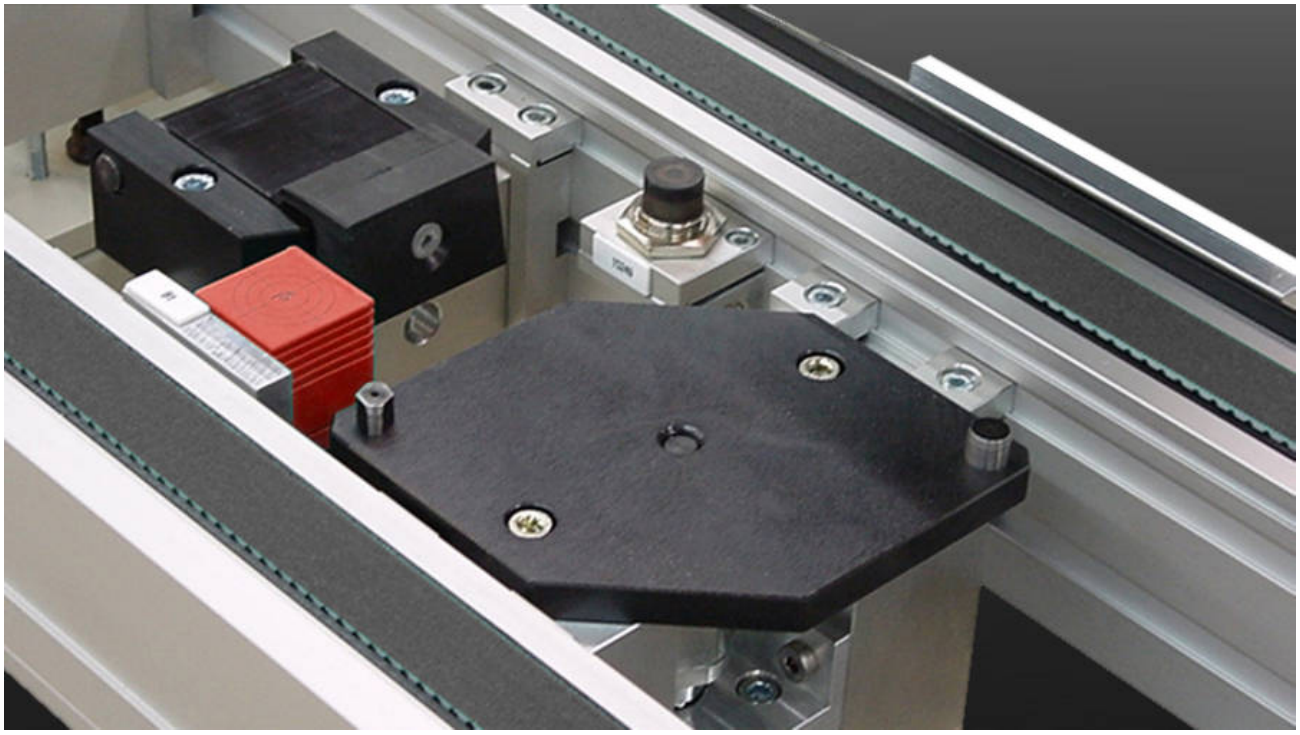


Fig. 55: Lateral positioning: Fine adjustment

- ▶ Place the workpiece carrier on the ball bearing of the lateral positioning (fixed side).
- ▶ By turning the centring bar (around the pivot point) on the side to be adjusted, adjust the workpiece carrier without play.
- ▶ Tighten the cheese head screws of the lateral positioning to be adjusted.

10 Lifting unit



10.1 Basic safety instructions for the lifting unit

10.1.1 Intended use

This component is only intended to be installed in the posyART transfer section in order to form a complete machine, in the sense of the Machinery Directive, together with it and other components of the posyART system.

Function

Lifting units lift workpiece carriers from belt height to a different machining height. Strokes from 0-100 mm are possible.

Personnel qualifications

See Target groups and personnel qualifications [▶ 21].

Environment

- The component may only be used with other components of the posyART system.
- The component may only be used for commercial use. It is not suitable for operation in potentially explosive or chemically aggressive areas. Dust loads must also be avoided.
- Operation is only permitted in industrial buildings, on sufficiently load-bearing surfaces and in accordance with the defined ambient conditions (see Technical data and ambient conditions of lifting unit [▶ 111]).

Non-intended use

Any use beyond the intended use or any other use is considered misuse. Misuse includes:

- Failure to perform maintenance, service and repair measures.
- Use of components with different gauges (e.g. transfer section with a gauge of 200 may only be used together with workpiece carriers etc. with a gauge width of 200).

10.1.2 Danger zone to be secured by the operator

The open danger zone shown in the figure must be secured by the operating company with a suitable protective device.

The machine may only be put into operation when the danger zone has been secured and all basic safety and health protection requirements have been fulfilled (for details, see supplied declaration of incorporation).

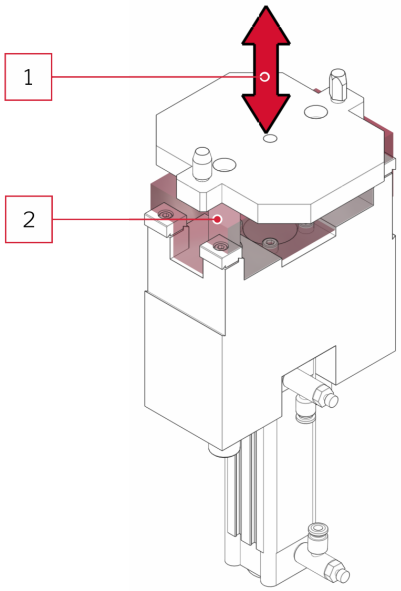


Fig. 56: Lifting unit: danger zone to be secured by the operator

1 Movement of the lifting unit	2 Danger zone to be secured

10.1.3 Residual risks

Life-phase	Risk and avoidance	
Maintenance, fault rectification	Danger due to electrical voltage! ▶ De-energise the machine before maintenance work and secure it from being switched on again.	
Operation	The danger area is not secured. Persons can reach into the danger area and suffer crushing. ▶ Secure open danger area. ▶ Only after a conformity assessment procedure, in accordance with the Machinery Directive, has been carried out for the complete machine in which the product is installed, may the machine/product be put into operation.	
Installation, disassembly, maintenance, fault rectification	Pneumatic lines are pressurised with compressed air. ▶ Depressurise the machine before performing any tasks.	

Tab. 51: Residual risks

10.2 Description of lifting unit

10.2.1 Scope of delivery and accessories of lifting unit

Scope of delivery	Required accessories	
■ Lifting unit	■ Transfer section	1
	■ Stopper	2
	■ Sensor	3

Tab. 52: Lifting unit: Scope of delivery and accessories

10.2.2 Technical data and ambient conditions of lifting unit

A type plate with (further) data is located on the machine / product.

Lifting area (lifting of the workpiece carrier from the belt)	0 – 100 mm
Permissible vertical forces	300 N (acting centrally), including weight of the workpiece carrier
Maximum workpiece carrier load (transport load)	200 N
Noise exposure	< 75 dB(A)

Tab. 53: Lifting unit: Technical data

Pneumatics

Operating pressure	4-6 bar, filtered

Tab. 54: Pneumatics specifications

Environmental conditions

Operating temperature	10 - 35°C
Change in temperature	maximum 10°C / h
Relative humidity	15 - 80% indoor, no condensation
Air pressure	(860...1060) hPa

