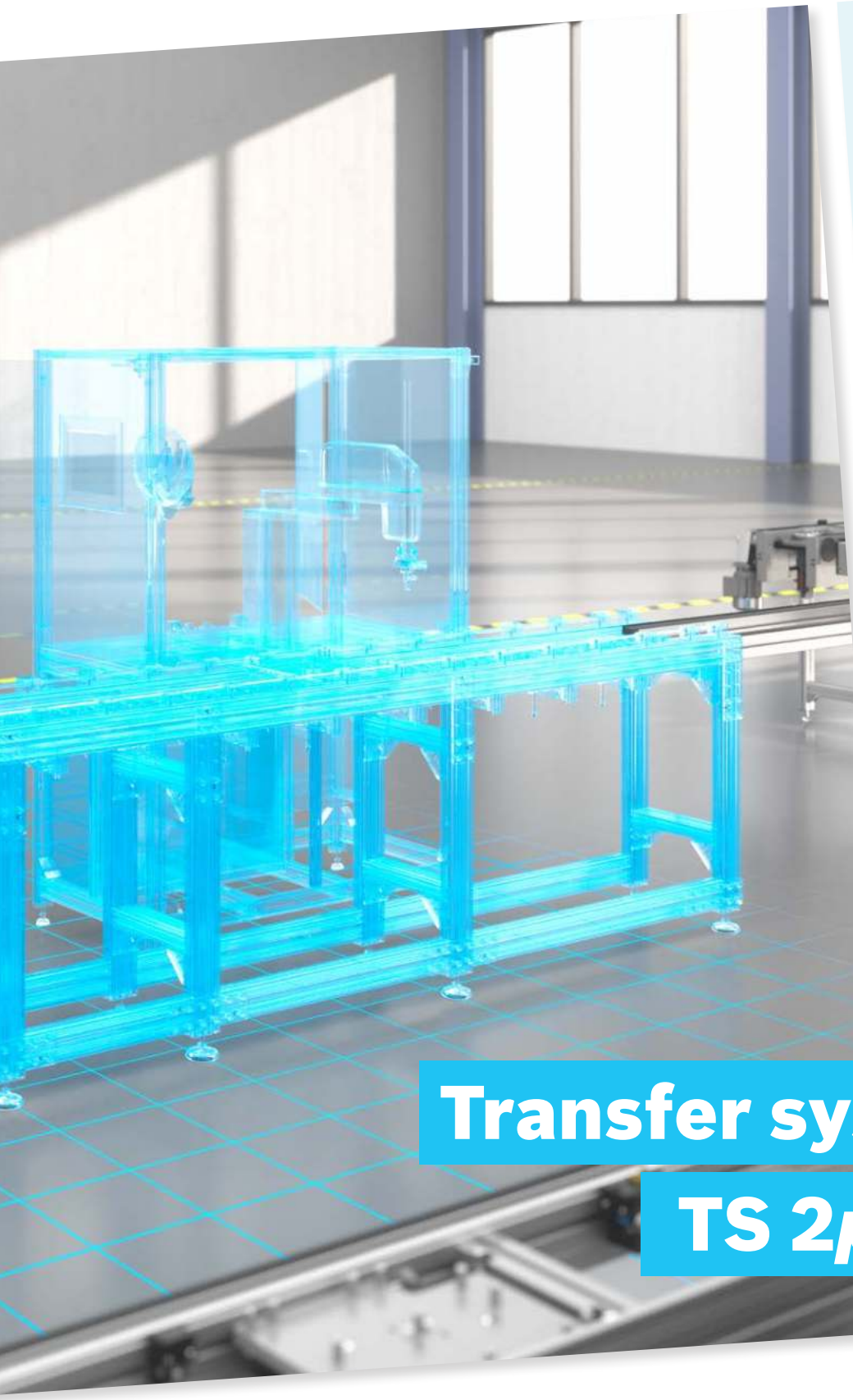
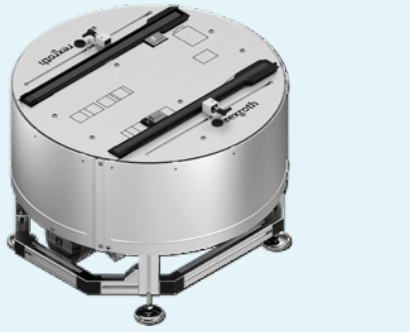
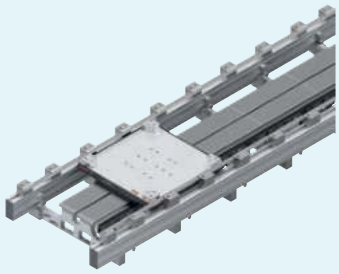
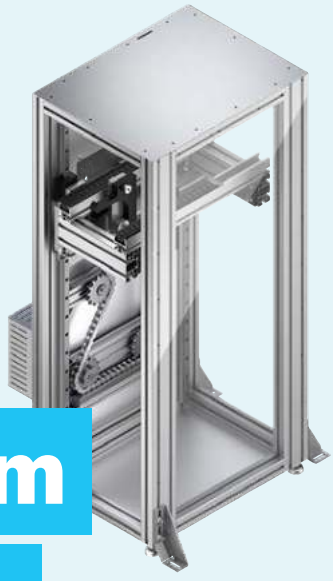
rexroth
A Bosch Company









Transfer system
TS 2*plus*

8.0

www.boschrexroth.com

Symbols

Product features

Permissible load, single load

Permissible load, sum of loads

Transport level

Unit with energy-efficient drive available

Lateral separation

Central separation

EPA ESD Protected Area

Potential applications

Suitable for use in clean rooms

Suitable for use in dry rooms

Additional information

Repetition accuracy

Vertical process force

Conveyor medium

Belt

Toothed belt

Plastic flat-top chain

Plastic accumulation roller chain

Steel accumulation roller chain

Accumulation roller chain V*plus*

Duplex chain

Round belt

Specific section load/cm
= WT total weight/support surface length

Ordering information

Explanation

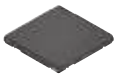
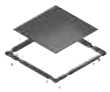
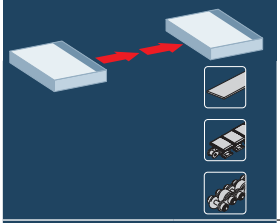
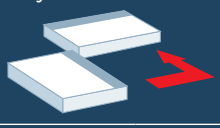
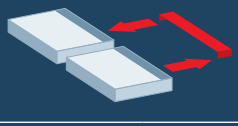
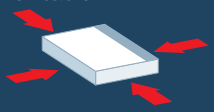
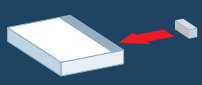
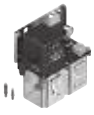
Packing unit = minimum order quantity (here: 10)

Example: Packing unit contains 10 items, material number 3 842 523 258
Order 1x 3 842 523 258 = delivery of 1x minimum order quantity 3 842 523 258 = 10 items
Order 15x 3 842 523 258 = delivery of 2x minimum order quantity 3 842 523 258 = 20 items

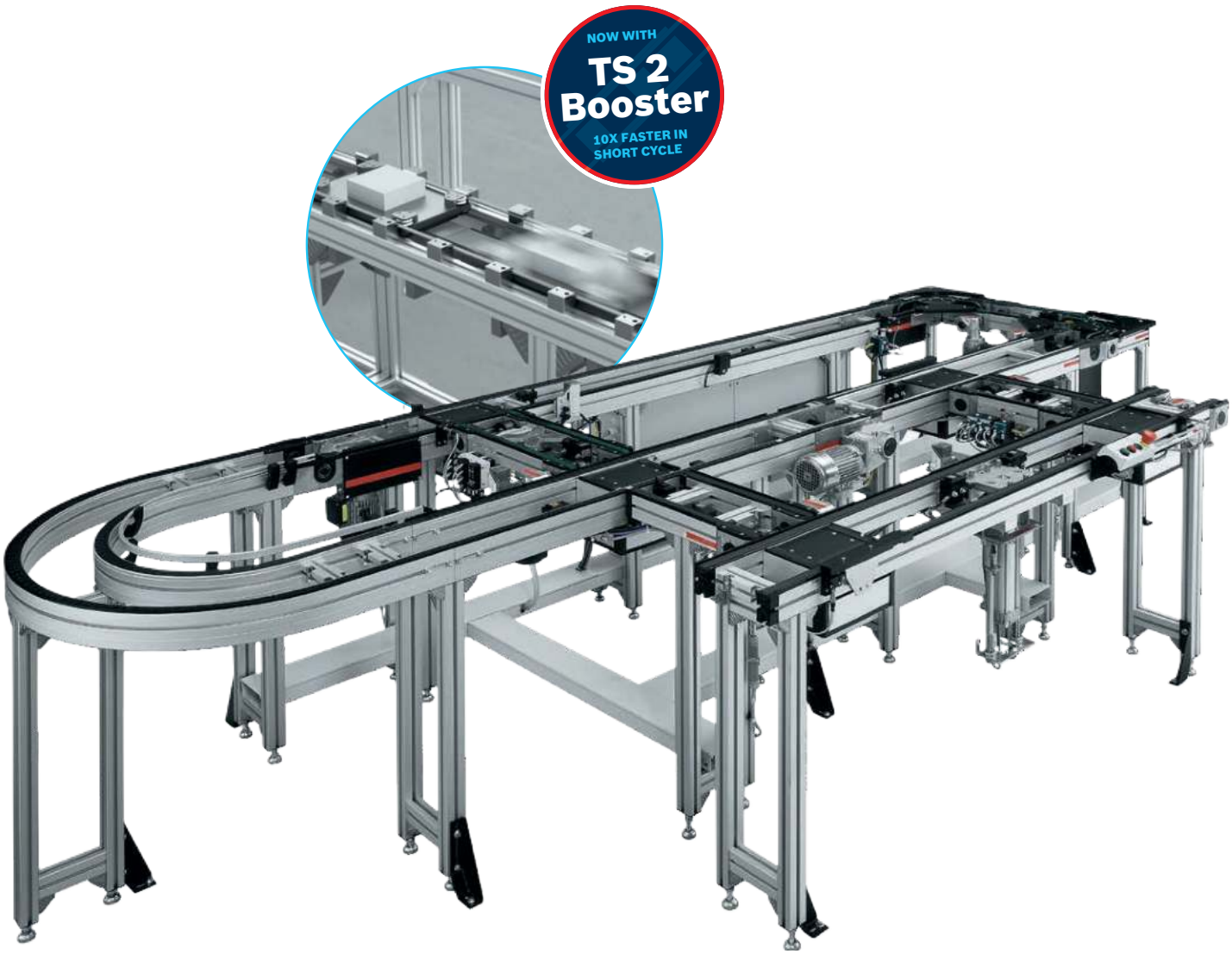
Delivery unit = delivery quantity (here: 16)

Example: Delivery unit contains 16 items, material number 3 842 532 695
Order 1x 3 842 532 695 – delivery of 1x delivery quantity 3 842 532 695, SP 2/B, l = 6070 mm = 16 items
Order 15x 3 842 532 695 – delivery of 15x delivery quantity 3 842 532 695 SP 2/B, l = 6070 mm = 240 items

System TS 2*plus* overview

Workpiece pallets	 See p. 2-6	See p. 2-8	 See p. 2-10	See p. 2-30	See p. 2-41	See p. 2-43
Longitudinal conveyor 	See p. 3-6 See p. 3-45 See p. 3-94	See p. 3-20 See p. 3-58 See p. 3-106	See p. 3-26 See p. 3-70 See p. 3-118	See p. 3-29 See p. 3-74 See p. 3-122		
Curves and rotary units 	See p. 4-6	See p. 4-9	See p. 4-24	See p. 4-32	See p. 4-40	
Transverse conveyor 	See p. 5-4	See p. 5-24	See p. 5-92	See p. 5-94	See p. 5-97	
Leg sets	See p. 6-8	See p. 6-10	See p. 6-12	See p. 6-16	See p. 6-24	
Positioning and orientation 	See p. 7-5	See p. 7-7	See p. 7-15	See p. 7-28	See p. 7-42	See p. 7-48
Transportation control	See p. 8-4	See p. 8-48	See p. 8-66	See p. 8-90	See p. 8-110	See p. 8-136
Accessories 	See p. 9-4	See p. 9-5	 See p. 9-7	See p. 9-15	See p. 9-16	See p. 9-21

Transfer system
TS 2*plus*



	1-2	**Transfer system TS 2*plus***	**1**
	1-4	Features	
1-14	1-6	Operating principle	
	1-24	Design ideas	
	1-25	Identification and data tag systems	
	1-26	Energy efficiency – Rexroth 4EE	
		Workpiece pallets	**2**
		Longitudinal conveyor	**3**
		Curves and rotary units	**4**
		Transverse conveyor	**5**
		Leg sets	**6**
		Positioning and orientation	**7**
		Transportation control	**8**
		Accessories	**9**
		Technical data	**10**
		Material number overview	**11**
		Index	**12**

TS 2*plus* – in thousands of plants in use worldwide

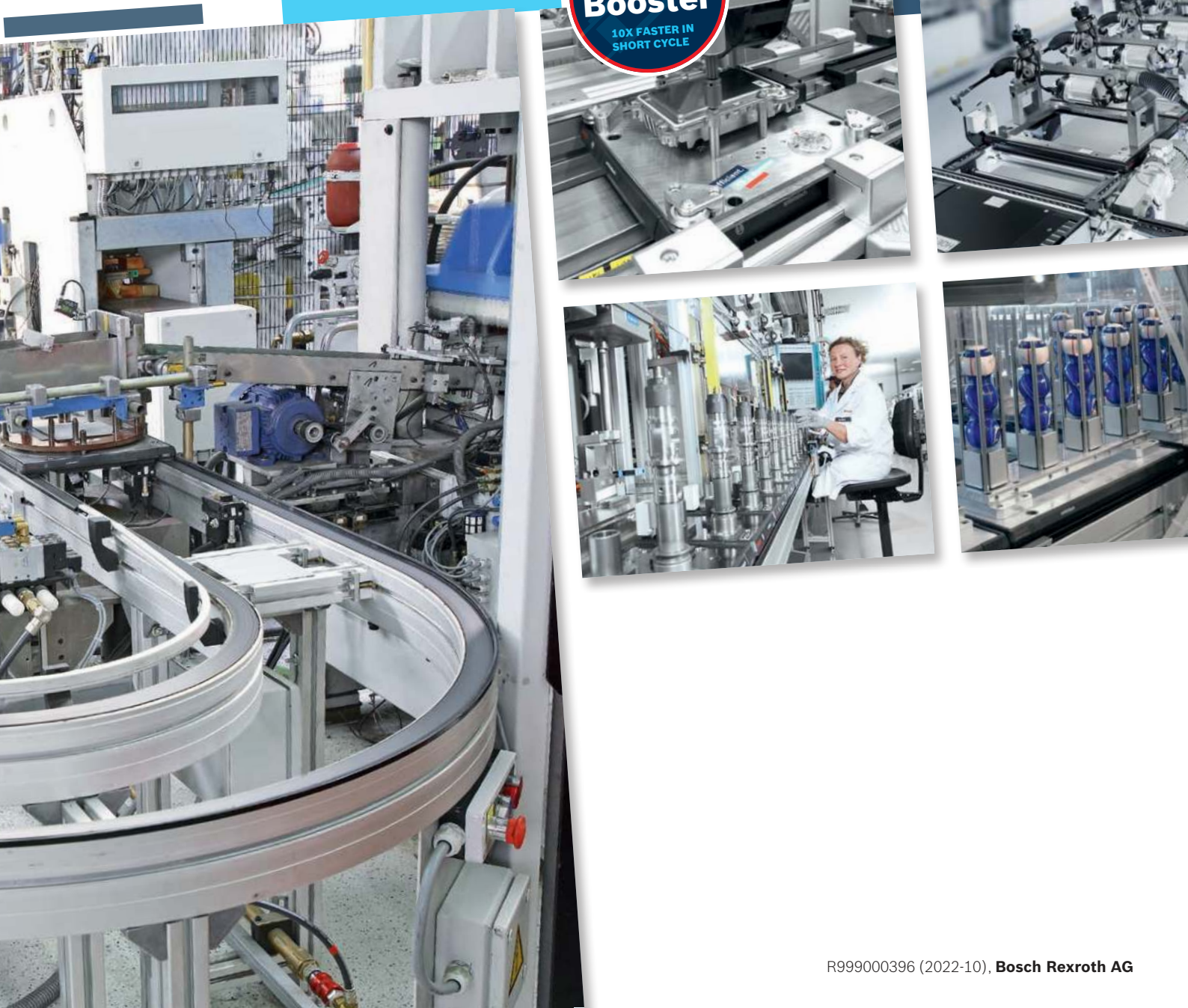
ADVANTAGES OF THE TRANSFER SYSTEM TS 2*plus*

Versatile
Flexible modular system with standardized modular units that meets the requirements of a wide range of different products

Robust
High maximum load of up to 240 kg per workpiece pallet

Adaptable
All-rounder for cost-effective production, workpiece pallet dimensions tailored to the product size

Welcome to the world market leader for transfer systems!



Transfer system TS 2*plus*: Features

The Bosch Rexroth transfer system TS 2*plus* is designed for the transportation of workpiece pallets with a total weight of up to 240 kg and is a good all-rounder in economical production. It is a diverse modular system that meets the requirements of a wide range of different products. It's no surprise that TS 2*plus* has become the leading transfer system in a wide range of industries over the years.

OPERATING PRINCIPLE

On an assembly line, a transfer system transports workpieces from one station to another.
Two constantly moving belts, toothed belts, flat-top chains, accumulation roller chains or round belts convey the workpiece pallets (WT) by means of friction – with the TS 2 Booster, transport is carried out precisely with linear motors.

The WTs hold the workpieces. All workpiece finishing takes place on the WTs. Information about destination and processing stage are carried in the WT data storage. The stop gate (VE) stops the WT at the stations (areas for manual work or automated stations), while the conveyor medium continues moving.

Several WTs can build up in front of individual stations to form small buffers. Once a processing stage is completed at the station, the WT is released to travel on to the next work station. The pneumatic VE is opened, either manually controlled or with a station control. At the end of the assembly process the workpiece is removed from the WT.

TS 2*plus* features standardized modular units, that can be combined in many ways to create a single system.
This permits a wide range of variants to be constructed and tailor made for individual requirements. The modular design permits the cost-effective use of ratio potentials in production. All components are of robust design and can therefore be reused for mounting future product generations.

Diverse, sturdy, adaptable
Due to the large number of modular components incorporated in the system, it can be adapted to suit specific production conditions and individual layouts without requiring any extra parts:

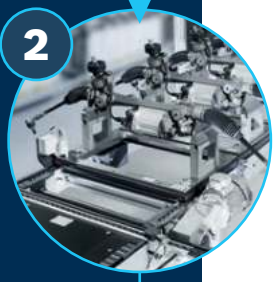
- Four types of conveyor media (polyamide belts, toothed belts, flat-top chains and accumulation roller chains) which can be combined together to meet the needs of the assembly process
- In addition, the new linear motor system TS 2 Booster for the ultra-fast short cycle
- Workpiece pallet dimensions (from 160 x 160 mm up to 1200 x 1200 mm) specifically designed for the product sizes
- High maximum load of up to 240 kg per workpiece pallet

Special modular units TS 2*plus*
Apart from the different types of conveyor media, the TS 2*plus* also provides an abundance of specific components for curves, transverse conveyors, positioning units and drive units. The time and effort spent on planning and designing can be reduced to a minimum using predefined macro modules. Material combinations that can be ordered from the catalog have been optimized for standard operation with TS 2*plus*. For special applications, additional material combinations are available.
Your Rexroth representative will be pleased to support you in choosing an appropriate solution where required.

AN OPTIMUM SOLUTION IN JUST SIX STEPS

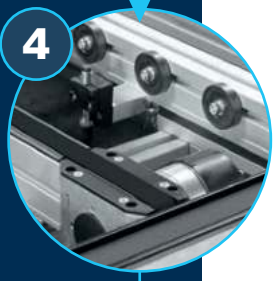
1 CHOICE OF SYSTEM

2 WORKPIECES TO BE TRANSPORTED



3 LAYOUT PLANNING

4 CONVEYOR MEDIA



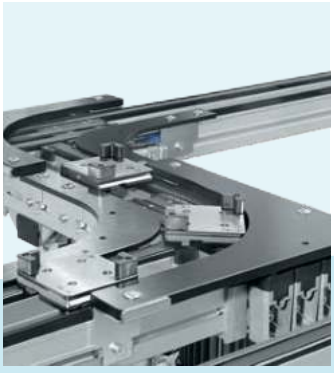
5 COMBINATION OF WORKPIECE PALLETS AND MODULES

6 AMBIENT CONDITIONS

Operating principle: 1. Choice of system

To ensure the most economical operation possible, an assembly line requires precise forward planning. Later conversions must be as simple and cost-effective to execute as possible in order to be able to respond to future market demand. The key factors when selecting a suitable transfer system are the weight and quality of the workpieces to be conveyed as well as the particular production environment.

The flexible construction kit of the transfer system TS 2*plus* from Bosch Rexroth covers a very wide range of requirements: with the wide range of mutually compatible modular units and macro modules permit a large variety of layouts with manual and automatic processing stations to be created. Solutions for maximum repetition accuracy or for especially heavy workpieces can be implemented easily using standard components. The future-proof transfer systems TS 2*plus* are designed for high availability, even under the harshest conditions.



TS 1: 0 – 3 KG

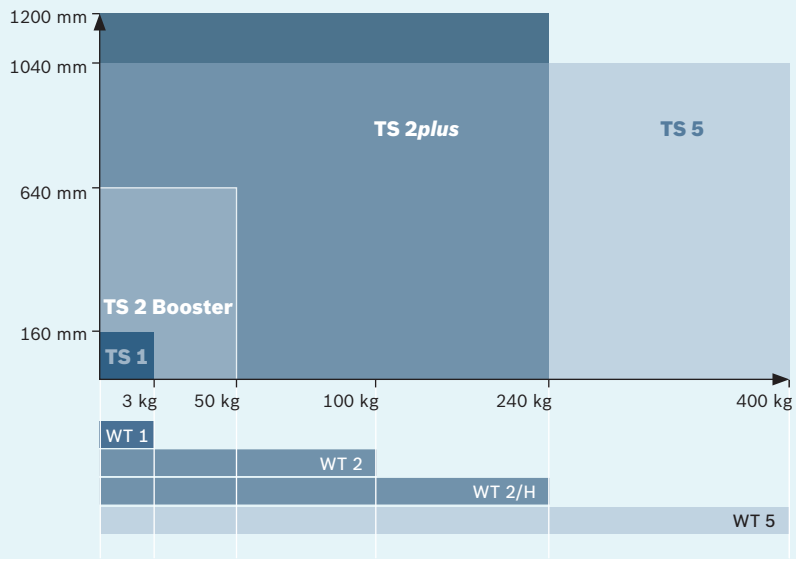
The transfer system TS 1 is specifically tailored to small, lightweight products and assemblies, which require high positioning and repetition accuracy.

TS 2*plus*: 0 – 240 KG

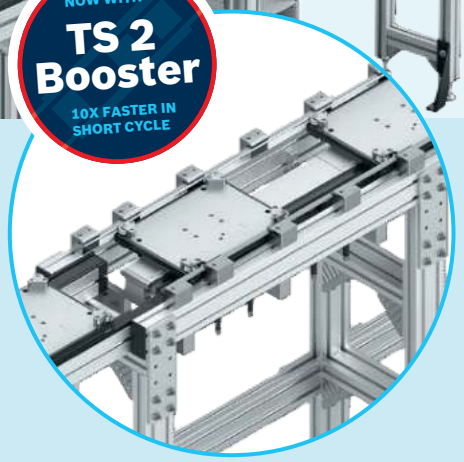
From the automotive and the electrical industry to household and electrical device production, the assembly lines TS 2*plus* are suitable for use in a wide range of industries with their versatile system components.

Bosch Rexroth AG, R999000396 (2022-10)

Choice of system
WT length (mm)/total weight of WT (kg)



NOW WITH
TS 2 Booster
10X FASTER IN SHORT CYCLE



TS 2 Booster: 0 – 50 KG

The TS 2 Booster supplements the TS 2*plus* in the short-cycle range for such sections of an assembly line that should be particularly fast or where parallel process stations would otherwise be required – particularly advantageous for cycle times of less than 4 to 5 seconds.

TS 5: 0 – 400 KG

The roller conveyor of the transfer system TS 5 conveys loads of up to 400 kg, over long distances where necessary. Its robust construction makes it particularly suitable for harsh environments.

Operating principle: 2. Workpieces to be transported

Workpiece pallet (WT)

The workpiece pallet (WT) transports the workpiece from one processing station to the next on the transfer system. Rexroth workpiece pallets are available in several versions for different applications:

The complete plastic WT 2/E handles the transportation and positioning of lighter workpieces. The more robust models WT 2 and WT 2/H, with their steel or aluminum carrying plates, are also suitable for medium and heavy loads. WT 2/LS for use in the TS 2 Booster allows a total weight of up to 50 kg.

Permitted weights

The WT total weight is limited for each WT size so that the permissible surface pressure is not exceeded.

The total weight of the WT results from the following:

- Workpiece pallet weight
- WT load (workpiece, pick-up, etc.)
- Weight of the special equipment (data storage, etc.)

For workpiece pallets that are not square, please note that the permissible WT total weight (m_G) may be different for longitudinal conveyors and transverse conveyors and the shorter side is the determining factor for the maximum WT load.

Permissible gravity center position

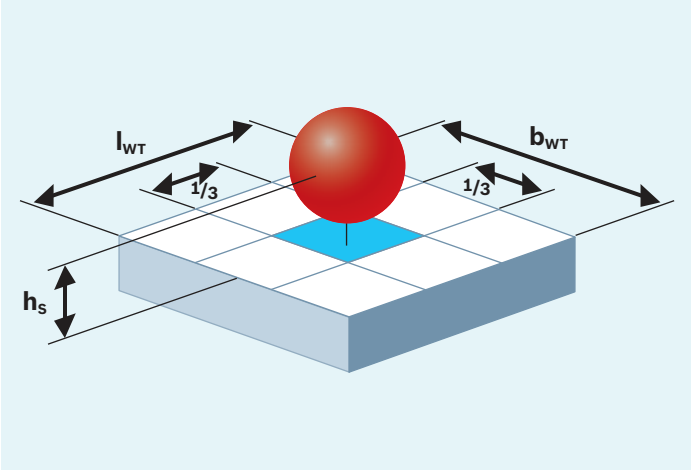
When separating pallets or changing directions, it is important to observe the position of the load center of gravity on the workpiece pallet to ensure that the acceleration forces can be absorbed without any interferences. We generally recommend that:

- the load should be positioned in the center of the workpiece pallet.
- the load center of gravity should not exceed a height h_s of 1/2 b_{WT} (with $b_{WT} \leq l_{WT}$)

The specified performance data relates to the illustrated gravity center position.

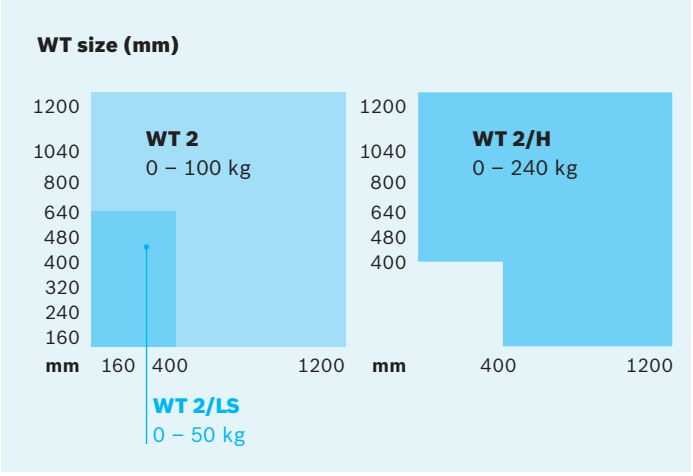
The WT 2 series workpiece pallets can be configured from components for the individual workpieces. A selection of various frame modules and carrying plates is available for this purpose.

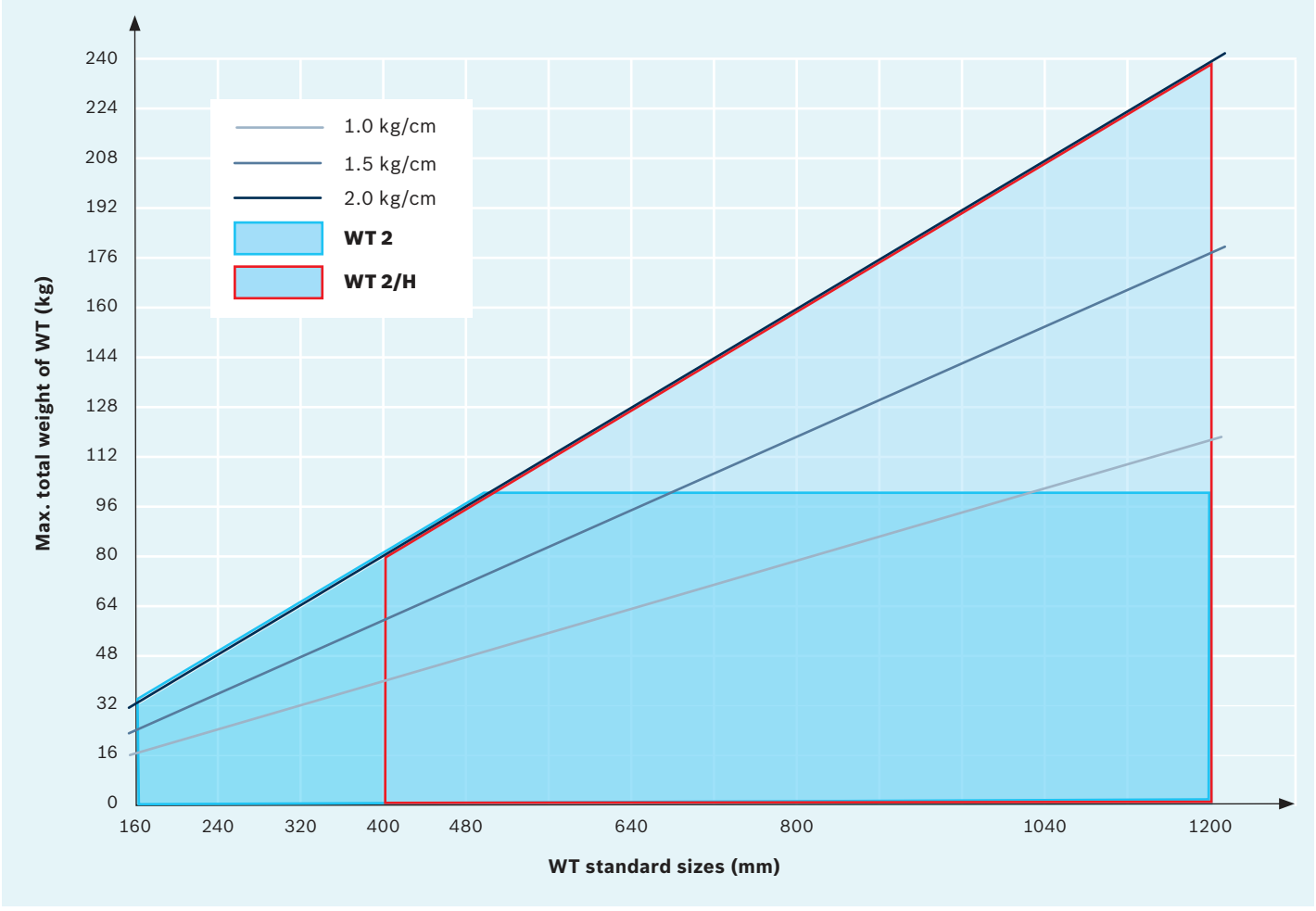
Because the workpiece pallets must be loaded as centrally as possible for optimal transportation, it is advisable to choose larger sized carrying plates for heavier workpieces or for those with uneven weight distribution.



Available workpiece pallet (WT) – dimensions

Workpiece pallets with a surface from 160 x 160 mm up to 1200 x 1200 mm (WT 2) or with a surface from 400 x 400 mm up to 1200 x 1200 mm (WT 2/H) allow for correct adaptation to the particular workpiece geometry. If necessary, a number of workpieces can be accommodated on a single workpiece pallet (WT).





Operating principle: 3. Layout planning

When planning the system layout, it is very important to take into account the individual requirements, targets and priorities of the company. A very flexible system is often required for complex assembly procedures. This may be due to:

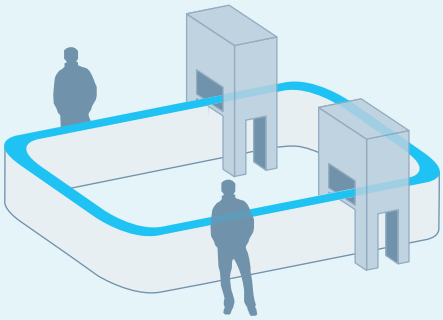
- frequent product conversions
- cycle problems due to different models
- differences in the work involved at each station
- frequent product alterations
- great fluctuation in number of workpieces

In cases like this, it is practical to outfeed the WT off the main conveyor (main circuit) into a shunt system which is independent of the main cycle. The term main circuit is used to describe workplaces or stations arranged in series. A shunt is when WT are fed out of the main circuit for processing independently of the main cycle, and then fed back into the main circuit.

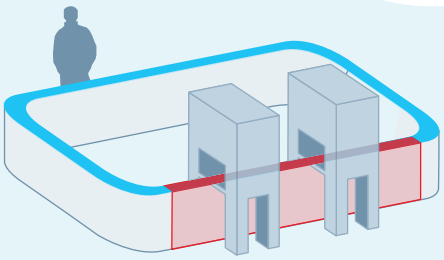
NOW WITH
TS 2 Booster
10X FASTER IN SHORT CYCLE

SYSTEM LAYOUTS

Rectangular circuit

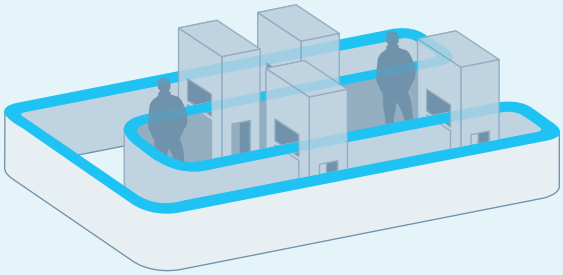


Rectangular circuit with inline station

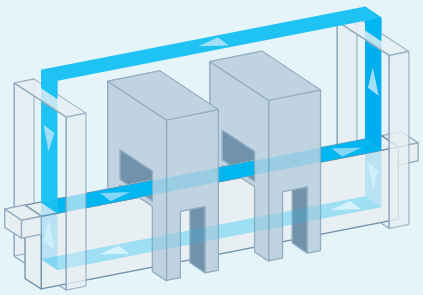


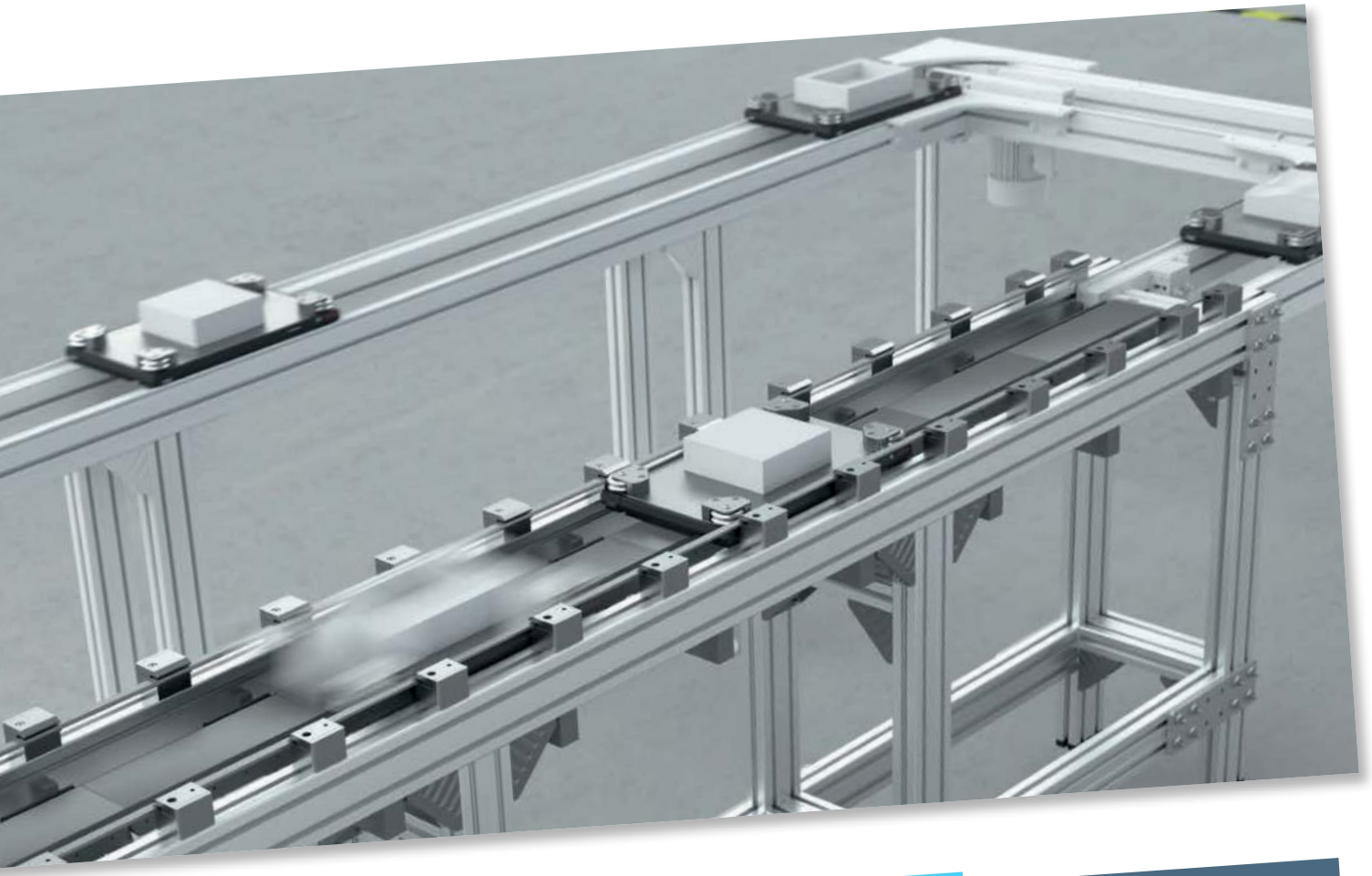
MAIN CIRCUIT

U-shape



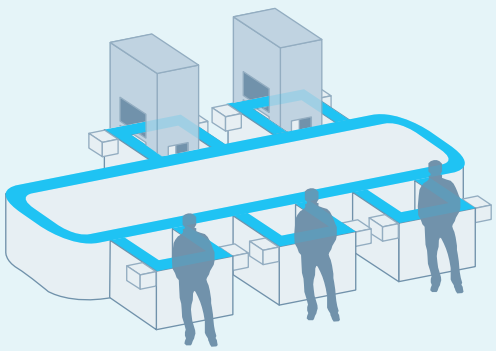
Production line construction with lift





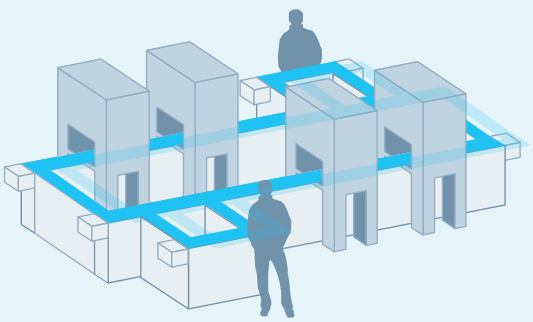
SHUNT

Parallel workplaces

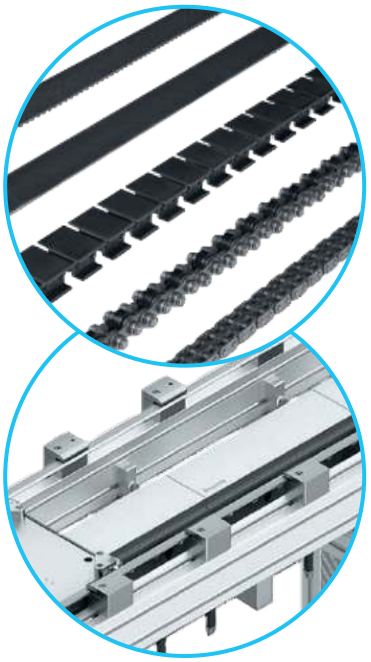


MIXED SYSTEMS

Rectangular circuit with parallel workplaces



Operating principle: 4. Conveyor media TS 2*plus*



Toothed belt, belt, plastic flat-top chain, roller chain, duplex chain as standard – linear motors and electromagnets in the TS 2 Booster

The load capacity for a workpiece pallet results from:

- the combination of conveyor medium, glide profiles, and workpiece pallet wear pad as well as
- the surface length on the conveyor medium

Specific section load/cm = overall WT mass /support surface length

	PA	Standard wear pad			NOW WITH TS 2 Booster 10X FASTER IN SHORT CYCLE	PE	Special wear pad		
Conveyor medium						Vplus		St	
Steel glide profile			1,5 kg / 1 cm			1,5 kg / 1 cm	1,5 kg / 1 cm	2,0 kg / 1 cm	
Plastic glide profile	1,0 kg / 1 cm	1,0 kg / 1 cm	1,0 kg / 1 cm	1,0 kg / 1 cm					2,0 kg / 1 cm
Linear guide with rollers					*				

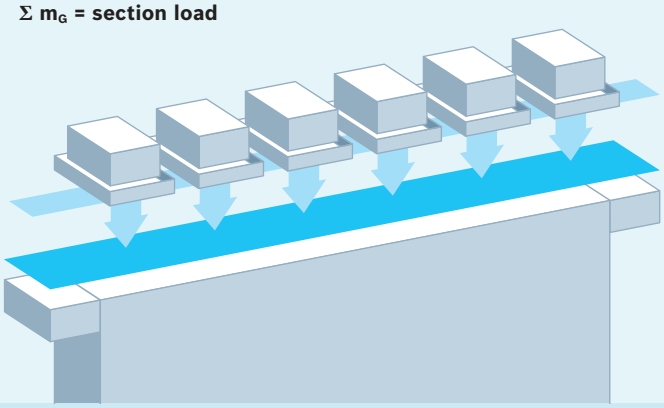
* Observe the specifications of the individual modular units for the technical data of the workpiece pallets

Permitted section loading

When designing the conveyor sections, it is important to ensure that the sum of the total weights of all workpiece pallets, which are on the conveyor section in accumulation operation at one time, is less than the section load for the conveyor section.

The permitted section loading in accumulation is specified on individual drive modules and belt sections. If the permitted section loading for the conveyor section is exceeded, the section must be divided into several individual sections.

Σm_G = section load



Operating principle: 5. Combination of workpiece pallets, components and modules

ASSIGNMENT OF WEIGHT CLASSES – PRODUCTS

Workpiece pallets	WT 2 ≤ 400 mm	WT 2	WT 2/H	WT 2/H
Typical total weights of the WT in the application	Small total weights 0 – 30 kg	Medium total weights 30 – 100 kg	Medium total weights 30 – 100 kg	High total weights 100 – 240 kg
Suitable (lift) positioning units	PE 2			
		PE 2/X	PE 2/H	PE 2/H
	HP 2/L	HP 2/L		
	HP 2	HP 2		
	PE 2/XX	PE 2/XX	PE 2/XX	PE 2/XX
	PE 2/XP			
Suitable stop gates	VE 2	VE 2	VE 2/D100-H	VE 2/D100-H
	VE 2/L	VE 2/L	VE 2/D250-H	VE 2/D250-H
	VE 2/M	VE 2/M		
	VE 2/S	VE 2/S		
	VE 2/X	VE 2/X		
	VE 2/D-60	VE 2/D-60		
	VE 2/D-175	VE 2/D-175		
	VE 2/D-200	VE 2/D-200		
Suitable dampers	DA 2/10			
	DA 2/30			
	DA 2/100	DA 2/100		
			DA 2/100-H	DA 2/100-H
			DA 2/250-H	DA 2/250-H
		DA 2/150-E	DA 2/150-E	
Suitable switch brackets	SH 2/S	SH 2/S		
	SH 2/ST	SH 2/ST		
	SH 2/S-H	SH 2/S-H	SH 2/S-H	SH 2/S-H
	SH 2/U	SH 2/U		
	SH 2/UV	SH 2/UV		
	SH 2/U-H	SH 2/U-H		
	SH 2/SF	SH 2/SF		
Suitable rockers	WI 2	WI 2		

NOW WITH TS 2 Booster 10X FASTER IN SHORT CYCLE

Operating principle: 6. Combination with TS 2 Booster (linear motor section LS 2)

The Rexroth transfer system TS 2 Booster is designed for limited short-cycle applications within the system TS 2*plus*: ideal for sections in front of and in process stations that require a particularly fast WT change of up to 0.3 s.

Features
Workpiece pallets with a total weight of up to 50 kg are transported via a system driven by a linear motor that seamlessly fits into a line TS 2*plus*. Without stopping, the WT is transferred from the TS 2*plus* into the section TS 2 Booster.

Standardized modular units deliver the WT maximum precision of up to ±15 µm. Flexible control and with accelerations of up to 4 g. The dynamics can be individually adjusted for each WT, stopping without collision and jerk-free start-up can be guaranteed even for the most sensitive products.

Use in system TS 2*plus*
The various WT variants up to a size of 400 x 640 mm, the high total weight of up to 50 kg, the modular design plus the interaction of extreme dynamics and precision make the TS 2 Booster very versatile. This smart sprinter can use its strengths directly in many systems TS 2*plus*, especially in the automotive, electronics, medical technology, acoustics and optics sectors and accelerate processes.

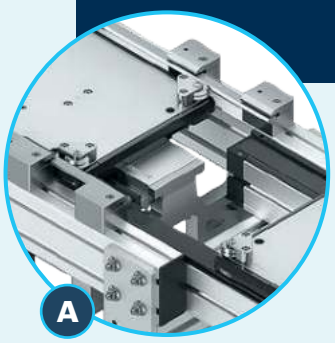
PRODUCT RANGE

Linear section LS 2
- Linear motors
- Measuring system
- Guide
- Fastening elements with tolerance compensation

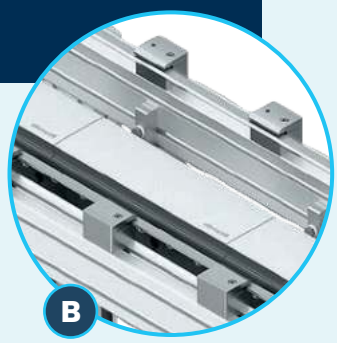
Workpiece pallet WT 2/LS
- WT 2 up to 400 x 640 mm (b_{WT} x l_{WT})
- Guide system with corner modules
- Feed magnet
- Measuring magnet

Leg sets SZ 2/LS
- SZ 2/LS MID, SZ 2/LS END

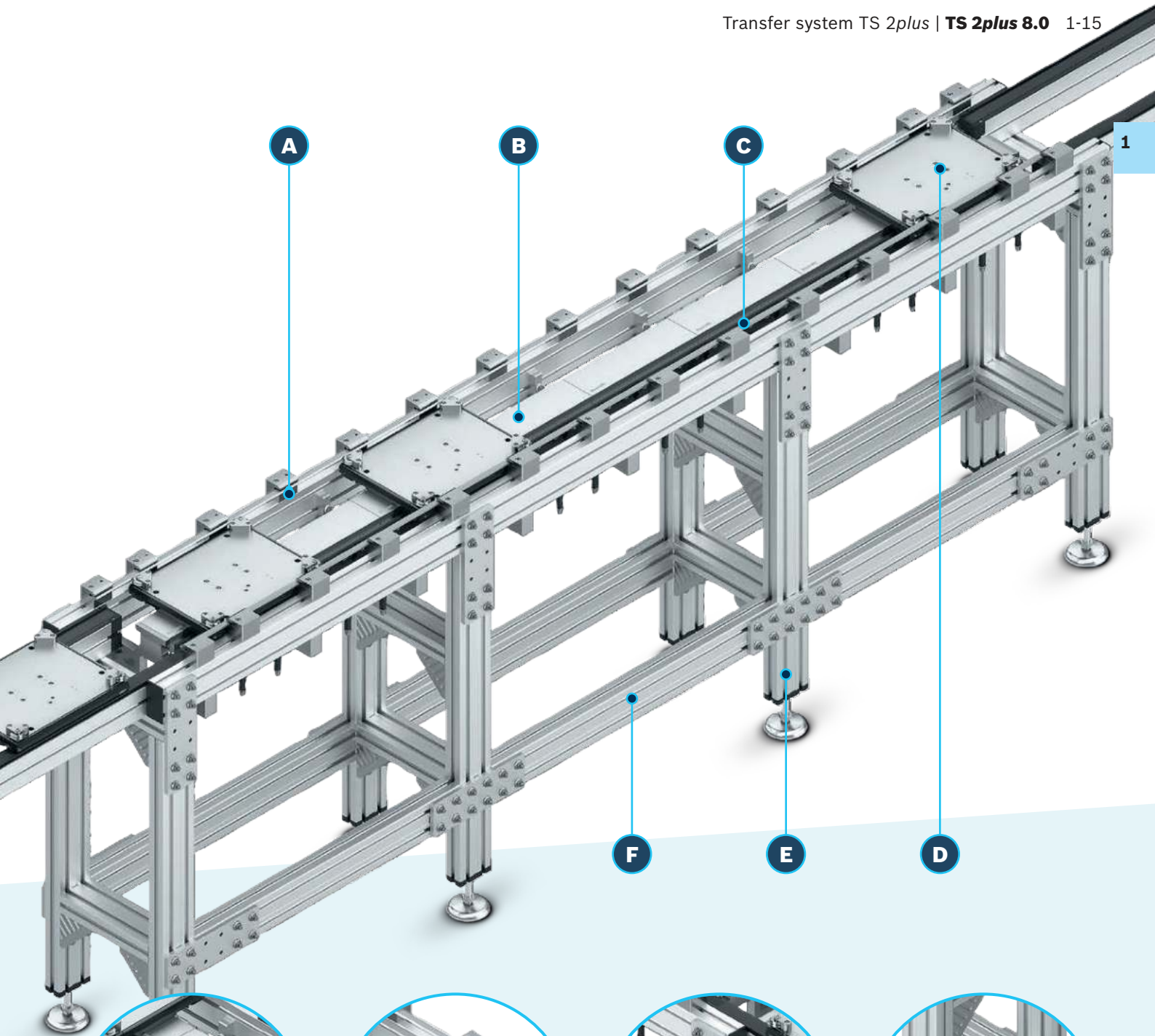
Lubrication unit LU 2/LS

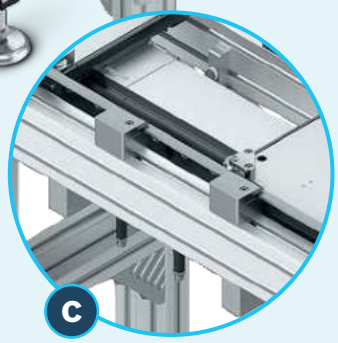


GUIDE RAIL
The low-wear roller guide rail enables precise and zero-clearance positioning of the workpiece pallet on the linear section (LS 2)

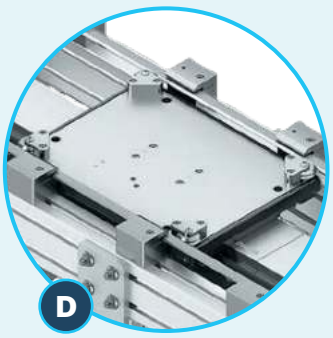


MOTOR
Stationary electromagnet – contrary to the circular arrangement in the rotary motor, the electromagnets are placed next to each other in the linear motor

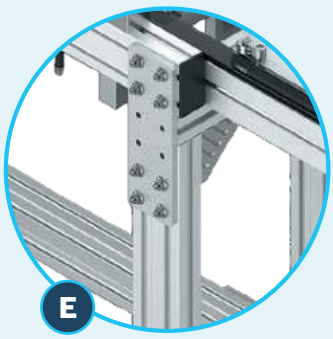




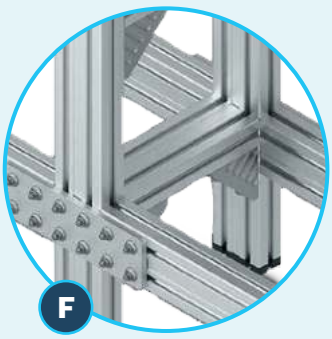
SENSOR SYSTEM
Contactless, dirt-resistant absolute measuring system for detecting WT positions on the linear section using measuring magnets (Hall sensor system)



WORKPIECE PALLETS
Permanent magnets mounted on the bottom of the WT 2/LS ensure the required feed according to the "moving magnet motor" principle



LEG SETS
The leg sets are suitable for accommodating the heavy-duty, single-track linear section LS 2



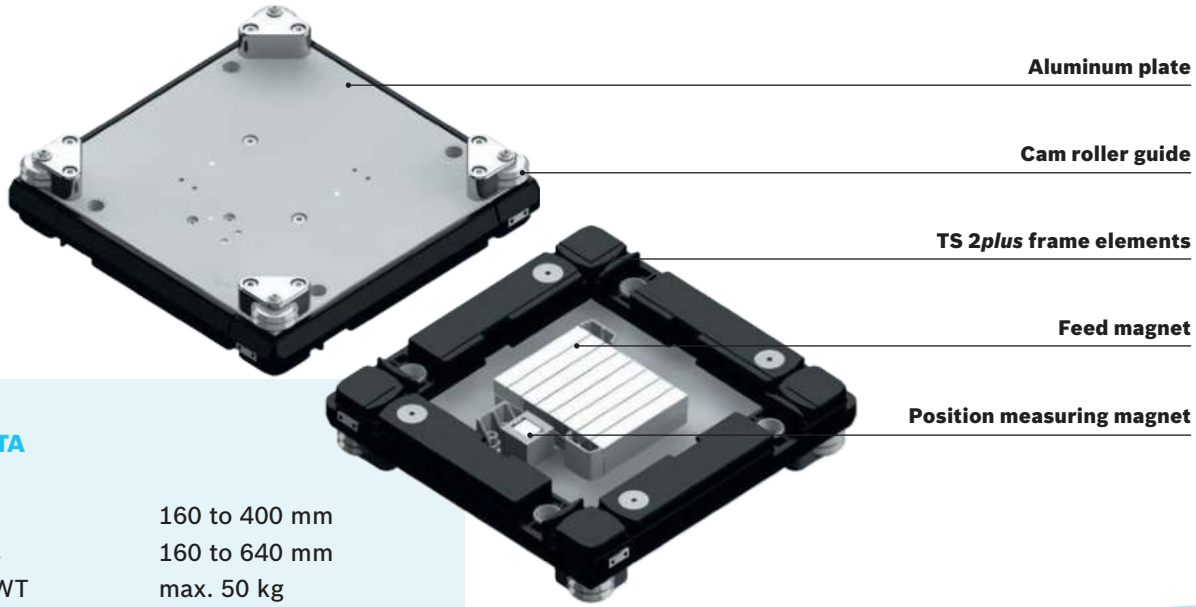
LONGITUDINAL/CROSS CONNECTORS
To compensate for the higher dynamics of the system, e.g. by fast stop or acceleration, all construction elements are designed accordingly stable

NOW WITH TS 2 Booster 10X FASTER IN SHORT CYCLE

The linear motor principle in the TS 2 Booster
A linear motor is an uncoiled rotary motor – the electromagnets are not arranged in a circular form but linearly. With the TS 2 Booster, a stationary electromagnet with moved permanent magnets is the basis ("moving magnet motor"). For this purpose, the workpiece pallet is equipped with a permanent magnet on the bottom side and the linear section itself contains the stationary electromagnets. With this design principle, there is no need for power feed to the WT.

With roller guide and absolute measuring system
A guide and a measuring system are required to transport the workpiece pallet precisely and to position it exactly. The TS 2 Booster is guided via rollers on the WT with a lateral guide on the linear section. The measurement is carried out using a contactless absolute measuring system with Hall sensor technology. The measuring system is integrated into the linear section. Therefore, in addition to the feed magnet, each WT has another (smaller) position magnet on the bottom side for position detection on the linear section. Each WT can be individually moved on the linear section – reversible, at different speeds with a special sequence. You have free reign.

Workpiece pallet WT 2/LS
The WT 2/LS consists of the WT 2 standard carrier with the defined parameters wear pad PA and aluminum carrying plate in standard dimensions as well as a feed magnet, a measuring magnet and guide rollers. In addition, the workpiece pallet is also specified by its defined orientation.



TECHNICAL DATA

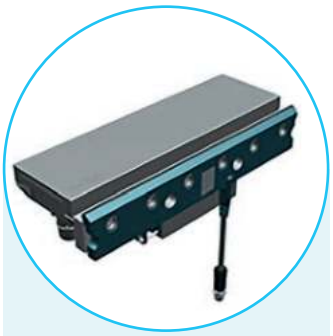
WT 2/LS widths	160 to 400 mm
WT 2/LS lengths	160 to 640 mm
Total weight of WT	max. 50 kg
Speed	max. 4m/s (240 m/min)
Acceleration	max. 40 m/s^2 (4 g)
WT changing time	up to 0.3 s
Accuracy at 1 WT	up to ±15 µm
Additional process force in x/y/z direction	0/500/100 N
Section lengths	306 to 3672 mm

MOTOR VARIANTS

Equipping options

The conveyor section LS 2 driven by a linear motor is perfectly matched to the system TS 2*plus* with a length division of 306 mm of the motors and 4 standard widths. The desired dynamics and feed force depends, among other things, on the load and the number of magnet assemblies. Important: only one magnet assembly can be individually moved per segment. The selection of the motor combination is therefore essential for the distances between the workpiece pallets and for performance.

Linear sections with track widths of up to 320 mm are equipped with a motor module, two parallel motor series are used at a track width of 400 mm.

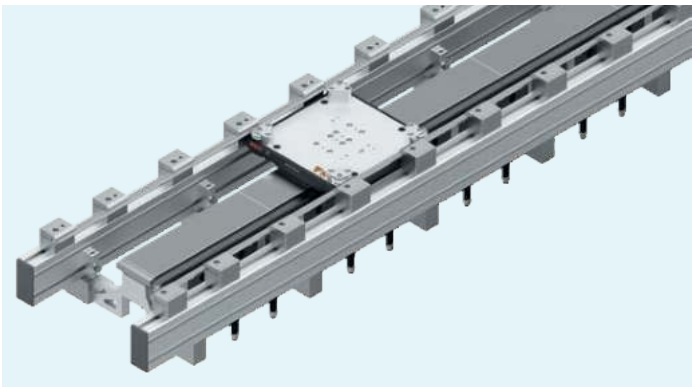


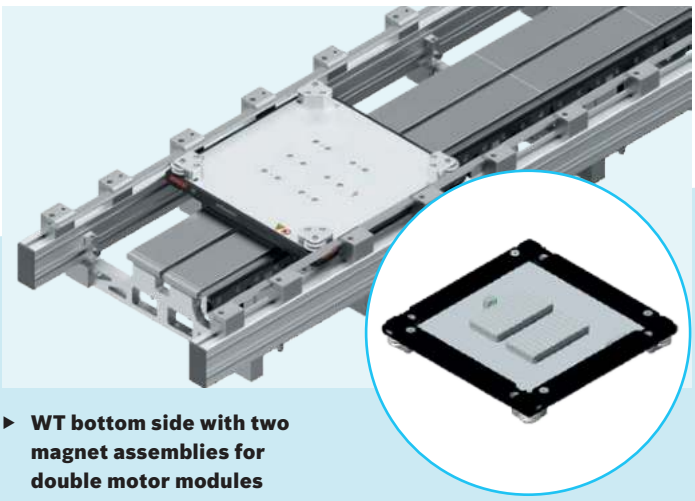
Motor 306-1
1 motor with 306 mm
1 segment, each 306 mm
1 sensor, each 306 mm

+ lower costs
+ minimum installation work
– larger WT distance required (recommended for WT lengths of 400 mm and in mixed operations)

Motor 306-3
1 motor with 306 mm
3 segments, each 102 mm
3 sensors, each 102 mm

+ better performance
+ higher load capacity
– increased effort (hardware, installation, commissioning)





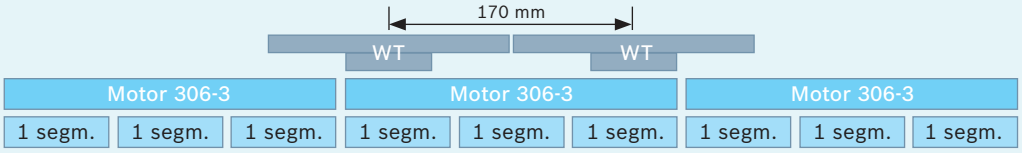
▸ **WT bottom side with two magnet assemblies for double motor modules**

WT type b_{WT} x l_{WT} (mm)	Track width (mm)	Pure 306-1	Pure 306-3	Mixed 306-1/ 306-3	Double track 306-1
160 x 160	160	o	●	●●	–
160 x 240	160	o	●	●●	–
160 x 320	160	●●	●	●●	–
240 x 160	240	●	●	●●	–
240 x 240	240	●	●	●●	–
240 x 320	240	●●	●	●●	–
240 x 400	240	●●	●	●●	–
320 x 240	320	●	●	●●	–
320 x 320	320	●●	o	●	–
320 x 400	320	●●	o	●	–
320 x 480	320	●●	o	●	–
400 x 320	400	–	–	–	●●
400 x 400	400	–	–	–	●●
400 x 480	400	–	–	–	●●
400 x 640	400	–	–	–	●●

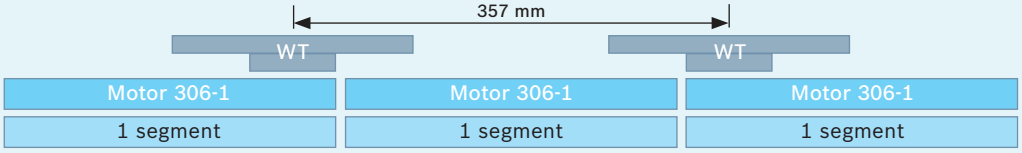
●● recommended
● possible, depending on application
o not recommended, required/practical in exceptional cases
– not possible

Three examples of the layout of motor equipment for a conveyor section (WT length 160 mm, magnetic assembly length 51 mm)

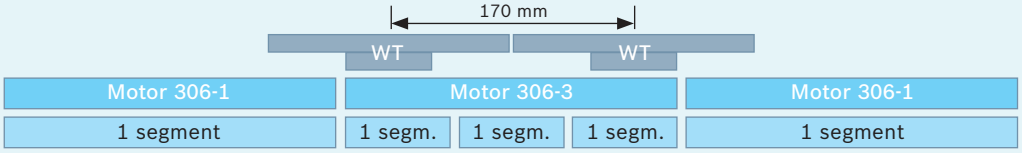
Motor 306-3
Sorted equipment
(1 stator magnet per segment)



Motor 306-1
Sorted equipment
(1 stator magnet per segment)



Motor 306-3 and 306-1
Mixed equipment
(1 stator magnet per segment)



IMPORTANT NOTES FOR SELECTING THE COMPONENTS

Motor/WT:

- Only 1 magnet assembly can be moved independently per segment
- The workpiece pallets must maintain a minimum distance between each other, which depends on the WT length: Distance between WT and WT = segment length + magnet length
- Systems with a pure 1-segment motor equipment need a larger workpiece pallet distance than lines with 3-segment motors
- Mixed equipment possible

Dynamics:

- Short cycle times can only be achieved with short WT changeover times, which in turn depend on the load, the travel acceleration and the WT load of the line.
- Excessive dynamics and load lead to thermal problems.
- To ensure that the motor does not overheat even in continuous operation, the following must apply for every segment: $F_{eff} \leq F_{nom}$.
- Synchronous WT changeover is time-optimized.
- A workpiece pallet must always be on the first, so-called check-in position with the entire magnet in order to achieve the maximum possible dynamics in the system TS 2 Booster.

Sizes/lengths:

- The section LS, i.e. the section TS 2 Booster, is mechanically limited to 3,672 mm via the guide. Longer sections are possible – please contact us for further information.
- The smallest practical layout is 2 WT lengths.
- In terms of control, the maximum number of segments must be taken into account. By default, 24 segments are specified in the catalog by configuration numbers. Greater lengths are, of course, also possible. Please contact us or your system provider.

Critical segments:

- Sections with frequent acceleration and/or deceleration, as well as segments in the process station are referred to as "critical". It is recommended to always carry out a rough calculation of F_{eff} for these "critical segments".

COMPONENTS TS 2*plus* FOR WT 2/LS

Longitudinal conveyor	
AS 2/B, UM 2/B, ST 2/B	●
BS 2, BS 2/M-2, BS 2/K	●
LG 2/H from b = 400 mm	●
AS 2/C..., UM 2/C..., ST 2/C...	●
BS 2/C	●
Curves	
KE 2/... LS	● **
KU 2/...	● **
Transverse conveyor	
EQ 2/... LS	● *
HQ 2/... LS	●
Roller sections	●
EL 2 from b = 320 mm	● *
Positioning and orientation	*
Inner guide from b = 240 mm	●
PE 2/LS	●
HP 2/L LS, HP 2/LS	●
HD 2-LS, HD 2/H LS	●
DE 2	● *
Transportation control	*
VE 2, VE 2/L, VE 2/M, VE 2/S, VE 2/RS	● *
VE 2/D60-LS, VE 2/175-LS	●
VA 2/50	●
WI 2/..., WI/M	●
Leg sets	*
SZ 2 ...	●

- * These components are available in an adapted version (version LS). The version LS is specifically designed for the WT 2/LS. However, it can also be combined with the same components as your standard version.
- ** The WT 2/LS cannot be inserted into the transverse conveyor on these components.

Operating principle: 7. Ambient conditions

Materials used, media resistance
Rexroth transfer systems are manufactured with high-quality materials to ensure continuous use. They are resistant to lubricating and cleansing agents that are common in an industrial environment.

However, we cannot guarantee that the products contained in this catalog are resistant to all combinations of testing liquids, gases, or solvents. Please contact your Rexroth representative if you have any doubts.

AMBIENT CONDITIONS

Climatic

The transfer systems have been designed for stationary use in a location that is protected from the elements.

- Operating temperature: +5 ... +40 °C, +5 °C ... +60 °C at 20 % reduced load
- Storage temperature: –25 °C ... +70 °C
- Relative humidity: 5 ... 85 %, non-condensing; 1 ... 2 % (dry room)
- Air pressure: > 84 kPa appropriate for an installation altitude < 1400 m above NN. Load values are reduced by 15 % when the system is set up at an installation altitude that is > 1400 m above sea level.

Biological

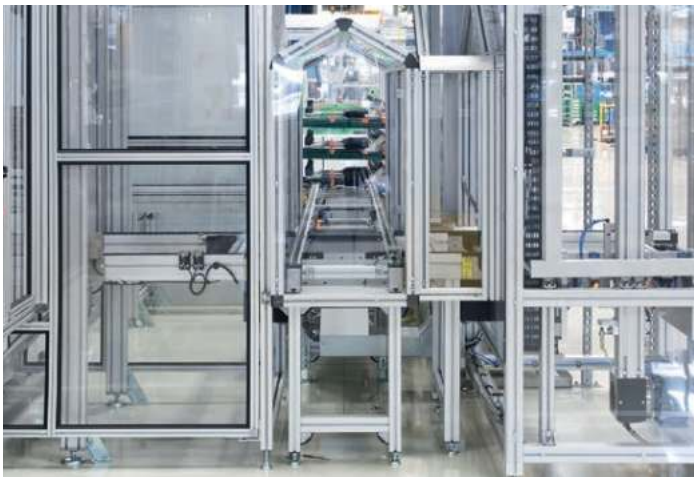
Avoid molds, fungi, rodents, and other vermin

Chemical

Do not set up near industrial systems with chemical emissions

Physical

Do not set up near sources of shavings, sand or dust.
Do not set up in areas that are regularly jarred by high forces caused by e.g. presses, heavy machinery, etc.



Suitability for electrostatically sensitive areas
Almost all of the components and parts in Rexroth transfer systems are ESD-compatible or available in an ESD-compatible version. They can thus principally be used in EPA (ESD Protected Areas). We do, however, recommend that you contact your Rexroth representative.

OIL

Use in oily environments
For applications where process-related oil can enter the transfer system, we recommend using chains as the conveyor medium (accumulation roller chains, V*plus* chains or flat-top chains). We do, however, recommend that you contact your Rexroth representative.

%rH

%

Use in dry rooms

TS 2*plus* has been tested and approved with all conveyor media for use in dry rooms with a relative humidity of 1 to 2 %, e.g. for the production of Li-Ion battery cells. Your Rexroth representative will be pleased to advise you about this.

Clean Room

Fraunhofer TESTED DEVICE IPA Bosch Transfersystem TS 2plus

Use in clean rooms

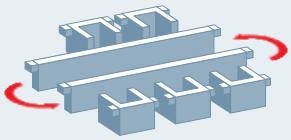
Almost all the components have been approved by the IPA* for use in cleanrooms and for cleanroom class 7 according to DIN EN ISO 14644-1. Please note that some cleanroom-compatible components have been specially modified. Please contact your Rexroth representative if you require cleanroom components.

* Fraunhofer Institute for Manufacturing Engineering and Automation, Stuttgart, Germany

Design ideas

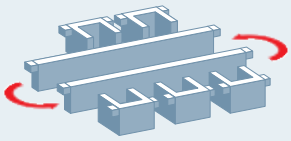
Layout example with 240 x 240 mm workpiece pallets

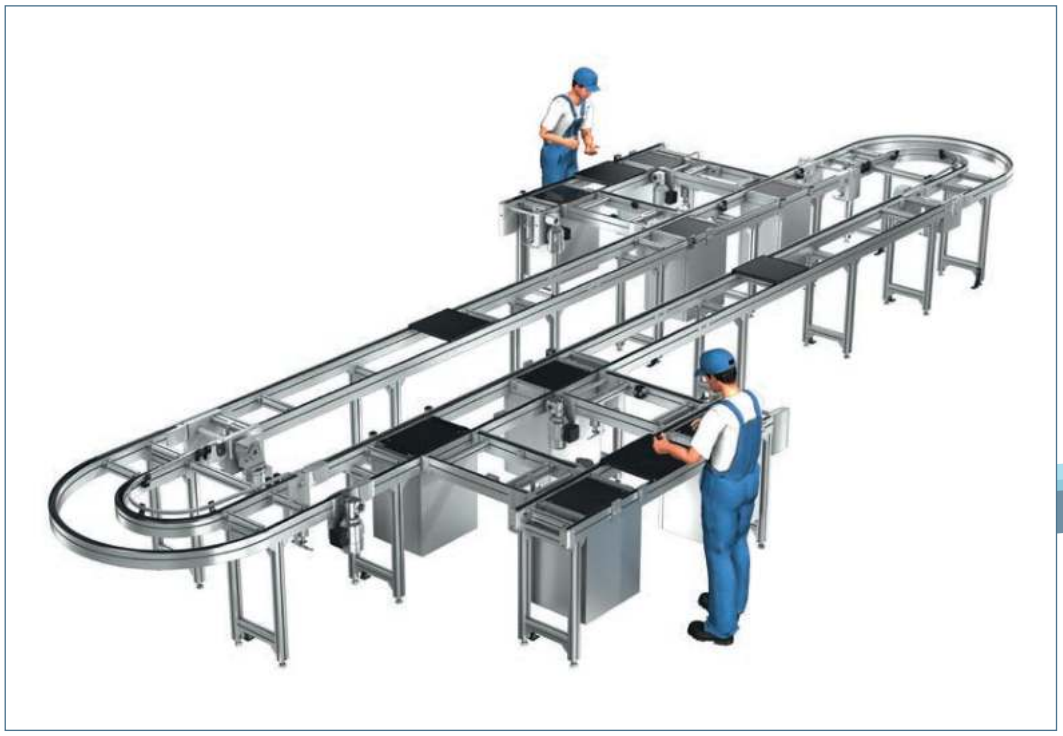
Conveyor medium: Belt, toothed belt



Layout example with 640 x 640 mm workpiece pallets

Conveyor medium: Accumulation roller chain, flat-top chain





Identification and data tag systems

Identification and data storage systems store all product and process-related data directly on the workpiece pallet and enable local or central data processing. Identification and data tag systems are used to control numerous production and transport systems in assembly technology applications.

Data related to objects is the basis for

- targeted control of processes and processing steps
- infeeding or outfeeding workpiece pallets according to type or variant when manufacturing product variants on flexible assembly systems.

RFID systems catalog

Here you can find the current range of Rexroth identification and data tag systems:
Identification systems catalog EN no. 3842541004

ID 15

ID 200

Energy efficiency – Rexroth 4EE

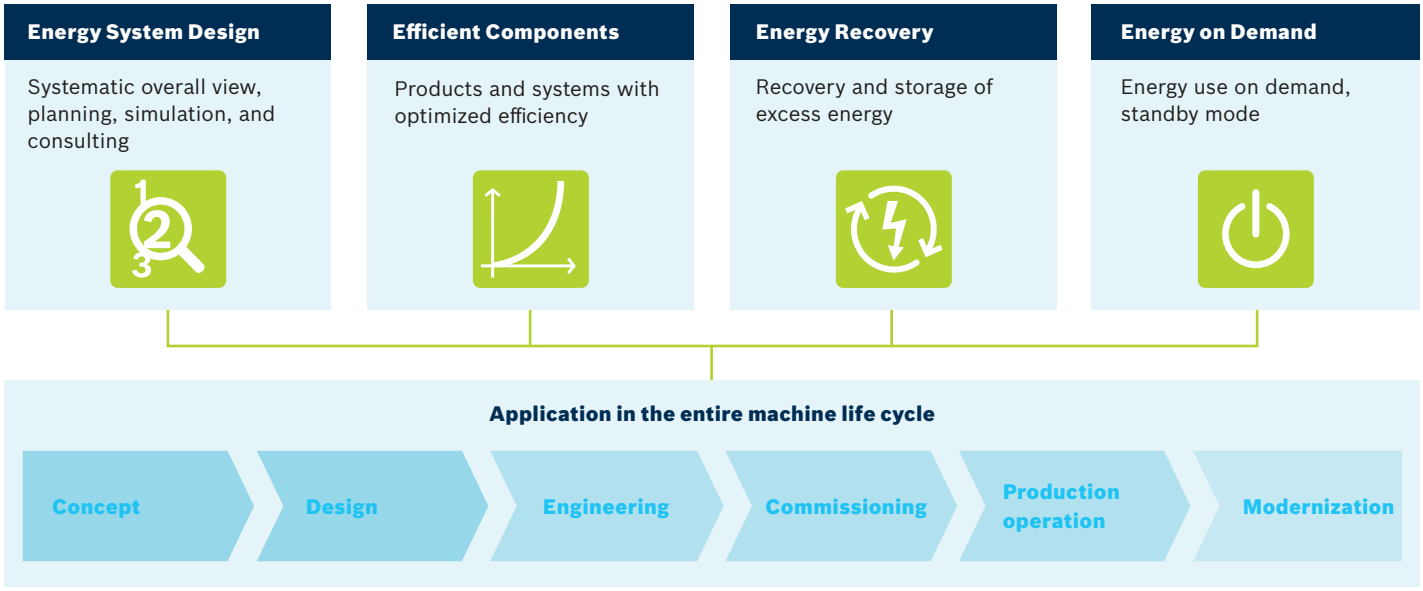
4EE
ENERGY EFFICIENCY

ENERGY EFFICIENCY IS A KEY FACTOR FOR CORPORATE SUCCESS

From an economic point of view, energy efficiency and reduced emissions lower operating costs and bring advantages in the fiercely competitive global market. In addition, they help support compliance with environmental standards.

All potentials for optimization are used effectively when not only the details of a system but the system as a whole is optimized.

The system 4EE features four levers:

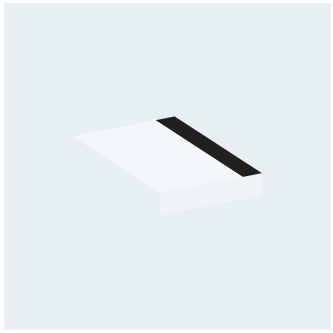


Efficient system layout
To achieve high energy efficiency, the system must be examined as a whole as early as in the planning phase. The construction kit TS 2*plus* offers numerous modules, all of which enable you to implement a transfer system tailored precisely to the particular application. This effectively prevents over-dimensioning and high energy losses from the outset.

Energy use on demand
Minimal energy consumption requires the ability to be able to switch off system components on demand. The majority of motors in the system TS 2*plus* are designed for start-stop operation and frequency converter operation.

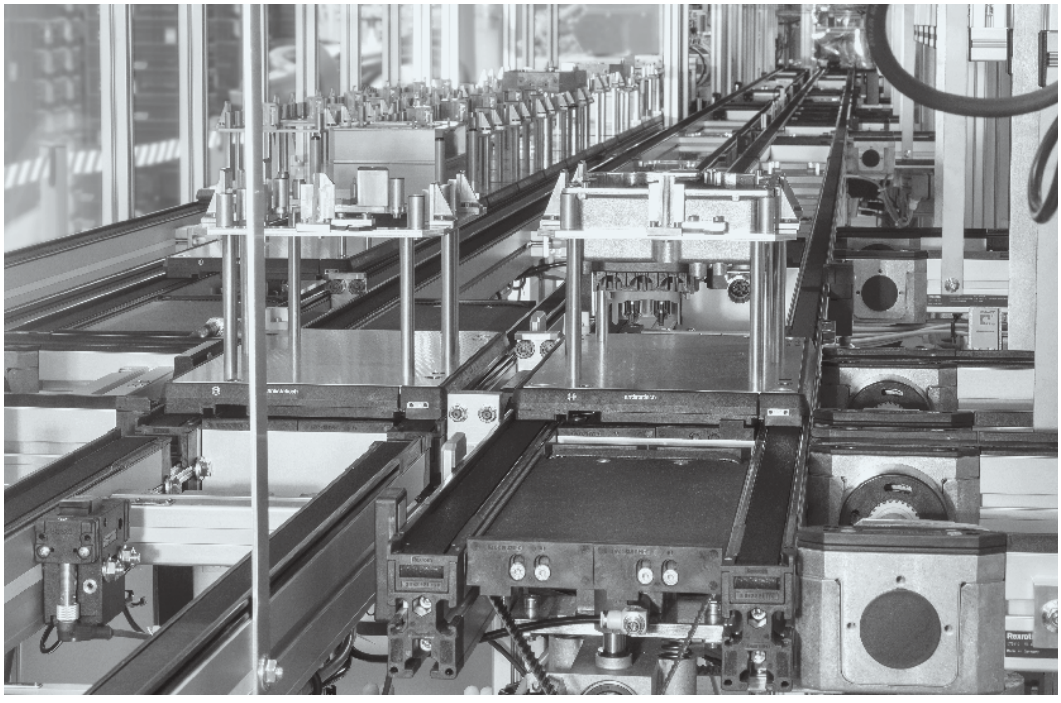
Energy-efficient modules
The modules TS 2*plus* are equipped with particularly energy-efficient drives.
The efficiency of most of the motors already exceed future requirements. The interplay of friction-optimized materials, e.g., on sliding rails, friction-minimizing gear oils and numerous further design details ensures perfect coordination in the overall system.

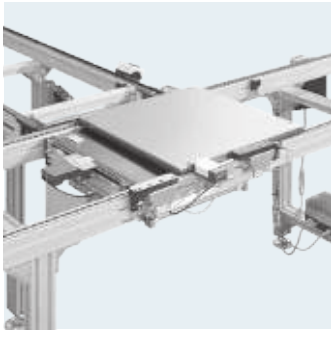
Worldwide approval
For international use, most of the motors feature CE, cURus and CCC approvals.

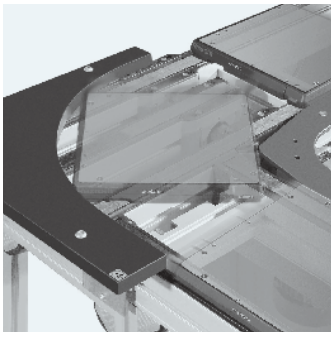


Workpiece pallets

Workpiece pallet selection **2-2**







Workpiece pallet selection

The workpiece pallet (WT) is used in the transfer system to convey the workpiece through the processing stations.
To guarantee an optimal transport, it should be loaded in the center.

Workpiece pallet applications

- Integrated positioning bushings enable defined positioning of the incoming workpiece in the processing station.
- Optionally available data tags can provide work-related information during processing. This information can be evaluated on-site and also updated.

Various WT workpiece pallets are available:

- The WT 2/E is an especially inexpensive, light-weight workpiece pallet with an all-plastic design that can be used for simple conveying and positioning tasks (see p. 2-6)
- The WT 2 is a sturdy and universally applicable workpiece pallet with a steel or aluminum carrying plate (see p. 2-8)
- The WT-2 components enable individual configuration of the WT using various frame modules and carrying plates, including those provided by the customer (see p. 2-10) Max. total workpiece pallet weight = 100 kg
- The WT 2/H with aluminum carrying plate for applications with total weights up to 240 kg (see p. 2-30)
- WT 2/F with an aluminum frame profile construction can be used for large workpieces. Grooves throughout the frame profile make it easier to install parts holders (see p. 2-41). Max. total workpiece pallet weight = 100 kg
- WT 2/F-H with the same aluminum frame profile construction, but in the heavy duty version up to 240 kg (see p. 2-43)
- WT 2/LS based on WT 2 for use in the TS 2 Booster (see p. 2-47)

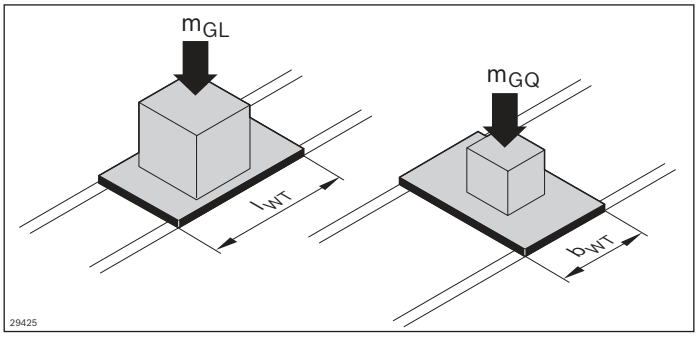
Size, combination with conveyor medium

The permitted total weight m_G of a workpiece pallet results from the

- combination of conveyor medium, glide profiles, and workpiece pallet wear pad as well as
- the surface length on the conveyor medium (see p. 1-12)

The surface length on the conveyor medium may vary in longitudinal and transverse conveying with non-square pallets. The shorter side of the workpiece pallet determines the maximum permitted total weight.

The following estimated parameters can be used:



- **Conveyor medium belt and toothed belt:** On workpiece pallets with wear pad PA, a specific section load of up to 1 kg/cm is possible
- **Conveyor medium flat-top chain:** Wear pads PA on the workpiece pallets are recommended in the combination with the plastic flat-top chain. This permits specific section loads of up to 1 kg/cm in the standard design with plastic glide profiles in the section profile. Specific section loads of 1.5 kg/cm are possible with the optionally available version with steel glide profiles.

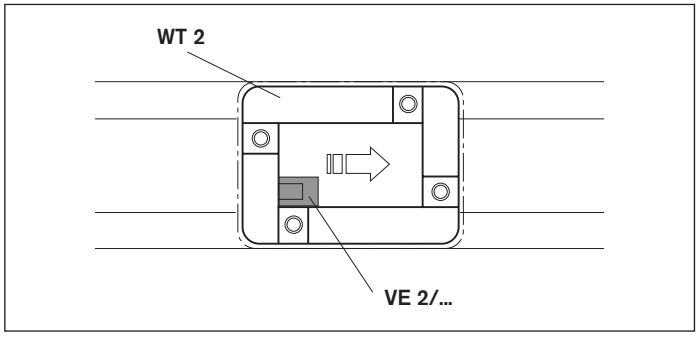
- **Conveyor medium accumulation roller chain:** In conjunction with wear pads PE on the workpiece pallets, the standard design with plastic glide profiles in the section profile permits specific section loads of up to 1.5 kg/cm. The optionally available version with steel glide profiles and the accumulation roller chain with steel rollers can tolerate specific section loads of 2kg/cm
- **Linear drive conveyor medium (linear guide with rollers):** Observe the specifications of the individual modular units for the technical data of the workpiece pallets WT 2/LS

When workpiece pallets WT 2/E, WT 2, WT 2/F and WT 2/LS are used, the VE 2/... stop gates are mounted directly on the section for lateral separation.
The workpiece pallets WT 2/E, WT 2 and WT 2/F are used up to 100 kg and the WT 2/LS workpiece pallet is used up to 50 kg.

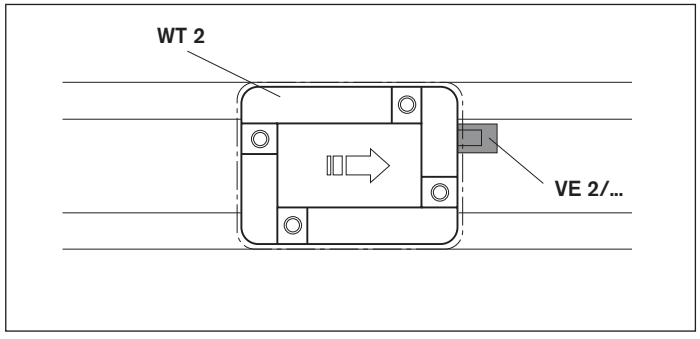
When workpiece pallets WT 2/H and WT 2/F-H are used the stop gates VE 2/D...-H are mounted by a cross strut for central separation.
WT 2/H or WT 2/F-H are used for heavy duty versions up to workpiece pallet total weights of 240 kg.

All VE 2/... (without VE 2/...-H) can be used for lateral separation.
All (without VE 2/D...-H) can be used for central separation.

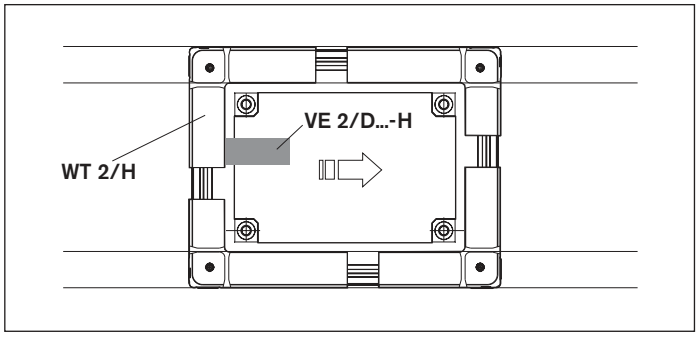
Mounting in rear right position in the direction of transport, on the **inside** of the workpiece pallet surface



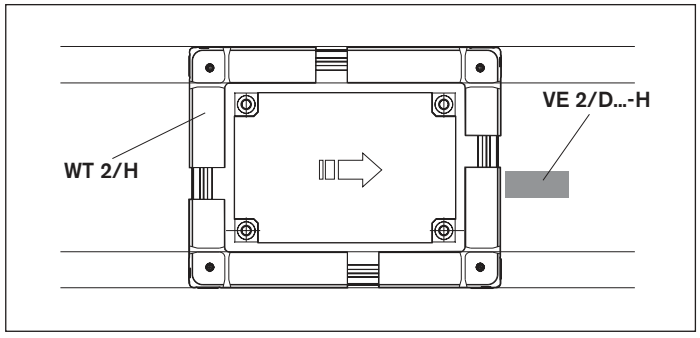
Mounting in front left position in the direction of transport, on the **outside** of the workpiece pallet surface



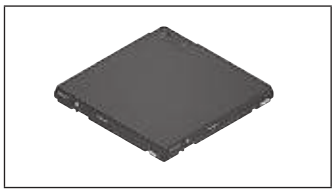
Mounting inside the workpiece pallet surface



Mounting outside the workpiece pallet surface

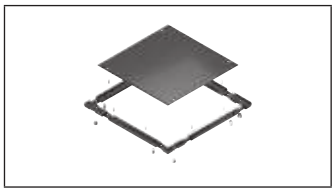


The size and position of the positioning bushings is different for the workpiece pallets for lateral separation compared to the types for central separation. This must be considered when selecting the positioning units.
For more information, see also the table on p. 1-13

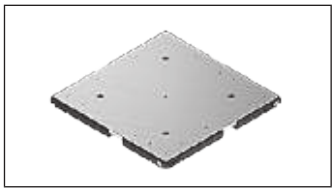


Workpiece pallet WT 2/E 12 **2-6**

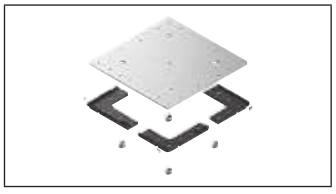
Workpiece pallet WT 2 100 **2-8**



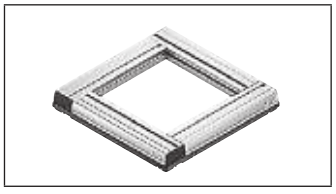
Components for workpiece pallet WT 2 100 **2-10**



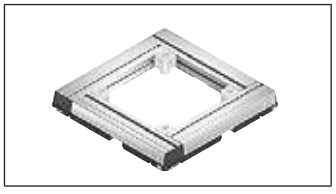
Workpiece pallet WT 2/H 240 **2-30**



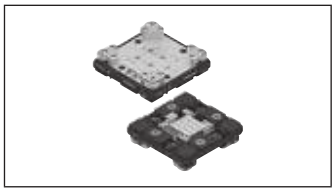
Components for workpiece pallet WT 2/H 240 **2-32**



Workpiece pallet WT 2/F 100 **2-41**

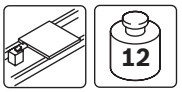


Workpiece pallet WT 2/-H 240 **2-43**



Workpiece pallet WT 2/LS 50 **2-47**

Workpiece pallet WT 2/E



- Including positioning hole for a repetition accuracy of ± 0.3 mm
- Prepared for the installation of mobile data tags from the ID 10 and ID 200 identification systems
- Not suitable for accumulation roller chains
- A standard size with the dimensions b_{WT} x l_{WT} = 240 x 240 mm
- Material: All-plastic polyamide version (PA 6)

WT 2/E is a cost-effective workpiece pallet with an all-plastic design, suitable for applications with low loads from above and on the joints of up to 0.5 kg/cm.

Scope of delivery

- Workpiece pallet, complete

Condition on delivery

- Assembled

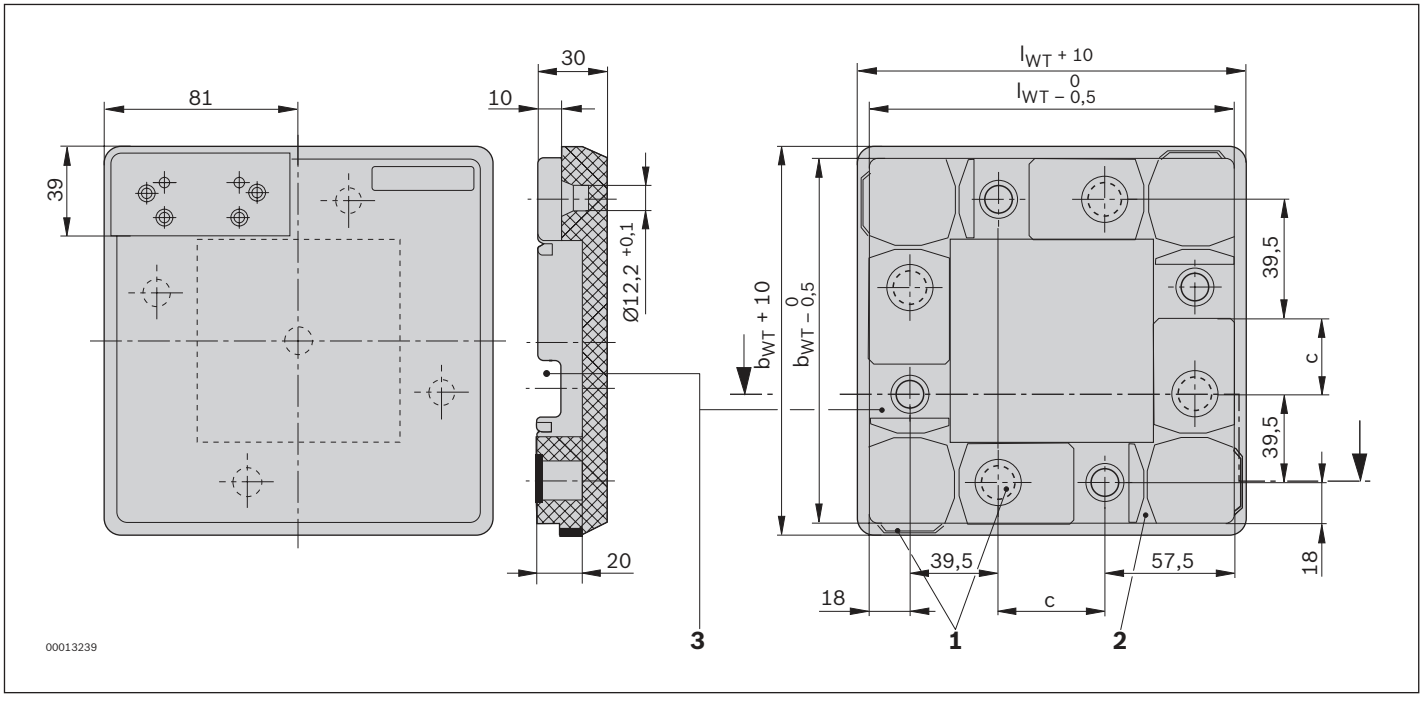
Ordering information

Product description	Material number
Workpiece pallet WT 2/E	3842352171

Technical data

Material number			**3842352171**
Plate thickness	d_{Pl}	mm	10
Flatness	☐	mm	1
Workpiece pallet weight	m_{WT}	kg	1.6

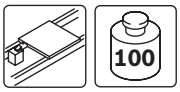
Dimensions



No production drawing
1 Exciter plate
2 Guide groove
3 Stop gate aperture

Width of workpiece pallet b_{WT} (mm)	**Length of workpiece pallet l_{WT} (mm)**	**Workpiece pallet weight m_{WT} (kg)**	**Dimension c (mm)**
240	240	1.6	125

Workpiece pallet WT 2, fully assembled



- Suitable for belt, toothed belt, and flat-top chain
- Robust workpiece pallet with high rigidity
- Integrated positioning bushings
- Prepared for installation of mobile data tags of the ID 15 and ID 200 identification system
- Not suitable for accumulation roller chains
- Plastic frame modules with universal steel carrying plate
- 15 standard sizes
- Material:
  - Frame module with polyamide (PA) wear pad
  - Steel carrying plate (4.8 mm)

WT 2 is a sturdy workpiece pallet with high rigidity in a composite plastic-steel construction used to pick up and convey workpieces in the transfer system TS 2*plus*. From size 400 x 400 mm, the workpiece pallet plates are executed as standard with two or four additional threaded holes for reinforcing bolts. Number given in carrying plate table on page 2-12.

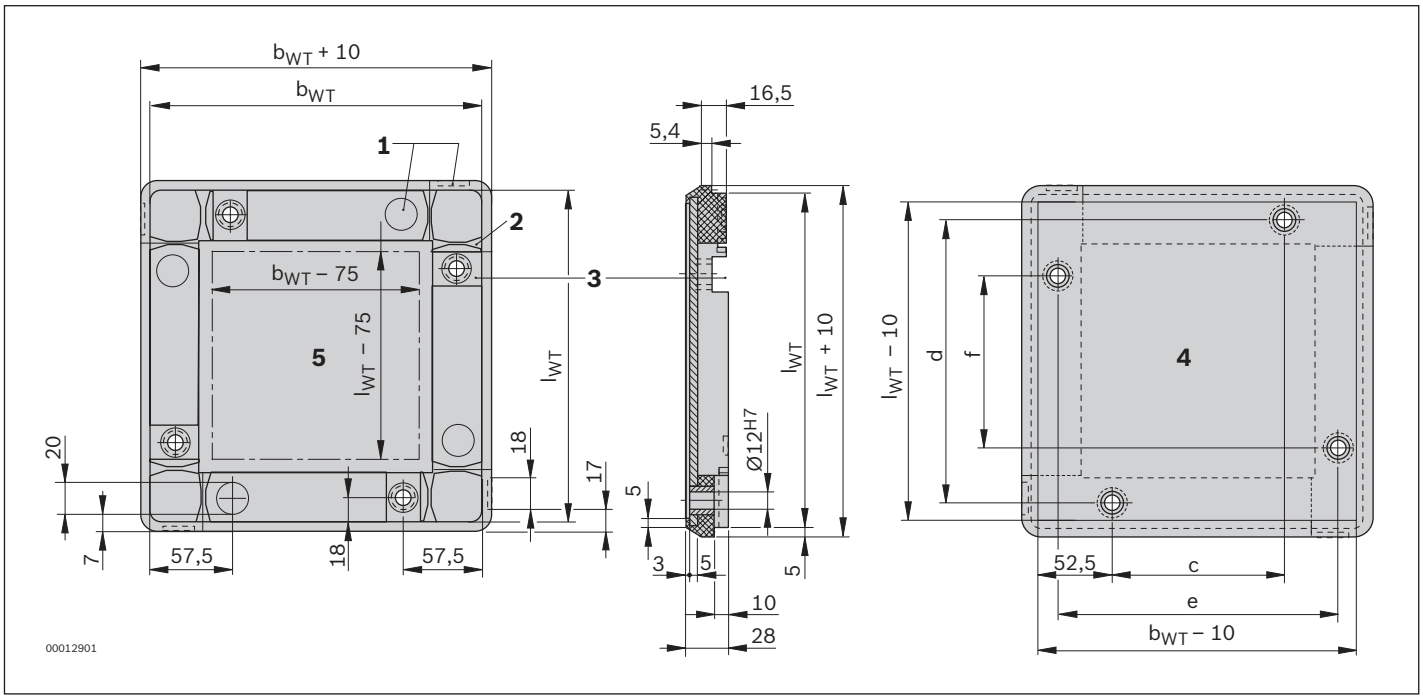
Scope of delivery
- Carrying plate
- Frame modules
- Connection elements
- Positioning bushings

Condition on delivery
- Assembled

Ordering information

Product description	Workpiece pallets b_{WT} x l_{WT}	Material number
Workpiece pallet WT 2	160 x 160	0842090030
Workpiece pallet WT 2	160 x 240	0842090032
Workpiece pallet WT 2	160 x 320	0842090034
Workpiece pallet WT 2	240 x 240	0842090039
Workpiece pallet WT 2	240 x 320	0842090041
Workpiece pallet WT 2	240 x 400	0842090043
Workpiece pallet WT 2	320 x 320	0842090048
Workpiece pallet WT 2	320 x 400	0842090050
Workpiece pallet WT 2	320 x 480	0842090051
Workpiece pallet WT 2	400 x 400	0842090080
Workpiece pallet WT 2	400 x 480	0842090081
Workpiece pallet WT 2	400 x 640	0842090083
Workpiece pallet WT 2	480 x 480	0842090086
Workpiece pallet WT 2	480 x 640	0842090088
Workpiece pallet WT 2	640 x 640	3842523405

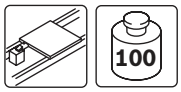
Dimensions



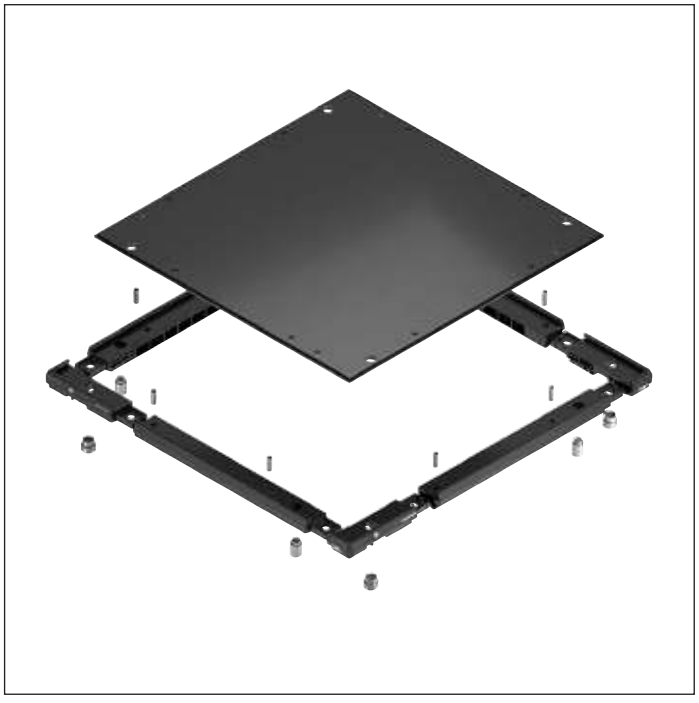
No production drawing
1 Exciter plate
2 Guide groove
3 Stop gate aperture
4 Top clearance
5 Bottom clearance

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Plate thickness d_{Pl} (mm)	Flatness □ (mm)	Plate mass m_{Pl} (kg)	Workpiece pallet weight m_{WT} (kg)	Dimension c (mm)	Dimension d (mm)	Dimension e (mm)	Dimension f (mm)
160	160	4.8	0.3	0.9	1.2	45	124	124	45
160	240	4.8	0.3	1.3	1.8	45	204	124	125
160	320	4.8	0.3	1.8	2.3	45	284	124	205
240	240	4.8	0.3	2.0	2.5	125	204	204	125
240	320	4.8	0.5	2.7	3.3	125	284	204	205
240	400	4.8	0.5	3.4	4.1	125	364	204	285
320	320	4.8	0.5	3.6	4.4	205	284	284	205
320	400	4.8	0.6	4.6	5.4	205	364	284	285
320	480	4.8	0.6	5.5	6.4	205	444	284	365
400	400	4.8	0.6	5.9	6.6	285	364	364	285
400	480	4.8	0.6	7.0	8.0	285	444	364	365
400	640	4.8	0.8	9.3	11.0	285	604	364	525
480	480	4.8	0.8	8.3	9.7	365	444	444	365
480	640	4.8	1.0	11.4	12.4	365	604	444	525
640	640	4.8	1.0	15.3	16.3	525	604	604	525

Components for workpiece pallets WT 2



To fulfill special needs, the workpiece pallets can also be individually configured in a design where the carrying plate is assembled by the customer. In addition to frame modules with different wear pads, various carrying plates, positioning bushings and all the necessary fastening elements are available.



Frame modules

- PA frame modules are the basic solution for use on belts, toothed belts, and plastic flat-top chains
- Wear pads PE are required for use on conveyor medium accumulation roller chains and duplex chains
- Reinforced (PA or PE) for workpiece pallet total weights > 50 kg AND conveyor speeds > 12 m/min

Carrying plates

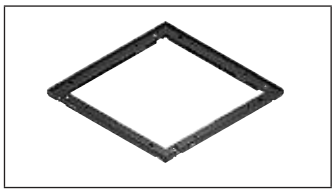
- Steel carrying plates with a thickness of 4.8 mm for workpiece pallets up to medium size High stability allows for easy integration of your own workpiece supports
- Aluminum carrying plates with a thickness of 8 mm or 12.7 mm are a light and rigid alternative for medium and large workpiece pallets

Positioning bushings

- For defined pick-up of the workpiece pallet in the positioning units

Accessories

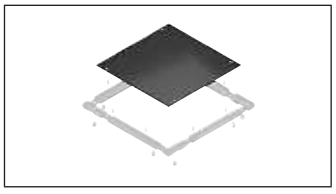
- Dowel pins to connect the extension modules to the carrying plate
- Bolts in combination with reinforced frame modules for large workpiece pallets (from 400 x 400 mm) and weights over 50 kg to max. 100 kg.

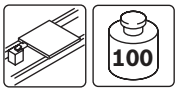


Frame modules, standard/reinforced **2-12**

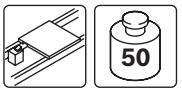
Positioning bushing **2-18**

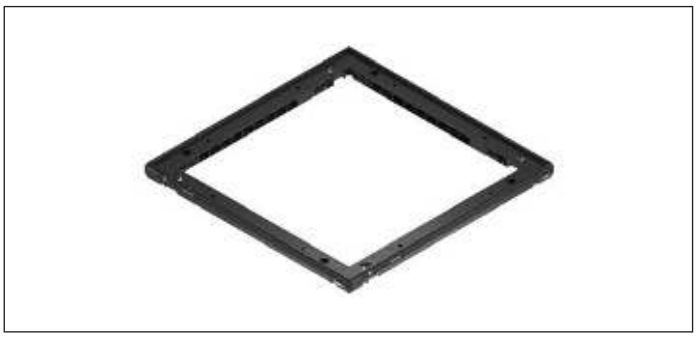
Bolt **2-21**



Carrying plates  **2-22**

Standard frame module

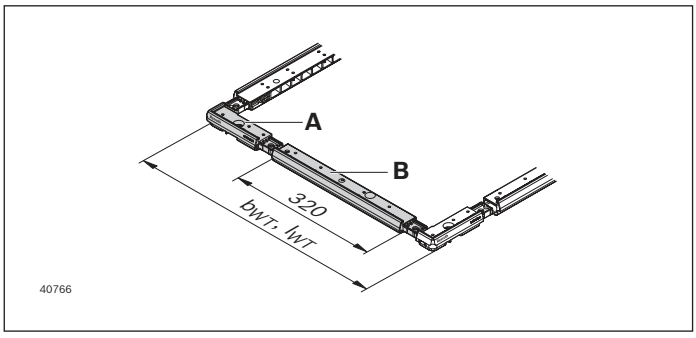




The basic solution PA is suitable for use on the belt/toothed belt and flat-top chain conveyor media.
Frame modules with wear pads PE are required for use on the duplex chain and accumulation roller chain conveyor media. The wear pad PE is not suitable for accumulation operation on flat-top chains ESD.

- Standard frame modules are used for self-assembly of workpiece pallets WT 2
- Corner modules with standard side lengths of 160 to 400 mm
- Frame extension module 320 mm
- Material:
  - Corner/extension module (PA) with PA (polyamide) wear pad
    or
  - Corner/extension module (PA) with PE (= polyethylene) wear pad
- Reinforced frame modules are required for total weights m_G > 50 kg AND for conveyor speeds v_N >12 m/min
- Can be combined with workpiece pallet WT 2 carrying plates
- Suitable for use in an EPA

Ordering information



A Corner module
B Extension module

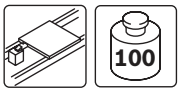
Dimensions, see p. 2-14

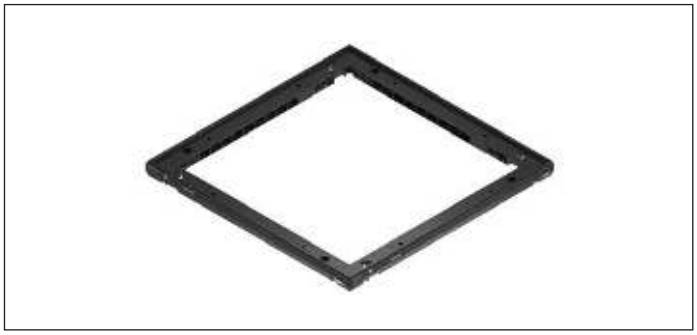
Product description	b_{WT}, l_{WT} (mm)	Material number
Standard frame module, corner module PA, wear pad PA	160	3842174301
Standard frame module, corner module PA, wear pad PA	240	3842174302
Standard frame module, corner module PA, wear pad PA	320	3842174303
Standard frame module, corner module PA, wear pad PA	400	3842174304
Standard frame module, corner module PA, wear pad PE[1)]	160	3842526760
Standard frame module, corner module PA, wear pad PE	240	3842526761
Standard frame module, corner module PA, wear pad PE	320	3842526762
Standard frame module, corner module PA, wear pad PE	400	3842526763

[1)] No exciter plate for position sensing from below with inductive sensors is included. Only lateral position sensing is possible with this design.

Product description	l (mm)	Material number
Standard frame module, extension module PA, wear pad PA	320	3842513458
Standard frame module, extension module PA, wear pad PE	320	3842526764

Reinforced frame module





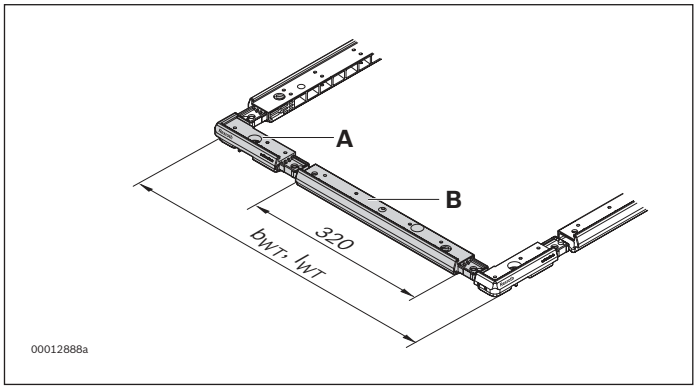
The basic solution PA for use on conveyor media belts/ toothed belts is suitable for use on the belt/toothed belt and plastic flat-top chain conveyor media.
Frame modules with wear pads PE are required for use on the duplex chain and accumulation roller chain conveyor media.

- Reinforced modules are used for self-assembly of workpiece pallets from 400 x 400 mm. They are required for workpiece pallet total weights m_G > 50 kg AND for conveyor speeds v_N > 12 m/min
- Corner module 400 mm
- Frame extension module 320 mm
- Wide variety of workpiece pallet sizes possible through combinations of standard modules
- Material:
  - Corner/extension module (PA) with PA (polyamide) wear pad or
  - Corner/extension module (PA) with PE (= polyethylene) wear pad
- Can be combined with workpiece pallet WT 2 carrying plates
- Suitable for use in an EPA

Required accessories

- Bolt, see p. 2-21

Ordering information



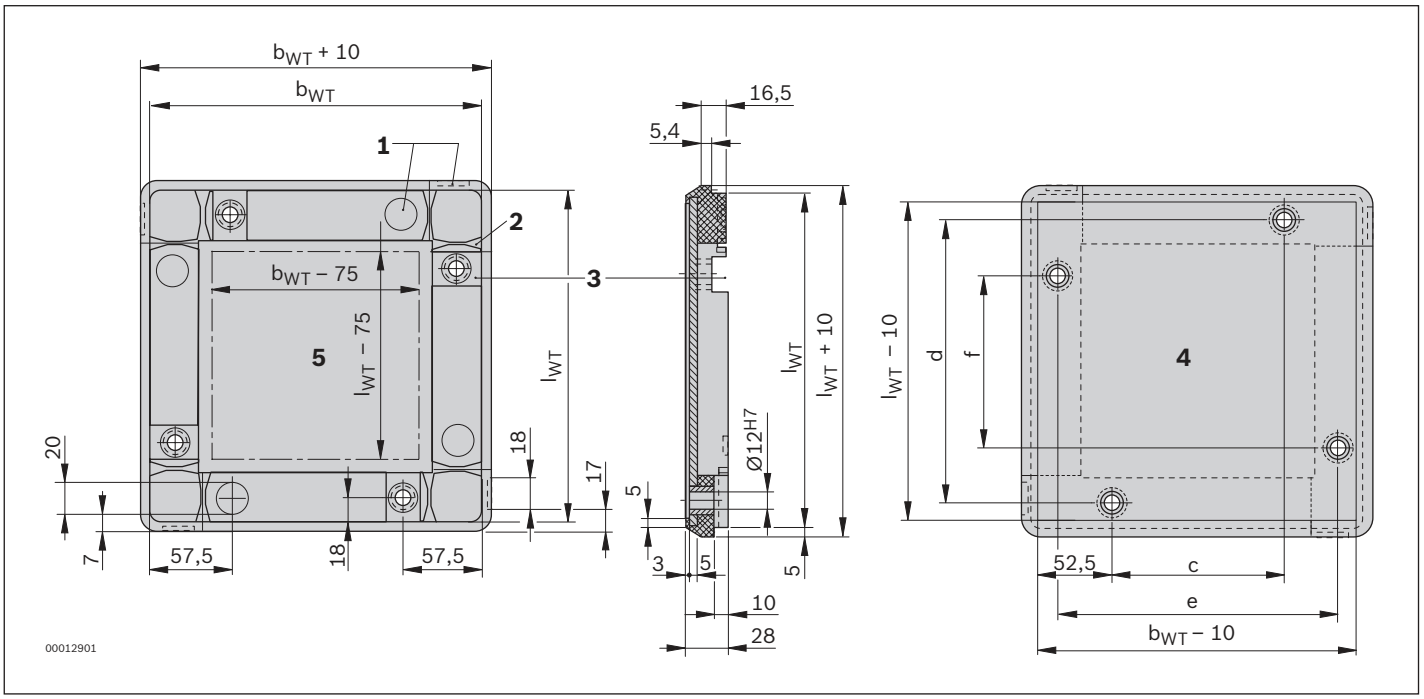
A Corner module
B Extension module

Dimensions, see p. 2-14

Product description	b_{WT}, l_{WT} (mm)	Material number
Reinforced frame module, corner module (PA)	400	3842525998
Reinforced frame module, corner module (PA+PE)	400	3842528292

Product description	l (mm)	Material number
Reinforced frame module, extension module (PA)	320	3842525999
Reinforced frame module, extension module (PA+PE)	320	3842528293

Dimensions



No production drawing
1 Exciter plate
2 Guide groove
3 Stop gate aperture
4 Top clearance
5 Bottom clearance

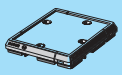
Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Plate mass $m_{PI1)}$ (kg)	Plate mass $m_{PI2)}$ (kg)	Plate mass $m_{PI3)}$ (kg)	Dimension c (mm)	Dimension d (mm)	Dimension e (mm)	Dimension f (mm)
160	160	0.9			45	124	124	45
160	240	1.3			45	204	124	125
160	320	1.8			45	284	124	205
240	240	2.0			125	204	204	125
240	320	2.7			125	284	204	205
240	400	3.4	1.9		125	364	204	285
320	320	3.6	2.1		205	284	284	205
320	400	4.6	2.6		205	364	284	285
320	480	5.5	3.1	4.9	205	444	284	365
400	400	5.9	3.2	5.1	285	364	364	285
400	480	7.0	3.9	6.2	285	444	364	365
400	640	9.3	5.2	8.3	285	604	364	525
400	800			10.4	285	764	364	685
480	480	8.3	4.7	7.4	365	444	444	365
480	640	11.4	6.3	10.0	365	604	444	525
480	800			12.5	365	764	444	685
640	640	15.3	8.5	13.4	525	604	604	525
640	800			16.8	525	764	604	685
640	1040			21.9	525	1004	604	925
800	800			21.0	685	764	764	685
800	1040			27.4	685	1004	764	925
800	1200			31.7	685	1164	764	1085
1040	1040			35.8	925	1004	1004	925
1040	1200			41.3	925	1164	1004	1085
1200	1200			47.8	1085	1164	1164	1085

[1)] Steel 4.8 mm
[2)] Aluminum 8.0 mm
[3)] Aluminum 12.7 mm

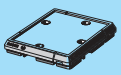
WT 2: Components

WT 2: Frame modules with wear pad PA – parts list

For $m_G \leq 50$ kg or $v_N \leq 12$ m/min workpiece pallets

						
b_{WT} (mm)	l_{WT} (mm)	3842174301	3842174302	3842174303	3842174304	3842513458
160	**160**	4				
160	**240**	2	2			
160	**320**	2		2		
240	**240**		4			
240	**320**		2	2		
240	**400**		2		2	
320	**320**			4		
320	**400**			2	2	
320	**480**	2		2		2
400	**400**				4	
400	**480**	2			2	2
400	**640**			2	2	2
400	**800**	2			2	4
480	**480**	4				4
480	**640**	2		2		4
480	**800**	4				6
640	**640**			4		4
640	**800**	2		2		6
640	**1040**			2	2	6
800	**800**	4				8
800	**1040**	2			2	8
800	**1200**	2	2			10
1040	**1040**				4	8
1040	**1200**		2		2	10
1200	**1200**		4			12

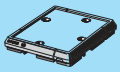
For $m_G > 50$ kg and $v_N > 12$ m/min workpiece pallets with reinforced frame modules

								
b_{WT} (mm)	l_{WT} (mm)	3842174301	3842174302	3842174303	3842174304	3842513458	3842525998*)	3842525999*)
320	**480**	2		2				2
400	**400**						4	
400	**480**	2					2	2
400	**640**			2			2	2
400	**800**	2				2	2	2
480	**480**	4						4
480	**640**	2		2				4
480	**800**	4				2		4
640	**640**			4				4
640	**800**	2		2		2		4
640	**1040**			2	2	2		4
800	**800**	4				4		4
800	**1040**	2			2	4		4
800	**1200**	2	2			6		4
1040	**1040**				4	4		4
1040	**1200**		2		2	6		4
1200	**1200**		4			8		4

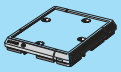
*) Reinforced module

WT 2: Frame modules with wear pad PE – parts list

For $m_G \leq 50$ kg or $v_N \leq 12$ m/min workpiece pallets

 b_{WT} (mm)	l_{WT} (mm)	3842526760[1)]	3842526761	3842526762	3842526763	3842526764
160	**160**	4				
160	**240**	2	2			
160	**320**	2		2		
240	**240**		4			
240	**320**		2	2		
240	**400**		2		2	
320	**320**			4		
320	**400**			2	2	
320	**480**	2		2		2
400	**400**				4	
400	**480**	2			2	2
400	**640**			2	2	2
400	**800**	2			2	4
480	**480**	4				4
480	**640**	2		2		4
480	**800**	4				6
640	**640**			4		4
640	**800**	2		2		6
640	**1040**			2	2	6
800	**800**	4				8
800	**1040**	2			2	8
800	**1200**	2	2			10
1040	**1040**				4	8
1040	**1200**		2		2	10
1200	**1200**		4			12

For $m_G > 50$ kg and $v_N > 12$ m/min workpiece pallets with reinforced frame modules

 b_{WT} (mm)	l_{WT} (mm)	3842526760[1)]	3842526761	3842526762	3842526763	3842526764	3842528292[*)]	3842528293[*)]
320	**480**	2		2				2
400	**400**						4	
400	**480**	2					2	2
400	**640**			2			2	2
400	**800**	2				2	2	2
480	**480**	4						4
480	**640**	2		2				4
480	**800**	4				2		4
640	**640**			4				4
640	**800**	2		2		2		4
640	**1040**			2	2	2		4
800	**800**	4				4		4
800	**1040**	2			2	4		4
800	**1200**	2	2			6		4
1040	**1040**				4	4		4
1040	**1200**		2		2	6		4
1200	**1200**		4			8		4

[*)] Reinforced module
[1)] With the 160 mm frame module with wear pad PE (3842526760), no exciter plate is included for inquiry with inductive sensors from below. Only lateral position sensing is possible with this design.

Positioning bushing

- For supporting the workpiece pallet in positioning units
- Used to mount frame modules and carrying plates
- Positioning bushings increase the empty weight of the workpiece pallet
- Material: Steel; hardened
- Can be combined with frame modules of the workpiece pallet WT 2

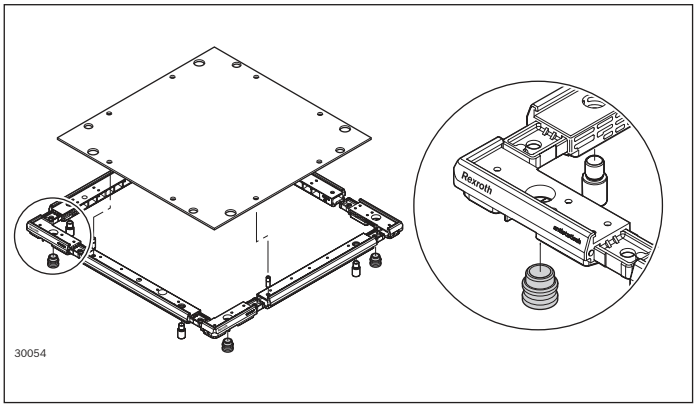
Required mounting accessories

- Press-fit mandrel, see p. 2-19

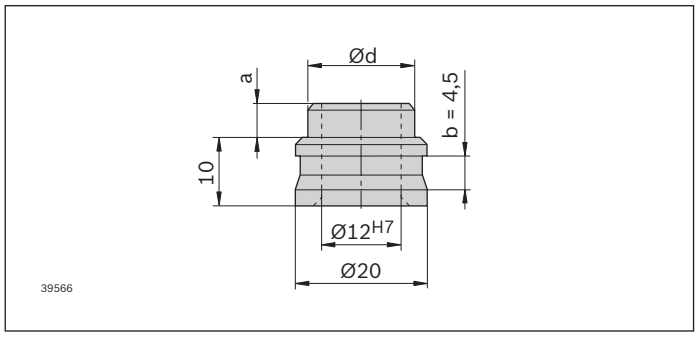
Ordering information

Product description	Delivery unit	Material number
D20 x 4.8 positioning bushing	1	3842174341
D20 x 8 positioning bushing	1	3842524614
D20 x 12.7 positioning bushing	1	3842524615

Technical data



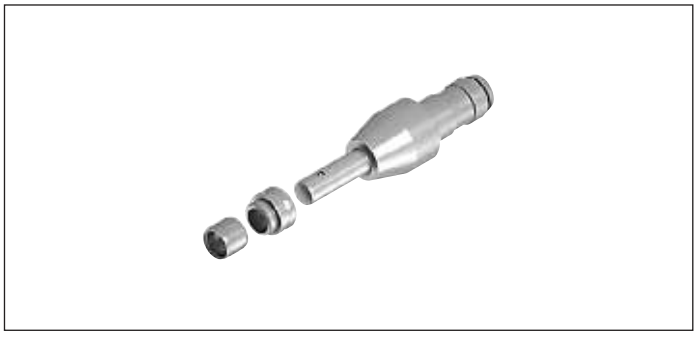
Dimensions



Dimension a must correspond to the plate WT thickness.
Notice: The dimension 12H7 refers to the state before press-fitting. After press-fitting with the press-fit mandrel the dimension 12H7 is guaranteed to be in the "b" range.

Material number	Dimension a (mm)	Lower dimension for a A_U (mm)	Dimension d (mm)	Upper dimension for d A_O (mm)	Lower dimension for d A_U (mm)
3842174341	4.8	-0.1	16	+0.034	+0.024
3842524614	8	-0.1	16	+0.05	+0.04
3842524615	12.7	-0.1	16	+0.05	+0.04

Press-fit mandrel



- Material: Steel; hardened
- Can be combined with positioning bushings of the workpiece pallet WT 2

The press-fit mandrel is used when mounting the workpiece pallet for pressing the positioning bushings into the carrying plate.

Required accessories

- Positioning bushing, see p. 2-18

Ordering information

Product description	Material number
Press-fit mandrel	3842525846

Dowel pin

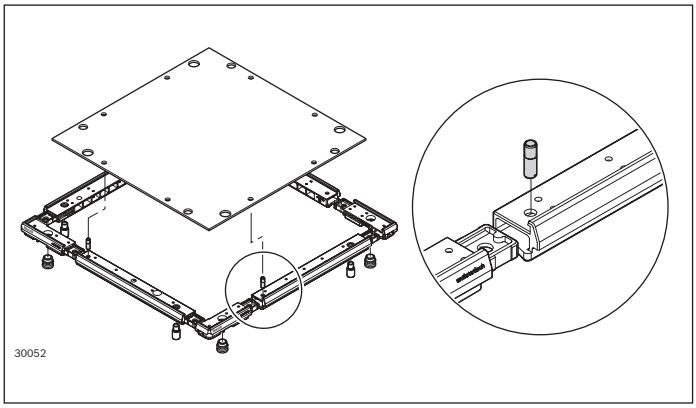
- To connect the carrying plate and the frame extension module with wear pad PA, two dowel pins are required
- To connect the carrying plate and the frame extension module with wear pad PE, one dowel pin is required
- Material: Steel
- Can be combined with frame modules of the workpiece pallet WT 2

The dowel pin is used to connect the carrying plate and the frame extension module.

Ordering information

Product description	Packaging unit	Material number
Dowel pin	100	3842532812

Technical data



Bolt

- For absorbing the stop forces on the stop gate
- Material: Steel; galvanized
- Can be combined with reinforced frame modules of the workpiece pallet WT 2

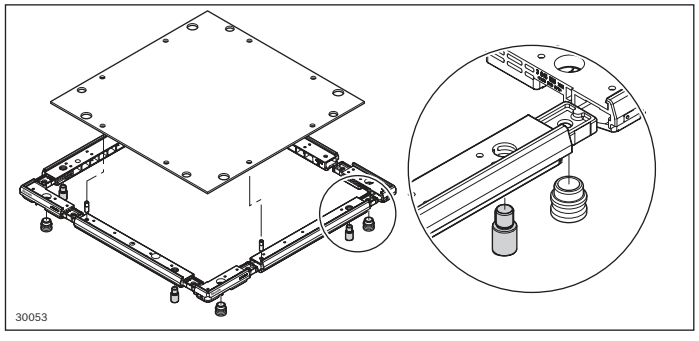
All plates WT from b_{WT} x l_{WT} = 400 x 400 mm are equipped with four threaded bores for reinforcing bolts as standard. An exception is the 320 x 480 mm plate WT, which is executed with only two threaded bores.

Ordering information

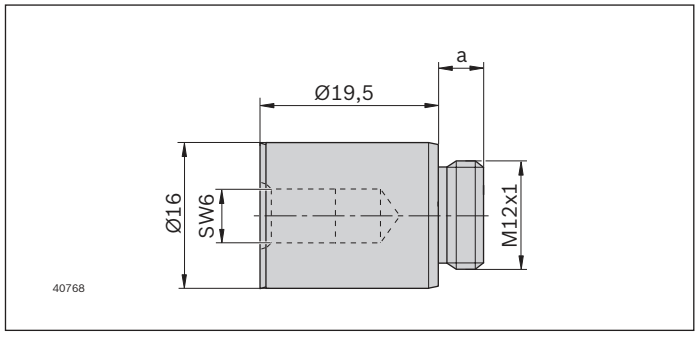
Product description	Dimension a* (mm)	Lower dimension for a A_U (mm)	Delivery unit	Material number
Bolt, D16 a = 4.8	4.8	-0.2	1	3842525803
Bolt D16 a = 8	8	-0.2	1	3842525804
Bolt D16 a = 12.7	12.7	-0.2	1	3842525805

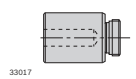
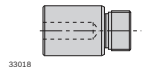
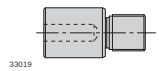
* The dimension must correspond to the plate thickness.

Technical data

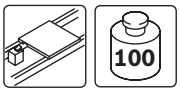


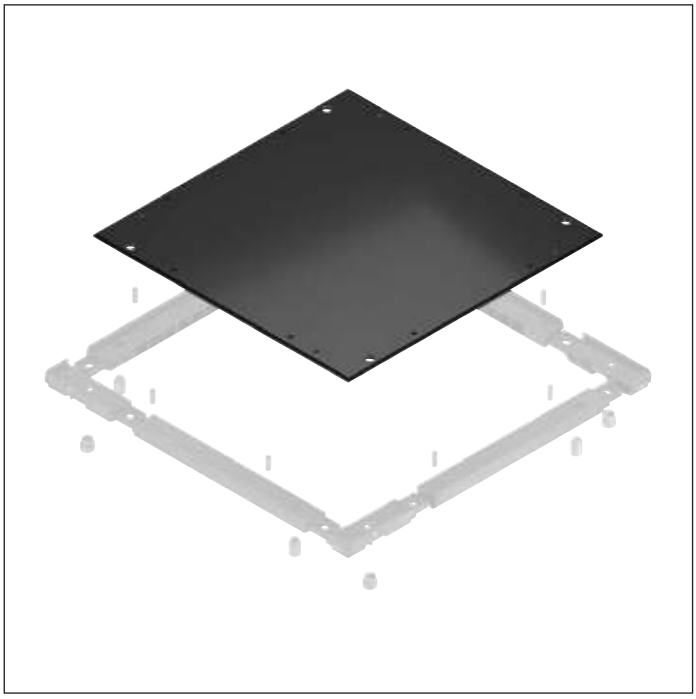
Dimensions



	Dimension a (mm)
	4.8
	8
	12.7

Carrying plate





Carrying plates are used for self-assembly of workpiece pallets WT 2 using frame modules and fastening elements.

- For self-assembly of workpiece pallets for product pick-up
- Completely drilled and ready for assembly
- 15 standard sizes in steel, 4.8 mm thick, with KTL (cataphoretic primer) coating
- 10 standard sizes in aluminum, 8 mm thick
- 13 standard sizes in aluminum, 12.7 mm thick
- Aluminum carrying plates are suitable for use in an EPA
- You will find drilling plans for identification and data storage systems in the RFID systems catalog
- Can be combined with frame modules of the workpiece pallet WT 2

Ordering information

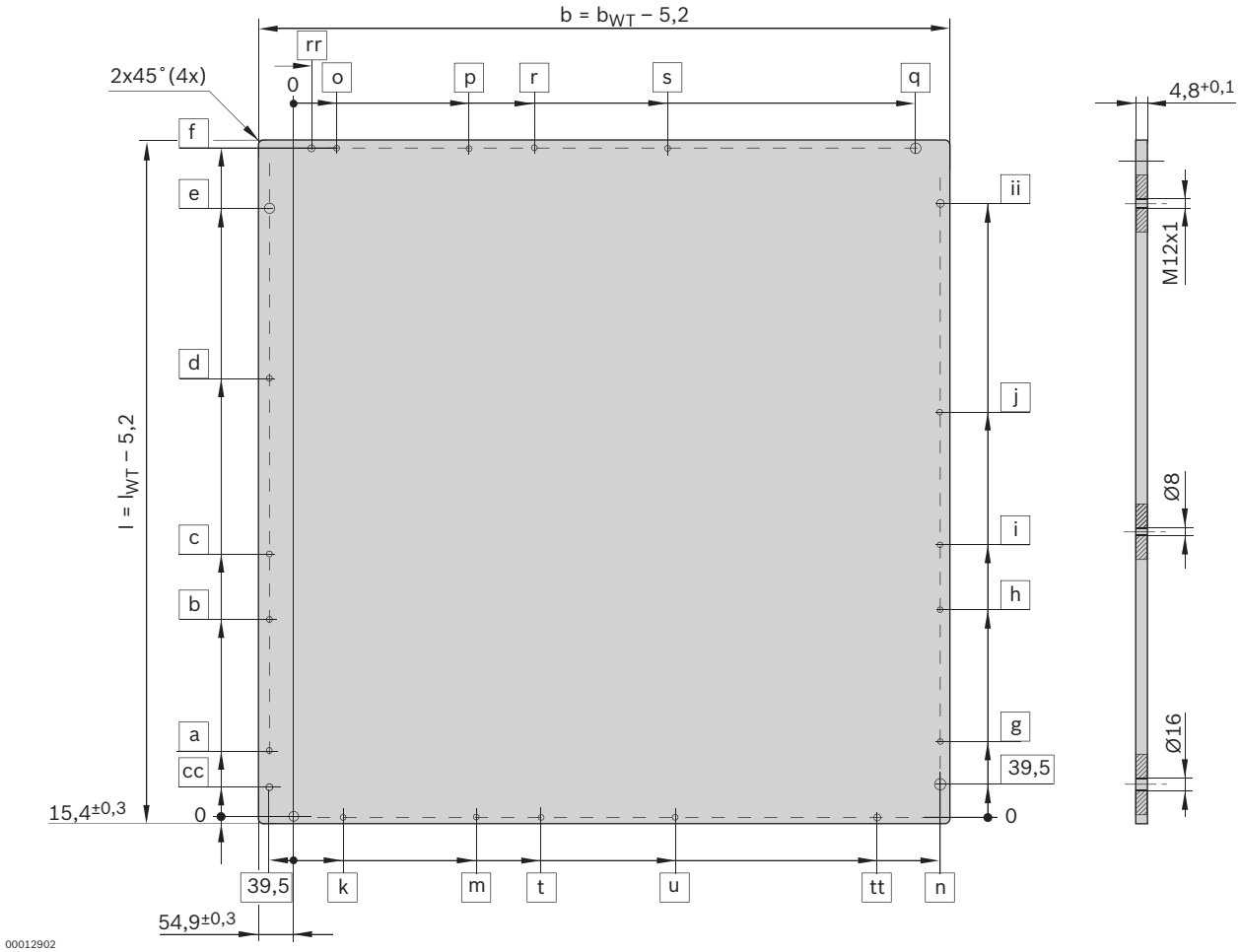
Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Plate thickness d_{PI} (mm)	Flatness □ (mm)	Plate mass m_{PI} (kg)	Material number Steel	Plate thickness d_{PI} (mm)	Flatness □ (mm)	Plate mass m_{PI} (kg)	Material number Aluminum	Plate thickness d_{PI} (mm)	Flatness □ (mm)	Plate mass m_{PI} (kg)	Material number Aluminum
160	160	4.8	0.3	0.9	**3842174311**								
160	240	4.8	0.3	1.3	**3842174313**								
160	320	4.8	0.3	1.8	**3842174315**								
240	240	4.8	0.3	2.0	**3842174321**								
240	320	4.8	0.5	2.7	**3842174323**								
240	400	4.8	0.5	3.4	**3842174325**	8.0	0.5	1.9	**3842524594**				
320	320	4.8	0.5	3.6	**3842174331**	8.0	0.5	2.1	**3842524595**				
320	400	4.8	0.6	4.6	**3842174333**	8.0	0.6	2.6	**3842524596**				
320	480	4.8	0.6	5.5	**3842174334**[1]	8.0	0.6	3.1	**3842524597**[1]	12.7	0.6	4.9	**3842538346**[1]
400	400	4.8	0.6	5.9	**3842174375**[2]	8.0	0.6	3.2	**3842524598**[2]	12.7	0.6	5.1	**3842538307**[2]
400	480	4.8	0.6	7.0	**3842174376**[2]	8.0	0.6	3.9	**3842524599**[2]	12.7	0.6	6.2	**3842538308**[2]
400	640	4.8	0.8	9.3	**3842174378**[2]	8.0	0.8	5.2	**3842524600**[2]	12.7	0.8	8.3	**3842538310**[2]
400	800									12.7	1.0	10.4	**3842524601**[2]
480	480	4.8	0.8	8.3	**3842174381**[2]	8.0	0.8	4.7	**3842524602**[2]	12.7	0.8	7.4	**3842538309**[2]
480	640	4.8	1.0	11.4	**3842174383**[2]	8.0	1.0	6.3	**3842524603**[2]	12.7	1.0	10.0	**3842538311**[2]
480	800									12.7	1.0	12.5	**3842524604**[2]
640	640	4.8	1.0	15.3	**3842523381**[2]	8.0	1.0	8.5	**3842524605**[2]	12.7	1.0	13.4	**3842538312**[2]
640	800									12.7	1.0	16.8	**3842524606**[2]
640	1040									12.7	1.2	21.9	**3842524607**[2]
800	800									12.7	1.0	21.0	**3842524608**[2]
800	1040									12.7	1.2	27.4	**3842524609**[2]
800	1200									12.7	1.2	31.7	**3842548684**[2]
1040	1040									12.7	1.2	35.8	**3842548685**[2]
1040	1200									12.7	1.2	41.3	**3842548686**[2]
1200	1200									12.7	1.2	47.8	**3842548687**[2]

[1] with two threaded bores for reinforcing bolts

[2] with four threaded bores for reinforcing bolts

Dimensions

Steel carrying plate (4.8 mm)



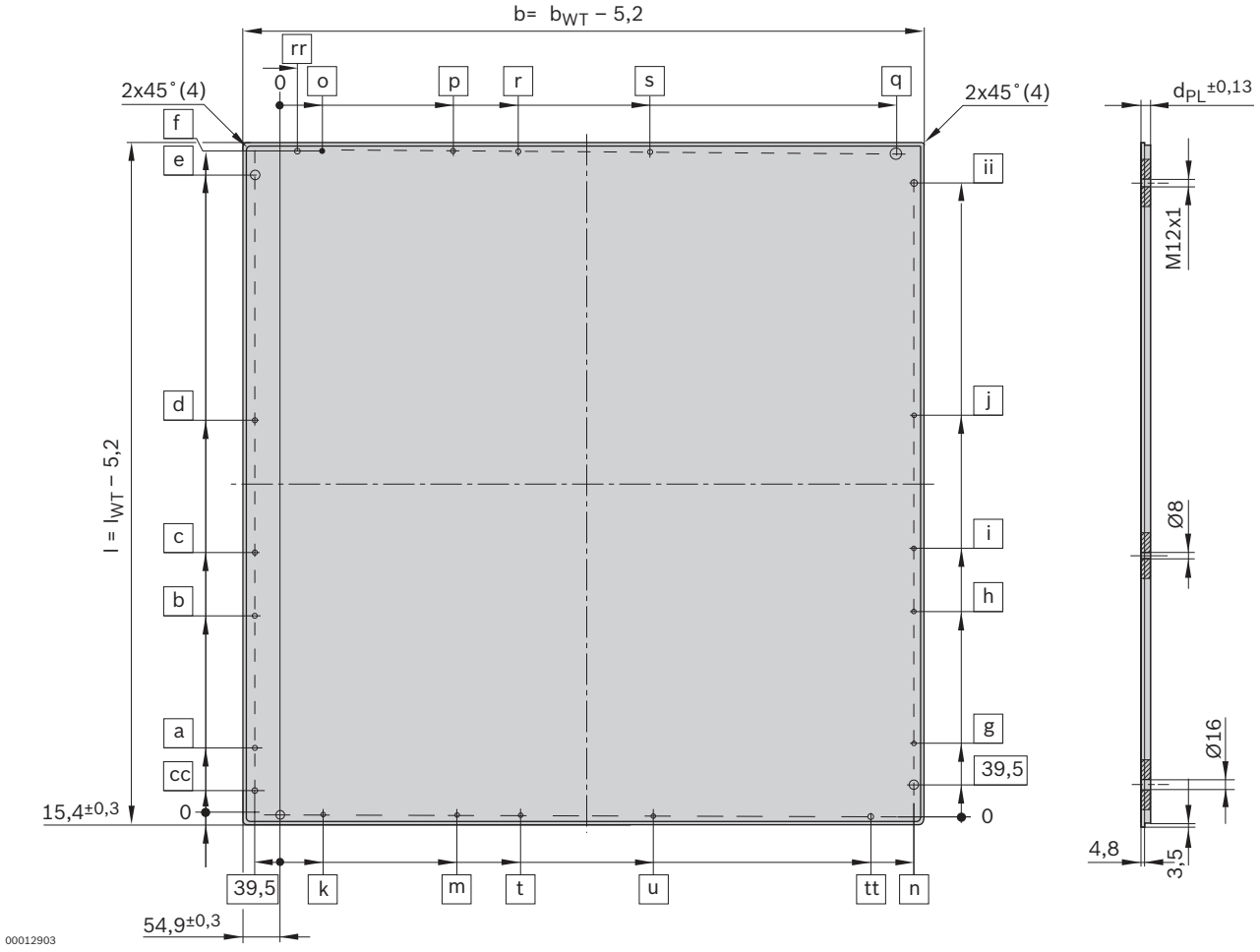
No production drawing

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Flatness □ (mm)	a	b	c	cc	d	e	f	g	h	i	ii	j	k
160	160	0.3						84.5	124						
160	240	0.3						164.5	204						
160	320	0.3						244.5	284						
240	240	0.3						164.5	204						
240	320	0.5						244.5	284						
240	400	0.5						324.5	364						
320	320	0.5						244.5	284						
320	400	0.6						324.5	364						
320	480	0.6	108.5	323.5		59.5		404.5	444	120.5	335.5		384.5		
400	400	0.6				59.5		324.5	364				304.5		
400	480	0.6	108.5	323.5		59.5		404.5	444	120.5	335.5		384.5		
400	640	0.8	108.5	323.5		59.5		564.5	604	280.5	495.5		544.5		
480	480	0.8	108.5	323.5		59.5		404.5	444	120.5	335.5		384.5		81
480	640	1.0	108.5	323.5		59.5		564.5	604	280.5	495.5		544.5		81
640	640	1.0	108.5	323.5		59.5		564.5	604	280.5	495.5		544.5		241

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	m	n	o	p	q	r	rr	s	t	tt	u	Material number
160	160		84.5			45							**3842174311**
160	240		84.5			45							**3842174313**
160	320		84.5			45							**3842174315**
240	240		164.5			125							**3842174321**
240	320		164.5			125							**3842174323**
240	400		164.5			125							**3842174325**
320	320		244.5			205							**3842174331**
320	400		244.5			205							**3842174333**
320	480		244.5			205							**3842174334**
400	400		324.5			285		20			265		**3842174375**
400	480		324.5			285		20			265		**3842174376**
400	640		324.5			285		20			265		**3842174378**
480	480	296	404.5	69	284	365		20			345		**3842174381**
480	640	296	404.5	69	284	365		20			345		**3842174383**
640	640	456	564.5	69	284	525		20			505		**3842523381**

Dimensions

Aluminum carrying plate (8 mm)



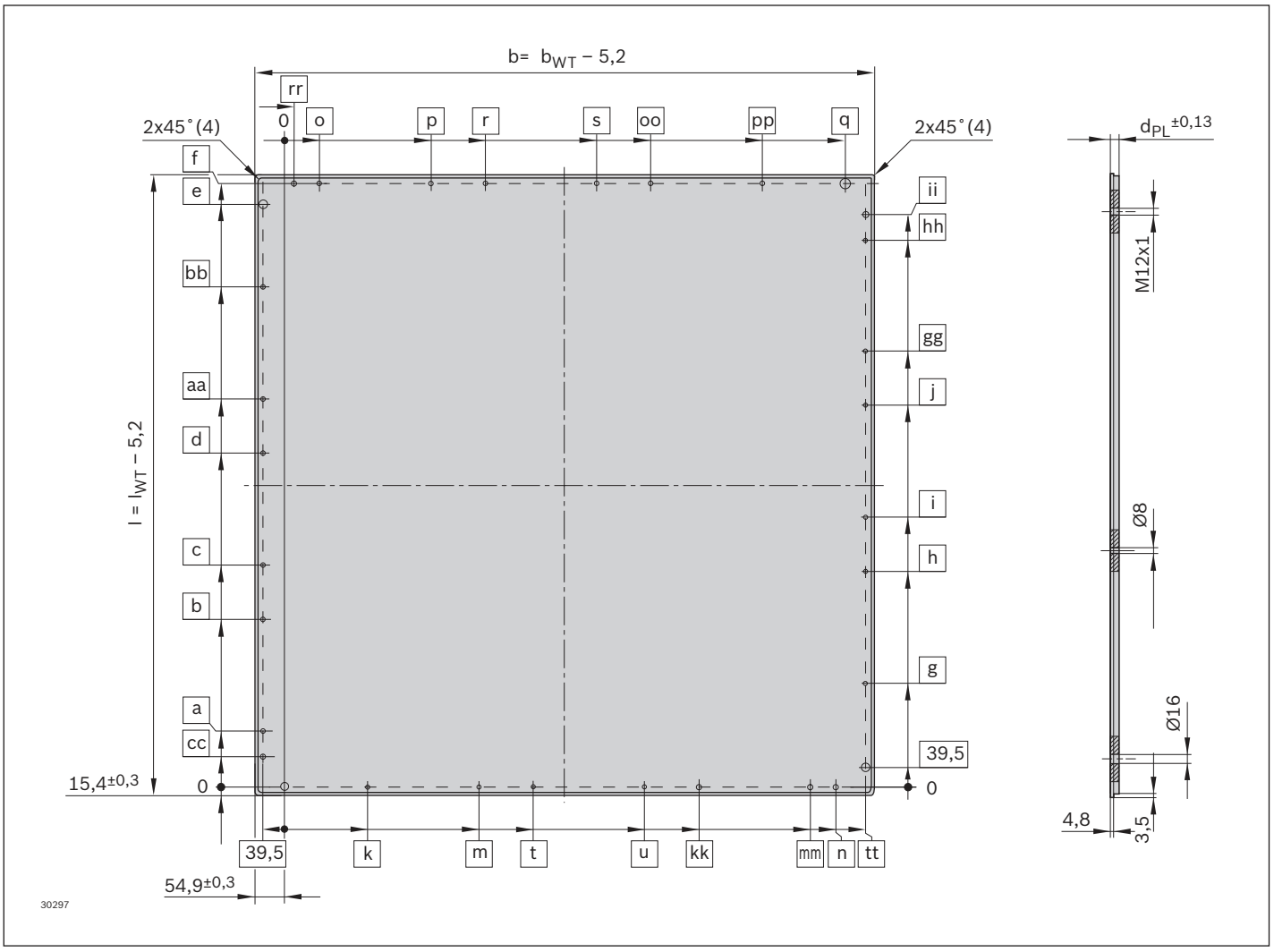
No production drawing

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Flatness ⬚ (mm)	a	b	c	cc	d	e	f	g	h	i	ii	j	k
240	400	0.5						324.5	364						
320	320	0.5						244.5	284						
320	400	0.6						324.5	364						
320	480	0.6	108.5	323.5		59.5		404.5	444	120.5	335.5		384.5		
400	400	0.6				59.5		324.5	364				304.5		
400	480	0.6	108.5	323.5		59.5		404.5	444	120.5	335.5		384.5		
400	640	0.8	108.5	323.5		59.5		564.5	604	280.5	495.5		544.5		
480	480	0.8	108.5	323.5		59.5		404.5	444	120.5	335.5		384.5		81
480	640	1.0	108.5	323.5		59.5		564.5	604	280.5	495.5		544.5		81
640	640	1.0	108.5	323.5		59.5		564.5	604	280.5	495.5		544.5		241

b_{WT} (mm)	l_{WT} (mm)	m	n	o	p	q	r	rr	s	t	tt	u	d_{PI}	Material number
240	400		164.5			125							8.0	**3842524594**
320	320		244.5			205							8.0	**3842524595**
320	400		244.5			205							8.0	**3842524596**
320	480		244.5			205							8.0	**3842524597**
400	400		324.5			285		20			265		8.0	**3842524598**
400	480		324.5			285		20			265		8.0	**3842524599**
400	640		324.5			285		20			265		8.0	**3842524600**
480	480	296	404.5	69	284	365		20			345		8.0	**3842524602**
480	640	296	404.5	69	284	365		20			345		8.0	**3842524603**
640	640	296	404.5	69	284	525		20			505		8.0	**3842524605**

Dimensions

Aluminum carrying plate (12.7 mm)



No production drawing

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Evenness □ (mm)	a	b	c	cc	d	aa	bb	e	f	g	h
320	480	0.6	108.5	323.5		59.5				404.5	444	120.5	335.5
400	400	0.6				59.5				324.5	364		
400	480	0.6	108.5	323.5		59.5				404.5	444	120.5	335.5
400	640	0.8	108.5	323.5		59.5				564.5	604	280.5	495.5
400	800	1.0	108.5	323.5	428.5	59.5	643.5			724.5	764	120.5	335.5
480	480	0.8	108.5	323.5		59.5				404.5	444	120.5	335.5
480	640	1.0	108.5	323.5		59.5				564.5	604	280.5	495.5
480	800	1.0	108.5	323.5	428.5	59.5	643.5			724.5	764	120.5	335.5
640	640	1.0	108.5	323.5		59.5				564.5	604	280.5	495.5
640	800	1.0	108.5	323.5	428.5	59.5	643.5			724.5	764	120.5	335.5
640	1040	1.2	108.5	323.5	428.5	59.5	643.5			964.5	1004	360.5	575.5
800	800	1.0	108.5	323.5	428.5	59.5	643.5			724.5	764	120.5	335.5
800	1040	1.2	108.5	323.5	428.5	59.5	643.5			964.5	1004	360.5	575.5
800	1200	1.2	108.5	323.5	428.5	59.5	643.5	748.5	963.5	1124.5	1164	200.5	415.5
1040	1040	1.2	108.5	323.5	428.5	59.5	643.5			964.5	1004	360.5	575.5
1040	1200	1.2	108.5	323.5	428.5	59.5	643.5	748.5	963.5	1124.5	1164	200.5	415.5
1200	1200	1.2	108.5	323.5	428.5	59.5	643.5	748.5	963.5	1124.5	1164	200.5	415.5

b_{WT} (mm)	l_{WT} (mm)	i	ii	j	k	gg	hh	m	n	o	p	q	r
320	480		384.5						244.5			205	
400	400		304.5						324.5			285	
400	480		384.5						324.5			285	
400	640		544.5						324.5			285	
400	800	440.5	704.5	655.5					324.5			285	
480	480		384.5		81			296	404.5	69	284	365	
480	640		544.5		81			296	404.5	69	284	365	
480	800	440.5	704.5	655.5	81			296	404.5	69	284	365	
640	640		544.5		241			296	564.5	69	284	525	
640	800	440.5	704.5	655.5	241			456	564.5	69	284	525	
640	1040	680.5	944.5	895.5	241			456	564.5	69	284	525	
800	800	440.5	704.5	655.5	81			296	724.5	69	284	685	389
800	1040	680.5	944.5	895.5	81			296	724.5	69	284	685	389
800	1200	520.5	1104.5	735.5	81	840.5	1055.5	296	724.5	69	284	685	389
1040	1040	680.5	944.5	895.5	321			536	964.5	69	284	925	389
1040	1200	520.5	1104.5	735.5	321	840.5	1055.5	536	964.5	69	284	925	389
1200	1200	520.5	1104.5	735.5	161	840.5	1055.5	376	1124.5	69	284	1085	389

b_{WT} (mm)	l_{WT} (mm)	rr	s	t	tt	u	kk	mm	oo	pp	d_{PI}	Material number
320	480										12.7	**3842538346**
400	400	20			265						12.7	**3842538307**
400	480	20			265						12.7	**3842538308**
400	640	20			265						12.7	**3842538310**
400	800	20			265						12.7	**3842524601**
480	480	20			345						12.7	**3842538309**
480	640	20			345						12.7	**3842538311**
480	800	20			345						12.7	**3842524604**
640	640	20			505						12.7	**3842538312**
640	800	20			505						12.7	**3842524606**
640	1040	20			505						12.7	**3842524607**
800	800	20	604	401	665	616					12.7	**3842524608**
800	1040	20	604	401	665	616					12.7	**3842524609**
800	1200	20	604	401	665	616					12.7	**3842548684**
1040	1040	20	604	641	905	856					12.7	**3842548685**
1040	1200	20	604	641	905	856					12.7	**3842548686**
1200	1200	20	604	481	1065	696	801	1016	709	924	12.7	**3842548687**

Workpiece pallet WT 2/H

Pick-up and transportation of workpieces in the transfer system TS 2*plus*.

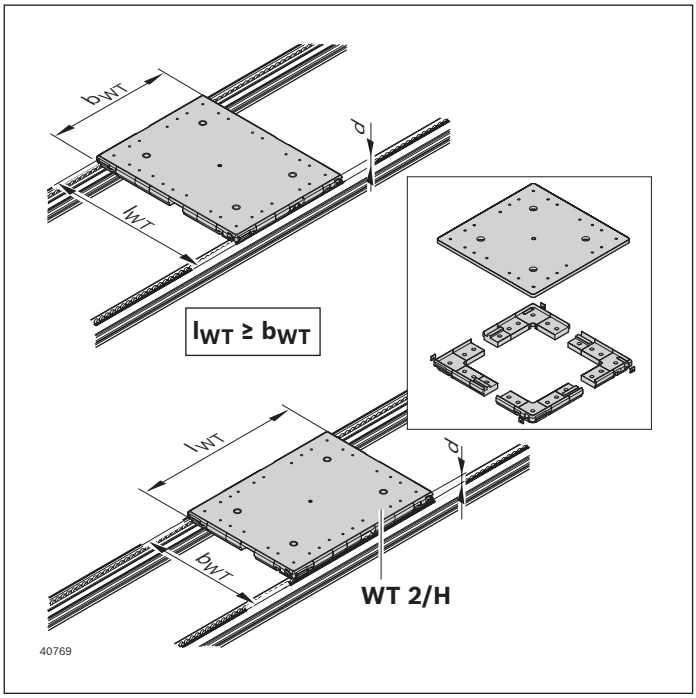
Recommended accessories

- 2x Positioning bushing set WT 2/H (LE 2), see p. 2-40
  Positioning bushings are required if a positioning unit PE 2/H is used

Scope of delivery

- Carrying plate
- Corner module
- Wear pads
- Damping elements

Ordering information



- Workpiece pallet for especially high maximum permitted total weight up to 240 kg (2 kg/cm length) in combination with accumulation roller chain conveyor medium
- Fully assembled or as a kit for self-assembly
- Wear pad PE for quiet operation and low wear
- Integrated stop damper, ensures quiet running onto other workpiece pallets
- 17 standard sizes
- For workpiece pallet dimensions
  b_{WT} x l_{WT} = 400 x 400 mm up to 1200 x 1200 mm
- Special dimensions on request
- Universal aluminum carrying plate with two carrying plate thicknesses:
  d = 12.70 mm
  d = 19.05 mm
- Suitable for use in an EPA
- Material:
  – Corner module and slider with PE (= polyethylene) wear pad
  – Aluminum carrying plate (12.7 mm; 19.05 mm)

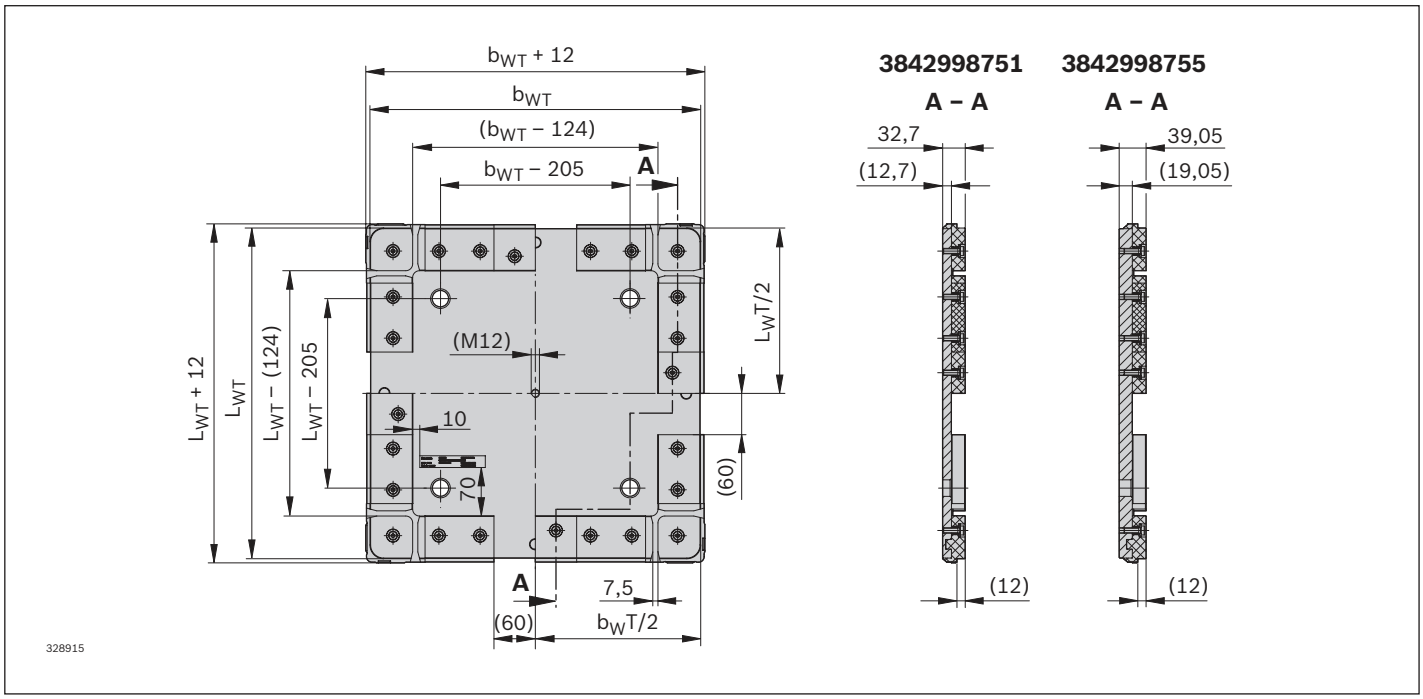
Condition on delivery

- Assembled (MT = 1)
- Kit, not assembled (MT = 0)

Material number		3842998751[1]	3842998755[2]
b_{WT} (mm)	Width of workpiece pallet	400; 480; 640; 800; 1040; 1200	
l_{WT} (mm)	Length of workpiece pallet	400; 480; 640; 800; 1040; 1200	
b_{WT} x l_{WT} (mm x mm)	Combination options	400 x 400; 480; 640; 800 480 x 480; 640; 800 640 x 640; 800; 1040; 1200 800 x 800; 1040; 1200 1040 x 1040; 1200 1200 x 1200	
MT	Kit 0 = not assembled 1 = assembled	0; 1	

[1] Plate thickness 12,7 mm
[2] Plate thickness 19.05 mm

Dimensions



No production drawing

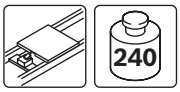
Technical data

Material number			3842998751	3842998755
Max. total workpiece pallet weight	m_G	kg	240	240
Plate thickness	d_{Pl}	mm	12.7	19.05

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Workpiece pallet weight 3842998751[1] m_{WT} (kg)	Flatness 3842998751[1] □ (mm)	Workpiece pallet weight 3842998755[2] m_{WT} (kg)	Flatness 3842998755[2] □ (mm)
400	400	6.9	0.4	9.6	0.4
400	480	8.2	0.6	11.5	0.6
400	640	10.9	0.8	15.2	0.8
400	800	13.5	1.0	18.9	1.0
480	480	9.8	0.6	13.7	0.6
480	640	12.9	0.8	18.1	0.8
480	800	16.0	1.0	22.5	1.0
640	640	16.8	0.8	23.7	0.8
640	800	20.7	1.0	29.4	1.0
640	1040	26.6	1.2	37.9	1.2
640	1200	30.6	1.2	43.6	1.2
800	800	25.6	1.0	36.5	1.0
800	1040	32.8	1.2	46.9	1.2
800	1200	37.6	1.2	53.9	1.2
1040	1040	41.9	1.2	60.3	1.2
1040	1200	48.1	1.2	69.3	1.2
1200	1200	55.1	1.2	79.6	1.2

[1] Plate thickness 12,7 mm
[2] Plate thickness 19.05 mm

Components for workpiece pallets WT 2/H



To fulfill special needs, the workpiece pallets can also be individually configured in a design where the carrying plate is assembled by the customer. In addition to frame modules, various carrying plates, positioning bushings, and all the necessary fastening elements are available.

Workpiece pallet WT 2/H kit

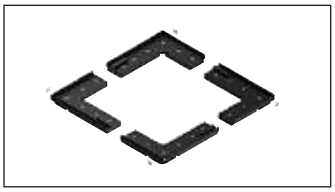
- Suitable for aluminum carrying plates WT 2/H and high specific section loads
- Wear pad PE for quiet operation and low wear
- Suitable for accumulation roller chains

Carrying plates

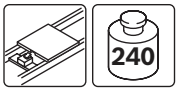
- Aluminum carrying plates with a thickness of 12.70 mm or 19.05 mm are a light and rigid alternative for large workpiece pallets

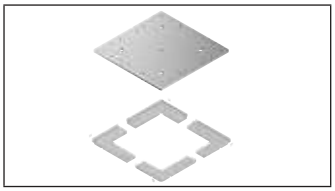
Positioning bushings

- For defined pick-up of the workpiece pallet in the positioning units

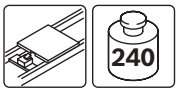


Workpiece pallet WT 2/H kit **2-34**



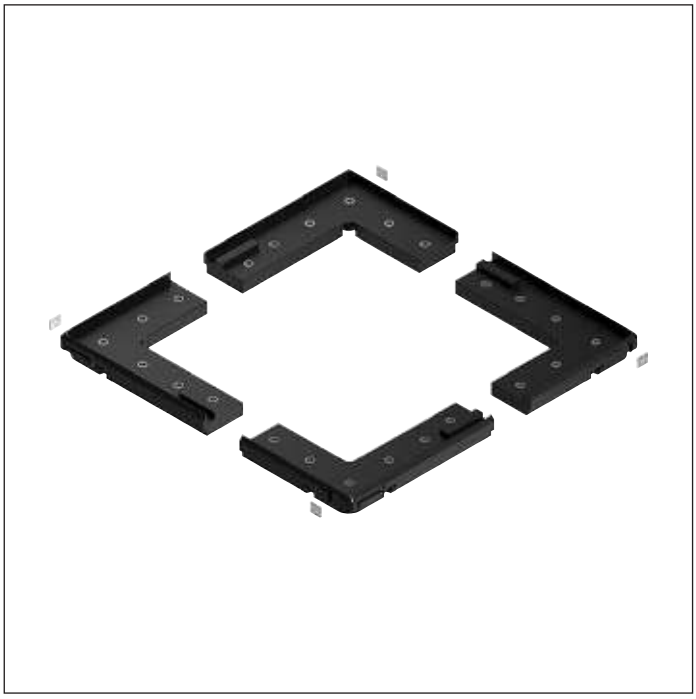


Carrying plate **2-36**



Positioning bushing set WT 2/H **2-40**

Workpiece pallet WT 2/H kit



- Workpiece pallet kit without carrying plate for self-assembly or for adaptation to specific customer requirements
- Wear pad PE for quiet operation and low wear
- Integrated stop damper, ensures quiet running onto other workpiece pallets
- 17 standard sizes
- For workpiece pallet dimensions b_{WT} x l_{WT} = 400 x 400 mm up to 1200 x 1200 mm
- Special dimensions on request
- Suitable for use in an EPA
- Material: PE (= polyethylene) wear pad

Recommended accessories

- 2x positioning bushing sets WT 2/H (LE 2), see p. 2-40
  Positioning bushings are required if a positioning unit PE 2/H is used

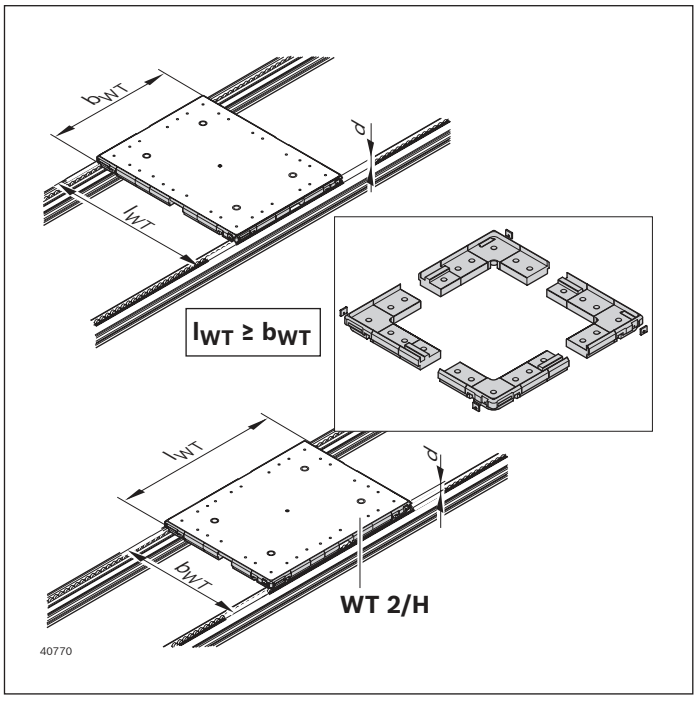
Scope of delivery

- Corner module
- Slider with wear pads PE
- Damping elements

Condition on delivery

- Parts kit without carrying plate
- Not assembled

Ordering information



Material number		3842998756
b_{WT} (mm)	Width of workpiece pallet	400; 480; 640; 800; 1040; 1200
l_{WT} (mm)	Length of workpiece pallet	400; 480; 640; 800; 1040; 1200
b_{WT} x l_{WT} (mm x mm)	Combination options	400 x 400; 480; 640; 800 480 x 480; 640; 800 640 x 640; 800; 1040; 1200 800 x 800; 1040; 1200 1040 x 1040; 1200 1200 x 1200

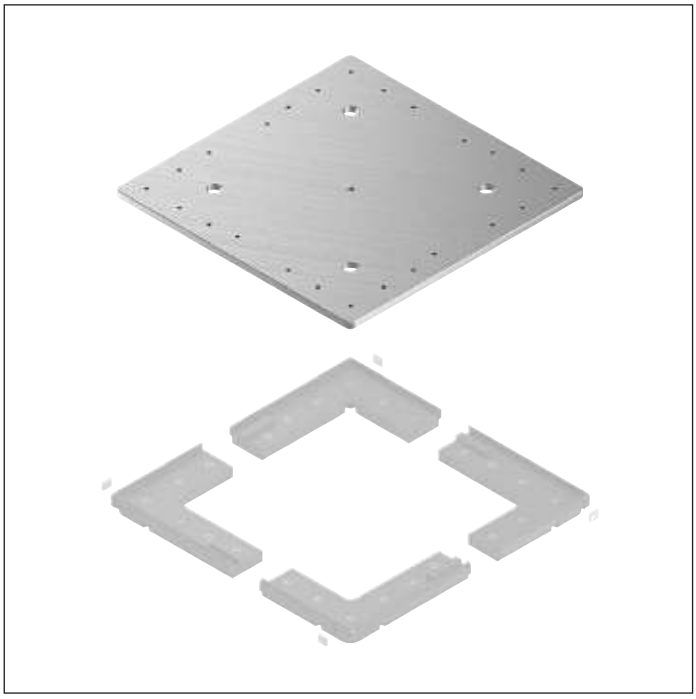
Technical data

Material number			3842998756
Max. total workpiece pallet weight	m_G	kg	240

Dimensions

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Frame module weight m (kg)
400	400	1.7
400	480	1.9
400	640	2.4
400	800	2.8
480	480	2.2
480	640	2.6
480	800	3.1
640	640	3.0
640	800	3.5
640	1040	4.1
640	1200	4.6
800	800	4.0
800	1040	4.6
800	1200	5.0
1040	1040	5.2
1040	1200	5.7
1200	1200	6.1

Carrying plate

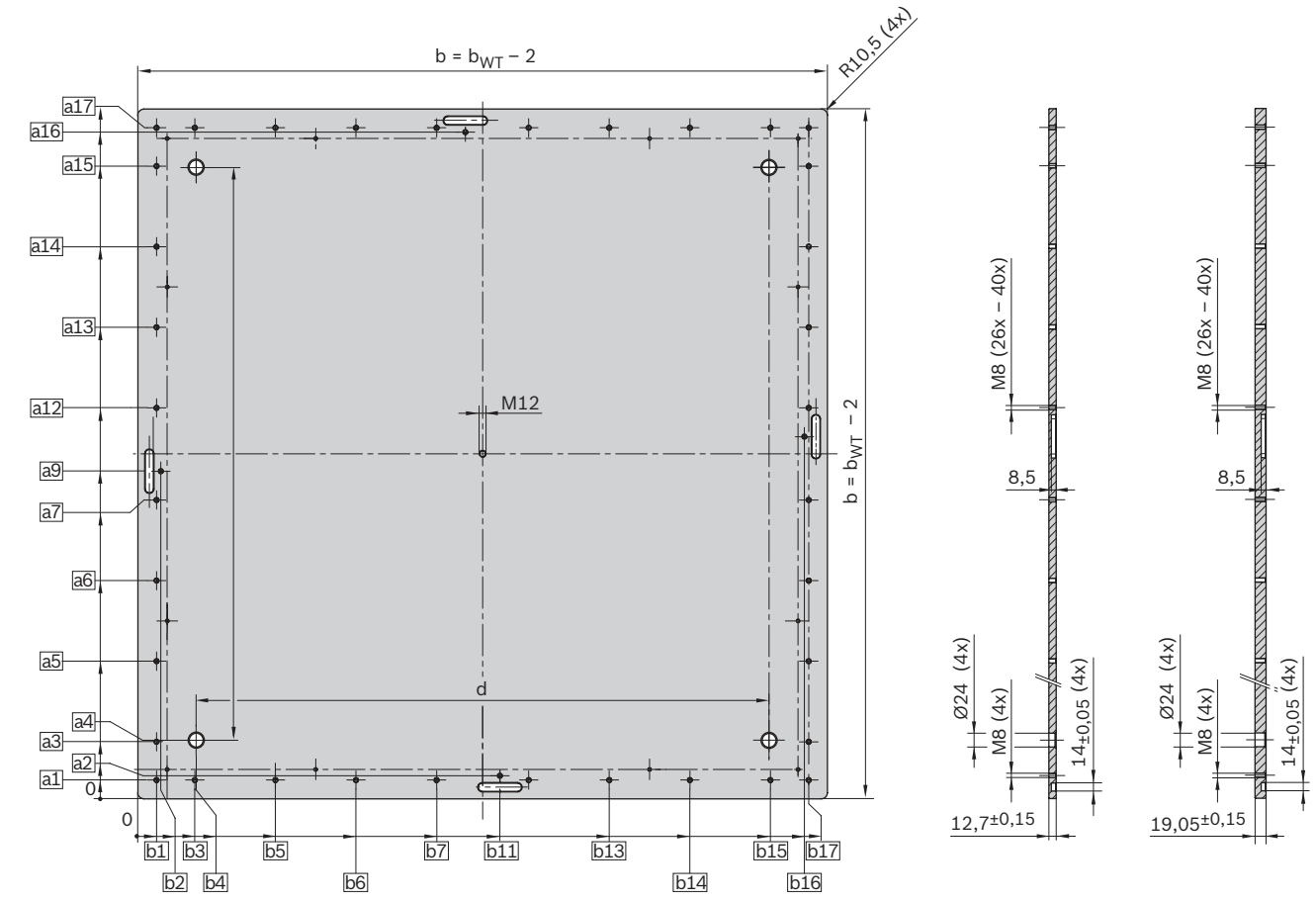


- Aluminum carrying plates for high loads with large workpiece pallets
- For workpiece pallet self-assembly for product support or for adaptation to specific customer requirements
- Completely drilled and ready for assembly
- 17 standard sizes
- Universal aluminum carrying plate with two carrying plate thicknesses:
  d = 12.70 mm
  d = 19.05 mm
- Can be combined with WT 2/H workpiece pallet mounting kit

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Plate thickness d_{Pl} (mm)	Flatness □ (mm)	Plate mass m_{Pl} (kg)	Material number	Plate thickness d_{Pl} (mm)	Flatness □ (mm)	Plate mass m_{Pl} (kg)	Material number
400	400	12.7	0.4	5.2	**3842548420**	19.05	0.4	7.9	**3842548424**
400	480	12.7	0.6	6.3	**3842548421**	19.05	0.6	9.5	**3842548425**
400	640	12.7	0.8	8.5	**3842548422**	19.05	0.8	12.8	**3842548426**
400	800	12.7	1.0	10.7	**3842548440**	19.05	1.0	16.1	**3842548439**
480	480	12.7	0.6	7.6	**3842548688**	19.05	0.6	11.5	**3842548407**
480	640	12.7	0.8	10.3	**3842548689**	19.05	0.8	15.4	**3842548408**
480	800	12.7	1.0	12.9	**3842548691**	19.05	1.0	19.3	**3842548410**
640	640	12.7	0.8	13.8	**3842548690**	19.05	0.8	20.7	**3842548409**
640	800	12.7	1.0	17.3	**3842548692**	19.05	1.0	25.9	**3842548411**
640	1040	12.7	1.2	22.5	**3842548694**	19.05	1.2	33.8	**3842548413**
640	1200	12.7	1.2	26.0	**3842548697**	19.05	1.2	39.1	**3842548416**
800	800	12.7	1.0	21.6	**3842548693**	19.05	1.0	32.5	**3842548412**
800	1040	12.7	1.2	28.2	**3842548695**	19.05	1.2	42.3	**3842548414**
800	1200	12.7	1.2	32.6	**3842548698**	19.05	1.2	48.9	**3842548417**
1040	1040	12.7	1.2	36.7	**3842548696**	19.05	1.2	55.2	**3842548415**
1040	1200	12.7	1.2	42.4	**3842548699**	19.05	1.2	63.7	**3842548418**
1200	1200	12.7	1.2	49.0	**3842548405**	19.05	1.2	73.5	**3842548419**

Dimensions

Carrying plate, aluminum



No production drawing

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Dimension a1 (mm)	Dimension a2 (mm)	Dimension a3 (mm)	Dimension a4 (mm)	Dimension a5 (mm)	Dimension a6 (mm)	Dimension a7 (mm)	Dimension a8 (mm)	Dimension a9 (mm)	Dimension a10 (mm)	Dimension a11 (mm)	Dimension a12 (mm)	Dimension a13 (mm)	Dimension a14 (mm)	Dimension a15 (mm)	Dimension a16 (mm)	Dimension a17 (mm)	Dimension c (mm)
400	400	32.5	40	109	101.5				138.5	169	198.5	229				289	358	365.5	195
400	480	32.5	40	99	101.5			159	178.5	209	238.5	269	319			379	438	445.5	295
400	640	32.5	40	99	101.5			239	258.5	289	318.5	349	399			539	598	605.5	435
400	800	32.5	40	99	101.5	209		319	338.5	369	398.5	429	479	589		699	758	765.5	595
480	480	32.5	40	99	101.5			159	178.5	209	238.5	269	319			379	438	445.5	275
480	640	32.5	40	99	101.5			239	258.5	289	318.5	349	399			539	598	605.5	435
480	800	32.5	40	99	101.5	209		319	338.5	369	398.5	429	479	589		699	758	765.5	595
640	640	32.5	40	99	101.5			239	258.5	289	318.5	349	399			539	598	605.5	435
640	800	32.5	40	99	101.5	209		319	338.5	369	398.5	429	479	589		699	758	765.5	595
640	1040	32.5	40	99	101.5	269		439	458.5	489	518.5	549	599	769		939	998	1005.5	835
640	1200	32.5	40	99	101.5	239	379	519	538.5	569	598.5	629	679	819	959	1099	1158	1165.5	995
800	800	32.5	40	99	101.5	209		319	338.5	369	398.5	429	479	589		699	758	765.5	595
800	1040	32.5	40	99	101.5	269		439	458.5	489	518.5	549	599	769		939	998	1005.5	835
800	1200	32.5	40	99	101.5	239	379	519	538.5	569	598.5	629	679	819	959	1099	1158	1165.5	995
1040	1040	32.5	40	99	101.5	269		439	458.5	489	518.5	549	599	769		939	998	1005.5	835
1040	1200	32.5	40	99	101.5	239	379	519	538.5	569	598.5	629	679	819	959	1099	1158	1165.5	995
1200	1200	32.5	40	99	101.5	239	379	519	538.5	569	598.5	629	679	819	959	1099	1158	1165.5	995

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Dimension b1 (mm)	Dimension b2 (mm)	Dimension b3 (mm)	Dimension b4 (mm)	Dimension b5 (mm)	Dimension b6 (mm)	Dimension b7 (mm)	Dimension b8 (mm)	Dimension b9 (mm)	Dimension b10 (mm)	Dimension b11 (mm)	Dimension b12 (mm)	Dimension b13 (mm)	Dimension b14 (mm)	Dimension b15 (mm)	Dimension b16 (mm)	Dimension b17 (mm)	Dimension d (mm)
400	400	32.5	40	109	101.5				138.5	169	198.5	229				289	358	365.5	195
400	480	32.5	40	109	101.5				138.5	169	198.5	229				289	358	365.5	195
400	640	32.5	40	109	101.5				138.5	169	198.5	229				289	358	365.5	195
400	800	32.5	40	109	101.5				138.5	169	198.5	229				289	358	365.5	195
480	480	32.5	40	99	101.5			159	178.5	209	238.5	269	319			379	438	445.5	275
480	640	32.5	40	99	101.5			159	178.5	209	238.5	269	319			379	438	445.5	275
480	800	32.5	40	99	101.5			159	178.5	209	238.5	269	319			379	438	445.5	275
640	640	32.5	40	99	101.5			239	258.5	289	318.5	349	399			539	598	605.5	435
640	800	32.5	40	99	101.5			239	258.5	289	318.5	349	399			539	598	605.5	435
640	1040	32.5	40	99	101.5			239	258.5	289	318.5	349	399			539	598	605.5	435
640	1200	32.5	40	99	101.5			239	258.5	289	318.5	349	399			539	598	605.5	435
800	800	32.5	40	99	101.5	209		319	338.5	369	398.5	429	479	589		699	758	765.5	595
800	1040	32.5	40	99	101.5	209		319	338.5	369	398.5	429	479	589		699	758	765.5	595
800	1200	32.5	40	99	101.5	209		319	338.5	369	398.5	429	479	589		699	758	765.5	595
1040	1040	32.5	40	99	101.5	269		439	458.5	489	518.5	549	599	769		939	998	1005.5	835
1040	1200	32.5	40	99	101.5	269		439	458.5	489	518.5	549	599	769		939	998	1005.5	835
1200	1200	32.5	40	99	101.5	239	379	519	538.5	569	598.5	629	679	819	959	1099	1158	1165.5	995

Positioning bushing set WT 2/H

- For defined pick-up of the workpiece pallet in positioning units
- Material: Steel
- Can be combined with workpiece pallet WT 2/H carrying plates

Required accessories

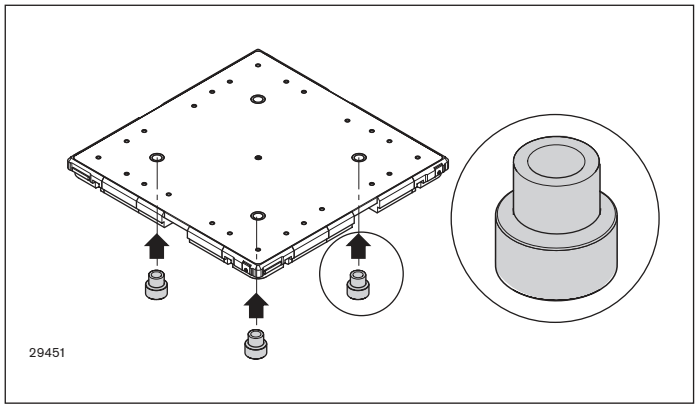
- Positioning bushings are required if a positioning unit PE 2/H is used

Ordering information

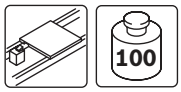
Product description	Delivery unit	Material number
Positioning bushing set WT 2/H	2	3842531354

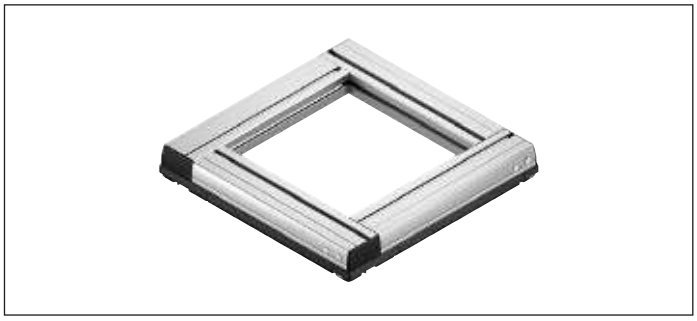
Technical data

Material number		3842531354
Weight	kg	0.6



Frame workpiece pallet WT 2/F





- Frame workpiece pallet, fully assembled or as a kit for self-assembly
- Low weight and high stability thanks to aluminum frame construction
- Especially suitable for low-cost transportation of large products
- Continuous standard grooves to easily fasten cross struts and workpiece supports
- Integrated positioning bushings
- Various wear pads for use on all conveyor media
- Wear pad PA (LS = 0) for use on belts, toothed belts, or flat-top chains
- Wear pad PE (LS = 1) for use on accumulation roller chains

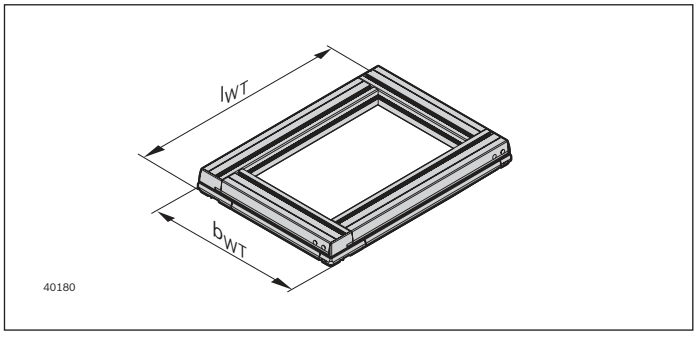
Scope of delivery

- Frame modules
- Connection elements
- Positioning bushings

Condition on delivery

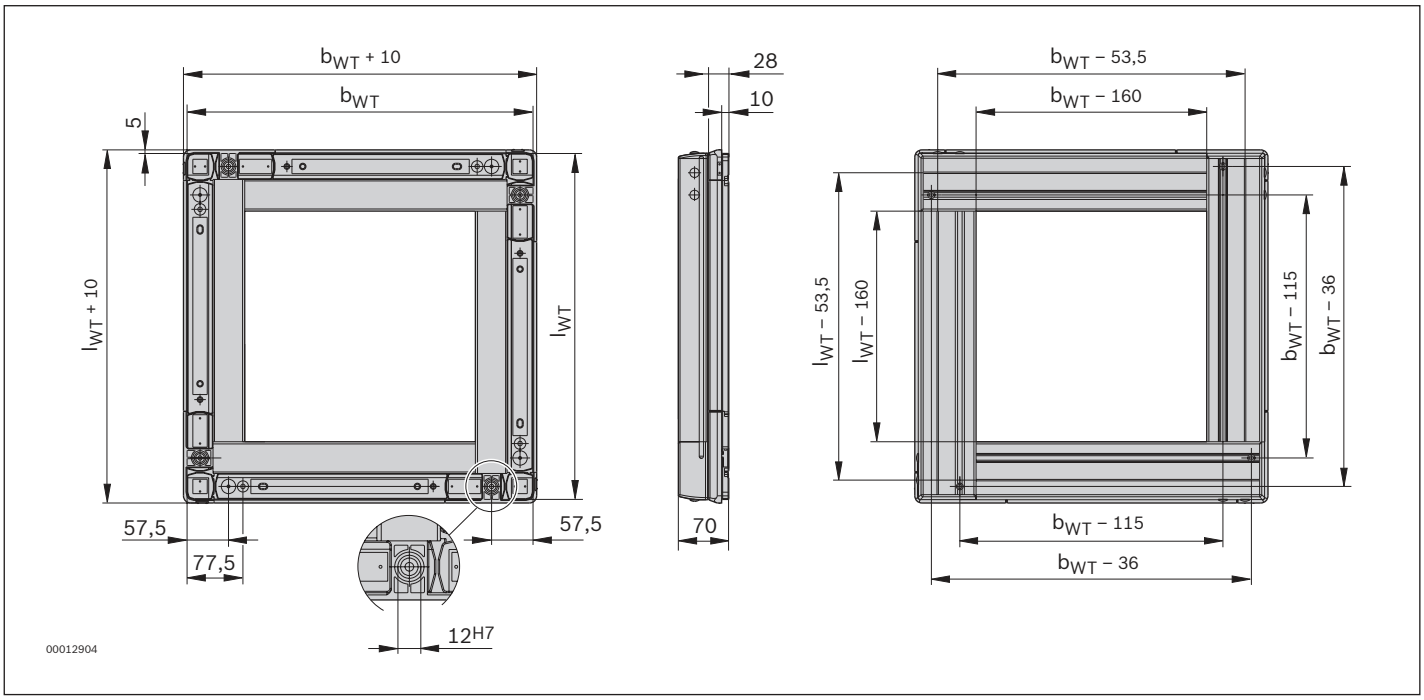
- Assembled (MT = 1)
- Kit, not assembled (MT = 0)

Ordering information



Material number		3842999941
b_{WT} (mm)	Width of workpiece pallet	400; 480; 640; 800
l_{WT} (mm)	Length of workpiece pallet	400; 480; 640; 800; 1040
b_{WT} x l_{WT} (mm x mm)	Combination options	400 x 400; 480; 640; 800 480 x 480; 640; 800; 640 x 640; 800; 1040; 1200 800 x 800; 1040; 1200 1040 x 1040; 1200 1200 x 1200
MT	Kit 0 = not assembled 1 = assembled	0; 1
LS	Wear pad 0 = PA 1 = PE	0; 1

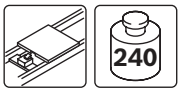
Dimensions



No production drawing

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Workpiece pallet weight m_{WT} (kg)
400	400	6.6
400	480	7.1
400	640	8.9
400	800	10.8
480	480	7.7
480	640	9.4
480	800	11.4
640	640	11.2
640	800	12.5
640	1040	15.0
640	1200	16.8
800	800	13.9
800	1040	16.0
800	1200	18.4
1040	1040	19.1
1040	1200	20.7
1200	1200	22.2

Frame workpiece pallets WT 2/F-H



Pick-up and transportation of workpieces in the transfer system TS 2*plus*.

- Frame workpiece pallet for especially high maximum permitted total weight up to 240 kg (2 kg/cm length) in combination with accumulation roller chain conveyor medium
- Fully assembled or unassembled as a kit
- Low weights and high stability thanks to aluminum frame construction
- Standard grooves to easily fasten cross struts and workpiece supports
- Wear pad PE for quiet operation and low wear
- Integrated stop damper, ensures quiet running onto other workpiece pallets
- For workpiece pallet dimensions b_{WT} x l_{WT} = 400 x 400 mm up to 1200 x 1200 mm
- Special dimensions on request
- Suitable for use in an EPA
- Material:
  Frame module with PE (= polyethylene) wear pad

Recommended accessories

- 2x positioning bushing set WT 2/F-H (LE 2), see p. 2-46

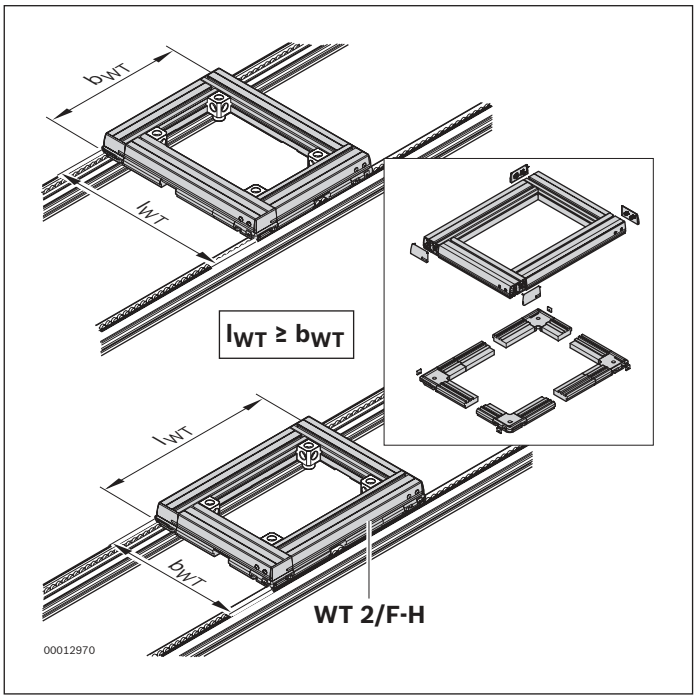
Scope of delivery

- Corner module
- Wear pads
- Damping elements
- Frame modules
- Cover caps

Condition on delivery

- Assembled (MT = 1)
- Kit, not assembled (MT = 0)

Ordering information

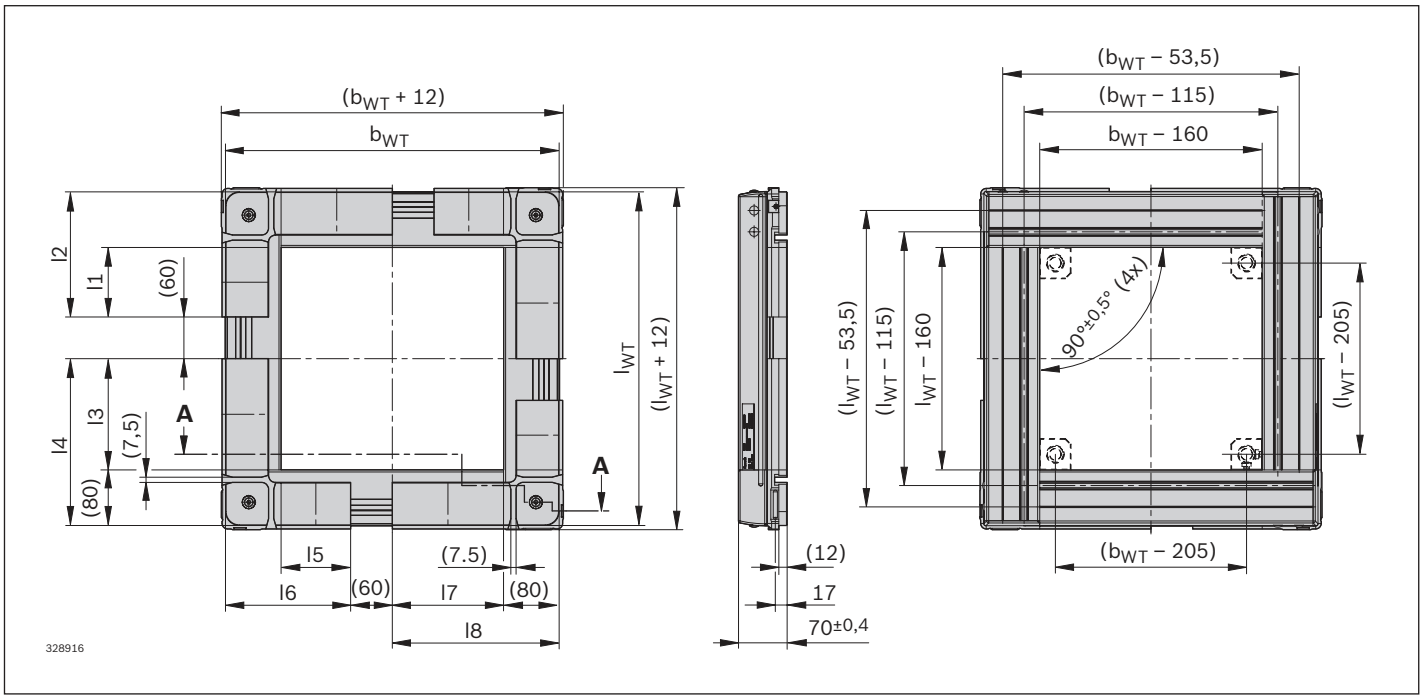


Material number		3842998757
b_{WT} (mm)	Width of workpiece pallet	400; 480; 640; 800; 1040; 1200
l_{WT} (mm)	Length of workpiece pallet	400; 480; 640; 800; 1040; 1200
b_{WT} x l_{WT} (mm x mm)	Combination options	400 x 400; 480; 640; 800 480 x 480; 640; 800 640 x 640; 800; 1040; 1200 800 x 800; 1040; 1200 1040 x 1040; 1200 1200 x 1200
MT	Kit 0 = not assembled 1 = assembled	0; 1

Technical data

Material number			3842998757
Max. total workpiece pallet weight	m_G	kg	240

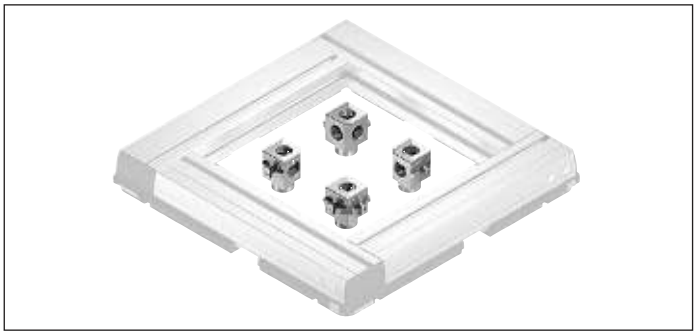
Dimensions



No production drawing

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Workpiece pallet weight m_{WT} (kg)	Dimension l1 (mm)	Dimension l2 (mm)	Dimension l3 (mm)	Dimension l4 (mm)	Dimension l5 (mm)	Dimension l6 (mm)	Dimension l7 (mm)	Dimension l8 (mm)
400	400	7.3	60	140	120	200	60	140	120	200
400	480	8.2	100	180	160	240	60	140	120	200
400	640	10.1	180	260	240	320	60	140	120	200
400	800	11.9	260	340	320	400	60	140	120	200
480	480	9.1	100	180	160	240	100	180	160	240
480	640	11.0	180	260	240	320	100	180	160	240
480	800	12.8	260	340	320	400	100	180	160	240
640	640	12.8	180	260	240	320	180	260	240	320
640	800	14.7	260	340	320	400	180	260	240	320
640	1040	17.4	380	460	440	520	180	260	240	320
640	1200	19.3	460	540	520	600	180	260	240	320
800	800	16.5	260	340	320	400	260	340	320	400
800	1040	19.3	380	460	440	520	260	340	320	400
800	1200	21.1	460	540	520	600	260	340	320	400
1040	1040	22.0	380	460	440	520	380	460	440	520
1040	1200	23.9	460	540	520	600	380	460	440	520
1200	1200	25.7	460	540	520	600	460	540	520	600

Positioning bushing set WT 2/F-H



- Positioning bushings are used for defined support of the workpiece pallet in positioning units
- Material: Steel
- Can be combined with the workpiece pallet WT 2/F-H frame module

Required accessories

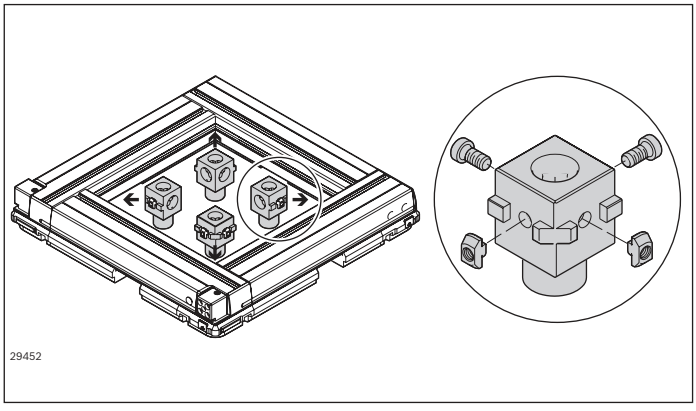
- Positioning bushings are required if a positioning unit PE 2/H is used

Ordering information

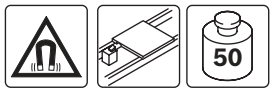
Product description	Delivery unit	Material number
Positioning bushing set WT 2/F-H	2	3842530529

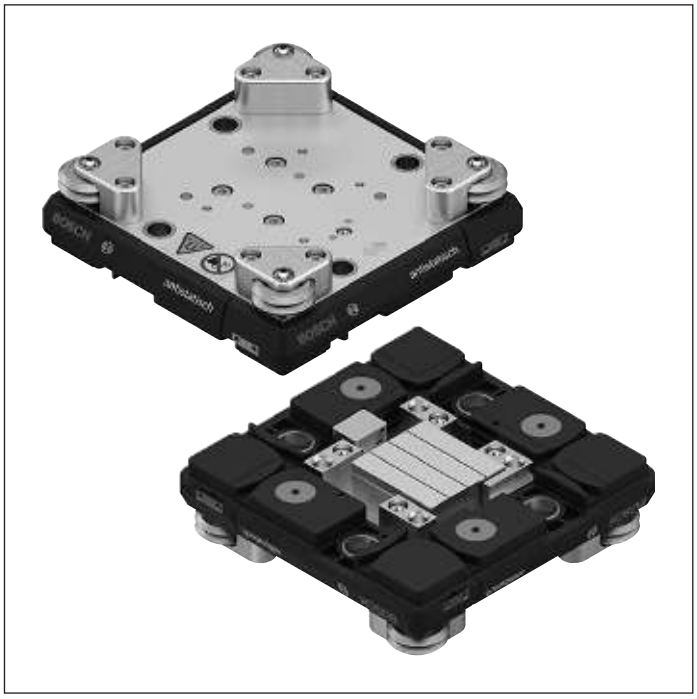
Technical data

Material number		3842530529
Weight	kg	1.3



Workpiece pallet WT 2/LS





- Suitable for belt, toothed belt, and flat-top chain
- Suitable for use in an EPA
- Integrated roller carrier with guide rollers
- Integrated feed magnet with magnetic protection plate
- Integrated measuring magnet
- Magnet stop protection
- Material:
  - Frame module with polyamide (PA) wear pad
  - Aluminum carrying plate (8 mm)

Notes:

- Observe the travel direction of the WT 2/LS on the linear section LS 2, shown by arrow on the carrying plate
- Observe the notes in the assembly instructions WB 2 workpiece pallet booster 3842562367:
  - Guidelines for processing the carrying plate
  - Warning notice "Strong magnetic field!"; remove magnetic protection plate for shielding the magnetic field only upon commissioning

Workpiece pallet WT 2/LS based on WT 2 with all functions of the WT 2 in 15 standard sizes.
The mobile data tags MDT 1/2K-H and MDT 21/28-L are fastened to the roller carrier. Other data tags can be mounted analogously to WT 2.

Scope of delivery

- Carrying plate
- Frame modules
- Connection elements
- Positioning bushings
- Roller carrier with guide rollers
- Feed magnet with magnetic protection plate
- Measuring magnet
- Magnet stop protection

Condition on delivery

- Assembled, individually packed with magnetic protection plate

Ordering information

Product description	Magnetic rows	Guide size BG	Material number
Workpiece pallet WT 2/LS 160 x 160[1)]	1	2	3842562346
Workpiece pallet WT 2/LS 160 x 240[1)]	1	2	3842562347
Workpiece pallet WT 2/LS 160 x 320[1)]	1	2	3842562348
Workpiece pallet WT 2/LS 240 x 160[1)]	1	2	3842562349
Workpiece pallet WT 2/LS 240 x 240[1)]	1	2	3842562350
Workpiece pallet WT 2/LS 240 x 320[1)]	1	2	3842562351
Workpiece pallet WT 2/LS 240 x 400[1)]	1	3	3842562352
Workpiece pallet WT 2/LS 320 x 240[1)]	1	2	3842562353
Workpiece pallet WT 2/LS 320 x 320[1)]	1	3	3842562354
Workpiece pallet WT 2/LS 320 x 400[1)]	1	3	3842562355
Workpiece pallet WT 2/LS 320 x 480[1)]	1	3	3842562356
Workpiece pallet WT 2/LS 400 x 320[1)]	2	3	3842562357
Workpiece pallet WT 2/LS 400 x 400[1)]	2	3	3842562358
Workpiece pallet WT 2/LS 400 x 480[1)]	2	3	3842562359
Workpiece pallet WT 2/LS 400 x 640[1)]	2	3	3842562360

[1)] Plastic frame modules, wear pad PA

Technical data

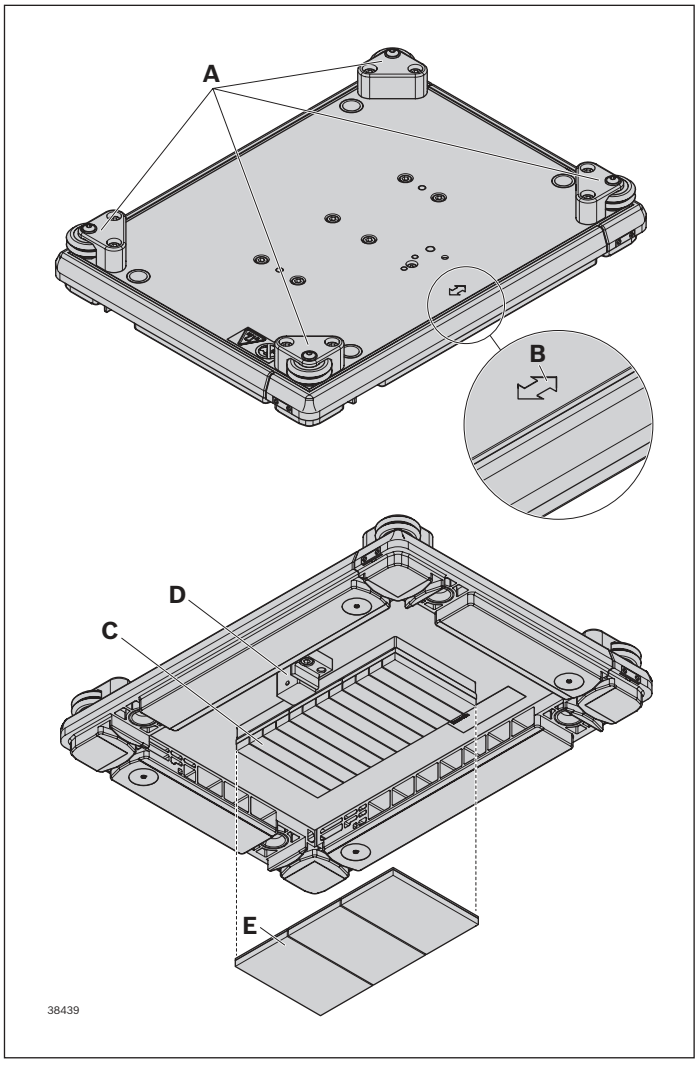
Workpiece pallets b_{WT} x l_{WT}	Weight WT	Max. load per WT	Max. acceleration with load of		Max. speed	Max. feed force at		Continuous feed force (= nominal force)[1)] at	Solenoid assembly length	Process force			Material number
			0 kg	max.		v = 0 m/s	v = 4 m/s	v = 0 m/s		Fx	Fy	Fz	
(mm)	(kg)	(kg)	(m/s^2)	(m/s^2)	(m/s)	(N)	(N)	(N)	(mm)	(N)	(N)	(N)	
160 x 160	1.64	10	23.2	3.3	4	38	21	12	51	0	500	[2)]	3842562346
160 x 240	1.93	10	19.7	3.2	4	38	21	12	51	0	500	[2)]	3842562347
160 x 320	2.58	10	29.8	6.1	4	77	41	23	102	0	500	[2)]	3842562348
240 x 160	2.1	10	24.3	4.2	4	51	26	15	51	0	500	[2)]	3842562349
240 x 240	3.01	20	33.9	4.4	4	102	52	31	102	0	500	[2)]	3842562350
240 x 320	3.89	20	39.3	6.4	4	153	77	46	153	0	500	[2)]	3842562351
240 x 400	4.98	20	30.7	6.1	4	153	77	46	153	0	500	[2)]	3842562352
320 x 240	3.44	20	26.5	3.9	4	91	40	28	102	0	500	[2)]	3842562353
320 x 320	5.14	20	26.5	5.4	4	136	60	42	153	0	500	[2)]	3842562354
320 x 400	6.17	30	29.3	5.0	4	181	81	56	204	0	500	[2)]	3842562355
320 x 480	6.53	30	27.7	5.0	4	181	81	56	204	0	500	[2)]	3842562356
400 x 320	6.17	30	24.8	4.2	4	153	106	49	102	0	500	[2)]	3842562357
400 x 400	7.87	35	29.2	5.4	4	230	126	73	153	0	500	[2)]	3842562358
400 x 480	8.6	35	26.7	5.3	4	230	126	73	153	0	500	[2)]	3842562359
400 x 640	13.03	35	20.9	5.7	4	272	139	83	153	0	500	[2)]	3842562360

[1)] Nominal force refers to room temperature.

[2)] Fz = 100 + maximum load - actual load

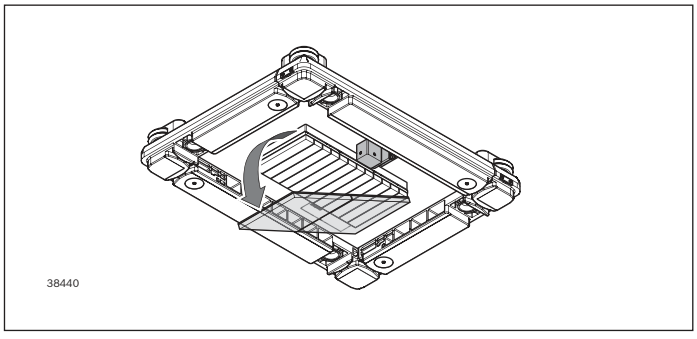
The process force Fz can be increased by using the maximum possible load as a process force.

Notice: Performance depends on the ambient temperature.



WT 2/LS overview

A Rollers
B Identification of travel direction on LS 2
C Feed magnet
D Measuring magnet
E Magnetic protection plate

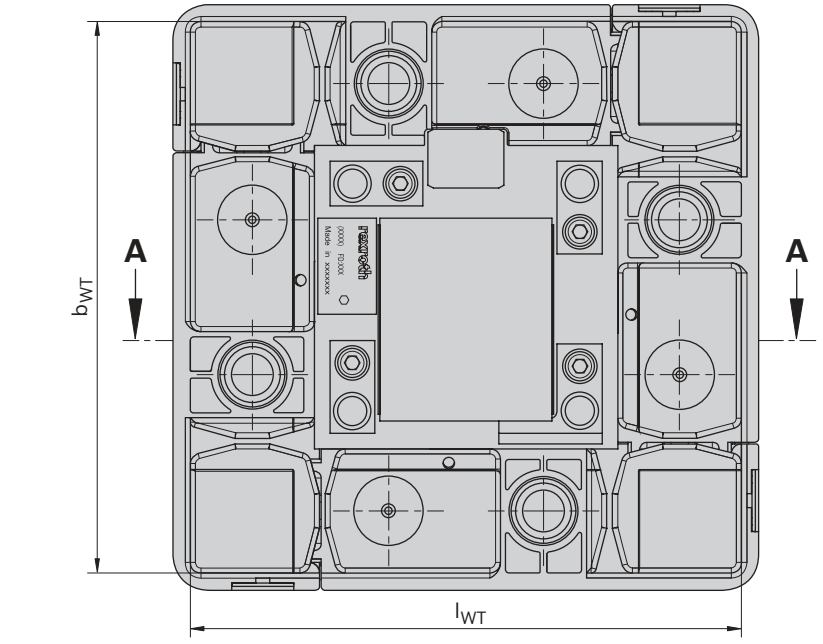


Notice:

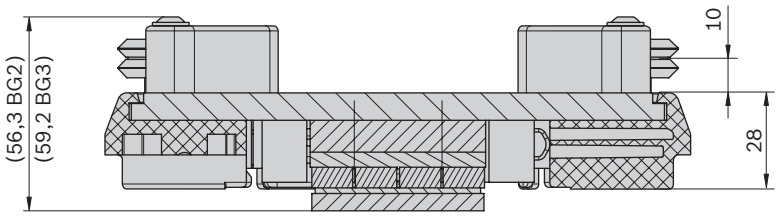
Please note that the workpiece pallet WT 2/LS has a strong magnetic field and take appropriate precautions.
Observe the corresponding notices in the assembly instructions.

- The magnetic protection plate must be placed immediately after the WT 2/LS is removed from the conveyor section
- Magnetic field < 6 mT at a distance of 20 mm from the top side of the WT
  Please refer to the assembly instructions for details
- With electronic implants (pacemaker, pump, etc.), a minimum distance of 0.3 m from the magnets must be maintained
- Further information on assembly/disassembly, functions and settings can be found in the assembly instructions WB 2 workpiece pallet booster 3842562367

Dimensions



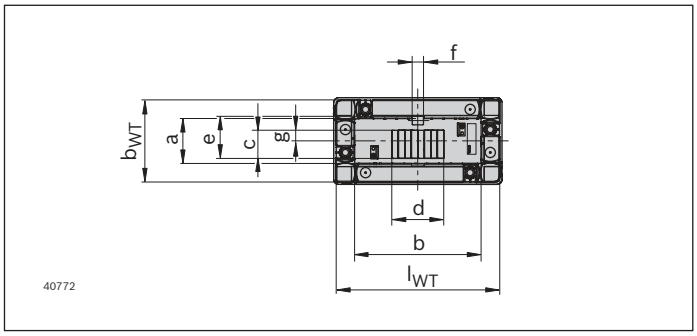
A – A



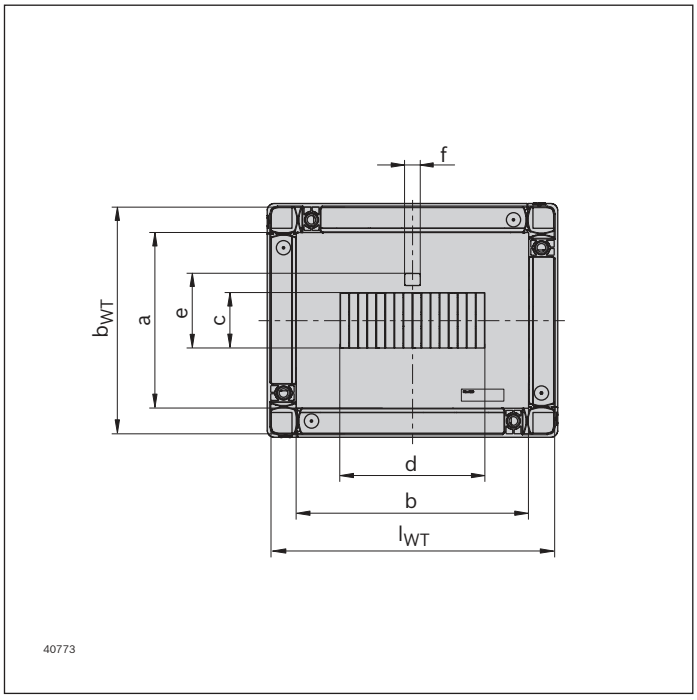
40771

For size information for b_{WT} and l_{WT}, see page 2-48.

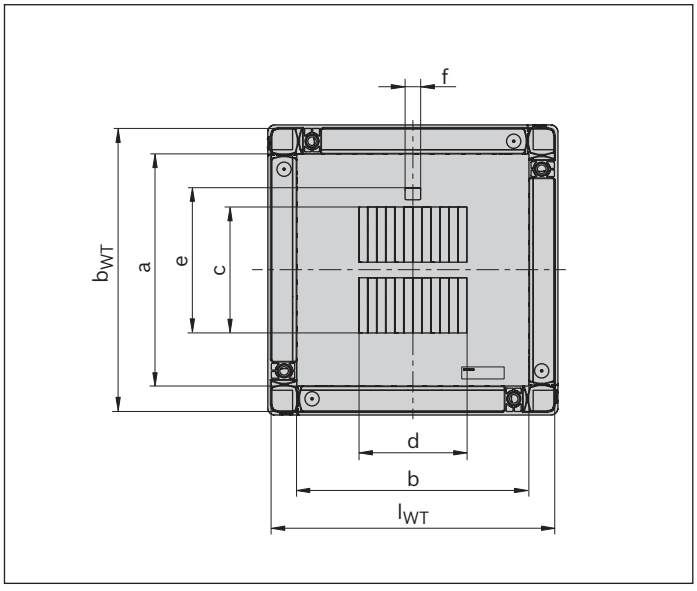
Dimensions
Workpiece pallet WT 2/LS: Feed and measuring magnet position



Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)
160	160	88	88	55	51	83	22	21
	240	88	168	55	51	83	22	21
	320	88	248	55	102	83	22	21

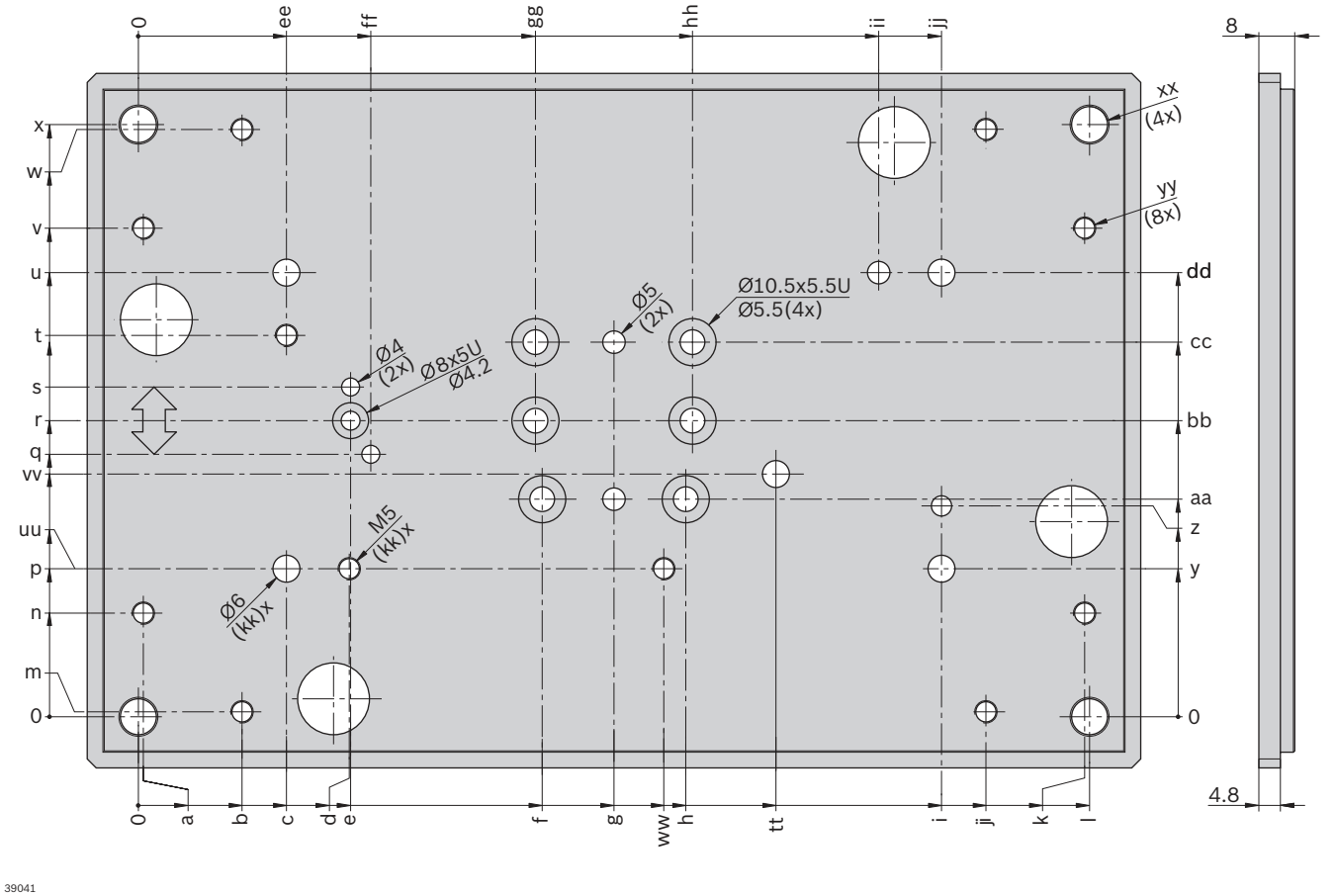


Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)
240	160	168	88	78	51	105	22	–
	240	168	168	78	102	105	22	–
	320	168	248	78	153	105	22	–
	400	168	328	78	153	105	22	–
320	240	248	168	78	102	105	22	–
	320	248	248	78	153	105	22	–
	400	248	328	78	204	105	22	–
	480	248	408	78	204	105	22	–



Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)
400	320	328	248	178	102	205	22	–
	400	328	328	178	153	205	22	–
	480	328	408	178	153	205	22	–
	640	328	568	178	153	205	22	–

Dimensions b_{WT} x l_{WT}: 160 x 160/240, 240 x 160/320/400, 320 x 240/320



Further information, see carrying plate on page 2-22ff.

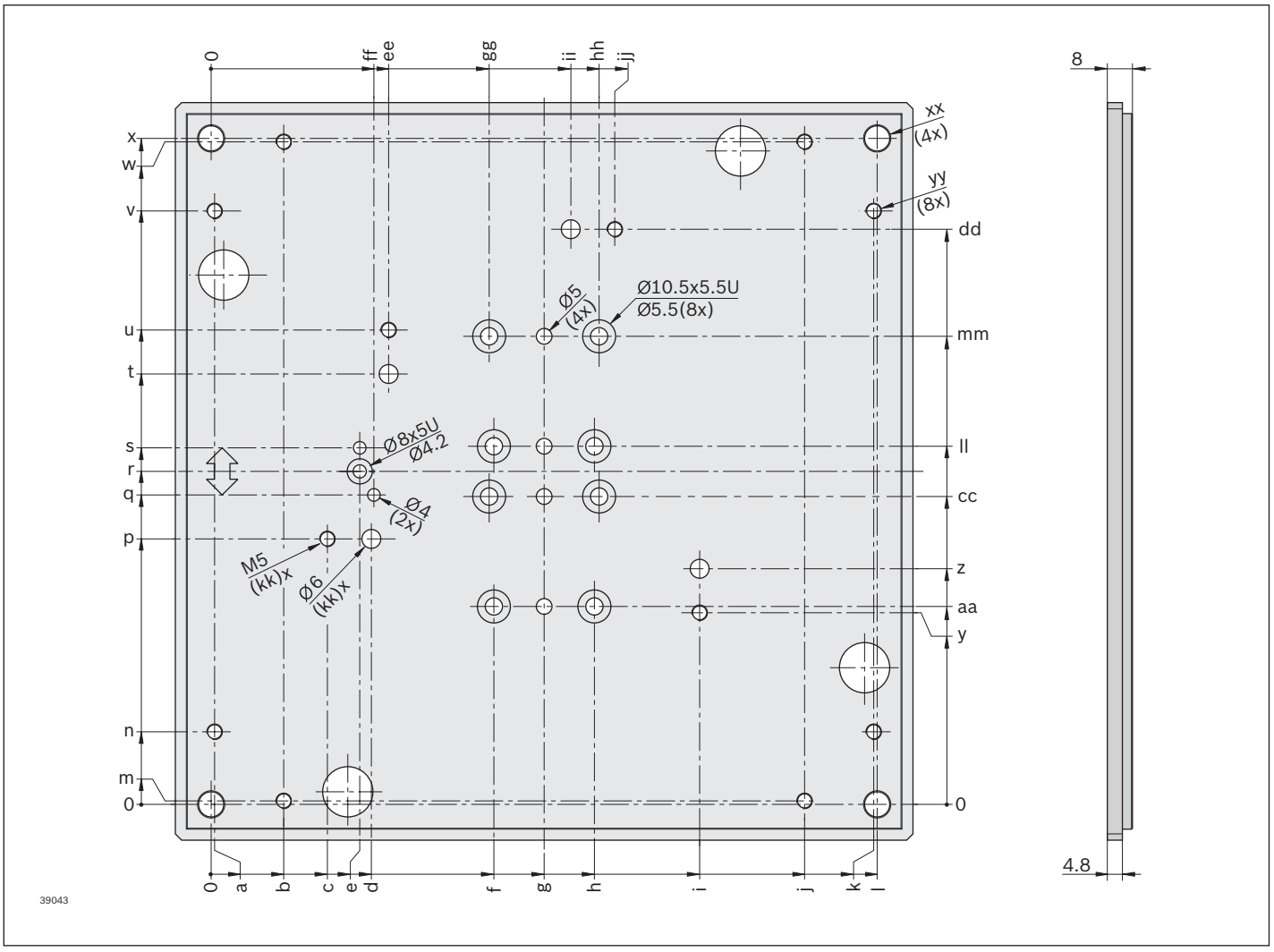
Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Width ab (mm)	Length al (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)
160	160	154.8	154.8	1.1	23.1	33	47	24.8	56.5	72.5
	240	154.8	234.8	1.1	23.1	51	37	24.8	56.5	72.5
240	160	234.8	154.8	1.1	23.1	33	47	47.3	90	106
	320	234.8	314.8	1.1	23.1	37	51	47.3	90	106
	400	234.8	394.8	9.3	29	29.5	43.5	39.8	82.5	98.5
320	240	314.8	234.8	1.1	23.1	–	–	87.3	130	146
	320	314.8	314.8	9.3	29	–	–	79.8	122.5	138.5

h (mm)	i (mm)	j (mm)	k (mm)	l (mm)	m (mm)	n (mm)	p (mm)	q (mm)	r (mm)	s (mm)	t (mm)
88.5	–	108.9	130.9	132	1.1	23.1	33	58.5	66	73.5	85
88.5	–	108.9	130.9	132	1.1	23.1	70	98.5	106	113.5	–
122	179	188.9	210.9	212	1.1	23.1	33	58.5	66	73.5	85
122	–	188.9	210.9	212	1.1	23.1	124.5	138.5	146	153.5	–
114.5	–	167.9	187.6	196.9	9.3	29	157	171	178.5	186	–
162	195.5	268.9	290.9	292	1.1	23.1	–	98.5	106	113.5	137.2
154.5	–	247.9	267.6	276.9	9.3	29	–	131	138.5	146	–

u (mm)	v (mm)	w (mm)	x (mm)	y (mm)	z (mm)	aa Ø (mm)	bb Ø (mm)	cc Ø (mm)	dd Ø (mm)	ee Ø (mm)	ff Ø (mm)
99	108.9	130.9	132	–	–	48.5	–	83.5	99	33	29.3
–	188.9	210.9	212	–	–	88.5	–	123.5	142	–	29.3
99	108.9	130.9	132	33	47	48.5	66	83.5	99	33	51.8
–	268.9	290.9	292	–	–	77.5	146	214.5	–	–	51.8
–	327.9	347.6	356.9	–	–	110	178.5	247	–	–	44.3
151.2	188.9	210.9	212	61	75	63	–	149	–	96.5	91.8
–	247.9	267.6	276.9	–	–	70	138.5	207	–	–	84.3

gg Ø (mm)	hh Ø (mm)	ii Ø (mm)	jj Ø (mm)	tt Ø (mm)	uu Ø (mm)	vv Ø (mm)	ww Ø (mm)	xx Ø (mm)	yy Ø (mm)	kk Ø(mm) Ø6	kk Ø(mm) M5
55	90	85	99	104.8	33	51	86	8	M5	4x	4x
55	90	95	81	–	–	–	–	8	M5	2x	2x
88.5	123.5	165	179	–	–	–	–	8	M5	4x	4x
88.5	123.5	–	–	–	–	–	–	8	M5	1x	1x
81	116	–	–	–	–	–	–	10	M6	1x	1x
128.5	163.5	–	–	–	–	–	–	8	M5	2x	2x
121	156	–	–	–	–	–	–	10	M6	–	–

Dimensions b_{WT} x l_{WT}: 160 x 320, 240 x 240, 320 x 400/480



Further information, see carrying plate on page 2-22ff.

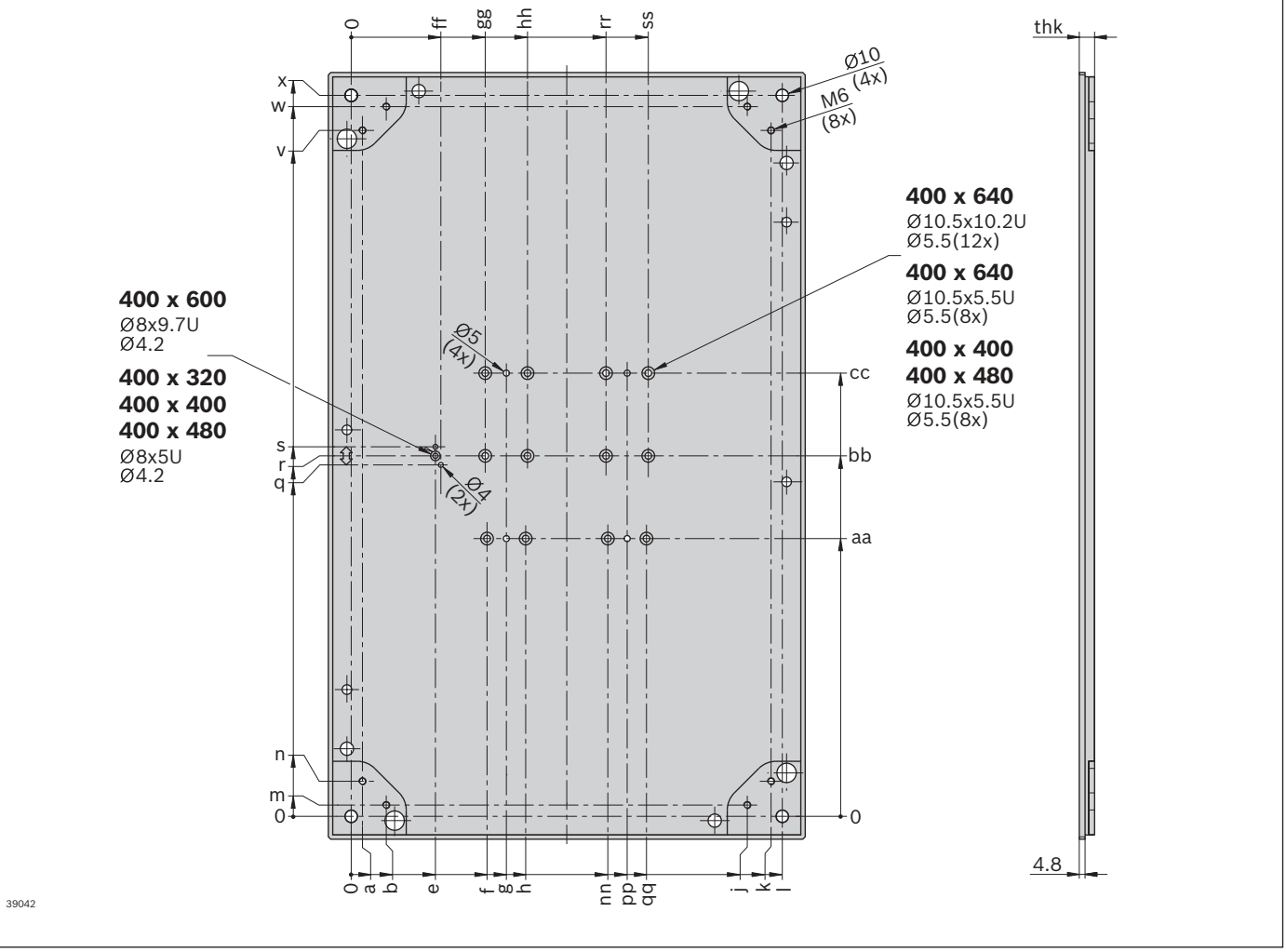
Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Width ab (mm)	Length al (mm)	a (mm)	b (mm)	c (mm)	d (mm)	e (mm)	f (mm)	g (mm)
160	320	154.8	314.8	1.1	23.1	37	51	24.8	56.5	72.5
240	240	234.8	234.8	1.1	23.1	37	51	47.3	90	106
320	400	314.8	394.8	9.3	29	–	–	79.8	122.5	138.5
	480	314.8	474.8	9.3	29	–	–	79.8	122.5	138.5

h (mm)	i (mm)	j (mm)	k (mm)	l (mm)	m (mm)	n (mm)	p (mm)	q (mm)	r (mm)	s (mm)	t (mm)
88.5	–	108.9	130.9	132	1.1	23.1	59	138.5	146	153.5	–
122	155.5	188.9	210.9	212	1.1	23.1	84.5	98.5	106	113.5	137
154.5	–	247.9	267.6	276.9	9.3	29	–	171	178.5	186	–
154.5	–	247.9	267.6	276.9	9.3	29	–	211	218.5	226	–

u (mm)	v (mm)	w (mm)	x (mm)	y (mm)	z (mm)	aa Ø (mm)	cc Ø (mm)	dd Ø (mm)	ee Ø (mm)	ff Ø (mm)	gg Ø (mm)
–	268.9	290.9	292	–	–	103	138	233	–	29.3	55
151	188.9	210.9	212	61	75	63	98	–	51.8	56.5	88.5
–	327.9	347.6	356.9	–	–	84.5	170.5	–	–	84.3	121
–	407.9	427.6	436.9	–	–	124.5	210.5	–	–	84.3	121

hh Ø (mm)	ii Ø (mm)	jj Ø (mm)	ll Ø (mm)	mm Ø (mm)	xx Ø (mm)	yy Ø (mm)	kk Ø(mm)	
							Ø6	M5
90	81	95	154	189	8	M5	2x	2x
123.5	–	–	114	149	8	M5	3x	3x
156	–	–	186.5	272.5	10	M6	–	–
156	–	–	226.5	312.5	10	M6	–	–

Dimensions b_{WT} 400

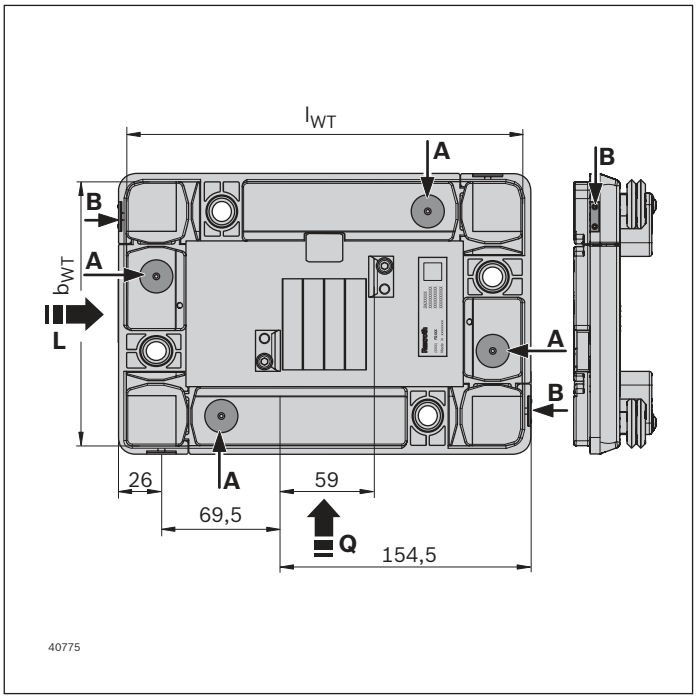


Further information, see carrying plate on page 2-22ff.

Width of workpiece pallet b_{WT} (mm)	Length of workpiece pallet l_{WT} (mm)	Width ab (mm)	Length al (mm)	a (mm)	b (mm)	e (mm)	f (mm)	g (mm)	h (mm)	j (mm)
400	320	394.8	314.8	9.3	29	69.8	112.5	128.5	144.5	327.9
	400	394.8	394.8	9.3	29	69.8	112.5	128.5	144.5	327.9
	480	394.8	474.8	9.3	29	69.8	112.5	128.5	144.5	327.9
	640	394.8	634.8	9.3	29	69.7	112.5	128.5	144.5	327.9

k (mm)	l (mm)	m (mm)	n (mm)	q (mm)	r (mm)	s (mm)	v (mm)	w (mm)	x (mm)	aa (mm)	bb (mm)
347.6	356.9	9.3	29	131	138.5	146	247.9	267.6	276.9	95.5	–
347.6	356.9	9.3	29	171	178.5	186	327.9	347.6	356.9	110	178.5
347.6	356.9	9.3	29	211	218.5	226	407.9	427.6	436.9	150	218.5
347.6	356.9	9.3	29	291	298.5	306	567.9	587.6	596.9	230	298.5

cc (mm)	ff (mm)	gg (mm)	hh (mm)	nn (mm)	pp (mm)	qq (mm)	rr (mm)	ss (mm)	thk (mm)
181.5	74.3	111	146	212.5	228.5	244.5	211	246	8
247	74.3	111	146	212.5	228.5	244.5	211	246	8
287	74.3	111	146	212.5	228.5	244.5	211	246	8
367	74.2	111	146	212.5	228.5	244.5	211	246	12.7



A = Exciter plate, bottom
B = Exciter plate, side
L = Longitudinal conveyor
Q = Transverse conveyor

Sensor query options

The following workpiece pallet sizes cannot be queried from below:

- 160 x 160
- 160 x 240
- 160 x 320
- 240 x 160

Query from below in the longitudinal conveyor

WT 2/LS

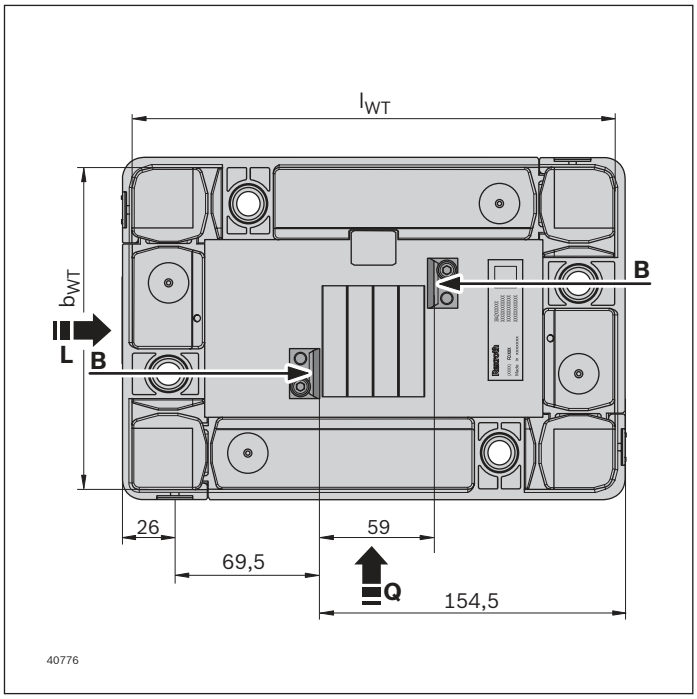
Length of workpiece pallet l_{WT} (mm)	Width of workpiece pallet b_{WT} (mm)			
	160	240	320	400
160	L	L	–	–
240	L	M	J	–
320	L	M	J	J
400	–	M	J	J
480	–	–	J	J
640	–	–	–	J

J	Query without restriction possible
L	Query only possible at side
M	Inquiry from below possible with restriction Not on the side of the measuring magnet

Query from below in the transverse conveyor

WT 2/LS

Length of workpiece pallet l_{WT} (mm)	Width of workpiece pallet b_{WT} (mm)			
	160	240	320	400
160	L	L	–	–
240	J	J	J	–
320	J	J	J	J
400	–	J	J	J
480	–	–	J	J
640	–	–	–	J



B = Stop gate feed-through
L = Longitudinal conveyor
Q = Transverse conveyor

Possible combination for separating the WT 2/LS

Use stop gate tunnels to stop the WT 2/LS in longitudinal conveyors on the inner edge of the frame module

VE 2

Length of workpiece pallet l_{WT} (mm)	Width of workpiece pallet b_{WT} (mm)			
	160	240	320	400
160	K	K	–	–
240	K	M	J	–
320	K	M	J	J
400	–	J	J	J
480	–	–	J	J
640	–	–	–	J

Use stop gate tunnels to stop the WT 2/LS in the transverse conveyor at the inside edge of the frame module

VE 2

Length of workpiece pallet l_{WT} (mm)	Width of workpiece pallet b_{WT} (mm)			
	160	240	320	400
160	K	K	–	–
240	J	J	J	–
320	J	J	J	J
400	–	J	J	J
480	–	–	J	J
640	–	–	–	J

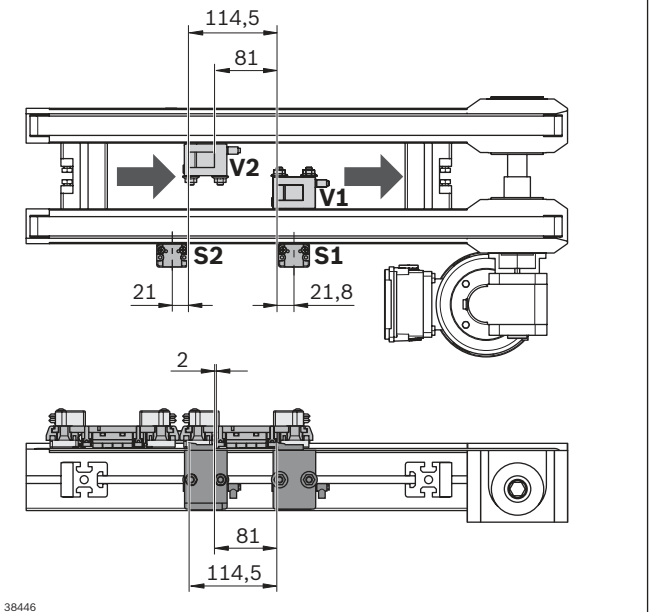
J	No restrictions
K	A double stop gate combination is required for separation
M	Stop gate mounting on the side of the measuring magnet is not permissible

Double separation

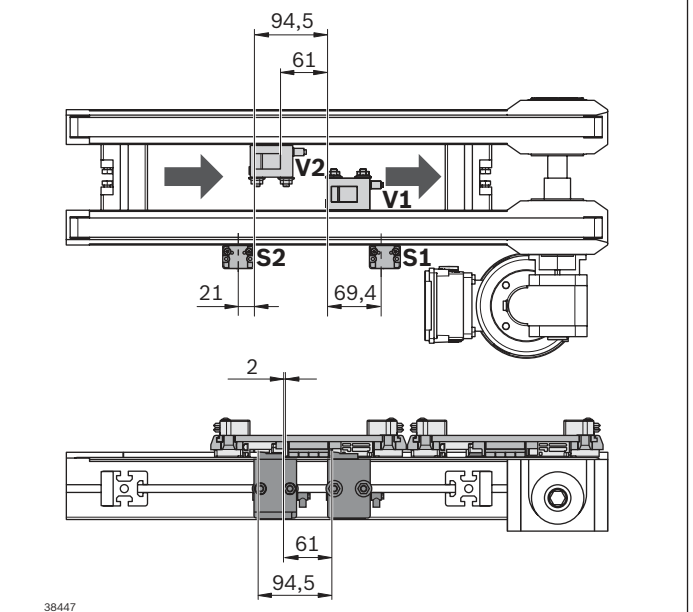
- Double separation is required for safe accumulation separation with short WTs.
- With a double stop gate, two stop gates are used to separate the workpiece pallets. The first stop gate stops the WT inside, the second stop gate stops the WT outside.
- Double stop gates are used to protect the magnets
- Double separation is required for the following WTs: 160 x 160; 160 x 240; 160 x 320; 240 x 160
- With a width of 320 mm and 400 mm, no special measures are required. A double stop gate does not need to be used here

Installation of double stop gate

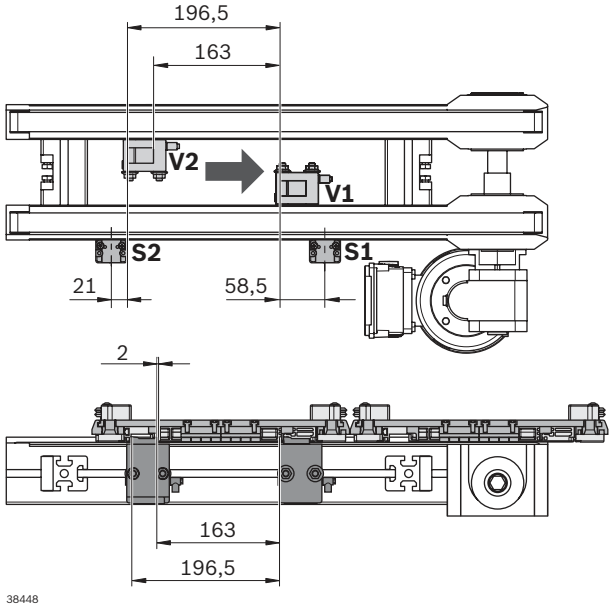
160 x 160



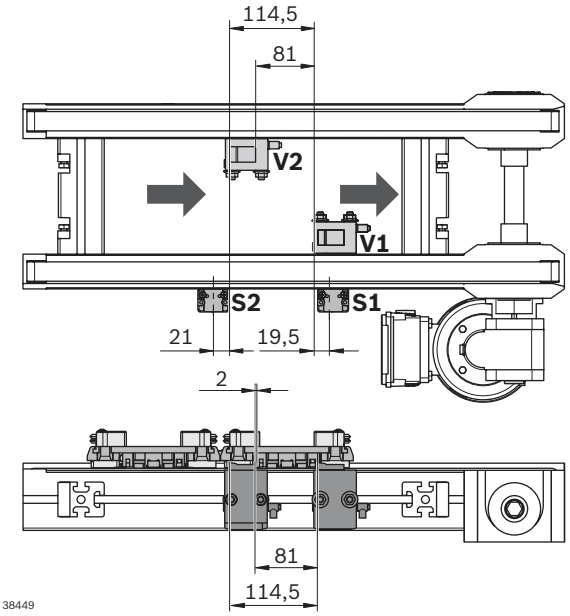
160 x 240



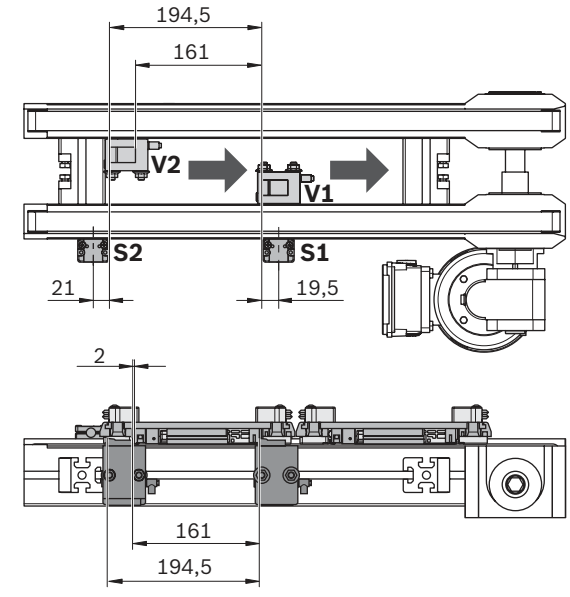
160 x 320



240 x 160



240 x 320



Workpiece pallet WT 2/LS combination options with components TS 2*plus*

Due to the strong magnets below the WT 2/LS, magnetically active parts must have a minimum distance from the magnets. Attached elements (feed magnet, measuring magnet and stopper) can represent an interfering contour for different components TS 2*plus*.
Some components TS 2*plus* can be used without any changes, others have been adapted to ensure that the WT 2/LS is used. However, there are also components that cannot be used.

Material numbers and parameters can be found in the relevant components.

- Components with toothed belt or belt can be used
- Components with accumulation roller chain cannot be used
- The curve KU 2/... for larger WTs can be used from the FPK construction kit

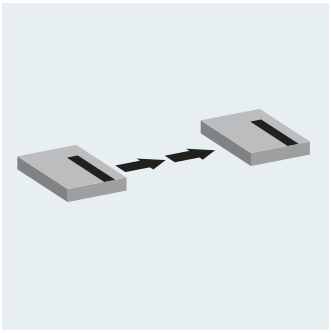
Components TS 2*plus* for workpiece pallets WT 2/LS

Longitudinal conveyor	
AS 2/B, UM 2/B, ST 2/B	● [3]
BS 2, BS 2/M-2, BS 2/K	●
LG 2/H from b = 400 mm	●
AS 2/C..., UM 2/C..., ST 2/C...	● [2), 3]
BS 2/C	● [2), 3]
Curves	
KE 2/... LS	● [1]
KU 2/...	● [3]
Transverse conveyor	
EQ 2/... LS	● [1]
HQ 2/... LS	● [1]
Roller sections	●
EL 2 from b = 320 mm	●
Positioning and orientation	
Inner guide from b = 240 mm	●
PE 2/LS	● [1]
HP 2/L LS, HP 2/LS	● [1]
HD 2-LS, HD 2/H LS	● [1]
DE 2	●
Transportation control	
VE 2, VE 2/L, VE 2/M, VE 2/S, VE 2/RS	●
VE 2/D60-LS, VE 2/175-LS	● [1]
VA 2/50	●
WI 2/..., WI/M	●
Leg sets	
SZ 2...	●

The following components TS 2*plus* cannot be used:

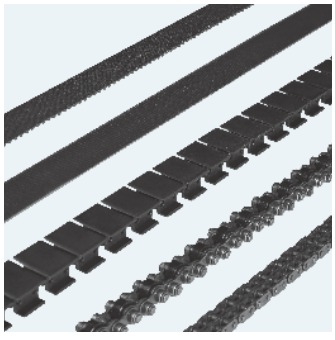
- CU 2
- HQ 2/U-H, HQ 2/C-H
- PE 2/X, PE 2/XP, PE 2/XX, PE 2/H
- VE 2/X, VE 2/D-200, VE 2/D100-H, VE 2/D250-H, VE 2/RS-H
- VA 2/50 rev., VA 2/D-130, VA 2/D-250
- All components with accumulation roller chain and chain V*plus*

[1] These components are available in an adapted version (version LS). The version LS is specially designed for the WT 2/LS, but it can also be combined with the same components as your standard version.
[2] The WT 2/LS cannot be inserted into the transverse conveyor on these components.
[3] In combination with the WT 2/LS, the motor mounting in the middle (MA=M) is not permissible for these components TS2.

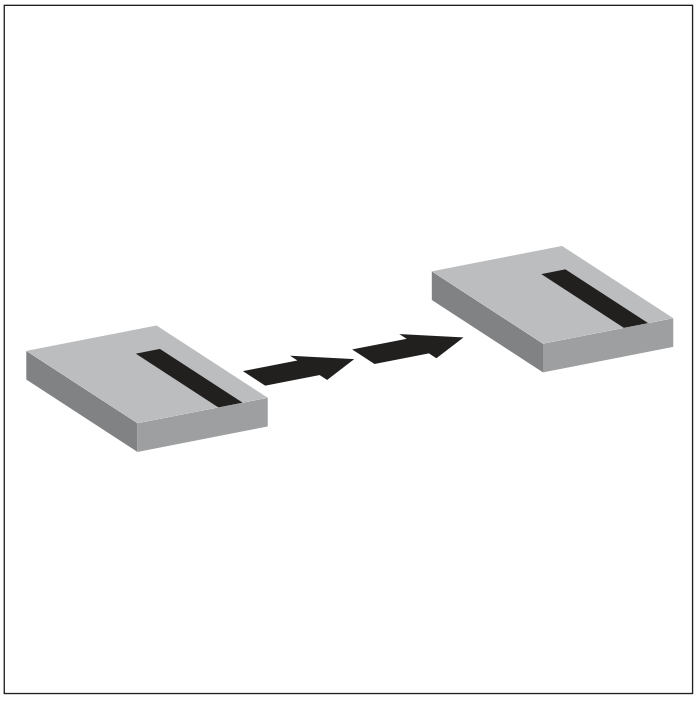


Longitudinal conveyor

Conveyor media selection **3-2**



Conveyor media selection



Linear motor driven section

With the feed force generated by a linear motor drive, a workpiece pallet can be moved variably forward and backward within 0.3 s (workpiece carrier change time) between process stations.
The seamless transition from a toothed belt section to a linear section allows low cycle times and, with limited sections, high dynamics, flexibility and precision.

Belts, toothed belts, flat-top chains, and accumulation roller chains are available as conveyor media for longitudinal conveying.

Belts/toothed belts

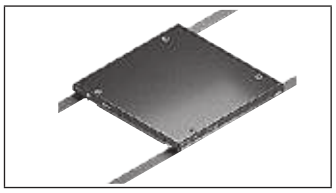
All toothed belts and the belt are suitable for use in EPAs (ESD Protected Areas). The belt has been designed for section loads of up to 250 kg and is pretensioned with a special device and then bonded to form a continuous belt. It is mainly used in systems with light conveying loads and section lengths of over 2 m.
Belt sections with toothed belts are available for shorter sections. The workpiece pallet is conveyed on the back side, which has been reinforced with fabric. A change to the running direction (reversible operation) is also possible.

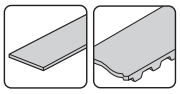
Flat-top chain

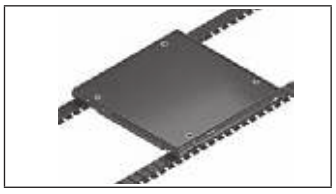
Plastic flat-top chains have wear-free polyamide caps on each chain link which reduce friction and help the system run more quietly. A marked cap is available for the chain joint. A design that is also flexible on the side enables use of the plastic flat-top chain in curves. It is mainly used in systems with medium conveying loads.

Accumulation roller chain

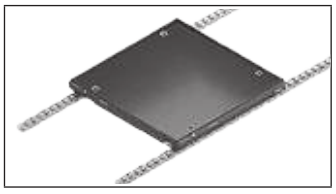
The roller elements of the accumulation roller chain allow the chain to lightly roll underneath the workpiece pallet when pallets accumulate. It is mainly used to convey heavy loads in rough environments. Both types of chains are closed using a chain lock to create an endless chain (1 chain lock each in scope of delivery).



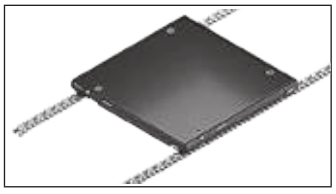
Belt and toothed belt conveyor medium  **3-4**



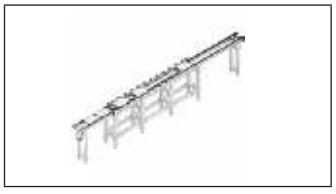
Flat-top chain conveyor medium **3-40**

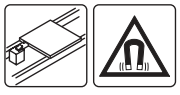


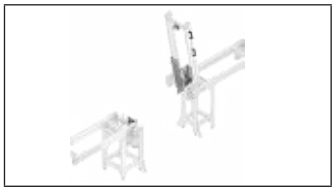
Accumulation roller chain conveyor medium **3-92**



Accumulation roller chain conveyor medium V*plus* **3-141**

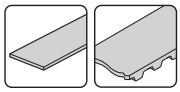


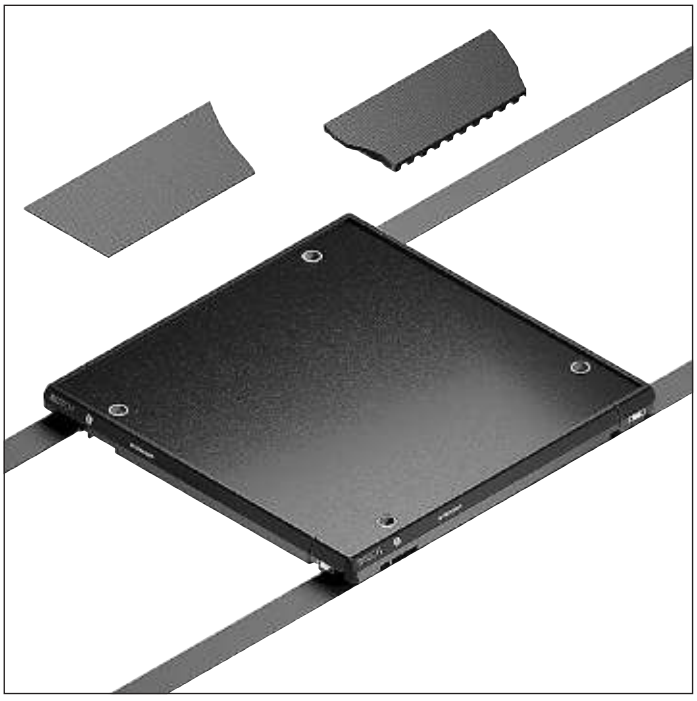
Linear section LS 2  **3-166**



Lift gate LG 2/H **3-182**

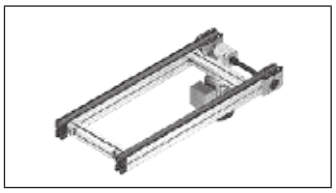
Belt and toothed belt conveyor medium



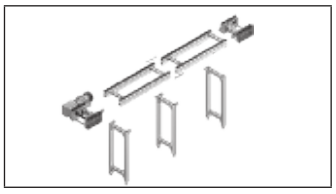


The belt and toothed belt conveyor media are suitable for conveying small and medium-sized workpiece pallets in clean, dry environments. The high flexibility and flat design of the conveyor medium allow for narrow conveyor trenches between section profiles.
Whereas the belt is an especially economical conveyor medium, primarily utilized on longer section segments, the toothed belt is suitable for shorter section segments and/or driving neighboring modules without their own drives.

The conveyor media, or the modules equipped with these media, are used for assembly of lightweight products, e.g., electrical household appliances. Features such as a low risk of drawing-in and low profile construction height, as well as quiet operation, facilitate use at manual assembly stations. Specific section loads of up to 1 kg/cm are possible on workpiece pallets with wear pad PA.



Belt sections BS 2... **3-6**



Components for conveyor units AS 2/..., UM 2/..., ST 2... **3-18**

Belt section BS 2/...

The belt section is a ready for operation conveyor section with own drive for the transportation of workpiece pallets in the longitudinal direction or for the transverse conveying of the workpiece pallet between parallel conveyor sections in connection with two lift transverse units HQ 2.

Recommended accessories

- Connection kit, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4

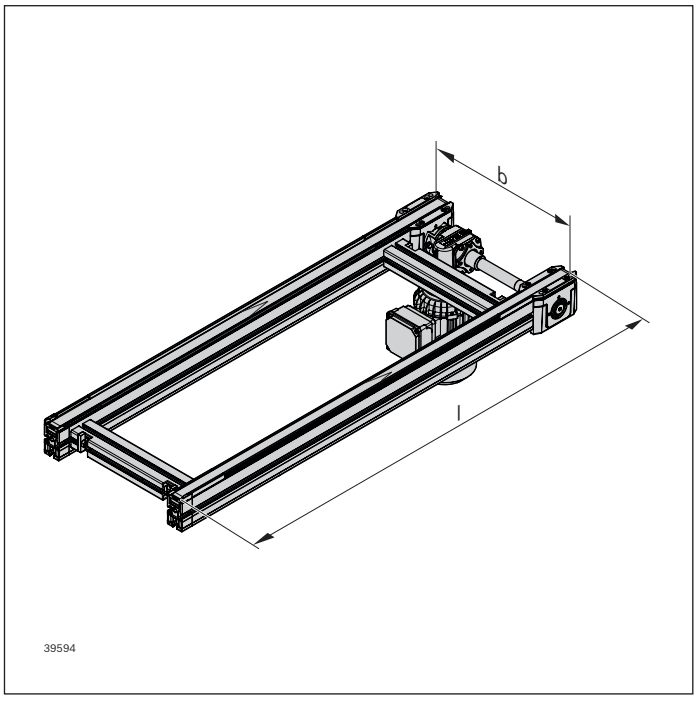
Condition on delivery

- Assembled

- Ready for operation conveyor section with own drive
- Accumulation operation possible
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Reversible operation possible
- Drive side can be attached to the input of KE 2/O (not as cam drive)
- When mounted at the output of a curve, BS 2 can also serve as a cam drive. The required connection kit and drive set is contained in the scope of delivery of the curve
- Suitable for mounting between KE 2 and linear section LS 2
- BS 2 is suitable and recommended for workpiece pallets WT 2 and WT 2/LS in the longitudinal conveyor
- BS 2/LS is particularly suitable and recommended for workpiece pallets WT 2/LS in the transverse conveyor, e.g. for removal in a HQ 2
- Can be combined with WT 2, WT 2/E, WT 2/LS and WT 2/F with wear pad PA
- Motor mounting right, left or central
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



Material number		3842999716 BS 2	3842999060 BS 2/LS
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200	
		160 ... 1200[1]	
l (mm)	Length	240 ... 6000[2]	
v_N (m/min)	Nominal speed	0[3]; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	
MA	Motor mounting R = right L = left M = center	R; L; M[4]	

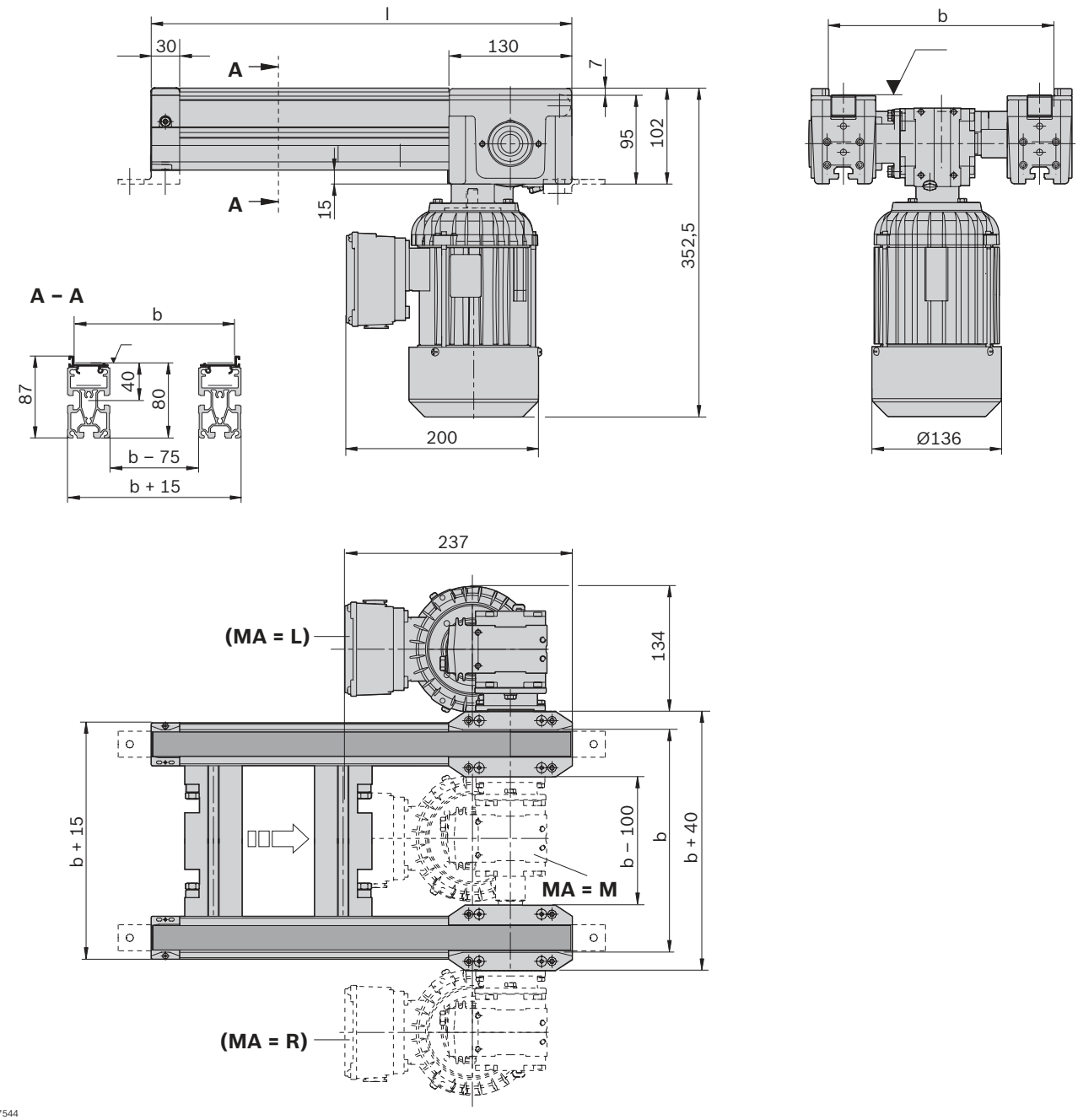
[1] Individual width variants can be ordered
[2] l is rounded in accordance with the toothed belt pitch
[3] v_N = 0: without motor or gear
[4] When MA = M and b = 160 mm, the max. section load is only 30 kg

Technical data

Material number			3842999716 BS 2	3842999060 BS 2/LS
Max. section load in accumulation operation		kg	60[5]	
ESD			Yes	
Cleanroom class			ISO class 7[6]	
Dry room	rF	%	<1	
Material specification			Glide profile: PA Guide profile: PA Section profile: Aluminum, natural; anodized	
Length	l	mm	240 ... 6000	

[5] When MA = M and b = 160 mm, the max. section load is only 30 kg
[6] Is basically suitable

Dimensions


l
30
130
A
A
7
95
102
15
352,5
200
b
Ø136
A – A
b
87
40
80
b – 75
b + 15
237
(MA = L)
134
b + 15
b – 100
b
b + 40
MA = M
(MA = R)
37544

Belt section BS 2/M...

The belt section is a conveyor section that is ready for operation with own drive for the transportation of workpiece pallets.It is suitable for all installation situations in which the motor cannot be fitted to the end of the belt section.
The return units can be inserted at both ends of the belt section, allowing a greater variety of applications.
With 1 or 2 large return heads, the new modular unit BS 2/M-2 can now also be used to drive a KE 2/O or HQ 2/O. In addition, there is the option of whether or not a hexagonal shaft is integrated.

