

***AUTOMATION
OUR SYSTEM***



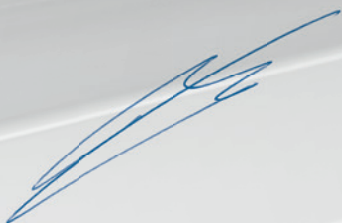
ROBOTUNITS®
THE MODULAR AUTOMATION SYSTEM

ONE SYSTEM

FOR ALL DISCIPLINES

To be successful in decathlon, the athlete must perfectly master all disciplines. A huge amount of passion combined with endurance, versatility, flexibility and precision are essential.

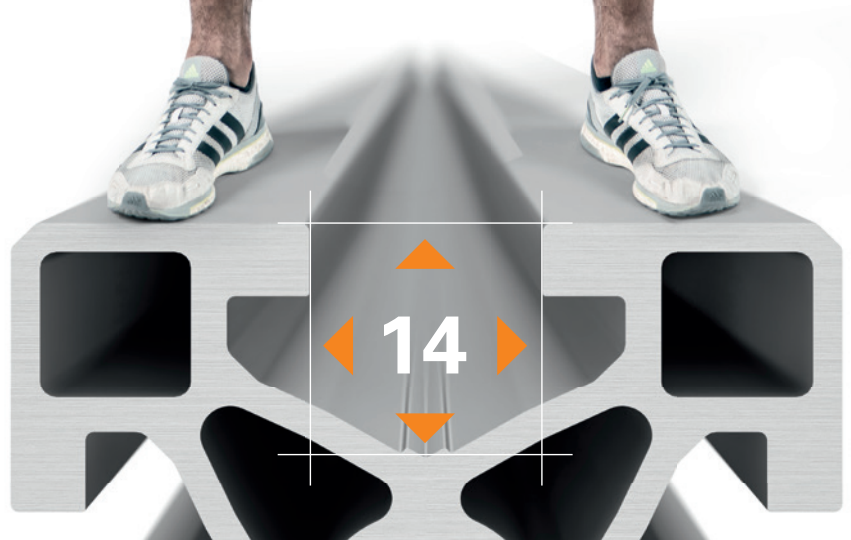
The decathlon athlete embodies all these characteristics – So does our Modular Automation System. Based on the unique 14 mm uniform T-slot design of our Extrusion Technology we offer customized & intelligent solutions in all disciplines: from Conveyor and Linear Motion solutions to Machine & Robot Framing, Guarding & Safety Fencing applications.



Christian Beer,
Inhaber und Geschäftsführer



- RESILIENCE**
- EFFICIENCY**
- TECHNIQUE**
- VERSATILITY**
- PRECISION**
- PASSION**
- COMBINATION**
- FLEXIBILITY**
- POWER**
- SPEED**



WORLD CLASS SYSTEM

In today's business environment manufacturers need a system that reduces lead time while simultaneously maximizing production possibilities.

The Robotunits Modular Automation System is based on this principle. Designed to use the least possible number of parts it combines intelligent design solutions with modern technology, and guarantees standardization and compatibility of all components. It minimizes time requirements and at the same time maximizes production possibilities and profit for top results in each discipline. It's not only about the number of single benefits, it's more about the perfect combination of each benefit within the system.

***Configure and order directly
online:***

www.robotunits.com



A minimum of parts, a maximum of possibilities:

The World-Class-System on the principle of LEAN

A main characteristic of a conventional product range is a large number of parts: The more possibilities on offer, the higher is the number of individual parts. The Robotunits World Class product range on the principle of LEAN works differently. The number of parts is deliberately kept small, yet the number of possible solutions is remarkably high.

Conventional Product Range

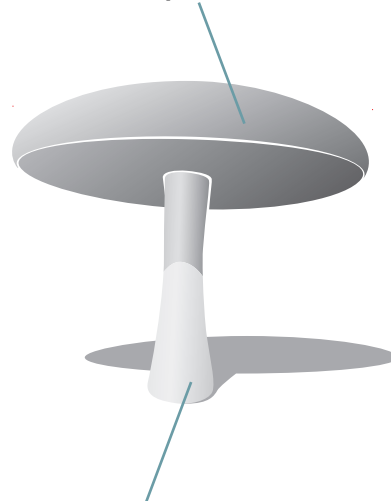
sum of all possible solutions



Conventional Product Range

World Class Product Range

sum of all possible solutions



World Class Product Range

To achieve this goal, Robotunits focuses on research and development of multifunctional components that are utilized throughout the entire Modular Automation System. As a result, our customers understand our product range quickly, and the ordering process stays easy and simple. Additionally, our efficient product line reduces the storage costs for our customers to a minimum.

More with less

Our Modular Automation System helps you to achieve more results with less effort. The small number of individual parts and components make the system fast and easy applicable. This in return helps you to achieve design objectives more directly while minimizing mistakes. Implementation and logistics are simplified, which shortens the entire production process. All in all this boosts productivity, cuts costs and increases your bottom line.

SUCCESS THROUGH TOP PERFORMANCE

At Robotunits quality is the result of continuous improvement in our products and processes. Our team consists of highly motivated, top class experts, which support our customers with competent service.

Individual customer support stands out through precision and short reaction times.

A worldwide manufacturer, Robotunits delivers world-class products to our customers locally through our extensive distribution network. This ensures that our customers are supported exactly when and where they need it.

A simple ordering process ensures that products get to their destination as efficiently as possible.



Our promise, your benefit:



outstanding quality



*uncompromising
service*



fastest delivery times



All products available for you online

Visit our webshop and configure and order our standard products online.

All CAD files are available online to facilitate your design process.

Robotunits utilizes Cadenas, a versatile part management platform that allows you to individually download 3D models in various formats.



Webshop & product configurator
Configure and order



Digital CAD database
Configure and download

www.robotunits.com

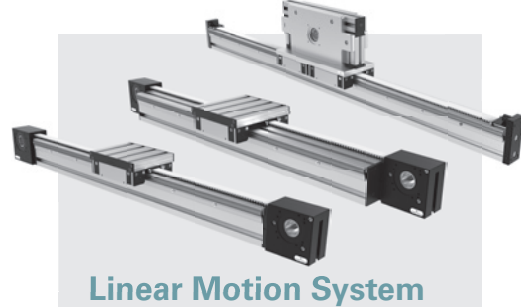
The Modular Automation System



Conveyor Technology

- Belt Conveyors
- Modular Belt Conveyors
- Timing Belt Conveyors
- Powered Roller Conveyor

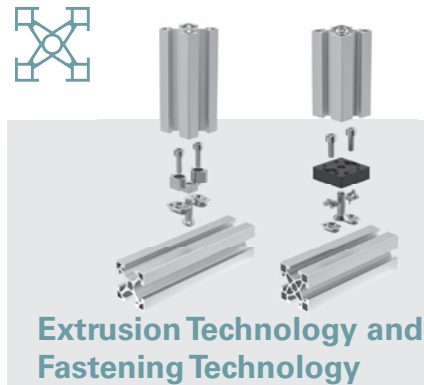
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Linear Motion System

- Linear Motion Unit 50
- Linear Motion Unit 100
- Linear Motion Unit 50 with Omega Drive

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Extrusion Technology and Fastening Technology

- 40 mm Series
- 50 mm Series

Page 54



Safety Fence System

- Basic System
- Allround System

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Material Handling System

- MHS System With Rollers
- MHS System With Slides

Page 102



Accessories

- Belt Conveyor Accessories
- Safety Fence Accessories
- Linear Motion Accessories
- General Modular Accessories

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THE JUST-IN-TIME CONVEYOR TECHNOLOGY



Success is often measured by efficiency and speed. For Robotunits customers this means always keeping one step ahead regarding the time required for delivery, design and assembly.

An important contributor to this is the fact that the Belt Conveyor System is seamlessly integrated into the Modular Automation System.

Advantages like these, as well as great product variety, maximum technical excellence and enormous potential to save time and money in design and assembly, are what makes Robotunits so unique. Special designs are available upon request.



Impressive delivery times

- production time for your individual Belt Conveyor: 1 week
- Just-In-Time delivery



Custom-made sizes

- select any standard frame width between 40 mm and 1200 mm
- select any conveyor length up to 12 m, longer units available upon request
- pre-assembled and height adjustable legs as an option
- fast adjustments to meet your individual requirements



Flexibility in drive options and positions

- choose drive option and position of motor
- maintenance-free timing belt drive
- space saving direct drive



Speed

- standard speed ranges from 2.6 m/min to 58 m/min
- higher speeds available upon request
- Speed Controller optional



Idler options

- roller diameters of 40 mm, 50 mm or 80 mm
- nose bar (16 mm diameter) for transfer of small parts



Wide variety of belts

- accumulation belt
- low & high friction belts
- high durability belts for abrasive and corrosive use



Fully integrated conveyor system

- compatible with all our extrusion sizes
- frame built with standard extrusion system
- accessible T-slot on 3 sides of the conveyor frame
- this makes it quick and easy to attach accessories or structural elements (i.e. stops) to the machine frame



Save time, cut cost

- shortest lead time
- quick configuration of your custom conveyor
- every Belt Conveyor comes fully assembled and tested
- outstanding price/performance ratio



Safety

- self-adjusting safety guard between the Belt Conveyor roll and the slider bed
- timing belt guard with window for visual inspection
- complete documentation meeting the latest Machinery Directive



Just-In-Time Conveyor Technology

Belt Conveyor

Page 14

Belt Conveyors 40
C4N



P. 16

Belt Conveyors 50
C5N



P. 18

Belt Conveyors 80
C8N



P. 20

Conveyor Stand
40/50
C4F



P. 22

Conveyor Stand
80
C8F



P. 23



Modular Belt Conveyors

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Straight Modular
Belt Conveyors
C8M



P. 26

Curved Modular
Belt Conveyors
C8M



P. 28

Conveyor Stand
80
C8F



P. 23

Timing Belt Conveyors

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Timing Belt
Conveyors 40
C4T



P. 32

Timing Belt
Conveyors 80
C8T



P. 34

Conveyor Stand 40
C4G



P. 36

Conveyor Stand 80
C8G



P. 37

Powered Roller Conveyor

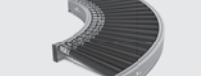
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Powered Roller
Conveyor Straight
R5S



P. 38

Powered Roller
Conveyor Curved
R5C



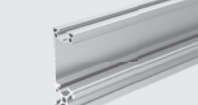
P. 39

Roller Conveyor
Stand
R5F



P. 40

Extrusion 40x120
PIL 4012



P. 41

Cover Extrusion
for PIL 4012
CAL 4012



P. 42

End Cap
CAP 4013



P. 42

Roller Conveyor
Power Supply
SUL 2000



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Conveyor Technology Accessory Overview

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C4N Belt Conveyor Drive Options



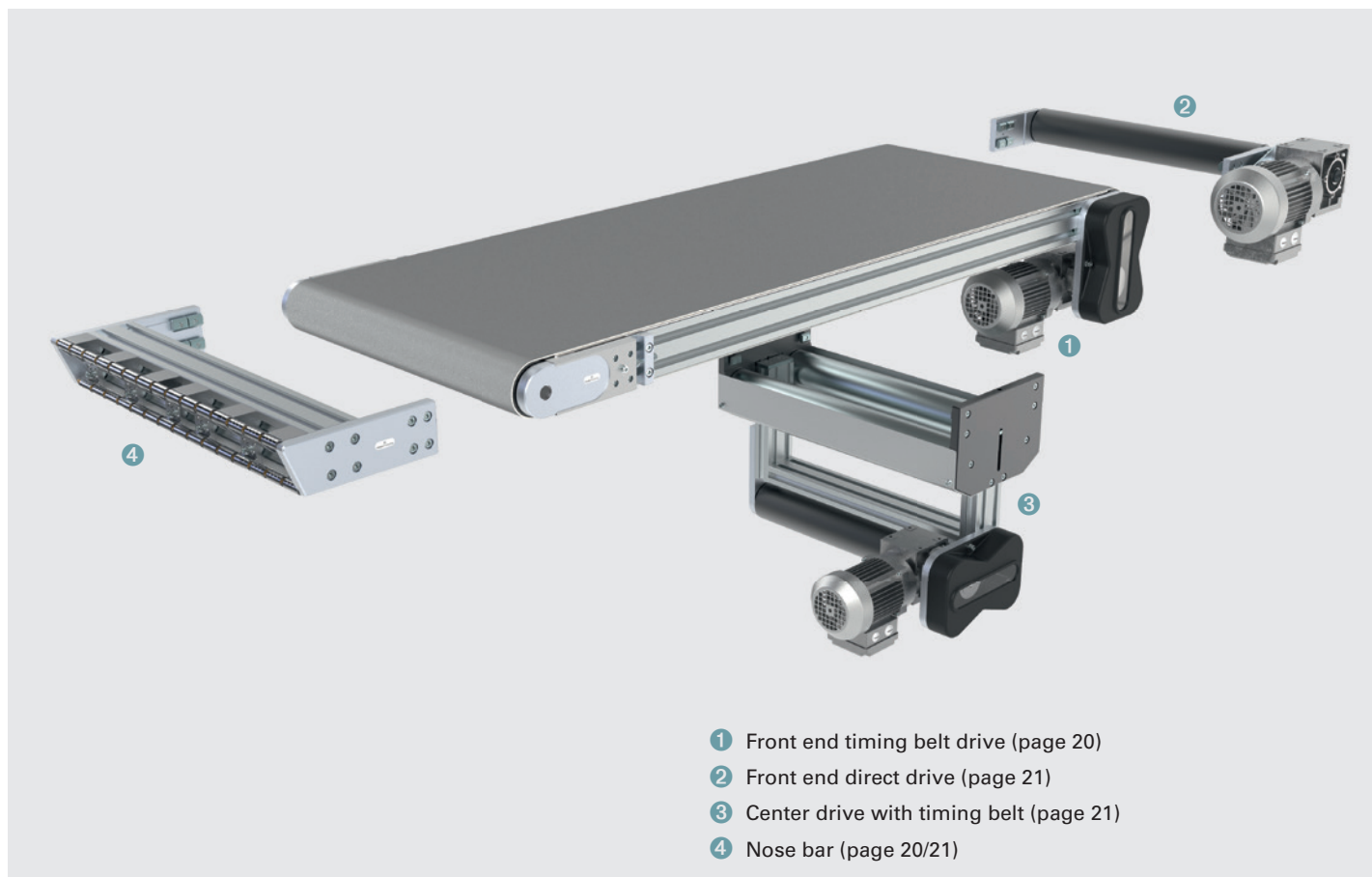
- ① Front end timing belt drive (page 16)
- ② Front end direct drive (page 17)
- ③ Center drive with timing belt (page 17)
- ④ Nose bar (page 16/17)

C5N Belt Conveyor Drive Options



- ① Front end timing belt drive (page 18)
- ② Front end direct drive (page 19)
- ③ Center drive with timing belt (page 19)
- ④ Nose bar (page 18/19)

C8N Belt Conveyor Drive Options



C4N

Belt Conveyor 40

**Application**

Used for a wide variety of conveying applications

Technical Data

Belt speeds from 3 m/min up to 55 m/min

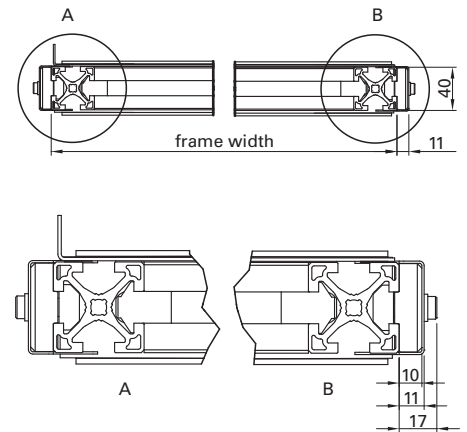
Drive power depending on belt speed and load ranging from 0.12 kW to 0.37 kW
(208-230/460V; 50/60Hz; IP54)
Max. total load of material 240 kg

Belt Type

low friction, high friction, accumulation, food grade, cut & oil resistant, cleated for incline transport, integrated belt side guides, etc.

C4N without side guides

Belt width = frame width - 10 mm

**C4N with side guides**

Frame width ≤ 120 mm

Belt width = frame width - 15 mm

Frame width > 120 mm

Belt width = frame width - 20 mm

Drive Option¹**Front End Timing Belt Drive**

- A** Front end timing belt drive, left
- B** Front end timing belt drive, right
- C** Front end timing belt drive, left, tail end nose bar
- D** Front end timing belt drive, right, tail end nose bar

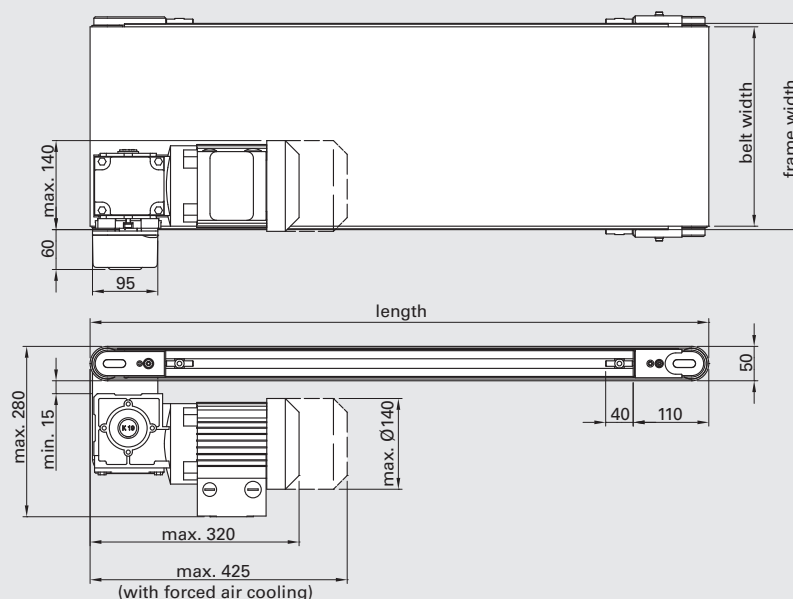
Front End Direct Drive

- E** Front end direct drive left
- F** Front end direct drive, right
- G** Front end direct drive, left, with tail end nose bar
- H** Front end direct drive, right, with tail end nose bar

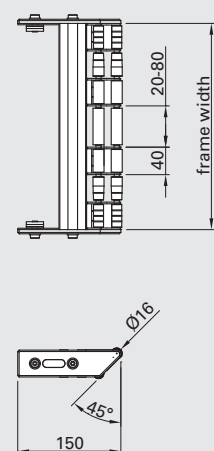
Center Drive With Timing Belt

- K** Center drive with timing belt
- L** Center drive with timing belt and front end nose bar
- N** Center drive with timing belt and tail end nose bar
- Q** Center drive with timing belt and nose bar on both ends

Front End Timing Belt Drive

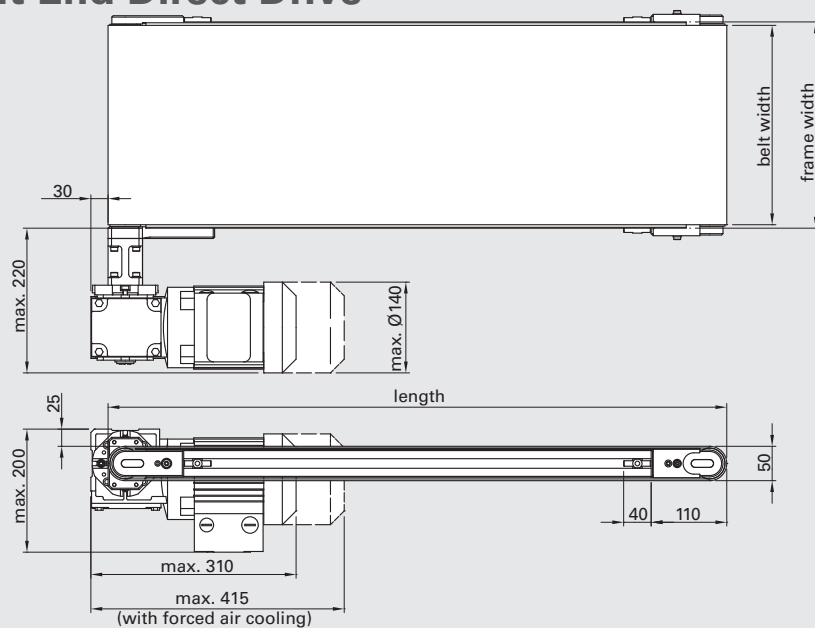


Optional: nose bar

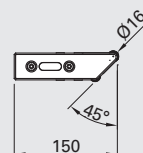
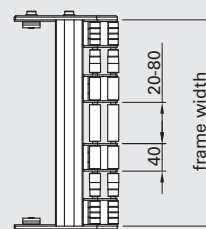


1) Standard direction is pulling. The running direction of all drives can be changed by reversing the polarity of the motor.

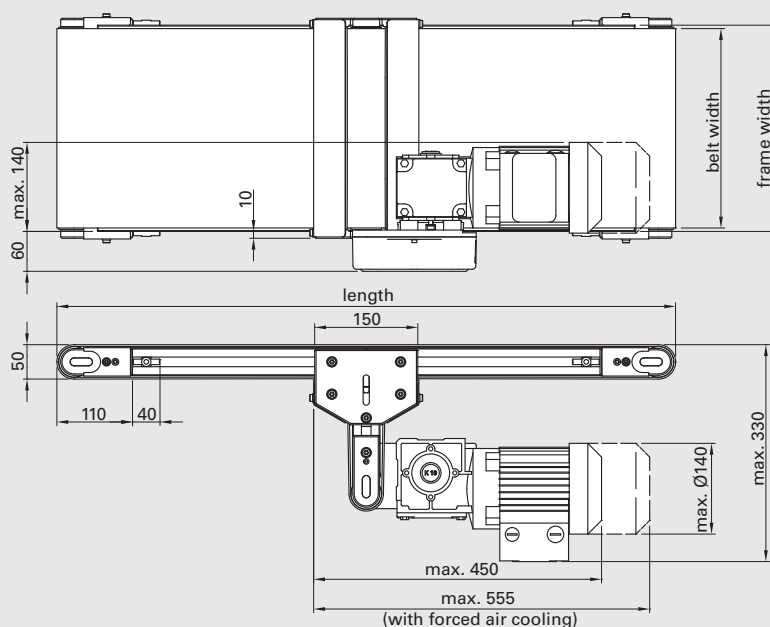
Front End Direct Drive



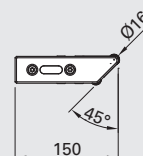
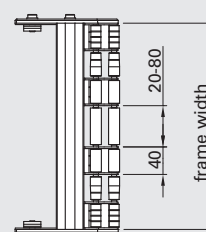
Optional: nose bar



Center Drive With Timing Belt



Optional: nose bar



Standard Widths And Lengths²

Description	Frame Width	Max. length
Belt Conveyor 40	40 mm	12000 mm
Belt Conveyor 40	80 mm	12000 mm
Belt Conveyor 40	120 mm	12000 mm
Belt Conveyor 40	160 mm	12000 mm

Description	Frame Width	Max. length
Belt Conveyor 40	200 mm	12000 mm
Belt Conveyor 40	240 mm	12000 mm
Belt Conveyor 40	300 mm	12000 mm
Belt Conveyor 40	400 mm	12000 mm

Please note the minimum length to width ratio of 1.5:1.

Request For Quote / Order

Please use our Belt Conveyor configuration tool or our request form at www.robotunits.com

2) Special widths and special lengths are available upon request.
Drawing dimensions in mm

C5N

Belt Conveyor 50

**Application**

Used for a wide variety of conveying applications

Technical Data

Belt speeds from 3 m/min up to 67 m/min

Drive power depending on belt speed and load ranging from

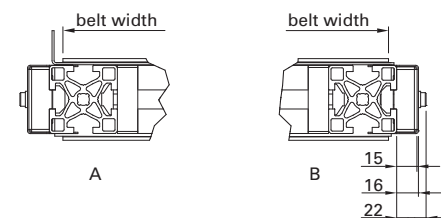
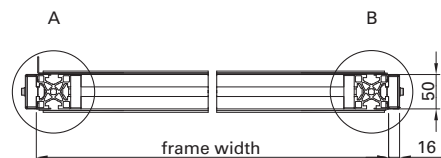
0.12 kW to 0.37 kW

(208-230/460V; 50/60Hz; IP54)

Max. total load of material 340 kg

Belt Type

low friction, high friction, accumulation, food grade, cut & oil resistant, cleated for incline transport, integrated belt side guides, etc.



Belt width = frame width - 20 mm

Drive Option¹**Front End Timing Belt Drive**

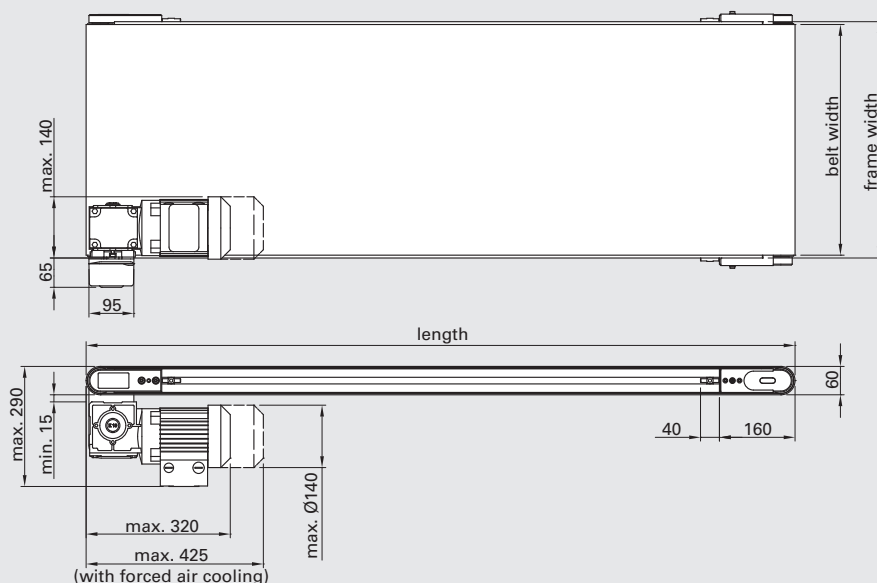
- A** Front end timing belt drive, left
- B** Front end timing belt drive, right
- C** Front end timing belt drive, left, tail end nose bar
- D** Front end timing belt drive, right, tail end nose bar

Front End Direct Drive

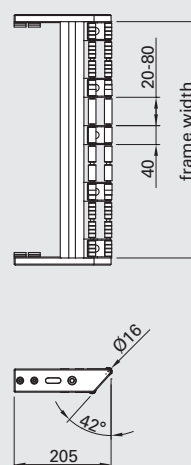
- E** Front end direct drive left
- F** Front end direct drive, right
- G** Front end direct drive, left, with tail end nose bar
- H** Front end direct drive, right, with tail end nose bar

Center Drive With Timing Belt

- K** Center drive with timing belt
- L** Center drive with timing belt and front end nose bar
- N** Center drive with timing belt and tail end nose bar
- Q** Center drive with timing belt and nose bar on both ends

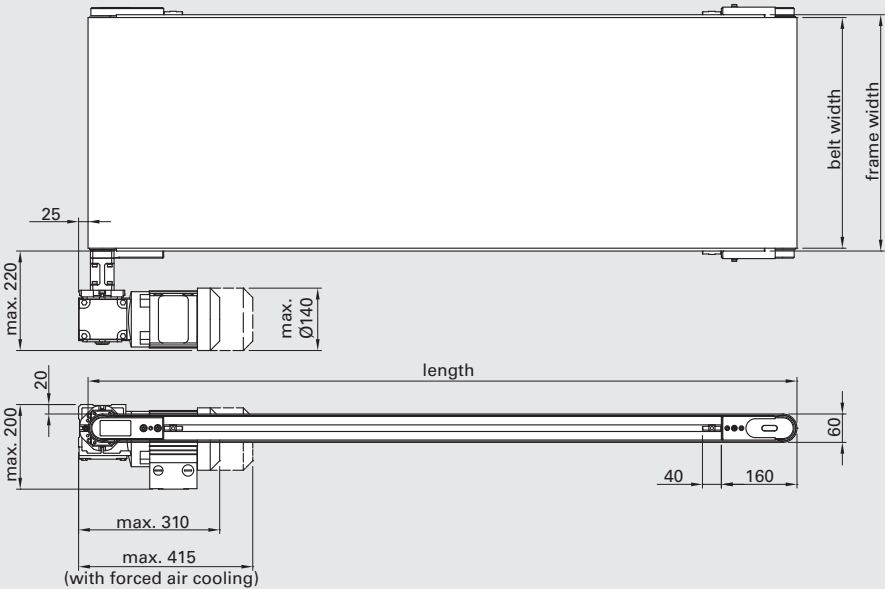
Front End Timing Belt Drive

Optional: nose bar

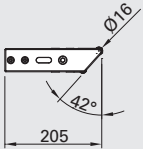
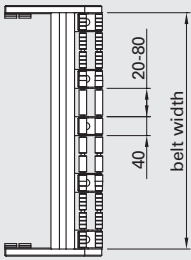


1) Standard direction is pulling. The running direction of all drives can be changed by reversing the polarity of the motor.
Drawing dimensions in mm

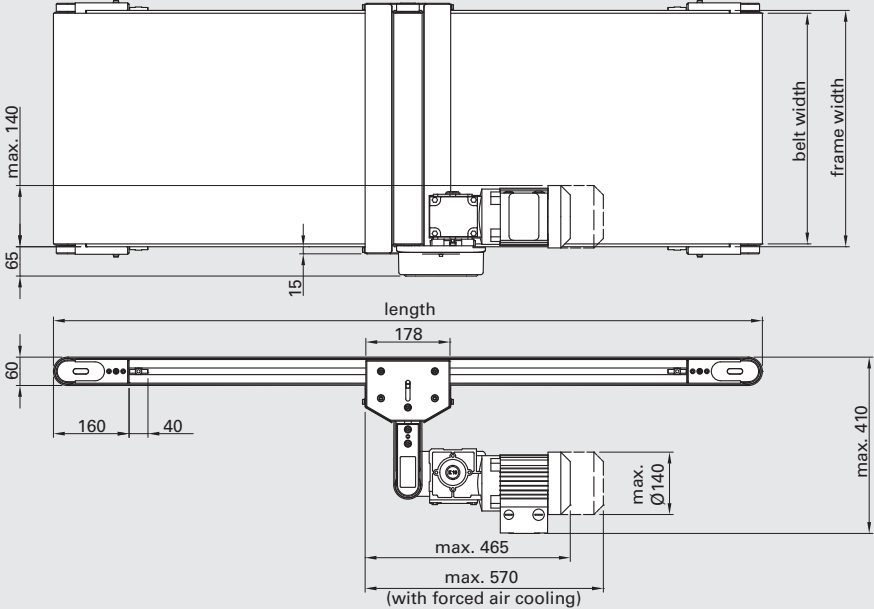
Front End Direct Drive



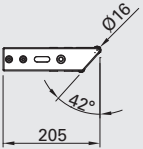
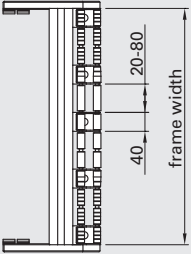
Optional: nose bar



Center Drive With Timing Belt



Optional: nose bar



Standard Widths And Lengths²

Description	Frame Width	Max. length
Belt Conveyor 50	400 mm	12000 mm
Belt Conveyor 50	500 mm	12000 mm
Belt Conveyor 50	600 mm	12000 mm

Design Options

Side view



Please note the minimum length to width ratio of 1.5:1.

Request For Quote / Order

Please use our Belt Conveyor configuration tool or our request form at www.robotunits.com

2) Special widths and special lengths are available upon request.
Drawing dimensions in mm

**Application**

Used for a wide variety of conveying applications

Technical Data

Belt speeds from 5 m/min up to 65 m/min

Drive power depending on belt speed and load ranging from

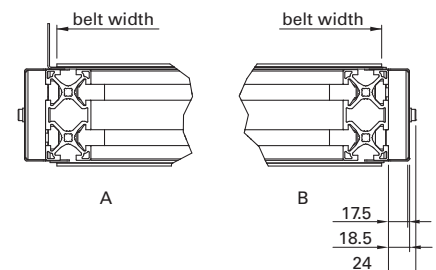
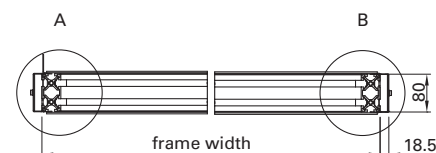
0.25 kW to 0.55 kW

(208-230/460V; 50/60Hz; IP54)

Max. total load of material 800 kg

Belt Type

low friction, high friction, accumulation, food grade, cut & oil resistant, cleated for incline transport, integrated belt side guides, etc.



Belt width = frame width - 20 mm

Drive Option¹**Front End Timing Belt Drive**

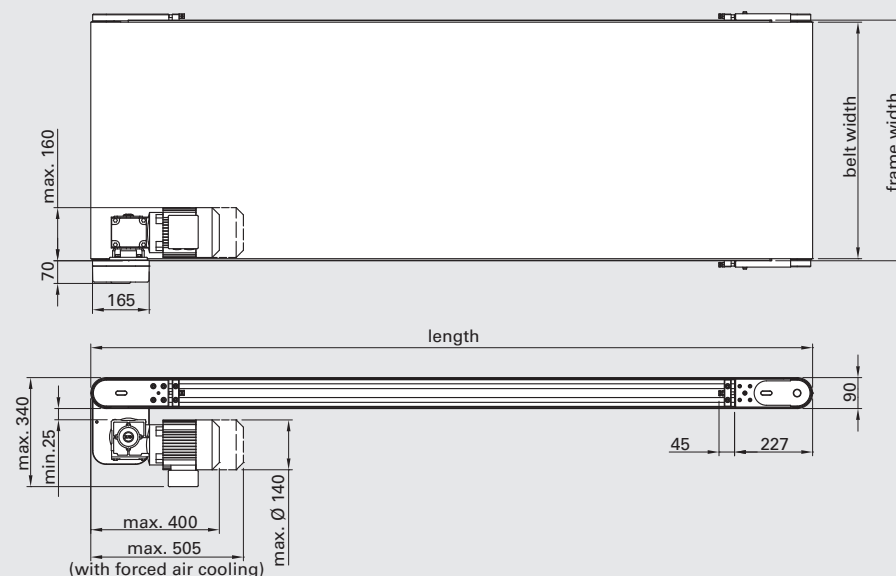
- A** Front end timing belt drive, left
- B** Front end timing belt drive, right
- C** Front end timing belt drive, left, tail end nose bar
- D** Front end timing belt drive, right, tail end nose bar

Front End Direct Drive

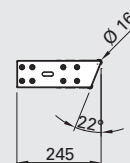
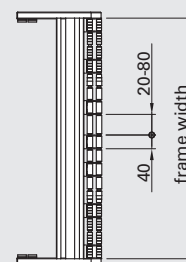
- E** Front end direct drive, left
- F** Front end direct drive, right
- G** Front end direct drive, left, tail end nose bar
- H** Front end direct drive, right, tail end nose bar

Center Drive With Timing Belt

- K** Center drive with timing belt
- L** Center drive with timing belt and front end nose bar
- N** Center drive with timing belt and tail end nose bar
- Q** Center drive with timing belt and nose bar on both ends

Front End Timing Belt Drive

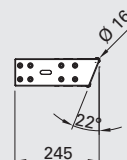
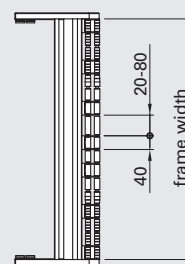
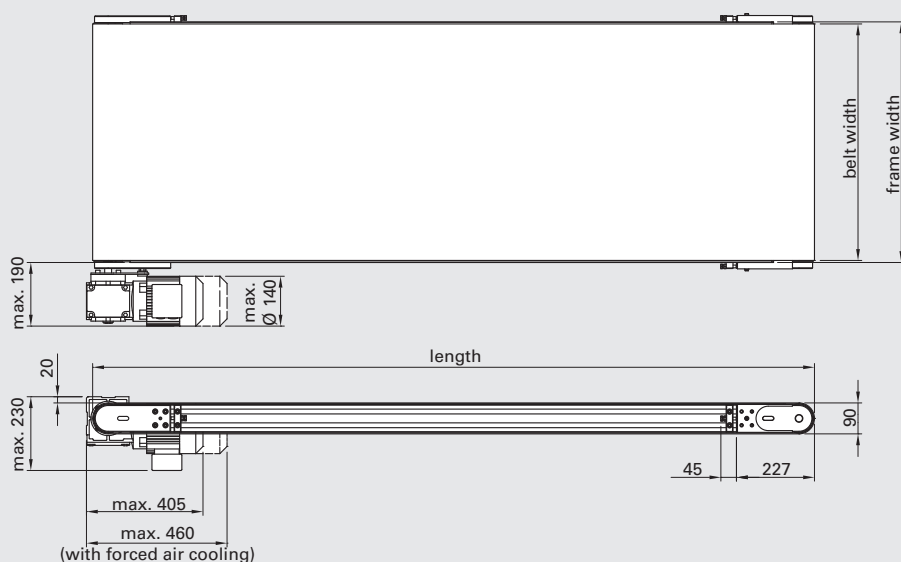
Optional: nose bar



1) Standard direction is pulling. The running direction of all drives can be changed by reversing the polarity of the motor.
Drawing dimensions in mm

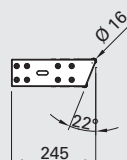
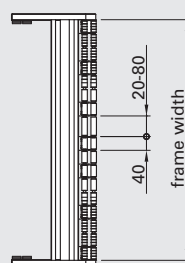
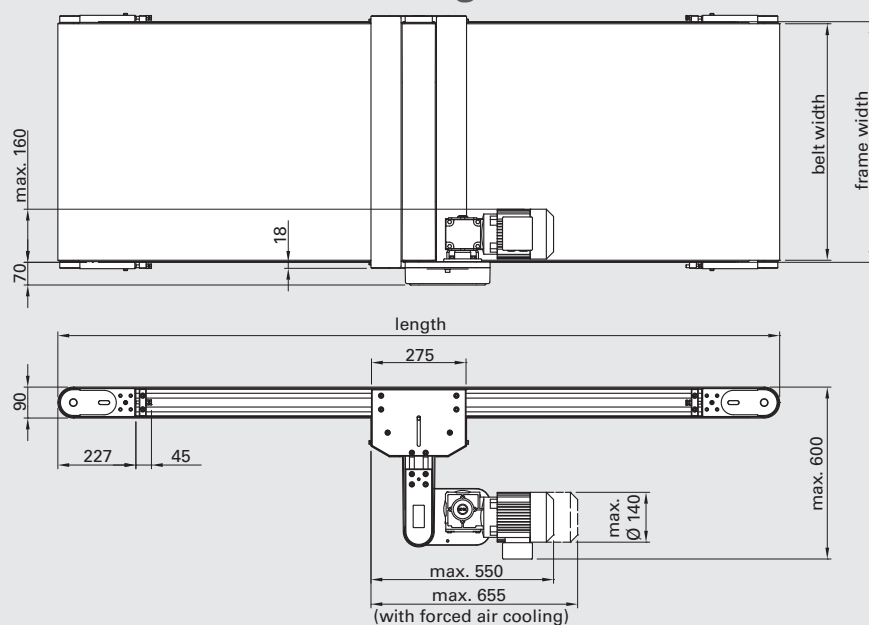
Front End Direct Drive

Optional: nose bar



Center Drive With Timing Belt

Optional: nose bar



Standard Widths And Lengths²

Description	Frame Width	Max. length
Belt Conveyor 80	600 mm	12000 mm
Belt Conveyor 80	700 mm	12000 mm
Belt Conveyor 80	800 mm	12000 mm
Belt Conveyor 80	1000 mm	12000 mm
Belt Conveyor 80	1200 mm	12000 mm

Design Options

Side view



Please note the minimum length to width ratio of 1.5:1.

Request For Quote / Order

Please use our Belt Conveyor configuration tool or our request form at www.robotunits.com

2) Special widths and special lengths are available upon request.
Drawing dimensions in mm

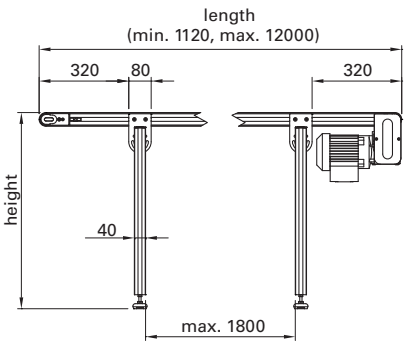


Application
Stand for C4N and C5N

Technical Data
Material: clear anodized aluminum;
galvanized GD-Zn; galvanized steel;
rubber

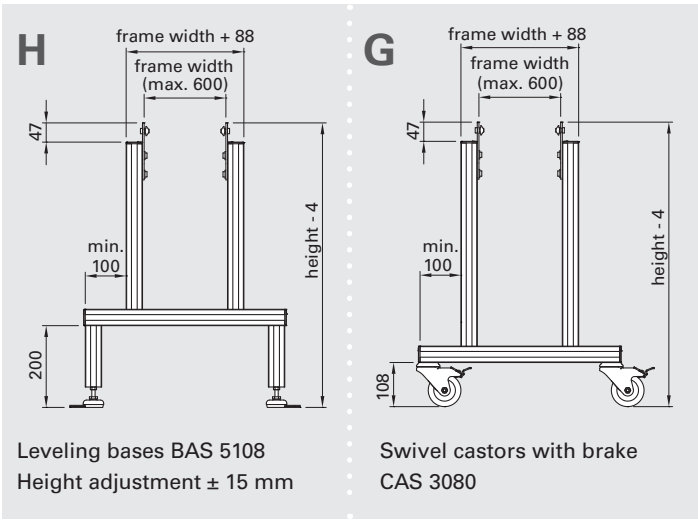
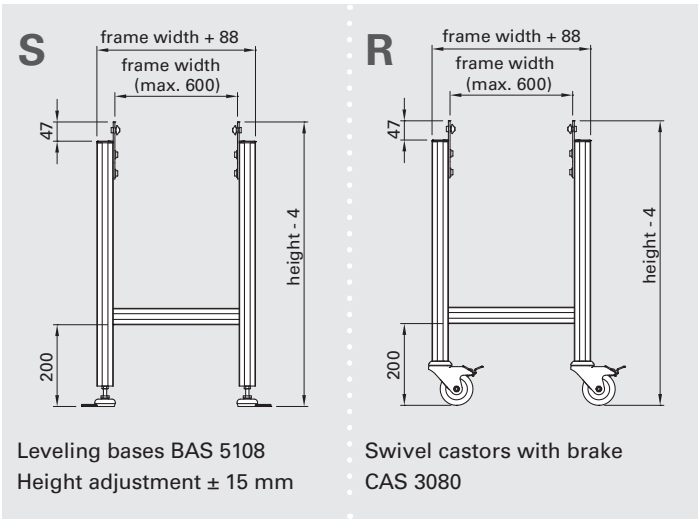
Scope of Delivery
Stand segment fully assembled and
attached to belt conveyor if applicable

Wide conveyor stand offers additional
stability when conveyor heights exceed
3 times the frame width.



Standard Conveyor Stands

Wide Conveyor Stands



Order Code

Description	Order Code ¹			
	Frame Width	Type	Length	Height
Conveyor Stand 40/50	C4F	__ NN	__ _	__ _

1) Please complete the order code by adding the corresponding parameters for order processing.
Drawing dimensions in mm

C8F

Conveyor Stand 80

**Application**

Stand for C8N and C8M

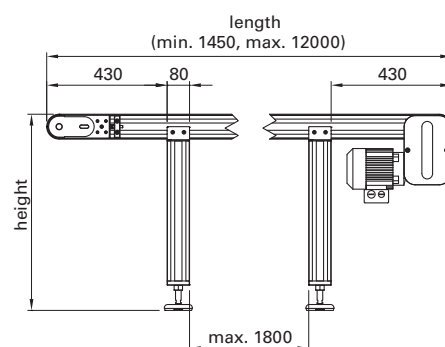
Technical Data

Material: clear anodized aluminum;
galvanized GD-Zn; galvanized steel;
rubber

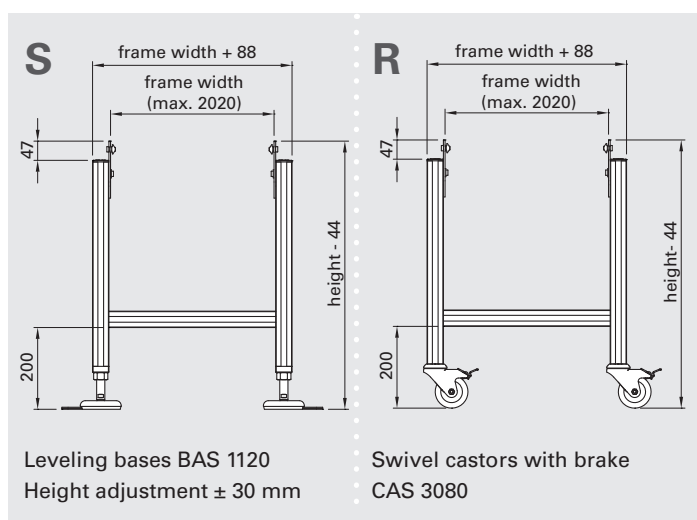
Scope of Delivery

Stand segment fully assembled and
attached to belt conveyor if applicable

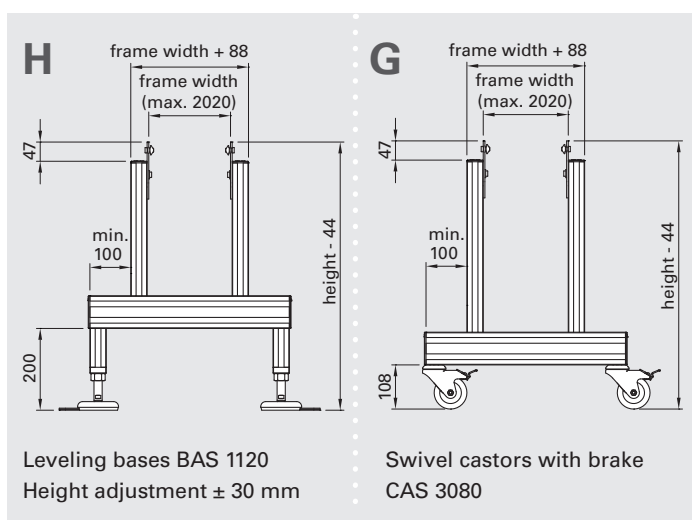
Wide conveyor stand offers additional
stability when conveyor heights exceed
3 times the frame width.



Standard Conveyor Stands



Wide Conveyor Stands



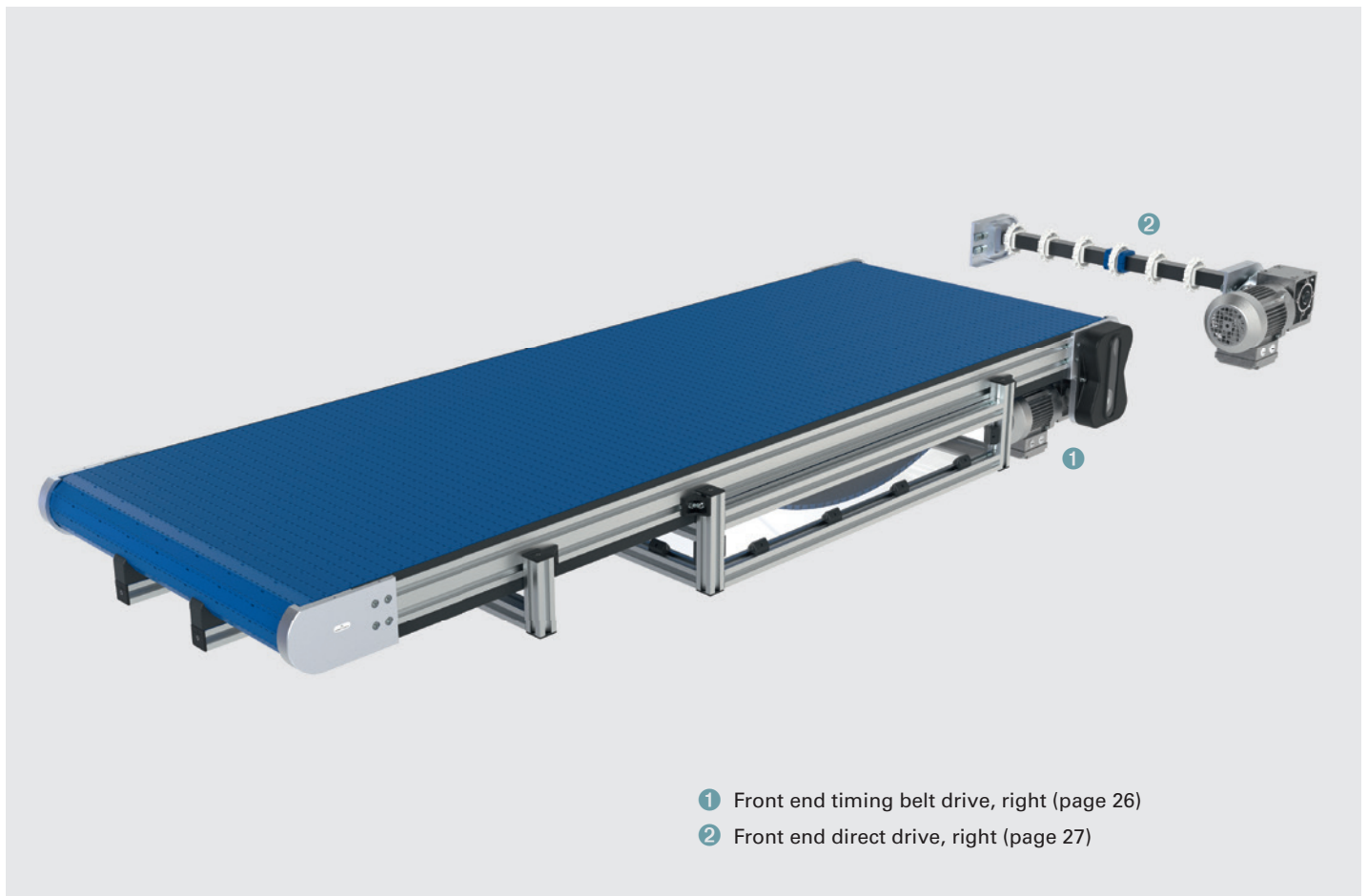
Order Code

Description	Order Code ¹			
	Frame Width	Type	Length	Height
Conveyor Stand 80	C8F	___ NN	___	___

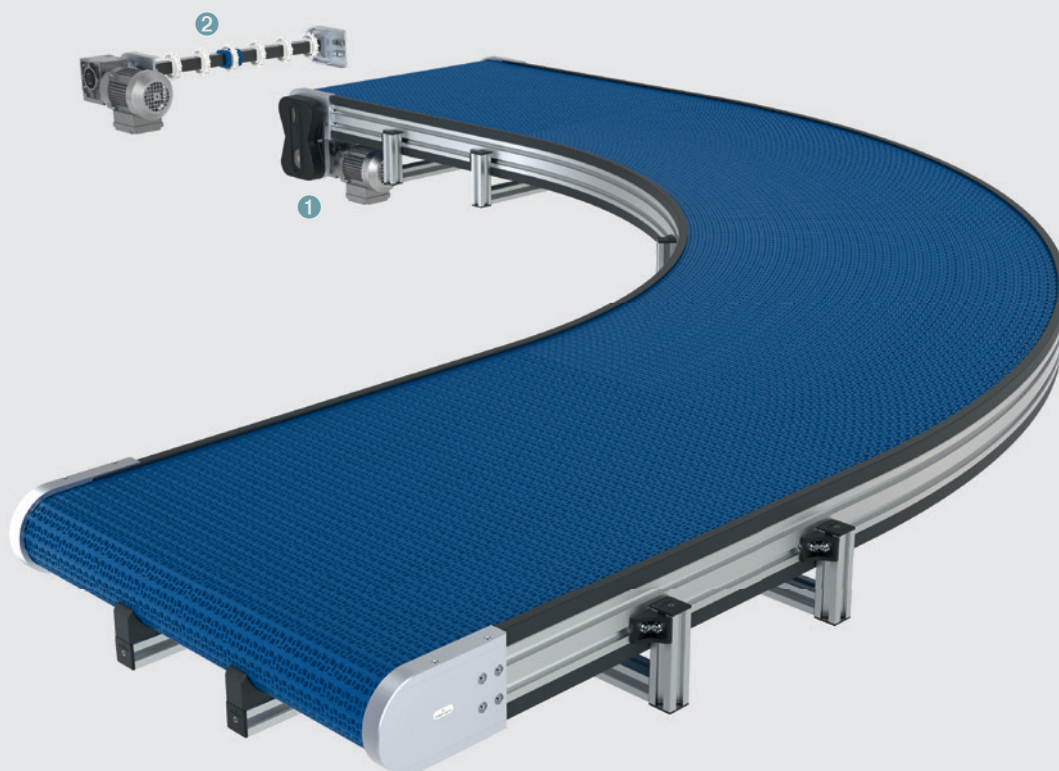
1) Please complete the order code by adding the corresponding parameters for order processing.