Tab. 55: Environmental conditions

10.2.3 Overview of lifting unit

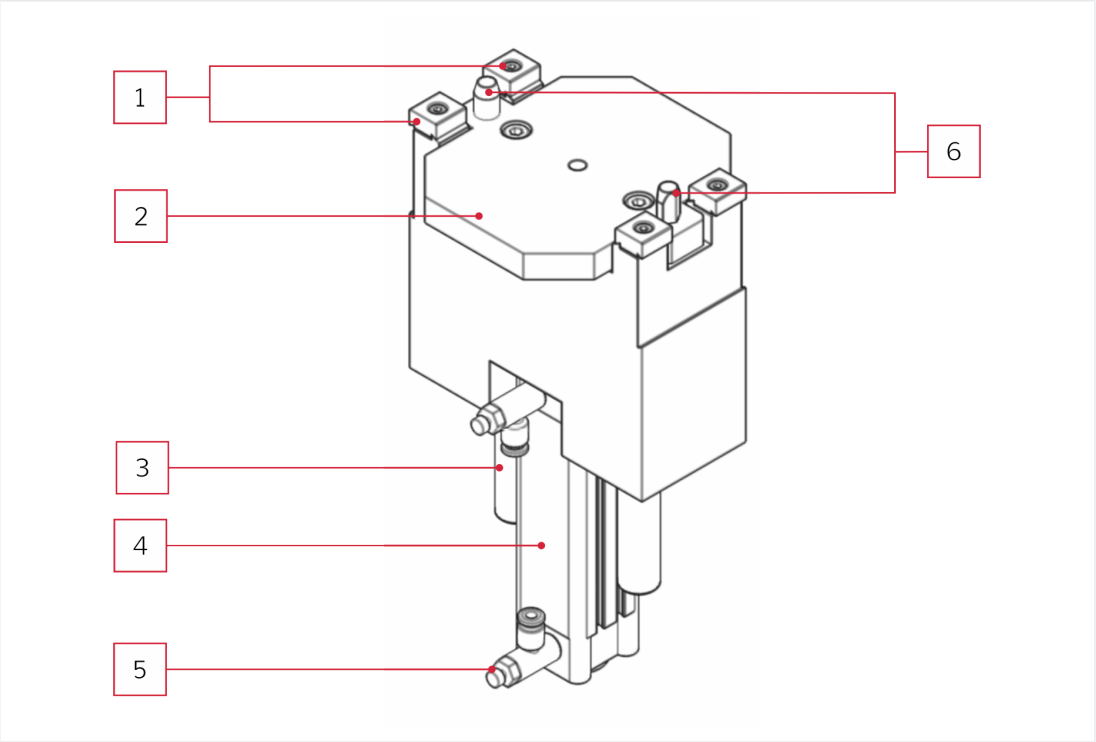


Fig. 57: Lifting unit

1 Clamping strip	2 Plate
3 Shaft	4 Cylinder
5 Throttle check valve	6 Locating bolts

10.2.4 Description of operational workflow of lifting unit

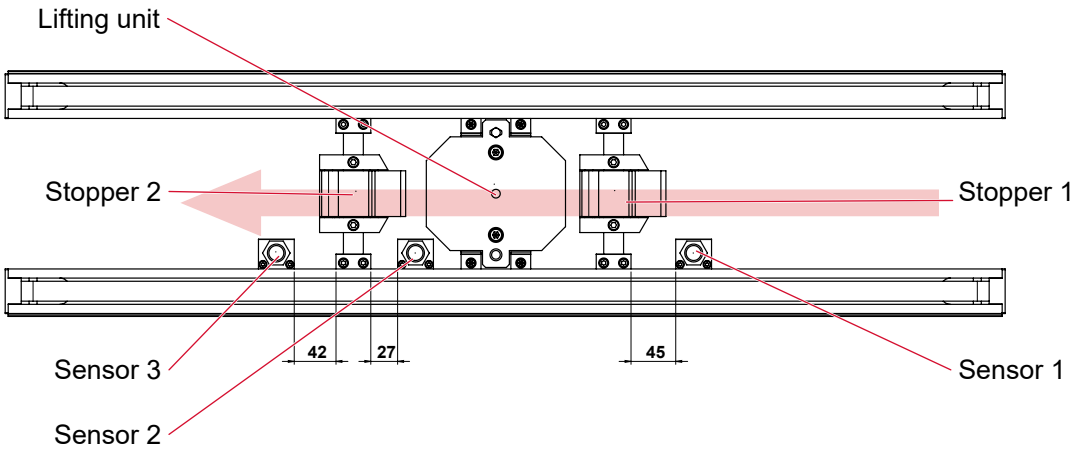


Fig. 58: Lifting unit: Design

1. **Initial position:**
   - Stopper 1 is in the home position (below).
   - Stopper 2 is in the work position (at the top).
2. The workpiece carrier moves over sensor 1.
   0.5 s after sensor 1 has detected the workpiece carrier, stopper 1 moves back into the work position so that subsequent workpiece carriers are stopped immediately.
3. The workpiece carrier moves to the lifting unit. Sensor 2 detects workpiece carrier.
4. After 0.5 s the cylinder moves the lifting unit upwards, the locating bolts move into the centring bushes of the workpiece carrier, the workpiece carrier is centred and raised to the machining height.
5. After machining, the cylinder moves the lifting unit downwards and lowers the workpiece carrier to the belt height.
6. At the same time, stoppers 1 and 2 move to the home position and the stopped workpiece carriers continue on.
7. After 0.5 s, stopper 2 moves to the work position so that the following workpiece carriers are stopped immediately.

10.3 Mounting lifting unit

Installation positions of the required accessories, see Drawings [▶ 72].

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

Required tools

- Allen wrench/Allen key, size 4

✓ Belt system is de-energised and depressurised.

Important information

The workpiece carrier requires a small amount of clearance for centring. Therefore, when mounting the stopper, first centre the workpiece carrier in the centring position and then align the stopper with 0.5 mm distance to the workpiece carrier.

- ▶ Remove clamping strip from component.

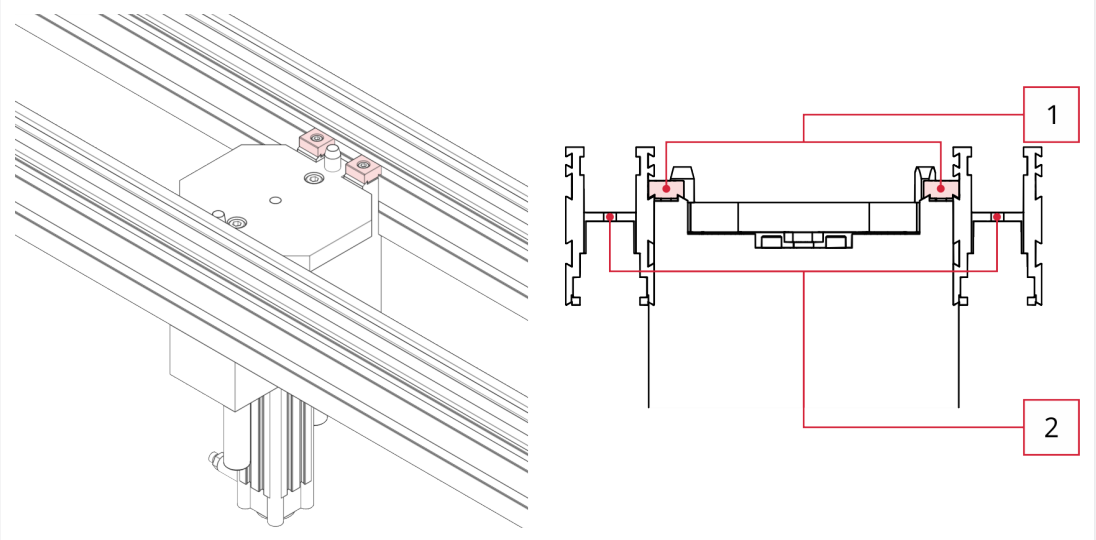


Fig. 59: Lifting unit: Installation

1 Clamping strip	2 Support profile of the transfer section

- ▶ Lift the component from below into the support profile of the transfer section.
- ▶ Mount the clamping strip at the respective points on the inside of the support profile of the transfer section and screw it tight.
- ▶ Connect the pneumatics according to the pneumatics plan.
- ▶ Mount the required accessories.

10.4 Setting lifting speed of lifting unit

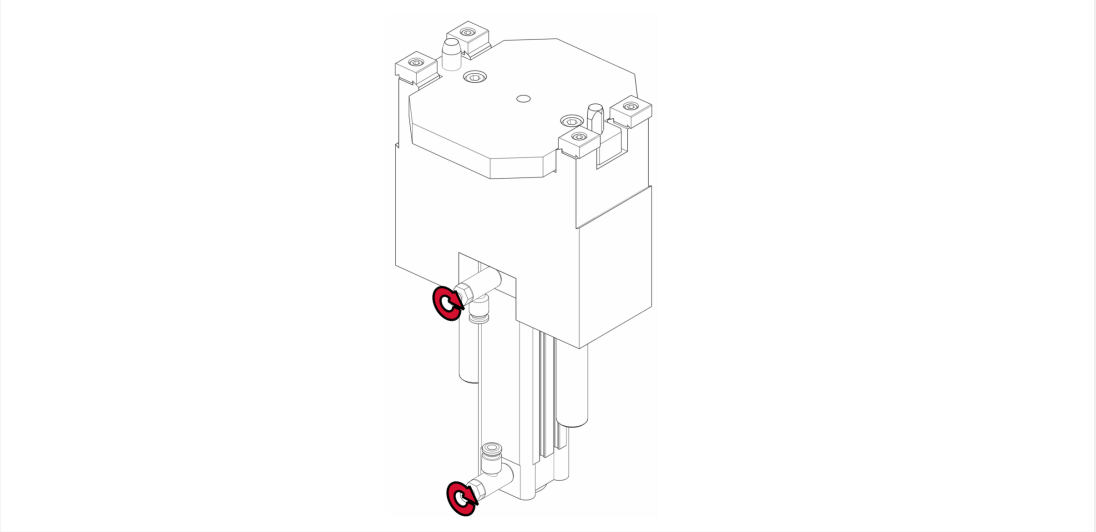


Fig. 60: Lifting unit: Setting lifting speed

- ▶ To increase the lifting speed: unscrew the nuts of the throttle check valves.
- ▶ To reduce the lifting speed: screw in the nuts of the throttle check valves.

10.5 Drawings and plans

Important information

The workpiece carrier requires a small amount of clearance for centring. Therefore, when mounting the stopper, first centre the workpiece carrier in the centring position and then align the stopper with 0.5 mm distance to the workpiece carrier.