Recommended accessories

- Connection kit, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4

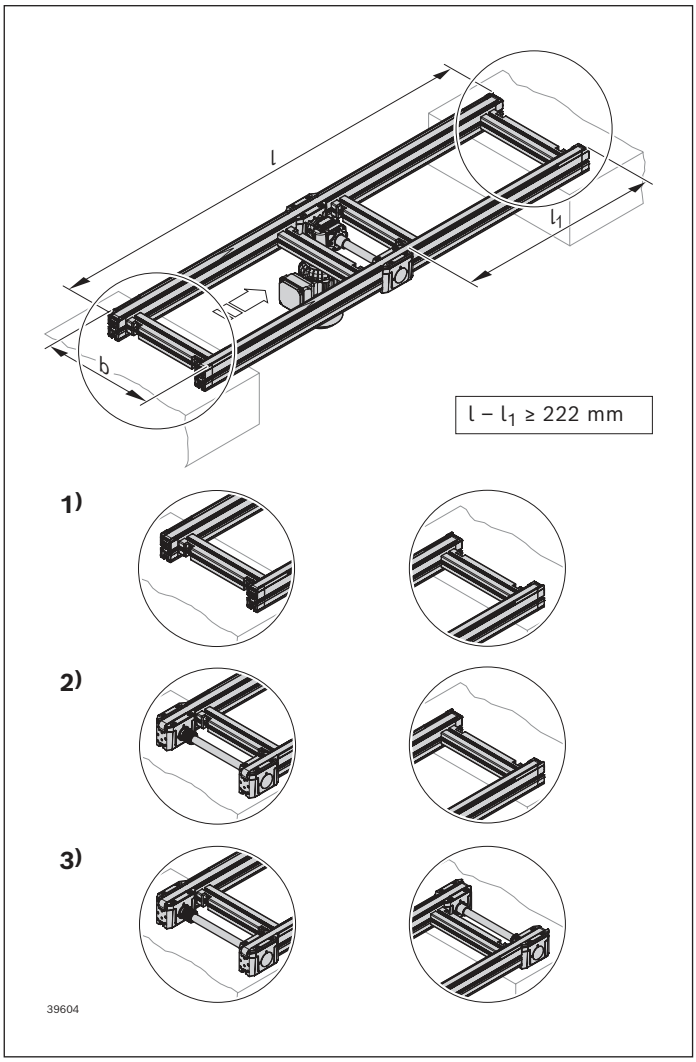
Condition on delivery

- Assembled

- Functional operation conveyor section complete with drive
- Drive position freely selectable in longitudinal direction
- Accumulation operation possible
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Reversible operation possible
- With 1 or 2 large return heads, the BS 2/M-2 is also suitable for mounting on curve KE 2/O or HQ 2/O
- Suitable for mounting situations where large return heads or drive heads are required
- BS 2 is suitable and recommended for workpiece pallets WT 2 and WT 2/LS in the longitudinal conveyor
- BS 2/LS is particularly suitable and recommended for workpiece pallets WT 2/LS in the transverse conveyor, e.g. for removal in a HQ 2
- Can be combined with WT 2, WT 2/E, WT 2/LS and WT 2/F with wear pad PA
- Motor mounting right, left or central
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



[1] UM = 0: Small return head on both sides
[2] UM = 1; 2; 3: Large return head on one side
[3] UM = 4; 5; 6: Large return head on both sides

Material number		3842994164 BS 2/M-2	3842999061 BS 2/M LS
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200	
		160 ... 1200[1]	
l (mm)	Length	UM = 0: 312 ... 6000[2] UM = 1; 2; 3: 410 ... 6000[2] UM = 4; 5; 6: 510 ... 6000[2]	
l_1 (mm)	Length	UM = 0; 1; 2; 3: 90 ... 5770 UM = 4; 5; 6: 190 ... 5770	
v_N (m/min)	Nominal speed	0[3]; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection 0 = without motor S = cable/plug K = terminal box	0; S; K	
MA	Motor mounting R = right L = left M = center	R; L; M	
UM	Return unit 0 = small return head on both sides 1/2/3 = return head large on one side[4] + 1, 2 or 3 1 = without drive shaft 2 = connection to KE 2/O 3 = connection to HQ 2/O 4/5/6 = large return head on both sides + 4,5 or 6 4 = without drive shaft 5 = connection to KE 2/O 6 = connection to HQ 2/O	0; 1; 2; 3; 4; 5; 6	
UB	Connection belt for HQ 2/O at UM = 3/6: 1 = BG 1 with b = 160 ... 480 2 = BG 2 with b = 400 ... 800	1; 2	

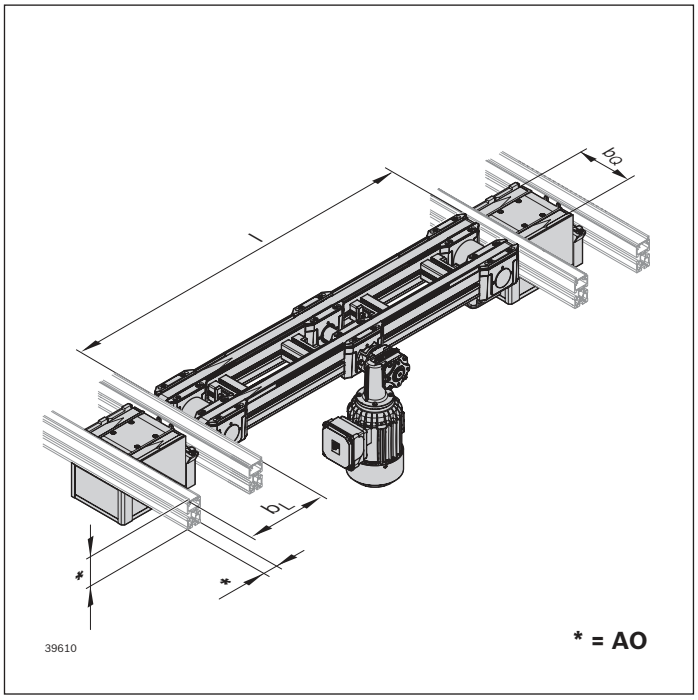
[1] Individual width variants can be ordered
[2] l is rounded in accordance with the toothed belt pitch
l – l_1 ≥ 222 mm
[3] v_N = 0: without motor or gear
[4] In travel direction at the beginning of the section

Technical data

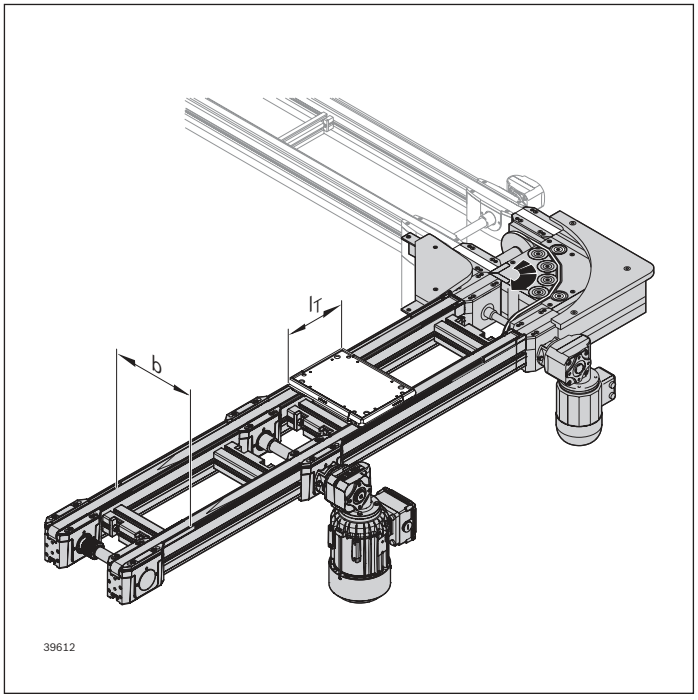
Material number			3842994164 BS 2/M-2	3842999061 BS 2/M LS
Max. section load in accumulation operation		kg	60[5]	
ESD			Yes	
Cleanroom class			ISO class 7[6]	
Dry room	rF	%	<1	
Material specification			Glide profile: PA Guide profile: PA Section profile: Aluminum, natural; anodized	
Length	l	mm	312 ... 6000	

[5] When MA = M and b = 160 mm, the max. section load is only 30 kg
[6] Is basically suitable

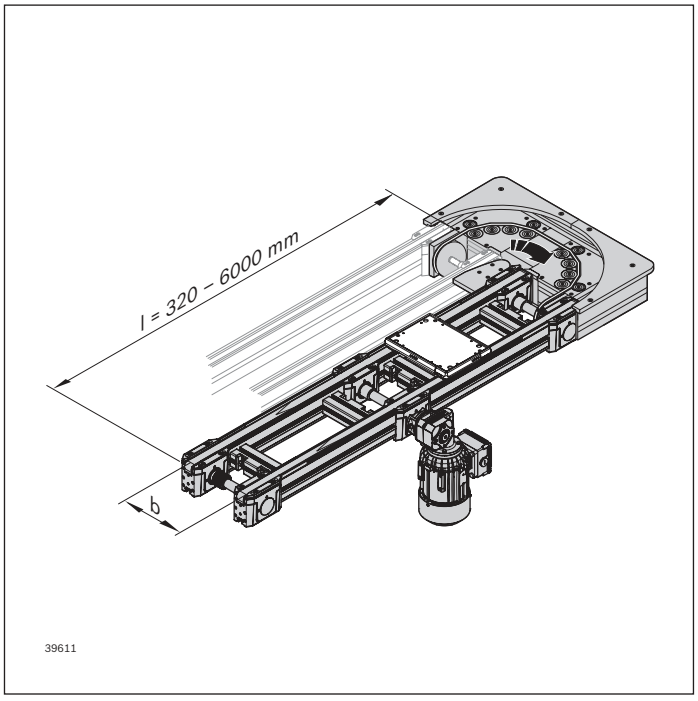
Mounting between 2 HQ 2/O in the transverse conveyor
2 large return heads with connection belt in the transverse conveyor

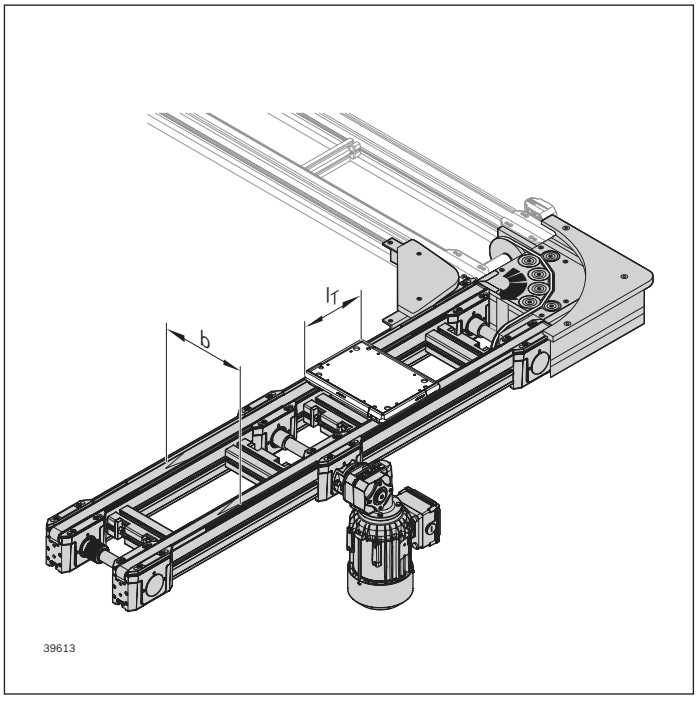


Mounting KE 2 without connection belt
Return head without connection belt and without hexagonal shaft

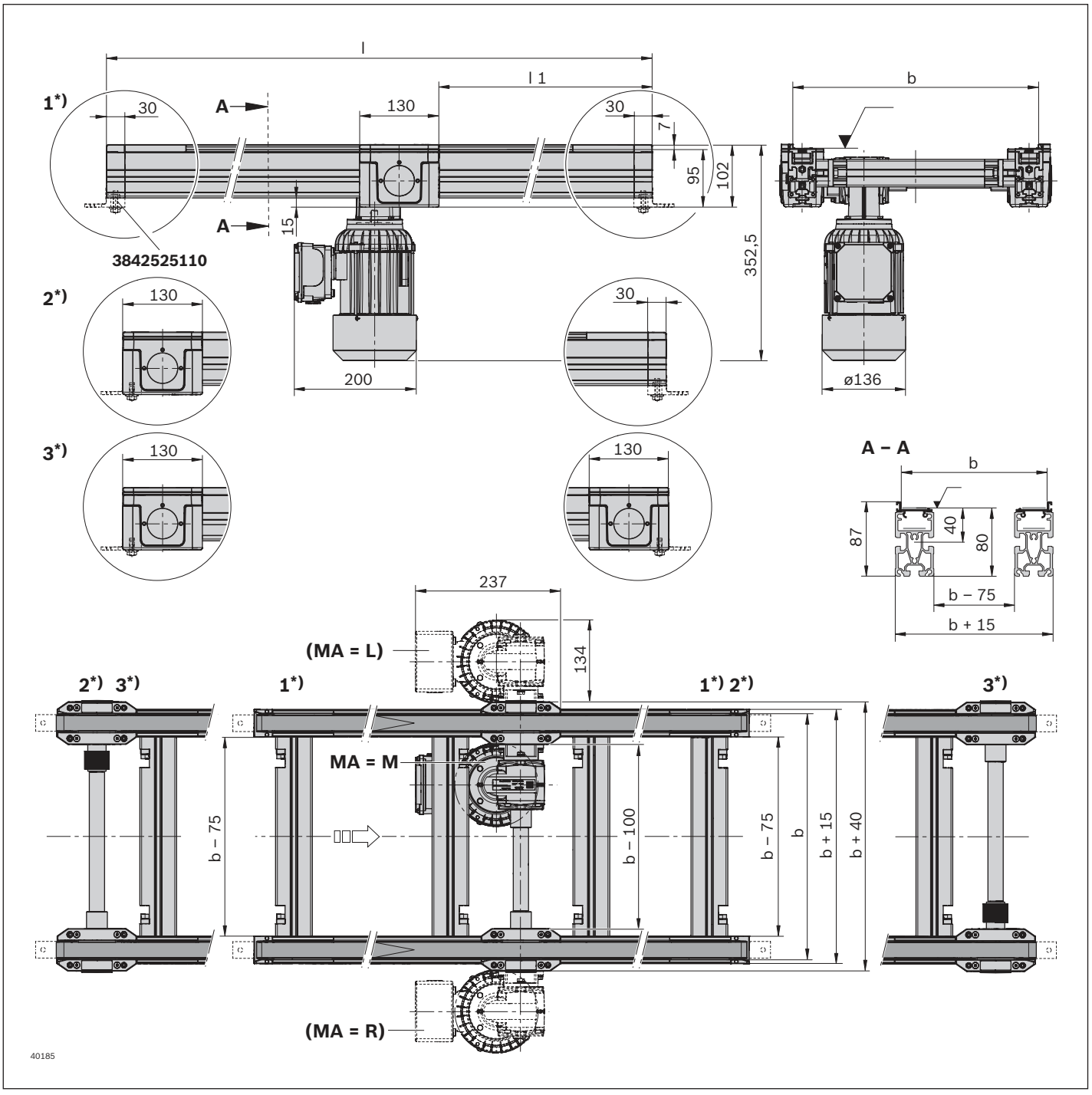


Mounting KE 2/O-180..., KE 2/O-90...
Large return head with hexagonal shaft and connection belt to a subsequent belt section





Dimensions

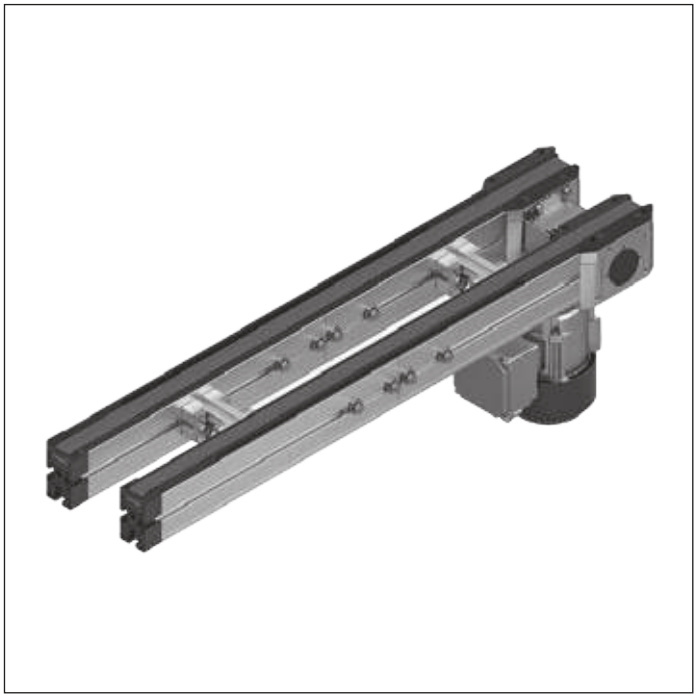


[1] UM = 0: Small return head on both sides (see page 3-10)

[2] UM = 1; 2; 3: Large return head on one side (see page 3-10)

[3] UM = 4; 5; 6: Large return head on both sides (see page 3-10)

Belt section BS 2/S



The belt section is a ready for operation conveyor section with own drive for the transportation of workpiece pallets in the longitudinal direction or for the transverse conveying of the workpiece pallet between parallel conveyor sections in connection with two lift transverse units HQ 2.

- Segmented belt section with the possibility of up to 3 additional cuts in the longitudinal profile
- Connection with standard profile connectors
- This allows flexible individual parts of the belt section to be removed
- This also causes simpler handling and more efficient transportation of the belt sections
- Accumulation operation possible
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Reversible operation possible
- Can be combined with WT 2, WT 2/E, WT 2/F and WT 2/LS
- Motor mounting right, left or central (central from track width of 160 mm)
- Motor connection optionally with cable/plug (AT = S) or terminal box (AT = K)
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

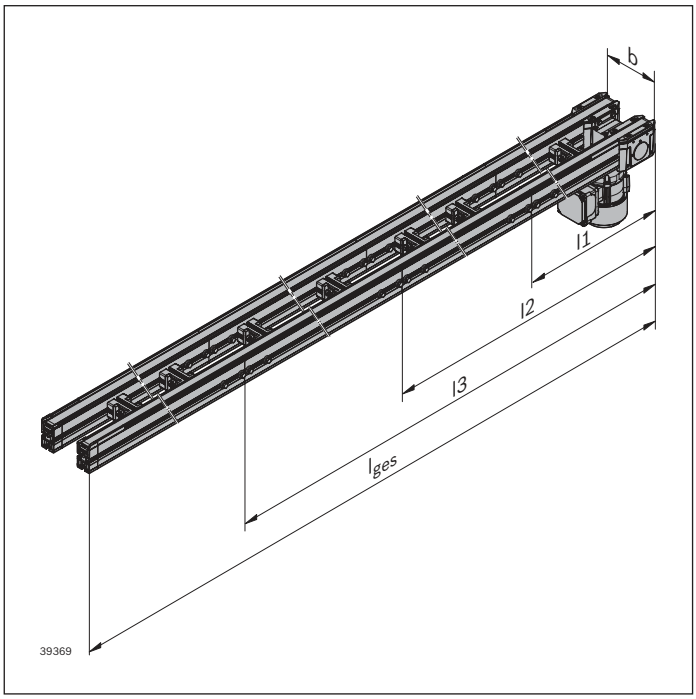
Recommended accessories

- Leg sets SZ2/..., see p. 6-4
- Connection kits for longitudinal conveyors (see p. 9-21)

Condition on delivery

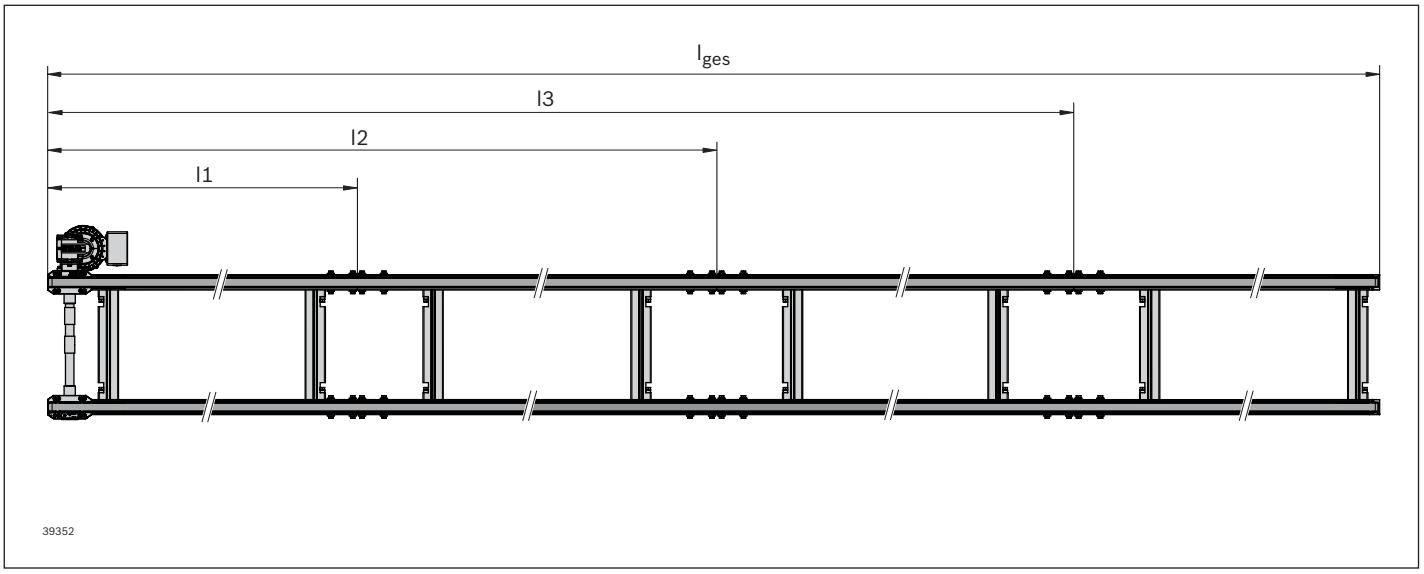
- Assembled

Ordering information



Material number		3842996463
b (mm)	Track width in direction of transport	160 ... 1200
l_{ges} (mm)	Length	900 ... 6000
l_1 (mm)	Length	450 ... 5550
l_2 (mm)	Length	0; 900 ... 5500
l_3 (mm)	Length	0; 1350 ... 5500
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, see p. 10-30ff
f (Hz)	Frequency	See motor data, see p. 10-30ff
AT	Motor connection O = without motor S = cable/plug K = terminal box	O; S; K
MA	Motor mounting R = right L = left M = center	R; L; M[3]

[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear
[3] When MA = M and b = 160 mm, the max. section load is only 30 kg

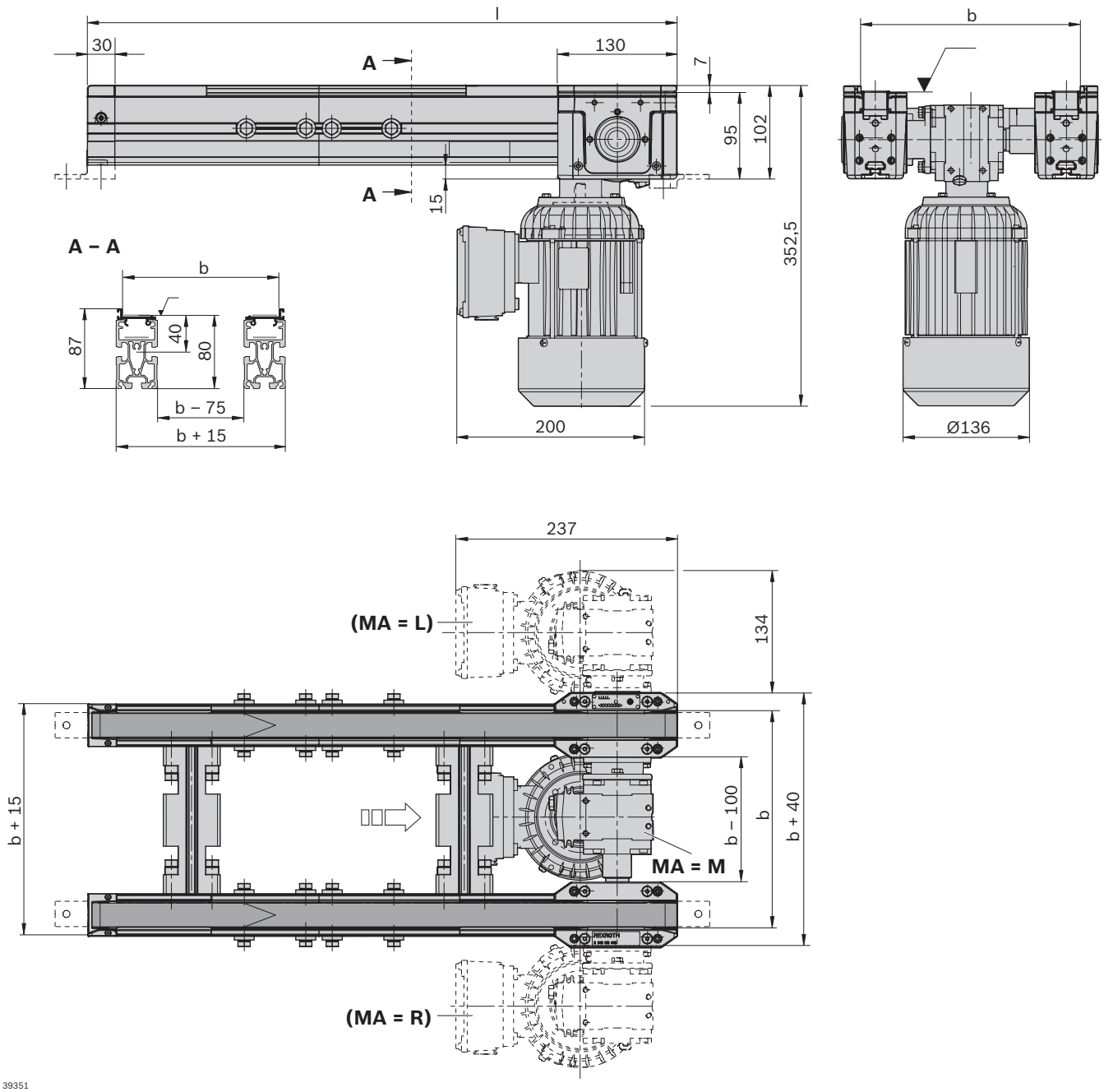


Technical data

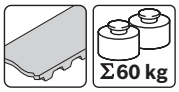
Material number		3842996463
Max. section load in accumulation operation [1]	kg	60[4]
ESD		Yes
Material specification		Glide profile: PA Guide profile: PA Section profile: Aluminum, natural; anodized

[4] When MA = M and b = 160 mm, the max. section load is only 30 kg

Dimensions


l
30
130
A
A
7
95
102
15
352,5
200
b
Ø136
A – A
b
87
40
80
b – 75
b + 15
237
134
(MA = L)
b + 15
b – 100
b
b + 40
MA = M
(MA = R)
39351

Transmission drive



For mounting larger third-party motors for the connection belt of higher drive torques (maximum section loads of the belt section must not be exceeded).

Required accessories

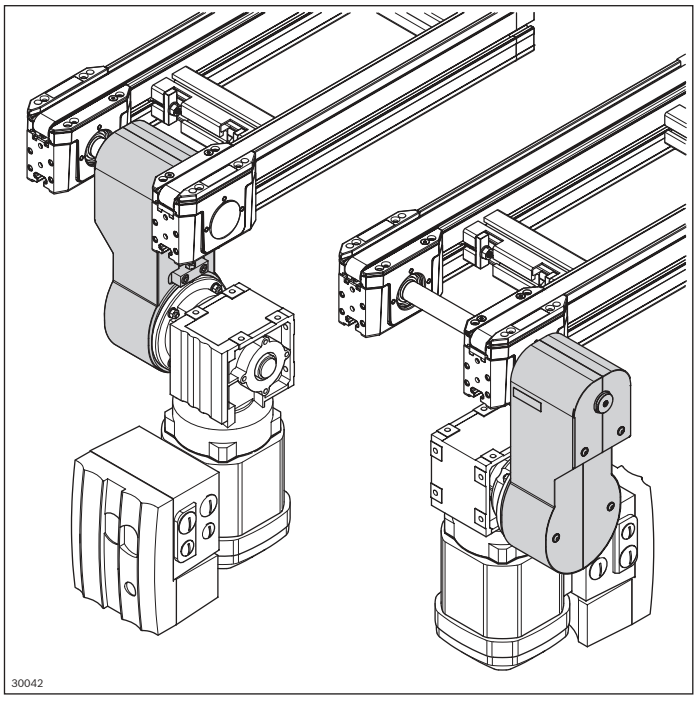
- Belt section BS 2 (see p. 3-6) or BS 2/M-2 (see p. 3-9)
- Gear motor
- Torque support (to be supplied by the operator)

Condition on delivery

- Unassembled in parts
- Bearing already press-fitted
- Incl. adapter set and additional hexagonal shaft

- Timing belt side drive for gear motors that must be constructed set lower so that they can be driven over
- Suitable for flange mounted gears, flange diameter 120 mm (B5 version with worm gear) and hollow shaft, diameter 20 mm
- Designed for Spiroplan right-angle gear motors SEW, WAF20, WAF30 or WAF37 and worm gear motors SAF37
- Reversible operation possible
- Suitable for mounting to belt section BS 2 and BS 2/M-2
- Maximum transferable torque (on the gear output): m_{max} = 12 Nm
- Only suspended mounting of the gear motor is permitted

Ordering information

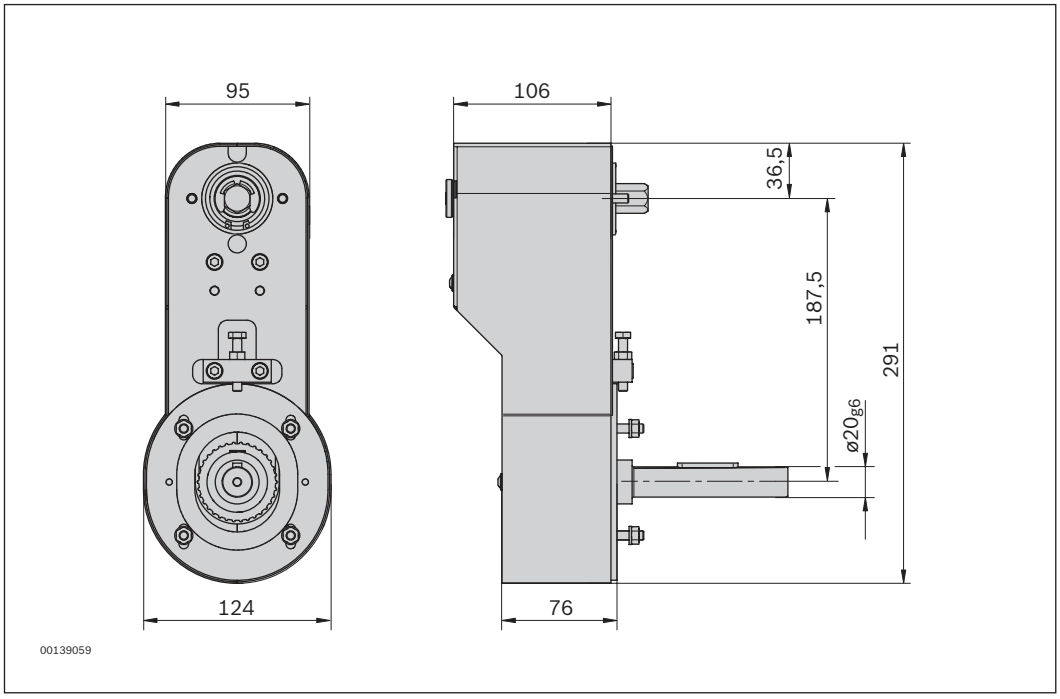


Product description	Material number
Transmission drive	3842542550

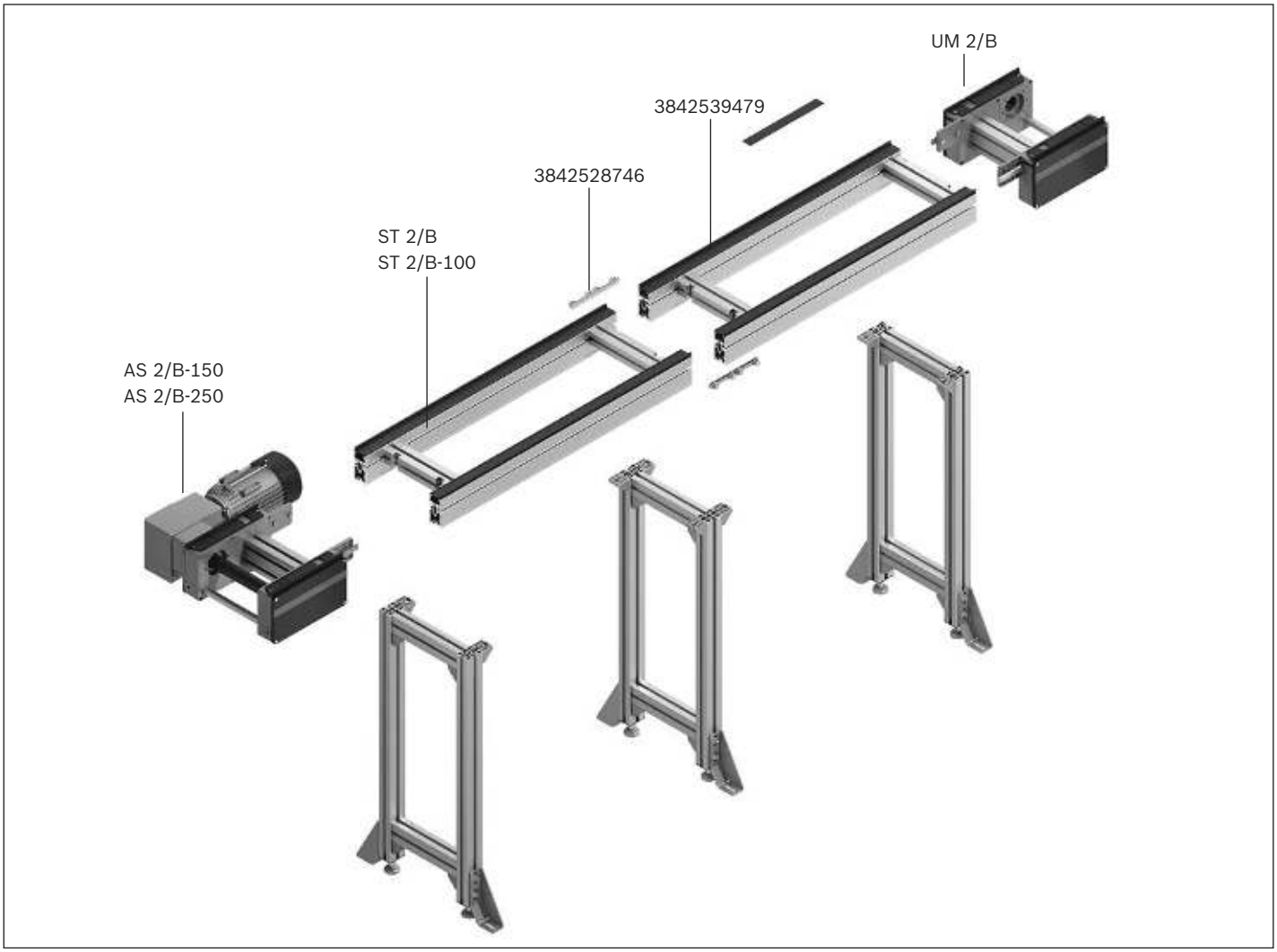
Technical data

Material number			3842542550
Maximum transferable torque		Nm	12
ESD			Yes
Dry room	rF	%	<1

Dimensions



Conveyor units
Components for belt conveyor medium



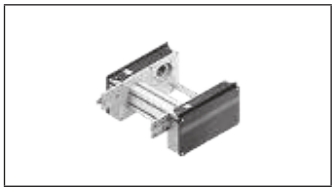
A conveyor unit is a complete unit used for the linear conveying of workpiece pallets. It consists of:

- Drive module AS 2/B-..., see p. 3-20
- Return unit UM 2/B, see p. 3-26
- Section ST 2/..., see p. 3-29
- Leg sets SZ 2/..., see p. 6-4

The UM 2/B and AS 2/B-... may be set up right next to each other, which allows for conveyor unit combinations.

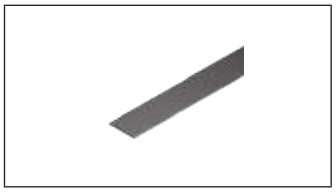
The drive module is designed for section loads up to m_G = 150 kg or up to m_G = 250 kg per conveyor unit.

Drive module AS 2/B... **3-20**



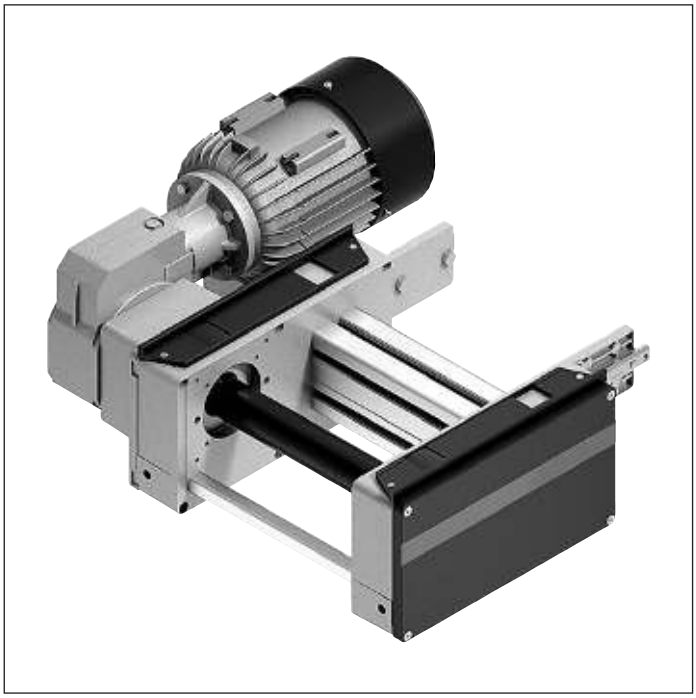
Return unit UM 2/B **3-26**

Section ST 2/B..., components **3-29**



Belt conveyor medium, accessories **3-36**

Drive module AS 2/B-150



The drive module AS 2/B-... drives the conveyor medium belt in self-built conveyor units with lines, return unit and conveyor belt or serves as a transverse section.

Required accessories

- Roller track RB 2 track 3842532822 (see p. 3-28) with adjacent longitudinal sections and workpiece pallet lengths of < 320 mm
- Roller track set RB 2/UM 2 3842558657 (see p. 5-99) for use in transverse sections with adjacent longitudinal sections

Scope of delivery

- Drive module AS 2/B-150
- Includes fastening material to mount on the conveyor section ST 2/..., as well as to mount on an adjacent return unit

- Conveyor medium: Belt (suitable for use in an EPA)
- Motor connection: Optionally with cable/plug or terminal box
- Centered motor mounting only possible in 0° and 90° position. For right or left motor mounting, the installation angle is optional
- Special models on request
- Accumulation operation possible

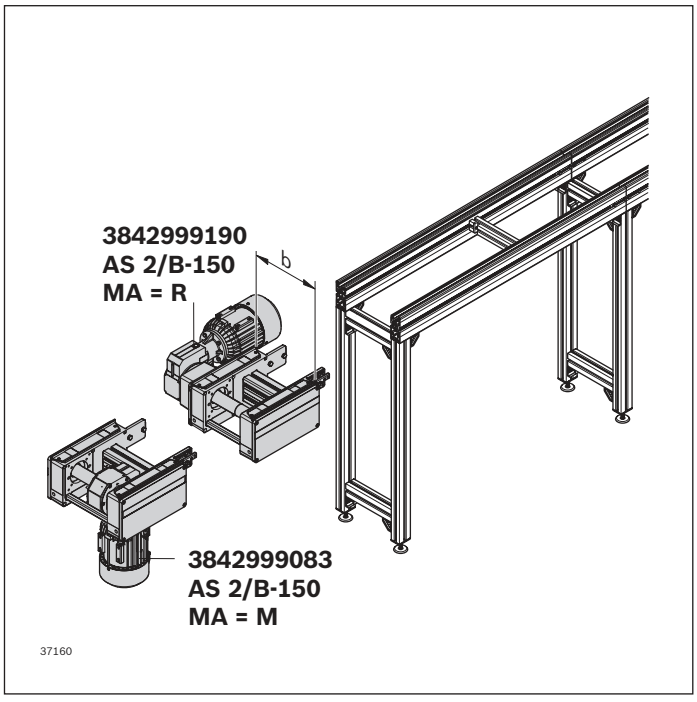
Notice: Can be combined with WT 2/LS workpiece pallet

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Condition on delivery

- Assembled

Ordering information



Material number		**3842999083** MA = M	**3842999190** MA = R, L
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200	
		160 ... 1200[1]	
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15[3]; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	S; K
MA	Motor mounting R = right L = left M = center	M[4]	R[5]; L[5]

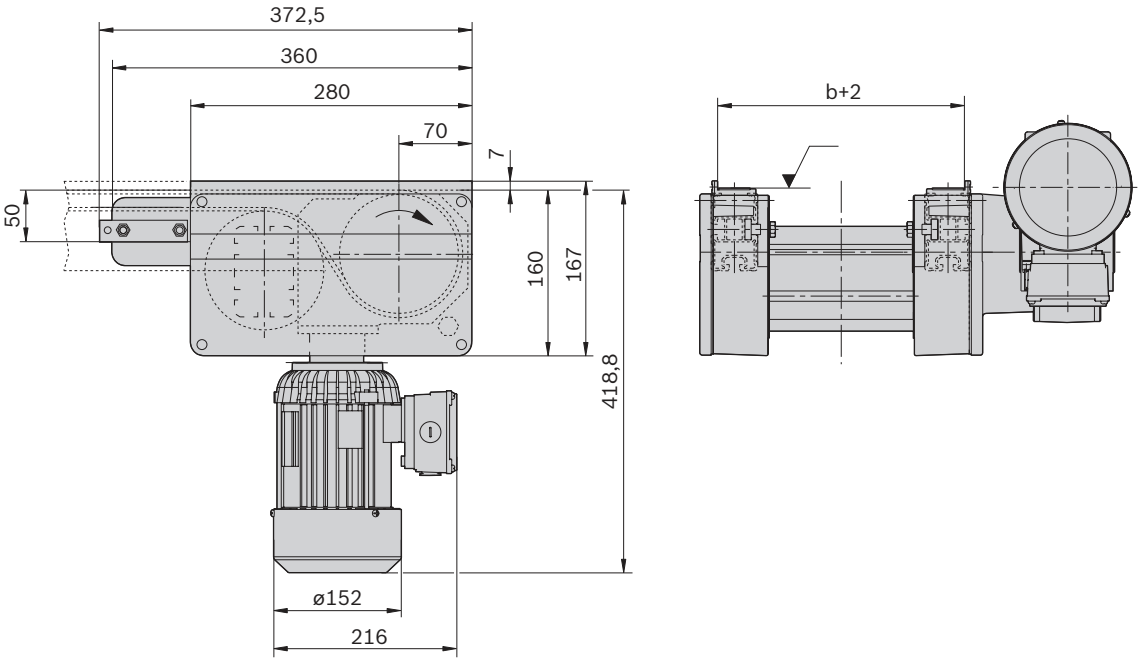
[1] Individual width variants available
[2] v_N = 0: without motor or gear
[3] Not possible at f = 60 Hz
[4] Only MA = M possible for 3842999083
[5] The following applies to 3842999190: MA = R; L

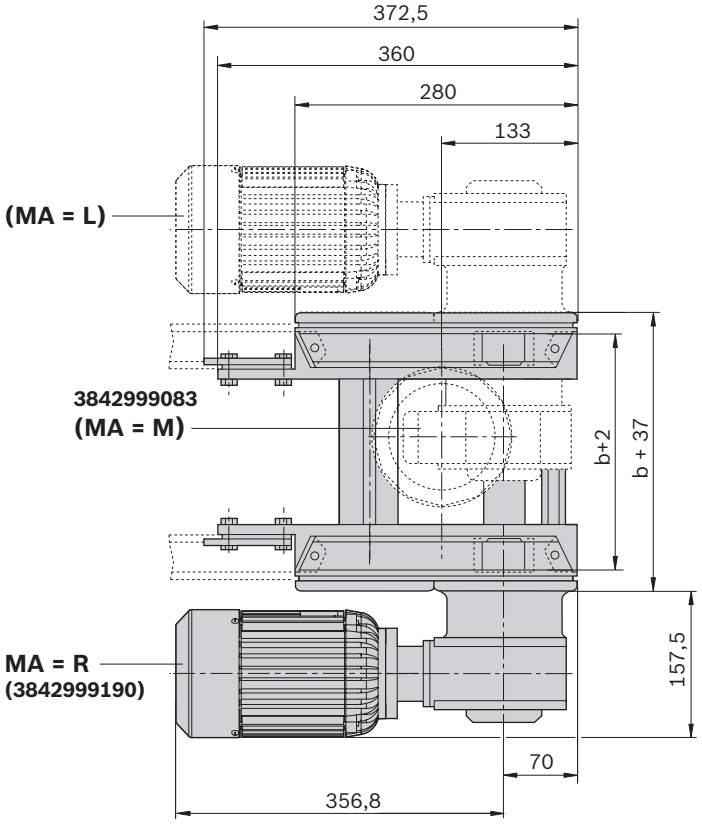
Technical data

Material number Motor mounting			**3842999083** MA = M	**3842999190** MA = R, L
Max. section load in accumulation operation		kg	150	
ESD			Yes	
Cleanroom class			ISO class 7[6]	
Dry room	rF	%	<1	
Required conveyor medium length[7]	l_{AS}	mm	660	

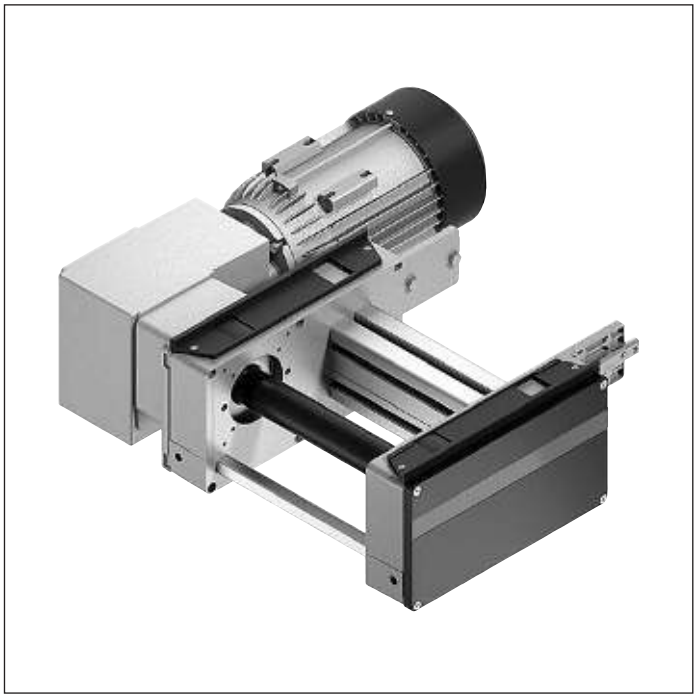
[6] Is basically suitable
[7] Formula for calculating the conveyor medium, see p. 3-37

Dimensions


372,5
360
280
70
7
50
160
167
418,8
ø152
216
b+2


372,5
360
280
133
(MA = L)
3842999083
(MA = M)
b+2
b + 37
MA = R
(3842999190)
157,5
70
356,8
37171

Drive module AS 2/B-250



The drive module AS 2/B-... drives the conveyor medium belt in self-built conveyor units with lines, return unit and conveyor belt or serves as a transverse section.

Required accessories

- Roller track RB 2 3842532822 (see p. 3-28) with adjacent longitudinal sections and workpiece pallet lengths of < 320 mm
- Roller track set RB 2/UM 2 3842558657 (see p. 5-99) for use in transverse sections with adjacent longitudinal sections

Scope of delivery

- Drive module AS 2/B-250
- Includes fastening material to mount on the conveyor section ST 2/..., as well as to mount on an adjacent return unit

- Conveyor medium: Belt (suitable for use in an EPA)
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request
- Accumulation operation possible

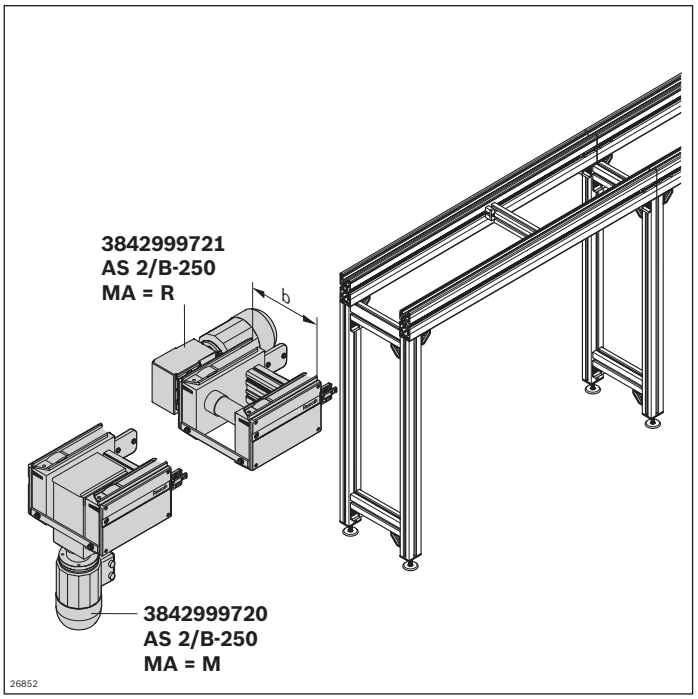
Notice: Can be combined with workpiece pallet WT 2/LS

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Condition on delivery

- Assembled

Ordering information



Material number		**3842999720** MA = M for b ≥ 240 mm	**3842999721** MA = R, L
b (mm)	Track width in direction of transport	160; 240[1]; 320; 400; 480; 640; 800; 1040; 1200	
		240 ... 1200[2]	
v_N (m/min)	Nominal speed	0[3]; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	
MA	Motor mounting R = right L = left M = center	M[1]	R; L

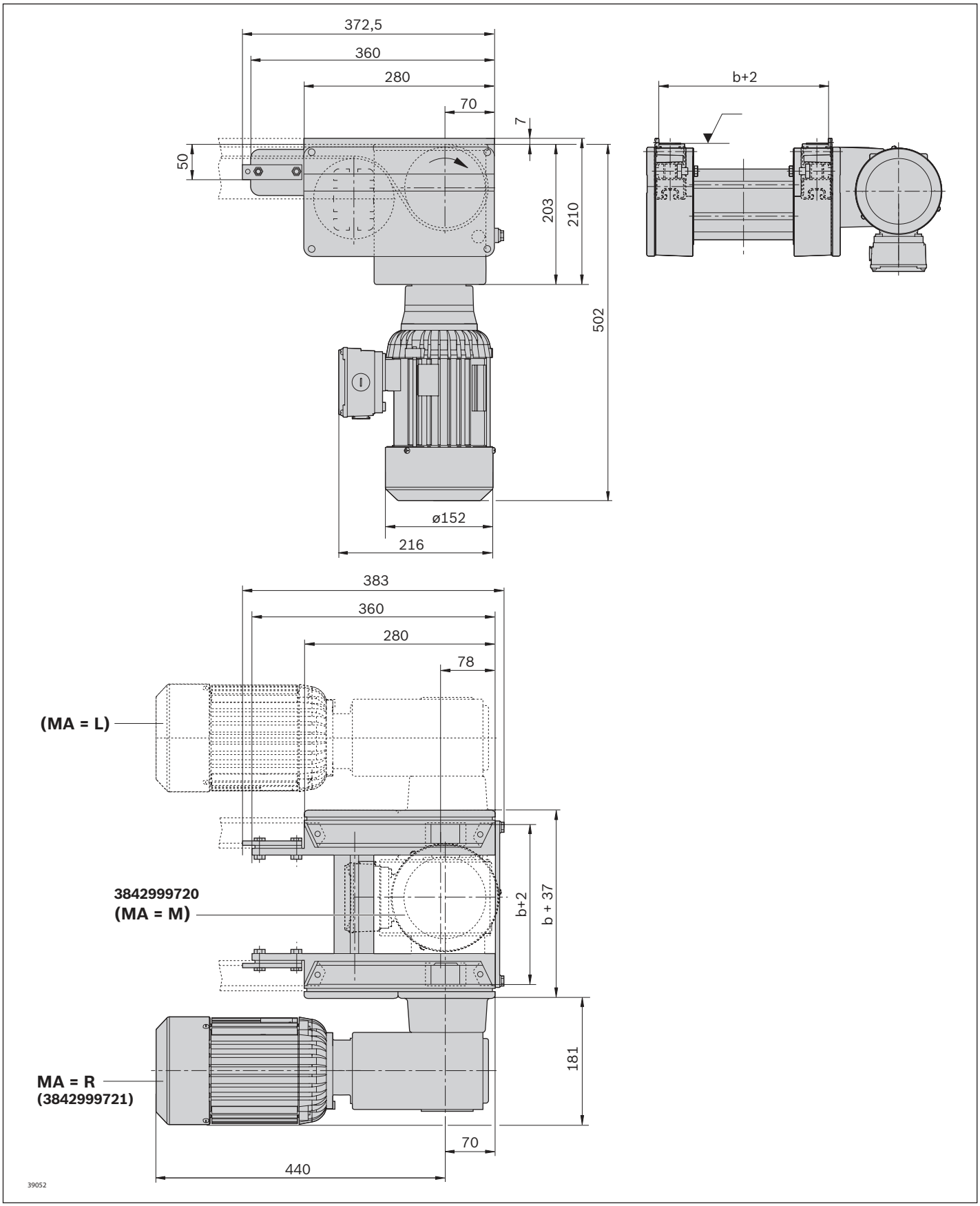
[1] The following applies to 3842999720: MA = M and b ≥ 240 mm
[2] Individual width variants available
[3] v_N = 0: without motor or gear

Technical data

Material number Motor mounting			**3842999720** MA = M for b ≥ 240 mm	**3842999721** MA = R, L
Max. section load in accumulation operation		kg	250	
ESD			Yes	
Cleanroom class			ISO class 7[4]	
Dry room	rF	%	<1	
Required conveyor medium length[5]	l_{AS}	mm	660	

[4] Is principally suitable
[5] Formula for calculating the conveyor medium, see p. 3-37

Dimensions


372,5
360
280
70
7
50
203
210
502
b+2
ø152
216
383
360
280
78
(MA = L)
3842999720
(MA = M)
b+2
b + 37
181
MA = R
(3842999721)
70
440
39052

Return unit UM 2/B

The return unit is used for constructing conveyor units. It guides the conveyor medium at the end of the conveyor unit back to the drive module.

- Conveyor medium: Belt (suitable for use in an EPA)
- For use in conjunction with all drive modules AS 2/B-...
- Max. permissible section load up to 250 kg in accumulation operation per conveyor unit

Notice: Can be combined with workpiece pallet WT 2/LS

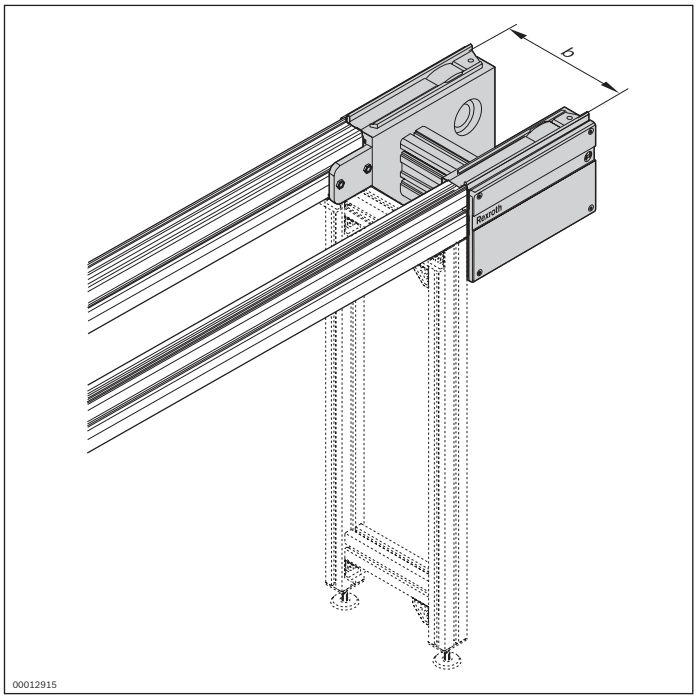
Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...

Condition on delivery

- Assembled



Ordering information

Material number		3842999090
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480: 640; 800; 1040; 1200
		160 ... 1200[1]

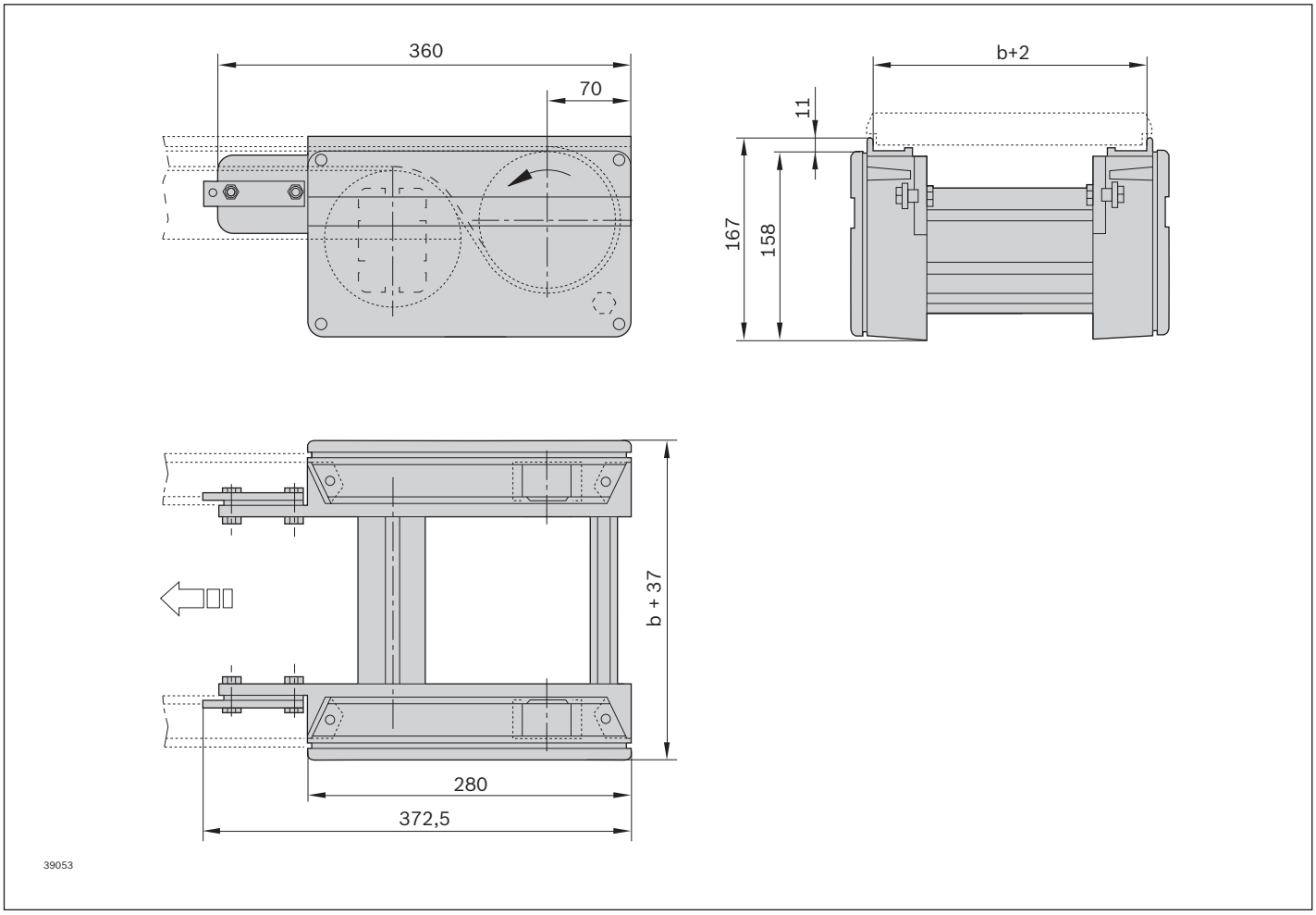
[1] Individual width variants can be ordered

Technical data

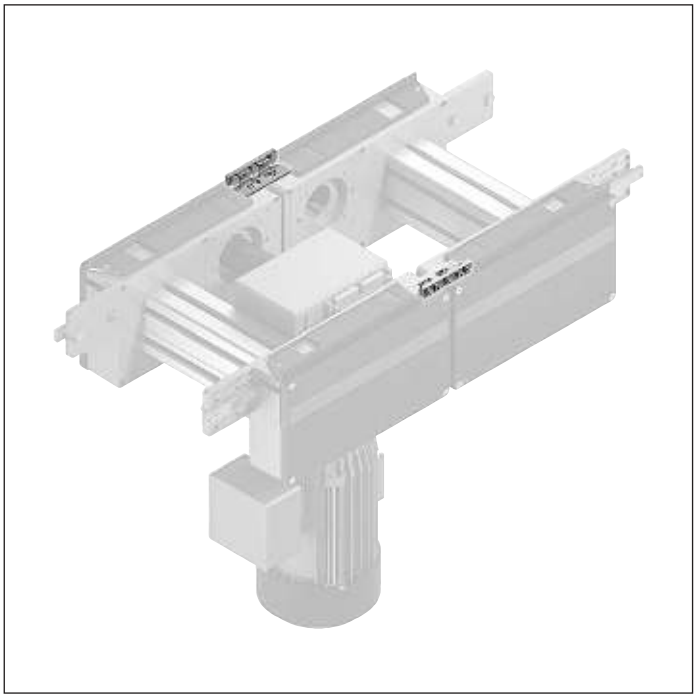
Material number			3842999090
ESD			Yes
Required conveyor medium length[2]	l_{UM}	mm	660

[2] Formula for calculating the conveyor medium, see p. 3-37

Dimensions



Roller track RB 2



- Suitable for the conveyor trench bridging of AS 2/B... and UM 2/B in the longitudinal conveyor
- It is used to support the workpiece pallets at the transition point between a conveyor unit and another adjacent conveyor unit. Necessary for workpiece pallets with l_{WT} < 320 mm
- Universal design

Scope of delivery

- Incl. fastening material

Condition on delivery

- Assembled

Ordering information

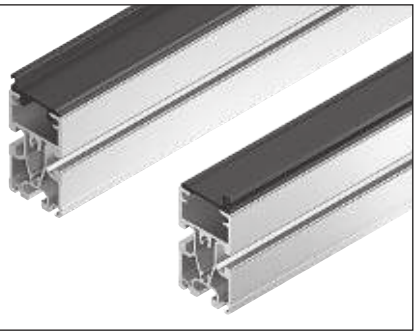
Product description	Packaging unit	Material number
Roller track RB 2	2	3842532822

Technical data

Material number	3842532822
ESD	Yes
Material specification	Roller carrier: Aluminum Rollers: Steel; hardened

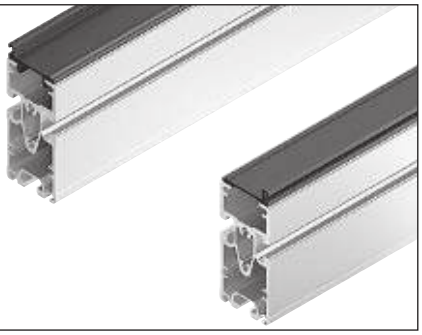
Section ST 2/B, section ST 2/B-100

ST 2/B



00012914

ST 2/B-100



23745

- For conveyor unit self-assembly
- Easy insertion of the guide profile into the section profile
- Easily replaceable when worn out
- Conveyor medium: Belt (suitable for use in an EPA)

Notice: Can be combined with WT 2/LS workpiece pallet
Can be combined with scraper, see p. 9-19

The section is used for self-construction of conveyor units in conjunction with the drive module AS 2/B-... and the return unit UM 2/B.

Recommended accessories

- Leg sets SZ 2/..., see p. 6-4
- Profile connector, see p. 9-16
- Cross connector, see p. 9-17

Scope of delivery

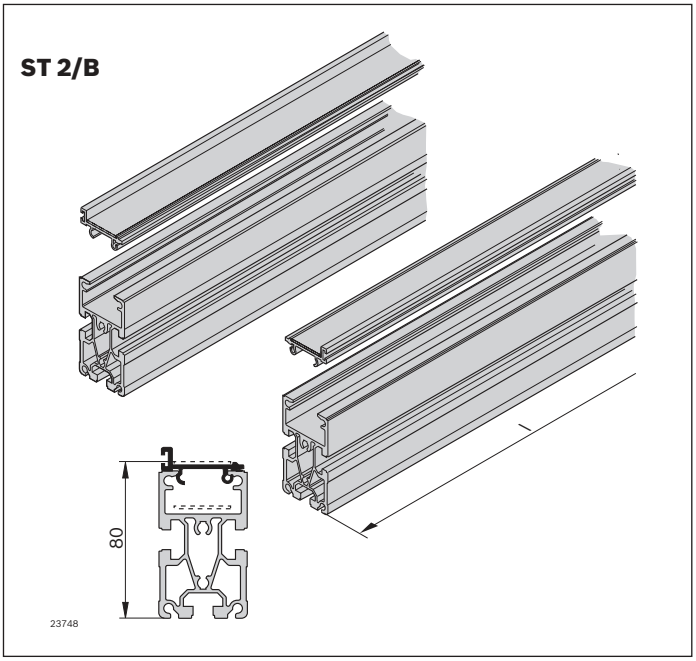
- ST 2/B: 2x section profile SP 2/B, 2x guide profile FP 2/B
- ST 2/B-100: 2x section profile SP 2/B-100, 2x guide profile FP 2/B

Condition on delivery

- Not assembled

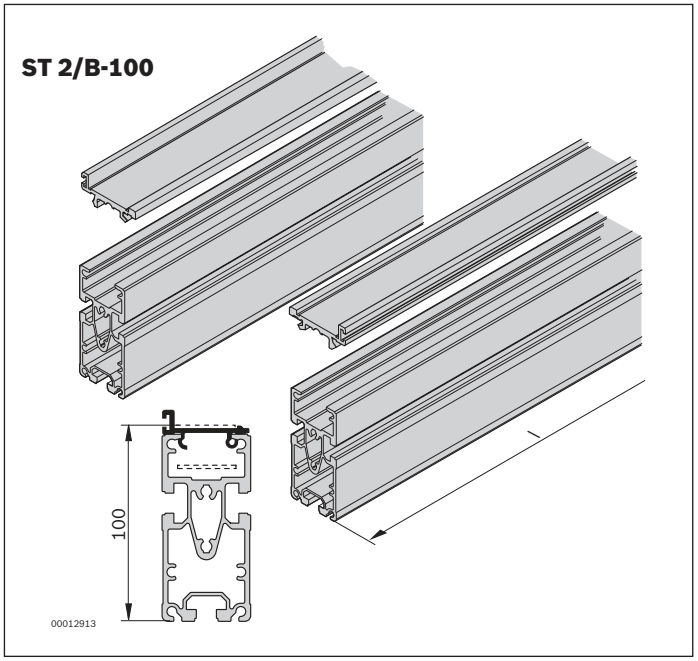
Ordering information

ST 2/B



23748

ST 2/B-100



00012913

Ordering information

Product description	Length l (mm)	Height to conveying level h (mm)	Material number
Section ST 2/B	60 ... 6000	80	3842992650
Section ST 2/B-100	60 ... 6000	100	3842994927

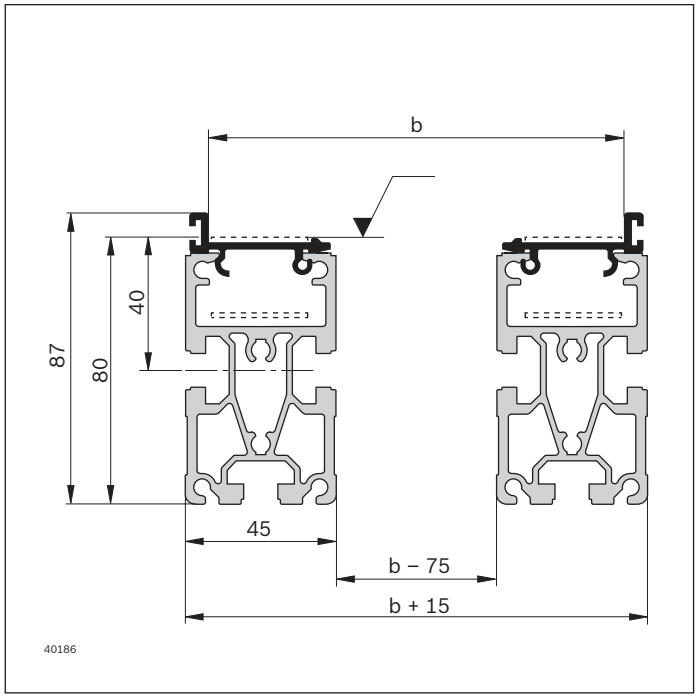
Technical data

Material number Product description			**3842992650** Section ST 2/B	**3842994927** Section ST 2/B-100
ESD			Yes	
Cleanroom class			ISO class 7[1)]	
Dry room	rF	%	<1	
Material specification			Guide profile: PA Section profile: Aluminum, natural; anodized	

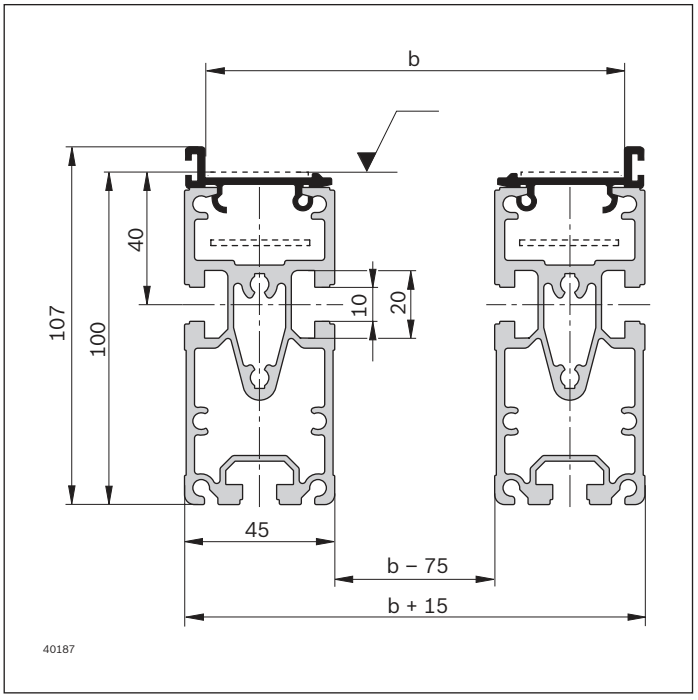
[1)] Is principally suitable

Dimensions

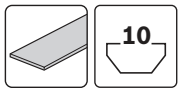
ST 2/B

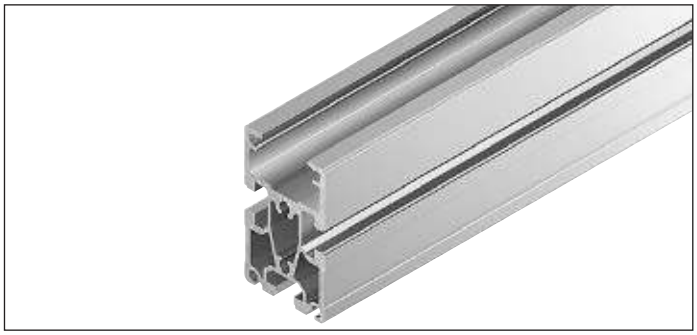


ST 2/B-100



Section profile SP 2/B





- Used for self-construction of low-profile conveyor units and the conveyor medium belt
- For use in conjunction with all drive modules AS 2/B, return units UM 2/B and guide profiles FP 2/B
- Longitudinal grooves for easy mounting
- To be used in sections ST 2/B

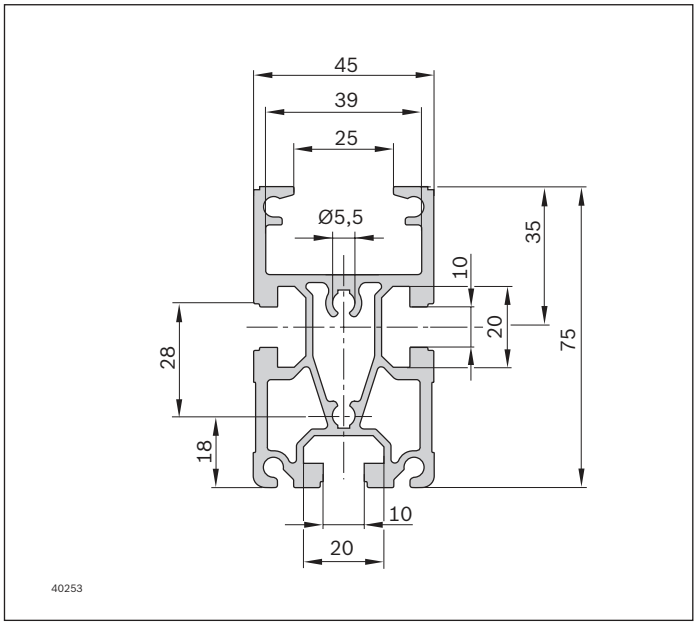
Ordering information

Product description	l (mm)	Delivery unit	Material number
Section profile SP 2/B 16 x 6070 mm	6070	16	3842532695
Section profile SP 2/B	60 ... 6000		3842992884

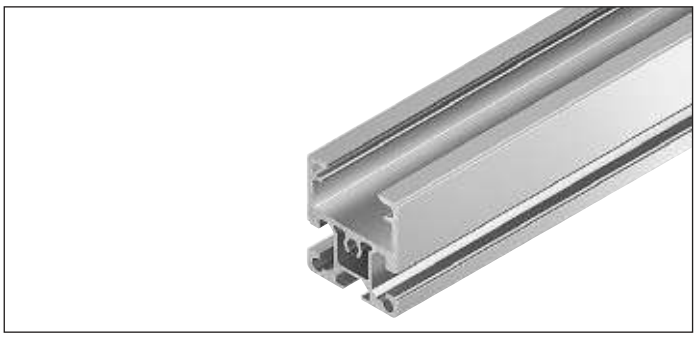
Technical data

Material number			3842532695	3842992884
Moment of inertia	I_x	cm^4	49.6	49.6
	I_y	cm^4	25.8	25.8
Moment of resistance	W_x	cm^3	12.1	12.1
	W_y	cm^3	11.5	11.5
Material specification			Aluminum, natural; anodized	Aluminum, natural; anodized
Weight	m	kg/m	2.8	2.8
Length	l	mm	6070	60 ... 6000
Profile surface	A	cm^2	10.4	10.4

Dimensions



Section profile SP 2/B-50



- Used for self-construction of low-profile conveyor units and the conveyor medium belt
- For use in conjunction with all drive modules AS 2/B, return units UM 2/B and guide profiles FP 2/B
- Longitudinal grooves for easy mounting
- Suitable for installation at manual workplaces

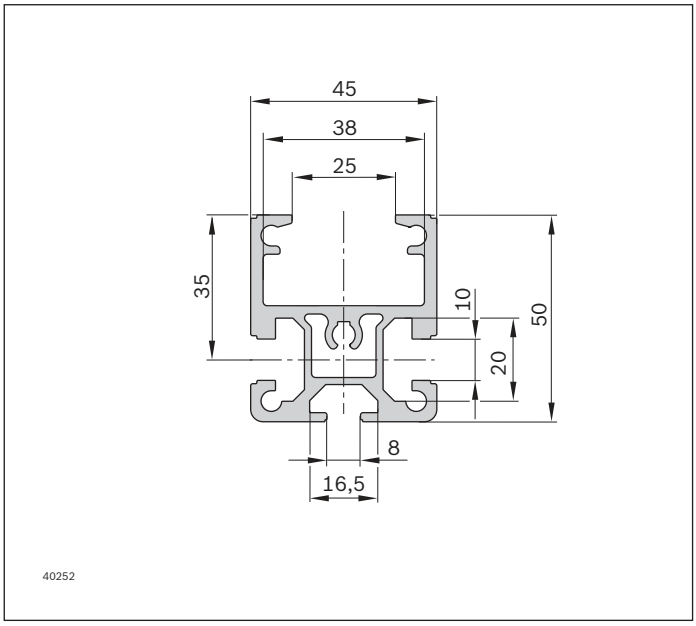
Ordering information

Product description	l (mm)	Delivery unit	Material number
Section profile SP 2/B-50 20 x 6070 mm	6070	20	3842532697
Section profile SP 2/B-50	60 ... 6000		3842992903

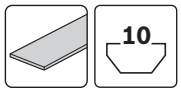
Technical data

Material number			3842532697	3842992903
Moment of inertia	I_x	cm^4	46.2	46.2
	I_y	cm^4	16.9	16.9
Moment of resistance	W_x	cm^3	5.3	5.3
	W_y	cm^3	7.5	7.5
Material specification			Aluminum, natural; anodized	Aluminum, natural; anodized
Weight	m	kg/m	1.9	1.9
Length	l	mm	6070	60 ... 6000
Profile surface	A	cm^2	6.9	6.9

Dimensions



Section profile SP 2/BH



- Used for self-construction of low-profile conveyor units and the conveyor medium belt
- For use in conjunction with all drive modules AS 2/B, return units UM 2/B and guide profiles FP 2/B
- Longitudinal grooves for easy mounting
- In heavy-duty design

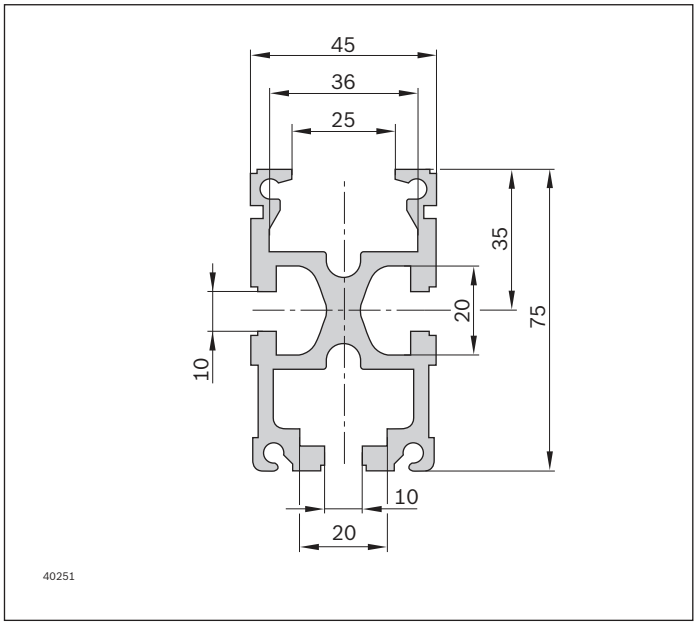
Ordering information

Product description	l (mm)	Delivery unit	Material number
Section profile SP 2/BH 16 x 6070 mm	6070	16	3842532696
Section profile SP 2/BH	60 ... 6000		3842990409

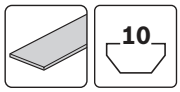
Technical data

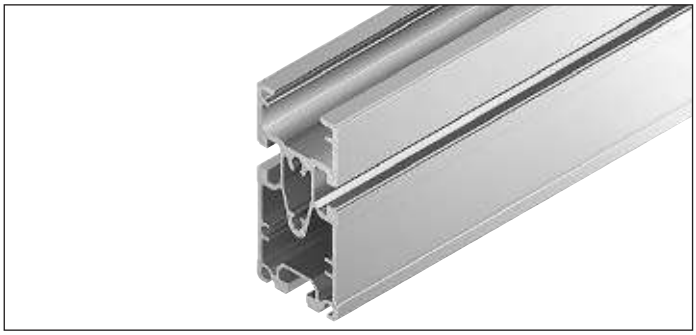
Material number			3842532696	3842990409
Moment of inertia	I_x	cm^4	53.7	53.7
	I_y	cm^4	28.6	28.6
Moment of resistance	W_x	cm^3	14.0	14.0
	W_y	cm^3	13.8	13.8
Material specification			Aluminum, natural; anodized	Aluminum, natural; anodized
Weight	m	kg/m	3.3	3.3
Length	l	mm	6070	60 ... 6000
Profile surface	A	cm^2	12.4	12.4

Dimensions



Section profile SP 2/B-100





- Used for self-construction of conveyor units with a height of 100 mm and the conveyor medium belt
- For use in conjunction with all drive modules AS 2/B, return units UM 2/B and guide profiles FP 2/B
- Longitudinal grooves for easy mounting
- For use in assembly systems with mixed conveyor media, e.g. belt and flat-top chain

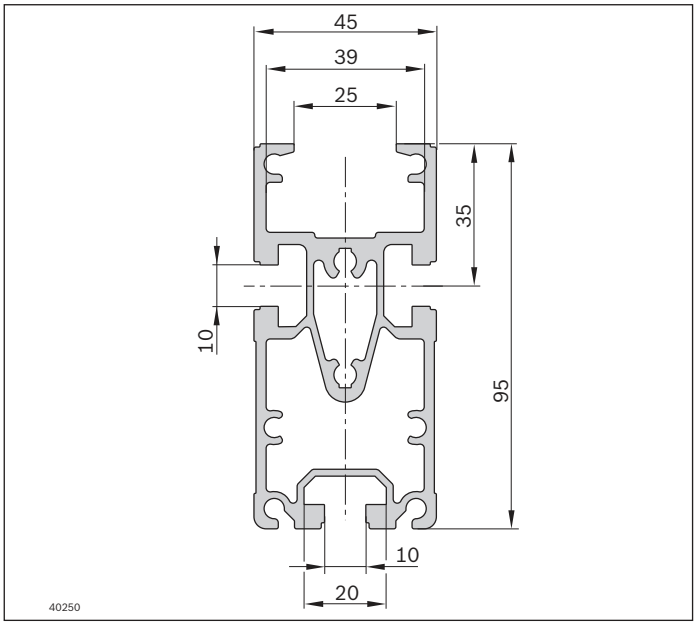
Ordering information

Product description	l (mm)	Delivery unit	Material number
Section profile SP 2/B-100 16 x 6070 mm	6070	16	3842532608
Section profile SP 2/B-100	60 ... 6000		3842993259

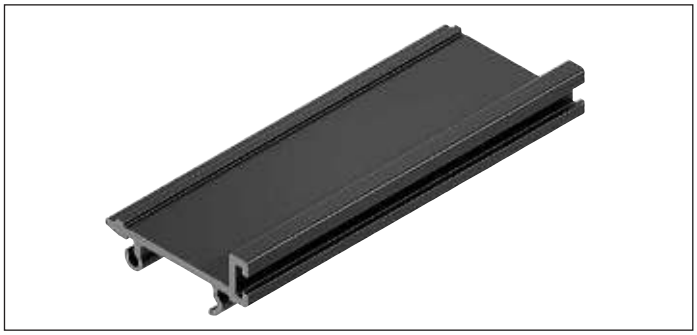
Technical data

Material number			3842532608	3842993259
Moment of inertia	I_x	cm^4	95.1	95.1
	I_y	cm^4	30.4	30.4
Moment of resistance	W_x	cm^3	20.0	20.0
	W_y	cm^3	13.5	13.5
Material specification			Aluminum, natural; anodized	Aluminum, natural; anodized
Weight	m	kg/m	3.2	3.2
Length	l	mm	6070	60 ... 6000
Profile surface	A	cm^2	11.9	11.9

Dimensions



Guide profile FP 2/B



- For belt guide
- For clipping onto the section profiles SP 2/B...

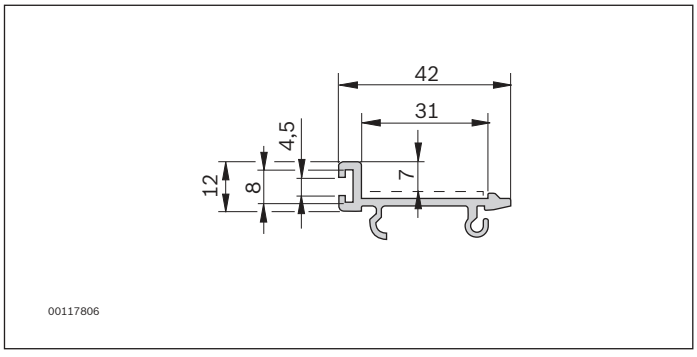
Ordering information

Product description	l (mm)	Delivery unit	Material number
Guide profile FP 2/B	6000	16	3842532675

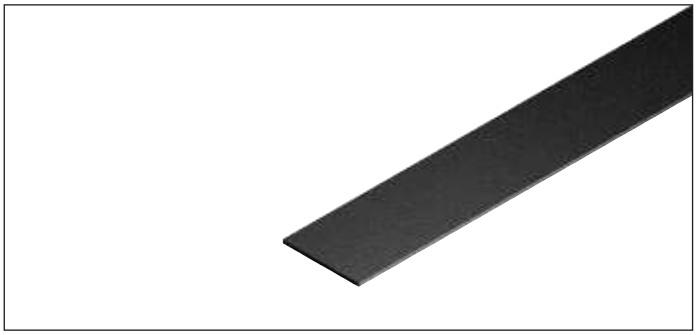
Technical data

Material number			3842532675
ESD			Yes
Material specification			Plastic; PA (suitable for use in an EPA)
Length	l	mm	6000

Dimensions



Belt GT 2



The belt used as a conveyor medium transports the workpiece pallets into the transfer system. The belts are pretensioned during installation and bonded to form a continuous belt. A belt mounting tool kit is used for jointing, tensioning and bonding.

Required accessories

- Belt mounting tool kit, see p. 3-38
- Glue, see p. 3-38

Ordering information

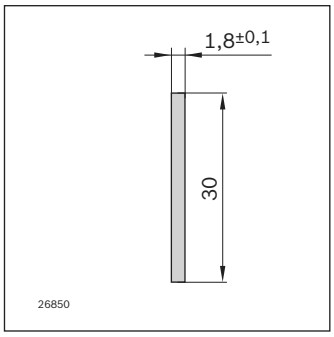
Product description	l (m)	Material number
Belt GT 2	250	3842539479
Belt GT 2	1 ... 250[1)]	3842992811

[1)] Order and delivery are possible only up to the next full meter

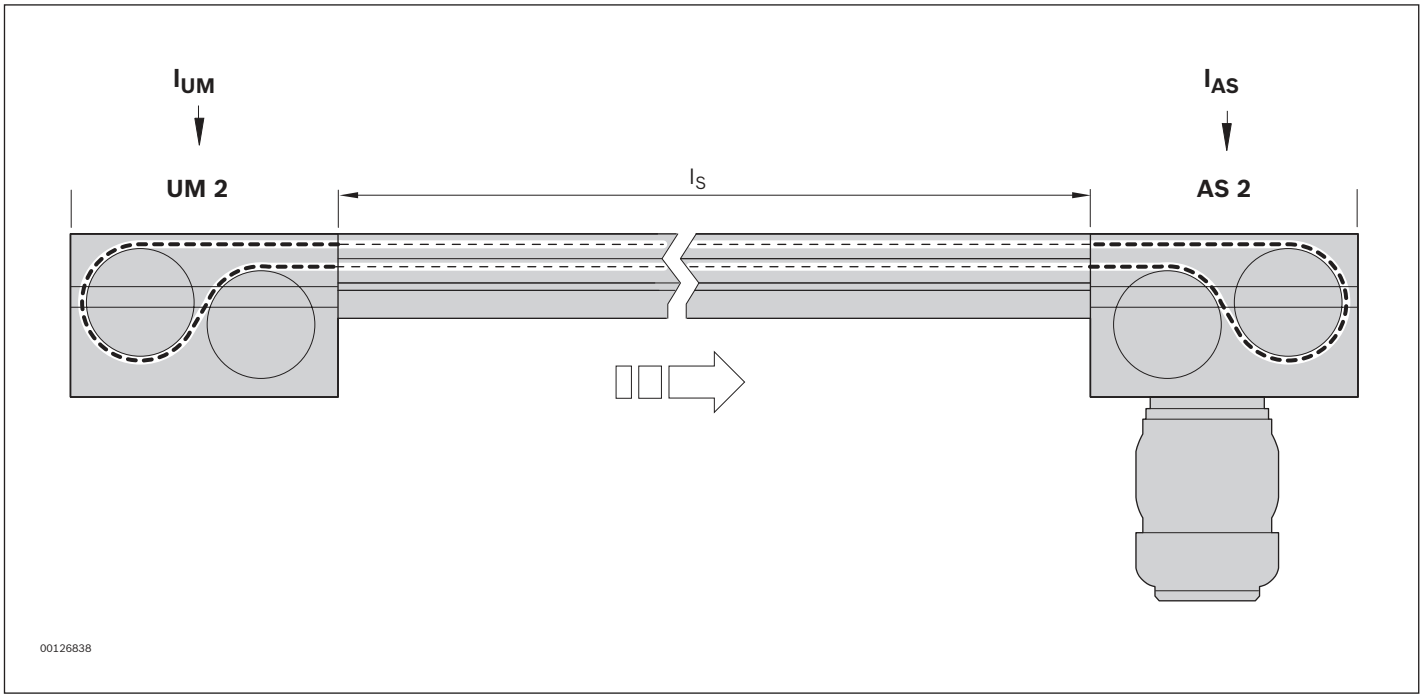
Technical data

Material number			3842539479	3842992811
ESD			Yes	Yes
Material specification			Polyamide (PA)	Polyamide (PA)
Length	l	m	250	1 ... 250

Dimensions



Calculating the required length of the conveyor medium



The required belt length is determined using the following formula.

Notice: A pretensioning factor F is required for the belt, see the "Pretensioning factor F for belts" overview.

$$l_B = ((2 \times l_S + l_{AS} + l_{UM}) \times F) + 60$$

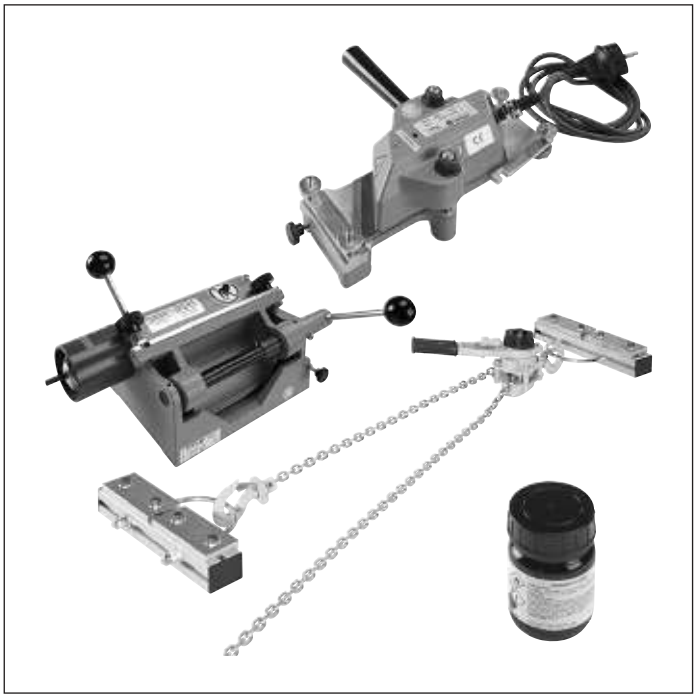
l_B = Length of belt
l_S = Length of section
l_{AS} = Length of the conveyor medium at the drive module
l_{UM} = Length of the conveyor medium at the return unit
F = Pretensioning factor

Pretensioning factor F for belt
With AS 2/B-150 and $l_S \leq 4000$ mm, F = 0.98
With AS 2/B-150 and $l_S > 4000$ mm, F = 0.975
With AS 2/B-250, F = 0.965

Length of the conveyor medium for belt
l_{UM} = 660 mm
l_{AS} = 660 mm

Belt expansion
at $l_S \leq 4000$ mm, = 2 %
at $l_S > 4000$ mm = 2.5 %
at AS 2/B-250 = 3.5 %

Belt mounting tool, glue



- Skiving device for reducing belts at connection points
- Heat press to glue the belt ends thermally
- Belt pre-tensioning device
- Adhesive for the bonding of belts, only for commercial use, observe safety instructions

The belt mounting tool is used to join the ends of belts for section lengths l > 2000 mm.

Required accessories

- Glue, see p. 3-38

Recommended accessories

- Second heat press for the simultaneous bonding of adjacent belts

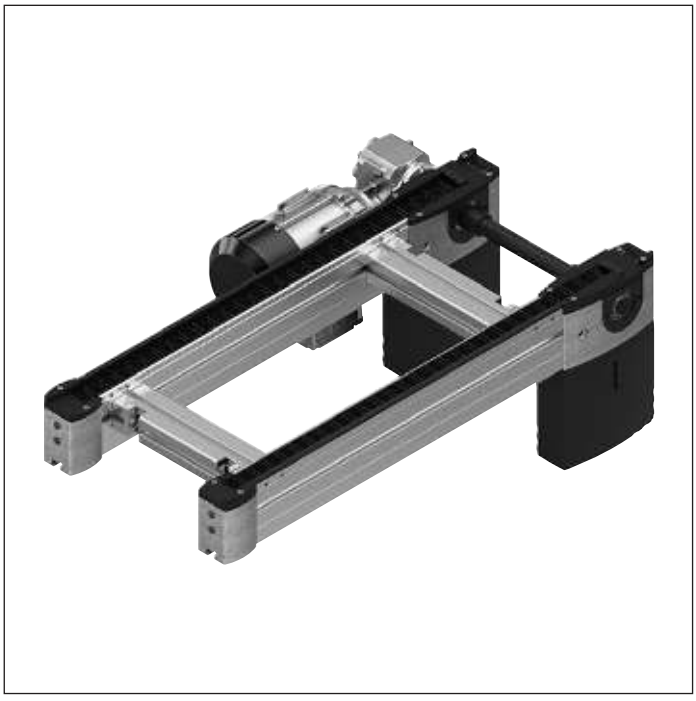
Scope of delivery

- Belt mounting tool kit:
  - Heat press
  - Skiving device with abrasive belt
  - Mounting bracket
  - Brush
  - Pre-tensioning device
  - Belt tensioner

Ordering information

Product description	Material number
Heat press, single	3842315101
Belt mounting tool kit	3842532810
Glue, 50 ml	3842315106

Flat-top chain conveyor medium



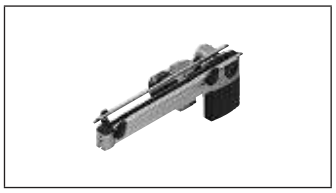
The flat-top chain conveys primarily medium and large-sized workpiece pallets in environments with low to moderate production emissions.
The flexibility of the plastic flat-top chain permits continuous drive combinations with curve arcs (see p. 4-32).

- Wear pad PA on the workpiece pallets are recommended in the combination with the plastic flat-top chain.
  In the standard design with plastic glide profiles in the section profile, this permits specific section loads of up to 1 kg/cm, whereas the optionally available version with steel glide profiles can tolerate section loads of up to 1.5 kg/cm.

A particularly robust combination can be created from the HD profiles in combination with steel glide profiles and steel guide profile.

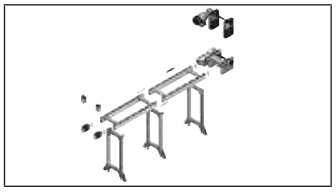
Reversible operation is not permitted with the flat-top chain conveyor medium.

If flat-top chains are used, the use of the decentralized automatic lubrication unit LU 2 or central automatic lubrication unit LU 2/P is recommended.



Single-track section CS/C,
belt sections BS 2 C...

3-42



Components for conveyor units
AS 2/..., UM 2/..., ST 2...

3-56

Single-track section CS/C

- Motor connection: Optionally with cable/plug or terminal box
- Motor mounting right or left
- Conveyor medium: Plastic flat-top chain (with KA = A suitable for use in an EPA)
- Special models on request
- Reversible operation is possible for l ≤ 2000 mm and environments without small parts

The single-track section CS/C is a conveyor section that is ready for operation with own drive for the transportation of small parts for mounting and assembly workstations.

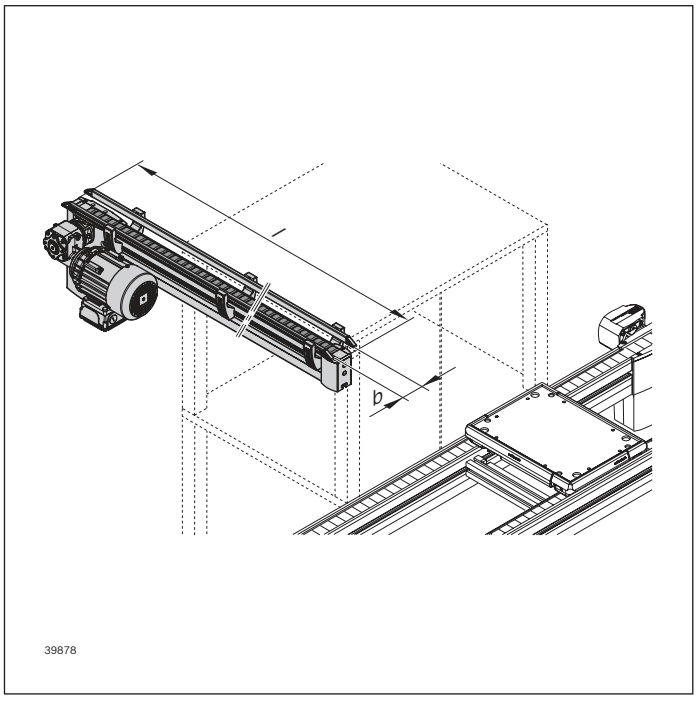
Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Condition on delivery

- Assembled

Ordering information



Material number		3842998277
b (mm)	Track width in direction of transport	42; 52; 62; 72
l (mm)	Length	350 ... 6000
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left	R; L
KA	Chain version N = chain in standard version A = Chain suitable for use in an EPA	N; A

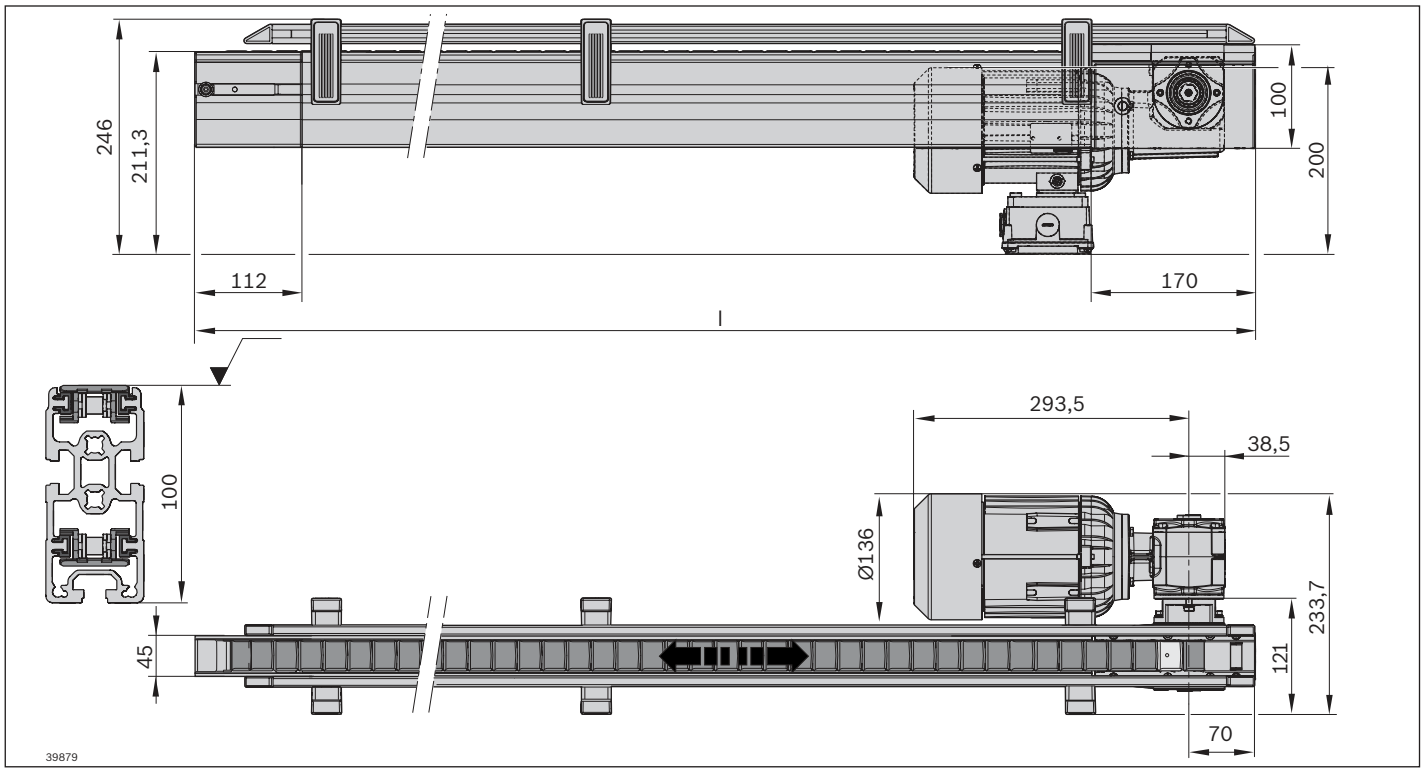
Technical data

Material number			3842998277
Max. section load in accumulation operation:			
for l = 350 ... 2000 mm		kg	70
for l = 2001 ... 6000 mm		kg	100
ESD			Yes, with KA = A[1)]
Max. operating temperature	T	°C	+40
Length	l	mm	350 ... 6000

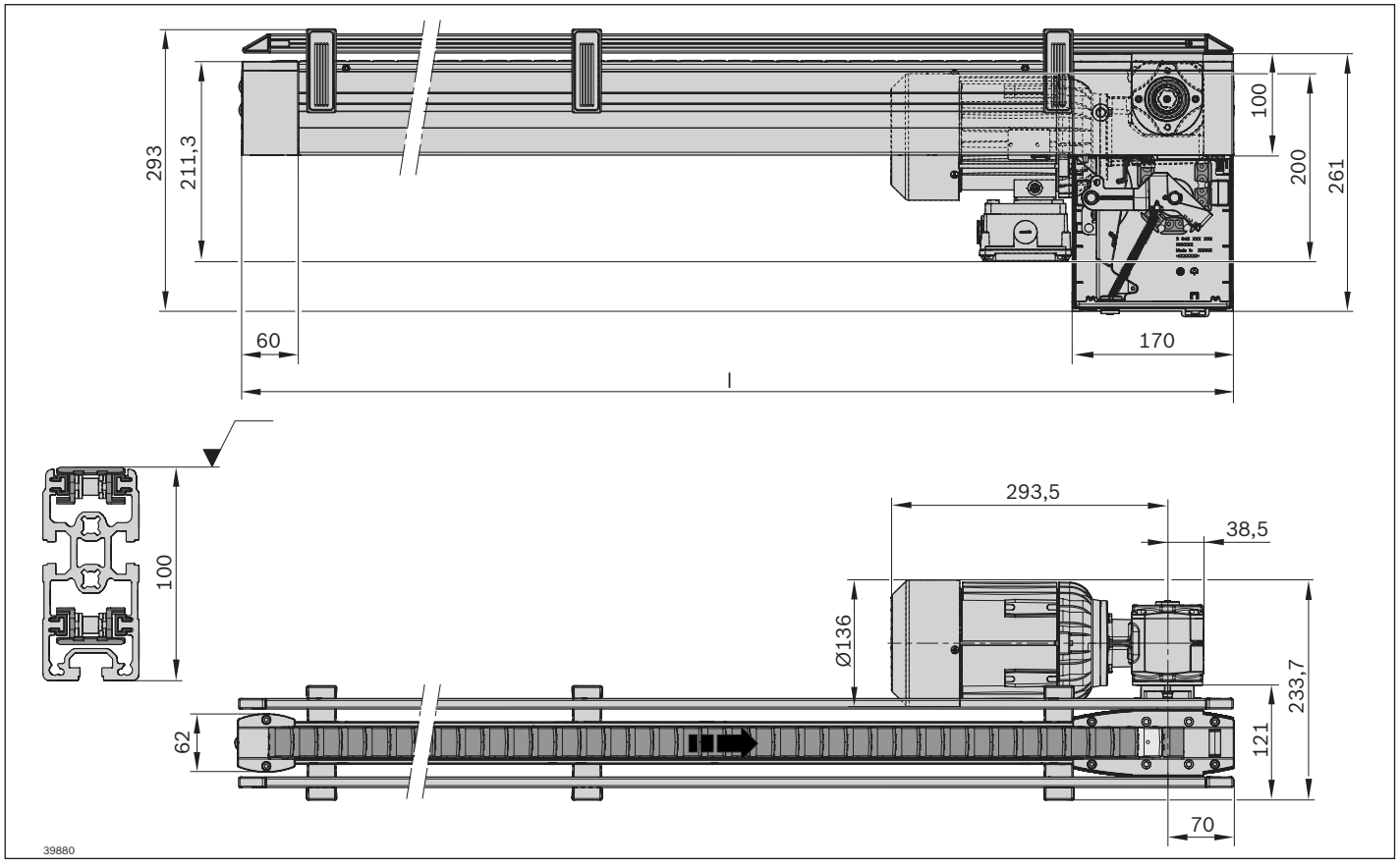
[1)] Chain suitable for use in an EPA (KA = A)

Dimensions

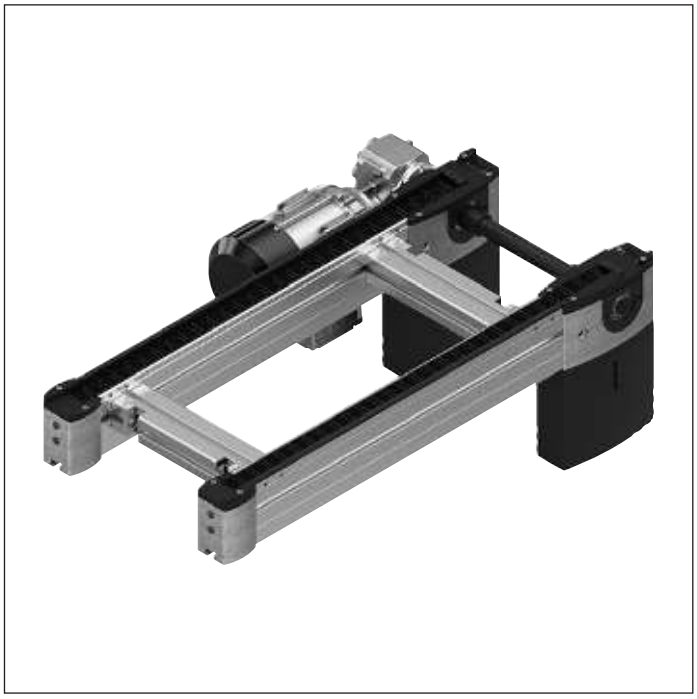
CS/C ≤ 2000 mm



CS/C > 2000 mm



Belt section BS 2/C-100



The belt section is a ready for operation conveyor section with own drive for the transportation of workpiece pallets in the longitudinal direction or for the transverse conveying of the workpiece pallet between parallel conveyor sections in connection with two lift transverse units HQ 2.

Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Condition on delivery

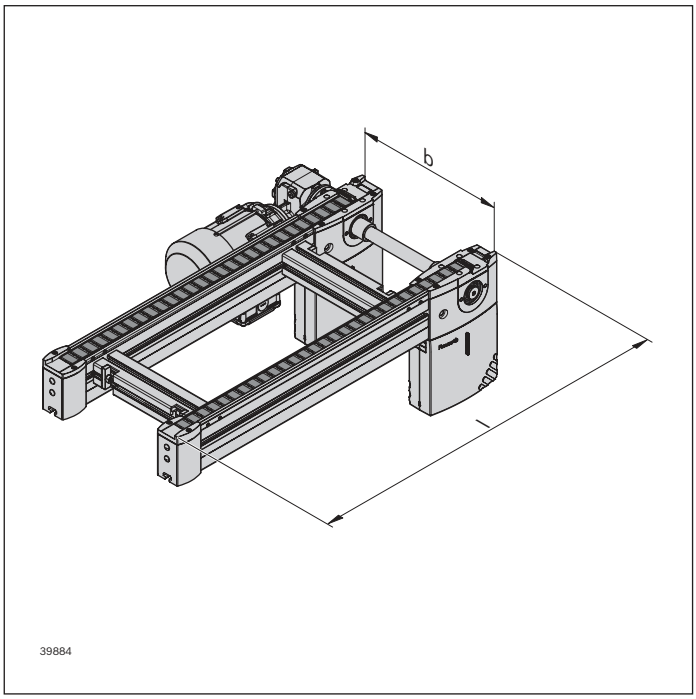
- Assembled

- Functional operation conveyor section complete with drive
- Longitudinal conveying of the workpiece pallet on conveyor sections of up to 6000 mm
- Transverse conveyor between parallel conveyor sections
- Conveyor medium: plastic flat-top chain (with KA = A suitable for use in an EPA)
- Can be combined with WT 2, WT 2/E, WT 2/F with wear pad PA, WT 2/LS
- Motor mounting right, left or central (central from track width of 240 mm)
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request
- Reversible operation not permitted
- Use with medium accumulation loads

Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
Cross-traversing and motor mounting in the center (MA = M) is not possible.

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



Material number		3842998933
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1]
l (mm)	Length	300 ... 6000
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[3]
KA	Chain version N = chain in standard version A = Chain suitable for use in an EPA	N; A
GP	Glide profile 0 = plastic 1 = steel	0; 1

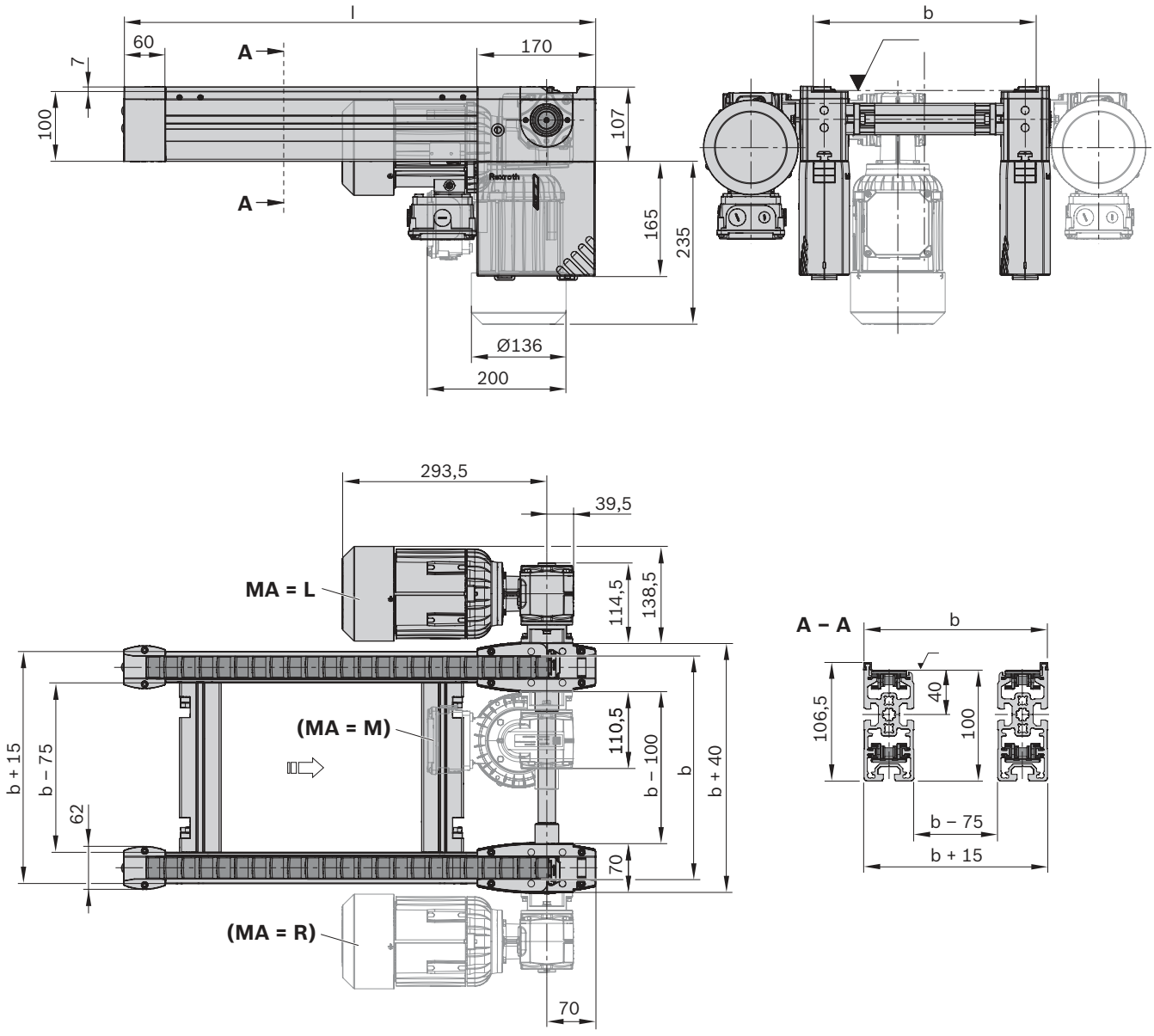
[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear
[3] MA = M only for b ≥ 240 mm

Technical data

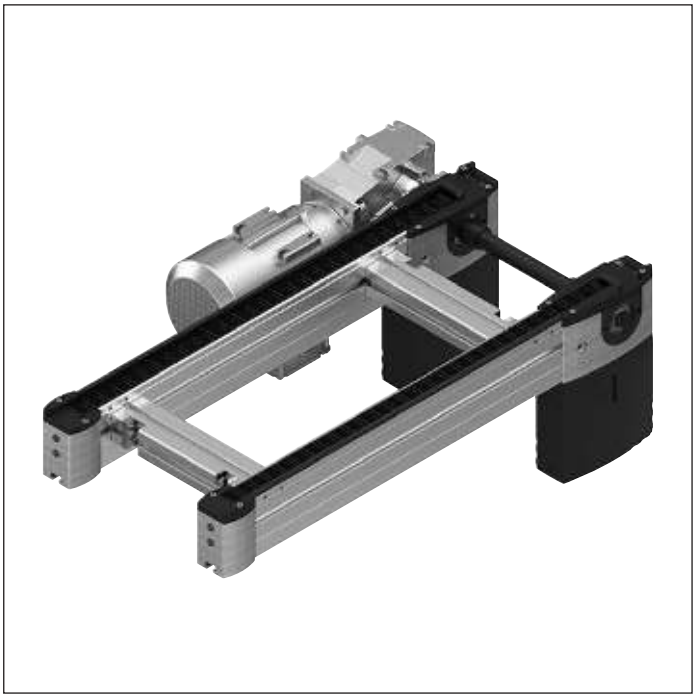
Material number			3842998933
Max. section load in accumulation operation		kg	100
ESD			Yes, with KA = A[4]
Cleanroom class			ISO class 7[5]
Dry room	rF	%	<1
Material specification			Glide profile: PA/steel; corrosion-resistant Guide profile: PA Section profile: Aluminum, natural; anodized
Max. operating temperature	T	°C	+40
Length	l	mm	300 ... 6000

[4] Chain suitable for use in an EPA (KA = A)
[5] Is principally suitable

Dimensions


l
60
A
170
7
100
107
A
165
235
Ø136
200
b
293,5
39,5
MA = L
114,5
138,5
(MA = M)
110,5
b – 100
b
b + 40
b + 15
b – 75
62
70
(MA = R)
70
A – A
b
106,5
40
100
b – 75
b + 15
40597

Belt section BS 2/C-250



The belt section is a ready for operation conveyor section with own drive for the transportation of workpiece pallets in the longitudinal direction or for the transverse conveying of the workpiece pallet between parallel conveyor sections in connection with two lift transverse units HQ 2.

Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4
- Decentralized automatic lubrication unit LU 2, see p. 9-5

Condition on delivery

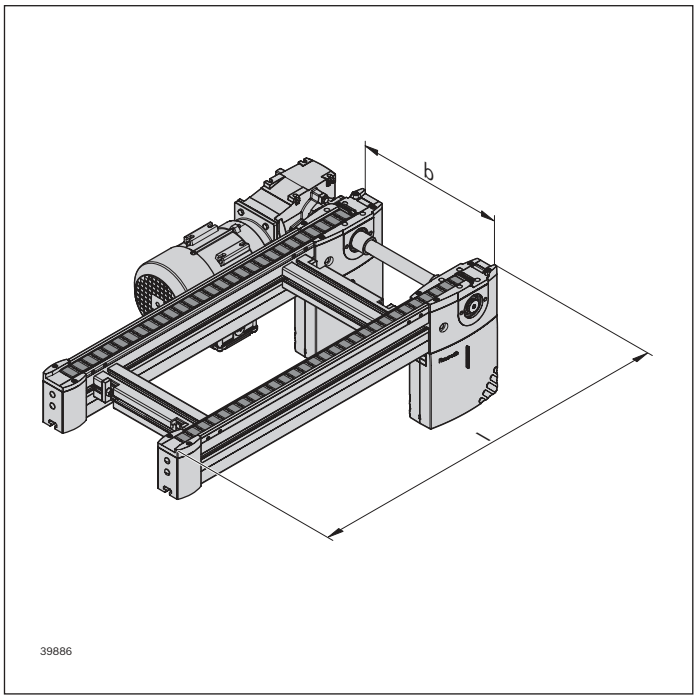
- Assembled

- Functional operation conveyor section complete with drive
- Longitudinal conveying of the workpiece pallet on conveyor sections of up to 6000 mm
- Transverse conveying between parallel conveyor sections in conjunction with lift transverse units
- Conveyor medium: Plastic flat-top chain (with KA = A suitable for use in an EPA)
- Can be combined with WT 2, WT 2/E, WT 2/F with wear pad PA, WT 2/LS
- Motor mounting right or left
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request
- Reversible operation not permitted
- Use with medium accumulation loads

Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
It is not possible to cross over.

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



Material number		3842998934
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
l (mm)	Length	300 ... 6000
v_N (m/min)	Nominal speed	0[1]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting[2] R = right L = left	R; L
KA	Chain version N = chain in standard version A = Chain suitable for use in an EPA	N; A
GP	Glide profile 0 = plastic 1 = steel	0; 1

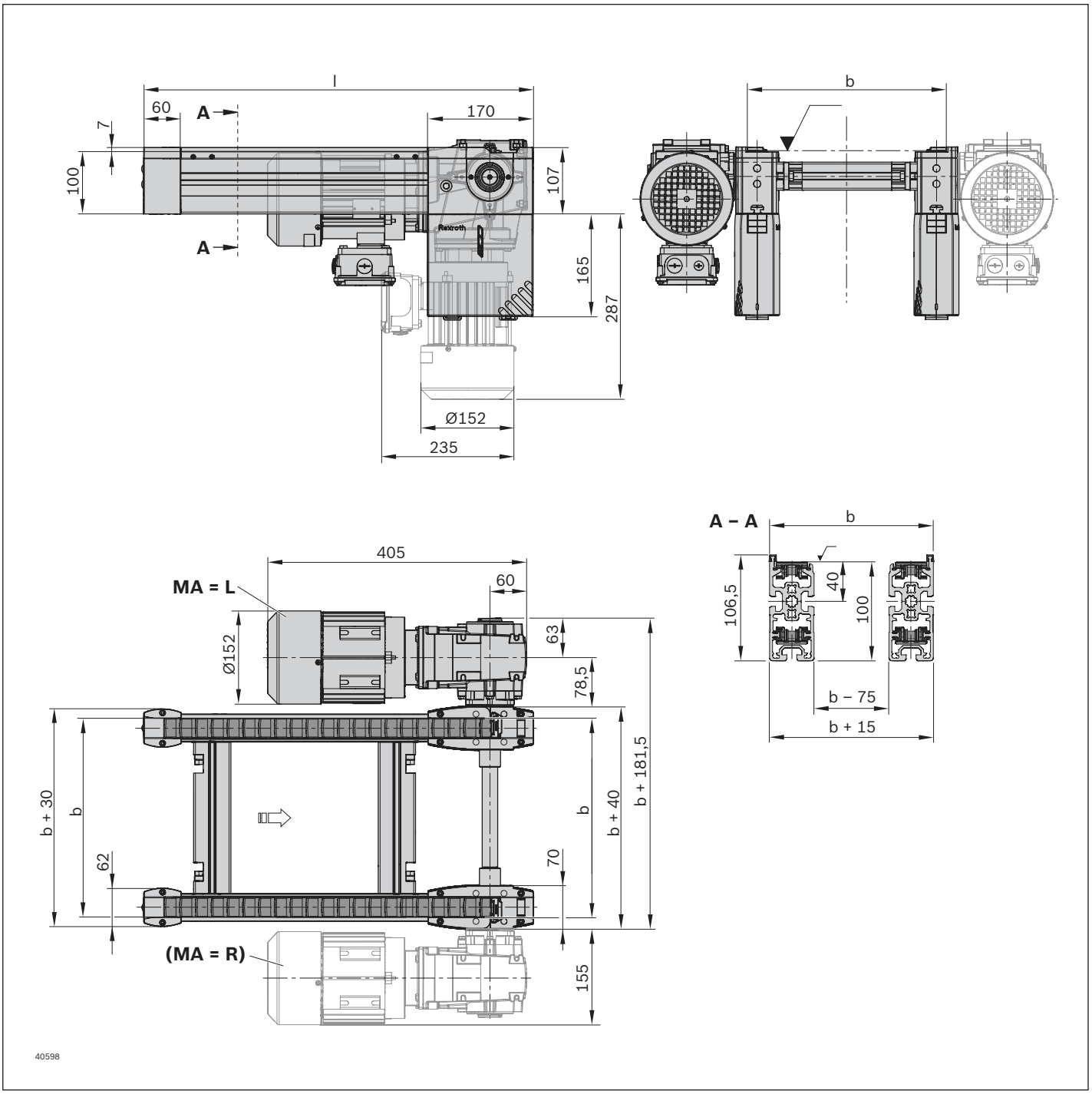
[1] v_N = 0: without motor or gear
[2] Geometry does not permit MA = M

Technical data

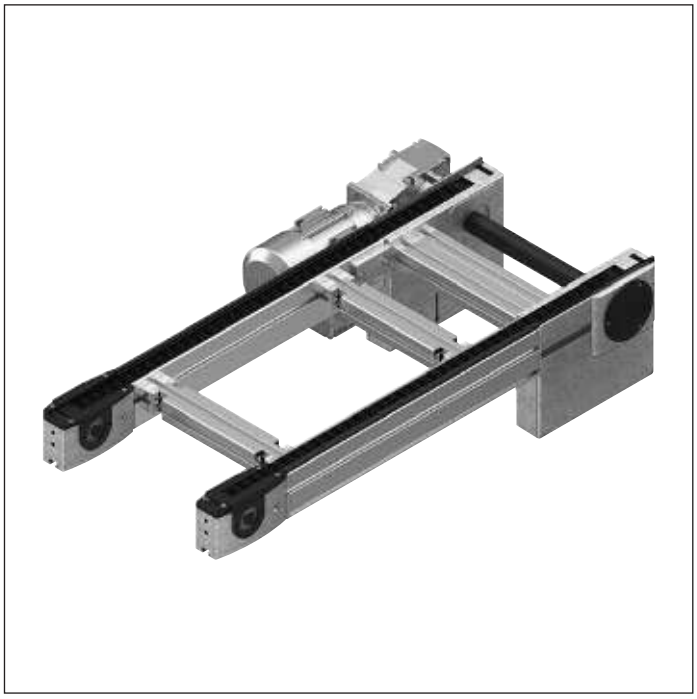
Material number			3842998934
Max. section load in accumulation operation		kg	250
ESD			Yes, with KA = A[3]
Cleanroom class			ISO class 7[4]
Dry room	rF	%	<1
Material specification			Glide profile: PA/steel; corrosion-resistant Guide profile: PA Section profile: Aluminum, natural; anodized
Max. operating temperature	T	°C	+40
Length	l	mm	300 ... 6000

[3] Chain suitable for use in an EPA (KA = A)
[4] Is principally suitable

Dimensions


l
60
A
170
7
100
107
A
165
287
Ø152
235
b
405
60
MA = L
Ø152
63
78,5
b + 30
b
62
70
b
b + 40
b + 181,5
(MA = R)
155
A – A
b
106,5
40
100
b – 75
b + 15
40598

Belt section BS 2/C-H



- Functional operation conveyor section complete with drive
- Sturdy version for especially heavy-duty systems
- Longitudinal conveying of the workpiece pallet on conveyor sections of 6000 mm
- Transverse conveying between parallel conveyor sections in conjunction with lift transverse units
- Conveyor medium: plastic flat-top chain (with KA = A suitable for use in an EPA)
- Can be combined with WT 2, WT 2/F with wear pad PA, WT 2/LS
- Motor mounting right, left or central
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request
- Stainless steel workpiece pallet lateral guide
- Reversible operation not permitted
- Profile width: 50 mm
- Use with high accumulation loads

The belt section is a ready for operation conveyor section with own drive for the transportation of workpiece pallets in the longitudinal direction or for the transverse conveying of the workpiece pallet between parallel conveyor sections in connection with two lift transverse units HQ 2.

Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
Cross-traversing and motor mounting in the center (MA = M) is not possible.

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

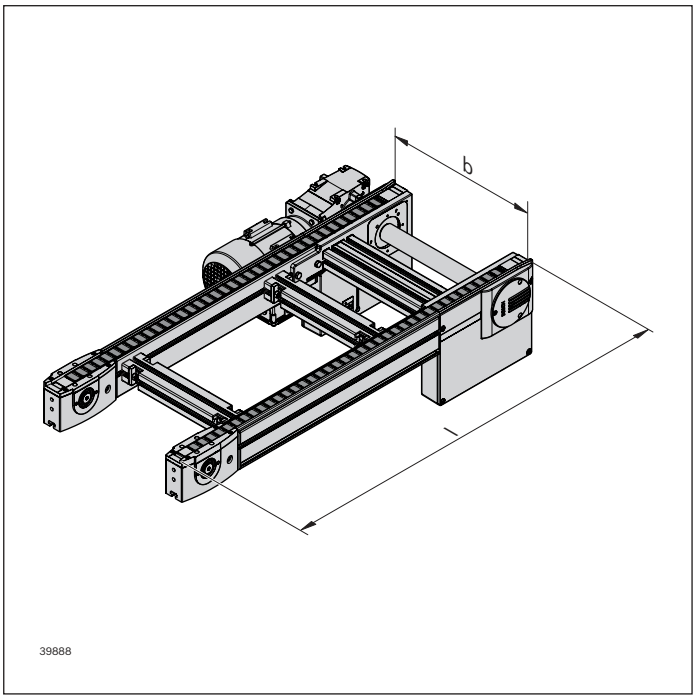
Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/...-H, see p. 6-4
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Condition on delivery

- Assembled

Ordering information



Material number		3842998935
b (mm)	Track width in direction of transport	400 ... 1200
l (mm)	Length	650 ... 6000
v_N (m/min)	Nominal speed	0[1]; 6; 9; 12; 15; 18[2]
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M
KA	Chain version N = chain in standard version A = Chain suitable for use in an EPA	N; A
GP	Glide profile 0 = plastic 1 = steel	0; 1

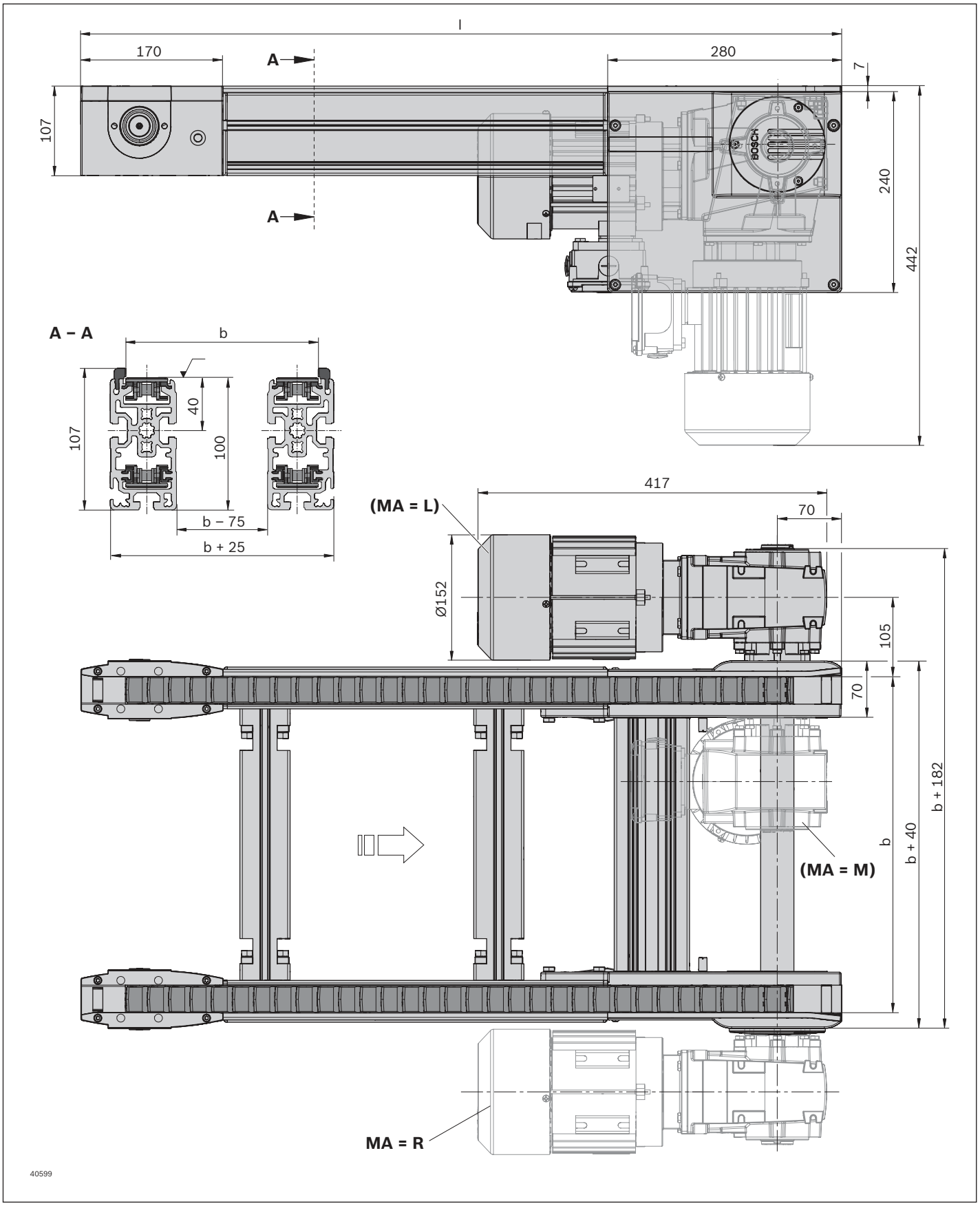
[1] v_N = 0: without motor or gear
[2] Not possible at f = 60 Hz

Technical data

Material number			3842998935
Max. section load in accumulation operation		kg	400
ESD			Yes, with KA = A[3]
Cleanroom class			ISO class 7[4]
Dry room	rF	%	<1
Material specification			Glide profile: PA/steel; corrosion-resistant Section profile: Aluminum, natural; anodized Lateral guide: Stainless steel
Length	l	mm	650 ... 6000

[3] Chain suitable for use in an EPA (KA = A)
[4] Is principally suitable

Dimensions


l
170
280
A
A
107
7
240
442
A – A
b
40
107
100
b – 75
b + 25
417
(MA = L)
70
Ø152
105
70
b + 182
b
b + 40
(MA = M)
MA = R
40599

Connection belt BS 2/C+R

- Conveyor medium: Toothed belt (suitable for use in an EPA)

The head-to-head connection of the drive and return heads in conveyor units results in short, non-driven sections. The connection belt is used to bridge these > 180 mm conveyor trenches by using short workpiece pallets with l_{WT} < 320 mm.

Notice: Positioning of WTs in the area of the connection belt is not allowed.

Condition on delivery

- Assembled

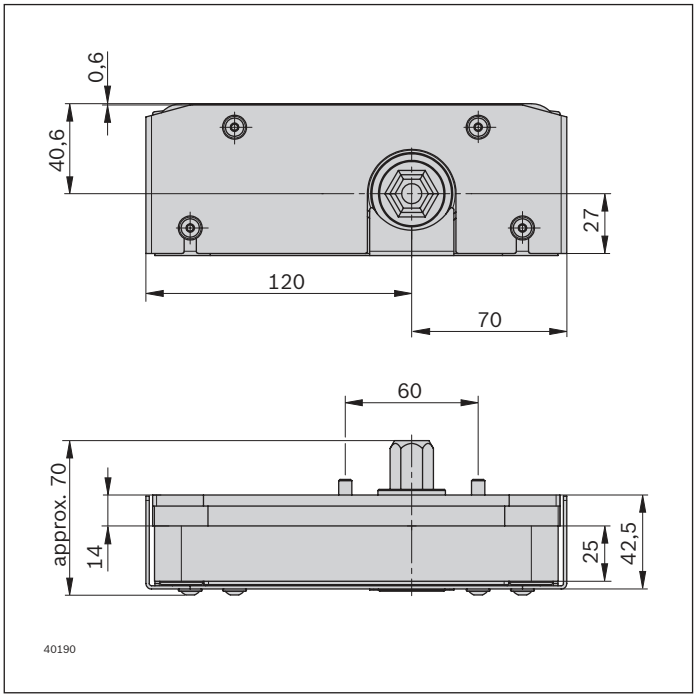
Ordering information

Product description	Material number
Connection belt, left	3842528480
Connection belt, right	3842539096

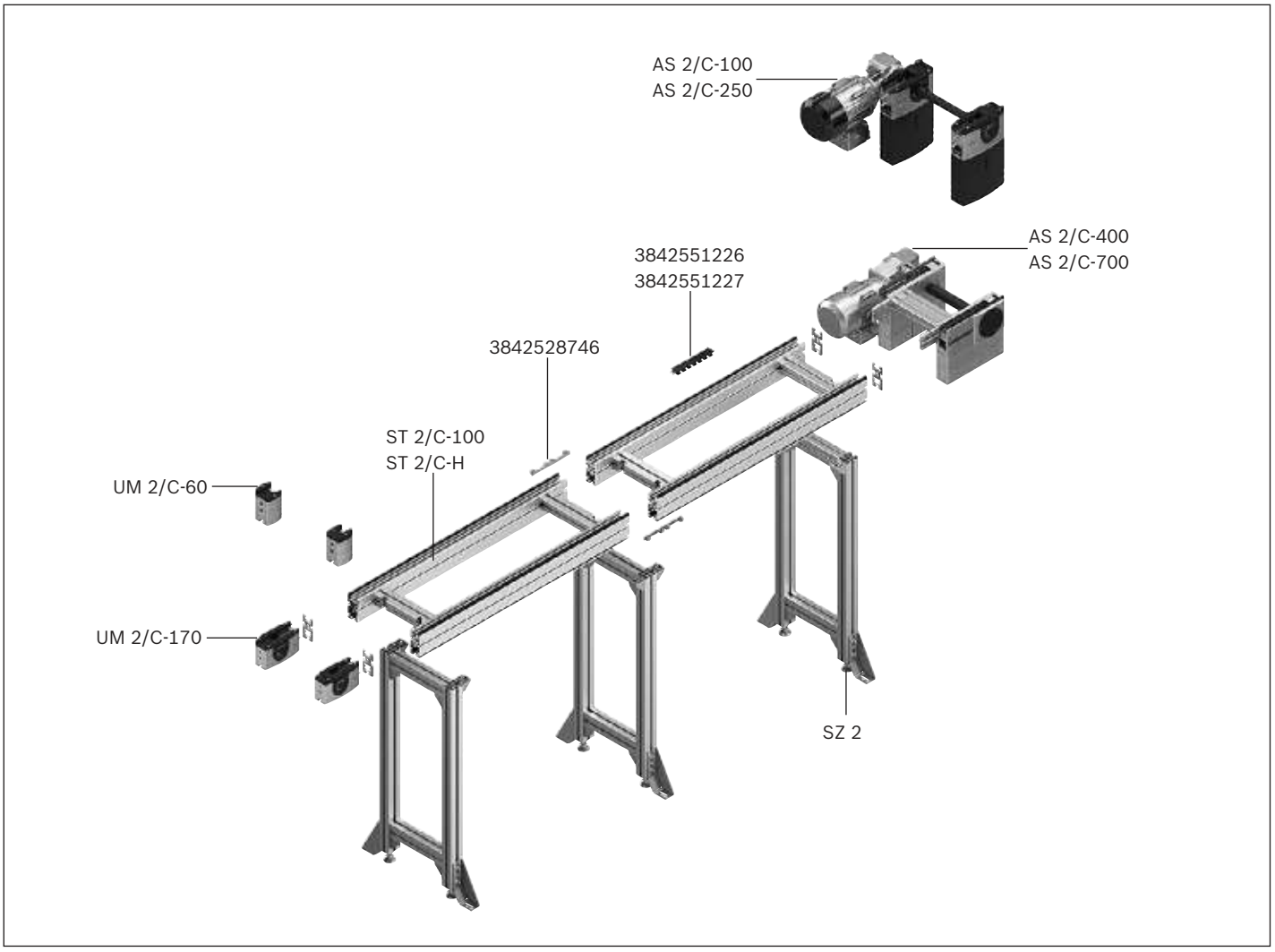
Technical data

Material number	3842528480	3842539096
ESD	Yes	Yes

Dimensions



Conveyor units
Components for conveyor medium flat-top chain

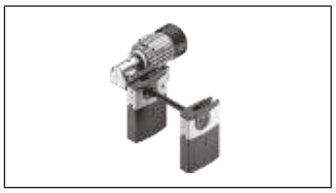


A conveyor unit is a complete unit used for the linear conveying of workpiece pallets. It consists of:

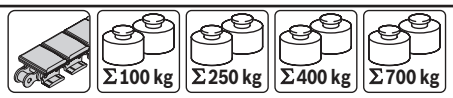
- Drive module AS 2/C, see p. 3-58
- Return unit UM 2/C, see p. 3-70
- Section ST 2/..., see p. 3-74
- Leg sets SZ 2/..., see p. 6-4
- Cross connector QV 2, see p. 9-17
- Flat-top chain, see p. 3-88

The UM 2/C and AS 2/C-... may be set up right next to each other, which allows for conveyor unit combinations.

Drive modules for section loads up to m_G = 100 kg; 250 kg; 400 kg; or up to m_G = 700 kg per conveyor unit.



Drive module AS 2/C... **3-58**



Return unit UM 2/C-... **3-70**

Section ST 2/C..., components **3-74**

Flat-top chain conveyor medium **3-88**

Drive module AS 2/C-100

The drive module AS 2/B-...drives the conveyor medium flat-top chain in self-built conveyor unit elements with section, return unit and flat-top chain.

- Drive for conveyor unit self-assembly
- Conveyor medium: Flat-top chain (with KA = A suitable for use in an EPA)
- Motor mounting right, left or central (central from track width of 240 mm)
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request
- Reversible operation not permitted
- Use with medium accumulation loads
- Can be combined with WT 2, WT 2/E, WT 2/F with wear pad PA, WT 2/LS

Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
Cross-traversing and motor mounting in the center (MA = M) is not possible.

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Recommended accessories

- Connection kits, see p. 9-21
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

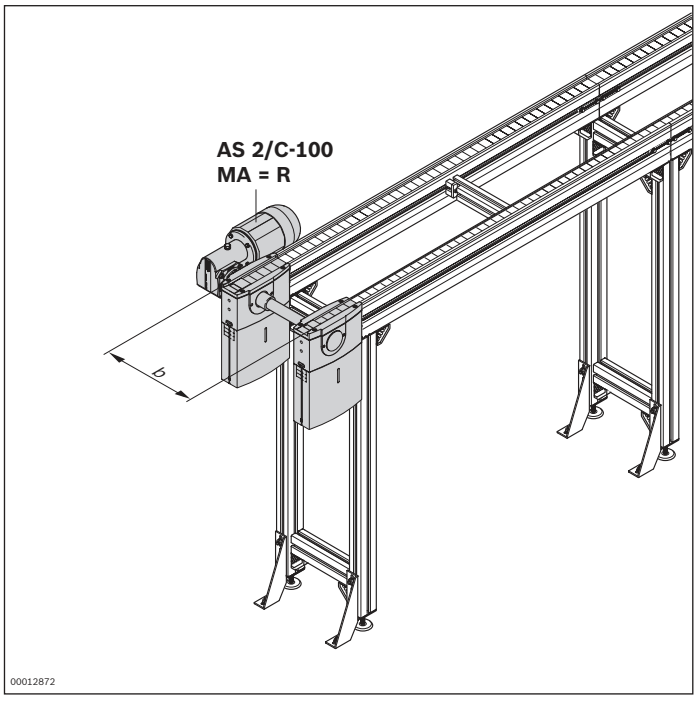
Scope of delivery

- Includes fastening material to mount on the conveyor section ST 2/..., as well as to mount on an adjacent return unit

Condition on delivery

- Assembled

Ordering information



Material number		3842998053
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1]
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[3]

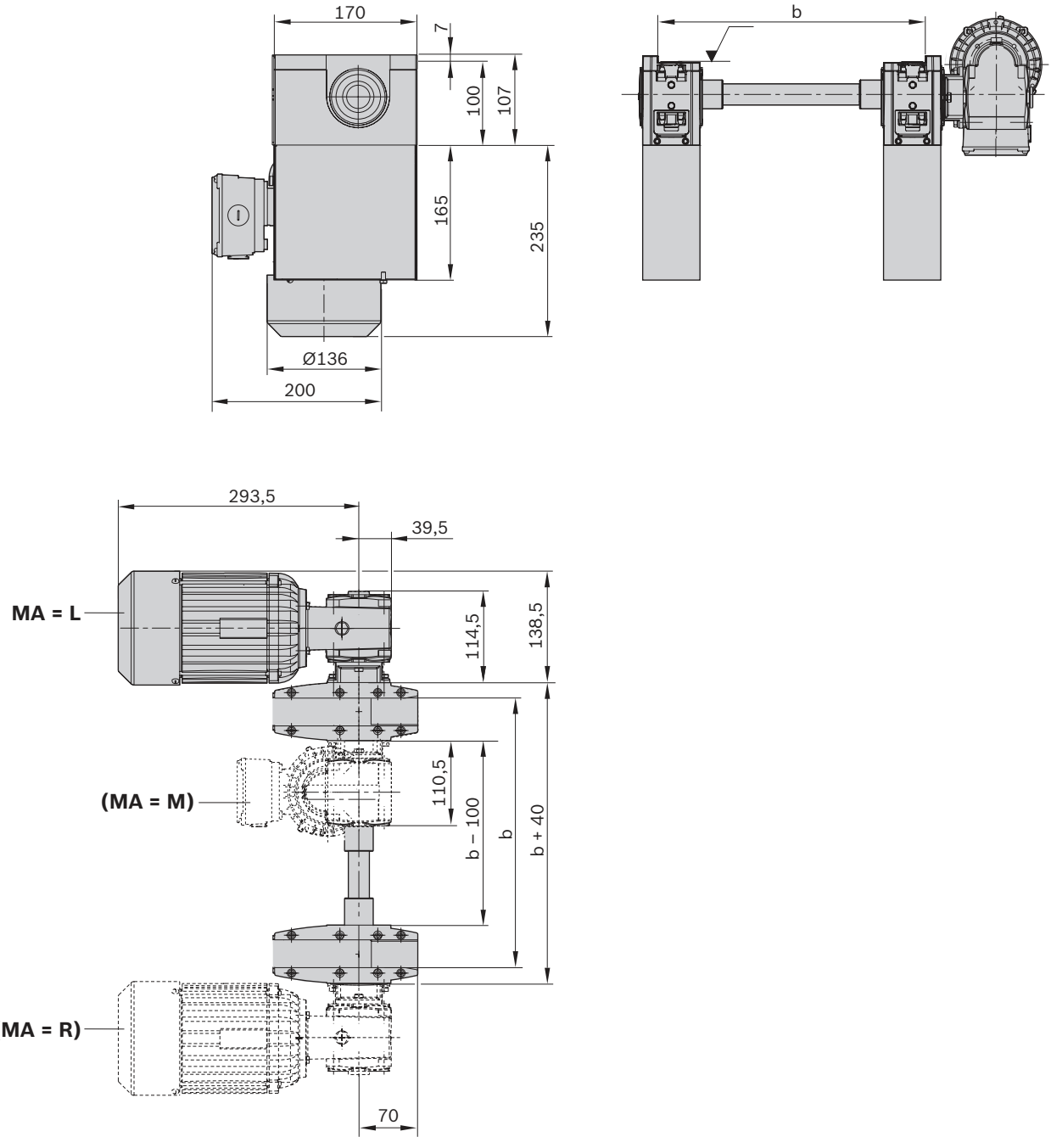
[1] Individual width variants available
[2] v_N = 0: without motor or gear
[3] MA = M only for b ≥ 240 mm

Technical data

Material number			3842998053
Max. section load in accumulation operation		kg	100
ESD			Yes, with KA = A[4]
Cleanroom class			ISO class 7[5]
Dry room	rF	%	<1
Required conveyor medium length[6]	l_{AS}	mm	475

[4] Chain suitable for use in an EPA (KA = A)
[5] Is principally suitable
[6] Formula for calculating the conveyor medium, see p. 3-89

Dimensions


170
7
100
107
165
235
Ø136
200
b
293,5
39,5
MA = L
114,5
138,5
(MA = M)
110,5
b – 100
b
b + 40
(MA = R)
70
40600

Drive module AS 2/C-250

The drive module AS 2/C-... drives the conveyor medium flat-top chain in self-built conveyor unit elements with section, return unit and flat-top chain.

- Drive for conveyor unit self-assembly
- Conveyor medium: Flat-top chain (with KA = A suitable for use in an EPA)
- Motor mounting right or left
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request
- Reversible operation not permitted
- Use with medium accumulation loads
- Can be combined with WT 2, WT 2/E, WT 2/F with wear pad PA, WT 2/LS

Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
It is not possible to cross over.

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Recommended accessories

- Connection kits, see p. 9-21
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

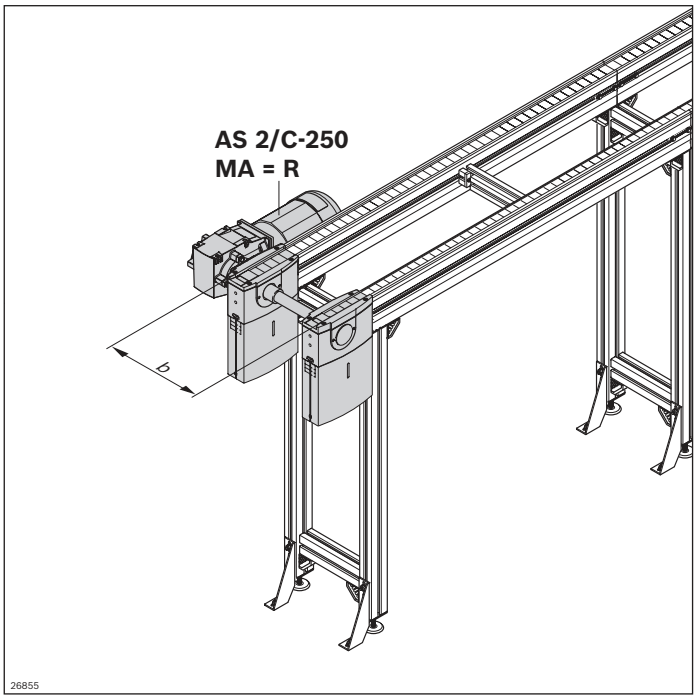
Scope of delivery

- Includes fastening material to mount on the conveyor section ST 2/..., as well as to mount on an adjacent return unit

Condition on delivery

- Assembled

Ordering information



Material number		3842998087
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1]
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left	R; L

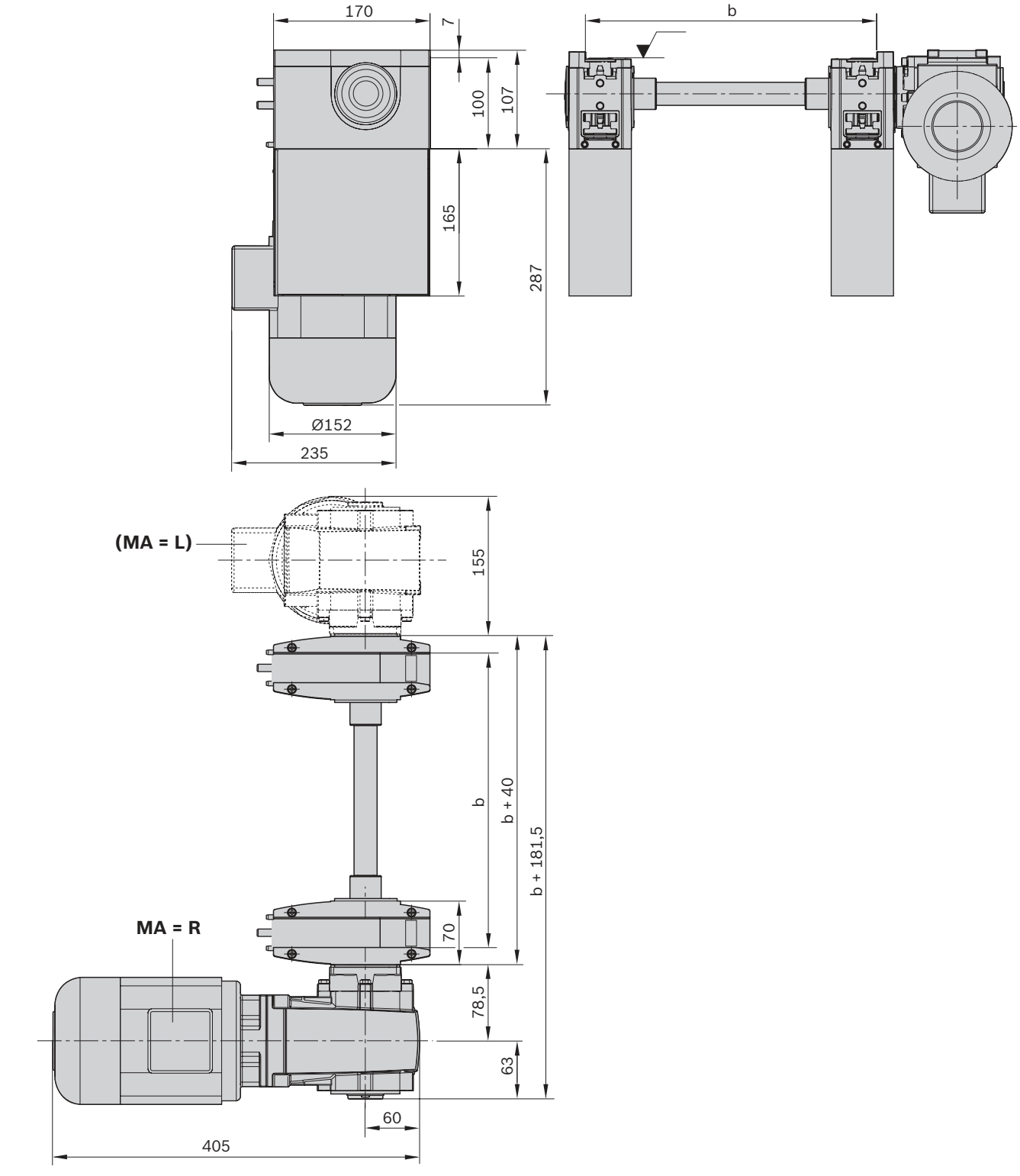
[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear

Technical data

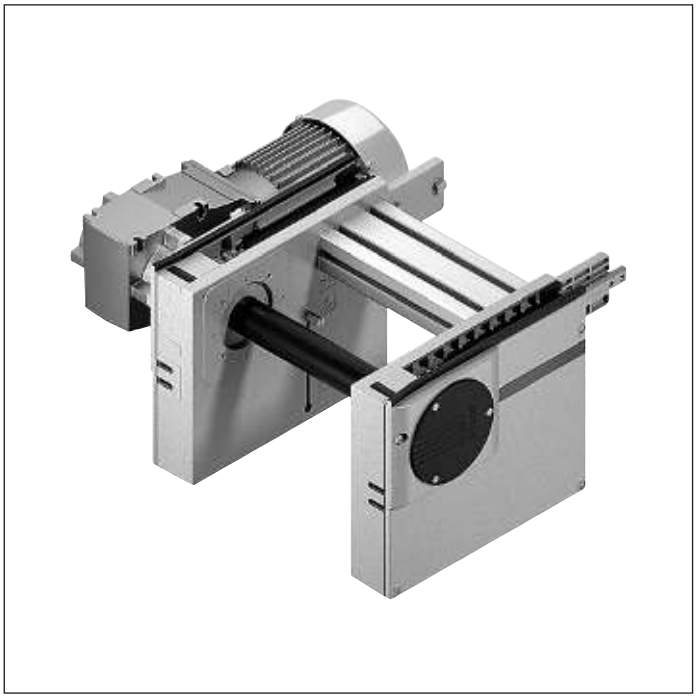
Material number			3842998087
Max. section load in accumulation operation		kg	250
ESD			Yes, with KA = A[3]
Cleanroom class			ISO class 7[4]
Dry room	rF	%	<1
Required conveyor medium length[5]	l_{AS}	mm	475

[3] Chain suitable for use in an EPA (KA = A)
[4] Is principally suitable
[5] Formula for calculating the conveyor medium, see p. 3-89

Dimensions


170
7
100
107
165
287
b
Ø152
235
(MA = L)
155
b
b + 40
b + 181,5
MA = R
70
78,5
63
60
405
40601

Drive module AS 2/C-400



The drive module AS 2/B-...drives the conveyor medium flat-top chain in self-built conveyor unit elements with section, return unit and flat-top chain.

Recommended accessories

- Connection kits, see p. 9-21
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...

- Drive for conveyor unit self-assembly
- Conveyor medium: Flat-top chain (with KA = A suitable for use in an EPA)
- Motor mounting right, left or central (central from track width of 240 mm)
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request
- Reversible operation not permitted
- Use with medium accumulation loads
- Can be combined with WT 2, WT 2/E, WT 2/F with wear pad PA, WT 2/LS

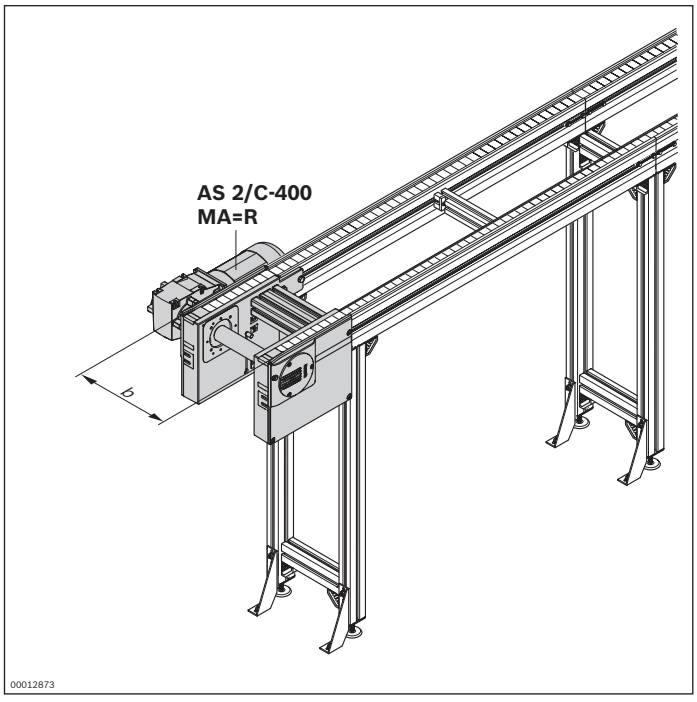
Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
Cross-traversing and motor mounting in the center (MA = M) is not possible.

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Condition on delivery

- Assembled

Ordering information



Material number		3842998038
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1]
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18[3]
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[4])

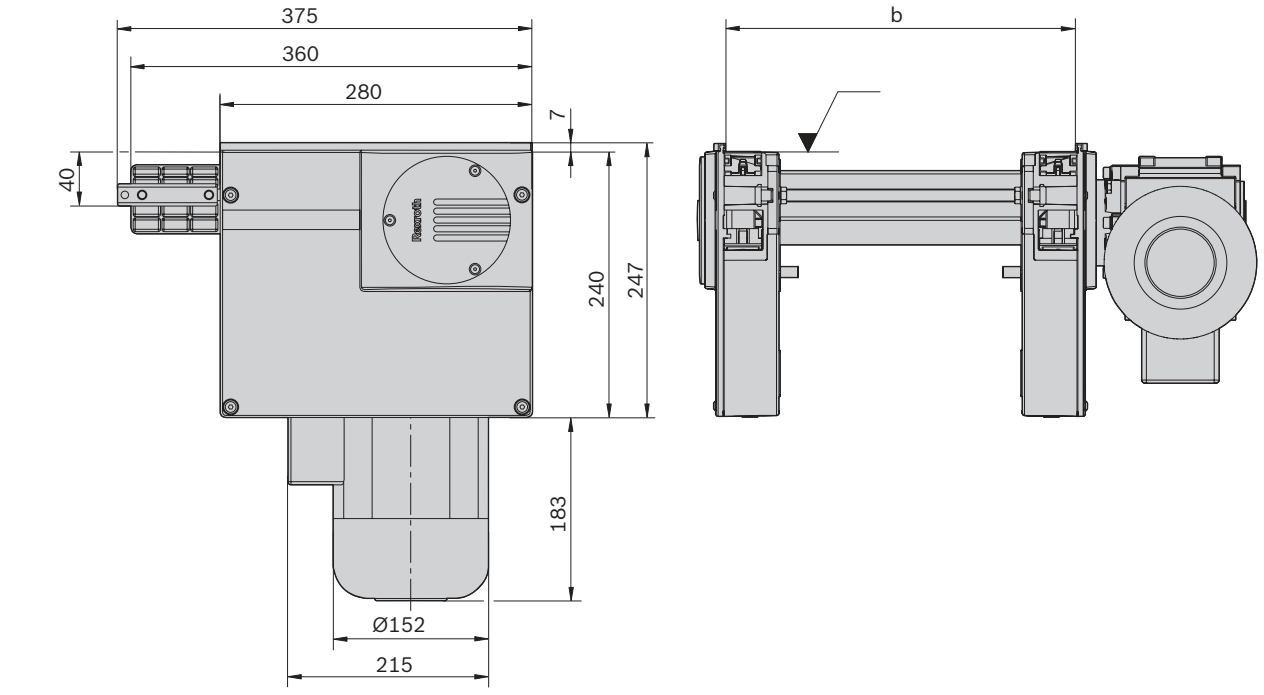
[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear
[3] Not possible at f = 60Hz
[4] MA = M only when b ≥ 240 mm

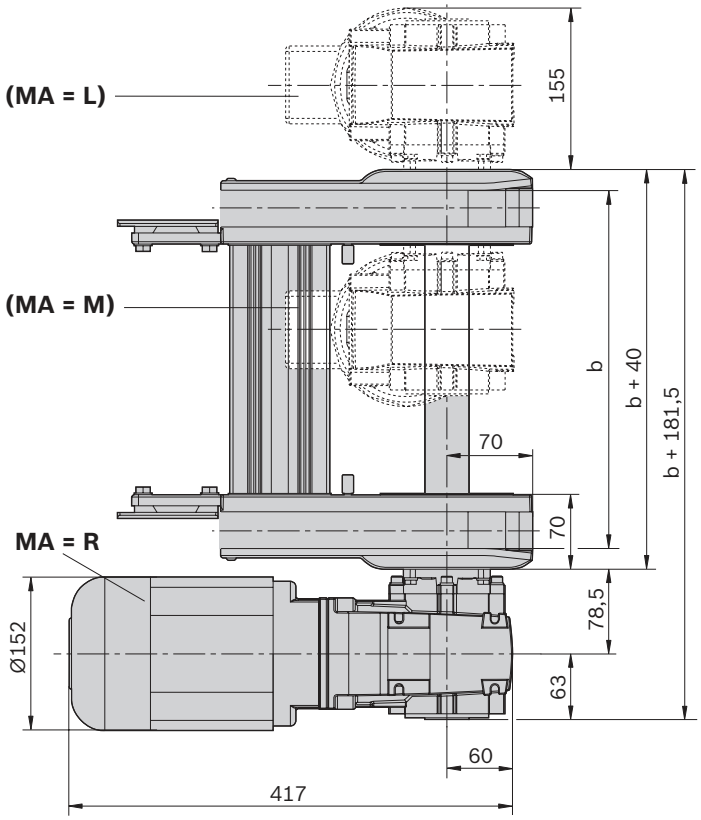
Technical data

Material number			3842998038
Max. section load in accumulation operation		kg	400
ESD			Yes, with KA = A[5]
Cleanroom class			ISO class 7[6]
Dry room	rF	%	<1
Required conveyor medium length[7]	l_{AS}	mm	625

[5] Chain suitable for use in an EPA (KA = A)
[6] Is basically suitable
[7] Formula for calculating the conveyor medium, see p. 3-89

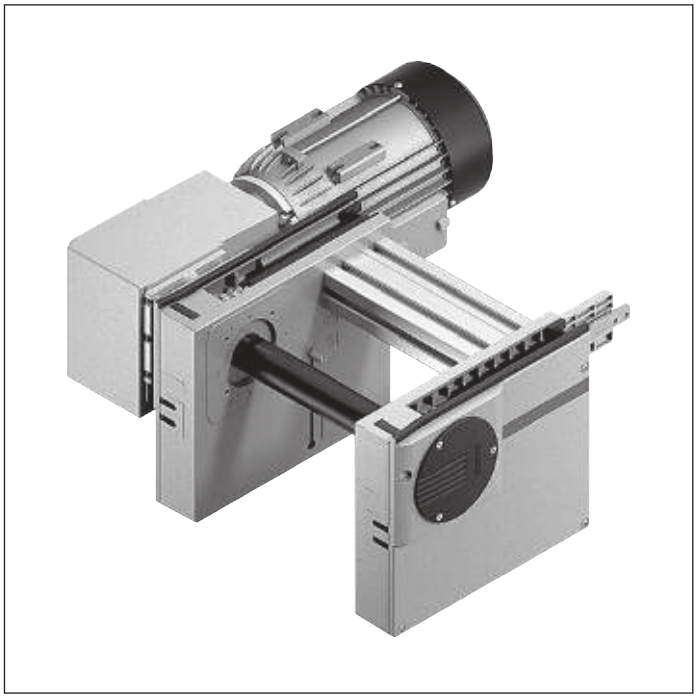
Dimensions





37162

Drive module AS 2/C-700



The drive module AS 2/B-...drives the conveyor medium flat-top chain in self-built conveyor unit elements with section, return unit and flat-top chain.

Recommended accessories

- Connection kits, see p. 9-21
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...

- Drive for conveyor unit self-assembly
- Conveyor medium: Flat-top chain (with KA = A suitable for use in an EPA)
- Motor mounting right, left or central (central from track width of 240 mm)
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request
- Reversible operation not permitted
- Use with high accumulation loads
- Can be combined with WT 2, WT 2/E, WT 2/F with wear pad PA, WT 2/LS

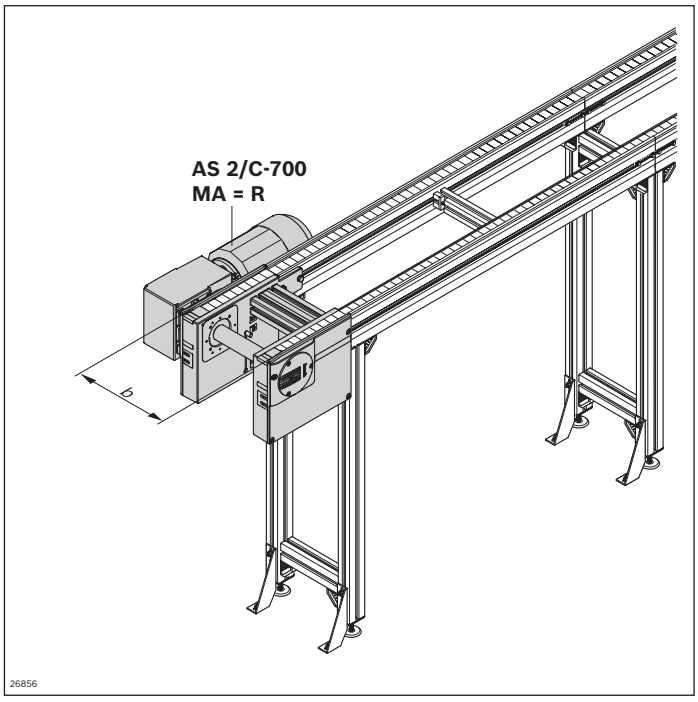
Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
Cross-traversing and motor mounting in the center (MA = M) is not possible.

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Condition on delivery

- Assembled

Ordering information



Material number		3842998039
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1]
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18[3]
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[4]

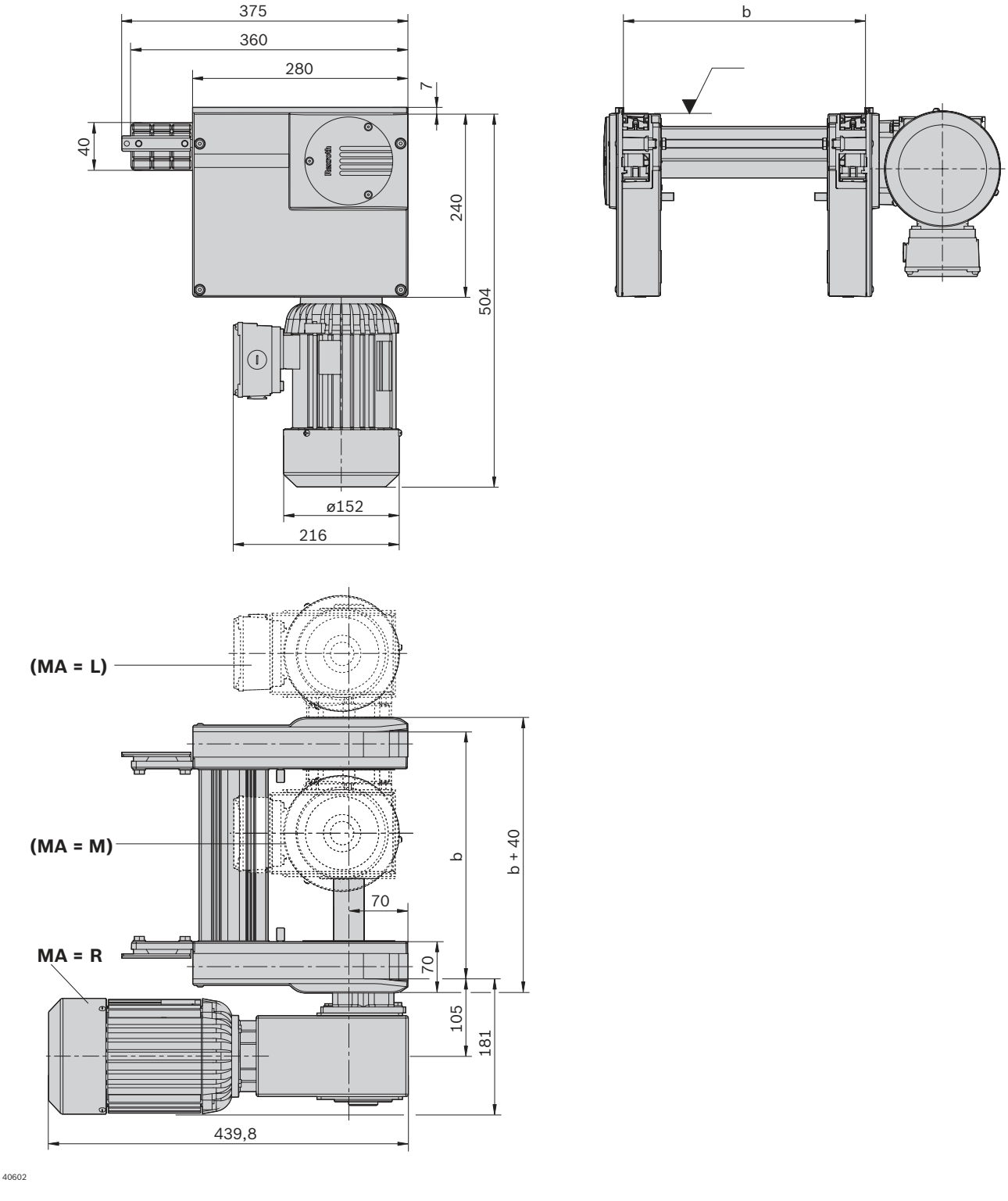
[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear
[3] Reduced load to 600 kg
[4] MA = M only when b ≥ 240 mm

Technical data

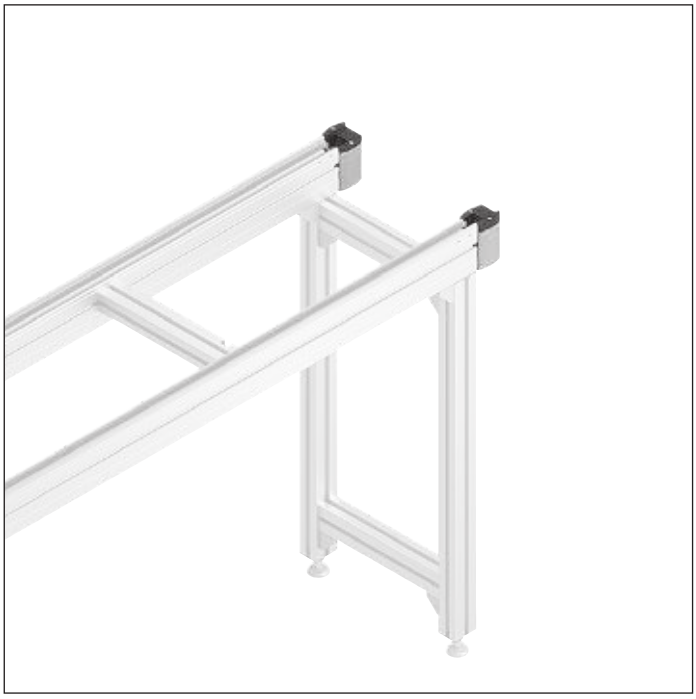
Material number			3842998039
Max. section load in accumulation operation		kg	700
ESD			Yes, with KA = A[5]
Cleanroom class			ISO class 7[6]
Dry room	rF	%	<1
Required conveyor medium length[7]	l_{AS}	mm	625

[5] Chain suitable for use in an EPA (KA = A)
[6] Is basically suitable
[7] Formula for calculating the conveyor medium, see p. 3-89

Dimensions


375
360
280
7
40
240
504
ø152
216
b
(MA = L)
(MA = M)
MA = R
b
b + 40
70
70
105
181
439,8
40602

Return unit UM 2/C-60



The return unit is used for constructing conveyor units. It guides the conveyor medium at the end of the conveyor unit back to the drive module.

- Conveyor medium: Flat-top chain (suitable for use in an EPA)
- For use in conjunction with all drive modules AS 2/C-...
- Version with sliding piece for return unit
- Recommended for sections up to l = 6000 mm

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Required accessories

- Connection kits, see p. 9-21

Scope of delivery

- One pair of return heads
- Incl. all fastening material to mount on the conveyor section ST 2/...

Condition on delivery

- Assembled

Ordering information

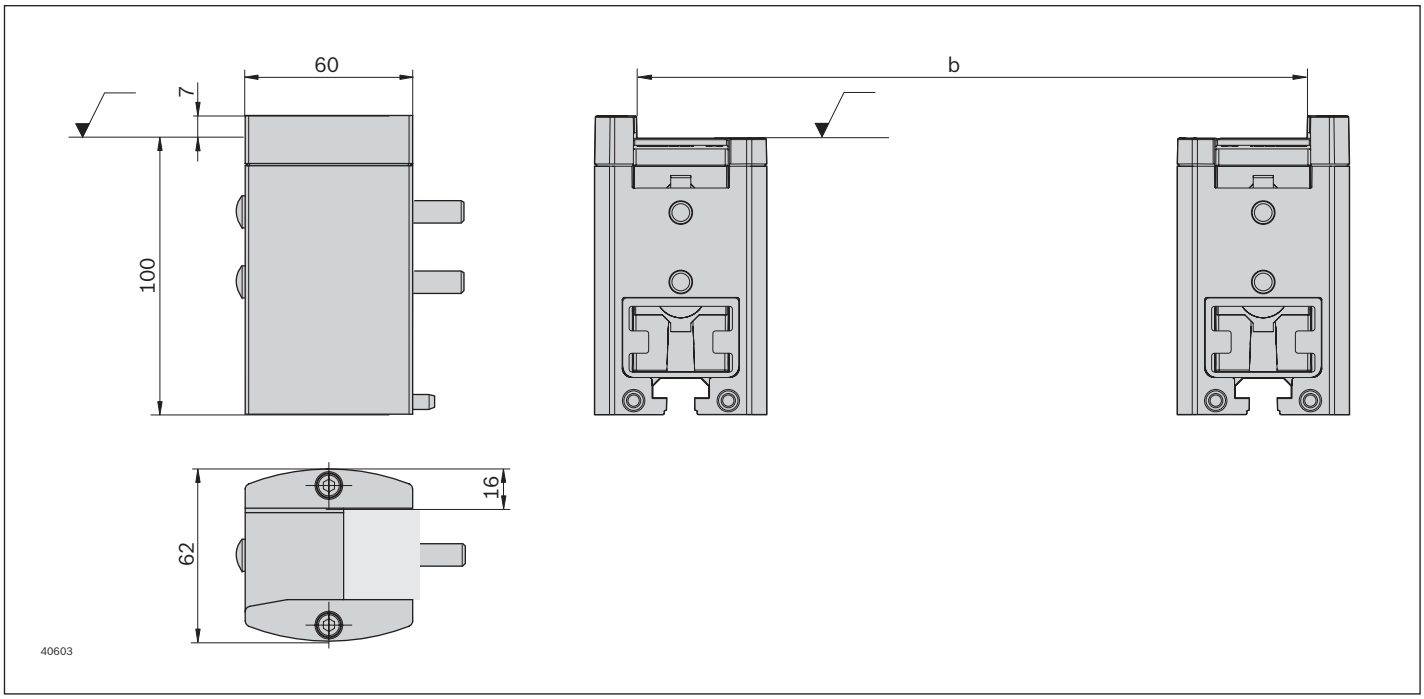
Product description	Material number
Return unit UM 2/C-60	3842528802

Technical data

Material number			3842528802
ESD			Yes
Required conveyor medium length[1)]	l_{UM}	mm	150

[1)] Formula for calculating the conveyor medium, see p. 3-89

Dimensions



Return unit UM 2/C-170

The return unit is used for constructing conveyor units. It guides the conveyor medium at the end of the conveyor unit back to the drive module.

- Conveyor medium: Flat-top chain (suitable for use in an EPA)
- For use in conjunction with all drive modules AS 2/C-...
- Version with pinion for return unit
- Recommended for sections of l > 6000 mm

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Required accessories

- Connection kits, see p. 9-21

Scope of delivery

- One pair of return heads
- Incl. all fastening material to mount on the conveyor section ST 2/...

Condition on delivery

- Assembled

Ordering information

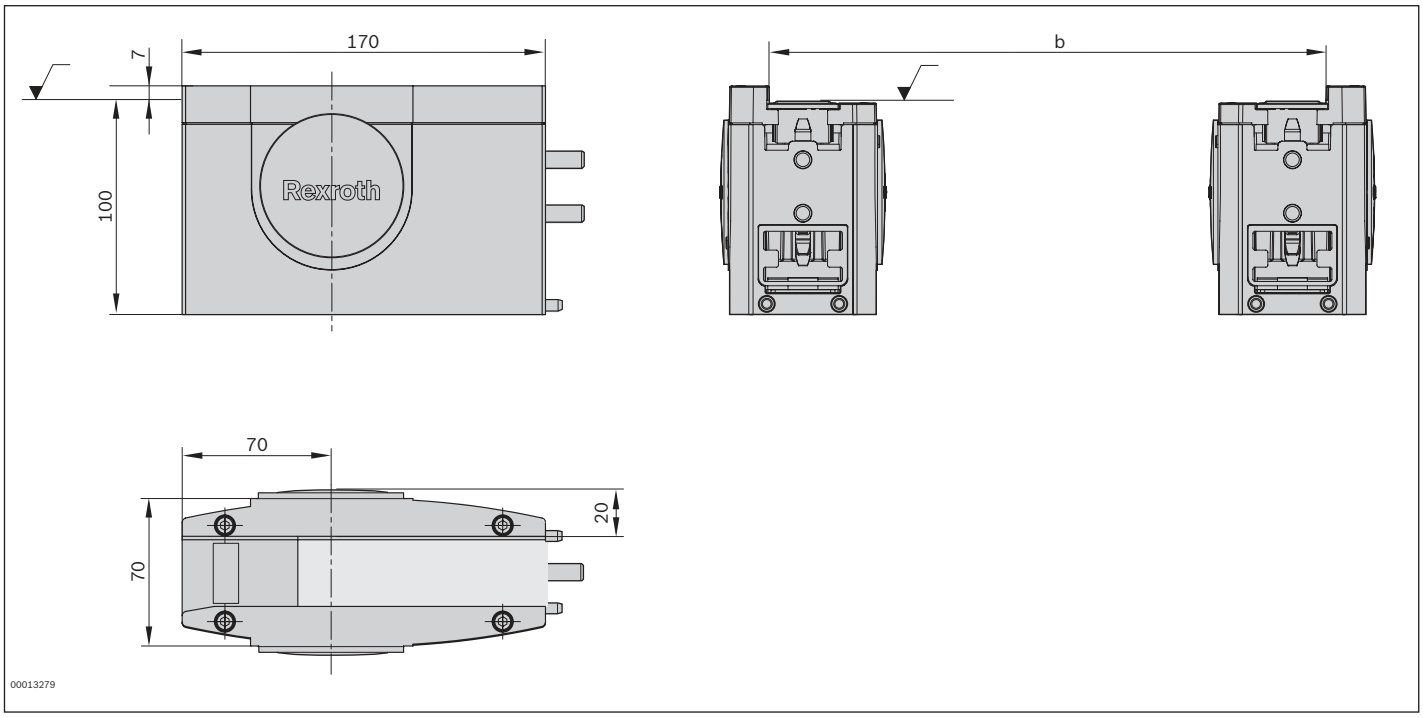
Product description	Material number
Return unit UM 2/C-170	3842528806

Technical data

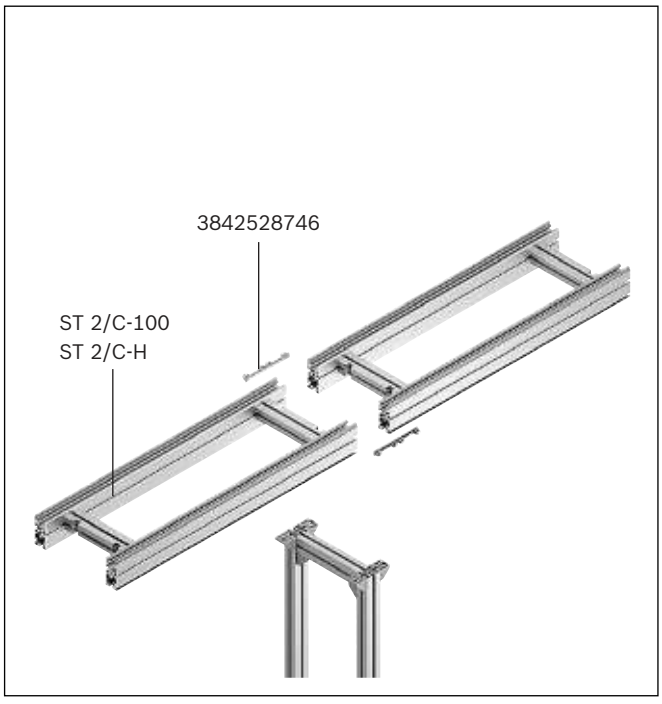
Material number			3842528806
ESD			Yes
Required conveyor medium length[1)]	l_{UM}	mm	310

[1)] Formula for calculating the conveyor medium, see p. 3-89

Dimensions



Section, section profiles



Sections can be individually configured for special requirements by selecting various section, glide, and guide profiles.

Depending on the load spectrum of the conveyor medium, stainless steel or plastic glide profiles can be inserted in the section profile. Use of steel glide profiles increases resistance to wear and temperature. This opens up new areas of application for the TS 2*plus*.

The proven profiles SP 2/C-100 are primarily suitable for medium loads in simple system layouts.

Especially suited for high strains and loads, the new, sturdy section profiles SP 2/C-H have been developed for flat-top chains. In addition to a more robust profile cross section and improvements to details (integrated cable duct), the use of stainless steel in the guide profile enhances the system. An adapter plate not only enables visually attractive mounting of the section profiles SP 2/C-H on the drive modules in the TS 2*plus*, it also securely keeps the glide profiles (sliding guides) from shifting.

Section ST 2/C-100

- For conveyor unit self-assembly
- For use in conjunction with all drive modules AS 2/C-... and return units UM 2/C-...
- Conveyor medium: Plastic flat-top chain
- Plastic glide profile GP 2
- Pre-assembled unit for quick setup

Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
It is not possible to cross over.

The section is used to construct conveyor units with plastic flat-top chains in connection with the drive modules AS 2/C-...and return units UM 2/C-....

Recommended accessories

- Leg sets SZ 2/..., see p. 6-4
- Profile connector, see p. 9-16
- Cross connector, see p. 9-17

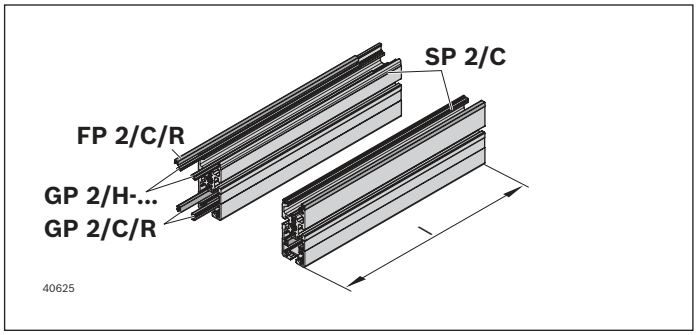
Scope of delivery

- 2x section profiles SP 2/C with assembled guide profiles FP 2 and glide profiles GP 2

Condition on delivery

- Assembled

Ordering information

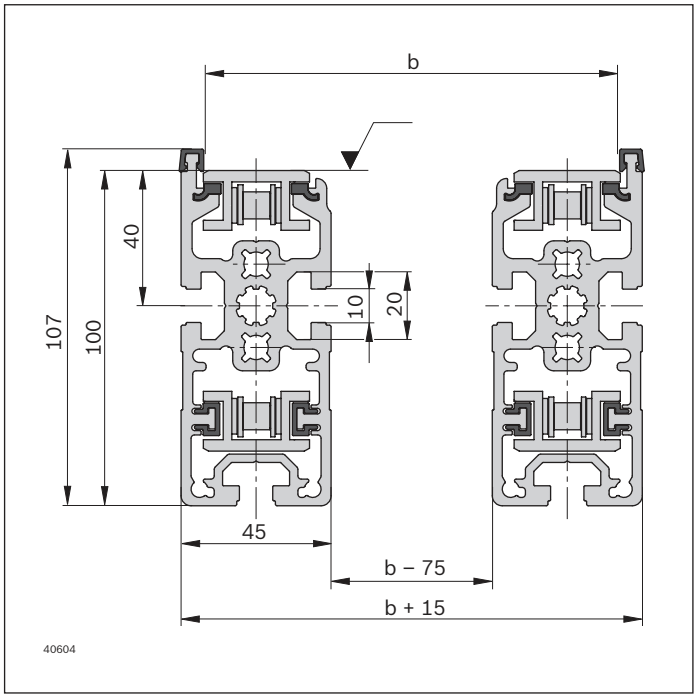


Material number		3842994188
l (mm)	Length	60 ... 6000
GP	Glide profile 0 = plastic 1 = steel	0; 1

Technical data

Material number			3842994188
Material specification			Glide profile: PA/steel: corrosion-resistant Guide profile: PA Section profile: Aluminum, natural; anodized
Max. operating temperature	T	°C	+40
Length	l	mm	60 ... 6000

Dimensions



Section ST 2/C-H

- For conveyor unit self-assembly
- For use in conjunction with all drive modules AS 2/C-... and return units UM 2/C-...
- Section profile (50 mm wide) in an especially sturdy version for section loads of up to 30 % higher
- Conveyor medium: Plastic flat-top chain
- Optional steel or plastic glide profiles GP 2

Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
It is not possible to cross over.

The section is used to construct heavy-duty conveyor units with plastic flat-top chains in connection with the drive modules AS 2/C-... and return units UM 2/C-...

Required accessories

- Adapter plate kit ST 2/C-H, see p. 3-85
- If GP = 0, then adapter plates are to be fitted between each section joint.

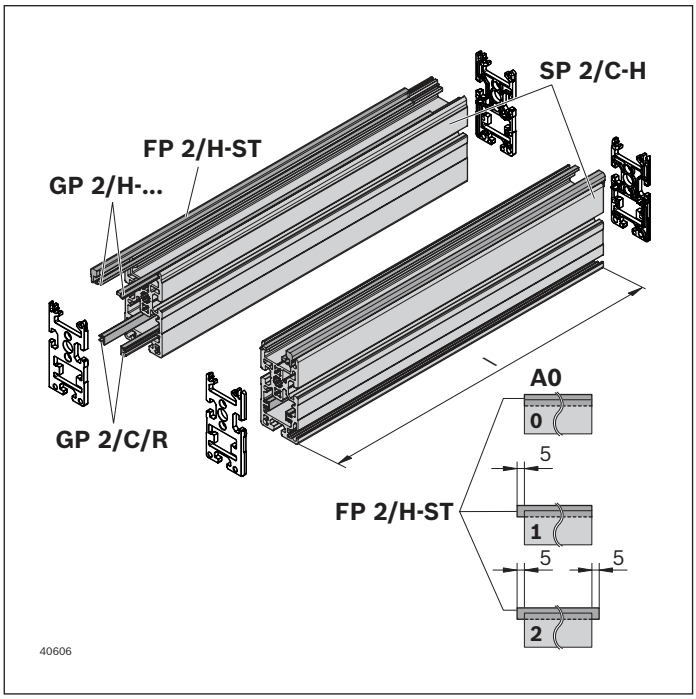
Recommended accessories

- Leg sets SZ 2/..., see p. 6-4
- Profile connector, see p. 9-16
- Cross connector, see p. 9-17
- Cover rail for cable duct, see p. 9-20

Scope of delivery

- 2x section profile SP 2/C-H with assembled guide profiles FP 2/H-ST and glide profiles GP 2/H-...

Ordering information



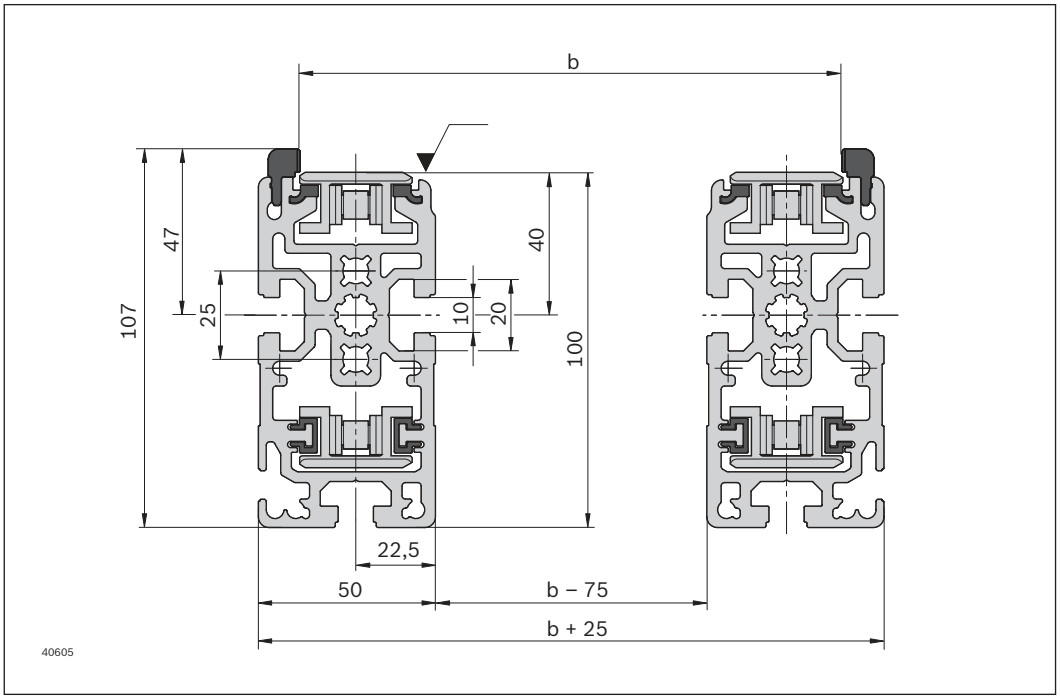
Material number		3842994189
l (mm)	Length	200 ... 6000
AO	Installation location 2 = plastic glide profile 0; 1; 2 = steel glide profile	0; 1; 2
GP	Glide profile 0 = plastic 1 = steel	0[1)]; 1

[1)] With GP = 0, only AO = 2 is possible

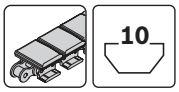
Technical data

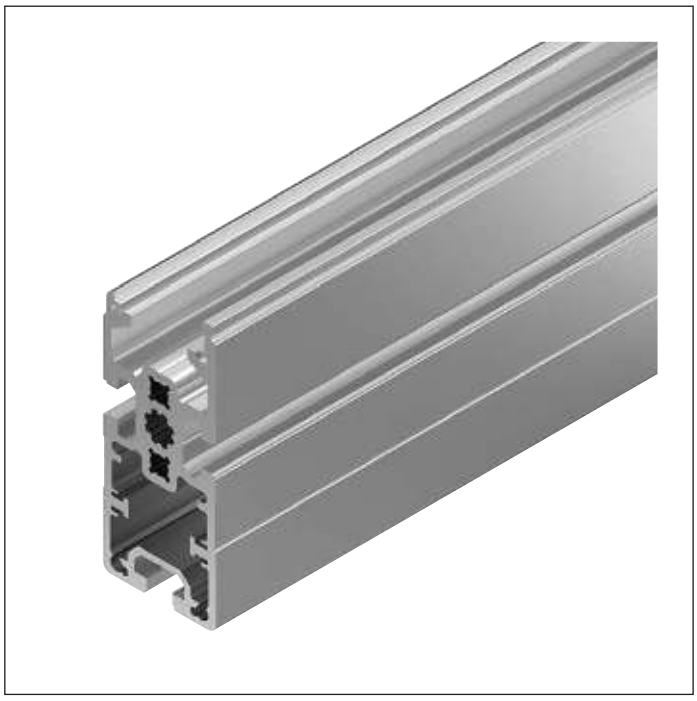
Material number			3842994189
Material specification			Glide profile: PA/steel; corrosion-resistant Guide profile: Steel; corrosion-resistant Section profile: Aluminum, natural; anodized
Max. operating temperature	T	°C	+40
Length	l	mm	200 ... 6000

Dimensions



Section profile SP 2/C-100





The section profile is used to set up conveyor units with the flat-top chain conveyor medium.

- For conveyor unit self-assembly for profile construction heights of 100 mm
- For use in conjunction with all drive modules AS 2/C-..., return units UM 2/C-..., guide profiles FP 2 and glide profiles GP 2
- Longitudinal grooves for easy mounting
- For conveyor units with a height to conveying level of 100 mm

Notice: The WT 2/LS can be used for longitudinal conveyors with this component.
It is not possible to cross over.

Required accessories

- Glide profile GP 2, see p. 3-81
- Guide profile FP 2, see p. 3-81

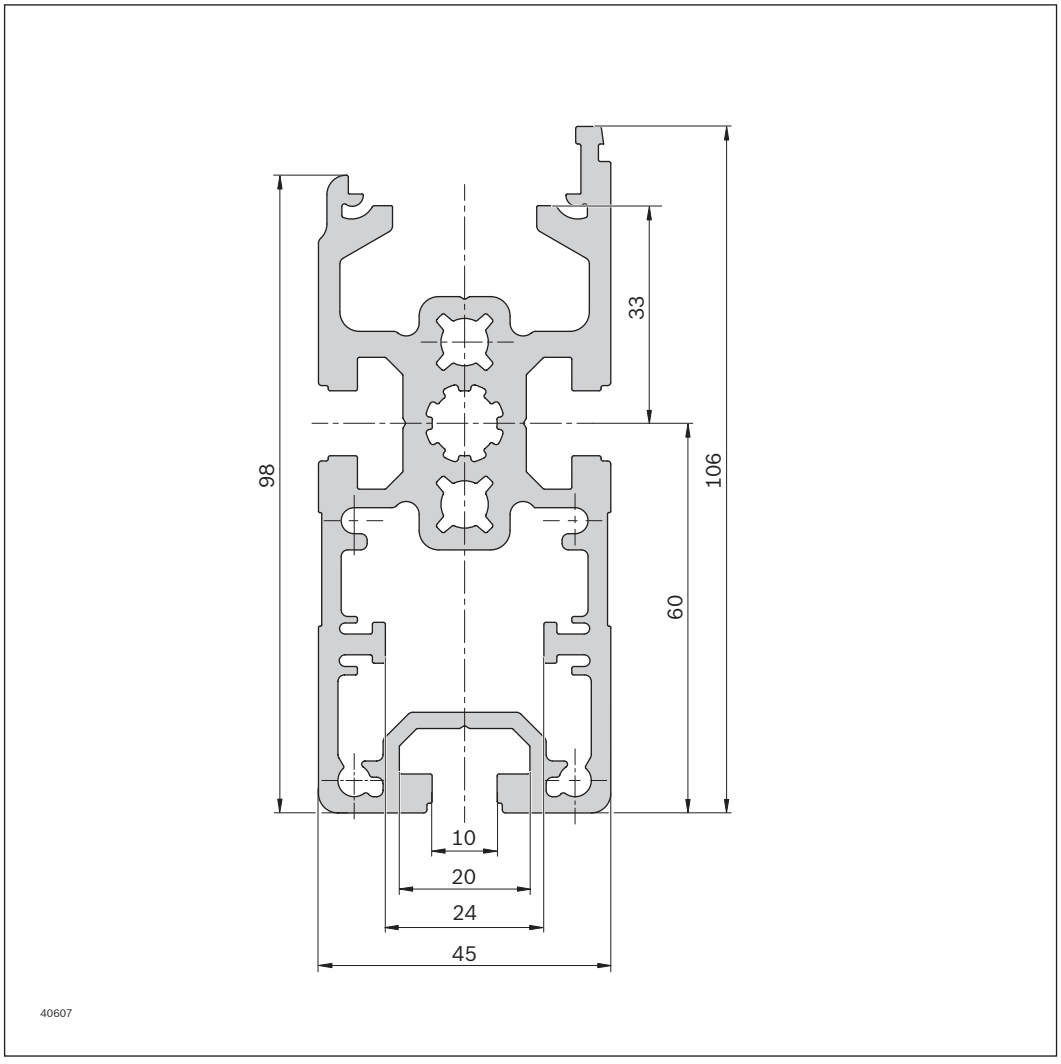
Ordering information

Product description	l (mm)	Delivery unit	Material number
Section profile SP 2/C-100 12 x 6070 mm	6070	12	3842564310

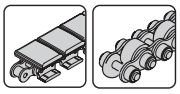
Technical data

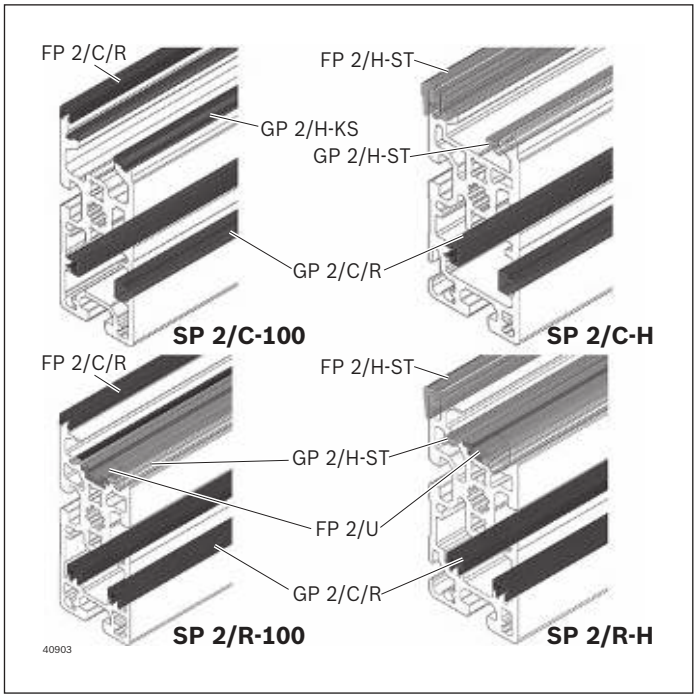
Material number			**3842564310**
Moment of inertia	I_x	cm^4	134.70
	I_y	cm^4	38.47
Moment of resistance	W_x	cm^3	55.92
	W_y	cm^3	23.02
Material specification			Aluminum, natural; anodized
Weight	m	kg/m	4.52
Length	l	mm	6070
Profile surface	A	cm^2	16.56

Dimensions



Guide and glide profiles





- For conveyor unit self-assembly
- Guide profiles are used for lateral guidance of the workpiece pallet
- Glide profiles are used to guide flat-top chains and accumulation roller chains
- Top section guide and glide profiles can be replaced from above
- GP 2/H-ST can be used for heavily loaded sections in the section profiles SP 2/C... and SP 2/R... in the upper section GP 2/H-KS exclusively for use in section profiles SP 2/C... in the upper section
- GP 2/C/R for use in conjunction with all section profiles SP 2/C..., SP 2/R... in the lower section and in SP 2/C-100, SP 2/R-100 in the upper section
- FP 2/H-ST made of corrosion-resistant steel, can be used with section profiles SP 2/C-H or SP 2/R-H
- The use of the additional routing FP 2/U is used for sections SP 2/R and SP 2/R-H with > 6 m length and one operation at 2 kg/cm and track widths > 480 mm recommended

Ordering information

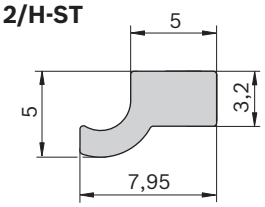
Product description	Packaging unit	Length l (mm)	Material number
Glide profile GP 2/H-KS	24	6000	3842564314
Glide profile GP 2/H-ST	48	3000	3842564315
Glide profile GP 2/C/R	24	6000	3842567260
Guide profile FP 2/C/R	12	6000	3842567261
Guide profile FP 2/H-ST	24	3000	3842564316
Guide profile FP 2/U	12	6000	3842567254

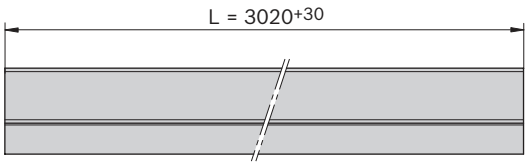
Technical data

Material number	3842564314	3842564315	3842567260	3842567261	3842564316	3842567254
ESD	Yes	Yes	Yes	Yes	Yes	Yes
Material specification	PA (suitable for use in an EPA)	Steel; corrosion-resistant	PA (suitable for use in an EPA)	PA (suitable for use in an EPA)	Steel; corrosion-resistant	PE
Length l (mm)	6000	3000	3000	6000	3000	6000

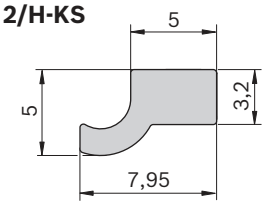
Dimensions

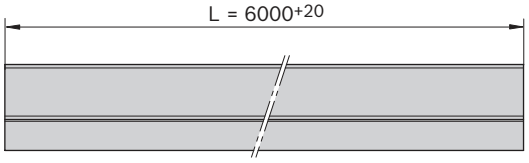
GP 2/H-ST



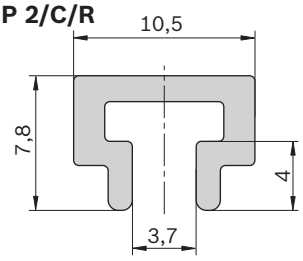


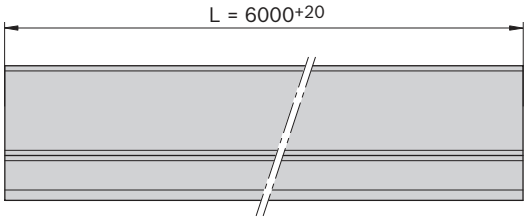
GP 2/H-KS



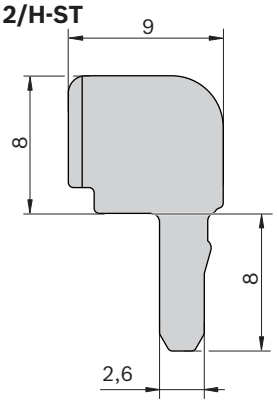


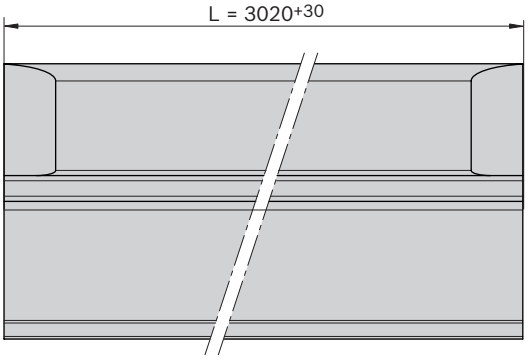
GP 2/C/R



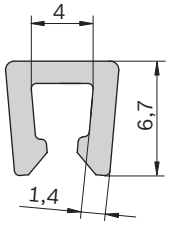


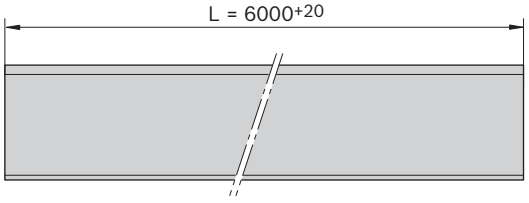
FP 2/H-ST



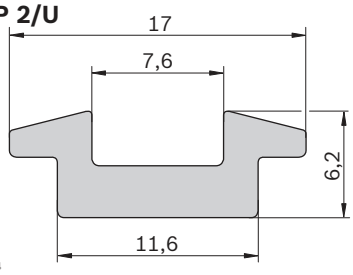


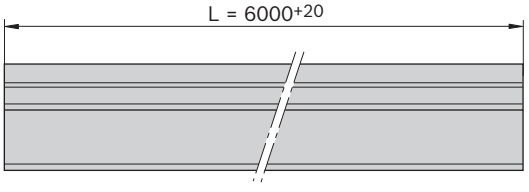
FP 2/C/R





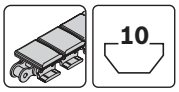
FP 2/U





40904

Section profile SP 2/C-H



- For conveyor unit self-assembly
- In especially sturdy design for particularly heavy-duty sections
- For use with all drive modules AS 2/C, guide profiles FP 2/H-ST and glide profiles GP 2/H
- Longitudinal grooves for easy mounting
- For conveyor units with a height to conveying level of 100 mm
- For heavy-duty conveyor unit assembly
- Profile width: 50 mm

The section profile is used to set up conveyor units with the flat-top chain conveyor medium.

Required accessories

- Guide profile FP 2/H-ST, see p. 3-81
- Glide profile GP 2/H-ST, see p. 3-81
- Glide profile GP 2/H-KS, see p. 3-81
- Adapter plate kit ST 2/C-H, see p. 3-85
- Cover rail for cable duct, see p. 9-20

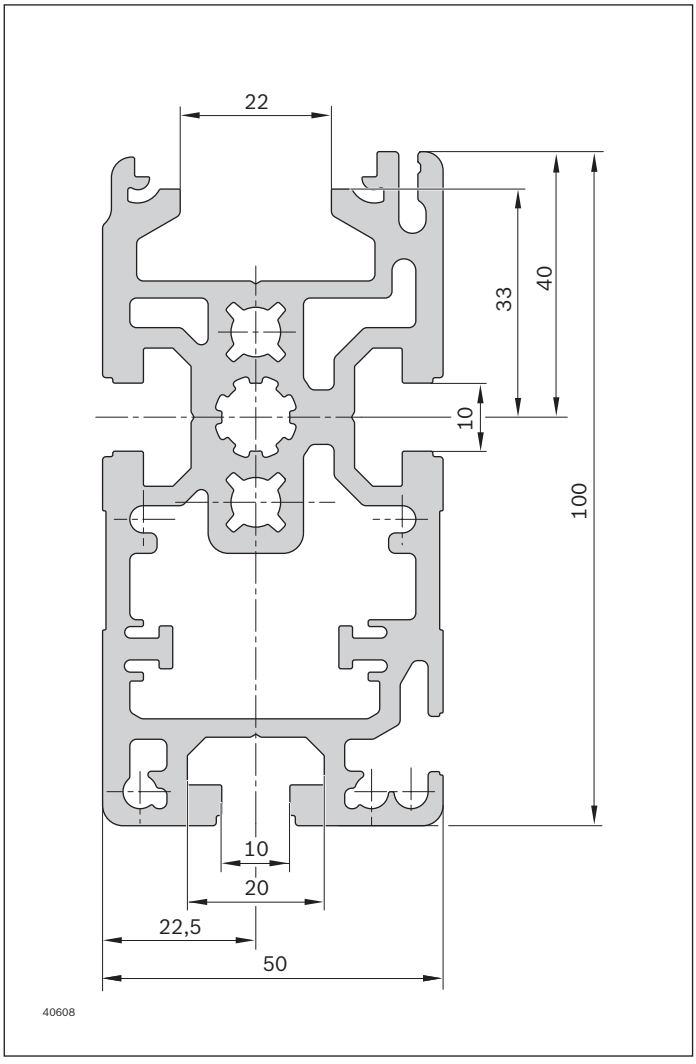
Ordering information

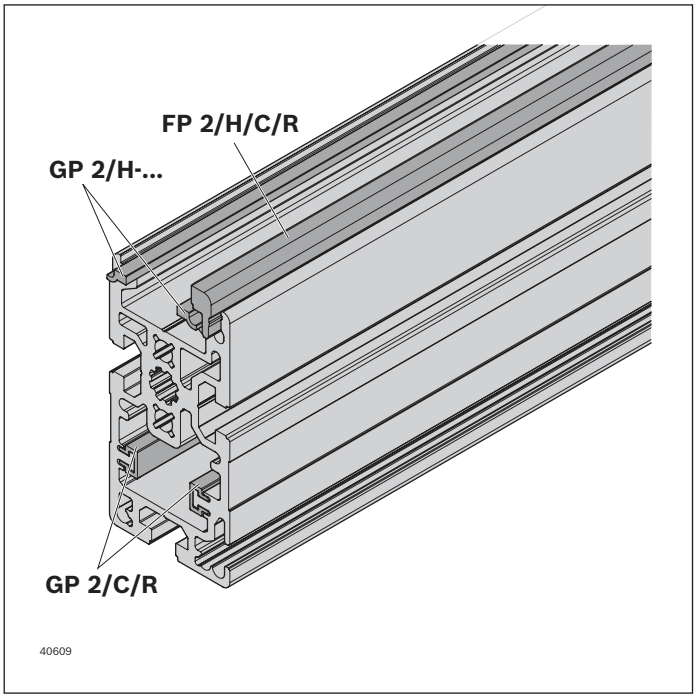
Product description	l (mm)	Delivery unit	Material number
Section profile SP 2/C-H 12 x 6070 mm	6070	12	3842564312

Technical data

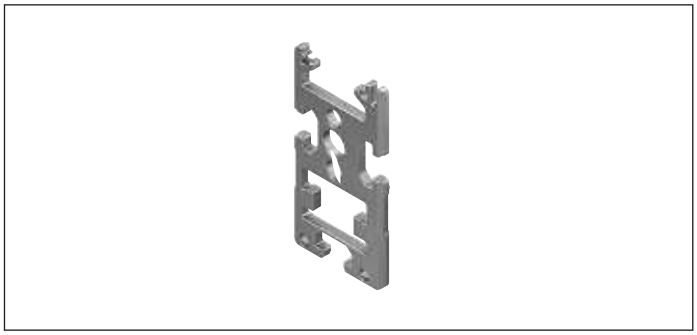
Material number			**3842564312**
Moment of inertia	I_x	cm^4	156.05
	I_y	cm^4	52.79
Moment of resistance	W_x	cm^3	49.75
	W_y	cm^3	25.14
Material specification			Aluminum, natural; anodized
Weight	m	kg/m	5.28
Length	l	mm	6070
Profile surface	A	cm^2	19.22

Dimensions





Adapter plate kit ST 2/C-H



- Front end plate
- For connection of section profiles SP 2/C-H and drive modules AS 2/C-...;
  for connection of section profiles SP 2/C-H and return units UM 2/C-...;
  and between section profiles where plastic glide profiles GP 2 are used

The adapter plates are used as front covers and for connecting section profiles and drive modules, or between section profiles and return units.
The adapter plates are also suitable for use between section profiles where plastic glide profiles GP 2 are used.

Scope of delivery

- 2x left adapter plate
- 2x right adapter plate

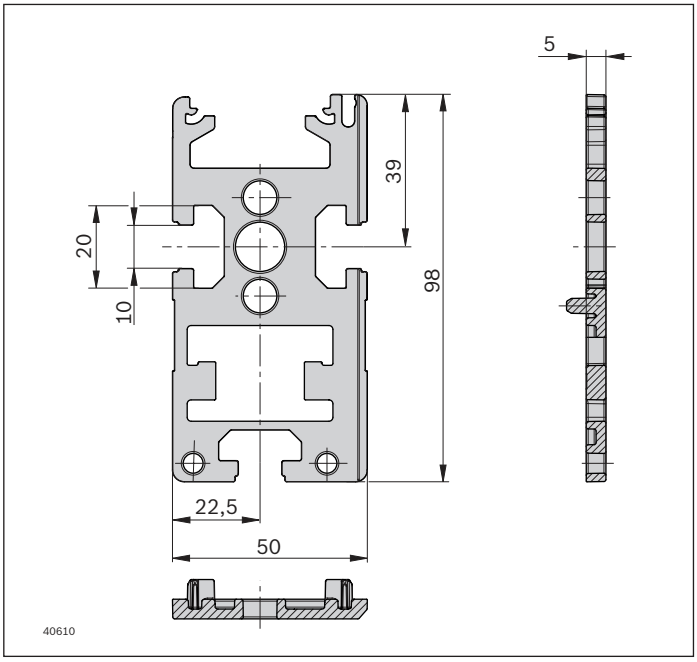
Ordering information

Product description	Packaging unit	Material number
Adapter plate kit ST 2/C-H	4	3842560610

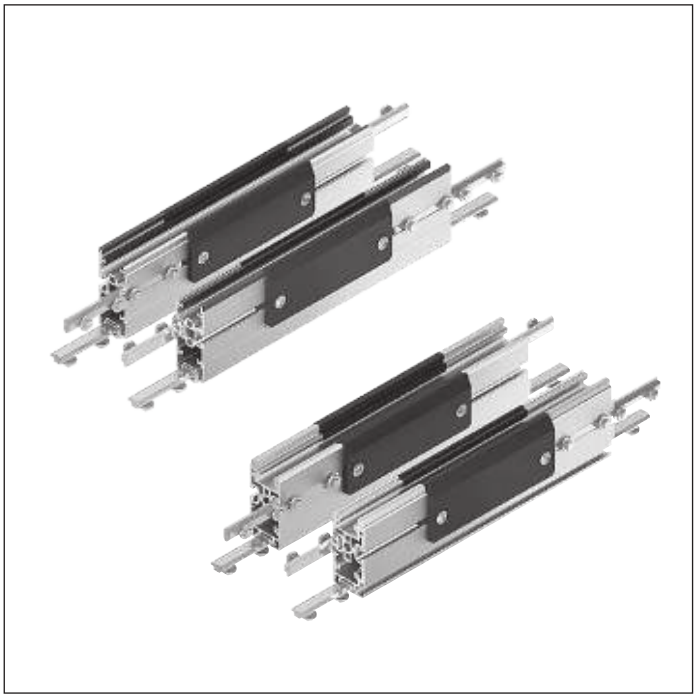
Technical data

Material number	3842560610
Material specification	Aluminum

Dimensions



Maintenance section ST 2/...-W



- For maintenance use (assembly, disassembly or lubrication)
- Two removable side covers each
- Suitable for flat-top chains

The maintenance section is a section element with removable caps. It is used for maintenance (assembly, disassembly, lubrication) of the flat-top chain conveyor medium.

Scope of delivery

- 2x maintenance section elements, 400 mm long
- Incl. 8x profile connectors

Ordering information

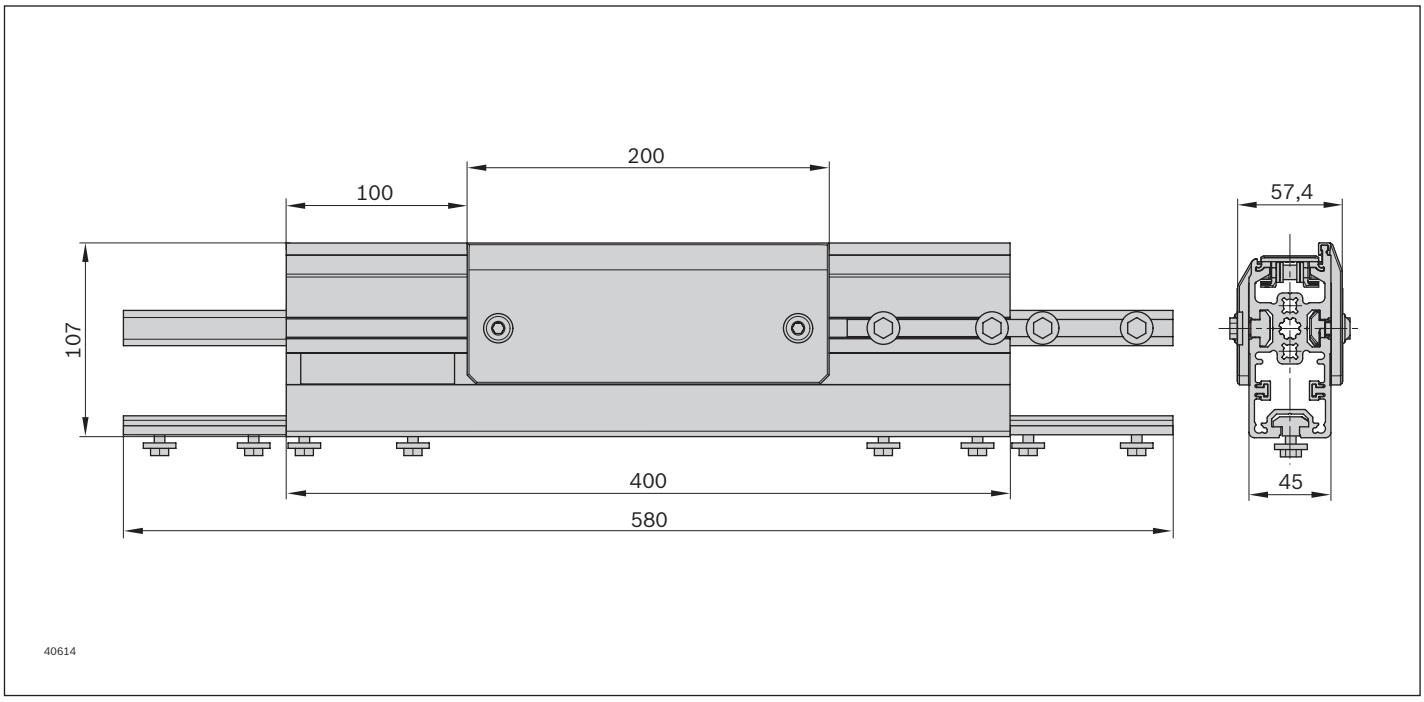
Product description	Material number
Maintenance section ST 2/C-W	3842564566
Maintenance section ST 2/C-H-W	3842564570

Technical data

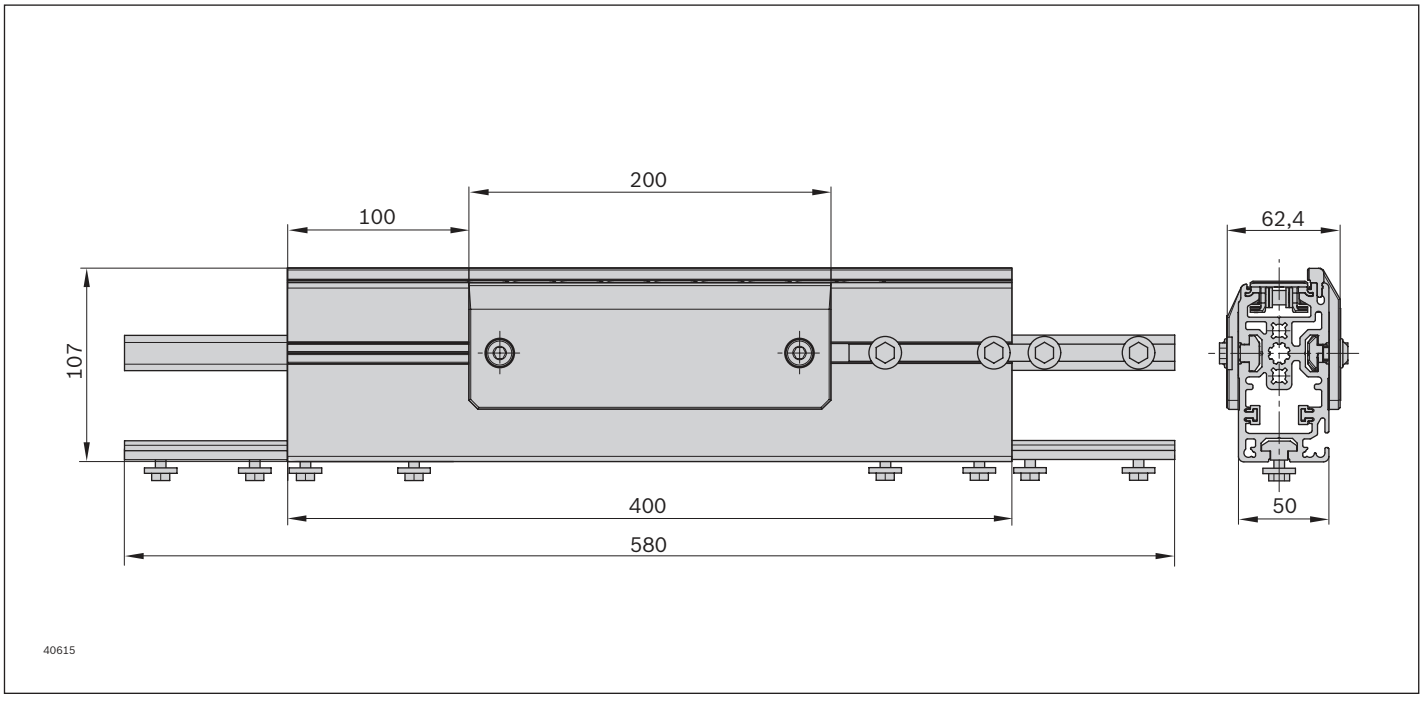
Material number			3842564566	3842564570
ESD			Yes	
Material specification			Section profile: Aluminum, natural; anodized Side cover: PE	
Length	l	mm	400	

Dimensions

Maintenance section ST 2/C-W



Maintenance section ST 2/C-H-W



Plastic flat-top chain
Chain lock

- Conveyor medium for use with conveyor unit self-assembly
- For use in conjunction with sections ST 2/C and ST 2/C-H
- Delivered in units of up to 12,000 mm. Lengths of l > 12,000 mm can be produced by connecting several flat-top chains using a chain lock
- Nickel-plated steel base chain version
- Steel chain with PA66 polyamide support caps

Notice:

- The plastic flat-top chain, which is also suitable for use in an EPA, cannot be used in curves and curve arcs

Conveyor medium for the workpiece pallets in the system TS 2*plus* in conjunction with conveyor section ST 2/C and ST 2/C-H.

Recommended accessories

- Additional chain lock, 3842551234
- Tool for flat-top chain, see p. 3-90

Scope of delivery

- Plastic flat-top chain (l = 12000 mm; black), incl. 1x chain lock
- ESD plastic flat-top chain (l = 12000 mm; gray), incl. 1x chain lock
- Chain lock, incl. 1x ESD flat-top (gray) with hole

Ordering information

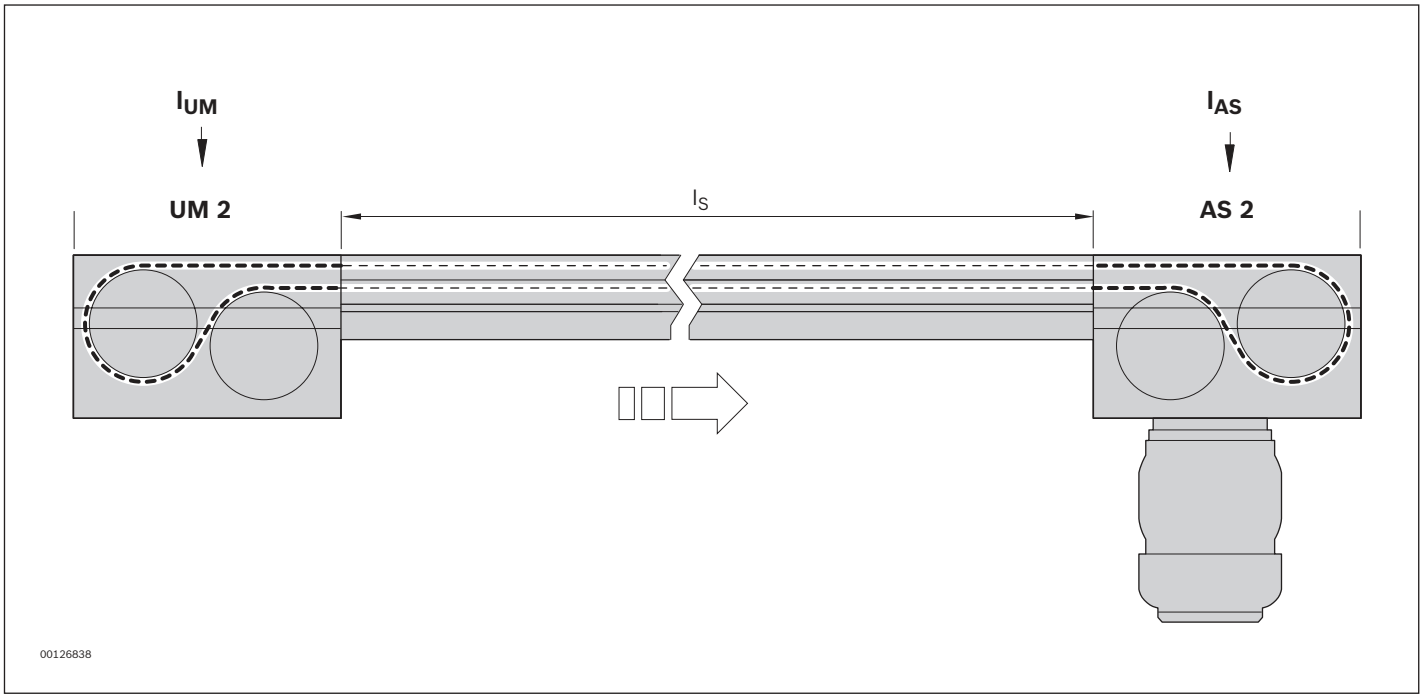
Product description	Material number
Plastic flat-top chain	3842551226
ESD plastic flat-top chain	3842551227
Chain lock, [1)]	3842551234

[1)] Can be used on both plastic flat-top chains

Technical data

Material number			3842551226	3842551227	3842551234
ESD			No	Yes	Yes
Material specification			Base chain: Steel; nickel-plated Flat-top: PA66	Base chain: Steel; nickel-plated Flat-top: PA66 (suitable for use in an EPA)	Steel; nickel-plated
Length	l	mm	12000	12000	

Dimensions



The required chain length is determined using the following formula.

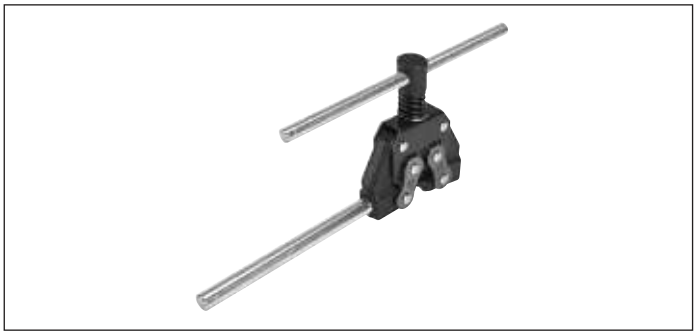
$$l_C = 2 \times l_S + l_{AS} + l_{UM}$$

l_C = Length of flat-top chain
l_S = Length of the section profile
l_{AS} = Length of the conveyor medium in the drive module
l_{UM} = Length of the conveyor medium at the return unit

Length of the conveyor medium for flat-top chains

$l_{UM\ 2/C\text{-}170}$ = 310 mm
$l_{UM\ 2/C\text{-}60}$ = 150 mm
l_{AS} 2/C-100 = 475 mm
l_{AS} 2/C-250 = 475 mm
l_{AS} 2/C-400 = 625 mm
l_{AS} 2/C-700 = 625 mm

Disassembly tool

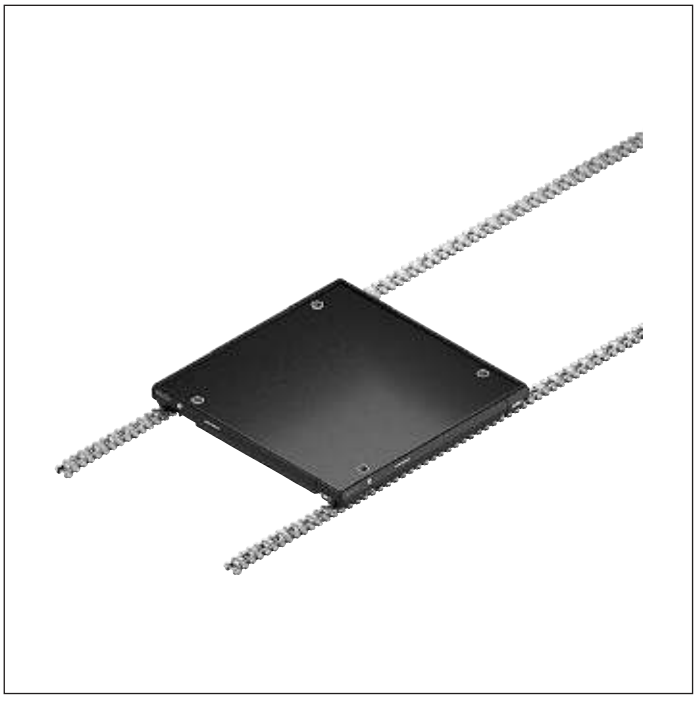


- For disassembling plastic flat-top chains

Ordering information

Product description	Material number
Disassembly tool for plastic flat-top chain	8981010510

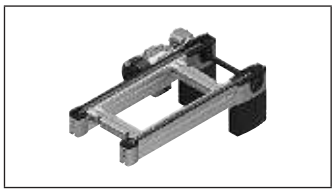
Accumulation roller chain conveyor medium



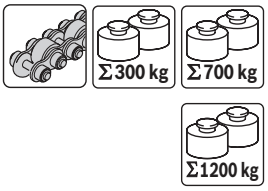
The accumulation roller chain is suitable for large, heavy workpiece pallets. Stress occurring due to media such as test oils or production emissions does not affect functional reliability.
The accumulation rollers do not only reduce the accumulation pressure on stop gates, but also enable a quick return to the transport speed via acceleration elements following work at a processing station.

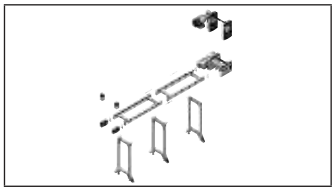
When combined with wear pads PE on the workpiece pallets, the version with plastic accumulation roller chain and steel glide profiles allows 1.5 kg/cm and the version with steel accumulation roller chain and steel glide profiles allows 2 kg/cm specific section load.

The new profiles HD equipped with steel glide profiles and steel guide profile provide a particularly sturdy, low-maintenance combination.



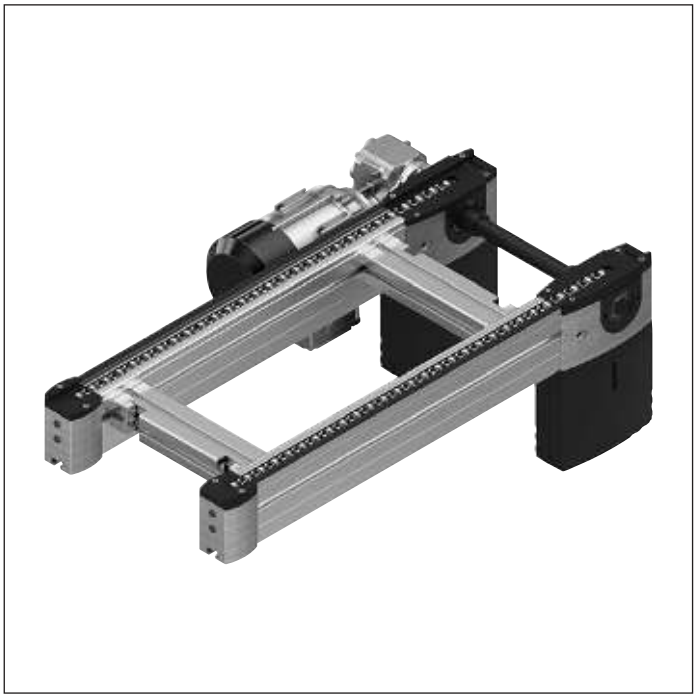
Belt sections BS 2/R... **3-94**





Components for conveyor units AS 2/..., UM 2/..., ST 2... **3-104**

Belt section BS 2/R-300



The belt section is a ready for operation conveyor section with own drive for the transportation of workpiece pallets in the longitudinal direction or for the transverse conveying of the workpiece pallet between parallel conveyor sections in connection with two lift transverse units HQ 2.

Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Condition on delivery

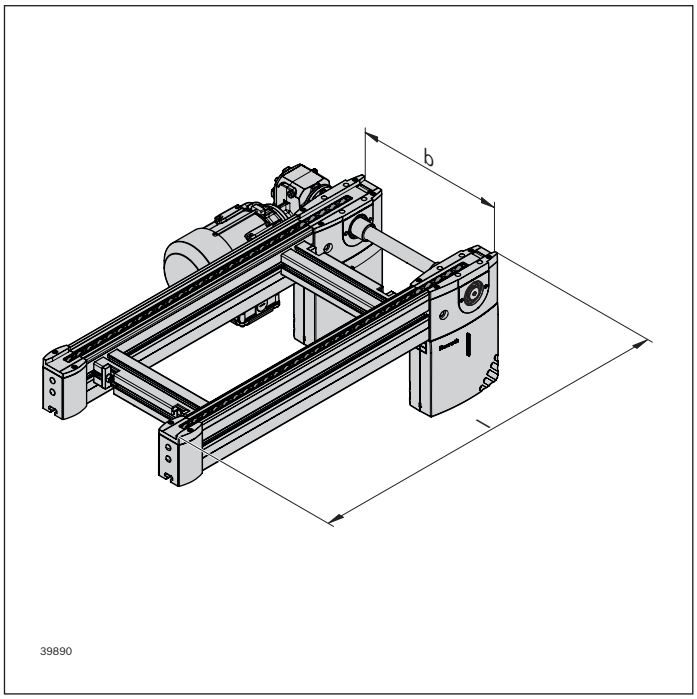
- Assembled

- Conveyor section ready to use
- Conveyor medium: Accumulation roller chain (suitable for use in an EPA)
- Reversible operation possible for l ≤ 2000 mm and accumulation roller chains without small parts protection
- Chain tensioner for reversible operation contained in drive head
- Motor mounting right, left or central (central from track width of 240 mm)
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Notice: With short, light workpiece pallets (l_{WT} = 160, 240), it may be necessary to ensure that conveyor trenches are traversable by installing the included acceleration element. When doing so, note the following:
Avoid accumulation above the acceleration element. Accumulation above the acceleration element causes severe roller wear and shortens the service life of the chain.

Ordering information



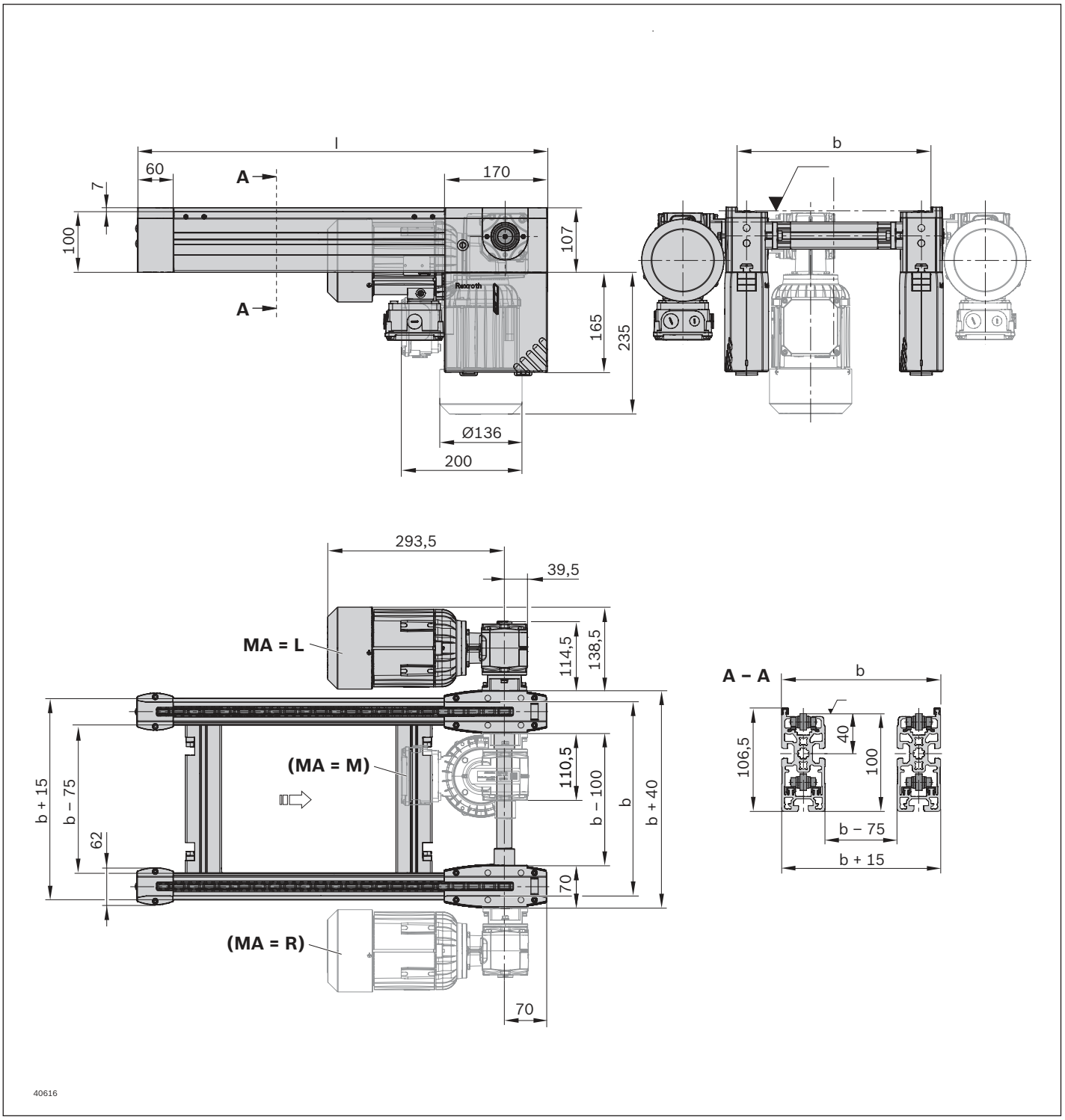
Material number		3842998937
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1]
l (mm)	Length	300 ... 6000
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[3]
RV	Reversible operation 0 = no reversible operation 1 = reversible operation	0; 1
GP	Glide profile S = corrosion-resistant steel	S
KT	Chain type 1 = accumulation roller chain with accumulation rollers PA 2 = accumulation roller chain with steel accumulation rollers 3 = accumulation roller chain with accumulation rollers PA and small parts protection 4 = accumulation roller chain with steel accumulation rollers and small parts protection	1; 2; 3; 4

[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear
[3] MA = M only for b ≥ 240 mm

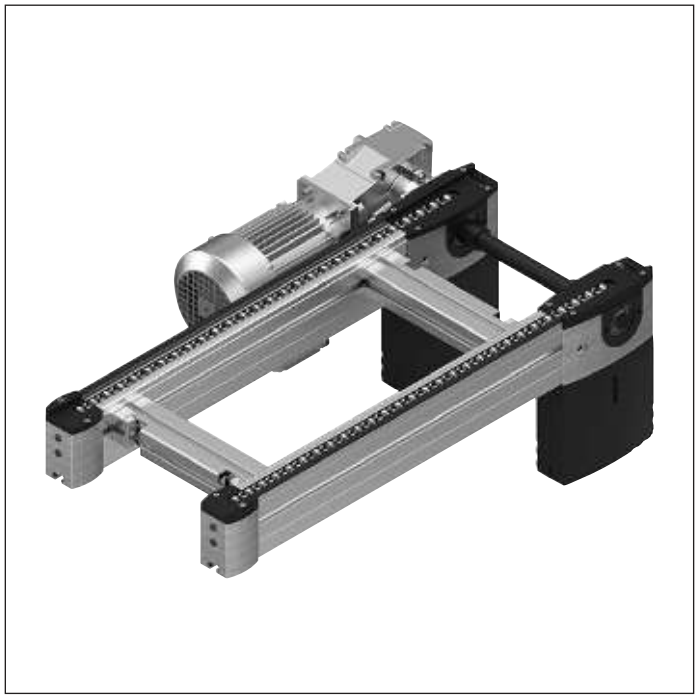
Technical data

Material number			3842998937
Max. section load in accumulation operation		kg	300
ESD			Yes
Material specification			Glide profile: Steel; corrosion-resistant Section profile: Aluminum, natural, anodized chain: PA or steel accumulation rollers Small parts protection: PA
Max. operating temperature	T	°C	+40
Length	l	mm	300 ... 6000

Dimensions


l
60
A
170
7
100
107
A
165
235
Ø136
200
b
293,5
39,5
MA = L
114,5
138,5
(MA = M)
110,5
b + 15
b – 75
62
b – 100
b
b + 40
70
(MA = R)
70
A – A
b
106,5
40
100
b – 75
b + 15
40616

Belt section BS 2/R-700



The belt section is a ready for operation conveyor section with own drive for the transportation of workpiece pallets in the longitudinal direction or for the transverse conveying of the workpiece pallet between parallel conveyor sections in connection with two lift transverse units HQ 2.

Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Condition on delivery

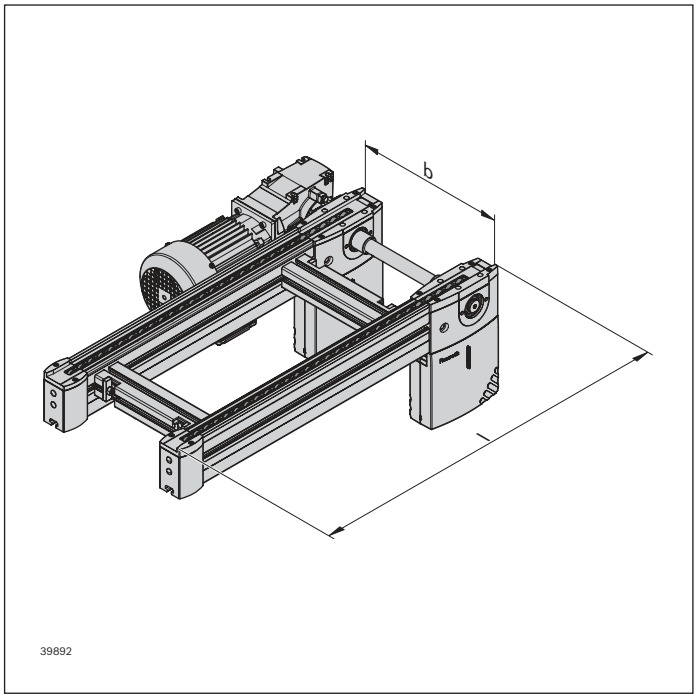
- Assembled

- Conveyor medium: Accumulation roller chain (suitable for use in an EPA)
- Reversible operation not permitted
- Motor mounting right or left
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Notice: With short, light workpiece pallets (l_{WT} = 160, 240), it may be necessary to ensure that conveyor trenches are traversable by installing the included acceleration element. When doing so, note the following:
Avoid accumulation above the acceleration element. Accumulation above the acceleration element causes severe roller wear and shortens the service life of the chain.

Ordering information



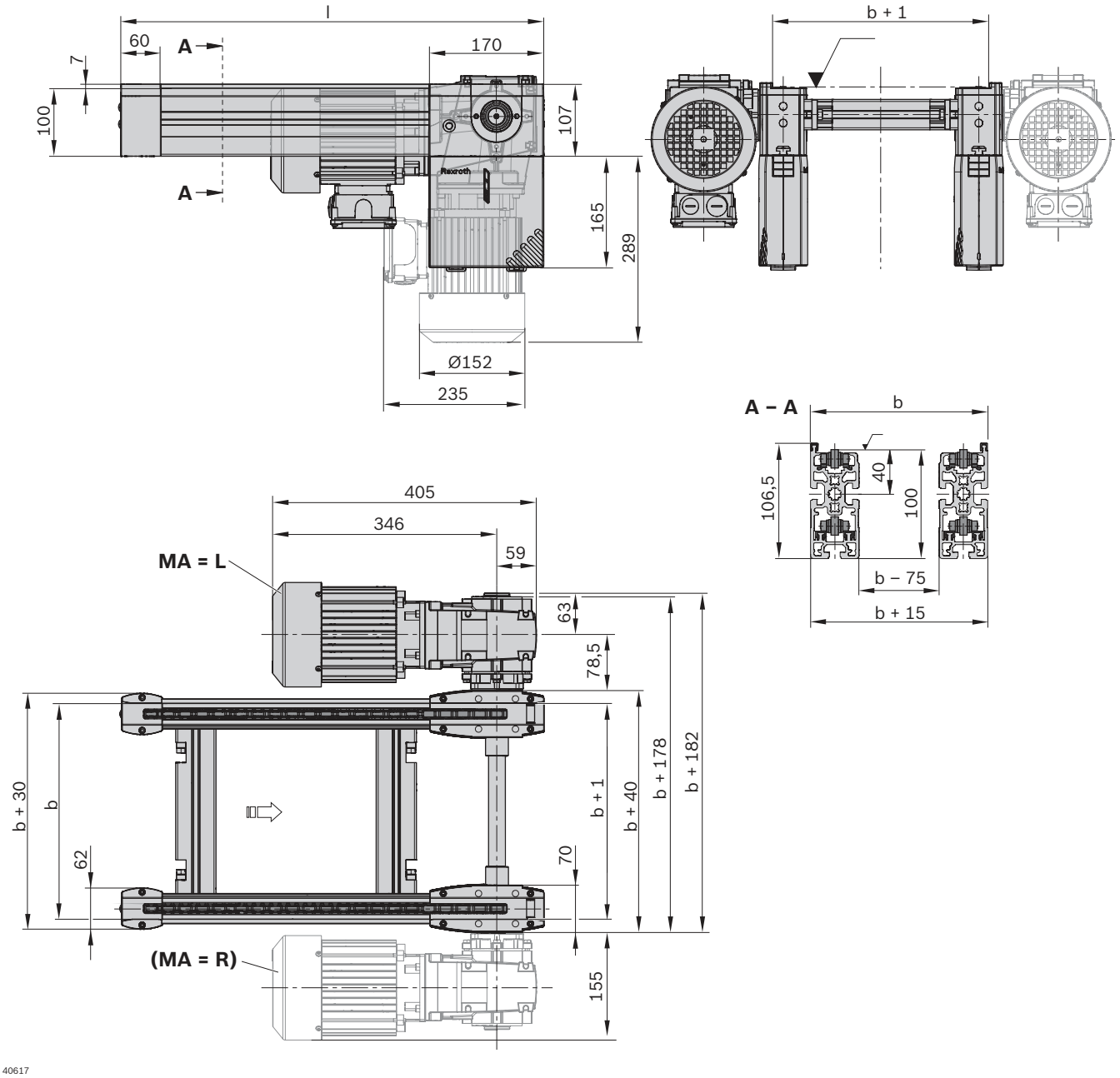
Material number		3842998938
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200;
		160 ... 1200[1]
l (mm)	Length	300 ... 6000
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left	R; L
GP	Glide profile S = corrosion-resistant steel	S
KT	Chain type 1 = accumulation roller chain with accumulation rollers PA 2 = accumulation roller chain with steel accumulation rollers 3 = accumulation roller chain with accumulation rollers PA and small parts protection 4 = accumulation roller chain with steel accumulation rollers and small parts protection	1; 2; 3; 4

[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear

Technical data

Material number			3842998938
Max. section load in accumulation operation		kg	700
ESD			Yes
Material specification			Glide profile: Steel; corrosion-resistant Section profile: Aluminum, natural, anodized chain: PA or steel accumulation rollers Small parts protection: PA
Max. operating temperature	T	°C	+40
Length	l	mm	300 ... 6000

Dimensions


l
60
A
170
7
100
107
A
165
289
Ø152
235
b + 1
A – A
b
106,5
40
100
b – 75
b + 15
405
346
59
MA = L
63
78,5
b + 30
b
62
70
b + 1
b + 40
b + 178
b + 182
(MA = R)
155
40617

Belt section BS 2/R-H

- Conveyor section ready to use
- Sturdy version for especially heavy-duty systems
- Conveyor medium: Accumulation roller chain (suitable for use in an EPA)
- Reversible operation possible for l ≤ 2000 mm and accumulation roller chains without small parts protection
- Chain tensioner for reversible operation is mounted on the return unit at RV = 1
- Motor mounting right, left or central
- Motor connection: Optionally with cable/plug or terminal box
- Profile width: 50 mm
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

The belt section is a ready for operation conveyor section with own drive for the transportation of workpiece pallets in the longitudinal direction or for the transverse conveying of the workpiece pallet between parallel conveyor sections in connection with two lift transverse units HQ 2.

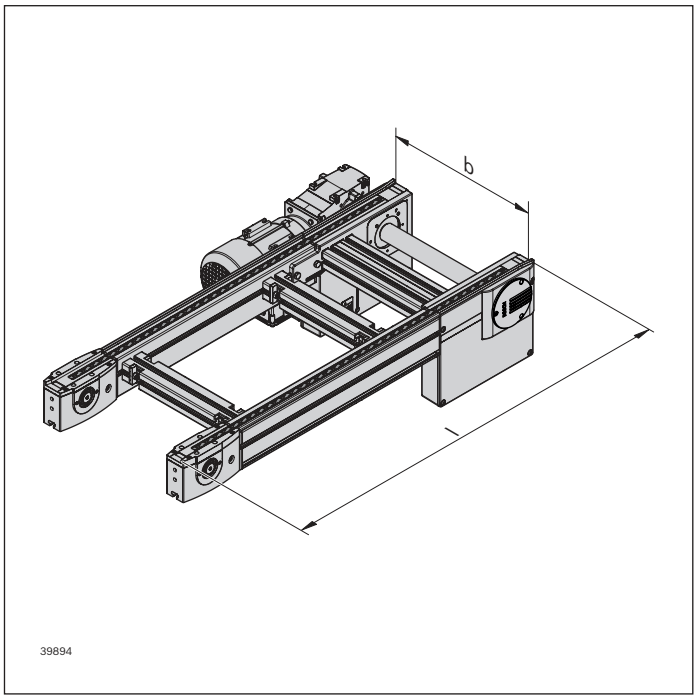
Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Condition on delivery

- Assembled

Ordering information



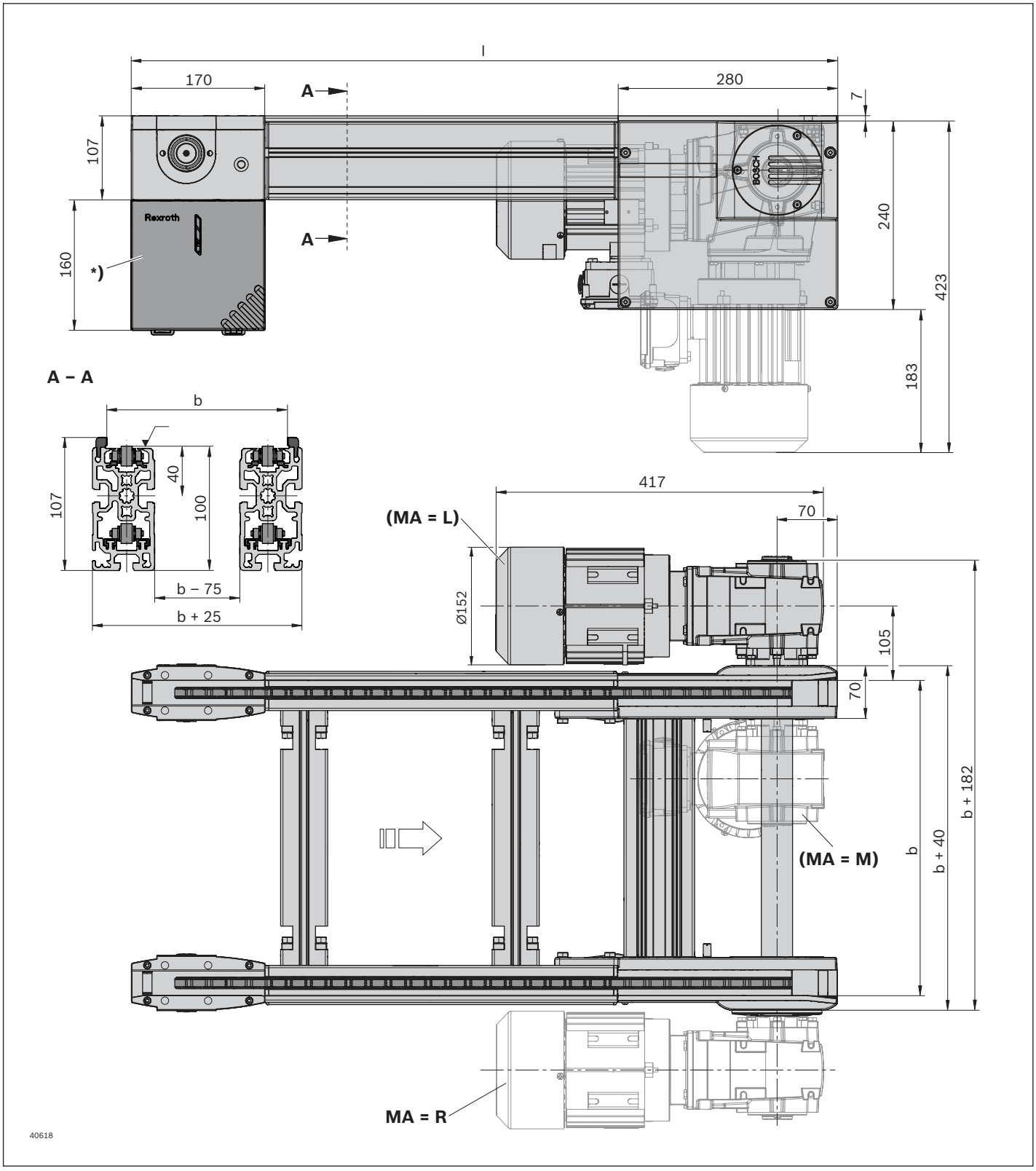
Material number		3842998939
b (mm)	Track width in direction of transport	400 ... 1200
l (mm)	Length	650 ... 6000
v_N (m/min)	Nominal speed	0[1]; 6; 9; 12; 15; 18[2]
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M
RV	Reversible operation 0 = no reversible operation 1 = reversible operation	0, 1[3]
GP	Glide profile S = corrosion-resistant steel	S
KT	Chain type 1 = accumulation roller chain with accumulation rollers PA 2 = accumulation roller chain with steel accumulation rollers 3 = accumulation roller chain with accumulation rollers PA and small parts protection 4 = accumulation roller chain with steel accumulation rollers and small parts protection	1; 2; 3; 4

[1] v_N = 0: without motor or gear
[2] Not possible at f = 60 Hz
[3] RV = 1 possible when l ≤ 2000 mm and section loads < 400 kg; no reversible operation for chains with small parts protection (KT = 3, 4)

Technical data

Material number			3842998939
Max. section load in accumulation operation		kg	1200
ESD			Yes
Material specification			Glide profile: Steel; corrosion-resistant Section profile: Aluminum, natural; anodized Chain: PA or steel accumulation rollers Small parts protection: PA
Length	l	mm	650 ... 6000

Belt section BS 2/R-H dimensions



* with chain tensioner (RV = 1)

Connection belt BS 2/C+R

- Conveyor medium: Toothed belt (suitable for use in an EPA)

The head-to-head connection of the drive and return heads in conveyor units results in short, non-driven sections. The connection belt is used to bridge these > 180 mm conveyor trenches by using short workpiece pallets with l_{WT} < 320 mm.

Notice: Positioning of WTs in the area of the connection belt is not allowed.

Condition on delivery

- Assembled

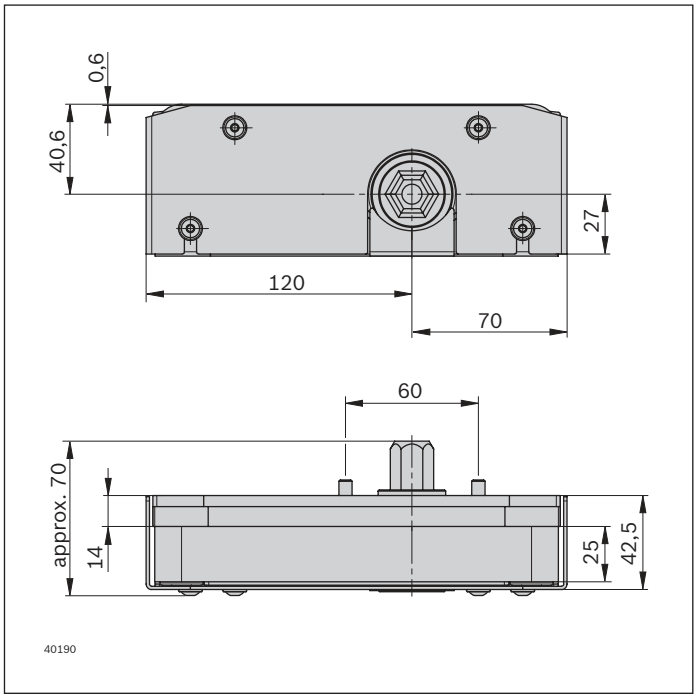
Ordering information

Product description	Material number
Connection belt, left	3842528480
Connection belt, right	3842539096

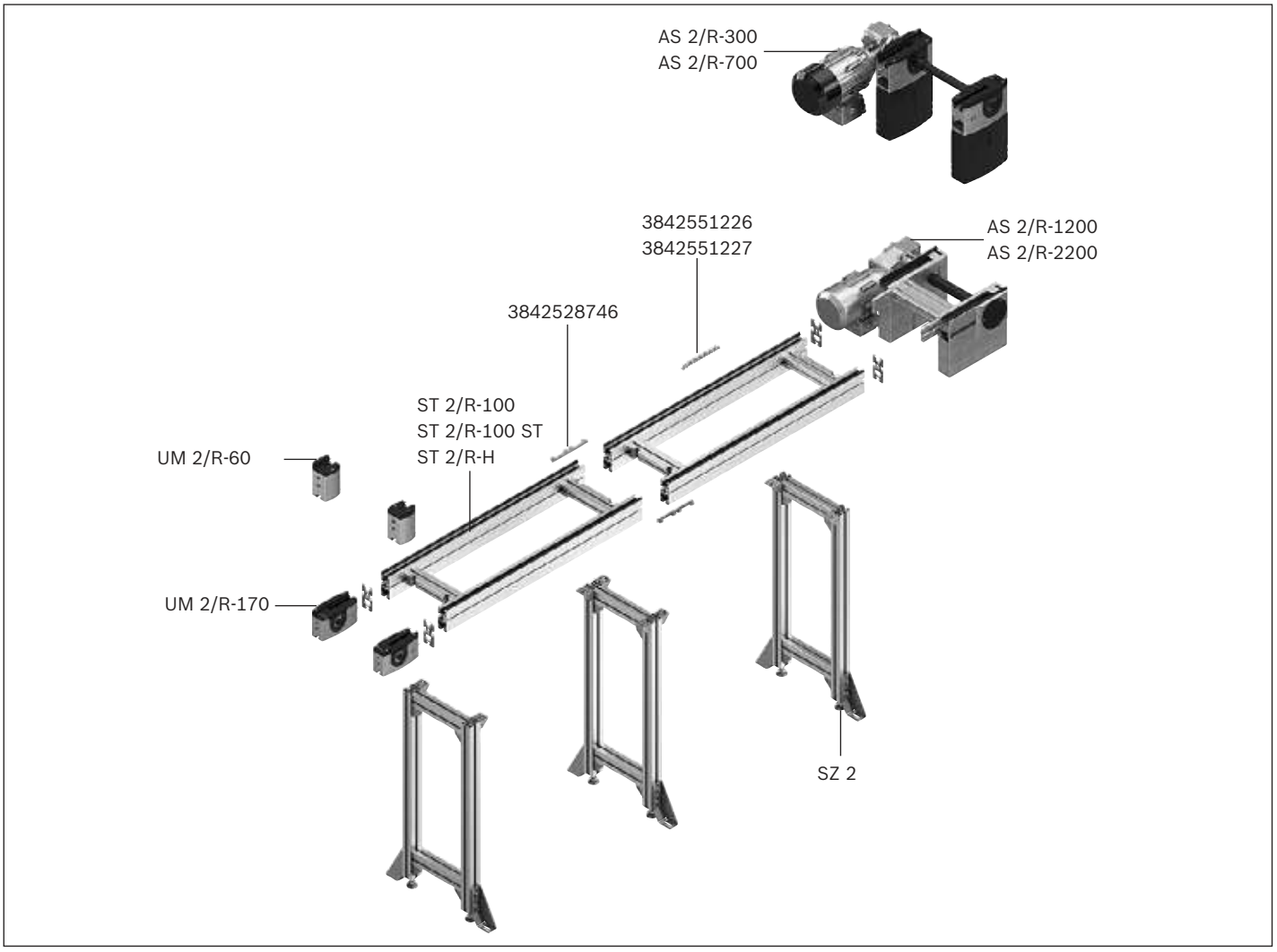
Technical data

Material number	3842528480	3842539096
ESD	Yes	Yes

Dimensions



Conveyor units
Accumulation roller chain conveyor medium

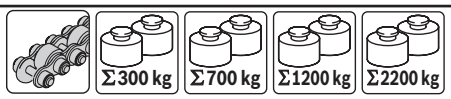


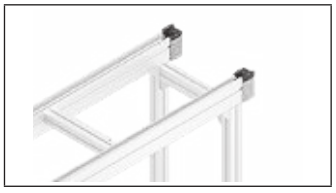
A conveyor unit is a complete unit used for the linear conveying of workpiece pallets. It consists of:

- Drive module AS 2/R, see p. 3-106
- Return unit UM 2/R, see p. 3-118
- Sections ST 2/R..., see p. 3-122
- Leg sets SZ 2/..., see p. 6-2

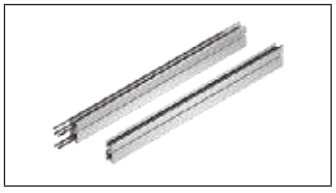
The UM 2/R and AS 2/R may be set up right next to each other, which allows for conveyor unit combinations.

Drive modules for section loads up to m_G = 300 kg; 700 kg; 1200 kg, or up to m_G = 2200 kg per conveyor unit.

Drive module AS 2/R...  **3-106**



Return unit UM 2/R... **3-118**



Section ST 2/R... components **3-122**

Accumulation roller chain conveyor medium, accessories **3-137**

Drive module AS 2/R-300

The drive module AS 2/R... drives the conveyor medium accumulation roller chain in self-built conveyor units with section, return unit and accumulation roller chain.