Drawing dimensions in mm

C8M Straight Modular Belt Conveyor Drive Options



C8M Curved Modular Belt Conveyor Drive Options



- ① Front end timing belt drive, left (page 28)
- ② Front end direct drive, left (page 29)

**Application**

Used for a wide variety of conveying applications

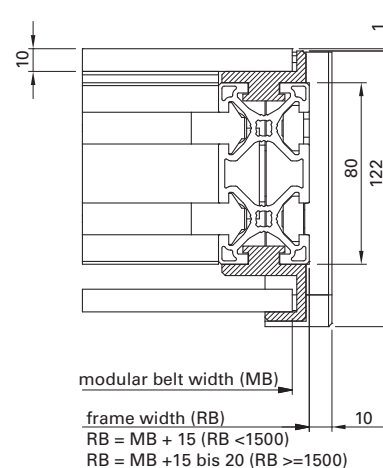
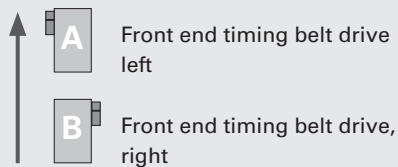
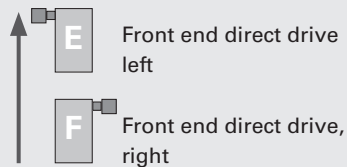
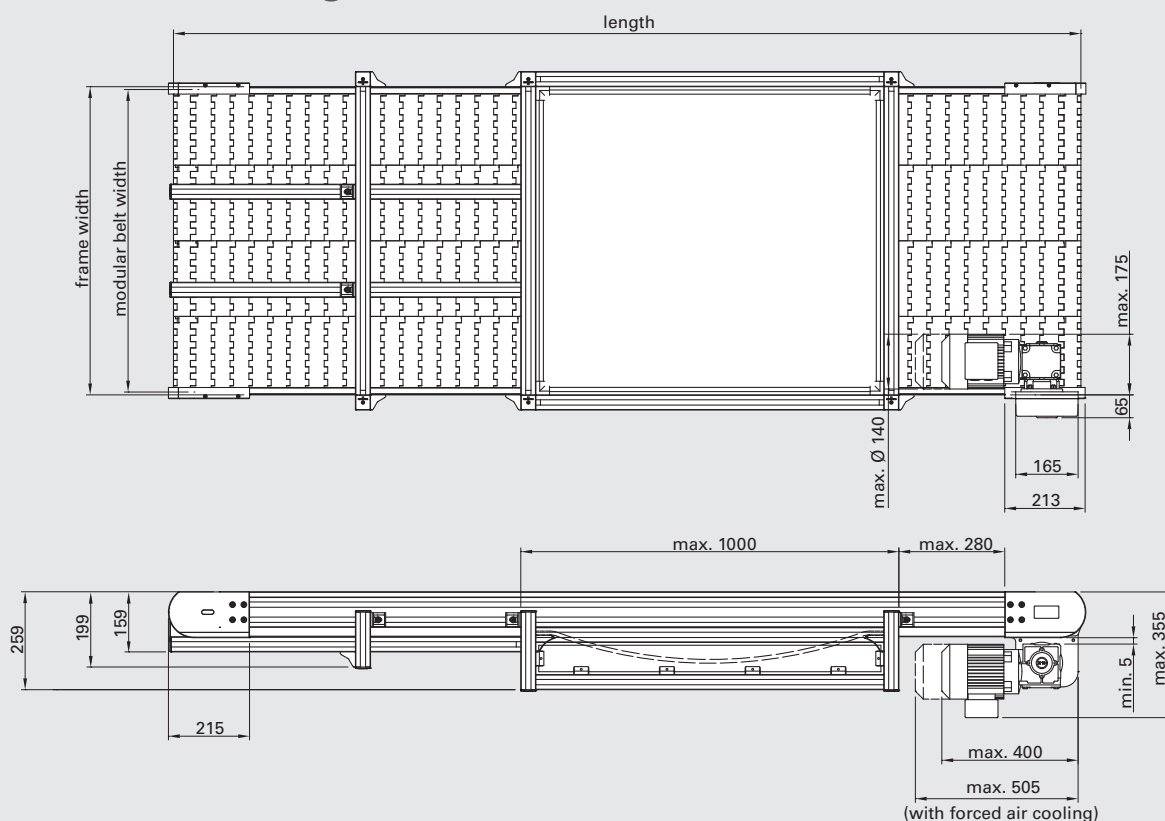
Technical Data

Belt speeds from
6 m/min up to 50 m/min

Drive power depending on belt speed
and load ranging from
0.25 kW to 0.55 kW
(208-230/460V; 50/60Hz; IP54)
Max. total load of material 750 kg
Modular belt pitch 1 inch

Modular belt design

Modular belt open
Modular belt closed

**Drive Option¹****Front End Timing Belt Drive****Front End Direct Drive****Front End Timing Belt Drive**

Technical drawing of the SCS 1000 system, showing top and side views with dimensions.

Top View Dimensions:

- length
- frame width
- modular belt width
- max. Ø 140
- max. 190

Side View Dimensions:

- max. 1000
- max. 280
- 10
- max. 230
- max. 405
- max. 460
- (with forced air cooling)

Description	Min. length ³	Max. length ³	Min. modular belt width ⁴	Max. modular belt width ⁴
C8M Straight front end timing belt drive	1500 mm	12000 mm	150 mm	2000 mm
C8M Straight front end direct drive	1500 mm	12000 mm	150 mm	2000 mm

Please use our request form at www.robotunits.com.

- 1) Only pulling direction is possible
- 2) Design options on request
- 3) Special lengths are available upon request
- 4) Modular belt widths can be ordered ranging from min. 150 mm to max. 2000 mm in steps of 50 mm.

C8M

Curved Modular Belt Conveyors

**Application**

Used for a wide variety of conveying applications

Technical Data

Belt speeds from
6 m/min up to 30 m/min

Drive power depending on belt speed
and load ranging from
0.25 kW to 0.55 kW

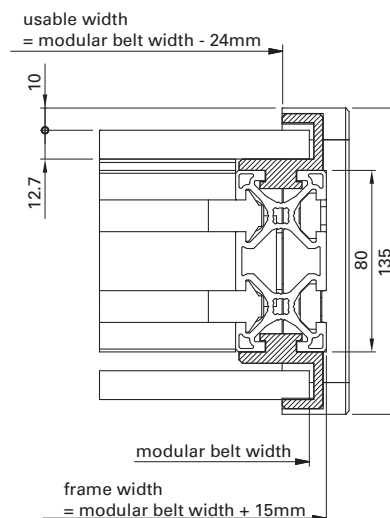
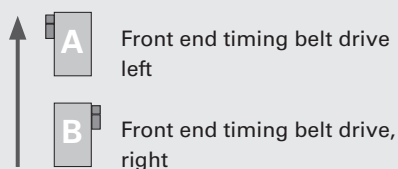
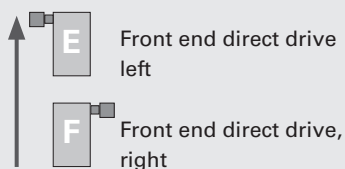
(208-230/460V; 50/60Hz; IP54)

Maximum load to be conveyed: on
request

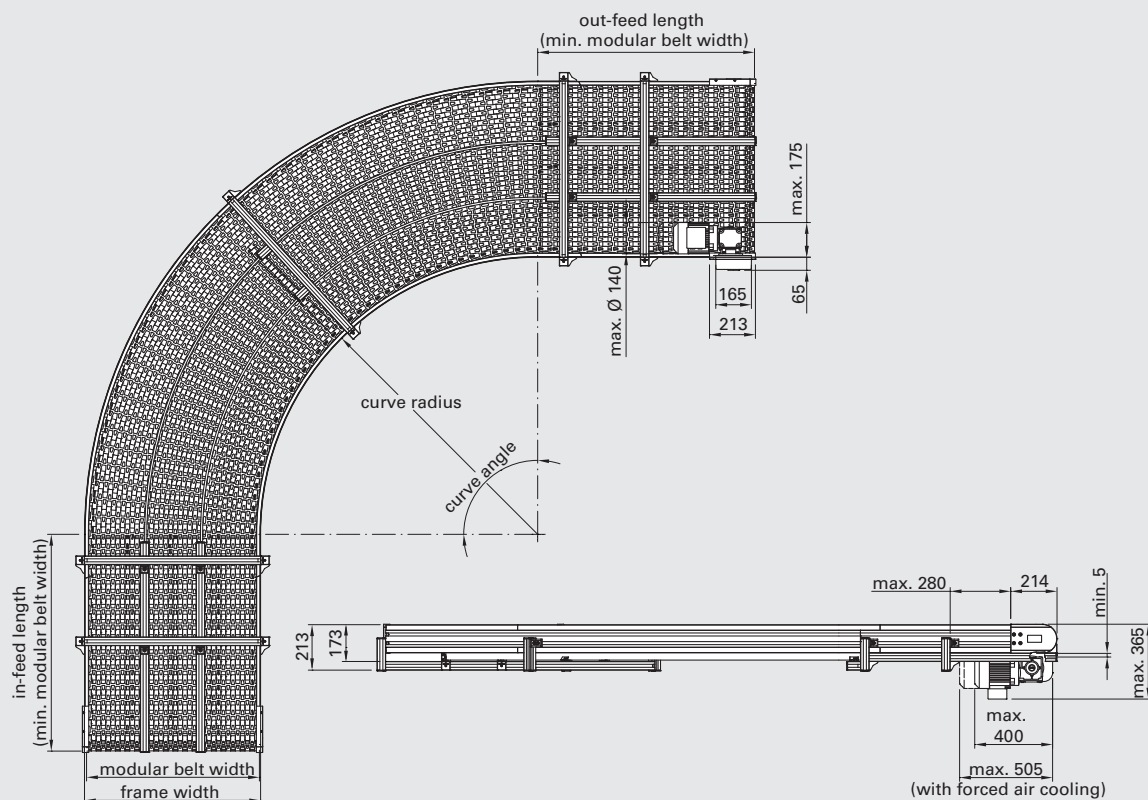
Modular belt pitch 1 inch

Modular belt design

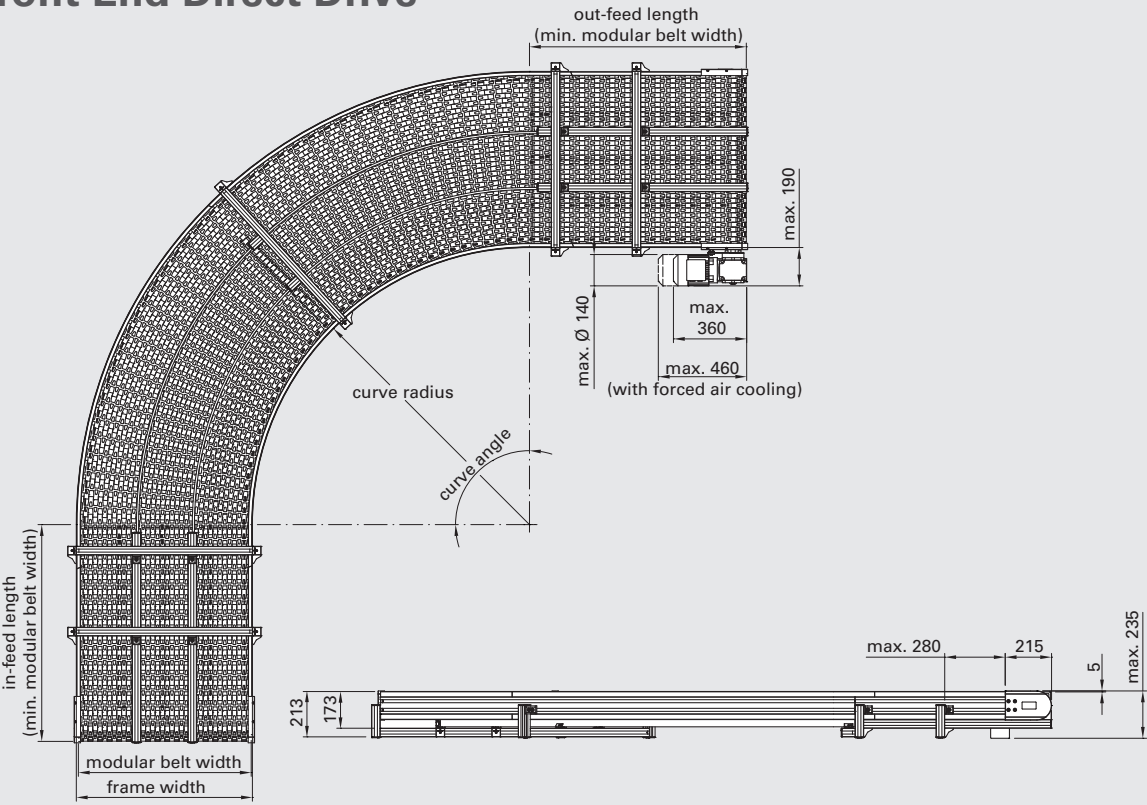
Modular belt open

Drive Option¹**Front End Timing Belt Drive****Front End Direct Drive**

Front End Timing Belt Drive



Front End Direct Drive



Design Options²

Side view



Top view



Frame Width

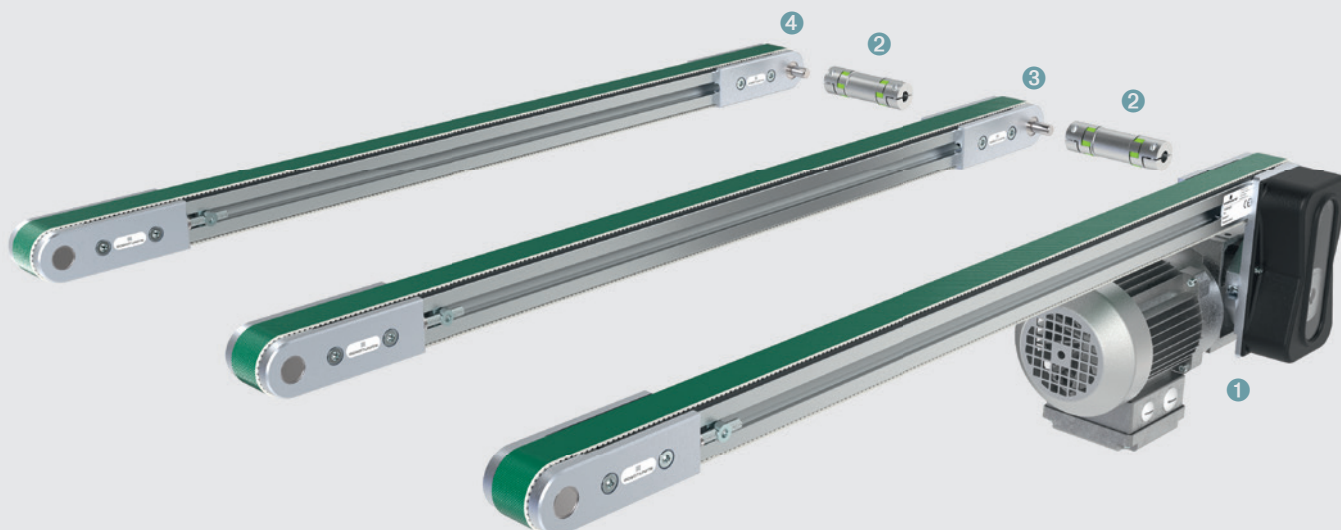
Description	Frame width min. ³	Frame width max. ³
C8M Curved front end timing belt drive	215 mm	1215 mm
C8M Curved front end direct drive	215 mm	1215 mm

Request For Quote / Order

Please use our request form at www.robotunits.com.

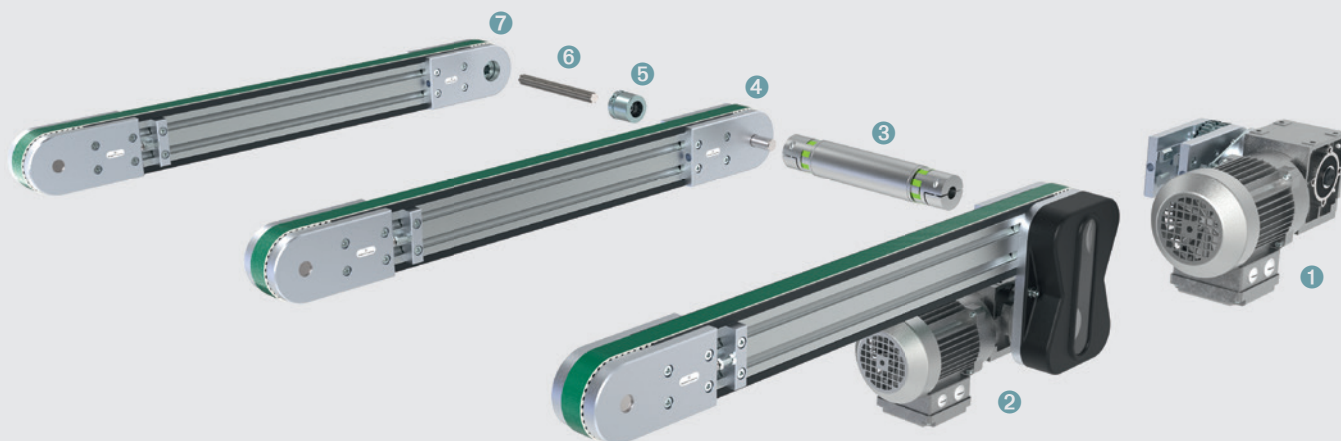
- 1) Only pulling direction is possible
 - 2) Design options on request
 - 3) Frame widths can be ordered ranging from min. 215 mm to max. 1215 mm in steps of 50 mm.
- Drawing dimensions in mm

C4T Timing Belt Conveyor Drive And Connection Options



- ① Front end timing belt drive, right, with output shaft (page 32)
- ② Connection shaft with coupling COL 5220 (page 162)
- ③ Timing belt lane without motor, output shaft, right (page 32)
- ④ Timing belt lane without motor, with output shaft, right (page 32)

C8T Timing Belt Conveyor Drive And Connection Options



- ① Front end direct drive, right, with output shaft (page 34)
- ② Front end timing belt drive, right, with output shaft (page 34)
- ③ Connection shaft with coupling COL 5240 (page 162)
- ④ Timing belt lane without motor, with output shaft on both sides (page 34)
- ⑤ Connection Hub COP 4501 (page 129)
- ⑥ Splined Shaft COL 8500 (page 129)
- ⑦ Timing belt lane without motor, with splined shaft hub (page 34)

**Application**

Used for a wide variety of conveying applications

Technical Data

Speeds from 3 m/min up to 58 m/min

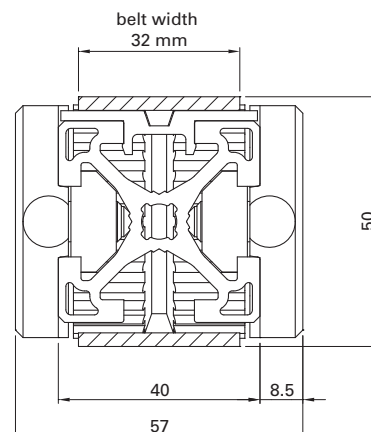
Drive power depending on belt speed and load ranging from 0.12 kW to 0.37 kW
(208-230/460V; 50/60Hz; IP54)
Max. total load of material 160 kg

Pulley

Number of teeth per pulley = 30
Pitch circle diameter = 47.75 mm

Belt Type

Standard application, cleated for incline transport, accumulation, etc.

**Drive Option¹****Front End Timing Belt Drive**

- A** Front end timing belt drive, left
- B** Front end timing belt drive, right
- O** Front end timing belt drive, left and output shaft
- P** Front end timing belt drive, right and output shaft

Timing Belt Lane Without Motor

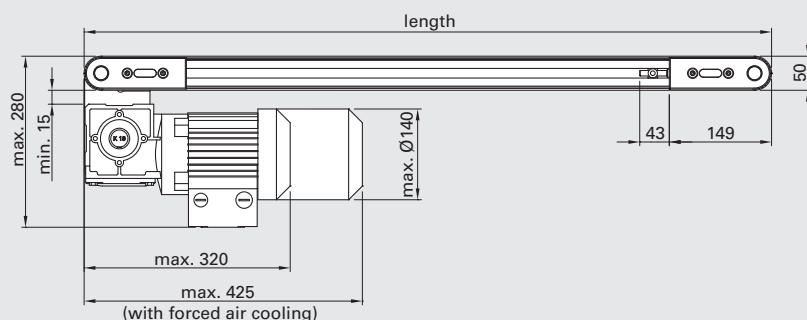
- T** Timing belt lane with output shaft on both sides
- U** Timing belt lane with output shaft, left
- V** Timing belt lane with output shaft, right

Front End Timing Belt Drive, Double Lane

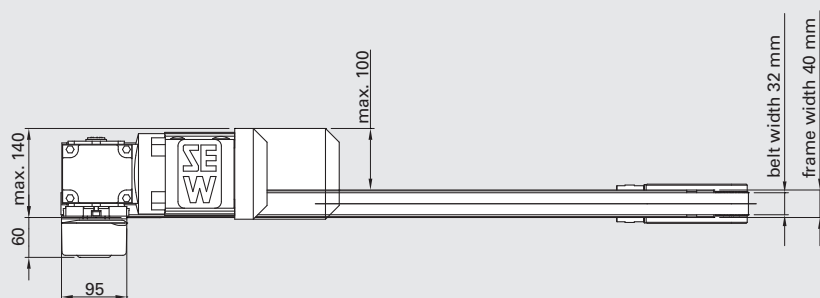
- A 2** Front end timing belt drive, left, double lane
- B 2** Front end timing belt drive, right, double lane

Front End Timing Belt Drive, Triple Lane

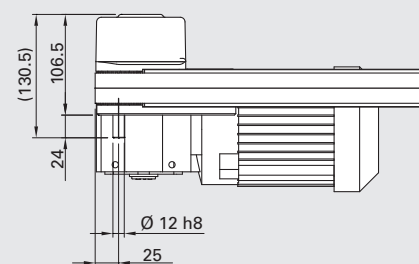
- A 3** Front end timing belt drive, left, triple lane
- B 3** Front end timing belt drive, right, triple lane

Front End Timing Belt Drive

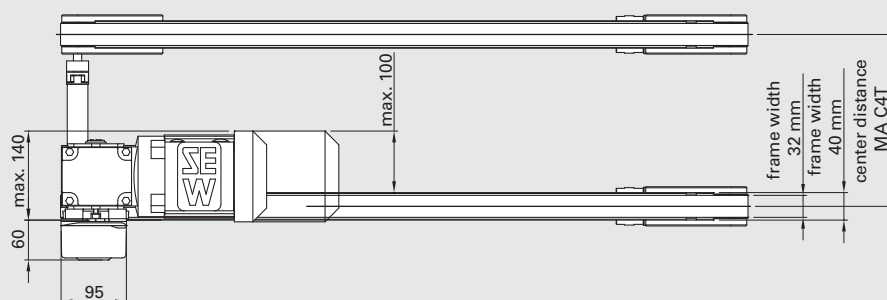
Front End Timing Belt Drive



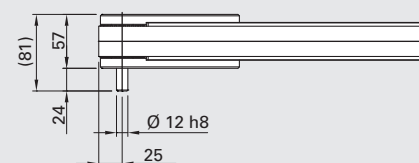
O/P



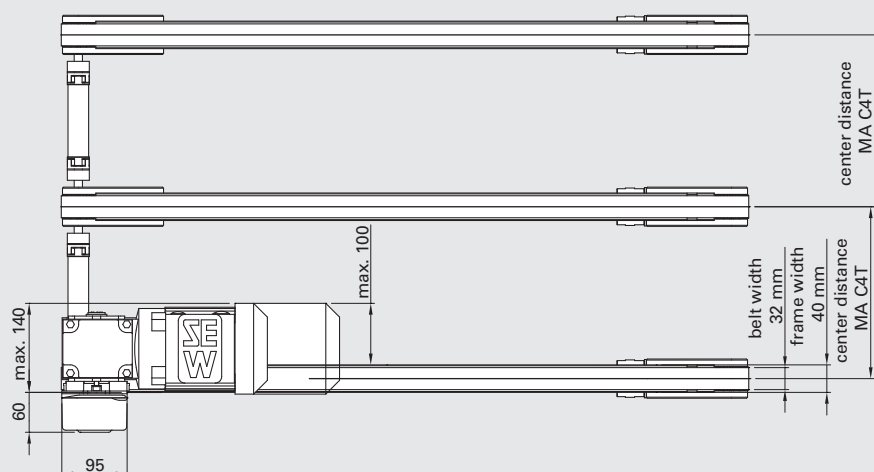
Front End Timing Belt Drive, Double Lane



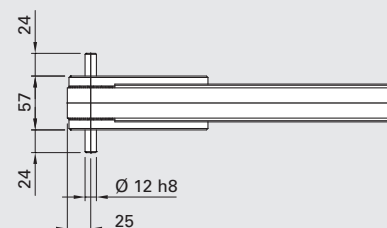
U/V



Front End Timing Belt Drive, Triple Lane



T



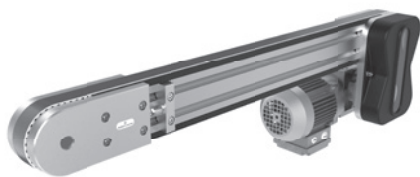
Length And Frame Width

Description	Min. length	Max. length	MA1	MA2
Timing Belt Conveyor 40 Front end timing belt drive	400 mm	12000 mm		
Timing Belt Conveyor 40 Front end timing belt drive, double lane	400 mm	12000 mm	----	
Timing Belt Conveyor 40 Front end timing belt drive, triple lane	400 mm	12000 mm	----	----
Timing Belt Conveyor 40 Timing belt lane without motor	400 mm	12000 mm		

Order Placement

Please use our Belt Conveyor configuration tool or our request form at www.robotunits.com

1) Standard direction is pulling. The running direction of all drives can be changed by reversing the polarity of the motor.
Drawing dimensions in mm

**Application**

Used for a wide variety of conveying applications

Technical Data

Speeds from 6 m/min up to 66 m/min

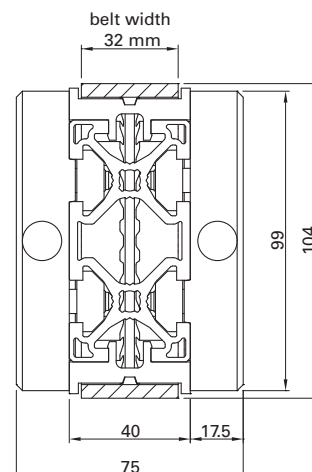
Drive power depending on belt speed and load ranging from 0.25 kW to 0.37 kW
(208-230/460V; 50/60Hz; IP54)
Max. total load of material 400 kg

Pulley

Number of teeth per pulley = 32
Pitch circle diameter = 101.85 mm

Belt Type

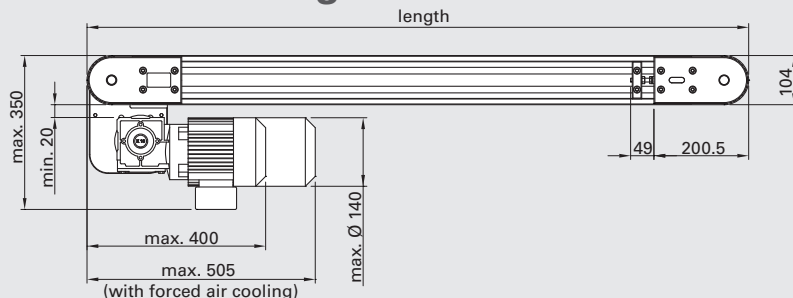
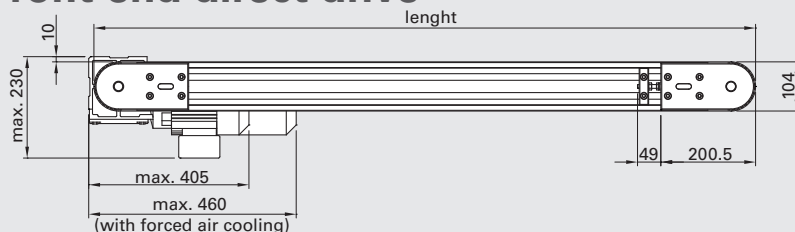
Standard application, cleated for incline transport, accumulation, etc.

**Drive Option¹****Front End Timing Belt Drive, Fmax 4000 N**

- A** Front end timing belt drive, left
- B** Front end timing belt drive, right
- O** Front end timing belt drive, left and output shaft
- P** Front end timing belt drive, right and output shaft

Front End Direct Drive, Fmax 6000 N

- E** Front end direct drive left
- F** Front end direct drive, right
- R** Front end direct drive, left and output shaft
- S** Front end direct drive, right and output shaft

Front end timing belt drive**Front end direct drive****Front End Drive, Double Lane**

- A 2** Front end timing belt drive, left, double lane
- B 2** Front end timing belt drive, right, double lane
- E 2** Front end direct drive, left, double lane
- F 2** Front end direct drive, right, double lane

Front End Drive, Triple Lane

- A 3** Front end timing belt drive, left, triple lane
- B 3** Front end timing belt drive, right, triple lane
- E 3** Front end direct drive left, triple lane
- F 3** Front end direct drive right, triple lane

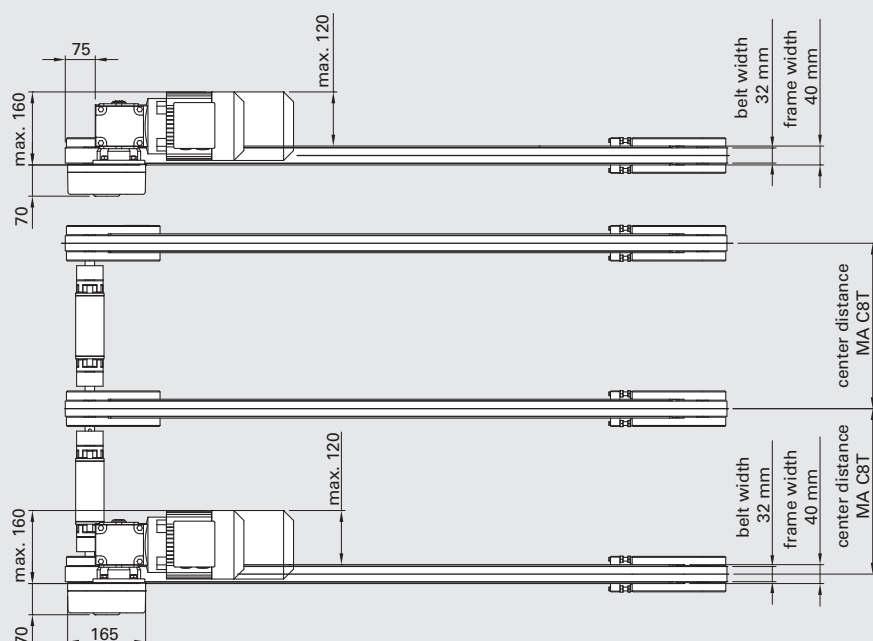
Timing Belt Lane Without Motor

- T** Timing belt lane with output shaft on both sides
- U** Timing belt lane with output shaft, left
- V** Timing belt lane with output shaft, right

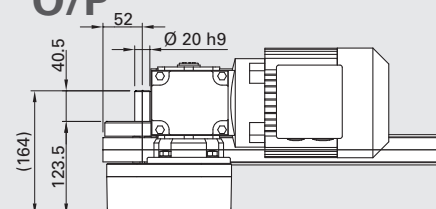
Timing Belt Lane Without Motor, Adjustable

- W** Timing belt lane with splined shaft hub

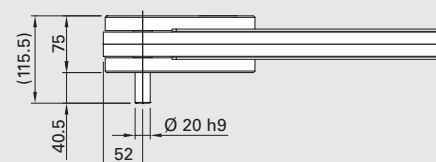
Front End Timing Belt Drive, Double-, Triple Lane



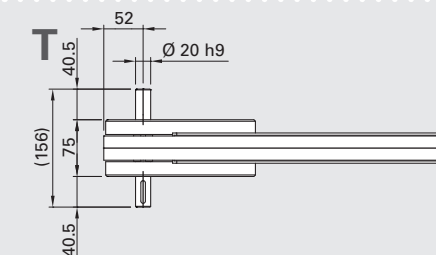
O/P



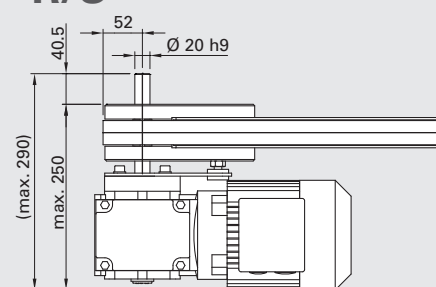
U/V



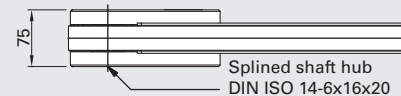
T



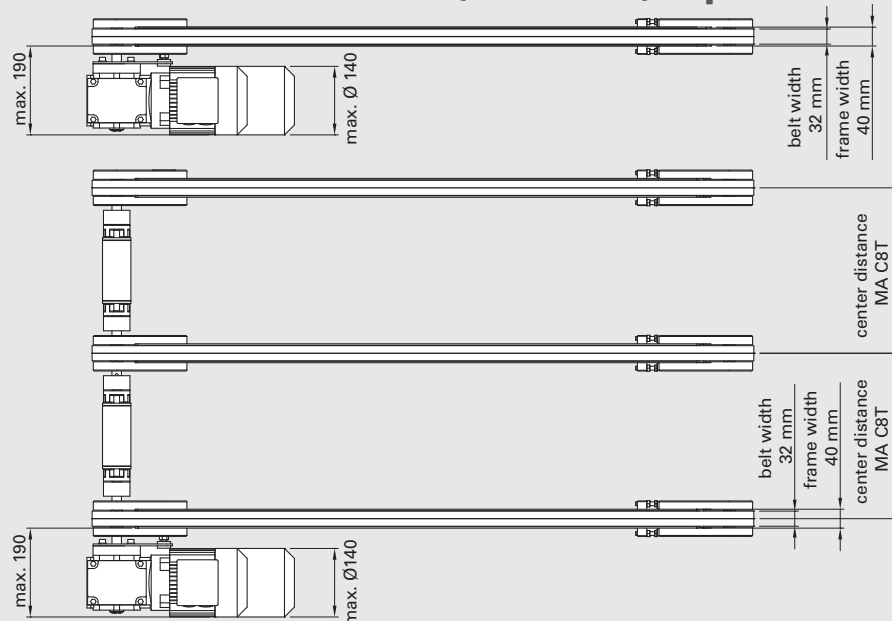
R/S



W, adjustable



Front End Direct Drive, Double-, Triple Lane



Length And Frame Width

Description	Min. length	Max. length	MA1	MA2
Timing Belt Conveyor 80 Front end timing belt drive	550 mm	12000 mm		
Timing Belt Conveyor 80 Front end timing belt drive, double lane	550 mm	12000 mm	----	
Timing Belt Conveyor 80 Front end timing belt drive, triple lane	550 mm	12000 mm	----	----
Timing Belt Conveyor 80 Front end direct drive	550 mm	12000 mm		
Timing Belt Conveyor 80 Front end direct drive, double lane	550 mm	12000 mm	----	
Timing Belt Conveyor 80 Front end direct drive, triple lane	550 mm	12000 mm	----	----
Timing Belt Conveyor 80 Timing belt lane without motor	550 mm	12000 mm		

Order Placement

Please use our Belt Conveyor configuration tool or our request form at www.robotunits.com

- 1) Standard direction is pulling. The running direction of all drives can be changed by reversing the polarity of the motor.



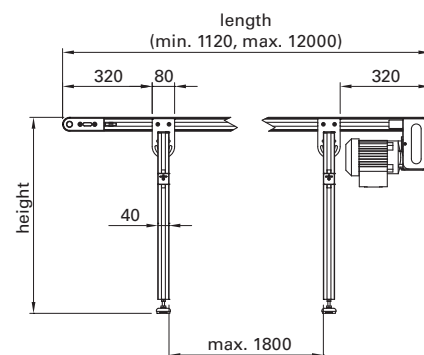
Application
Stand for C4T

Technical Data

Material: clear anodized aluminum;
galvanized GD-Zn; galvanized steel;
rubber

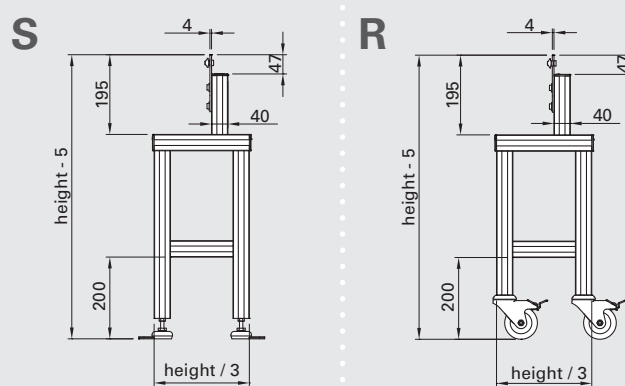
Scope of Delivery

Stand segment fully assembled and
attached to belt conveyor if applicable



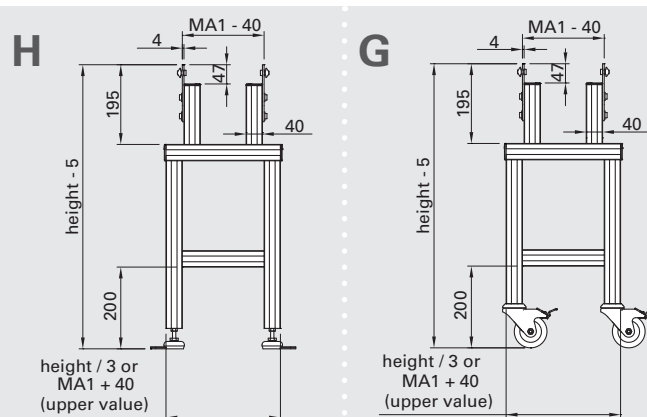
Stand Types: Single Lane

Stand Types: Double Lanes



Leveling bases BAS 5108
Height adjustment ± 15 mm

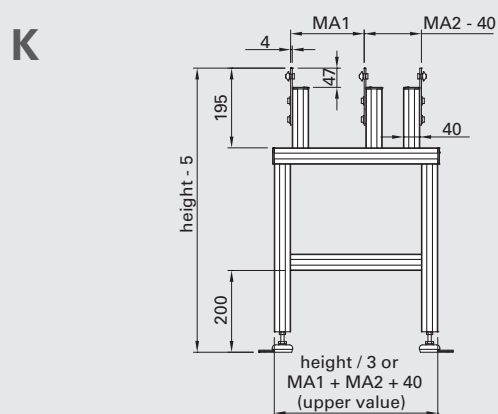
Swivel castors with brake
CAS 3080



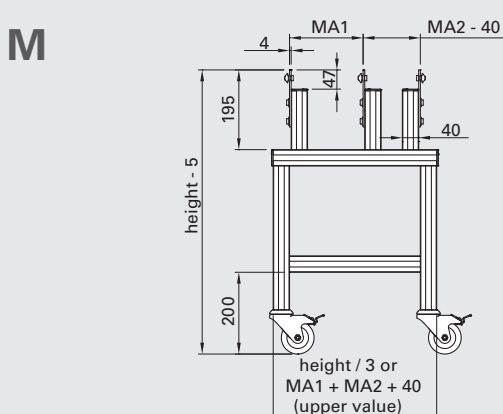
Leveling bases BAS 5108
Height adjustment ± 15 mm

Swivel castors with brake
CAS 3080

Stand Types: Triple Lane



Leveling bases BAS 5108
Height adjustment ± 15 mm



Swivel castors with brake
CAS 3080

Order Code

Description	Order Code ¹				
	Length	Type	Height	MA1	MA2
Conveyor Stand 40	C4G	___	NN	___	___

1) Please complete the order code by adding the corresponding parameters for order processing.

Drawing dimensions in mm

C8G

Conveyor Stand 80

**Application**

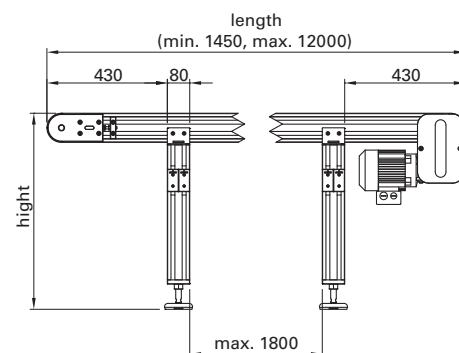
Stand for C8T

Technical Data

Material: clear anodized aluminum;
galvanized GD-Zn; galvanized steel;
rubber

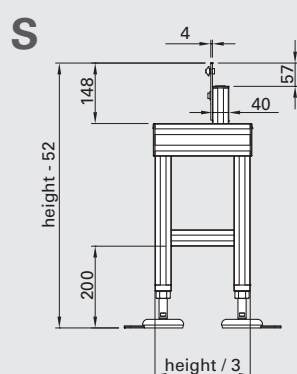
Scope of Delivery

Stand segment fully assembled and
attached to belt conveyor if applicable

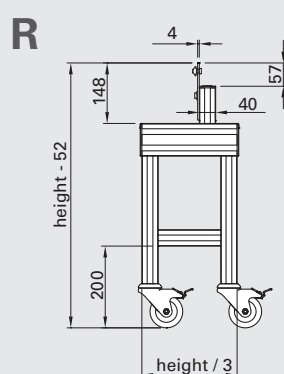


Stand Types: Single Lane

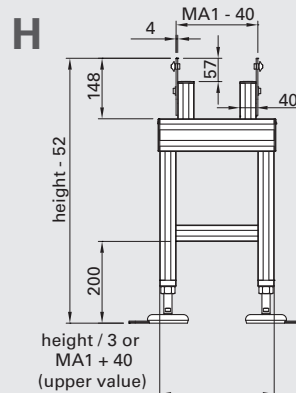
Stand Types: Double Lanes



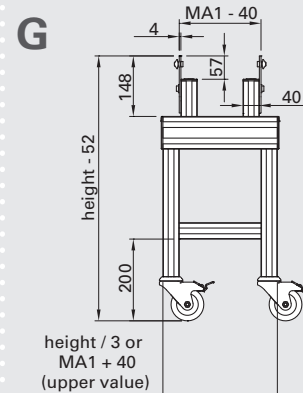
Leveling bases BAS 1120
Height adjustment ± 30 mm



Swivel castors with brake
CAS 3080

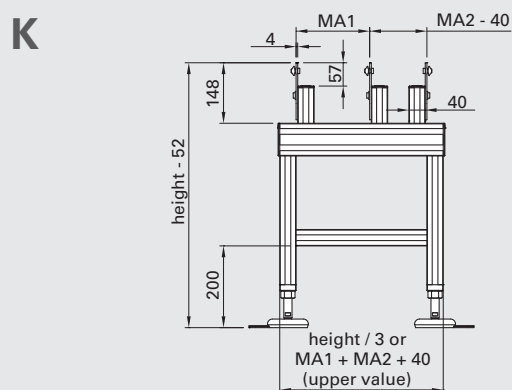


Leveling bases BAS 1120
Height adjustment ± 30 mm

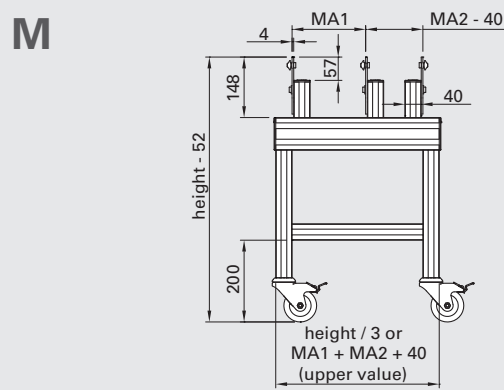


Swivel castors with brake
CAS 3080

Stand Types: Triple Lane



Leveling bases BAS 1120
Height adjustment ± 30 mm



Swivel castors with brake
CAS 3080

Order Code

Description	Order Code ¹				
	Length	Type	Height	MA1	MA2
Conveyor Stand 80	C8G	----	NN	----	----

1) Please complete the order code by adding the corresponding parameters for order processing.

Drawing dimensions in mm

Application

Zero-pressure accumulation conveying of products in various sizes

Technical Data

Material:

Galvanized steel rollers

Round belt TPU

Base frame made of clear anodized aluminum; galvanized GD-Zn; galvanized steel

Drive roller:

24 V DC motor

Speeds from 10 m/min up to 30 m/min

Temperature range from +2°C to +40°C

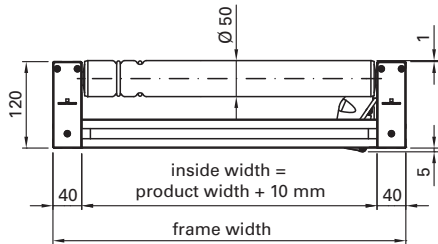
Conveyor rollers driven with round belts

Control unit:

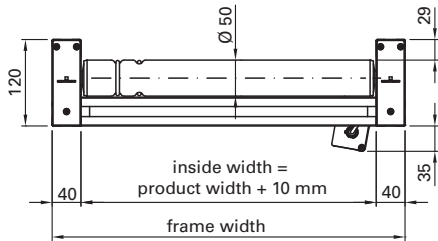
Completely pre-installed incl. sensors

Max. product load 50 kg

Option without side guides



Option with side guides

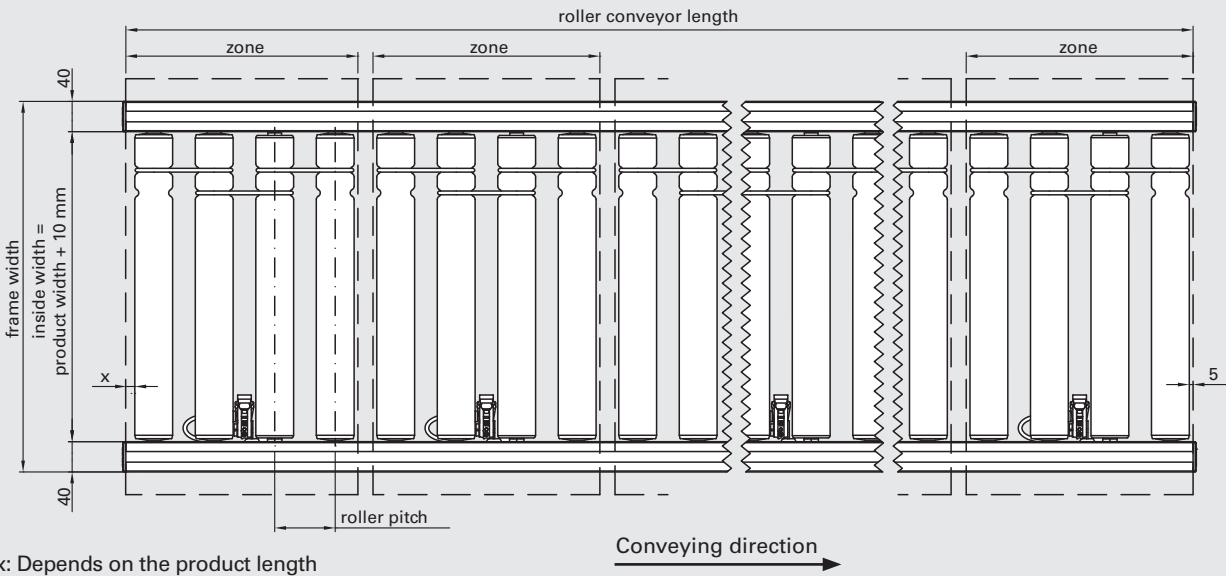


Supported control protocols:

Modbus/TCP, Profinet IO, EtherNet/IP,

EtherCAT

Dimensions



Standard Widths, Lengths And Roller Pitch

Description	Frame Width	Inside width	Product width	Standard length up to
Powered Roller Conveyor Straight	490 mm	410 mm	400 mm	6000 mm
Powered Roller Conveyor Straight	690 mm	610 mm	600 mm	6000 mm

Standard Roller Pitch

80 mm (for product length 300 mm in conveying direction)

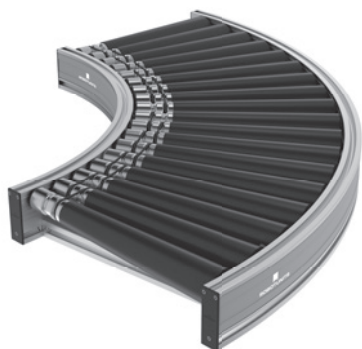
105 mm (for product length 400 mm mm in conveying direction)

160 mm (for product length 600 mm mm in conveying direction)

Special widths (inside width min. 347 mm, inside width max. 1210 mm), special lengths and special roller pitch are available on request.
Guide line for roller pitch = product length in conveying direction / 3.75

R5C

Powered Roller Conveyor Curved

**Application**

Zero-pressure accumulation conveying of products in various sizes

Technical Data**Material:**

Galvanized steel rollers

Round belt TPU

Base frame made of clear anodized aluminum; galvanized GD-Zn; galvanized steel

Drive roller:

24 V DC motor

Speeds from 10 m/min up to 30 m/min

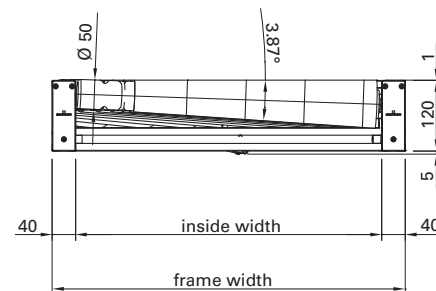
Temperature range from +2°C to +40°C

Conveyor rollers driven with round belts

Control unit:

Completely pre-installed incl. sensors

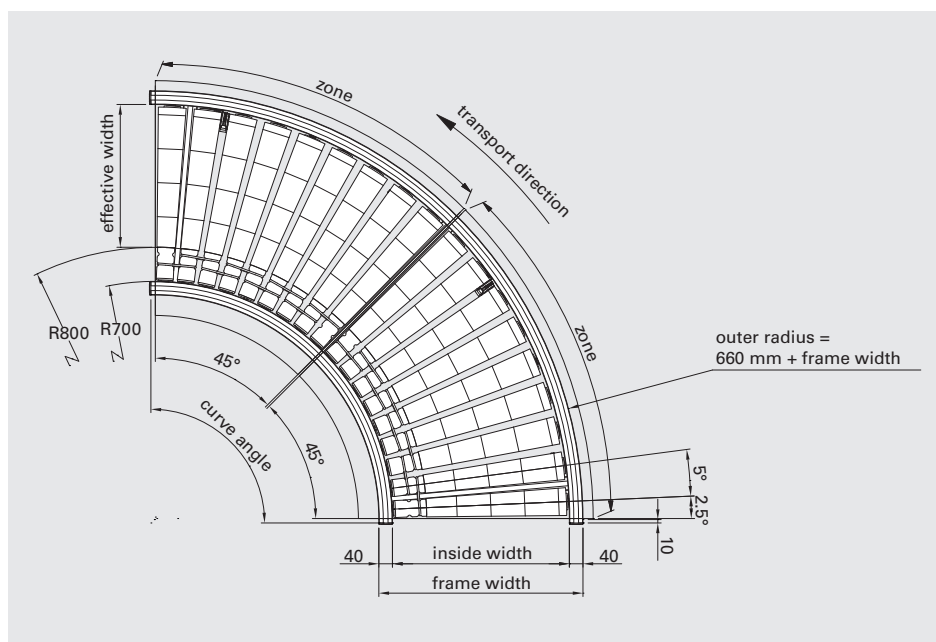
Max. product load 50 kg



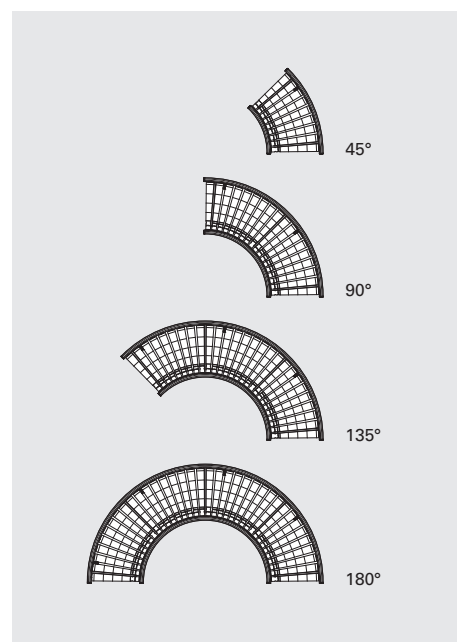
Supported control protocols:
Modbus/TCP, Profinet IO, EtherNet/IP,
EtherCAT

Side guides for curves available separately

Dimensions



Standard Angles



The inside width depends on the dimensions of the transported product. Inside width min. 347 mm, inside width max. 1100 mm
Special curve angles are available on request.

Request For Quote / Order

Please use our request form at www.robotunits.com.