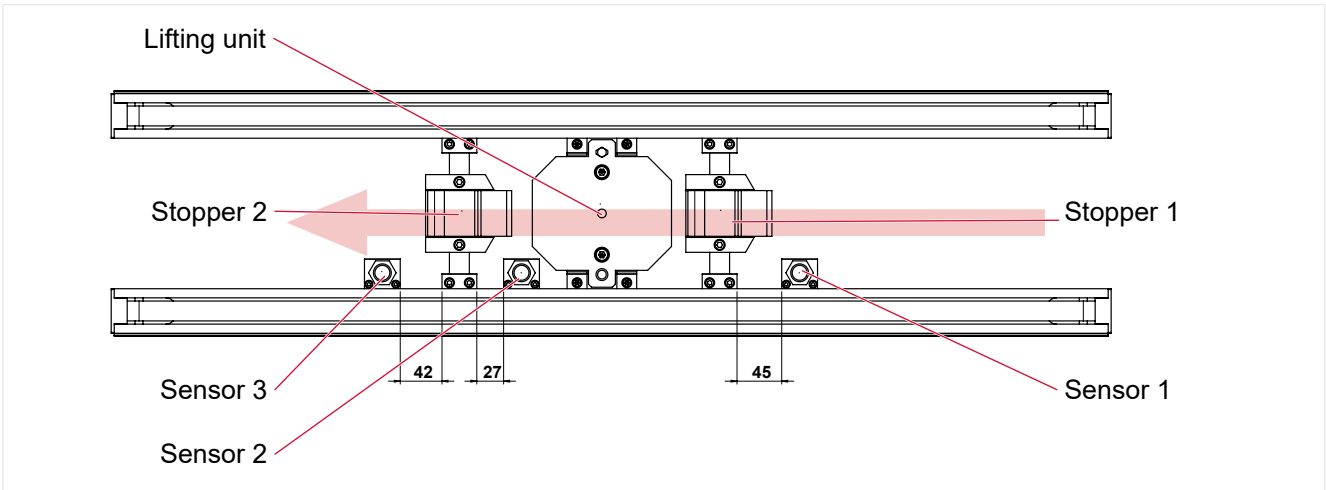
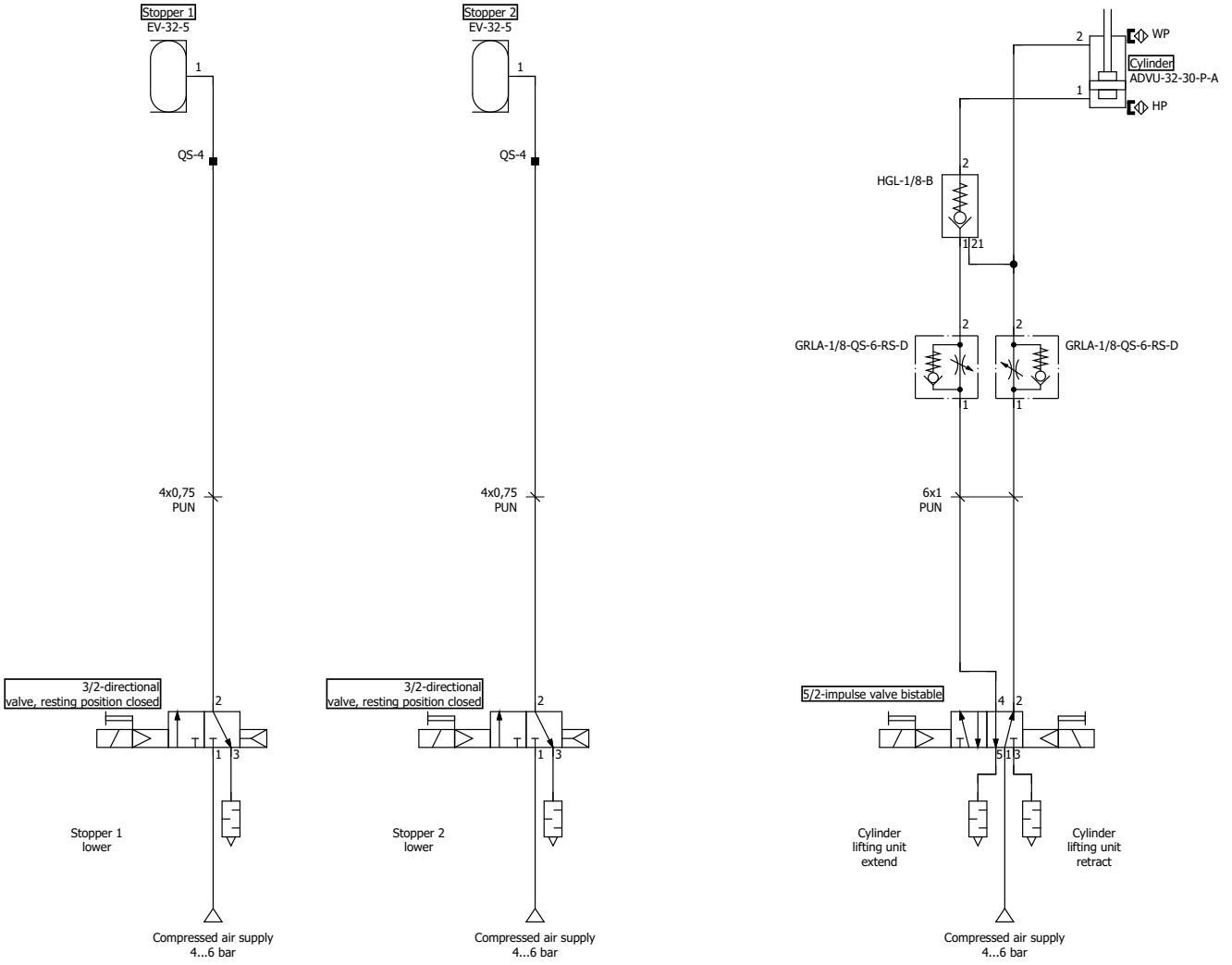


Fig. 61: Lifting unit: Design

See also

Pneumatics plan [▶ 116]

10.5.1 Pneumatics plan



10.6 Spare parts of lifting unit

NOTE

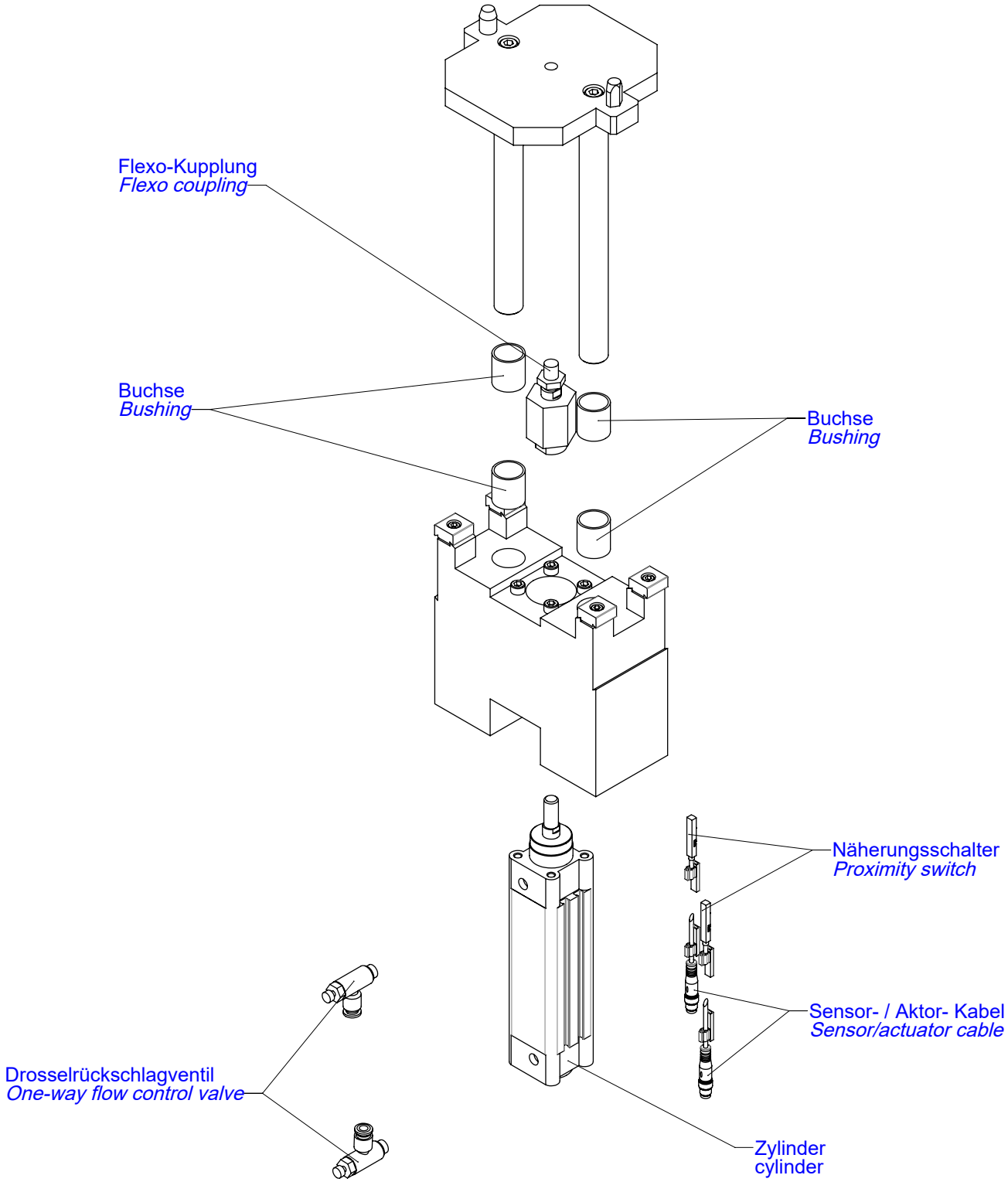
Important information

For more information on spare parts, see the specific spare parts list enclosed with the delivery.