Recommended accessories

- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

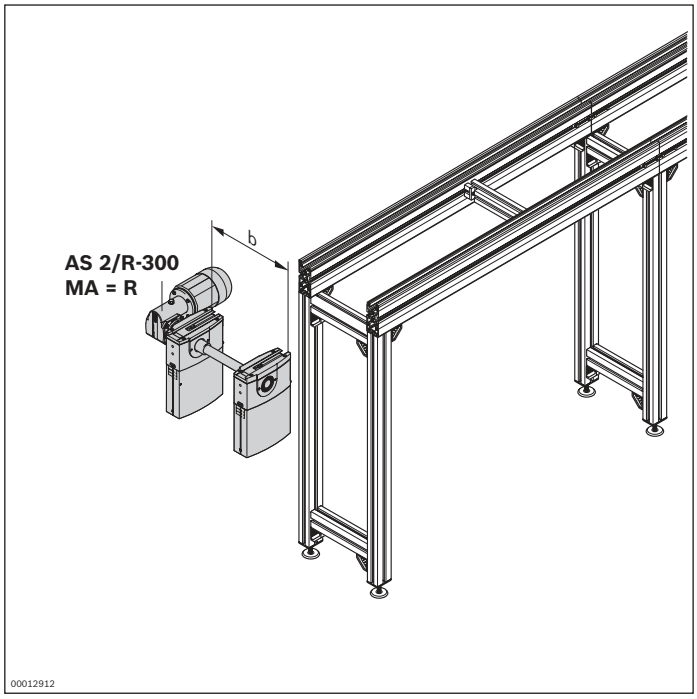
Condition on delivery

- Assembled

- For conveyor unit self-assembly
- For use in conjunction with return units UM 2/... and sections ST 2/...
- Conveyor medium: Accumulation roller chain (suitable for use in an EPA)
- Reversible operation possible for l ≤ 2000 mm and accumulation roller chains without small parts protection
- Motor mounting right, left or central (central from track width of 240 mm)
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



Material number		3842998052
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1]
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[3]
RV	Reversible operation 0 = no reversible operation 1 = reversible operation	0; 1[4]

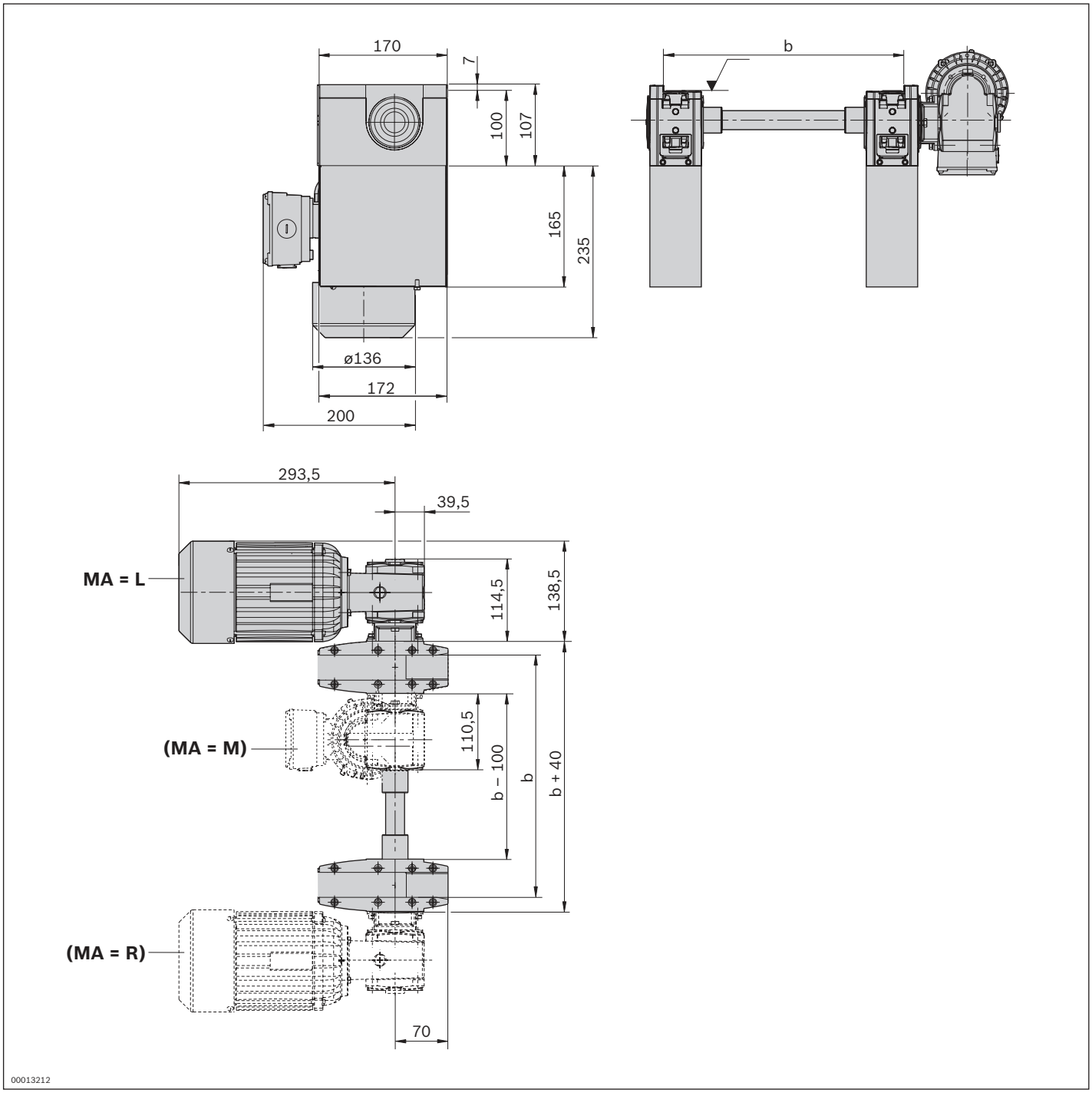
[1] Individual width variants available
[2] v_N = 0: without motor or gear
[3] MA = M only for b ≥ 240 mm
[4] RV = 1 possible when l ≤ 2000 mm; no reversible operation for chains with small parts protection (KT = 3, 4)

Technical data

Material number			3842998052
Max. section load in accumulation operation		kg	300
ESD			Yes
Required conveyor medium length[5]	l_{AS}	mm	475

[5] Formula for calculating the conveyor medium, see p. 3-138

Dimensions


170
7
100
107
165
235
ø136
172
200
b
293,5
39,5
MA = L
114,5
138,5
(MA = M)
110,5
b – 100
b
b + 40
(MA = R)
70
00013212

Drive module AS 2/R-700

The drive module AS 2/R... drives the conveyor medium accumulation roller chain in self-built conveyor units with section, return unit and accumulation roller chain.

Recommended accessories

- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

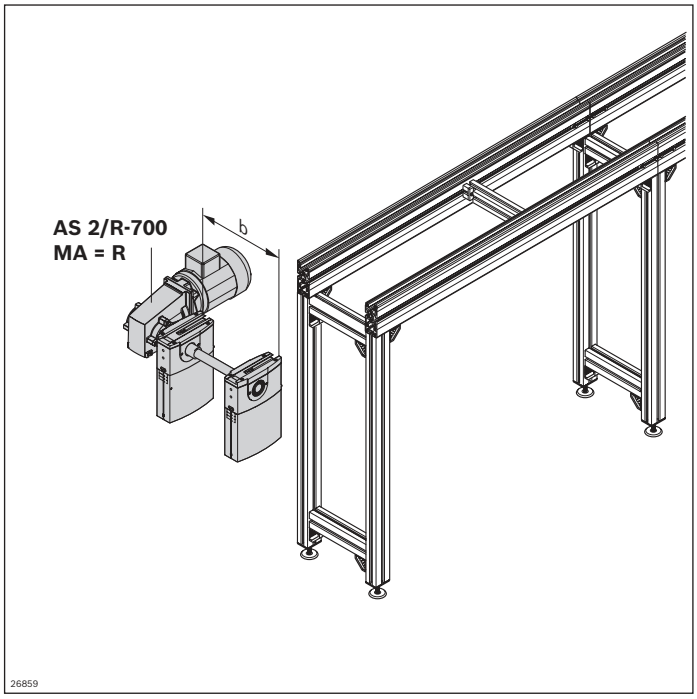
Condition on delivery

- Assembled

- For conveyor unit self-assembly
- For use in conjunction with return units UM 2/... and sections ST 2/...
- Conveyor medium: Accumulation roller chain (suitable for use in an EPA)
- Motor mounting right or left
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



Material number		3842998072
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1)]
v_N (m/min)	Nominal speed	0[2)]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left	R; L

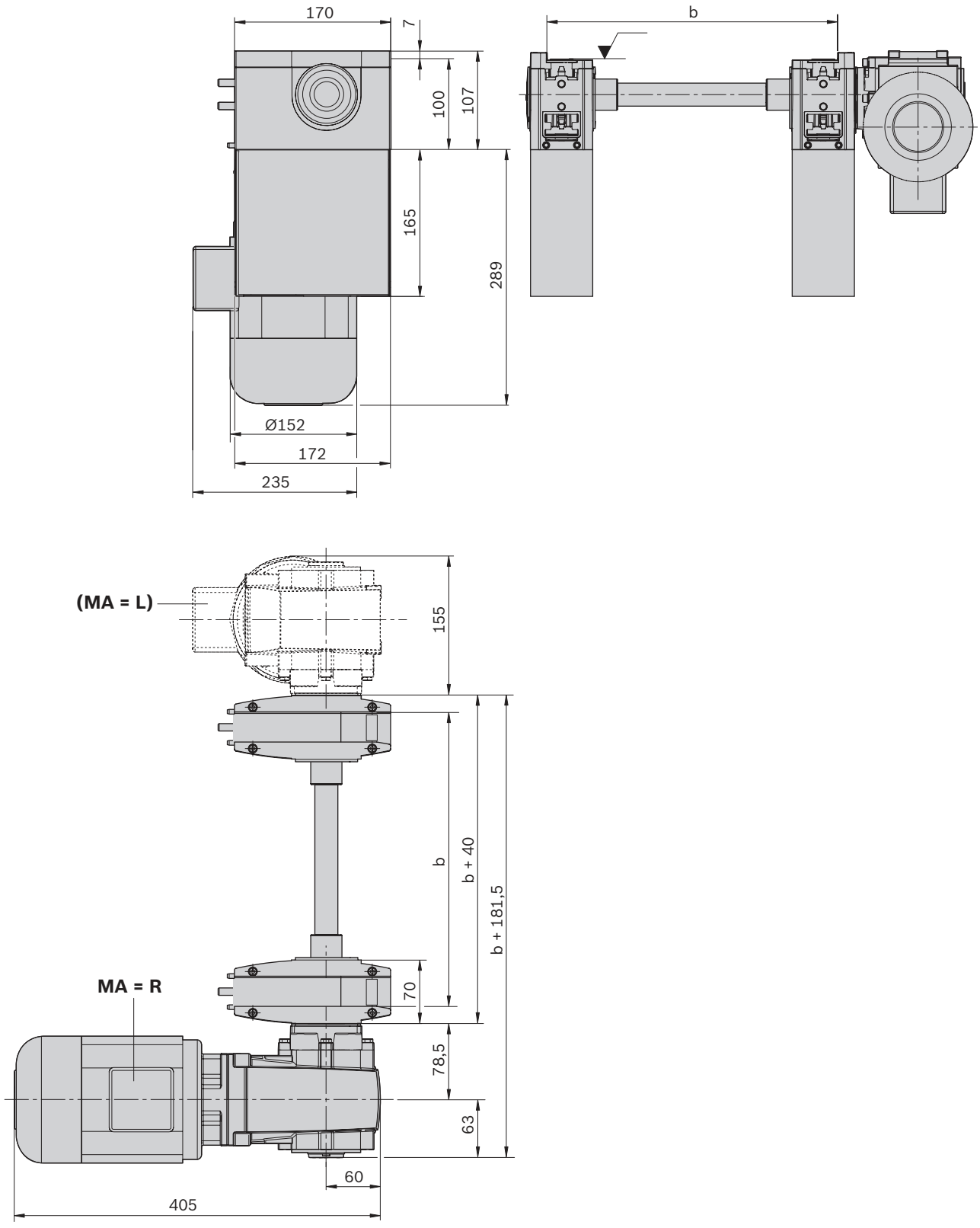
[1)] Individual width variants can be ordered
[2)] v_N = 0: without motor or gear

Technical data

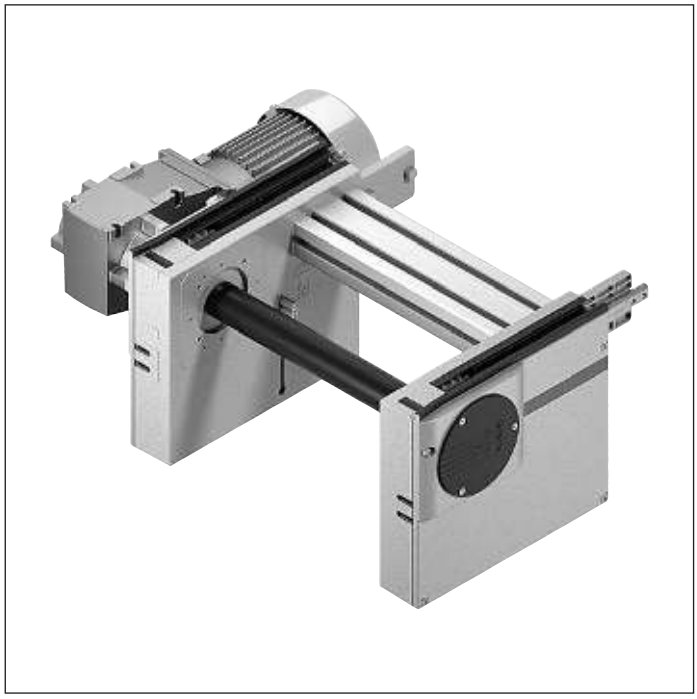
Material number			3842998072
Max. section load in accumulation operation		kg	700
ESD			Yes
Required conveyor medium length[3)]	l_{AS}	mm	475

[3)] Formula for calculating the conveyor medium, see p. 3-138

Dimensions


170
7
100
107
165
289
b
Ø152
172
235
(MA = L)
155
b
b + 40
b + 181,5
MA = R
70
78,5
63
60
405
40620

Drive module AS 2/R-1200



The drive module AS 2/R... drives the conveyor medium accumulation roller chain in self-built conveyor units with section, return unit and accumulation roller chain.

Recommended accessories

- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

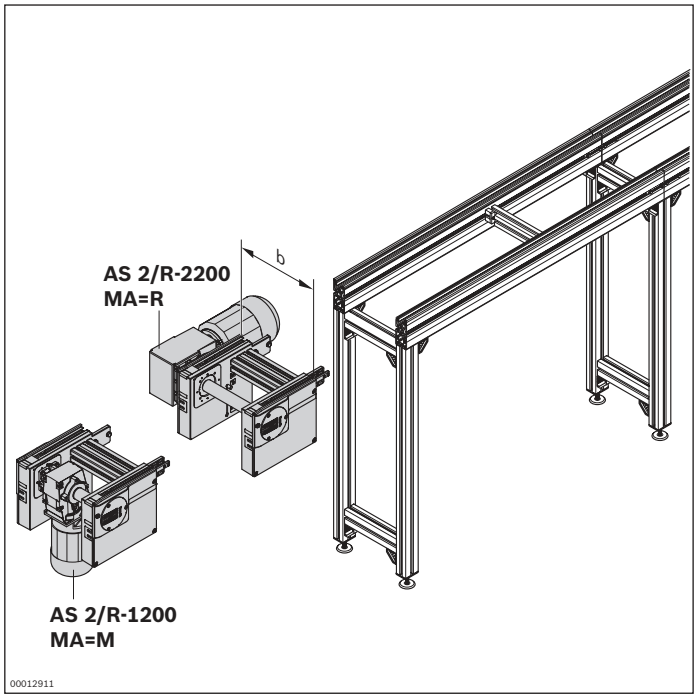
Condition on delivery

- Assembled

- For conveyor unit self-assembly
- For use in conjunction with return units UM 2/... and sections ST 2/...
- Conveyor medium: Accumulation roller chain (suitable for use in an EPA)
- Motor mounting right, left or central (central from track width of 240 mm)
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



Material number		3842998040
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1)]
v_N (m/min)	Nominal speed	0[2)]; 6; 9; 12; 15; 18[3)]
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[4)]

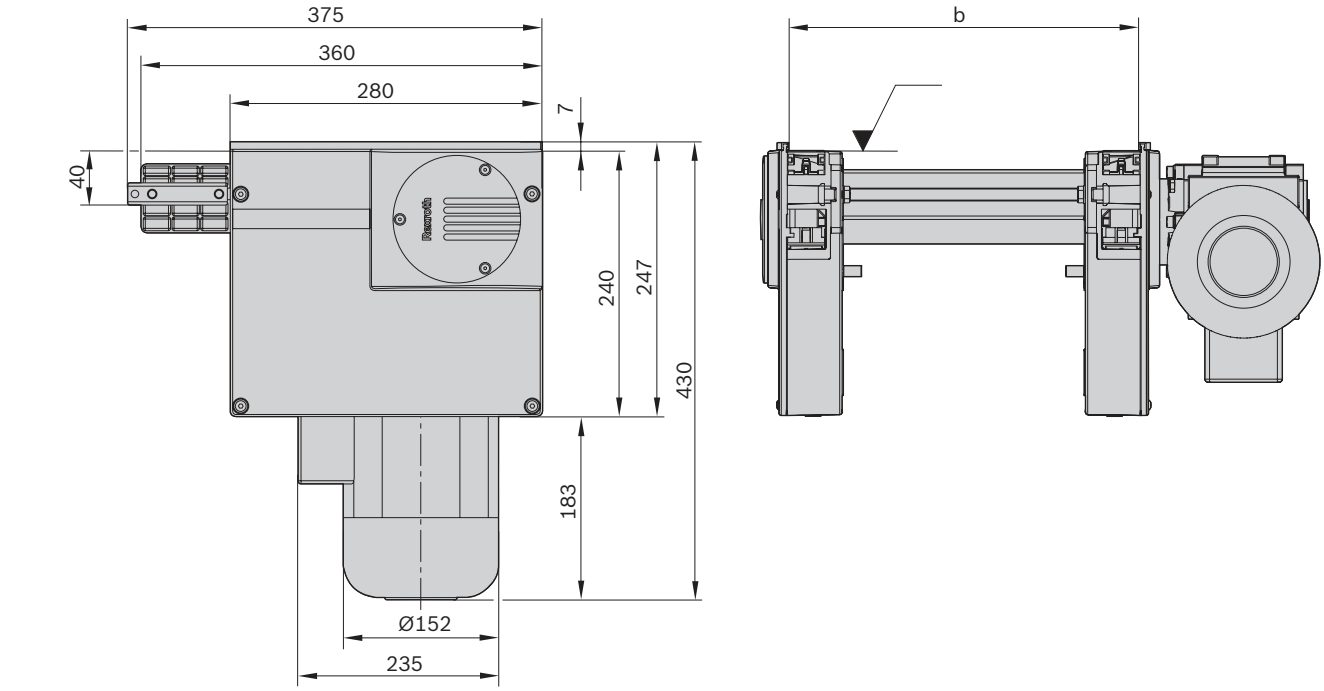
[1)] Individual width variants can be ordered
[2)] v_N = 0: without motor or gear
[3)] Not possible at f = 60 Hz
[4)] MA = M when b ≥ 240 mm

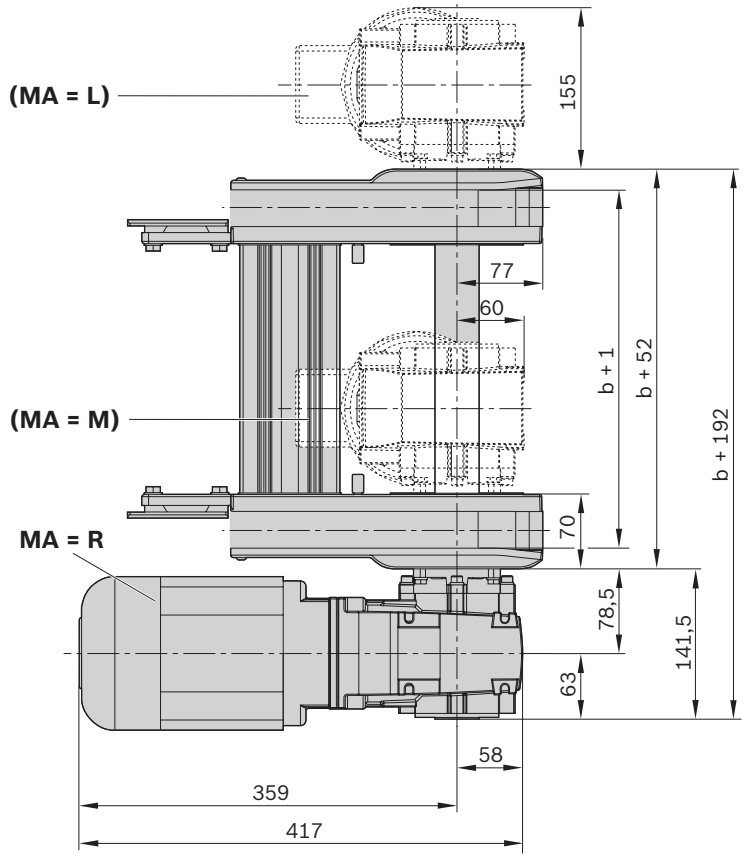
Technical data

Material number			3842998040
Max. section load in accumulation operation		kg	1200
ESD			Yes
Required conveyor medium length[5)]	l_{AS}	mm	625

[5)] Formula for calculating the conveyor medium, see p. 3-138

Dimensions





40621

Drive module AS 2/R-2200

The drive module AS 2/R... drives the conveyor medium accumulation roller chain in self-built conveyor units with section, return unit and accumulation roller chain.

Recommended accessories

- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

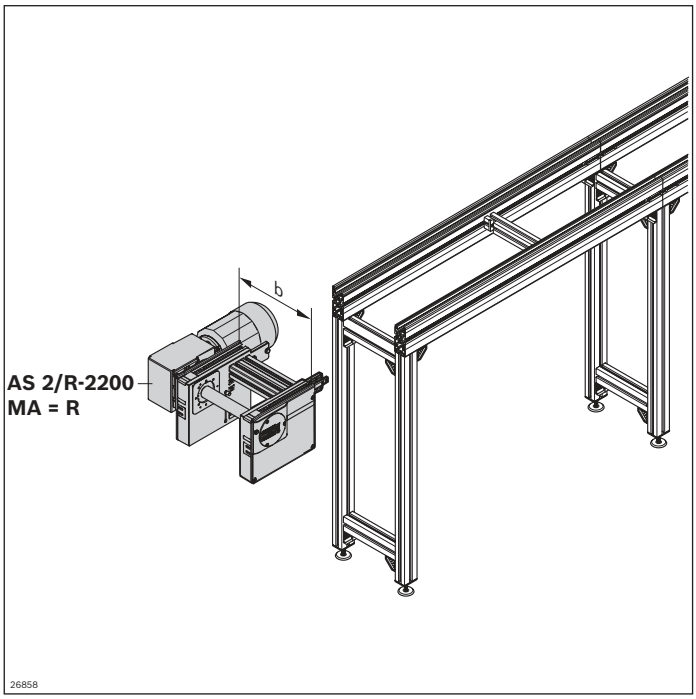
Condition on delivery

- Assembled

- For conveyor unit self-assembly
- For use in conjunction with return units UM 2/... and sections ST 2/...
- Conveyor medium: Accumulation roller chain (suitable for use in an EPA)
- Motor mounting right, left or central (central from track width of 240 mm)
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



Material number		3842998041
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1]
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18[3]
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[4]

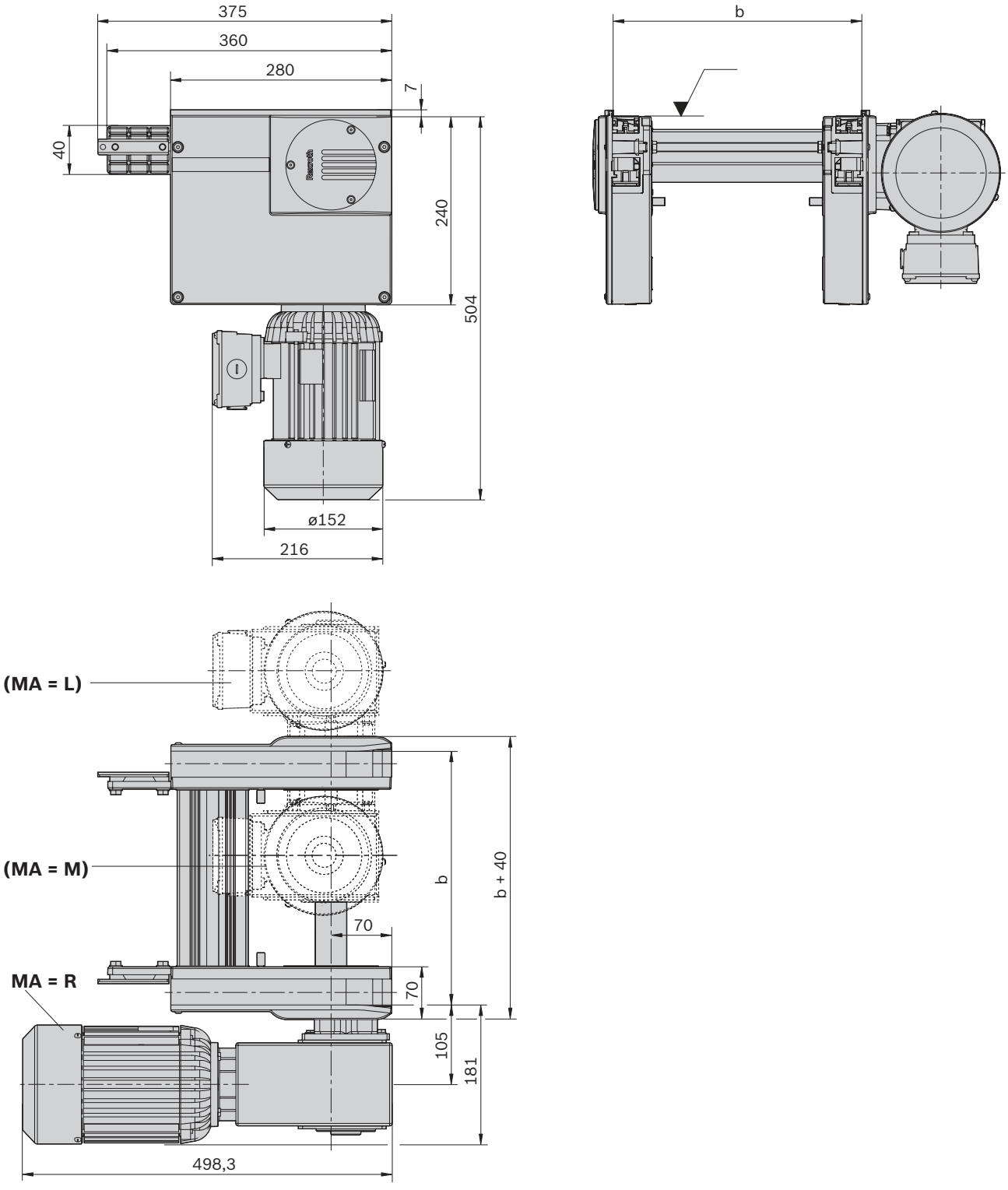
[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear
[3] Reduced load to 1800 kg
[4] MA = M only when b ≥ 240 mm

Technical data

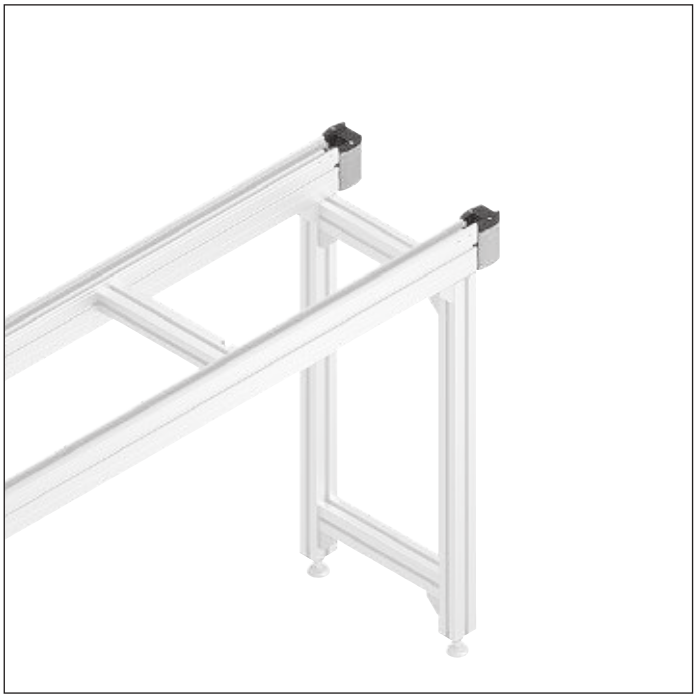
Material number			3842998041
Max. section load in accumulation operation		kg	2200
ESD			Yes
Required conveyor medium length[5]	l_{AS}	mm	625

[5] Formula for calculating the conveyor medium, see p. 3-138

Dimensions


375
360
280
7
40
240
504
ø152
216
b
(MA = L)
(MA = M)
MA = R
b
b + 40
70
70
105
181
498,3
40622

Return unit UM 2/R-60



The return unit is used for constructing conveyor units. It guides the conveyor medium at the end of the conveyor unit back to the drive module.

- For conveyor unit self-assembly
- Conveyor medium: Accumulation roller chain (suitable for use in an EPA)
- For use in conjunction with all drive modules AS 2/R-... and sections ST 2/...
- Version with sliding piece for return unit, recommended for sections up to l = 6000 mm

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Scope of delivery

- One pair of return heads
- Incl. all fastening material to mount on the conveyor section ST 2/R-...

Condition on delivery

- Assembled

Ordering information

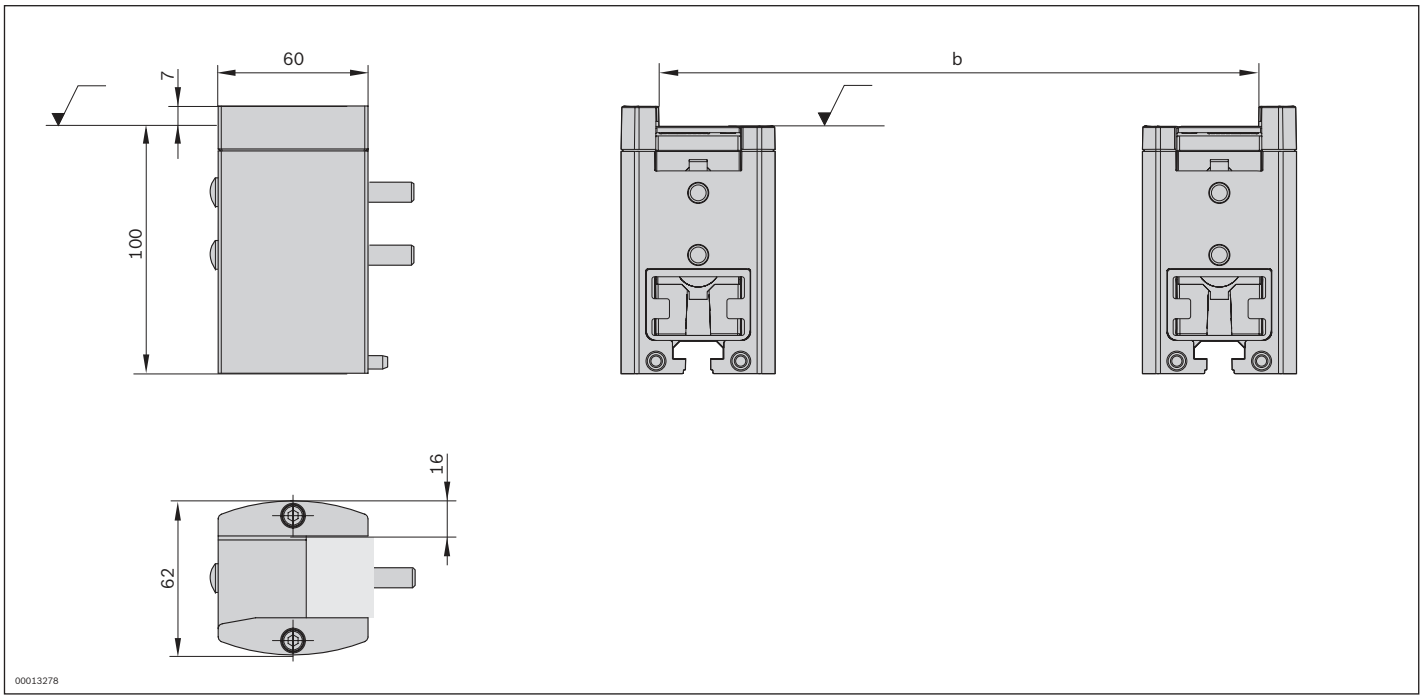
Product description	Material number
Return unit UM 2/R-60	3842528803

Technical data

Material number			3842528803
ESD			Yes
Required conveyor medium length[1)]	l_{UM}	mm	150

[1)] Formula for calculating the conveyor medium, see p. 3-138

Dimensions



Return unit UM 2/R-170

The return unit is used for constructing conveyor units. It guides the conveyor medium at the end of the conveyor unit back to the drive module.

- For conveyor unit self-assembly
- Conveyor medium: Accumulation roller chain (suitable for use in an EPA)
- For use in conjunction with all drive modules AS 2/R-... and sections ST 2/...
- Version with pinion for return unit recommended for sections of l ≥ 6000 mm or for sections of any length for reversible operation

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Scope of delivery

- One pair of return heads
- Incl. all fastening material to mount on the conveyor section ST 2/R-...

Condition on delivery

- Assembled

Ordering information

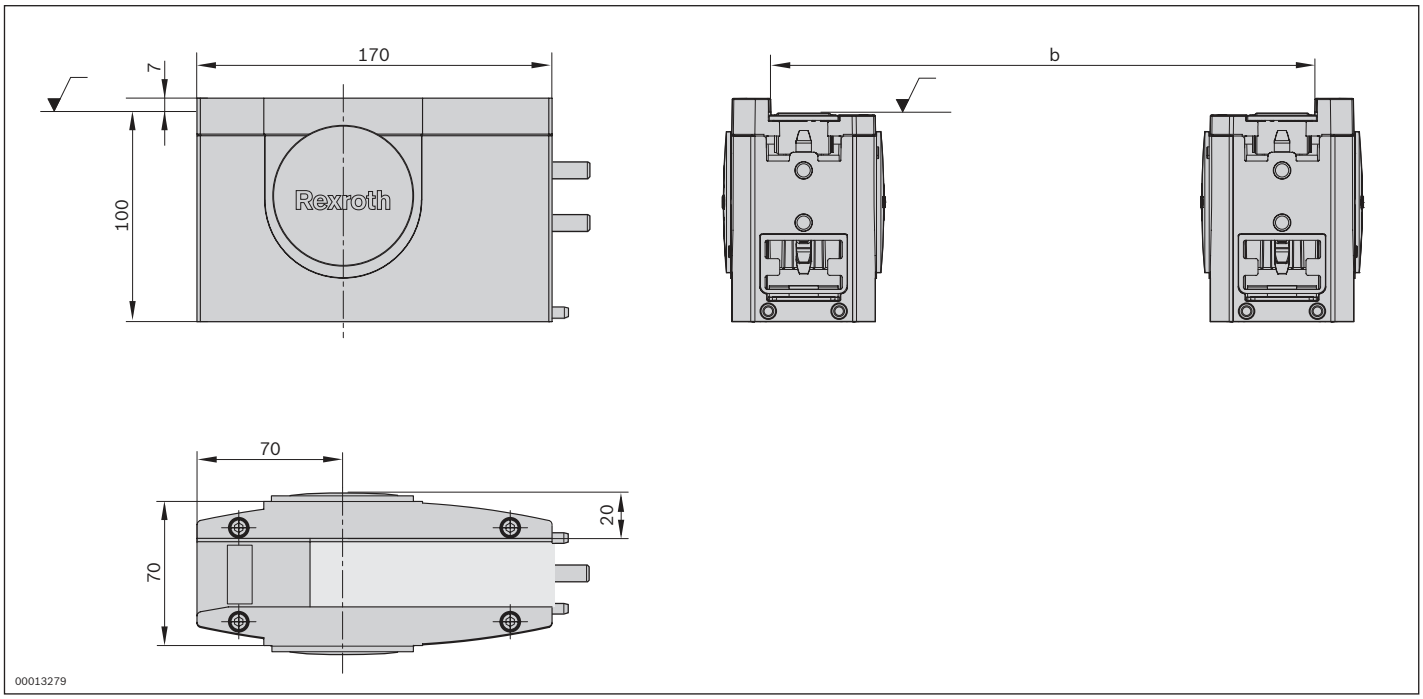
Product description	Material number
Return unit UM 2/R-170	3842528807

Technical data

Material number			3842528807
ESD			Yes
Required conveyor medium length[1)]	l_{UM}	mm	310

[1)] Formula for calculating the conveyor medium, see p. 3-138

Dimensions



Section, section profiles

Sections can be individually configured for special requirements by selecting various section, glide, and guide profiles.

Depending on the load spectrum of the conveyor medium, stainless steel glide profiles can be inserted in the section profile. Use of steel glide profiles increases resistance to wear and temperature. This opens up new areas of application for the TS 2*plus*.

The proven profiles SP 2/R-100 are primarily suitable for medium to high loads in simple system layouts.

Especially suited for high strains and loads, the new, sturdy section profiles SP 2/R-H have been developed for accumulation roller chains. In addition to a more robust profile cross section and improvements to details (integrated cable duct), the use of stainless steel in the guide profile enhances the system. An adapter plate not only enables visually attractive mounting of the section profiles SP 2/R-H with drive modules in the TS 2*plus*, it also securely keeps the glide profiles (sliding guides) from shifting.

Section ST 2/R-100

The section is used for the construction of conveyor units in conjunction with the drive modules AS 2/R and the return units UM 2/R... .

Recommended accessories

- Leg sets SZ 2/..., see p. 6-4
- Cross connector, see p. 9-17
- Profile connector, see p. 9-16
- FP 2/U is recommended for long sections > 6 m, for operation with specific load > 2 kg/cm and for large workpiece pallets

Scope of delivery

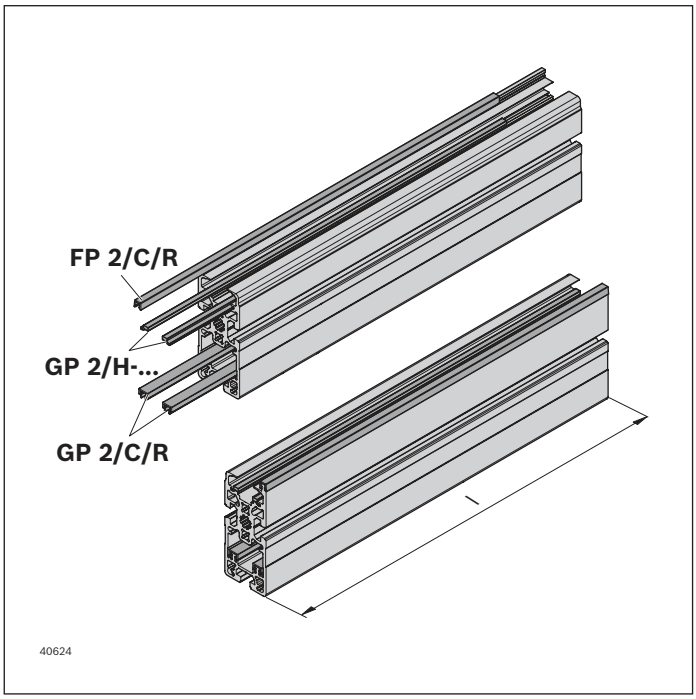
- 2x section profile SP 2/R with assembled guide and glide profiles GP 2/H-ST, GP 2/C/R, FP 2/C/R

- For conveyor unit self-assembly for higher section loads
- For use in conjunction with drive modules AS 2/R..., return units UM 2/R-..., and steel glide profiles

Condition on delivery

- Assembled

Ordering information

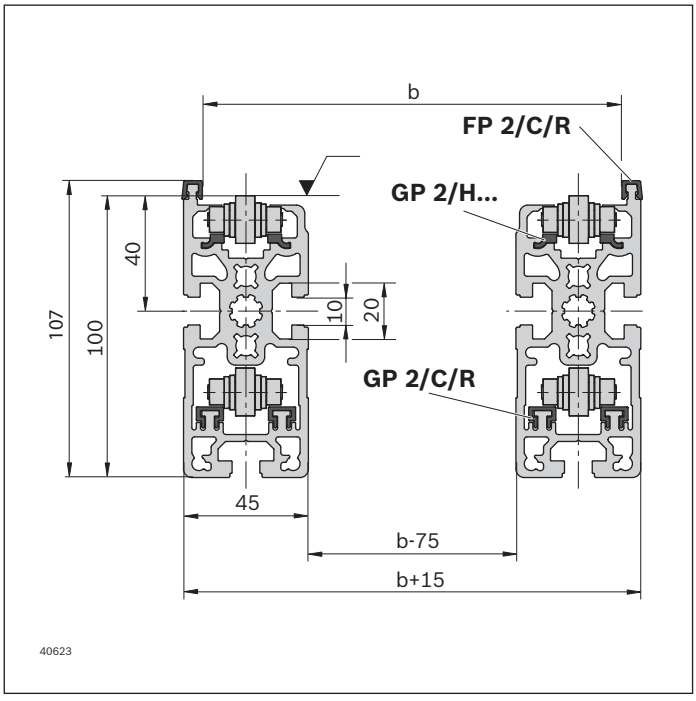


Material number		3842994190
l (mm)	Length	60 ... 6000

Technical data

Material number			3842994190
Material specification			Glide profile: GP 2/C/R: PA, GP 2/H-ST: Steel; corrosion-resistant Guide profile: FP 2/C/R: PA Section profile: Aluminum, natural; anodized
Max. operating temperature	T	°C	+40
Length	l	mm	60 ... 6000

Dimensions



Section ST 2/R-H

- For conveyor unit self-assembly
- For use in conjunction with drive modules AS 2/R-... and return units UM 2/R-...
- Section profile in especially sturdy design for section loads of up to 30 % higher

The section is used for the construction of heavy-duty conveyor units in conjunction with the drive modules AS 2/R-... and the return units UM 2/R-... .

Required accessories

- Adapter plate kit ST 2/R-H, see p. 3-131

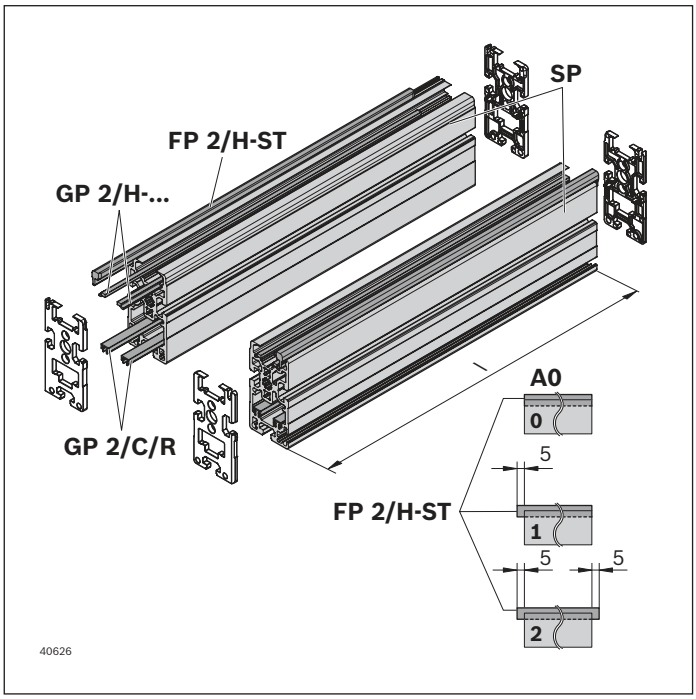
Recommended accessories

- Leg sets SZ 2/...-H, see p. 6-4
- Cross connector, see p. 9-17
- Profile connector, see p. 9-16
- Cover rail for cable duct, see p. 9-20
- FP 2/U is recommended for long sections > 6 m, for operation with specific load > 2 kg/cm and for large workpiece pallets

Scope of delivery

- 2x section profile SP 2/R-H with assembled guide and glide profiles GP 2/H-ST, GP 2/C/R, FP 2/H-ST

Ordering information

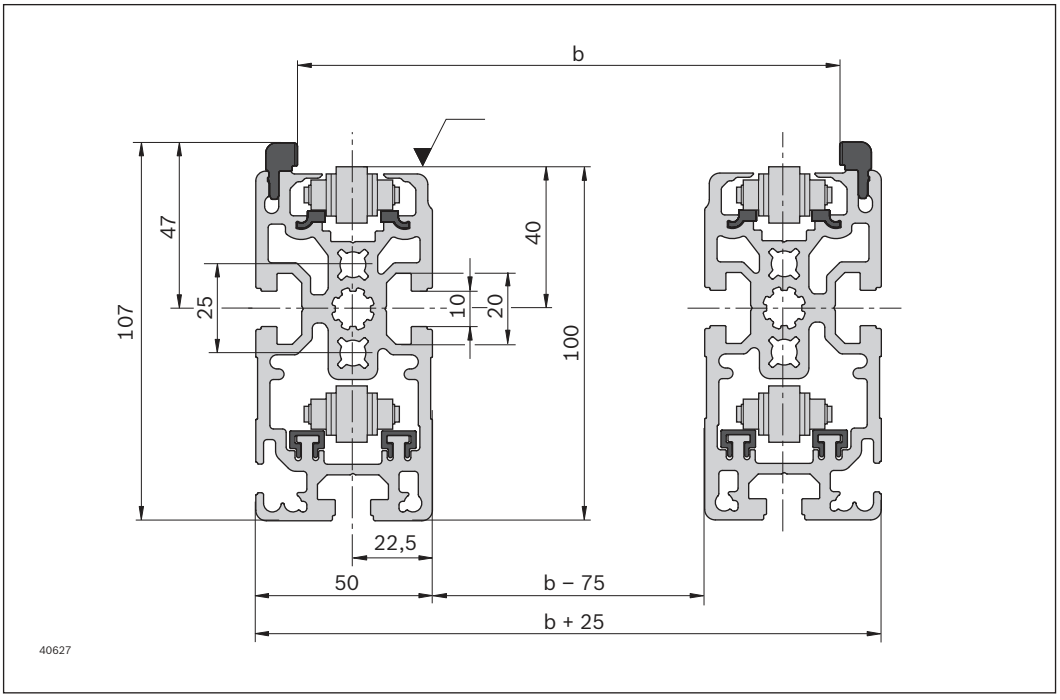


Material number		3842994192
l (mm)	Length	200 ... 6000
AO	Installation location 0; 1; 2 = steel glide profile	0; 1; 2
GP	Glide profile 1 = corrosion-resistant steel	1

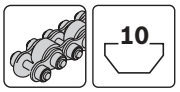
Technical data

Material number			3842994192
Material specification			Glide profile: GP 2/C/R: PA, GP 2/H-ST: Steel; corrosion-resistant Guide profile: FP 2/H-ST: Steel; corrosion-resistant Section profile: Aluminum, natural; anodized
Length	l	mm	200 ... 6000

Dimensions



Section profile SP 2/R-100



- For conveyor unit self-assembly
- For use with all drive modules AS 2/R-..., return units UM 2/R-..., guide profiles FP 2 and glide profiles GP 2
- Longitudinal grooves for easy mounting

The section profile is used to set up conveyor units with the accumulation roller chain conveyor medium.

Required accessories

- Guide profile FP 2, see p. 3-133
- Glide profile GP 2, see p. 3-133

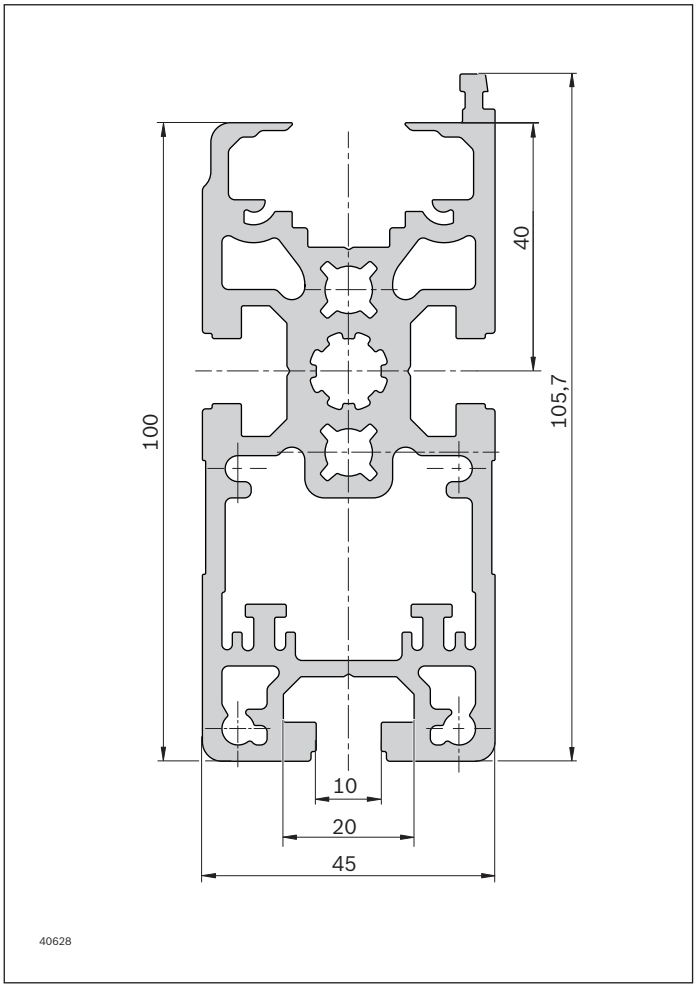
Ordering information

Product description	l (mm)	Delivery unit	Material number
Section profile SP 2/R-100 12 x 6070 mm	6070	12	3842564309

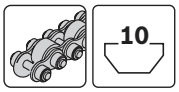
Technical data

Material number			3842564309
Moment of inertia	I_x	cm^4	146.25
	I_y	cm^4	38.98
Moment of resistance	W_x	cm^3	56.86
	W_y	cm^3	22.93
Material specification			Aluminum, natural; anodized
Weight	m	kg/m	4.79
Length	l	mm	6070
Profile surface	A	cm^2	17.28

Dimensions



Section profile SP 2/R-H



- For conveyor unit self-assembly for higher section loads in the 100 mm construction height
- For use with all drive modules AS 2/R-..., return units UM 2/R-..., guide profiles FP 2/H-ST, glide profiles GP 2/H-... and section profiles SP 2/R
- Longitudinal grooves for easy mounting
- Extruded aluminum profile with an especially sturdy design
- Integrated cable duct at the profile base

The section profile is used for constructing conveyor units with 100 mm construction height and with the accumulation roller chain and guide profile conveyor media.

Required accessories

- Cover rail for cable duct, see p. 9-20
- Guide profile FP 2/H-ST, see p. 3-133
- Glide profiles GP 2/H-ST and GP 2/H-KS, see p. 3-133
- Adapter plate kit ST 2/R-H, see p. 3-131

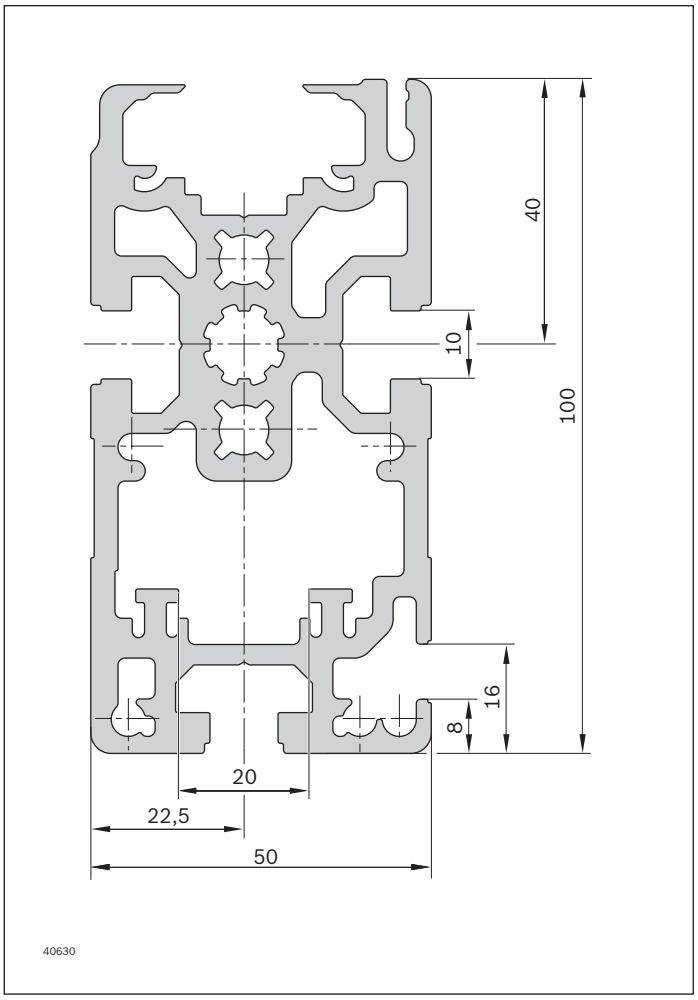
Ordering information

Product description	l (mm)	Delivery unit	Material number
Section profile SP 2/R-H 12 x 6070 mm	6070	12	3842564311

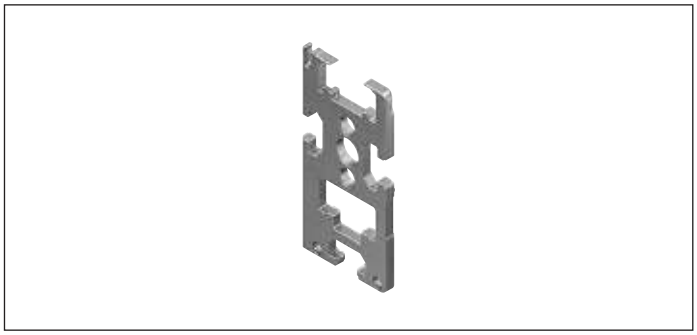
Technical data

Material number			3842564311
Moment of inertia	I_x	cm^4	158.76
	I_y	cm^4	51.11
Moment of resistance	W_x	cm^3	50.39
	W_y	cm^3	25.58
Material specification			Aluminum, natural; anodized
Weight	m	kg/m	5.26
Length	l	mm	6070
Profile surface	A	cm^2	19.13

Dimensions



Adapter plate kit ST 2/R-H



- Front end plate
- For connection of section profiles SP 2/C-H and drive modules AS 2/R-...;
  for connection of section profiles SP 2/R-H and return units UM 2/R-...;
  and between section profiles where plastic glide profiles GP 2 are used

The adapter plates are used as front covers and for connecting section profiles and drive modules, or between section profiles and return units.

The adapter plates are also suitable for use between section profiles where plastic glide profiles GP 2 are used.

Scope of delivery

- 2x left adapter plate
- 2x right adapter plate

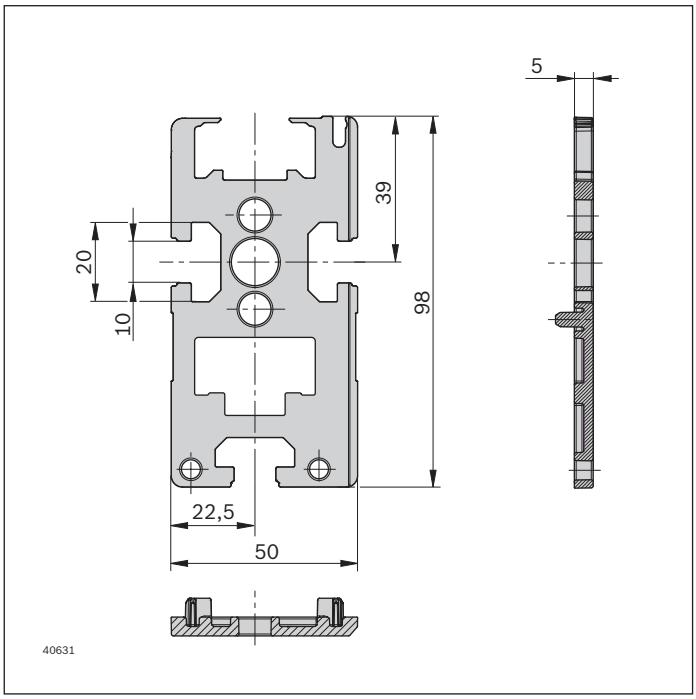
Ordering information

Product description	Packaging unit	Material number
Adapter plate kit ST 2/R-H	4	3842560609

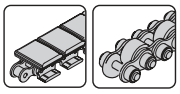
Technical data

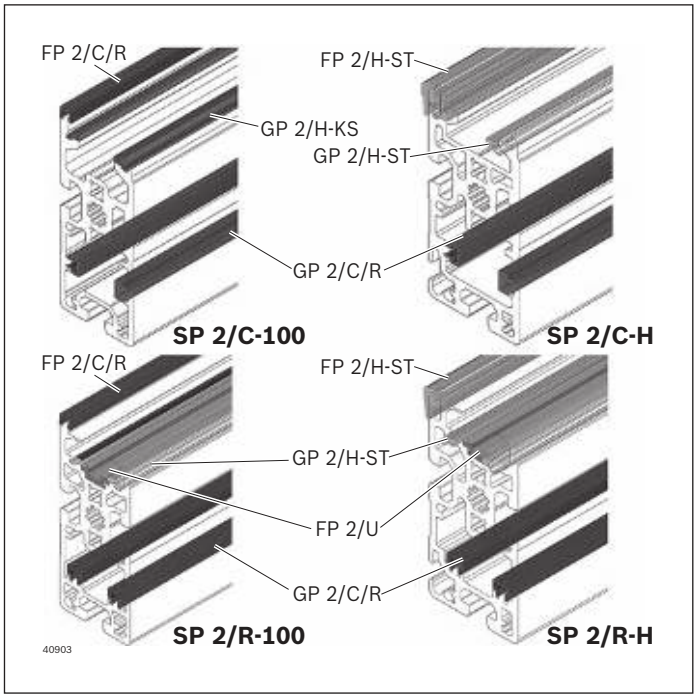
Material number	3842560609
ESD	Yes
Material specification	Aluminum

Dimensions



Guide and glide profiles





- For conveyor unit self-assembly
- Guide profiles are used for lateral guidance of the workpiece pallet
- Glide profiles are used to guide flat-top chains and accumulation roller chains
- Top section guide and glide profiles can be replaced from above
- GP 2/H-ST can be used for heavily loaded sections in the section profiles SP 2/C... and SP 2/R... in the upper section GP 2/H-KS exclusively for use in section profiles SP 2/C... in the upper section
- GP 2/C/R for use in conjunction with all section profiles SP 2/C..., SP 2/R... in the lower section and in SP 2/C-100, SP 2/R-100 in the upper section
- FP 2/H-ST made of corrosion-resistant steel, can be used with section profiles SP 2/C-H or SP 2/R-H
- The use of the additional routing FP 2/U is used for sections SP 2/R and SP 2/R-H with > 6 m length and one operation at 2 kg/cm and track widths > 480 mm recommended

Ordering information

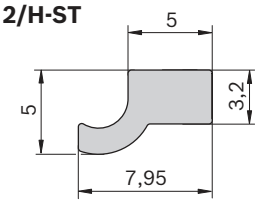
Product description	Packaging unit	Length l (mm)	Material number
Glide profile GP 2/H-KS	24	6000	3842564314
Glide profile GP 2/H-ST	48	3000	3842564315
Glide profile GP 2/C/R	24	6000	3842567260
Guide profile FP 2/C/R	12	6000	3842567261
Guide profile FP 2/H-ST	24	3000	3842564316
Guide profile FP 2/U	12	6000	3842567254

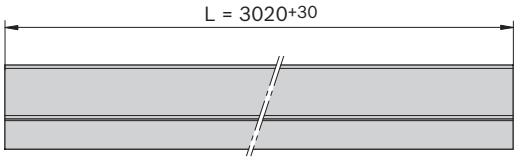
Technical data

Material number	3842564314	3842564315	3842567260	3842567261	3842564316	3842567254
ESD	Yes	Yes	Yes	Yes	Yes	Yes
Material specification	PA (suitable for use in an EPA)	Steel; corrosion-resistant	PA (suitable for use in an EPA)	PA (suitable for use in an EPA)	Steel; corrosion-resistant	PE
Length l (mm)	6000	3000	3000	6000	3000	6000

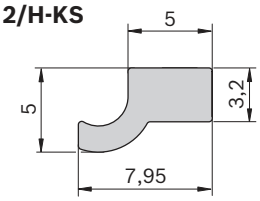
Dimensions

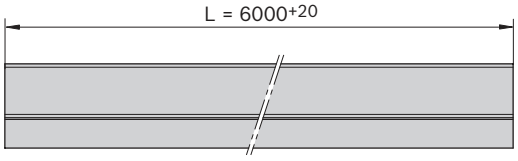
GP 2/H-ST



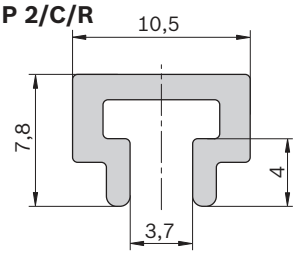


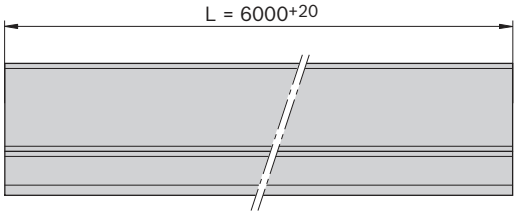
GP 2/H-KS



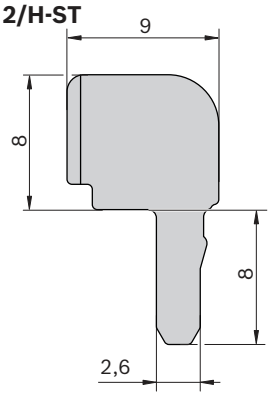


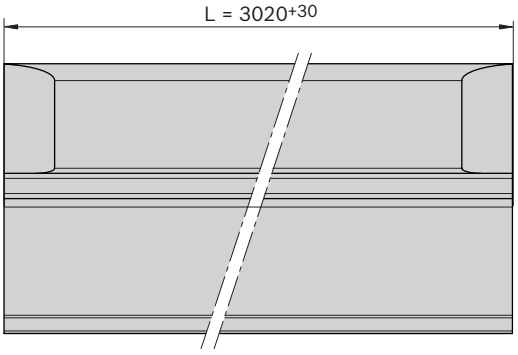
GP 2/C/R



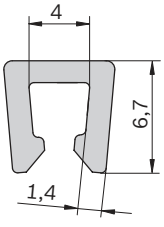


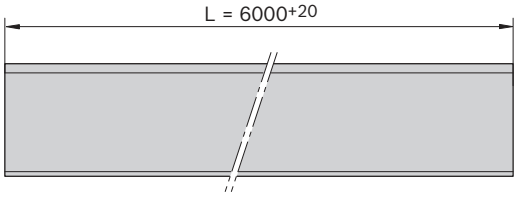
FP 2/H-ST



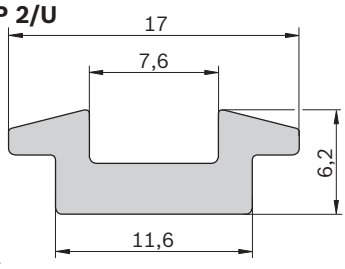


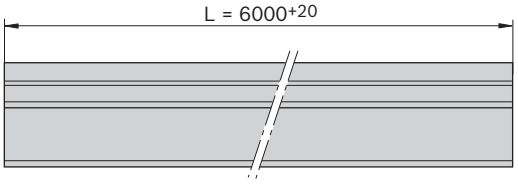
FP 2/C/R





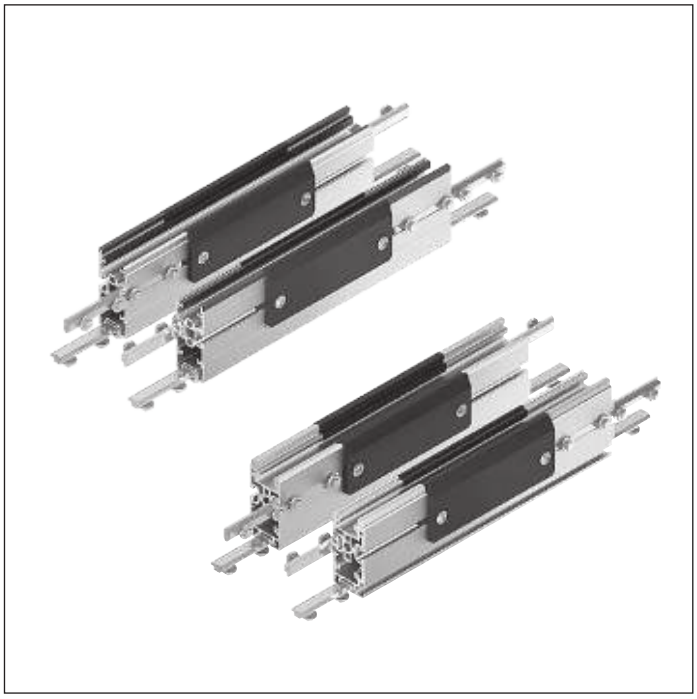
FP 2/U





40904

Maintenance section ST 2/R-...-W



- For maintenance use (assembly, disassembly or lubrication)
- Two removable side covers each
- Suitable for accumulation roller chains
- ST 2/R-W suitable for section profiles ST 2/R...
- ST 2/R-H-W suitable for section profiles ST 2/R-H

The maintenance section is a section element with removable caps. It is used for maintenance (assembly, disassembly, lubrication) of the accumulation roller chain conveyor medium.

Scope of delivery

- 2x maintenance section elements consisting of section profiles ST 2/R-100, guide profiles FP 2/... and glide profiles GP 2/...
- 4x side cover
- 8x profile connector
- Incl. fastening material

Ordering information

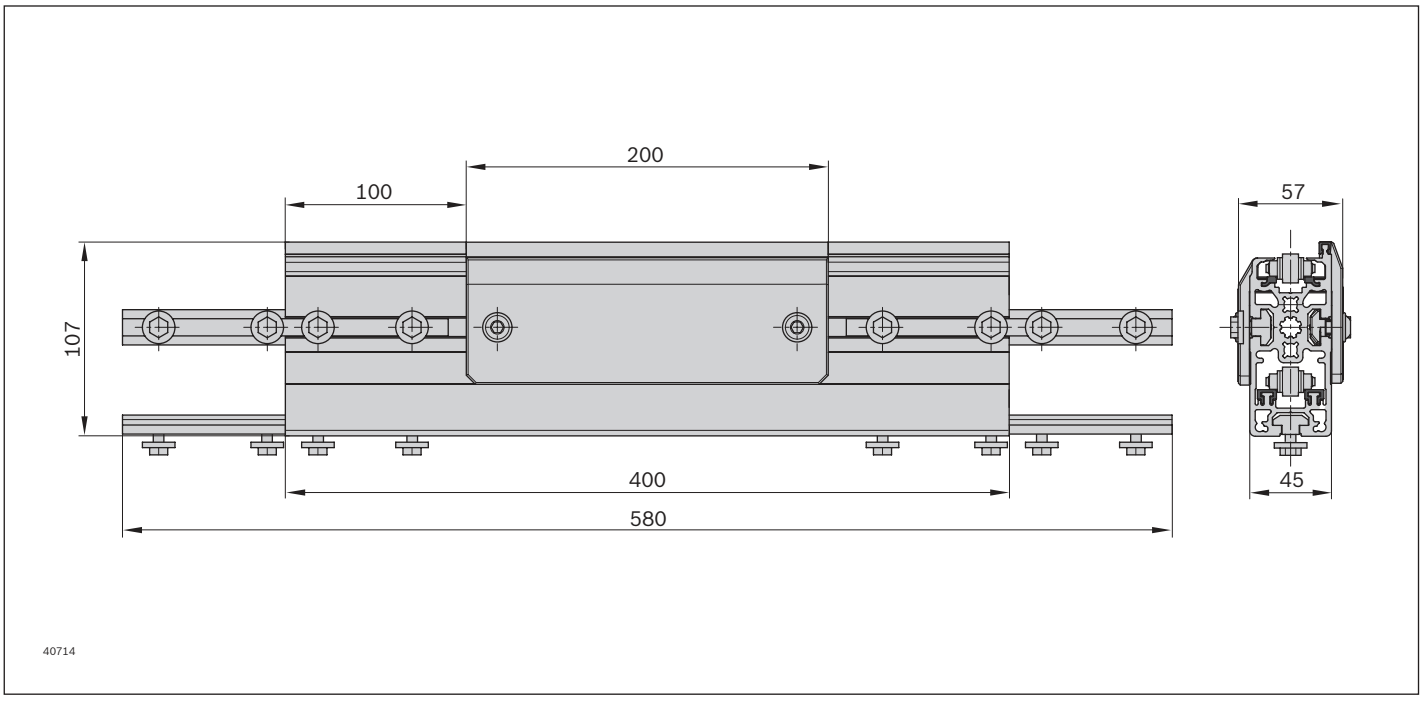
Product description	Delivery unit	Material number
Maintenance section ST 2/R-W	2	3842564574
Maintenance section ST 2/R-H-W	2	3842564578

Technical data

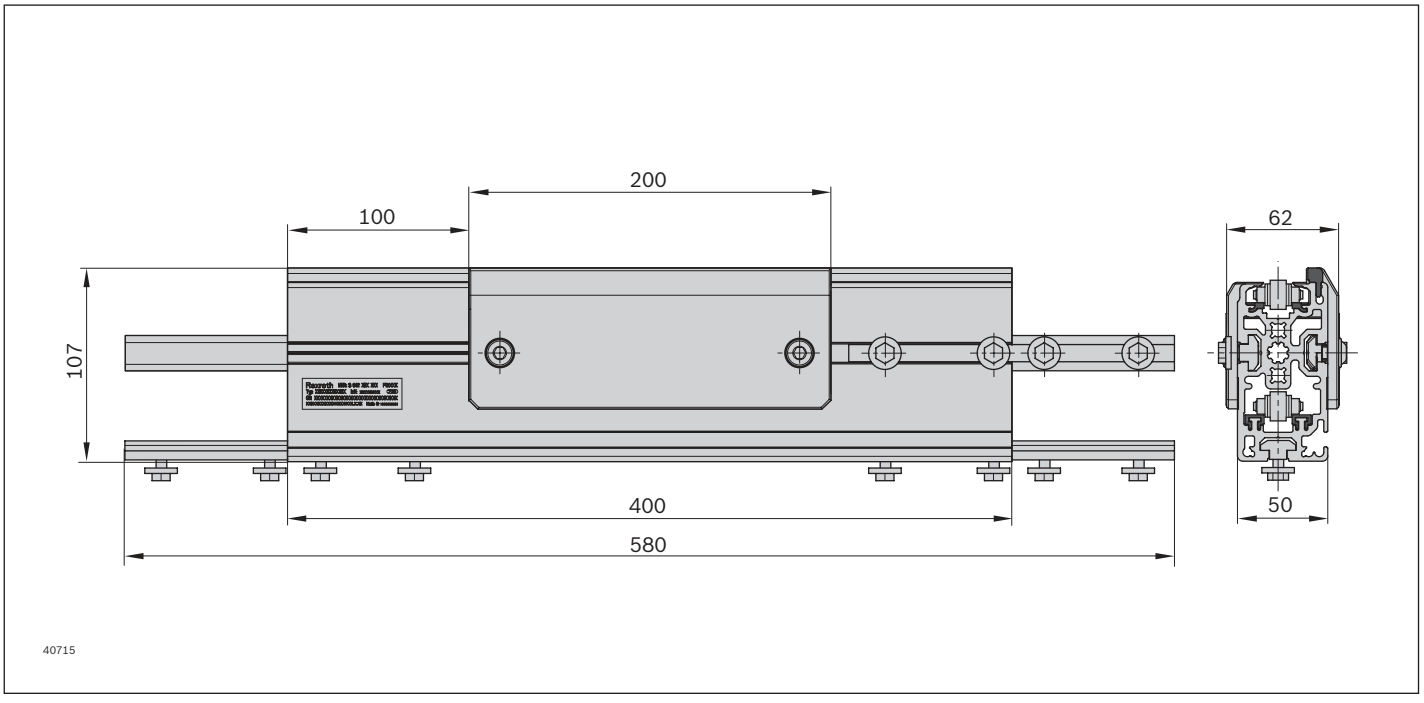
Material number			3842564574	3842564578
ESD			Yes	
Material specification			Section profile: Aluminum, natural; anodized Side cover: Polyethylene	
Length	l	mm	400	

Dimensions

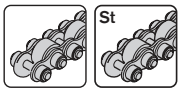
Maintenance section ST 2/R-W



Maintenance section ST 2/R-H-W



Accumulation roller chain with PA or steel accumulation roller chain lock for accumulation roller chain



- Conveyor medium for the workpiece pallets
- For conveyor unit self-assembly
- For use in conjunction with conveyor units ST 2/R and ST 2/R-H
- Delivered in units of 12,000 mm. Lengths of l > 12,000 mm can be produced by connecting several accumulation roller chains using chain locks
- Chains are available with small parts protection (= filler pieces in the accumulation roller chain prevent small parts from pinching)

Notice: Reversible operation is not possible in conjunction with small parts protection.

- Chain lock for locking the accumulation roller chain after insertion in conveyor section element
- Chain lock is suitable for all accumulation roller chains except the accumulation roller chain V*plus*

Scope of delivery

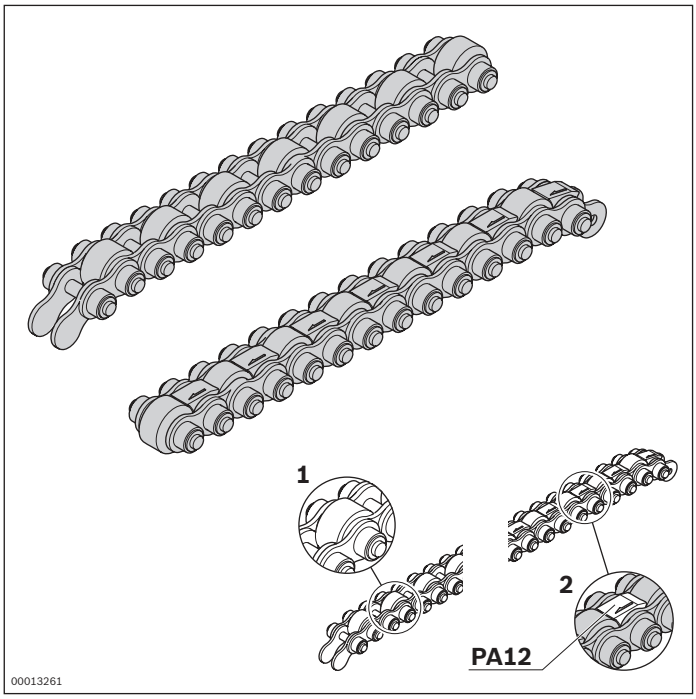
- Units up to 12000 mm, incl. 1x chain lock

Ordering information

Product description	Material number
Accumulation roller chain with accumulation rollers PA	3842523918
Accumulation roller chain with accumulation rollers PA and small parts protection	3842536268
Accumulation roller chain with steel accumulation rollers	3842530864
Accumulation roller chain with steel accumulation rollers and small parts protection	3842536270
Chain lock for accumulation roller chain	3842530417

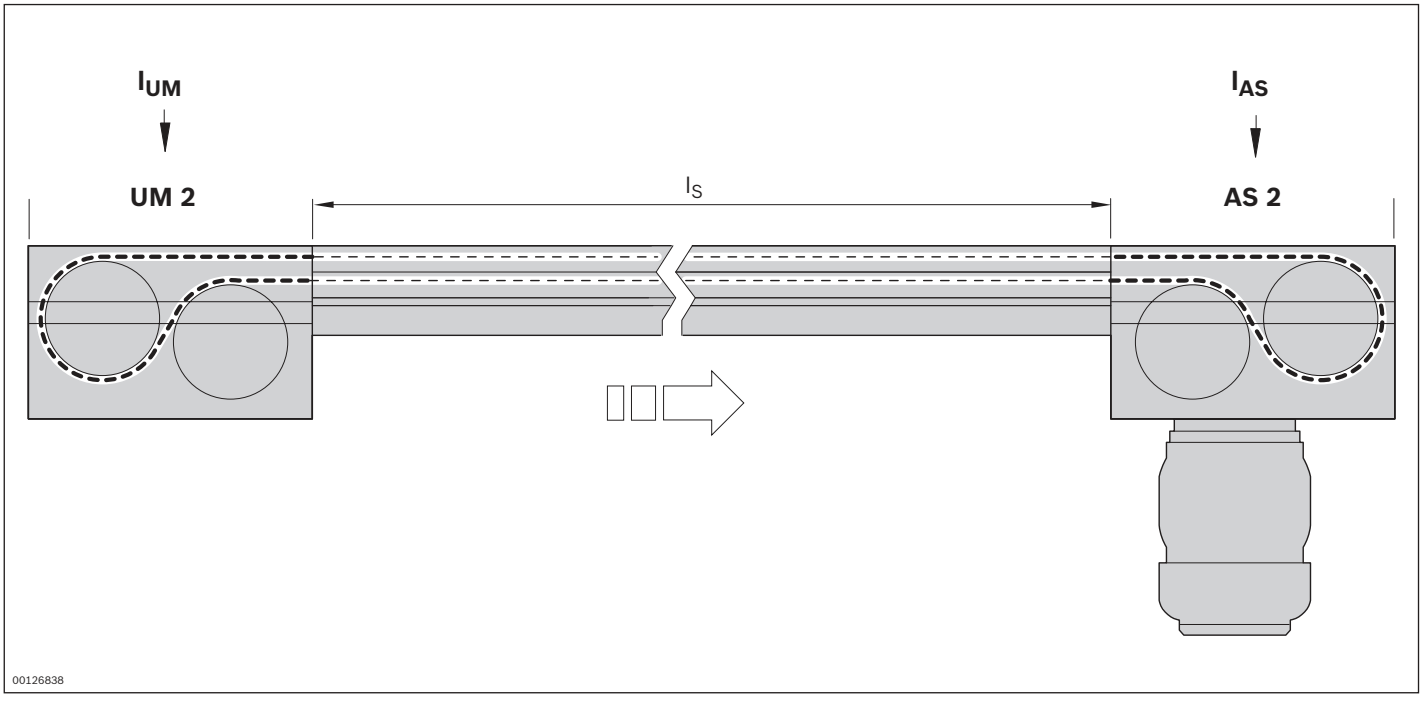
Technical data

Material number			3842523918	3842536268	3842530864	3842536270	3842530417
ESD			Yes	Yes	Yes	Yes	Yes
Material specification			Accumulation roller chains: PA 12	Accumulation roller chains: PA 12 Small parts protection: PA 12	Accumulation roller chains: Steel	Accumulation roller chains: Steel Small parts protection: PA 12 (suitable for use in an EPA)	Accumulation roller chains: Steel
Length	l	mm	12000	12000	12000	12000	



1 Accumulation roller chain without small parts protection
2 Accumulation roller chain with small parts protection

Dimensions



The required chain length is determined using the following formula.

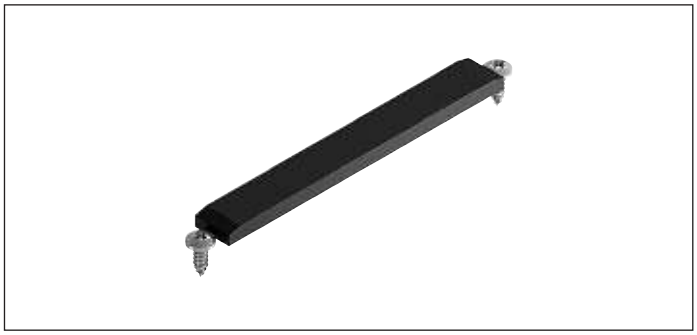
$$l_R = 2 \times l_S + l_{AS} + l_{UM}$$

l_R = Length of the accumulation roller chain
l_S = Length of the section profile
l_{AS} = Length of the conveyor medium in the drive module
l_{UM} = Length of the conveyor medium at the return unit

Length of the conveyor medium for accumulation roller chain

$l_{UM\ 2/C\text{-}170}$ = 310 mm
$l_{UM\ 2/C\text{-}60}$ = 150 mm
l_{AS} 2/R-300 = 475 mm
l_{AS} 2/R-700 = 475 mm
l_{AS} 2/R-1200 = 625 mm
l_{AS} 2/R-2200 = 625 mm

Acceleration element



- For accelerated transport of a workpiece pallet to a stop gate
- The acceleration element is used in conjunction with the accumulation roller chain conveyor medium with steel rollers
- Accumulation operation not permitted
- Installation in sections after the stop gate
- Suitable for retrofitting

The support wheels of the chain element are lifted and roll frictionally engaged between the acceleration element and the workpiece pallet with a peripheral speed of $v_U = 2 \times v_N$.

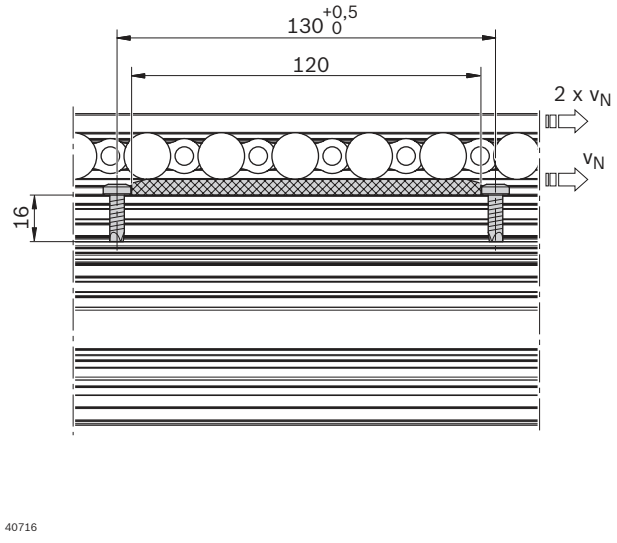
This may be limited in oily environments.

Condition on delivery

- Not assembled

Ordering information

SP 2/R

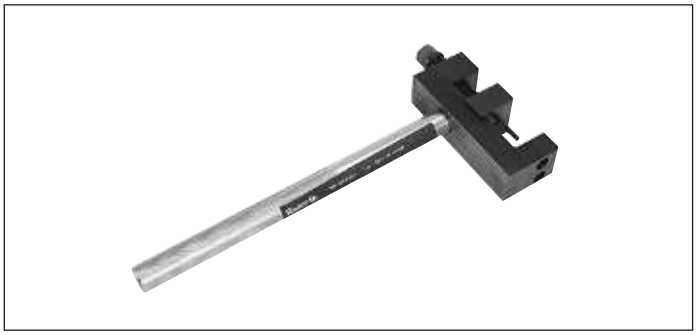


Product description	Packaging unit	Material number
Acceleration element SP 2/R	2	3842567252

Technical data

Material number	3842567252
ESD	Yes
Material specification	PE; abrasion-resistant

Disassembly tool for accumulation roller chain



- Makes it easier to open and disassemble the accumulation roller chain
- Turning the thread mandrel pushes out a chain rivet and the chain can be removed

The thread mandrel has a hexagonal fixture acting as a lever arm for a size 13 hexagonal wrench Grooves are provided for the exact positioning of the chain links.

Condition on delivery

- Assembled

Ordering information

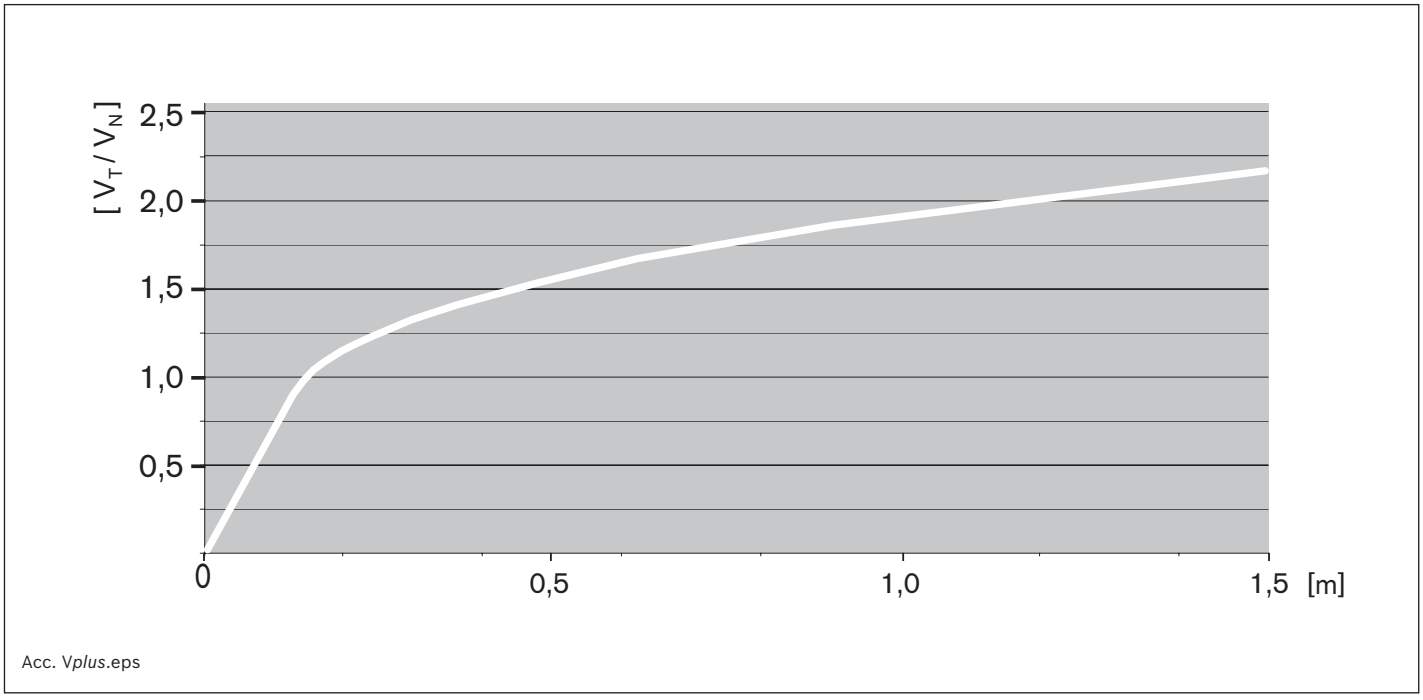
Product description	Material number
Disassembly tool for accumulation roller chain	8981010511

Technical data

Material number	8981010511
Material specification	Steel; hardened

Accumulation roller chain V*plus* conveyor medium

Accumulation roller chain V*plus* – transport speed over distance



v_N Nominal speed
v_T Max. transport speed

With the accumulation roller chain V*plus*, the workpiece pallet attains transport speeds to the factor of 2.5 higher than the nominal chain speed.

Smooth running and less wear can thus be achieved by using drives with lower chain speeds with the accumulation roller chain V*plus*.

Another benefit of the accumulation roller chain V*plus* is the acceleration effect: after each processing station, the transport speed is picked up quickly without requiring any additional internal elements.

As a rule, dampened stop gates and dampers are recommended.
If transport speeds over 18 m/min are to be attained with the chain V*plus*, the resulting higher dynamic loads on the entire system must be taken into account.
Please contact your Rexroth specialist if in any doubt.

Workpiece pallets with wear pad PE must be used on the accumulation roller chain V*plus*. The maximum permissible section load is 1.5 kg/cm.

V*plus* 3-142 planning advice

Planning advice V*plus*

The accumulation roller chain V*plus* can mathematically reach a transport speed that is 2.5 times the nominal speed of the conveyor medium.

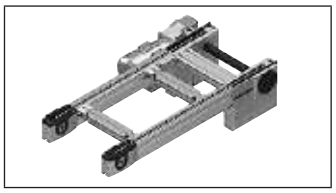
In practice:

- The weight of the workpiece pallet
- The lubrication and wear of the chain
- The length of the acceleration section

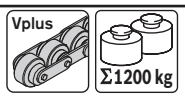
Can cause transport speeds that are typically up to 2.5 times the nominal speed of the conveyor medium.

The system must be adjusted to the significantly higher kinetic energy of the workpiece pallet:

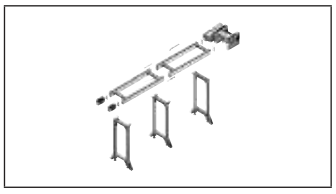
- Dampers and dampened stop gates must be designed for the mathematical transport speed.
- Before entering a curve, ensure that the transport speed is max. 18 m/min.



Belt sections BS 2/R-V...



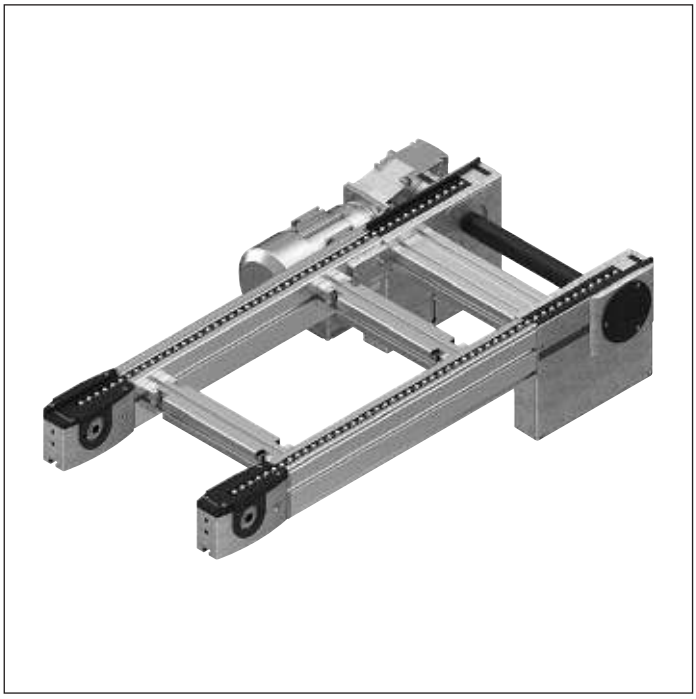
3-144



Components for conveyor units AS 2/..., UM 2/..., ST 2...

3-148

Belt section BS 2/R-V-1200



The belt section is a ready for operation conveyor section with own drive for the transportation of workpiece pallets in the longitudinal direction or for the transverse conveying of the workpiece pallet between parallel conveyor sections in connection with two lift transverse units HQ 2.

Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/...-H, see p. 6-4
- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Condition on delivery

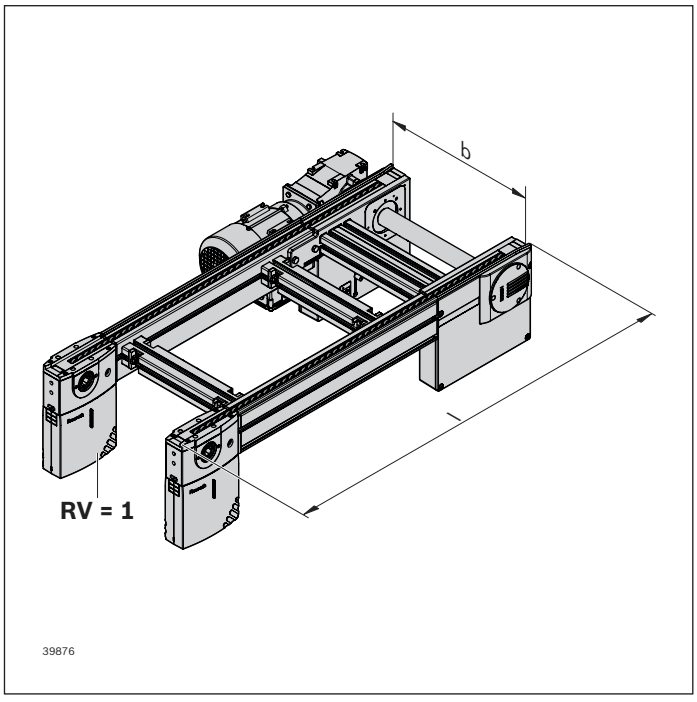
- Assembled

- Operational conveyor section complete with drive for high workpiece pallet speeds
- Sturdy version for especially heavy-duty systems
- Conveyor medium: Accumulation roller chain V*plus* (suitable for use in an EPA)
- Reversible operation possible for l ≤ 2000 mm and accumulation roller chains without small parts protection
- Motor mounting right, left or central
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: On the accumulation roller chain V*plus*, the workpiece pallet attains a speed up to the factor of 2.5 higher than that of the chain. Special measures must therefore be observed for chain speeds > 9 m/min!

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



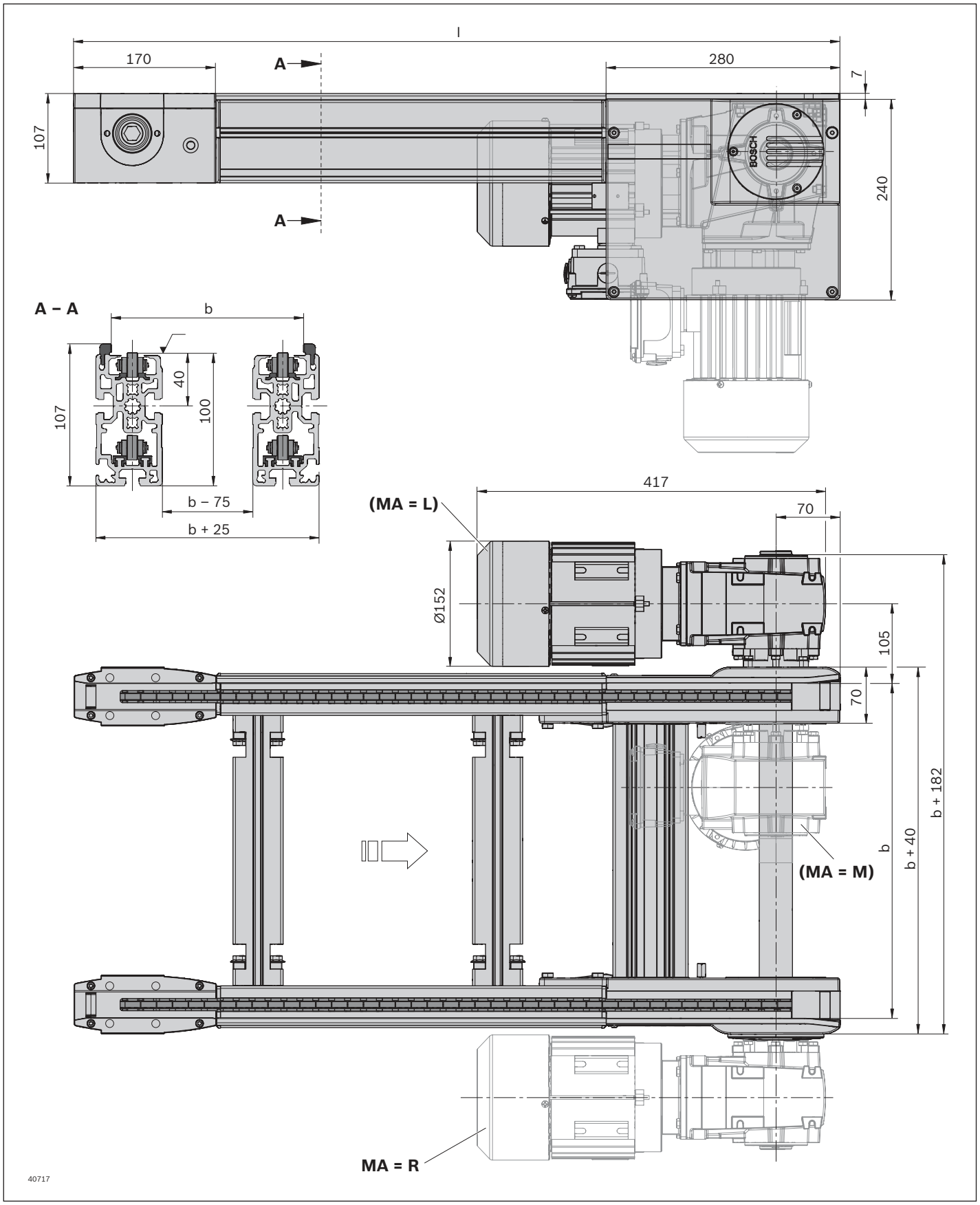
Material number		3842998941
b (mm)	Track width in direction of transport	400 ... 1200
l (mm)	Length	650 ... 6000
v_N (m/min)	Nominal speed of the chain	0[1]; 6; 9; 12; 15; 18[2]
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M
RV	Reversible operation 0 = no reversible operation 1 = reversible operation	0; 1
KT	Chain type 2 = accumulation roller chain with steel accumulation rollers 4 = accumulation roller chain with steel accumulation rollers and small parts protection	2; 4

[1] v_N = 0: without motor or gear
[2] Not possible at f = 60 Hz

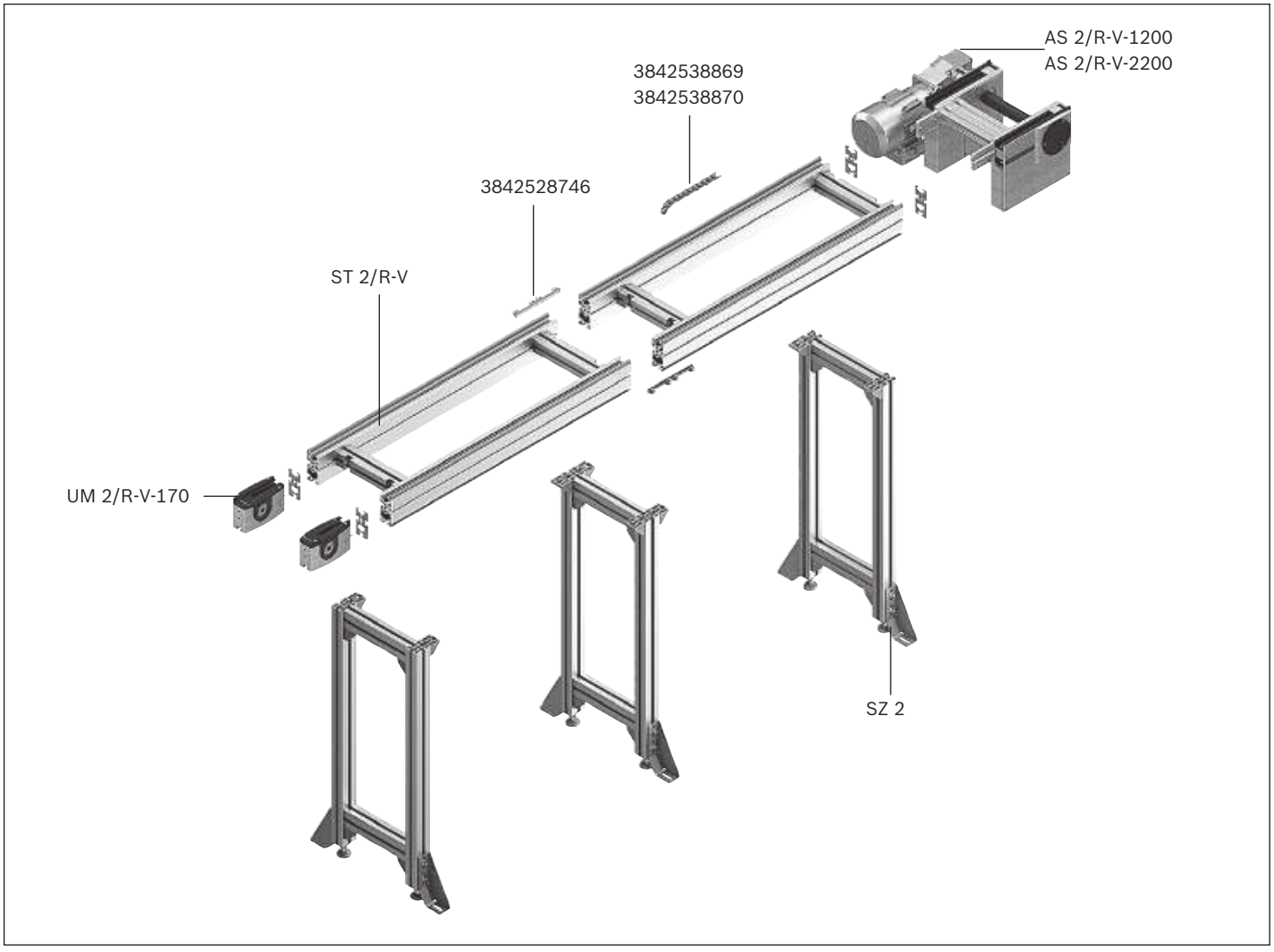
Technical data

Material number			3842998941
Max. section load in accumulation operation		kg	1200
ESD			Yes
Material specification			Glide profile: Steel; corrosion-resistant Small parts protection: Steel
Length	l	mm	650 ... 6000

Dimensions


l
170
A
280
7
107
240
BOSCH
A
A – A
b
40
100
107
b – 75
b + 25
417
(MA = L)
70
Ø152
105
70
b
b + 40
b + 182
(MA = M)
MA = R
40717

Conveyor units
Accumulation roller chain V*plus* conveyor medium



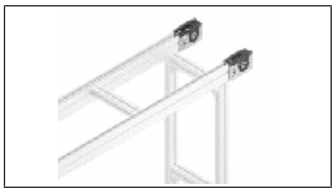
A conveyor unit is a complete unit used for the linear conveying of workpiece pallets. It consists of:

- Drive module AS 2/R-V, see p. 3-150
- Return unit UM 2/R-V, see p. 3-156
- Sections ST 2/R-V..., see p. 3-158
- Leg sets SZ 2/..., see p. 6-4
- Cross connector QV 2..., see p. 9-17
- Accumulation roller chain V*plus*, see p. 3-141

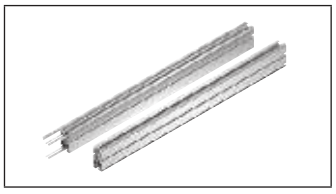
The UM 2/R-V and AS 2/R-V may be set up right next to each other, which allows for conveyor unit combinations.

The drive modules are designed for section loads up to m_G = 2200 kg per conveyor unit.

Drive module AS 2/R-V... **3-150**



Return unit UM 2/R-V-170 **3-156**



Section ST 2/R-V components **3-158**

Accumulation roller chain conveyor medium, accessories **3-163**

Drive module AS 2/R-V-1200

The drive module AS 2/R-V-1200 drives the conveyor medium accumulation roller chain V*plus* in self-built conveyor units with sections, return units and accumulation roller chains V*plus*.

Recommended accessories

- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Condition on delivery

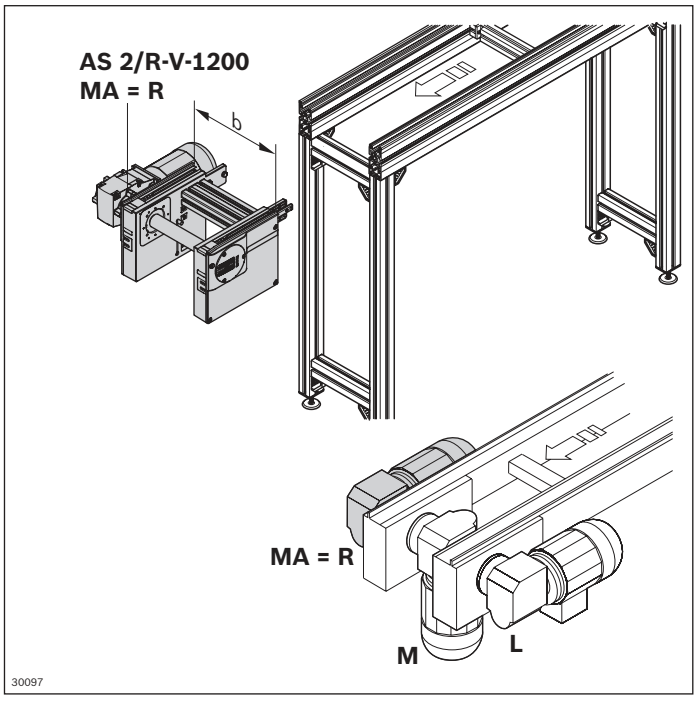
- Assembled

- For conveyor unit self-assembly
- For use in conjunction with sections ST 2/R-V and return units UM 2/R-V-170
- Conveyor medium: Accumulation roller chain V*plus* (suitable for use in an EPA)
- Motor mounting right, left or central
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: On the accumulation roller chain V*plus*, the workpiece pallet attains a speed up to the factor of 2.5 higher than that of the chain. Special measures must therefore be observed for chain speeds > 9 m/min!

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



Material number		3842998233
b (mm)	Track width in direction of transport	400; 480; 640; 800; 1040; 1200
		400 ... 1200[1)]
v_N (m/min)	Nominal speed of the chain	0[2)]; 6; 9; 12; 15; 18[3)]
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M

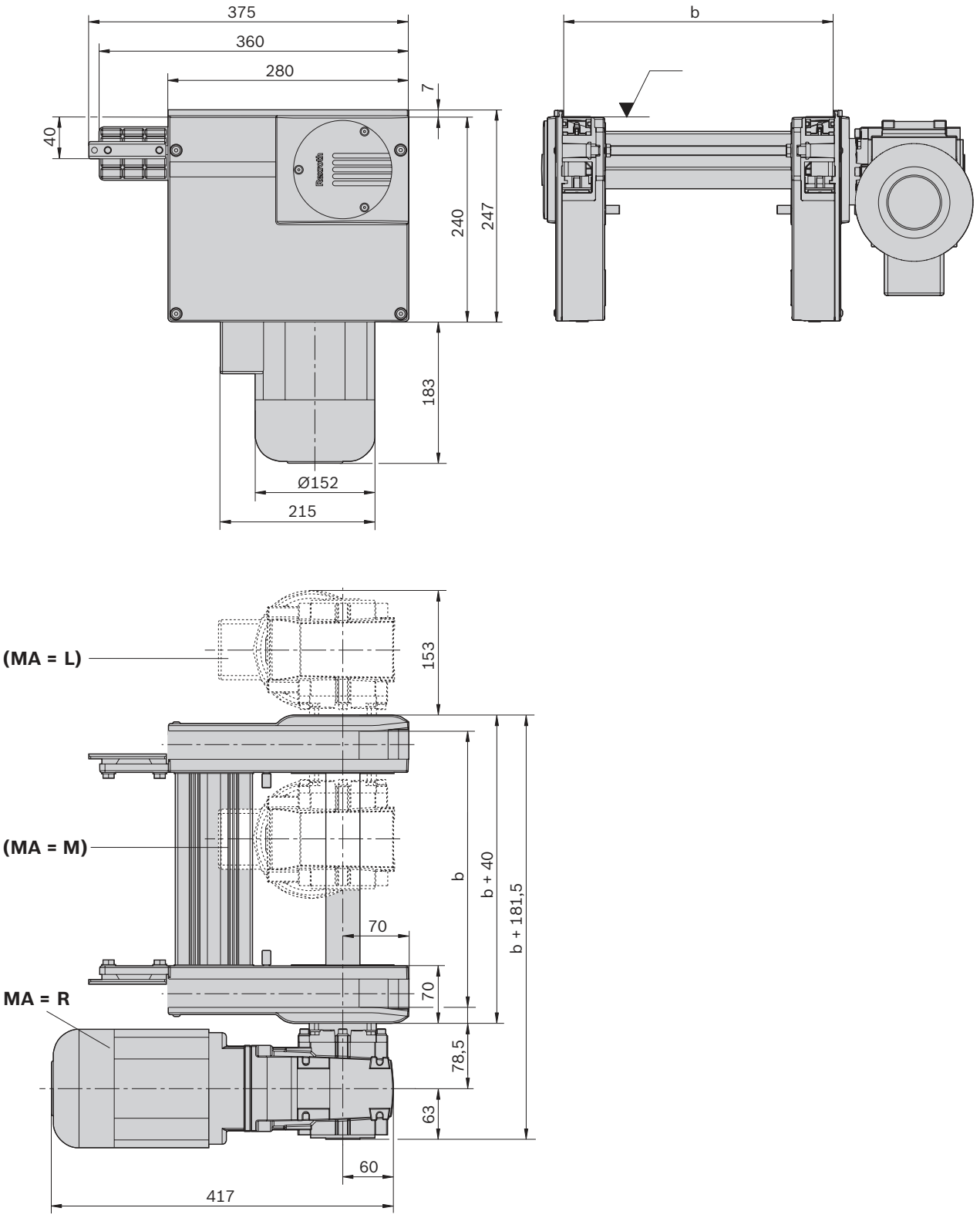
[1)] Individual width variants can be ordered
[2)] v_N = 0: without motor or gear
[3)] Not possible at f = 60 Hz

Technical data

Material number			3842998233
Max. section load in accumulation operation		kg	1200
ESD			Yes
Required conveyor medium length[4)]	l_{AS}	mm	625

[4)] Formula for calculating the conveyor medium, see p. 3-164

Dimensions


375
360
280
7
40
240
247
183
Ø152
215
b
(MA = L)
(MA = M)
MA = R
153
b
b + 40
b + 181,5
70
70
78,5
63
60
417
37173

Drive module AS 2/R-V-2200

The drive module AS 2/R-V-2200 drives the conveyor medium accumulation roller chain V*plus* in self-built conveyor units with section, return unit and accumulation roller chain V*plus*.

Recommended accessories

- Decentralized automatic lubrication unit LU 2, see p. 9-5 or central automatic lubrication unit LU 2/P, see p. 9-7

Condition on delivery

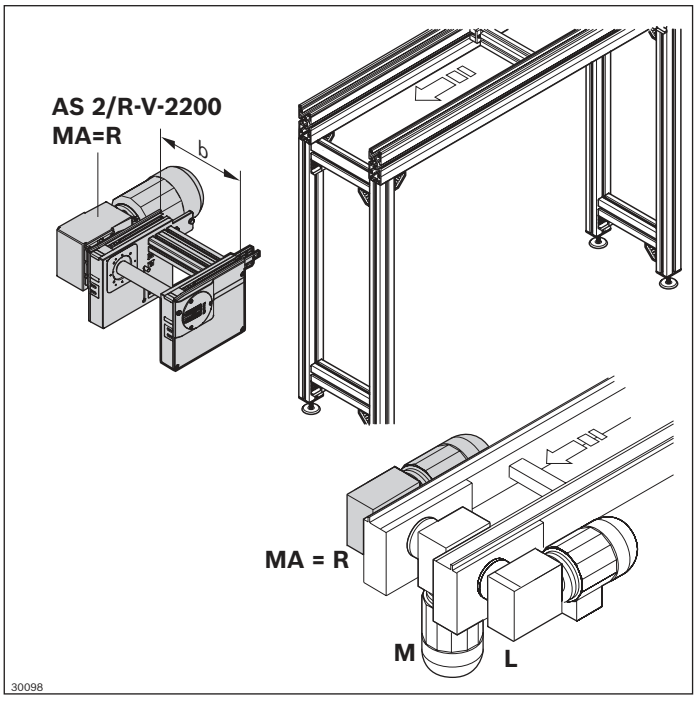
- Assembled

- Conveyor medium: Accumulation roller chain V*plus* (suitable for use in an EPA)
- Motor mounting right, left or central
- Motor connection: Optionally with cable/plug or terminal box
- Special models on request

Notice: On the accumulation roller chain V*plus*, the workpiece pallet attains a speed up to the factor of 2.5 higher than that of the chain. Special measures must therefore be observed for chain speeds > 9 m/min!

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Ordering information



Material number		3842998234
b (mm)	Track width in direction of transport	400; 480; 640; 800; 1040; 1200
		400 ... 1200[1]
v_N (m/min)	Nominal speed of the chain	0[2]; 6; 9; 12; 15; 18[3]
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M

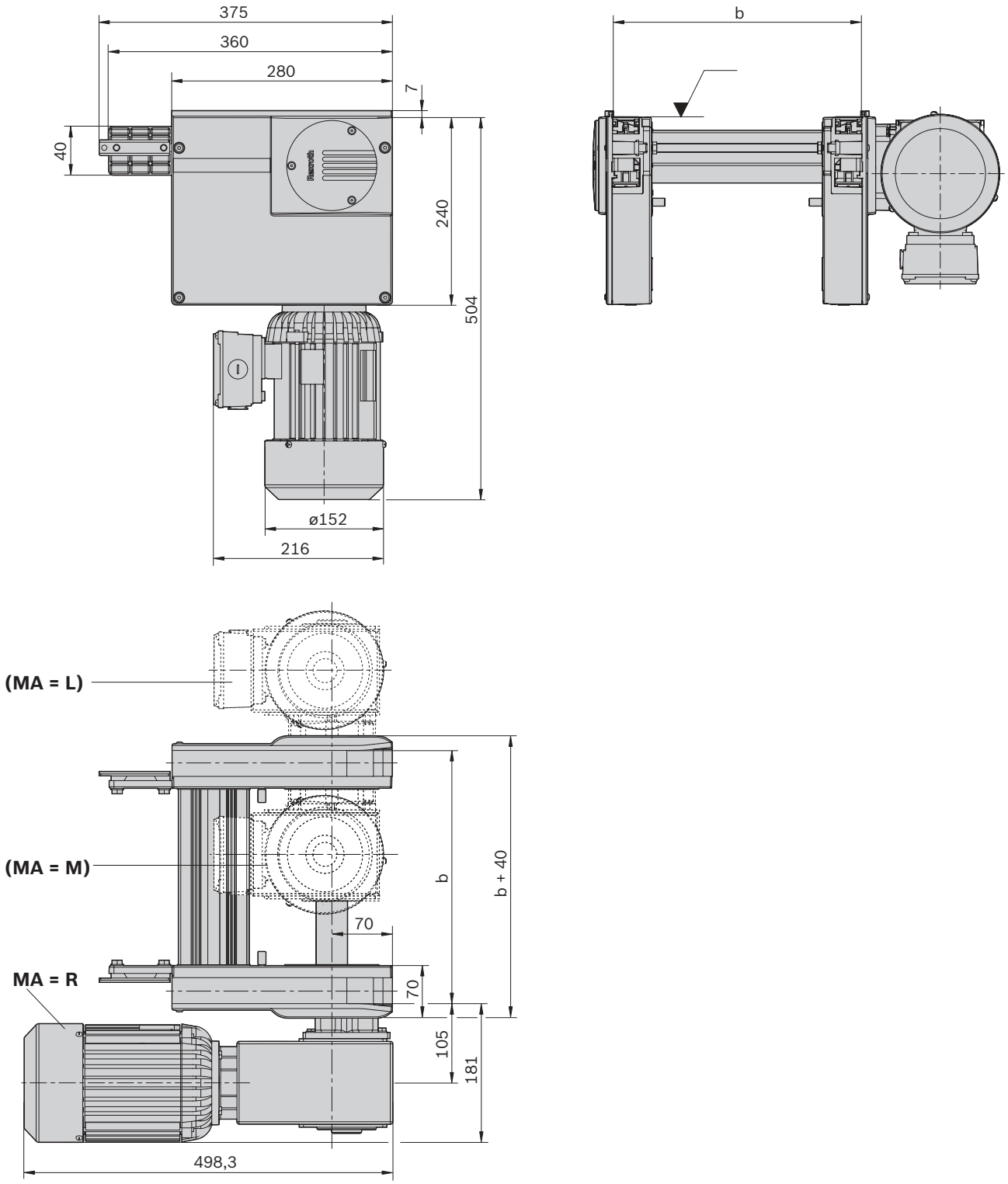
[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear
[3] Reduced load to 1800 kg

Technical data

Material number			3842998234
Max. section load in accumulation operation		kg	2200
ESD			Yes
Required conveyor medium length[4]	l_{AS}	mm	625

[4] Formula for calculating the conveyor medium, see p. 3-164

Dimensions


375
360
280
7
40
240
504
ø152
216
b
(MA = L)
(MA = M)
MA = R
b
b + 40
70
70
105
181
498,3
37158

Return unit UM 2/R-V-170

- Conveyor medium: Accumulation roller chain V*plus* (suitable for use in an EPA)
- For use with all drive modules AS 2/R-V
- Version with pinion for return unit
- Reversible operation possible

Notice: On the accumulation roller chain V*plus*, the workpiece pallet attains a speed up to the factor of 2.5 higher than that of the chain. Special measures must therefore be observed for chain speeds > 9 m/min!

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

The return unit is used for constructing conveyor units. It guides the conveyor medium at the end of the conveyor unit back to the drive module.

Scope of delivery

- One pair of return heads
- Incl. all fastening material to mount on the section ST 2/R-V...

Condition on delivery

- Assembled

Ordering information

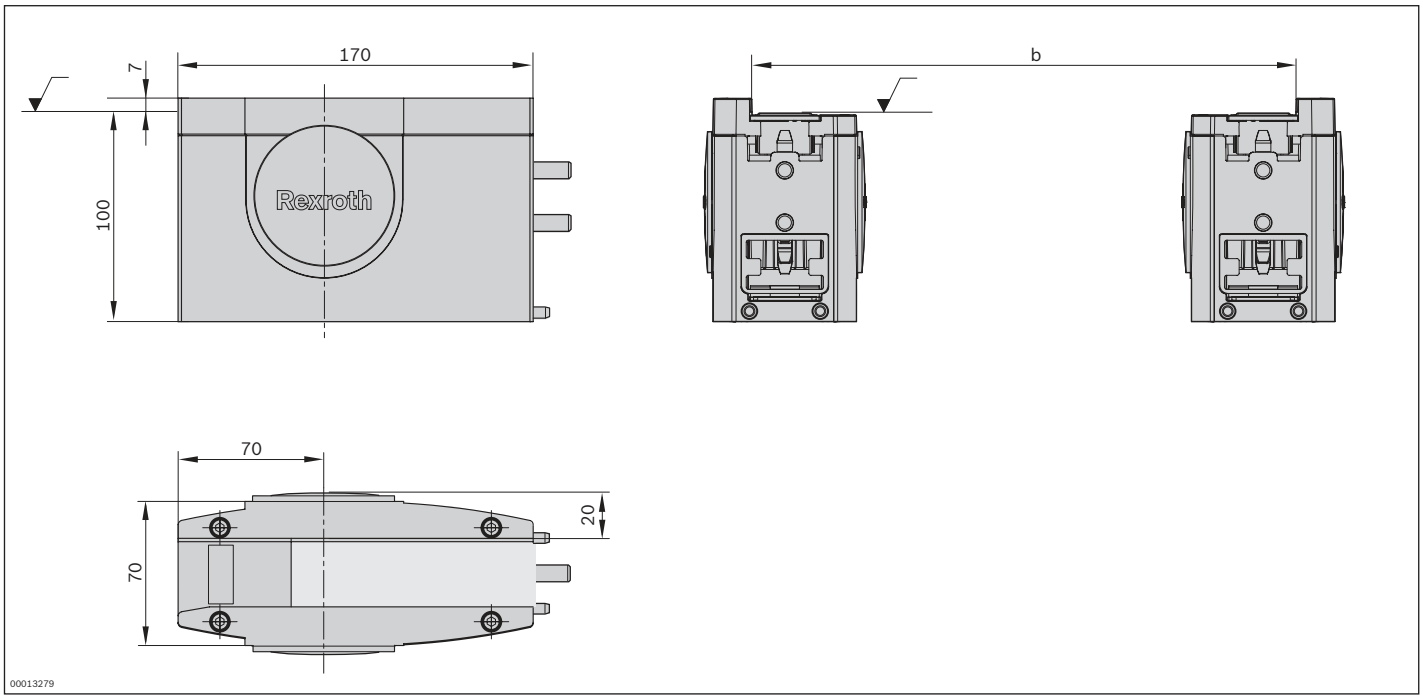
Product description	Material number
Return unit UM 2/R-V-170	3842536803

Technical data

Material number			3842536803
ESD			Yes
Required conveyor medium length[1)]	l_{UM}	mm	310

[1)] Formula for calculating the conveyor medium, see p. 3-164

Dimensions



Section ST 2/R-V

- Section profile in especially sturdy design for section loads of up to 30 % higher

The section is used for the construction of conveyor units in conjunction with the accumulation roller chain V*plus* with the drive module AS 2/R-V-... and the return unit UM 2/R-V-

...

Required accessories

- Adapter plate kit, see p. 3-160

Recommended accessories

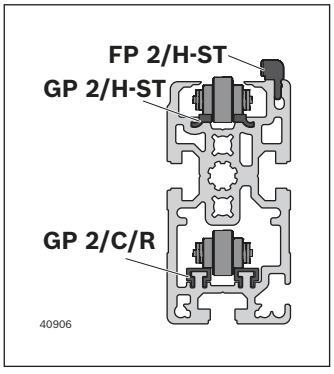
- Leg sets SZ 2/...-H, see p. 6-4
- Cross connector, see p. 9-17
- Profile connector, see p. 9-16

Scope of delivery

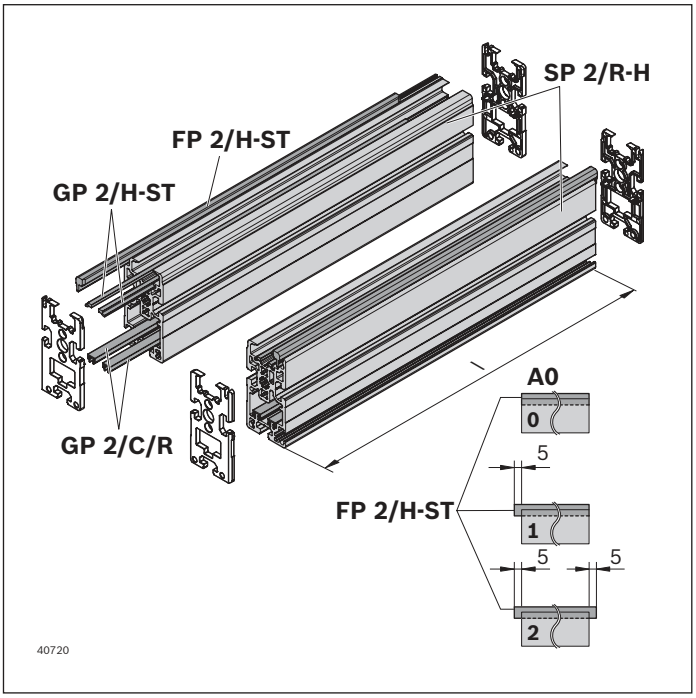
- 2x section profile SP 2/R-H
- 2x guide profile FP 2/H-ST
- 4x glide profile GP 2/H-ST (in a different mounting position)

Condition on delivery

- Assembled



Ordering information



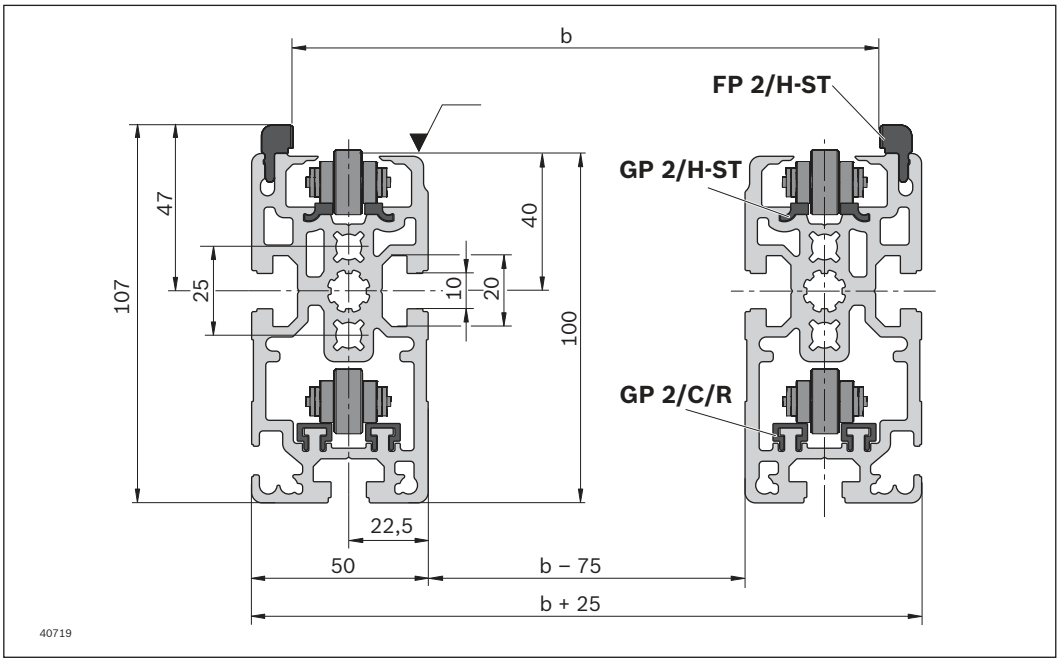
Material number		3842994193
l (mm)	Length	200 ... 6000
AO	Installation location 0; 1; 2 = steel glide profile	0; 1; 2
GP	Glide profile S = corrosion-resistant steel	S

3

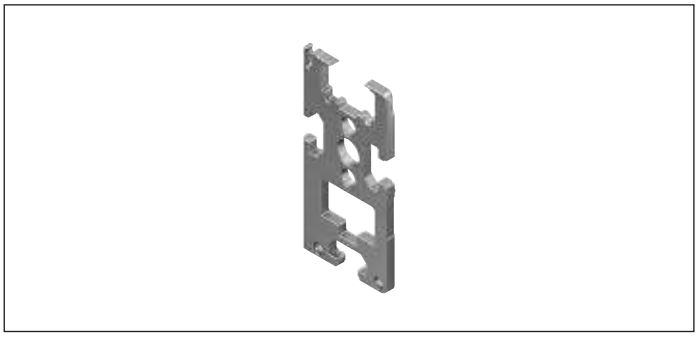
Technical data

Material number			3842994193
ESD			Yes
Material specification			Glide profile: GP 2/C/R: PA, GP 2/H-ST: Steel; corrosion-resistant Guide profile: FP 2/H-ST: Steel; corrosion-resistant Section profile: Aluminum, natural; anodized
Length	l	mm	200 ... 6000

Dimensions



Adapter plate kit ST 2/R-V



- Front end plate
- For connection of section profiles SP 2/R-H and drive modules AS 2/R-V-...,
  for connection of section profiles SP 2/R-H and return units UM 2/R-V-170;
  and between section profiles where plastic glide profiles GP 2 are used

The adapter plates are used as front covers and for connecting section profiles and drive modules, or between section profiles and return units.

The adapter plates are also suitable for use between section profiles where plastic glide profiles GP 2 are used.

Scope of delivery

- 2x left adapter plate
- 2x right adapter plate

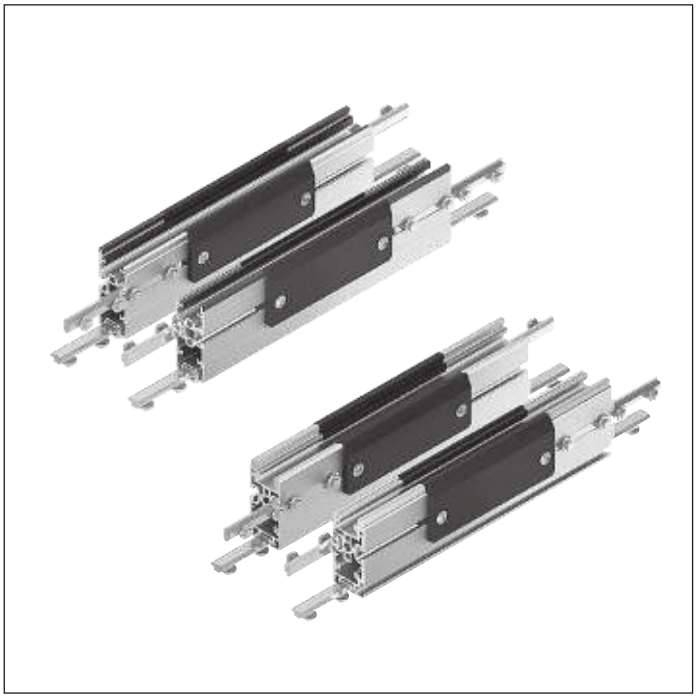
Ordering information

Product description	Packaging unit	Material number
ST 2/R-V adapter plate kit	4	3842560611

Technical data

Material number	3842560611
ESD	Yes
Material specification	Aluminum

Maintenance section ST 2/R-V-W



- For maintenance use (assembly, disassembly or lubrication)
- Two removable side covers each
- Suitable for accumulation roller chains V*plus*
- Suitable for section profiles SP 2/R-H

The maintenance section is a section element with removable caps. It is used for maintenance (assembly, disassembly, lubrication) of the conveyor medium accumulation roller chain V*plus*.

Scope of delivery

- 2x maintenance section elements consisting of section profiles ST 2/R-H, guide profiles FP 2/H-ST and glide profiles GP 2/...
- 4x side cover
- 8x profile connector
- Fastening material

Ordering information

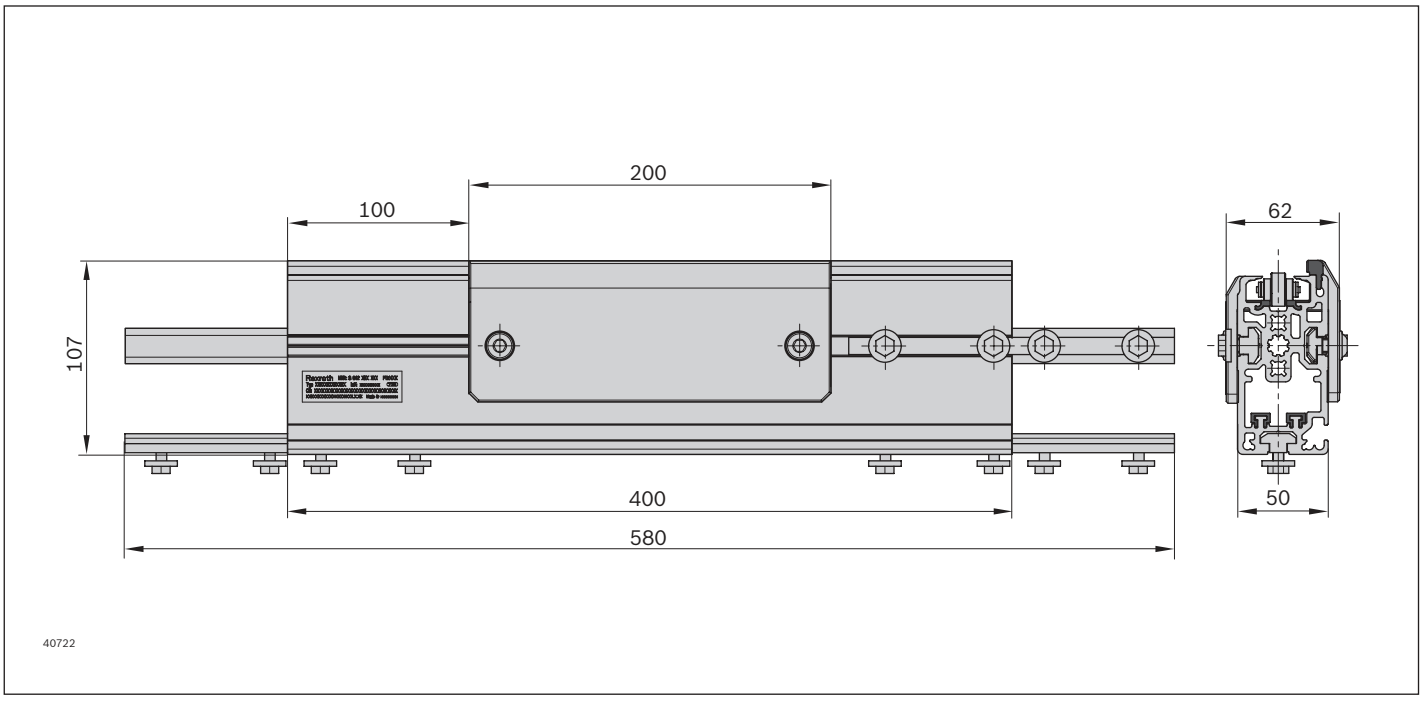
Product description	Material number
Maintenance section ST 2/R-V-W	3842564582

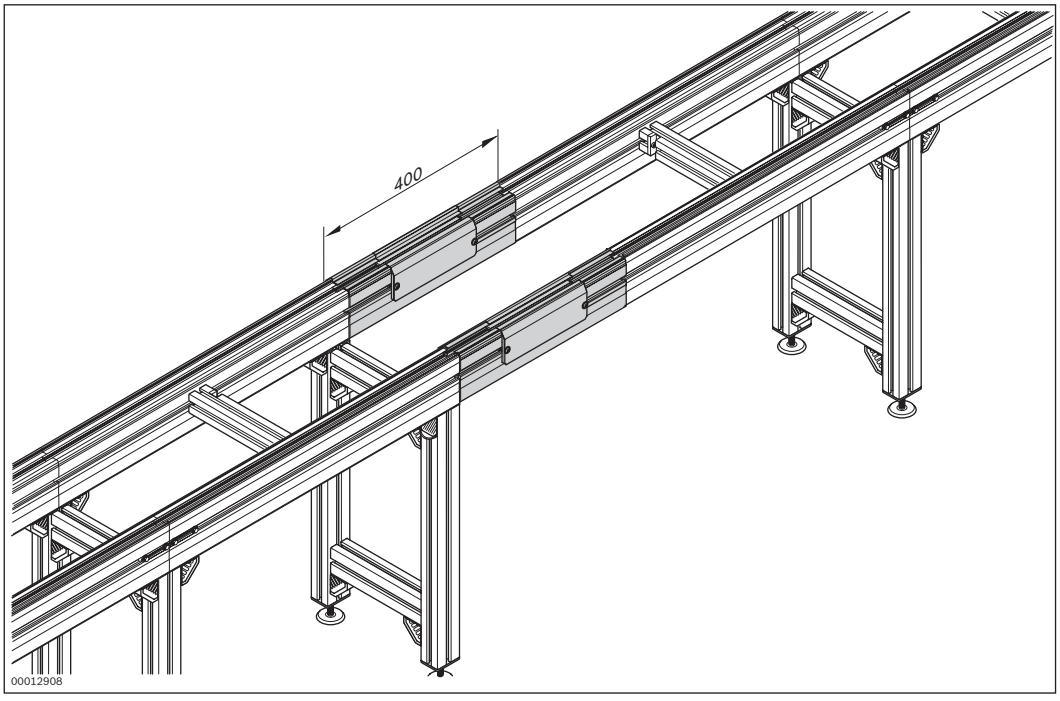
Technical data

Material number			3842564582
ESD			Yes
Material specification			Glide profile: Steel; corrosion-resistant Section profile: Aluminum, natural; anodized Side cover: Polyethylene
Length	l	mm	400

Dimensions

Maintenance section ST 2/R-V-W





Accumulation roller chain V*plus*
Chain lock for accumulation roller chain V*plus*

Scope of delivery of accumulation roller chain V*plus*:

- Units up to 12000 mm, incl. 1x chain lock

- Conveyor medium for the workpiece pallets in the system TS 2*plus*
- For conveyor unit self-assembly
- Can be combined with conveyor units ST 2/R-V and ST 2/R-H
- Delivered in units of 12,000 mm. Lengths of l > 12,000 mm can be produced by connecting several accumulation roller chains using chain locks
- Chains are available with small parts protection (= filler pieces in the accumulation roller chain V*plus* prevent small parts from pinching)

Notice: Reversible operation is not possible in conjunction with small parts protection.

- Chain lock to close the accumulation roller chain V*plus* after insertion in conveyor section element

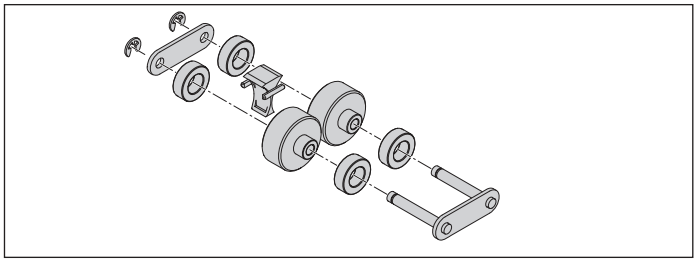
Notice: On the accumulation roller chain V*plus*, the workpiece pallet attains a speed up to the factor of 2.5 higher than that of the chain. Special measures must therefore be observed for chain speeds > 9 m/min!

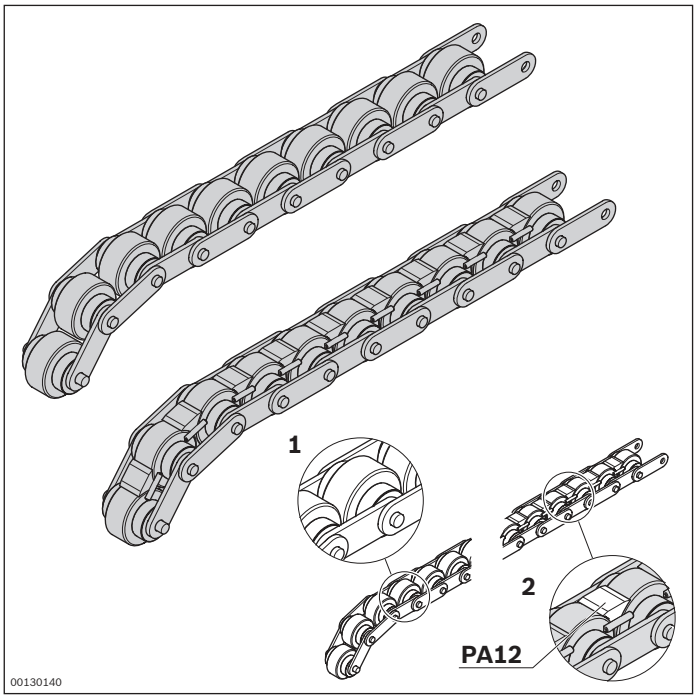
Ordering information

Product description	Material number
Accumulation roller chain V*plus* with steel	3842538869
Accumulation roller chain V*plus* with steel accumulation rollers and small parts protection	3842538870
Chain lock for accumulation roller chain V*plus*	3842538872

Technical data

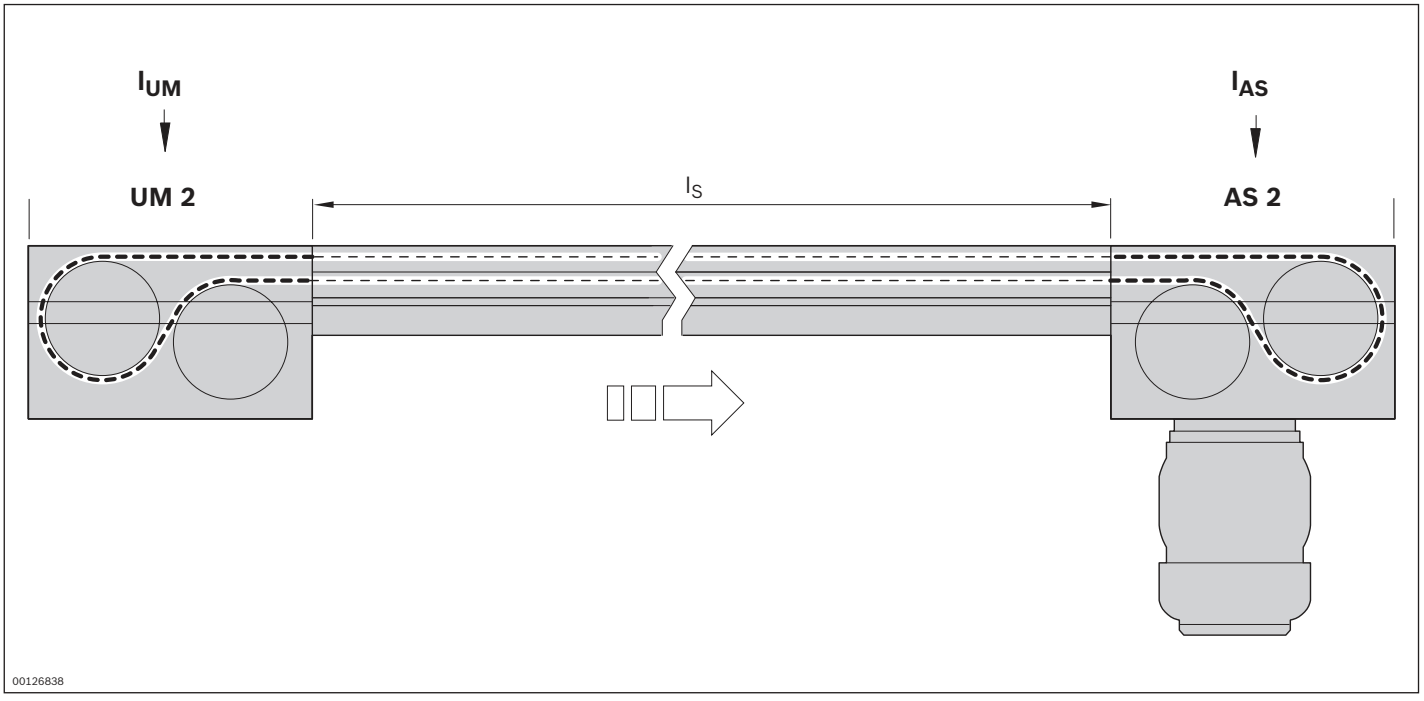
Material number			3842538869	3842538870	3842538872
ESD			Yes	Yes	Yes
Material specification			Rollers: Steel	Rollers: Steel Small parts protection: PA 12 (suitable for use in an EPA)	Chain lock: Steel
Length	l	mm	12000	12000	





1 Accumulation roller chain with steel accumulation rollers
2 Accumulation roller chain with steel accumulation rollers and small parts protection

Dimensions



The required chain length is determined using the following formula.

$$l_R = 2 \times l_S + l_{AS} + l_{UM}$$

l_R = Length of the accumulation roller chain
l_S = Length of the section profile
l_{AS} = Length of the conveyor medium in the drive module
l_{UM} = Length of the conveyor medium at the return unit

Length of the conveyor medium for accumulation roller chain

$l_{UM\ 2/C\text{-}170}$ = 310 mm
$l_{UM\ 2/C\text{-}60}$ = 150 mm
l_{AS} = 625 mm

Disassembly tool for accumulation roller chain V*plus*

- For disassembly of accumulation roller chains V*plus*
- Makes it easier to open and disassemble the accumulation roller chain V*plus*
- Turning the thread mandrel pushes out a chain rivet and the chain can be removed

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Disassembly tool for accumulation roller chain V*plus*	3842539357

Linear section LS 2

- The linear section LS 2 is a high-speed section driven by linear motors, fully assembled including guides for workpiece pallets WT 2/LS
- For the design of a hybrid system by integrating the section LS 2 driven by linear motors in layouts of TS 2*plus* systems
- Fast WT changeover times and thus reduced cycle times
- Positioning without additional indexing
- Transition to linear motor range "on the fly"
- Impact-free stopping for gentle transport of sensitive products
- Independent control of the workpiece pallets WT 2/LS with various motion profiles, also reversing

Notice: Positioning of WTs in the area of the drive heads/return heads is not permitted.

Notes when using the workpiece pallet WT 2/LS in conjunction with standard components TS 2*plus*:

- It is possible to use the toothed belt, belt, and FPK conveyor media for curves
- Due to the strong magnets below the WT 2/LS, magnetically active parts must have a minimum distance of 30 mm from the magnets. Please also note that the attached elements (feed magnet, measuring magnet and stopper) represent an interfering contour for different components TS 2*plus*
- Some components TS 2*plus* have been adapted to enable the use of the WT 2/LS. Material numbers and parameters can be found in the relevant components/standard components. On page 2-62 you will find an overview of the components TS 2*plus* suitable for the TS 2 Booster.

Please note that the linear path guide must be lubricated on both sides, for this the lubrication LU 2/LS for linear path LS 2 with adapter set is required (see p. 9-15).

Notice:

Please note that the workpiece pallet WT 2/LS has a strong magnetic field and take appropriate precautions. Observe the corresponding information in the assembly instructions.

Scope of delivery

- Conveyor section LS 2:
  - Guide with fastening elements (C)
  - Holder for linear motor
  - Linear motor (A)
  - Measuring system (B)

Condition on delivery

- Assembled

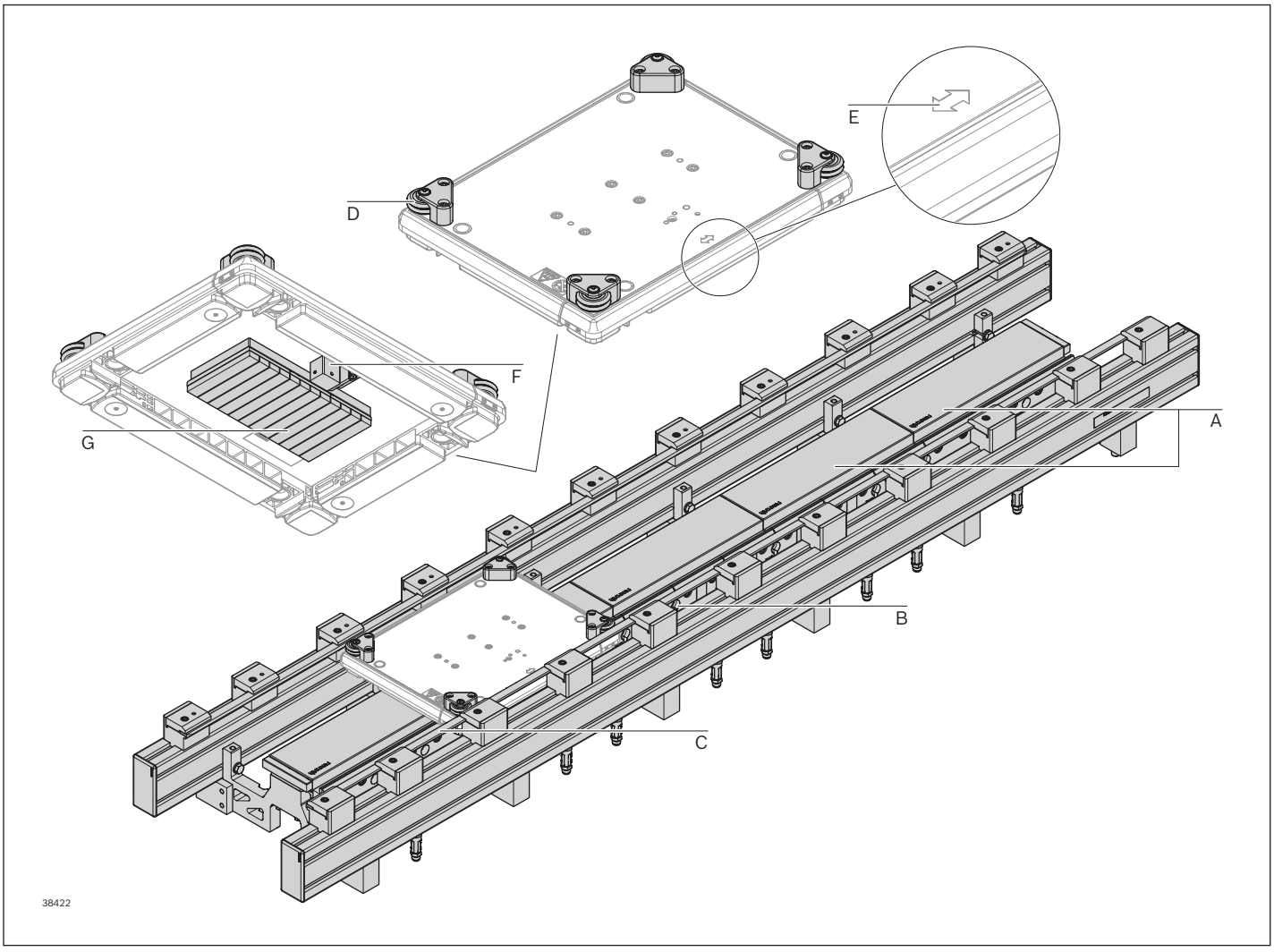
Required accessories

- Workpiece pallet WT 2/LS, see p. 2-47
- Motor cable, see p. 3-179
- Sensor cable, see p. 3-179

Recommended accessories

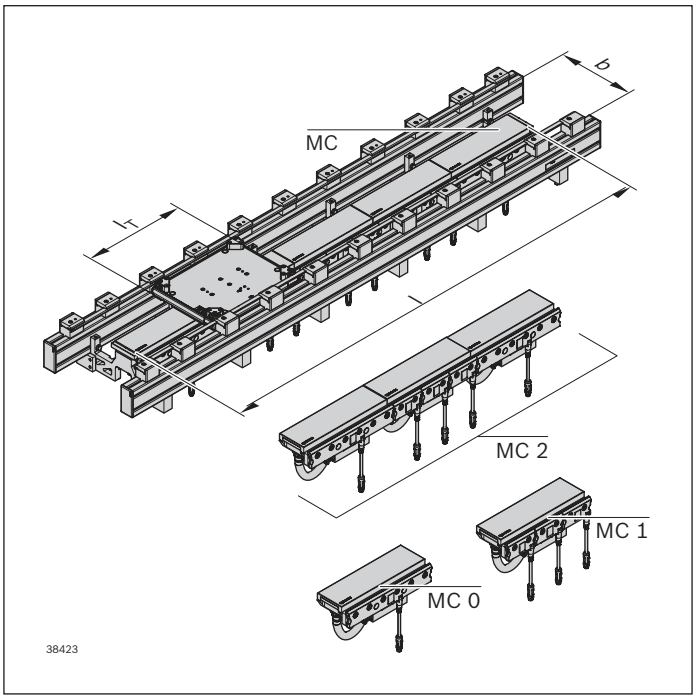
- Leg set SZ 2/LS END/MID, see p. 6-26
- Longitudinal connector LV 2, see p. 6-29
- 2x lubrication unit LU 2/LS, see p. 9-15,
  2x grease cartridge LU 2/LS, see p. 9-15
- Adjustment set LS 2, see p. 3-178
- Adjustment set BS 2 - LS 2, see p. 3-178

Linear section LS 2



A Linear motor
B Measuring system
C Guide with fastening elements
D Rollers
E Marking/travel direction
F Measuring magnet
G Feed magnet

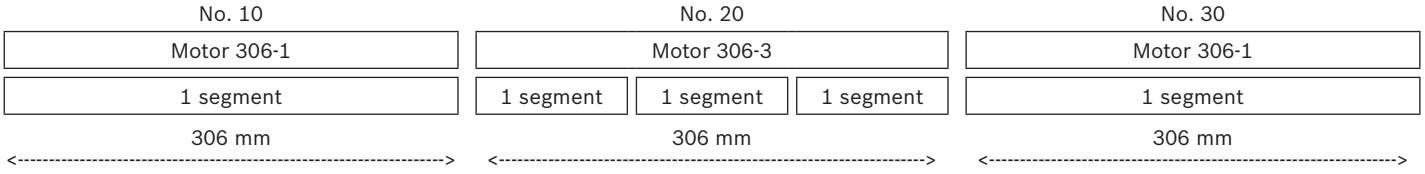
Ordering information



Material number		3842998905
b (mm)	Track width in direction of transport	160; 240; 320; 400
l_T (mm)	Length in direction of transport	160; 240; 320; 400; 480; 640
b x l_T	Combination options	160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 240; 320; 400; 480 400 x 320; 400; 480; 640
l (mm)	Length	MC = 0[2] or 2[2]: 306; 612; 918; 1224; 1530; 1836; 2142; 2448; 2754; 3060; 3366; 3672
		MC = 1[2]: 306; 612; 918; 1224; 1530; 1836; 2142; 2448
MC	Motor type/equipment 0 = FLM-306-1 1 = FLM-306-3 2[1] = mixed	MC = 0 for b = 160; 240; 320; 400 MC = 1 for b = 160; 240; 320 MC = 2 for l ≥ 612, b = 160; 240; 320

[1] Mixed equipment = motor 306-3 and 306-1
Specification of the desired motor type per position
(see example mixed equipment)
[2] Other lengths upon request

Example of mixed equipment

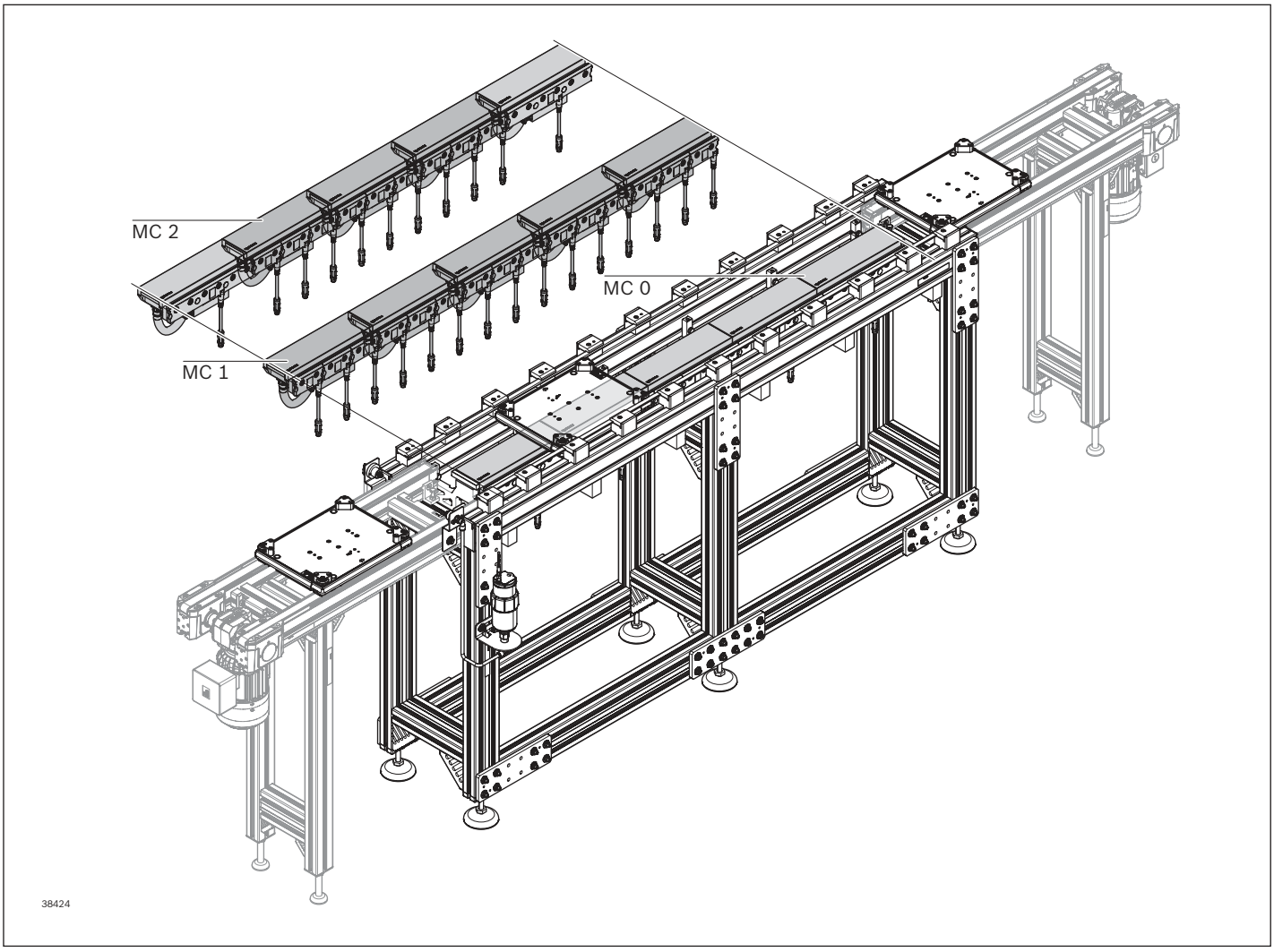


A linear section is made up of linear motors.
A distinction is made between three motor types.

Motor type	Length (mm)	Number of independent segments
306-1	306	1
306-3	306	3
306-1 in double track	306	1

Depending on the track width (= WT width),
the following section configurations are recommended.

Track width	Motor type 306-1	Motor type 306-3	Motor type 306-1 and -3	306-1 in double track
160	x	x	x	
240	x	x	x	
320	x	x	x	
400				x



MC = 2: Mixed equipment:
Motors with 1 segment and motors with 3 segments are installed together in the section.

MC = 0/1: Sorted equipment:
Either only motors with 1 segment or with 3 segments are installed in the section.

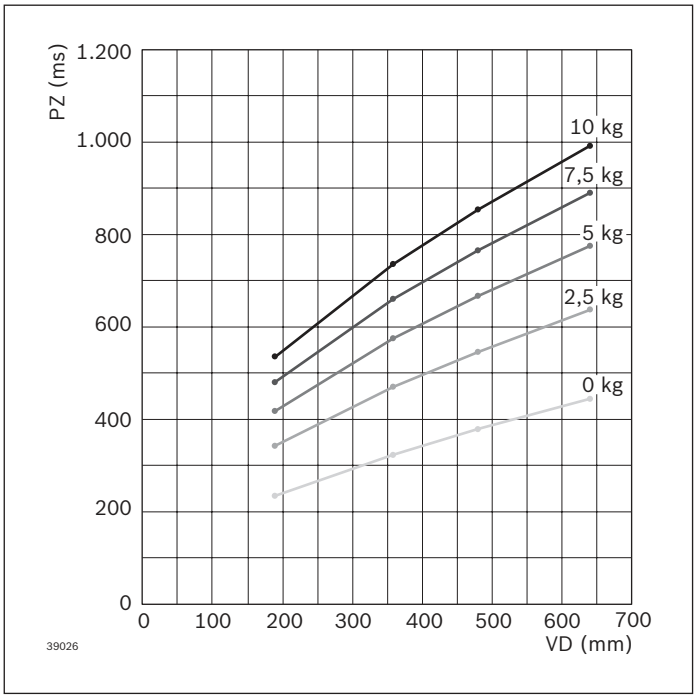
Positioning time diagram

The following diagrams show the achievable positioning times depending on the travel distance and load.
The diagram values were determined under the following conditions:

- Jerk = unlimited
- Setting time = 30 ms
- With maximum dynamics (acceleration)

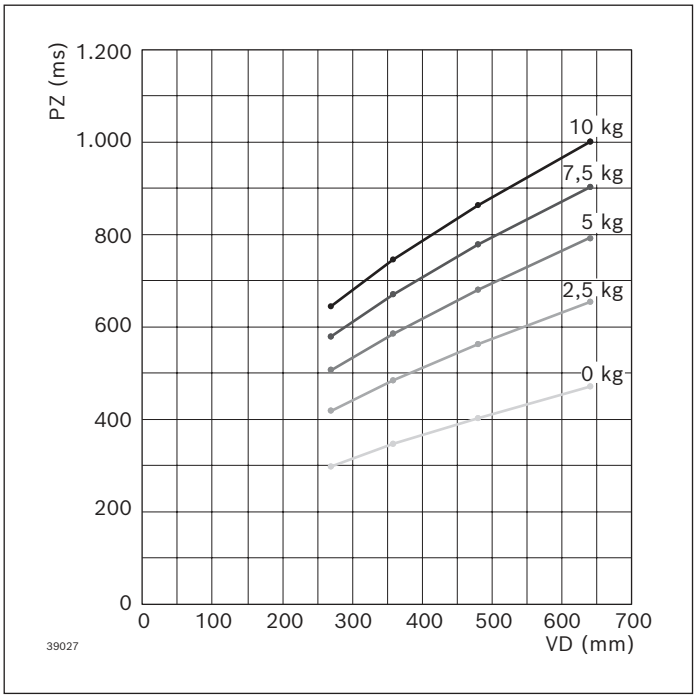
Notice:
Depending on the application, the positioning times depend on the following:
Tuning, standstill limit, PLC cycle time, etc.
Application-specific load cycle must be thermally checked

Positioning time diagram 160 x 160



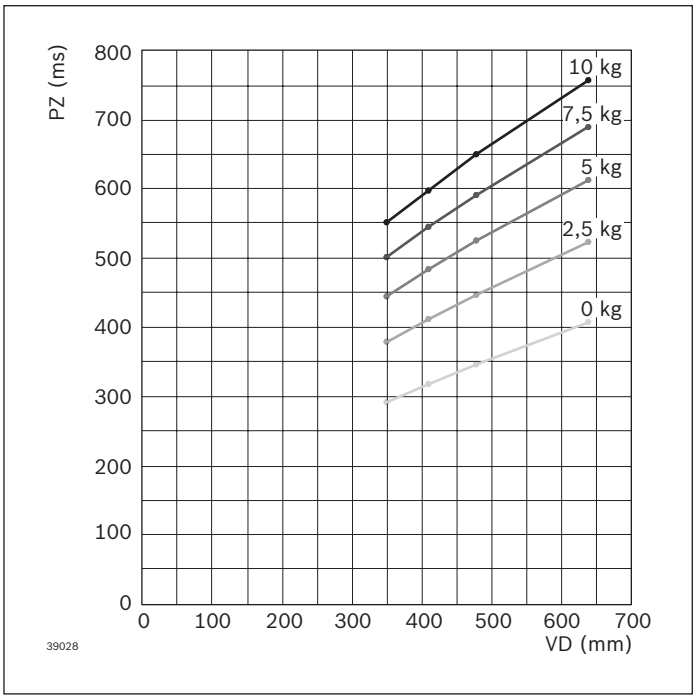
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 160 x 240



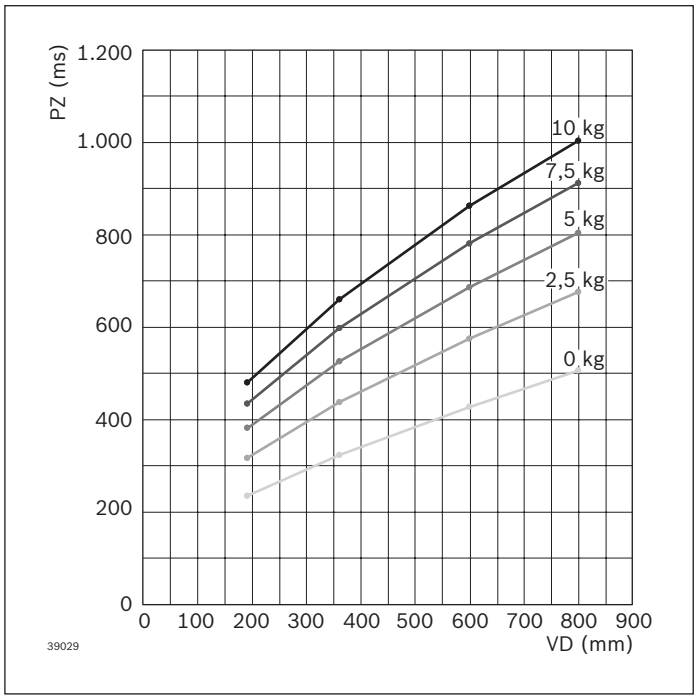
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 160 x 320



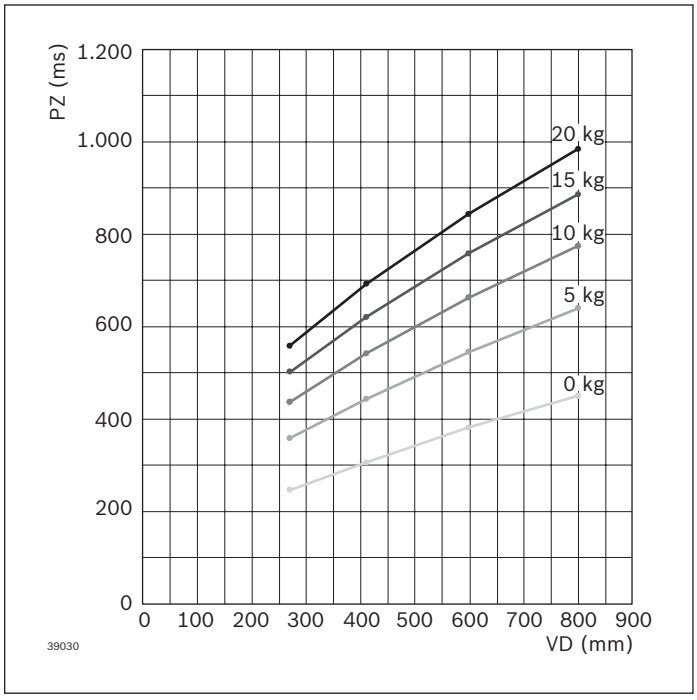
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 240 x 160



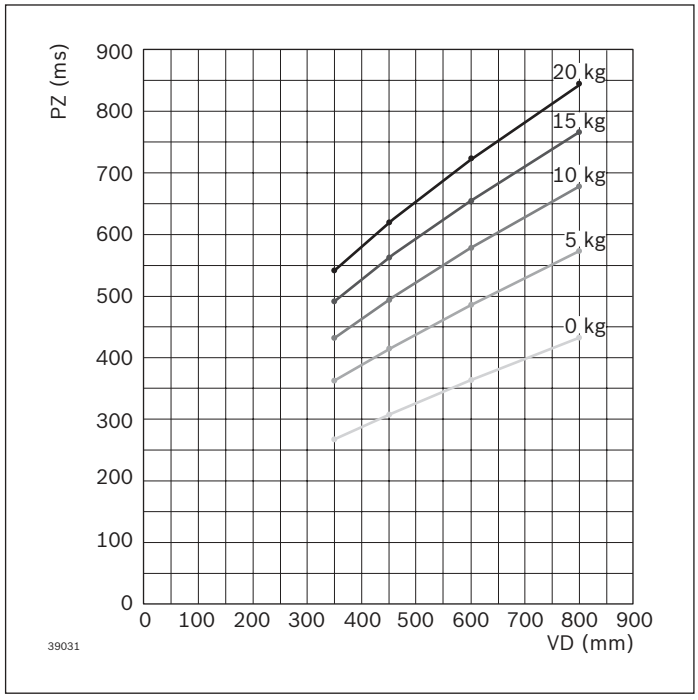
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 240 x 240



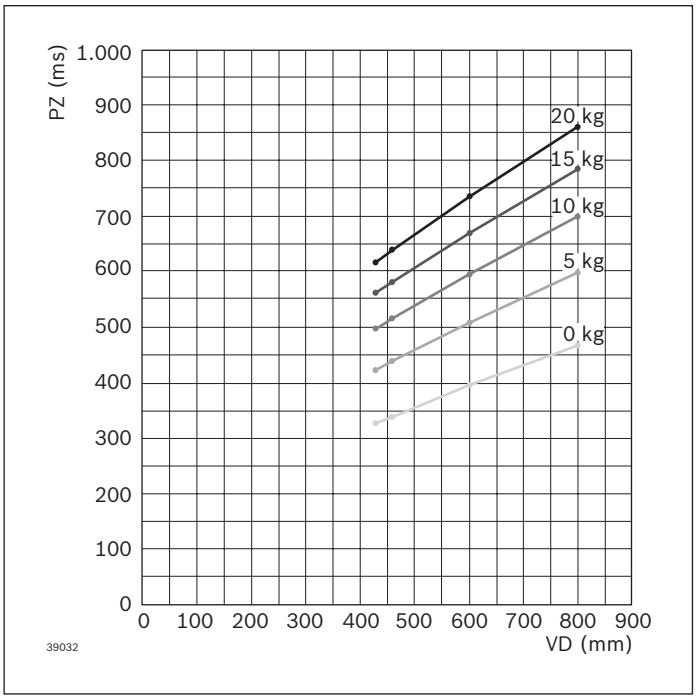
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 240 x 320



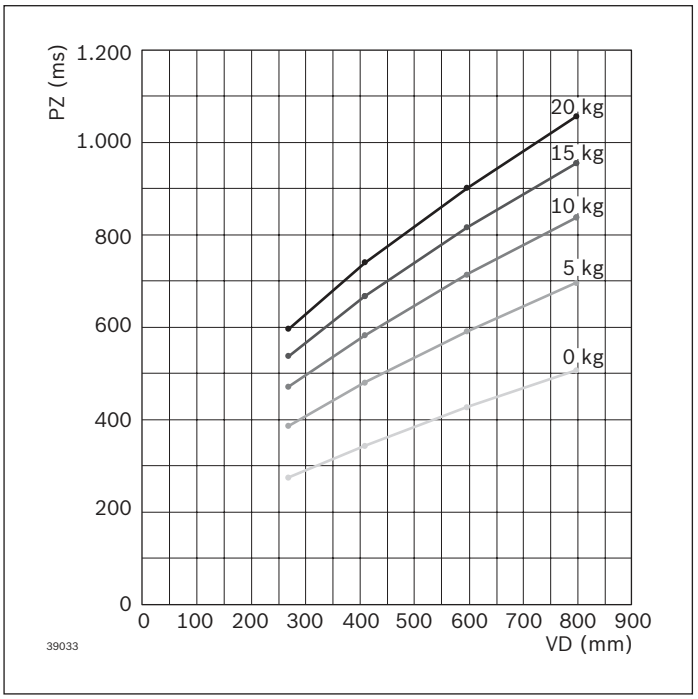
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 240 x 400



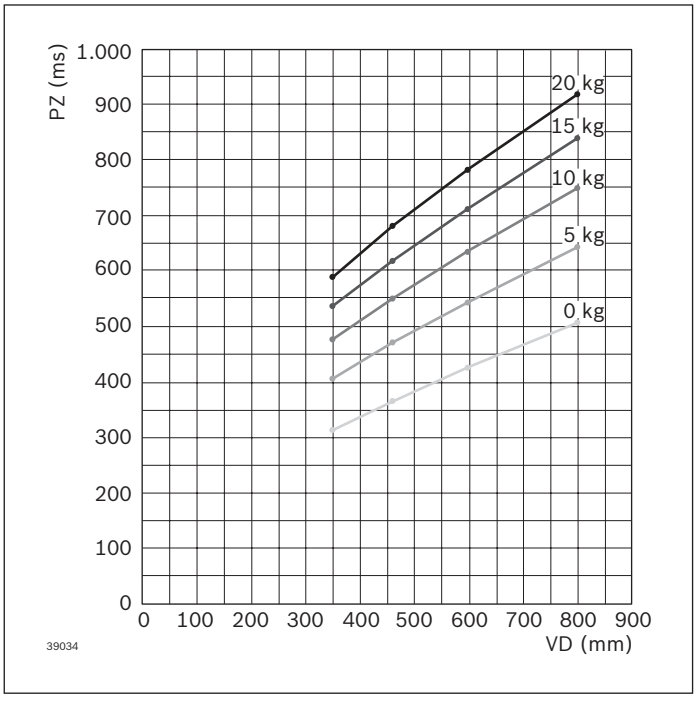
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 320 x 240



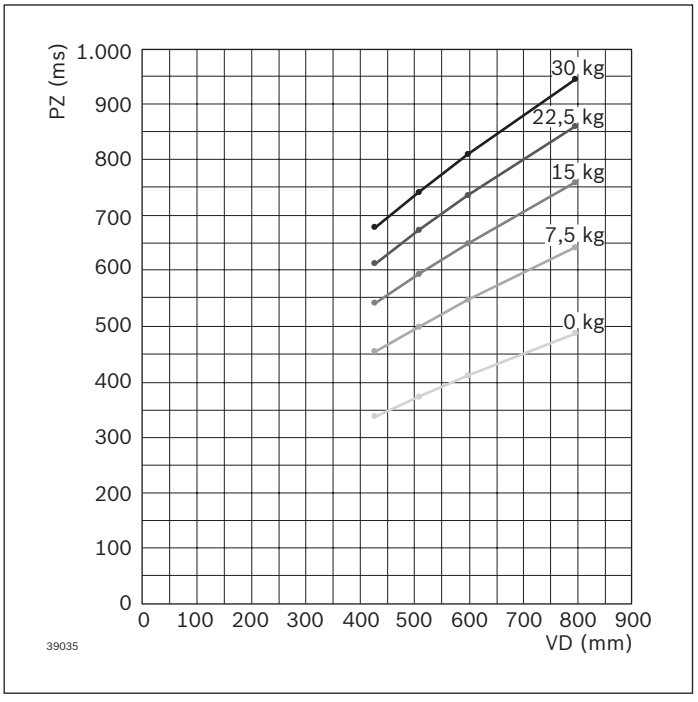
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 320 x 320



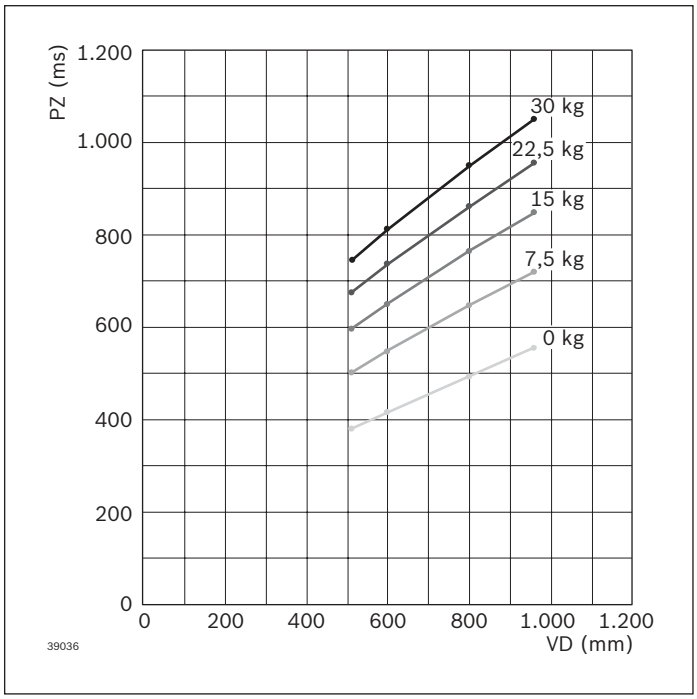
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 320 x 400



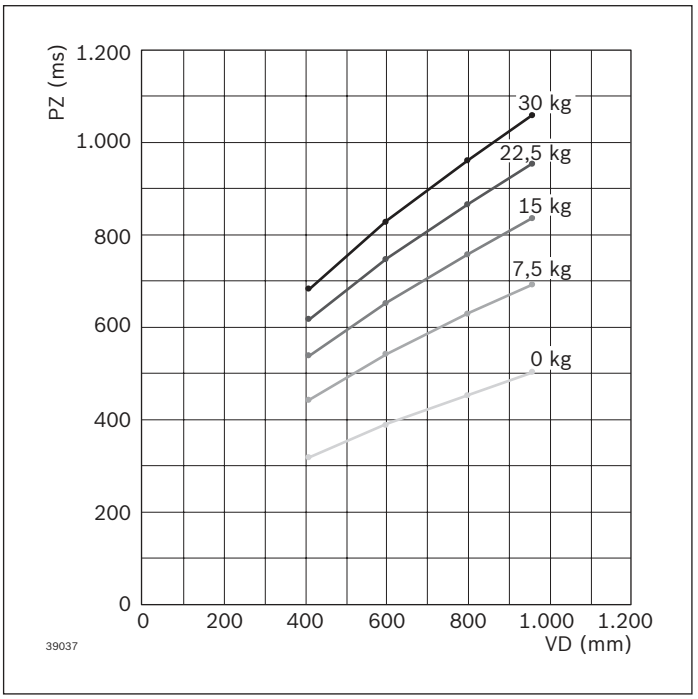
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 320 x 480



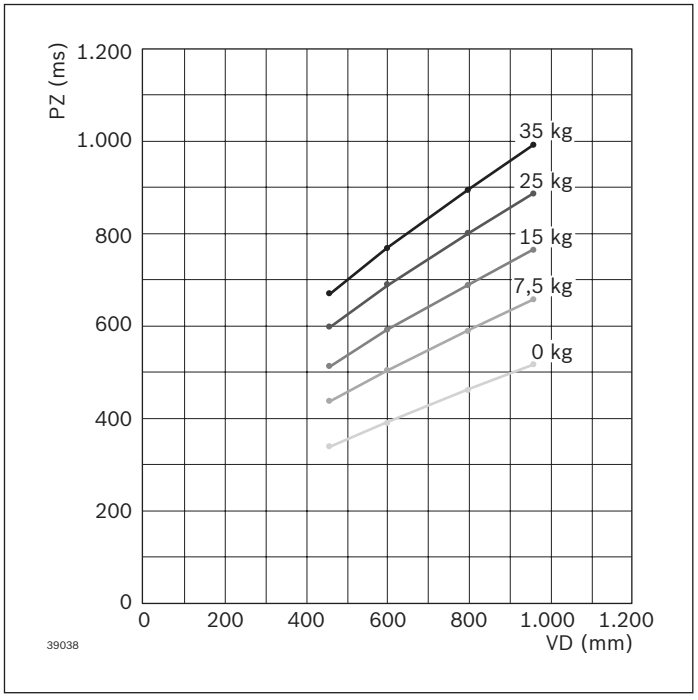
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 400 x 320



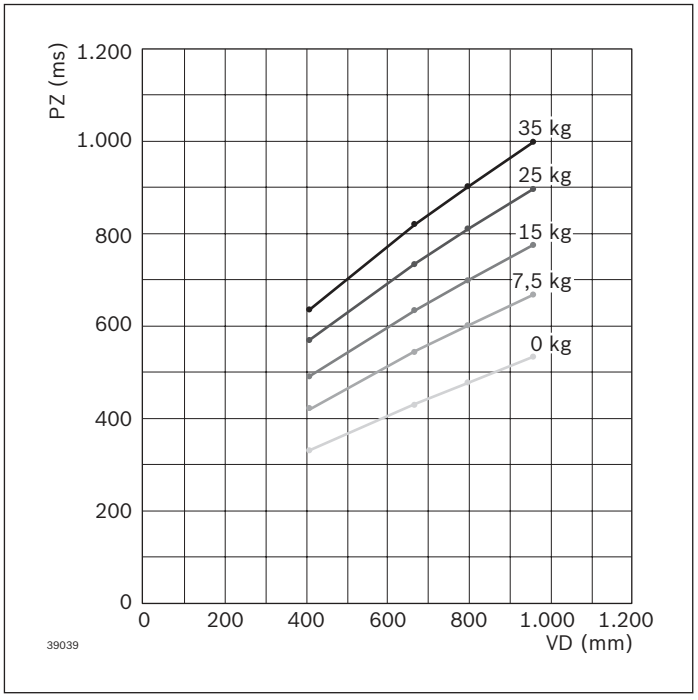
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 400 x 400



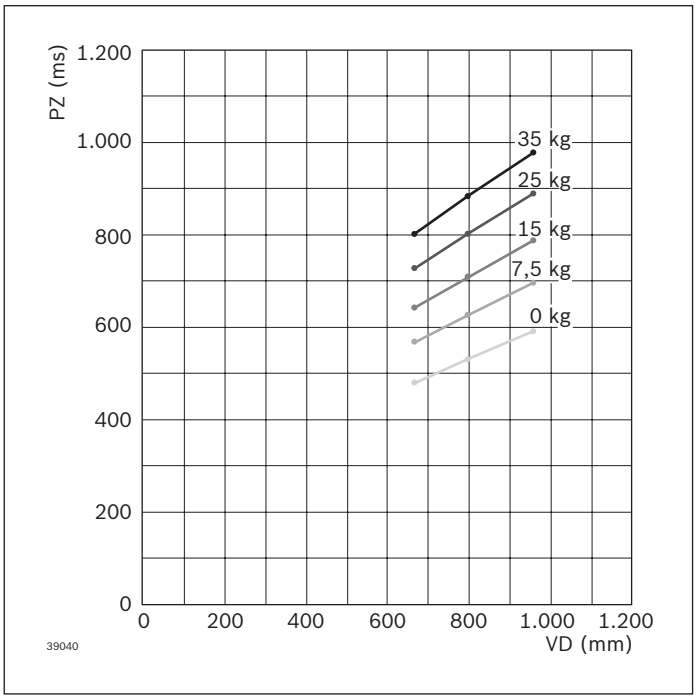
PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 400 x 480



PZ = positioning time in ms
VD = travel distance in mm

Positioning time diagram 400 x 640



PZ = positioning time in ms
VD = travel distance in mm

Combination options of LS 2 and WT 2/LS with the following components TS 2*plus*:

Note on combination with linear section LS 2:

- Before and after the linear section LS 2, a belt section with a small return head and a minimum length of one WT must be installed. => BS 2 or BS 2/M-2

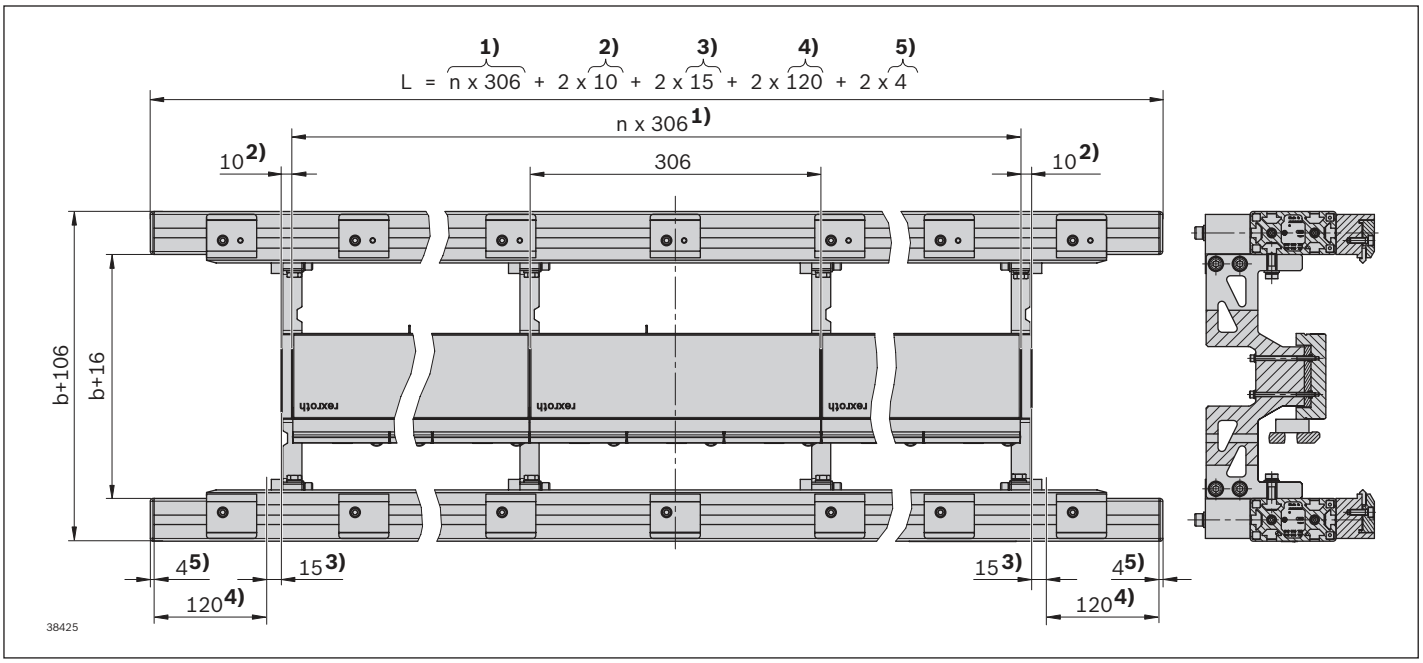
Notes on the combination option of the workpiece pallet WT 2/LS:

- Components with toothed belt or belt can be used without any problems
- Components with roller chain cannot be used
- The curve KU 2/... and BS 2/C... for larger WTs can be used from the flat-top chain construction kit
- On components with flat-top chain, the WT 2/LS cannot be removed from the transverse conveyor

Workpiece pallet WT 2/LS combination matrix with components TS 2*plus*, see page 2-62

Dimensions

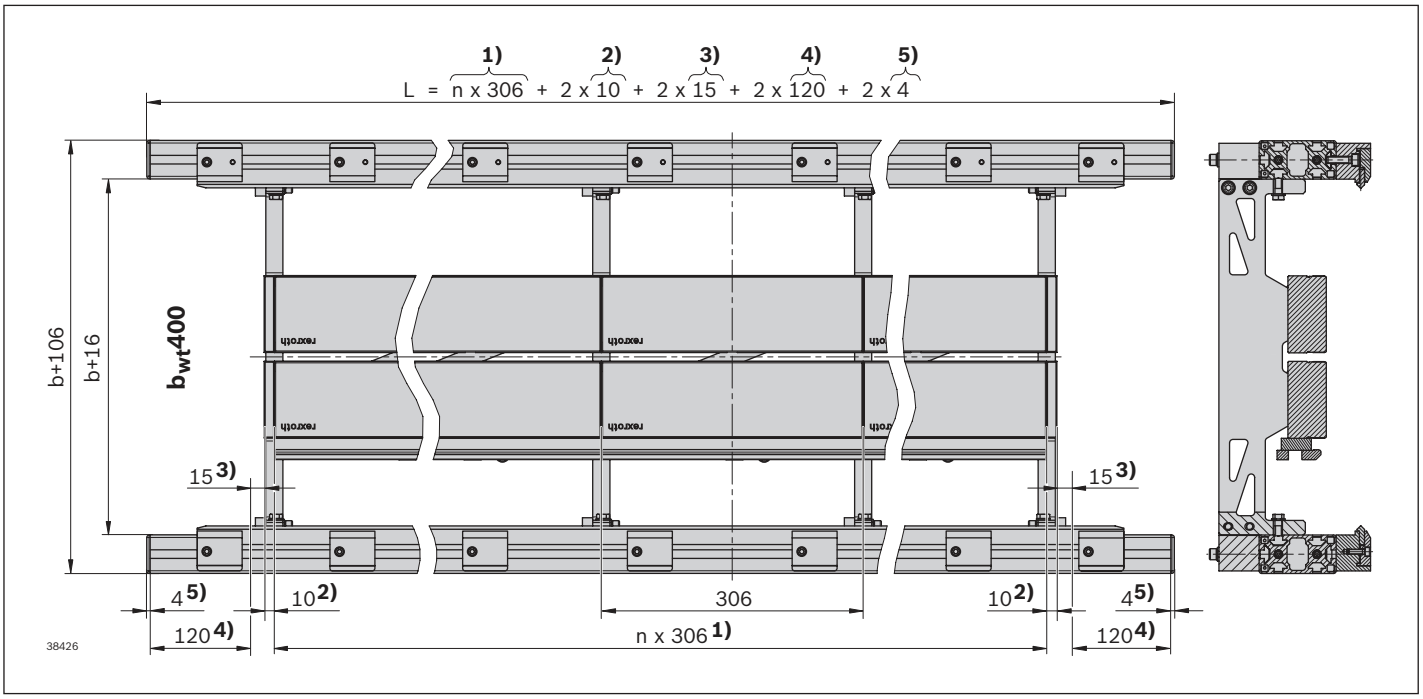
Single track



1) Number of 306 motors
2) 1/2 bridge, bridge = 20 mm
3) Safety clearance
4) Overlap with section TS 2
5) Cover cap

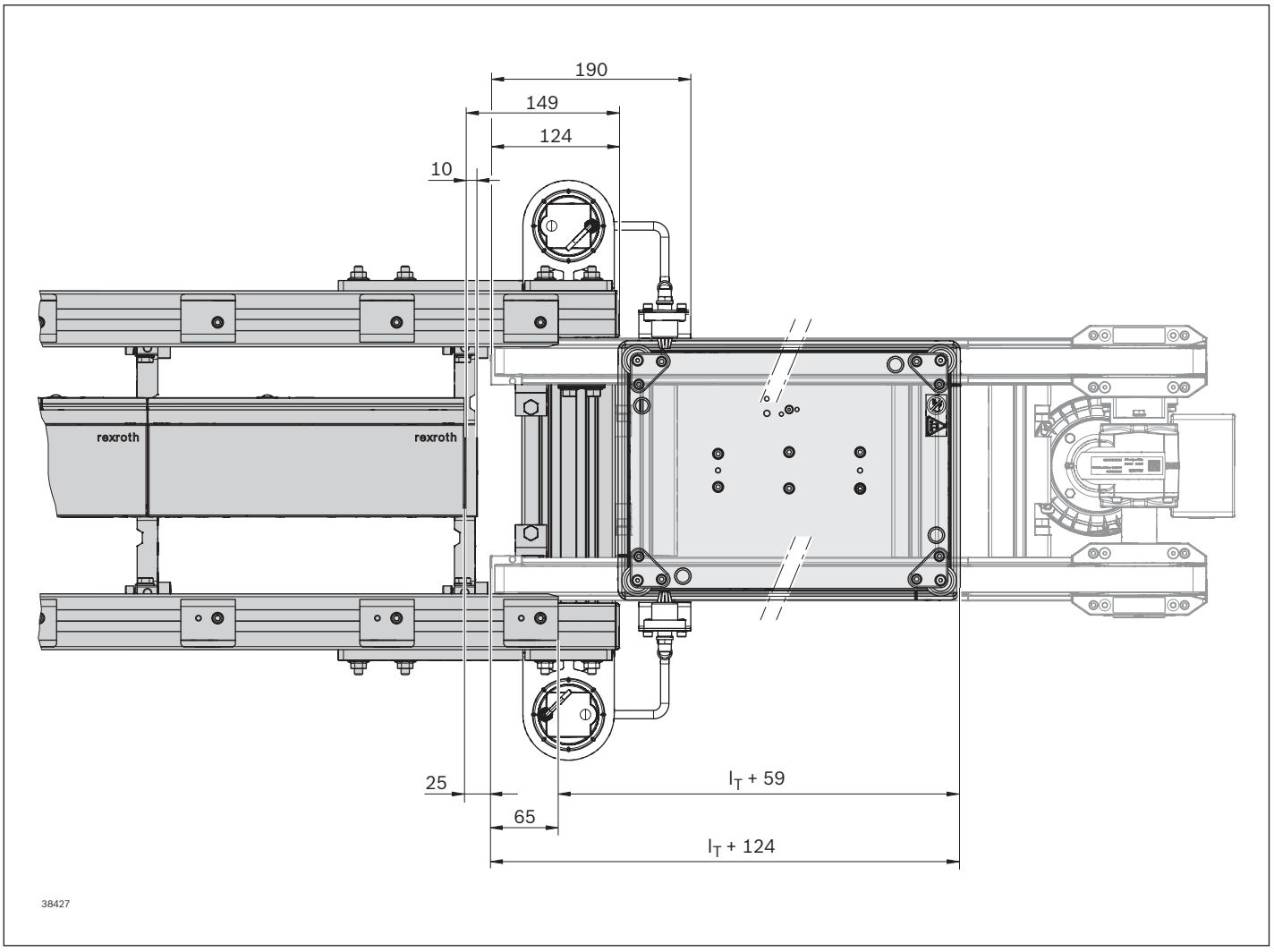
Double track (only for b_{WT} = 400 mm)

Installation situation: Clear dimension between belt sections BS 2

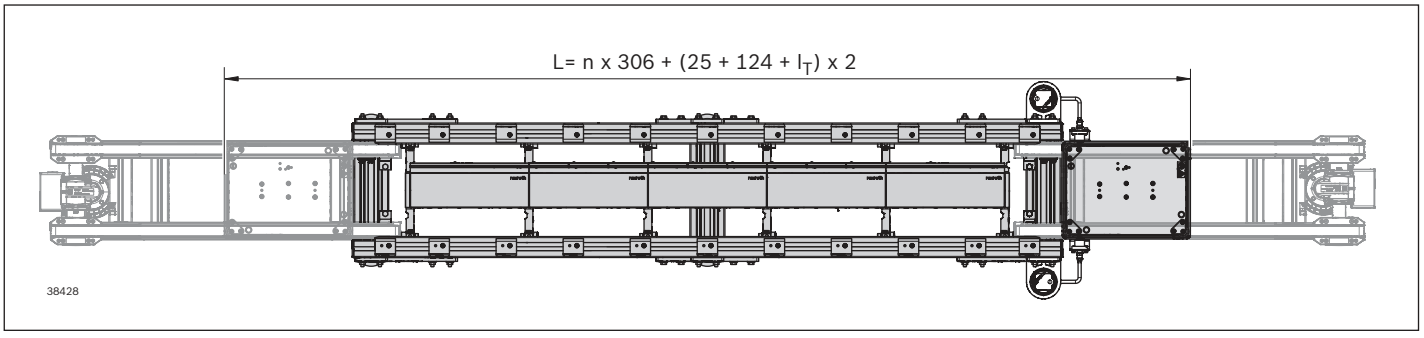


1) Number of 306 motors
2) 1/2 bridge, bridge = 20 mm
3) Safety clearance
4) Overlap with section TS 2
5) Cover cap

Transition of conveyor section LS 2 and BS 2



Total length of linear section LS 2 with check-in and check-out section on the belt section BS 2

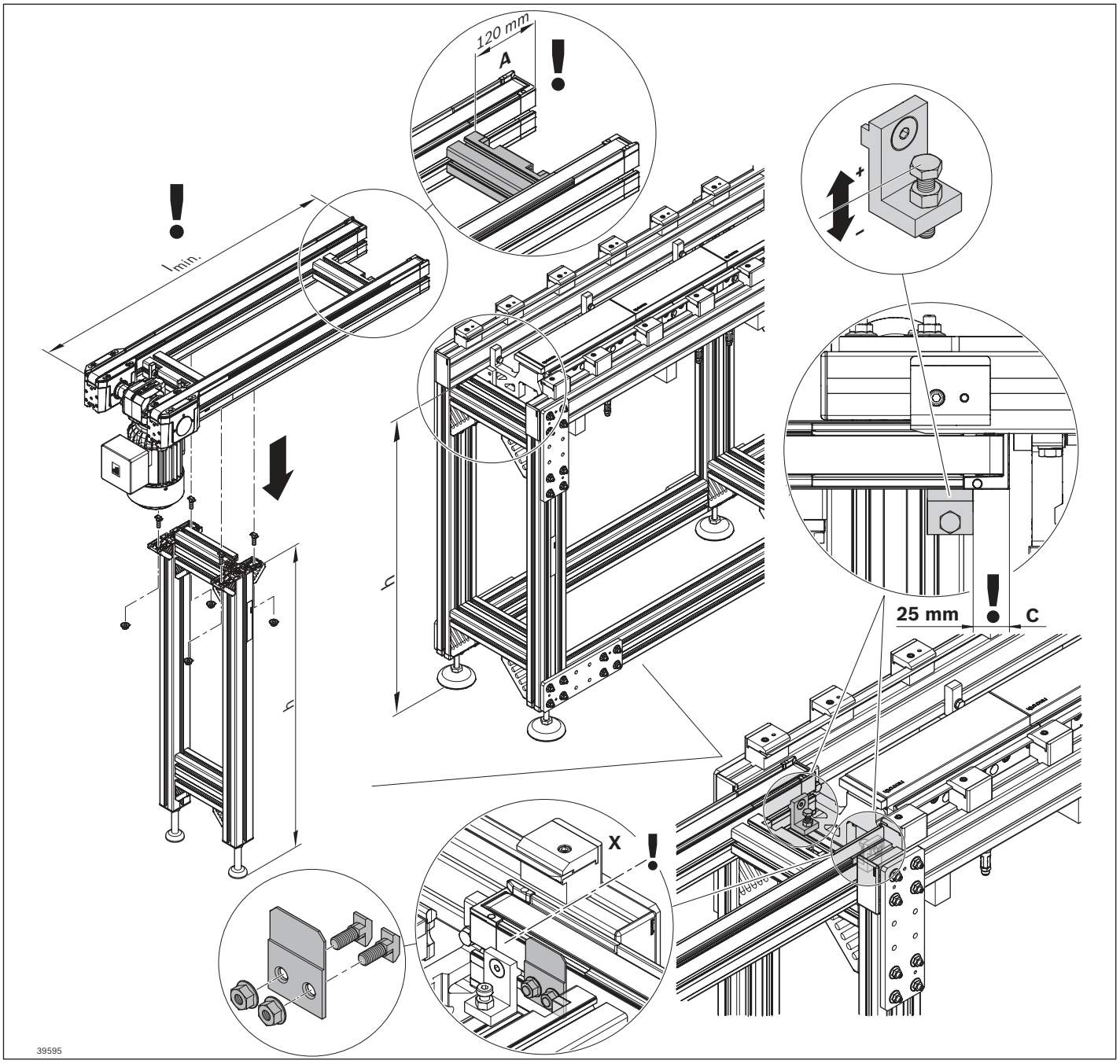


Height adjustment between leg set SZ 2/LS END / belt section BS 2 and linear section LS 2

The leg set SZ 2/LS END, the belt section BS 2 and the linear section LS 2 must be adjusted to the same height/orientation so that the curve is not offset.

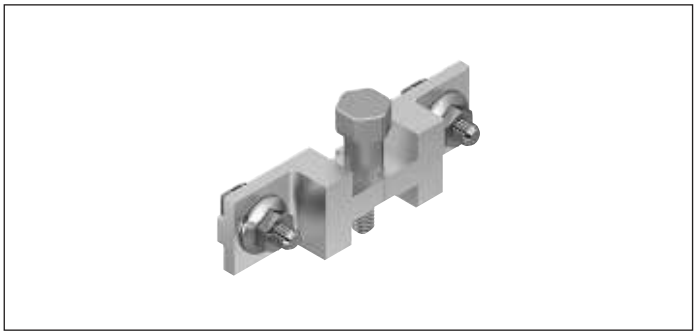
Observe the minimum length of the belt section BS 2 which connects to the linear section LS 2:

Length of workpiece pallet l_{WT} (mm)	Minimum length of belt section l_{min} (mm)
160	310
240	320
320	400
400	480
480	560
640	720



Notice: Workpiece pallet centering from a track width of b ≥ 240 mm is required.

Adjustment set LS 2



- For motor alignment and height adjustment

The adjustment set LS 2 is a tool for adjusting the motors in a linear section. 2 adjustment sets are required respectively.

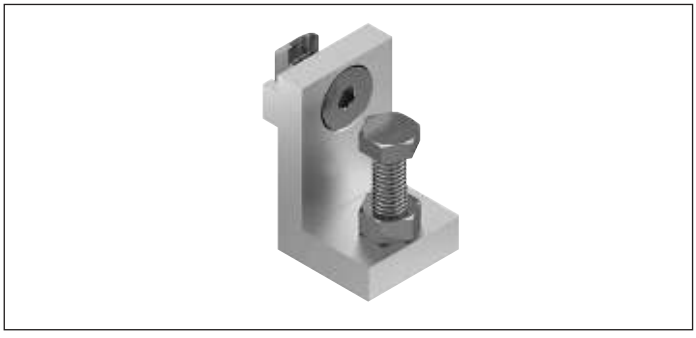
Scope of delivery

- Adjustment set incl. holding body, centering piece, tightening spindle and fastening material

Ordering information

Product description	Material number
Adjustment set LS 2	3842562442

Adjustment set BS 2 – LS 2



- Used for fine adjustment of the adjacent belt sections BS 2 to LS 2

Notice:
The adjustment set BS 2 – LS 2 is included in the scope of delivery of the leg set SZ 2/END

The adjustment set BS 2 – LS 2 is required if the linear section is not installed on standard leg sets SZ 2/LS END.

Scope of delivery

- Set containing 2x adjustment set

Ordering information

Product description	Material number
Adjustment set BS 2 – LS 2	3842562433

Motor cable FMK, sensor cable FSK

- Motor cable FMK for connecting the motor to the control cabinet
- Sensor cable FSK for connecting the measuring system to the control cabinet

Ordering information

Product description	Length (m)	Material number
Motor cable, FMK M23 FG8 E5 CPL	5	3842562400
Motor cable, FMK M23 FG8 E10 CPL	10	3842562401
Motor cable, FMK M23 FG8 E15 CPL	15	3842562402
Sensor cable, FSK M12 DQ E5	5	3842562404
Sensor cable, FSK M12 DQ E10	10	3842562405
Sensor cable, FSK M12 DQ E15	15	3842562406

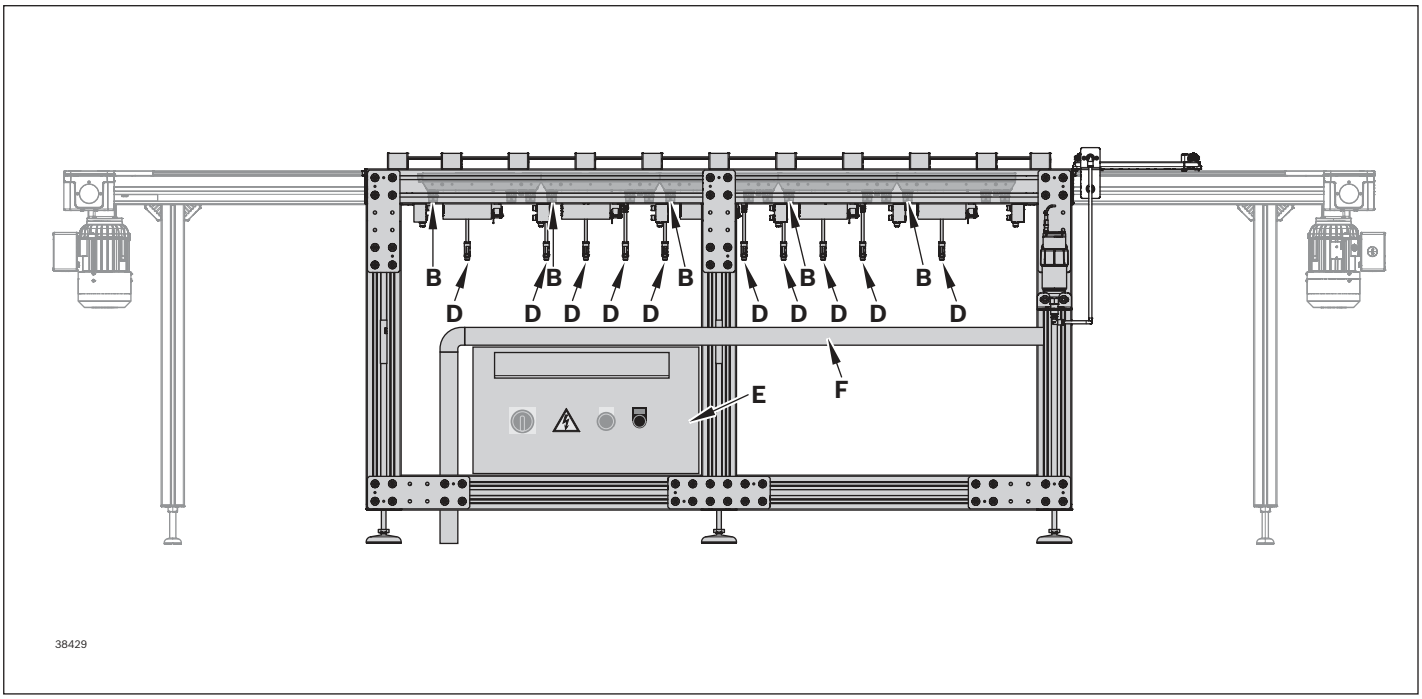
Scope of delivery

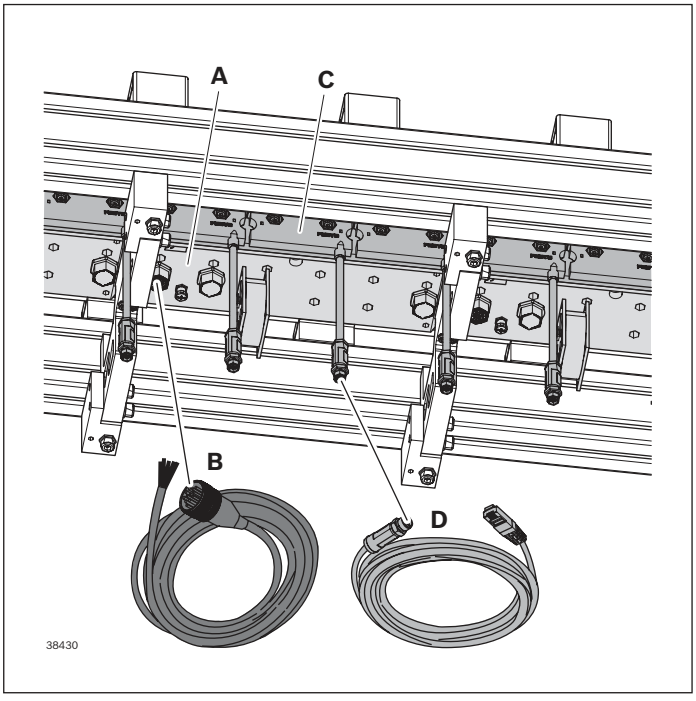
- Cable with connector and socket, cable length depending on the version

Condition on delivery

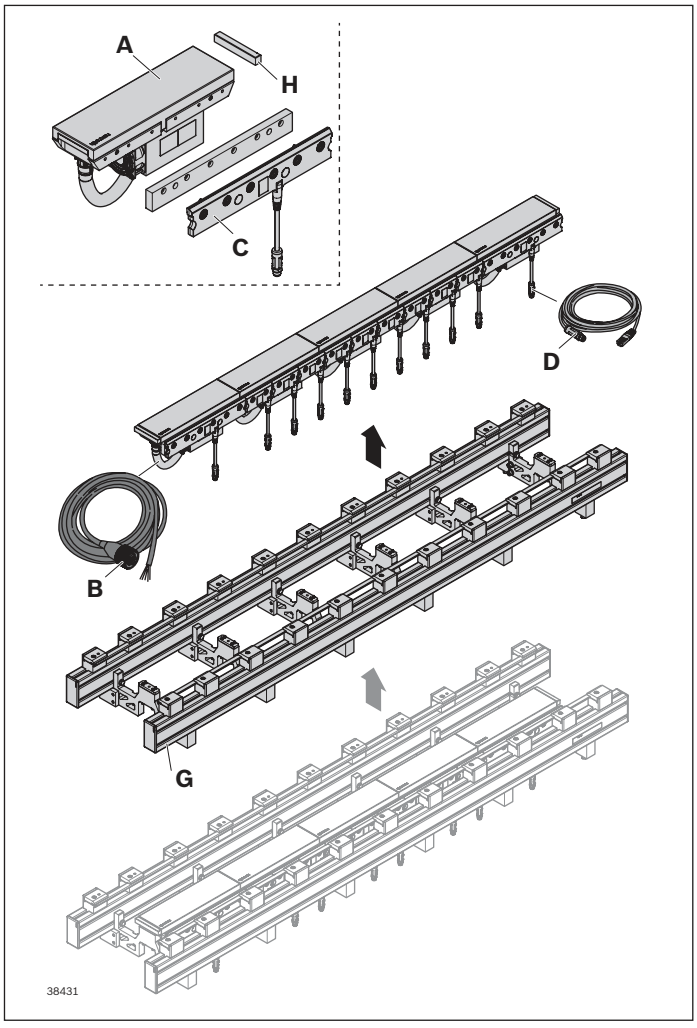
- Assembled
- Configured

Connections for measuring system and motor to the control cabinet



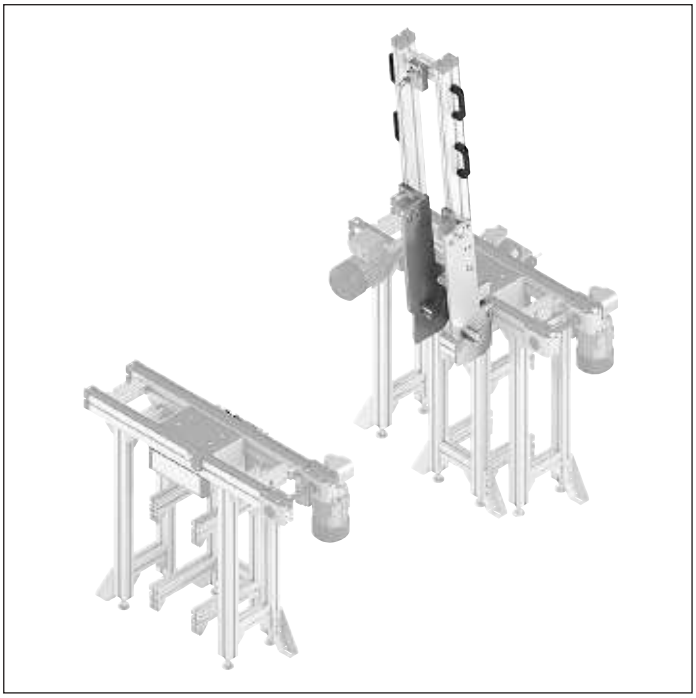


A Linear motor
B Motor cable FMK...;
Connection between motor and control cabinet
C Measuring system
D Sensor cable FSK...;
Connection between measuring system and control cabinet
E Control cabinet
F Cable duct



A Linear motor
B Motor cable FMK...;
Connection between motor and control cabinet
C Measuring system
D Sensor cable FSK...;
Connection between measuring system and control cabinet
G Guide
H End piece

Lift gate LG 2/H



- Can be used for belt sections BS 2, BS 2/C-100, BS 2/R-300 and for combinations of section ST 2/C-H (ST 2/R-H), drive AS 2/C-100 (AS 2/R-300) and return unit UM 2/C-60 (UM 2/R-60)
- From width b = 240 mm up to b = 1200 mm
- For passage width (A) 600 ... 1800 mm
- In open position (85°), locked
- Mechanical unlocking, optionally with pneumatic unlocking (kit PN)
- Safety switch in off position
- Can be used as transverse section

Notice:

- The length of the belt section (l_{BS}) is the passage width plus 500 mm
- The total required space of the LG 2/H is the passage width plus 535 mm
- Can be used with WT 2/LS at b ≥ 400 mm and with all conveyor media except accumulation roller chain

Required accessories

- 1x belt section BS 2, see p. 3-6, or conveyor unit
- 2x leg set SZ 2, see p. 6-4
- 2x 4 strut profiles 45x60, see p. 3-188
- 16x bracket 45x45, see p. 3-188
- 2x foundation bracket, see p. 3-187
- Extension cable for safety switch

Recommended accessories

- Mounting kit PN, see p. 3-188

Scope of delivery

- Mounting kit with gas pressure springs, attachment kit, locking and safety switch

Condition on delivery

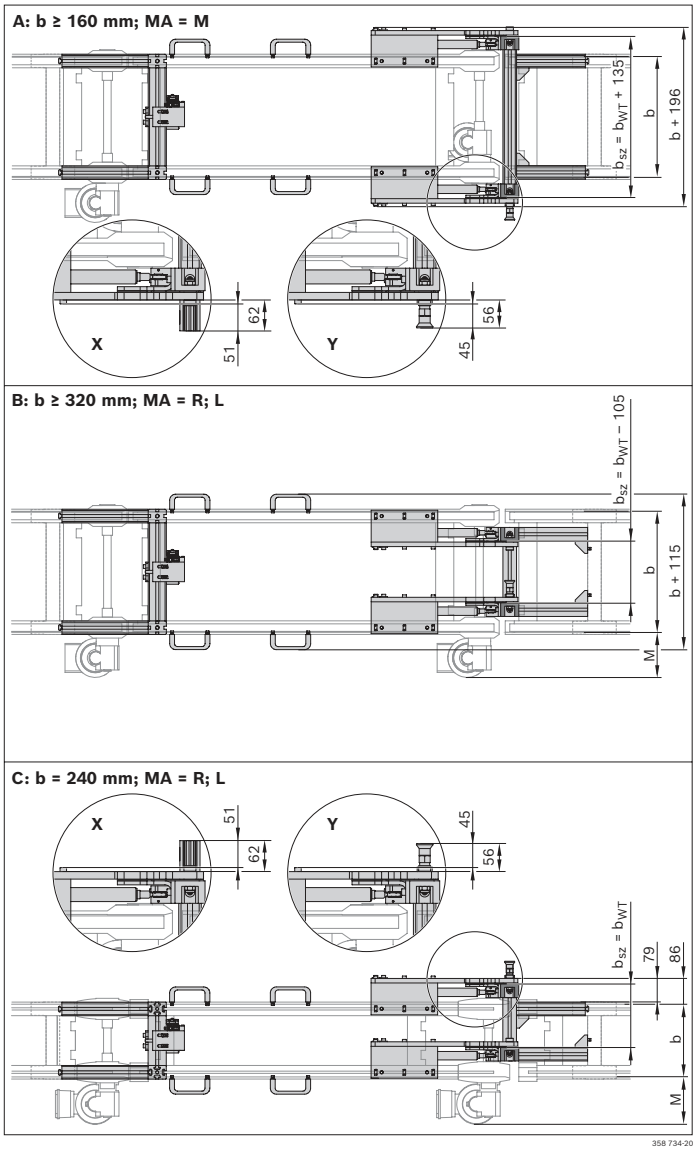
- Not assembled

The lift gate LG 2/H provides access or passage to the inner spaces of a belt section (BS). Manually tilting the belt section can open it from 0° to 85° or close it from 85° to 0°.

The effort required to do this is reduced with the aid of a gas pressure spring.

Overall width of the different lift gate assembly variants

Lift gate interfering contours



The following applies to the BS 2: When MA = M and b = 160 mm, the max. section load is only 30 kg

The total width results from the belt section width (b), the motor width (M) and other interfering contours (e.g. locking bolts for unlocking, etc.).
The requirements for other interfering contours are specified in the dimension drawings on the left.
In addition, the workpiece pallet width need not be taken into account.

Overall width/interfering contours

	Belt section	M (mm)
B	BS 2	154.0
	BS 2/C-100	158.5
	BS 2/R-300	158.5
	ST 2/C-H	158.5
	ST 2/R-H	158.5
C	BS 2	154.0
	BS 2/C-100	158.5
	BS 2/R-300	158.5
	ST 2/C-H	158.5
	ST 2/R-H	158.5

Interfering contours A
If both plates are mounted outside of the belt section, the minimum width is b = 240 mm.

Interfering contours B
If both plates are mounted in the center of the belt section, the minimum width is b = 320 mm.
For mounting a locking bolt (not included) or mounting the PN locking mechanism, b = 320 mm.

Interfering contours C
If one plate is mounted in outside or inside of the belt section, the minimum width is b = 240 mm.

Selection of the mounting kit LG 2/H for the belt section type

- 1. Select the appropriate table for your belt section type
- 2. Determine the mounting kit LG 2/H reference number, which can be worked out from the workpiece pallet width b_{WT} and the feed width (A = l_{BS} – 500)
- 3. Use this reference number from the "mounting kit LG 2/H" table to identify the correct mounting kit (see p. 3-26)

Notice:

- The length of the belt section (l_{BS}) is the passage width plus 500 mm
- The total required space of the LG 2/H is the passage width plus 535 mm

BS 2

Passage width A	Width of workpiece pallet b_{WT}								
	160	240	320	400	480	640	800	1040	1200
600	1	1	1	1	1	1	1	1	1
700	1	1	1	1	1	1	1	1	1
800	1	1	1	1	1	1	1	1	1
900	1	1	1	1	1	1	1	1	1
1000	1	1	1	1	1	1	2	2	2
1100	1	1	1	1	1	2	2	2	2
1200	1	1	1	2	2	2	2	2	2
1300	2	2	2	2	2	2	2	2	2
1400	2	2	2	2	2	2	2	2	2
1500	2	2	2	2	2	2	2	2	2
1600	2	2	2	2	2	2	2	3	3
1700	2	2	2	2	2	3	3	3	3
1800	2	2	2	3	3	3	3	3	3

BS 2 C-100

Passage width A	Width of workpiece pallet b_{WT}								
	160	240	320	400	480	640	800	1040	1200
600	x[1)]	1	1	2	2	2	2	2	2
700	x[1)]	2	2	2	2	2	2	2	2
800	x[1)]	2	2	2	2	2	2	2	2
900	x[1)]	2	2	2	2	2	3	3	3
1000	x[1)]	2	2	2	3	3	3	3	3
1100	x[1)]	3	3	3	3	3	3	3	3
1200	x[1)]	3	3	3	3	3	3	3	3
1300	x[1)]	3	3	3	3	3	4	4	4
1400	x[1)]	3	3	3	4	4	4	5	5
1500	x[1)]	4	4	4	4	5	5	5	5
1600	x[1)]	4	4	4	5	5	5	5	5
1700	x[1)]	5	5	5	5	5	5	5	5
1800	x[1)]	5	5	5	5	5	6	6	6

x[1)] Mounting not possible

BS 2 R-300 ks

Passage width A	Width of workpiece pallet b_{WT}								
	160	240	320	400	480	640	800	1040	1200
600	x[1)]	2	2	2	2	2	2	3	3
700	x[1)]	2	2	2	2	2	3	3	3
800	x[1)]	2	2	2	2	3	3	3	3
900	x[1)]	2	2	2	3	3	3	3	3
1000	x[1)]	3	3	3	3	3	3	4	4
1100	x[1)]	3	3	3	3	3	4	4	4
1200	x[1)]	3	3	3	3	4	4	5	5
1300	x[1)]	4	4	4	4	4	5	5	5
1400	x[1)]	4	4	4	4	5	5	5	5
1500	x[1)]	4	4	5	5	5	5	5	5
1600	x[1)]	5	5	5	5	5	5	6	6
1700	x[1)]	5	5	5	5	6	6	6	6
1800	x[1)]	5	6	6	6	6	6	6	6

x[1)] Mounting not possible

BS 2 R-300 st

Passage width A	Width of workpiece pallet b_{WT}								
	160	240	320	400	480	640	800	1040	1200
600	x[1)]	2	2	2	2	2	3	3	3
700	x[1)]	2	2	2	2	3	3	3	3
800	x[1)]	3	3	3	3	3	3	3	3
900	x[1)]	3	3	3	3	3	3	4	4
1000	x[1)]	3	3	3	3	3	4	4	4
1100	x[1)]	3	3	3	4	4	4	5	5
1200	x[1)]	4	4	4	4	4	5	5	5
1300	x[1)]	4	4	4	5	5	5	5	5
1400	x[1)]	5	5	5	5	5	5	5	5
1500	x[1)]	5	5	5	5	5	5	6	6
1600	x[1)]	5	5	5	5	5	6	6	6
1700	x[1)]	5	6	6	6	6	6	6	6
1800	x[1)]	6	6	6	6	6	6	6	6

x[1)] Mounting not possible

Conveyor unit
ST 2/C-H + AS 2/C-100 + UM 2/C-60

Passage width A	Width of workpiece pallet b_{WT}								
	160	240	320	400	480	640	800	1040	1200
600	x[1)]	2	2	3	3	3	3	3	3
700	x[1)]	3	3	3	3	3	3	3	4
800	x[1)]	3	3	3	3	3	4	4	4
900	x[1)]	3	3	3	4	4	4	4	4
1000	x[1)]	4	4	4	4	4	5	5	5
1100	x[1)]	4	4	5	5	5	5	5	5
1200	x[1)]	5	5	5	5	5	5	5	5
1300	x[1)]	5	5	5	5	5	5	5	6
1400	x[1)]	5	5	5	5	6	6	6	6
1500	x[1)]	5	6	6	6	6	6	6	6
1600	x[1)]	6	6	6	6	6	6	6	7
1700	x[1)]	6	6	6	6	7	7	7	7
1800	x[1)]	6	6	6	6	7	7	7	7

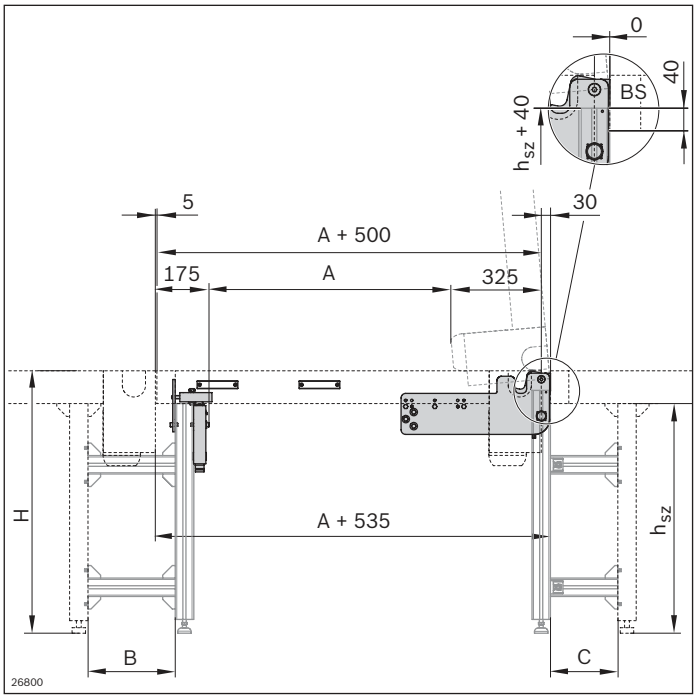
x[1)] Mounting not possible

Conveyor unit
ST 2/R-H + AS 2/R-300 + UM 2/R-60 (ST)

Passage width A	Width of workpiece pallet b_{WT}								
	160	240	320	400	480	640	800	1040	1200
600	x[1)]	2	3	3	3	3	3	3	3
700	x[1)]	3	3	3	3	3	3	4	4
800	x[1)]	3	3	3	3	4	4	4	4
900	x[1)]	3	3	4	4	4	4	4	4
1000	x[1)]	4	4	4	4	5	5	5	5
1100	x[1)]	4	5	5	5	5	5	5	5
1200	x[1)]	5	5	5	5	5	5	5	5
1300	x[1)]	5	5	5	5	5	5	6	6
1400	x[1)]	5	5	5	6	6	6	6	6
1500	x[1)]	6	6	6	6	6	6	6	6
1600	x[1)]	6	6	6	6	6	6	7	7
1700	x[1)]	6	6	6	7	7	7	7	7
1800	x[1)]	6	6	6	7	7	7	7	7

x[1)] Mounting not possible

Mounting kit LG 2/H



- Determine the mounting kit LG 2/H reference number using the tables and the description "Selection of the mounting kit LG 2/H for the belt section type" on page 3-184f.
  The reference number is also the mounting kit number. For example, if the reference number is 2, the mounting kit number is equal to 2.

Minimum length of the leg connection:

Minimum length B/C (mm)	Connection
145[1)]	BS 2 return unit
175[1)]	UM 2/C-60, UM 2/R-60
245	BS 2 drive
285	AS 2/C-100, AS 2/C-250, AS 2/R-300, AS 2/R-700, UM 2/C-170, UM 2/R-170
395	AS 2/C-400, AS 2/C-700, AS 2/R-1200, AS 2/R-220

[1)] Optimum leg connection for ideal support: 220 mm

Required accessories:

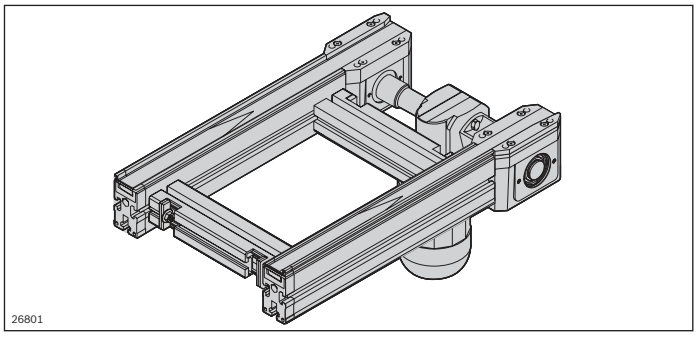
- 1x belt section BS 2, see p. 3-6, or conveyor unit
- 2x leg set SZ 2, see p. 6-8
- 2x 4 strut profiles 45x60, see p. 3-188
- 16x bracket 45x45, see p. 3-188
- 2x foundation bracket, see p. 3-187

Recommended accessories:

- Kit PN for unlocking in the top end position, see p. 3-188

Ordering information

Mounting kit LG 2/H	Packaging unit	Material number
1	1	3842564941
2	1	3842564942
3	1	3842564943
4	1	3842564944
5	1	3842564945
6	1	3842564946
7	1	3842564947

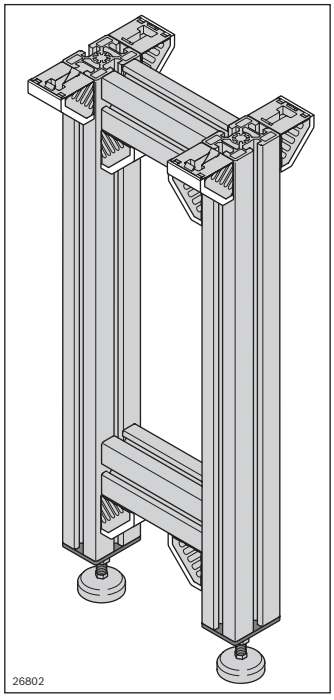


Belt section with l = A + 500

Select the length (l) of the belt section (BS).

l = A + 500 mm, according to the ambient system:

- BS 2, see p. 3-6
- BS 2/C-100, see p. 3-45
- BS 2/R-300 plastic chain and steel chain, see p. 3-94
- Conveyor unit: ST 2/R-H (see p. 3-125),
  AS 2/R-300 (see p. 3-106), UM 2/R-60 (see p. 3-118)
  Conveyor unit: ST 2/C-H (see p. 3-77),
  AS 2/C-100 (see p. 3-58), UM 2/C-60 (see p. 3-70)

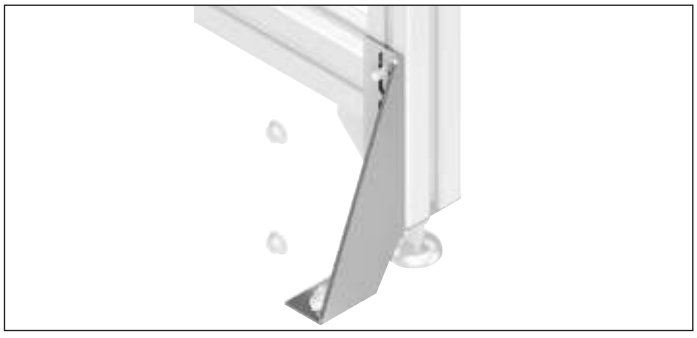


To construct a lift gate, you need:

- one leg set SZ 2 (3842996320) with AO = profile height of a BS 2
- one leg set SZ 2 with parameters, see table below: AO = 60 mm and leg set width b_{SZ}

BS 2/...	Leg sets SZ 2[1]	Material number
A b ≥ 160, MA = M	b_{SZ}[3] = b[4] + 120, AO[2] = 60 mm	3842996320
B b ≥ 320, MA = L; R	b_{SZ}[3] = b[4] – 120, AO[2] = 60 mm	3842996320
C b = 240 MA = L; R	b = b[4] AO[2] = 60 mm	3842996320

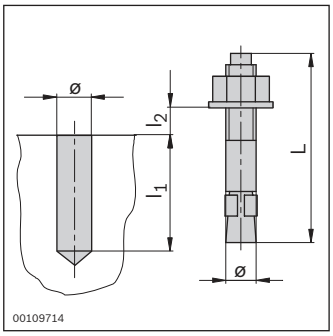
[1] See also p. 6-2
[2] AO = installation location
[3] b_{SZ} = width b for leg
[4] b = width of belt section
See also p. 3-183:
for **A:** If both plates are mounted outside of the belt section
for **B:** If both plates are mounted in the middle of the belt section
for **C:** If one plate is mounted outside or inside the belt section



Ordering information

Product description	Packaging unit	Material number
Foundation bracket	20	3842146848

See also p. 6-32



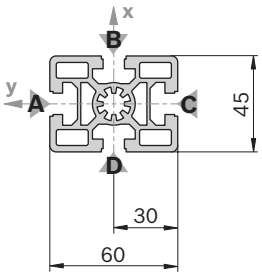
Ordering information

Product description	Packaging unit	Material number
Floor dowel	100	3842526560

See also p. 6-33

45x60

A = 11,0 cm²
I_x = 37,2 cm⁴
I_y = 22,7 cm⁴
W_x = 12,4 cm³
W_y = 10,1 cm³
m = 3,0 kg/m



19433

Ordering information

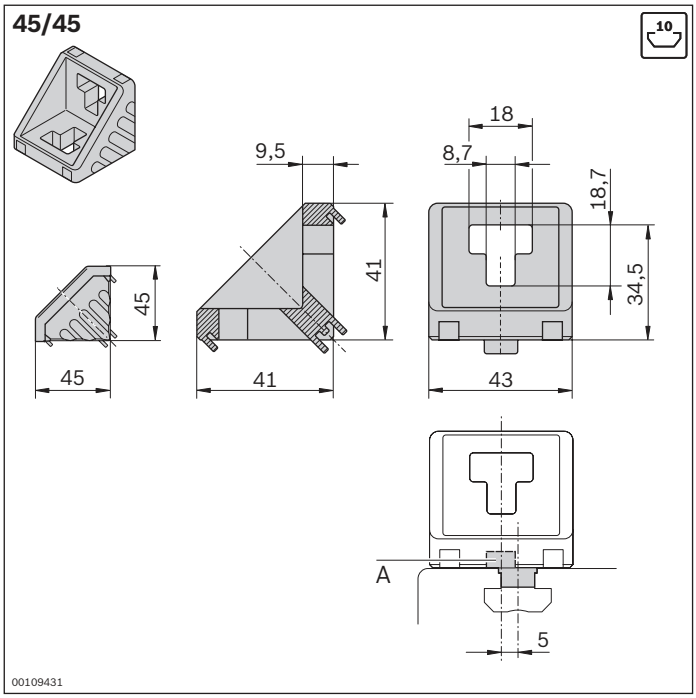
Product description	Packaging unit	Material number
Strut profile 45x60	1	3842990570

Technical data

Material number	3842990570
l (mm)	15 ... 5600

Notice: Determine the required length/number of strut profiles up to the next leg set according to your needs.

45/45



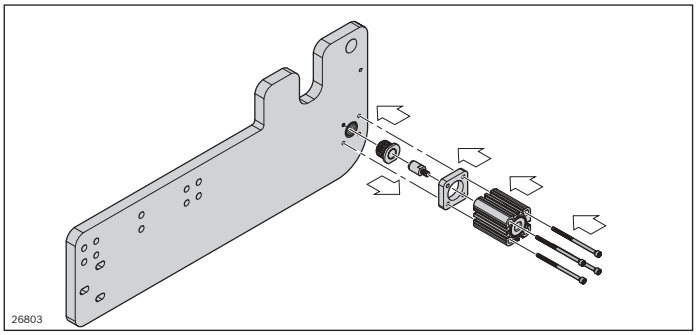
00109431

Ordering information

Product description	Packaging unit	Material number
45/45 bracket set	1	3842523561
Scope of delivery:	Incl. fastening material	

Technical data

Material number	3842523561
ESD	Yes
Slot	10/10



26803

Ordering information

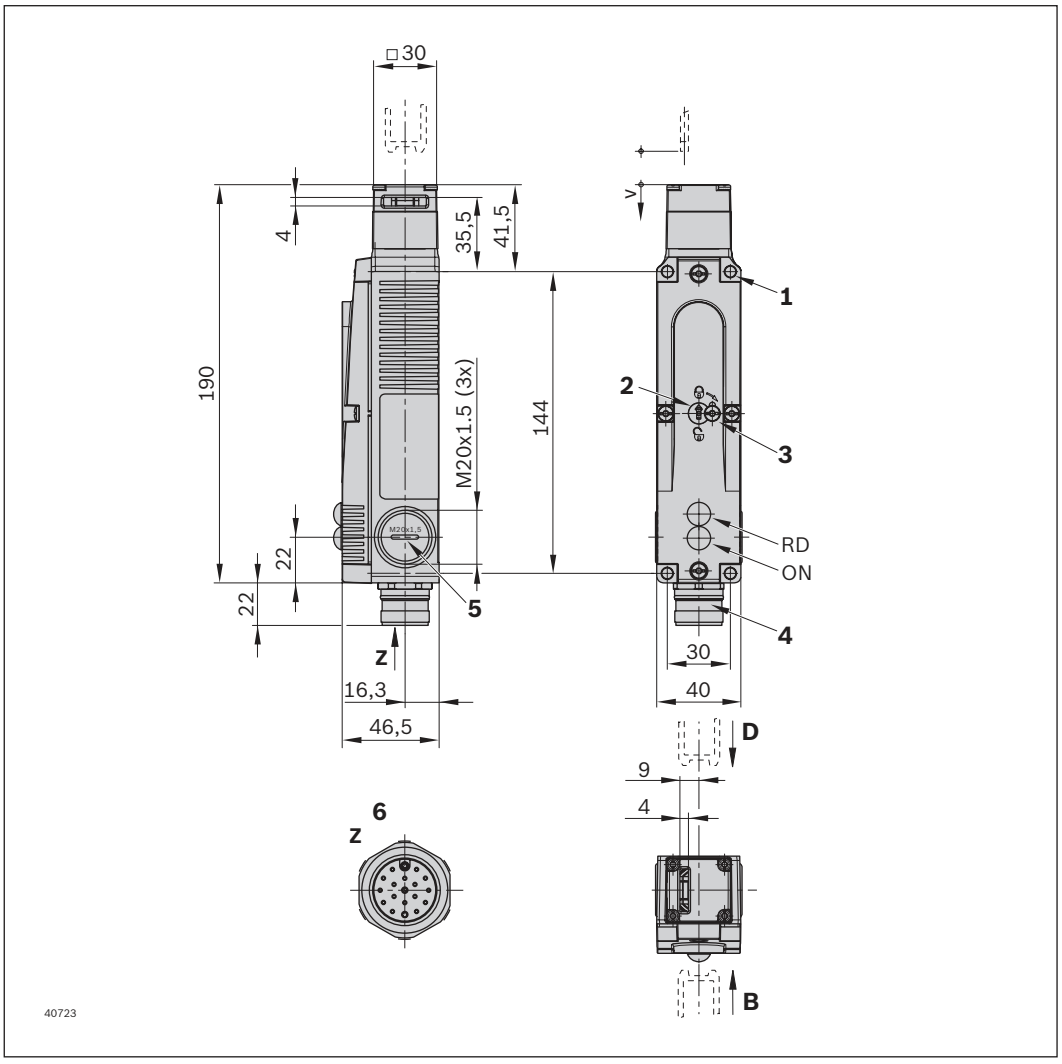
Product description	Packaging unit	Material number
Kit PN	1	3842549509

Safety switch

Technical data

Features			
Material			Housing: Die-cast light metal
Protection class to EN IEC 60529			IP 65
Installation position			As desired
Mechanical service life		Switching cycles	1 x 10^6
Ambient temperature		°C	–20 ... +70
Start-up speed max.		m/min	20
Actuation / extension / restraint force		N	35 / 30 / 20
Closing force max.		N	3000
Tumbler type			STA4: Working current principle, tumbler by applying voltage to the tumbler magnet. Spring release
Closing force Fzh acc. to testing principle GS-ET-19		N	2300
Actuation frequency		1/h	1200
Actuator locking type: inserted			STA4: 1) Locking by application of voltage 2) De-energized unlocked 3) Opened when the actuator is unplugged
Weight		kg	Approx. 0.6
Solenoid operating voltage according to type (type designation)	+10 % –15 %	V	AC/DC 24
Duty cycle	ED	%	100
Connection power		W	8
Switching principle			Creep-switch element
Switching element			2131 creep-switch element
Contact material			Silver alloy, flash plated
Connection type			RC18 integrated plug (18-pin + PE)
Rated isolation voltage	Ui	V	50
Rated surge strength	Uimp	kV	1.5
Category according to DIN EN 60947-5-1			AC-15 4 A 50 V DC-13 4 A 24 V
Switching voltage min. at 10 mA		V	12
Switching current min. at 24 V		mA	1
Conventional continuous thermal current	Ith	A	4
Short-circuit protection (control fuse)		A gG	4
LED function display			2 LEDs: red and green Voltage range: AC/DC 24 V (+10 %, –15 %)

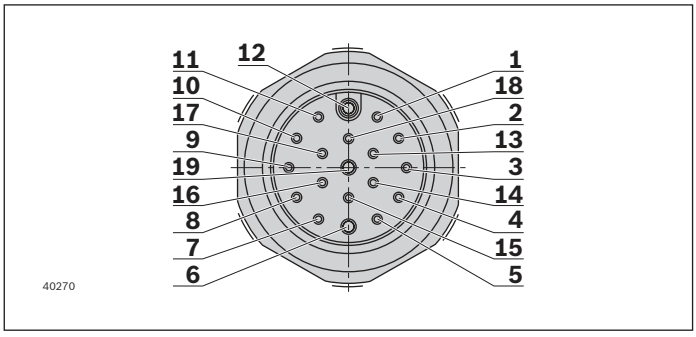
Dimensions



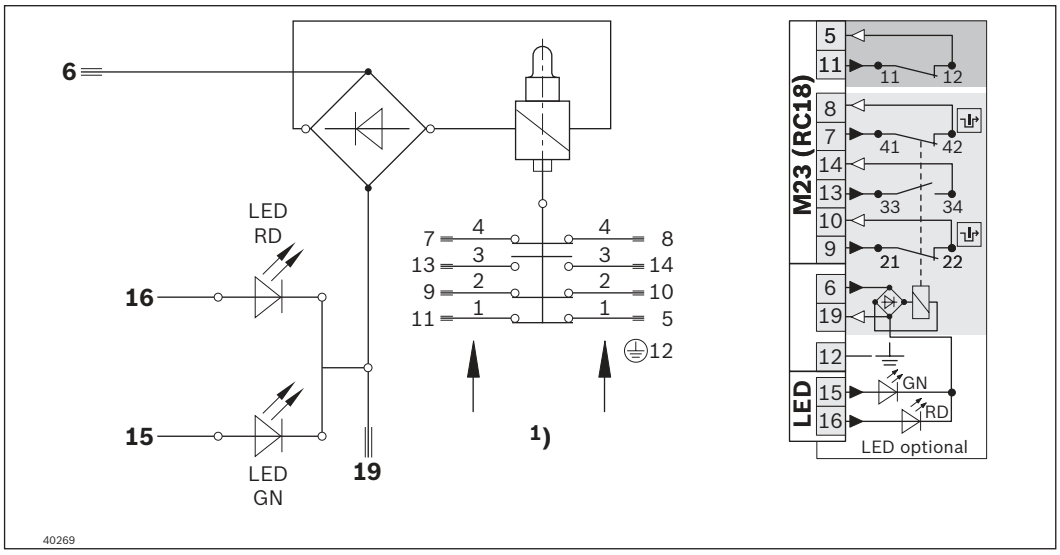
Note on direction of actuation:
After undoing the fastening screws, you can switch the fastening knob to the desired direction of approach.

1 Ø5.3 (4x) for M5x35 mm ISO 1207 (DIN 84)/ ISO 4762 (DIN 912)
2 Auxiliary release
3 Locking screw
4 Integrated plug
5 Screw plugs M20x1,5 (2x)
6 Integrated plug not aligned Integrated plug RC18 (18-pin + PE)

Plug assignment; integrated plug -RC18, not aligned



Integrated plug contact, connection diagram

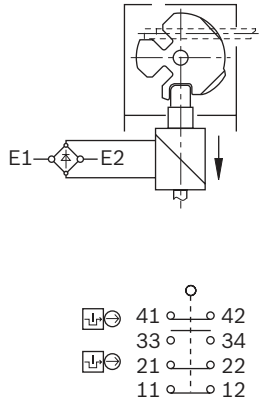
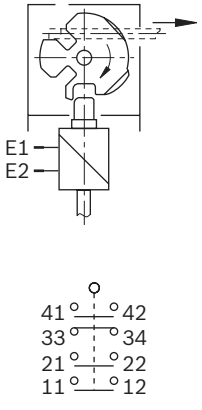
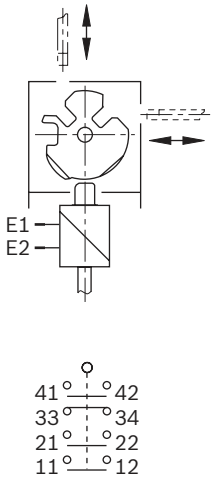


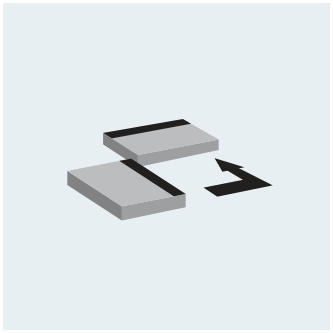
[1] Order number of the switching elements

Attention:
Only the contacts 21-22 and 41-2 are actuated when the tumbler is locked or unlocked. In applications with dangerous states (e.g. trailing movements), the contact 21-22 and/or 41-2 must always be connected to the safety circuit.

Type
STA4A-2131A024L024RC18C1826

Switching function

Actuator	Inserted	Inserted	Pulled
Switch position	Locked	Unlocked	Opened
762	1	2	3
			
	40724	40725	40726



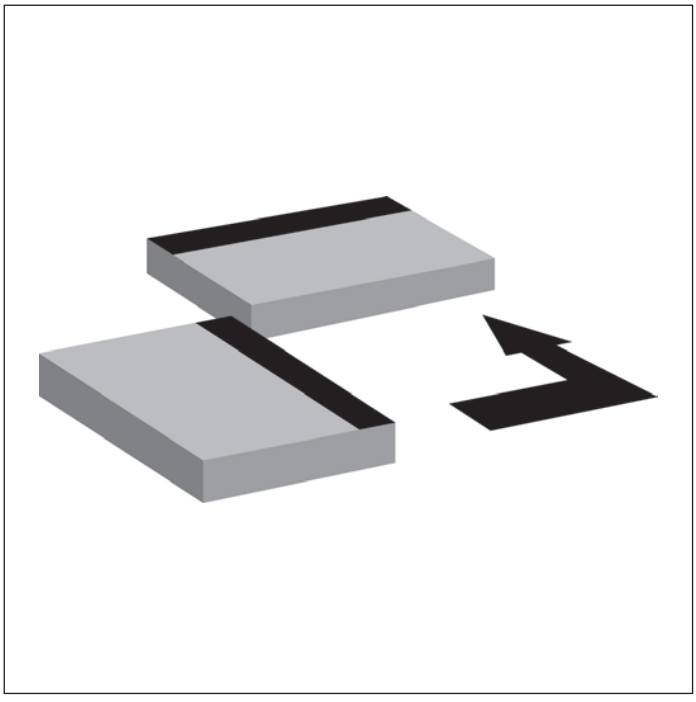
Curves and rotary units

Selection of curves	**4-2**
Selection of rotary units	**4-40**

Selection of curves and rotary units

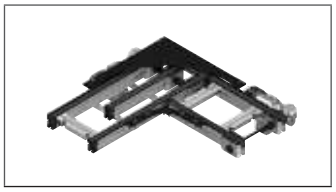
CURVES

Curves are used to change the running direction of a workpiece pallet and to keep the orientation of the parts traveling (the front is always the front). The pneumatic and electrical installation and control effort for these modular units is minimal.



ROTARY UNITS

Rotary units are used for horizontal rotation and transportation of workpiece pallets. Rotating is possible in the narrowest space, while the part orientation is maintained (the front is always the front).
It is possible to rotate the workpiece pallet horizontally by 90°, 180° or 270°.



Curves **4-4**

Rotary units **4-40**

Curves

The following products are available for configuration for the curves:

CURVE CU 2/90

Used with the toothed belt conveyor medium (suitable for use in an EPA) without additional drive.

CURVES KE

Used with the round belt conveyor medium in KE 2/90 and KE 2/180 versions with and without a built-in drive.
Can be used for combining the longitudinal section with belts or toothed belts.

CURVES KU

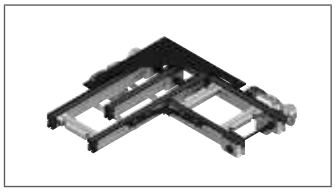
Used with the flat-top chain conveyor medium in KU 2/90 and KU 2/180 versions with and without a built-in drive and conveyor medium.

CURVE ARC KU

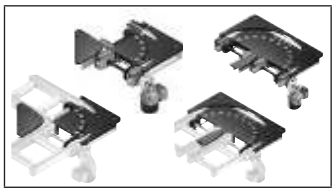
The construction principle of curves KU 2/O-90 and KU 2/0-180 with the conveyor medium flat-top chain allows smooth integration into longer conveyor units driven by a single drive.

Notice:

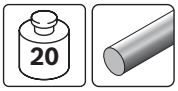
- For higher drive loads with integration of sections and curves, please consider the layout design
- The use of an automatic lubrication unit for curves with flat-top chains is highly recommended

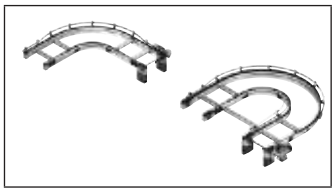


Curve CU 2/90 **4-6**

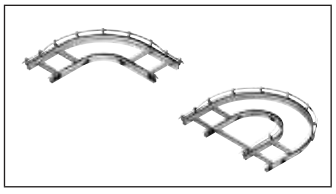


Curves KE 2/..., KE 2/O-... **4-9**



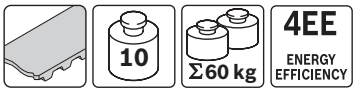


Curves KU 2/... **4-24**



Curve arcs KU 2/O-... **4-32**

Curve CU 2/90



The drive for curve CU 2/90 with the toothed belt conveyor medium is provided by the belt section.

- 90° curve conveying of the workpiece pallet
- With no additional drive for the curve function
- Max. total workpiece pallet weight up to 10 kg
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Curve in anti-static version
- Can be combined with WT 2 and WT 2/F

Notice: Accumulation operation not permitted in the curve.

Recommended accessories

- Leg sets SZ 2/..., see p. 6-4
- Accumulation pressure regulation, e.g. with rocker WI/M, see p. 8-138

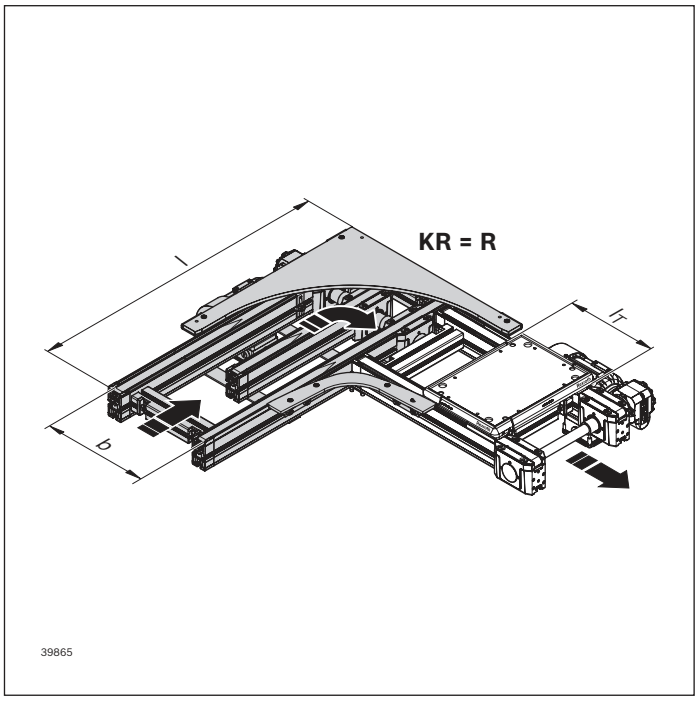
Scope of delivery

- Belt section
- Inner guide
- Outer guide
- Fastening material
- Connection kit 3842538259

Condition on delivery

- Some assembly required

Ordering information

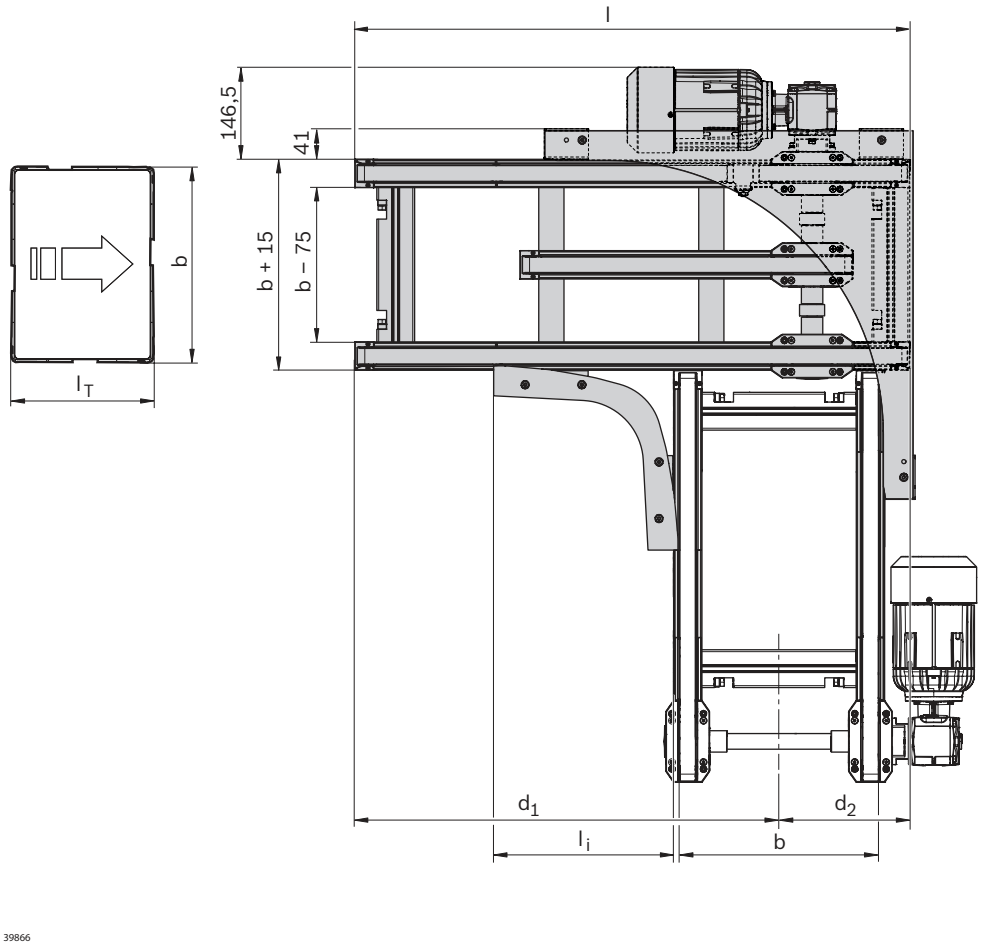


Material number		3842998288
b (mm)	Track width in direction of transport	240; 320
l_T (mm)	Length in direction of transport	240; 320; 400
l (mm)	Length	721 ... 6000
b x l_T x l (mm x mm x mm)	Combination options	240 x 240 x 721 ... 6000 240 x 320 x 801 ... 6000 320 x 320 x 881 ... 6000 320 x 400 x 961 ... 6000
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
KR	Curve direction R = right L = left	R; L

Technical data

Material number			3842998288
Max. section load in accumulation operation before the curve		kg	60
Max. total workpiece pallet weight	m_G	kg	10
ESD			Yes

Dimensions

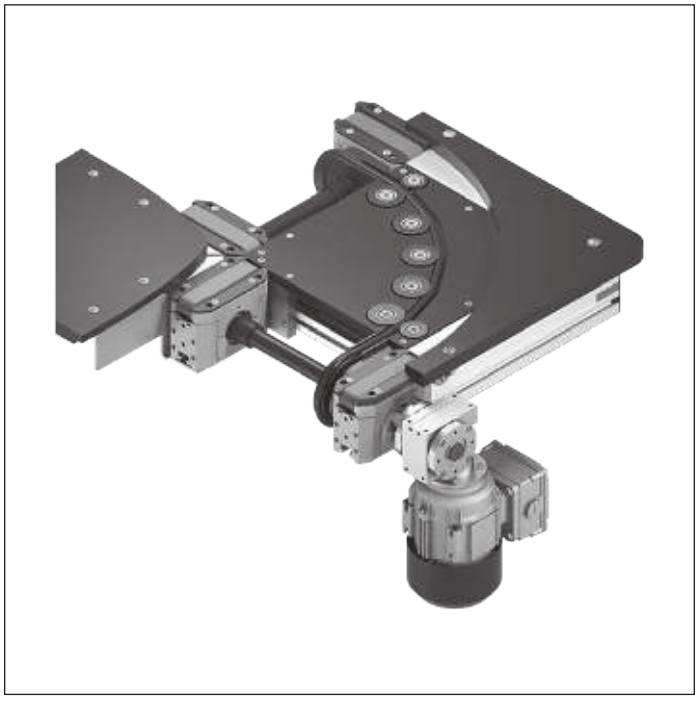


$d_2 = (b_T - 75) / 2 + 85$
$d_1 = L - d_2$
$L = d_1 + d_2 = d_1 + (b_T - 75) / 2 + 85$

b Track width in direction of transport
l_T Length in direction of transport

Track width in direction of transport b (mm)	Length in direction of transport l_T (mm)	Length l (mm)	Dimension d_1 (mm)	Dimension d_2 (mm)	Dimension li (mm)
240	240	721 ... 6000	553.5 ... 5832.5	167.5	270.5
240	320	801 ... 6000	633.5 ... 5832.5	167.5	285.5
320	320	881 ... 6000	673.5 ... 5792.5	207.5	285.5
320	400	961 ... 6000	753.5 ... 5792.5	207.5	350.5

Curve KE 2/90...



- 90° curve conveying of the workpiece pallet
- Max. total workpiece pallet weight = 20 kg
- Conveyor medium: Round belt
  (suitable for use in an EPA)
- Intended for grease-free and oil-free environments
- Can be combined with WT 2, WT 2/F and WT 2/LS
  (only with version LS)

Notice: Accumulation operation not permitted.

The curves KE 2/... with round belt conveyor medium have a built-in drive at the curve end. They can be used to combine the longitudinal section with belts or toothed belts.

Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4

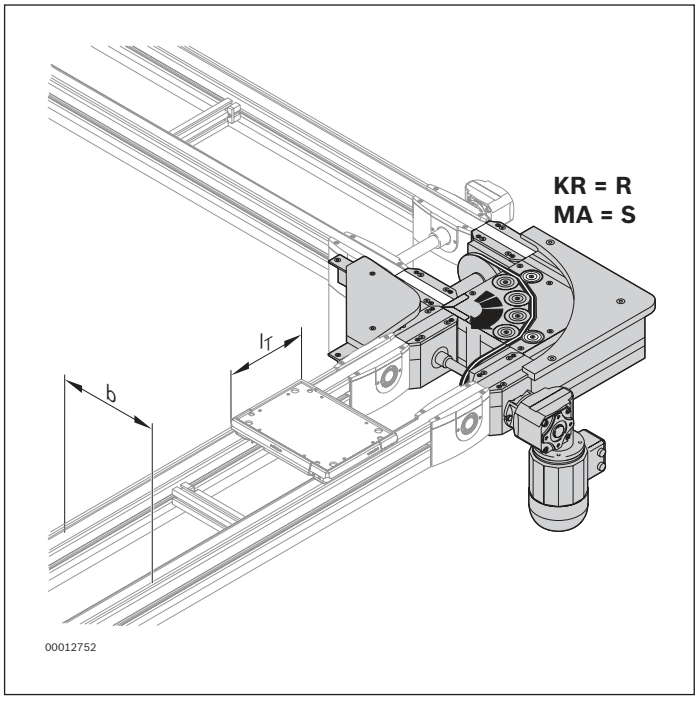
Scope of delivery

- Curve, complete with drive motor

Condition on delivery

- Some assembly required
- Inner guide and motor included

Ordering information



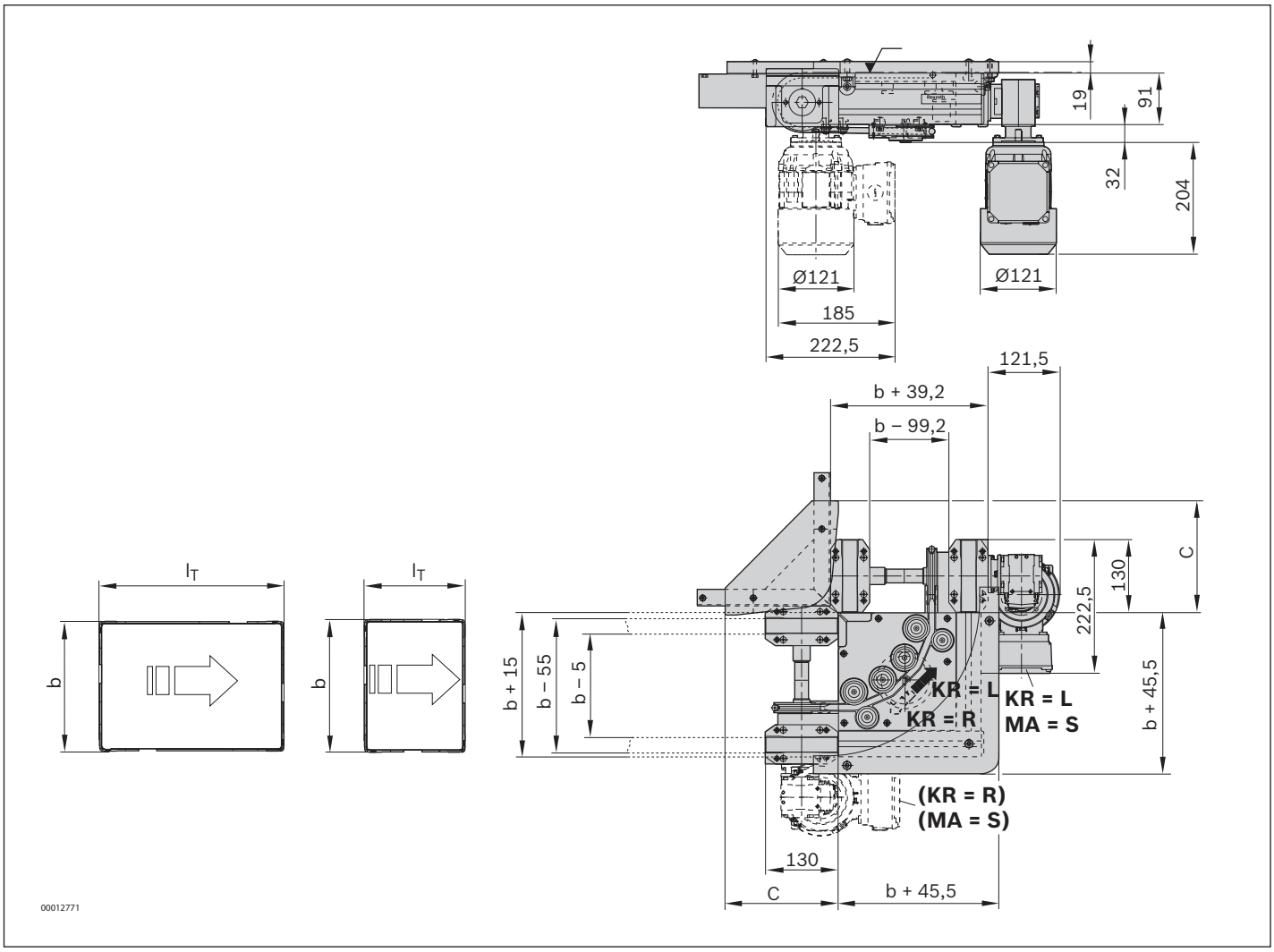
Material number		3842999727 KE 2/90	3842999036 KE 2/90 LS
b (mm)	Track width in direction of transport	160; 240; 320; 400	
l_T (mm)	Length in direction of transport	160; 240; 320; 400	
b x l_T (mm x mm)	Combination options	160 x 160; 240 240 x 160; 240; 320 320 x 240; 320; 400 400 x 320; 400	
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	
MA	*Motor mounting* M = center S = side	M[1)]; S	
KR	Curve direction R = right L = left	R; L	

[1)] MA = M only when b ≥ 320 mm

Technical data

Material number			3842999727 KE 2/90	3842999036 KE 2/90 LS
Max. total workpiece pallet weight	m_G	kg	20	20
ESD			Yes	Yes

Dimensions

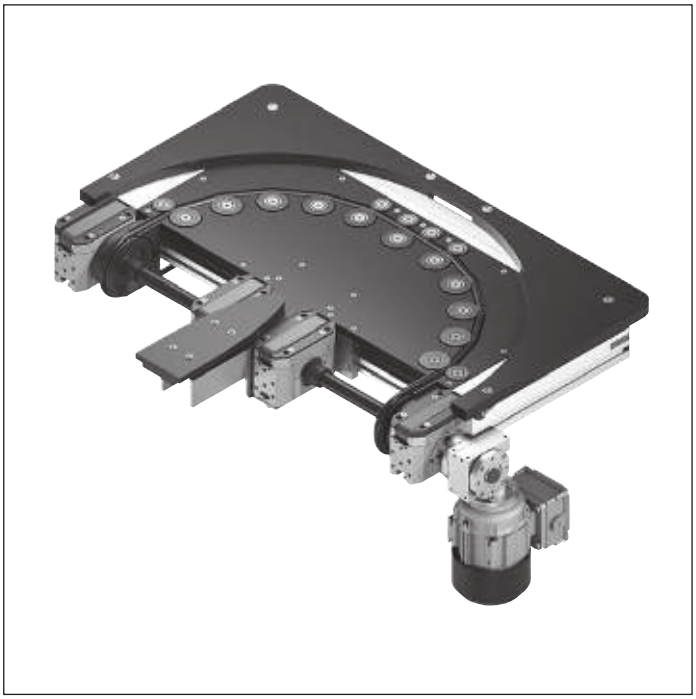


b Track width in direction of transport

l_T Length in direction of transport

Track width in direction of transport b (mm)	Length in direction of transport l_T (mm)	Dimension C (mm)
160	160	170
160	240	225
240	160	200
240	240	200
240	320	200
320	240	290
320	320	290
320	400	290
400	320	355
400	400	355

Curve KE 2/180...



- 180° curve conveying of the workpiece pallet
- Curve module with built-in drive
- Max. total workpiece pallet weight = 20 kg
- Conveyor medium: Round belt (suitable for use in an EPA)
- Intended for grease-free and oil-free environments
- Can be combined with WT 2, WT 2/F and WT 2/LS (only with version LS)

Notice: Accumulation operation not permitted.

The curves KE 2/... with round belt conveyor medium have a built-in drive at the curve end. They can be used to combine the longitudinal section with belts or toothed belts.

Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4

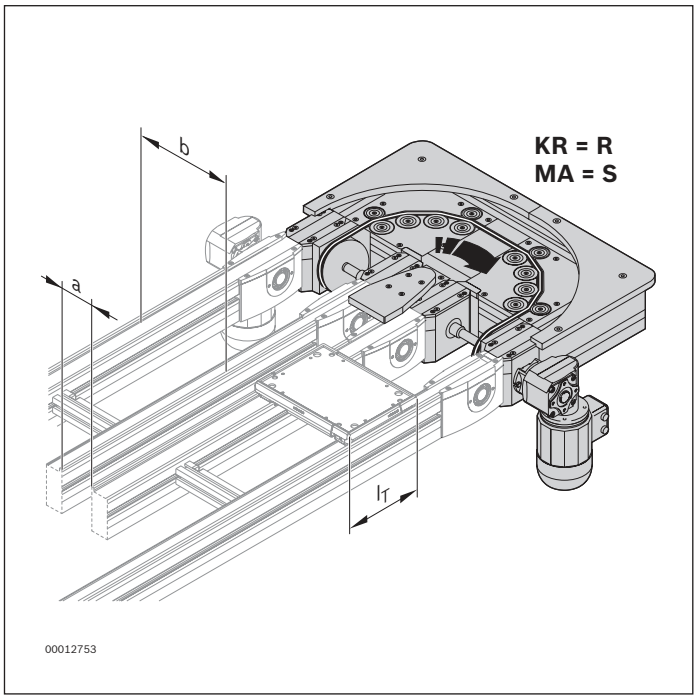
Scope of delivery

- Curve, complete with drive motor

Condition on delivery

- Some assembly required
- Inner guide and motor included

Ordering information



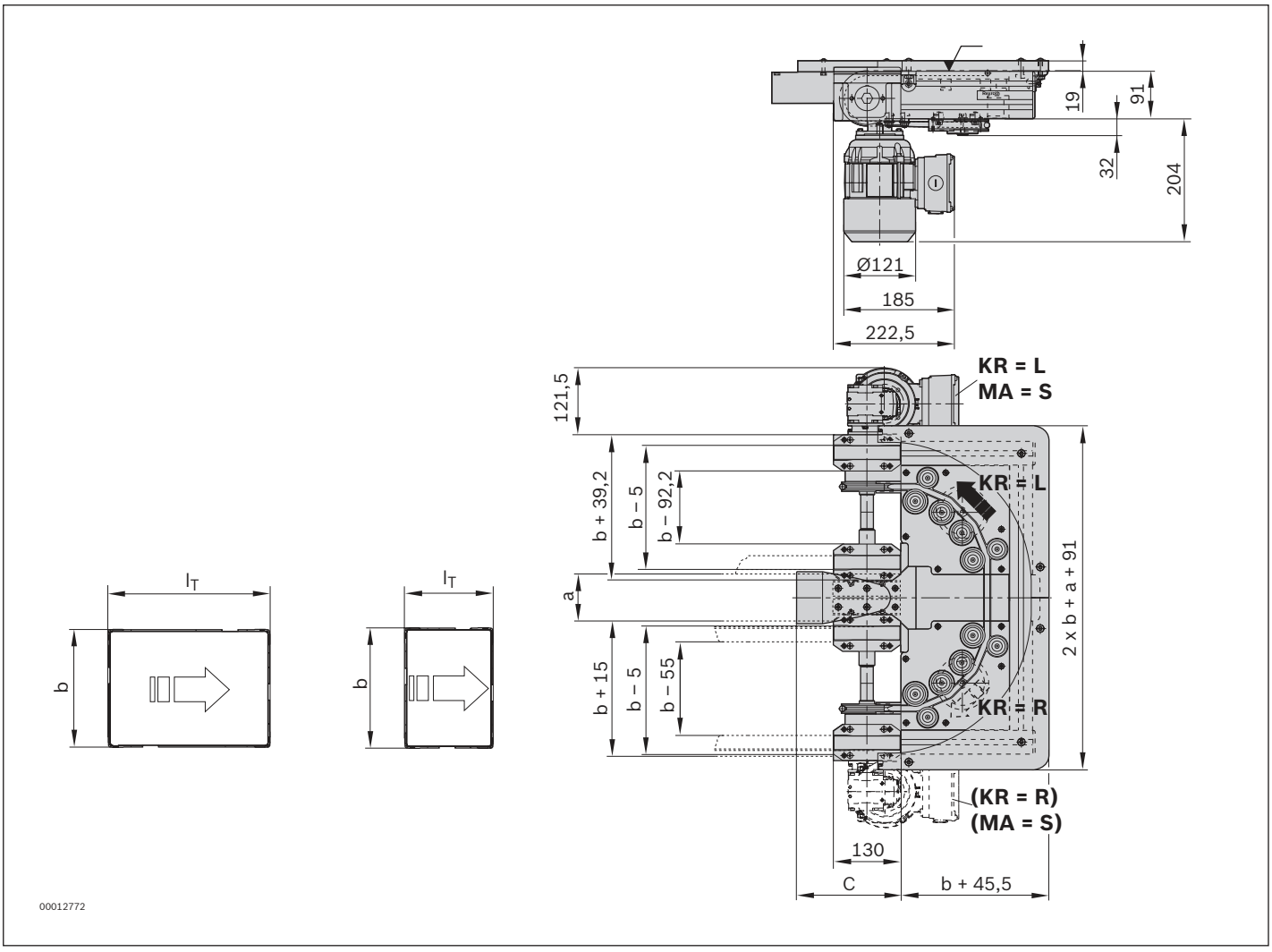
Material number		3842999728 KE 2/180	3842999037 KE 2/180 LS
b (mm)	Track width in direction of transport	160; 240; 320; 400	
l_T (mm)	Length in direction of transport	160; 240; 320; 400	
a (mm)	Distance between conveyors[1)]	90; 135	
b x l_T (mm x mm)	Combination options	160 x 160; 240 240 x 160; 240; 320 320 x 240; 320; 400 400 x 320; 400	
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	
MA	Motor mounting M = center S = on the outside, on the side	M[2)]; S	
KR	Curve direction R = right L = left	R; L	

[1)] b x l_T is possible in all combinations
[2)] MA = M only when b ≥ 320 mm

Technical data

Material number			3842999728 KE 2/180	3842999037 KE 2/180 LS
Max. total workpiece pallet weight	m_G	kg	20	20
ESD			Yes	Yes

Dimensions

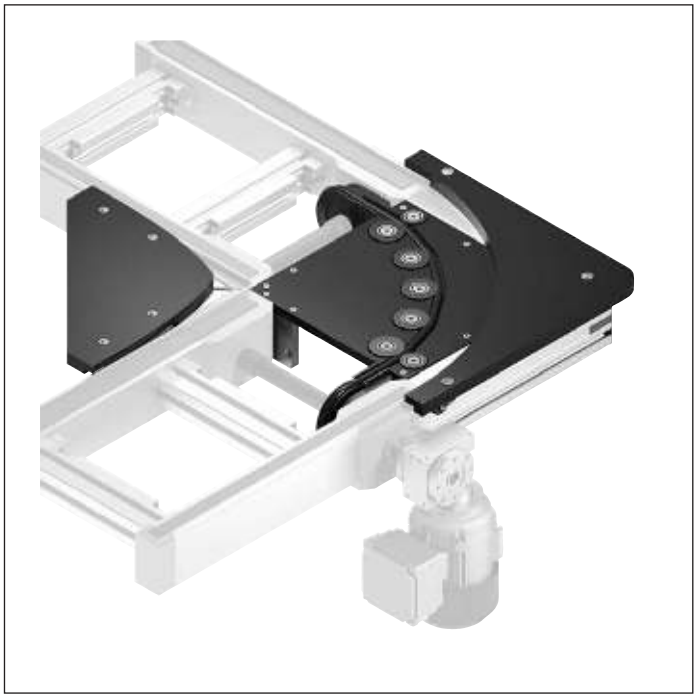


b Track width in direction of transport

l_T Length in direction of transport

Track width in direction of transport b (mm)	Length in direction of transport lT (mm)	Dimension C (mm)	Distance between conveyors a (mm)
160	160	170	90; 135
160	240	170	90; 135
240	160	200	90; 135
240	240	200	90; 135
240	320	200	90; 135
320	240	290	90; 135
320	320	290	90; 135
320	400	290	90; 135
400	320	355	90; 135
400	400	355	90; 135

Curve KE 2/O-90...



- 90° curve conveying of the workpiece pallet
- Suitable for combination with BS 2/K or BS 2/M-2
- Curve without built-in drive
- Max. total workpiece pallet weight = 20 kg
- Conveyor medium: Round belt
  (suitable for use in an EPA)
- Can be combined with WT 2, WT 2/F and WT 2/LS
  (only with version LS)

Notice:

- Accumulation operation not permitted
- Drive by belt section BS 2/K (pulling operation)
  or by BS 2/M-2

Required accessories

- 2x belt section BS 2/K, see p. 4-21 or
  2x belt section BS 2/M-2, see p. 3-9

Recommended accessories

- Leg sets SZ 2/..., see p. 6-4

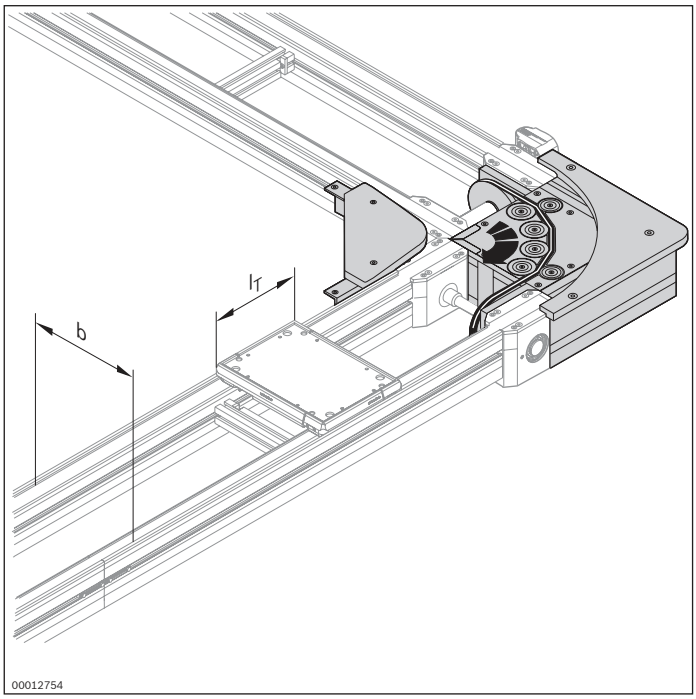
Scope of delivery

- Curve, complete with fastening parts

Condition on delivery

- Some assembly required
- Inner guide included

Ordering information

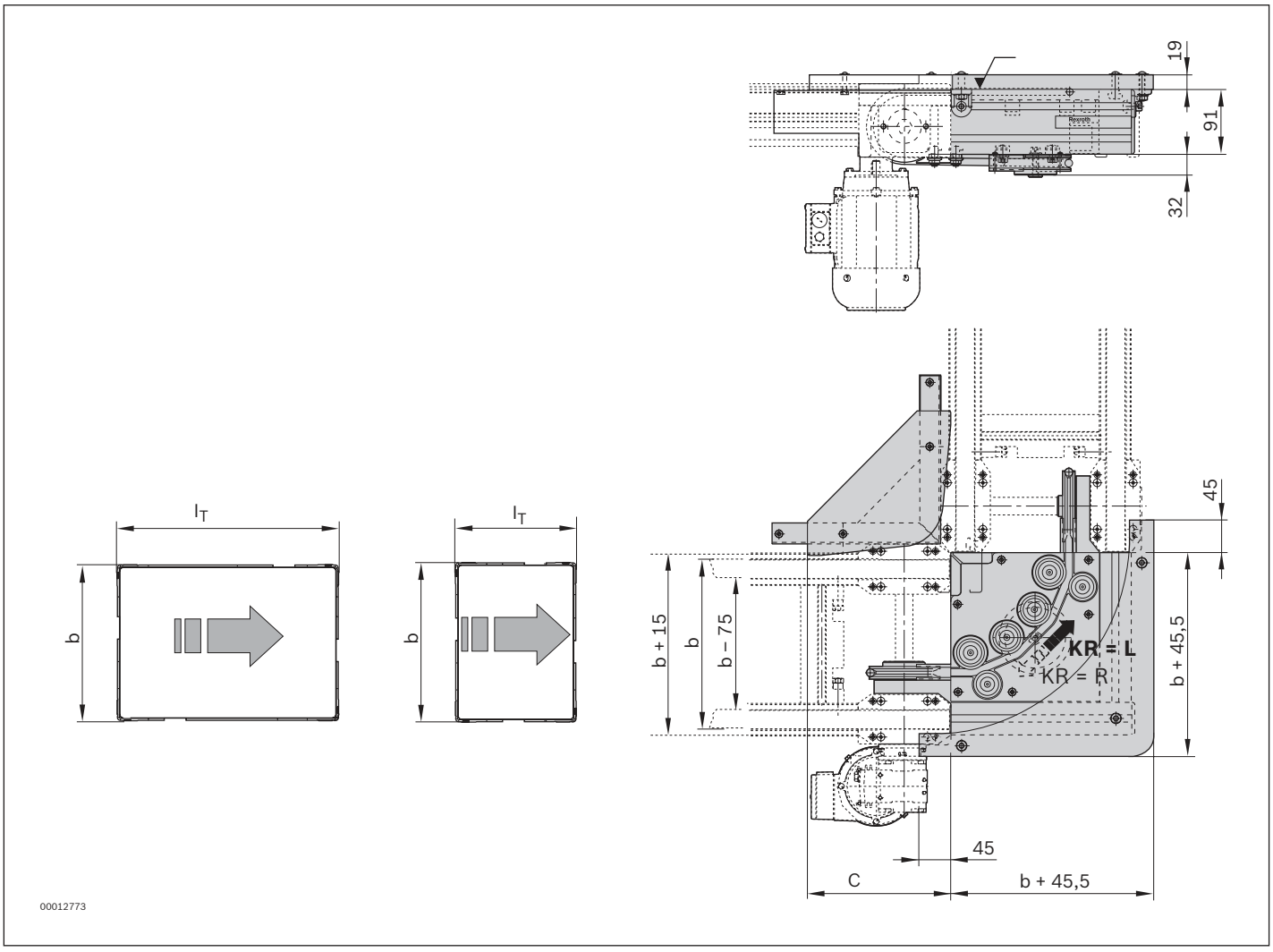


Material number		3842999725 KE 2/O-90	3842999034 KE 2/O-90 LS
b (mm)	Track width in direction of transport	160; 240; 320; 400	
l_T (mm)	Length in direction of transport	160; 240; 320; 400	
b x l_T (mm x mm)	Combination options	160 x 160; 240 240 x 160; 240; 320 320 x 240; 320; 400 400 x 320; 400	

Technical data

Material number			3842999725 KE 2/O-90	3842999034 KE 2/O-90 LS
Max. total workpiece pallet weight	m_G	kg	20	20
ESD			Yes	Yes

Dimensions

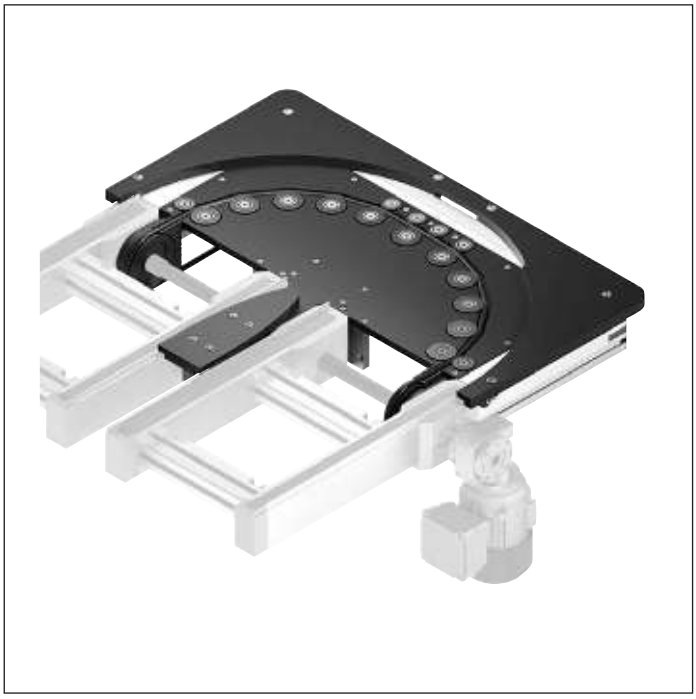


b Track width in direction of transport

l_T Length in direction of transport

Track width in direction of transport b (mm)	Length in direction of transport l_T (mm)	Dimension C (mm)
160	160	170
160	240	225
240	160	200
240	240	200
240	320	200
320	240	290
320	320	290
320	400	290
400	320	355
400	400	355

Curve KE 2/O-180...



- 180° curve conveying of the workpiece pallet
- Suitable for combination with BS 2/K or BS 2/M-2
- Curve module without built-in drive
- Max. total workpiece pallet weight = 20 kg
- Conveyor medium: Round belt (suitable for use in an EPA)
- Can be combined with WT 2, WT 2/F and WT 2/LS (only with version LS)

Notice:

- Accumulation operation not permitted
- Drive by belt section BS 2/K (pulling operation) or by BS 2/M-2

Required accessories

- 2x belt section BS 2/K, see p. 4-21 or 2x belt section BS 2/M-2, see p. 3-9

Recommended accessories

- Leg sets SZ 2/..., see p. 6-4

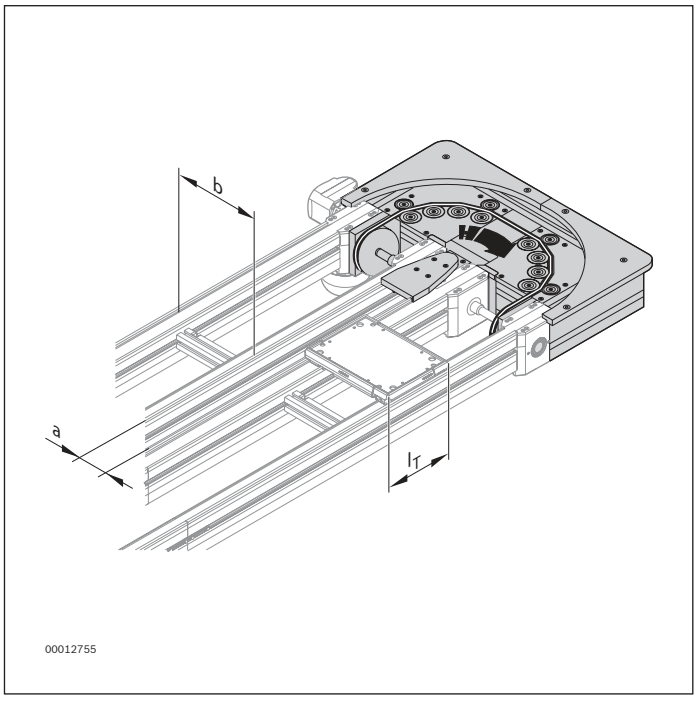
Scope of delivery

- Curve, complete with fastening parts

Condition on delivery

- Some assembly required
- Inner guide included

Ordering information



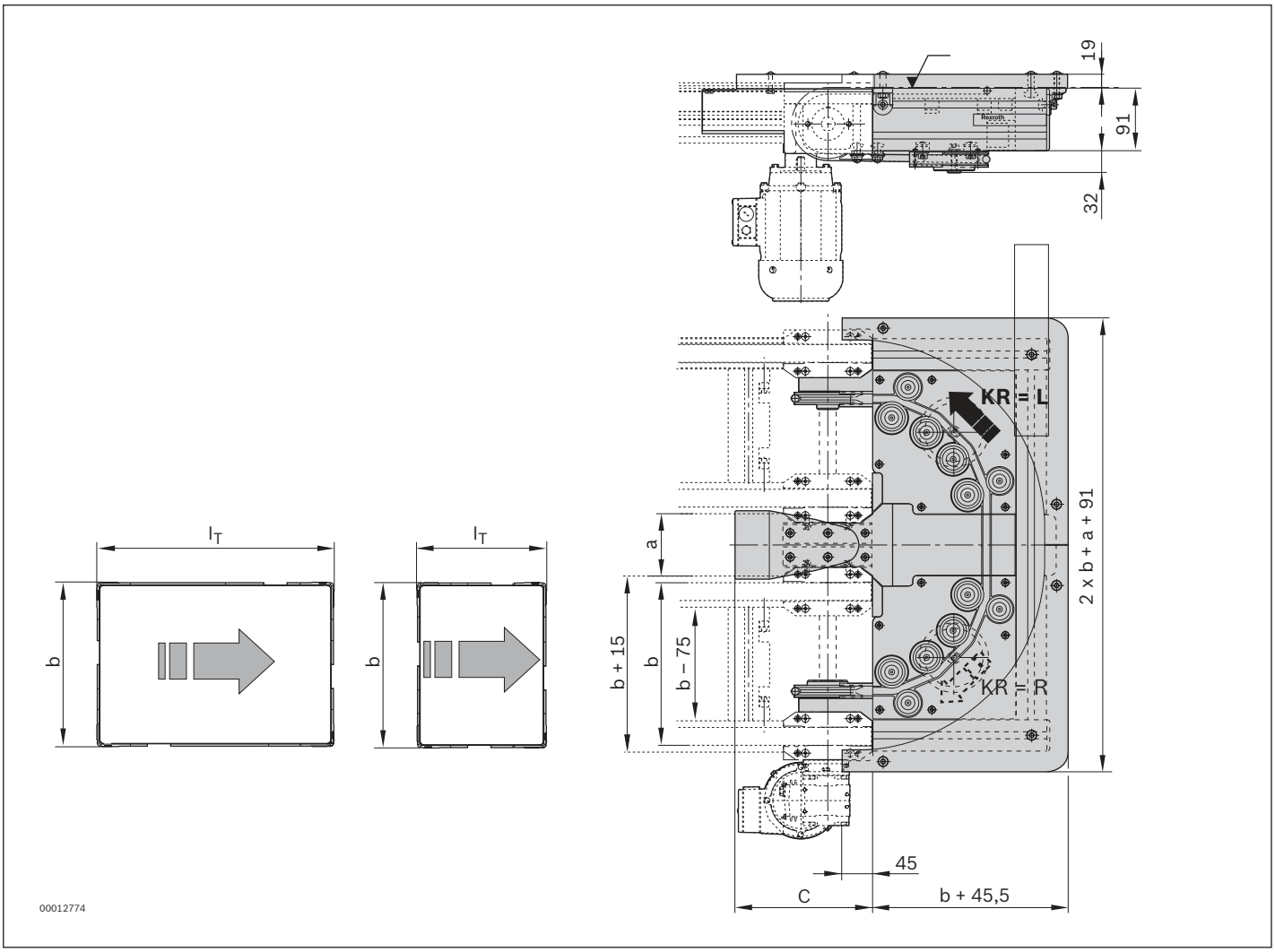
Material number		3842999726 KE 2/O-180	3842999035 KE 2/O-180 LS
b (mm)	Track width in direction of transport	160; 240; 320; 400	
l_T (mm)	Length in direction of transport	160; 240; 320; 400	
a (mm)	Distance between conveyors[1)]	90; 135	
b x l_T (mm x mm)	Combination options	160 x 160; 240 240 x 160; 240; 320 320 x 240; 320; 400 400 x 320; 400	

[1)] b x l_T is possible in all combinations

Technical data

Material number			3842999726 KE 2/O-180	3842999035 KE 2/O-180 LS
Max. total workpiece pallet weight	m_G	kg	20	20
ESD			Yes	Yes

Dimensions



b Track width in direction of transport

l_T Length in direction of transport

Track width in direction of transport b (mm)	Length in direction of transport l_T (mm)	Dimension C (mm)	Distance between conveyors a (mm)
160	160	170	90; 135
160	240	170	90; 135
240	160	200	90; 135
240	240	200	90; 135
240	320	200	90; 135
320	240	290	90; 135
320	320	290	90; 135
320	400	290	90; 135
400	320	355	90; 135
400	400	355	90; 135

Belt section BS 2/K

- To drive a curve KE 2/O...
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Max. permissible section load up to 60 kg in accumulation operation (incl. the driven curve section)
- Can be combined with WT 2, WT 2/F and WT 2/LS

The belt section BS 2/K is a conveyor section that is ready for operation with the toothed belt conveyor medium and a built-in drive.It is used to drive the curves KE 2/O... and to longitudinally convey workpiece pallets in the infeed and outfeed sections.

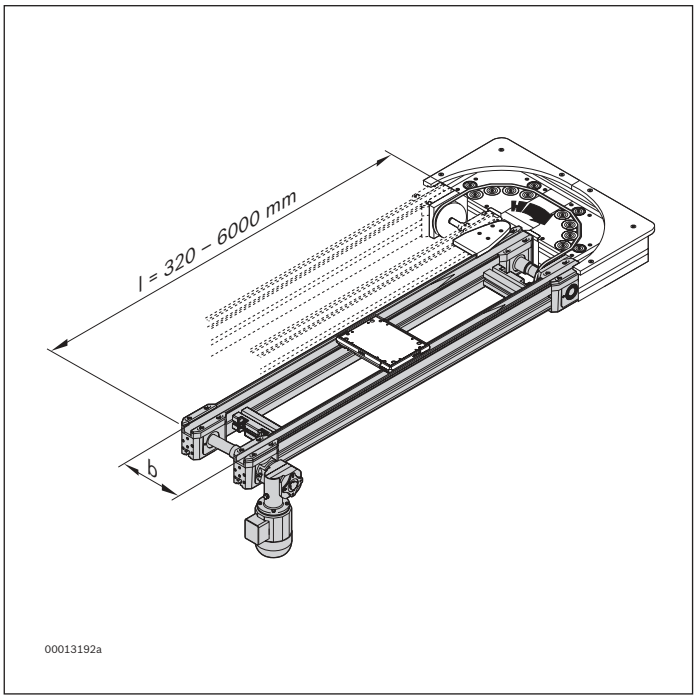
Scope of delivery

- Belt section, complete with drive motor

Condition on delivery

- Some assembly required
- Motor included

Ordering information



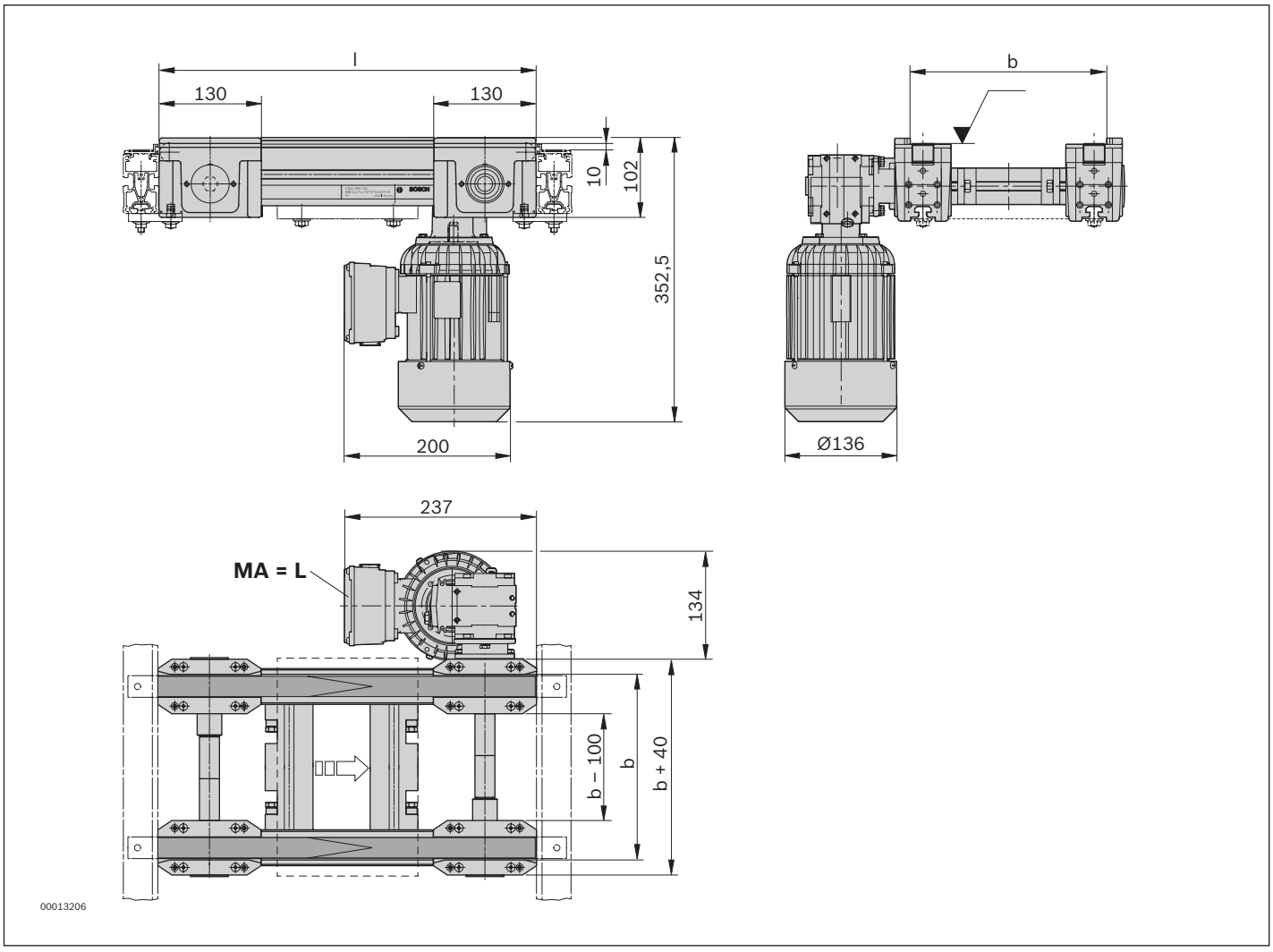
Material number		3842999715
b (mm)	Track width in direction of transport MA = R, L	160; 240; 320; 400; 480; 640; 800; 1040
		160 ... 1040
	Track width in direction of transport MA = M	320; 400; 480; 640; 800; 1040
		320 ... 1040
l (mm)	Length	320 ... 6000
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[1)]

[1)] MA = M only when b ≥ 320 mm

Technical data

Material number		3842999715
Max. section load in accumulation operation	kg	60
ESD		Yes

Dimensions



b Track width in direction of transport

l_T Length in direction of transport

Track width in direction of transport b (mm)	Length l (mm)
160	320 ... 6000
240	320 ... 6000
320	320 ... 6000
400	320 ... 6000
480	320 ... 6000
640	320 ... 6000
800	320 ... 6000
1040	320 ... 6000

Curve KU 2/90

The curves KU 2/... with flat-top chain conveyor medium have a built-in drive. They are suitable for use with high section loads in accumulation operation.

Recommended accessories

- Leg sets SZ 2/..., see p. 6-4
- Accumulation pressure regulation, e.g. with rocker WI/M, see p. 8-138
- Connection kits, see p. 9-21
- Decentralized automatic lubrication unit LU 2, see p. 9-5

Scope of delivery

- Curve, complete

- 90° curve conveying of the workpiece pallet
- Curve with built-in drive
- Section loads up to 90 kg in accumulation operation
- Conveyor medium: Flat-top chain
- Accumulation operation possible
- Plastic chain guides
- Automatic chain tensioning system
- Can be combined with WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS

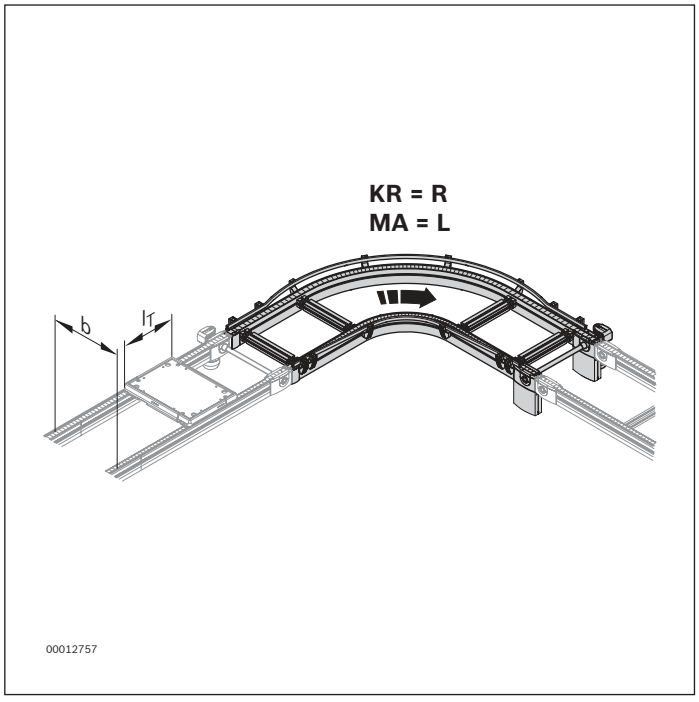
Notice:

- The automatic lubrication unit LU 2 is highly recommended for flat-top chains
- Use in EPA only possible with additional measures (conductive brushes)
- Cannot be combined with ESD flat-top chain

Condition on delivery

- Assembled

Ordering information



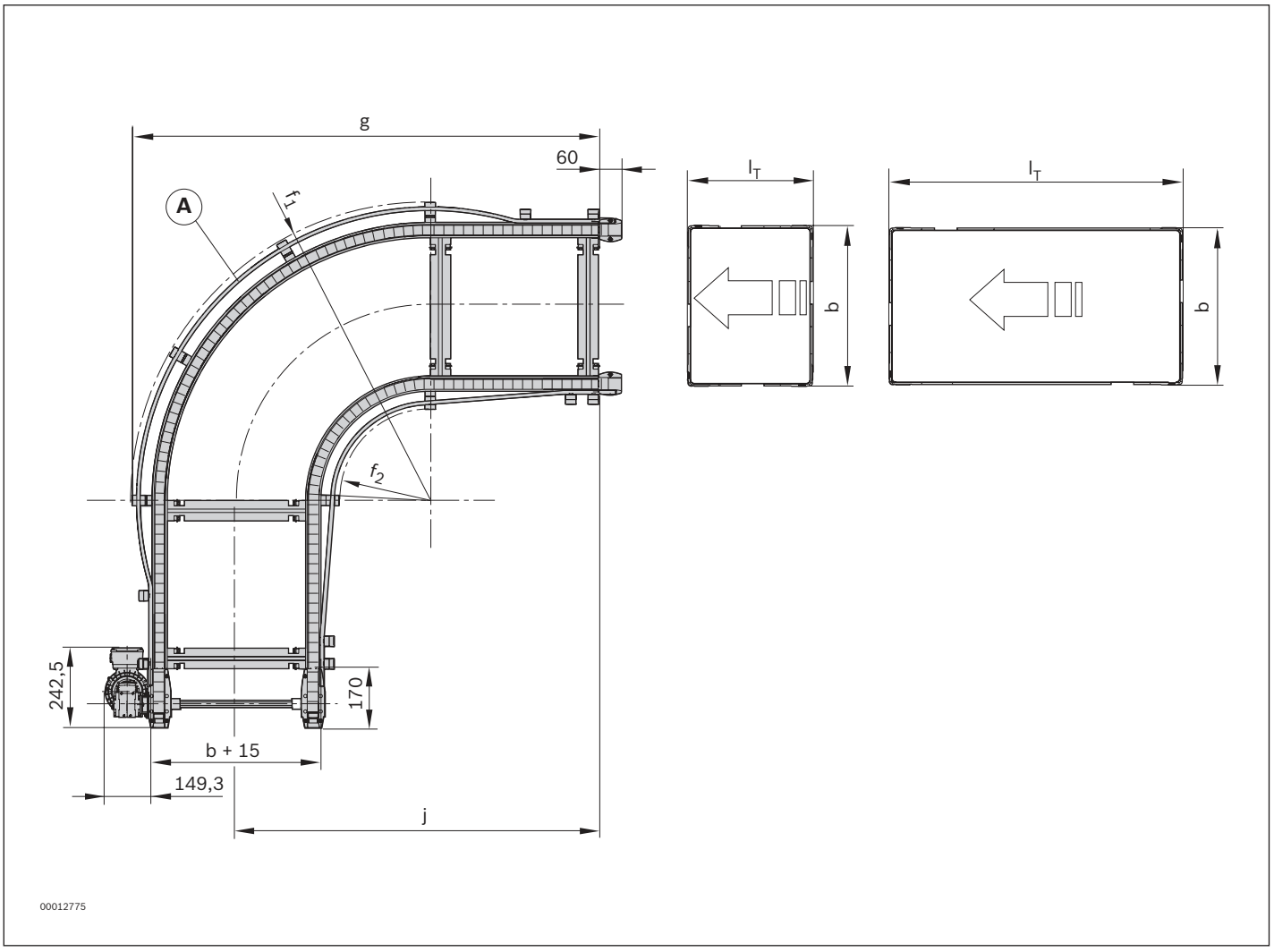
Material number		3842998098
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800
l_T (mm)	Length in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040
b x l_T (mm x mm)	Combination options	160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400; 480 400 x 240; 320; 400; 480; 640 480 x 320; 400; 480; 640; 800 640 x 400; 480; 640; 800; 1040 800 x 480; 640; 800; 1040
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[1),2)]
KR	Curve direction R = right L = left	R; L

[1)] MA = M only when b ≥ 240 mm
[2)] MA = M not possible for WT 2/LS

Technical data

Material number			3842998098
Max. section load in accumulation operation		kg	90
Max. operating temperature	T	°C	+40 °C

Dimensions



Ⓐ Workpiece pallet outer guide from l_T = 640 mm
b Track width in direction of transport
l_T Length in direction of transport

Track width in direction of transport b (mm)	Length in direction of transport l_T (mm)	Curve radius f1[1)] (mm)	Curve radius f2[1)] (mm)	Dimension g (mm)	Dimension j (mm)
160	160	493	286	755	667
160	240	493	287	835	747
160	320	493	266	915	827
240	160	573	287	835	707
240	240	573	280	915	787
240	320	573	270	995	867
240	400	573	256	1075	947
240	480	573	240	1155	1027
320	160	653	288	915	747
320	240	653	282	995	827
320	320	653	273	1075	907
320	400	653	261	1155	987
320	480	653	247	1235	1067
400	240	733	283	1075	867
400	320	733	275	1155	947
400	400	733	265	1235	1027
400	480	733	252	1315	1107
400	640	770	260	1299	1032
480	320	813	277	1235	987
480	400	813	268	1315	1067
480	480	813	256	1395	1147
480	640	850	267	1366	1060
480	800	930	319	1695	1289
640	400	973	272	1475	1147
640	480	973	263	1555	1227
640	640	1010	278	1503	1117
640	800	1090	333	1733	1347
640	1040	1090	277	1973	1587
800	480	1133	267	1715	1307
800	640	1170	285	1642	1176
800	800	1250	344	1872	1406
800	1040	1250	296	2112	1646

[1)] f_1, f_2 = reference value

Curve KU 2/180

The curves KU 2/... with flat-top chain conveyor medium have a built-in drive. They are suitable for use with high section loads in accumulation operation.

- 180° curve conveying of the workpiece pallet
- Curve with built-in drive
- Section loads up to 70 kg in accumulation operation
- Conveyor medium: Flat-top chain
- Automatic chain tensioning system
- Plastic chain guides
- Accumulation operation possible
- Can be combined with WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS

Notice:

- The automatic lubrication unit LU 2 is highly recommended for flat-top chains
- Use in EPA only possible with additional measures (conductive brushes)

Recommended accessories

- Leg sets SZ 2/..., see p. 6-4
- Accumulation pressure regulation, e.g. with rocker WI/M, see p. 8-138
- Connection kits, see p. 9-21
- Decentralized automatic lubrication unit LU 2, see p. 9-5

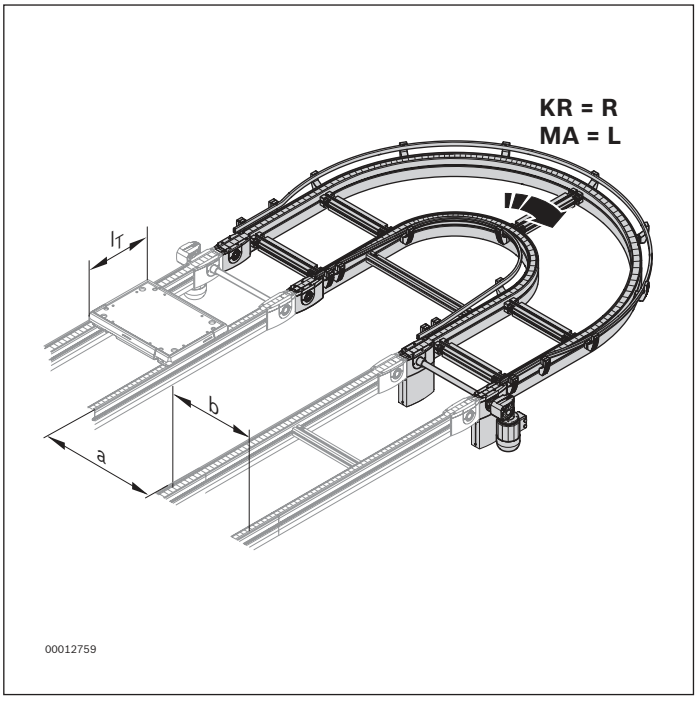
Scope of delivery

- Curve, complete

Condition on delivery

- Assembled

Ordering information



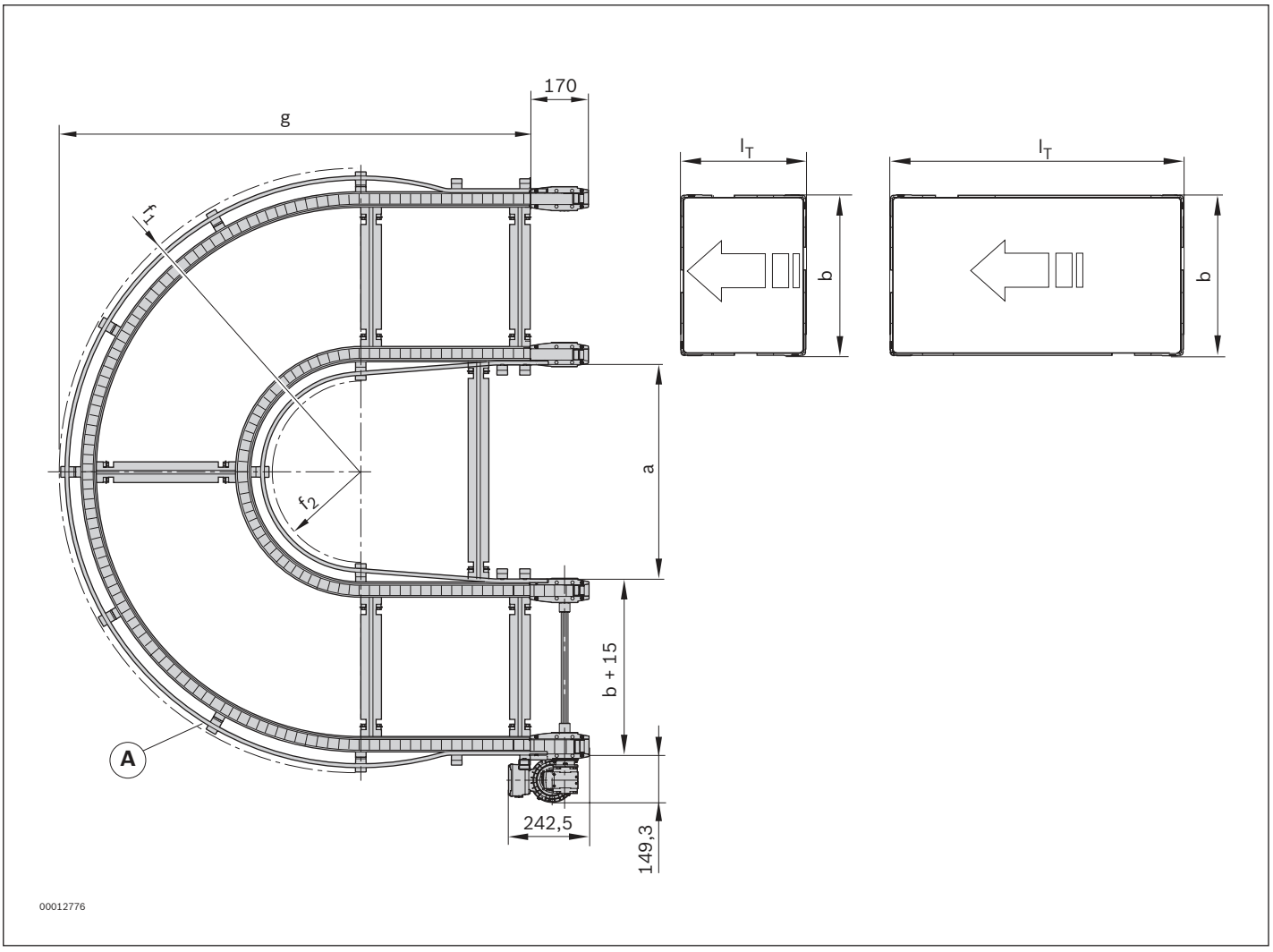
Material number		3842998099
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800
l_T (mm)	Length in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040
b x l_T (mm x mm)	Combination options a = 640 mm	160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400; 480 400 x 240; 320; 400; 480; 640 480 x 320; 400; 480; 640 640 x 400; 480; 640 800 x 480; 640
	a = 800 mm	480 x 800 640 x 800; 1040 800 x 800; 1040
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[1),2)]
KR	Curve direction R = right L = left	R; L

[1)] MA = M only when b ≥ 240 mm
[2)] MA = M not possible for WT 2/LS

Technical data

Material number			3842998099
Max. section load in accumulation operation		kg	70
Max. operating temperature	T	°C	+40 °C

Dimensions

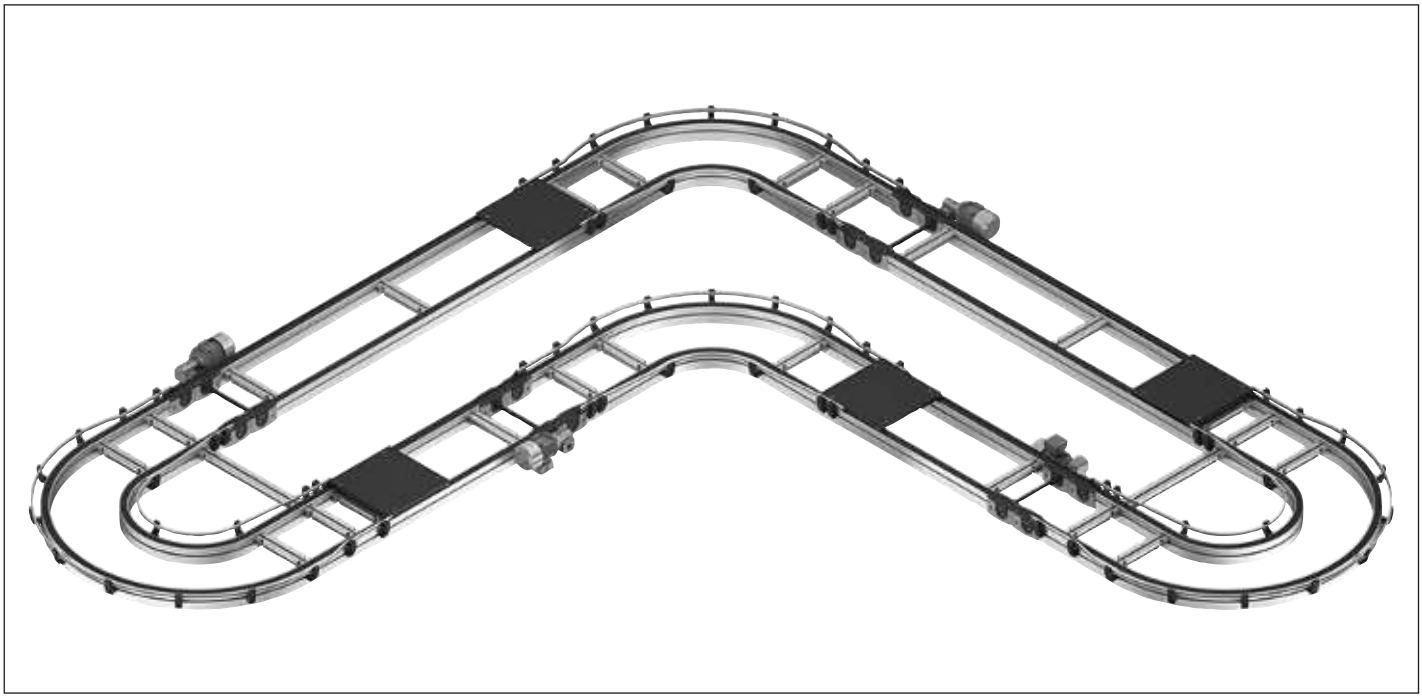


Ⓐ Workpiece pallet outer guide from l_T = 640 mm
b Track width in direction of transport
l_T Length in direction of transport

Track width in direction of transport b (mm)	Length in direction of transport lT (mm)	Curve radius f1[1)] (mm)	Curve radius f2[1)] (mm)	Dimension g (mm)	Distance between conveyors a (mm)
160	160	493	286	755	640
160	240	493	287	835	640
160	320	493	266	915	640
240	160	573	287	835	640
240	240	573	280	915	640
240	320	573	270	995	640
240	400	573	256	1075	640
320	160	653	288	915	640
320	240	653	282	995	640
320	320	653	273	1075	640
320	400	653	261	1155	640
320	480	653	247	1235	640
400	240	733	283	1075	640
400	320	733	275	1155	640
400	400	733	265	1235	640
400	480	733	252	1315	640
400	640	770	260	1299	640
480	320	813	277	1235	640
480	400	813	268	1315	640
480	480	813	256	1395	640
480	640	850	267	1366	640
480	800	930	319	1595	800
640	400	973	272	1475	640
640	480	973	263	1555	640
640	640	1010	278	1503	640
640	800	1090	333	1733	800
640	1040	1090	277	1973	800
800	480	1133	267	1715	640
800	640	1170	285	1642	640
800	800	1250	344	1872	800
800	1040	1250	296	2112	800

[1)] f_1, f_2 = reference value

Curve arc KU 2/O-...



The construction principle of curves KU 2/O-... with the conveyor medium flat-top chain allows smooth integration into longer conveyor units driven by a single drive.

In order to mount such units, the curve arcs KU 2/O-... are offered without the conveyor medium, and drive and return heads. The following guidelines must be taken into account when designing sections with integrated curves.

The AS 2/...-C and UM 2/...-C on the conveyor units can be used for the drive and return unit. The overall length of the flat-top chain results from the sum of the required length of the conveyor medium for each component.

Drive layout

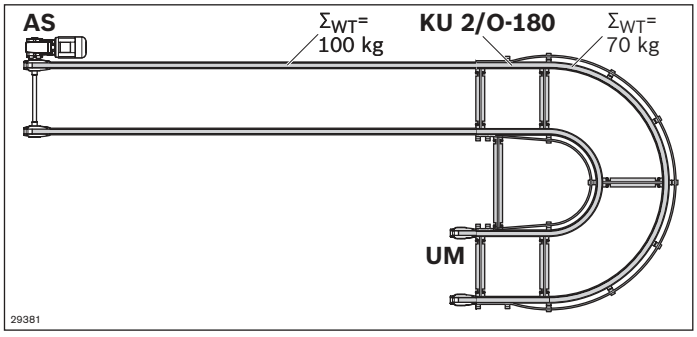
Each change in the direction of the conveyor medium on the transport level, such as with curves KU 2, results in a loss through friction which must be offset by the drive of the section.
This increase in stress on the drive is taken into account by the curve factor. Multiplying the workpiece pallet load that arises before the curve with the curve factor results in the necessary load capacity of the drive. The curve factor is 1.5 for every 90° curve angle.

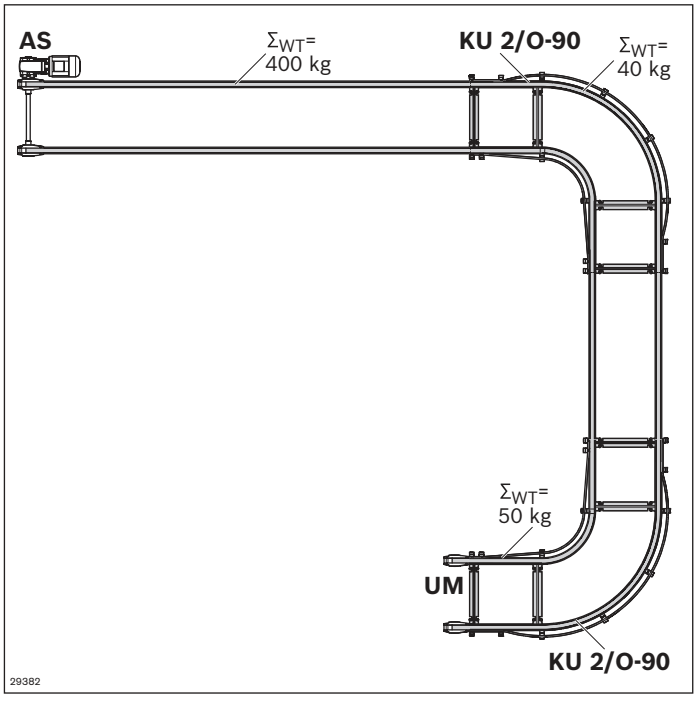
The following applies as a general guideline:

- For each drive module AS 2/C, max. 2x curve arc of 90° or max. 1x curve arc of 180°
- Mount curve arc directly on a return unit UM 2/C-170
- For permitted total workpiece pallet weights in
  a 90° curve arc: 90 kg
  180° curve arc: 70 kg

- The workpiece pallet loads before and in a 180° curve is 70 kg and an additional 100 kg after the curve. From this arises the minimum required load capacity of (70 kg * 1.5 * 1.5) + 100 kg = 257.5 kg. The drive module AS 2/C-400 must be selected for this section.

- The workpiece pallet loads before and in the first 90° curve are 50 kg before and in the second 90° curve, another 40 kg before and in the second curve, and another 400 kg after the second curve. From this arises the minimum required load capacity of (50 kg * 1.5 * 1.5) + (40 kg * 1.5) + 400 kg = 572.5 kg. The drive module AS 2/C-700 must be selected for this section.





Curve arc KU 2/O-90

- Curve arc without built-in drive
- Accumulation operation possible
- Plastic chain guides
- Can be combined with WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS

Notice:
- Flat-top chain in version ESD is not permitted
- The automatic lubrication unit LU 2 is highly recommended for flat-top chains
- Cannot be combined with ESD flat-top chain
- Motor mounting centered not possible for WT 2/LS

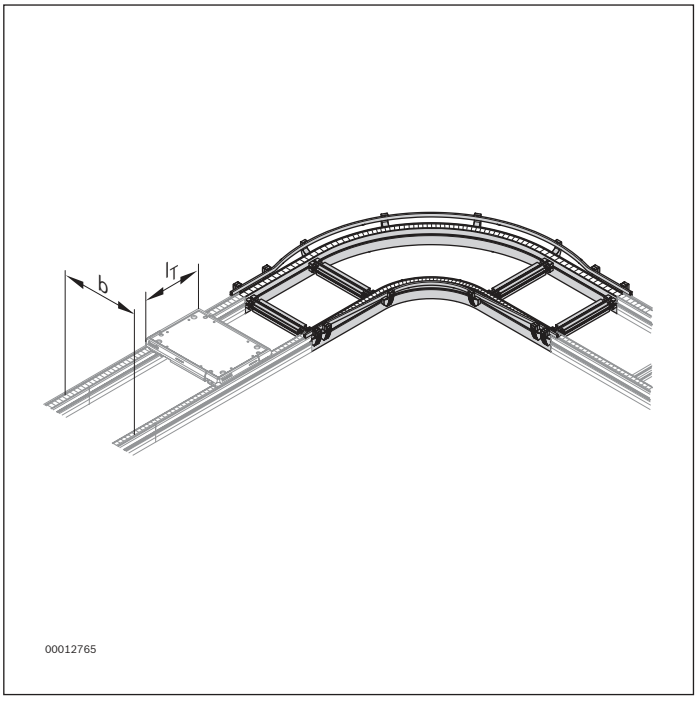
The curve arcs KU 2/O without drive or conveyor medium are used for setting up sections with integrated curves to transport the workpiece pallets in accumulation operation.

Required accessories
- Plastic flat-top chain conveyor medium 3842551226
- Drive module AS 2/C-..., see p. 3-58
- Return unit UM 2/C-..., see p. 3-70

Condition on delivery
- Assembled

Recommended accessories
- Leg sets SZ 2/..., see p. 6-4
- Section ST 2/C-100, see p. 3-75
- Profile connector, see p. 9-16

Ordering information

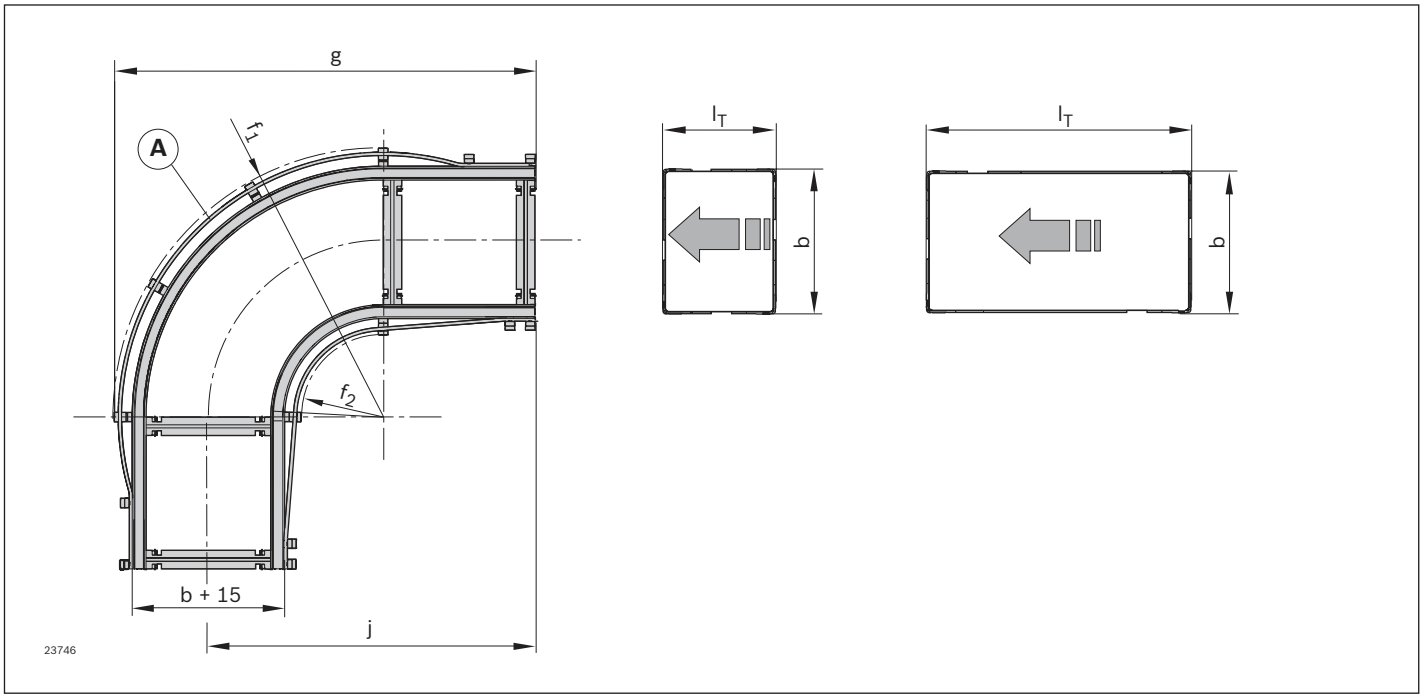


Material number		3842999994
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800
l_T (mm)	Length in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040
b x l_T (mm x mm)	Combination options	160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400; 480 400 x 240; 320; 400; 480; 640 480 x 320; 400; 480; 640; 800 640 x 400; 480; 640; 800; 1040 800 x 480; 640; 800; 1040

Technical data

Material number			3842999994
Max. operating temperature	T	°C	+40 °C

Dimensions

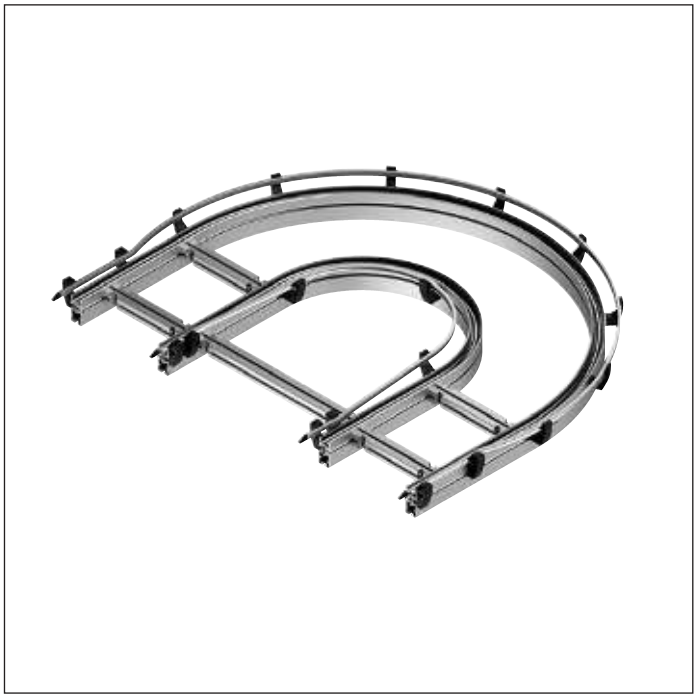


Ⓐ Workpiece pallet outer guide from l_T = 640 mm
b Track width in direction of transport
l_T Length in direction of transport

Track width in direction of transport b (mm)	Length in direction of transport l_T (mm)	Curve radius f1[1)] (mm)	Curve radius f_2[1)] (mm)	Dimension g (mm)	Dimension j (mm)	Required conveyor medium length lk (mm)
160	160	493	286	755	667	4640
160	240	493	287	835	747	5280
160	320	493	266	915	827	5920
240	160	573	287	835	707	4892
240	240	573	280	915	787	5532
240	320	573	270	995	867	6172
240	400	573	256	1075	947	6812
320	160	653	288	915	747	5143
320	240	653	282	995	827	5783
320	320	653	273	1075	907	6423
320	400	653	261	1155	987	7063
320	480	653	247	1235	1067	7703
400	240	733	283	1075	867	6034
400	320	733	275	1155	947	6674
400	400	733	265	1235	1027	7314
400	480	733	252	1315	1107	7954
400	640	770	260	1299	1032	7355
480	320	813	277	1235	987	6926
480	400	813	268	1315	1067	7566
480	480	813	256	1395	1147	8206
480	640	850	267	1366	1060	7508
480	800	930	319	1695	1289	9197
640	400	973	272	1475	1147	8068
640	480	973	263	1555	1227	8708
640	640	1010	278	1503	1117	7827
640	800	1090	333	1733	1347	9524
640	1040	1090	277	1973	1587	11444
800	480	1133	267	1715	1307	9211
800	640	1170	285	1642	1176	8161
800	800	1250	344	1872	1406	9864
800	1040	1250	296	2112	1646	11784

[1)] f_1, f_2 = reference value

Curve arc KU 2/O-180



- Curve arc without built-in drive
- Accumulation operation possible
- Plastic chain guides
- Can be combined with WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS

Notice:
- Flat-top chain in version ESD is not permitted
- The automatic lubrication unit LU 2 is highly recommended for flat-top chains
- Motor mounting centered not possible for WT 2/LS

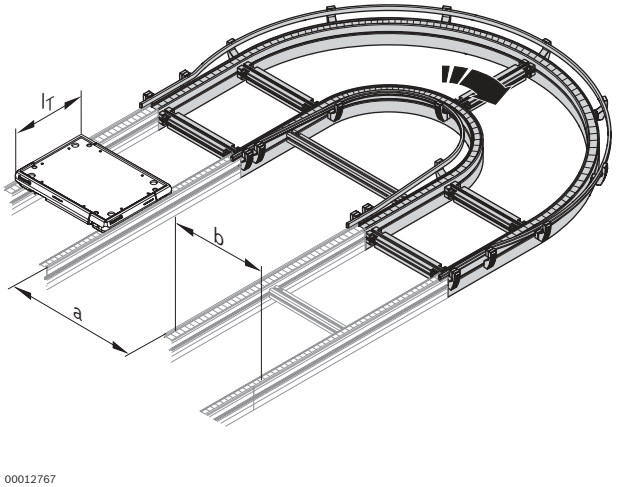
The curve arcs KU 2/O without drive or conveyor medium are used for setting up sections with integrated curves to transport the workpiece pallets in accumulation operation.

Required accessories
- Plastic flat-top chain conveyor medium 3842551226
- Drive module AS 2/C-..., see p. 3-58
- Return unit UM 2/C-..., see p. 3-70

Condition on delivery
- Assembled

Recommended accessories
- Leg sets SZ 2/..., see p. 6-4
- Section ST 2/C-100, see p. 3-75
- Profile connector, see p. 9-16

Ordering information

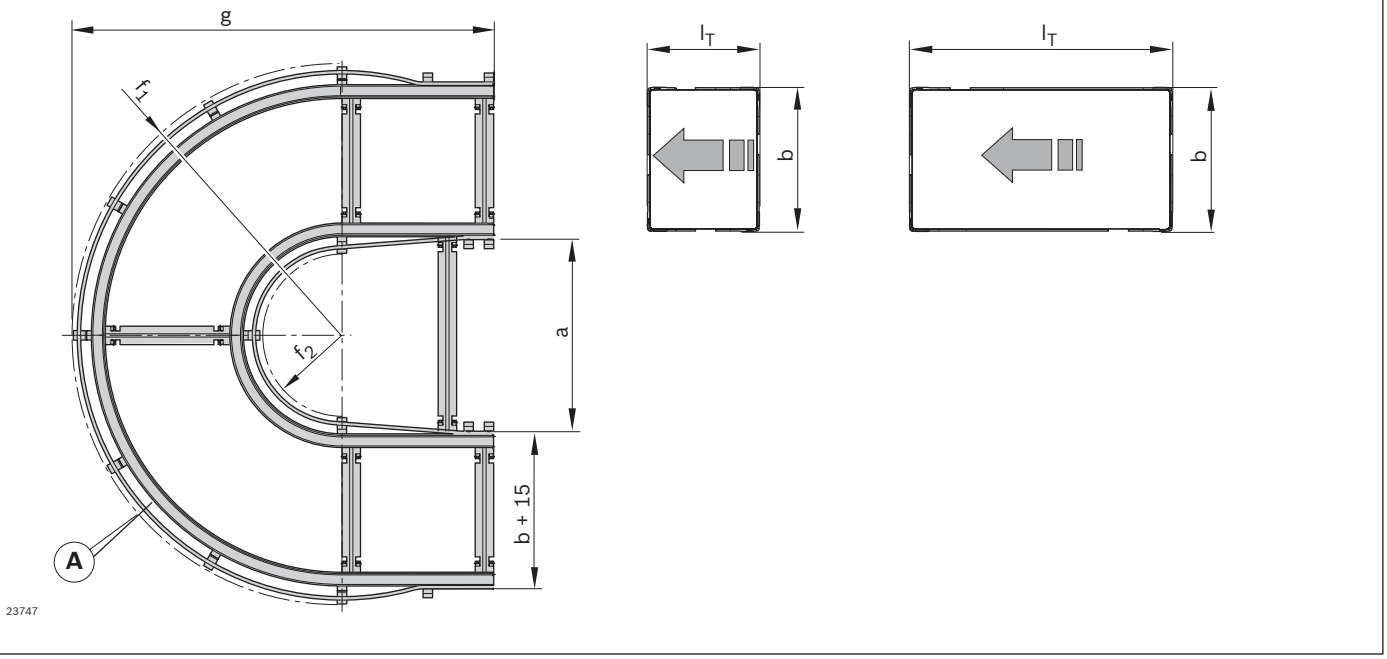


Material number		3842999995
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800
l_T (mm)	Length in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040
b x l_T (mm x mm)	Combination options a = 640 mm	160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400; 480 400 x 240; 320; 400; 480; 640 480 x 320; 400; 480; 640 640 x 400; 480; 640 800 x 480; 640
	a = 800 mm	480 x 800 640 x 800; 1040 800 x 800; 1040

Technical data

Material number			3842999995
Max. operating temperature	T	°C	+40 °C

Dimensions



(A) Workpiece pallet outer guide from l_T = 640 mm
b Track width in direction of transport
l_T Length in direction of transport

Track width in direction of transport b (mm)	Length in direction of transport l_T (mm)	Curve radius f_1 [1] (mm)	Curve radius f_2 [1] (mm)	Dimension g (mm)	Distance between conveyors a (mm)	Required conveyor medium length l_k (mm)
160	160	493	286	755	640	7201
160	240	493	287	835	640	7841
160	320	493	266	915	640	8481
240	160	573	287	835	640	7704
240	240	573	280	915	640	8344
240	320	573	270	995	640	8984
240	400	573	256	1075	640	9624
320	160	653	288	915	640	8206
320	240	653	282	995	640	8846
320	320	653	273	1075	640	9486
320	400	653	261	1155	640	10126
320	480	653	247	1235	640	10766
400	240	733	283	1075	640	9349
400	320	733	275	1155	640	9989
400	400	733	265	1235	640	10629
400	480	733	252	1315	640	11269
400	640	770	260	1299	640	10669
480	320	813	277	1235	640	10491
480	400	813	268	1315	640	11131
480	480	813	256	1395	640	11771
480	640	850	267	1366	640	11074
480	800	930	319	1595	800	13265
640	400	973	272	1475	640	12137
640	480	973	263	1555	640	12777
640	640	1010	278	1503	640	11896
640	800	1090	333	1733	800	14095
640	1040	1090	277	1973	800	16015
800	480	1133	267	1715	640	13782
800	640	1170	285	1642	640	12732
800	800	1250	344	1872	800	14938
800	1040	1250	296	2112	800	16858

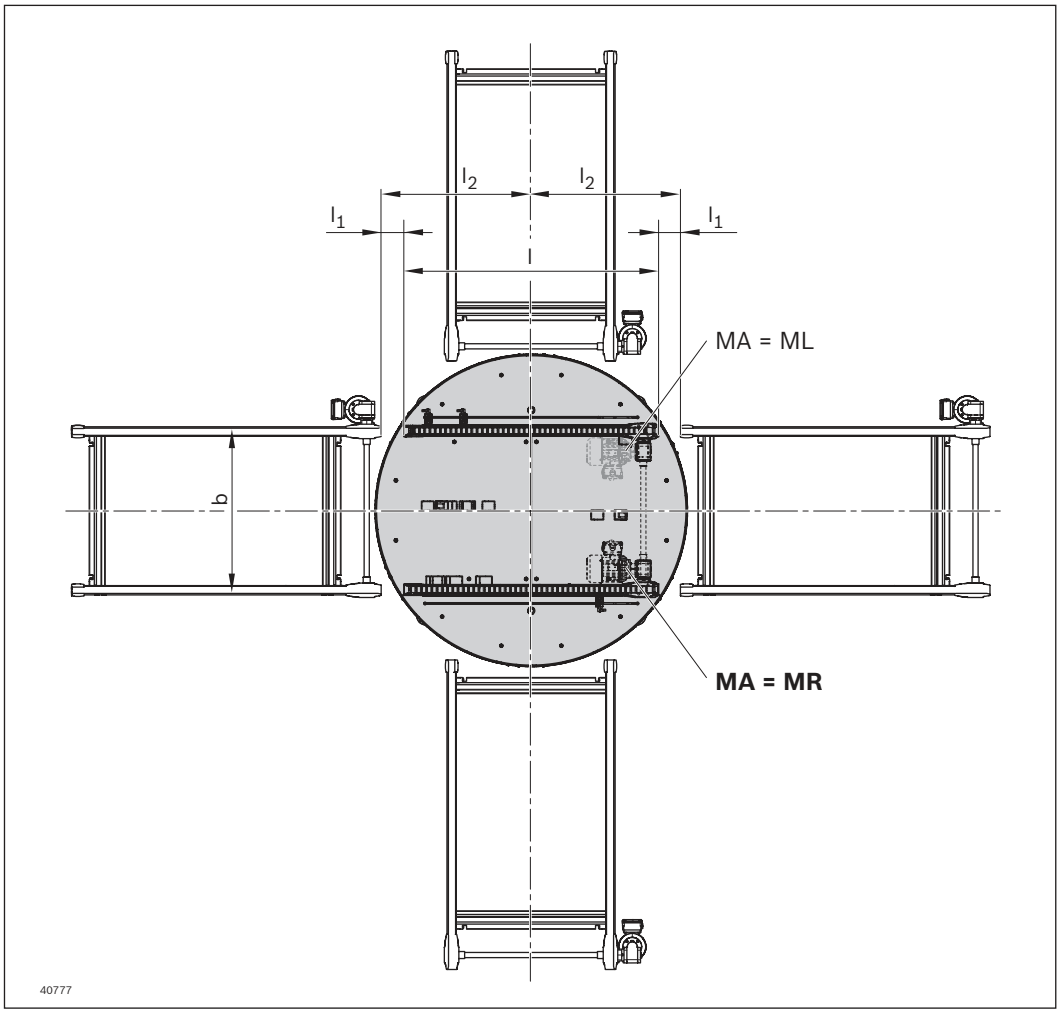
[1] f_1, f_2 = reference value

Rotary units

The rotary units (DE) are modules used for horizontal rotation and transportation of workpiece pallets. The rotation is possible in 90° steps in the range from 0° to 270°.
Through the rotary units, branches and crossings are also possible for large and/or heavy workpiece pallets.
Since the rotation is performed "on the spot", the space requirement is very small, as opposed to a curve, especially in the case of large WTs. However, as with a curve, the direction of transport is retained.
All rotary units have their own rotary drive and an integrated section for the longitudinal conveyor.
Depending on the WT size, WT type and the conveyor medium (CM) used, the rotary unit is available in different sizes (BG). The modular units are available with or without protective housing.
Additional stop gates VE 2/... must be provided for pre-separation.

Size layout

Distance of connecting belt sections



Distance to connecting belt sections, BS 2

		Workpiece pallets WT 2 and WT 2/F with lateral stop gate					Workpiece pallets WT 2/H and WT 2/F-H with center stop gate				
b (mm)	l_T (mm)	BG	MA [1]	l [2] (mm)	l1 (mm)	l2 (mm)	BG	MA [1]	l [2] (mm)	l1 (mm)	l2 (mm)
400	400	1	MR	656	54.0	382.0	1	ML	656	54.0	382.0
400	480	1	MR	656	54.0	382.0	1	ML	656	54.0	382.0
480	400	1	MR	597	65.5	364.0	1	ML	597	65.5	364.0
480	480	1	MR	597	65.5	364.0	1	ML	597	65.5	364.0
480	640	2	MR	818	54.0	463.0	2	ML	818	54.0	463.0
480	800	3	MR	1001	47.5	548.0	3	ML	1001	47.5	548.0
640	480	2	MR	695	100.5	448.0	2	ML	695	100.5	448.0
640	640	3	MR	903	76.5	528.0	2	ML	695	100.5	448.0
640	800	3	MR	903	76.5	528.0	3	ML	903	76.5	528.0
640	1040	4	MR	1324	49.0	711.0	4	ML	1324	49.0	711.0

[1] Motor mounting: ML = middle left, MR = middle right

[2] Length of the belt section assembled at the DE2

Distance to connecting belt sections, BS 2

		Workpiece pallets WT 2 and WT 2/F with lateral stop gate					Workpiece pallets WT 2/H and WT 2/F-H with center stop gate				
b (mm)	l_T (mm)	BG	MA [1]	l [2] (mm)	l1 (mm)	l2 (mm)	BG	MA [1]	l [2] (mm)	l1 (mm)	l2 (mm)
800	480	3	MR	761	147.5	528.0	3	ML	761	147.5	528.0
800	640	3	MR	761	147.5	528.0	3	ML	761	147.5	528.0
800	800	4	MR	1231	92.5	708.0	4	ML	1231	92.5	708.0
800	1040	4	MR	1231	92.5	708.0	4	ML	1231	92.5	708.0
800	1200	5	MR	1646	65.0	888.0	5	ML	1646	65.0	888.0
1040	640	4	MR	1031	192.5	708.0	4	ML	1031	192.5	708.0
1040	800	4	MR	1031	192.5	708.0	4	ML	1031	192.5	708.0
1040	1040	5	MR	1503	136.5	888.0	5	ML	1503	136.5	888.0
1040	1200	5	MR	1503	136.5	888.0	5	ML	1503	136.5	888.0
1200	800	5	MR	1376	200.0	888.0	5	ML	1376	200.0	888.0
1200	1040	5	MR	1376	200.0	888.0	5	ML	1376	200.0	888.0
1200	1200	5	MR	1376	200.0	888.0	5	ML	1376	200.0	888.0

[1] Motor mounting: ML = middle left, MR = middle right

[2] Length of the belt section assembled at the DE2

Distance to connecting belt sections, BS 2/R; BS 2/C; BS 2/G-250

		Workpiece pallets WT 2 and WT 2/F: with lateral stop gate						Workpiece pallets WT 2/H and WT 2/F-H: with center stop gate					
b (mm)	l_T (mm)	BG	MA [1]	l [2] (mm)	l1 (mm)	l2 (mm)	Connection belt required [3]	BG	MA [1]	l [2] (mm)	l1 (mm)	l2 (mm)	Connection belt required [3]
400	400	1	ML	656	68	396	●	1	ML	656	68	396	●
400	480	1	ML	656	68	396	●	1	ML	656	68	396	●
480	400	1	ML	597	84.5	383	●	1	ML	597	84.5	383	●
480	480	2	ML	818	69	478	●	2	ML	818	69	478	●
480	640	2	ML	818	54	463		2	ML	818	54	463	
480	800	3	ML	1001	47.5	548		3	ML	1001	47.5	548	
640	480	2	ML	695	98.5	446	●	2	ML	695	98.5	446	●
640	640	3	ML	903	71.5	523		3	ML	903	71.5	523	
640	800	4	ML	1324	49	711		4	ML	1324	49	711	
640	1040	4	ML	1324	49	711		4	ML	1324	49	711	
800	480	3	ML	761	142.5	523	●	3	ML	761	142.5	523	●
800	640	4	ML	1231	87.5	703	●	4	ML	1231	87.5	703	●
800	800	4	ML	1231	87.5	703		4	ML	1231	87.5	703	
800	1040	4	ML	1231	87.5	703		4	ML	1231	87.5	703	
800	1200	5	ML	1646	60	883		5	ML	1646	60	883	
1040	640	4	ML	1031	187.5	703	●	4	ML	1031	187.5	703	●
1040	800	4	ML	1031	187.5	703	●	4	ML	1031	187.5	703	●
1040	1040	5	ML	1503	131.5	883		5	ML	1503	131.5	883	
1040	1200	5	ML	1503	131.5	883		5	ML	1503	131.5	883	
1200	800	5	ML	1376	195	883	●	5	ML	1376	195	883	●
1200	1040	5	ML	1376	195	883		5	ML	1376	195	883	
1200	1200	5	ML	1376	195	883		5	ML	1376	195	883	

[1] Motor mounting: ML = middle left

[2] Length of the belt section assembled at the DE2

[3] To bridge the conveyor trench between rotary unit DE2 and the downstream section, connection belts are required at the connecting sections.

Rotary unit DE 2 – BG 1 **4-44**

Rotary unit DE 2 – BG 2 **4-47**

Rotary unit DE 2 – BG 3 **4-50**

Rotary unit DE 2 – BG 4 **4-53**

Rotary unit DE 2 – BG 5 **4-56**

Rotary unit DE 2 – BG 1

- The rotary unit is a module for the horizontal rotation and transport of workpiece pallets
- With this, branch-offs and crossings are also possible for heavy workpiece pallets (up to 96 kg)
- Can be used with workpiece pallets WT 2, WT 2/F, WT 2/H and WT 2/F-H
- Conveyor medium optionally toothed belt, flat-top chain, accumulation roller chain, duplex chain
- Reversible for toothed belt and accumulation roller chain
- Total weight up to 96 kg, depending on WT size
- Electric rotary drive with internal motor mounting
- Motor mounting for the section at the section end
- Rotary range of a total of 270°, divided in 90° steps

Scope of delivery

- Including sensor for end position of the rotary movement 1x M12 with M8, S_N = 4 mm, flush, 3842549811

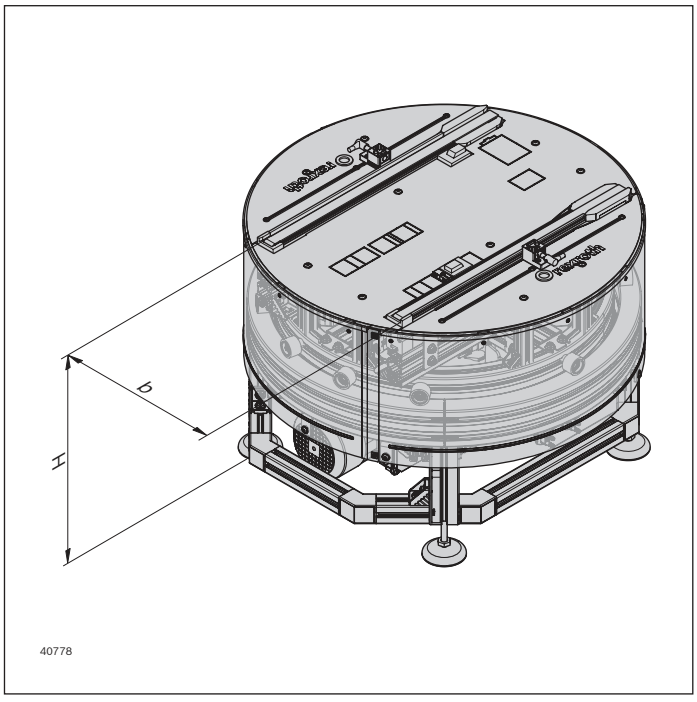
Condition on delivery

- Ready-to-install incl. leg sets
- Optional: Protective covers assembled

Required accessories

- Anchoring of the rotary unit at the floor for each bolting point:
  - 1x foundation bracket, 3842146848
  - 1x dowel, 3842526560
  - 2x T-bolts, 3842528718
  - 2x flange nuts, 3842345081
- Frequency converter:
  - 1x for the motor for rotary movement
  - 1x for motor of belt section (deceleration and start-up of the workpiece pallet)
- I/O module (PROFIBUS® or Ethernet):
  - For connection of proximity switches for control of the workpiece pallet
  - For connection of necessary solenoid valves for control of the stop gates
- Sensors:
  - For controlling the position (0°/90°/180°/270°) 4x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 4x M12 with M8, S_N = 4 mm, flush, 3842549812
  - For stopping and locking the rotary movement (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - For WT end position and running in of workpiece pallets with deceleration (ramp) 3x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 3x M12 with M8, S_N = 4 mm, flush 3842549812
  - For stopping and locking the workpiece pallet (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - 2x position query 3842528817

Ordering information



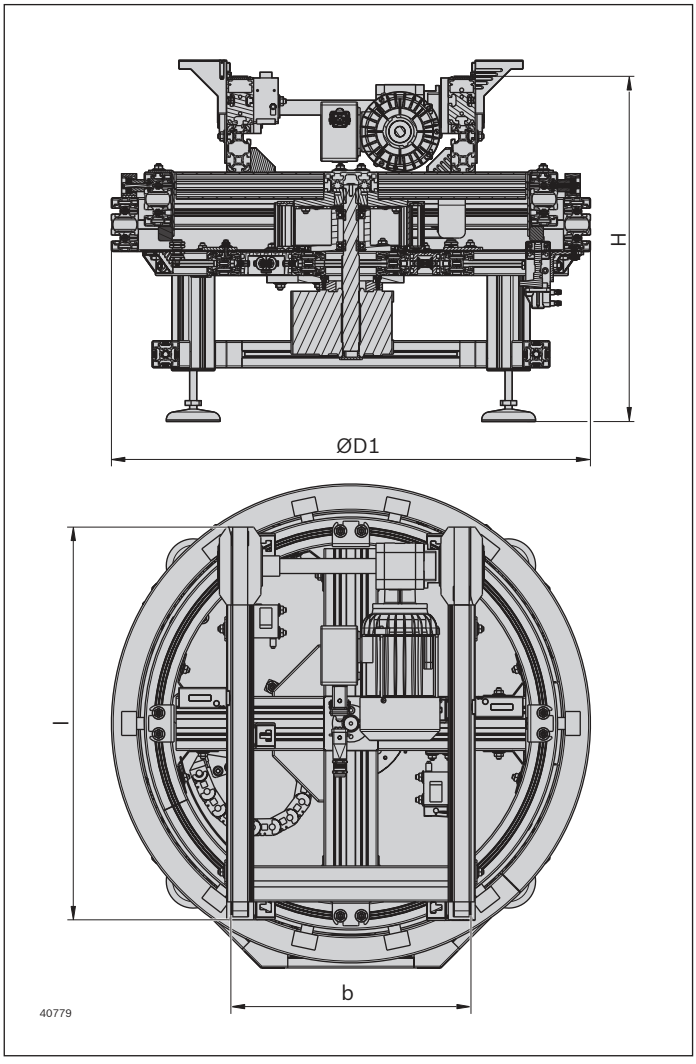
Material number		3842998871
b (mm)	Track width in direction of transport	400; 480
l_T (mm)	Length in direction of transport	400; 480
b x lT (mm)	Combination options	CM 1...8: 400x400; 400x480; 480x400 CM1: 480x480
WT	Workpiece pallet type 1: WT2, WT2/F 2: WT 2/H, WT 2/F-H	1; 2
CM	Conveyor medium 1: BS 2 (with ZR) 2: BS 2/C with standard chain 3: BS 2/C with chain, anti-static 4: BS 2/R with steel profile + accumulation roller PA 5: BS 2/R with steel profile + steel accumulation roller 6: BS 2/R with steel profile + accumulation roller PA with small parts protection (only pulling) 7: BS 2/R with steel profile + steel accumulation roller with small parts protection (only pulling) 8: BS 2/G-250	1; 2; 3; 4; 5; 6; 7; 8
H	Transportation height	585 ... 1400
CT	Type of protection 0: without 1: with sheet steel	0; 1
VE	Stop gate 0: without 1: with stop gate	0; 1
v_N (m/min)	Nominal speed	6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff

Technical data

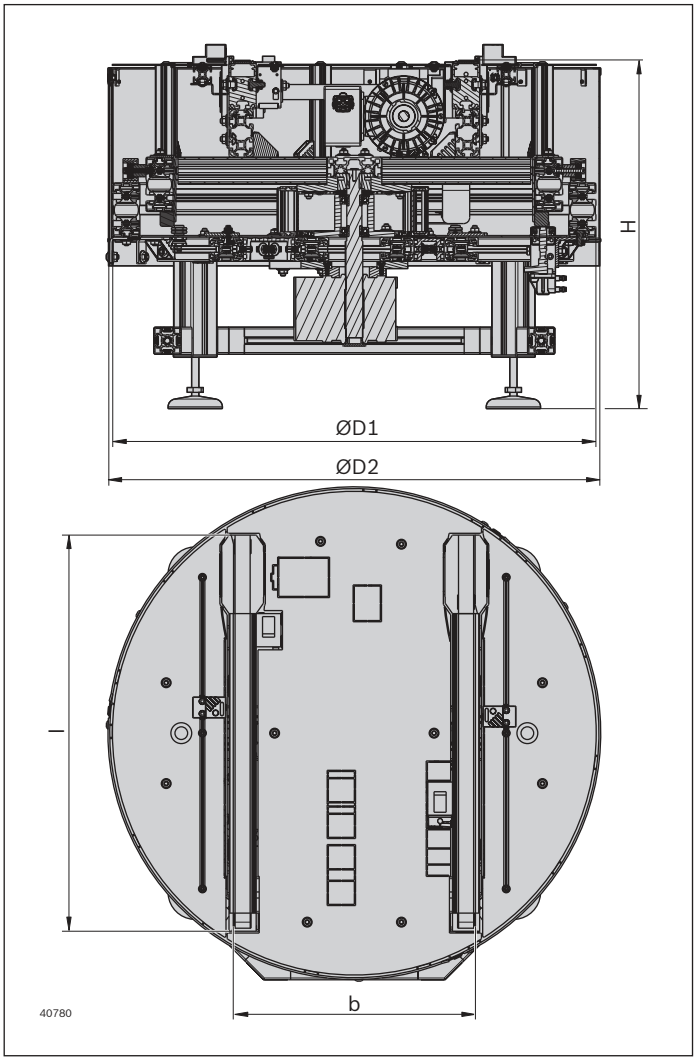
Material number			**3842998871**
Max. total workpiece pallet weight	m_G	kg	96
Required compressed air connection	p	bar	5 ... 6
Push in air connection	Ø	mm	6
Rotary movement time		s	90°: 4 180°: 7 270°: 10

Dimensions

Rotary unit without protective cover



Rotary unit with protective cover



Track width in direction of transport b (mm)	**Length Belt section l (mm)**	**Ø without Protective cover D1 (mm)**	**Ø with Protective cover D2 (mm)**	**Transportation height H (mm)**
400	656	800	816	585 ... 1400
480	597	800	816	585 ... 1400

Distance of connecting belt sections and design of the size, see p. 4-41

Rotary unit DE 2 – BG 2

- The rotary unit is a module for the horizontal rotation and transport of workpiece pallets
- With this, branch-offs and crossings are also possible for heavy workpiece pallets (up to 128 kg)
- Can be used with all workpiece pallets WT 2, WT 2/F, WT 2/H and WT 2/F-H
- Conveyor medium optionally toothed belt, flat-top chain, accumulation roller chain, duplex chain
- Reversible for toothed belt and accumulation roller chain
- Total weight up to 128 kg, depending on WT size
- Electric rotary drive with internal motor mounting
- Motor mounting for the section at the section end
- Rotary range of a total of 270°, divided in 90° steps

Scope of delivery

- Including sensor for end position of the rotary movement 1x M12 with M8, S_N = 4 mm, flush, 3842549811

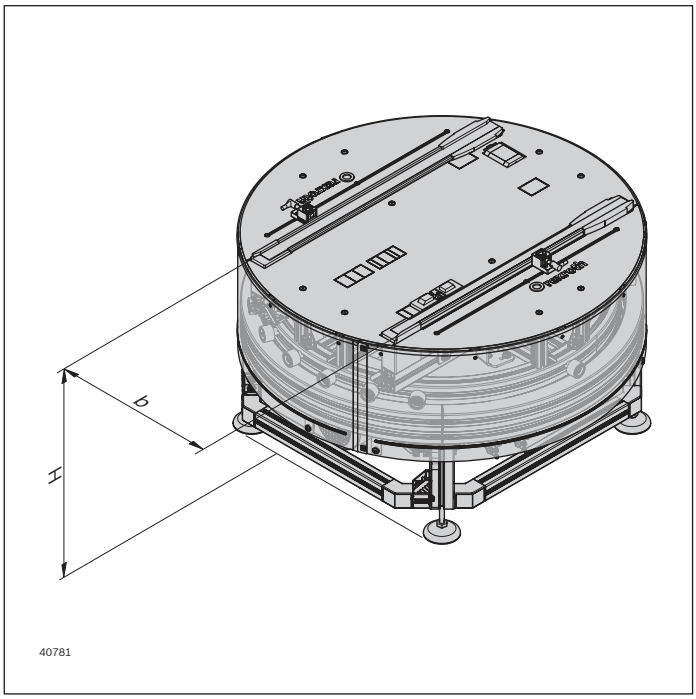
Condition on delivery

- Ready-to-install incl. leg sets
- Optional: Protective covers assembled

Required accessories

- Anchoring of the rotary unit at the floor for each bolting point:
  - 1x foundation bracket, 3842146848
  - 1x dowel, 3842526560
  - 2x T-bolts, 3842528718
  - 2x flange nuts, 3842345081
- Frequency converter:
  - 1x for the motor for rotary movement
  - 1x for motor of belt section (deceleration and start-up of the workpiece pallet)
- I/O module (PROFIBUS® or Ethernet):
  - For connection of proximity switches for control of the workpiece pallet
  - For connection of necessary solenoid valves for control of the stop gates
- Sensors:
  - For controlling the position (0°/90°/180°/270°) 4x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 4x M12 with M8, S_N = 4 mm, flush, 3842549812
  - For stopping and locking the rotary movement (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - For WT end position and running in of workpiece pallets with deceleration (ramp) 3x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 3x M12 with M8, S_N = 4 mm, flush 3842549812
  - For stopping and locking the workpiece pallet (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - 2x position query 3842528817

Ordering information



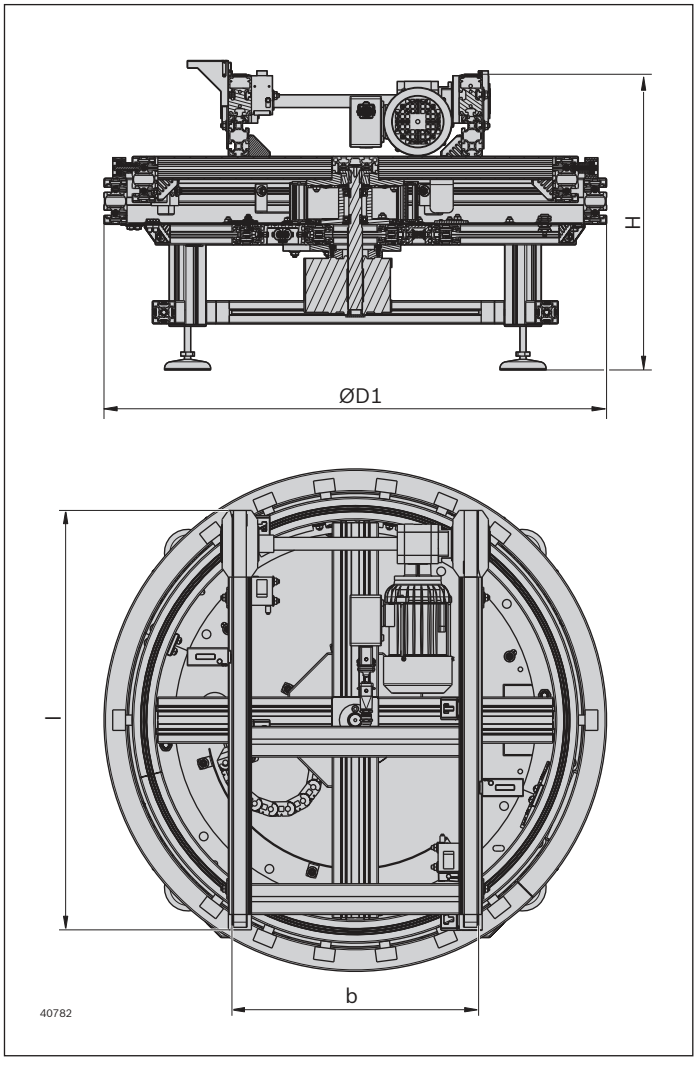
Material number		**3842998872**
b (mm)	Track width in direction of transport	480; 640
l_T (mm)	Length in direction of transport	480; 640
b x l_T (mm)	Combination options	CM 2...8: 480x480 CM 1...8: 640x480; 480x640 CM 1, WT=2: 640x640
WT	Workpiece pallet type 1: WT2, WT2/F 2: WT 2/H, WT 2/F-H	1; 2
CM	Conveyor medium 1: BS 2 (with ZR) 2: BS 2/C with standard chain 3: BS 2/C with chain, anti-static 4: BS 2/R with steel profile + accumulation roller PA 5: BS 2/R with steel profile + steel accumulation roller 6: BS 2/R with steel profile + accumulation roller PA with small parts protection (only pulling) 7: BS 2/R with steel profile + steel accumulation roller with small parts protection (only pulling) 8: BS 2/G-250	1; 2; 3; 4; 5; 6; 7; 8
H	Transportation height	585 ... 1400
CT	Type of protection 0: without 1: with sheet steel	0; 1
VE	Stop gate 0: without 1: with stop gate	0; 1
v_N (m/min)	Nominal speed	6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff

Technical data

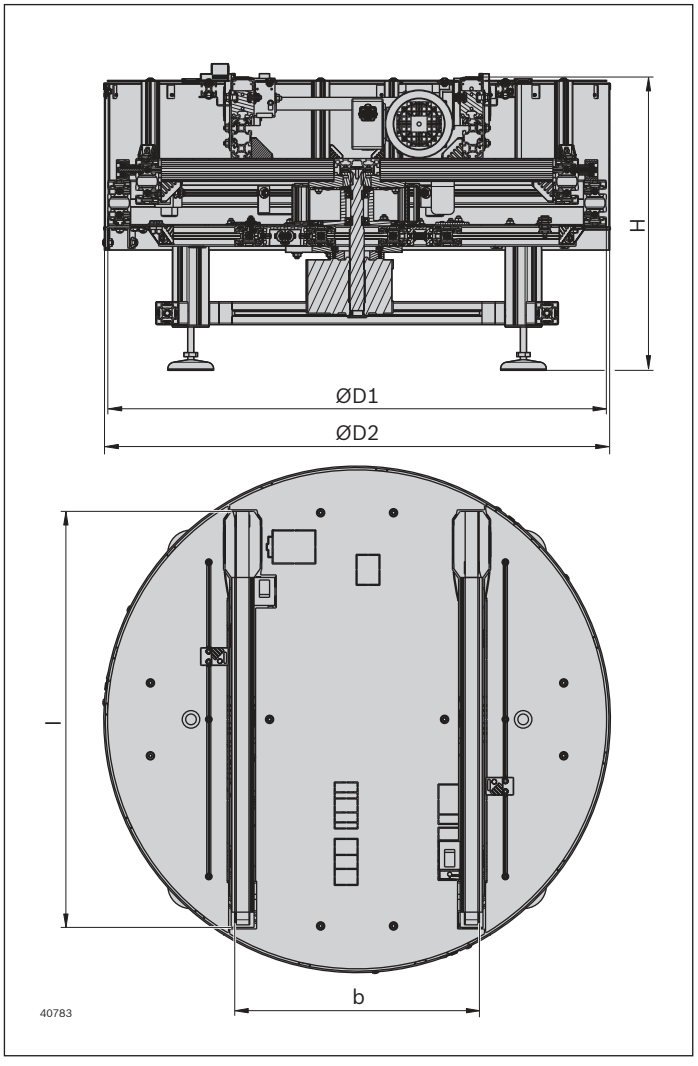
Material number			**3842998872**
Max. total workpiece pallet weight	m_G	kg	128
Required compressed air connection	p	bar	5 ... 6
Push in air connection	Ø	mm	6
Rotary movement time		s	90°: 4 180°: 7 270°: 10

Dimensions

Rotary unit without protective cover



Rotary unit with protective cover



Track width in direction of transport b (mm)	**Length Belt section l (mm)**	**Ø without Protective cover D1 (mm)**	**Ø with Protective cover D2 (mm)**	**Transportation height H (mm)**
400	818	980	996	585 ... 1400
640	695	980	996	585 ... 1400

Distance of connecting belt sections and design of the size, see p. 4-41

Rotary unit DE 2 – BG 3

- The rotary unit is a module for the horizontal rotation and transport of workpiece pallets
- With this, branch-offs and crossings are also possible for heavy workpiece pallets (up to 160 kg). Can be used with all workpiece pallets WT 2, WT 2/F, WT 2/H and WT 2/F-H
- Conveyor medium optionally toothed belt, flat-top chain, accumulation roller chain, duplex chain
- Reversible for toothed belt and accumulation roller chain
- Total weight up to 160 kg, depending on WT size
- Electric rotary drive with internal motor mounting
- Motor mounting for the section at the section end
- Rotary range of a total of 270°, divided in 90° steps

Scope of delivery

- Including sensor for end position of the rotary movement 1x M12 with M8, S_N = 4 mm, flush, 3842549811

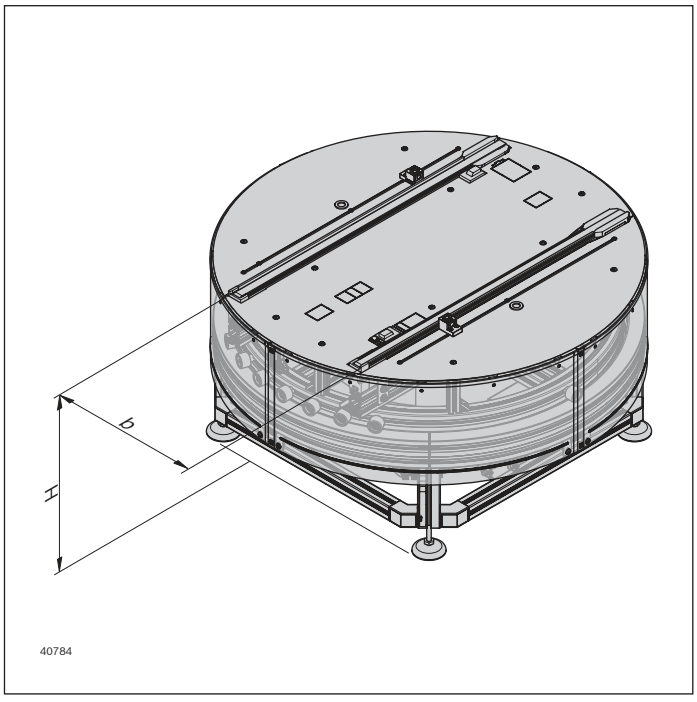
Condition on delivery

- Ready-to-install incl. leg sets
- Optional: Protective covers assembled

Required accessories

- Anchoring of the rotary unit at the floor for each bolting point:
  - 1x foundation bracket, 3842146848
  - 1x dowel, 3842526560
  - 2x T-bolts, 3842528718
  - 2x flange nuts, 3842345081
- Frequency converter:
  - 1x for the motor for rotary movement
  - 1x for motor of belt section (deceleration and start-up of the workpiece pallet)
- I/O module (PROFIBUS® or Ethernet):
  - For connection of proximity switches for control of the workpiece pallet
  - For connection of necessary solenoid valves for control of the stop gates
- Sensors:
  - For controlling the position (0°/90°/180°/270°) 4x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 4x M12 with M8, S_N = 4 mm, flush, 3842549812
  - For stopping and locking the rotary movement (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - For WT end position and running in of workpiece pallets with deceleration (ramp) 3x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 3x M12 with M8, S_N = 4 mm, flush 3842549812
  - For stopping and locking the workpiece pallet (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - 2x position query 3842528817

Ordering information



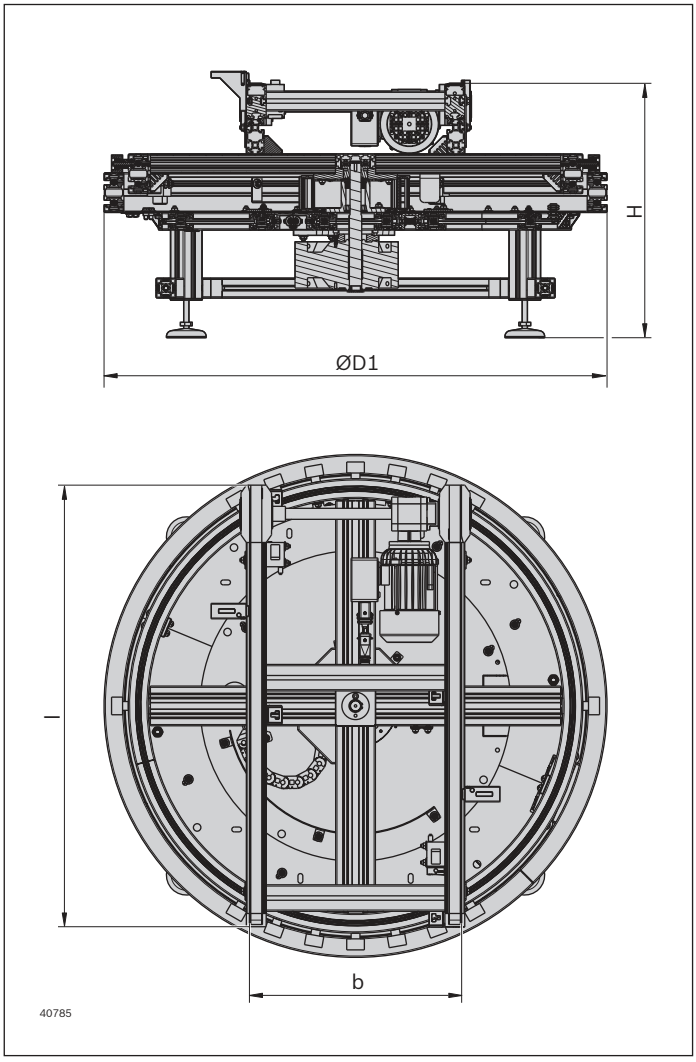
Material number		**3842998873**
b (mm)	Track width in direction of transport	480; 640; 800
l_T (mm)	Length in direction of transport	480; 640; 800
b x l_T (mm)	Combination options	CM 1...8: 480x800; 800x480 CM 1, WT=1: 640x640 CM 1: 800x640; 640x800 CM 2...8: 640x480; 480x640
WT	Workpiece pallet type 1: WT2, WT2/F 2: WT 2/H, WT 2/F-H	1; 2
CM	Conveyor medium 1: BS 2 (with ZR) 2: BS 2/C with standard chain 3: BS 2/C with chain, anti-static 4: BS 2/R with steel profile + accumulation roller PA 5: BS 2/R with steel profile + steel accumulation roller 6: BS 2/R with steel profile + accumulation roller PA with small parts protection (only pulling) 7: BS 2/R with steel profile + steel accumulation roller with small parts protection (only pulling) 8: BS 2/G-250	1; 2; 3; 4; 5; 6; 7; 8
H	Transportation height	585 ... 1400
CT	Type of protection 0: without 1: with sheet steel	0; 1
VE	Stop gate 0: without 1: with stop gate	0; 1
v_N (m/min)	Nominal speed	6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff

Technical data

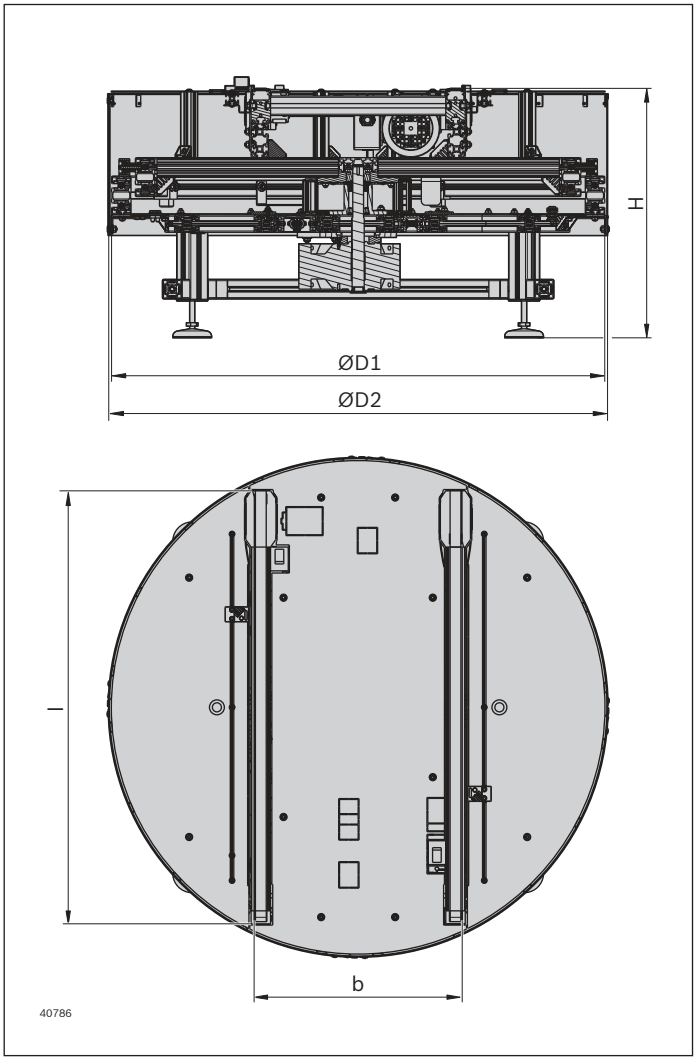
Material number			**3842998873**
Max. total workpiece pallet weight	m_G	kg	160
Required compressed air connection	p	bar	5 ... 6
Push in air connection	Ø	mm	6
Rotary movement time		s	90°: 4 180°: 7 270°: 10

Dimensions

Rotary unit without protective cover



Rotary unit with protective cover



Track width in direction of transport b (mm)	**Length Belt section l (mm)**	**Ø without Protective cover D1 (mm)**	**Ø with Protective cover D2 (mm)**	**Transportation height H (mm)**
400	1001	1140	1156	585 ... 1400
640	903	1140	1156	585 ... 1400
800	761	1140	1156	585 ... 1400

Distance of connecting belt sections and design of the size, see p. 4-41

Rotary unit DE 2 – BG 4

- The rotary unit is a module for the horizontal rotation and transport of workpiece pallets
- With this, branch-offs and crossings are also possible for heavy workpiece pallets (up to 208 kg)
- Can be used with all workpiece pallets WT 2, WT 2/F, WT 2/H and WT 2/F-H
- Conveyor medium optionally toothed belt, flat-top chain, accumulation roller chain, duplex chain
- Reversible for toothed belt and accumulation roller chain
- Total weight up to 208 kg, depending on WT size
- Electric rotary drive with internal motor mounting
- Motor mounting for the section at the section end
- Rotary range of a total of 270°, divided in 90° steps

Scope of delivery

- Including sensor for end position of the rotary movement 1x M12 with M8, S_N = 4 mm, flush, 3842549811

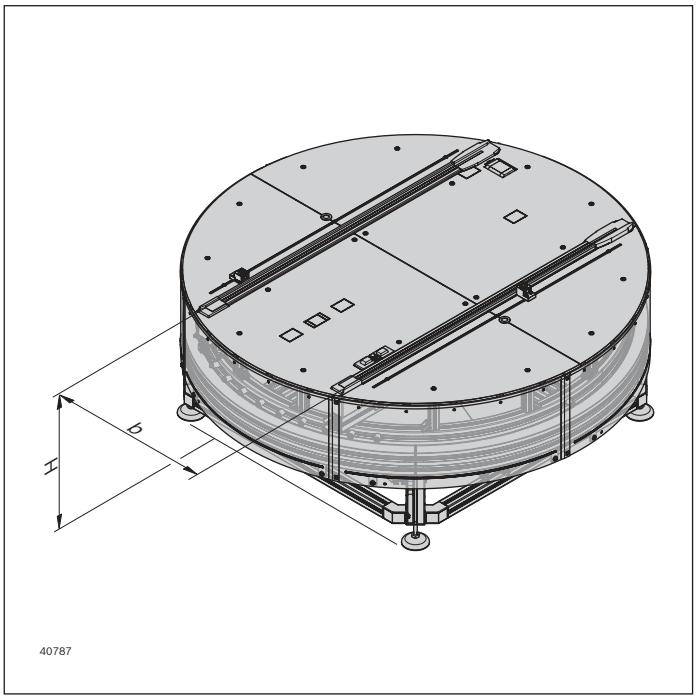
Condition on delivery

- Ready-to-install incl. leg sets
- Optional: Protective covers assembled

Required accessories

- Anchoring of the rotary unit at the floor for each bolting point:
  - 1x foundation bracket, 3842146848
  - 1x dowel, 3842526560
  - 2x T-bolts, 3842528718
  - 2x flange nuts, 3842345081
- Frequency converter:
  - 1x for the motor for rotary movement
  - 1x for motor of belt section (deceleration and start-up of the workpiece pallet)
- I/O module (PROFIBUS® or Ethernet):
  - For connection of proximity switches for control of the workpiece pallet
  - For connection of necessary solenoid valves for control of the stop gates
- Sensors:
  - For controlling the position (0°/90°/180°/270°) 4x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 4x M12 with M8, S_N = 4 mm, flush, 3842549812
  - For stopping and locking the rotary movement (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - For WT end position and running in of workpiece pallets with deceleration (ramp) 3x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 3x M12 with M8, S_N = 4 mm, flush 3842549812
  - For stopping and locking the workpiece pallet (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - 2x position query 3842528817

Ordering information



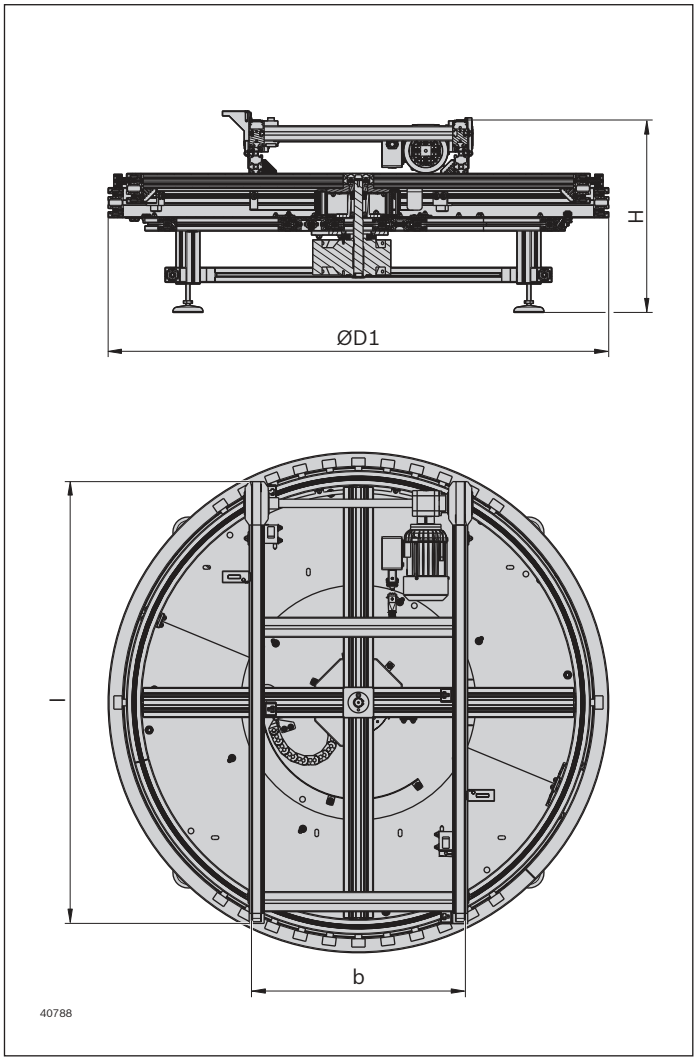
Material number		**3842998874**
b (mm)	Track width in direction of transport	640; 800; 1040
l_T (mm)	Length in direction of transport	640; 800; 1040
b x l_T (mm)	Combination options	CM 1...8: 640x1040; 800x800; 800x1040; 1040x640; 1040x800 CM 2...8: 800x640; 640x800
WT	Workpiece pallet type 1: WT2, WT2/F 2: WT 2/H, WT 2/F-H	1; 2
CM	Conveyor medium 1: BS 2 (with ZR) 2: BS 2/C with standard chain 3: BS 2/C with chain, anti-static 4: BS 2/R with steel profile + accumulation roller PA 5: BS 2/R with steel profile + steel accumulation roller 6: BS 2/R with steel profile + accumulation roller PA with small parts protection (only pulling) 7: BS 2/R with steel profile + steel accumulation roller with small parts protection (only pulling) 8: BS 2/G-250	1; 2; 3; 4; 5; 6; 7; 8
H	Transportation height	585 ... 1400
CT	Type of protection 0: without 1: with sheet steel	0; 1
VE	Stop gate 0: without 1: with stop gate	0; 1
v_N (m/min)	Nominal speed	6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff

Technical data

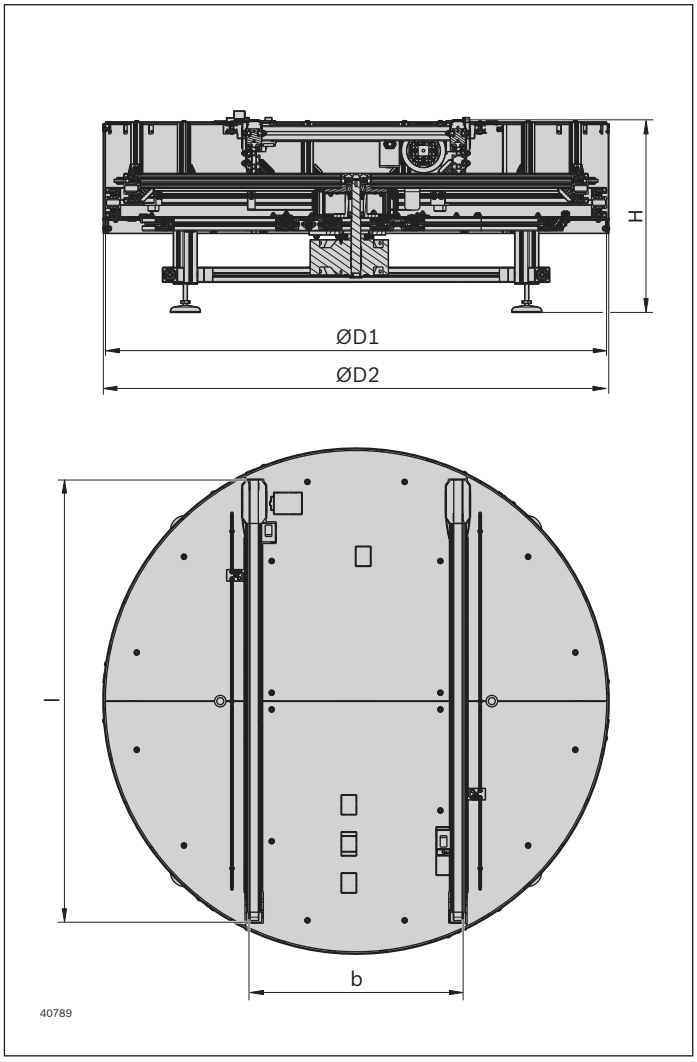
Material number			**3842998874**
Max. total workpiece pallet weight	m_G	kg	208
Required compressed air connection	p	bar	5 ... 6
Push in air connection	Ø	mm	6
Rotary movement time		s	90°: 4 180°: 7 270°: 10

Dimensions

Rotary unit without protective cover



Rotary unit with protective cover



Track width in direction of transport b (mm)	**Length Belt section l (mm)**	**Ø without Protective cover D1 (mm)**	**Ø with Protective cover D2 (mm)**	**Transportation height H (mm)**
640	1324	1500	1516	585 ... 1400
800	1231	1500	1516	585 ... 1400
1040	1031	1500	1516	585 ... 1400

Distance of connecting belt sections and design of the size, see p. 4-41

Rotary unit DE 2 – BG 5

- The rotary unit is a module for the horizontal rotation and transport of workpiece pallets
- With this, branch-offs and crossings are also possible for heavy workpiece pallets (up to 240 kg)
- Can be used with all workpiece pallets WT 2, WT 2/F, WT 2/H and WT 2/F-H
- Conveyor medium optionally toothed belt, flat-top chain, accumulation roller chain, duplex chain
- Reversible for toothed belt and accumulation roller chain
- Total weight up to 240 kg, depending on WT size
- Electric rotary drive with internal motor mounting
- Motor mounting for the section at the section end
- Rotary range of a total of 270°, divided in 90° steps

Scope of delivery

- Including sensor for end position of the rotary movement 1x M12 with M8, S_N = 4 mm, flush, 3842549811

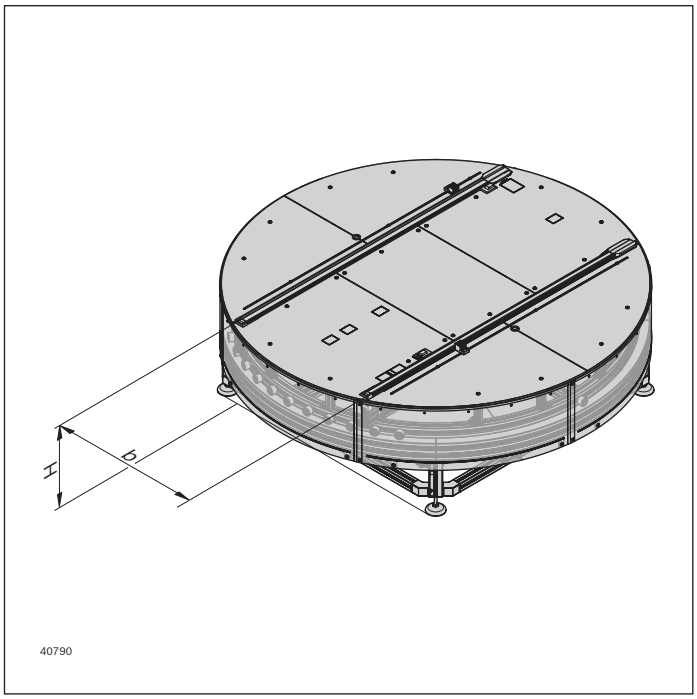
Condition on delivery

- Ready-to-install incl. leg sets
- Optional: Protective covers assembled

Required accessories

- Anchoring of the rotary unit at the floor for each bolting point:
  - 1x foundation bracket, 3842146848
  - 1x dowel, 3842526560
  - 2x T-bolts, 3842528718
  - 2x flange nuts, 3842345081
- Frequency converter:
  - 1x for the motor for rotary movement
  - 1x for motor of belt section (deceleration and start-up of the workpiece pallet)
- I/O module (PROFIBUS® or Ethernet):
  - For connection of proximity switches for control of the workpiece pallet
  - For connection of necessary solenoid valves for control of the stop gates
- Sensors:
  - For controlling the position (0°/90°/180°/270°) 4x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 4x M12 with M8, S_N = 4 mm, flush, 3842549812
  - For stopping and locking the rotary movement (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - For WT end position and running in of workpiece pallets with deceleration (ramp) 3x M12 with M12, S_N = 4 mm, flush, 3842549814
    • or alternatively: 3x M12 with M8, S_N = 4 mm, flush 3842549812
  - For stopping and locking the workpiece pallet (VE) 4x M8 with M8, S_N = 2 mm, flush, 3842551761
  - 2x position query 3842528817

Ordering information



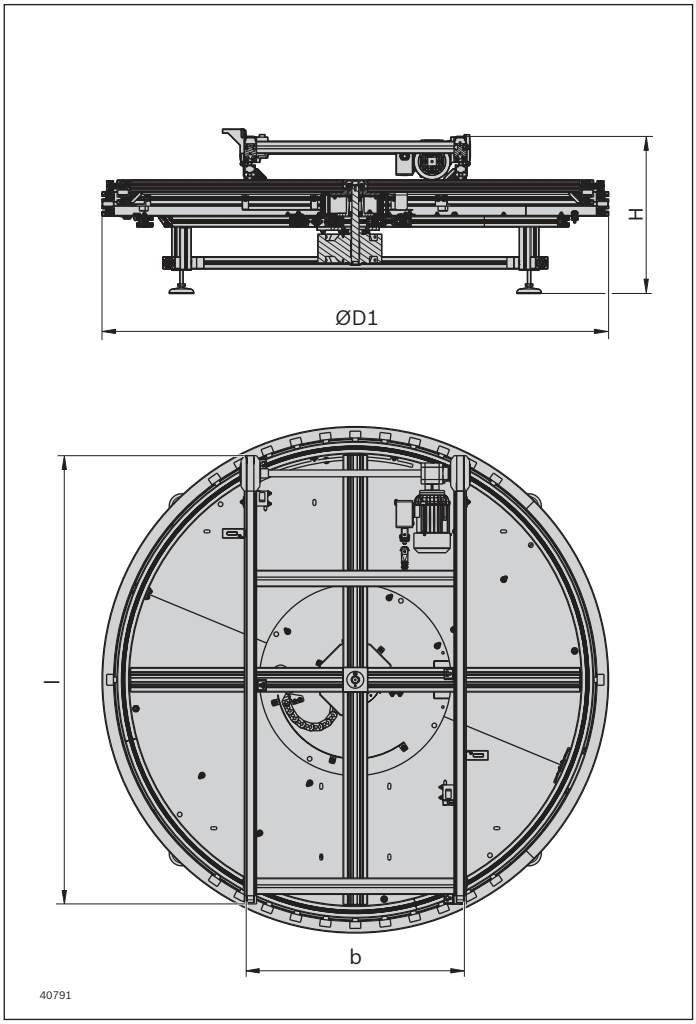
Material number		**3842998875**
b (mm)	Track width in direction of transport	800; 1040; 1200
l_T (mm)	Length in direction of transport	800; 1040; 1200
b x l_T (mm)	Combination options	CM 1...8: 1200x800; 1040x1040; 1200x1040; 800x1200; 1040x1200; 1200x1200
WT	Workpiece pallet type 1: WT2, WT2/F 2: WT 2/H, WT 2/F-H	1; 2
CM	Conveyor medium 1: BS 2 (with ZR) 2: BS 2/C with standard chain 3: BS 2/C with chain, anti-static 4: BS 2/R with steel profile + accumulation roller PA 5: BS 2/R with steel profile + steel accumulation roller 6: BS 2/R with steel profile + accumulation roller PA with small parts protection (only pulling) 7: BS 2/R with steel profile + steel accumulation roller with small parts protection (only pulling) 8: BS 2/G-250	1; 2; 3; 4; 5; 6; 7; 8
H	Transportation height	585 ... 1400
CT	Type of protection 0: without 1: with sheet steel	0; 1
VE	Stop gate 0: without 1: with stop gate	0; 1
v_N (m/min)	Nominal speed	6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff

Technical data

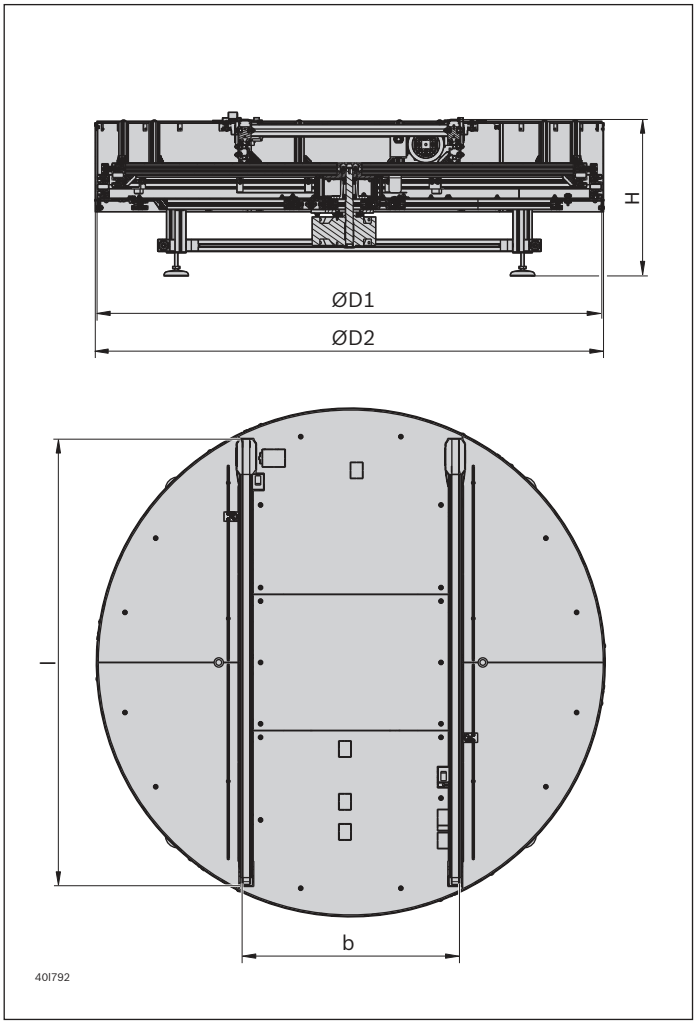
Material number			3842998875
Max. total workpiece pallet weight	m_G	kg	240
Required compressed air connection	p	bar	5 ... 6
Push in air connection	Ø	mm	6
Rotary movement time		s	90°: 4 180°: 7 270°: 10

Dimensions

Rotary unit without protective cover

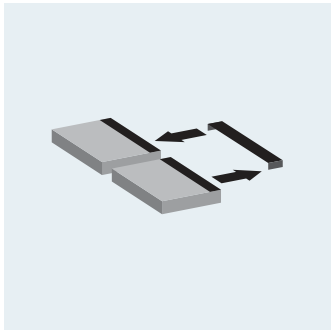


Rotary unit with protective cover



Track width in direction of transport b (mm)	Length Belt section l (mm)	Ø without Protective cover D1 (mm)	Ø with Protective cover D2 (mm)	Transportation height H (mm)
800	1646	1860	1867	585 ... 1400
1040	1503	1860	1867	585 ... 1400
1200	1376	1860	1867	585 ... 1400

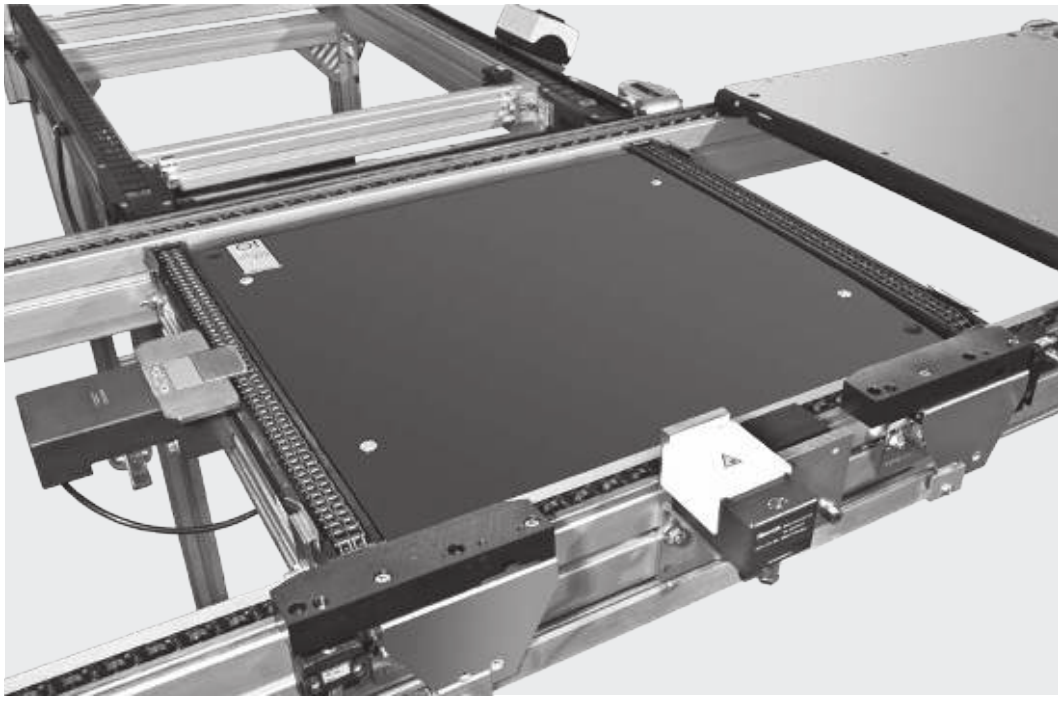
Distance of connecting belt sections and design of the size, see p. 4-41

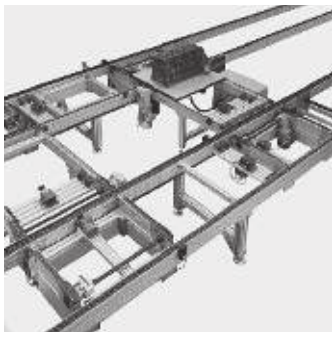


Transverse conveyor

5

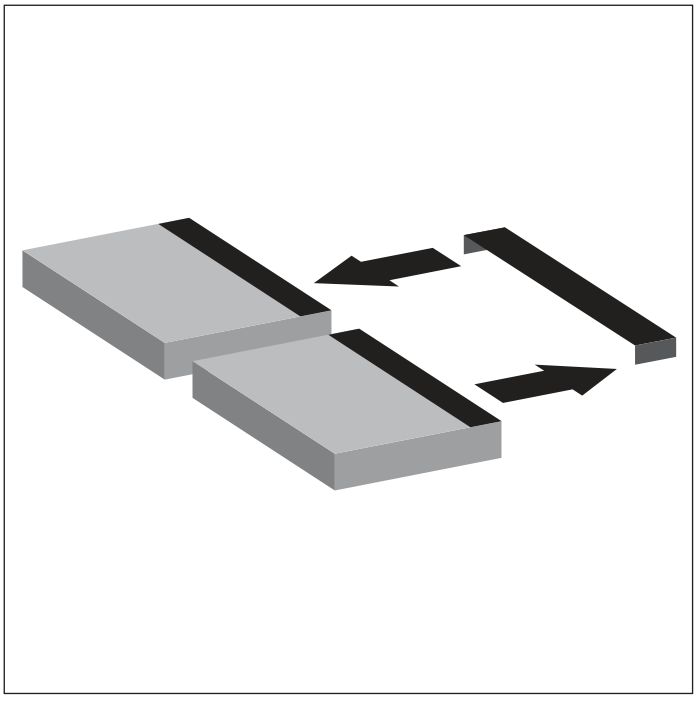
Selection of transverse conveyors **5-2**





Selection of transverse conveyors

Transverse conveyors are used to change the workpiece pallet direction of transport. They are used to create a branch in the workpiece pallet paths to the individual processing stations. The orientation of the workpiece pallet relative to its conveying direction changes when it is moved from longitudinal conveying to transverse conveying and vice versa.



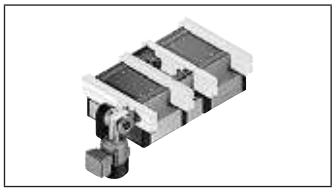
Transverse conveyors can be implemented in the TS 2*plus* transfer system in two different ways:

- **Electrical transverse conveyors EQ 2/...** (see p. 5-4) (e.g., version EQ 2/TR with roller section), or
- **Lift transverse units HQ 2/...** (see p. 5-24) in combination with belt sections BS 2 or conveyor units

The electrical transverse conveyors EQ 2/... are complete macro modules. They consist of one or two HQ 2/... and additional transverse conveyor sections (BS 2.../RS 2).

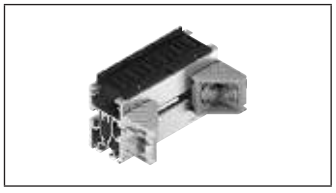
The transverse section transport level is 10 mm above the transport level of the longitudinal section.

Notice: The lift transverse units lift the workpiece pallet out of the longitudinal section and transport it transversely into the transverse section, which is situated 10 mm higher.



Electrical transverse conveyors EQ 2/... **5-4**

Lift transverse units HQ 2/... **5-24**

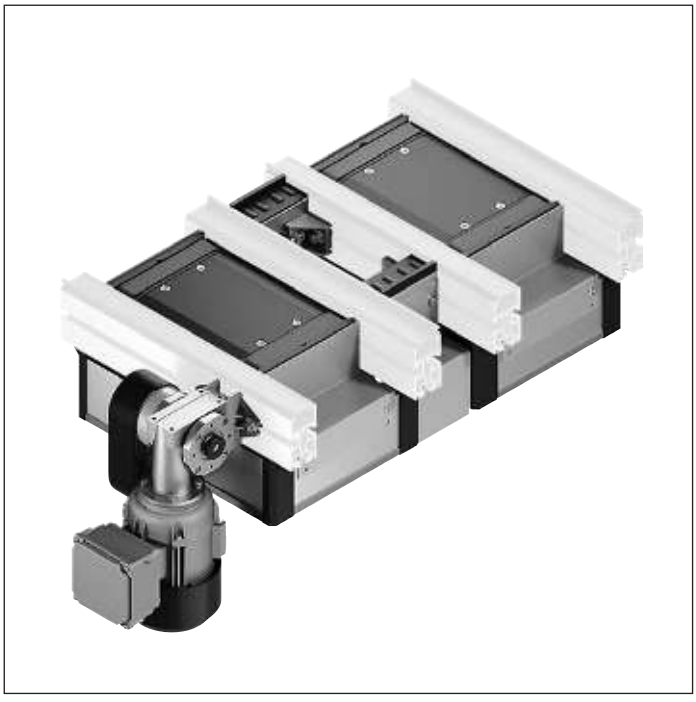


Roller sections RS 2/... **5-92**

Electrical transverse conveyors EQ 2/...

Electrical transverse conveyors EQ 2 are used to move workpiece pallets from a longitudinal section onto a second, parallel longitudinal section. EQ 2s are complete macro modules which consist of one or two lift transverse units HQ 2 and one transverse conveyor section (BS 2.../RS 2).

All the transport belts are driven by a motor.



For the transfer system TS 2*plus*, electrical transverse conveyors are available with the following transport function:

EQ 2/TR

Moving workpiece pallets from one longitudinal section to a second one, which runs parallel a small distance away, across a roller section.

EQ 2/T

Moving workpiece pallets from one longitudinal section to a second one, which runs parallel a large distance away, across a transverse belt section.

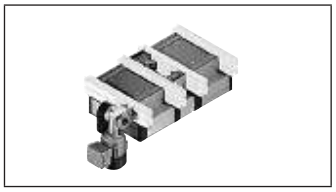
EQ 2/TE

Moving pallets from a longitudinal section to a transverse belt section and vice versa.

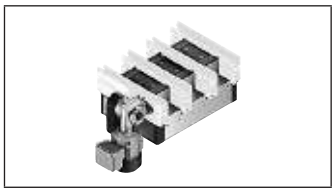
Notice: Accumulation on the HQ 2... is not permitted.

All EQ 2 designs are delivered with pneumatic connections, optionally for the center and top lift position, or for the bottom, center and top lift position. Pneumatic valves are not included in the scope of delivery.

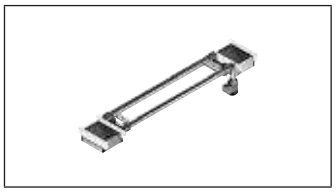
The pneumatic valves are designed so that the rest position acts as an exhaust position, moving the lift transverse units to the center position in case of a pressure drop. In the center position, the workpiece pallets are stopped by the lift transverse unit. This function provides increased safety and ensures easier commissioning.



Electrical transverse conveyor EQ 2/TR... **5-6**
160 x 160 ... 800 x 480

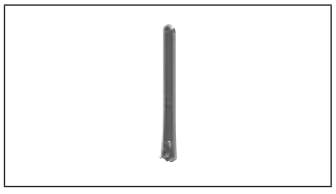


Electrical transverse conveyor EQ 2/TR-90... **5-10**
160 x 160; 240 x 160



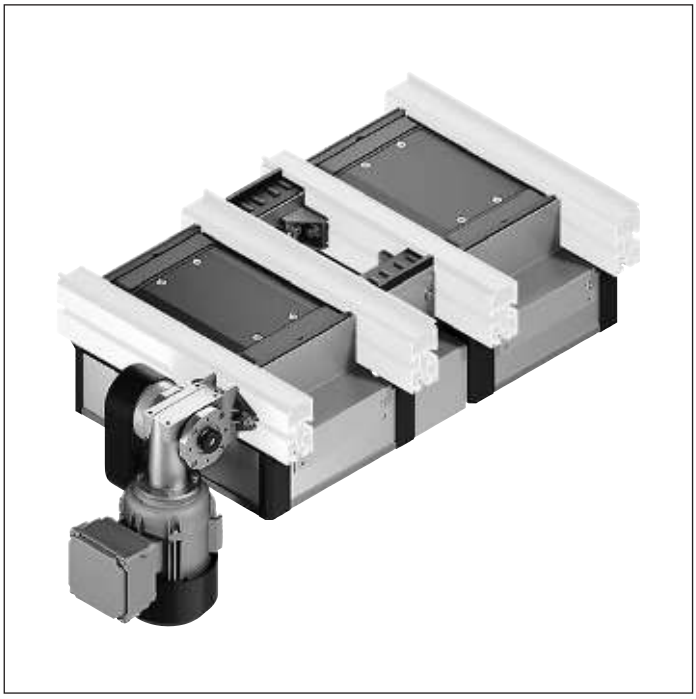
Electrical transverse conveyor EQ 2/T... **5-14**
160 x 160 ... 800 x 480

Electrical transverse conveyor EQ 2/TE... **5-18**
160 x 160 ... 800 x 480



Assembly tool **5-22**

Electrical transverse conveyor EQ 2/TR...



- Complete macro module for connecting two parallel longitudinal sections at a short distance from each other
- In tandem design with roller section RS 2 at a distance of a = 45 ... 135 mm
- Size 2 with two lifting cylinders from ≥ 480 x 480 mm
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Suspended motor mounting only. Other motor mounting variants available on request
- Can be combined with workpiece pallets WT 2/E, WT 2, WT 2/F and WT 2/LS (only with version LS)

Notice:
- Reversible operation possible
- Accumulation operation not permitted

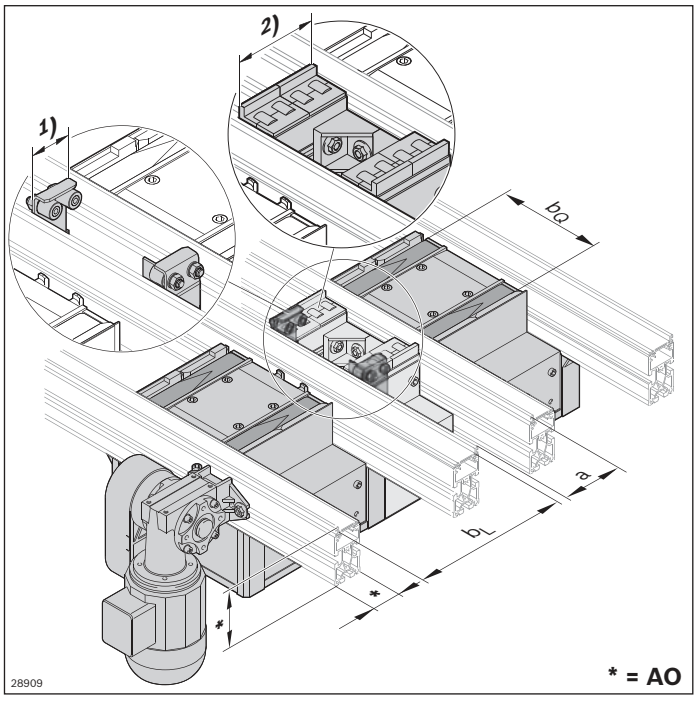
Required accessories
- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112

Recommended accessories
- Damper DA 2/60 (see p. 8-68) for outfeeding workpiece pallets at v_N > 9 m/min
- Rockers WI 2/... (see p. 8-144ff), WI/M (s. S. 8-138) and dampers DA 2/60 (see p. 8-68), DA 2/100-C for BG 2 (s. p. 8-74) for infeeding the workpiece pallet
- Assembly tool (see p. 5-22) for simple tensioning of the connection belt toothed belt

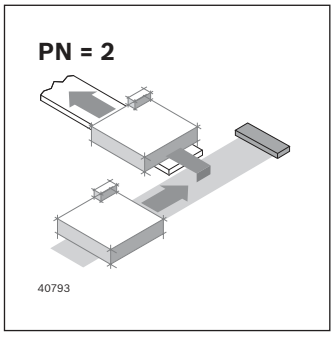
Scope of delivery
- Incl. fastening material
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.
- Protective case

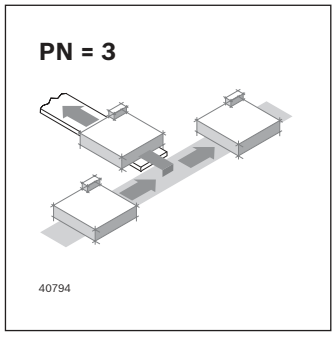
Condition on delivery
- Lift transverse units HQ 2/O and HQ 2/T assembled
- Connection kit
- Motor mounting kit, drive motor enclosed
- Roller section with roller elements
- Protective case, not assembled

Ordering information



1 = Intermediate section with roller:
applies to a = 45
applies to a = 90 and b_L = 240 mm
2 = roller section:
applies to a = 90 and b_L > 240 mm
applies to a = 135 and b_L ≥ 320 mm





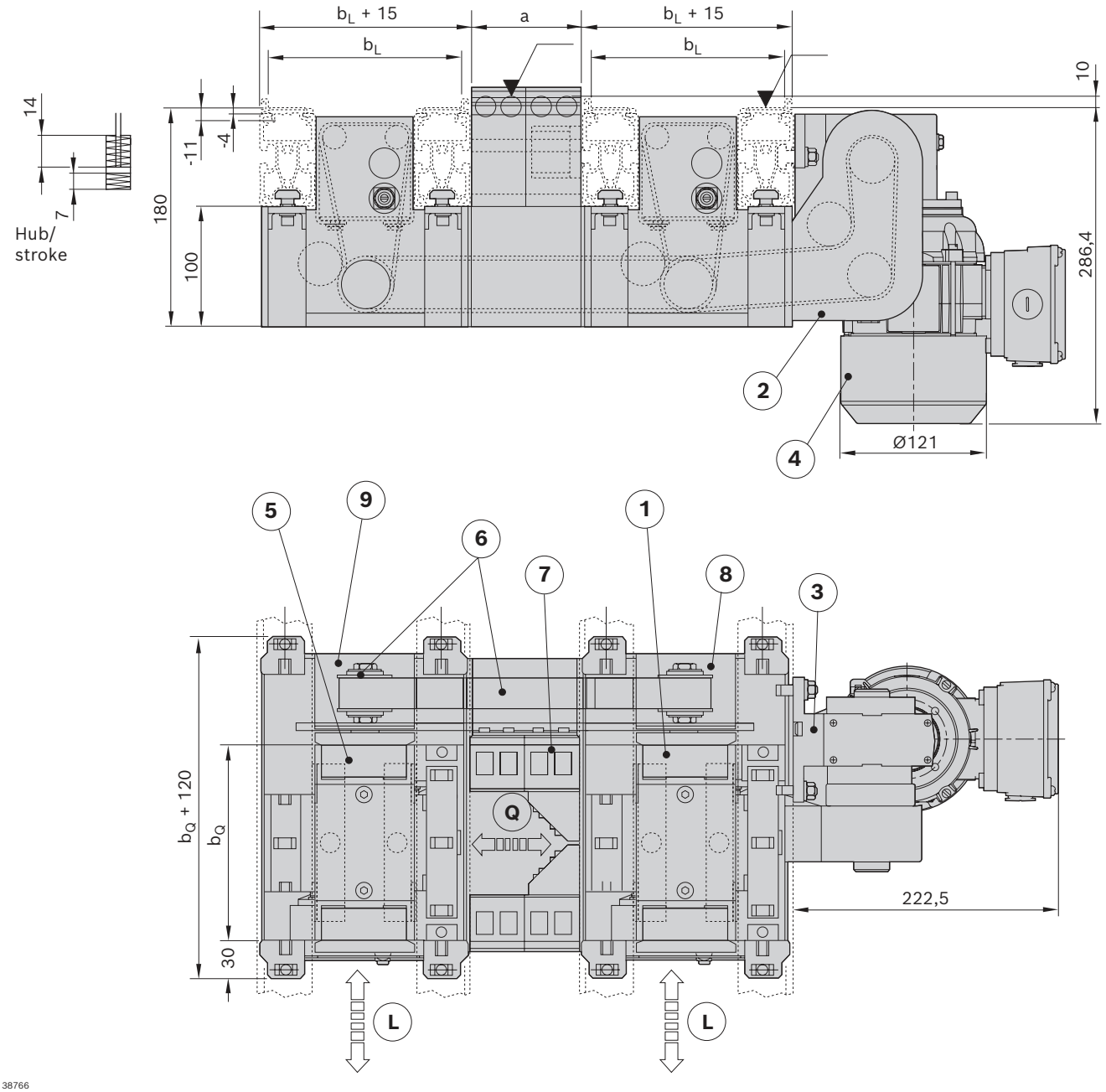
Material number		**3842999894 EQ 2/TR**	**3842999040 EQ 2/TR LS**
b_Q (mm)	Track width in the transverse conveyor	160; 240; 320; 400; 480; 640; 800	
b_L (mm)	Track width in the longitudinal conveyor	160; 240; 320; 400; 480	
b_Q x b_L (mm x mm)	Combination options	BG 1: 160 x 160; 240; 320 240 x 160: 240; 320; 400 320 x 160; 240; 320; 400 400 x 240; 320; 400; 480 480 x 320 BG 2: 480 x 400; 480 640 x 400; 480 800 x 400; 480	
AO	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2	
PN	Pneumatic equipment	2[1] ; 3[2]	
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	
a (mm)	Distance between conveyors	45; 90[3]; 135[3]	

[1] PN = 2: Upper and middle lift position
[2] PN = 3: Upper, middle and lower lift position
[3] a = 90 mm only when b_L ≥ 240 mm; a = 135 mm only when b_L ≥ 320 mm

Technical data

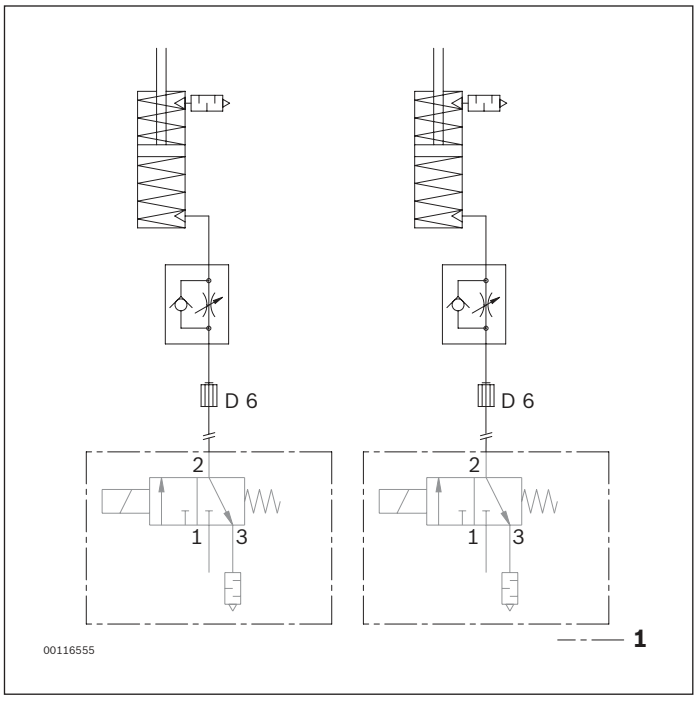
Material number			**3842999894 EQ 2/TR**	**3842999040 EQ 2/TR LS**
Max. total workpiece pallet weight	m_G	kg	30	30
ESD			Yes	Yes
Size	BG		BG 1; BG 2	BG 1; BG 2
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	6	6

Dimensions



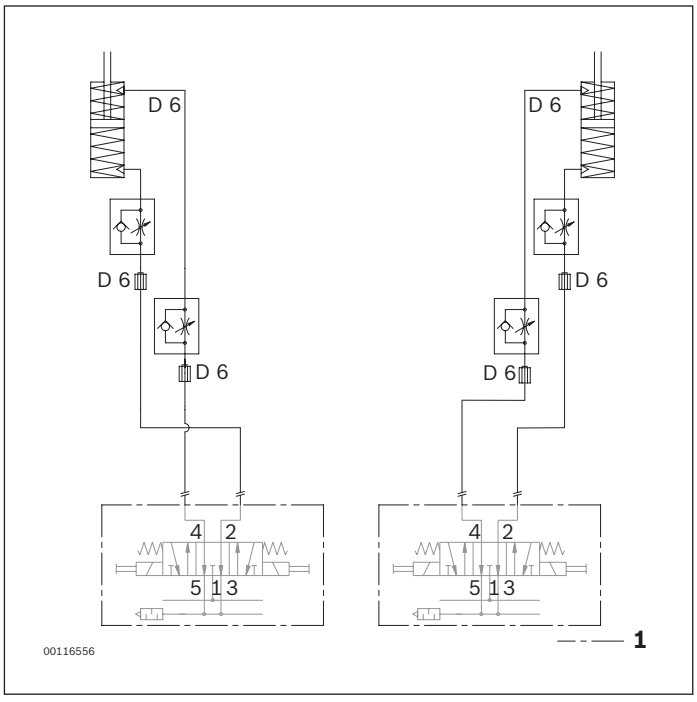
L Longitudinal conveyor conveying direction
Q Conveying direction of transverse conveyor
1 Lift transverse unit HQ 2/O
2 Connection kit
3 Motor mounting kit
4 Drive motor
5 Lift transverse unit HQ 2/T
6 Drive kit
7 Intermediate section with roller elements and protective case
8 Protective case for lift transverse unit HQ 2/O combined with HQ 2/T
9 Protective case for lift transverse unit HQ 2/T

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 1



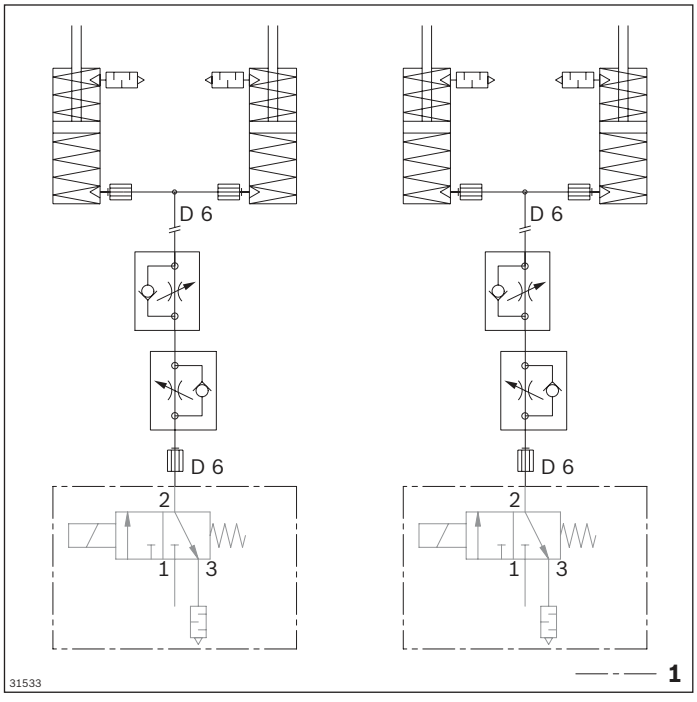
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 1



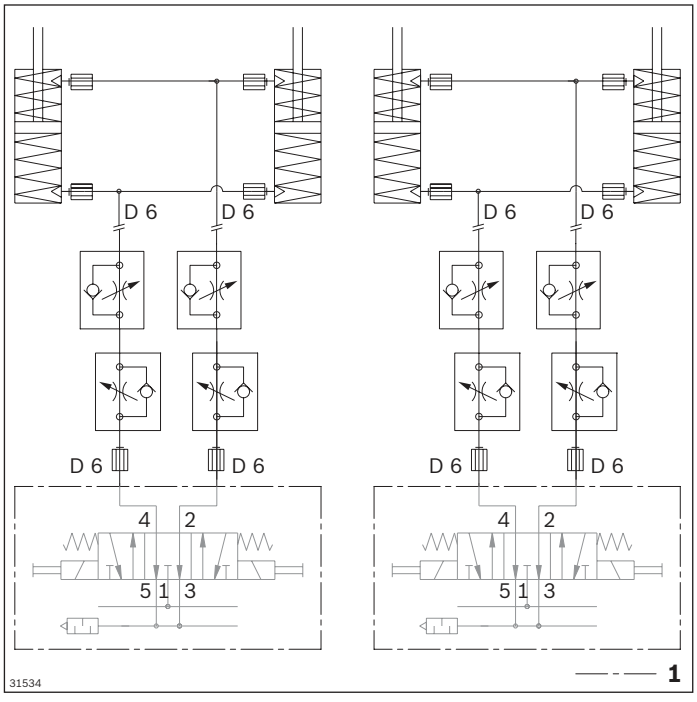
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 2



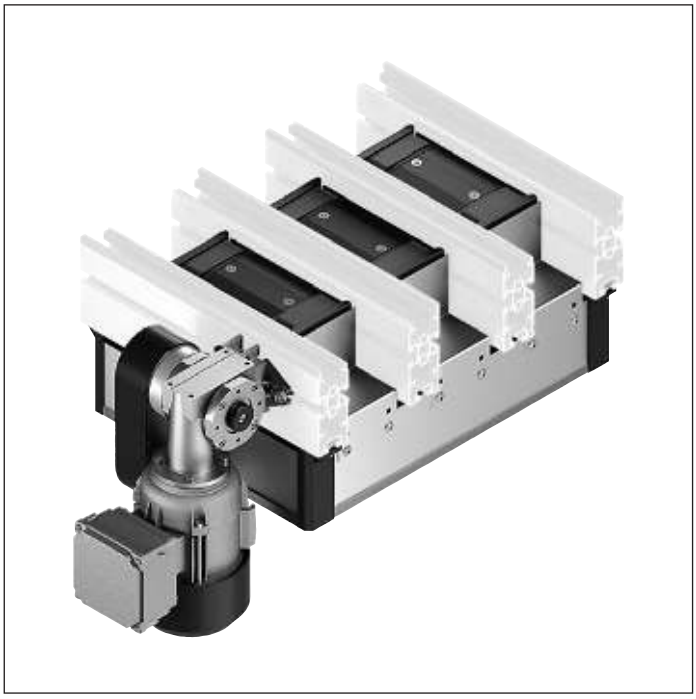
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 2



1 Not included in the scope of delivery

Electrical transverse conveyor EQ 2/TR-90...



- Complete macro module for connecting two parallel longitudinal sections at a distance of 90 mm from each other
- With driven intermediate section
- Modular unit with three lifting cylinders
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2, WT 2/E and WT 2/LS (only with version LS)

Notice:
- Reversible operation possible
- Accumulation operation not permitted

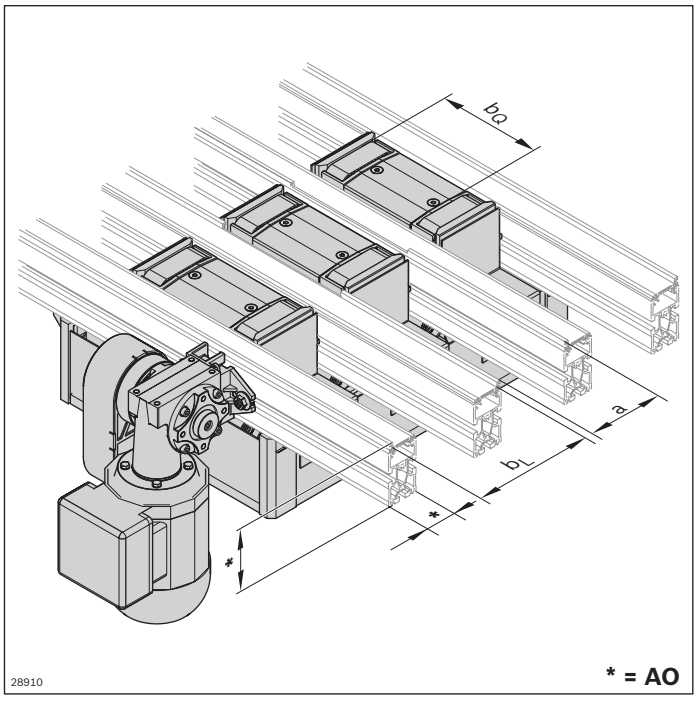
Required accessories
- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112

Recommended accessories
- Damper DA 2/60 (see p. 8-68), for outfeeding workpiece pallets WT 2 and WT 2/E at v_N > 9 m/min
- Rocker WI 2/... (see p. 8-144ff) WI/M (see p. 8-138) and damper DA 2/60 (see p. 8-68) for infeeding the workpiece pallets WT 2 and WT 2/E
- Assembly tool (see p. 5-22) for simple tensioning of the connection belt toothed belt

Scope of delivery
- Incl. fastening material
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.
- Connection kit
- Protective case

Condition on delivery
- Lift transverse units HQ 2/O and HQ 2/T assembled
- Drive kit, assembled
- Motor mounting kit, drive motor enclosed
- Connection kit included
- Protective case, not assembled

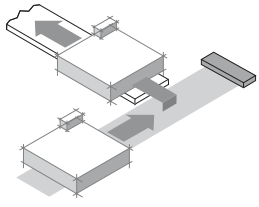
Ordering information



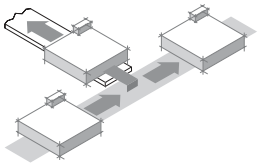
Material number		3842998289 EQ 2/TR-90	3842999041 EQ 2/TR-90 LS
b_Q (mm)	Track width in the transverse conveyor	160; 240	
b_L (mm)	Track width in the longitudinal conveyor	160	
b_Q x b_L (mm x mm)	Combination options	160 x 160 240 x 160	
AO	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2	
PN	Pneumatic equipment	2[1] ; 3[2]	
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	

[1] PN = 2: Upper and middle lift position
[2] PN = 3: Upper, middle and lower lift position

PN = 2



PN = 3

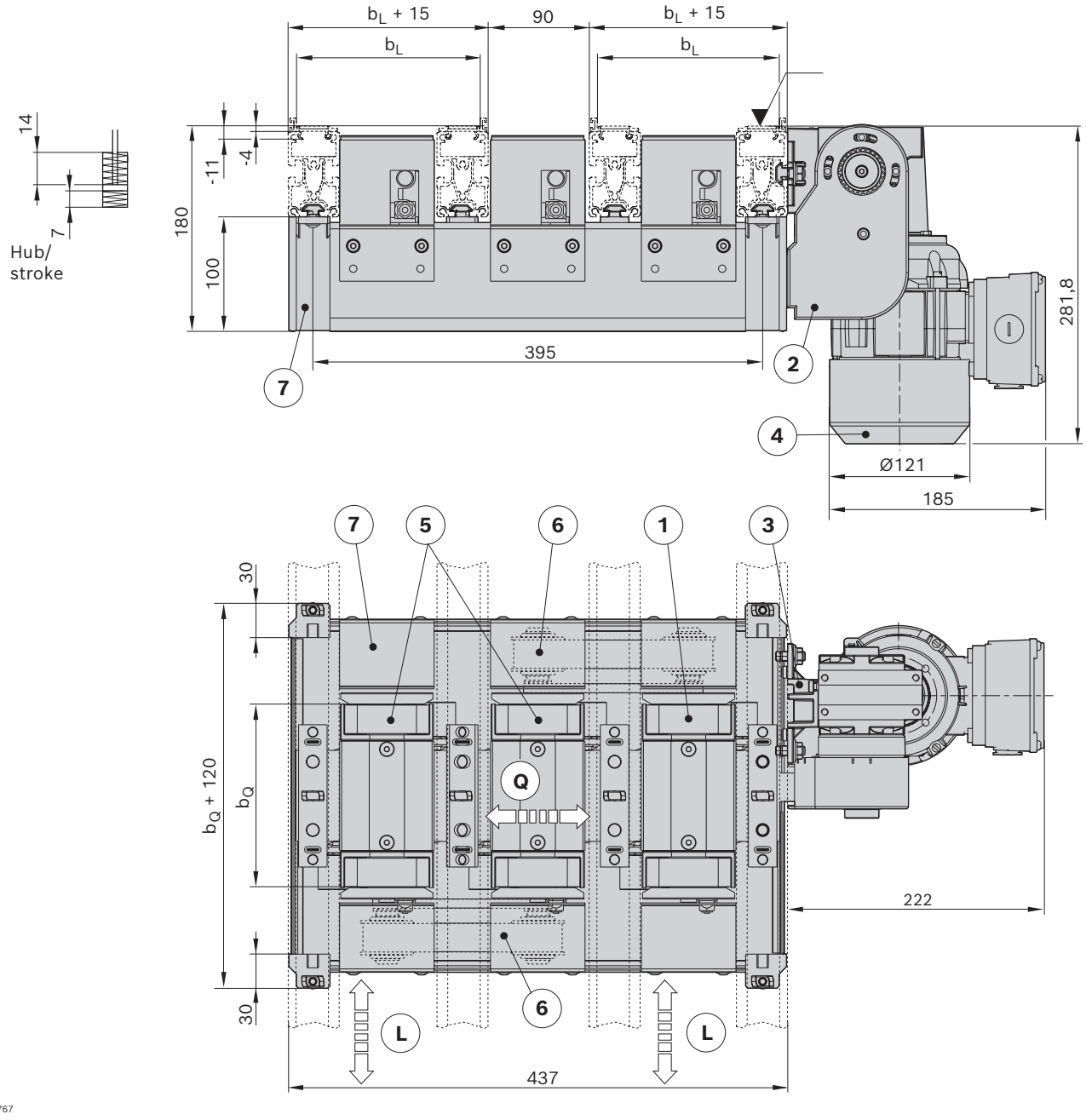


Technical data

Material number			3842998289 EQ 2/TR-90	3842999041 EQ 2/TR-90 LS
Max. total workpiece pallet weight	m_G	kg	30	30
ESD			Yes	Yes
Distance between conveyors	a	mm	90	90
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	6	6

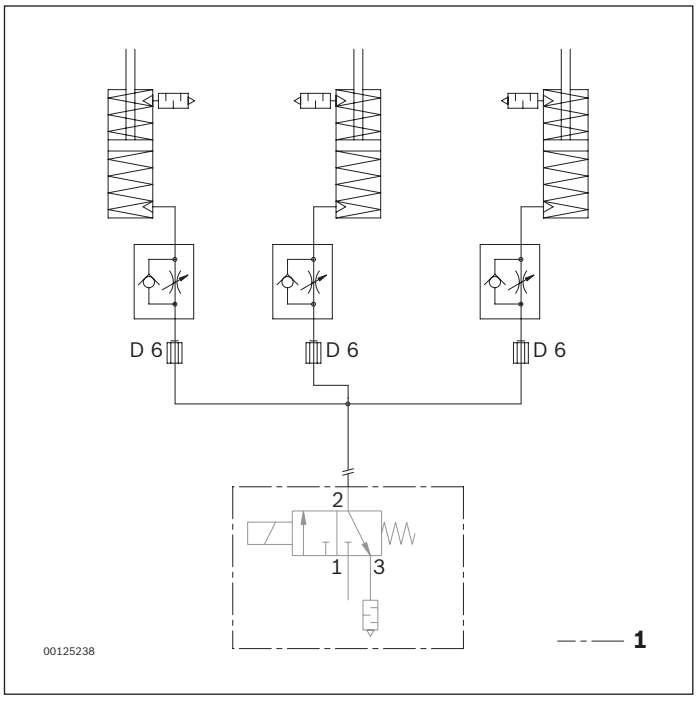
Dimensions

AO = 0 referenced



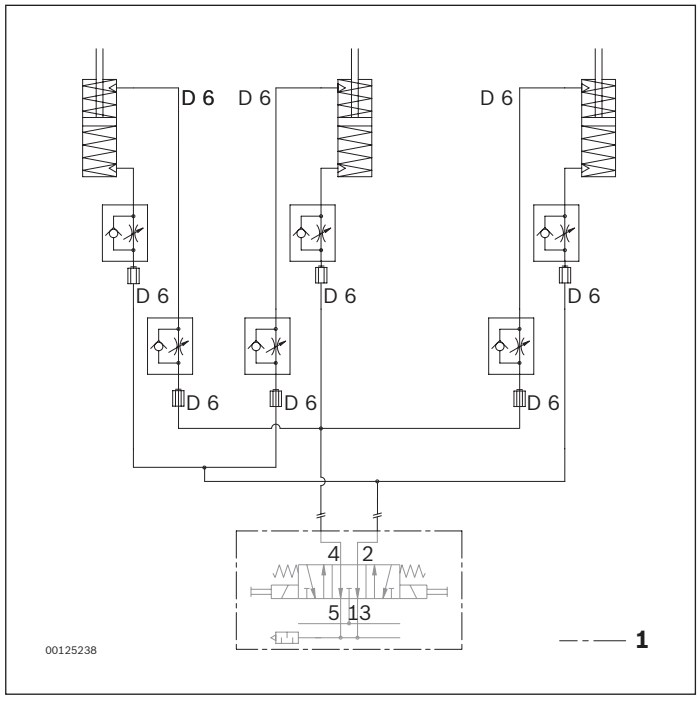
L Longitudinal conveyor conveying direction
Q Conveying direction of transverse conveyor
1 Lift transverse unit HQ 2/O
2 Connection kit
3 Motor mounting kit
4 Drive motor
5 Lift transverse unit HQ 2/T
6 Drive kit
7 Protective case

Circuit diagram for unit with pneumatic equipment for two positions PN = 2



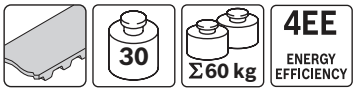
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3



1 Not included in the scope of delivery

Electrical transverse conveyor EQ 2/T...



- Pre-assembled module for connecting two parallel longitudinal sections
- Tandem design with driven belt section for greater distances from 320 mm
- Size 2 from ≥ 480 x 480 mm with two lifting cylinders per lift transverse unit
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2, WT 2/E, WT 2/F and WT 2/LS (only with version LS)

Notice:

- Reversible operation possible
- Accumulation operation not permitted on the lift transverse units.

Required accessories

- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112

Recommended accessories

- Damper DA 2/60 (see p. 8-68) for outfeeding workpiece pallets at v_N > 9 m/min
- Rockers WI 2/... (see p. 8-144ff), WI/M (see p. 8-138) and DA 2/60 (see p. 8-68), DA 2/100-C for BG 2 (see p. 8-74) for infeeding the workpiece pallet
- Assembly tool (see p. 5-22) for simple tensioning of the connection belt toothed belt

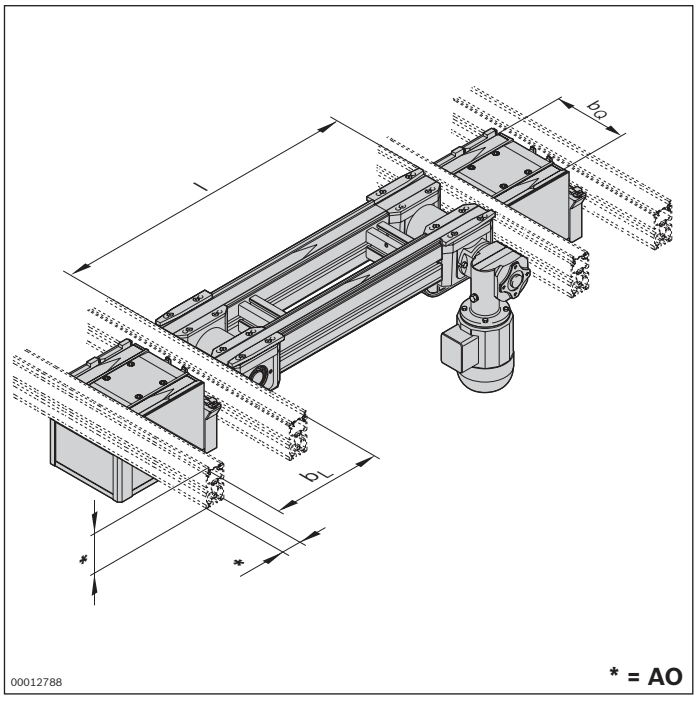
Scope of delivery

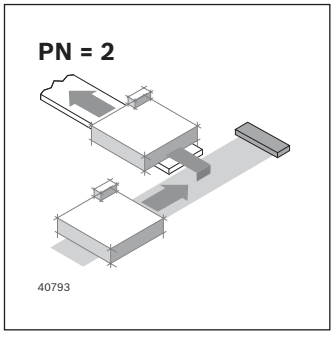
- Incl. fastening material
- 2x HQ 2/O
- 1x tandem design belt section BS 2/T
- 2x connection kit
- 2x protective case SK 2/B
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.

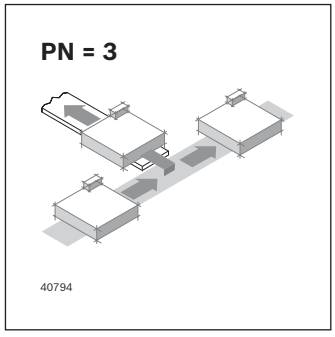
Condition on delivery

- Pre-assembled in modular units

Ordering information







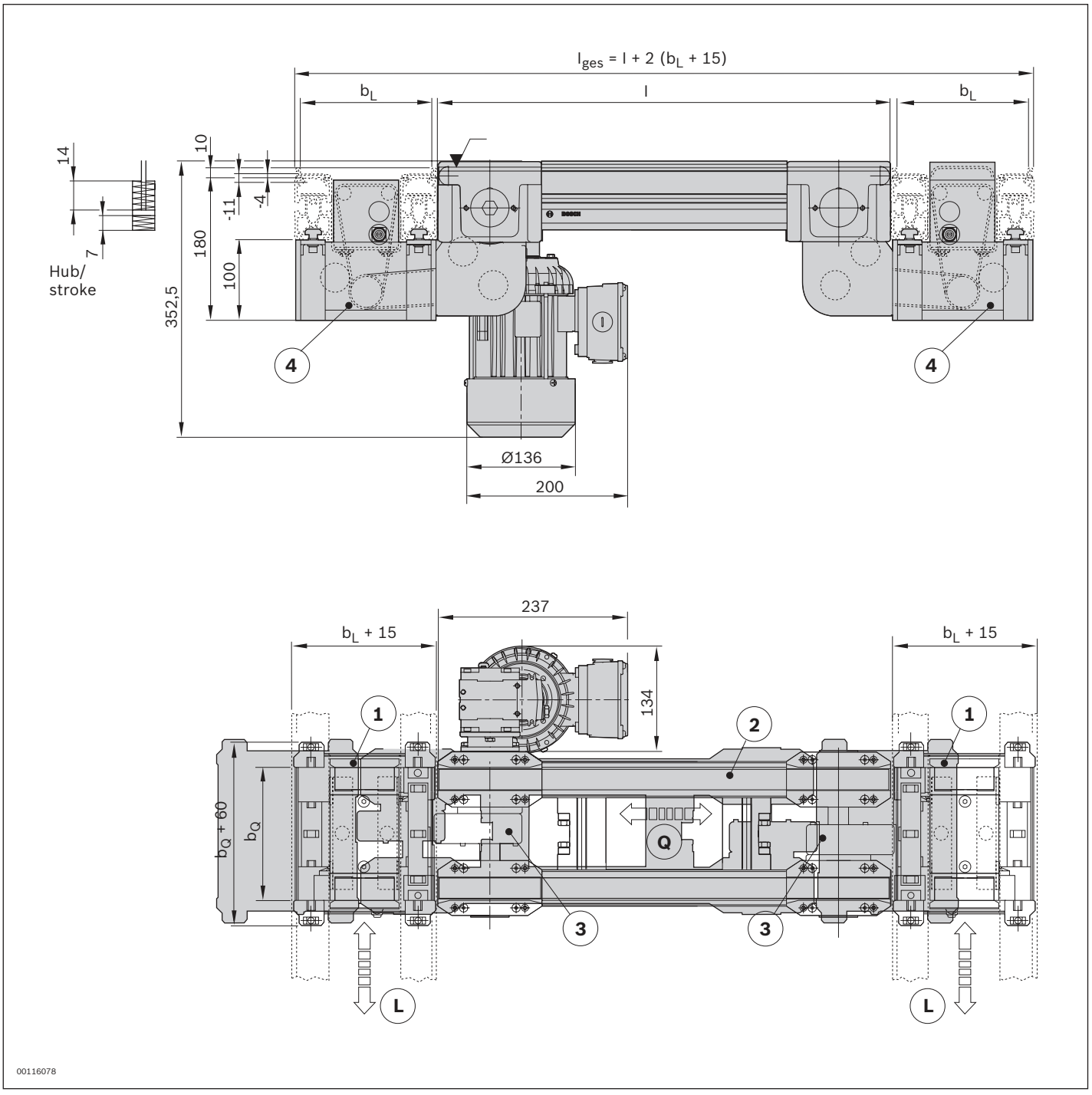
Material number		3842999895 EQ 2/T	3842999038 EQ 2/T LS
b_Q (mm)	Track width in the transverse conveyor	160; 240; 320; 400; 480; 640; 800	
b_L (mm)	Track width in the longitudinal conveyor	160; 240; 320; 400; 480	
b_Q x b_L (mm x mm)	Combination options	BG 1: 160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400 400 x 240; 320; 400 480 x 320 BG 2: 400 x 480 480 x 400; 480 640 x 400; 480 800 x 400; 480	
l (mm)	Length	320 ... 6000	
AO	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2	
PN	Pneumatic equipment	2[1]; 3[2]	
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	
MA	Motor mounting R = right L = left M = center	R; L; M[3]	

[1] PN = 2: Upper and middle lift position
[2] PN = 3: Upper, middle and lower lift position
[3] MA = M when $b_Q \geq 320$ mm

Technical data

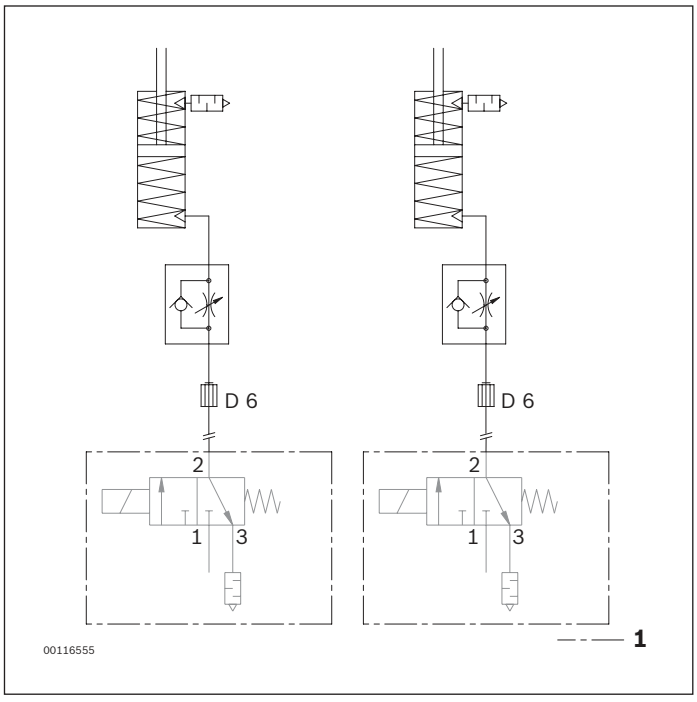
Material number			3842999895 EQ 2/T	3842999038 EQ 2/T LS
Max. section load in accumulation operation		kg	60	60
Max. total workpiece pallet weight	m_G	kg	30	30
ESD			Yes	Yes
Size	BG		BG 1; BG 2	BG 1; BG 2
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	6	6

Dimensions



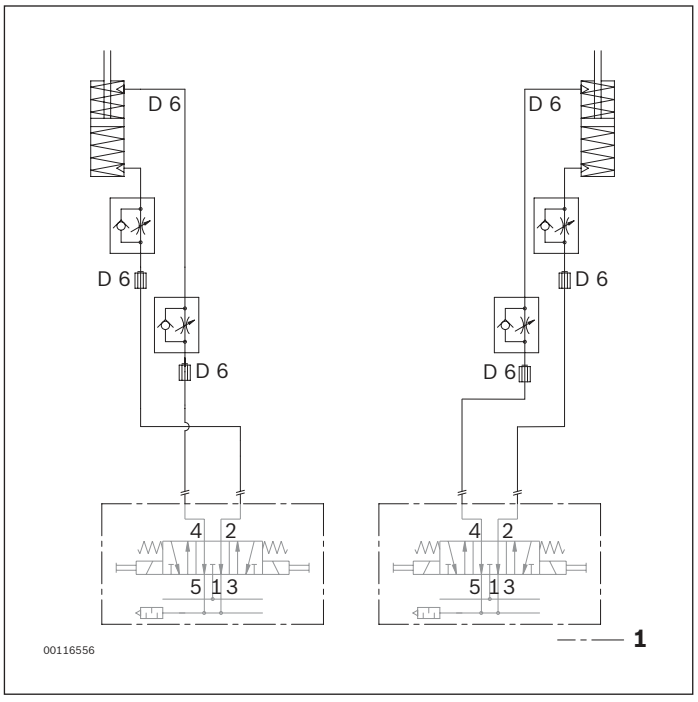
L Longitudinal conveyor conveying direction
Q Conveying direction of transverse conveyor
1 Lift transverse unit HQ 2/O
2 Tandem design belt section BS 2/T
3 Connection kit
4 Protective case

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 1



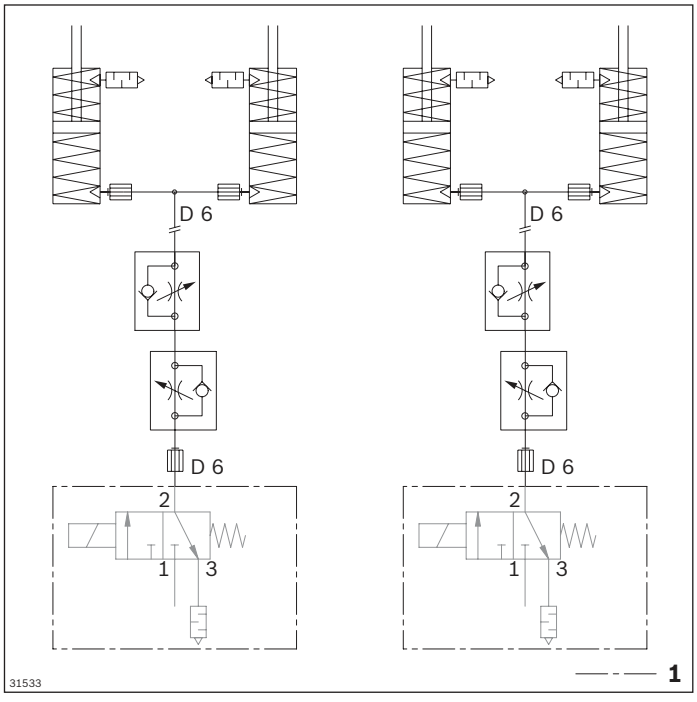
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 1



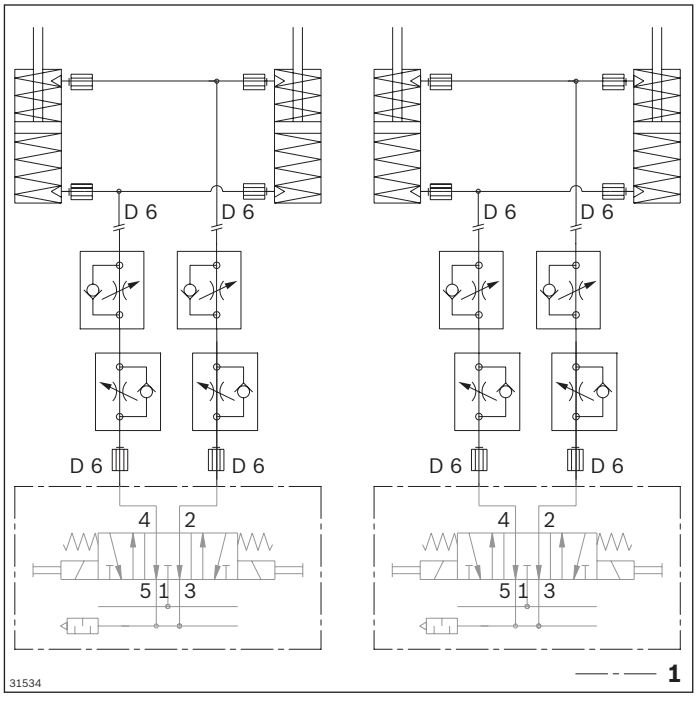
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 2



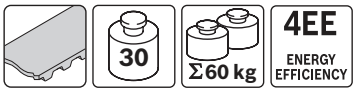
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 2



1 Not included in the scope of delivery

Electrical transverse conveyor EQ 2/TE...



- Pre-assembled assembly for branching off into a transverse section in which the second end does not lead to a further transverse section (dead end)
- Size 2 from ≥ 480 x 480 mm with two lifting cylinders per lift transverse unit
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with workpiece pallets WT 2/E, WT 2, WT 2/F and WT 2/LS (only with version LS)

Notice:
- Reversible operation possible
- Accumulation operation on the lift transverse unit is not permitted

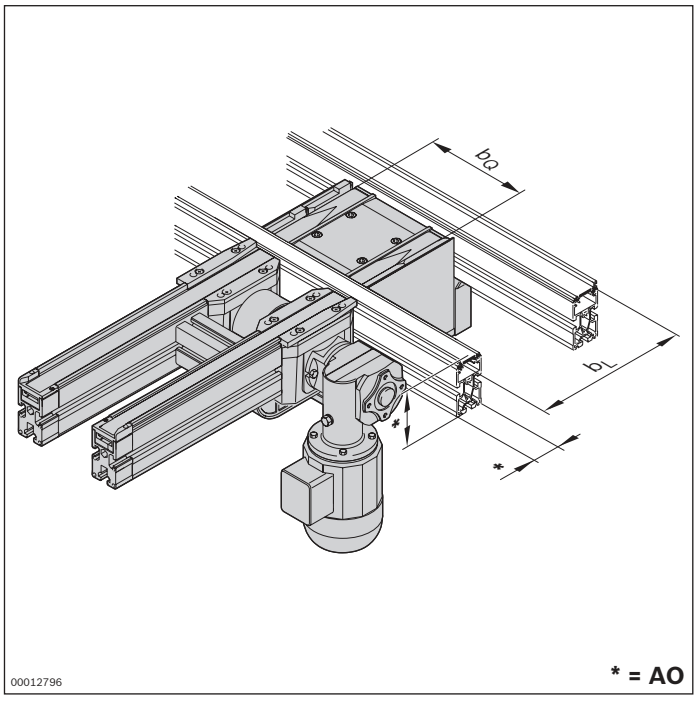
Required accessories
- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112

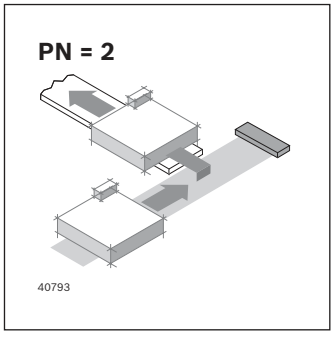
Recommended accessories
- Damper DA 2/60 (see p. 8-68) for outfeeding workpiece pallets WT 2, WT 2/F, WT 2/H or WT 2/F-H at v_N > 9 m/min
- Rockers WI 2 (see p. 8-144ff) or WI/M (see p. 8-138) and dampers DA 2/60 (see p. 8-68) or DA 2/100-C for BG 2 (see p. 8-74) for infeeding workpiece pallets
- Assembly tool (see p. 5-22) for simple tensioning of the connection belt toothed belt

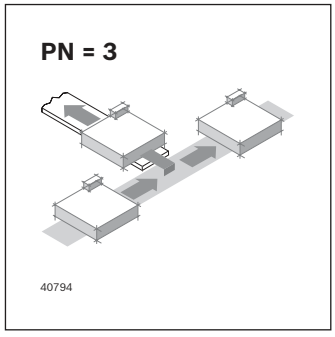
Scope of delivery
- 1x lift transverse unit HQ 2/O
- 1x belt section BS 2/TE
- 1x connection kit
- 1x protective case SK 2/B
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.

Condition on delivery
- Lift transverse unit HQ 2/O, assembled
- Belt section BS 2/TE, assembled
- Connection kit included
- Protective case, not assembled

Ordering information







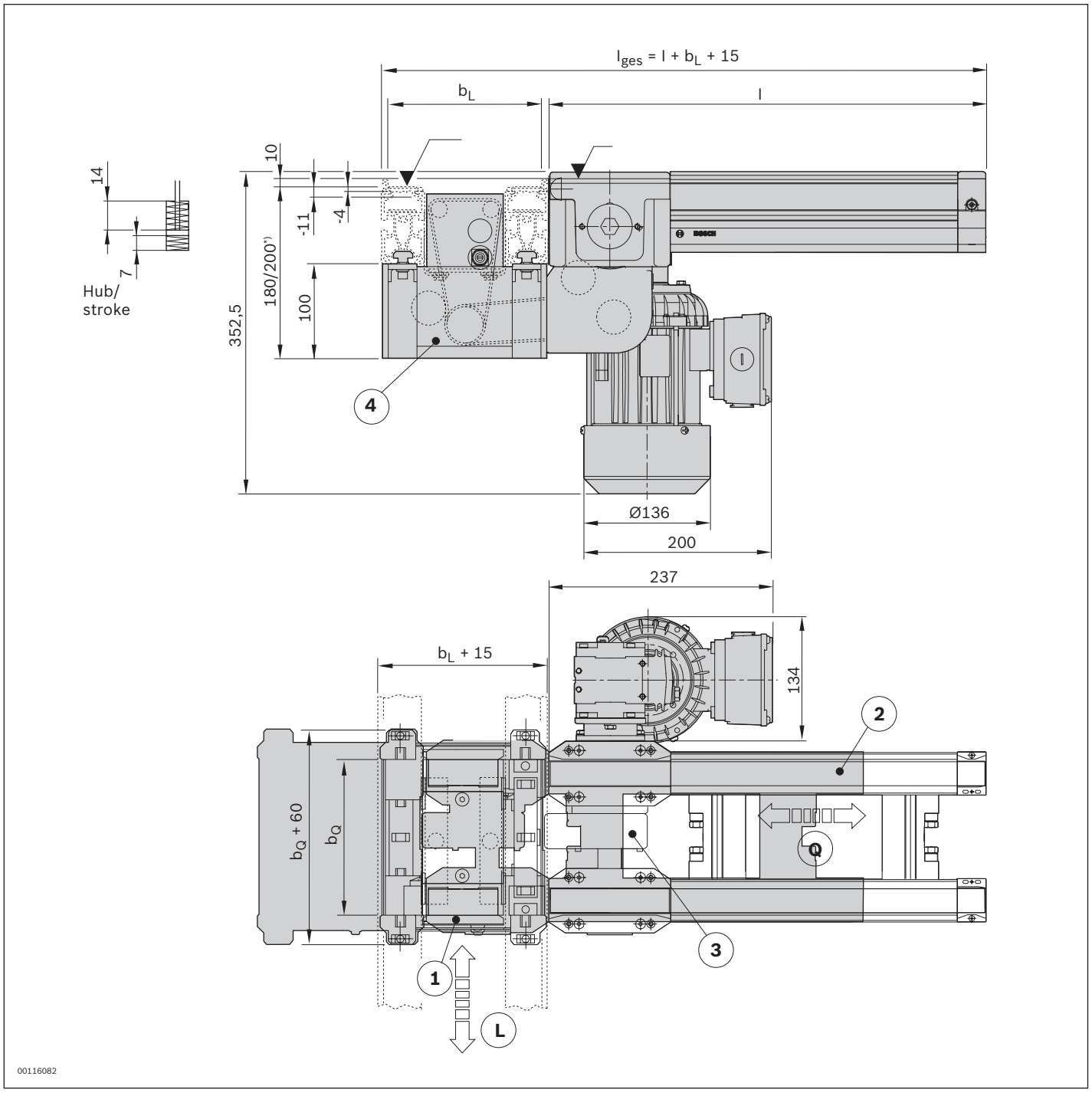
Material number		3842999896 EQ 2/TE	3842999039 EQ 2/TE LS
b_Q (mm)	Track width in the transverse conveyor	160; 240; 320; 400; 480; 640; 800	
b_L (mm)	Track width in the longitudinal conveyor	160; 240; 320; 400; 480	
b_Q x b_L (mm x mm)	Combination options	BG 1: 160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400 400 x 240; 320; 400; 480 480 x 320; 400 BG 2: 480 x 480 640 x 400; 480 800 x 400; 480	
l (mm)	Length	240 ... 6000	
AO	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2	
PN	Pneumatic equipment	2[1] ; 3[2]	
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	
MA	Motor mounting R = right L = left M = center	R; M[3]; L	

[1] PN = 2: Upper and middle lift position
[2] PN = 3: Upper, middle and lower lift position
[3] MA = M when $b_Q \geq 320$ mm

Technical data

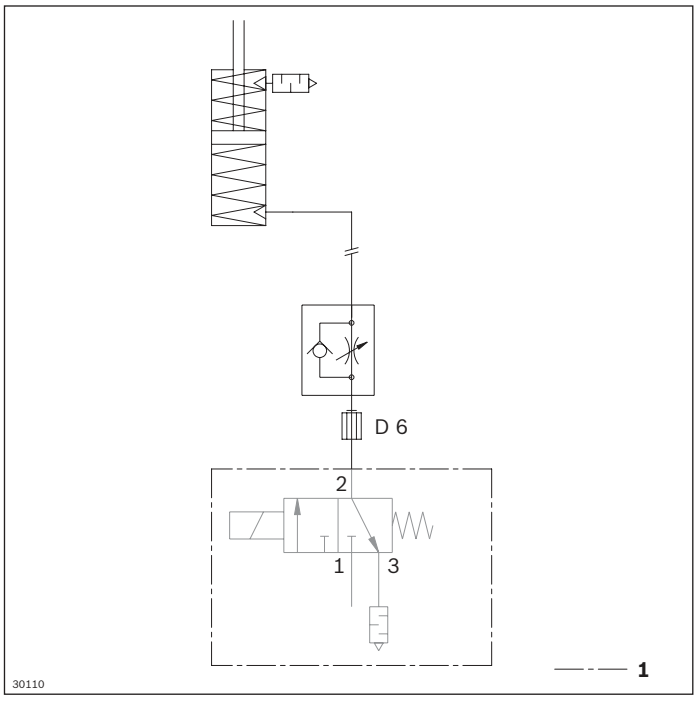
Material number			3842999896 EQ 2/TE	3842999039 EQ 2/TE LS
Max. section load in accumulation operation		kg	60	60
Max. total workpiece pallet weight	m_G	kg	30	30
ESD			Yes	Yes
Size	BG		BG 1; BG 2	BG 1; BG 2
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	6	6

Dimensions



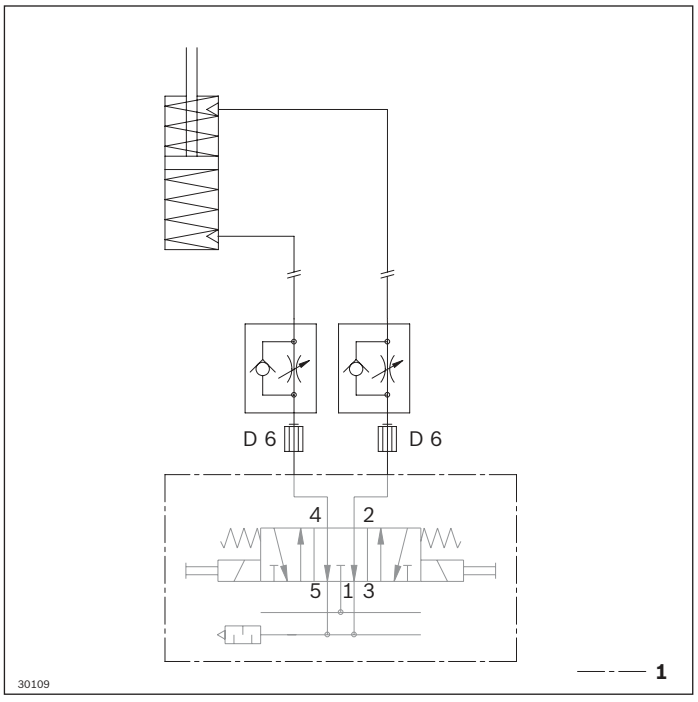
L Longitudinal conveyor conveying direction
Q Conveying direction of transverse conveyor
1 Lift transverse unit HQ 2/O
2 Belt section BS 2/TE
3 Connection kit
4 Protective case
*) 180 mm for 80 mm profile height, 200 mm for 100 mm profile height

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 1



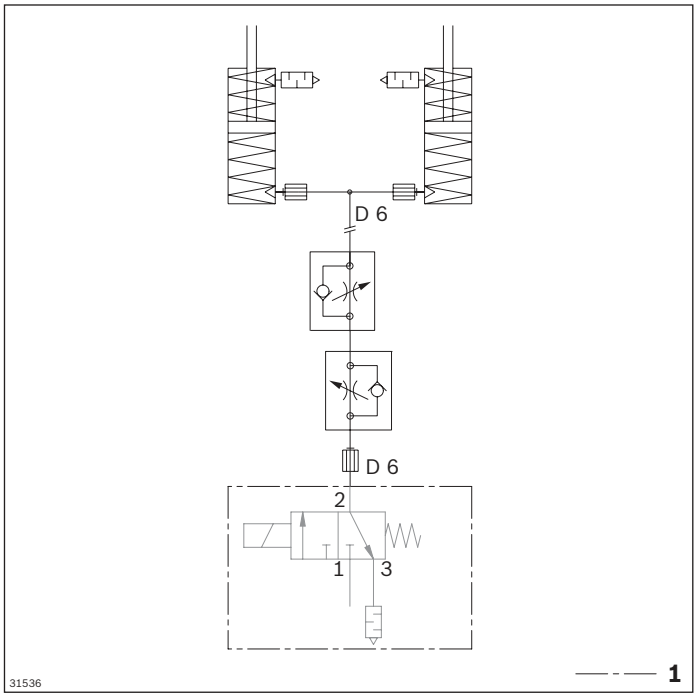
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 1



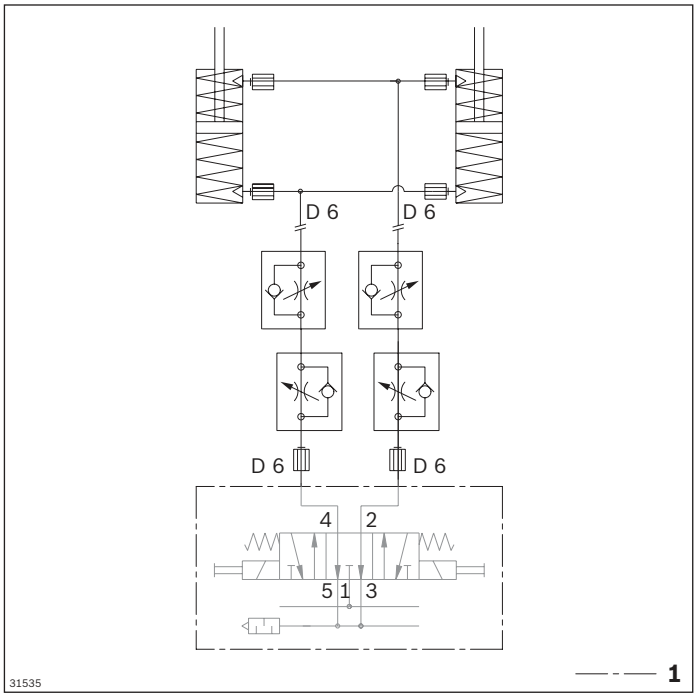
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 2



1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 2

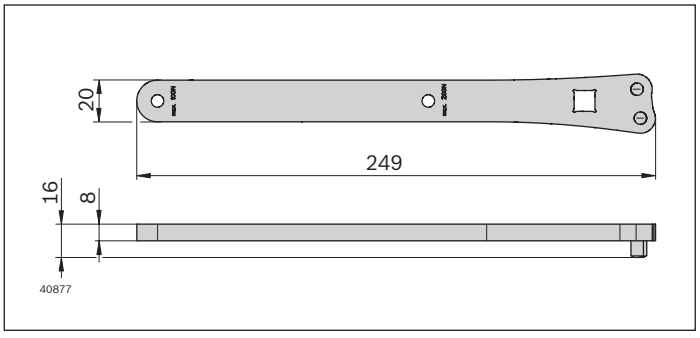


1 Not included in the scope of delivery

Assembly tool

- For simple tensioning of the connection belt toothed belt
- Use of a torque wrench or a spring balance is possible, thus exact tensioning is possible

Dimensions



Ordering information

Product description	Material number
Assembly tool	3842567664

Technical data

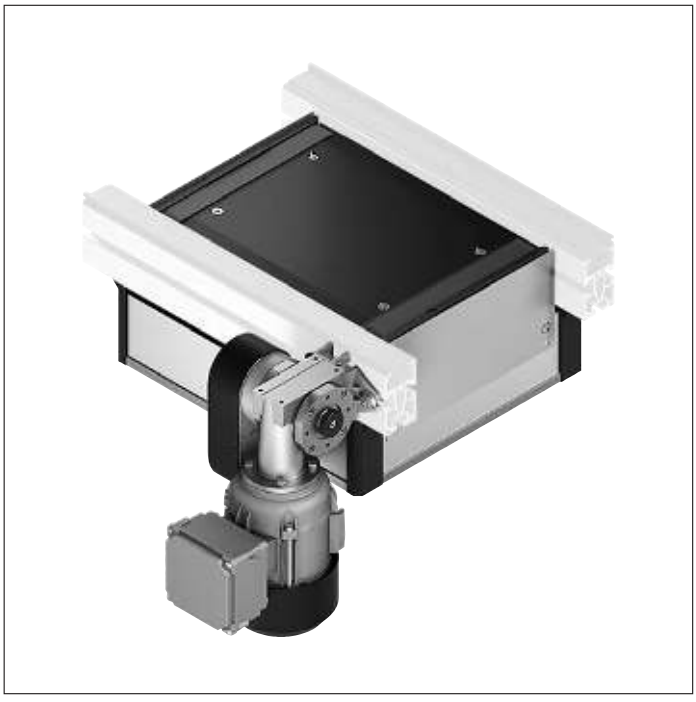
Material number	3842567664
Material specification	Steel; stainless

Lift transverse units HQ 2/...

The lift transverse units have to:

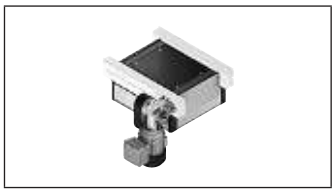
- Move the workpiece pallets from a longitudinal section to a transverse section
- Move the workpiece pallets from a transverse section onto a longitudinal section

Lift transverse units for overall workpiece pallet weights up to 240 kg are available for the transfer system TS 2*plus*.

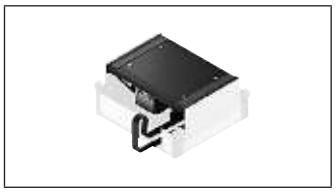


All lift transverse units have one thing in common – vertical pneumatic movement and horizontal transportation action. The vertical movement can be set in three positions:

- Spring-centered middle position
  (basic position, 4 mm below transport level).
  It serves as the transport position when the lug cam is lowered and as the locked position when the stop cam is raised
- Transverse conveyor position
  (10 mm above transport level of longitudinal conveyor)
- Lower transport position
  (11 mm below conveying level).
  In this low position a workpiece pallet is also released onto a longitudinal section when the stop cam is raised



Lift transverse units HQ 2/S 5-26
160 x 160 ... 800 x 480

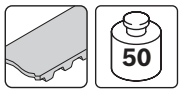


Lift transverse units HQ 2/O 5-30
160 x 160 ... 800 x 480

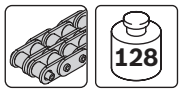
Lift transverse unit HQ 2/T... 5-43
160 x 160 ... 800 x 480

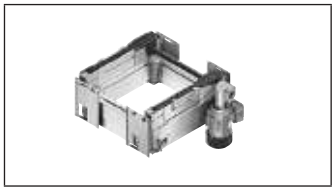
Lift transverse unit HQ 2/U... 5-50
160 x 160 ... 400 x 400; 480 x 320

Lift transverse unit HQ 2/U2... 5-54
400 x 400 ... 800 x 640

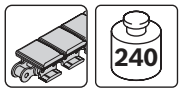


Lift transverse units HQ 2/U-H 5-58
240 x 240 ... 640 x 640

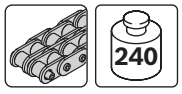




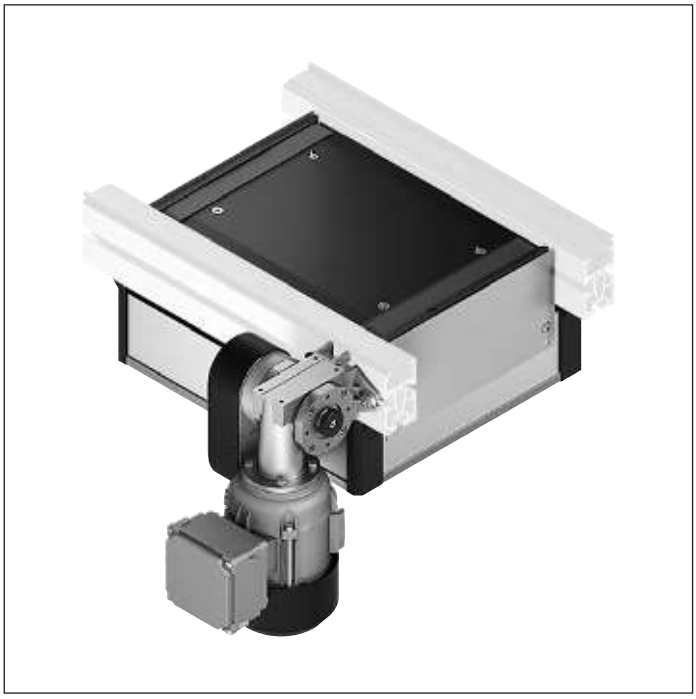
Lift transverse units HQ 2/C-H 5-67
480 x 640 ... 1200 x 1200



Lift transverse unit HQ 2/G-H 5-70
480 x 640 ... 1200 x 1200



Lift transverse unit HQ 2/S



- Lift transverse unit for feeding out from a longitudinal section into a transverse section and vice versa
- Low height with motor mounted on side. It is therefore suitable for the operation of double-deck conveyor sections
- In two sizes with one or two lifting cylinders
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with workpiece pallets WT 2/E, WT 2 and WT 2/F

Notice:
- Reversible operation possible
- Accumulation operation not permitted

Vertical movement is delivered by pneumatic cylinders. Two sizes are available:
Size 1 (BG 1) for total weights (workpiece pallet + load) up to 30 kg by one lifting cylinder.

Size 2 (BG 2) for total weights (workpiece pallet + load) up to 50 kg by two lifting cylinders for workpiece pallet dimensions from 400 x 480 mm.

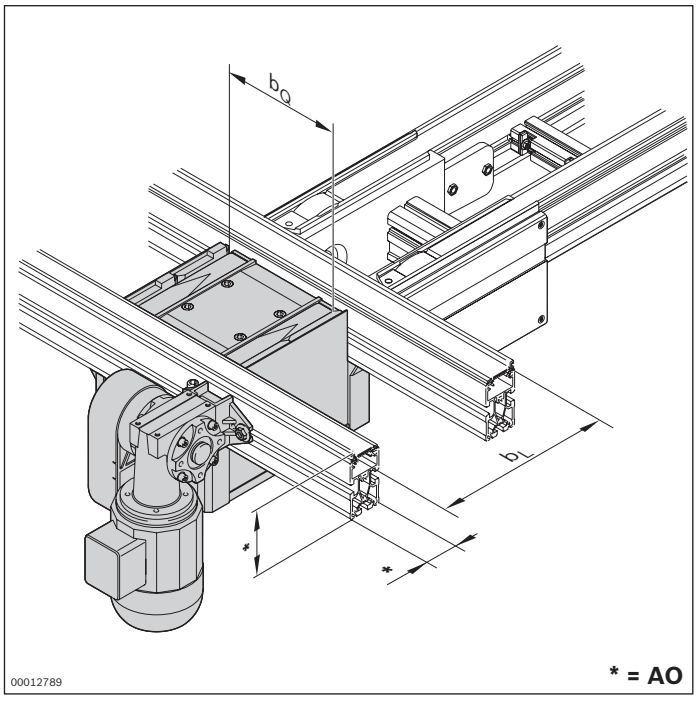
Required accessories
- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112ff

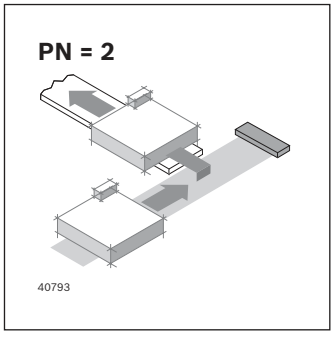
Recommended accessories
- Damper DA 2/60 (see p. 8-68) for outfeeding workpiece pallets at v_N > 9 m/min
- Rockers WI 2/... (see p. 8-144ff), WI/M (see p. 8-138) and dampers DA 2/60 (see p. 8-68), DA 2/100-C for BG 2 (see p. 8-74) for infeeding the workpiece pallet
- Assembly tool (see p. 5-22) for simple tensioning of the connection belt toothed belt

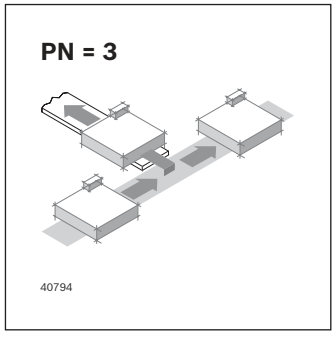
Scope of delivery
- Incl. fastening material
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.
- Protective case SK 2/B

Condition on delivery
- Pre-assembled in modular units
- Protective case, not assembled

Ordering information







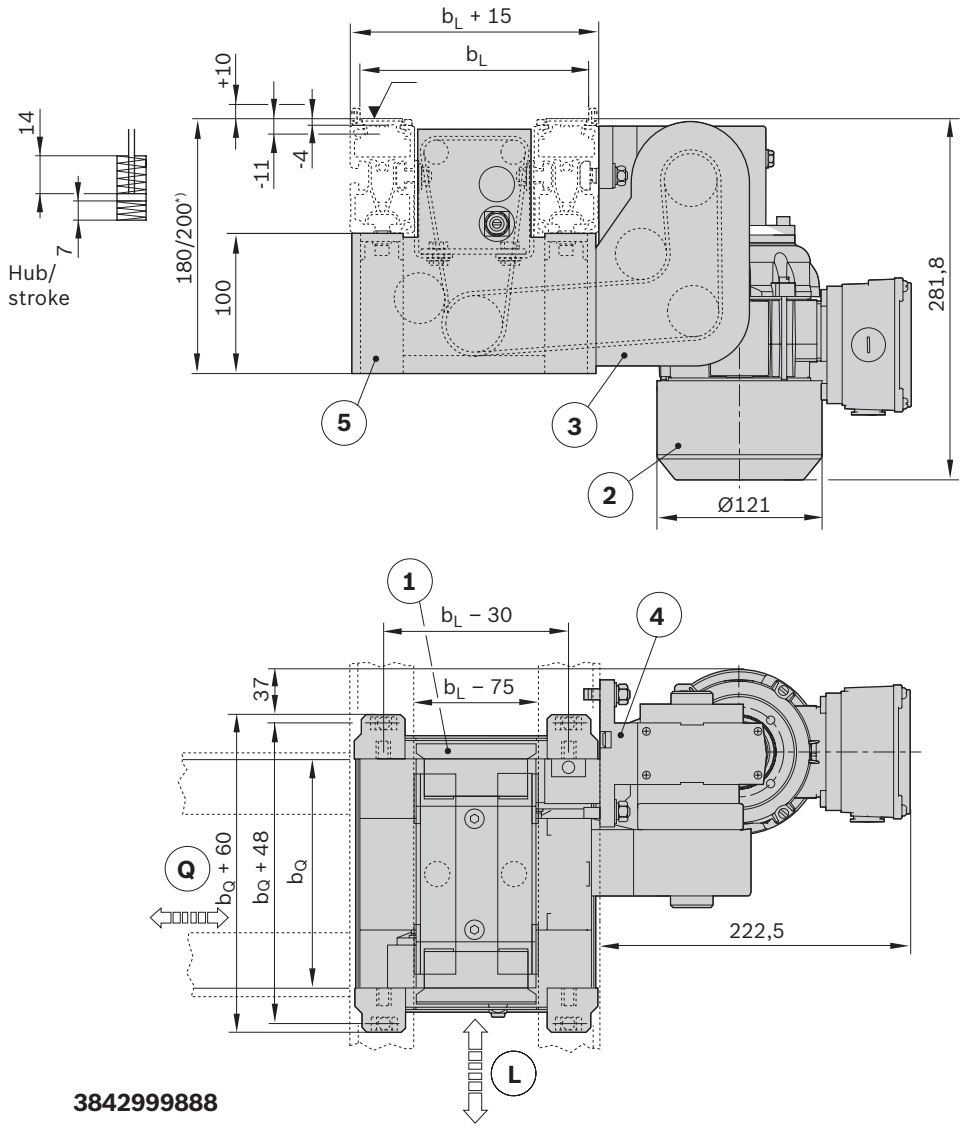
Material number		3842999888
b_Q (mm)	Track width in the transverse conveyor	160; 240; 320; 400; 480; 640; 800
b_L (mm)	Track width in the longitudinal conveyor	160; 240; 320; 400; 480
b_Q x b_L (mm x mm)	Combination options	BG 1: 160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400 400 x 240; 320; 400 480 x 320 BG 2: 400 x 480 480 x 400; 480 640 x 400; 480 800 x 400; 480
AO	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2
PN	Pneumatic equipment	2[1] ; 3[2]
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K

[1] PN = 2: Upper and middle lift position
[2] PN = 3: Upper, middle and lower lift position

Technical data

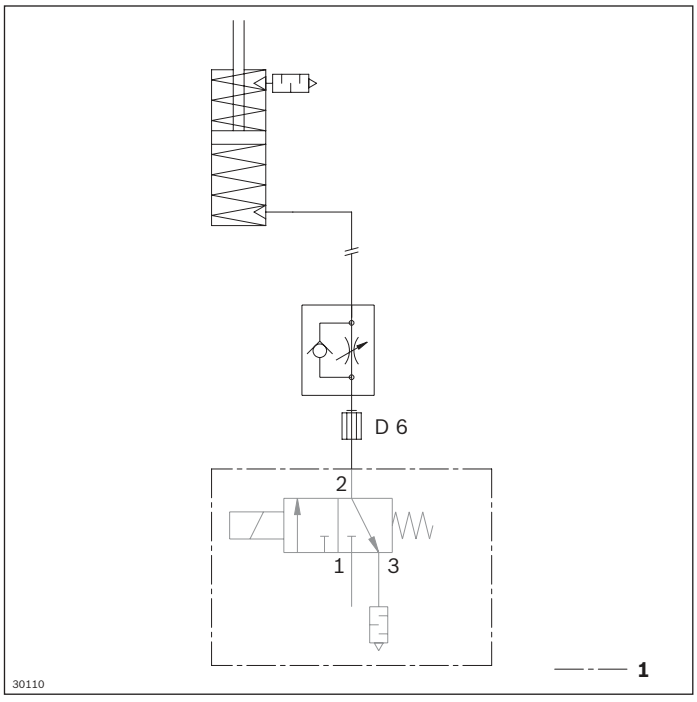
Material number			3842999888
Max. total workpiece pallet weight	m_G	kg	BG 1: 30 BG 2: 50
ESD			Yes
Size	BG		BG 1; BG 2
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	6

Dimensions



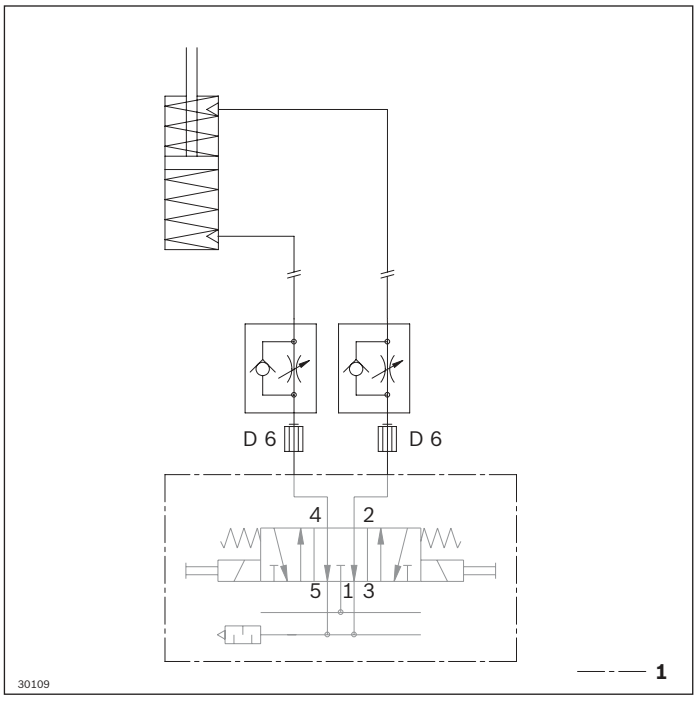
L Conveying direction of longitudinal section
Q Conveying direction of transverse section
1 Lift transverse unit HQ 2/S
2 Drive motor
3 Connection kit
4 Motor mounting kit
5 Protective case
*) 180 mm for 80 mm profile height, 200 mm for 100 mm profile height

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 1



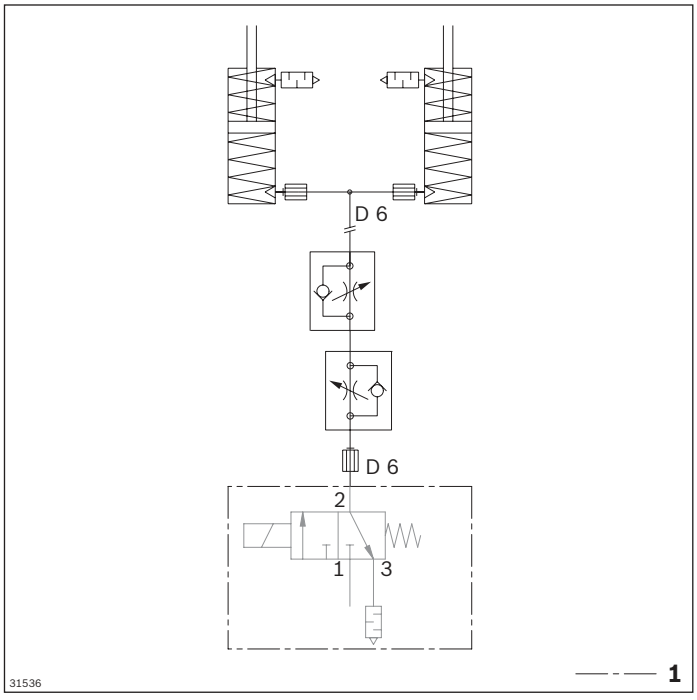
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 1



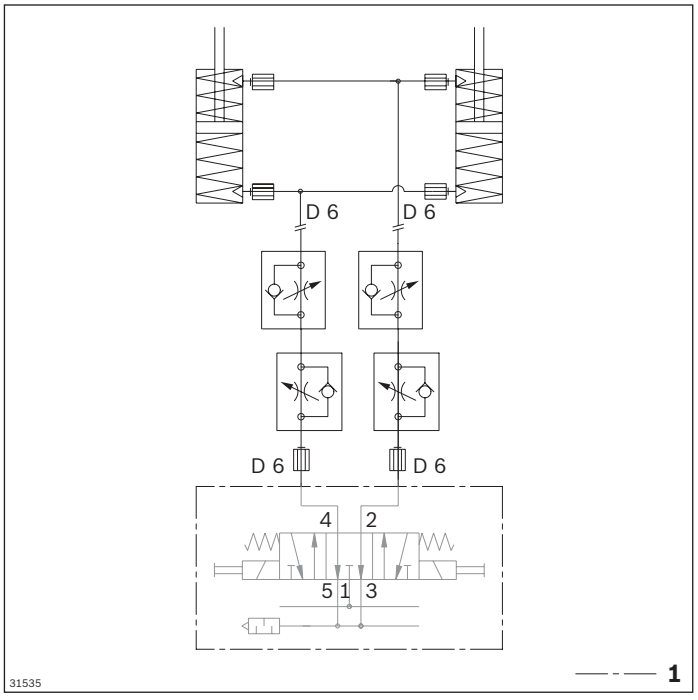
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 2



1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 2



1 Not included in the scope of delivery

Lift transverse unit HQ 2/O

- Lift transverse unit without built-in drive for outfeeding from a longitudinal section into a transverse section and vice versa
- Drive by toothed belt coupling
- The low height is suitable for the operation of double-deck conveyor sections
- Suitable for use in special designs
- In two sizes with one or two lifting cylinders
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2 and WT 2/F

Notice:
- Reversible operation possible
- Accumulation operation not permitted

The HQ 2/O does not have a built-in drive. Drive is provided by a toothed belt coupling with a belt section BS 2/T, BS 2/TE, BS 2/M-2 or by a separate drive motor. It is a part of all electrical transverse conveyors EQ 2/... and can also be used in special system designs. The vertical movement is delivered by pneumatic cylinders.

Two sizes are available:
Size 1 (BG 1) for total weights (workpiece pallet + load) up to 30 kg by one lifting cylinder.
Size 2 (BG 2) for total weights (workpiece pallet + load) up to 50 kg by two lifting cylinders for workpiece pallet dimensions from 400 x 480 mm.

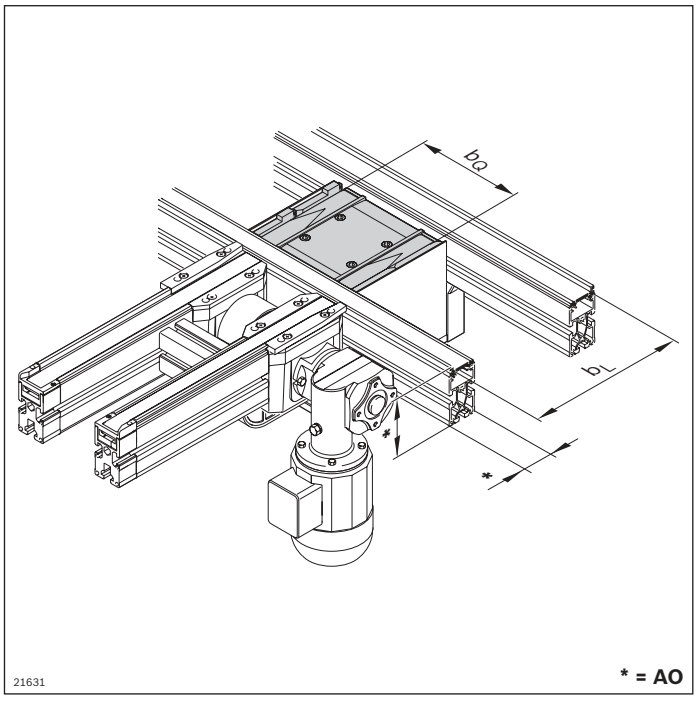
Required accessories
- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112ff
- Belt section BS 2/T (see p. 5-37), BS 2/TE (see p. 5-40), BS 2/M-2 (see p. 3-9) for driving
- HQ 2/T (see p. 5-43) in the tandem design
- Connection belt set for HQ 2/O drive (see p. 5-34) via a belt section
- Protective case SK 2/B, see p. 5-35

Recommended accessories
- Damper DA 2/60 (see p. 8-68) for outfeeding workpiece pallets at v_N > 9 m/min
- Rockers WI 2 (see p. 8-144ff) or WI/M (see p. 8-138) and dampers DA 2/60 (see p. 8-68) or DA 2/100-C for BG 2 (see p. 8-74) for infeeding workpiece pallets
- Assembly tool (see p. 5-22) for simple tensioning of the connection belt toothed belt

Scope of delivery
- Incl. fastening material
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.

Condition on delivery
- Assembled

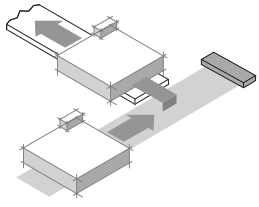
Ordering information



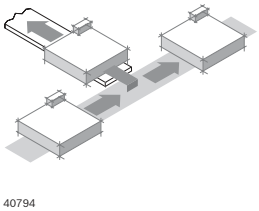
Material number		3842998113
b_Q (mm)	Track width in the transverse conveyor	160; 240; 320; 400; 480; 640; 800
b_L (mm)	Track width in the longitudinal conveyor	160; 240; 320; 400; 480
b_Q x b_L (mm x mm)	Combination options	BG 1: 160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400 400 x 240; 320; 400 480 x 320 BG 2: 400 x 480 480 x 400; 480 640 x 400; 480 800 x 400; 480
AO	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2
PN	Pneumatic equipment	2[1] ; 3[2]

[1] PN = 2: Upper and middle lift position
[2] PN = 3: Upper, middle and lower lift position

PN = 2



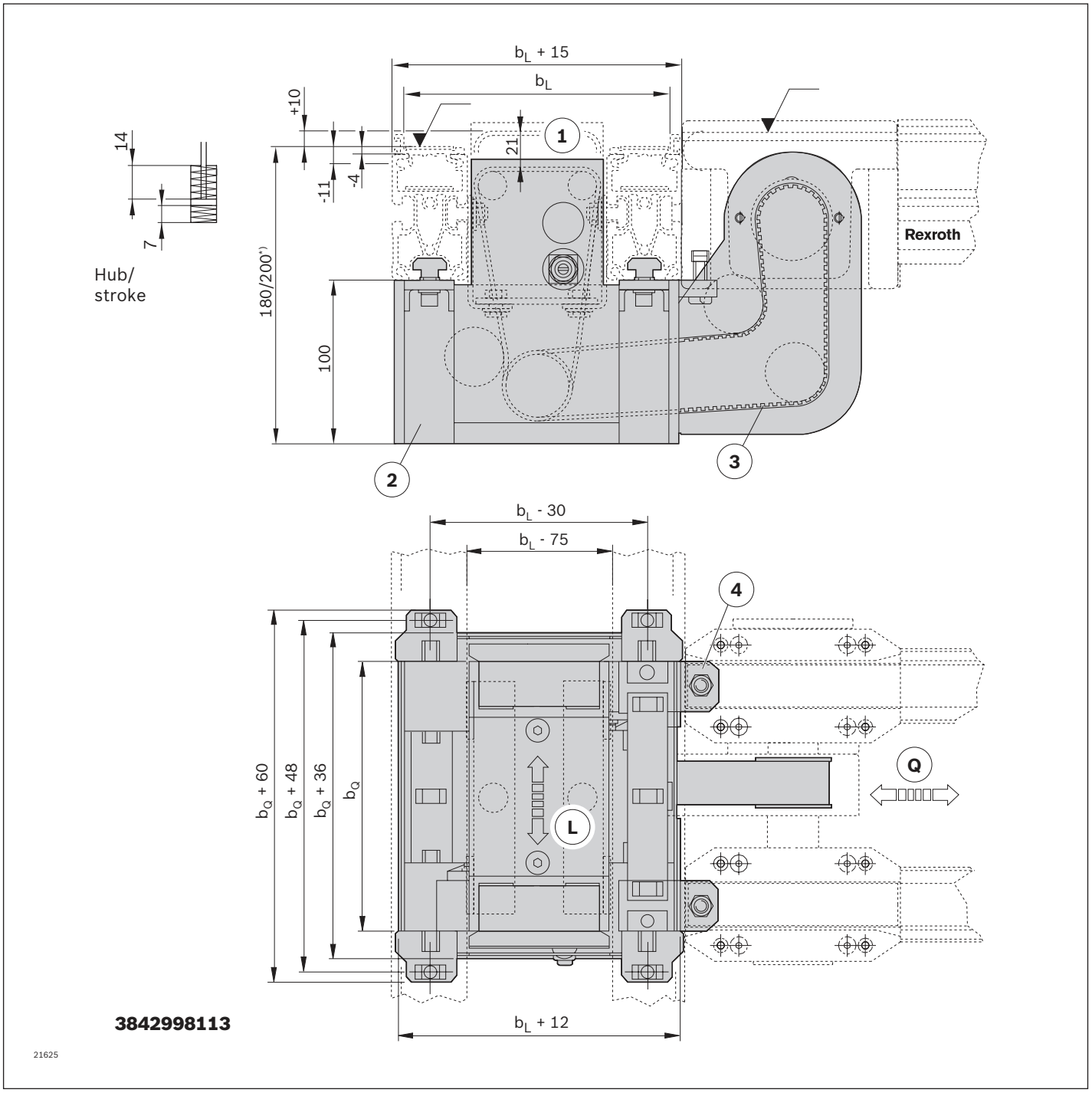
PN = 3



Technical data

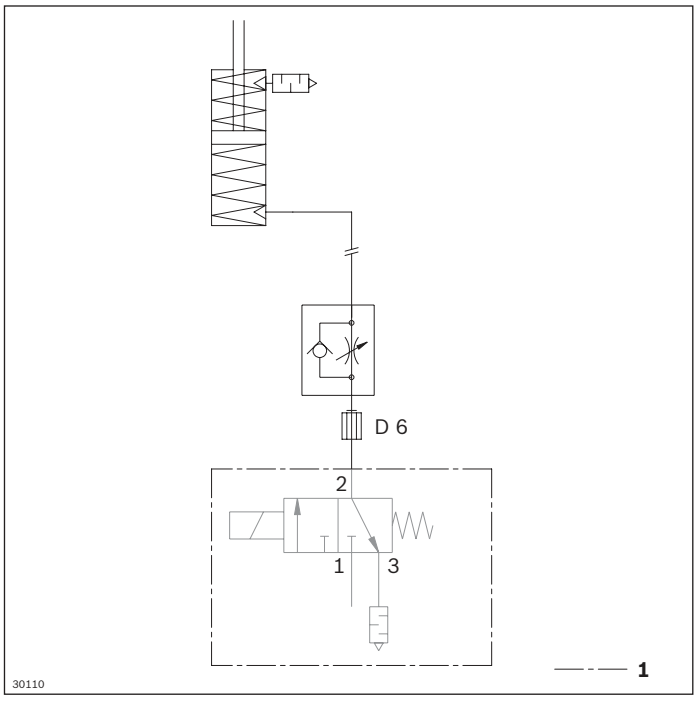
Material number			3842998113
Max. total workpiece pallet weight	m_G	kg	BG 1: 30 BG 2: 50
ESD			Yes
Size	BG		BG 1; BG 2
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	6

Dimensions



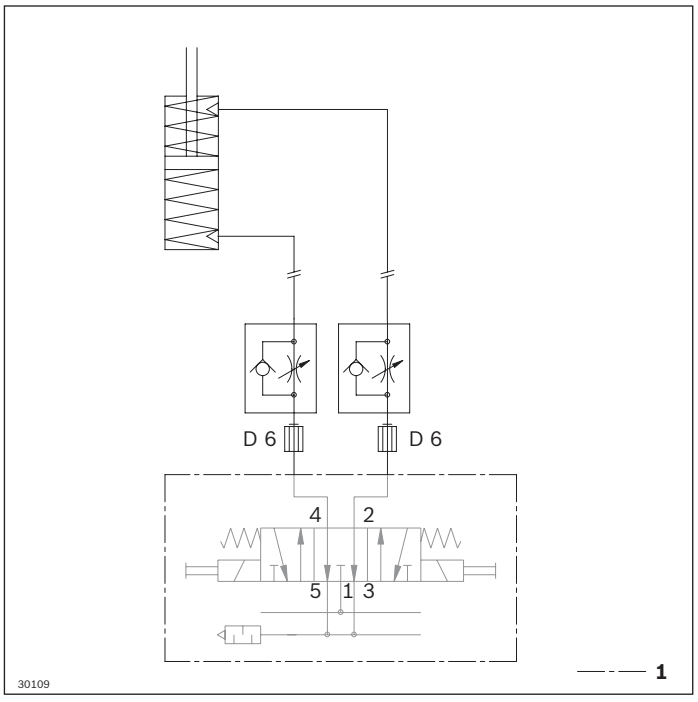
L Conveying direction of longitudinal section
Q Conveying direction of transverse section
1 Stroke
2 Protective case
3 Toothed belt for drive
4 Attachment for BS 2/T
*) 180 mm for 80 mm profile height, 200 mm for 100 mm profile height

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 1



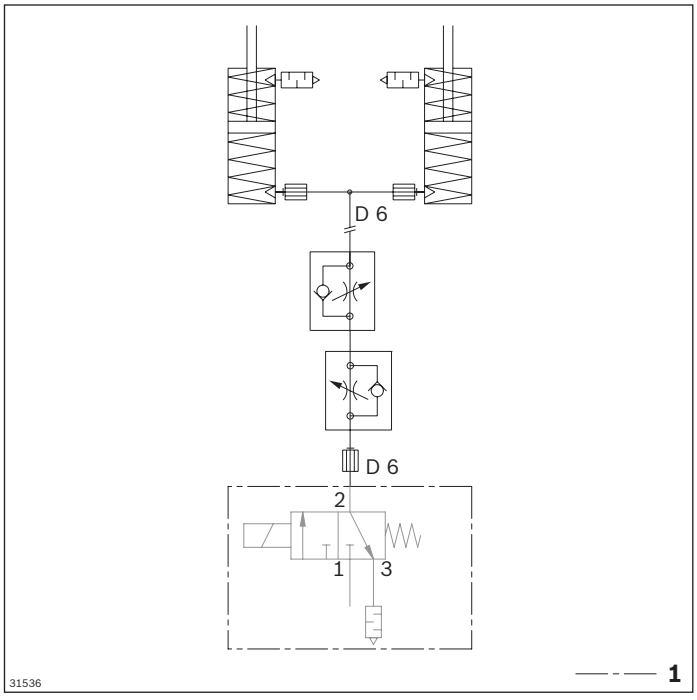
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 1



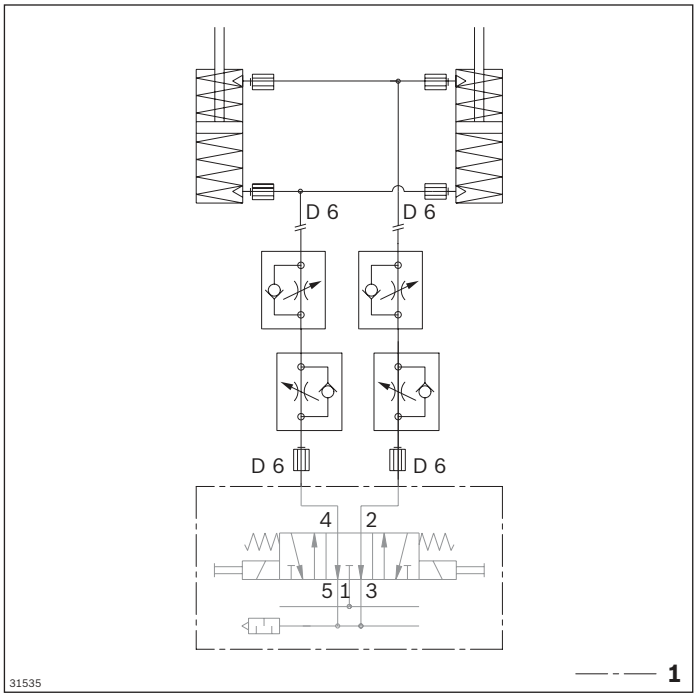
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 2



1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 2



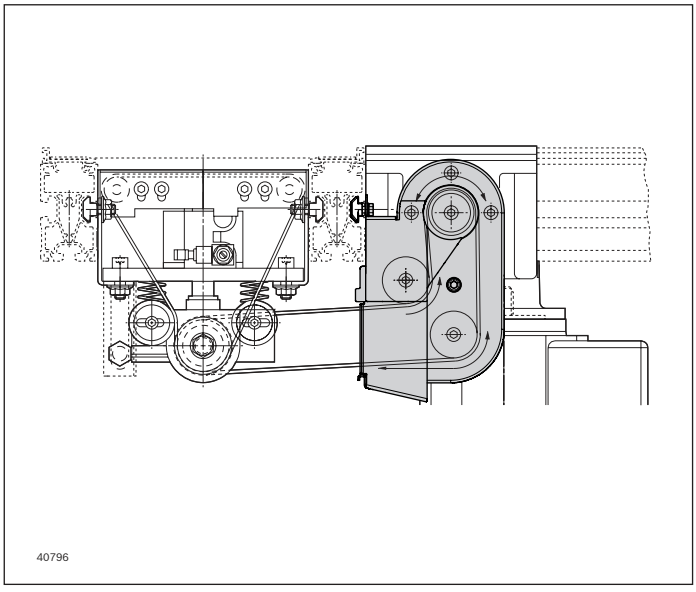
1 Not included in the scope of delivery

Connection belt for HQ 2/O

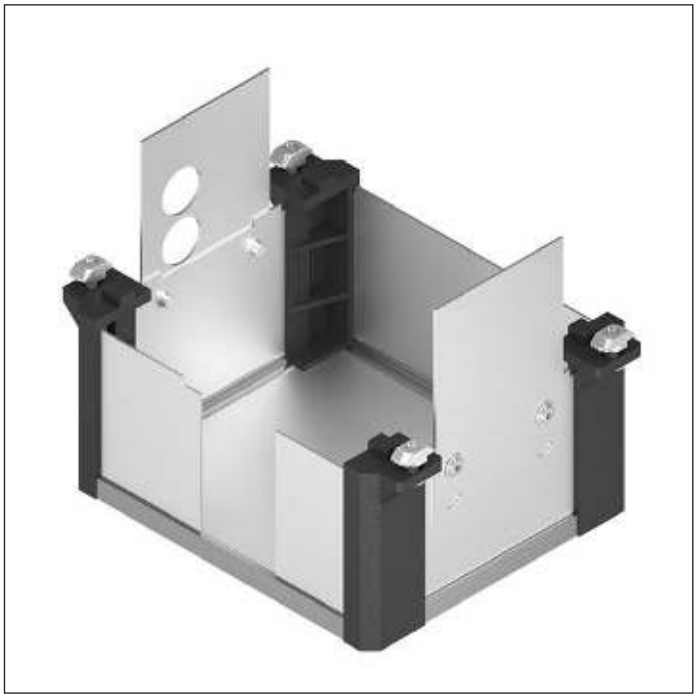
If the lift transverse unit HQ 2/O is driven via a belt section, a connection belt set is required. The HQ 2/O (BG 1 or BG 2) can be combined with BS 2/TE, BS 2/T or BS 2/M-2 using the connection belt set. The b_Q and b_L parameters are decisive for selection of the connection belt set.

Ordering information

Material number		3842563517	3842563518
b_Q x b_L (mm x mm)	Combination possibilities HQ 2/O	BG 1: 160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400 400 x 240; 320; 400 480 x 320	BG 2: 400 x 480 480 x 400; 480 640 x 400; 480 800 x 400; 480



Protective case SK 2/B



- Protective case for HQ 2/O and HQ 2/S

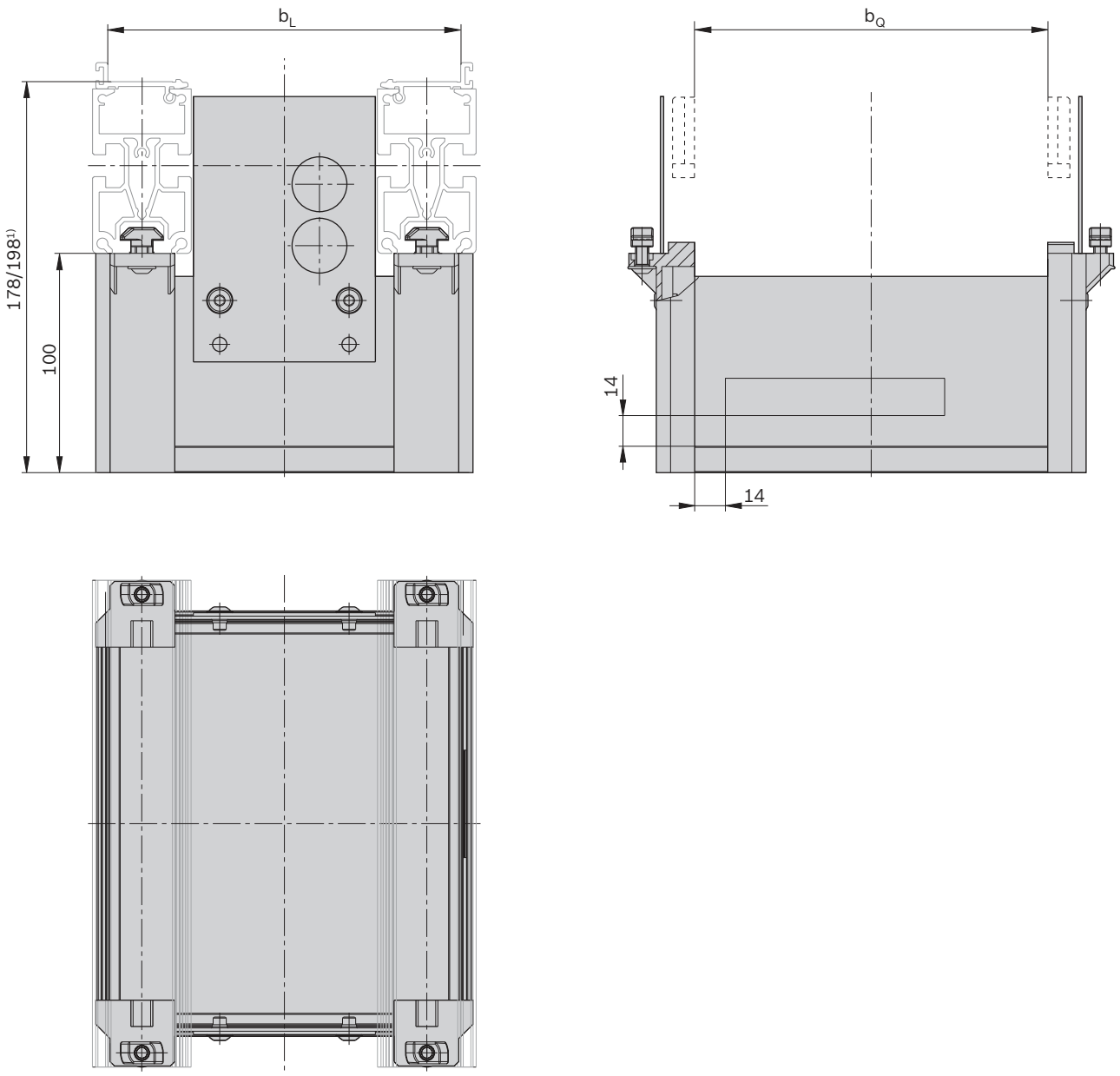
Ordering information

Product description	b_Q x b_L (mm)	Material number
Protective case SK 2/B	160 x 160	3842338750
Protective case SK 2/B	160 x 240	3842338755
Protective case SK 2/B	160 x 320	3842338760
Protective case SK 2/B	240 x 160	3842338751
Protective case SK 2/B	240 x 240	3842338756
Protective case SK 2/B	240 x 320	3842338761
Protective case SK 2/B	240 x 400	3842338766
Protective case SK 2/B	320 x 160	3842338752
Protective case SK 2/B	320 x 240	3842338757
Protective case SK 2/B	320 x 320	3842338762
Protective case SK 2/B	320 x 400	3842338767
Protective case SK 2/B	400 x 240	3842338758
Protective case SK 2/B	400 x 320	3842338763
Protective case SK 2/B	400 x 400	3842338768
Protective case SK 2/B	400 x 480	3842338776
Protective case SK 2/B	480 x 320	3842338764
Protective case SK 2/B	480 x 400	3842338771
Protective case SK 2/B	480 x 480	3842338777
Protective case SK 2/B	640 x 400	3842338773
Protective case SK 2/B	640 x 480	3842338779
Protective case SK 2/B	800 x 400	3842338775
Protective case SK 2/B	800 x 480	3842338781

Technical data

Material number	3842338750 3842338751 3842338752 3842338755 3842338756	3842338757 3842338758 3842338760 3842338761 3842338762	3842338763 3842338764 3842338766 3842338767	3842338768 3842338771 3842338773 3842338775	3842338776 3842338777 3842338779 3842338781
Material specification					Aluminum; anodized PA66; black

Dimensions



[1] 178 mm for 80 mm profile height, 198 mm for 100 mm profile height

Belt section BS 2/T

Additional toothed gears to drive a lift transverse unit HQ 2/O each on both ends
Position of the gears depends on the size of the HQ 2/O.

Recommended accessories

- Connection kit 3842525110 (see p. 9-22) for installing the belt section between the conveyor sections ST 2/...
- Leg sets SZ 2/..., see p. 6-4
- Lift transverse unit HQ 2/O, see p. 5-30

Condition on delivery

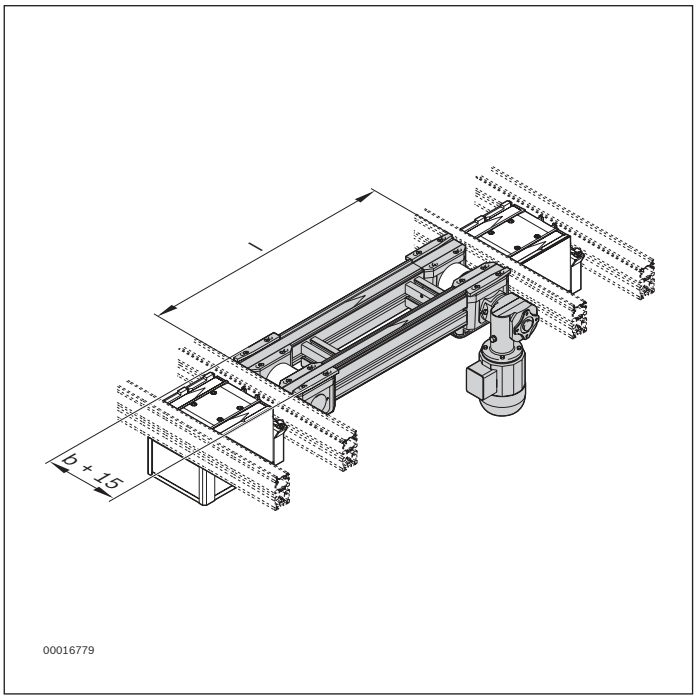
- Assembled

- Ready-to-use conveyor section with drive for transverse conveyor between parallel conveyor sections
- Additional toothed gears to drive a lift transverse unit HQ 2/Q each on both ends
- Reversible operation possible
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Can be combined with WT 2/E, WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS

Notice:

The WT 2/LS can be used for longitudinal conveyors with this component. It is not possible to cross over.

Ordering information



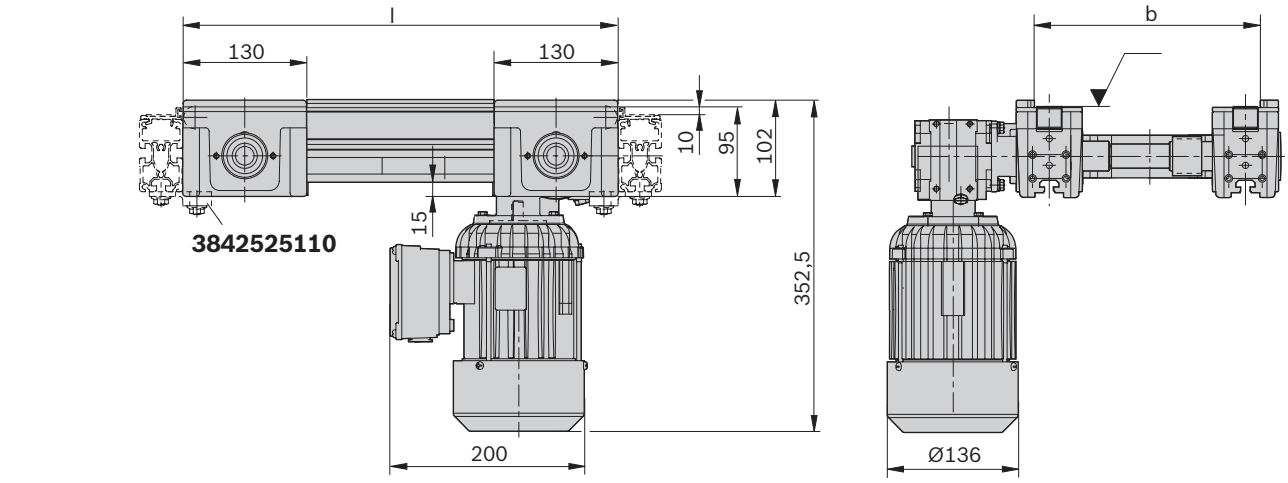
Material number		3842999722
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800
l (mm)	Length	320 ... 6000
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[2)]
UB[1)]	Connection belt UB = 1 UB = 2	1; 2

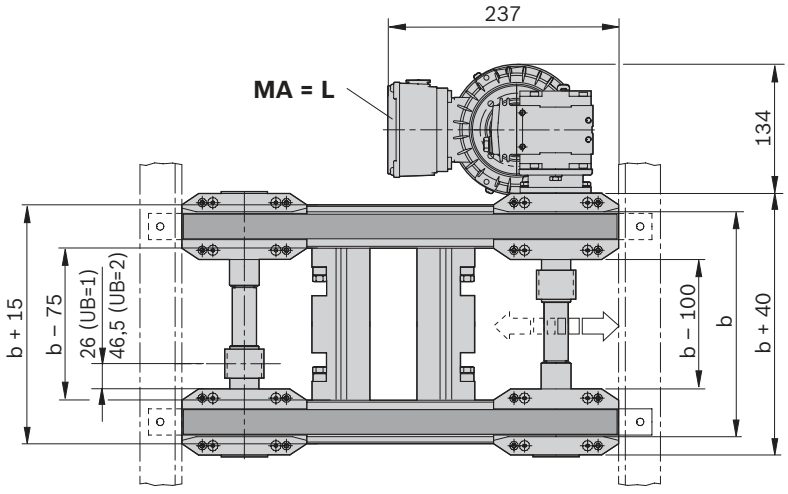
[1)] UB: Connection belt for HQ 2/O size BG 1 (b_Q x b_L ≤ 480 x 320 mm) or BG 2 (b_Q x b_L ≥ 400 x 480 mm)
[2)] MA = M when b_Q ≧ 320 mm

Technical data

Material number		3842999722
Max. section load in accumulation operation	kg	60
ESD		Yes

Dimensions





3842999722

00116829

Belt section BS 2/TE

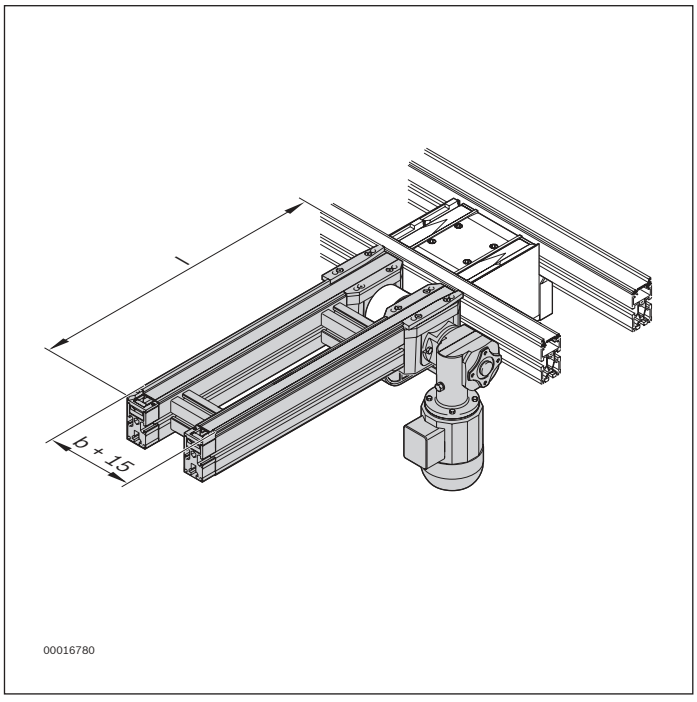
- Ready-to-use conveyor section with drive for transverse conveyor into a dead end
- Additional toothed gear to drive a lift transverse unit HQ 2/O
- Reversible operation possible
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Can be combined with WT 2/E, WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS

Notice:
The WT 2/LS can be used for longitudinal conveyors with this component. It is not possible to cross over.

Recommended accessories
- Connection kit (3842525110, see p. 9-22) for installing the belt section between the conveyor sections ST 2/...
- Leg sets SZ 2/..., see p. 6-4

Condition on delivery
- Assembled

Ordering information



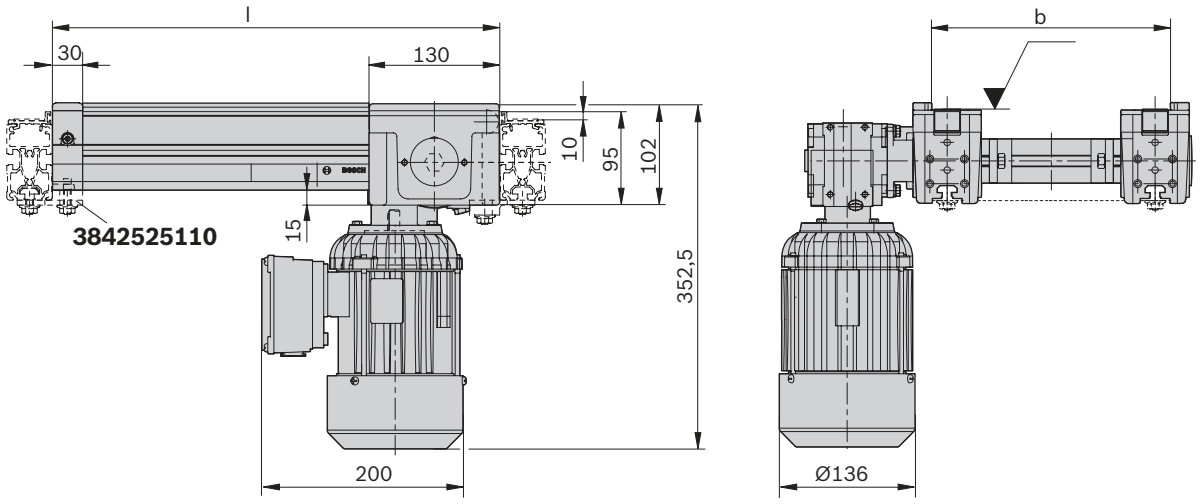
Material number		3842999723
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800
l (mm)	Length	240 ... 6000
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[2)]
UB[1)]	Connection belt UB = 1 UB = 2	1; 2

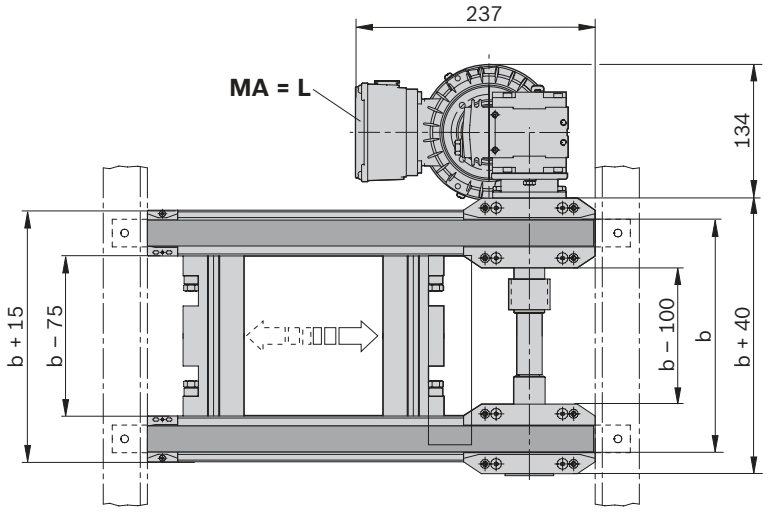
[1)] UB: Connection belt for HQ 2/O size BG 1 (b_Q x b_L ≤ 480 x 320 mm) or BG 2 (b_Q x b_L ≥ 400 x 480 mm)
[2)] MA = M when b_Q ≧ 320 mm

Technical data

Material number		3842999723
Max. section load in accumulation operation	kg	60
ESD		Yes

Dimensions





3842999723

00116828

Lift transverse unit HQ 2/T...

Vertical movement is delivered by pneumatic cylinders.
Two sizes are available:
Size 1 for total weights (workpiece pallet + load) up to 30 kg.
Size 2 for workpiece pallet dimensions from 400 x 480 mm.