R5F

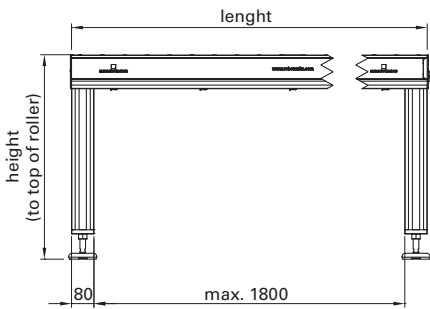
Roller Conveyor Stand



Application
Stand for R5S

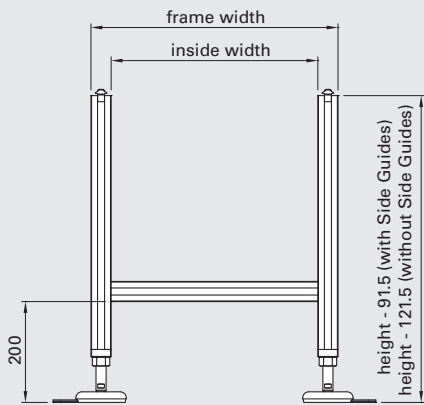
Technical Data
Material: clear anodized aluminum;
galvanized GD-Zn; galvanized steel; PA
6 or rubber

Scope of Delivery
Stand segment fully assembled



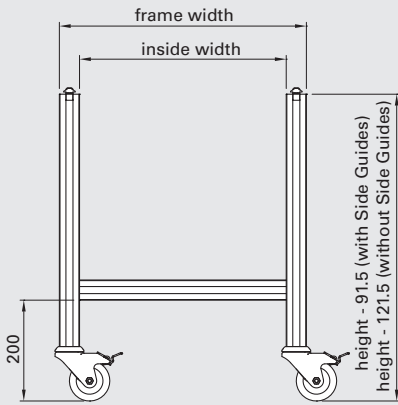
Standard Conveyor Stands

S



Leveling bases BAS 1120
Height adjustment ± 30 mm

R



Swivel Castors with brake
CAS 3080

Order Code

Description	Order Code ¹		
	Frame Width	Type	Height
Roller Conveyor Stand	R5F	__ NN	__

1) Please complete the order code by adding the corresponding parameters for order processing.
Drawing dimensions in mm

CAP 4013

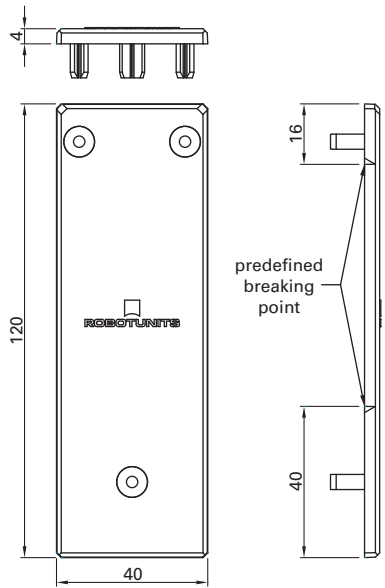
End Cap

Application

- Cover for extrusion ends (PIL 4012)
- Self-centering
 - Retained through expanding anchor
 - Can be separated along predefined breaking points for attachments

Technical Data

Material: black ABS V0 composite



Order Code

Description	Scope of Delivery		Order Code	Weight
	CAP 4012	BKS 4x13		
End Cap Kit 40x120	1	3	CAP 4013	0.019 kg

**Application**

Power supply for powered roller conveyor consisting of control cabinet incl. CEE plug, power supply cable and connecting cable to roller conveyor.

A maximum of 12 motor rollers may be connected to a power supply.

Technical Data

Housing material: powder-coated RAL 7035

Operating voltage: 400 VAC

Power frequency: 50 Hz

Control voltage: 24 VDC

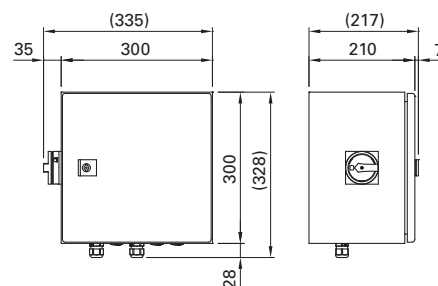
Rated current: 10 A

Connected load: 6.9 kW

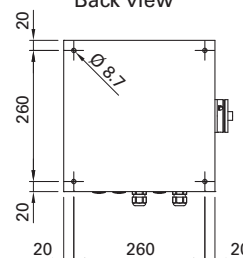
IP rating: IP54

Scope of delivery

Wired to roller conveyor



Back view



Order Code

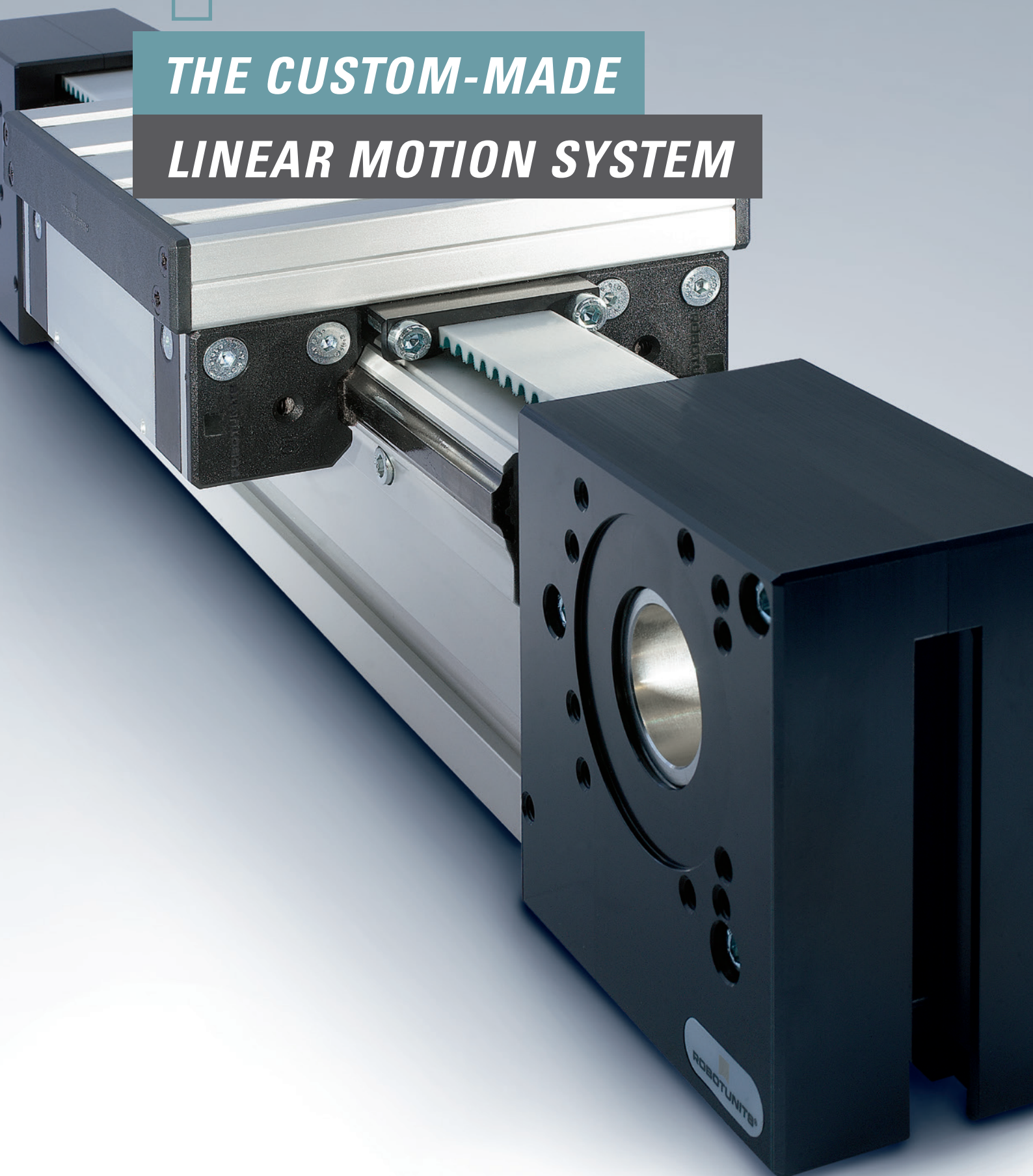
Description	Order Code ¹	Weight
	Length	
Roller Conveyor Power Supply	SUL 2000 SNN ____	10 kg + 0.2 kg/m power cable connection

1) Please complete the order code by adding the desired length of the power supply cable connection.

Drawing dimensions in mm



***THE CUSTOM-MADE
LINEAR MOTION SYSTEM***



Customized linear motion technology. Based on our proven Extrusion and Fastening Technology, we have developed Linear Motion Units that meet the highest customer expectations in terms of versatility, stability and efficiency.

Robotunits offers a Linear Motion System of the highest quality and precision, with a maximum potential for cost and time savings in design and assembly.



Fully integrated Linear Motion System

- completely compatible with the entire Modular Automation System
- belt return inside the extrusion
- leaves 3 sides of the extrusion free for additional attachments
- available in 50 mm series



It runs and runs and runs ...

- single or double idlers can be used, depending on the load
- high strength due to special captive design of idler extrusion
- large rollers
- integrated fastening option for Flexible Energy Chain



Guiderails instead of guide systems

- easily mounted guiderails eliminate the need for a separate guide system
- playfree datum edge positioning
- hardened, tempered steel guiderail allow heavier loads
- high wear resistance allows smooth and quiet operation
- quick and easy assembly



Modular design of linear motion units

- customized linear motion units, from single units to complex 3 axis gantry systems
- single and multiple guiderails available in one system
- X-,Y-,Z-combinations possible
- almost limitless combinations



Drive options

- motor selection tailored to performance requirements
- minimal design time through expansion coupling system
- one size pulley for all chassis sizes



Protection against damage

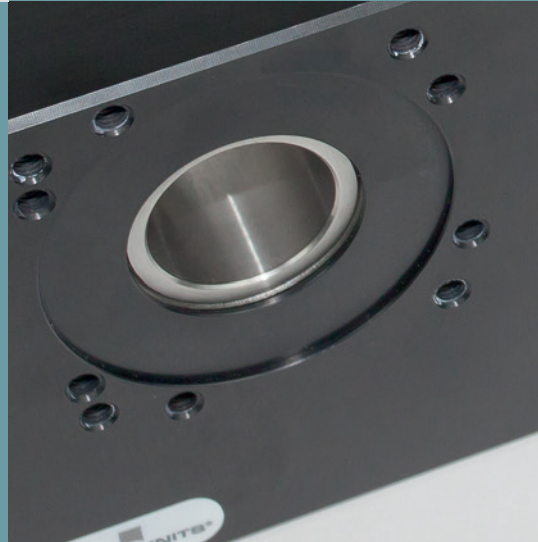
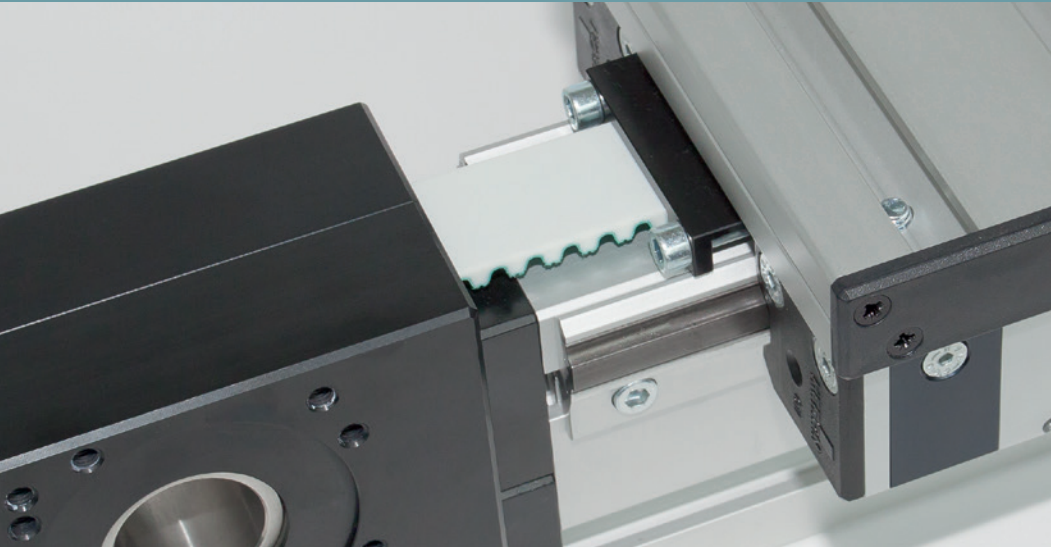
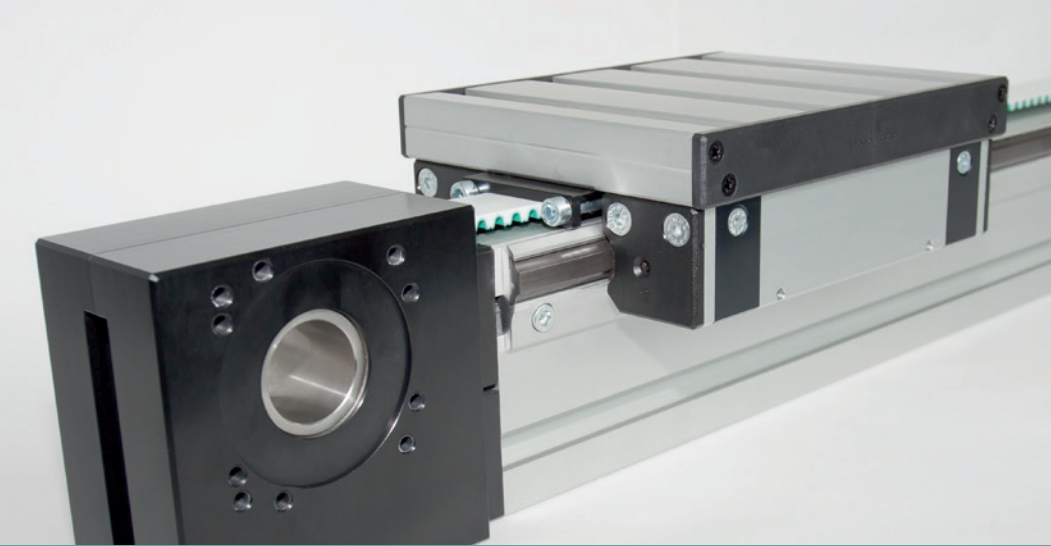
- integrated overrun protection prevents mechanical damage



Save time, cut cost

- easy selection of components
- easy to order
- minimal design time required
- quick and easy attachment of accessories
- easy installation





The Custom-Made Linear Motion System

Linear Motion Unit 50

Page 50

Linear Motion
Unit 50
LIL 5010



P. 50



Linear Motion Unit 100

Page 51

Linear Motion
Unit 100
LIL 1010



P. 51

Linear Motion Unit 50 With Omega Drive

Page 52

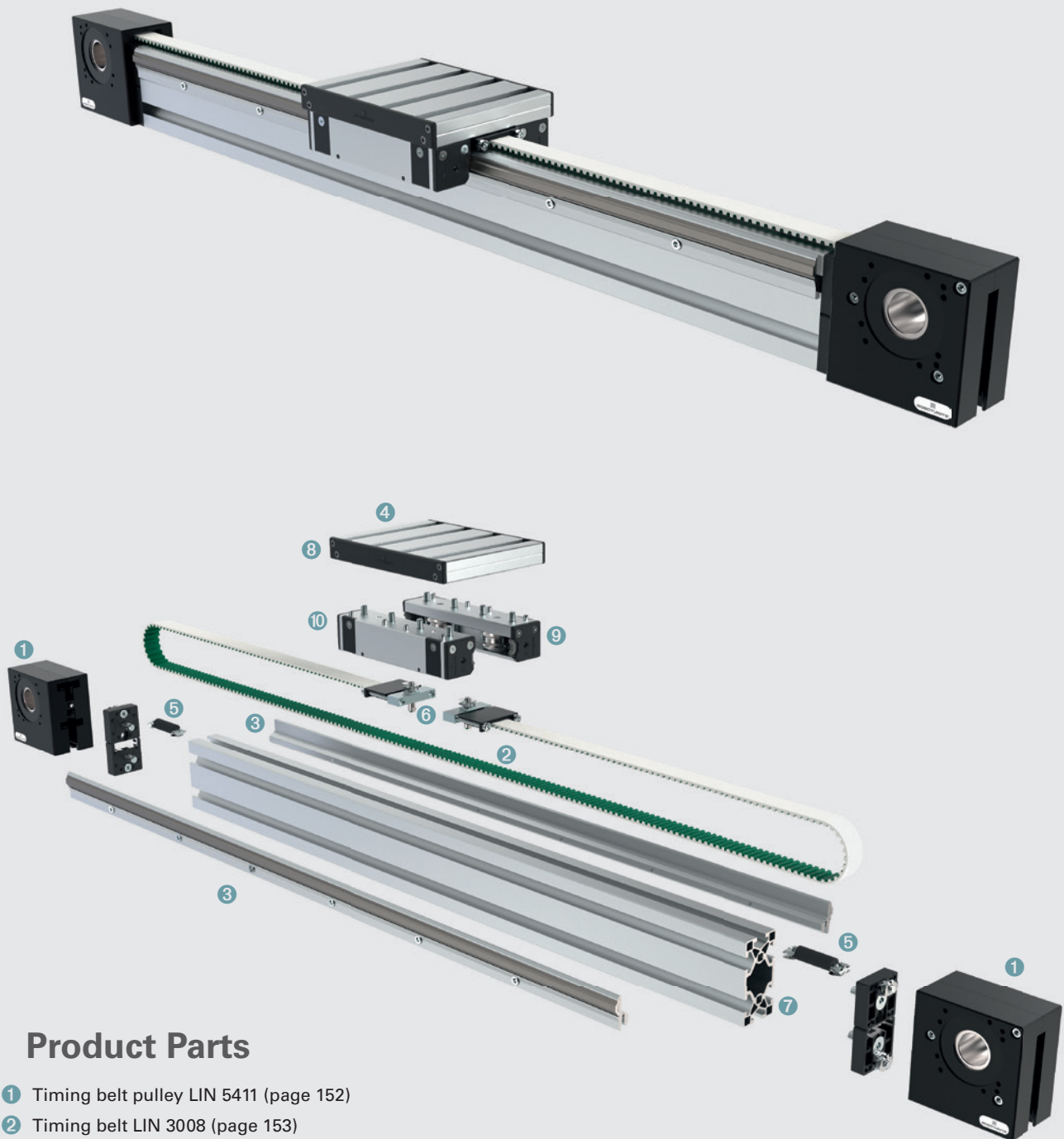
Linear Motion Unit
50 with Omega
drive LOL 5010



P. 52

Linear Motion Accessories Overview

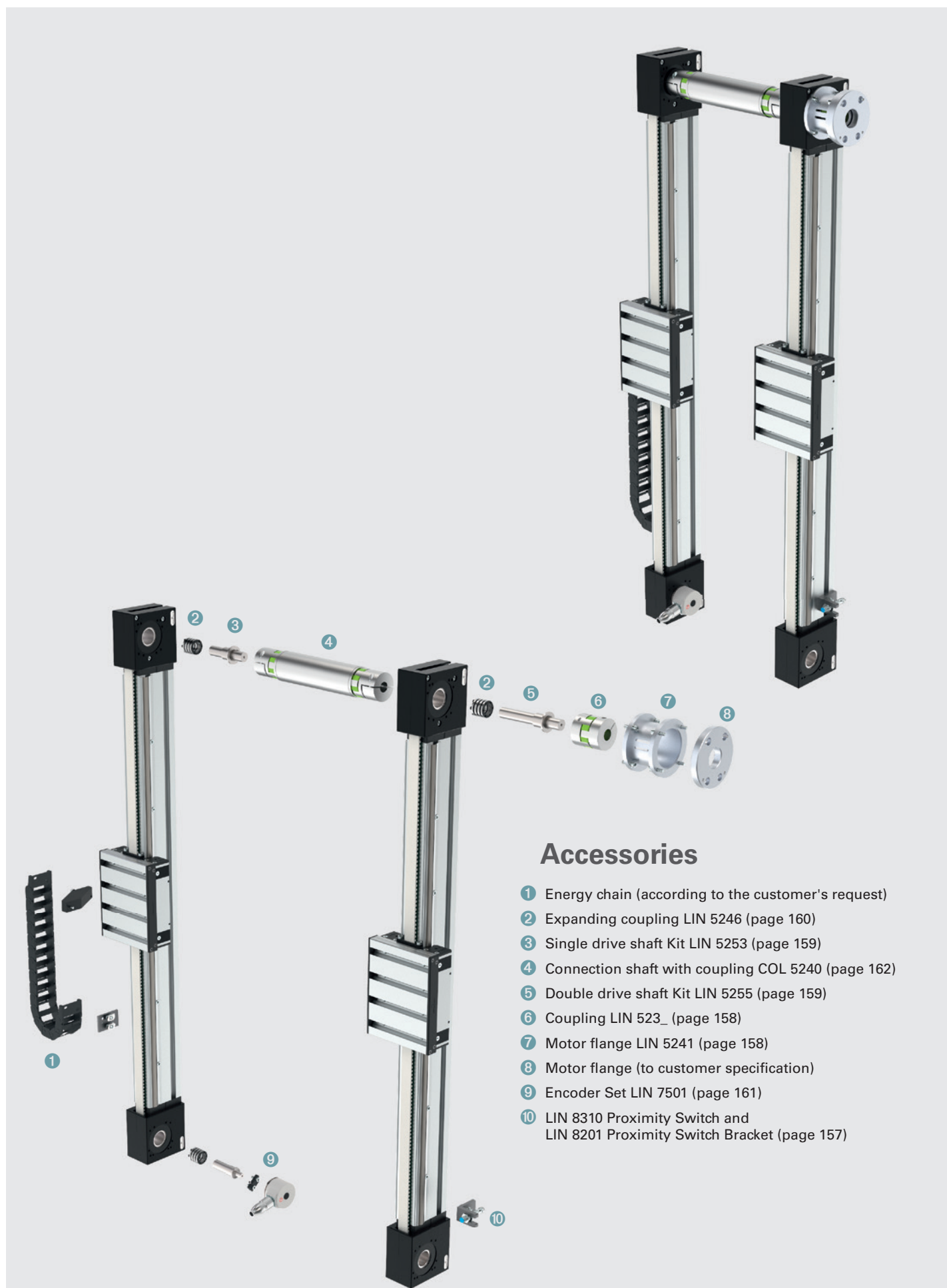
Page 127



Product Parts

- ① Timing belt pulley LIN 5411 (page 152)
- ② Timing belt LIN 3008 (page 153)
- ③ Guiderrail LIL 5000 SNN (page 155)
- ④ Carriage plates LIN 1501 / LIN 2001 (page 156)
- ⑤ Limit stop LIN 5191 (page 156)
- ⑥ Timing belt clamp LIN 3221 (page 153)
- ⑦ Extrusions, 50x50, 50x100, 50x200, or 100x100 (starting page 62)
- ⑧ End cap CAP 2521 (page 163)
- ⑨ Single idler Kit, concentric LIN 5001 or double idler Kit, concentric LIN 5011 (page 154)
- ⑩ Single idler Kit, eccentric LIN 5003 or double idler Kit, eccentric LIN 5013 (page 154)

Linear Motion System



Accessories

- ① Energy chain (according to the customer's request)
- ② Expanding coupling LIN 5246 (page 160)
- ③ Single drive shaft Kit LIN 5253 (page 159)
- ④ Connection shaft with coupling COL 5240 (page 162)
- ⑤ Double drive shaft Kit LIN 5255 (page 159)
- ⑥ Coupling LIN 523_ (page 158)
- ⑦ Motor flange LIN 5241 (page 158)
- ⑧ Motor flange (to customer specification)
- ⑨ Encoder Set LIN 7501 (page 161)
- ⑩ LIN 8310 Proximity Switch and LIN 8201 Proximity Switch Bracket (page 157)



Application

- For transportation and exact positioning of parts.
- Used as individual units or x-y-z gantries

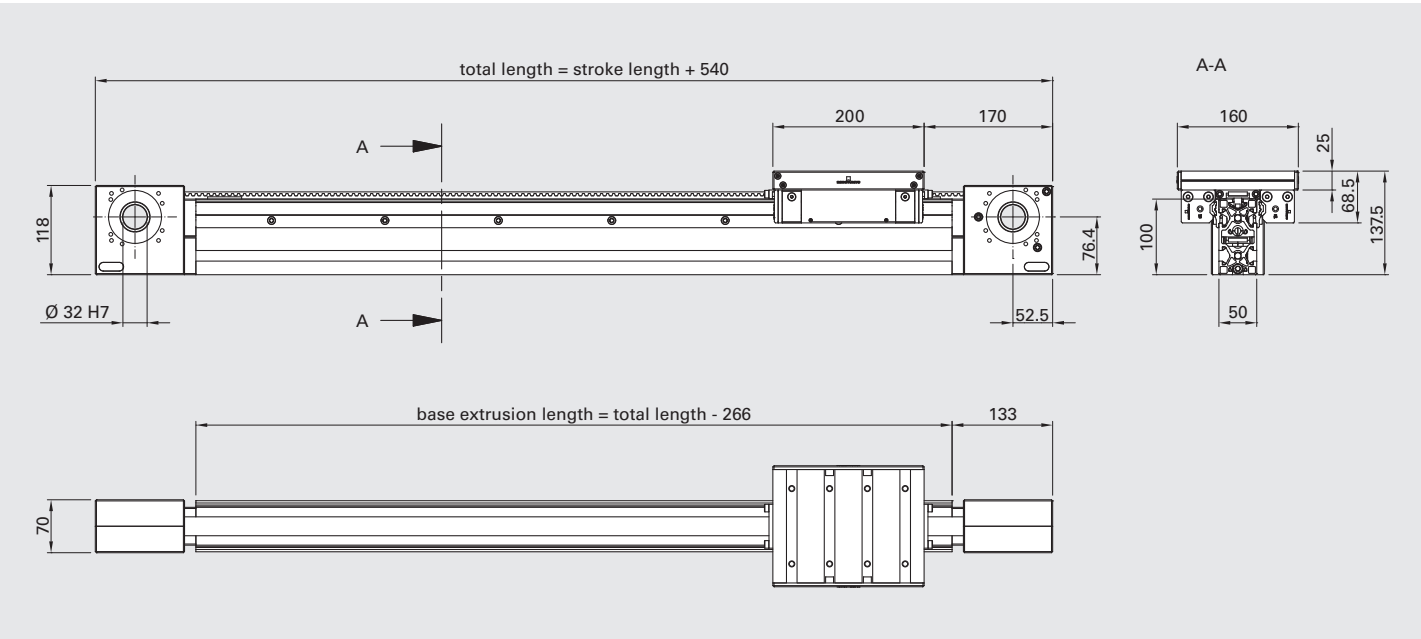
Technical Data / Scope of Delivery

Base extrusion 50x100 (PIL 5010)
 Standard carriage plate: 200x150 mm
 Md max.: 60 Nm (max. transmittable drive torque)
 Carriage stroke per revolution: 200 mm
 Pitch circle diameter: 63.66 mm
 Idle torque: 1 Nm
 Positioning accuracy: ± 0.2 mm (without drive backlash)
 Weight of carriage: 2.66 kg

A Wrench LIN 9990 (page 155) is needed to adjust the eccentric roller

Assembly Instructions
 See page 181

Dimensions



Order Code

Description	Order Code ¹		
	Base Extrusion	Type	Stroke Length ¹
Linear Motion Unit 50	LIL 5010	SNN	—

1) Please complete the order code by adding the desired stroke length in mm.
 Drawing dimensions in mm

LIL 1010

Linear Motion Unit 100

**Application**

- For transportation and exact positioning of parts.
- Used as individual units or x-y-z gantries

Technical Data / Scope of Delivery

Base extrusion 100x100 (PIL 1010)
 Standard carriage plate: 200x200 mm
 Md max.: 60 Nm (max. transmittable drive torque)
 Carriage stroke per revolution: 200 mm
 Pitch circle diameter: 63.66 mm
 Idle torque: 1 Nm
 Positioning accuracy: ± 0.2 mm (without drive backlash)
 Weight of carriage: 3.04 kg

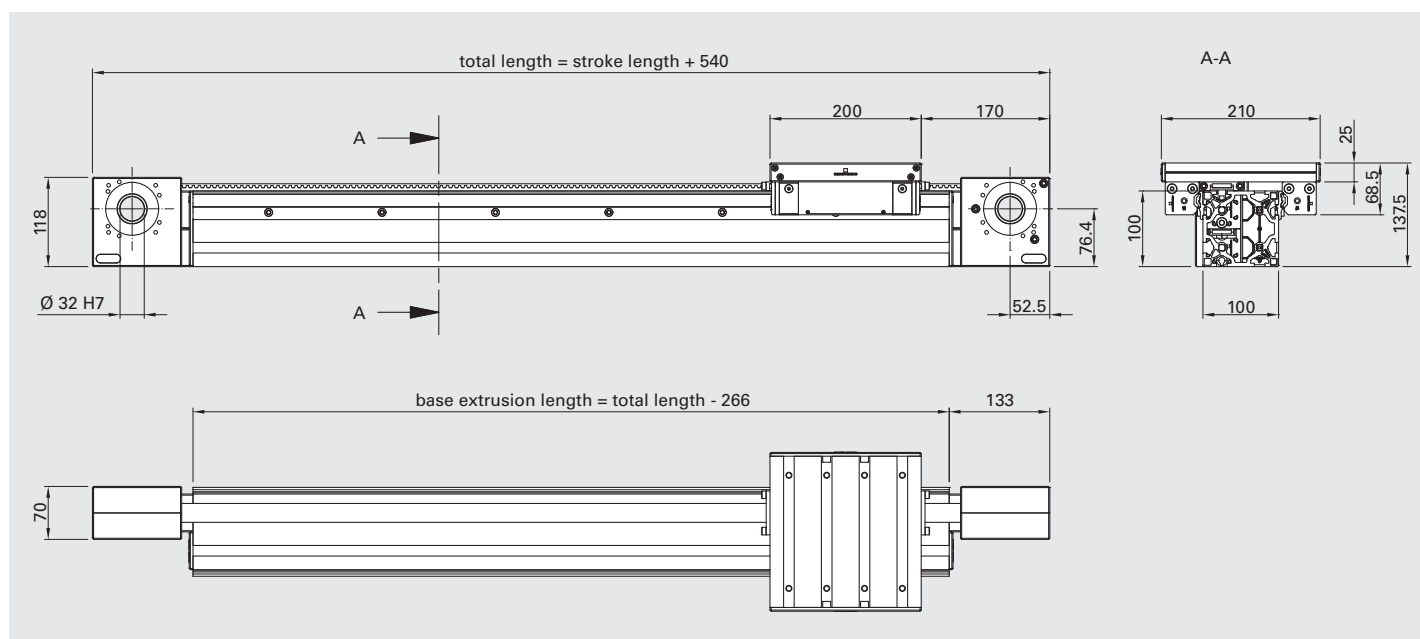
A Wrench LIN 9990 (page 155) is needed to adjust the eccentric roller

Assembly Instructions

See page 181



Dimensions

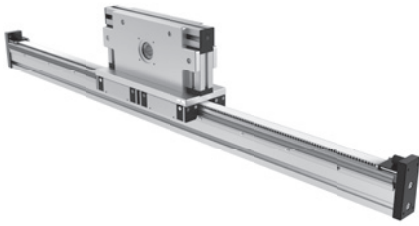


Order Code

Description	Order Code ¹		
	Base Extrusion	Type	Stroke Length ¹
Linear Motion Unit 100	LIL 1010	SNN	—

1) Please complete the order code by adding the desired stroke length in mm.

Drawing dimensions in mm



Application

- For transportation and exact positioning of parts.
- Used as individual units or x-y-z gantries

Technical Data / Scope of Delivery

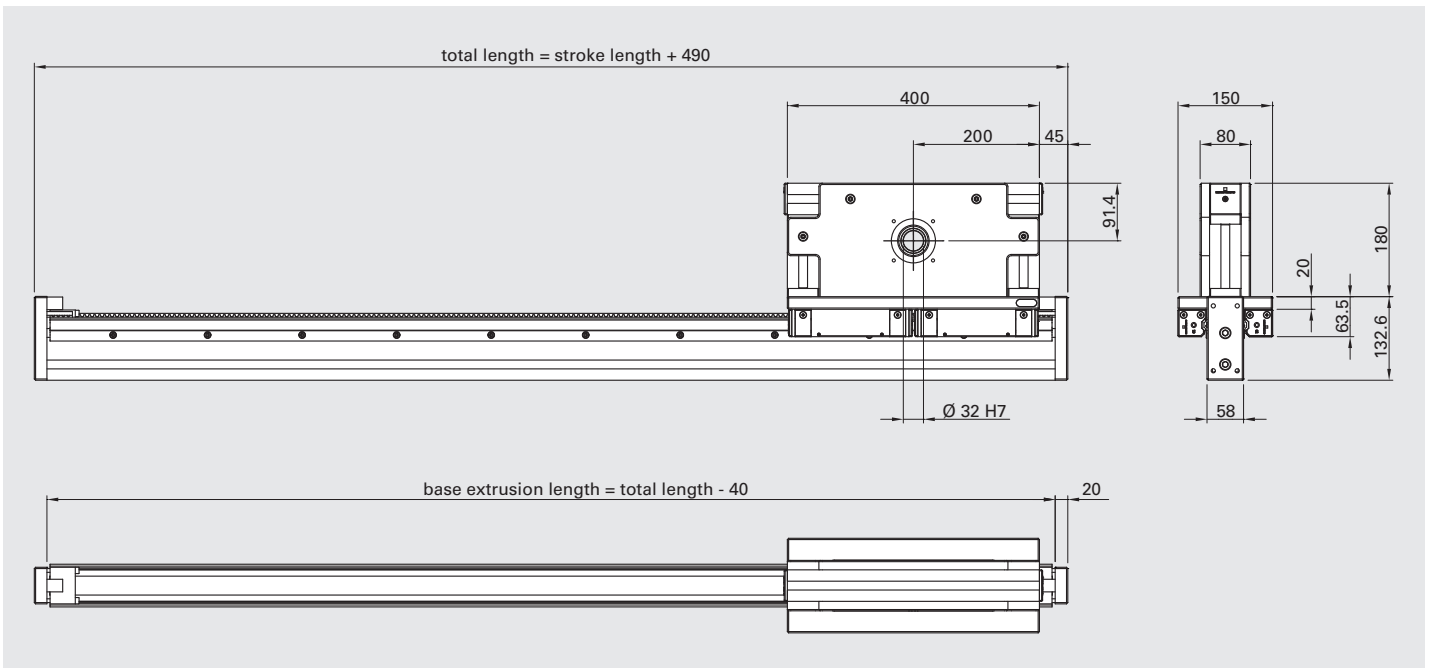
Base extrusion: 50x100 PIL 5010
 Carriage Plate: 400 x 150 mm
 Md max.: 60 Nm (max. transmittable drive torque)
 Carriage stroke per revolution: 200 mm
 Pitch circle diameter: 63.66 mm
 Idle torque: 1 Nm
 Positioning accuracy: ± 0.2 mm (without drive backlash)
 Weight of profile incl. guiderail: 5.4 kg/m
 Weight of right and left end parts: 1.2 kg
 Weight of drive unit without motor: 15.0 kg

Assembly Instructions

See page 181

A Wrench LIN 9990 (page 155) is needed to adjust the eccentric roller

Dimensions

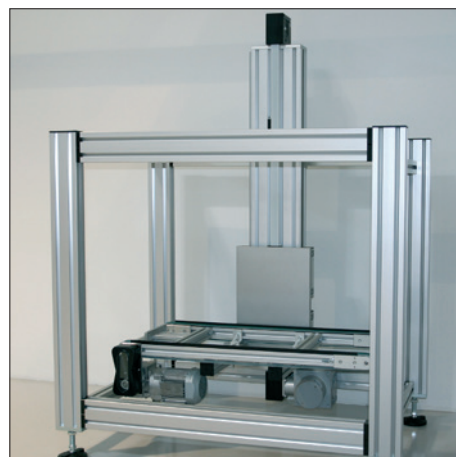
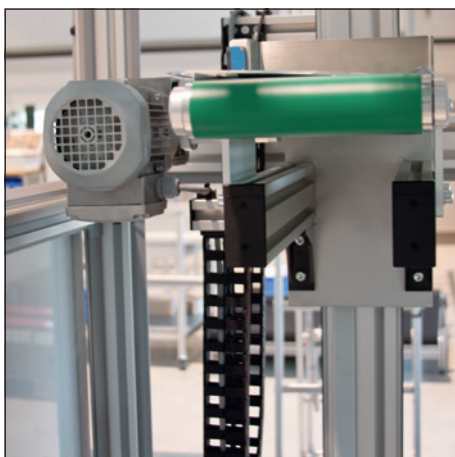
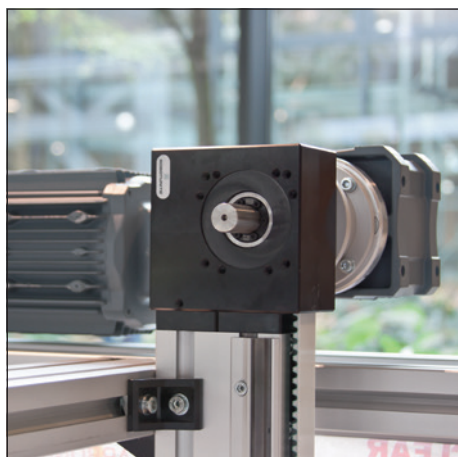
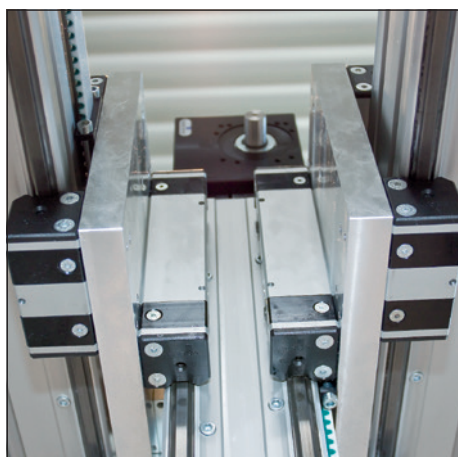
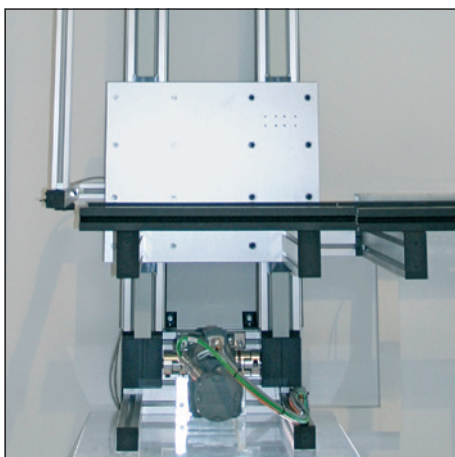
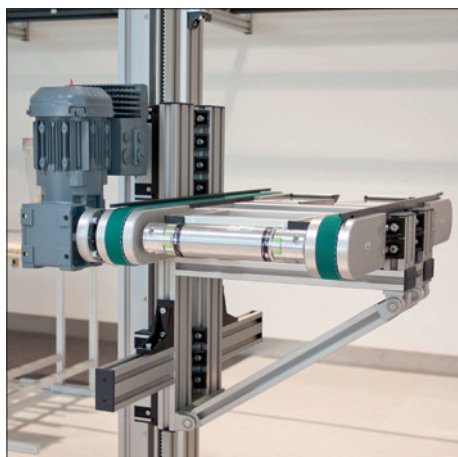
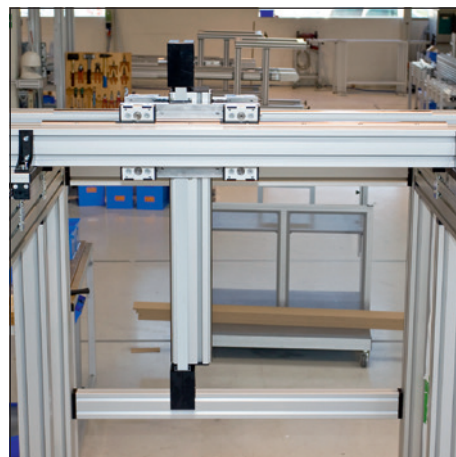
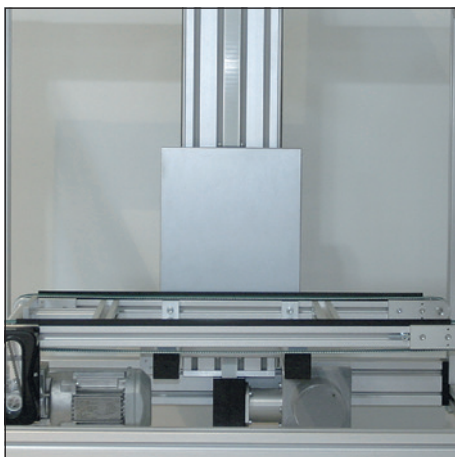
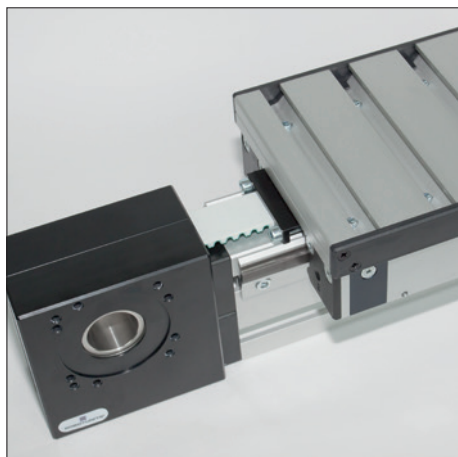


Order Code

Description	Order Code ¹		
	Base Extrusion	Type	Stroke Length ¹
Linear Motion Unit 50 With Omega Drive	LOL 5010	SNN	—

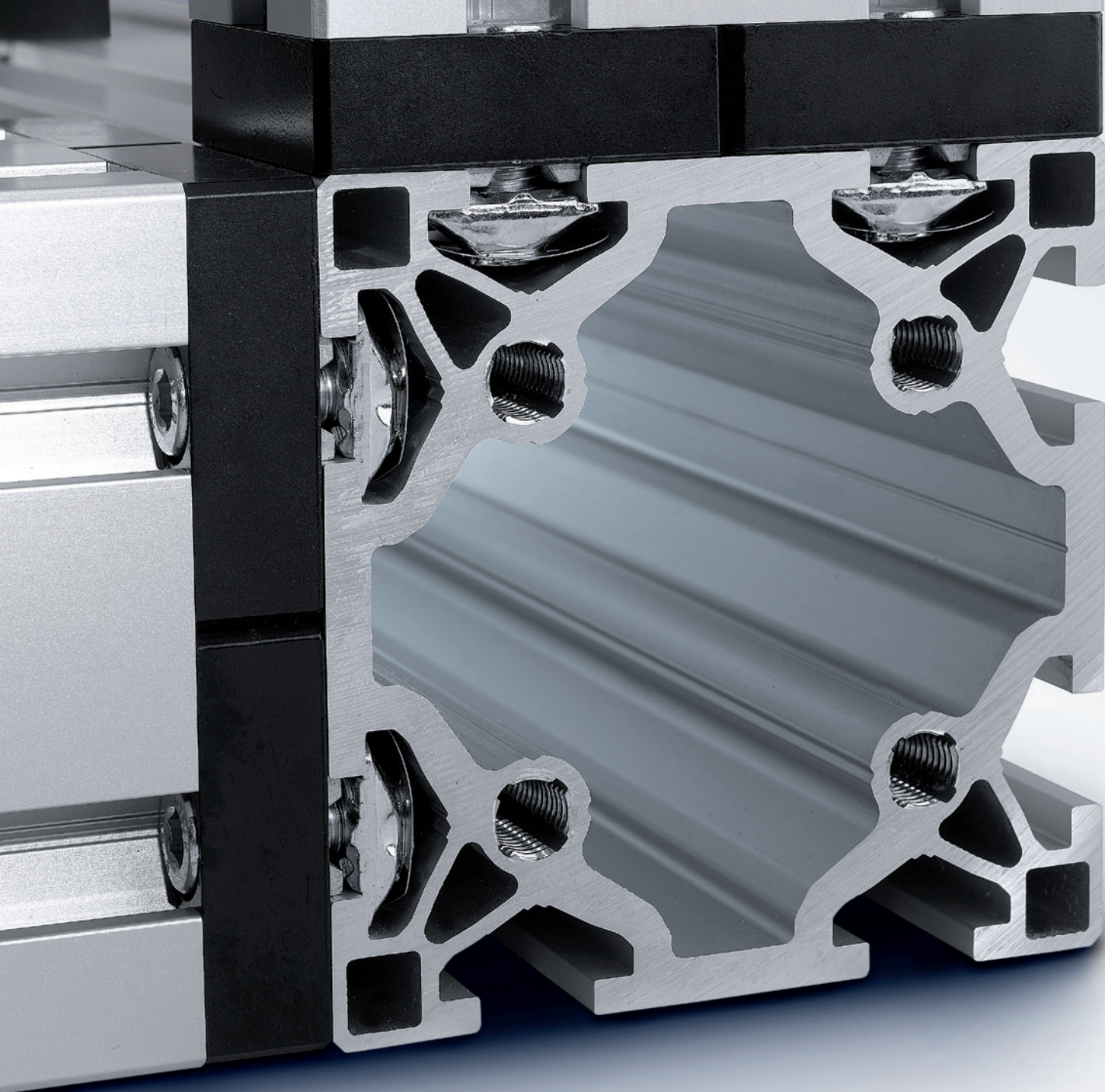
1) Please complete the order code by adding the desired stroke length in mm.
 Drawing dimensions in mm

Linear Motion Unit and Lift Application Examples





***THE SMART
EXTRUSION- AND
FASTENING TECHNOLOGY***



The key elements of the Modular Automation System are the unique Extrusion and Fastening Technologies. Extrusions, available in 40 mm and 50 mm size systems, are fully compatible due to a common 14 mm slot size.

In combination with a strong Fastening Technology, the system is unique in its stability and rigidity as well as in its enormous potential for time savings - from design to assembly.



One slot size fits all

- 13 profile shapes in 40 mm and 50 mm extrusion sizes simplify the application
- large, uniform 14 mm wide and 14mm deep T-slot
- same T-slot dimensions for all extrusions in the Modular Automation System
- Post insertion of heavy duty Drop-in Nuts up to M8 possible



Maximum stability

- worldwide unique play-free, accurate and centrally aligned connections
- single fastener provides up to 4 tons of tensile strength
- tubular honeycomb structure for outstanding torsion and load resistance
- maximum stability for all your applications



One fastener, double value

- two-sided fastener provides equal strength on both sides of the connection
- twice the strength for the price of one
- no additional connectors needed
- strength comparable to a welded connection



Any hole drilled is one hole too many

- all connections made without drilling or milling
- maximum wall thickness in key areas
- unlimited re-usability
- for required hole an integrated location groove guarantees precise and straight drilling



Stability increases with every turn

- every turn positions centering inserts tighter into the T-slot
- absolutely play-free, accurate and centrally aligned connection
- concave surface of extrusion guarantees durable vibration resistance
- low fastener height saves space in your design



Inserting the drop-in nut

- Simple and quick insertion of the drop-in nut into the 14 mm wide T-slot
- leaf spring assembly protects drop-in nut against unintended movement, guaranteed contact surface
- to position the drop-in nut, just slide to stop position



Anything is possible - even post assembly

- simple post-assembly integration of struts without dismantling the frame
- easy repositioning of struts at any time
- no cutting of existing structures
- no surface treatment required



Save time, cut cost

- minimum assembly time required
- simple and quick selection of Extrusion and Fastening Technology
- no measuring of boreholes and no drawings necessary
- length of the extrusion is the only measurement needed
- labeled and tapped extrusions allow immediate assembly



The Smart Extrusion Technology

Extrusion, 40 mm Series

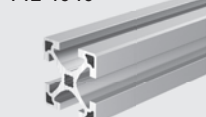
Page 58

Extrusion 16x40
PIL 1640



P. 58

Extrusion 40x40
PIL 4040



P. 58

Extrusion 40x80
PIL 4080



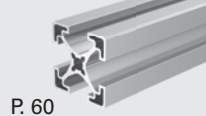
P. 59

Extrusion 80x80
PIL 8080



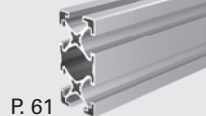
P. 59

Lean Line Extrusion
40x40
PIL 4140



P. 60

Lean Line Extrusion
40x80
PIL 4180

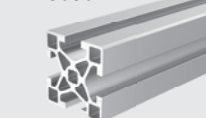


P. 61

Extrusion, 50 mm Series

Page 62

Extrusion 50x50
PIL 5050



P. 62

Extrusion 50x100
PIL 5010



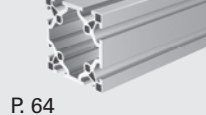
P. 62

Extrusion 50x200
PIL 5020



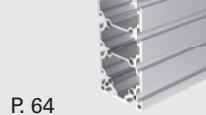
P. 63

Extrusion
100x100
PIL 1010



P. 64

Extrusion
100x200
PIL 1020



P. 64

Extrusion 25x200
PIL 2520



P. 65

The Strong Fastening Technology

Fastening Technology 40 mm Series

Page 66

Fastener 16x40
FAS 1641



P. 66

Fastener 40x40
FAS 404_



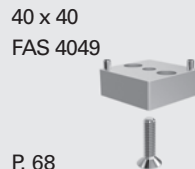
P. 66

Fastener 40x80
FAS 408_



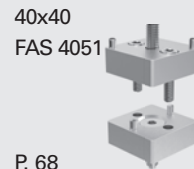
P. 67

Surface Fastener
40 x 40
FAS 4049



P. 68

End-to-End Fastener
40x40
FAS 4051



P. 68

Elbow Joint
GUS 4_41



P. 69



Fastening Technology 50 mm Series

Page 70

Fastener 50x50
FAS 505_



P. 70

Surface Fastener
50x50
FAS 505_



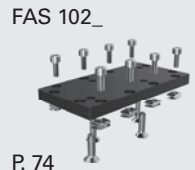
P. 72

End-to-End Fastener
50x50
FAS 5061



P. 73

Fastener 100x200
FAS 102_



P. 74

Fastening Technology 40 mm and 50 mm Series

Page 75

Bracket 40
GUS 450_



P. 75

Fixing Bracket
35x25
GUS 4651



P. 76

Bracket 100
GUS 100_



P. 77

Corner Bracket 100,
one side centered
GUS 110_



P. 77

Drop-In Nut
TIN 45_



P. 78

Inserter
TIN 9990



P. 78

T-Nut
TIN 60_



P. 79

T-Nut Bar
TIN _000



P. 80

T-Nut In-Line
Fastener
TIN 0171



P. 80

Miter Fastener
TIN 4545



P. 81

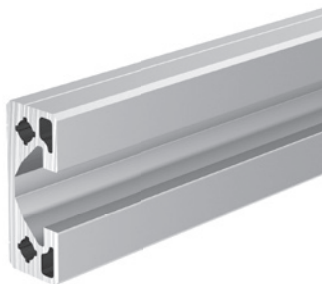
Special Fastener
TIN _000



P. 81

PIL 1640

Extrusion 16x40



Application

- Signs, shelves, racks
- Hand rails, guide rails
- MRO equipment
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus W_x : 2.9 cm³

Section modulus W_y : 1.0 cm³

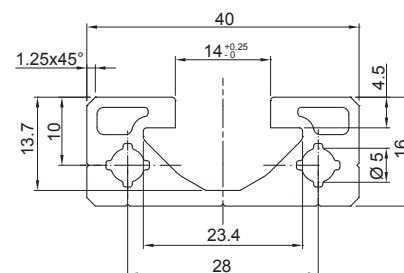
Geometrical moment of inertia:

against x I_x : 5.8 cm⁴

against y I_y : 0.8 cm⁴

against torsion I_t : 0.6 cm⁴

Cross sectional area A: 323.6 mm²



Tolerances and Deflection

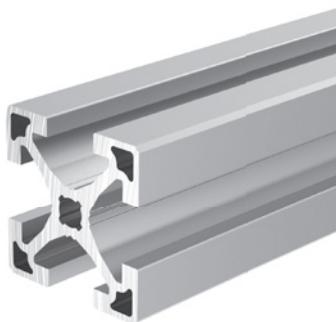
see pages 184 to 185

Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M6 tapped on both ends, 15 mm deep	PIL 1640 SNN ____	0.890 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 1640 NNN 6050	0.890 kg

PIL 4040

Extrusion 40x40



Application

- Machine guardings
- Enclosures
- Safety fence panels & doors
- Light weight machine frames
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

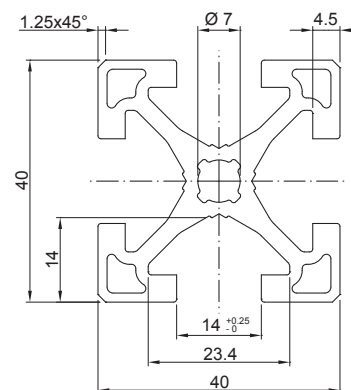
Section modulus $W_x = W_y$: 4.3 cm³

Geometrical moment of inertia:

against x + y $I_x = I_y$: 8.6 cm⁴

against torsion I_t : 0.7 cm⁴

Cross sectional area A: 554.6 mm²



Tolerances and Deflection

see pages 184 to 185

Order Code

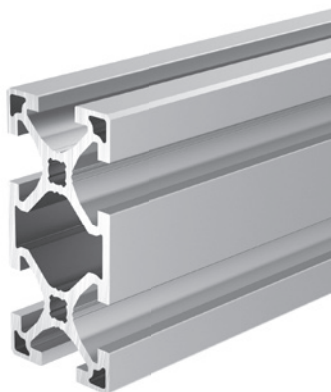
Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 4040 SNN ____	1.530 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 4040 NNN 6050	1.530 kg
Extrusions, 80 units, stock length 6050 mm (usable length 6000 mm)	PIL 4040 PAC 0080	1.530 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

PIL 4080

Extrusion 40x80



Tolerances and Deflection
see pages 184 to 185

Application

- Machine guardings
- Enclosures
- Safety fence panels & doors
- Machine frames
- Workstations
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus W_x : 15.4 cm³

Section modulus W_y : 8.4 cm³

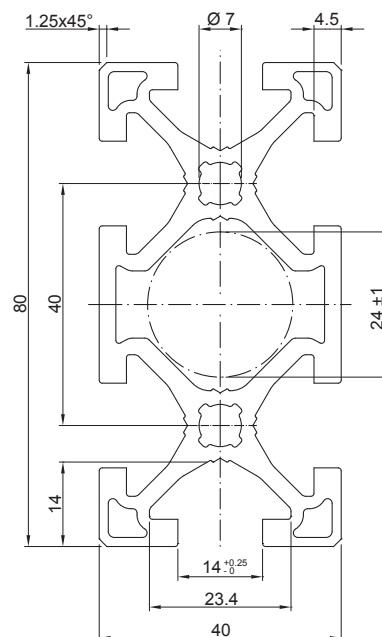
Geometrical moment of inertia:

against x I_x : 61.6 cm⁴

against y I_y : 16.8 cm⁴

against torsion I_t : 9.3 cm⁴

Cross sectional area A: 1013.2 mm²

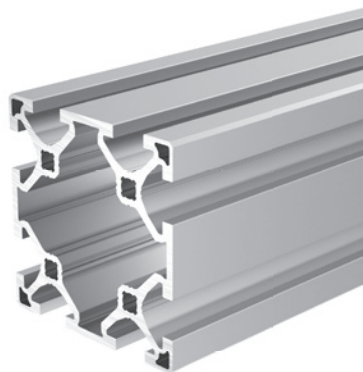


Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 4080 SNN ____	2.780 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 4080 NNN 6050	2.780 kg
Extrusions, 40 units, stock length 6050 mm (usable length 6000 mm)	PIL 4080 PAC 0040	2.780 kg