See also

Spare parts overview [▶ 118]

10.6.1 Spare parts overview



11 Rotary lifting unit

11.1 Basic safety instructions of rotary lifting unit

11.1.1 Intended use

This component is only intended to be installed in the posyART transfer section in order to form a complete machine, in the sense of the Machinery Directive, together with it and other components of the posyART system.

Function

Rotary lifting unit rotates workpiece carriers by 90 or 180 degrees.

Personnel qualifications

See Target groups and personnel qualifications [▶ 21].

Environment

- The component may only be used with other components of the posyART system.
- The component may only be used for commercial use. It is not suitable for operation in potentially explosive or chemically aggressive areas. Dust loads must also be avoided.
- Operation is only permitted in industrial buildings, on sufficiently load-bearing surfaces and in accordance with the defined ambient conditions (see Technical data and ambient conditions for the rotary lifting unit [▶ 122]).

Non-intended use

Any use beyond the intended use or any other use is considered misuse. Misuse includes:

- Failure to perform maintenance, service and repair measures.
- Use of components with different gauges (e.g. transfer section with a gauge of 200 may only be used together with workpiece carriers etc. with a gauge width of 200).

11.1.2 Danger zone to be secured by the operator

The risk of crushing depends on the weight of the workpiece carrier.

- Workpiece carrier with a weight of less than 135 N: slight danger of crushing
- Workpiece carrier with a weight of greater than 135 N: severe danger of crushing. The danger zone shown in the figure must be secured by the operating company with a suitable protective device. The machine may only be put into operation when the danger zone has been secured and all basic safety and health protection requirements have been fulfilled (for details, see supplied declaration of incorporation).

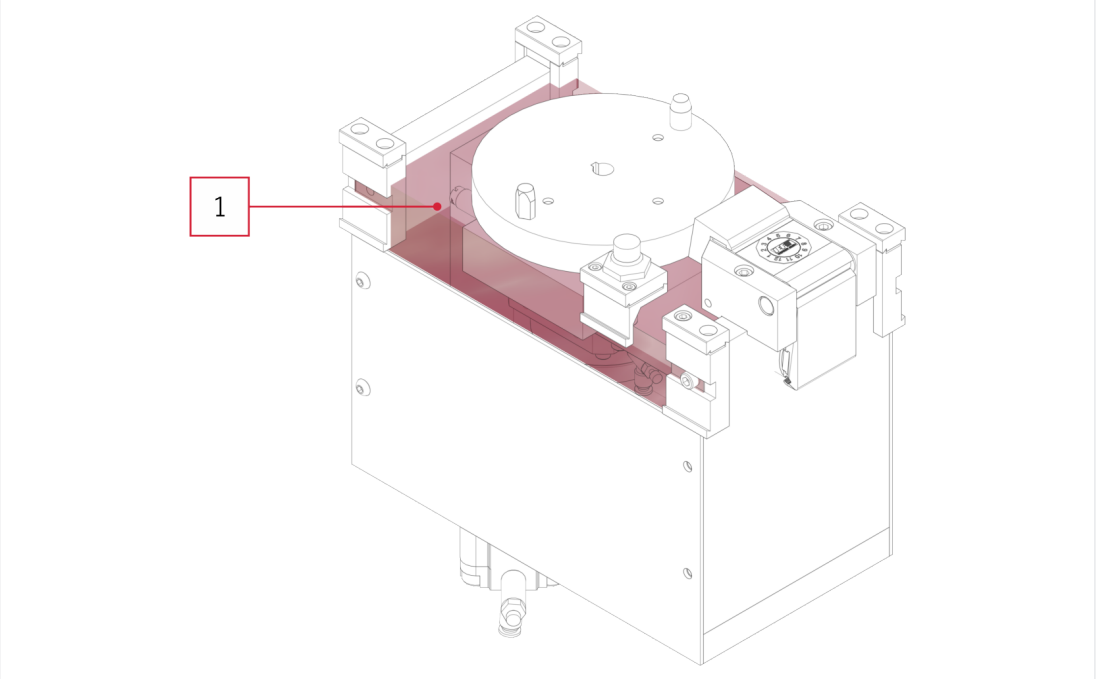


Fig. 62: Rotary lifting unit: danger zone to be secured by the operator [1]

1 Danger zone to be secured

11.1.3 Residual risks

Life-phase	Risk and avoidance	
Maintenance, fault rectification	Danger due to electrical voltage! ▶ De-energise the machine before maintenance work and secure it from being switched on again.	
Operation	The danger area is not secured. Persons can reach into the danger area and suffer crushing. ▶ To secure open danger area, see Danger zone to be secured by the operator [▷ 121]. ▶ Only after a conformity assessment procedure, in accordance with the Machinery Directive, has been carried out for the complete machine in which the product is installed, may the machine/product be put into operation.	

Life-phase	Risk and avoidance	
Installation, disassembly, maintenance, fault rectification	Pneumatic lines are pressurised with compressed air. ▶ Depressurise the machine before performing any tasks.	

Tab. 56: Residual risks

11.2 Description of the rotary lifting unit

11.2.1 Scope of delivery and accessories of rotary lifting unit

Scope of delivery	Required accessories	
■ Rotary lifting unit (depending on order, for 90° or 180° rotation)	■ Transfer section	1
	■ Stopper	1
	■ Sensor	2

Tab. 57: Rotary lifting unit: Scope of delivery and accessories

11.2.2 Technical data and ambient conditions for the rotary lifting unit

A type plate with (further) data is located on the machine / product.

Torque	■ Workpiece carrier size 160-240: 5 Nm ■ Workpiece carrier size 280-400: 10 Nm
Permissible vertical forces (acting centrally), including weight of the workpiece carrier	■ Workpiece carrier size 160-240: 50 N ■ Workpiece carrier size 280-400: 80 N
Maximum workpiece carrier load (transport load)	200 N
Noise exposure	< 75 dB(A)

Tab. 58: Rotary lifting unit: Technical data

Pneumatics

Operating pressure	4-6 bar, filtered

Tab. 59: Pneumatics specifications

Environmental conditions

Operating temperature	10 - 35°C
Change in temperature	maximum 10°C / h
Relative humidity	15 - 80% indoor, no condensation
Air pressure	(860...1060) hPa