- Lift transverse unit without built-in drive for outfeeding from a longitudinal section into a transverse section with a roller section and vice versa
- Used in tandem version with the HQ 2/O
- Drive by toothed belt coupling
- Suitable for use in special designs
- In two sizes with one or two lifting cylinders
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with workpiece pallets WT 2/E, WT 2, WT 2/F and WT 2/LS (only with version LS)

Notice:
- Reversible operation possible
- Accumulation operation not permitted

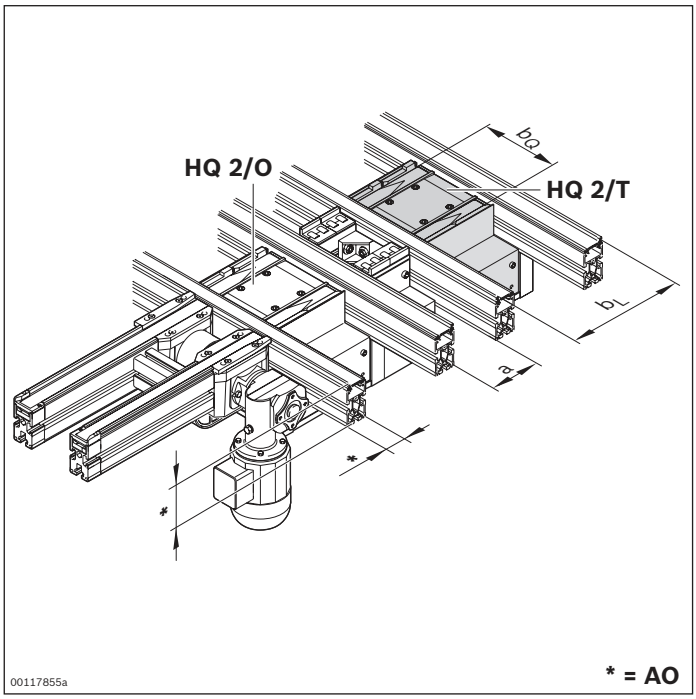
Required accessories
- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112ff
- Protective case SK 2, see p. 5-48

Recommended accessories
- Damper DA 2/60 (see p. 8-68) for outfeeding workpiece pallets at v_N > 9 m/min
- Rockers WI 2 (see p. 8-144ff) or WI/M (see p. 8-138) and dampers DA 2/60 (see p. 8-68) or DA 2/100-C for BG 2 (see p. 8-74) for infeeding workpiece pallets

Scope of delivery
- Incl. fastening material
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.
- Incl. drive kit (required to drive an HQ 2/T)

Condition on delivery
- Assembled

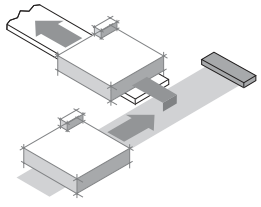
Ordering information



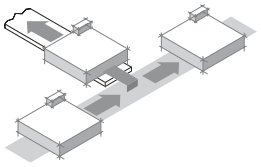
Material number		3842998114 HQ 2/T	3842999031 HQ 2/T LS
b_Q (mm)	Track width in the transverse conveyor	160; 240; 320; 400; 480; 640; 800	
b_L (mm)	Track width in the longitudinal conveyor	160; 240; 320; 400; 480	
b_Q x b_L (mm x mm)	Combination options	BG 1: 160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400 400 x 240; 320; 400 480 x 320 BG 2: 400 x 480 480 x 400; 480 640 x 400; 480 800 x 400; 480	
AO	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2	
a (mm)	Distance between conveyors	45; 90; 135	
PN	Pneumatic equipment	2[1] ; 3[2]	

[1] PN = 2: Upper and middle lift position
[2] PN = 3: Upper, middle and lower lift position

PN = 2



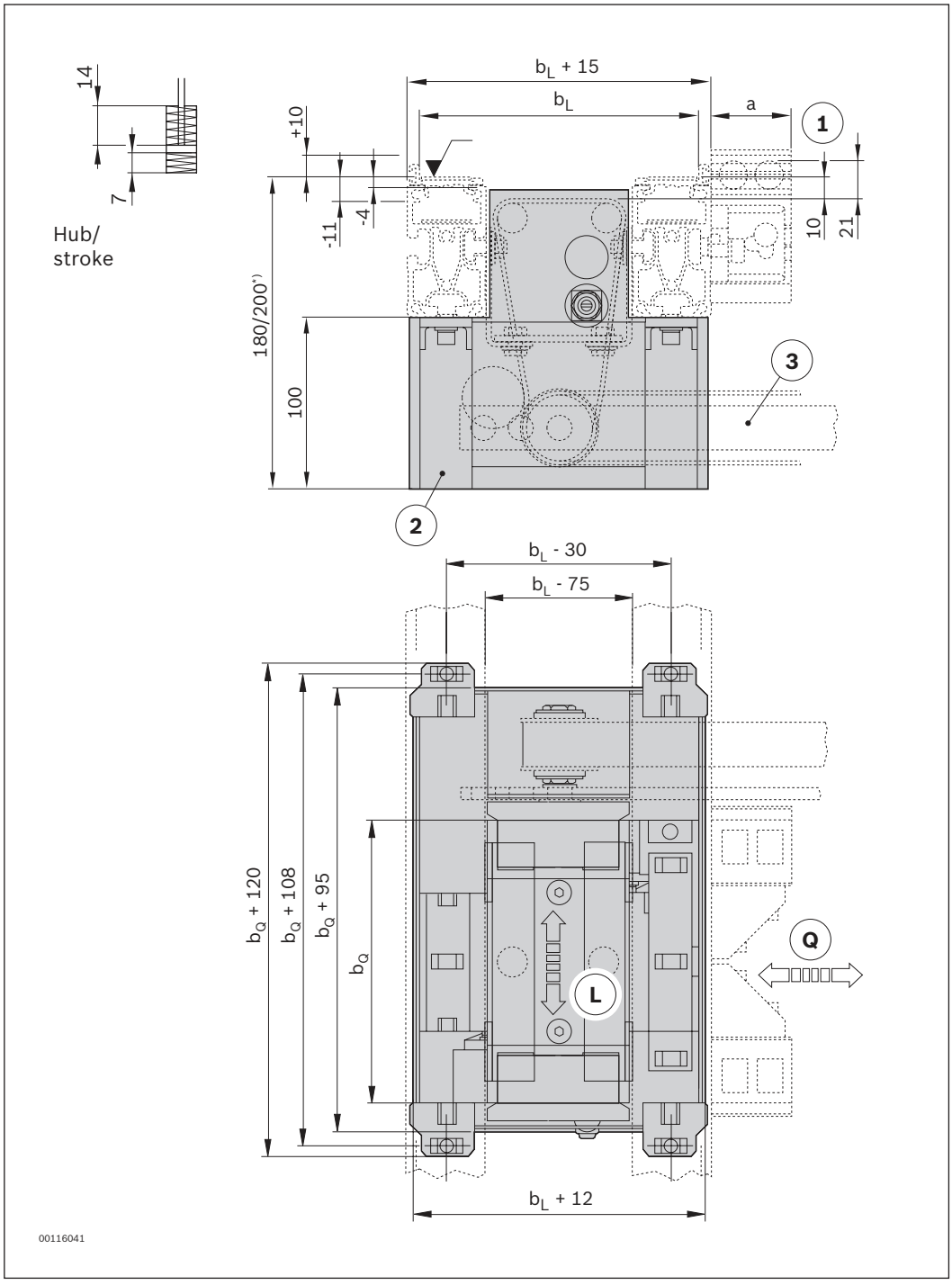
PN = 3



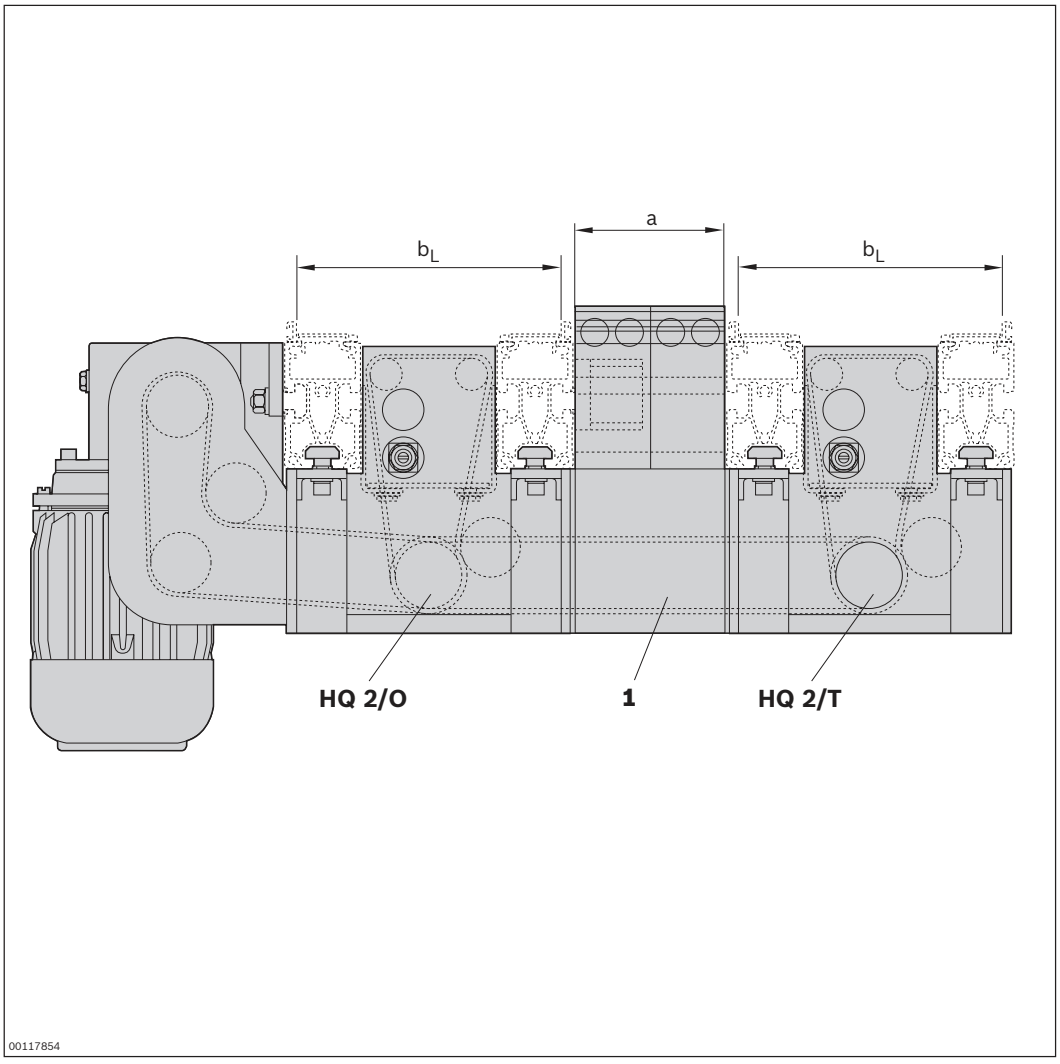
Technical data

Material number			3842998114 HQ 2/T	3842999031 HQ 2/T LS
Max. total workpiece pallet weight	m_G	kg	30	30
ESD			Yes	Yes
Size	BG		BG 1; BG 2	BG 1; BG 2
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	6	6

Dimensions

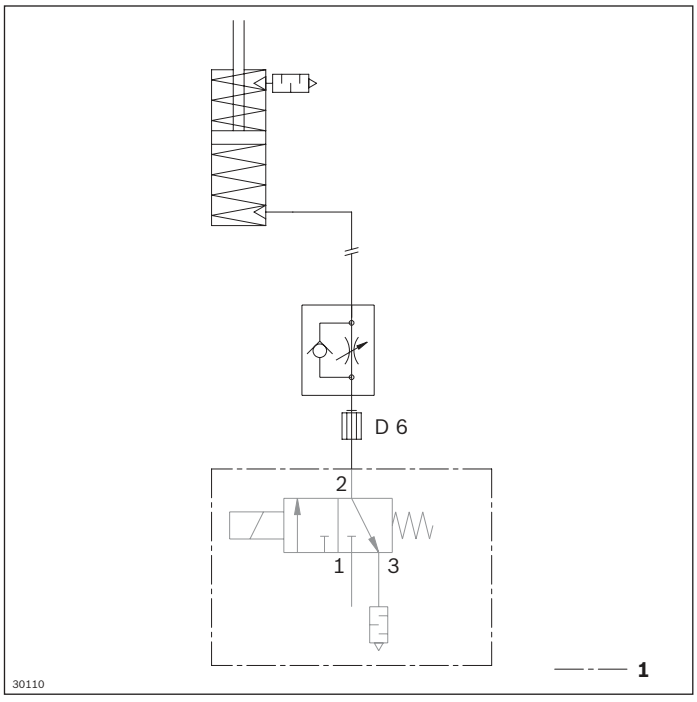


L Conveying direction of longitudinal section
Q Conveying direction of transverse section
1 Stroke
2 Protective case
3 Drive kit for HQ 2/O-HQ 2/T
*) 180 mm for 80 mm profile height, 200 mm for 100 mm profile height



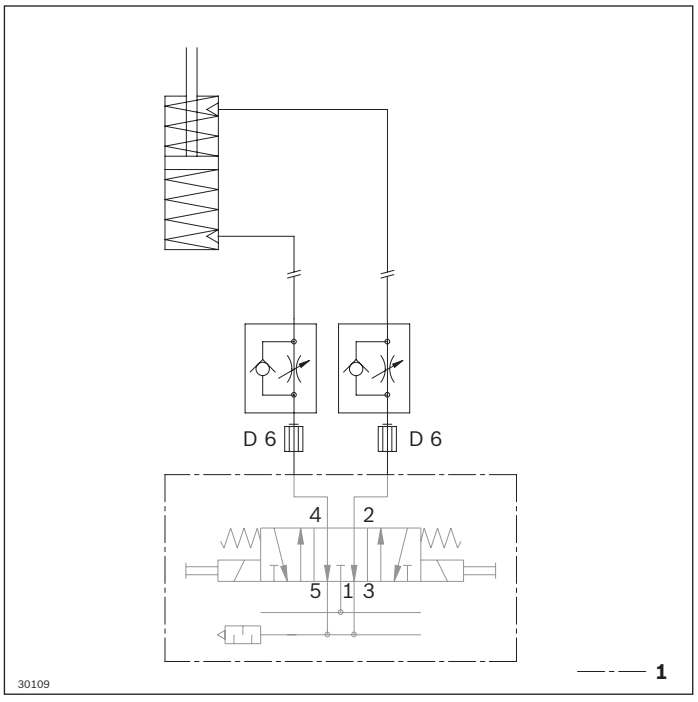
1 Drive kit

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 1



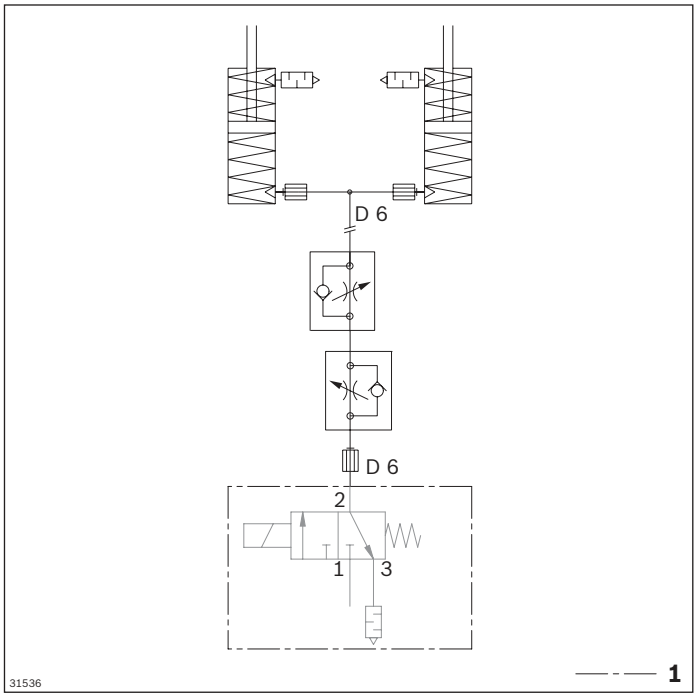
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 1



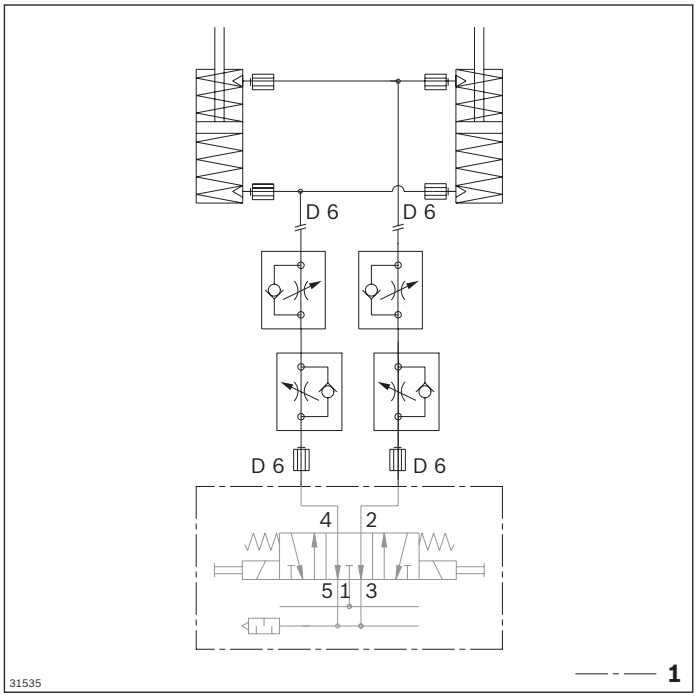
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for two positions PN = 2, BG 2



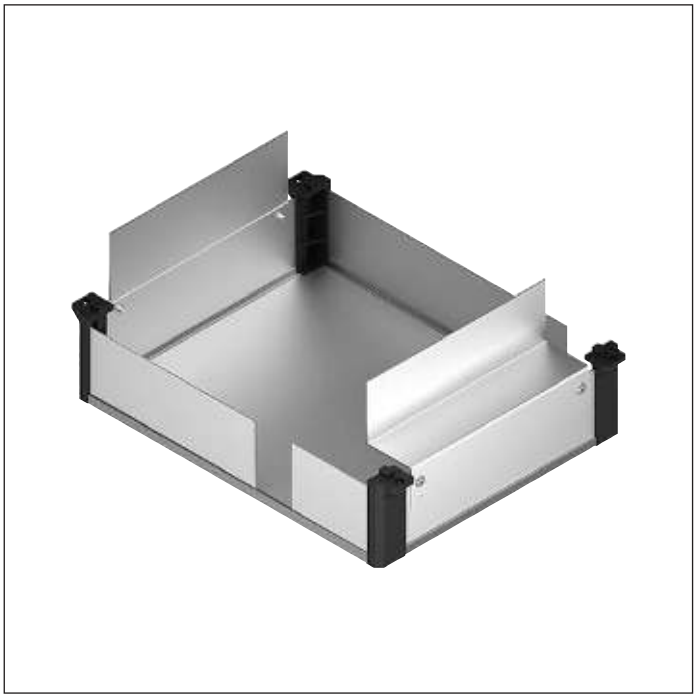
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3, BG 2



1 Not included in the scope of delivery

Protective case SK 2



- Protective case for HQ 2/T

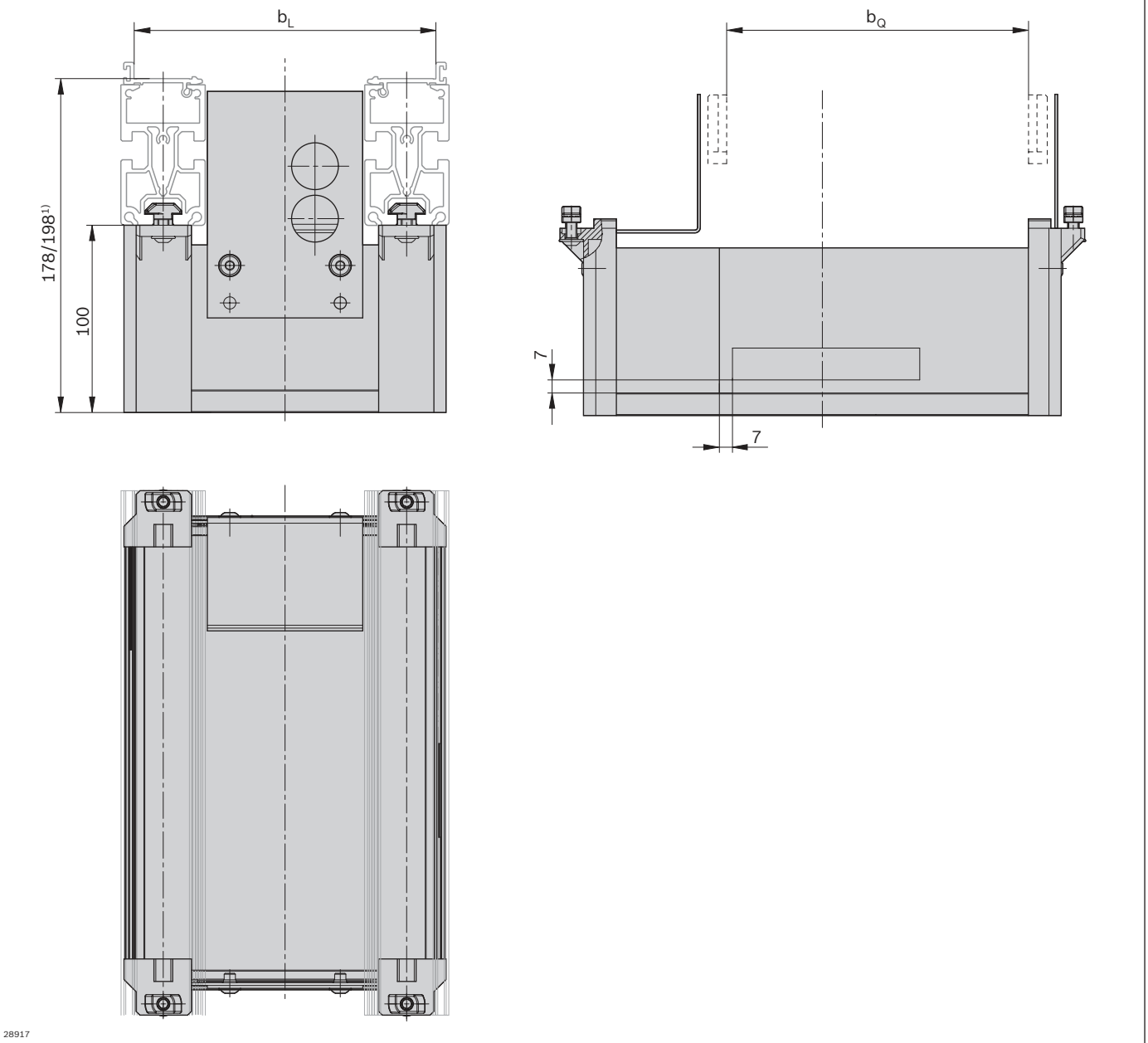
Ordering information

Product description	b_Q x b_L (mm)	Material number
Protective case SK 2	160 x 160	3842345100
Protective case SK 2	160 x 240	3842345105
Protective case SK 2	160 x 320	3842345110
Protective case SK 2	240 x 160	3842345101
Protective case SK 2	240 x 240	3842345106
Protective case SK 2	240 x 320	3842345111
Protective case SK 2	240 x 400	3842345116
Protective case SK 2	320 x 160	3842345102
Protective case SK 2	320 x 240	3842345107
Protective case SK 2	320 x 320	3842345112
Protective case SK 2	320 x 400	3842345117
Protective case SK 2	400 x 240	3842345108
Protective case SK 2	400 x 320	3842345113
Protective case SK 2	400 x 400	3842345118
Protective case SK 2	400 x 480	3842345126
Protective case SK 2	480 x 320	3842345114
Protective case SK 2	480 x 400	3842345121
Protective case SK 2	480 x 480	3842345127
Protective case SK 2	640 x 400	3842345123
Protective case SK 2	640 x 480	3842345129
Protective case SK 2	800 x 400	3842345125
Protective case SK 2	800 x 480	3842345131

Technical data

Material number					
	3842345100	**3842345107**	**3842345113**	**3842345118**	**3842345126**
	3842345101	**3842345108**	**3842345114**	**3842345121**	**3842345127**
	3842345102	**3842345110**	**3842345116**	**3842345123**	**3842345129**
	3842345105	**3842345111**	**3842345117**	**3842345125**	**3842345131**
	3842345106	**3842345112**			
Material specification					Aluminum; anodized PA 66; black

Dimensions



[1)] 178 mm for 80 mm profile height, 198 mm for 100 mm profile height

Lift transverse unit HQ 2/U...

- Lift transverse unit for outfeeding from a longitudinal section into a transverse section and vice versa
- Use in tight spaces by means of suspended drive motor (outside dimensions must be no wider than the section)
- Drive by toothed belt coupling is not possible because of the compact construction
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with workpiece pallets WT 2/E, WT 2, WT 2/F and WT 2/LS (only with version LS)

Notice:
- Reversible operation possible
- Accumulation operation not permitted

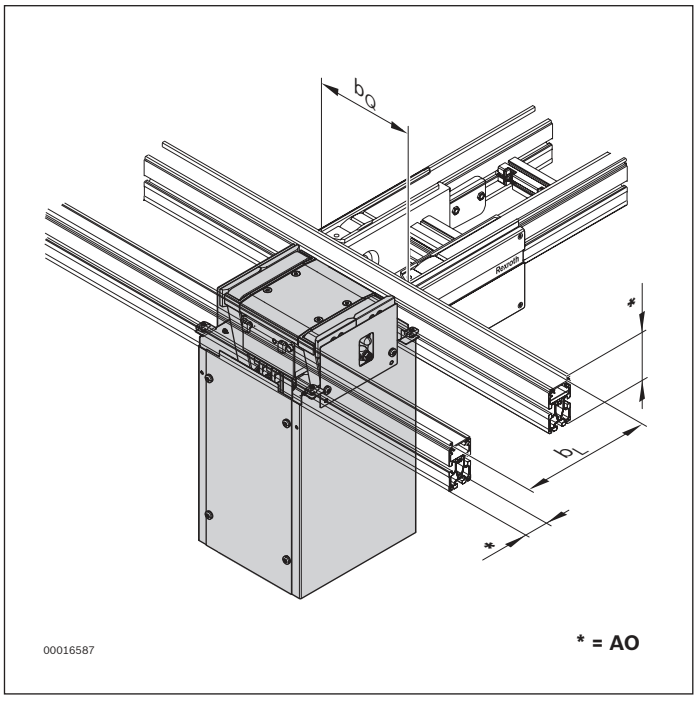
Required accessories
- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112ff

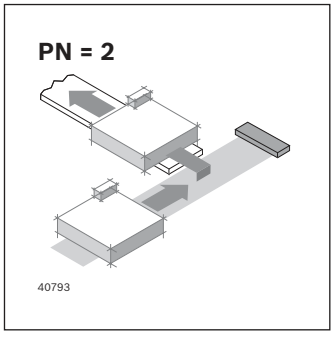
Recommended accessories
- Damper DA 2/60 (see p. 8-68) for outfeeding workpiece pallets at v_N > 9 m/min
- Rockers WI 2 (see p. 8-144ff) or WI/M (see p. 8-138) and dampers DA 2/60 (see p. 8-68) or DA 2/100-C for BG 2 (see p. 8-74) for infeeding workpiece pallets

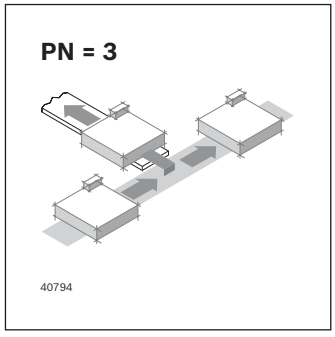
Scope of delivery
- Incl. fastening material
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.
- Protective case

Condition on delivery
- Assembled
- Kit for electric position sensing included

Ordering information







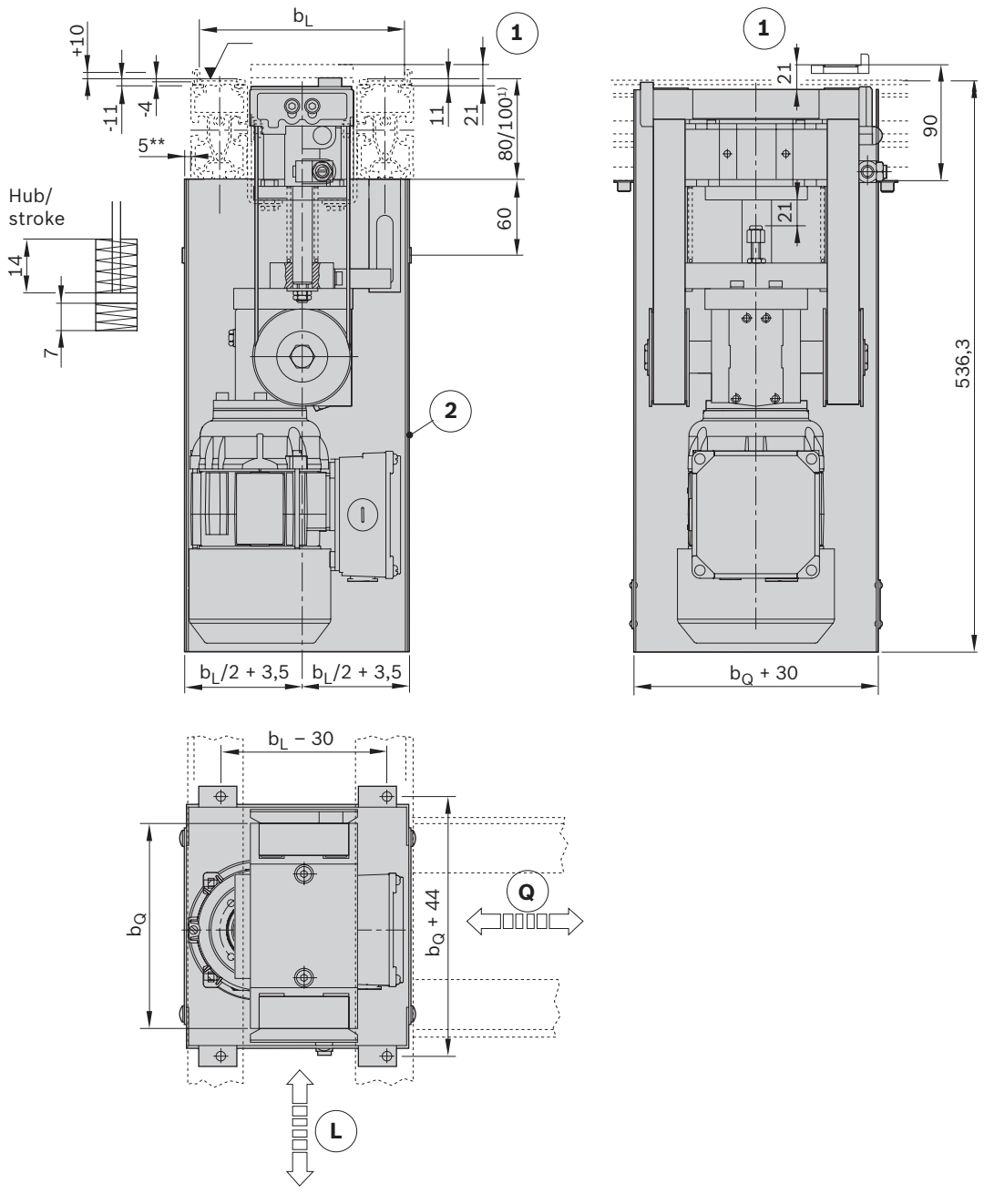
Material number		3842999903 HQ 2/U	3842999032 HQ 2/U LS
b_Q (mm)	Track width in the transverse conveyor	160; 240; 320; 400; 480	
b_L (mm)	Track width in the longitudinal conveyor	160; 240; 320; 400	
b_Q x b_L (mm x mm)	Combination options	160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400 400 x 240; 320; 400 480 x 320	
AO	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2	
PN	Pneumatic equipment	2[1] ; 3[2]	
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	

[1] PN = 2: Upper and middle lift position
[2] PN = 3: Upper, middle and lower lift position

Technical data

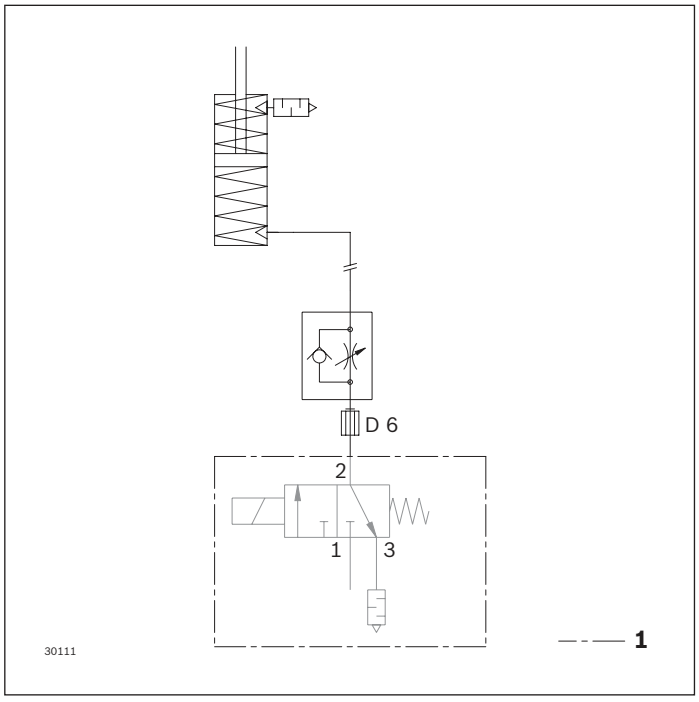
Material number			3842999903 HQ 2/U	3842999032 HQ 2/U LS
Max. total workpiece pallet weight	m_G	kg	30	30
ESD			Yes	Yes
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	6	6

Dimensions



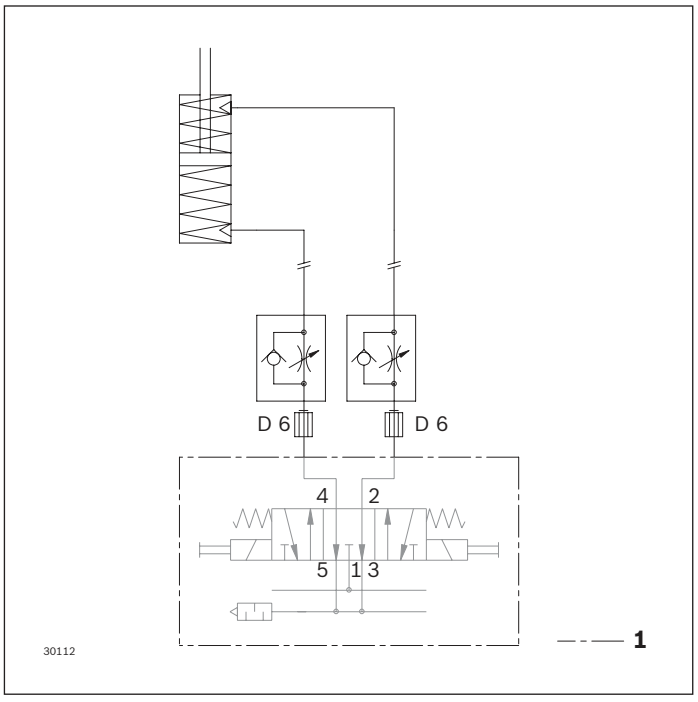
L Conveying direction of longitudinal section
Q Conveying direction of transverse section
1 Stroke
2 Protective case
** Only for b_L = 160 mm
[1] Profile height

Circuit diagram for unit with pneumatic equipment for two positions PN = 2



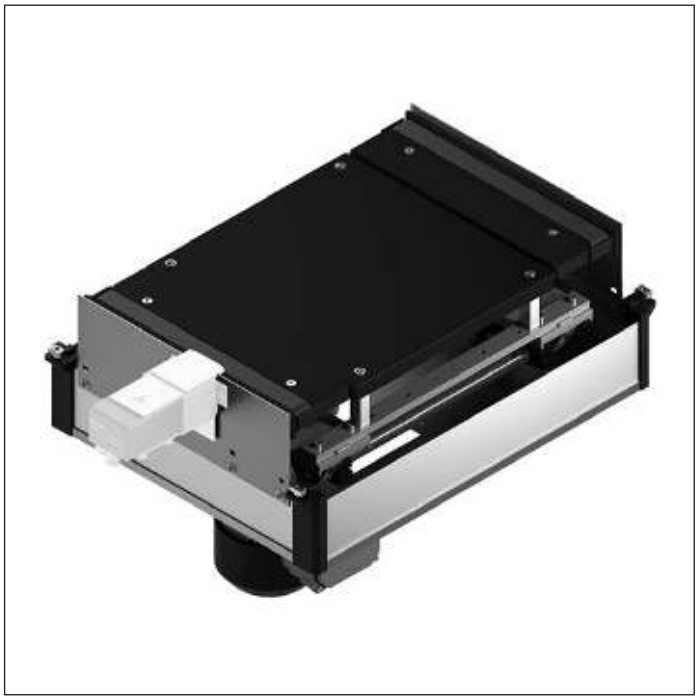
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3



1 Not included in the scope of delivery

Lift transverse unit HQ 2/U2...



- Lift transverse unit for outfeeding from a longitudinal section into a transverse section and vice versa
- Use in tight spaces by means of suspended drive motor (outside dimensions must be no wider than the section)
- Reinforced version of HQ 2/U with two lift cylinders for large workpiece pallet dimensions
- Drive by toothed belt coupling is not possible because of the compact construction
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS (only with version LS)

Notice:

- Reversible operation possible
- Accumulation operation not permitted

Required accessories

- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112ff

Recommended accessories

- Damper DA 2/100-B (see p. 8-71) for outfeeding workpiece pallets WT 2, WT 2/F, WT 2/H or WT 2/F-H, required when v_N > 12 m/min or total weight of the workpiece pallet ≥ 30 kg
- Rockers WI 2 (see p. 8-144) or WI/M (see p. 8-138) and damper DA 2/100-C (see p. 8-74) for infeeding workpiece pallets WT 2 and WT 2/F

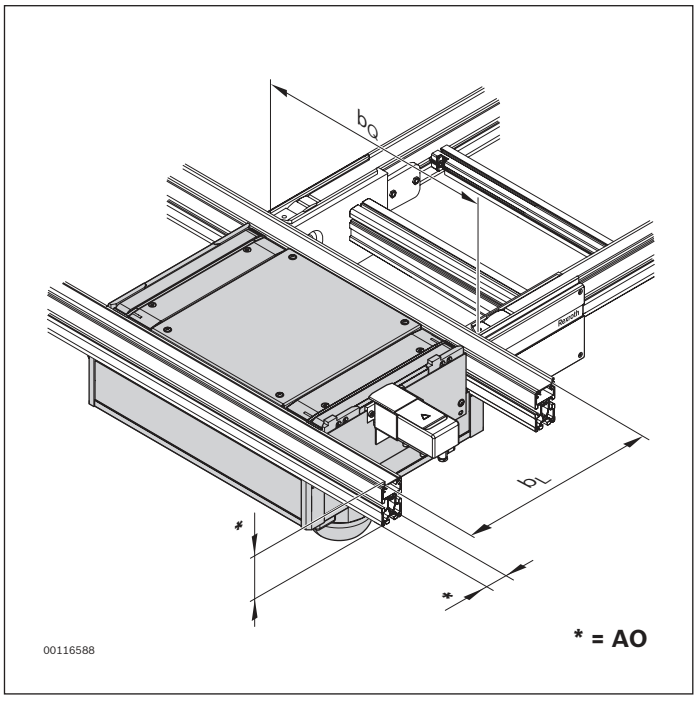
Scope of delivery

- Incl. fastening material
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.
- Protective case

Condition on delivery

- Assembled
- Kit for electric position sensing included
- Kit for protective case included

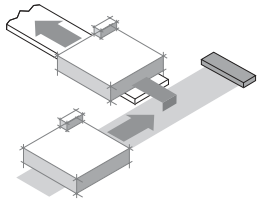
Ordering information



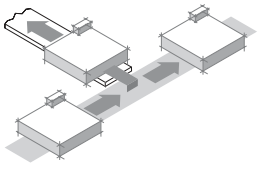
Material number		3842999843 HQ 2/U2	3842999033 HQ 2/U2 LS
b_Q (mm)	Track width in the transverse conveyor	400; 480; 640; 800	
b_L (mm)	Track width in the longitudinal conveyor	400; 480; 640	
b_Q x b_L (mm x mm)	Combination options	400 x 400; 480; 640 480 x 400; 480; 640 640 x 400; 480; 640 800 x 400; 480; 640	
AO	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2	
PN	Pneumatic equipment	2[1]; 3[2]	
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18	
U (V)	Voltage	See motor data, p. 10-29ff	
f (Hz)	Frequency	See motor data, p. 10-29ff	
AT	Motor connection S = cable/plug K = terminal box	S; K	

[1] PN = 2: Upper and middle lift position
[2] PN = 3: Upper, middle and lower lift position

PN = 2



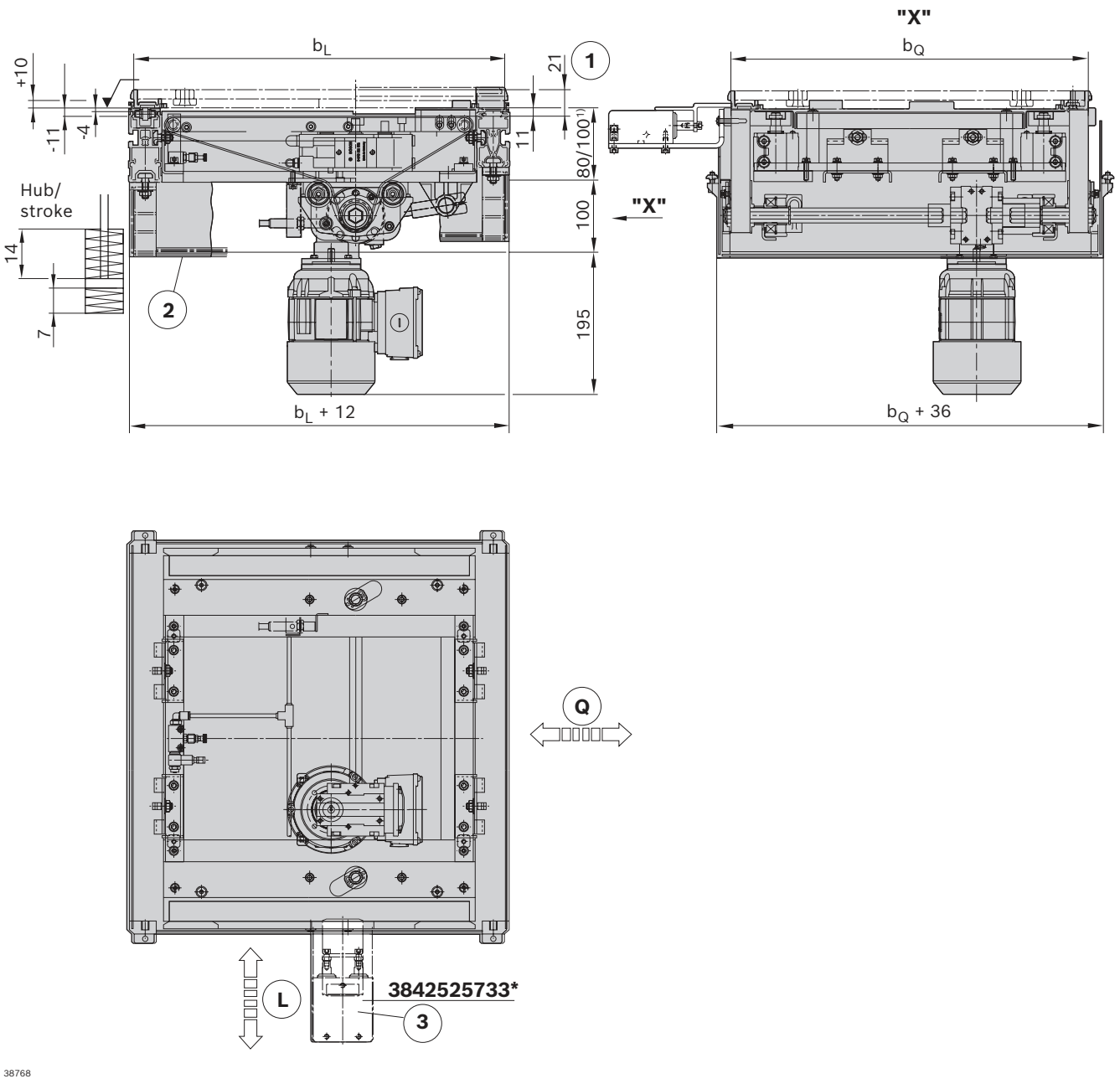
PN = 3



Technical data

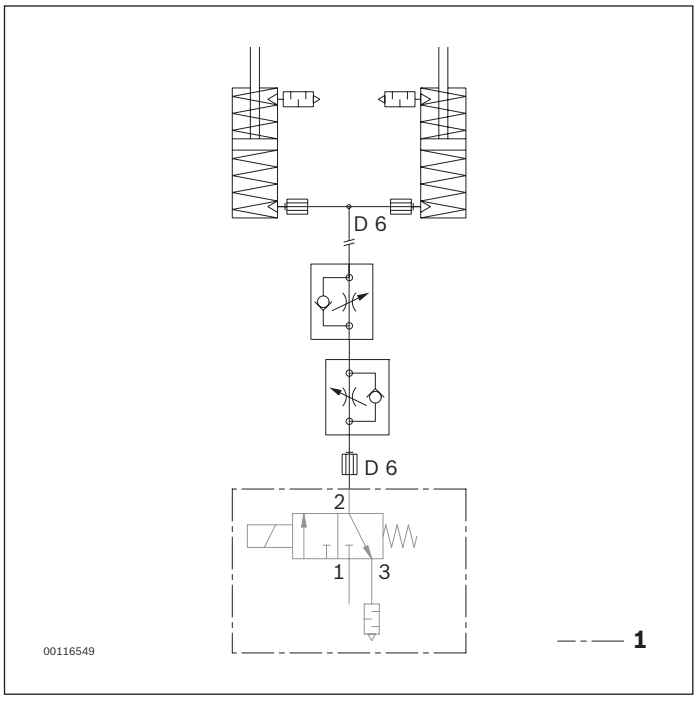
Material number			3842999843 HQ 2/U2	3842999033 HQ 2/U2 LS
Max. total workpiece pallet weight	m_G	kg	50	50
ESD			Yes	Yes
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	6	6

Dimensions



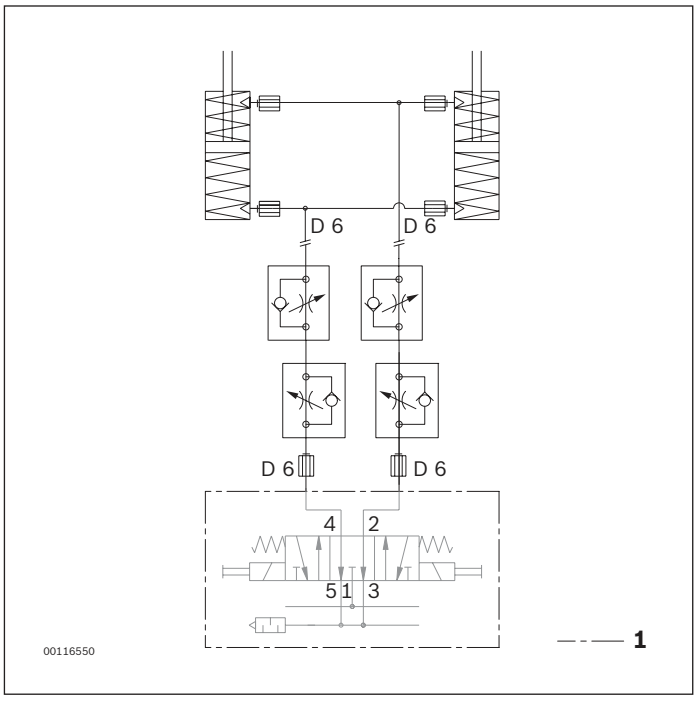
L Conveying direction of longitudinal section
Q Conveying direction of transverse section
1 Stroke
2 Protective case
3 Damped stop
[1] Profile height
* See p. 8-71

Circuit diagram for unit with pneumatic equipment for two positions PN = 2



1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for three positions PN = 3



1 Not included in the scope of delivery

Lift transverse unit HQ 2/U-H

In combination with HQ 2/U-H, only wear pads PE are recommended for use on the workpiece pallets.

Required accessories

- 1x sensor M12x1 with rated switching distance S_N = 4 mm for each (top/center/bottom) position sensing location, see p. 8-112ff
- Adapter plate (available on request) required to mount a VA 2/D-130 perpendicular to the main direction of transport

Recommended accessories

- Dampers DA 2/150-E (see p. 8-80), DA 2/100-E (see p. 8-77) for outfeeding workpiece pallets WT 2, WT 2/F, WT 2/H or WT 2/F-H; required when v_N > 9 m/min or when total weight of the workpiece pallet > 30 kg
- Rockers WI 2/... (see p. 8-144ff), WI/M (see p. 8-138) and damper DA 2/100-C (see p. 8-74) for infeeding workpiece pallets WT 2 and WT 2/F
- Decentralized automatic lubrication unit LU 2 (see p. 9-5) or central automatic lubrication unit LU 2/P (see p. 9-7)

- Lift transverse unit for outfeeding from a longitudinal section into a transverse section and vice versa
- Use for high total weights up to 2 kg/cm on the smallest side of the workpiece pallet
- Sensor mounting for speed control during infeeding possible
- Lifting movements through two to four block cylinders according to size
- Conveyor medium: Duplex chain (suitable for use in an EPA)
- Pneumatic equipment for 2 (top, center) or 3 (top, center, bottom) lift positions
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- The lateral guides can be mounted on either the left or the right depending on the conveying situation
- Can be combined with WT 2, WT 2/F, WT 2/H and WT 2/F-H

Notice:

- Reversible operation possible
- Accumulation operation not permitted
- Lateral guides of different heights allow for a fixed stop when outfeeding on the HQ
- Combination with WT 2/LS not possible

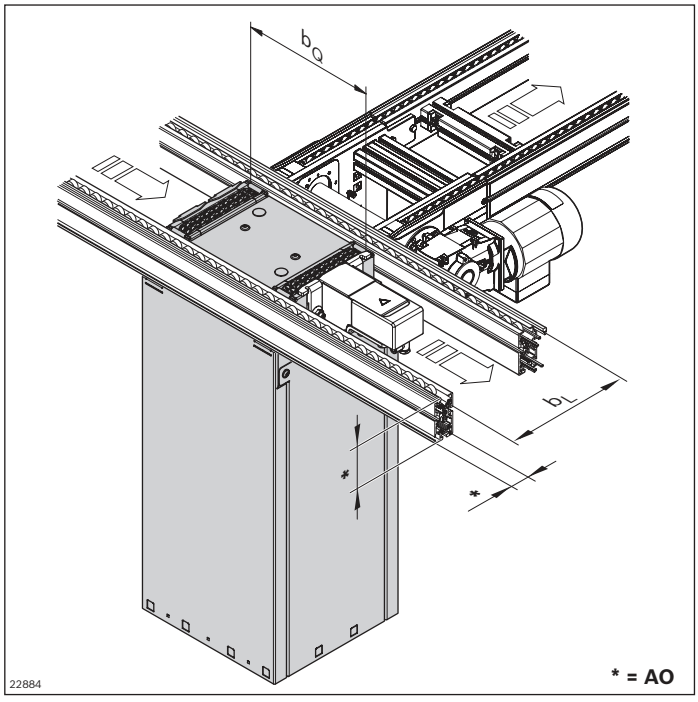
Scope of delivery

- Incl. fastening material
- Pneumatic equipment for two or three positions
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.
- Protective case

Condition on delivery

- Pre-assembled incl. pneumatic equipment
- Protective case, not assembled

Ordering information



Material number		3842998750
b_Q (mm)	Track width in the transverse conveyor	240; 320; 400; 480; 640
b_L (mm)	Track width in the longitudinal conveyor	240; 320; 400; 480; 640
b_Q x b_L (mm x mm)	Combination options	BG 1: 240 x 240; 320; 400 320 x 240; 320; 400; 480 400 x 240 BG 2: 400 x 320; 400; 480; 640 480 x 320; 400 640 x 400 BG 3: 480 x 480; 640 640 x 480; 640
AO[1)]	Installation location, profile 0 = profile 45x80 1 = profile 45x100 2 = profile 50x100	0; 1; 2
PN	Pneumatic equipment	2[2)] ; 3[3)]
v_N (m/min)	Nominal speed	6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K

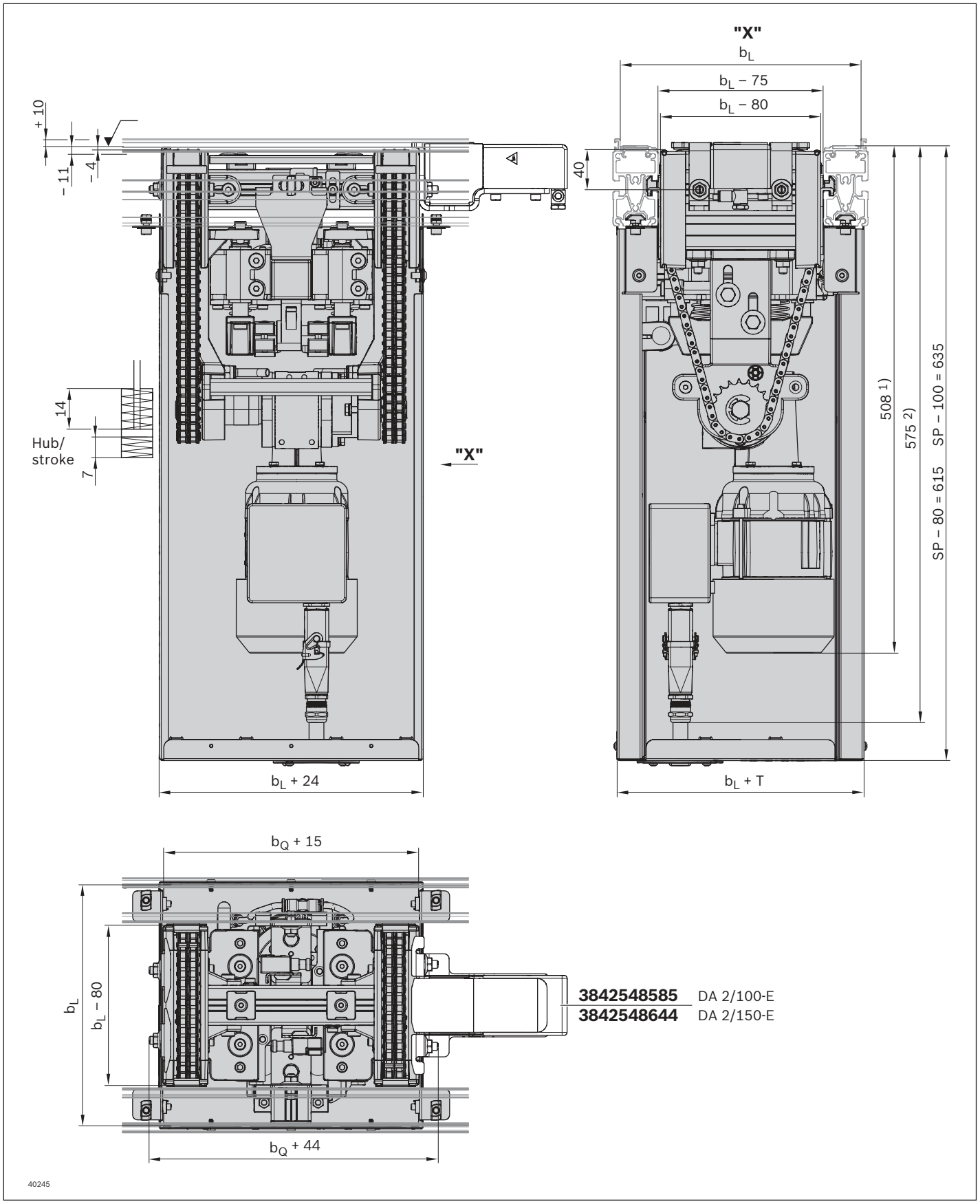
[1)] Only required when b_Q = 240 mm
[2)] PN = 2: Upper and middle lift position
[3)] PN = 3: Upper, middle and lower lift position

Technical data

Material number			3842998750
Max. total workpiece pallet weight	m_G	kg	128
ESD			Yes
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	BG 1, 2, 3: 6
Number of lifting cylinders[1]			BG 1: 2 BG 2: 3 BG 3: 4

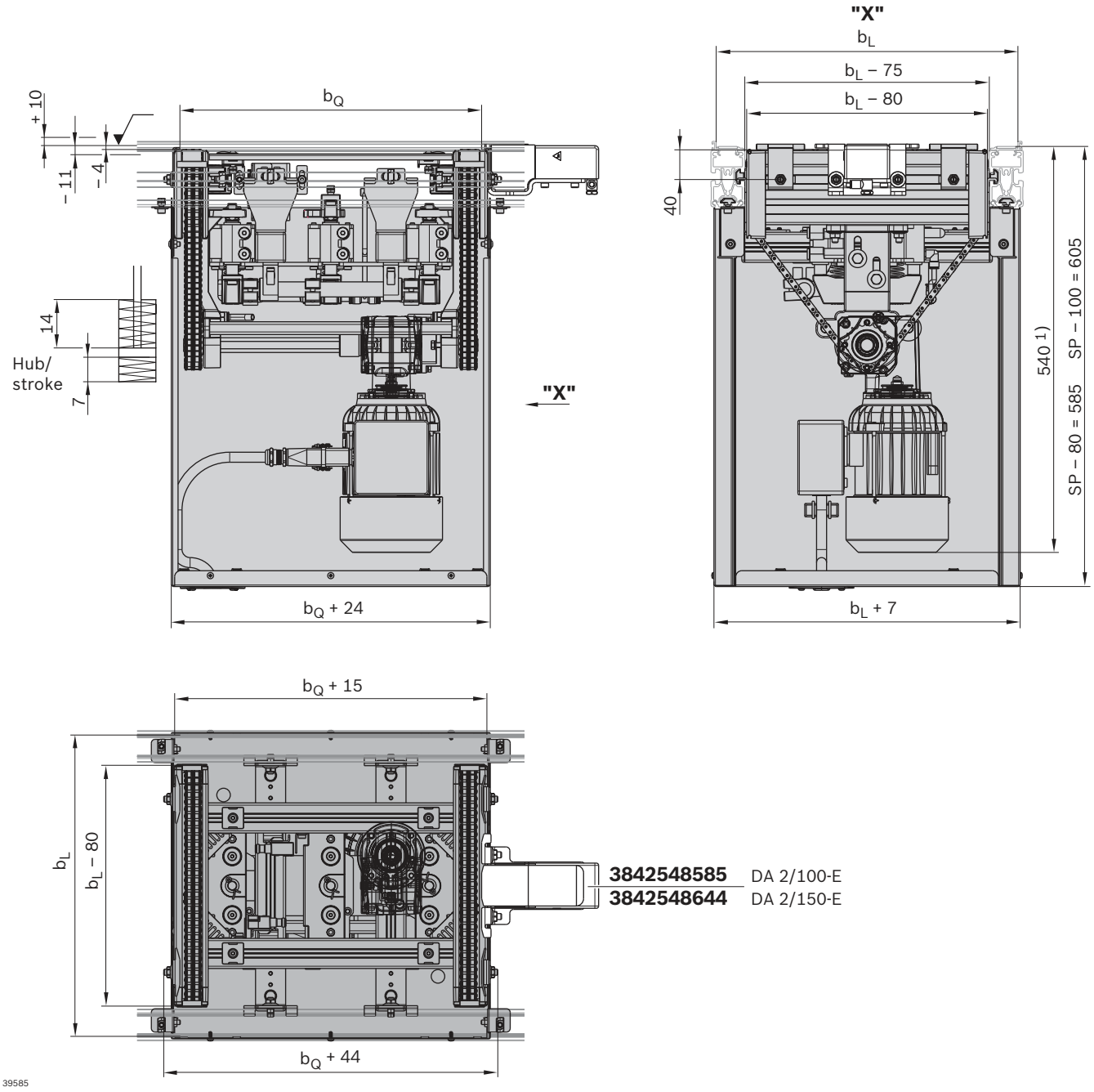
[1)] See also page 5-63
Notice:
Adapter plate for mounting a slide stop VA 2/D-130 on the HQ 2/U-H perpendicular to the main direction of transport available on request.

Dimensions, BG 1 (2 cylinders)



3842548585 DA 2/100-E
3842548644 DA 2/150-E

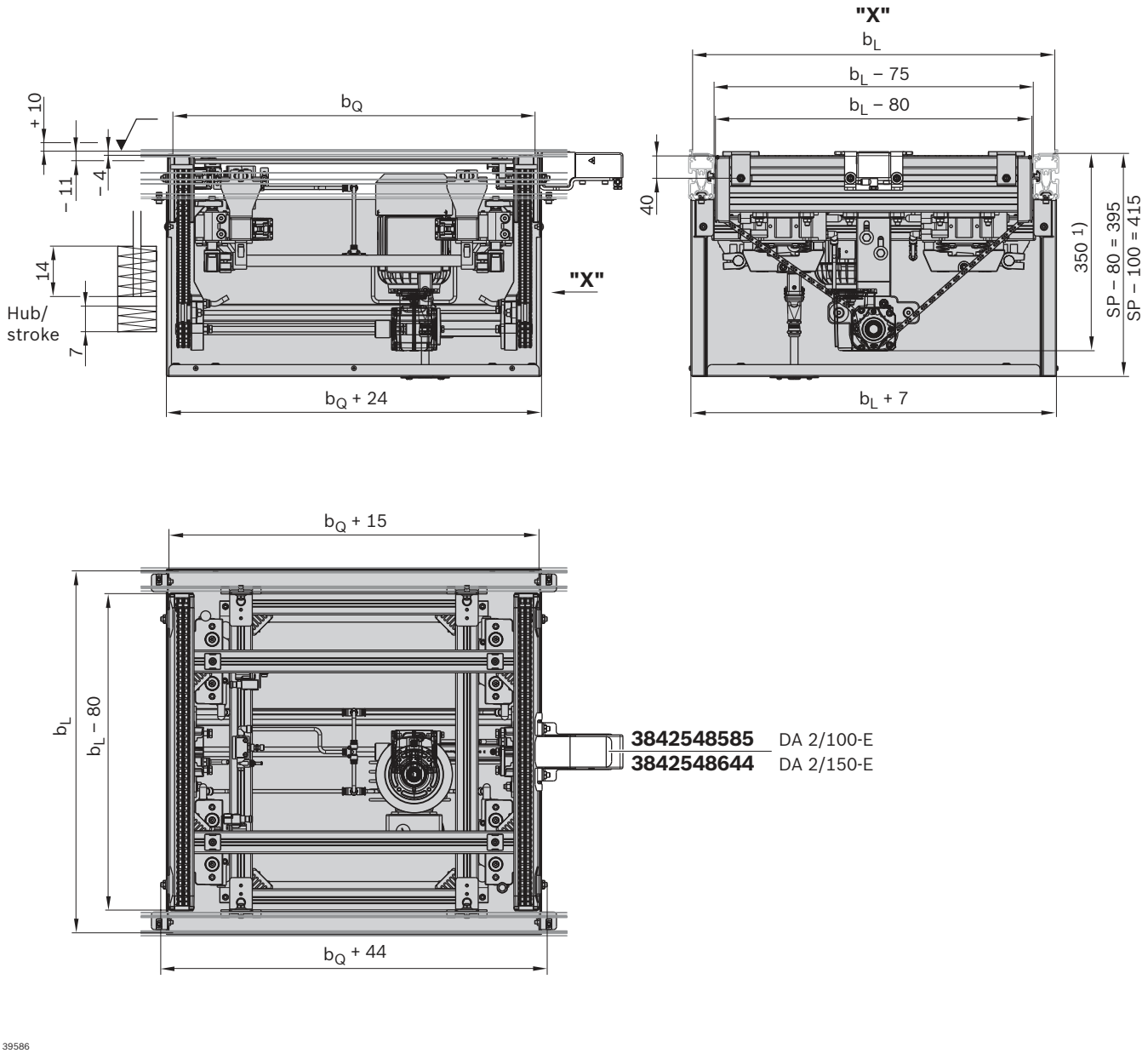
Dimensions, BG 2 (3 cylinders)



3842548585 DA 2/100-E
3842548644 DA 2/150-E

Comment: For 3 cylinders, align the push-in fitting to the left/side.

Dimensions, BG 3 (4 cylinders)

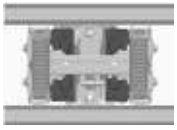
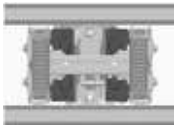
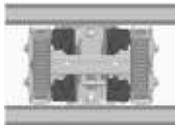
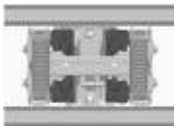
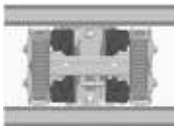
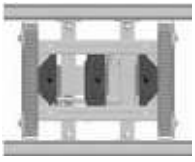
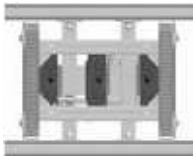
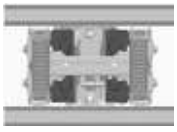
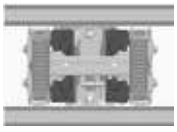
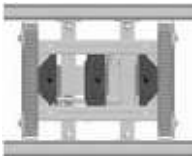
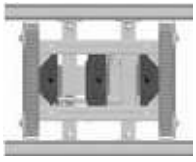
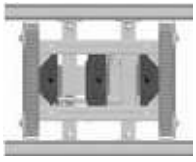
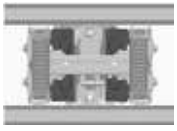
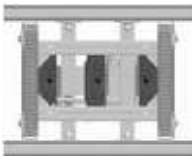
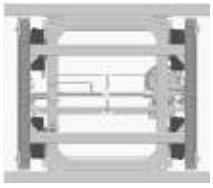
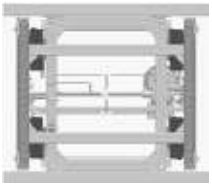
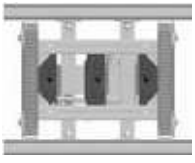
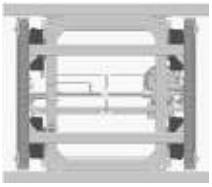
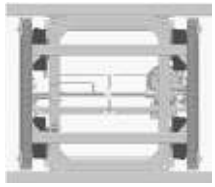


3842548585 DA 2/100-E
3842548644 DA 2/150-E

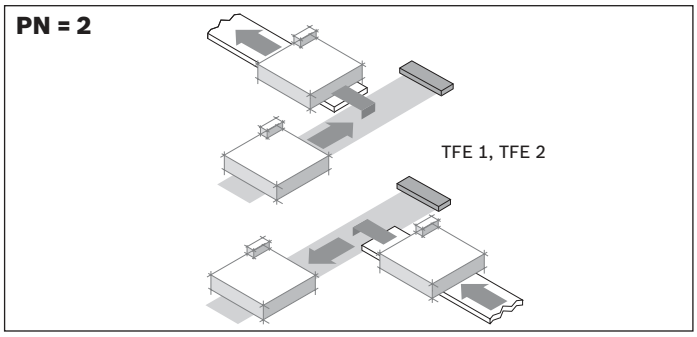
Comment: With 4 cylinders, the motor is oriented upwards and push-in fitting downwards.

Cylinder arrangement

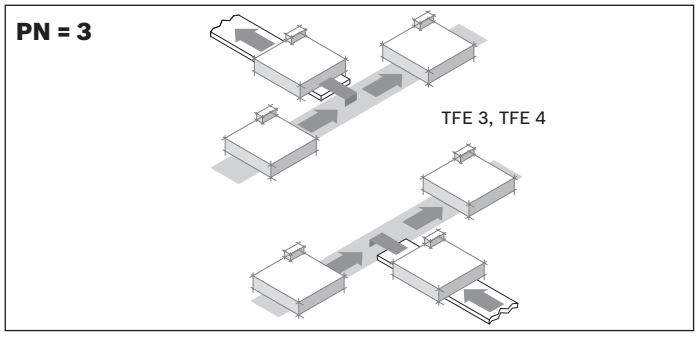
Schematic of the cylinder arrangement according to size

	b_Q 240	b_Q 320	b_Q 400	b_Q 480	b_Q 640
					
b_L 240	2 cylinders	2 cylinders	2 cylinders		
Load	48	48	48		
					
b_L 320	2 cylinders	2 cylinders	3 cylinders	3 cylinders	
Load	48	64	64	64	
					
b_L 400	2 cylinders	2 cylinders	3 cylinders	3 cylinders	3 cylinders
Load	48	64	80	96	96
					
b_L 480		2 cylinders	3 cylinders	4 cylinders	4 cylinders
Load		64	80	96	96
					
b_L 640			3 cylinders	4 cylinders	4 cylinders
Load			80	96	128

Pneumatic diagram



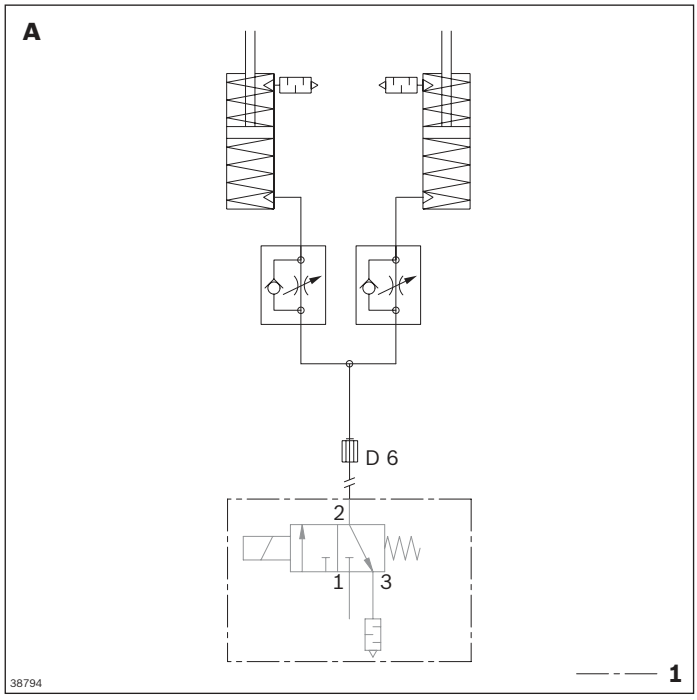
Use the pneumatic diagram:
A (for pneumatic equipment PN = 2) if you want to transfer the WT from the longitudinal section to the transverse section (TFE 1) or from the transverse section to the longitudinal section (TFE 2).



B (for pneumatic equipment PN = 3), if you want to outfeed the WT from the longitudinal section to the transverse section (TFE 3) or infeed from the transverse section to the longitudinal section (TFE 4).

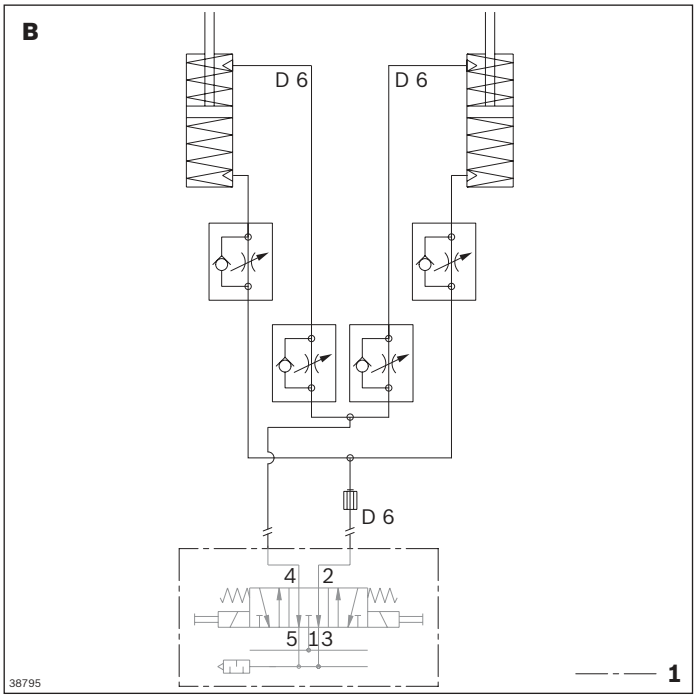
Pneumatic diagrams, BG 1, 2 cylinders

Circuit diagram for unit with pneumatic equipment for 2 positions (PN = 2), BG 1, b_L < 320 mm



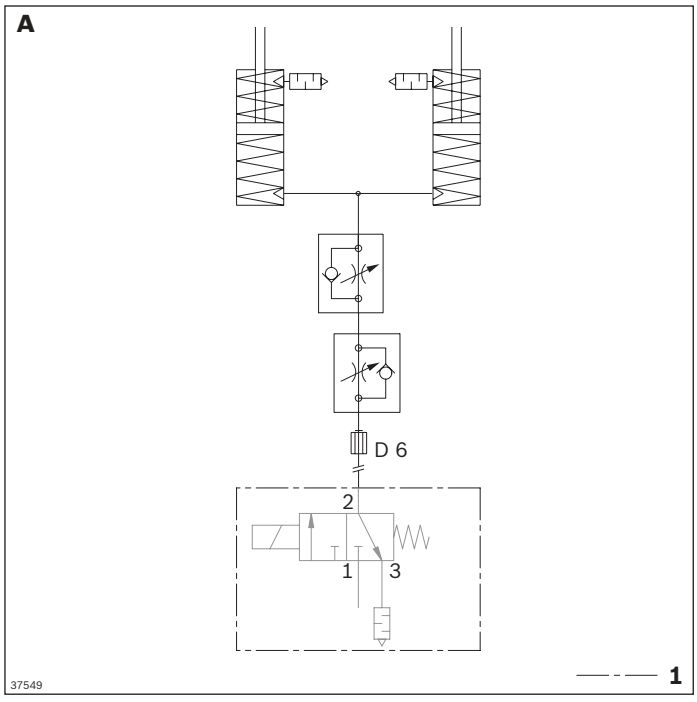
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for 3 positions (PN = 3), BG 1, b_L < 320 mm



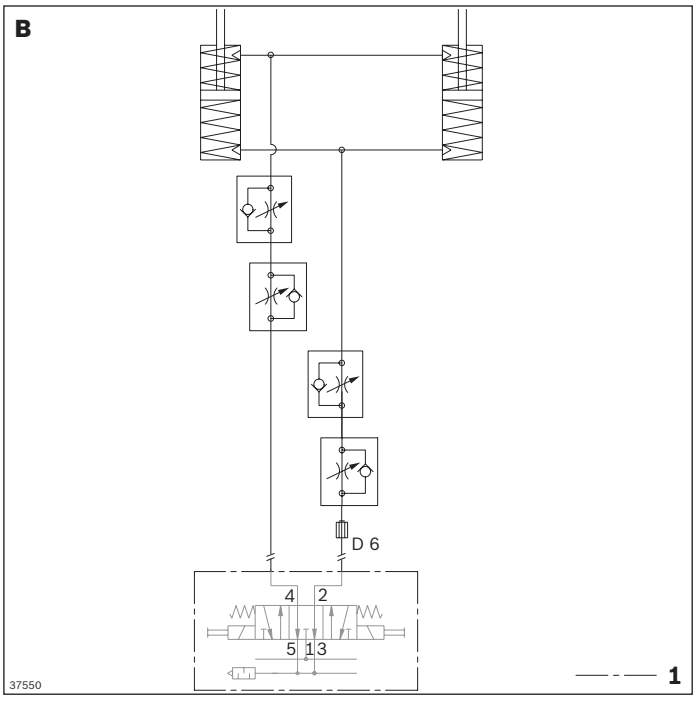
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for 2 positions (PN = 2), BG 1, $b_L \geq 320$



1 Not included in the scope of delivery

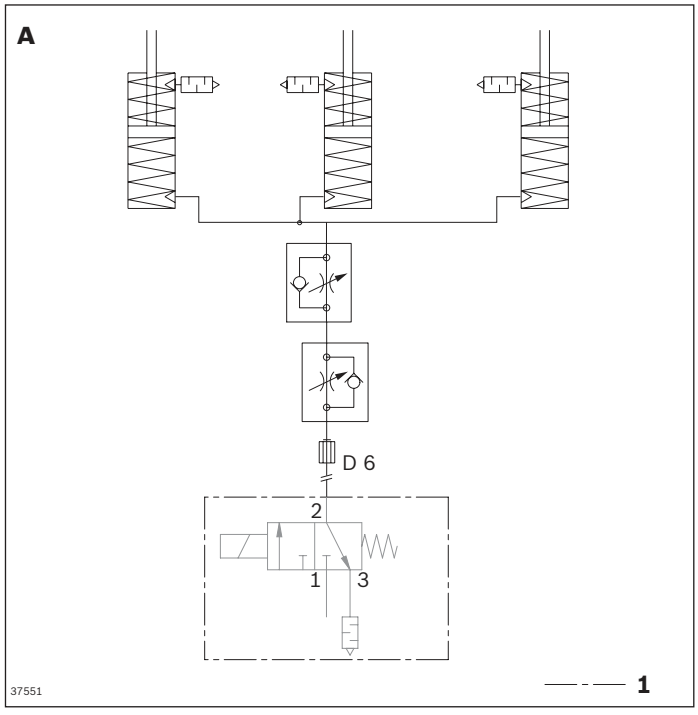
Circuit diagram for unit with pneumatic equipment for 3 positions (PN = 3), BG 1, $b_L \geq 320$



1 Not included in the scope of delivery

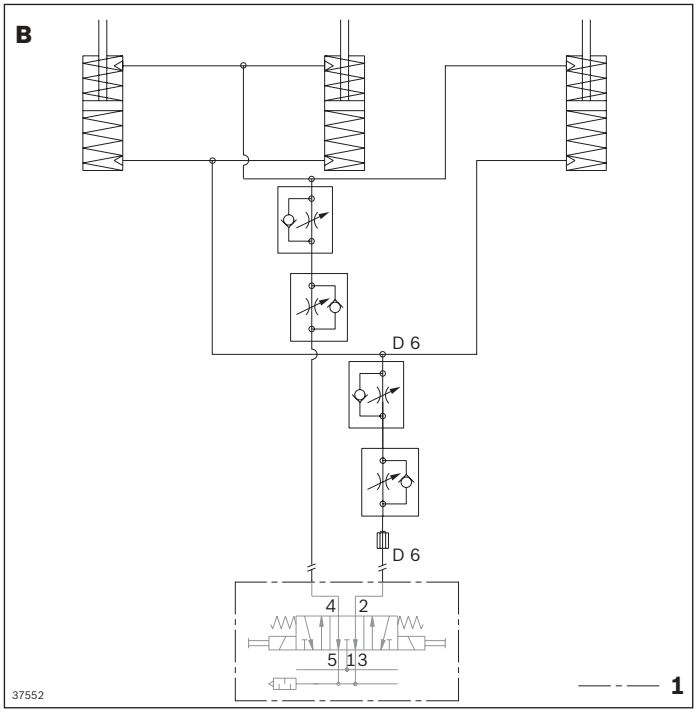
Pneumatic diagrams, BG 2, 3 cylinders

Circuit diagram for unit with pneumatic equipment for 2 positions PN = 2, BG 2



1 Not included in the scope of delivery

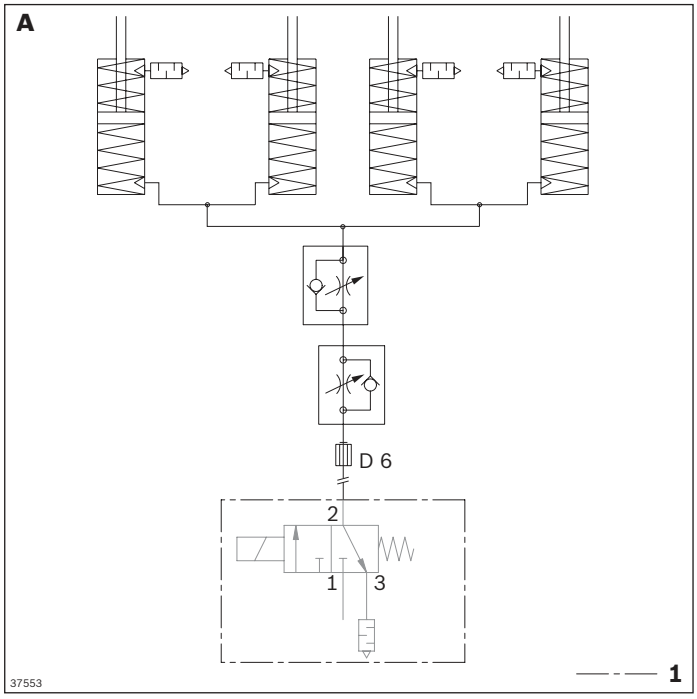
Circuit diagram for unit with pneumatic equipment for 3 positions PN = 3, BG 2



1 Not included in the scope of delivery

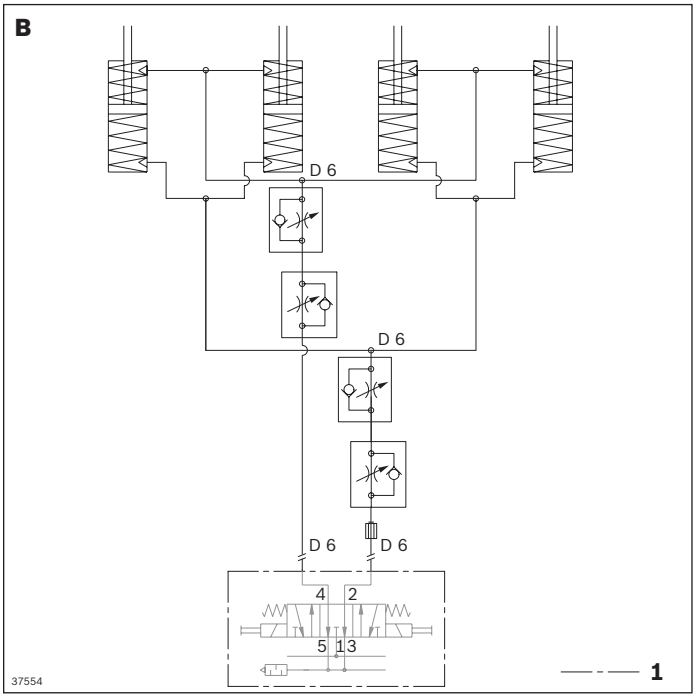
Pneumatic diagrams, BG 3, 4 cylinders

Circuit diagram for unit with pneumatic equipment for 2 positions PN = 2, BG 3



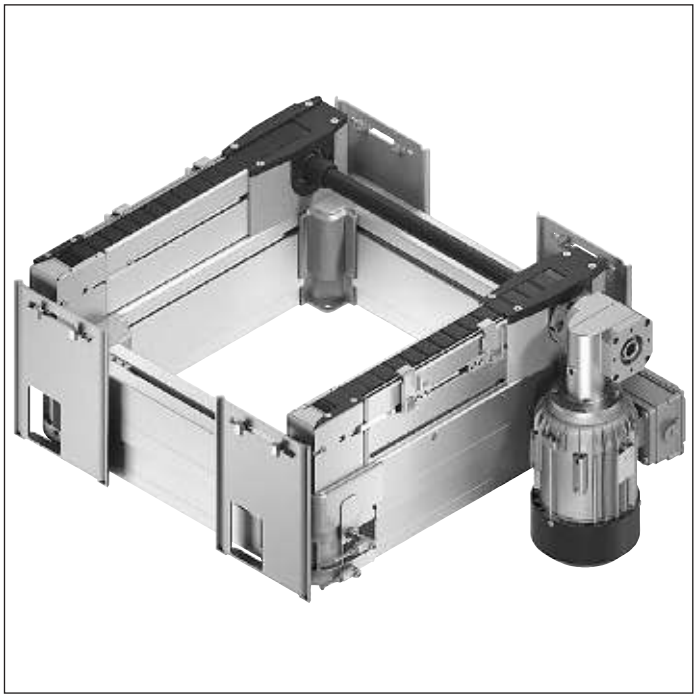
1 Not included in the scope of delivery

Circuit diagram for unit with pneumatic equipment for 3 positions PN = 3, BG 3



1 Not included in the scope of delivery

Lift transverse unit HQ 2/C-H



- Lift transverse unit for outfeeding from a longitudinal section into a transverse section and vice versa
- Use for high total weights up to 2 kg/cm on the smallest side of the workpiece pallet and up to 240 kg
- Flat construction permits system layouts on several levels
- Synchronized lifting movement of the four block cylinders for uniform and parallel lifting movement
- Conveyor medium: Flat-top chain
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Depending on the installation, height-adjustable lateral guides can be used as a fixed stop for outfeeding or as a lateral guide when changing workpiece pallets
- Fixed stops in the form of adjustable/movable lateral guides made of strip steel
- Can be combined with WT 2, WT 2/F, WT 2/H and WT 2/F-H

Recommended accessories

- Dampers DA 2/100-E (see p. 8-77) and DA 2/150-E (see p. 8-80) or a fixed stop (included in the scope of delivery) can be used for outfeeding workpiece pallets WT 2, WT 2/F, WT 2/H and WT 2/F-H. The damper DA 2/100-C (see p. 8-74) can be used at the belt end for outfeeding a workpiece pallet WT 2 or WT 2/F.
- Dampers DA 2/100-H (see p. 8-83) or DA 2/250-H (see p. 8-86) for outfeeding workpiece pallets WT 2/H and WT 2/F-H
- A fixed stop (included in the scope of delivery) or damper DA 2/100-C can be used for infeeding workpiece pallets WT 2 and WT 2/F. This is also possible in combination with a rocker WI 2 (see p. 8-144), WI 2/X (see p. 8-148), WI 2/D (see p. 8-150) or a WI 2/M (see p. 8-138).
- Dampers DA 2/100-H and DA 2/250-H can be used for infeeding workpiece pallets WT 2/H and WT 2/F-H.
- Decentralized automatic lubrication unit LU 2 (see p. 9-5) or central automatic lubrication unit LU 2/P (see p. 9-7)

Notice:

- Reversible operation possible
- Accumulation operation not permitted
- Combination with WT 2/LS not possible

Required accessories

- Sensor M12x1 for position sensing (top/center/bottom), see p. 8-112ff
- Dampers for outfeeding and infeeding workpiece pallets, see p. 8-66

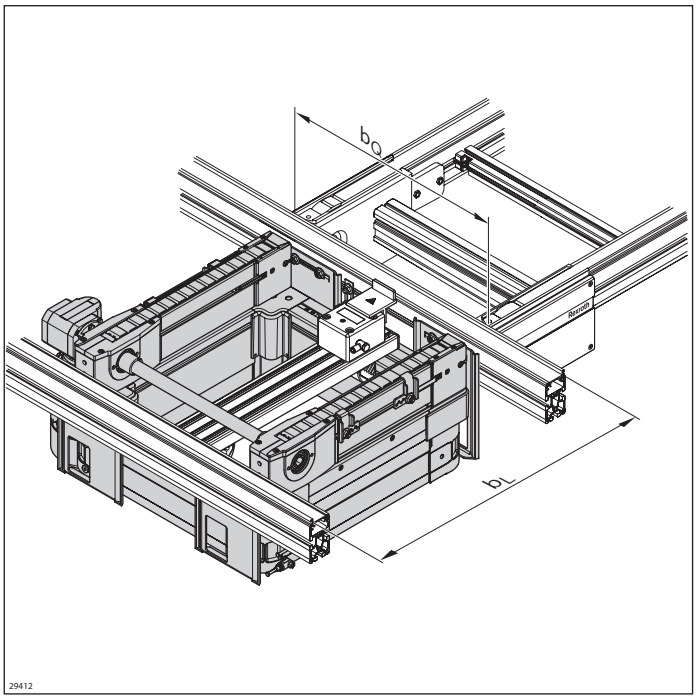
Scope of delivery

- Incl. fastening material
- Switch holder for 12 mm sensor for position sensing
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.
- Lateral guide kit for $b_l \leq 640$ mm (3842549567) or for $b_l > 640$ mm (3842549568)

Condition on delivery

- Assembled
- Kits for lateral guides included

Ordering information



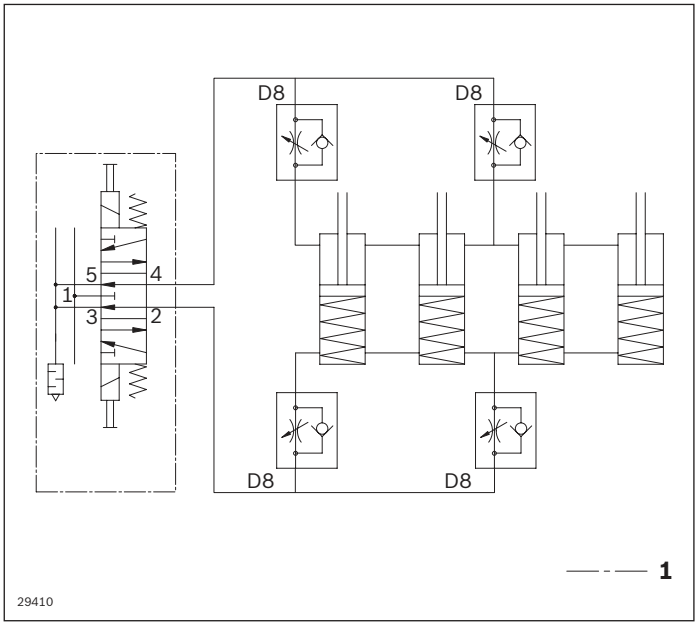
Material number		3842999002
b_Q (mm)	Track width in the transverse conveyor	480; 640; 800; 1040; 1200
		480 ... 1200[1]
b_L (mm)	Track width in the longitudinal conveyor	640; 800; 1040; 1200
		640 ... 1200[1]
b_Q x b_L (mm x mm)	Combination options	480 x 640; 800 640 x 640; 800; 1040 800 x 640; 800; 1040; 1200 1040 x 640; 800; 1040; 1200; 1200 x 800; 1040; 1200
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R[2]; L[2]; M[3]

[1] Individual width variants can be ordered
[2] When MA = R; L: Motor mounting only possible at the end of the section
[3] MA = M when $b_Q \geq 640$ mm

Technical data

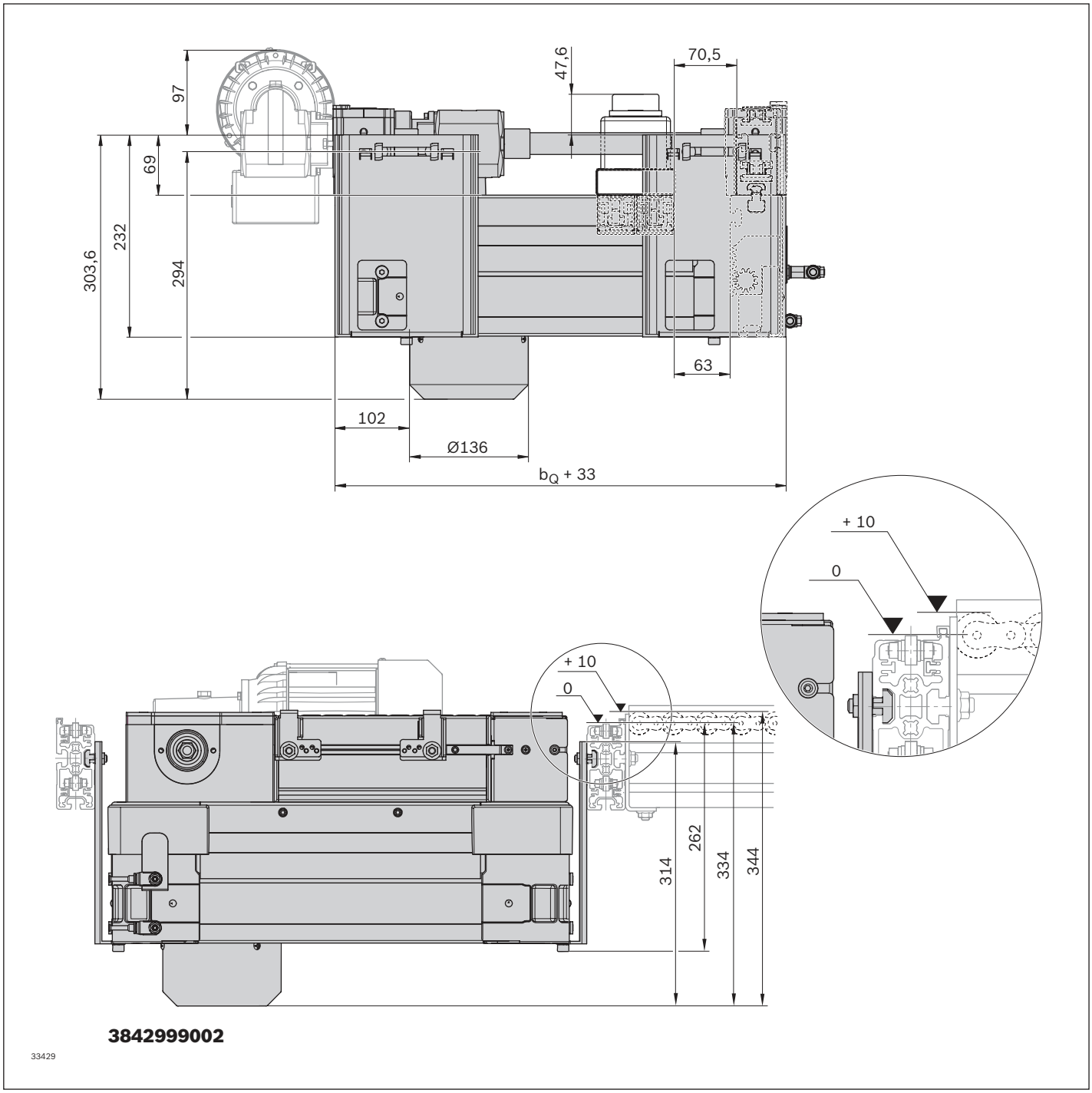
Material number			3842999002
Max. total workpiece pallet weight	m_G	kg	240
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	8

Circuit diagram



1 Not included in the scope of delivery

Dimensions



3842999002

33429

Lift transverse unit HQ 2/G-H

Required accessories

- Sensor M12x1 for position sensing (top/center/bottom), see p. 8-112ff
- Dampers for outfeeding and infeeding workpiece pallets, see p. 8-66

Recommended accessories

- Dampers DA 2/100-E (see p. 8-77), DA 2/150-E (see p. 8-80) or a fixed stop (included in the scope of delivery) for outfeeding workpiece pallets WT 2, WT 2/F, WT 2/H and WT 2/F-H; required when v_N > 9 m/min or when total weight of the workpiece pallet > 30 kg. The damper DA 2/100-C (see p. 8-74) can be used at the belt end for outfeeding a workpiece pallet WT 2 or WT 2/F.
- Dampers DA 2/100-H (see p. 8-83) or DA 2/250-H (see p. 8-86) for outfeeding workpiece pallets WT 2/H and WT 2/F-H

- Lift transverse unit for outfeeding from a longitudinal section into a transverse section and vice versa
- The particularly compact construction permits system layouts on several levels when space is limited
- Use for high total weights up to 2 kg/cm on the smallest side of the workpiece pallet and up to 240 kg
- Synchronized lifting movement of the four block cylinders for uniform and parallel lifting movement
- Integrated chain tensioner; to be adjusted manually
- Conveyor medium: Duplex chain (suitable for use in an EPA)
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Depending on the installation, height-adjustable lateral guides can be used as a fixed stop for outfeeding or as a lateral guide when changing workpiece pallets
- Fixed stops in the form of adjustable/movable lateral guides made of strip steel
- Can be combined with WT 2, WT 2/F, WT 2/H and WT 2/F-H

Notice:

- Accumulation operation not permitted
- Reversible operation possible
- Only workpiece pallets with wear pad PE are permitted

- A fixed stop (included in the scope of delivery) or damper DA 2/100-C can be used for infeeding workpiece pallets WT 2 and WT 2/F. This is also possible in combination with a rocker WI 2 (see p. 8-144), WI 2/X (see p. 8-148), WI 2/D (see p. 8-150) or a WI 2/M (see p. 8-138).
- Dampers DA 2/100-H and DA 2/250-H can be used for infeeding workpiece pallets WT 2/H and WT 2/F-H.
- Decentralized automatic lubrication unit LU 2 (see p. 9-5) or central automatic lubrication unit LU 2/P (see p. 9-7)

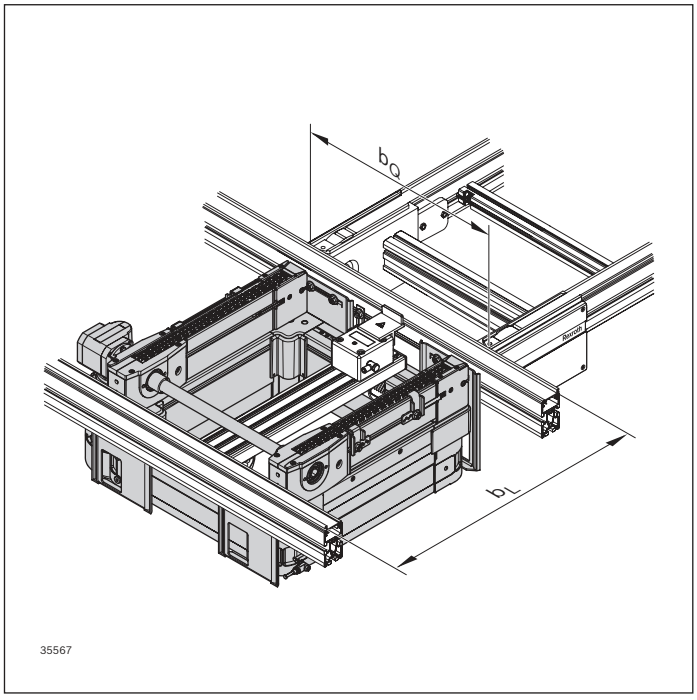
Scope of delivery

- Incl. fastening material
- Switch holder for 12 mm sensor for position sensing
- Construction kit for electrical position sensing for 1 to 3 sensors (top/center/bottom). You can query all 3 lift positions.
- Lateral guide kit for $b_l \leq 640$ mm (3842549567) or for $b_l > 640$ mm (3842549568)

Condition on delivery

- Assembled
- Kits for lateral guides included

Ordering information



Material number		3842996370
b_Q (mm)	Track width in the transverse conveyor	480; 640; 800; 1040; 1200
		480 ... 1200[1]
b_L (mm)	Track width in the longitudinal conveyor	640; 800; 1040; 1200
		640 ... 1200[1]
b_Q x b_L (mm x mm)	Combination options	480 ... 1200 x 640 ... 1200
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[2]

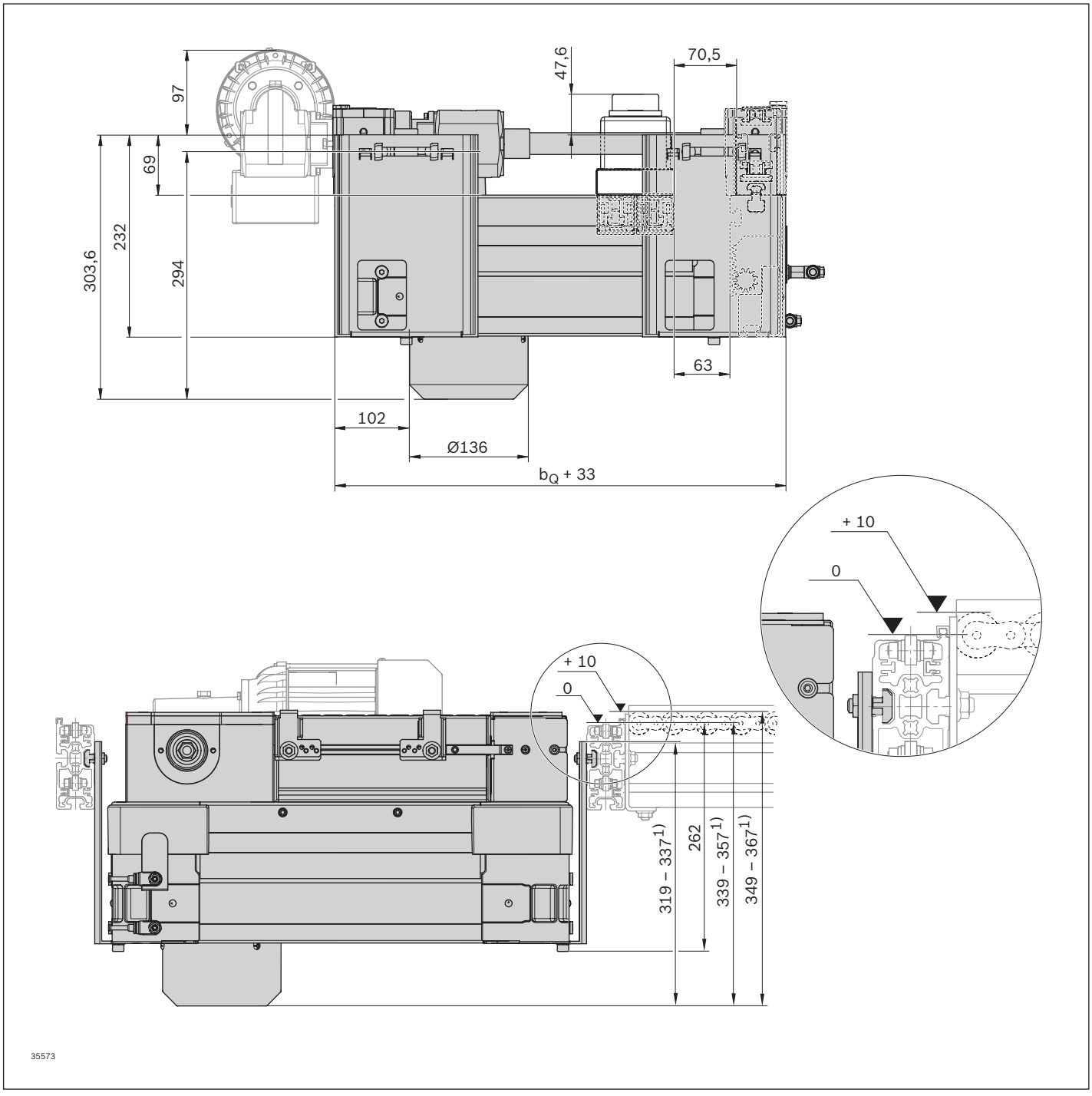
[1] Individual width variants can be ordered
[2] MA = M: b ≥ 480 mm at DA 2/100-E, DA 2/150-E, DA 2/100-C
MA = M: b ≥ 640 mm at DA 2/100-H, DA 2/250-H, VA 2/D-250

Technical data

Material number			3842996370
Max. total workpiece pallet weight	m_G	kg	240
ESD			Yes[3]
Cleanroom class			ISO class 7[4]
Dry room	rF	%	<1
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	8

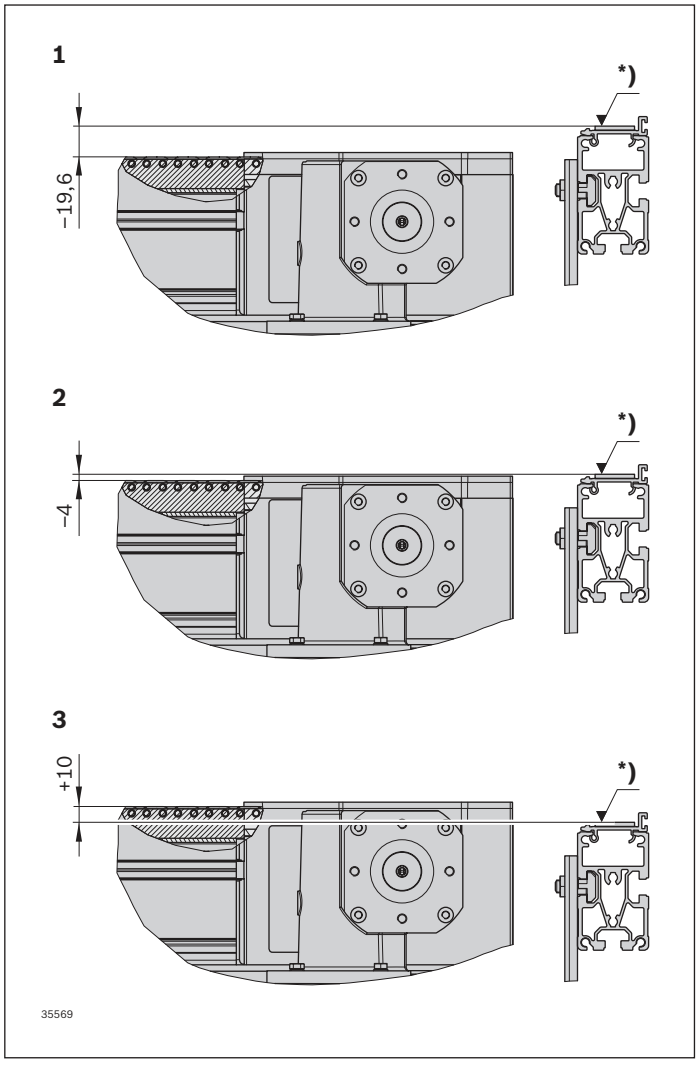
[3] Chain suitable for use in an EPA
[4] Is principally suitable

Dimensions



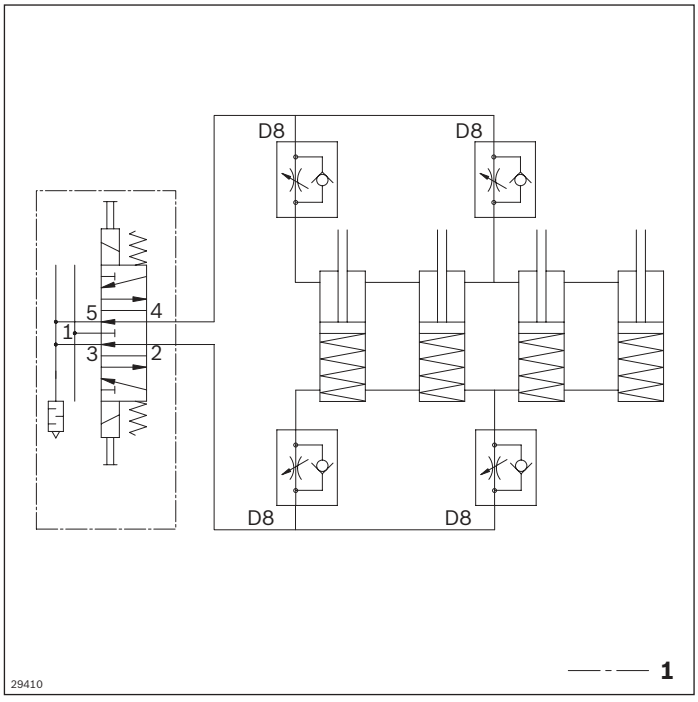
[1] Depending on motor size, see selection table motors, see p. 10-29

Lift positions



1 Lower position
2 Middle position
3 Upper position
*) Transport level = 0

Circuit diagram



1 Not included in the scope of delivery

Belt section BS 2/G-250

The belt section is a functional conveyor section with its own drive for the transverse conveyor of the workpiece pallet between parallel conveyor sections in conjunction with two lift transverse units HQ 2/... or for longitudinal conveying on conveyor sections up to 2000 mm.

Recommended accessories

- Connection kits, see p. 9-21
- Leg sets SZ 2/..., see p. 6-4
- Decentralized automatic lubrication unit LU 2 (see p. 9-5) or central automatic lubrication unit LU 2/P (see p. 9-7)

Condition on delivery

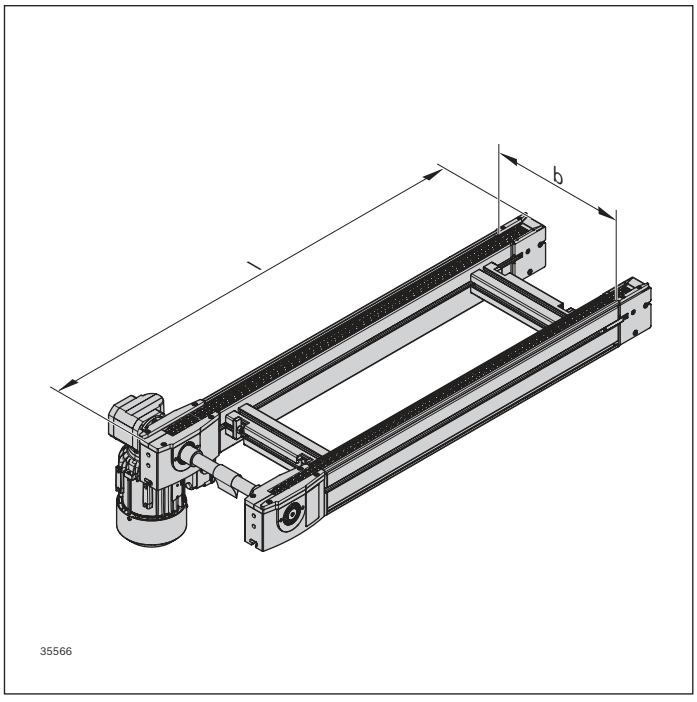
- Assembled

- Particularly robust, functional conveyor section, complete with drive
- Longitudinal conveying of the workpiece pallet on conveyor sections of up to 2000 mm
- Transverse conveyor between parallel conveyor sections
- Can also be used in longitudinal conveyors
- Recommended for use with two lift transverse units HQ 2
- Conveyor medium: Duplex chain (suitable for use in an EPA)
- Motor mounting right, left or central (central from track width of 240 mm)
- Motor connection: Optionally with cable/plug or terminal box
- Integrated chain tensioner; can be adjusted manually
- Special models on request

Notice:

- Accumulation operation not permitted
- Reversible operation possible
- Only workpiece pallets with wear pad PE are permitted
- Connection kits only available on the drive side

Ordering information



Material number		3842999022
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
		160 ... 1200[1]
l (mm)	Length	385 ... 2000
v_N (m/min)	Nominal speed	0[2]; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left M = center	R; L; M[3]

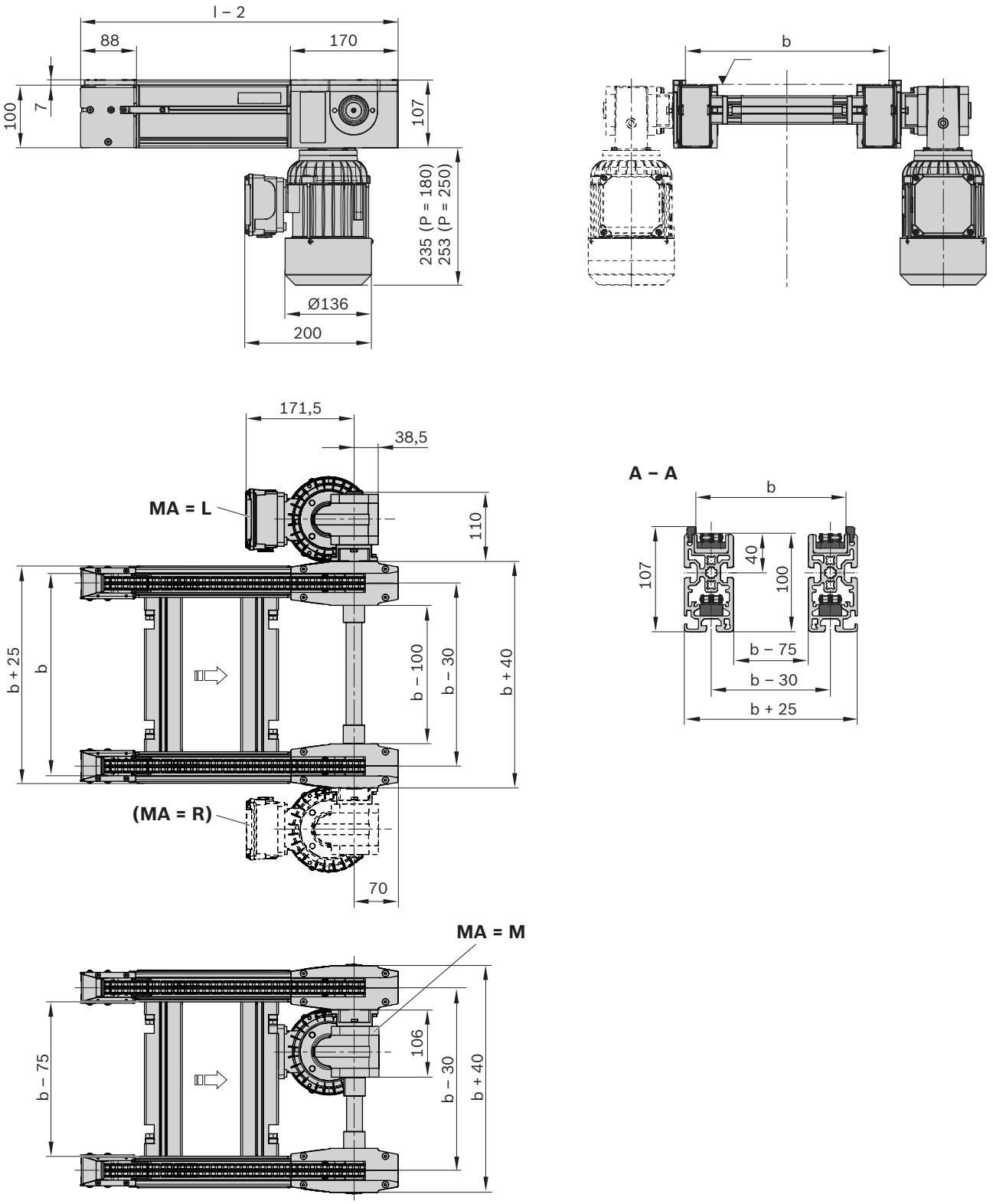
[1] Individual width variants can be ordered
[2] v_N = 0: without motor or gear
[3] MA =M only for b≥240 mm

Technical data

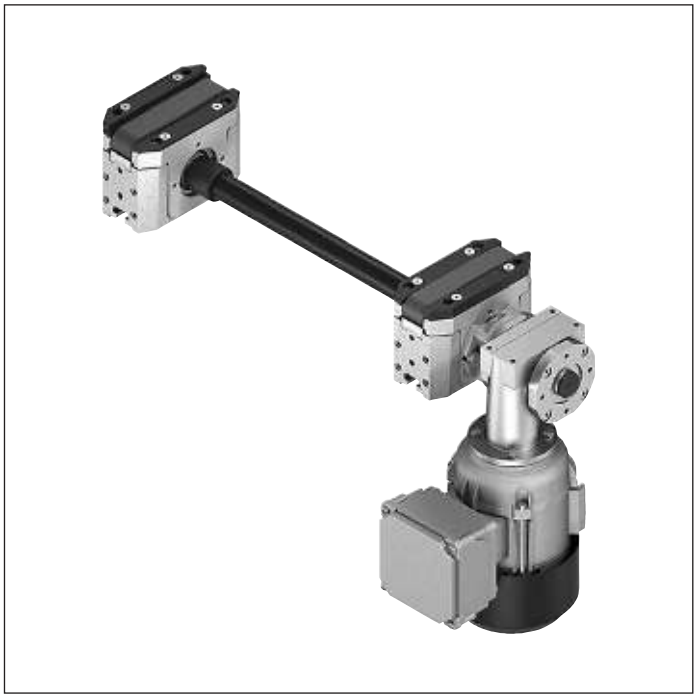
Material number			3842999022
Max. section load		kg	250
ESD			Yes[4]
Cleanroom class			ISO class 7[5]
Dry room	rF	%	<1
Material specification			Section profile: Aluminum, natural; anodized Guide profile: Stainless steel Glide profile: PE
Max. operating temperature	T	°C	+40
Length	l	mm	385 ... 2000

[4] Chain suitable for use in an EPA
[5] Is principally suitable

Dimensions


l – 2
88
170
100
7
107
235 (P = 180)
253 (P = 250)
Ø136
200
b
171,5
38,5
MA = L
110
b + 25
b
b – 100
b – 30
b + 40
(MA = R)
70
A – A
b
107
40
100
b – 75
b – 30
b + 25
MA = M
106
b – 75
b – 30
b + 40
35568

Belt section BS 2/130



- Fully mounted belt section for the transverse conveying of workpiece pallets between parallel conveyor sections at a distance of a = 135 mm
- With built-in drive
- Use with two lift transverse units HQ 2
- Conveyor medium: Toothed belt (suitable for use in an EPA)
- Reversible operation possible
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2/E, WT 2, WT 2/F, WT 2/H and WT 2/F-H

Recommended accessories

- 2x HQ 2 for transverse conveyor, see p. 5-24

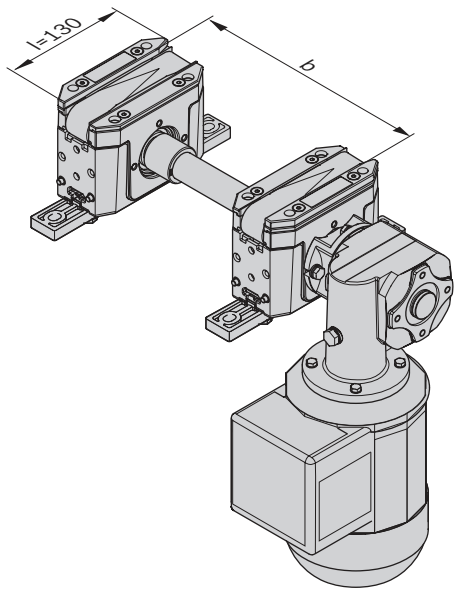
Scope of delivery

- Incl. fastening material

Condition on delivery

- Assembled

Ordering information



Material number		3842999743
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800; 1040; 1200
b (mm)	Track width in direction of transport	160 ... 1200
v_N (m/min)	Nominal speed	0; 6; 9; 12; 15; 18
U (V)	Voltage	See motor data, p. 10-29ff
f (Hz)	Frequency	See motor data, p. 10-29ff
AT	Motor connection S = cable/plug K = terminal box	S; K
MA	Motor mounting R = right L = left	R; L

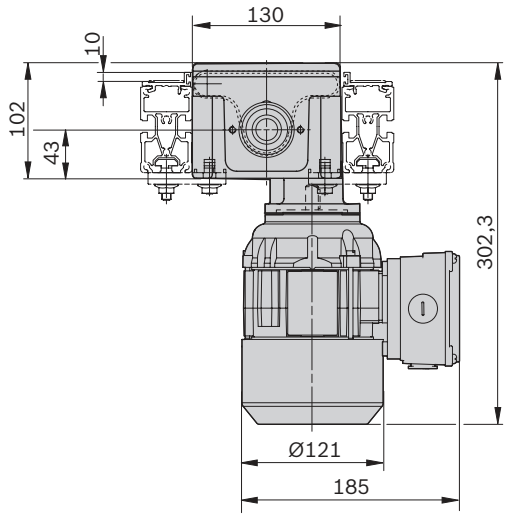
v_N = 0: without motor and gear

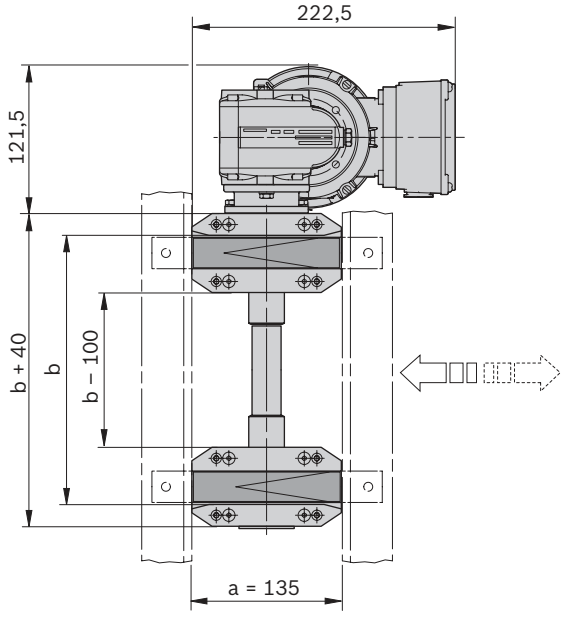
Technical data

Material number			3842999743
Max. section load in accumulation operation		kg	30
ESD			Yes
Cleanroom class			ISO class 7[1)]
Dry room	rF	%	<1
Length	l	mm	130

[1)] Is principally suitable

Dimensions

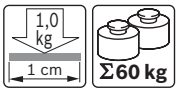


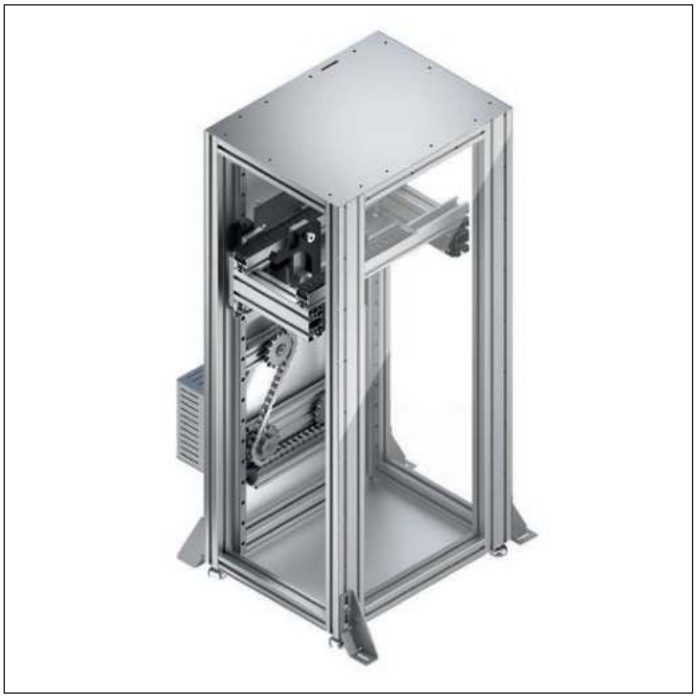


3842999743

00117866

Lift EL 2





Lift for changing workpiece pallets between two different transport levels.

Required accessories
- Optical sensor for infeeding
- Rocker WI/M, see p. 8-138
- Pre-stop gate and sensors for pre-sorting, see p. 8-4

Recommended accessories
- Decentralized automatic lubrication unit LU 2 (see p. 9-5)
- Battery box with battery, see p. 5-89
- Connection cable battery box – motor RKG 0062, see p. 5-89
- Mains filter

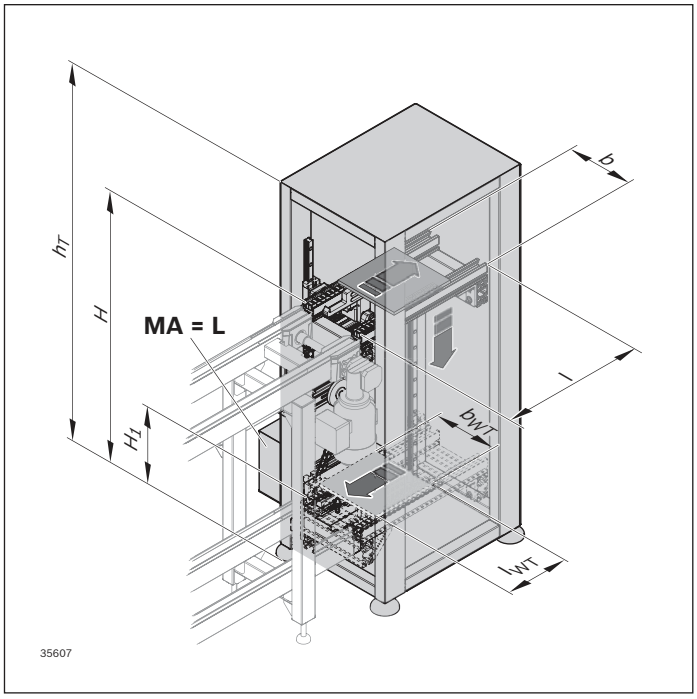
Condition on delivery
- Motor control unit, assembled (GM = 1)
- Motor control unit, not assembled (GM = 0)
- Protective cover, partially assembled (c2, c4, c5 and c6 are assembled, see fig. on page 5-81 below)

- Drive through synchronous servomotor MSM with absolute encoder
  - Electrically released holding brake
  - Interface: Plug-in connectors for encoder connection and power connection
  - The following communication protocols are included: Sercos III, EtherCAT SOE, EtherCAT COE, Profinet/IO, Ethernet/IP
- Lift for conveying a workpiece pallet vertically from a lower conveying section to an upper conveying section or vice versa
- Designed as a head lift
- Suitable for use in an EPA
- For all workpiece pallet dimensions to 800 x 800 mm
- Lower conveying level possible from 290 mm
- Max. total workpiece pallet weight = 60 kg
- Short cycle times of up to 7.9 s are possible
- Strokes of up to 1500 mm can be achieved
- Maintenance hatch for service purposes included
- Options are available for protective cover material
- The product to be transported must not exceed b_{WT} or l_{WT} of the workpiece pallet

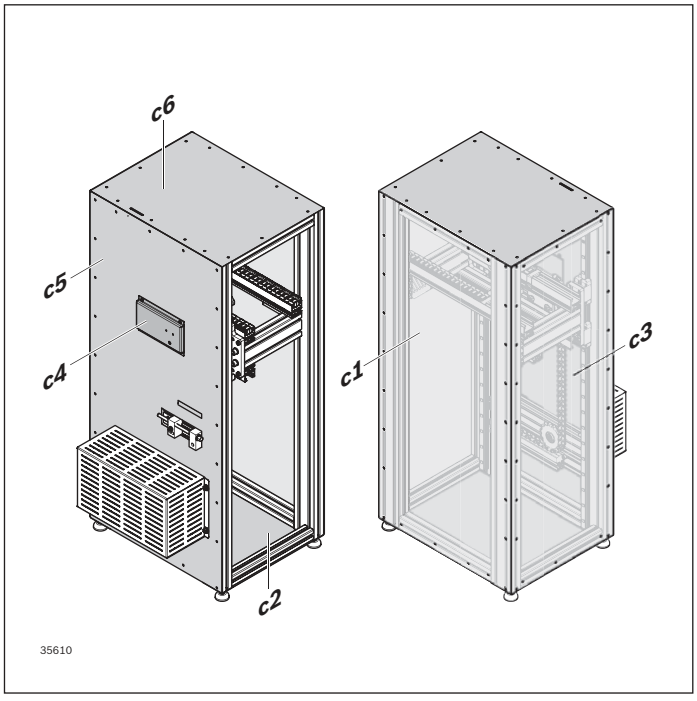
Notice:
- Accumulation operation not permitted, max. 1 WT per transfer process
- Upper transport level to maximum 1790 mm
- Reversible operation not permitted
- Fall protection via servomotor holding brake

Scope of delivery
- GM = 0: Gear
- GM = 1: Gear, servomotor, power cable 5 m, compact converter, cable for compact converter 5 m
- Assembly and adapter set for the decentralized automatic lubrication unit LU 2
- Connection kit for mechanically connecting the EL 2 when inserting and removing it from adjacent sections
- Incl. 2x sensor M12x1,S_N = 8 mm (position detection WT, position detection EL 2)
- Protective cover

Ordering information



Protective cover

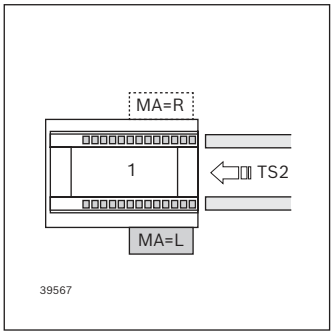


c1 (= side element, right), **c3** (= rear side): material selectable when not assembled: PC; transparent or aluminum; anodized
c2, **c4**, **c5** and **c6**: pre-assembled
Material: Aluminum; anodized

Material number		**3842998861**
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480; 640; 800
l_T (mm)	Length in direction of transport	160; 240; 320; 400; 480; 640; 800
b x l_T (mm x mm)	Combination option	160 x 160; 240; 320 240 x 160; 240; 320; 400 320 x 160; 240; 320; 400; 480 400 x 240; 320; 400; 480; 640; 800 480 x 320; 400; 480; 640; 800 640 x 400; 480; 640; 800 800 x 400; 480; 640; 800
MA[1)]	Motor mounting R = right L = left	R; L
GM	Gear motor 0 = with gear, without motor, without compact converter 1 = with gear, motor and compact converter	0; 1
H1 (mm)[2)]	Lower transport level	290 ... 1000
h_T (mm)[3)]	Total lift height	1000; 1100; 1200; 1300; 1400; 1500; 1600; 1700; 1800; 1900; 2000; 2300; 2600; 2900
H (mm)[2)]	Upper transportation height	690 ... 1790
RM[4)]	Operating mode C = C-shape O = O-shape	C; O
TD[5)]	Running direction D = downwards U = upwards	D; U
CT[6)]	Material Protective cover 2 = c1, c3: PC; transparent 3 = c1, c3: Aluminum; anodized	2; 3

[1)] See also p. 5-82
[2)] Stroke: s = H - H1, 400 ≤ s ≤ 1500
[3)] $h_T \geq 250 + H$
[4)] For selection, see technical data (p. 5-82)
[5)] See also technical data (p. 5-82)
[6)] See figure for protective cover, left

Motor mounting (parameter MA, see p. 5-81)



MA=R: Motor mounting in direction of travel, right
MA= L: Motor mounting in direction of travel, left
1 = Lift EL 2

Technical data

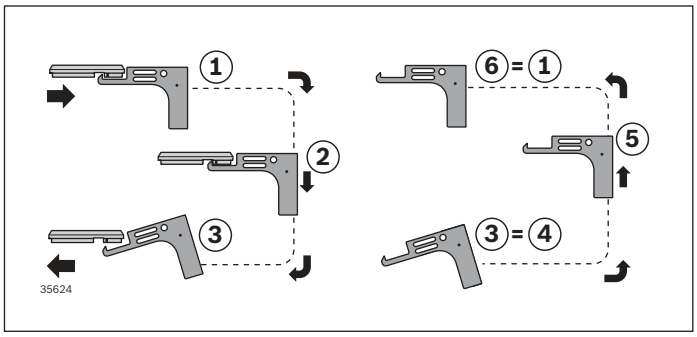
Material number		**3842998861**
Max. section load in accumulation operation	kg	60
Specific section load	kg/cm	1
ESD		Yes
Material specification		Protective cover: PC, aluminum Vertical guide: Steel Guide profiles: PUHMW; black Chain wheel and chain tensioner: Steel Motor cover: Sheet, galvanized Feed hook: POM; black
Stroke	mm	400 ... 1500

Combination options Lift EL 2 with sections

Lift EL 2 combined with...	**Installation location and length of the drive head (mm)**	**C-shape/O-shape in relation to the length of the WT**
BS 2	130	See selection table on page 5-83, **A**
BS 2/R-300, BS 2/R-700, BS 2/C-100, BS 2/C-250, AS 2/R-300, AS 2/R-700, AS 2/C-100, AS 2/C-250, AS 2/B-150, AS 2/B-250	170	See selection table on page 5-83, **B**
BS 2/R-H, BS 2/C-H, AS 2/C-400, AS 2/C-700, AS 2/R-1200, AS 2/R-2200	280	See selection table on page 5-83, **C**
Lift EL 2 combined with...	**Installation location and length of return unit (mm)**	**C-shape/O-shape in relation to the length of the WT**
Return unit of BS 2	30	See selection table on page 5-83, **A**
UM 2/C-60, (and return unit for BS 2/C... and BS 2/R...), UM 2/R-60	60	See selection table on page 5-83, **B**
UM 2/C-170 (and return unit for BS 2/R-H), UM 2/R-170	170	See selection table on page 5-83, **C**
UM 2/B	280	See selection table on page 5-83, **C**

Operating mode (parameter RM, see p. 5-81)

C-shape: Running direction downwards (TD = D)

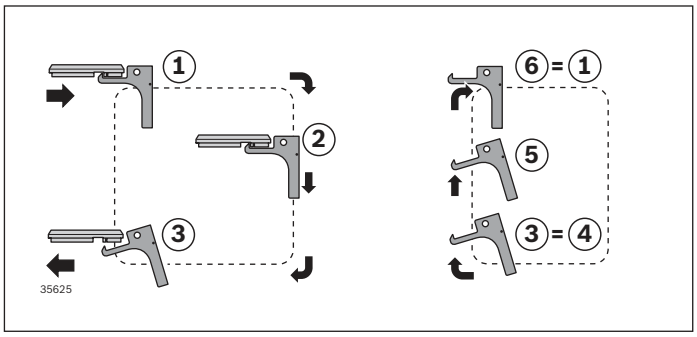


The gripper arm moves in a C-shape between the two transport levels.

1 Gripper arm retracts WT on upper transport level
2 Gripper arm conveys WT on lower transport level
3 Gripper arm ejects WT on lower transport level
4 Empty gripper arm is retracted
5 Empty gripper arm is conveyed on upper transport level
6 Empty gripper arm moves to position 1

If the running direction is upwards (TD = U), the sequence is reversed.

O-shape: Running direction downwards (TD = D)



The gripper arm moves in an O-shape between the two transport levels.

1 Gripper arm retracts WT on upper transport level
2 Gripper arm conveys WT on lower transport level
3 Gripper arm ejects WT on lower transport level
4 Empty gripper arm remains on lift front
5 Empty gripper arm is conveyed on front side on upper transport level
6 Empty gripper arm is at position 1

If the running direction is upwards (TD = U), the sequence is reversed.

5

C-shape/O-shape selection table

Workpiece pallet length l_{WT}	160	240	320	400	480	640	800
A[1)] BS 2	C	C/O	C/O	C/O	C/O	C/O	C/O
B[1)] BS 2/R, BS 2/C	C	C	C	C/O	C/O	C/O	C/O
C[1)] BS 2/R-H, BS 2/C-H	–	–	–	C	C	C/O	C/O

Notice: For short circulation times we recommend the O-shape operating mode

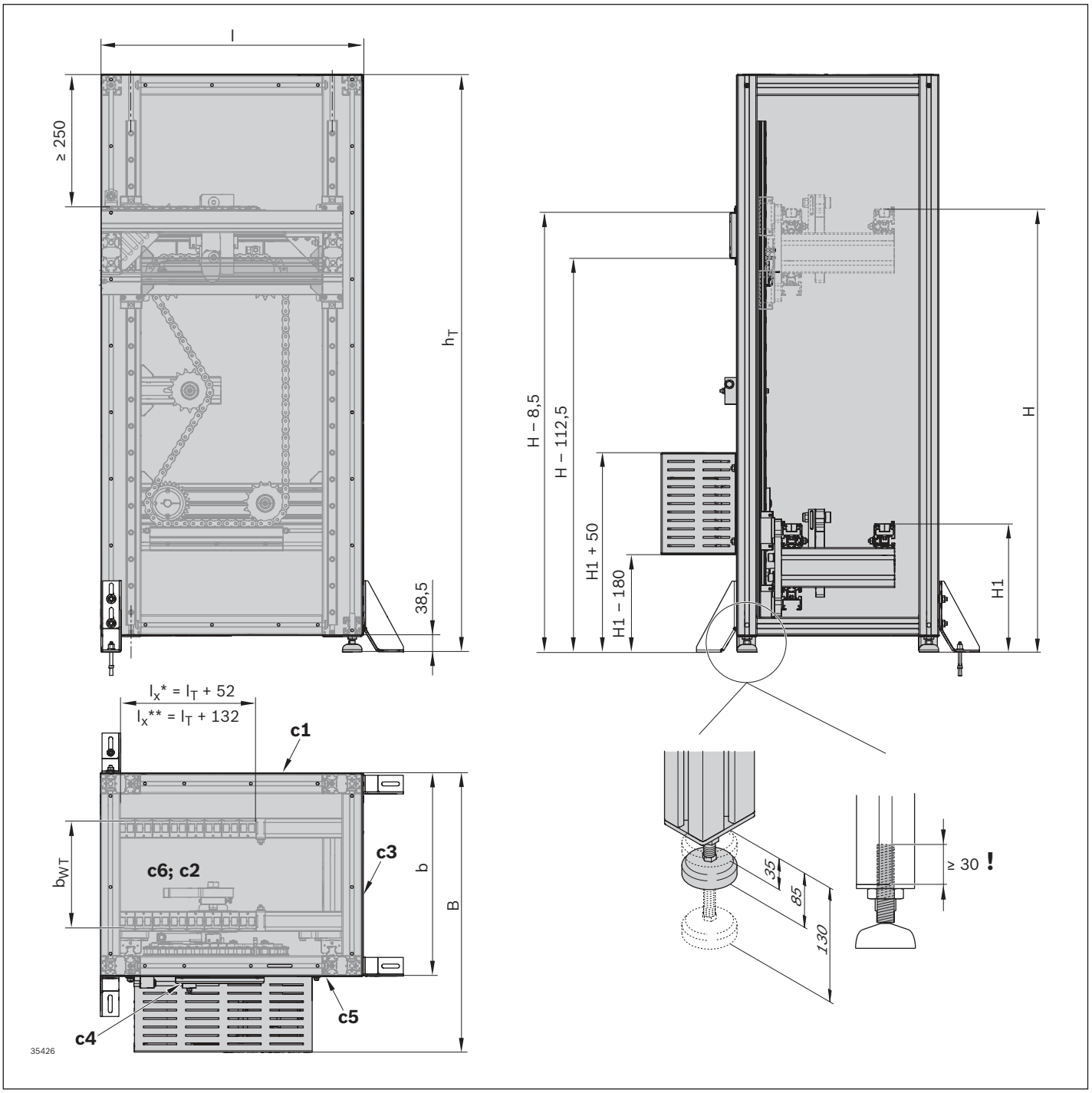
[1)] Reference to table Combination options Lift EL 2 with plug, see p. 5-82

Cycle times* (s) in the C-shape/O-shape lift

Lift shape	Workpiece pallet length l_{WT}	Unit	160	240	320	400	480	640	800
C-shape	BS 2, BS 2/R, BS 2/C	s	8.48	8.48	9.28	10.08	10.88	12.48	14.08
	BS 2/R-H, BS 2/C-H	s				10.08	10.88	12.48	14.08
O-shape	BS 2	s		7.87	8.27	8.67	9.07	9.87	10.67
	BS 2/R, BS 2/C	s				8.67	9.07	9.87	10.67
	BS 2/R-H, BS 2/C-H	s						9.87	10.67

*) Applies to connected belt sections with a transport speed of v = 18 m/min and a stroke height of 400 mm

Dimensions



l = l (= see table below) = without protective cover
l = l (= see table below) = + 3 mm for CT = 2
l = l (= see table below) = + 1.5 mm for CT = 3

Information in mm:

l_{WT}	160	240	320	400	480	640	800
l	588.5	588.5	668.5	748.5	828.5	988.5	1148.5

* C-shape
** O-shape

b = b_{WT} + 215 without protective cover
b = b_{WT} + 219.5 for CT = 2
b = b_{WT} + 218 for CT = 3
b = b_{WT} + 386.5 without protective cover
b = b_{WT} + 389.5 for CT = 2
b = b_{WT} + 388 for CT = 3

Motor data

Identification of motor MSM 041

Type abbreviation **Material number**	**MSM041B-0300-NN-M5-ML1** **R911344228**	
Product	MSM	= Synchronous servomotor MSM
Size	041	= 041
Length	B	= B
Winding	0300	= 0300
Cooling method	NN	= Natural convection
Transducer	M5	= Optical encoder, absolute multi-turn (20 bit)
Electrical connection	M	= Cable connection, round plug M17
Shaft	L	= Shaft with keyway, without shaft sealing ring
Holding brake	1	= Electrically released, 2.45 Nm

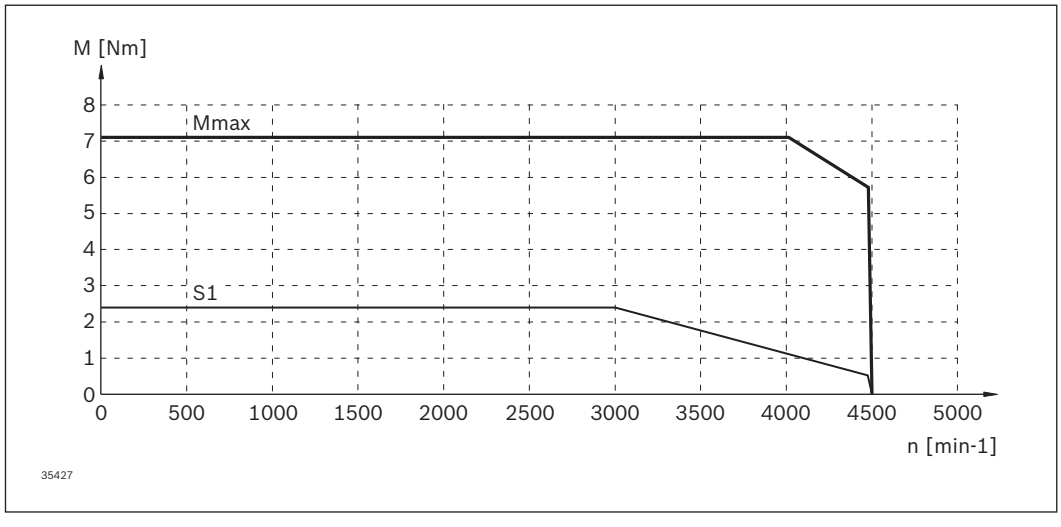
Performance characteristics of the motor MSM 041

Motor MSM	**Continuous power PN (W)**	**Standstill torque MO (Nm)**	**Maximum torque M_{max} (Nm)**	**Maximum speed n_{max} (rpm)**	**Protection class**
041B	750	2.4	7.1	4500	IP 54 (shaft IP 40)

Technical data, holding brakes (MSM041)

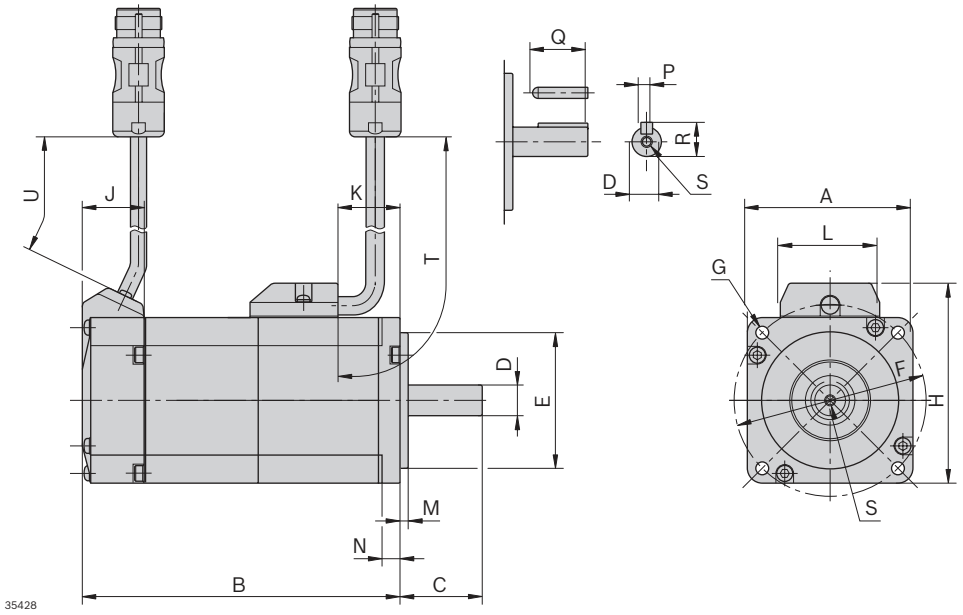
Designation	**Symbol**	**Unit**	**Holding brake 1 (MSM041)**
Holding torque	M_4	Nm	2.45
Rated voltage	U_N	V	24 ± 1.2
Rated current	I_N	A	0.42
Connection time	t_1	ms	70
Disconnection time	t_2	ms	20
Moment of inertia of the holding brake	J_{rot}	kg*m2	0.0000075

Torque speed characteristic curve



MSM041B-0300-NN with HCS01.1N-W0018 (Servo 400 ms) on 3x 230 V (±0%) / 4 kHz

MSM041...M5-M... dimensions



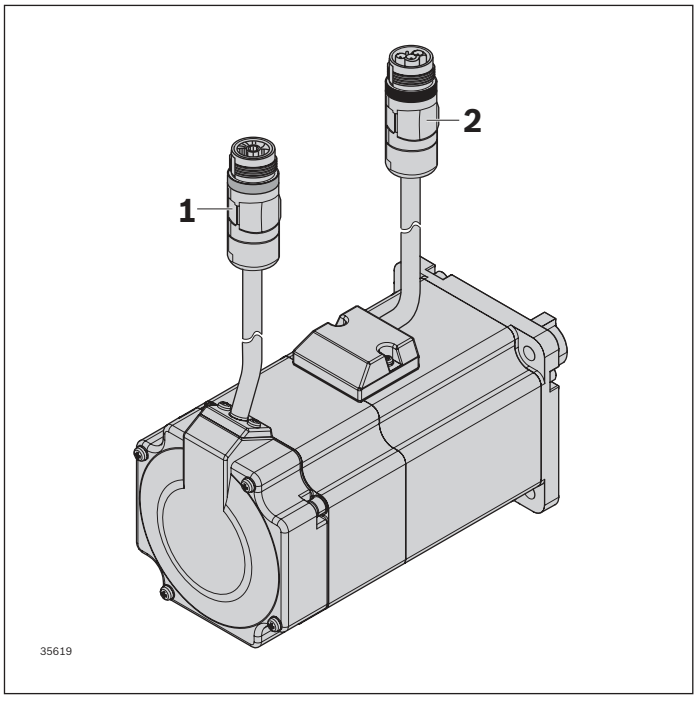
Motor / dimension	A	B	C	D	E	F	G	H	J	K
MSM041B-...-..-M5-M.1	□80	149	35	ø19h6	ø70h7	ø90±0.20	ø6	93	25.5	52.2

Motor / dimension	L	M	N	P	Q	R	S	T	U
MSM041B-...-..-M5-M.1	36	3	8	6h9 (slot p9)	25	21.5	M5 (10 deep)	200	220

Technical data, motor encoder M5

Designation	Symbol	Unit	ENCODER M5 (MSM)	
External battery	–	–	–	Yes
Encoder design	–	–	Absolute single turn	Absolute multi-turn
Distinguishable revolutions	–	–	1	65536
Incremental signals	–	–	Without	Without
Encoder resolution	–	–	20 bit	20 + 16 bit
Typical/maximum system accuracy	–	"	±170 / ±240	±170 / ±240
Maximum encoder rotational speed		(rpm)	6000	6000
Supply voltage	$VCC_{Encoder}$	V	4.5 ... 5.5	4.5 ... 5.5
Max. current consumption	$I_{Encoder}$	mA	70	70

" Angular seconds



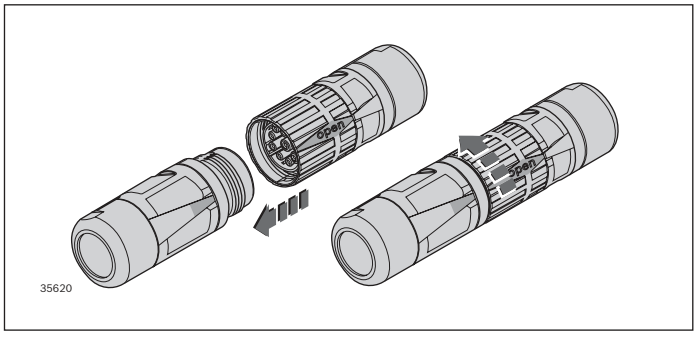
1 Encoder connection (green marking ring)
2 Power connection (black marking ring)

Electrical connection, round plug cable connection M17

Motor connection SpeedCon MSM

The power and encoder connections of the motor MSM are made via flexible connecting cables with round plug connectors M17 (IP 67) and a locking system SpeedCon.

Motor	Connection line length, Cable connection, round plug M17	
	Transducer	Service
MSM041	220 mm (+47 mm plug-in connector RGS1782)	200 mm (+47 mm plug-in connector RLS1722)



Quick locking system SpeedCon

Insert the cable plug in the open position, tighten the cable plug by hand with a turn of approximately 90°.

Ready-to-use connection cable

Product description	Designation	Material number
Power cable	Cable RKL 4804/005,0	R911379613
Encoder cable	Cable RKG 0062	R911380324

Motor transport

Environmental and operating conditions

Designation	Symbol	Unit	Value
Temperature range	T_{a_tran}	°C	-20 ... +80
Relative humidity		%	5 ... 95
Absolute humidity		g/m3	1 ... 60
Climate class (IEC721)			2K3
Condensation			Not permitted
Icing			Not permitted

Motor storage

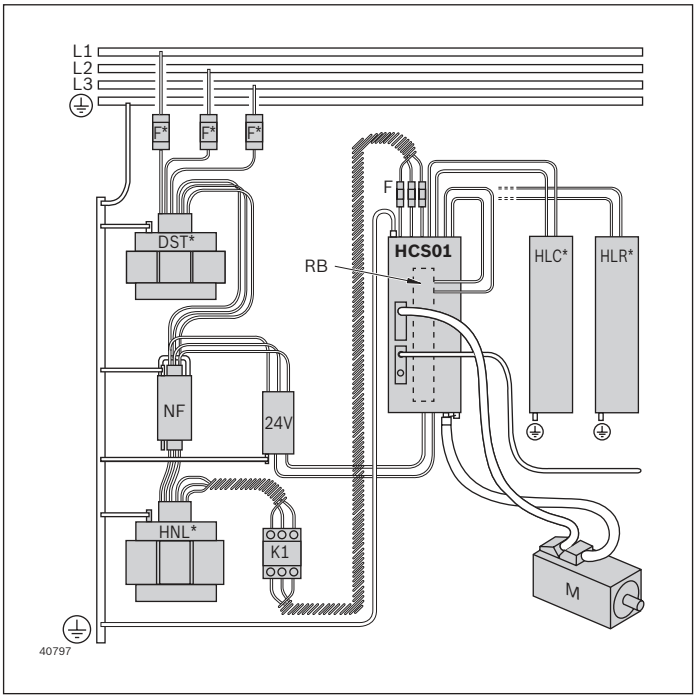
Environmental and operating conditions

Designation	Symbol	Unit	Value
Temperature range	T_{a_store}	°C	-20 ... +60
Relative humidity		%	5 ... 95
Absolute humidity		g/m3	1 ... 29
Climate class (IEC721)			1K3
Condensation			Not permitted
Icing			Not permitted

Ordering details encoder system

Product description	Designation	Material number
Compact converter	HCS01.1E-W0013-A-02-B-ET-EC-EP-NN-NN-FW	R911379677
Communication interface	FWA-INDRV*-MPB-21VRS-D5-1-NNN-NN	R911390803

Wiring diagram



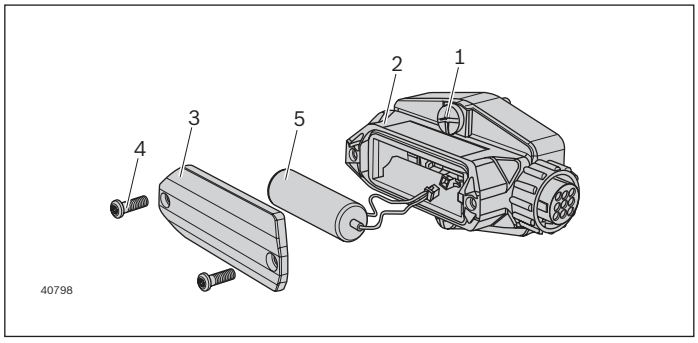
*	Optional
24V	Control voltage supply
COM	Communication
DST	Autotransformer
F	Fuses
HCS01	Converter
HLC	Intermediate circuit capacitor unit (for devices with DC link connection)
HLR	External brake resistor
HNL	Line reactor
NF	Mains filter
K1	External mains contactor
M	Motor
RB	Integral brake resistance (located at the rear of the drive control unit)

Technical data

Designation	Symbol	Unit	Regulator
Protection class			IP20
Mains connection voltage	U_{LN}	V	3 x AC 110 ... 230 V ±10 % 3 x AC 200 ... 500 V ±10 %
Output to UL standard (UL)			UL 508C
Performance according to CSA standard (UL)			Canadian National Standard(s) C22.2 No.
UL files (UL)			E134201

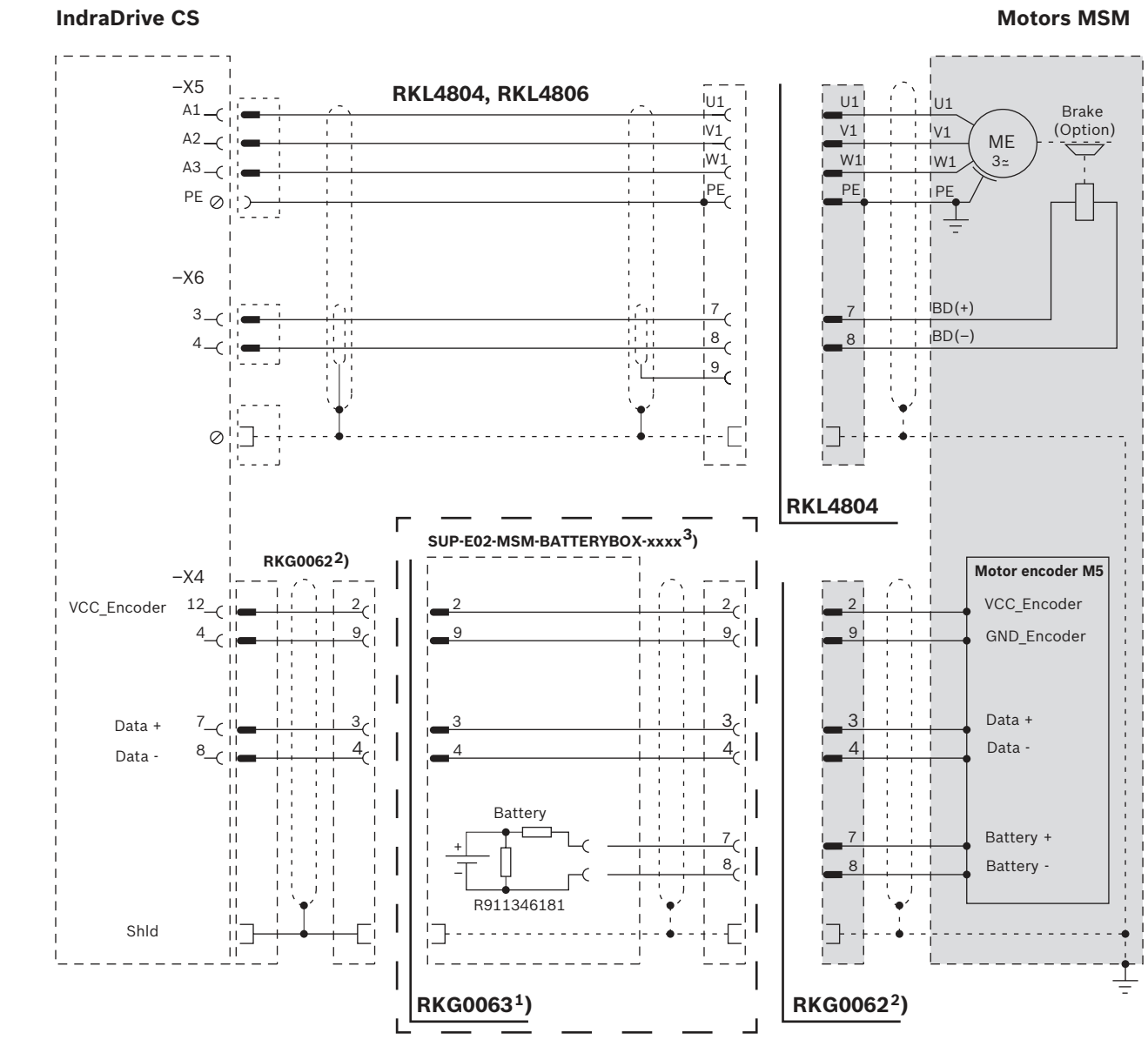
Ordering Information Battery box with battery

Product description	Designation	Length (mm)	Material number
Battery box	SUP-E02-MSM-BATTERYBOX-L010	1000	R911346063
Replacement battery (type: ER6C, 3.6 V; 1800 mA, lithium)	SUP-E02-MSM-BATTERY		R911369925
Encoder cable	Cable RKG 0062		R911380324



1 Mounting screw
2 Housing
3 Housing lid
4 Housing cover screw (self-tapping screw 30x10; tightening torque 0.8 Nm
5 Battery (type: ER6C, 3.6 V; 1800 mA, lithium)

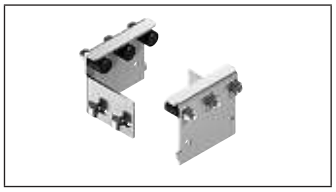
Circuit diagram MSM

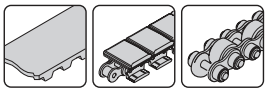


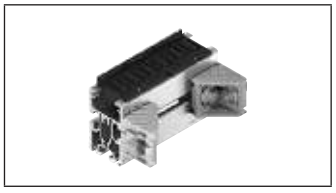
1) Optional extension cable
2) For single-turn applications the cable must be connected directly to the motor
3) SUP-E02-MSM-BATTERYBOX-XXXX only required when a battery is used to buffer data. Battery box scope of delivery: Box, battery, cable RKG 0065 is not part of the scope of delivery EL 2
☐ Shield connection via housing
RKG 0063 Extension cable, optional
EL 2 Scope of delivery EL 2: Motor MSM, compact converter HCS01, power cable RKL4804, encoder cable RKG 0062; (3) not part of the scope of delivery EL 2)

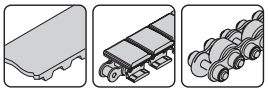
Roller sections

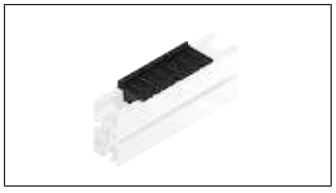
Roller sections in conjunction with two lift transverse units permit workpiece pallets to be conveyed between parallel conveyor sections.



Intermediate section with roller  **5-94**



Roller section RS 2  **5-95**

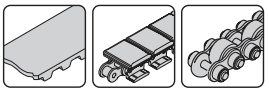


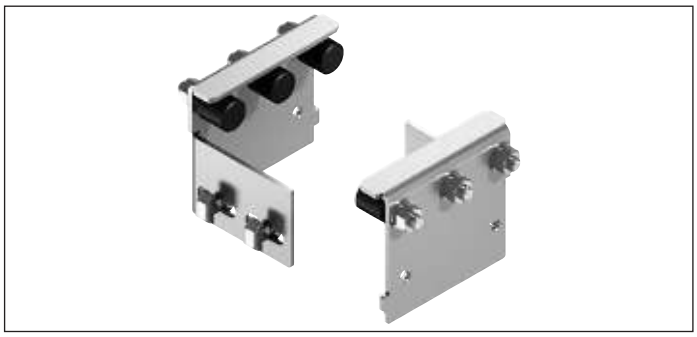
Roller elements RE **5-97**

Roller track set RB 2/UM 2 **5-99**

Roller section RS 2/H **5-101**

Intermediate section with roller





- Unmounted roller section for transverse conveying of workpiece pallets between parallel conveyor sections at a distance of a = 45 to 135 mm
- Use with two lift transverse units HQ 2
- Without built-in drive
- Conveyor medium: Rollers made of galvanized steel
- Reversible operation possible
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2, WT 2/F and WT 2/LS

Installation between two conveyor units ST 2 or belt sections BS 2 for transverse conveying.
Alternatively, use as an inclined passive conveyor section.

Scope of delivery

- Incl. fastening material

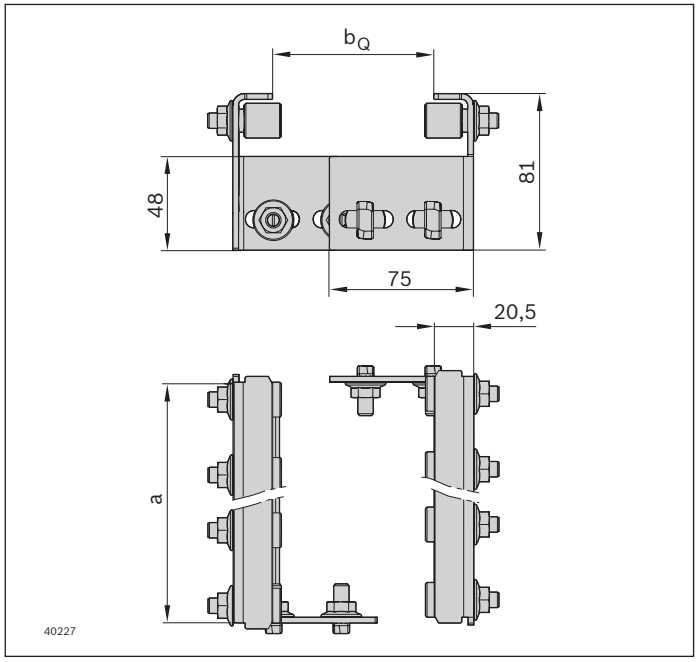
Condition on delivery

- Not assembled

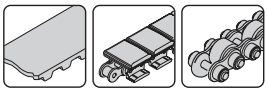
Ordering information

Product description	Material number
Intermediate section with roller a = 45	3842553814
Intermediate section with roller a = 90	3842554658
Intermediate section with roller a = 135	3842554659

Dimensions



Roller section RS 2



- Unmounted roller section for transverse conveying of workpiece pallets between parallel conveyor sections at a distance of a = 90 to 200 mm
- Use with two lift transverse units HQ 2
- Use as an inclined passive conveyor section is possible
- Without built-in drive
- Conveyor medium: PA6 rollers
- Reversible operation possible
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS

Installation between two conveyor units ST 2 or belt sections BS 2 for transverse conveying.
Alternatively, use as an inclined passive conveyor section.

Scope of delivery

- Incl. fastening material

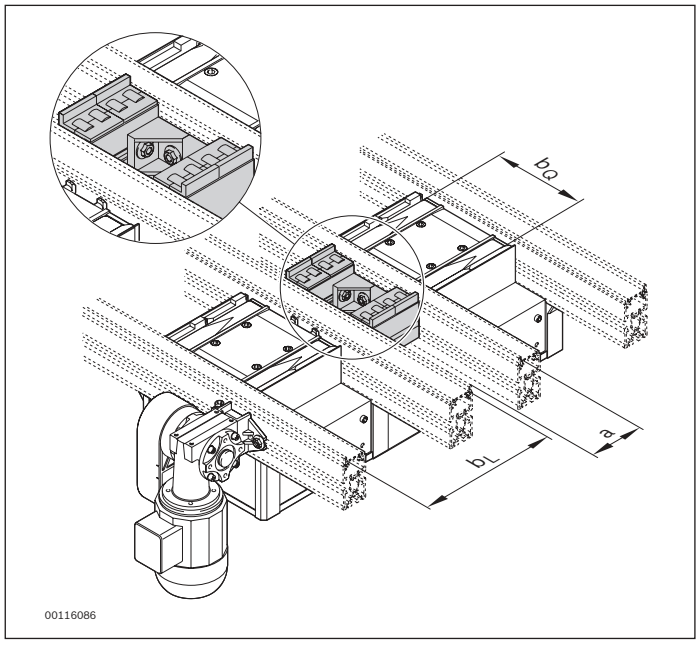
Condition on delivery

- Not assembled

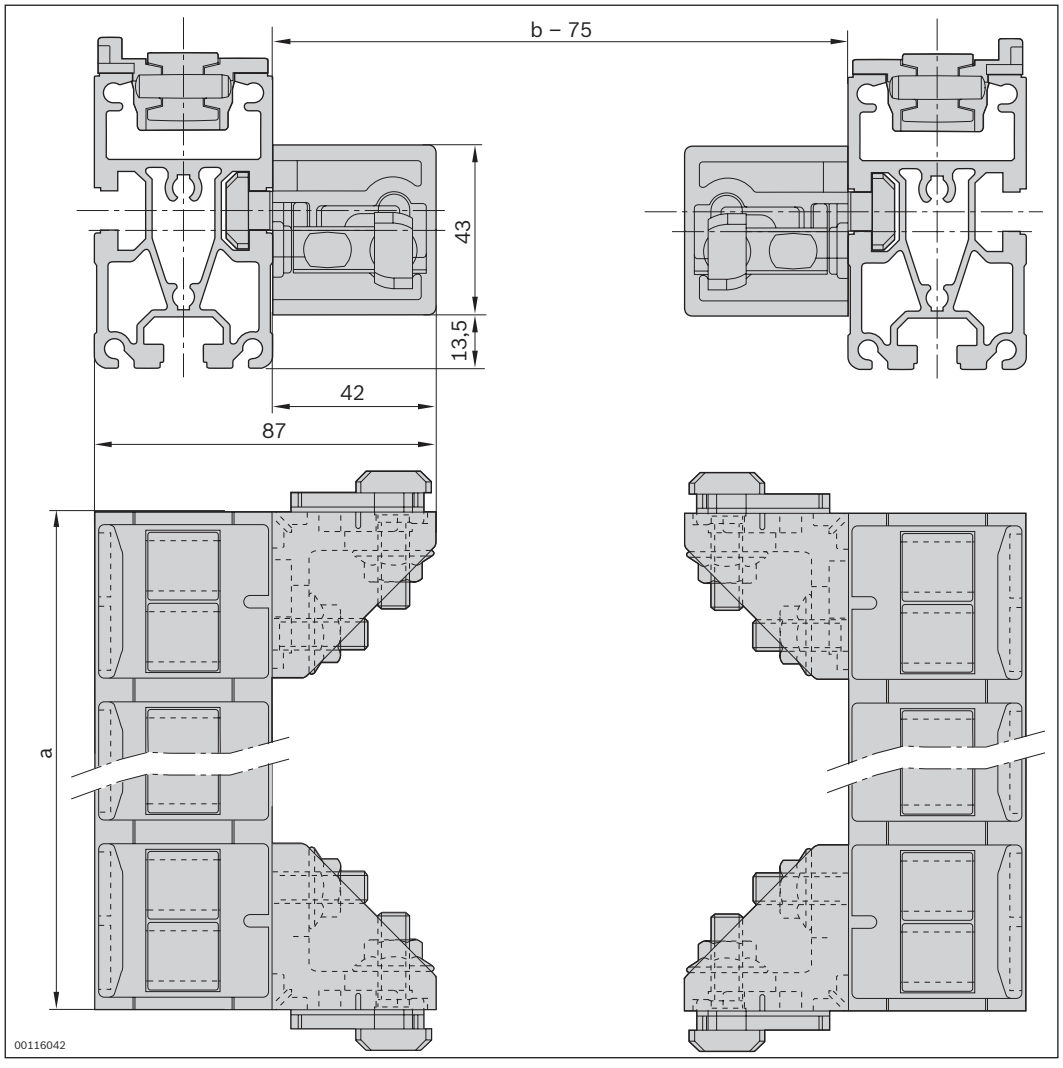
Ordering information

Product description	Material number
Roller section RS 2 a = 90	3842522140
Roller section RS 2 a = 135	3842522141
Roller section RS 2 a = 160	3842522142
Roller section RS 2 a = 200	3842522143

Technical data



Dimensions



Roller element RE

- Assembled roller elements for the manual transportation of workpiece pallets
- Use as an inclined passive conveyor section is possible
- Without built-in drive
- Conveyor medium: PA66 rollers
- Reversible operation possible
- Can be combined with WT 2/E, WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS

Roller elements can be clipped into section profile SP 2/B instead of driven belts. Roller sections constructed in this way are an economical solution for moving workpiece pallets or other similar pallets manually on a transfer system.

The number of roller elements is calculated based on the section length. The remaining measurement < 45 mm has to be distributed by spacing the roller elements accordingly.

Required accessories

- Section profile SP 2/B, see p. 3-31

Condition on delivery

- Assembled

Ordering information

Product description	Packaging unit	Material number
Roller element RE 39 ESD[1)]	10	3842538245
Roller element RE 45 ESD[1)]	100	3842538064
Roller element RE 45 SK ESD[1)]	100	3842538065

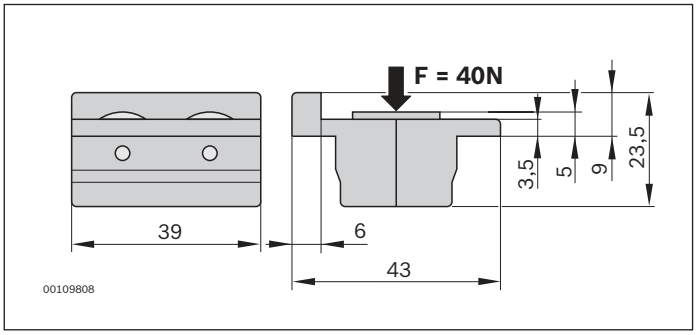
[1)] Version with conductive material in accordance with DIN EN 61 340-5-1, suitable for ESD-sensitive areas.

Technical data

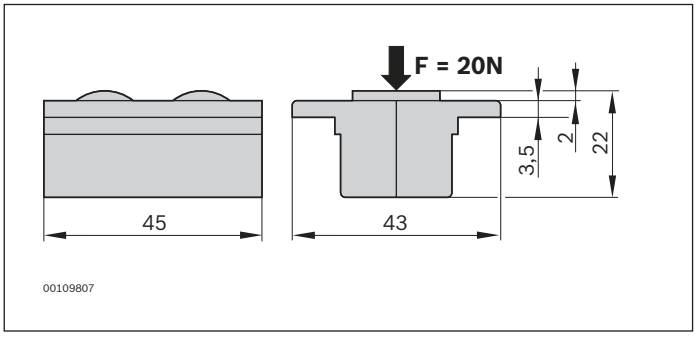
Material number	RE 39	3842538245
	RE 45	3842538064
	RE 45SK	3842538065
ESD		Yes
Material specification		RE 39, RE 45, RE 45SK: Rollers: PA66 Housing: PA6 RE 39: Bearing: Steel bolt

Dimensions

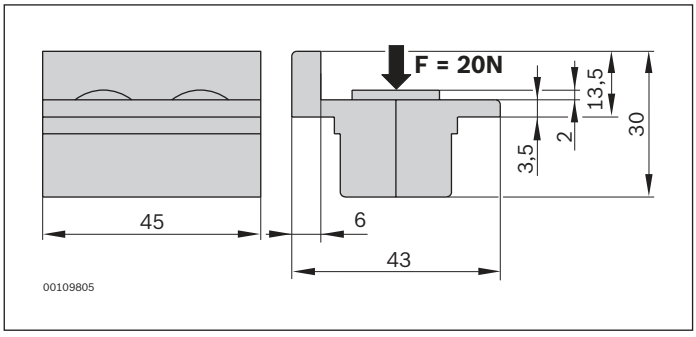
RE 39



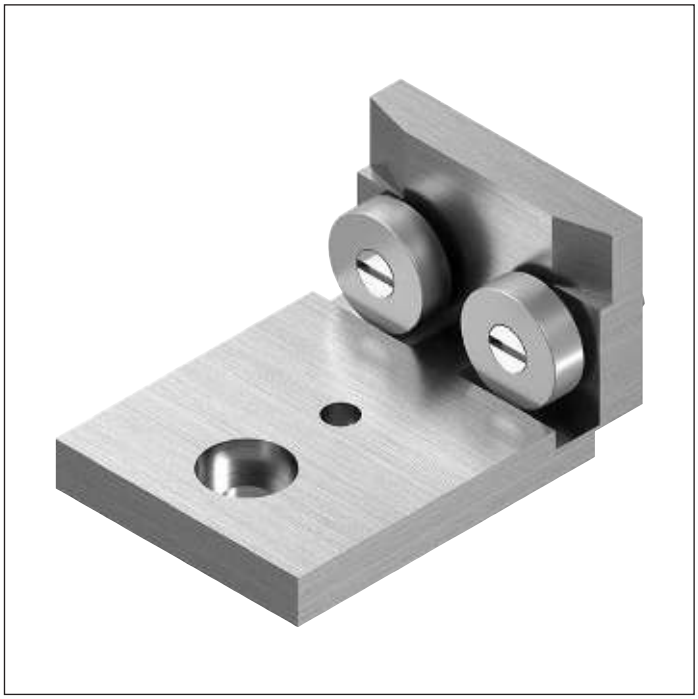
RE 45



RE 45 SK



Roller track set RB 2/UM 2



- Mounted roller section for mounting on AS 2/B... or UM 2/B for transverse conveying
- Mounted roller section for mounting on AS 2/B... or UM 2/B for longitudinal conveying. Possible as a replacement for RB 2 (3842532822). 1 set RB 2/UM per modular unit.
- Additional workpiece pallet support on the front transition from AS 2/B to UM 2/B or from AS 2/B or UM 2/B to a lift transverse unit
- Installation along a belt section during the transition from AS 2/B to UM 2/B or vice versa
- Conveyor medium: Belt
- Without drive
- Required for workpiece pallet lengths of 160 mm and 240 mm; recommended for longer lengths
- Reversible operation possible
- Can be combined with WT 2/E, WT 2, WT 2/F and WT 2/LS

The roller track supports the workpiece pallets at the transition point between a conveyor unit and another adjacent conveyor unit. The roller track can be mounted longitudinally on a belt section for the transition from AS to UM or UM to AS, if 1 x RB 2/UM 2 per modular unit AS 2/B... and UM 2/B is used.

Scope of delivery

- Set (containing 2x roller track, 2x guide profile, 2x fastening kit)

Condition on delivery

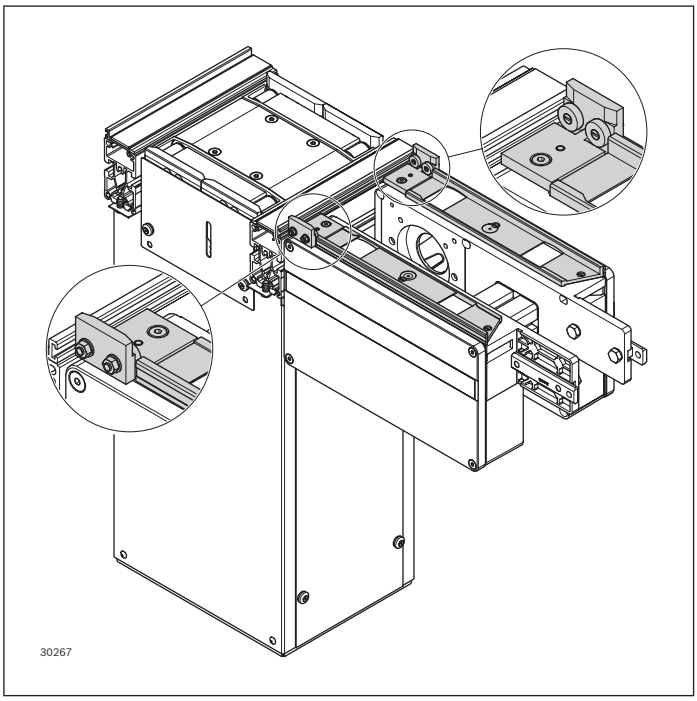
- Assembled

Ordering information

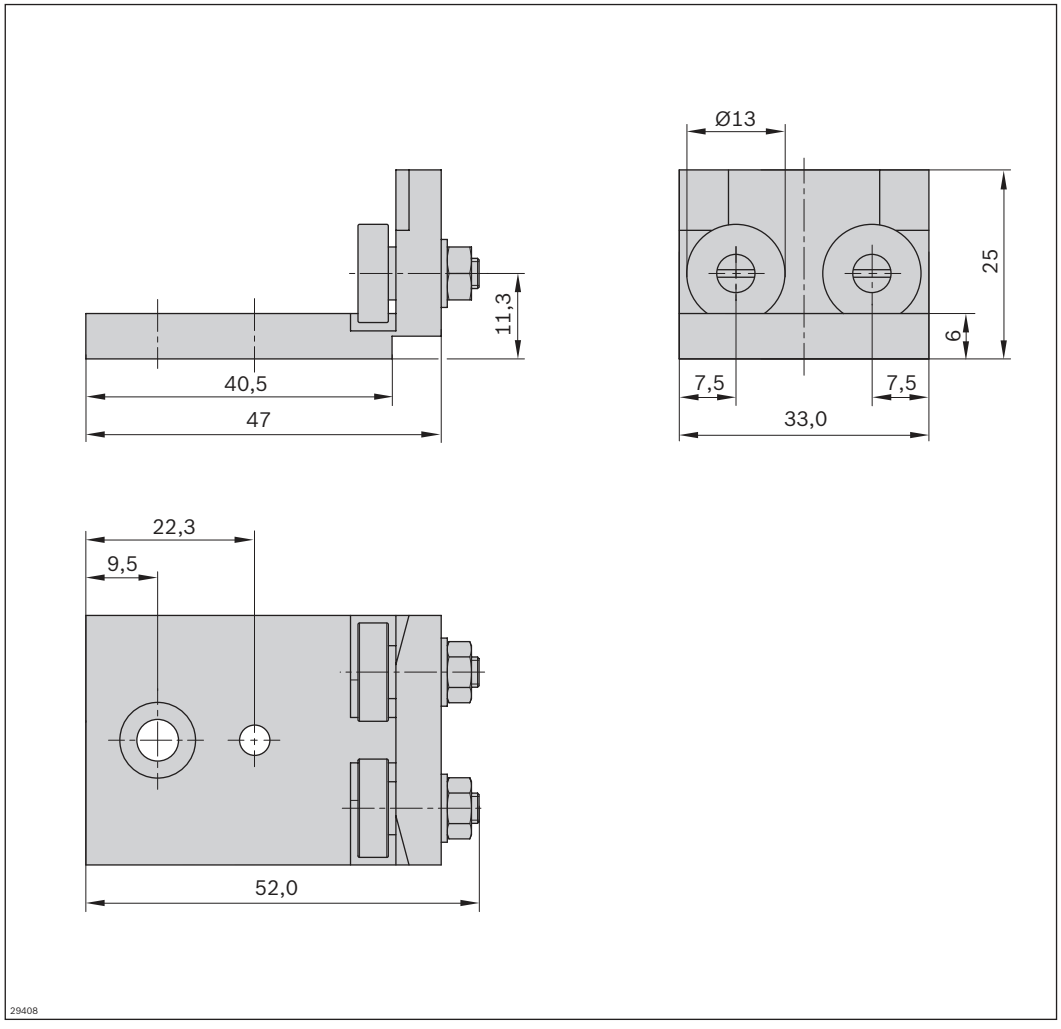
Product description	Packaging unit	Material number
Roller track set RB 2/UM 2	Set	3842558657

Technical data

Material number	3842558657
Material specification	Track: Aluminum Rollers: Steel



Dimensions



Roller section RS 2/H

- Mounted roller section for transverse conveying of workpiece pallets between parallel conveyor sections at a distance of a = 90 to 690 mm
- Use with two lift transverse units HQ 2
- Without built-in drive
- Conveyor medium: Accumulation roller chain with steel accumulation rollers and small parts protection
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2/E, WT 2, WT 2/F, WT 2/H and WT 2/F-H

5

Installation between two conveyor units ST 2/...-H or belt sections BS 2/...-H with lift transverse unit HQ 2/U-H or HQ 2/C-H. Alternatively, use as an inclined passive conveyor section.

Recommended accessories

- Note on cross connectors QV: With conveyor section distances a > 90 mm, we recommend stabilizing the roller section RS 2/H using the cross connectors QV, see p. 5-103

Scope of delivery

- Section, incl. accumulation roller chain with steel accumulation rollers and small parts protection
- Incl. fastening material

Condition on delivery

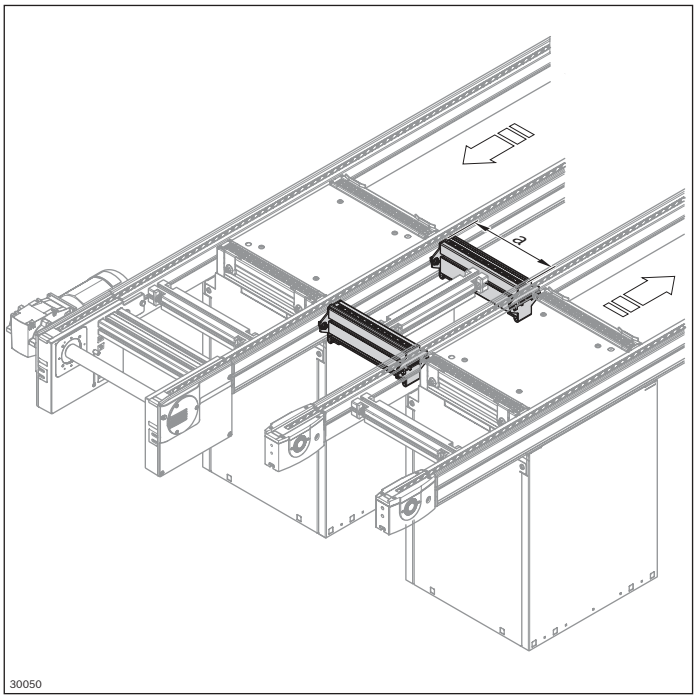
- Assembled

Ordering information

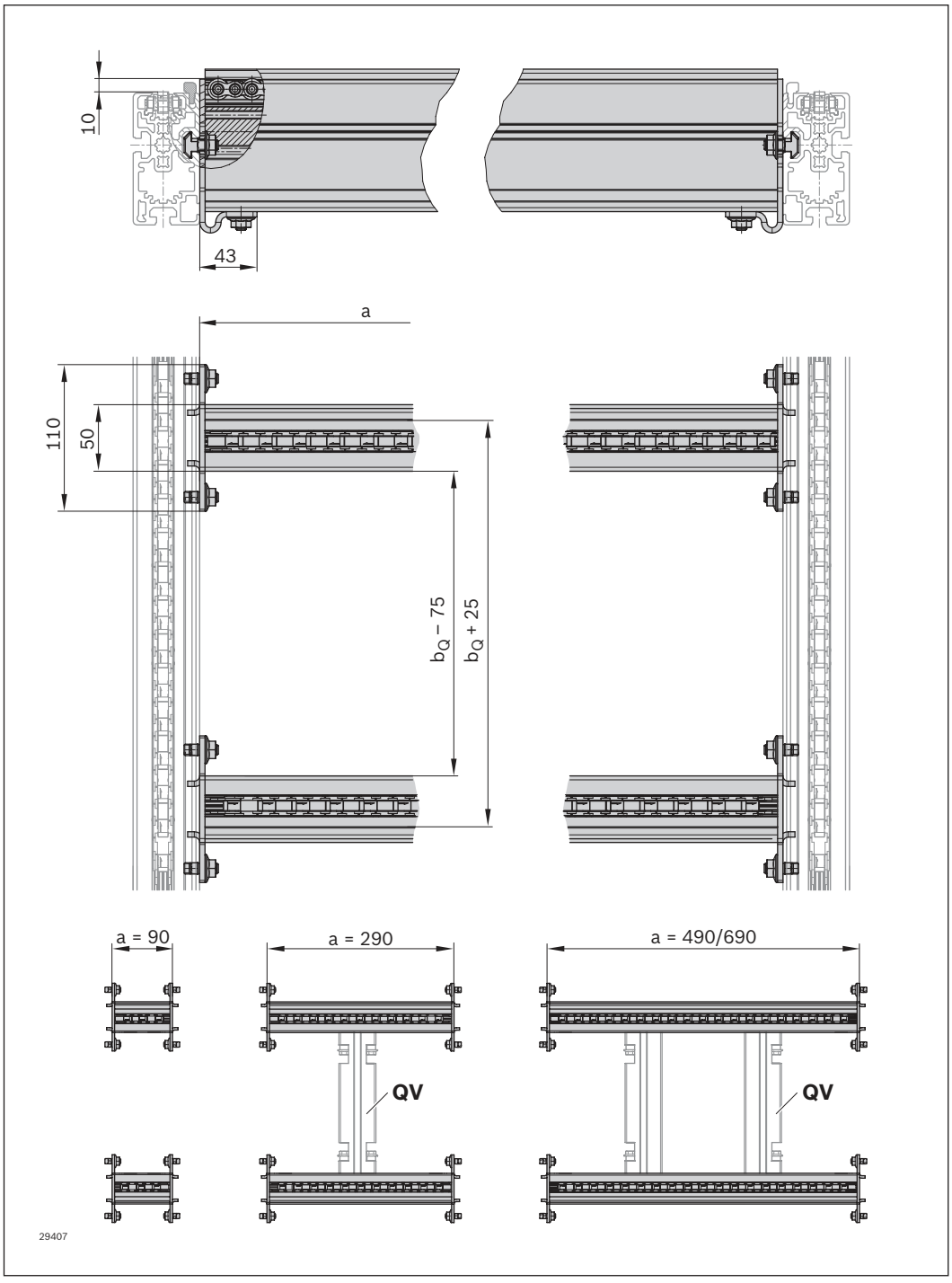
Product description	a (mm)	b_l (mm)	Material number
Roller section RS 2/H	90	480; 640; 800; 1040; 1200	3842998940
	290	640; 800; 1040; 1200	3842998940
	490	800; 1040; 1200	3842998940
	690	1040; 1200	3842998940

Technical data

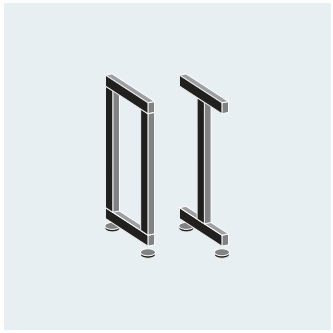
Material number		**3842998940**
Material specification		Section profile: Aluminum, natural; anodized Accumulation roller chain: Steel accumulation rollers and small parts protection
a (mm)	Roller section length	90 ... 690



Dimensions

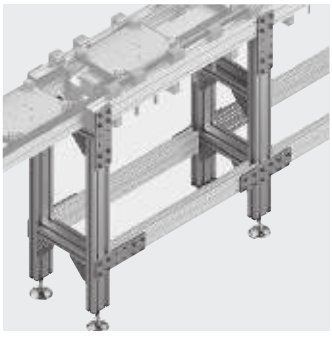


a (mm)	Number of QVs	QV material number
90	–	–
290	1	3842993052/b = b_Q
490	2	3842994635/b = b_Q
690	2	3842994635/b = b_Q

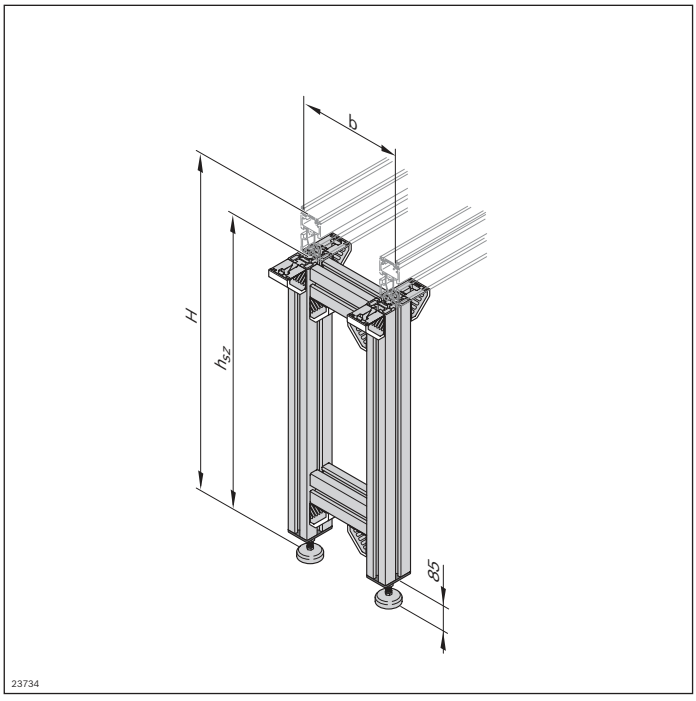


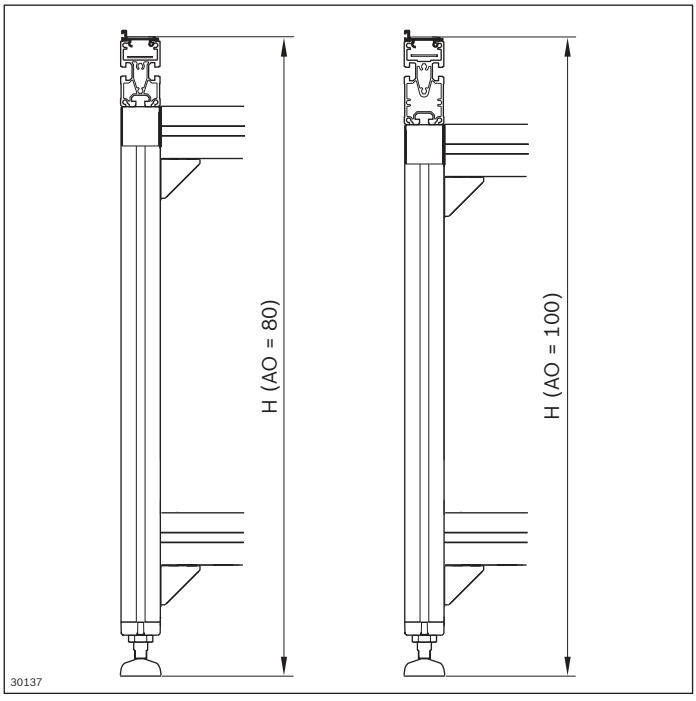
Leg sets

Selection of leg sets **6-2**



Selection of leg sets



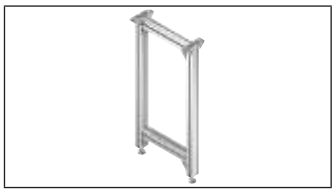


New leg set height H

Defines the height of the leg sets with the new parameter H, measured from floor to top of the conveyor medium (= conveying level).

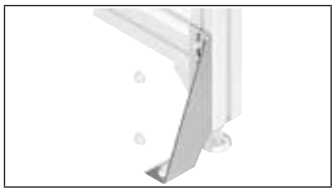
In addition, the height of the section profile is specified as an additional ordering parameter (AO).

The height of the leg set to lower edge of section profile (= h_{SZ}) is calculated as follows: $h_{SZ} = H - AO$.



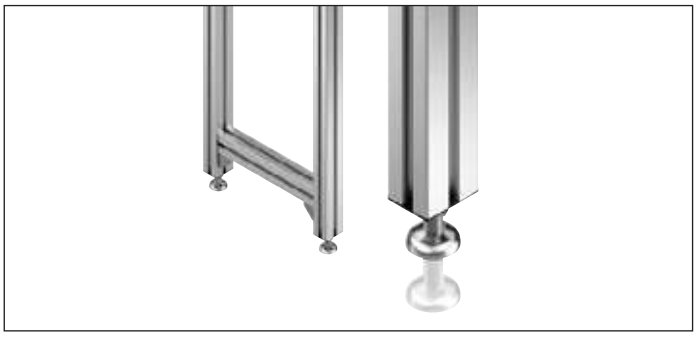
Leg sets SZ 2/... **6-4**

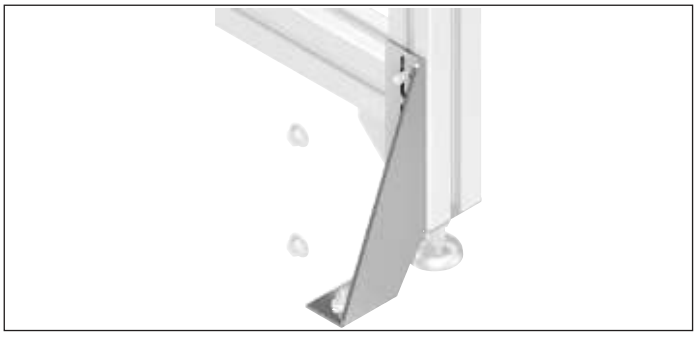
Reinforcement SZ 2 – ST 2 **6-31**

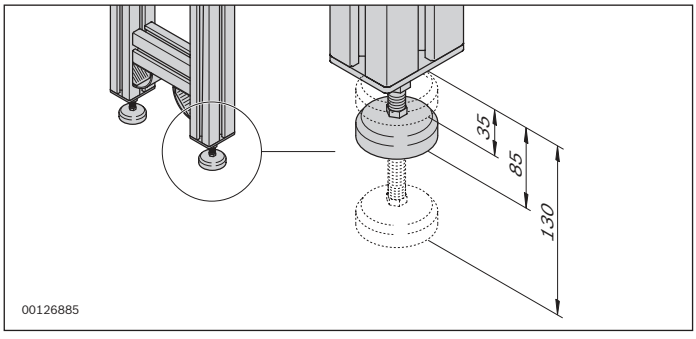


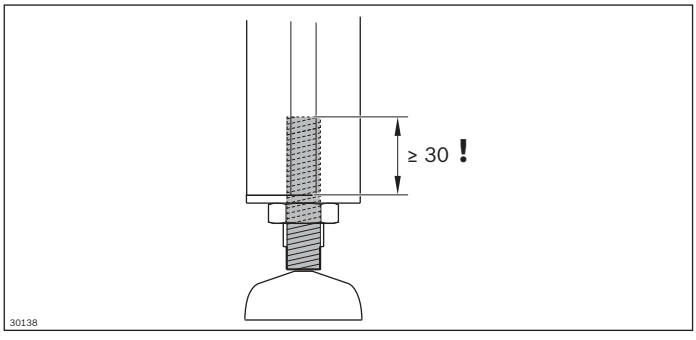
Foundation bracket, floor dowel, T-bolt, flange nut, bracket cover caps **6-32**

Leg sets SZ 2/...









Leg sets

Leg sets support the conveyor section. They have to be mounted directly next to the drive and return units, and underneath section joints. Conveyor units have to be supported with extra leg sets at equal distances of max. 2000 mm.

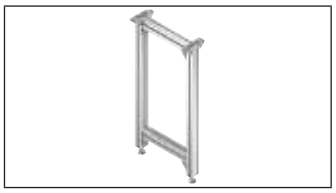
Fastening material

Leg sets must be anchored to the floor with foundation brackets (3842146848) and floor dowels (3842526560).

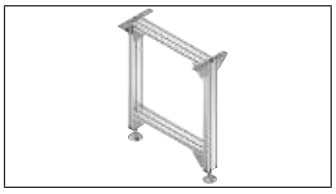
Bracket cover caps are not included in the scope of delivery for all leg sets.

Leveling feet

The height-adjustable leveling feet (incl. fastening material) are included in the scope of delivery. The engagement depth of the leveling feet must be at least 30 mm for all leg sets.

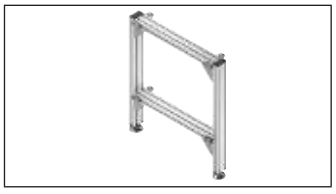


Leg set SZ 2 **6-8**

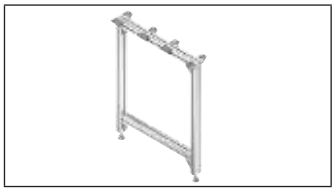


Leg set SZ 2/H **6-10**

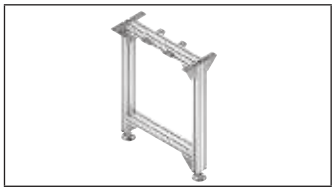
Leg set SZ 2/U **6-12**



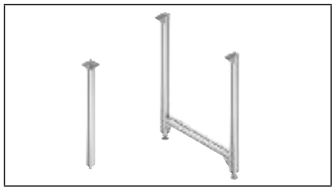
Leg set SZ 2/U-H **6-14**



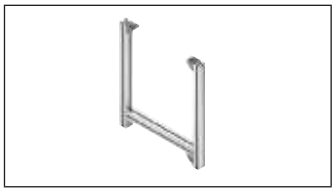
Leg set SZ 2/T **6-16**



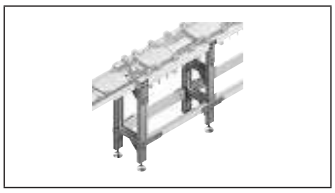
Leg set SZ 2/T-H **6-18**



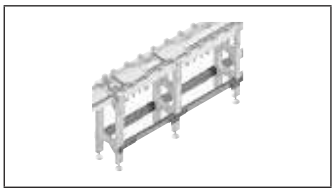
Leg set SZ 2/K-90, SZ 2/K-180 **6-20**



Leg set HD 2/H **6-24**

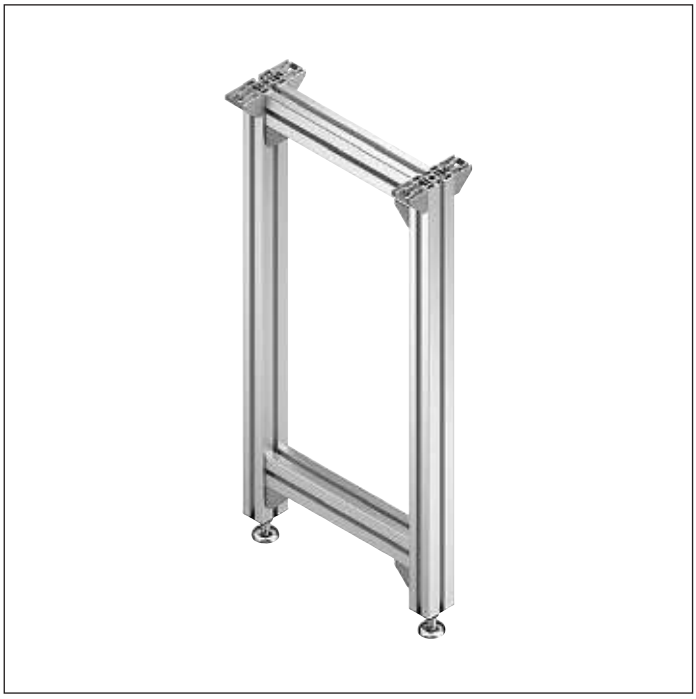


Leg set SZ 2/LS... **6-26**



Longitudinal connector LV 2 **6-29**

Leg set SZ 2



- Leg set for single-track conveyor sections on a single transport level
- Standard version

The leg sets support one belt section or one conveyor unit.

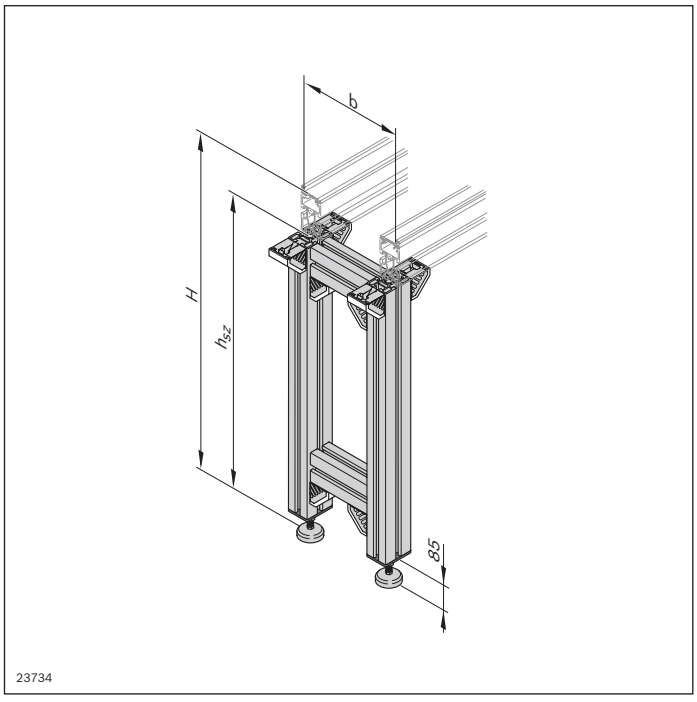
Required accessories
- Foundation bracket 3842146848, see p. 6-32
- Floor dowel 3842526560, see p. 6-33

Recommended accessories
- Cover caps for bracket, see p. 6-34

Scope of delivery
- Incl. height-adjustable leveling foot
- Incl. all fastening material to mount on conveyor section, drive module or return unit

Condition on delivery
- Assembled (MT = 1)
- Not assembled (MT = 0)

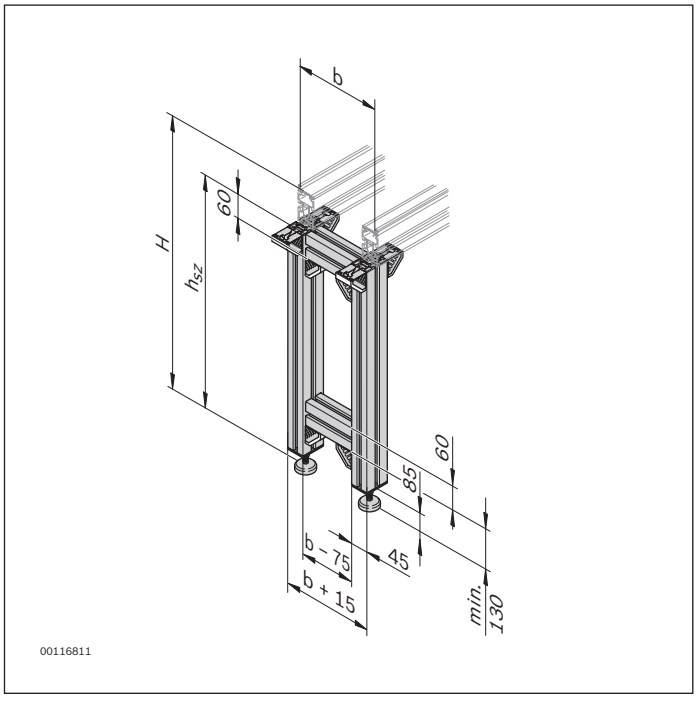
Ordering information



Material number		3842996320	
b (mm)	Track width in direction of transport	160 ... 1200	
H (mm) *H = h_{SZ}*+ AO*	Transportation height	ST 2/B-50: Lift gate: ST 2/B: ST 2/B-100:	350 ... 2000 355 ... 2000 375 ... 2000 395 ... 2000
AO	Installation location SP 2/B-50: Lift gate: ST 2/B; SP 2/BH BS 2; BS 2/M: ST 2/B-100; ST 2/C-100; ST 2/R-100; ST 2/C-H; ST 2/R-H; ST 2/R-V; BS 2/C; BS 2/C-H; BS 2/R; BS 2/R-H; BS 2/R-V; CS/C:	55; 60; 80; 100 AO = 55 AO = 60 AO = 80 AO = 100	
MT	Kit 0 = not assembled 1 = assembled	0; 1	

* h_{SZ} = leg set height

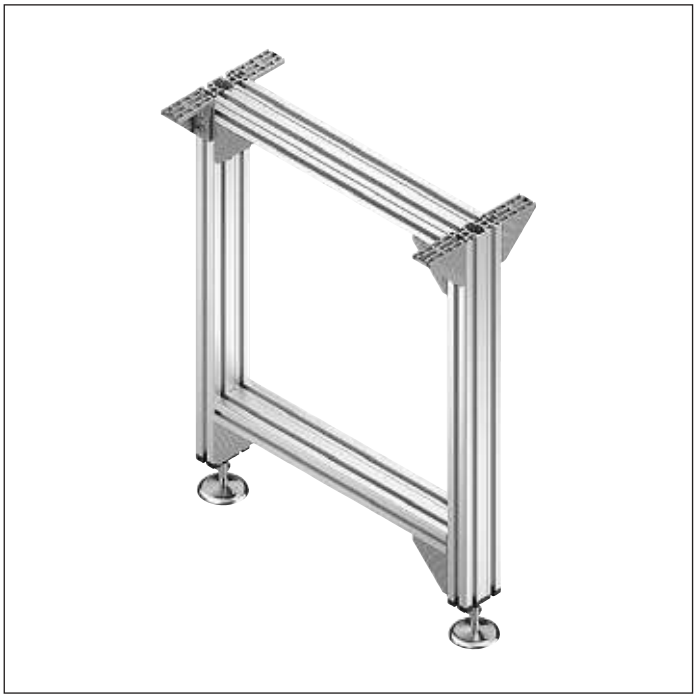
Dimensions



Technical data

Material number	3842996320
ESD	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized

Leg set SZ 2/H



- Leg set for heavy-duty single-track conveyor sections on one transport level
- Standard version

The leg sets support one belt section or one conveyor unit with high loads. They are particularly suitable for belt sections BS 2/...-H and conveyor units with section profile SP 2/...-H.

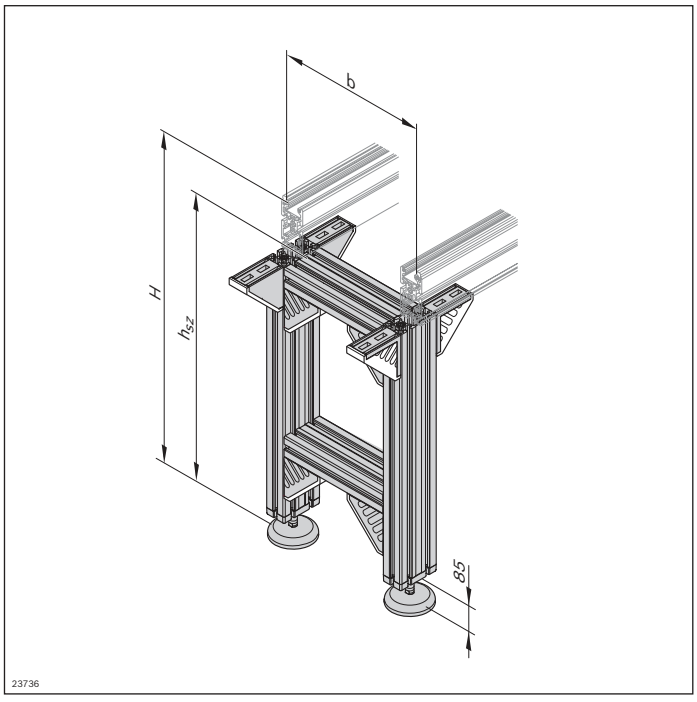
Required accessories
- Foundation bracket 3842146848, see p. 6-32
- Floor dowel 3842526560, see p. 6-33

Recommended accessories
- Cover caps for bracket, see p. 6-34

Scope of delivery
- Incl. height-adjustable leveling foot
- Incl. all fastening material to mount on conveyor section, drive module or return unit

Condition on delivery
- Assembled (MT = 1)
- Not assembled (MT = 0)

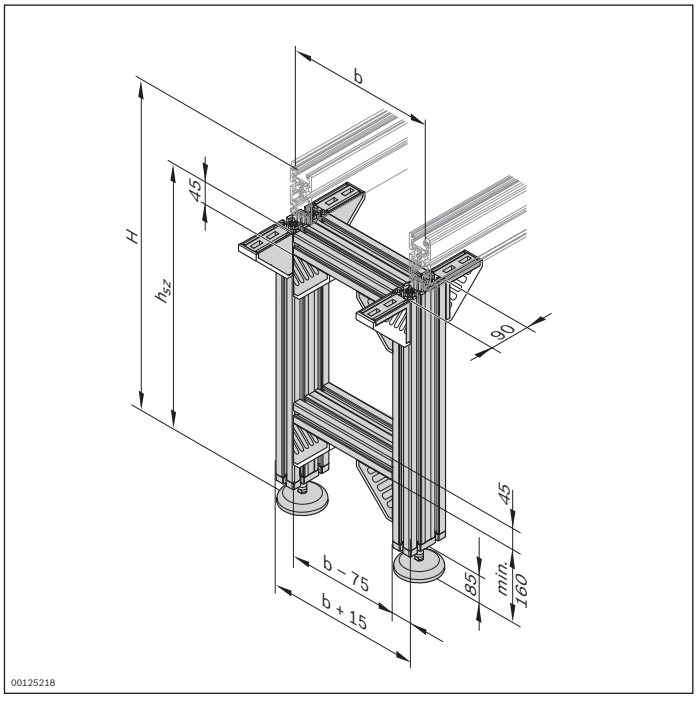
Ordering information



Material number		3842996321	
b (mm)	Track width in direction of transport	400 ... 1200	
H (mm) *H = h_{sz}*+ AO*	Transportation height	ST 2/B-50: ST 2/B: ST 2/B-100:	410 ... 2000 435 ... 2000 455 ... 2000
AO	Installation location SP 2/B-50: ST 2/B; SP 2/BH; BS 2; BS 2/M: ST 2/B-100; ST 2/C-100; ST 2/R-100; ST 2/C-H; ST 2/R-H; ST 2/R-V; BS 2/C; BS 2/C-H; BS 2/R; BS 2/R-H; BS 2/R-V; CS/C:	55; 80; 100 AO = 55 AO = 80 AO = 100	
MT	Kit 0 = not assembled 1 = assembled	0; 1	

* h_{sz} = leg set height

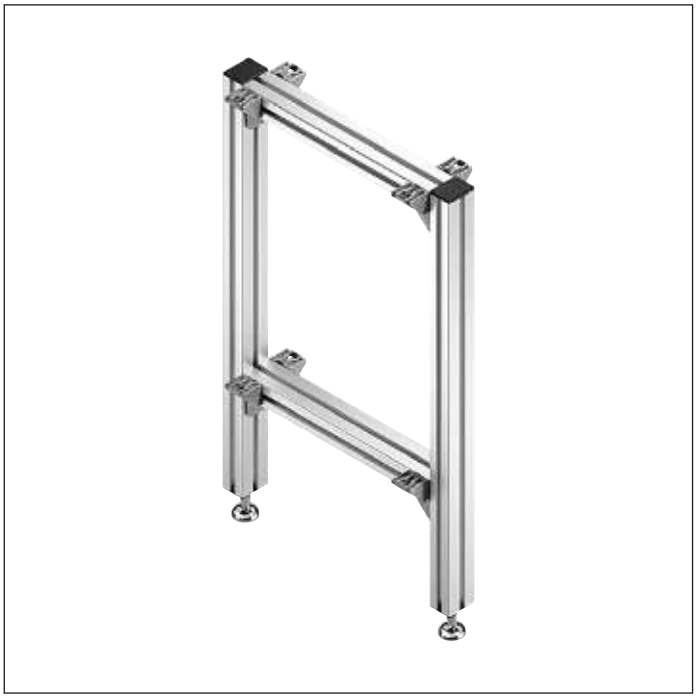
Dimensions



Technical data

Material number	3842996321
ESD	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized

Leg set SZ 2/U



- Leg set for single-track conveyor sections on two transport levels

The leg sets support two belt sections or two conveyor units side by side, e.g. for a workpiece pallet return.

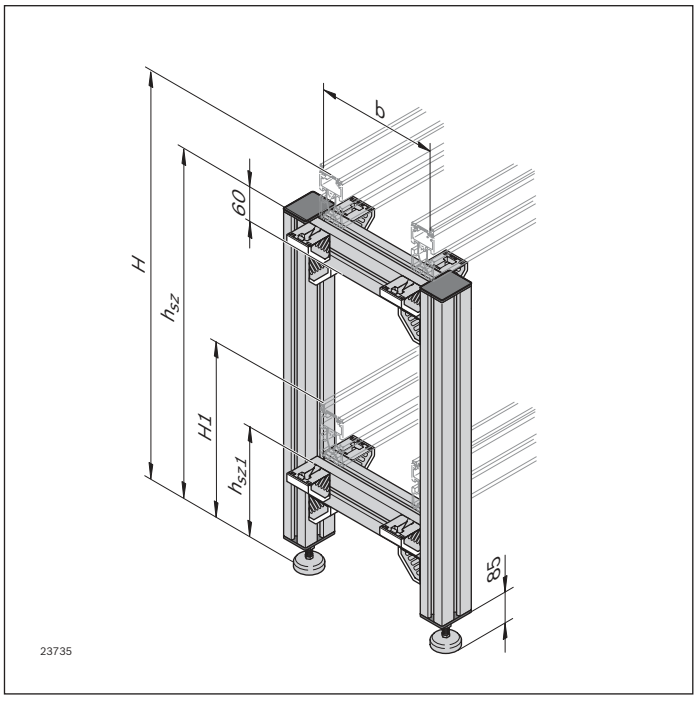
Required accessories
- Foundation bracket 3842146848, see p. 6-32
- Floor dowel 3842526560, see p. 6-33

Recommended accessories
- Cover caps for bracket, see p. 6-34

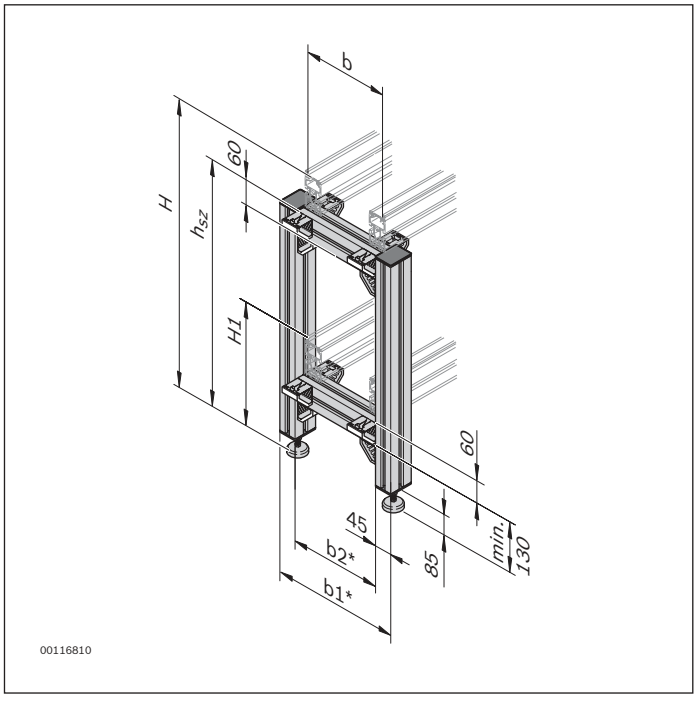
Scope of delivery
- Incl. height-adjustable leveling foot
- Incl. all fastening material to mount on conveyor section, drive module or return unit

Condition on delivery
- Assembled (MT = 1)
- Not assembled (MT = 0)

Ordering information



Dimensions



*) Calculations of b1 and b2 depending on section profile width:
Section profile width 45 mm: b1 = b+106; b2 = b+16
Section profile width 50 mm: b1 = b+116; b2 = b+26

Material number		3842996322	
b (mm)	Track width in direction of transport	160 ... 1200	
H (mm) $H = h_{SZ}* + AO$[1]	Transportation height	ST 2/B-50: ST 2/B: ST 2/B-100:	475 ... 2000 525 ... 2000 565 ... 2000
H1 (mm) $H1 = h_{SZ1}** + AO1$[2]		ST 2/B-50: ST 2/B: ST 2/B-100:	245 ... 1770 270 ... 1745 290 ... 1725
AO[1]	Installation location SP 2/B-50: ST 2/B; SP 2/BH; BS 2; BS 2/M: ST 2/B-100; ST 2/C-100; ST 2/R-100; ST 2/R-V; BS 2/C; BS 2/R; BS 2/R-V; CS/C: ST 2/C-H; ST 2/R-H; BS 2/C-H; BS 2/R-H:	55 x 45; 80 x 45; 100 x 45; 100 x 50 AO = 55 x 45 AO = 80 x 45 AO = 100 x 45 AO = 100 x 50	
AO[2]	Installation location SP 2/B-50: ST 2/B; SP 2/BH; BS 2; BS 2/M: ST 2/B-100; ST 2/C-100; ST 2/R-100; ST 2/R-V; BS 2/C; BS 2/R; BS 2/R-V; CS/C: ST 2/C-H; ST 2/R-H; BS 2/C-H; BS 2/R-H:	55 x 45; 80 x 45; 100 x 45; 100 x 50 AO = 55 x 45 AO = 80 x 45 AO = 100 x 45 AO = 100 x 50	
MT	Kit 0 = not assembled 1 = assembled	0; 1	

* h_{SZ} = leg set height at upper transport level
** h_{SZ1} = leg set height at lower transport level
[1] Upper transport level
[2] Lower transport level

Technical data

Material number	3842996322
ESD	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized

Leg set SZ 2/U-H

- Leg set for heavy-duty single-track conveyor sections on two transport levels

The leg sets support two belt sections or two conveyor units side by side, e.g. for a workpiece pallet return.
They are particularly suitable for belt sections BS 2/...-H or conveyor units with section profile SP 2/...-H.

Required accessories

- Foundation bracket 3842146848, see p. 6-32
- Floor dowel 3842526560, see p. 6-33

Recommended accessories

- Cover caps for bracket, see p. 6-34

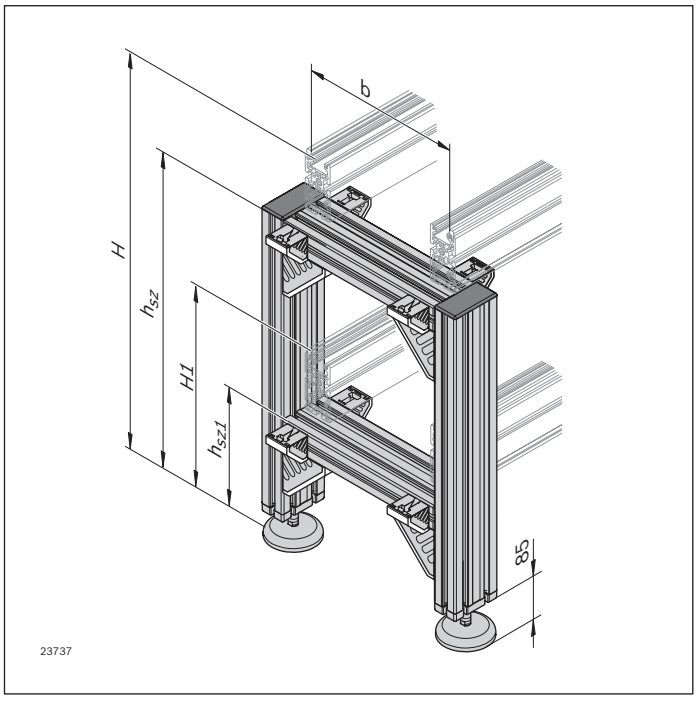
Scope of delivery

- Incl. height-adjustable leveling foot
- Incl. all fastening material to mount on conveyor section, drive module or return unit

Condition on delivery

- Assembled (MT = 1)
- Not assembled (MT = 0)

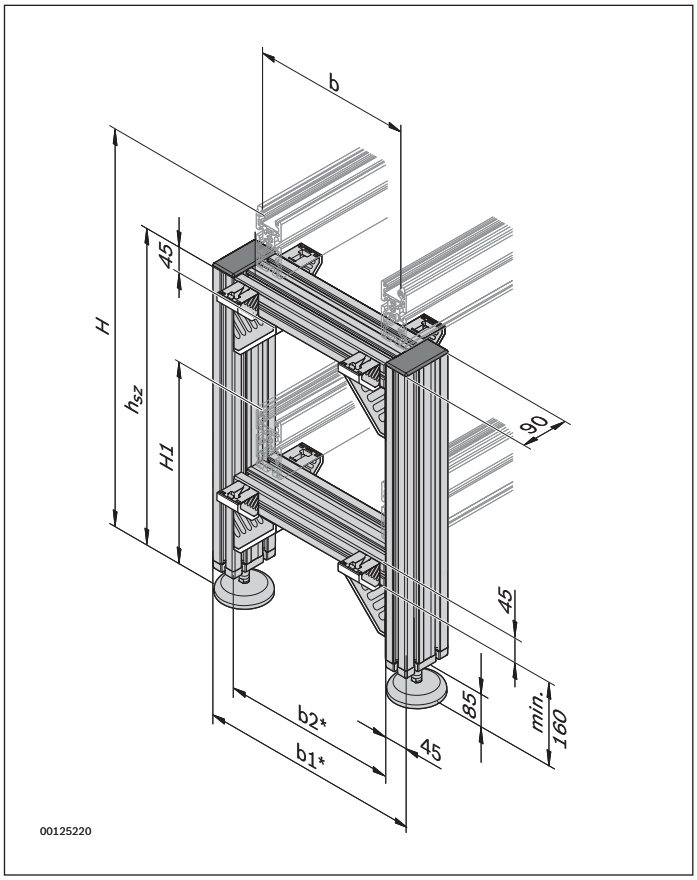
Ordering information



Material number		3842996323	
b (mm)	Track width in direction of transport	400 ... 1200	
H (mm)	Transportation height	ST 2/B-50:	535 ... 2000
$H = h_{SZ}* + AO^{1)}$		ST 2/B:	585 ... 2000
		ST 2/B-100:	625 ... 2000
H1 (mm)		ST 2/B-50:	275 ... 1740
$H1 = h_{SZ1}** + AO1^{2)}$		ST 2/B:	300 ... 1715
		ST 2/B-100:	320 ... 1695
$AO^{1)}$	Installation location	55 x 45; 80 x 45; 100 x 45; 100 x 50	
	SP 2/B-50:	AO = 55 x 45	
	ST 2/B; SP 2/BH; BS 2; BS 2/M:	AO = 80 x 45	
	ST 2/B-100; ST 2/C-100; ST 2/R-100; ST 2/R-V; BS 2/C; BS 2/R; BS 2/R-V; CS/C:	AO = 100 x 45	
	ST 2/C-H; ST 2/R-H; BS 2/C-H; BS 2/R-H:	AO = 100 x 50	
$AO^{2)}$	Installation location	55 x 45; 80 x 45; 100 x 45; 100 x 50	
	SP 2/B-50:	AO = 55 x 45	
	ST 2/B; SP 2/BH; BS 2; BS 2/M:	AO = 80 x 45	
	ST 2/B-100; ST 2/C-100; ST 2/R-100; ST 2/R-V; BS 2/C; BS 2/R; BS 2/R-V; CS/C:	AO = 100 x 45	
	ST 2/C-H; ST 2/R-H; BS 2/C-H; BS 2/R-H:	AO = 100 x 50	
MT	Kit 0 = not assembled 1 = assembled	0; 1	

* h_{SZ} = leg set height at upper transport level
** h_{SZ1} = leg set height at lower transport level
[1)] Upper transport level
[2)] Lower transport level

Dimensions

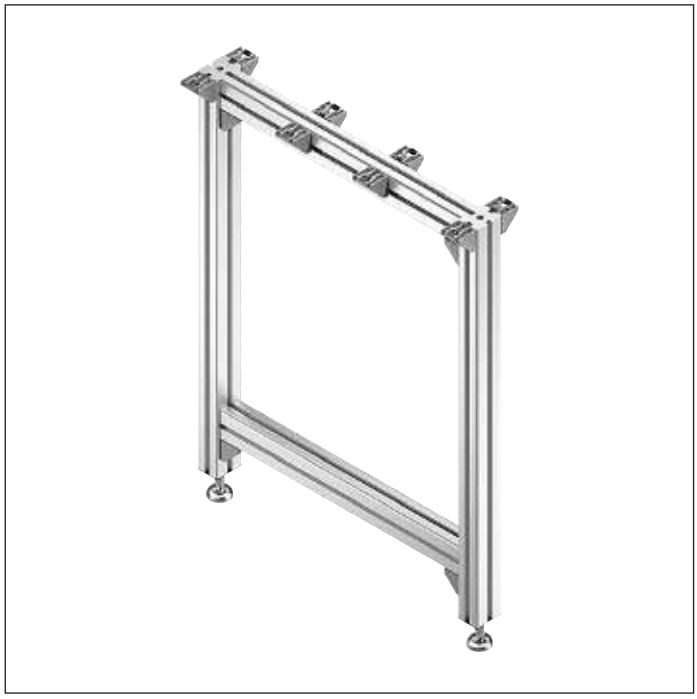


[*)] Calculations of b1 and b2 depending on section profile width:
Section profile width 45 mm: b1 = b+106; b2 = b+16
Section profile width 50 mm: b1 = b+116; b2 = b+26

Technical data

Material number	3842996323
ESD	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized

Leg set SZ 2/T



- Leg set for double-track conveyor sections on one transport level

The leg sets support two belt sections or two conveyor units side by side.

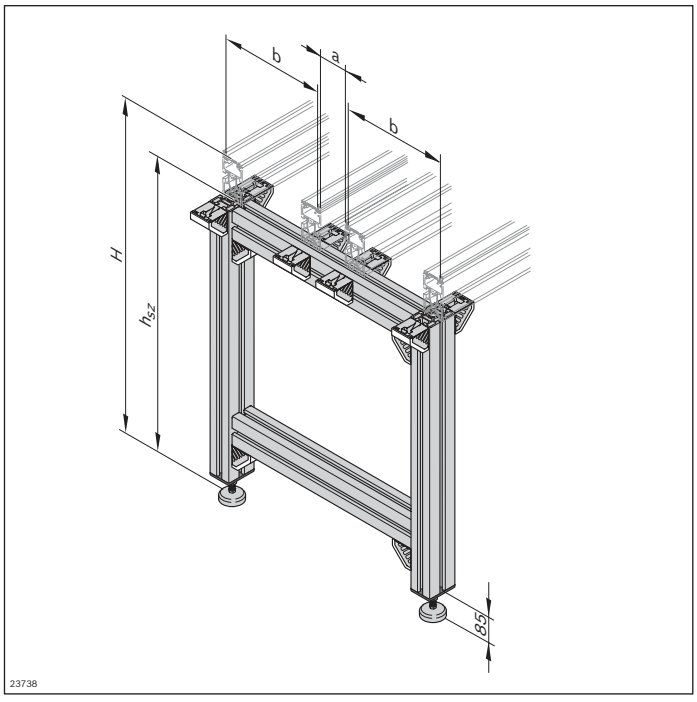
Required accessories
- Foundation bracket 3842146848, see p. 6-32
- Floor dowel 3842526560, see p. 6-33

Recommended accessories
- Cover caps for bracket, see p. 6-34

Scope of delivery
- Incl. height-adjustable leveling foot
- Incl. all fastening material to mount on conveyor section, drive module or return unit

Condition on delivery
- Assembled (MT = 1)
- Not assembled (MT = 0)

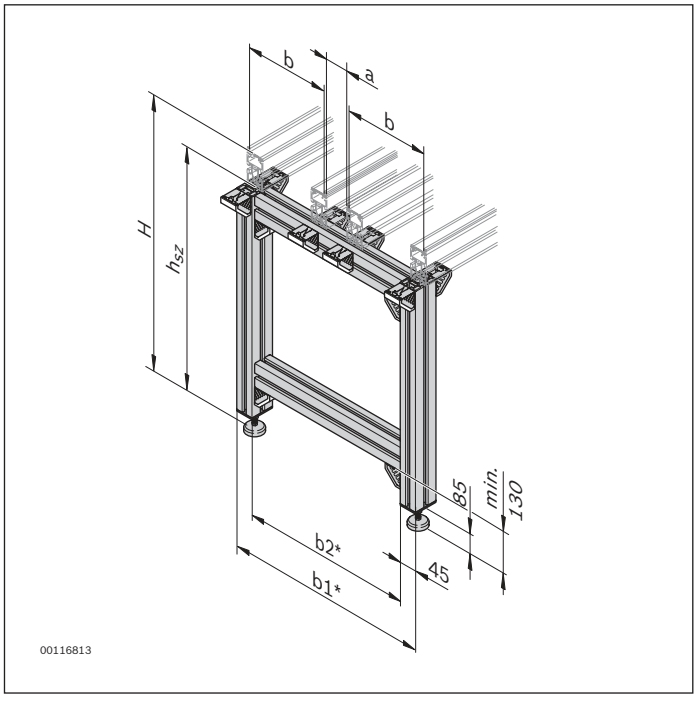
Ordering information



Material number		3842996324	
b (mm)	Track width in direction of transport	160 ... 480	
H (mm) *H = h_{SZ}*+ AO***	Transportation height	ST 2/B-50: ST 2/B: ST 2/B-100:	350 ... 2000 375 ... 2000 395 ... 2000
AO	Installation location SP 2/B-50: ST 2/B; SP 2/BH; BS 2; BS 2/M: ST 2/B-100; ST 2/C-100; ST 2/R-100; ST 2/R-V; BS 2/C; BS 2/R; BS 2/R-V; CS/C: ST 2/C-H; ST 2/R-H; BS 2/C-H; BS 2/R-H:	55 x 45; 80 x 45; 100 x 45; 100 x 50 AO = 55 x 45 AO = 80 x 45 AO = 100 x 45 AO = 100 x 50	
MT	Kit 0 = not assembled 1 = assembled	0; 1	
a (mm)	Distance between conveyors	45; 90; 135	

* h_{SZ} = leg set height
** AO = 55, 80 or 100 (height of section profile)

Dimensions

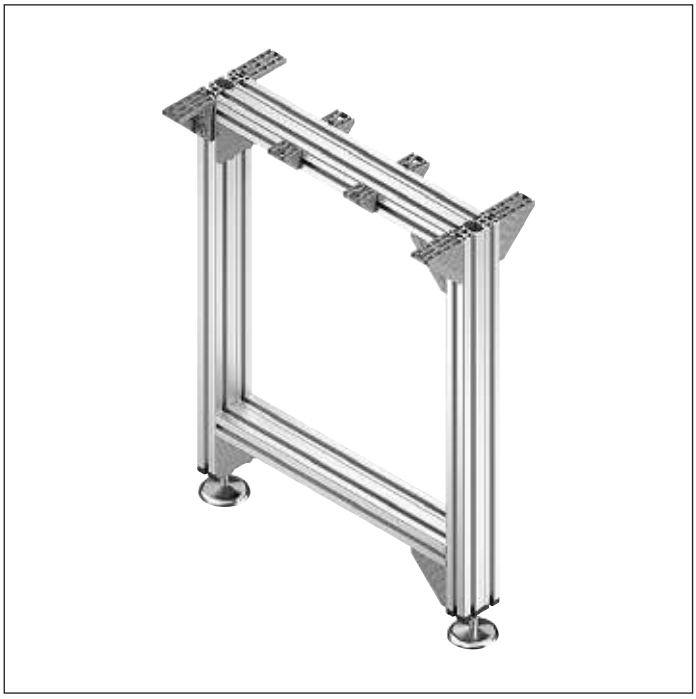


*) Calculations of b1 and b2 depending on section profile width:
Section profile width 45 mm: b1 = 2(b+15)+a; b2 = 2(b+15)+a-90
Section profile width 50 mm: b1 = 2(b+25)+a-10; b2 = 2(b+25)+a-100

Technical data

Material number	3842996324
ESD	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized

Leg set SZ 2/T-H



- Leg set for heavy-duty double-track conveyor sections on one transport level

The leg sets support two belt sections or two conveyor units side by side. They are particularly suitable for belt sections BS 2/...-H or conveyor units with section profile SP 2/...-H.

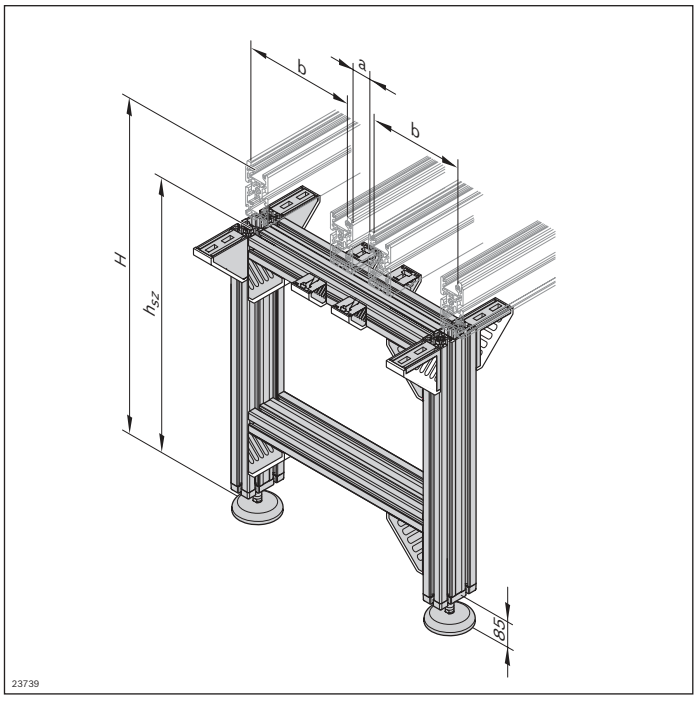
Required accessories
- Foundation bracket 3842146848, see p. 6-32
- Floor dowel 3842526560, see p. 6-33

Recommended accessories
- Cover caps for bracket, see p. 6-34

Scope of delivery
- Incl. height-adjustable leveling foot
- Incl. all fastening material to mount on conveyor section, drive module or return unit

Condition on delivery
- Assembled (MT = 1)
- Not assembled (MT = 0)

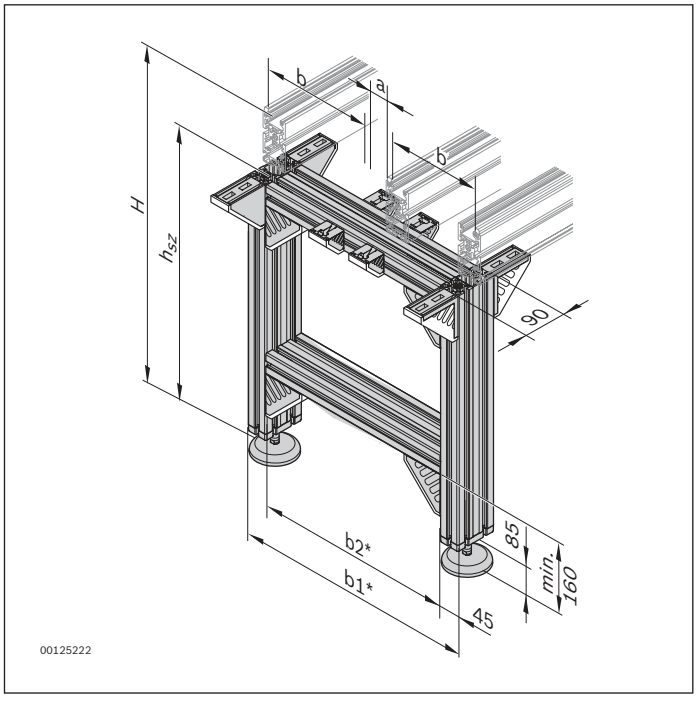
Ordering information



Material number		3842996325	
b (mm)	Track width in direction of transport	160 ... 480	
H (mm) *H = h_{SZ}*+ AO***	Transportation height	ST 2/B-50: ST 2/B: ST 2/B-100:	410 ... 2000 435 ... 2000 455 ... 2000
AO	Installation location SP 2/B-50: ST 2/B; SP 2/BH; BS 2; BS 2/M: ST 2/B-100; ST 2/C-100; ST 2/R-100; ST 2/R-V; BS 2/C; BS 2/R; BS 2/R-V; CS/C: ST 2/C-H; ST 2/R-H; BS 2/C-H; BS 2/R-H:	55 x 45; 80 x 45; 100 x 45; 100 x 50 AO = 55 x 45 AO = 80 x 45 AO = 100 x 45 AO = 100 x 50	
MT	Kit 0 = not assembled 1 = assembled	0; 1	
a (mm)	Distance between conveyors	45; 90; 135	

* h_{SZ} = leg set height
** AO = 55, 80 or 100 (height of section profile)

Dimensions



*) Calculations of b1 and b2 depending on section profile width:
Section profile width 45 mm: b1 = 2(b+15)+a; b2 = 2(b+15)+a-90
Section profile width 50 mm: b1 = 2(b+25)+a-10; b2 = 2(b+25)+a-100

Technical data

Material number	3842996325
ESD	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized

Leg set SZ 2/K-90

- Leg set for curves K...-90

The leg sets have a 90°curve.

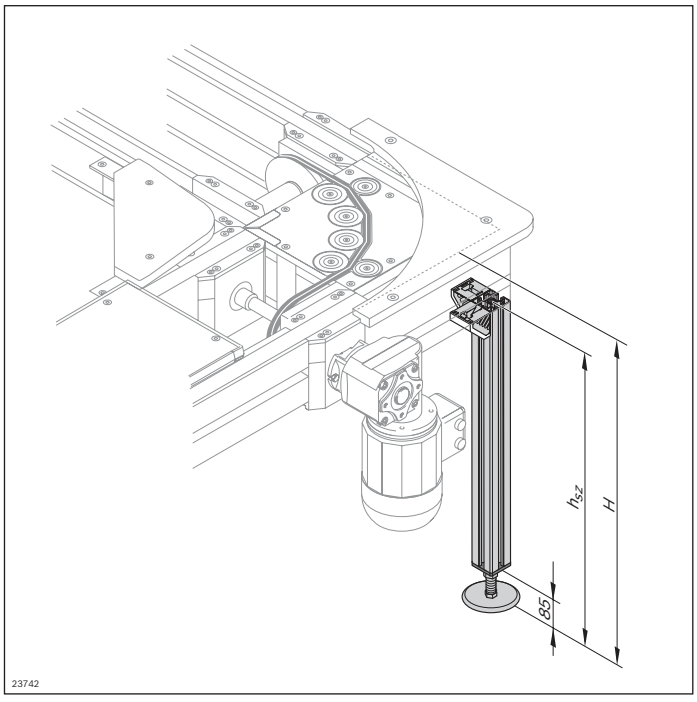
Required accessories
- Foundation bracket 3842146848, see p. 6-32
- Floor dowel 3842526560, see p. 6-33

Recommended accessories
- Cover caps for bracket, see p. 6-34

Scope of delivery
- Incl. height-adjustable leveling foot
- Incl. all fastening material for mounting on the curve KE 2/90

Condition on delivery
- Assembled (MT = 1)
- Not assembled (MT = 0)

Ordering information



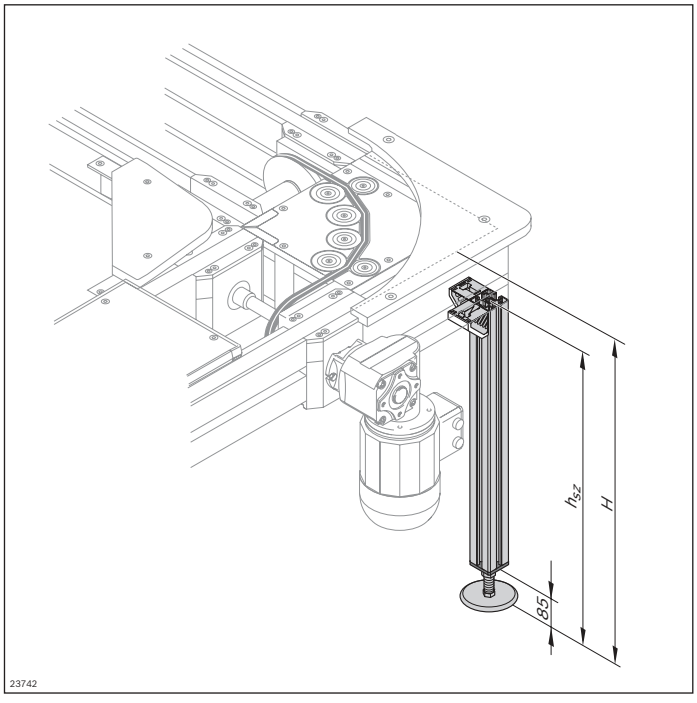
Material number		3842996326
H (mm) *H = h_{SZ}*+ AO*	Transportation height	376 ... 2000
AO	Installation location	91
MT	Kit 0 = not assembled 1 = assembled	0; 1

* h_{SZ} = leg set height

Technical data

Material number	3842996326
ESD	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized

Dimensions



Leg set SZ 2/K-180

- Leg set for curves K...-180

The leg sets support a 180° curve.

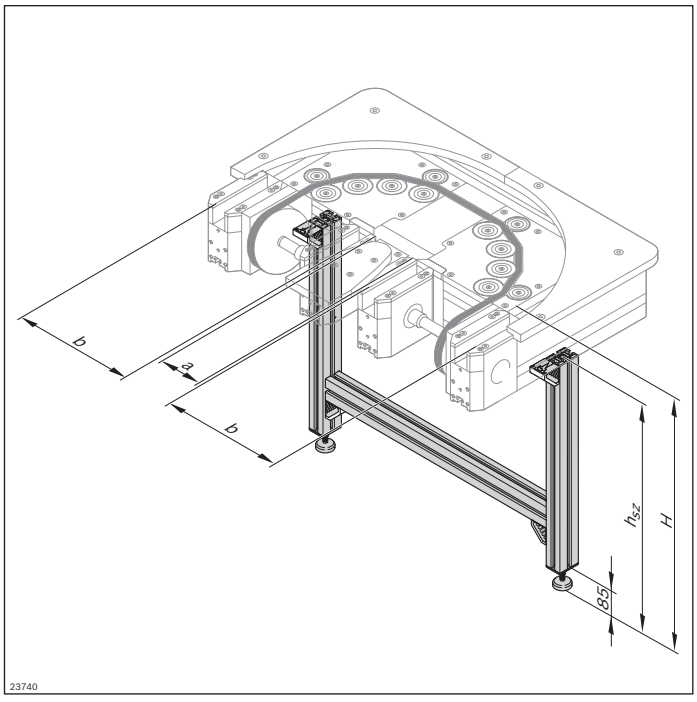
Required accessories
- Foundation bracket 3842146848, see p. 6-32
- Floor dowel 3842526560, see p. 6-33

Recommended accessories
- Cover caps for bracket, see p. 6-34

Scope of delivery
- Incl. height-adjustable leveling foot
- Incl. all fastening material for mounting on the curve KE 2/180

Condition on delivery
- Assembled (MT = 1)
- Not assembled (MT = 0)

Ordering information



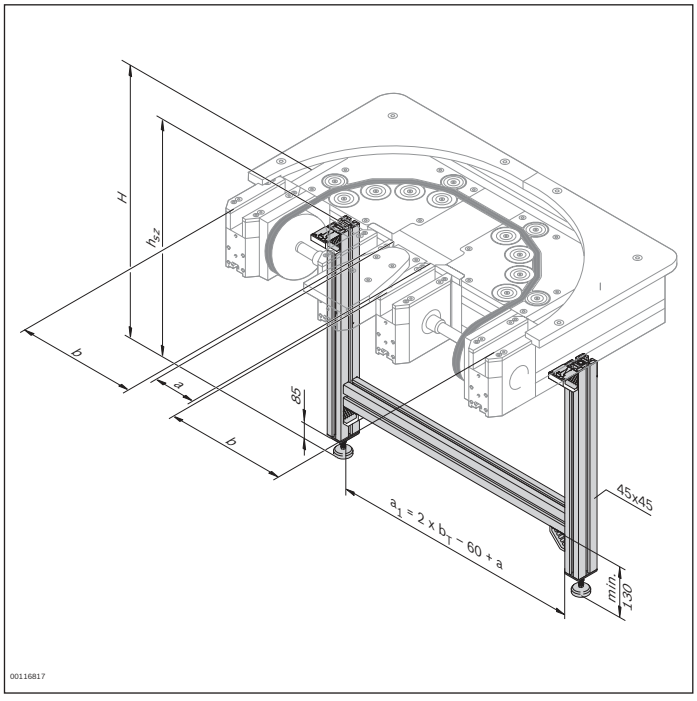
Material number		3842996327
b (mm)	Track width in direction of transport	160 ... 400
H (mm) *H = h_{SZ}*+ AO*	Transportation height	376 ... 2000
AO	Installation location	91
MT	Kit 0 = not assembled 1 = assembled	0; 1
a (mm)	Distance between conveyors	90; 135

* h_{SZ} = leg set height

Technical data

Material number	3842996327
ESD	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized

Dimensions



Leg set HD 2/H

- Leg set for lift rotary unit HD 2/H
- For size 2 over 50 kg (Size 2)
- For size 3 generally (Size 3)

Required accessories

- Foundation bracket 3842146848, see p. 6-32
- Floor dowel 3842526560, see p. 6-33

Recommended accessories

- Cover caps for bracket, see p. 6-34

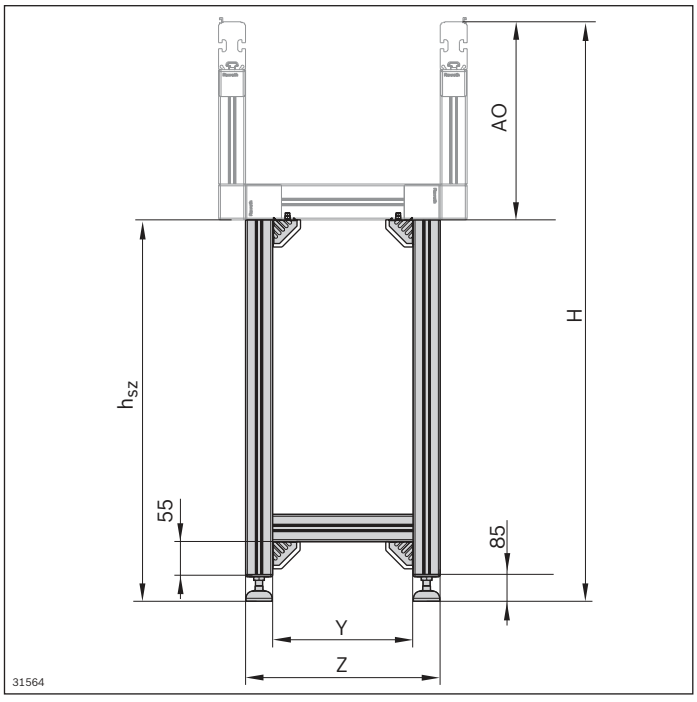
Scope of delivery

- Incl. height-adjustable leveling foot
- Incl. fastening material

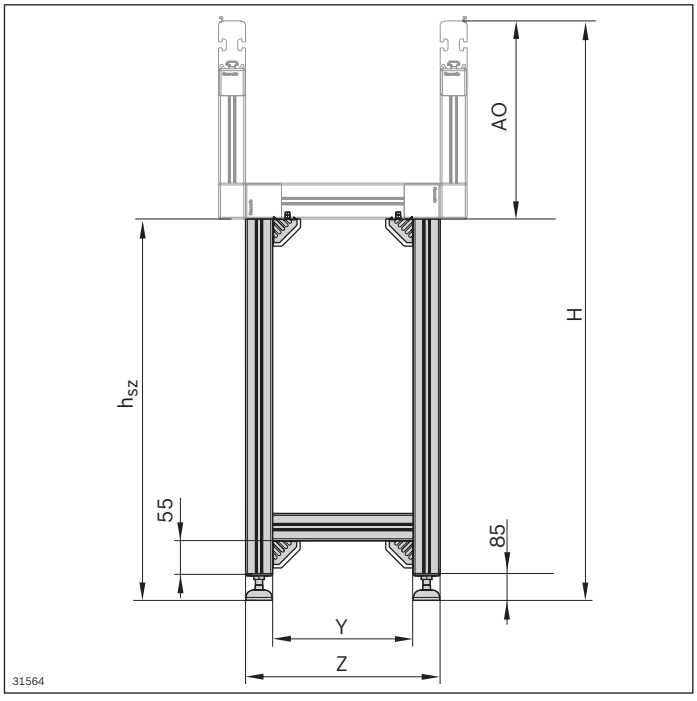
Condition on delivery

- Assembled (MT = 1)
- Not assembled (MT = 0)

Ordering information



Dimensions



Leg set HD 2/H, Size 2[1)]

Material number		3842993324
H (mm) *H = h_{SZ}*+ AO*	Transportation height	595 ... 2000
DW (°)	Rotation angle	90; 180
MT	Kit 0 = not assembled 1 = assembled	0; 1

[1)] For size 2 over 50 kg
* h_{SZ} = leg set height

HD 2/H leg set, size 3[2)]

Material number		3842993325
H (mm) *H = h_{SZ}*+ AO*	Transportation height	625 ... 2000
DW (°)	Rotation angle	90; 180
MT	Kit 0 = not assembled 1 = assembled	0; 1

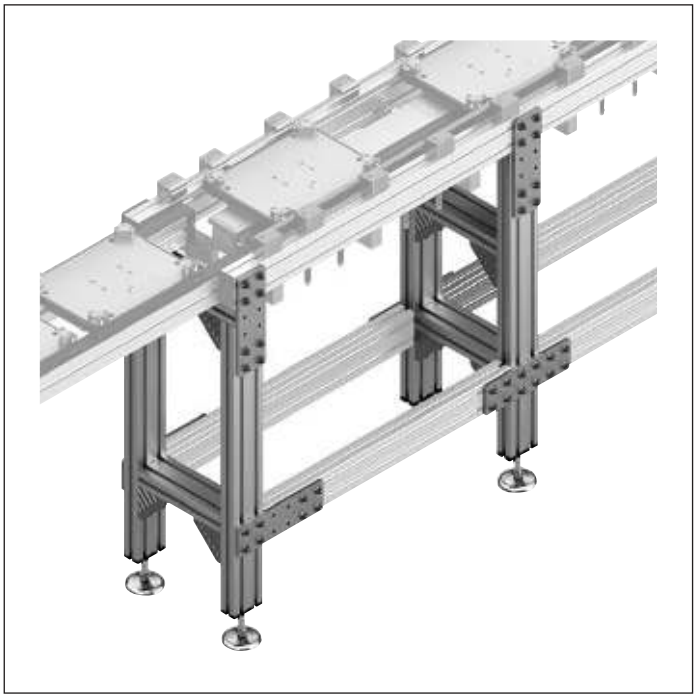
[2)] For size 3 generally
* h_{SZ} = leg set height

Technical data

Material number	3842993324 3842993325
ESD	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized

	Size 2, DW = 90°	Size 2, DW = 180°	Size 3, DW = 90°	Size 3, DW = 180°
AO	331	226	362	257
Y	235	235	480	480
Z	325	325	570	570

Leg set SZ 2/LS...



- Leg set for mounting linear sections LS 2
- Standard version in 2 variants:
  - SZ 2/LS END:
    for installation at the beginning and end of a linear section LS 2 and for connecting linear sections LS 2 with belt sections BS 2
  - SZ 2/LS MID:
    for mounting a linear section LS 2 between two leg sets SZ 2/LS END for conveyor sections > 918 mm

The leg sets support belt sections or linear section units with high loads and dynamics. They are only suitable for linear sections LS 2.

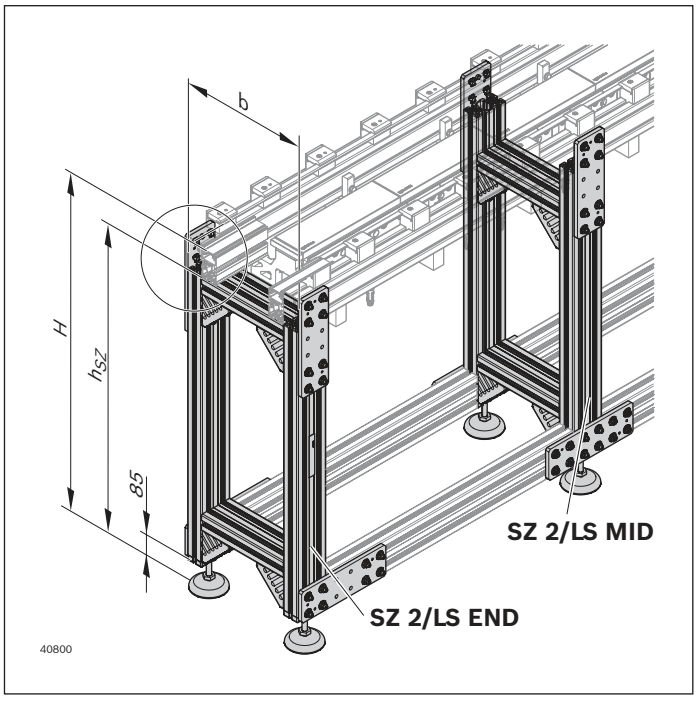
Required accessories
- Longitudinal connector LV 2, see p. 6-29
- Foundation bracket 3842146848, see p. 6-32
- T-bolt 3842528718, see p. 6-33
- Flange nut 3842345081, see p. 6-33
- Floor dowel 3842526560, see p. 6-33

Recommended accessories
- Cover caps for bracket, see p. 6-34

Scope of delivery
- Incl. height-adjustable leveling foot
- Incl. fastening material for assembly on conveyor sections LS 2
- SZ 2/LS END: incl. adjustment kit BS 2 to LS 2

Condition on delivery
- Assembled (MT = 1)
- Not assembled (MT = 0)

Ordering information



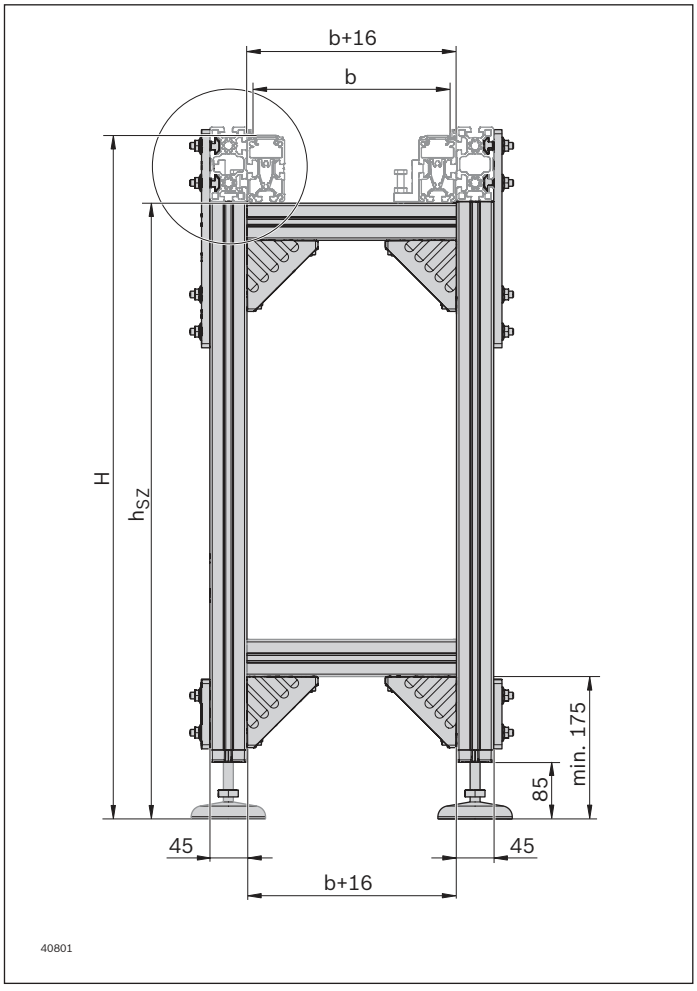
Material number		3842998906 SZ 2/LS END	3842998907 SZ 2/LS MID
b (mm)	Track width in direction of transport	160 ... 400	160 ... 400
H (mm)	Transportation height	435... 1000	435... 1000
MT	Kit 0 = not assembled 1 = assembled	0; 1	0; 1

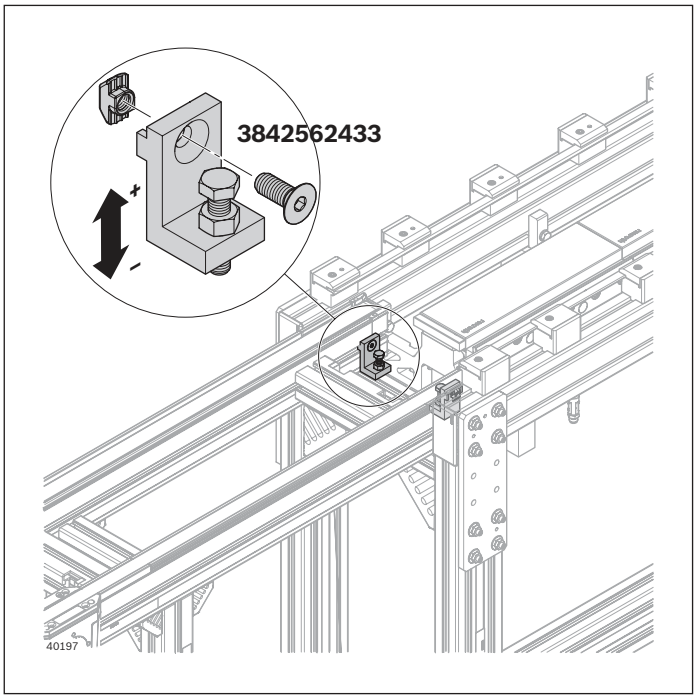
* h_{SZ} = leg set height

Technical data

Material number	3842998906 SZ 2/LS END	3842998907 SZ 2/LS MID
ESD	Yes	Yes
Material specification	Profile: Aluminum Bracket: Diecast aluminum Leveling foot: Steel; galvanized Connecting plate: Steel; galvanized	

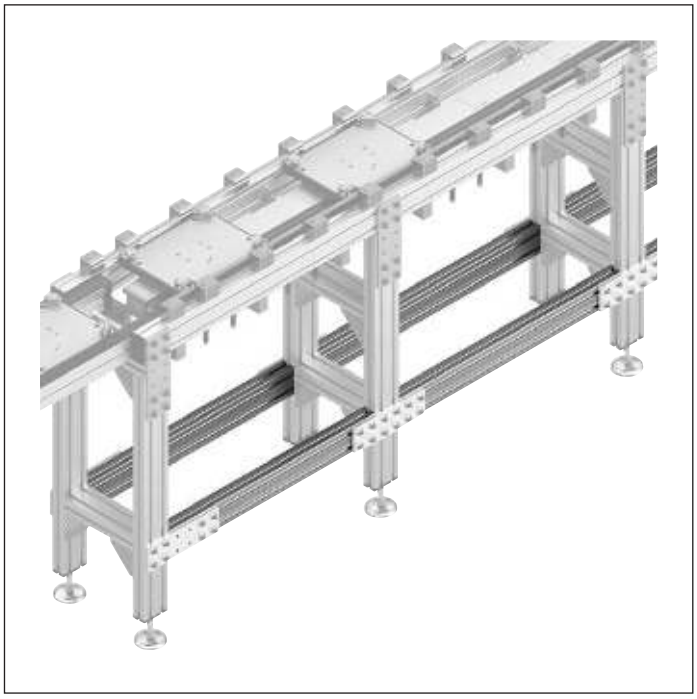
Dimensions





Product description	Material number
Adjustment kit BS 2 to LS 2	3842562433

Longitudinal connector LV 2



- For establishing a stable connection between the leg sets SZ 2/LS END and SZ 2/LS MID
- For accommodating high loads and dynamics

Required accessories

- Leg sets SZ 2/LS END and SZ 2/LS MID, see p. 6-26

Scope of delivery

- Incl. fastening material for mounting on the leg sets SZ 2/LS END and SZ 2/LS MID

Condition on delivery

- Not assembled

Ordering information

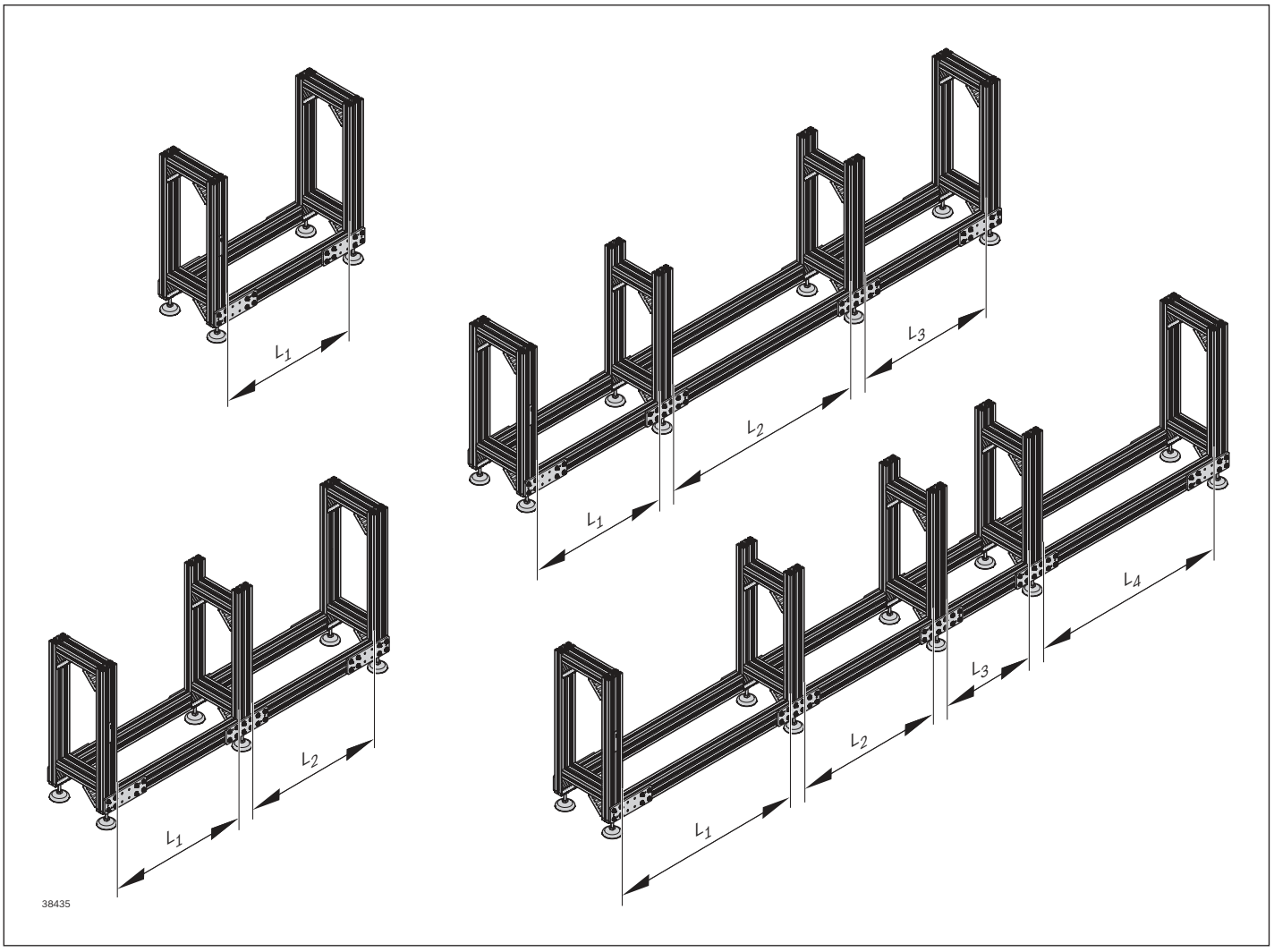
Material number		**3842998908**
l[1] (mm)	Length	306; 612; 918; 1224; 1530; 1836; 2142; 2448; 2754; 3060; 3366; 3672

[1] l = n x motor length of 306 mm

Technical data

Material number	**3842998908**
ESD	Yes
Material specification	Profile: Aluminum

Dimensions



Lengths of longitudinal connectors LV 2

Number of leg sets	Version	Total length of motor modules l (mm)	Number of longitudinal connectors by length	Lengths of longitudinal connectors LV 2			
				L_1 (mm)	L_2 (mm)	L_3 (mm)	L_4 (mm)
2	SZ 2/LS END	306	2	416	–	–	–
		612	2	722	–	–	–
		918	2	1028	–	–	–
2	SZ 2/LS END	1224	2	775	469	–	–
1	SZ 2/LS MID	1530	2	775	775	–	–
		1836	2	1081	775	–	–
		2142	2	1081	1081	–	–
2	SZ 2/LS END	2448	2	775	828	775	–
2	SZ 2/LS MID	2754	2	775	1134	775	–
		3060	2	1081	828	1081	–
		3366	2	1081	1134	1081	–
2	SZ 2/LS END	3672	2	1081	828	522	1081
3	SZ 2/LS MID						

Reinforcement SZ 2 – ST 2

For absorbing horizontal forces from the sections.
Installation at the end of the section

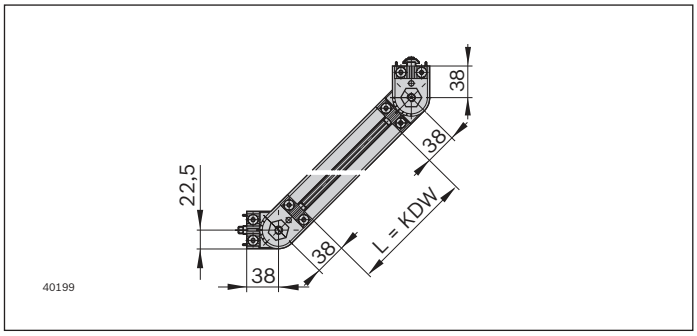
Scope of delivery

- Incl. fastening material

Condition on delivery

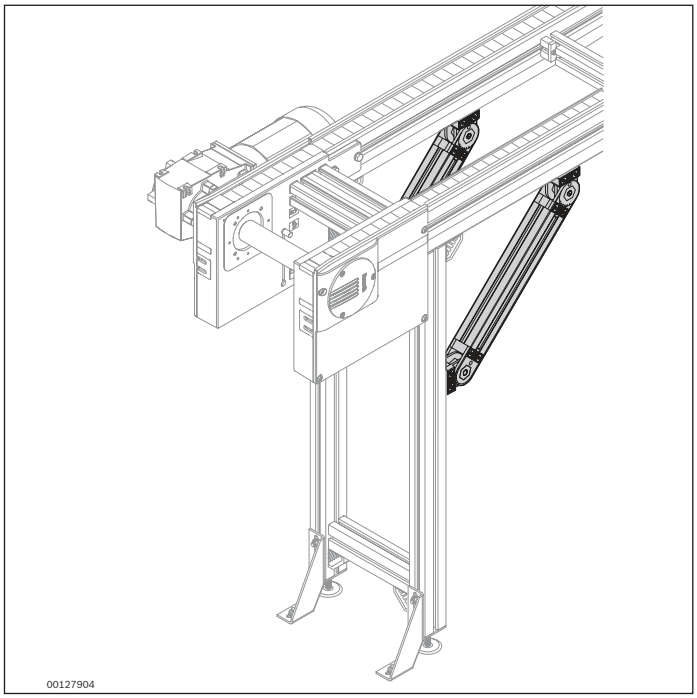
- Not assembled

Ordering information

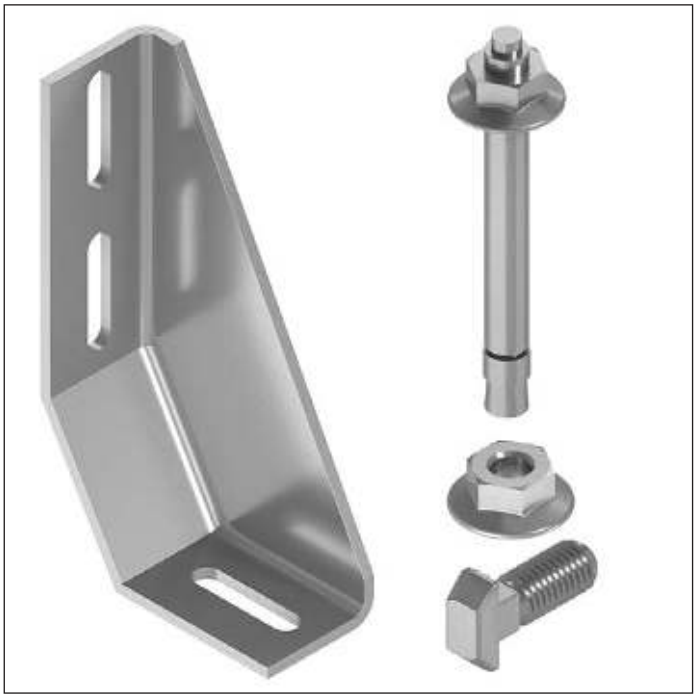


Material number		3842994910
l (mm)	Length	300 ... 2000

Technical data



Foundation brackets, dowels



Foundation brackets are used for securing frames to the floor.
The hole for the floor dowel can be drilled out without removing the foundation bracket.