PIL 8080

Extrusion 80x80



Tolerances and Deflection
see pages 184 to 185

Application

- Machine frames
- Workstations
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

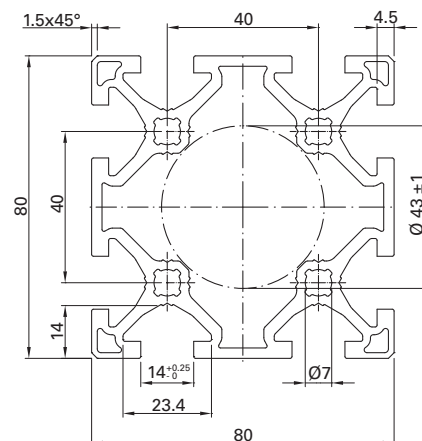
Section modulus $W_x = W_y$: 28.0 cm³

Geometrical moment of inertia:

against x + y $I_x = I_y$: 112.0 cm⁴

against torsion I_t : 59.5 cm⁴

Cross sectional area A: 1547.0 mm²

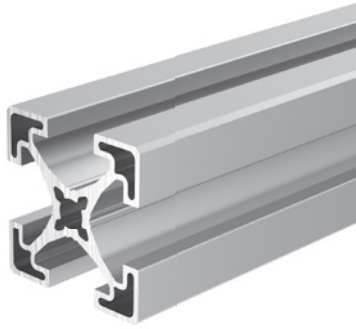


Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 8080 SNN ____	4.280 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 8080 NNN 6050	4.280 kg
Extrusions, 25 units, stock length 6050 mm (usable length 6000 mm)	PIL 8080 PAC 0025	4.280 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm



Application

- Machine guardings
- Enclosures
- Safety fence panels
- Light weight machine frames
- Workstations
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

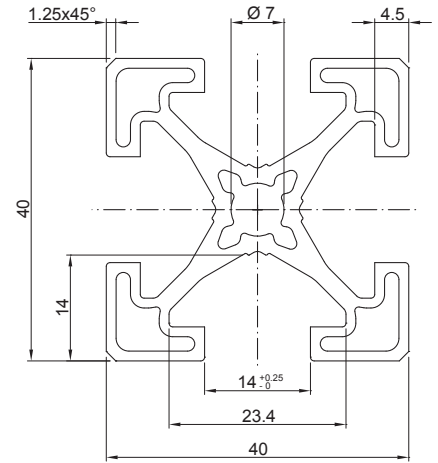
Section modulus $W_x = W_y$: 3.3 cm³

Geometrical moment of inertia:

against x + y $I_x = I_y$: 6.5 cm⁴

against torsion I_t : 0.6 cm⁴

Cross sectional area A: 431.0 mm²



Tolerances and Deflection
see pages 184 to 185

Order Code

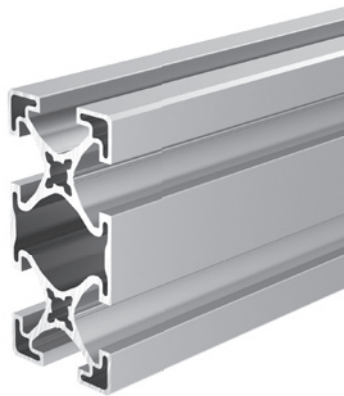
Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 4140 SNN ____	1.160 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 4140 NNN 6050	1.160 kg
Extrusions, 80 units, stock length 6050 mm (usable length 6000 mm)	PIL 4140 PAC 0080	1.160 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

PIL 4180

Lean Line Extrusion 40x80

**Application**

- Machine guardings
- Enclosures
- Safety fence panels
- Light weight machine frames
- Workstations
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus W_x : 11.9 cm³

Section modulus W_y : 6.4 cm³

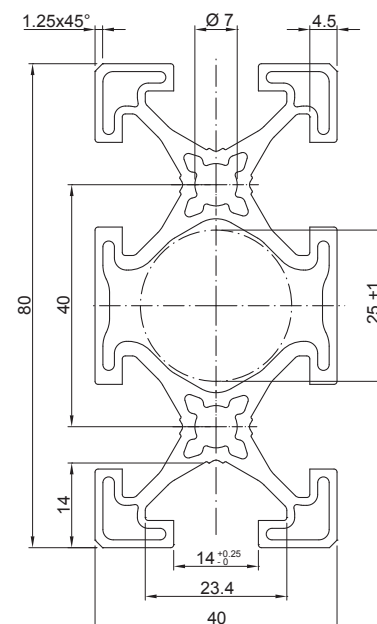
Geometrical moment of inertia:

against x I_x : 47.4 cm⁴

against y I_y : 12.8 cm⁴

against torsion I_t : 5.9 cm⁴

Cross sectional area A: 790.8 mm²

**Tolerances and Deflection**

see pages 184 to 185

Order Code

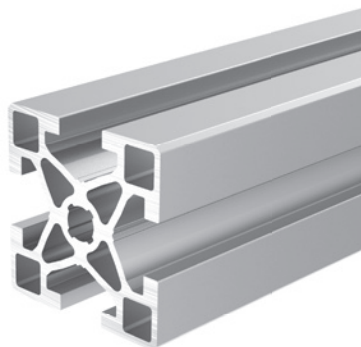
Description	Order Code ¹	Weight/Meter
	Length	
Extrusion, cut to length, M8 tapped on both ends, 50 mm deep	PIL 4180 SNN ____	2.140 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 4180 NNN 6050	2.140 kg
Extrusions, 40 units, stock length 6050 mm (usable length 6000 mm)	PIL 4180 PAC 0040	2.140 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

PIL 5050

Extrusion 50x50

**Application**

- Machine frames
- Robot frame structures
- Workstations
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

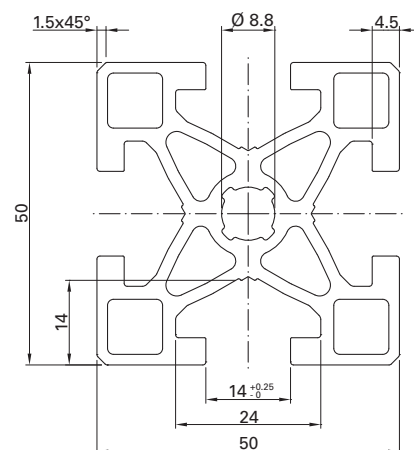
Section modulus $W_x = W_y$: 8.0 cm³

Geometrical moment of inertia:

against x + y $I_x = I_y$: 20.0 cm⁴

against torsion I_t : 4.8 cm⁴

Cross sectional area A: 857.5 mm²

**Tolerances and Deflection**

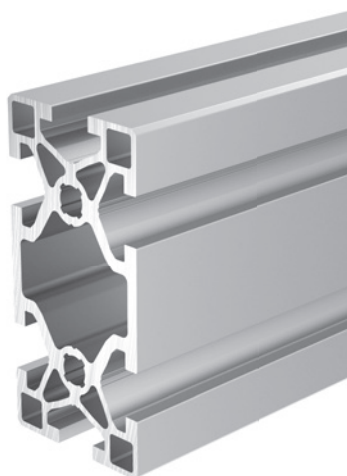
see pages 184 to 185

Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 5050 SNN ____	2.350 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 5050 NNN 6050	2.350 kg
Extrusions, 64 units, stock length 6050 mm (usable length 6000 mm)	PIL 5050 PAC 0064	2.350 kg

PIL 5010

Extrusion 50x100

**Application**

- Machine frames
- Robot frame structures
- Workstations
- Base support for Linear Motion Units & gantries
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus W_x : 29.7 cm³

Section modulus W_y : 16.6 cm³

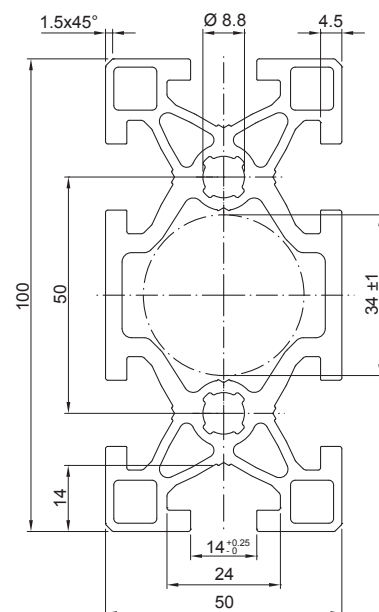
Geometrical moment of inertia:

against x I_x : 148.5 cm⁴

against y I_y : 41.4 cm⁴

against torsion I_t : 37.0 cm⁴

Cross sectional area A: 1559.3 mm²

**Tolerances and Deflection**

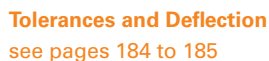
see pages 184 to 185

Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 5010 SNN ____	4.290 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 5010 NNN 6050	4.290 kg
Extrusions, 32 units, stock length 6050 mm (usable length 6000 mm)	PIL 5010 PAC 0032	4.290 kg

1) Please complete the order code by adding the desired length.

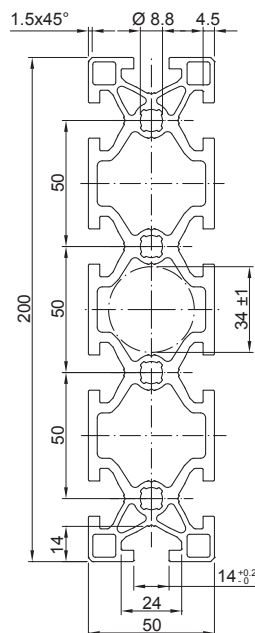
Drawing dimensions in mm



- Heavy duty machine frames
- Robot frame structures
- Workstations
- Base support for Linear Motion Units & gantries
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Material: EN AW-6063-T66 clear
anodized aluminum

Cross sectional area A: 2962.8 mm²



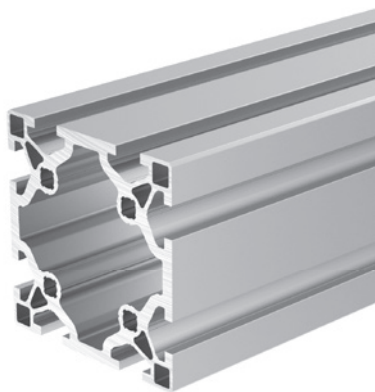
Order Code

	Order Code ¹	
Description	Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 5020 SNN ____	8.150 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 5020 NNN 6050	8.150 kg
Extrusions, 16 units, stock length 6050 mm (usable length 6000 mm)	PIL 5020 PAC 0016	8.150 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

PIL 1010

Extrusion 100x100

**Application**

- Heavy duty machine frames
- Robot frame structures
- Workstations
- Base support for Linear Motion Units & gantries
- Machine guardings
- Enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

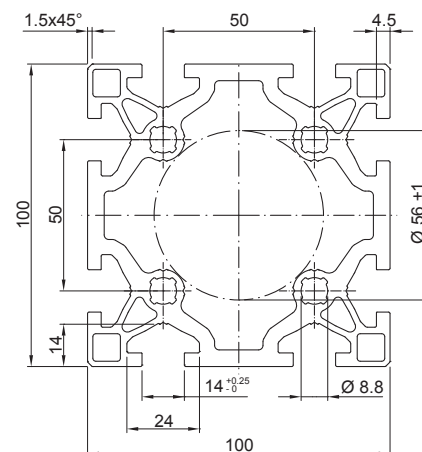
Section modulus $W_x = W_y$: 61.1 cm³

Geometrical moment of inertia:

against x + y $I_x = I_y$: 305.6 cm⁴

against torsion I_t : 256.0 cm⁴

Cross sectional area A: 2714.4 mm²

**Tolerances and Deflection**

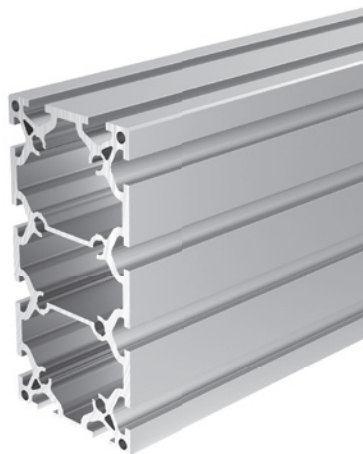
see pages 184 to 185

Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 1010 SNN ____	7.480 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 1010 NNN 6050	7.480 kg
Extrusions, 16 units, stock length 6050 mm (usable length 6000 mm)	PIL 1010 PAC 0016	7.480 kg

PIL 1020

Extrusion 100x200

**Application**

- Heavy duty machine frames
- Robot frame structures
- Workstations
- Base support for Linear Motion Units & gantries
- Machine guardings
- Machine enclosures
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus W_x : 220.2 cm³

Section modulus W_y : 132.9 cm³

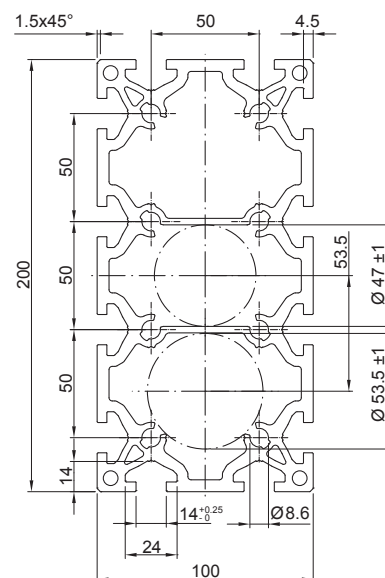
Geometrical moment of inertia:

against x I_x : 2202.2 cm⁴

against y I_y : 664.4 cm⁴

against torsion I_t : 794.0 cm⁴

Cross sectional area A: 5128.7 mm²

**Tolerances and Deflection**

see pages 184 to 185

Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M10 tapped on both ends, 50 mm deep	PIL 1020 SNN ____	13.700 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 1020 NNN 6050	13.700 kg
Extrusions, 8 units, stock length 6050 mm (usable length 6000 mm)	PIL 1020 PAC 0008	13.700 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

PIL 2520

Extrusion 25x200



Tolerances and Deflection
see pages 184 to 185

Application

- Carriage plates for Linear Motion Units
- Workstations
- Shelves, racks, trolleys (MRO equipment)
- etc.

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

Section modulus W_x : 102.8 cm³

Section modulus W_y : 14.1 cm³

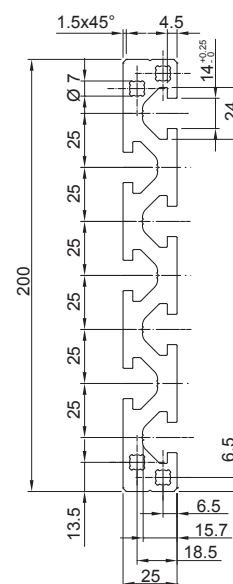
Geometrical moment of inertia:

against x I_x : 1027.9 cm⁴

against y I_y : 17.6 cm⁴

against torsion I_t : 9.8 cm⁴

Cross sectional area A: 2891.7 mm²



Order Code

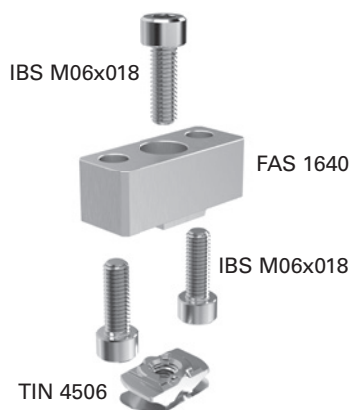
Description	Order Code ¹	
	Length	Weight/Meter
Extrusion, cut to length, M8 tapped on both ends, 15 mm deep	PIL 2520 SNN ____	7.900 kg
Extrusion, stock length: 6050 mm (usable length 6000 mm)	PIL 2520 NNN 6050	7.900 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

FAS 1641

Fastener 16x40

**Application**

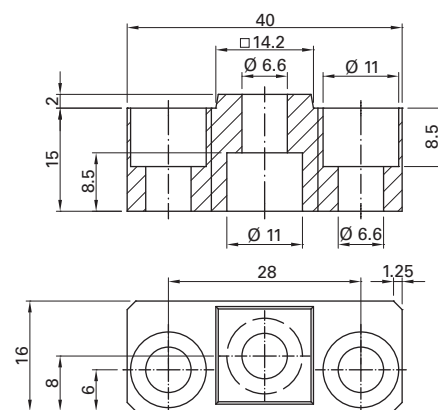
90° fastener for extrusion PIL 1640

Technical Data

Material: clear anodized aluminum, galvanized steel

Tightening torque

IBS M06x018 = 10 Nm



Order Code

Description
Fastener Kit, 16x40

Scope of Delivery

FAS 1640	TIN 4506	IBS M06x018
1	1	3

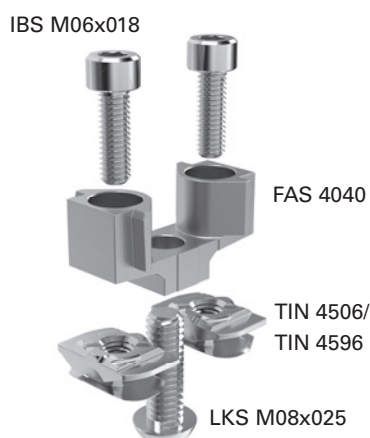
Order Code

FAS 1641

Weight
0.045 kg

FAS 404_

Fastener 40x40

**Application**

90° fastener on 40 mm series for extrusion PIL 4040 and PIL 4080 transverse

Technical Data

Material: galvanized GD-Zn, galvanized steel

Load index

See page 186

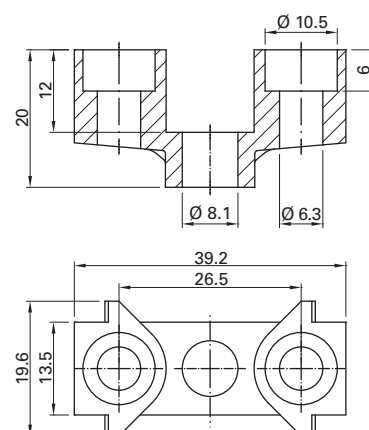
Tightening torque

IBS M06x018 = 10 Nm

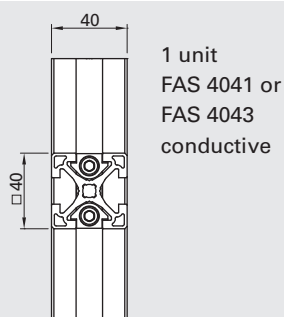
LKS M08x025 = 12 Nm

Optional

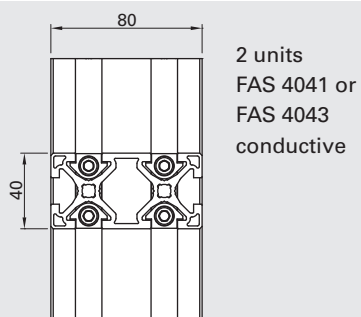
40x40 fastener Kit for conductive structures



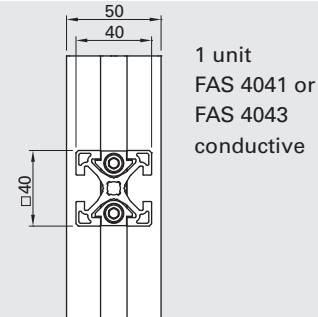
Transfer resistance per conductive
connection: 0.4 mΩ



1 unit
FAS 4041 or
FAS 4043
conductive



2 units
FAS 4041 or
FAS 4043
conductive



1 unit
FAS 4041 or
FAS 4043
conductive

Order Code

Description	Scope of Delivery					Order Code	
	FAS 4040	TIN 4506	TIN 4596	IBS M06x018	LKS M08x025		Weight
Fastener Kit, 40x40	1	2	-	2	1	FAS 4041 ¹	0.068 kg
Fastener Kit, 40x40	1	2	-	2	1	FAS 4041CP ²	0.068 kg
Fastener Kit, 40x40, conductive	1	-	2	2	1	FAS 4043 ¹	0.068 kg
Fastener Kit, 40x40, conductive	1	-	2	2	1	FAS 4043CP ²	0.068 kg

FAS 408_

Fastener 40x80

**Application**

90° fastener on 40 mm series for extrusion

- PIL 4080, longitudinal
- PIL 8080

Technical Data

Material: galvanized GD-Zn, galvanized steel

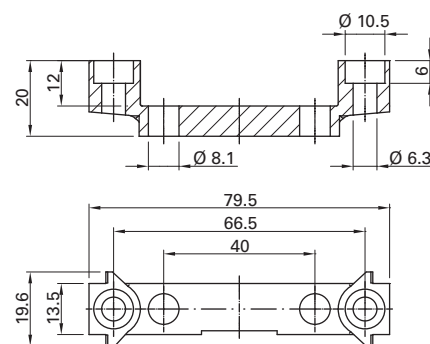
Load index

See page 186

Tightening torque

IBS M06x018 = 10 Nm

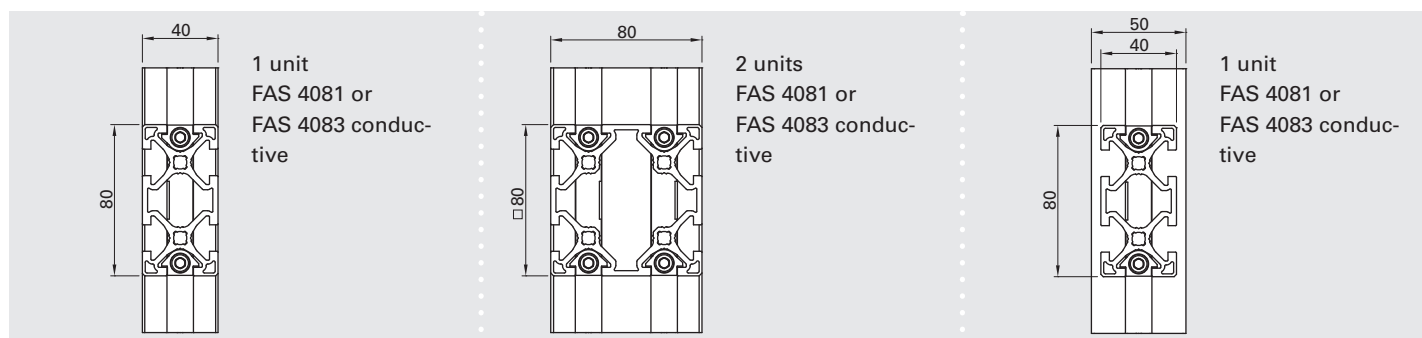
LKS M08x025 = 12 Nm



Transfer resistance per conductive connection: 0.4 mΩ

Optional

40x80 fastener Kit for conductive structures



Order Code

Description	Scope of Delivery					Order Code	Weight
	FAS 4080	TIN 4506	TIN 4596	IBS M06x018	LKS M08x025		
Fastener Kit, 40x80	1	2	-	2	2	FAS 4081 ¹	0.103 kg
Fastener Kit, 40x80	1	2	-	2	2	FAS 4081CP ²	0.103 kg
Fastener Kit, 40x80, conductive	1	-	2	2	2	FAS 4083 ¹	0.103 kg
Fastener Kit, 40x80, conductive	1	-	2	2	2	FAS 4083CP ²	0.103 kg

1) Packaged in Kit

2) Packaged by type, available for an order quantity of 100 or more

Drawing dimensions in mm

FAS 4049

Surface Fastener 40x40

FAS 4048



SKS M08x030

**Application**

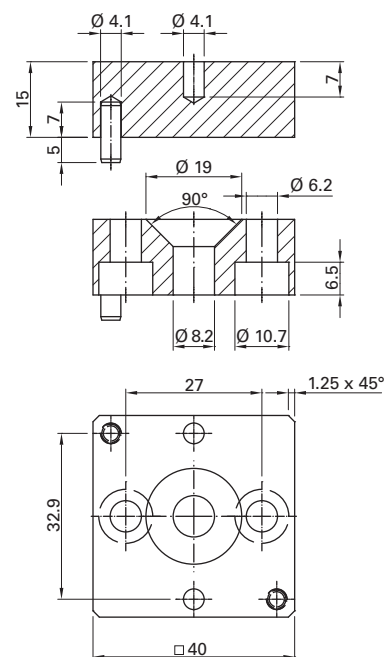
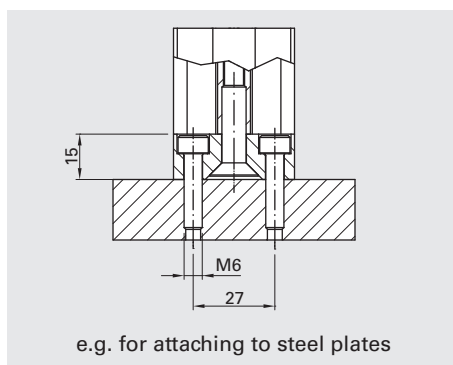
Used for connections to non-Robotunits surfaces on 40 mm series for extrusion PIL 4040

Technical Data

Material: clear anodized aluminum, galvanized steel

Tightening torque

SKS M08x030 = 15 Nm



Order Code

Description	Scope of Delivery		Order Code	Weight
	FAS 4048	SKS M08x030		
Surface Fastener Kit, 40x40	1	1	FAS 4049	0.070 kg

FAS 4051

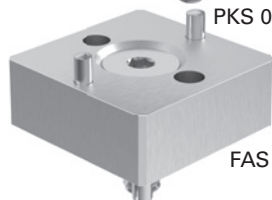
End-to-End Fastener 40x40

FAS 4050



SKS M08x030

PKS 004x012



FAS 4048

IBS M06x025

Application

Used for end-to-end connections of 40 mm series for extrusion PIL 4040

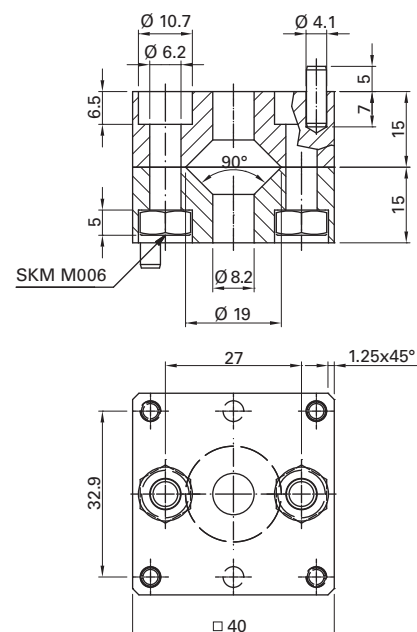
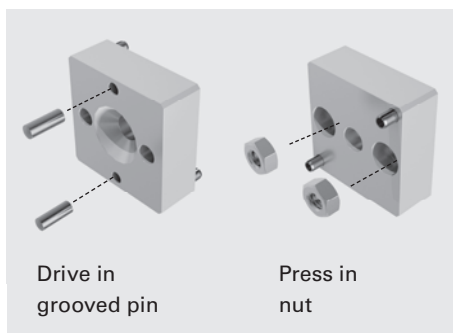
Technical Data

Material: clear anodized aluminum, galvanized steel

Tightening torque

SKS M08x030 = 15 Nm

IBS M06x025 = 10 Nm



Order Code

Description	Scope of Delivery					Order Code	Weight
	FAS 4048	FAS 4050	SKS M08x030	IBS M06x025	PKS 004x012		
End-to-End Fastener Kit, 40x40	1	1	2	2	2	FAS 4051	0.160 kg



Application

For variable angle connections, e.g.:

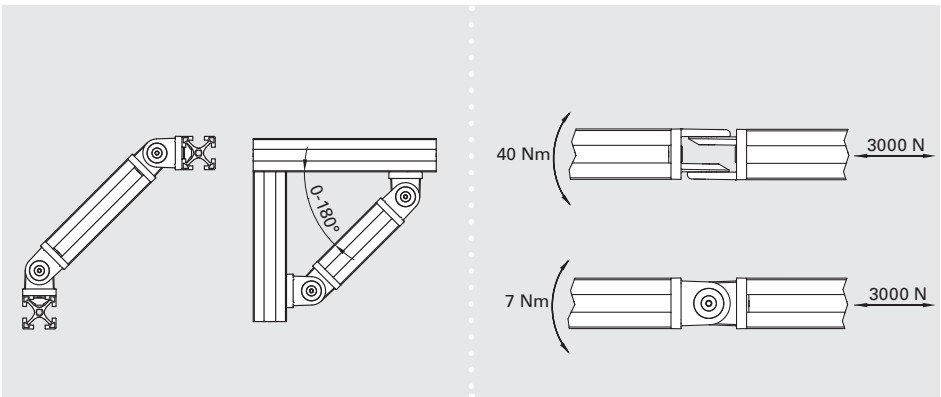
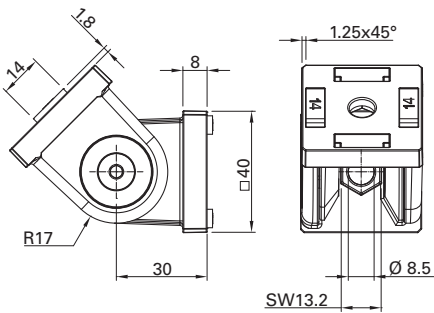
- Guardings
- Frames
- Swing arms

Technical Data

Material: zinc diecast or galvanized steel
Pivoting range: +/- 90°

Tightening torque

IBS M08x016NIKO = 20 Nm
Clamp screw = 8 Nm



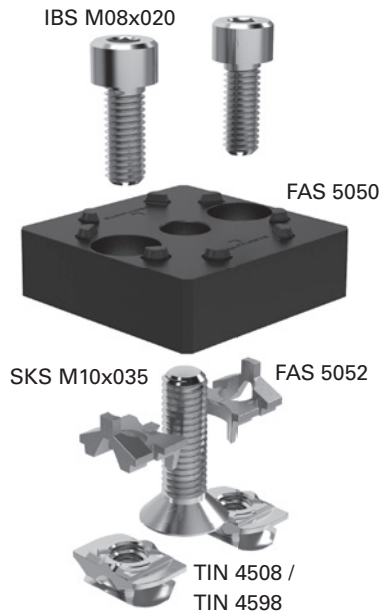
Order Code

Description	Scope of Delivery				Order Code	Weight
	GUS 4040	GUS 4140	TIN 4508	IBS M08x016NIKO		
Elbow Joint 40 Kit	1	-	2	2	GUS 4041	0.135 kg
Elbow Joint 40 Kit with Clamping Lever	-	1	2	2	GUS 4141	0.205 kg

Drawing dimensions in mm

FAS 505_

Fastener 50x50

**Application**

Used for 90° connections of heavy-duty structures in the 50 mm series for extrusions:

- PIL 5050
- PIL 5010
- PIL 5020

Technical Data

Material: GD-Zn black KTL coated, galvanized steel

Load index

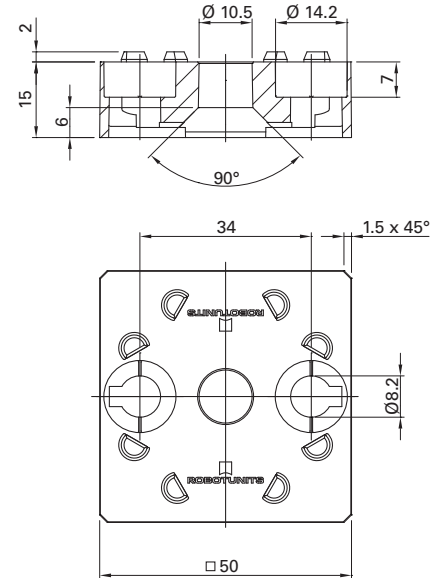
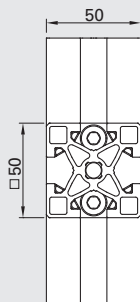
See page 186

Tightening torque

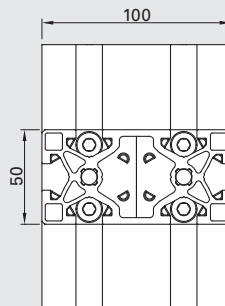
IBS M08x020 = 26 Nm

SKS M10x035 = 40 Nm

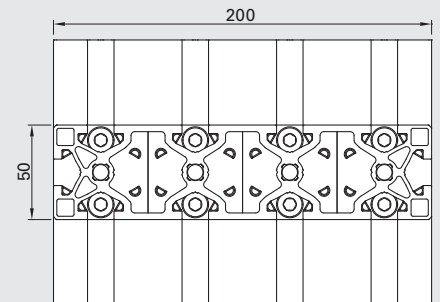
Transfer resistance per conductive connection: 0.4 mΩ

**Assembly**

1 units FAS 5051 or FAS 5053 conductive



2 units FAS 5051 or FAS 5053 conductive



4 units FAS 5051 or FAS 5053 conductive

Order Code

Description	Scope of Delivery						Order Code	Weight
	FAS 5050	FAS 5052	TIN 4508	TIN 4598	IBS M08x020	SKS M10x035		
Fastener Kit, 50x50	1	2	2	-	2	1	FAS 5051 ¹	0.223 kg
Fastener Kit, 50x50	1	2	2	-	2	1	FAS 5051CP ²	0.223 kg
Fastener Kit, 50x50, conductive	1	2	-	2	2	1	FAS 5053 ¹	0.223 kg
Fastener Kit, 50x50, conductive	1	2	-	2	2	1	FAS 5053CP ²	0.223 kg
Fastener, 50x50	100	-	-	-	-	-	FAS 5050 PAC 0100	14.400 kg

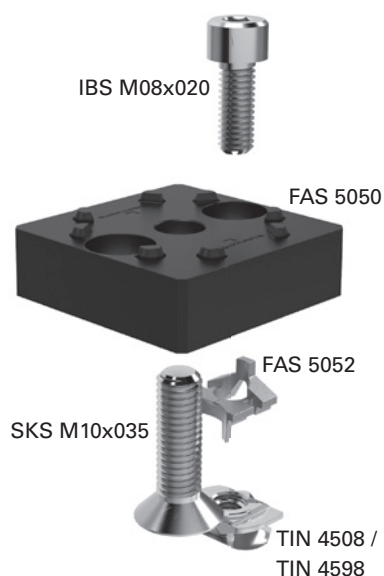
1) Packaged in Kit

2) Packaged by type, available for an order quantity of 100 or more

Drawing dimensions in mm

FAS 505_

Single-Sided Fastener 50x50

**Application**

Used for 90° connections of heavy-duty structures in the 50 mm series for extrusions:

- PIL 5010
- PIL 1010
- PIL 5020

Technical Data

Material: GD-Zn black KTL coated, galvanized steel

Load index

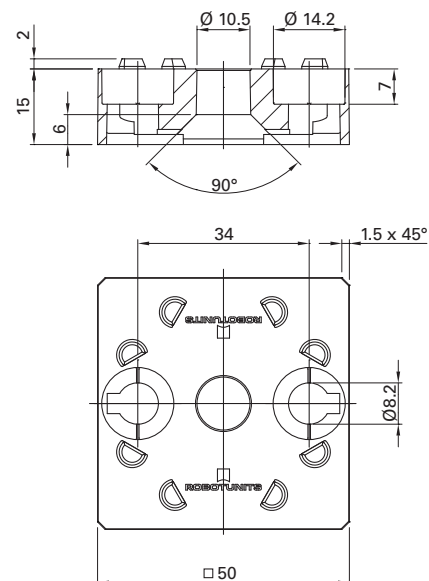
See page 186

Tightening torque

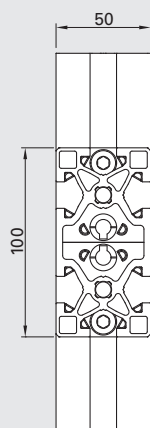
IBS M08x020 = 26 Nm

SKS M10x035 = 40 Nm

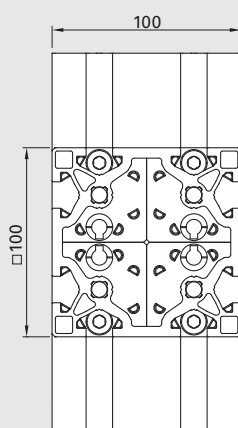
Transfer resistance per conductive connection: 0.4 mΩ



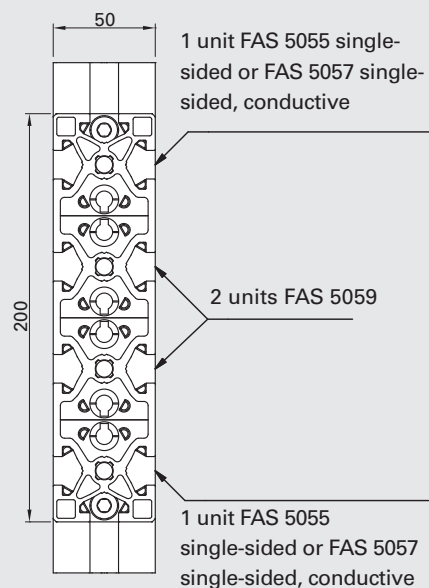
Assembly



2 units FAS 5055 single-sided or
FAS 5057 single-sided, conductive



4 units FAS 5055 single-sided or
FAS 5057 single-sided, conductive



Order Code

Description	Scope of Delivery						Order Code	
	FAS 5050	FAS 5052	TIN 4508	TIN 4598	IBS M08x020	SKS M10x035		Weight
Fastener Kit, 50x50, single-sided	1	1	1	-	1	1	FAS 5055 ¹	0.185 kg
Fastener Kit, 50x50, single-sided	1	1	1	-	1	1	FAS 5055CP ²	0.185 kg
Fastener Kit, 50x50, single-sided, cond.	1	1	-	1	1	1	FAS 5057 ¹	0.185 kg
Fastener Kit, 50x50, single-sided, cond.	1	1	-	1	1	1	FAS 5057CP ²	0.185 kg
Fastener, 50x50	100	-	-	-	-	-	FAS 5050 PAC 0100	14.400 kg

1) Packaged in Kit

2) Packaged by type, available for an order quantity of 100 or more

Drawing dimensions in mm

FAS 5059

Surface Fastener 50x50



Application

Used for connections to non-Robotunits surfaces. 90° connection for massive structures in the 50 mm series for extrusions

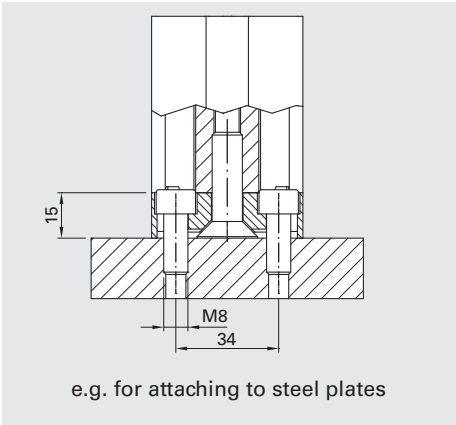
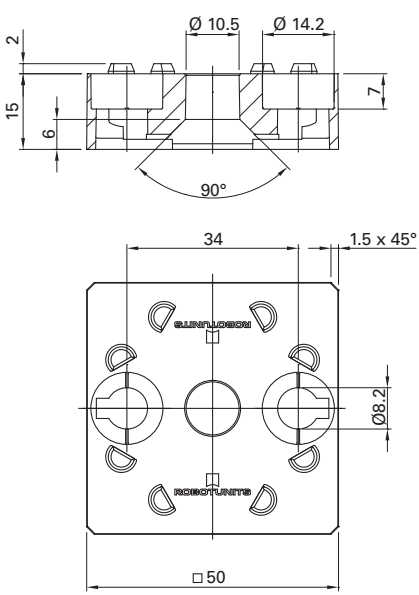
- PIL 5050
- PIL 5010
- PIL 1010
- PIL 5020

Technical Data

Material: GD-Zn black KTL coated, galvanized steel

Tightening torque

SKS M10x035 = 40 Nm



Order Code

Description	Scope of Delivery		Order Code	Weight
	FAS 5050	SKS M10x035	FAS 5059	
Surface Fastener Kit, 50x50	1	1		0.168 kg

Drawing dimensions in mm



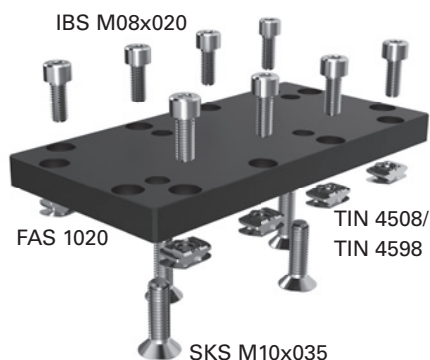
Order Code

Description	Scope of Delivery				Order Code	Weight
	FAS 5050	FAS 5060	IBS M08x025	SKS M10x035		
End-To-End Fastener Kit, 50x50	1	1	2	2	FAS 5061	0.374 kg

Drawing dimensions in mm

FAS 102_

Fastener 100x200

**Application**

Used for 90° connections of heavy duty structures of PIL 1020

Technical Data

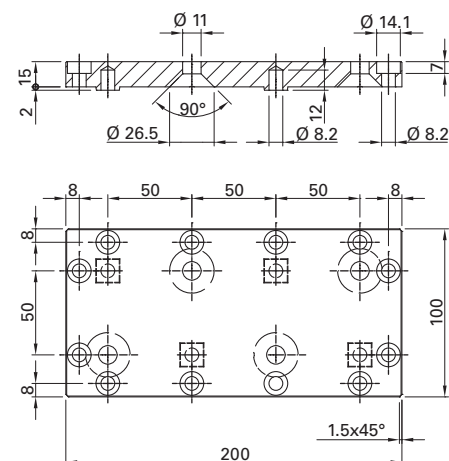
Material: black anodized aluminum, galvanized steel

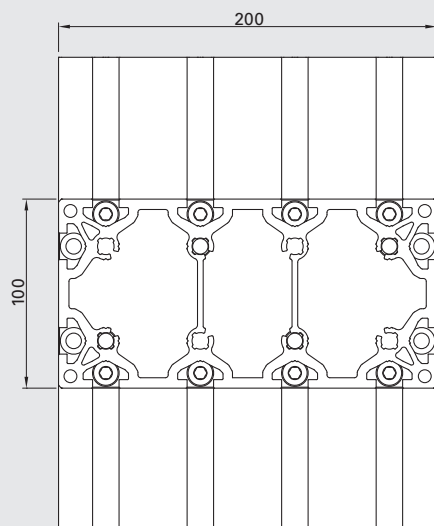
Tightening torque

IBS M08x020 = 26 Nm

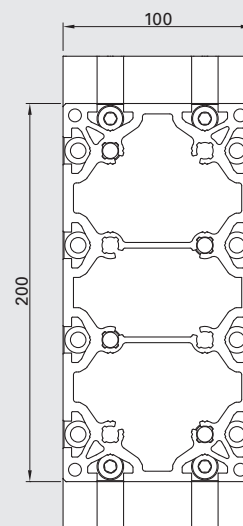
SKS M10x035 = 40 Nm

Transfer resistance per conductive connection: 0.4 mΩ


 Cross Fastener

 In-Line Fastener


1 units FAS 1021 or FAS 1023 conductive



1 units FAS 1025 or FAS 1027 conductive

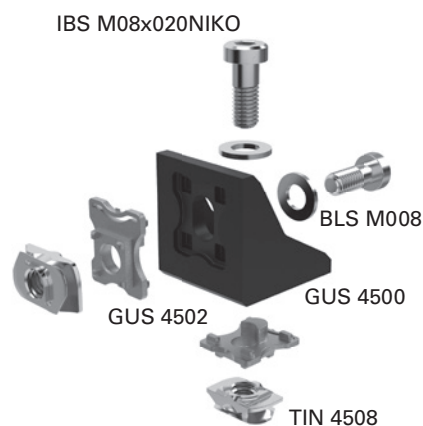
Order Code

Description	Scope of Delivery					Order Code	Weight
	FAS 1020	TIN 4508	TIN 4598	IBS M08x020	SKS M10x035		
Cross Fastener Kit, 100x200	1	8	-	8	4	FAS 1021	1.000 kg
Cross Fastener Kit, 100x200, cond.	1	-	8	8	4	FAS 1023	1.000 kg
In-Line Fastener Kit, 100x200	1	4	-	4	4	FAS 1025	0.920 kg
In-Line Fastener Kit, 100x200, cond.	1	-	4	4	4	FAS 1027	0.920 kg

Drawing dimensions in mm

GUS 450_

Corner Bracket 40/50

**Application**

Used for 90° connections and as strengthening element in combination with Robotunits fasteners, for both 40 mm and 50 mm series extrusions, e.g.:

- 40/40 series combination
- 50/50 series combination
- 40/50 series combination

Connections to non-Robotunits extrusions and surfaces, e.g.:

- Mounting of table tops
- Fastening to non-Robotunits extrusions
- Fastening to walls

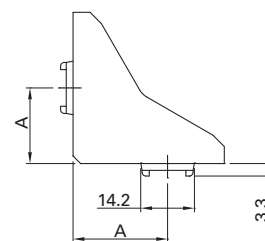
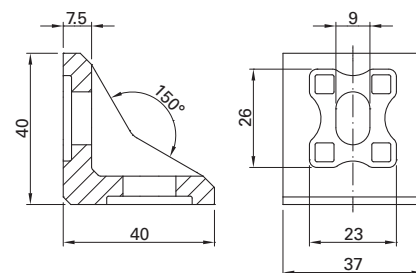
Technical Data

Material: GD-Zn black KTL coated, galvanized steel

Tightening torque

IBS M08x020NIKO = 20 Nm

By turning the centering insert (GUS 4502), the angle bracket can be used in either the 40 mm or the 50 mm series.

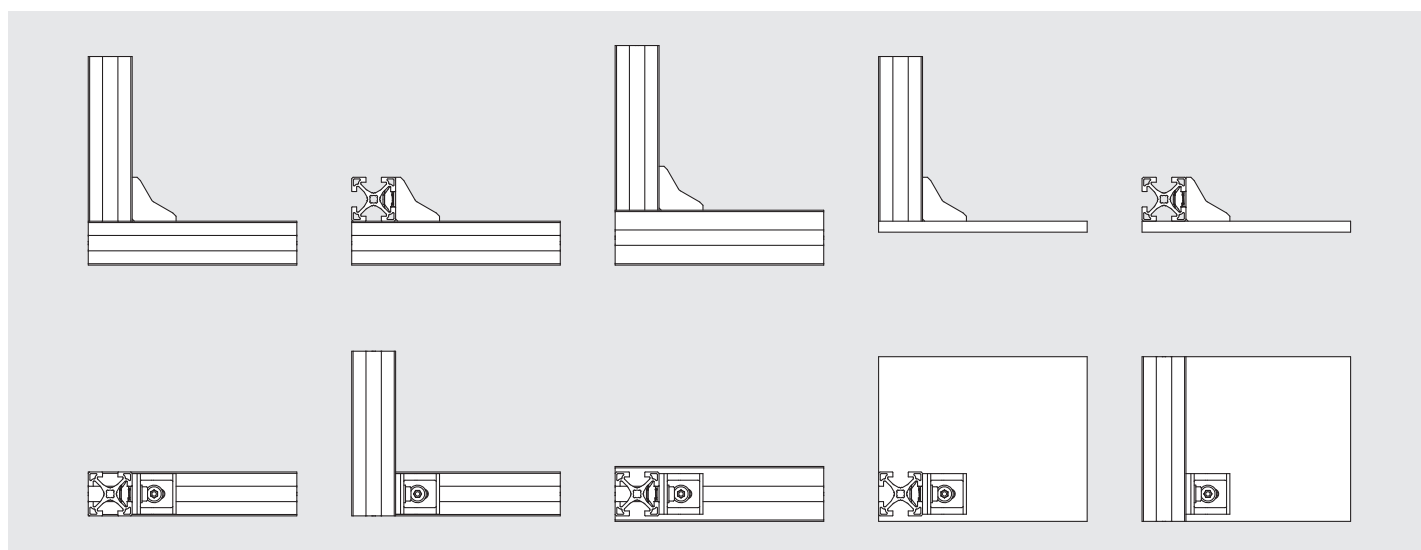


A in 40 mm series = 20

A in 50 mm series = 25



Applications



Order Code

Description	Scope of Delivery					Order Code	Weight
	GUS 4500	GUS 4502	TIN 4508	IBS M08x020NIKO	BLS M008		
Corner Bracket 40/50 Kit	1	2	2	2	2	GUS 4501 ¹	0.180 kg
Corner Bracket 40/50 Kit	1	2	2	2	2	GUS 4501CP ²	0.180 kg
Corner Bracket 40/50	80	-	-	-	-	GUS 4500 PAC 0080	9.920 kg

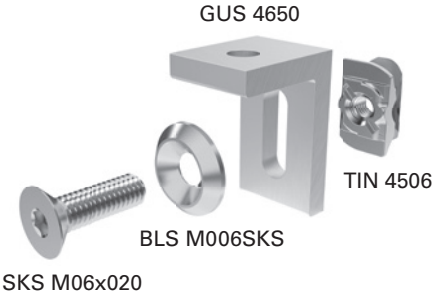
1) Packaged in Kit

2) Packaged by type, available for an order quantity of 100 or more

Drawing dimensions in mm

GUS 4651

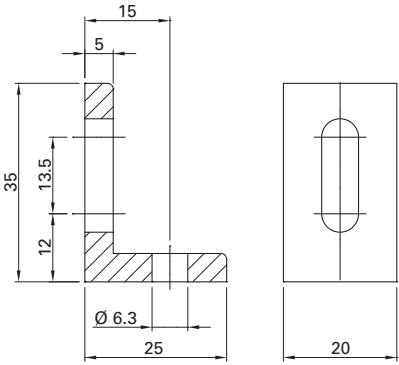
Fixing Bracket 35x25



Application
Used for 90° connections and as strengthening element in combination with Robotunits extrusion technology with non-Robotunits components. Particularly suitable for fixing table plates and similar surface elements

Technical Data
Material: clear anodized aluminum
galvanized steel

Tightening torque
SKS M06x020 = 9 Nm



Applications

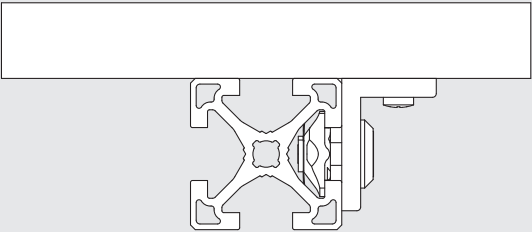
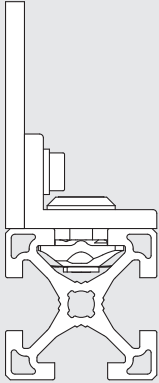


Table plate fastening



Surface element fastening

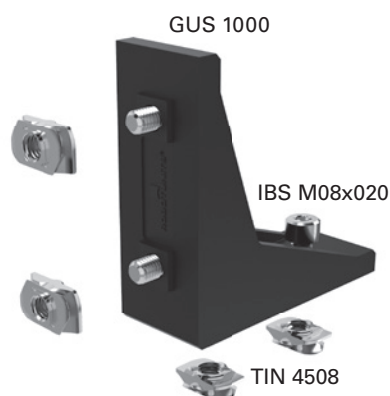
Order Code

Description	Scope of Delivery				Order Code	Weight
	GUS 4650	TIN 4506	SKS M06x020	BLS M006SKS	GUS 4651	
Fixing Bracket, 35x25 Kit	1	1	1	1	GUS 4651	0.030 kg

Drawing dimensions in mm

GUS 100_

Corner Bracket 100

**Application**

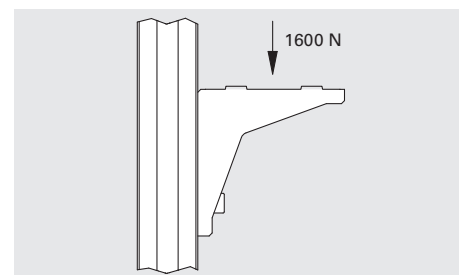
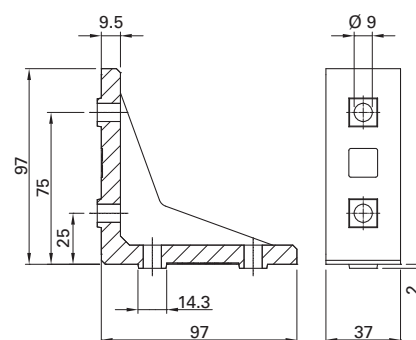
Used for 90° connections and as strengthening element in combination with Robotunits fasteners. The GUS 1000 can also be used with 40 mm series extrusions parallel to T-slot centerline.

Technical Data

Material: GD-Zn black KTL coated, galvanized steel

Tightening torque

IBS M08x020 = 26 Nm

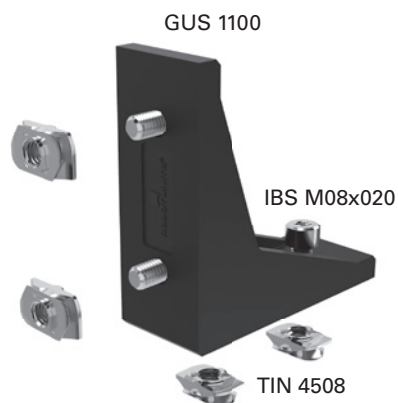


Order Code

Description	Scope of Delivery			Order Code	
	GUS 1000	TIN 4508	IBS M08x020		Weight
Corner Bracket 100 Kit	1	4	4	GUS 1001 ¹	0.615 kg
Corner Bracket 100 Kit	1	4	4	GUS 1001CP ²	0.615 kg
Corner Bracket 100	16	-	-	GUS 1000 PAC 0016	9.500 kg

GUS 110_

Corner Bracket 100, one side centered

**Application**

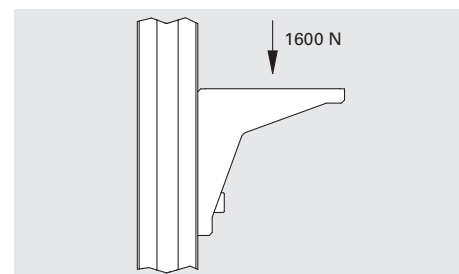
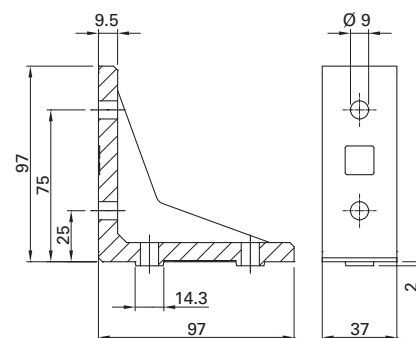
Used for 90° connections and as strengthening element in combination with Robotunits fasteners and non-Robotunits extrusions and surfaces. The GUS 1100 can also be used with 40 mm series extrusions parallel to T-slot centerline.