Tab. 60: Environmental conditions

11.2.3 Overview of the rotary lifting unit

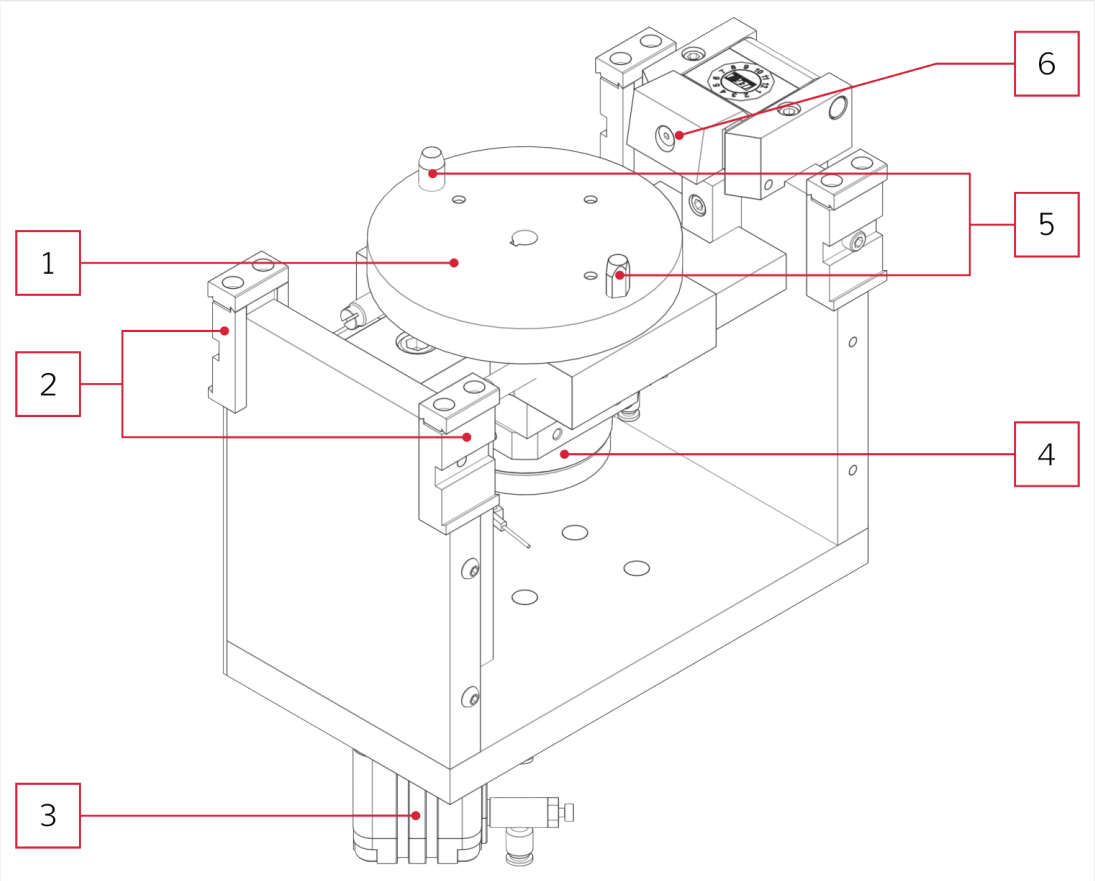


Fig. 63: Rotary lifting unit: Overview

1	Rotary plate	2	Clamping element
3	Cylinder	4	Rotary unit
5	Locating bolts	6	Stopper

11.2.4 Description of operational workflow of the rotary lifting unit

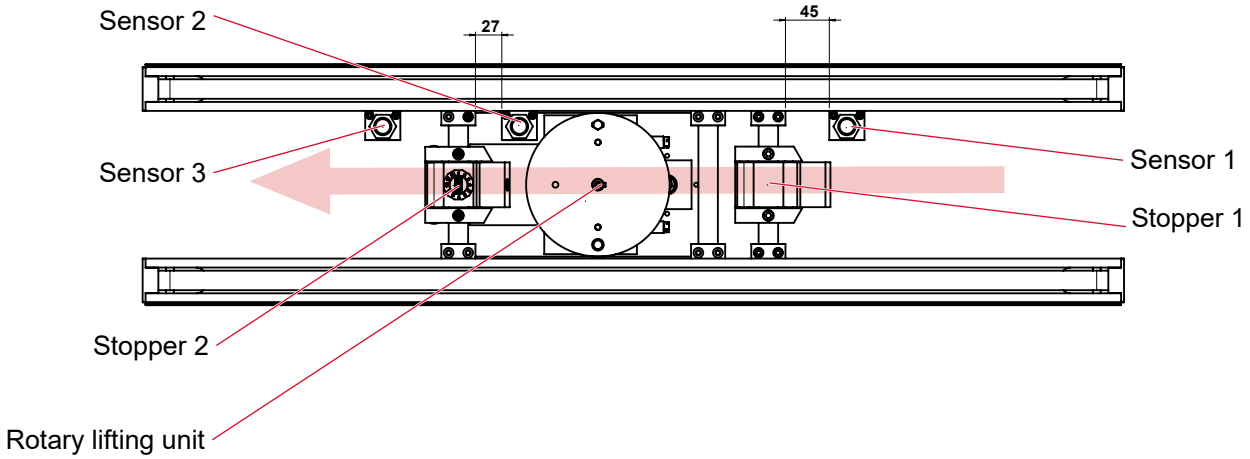


Fig. 64: Rotary lifting unit: Design

1. **Initial position:**
   - Stopper 1 is in the home position (below).
   - Stopper 2 is in the work position (at the top).
2. The workpiece carrier moves over sensor 1.
   0.5 s after sensor 1 has detected the workpiece carrier, stopper 1 moves back into the work position so that subsequent workpiece carriers are stopped immediately.
3. The workpiece carrier moves to the rotary lifting unit. Sensor 2 detects the workpiece carrier.
4. After 0.5 s the cylinder moves the rotary lifting unit upwards, the locating bolts move into the centring bushes of the workpiece carrier, the workpiece carrier is centred and raised by 10 mm.
5. As soon as the workpiece carrier is lifted, the rotary unit rotates by 90 or 180 degrees. The proximity switches of the rotary unit detect the position.
6. After machining, the cylinder moves the rotary lifting unit downwards and lowers the workpiece carrier to the belt height.
7. At the same time, stoppers 1 and 2 move to the home position and the stopped workpiece carriers continue on.
8. After 0.5 s, stopper 2 moves to the work position so that the following workpiece carriers are stopped immediately.

11.3 Mounting the rotary lifting unit

Installation positions of the required accessories, see Drawings [▶ 126].

⚠ WARNING

Risk of serious injury due to electrical voltage and pneumatic pressure.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

Required tools

- Allen wrench/Allen key, size 4

✓ Belt system is de-energised and depressurised.

- ▶ Remove clamping strip from component.

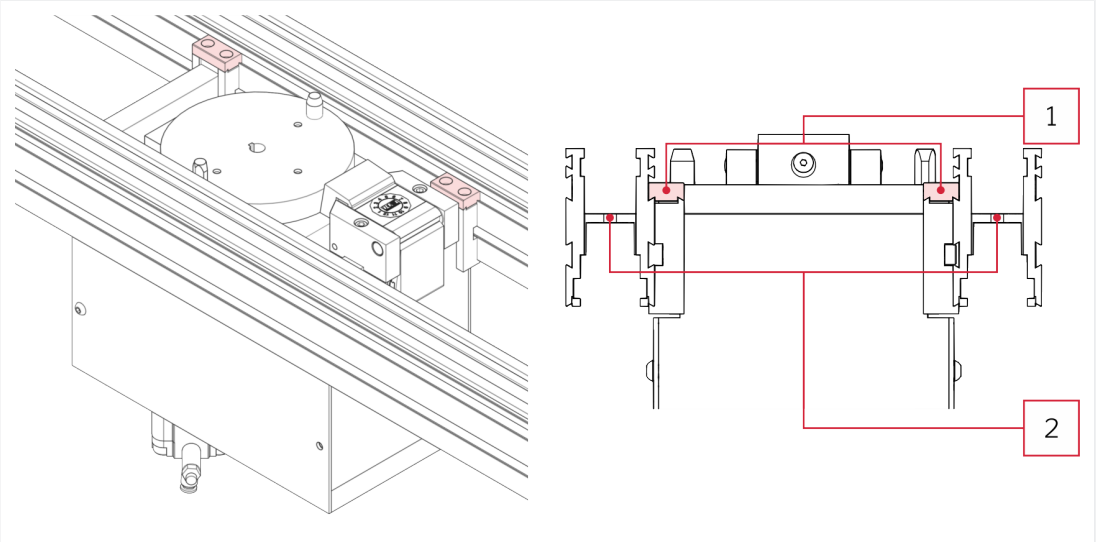


Fig. 65: Rotary lifting unit: Installation

1 Clamping strip	2 Support profile of the transfer section

- ▶ Lift the component from below into the support profile of the transfer section.
- ▶ Mount the clamping strip at the respective points on the inside of the support profile of the transfer section and screw it tight.
- ▶ Connect the pneumatics according to the pneumatics plan.
- ▶ Mount the required accessories.

11.4 Drawings and plans of the rotary lifting unit

See also

Pneumatics plan [▶ 126]