Required accessories

- Floor dowel 3842526560, see p. 6-33
- T-bolt M8x25 3842528718, see p. 6-33
- Flange nut M8 3842345081, see p. 6-33

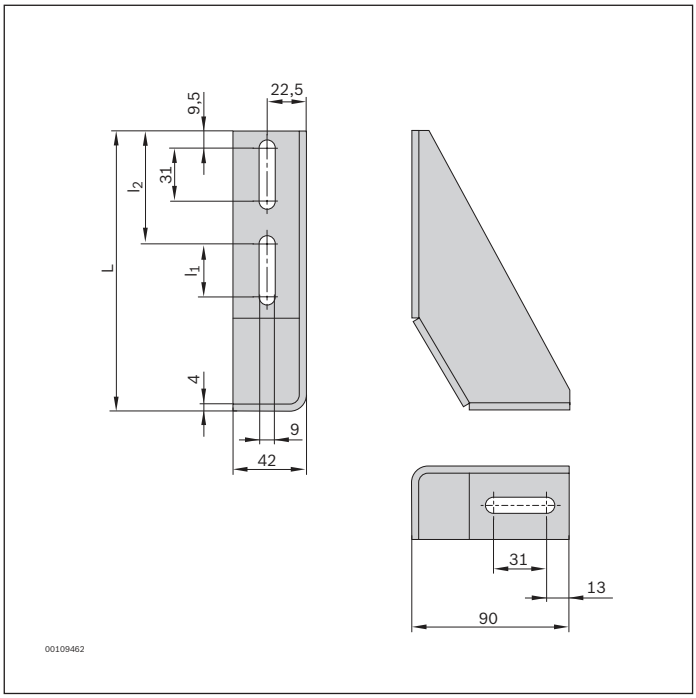
Ordering information

Product description	Packaging unit	Material number
Foundation bracket 210x90x42	20	3842146848

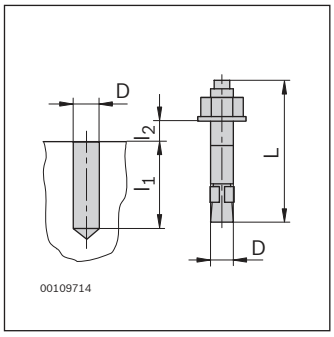
Technical data

Material number	3842146848
Material specification	Sheet steel; galvanized, transparent chromated

Dimensions



Length l_1 (mm)	Length l_2 (mm)	Dimension L (mm)
91	54.5	210



l_2 = maximum value

Length l_1 (mm)	Length l_2 (mm)	Dimension L (mm)	Dimension D
65	15	80	M8

Floor dowel

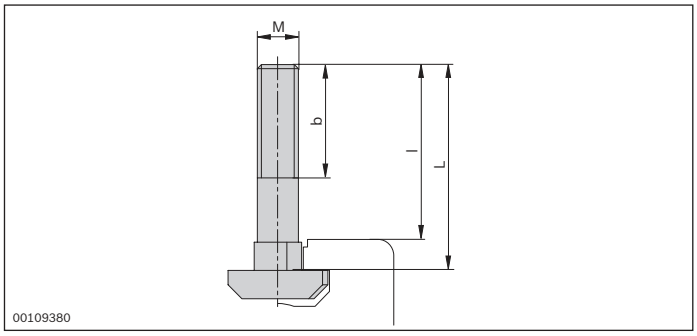
- For anchoring foundation brackets to the floor

Ordering information

Product description	Packaging unit	Material number
Floor dowel M8x80-15	100	3842526560

Technical data

Material number	3842526560
Material specification	Steel; galvanized



Dimension b (mm)	Dimension l (mm)	Dimension L (mm)
19	19	25

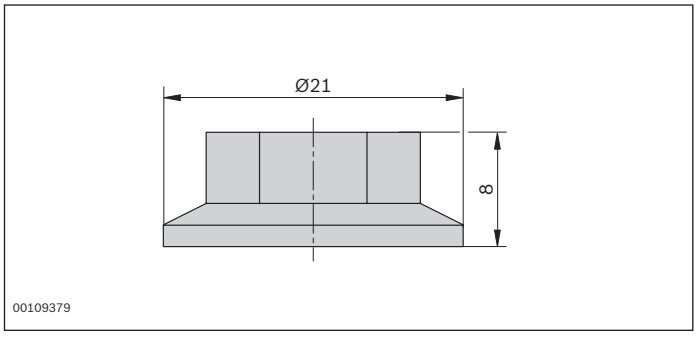
T-bolt

Ordering information

Product description	Packaging unit	Material number
T-bolt M8x25	100	3842528718

Technical data

Material number	3842528718
ESD	Yes
Material specification	Steel; galvanized
Thread size	M8x25
Length	19



Flange nut

Ordering information

Product description	Packaging unit	Material number
Flange nut M8	100	3842345081

Technical data

Material number	3842345081
ESD	Yes
Material specification	Steel; galvanized
Thread size	M8

Bracket cover caps

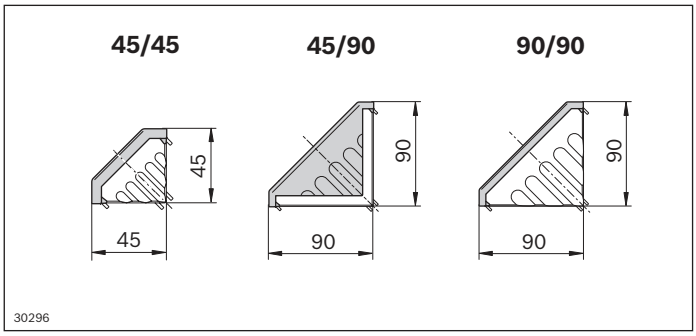
Ordering information

Product description	Packaging unit	Material number
Cover cap 45x45; signal gray	100	3842548862
Cover cap 45x45; black	100	3842548863
Cover cap 45x90; signal gray	100	3842548864
Cover cap 45x90; black	100	3842548865
Cover cap 90x90; signal gray	20	3842548868
Cover cap 90x90; black	20	3842548869

Technical data

Material number	3842548862	3842548863	3842548864	3842548865	3842548868	3842548869
ESD	No	Yes	No	Yes	No	Yes
Material specification	Polypropylene	Polypropylene	Polypropylene	Polypropylene	Polypropylene	Polypropylene

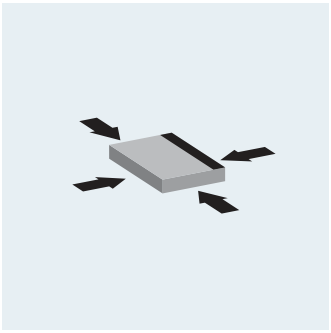
Dimensions



Leg set/bracket/cover cap combination matrix

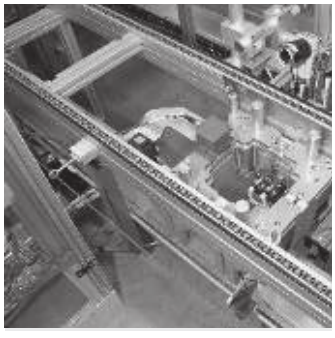
Designation	Material number	Bracket	Number of bracket cover caps (alternatively black or signal gray)		
			45x45	45x90	90x90
SZ 2	3842996320	45x45	8		
SZ 2/H	3842996321	45x90		4	
		90x90			4
SZ 2/U	3842996322	45x45	12		
SZ 2/U-H	3842996323	45x45	8		
		90x90			4
SZ 2/T	3842996324	45x45	12		
SZ 2/T-H	3842996325	45x45	4		
		45x90		4	
		90x90			4
SZ 2/K-90	3842996326	45x45	2		
SZ 2/K-180	3842996327	45x45	4		
HD 2/H Size 2	3842993324	45x45	4		
HD 2/H Size 3	3842993325	45x45	4		

	Bracket	Number of bracket cover caps (alternatively black or signal gray)	
		45x45	90x90
SZ 2/LS END 3842998906	45x45 SET (MT = 0) 3842523561	8 (b < 240, H ≥ 455) 4 (b < 240, H < 455)	
	45x45 (MT = 1) 3842523558	8 (b < 240, H ≥ 455) 4 (b < 240, H < 455)	
	90x90 SET (MT = 0) 3842523578		4 (b = 240...400, H ≥ 455) 2 (b = 240...400, H < 455)
	90x90 (MT = 1) 3842523575		4 (b = 240...400, H ≥ 455) 2 (b = 240...400, H < 455)
SZ 2/LS MID 3842998907	45x45 SET (MT = 0) 3842523561	8 (b < 240, H ≥ 555) 4 (b < 240, H < 555)	
	45x45 (MT = 1) 3842523558	8 (b < 240, H ≥ 555) 4 (b < 240, H < 555)	
	90x90 SET (MT = 0) 3842523578		4 (b = 240...400, H ≥ 555) 2 (b = 240...400, H < 555)
	90x90 (MT = 1) 3842523575		4 (b = 240...400, H ≥ 555) 2 (b = 240...400, H < 555)



Positioning and orientation

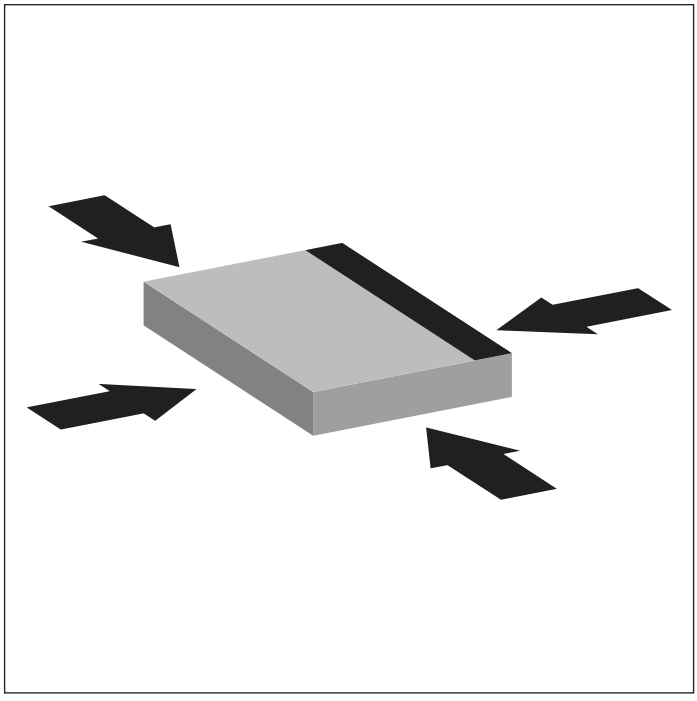
Selection of positioning units **7-2**



Selection of positioning units

In order to process and maintain manufacturing tolerances, workpiece pallets must be stopped and positioned in the processing station.

Depending on the design, the positioning unit can move the workpiece pallets with an accuracy of ±0.05 mm. Vertical process forces of up to 100 kN can be taken up.

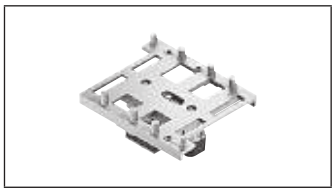


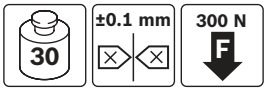
INTENDED USE

- A stop gate VE 2 (see p. 8-6) is sufficient for use with a manual workstation that has low requirements for repetition accuracy and if no forces act upon the workpiece pallet
- Transverse repetition accuracy can be improved using a workpiece pallet inner guide (see p. 7-5)
- To lift the workpiece pallet from the conveyor medium: PE 2 (see p. 7-7) and PE 2/X (see p. 7-11)
- For larger lifting distances: HP 2 (see p. 7-28) and HP 2/L (see p. 7-19)
- For high forces, e.g. in presses or in riveting machines: PE 2/XP, see p. 7-34
- For process force decoupling: PE 2/XX, see p. 7-42
- To change the workpiece pallet orientation: Lift rotary unit HD 2 (see p. 7-48) and lift rotary unit HD 2/H (see p. 7-51)

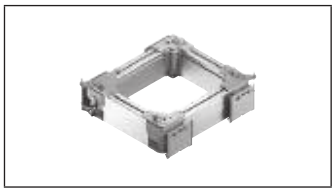
Workpiece pallet inner guide

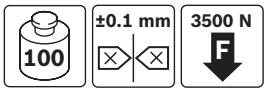
7-5



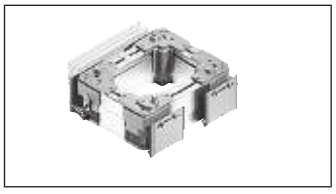
Positioning unit PE 2... 

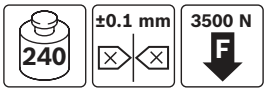
7-7



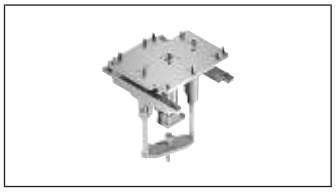
Positioning unit PE 2/X 

7-11



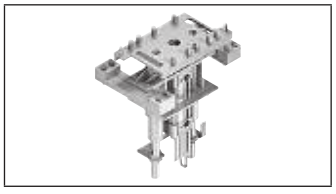
Positioning unit PE 2/H 

7-15



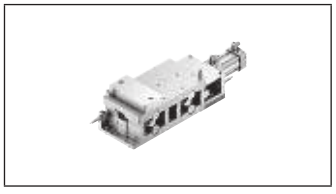
Lift positioning unit HP 2/L...

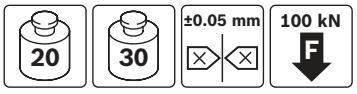
7-19



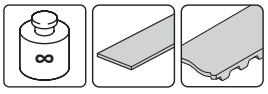
Lift positioning unit HP 2...

7-28

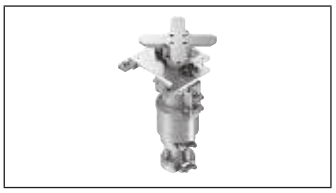


Positioning unit PE 2/XP 

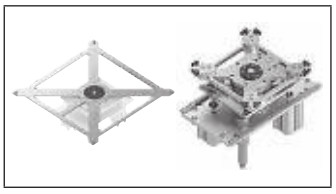
7-34

Process force decoupling PE 2/XX 

7-42

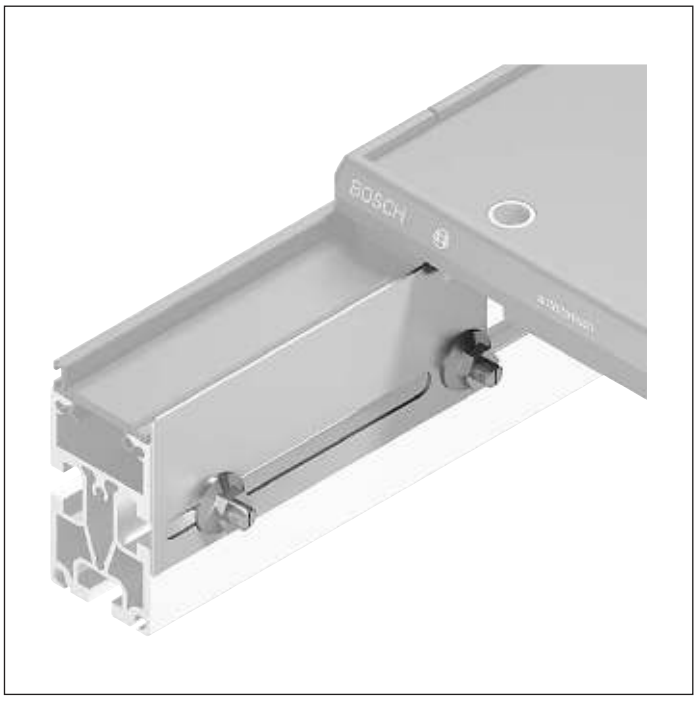


Lift rotary unit HD 2... **7-48**



Lift rotary unit HD 2/H... **7-51**

Workpiece pallet inner guide



- Easy mounting on conveyor sections
- Positioning with the guide groove on the workpiece pallet WT 2/...
- Can be combined with all workpiece pallets WT 2, WT 2/F and WT 2/E
- Can be combined with workpiece pallet WT 2/LS from b ≥ 240 mm

Using a workpiece pallet inner guide and a stop gate VE 2/..., a workpiece pallet with low requirements can be positioned at the repetition accuracy (±0.5 mm), i.e. for manual assembly processes.

Required accessories

- Stop gate VE 2/..., see p. 8-6

Scope of delivery

- Including fastening material for installation on the conveyor section ST 2/... or belt section BS 2/...

Condition on delivery

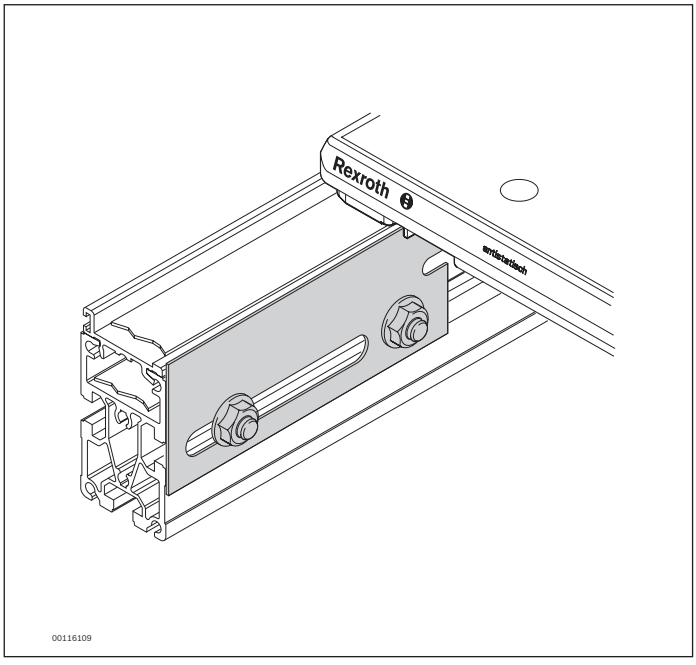
- Not assembled

Ordering information

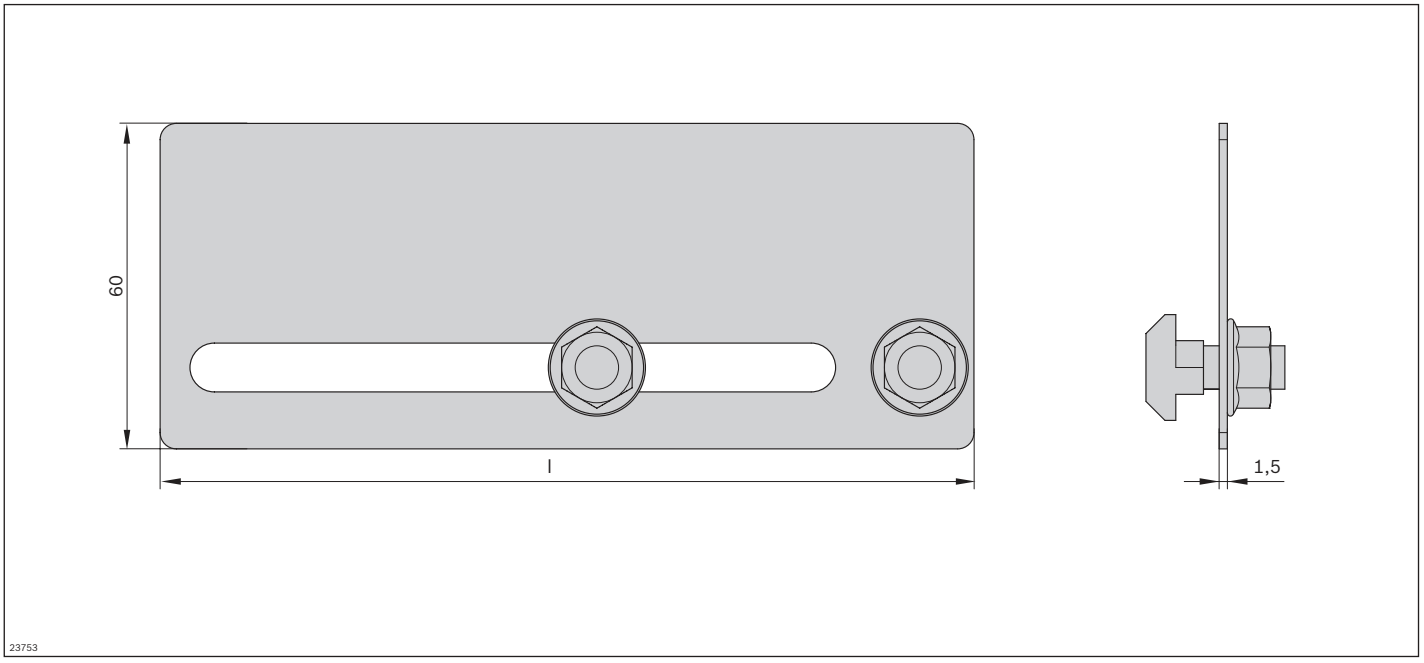
Product description	Length l (mm)	Material number
Workpiece pallet inner guide	45	3842525634
Workpiece pallet inner guide	150	0842601001
Workpiece pallet inner guide	300	0842601003
Workpiece pallet inner guide	450	0842601004
Workpiece pallet inner guide	600	0842601006

Technical data

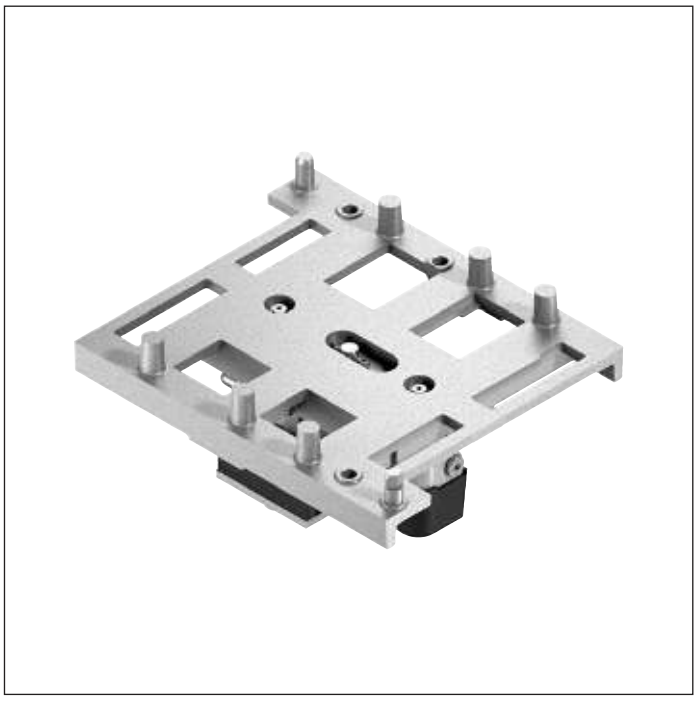
Material number			0842601001	0842601003	0842601004	0842601006	3842525634
ESD			Yes	Yes	Yes	Yes	Yes
Material specification			Steel; stainless	Steel; stainless	Steel; stainless	Steel; stainless	Steel; stainless
Length	l	mm	150	300	450	600	45
Repetition accuracy		mm	±0.5	±0.5	±0.5	±0.5	±0.5



Dimensions



Positioning unit PE 2...



- To position a workpiece pallet in a manual/automatic processing station
- For high repetition accuracy requirements up to ±0.1 mm
- Can be combined with all workpiece pallets WT 2 and WT 2/F up to 400 x 400 mm
- PE 2 in sizes 320 x 160 mm to 400 x 400 mm can be combined with WT 2/LS
- PE 2 in sizes 160 x 160 mm to 240 x 400 mm can only be combined as version PE 2/LS with WT 2/LS

Required accessories

- Stop gate VE 2/..., see p. 8-6
- Pneumatic equipment, connectors

Recommended accessories

- Position sensing kit for PE 2, see p. 7-10

Scope of delivery

- Incl. fastening material

Condition on delivery

- Assembled

Ordering information

Product description	Positioning unit b x l_T (mm)	Material number
Positioning unit PE 2	160 x 160	3842504706
Positioning unit PE 2/*LS*	160 x 160	3842563400
Positioning unit PE 2	160 x 240	3842504707
Positioning unit PE 2/LS	160 x 240	3842563401
Positioning unit PE 2	160 x 320	3842504708
Positioning unit PE 2/LS	160 x 320	3842563402
Positioning unit PE 2	240 x 160	3842504710
Positioning unit PE 2/LS	240 x 160	3842563403
Positioning unit PE 2	240 x 240	3842504711
Positioning unit PE 2/LS	240 x 240	3842563404
Positioning unit PE 2	240 x 320	3842504712
Positioning unit PE 2/LS	240 x 320	3842563405
Positioning unit PE 2	240 x 400	3842504713
Positioning unit PE 2/LS	240 x 400	3842563406
Positioning unit PE 2[1)]	320 x 160	3842504714
Positioning unit PE 2[1)]	320 x 240	3842504715
Positioning unit PE 2[1)]	320 x 320	3842504716
Positioning unit PE 2[1)]	320 x 400	3842504717
Positioning unit PE 2[1)]	400 x 320	3842504718
Positioning unit PE 2[1)]	400 x 400	3842504719

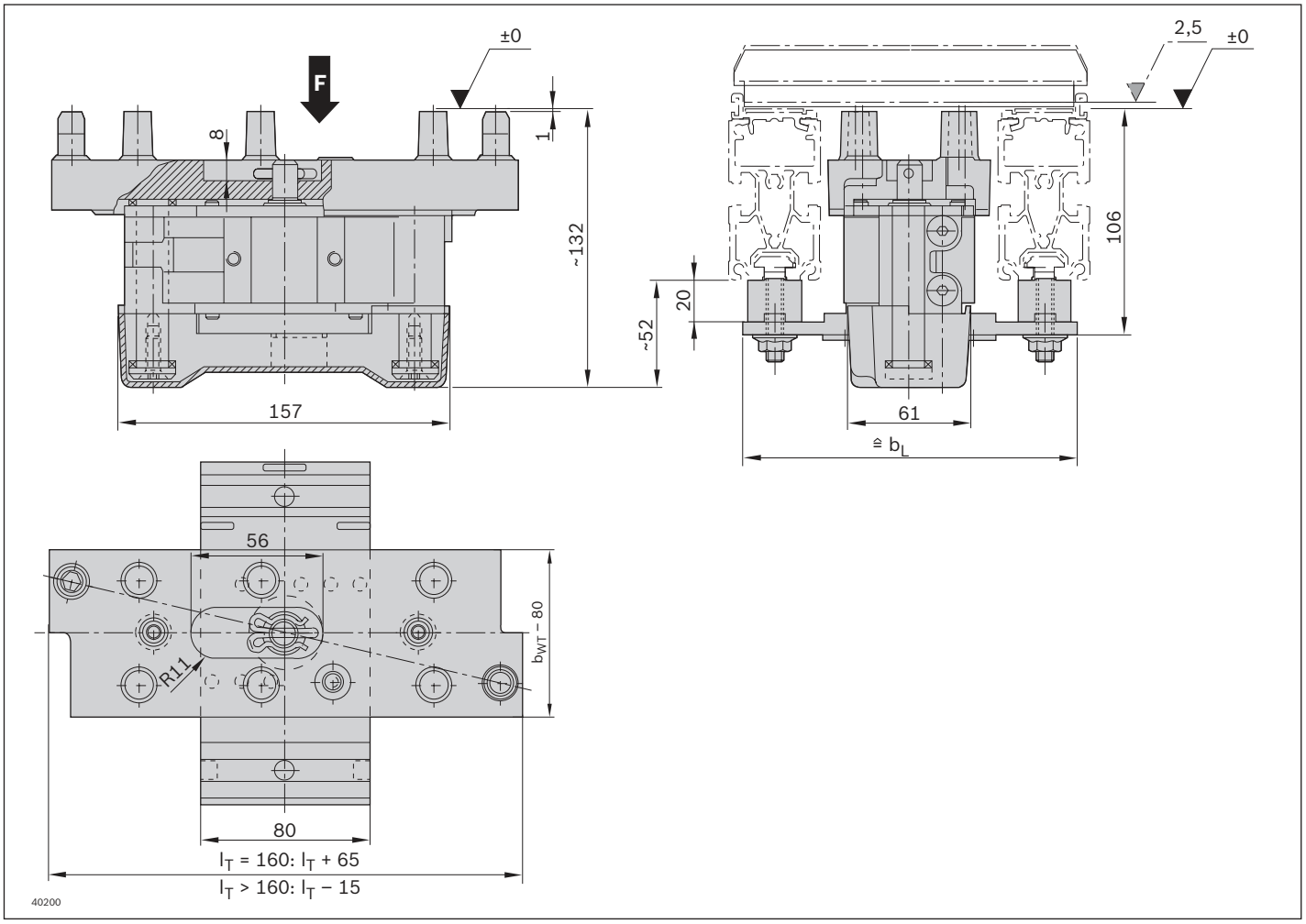
[1)] Can be combined with WT 2/LS, no special version LS required

Technical data

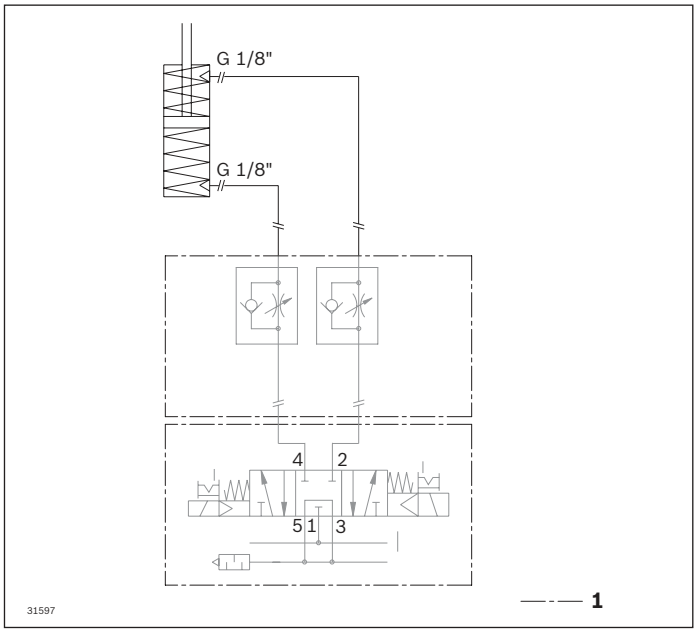
Material number			3842504706 3842563400 3842504707 3842563401 3842504708 3842563402 3842504710	3842563403 3842504711 3842563404 3842504712 3842563405 3842504713 3842563406	3842504714 3842504715 3842504716 3842504717 3842504718 3842504719
Max. total workpiece pallet weight	m_G	kg	30		
ESD			Yes		
Required compressed air connection	p	bar	4 ... 6		
Push in air connection[1]	Ø	mm	G1/8"		
Lift WT above conveying level		mm	2.5		
Repetition accuracy		mm	±0.1		
Permissible vertical process forces[2]		N	300		

[1)] Push-in fitting for thread G1/8" must be attached by the customer
[2)] Incl. WT 2, WT 2/F, WT 2/LS

Dimensions



Circuit diagram



1 Not included in the scope of delivery

Position sensing kit for PE 2

- For position sensing for positioning unit PE 2
- Simple, fast mounting and replacement of the sensor without adjustment through flush installation with defined switching distance
- Changing the sensor is quick and easy by loosening a separate clamping screw. The switch bracket stays in position

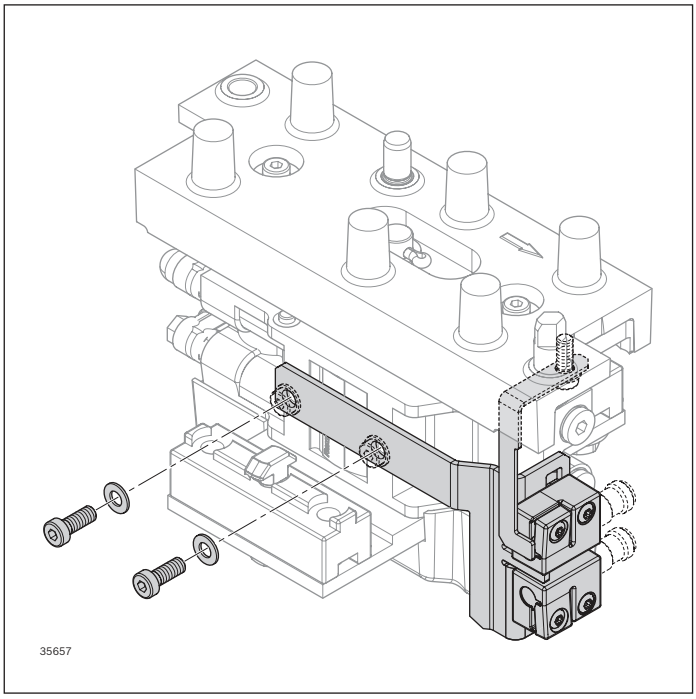
Required accessories

- Positioning unit PE 2, see p. 7-7
- Sensor M12 with rated sensing range S_N = 4 mm, see p. 8-112

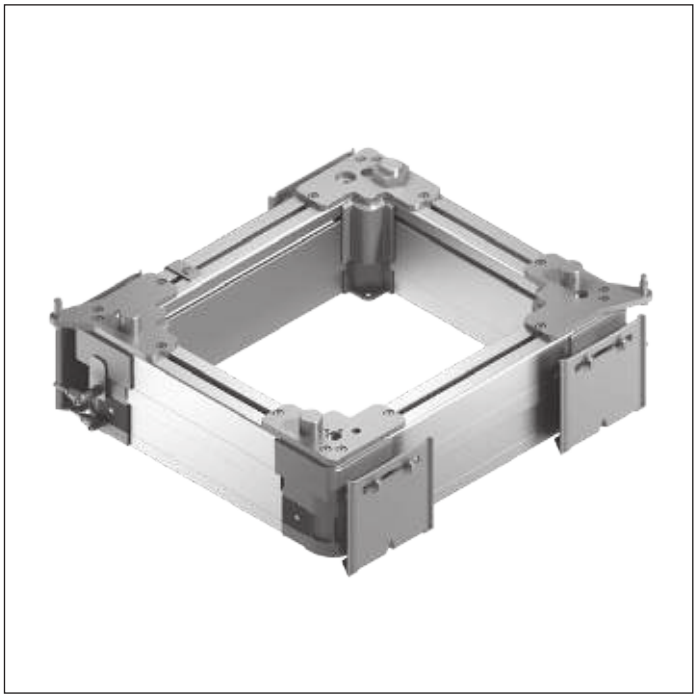
Ordering information

Product description	Material number
Position sensing kit for PE 2	3842562482

Technical data



Positioning unit PE 2/X



- To position a workpiece pallet in a manual/automatic processing station
- Repetition accuracy up to ±0.1 mm when assembled on a separate machine frame
- Lift WT above conveying level, approx. 3 mm
- Positioning via the PE 2 positioning pins and the positioning bushings on the workpiece pallet WT 2/...
- Mounting holes on lift frame as an optional fastening point for a separate machine frame
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Permissible vertical process forces: 3500 N, incl. WT 2
- Can be combined with workpiece pallets WT 2 and WT 2/F

Notice: Combination with WT 2/LS not possible

Required accessories

- Stop gate VE 2/..., see p. 8-6

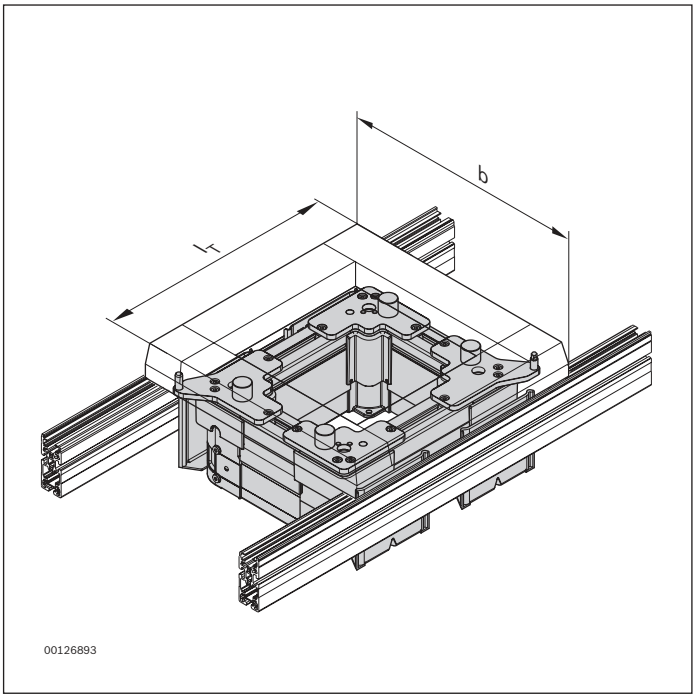
Scope of delivery

- Incl. fastening material
- Switch bracket for mounting sensors M12 for top position sensing

Condition on delivery

- Assembled

Ordering information



Material number		3842998324
b (mm)	Track width in direction of transport	480; 640; 800; 1040; 1200
		480 ... 1200[1)]
l_T (mm)	Length in direction of transport	480; 640; 800; 1040; 1200
		480 ... 1200[1)]
b x l_T (mm x mm)	Combination options	480 x 480; 640; 800 640 x 480; 640; 800 800 x 480; 640; 800; 1040; 1200 1040 x 640; 800; 1040; 1200; 1200 x 800; 1040; 1200 480 ... 1200 x 480 ... 1200

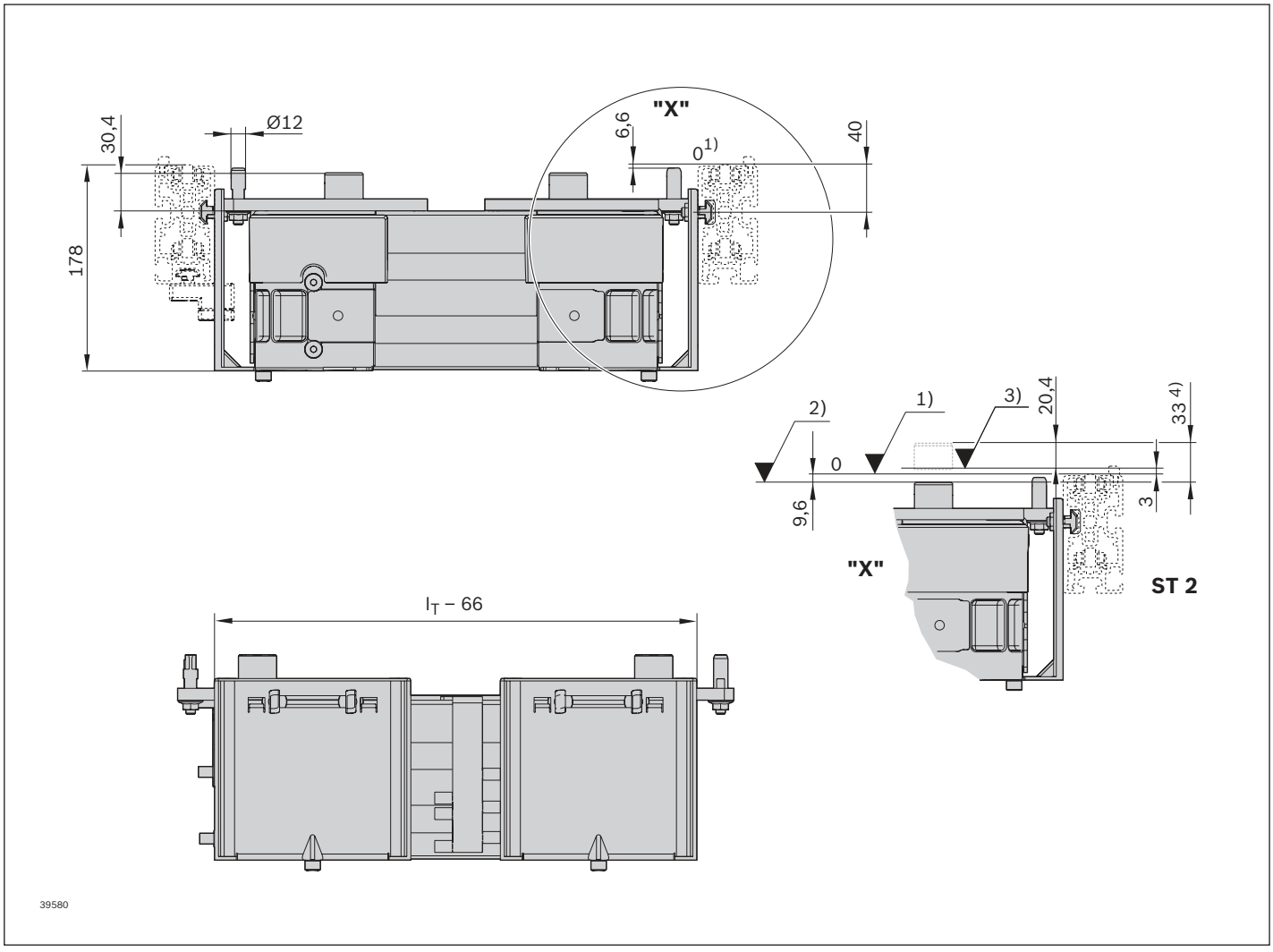
[1)] Individual width variants can be ordered

Technical data

Material number			3842998324
Max. total workpiece pallet weight	m_G	kg	100
ESD			Yes
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	8
Lift WT above conveying level		mm	3
Repetition accuracy[1]		mm	±0.1
Permissible vertical process forces[2]		N	3500

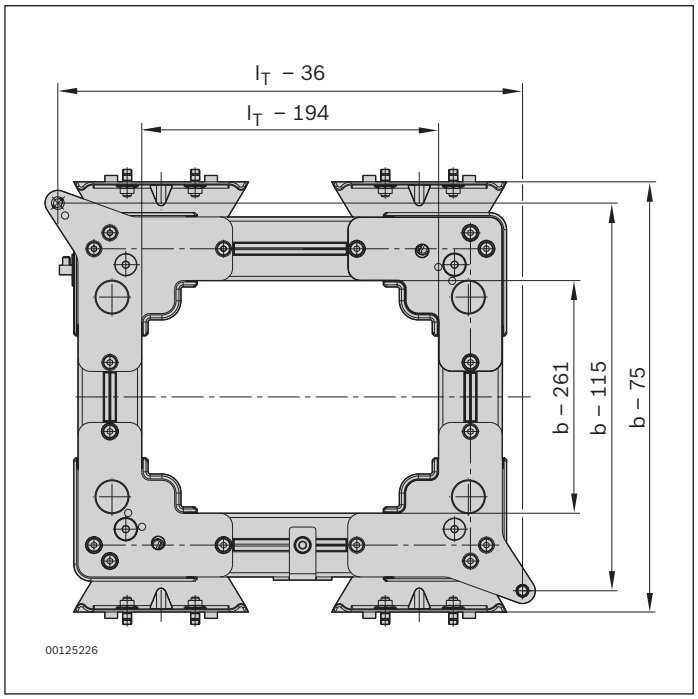
[1)] When assembled on a separate machine frame
[2)] Incl. WT 2

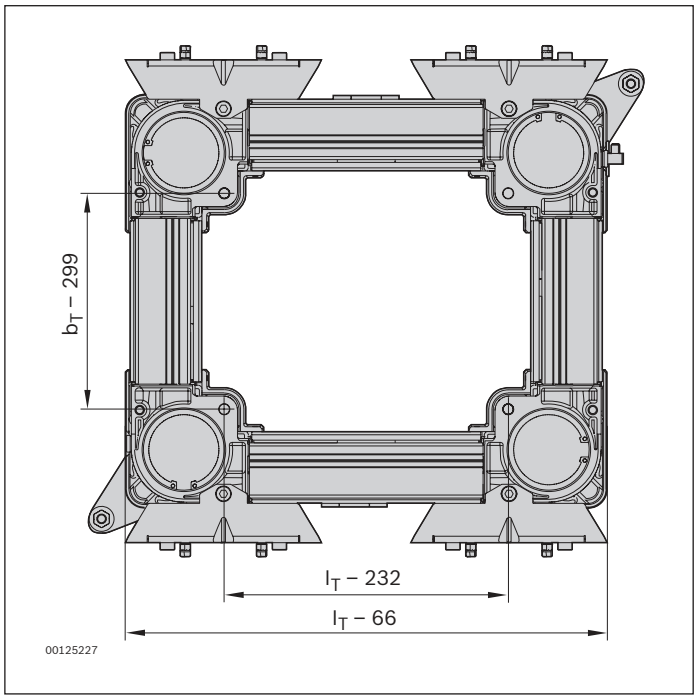
Dimensions



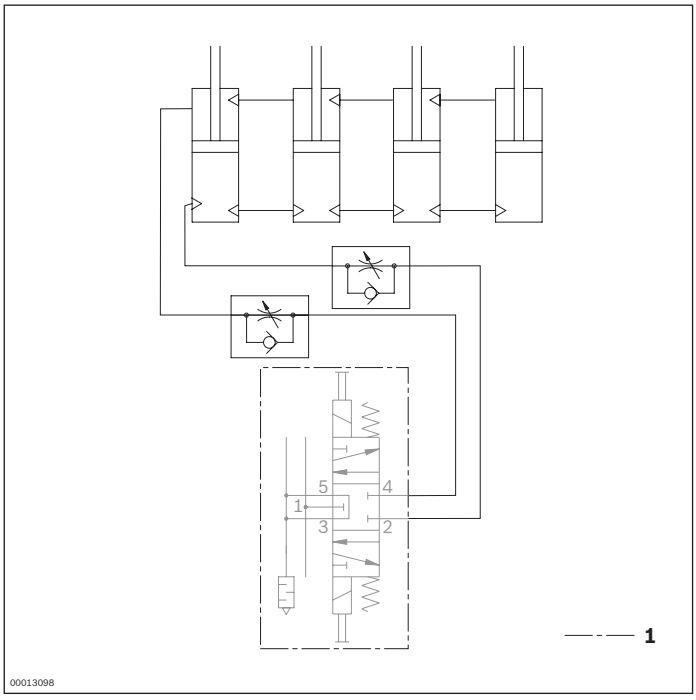
1) Conveying level ST 2
2) PE 2/X, lower position: 9.6 mm below conveying level ST 2
3) PE 2/X, upper position: 3 mm above conveying level ST 2
4) Total stroke 33 mm

Dimensions



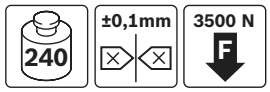


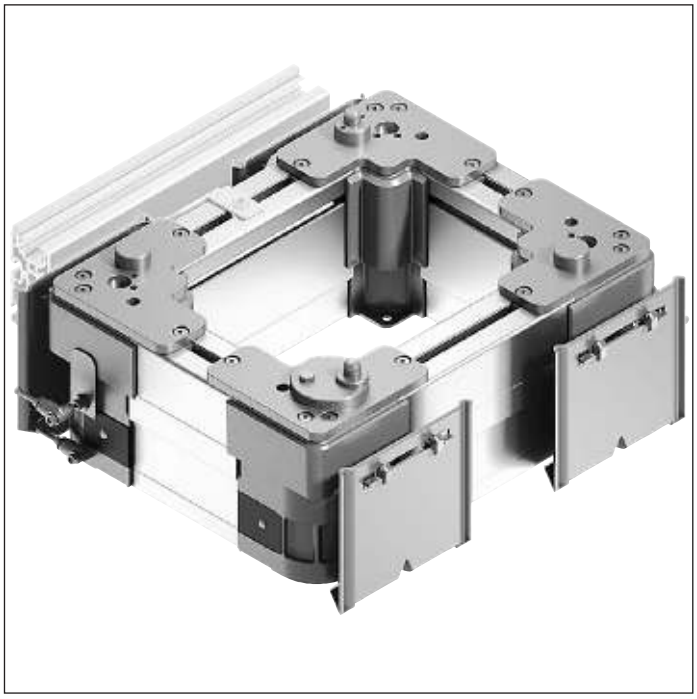
Circuit diagram



1 Not included in the scope of delivery

Positioning unit PE 2/H





- For positioning a workpiece pallet in a manual/ automatic processing station
- Repetition accuracy up to ±0.1 mm when assembled on a separate machine frame
- Lift WT above conveying level, approx. 3 mm
- Positioning via the positioning unit PE 2/H and the positioning bushings on the workpiece pallet WT 2/H
- Mounting holes on lift frame as an optional fastening point for a separate machine frame
- Permissible vertical process forces: 3500 N, incl. WT 2/H
- Can be combined with all workpiece pallets WT 2/H and WT 2/F-H

Notice: Combination with WT 2/LS not possible

Required accessories

- Stop gate VE 2/D100-H, see p. 8-38 or stop gate VE 2/D250-H, see p. 8-41

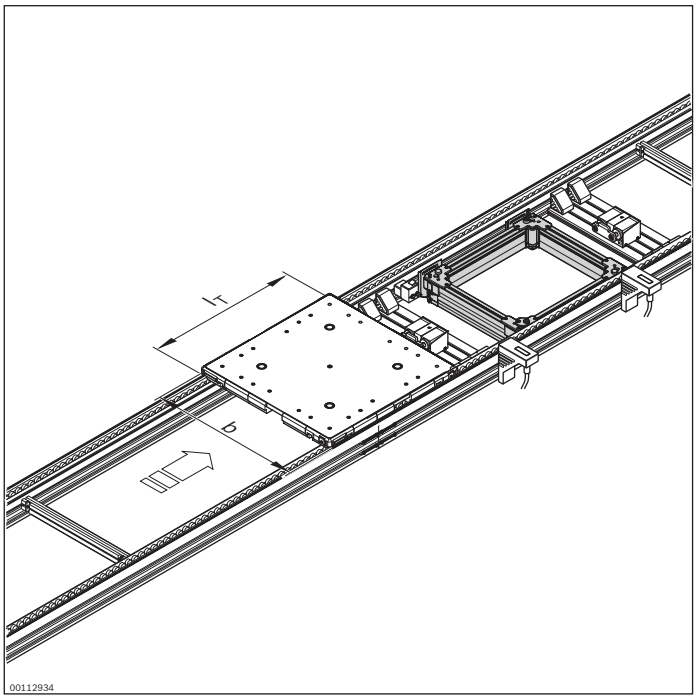
Scope of delivery

- Incl. fastening material
- Pneumatic elements

Condition on delivery

- Assembled

Ordering information



Material number		3842999000
b (mm)	Track width in direction of transport	480; 640; 800; 1040; 1200
		480 ... 1200[1)]
l_T (mm)	Length in direction of transport	480; 640; 800; 1040; 1200
		480 ... 1200[1)]
b x l_T (mm x mm)	Combination options	480 ... 1200 x 480 ... 1200

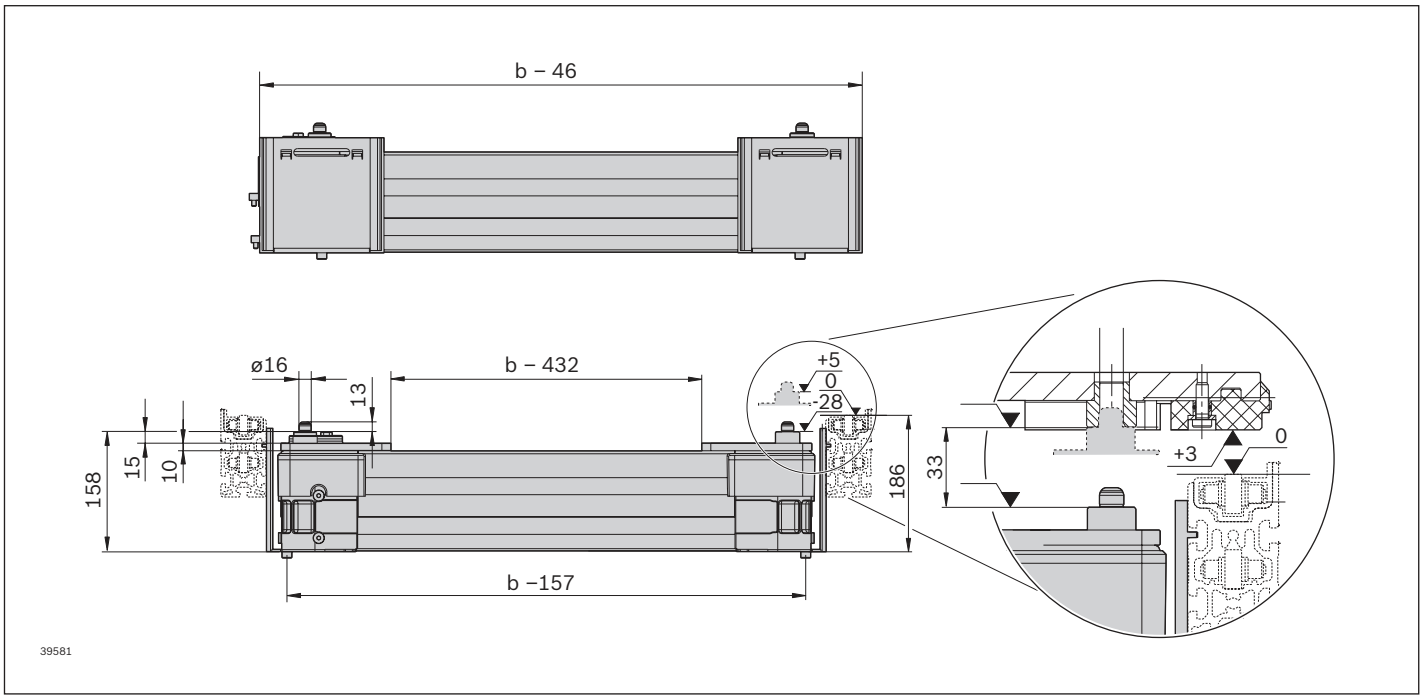
[1)] Individual width variants can be ordered

Technical data

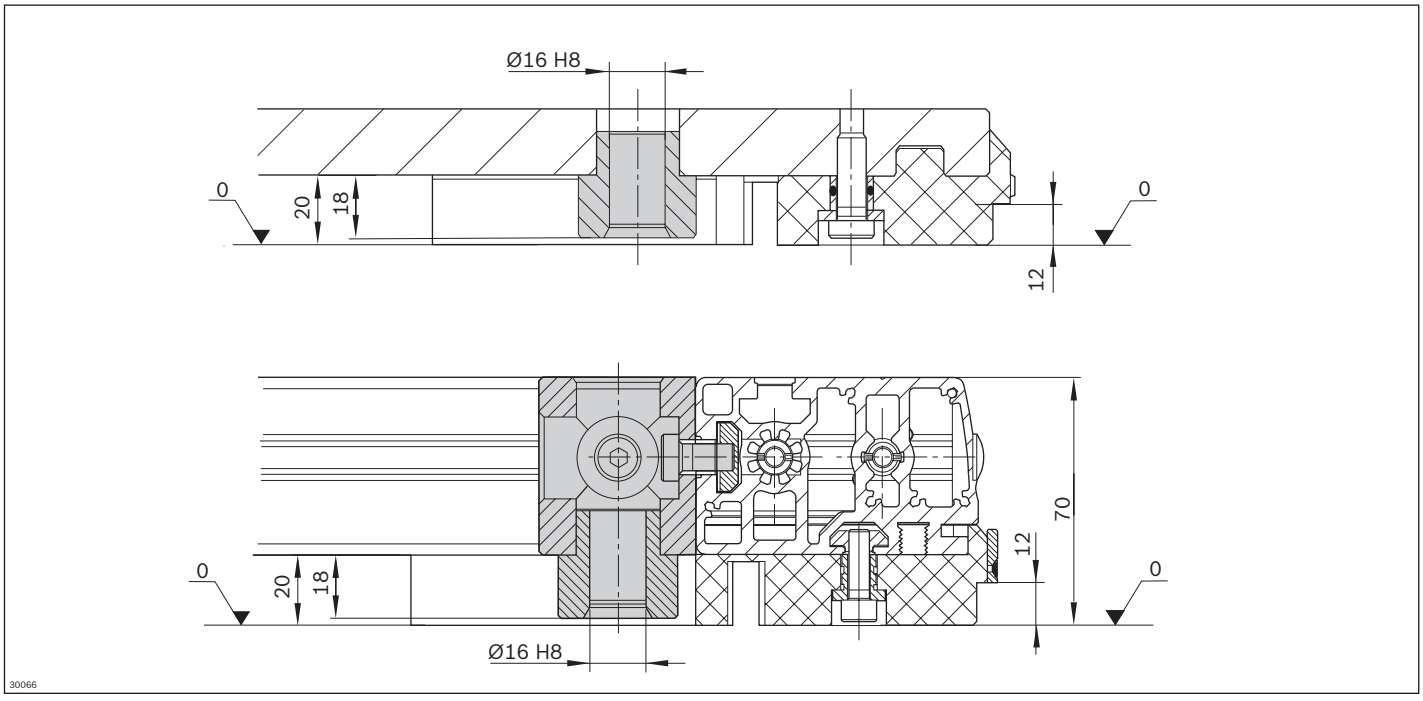
Material number			3842999000
Max. total workpiece pallet weight	m_G	kg	240
ESD			Yes
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	8
Lift WT above conveying level		mm	3
Repetition accuracy[1]		mm	±0.1
Permissible vertical process forces[2]		N	3500

[1)] When assembled on a separate machine frame
[2)] Incl. WT 2

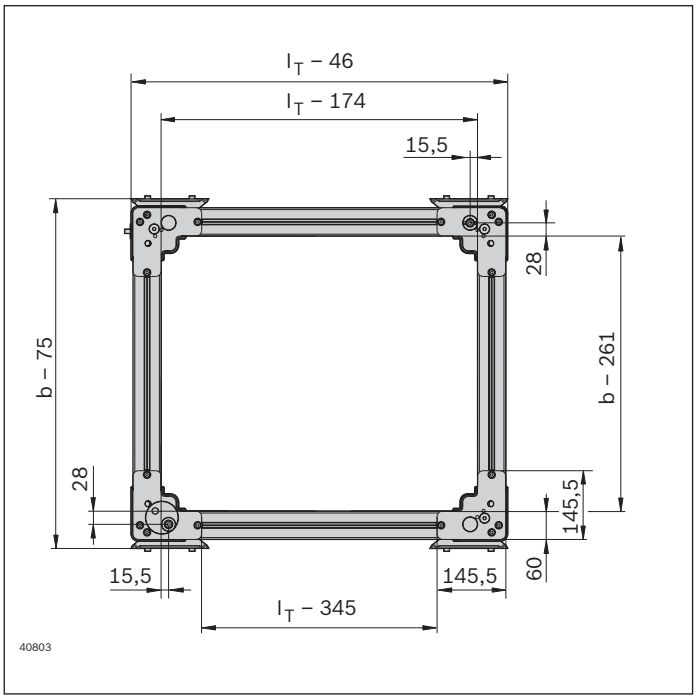
Dimensions

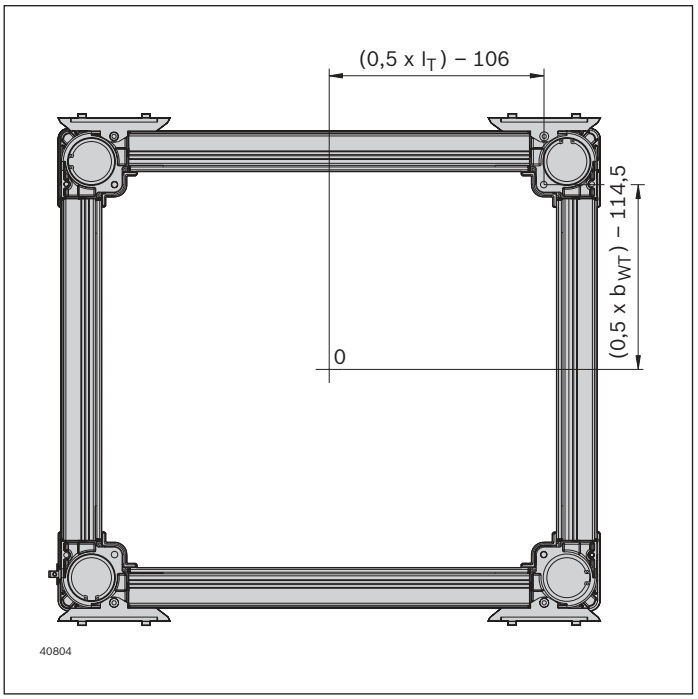


0 Transport level
[1] Total stroke 33 mm

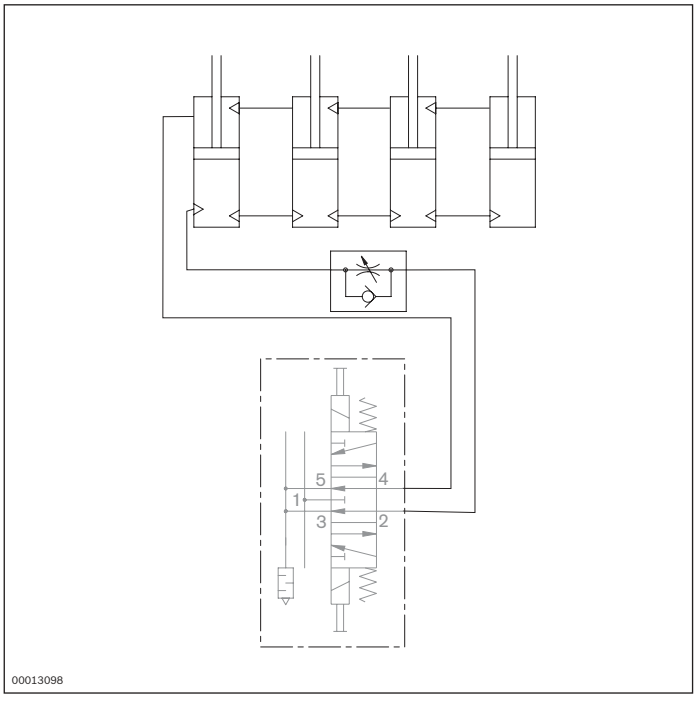


Dimensions



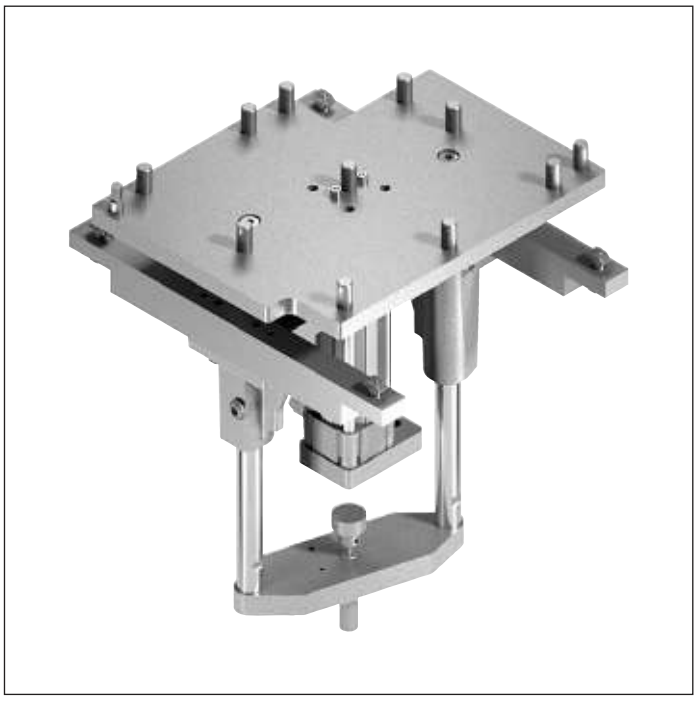


Circuit diagram



1 Not included in the scope of delivery

Lift positioning unit HP 2/L...



- Positions a workpiece pallet in a processing station with high repetition accuracy requirements
- Positioning with exchangeable positioning pins in the HP 2/L and positioning bushings in the workpiece pallet WT 2
- Lifting cylinder Ø 40 mm with damping for the lower and upper end position
- Exchange of lifting cylinder possible without disassembling the lifting plate
- 5 lift ranges h_0 from 0 ... 240 mm, infinitely adjustable central lift height within the lift range
- Optional lifting cylinder for b = 240 mm, center (HA = 0) or offset (HA = 1). Space-saving arrangement made possible by inner WT stop
- Adjustment time at h_N = 50 mm without load: Upward stroke = 0.5 s, downward stroke = 0.5 s (= lift range from 0 to 28 mm)
- Permissible vertical process forces: 400 N, incl. WT 2
- Can be combined with workpiece pallets WT 2, WT 2/F and WT 2/E
- WT 2/LS can only be combined with version LS

Required accessories

- Position sensing set for lifting cylinder SA, see p. 7-24
- Position sensing with turret stop RA, see p. 7-27
- Protective case for HP 2/L, see p. 7-26

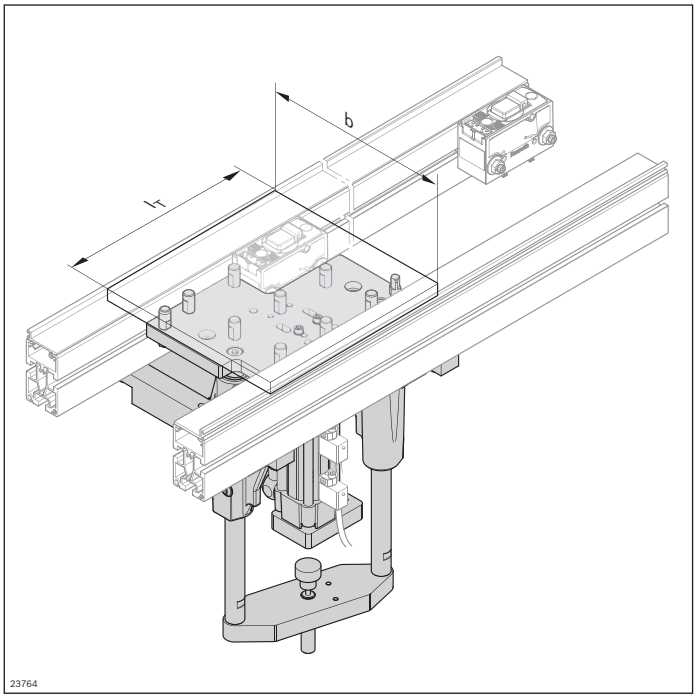
Scope of delivery

- Incl. fastening material
- Incl. throttle check valve

Condition on delivery

- Assembled

Ordering information



Material number		3842998952 HP 2/L	3842999027 HP 2/L LS
b (mm)	Track width in direction of transport	160; 240; 320	
l_T (mm)	Length in direction of transport	160; 240; 320	
b x l_T (mm x mm)	Combination options	160 x 160; 240; 320 240 x 160; 240; 320 320 x 160; 240; 320	
h_N (mm)	Nominal stroke	50; 100; 160; 200; 250	
AO	AO = installation location Below conveyor section AT = installation location on the machine table O = installation location for in-house construction	UB; AT; O	
HA	Lift arrangement centered (HA = 0) eccentric (HA = 1)	0; 1[1)]	

[1)] HA = 1 only for b = 240 mm

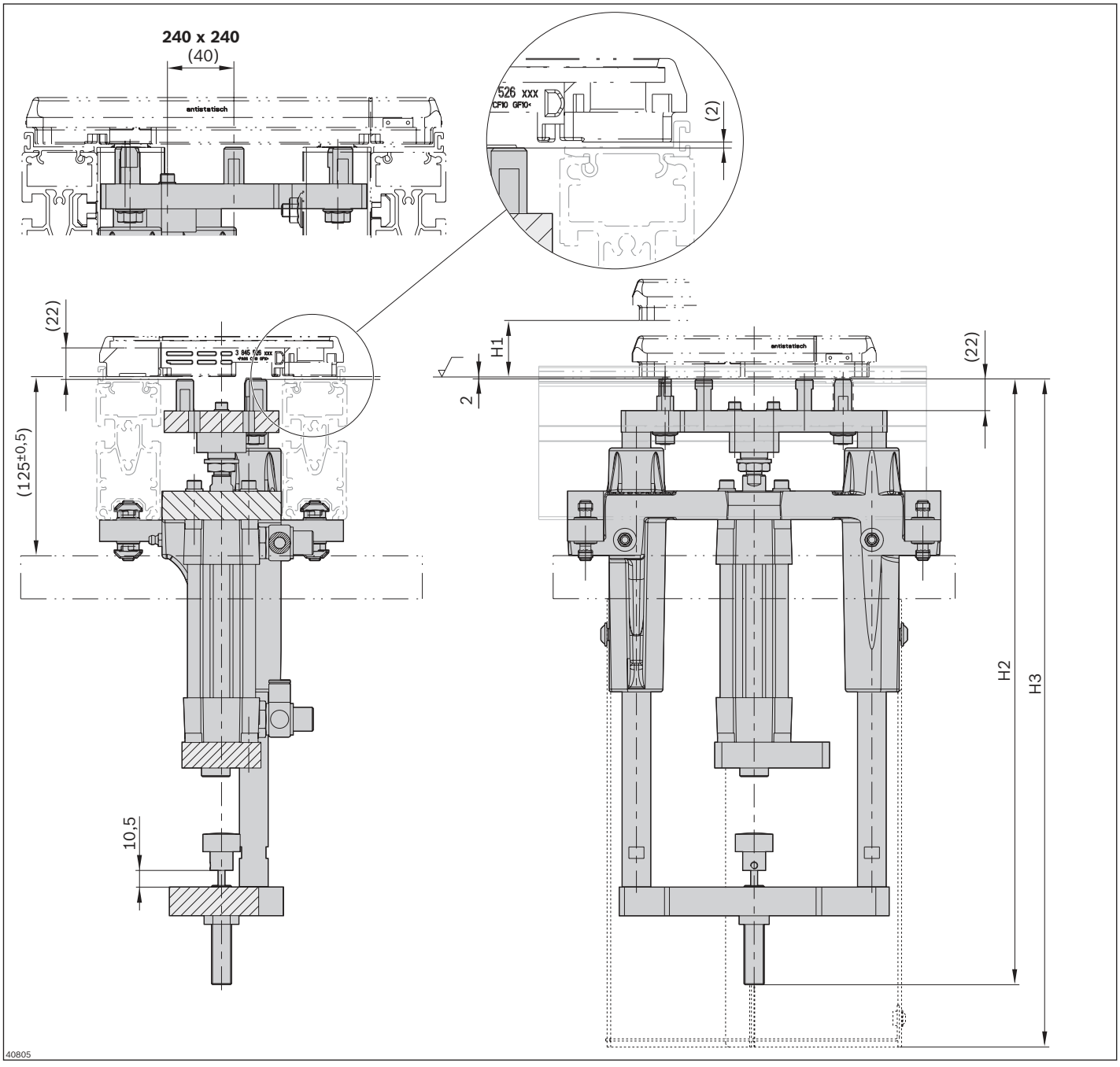
Technical data

Material number			3842998952 HP 2/L	3842999027 HP 2/L LS
Max. total workpiece pallet weight	m_G	kg	40	40
ESD			Yes	Yes
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	8	8
Repetition accuracy[1]		mm	±0.05	±0.05
Permissible vertical process forces[2]		N	400	400

[1)] Applies only to lifts of up to 204 mm
[2)] Incl. WT 2

Compressed air (bar)	Lifting force (N)
4	350
5	450
6	550

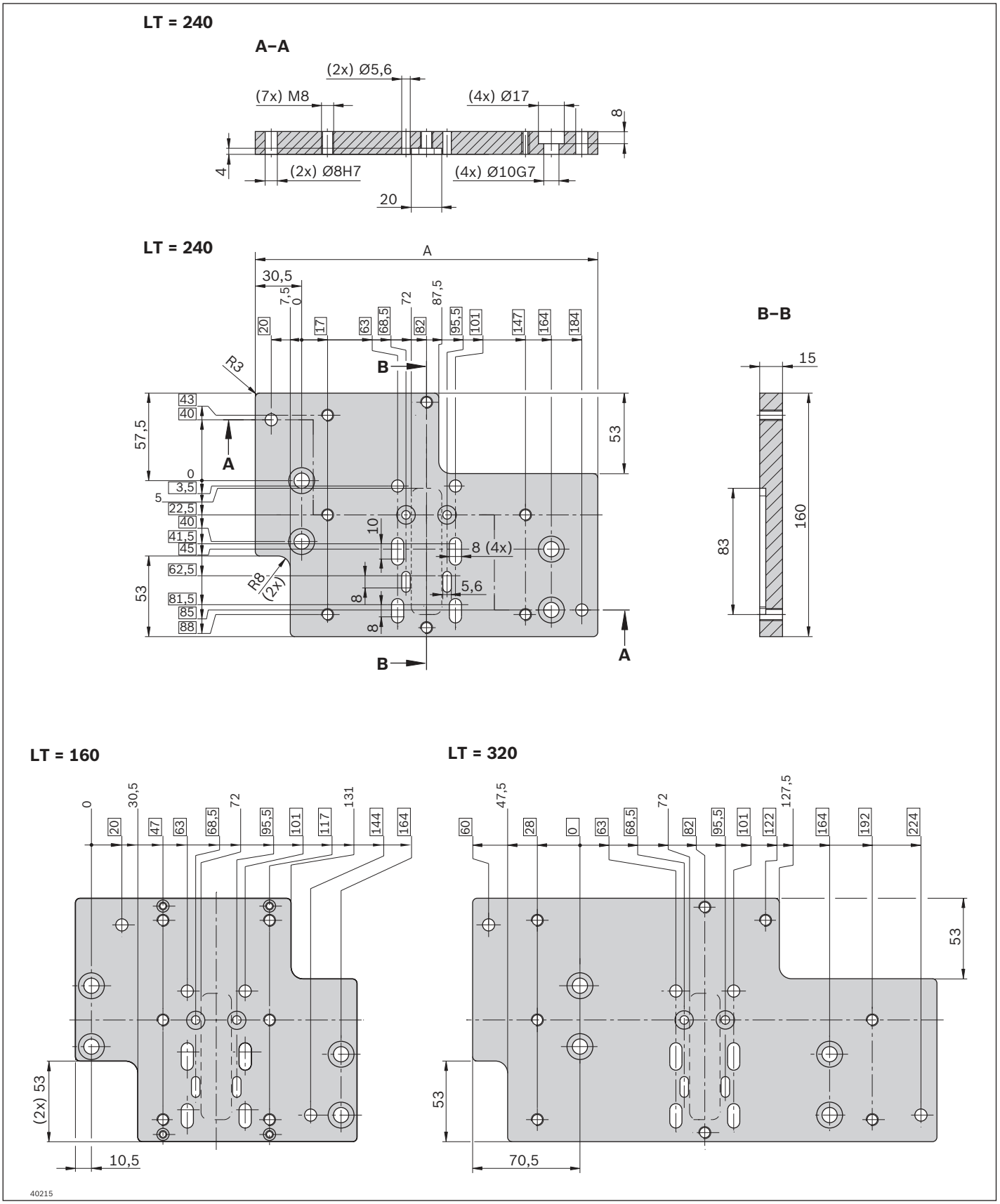
Dimensions



Lift range/dimensions

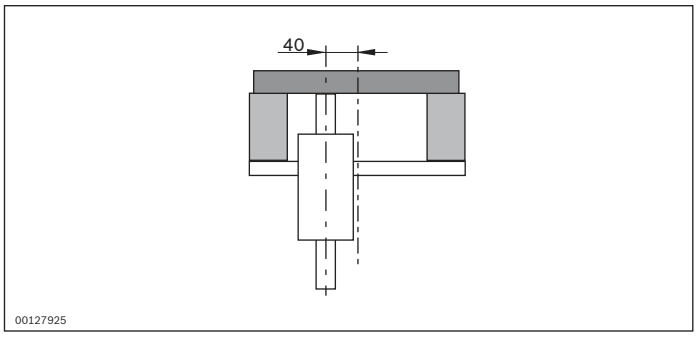
Nominal stroke h_N (mm)	Lift WT above conveying level h_0 (mm)	H1 H extended (mm)	H2 (mm)	H3 (mm)
50	0 ... 28	28	400	465
100	35 ... 78	78	500	685
160	95 ... 138	138	620	685
200	135 ... 178	178	700	865
250	185 ... 228	228	800	865

Dimensions

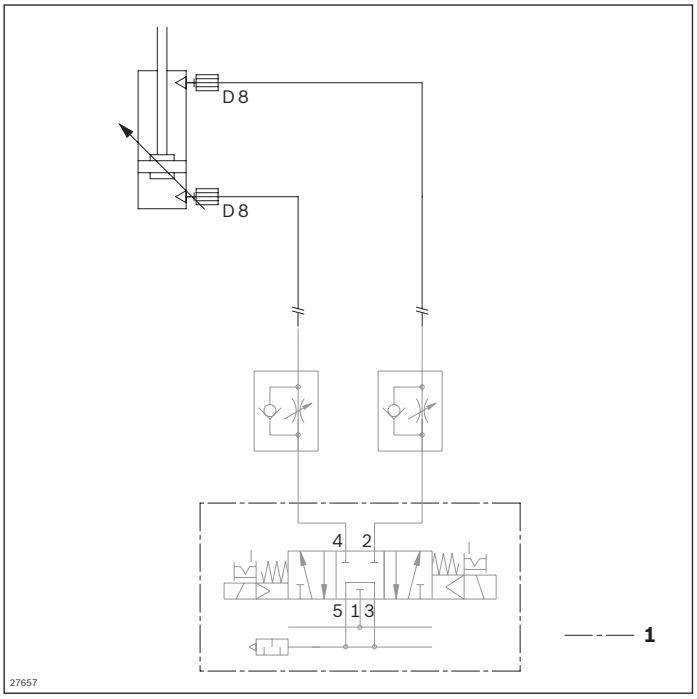


Lifting plate

Lifting cylinder offset (HA = 1, b = 240 mm)



Circuit diagram



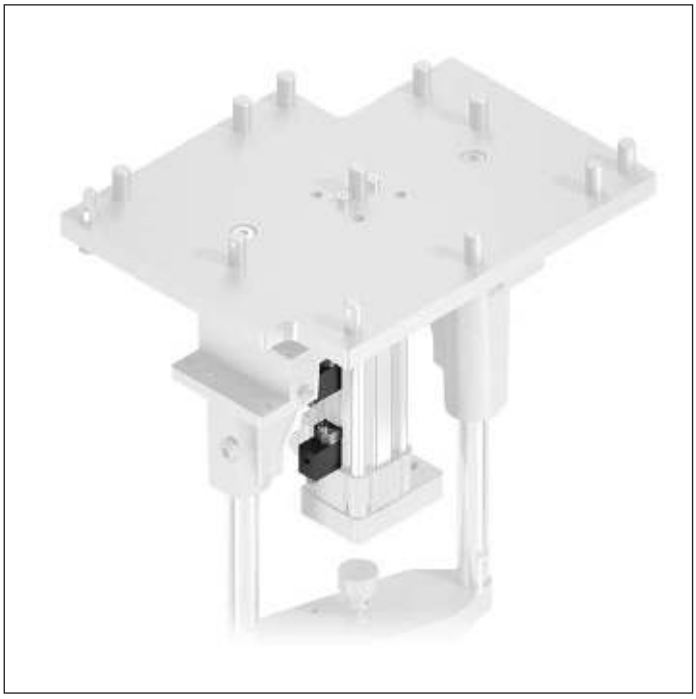
1 Not included in the scope of delivery

Possible installation locations for VE 2/D-60 and VE 2/D-80

		Length in direction of transport l_T (mm)		
Track width in direction of transport b (mm)	**Installation location VE 2**	**160**	**240**	**320**
160	VE 2 stop inside lifting plate	–	–	a
160	VE 2 stop outside lifting plate	a	b	b
240	VE 2 stop inside lifting plate	–	b	b
240	VE 2 stop outside lifting plate	a	b	b
320	VE 2 stop inside lifting plate	–	b	b
320	VE 2 stop outside lifting plate	a	b	b

–) Mounting not possible
a) Permissible mounting options for VE2/D-60 and VE2/D-80 without position sensing
b) Permissible mounting options for VE2/D-80 with and without position sensing

Cylinder position sensing



- Cylinder switch with clamping holder for lifting cylinder position sensing

Notice: Position sensing can only be mounted on the side

Required accessories

- Connection cable with plug

Scope of delivery

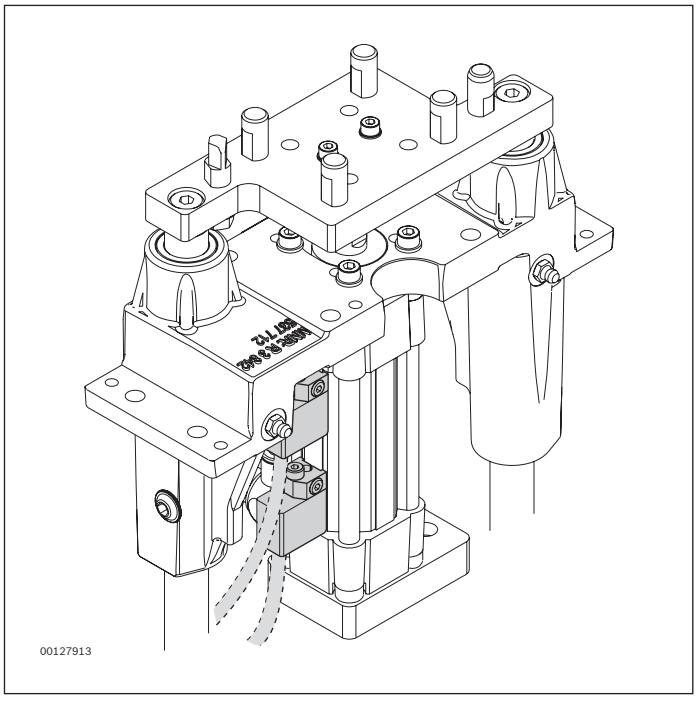
- 2x series cylinder switch SN2 (cube)
- 2x clamping holder for cylinder switch

Ordering information

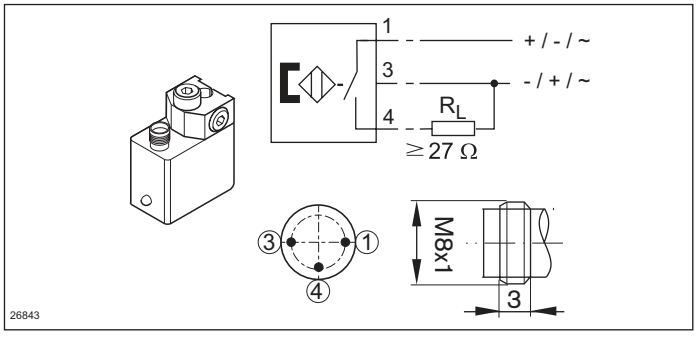
Product description	Packaging unit	Material number
Cylinder position sensing	2	3842536974

Technical data

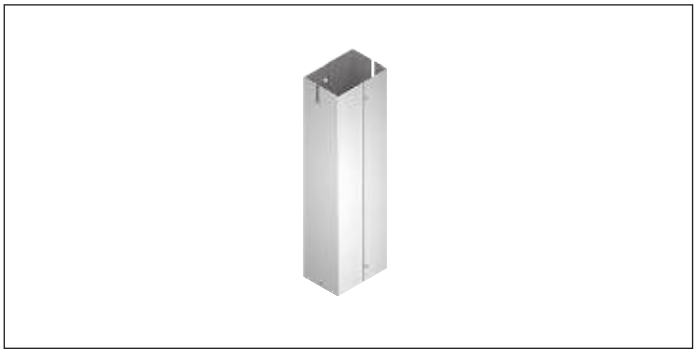
Material number	3842536974
Push-in fitting	M8x1, without cable
Function display	LED
Contact type	Reed, 3-conductor
Operating voltage	AC 12-30, DC 12-36 V



Circuit diagram



Protective case HP 2/L

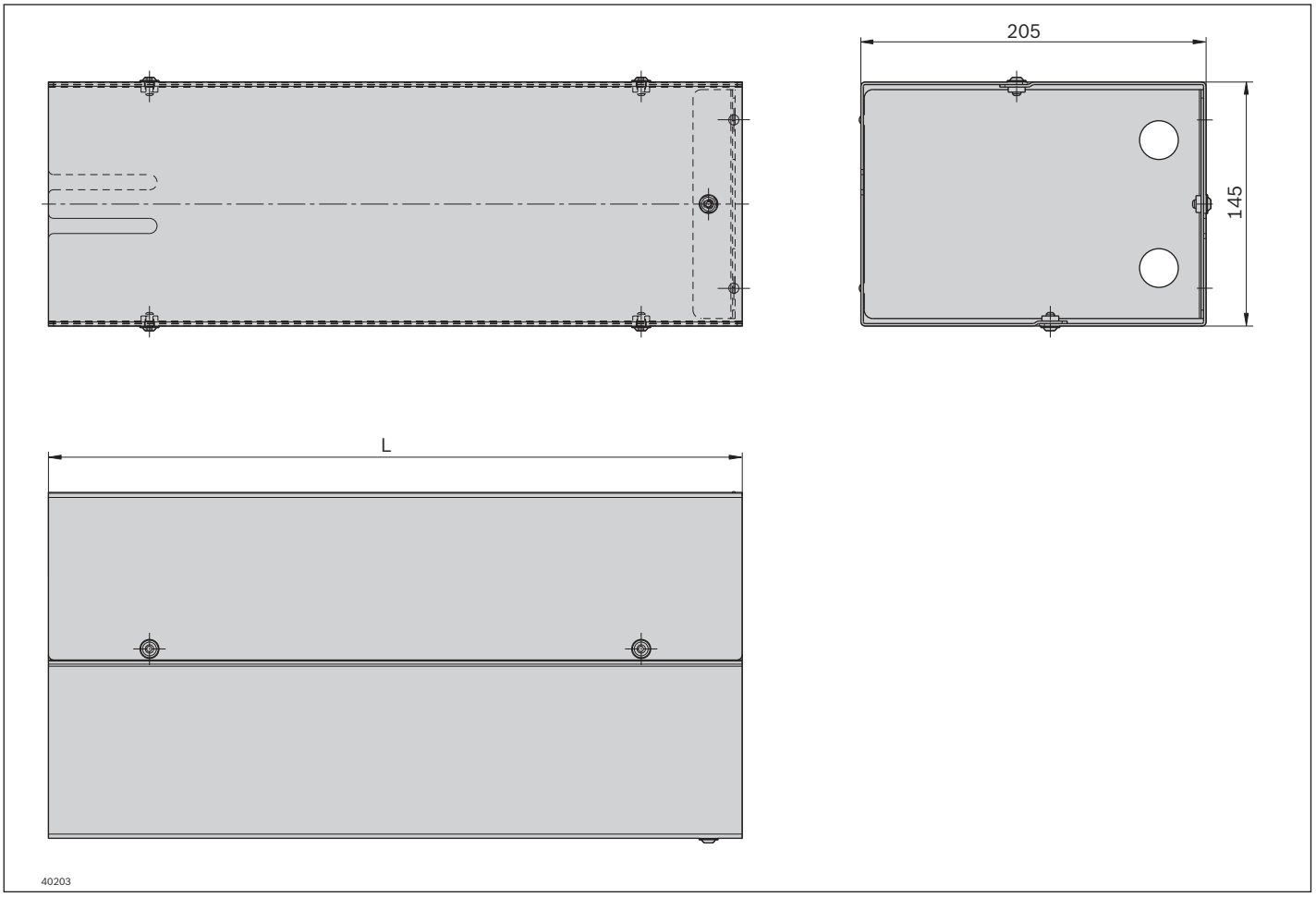


- Protective case for lift positioning unit HP 2/L

Ordering information

Product description	Nominal stroke h_N (mm)	Length L (mm)	Material number
Protective case HP 2/L	50	315	3842536977
	100/160	535	3842536960
	200/250	715	3842536962

Dimensions



Position sensing set RA

- Position sensing for HP 2/L special design with turret stop

For use with a turret stop (e.g. Somatec) the HP 2/L can be ordered with longer guide rails as a modification.

An accompanying sensor is used instead of the cylinder switch to query the upper positions on the turret stop (position sensing set RA).

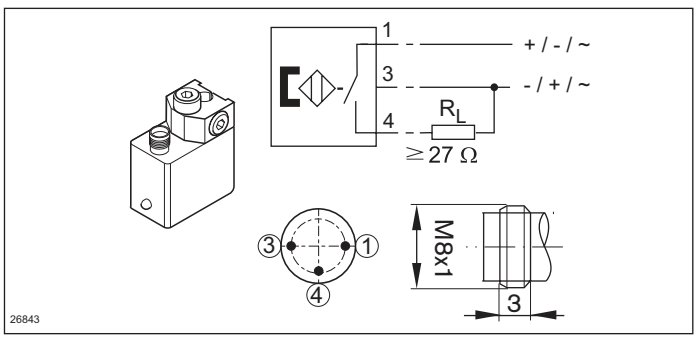
Scope of delivery

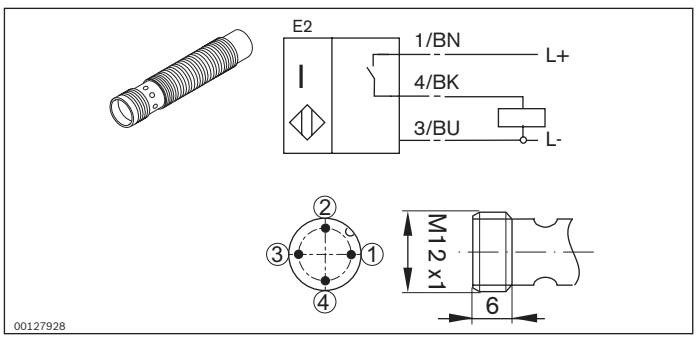
- 1x series cylinder switch SN 2 (cube)
- 1x clamping holder for cylinder switch
- 1x sensor M12x1 with S_N= 8 mm rated switching distance range, length 45 mm (3842557633)
- 1x switch bracket for mounting on the base plate

Ordering information

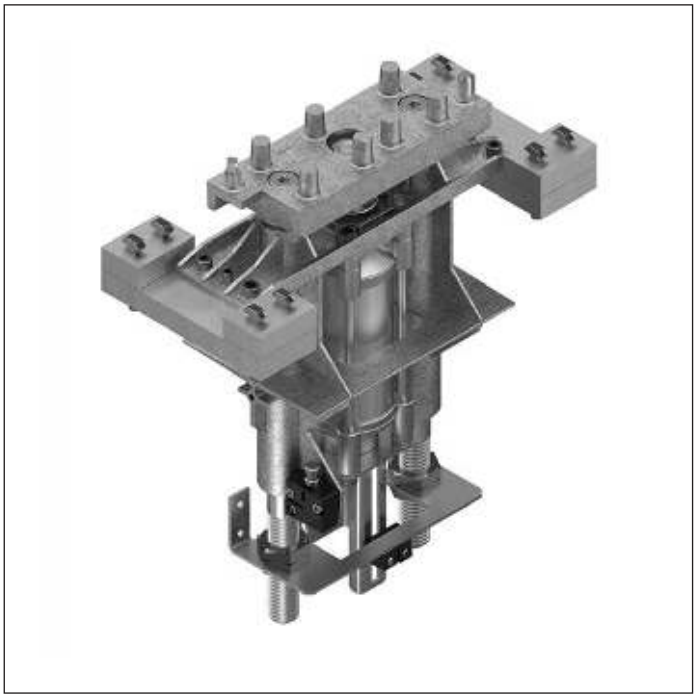
Product description	Material number
Position sensing set RA	3842536975

Circuit diagrams





Lift positioning unit HP 2...



- Positions a workpiece pallet in a processing station with high repetition accuracy requirements and higher workpiece pallet weights.
- Positioning via the positioning pins HP 2 and the positioning bushings on the workpiece pallet WT 2
- Lifting cylinder with adjustable top-end and bottom stop-end damping
- Upper end position damping takes effect only under full lift.
- Continuously adjustable lift height in 8 lift ranges h_N of 0 ... 404 mm
- Permissible vertical process forces: 1100 N, incl. WT 2
- Can be combined with workpiece pallets WT 2, WT 2/F and WT 2/E
- WT 2/LS can only be combined with version LS

Upper end position damping of the cylinder takes effect only under full lift. With larger lifts, we recommend separately fixing the workpiece pallet while the HP 2 is in the highest position in order to improve repetition accuracy.

Required accessories

- Stop gate VE 2/..., see p. 8-6
- Throttle check valve, exhaust air, G3/8", diameter d = 6 mm
- Sensor

Scope of delivery

- Incl. fastening material
- Switch bracket for mounting of sensors M12 for top and bottom lift position sensing

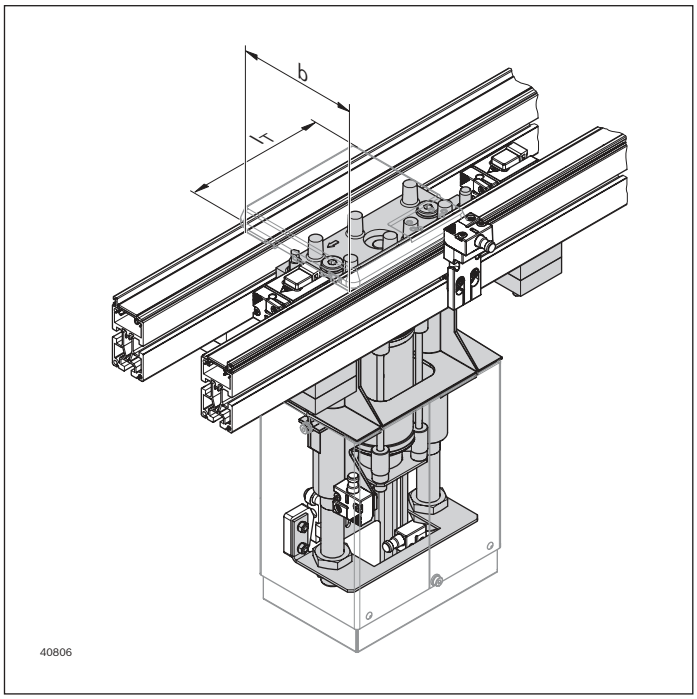
Recommended accessories

- Throttle kit (3842211355) to lower the WT gently onto the conveyor medium
- Protective case HP 2, see p. 7-33

Condition on delivery

- Assembled

Ordering information



Material number		3842999678 HP 2	3842999028 HP 2/LS
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480	
l_T (mm)	Length in direction of transport	0[1]; 160; 240; 320; 400; 480; 640; 800	
b x l_T (mm x mm)	Combination options	160 x 0[1]; 160; 240; 320; 400; 480 240 x 0[1]; 160; 240; 320; 400; 480 320 x 0[1]; 160; 240; 320; 400; 480 400 x 0[1]; 320; 400; 480; 640; 800 480 x 0[1]; 320; 400; 480; 640; 800	
h_N (mm)	Nominal stroke	55; 100; 150; 200; 250; 300; 350; 400	
AO	AO = installation location Below conveyor section AT = installation location on the machine table O = Installation location for in-house construction without fastening material	UB; AT; O	

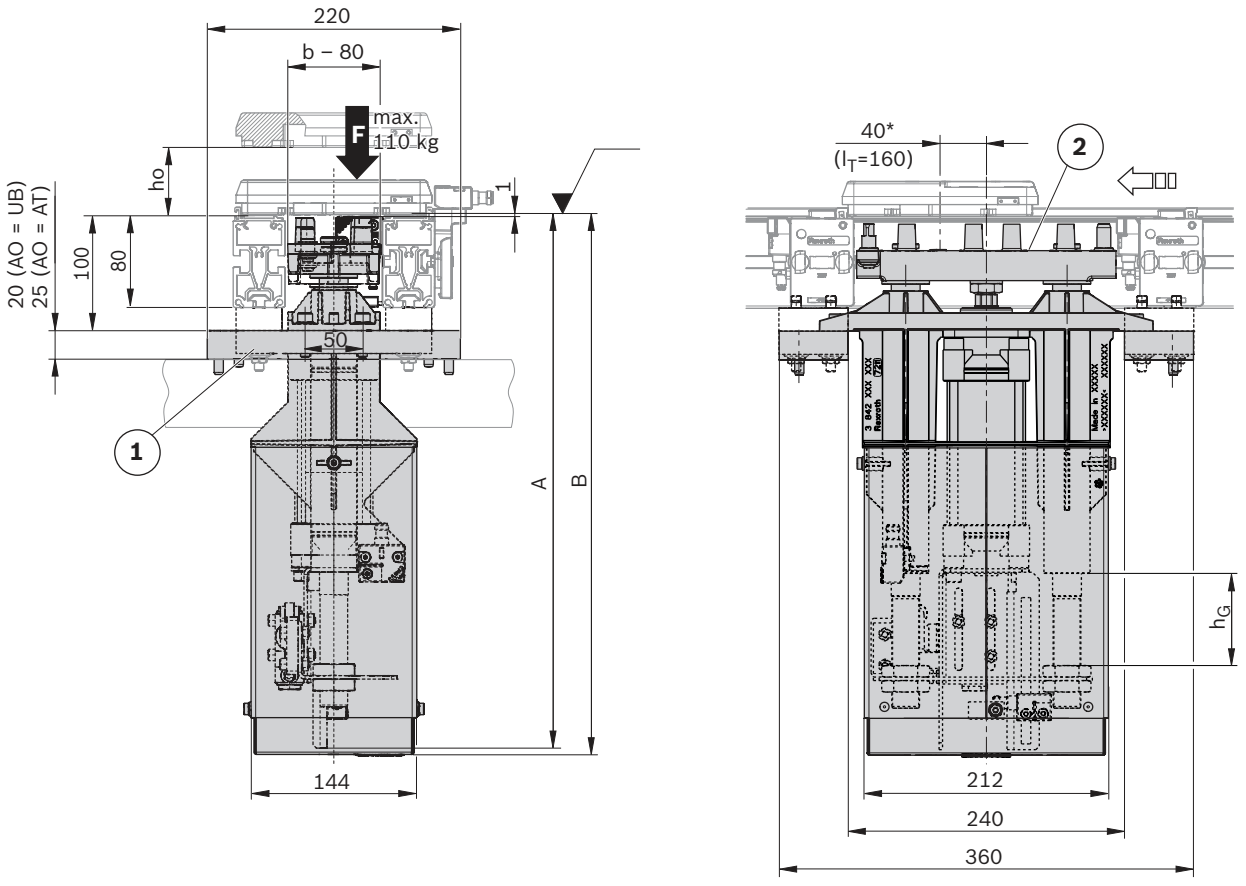
[1] If the value is "0", HP 2 will be delivered with a lifting plate (3842516048, see p. 7-31) instead of the lift position plate for custom designing of the lift positioning plate.

Technical data

Material number			3842999678 HP 2	3842999028 HP 2/LS
Max. total workpiece pallet weight	m_G	kg	110	110
ESD			Yes	Yes
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection[2]	Ø	mm	6	6
Repetition accuracy		mm	±0.05	±0.05
Permissible vertical process forces[1]		N	1100	1100

[1] Incl. WT 2
[2] Throttle check valve, exhaust air with connector, diameter d = 6 mm, for thread G 3/8" must be attached by the customer

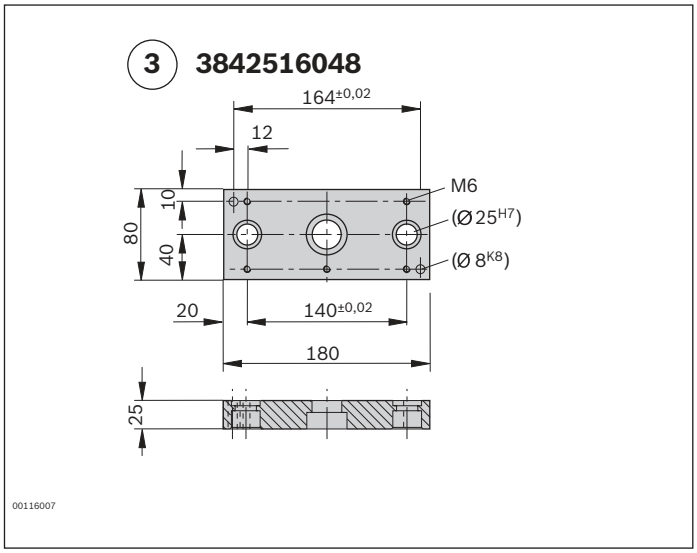
Dimensions



* Eccentric position for WT l_T = 160 mm
1 Mounting kit (UB or AT)
2 Positioning plate
h_0 Lift WT above conveying level
h_G Cylinder total lift

Lift range

Cylinder total lift h_G (mm)	Nominal stroke max. h_N (mm)	Lift WT above conveying level h_0 (mm)	Dimensional information A (mm)	Dimensional information B (mm)
80	55	0 ... 59	463	469
125	100	0 ... 104	508	514
175	150	0 ... 154	558	564
225	200	0 ... 204	608	614
275	250	0 ... 254	658	664
325	300	0 ... 304	708	714
375	350	0 ... 354	758	764
425	400	0 ... 404	808	814



3 Lifting plate

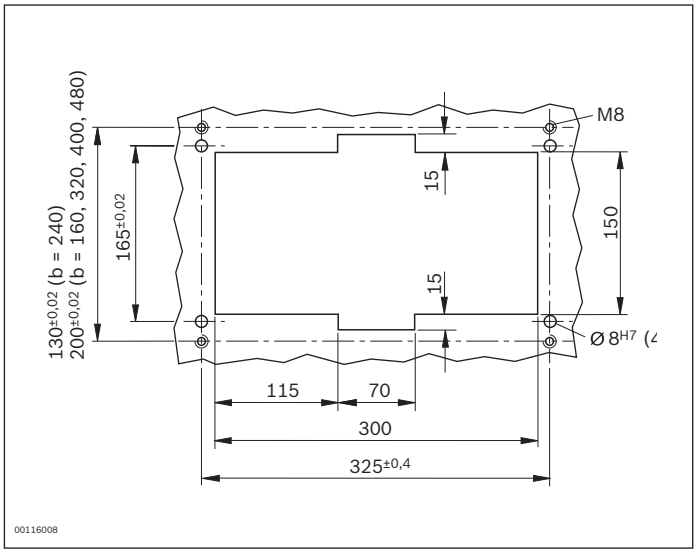
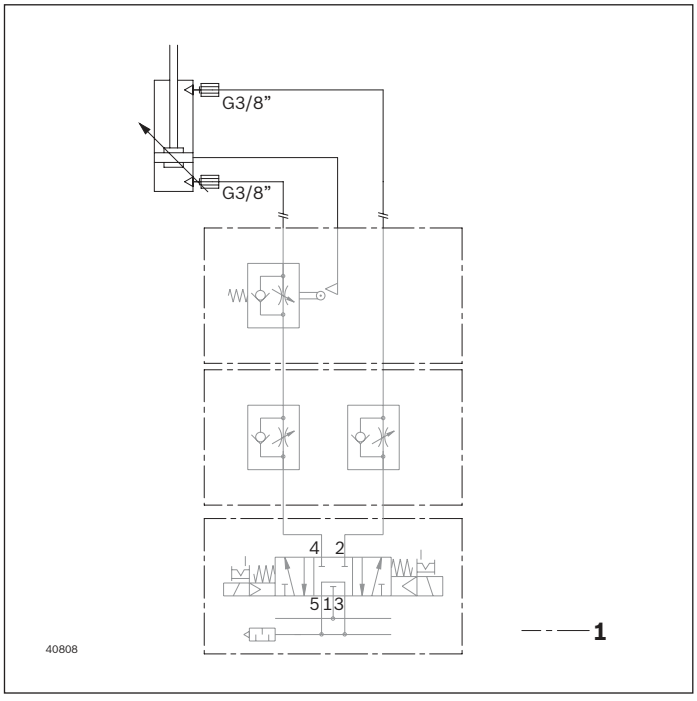


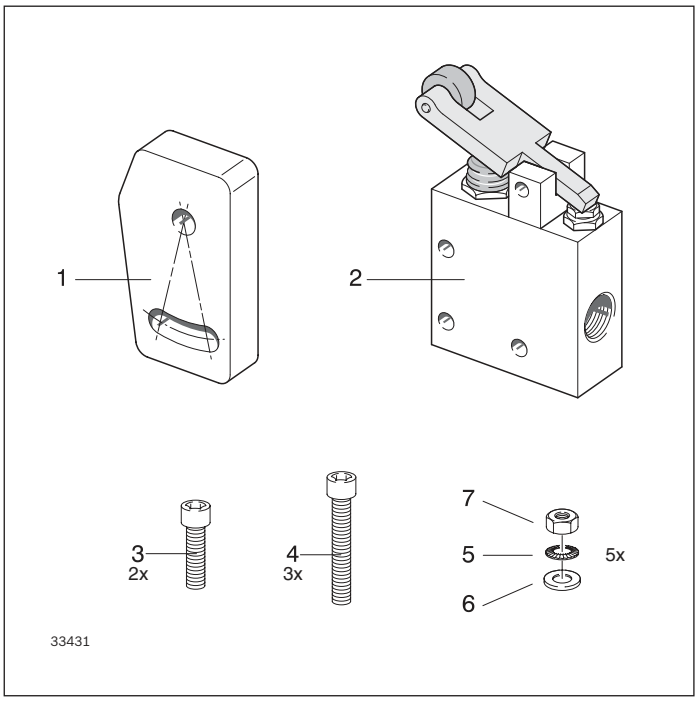
Table cut-out for installation location "on table"

Circuit diagram



1 Not included in the scope of delivery

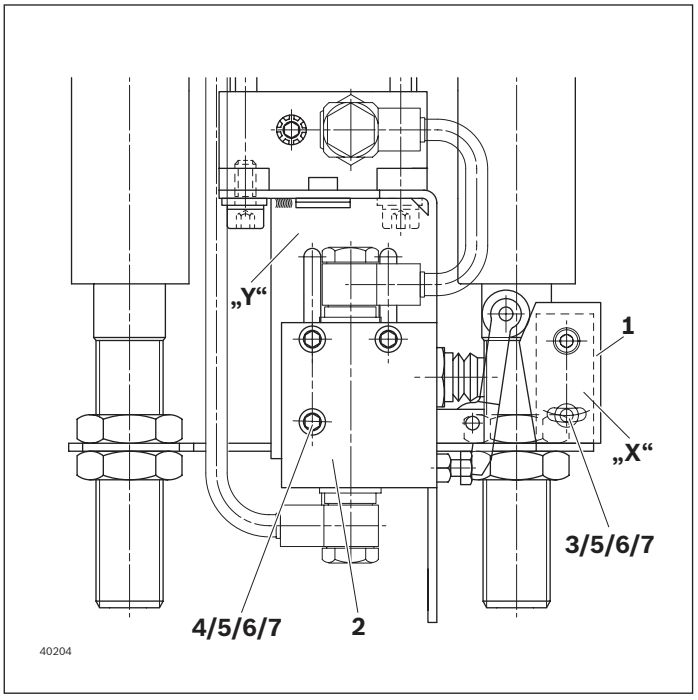
Kit for throttling the storage speed



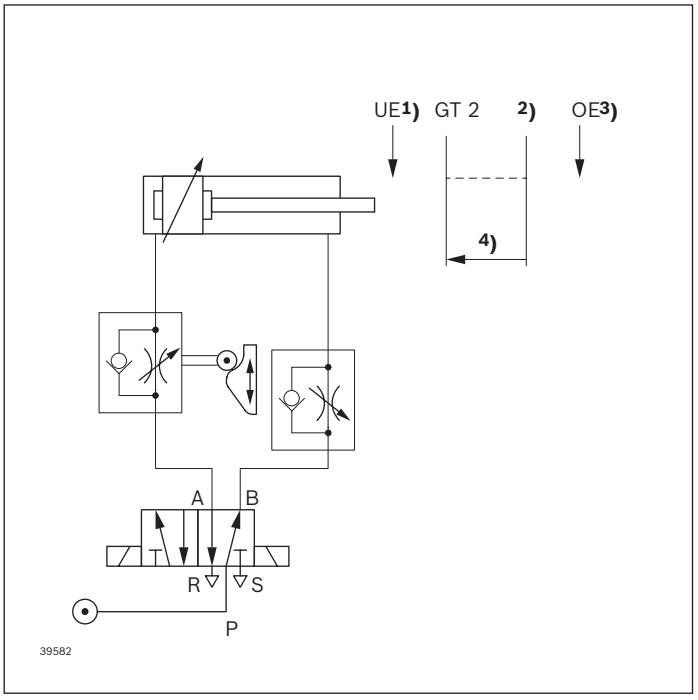
- Fasten each switching tappet (1) to the metal bracket "X" with two cylinder head screws M6x20 (3), lock washers (6) and hexagon nuts (7)
- Fasten throttle for the storage speed (2) with three cylinder head screws M6x35 (4), lock washers (5), washers (6) and hexagon nuts (7) in each case to the limit switch holder "Y"

Ordering information

Product description	Material number
Kit for throttling the storage speed	3842211355



Circuit diagram



1 Lower end position
2 Tappet
3 Upper end position
4 Throttle

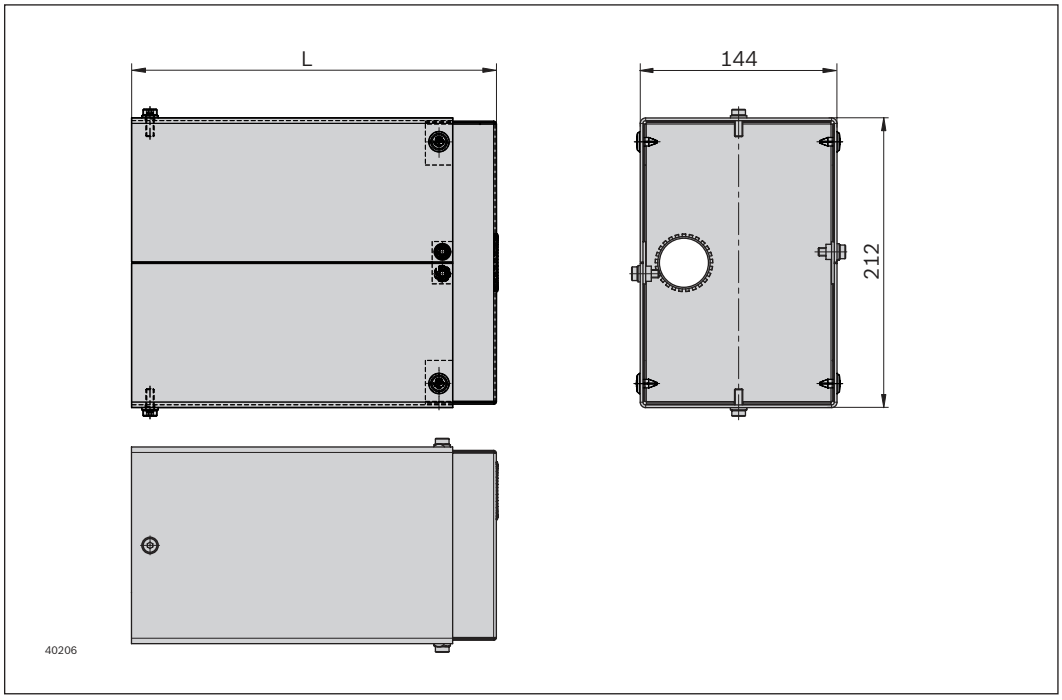
Protective case HP 2

- Protective case for lift positioning unit HP 2

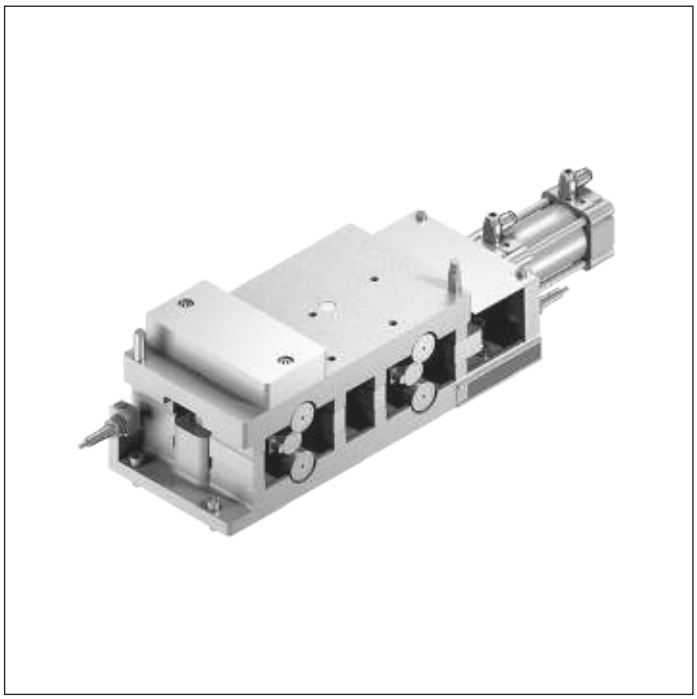
Ordering information

Product description	Nominal stroke h_N (mm)	Length L (mm)	Material number
Protective case HP 2	55	267	3842562217
Protective case HP 2	100	312	3842562218
Protective case HP 2	150	362	3842562219
Protective case HP 2	200	412	3842562220
Protective case HP 2	250	462	3842563329
Protective case HP 2	300	512	3842563330
Protective case HP 2	350	562	3842563331
Protective case HP 2	400	612	3842563332

Dimensions



Positioning unit PE 2/XP



- Positions a workpiece pallet in a processing station with especially high vertical process force requirements (100 kN/60 kN), such as those needed for press-fit or riveting work
- Mounting in load sensor, positive force introduction
- Lift WT above conveying level, approx. 3 mm
- Can be combined with workpiece pallets WT 2

Notice: Combination with WT 2/LS not possible

Notice: Maximum total weight of workpiece pallet m_G incl. anvil plate or positioning plate for BG 1 is: m_G = 20 kg and BG 2: m_G = 30 kg.

Required accessories

- Anvil plate for standard sizes from 160 x 160 mm to 320 x 240 mm, see p. 7-38
- Anvil plate for 320 x 240 mm workpiece pallet, see p. 7-37
- Positioning pins, round and flat-sided
  h = 30 mm for standard anvil plate
  h = 21 mm for special designs
- Stop gate VE 2/..., see p. 8-6
- 2x sensor M12x70 and M12x67 with rated switching distance S_N = 4 mm, can be installed flush, see p. 8-112 and 8-114

Condition on delivery

- Assembled

Ordering information

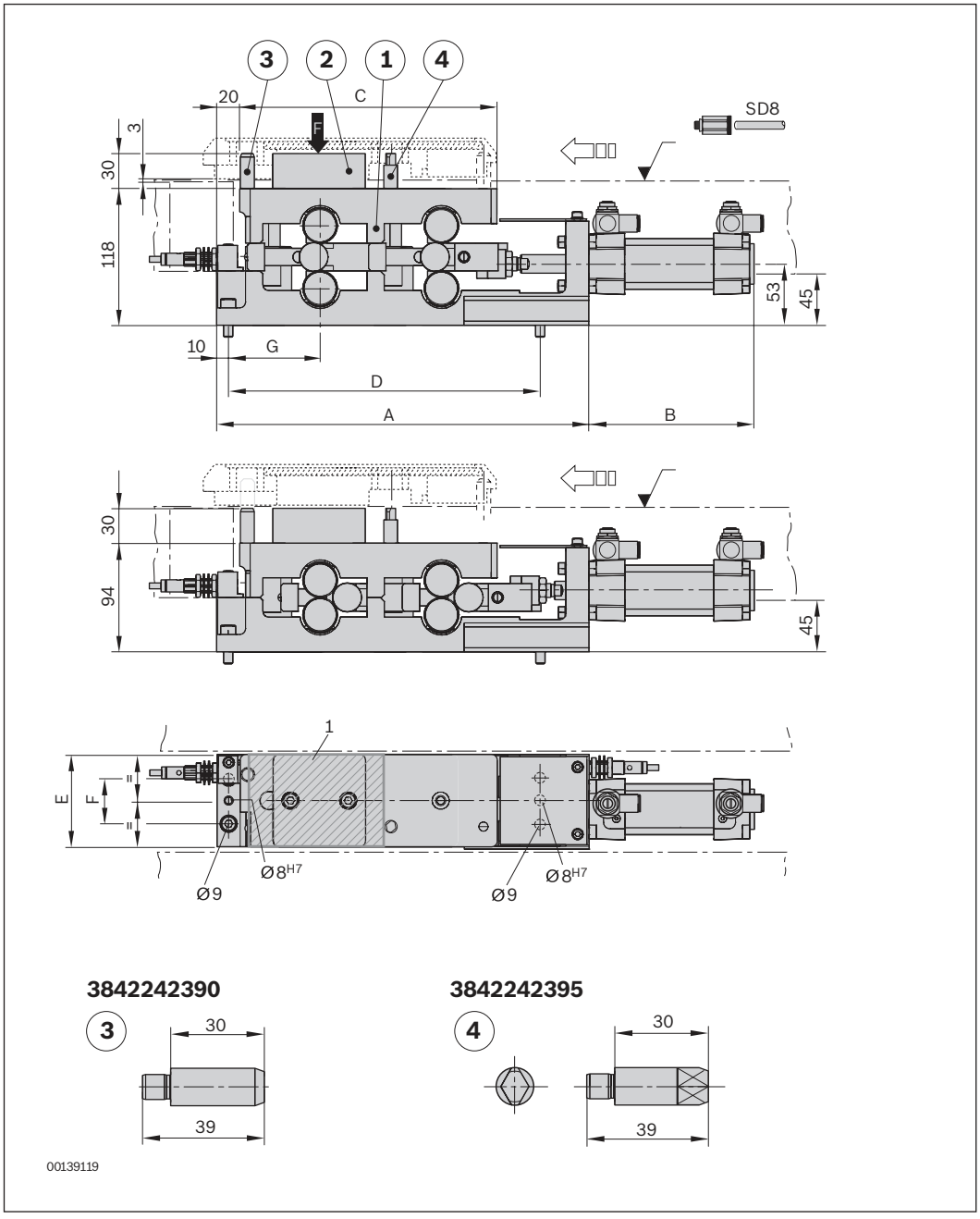
Product description	Size	Width of workpiece pallet (mm)	Material number
Positioning unit PE 2/XP	BG 1	160	3842242350
Positioning unit PE 2/XP	BG 2	240	3842242351

Technical data

Material number			3842242350	3842242351
Max. total workpiece pallet weight	m_G	kg	20	30
ESD			Yes	Yes
Size	BG		BG 1	BG 2
Repetition accuracy		mm	±0.05	±0.05
Permissible vertical process forces[1)]		kN	60	100
Lift WT above conveying level		mm	3	3

[1)] Incl. WT 2/...

Dimensions



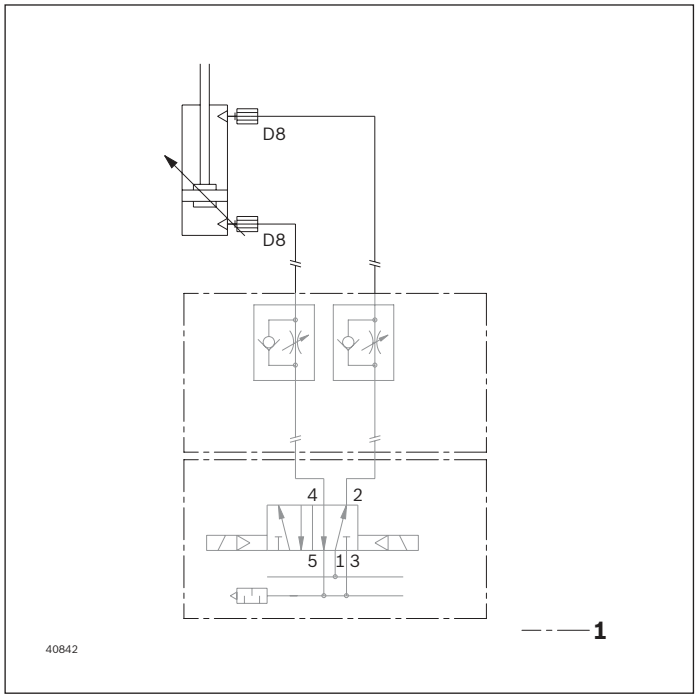
1 PE 2/XP
2 Anvil plate
3 Positioning pin round
4 Positioning pin flat-sided

7

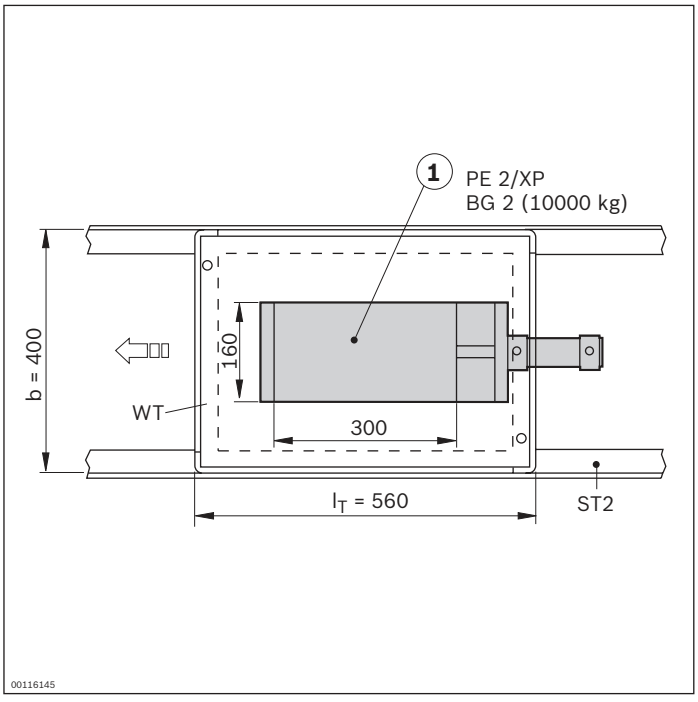
Dimensions

Size	Workpiece pallet size b (mm)	Workpiece pallet size l_T (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
BG 1	160	160	322	142	222	270	80	40±0.2	78.5
BG 1	160	240	322	142	222	270	80	40±0.2	118.5
BG 2	240	160	405	146	298	350	160	100±0.3	78.5
BG 2	240	240	405	146	298	350	160	100±0.3	118.5
BG 2	240	320	405	146	298	350	160	100±0.3	158.5

Circuit diagram



1 Not included in the scope of delivery

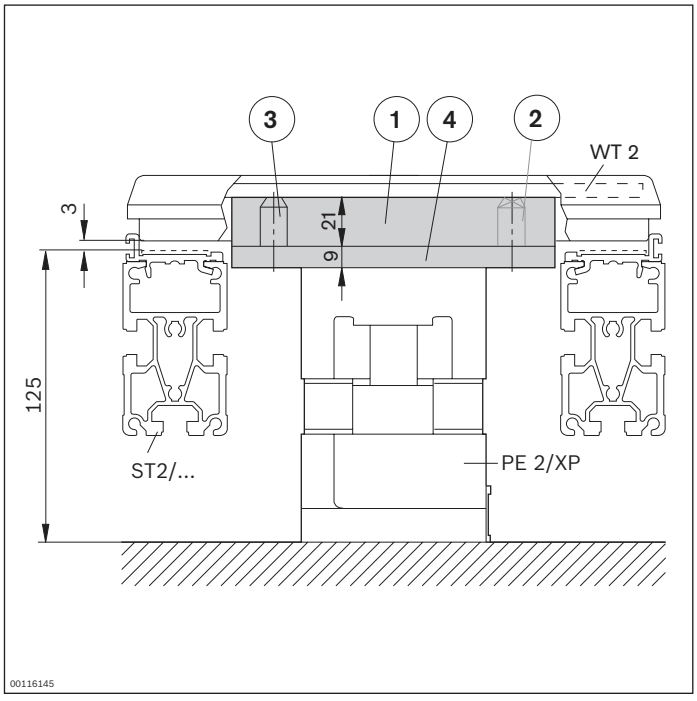


1 Anvil plate, example:
Process forces applied at center of workpiece pallet

Use of PE 2/XP for workpiece pallets greater than b = 240 mm x l_T = 320 mm

The positioning unit PE 2/XP, designed to absorb forces, can also be used with workpiece pallets with large dimensions if the process forces are applied at certain points.

The PE 2/XP must then be arranged in such a manner that it can absorb the forces directly.
The forces may be applied off-center.
However, where process forces are applied must be within the area of the upper part of the PE 2/XP.



1 Anvil plate
2 Positioning pin, round
3 Positioning pin, flat-sided
4 Positioning plate

Design notes

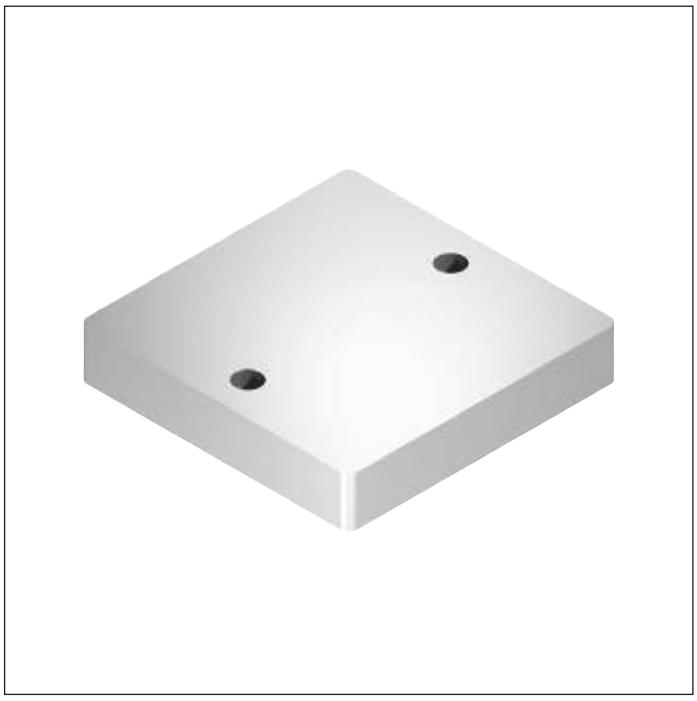
When the unit is used with workpiece pallets larger than l_T x b = 240 x 320 mm, a special anvil plate with a thickness of 21 mm and a positioning plate with a thickness of 9 mm must be constructed.

The positioning plate must also receive the positioning pins. The anvil plate should support the WT carrying plate.

The anvil plate can also be replaced with several domes for WT support and power connection belt.
Advantage: Weight reduction.

The maximum total workpiece pallet weight m_G, incl. anvil plate or positioning plate, is as follows for the following sizes:
BG 1: m_G = 20 kg
BG 2: m_G = 30 kg

Anvil plate



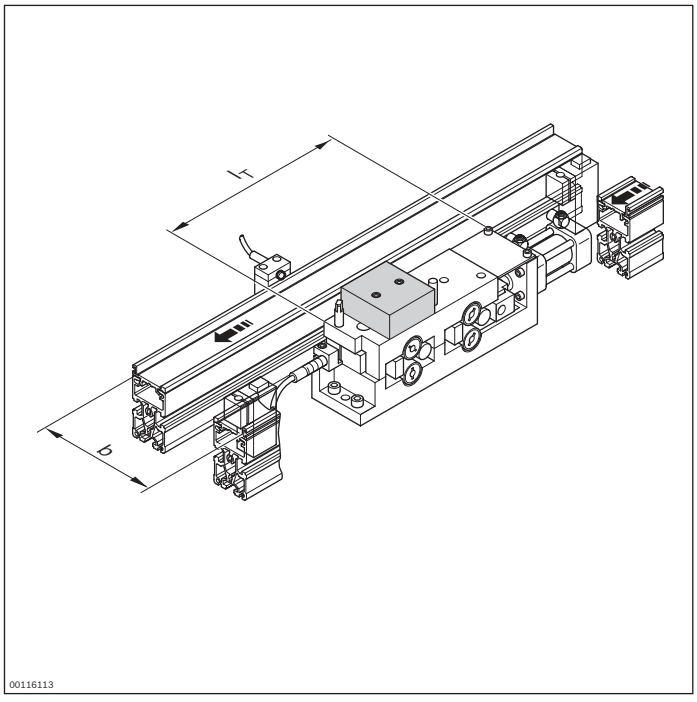
- For positioning unit PE 2/XP

Ordering information

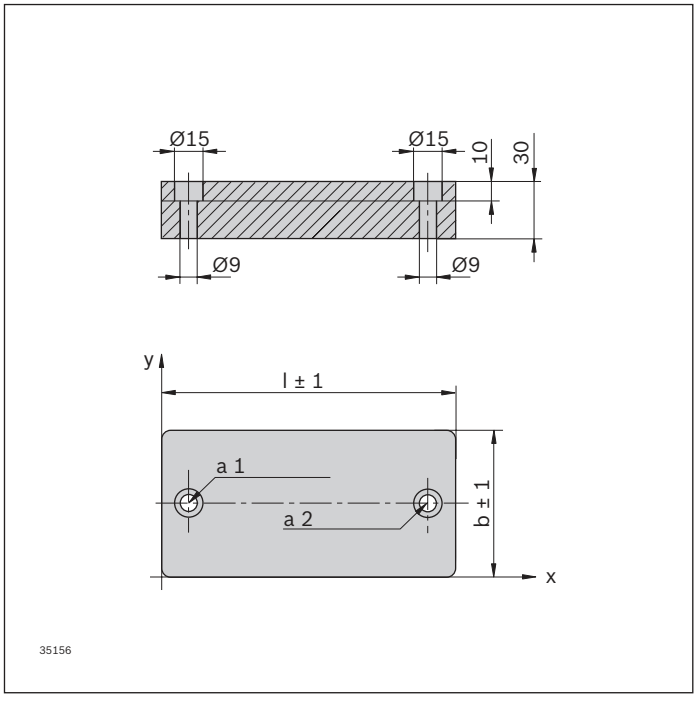
Product description	BG	Track width in direction of transport b (mm)	Length in direction of transport l_T (mm)	Material number
Anvil plate	BG 1	160	160	3842242375
Anvil plate	BG 1	160	240	3842242376
	BG 2	240	160	3842242376
Anvil plate	BG 2	240	240	3842242377
Anvil plate	BG 2	240	320	3842242378

Technical data

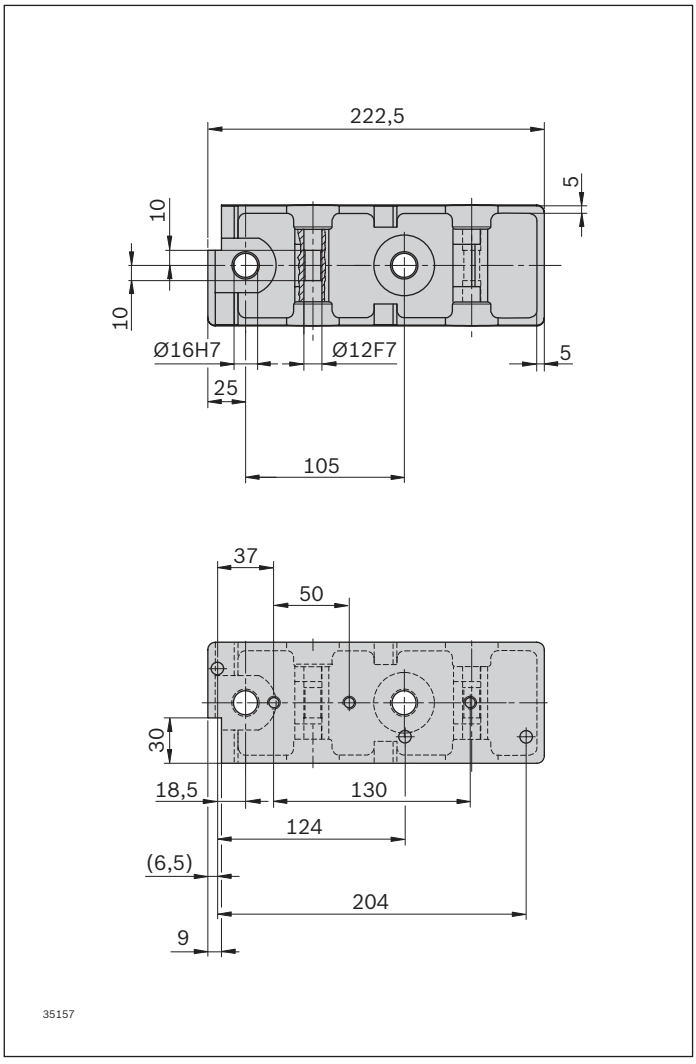
Material number			3842242375	3842242376	3842242377	3842242378
Max. total workpiece pallet weight	m_G	kg	BG 1: 20	BG 1: 20 BG 2: 30	BG 2: 30	BG 2: 30



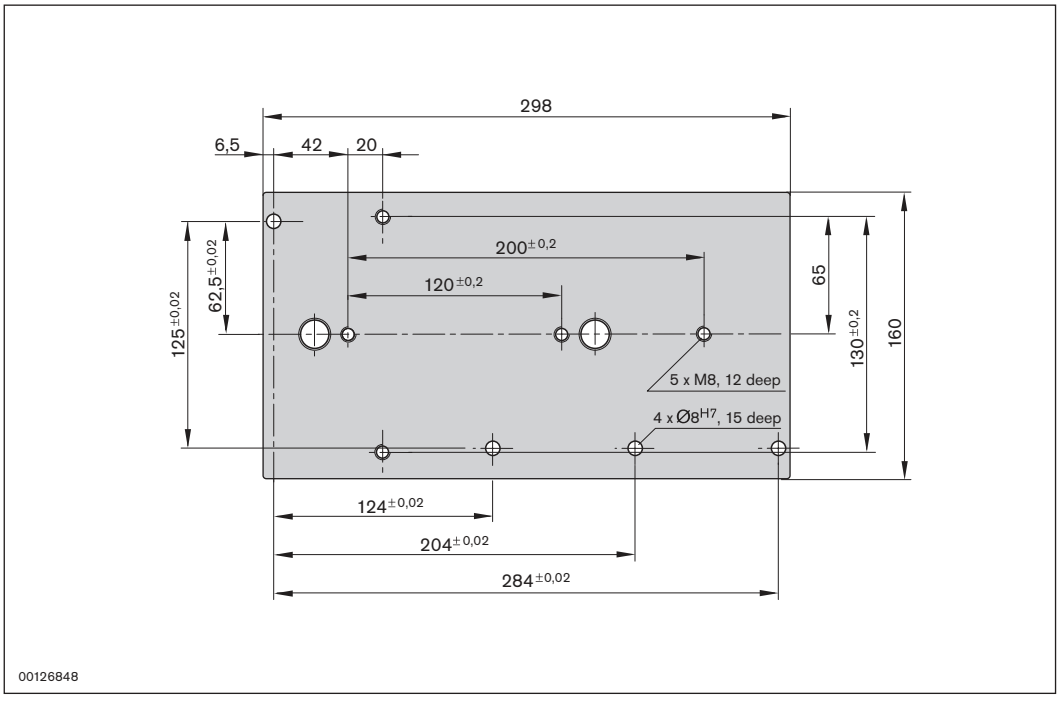
Anvil plate drilling plan



Workpiece pallet size b (mm)	Workpiece pallet size l_T (mm)	Type	b (mm)	l (mm)	x (mm)	y (mm)
160	160	a1	80	80	15	40
		a2	80	80	65	40
160	240	a1	80	160	15	40
		a2	80	160	145	40
240	160	a1	80	160	15	40
		a2	80	160	145	40
240	240	a1	160	160	20	80
		a2	160	160	140	80
240	320	a1	160	240	20	80
		a2	160	240	220	80



Drilling plan PE 2/XP,PE 2/XP, upper part, BG 1



Drilling plan PE 2/XP, upper part, BG 2

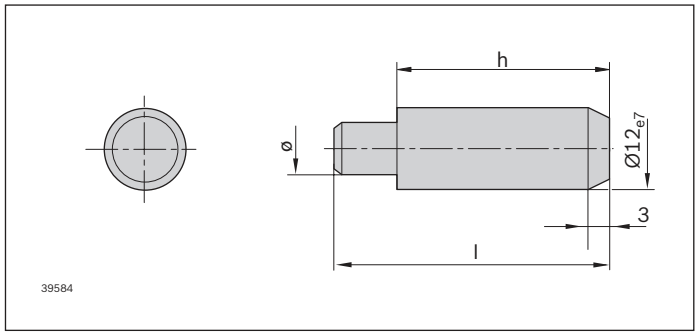
Positioning pin, round

▶ For positioning unit PE 2/XP

Ordering information

Product description	Length l (mm)	Height h (mm)	ø (mm)	Material number
Positioning pin, round	30	21	8_{r6}	3842242391
Positioning pin, round	39	30	8_{r6}	3842242390

Dimensions



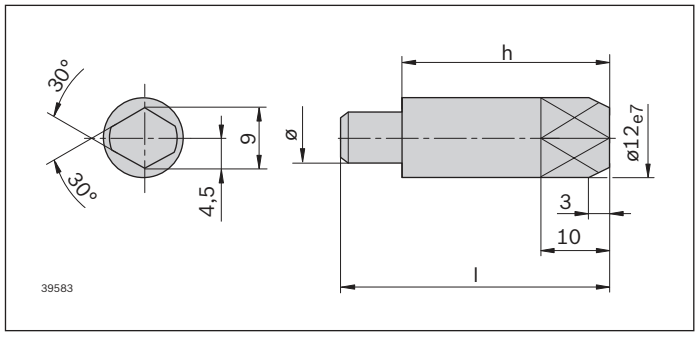
Positioning pin, flat-sided

▶ For positioning unit PE 2/XP

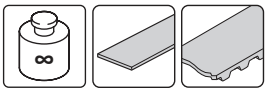
Ordering information

Product description	Length l (mm)	Height h (mm)	ø (mm)	Material number
Positioning pin, flat-sided	30	21	8_{r6}	3842242396
Positioning pin, flat-sided	39	30	8_{r6}	3842242395

Dimensions



Process force decoupling PE 2/XX
Components



The process force decoupling is assembled using the following parts:

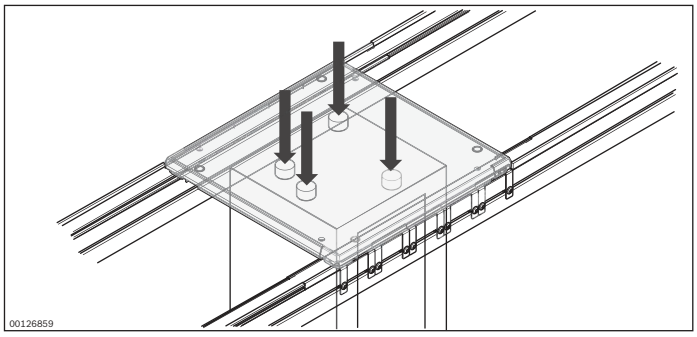
- Spring element in designs with 5.8 N/cm and 10 N/cm specific section load, see p. 7-44
- Transition pieces to and from the spring elements, see p. 7-46
- Lateral guides, see p. 7-47

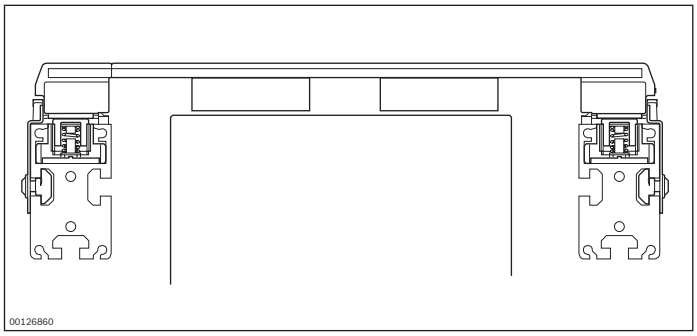
Required accessories

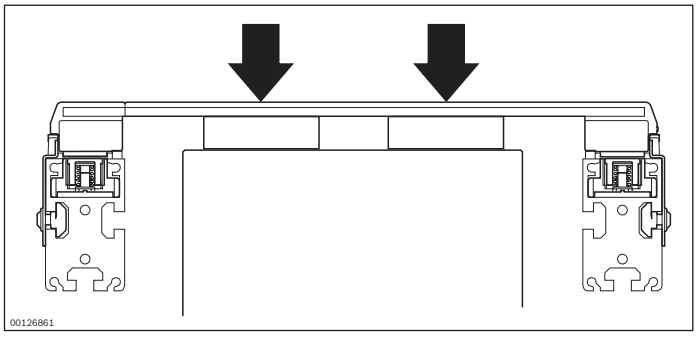
- Anvil (customer load sensor) to absorb process forces at the mounting location of the positioning unit
- Substructure plate for workpiece pallets to transfer the process forces to the anvil (provided by customer)
- Stop gate VE 2/..., see p. 8-6

- For mounting processes with especially high demands on vertical process forces
- To guide the belt or toothed belt near a load sensor to be constructed by the customer.
- Permissible vertical process force depending on the construction by the customer
- Lift below conveying level approx. 1 mm.
- Prepositioning via VE (accessories)
- Can be combined with workpiece pallets WT 2, WT 2/F, WT 2/H and WT 2/F-H, on which the customer must install spacer plates under the force introduction side

Notice: Combination with WT 2/LS not possible



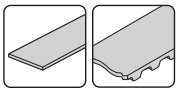


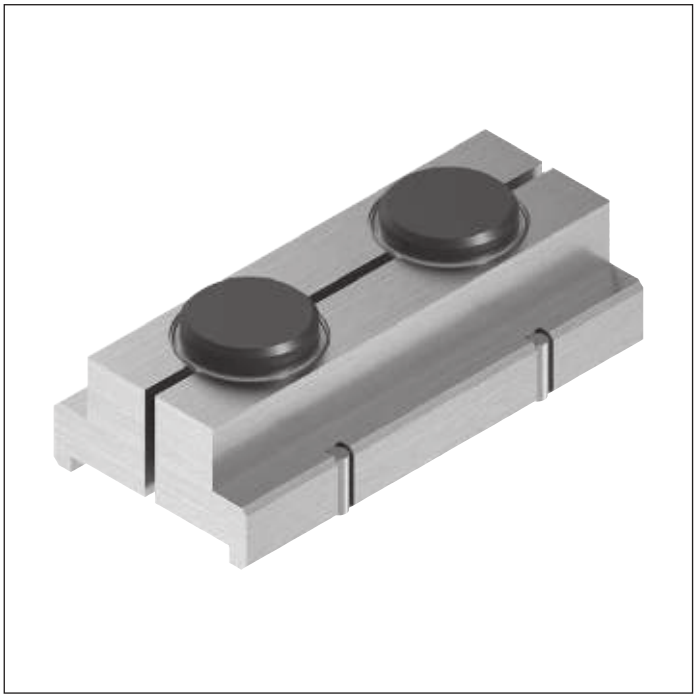


Mode of operation

Vertical process forces are deflected via a load sensor constructed by the customer. In doing so, the plate of the workpiece pallet is supported via the spacer blocks on the anvil of the load sensor. The guide profile is replaced by spring elements near the load sensor to prevent the conveyor medium (belt or toothed belt) from getting jammed between the workpiece pallet and guide profile. The conveyor medium can thus be pushed down by up to 1.5 mm.

Spring element





- For mounting in sections where the workpiece pallet is stressed by the process forces
- For section loads of 5.8 N/cm and 10 N/cm

Scope of delivery

- Set containing 2x spring element

Ordering information

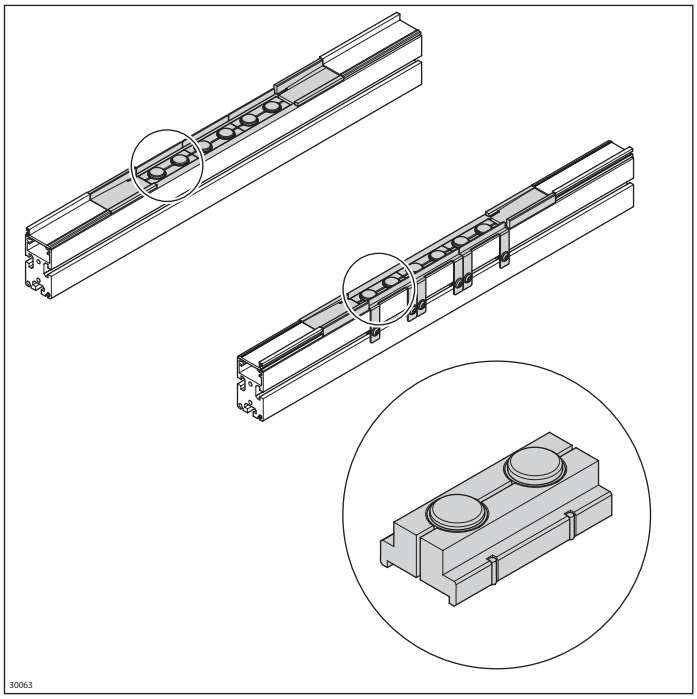
Product description	Packaging unit	Material number
Spring element 10 N/cm	Set	3842536930
Spring element 5.8 N/cm	Set	3842536931

Technical data

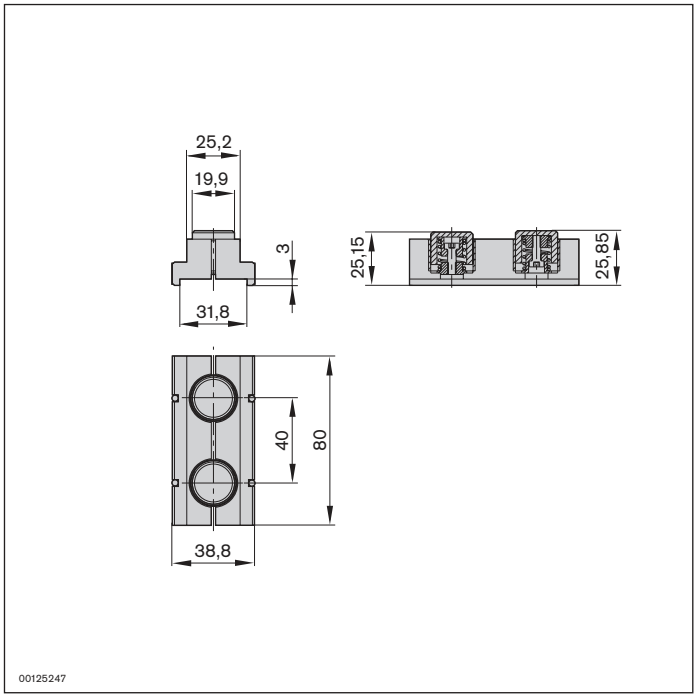
Material number	3842536930	3842536931
ESD	Yes	Yes

Length of workpiece pallet l_{WT} (mm)	Quantity required per section profile X	Section load 5.8 N/cm 3842536931 m_{WT} max[1)] (kg)	Section load 10 N/cm 3842536930 m_{WT} max[1)] (kg)
160	2	9.3	16
240	3	14.0	23.1
320	4	18.7	31.9
400	5	23.3	40
480	6	28.0	48
640	8	37.3	64
800	10	46.7	70
1040	13	60.7	70

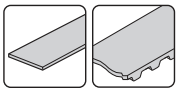
[1)] Maximum workpiece pallet weight incl. spacer block/substructure plate

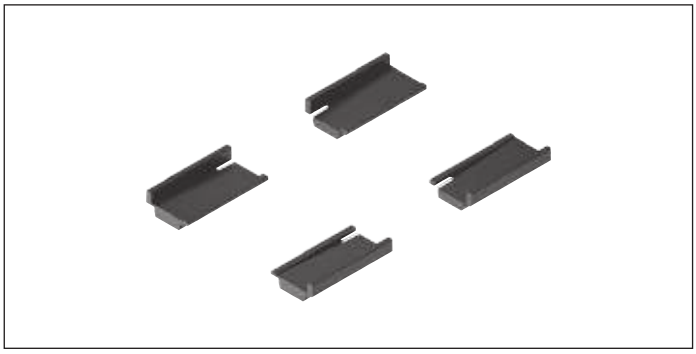


Dimensions



Transition piece





- For transitioning from guide profile to spring elements and vice versa
- For use with the belt or toothed belt conveyor medium

Scope of delivery

- Set containing 2x left transition piece, 2x right transition piece

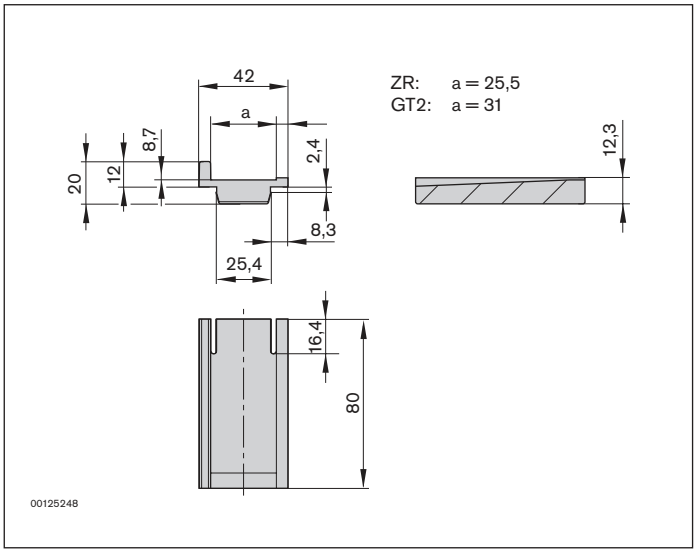
Ordering information

Product description	Packaging unit	Material number
Transition piece for belt	Set	3842536932
Transition piece for toothed belt	Set	3842536933

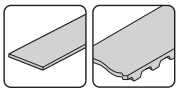
Technical data

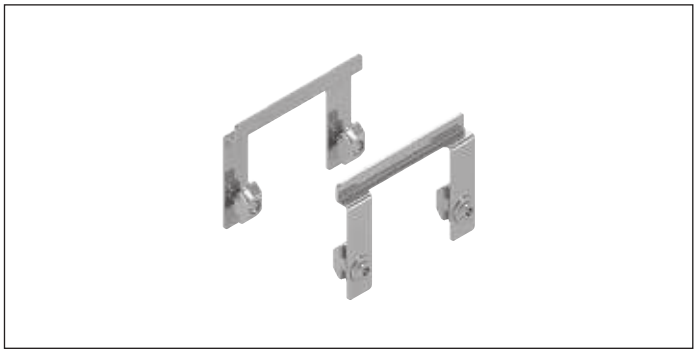
Material number			3842536932	3842536933
ESD			Yes	Yes
Length	l	mm	80	80

Dimensions



Lateral guide





- For laterally guiding workpiece pallets in the sections where the spring elements are mounted
- A stop WT 2 can be positioned diagonally the stop gate to prevent workpiece pallets from rotating and tilting

Scope of delivery

- 1 set (containing 2x lateral guide), incl. fastening material

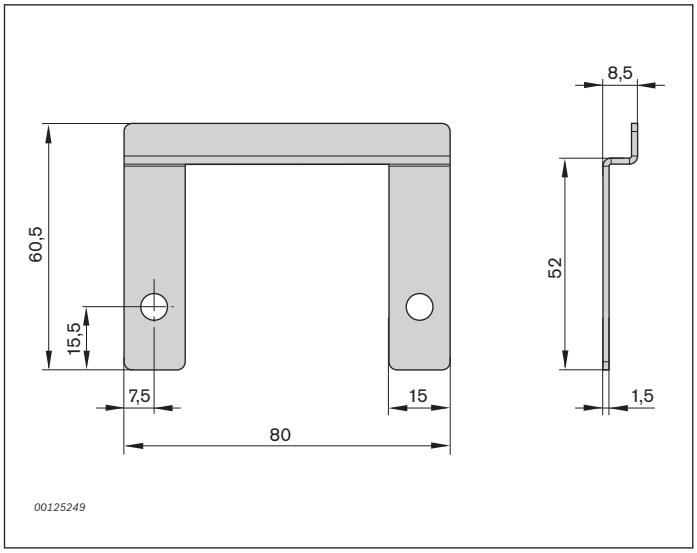
Ordering information

Product description	Packaging unit	Material number
Lateral guide	Set	3842536926

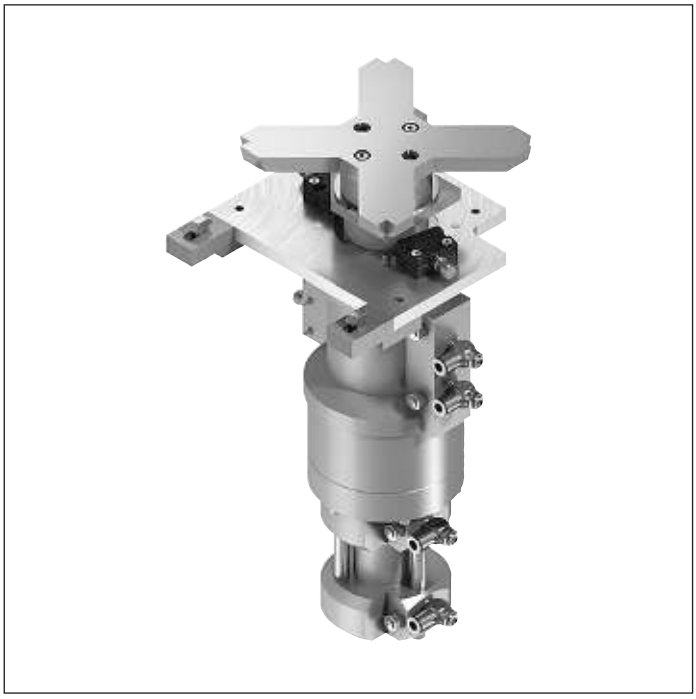
Technical data

Material number			3842536926
ESD			Yes
Material specification			Sheet steel; galvanized
Length	l	mm	80

Dimensions



Lift rotary unit HD 2...



- Rotation angles on the Z axis: 90° or 180°. The rotational direction of the HD 2/90° can be individually selected for each workpiece pallet as required
- Lift WT 40 mm or 90 mm above conveying level
  The version with a 40 mm lift is suitable for turning workpiece pallets directly above the conveyor section. If there are any components mounted at the side of the workpiece pallet, e.g. identification and data storage modules, it may be necessary to select the version with a 90 mm lift
- Max. permitted mass moment of inertia: 0.65 kgm^2
- Can be combined with WT 2
- WT 2/LS can only be combined with lift rotary unit HD 2 in conjunction with a suitable conversion kit HD 2-LS, see p. 7-49

The lift rotary unit HD 2 turns workpiece pallets to the required orientation. On circuits without curves it ensures that the workpiece pallet always runs with the correct orientation, i.e., front is always front.

Work on the HD 2 is permitted without additional forces.

Required accessories

- Stop gate VE 2/..., see p. 8-6
- Sensor M12x1 with rated sensing range $S_N \geq 4$ mm, can be installed at 0.5 mm rather than being installed flush, see p. 8-112

Scope of delivery

- Incl. fastening material

Ordering information

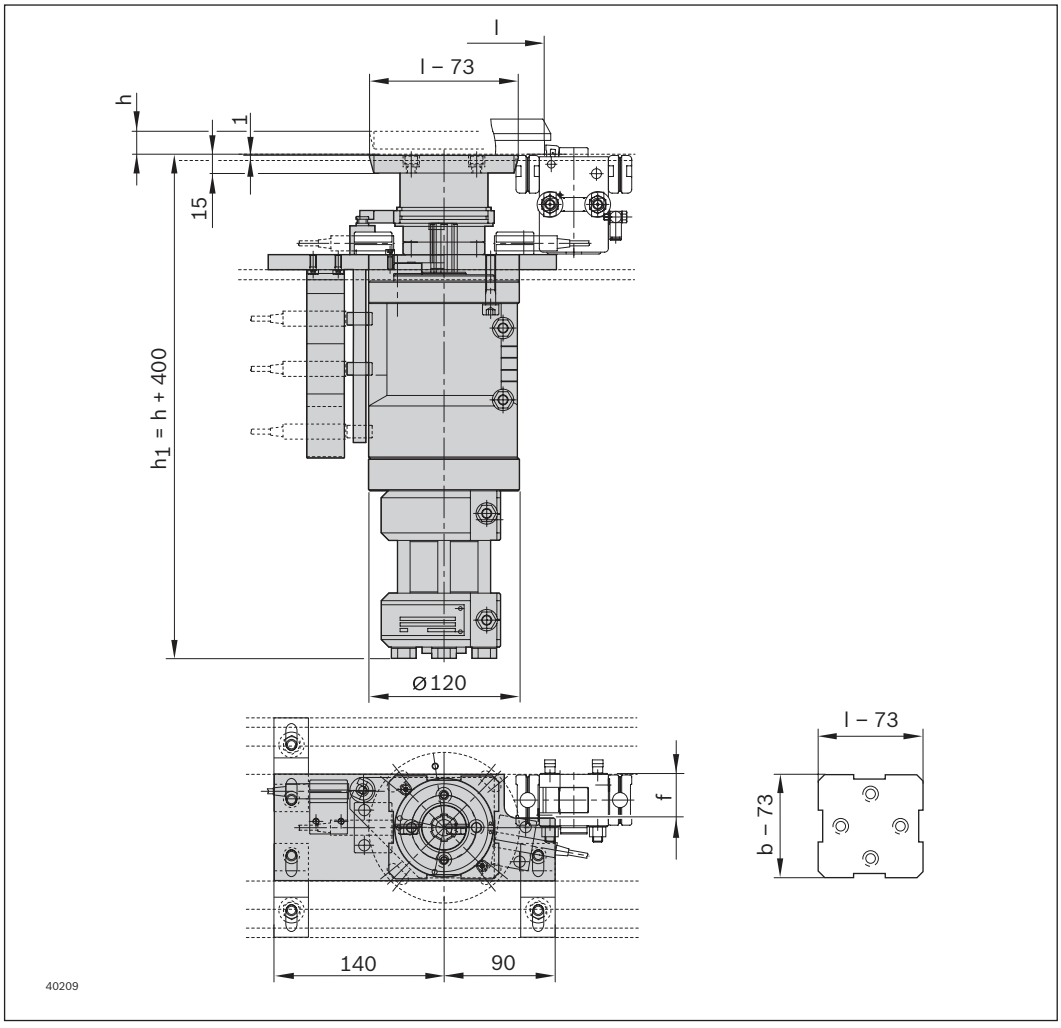
Product description	b (mm)	l (mm)	DW (°)	h (mm)	Material number
Lift rotary unit HD 2	160	160	90	40	3842525847
Lift rotary unit HD 2	160	160	180	40	3842525848
Lift rotary unit HD 2	160	160	90	90	3842525849
Lift rotary unit HD 2	160	160	180	90	3842525850
Lift rotary unit HD 2	160	240	180	40	3842525851
Lift rotary unit HD 2	160	240	180	90	3842525852
Lift rotary unit HD 2	160	320	180	40	3842525853
Lift rotary unit HD 2	160	320	180	90	3842525854
Lift rotary unit HD 2	240	160	180	40	3842525855
Lift rotary unit HD 2	240	160	180	90	3842525856
Lift rotary unit HD 2	240	240	90	40	3842525857
Lift rotary unit HD 2	240	240	180	40	3842525858
Lift rotary unit HD 2	240	240	90	90	3842525859
Lift rotary unit HD 2	240	240	180	90	3842525860
Lift rotary unit HD 2	240	320	180	40	3842525861
Lift rotary unit HD 2	240	320	180	90	3842525862
Lift rotary unit HD 2	320	160	180	40	3842525863
Lift rotary unit HD 2	320	160	180	90	3842525864
Lift rotary unit HD 2	320	240	180	40	3842525865
Lift rotary unit HD 2	320	240	180	90	3842525866
Lift rotary unit HD 2	320	320	90	40	3842525867
Lift rotary unit HD 2	320	320	180	40	3842525868
Lift rotary unit HD 2	320	320	90	90	3842525869
Lift rotary unit HD 2	320	320	180	90	3842525870

Product description	b x l (mm)	Material number
Changeover kit HD 2-LS	160 x 160	3842563535
Changeover kit HD 2-LS	160/240 x 160/240	3842563536
Changeover kit HD 2-LS	160/320 x 160/320	3842563537
Changeover kit HD 2-LS	240 x 240	3842563538
Changeover kit HD 2-LS	240/320 x 240/320	3842563539
Changeover kit HD 2-LS	320 x 320	3842563540

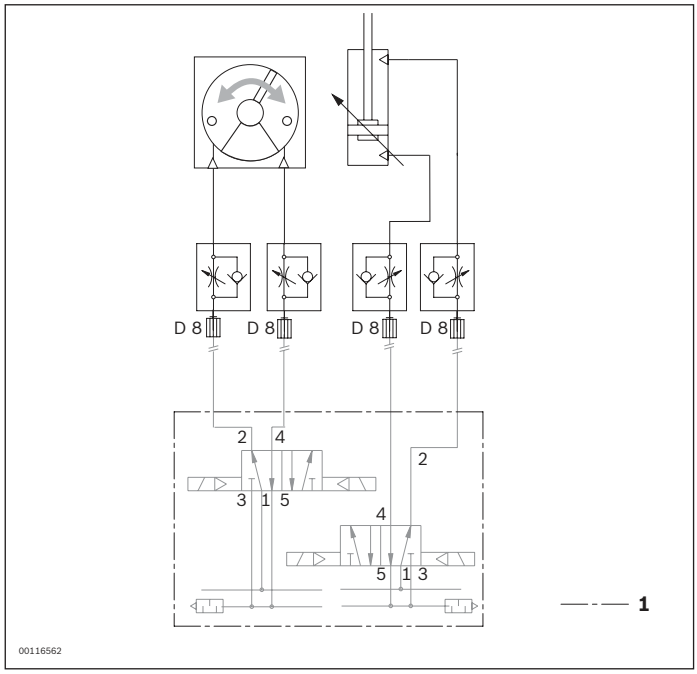
Technical data

Material number			3842525847 3842525848 3842525849 3842525850 3842525851 3842525852	3842525853 3842525854 3842525855 3842525856 3842525857 3842525858	3842525859 3842525860 3842525861 3842525862 3842525863 3842525864	3842525865 3842525866 3842525867 3842525868 3842525869 3842525870
Max. total workpiece pallet weight	m_G	kg				16
ESD						Yes
Lift WT above conveying level						40; 90

Dimensions

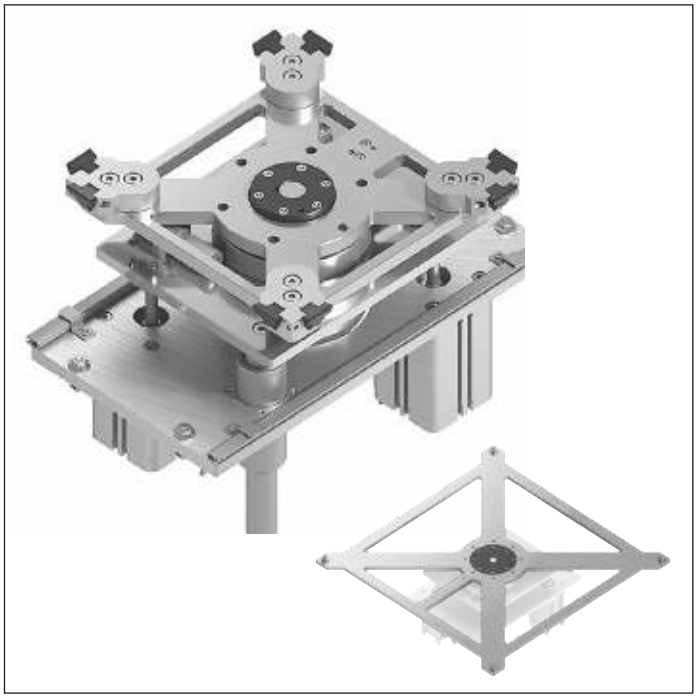


Circuit diagram



1 Not included in the scope of delivery

Lift rotary unit HD 2/H...



The lift rotary unit HD 2/H turns workpiece pallets to the required orientation.

- Lift WT above conveying level, approx. 50 mm
- Available in 3 sizes (BG) for WT total weights up to 240 kg
  - BG 1 and BG 2 for use with workpiece pallets WT 2, WT 2/F and WT 2/LS (only with version LS)
  - BG 3 for use with workpiece pallets WT 2/H and WT 2/F-H
- Rotation 90° or 180°
  - For rotating quadratic workpiece pallets 90° or 180°
    - 90° variant of BG 1, BG 2
      Workpiece pallet rotation belt tape rotary cylinder rotation under belt
    - 180° variant of BG 1, 2, 3 and 90° BG 3 rotation and reverse rotation of the turnstile via belt
  - For rotating non-quadratic workpiece pallets 180°

Required accessories

- Housing elements HD 2/H, see p. 7-58
- Leg sets for BG 2 over 50 kg, see p. 6-24
- Leg sets for BG 3 generally, see p. 6-24
- Cylinder switch (R412022863) for the top/center/bottom lift positions, see p. 7-52
- Sensor for rotary movement at 0°/180° or 0°/90°, see p. 7-52

Recommended accessories

- Stop gate VE 2, see p. 8-6, or stop gate VE 2/D, see p. 8-23, for damped stopping of a workpiece pallet
- Recommended accessories for BG3: Stop gate VE 2/D-100 (see p. 8-38), stop gate VE 2/D-250 (see p. 8-41)

Scope of delivery

- 2x damper for end positions of the rotary movement
- Incl. fastening material for assembly on conveyor sections
- Pneumatic elements such as fittings, throttle check valves, etc. for the top/center/bottom lift positions

Condition on delivery

- Assembled

Ordering information

Product description	Size BG	Max. total workpiece pallet weight m_G (kg)	Width b (mm)	Length l_T (mm)	Rotation angle DW[4] (°)	Installation location AO[5]	LS[6]	Material number
Lift rotary unit HD 2/H	BG 1[1]	50	240	240; 320; 400	90; 180	0; 1		3842998760
			320	240; 320; 400; 480	90; 180	0; 1		3842998760
			400	320	180	0; 1		3842998760
Lift rotary unit HD 2/H LS	BG 1[2]	50	240	240; 320; 400	90; 180	0; 1	1	3842999023
			320	240; 320; 400; 480	90; 180	0; 1	1	3842999023
			400	320	90; 180	0; 1	1	3842999023
Lift rotary unit HD 2/H	BG 2[1]	128	400	400; 480	90; 180	0; 1		3842998761
			480	400; 480; 640; 800	90; 180	0; 1		3842998761
			640	480; 640; 800; 1040	90; 180	0; 1		3842998761
			800	640	180	0; 1		3842998761
Lift rotary unit HD 2/H LS	BG 2[2]	50	400	400; 480	90; 180	0; 1	1	3842999024
			480	400; 480; 640; 800	90; 180	0; 1	1	3842999024
			640	480; 640; 800; 1040	90; 180	0; 1	1	3842999024
			800	640	90; 180	0; 1	1	3842999024
Lift rotary unit HD 2/H	BG 3[3]	240	800	800; 1040	90; 180	0; 1		3842998762
			1040	800; 1040; 1200	90; 180	0; 1		3842998762
			1200	1200	90; 180	0; 1		3842998762

1) For use with workpiece pallets WT 2 and WT 2/F-H only
2) For use with workpiece pallets WT 2/LS only
3) For use with workpiece pallets WT 2/H and WT 2/F-H only
4) Only possible for DW = 90° quadratic workpiece pallets
5) Installation location: 0 = 80 mm and 1 = 100 mm
6) Linear section: 1 = yes

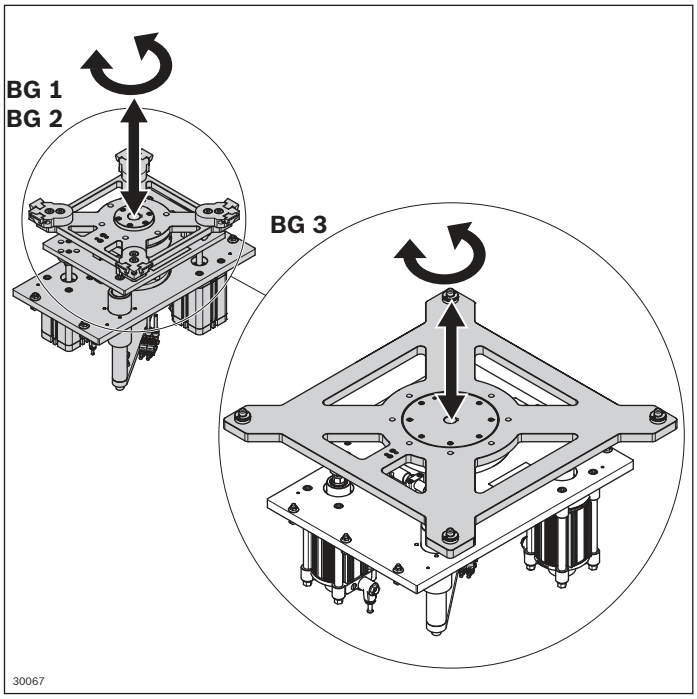
Ordering information

Product description	Material number
Cylinder switch for top/center/bottom position sensing ST6-PN-M12R-030 sensor	**R412022863**

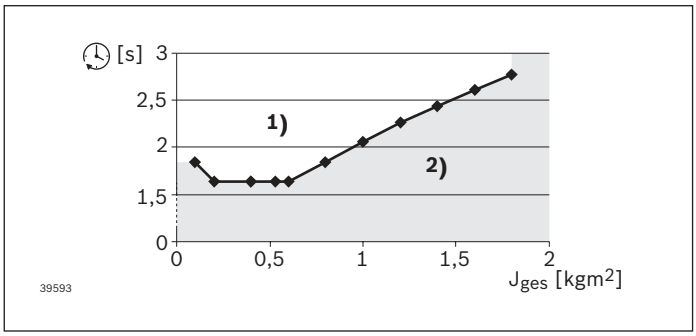
Product description	Material number
Sensor, short, for rotary movement end position sensing IEC/EN 60947-5-2:-2004	**3842549811**

Technical data

Material number	3842998760	3842999023	3842998761	3842999024	3842998762
ESD	Yes	Yes	Yes	Yes	Yes
Lift WT above conveying level	50	50	50	50	50

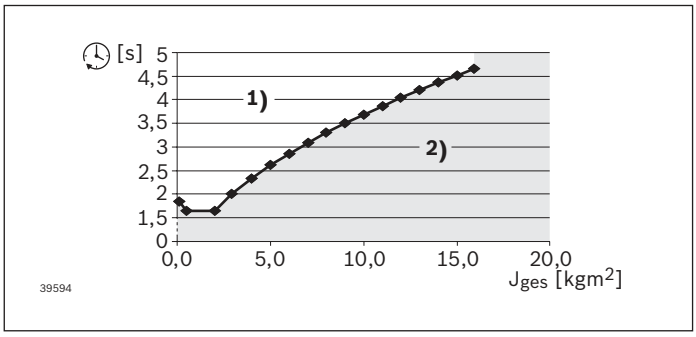


Size 1



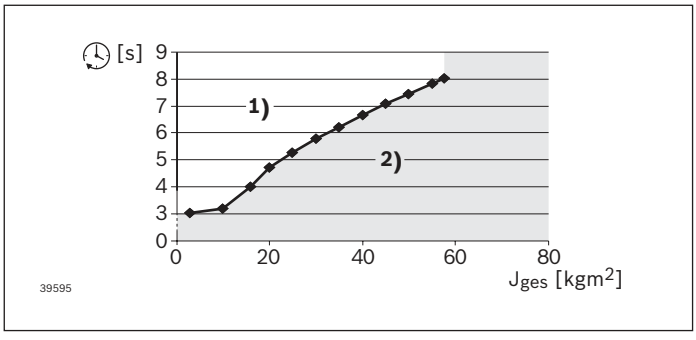
= rotary movement time
J_{ges} = mass moment of inertia
[1] Permissible range
[2] Impermissible range

Size 2

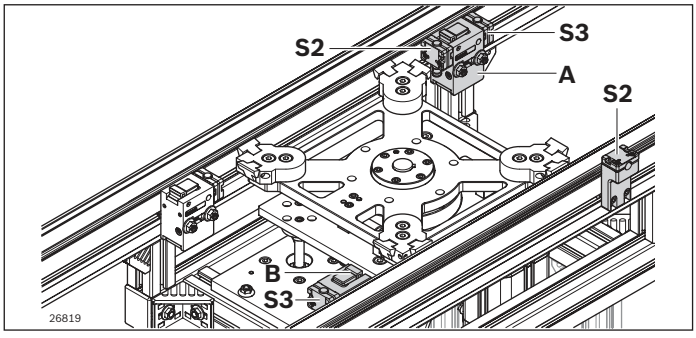


= rotary movement time
J_{ges} = mass moment of inertia
[1] Permissible range
[2] Impermissible range

Size 3



= rotary movement time
J_{ges} = mass moment of inertia
[1] Permissible range
[2] Impermissible range



Operating limits of the lift rotary unit HD 2/H...

Mass moment of inertia

Notice:

In the arrangement of supports and workpieces on the WT, it must be ensured that the center of gravity of the loaded WT is within ⅓ of the length/width of the WT around the center of the WT.

It must also be ensured that the load center of gravity at height h_s does not exceed ½ b_{WT} (with $b_{WT} \leq l_{WT}$).

Size 1: Lift rotary unit HD 2/H, 3842998760
Lift rotary unit HD 2/H LS, 3842999023
Mass moment of inertia max. 1.8 kg m²

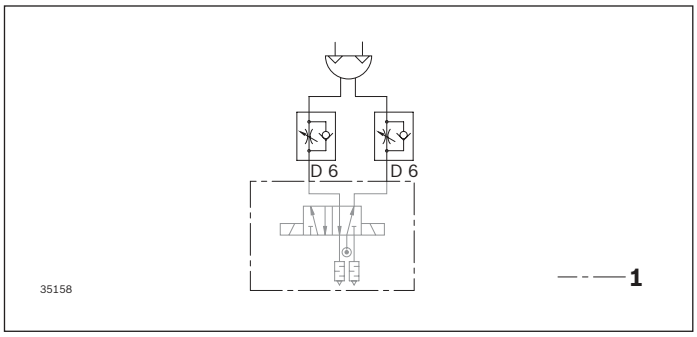
Size 2: Lift rotary unit HD 2/H, 3842998761
Lift rotary unit HD 2/H LS, 3842999024
Mass moment of inertia max. 15.9 kg m²

Size 3: Lift rotary unit HD 2/H, 3842998762
Mass moment of inertia max. 57.6 kg m²

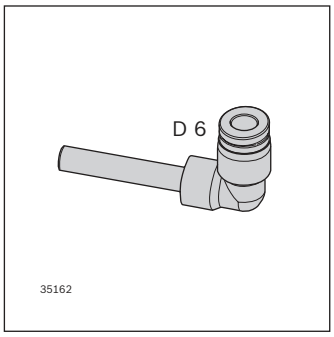
Additional operating limits

- Switch bracket mounting at b x l_T 240 mm x 240 mm is only possible from outside => see S2
- Reversible operation possible from b x l_T 320 mm x 320 mm => see A and B

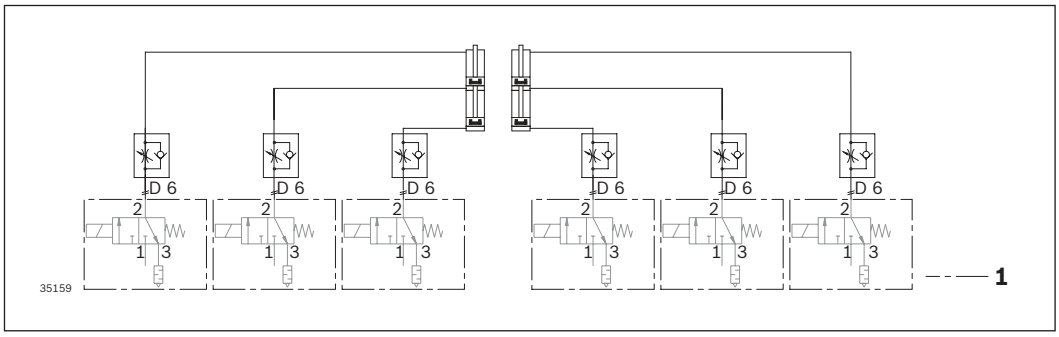
Pneumatic diagram of the lift rotary unit HD 2/H:
Rotary cylinder for Size 1/2/3, rotation angle 90° and 180°



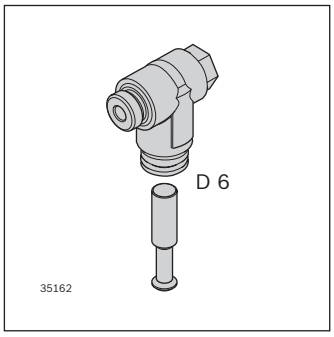
1 Not included in the scope of delivery



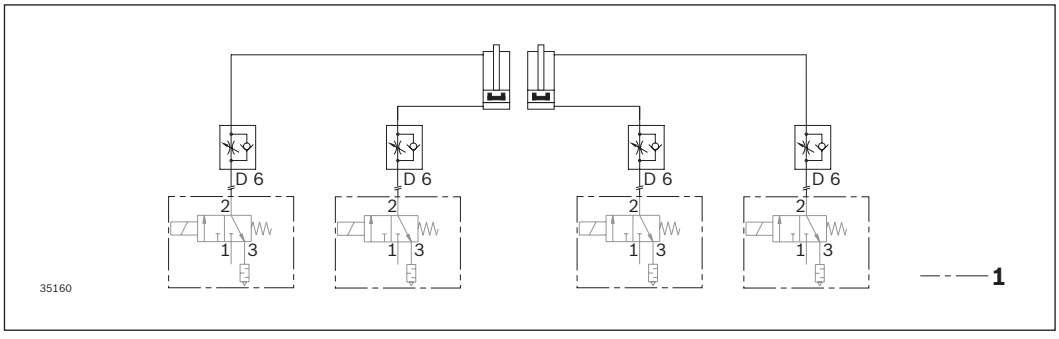
Pneumatic diagram of the lift rotary unit HD 2/H:
Lifting cylinder for Size 1/2, rotation angle 90° (multiple position cylinder)



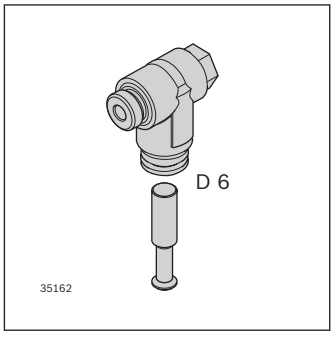
1 Not included in the scope of delivery



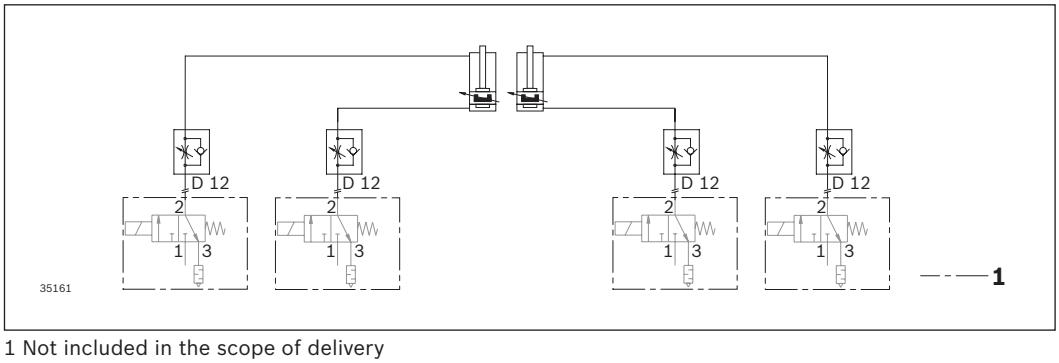
Pneumatic diagram of the lift rotary unit HD 2/H:
Lifting cylinder for Size 1/2, rotation angle 180°



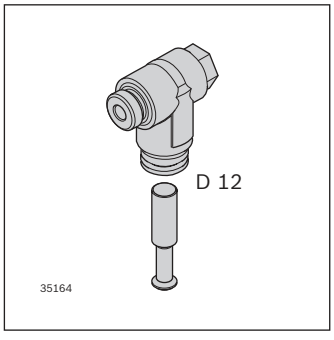
1 Not included in the scope of delivery



Pneumatic diagram of the lift rotary unit HD 2/H:
Lifting cylinder for Size 3, rotation angle 90° and 180°

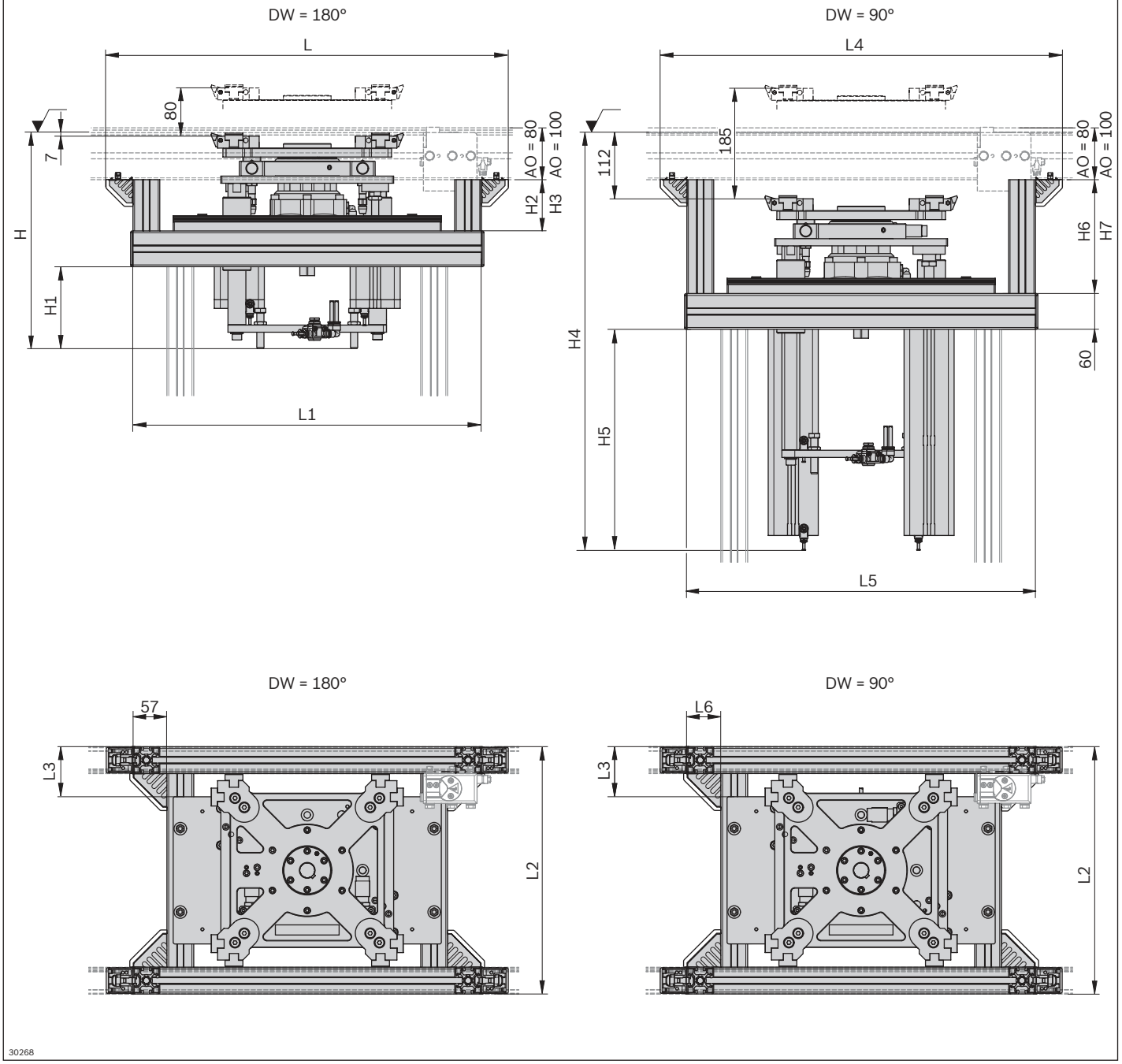


1 Not included in the scope of delivery



Dimensions for BG 1 (3842998760, 3842999023)/BG 2 (3842998761, 3842999024)

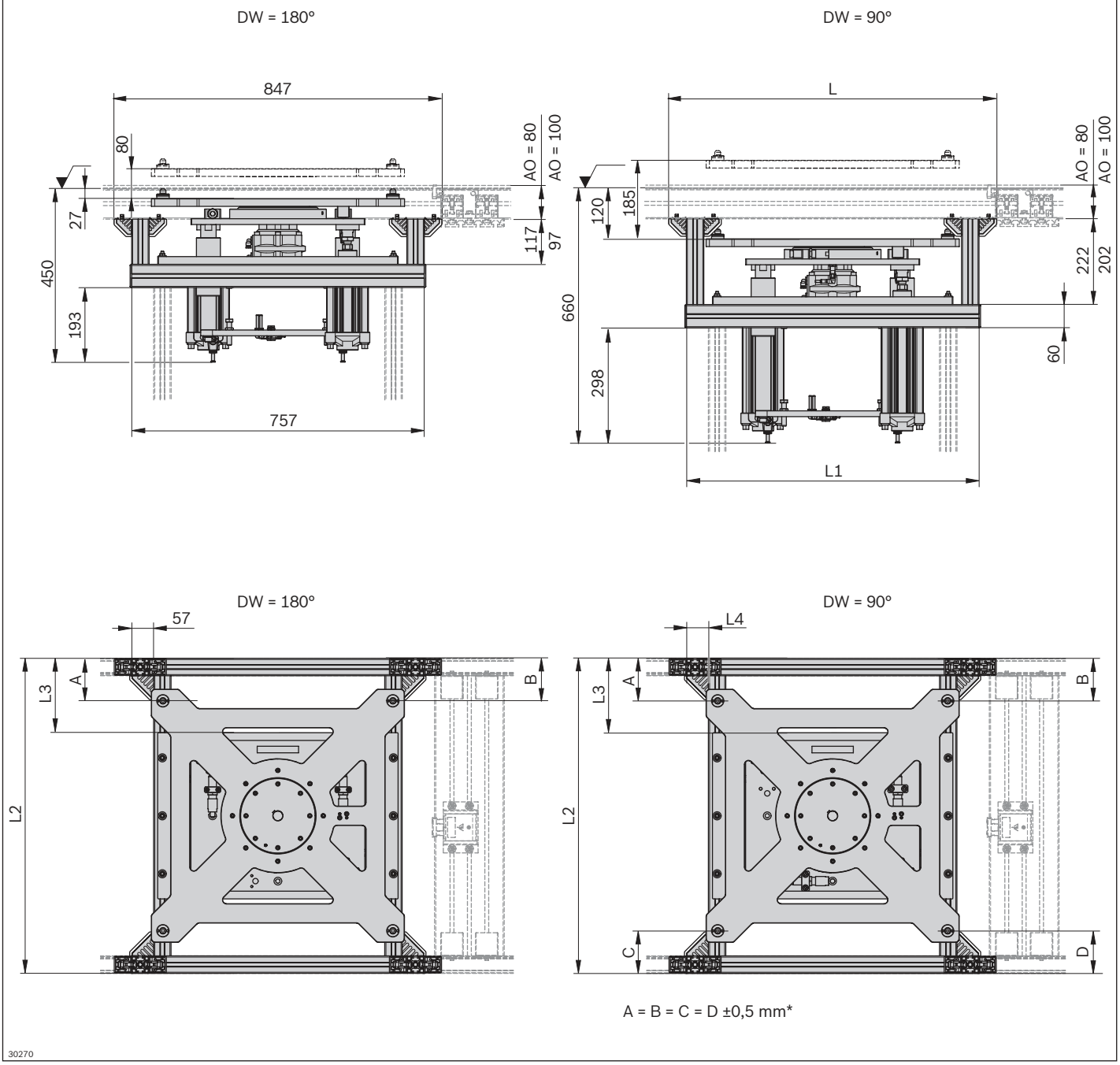
BG 1
BG 2



BG	Width b (mm)	H (mm)	H1 (mm)	H2 (mm)	H3 (mm)	H4 (mm)	H5 (mm)	H6 (mm)	H7 (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)	L5 (mm)	L6 (mm)
BG 1	240	336	120	76	56	672	351	181	161	597	507	255	48	597	507	57
BG 1	320	336	120	76	56	672	351	181	161	597	507	335	88	597	507	57
BG 1	400	336	120	76	56	672	351	181	161	597	507	415	128	597	507	57
BG 2	400	364	138	86	66	702	371	191	171	675	585	415	84	675	585	57
BG 2	480	364	138	86	66	702	371	191	171	675	585	495	124	675	585	57
BG 2	640	364	138	86	66	702	371	191	171	675	585	655	204	725	635	82
BG 2	800	364	138	86	66	702	371	191	171	675	585	815	284	725	635	82

Dimensions for BG3 (3842998762)

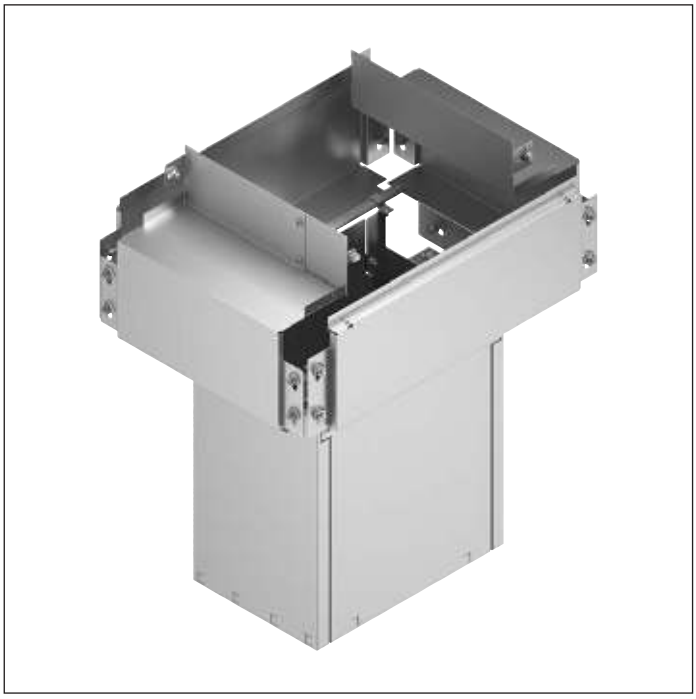
BG 3



* Rotation angle setting

BG	Width b (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	L4 (mm)
BG 3	800	847	757	815	193	57
BG 3	1040	1040	950	1055	313	154
BG 3	1200	1190	1100	1215	393	229

Protective case for HD 2/H...

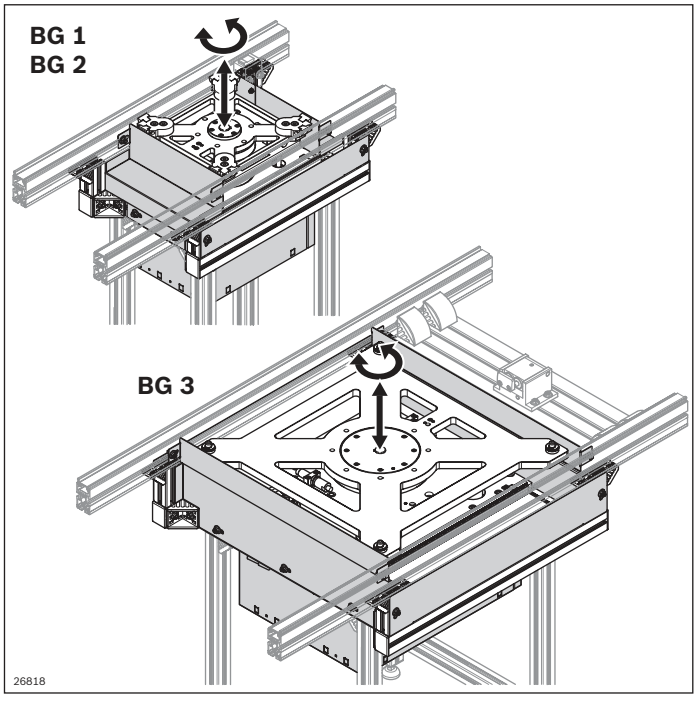


- For the safety of the unit and to protect against interference from outside below the conveying level
- Protection above the conveying level must be configured individually for each application

Ordering information

BG	Width b (mm)	Length l_T (mm)	Rotation angle DW (°)	Material number
BG 1	240	240	90	3842552593
BG 1	240	240	180	3842552601
BG 1	240	320	180	3842552602
BG 1	240	400	180	3842552603
BG 1	320	240	180	3842552604
BG 1	320	320	90	3842552594
BG 1	320	320	180	3842552605
BG 1	320	400	180	3842552606
BG 1	320	480	180	3842552607
BG 1	400	320	180	3842552609
BG 2	400	400	90	3842552595
BG 2	400	400	180	3842552611
BG 2	400	480	180	3842552612
BG 2	480	400	180	3842552613
BG 2	480	480	90	3842552596
BG 2	480	480	180	3842552614
BG 2	480	640	180	3842552615
BG 2	480	800	180	3842552616
BG 2	640	480	180	3842552617
BG 2	640	640	90	3842552597
BG 2	640	640	180	3842552618

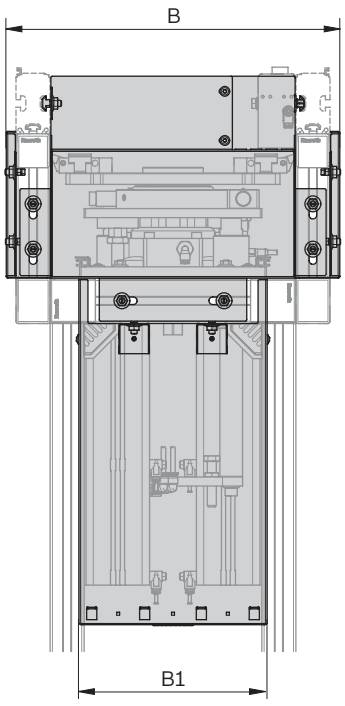
BG	Width b (mm)	Length l_T (mm)	Rotation angle DW (°)	Material number
BG 2	640	800	180	3842552619
BG 2	640	1040	180	3842552620
BG 2	800	640	180	3842552622
BG 3	800	800	90	3842552598
BG 3	800	800	180	3842552624
BG 3	800	1040	180	3842552625
BG 3	1040	800	180	3842552626
BG 3	1040	1040	90	3842552599
BG 3	1040	1040	180	3842552627
BG 3	1040	1200	180	3842552628
BG 3	1200	1200	90	3842552600
BG 3	1200	1200	180	3842552630



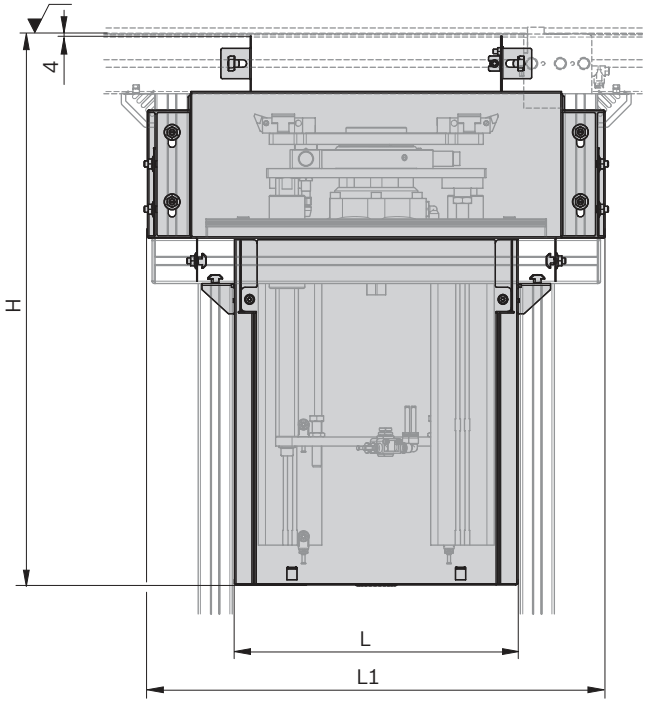
Protective case dimensions for BG 1 and BG 2

BG 1
BG 2

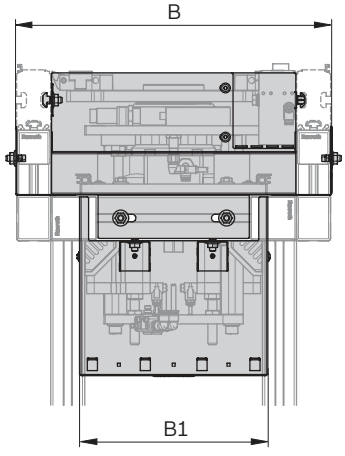
DW = 90°



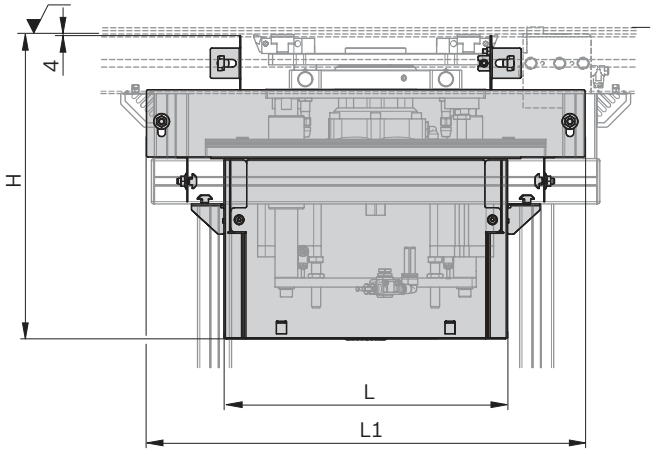
DW = 90°



DW = 180°



DW = 180°



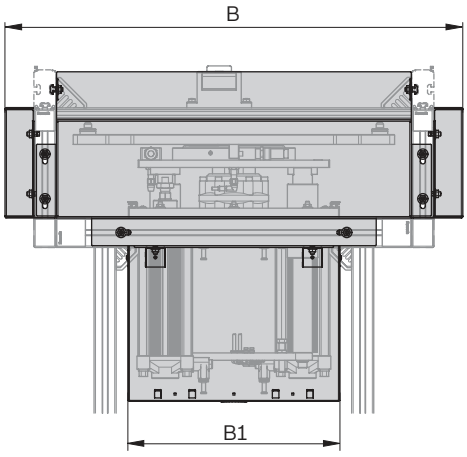
30269

BG	Width b (mm)	Length l_T (mm)	Rotation angle DW (°)	H (mm)	L (mm)	L1 (mm)	B (mm)	B1 (mm)	Material number
BG 1	240	240	90	700	297	509	257	157	3842552593
BG 1	240	240	180	372	297	423	257	157	3842552601
BG 1	240	320	180	372	297	423	257	157	3842552602
BG 1	240	400	180	372	297	423	257	157	3842552603
BG 1	320	240	180	372	297	423	337	162	3842552604
BG 1	320	320	90	700	297	509	337	162	3842552594
BG 1	320	320	180	372	297	423	337	162	3842552605
BG 1	320	400	180	372	297	423	337	162	3842552606
BG 1	320	480	180	372	297	495	337	162	3842552607
BG 1	400	320	180	372	297	423	417	162	3842552609
BG 2	400	400	90	730	375	605	441	249	3842552595
BG 2	400	400	180	405	375	501	417	249	3842552611
BG 2	400	480	180	405	375	501	417	249	3842552612
BG 2	480	400	180	405	375	501	497	249	3842552613
BG 2	480	480	90	730	375	605	553	249	3842552596
BG 2	480	480	180	405	375	501	497	249	3842552614
BG 2	480	640	180	405	375	651	497	249	3842552615
BG 2	480	800	180	405	375	811	497	249	3842552616
BG 2	640	480	180	405	375	501	657	249	3842552617
BG 2	640	640	90	730	375	779	779	249	3842552597
BG 2	640	640	180	405	375	651	657	249	3842552618
BG 2	640	800	180	405	375	811	657	249	3842552619
BG 2	640	1040	180	405	375	1051	657	249	3842552620
BG 2	800	640	180	405	375	651	817	249	3842552622

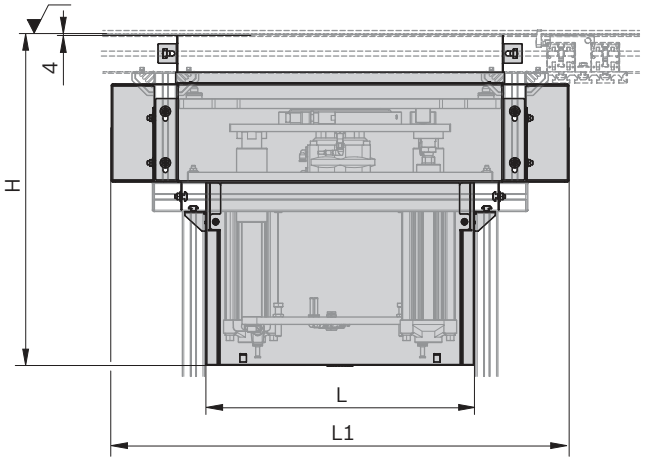
Protective case dimensions for BG 3

BG 3

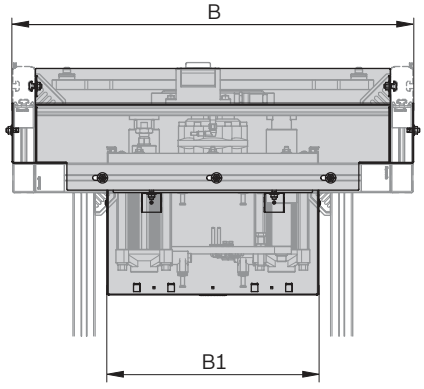
DW = 90°



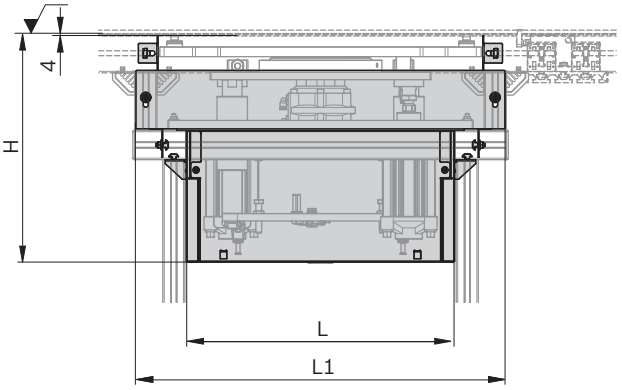
DW = 90°



DW = 180°

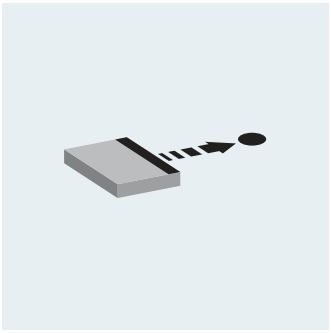


DW = 180°



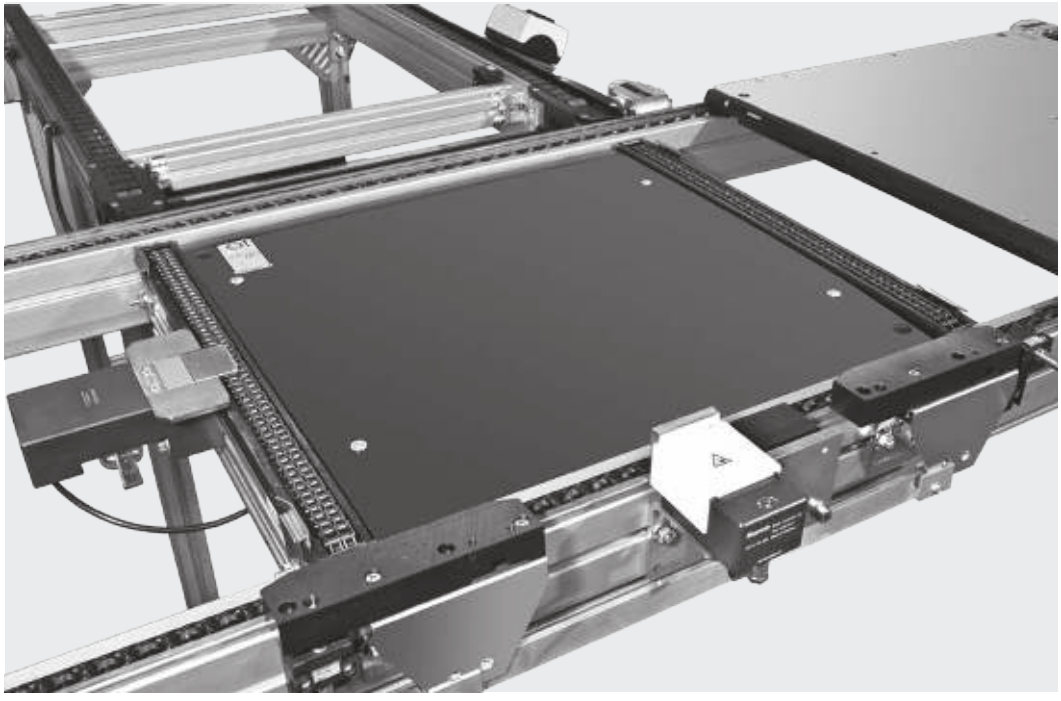
30271

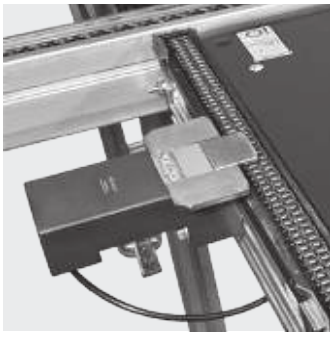
BG	Width b (mm)	Length l_T (mm)	Rotation angle DW (°)	H (mm)	L (mm)	L1 (mm)	B (mm)	B1 (mm)	Material number
BG 3	800	800	90	676	547	932	933	432	3842552598
BG 3	800	800	180	466	547	742	818	432	3842552624
BG 3	800	1040	180	466	547	982	818	432	3842552625
BG 3	1040	800	180	466	547	742	1058	432	3842552626
BG 3	1040	1040	90	676	547	1271	1271	432	3842552599
BG 3	1040	1040	180	466	547	982	1058	432	3842552627
BG 3	1040	1200	180	466	547	1142	1058	432	3842552628
BG 3	1200	1200	90	676	547	1497	1497	432	3842552600
BG 3	1200	1200	180	466	547	1142	1218	432	3842552630



Transportation control

Transportation control selection **8-2**





Transportation control selection

The modular units for transportation control are used to control the flow of the workpiece pallets on the transfer system. The transportation control involves stopping and separating pallets, inquiring the position of workpiece pallets, controlling all function processes, etc.

When workpiece pallets WT 2/E, WT 2 and WT 2/F are used, the stop gates VE 2/... are mounted directly on the section for lateral separation.

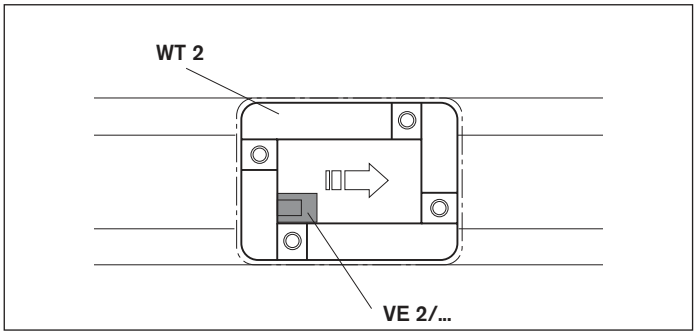
When workpiece pallets WT 2/H and WT 2/F-H are used, the stop gates VE 2/D...-H are mounted by a cross strut for central separation.

All VE 2/... (without VE 2/...-H) can be used for lateral separation.
All (without VE 2/D...-H) can be used for central separation.

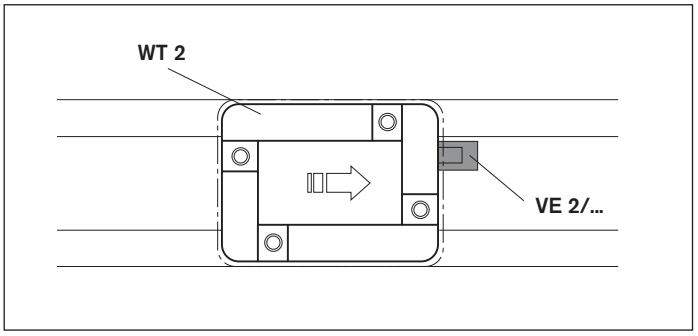
Depending on the application and available space, stop gates may be mounted inside or outside the workpiece pallet.

Workpiece pallet WT 2 with lateral separation

Mounting in rear right position in the direction of transport, on the **inside** of the workpiece pallet surface

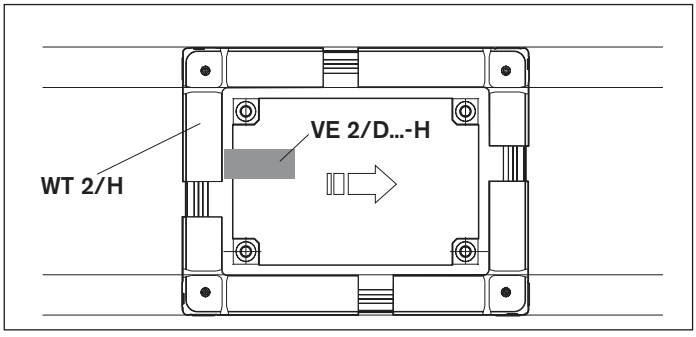


Mounting in front left position in the direction of transport, on the **outside** of the workpiece pallet surface

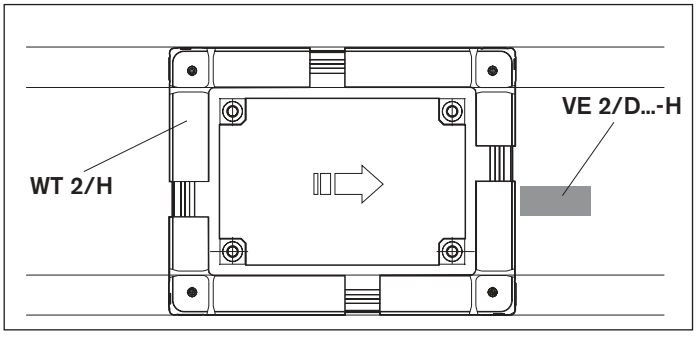


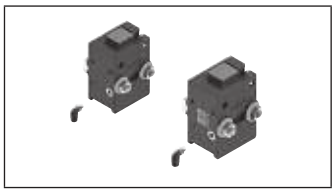
Workpiece pallet WT 2/H with central separation

Mounting inside the workpiece pallet surface



Mounting outside the workpiece pallet surface



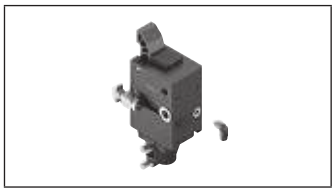


Stop gates VE 2... **8-4**

140 200 450

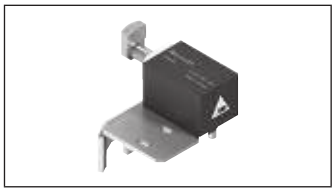
Dampened stop gates VE 2/D... **8-23**
Electrical stop gates VE 2/...-E...
Return stop VE 2/RS...

60 80 100
175 200 250



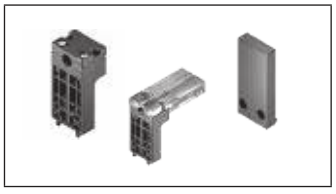
Slide stops VA 2/... **8-53**

50 130 250



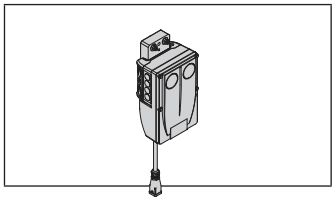
Dampers DA 2/... **8-66**

60 100 150 250

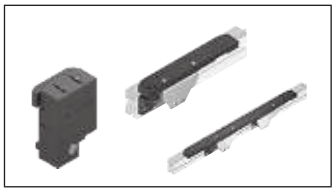


Switch brackets SH 2/... **8-90**

Sensors **8-110**



Frequency converters **8-120**



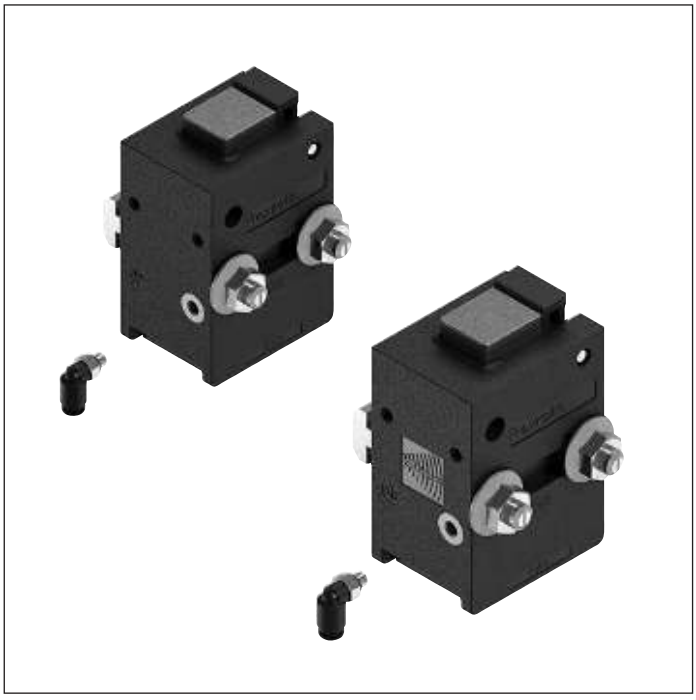
Rockers WI 2/... **8-136**

30 100

Stop gates VE 2/...

The stop gates VE 2/... are used to stop and separate workpiece pallets, e.g. in an automated station. Actuation is performed pneumatically. In an unpressurized state, the stop gate is held in the lock position by a spring and thus contributes significantly to production safety.

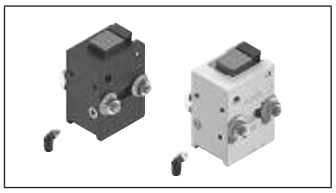
Stop gates are available with and without integrated shock absorbers.



Depending on the application and available space, stop gates may be mounted inside or outside the workpiece pallet. Stop gates have mounting areas for sensors, which are used to monitor whether a workpiece pallet is standing at a stop gate or has passed it.

Dampened stop gates are used on conveyors where shock-sensitive and fragile parts are conveyed at speeds of up to 18 m/min.
All versions are designed as pneumatic stop gate with infinitely adjustable damping. This reduces the force of impact by up to 80% compared to an uncushioned stop gate. Dampened stop gates are not suitable for accumulation separation.

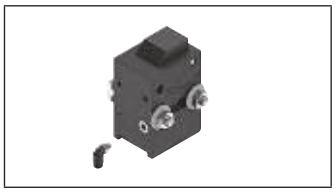
The electric stop gates are used for conveying parts in pneumatic-free systems. The load is exclusively in direction of transport, the latch is set up by a stepping motor.
The noise generation is minimal and the installation effort is very low due to the omission of the pneumatic system.



Stop gate
VE 2, VE 2/L, VE 2/M

200

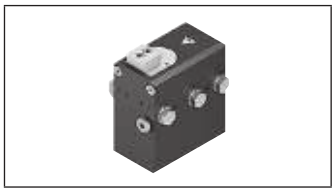
8-6



Stop gate VE 2/S

140

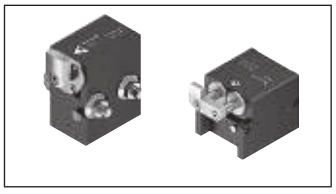
8-15



Stop gate VE 2/X

450

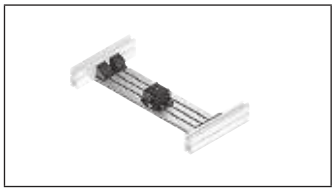
8-20



Stop gate
VE 2/D-60, VE 2/D-80,
VE 2/D-175, VE 2/D-200,
VE 2/D-220

60 80 175 200 220

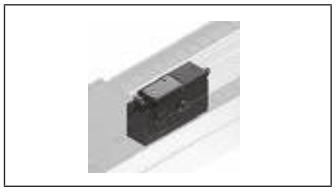
8-23



Stop gate
VE 2/D100-H, VE 2/D250-H

100 250

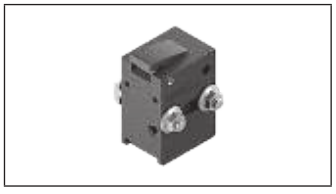
8-38



Stop gate (electric)
VE 2/D100-E, VE 2/D410-EH

100 410

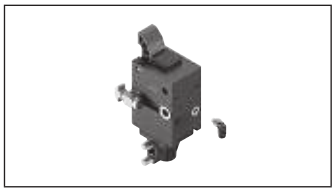
8-44



Return stop
VE 2/RS, VE 2/RS-H

250

8-48



Slide stops
VA 2/50, VA 2/D-130, VA 2/D-250

50 130 250

8-53

Stop gate VE 2

- Pneumatic stop gate
- Tilting stop gate; can be opened without causing abrasion on the surface of the workpiece pallet stop surface
- Reversible operation not permitted
- Can be combined with WT 2/E, WT 2, WT 2/F and WT 2/LS

Stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped. Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Return stop VE 2/RS, see p. 8-48
- Switch bracket SH 2/..., see p. 8-90
- Position sensing stop gate, see p. 8-18

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Pneumatic elements

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2	0842900300

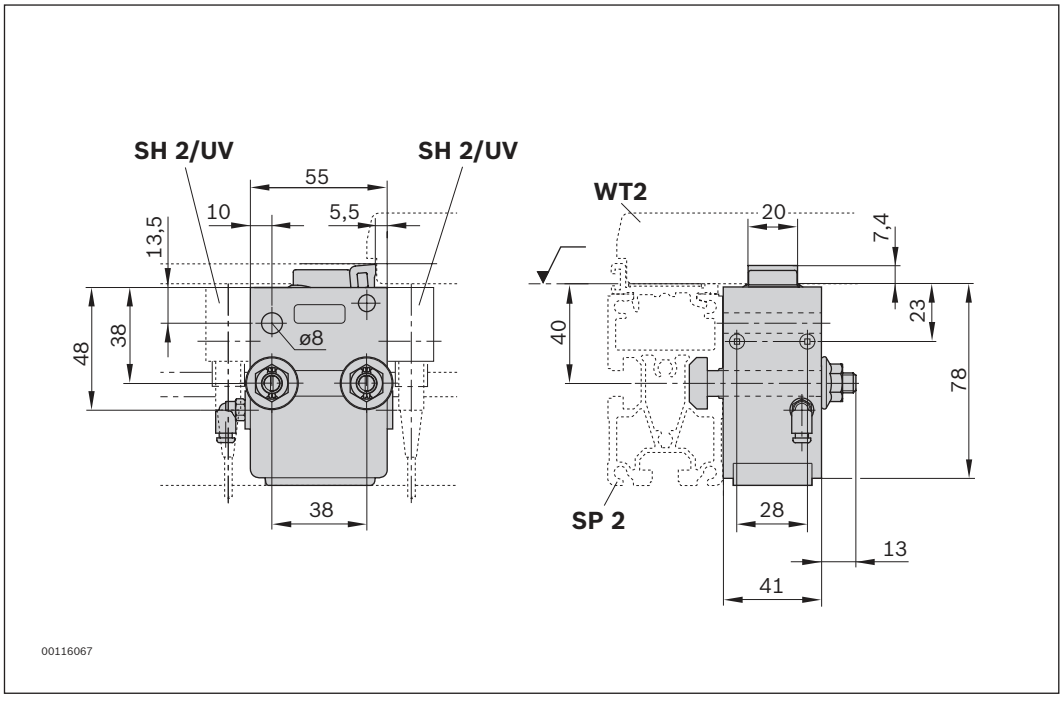
Technical data

Material number			**0842900300**
Max. total workpiece pallet weight	m_G	kg	200
Material specification			Housing: PA6 Safety catch: Brass Stop cam: PA66
Operating temperature[1)]		°C	+5 ... +60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	4

[1)] High-temperature stop gate on request

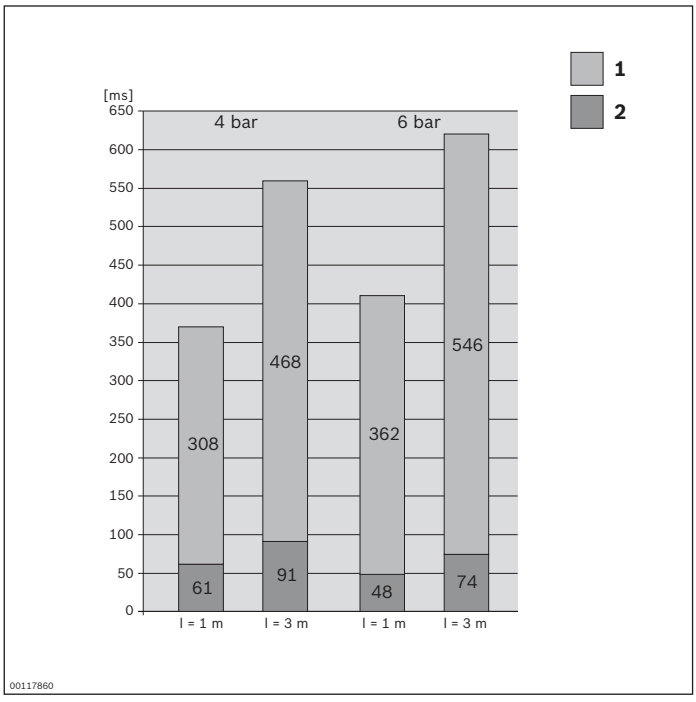
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
200	6
140	9
100	12
70	15
50	18

Dimensions



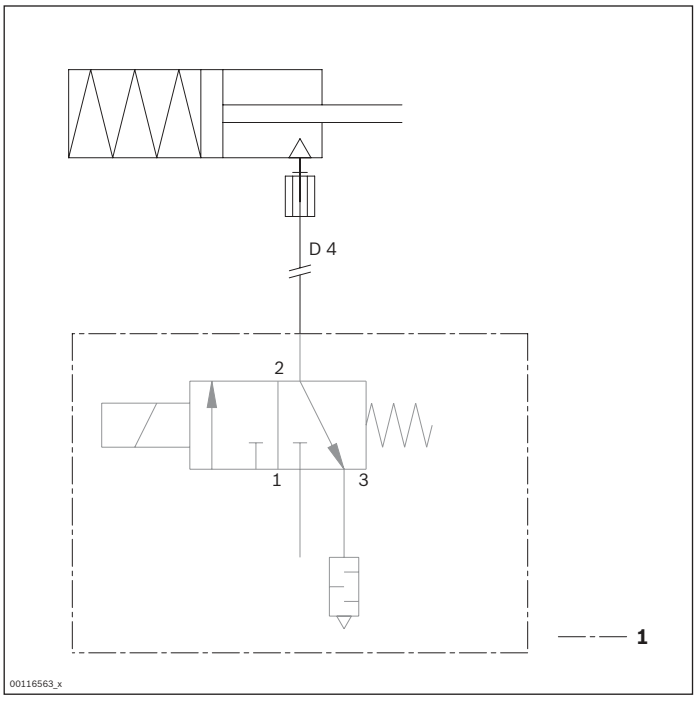
Circuit diagrams

Opening and shutting times



l = Hose length
1 Close
2 Open at 4 bar

Circuit diagram



1 Not included in the scope of delivery

Stop gate VE 2/L

- Pneumatic stop gate
- Low noise; especially quiet operation during opening and closing, therefore especially suitable for manual workstations
- Tilting stop gate; can be opened without causing abrasion on the surface of the workpiece pallet stop surface
- Reversible operation not permitted
- Can be combined with WT 2/E, WT 2, WT 2/F and WT 2/LS

Stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped. Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Return stop VE 2/RS, see p. 8-48
- Switch bracket SH 2/..., see p. 8-90
- Position sensing stop gate, see p. 8-18

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Pneumatic elements

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2/L	3842530630

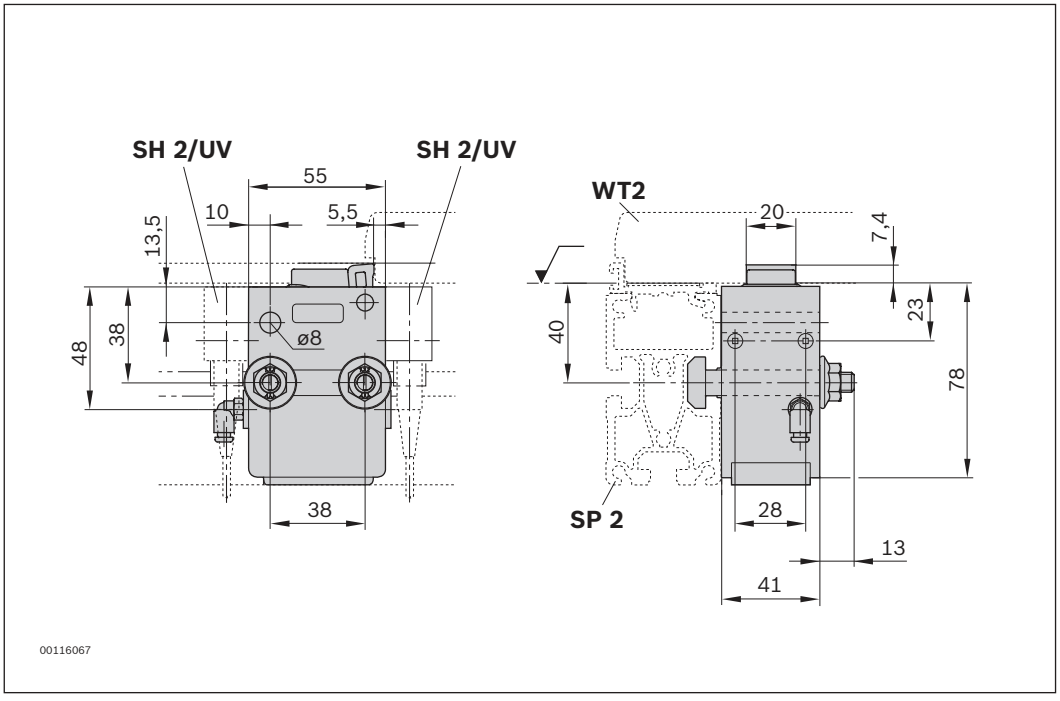
Technical data

Material number			**3842530630**
Max. total workpiece pallet weight	m_G	kg	200
Material specification			Housing: PA6 Safety catch: Brass Stop cam: PA66
A-rated emission sound pressure level	L_{PA}	dB(A)	<60
Operating temperature[1)]		°C	+5 ... +60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	4

[1)] High-temperature stop gate on request

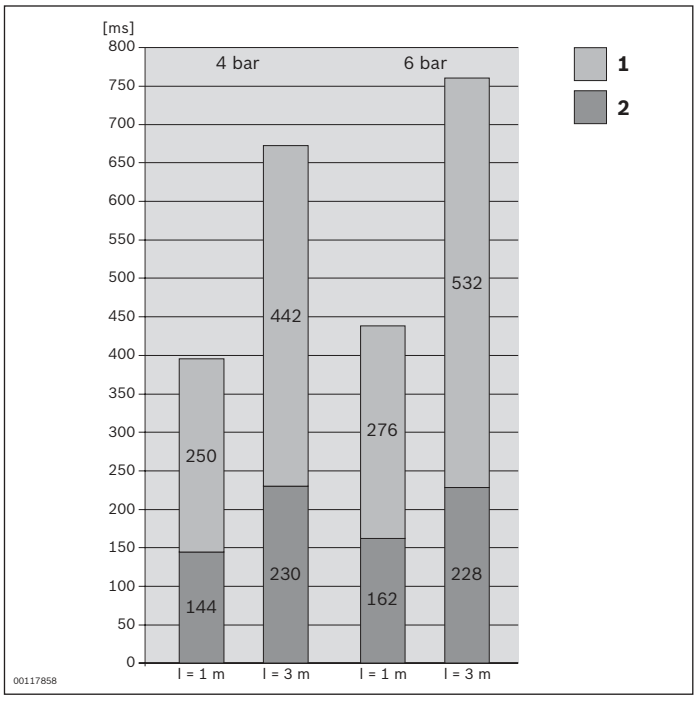
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
200	6
140	9
100	12
70	15
50	18

Dimensions



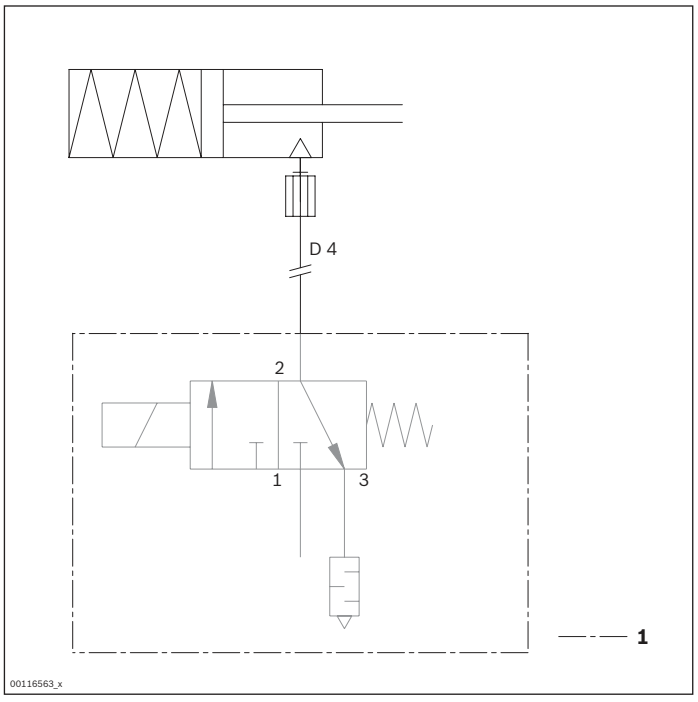
Circuit diagrams

Opening and shutting times



l = Hose length
1 Close
2 Open at 4 bar

Circuit diagram



1 Not included in the scope of delivery

8

Stop gate VE 2/M

- Pneumatic stop gate
- Media resistant
- Tilting stop gate; can be opened without causing abrasion on the surface of the workpiece pallet stop surface
- Low noise; especially quiet operation during opening and closing
- Reversible operation not permitted
- Can be combined with WT 2/E, WT 2, WT 2/F and WT 2/LS

Stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped. Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Return stop VE 2/RS, see p. 8-48
- Switch bracket SH 2/..., see p. 8-90
- Position sensing stop gate, see p. 8-18

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Pneumatic elements

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2/M	3842531610

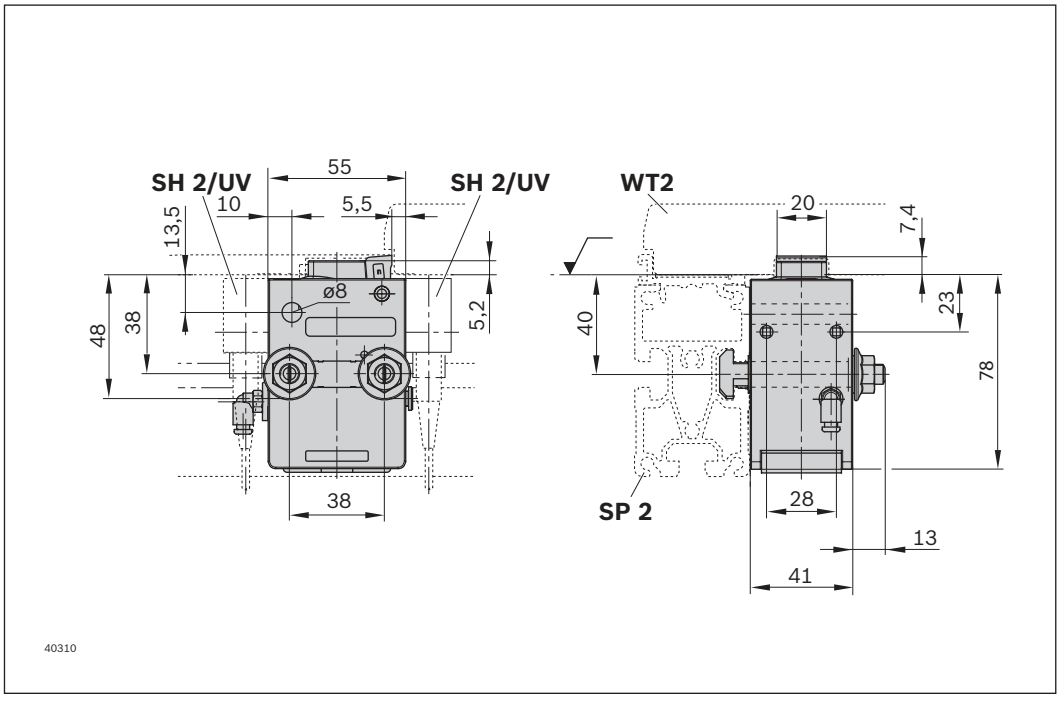
Technical data

Material number			**3842531610**
Max. total workpiece pallet weight	m_G	kg	200
Material specification			Housing: PA6 Safety catch: Brass Stop cam: PA66
A-rated emission sound pressure level	L_{PA}	dB(A)	<60
Operating temperature[1)]		°C	+5 ... +60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	4

[1)] High-temperature stop gate on request

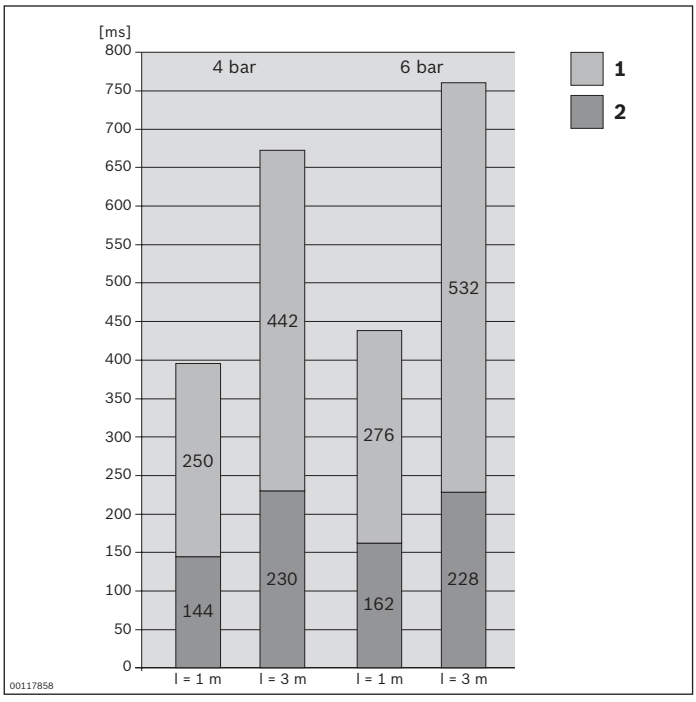
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
200	6
140	9
100	12
70	15
50	18

Dimensions



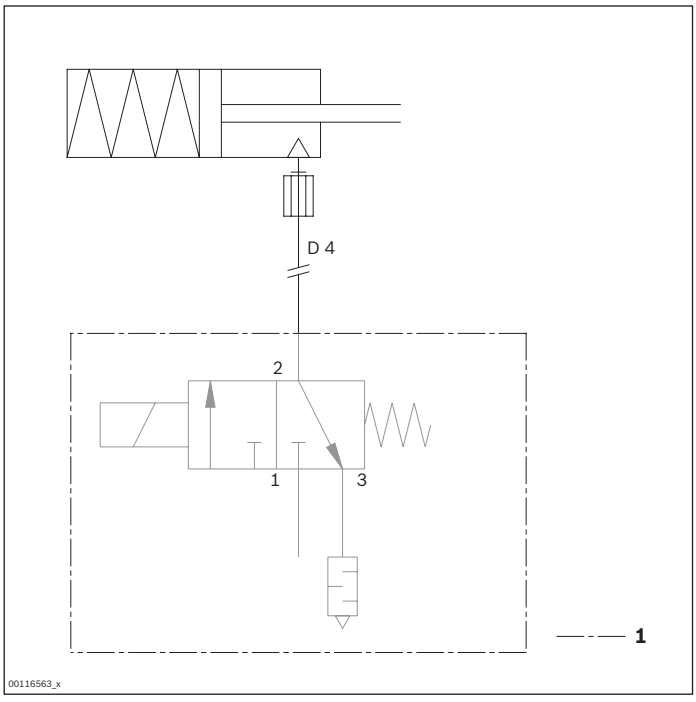
Circuit diagrams

Opening and shutting times



l = Hose length
1 Close
2 Open at 4 bar

Circuit diagram



1 Not included in the scope of delivery

Stop gate VE 2/S

- Pneumatic stop gate
- Used on sections with possible reversible operation
- Pressure must not be exerted on VE 2/S by pallets traveling in reverse
- Can be combined with WT 2/E, WT 2, WT 2/F and WT 2/LS

Notice: Safe transition from both directions is possible by actively (pneumatically) opening the safety catch.

Stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. The VE 2/S can only stop workpiece pallets coming from one direction. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped. Two VE 2/S are needed to stop workpiece pallets coming from both directions of transport, since pressure must not be exerted on the stop gate by pallets traveling in reverse.Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Return stop VE 2/RS, see p. 8-48
- Switch bracket SH 2/..., see p. 8-90
- Position sensing stop gate, see p. 8-18

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Pneumatic elements

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2/S	3842515844

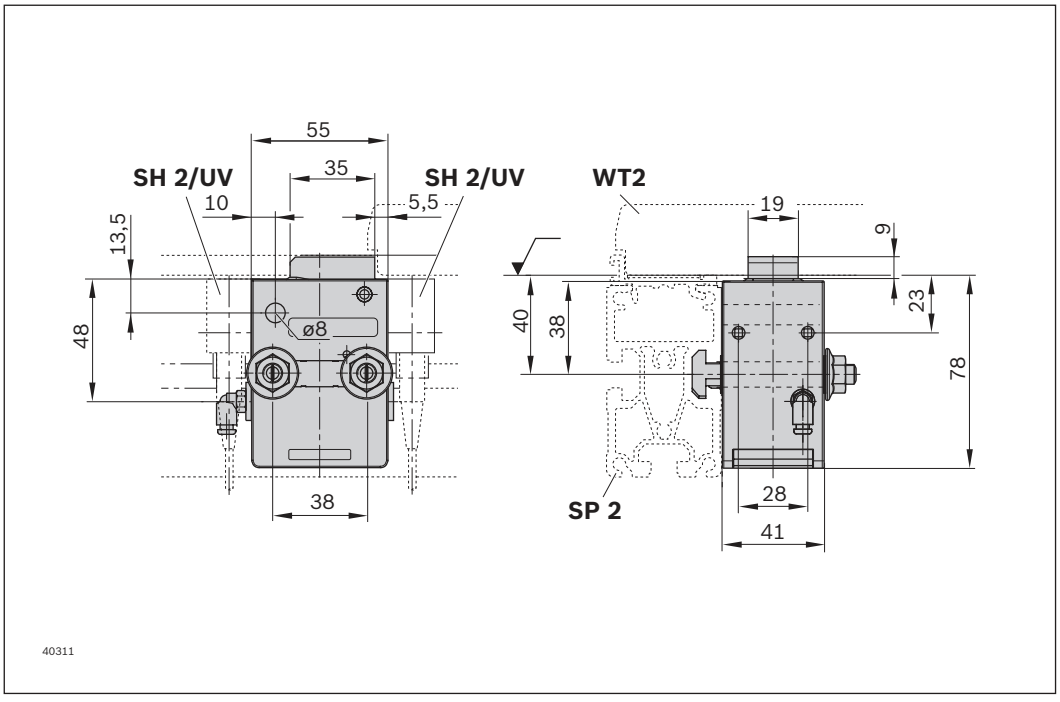
Technical data

Material number			**3842515844**
Max. total workpiece pallet weight	m_G	kg	140
Material specification			Housing: PA6 Stop cam: PA66
Operating temperature[1)]		°C	+5 ... +60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	4

[1)] High-temperature stop gate on request

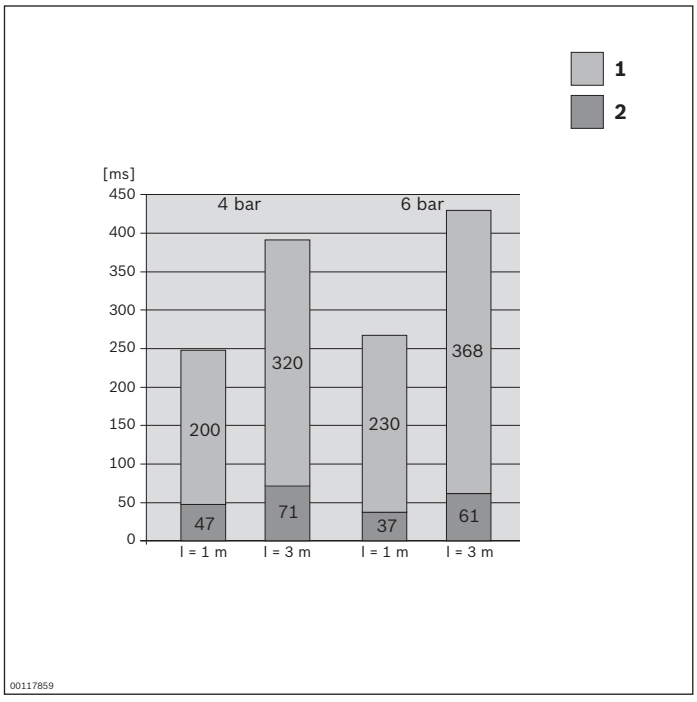
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
140	6
90	9
70	12
50	15
30	18

Dimensions



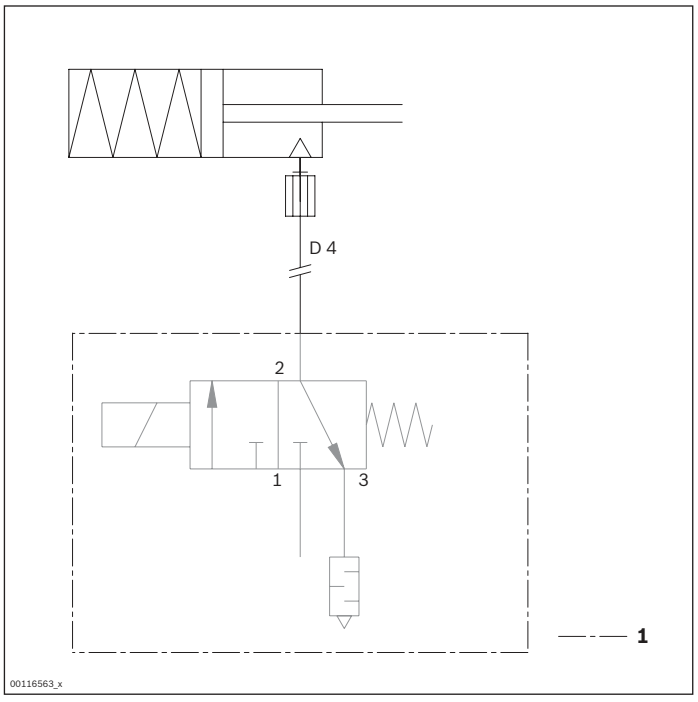
Circuit diagrams

Opening and shutting times



l = Hose length
1 Close
2 Open at 4 bar

Circuit diagram



1 Not included in the scope of delivery

8

Stop gate position sensing

- Position sensing for querying the upper and lower positions
- Position sensing stop gate for retrofitting on the stop gates VE 2, VE 2/M and VE 2/L
- Position sensing VE 2/S for retrofitting on the stop gate VE 2/S
- Compressed air connection for double-action stop gate operation

The stop gate position sensor is used to detect the position of the stop gate using sensors. In the pressureless state, the stop gate goes through a spring in lock position, but is also optionally pneumatically controllable via the position sensing.

Required accessories

- Stop gates VE 2, VE 2/M, VE 2/L, or VE 2/S
- 2x sensor M8x1 with rated switching distance $S_N \geq 2$ mm, can be installed flush, see p. 8-116

Scope of delivery

- Incl. fastening material

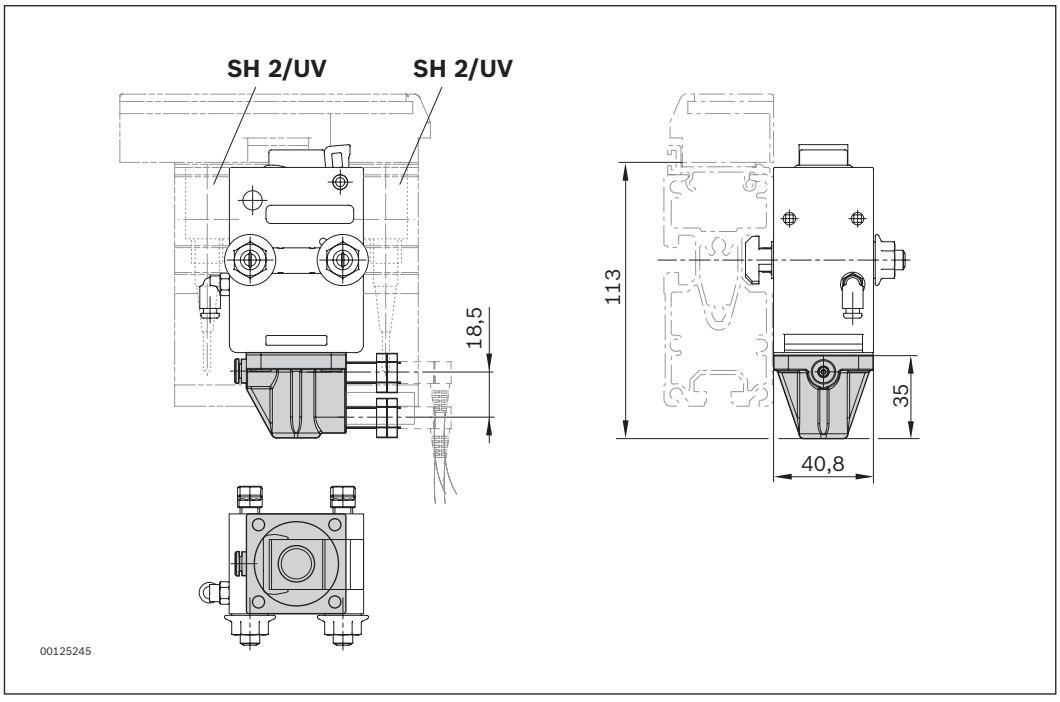
Ordering information

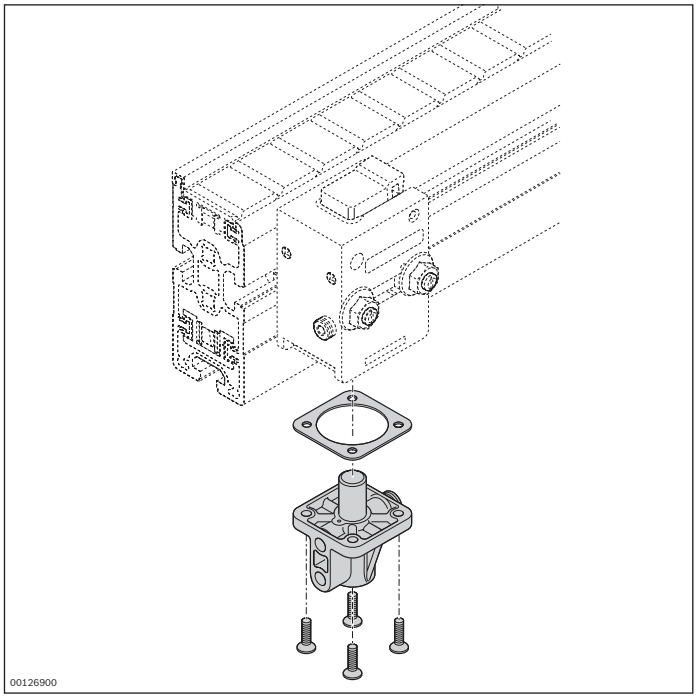
Product description	Material number
Position sensing VE 2, VE 2/M, VE 2/L	3842528817
Position sensing VE 2/S	3842559859

Technical data

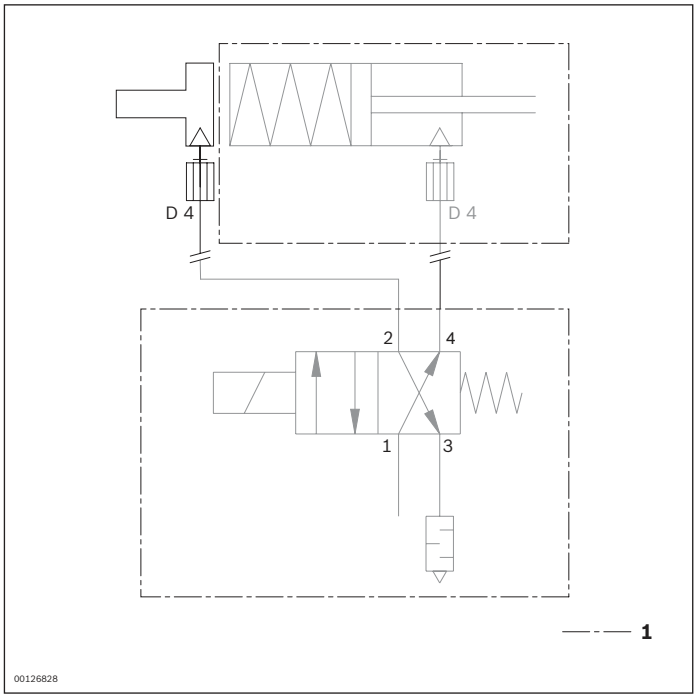
Material number			**3842528817**
Material specification			PA; black Housing: PA6
Compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	4

Dimensions





Circuit diagram



1 Not included in the scope of delivery

Stop gate VE 2/X

- Pneumatic stop gate
- For high permitted total weight of the workpiece pallet up to 450 kg
- Can be combined with WT 2 and WT 2/F

Notice: Combination with WT 2/LS not possible.

Stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped. Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Return stop VE 2/RS, see p. 8-48
- Switch bracket SH 2/..., see p. 8-90

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2/X	3842547770

Technical data

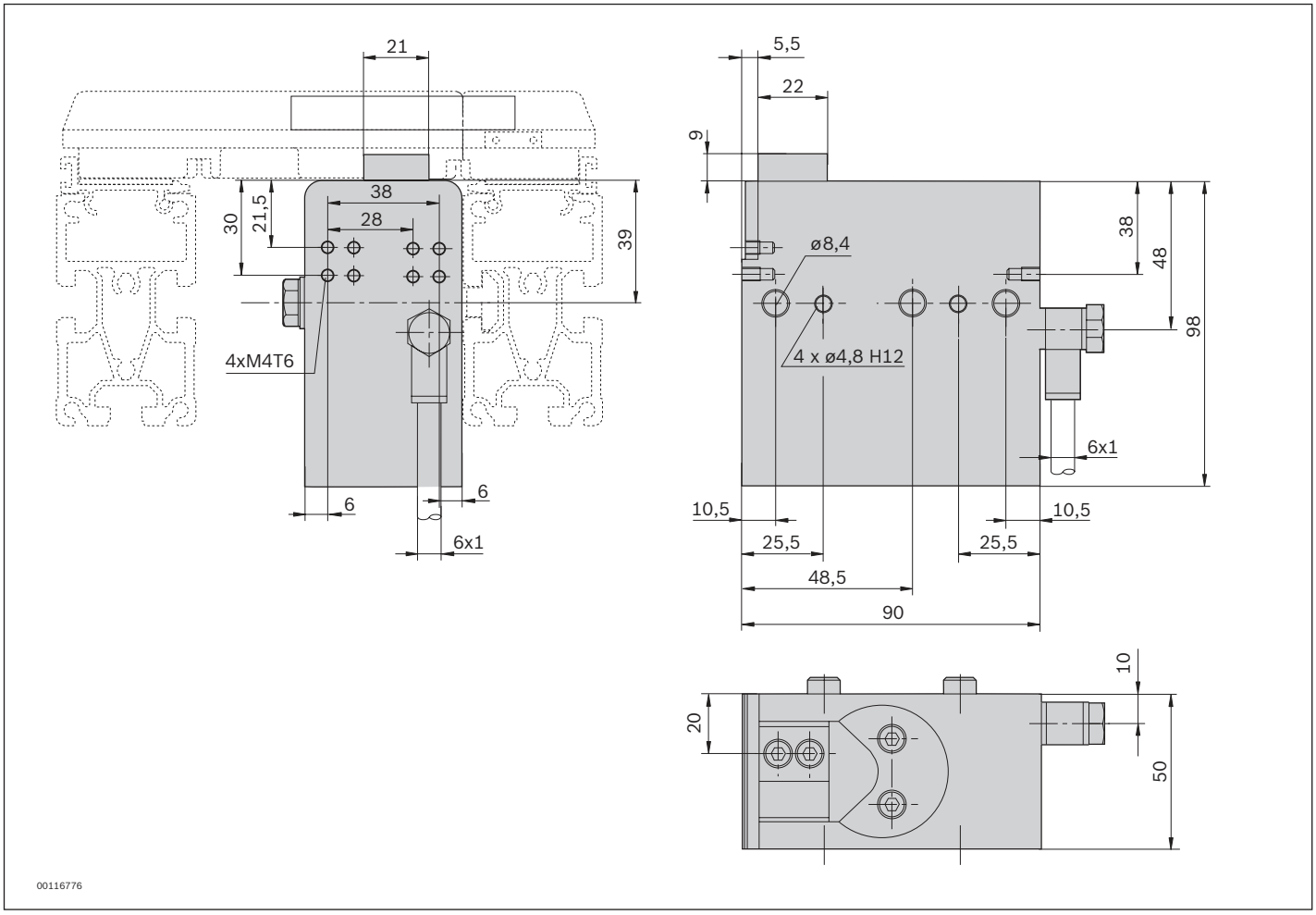
Material number			**3842547770**
Max. total workpiece pallet weight	m_G	kg	450
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop cam: Steel; hardened
Operating temperature[1)]		°C	+5 ... +60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	6

[1)] High-temperature stop gate on request

Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
450	6
300	9
220	12
140	15
100	18

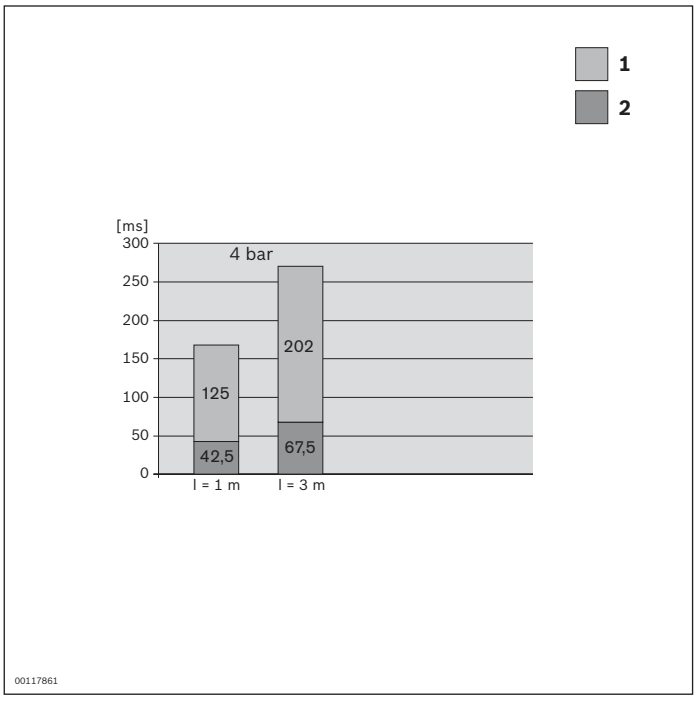
8

Dimensions



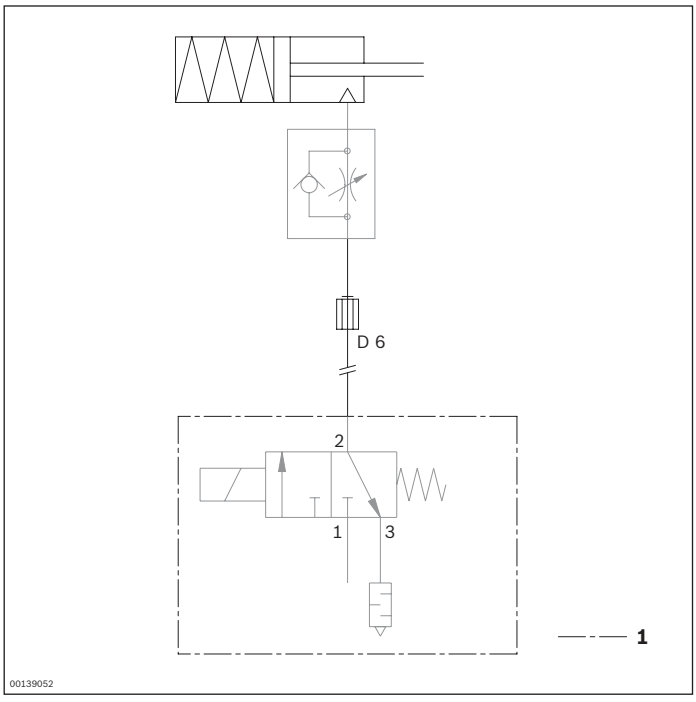
Circuit diagrams

Opening and shutting times



l = Hose length
1 Close
2 Open at 4 bar

Circuit diagram



1 Not included in the scope of delivery

Stop gates VE 2/D-60, VE 2/D60-LS

- Pneumatic stop gate
- Optimal damping for workpiece pallet total weights up to 60 kg
- Continuously adjustable damping
- Can be combined with WT 2/E, WT 2, WT 2/F and WT 2/LS (only with version LS)
- Suitable for use in an EPA

Dampened stopping of the first accumulating workpiece pallet. The stop gate stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped. Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Return stop VE 2/RS, see p. 8-48

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Pneumatic elements

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2/D-60	3842547785
Stop gate VE 2/D60-LS	3842563510

Technical data

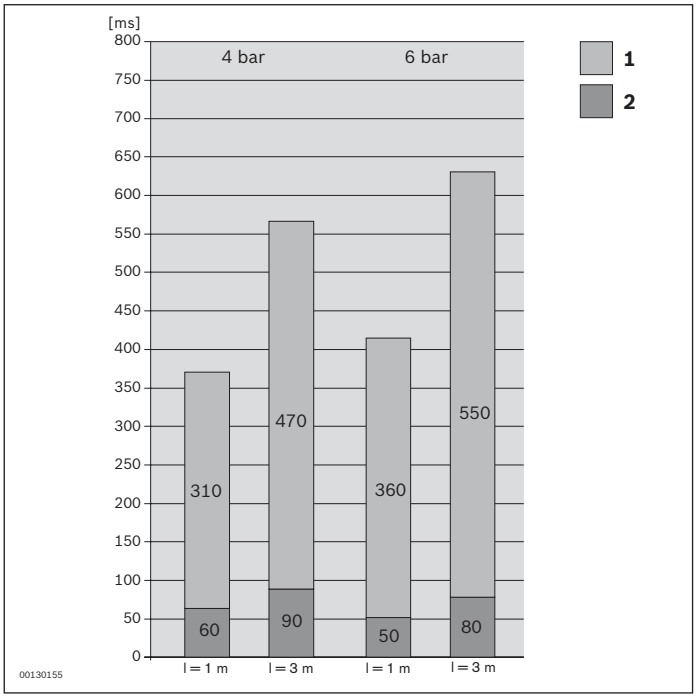
Material number			**3842547785 VE 2/D-60**	**3842563510 VE 2/D60-LS**
Max. total workpiece pallet weight	m_G	kg	60	60
Min. workpiece pallet weight	m	kg	1	1
ESD			Yes	Yes
Material specification			Housing: Aluminum, hard anodized Stop cam: Steel; hardened	Housing: Aluminum, hard anodized Stop cam: non-magnetic stainless steel; hardened
Operating temperature[1)]		°C	+5 ... +60	+5 ... +60
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	4	4

[1)] High-temperature stop gate on request

	Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
	60	6
	40	9
	35	12
	30	15
	30	18
	24	24

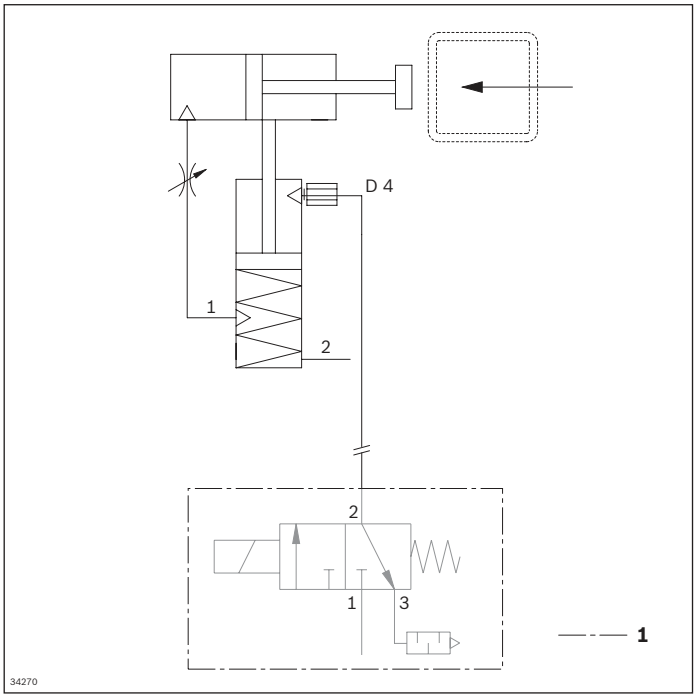
Circuit diagrams

Opening and shutting times



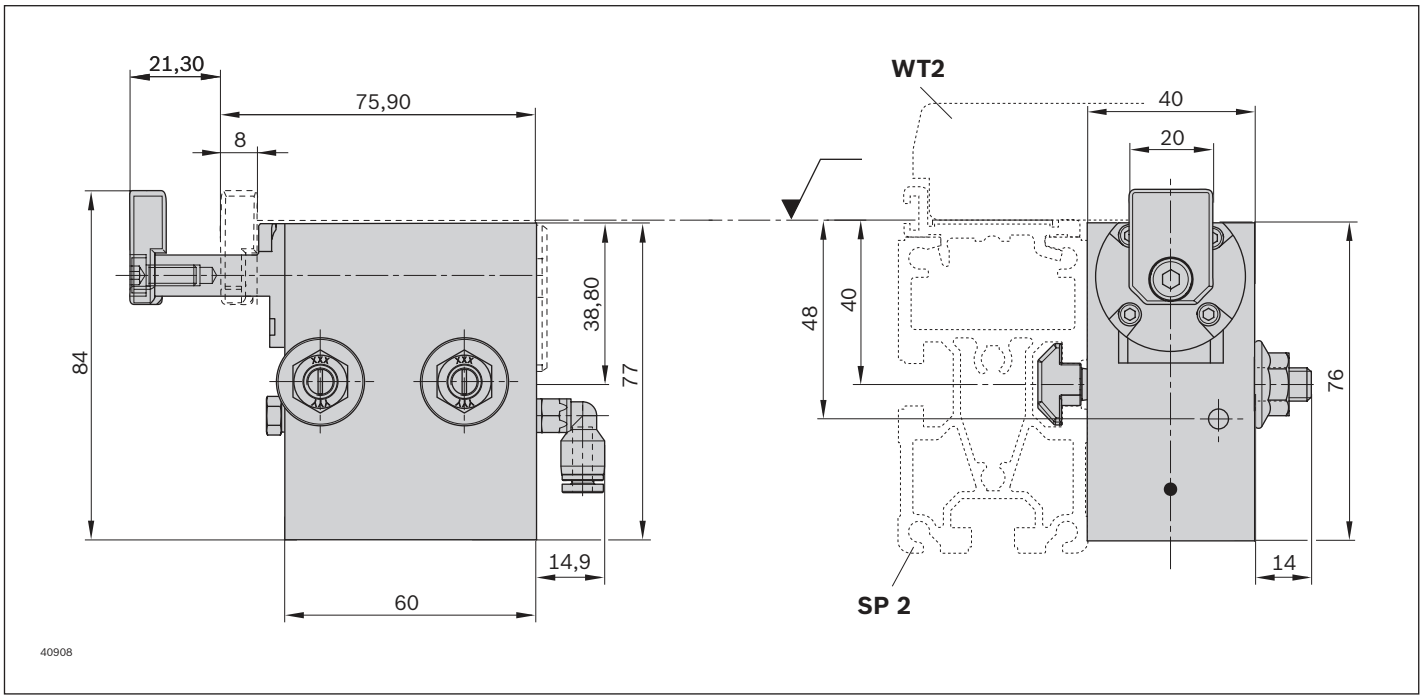
l = Hose length
1 Close
2 Open at 4 bar

Circuit diagram



1 Not included in the scope of delivery

Dimensions



Stop gate VE 2/D-80

- Pneumatic stop gate
- Optimal damping for workpiece pallet total weights up to 80 kg
- Continuously adjustable damping
- Can be combined with WT 2/E, WT 2 and WT 2/F

Dampened stopping of the first accumulating workpiece pallet. The stop gate stops one or more accumulating workpiece pallets at the defined stop surface.
When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped.