Technical Data

Material: GD-Zn black KTL coated, galvanized steel

Tightening torque

IBS M08x020 = 26 Nm

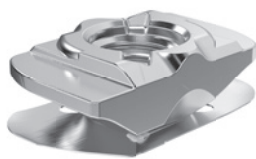


Order Code

Description	Scope of Delivery			Order Code	
	GUS 1100	TIN 4508	IBS M08x020		Weight
Corner Bracket 100 Kit, one side centered	1	4	4	GUS 1101 ¹	0.615 kg
Corner Bracket 100 Kit, one side centered	1	4	4	GUS 1101CP ²	0.615 kg
Corner Bracket 100, one side centered	16	-	-	GUS 1100 PAC 0016	9.500 kg

TIN 45__

Drop-in Nut

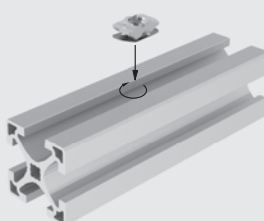
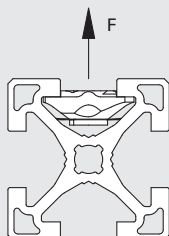
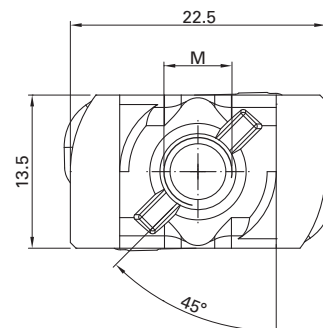
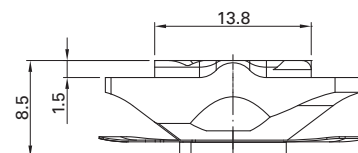
**Application**

Used for 40 mm and 50 mm series extrusions

- Self-centering
- Slip protection (leaf springs)
- Anti-twist safeguard

Technical Data

Material: galvanized steel

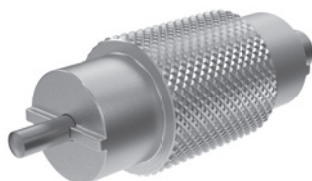


Order Code

Description	F ¹	Order Code	Weight
Drop-in Nut M4	1500 N	TIN 4504	0.010 kg
Drop-in Nut M4, conductive	1500 N	TIN 4594	0.010 kg
Drop-in Nut M5	3000 N	TIN 4505	0.010 kg
Drop-in Nut M5, conductive	3000 N	TIN 4595	0.010 kg
Drop-in Nut M6	4500 N	TIN 4506	0.010 kg
Drop-in Nut M6, conductive	4500 N	TIN 4596	0.010 kg
Drop-in Nut M8	6000 N	TIN 4508	0.010 kg
Drop-in Nut M8, conductive	6000 N	TIN 4598	0.010 kg

TIN 9990

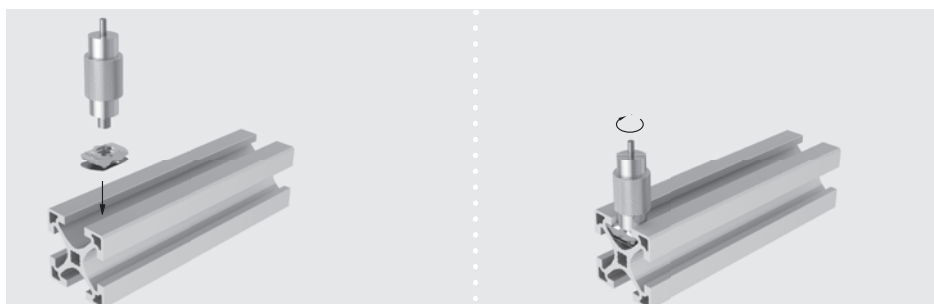
Inserter

**Application**

Assembly tool for inserting Drop-in Nuts into T-slot.

Technical Data

Material: galvanized steel



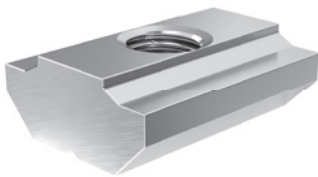
Order Code

Description	Order Code	Weight
Inserter	TIN 9990	0.045 kg

1) Pull-out values are based on screw quality 8.8

TIN 60__

T-Nut



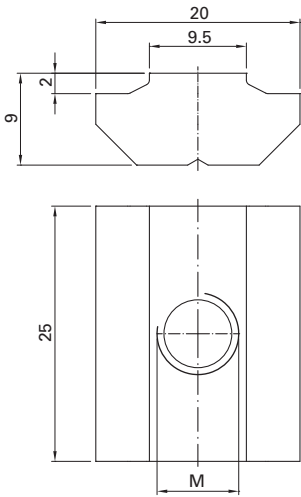
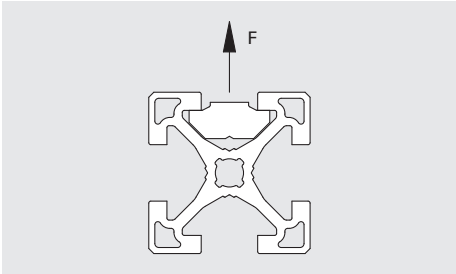
Application

For 40 mm series and 50 mm series extrusions

- Self-centering

Technical Data

Material: galvanized steel



Order Code

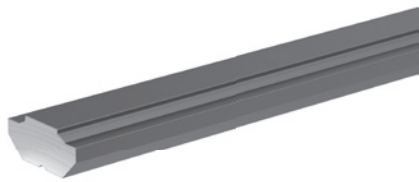


Description		F ¹	Order Code	Weight
T-Nut M8		7500 N	TIN 6008	0.027 kg
T-Nut M10		7500 N	TIN 6010	0.025 kg

1) Pull-out values are based on screw quality 8.8
Drawing dimensions in mm

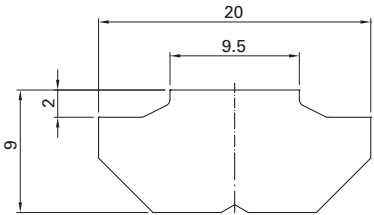
TIN_000

T-Nut Bar



Application
Used for specific applications with 40 mm and 50 mm series extrusions

Technical Data
Material: untreated steel
Stock length: 1000 or 3030 mm



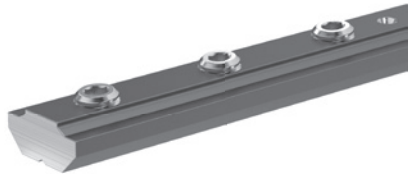
Order Code

Description	Order Code		Weight
	T-Nut Bar, stock length: 1000 mm	TIN 1000	
	T-Nut Bar, stock length: 3030 mm	TIN 3000	



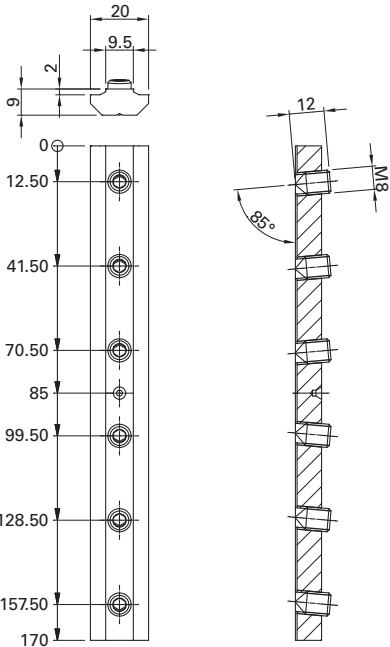
TIN 0171

T-Nut In-Line Fastener



Application
Used for end-to-end connections of 40 mm and 50 mm series extrusions

Technical Data
Material: galvanized steel



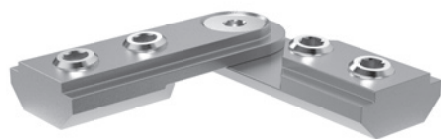
Order Code

Description	Scope of Delivery		Order Code	Weight
	Base Part	GST M08x012 SPI		
	1	6		

Drawing dimensions in mm

TIN 4545

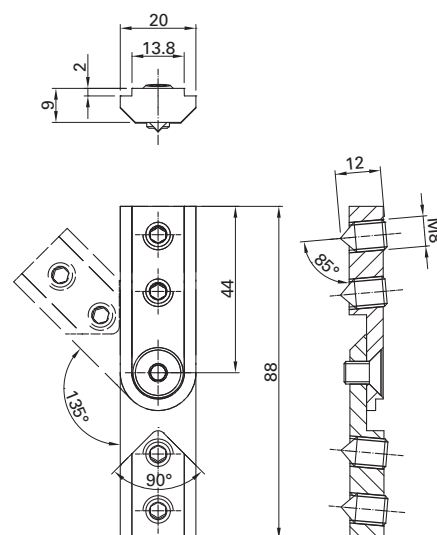
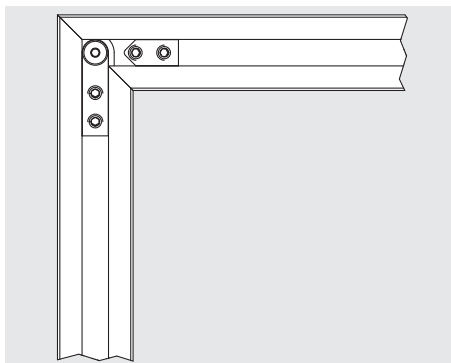
Miter Fastener

**Application**

Fasteners for extrusions with miter cuts

Technical Data

Material: galvanized steel



Order Code

Description	Scope of Delivery				Order Code	Weight
	Base Part countersink	Base Part thread	GST M08x012 SPI	SKS M06x010		
Miter Fastener	1	1	4	1	TIN 4545	0.098 kg

TIN _000

Special Fastener

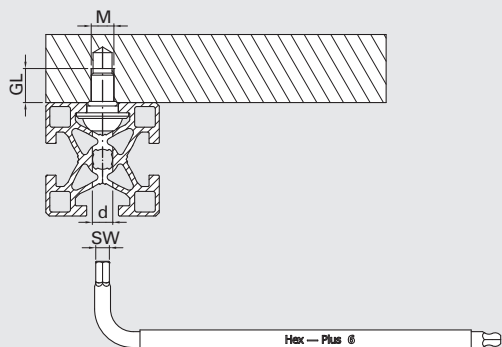
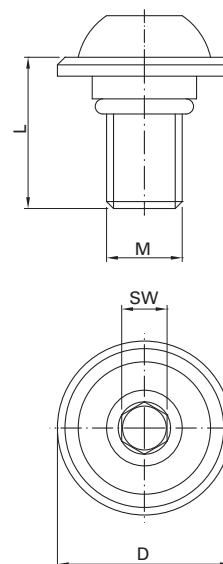
**Application**

For mounting parts onto Robotunits extrusions where no holes are to be seen from the outside of the assembly

In contrast with all other Robotunits fasteners, this fastener requires drilling.

Technical Data

Material: galvanized steel, NBR



Order Code

Description	GL	SW	M	d	D	L	Order Code	Weight
Special Fastener 40	15	5	M8	7	20	20	TIN 4000	0.016 kg
Special Fastener 50	15	6	M10	9	23	20	TIN 5000	0.032 kg



EASILY CONSTRUCTED

SAFETY FENCE SYSTEM



Safety standard requirements have never been as demanding as today. National and international standards have to be considered. Quickly changing production requirements and continuous upgrades and adaptations require a flexible and time-saving Safety Fence System.

Order completely pre-assembled components that are easily and quickly installed. Nothing is so simple and safe as the Safety Fence System from Robotunits.



Turn-key offer

- Included in the price and delivery: ready-to-insert, completely assembled elements (including safety fence foot and connectors between elements)
- modular safety fence system with flat and door panels
- standard widths from 518 mm to 1507 mm or special-width panels
- standard height 2200 mm or special height panels



Ready to install

- easy installation of fully assembled panels
- minimum installation time



One Mesh Clip, many functions

- impact rated up to 80 kg at 10 km/h
- small number of parts
- visually appealing design



High flexibility

- quick installation of all panels
- panels can be easily removed to gain access to machine area
- adjustable to any angle



Easy installation

- only one person required for setup
- only one Allen wrench size needed
- reusable components



Fully integrated Safety Fence System

- uniform slot size and shape
- completely compatible with entire Modular Automation System
- quick and easy attachment of accessories
- use of standard screws and standard panels



Save time, cut cost

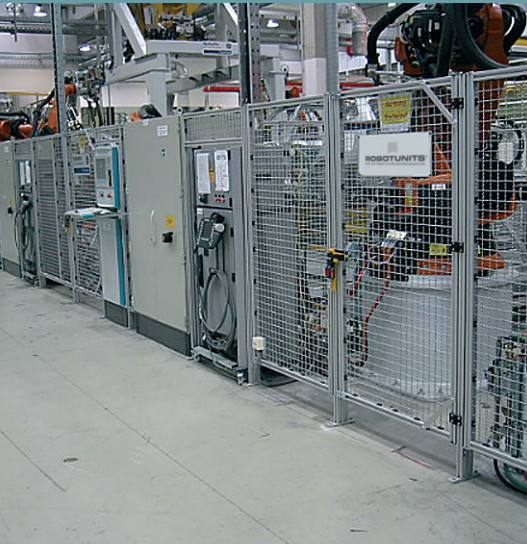
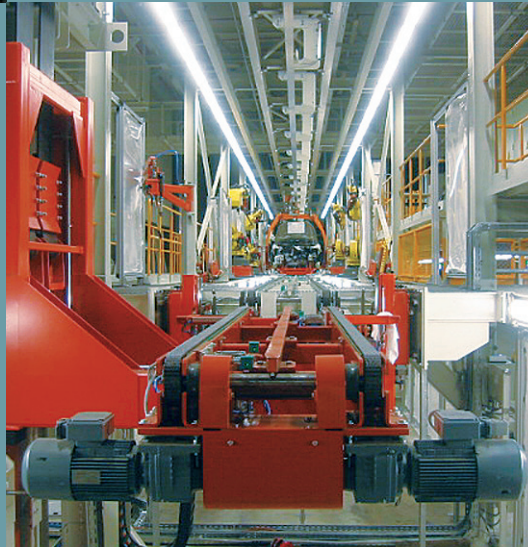
- no additional design expenses
- simple panel selection
- efficient one-person installation
- simple adjustment and setup on-site
- just one order code for the complete safety fence panels
- easy attachment of accessories (safety switches, etc.)



Safety

- complete documentation
- meets European Machinery Safety Standards and the latest automotive industry specifications





Easily constructed Safety Fence System

Basic System	Page 86
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Basic Panel SBE _____ P. 88	Basic Single Door SBS 1044 P. 90	Basic Double Door SBD 2083 P. 91	Basic Sliding Door SBF 0872 P. 92
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Allround System	Page 94
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Allround Panel SAE _____ P. 96	Allround Post SAP 4180 P. 98	Allround Single Door SAS 1044 P. 99	Allround Double Door SAD 2083 P. 100	Allround Sliding Door SAF 0872 P. 101
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Safety Fence Accessory Overview	Page 126
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Safety Distances for Safety Systems	Page 187
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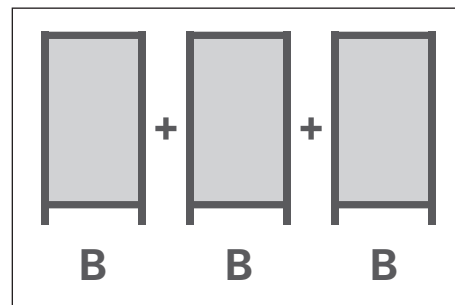
Basic System

The Basic system is the “classic” among Robotunits safety fence systems. Easy to use and low in price. Ideal for standard applications in machine design and in production automation.

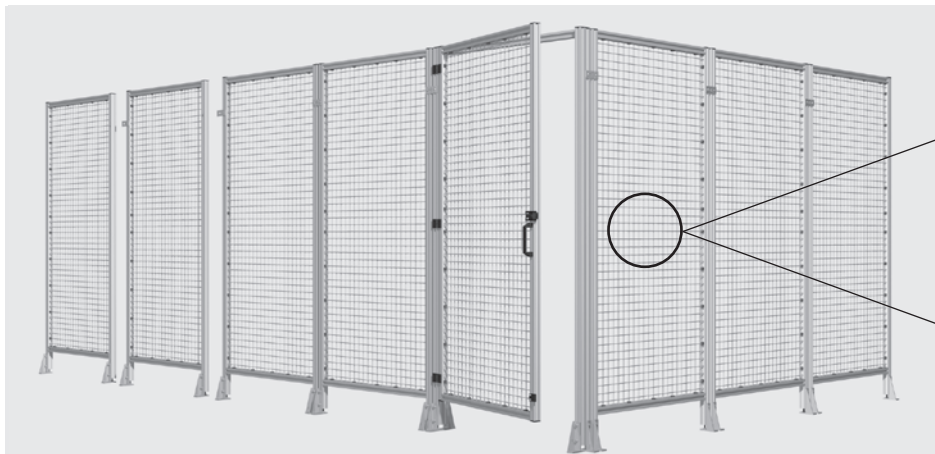
The Basic system is capable of stopping up to 80 kg at 10 km/h.

How does the Basic system work?

With the Basic system, the Basic panels (B) or Basic doors (D) are lined up and then directly connected with one another using Safety Fence Fasteners.

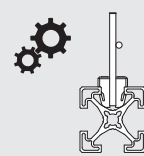


Basic System Overview



Panel Options

Weld Mesh with Weld Mesh Clip



Polycarbonate with Panel Profile



Basic Panel



Basic Doors

Single Door



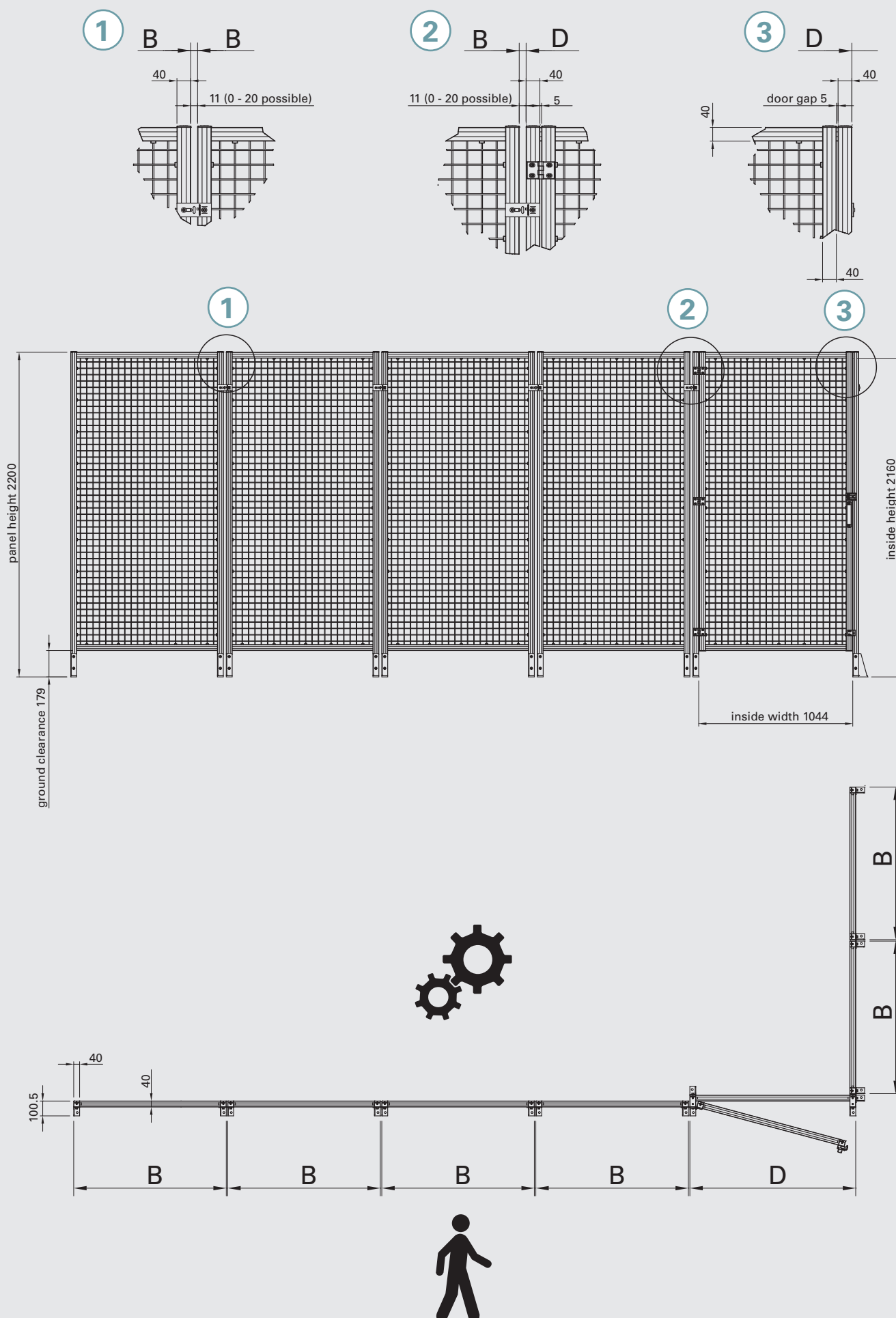
Double Door

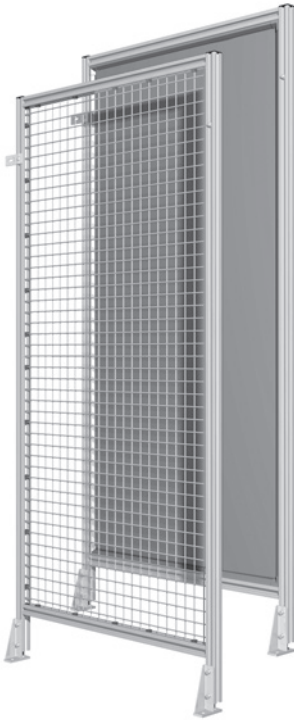


Sliding Door



Basic System Dimensions





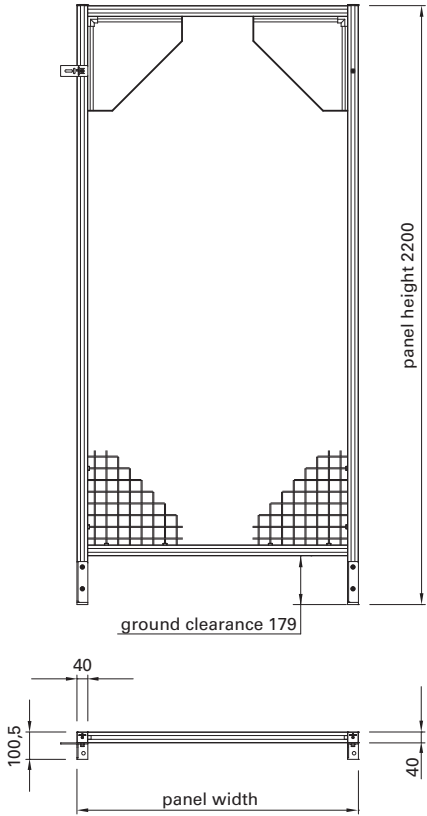
Panel Options:
Weld Mesh or
4 mm thick Polycarbonate

Application
For general safety fencing

Technical Data
Material: EN AW-6063-T66 clear anodized aluminum; galvanized steel, powder-coated, chrome silver steel; black ABS V0 composite; Weld Mesh or Polycarbonate; conductive Weld Mesh and frame; Safety Fence Floor Bracket height adjustable from - 20 / + 5 mm

- Scope of Delivery**
Completely pre-assembled, consisting of:
- 2 Post Extrusions 40 x 40 PIL 4140
 - 2 Horizontal Extrusions 40 x 40 PIL 4140
 - 4 Fasteners FAS 4043, conductive
 - 1 Safety Fence Fastener TIN 4511
 - 2 End Caps CAP 4041
 - 2 Safety Fence Floor Brackets BAP 2051
- Panel option according to the order code:
- Weld Mesh with Weld Mesh Clip and Safety Fence Mesh Retainer
 - Polycarbonate with Panel Profile

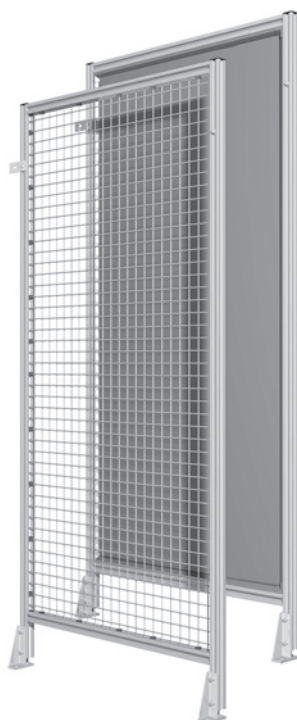
Design tip:
Standard widths offer an outstanding price/performance ratio and quick delivery.



Order Code

Description	Panel Width	Panel Option	Order Code	
				Weight
Basic Panel Standard Width	0518	Weld Mesh	SBE 0518 SNA 2200	11.797 kg
Basic Panel Standard Width	0776	Weld Mesh	SBE 0776 SNA 2200	14.610 kg
Basic Panel Standard Width	1034	Weld Mesh	SBE 1034 SNA 2200	17.425 kg
Basic Panel Standard Width	1507	Weld Mesh	SBE 1507 SNA 2200	22.584 kg
Basic Panel Standard Width	0518	Polycarbonate	SBE 0518 PNA 2200	12.993 kg
Basic Panel Standard Width	0776	Polycarbonate	SBE 0776 PNA 2200	16.120 kg
Basic Panel Standard Width	1034	Polycarbonate	SBE 1034 PNA 2200	19.246 kg
Basic Panel Standard Width	1507	Polycarbonate	SBE 1507 PNA 2200	24.977 kg

Drawing dimensions in mm

**Panel Options:**

Weld Mesh or
4 mm thick Polycarbonate

Application

For general safety fencing

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum; galvanized steel, powder-coated, chrome silver steel; black ABS V0 composite; Weld Mesh or Polycarbonate; conductive Weld Mesh and frame; Safety Fence Floor Bracket height adjustable from - 20 / + 5 mm

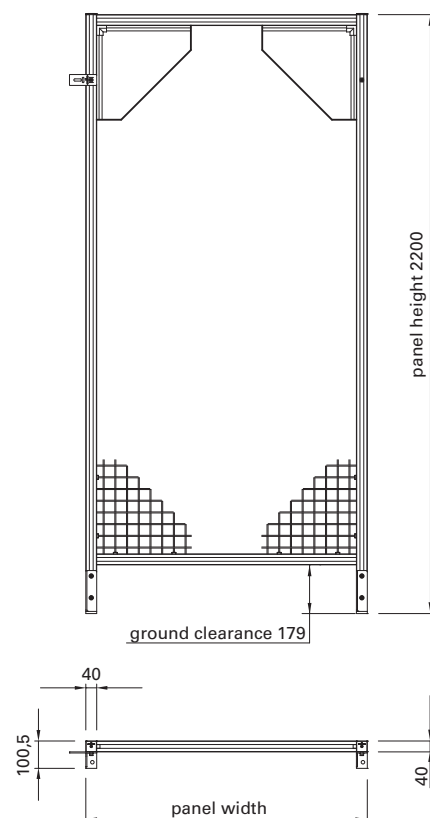
Scope of Delivery

Completely pre-assembled, consisting of:

- 2 Post Extrusions 40 x 40 PIL 4140
 - 2 Horizontal Extrusions 40 x 40 PIL 4140
 - 4 Fasteners FAS 4043, conductive
 - 1 Safety Fence Fastener TIN 4511
 - 2 End Caps CAP 4041
 - 2 Safety Fence Floor Brackets BAP 2051
- Panel option according to the order code:
- Weld Mesh with Weld Mesh Clip and Safety Fence Mesh Retainer
 - Polycarbonate with Panel Profile

Note for Polycarbonate panel option:

Any special widths from 152 mm to 1506 are available.



Order Code

Description	Panel Width	Panel Option	Order Code	Weight
Basic Panel Special Width	0131	Weld Mesh	SBE 0131 SNA 2200	7.578 kg
Basic Panel Special Width	0174	Weld Mesh	SBE 0174 SNA 2200	8.046 kg
Basic Panel Special Width	0217	Weld Mesh	SBE 0217 SNA 2200	8.515 kg
Basic Panel Special Width	0260	Weld Mesh	SBE 0260 SNA 2200	8.984 kg
Basic Panel Special Width	0303	Weld Mesh	SBE 0303 SNA 2200	9.453 kg
Basic Panel Special Width	0346	Weld Mesh	SBE 0346 SNA 2200	9.922 kg
Basic Panel Special Width	0389	Weld Mesh	SBE 0389 SNA 2200	10.391 kg
Basic Panel Special Width	0432	Weld Mesh	SBE 0432 SNA 2200	10.859 kg
Basic Panel Special Width	0475	Weld Mesh	SBE 0475 SNA 2200	11.328 kg
Basic Panel Special Width	0561	Weld Mesh	SBE 0561 SNA 2200	12.266 kg
Basic Panel Special Width	0604	Weld Mesh	SBE 0604 SNA 2200	12.735 kg
Basic Panel Special Width	0647	Weld Mesh	SBE 0647 SNA 2200	13.204 kg
Basic Panel Special Width	0690	Weld Mesh	SBE 0690 SNA 2200	13.672 kg
Basic Panel Special Width	0733	Weld Mesh	SBE 0733 SNA 2200	14.141 kg
Basic Panel Special Width	0819	Weld Mesh	SBE 0819 SNA 2200	15.079 kg
Basic Panel Special Width	0862	Weld Mesh	SBE 0862 SNA 2200	15.548 kg
Basic Panel Special Width	0905	Weld Mesh	SBE 0905 SNA 2200	16.018 kg
Basic Panel Special Width	0948	Weld Mesh	SBE 0948 SNA 2200	16.487 kg
Basic Panel Special Width	0991	Weld Mesh	SBE 0991 SNA 2200	16.956 kg
Basic Panel Special Width	1077	Weld Mesh	SBE 1077 SNA 2200	17.894 kg
Basic Panel Special Width	1120	Weld Mesh	SBE 1120 SNA 2200	18.363 kg
Basic Panel Special Width	1163	Weld Mesh	SBE 1163 SNA 2200	18.832 kg
Basic Panel Special Width	1206	Weld Mesh	SBE 1206 SNA 2200	19.301 kg
Basic Panel Special Width	1249	Weld Mesh	SBE 1249 SNA 2200	19.770 kg
Basic Panel Special Width	1292	Weld Mesh	SBE 1292 SNA 2200	20.239 kg
Basic Panel Special Width	1335	Weld Mesh	SBE 1335 SNA 2200	20.708 kg
Basic Panel Special Width	1378	Weld Mesh	SBE 1378 SNA 2200	21.177 kg
Basic Panel Special Width	1421	Weld Mesh	SBE 1421 SNA 2200	21.646 kg
Basic Panel Special Width	1464	Weld Mesh	SBE 1464 SNA 2200	22.115 kg



Left-hand hung Single Door

Design tip:

Safety fence door elements may need to be additionally grounded.

Application

For general safety fencing

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum; galvanized steel, powder-coated, chrome silver steel; black ABS V0 composite; Weld Mesh or Polycarbonate; conductive Weld Mesh and frame; Safety Fence Floor Bracket height adjustable from - 20 / + 5 mm

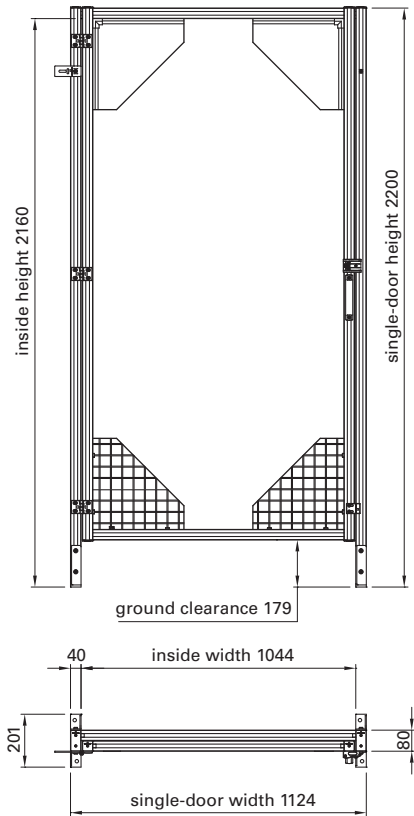
Scope of Delivery

Completely pre-assembled, consisting of:

- 2 Post Extrusions 40 x 80 PIL 4180
- 1 Horizontal Extrusion 40 x 40 PIL 4140
- 4 Door Panel Extrusions 40 x 40 PIL 4140
- 6 Fasteners FAS 4043, conductive
- 1 Safety Fence Fastener TIN 4511
- 4 End Caps CAP 4041
- 2 End Caps CAP 4081
- 4 Safety Fence Floor Brackets BAP 2051
- 1 Handle DOR 4501
- 3 Hinges DOR 4511
- 1 Door Catch DOR 4553
- 1 Door Stop DOR 4555

Panel option according to the order code:

- Weld Mesh with Weld Mesh Clip and Safety Fence Mesh Retainer
- Polycarbonate with Panel Profile



Order Code

			Order Code	
Description	Hinge Position	Panel Option		Weight
Basic Single Door	Left	Weld Mesh	SBS 1044 SLA 2160	29.974 kg
Basic Single Door	Right	Weld Mesh	SBS 1044 SRA 2160	29.974 kg
Basic Single Door	Left	Polycarbonate	SBS 1044 PLA 2160	31.795 kg
Basic Single Door	Right	Polycarbonate	SBS 1044 PRA 2160	31.795 kg

Drawing dimensions in mm

SBD 2083

Basic Double Door



Left-hand hung Double Door

Design tip:

Safety fence door elements may need to be additionally grounded.

Application

For general safety fencing

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum; galvanized steel, powder-coated, chrome silver steel; black ABS V0 composite; Weld Mesh or Polycarbonate; conductive Weld Mesh and frame; Safety Fence Floor Bracket height adjustable from - 20 / + 5 mm

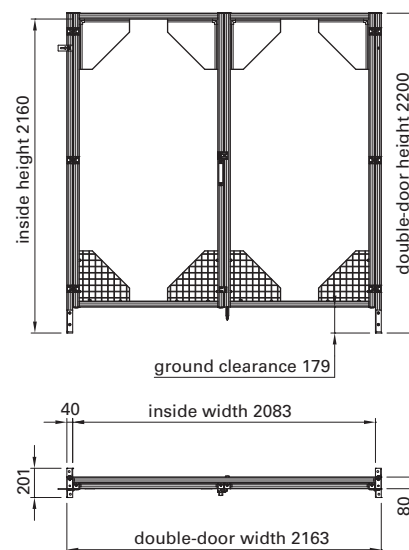
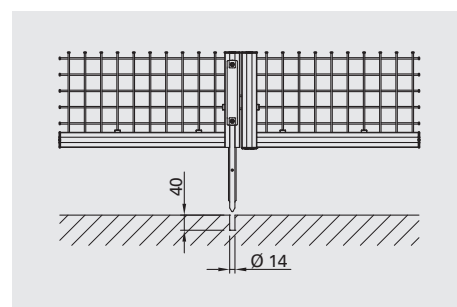
Scope of Delivery

Completely pre-assembled, consisting of:

- 2 Post Extrusions 40 x 80 PIL 4180
- 1 Horizontal Extrusion 40 x 40 PIL 4140
- 8 Door Panel Extrusions 40 x 40 PIL 4140
- 10 Fasteners FAS 4043, conductive
- 1 Safety Fence Fastener TIN 4511
- 7 End Caps CAP 4041
- 2 End Caps CAP 4081
- 4 Safety Fence Floor Brackets BAP 2051
- 1 Handle DOR 4501
- 6 Hinges DOR 4511
- 1 Door Catch DOR 4553
- 1 Door Stop DOR 4555
- 1 Floor Catch DOR 4561

Panel option according to the order code:

- Weld Mesh with Weld Mesh Clip and Safety Fence Mesh Retainer
- Polycarbonate with Panel Profile

**Floor Catch****Order Code**

Description	Hinge Position	Panel Option	Order Code	
				Weight
Basic Double Door	Left	Weld Mesh	SBD 2083 SLA 2160	48.098 kg
Basic Double Door	Right	Weld Mesh	SBD 2083 SRA 2160	48.098 kg
Basic Double Door	Left	Polycarbonate	SBD 2083 PLA 2160	51.739 kg
Basic Double Door	Right	Polycarbonate	SBD 2083 PRA 2160	51.739 kg

Drawing dimensions in mm

SBF 0872

Basic Sliding Door



Sliding door opening on right

Design tip:

Safety fence door elements may need to be additionally grounded.

Application

For general safety fencing

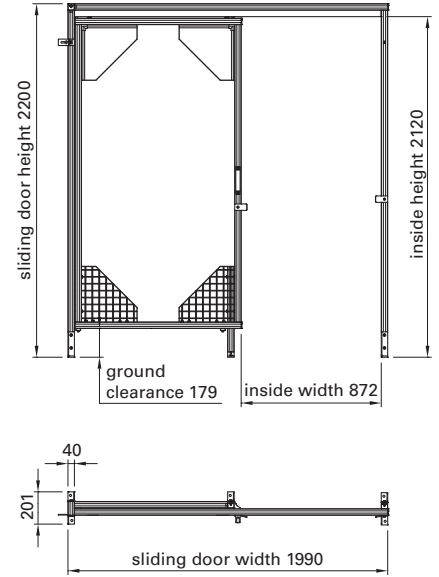
Technical Data

Material: EN AW-6063-T66 clear anodized aluminum; galvanized steel, powder-coated, chrome silver steel; black ABS V0 composite; Weld Mesh or Polycarbonate; conductive Weld Mesh and frame; Safety Fence Floor Bracket height adjustable from - 20 / + 5 mm

Scope of Delivery

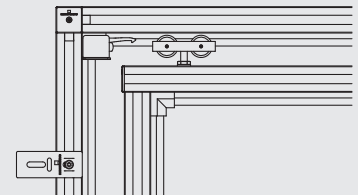
Completely pre-assembled, consisting of:

- 2 Post Extrusions 40 x 80 PIL 4180
 - 1 Horizontal Extrusion 40 x 40 PIL 4140
 - 4 Sliding Door Extrusions 40 x 40 PIL 4140
 - 3 Fixed Panel Extrusions 40 x 40 PIL 4140
 - 10 Fasteners FAS 4043, conductive
 - 1 Fastener FAS 4083
 - 1 Safety Fence Fastener TIN 4511
 - 9 End Caps CAP 4041
 - 5 Safety Fence Floor Brackets BAP 2051
 - 2 Roller Sets DOR 4031
 - 2 Sliding Door Stops DOR 4032
 - 1 Aluminum Guiderail DOL 4034
 - 1 Handle DOR 4501
 - 2 Centering Guides DOR 4571
 - 2 Sliders DOR 4573
- Panel option according to the order code:
- Weld Mesh with Weld Mesh Clip and Safety Fence Mesh Retainer
 - Polycarbonate with Panel Profile



Rubber stop

Rubber stop with retention spring

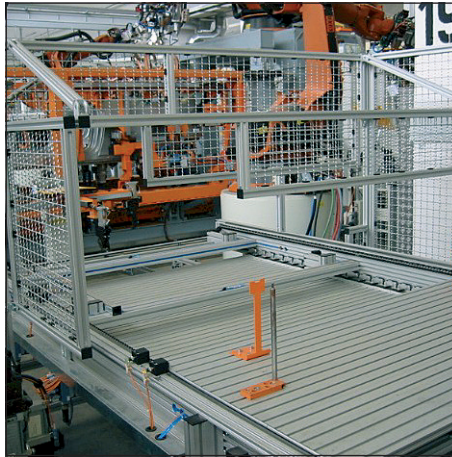
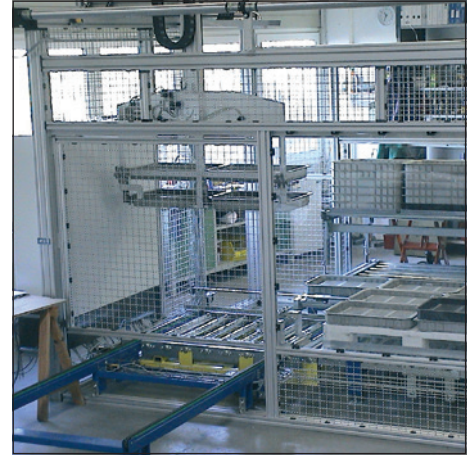
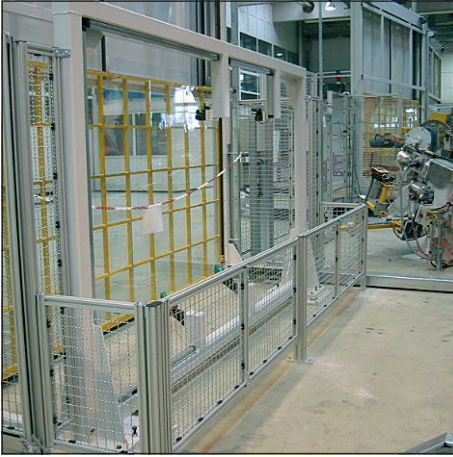


Order Code

Description	Door Opening	Panel Option	Order Code	Weight
Basic Sliding Door	Left	Weld Mesh	SBF 0872 SLA 2120	46.060 kg
Basic Sliding Door	Right	Weld Mesh	SBF 0872 SRA 2120	46.060 kg
Basic Sliding Door	Left	Polycarbonate	SBF 0872 PLA 2120	50.202 kg
Basic Sliding Door	Right	Polycarbonate	SBF 0872 PRA 2120	50.202 kg

Drawing dimensions in mm

Safety Fence Application Examples



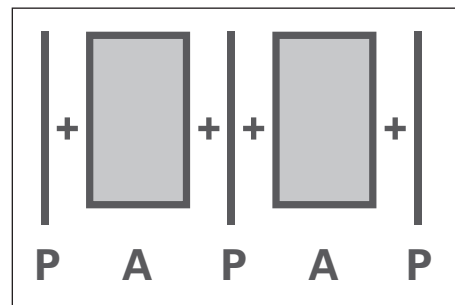
Allround System

The Allround system offers high flexibility. Panels can be attached and removed from the pre-assembled posts. This allows for easy access to the safety area without disconnecting any accessories attached to the posts, e.g. air hoses, safety equipment etc.

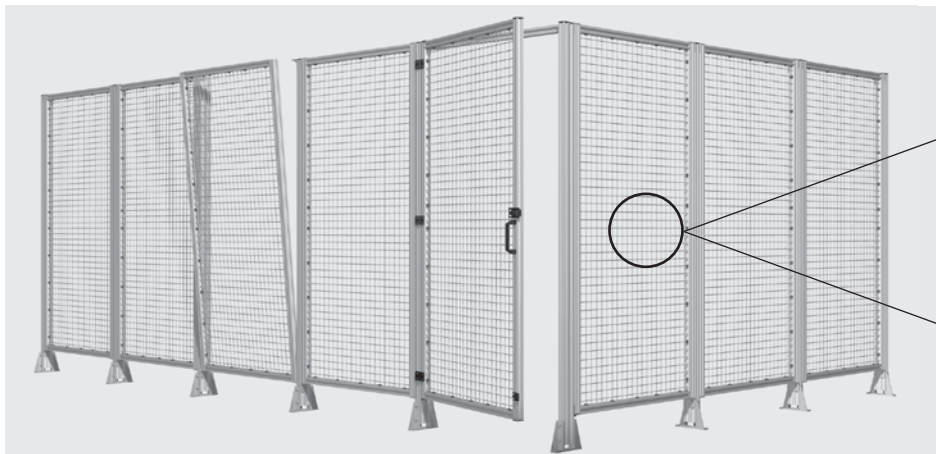
The Allround system is capable of stopping up to 80 kg at 10 km/h.

How does the Allround system work?

In the Allround System, Allround panels (A) are fitted and bolted to the pre-assembled posts (P).



Allround System Overview



Panel Options

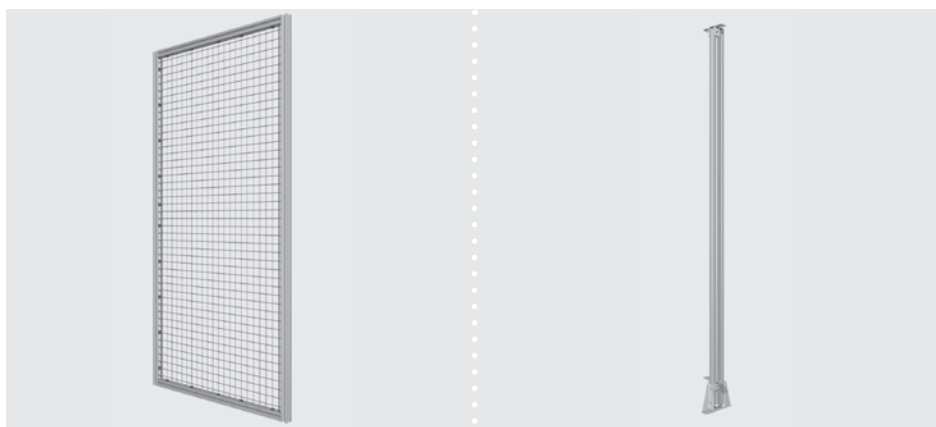
Weld Mesh with Weld Mesh Clip



Polycarbonate with Panel Profile



Allround Panel and Post



Allround Doors

Single Door



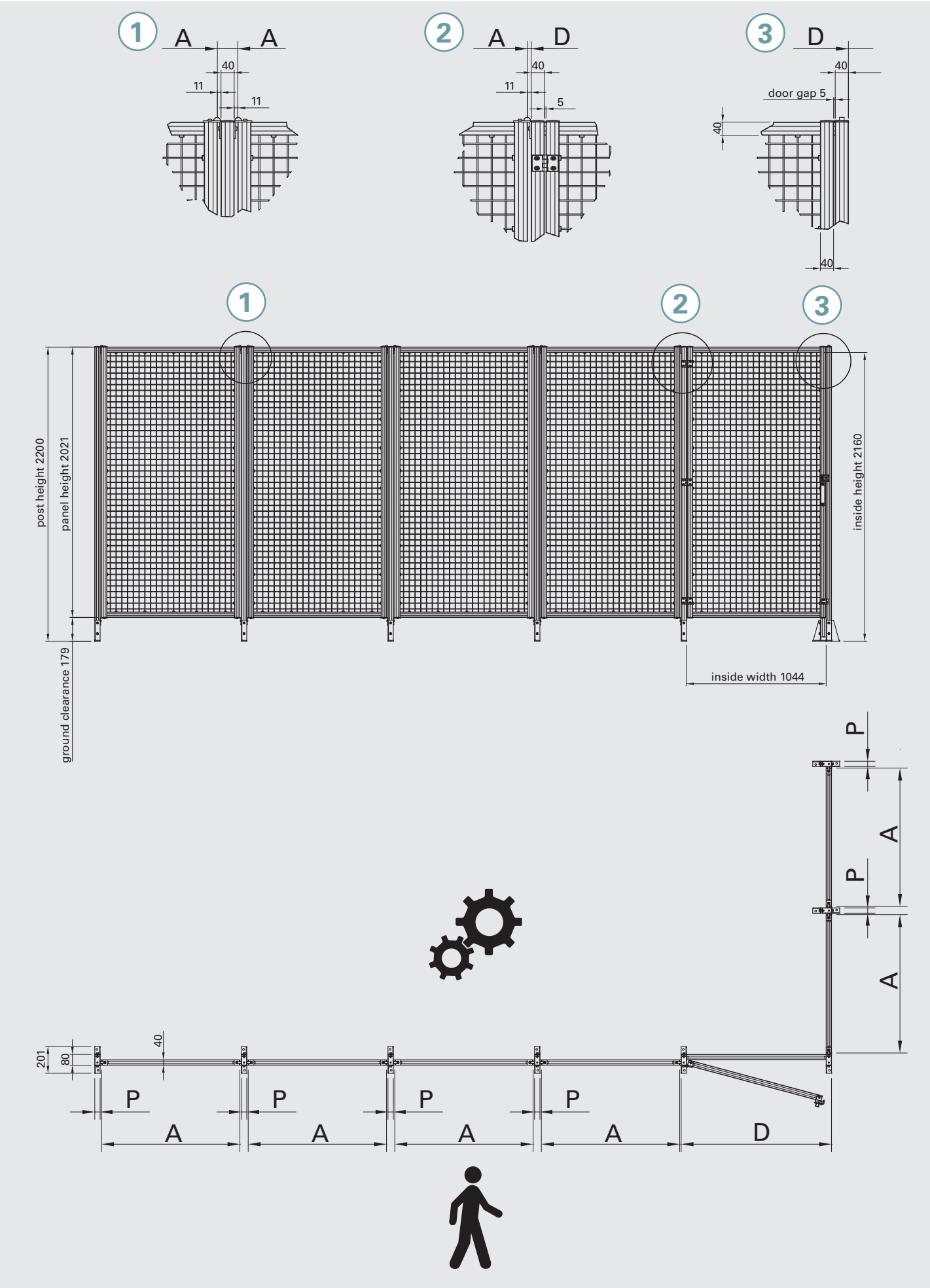
Double Door

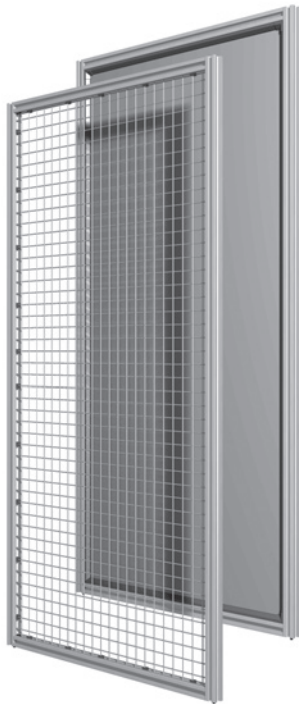


Sliding Door



Allround System Dimensions





Panel Options:
Weld Mesh or
4 mm thick Polycarbonate

Application

For general safety fencing in
combination with Allround posts

Technical Data

Material: EN AW-6063-T66 clear
anodized aluminum; galvanized steel;
Weld Mesh or Polycarbonate;
conductive Weld Mesh and frame

Scope of Delivery

Completely pre-assembled, consisting of:

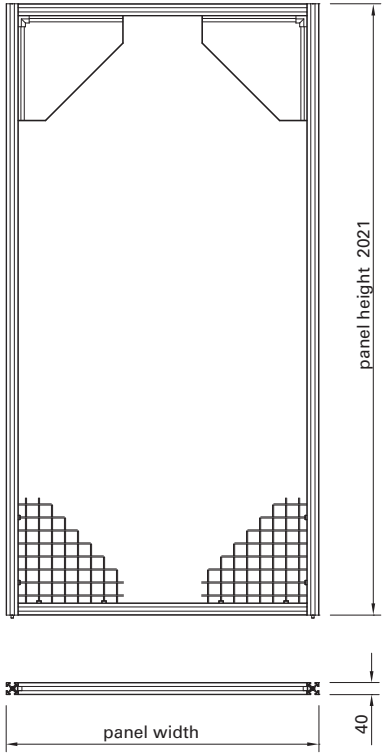
- 4 Extrusions 40x40 PIL 4140
- 4 Fasteners FAS 4043, conductive
- 2 Bolts SSP 4900

Panel option according to the order code:

- Weld Mesh with Weld Mesh Clip and
Safety Fence Mesh Retainer
- Polycarbonate with Panel Profile

Design tip:

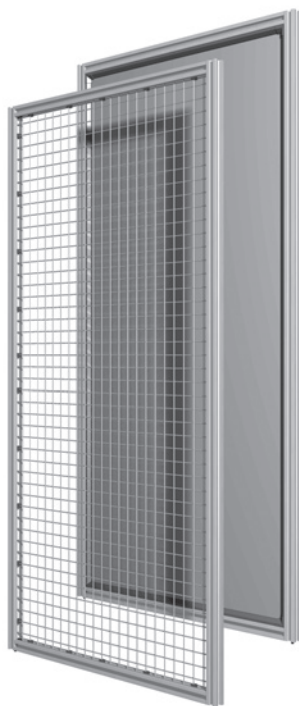
Standard widths offer an outstanding
price/performance ratio and quick
delivery.