11.4.1 Drawings

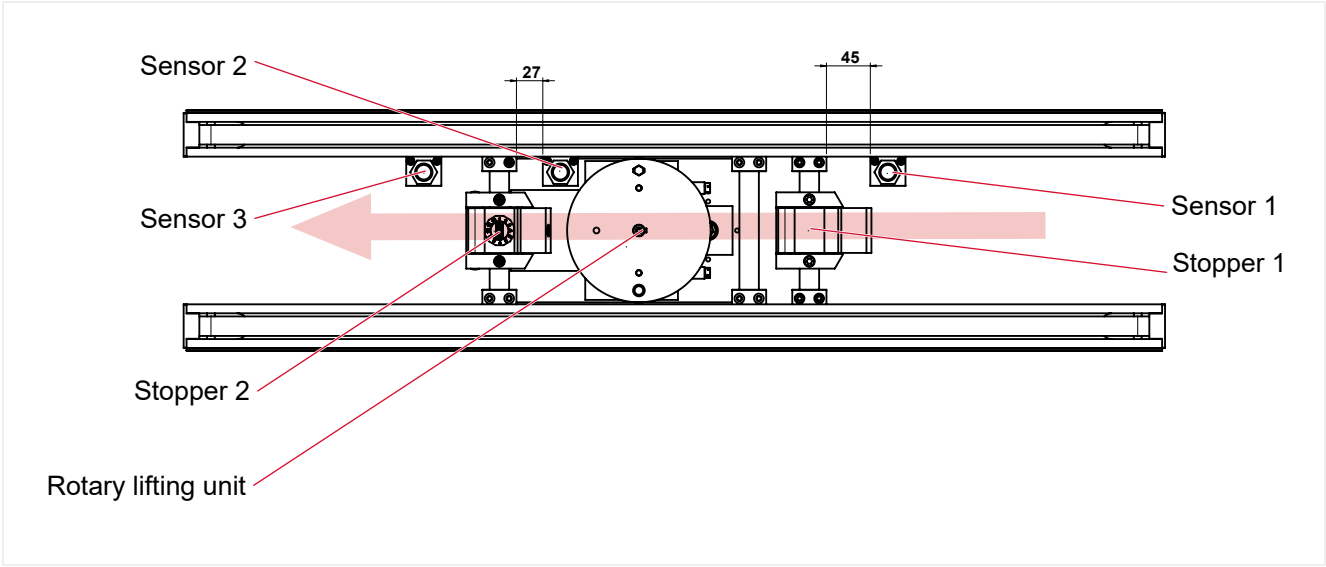
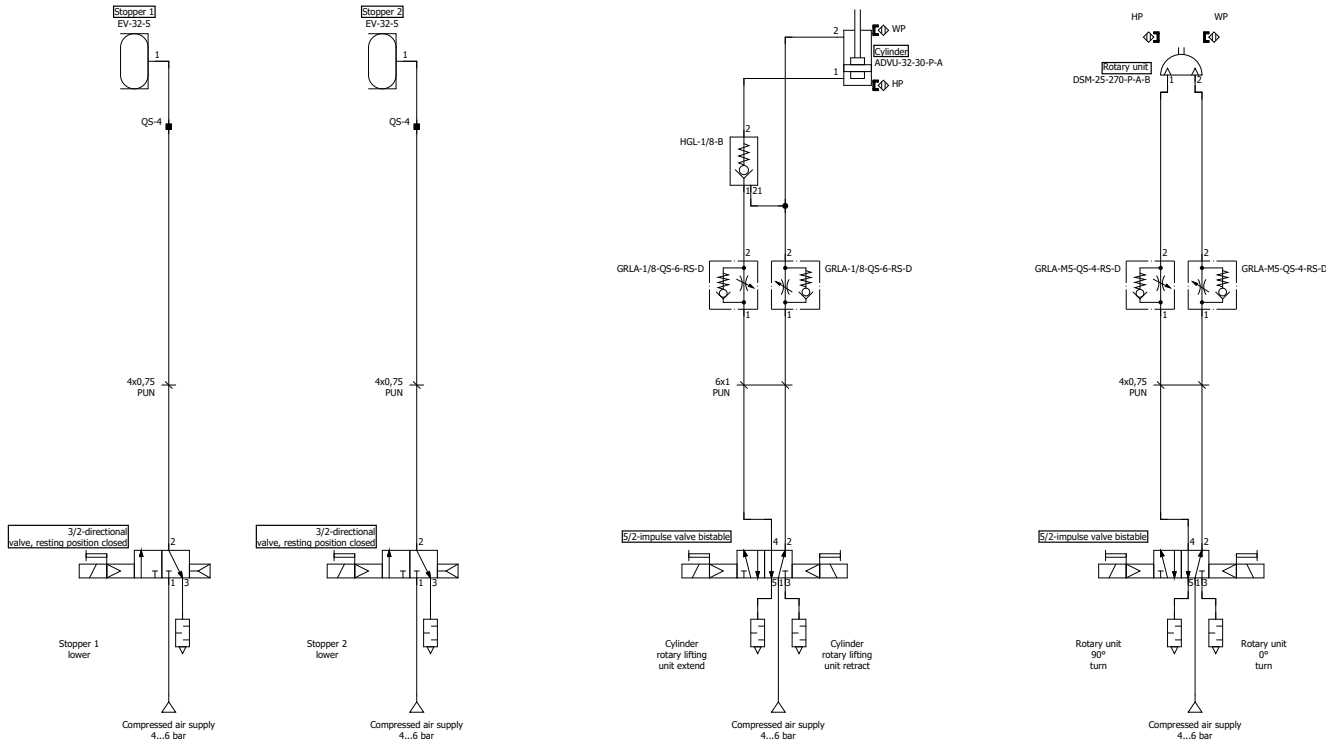


Fig. 66: Rotary lifting unit: Design

11.4.2 Pneumatics plan



11.5 Spare parts of the rotary lifting unit

NOTE

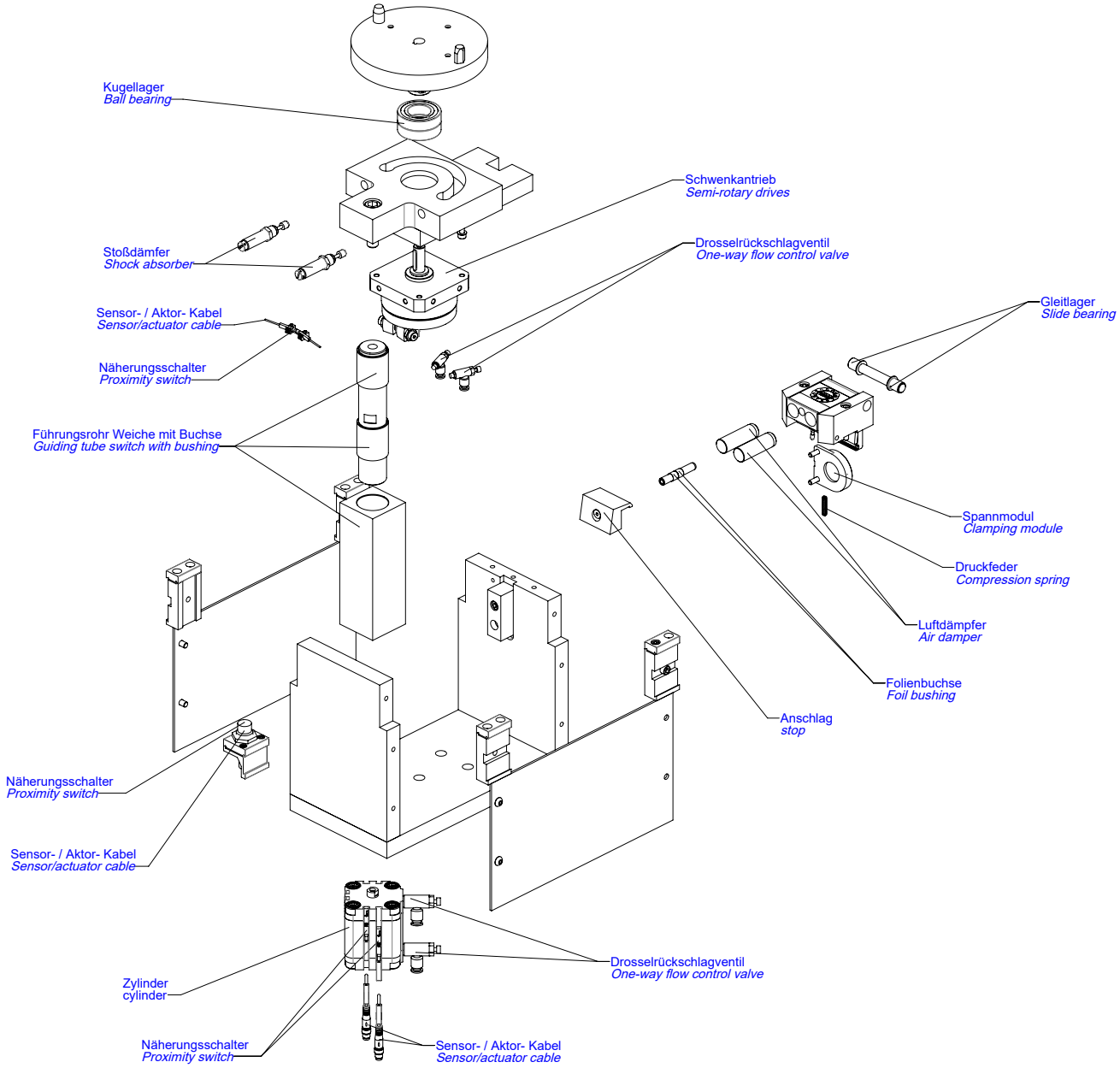
Important information

For more information on spare parts, see the specific spare parts list enclosed with the delivery.

See also

Spare parts overview [▶ 127]

11.5.1 Spare parts overview



12 Sensor

12.1 Description of sensor

12.1.1 Scope of delivery and accessories of sensor

Scope of delivery
■ Sensor ■ Clamping element ■ Mounting screws

Tab. 61: Sensor: Scope of delivery and accessories

12.1.2 Technical data and ambient conditions of sensor

A type plate with (further) data is located on the machine / product.