Mounted inside the tracks, directly on the conveyor section. In case of installation of the stop gate VE 2/D-80 inside the HP 2/L positioning plate, the mounting option is to be checked by means of CAD (MT*pro*).

Recommended accessories

- Return stop VE 2/RS, see p. 8-48
- Switch bracket SH 2/UV, see p. 8-100

Optional accessories

- Position sensing VE 2/D-80, see p. 8-29

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Pneumatic elements

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2/D-80	3842564181
Switch bracket SH 2/UV	3842168600

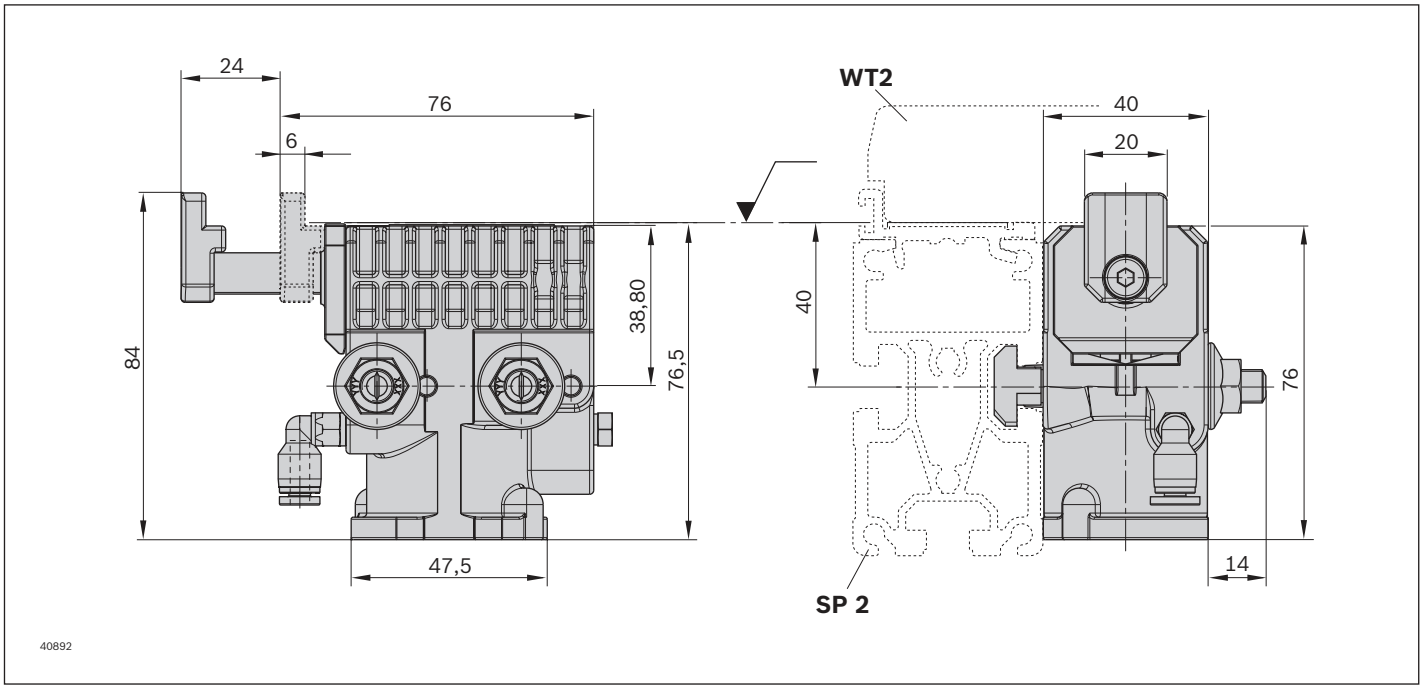
Technical data

Material number			**3842564181**
Max. total workpiece pallet weight	m_G	kg	80
Min. workpiece pallet weight	m	kg	1
Material specification			Housing: Plastic Stop cam: Steel; hardened
Operating temperature[1)]		°C	+5 ... +60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	4

[1)] High-temperature stop gate on request

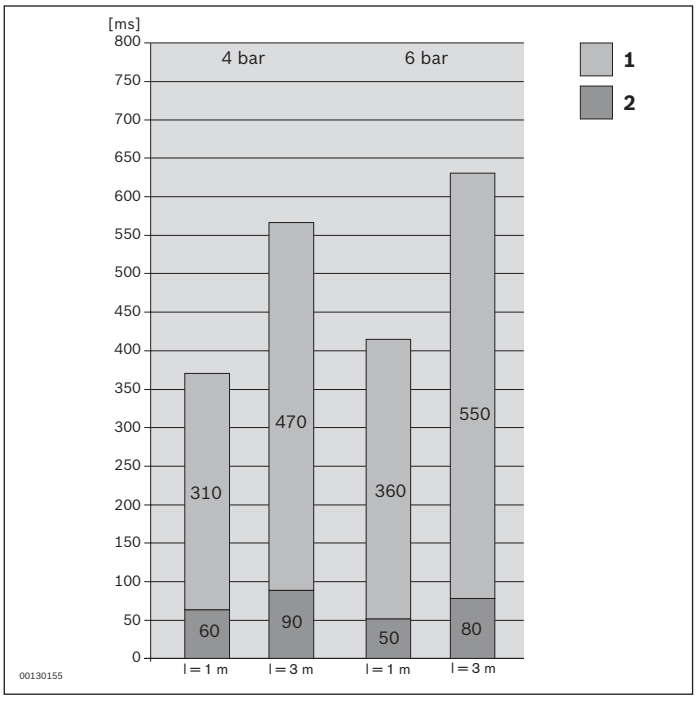
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
80	6
60	9
40	12
26	15
18	18

Dimensions



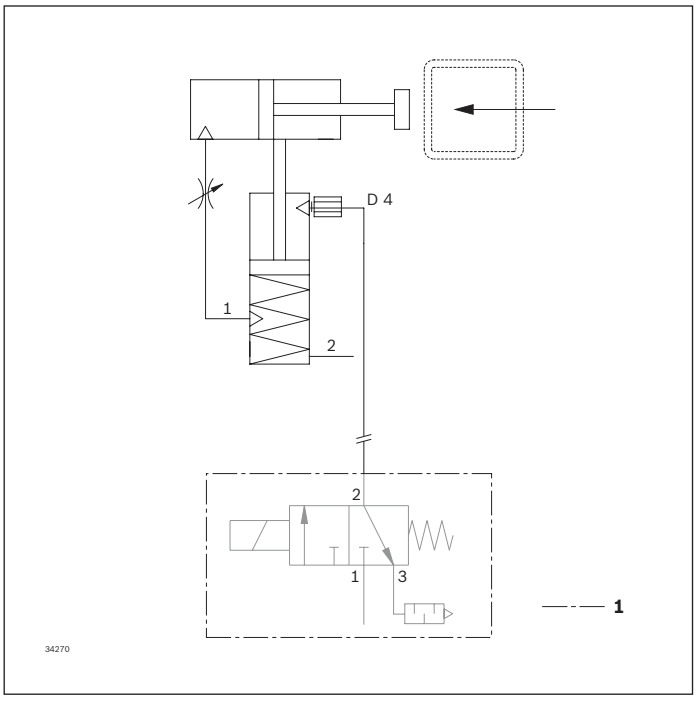
Circuit diagrams

Opening and shutting times



l = Hose length
1 Close
2 Open at 4 bar

Circuit diagram



1 Not included in the scope of delivery

Position sensing VE 2/D-80

The stop gate position sensor is used to detect the position of the stop gate using sensors and/or for active pneumatic closing of the stop gate.

Required accessories

- Sensor M8x1 with rated switching distance S_N = 2 mm for position sensing VE, see p. 8-116
- Stop gate VE 2/D-80, see p. 8-26

Scope of delivery

- Incl. fastening material

- For retrofitting on the stop gate VE2/D-80
- Inquiry suitable for top or bottom position of the stop gate

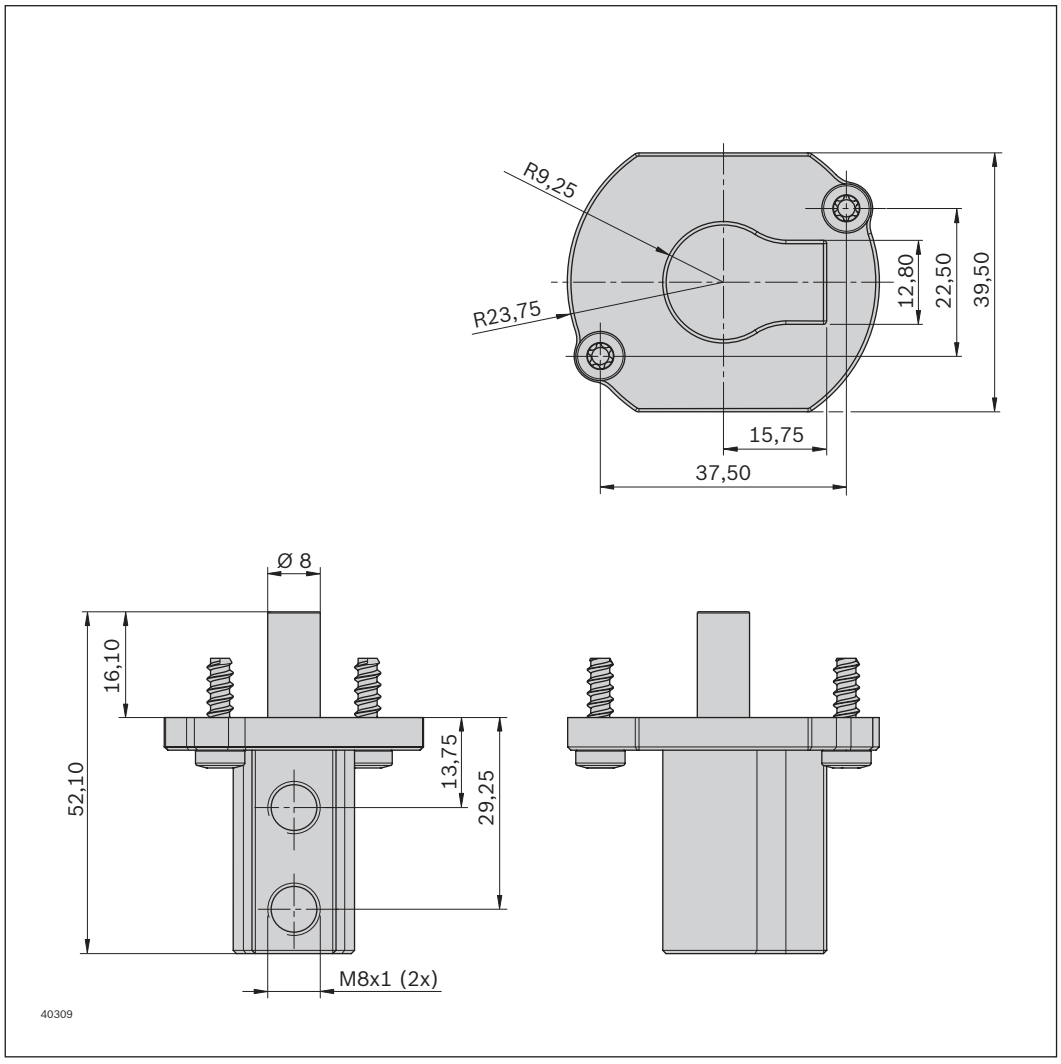
Notice: Position sensing not possible if:
- HP 2: $l_T \leq 320$ mm
- HP 2/L: $l_T \leq 320$ mm
- HD 2/H: Unit mounting not possible

8

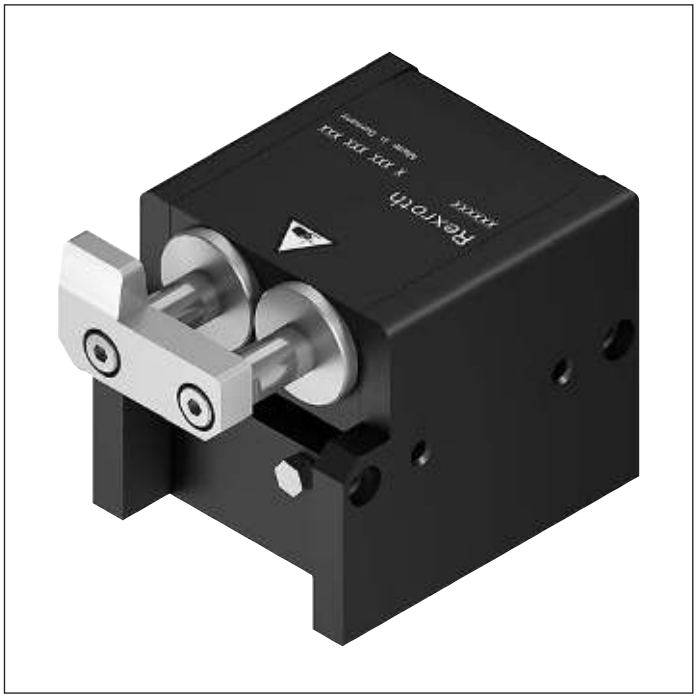
Ordering information

Product description	Material number
Position sensing VE 2/D-80	3842564903

Dimensions


R9,25
R23,75
12,80
22,50
39,50
15,75
37,50
Ø 8
16,10
52,10
13,75
29,25
M8x1 (2x)
40309

Stop gates VE 2/D-175, VE 2/D175-LS



- Pneumatic stop gate
- Especially sturdy all-metal design with double piston damper
- Continuously adjustable damping
- Optimal damping for total WT weights up to 175 kg
- Short damping path of 20 mm
- Short damping time
- Short installation dimension
- Can be combined with WT 2, WT 2/F and WT 2/LS (only with version LS)
- Suitable for use in an EPA

Dampened stopping of the first accumulating workpiece pallet. The stop gate stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped. Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Return stop VE 2/RS, see p. 8-48

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2/D-175	3842558795
Stop gate VE 2/D175-LS	3842563511

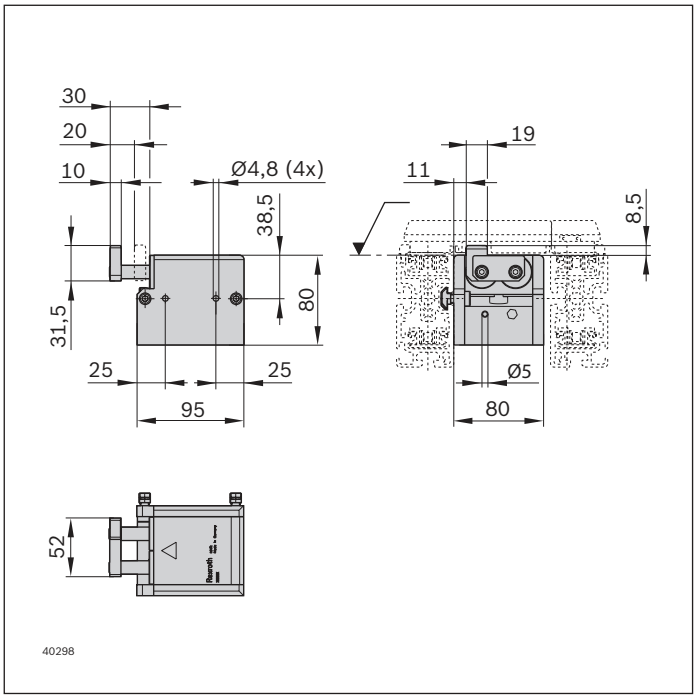
Technical data

Material number			**3842558795** **VE 2/D-175**	**3842563511** **VE 2/D175-LS**
Max. total workpiece pallet weight	m_G	kg	175	175
Min. workpiece pallet weight	m	kg	5	5
ESD			Yes	Yes
Material specification			Housing: Aluminum, hard anodized Stop cam: Steel; hardened	Housing: Aluminum, hard anodized Stop cam: Non-magnetic stainless steel; hardened
Operating temperature[1)]		°C	+5 ... +60	+5 ... +60
Required compressed air connection	p	bar	4 ... 6	4 ... 6
Push in air connection	Ø	mm	6	6

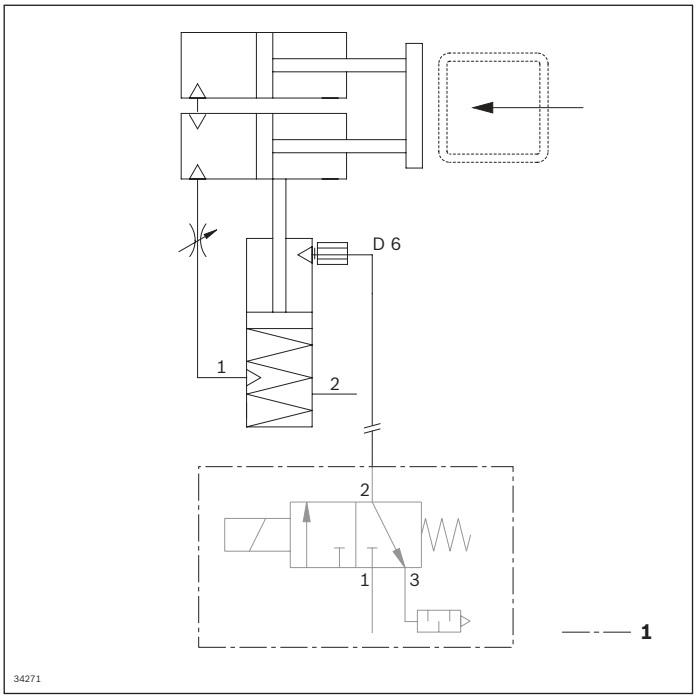
[1)] High-temperature stop gate on request

Permitted total weight of workpiece pallet **m_G** **(kg)**	**Nominal speed** **v_N** **(m/min)**
175	6
160	9
145	12
110	15
90	18
50	24
35	30

Dimensions



Circuit diagram



1 Not included in the scope of delivery

Stop gate VE 2/D-200

- Pneumatic stop gate
- Continuously adjustable damping
- Optimal damping for workpiece pallet total weights between 50 kg and 200 kg
- Can be combined with WT 2 and WT 2/F

Notice: Combination with WT 2/LS not possible.

Dampened stopping of the first accumulating workpiece pallet.Stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped. Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Return stop VE 2/RS, see p. 8-48

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2/D-200	3842524895

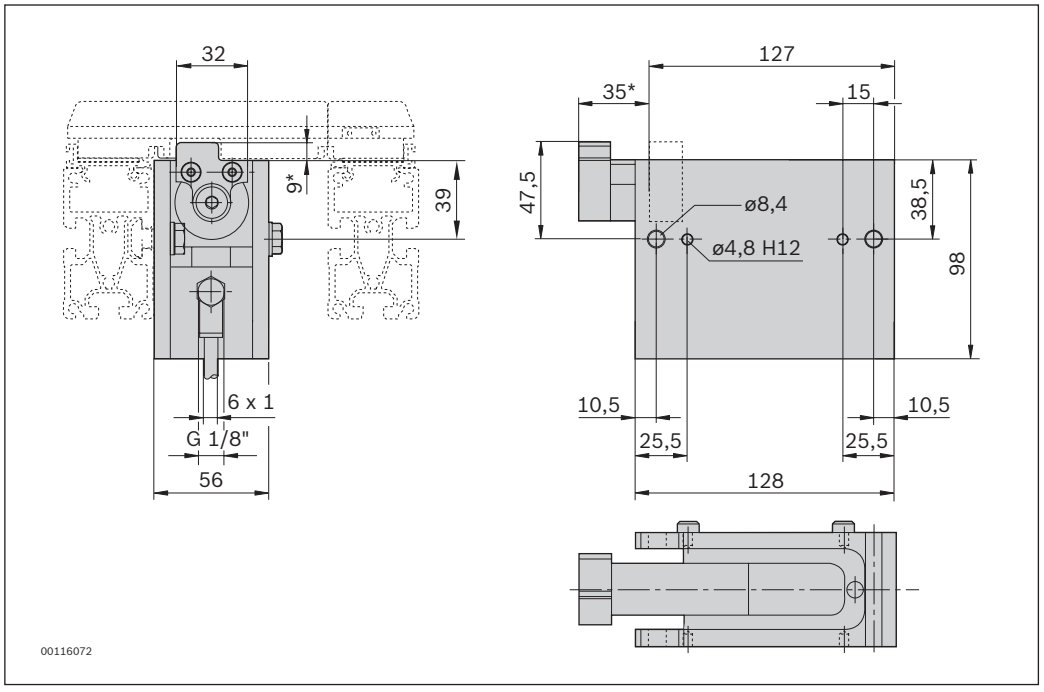
Technical data

Material number			**3842524895**
Max. total workpiece pallet weight	m_G	kg	200
Min. workpiece pallet weight	m	kg	5
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop cam: Steel; hardened
Operating temperature[1)]		°C	+5 ... +60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	6

[1)] High-temperature stop gate on request

Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
200	6
140	9
100	12
100	15
100	18
55	24
35	30

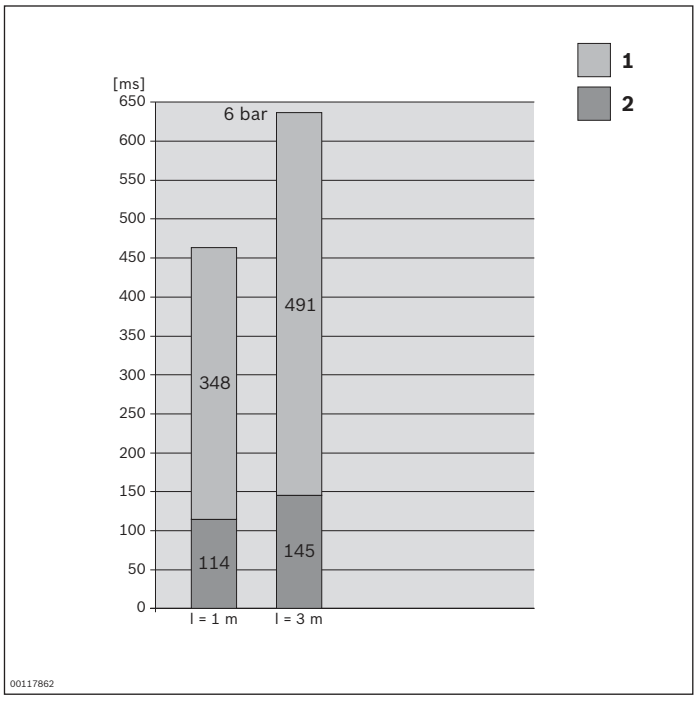
Dimensions



* Stroke

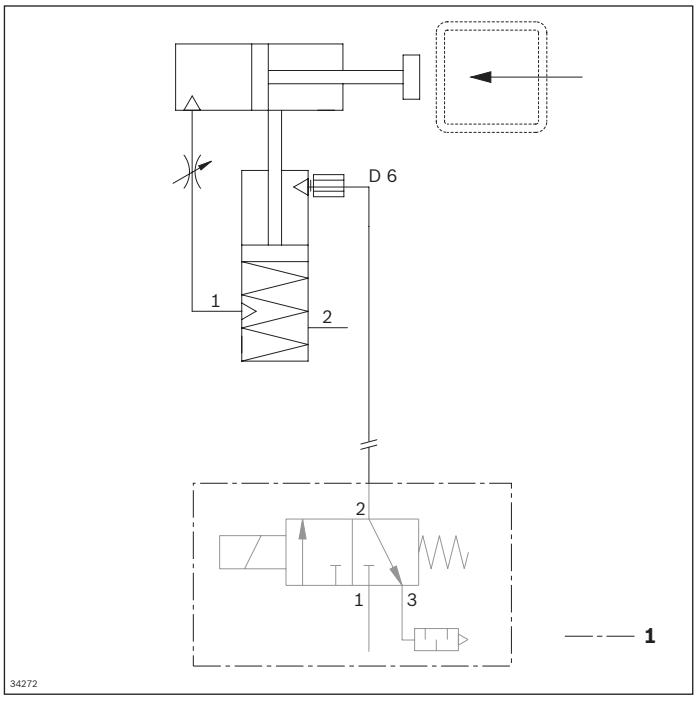
Circuit diagrams

Opening and shutting times



l = Hose length
1 Close
2 Open at 4 bar

Circuit diagram



1 Not included in the scope of delivery

8

Stop gate VE 2/D-220

- Pneumatic stop gate
- Economical plastic version with double piston damper
- Continuously adjustable damping
- Optimal damping for total WT weights up to 220 kg
- Damping path 27.5 mm
- Linear lowering stroke
- Short installation dimension
- Can be combined with WT 2 and WT 2/F
- Prepared for scanning the upper and lower positions with inductive proximity switches

Dampened stopping of the first accumulating workpiece pallet. The stop gate stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped.
Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Return stop VE 2/RS, see p. 8-48

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Pneumatic elements

Condition on delivery

- Assembled

Ordering information

Product description	Material number
Stop gate VE 2/D-220	3842567562

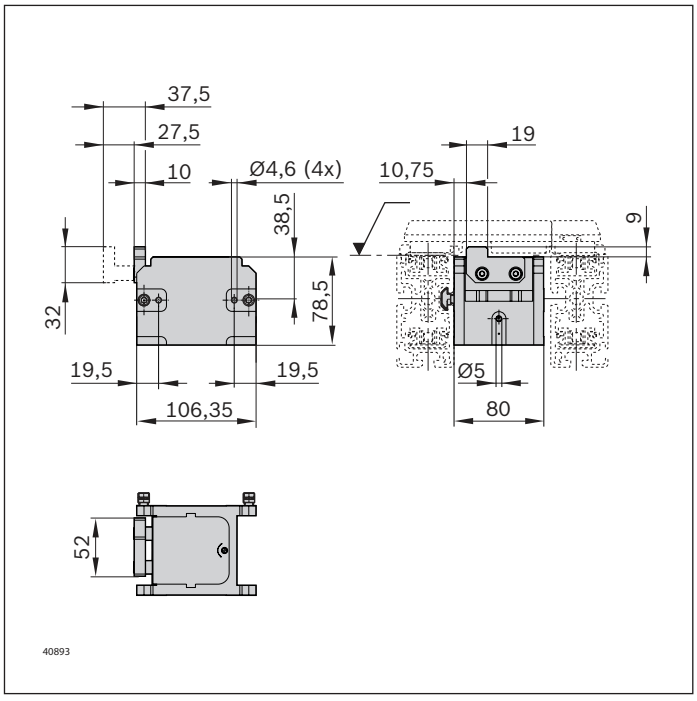
Technical data

Material number			**3842567562** **VE 2/D-220**
Max. total workpiece pallet weight	m_G	kg	220
Min. workpiece pallet weight	m	kg	5
Material specification			Housing: Plastic Stop cam: Steel; hardened
Operating temperature		°C	+5 ... +60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	6

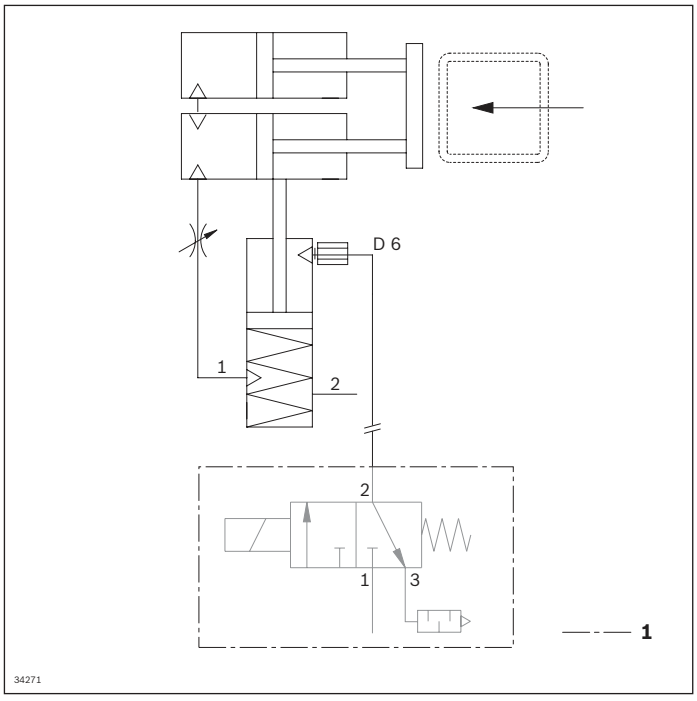
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
220	6
180	9
165	12
135	15
115	18

8

Dimensions



Circuit diagram



1 Not included in the scope of delivery

Stop gate VE 2/D100-H

- Pneumatic stop gate
- For central separation of the workpiece pallets WT 2/H and WT 2/F-H
- Suitable for accumulation loads up to 1000 kg
- Continuously adjustable damping
- Optimal damping for workpiece pallet total weights up to 100 kg
- Can be combined with WT 2/H and WT 2/F-H

Notice: Combination with WT 2/LS not possible.

Dampened stopping of the first accumulating workpiece pallet. The stop gate stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. For central separation, the stop gate is mounted inside the tracks on the conveyor section using the supplied cross connectors. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped.

Recommended accessories

- Return stop VE 2/RS-H, see p. 8-50

Scope of delivery

- Incl. all fastening material to mount on the conveyor sections ST 2/...

Condition on delivery

- Not assembled

Ordering information

Material number		3842998747
b (mm)	Track width	400; 480; 640; 800; 1040; 1200
b (mm)	Track width	400 ... 1200[1)]

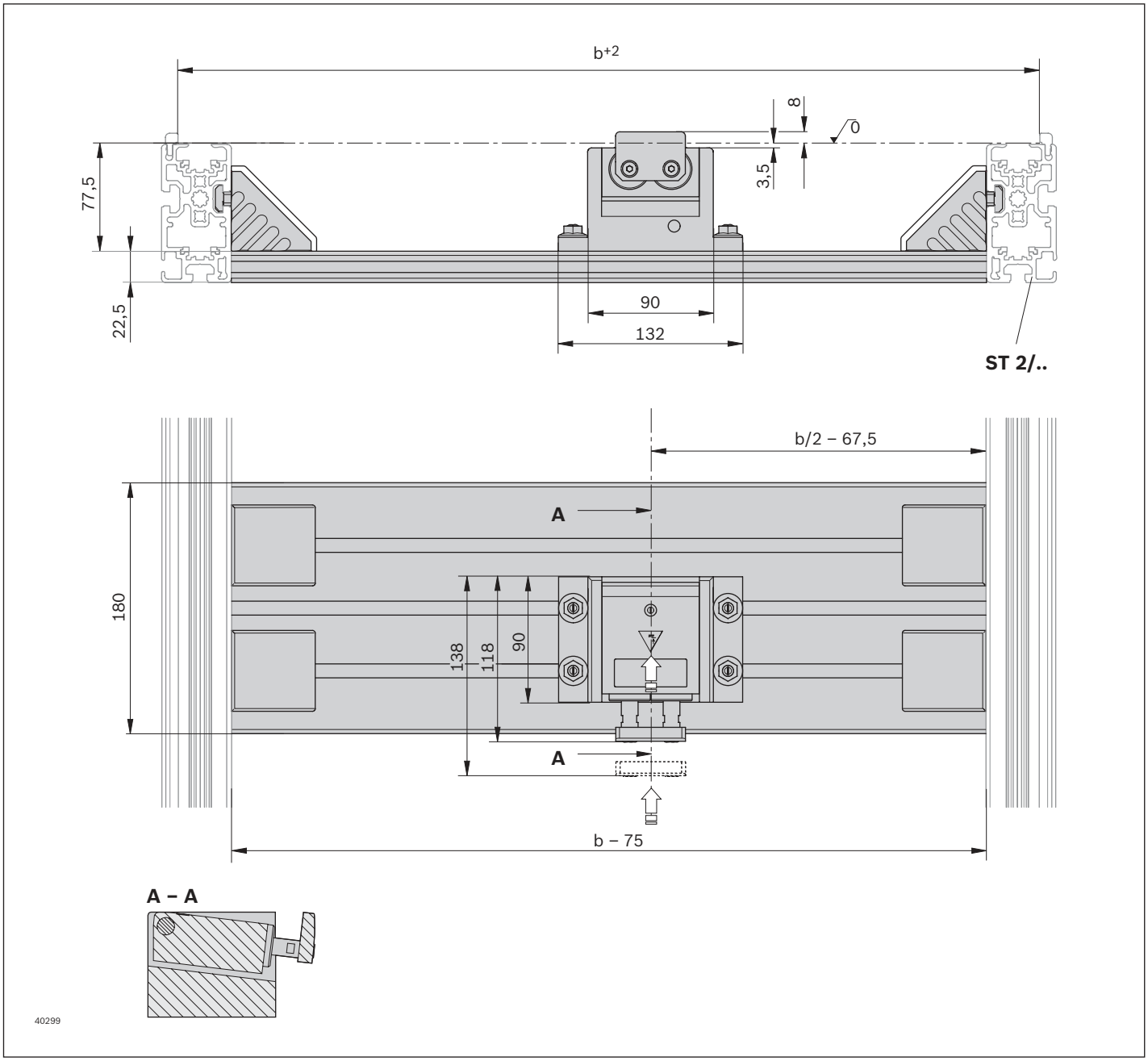
[1)] Individual width variants possible

Technical data

Material number			**3842998747**
Max. total workpiece pallet weight	m_G	kg	100
Min. workpiece pallet weight	m	kg	5
ESD			Yes
Material specification			Housing: Steel Stop cam: Steel Cross strut: Aluminum
Operating temperature[1)]		°C	+5 ... +60

[1)] High-temperature stop gate on request

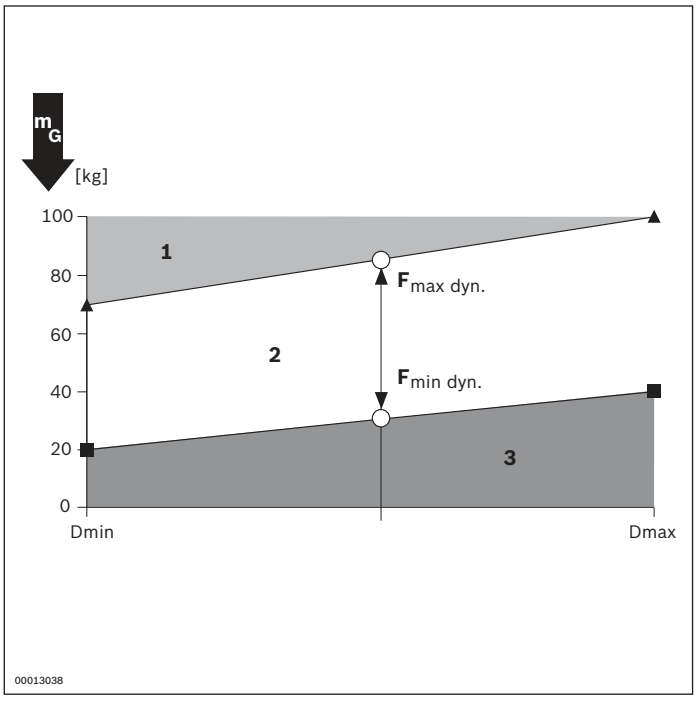
Dimensions



0 Transport level

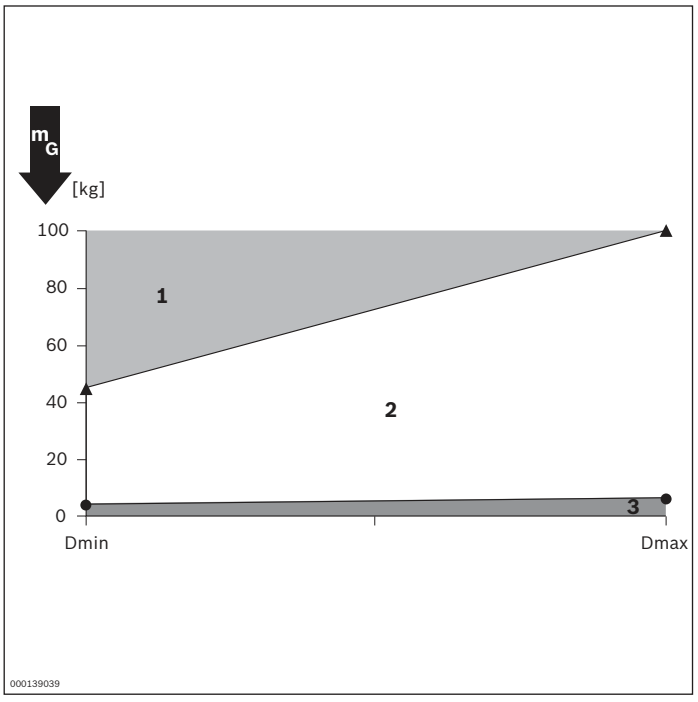
Characteristic curve diagram

Damping setting, accumulation roller chain μ = 0.02



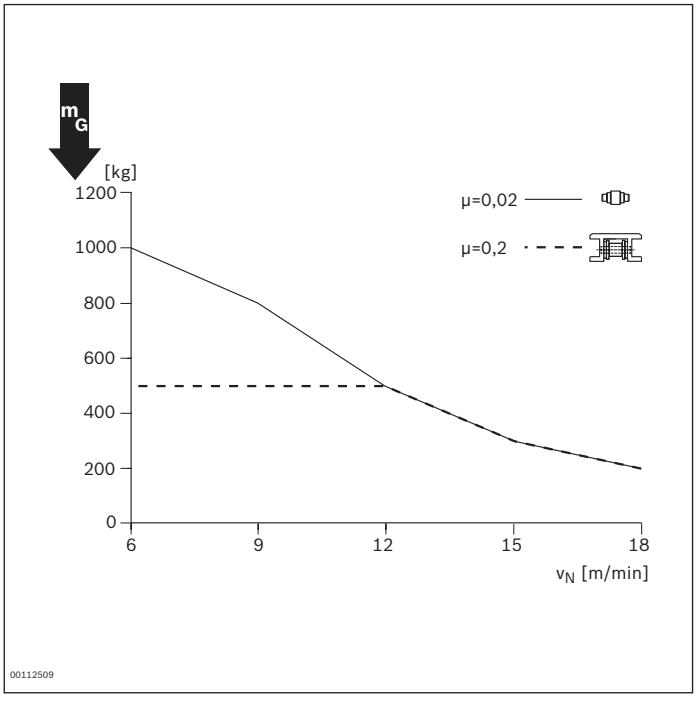
1 Damping effect limited, use of a return stop
VE 2/RS-H recommended
2 Recommended range
3 Not possible
Dmax/min damping setting

Damping setting, flat-top chain μ = 0.2

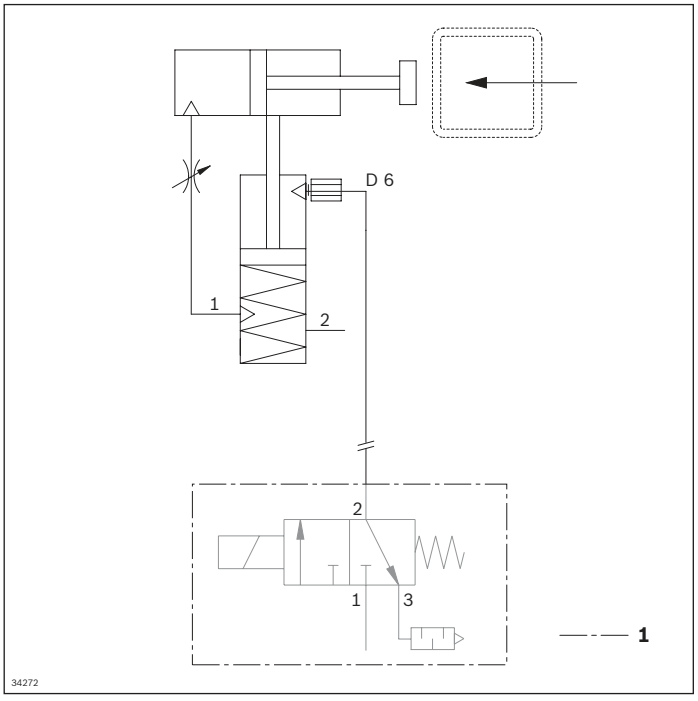


1 Damping effect limited, use of a return stop
VE 2/RS-H recommended
2 Recommended range
3 Not possible
Dmax/min damping setting

Max. permitted section load



Circuit diagram



1 Not included in the scope of delivery

Stop gate VE 2/D250-H

- Pneumatic stop gate
- For central separation of the workpiece pallets WT 2/H and WT 2/F-H
- Suitable for accumulation loads up to 2250 kg
- Continuously adjustable damping
- Optimal damping for total weights up to 250 kg
- Can be combined with WT 2/H and WT 2/F-H

Notice: Combination with WT 2/LS not possible.

Dampened stopping of the first accumulating workpiece pallet. The stop gate stops one or more accumulating workpiece pallets at the defined stop surface of the workpiece pallet stop surface. For central separation, the stop gate is mounted inside the tracks on the conveyor section using the supplied cross connectors. When the pressure is released, the stop gate is held in the lock position by a spring and the workpiece pallet is stopped.

Recommended accessories

- Return stop VE 2/RS-H, see p. 8-50

Scope of delivery

- Incl. all fastening material to mount on the conveyor sections ST 2/...

Condition on delivery

- Not assembled

Ordering information

Material number		3842998748
b (mm)	Track width	400; 480; 640; 800; 1040; 1200
b (mm)	Track width	400 ... 1200[1)]

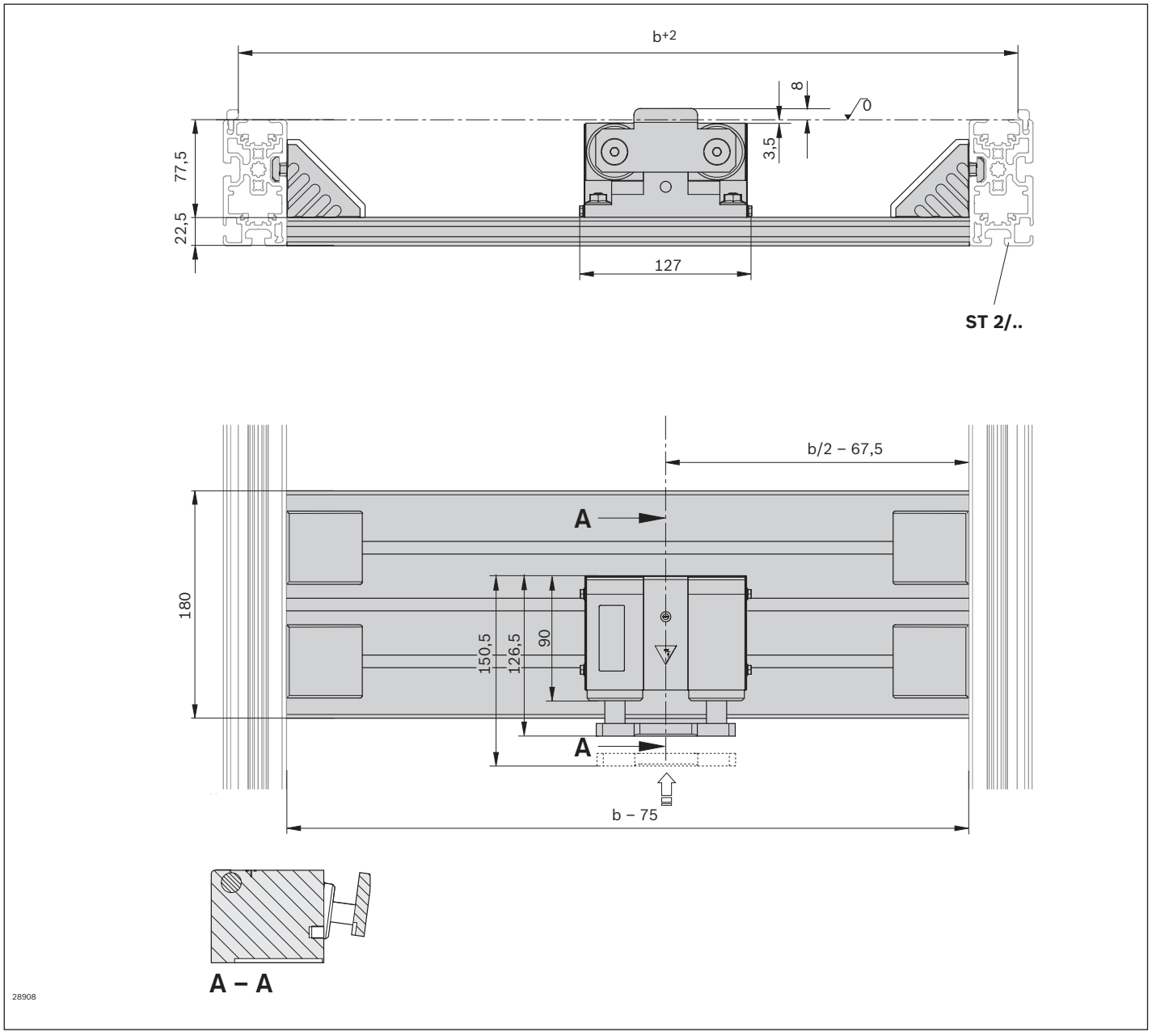
[1)] Individual width variants possible

Technical data

Material number			**3842998748**
Max. total workpiece pallet weight	m_G	kg	250
Min. workpiece pallet weight	m	kg	5
ESD			Yes
Material specification			Housing: Steel; coated Stop cam: Steel; coated Cross strut: Aluminum, natural; anodized
Operating temperature[1)]		°C	0 ... +60

[1)] High-temperature stop gate on request

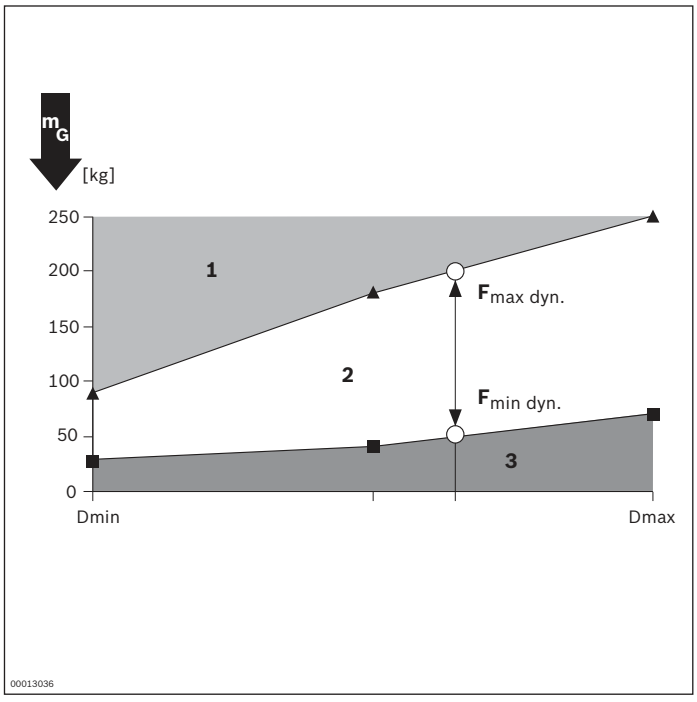
Dimensions



0 Transport level

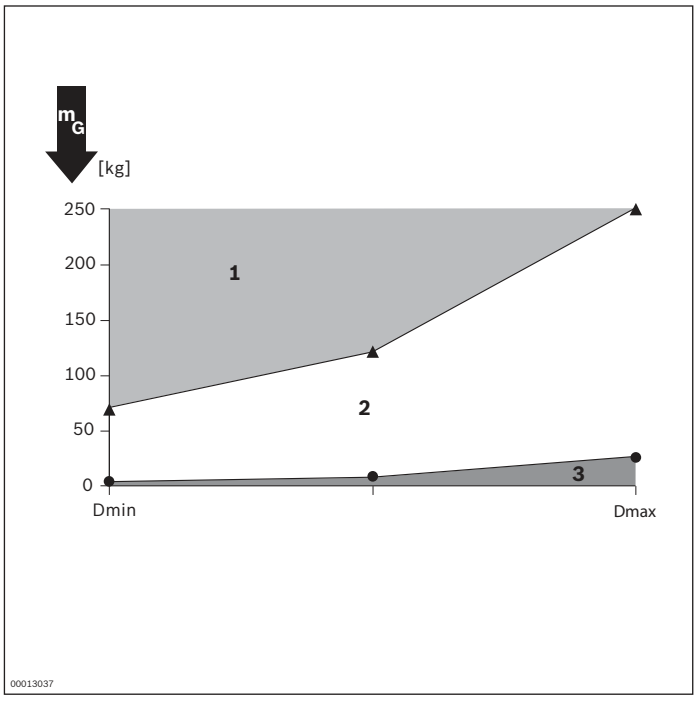
Characteristic curve diagram

Damping setting, accumulation roller chain μ = 0.02



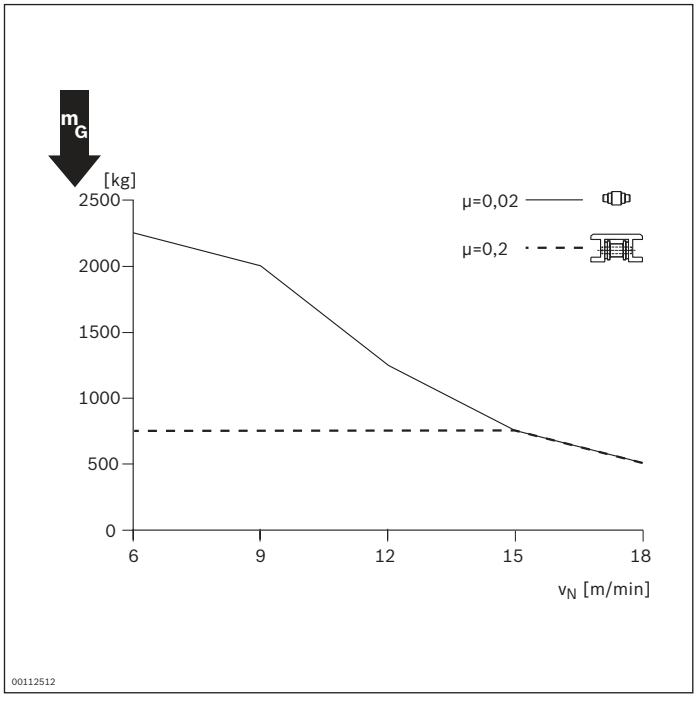
1 Damping effect limited, use of a return stop
VE 2/RS-H recommended
2 Recommended range
3 Not possible
Dmax/min damping setting

Damping setting, flat-top chain μ = 0.2

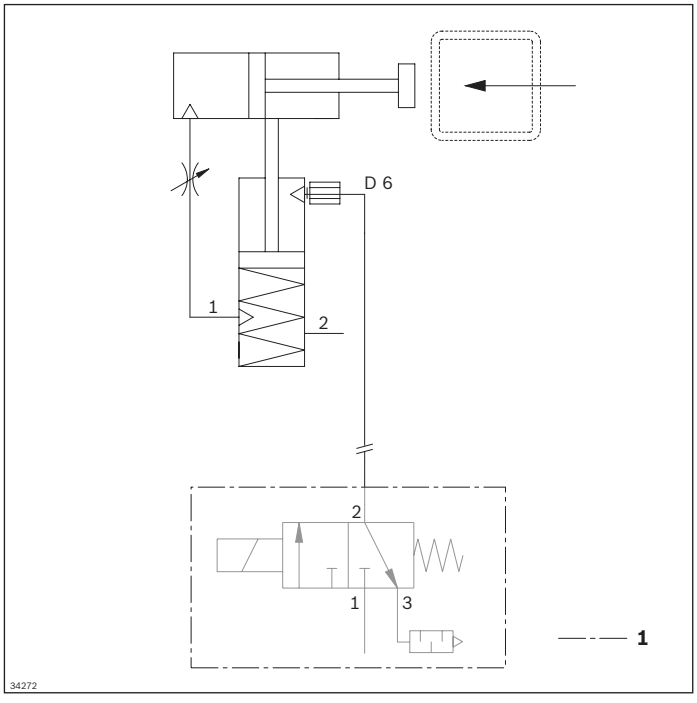


1 Damping effect limited, use of a return stop
VE 2/RS-H recommended
2 Recommended range
3 Not possible
Dmax/min damping setting

Max. permitted section load

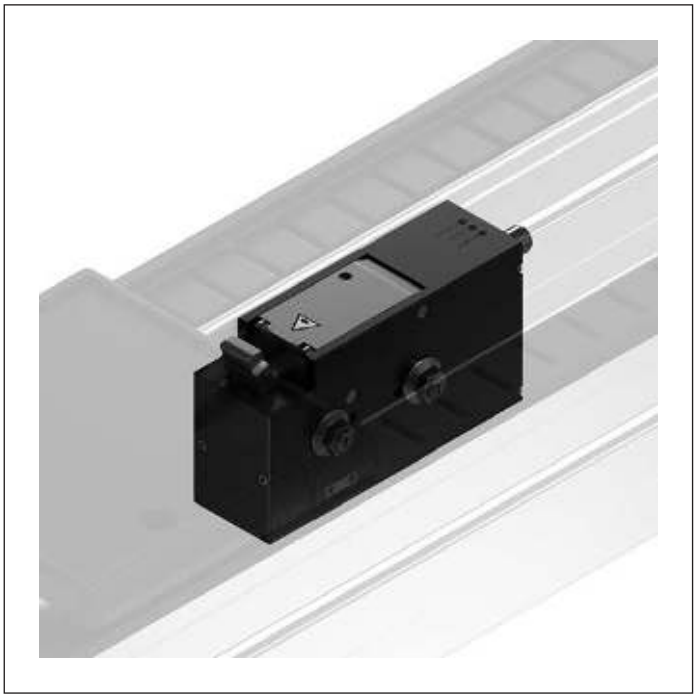


Circuit diagram



1 Not included in the scope of delivery

Stop gate VE 2/D100-E



- For workpiece pallet separation in sections
- Dampened stop gate
- Can be combined with WT 2/E, WT 2, WT 2/F and WT 2/LS
- Can be combined with all components TS 2*plus* (except HD components)
- Air damping adjustable by means of throttle screw
- Damping effect adjustable on the upper surface
- If the damping is set, weights of ± 50% of the set weight can be properly damped.
- Loading only in the direction of transport
- No spring return; the stop blade of the stop gate is reset or put up by means of a step motor
- Electrical stop gate for the set-up of plants without pneumatic system
- Little installation work as there is no pneumatic system
- Low noise development

Notice: A workpiece pallet may only hit the stop if the latter is completely in its top position.

Recommended accessories

- Actuator and sensor system cables common in the market (5-pole)

Ordering information

Product description	Material number
Stop gate VE 2/D100-E	3842563103

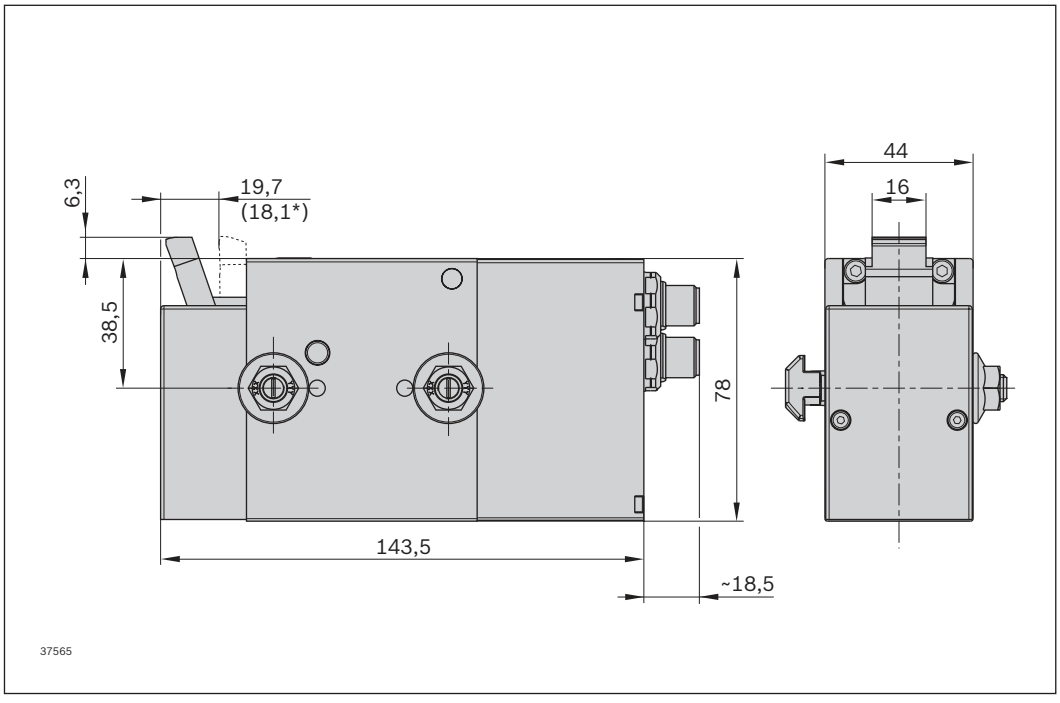
Technical data

Material number			**3842563103**
Max. total workpiece pallet weight	m_G	kg	100
Min. workpiece pallet weight	m	kg	6
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop: Steel; hardened
Operating temperature[1)]		°C	+5 ... +60
Cycle time		s	3

[1)] High-temperature stop gate on request

Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
100	6
70	9
60	12
55	15
50	18

Dimensions



*) = stroke

Stop gate VE 2/D410-EH

- For workpiece pallet separation in sections
- Dampened stop gate
- Can be combined with WT 2/H
- Can be combined with all components TS 2*plus* HD
- Loading only in the direction of transport
- No spring return; the stop blade of the stop gate is reset or put up by means of a step motor
- Electrical stop gate for the set-up of plants without pneumatic system
- Little installation work as there is no pneumatic system
- Low noise development

Notice: A workpiece pallet may only hit the stop if the latter is completely in its top position.

Recommended accessories

- Actuator and sensor system cables common in the market (5-pole)

Ordering information

Material number		**3842998923**
b (mm)	Track width in direction of transport	400; 480; 640; 800; 1040; 1200
		400 ... 1200[1)]
AO	Installation location 0 = 80 1 = 100	0; 1

[1)] Individual width variants possible

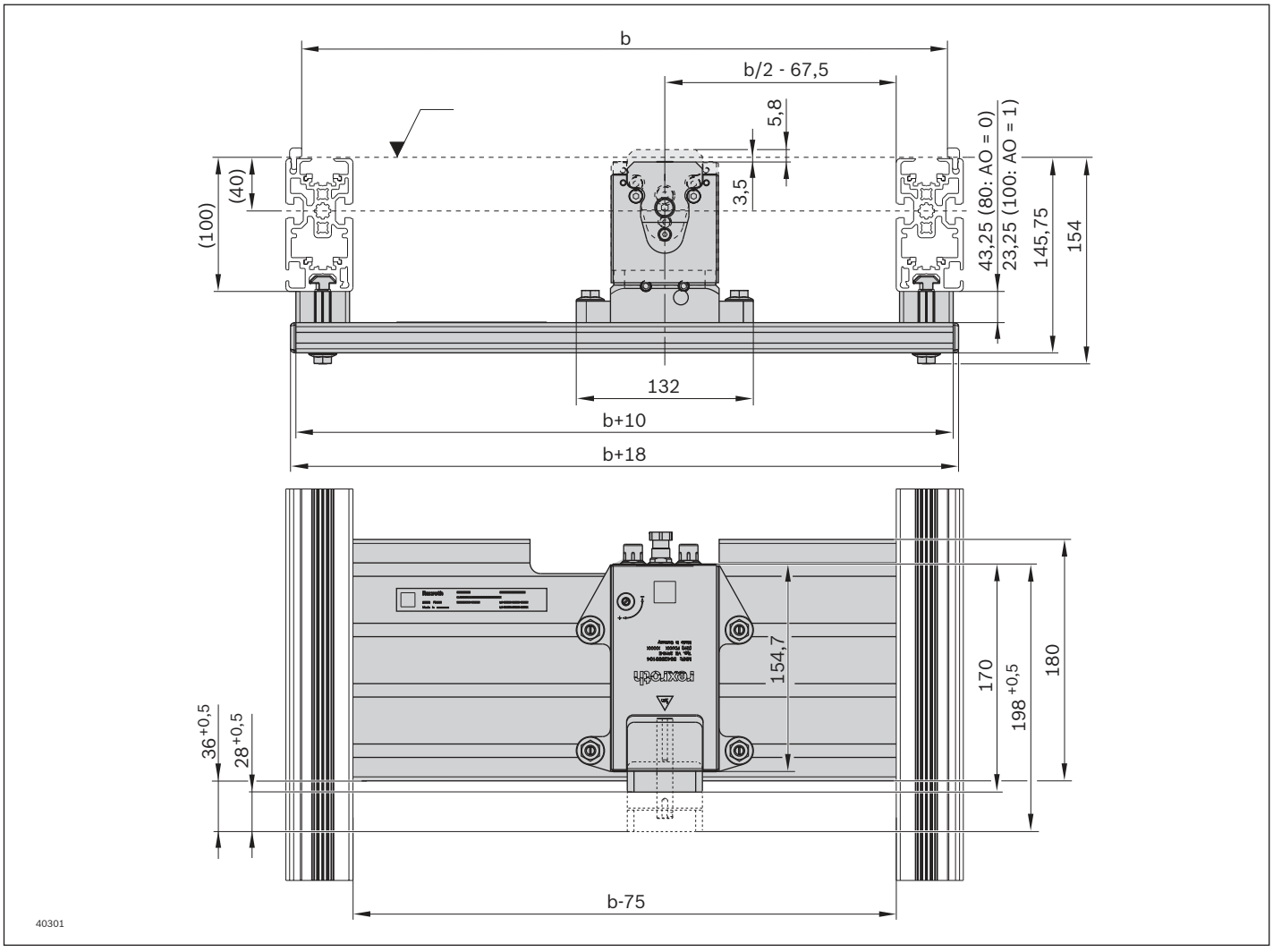
Technical data

Material number			**3842998923**
Max. total workpiece pallet weight	m_G	kg	410
Min. workpiece pallet weight	m	kg	20
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop: Steel; hardened
Operating temperature[1)]		°C	+5 ... +60
Cycle time		s	5

[1)] High-temperature stop gate on request

Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
410	6
305	9
250	12
220	15
200	18

Dimensions



Return stop VE 2/RS

- Spring-loaded safety catch
- Can be used on the left or right
- Use for one direction of transport, reversible operation not permitted
- Can be combined with WT 2/E, WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS

Notice: The return stop VE 2/RS can only be installed outside the workpiece pallet surface on the WT 2/H and WT 2/F-H.

The return stop prevents the rebound impact of the workpiece pallet from the stop gate. The use of the VE 2/RS is especially recommended when the accumulation roller chain is used as conveyor medium in connection with undamped stop gates. In normal condition the stop gate is moved into the lock position by a spring and the workpiece pallet overtravels the VE 2/RS in the direction of transport and is stopped against the transport direction.
Mounted inside the tracks, directly on the conveyor section.

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...

Condition on delivery

- Assembled

Ordering information

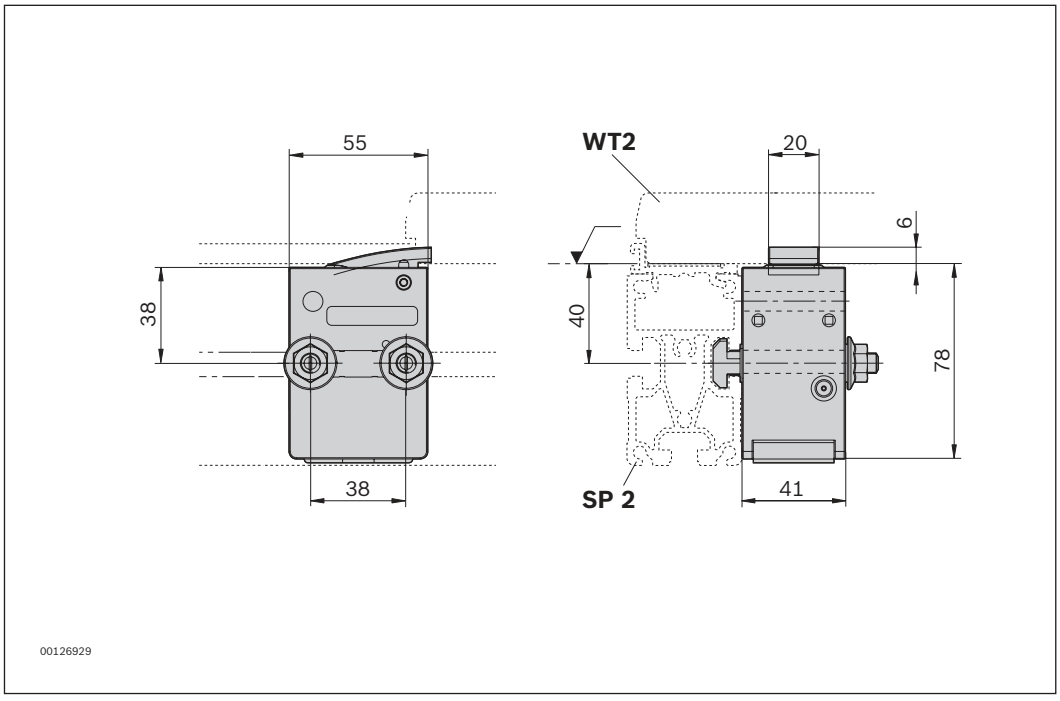
Product description	Material number
Return stop VE 2/RS	3842531696

Technical data

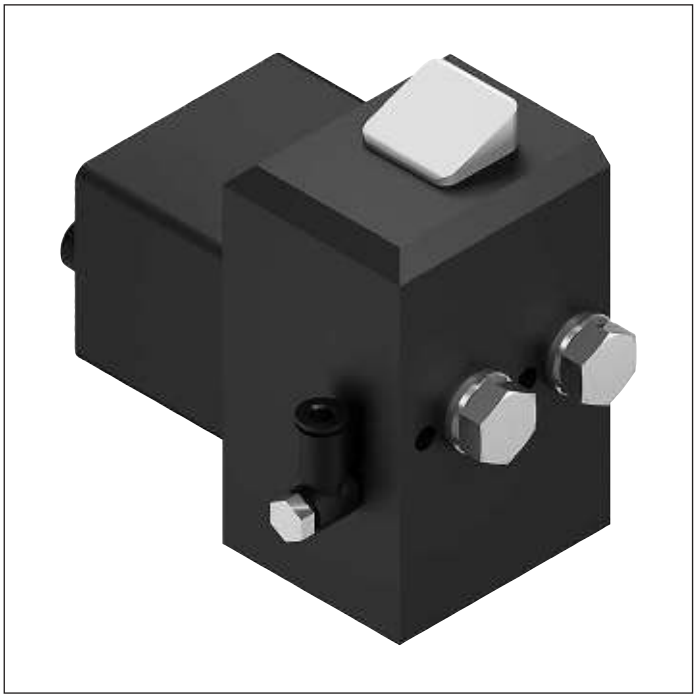
Material number			**3842531696**
Max. total workpiece pallet weight	m_G	kg	250
Min. workpiece pallet weight	m	kg	3
Material specification			Housing: PA6 Stop cam: PA66
Operating temperature[1)]		°C	+5 ... +60

[1)] High-temperature stop gate on request

Dimensions



Return stop VE 2/RS-H



- Spring-loaded safety catch
- Can be used on the left or right
- Easy fastening in the groove of the section profile ST 2/... or BS 2/...
- Pneumatic version, including pneumatic cylinder to open the safety catch. Necessary for reversible operation
- Can be combined with WT 2, WT 2/F, WT 2/H and WT 2/F-H

Notice:

- The return stop VE 2/RS-H can be installed on the WT 2 and WT 2/F without spacers.
- Combination with WT 2/LS not possible

The return stop prevents the workpiece pallet from rebounding off the stop gate VE 2/D-... or the damper DA 2/...
The use of the VE 2/RS-H is especially recommended for high total weights and low damping.
In normal condition the stop gate is moved into the lock position by a spring and the workpiece pallet overtravels the VE 2/RS-H in the direction of transport and is stopped against the transport direction. Mounted inside the tracks, directly on the conveyor section.

Notice: Reversible operation is only possible with the pneumatic version.

Condition on delivery

- Not assembled

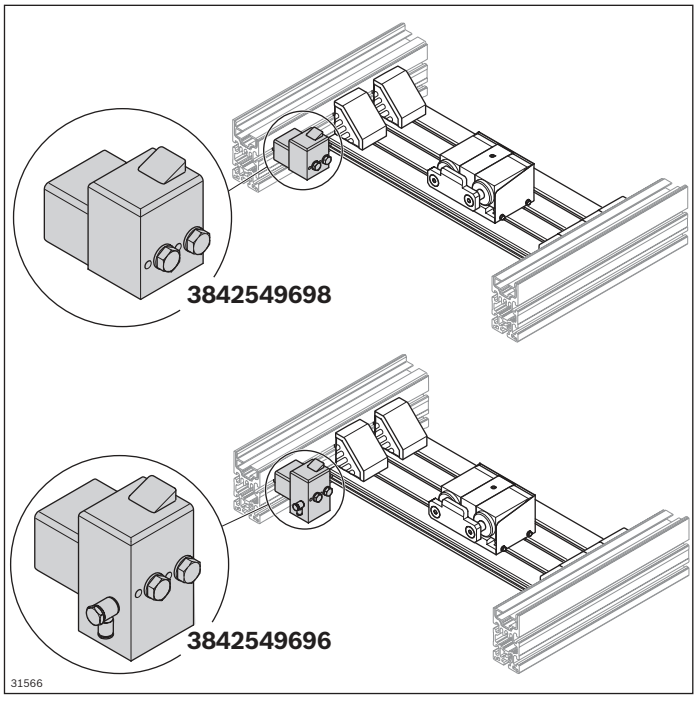
Ordering information

Product description	Material number
Return stop VE 2/RS-H	3842549698
Return stop VE 2/RS-H, pneumatic	3842549696

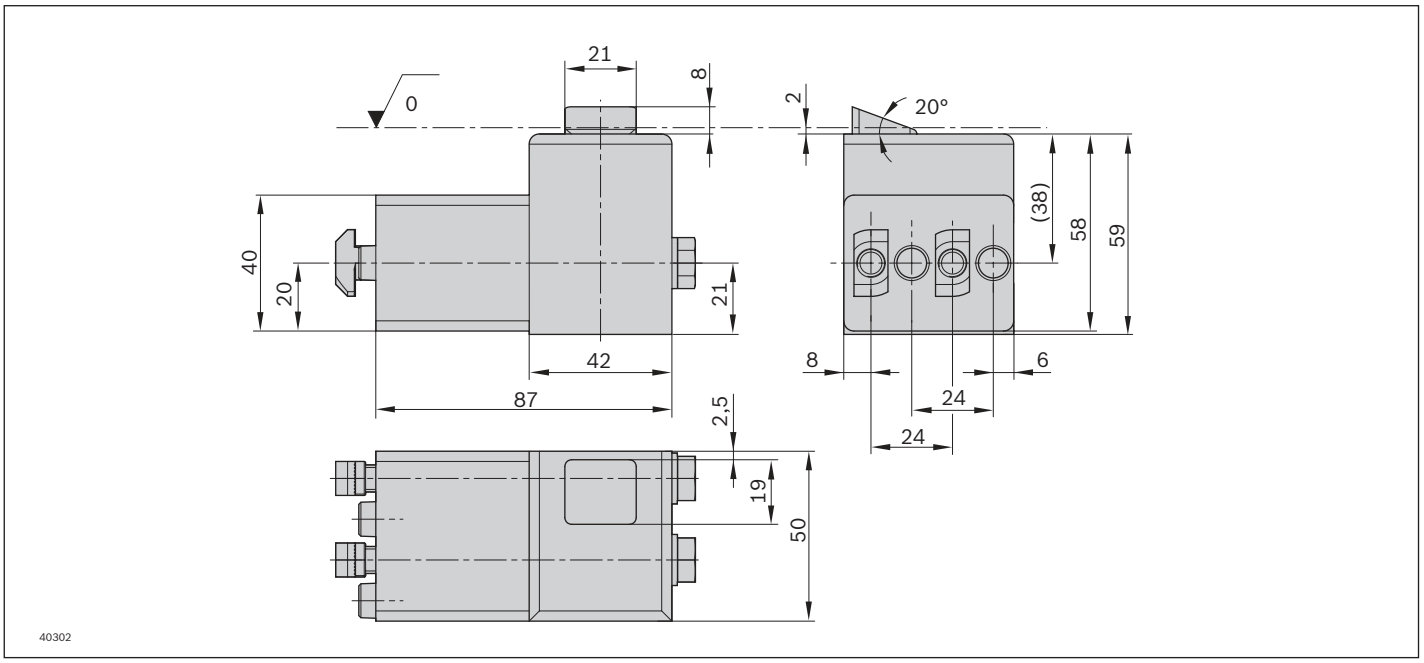
Technical data

Material number			3842549696	3842549698
Max. total workpiece pallet weight	m_G	kg	250	250
Min. workpiece pallet weight	m	kg	3	3
ESD				Yes
Material specification			Housing: Aluminum, hard anodized Stop cam: Steel; hardened	Housing: Aluminum, hard anodized Stop cam: Steel; hardened
Operating temperature[1)]		°C	+5 ... +60	+5 ... +60

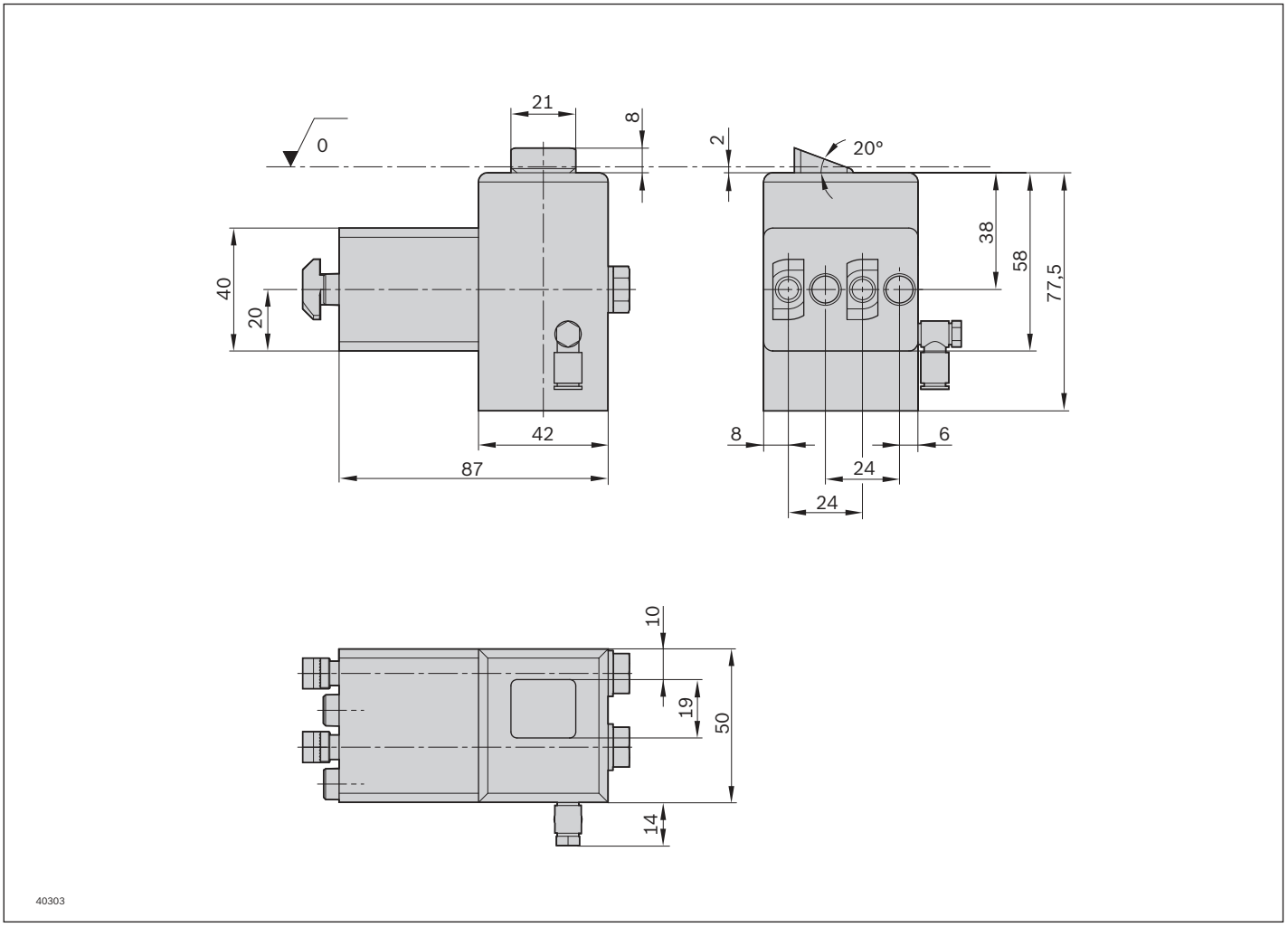
[1)] High-temperature stop gate on request



Dimensions VE 2/RS-H



Dimensions VE 2/RS-H, pneumatic



Slide stop VA 2/50

- Slide stop, can be lowered pneumatically
- Reversible operation not permitted
- Removable slide stop position sensors
- Not suitable for sections ST 2...-H
- Can be combined with WT 2/E, WT 2, WT 2/F and WT 2/LS

The slide stop is used in a transverse section that connects more than two longitudinal sections and that requires supplementary stops. A lift transverse unit can feed in the workpiece pallet onto the longitudinal section when the slide stop is activated.
When depressurized, the pneumatically lowered slide stop is extended to the upper end position. Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- 2x sensor M8x1, see p. 8-114ff

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Position sensing

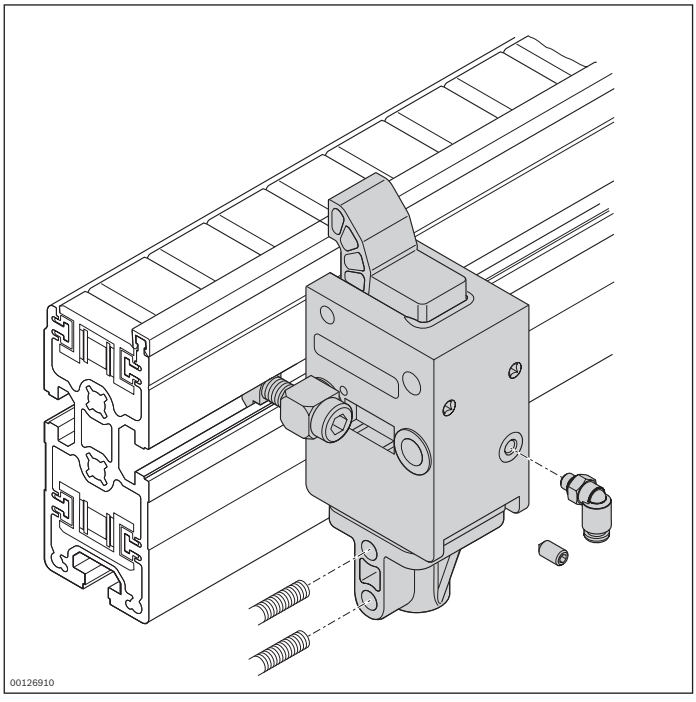
Ordering information

Product description	Material number
Slide stop VA 2/50	3842528808

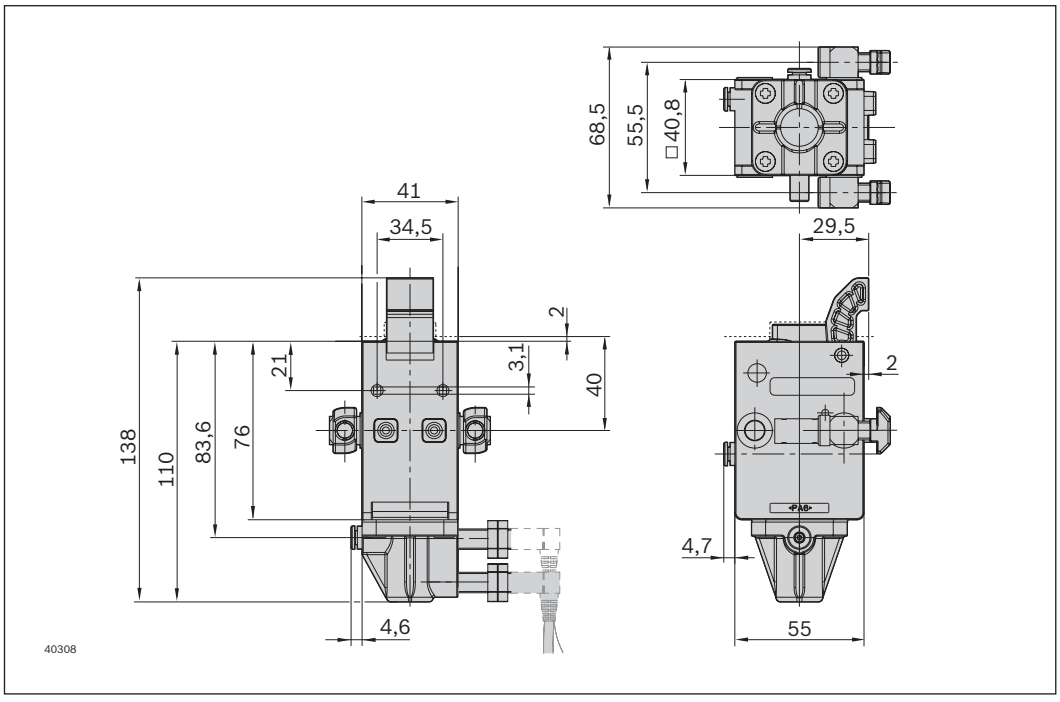
Technical data

Material number			**3842528808**
Max. total workpiece pallet weight	m_G	kg	50
Material specification			Housing: PA6 Safety catch: PA66 Stop cam: PA66
Max. operating temperature		°C	60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	4

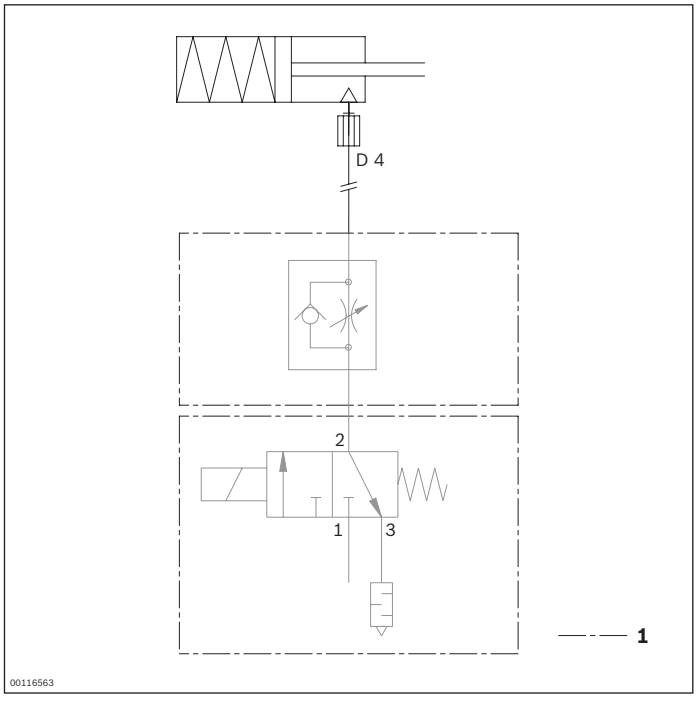
	Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
	50	6
	50	9
	35	12
	25	15
	20	18



Dimensions



Circuit diagram



1 Not included in the scope of delivery

Slide stop VA 2/50 – reversible

- Slide stop, can be extended pneumatically
- Integrated switch bracket
- Reversible operation possible
- Not suitable for sections ST 2...-H
- Inquiry of the slide stop upper position via sensors
- Can be combined with WT 2 and WT 2/F

The slide stop is used in a transverse section that connects more than two longitudinal sections and that requires supplementary stops. A lift transverse unit can feed in the workpiece pallet onto the longitudinal section when the slide stop is activated.

When depressurized, the pneumatically extended slide stop is lowered to the lower end position. The slide stop upper position can be detected using sensors.
Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- M12x1 sensor, see p. 8-112

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Bracket pivoting screw fitting

Ordering information

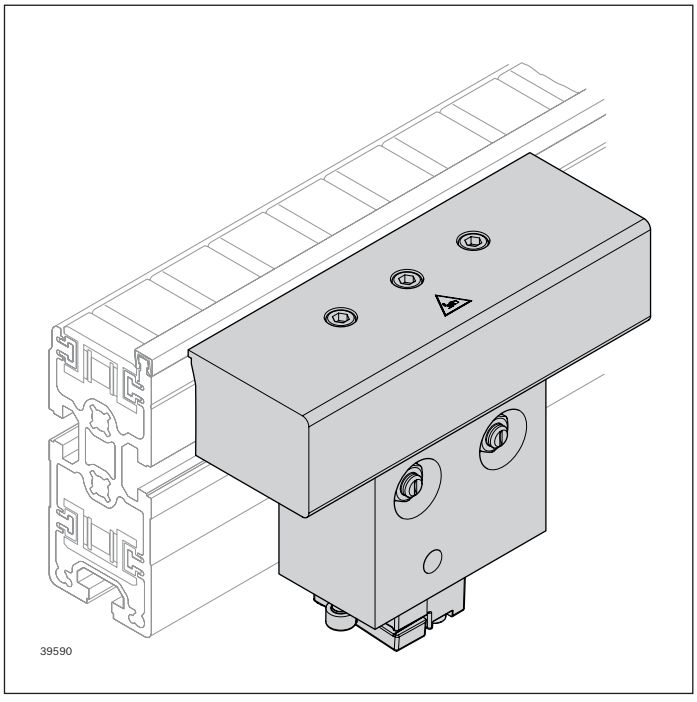
Product description	Material number
Slide stop VA 2/50 – reversible	3842191721

Technical data

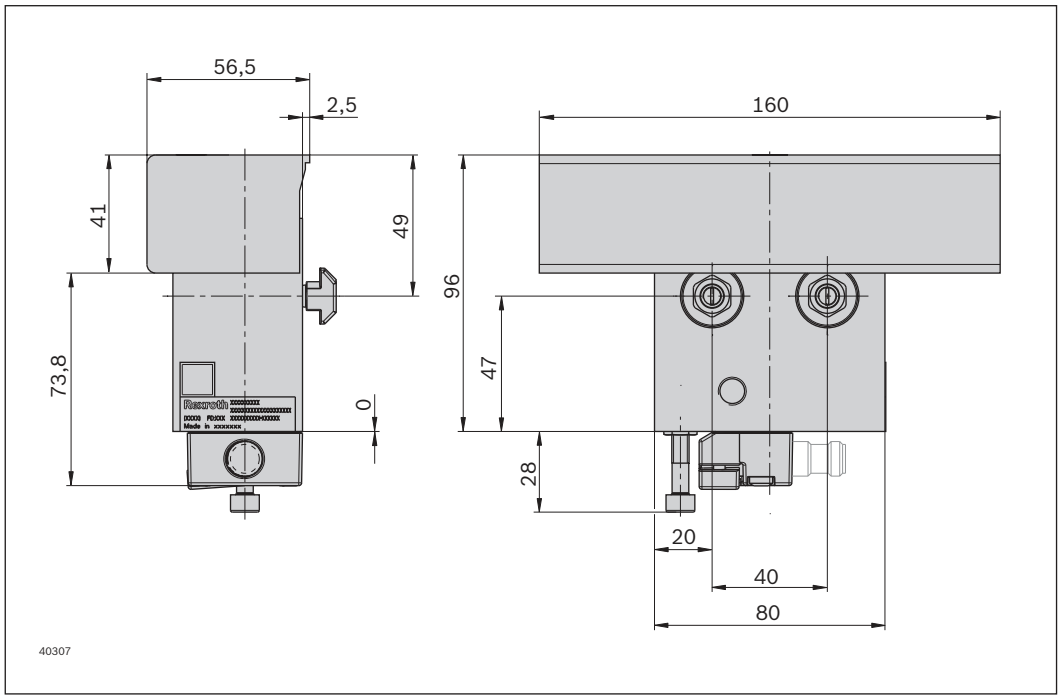
Material number			**3842191721**
Max. total workpiece pallet weight	m_G	kg	50
ESD			Yes
Material specification			Housing: Aluminum Stop: Aluminum
Operating temperature[1)]		°C	60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	6

[1)] High-temperature stop gate on request

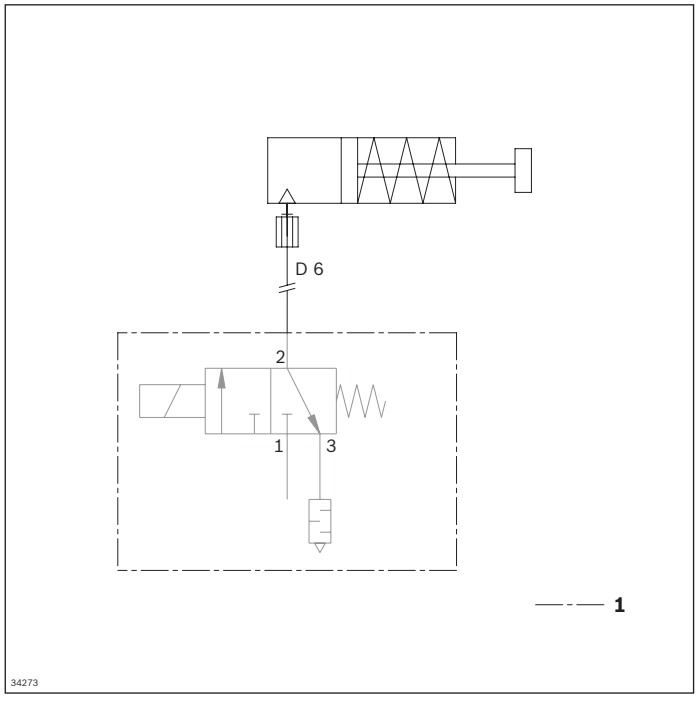
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
50	6
50	9
35	12
25	15
20	18



Dimensions



Circuit diagram



1 Not included in the scope of delivery

Slide stop VA 2/D-130

- Slide stop; can be lowered pneumatically, dampened stop
- Stopping on the outside of the frame module
- Can be used in reversible operation
- Design permits installation with a section gap from a = 90 mm when space is limited
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- 4 positions, can be moved to pneumatically: Upper, lower position and latch in the extended and retracted state
- 3 positions can be detected: Top, bottom and retracted stop rail
- Additional possibilities for installing sensors, advantageously in restricted conditions
- Can be combined with WT 2 and WT 2/F

Notice: Combination with WT 2/LS not possible.

The slide stop is used in a transverse section that connects more than two longitudinal sections and that requires supplementary stops. A lift transverse unit can feed in the workpiece pallet onto the longitudinal section when the slide stop is activated.
The pneumatically adjustable slide stop is extended to the upper end position when the system is depressurized.
Mounted inside the tracks, directly on the conveyor section.

Recommended accessories

- Sensor M12x1 (3842549814) with rated switching distance S_N = 4 mm, **length 45 mm, see p. 8-112**
- **Clamping holder, see p. 8-62**

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Right-angle connector for the push in air connections
- Position sensing

Condition on delivery

- Assembled

Ordering information

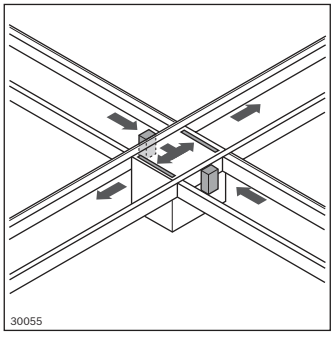
Product description	Material number
Slide stop VA 2/D-130	3842564563

Technical data

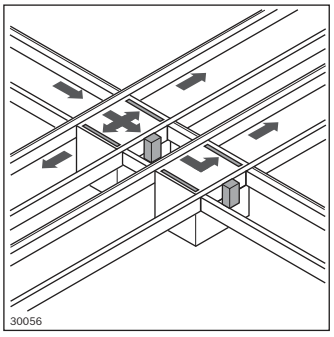
Material number			**3842564563**
Max. total workpiece pallet weight	m_G	kg	130
Min. workpiece pallet weight	m	kg	15
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Latch: Steel
Max. operating temperature		°C	60
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	6
Minimum width for mounting between sections	b_L	mm	320

	Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
	130	6
	110	9
	110	12
	100	15
	100	18

Possible installation location for VA2/D-130

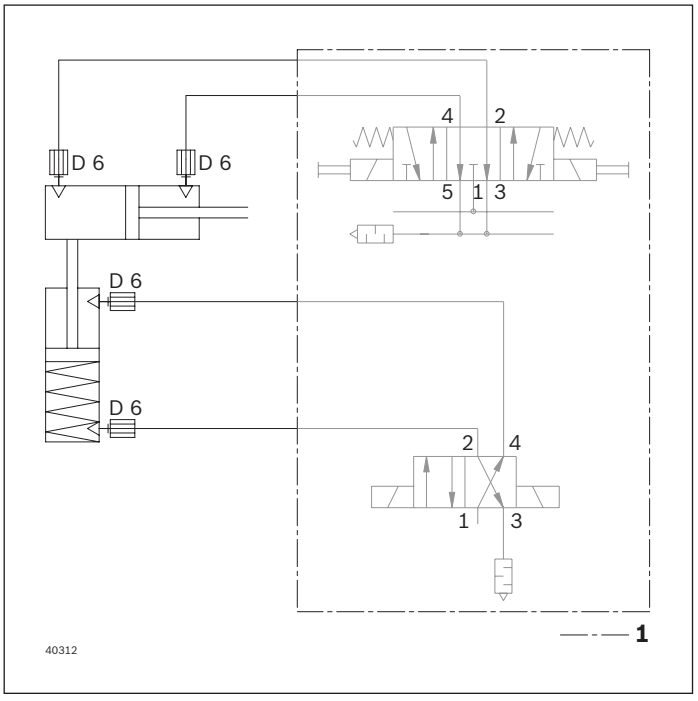


As a node point



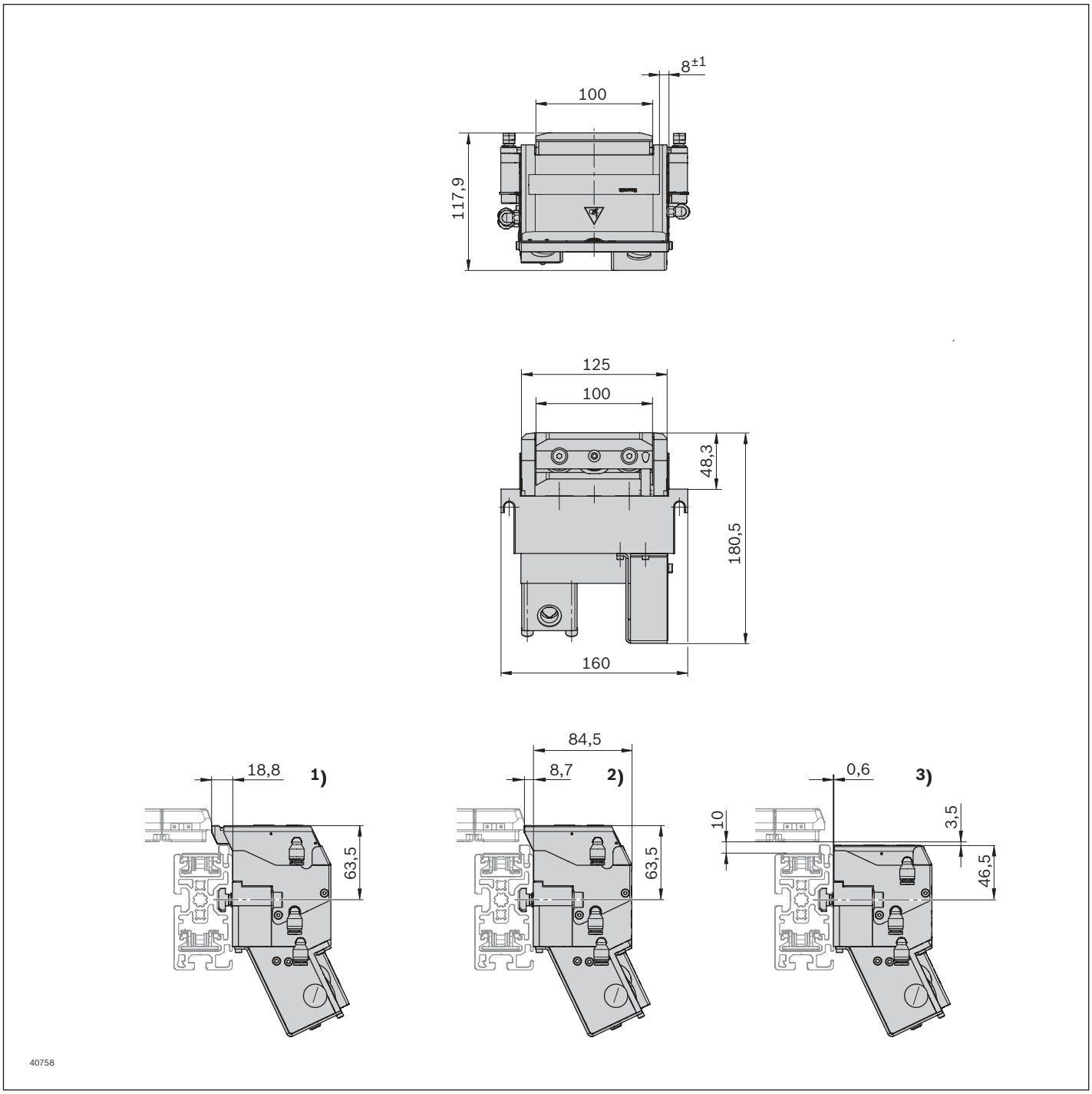
During outfeeding on parallel section

Circuit diagram



1 Not included in the scope of delivery

Dimensions



[1] Top stop extended; [2] Top stop retracted; [3] Bottom stop retracted

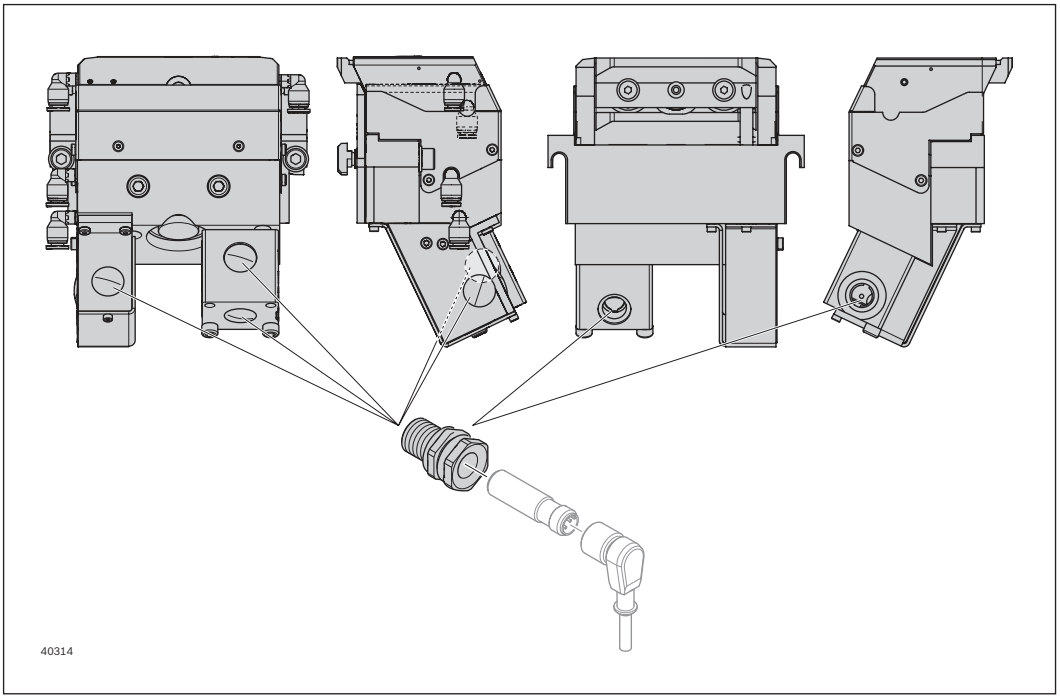
Clamping holder

- Clamping holder for sensor for screwing into slide stop VA 2/D-130, Ø 12 mm
- Adapter for variable positioning of the sensor

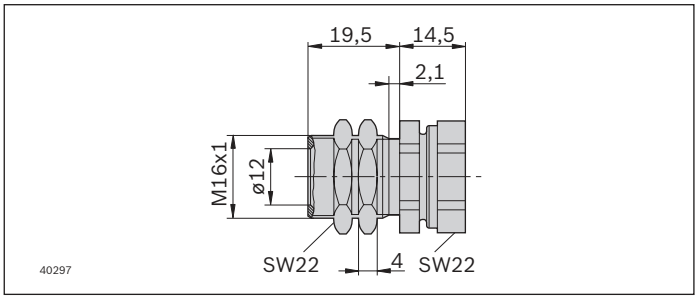
Ordering information

Product description	Packaging unit	Material number
Clamping holder	1	3842545974

Technical data



Dimensions



Slide stop VA 2/D-250

- Slide stop, can be pneumatically lowered, dampened stop for use with HQ 2/C-H only (minimum longitudinal width from b_Q = 480 mm, minimum transverse width from
  b_L = 640 mm)
- Stopping on the inside of the WT frame module
- Continuously adjustable damping
- In depressurized state by a spring in locking position
- Can be combined with WT 2/H and WT 2/F-H

Notice: Combination with WT 2/LS not possible.

8

The slide stop is used in a transverse section that connects more than two longitudinal sections and that requires supplementary stops. A lift transverse unit can feed in the workpiece pallet onto the longitudinal section when the slide stop is activated.

The pneumatically adjustable slide stop is extended to the upper end position when the system is depressurized. Mounting inside the lift transverse unit HQ 2/C-H.

Scope of delivery

- Incl. all fastening material to mount on the conveyor section ST 2/...
- Right-angle connector for the push in air connection

Condition on delivery

- Not assembled

Ordering information

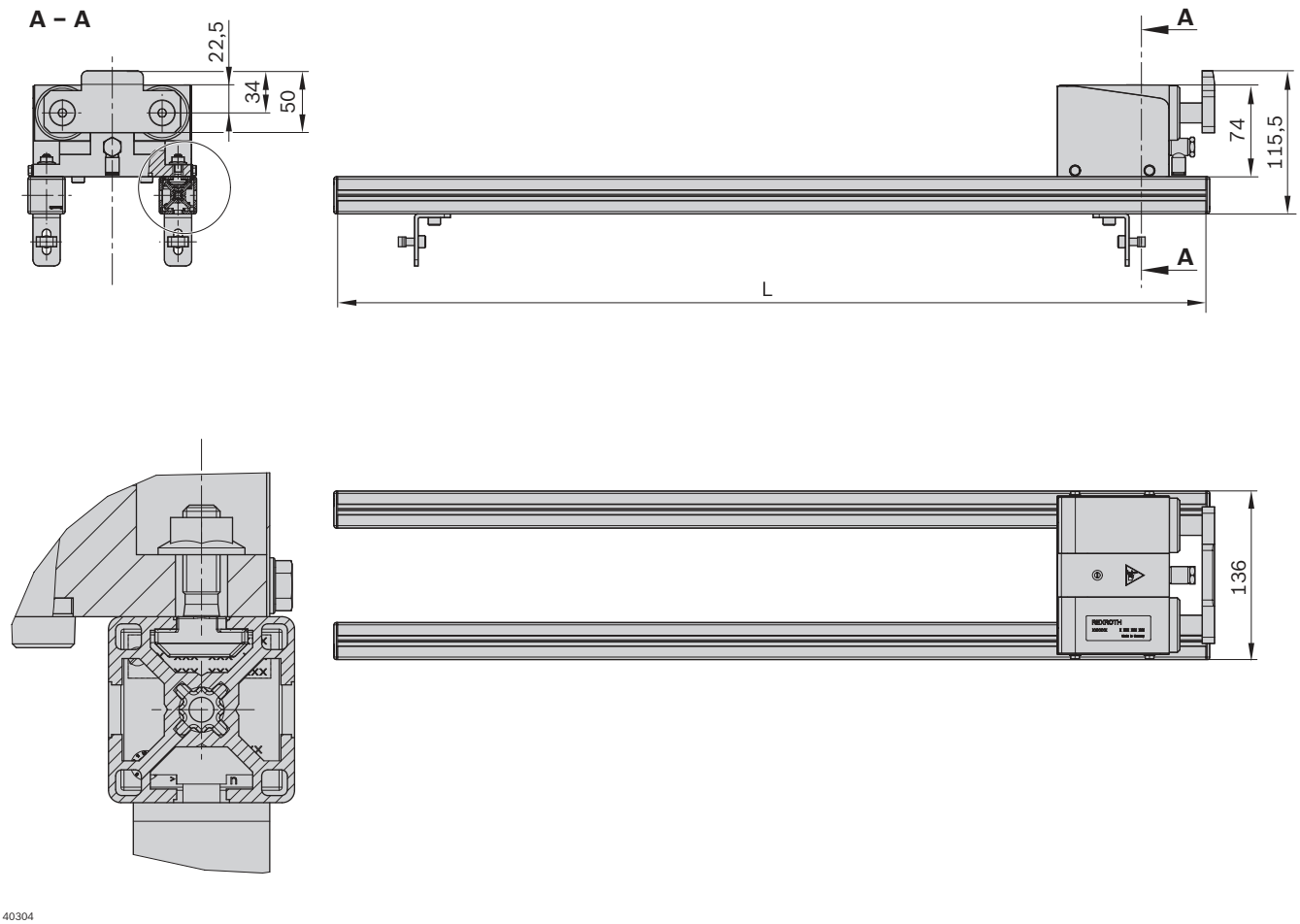
Material number		3842998796
b_L (mm)	Track width in the longitudinal conveyor	640; 800; 1040; 1200
b_L (mm)	Track width in the longitudinal conveyor	640 ... 1200
b_Q (mm)	Track width in the transverse conveyor	480; 640; 800; 1040; 1200; 480 ... 1200

Technical data

Material number			**3842998796**
Max. total workpiece pallet weight	m_G	kg	250
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop: Steel; hardened
Operating temperature[1)]		°C	-20 ... +80
Minimum length of workpiece pallet	l_{wt}		400
Required compressed air connection	p	bar	4 ... 6
Push in air connection	Ø	mm	6

[1)] High-temperature stop gate on request

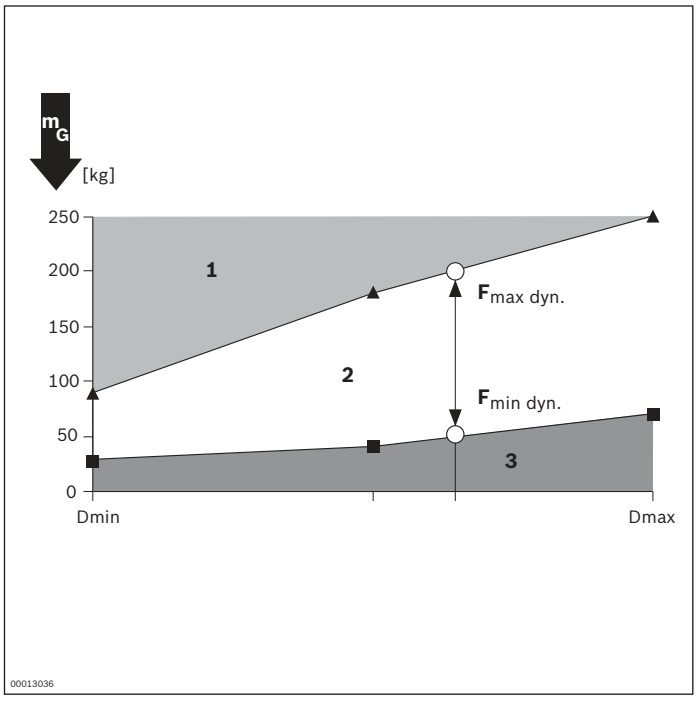
Dimensions



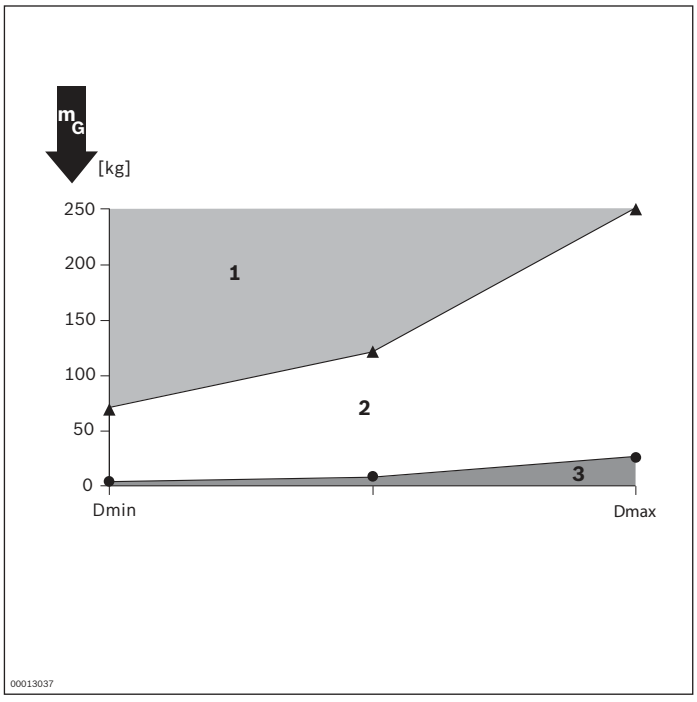
Track width in the longitudinal conveyor b_L (mm)	**Dimension L (mm)**
640	519
800	679
1040	919
1200	1079

Characteristic curve diagram

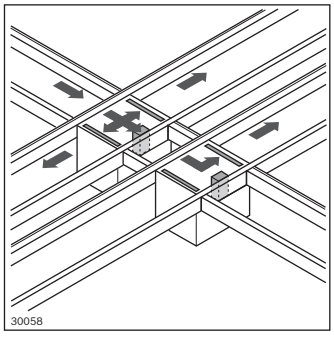
Damping setting, accumulation roller chain μ = 0.02



Damping setting, flat-top chain μ = 0.2



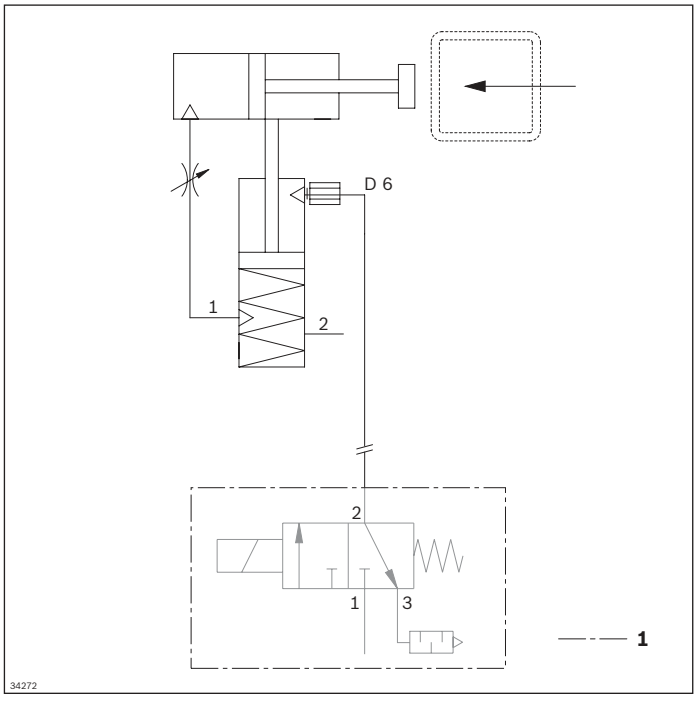
Possible installation location for VA 2/D-250



During outfeeding on
parallel section

When attaching inside an HQ 2/C-H, the VA 2/D-250 must be positioned on the opposite side of the hexagonal shaft in each case.

Circuit diagram

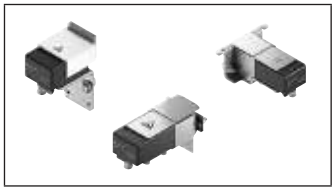


8

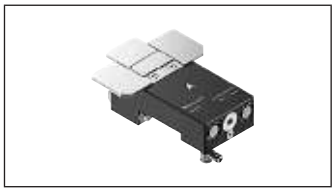
Damper

Dampers DA 2/... are used to cushion the impact of workpiece pallets when they are moved from a transverse section into a longitudinal section or vice versa.

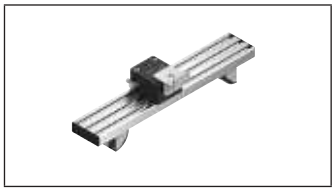
Damper DA 2/60 60 **8-68**



Damper DA 2/100-B, DA 2/100-C, DA 2/100-E 100 **8-71**



Damper DA 2/150-E 150 **8-80**



Damper DA 2/100-H, DA 2/250-H 250 **8-83**

Damper DA 2/60

- For permitted total weight of workpiece pallets up to 60 kg
- Pneumatic damper
- Continuously adjustable
- Optimal damping at a ratio of 2:1 between heavy and light workpiece pallets
- Can be combined with WT 2/E, WT 2, WT 2/F, WT 2/H, WT 2/F-H and WT 2/LS
- Installation location: Section ST 2/..., belt section BS 2/... and lift transverse unit HQ 2...
- Not suitable for HQ 2/U2 and HQ 2/...-H

The damper cushions the impact of workpiece pallets when they are moved from a transverse section into a longitudinal section and vice versa. The pneumatic return occurs as the stop gate opens, which permits the workpiece pallet to move toward the damper.

Scope of delivery

- Includes fastening material for mounting on an ST 2/... or BS 2/... EQ 2/... or HQ 2/U, HQ 2/T, HQ 2/S, HQ 2/O
- Damper DA 2/60 with two different stops for optional use infeeding or outfeeding use

Condition on delivery

- Not assembled

Ordering information

Product description	Material number
Damper DA 2/60	3842557983

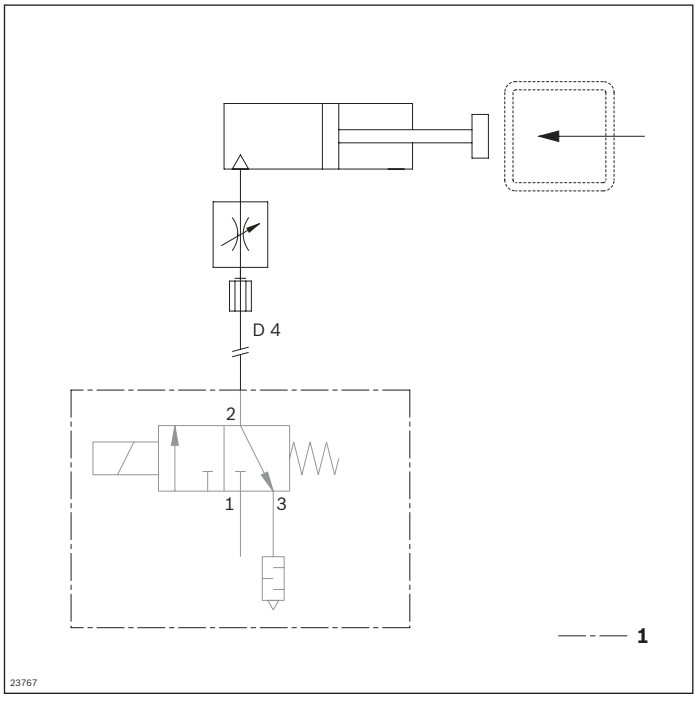
Technical data

Material number			**3842557983**
Max. total workpiece pallet weight	m_G	kg	60
Min. workpiece pallet weight	m	kg	1
ESD			Yes
Material			Housing: Aluminum, hard anodized Stop: Steel; hardened
Operating temperature[1)]		°C	+5 ... +60
Push in air connection	Ø	mm	4

[1)] High-temperature damper on request

Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
60	6
40	9
35	12
30	18
24	24
18	30
10	36

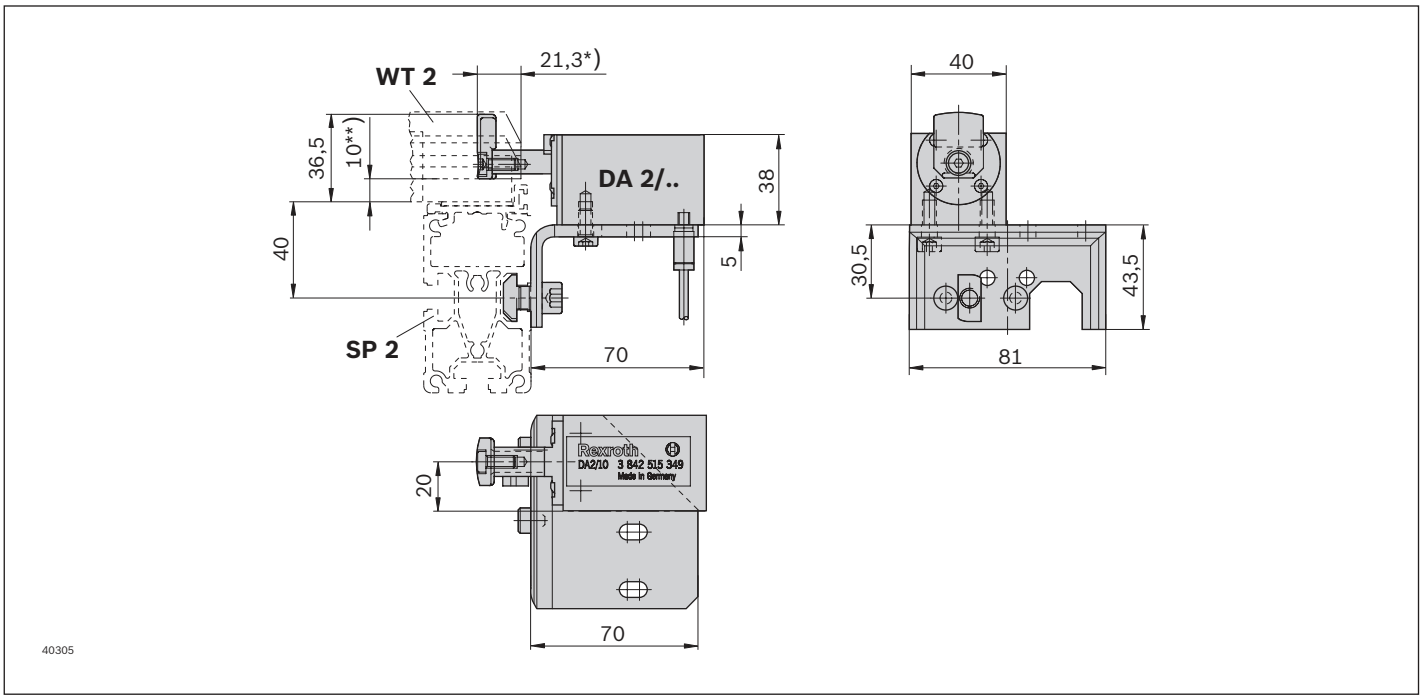
Circuit diagram



1 Not included in the scope of delivery

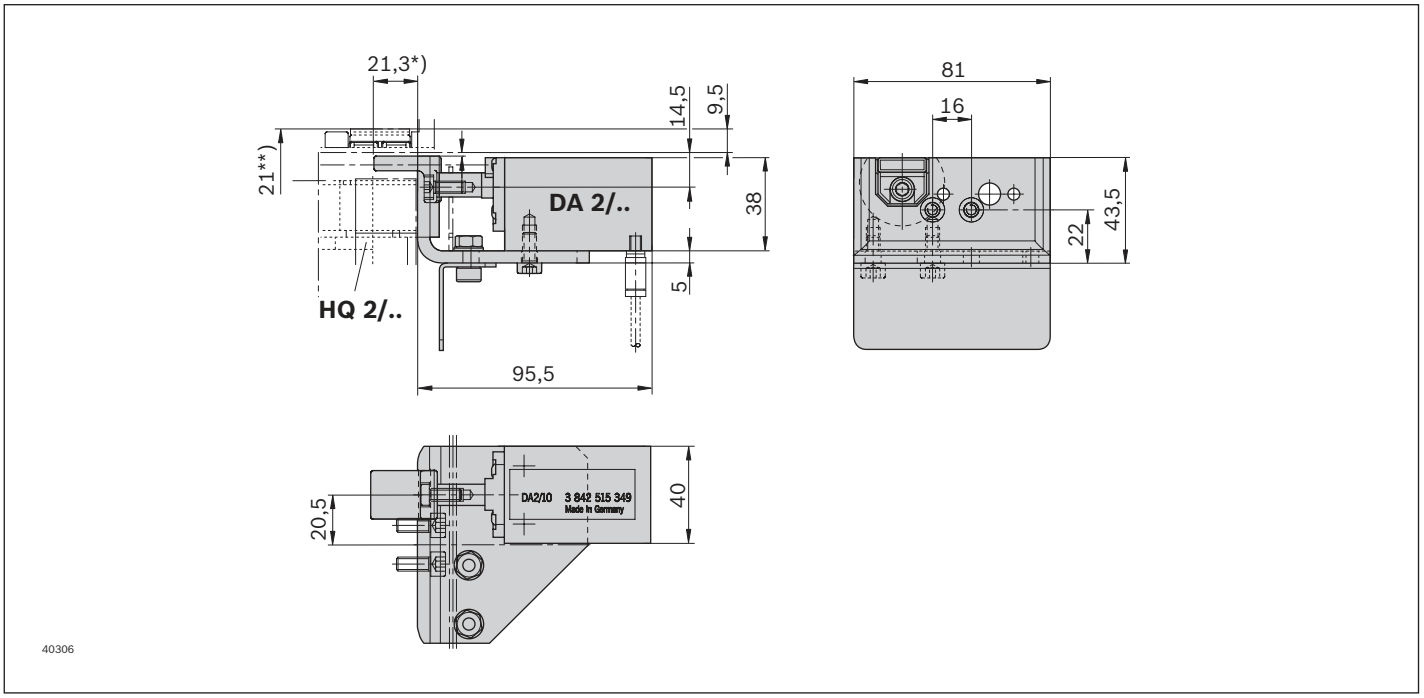
Dimensions

DA 2/... – SP 2/...



*) = Stroke of damper
**) = Stroke of WT 2

DA 2/... – HQ 2/...



*) =Stroke of damper
**) = Stroke of HQ 2/...

Damper DA 2/100-B

- For permitted total weight of workpiece pallets up to 100 kg
- Pneumatic damper
- Continuously adjustable
- Before outfeeding via a lift transverse unit HQ 2/U2
- Optimal damping at a ratio of 2:1 between heavy and light workpiece pallets
- Can be combined with WT 2, WT 2/F, WT 2/H and WT 2/F-H
- Installation location: Lift transverse unit HQ 2/U2...

The damper cushions the impact of the arriving workpiece pallet. The DA 2/100-B is suitable for outfeeding via a lift transverse unit HQ 2/U2.

The pneumatic return occurs as the stop gate opens, which permits the workpiece pallet to move toward the damper. Mounted at the end or in the transverse conveyor directly on the conveyor section, since the damper is not traversable.

Scope of delivery

- Incl. fastening material
- Damper DA 2/100-B for outfeeding the workpiece pallets WT 2, WT 2/F, WT 2/H or WT 2/F-H, via an HQ 2/U2, required at v_N > 12 m/min or total weight of the workpiece pallet > 1 kg/cm

Condition on delivery

- Not assembled

Ordering information

Product description	Material number
Damper DA 2/100-B	3842525733

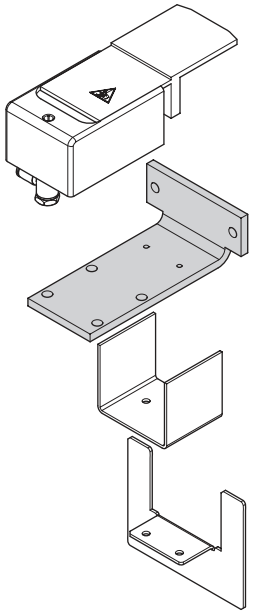
Technical data

Material number			**3842525733**
Max. total workpiece pallet weight	m_G	kg	100
Min. workpiece pallet weight	m	kg	5
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop: Steel; hardened
Operating temperature[1)]		°C	+5 ... +60
Push in air connection	Ø	mm	6

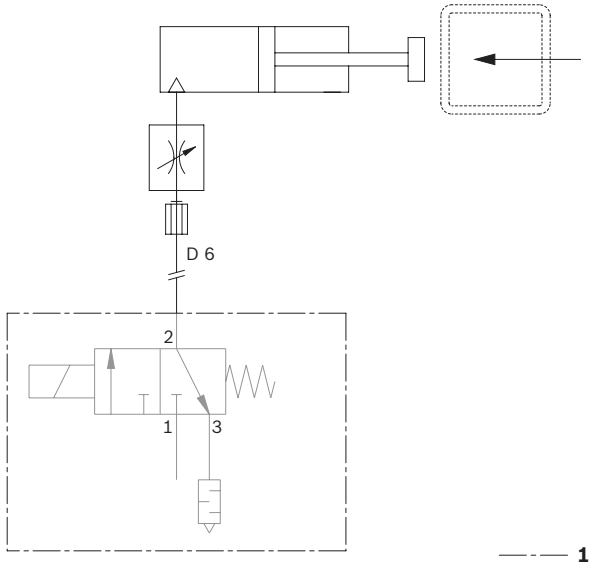
[1)] High-temperature damper on request

Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
100	6
100	9
100	12
95	15
55	18

Attachment plate

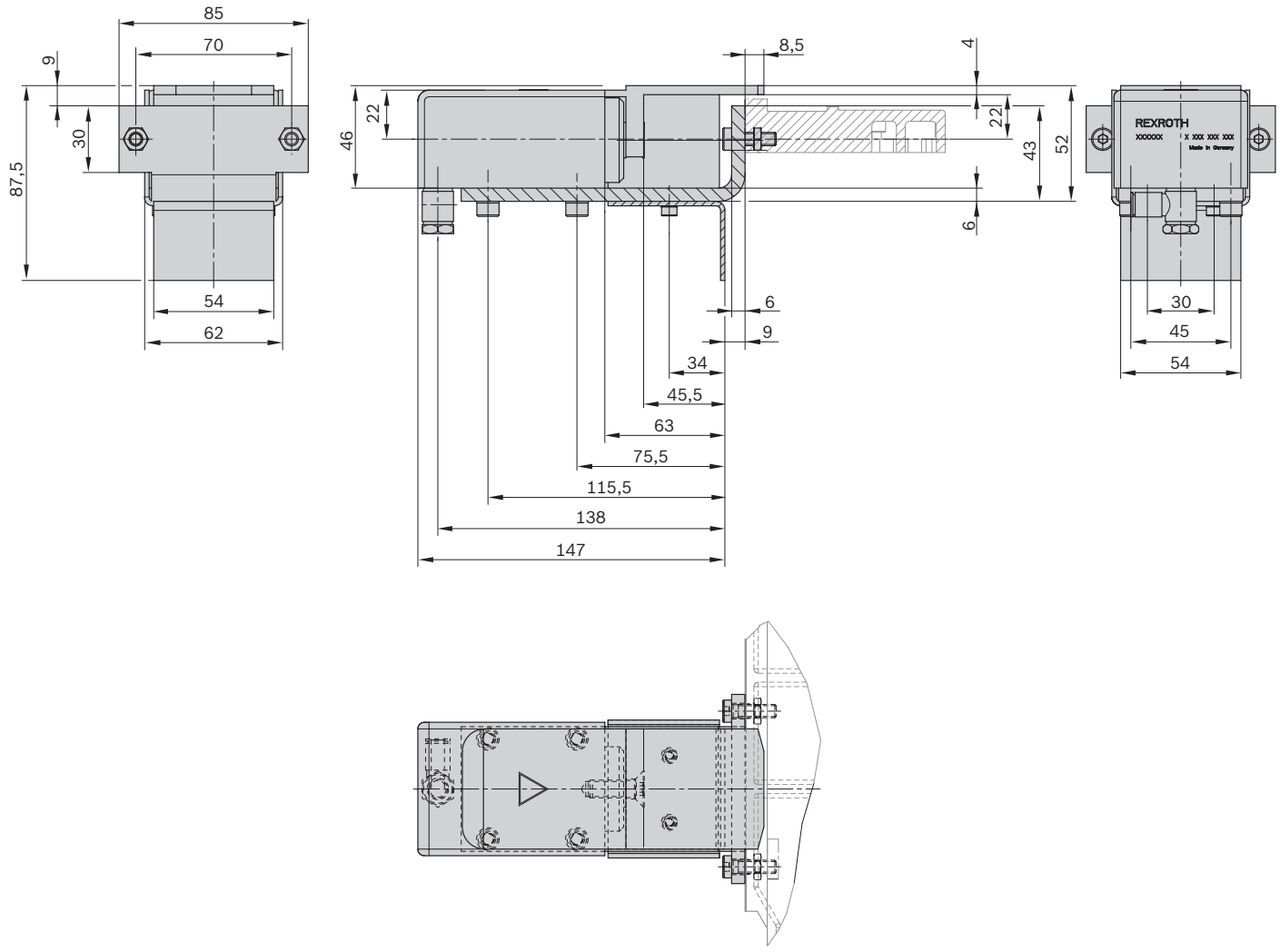


Circuit diagram



1 Not included in the scope of delivery

Dimensions


85
70
9
30
87,5
54
62
8,5
4
22
46
22
43
52
6
6
9
34
45,5
63
75,5
115,5
138
147
REXROTH
30
45
54
28923

Damper DA 2/100-C

- For permitted total weight of workpiece pallets up to 100 kg
- Pneumatic damper
- Continuously adjustable
- During infeeding in a longitudinal section
- Optimal damping at a ratio of 2:1 between heavy and light workpiece pallets
- Can be combined with WT 2, WT 2/F, WT 2/H and WT 2/F-H
- Installation location: Section ST 2/... or belt section BS 2/...

The damper cushions the impact of the arriving workpiece pallet. The DA 2/100-C is suitable for infeeding from a transverse section into a longitudinal section. It is mounted directly on the section profile of the longitudinal section.

The pneumatic return occurs as the stop gate opens, which permits the workpiece pallet to move toward the damper. The damper is not traversable.

Scope of delivery

- Incl. fastening material
- Damper DA2/100-C for infeeding the workpiece pallets WT 2 and WT 2/F

Condition on delivery

- Not assembled

Ordering information

Product description	Material number
Damper DA 2/100-C	3842525734

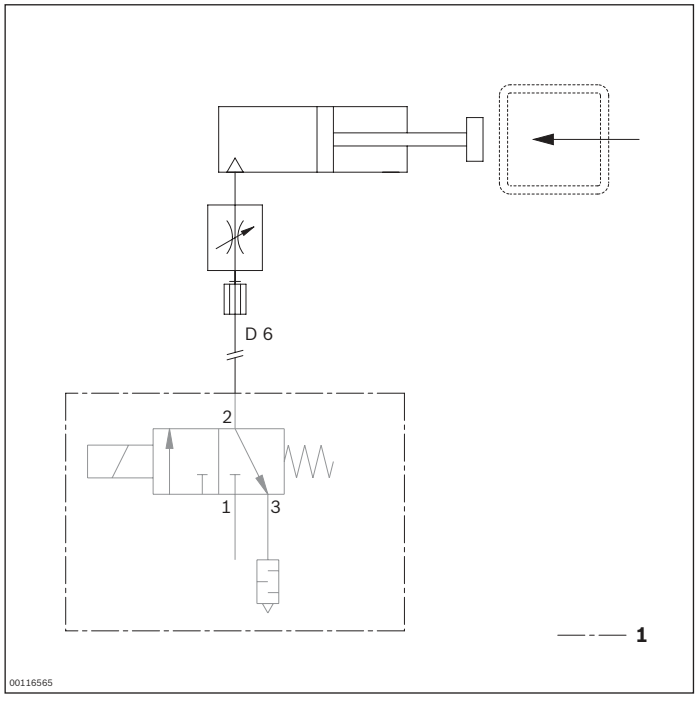
Technical data

Material number			**3842525734**
Max. total workpiece pallet weight	m_G	kg	100
Min. workpiece pallet weight	m	kg	5
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop: Steel; hardened
Operating temperature[1)]		°C	0 ... +60
Push in air connection	Ø	mm	6

[1)] High-temperature damper on request

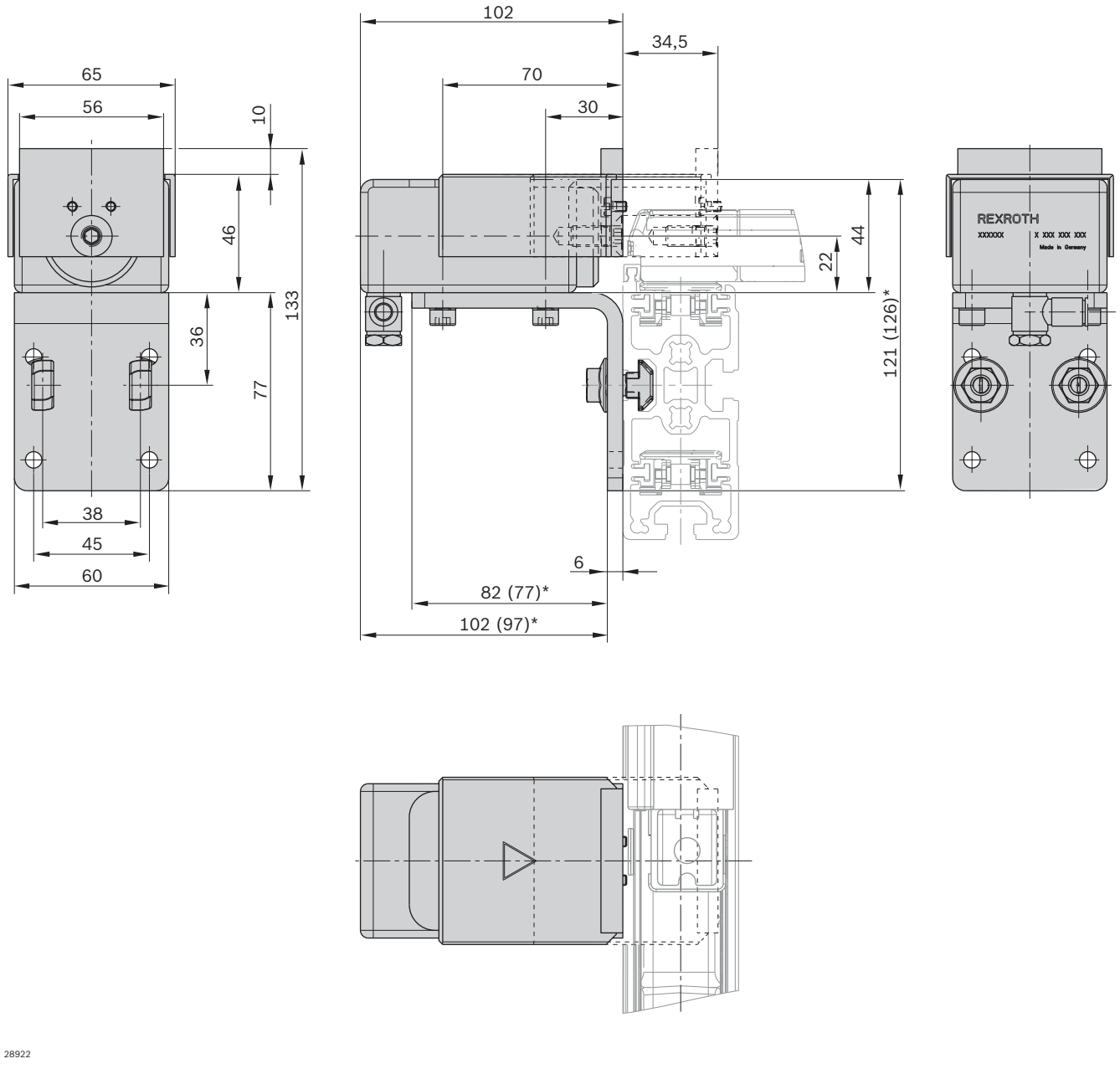
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
100	6
100	9
100	12
95	15
55	18

Circuit diagram



1 Not included in the scope of delivery

Dimensions



* Dimension in brackets apply to mounting on section profile ST 2/...-H

Damper DA 2/100-E

- For permitted total weight of workpiece pallets up to 100 kg
- Pneumatic damper
- Continuously adjustable
- Optimal damping at a ratio of 2:1 between heavy and light workpiece pallets
- Can be combined with WT 2, WT 2/F, WT 2/H and WT 2/F-H
- Installation location: Lift transverse unit HQ 2/U-H or HQ 2/C-H

The damper cushions the impact of the arriving workpiece pallet. The DA 2/100-E is suitable for outfeeding via an HQ 2/U-H. The pneumatic return is parallel to opening of the stop gate, which permits the workpiece pallet to move towards the damper. The damper is traversable.

Scope of delivery

- Incl. fastening material
- Damper DA 2/100-E for outfeeding the workpiece pallets WT 2, WT 2/F, WT 2/H or WT 2/F-H via an HQ 2/U-H or HQ 2/C-H

Condition on delivery

- Not assembled

Ordering information

Product description	Material number
Damper DA 2/100-E	3842548585

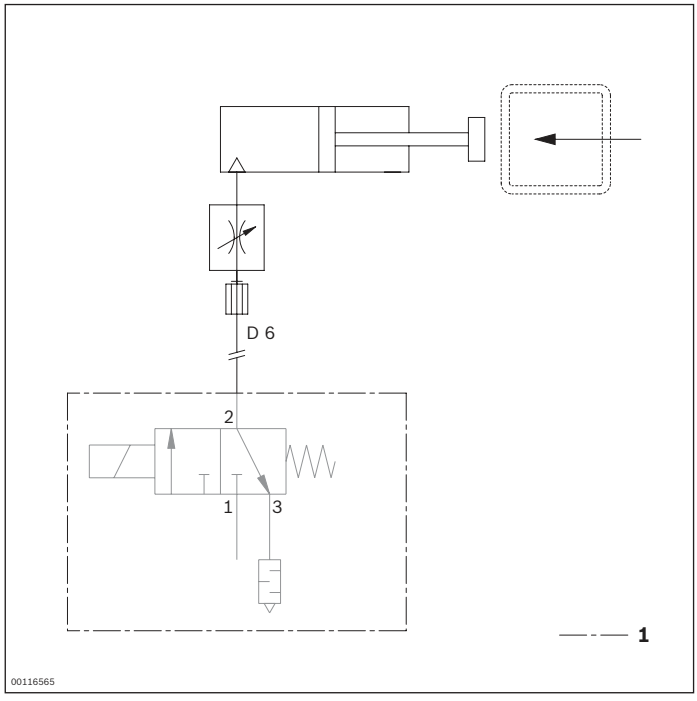
Technical data

Material number			**3842548585**
Max. total workpiece pallet weight	m_G	kg	100
Min. workpiece pallet weight	m	kg	5
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop: Steel; hardened
Operating temperature[1)]		°C	0 ... +60
Push in air connection	Ø	mm	6

[1)] High-temperature damper on request

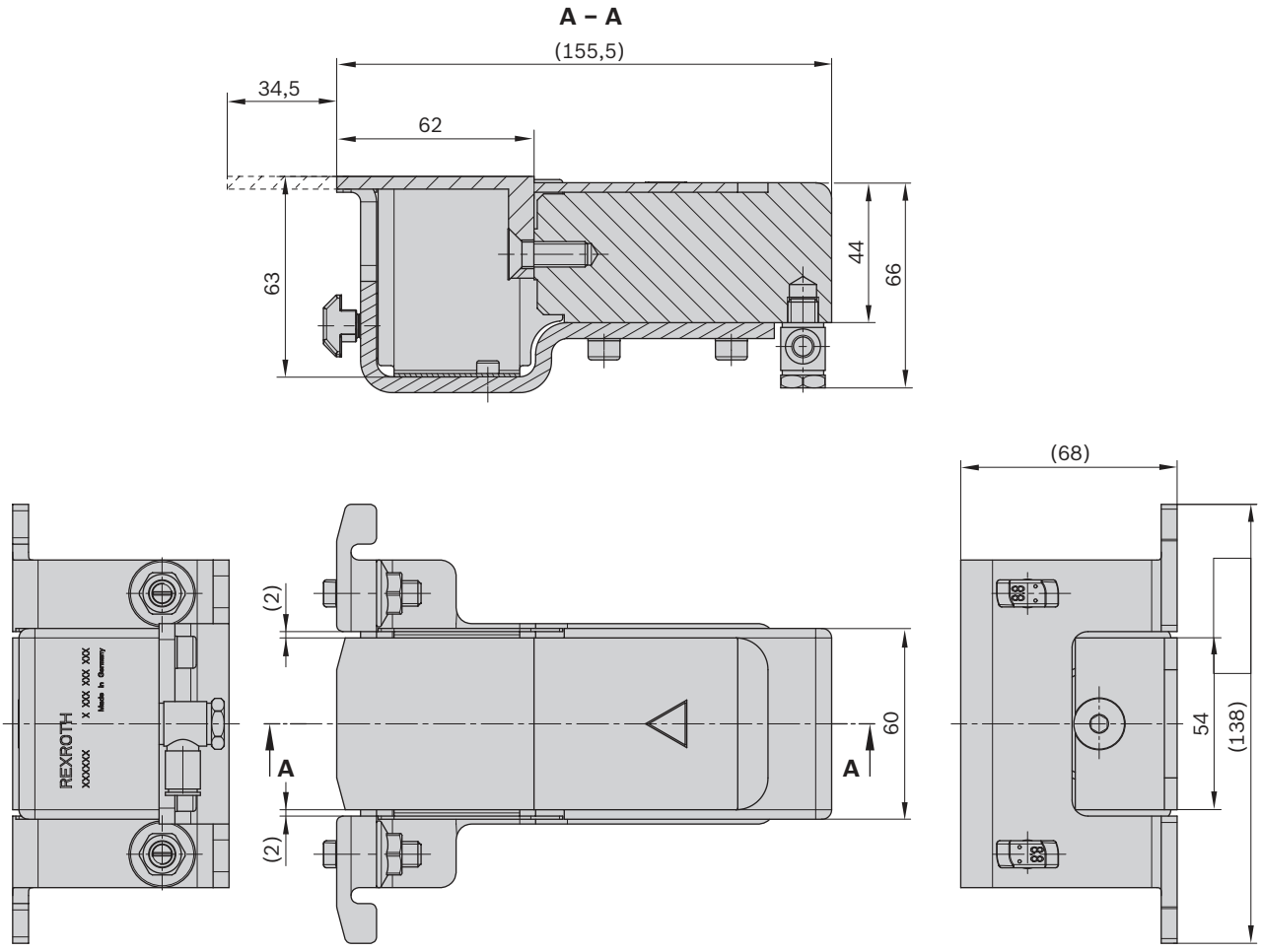
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
100	6
100	9
100	12
95	15
55	18

Circuit diagram



1 Not included in the scope of delivery

Dimensions



Damper DA 2/150-E

- Hydraulic damper with closed damping system
- Before outfeeding via a lift transverse unit HQ 2/U-H
- For permitted total weight of workpiece pallets up to 130 kg with belts, toothed belts or flat-top chains
- For permitted total weight of workpiece pallets up to 150 kg with accumulation roller chains
- Can be combined with WT 2, WT 2/F, WT 2/H and WT 2/F-H
- Installation location: Lift transverse unit HQ 2/U-H or HQ 2/C-H

The damper cushions the impact of the arriving workpiece pallet. The damper DA 2/150-E is suitable for outfeeding a workpiece pallet via an HQ 2/U-H. The pneumatic return is parallel to the opening of the stop gate, which permits the workpiece pallet to move towards the damper. The damper is traversable.

Scope of delivery

- Incl. fastening material
- Damper DA 2/150-E for outfeeding the workpiece pallets WT 2, WT 2/F, WT 2/H or WT 2/F-H via an HQ 2/U-H or HQ 2/C-H

Condition on delivery

- Not assembled

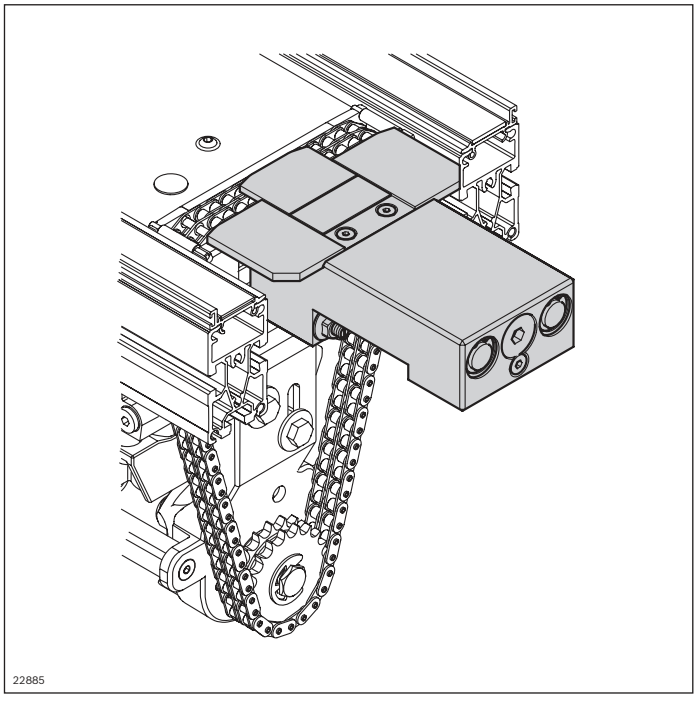
Ordering information

Product description	Material number
Damper DA 2/150-E	3842548644

Technical data

Material number			**3842548644**
Max. total workpiece pallet weight	m_G	kg	Belt, toothed belt, flat-top chain 130 Accumulation roller chain: 150
Min. workpiece pallet weight	m	kg	Belt, toothed belt, flat-top chain 15 Accumulation roller chain: 60
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop: Steel; hardened
Operating temperature[1)]		°C	0 ... +60
Push in air connection	Ø	mm	6

[1)] High-temperature damper on request



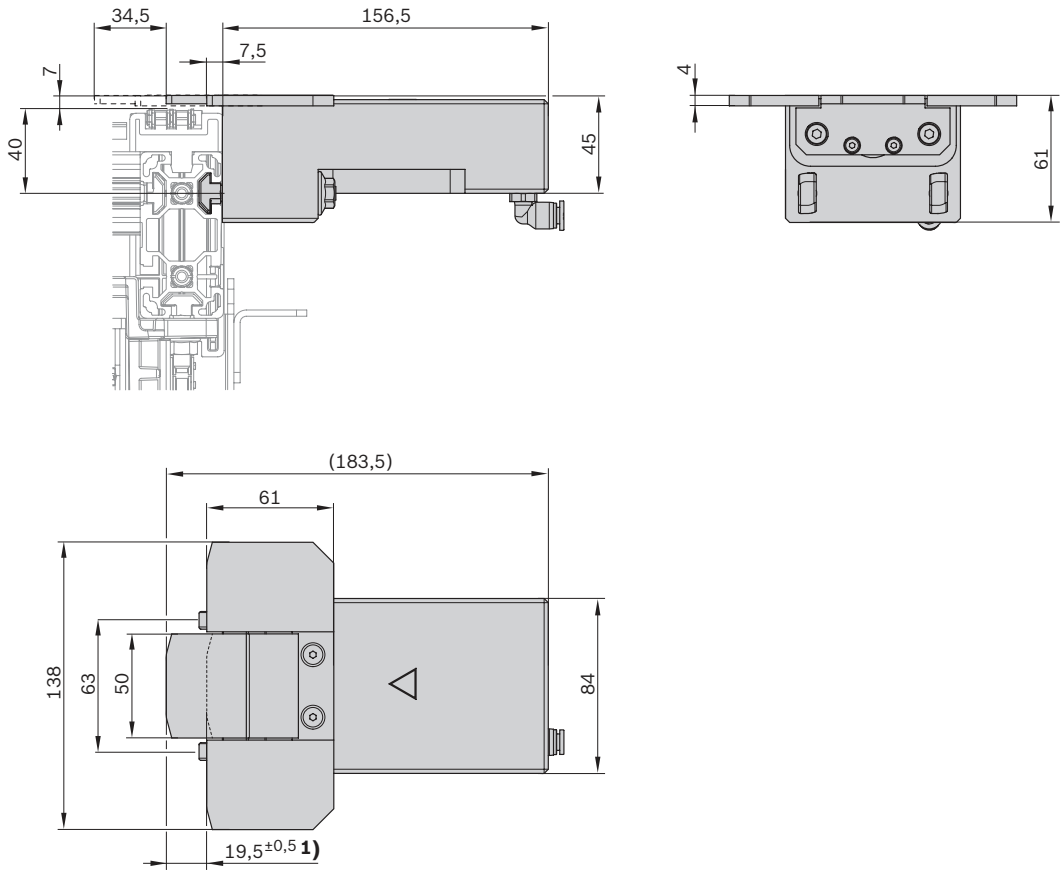
Belt, toothed belt, or flat-top chain

Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
130	6
130	9
130	12
130	15
130	18

Accumulation roller chain

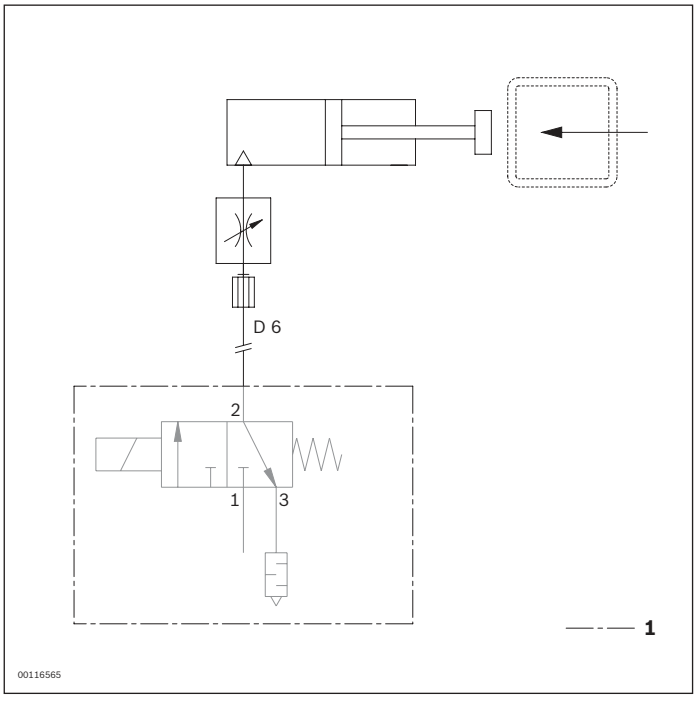
Permitted total weight of workpiece pallet m_G (kg)	**Nominal speed v_N (m/min)**
150	6
150	9
150	12
150	15
150	18

Dimensions



1) Stroke

Circuit diagram



1 Not included in the scope of delivery

Damper DA 2/100-H

- For permitted total weight of workpiece pallets up to 100 kg
- Pneumatic damper
- Continuously adjustable
- Installation location: Lift transverse unit HQ 2/C-H
- Can be combined with WT 2/H and WT 2/F-H

Notice: Combination with WT 2/LS not possible.

The damper cushions the impact of workpiece pallets when they are moved from a transverse section into a longitudinal section and vice versa. The pneumatic return occurs as the stop gate opens, which permits the workpiece pallet to move toward the damper.
For installation in a lift transverse unit HQ 2/C-H.
The damper is traversable.

Scope of delivery

- Incl. fastening material
- Damper DA 2/100-H for infeeding or outfeeding the workpiece pallets WT 2/H or WT 2/F-H via an HQ 2/C-H

Condition on delivery

- Not assembled

Ordering information

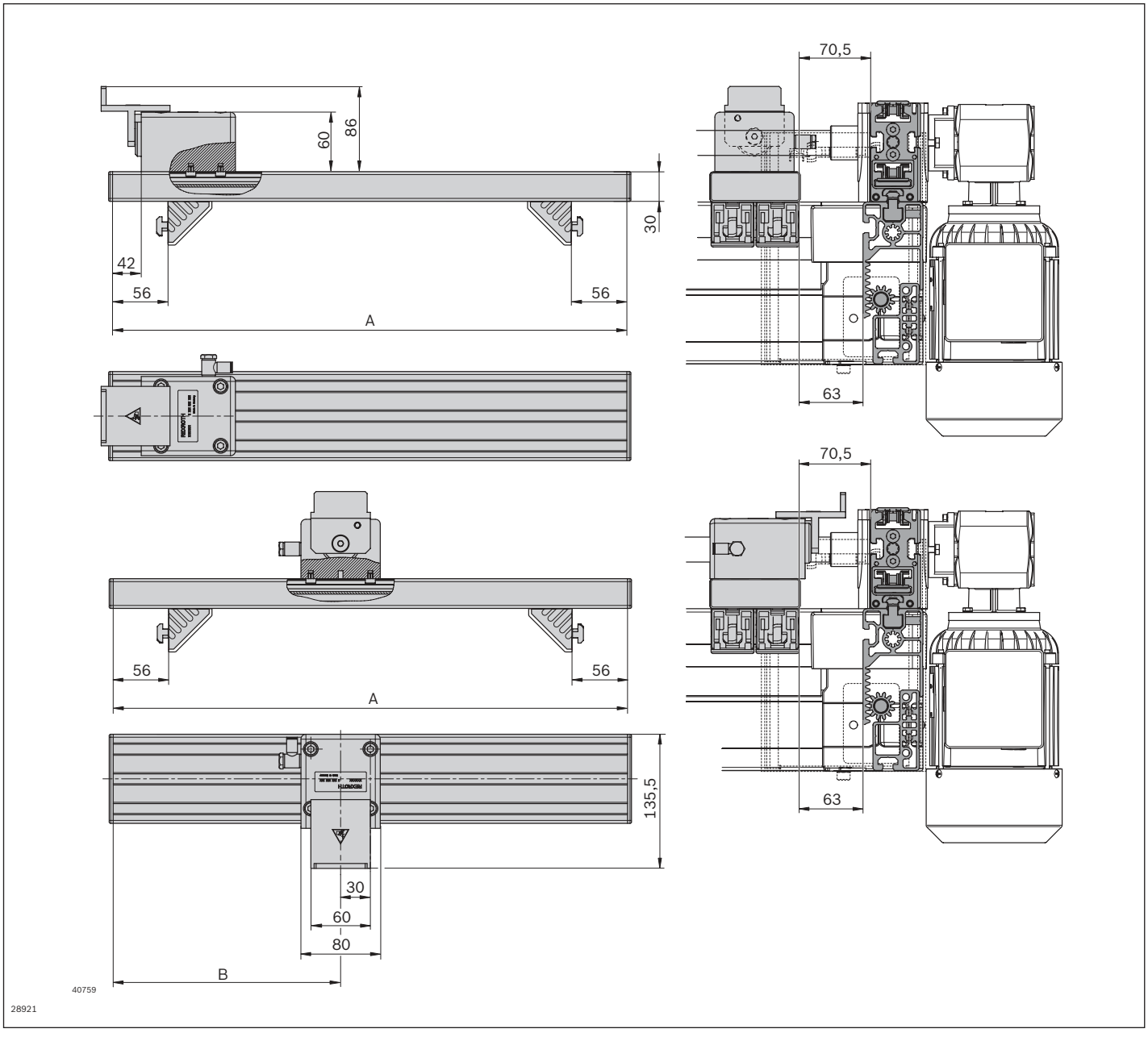
Material number		**3842998745**
b_L (mm)	Track width in the longitudinal conveyor	480, 640, 800, 1040, 1200
b_L (mm)	Track width in the longitudinal conveyor	480 ... 1200

Technical data

Material number			**3842998745**
Max. total workpiece pallet weight	m_G	kg	100
Min. workpiece pallet weight	m	kg	5
ESD			Yes
Material specification			Housing: Aluminum; hard anodized Stop: Steel; hardened Section profile: Aluminum, natural; anodized
Operating temperature[1)]		°C	0 ... +60
Push in air connection	Ø	mm	6

[1)] High-temperature damper on request

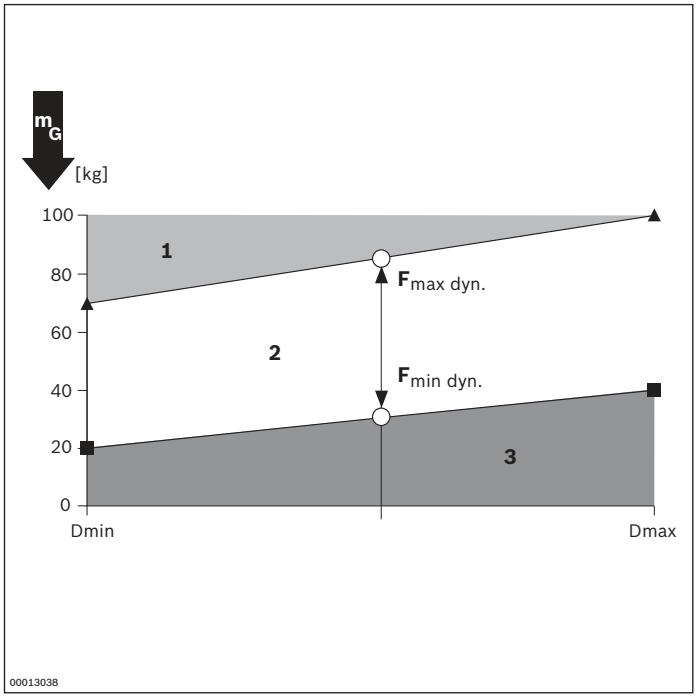
Dimensions



Track width in the longitudinal conveyor b_L (mm)	Dimension A (mm)	Dimension B (mm)
480	359	149.5
640	519	229.5
800	679	309.5
1040	919	429.5
1200	1079	509.5

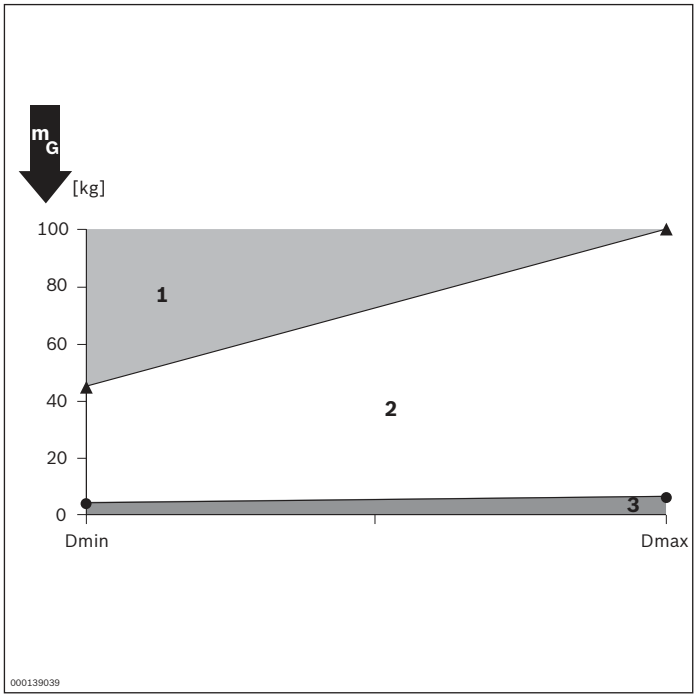
Characteristic curve diagram

Damping setting, accumulation roller chain μ = 0.02



1 Damping effect limited, use of a return stop
VE 2/RS-H recommended
2 Recommended range
3 Not possible
Dmax/min damping setting

Damping setting, flat-top chain μ = 0.2



1 Damping effect limited, use of a return stop
VE 2/RS-H recommended
2 Recommended range
3 Not possible
Dmax/min damping setting

Damper DA 2/250-H

- For permitted total weight of workpiece pallets up to 250 kg
- Pneumatic damper
- Continuously adjustable
- Installation location: Lift transverse unit HQ 2/C-H
- Can be combined with WT 2/H and WT 2/F-H

Notice: Combination with WT 2/LS not possible.

The damper cushions the impact of workpiece pallets when they are moved from a transverse section into a longitudinal section and vice versa. The pneumatic return occurs as the stop gate opens, which permits the workpiece pallet to move toward the damper.
For installation in a lift transverse unit HQ 2/C-H.
The damper is traversable.

Scope of delivery

- Incl. fastening material
- Damper DA 2/100-H for infeeding or outfeeding the workpiece pallets WT 2/H or WT 2/F-H via an HQ 2/C-H

Condition on delivery

- Not assembled

Ordering information

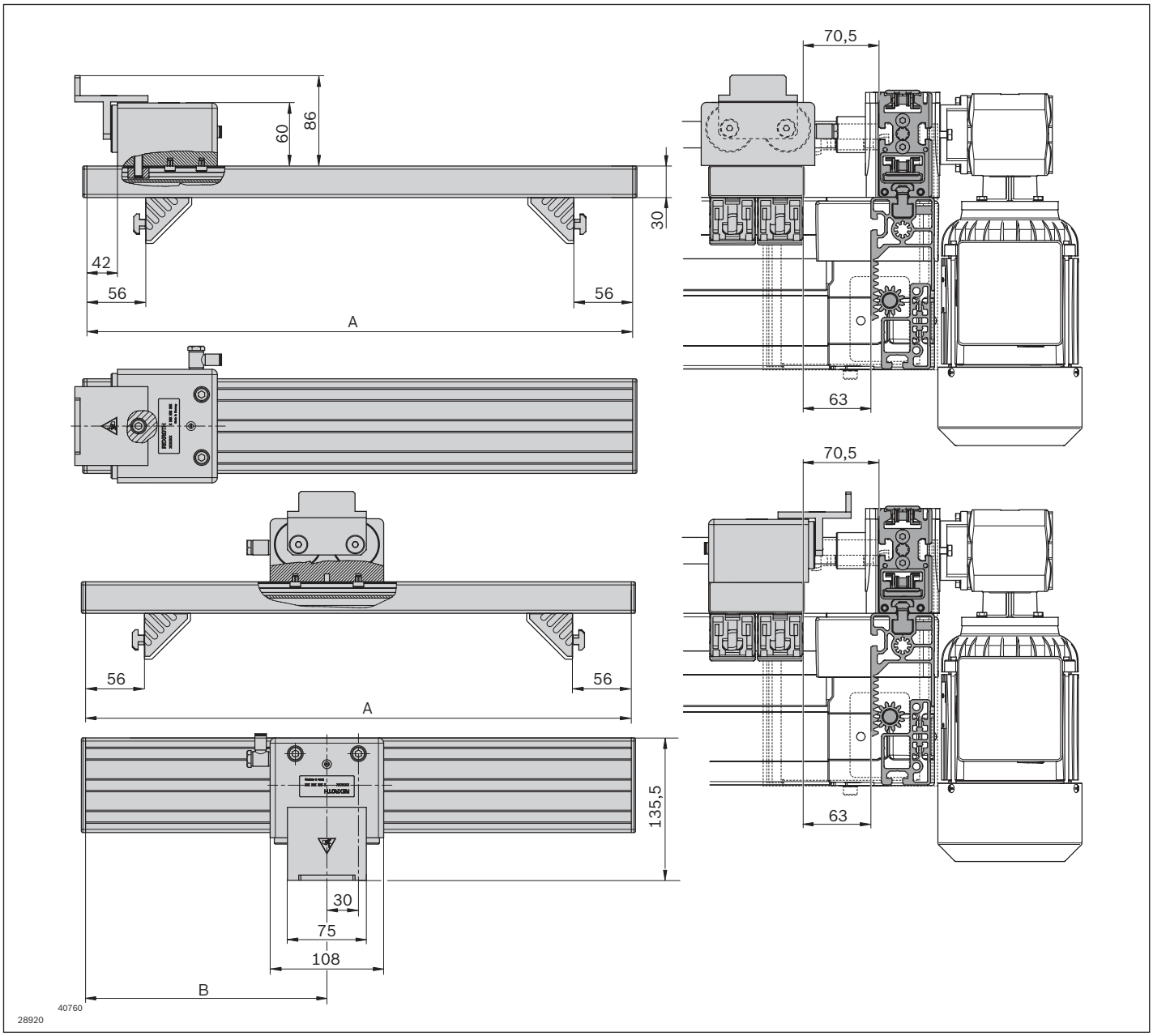
Material number		3842998746
b_L (mm)	Track width in the longitudinal conveyor	480, 640, 800, 1040, 1200
b_L (mm)	Track width in the longitudinal conveyor	480 ... 1200

Technical data

Material number			**3842998746**
Max. total workpiece pallet weight	m_G	kg	250
Min. workpiece pallet weight	m	kg	5
ESD			Yes
Material specification			Housing: Aluminum, hard anodized Stop: Steel; hardened Section profile: Aluminum, natural; anodized
Operating temperature[1)]		°C	0 ... +60
Push in air connection	Ø	mm	6

[1)] High-temperature damper on request

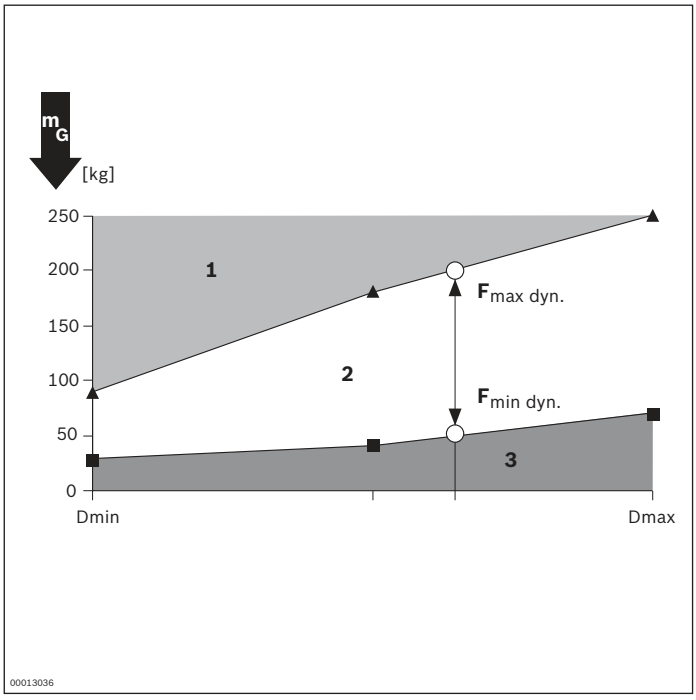
Dimensions



Track width in the longitudinal conveyor b_L (mm)	Dimension A (mm)	Dimension B (mm)
480	359	149.5
640	519	229.5
800	679	309.5
1040	919	429.5
1200	1079	509.5

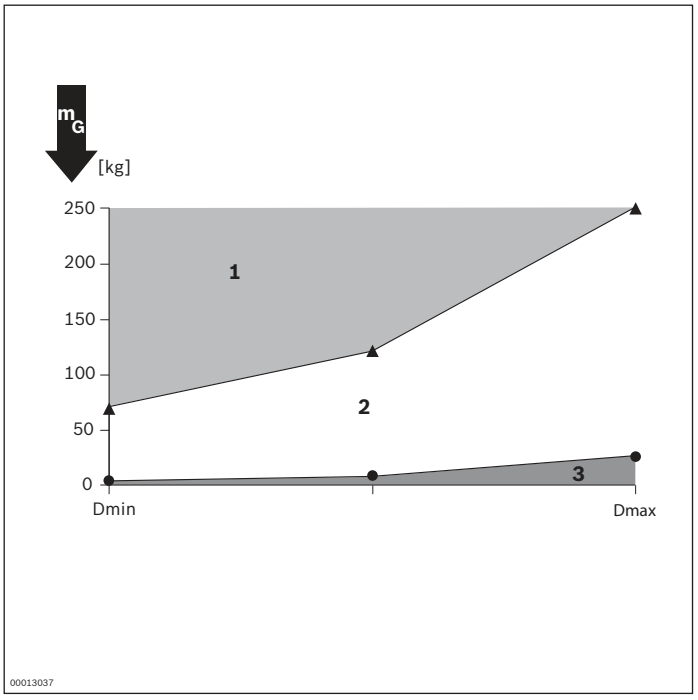
Characteristic curve diagram

Damping setting, accumulation roller chain μ = 0.02



1 Damping effect limited, use of a return stop
VE 2/RS-H recommended
2 Recommended range
3 Not possible
Dmax/min damping setting

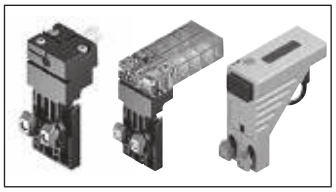
Damping setting, flat-top chain μ = 0.2



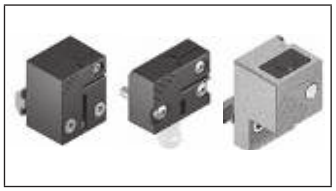
1 Damping effect limited, use of a return stop
VE 2/RS-H recommended
2 Recommended range
3 Not possible
Dmax/min damping setting

Switch bracket SH 2/...

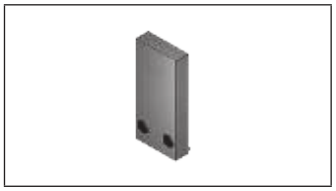
There are five types of sensor switch bracket available for use in the transfer system TS 2*plus*.
The switch brackets SH 2/... are only suitable for flush and non-flush mounting sensors.



Switch brackets SH 2/S, SH 2/ST, SH 2/S-H **8-92**



Switch brackets SH 2/U, SH 2/UV, SH 2/U-H **8-98**



Switch bracket SH 2/SF **8-104**

Switch bracket SH 2/EP **8-106**

Deflector **8-108**

Switch bracket SH 2/S

- For fastening a sensor and attaching to the outside groove of a conveyor section
- Suitable for lateral sensing of the workpiece pallet position
- Simple, fast mounting and replacement of the sensor without adjustment through flush installation with defined switching distance
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/...-H with a profile width of 50 mm
- Changing the sensor is quick and easy by loosening a separate clamping screw.
  The switch bracket stays in position
- The short length of the switch bracket enables recognition of the operating status of the sensor
- The integrated cable routing and cable clamping allows secure and protected cable routing
- Side query adjustable
- One-time switch bracket setting on installation

The switch bracket can be used to fix a sensor M12x1 in place for lateral sensing of the workpiece pallet position.

Required accessories

- Sensor M12x1, S_N = 8 mm, L ≥ 44 mm can be installed flush or not flush, see p. 8-112

Scope of delivery

- Incl. all fastening material to mount on the conveyor sections ST 2/...

Condition on delivery

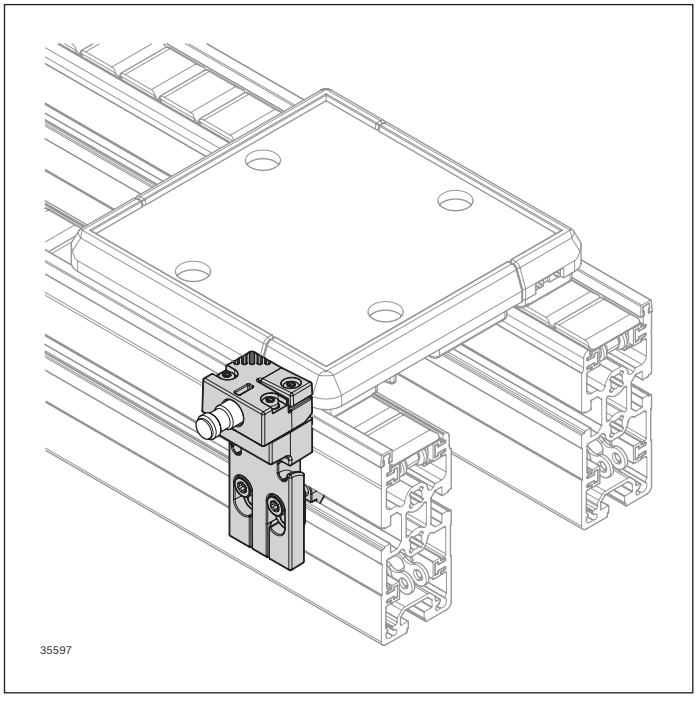
- Not assembled

Ordering information

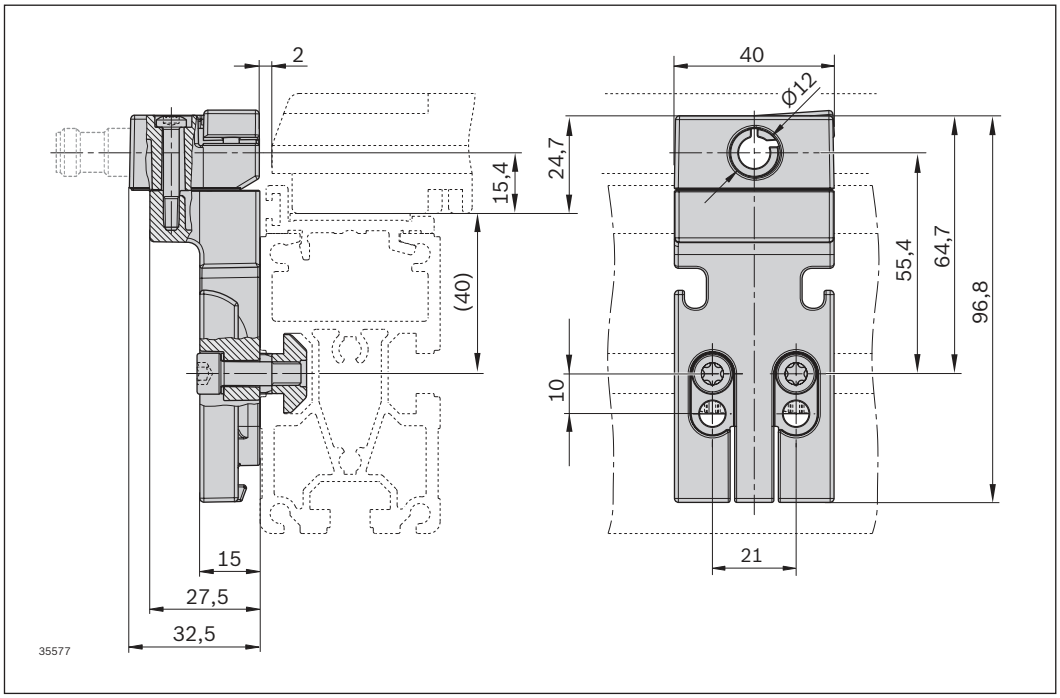
Product description	Material number
Switch bracket SH 2/S	3842567085

Technical data

Material number	3842567085
Material specification	PA66, black



Dimensions



Switch bracket SH 2/ST

- For fastening a sensor and attaching to the outside groove of a conveyor section
- Suitable for lateral sensing of the workpiece pallet position
- Switch cover to protect sensor and cable
- Transparent cover to recognize the operating state of the sensor
- Simple, fast mounting and replacement of the sensor without adjustment through flush installation with defined switching distance
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/...-H with a profile width of 50 mm
- Changing the sensor is quick and easy by loosening a separate clamping screw.
  The switch bracket stays in position
- The integrated cable routing and cable clamping allows secure and protected cable routing
- Side query adjustable
- One-time switch bracket setting on installation

The switch bracket can be used to fix a sensor M12x1 in place for lateral sensing of the workpiece pallet position.

Required accessories

- Sensor M12x1, S_N = 8 mm, L ≥ 44 mm can be installed flush or not flush, see p. 8-112

Scope of delivery

- Incl. fastening material

Condition on delivery

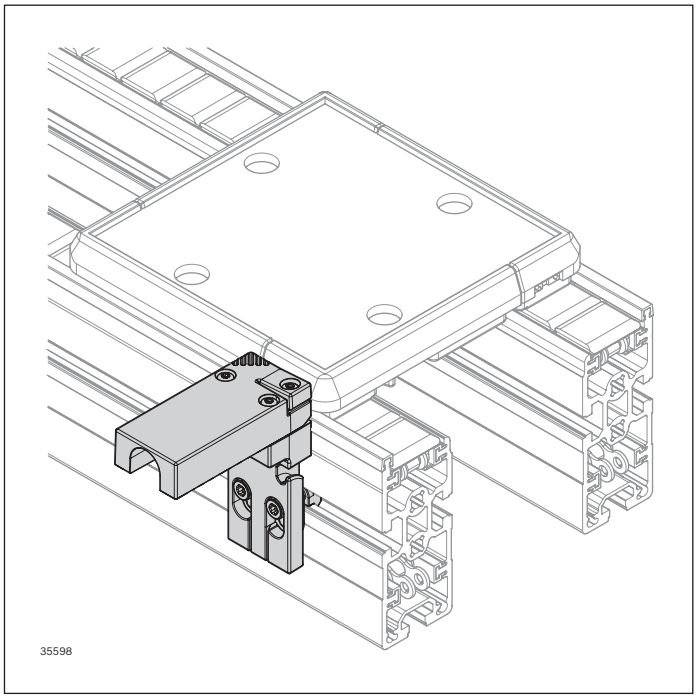
- Not assembled

Ordering information

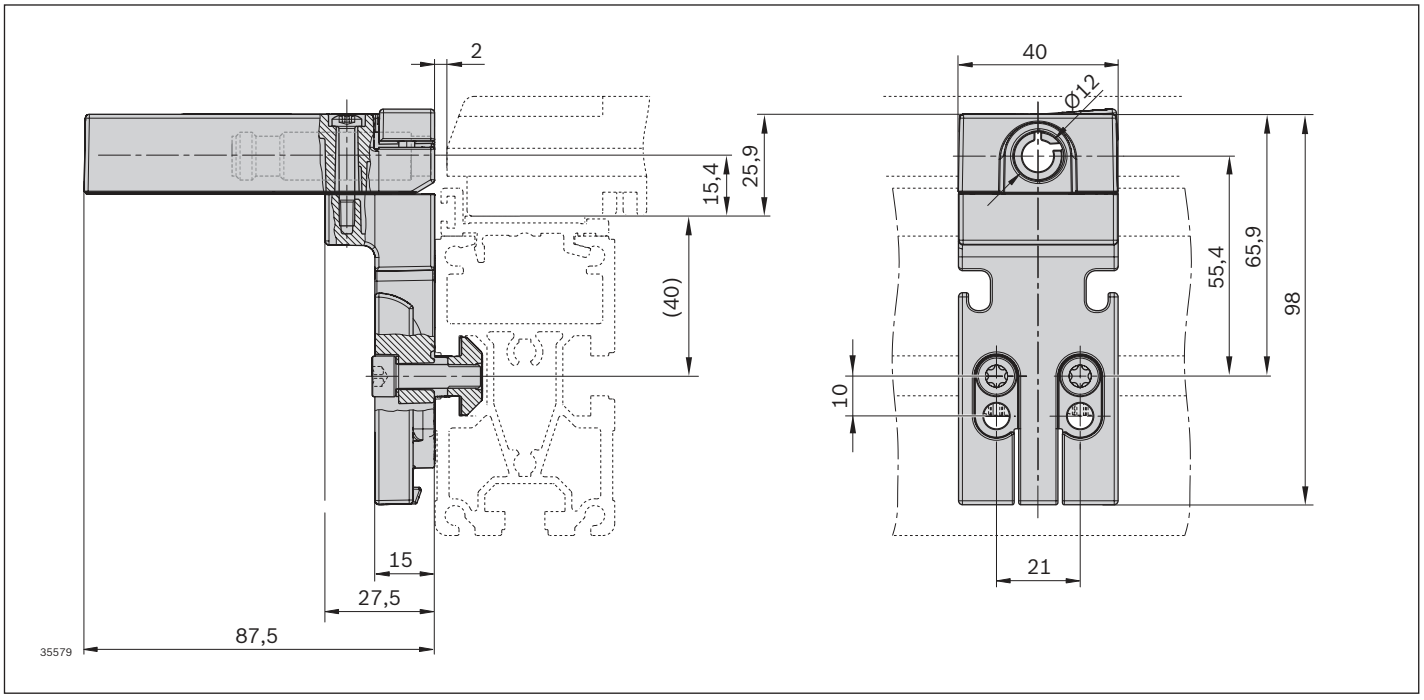
Product description	Material number
Switch bracket SH 2/ST	3842567086

Technical data

Material number	3842567086
Material specification	Housing: PA66, black Switch cover: ABS; transparent



Dimensions



Switch bracket SH 2/S-H

The switch bracket can be used to fix a sensor M12x1 in place for lateral sensing of the workpiece pallet position.

- For fastening a sensor and attaching to the outside groove of a conveyor section
- Especially sturdy metal design
- Able to bear loads of up to 100 kg
- Suitable for lateral sensing of the workpiece pallet position
- Switch cover to protect sensor and cable
- Inspection window to recognize the operating state of the sensor
- Simple, fast mounting and replacement of the sensor without adjustment through flush installation with defined switching distance
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/...-H with a profile width of 50 mm
- Changing the sensor is quick and easy by loosening a separate clamping screw.
  The switch bracket stays in position
- The integrated cable routing and cable clamping allows secure and protected cable routing

Required accessories

- Sensor M12x1, S_N = 8 mm, L ≥ 44 mm can be installed flush or not flush, see p. 8-112

Scope of delivery

- Incl. fastening material

Condition on delivery

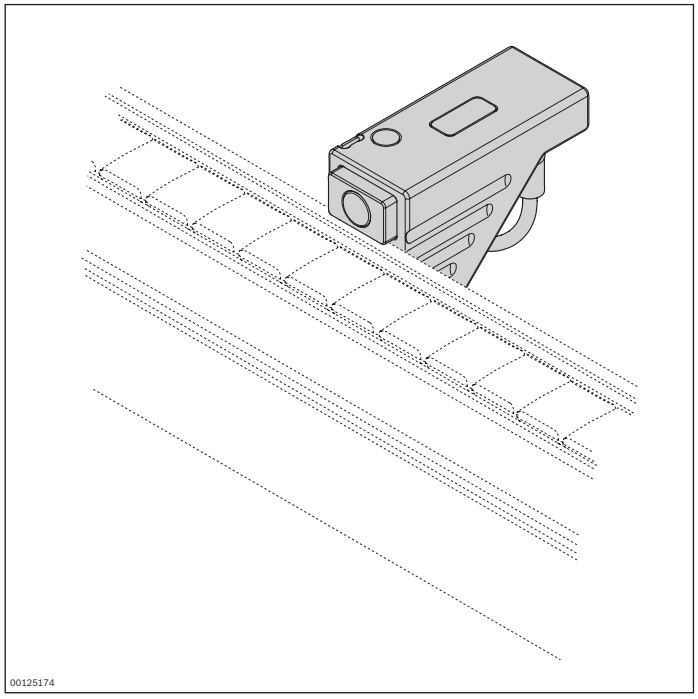
- Not assembled

Ordering information

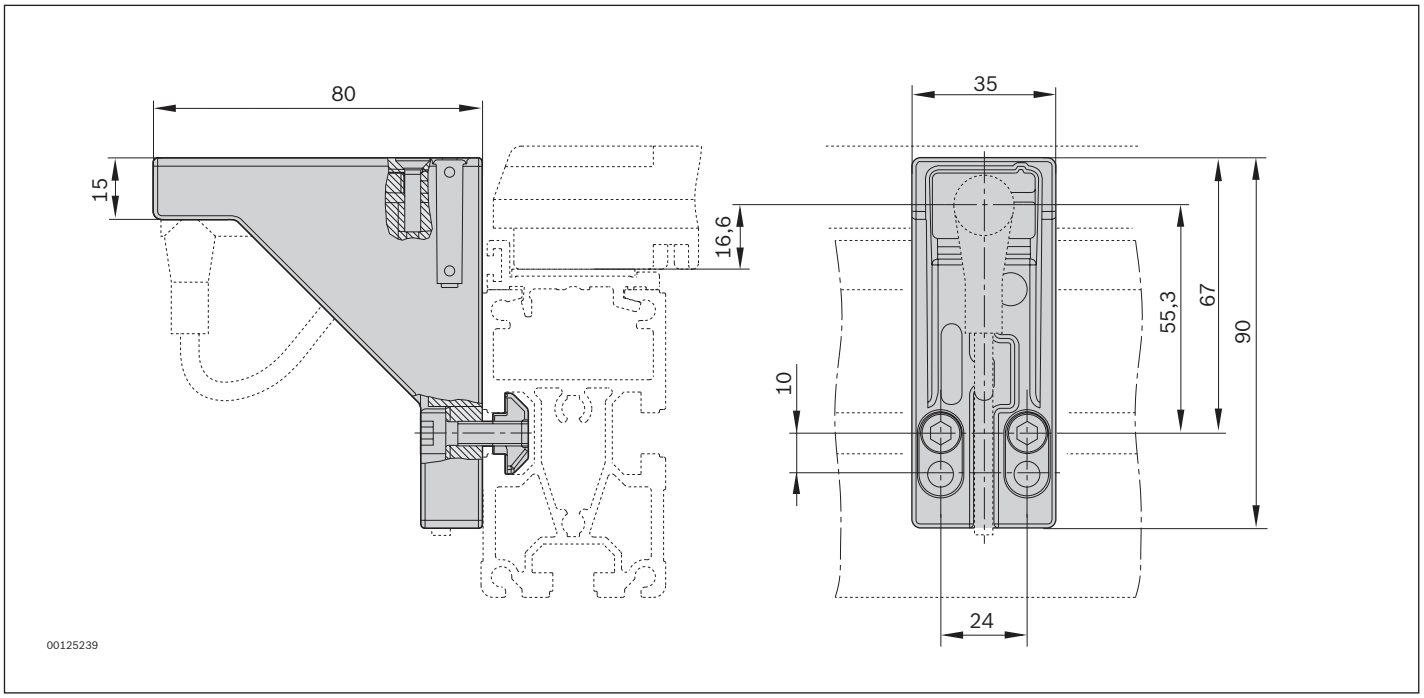
Product description	Material number
Switch bracket SH 2/S-H	3842537280

Technical data

Material number	**3842537280**
Material specification	Die-cast aluminum



Dimensions



Switch bracket SH 2/U

- For fastening a sensor and attaching to the inside groove of a conveyor section
- Suitable for querying the workpiece pallet position from below or for use in the WI rocker
- Simple, fast mounting and replacement of the sensor without adjustment through flush installation with defined switching distance
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/...-H with a profile width of 50 mm
- Changing the sensor is quick and easy by loosening a separate clamping screw.
  The switch bracket stays in position
- Inspection window to recognize the operating state of the sensor

The switch bracket is used for fastening an M12x1 sensor for inquiry of the workpiece pallet position from below.

Required accessories

- Sensor M12x1, S_N = 8 mm, L ≥ 60 mm can be installed flush or not flush, see p. 8-112

Scope of delivery

- Incl. fastening material

Condition on delivery

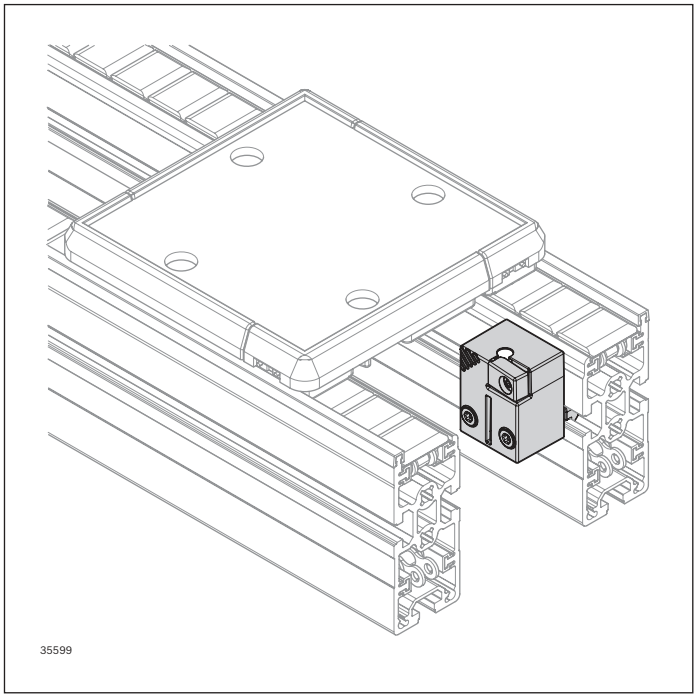
- Not assembled

Ordering information

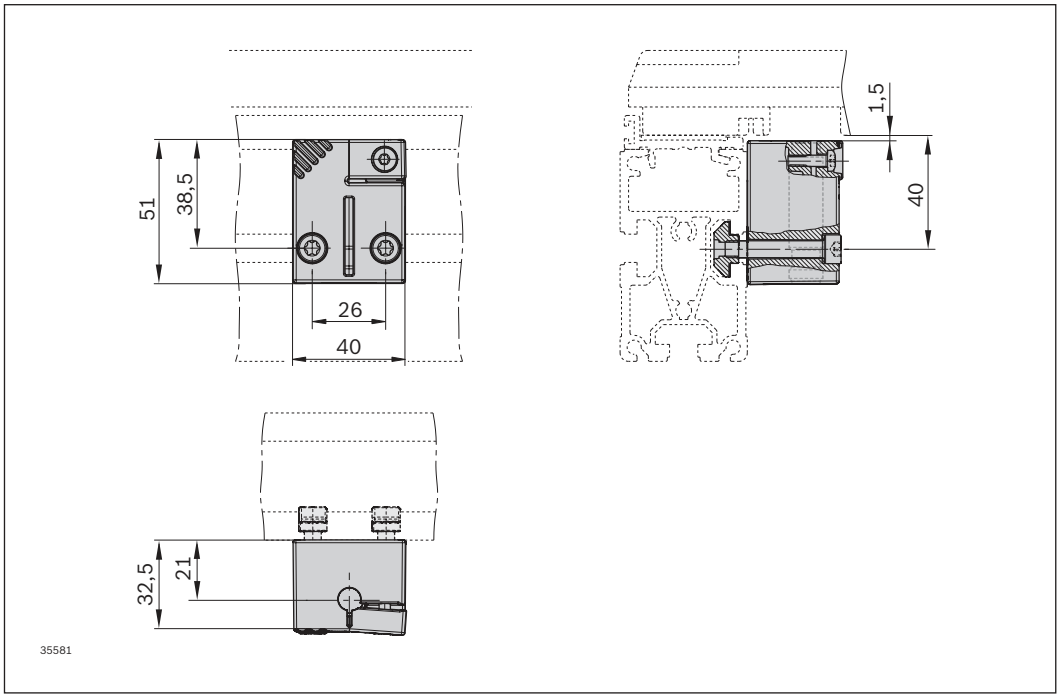
Product description	Material number
Switch bracket SH 2/U	3842557602

Technical data

Material number	3842557602
Material specification	PA66, black



Dimensions



Switch bracket SH 2/UV

- For fastening a sensor and attaching to the stop gate VE 2
- Suitable for querying the workpiece pallet position from below
- Simple, fast mounting and replacement of the sensor without adjustment through flush installation with defined switching distance
- Changing the sensor is quick and easy by loosening a separate clamping screw.
  The switch bracket stays in position
- The short length of the switch bracket enables recognition of the operating status of the sensor

The switch bracket is used for fastening an M12x1 sensor for inquiry of the workpiece pallet position from below.

Required accessories

- Sensor M12x1, S_N = 8 mm, L ≥ 44 mm can be installed flush or not flush, see p. 8-112

Scope of delivery

- Incl. fastening material

Condition on delivery

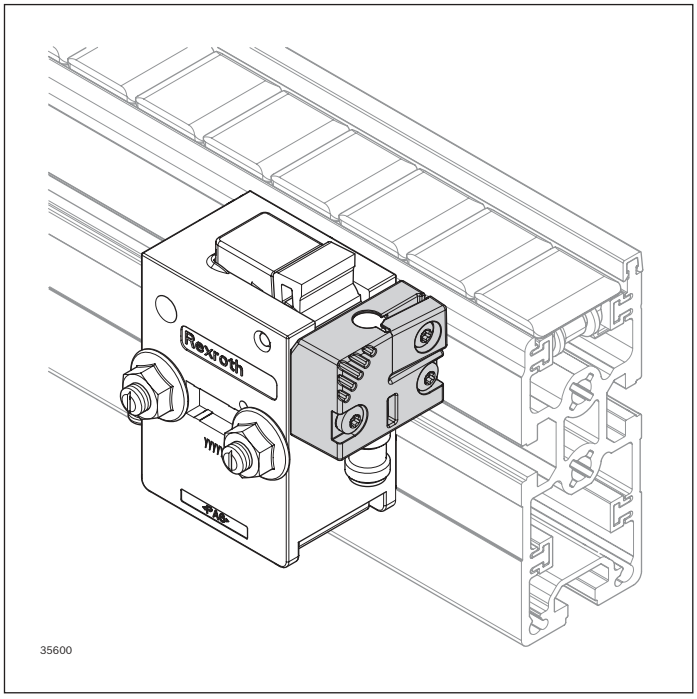
- Not assembled

Ordering information

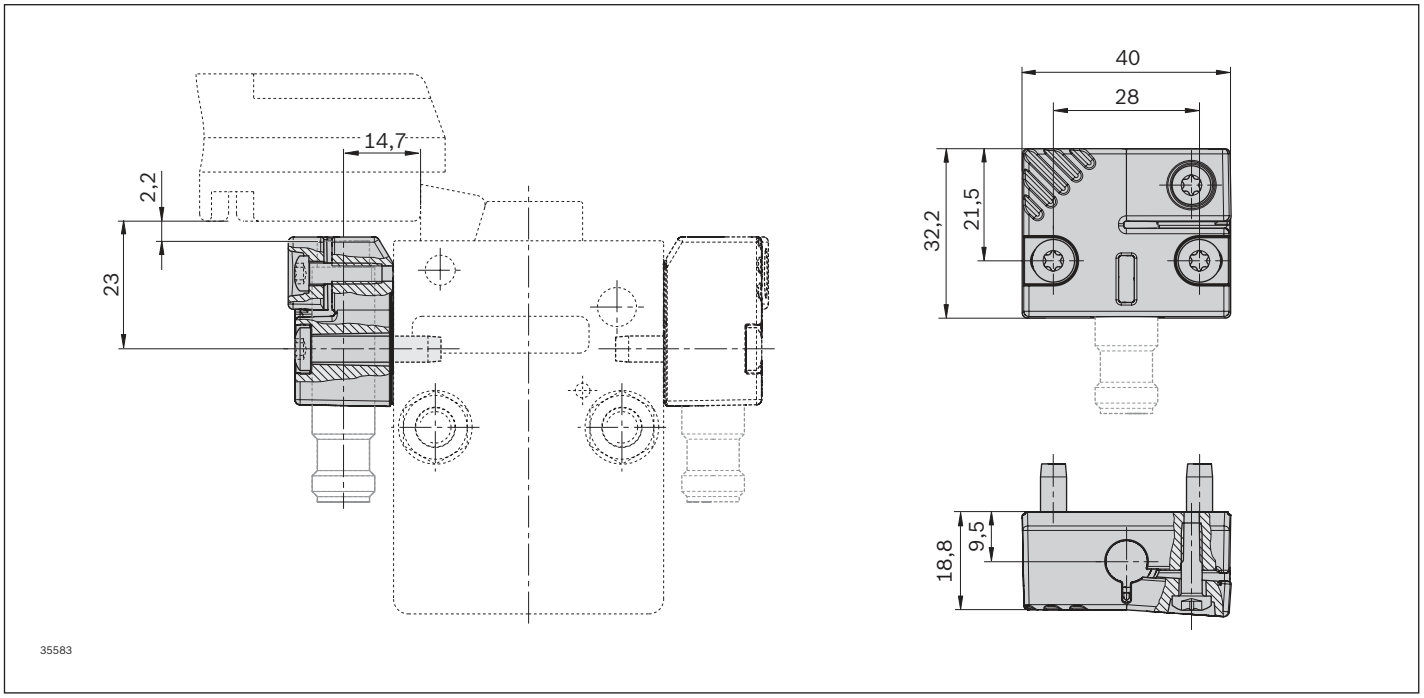
Product description	Material number
Switch bracket SH 2/UV	3842557600

Technical data

Material number	3842557600
Material specification	PA66, black



Dimensions



Switch bracket SH 2/U-H

- For fastening a sensor and attaching to the inside groove of a conveyor section
- For sensing the workpiece pallet position from below
- Especially sturdy metal design
- Able to bear loads of up to 100 kg
- Simple, fast mounting and replacement of the sensor without adjustment through flush installation with defined switching distance
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/...-H with a profile width of 50 mm
- Changing the sensor is quick and easy by loosening a separate clamping screw.
  The switch bracket stays in position
- The short length of the switch bracket enables recognition of the operating status of the sensor

The switch bracket is used for fastening an M12x1 sensor for inquiry of the workpiece pallet position from below.

Required accessories

- Sensor M12x1, S_N = 8 mm, L ≥ 44 mm can be installed flush or not flush, see p. 8-112

Scope of delivery

- Incl. fastening material

Condition on delivery

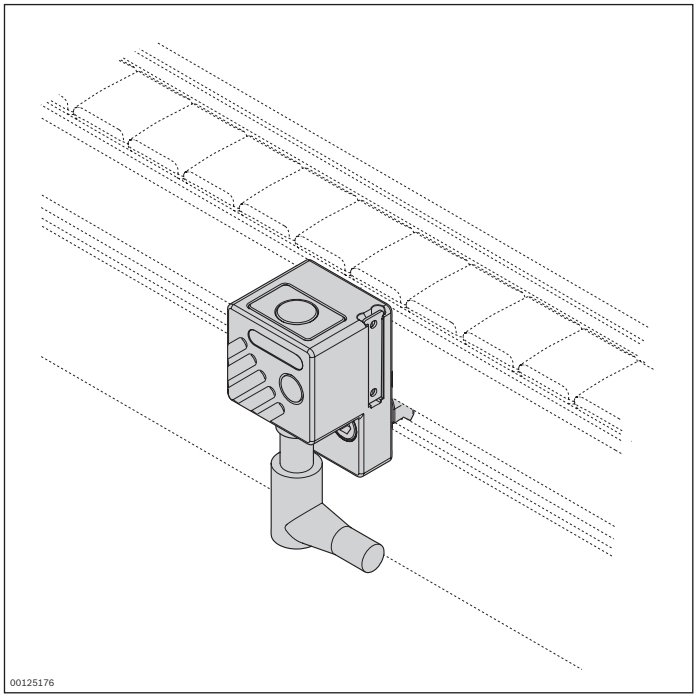
- Not assembled

Ordering information

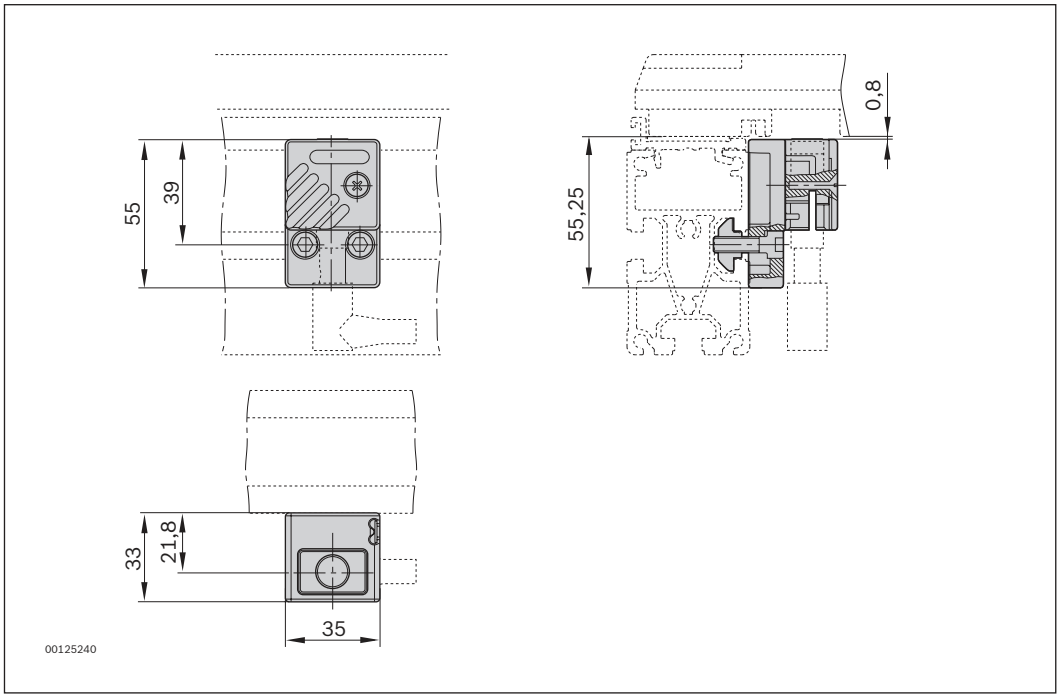
Product description	Material number
Switch bracket SH 2/U-H	3842537289

Technical data

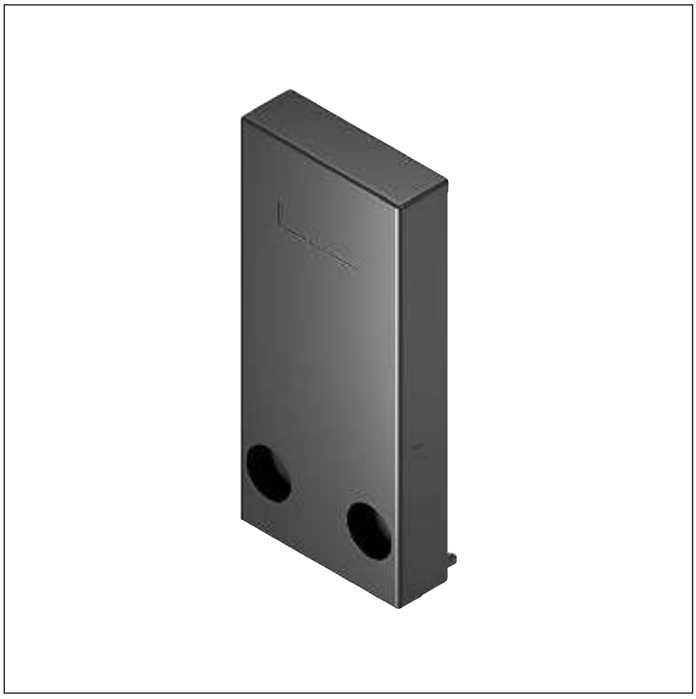
Material number	**3842537289**
Material specification	Die-cast aluminum



Dimensions



Switch bracket SH 2/SF



The switch bracket is used for fastening a sensor with special flat design for lateral inquiry of the workpiece pallet position.

- For fastening a sensor with special flat design
- Installation in the upper groove on the side of a conveyor section

Notice: Not suitable for use in heavy duty profiles and sections with a profile width of 50 mm, for example ST 2/C-H, ST 2/R-H, BS 2/R-H, BS 2/C-H.

Required accessories

- Sensor with special flat design, rated sensing range $S_N \geq 4$ mm, e.g. Balluff BES 516-347-SA-2-03

Scope of delivery

- Incl. fastening material

Condition on delivery

- Not assembled

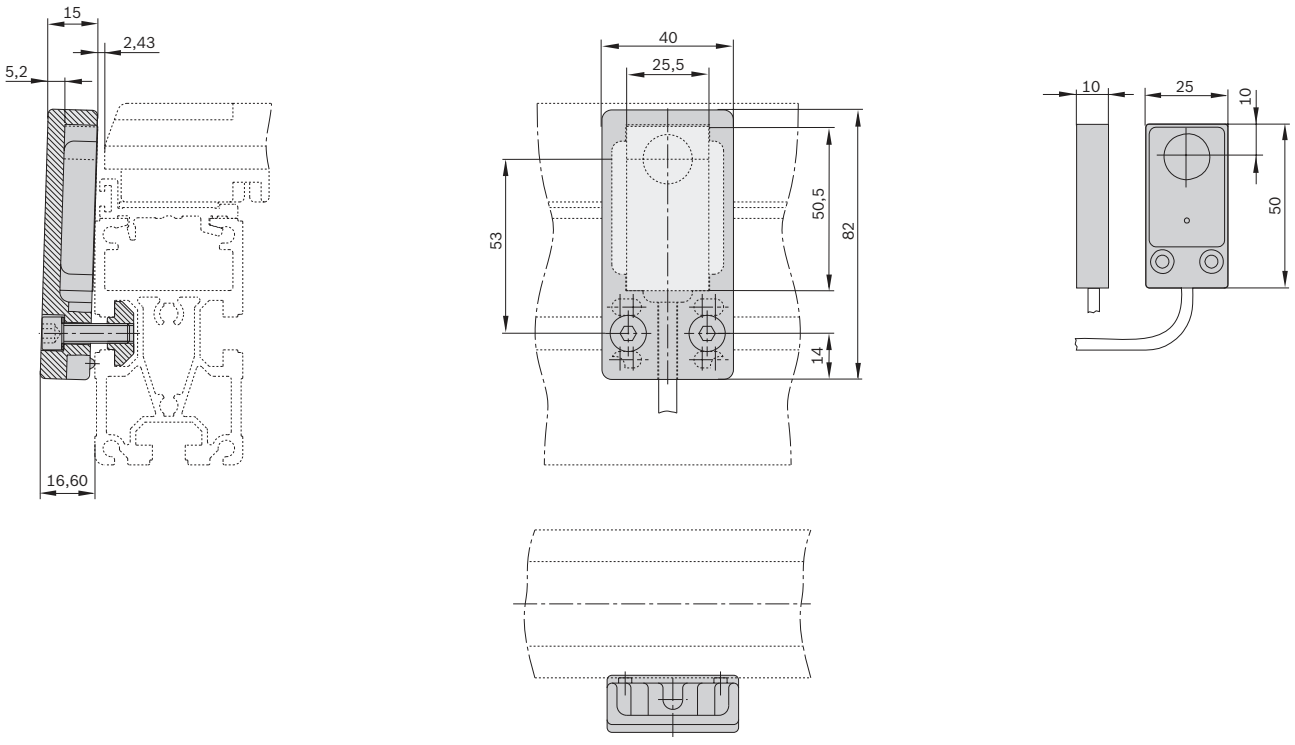
Ordering information

Product description	Material number
Switch bracket SH 2/SF	3842168840

Technical data

Material number	3842168840
Material specification	PA6

Dimensions



Switch bracket SH 2/EP

- For fastening a sensor and attaching to the belt end of a conveyor section
- Suitable for querying the workpiece pallet position
- The switch bracket is not traversable
- Simple, fast mounting and replacement of the sensor without adjustment through flush installation with defined switching distance
- Suitable for mounting a section ST 2/... with a profile width of 45 mm or a section ST 2/...-H with a profile width of 50 mm
- Changing the sensor is quick and easy by loosening a separate clamping screw.
  The switch bracket stays in position
- The short length of the switch bracket enables recognition of the operating status of the sensor
- The switch bracket is not suitable for node control on HQ's and EQ's.

Required accessories

- Sensor M12x1, S_N = 8 mm, L ≥ 44 mm can be installed flush or not flush, see p. 8-112

Scope of delivery

- Incl. fastening material

Condition on delivery

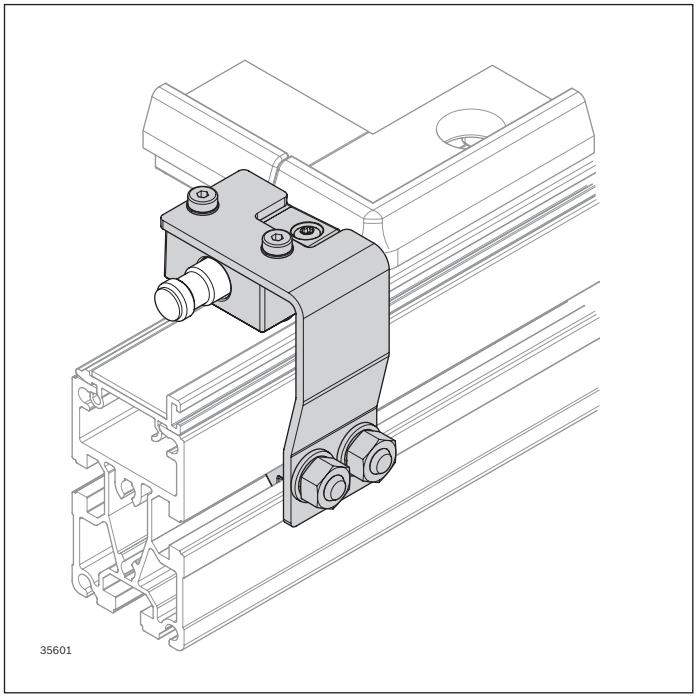
- Not assembled

Ordering information

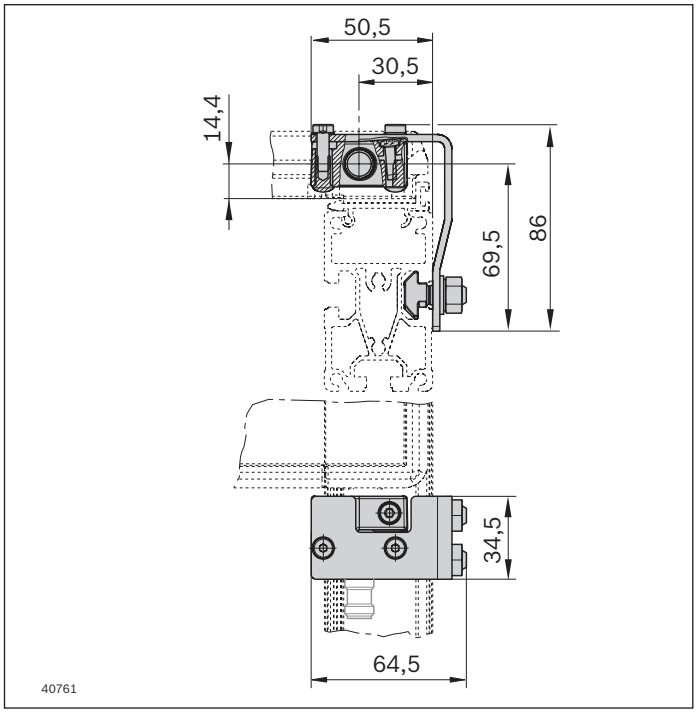
Product description	Material number
Switch bracket SH 2/EP	3842559549

Technical data

Material number	3842559549
Material specification	Steel; PA66



Dimensions



Deflector

- Protective device to restrict unintentional access between the workpiece pallet and the switch bracket during operation.
- Suitable for attaching to a switch bracket SH 2/S, SH 2/ST or rocker WI 2/M
- Centering bolts for pre-positioning and quick assembly in the profile slot

Scope of delivery

- Set left consisting of 1x deflector left, fastening material
- Set right consisting of 1x deflector right, fastening material

Condition on delivery

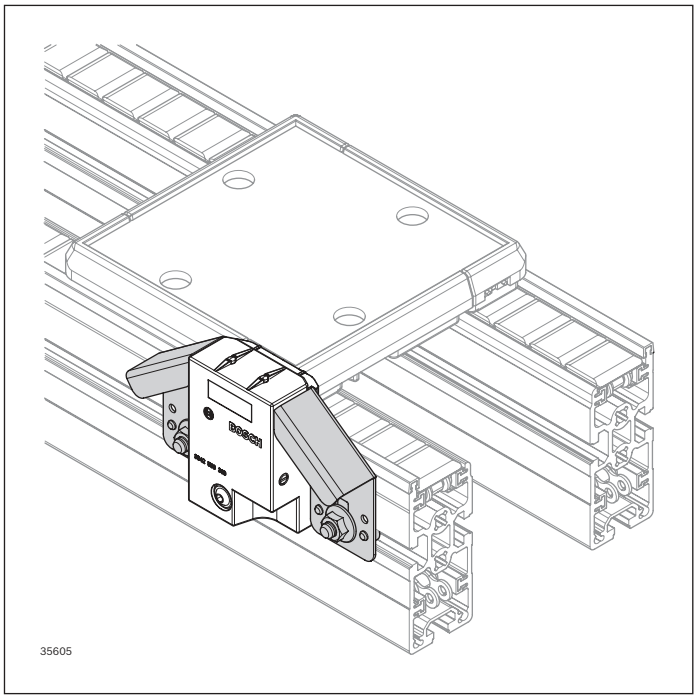
- Not assembled

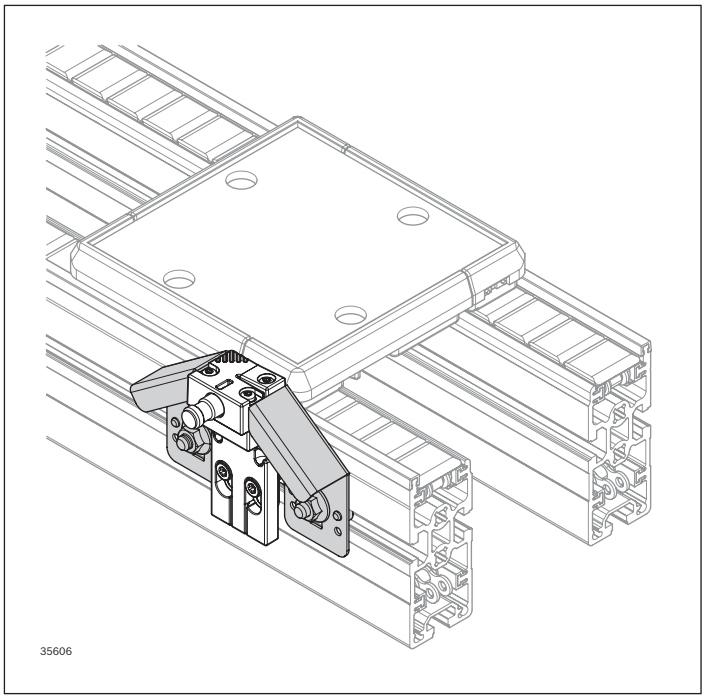
Ordering information

Product description	Material number
Deflector set, left	3842558833
Deflector set, right	3842558834

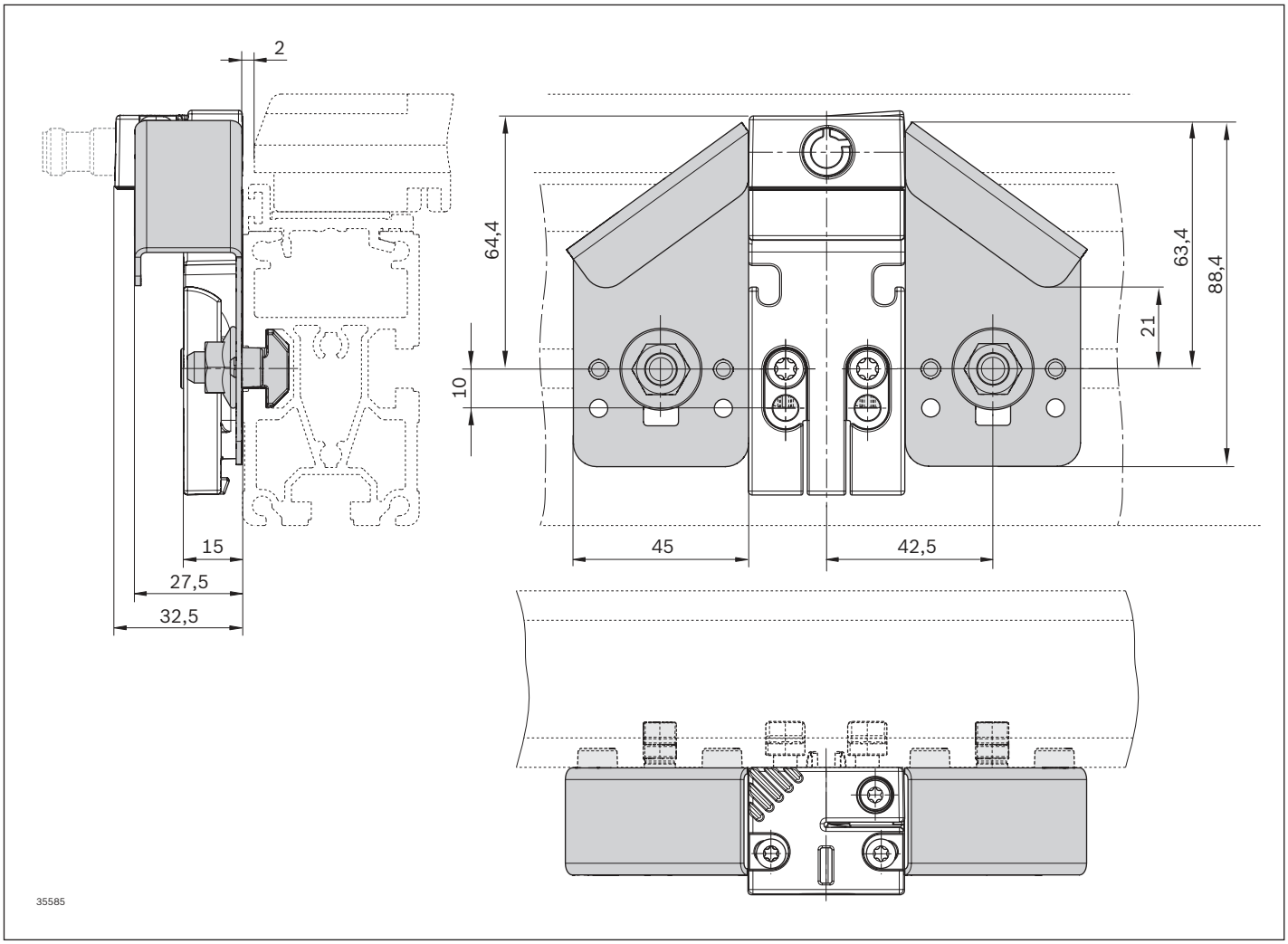
Technical data

Material number	3842558833	3842558834
Material specification	Deflector: Stainless steel Fastening material: Steel; galvanized	Deflector: Stainless steel Fastening material: Steel; galvanized





Dimensions



Sensors

Inductive sensors M12 and M8 with push-in fitting M12 or M8 for workpiece pallet detection, position sensing for stop gates, lift/transverse units, positioning units, and rotary units.

Sensors M12 with push-in fitting M12x1 **8-112**

Sensors M12 with push-in fitting M8x1 **8-114**

Sensors M8 with push-in fitting M8x1 **8-116**

Sensors M12 with push-in fitting M12x1

Detection of the position of a workpiece pallet, position sensing for lift transverse units, lift positioning units and lift rotary units.

Required accessories

- Switch bracket, see p. 8-90

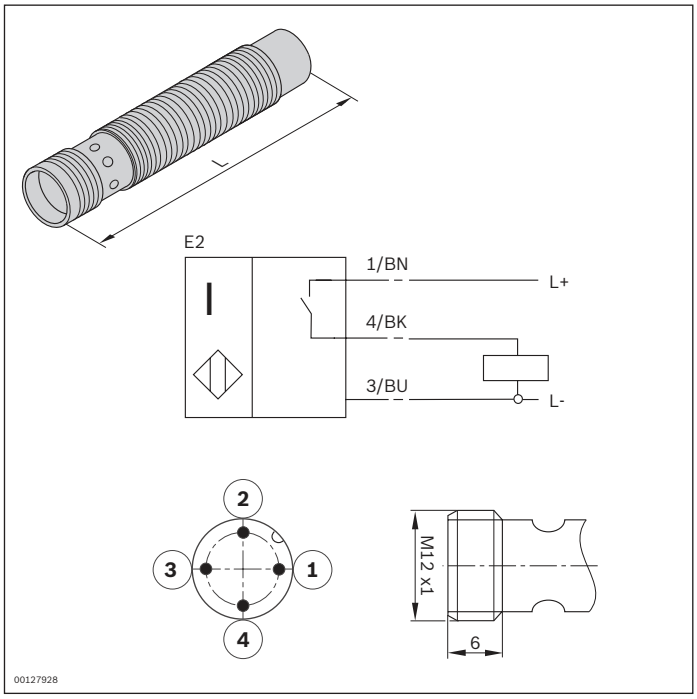
Ordering information

Product description	Material number
Sensor M12x45	3842557633
Sensor M12x45	3842549814
Sensor M12x70	3842501548
Sensor M12x60	3842558990

Technical data

Material number			3842557633	3842549814	3842501548	3842558990
Protection class			IP 68	IP 67	IP 68	IP 68
Material specification			Housing: CuZn; nickel-free coating, active surface: LCP	Housing: CuZn; nickel-free coating, active surface: LCP	Housing: Stainless steel; non-rusting, active surface: LCP	Housing: CuZn; nickel-free coating, active surface: LCP
Max. operating temperature	T	°C	-25 ... +70°C	-25 ... +70 °C	-40 ... +85 °C	-25 ... +70°C
Dimensions		mm	M12 x 45	M12 x 45	M12 x 70	M12 x 60
Length	L	mm	45	45	70	60
Push-in fitting			M12x1	M12x1	M12x1	M12x1
Rated switching distance	S_N	mm	8	4	4	8
Switching frequency		Hz	500	300	2500	1000
Operating current		mA	200	200	200	200
Mechanical installation			Not flush	Flush	Not flush	Not flush
Function display			LED	LED	LED	LED
Switching output			PNP	PNP	PNP	PNP
Switching function			Normally open (NO)	Normally open (NO)	Normally open (NO)	Normally open (NO)
Operating voltage		V DC	10 ... 30	10 ... 30	10 ... 30	10 ... 30
Approvals			cULus, CE, EAC	cULus, CE, EAC	cULus, CE, EAC	cULus, CE, EAC
Conformity with standards			IEC 60947-5-2	IEC 60947-5-2	IEC 60947-5-2	IEC 60947-5-2

Circuit diagram



Sensors M12 with push-in fitting M8x1

Detection of the position of a workpiece pallet, position sensing for lift transverse units, lift positioning units and lift rotary units.

Required accessories

- Switch bracket, see p. 8-90

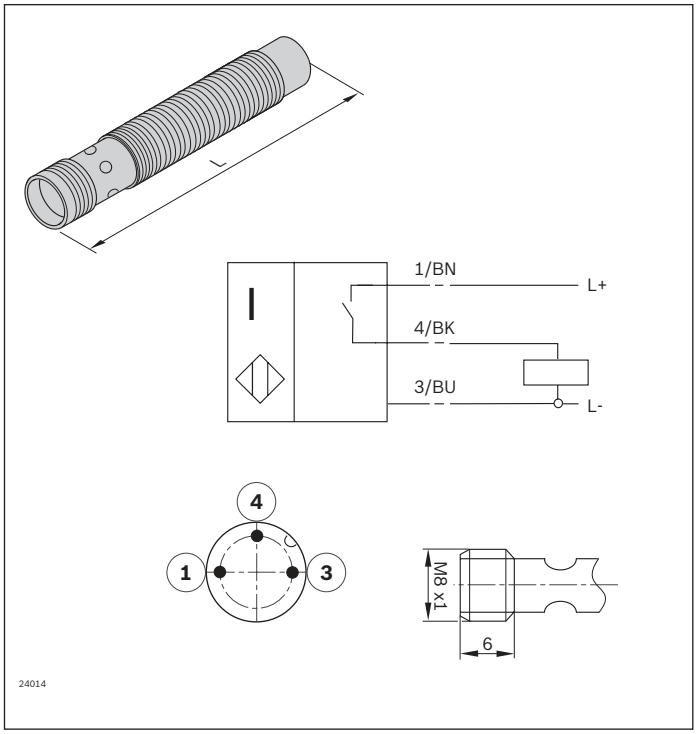
Ordering information

Product description	Material number
Sensor M12x44	3842549813
Sensor M12x67	3842549812
Sensor M12x44	3842549811

Technical data

Material number			**3842549813**	**3842549812**	**3842549811**
Protection class			IP 67	IP 67	IP 67
Material specification			Housing: CuZn; nickel-free coating, active surface: PBT	Housing: CuZn; nickel-free coating, active surface: LCP	Housing: CuZn; nickel-free coating, active surface: LCP
Max. operating temperature	T	°C	-25 ... +70°C	-25 ... +70°C	-25 ... +70°C
Dimensions		mm	M12 x 44	M12 x 67	M12 x 44
Length	L	mm	44	67	44
Push-in fitting			M8x1	M8x1	M8x1
Rated switching distance	S_N	mm	8	4	4
Switching frequency		Hz	800	2500	2500
Operating current		mA	200	200	200
Mechanical installation			Not flush	Flush	Flush
Function display			LED	LED	LED
Switching output			PNP	PNP	PNP
Switching function			Normally open (NO)	Normally open (NO)	Normally open (NO)
Operating voltage		V DC	10 ... 30	10 ... 30	10 ... 30
Approvals			cULus, CE, EAC	cULus, CE, EAC	cULus, CE, EAC
Conformity with standards			IEC 60947-5-2	IEC 60947-5-2	IEC 60947-5-2

Circuit diagram



Sensors M8 with push-in fitting M8x1

For position sensing VE 2, VE 2/L, VE 2/M or VE 2/S in connection with 3842528817. For position sensing of VA 2/50 or for chain tensioner sensing with AS/BS 2/C-100, -250, AS/BS 2/R-300, -700, KU 2...

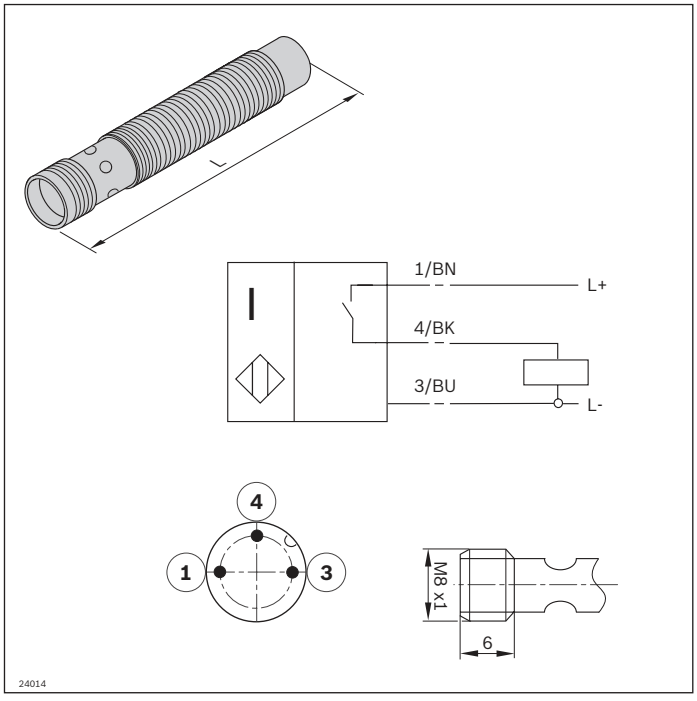
Ordering information

Product description	Material number
Sensor M8x30	3842551761

Technical data

Material number			**3842551761**
Protection class			IP 68
Material specification			Housing: Stainless steel; non-corrosive Active surface: PBT
Operating temperature	T	°C	-40 ... +85°C
Dimensions			M8 x 30
Length	L	mm	30
Push-in fitting			M8x1
Rated switching distance	S_N	mm	2
Switching frequency		Hz	5000
Operating current		mA	200
Mechanical installation			Flush
Function display			LED
Switching output			PNP
Switching function			Normally open (NO)
Operating voltage		V DC	10 ... 30
Approvals			cULus, CE, EAC, WEEE
Conformity with standards			IEC 60947-5-2

Circuit diagram



Sensor application matrix

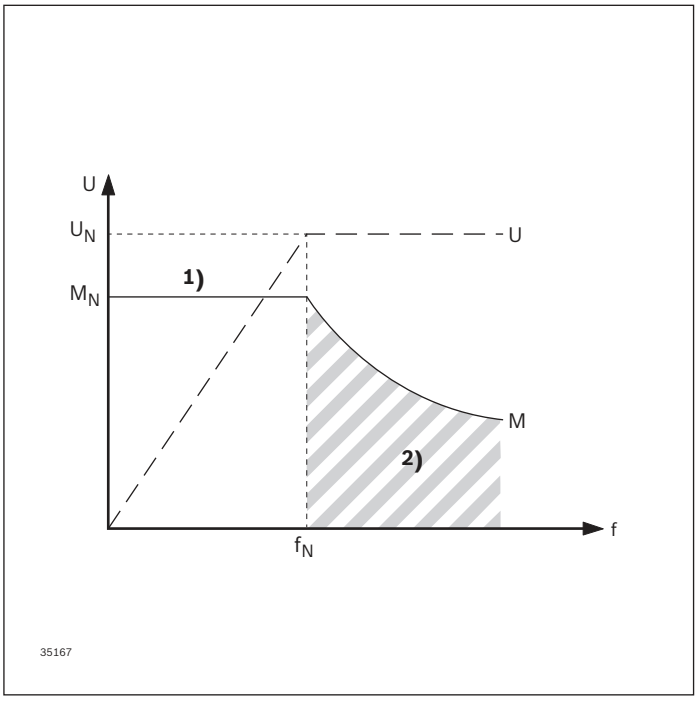
	Diameter with push-in fitting	**Sensor**				
	M12 with M12	**3842557633** S_N = 8 mm L = 45 mm	**3842501548** S_N = 4 mm L = 70 mm	**3842549814** S_N = 4 mm L = 45 mm	**3842558990** S_N = 8 mm L = 60 mm	
	M12 with M8	**3842549813** S_N = 8 mm L = 44 mm	**3842549812** S_N = 4 mm L = 67 mm	**3842549811** S_N = 4 mm L = 44 mm		
	M8 with M8					**3842551761** S_N = 2 mm L = 30 mm
Position sensing	AS 2/C-100, AS 2/C-250					X
	AS 2/C-400, AS 2/C-700	X				
	AS 2/R-300, AS 2/R-700					X
	AS 2/R-1200, AS 2/R-2200	X				
	AS 2/R-V-1200, AS 2/R-V-2200	X				
	BS 2/R-300, BS 2/R-700					X
	BS 2/C-100, BS 2/C-250					X
	BS 2/R-H	X				
	BS 2/R-V-1200	X				
	BS 2/C-H	X				
	CS/C					X
	EQ 2/TR			X		
	EQ 2/TR-90			X		
	EQ 2/T			X		
	EQ 2/TE			X		
	HQ 2/S			X		
	HQ 2/O			X		
	HQ 2/T			X		
	HQ 2/U			X		
	HQ 2/U2			X		
	HQ 2/U-H			X		
	HQ 2/C-H				X	
	HQ 2/G-H				X	
	HD 2			X		
	HD 2/H			X		
	KU 2/...					X
	PE 2			X		
	PE 2/X, PE 2/H				X	
	PE 2/XP				X	
	HP 2/L	X				
	HP 2			X		
	Position sensing VE 2					X
	VA 2/D-130			X		

	Diameter with push-in fitting	**Sensor**				
	M12 with M12	**3842557633** S_N = 8 mm L = 45 mm	**3842501548** S_N = 4 mm L = 70 mm	**3842549814** S_N = 4 mm L = 45 mm	**3842558990** S_N = 8 mm L = 60 mm	
	M12 with M8	**3842549813** S_N = 8 mm L = 44 mm	**3842549812** S_N = 4 mm L = 67 mm	**3842549811** S_N = 4 mm L = 44 mm		
	M8 with M8					**3842551761** S_N = 2 mm L = 30 mm
Query WT position	SH 2/S	X				
	SH 2/ST				X	
	SH 2/S-H	X				
	SH 2/U				X	
	SH 2/UV	X				
	SH 2/U-H	X				
	SH 2/EP	X				
	WI/M		X			
	WI 2 (horizontal installation)[1)]					
	WI 2 (vertical installation)		X			
	WI 2/X (horizontal installation)[1)]					
	WI 2/X (vertical installation)		X			
	WI 2/D (horizontal installation)[1)]					
	WI 2/D (vertical installation)		X			
	HQ 2/U-H			X		
	DE2-BG1	X	X	X		X
	DE2-BG2	X	X	X		X
	DE2-BG3	X	X	X		X
	DE2-BG4	X	X	X		X

[1)] The sensor for horizontal installation is provided by the customer, see p. 8-144ff

Frequency converter FU

U/f mode



A frequency converter is a power converter that adjusts the frequency and amplitude of AC voltage in order to directly power three-phase motors.

- VFC*plus*: U/f open loop, linear and quadratic
- SLVC: Sensorless vector control (torque/speed)
- VFC eco (energy-saving function)

1) M = const.
2) Field weakening mode
f = frequency
f_N = nominal frequency
M = torque
M_N = rated torque
U = voltage
U_N = nominal voltage

OPERATING MODES

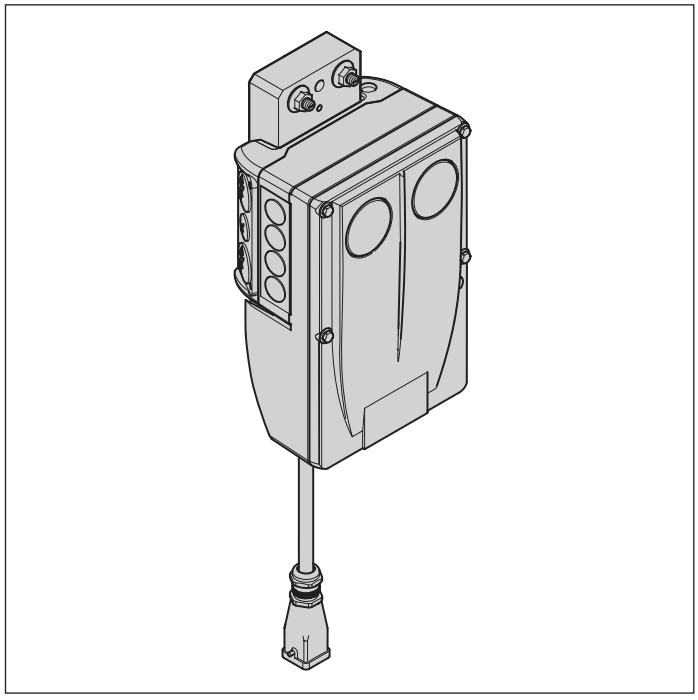
U/f mode, U/f characteristic curve

The converter regulates motor voltage and keeps the frequency constant. Frequency and voltage are proportional to each other. Due to the inductive nature of the motor, this results in a constant torque over an extensive range without overloading the motor.
In U/f mode, the speed of the connected motor varies depending on the load.
For this reason, U/f mode is only adequate when speed does not need to be constant at all times and there is no heavy starting.

Field-oriented controller

The vector controller, also called the field-oriented controller, is a speed regulator that is based on an underlying current regulator.
The instantaneous active and reactive current components are regulated. In an electronic motor model saved in the converter, the motor parameters can be saved or, if necessary, automatically detected and adapted.
The instantaneous current is the only returned value used for control.
This value and voltage phasing is used to determine all necessary motor states (speed, slip, torque and thermal dissipation loss).
This makes very high speed and torque calibration ranges possible.

Frequency converter selection guide

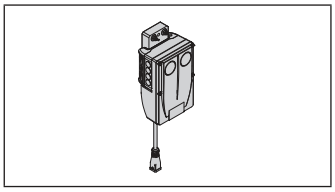


Frequency converter FU/motec 8400

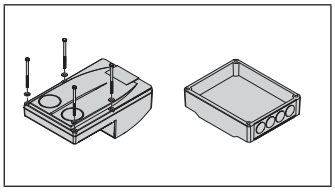
- Decentralized frequency converter for motor wall mounting
- U/f controller motor control, sensorless vector control
- Communication via field buses:
  - ASInterface
  - CANopen
  - EtherCAT
  - Profibus
  - PROFINET
  - Ethernet I/P
- Built-in brake chopper
- Protection class IP 66
- Output: 0.55 kW

Frequency converters EFC 3610 and EFC 5610

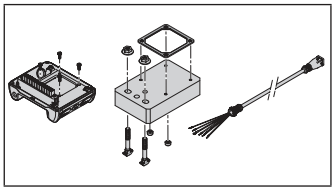
- Frequency converters for control cabinet installation
- U/f controller and SVC motor control (only possible with EFC 5610)
- Communication via field buses:
  - Multi-Ethernet interface
    - Sercos III
    - EtherCAT
    - Ethernet I/P
    - Profinet, Modbus TCP
  - CAN
  - Profibus
- Built-in brake chopper (max. 22 kW)
- Removable control panel for quick and easy commissioning
- I/Os: Analog voltage/current input/output switching
- Protection class IP 20
- Output: 0.44 kW; 0.75 kW
- STO, Cat. 4 SIL3 PLe (only for EFC 5610)



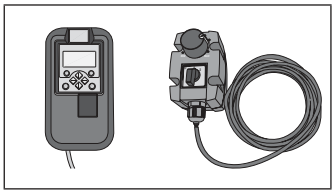
Frequency converter FU/motec 8400 **8-123**



Frequency converter FU: Power unit **8-124**
Communication module



Connection unit **8-124**
Attachment kit
Connection cable

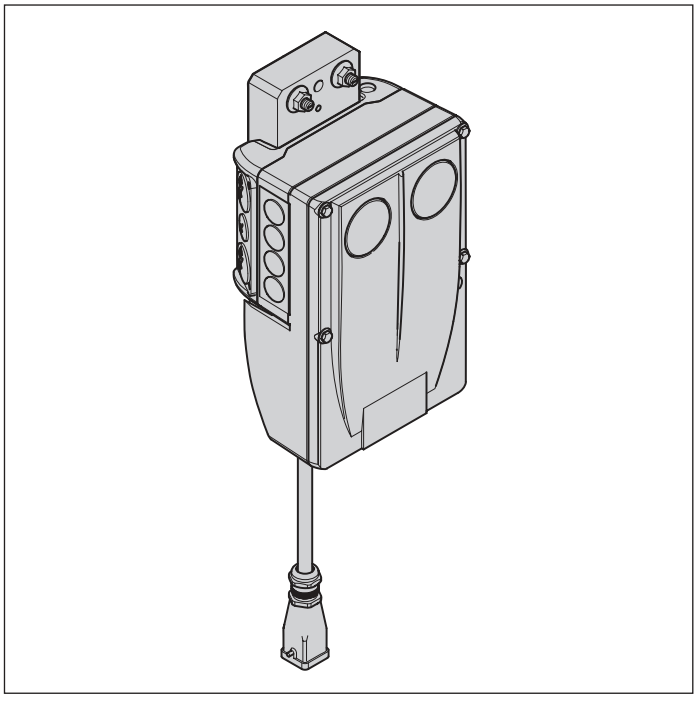


Manual control unit, Switching/potentiometer unit **8-126**

Frequency converters EFC 3610, EFC 5610 **8-129**

Option cards **8-130**

Frequency converter FU/motec 8400



In order to operate a gear motor with adjustable speed, the motor needs to be retrofitted with a frequency converter (FU). The frequency converter has a modular design so that it can be easily mounted on a leg set and connected to the motor by cable.

- Connection power: 0.55 kW
- (Connection voltage: 400 V ± 10 % ... 460 V/ 480 V ± 10 %)
- Speed (v_N) depending on the speed range of the gear motor used
- Duty cycle ED: All motors meet the S1 (continuous operation) and S3 (start-stop operation with 70%/10 s) operation.

Notice: Maximum 10 m cable length between motor and frequency converter.

Complete frequency converter (FU) consisting of the following modules:

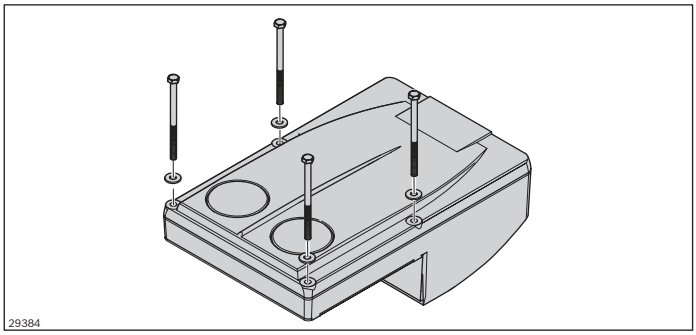
- Frequency converter power unit
- Communication module
- Connection unit
- Attachment kit
- Optional: Connection cable for the plug-in connection to the gear motor (AT = S)

The individual modules can be ordered separately and are easy to connect with the screws supplied with the scope of delivery. For the internal and external voltage supply, the modules must be wired by the user.

Required accessories

- Manual control unit, see p. 8-126
- Switching/potentiometer unit, see p. 8-126

Frequency converter FU: Power unit

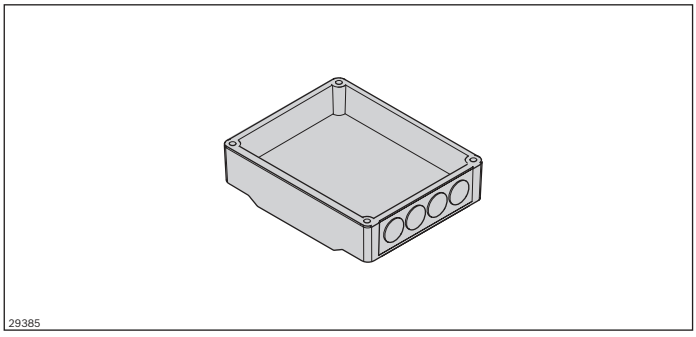


- Power unit: 0.55 kW
  (400 V ± 10% ... 460 V/480 V ± 10%)
- Easy commissioning via hand-held terminal
- Easy-to-replace memory module
- Large LED status indicator

Ordering information

Product description	Material number
Frequency converter: 0.55 kW power unit	3842553447

Communication module



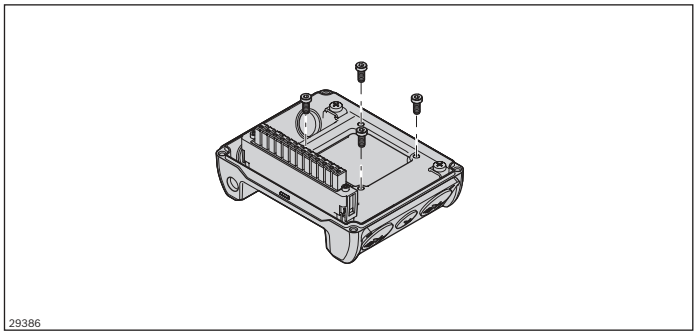
Depending on their function, the individual communication modules are provided with the corresponding connections.

- Used to control the frequency converter
- Cable connection options

Ordering information

Product description	Material number
Communication module Standard I/O	3842553449
Communication module AS-i	3842553453
Communication module CANopen	3842553454
Communication module EtherNet/IP	3842553451
Communication module EtherCAT	3842553459
Communication module PROFIBUS	3842553452
Communication module PROFINET	3842553450

Connection unit

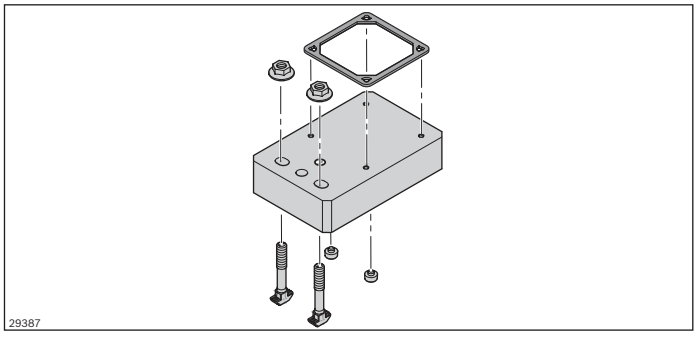


- Power grid connection options

Ordering information

Product description	Material number
Connection unit	3842553445

Attachment kit

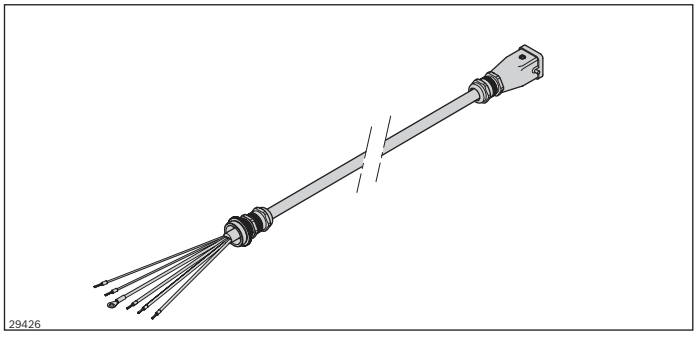


- For the simple attachment of the FU to the leg set AL (grooves of a 60 mm or 80 mm strut profile)

Ordering information

Product description	Material number
Attachment kit	3842553457

Connection cable

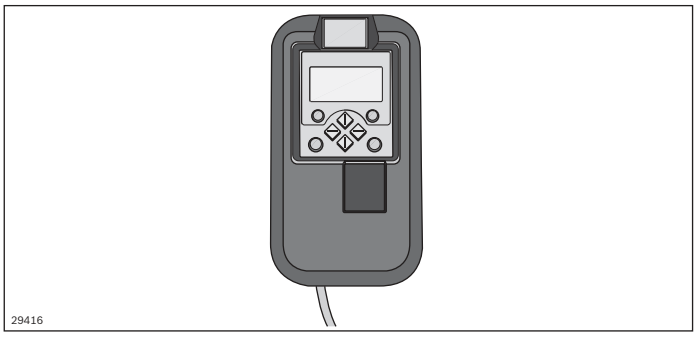


- For connecting the gear motor to the frequency converter (length: 1 m)

Ordering information

Product description	Material number
Connection cable	3842553512

Manual control unit



- For the parameterization of drives with frequency converters
- For controlling (e.g., block and release)
- For displaying operating data
- For infinitely variable control of the transport speed on drives
- For transferring parameter sets to other base units

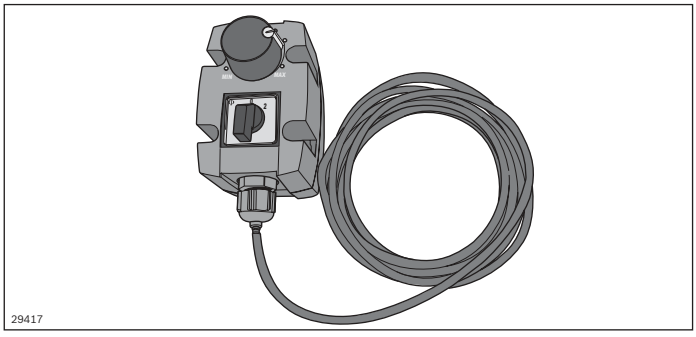
Scope of delivery

- Incl. 2.5 m connection cable

Ordering information

Product description	Material number
Manual control unit	3842552821

Switching/potentiometer unit



The switching/potentiometer unit is used to fine tune the transport speed within a range that has been preset with the manual control unit. The switching/potentiometer unit is connected to the frequency converter by a cable. The drive can be started or stopped with the rotary switch.

Notice: It is imperative that the running direction of the chain conveyor is checked prior to commissioning.

Scope of delivery

- Incl. 2.5 m connection cable

Ordering information

Product description	Material number
Switching/potentiometer unit	3842553184

Technical data

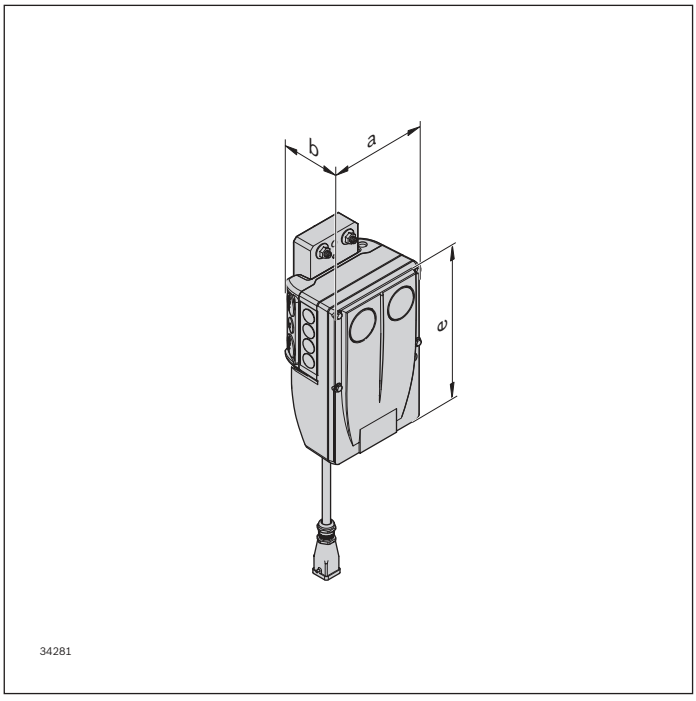
Connection conditions			
Motor connection			
4-pin ASM motor cable	P_{aN}	kW	0.55
No. phases			3
Motor cable length	m		< 20 (system cable, shielded)
Control			
Control method			VFCplus: U/f control (linear or quadratic), SLVC: sensorless vector control (speed); VFCplus eco: energy-efficient U/f control
Switching frequency	kHz		4; 8; 16
Torque response			
Maximum torque when rated motor output = rated controller output			1.5 x M_N for 60 s; 2.0 x M_N for 3 s
Sensorless vector control (speed)			
Min. output frequency	Hz		0.5 (0 ... M_N)
Accuracy in 3 ... 50 Hz speed range	%		±0.5
Concentricity in 3 ... 50 Hz speed range	Hz		±0.1
Output frequency			
Range	Hz		-300 ... +300
Absolute resolution	Hz		0.2
Standardized resolution	%		Parameter data: 0.01; Process data: 0.006 (= 2^{14})
Power			3 PE/AC
Mains connection voltage	U_{LN}	V	320 -0% ... 528 +0%
Line frequency range	f	Hz	45 -0% ... 65 +0%
Output voltage	U_{LN}		0 ... power connection voltage
Output frequency	f	Hz	0 ... 300
Line current at I_{aN}	I_{AN}	A	1.8

Notice: The max. output voltage possible is approx. 88% of the line voltage.

Safety technology		
STO		SIL 3, PLe Cat.4
Drive unit protection class		IP65
Certifications		CE, UL, CSA, EAC
Climate conditions		
In operation	°C	-30 ... +55
Derating	%/K	2.5

	Digital inputs	**Digital outputs**	**Relay outputs**	**Analog inputs**
	Quantity	Quantity	Quantity	Quantity
I/O modules				
Basic I/O	2	–	1	–
Standard I/O	5	1	1	1
Extended I/O	8	1	1	2

Dimensions



Dimension a (mm)	**Dimension b (mm)**	**Dimension e (mm)**	**Weight m (kg)[1)]**
161	109	241	2.6

[1)] For the Basic I/O version, without cable gland

Frequency converters EFC 3610, EFC 5610

- FU for control cabinet installation
- Power connection single or three phase (the models offered here are only three phase)
- U/f controller and SVC motor control (only possible with EFC 5610)
- Loadable, application-specific firmware (ASF)
- Integrated line filter
- Built-in brake chopper (max. 22 kW)
- Removable control panel for quick and easy commissioning
- I/Os: Analog voltage/current input/output switching
- Protection class IP 20
- Safety function STO, Cat. 4 SIL3 PLe for EFC 5610
- Duty cycle ED: All motors meet the S1 (continuous operation) and S3 (start-stop operation with 70%/10 s) operation.

Notice: Maximum 10 m cable length between motor and frequency converter.

Ordering information

Product description	Material number
EFC 3610 0.4kW, 3AC 380 ... 480V, 50/60 Hz, 1.3A, LED display	R912005717
EFC 3610 0.75kW, 3AC 380 ... 480V, 50/60 Hz, 2.3A, LED display	R912005718
EFC 5610 0.4kW, 3AC 380 ... 480V, 50/60 Hz, 1.3A, LED display	R912007272
EFC 5610 0.75kW, 3AC 380 ... 480V, 50/60 Hz, 2.3A, LED display	R912007273

You can find more detailed information on both frequency converters in the "Automation Solutions" catalog.