Order Code

Description	Panel Width	Panel Option	Order Code	Weight
Allround Panel Standard Width	0518	Weld Mesh	SAE 0518 SNN 2021	10.034 kg
Allround Panel Standard Width	0776	Weld Mesh	SAE 0776 SNN 2021	12.847 kg
Allround Panel Standard Width	1034	Weld Mesh	SAE 1034 SNN 2021	15.661 kg
Allround Panel Standard Width	1507	Weld Mesh	SAE 1507 SNN 2021	20.820 kg
Allround Panel Standard Width	0518	Polycarbonate	SAE 0518 PNN 2021	11.230 kg
Allround Panel Standard Width	0776	Polycarbonate	SAE 0776 PNN 2021	14.356 kg
Allround Panel Standard Width	1034	Polycarbonate	SAE 1034 PNN 2021	17.482 kg
Allround Panel Standard Width	1507	Polycarbonate	SAE 1507 PNN 2021	23.214 kg

Drawing dimensions in mm

**Panel Options:**

Weld Mesh or
4 mm thick Polycarbonate

Application

For general safety fencing in
combination with Allround posts

Technical Data

Material: EN AW-6063-T66 clear
anodized aluminum; galvanized steel,
Weld Mesh or Polycarbonate;
conductive Weld Mesh and frame

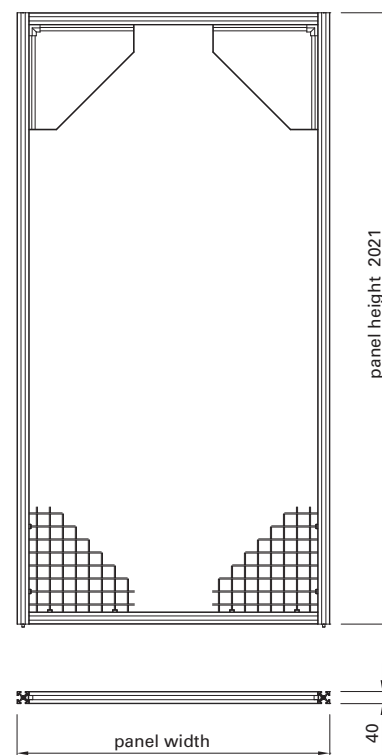
Scope of Delivery

Completely pre-assembled, consisting of:

- 4 Extrusions 40x40 PIL 4140
 - 4 Fasteners FAS 4043, conductive
 - 2 Bolts SSP 4900
- Panel option according to the order code:
- Weld Mesh with Weld Mesh Clip and Safety Fence Mesh Retainer
 - Polycarbonate with Panel Profile

Note for Polycarbonate panel option:

Any special widths from 152
mm to 1506 are available for
4 mm thick Polycarbonate panel option



Order Code

Description	Panel Width	Panel Option	Order Code	Weight
Allround Panel Special Width	0131	Weld Mesh	SAE 0131 SNN 2021	5.815 kg
Allround Panel Special Width	0174	Weld Mesh	SAE 0174 SNN 2021	6.283 kg
Allround Panel Special Width	0217	Weld Mesh	SAE 0217 SNN 2021	6.752 kg
Allround Panel Special Width	0260	Weld Mesh	SAE 0260 SNN 2021	7.221 kg
Allround Panel Special Width	0303	Weld Mesh	SAE 0303 SNN 2021	7.690 kg
Allround Panel Special Width	0346	Weld Mesh	SAE 0346 SNN 2021	8.159 kg
Allround Panel Special Width	0389	Weld Mesh	SAE 0389 SNN 2021	8.628 kg
Allround Panel Special Width	0432	Weld Mesh	SAE 0432 SNN 2021	9.096 kg
Allround Panel Special Width	0475	Weld Mesh	SAE 0475 SNN 2021	9.565 kg
Allround Panel Special Width	0561	Weld Mesh	SAE 0561 SNN 2021	10.503 kg
Allround Panel Special Width	0604	Weld Mesh	SAE 0604 SNN 2021	10.972 kg
Allround Panel Special Width	0647	Weld Mesh	SAE 0647 SNN 2021	11.441 kg
Allround Panel Special Width	0690	Weld Mesh	SAE 0690 SNN 2021	11.909 kg
Allround Panel Special Width	0733	Weld Mesh	SAE 0733 SNN 2021	12.378 kg
Allround Panel Special Width	0819	Weld Mesh	SAE 0819 SNN 2021	13.316 kg
Allround Panel Special Width	0862	Weld Mesh	SAE 0862 SNN 2021	13.785 kg
Allround Panel Special Width	0905	Weld Mesh	SAE 0905 SNN 2021	14.254 kg
Allround Panel Special Width	0948	Weld Mesh	SAE 0948 SNN 2021	14.723 kg
Allround Panel Special Width	0991	Weld Mesh	SAE 0991 SNN 2021	15.192 kg
Allround Panel Special Width	1077	Weld Mesh	SAE 1077 SNN 2021	16.130 kg
Allround Panel Special Width	1120	Weld Mesh	SAE 1120 SNN 2021	16.599 kg
Allround Panel Special Width	1163	Weld Mesh	SAE 1163 SNN 2021	17.068 kg
Allround Panel Special Width	1206	Weld Mesh	SAE 1206 SNN 2021	17.537 kg
Allround Panel Special Width	1249	Weld Mesh	SAE 1249 SNN 2021	18.006 kg
Allround Panel Special Width	1292	Weld Mesh	SAE 1292 SNN 2021	18.475 kg
Allround Panel Special Width	1335	Weld Mesh	SAE 1335 SNN 2021	18.944 kg
Allround Panel Special Width	1378	Weld Mesh	SAE 1378 SNN 2021	19.413 kg
Allround Panel Special Width	1421	Weld Mesh	SAE 1421 SNN 2021	19.882 kg
Allround Panel Special Width	1464	Weld Mesh	SAE 1464 SNN 2021	20.351 kg

Drawing dimensions in mm



Application

Posts for Safety Fence Components

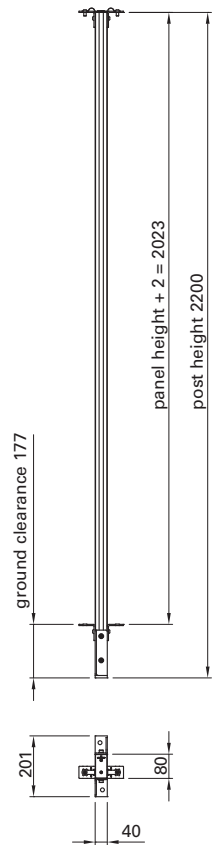
Technical Data

Material: EN AW-6063-T66 clear anodized aluminum; galvanized steel, powder-coated, chrome silver steel; black
ABS V0 composite, conductive, Safety Fence Floor Bracket height adjustable
20 - 5 mm with Screw Retainer

Scope of Delivery

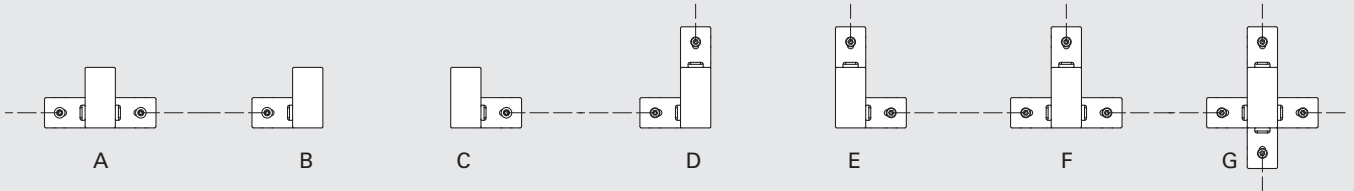
Completely pre-assembled, consisting of:

- 1 Post Extrusion 40 x 80 PIL 4180
- 90° Safety Fence Fastener TIN 4521 as per attachment option
- 1 End Cap CAP 4081
- 2 Safety Fence Floor Brackets BAP 2051
- Screw Retainer SSP 5500 as per attachment option



Attachment of Safety Fence Fastener,
Type A

Safety Fence Fastener Attachment Options



Order Code

Description	Extrusion	Attachment Option	Order Code	
				Weight
Allround Post	40 x 80	Type A	SAP 4180 ANA 2200	6.467 kg
Allround Post	40 x 80	Type B	SAP 4180 BNA 2200	6.187 kg
Allround Post	40 x 80	Type C	SAP 4180 CNA 2200	6.187 kg
Allround Post	40 x 80	Type D	SAP 4180 DNA 2200	6.467 kg
Allround Post	40 x 80	Type E	SAP 4180 ENA 2200	6.467 kg
Allround Post	40 x 80	Type F	SAP 4180 FNA 2200	6.747 kg
Allround Post	40 x 80	Type G	SAP 4180 GNA 2200	7.027 kg

Drawing dimensions in mm

SAS 1044

Allround Single Door



Left-hand hung Single Door

Design tip:

Safety fence door elements may need to be additionally grounded.

Application

For general safety fencing

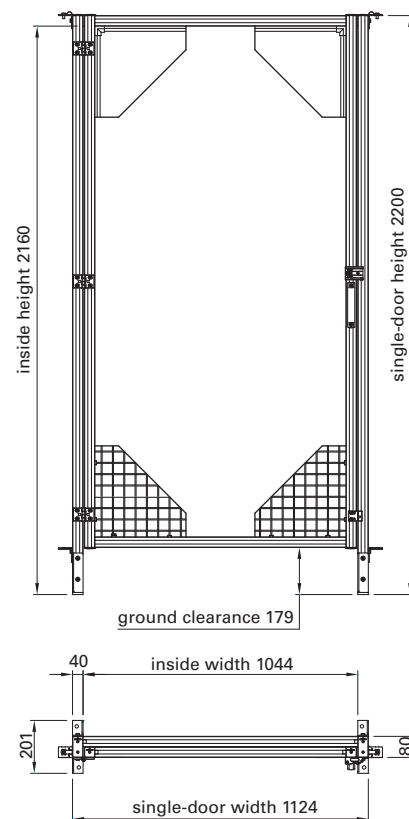
Technical Data

Material: EN AW-6063-T66 clear anodized aluminum; galvanized steel, powder-coated, chrome silver steel; black ABS V0 composite; Weld Mesh or Polycarbonate; conductive Weld Mesh and frame; Safety Fence Floor Bracket height adjustable - 20 / + 5 mm, with Screw Retainer

Scope of Delivery

Completely pre-assembled, consisting of:

- 2 Post Extrusions 40 x 80 PIL 4180
 - 1 Horizontal Extrusion 40 x 40 PIL 4140
 - 4 Door Panel Extrusions 40 x 40 PIL 4140
 - 6 Fasteners FAS 4043, conductive
 - 4 90° Safety Fence Fasteners TIN 4521
 - 4 End Caps CAP 4041
 - 2 End Caps CAP 4081
 - 4 Safety Fence Floor Brackets BAP 2051
 - 1 Handle DOR 4501
 - 3 Hinges DOR 4511
 - 1 Door Catch DOR 4553
 - 1 Door Stop DOR 4555
 - 2 Screw Retainers SSP 5500
- Panel option according to the order code:
- Weld Mesh with Weld Mesh Clip and Safety Fence Mesh Retainer
 - Polycarbonate with Panel Profile



Order Code

			Order Code	Weight
Description	Hinge Position	Panel Option		
Allround Single Door	Left	Weld Mesh	SAS 1044 SLA 2160	30.381 kg
Allround Single Door	Right	Weld Mesh	SAS 1044 SRA 2160	30.381 kg
Allround Single Door	Left	Polycarbonate	SAS 1044 PLA 2160	32.202 kg
Allround Single Door	Right	Polycarbonate	SAS 1044 PRA 2160	32.202 kg

Drawing dimensions in mm



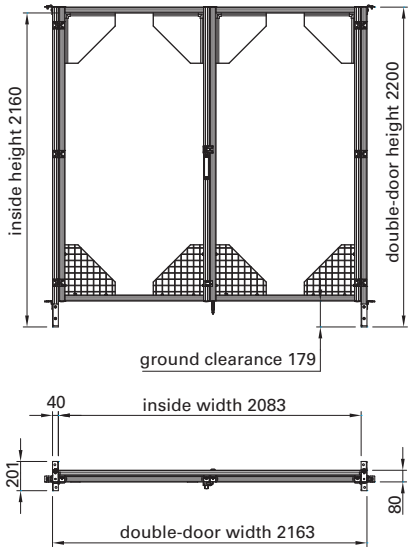
Left-hand hung Double Door

Design tip:
Safety fence door elements may need to be additionally grounded.

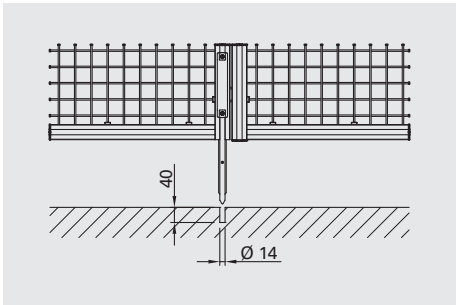
Application
For general safety fencing

Technical Data
Material: EN AW-6063-T66 clear anodized aluminum; galvanized steel, powder-coated, chrome silver steel; black ABS V0 composite; Weld Mesh or Polycarbonate; conductive Weld Mesh and frame; Safety Fence Floor Bracket height adjustable - 20 / + 5 mm, with Screw Retainer

- Scope of Delivery**
Completely pre-assembled, consisting of:
- 2 Post Extrusions 40 x 80 PIL 4180
 - 1 Horizontal Extrusion 40 x 40 PIL 4140
 - 8 Door Panel Extrusions 40 x 40 PIL 4140
 - 10 Fasteners FAS 4043, conductive
 - 4 90° Safety Fence FastenersTIN 4521
 - 7 End Caps CAP 4041
 - 2 End Caps CAP 4081
 - 4 Safety Fence Floor Brackets BAP 2051
 - 1 Handle DOR 4501
 - 6 Hinges DOR 4511
 - 1 Door Catch DOR 4553
 - 1 Door Stop DOR 4555
 - 1 Floor Catch DOR 4561
 - 2 Screw Retainers SSP 5500
- Panel option according to the order code:
- Weld Mesh with Weld Mesh Clip and Safety Fence Mesh Retainer
 - Polycarbonate with Panel Profile



Floor Catch



Order Code

			Order Code	
Description	Hinge Position	Panel Option		Weight
Allround Double Door	Left	Weld Mesh	SAD 2083 SLA 2160	48.505 kg
Allround Double Door	Right	Weld Mesh	SAD 2083 SRA 2160	48.505 kg
Allround Double Door	Left	Polycarbonate	SAD 2083 PLA 2160	52.146 kg
Allround Double Door	Right	Polycarbonate	SAD 2083 PRA 2160	52.146 kg

Drawing dimensions in mm

SAF 0872

Allround Sliding Door



Sliding door opening on right

Application

For general safety fencing

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum; galvanized steel, powder-coated, chrome silver steel; black ABS V0 composite; Weld Mesh or Polycarbonate; conductive Weld Mesh and frame; Safety Fence Floor Bracket height adjustable - 20 / + 5 mm, with Screw Retainer

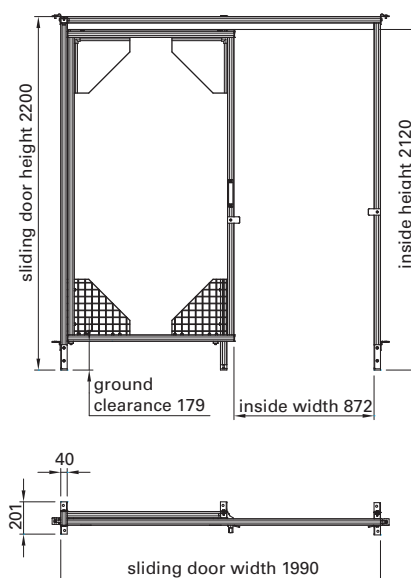
Scope of Delivery

Completely pre-assembled, consisting of:

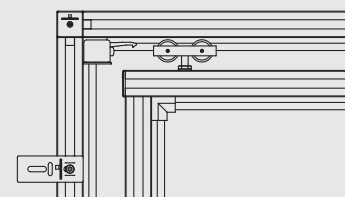
- 2 Post Extrusions 40 x 80 PIL 4180
 - 1 Horizontal Extrusion 40 x 40 PIL 4140
 - 4 Sliding Door Extrusions 40 x 40 PIL 4140
 - 3 Fixed Panel Extrusions 40 x 40 PIL 4140
 - 10 Fasteners FAS 4043, conductive
 - 1 Fastener FAS 4083
 - 4 90° Safety Fence Fasteners TIN 4521
 - 9 End Caps CAP 4041
 - 5 Safety Fence Floor Brackets BAP 2051
 - 2 Roller Sets DOR 4031
 - 2 Sliding Door Stops DOR 4032
 - 1 Aluminum Guiderail DOL 4034
 - 1 Handle DOR 4501
 - 2 Centering Guides DOR 4571
 - 2 Sliders DOR 4573
 - 2 Screw Retainers SSP 5500
- Panel option according to the order code:
- Weld Mesh with Weld Mesh Clip and Safety Fence Mesh Retainer
 - Polycarbonate with Panel Profile

Design tip:

Safety fence door elements may need to be additionally grounded.

**Rubber stop**

Rubber stop with retention spring

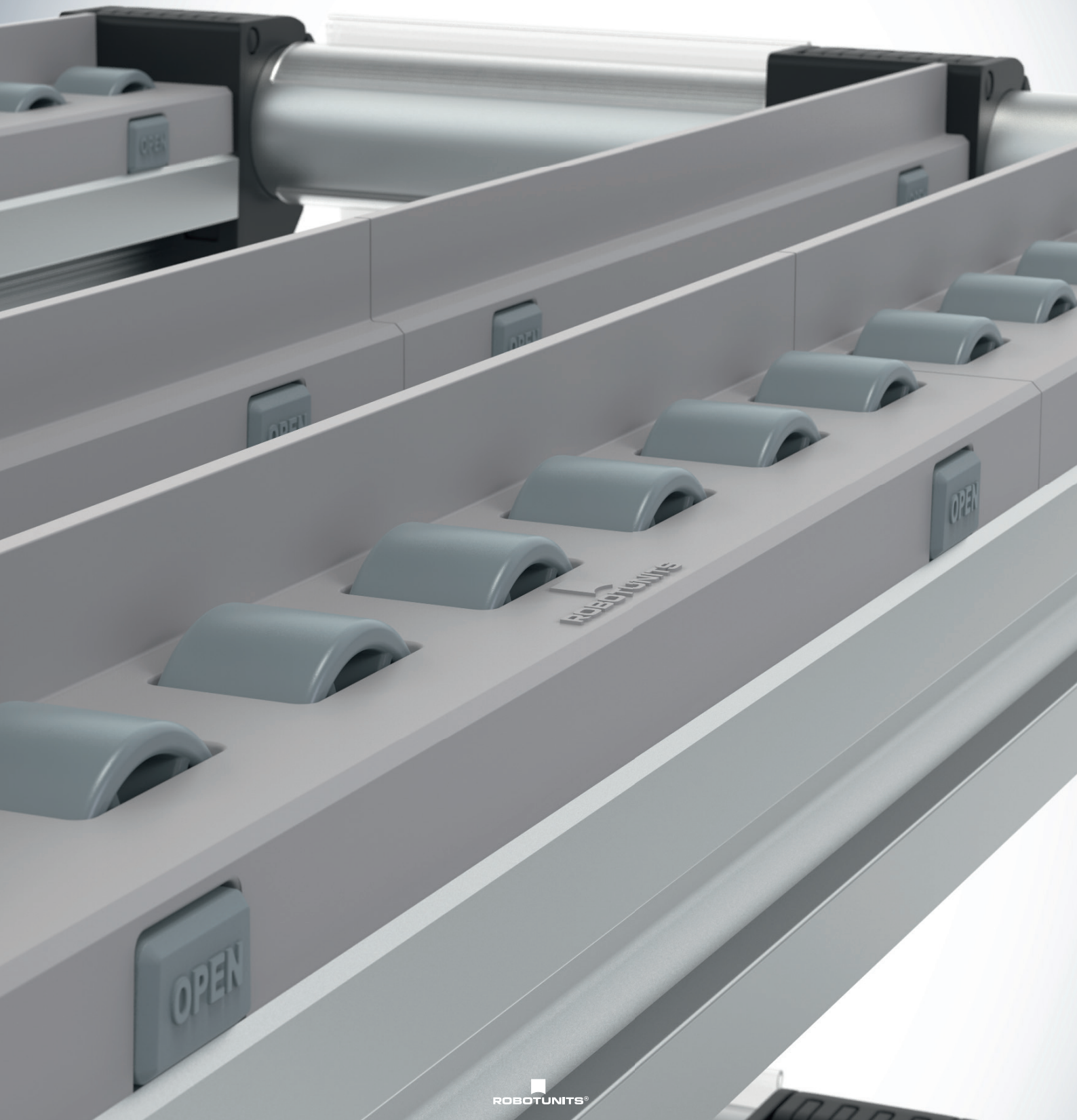
**Order Code**

Description	Door Opening	Panel Option	Order Code	Weight
Allround Sliding Door	Left	Weld Mesh	SAF 0872 SLA 2120	46.452 kg
Allround Sliding Door	Right	Weld Mesh	SAF 0872 SRA 2120	46.452 kg
Allround Sliding Door	Left	Polycarbonate	SAF 0872 PLA 2120	50.593 kg
Allround Sliding Door	Right	Polycarbonate	SAF 0872 PRA 2120	50.593 kg

Drawing dimensions in mm



THE VERSATILE MATERIAL HANDLING SYSTEM



Modern factories are geared towards high speed production. Time pressure increases constantly. Changeover time between production runs need to be shorter. Therefore product cycles and demanding customers require a new dimension in flexibility.

The solution is now available: Robotunits expands its Modular Automation System with a unique concept for material handling. Only 8 multifunctional components allow for a large range of applications.



Individual lengths and widths

- Lane length and width can be easily adjusted
- No tools needed to change lane width
- Additional tracks can be added if load requires



Adjustable angle

- Infinitely adjustable angle
- Track can be attached to the tube clamp in the front, or in the T-slot of the extrusion
- Brakes can be inserted anywhere on the track to control the speed of the box



Safe and rigid design

- Rigid system through Robotunits Fastening Technology
- Tight fitting track covers prevent contamination of roller tracks
- Low noise level due to special gliding bearings
- Entire construction available for ESD
- Anti-Reverse can be placed anywhere on the track
- Colored anti-reverse shows maximum fill level



High Flexibility

- Open T-slots can be used to install additional components
- Tracks can be inserted in any of the Robotunits extrusions
- Quick assembly without special tools
- System can be easily adjusted for new requirements



System compatible

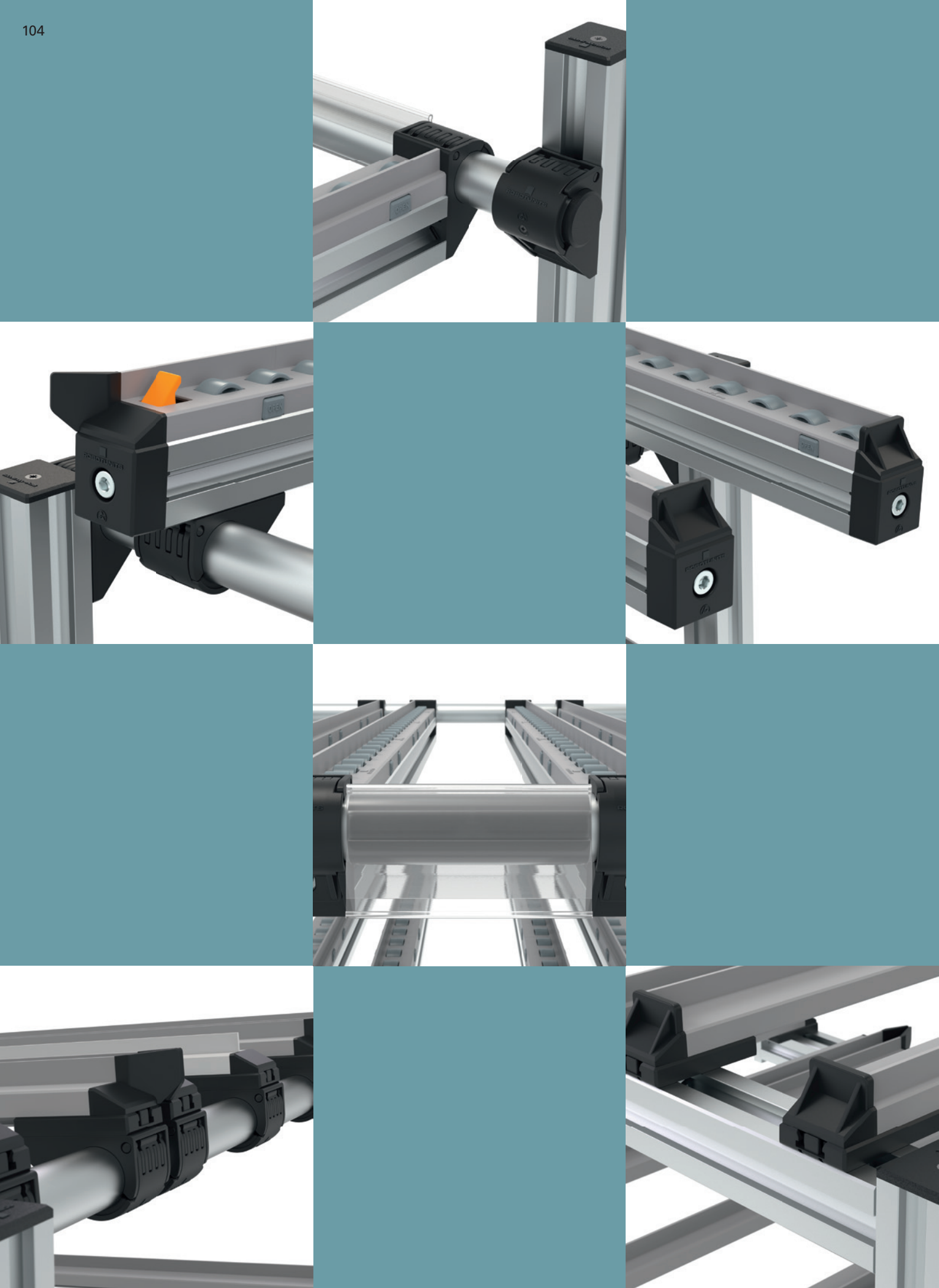
- All components fully compatible with the Robotunits Modular Automation System
- Multifunctional stop elements allow safe in-feed and removal of material
- Unlimited applications due to 14 mm T-slot
- Reduced inventory cost due to multifunctional parts



Save time, reduce cost

- Minimal design effort necessary
- Snap-in connections for quick assembly
- Minimal training required
- Individual adjustments possible





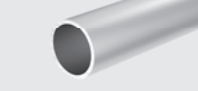
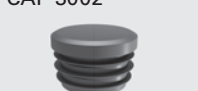
The versatile Material Handling System

MHS Overview

Page 106

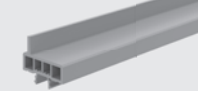
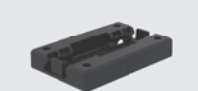
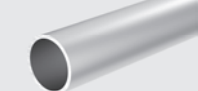
MHS Rolling

Page 108

RollerTrack MA_456_  P. 110	RollerTrack With Side Guides MA_459_  P. 111	Tube Clamp Front MAT 30_1  P. 112	Front Part MAT 455_  P. 113	Brake for RollerTrack MAT 4580  P. 114
Anti-Reverse For RollerTrack MAT 4575  P. 115	RoundTube 30x2 PIL 3002  P. 122	Cover for Round Tube 30x2 CAP 3002  P. 122	Label Holder 50 x 100 MAT 3050  P. 123	

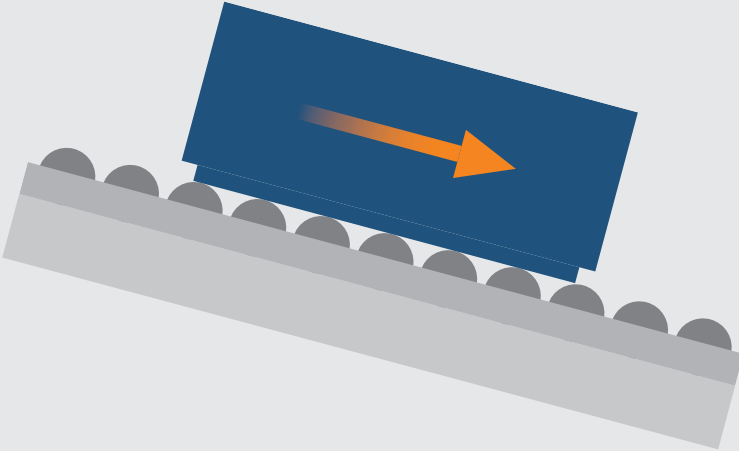
MHS Sliding

Page 116

Sliding Rail MAL 453_  P. 118	Tube Adapter MAT 303_  P. 119	Extrusion Adapter MAT 403_  P. 120	Adapter MAT 903_  P. 121	RoundTube 30x2 PIL 3002  P. 122
Cover for Round Tube 30x2 CAP 3002  P. 122	Label Holder 50x100 MAT 3050  P. 123			



MHS Rolling



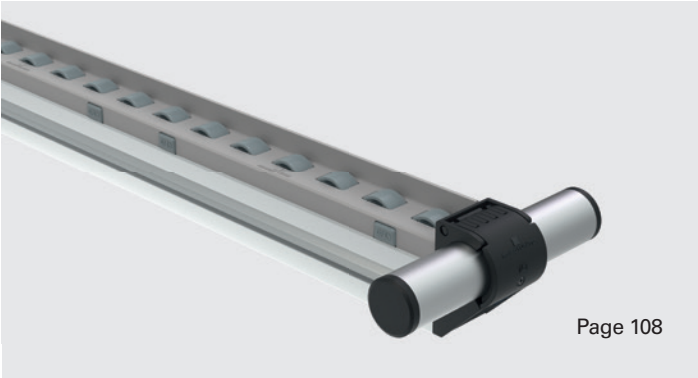
Properties

- Loads up to approx. 30 kg / box
- Conveying
- Self-rolling
- Stable
- Individual assembly

Applications

- Roller conveyors
- Conveyor sections
- Material flow technology
- In-feed / out-feed conveyors
- Transport carts
- Rolling side guides

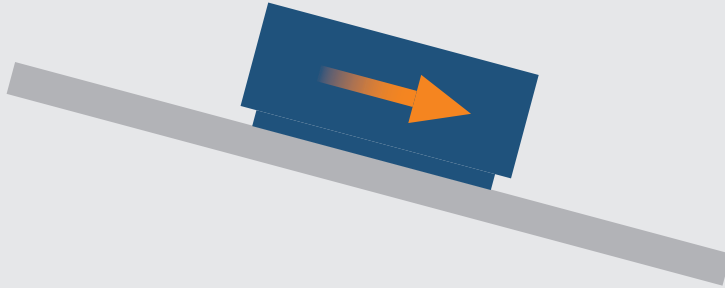
Compact System Options



Ergonomic System Options



MHS Sliding



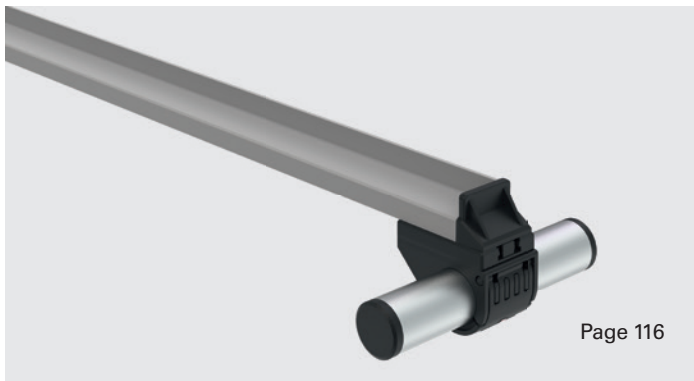
Properties

- Loads up to approx. 5 kg / box
- Storage (deposit, warehousing)
- Manual operation
- Low overall height
- Few components
- Low price

Applications

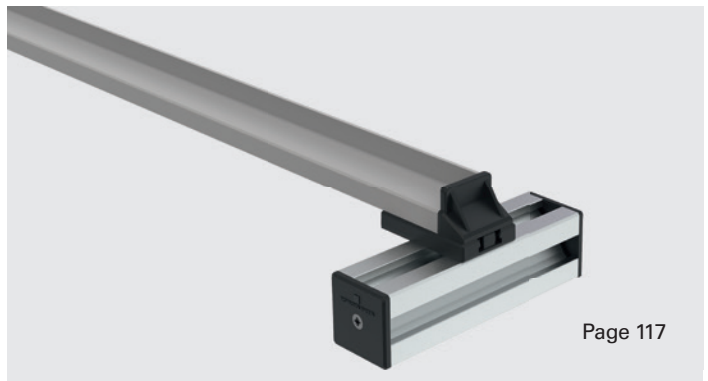
- Manual workstation

Round System Options



Page 116

Square System Options



Page 117



MHS Rolling - Compact



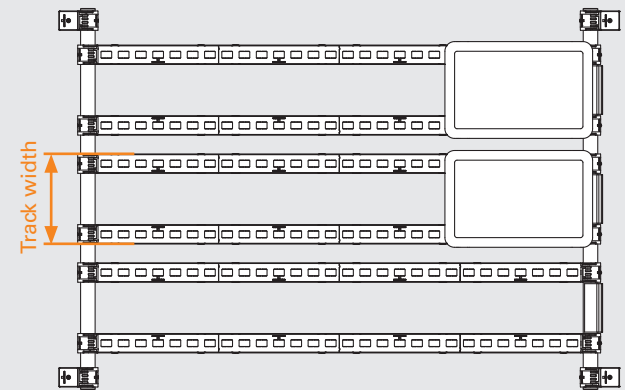
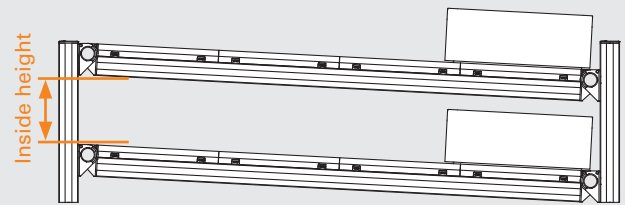
Benefits

- Flexible track width, inside height
- Lower overall height
- Few components

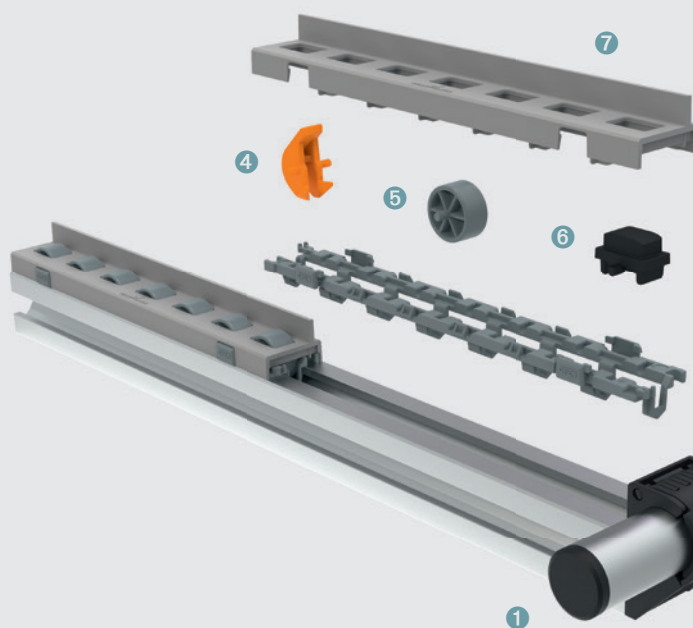
Application

- KANBAN carts, workstations

Freely combinable system options



Design MHS Rolling - Compact



- ⑨ Round Tube 30x2 PIL3002 (page 122)
- ② Front ESDTube Clamp Kit MAT3011 (page 112)
- ③ Label Holder MAT3050 (page 123)
- ④ Anti-Reverse For RollerTrack MAT 4575 (page 115)
- ⑤ Roller for RollerTrack
- ⑥ Brake for RollerTrack MAT4580 (as of page 114)
- ⑦ RollerTrack With Side Guides MAT4591 (as of page 111)

MHS Rolling - Ergonomic



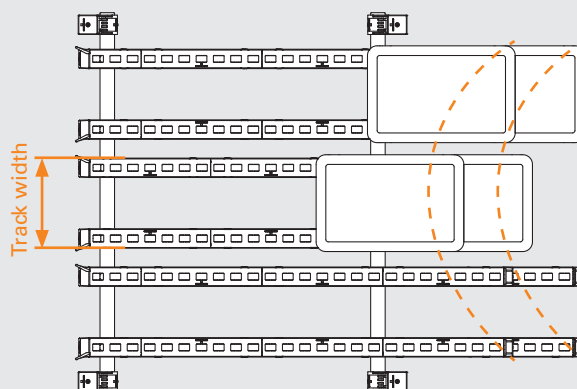
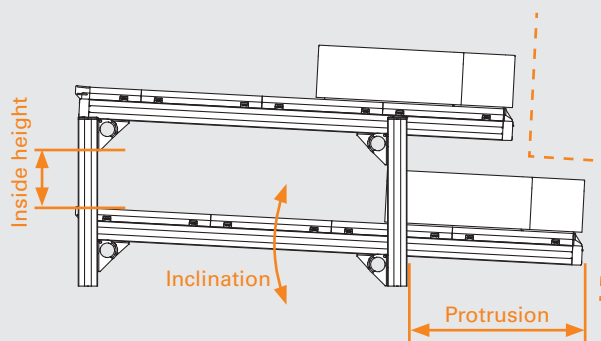
Benefits

- Flexible adjustable inclination, track width, protrusion, inside height
- Staggered configuration
- Individual arrangement

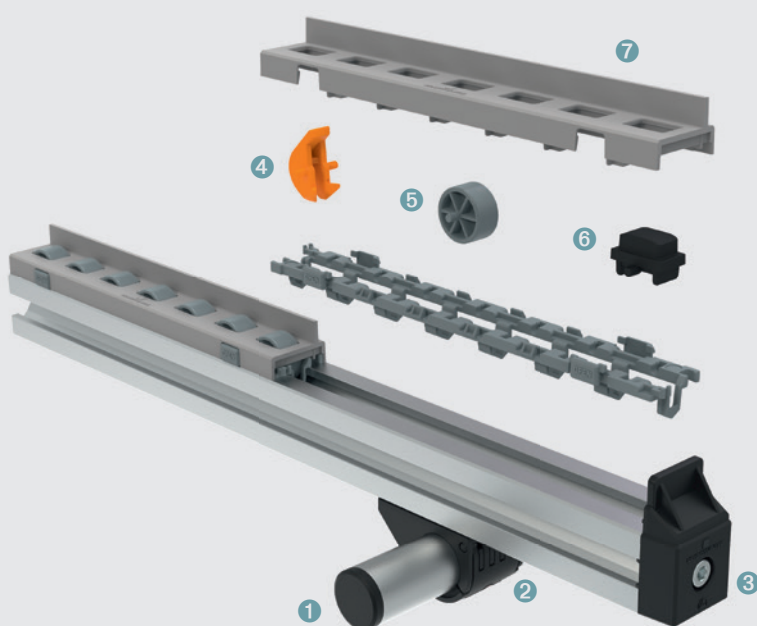
Application

- Ergonomic (semi-circular) gripping chamber application

Freely combinable system options

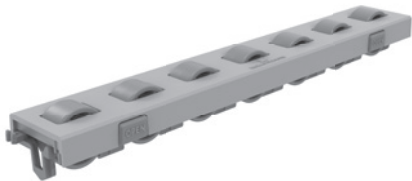


Design MHS Rolling - Ergonomic



- 9 RoundTube 30x2 PIL3002 (page 122)
- 2 ESDTube Clamp T-Slot Kit MAT3021 (page 112)
- 3 Front Part ESD Stop Kit (page 113)
- 4 Anti-Reverse For RollerTrack MAT 4575 (page 115)
- 5 Roller for RollerTrack
- 6 Brake for RollerTrack MAT4580 (as of page 114)
- 7 RollerTrack With Side Guides MAT4591 (as of page 111)

MAT 4561



MAT 4563



Application

For roller conveyors, e.g. for:

- Material flow technology
- Manual workstations
- In- and out-feed conveyors
- Transport carts
- Rolling side guides

Technical Data

Material: Base part and gray PP or black PP cover (ESD conductive)
Roller gray POM-C or black POM-C (ESD conductive)

Max. load per unit 15 kg

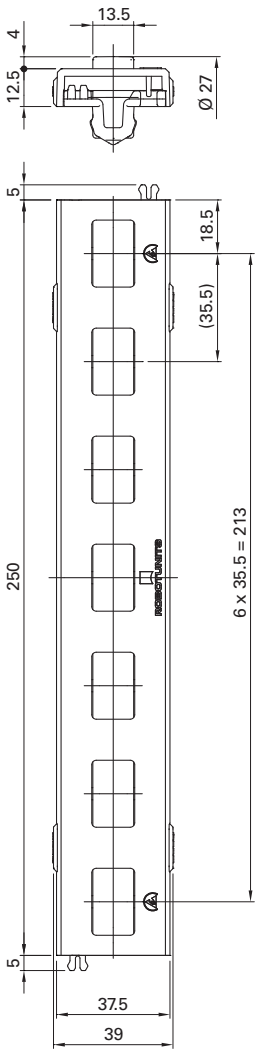
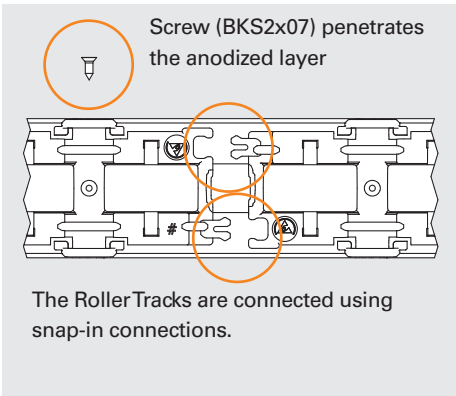
Inclination angle (depending on the product to be transported)

MAT 4561: 4° to 5°

MAT 4563: 5° to 6°

Surface resistance per RollerTrack
 $R_s < 35 \text{ M}\Omega$

ESD Conductivity

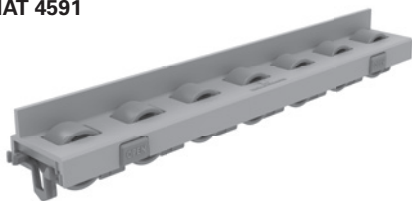


Order Code

Description	Scope of Delivery				Order Code ¹	
	Base Part	Cover	Castors	BKS2x07	Length	Weight
RollerTrack Kit	1	1	7	-	MAT 4561	0.112 kg
RollerTrack Kit, cut to length	1	1	X ²	-	MAL 4561 SNN ____ ³	0.448 kg/m
RollerTrack ESD Kit	1	1	7	1	MAT 4563	0.114 kg
RollerTrack ESD Kit, cut to length	1	1	X ²	1	MAL 4563 SNN ____ ³	0.456 kg/m

1) Please complete the order code by adding the desired length.
2) Number of rollers depending on the length of the cut-to-length RollerTrack
3) Ideal pre-cut lengths in the roller series (35.5 mm)
Drawing dimensions in mm

MAT 4591



MAT 4593 T

**Application**

For roller conveyors, e.g. for:

- Material flow technology
- Manual workstations
- In- and out-feed conveyors
- Transport carts

Technical Data

Material: Base part and gray PP or black PP cover (ESD conductive)

Roller gray POM-C or black POM-C (ESD conductive)

Max. load per unit 15 kg

Inclination angle (depending on the product to be transported)

MAT 4591: 4° to 5°

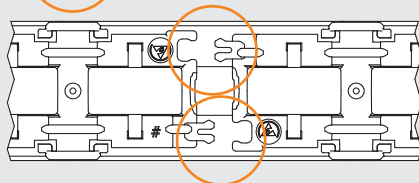
MAT 4593: 5° to 6°

Surface resistance per RollerTrack

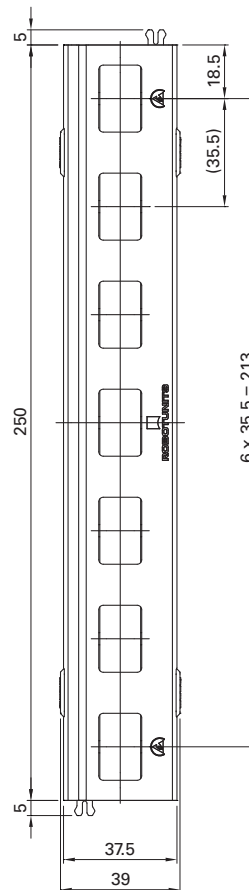
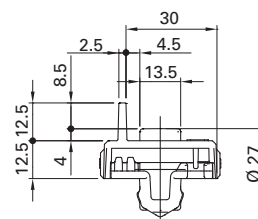
$R_s < 35 \text{ M}\Omega$

ESD Conductivity

Screw (BKS2x07) penetrates the anodized layer



The RollerTracks are connected using snap-in connections.

**Order Code**

Description	Scope of Delivery				Order Code ¹	
	Base Part	Cover	Castors	BKS2x07	Length	Weight
RollerTrack With Side Guide Kit	1	1	7	-	MAT 4591	0.122 kg
RollerTrack With Side Guide Kit, cut-to-length	1	1	X ²	-	MAL 4591 SNN ____ ³	0.488 kg/m
RollerTrack ESD With Side Guide Kit	1	1	7	1	MAT 4593	0.124 kg
RollerTrack ESD With Side Guide Kit, cut-to-length	1	1	X ²	1	MAL 4593 SNN ____ ³	0.496 kg/m

1) Please complete the order code by adding the desired length.

2) Number of rollers depending on the length of the cut-to-length RollerTrack

3) Ideal pre-cut lengths in the roller series (35.5 mm)

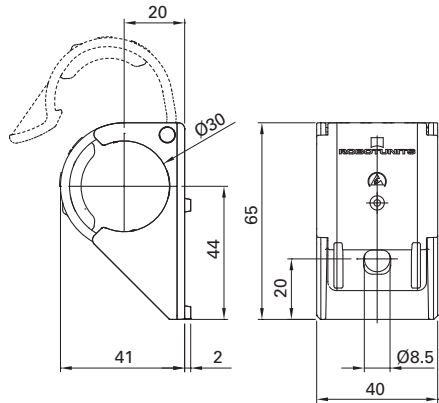
Drawing dimensions in mm



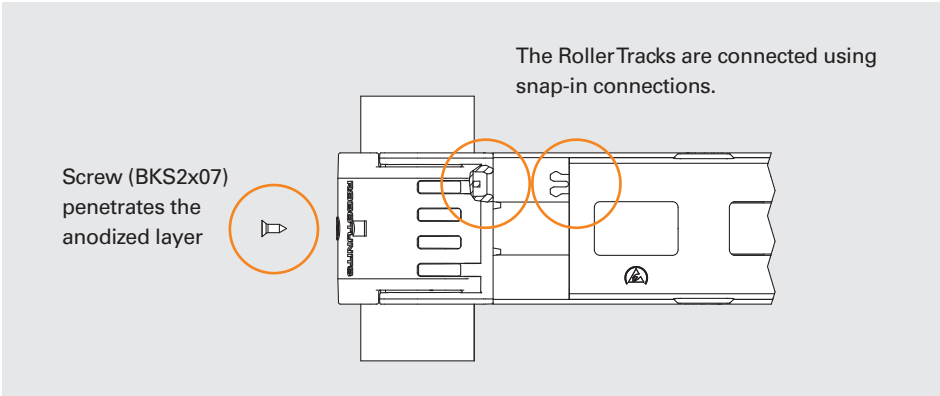
Application
Connector for fastening the Round Tube to the face or T-slot of the extrusion; Clamp can be opened without tools

Technical Data
Material:
Base Part PA6, black (ESD conductive)
Clamping Part PA6, black (ESD conductive) and TPV rubber, black
Fastening material: galvanized steel

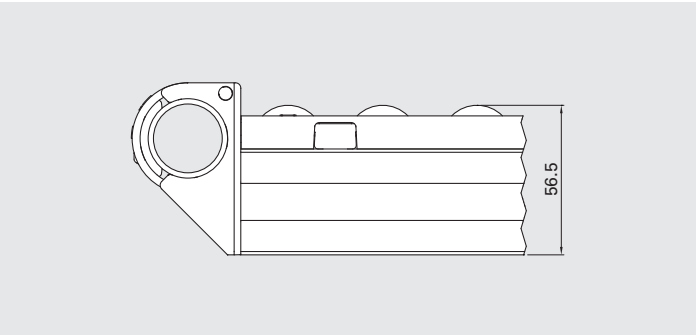
Surface resistance per Tube Clamp
 $R_s < 35 \text{ M}\Omega$



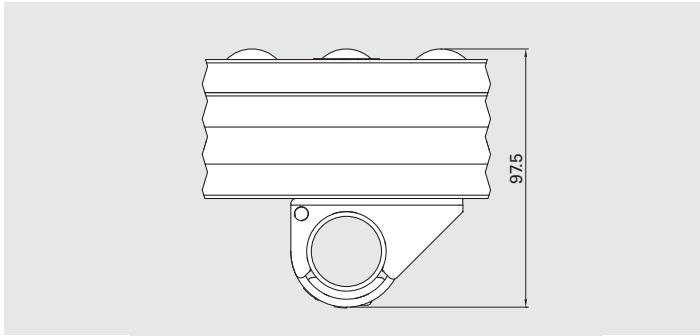
ESD Conductivity



Compact Installed Height



Ergonomic Installed Height



Order Code

Description	Scope of Delivery						Order Code	Weight
	Base Part	Clamping Part	IBS M08x018NIKO	BLS M008S02	BKS 2x07	TIN4598		
Tube Clamp ESD Front Kit	1	1	1	1	1	-	MAT 3011	0.052 kg
Tube Clamp ESD T-Slot Kit	1	1	1	1	1	1	MAT 3021	0.062 kg

Drawing dimensions in mm

MAT 455_

Front Part

MAT 4553

Stop Insert



IBS M08x025



Base Part

Application

Material stop at the start or the end of the RollerTrack
In-feed, removal or transfer support in combination with RollerTrack Without Side Guides

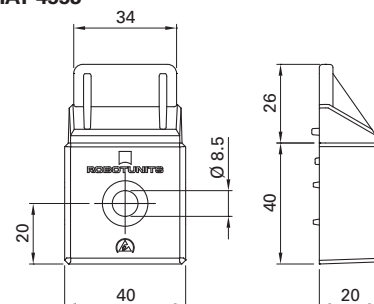
Technical Data

Material: PP, black (ESD conductive)
Fastening material: galvanized steel

Surface resistance per Front Part

 $R_s < 35 \text{ M}\Omega$

MAT 4553



MAT 4555

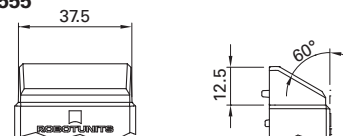
Flat Insert

IBS M08x025



Base Part

MAT 4555



MAT 4557

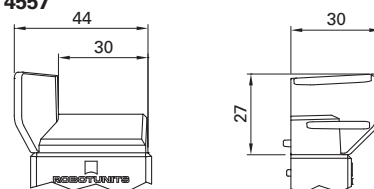
Left Insert

IBS M08x025



Base Part

MAT 4557



MAT 4559

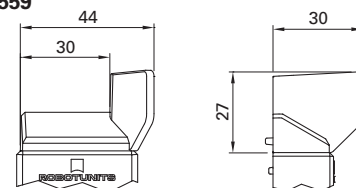
Right Insert

IBS M08x025

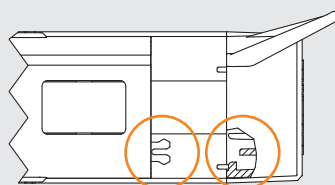
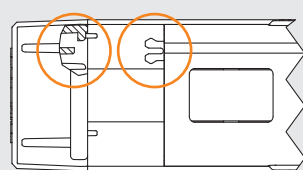


Base Part

MAT 4559

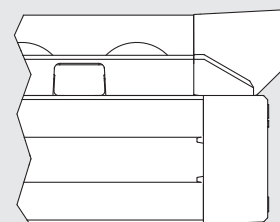
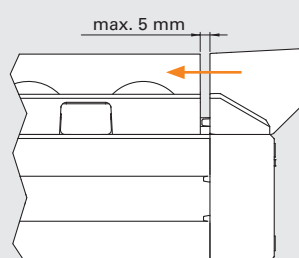


ESD Conductivity



The RollerTracks are connected using snap-in connections.