Switch output	PNP NOC
Connection	M12x1 plug, 4-pin, A-coded
Dimensions (sensor only)	Ø 18 x 54 mm
Tightening torque (sensor only)	35 Nm
Size (sensor only)	M18x1
Secured switching distance	6.5 mm

Tab. 62: Sensor: Technical data

Environmental conditions

Operating temperature	10 - 35°C
Change in temperature	maximum 10°C / h
Relative humidity	15 - 80% indoor, no condensation
Air pressure	(860...1060) hPa

Tab. 63: Environmental conditions

12.1.3 Overview of sensor

Sensors are used to monitor the positions of the workpiece carriers. If a workpiece carrier passes a sensor, the sensor sends an electrical signal to the controller.

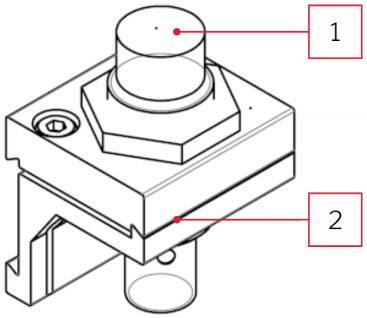


Fig. 67: Sensor: Overview

1 Sensor	2 Sensor fixing

12.2 Mounting sensor

If sensors are used as accessories to other assemblies, the sensors must be mounted at the specified distance from the respective assembly (see chapter “Drawings” of the respective assembly).

⚠ WARNING

Serious risk of injury due to electrical voltage.

- ▶ Before carrying out the following work, depressurise the relevant machine part and secure it against restarting.

- ✓ Belt system is de-energised and depressurised.
- ▶ Mount the clamping strip at the desired position on the inside of the support profile of the transfer section and screw it tight. Make sure that the sensor is flush with the upper edge of the support profile.
- ▶ Connect sensor.

12.2.1 Sensor connector pin assignment

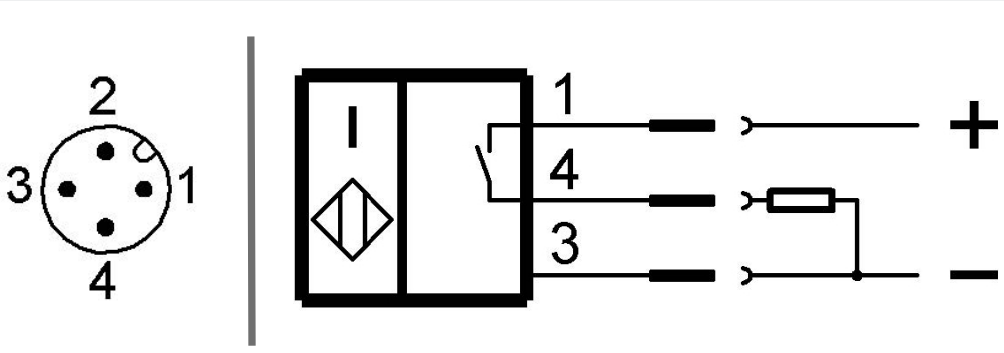


Fig. 68: Sensor: Pin assignment and circuit diagram [posyART]

12.3 Drawings of sensor

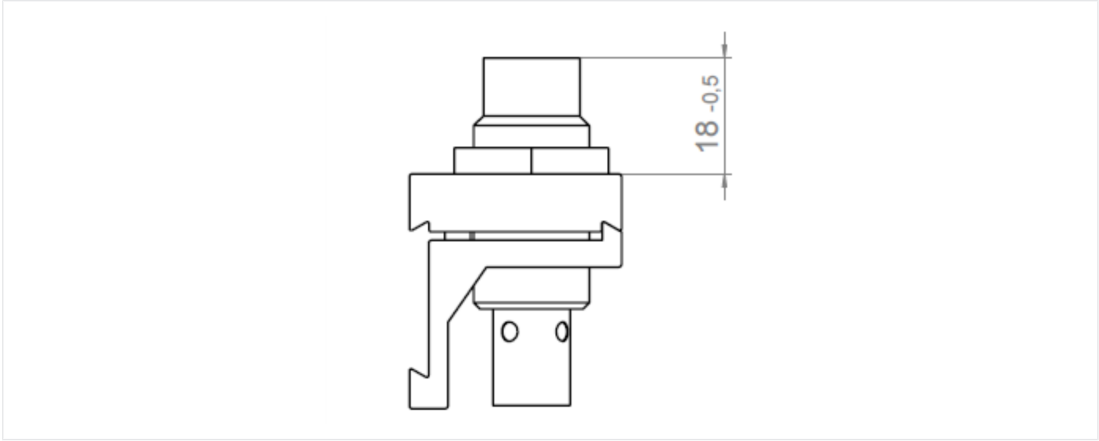


Fig. 69: Sensor: Dimensions

13 Passive belt lowering

13.1 Description of passive belt lowering

13.1.1 Scope of delivery and accessories Passive belt lowering

Scope of delivery	Required accessories
■ Passive belt lowering	■ Transfer section

Tab. 64: Passive belt lowering: Scope of delivery and accessories

13.1.2 Overview of passive belt lowering

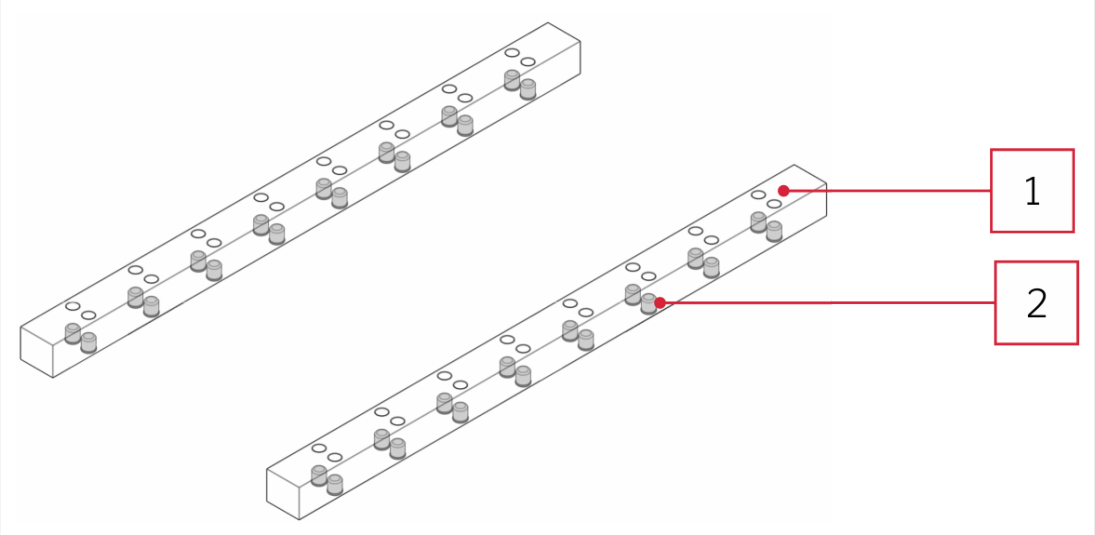


Fig. 70: Passive belt lowering: Overview

1 Passive belt lowering	2 Spring plunger

Due to the passive belt lowering, the belt can be pushed downwards when vertical force is applied. Jamming of the belt between the belt support and workpiece carrier is prevented.

13.2 Mounting passive belt lowering

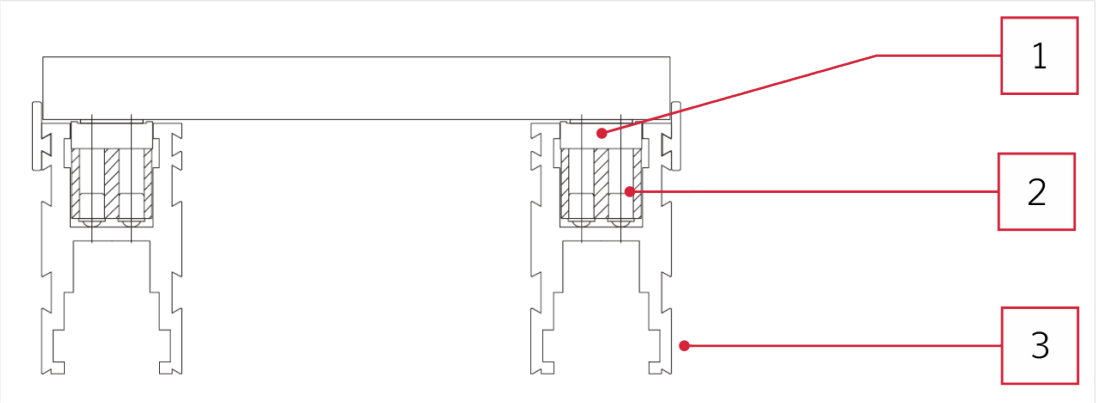


Fig. 71: Passive belt lowering: Installation

1	Passive belt lowering	2	Spring plunger
3	Support profile of the transfer section		

- ▶ Remove the support profile of the belt support and replace it with passive belt lowering. When doing so, make sure that the spring plungers are pointing downwards.

13.3 Maintenance of passive belt lowering

Task	Cycle
Check spring plungers for ease of movement.	Annually

Tab. 65: Passive belt lowering: Maintenance

14 Clamping element

Function

Clamping elements are used to fasten components to the support profile.