	Material number
DE	R999000018
EN	R999000019

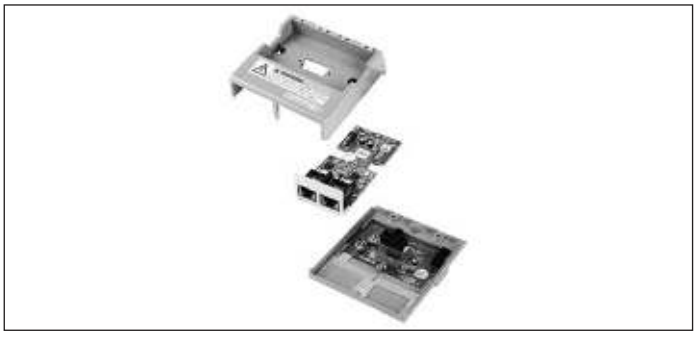
EFC x610 accessories

Control panels and protective covers

- No control panel (-NN-)
- 7-segment display (5 digits) (-7P-)
- LCD display (extra option)
  Languages: DE, EN, FR, ES, IT, PT, KR, RU, ZH

Description			Material number
Protective cover	Status LED		R912005785
5-digit 7-segment LED display	Status LED	With potentiometer	R912005783
LCD display		With potentiometer	R912006375

Option cards



Optional module with two slots:

- Multi-Ethernet interface:
  Sercos III, EtherCAT, Ethernet I/P, Profinet, Modbus TCP
- CAN
- Profibus

I/O extension

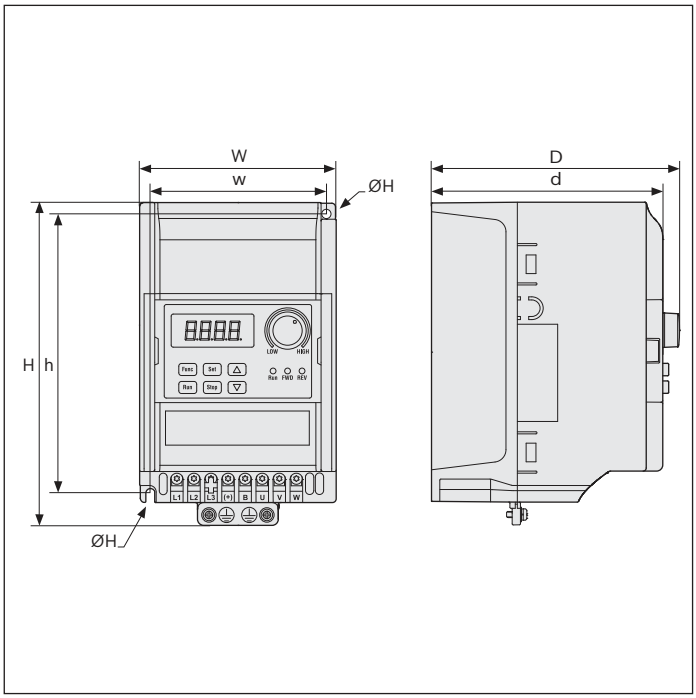
- Relay module (250 VAC, 3 A/30 V DC, 3 A)
- Standard I/O extension:
  - 4 digital inputs (24 V DC, 8 mA/12 V DC, 4 mA)
  - 1 digital output (24 V DC/50 mA)
  - 1 relay output (250 VAC, 3 A/30 V DC, 3 A)
  - 1 analog input (-10 ... 10 V/0(2) ... 10 V/0(4) ... 20 mA)
  - 1 analog output (0(2) ... 10 V/0(4) ... 20 mA)
- U/f controller and SVC motor control
  (only possible with EFC 5610)
- Output: 0.44 kW; 0.75 kW

Description	Material number
Option terminal base	R912006052
Relay card	R912006051
I/O card	R912006050
I/O plus extension	R912007257
CANopen interface	R912006133
PROFIBUS interface	R912006132
Multi-Ethernet interface	R912006134

Technical data

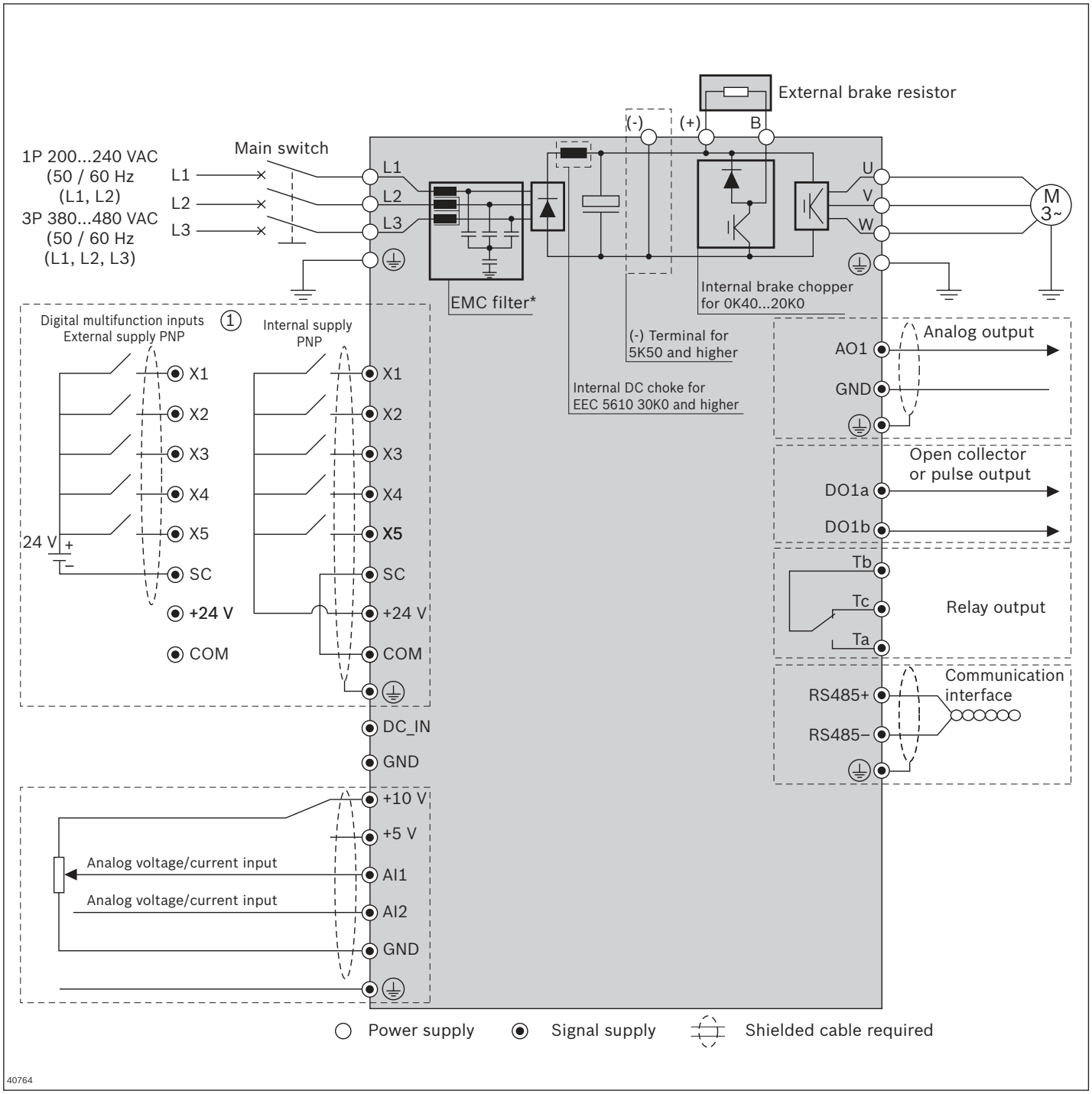
			EFC 3610		EFC 5610	
(3P 380 ... 480 V AC -15%/+10%)			Max. rated current (A)	Rated motor output (kW)	Max. rated current (A)	Rated motor output (kW)
EFC3610-0K40-3P4-.../EFC5610-0K40-3P4-...			1.3	0.4	1.3	0.4
EFC3610-0K75-3P4-.../EFC5610-0K75-3P4-...			2.3	0.75	2.3	0.75
Type						
Mains connection voltage		V	3 AC 380 ... 480 (-15%/+10%)			
Mains frequency		Hz	50 ... 60 (±5%)			
Rated motor voltage		V	3-phase, 0 ... power connection voltage			
Output voltage		V	0 ... power connection voltage			
Output frequency		Hz	0 ... 400			
Overload capacity, heavy-duty mode			150% for 60 s, 200% for 1 s			
Functions						
Control technology			U/f		U/f or SVC (sensorless vector control)	
Pulse width modulation (PWM)			1 ... 15 kHz, adjustable in 1 kHz increments			
Speed control range			1:50			
Starting torque	U/f		100% at 1,5 Hz; 150% at 3 Hz			
	SVC		Not available		200% at 0.5 Hz	
Frequency resolution	Analog		1/1000 of output frequency			
	Digital	Hz	0.01			
Frequency setting accuracy	Analog	%	0.1			
	Digital	%	0.01			
U/f characteristic curve			Linear, quadratic, openly definable			
Acceleration and brake ramps			Linear, S-curve			
DC brake	Starting frequency	Hz	0 ... 50			
	Brake time	s	0 ... 10			
Integrated control			Integrated stepping mechanism			
Controller			PID			
Bus systems			On-board: Modbus/Ext. Options: PROFIBUS, CANopen, multi-Ethernet			
No. digital inputs 24 V DC			5 (with 1x pulse train 50 kHz)			
No. digital outputs 24 V DC/50 mA			1 (32 kHz pulse train)			
No. 230 V AC/30 V DC/3 A relay outputs			1			
No. analog inputs 0 ... 10 V or 0 ... 20 mA			2			
No. analog outputs 0 ... 10 V or 0 ... 20 mA			1			
Display			Dust cover with 5 diagnostic LEDs; 5-point LED (optional); LCD (optional)			
Status LED			Rotational direction and operating state			
Brake						
Brake chopper			Internal up to 22 kW			
Brake resistor			External			
Motor cable length						
Internal filter C3	0.4 kW ... 4 kW	m	15			
External filter C3	0.4 kW ... 4 kW	m	30			
Ambient conditions						
Ambient temperature (during operation)			-10 ... 45 °C (derating 1.5% of output per 1° from 45 ... 55 °C)			
Relative humidity		%	< 90 (no condensation)			
Protection class			IP20			
Certifications			CE, UL, cUL, EAC, RCM			

Dimensions



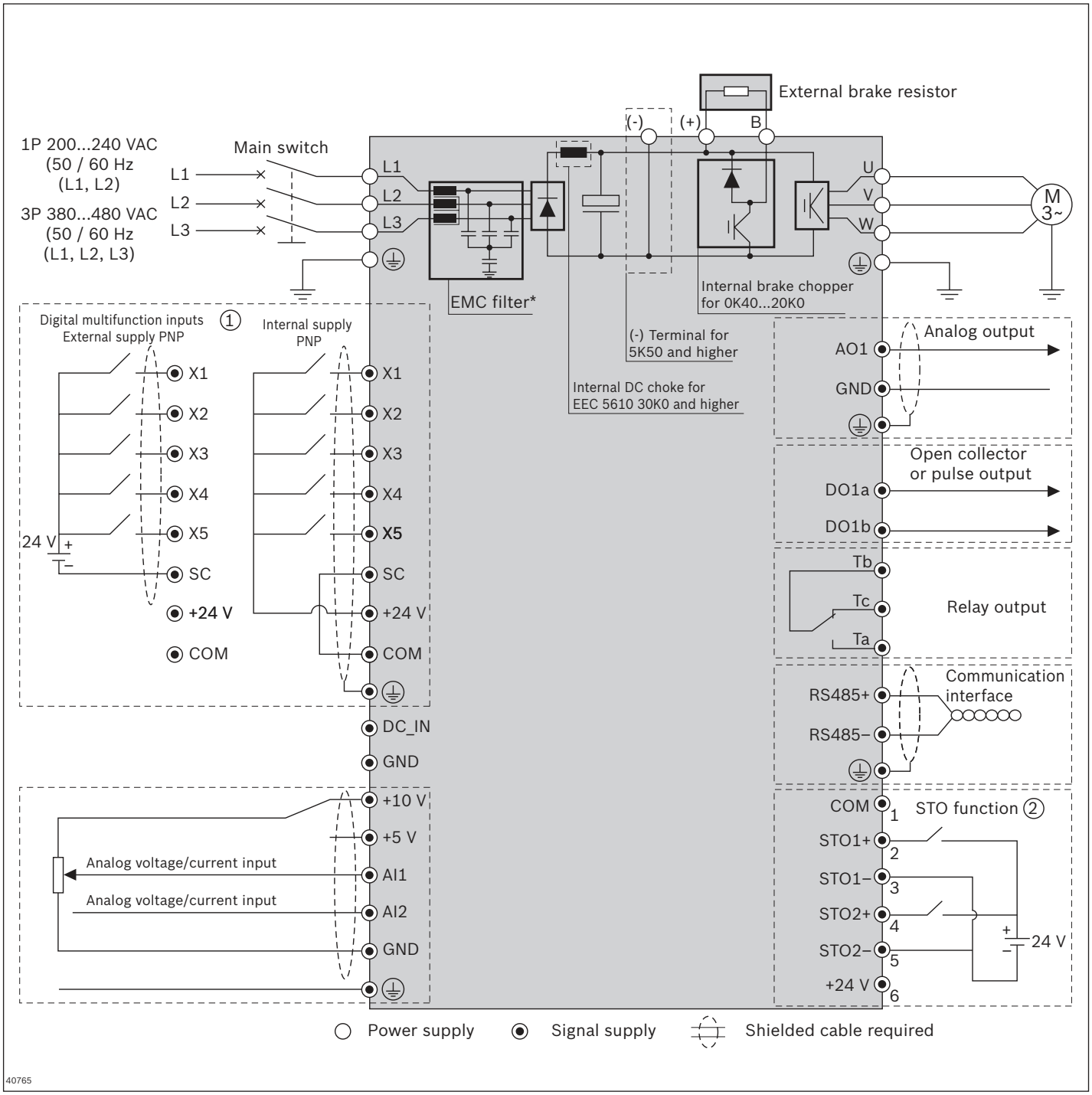
Type	Dimension W (mm)	Dimension w (mm)	Dimension H (mm)	Dimension h (mm)	Dimension D (mm)	Dimension d (mm)	Dimension ØH (mm)	Weight (kg)
EFC3610-0K40-3P4-.../EFC5610-0K40-3P4-...	95	66	166	156	167	159	4.5	1.5
EFC3610-0K75-3P4-.../EFC5610-0K75-3P4-...	95	66	166	156	167	159	4.5	1.5

Circuit diagram (EFC3610)



- Digital multi-function inputs: For NPN modes, see operating manual EFC x610 fig. 8-10 "Digital input NPN/PNP wiring"
- The pulse input can **only** be set via the "digital multifunction input X5"
- If the power input is analog, the line voltage of the analog input terminal must not exceed +5V

Circuit diagram (EFC5610)



- Digital multi-function inputs: For NPN modes, see operating manual EFC x610 fig. 8-10 "Digital input NPN/PNP wiring"
- The pulse input can **only** be set via the "digital multifunction input X5"
- If the power input is analog, the line voltage of the analog input terminal must not exceed +5V

Rockers WI/M, WI 2/...

Rockers are used for the following areas:

- For area monitoring
- As a stop for transverse conveying of workpiece pallets
- For workpiece pallet recognition

Depending on the desired function, the rockers WI/M, WI 2/... should be fitted with either one (WI/M) or two (WI 2/...) sensors (see p. 8-144).

ROCKER FUNCTIONS

Area monitoring

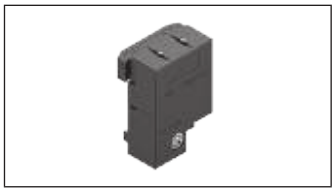
The stop rail leans slightly to one side and, together with a sensor, signals the presence of a workpiece pallet in the area of this rail.
The length of the monitored area depends on the length of the stop rail.
The sensor for the stop rail is damped when the rocker is deactivated. For WI/M, the sensor is dampened when the rocker is activated.

Stop

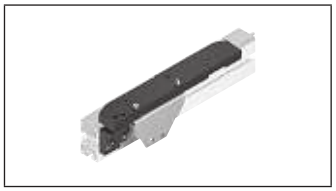
At the end of a lift transverse conveyor the workpiece pallet is stopped by the slide stop or by the rocker in its capacity as a stop.
Damped rockers WI 2/D are recommended for workpiece pallet total weights of > 35 kg.

Workpiece pallet recognition

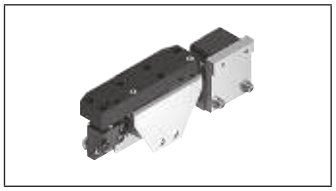
If a rocker WI 2 is fitted with a second sensor, not only can an area be monitored, but the position of a workpiece pallet WT 2 – in position on the lift transverse unit – can also be recognized. This is, for example, necessary if rockers are used together with reversible lift transverse conveyors EQ 2.
The second sensor, which can be fitted later whenever required, is attenuated if the workpiece pallet is positioned centrally in front of the activated rocker.



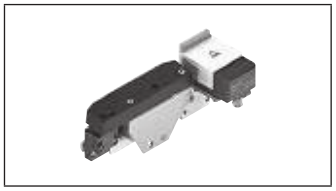
Rockers WI/M **8-138**



Rockers WI 2/... 30 **8-144**



Rockers WI 2/X 100 **8-148**



Rockers WI 2/D 100 **8-150**

8

Rocker WI/M

- For area monitoring
- For workpiece pallet recognition
- For accumulation pressure regulation
- Simple and compact construction
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2, WT 2/F and WT 2/LS
- Suitable for use in an EPA

The rocker WI/M is used for area monitoring on transfer systems. The rocker WI/M is unsuitable for use as a stop for workpiece pallets arriving from the transverse conveyor. In addition, a stop or damper must be installed to absorb the impact pulse corresponding to the workpiece pallet weight.The spring-mounted rocker switch physically detects workpiece pallets. The metal element in the rocker switch engages a sensor to enable detection. Alternatively, a pneumatic cylinder switch can be used to convert the rocker activation directly into a pneumatic signal. Simple, purely pneumatic accumulation pressure regulation can be established in conjunction with a stop gate VE 2.

Recommended accessories

- Sensor M12x1 with rated switching distance S_N = 4 mm (for rated switching distance ≥ 4 or ≤ 4 a correct query is not possible), overall length 70 mm, see p. 8-112
- Pneumatic cylinder switch, see p. 8-141

Scope of delivery

- Including fastening material for installation on conveyor sections ST 2/... or belt sections BS 2/...

Ordering information

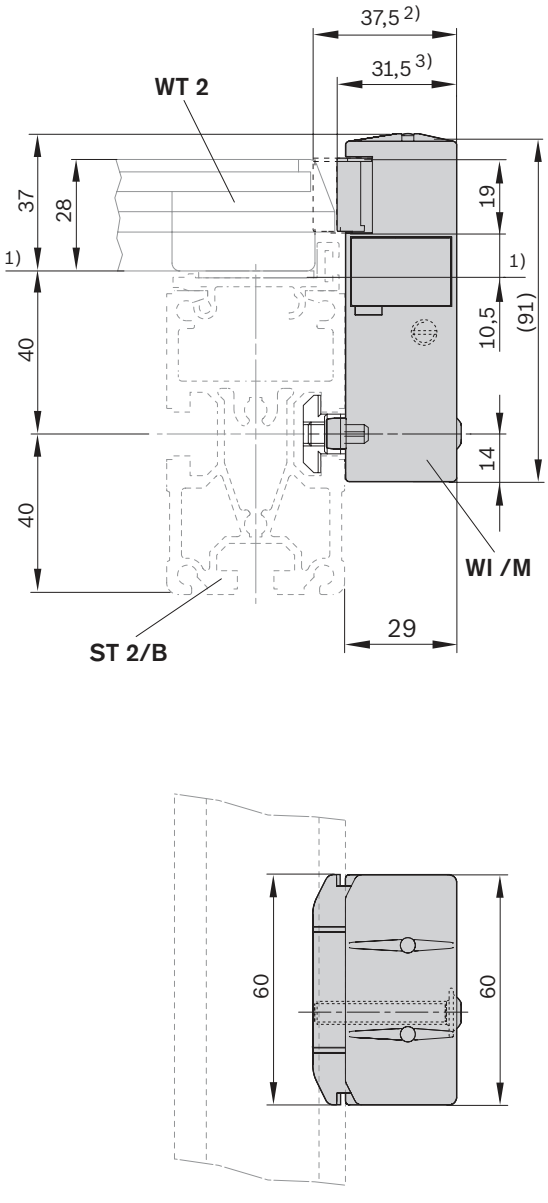
Product description	Material number
Rocker WI/M	3842530797

Technical data

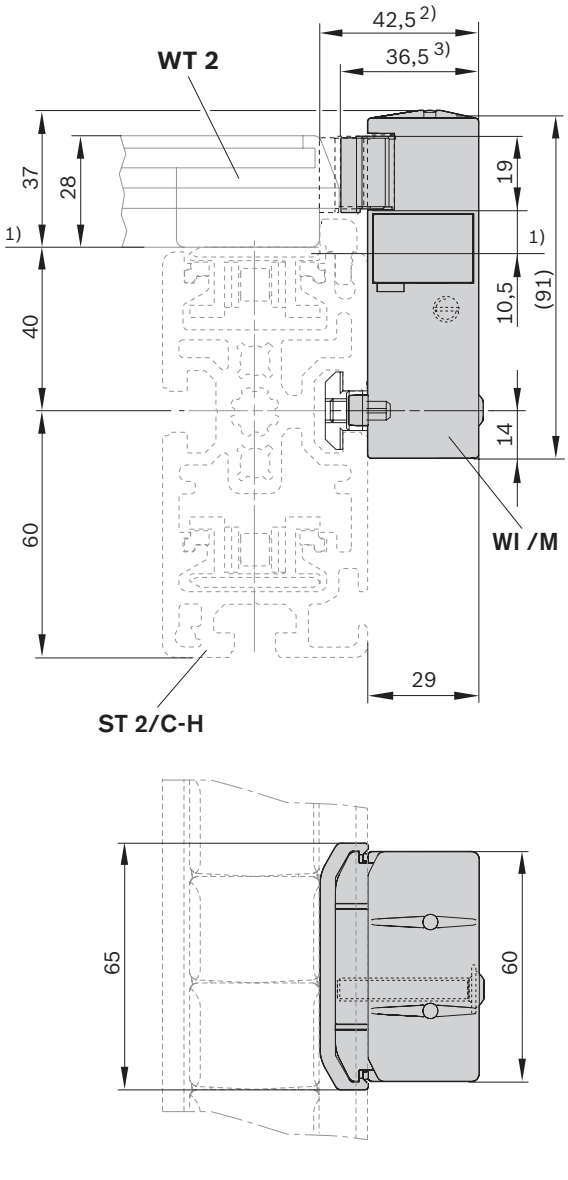
Material number		3842530797
ESD		Yes
Monitoring range	mm	60

Dimensions

Mounting on ST 2/...



Mounting on ST 2/...-H

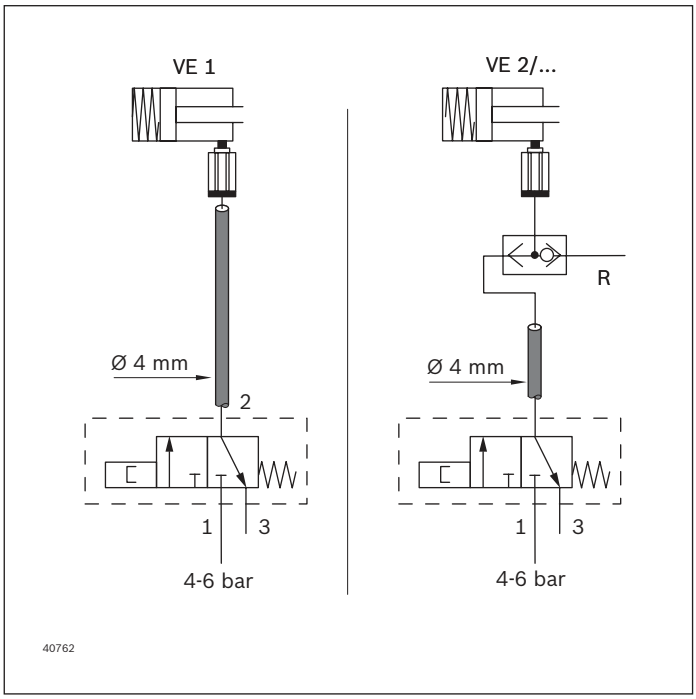


00012816

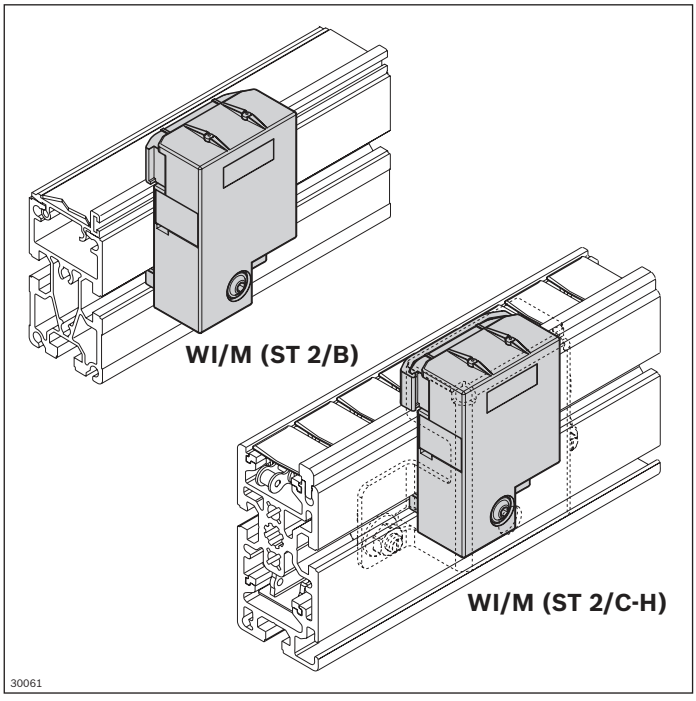
1) Transport level
2) Limit stop not activated
3) Limit stop activated

Notice: Rocker activated, electrical sensor dampened

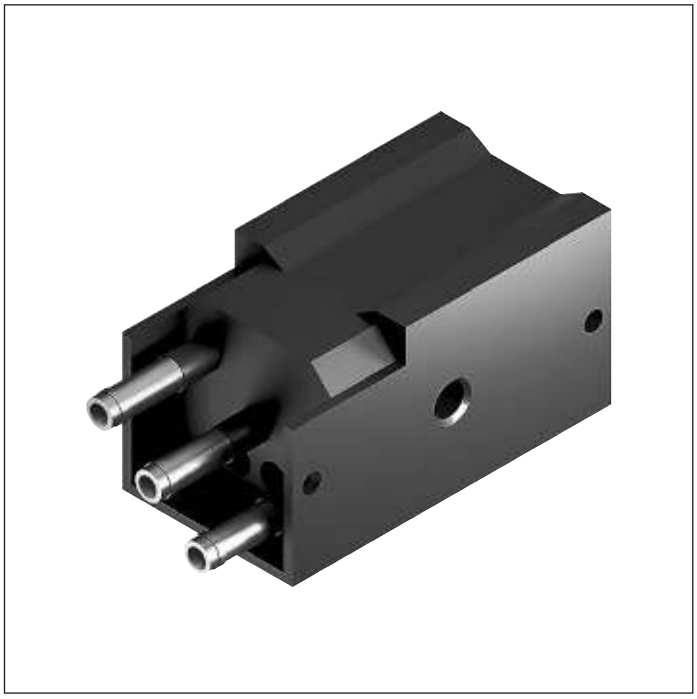
Circuit diagrams



Installation locations on ST 2 or ST 2/...-H



Pneumatic cylinder switch



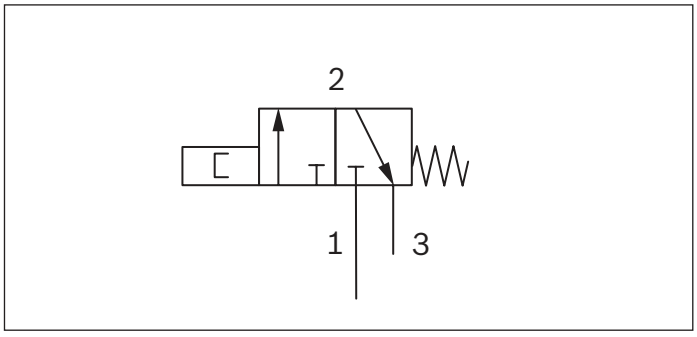
The pneumatic cylinder switch is used for direct conversion of the slide activation into a pneumatic signal. Simple, purely pneumatic accumulation pressure regulation can be established in conjunction with a stop gate VE 2.

Ordering information

Product description	Material number
Pneumatic cylinder switch	3842532151

Notice: Rocker not activated, pneumatic cylinder switch in operating position.

Circuit diagrams



Protective cover WI/M

The protective cover enables the rocker WI/M to be used in harsh industrial environments.

Scope of delivery

- Incl. fastening material

Condition on delivery

- Not assembled

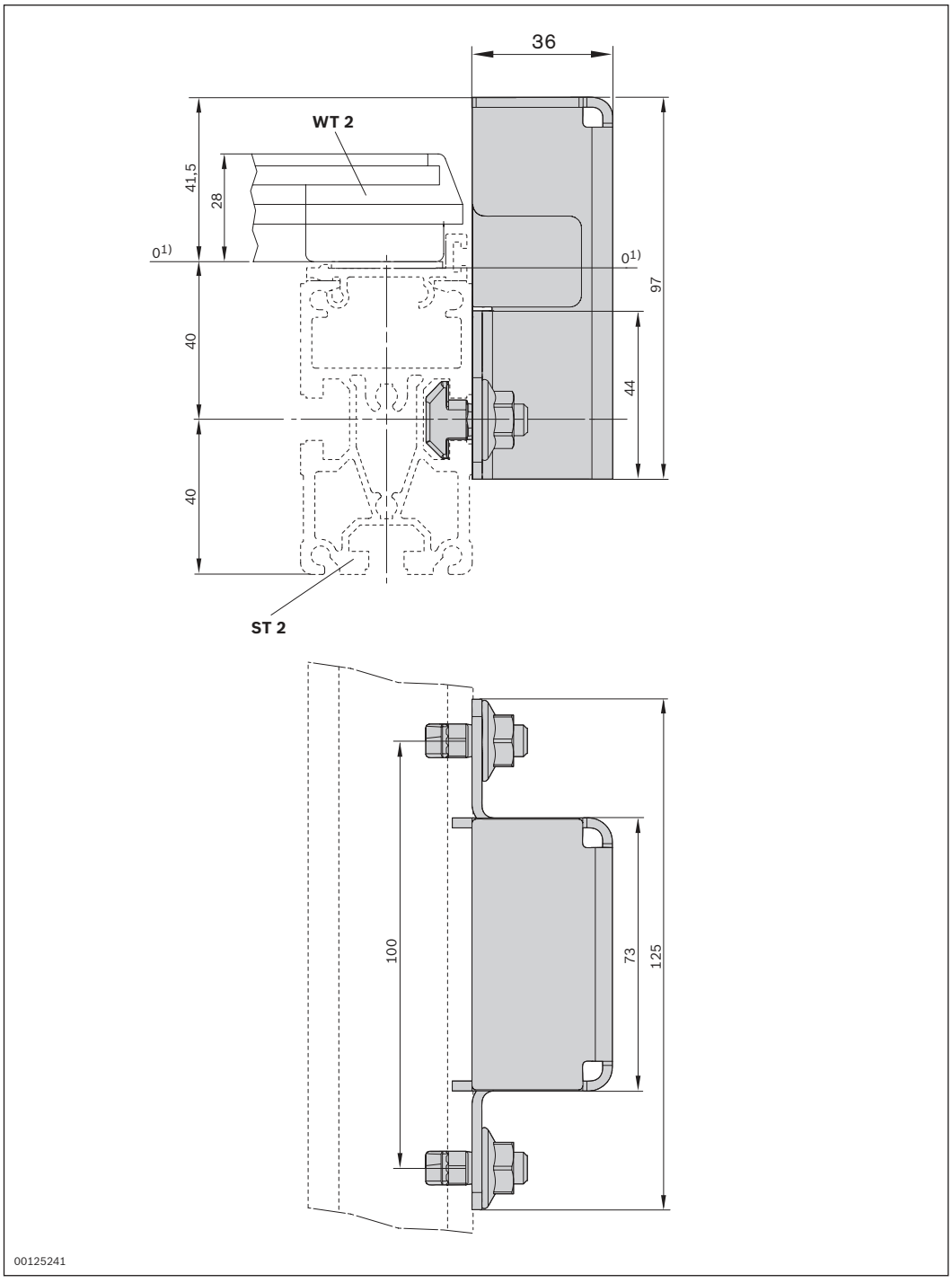
Ordering information

Product description	Material number
Protective cover WI/M	3842537855

Technical data

Material number	3842537855
Material specification	Sheet steel; corrosion-resistant

Dimensions



1) Transport level

Rocker WI 2

- For area monitoring
- For workpiece pallet recognition
- As a stop for transverse conveying of workpiece pallets
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2, WT 2/F and WT 2/LS
- Suitable for use in an EPA

Notice:
For the horizontal installation of the WI 2, a flush-mounted sensor with a rated switching distance of min, S_n = 6 mm and a minimum length of L = 60 mm are provided on the customer side.

One basic rocker body for workpiece pallet lengths of ≤ 480 mm

Two basic rocker body for workpiece pallet lengths of ≥ 640 mm

Scope of delivery
- Including fastening material for installation on the conveyor section ST 2/... or belt section BS 2/...

Ordering information

Product description	Material number
Rocker, WI 2 b_Q = 160	3842348780
Rocker, WI 2 b_Q = 240	3842348781
Rocker, WI 2 b_Q = 320	3842348782
Rocker, WI 2 b_Q = 400	3842348783
Rocker, WI 2 b_Q = 480	3842348784
Rocker, WI 2 b_Q = 640	3842348786
Rocker, WI 2 b_Q = 800	3842348788

Technical data

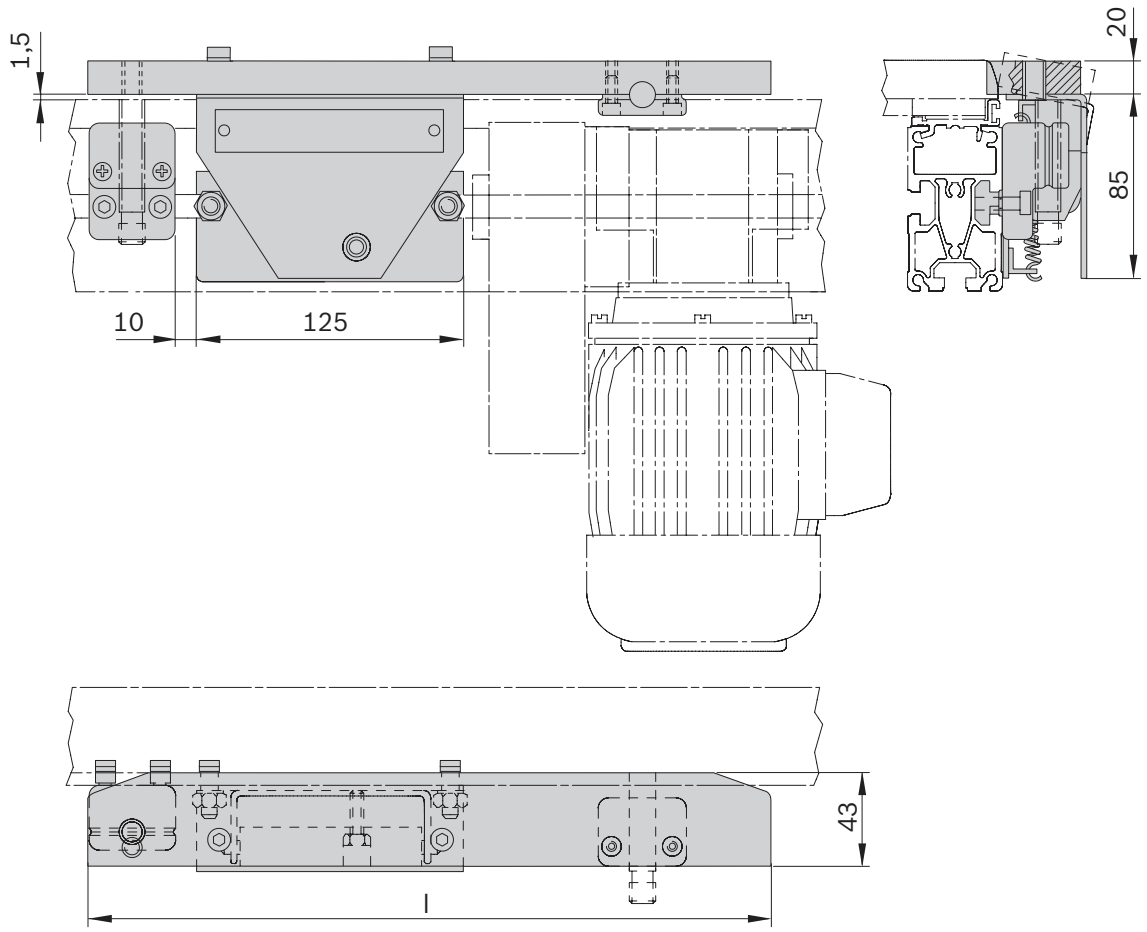
Material number			3842348780	3842348781	3842348782	3842348783
Max. total workpiece pallet weight[1)]	m_G	kg	30	30	30	30
Min. workpiece pallet weight[2)]	m	kg	1.5	1.5	1.5	1.5
ESD			Yes	Yes	Yes	Yes
Monitoring range		mm	165	270	350	430
Length	l	mm	320	320	400	480

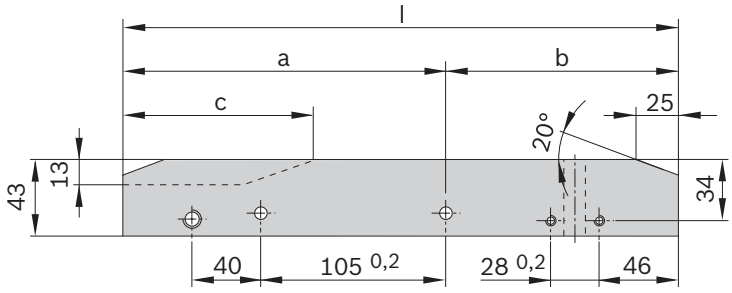
Material number			3842348784	3842348786	3842348788
Max. total workpiece pallet weight[1)]	m_G	kg	30	30	30
Min. workpiece pallet weight[2)]	m	kg	1.5	3.0	3.0
ESD			Yes	Yes	Yes
Monitoring range		mm	510	670	830
Length	l	mm	560	720	880

[1)] Max. total WT weight applies when infeeding from a transverse section into a main section; for area monitoring, only the max. system weight of 240 kg cannot be exceeded.

[2)] Min. WT weight applies per rocker body

For workpiece pallet lengths of ≤ 480 mm

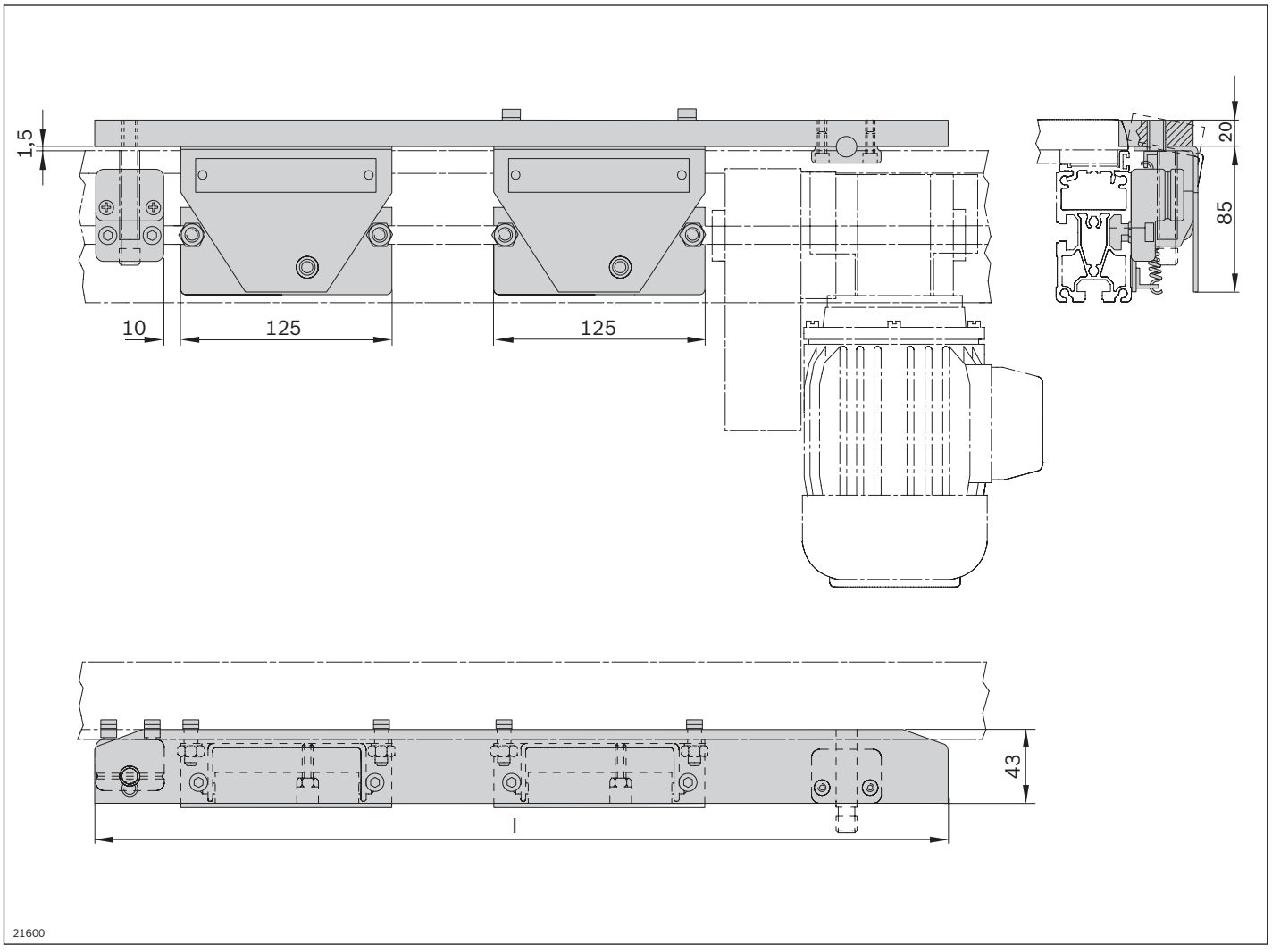


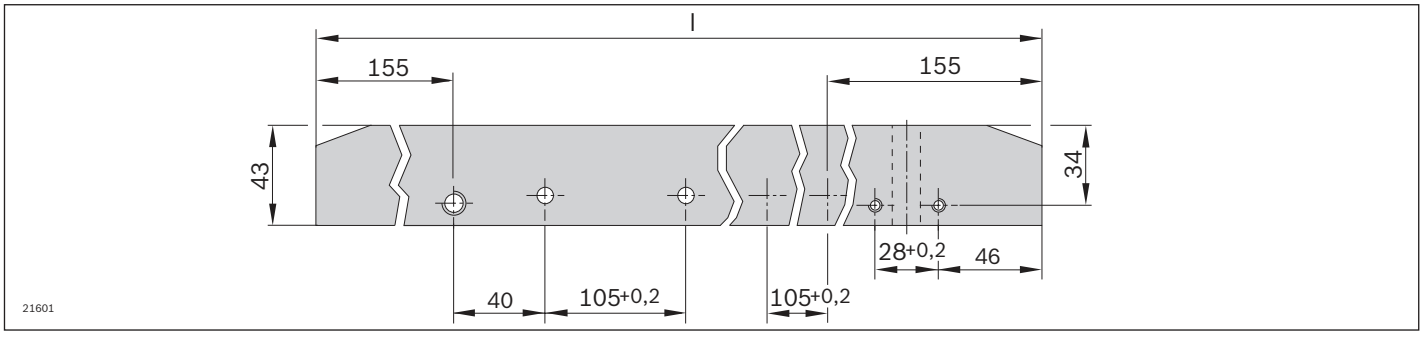


Track width in the transverse conveyor b_Q (mm)	Dimension a (mm)	Dimension b (mm)	Dimension c (mm)	Dimension l (mm)
160	165	155	105	320
240	165	155	25	320
320	245	155	25	400
400	292	188	25	480
480	332	228	25	560

Dimensions

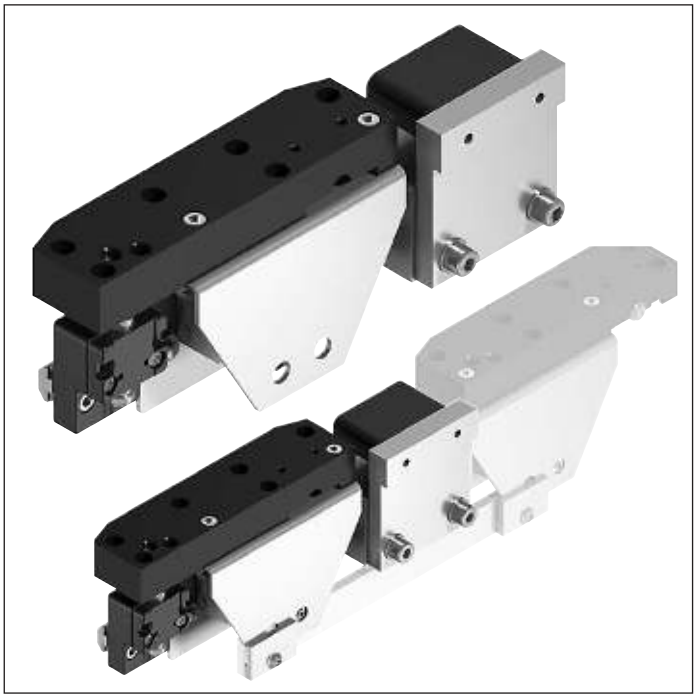
For workpiece pallet lengths of ≥ 640 mm





Track width in the transverse conveyor b_Q (mm)	Dimension l (mm)
640	720
800	880

Rocker WI 2/X



- Fixed stop for workpiece pallet in the transverse conveyor
- For area monitoring
- For workpiece pallet recognition
- For permitted total weight of workpiece pallets > 30 kg
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2, WT 2/F and WT 2/LS
- Suitable for use in an EPA

Notice:
For the horizontal installation of the WI 2, a flush-mounted sensor with a rated switching distance of min, S_n = 6 mm and a minimum length of L = 60 mm are provided on the customer side.

Required accessories
- Sensor M12 with rated sensing range $S_N \geq 4$ mm, see p. 8-112

Recommended accessories
- Additional rocker extension MS with second rocker body and connecting strip for installation of a rocker positioned between the start and end of the conveyor section.

Scope of delivery
- Including fastening material for fastening to conveyor sections ST 2/... or belt sections BS 2/...

Ordering information

Product description	Material number
Rocker WI 2/X	3842524447
Rocker extension MS l_{WT} = 400	3842524449
Rocker extension MS l_{WT} = 480	3842524450
Rocker extension MS l_{WT} = 640	3842524451
Rocker extension MS l_{WT} = 800	3842524452
Rocker extension MS l_{WT} = 1040; 1200	3842524453

Technical data

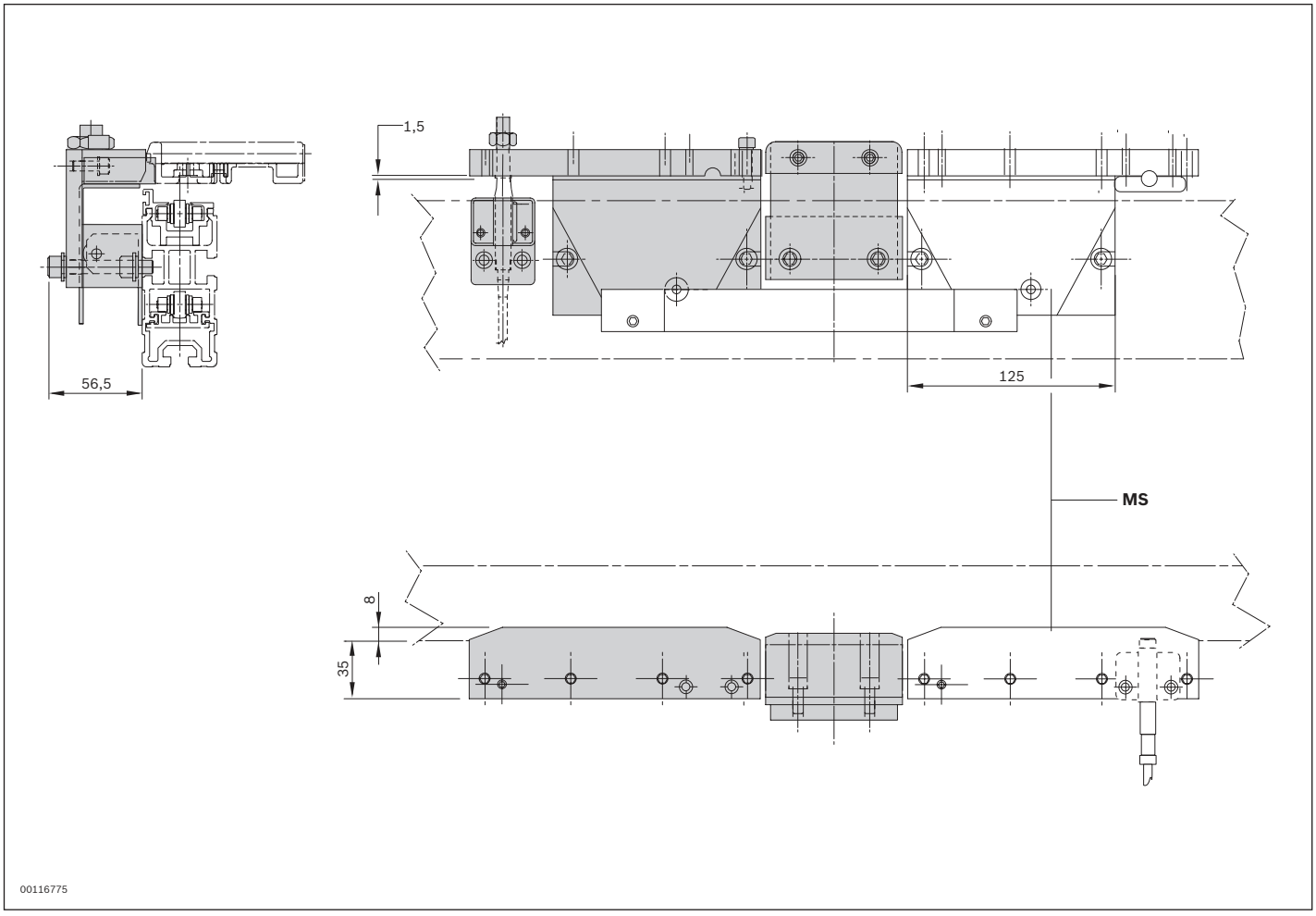
Material number			3842524447
Max. total workpiece pallet weight[1]	m_G	kg	100
Min. workpiece pallet weight[2]	m	kg	1.5
ESD			Yes
Monitoring range		mm	430 ... 1230

[1] Max. total WT weight applies when infeeding from a transverse section into a main section; for area monitoring, only the max. system weight of 240 kg cannot be exceeded.
[2] Min. WT weight applies per rocker body

Rocker extension MS

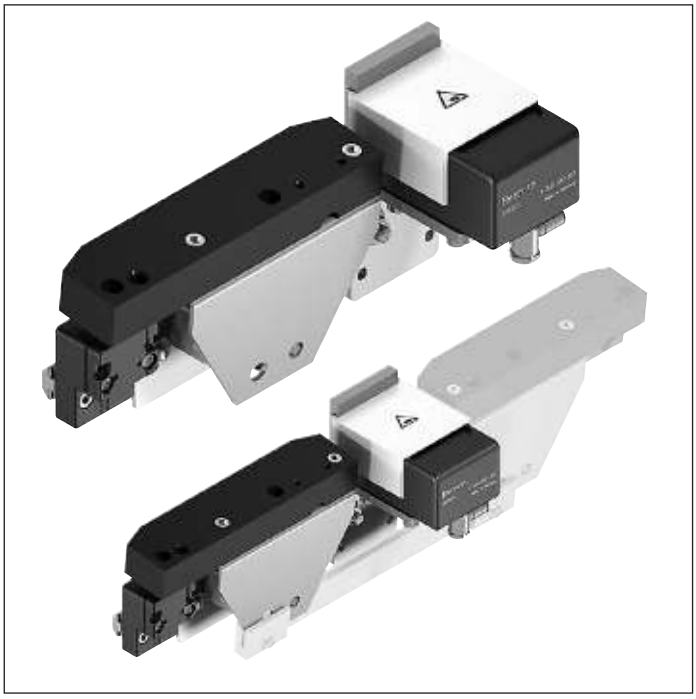
Material number			3842524449	3842524450	3842524451	3842524452	3842524453
Length of workpiece pallet	l_{WT}	mm	400	480	640	800	1040; 1200
ESD			Yes	Yes	Yes	Yes	Yes
Monitoring range		mm	430	510	670	830	1230

Dimensions



MS Additional rocker extension

Rocker WI 2/D



- As a dampened stop for workpiece pallets in the transverse conveyor
- For area monitoring
- For workpiece pallet recognition
- For permitted total weight of workpiece pallets > 35 kg
- Suitable for mounting on a section ST 2/... with a profile width of 45 mm or a section ST 2/... H with a profile width of 50 mm
- Can be combined with WT 2, WT 2/F and WT 2/LS
- Suitable for use in an EPA

Notice:
For the horizontal installation of the WI 2, a flush-mounted sensor with a rated switching distance of min, S_n = 6 mm and a minimum length of L = 60 mm are provided on the customer side.

Required accessories
- Sensor M12 with rated switching distance $S_N \geq 4$ mm, see p. 8-112

Recommended accessories
- Additional rocker extension MS with second rocker body and connecting strip for installation of a rocker positioned between the start and end of the conveyor section from a monitoring range of 400 mm

Scope of delivery
- Incl. fastening material
- Including damper DA 2/100

Ordering information

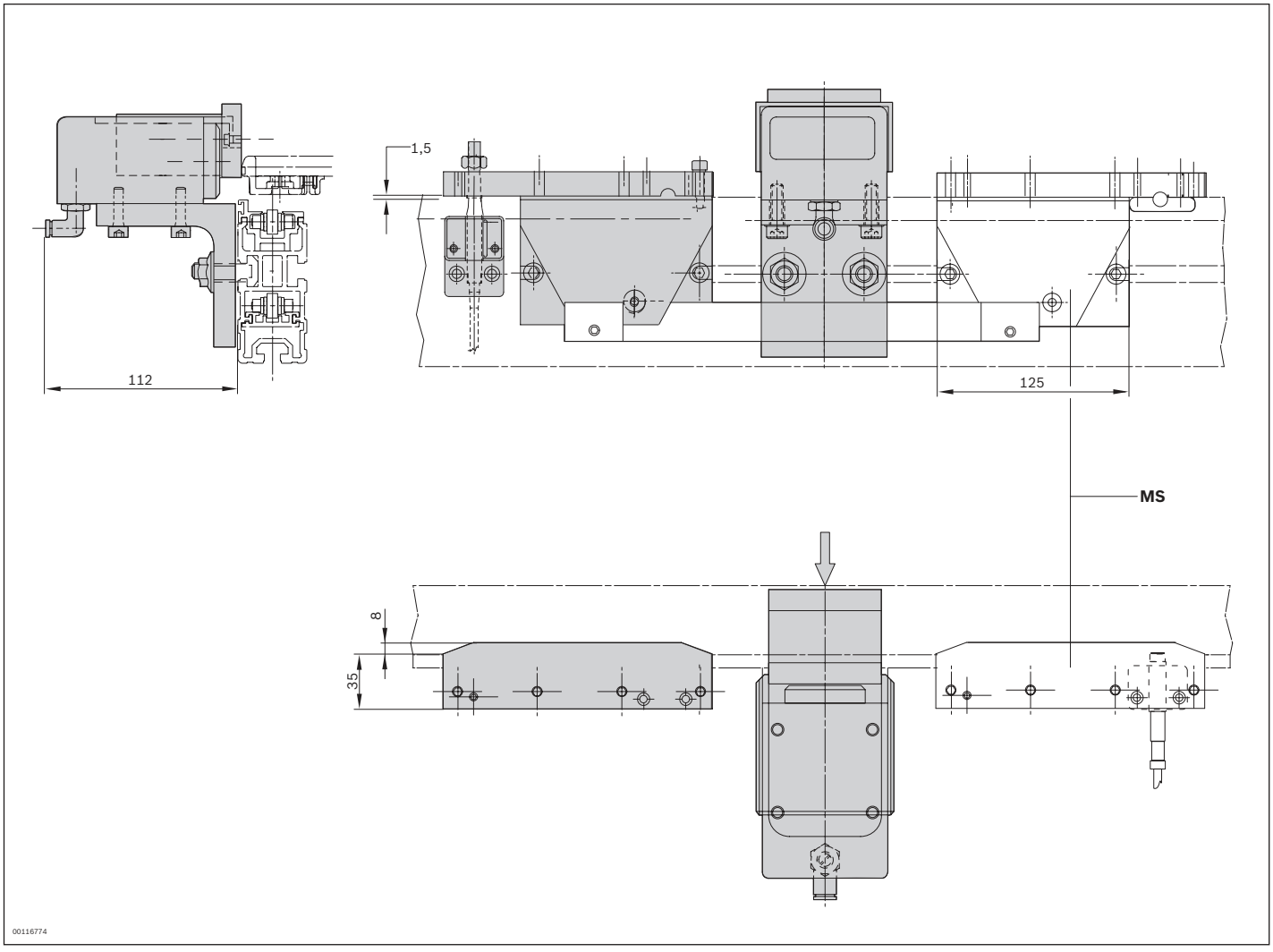
Product description	Material number
Rocker WI 2/D	3842524448

Technical data

Material number			**3842524448**
Max. total workpiece pallet weight[1)]	m_G	kg	100
Min. workpiece pallet weight[2)]	m	kg	5
ESD			Yes
Monitoring range		mm	430 ... 1230

[1)] Max. total WT weight applies when infeeding from a transverse section into a main section; for area monitoring, only the max. system weight of 240 kg cannot be exceeded.
[2)] Min. WT weight applies per rocker body

Dimensions



MS Additional rocker extension

Rocker extension MS

- Suitable for use in an EPA

Rocker extension as a second rocker body with connecting strip for installation of a rocker positioned between the start and end of the conveyor section.

Required accessories

- Rocker WI 2/X or WI 2/D, see p. 8-148/8-150

Ordering information

Product description	Material number
Rocker extension MS l_{WT} = 400	3842524449
Rocker extension MS l_{WT} = 480	3842524450
Rocker extension MS l_{WT} = 640	3842524451
Rocker extension MS l_{WT} = 800	3842524452
Rocker extension MS l_{WT} = $1040_{; 1200}$	3842524453

Technical data

Material number			3842524449	3842524450	3842524451	3842524452	3842524453
Length of workpiece pallet	l_{WT}	mm	400	480	640	800	1040; 1200
ESD			Yes	Yes	Yes	Yes	Yes
Monitoring range		mm	430	510	670	830	1230

Stop WT 2

- Fixed stop in the transverse conveyor
- Installation location: Section ST 2/... and belt section BS 2/...
- Not suitable for mounting on section ST 2/...-H or BS 2/...-H

The stop WT 2 is used as a fixed stop for workpiece pallets entering a longitudinal section from a transverse section.

Scope of delivery

- Including fastening material for installation between two conveyor sections ST 2... or belt sections BS 2...

Condition on delivery

- Not assembled

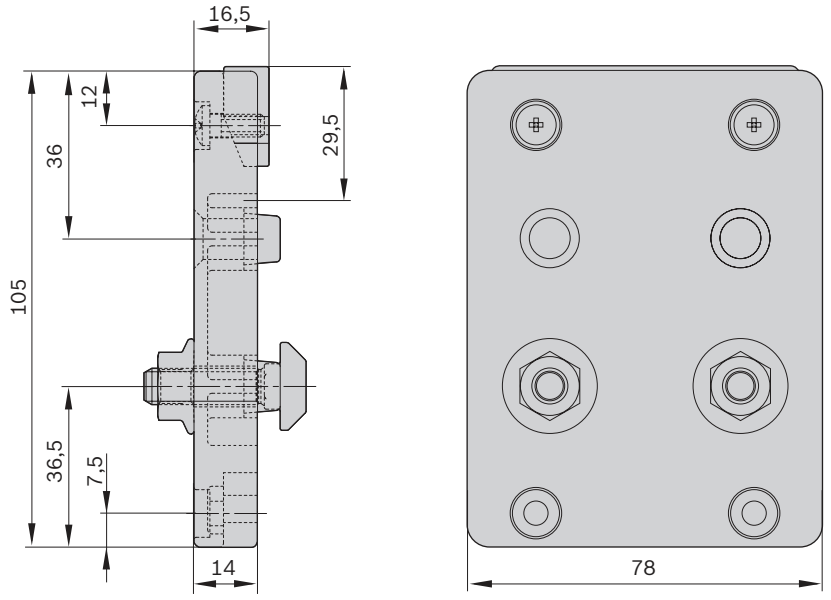
Ordering information

Product description	Material number
Stop WT 2	3842519717

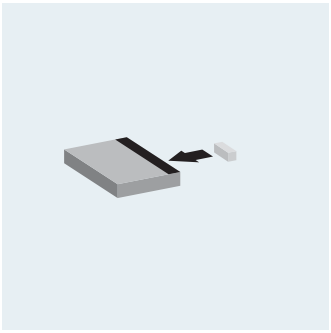
Technical data

Material number			3842519717
Max. total workpiece pallet weight	m_G	kg	30
ESD			Yes
Material specification			PA66

Dimensions

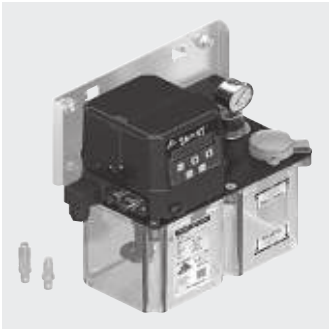


00125246

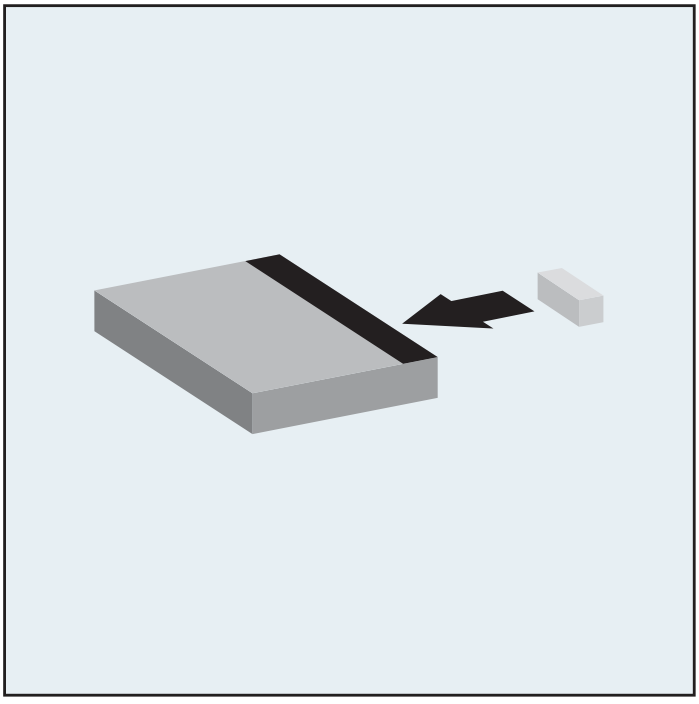


Accessories

Selection of accessories **9-2**



Selection of accessories

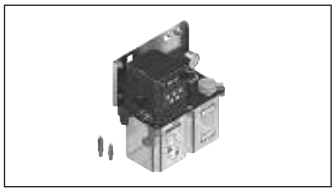


The selection of accessories includes information on identification systems, as well as important elements for chain lubrication. It also contains longitudinal and transverse conveyor connection kits.

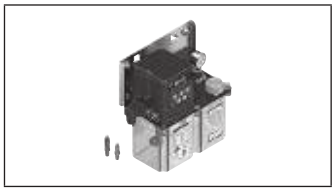
The use of the decentralized or central automatic lubrication unit for the automatic lubrication of our chains eliminates the need for manual lubrication.

Identification systems **9-4**

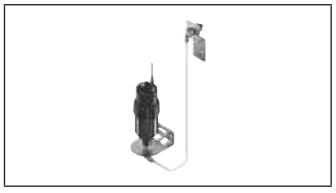
Decentralized automatic lubrication unit LU 2 **9-5**



Central automatic lubrication unit LU 2/P **9-7**

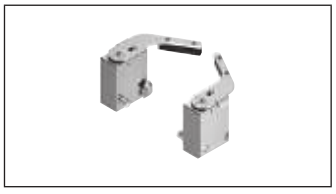


Mounting kit LU 2/P, PA hose set, steel pipe set **9-9**
Hydraulic blocks **9-10**
Dosing valves **9-12**
Adapter set **9-13**

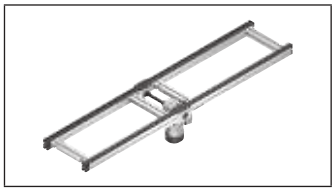


Automatic lubrication unit for linear section LU2/LS **9-15**

Profile connector **9-16**
Cross connector QV 2 **9-17**
Cross connector QV 2-H **9-18**



Scraper **9-19**
Cover rail for cable duct **9-20**



Connection kits for longitudinal conveyors **9-21**
Connection kits for transverse conveyors **9-22**

Identification systems

Identification and data tag systems are used to control numerous production and transport systems in assembly technology applications.

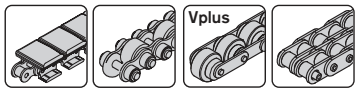
Data related to objects is the basis for

- VE, VE 2/M, VE 2/L or VE 2/S stop gates
- Sensor M8x1 with rated sensing range $S_N \geq 2$ mm, can be installed flush

You can find our current range of identification and data tag systems in the RFID systems catalog.

Catalog: 3842541004
www.boschrexroth.de/mediadirectory

Decentralized automatic lubrication unit LU 2



- Modular design consisting of decentralized automatic lubrication unit LU 2, oil container LC 2 and adapter set
- Decentralized automatic lubrication unit LU 2 with drive, compressed air connection to drive module and fastening material
- Oil container LC 2 with Structovis GHD from Klüber; contains: 0.25 L(must be ordered separately)
- Specific adapter sets with compatible lubrication pins for different drive modules
- Adjustment of lubrication amount to be distributed per metering process on the decentralized automatic lubrication unit LU 2. The metering process is actuated by an external PLC
- Designed for lubricating one belt section or conveyor unit respectively
- Use of the decentralized automatic lubrication unit LU 2 is highly recommended for flat-top chains

Increasing the system service life through interval lubrication of flat-top chains, accumulation roller chains, and duplex chains during operation.
For preventing dry running.

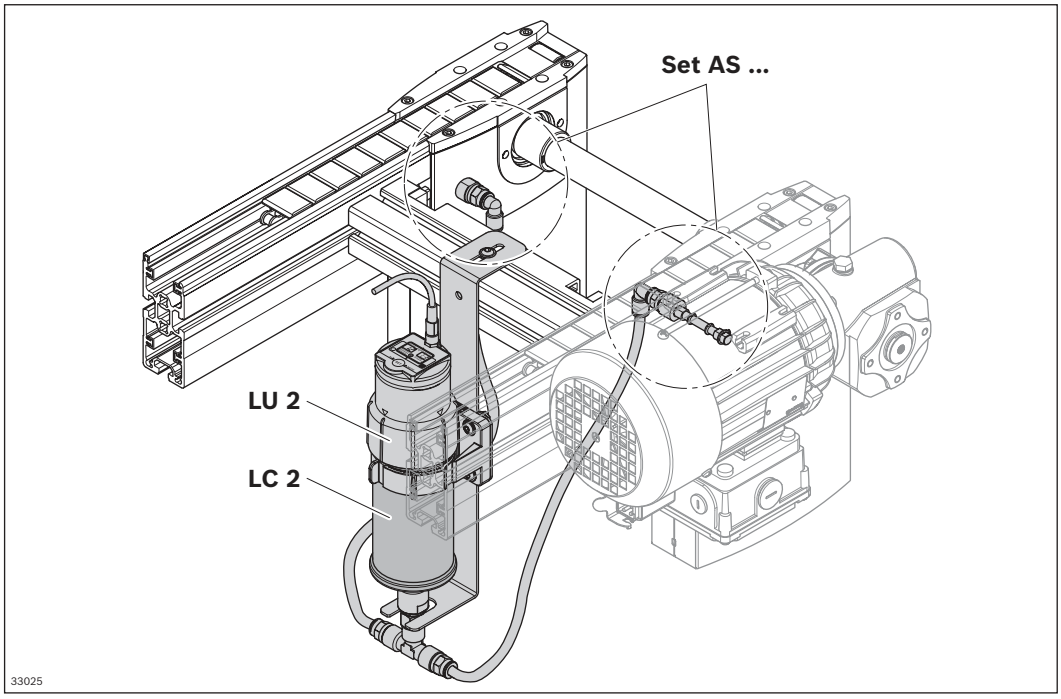
Suitable for use with all belt sections and conveyor units; lubrication unit on the drive module.
Reduction of oil consumption thanks to exact metering and pinpoint application to the chain links.

Required accessories

- Oil container LC 2, see p. 9-6
- Adapter set, see p. 9-6

Condition on delivery

- Not assembled, fastening material enclosed
- Oil container LC 2 and adapter set as ordered



Ordering information

Product description	Packaging unit	Material number
Decentralized automatic lubrication unit LU 2	1	3842543482
Oil container LC 2	4	3842543469

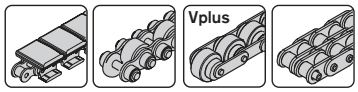
Product description		Packaging unit	Material number
Adapter set for	AS 2/C-100, AS 2/C-250 BS 2/C-100, BS 2/C-250, UM 2/C-170 HQ 2/C-H	1	3842543483
Adapter set for	AS 2/C-400 (assembly on UM 2/C-170 when b = 160 mm) AS 2/C-700 (assembly on UM 2/C-170 when b = 160 mm) BS 2/C-H (assembly on UM 2/C-170, UM 2/R-170 when b = 160 mm)	1	3842543484
Adapter set for	AS 2/R-300, AS 2/R-700 BS 2/R-300, BS 2/R-700, UM 2/R-170, BS 2/R-H with RV = 1* BS 2/G-250 HQ 2/G-H	1	3842543485
Adapter set for	AS 2/R-1200 (assembly on UM 2/R-170 when b = 160 mm) AS 2/R-2200 (assembly on UM 2/R-170 when b = 160 mm) BS 2/R-H with RV = 0 (assembly on UM 2/C-170, UM 2/R-170 when b = 160 mm)	1	3842543486
Adapter set for	AS 2/R-V-1200 (assembly on UM 2/R-170 when b = 160 mm) AS 2/R-V-2200 (assembly on UM 2/R-170 when b = 160 mm) BS 2/R-V-1200 (assembly on UM 2/R-170 when b = 160 mm)	1	3842543487
Adapter set for	HQ 2/U-H	1	3842548578

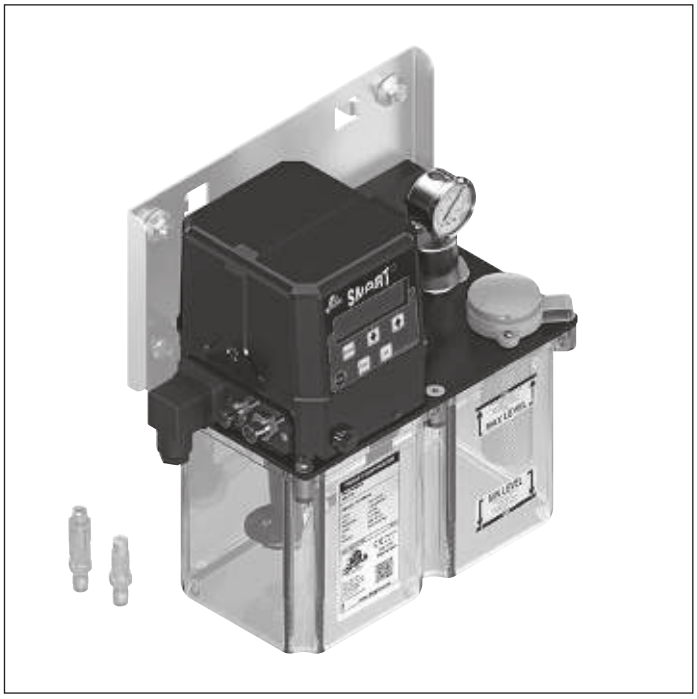
* Assembly on return unit UM

Technical data

Material number			3842543482
ESD			Yes
Max. operating temperature	T	°C	+40

Central automatic lubrication unit LU 2/P





- An adaptive system for the simultaneous lubrication of several transfer sections with conveyor chains, together with distributor blocks, dosing valves, adapter sets and connection hoses or tubes
- A module structure made up of central automatic lubrication unit LU 2/P, a 3 L oil container, hydraulic blocks with 2...8 dosing valves and adapter sets for drive modules
- Simultaneous lubrication of several connected conveyor sections
- The lubrication amount can be adjusted to suit different section lengths and chain types by way of dosing valves
- Precise dosing by timing the central pump
- 24V DC motor
- Specific adapter sets with compatible lubrication pins for different drive modules
- The metering process is actuated by an external PLC.

9

The central automatic lubrication unit works with a lubrication pump which supplies a greater number of conveyor sections with lubricant at the same time via hydraulic blocks. The maximum distance from the pump to a drive module may be up to 30 m.

Selecting the valve and timing the central pump allows the overall lubrication amount, which is supplied to all connected conveyor sections, to be administered in doses. The lubrication amount can be adjusted to suit different section lengths or chain types by way of dosing valves which are screwed into the hydraulic blocks.

Required accessories

- Mounting kit LU 2/P 3842562923 for assembly to section profile, see p. 9-9
- Adapter set, see p. 9-13
- Connection cable with M12x1 plug for meter input and alarm output
- Oil cannister 5 L (Structovis GHD for initial filling)
- Hose (see p. 9-9), tube (see p. 9-9), hydraulic blocks (see p. 9-10), dosing valves with elbow fitting (see p. 9-12)

Scope of delivery

- Pump with 3L oil container (not filled)
- Integrated control with display unit
- Connector for 24 V voltage supply
- Straight fitting G1/8" for optional connection of PA hose or steel tube

Condition on delivery

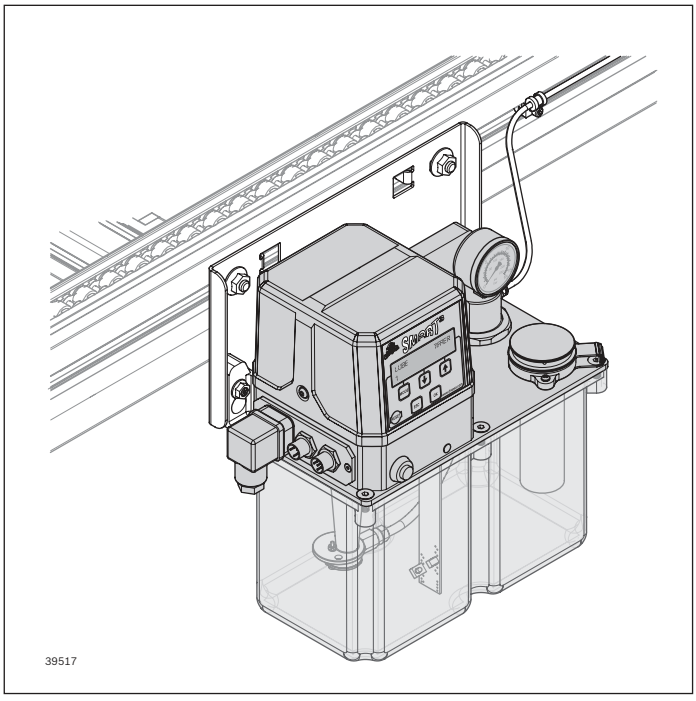
- Not assembled

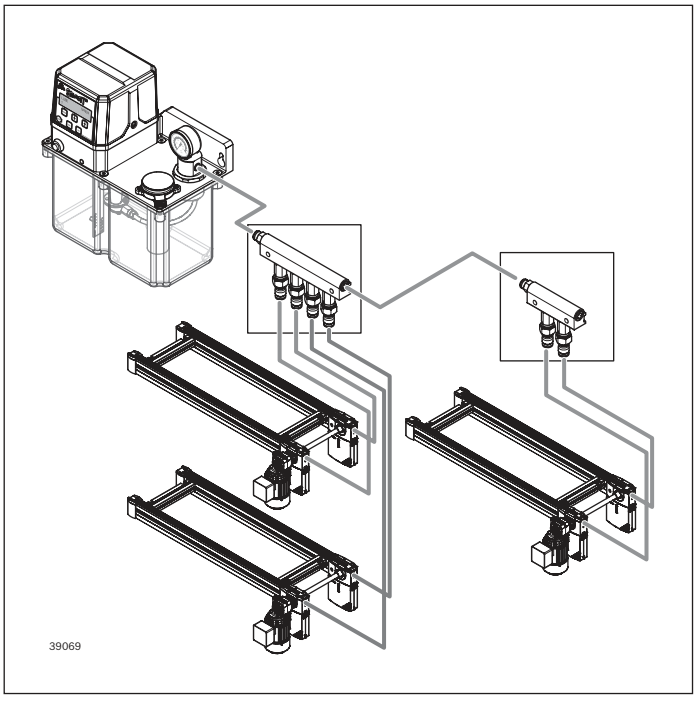
Ordering information

Product description	Material number
Central automatic lubrication unit LU 2/P	3842562921

Technical data

Material number			3842562921
Protection class			IP55
Voltage supply			24 V/DC
Operating temperature	T	°C	+5 ... +60

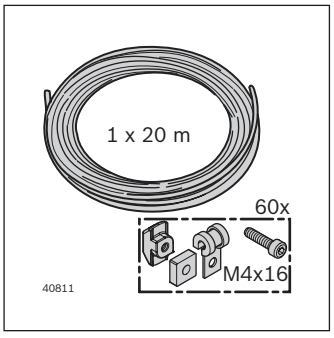




Mounting kit LU 2/P, PA hose set, steel pipe set

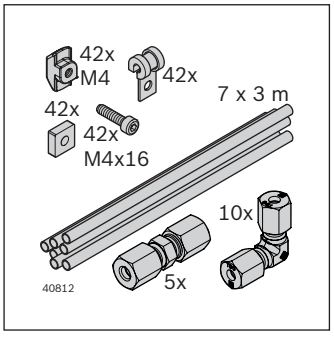
- The mounting kit contains all parts required to fasten the pump LU 2/P to a section profile
- Oil for initial and subsequent filling
- Hose and steel tube set for connecting the components to the LU 2/P

PA hose set



Scope of delivery
incl. 60x tube clamps
for mounting

Steel pipe set



Scope of delivery
incl. 42x tube clamps,
10x angle connector,
5x straight connector

Ordering information

Product description	Packaging unit	Material number
Mounting kit LU 2/P		3842562923
PA hose set D4x3, L=20	Set	3842562925
Steel tube set D=4 mm, 7x3 m	Set	3842562926
Oil can 5 liters		3842562941

Hydraulic blocks

- The hydraulic block has room for 2, 4, 6 or 8 dosing valves
- The radially mounted threads are provided for receiving the dosing valves
- The axially mounted threads are provided for connection to the pump LU 2/P or other hydraulic blocks
- The screw plug can be used to close one end of a line
- The connection can be made with hose or tube

Scope of delivery

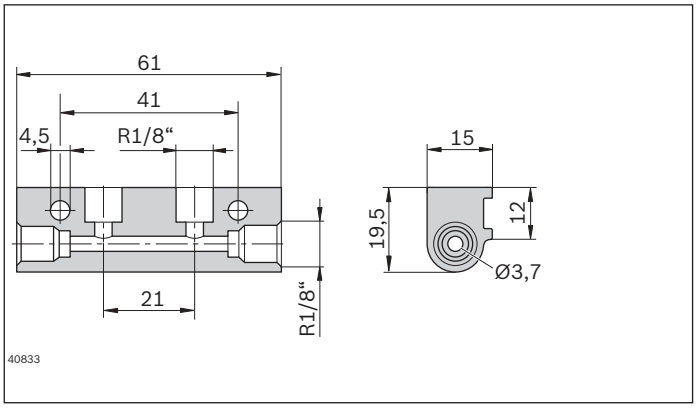
- Incl. 2x straight connections for a hose and 2x hose connections, as well as 1x screw plug
- Incl. 2x T-nuts and 2x cylinder head screws for mounting on the section with a groove width of 10 mm

Ordering information

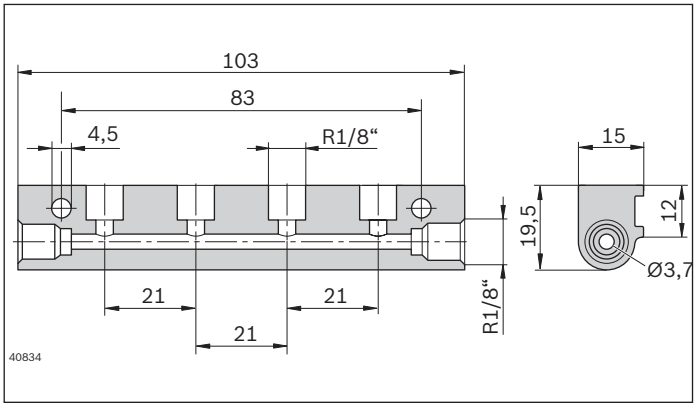
Product description	Material number
Hydraulic block LU 2/M-2 for 2 dosing valves	3842562927
Hydraulic block LU 2/M-4 for 4 dosing valves	3842562928
Hydraulic block LU 2/M-6 for 6 dosing valves	3842562929
Hydraulic block LU 2/M-8 for 8 dosing valves	3842562930

Dimensions

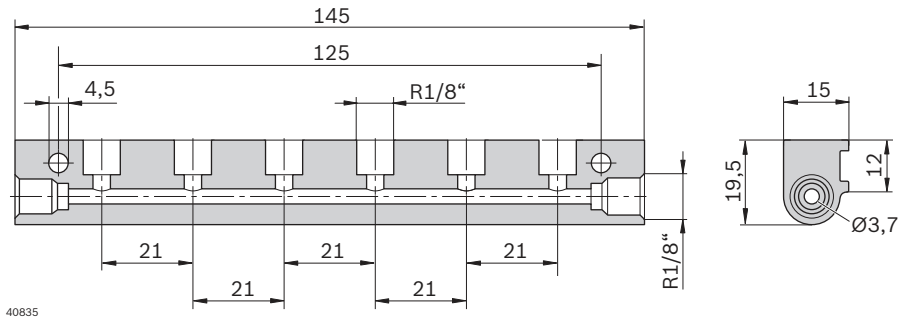
Hydraulic block LU 2/M-2 for 2 dosing valves



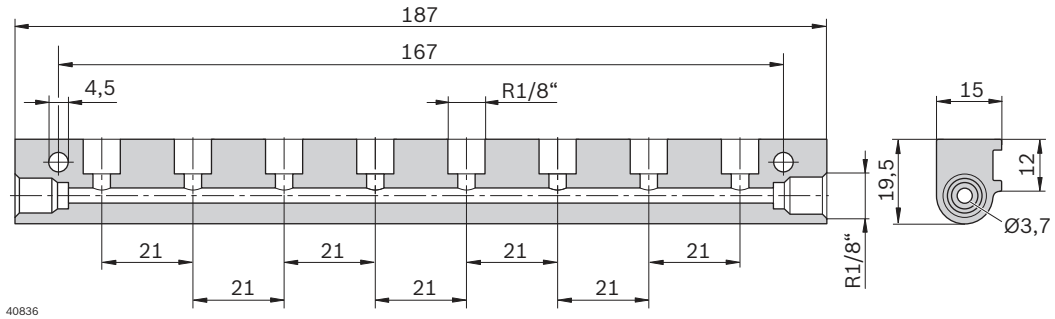
Hydraulic block LU 2/M-4 for 4 dosing valves



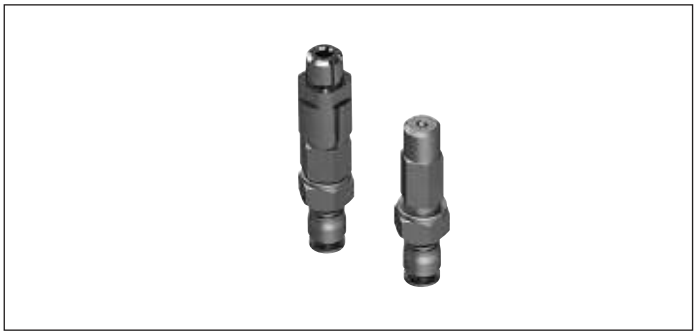
Hydraulic block LU 2/M-6 for 6 dosing valves



Hydraulic block LU 2/M-8 for 8 dosing valves



Dosing valves



- The dosing valve defines the quantity of oil which is supplied to the drive module per site in one lubrication impulse

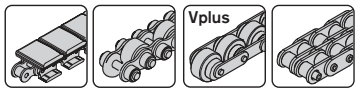
Scope of delivery

- Set consisting of 2x dosing valve each with push-in fitting for 4 mm hose (...-D4-1/8)
- 2x elbow fittings for adapter sets

Ordering information

Product description	Packaging unit	Material number
Dosing valve LU 2/V-0.03-D4-1/8	Set	3842562947
Dosing valve LU 2/V-0.06-D4-1/8	Set	3842562931
Dosing valve LU 2/V-0.10-D4-1/8	Set	3842562932
Dosing valve LU 2/V-0.16-D4-1/8	Set	3842562933
Dosing valve LU 2/V-0.20-D4-1/8	Set	3842562934
Dosing valve LU 2/V-0.30-D4-1/8	Set	3842562935
Dosing valve LU 2/V-0.50-D4-1/8	Set	3842562943

Adapter set



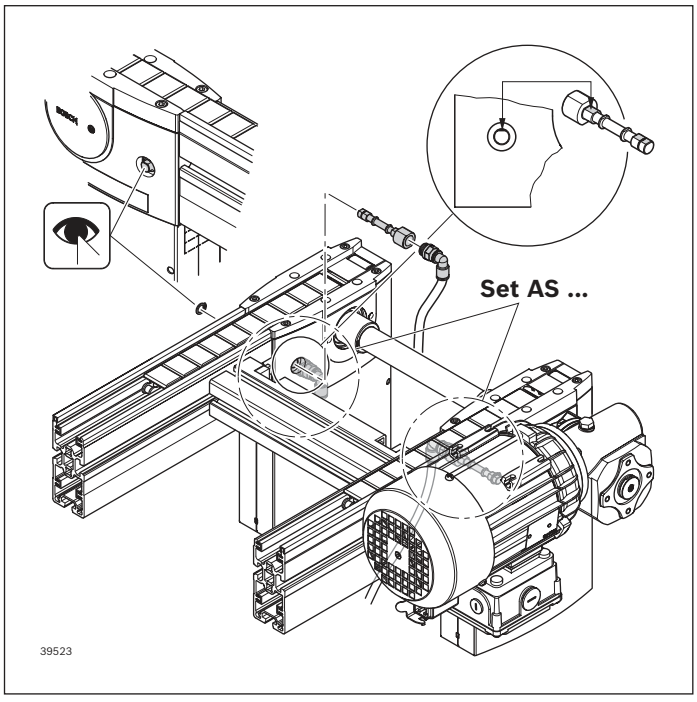
- Specific adapter sets with compatible lubrication pins for different drive modules

Ordering information

Product description		Packaging unit	Material number
Adapter set for	AS 2/C-100, AS 2/C-250 BS 2/C-100, BS 2/C-250, UM 2/C-170 HQ 2/G-H	1	3842543483
Adapter set for	AS 2/C-400 (assembly on UM 2/C-170 when b = 160 mm) AS 2/C-700 (assembly on UM 2/C-170 when b = 160 mm) BS 2/C-H (assembly on UM 2/C-170, UM 2/R-170 when b = 160 mm)	1	3842543484
Adapter set for	AS 2/R-300, AS 2/R-700 BS 2/R-300, BS 2/R-700, UM 2/R-170, BS 2/R-H with RV = 1* BS 2/G-250 HQ 2/C-H	1	3842543485
Adapter set for	AS 2/R-1200 (assembly on UM 2/R-170 when b = 160 mm) AS 2/R-2200 (assembly on UM 2/R-170 when b = 160 mm) BS 2/R-H with RV = 0 (assembly on UM 2/C-170, UM 2/R-170 when b = 160 mm)	1	3842543486
Adapter set for	AS 2/R-V-1200 (assembly on UM 2/R-170 when b = 160 mm) AS 2/R-V-2200 (assembly on UM 2/R-170 when b = 160 mm) BS 2/R-V-1200 (assembly on UM 2/R-170 when b = 160 mm)	1	3842543487

* Assembly on return unit UM

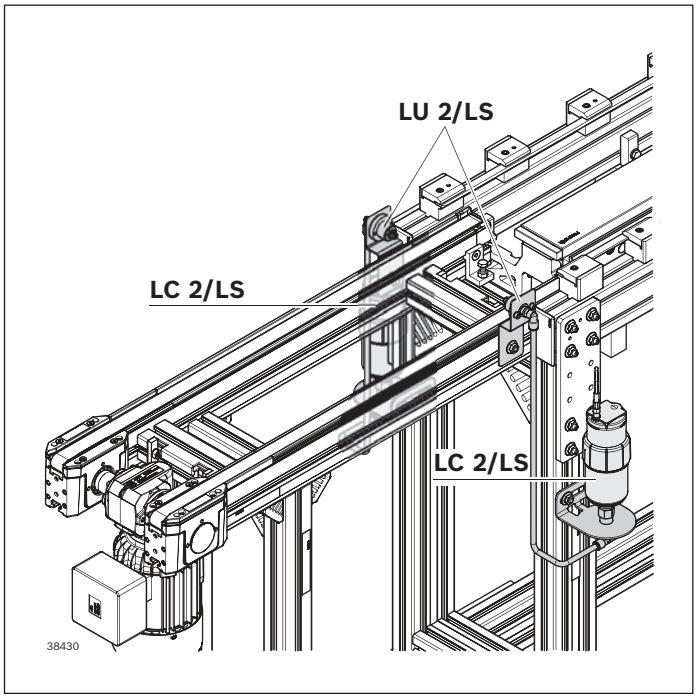
Technical data



Automatic lubrication unit for linear section LU 2/LS

- Modular assembly consisting of automatic lubrication unit LU 2/LS, grease cartridge LU 2/LS and adapter set
- Adjustment of lubrication amount to be distributed per metering process on the automatic lubrication unit LU 2/LS.
- Increasing the system service life by periodically lubricating the guide rails during operation.
  For preventing dry running.

Notice: 2 lubrication units are required for each section routing (1x left, 1x right)



Required accessories

- Grease cartridge LU 2/LS 3842562441

Scope of delivery

- Incl. adapter set

Condition on delivery

- Not assembled, fastening material enclosed

Ordering information

Product description	Material number
Lubrication unit LU 2/LS	3842562436
Grease cartridge LU 2/LS	3842562441

Notice:

For further information on the assembly, functions and settings of the lubrication unit, please refer to the automatic lubrication unit LU 2/LS 3842562440 assembly instructions.

Profile connector

- For the end-to-end connecting of two profiles SP 2/...
  Two profile connectors are required for each profile joint
- For conveyor unit self-assembly
- For use with all drive modules AS 2/..., return units UM 2/... and section profiles SP 2/...

Scope of delivery

- Profile connector, screws

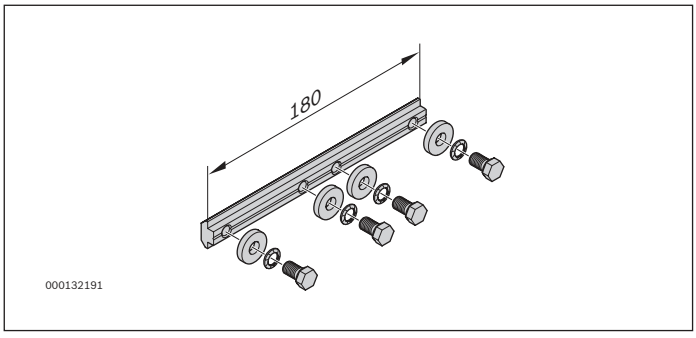
Ordering information

Product description	Material number
Profile connector	3842528746

Technical data

Material number	3842528746
Material specification	Steel; galvanized

Dimensions



Cross connector QV 2

- For conveyor unit self-assembly
- For connecting section profiles and defining the track width
- Can be combined with all section profiles SP 2/...

The cross connectors serve to connect the conveyor section profiles.

Formula for calculating the number of cross connectors needed

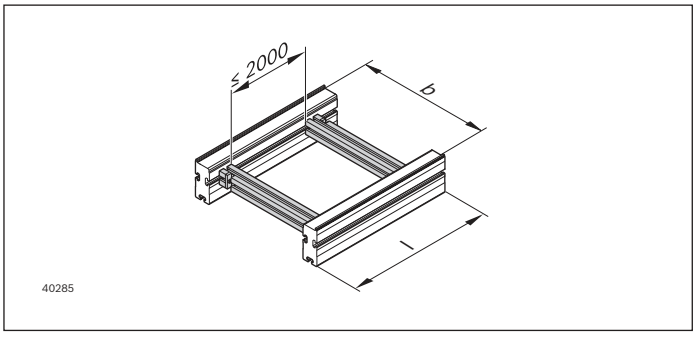
A_{QV} = (l/2000 mm) + 1

A_{QV} = number of cross connectors
l = section length

Scope of delivery

- Strut profile 45x60, finished
- 2x fastening material to mount on a section ST 2...

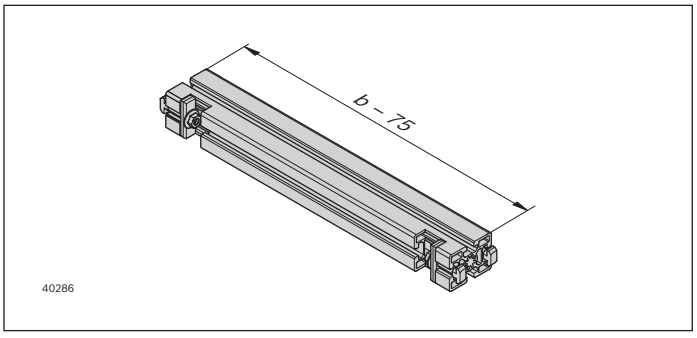
Ordering information



Material number		3842994635
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480: 640; 800; 1040; 1200
		160 ... 1200[1)]

[1)] Individual width variants can be ordered

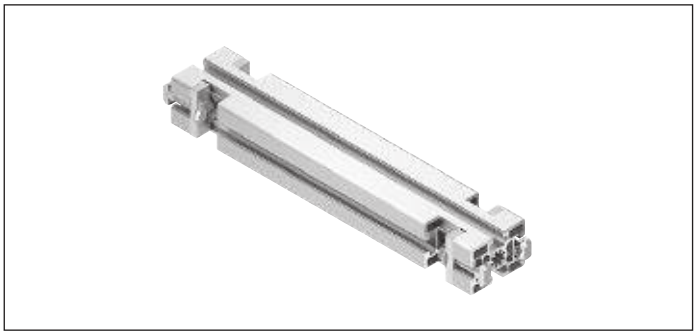
Dimensions



Technical data

Material number	3842994635
Material specification	Aluminum, natural; anodized

Cross connector QV 2-H



- For heavy-duty conveyor unit self-assembly
- For connecting section profiles and defining the track width
- Can be combined with all section profiles SP 2/...

Cross connectors QV 2-H are particularly suitable for connections between section profiles in heavy-duty systems.

Formula for calculating the number of cross connectors needed

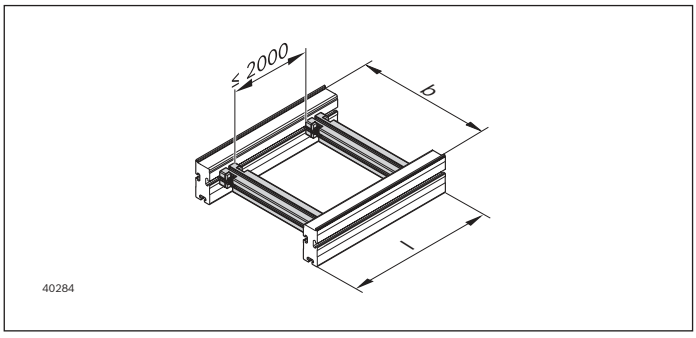
A_{QV} = (l/2000 mm) + 1

A_{QV} = number of cross connectors
l = section length

Scope of delivery

- Strut profile 45x60, finished
- 4x fastening material to mount on a section ST 2...

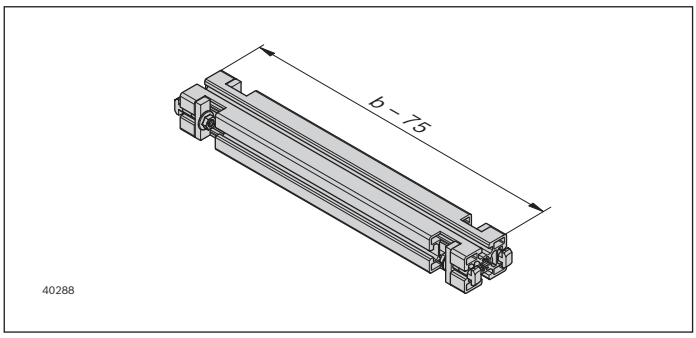
Ordering information



Material number		3842993052
b (mm)	Track width in direction of transport	160; 240; 320; 400; 480: 640; 800; 1040; 1200
		160 ... 1200[1)]

[1)] Individual width variants can be ordered

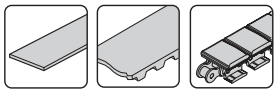
Dimensions

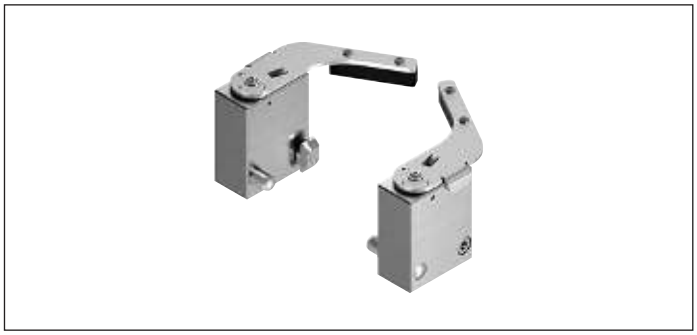


Technical data

Material number	3842993052
Material specification	Aluminum, natural; anodized

Scraper





- To scrape small parts from the conveyor medium
- For use with workpiece pallets with a minimum weight of 3 kg
- Conveyor media: Belt, toothed belt and flat-top chain
- May be mounted on the right side (R) or left side (L)
- Reversible operation is not possible on sections with scrapers

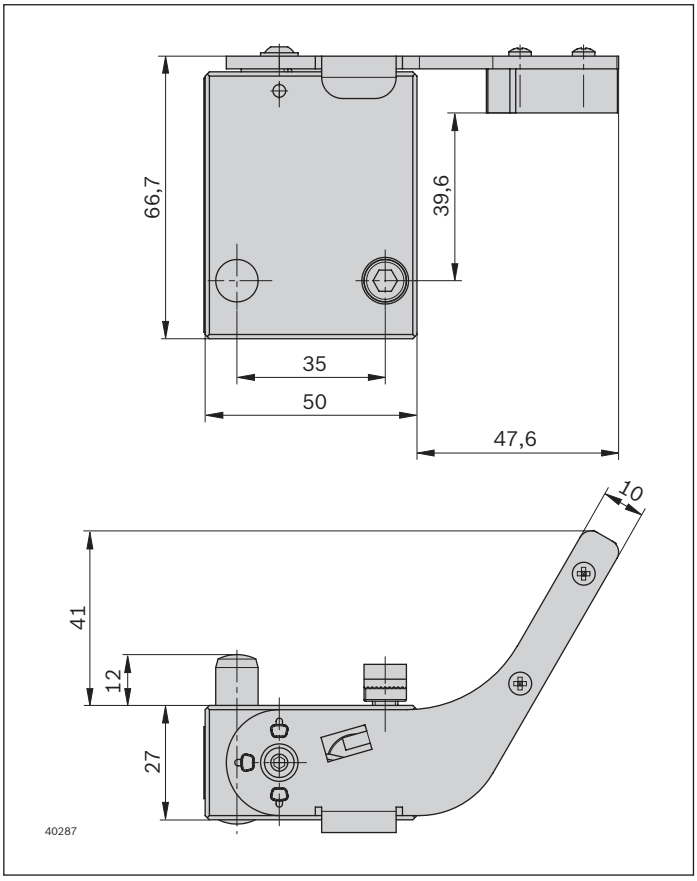
Scope of delivery

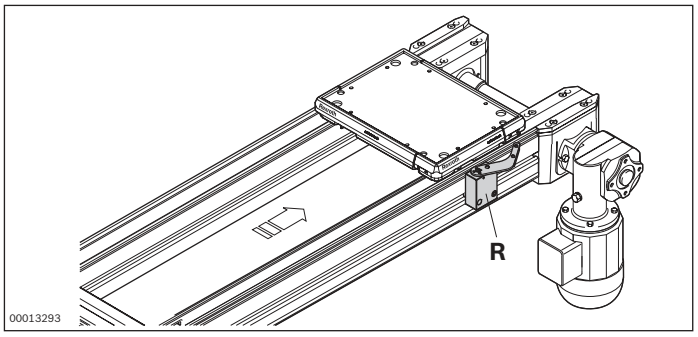
- 1x scraper, right or left, including fastening material

Ordering information

Product description	Material number
Scraper, right	3842532679
Scraper, left	3842532680

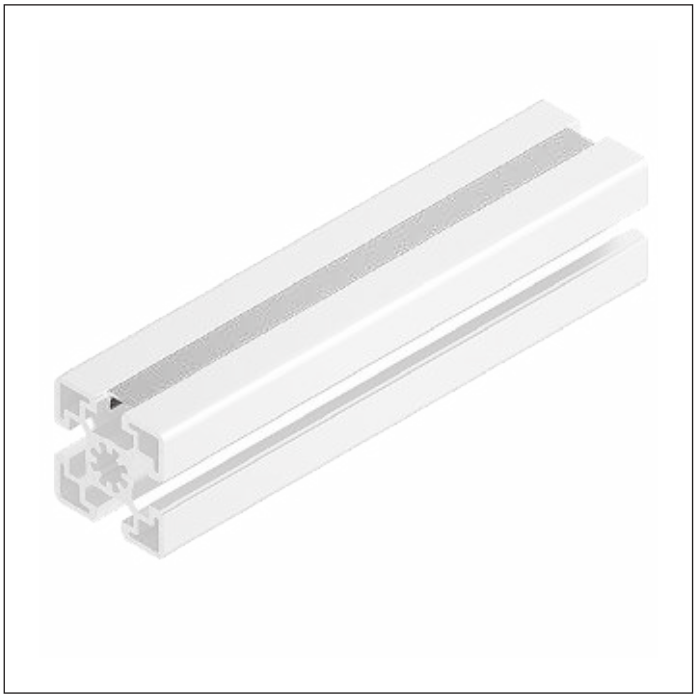
Dimensions





Cover rail for cable duct

10



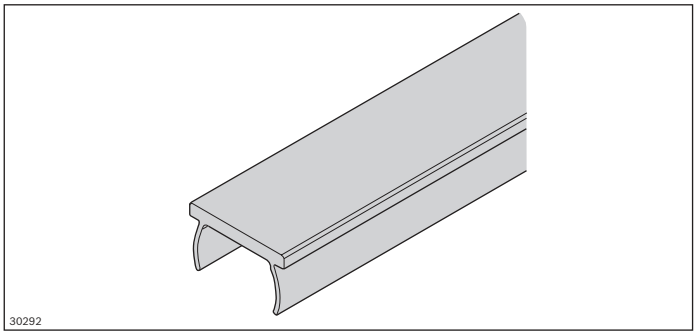
- To prevent dirt from entering the profile slot
- For fixing cables in position
- Flush with profile

Ordering information

Product description	Packaging unit	Material number
Cover rail for cable duct	10	3842523258

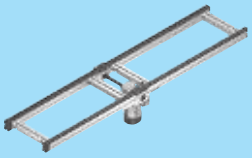
Technical data

Material number			3842523258
Material specification			Aluminum, natural; anodized
Length	l	mm	2000



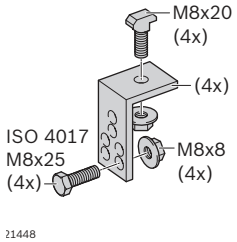
Connection kits for longitudinal conveyors

Use: For connecting the modules TS 2*plus* on a longitudinal conveyor at the ends (end-to-end)

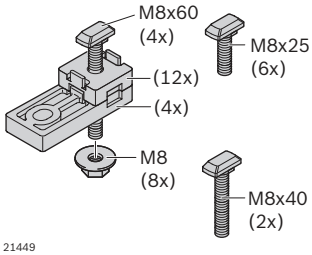
	**Return unit (return side)**						
	UM 2/B	**UM 2/C-60** **UM 2/C-170** **UM 2/R-60** **UM 2/R-170**	**BS 2**	**BS 2/C** **BS 2/C-H** **BS 2/R** **BS 2/R-H**	**KE 2**	**KU 2**	**CU 2**
Drive (drive side)							
AS 2/B-150, **AS 2/B-250**	3842179574[1)]	3842530871	3842518828	3842530871	3842518828	3842530871	3842518828
AS 2/C-100, **AS 2/C-250,** **KU 2/90,** **KU 2/180**	3842530871	3842529881	3842525110	3842179574 or 3842529881	–[2)]	3842179574 or 3842529881	3842525110
AS 2/C-400, **AS 2/C-700**	3842179574[1)]	3842530871	3842518828	3842530871	–[2)]	3842530871	3842518828
AS 2/R-300, **AS 2/R-700**	3842530871	3842529881	3842525110	3842179574 or 3842529881	–[2)]	3842179574 or 3842529881	3842525110
AS 2/R-1200, **AS 2/R-2200**	3842179574[1)]	3842530871	3842518828	3842530871	–[2)]	3842530871	3842518828
BS 2	3842518828	3842525110	3842525110	3842525110	3842525110 [3)]	3842525110	3842525110
BS 2/C **BS 2/R** **BS 2/G-250 (drive side)**	3842530871	3842529881	3842525110	3842179574 or 3842529881	–[2)]	3842179574 or 3842529881	3842525110
BS 2/C-H **BS 2/R-H**	3842179574[1)]	3842530871	3842518828	3842530871	–[2)]	3842530871	3842518828
KE 2/90 **KE 2/180**	3842518828	–[2)]	3842525110	–[2)]	3842525110 [3)]	–[2)]	3842525110

[1)] Included in the scope of delivery of the UM 2/B
[2)] Connection not permitted
[3)] Included in the scope of delivery of the KE 2

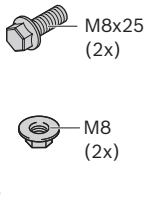
3842518828



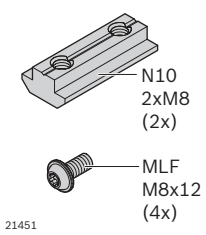
3842525110



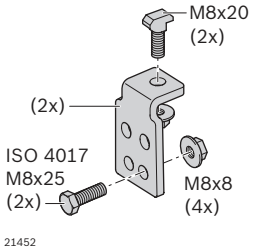
3842179574



3842529881

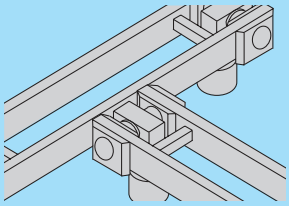


3842530871



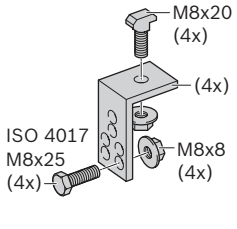
Connection kits for transverse conveyors

Use: To connect the module TS 2*plus* on a transverse conveyor laterally (end-to-section), the following are also required: Lift transverse unit

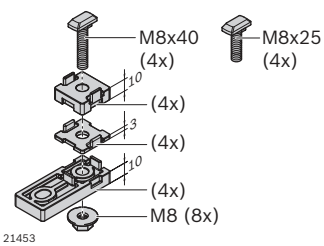


	Longitudinal conveyor	
	ST 2/B **SP 2/B** **ST 2/B-100** **ST 2/C-100** **ST 2/R-100**	**ST 2/C-H** **ST 2/R-H** **ST 2/R-V**
Transverse conveyor		
AS 2/B-150, **AS 2/B-250**	3842518828	–
AS 2/C-100, **AS 2/C-250**	3842528192	3842528192
AS 2/C-400, **AS 2/C-700**	3842518828	3842518828
AS 2/R-300, **AS 2/R-700**	3842528192	3842528192
AS 2/R-1200, **AS 2/R-2200**	3842518828	3842518828
UM 2/B	3842518828	–
UM 2/C-60, UM 2/C-170, **UM 2/R-60, UM 2/R-170,**	3842528192	3842528192
BS 2	3842525110	–
BS 2/C (drive side and return side) **BS 2/R (drive side and return side)** **BS 2/G (drive side)**	3842528192	3842528192
BS 2/C-H (drive side) **BS 2/R-H (drive side)**	3842518828	3842518828
BS 2/C-H (return side) **BS 2/R-H (return side)**	3842528192	3842528192
KU 2 (drive side and return side)	3842528192	3842528192

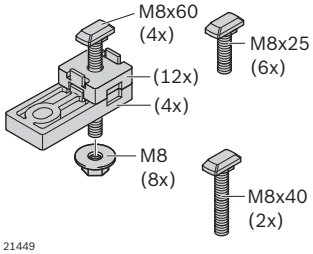
3842518828



3842528192

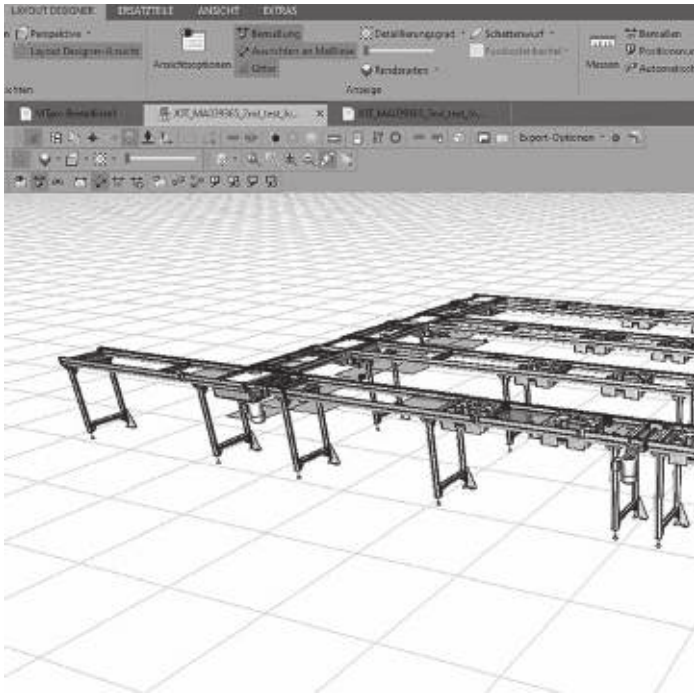


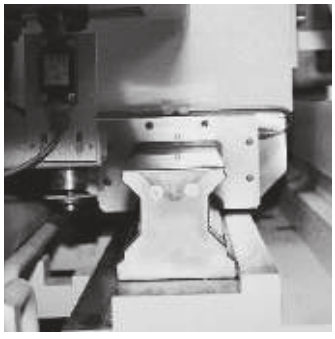
3842525110

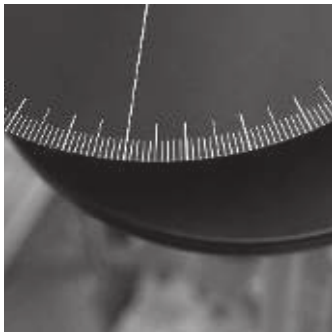


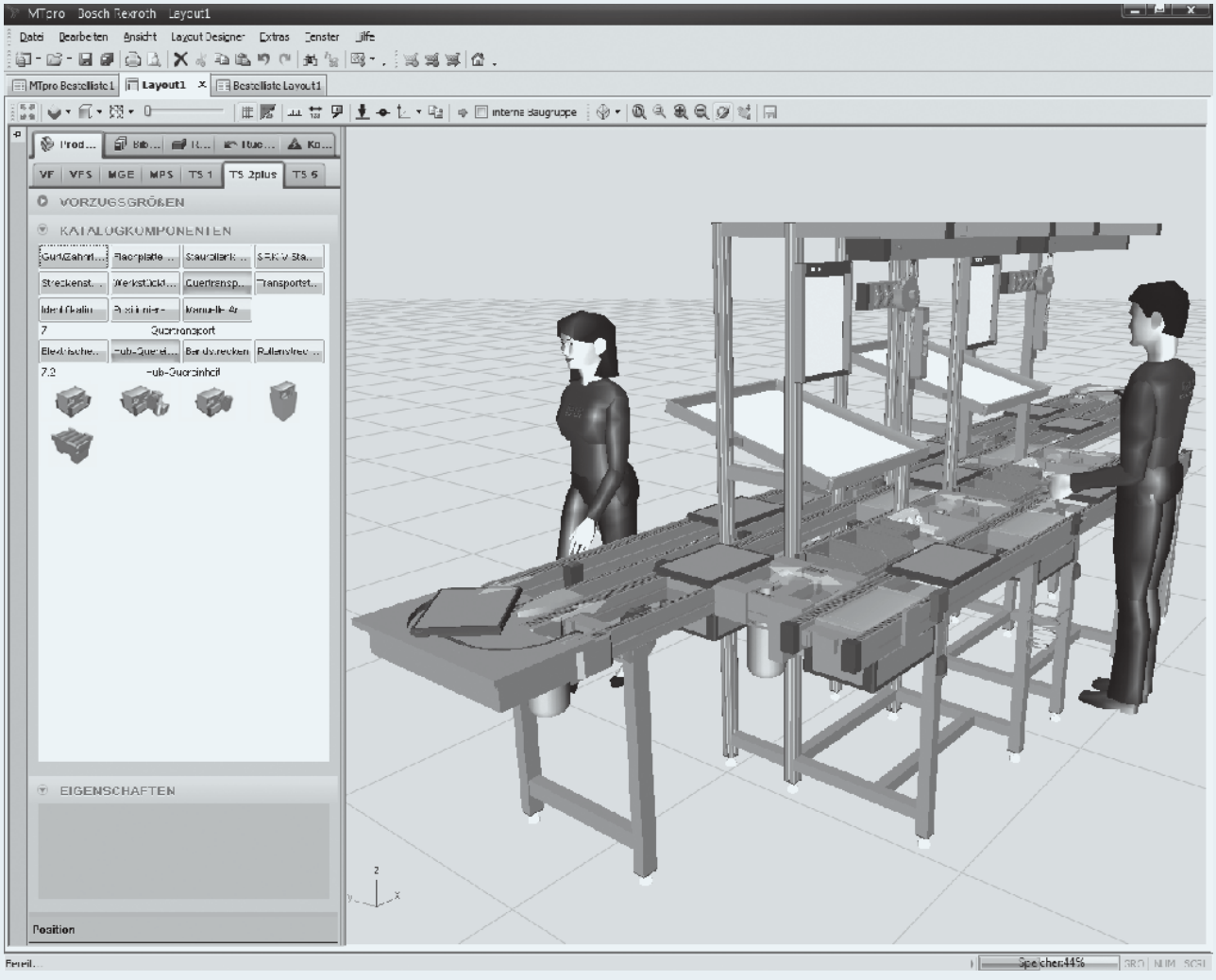
Technical data

MT*pro* – planning software	**10-3**
System specifications	**10-4**
Function plans	**10-7**
Motor data/motor connection	**10-29**
Transportation and nominal speeds v_N	**10-33**
Frequency converter (FU)	**10-36**
Compressed air consumption of TS 2*plus* units	**10-38**








MTpro Bosch Rexroth Layout1
Datei Bearbeiten Ansicht Layout Designer Extras Fenster Hilfe
MTpro Bestellliste1
Layout1
Bestellliste Layout1
interne Baugruppe
VF VFS MGE MPS TS 1 TS 2plus TS 5
VORZUGSGRÖßEN
KATALOGKOMPONENTEN
Quertransport
Sub-Querunterbau
EIGENSCHAFTEN
Position
Speicher:44%

MT*pro* – planning software

MT*pro* is a software program used for planning assembly systems. It assists you from selection to configuration and ordering of the Rexroth products. The program offers the following functions and full content in seven languages (en/de/fr/es/it/ja/zh):

Layout Designer for planning and designing complete frames and conveyor systems

- Simple design using the drag & drop and snap functions without a CAD system
- Design logic for automatic configuration and assembly adaptation
- Automatic order list generation of all small parts and accessories
- Export of 3D volume models
- Library for saving and reusing your own modules and layouts

Product information

- Technical data
- Catalog data sheets
- Assembly instructions
- Spare parts lists and drawings

Configuration and calculation

- Product configuration and generation of ordering information
- Issuing of order lists in user-specific presentations
- Direct connection to Rexroth eShop
- Quick & Easy profile configuration and drafting
- Other design and calculation programs

CAD library

- Configurable CAD models
- Memories in standard formats
- Direct integration into all common CAD systems

System requirements

- Windows from version 10 onwards
- USB data tag in vCard format
- At least 6 GB of free hard drive space
- Adobe Reader from version 10 onwards
- Internet access for Layout Designer licensing and automatic updates

Material number 3 842 539 057 for ordering of a USB data tag or via download at:
www.boschrexroth.de/mtpro

System specifications

APPLICATION

The Rexroth transfer systems all form a program of fine-tuned mechanical components that are used to convey, separate, and position workpiece pallets. With these components, you can create almost any system layout you need.
The systems are primarily used to convey workpieces (on Rexroth workpiece pallets) to and from manual or automatic work stations on an assembly line.

PLANNING

Transfer system planning (the combination of components into a modular system), setup, initial commissioning and maintenance should only be done by trained personnel. Rexroth offers training courses for this.

SCOPE OF DELIVERY – SMALL PARTS

The sensors, pneumatic valves, and electrical and pneumatic installation material that are necessary for operation are usually not included in the scope of delivery. These parts are only preassembled if doing so guarantees special functional safety or if installing them at a later point would require a disproportionate effort.
Please note the references for the required flow control valves and check valves in the pneumatic switching plan (listed in the assembly and operating manual) must be followed.

NOTICES

Examples
Installation references, pneumatic switching plans and typical function processes are described in the catalogs and assembly instructions. These must be followed when setting up and commissioning the system.

CE IDENTIFICATION, RESPONSIBILITY

Components that fall under the EC Machinery Directive are delivered with the corresponding declaration of incorporation. Overall responsibility for system safety (declaration of conformity, CE identification) lies with the system builder. The references in the assembly instructions and in the Instructions for Employees on Safety – 3842527147 – must be followed.

MEDIA RESISTANCE

Our products are guaranteed to be resistant to numerous media common to manufacturing, such as water, mineral oil, grease and detergents. Contact your Rexroth representative if you have any doubts about resistance to specific chemicals, e.g. test oil, doped oils, aggressive detergents, solvents, or brake fluid.
Avoid prolonged contact with highly reactive acidic or alkaline materials.

CONTAMINATION

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

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

- Liquids that thicken on evaporation and are highly viscous or adhesive (sticky) could lead to a disruption in function.
- Media with lubricating properties may reduce the drive power that is caused by friction if they are transported on systems with belts or round belts.
- The chain lubricant used on systems with conveyor chains can be washed away with solvents or detergents.

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

ENVIRONMENTAL SUSTAINABILITY, RECYCLING

The materials used are environmentally friendly.
They can be recycled or reused (components may have to be processed and replaced). Recyclability is ensured by the selection of materials and the ability to take the components apart.

PNEUMATIC CONNECTION DATA

Oiled or non-oiled, filtered, dry compressed air.
Operating pressure 4...6 bar
Performance data is for an operating pressure of 5 bar.

MAINTENANCE

The TS components require very little maintenance.
If maintenance-free operation cannot be achieved at an economically justifiable cost, maintenance instructions are specified in the operating manual.

WEAR

Wear is caused by the basic principle of this system and cannot be avoided. Design measures and appropriate materials help ensure functional safety over the service life of the product. However, wear depends on the operating, maintenance, and ambient conditions of the system and the location (resistance, contamination).

MEASURES TO REDUCE WEAR

The following measures reduce wear and the friction caused by it:

- Switch off conveyor sections when the system is not running, e.g. during breaks, overnight, on the weekend.
- Do not select conveyor section speeds that are higher than those required for the particular function
- Minimize the weight of the workpiece pallet – do not overload workpiece supports with material.
- Avoid unnecessary accumulation section, e.g. by reducing the number of WTs
- Switch off accumulation sections carrying heavy WTs if transport is not necessary.
- Very important: Avoid contamination by abrasive media or reduce contamination with regular cleaning

LOAD SPECIFICATIONS

Permitted loads apply for conveyor sections under the condition that only workpiece pallets with the maximum total permitted weight have accumulated.
Higher loads are permitted if accumulation can be safely avoided.
Accumulation operation is not permitted on lift transverse units.

WEAR AND CONVEYOR SPEED

Nominal data for the permitted workpiece pallet weight describe operation at standard speeds and under normal operating conditions.
Wear on the WT wear pads and the conveyor medium will not influence system function throughout the service life.

WEAR AND HIGHER/LOWER LOADS

Higher loads may lead to more wear and thus require, among other measures, shorter maintenance intervals.
A linear decrease in wear can be calculated for lower loads (half load = half the wear = twice the service life).

LOADING THE WORKPIECE PALLET, COMBINATION OF EMPTY AND LOADED WORKPIECE PALLET

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

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

Function is usually not limited if the weight ratio is 2:1 between heavy (loaded with a workpiece) and light workpiece pallets (empty).

LOADING THE WORKPIECE PALLET, MINIMUM WEIGHT

The minimum weight of the workpiece pallet is generally not relevant. In special cases, depending on the marginal conditions, an application-specific minimum weight may be required for safe and continuous transport. This can occur, for example, if switching elements have to be manually operated (on the rocker), or if a lighter WT does not run smoothly when changing directions, e.g., jumps out of the guide on the HQ. In such unusual cases, additional weight should be added when designing the workpiece support.

OVERLOADING

Overloading the conveyor sections may damage the conveyor medium and cause the motor and gears to break down.

When overloading of pneumatic components occurs, function cannot be guaranteed.

TRANSPORT SPEED, INFLUENCE ON WEAR

Wear on the conveyor medium, slide rails, WT wear pads and the like is proportional to the transport speed. This means that, in comparison to the standard speed of 12 m/min, when running at 18 m/min the wear limit is already reached at 12/18 = 2/3 of the running time.

Transport speed, dynamic influences
When the transport speed increases bumps when changing directions and the rebound force on the stop gates also increase. This may require longer damping periods or shock absorbers before the next movement. If accumulation roller chains are the conveyor medium a return stop combined with stop gates is recommended for operation at higher speeds.

Function plans

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

Characters are used in the action blocks that deviate from DIN IEC 61131-3. They are explained in the following table.

Action block	Explanation
S	Storing
NS	Non-storing
S	Set
R	Reset
NS T3 D T3 ? S Y2.1 S	Non-storing trigger of a time function (with runtime T), after which a switching function is triggered.

Simple stop gates VE 2 are used to stop workpiece pallets. The position of the workpiece pallets is queried with separate sensors.

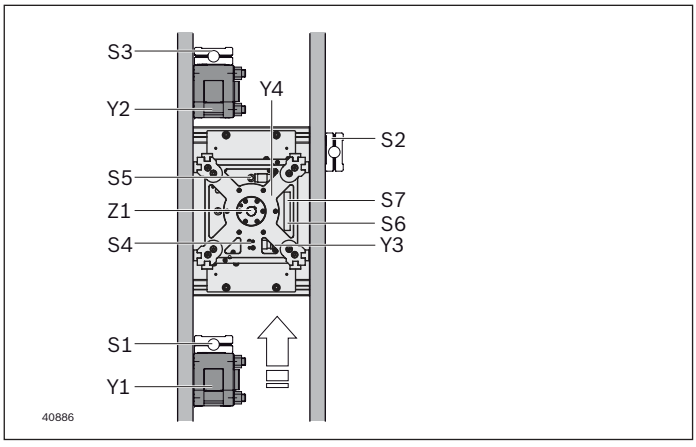
The function plans are simplified accordingly if using stop gates with integrated sensors and internal switching logic.

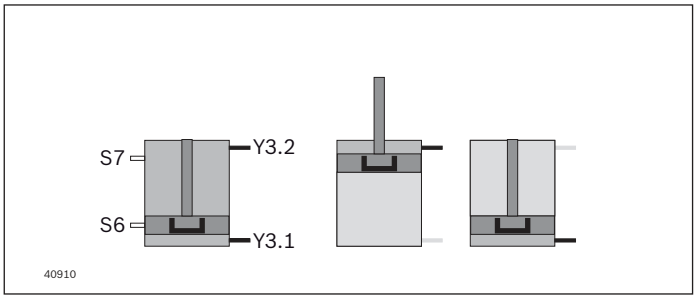
General abbreviations

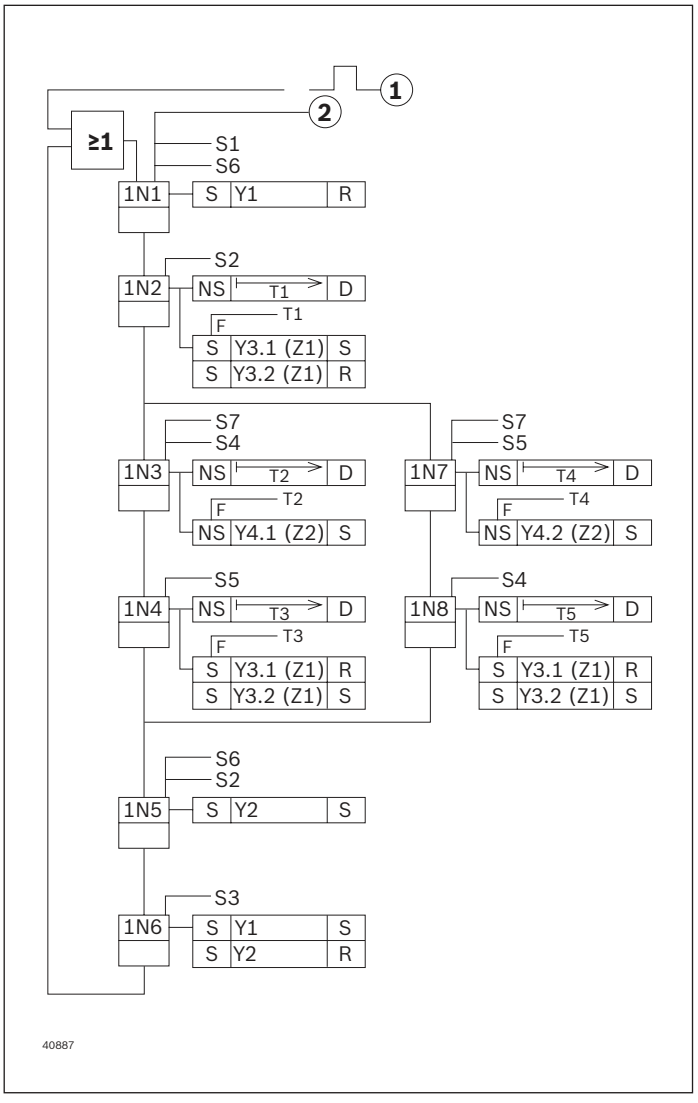
WT	=	Workpiece pallets
VE	=	Stop gate
S...	=	Signal transmitter
Y...	=	Valve
Z...	=	Cylinder
LT	=	Longitudinal conveyor (main section)
QT	=	Transverse conveyor (secondary section)
HQ	=	Lift transverse unit
DA	=	Damper
①	=	Start pulse after end of start-up
②	=	Enable cyclic travel

Function plan HD 2/H (BG1, BG2, BG3)

ROTATION ANGLE 180°





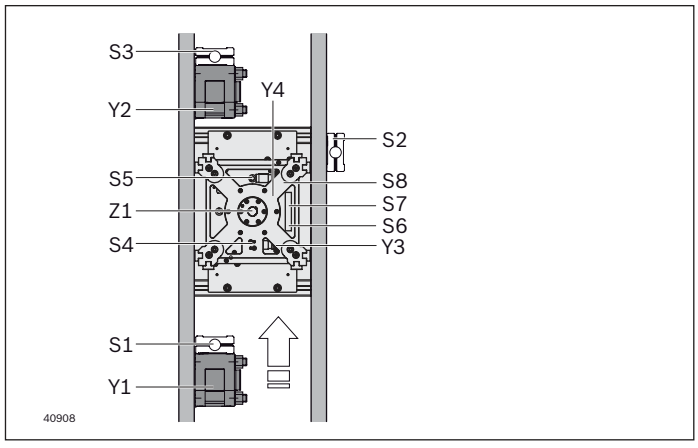


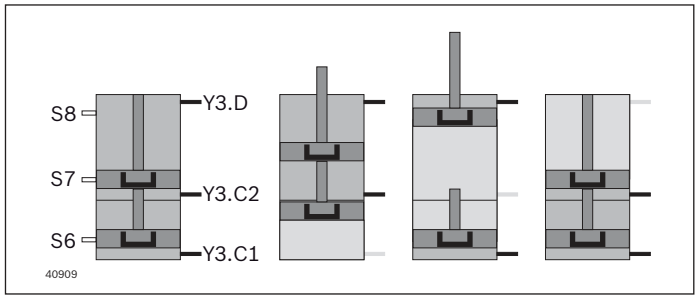
S1 = WT after VE1
S2 = WT in position on HD
S3 = WT after VE2
S4 = Scanning 0° position rotation
S5 = Scanning 180° position rotation
S6 = Query lower limit position HD
S7 = Query upper limit position HD
Y1 = Pre-stop gate
Y2 = Main stop gate
Y3.1 (Z1) = Lifting cylinder moves to upper position
Y3.2 (Z1) = Lifting cylinder moves to lower position
Y4.1 (Z2) = Rotary cylinder rotates clockwise
Y4.2 (Z2) = Rotary cylinder rotates anticlockwise

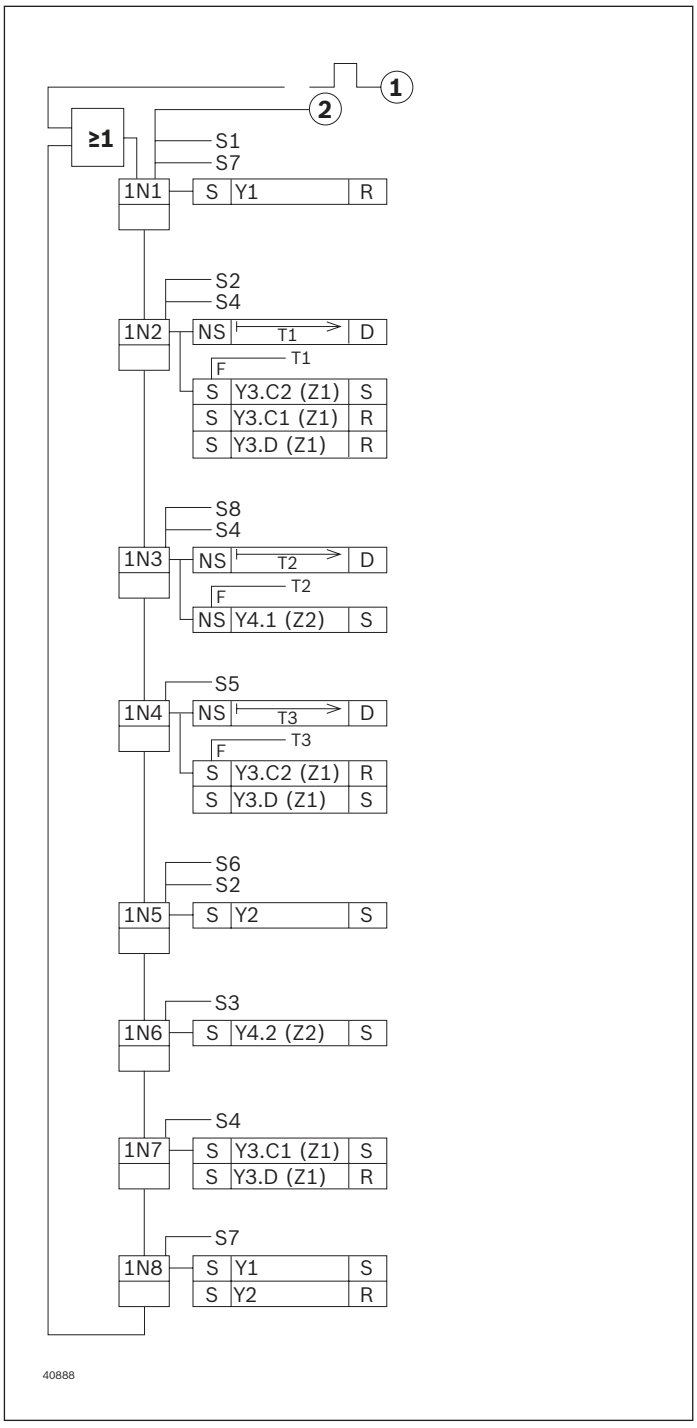
See also explanation on page 10-7

Function plan HD 2/H (BG1, BG2)

ROTATION ANGLE 90° (NOT TIME-OPTIMIZED)





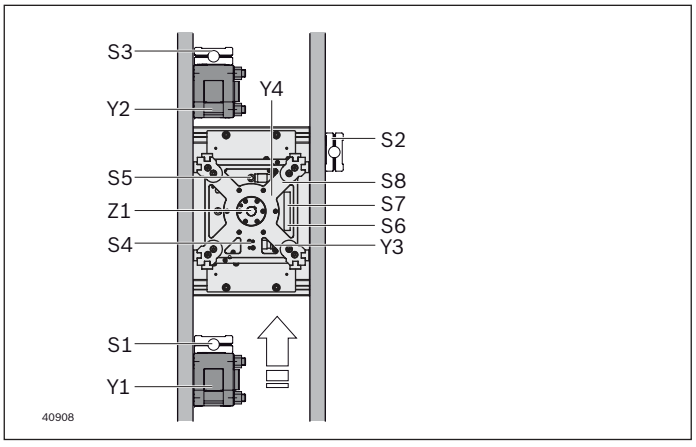


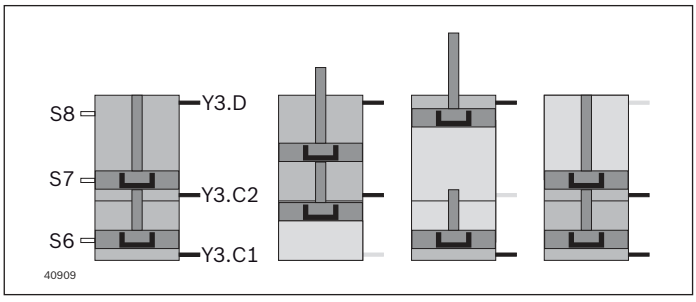
S1	=	WT after VE1
S2	=	WT in position on HD
S3	=	WT after VE2
S4	=	Scanning 0° position rotation
S5	=	Query 90° position rotation
S6	=	Query lower limit position HD
S7	=	Query central end position HD
S8	=	Query upper limit position HD
Y1	=	Pre-stop gate
Y2	=	Main stop gate
Y3.D (Z1)	=	Lifting cylinder moves to lower position
Y3.C2 (Z1)	=	Lifting cylinder moves to central position
Y3.C1 (Z1)	=	Lifting cylinder moves to upper position
Y4.1 (Z2)	=	Rotary cylinder rotates clockwise
Y4.2 (Z2)	=	Rotary cylinder rotates anticlockwise

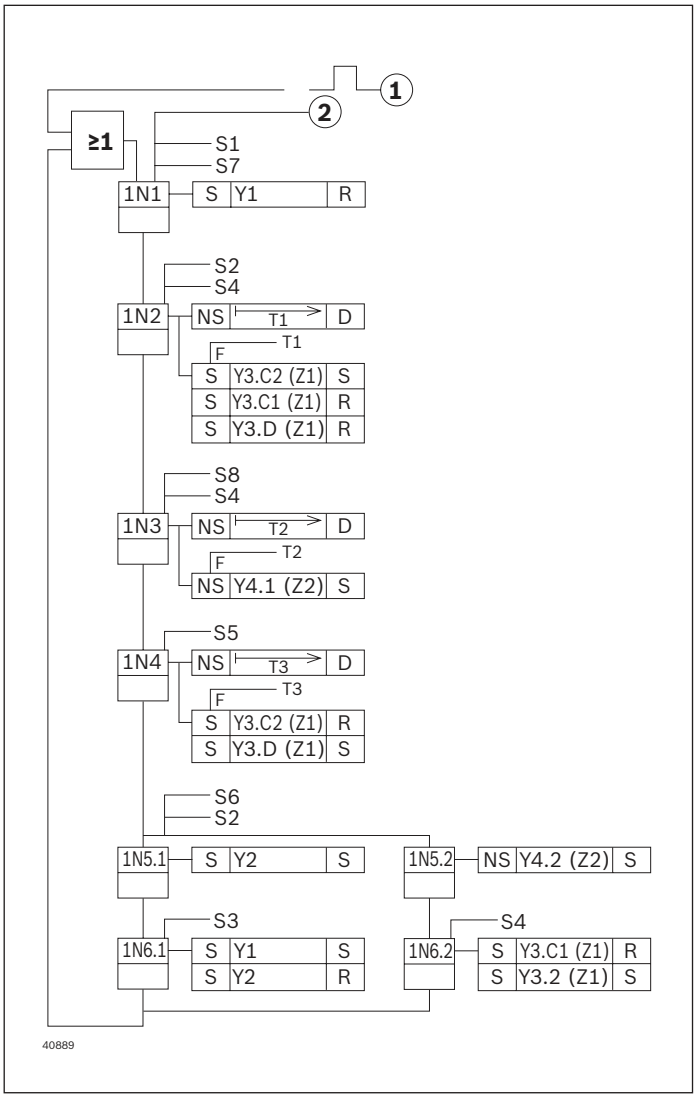
See also explanation on page 10-7

Function plan HD 2/H (BG1, BG2)

ROTATION ANGLE 90° (TIME-OPTIMIZED)





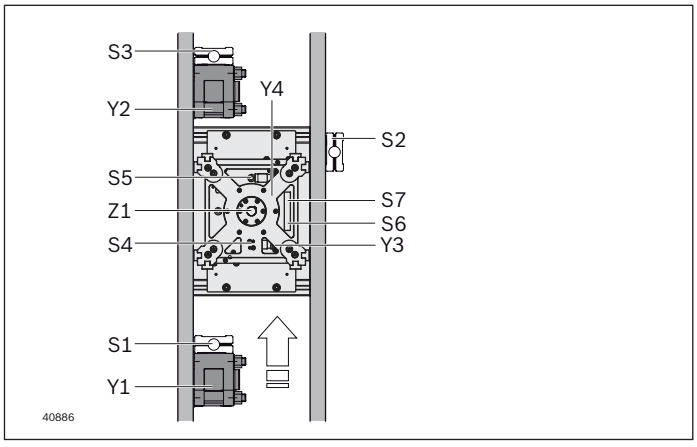


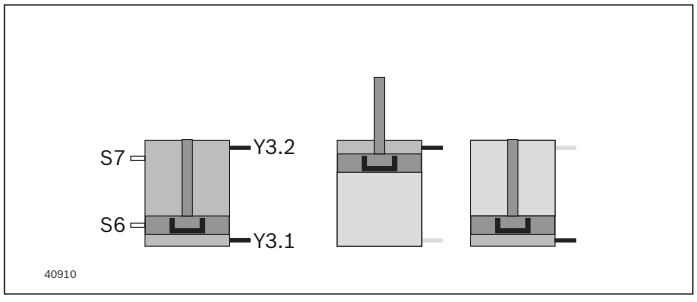
S1 = WT after VE1
S2 = WT in position on HD
S3 = WT after VE2
S4 = Scanning 0° position rotation
S5 = Query 90° position rotation
S6 = Query lower limit position HD
S7 = Query central end position HD
S8 = Query upper limit position HD
Y1 = Pre-stop gate
Y2 = Main stop gate
Y3.D (Z1) = Lifting cylinder moves to lower position
Y3.C2 (Z1) = Lifting cylinder moves to central position
Y3.C1 (Z1) = Lifting cylinder moves to upper position
Y4.1 (Z2) = Rotary cylinder rotates clockwise
Y4.2 (Z2) = Rotary cylinder rotates anticlockwise

See also explanation on page 10-7

Function plan HD 2/H (BG3)

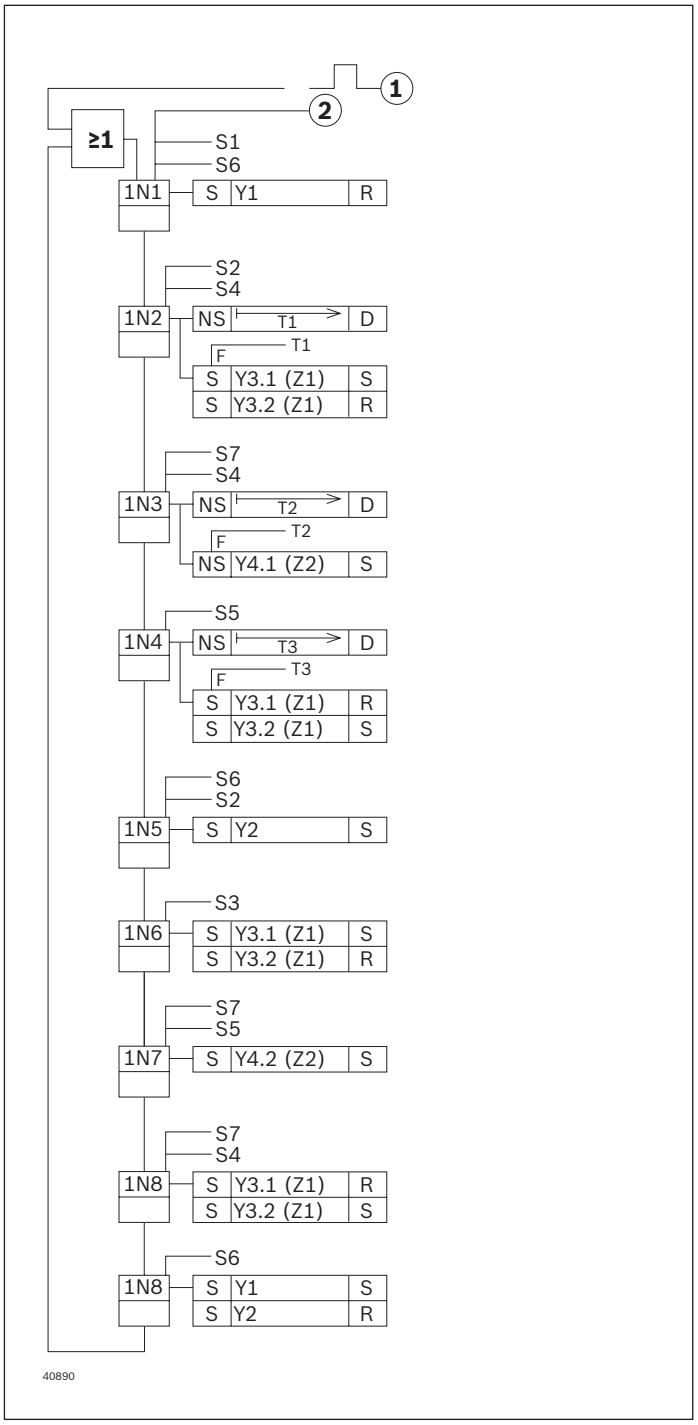
ROTATION ANGLE 90°



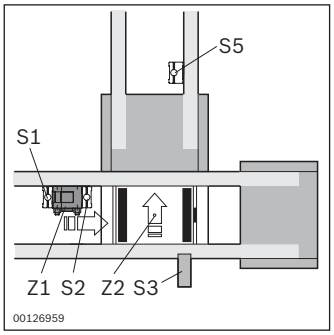


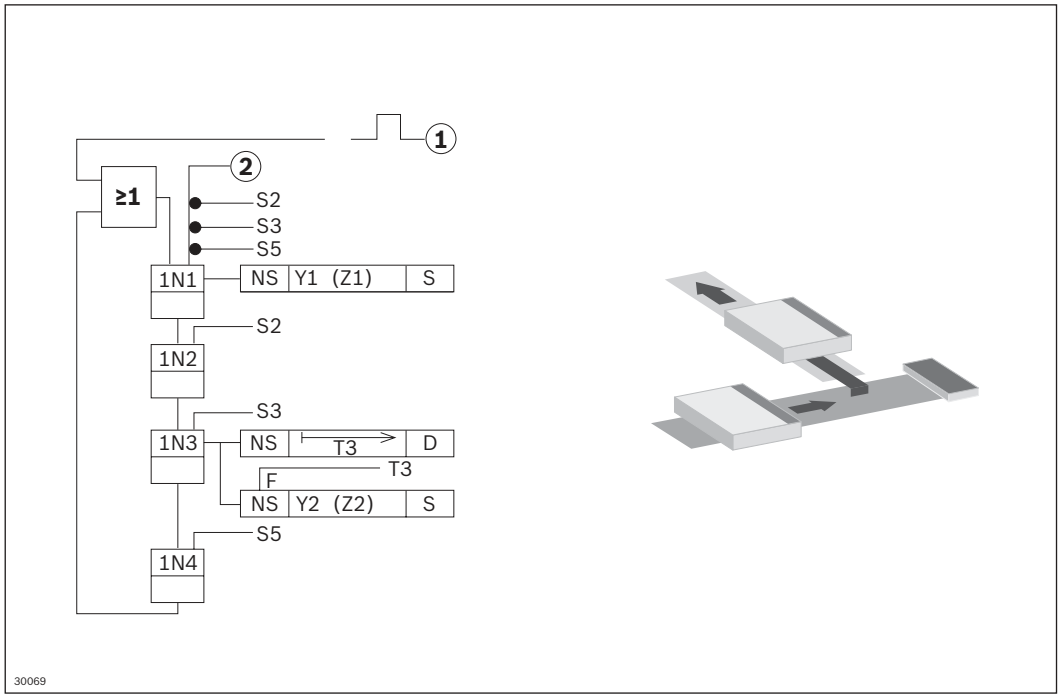
S1 = WT after VE1
S2 = WT in position on HD
S3 = WT after VE2
S4 = Scanning 0° position rotation
S5 = Query 90° position rotation
S6 = Query lower limit position HD
S7 = Query upper limit position HD
Y1 = Pre-stop gate
Y2 = Main stop gate
Y3.1 (Z1) = Lifting cylinder moves to upper position
Y3.2 (Z1) = Lifting cylinder moves to lower position
Y4.1 (Z2) = Rotary cylinder rotates clockwise
Y4.2 (Z2) = Rotary cylinder rotates anticlockwise

See also explanation on page 10-7



Implementation in transverse section (TFE 1)

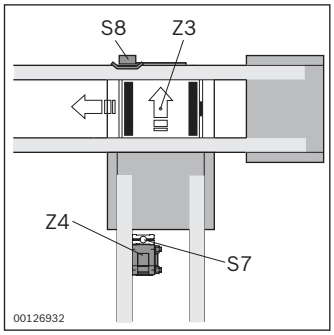


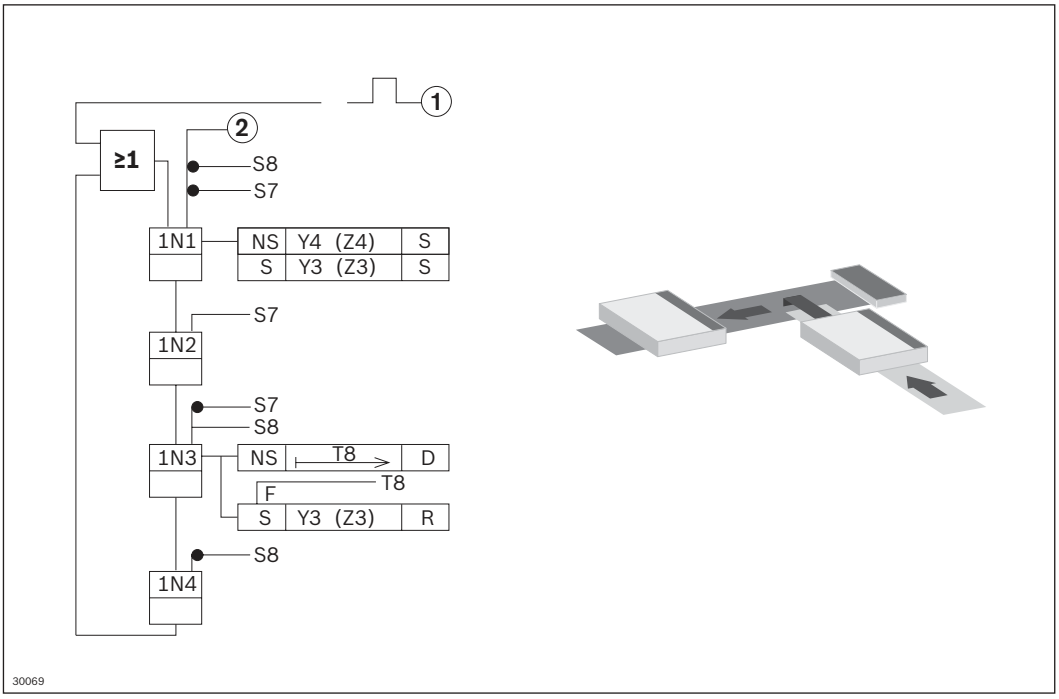


S2 = WT after VE1 (Z1)
S3 = WT in position on HQ (Z2) (rocker WI/M)
T3 = Delaying time 100 ... 200 ms
S5 = Enable main section 1
Y1 = Main section VE (Z1)
Y2 = Lifting cylinder HQ (Z2)

See also explanation on page 10-7

Implementation in longitudinal section (TFE 2)

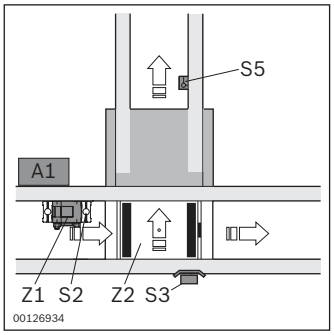


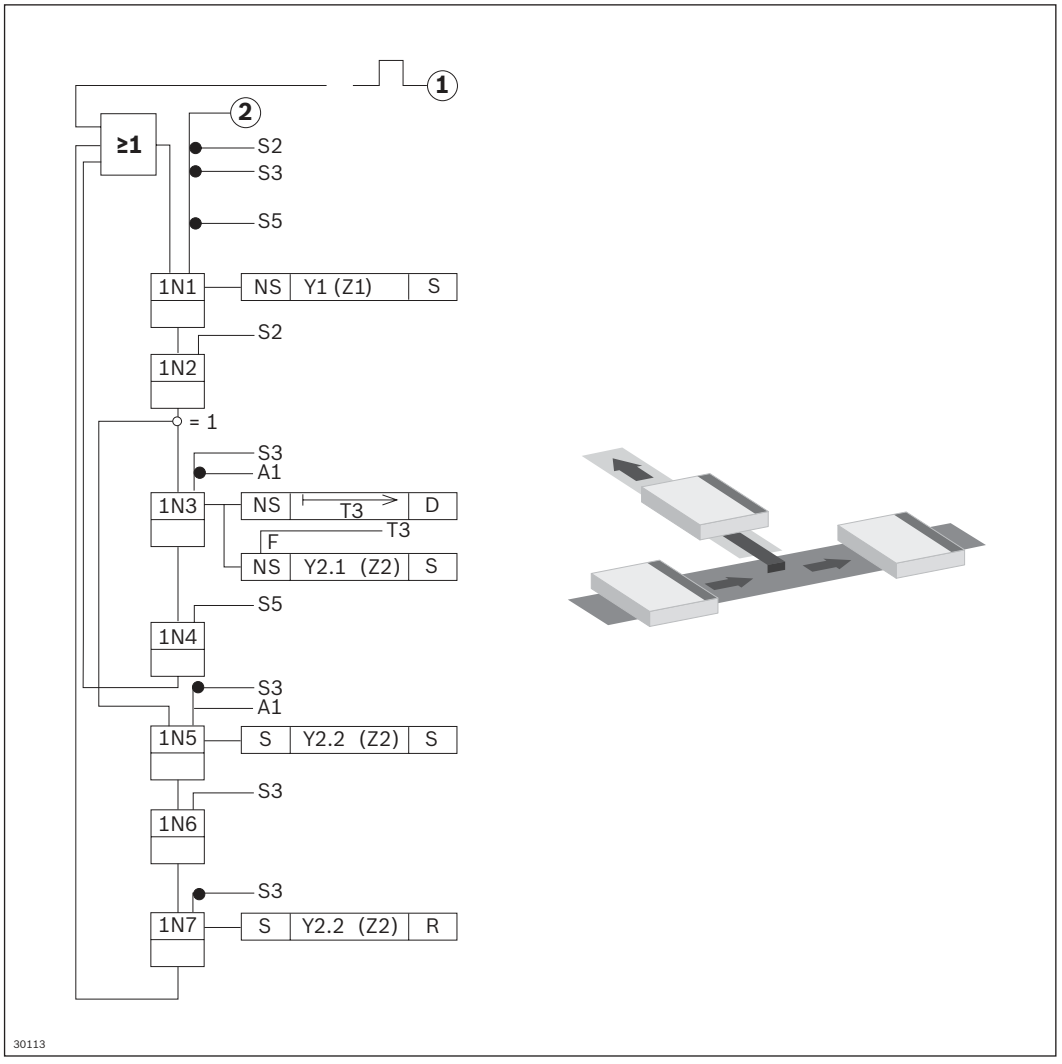


S7 = WT after VE4 (Z4)
S8 = WT in position on HQ (rocker WI/M)
T8 = Delaying time 100 ... 200 ms
Y3 = EQ lifting cylinder (Z3)
Y4 = Secondary section VE (Z4)

See also explanation on page 10-7

Transverse conveyor (separating, outfeeding) (TFE 3)

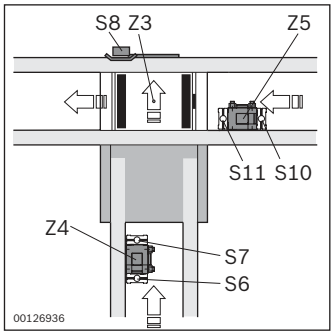


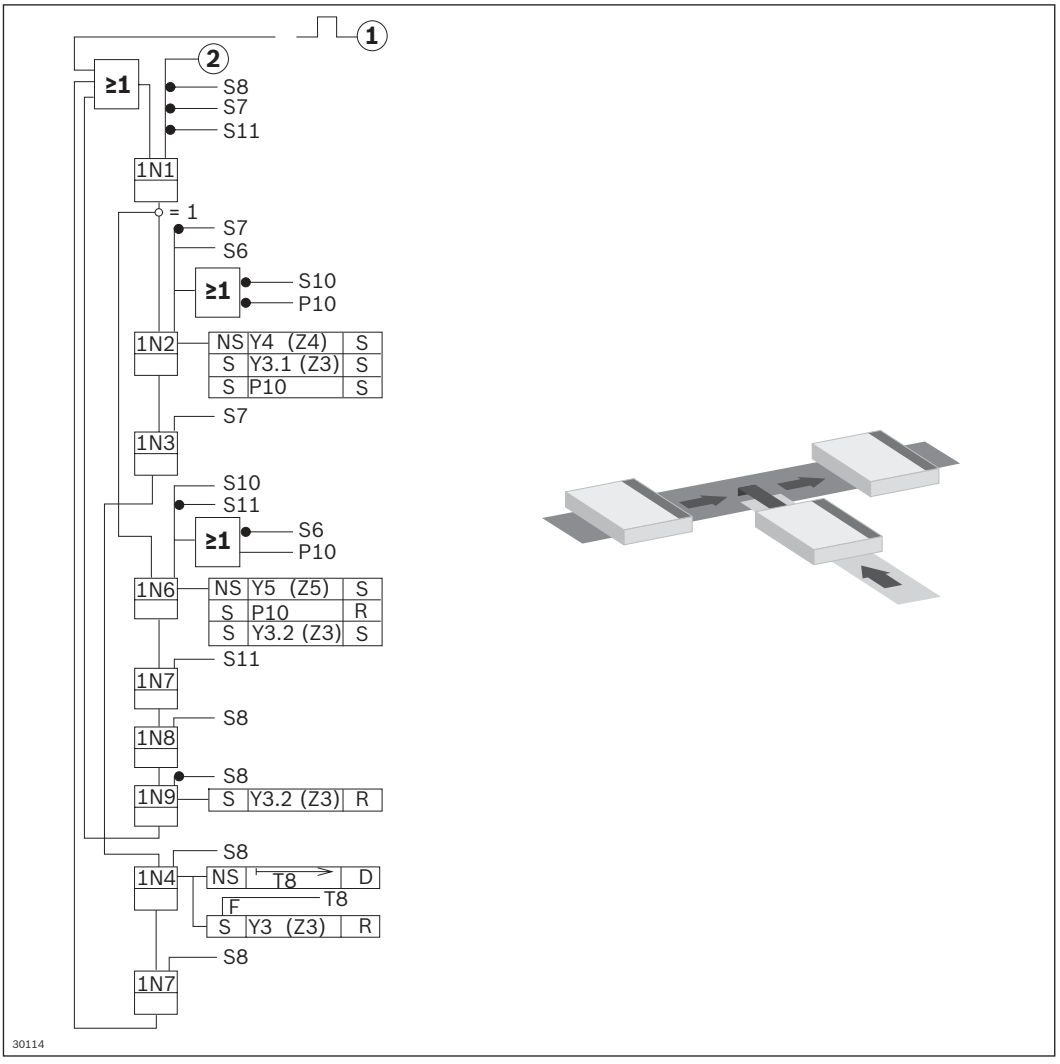


S2 = WT after VE1 (Z1)
S3 = WT in position on HQ
T3 = Delaying time 100 ... 200 ms
S5 = Enable secondary section
Y1 = Main section VE (Z1)
Y2 = Lifting cylinder HQ (Z2)
P10 = Priority main section
A1 = Identification system with straight-ahead signal
(0 = branch
1 = straight on)

See also explanation on page 10-7

Transverse conveyor (separating, infeeding) (TFE 4)

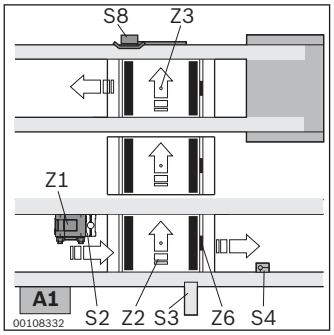


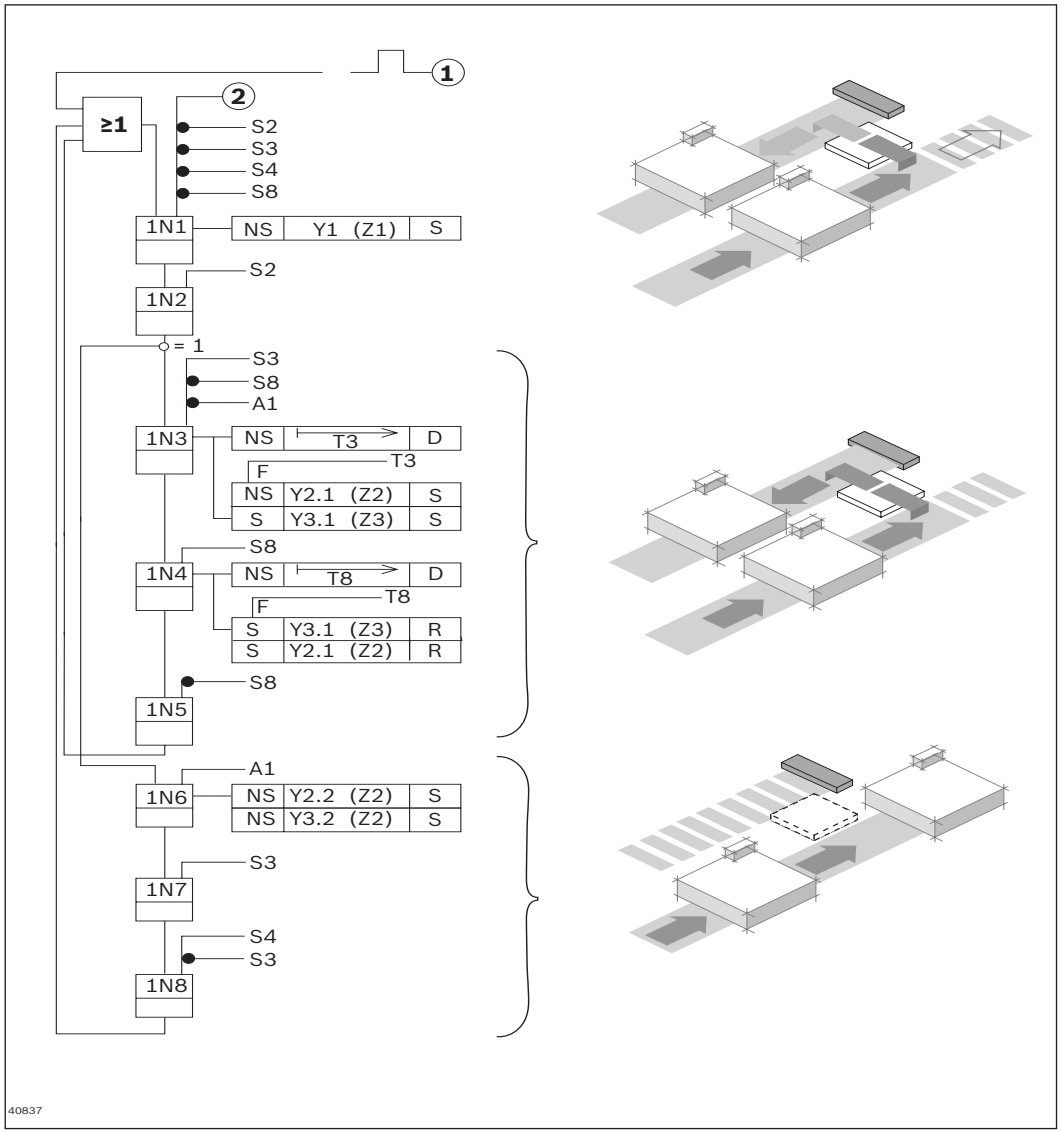


T8 = Delaying time 100 ... 200 ms
S6 = WT before VE4 (Z4)
S7 = WT after VE4 (enable secondary section)
S8 = WT in position on HQ (rocker WI/M)
S10 = WT before VE5 (Z5)
S11 = WT after VE5 (Z5)
Y3 = Lifting cylinder HQ (Z3)
Y4 = Secondary section VE (Z4)
Y5 = Main section VE (Z5)
Y6 = VE in EQ (Z6)
P10 = Priority main section

See also explanation on page 10-7

Transverse conveyor EQ 2/TR (separating, outfeeding) (TFE 5)



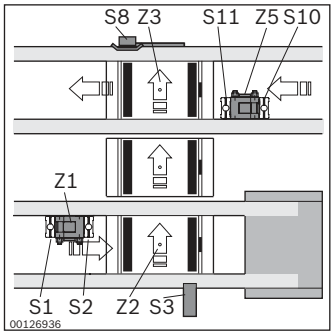


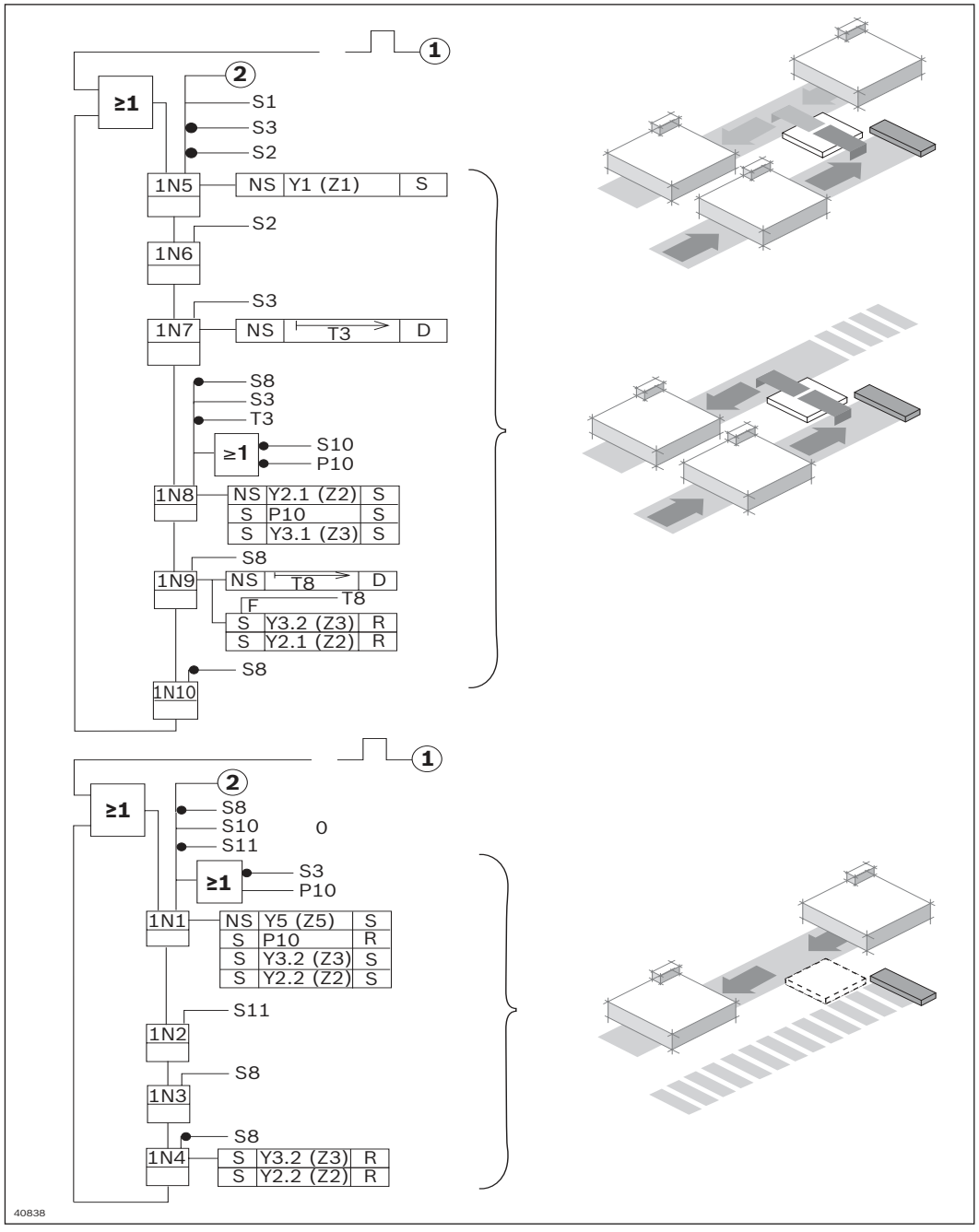
S1 = WT in position at VE1 (Z1)
S2 = WT after VE1 (Z1)
S3 = WT in position on EQ Part 1
T3 = Switch-on delay 100 ... 200 ms
T8 = Switch-on delay 100 ... 200 ms
S4 = Enable main section 1

S6 = WT before VE4 (Z4)
S7 = WT after VE4
S8 = WT on EQ Part 2 (rocker WI/M)
Y1 = Main section VE (Z1)
Y2.1/2.2 = Lifting cylinder EQ (Z2)
Y3.1/3.2 = EQ lifting cylinder (Z3)
A1 = Straight-ahead signal
(0 = branch
1 = straight on)

See also explanation on page 10-7

Transverse conveyor EQ 2/TR (infeeding) (TFE 6)



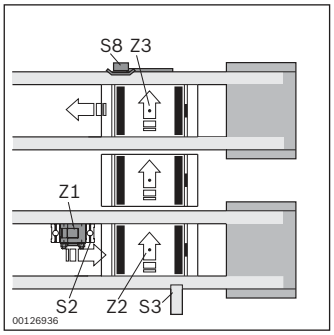


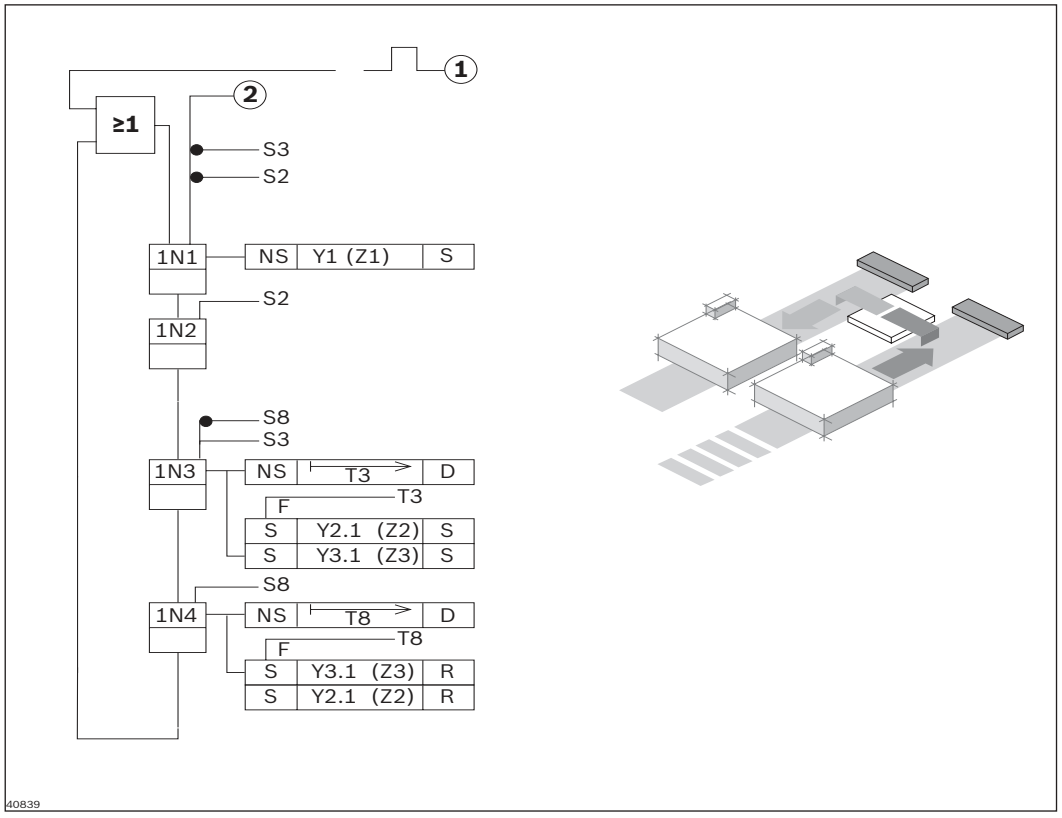
S1 = WT in position at VE1 (Z1)
S2 = WT after VE1 (Z1)
S3 = WT in position on EQ Part 1
T3 = Switch-on delay 100 ... 200 ms
T8 = Switch-on delay 100 ... 200 ms
S8 = WT on EQ-part 2

S11= WT after VE5 (Z5)
Y1= Main section VE (Z1)
Y2.1/2.2= Lifting cylinder EQ (Z2)
Y3.1/3.2= EQ lifting cylinder (Z3)
Y5= Main section VE (Z5)
P10= Priority

See also explanation on page 10-7

Transverse conveyor EQ 2/TR (transfer) (TFE 7)

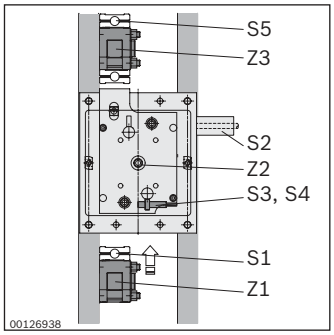


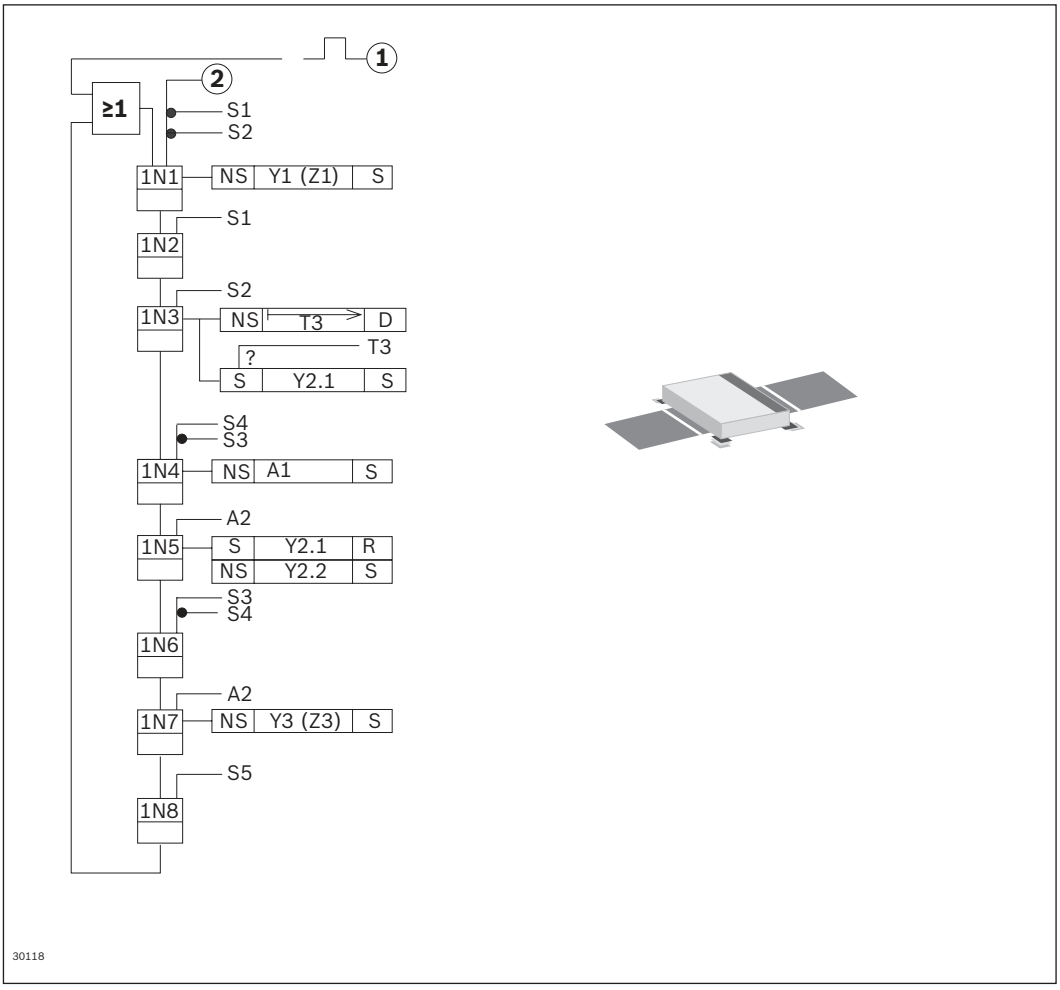


S1 = WT in position at VE1 (Z1)
S2 = WT after VE1 (Z1)
S3 = WT in position on EQ Part 1
T3 = Switch-on delay 100 ... 200 ms
T8 = Switch-on delay 100 ... 200 ms
S8 = WT on EQ-part 2
Enable main section 1 (rocker WI/M)
Y1 = Main section VE (Z1)
Y2.1/2.2 = Lifting cylinder EQ (Z2)
Y3.1/3.2 = EQ lifting cylinder (Z3)

See also explanation on page 10-7

Conveyor function unit PE





10

S1 = WT after VE1
S2 = WT arrival
S3 = Bottom end position of lift
S4 = Top end position of lift
S5 = WT after VE2
Y1 = Open VE1 (Z1)
Y2 = WT lift
Y3 = Open VE (Z3)
A1 = Start process
A2 = Process ended

See also explanation on page 10-7

Function plans HQ 2/C-H, HQ 2/G-H

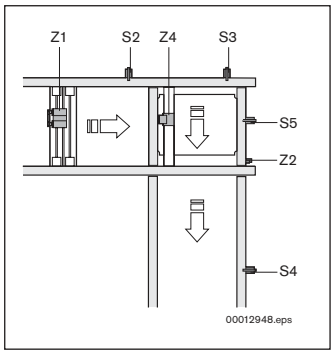
Notes for HQ 2/C-H and HQ 2/G-H in combination with WT 2/H or WT 2/F-H

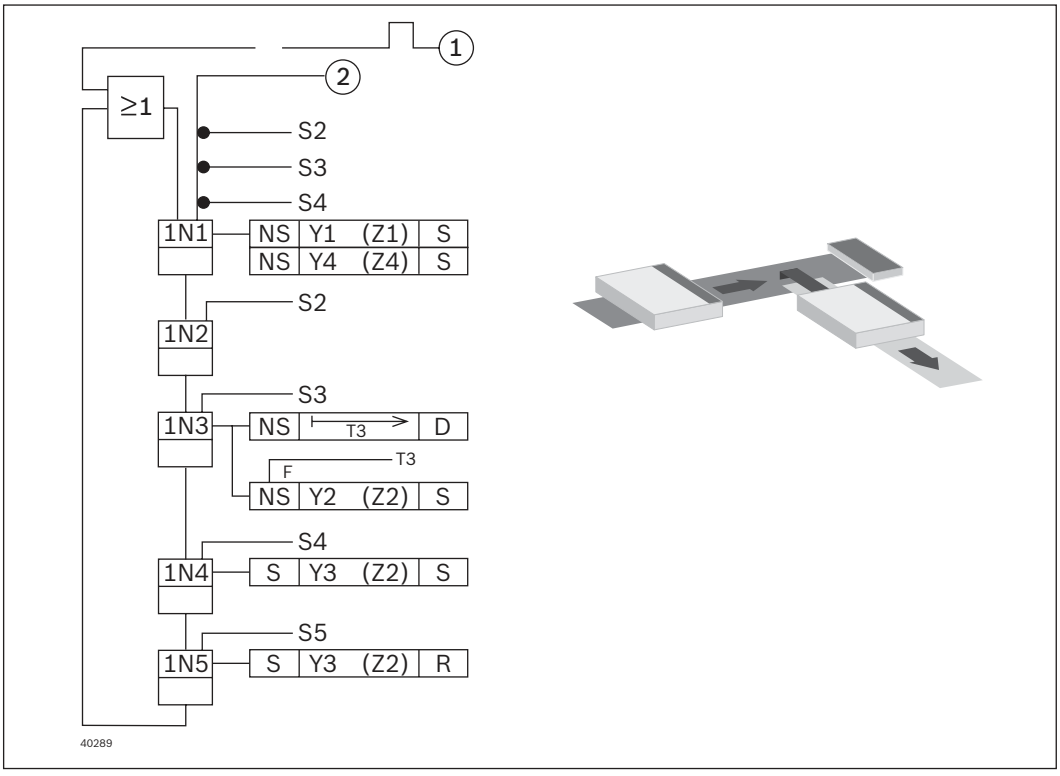
DA 2

- For conveyor function units TFE 2 and TFE 4,
  damper extension must be delayed.
  This ensures that the HQ 2 is already in the upper position

Implementation in transverse section (TFE 1)

FUNCTION PLAN FOR HQ 2/C-H AND HQ 2/G-H IN COMBINATION WITH WT 2/H OR WT 2/F-H



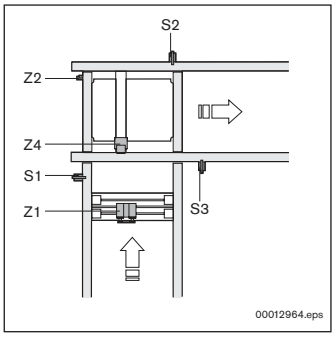


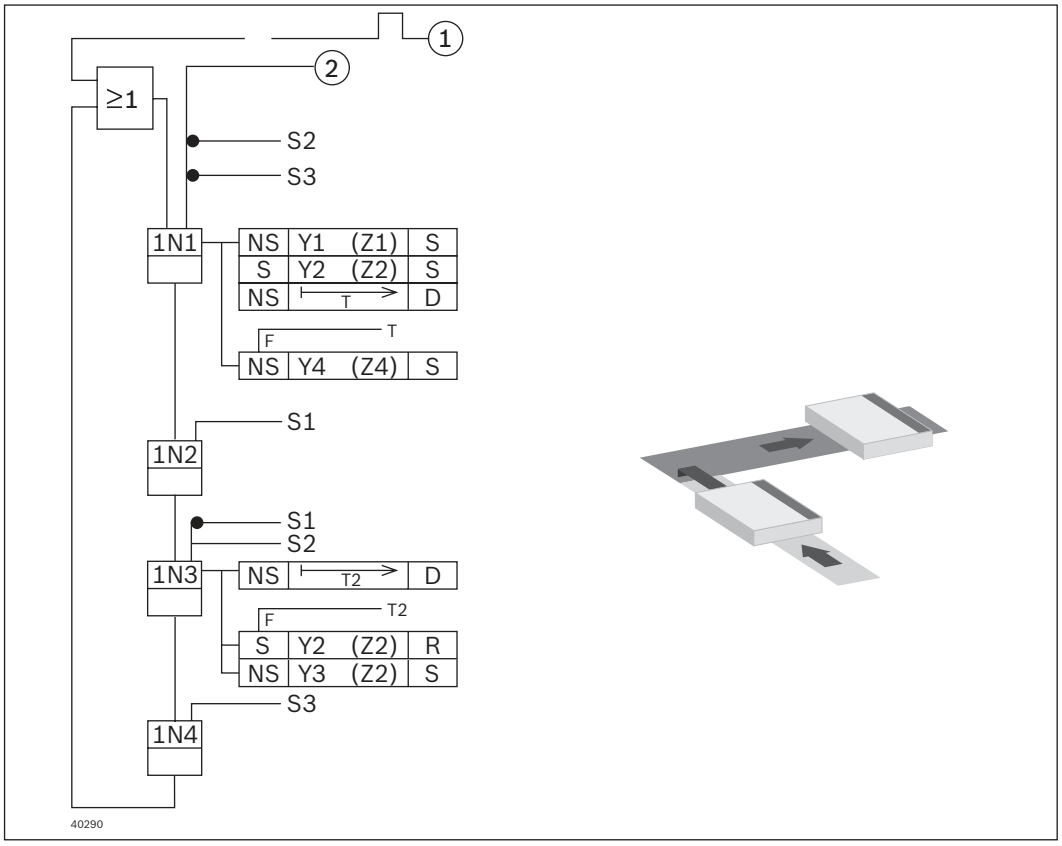
① = Start pulse after end of start-up
② = Enable cyclic travel
S2 = WT after VE2
S3 = WT in position on HQ 2
S4 = Enable secondary section, HQ 2 free
S5 = HQ 2 in the lower position
Y1 = Main section VE 2 (Z1)
Y2 = HQ 2 up (Z2)
Y3 = HQ 2 down (Z2)
Y4 = Extend damper DA 2 (Z4), stop position
Notice:
– Central position of HQ 2 is centered by springs (without pressurization)
– Distance Z1–Z3 IWT +200 mm

See also explanation on page 10-7

Implementation in longitudinal section (TFE 2)

FUNCTION PLAN FOR HQ 2/C-H AND HQ 2/G-H IN COMBINATION WITH WT 2/H OR WT 2/F-H



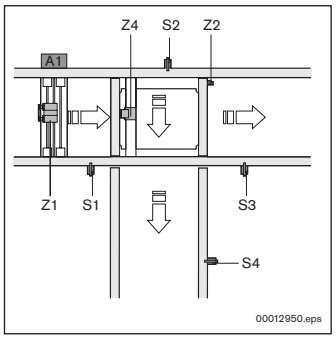


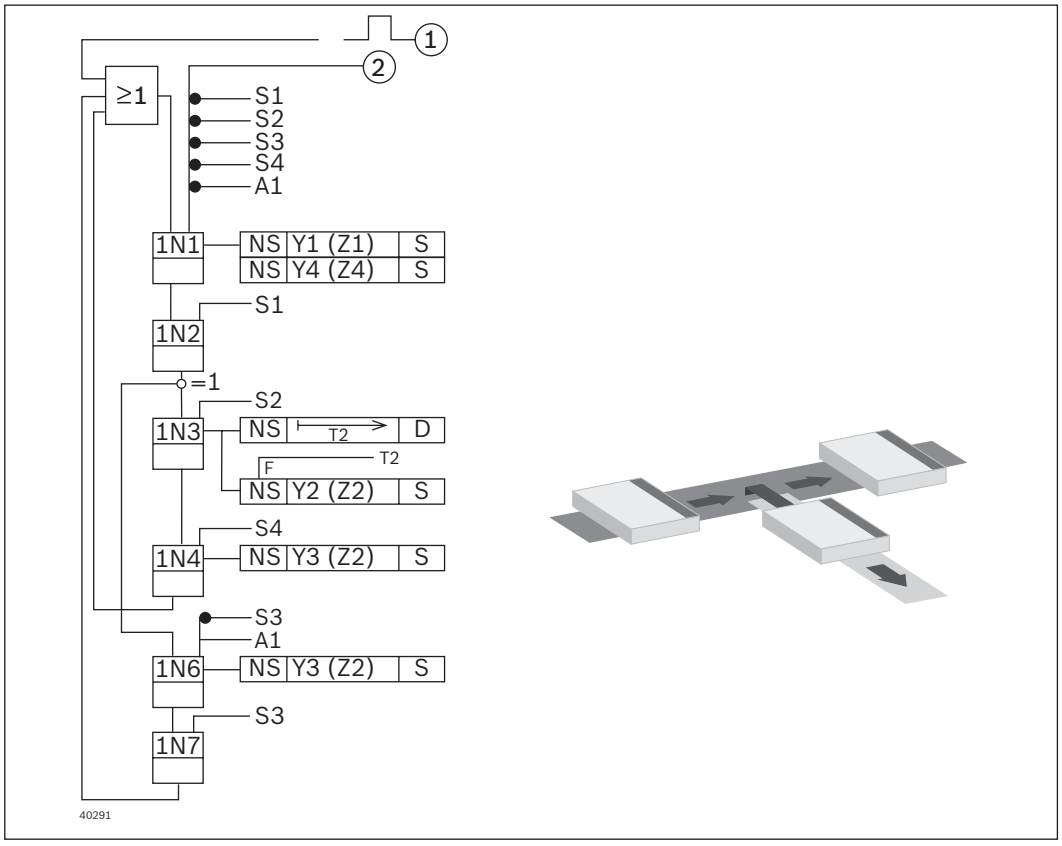
① = Start pulse
② = Enable cyclic travel
S1 = WT after VE 2
S2 = WT in position on HQ 2
S3 = Enable main section, HQ 2 free
Y1 = VE 2 secondary section (Z1)
Y2 = HQ 2 up (Z2)
Y3 = HQ 2 down
Y4 = Extend DA 2 damper
Notice: Distance Z1–Z3 bWT +200 mm

See also explanation on page 10-7

Outfeeding from longitudinal conveyor (TFE 3)

FUNCTION PLAN FOR HQ 2/C-H AND HQ 2/G-H IN COMBINATION WITH WT 2/H OR WT 2/F-H





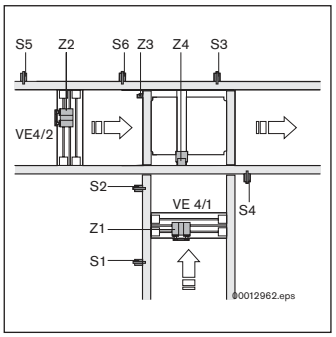
①	=	Start pulse
②	=	Enable cyclic travel
S1	=	WT after VE4
S2	=	WT in position on HQ 2
S4	=	Enable secondary section, HQ 2 free
S3	=	Enable main section, HQ 2 free
Y1	=	Main section VE 2 (Z1)
Y2	=	HQ 2 up (Z2)
Y3	=	HQ 2 down (Z2)
Y4	=	Extend DA 2 damper
A1	=	Straight-ahead signal

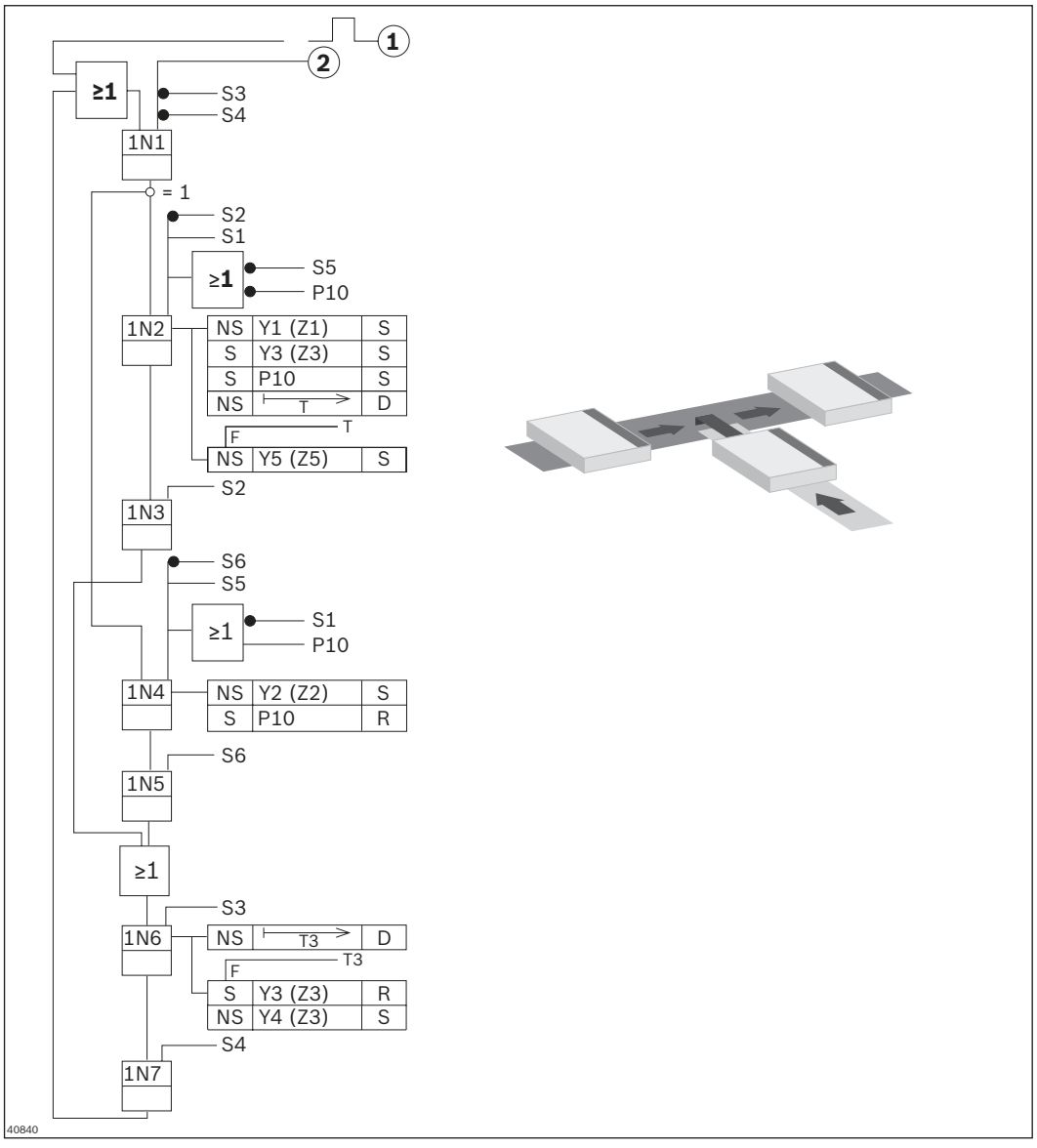
Notice:
- Central position (WT 2 stop position) of HQ 2 is centered by springs (without pressurization)
- Distance Z1–Z3 IWT +200 mm
- Distance S2–S3 = min. 200 mm

See also explanation on page 10-7

Infeeding to longitudinal conveyor (TFE 4)

FUNCTION PLAN FOR HQ 2/C-H AND HQ 2/G-H IN COMBINATION WITH WT 2/H OR WT 2/F-H

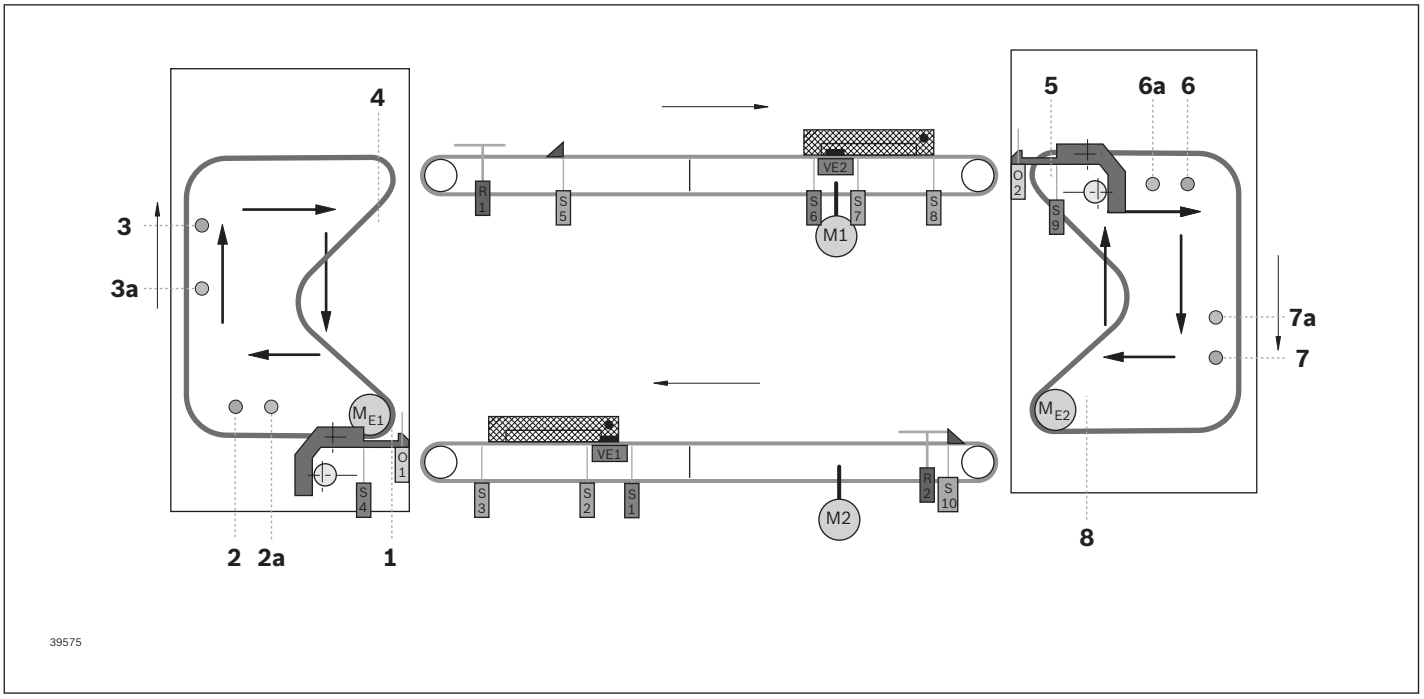




①	=	Start pulse after end of start-up	S6	=	WT after VE 2
②	=	Enable cyclic travel	Y1	=	VE 2 secondary section (Z1)
S1	=	WT before VE 2	Y2	=	VE 2 secondary section (Z2)
S2	=	WT after VE 2	Y3	=	HQ 2 up (Z3)
S3	=	WT in position on HQ 4	Y4	=	HQ 2 down
S4	=	WT after HQ 4	Y5	=	Extend DA 2 damper (Z4)
S5	=	WT before VE 2	P10	=	Priority

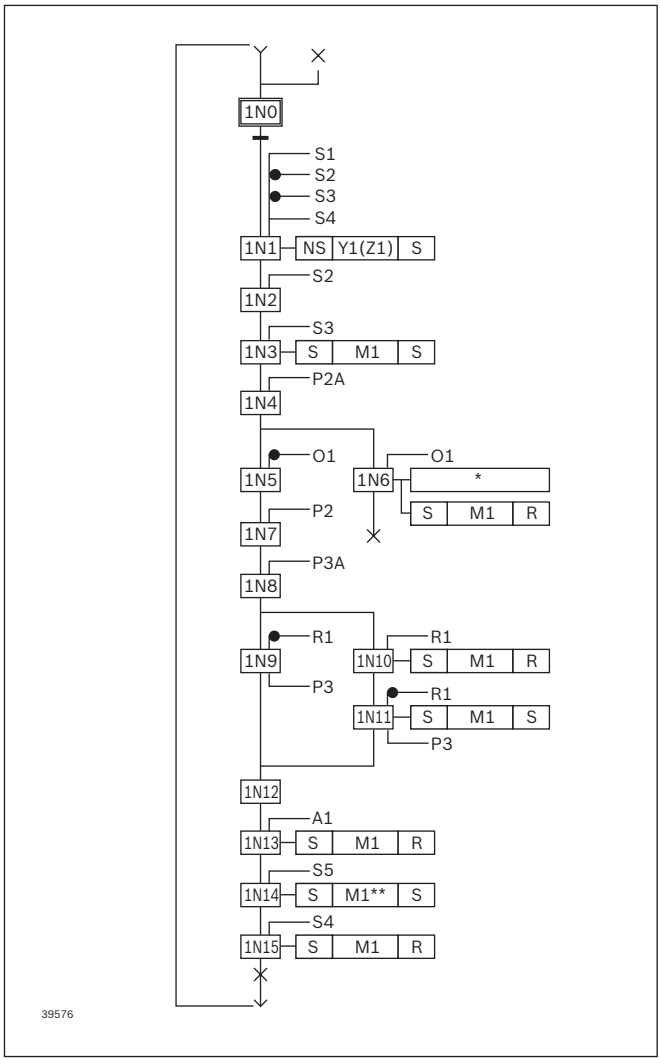
See also explanation on page 10-7

Lift EL 2 (infeeding + outfeeding)



1 *Infeeding*
2 When 01 = on, stop
2a Check 01
3 When R1 = on, stop
3a Check R1
4 Outfeeding

5 *Infeeding*
6 When 02 = on, stop
6a Check 02
7 When R2 = on, stop
7a Check R2
8 Outfeeding



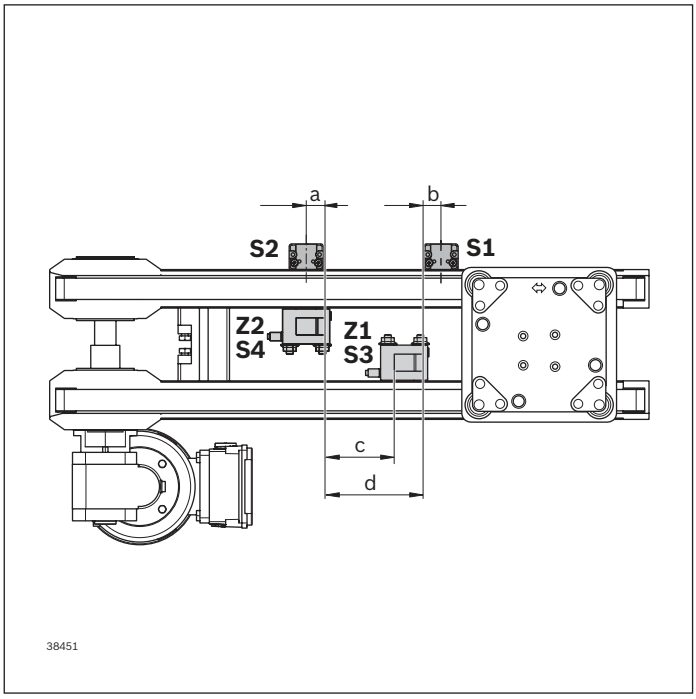
①	=	Start pulse after end of start-up
②	=	Enable cyclic travel
S1	=	WT before VE 1
S2	=	WT after VE 1
S3	=	WT on gripper arm
S4	=	Gripper arm zero point
Y1	=	VE 1 (Z1) main section
M1	=	Servomotor
O1	=	Optical sensor
P2A	=	WT at control point before vertical motion
P2	=	WT at hold point before vertical motion
P3A	=	WT at control point before horizontal motion
P3	=	WT at hold point before horizontal motion
R1	=	Drain area occupied (rocker actuated)
S5	=	WT has left the lift completely, start return
A1	=	Position mode, steps reached

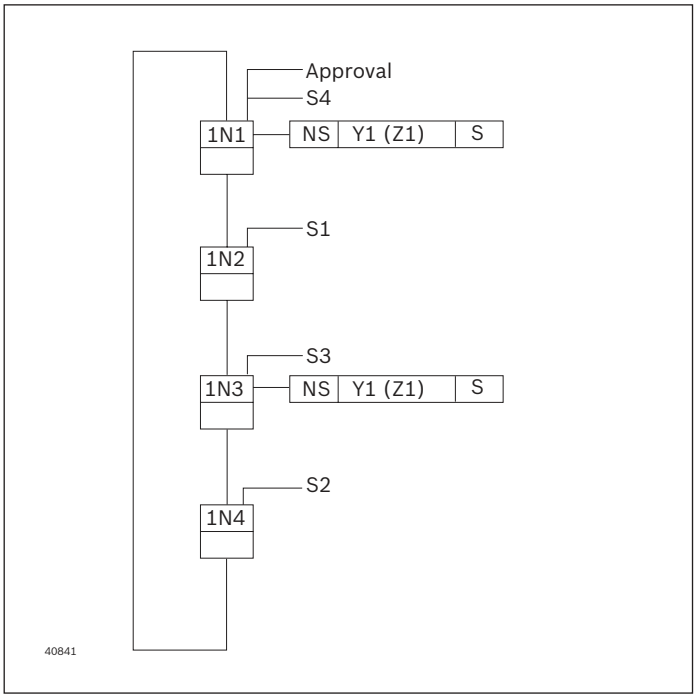
*) Malfunction

**) C-shape, reverse

See also explanation on page 10-7

WT 2/LS: Sequence of double stop gate, double stop gate stop





S1 = WT after stop gate (VE1)
S2 = WT after stop gate (VE2)
S3 = Position sensing VE1 up
S4 = Position sensing VE2 up
Y1 = VE1 (Z1)
Y2 = VE2 (Z2)

See also explanation on page 10-7

Motor data/motor connection

Electrical connection requirements:
Connection to a 3-phase, 5-wire system (L1, L2, L3, N, PE);
a connection plan is included in the terminal box.
All motors are equipped with a thermal contact*,
which has to be connected to an overload switch-off.

All of the motors comply with protection class IP 55.

*) Bi-metal thermal contact, opening, tripping at 150 °C ± 5 °C.

Country classification

	Europe	Switzerland	USA	Canada	Brazil	Australia	New Zealand	South Korea	China	India
Line voltage (3x....)	400 V	400 V	480 V[1)]	480 V[1)] 575 V	220 V 380 V[3)] 440 V[1)]	400 V 415 V[2)]	400 V 415 V[2)]	220 V 380 V[3)] 440 V[1)]	380 V[2)]	415 V[2)]
Line voltage tolerance	±10%	±10%	±10%	±10%	±10%	±5%	±5%			±5%
Mains frequency	50 Hz	50 Hz	60 Hz	60 Hz	60 Hz	50 Hz	50 Hz	60 Hz	50 Hz	50 Hz

[1)] ~ 460 V / 60 Hz
[2)] ~ 400 V / 50 Hz
[3)] ~ 400 V / 60 Hz

Motor data (GM = 1)

Performance data

Notice: Values are typical. Subject to change. See motor type plate for official data.
Please note the country assignment.

Voltage class	**A**	**A**	**B**	**D**
Circuit	**Δ**	**Y**	**Y**	**Y**
Voltage U at f = 50 Hz	200 V ±10%		400 V +10...-12 %	
Voltage U at f = 60 Hz	220 V ±10%	400 V ±10%	460 V +10...-12%	575 V ±10%

			Current consumption at rated power			Power factor	Power output at	
Motor type	**IE3**	**I_N (A)**	**I_N (A)**	**I_N (A)**	**I_N (A)**	**cos φ**	**(50Hz) P (kW)**	**(60Hz) P (kW)**
524	x	0.65	0.35	0.32	0.24	0.6	0.09	0.1
624	x	1.15	0.65	0.55	0.45	0.66	0.18	0.22
634	x	1.65	0.9	0.85	0.65	0.6	0.25	0.29
714b	x	1.9	1.1	0.95	0.75	0.73	0.37	0.42
804a	x	3.1	1.8	1.45	1.15	0.65	0.55	0.63
716	x	1.3	0.75	0.6	0.62	0.68	0.18	0.22
734	x	1.9	1.05	0.95	0.72	0.74	0.37	0.42
734a	x	2.5	1.4	1.3	1	0.66	0.45	0.52
714a	x	1.65	0.95	0.85	0.65	0.60	0.25	0.29
716a	x	1.3	0.75	0.6	0.52	0.61	0.18	0.22
718b	x	0.95	0.55	0.48	0.38	0.6	0.12	0.14
814	x	3.1	1.7	1.45	1.1	0.69	0.55	0.63
824	x	4.1	2.25	2	1.6	0.66	0.75	0.86

Suitable for continuous operation (S1), start-stop operation with a duty cycle of up to 70% (S3: 70%/10 s) and frequency converter operation.

Certification for the motor, cable and plug components: IE3 motors: CE, cURUS, CCC

3-phase motors	
T_U (°C)	**P_V / P_N**
< 40	1[1)]
45	0.95
50	0.90
55	0.85
60	0.8

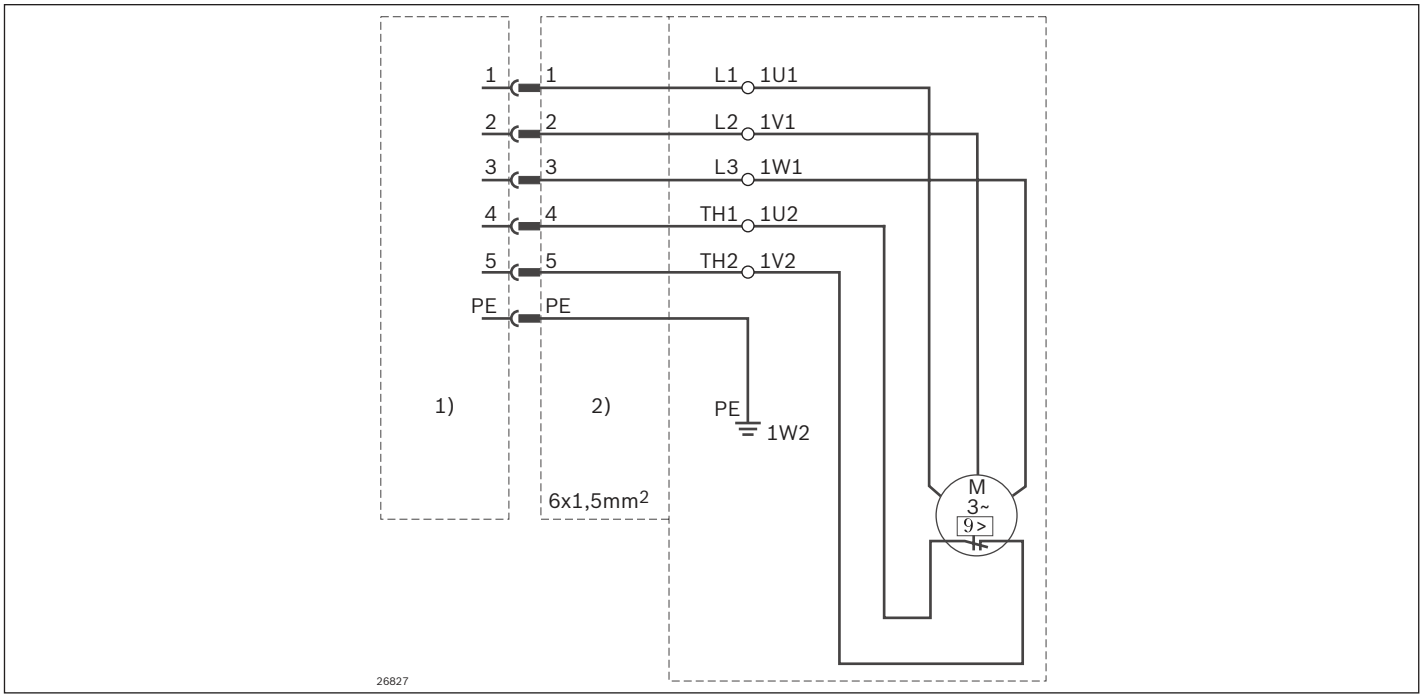
[1)] Rated motor power (0.37; 0.25; 0.12 kW)

Rated motor power

The ambient operating temperature T_U influences the rated power P_N of the gear motors.

Motor connection

MOTOR CONNECTION WITH CABLE/PLUG (AT = S), CIRCUIT DIAGRAM

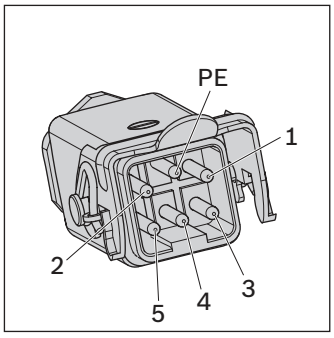


1) Connection cable side
2) Motor side

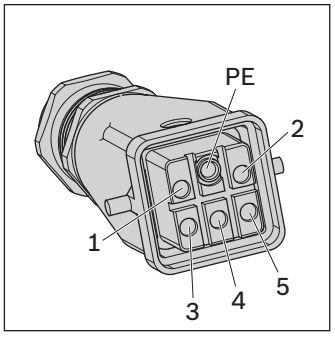
The push-in fitting consists of UL components.

Connection list

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



Motor side



Connection cable side

MOTOR PROTECTION SWITCH

Motor type	50 Hz			60 Hz			Motor protection switch	
	Rated output	Voltage		Rated output	Voltage			
		Δ (V)	Y (V)		Δ (V)	Y (V)	Δ (A)	Y (A)
524	0.09	200	N/A	0.10	220	400	0.75	0.43
		N/A	400		N/A	460	N/A	0.37
		N/A	N/A		N/A	575	N/A	0.30
624	0.18	200	N/A	0.22	220	400	1.30	0.75
		N/A	400		N/A	460	N/A	0.65
		N/A	N/A		N/A	575	N/A	0.55
634	0.25	200	N/A	0.29	220	400	1.90	1.10
714a		N/A	400		N/A	460	N/A	1.00
		N/A	N/A		N/A	575	N/A	0.80
734	0.37	200	N/A	0.42	220	400	2.15	1.25
714b		N/A	400		N/A	460	N/A	1.10
		N/A	N/A		N/A	575	N/A	0.90
734a	0.45	200	N/A	0.52	220	400	2.75	1.60
		N/A	400		N/A	460	N/A	1.40
		N/A	N/A		N/A	575	N/A	1.15
814	0.55	200	N/A	0.63	220	400	3.30	1.95
804a		N/A	400		N/A	460	N/A	1.70
		N/A	N/A		N/A	575	N/A	1.30
824	0.75	200	N/A	0.86	220	400	4.40	2.55
		N/A	400		N/A	460	N/A	2.25
		N/A	N/A		N/A	575	N/A	1.90
716	0.18	200	N/A	0.22	220	400	1.50	0.85
716a		N/A	400		N/A	460	N/A	0.70
		N/A	N/A		N/A	575	N/A	0.60

Transportation and nominal speeds v_N

Modular unit	v_N (m/min)	50 Hz v (m/min)	Motor type	60 Hz v (m/min)	Motor type
AS 2/B–150	18	18.3	804a	17.0	714b
	15	14.2	714b	17.0	714b
	12	11.2	714b	13.4	714b
	9	8.9	714a	10.7	714a
	6	5.9	716a	7.0	716a
AS 2/B–250	18	18.5	824	18.9	824
	15	15.7	824	15.7	824
	12	10.9	824	11.1	814
	9	9.2	814	8.9	734
	6	5.9	734	5.9	716
AS 2/C–100 BS 2/C–100 CS/C AS 2/R–300 BS 2/R–300 KU 2/90 KU 2/180	18	18.5	634	16.6	624
	15	13.9	624	13.3	624
	12	11.1	624	11.1	624
	9	9.2	624	8.3	624
	6	5.5	624	6.7	624
BS 2/C–H AS 2/C–400 BS 2/R–H AS 2/R–1200 BS 2/R–V–1200 AS 2/R–V–1200	18	16.6	804a	15.5	714b
	15	12.9	714b	15.5	714b
	12	10.2	714b	12.2	714b
	9	8.1	714a	9.8	714a
	6	5.4	716a	6.4	716a
AS 2/C–700 AS 2/R–2200	18	16.8	824	17.2	824
	15	14.4	824	14.3	824
	12	11.9	824	12.0	824
	9	8.4	814	8.1	734
	6	5.4	734	6.5	734
AS 2/C–250 BS 2/C–250 AS 2/R–700 BS 2/R–700	18	17.8	714b	17.5	714b
	15	14.6	714b	14.3	714b
	12	11.9	714b	11.3	714b
	9	9.5	714b	8.8	714b
	6	5.8	714b	5.5	714a

v_N = nominal speed
v = speed of the conveyor medium

Modular unit	v_N (m/min)	50 Hz v (m/min)	Motor type	60 Hz v (m/min)	Motor type
BS 2 BS 2/M-2 BS 2/T, BS 2/TE CU 2/90 BS 2/K EQ 2/T, EQ 2/TE EQ 2/M...	18	18.0	634	18.0	634
	15	15.0	634	14.4	634
	12	12.0	634	10.8	624
	9	9.0	624	8.7	624
	6	6.0	624	5.4	624
HQ 2/U	18	15.8	524	19.0	524
	15	13.2	524	15.8	524
	12	10.6	524	12.7	524
	9	8.3	524	10.0	524
	6	5.7	524	6.8	524
KE 2 EQ 2/TR, EQ 2/TR-90 HQ 2/S, HQ2/U2 BS 2/130	18	18.0	524	18.0	524
	15	15.0	524	14.4	524
	12	12.0	524	10.8	524
	9	9.0	524	9.0	524
	6	6.0	524	5.7	524
HQ 2/C-H	18	18.5	634	16.6	624
	15	13.9	624	13.3	624
	12	11.1	624	11.1	624
	9	9.2	624	8.3	624
	6	5.5	624	6.7	624
HQ 2/G-H BS 2/G-250	18	15.8	634	19.0	634
	15	15.8	634	15.8	634
	12	12.7	634	12.7	624
	9	10.5	624	10.0	624
	6	6.3	624	6.8	624
HQ 2/U-H BG 1, 2 cylinders: 90 W	18	16.7	524	20.4	524
	15	16.7	524	20.4	524
	12	12.5	524	15.3	524
	9	8.4	524	10.2	524
	6	6.6	524	5.5	524
HQ 2/U-H BG 2, 3 cylinders: 180 W BG 3, 4 cylinders: 180 W	18	16.7	624	20.4	624
	15	16.7	624	15.3	624
	12	12.5	624	10.2	624
	9	8.4	624	7.6	624
	6	6.3	624	6.1	624
DE 2 (rotary movement)	–	–	624	–	624

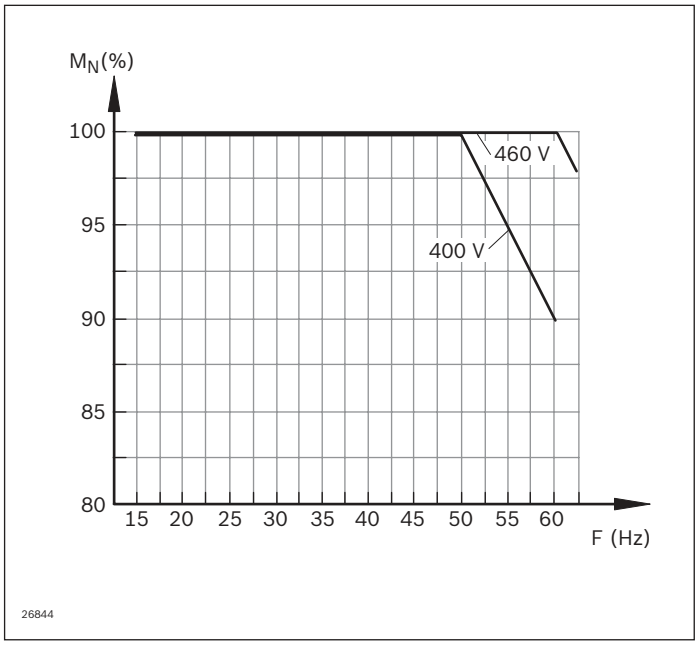
v_N = nominal speed
v = speed of the conveyor medium

Modular unit				Motor type			Motor type
	v_N (m/min)	50 Hz v (m/min)	50 Hz v_T (m/min)		60 Hz v (m/min)	60 Hz v_T (m/min)	
AS 2/R–V–2200	18	16.8	42.0	824	17.2	43.0	824
	15	14.4	36.0	824	14.3	35.8	824
	12	11.9	29.8	824	12.0	30.0	824
	9	8.4	21.0	814	8.1	20.3	734
	6	5.4	13.5	734	6.5	16.3	734

v_N = nominal speed
v = speed of the conveyor medium
v_T = max. transport speed

Frequency converter (FU)

Drive spectrum of motors with frequency converters (FU)



Technical data

Duty cycle ED: All motors meet the S1 (continuous operation) and S3 (start-stop operation with 70%/10 s) operation.

Notice: Maximum 10 m cable length between motor and frequency converter.

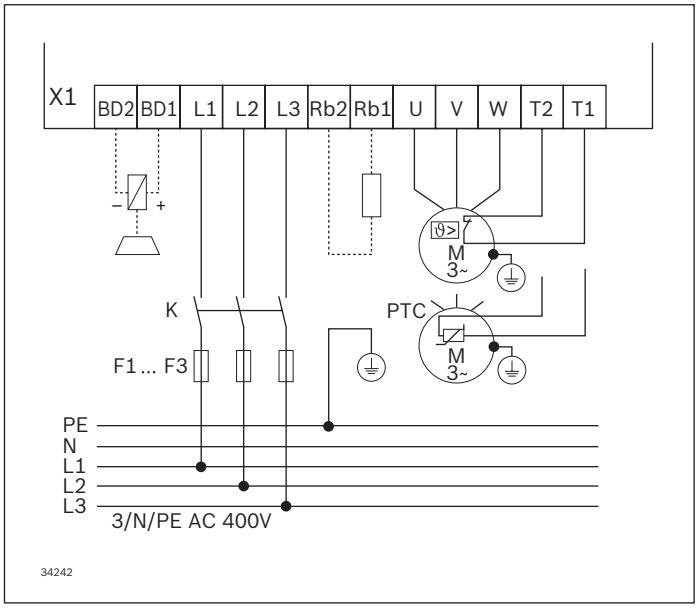
Technical information:

At rotating field frequencies of ≥ 15 Hz, the motor can be operated under normal operating conditions without an external fan. The motor's thermal conditions should be considered at rotating field frequencies of ≤ 20 Hz.
In the range 20 ... 50 Hz, the full torque is available.
At rotating field frequencies > 50 Hz, higher speeds can also be achieved with a corresponding drop in performance.

The speed range of the frequency converter is based on the base speed of the motor (by accepting a resulting loss of power, a higher bandwidth can be covered).

Motor speed range at 50 Hz (m/min)	Min. (m/min)	Max. (m/min)	Max. at max. 80 % (m/min)
4	2*	4.5	6
6	2*	6	8
9	3.5	10	13
12	4	13	17
15	5	15	20
18	6	18.5	25

* Additional measures may be necessary



Circuit diagram for moltec 8400

——— 1 Minimum wiring required for operation
----*)---- 2 Additional wiring to change rotational direction

Frequency converter (FU) accessories

In order to operate a drive with a frequency converter (FU), the user needs to work out the minimum wiring for the internal and external voltage supply (see terminal assignment plan left).

Compressed air consumption of units TS 2*plus*

Unit	Type	Rotation angle (°)	Diameter Ø (mm)	Lift (mm)	Air consumption*) (l/min)
Block cylinder	PE 2, HQ 2 (BG 1)	–	50	21	0.58
	EQ 2/..., HQ 2/... (BG 2) HQ 2/U2	–	2 x 50	21	1.15
	HQ 2/U-H	–	2 x 50	21	1.15
		–	3 x 50	21	1.73
		–	4 x 50	21	2.31
Lift positioning unit HP 2		–	63	80	3
				125	4.7
				175	6.5
				225	8.4
				275	10.3
				325	12.1
				375	14
				425	15.9
Positioning unit PE 2/X, PE 2/H, lift/transverse unit HQ 2/C-H		–	4 x 63	33	5.76
Positioning unit PE 2/XP	BG 1	–	40	34	0.60
	BG 2	–	50	34	0.93
Lift rotary unit HD 2		–	50	40	1.10
		–	50	90	2.47
		90	80	125	8.79
		180	80	180	12.66
Lift rotary unit HD 2/H	Rotary cylinder BG 1	90	–	–	0.9
		180	–	–	1.3
	Rotary cylinder BG 2, 3	90	–	–	1.7
		180	–	–	2.5
	Lifting cylinder BG 1	90	40	185	3.25
		180	40	80	1.41
	Lifting cylinder BG 2	90	63	185	8.07
		180	63	80	3.49
	Lifting cylinder BG 3	90	100	185	20.33
		180	100	80	8.79

*) Calculation basis for air consumption:
Data in NL/min, working cycles a: 1 cycle per min, operating pressure p: 6 bar

Unit	Type	Rotation angle (°)	Diameter Ø (mm)	Lift (mm)	Air consumption*) (l/min)
Stop gate	VE 2, VE 2/L, VE 2/M	–	32	20	0.10
	VE 2/X	–	44	10	0.08
	VE 2/D-60	–	34	28	0.09
	VE 2/D-80	–	–	–	0.09
	VE 2/D-175, VE 2/D-220	–	38	26	0.21
	VE 2/D-200	–	50	45	0.32
	VE 2/D-100H	–	25	31	0.16
	VE 2/D-250H	–	40	33	0.34
Damper	DA 2/100H	–	35	24	0.15
	DA 2/250H, VA 2/250-H	–	40	24	0.20
	DA 2/60	–	20	18	0.05
	DA 2/100	–	35	35	0.15
Slide stop VA 2	3842528808	–	32	20	0.11
		–	20	17	0.04

*) Calculation basis for air consumption:
Data in NL/min, working cycles a: 1 cycle per min, operating pressure p: 6 bar

Material number overview

0 842 090 030	2-8
0 842 090 032	2-8
0 842 090 034	2-8
0 842 090 039	2-8
0 842 090 041	2-8
0 842 090 043	2-8
0 842 090 048	2-8
0 842 090 050	2-8
0 842 090 051	2-8
0 842 090 080	2-8
0 842 090 081	2-8
0 842 090 083	2-8
0 842 090 086	2-8
0 842 090 088	2-8
0 842 601 001	7-5
0 842 601 003	7-5
0 842 601 004	7-5
0 842 601 006	7-5
0 842 900 300	8-6
3 842 146 848	3-187, 6-32
3 842 168 600	8-26
3 842 168 840	8-104
3 842 174 301	2-12, 2-16
3 842 174 302	2-12, 2-16
3 842 174 303	2-12, 2-16
3 842 174 304	2-12, 2-16
3 842 174 311	2-23, 2-25
3 842 174 313	2-23, 2-25
3 842 174 315	2-23, 2-25
3 842 174 321	2-23, 2-25
3 842 174 323	2-23, 2-25
3 842 174 325	2-23, 2-25
3 842 174 331	2-23, 2-25
3 842 174 333	2-23, 2-25
3 842 174 334	2-23, 2-25
3 842 174 341	2-18
3 842 174 375	2-23, 2-25
3 842 174 376	2-23, 2-25
3 842 174 378	2-23, 2-25
3 842 174 381	2-23, 2-25
3 842 174 383	2-23, 2-25
3 842 179 574	9-21
3 842 191 721	8-56, 8-57, 10-39
3 842 211 355	7-28, 7-32
3 842 242 350	7-34, 7-35
3 842 242 351	7-34, 7-35
3 842 242 375	7-38
3 842 242 376	7-38
3 842 242 377	7-38
3 842 242 378	7-38
3 842 242 390	7-35, 7-41
3 842 242 391	7-41
3 842 242 395	7-35, 7-41
3 842 242 396	7-41
3 842 315 101	3-38
3 842 315 106	3-38
3 842 338 750	5-35, 5-36
3 842 338 751	5-35, 5-36
3 842 338 752	5-35, 5-36
3 842 338 755	5-35, 5-36
3 842 338 756	5-35, 5-36
3 842 338 757	5-35, 5-36
3 842 338 758	5-35, 5-36
3 842 338 760	5-35, 5-36
3 842 338 761	5-35, 5-36
3 842 338 762	5-35, 5-36
3 842 338 763	5-35, 5-36
3 842 338 764	5-35, 5-36
3 842 338 766	5-35, 5-36
3 842 338 767	5-35, 5-36
3 842 338 768	5-35, 5-36
3 842 338 771	5-35, 5-36
3 842 338 773	5-35, 5-36
3 842 338 775	5-35, 5-36
3 842 338 776	5-35, 5-36
3 842 338 777	5-35, 5-36
3 842 338 779	5-35, 5-36
3 842 338 781	5-35, 5-36
3 842 345 081	6-33
3 842 345 100	5-48, 5-49
3 842 345 101	5-48, 5-49
3 842 345 102	5-48, 5-49
3 842 345 105	5-48, 5-49
3 842 345 106	5-48, 5-49
3 842 345 107	5-48, 5-49
3 842 345 108	5-48, 5-49
3 842 345 110	5-48, 5-49
3 842 345 111	5-48, 5-49
3 842 345 112	5-48, 5-49
3 842 345 113	5-48, 5-49
3 842 345 114	5-48, 5-49
3 842 345 116	5-48, 5-49
3 842 345 117	5-48, 5-49
3 842 345 118	5-48, 5-49
3 842 345 121	5-48, 5-49
3 842 345 123	5-48, 5-49
3 842 345 125	5-48, 5-49
3 842 345 126	5-48, 5-49
3 842 345 127	5-48, 5-49
3 842 345 129	5-48, 5-49
3 842 345 131	5-48, 5-49
3 842 348 780	8-145
3 842 348 781	8-145
3 842 348 782	8-145
3 842 348 783	8-145
3 842 348 784	8-145
3 842 348 786	8-145
3 842 348 788	8-145
3 842 352 171	2-6, 2-7
3 842 501 548	8-112, 8-113, 8-118, 8-119
3 842 504 706	7-8
3 842 504 707	7-8
3 842 504 708	7-8
3 842 504 710	7-8
3 842 504 711	7-8
3 842 504 712	7-8
3 842 504 713	7-8
3 842 504 714	7-8
3 842 504 715	7-8
3 842 504 716	7-8
3 842 504 717	7-8
3 842 504 718	7-8
3 842 504 719	7-8
3 842 513 458	2-12, 2-16
3 842 515 844	8-15
3 842 518 828	9-21, 9-22
3 842 519 717	8-153
3 842 522 140	5-95
3 842 522 141	5-95
3 842 522 142	5-95
3 842 522 143	5-95
3 842 523 258	9-20
3 842 523 381	2-23, 2-25
3 842 523 405	2-8
3 842 523 558	6-35
3 842 523 561	3-188, 6-35
3 842 523 575	6-35
3 842 523 578	6-35
3 842 523 918	3-137
3 842 524 447	8-148, 8-149
3 842 524 448	8-150, 8-151
3 842 524 449	8-148, 8-152
3 842 524 450	8-148, 8-152
3 842 524 451	8-148, 8-152
3 842 524 452	8-148, 8-152
3 842 524 453	8-148, 8-152
3 842 524 594	2-23, 2-27
3 842 524 595	2-23, 2-27
3 842 524 596	2-23, 2-27
3 842 524 597	2-23, 2-27
3 842 524 598	2-23, 2-27
3 842 524 599	2-23, 2-27
3 842 524 600	2-23, 2-27
3 842 524 601	2-23, 2-29
3 842 524 602	2-23, 2-27
3 842 524 603	2-23, 2-27
3 842 524 604	2-23, 2-29
3 842 524 605	2-23, 2-27
3 842 524 606	2-23, 2-29
3 842 524 607	2-23, 2-29
3 842 524 608	2-23, 2-29
3 842 524 609	2-23, 2-29
3 842 524 614	2-18
3 842 524 615	2-18
3 842 524 895	8-33, 8-34
3 842 525 110	5-37, 9-21, 9-22
3 842 525 634	7-5
3 842 525 733	5-56, 8-71, 8-72
3 842 525 734	8-74, 8-75
3 842 525 803	2-21
3 842 525 804	2-21
3 842 525 805	2-21
3 842 525 846	2-19
3 842 525 847	7-49
3 842 525 848	7-49
3 842 525 849	7-49
3 842 525 850	7-49
3 842 525 851	7-49
3 842 525 852	7-49
3 842 525 853	7-49
3 842 525 854	7-49
3 842 525 855	7-49
3 842 525 856	7-49
3 842 525 857	7-49
3 842 525 858	7-49
3 842 525 859	7-49
3 842 525 860	7-49
3 842 525 861	7-49
3 842 525 862	7-49
3 842 525 863	7-49
3 842 525 864	7-49
3 842 525 865	7-49
3 842 525 866	7-49
3 842 525 867	7-49
3 842 525 868	7-49
3 842 525 869	7-49
3 842 525 870	7-49
3 842 525 998	2-13, 2-16
3 842 525 999	2-13, 2-16
3 842 526 560	3-188, 6-33
3 842 526 760	2-12, 2-17
3 842 526 761	2-12, 2-17
3 842 526 762	2-12, 2-17
3 842 526 763	2-12, 2-17
3 842 526 764	2-12, 2-17
3 842 527 147	10-4
3 842 528 192	9-22
3 842 528 292	2-13, 2-17
3 842 528 293	2-13, 2-17
3 842 528 480	3-54, 3-103
3 842 528 718	6-33
3 842 528 746	3-18, 3-56, 3-74, 3-104, 3-148, 9-16
3 842 528 802	3-70
3 842 528 803	3-118
3 842 528 806	3-72
3 842 528 807	3-120
3 842 528 808	8-53, 10-39
3 842 528 817	8-18, 8-19
3 842 529 881	9-21
3 842 530 417	3-137
3 842 530 529	2-46
3 842 530 630	8-9
3 842 530 797	8-138
3 842 530 864	3-137
3 842 530 871	9-21
3 842 531 354	2-40
3 842 531 610	8-12, 8-13
3 842 531 696	8-48
3 842 532 151	8-141
3 842 532 608	3-34
3 842 532 675	3-35
3 842 532 679	9-19
3 842 532 680	9-19
3 842 532 695	3-31
3 842 532 696	3-33
3 842 532 697	3-32
3 842 532 810	3-38
3 842 532 812	2-20
3 842 532 822	3-28
3 842 536 268	3-137
3 842 536 270	3-137
3 842 536 803	3-156

3 842 536 926	7-47
3 842 536 930	7-44
3 842 536 931	7-44
3 842 536 932	7-46
3 842 536 933	7-46
3 842 536 960	7-26
3 842 536 962	7-26
3 842 536 974	7-24
3 842 536 975	7-27
3 842 536 977	7-26
3 842 537 280	8-96
3 842 537 289	8-102
3 842 537 855	8-142
3 842 538 064	5-97, 5-98
3 842 538 065	5-97, 5-98
3 842 538 245	5-97, 5-98
3 842 538 307	2-23, 2-29
3 842 538 308	2-23, 2-29
3 842 538 309	2-23, 2-29
3 842 538 310	2-23, 2-29
3 842 538 311	2-23, 2-29
3 842 538 312	2-23, 2-29
3 842 538 346	2-23, 2-29
3 842 538 869	3-163
3 842 538 870	3-163
3 842 538 872	3-163
3 842 539 057	10-3
3 842 539 096	3-54, 3-103
3 842 539 357	3-165
3 842 539 479	3-36
3 842 541 003	1-25, 9-4
3 842 542 550	3-17
3 842 543 469	9-6
3 842 543 482	9-6
3 842 543 483	9-6, 9-13
3 842 543 484	9-6, 9-13
3 842 543 485	9-6, 9-13
3 842 543 486	9-6, 9-13
3 842 543 487	9-6, 9-13
3 842 545 974	8-62
3 842 547 770	8-20, 8-21
3 842 547 785	8-23
3 842 548 405	2-37
3 842 548 407	2-37
3 842 548 408	2-37
3 842 548 409	2-37
3 842 548 410	2-37
3 842 548 411	2-37
3 842 548 412	2-37
3 842 548 413	2-37
3 842 548 414	2-37
3 842 548 415	2-37
3 842 548 416	2-37
3 842 548 417	2-37
3 842 548 418	2-37
3 842 548 419	2-37
3 842 548 420	2-37
3 842 548 421	2-37
3 842 548 422	2-37
3 842 548 424	2-37
3 842 548 425	2-37
3 842 548 426	2-37
3 842 548 439	2-37
3 842 548 440	2-37
3 842 548 578	9-6
3 842 548 585	8-77, 8-78
3 842 548 644	8-80, 8-81
3 842 548 684	2-23, 2-29
3 842 548 685	2-23, 2-29
3 842 548 686	2-23, 2-29
3 842 548 687	2-23, 2-29
3 842 548 688	2-37
3 842 548 689	2-37
3 842 548 690	2-37
3 842 548 691	2-37
3 842 548 692	2-37
3 842 548 693	2-37
3 842 548 694	2-37
3 842 548 695	2-37
3 842 548 696	2-37
3 842 548 697	2-37
3 842 548 698	2-37
3 842 548 699	2-37
3 842 548 862	6-34
3 842 548 863	6-34
3 842 548 864	6-34
3 842 548 865	6-34
3 842 548 868	6-34
3 842 548 869	6-34
3 842 549 509	3-188
3 842 549 696	8-50, 8-51
3 842 549 698	8-50, 8-51
3 842 549 811	7-52, 8-114, 8-115, 8-118, 8-119
3 842 549 812	8-114, 8-115, 8-118, 8-119
3 842 549 813	8-114, 8-115, 8-118, 8-119
3 842 549 814	8-112, 8-113, 8-118, 8-119
3 842 551 226	3-88, 3-89, 4-34, 4-37
3 842 551 227	3-88, 3-89
3 842 551 234	3-88, 3-89
3 842 551 761	8-116, 8-117, 8-118, 8-119
3 842 552 593	7-58, 7-61
3 842 552 594	7-58, 7-61
3 842 552 595	7-58, 7-61
3 842 552 596	7-58, 7-61
3 842 552 597	7-58, 7-61
3 842 552 598	7-59, 7-63
3 842 552 599	7-59, 7-63
3 842 552 600	7-59, 7-63
3 842 552 601	7-58, 7-61
3 842 552 602	7-58, 7-61
3 842 552 603	7-58, 7-61
3 842 552 604	7-58, 7-61
3 842 552 605	7-58, 7-61
3 842 552 606	7-58, 7-61
3 842 552 607	7-58, 7-61
3 842 552 609	7-58, 7-61
3 842 552 611	7-58, 7-61
3 842 552 612	7-58, 7-61
3 842 552 613	7-58, 7-61
3 842 552 614	7-58, 7-61
3 842 552 615	7-58, 7-61
3 842 552 616	7-58, 7-61
3 842 552 617	7-58, 7-61
3 842 552 618	7-58, 7-61
3 842 552 619	7-59, 7-61
3 842 552 620	7-59, 7-61
3 842 552 622	7-59, 7-61
3 842 552 624	7-59, 7-63
3 842 552 625	7-59, 7-63
3 842 552 626	7-59, 7-63
3 842 552 627	7-59, 7-63
3 842 552 628	7-59, 7-63
3 842 552 630	7-59, 7-63
3 842 552 821	8-126
3 842 553 184	8-126
3 842 553 445	8-125
3 842 553 447	8-124
3 842 553 449	8-124
3 842 553 450	8-124
3 842 553 451	8-124
3 842 553 452	8-124
3 842 553 453	8-124
3 842 553 454	8-124
3 842 553 457	8-125
3 842 553 459	8-124
3 842 553 512	8-125
3 842 553 814	5-94
3 842 554 658	5-94
3 842 554 659	5-94
3 842 557 600	8-100
3 842 557 602	8-98
3 842 557 633	8-112, 8-113, 8-118, 8-119
3 842 557 983	8-68
3 842 558 657	3-20, 3-23, 5-99
3 842 558 795	8-31
3 842 558 833	8-108
3 842 558 834	8-108
3 842 558 990	8-112, 8-113, 8-118, 8-119
3 842 559 549	8-106
3 842 559 859	8-18
3 842 560 609	3-131
3 842 560 610	3-85
3 842 560 611	3-160
3 842 562 217	7-33
3 842 562 218	7-33
3 842 562 219	7-33
3 842 562 220	7-33
3 842 562 346	2-48
3 842 562 347	2-48
3 842 562 348	2-48
3 842 562 349	2-48
3 842 562 350	2-48
3 842 562 351	2-48
3 842 562 352	2-48
3 842 562 353	2-48
3 842 562 354	2-48
3 842 562 355	2-48
3 842 562 356	2-48
3 842 562 357	2-48
3 842 562 358	2-48
3 842 562 359	2-48
3 842 562 360	2-48
3 842 562 400	3-179
3 842 562 401	3-179
3 842 562 402	3-179
3 842 562 404	3-179
3 842 562 405	3-179
3 842 562 406	3-179
3 842 562 433	3-178
3 842 562 436	9-15
3 842 562 441	9-15
3 842 562 442	3-178
3 842 562 482	7-10
3 842 562 921	9-8
3 842 562 923	9-9
3 842 562 925	9-9
3 842 562 926	9-9
3 842 562 927	9-10
3 842 562 928	9-10
3 842 562 929	9-10
3 842 562 930	9-10
3 842 562 931	9-12
3 842 562 932	9-12
3 842 562 933	9-12
3 842 562 934	9-12
3 842 562 935	9-12
3 842 562 941	9-9
3 842 562 943	9-12
3 842 562 947	9-12
3 842 563 103	8-44
3 842 563 329	7-33
3 842 563 330	7-33
3 842 563 331	7-33
3 842 563 332	7-33
3 842 563 400	7-8
3 842 563 401	7-8
3 842 563 402	7-8
3 842 563 403	7-8
3 842 563 404	7-8
3 842 563 405	7-8
3 842 563 406	7-8
3 842 563 510	8-23
3 842 563 511	8-31
3 842 563 517	5-34
3 842 563 518	5-34
3 842 563 535	7-49
3 842 563 536	7-49
3 842 563 537	7-49
3 842 563 538	7-49
3 842 563 539	7-49
3 842 563 540	7-49
3 842 564 181	8-26
3 842 564 309	3-127
3 842 564 310	3-79
3 842 564 311	3-129
3 842 564 312	3-83

3 842 564 314	3-81, 3-133
3 842 564 315	3-81, 3-133
3 842 564 316	3-81, 3-133
3 842 564 563	8-59
3 842 564 566	3-86
3 842 564 570	3-86
3 842 564 574	3-135
3 842 564 578	3-135
3 842 564 582	3-161
3 842 564 903	8-29
3 842 564 941	3-186
3 842 564 942	3-186
3 842 564 943	3-186
3 842 564 944	3-186
3 842 564 945	3-186
3 842 564 946	3-186
3 842 564 947	3-186
3 842 567 085	8-92
3 842 567 086	8-94
3 842 567 252	3-139
3 842 567 254	3-81, 3-133
3 842 567 260	3-81, 3-133
3 842 567 261	3-81, 3-133
3 842 567 562	8-36
3 842 567 664	5-22
3 842 990 409	3-33
3 842 990 570	3-188
3 842 992 650	3-30
3 842 992 811	3-36
3 842 992 884	3-31
3 842 992 903	3-32
3 842 993 052	5-103, 9-18
3 842 993 259	3-34
3 842 993 324	6-25
3 842 993 325	6-25
3 842 994 164	3-10
3 842 994 188	3-76
3 842 994 189	3-78
3 842 994 190	3-124
3 842 994 192	3-126
3 842 994 193	3-159
3 842 994 635	5-103, 9-17
3 842 994 910	6-31
3 842 994 927	3-30
3 842 996 320	3-187, 6-9
3 842 996 321	6-11
3 842 996 322	6-13
3 842 996 323	6-15
3 842 996 324	6-17
3 842 996 325	6-19
3 842 996 326	6-21
3 842 996 327	6-23
3 842 996 370	5-71
3 842 996 463	3-14
3 842 998 038	3-65
3 842 998 039	3-68
3 842 998 040	3-113
3 842 998 041	3-116
3 842 998 052	3-107
3 842 998 053	3-59
3 842 998 072	3-110
3 842 998 087	3-62
3 842 998 098	4-25
3 842 998 099	4-29
3 842 998 113	5-31
3 842 998 114	5-44
3 842 998 233	3-151
3 842 998 234	3-154
3 842 998 277	3-43
3 842 998 288	4-7
3 842 998 289	5-11
3 842 998 324	7-12
3 842 998 745	8-83, 8-84
3 842 998 746	8-86, 8-87
3 842 998 747	8-38, 8-39
3 842 998 748	8-41, 8-42
3 842 998 750	5-59
3 842 998 751	2-31
3 842 998 755	2-31
3 842 998 756	2-35
3 842 998 757	2-44
3 842 998 760	7-52, 7-54, 7-56
3 842 998 761	7-52, 7-54, 7-56
3 842 998 762	7-52, 7-54, 7-57
3 842 998 796	8-63, 8-64
3 842 998 861	5-81
3 842 998 871	4-45
3 842 998 872	4-48
3 842 998 873	4-51
3 842 998 874	4-54
3 842 998 875	4-57
3 842 998 905	3-168
3 842 998 906	6-27, 6-35
3 842 998 907	6-27, 6-35
3 842 998 908	6-29
3 842 998 923	8-46
3 842 998 933	3-46
3 842 998 934	3-49
3 842 998 935	3-52
3 842 998 937	3-95
3 842 998 938	3-98
3 842 998 939	3-101
3 842 998 940	5-101
3 842 998 941	3-145
3 842 998 952	7-20
3 842 999 000	7-16
3 842 999 002	5-71
3 842 999 022	5-75
3 842 999 023	7-52, 7-54, 7-56
3 842 999 024	7-52, 7-54, 7-56
3 842 999 027	7-20
3 842 999 028	7-29
3 842 999 031	5-44
3 842 999 032	5-51
3 842 999 033	5-55
3 842 999 034	4-16
3 842 999 035	4-19
3 842 999 036	4-10
3 842 999 037	4-13
3 842 999 038	5-15
3 842 999 039	5-19
3 842 999 040	5-7
3 842 999 041	5-11
3 842 999 061	3-10
3 842 999 083	3-21
3 842 999 090	3-27
3 842 999 190	3-21
3 842 999 678	7-29
3 842 999 715	4-22
3 842 999 716	3-7
3 842 999 720	3-24
3 842 999 721	3-24
3 842 999 722	5-38
3 842 999 723	5-41
3 842 999 725	4-16
3 842 999 726	4-19
3 842 999 727	4-10
3 842 999 728	4-13
3 842 999 743	5-78
3 842 999 843	5-55
3 842 999 888	5-27
3 842 999 894	5-7
3 842 999 895	5-15
3 842 999 896	5-19
3 842 999 903	5-51
3 842 999 941	2-41
3 842 999 994	4-35
3 842 999 995	4-38
8 981 010 510	3-90
8 981 010 511	3-140
R412022863	7-52
R911344228	5-85
R911346063	5-89
R911369925	5-89
R911379677	5-88
R911380324	5-89
R911390803	5-88
R912005717	8-129
R912005718	8-129
R912005783	8-130
R912005785	8-130
R912006050	8-130
R912006051	8-130
R912006052	8-130
R912006132	8-130
R912006133	8-130
R912006134	8-130
R912006375	8-130
R912007257	8-130
R912007272	8-129
R912007273	8-129
R999000018	8-129
R999000019	8-129

Index

▶ **A**
Acceleration element 3-139
Accumulation roller chain 3-92
– Acceleration element 3-139
– Disassembly tool 3-140
– Guide and glide profiles FP 2/..., GP 2/... 3-133
– With accumulation rollers PA 3-137
– With steel accumulation rollers 3-137
Accumulation roller chain V*plus* 3-141
– Chain lock 3-163
– Design 3-142
– Disassembly tool 3-165
Adapter plate kit
– ST 2/C-H 3-85
– ST 2/R-H 3-131
– ST 2/R-V 3-160
Adapter Set 9-13
– Decentralized automatic lubrication unit LU2 9-6
Adjustment set
– BS 2 – LS 2 3-178
– LS 2 3-178
Ambient conditions 1-20
Anvil plate 7-38
Assembly kit
– LG 2/H 3-186
– LU 2/P 9-9
Attachment kit for Frequency converters 8-125
Automatic lubrication unit
– Automatic lubrication unit LU 2/LS 9-15
– Central automatic lubrication unit LU 2/P 9-7
– Decentralized automatic lubrication unit LU 2 9-5

▶ **B**
Belt 3-4
– Belt mounting tool 3-38
– Glue 3-38
– GT 2 belt 3-36
– Guide profile FP 2/B 3-35
– Transition piece 7-46
Belt and toothed belt
– Accumulation roller chain 3-92
– Accumulation roller chain V*plus* 3-163
– Conveyor medium 3-4
– Flat-top chain 3-40
Belt section
– BS 2/... 3-6
– BS 2/130 5-77
– BS 2/C-100 3-45
– BS 2/C-250 3-48
– BS 2/C-H 3-51
– BS 2/G-250 5-74
– BS 2/K 4-21
– BS 2/M... 3-9
– BS 2/R-300 3-94
– BS 2/R-700 3-97
– BS 2/R-H 3-100
– BS 2/R-V-1200 3-144
– BS 2/S 3-13
– BS 2/T 5-37
– BS 2/TE 5-40
Bolt 2-21
Bracket
– Combination matrix for leg set, bracket, cover cap 6-35
– Cover caps 6-34
Bracket cover caps 6-34

▶ **C**
Cable
– Motor cable FMK 3-179
– Sensor cable FSK 3-179
Carrying plate
– WT 2 2-22
– WT 2/H 2-36
Central automatic lubrication unit LU 2/P 9-7
– Assembly kit 9-9
– PA hose set 9-9
– Steel pipe set 9-9
Chain lock
– For accumulation roller chain 3-137
– For accumulation roller chain V*plus* 3-163
– For flat-top chain 3-88
Choice of system 1-6
Clamping holder 8-62
Combination of workpiece pallet, components and modules 1-13
Combination options LS 2 and WT 2/LS 3-174
Combination options WT 2/LS 2-62
Combination WI 2/D, DA 2/100 8-150
Combination with TS 2 Booster (linear motor section LS 2) 1-14
Communication module for Frequency converters 8-124
Components
– Belt 3-18
– Flat-top chain 3-56
– Process force decoupling PE 2/XX 7-42
– WT 2 2-10
– WT 2/H 2-32
Compressed air consumption of the TS 2*plus* units 10-1, 10-38
Connection belt
– For HQ 2/O 5-34
Connection cable for Frequency converters 8-125
Connection kits
– For longitudinal conveyor 9-21
– For transverse conveyor 9-22
Connection unit for Frequency converters 8-125
Conveyor units
– Accumulation roller chain 3-104
– Accumulation roller chain V*plus* 3-148
– Belt 3-18
– Flat-top chain 3-56
Cover rail for cable duct 9-20
Cross connector
– QV 2 9-17
– QV 2-H 9-18
Curve 4-1
– Belt section BS 2/K 4-21
– CU 2/90 4-6
– Curve KE 4-9
– Curve KU 4-24
– Curves 4-4
– Selection 4-2, 4-40
Curve arc KU
– KU 2/O-... 4-32
– KU 2/O-90 4-34
– KU 2/O-180 4-37
Curve KE
– KE 2/90... 4-9
– KE 2/90 4-10
– KE 2/90 LS 4-10
– KE 2/180... 4-12
– KE 2/180 4-13
– KE 2/180 LS 4-13
– KE 2/O-90... 4-15
– KE 2/O-90 4-16
– KE 2/O-90 LS 4-16
– KE 2/O-180... 4-18
– KE 2/O-180 4-19
– KE 2/O-180 LS 4-19
Curve KU
– KU 2/90 4-24
– KU 2/180 4-28
Cylinder switch, pneumatic 8-141

▶ **D**
Damper 8-66
– DA 2/60 8-68
– DA 2/100-B 8-71
– DA 2/100-C 8-74
– DA 2/100-E 8-77
– DA 2/100-H 8-83
– DA 2/150-E 8-80
– DA 2/250-H 8-86
Decentralized automatic Lubrication unit LU 2 9-5
Deflector 8-108
Disassembly tool
– For accumulation roller chain 3-140
– For accumulation roller chain V*plus* 3-165
– For flat-top chain 3-90
Dosing valves 9-12
Dowel 6-32

Dowel pin 2-20
Drive module
– AS 2/B-150 3-20
– AS 2/B-250 3-23
– AS 2/C-100 3-58
– AS 2/C-250 3-61
– AS 2/C-400 3-64
– AS 2/C-700 3-67
– AS 2/R-300 3-106
– AS 2/R-700 3-109
– AS 2/R-1200 3-112
– AS 2/R-2200 3-115
– AS 2/R-V-1200 3-150
– AS 2/R-V-2200 3-153

▶ **E**
EL 2 lift 5-80
– Battery box with battery 5-89
– Circuit diagram motor MSM 5-90
– Combination options with sections 5-82
– Compact converter HCS01 5-88, 5-90
– C-shape/O-shape 5-83
– C-shape/O-shape cycle times 5-83
– Encoder cable RKG 0062 5-90
– Motor connection motor MSM 5-87
– Motor data for motors MSM 5-85
– Power cable RKL4804 5-87, 5-90
Electrical transverse conveyor 5-4
– EQ 2/T... 5-14
– EQ 2/T 5-15
– EQ 2/T LS 5-15
– EQ 2/TE... 5-18, 5-22
– EQ 2/TE 5-19
– EQ 2/TE LS 5-19
– EQ 2/TR... 5-6
– EQ 2/TR 5-7
– EQ 2/TR LS 5-7
– EQ 2/TR-90... 5-10
– EQ 2/TR-90 5-11
– EQ 2/TR-90 LS 5-11
Energy efficiency – Rexroth 4EE 1-26

▶ **F**
Flat-top chain 3-2, 3-40
– Chain lock 3-88
– Disassembly tool 3-90
– Guide and glide profiles FP 2/..., GP 2/... 3-81
– Plastic flat-top chain 3-88
– Plastic flat-top chain ESD 3-88
Foundation bracket 6-32
Frame modules
– Bolt 2-21
– Carrying plate 2-22
– Dowel pin 2-20
– Positioning bushing 2-18
– Press-fit mandrel 2-19
– Reinforced 2-13
– Standard 2-12
– With wear pad PA 2-16
– With wear pad PE 2-17
Frame workpiece pallet
– WT 2/F 2-41
– WT 2/F-H 2-43
Frequency converter EFC 8-129
– Accessories 8-130
– Circuit diagram EFC3610 8-133
– Circuit diagram EFC5610 8-134
– Option cards 8-130
– Technical data 8-131
Frequency converter (FU) 10-36
– Accessories 10-37
– Motor drive spectrum 10-36
Frequency converter FU 8-120
– Attachment kit 8-125
– Communication module 8-124
– Connection cable 8-125
– Connection unit 8-125
– Frequency converters motec 8400 8-123
– Manual control unit 8-126
– Power unit 8-124
– Selection guide 8-121
– Switch/potentiometer unit 8-126
– Technical data 8-127
Function plans 10-7

▶ **G**
Glide profiles 3-81, 3-133
– GP 2/... 3-81, 3-133
– GP 2/C/R 3-81, 3-133
– GP 2/H-KS 3-81
– GP 2/H-ST 3-81, 3-133
Glue 3-38
Guide profiles 3-133
– FP 2/... 3-81, 3-133
– FP 2/B 3-35
– FP 2/C/R 3-81, 3-133
– FP 2/H-ST 3-81, 3-133
– FP2/U 3-133

▶ **H**
Hydraulic blocks 9-10

▶ **I**
Identification and data tag systems 1-25
Intermediate section with roller 5-94

▶ **K**
Kit
– WT 2/H 2-34

▶ **L**
Lateral guide 7-47
Layout planning 1-10
Leg set
– Fastening material 6-4
– HD 2/H 6-24
– Leveling feet 6-4
– SZ 2 6-8
– SZ 2/... 6-4
– SZ 2/H 6-10
– SZ 2/K-90 6-20
– SZ 2/K-180 6-22
– SZ 2/LS... 6-26
– SZ 2/T 6-16
– SZ 2/T-H 6-18
– SZ 2/U 6-12
– SZ 2/U-H 6-14
Leg set height H 6-2
Leg sets 6-1
– Combination matrix for leg set, bracket, cover cap 6-35
– Cover caps 6-34
– Flange nut 6-33
– Floor dowel 6-33
– Foundation brackets, dowels 6-32
– Leg sets SZ 2/... 6-4
– Longitudinal connector LV 2 6-29
– Reinforcement SZ 2 – ST 2 6-31
– Selection 6-2
– T-bolt 6-33
Leg set SZ 2/LS... 6-26
– SZ 2/LS END 6-27
– SZ 2/LS MID 6-27
Lift gate LG 2/H 3-182
– Lift gate assembly variants 3-183
– Mounting kit LG 2/H 3-186
– Safety switch 3-189
– Selection of the mounting kit LG 2/H 3-184
Lift positioning unit
– HP 2... 7-28
– HP 2 7-29
– HP 2 LS 7-29
– HP 2/L... 7-19
– HP 2/L 7-20
– HP 2/L LS 7-20
Lift rotary unit
– HD 2... 7-48
– HD 2 7-49
– HD 2-LS 7-49
– HD 2/H... 7-51
– HD 2/H 7-52
– HD 2/H LS 7-52
Lift transverse unit 5-24
– HQ 2/C-H 5-67
– HQ 2/G-H 5-70
– HQ 2/O 5-30
– HQ 2/S 5-26
– HQ 2/T... 5-43
– HQ 2/T 5-44
– HQ 2/T LS 5-44
– HQ 2/U... 5-50
– HQ 2/U 5-51
– HQ 2/U LS 5-51
– HQ 2/U2... 5-54
– HQ 2/U2 5-55
– HQ 2/U2 LS 5-55

– HQ 2/U-H 5-58
Linear section LS 2 3-166
– Combination options LS 2 and WT 2/LS 3-174
– Double track 3-175
– Height adjustment between SZ 2/LS END/BS 2 and LS 2 3-177
– Overall length LS 2 3-176
– Positioning time diagram 3-170
– Single track 3-175
– Transition from conveyor section LS 2 and BS 2 3-176
Longitudinal connector LV 2 6-29
Longitudinal conveyor 3-1
– Accumulation roller chain 3-92
– Adjustment set 3-178
– Belt and toothed belt 3-4
– Belt section BS 2/... 3-6
– Belt section BS 2/C... 3-45
– Connection kits 9-21
– Drive module AS 2/B... 3-20
– Drive module AS 2/C... 3-58
– Flat-top chain 3-40
– Glide profiles 3-81, 3-133
– Guide profiles 3-35, 3-81, 3-133
– Lift gate LG 2/H 3-182
– Linear section LS 2 3-166
– Motor cable FMK, Sensor cable FSK 3-179
– Return unit UM 2/B 3-26
– Return unit UM 2/C-... 3-70
– Section ST 2/C... 3-75
– Selection 3-2
– ST 2/B section, ST 2/B-100 section 3-29

▶ **M**
Maintenance section
– ST 2/C-H-W 3-87
– ST 2/C-W 3-87
– ST 2/R-H-W 3-135
– ST 2/R-V-W 3-161
– ST 2/R-W 3-135
Manual control unit for Frequency converters 8-126
Material number overview 11-1
Motor cable FMK 3-179
– Connections 3-180
Motor connection 10-31
Motor data 10-29, 10-30
Motor MSM 5-85, 5-90
– Battery box with battery 5-89
– Connection cable 5-87
– Encoder system 5-88
– Motor connection 5-87
– Motor data 5-85
– Motor encoder M5 5-86
MT*pro* planning software 10-3

▶ **N**
Nominal speed vN 10-33

▶ **O**
Option cards 8-130

▶ **P**
Accumulation roller chain PA 3-137
Planning software, MT*pro* 10-3
Plastic flat-top chain 3-88
Pneumatic cylinder switch 8-141
Position
– for throttling the storage speed 7-32
– sensing kit for PE 2 7-10
Positioning and orientation 7-1
– Anvil plate 7-38
– Kit for throttling the storage speed 7-32
– Lift positioning unit 7-19
– Lift rotary unit 7-48
– Positioning unit PE 2... 7-7
– Selection of positioning units 7-2
– Spring element 7-44
– Workpiece pallet inner guide 7-5
Positioning bushing 2-18
Positioning bushing set
– WT 2/F-H 2-46
– WT 2/H 2-40
Positioning pin,
– Flat-sided 7-41
– round 7-41
Positioning unit PE 2... 7-7
– PE 2 7-8
– PE 2/H 7-15
– PE 2/LS 7-8
– PE 2/X 7-11
– PE 2/XP 7-34
Position sensing
– Cylinder 7-24
– Function plans 10-7
– Positioning unit PE 2 7-10
– Sensors 8-110
– Set RA 7-27
– Stop gate 8-18
– VE 2/D-80 8-29
Position sensing set RA 7-27
Power unit for Frequency converters 8-124
Press-fit mandrel 2-19
Process force decoupling PE 2/XX 7-42
Profile connector 9-16
Protective case
– For HD 2/H... 7-58
– For HP 2 7-33
– For HP 2/L 7-26
– SK 2 5-48
– SK 2/B 5-35
Protective cover
– EL 2 lift 5-81
– Rocker WI/M 8-142
– Rotary units 4-40

▶ **R**
Reinforcement SZ 2 – ST 2 6-31
Return stop
– VE 2/RS-H 8-50
– VE 2/RS-H, pneumatic 8-50
Return stop VE 2/RS 8-48
Return unit
– UM 2/B 3-26
– UM 2/C-60 3-70
– UM 2/C-170 3-72
– UM 2/R-60 3-118
– UM 2/R-170 3-120
– UM 2/R-V-170 3-156
Rocker 8-136
– Functions 8-136
– WI 2 8-144
– WI 2/D 8-150
– WI 2/X 8-148
– WI/M 8-138
Rocker extension MS 8-152
Roller element RE 5-97
Roller sections 5-92
– RS 2 5-95
– RS 2/H 5-101
Roller track RB 2 3-28
Roller track set RB 2/UM 2 5-99
Rotary units 4-40
– DE 2 – BG 1 4-44
– DE 2 – BG 2 4-47
– DE 2 – BG 3 4-50
– DE 2 – BG 4 4-53
– DE 2 – BG 5 4-56

▶ **S**
Scraper 9-19
Section
– Single-track CS/C 3-42
– ST 2/B, ST 2/B-100 3-29
– ST 2/C-100 3-75
– ST 2/C-H 3-77
– ST 2/R-100 3-123
– ST 2/R-H 3-125
– ST 2/R-V 3-158
Section profile
– SP 2/B 3-31
– SP 2/B-50 3-32
– SP 2/B-100 3-34
– SP 2/BH 3-33
– SP 2/C-100 3-79
– SP 2/C-H 3-83
– SP 2/R-100 3-127
– SP 2/R-H 3-129
Section, section profiles 3-74, 3-122
Selection
– Conveyor media 3-2
– Curves 4-2, 4-40
– Frequency converters 8-121
– Leg sets 6-2
– Positioning units 7-2
– Transportation controls 8-2
– Transverse conveyors 5-2

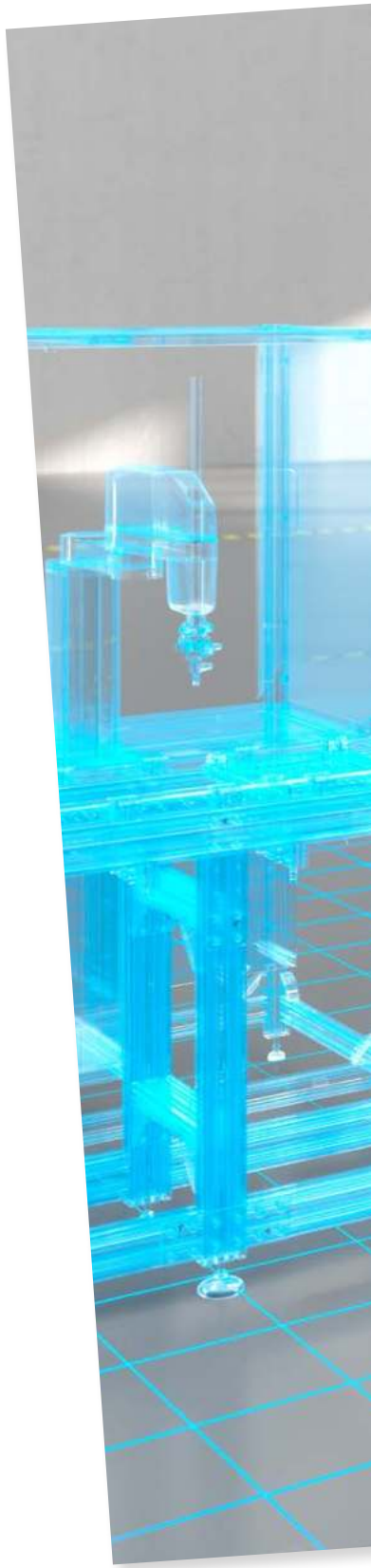
– Workpiece pallets 2-2
Sensor
– Application matrix 8-118
– Clamping holder 8-62
Sensor application matrix 8-118
Sensor cable FSK 3-179
Sensors 8-110
– M8 with M8x1 8-116
– M12 with M8x1 8-114
– M12 with M12x1 8-112
Single-track section CS/C 3-42
Slide stop
– Clamping holder 8-62
– VA 2/50 8-53
– VA 2/50 – reversible 8-56
– VA 2/D-130 8-59
– VA 2/D-250 8-63
Spring element 7-44
– Transition piece 7-46
Steel accumulation roller chain 3-137
Stop gate
– Position sensing 8-18
– VE 2 8-6
– VE 2/... 8-4
– VE 2/D-60, VE 2/D60-LS 8-23
– VE 2/D-80 8-26
– VE 2/D100-E 8-44
– VE 2/D100-H 8-38
– VE 2/D-175, VE 2/D175-LS 8-31
– VE 2/D-200 8-33
– VE 2/D-220 8-36
– VE 2/D250-H 8-41
– VE 2/D410-EH 8-46
– VE 2/L 8-9
– VE 2/M 8-12
– VE 2/S 8-15
– VE 2/X 8-20
Stop WT 2 8-153
Switch bracket SH 2/... 8-90
– Deflector 8-108
– SH 2/EP 8-106, 8-108
– SH 2/S 8-92
– SH 2/SF 8-104
– SH 2/S-H 8-96
– SH 2/ST 8-94
– SH 2/U 8-98
– SH 2/U-H 8-102
– SH 2/UV 8-100
Switching/potentiometer unit 8-126
Symbols 0-2
System specifications 10-4

▸ **T**
Technical data
– Compressed air consumption of the TS 2*plus* units 10-1, 10-38
– Frequency converters 10-1, 10-36
– Function plans 10-7
– Motor connection 10-31
– Motor data 10-29, 10-30
– System specifications 10-4
– Transportation and nominal speeds vN 10-33
Tools
– For accumulation roller chain 3-140
– For belt 3-38
– For flat-top chain 3-90
– Press-fit mandrel 2-19
Toothed belt 3-4
– BS 2/130 5-77
– BS 2, BS 2/LS 3-6
– BS 2/C+R 3-54, 3-103
– BS 2/K 4-21
– BS 2/M... 3-9
– BS 2/S 3-13
– BS 2/T 5-37
– BS 2/TE 5-40
– Rotary units 4-40
– Scraper 9-19
– Transition piece 7-46
– Transmission drive 3-16
Transition piece 7-46
Transmission drive 3-16
Transport and nominal speeds vN 10-33
Transportation control 8-1
– Damper 8-66
– Frequency converters 8-120
– Return stop VE 2/RS 8-48
– Rockers WI/M, WI 2/... 8-136
– Selection 8-2
– Sensors 8-110
– Slide stop VA 2/... 8-53
– Stop gate 8-6
– Stop gate VE 2/... 8-4
– Switch brackets SH 2/... 8-90
Transverse conveyor 5-1
– Assembly tool 5-22
– Belt section BS 2/... 5-37, 5-40, 5-74, 5-77
– Connection kits 9-22
– EL 2 lift 5-80
– Electrical transverse conveyors EQ 2/... 5-4
– Intermediate section with roller 5-94
– Lift transverse units HQ 2/... 5-24
– Protective case SK 2... 5-35, 5-48
– Roller elements RE 5-97
– Roller section RS 2 5-95
– Roller section RS 2/H 5-101
– Roller sections 5-92
– Roller track RB 2/UM 2 5-99
– Selection 5-2
– Stop WT 2 8-153
Transverse conveyor assembly tool 5-22
TS 2*plus* conveyor media 1-12
TS 2*plus* design ideas 1-24
TS 2*plus* features 1-4
TS 2*plus* functional principle 1-6
– Ambient conditions 1-20
– Choice of system 1-6
– Combination of workpiece pallet, components and modules 1-13
– Combination with TS 2 Booster (linear motor section LS 2) 1-14
– Layout planning 1-10
– To be transported Workpieces 1-8
– Conveyor media TS 2*plus* 1-12
TS 2*plus* system overview 0-3
Transfer system TS 2*plus*
– Design ideas 1-24
– Energy efficiency – Rexroth 4EE 1-26
– Features 1-4
– Identification and data tag systems 1-25
– Operating principle 1-6
Turret stop
– Position sensing set RA 7-27

▸ **V**
VE 2/D-80 8-29
– Position sensing 8-29
– Stop gate 8-26
V*plus* design 3-142

▸ **W**
Workpiece pallet inner guide 7-5
Workpiece pallets 2-1
– Bolt 2-21
– Carrying plate 2-22, 2-36
– Components WT 2 2-10, 2-16
– Components WT 2/H 2-32
– Dowel pin 2-20
– Lateral guide 7-47
– Positioning bushing 2-18
– Positioning bushing set WT 2/F-H 2-46
– Positioning bushing set WT 2/H 2-40
– Press-fit mandrel 2-19
– Reinforced frame module 2-13
– Selection 2-2
– Standard frame module 2-12
– Stop WT 2 8-153
– WT 2 2-8
– WT 2/E 2-6
– WT 2/F 2-41
– WT 2/F-H 2-43
– WT 2/H 2-30
– WT 2/H kit 2-34
Workpiece pallet WT 2/LS
– Dimensions 2-51
– Double separation 2-60
– Position of feed and measuring magnet 2-51
– Possible combination for separation of the WT 2/LS 2-59
– Query options through Sensor 2-58
– Components TS 2*plus* for workpiece pallet WT 2/LS 2-62
– WT 2/LS overview 2-49
Workpieces to be transported 1-8

Bosch Rexroth AG
Postfach 30 02 07
70442 Stuttgart, Germany
www.boschrexroth.com



Further information online:

Find your local contact person here:
https://addresses.boschrexroth.com

Rexroth media directory
Commercial media and technical documentation is available for download 24/7 at:
www.boschrexroth.com/mediadirectory

The data specified above only serves to describe the product. Due to the continuing development of our products, no statements concerning a certain condition or suitability for a certain application can be derived from our information. The information given does not exempt the user from the obligation of own judgment and verification. It must be remembered that our products are subject to a natural process of wear and aging.

R999000396 (2022-10)
© Bosch Rexroth AG 2023
Subject to changes!