Variable Inserts



Gap between RollerTrack and Front Part can be closed by a Variable Insert

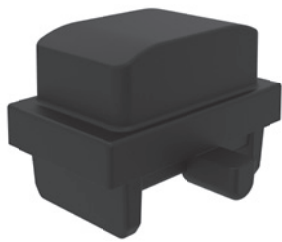
Order Code

Description	Scope of Delivery			Order Code	Weight
	Base Part	Insert	IBS M08x025		
Front Part ESD Stop Kit	1	1 (stop)	1	MAT 4553	0.036 kg
Front Part ESD Flat Kit	1	1 (flat)	1	MAT 4555	0.034 kg
Front Part ESD left Kit	1	1 (left)	1	MAT 4557	0.035 kg
Front Part ESD Right Kit	1	1 (right)	1	MAT 4559	0.035 kg

Drawing dimensions in mm

MAT 4580

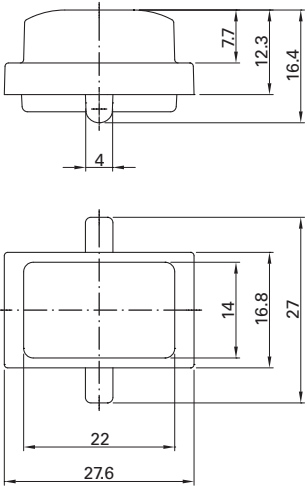
Brake For RollerTrack



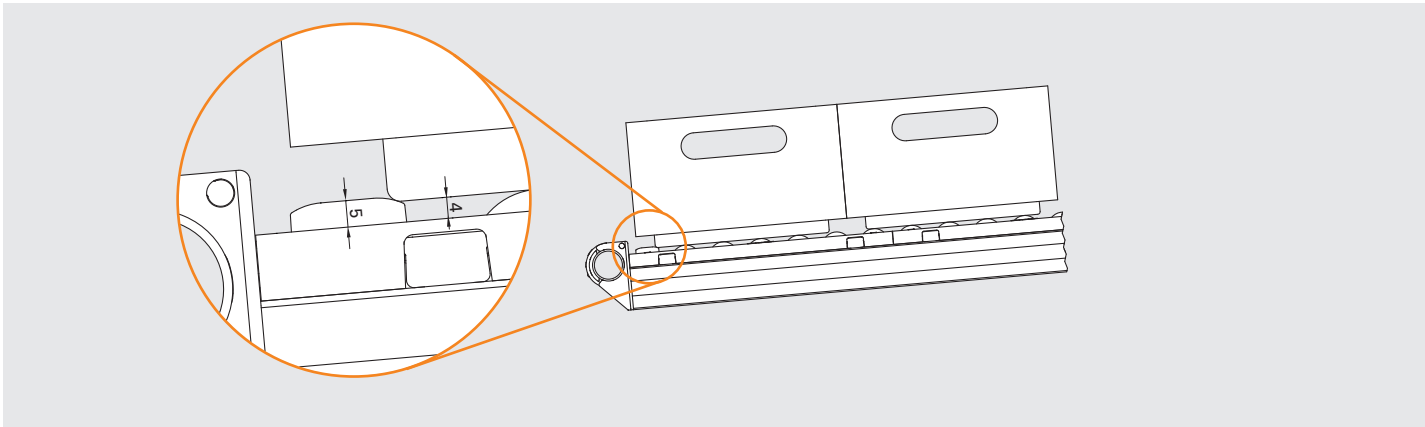
Application
Slowing down the transported product

Technical Data
Material: TPV rubber, black

Easy retrofitting possible.
(Switch Roller with Brake)
Depending on the product (weight,
condition of bottom, etc.) several
Brakes can be installed



Function



Order Code

Description		Order Code	Weight
Brake For RollerTrack		MAT 4580	0.003 kg

Drawing dimensions in mm

MAT 4575

Anti-Reverse For RollerTrack

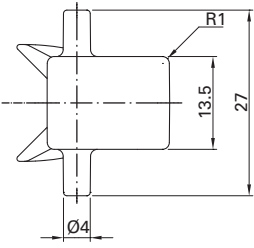
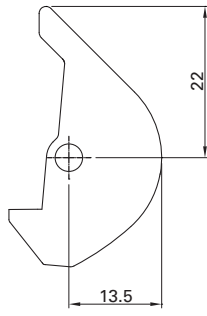


Application
Material stop at the start or end of the RollerTrack
Prevents product in the back off the shelf from falling down when product in the front is removed

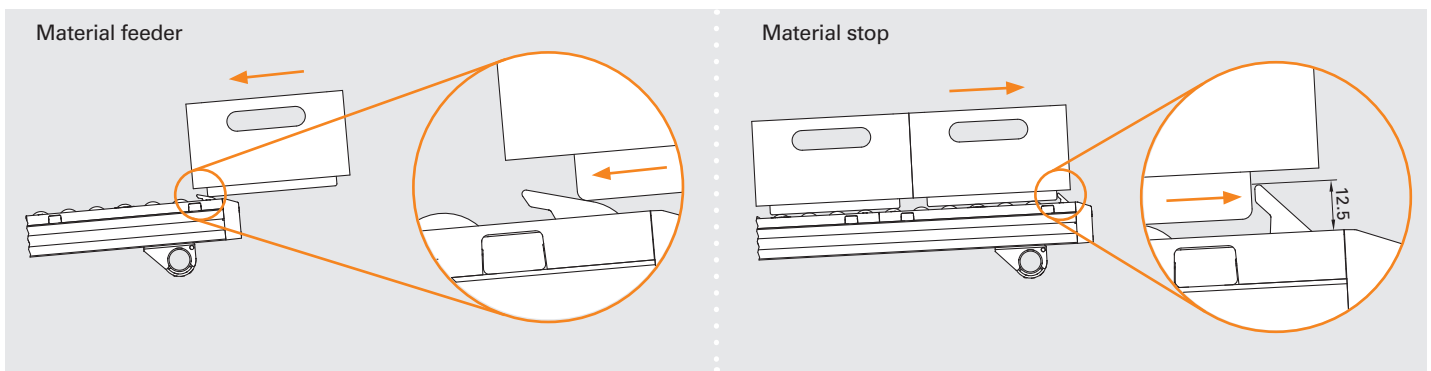
Fill level indicator through signal color (visible = empty)

Technical Data
Material: POM-C orange

Easy retrofitting possible.
(Switch Roller with Anti-Reverse for RollerTrack)



Function

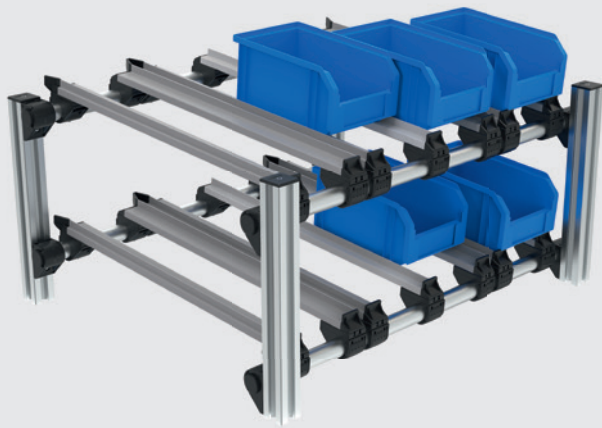


Order Code

Description	Order Code	Weight
Anti-Reverse For RollerTrack Kit	MAT 4575	0.006 kg

Drawing dimensions in mm

MHS Sliding - Round

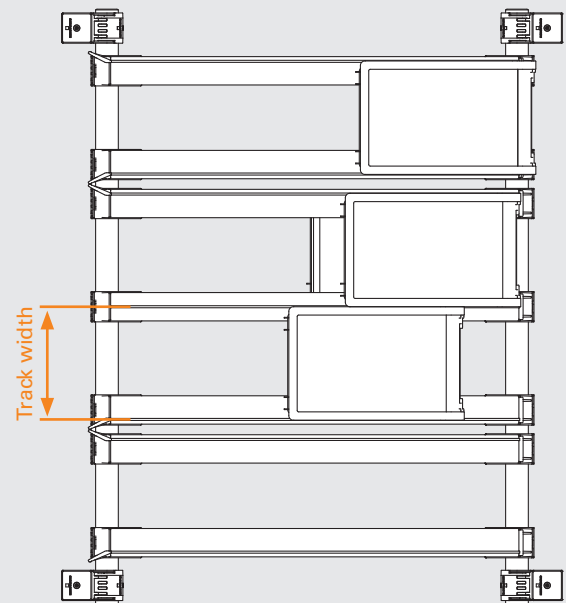
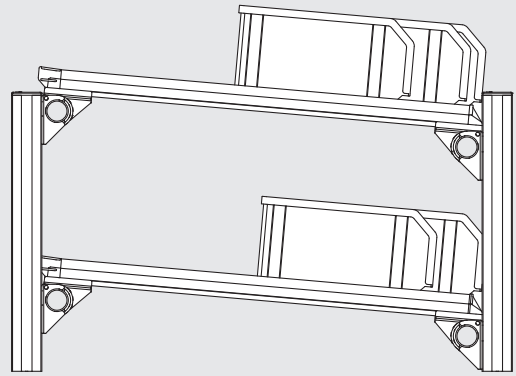


Benefits

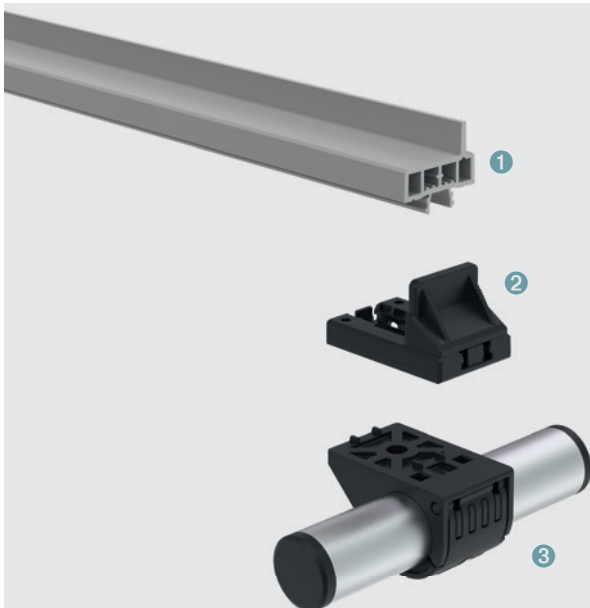
- Flexible adjustable track width
- Simpler assembly
- Freely adjustable incline

Application

Workstation with short tracks



Design MHS Sliding - Round

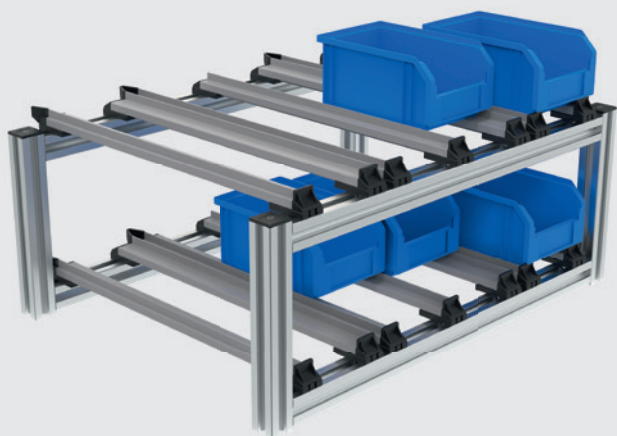


① Sliding Rail With Side Guide MAL4532 (page 118)

② Tube Adapter ESD Stop Kit MAT3033 (page 119)

③ Round Tube 30x2 PIL3002 (page 122)

MHS Sliding - Square

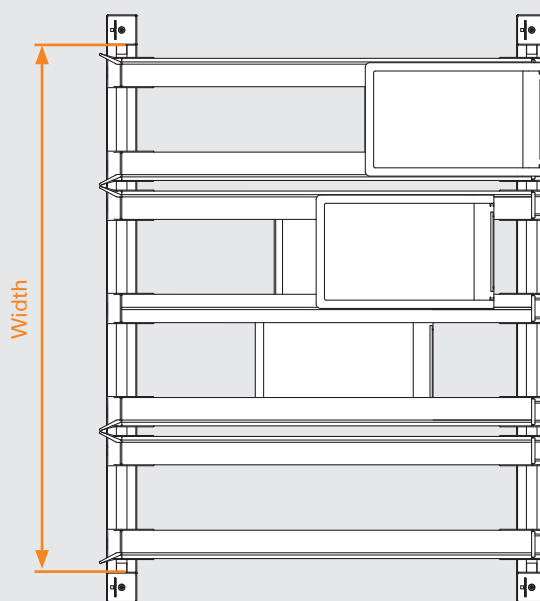
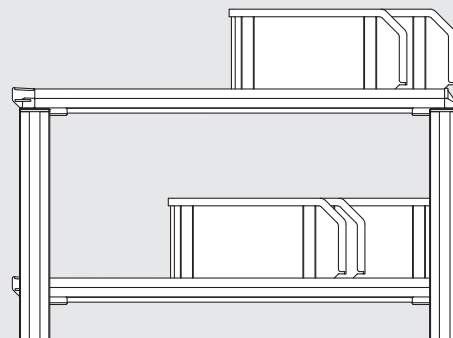


Benefits

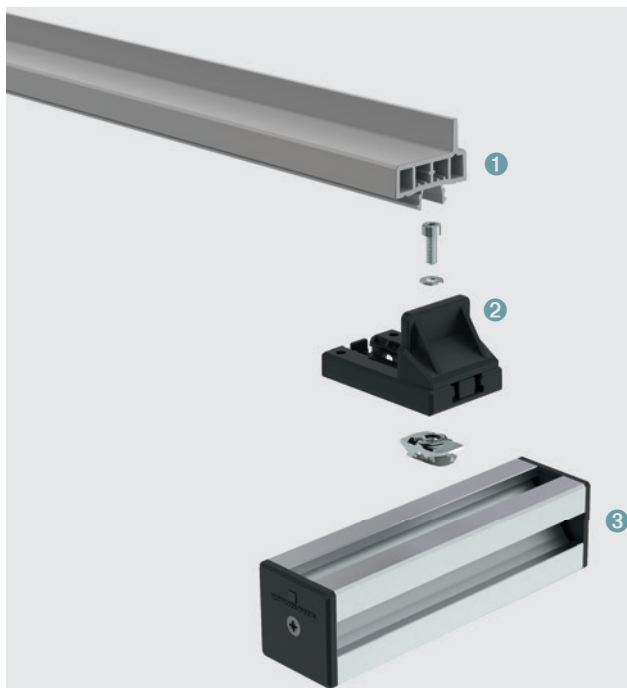
- Sturdy frame design
- Greater width
- Subsequent installation directly onto extrusions

Application

Integration into existing extrusion frame

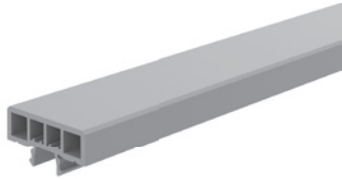


Design MHS Sliding - Square

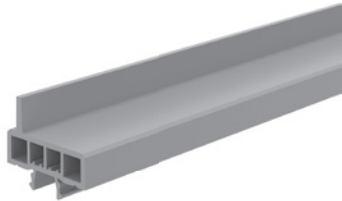


- 1 Sliding Rail With Side Guide MAL4532 (page 118)
- 2 Extrusion Adapter ESD Stop Kit MAT4033 (page 120)
- 3 Extrusion Technology (page 54)

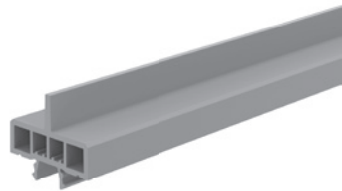
MAL 4530



MAL 4532



MAL 4534



Application

For sliding tracks, e.g. for:

- Manual workstations

Technical Data of Sliding Rail (MAL 4530)

Material: gray PVC-U (antistatic)
Modulus of elasticity E: 3000 N/mm²
Section modulus W_x: 0.5 cm³
Section modulus W_y: 1.6 cm³
Area moment of inertia I_x: 0.6 cm⁴
Area moment of inertia I_y: 2.9 cm⁴
Load m: 1.5 kg

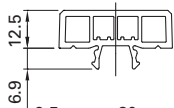
Technical Data of Sliding Rail With Side Guide (MAL 4532)

Material: gray PVC-U (antistatic)
Modulus of elasticity E: 3000 N/mm²
Section modulus W_x: 0.7 cm³
Section modulus W_y: 1.7 cm³
Area moment of inertia I_x: 1.2 cm⁴
Area moment of inertia I_y: 3.4 cm⁴
Load m: 2.5 kg

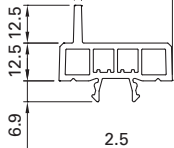
Technical Data of Sliding Rail With Center Guide (MAL 4534)

Material: gray PVC-U (antistatic)
Modulus of elasticity E: 3000 N/mm²
Section modulus W_x: 0.7 cm³
Section modulus W_y: 1.6 cm³
Area moment of inertia I_x: 1.2 cm⁴
Area moment of inertia I_y: 2.9 cm⁴
Load m: 2.5 kg

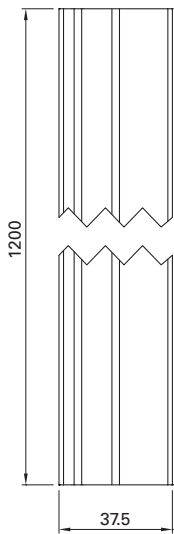
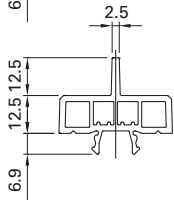
MAL 4530



MAL 4532

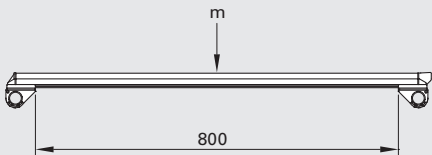


MAL 4534



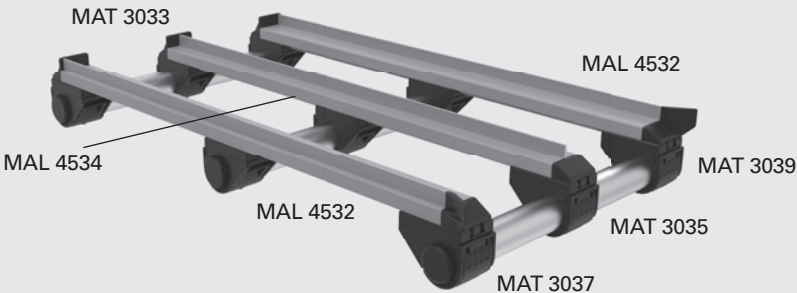
Surface resistance per sliding rail
R_s < 100 GΩ

Load



m = Maximum load per 800 mm of sliding rail

Application



Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Sliding Rail, cut to length	MAL 4530 SNN ____	0.290 kg
Sliding Rail, stock length 1200 mm	MAL 4530 NNN 1200	0.290 kg
Sliding Rail With Side Guide, cut to length	MAL 4532 SNN ____	0.330 kg
Sliding Rail With Side Guide, stock length 1200 mm	MAL 4532 NNN 1200	0.330 kg
Sliding Rail With Center Guide, cut to length	MAL 4534 SNN ____	0.330 kg
Sliding Rail With Center Guide, stock length 1200 mm	MAL 4534 NNN 1200	0.330 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

MAT 303_

Tube Adapter

MAT 3031



MAT 3033



MAT 3035



MAT 3037



MAT 3039

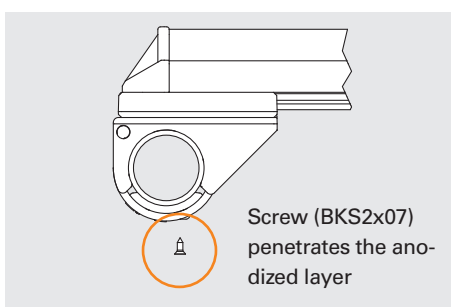
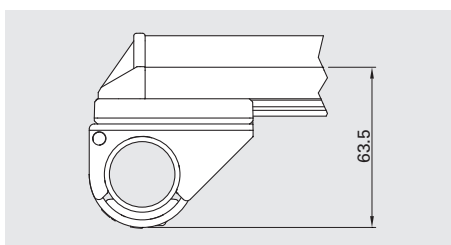
**Application**

Adapter to connect the Round Tube to the Sliding Rail

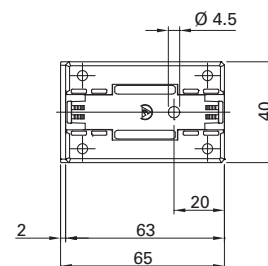
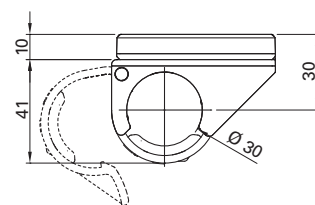
Technical Data

Material: Base part and adapter plate PA6, black (ESD conductive)
Clamping Part PA6, black (ESD conductive) and TPV rubber, black
Inserts: PP, black (ESD conductive)
Conductivity screw: galvanized steel

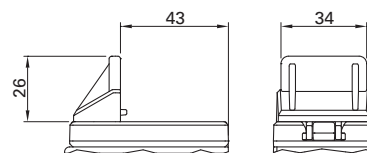
Surface resistance per Tube Adapter
 $R_s < 35 \text{ M}\Omega$

ESD Conductivity**Round Installed Height****Application**

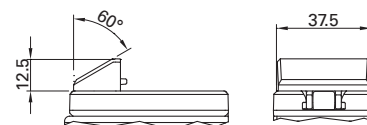
MAT 3031



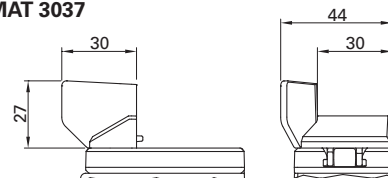
MAT 3033



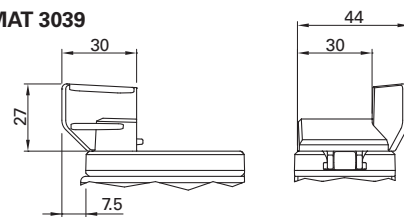
MAT 3035



MAT 3037



MAT 3039

**Order Code**

Description	Scope of Delivery					Order Code	Weight
	Base Part	Clamping Part	Adapter plate	Insert	BKS 2x07		
Tube Adapter ESD Kit	1	1	1	-	1	MAT 3031	0.054 kg
Tube Adapter ESD Stop Kit	1	1	1	1 (stop)	1	MAT 3033	0.061 kg
Tube Adapter ESD Flat Kit	1	1	1	1 (flat)	1	MAT 3035	0.059 kg
Tube Adapter ESD Left Kit	1	1	1	1 (left)	1	MAT 3037	0.060 kg
Tube Adapter ESD Right Kit	1	1	1	1 (right)	1	MAT 3039	0.060 kg

Drawing dimensions in mm

MAT 403_

Extrusion Adapter

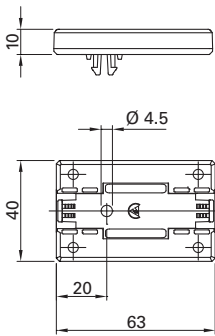
MAT 4031



Application
Adapter to connect the extrusion to the Sliding Rail

Technical Data
Material: Adapter plate PA6, black (ESD conductive) Inserts: PP, black (ESD conductive) Fastening material: galvanized steel

MAT 4031

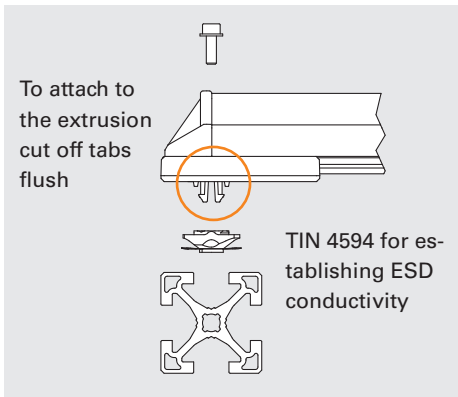


MAT 4033

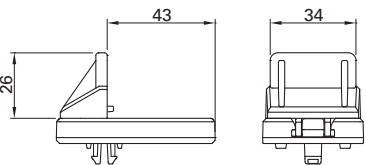


Surface resistance per Extrusion Adapter
 $R_s < 35 \text{ M}\Omega$

ESD Conductivity



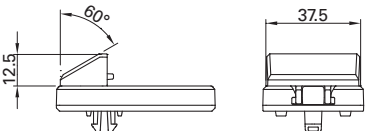
MAT 4033



MAT 4035



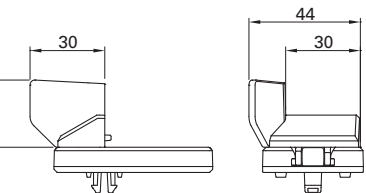
MAT 4035



MAT 4037



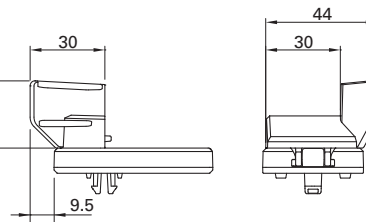
MAT 4037



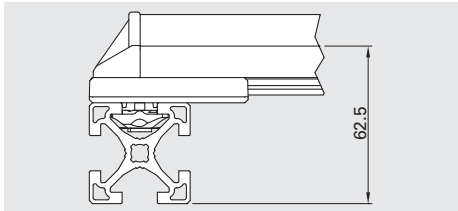
MAT 4039



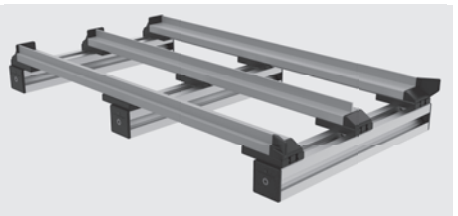
MAT 4039



Round Installed Height



Application



Order Code

Description	Scope of Delivery					Order Code	Weight
	Adapter plate	Insert	IBS M04x012	BLS M004	TIN 4594		
Extrusion Adapter ESD Kit	1	-	1	1	1	MAT 4031	0.027 kg
Extrusion Adapter ESD Stop Kit	1	1 (stop)	1	1	1	MAT 4033	0.034 kg
Extrusion Adapter ESD Flat Kit	1	1 (flat)	1	1	1	MAT 4035	0.032 kg
Extrusion Adapter ESD Left Kit	1	1 (left)	1	1	1	MAT 4037	0.033 kg
Extrusion Adapter ESD Right Kit	1	1 (right)	1	1	1	MAT 4039	0.033 kg

Drawing dimensions in mm

MAT 903_

Adapter

MAT 9031

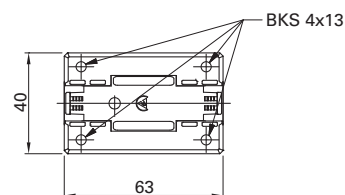
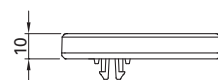
**Application**

Connector for fastening the Sliding Rail for protruding sections or partitioned Sliding Rails

Technical Data

Material: Adapter plate PA6, black (ESD conductive) Inserts: PP, black (ESD conductive) Fastening material: galvanized steel

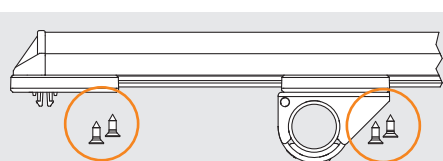
MAT 9031



MAT 9033

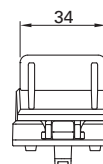
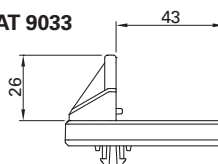


Surface resistance per Adapter
 $R_s < 35 \text{ M}\Omega$

Round Protrusion

BKS 4x13 for fastening the sliding rails

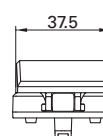
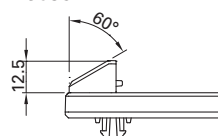
MAT 9033



MAT 9035



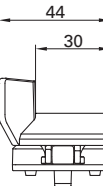
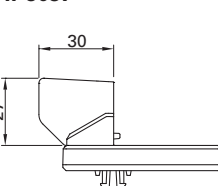
MAT 9035



MAT 9037



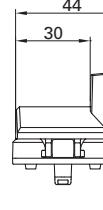
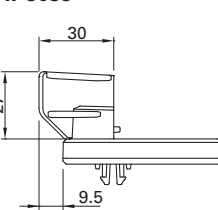
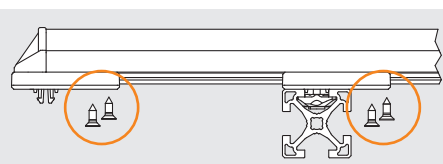
MAT 9037



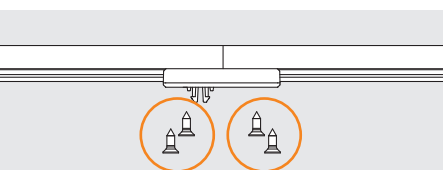
MAT 9039



MAT 9039

**Square Protrusion**

BKS 4x13 for fastening the sliding rails

Partitioning

BKS 4x13 for fastening the sliding rails

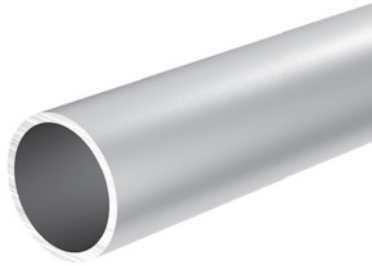
Order Code

Description	Scope of Delivery			Order Code	Weight
	Adapter plate	Insert	BKS 4x13		
Adapter ESD Kit	1	-	4	MAT 9031	0.017 kg
Adapter ESD Stop Kit	1	1 (stop)	4	MAT 9033	0.024 kg
Adapter ESD Flat Kit	1	1 (flat)	4	MAT 9035	0.022 kg
Adapter ESD Left Kit	1	1 (left)	4	MAT 9037	0.023 kg
Adapter ESD Right Kit	1	1 (right)	4	MAT 9039	0.023 kg

Drawing dimensions in mm

PIL 3002

Round Tube 30x2

**Application**

Universally useful, e.g. as

- Material flow technology
- Manual workstations
- In- and out-feed conveyors
- Signage and shelving
- Transport carts
- Table frames

Technical Data

Material: EN AW-6063-T66 clear anodized aluminum

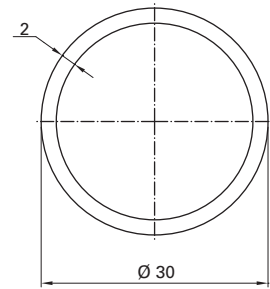
Section modulus $W_x = W_y$: 1.16 cm³

Area moment of inertia

against x + y $I_x = I_y$: 1.73 cm⁴

against torsion I_t : 3.47 cm⁴

Cross sectional area A: 175.9 mm²



Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Round Tube 30x2, cut to length	PIL 3002 SNN ____	0.475 kg
Round Tube 30x2, stock length 6050 mm (usable length 6000 mm)	PIL 3002 NNN 6050	0.475 kg
Round Tube 30x2, 175 units, stock length 6050 (usable length 6000 mm)	PIL 3002 PAC 0175	0.475 kg

CAP 3002

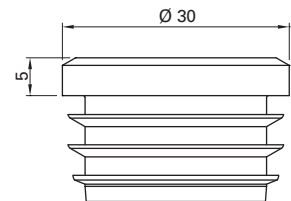
End Cap For Round Tube 30x2

**Application**

End Cap for Round Tube

Technical Data

Material: PE, black



Order Code

Description	Order Code	
		Weight
End Cap For Round Tube 30x2	CAP 3002	0.004 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

MAT 3050

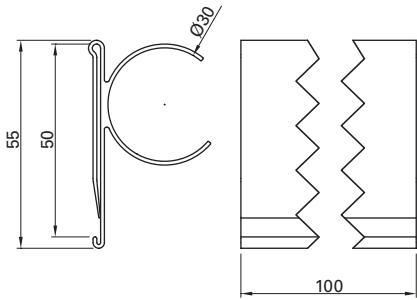
Label Holder 50x100



Application
Labels can be inserted into transparent Label Holder
Label Holder can be snapped on directly to Round Tube

Technical Data
Material: PVC transparent

Max. label size 50 x 100 mm



Order Code

Description		Order Code	Weight
Label Holder 50x100		MAT 3050	0.023 kg

Drawing dimensions in mm





MULTIFUNCTIONAL ACCESSORIES



Every small detail has a big impact on the entire system, especially when countless accessories fill hundreds of catalog pages. Developing an accessory for every new application fundamentally contradicts our concept of a World-Class Product Range.

Our accessories are multifunctional and fit not only to an exactly defined component, but to all other components in the entire Modular Automation System.



Cover or fasten

- universally usable Cover or Insert Extrusion
- fits 40 mm and 50 mm extrusions
- suitable for mounting 4 mm to 6 mm thick panels
- covers T-slots and protects against dust and water spray
- suitable for cable routing
- easy to assemble: snap in and go



Everything is possible with a single hinge

- universal hinge fits all applications
- one hinge for all doors
- attachment of non-Robotunits components possible



Fine-tuning and Fastening element

- multifunctional Fine-Tuning and Fastening Element
- form located positioning
- infinitely adjustable
- post-assembly insertion possible



Unique clamping device allows easy attachment of parts

- facilitates mounting of 3 mm to 10 mm thick panels without drilling
- clamping device is quickly mounted by inserting it into the slot
- no drilling of panels required
- parts can be reused
- fits 40 mm and 50 mm extrusions



Safety interlocks: quick and secure installation

- quick and safe installation without the need for additional parts
- fits 40 mm and 50 mm extrusions
- easy to install and adjust
- no drilling or preparing of extrusions needed
- IP65 protection class in accordance with TEC 529



Save time, cut cost

- multifunctional accessories reduce your cost of ordering and your inventory overhead
- standard labeling saves even more time in assembly and storage



Multifunctional Accessories

Conveyor Technology Accessories

Page 128

Roller Retainer
PIN 453_



P. 128

Speed Controller
CCN 0004



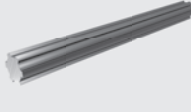
P. 128

Connection Hub
COP 4501



P. 129

Splined Shaft
COL 8500



P. 129

Tilt Plate 80
TIN 4561



P. 138

Tilt Plate 80 Bent
TIN 4571



P. 139

Connection Shaft
with Couplings
COL 52_0



P. 162

Fine-Tuning and
Fixing Element
TIN 4501



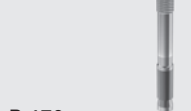
P. 164

Safety Fence Floor
Bracket
BAP 205_



P. 170

Anchor Bolt
BAP 2900



P. 170

Leveling Bases
BAS ____



P. 172

Castors
CAS ____



P. 174

Safety Fence Accessories

Page 130

Weld Mesh
PAN ____



P. 130

Panel
PAN ____



P. 130

Weld Mesh Clip
SSP 4520



P. 131

Mesh Retainer
SSP 4515



P. 131

Clamping Device
PIN 452_



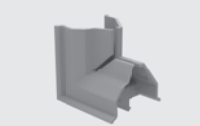
P. 132

Panel Profile
CAL 451_



P. 133

90° Corner Piece
CAN 4501



P. 134

270° Corner Piece
CAN 4503



P. 135

Safety Fence
Fastener
TIN 4511



P. 136

90° Safety Fence
Fastener
TIN 4521



P. 137

Bolt
SSP 4900



P. 140

Screw Retainer
Screw
SSP 5500



P. 140

Handle
DOR 4501



P. 141

Magnet Holder
DOR 4541



P. 141

Door Latch
DOR 4551



P. 142

Door Catch
DOR 4553



P. 143

Door Stop
DOR 4555



P. 144

Safety Slide
DOR 4557



P. 144

Hinge
DOR 4511



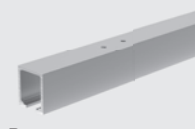
P. 145

Safety Interlock
DOR 4580



P. 146

Guiderail
DOL 4034



P. 147

Roller Set
DOR 4031



P. 147

Sliding Door Stop
DOR 4032



P. 148

Centering Guide
DOR 4571



P. 148

Slider
DOR 4573



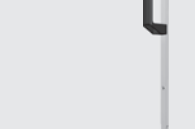
P. 149

Door Support
Castor
DOR 456_



P. 150

Floor Catch
DOR 4561



P. 151

Safety Fence Floor
Bracket
BAP 205_



P. 170

Anchor Bolt
BAP 2900



P. 170

Linear Motion System Accessories

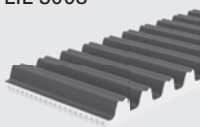
Page 152

Timing Belt Pulley
LIN 5400



P. 152

Timing Belt
LIL 3008



P. 153

Timing Belt Clamp
LIN 3221



P. 153

Idlers
LIN 50__



P. 154

Wrench
LIN 9990



P. 155

Guiderail
LIL 5000



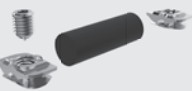
P. 155

Carriage Plate
LIN 1501 / 2001



P. 156

Limit Stop
LIN 5191



P. 156

Proximity Switch
Bracket
LIN 8201



P. 157

Proximity Switch
LIN 8310



P. 157

Angle Plug with
Cable
LIN 8312



P. 157

Motor Flange
LIN 5241



P. 158

Coupling
LIN 523__



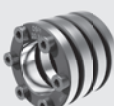
P. 158

Driveshaft/Encoder
Shaft
LIN 52__



P. 159

Expanding Coupling
LIN 5246



P. 160

Encoder
LIN 7501



P. 161

Connection Shaft
with Coupling
COL 5240



P. 162

General Modular Accessories

Page 162

Connection Shaft
with Couplings
COL 52_0



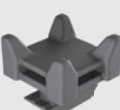
P. 162

End Cap
CAP__



P. 163

Cable Block
PIN 4530



P. 163

Plastic Hook
PIN 4590



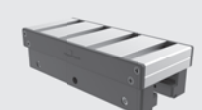
P. 164

Fine-Tuning and
Fixing Element
TIN 4501



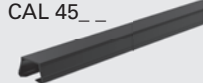
P. 164

Linear Slider
LIN 404 _/LIN 505__



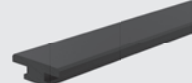
P. 165

Cover/Insert
Extrusion
CAL 45__



P. 166

T-Slot Sliding Rail
CAL 4540



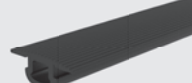
P. 167

Aluminum
Cover Extrusion
CAL 4545



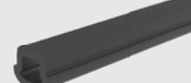
P. 167

Anti-Slip Profile
CAL 4560



P. 168

Gasket
CAL 4565



P. 169

Safety Fence Floor
Bracket
BAP 205__



P. 170

Anchor Bolt
BAP 2900



P. 170

Base and Transport
Plates
BAP__



P. 171

Leveling Bases
BAS__



P. 172

Castors
CAS__



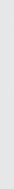
P. 174

Allen Key for
Hex Socket
Head Cap
Screws
EQL 1001__



P. 176

1/4" Hex Bit
with Ball End
EQL 1005__



P. 177

PIN 453_

Roller Retainer

TIN 4506



PIN 4532



IBS M06x018

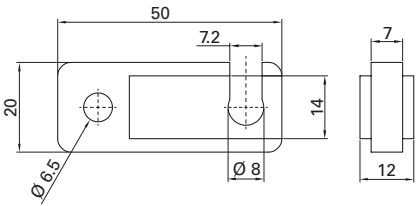


Application

Used for gravity roller conveyors.
Rollers can be easily integrated into
frame or guarding structure

Technical Data

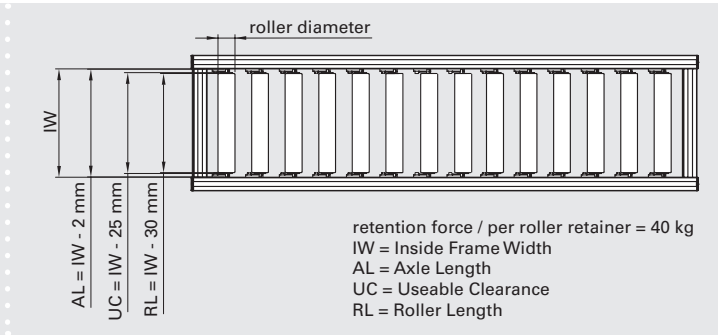
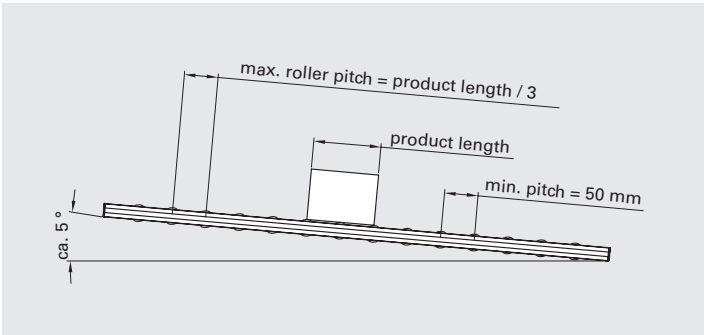
Material: PA composite, fiberglass-
reinforced



Application



Assembly



Order Code



Description	Scope of Delivery			Order Code	
	PIN 4532	TIN 4506	IBS M06x018		Weight
Roller Retainer Kit	1	1	1	PIN 4533	0.025 kg
Roller Retainer, 100 pcs.	100	-	-	PIN 4532 PAC 0100	2.500 kg

CCN 0004

Speed Controller



European version

Application

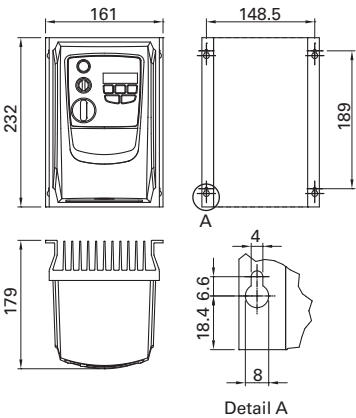
Variable frequency drive for controlling
motor speed

Technical Data

Input voltage: 1 x AC 200 - 240 V
Input frequency: 50/60 Hz
Output voltage: 3 x 20 - 250 V
Output frequency: 0 - 500 Hz
Power output: 0.75 kW
IP rating: IP66

Delivery: un-wired

Speed Controller type may vary by
country / region

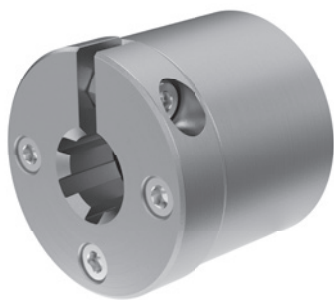


Order Code

		Order Code	
Description			Weight
Speed Controller		CCN 0004	2.300 kg

COP 4501

Connection Hub

**Application**

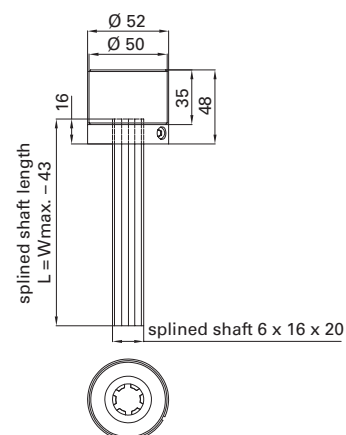
For connecting adjustable timing belt conveyors

Technical Data

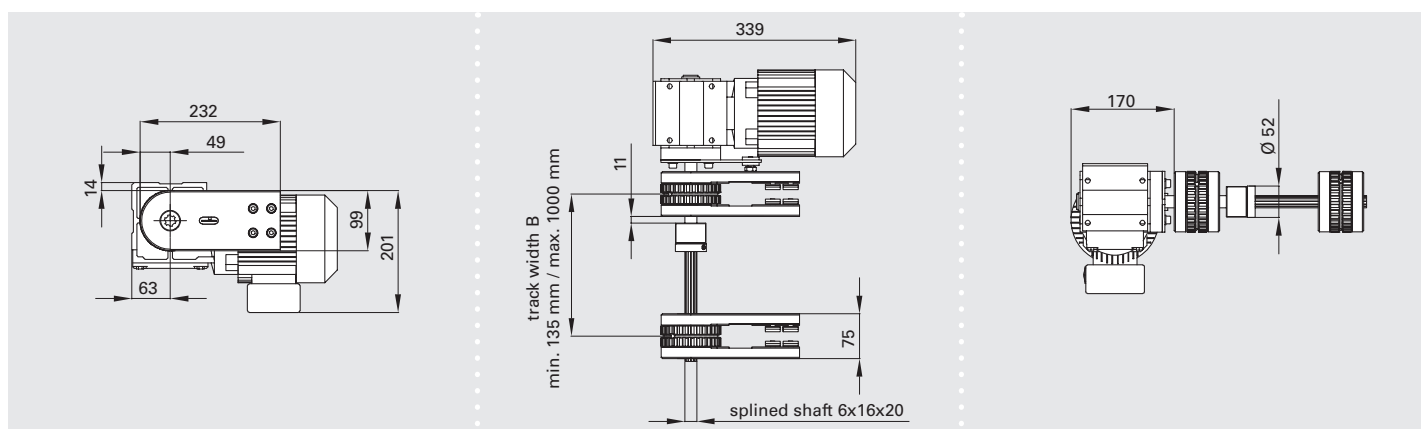
Max. torque: 60 Nm

Scope of Delivery

1 C8T Splined Shaft Clamping Ring
1 C8T Connection Hub
1 Expanding Coupling LIN 5246
3 screws IBM M05x016



Adjustable Drive Dimensions



Order Code

Description	Order Code	Weight
Connection Hub Kit	COP 4501	0.550 kg



COL 8500

Splined Shaft

**Application**

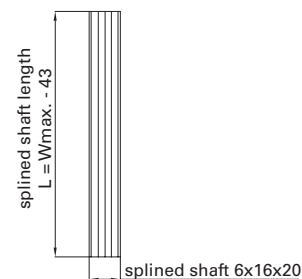
For connecting adjustable timing belt conveyors

Technical Data

Max. torque: 60 Nm

Scope of Delivery

1 Splined Shaft, DIN-ISO 14 - 6x16x20



Order Code

Description	Order Code ¹	Weight
Splined Shaft	Length COL 8500 SNN _ _ _ _	1.930 kg/m

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

PAN _____

Weld Mesh

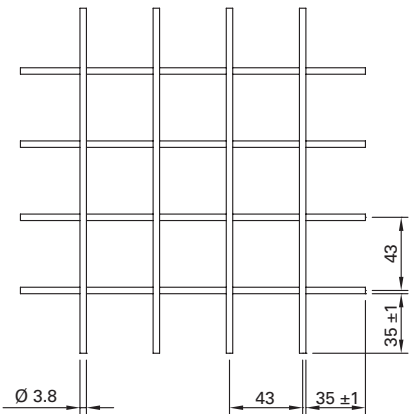


Application
Used for Safety Fencing

- Fastening:**
- Weld Mesh Clip SSP 4520
 - Safety Fence Mesh Retainer SSP 4515

Technical Data
Material: galvanized steel

Design tip:
Standard widths and lengths offer an outstanding price/performance ratio and quick delivery.



Order Code

Description	Order Code ¹				Weight
		Width	Type	Length	
Weld Mesh, 40x40x4 mm standard	PAN	0461	S4N	1966	3.952 kg
Weld Mesh, 40x40x4 mm standard	PAN	0719	S4N	1966	6.163 kg
Weld Mesh, 40x40x4 mm standard	PAN	0977	S4N	1966	8.375 kg
Weld Mesh, 40x40x4 mm standard	PAN	1450	S4N	1966	12.429 kg
Weld Mesh, 40x40x4 mm	PAN	_____	S4N	_____	4.360 kg/m ²

PAN _____

Panels



Application
Used for Safety Fencing

- Fastening:**
- Clamping Device PIN 4521
 - Cover/Insert Extrusion
CAL 4500, CAL 4504, CAL 4510
 - Panel Profile CAL 4515, CAL 4517,
 - Corner Piece CAN 4501, CAN 4503

Technical Data
Material: Polycarbonate glass or expanded PVC sheets, gray

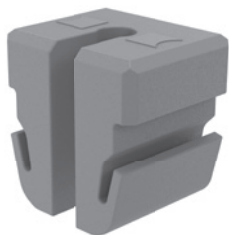
Order Code

Description	Strength	Order Code ¹				Weight/m ²
			Width	Type	Length	
Clear Polycarbonate Glass	4 mm	PAN	_____	P4N	_____	4.800 kg
Clear Polycarbonate Glass	5 mm	PAN	_____	P5N	_____	6.000 kg
Clear Polycarbonate Glass	6 mm	PAN	_____	P6N	_____	7.200 kg
Tinted Polycarbonate Glass	4 mm	PAN	_____	Q4N	_____	4.800 kg
Tinted Polycarbonate Glass	5 mm	PAN	_____	Q5N	_____	6.000 kg
Tinted Polycarbonate Glass	6 mm	PAN	_____	Q6N	_____	7.200 kg
Expanded PVC Panel, gray, similar to RAL 7004	5 mm	PAN	_____	G5N	_____	3.250 kg

1) Please complete the order code by adding the desired width and length.
Drawing dimensions in mm

SSP 4520

Weld Mesh Clip

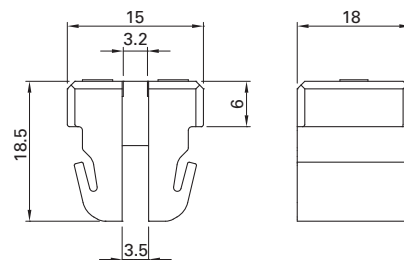
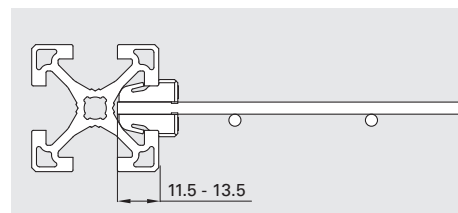
**Application**

For form-located integration of Weld Mesh panels into an extrusion frame

Technical Data

Material: PA6 V0

Color: RAL 7004 (signal gray)

**Assembly****Order Code**

Description	Order Code	Weight
Weld Mesh Clip	SSP 4520	0.005 kg

SSP 4515

Mesh Retainer

**Application**

For form-located integration of Weld Mesh panels into an extrusion frame

- Electrically conductive connection between weld mesh panels and extrusion frame
- can be used with non-standard spacing

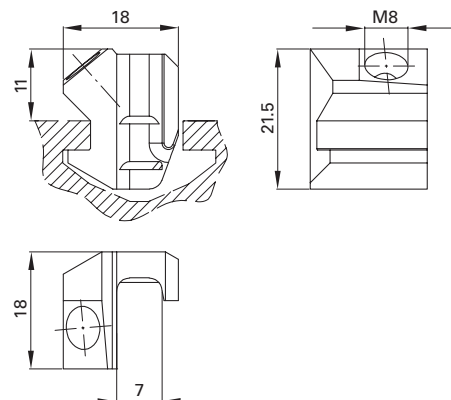
Technical Data

Material: steel

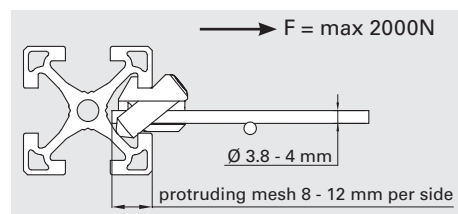
Scope of Delivery

1 Mesh Retainer SSP 4514

1 Set Screw GST M08x025 (waxed)



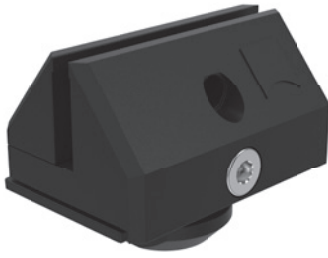
Transfer resistance per conductive connection: 0.4 mΩ

Assembly**Order Code**

Description	Order Code	Weight
Mesh Retainer Kit	SSP 4515	0.025 kg

1) Please complete the order code by adding the desired width and length.