Scope of delivery

- Clamping element
- Clamping strip
- Mounting screws

Installation

The clamping elements are inserted into the dovetail grooves of the support profile and fastened at any point using clamping strips.

Drawings

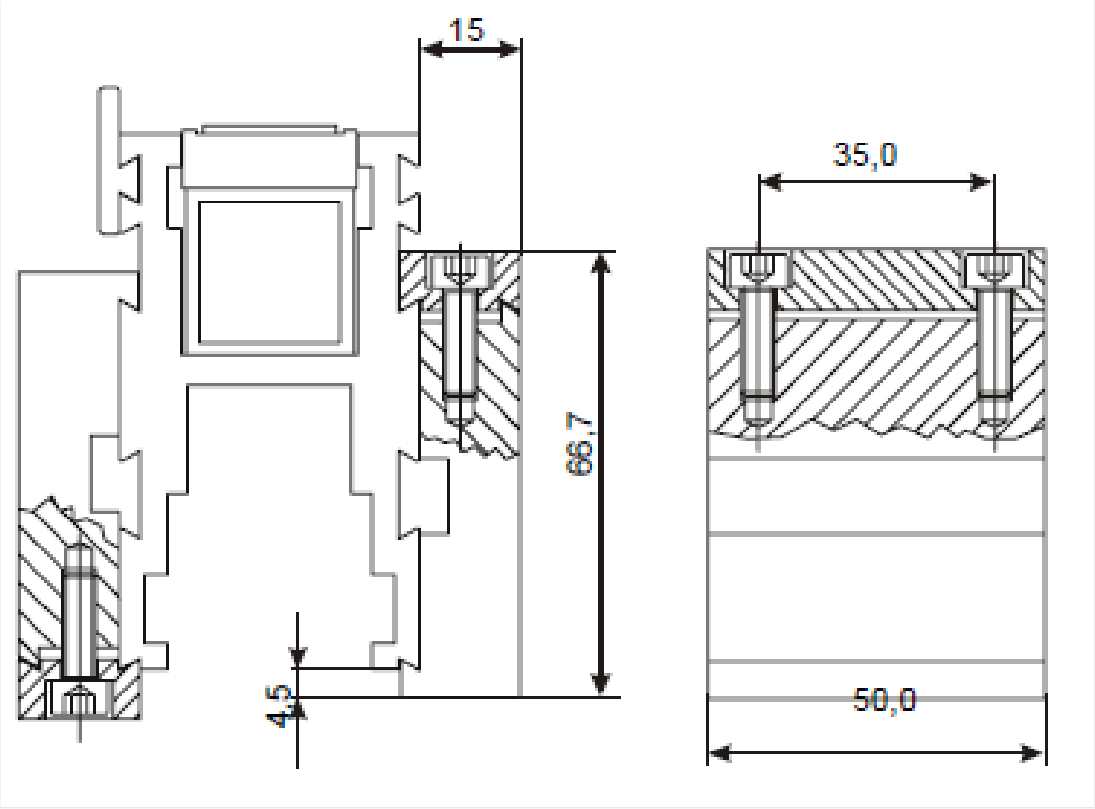


Fig. 72: Clamping element: Drawing design A

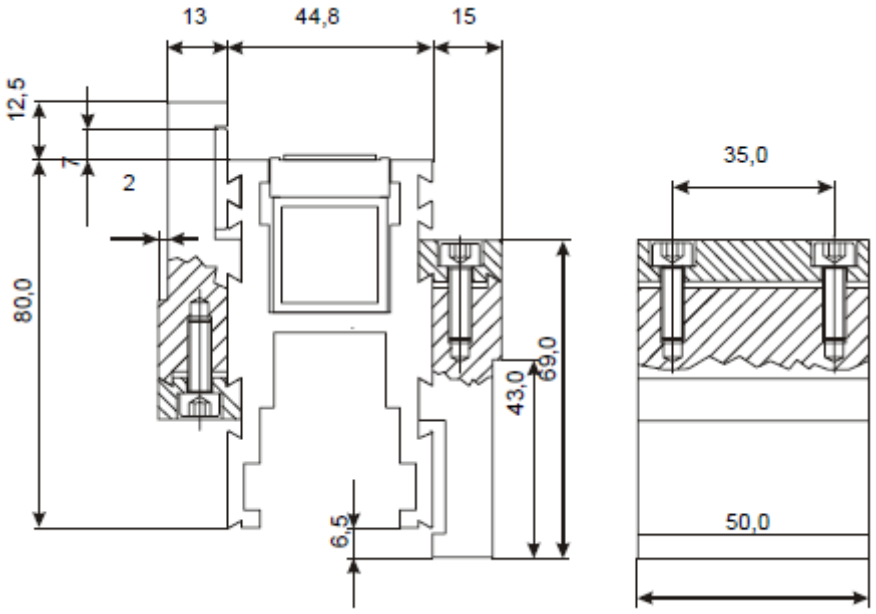


Fig. 73: Clamping element: Drawing design B

15 Support leg

Function

Support legs serve as a substructure for transfer sections. The height of the transfer sections can be adjusted using the adjustable support legs.

Scope of delivery

- 1 support leg
- 4 clamping elements

Installation

The support leg is fixed by means of holders in the spacers and with clamping elements.

Overview

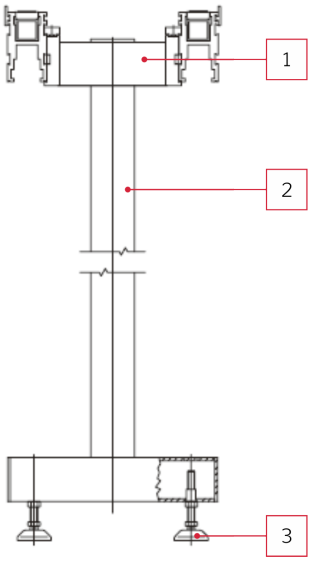


Fig. 74: Support leg: Overview

1 Spacer	2 Support leg
3 Adjustable foot of the support leg	

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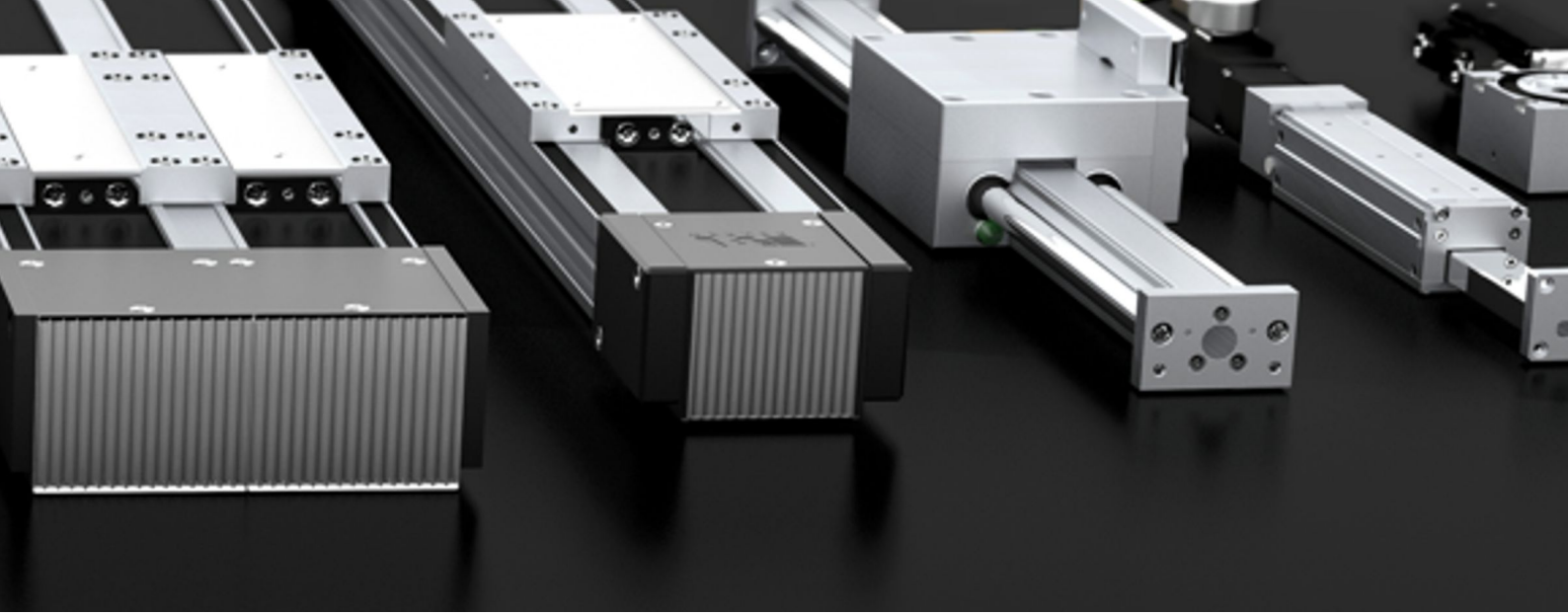

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