Drawing dimensions in mm



Application

For attaching panels to extrusions, usable with 40 mm and 50 mm series extrusions

- As standard, panels do not need to be drilled
- High retention force

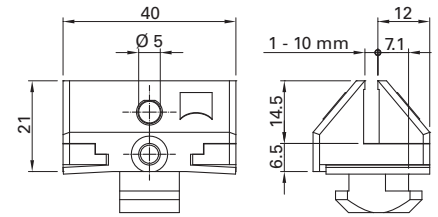
Technical Data

Material: PA6, black, galvanized steel

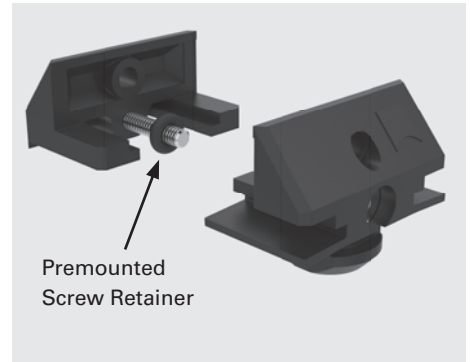
Load: up to 250 N, perpendicular to slot

Centerline: 1 - 10 mm

Protection against inadvertent movement of panels through pretensioning of clamp



Screw Retainer



Retention Force

Without pin: 200 N

With pin (SPS 5x20): 1500 N
(Polycarbonate glass)

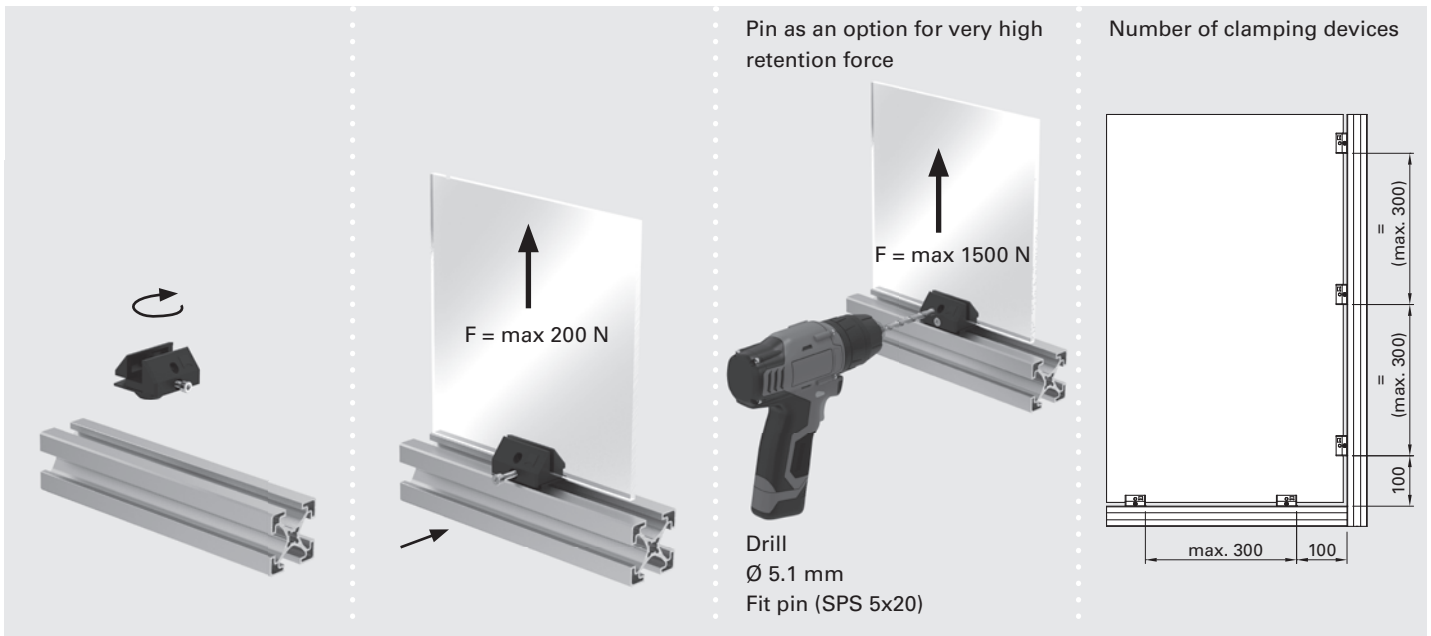
Scope of Delivery

1 PIN Clamping Device Base Part
1 PIN Clamping Device Sliding Part
1 screw IBS M04x25
1 Screw Retainer

Panel size

inside width minus 15 mm

Assembly



Order Code

	Order Code	
Description		Weight
Clamping Device Kit	PIN 4521	0.021 kg
Pin	SPS 5x20	0.002 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

**Application**

For fastening of panels between 1 - 3 mm and 3.1 - 6 mm thick, also suitable for later installation

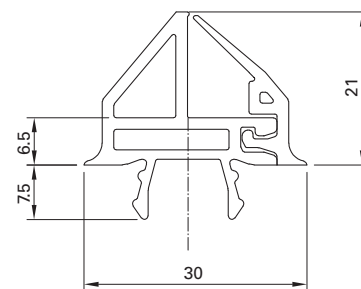
- Adequate protection against dust, water spray and noise
- Appealing design

Technical Data

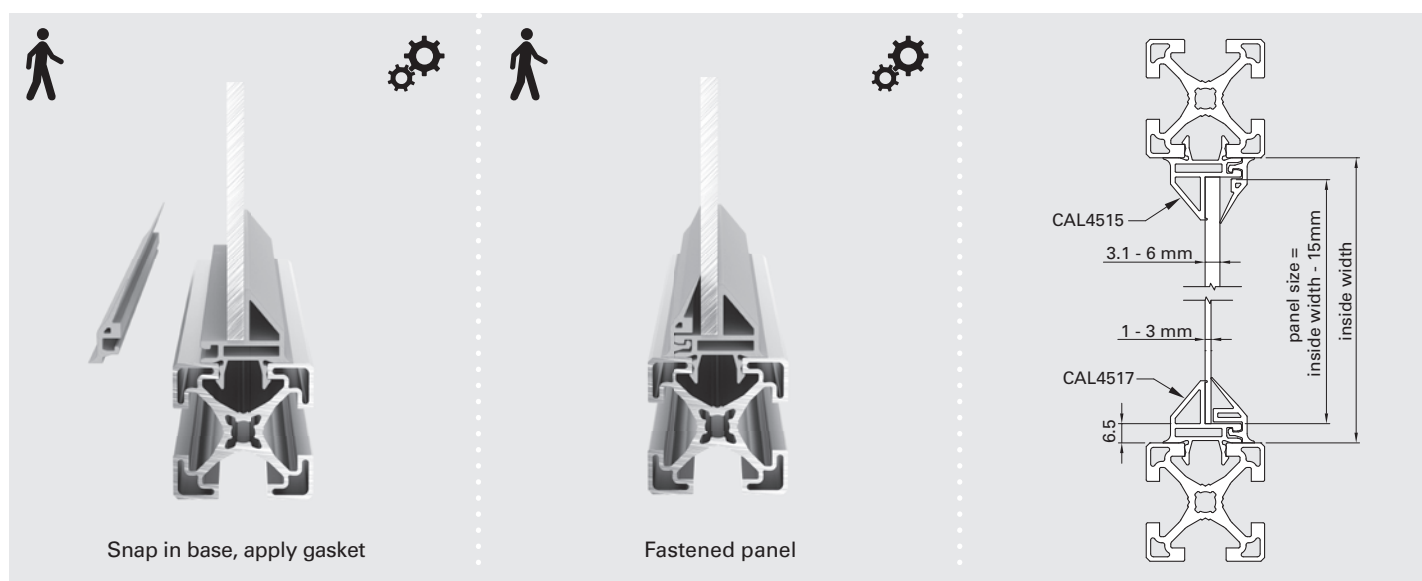
Material: impact-resistant PVC with soft lip, RAL 7004 (signal gray), UV-resistant, silicone-free

Temperature range: -10°C to +60°C

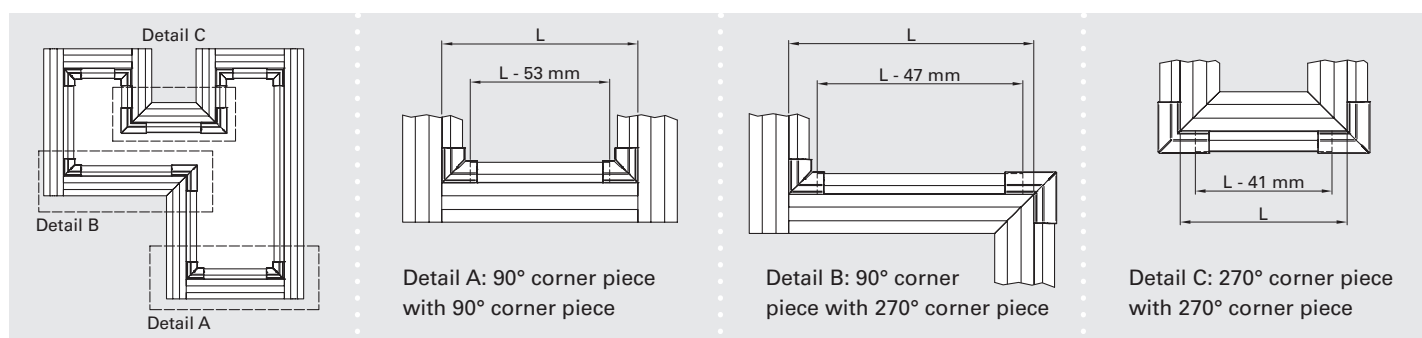
Stock length: 3000 mm



Assembly



Length Calculation

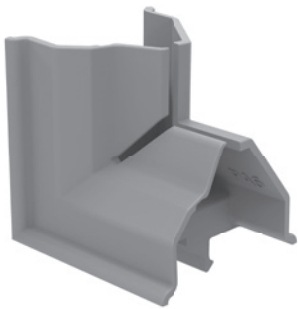


Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Panel Profile, 3.1 - 6 mm, cut to length	CAL 4515 SNN ____	0.280 kg
Panel Profile, 3.1 - 6 mm, stock length: 3000 mm	CAL 4515 NNN 3000	0.280 kg
Panel Profile, 3.1 - 6 mm, 25 rods, stock length: 3000 mm	CAL 4515 PAC 0025	0.280 kg
Panel Profile, 1 - 3 mm, cut to length	CAL 4517 SNN ____	0.280 kg
Panel Profile, 1 - 3 mm, stock length: 3000 mm	CAL 4517 NNN 3000	0.280 kg
Panel Profile, 1 - 3 mm, 25 rods, stock length: 3000 mm	CAL 4517 PAC 0025	0.280 kg

CAN 4501

90° Corner Piece



Application

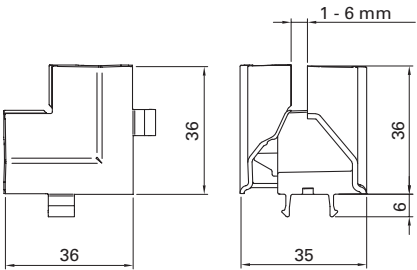
Used as 90° corner trim for Panel Profiles CAL 4515 and CAL 4517

Technical Data

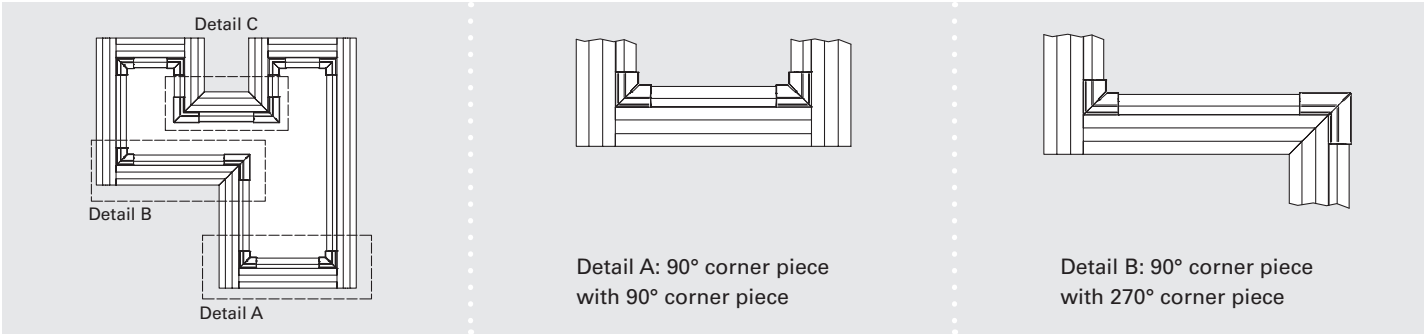
Material: POM, UV-resistant, silicone-free
Color: RAL 7004 (signal gray)
Temperature Range: -10 °C to +60 °C

Scope of Delivery

- 1 90° Corner Piece Base Part
- 1 90° Corner Piece Top Part



Assembly



Order Code

Description		Order Code	Weight
90° Corner Piece Kit		CAN 4501	0.010 kg



Drawing dimensions in mm

CAN 4503

270° Corner Piece

**Application**

Used as 270° corner trim for Panel Profiles CAL 4515 and CAL 4517

Technical Data

Material: PA6, UV-resistant, silicone-free

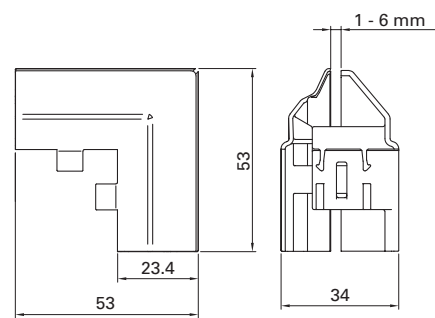
Color: RAL 7004 (signal gray)

Temperature Range: -10 °C to +60 °C

Scope of Delivery

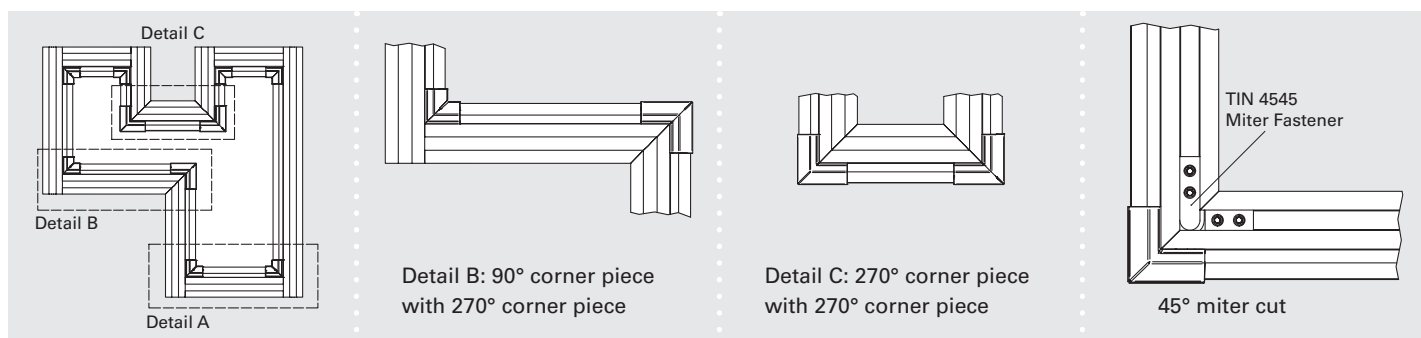
1 270° Corner Piece Base Part

1 270° Corner Piece Top Part



A 45° miter cut of the extrusion is necessary if the 270° corner piece is to be used.

Assembly



Order Code

Description	Order Code	Weight
270° Corner Piece Kit	CAN 4503	0.012 kg

Drawing dimensions in mm



TIN 4511

Safety Fence Fastener



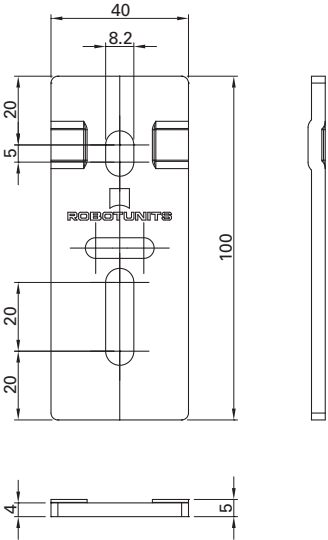
Application

For variable fastening options of safety fence components

- 90° connections of extrusions and as end cap
- Strong connection between elements

Technical Data

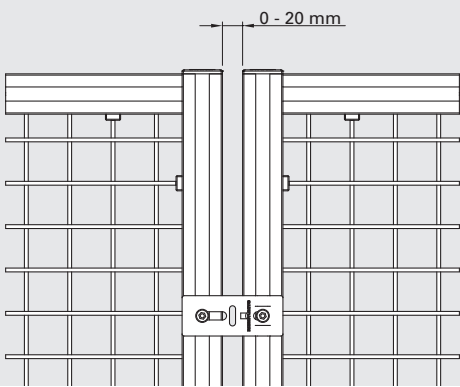
Material: galvanized steel



Assembly



Sturdy connection between panels



Order Code

Description	Scope of Delivery			Order Code	Weight
	TIN 4510	TIN 4598	IBS M08x016NIKO		
Safety Fence Fastener Kit	1	2	2	TIN 4511 ¹	0.150 kg
Safety Fence Fastener Kit	1	2	2	TIN 4511CP ²	0.150 kg

1) Packaged in Kit
2) Packaged by type, available for an order quantity of 100 or more
Drawing dimensions in mm

TIN 4521

90° Safety Fence Fastener

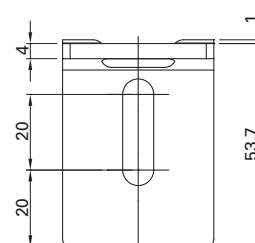
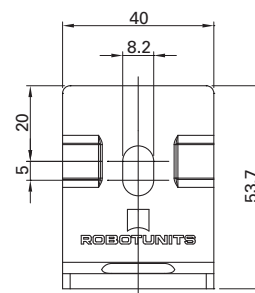
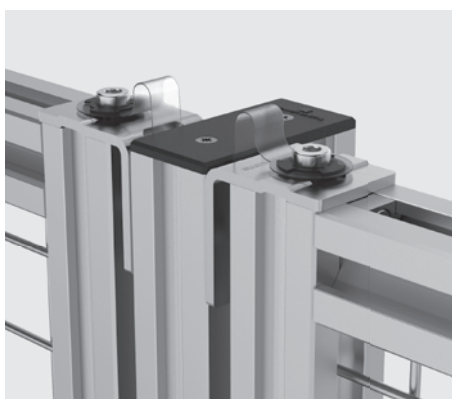
**Application**

For variable fastening options of safety fence components

- 90° connections of extrusions and as end cap
- Strong connection between elements
- Adjustable corner brackets from 0° to 180°

Technical Data

Material: galvanized steel

Assembly**Order Code**

Description	Scope of Delivery			Order Code	Weight
	TIN 4520	TIN 4598	IBS M08x016NIKO		
90° Safety Fence Fastener Kit	1	2	2	TIN 4521 ¹	0.150 kg
90° Safety Fence Fastener Kit	1	2	2	TIN 4521CP ²	0.150 kg

1) Packaged in Kit

2) Packaged by type, available for an order quantity of 100 or more

Drawing dimensions in mm



TIN 4561

Tilt Plate 80



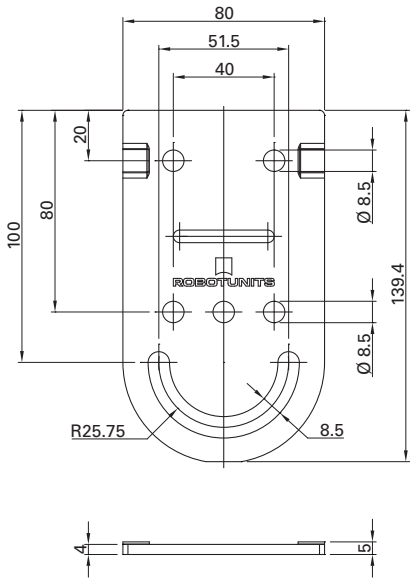
Application

Variable connection of modular components

- Sturdy connection of conveyor and stand
- Infinitely adjustable incline

Technical Data

Material: galvanized steel



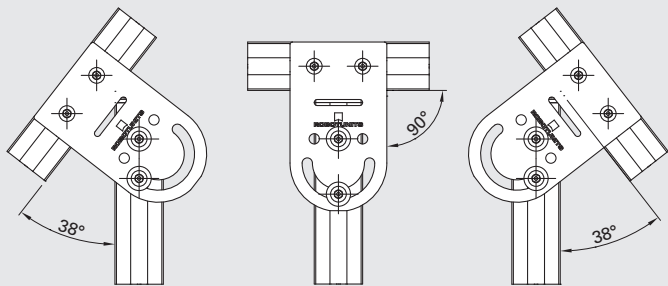
Application

Connection of conveyor and stand

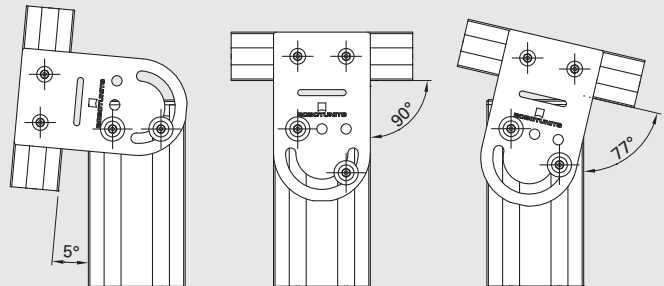


Possible inclination settings

40 mm series



80 mm series



Order Code

Description	Scope of Delivery				Order Code	Weight
	TIN 4530	TIN 4508	IBS M08x016NIKO	BLS M008S02		
Tilt Plate 80 Kit	1	4	4	2	TIN 4561	0.370 kg

Drawing dimensions in mm

TIN 4571

Tilt Plate 80 Bent

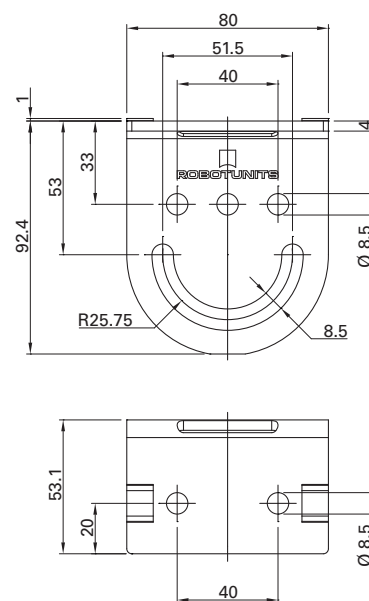
**Application**

Variable connection of modular components

- Workplace applications e.g. for shelves
- Infinitely adjustable incline (Bracket as with TIN 4531)

Technical Data

Material: galvanized steel



Application

Workstation



Order Code

Description	Scope of Delivery				Order Code	Weight
	TIN 4540	TIN 4508	IBS M08x016NIKO	BLS M008S02		
Tilt Plate 80 Bent Kit	1	4	4	2	TIN 4571	0.370 kg

Drawing dimensions in mm

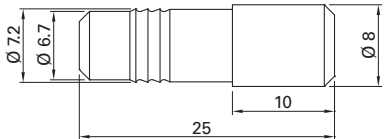
SSP 4900

Bolt

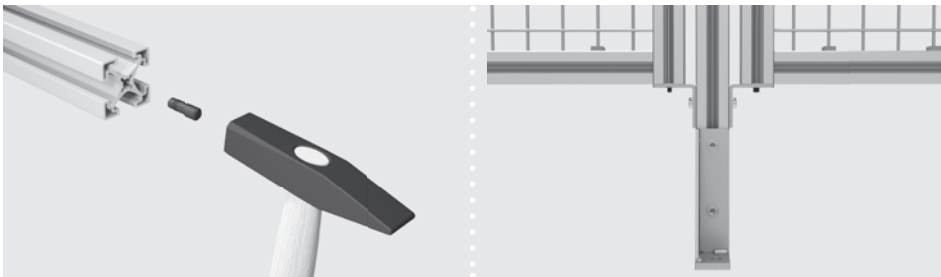


Application
For mounting Allround Panels

Technical Data
Material: nitrated steel



Function



Order Code

Description	Order Code	Weight
Bolt	SSP 4900	0.010 kg

SSP 5500

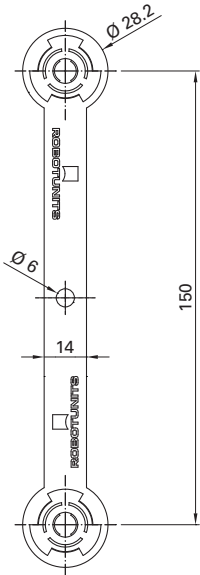
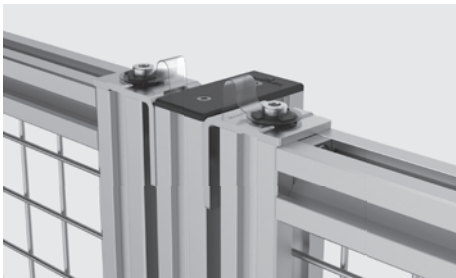
Screw Retainer



Application
For securing M8 retaining screws
(e.g. for Allround Panel)

Technical Data
Material: PVC and PA

Application



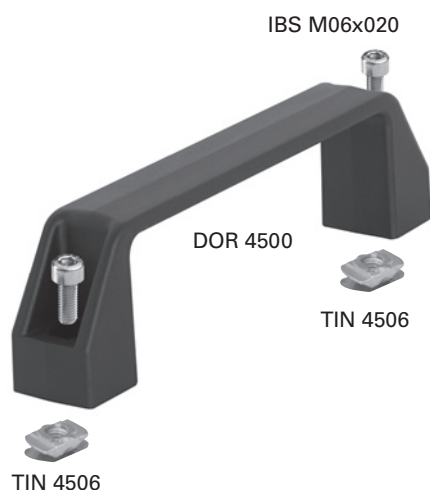
Order Code

Description	Order Code	Weight
Screw Retainer	SSP 5500	0.001 kg

Drawing dimensions in mm

DOR 4501

Handle

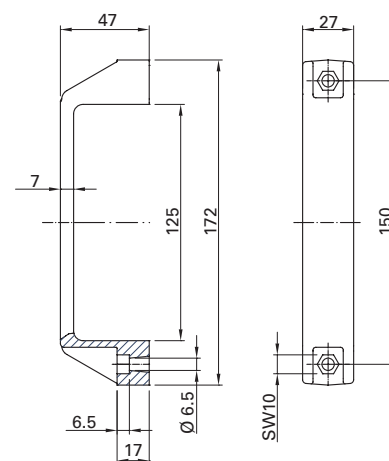
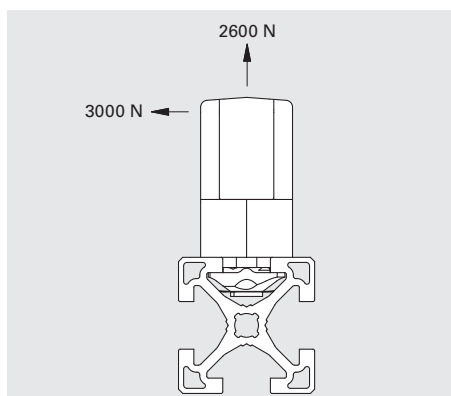
**Application**

For use with doors, panels, carts etc.

Technical Data

Material: PA/GF composite, galvanized steel

Retention Force



Order Code

Description	Scope of Delivery			Order Code	Weight
	DOR 4500	TIN 4506	IBS M06x020		
Handle Kit	1	2	2	DOR 4501	0.100 kg

DOR 4541

Magnet Holder

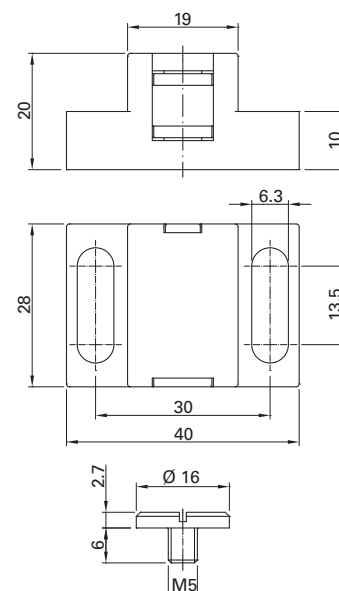
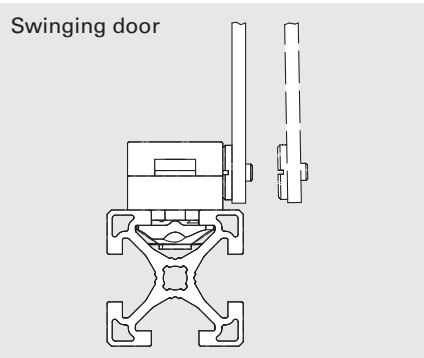
**Application**

Closing device for frameless doors

Technical Data

Material: POM composite, black, galvanized steel

Application



Retention Force: front 20 N, back 8 N

Order Code

Description	Scope of Delivery				Order Code	Weight
	DOR 4540	TIN 4506	IBS M06x020	BLS M006		
Magnet Holder Kit	1	2	2	2	DOR 4541	0.075 kg

DOR 4551

Door Latch



TIN 4506

DOR 4550

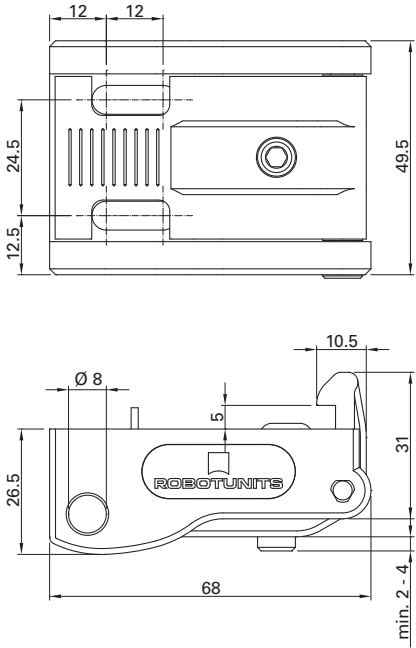
Application

To latch door panels directly to door posts. Door can only be opened by pushing the door latch. Suitable for 40 mm and 50 mm series extrusions.

Technical Data

Material: PA6 30 GF, black, galvanized steel

For extra security.



Application



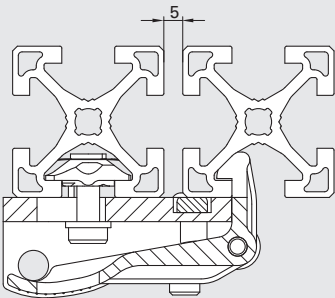
Secure: Push latch to open door.



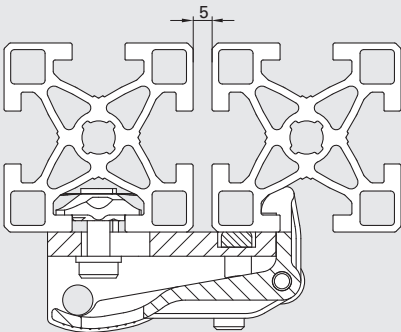
Door latch can be **secured with a pad-lock against inadvertent opening**. Lock bolt diameter: 7 mm



Door latch can be **secured with a pad-lock against inadvertent closing**. Lock bolt diameter: 7 mm



Application: door latch in 40 mm series



Application: door latch in 50 mm series



Adjustable pre-tension for optimal retention force. Set screw must always protrude by at least 2 mm.

Order Code

Description	Scope of Delivery		Order Code	Weight
	DOR 4550	TIN 4506		
Door Latch Kit	1	2	DOR 4551	0.100 kg

Drawing dimensions in mm

DOR 4553

Door Catch



TIN 4506

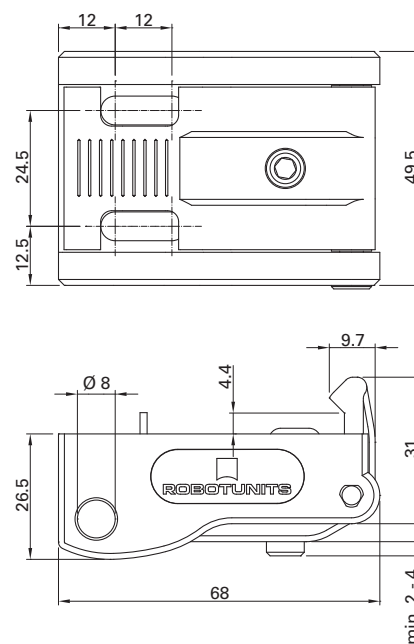
DOR 4552

Application

To latch door panels directly to door posts. Door can be opened by pulling door handle. Suitable for 40 mm and 50 mm series extrusions.

Technical Data

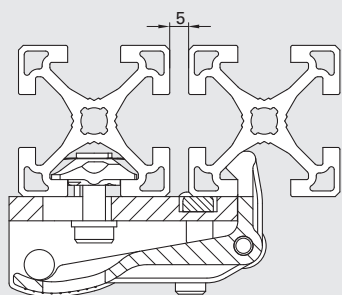
Material: PA6 30 GF, black, galvanized steel



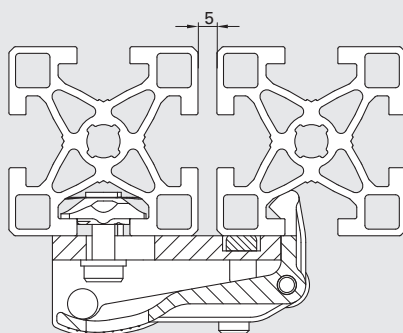
Application



Pull to release and open.



Application of door latch in 40 mm series



Application of door latch in 50 mm series



Adjustable pre-tension for optimal retention force. Set screw must always protrude by at least 2 mm.

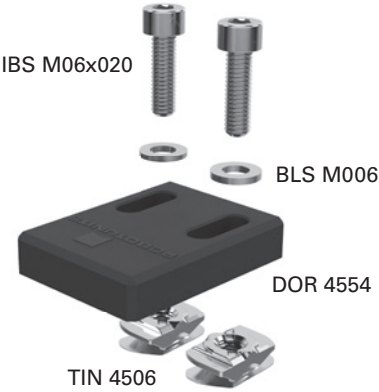
Order Code

Description	Scope of Delivery		Order Code	Weight
	DOR 4552	TIN 4506		
Door Catch Kit	1	2	DOR 4553	0.100 kg

Drawing dimensions in mm

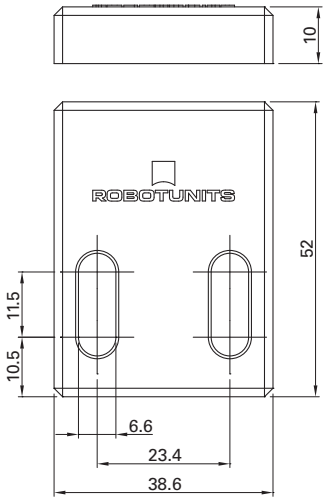
DOR 4555

Door Stop



Application
Used as a fixed door stop

Technical Data
Material: PA6 30 GK, galvanized steel



Order Code

Description	Scope of Delivery				Order Code	Weight
	DOR 4554	TIN 4506	IBS M06x020	BLS M006	DOR 4555	
Door Stop Kit	1	2	2	2		0.020 kg

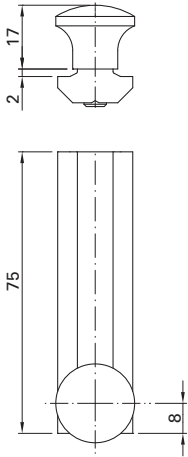
DOR 4557

Safety Slide



Application
Prevents inadvertent closing of doors.
Suitable for 40 mm and 50 mm series extrusions.

Technical Data
Material: galvanized steel; Duroplast



Application



Door is open:



Door is closed: Safety slide sits on the door latch. Safety slide falls down onto the drop-in nut and prevents the door from being inadvertently closed.



Door will be closed:
To close the door, the safety slide must be manually lifted.

Order Code

Description	Scope of Delivery			Order Code	Weight
	Base Part	TIN 4508	GST M08x012 SPI	DOR 4557	
Safety Slide Kit	1	1	1		0.090 kg

Drawing dimensions in mm

DOR 4511

Hinge

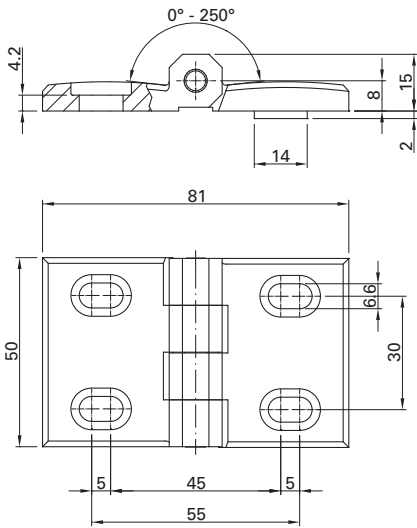
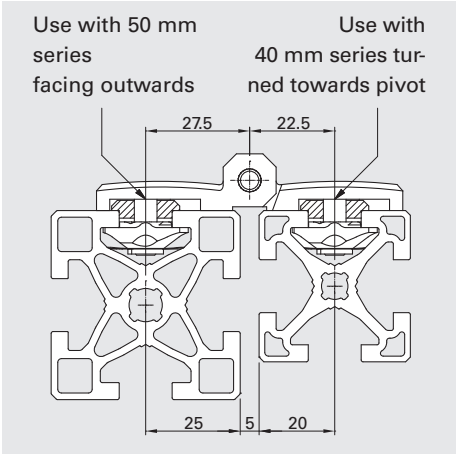


Application
For hinged structures. Inserts allow for use with 40 mm and 50 mm series extrusions.

Technical Data
Material: GD-Zn black, coated, galvanized steel

Tightening torque
IBS M06x016NIKO = 9 Nm

Assembly



Order Code

Description	Scope of Delivery			Order Code	Weight
	DOR 4510	TIN 4506	IBS M06x016NIKO		
Hinge Kit	1	4	4	DOR 4511	0.222 kg

Drawing dimensions in mm

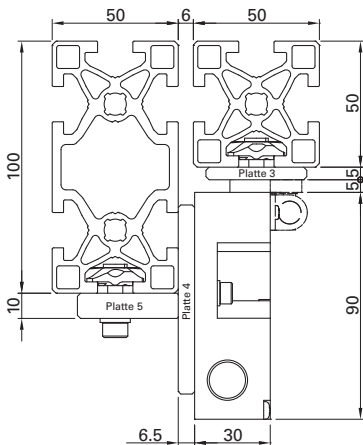


Safety Interlock with actuator and ball retainer



Safety interlock with actuator

Fastening Kit B: PIL 5010 and PIL 5050



Application
Safety device for doors

Technical Data
Material: clear, anodized aluminum, galvanized steel, housing of fiberglass-reinforced Thermopolus (-30 to +80°C)

Voltage:
230V/2 A,
1 x N/C contact, 1 x N/O contact

Regulations:
IEC 60947-5-1, EN 60947-5-1
DIN VDE 0660-200, BG-GS-ET-15

Scope of Delivery
DOR 4580:
1 Base Part
1 Actuator

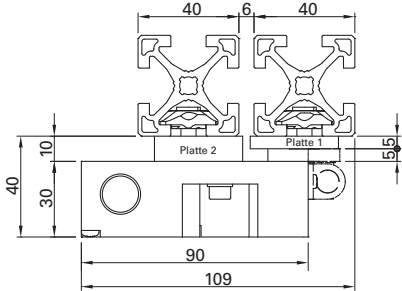
DOR 4582:
1 Base Part
1 Actuator
1 Ball Retainer

DOR 4581 (Fastening Kit A):
1 Mounting Plate 1
1 Mounting Plate 2
4 Drop-in Nuts TIN 4506
2 Washers BLS M005
2 Screws IBS M05x014
2 Screws SKS M05x010
2 Screws SKS M06x016
2 Screws SKS M06x020

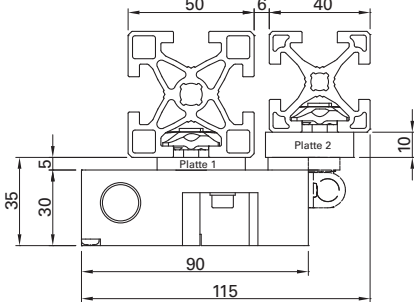
DOR 4583 (Fastening Kit B):
1 Mounting Plate 3
1 Mounting Plate 4
1 Mounting Plate 5
4 Drop-in Nuts TIN 4506
2 Washers BLS M005
2 Washers BLS M006
2 Screws SKS M05x010
2 Screws IBS M05x016
4 Screws SKS M06x016
2 Screws IBS M06x020

Additional attachment options for Fastening Kit B DOR 4583:
PIL 40 x 40 with PIL 50 x 100
PIL 50 x 50 with PIL 40 x 80

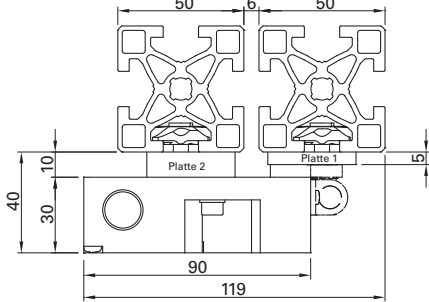
Fastening Kit A: PIL 4040 and PIL 4040



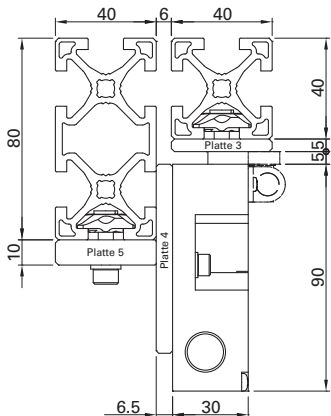
Fastening Kit A: PIL 5050 and PIL 4040



Fastening Kit A: PIL 5050 and PIL 5050



Fastening Kit B: PIL 4080 and PIL 4040

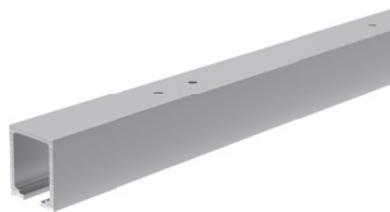


Order Code

Description	Order Code	Weight
Safety Interlock with Actuator	DOR 4580	0.125 kg
Safety Interlock with actuator and ball retainer	DOR 4582	0.160 kg
Fastening Kit A	DOR 4581	0.155 kg
Fastening Kit B	DOR 4583	0.230 kg

DOL 4034

Guiderail

**Application**

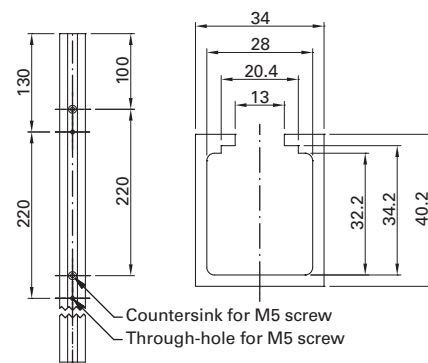
For sliding doors

Technical Data

Material: clear anodized aluminum

Hole spacing = 220 mm

Max. load = 80 kg per sliding door



Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Guiderail	DOL 4034 SNN _ _ _ _	0.996 kg
Guiderail of maximum standard length (approx. 6050 mm)	DOL 4034 NNN 6050	0.996 kg

DOR 4031

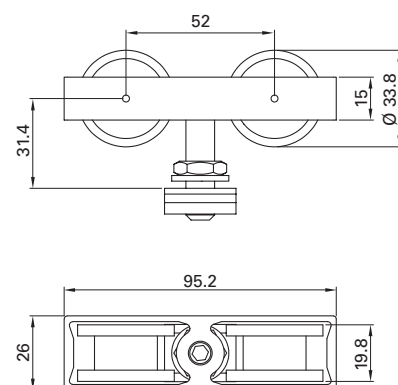
Roller

**Application**

Sliding Door

Technical Data

Material: clear anodized aluminum, PA6 white, galvanized steel



Order Code

Description	Scope of Delivery					Order Code	Weight
	DOR 4030	TIN 6010	SKM M10FLA	GST M10x050	BLS M010		
Roller Kit	1	1	1	1	1	DOR 4031	0.140 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

DOR 4032

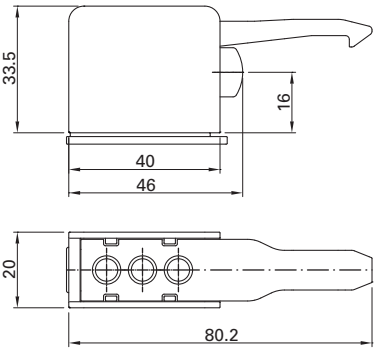
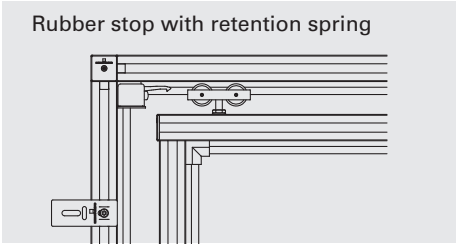
Sliding Door Stop



Application
Mechanical stop and retainer for sliding door

Technical Data
Material: aluminum, galvanized steel, rubber

Application

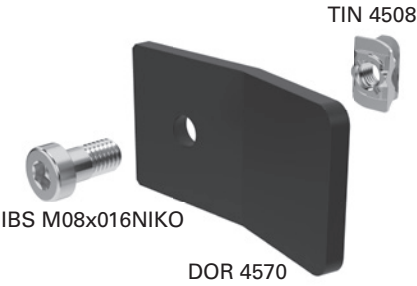


Order Code

Description	Order Code	Weight
Sliding Door Stop	DOR 4032	0.126 kg

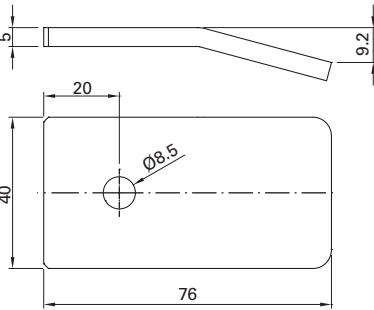
DOR 4571

Centering Guide



Application
For sliding doors

Technical Data
Material: powder-coated steel

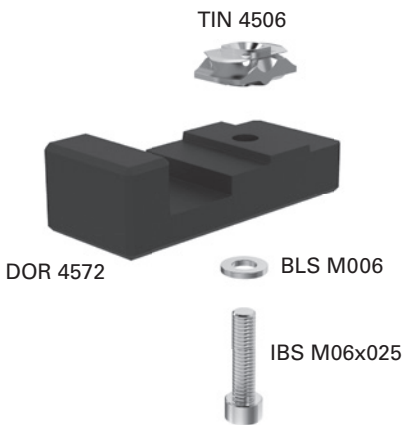


Order Code

Description	Scope of Delivery			Order Code	Weight
	DOR 4570	TIN 4508	IBS M08x016NIKO		
Centering Guide Kit	1	1	1	DOR 4571	0.100 kg

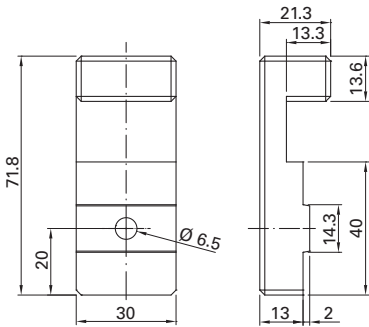
DOR 4573

Slider



Application
For sliding doors

Technical Data
Material: black POM composite



Order Code

Description	Scope of Delivery				Order Code	Weight
	DOR 4572	TIN 4506	IBS M06x025	BLS M006	DOR 4573	
Slider Kit	1	1	1	1		0.060 kg

Drawing dimensions in mm



DOR 456_

Door Support Castor

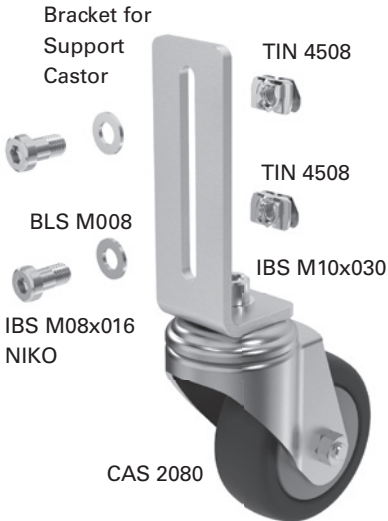
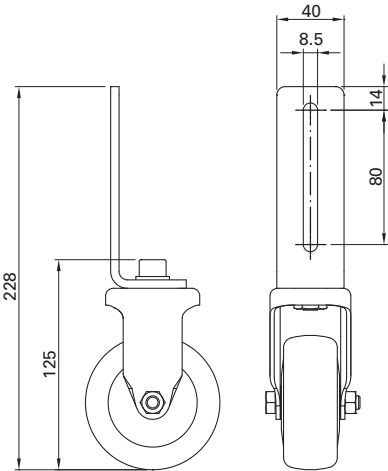


Application
Rolling support for panels, doors

Technical Data
Material: clear anodized aluminum, galvanized steel, rubber

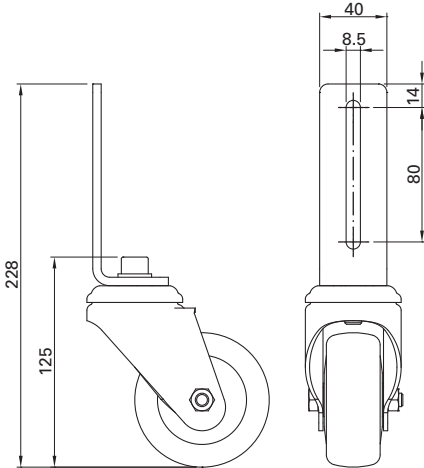
- Scope of Delivery**
Door Support Castor Kit, rigid
DOR 4565:
1 Rigid Castor with Bolt Hole Fitting CAS 2082
1 Bracket for Support Castor
1screw IBS M10x020
2 Washers BLS M010
1 Hexagon Nut SKM M10
2 Screws IBS M08x016NIKO
2 Drop-in Nuts TIN 4508
2 Washers BLS M008

Door Support Castor Kit, rigid



- Door Support Castor Kit, swivel
DOR 4567:
1 Swivel Castor with Bolt Hole Fitting CAS 2080
1 Bracket for Support Castor
1 screw IBS M10x030
2 Washers BLS M010
1 Hexagon Nut SKM M10
2 Screws IBS M08x016NIKO
2 Drop-in Nuts TIN 4508
2 Washers BLS M008

Door Support Castor Kit, swivel



Order Code

Description	Order Code	Weight
Door Support Castor Kit, rigid	DOR 4565	0.510 kg
Door Support Castor Kit, swivel	DOR 4567	0.680 kg

Drawing dimensions in mm

DOR 4561

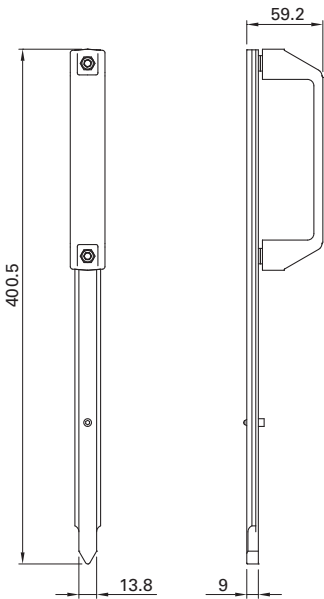
Floor Catch



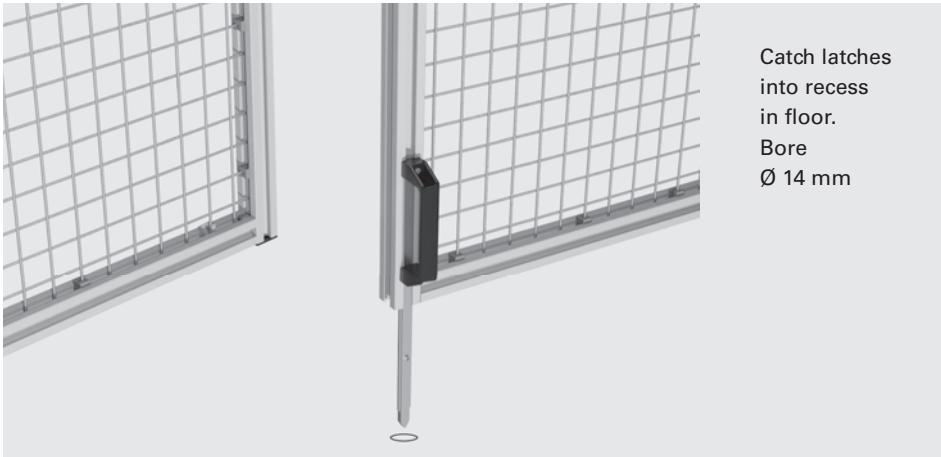
Application
For double door

Technical Data
Material: galvanized steel,
PA/GF composite

Scope of Delivery
1 Floor Catch Base Part
1 Handle DOR 4500
2 Screws M06x020
4 Washers BLS M006
1 Spring-Loaded Pressure Part with Band
and Hexagon Socket-Head
GST M06x015FED



Application



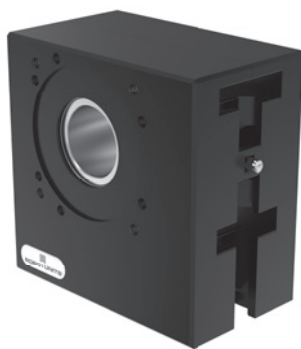
Catch latches
into recess
in floor.
Bore
Ø 14 mm



Order Code

Description		Order Code	Weight
Floor Catch Kit		DOR 4561	0.545 kg

Drawing dimensions in mm



Application

Drive and idler pulley for Linear Motion Unit, suitable for 50 mm series extrusions.

Technical Data

Material: black anodized aluminum,
steel

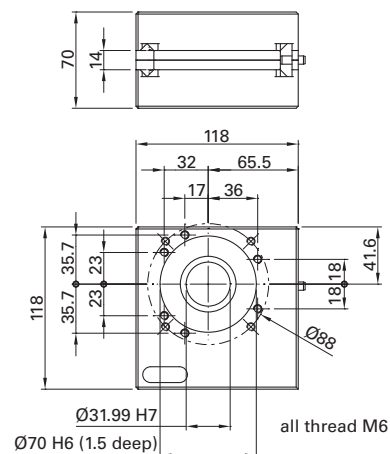
Max. drive torque: 60 Nm

Carriage stroke per revolution:

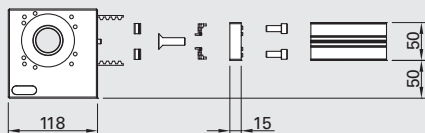
200 mm

Pitch circle diameter: 63.66 mm

Flange plates for motor connection are available upon request.



Application

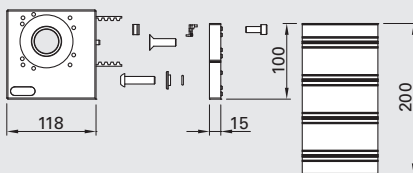


Connection Option LIN 5451

For connecting to extrusions:
50x50, 50x100 flat, 50x200 flat

Scope of Delivery

- 1 Timing Belt Pulley LIN 5400
1 Fastener 50x50 FAS 5050
2 Centering Inserts FAS 5052
2 Drop-in Nuts TIN 4508
2 Screws IBS M08x020
1 screw IBS M10x035

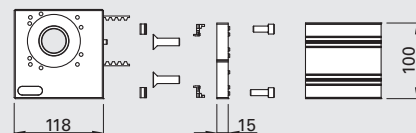


Connection Option LIN 5421

For connecting to extrusions:
50x200 upright

Scope of Delivery

- 1 Timing Belt Pulley LIN 5400
- 1 Fastener 50x50 FAS 5050
- 1 Fastener 50x50 FAS 5050, modified
- 1 FAS 5052 centering insert
- 1 Drop-in Nut TIN 4508
- 1screw IBS M08x020
- 1 screw IBS M10x035
- 1 TIN plate for Special Fastener 50
with O ring and screw LKS M10x040



Connection Option LIN 5411

For connecting to extrusions:
50x100 upright, 100x100

Scope of Delivery

- 1 Timing Belt Pulley LIN 5400
- 1 Fastener 50x50 FAS 5050
- 1 Fastener 50x50 FAS 5050, modified
- 2 Centering Inserts FAS 5052
- 2 Drop-in Nuts TIN 4508
- 2 Screws IBS M08x020
- 2 Screws SKS M10x035

Order Code

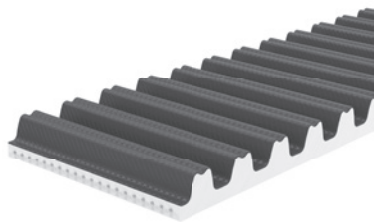
	Order Code	Weight
Description		
Timing Belt Pulley	LIN 5400	1.660 kg
Timing Belt Pulley with Fastening Kit 50	LIN 5451	1.950 kg
Timing Belt Pulley with Fastening Kit 100	LIN 5411	2.000 kg
Timing Belt Pulley with Fastening Kit 200	LIN 5421	2.050 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

LIL 3008

Timing Belt

**Timing Belt Length Calculation**

TL (Total Length), SL (Stroke Length),

L (Timing Belt Length):

$$L = 2 \times TL - 136 \text{ or } L = 2 \times SL + 944$$

Application

Power transmission from drive to carriage.

Technical Data/Scope of Delivery

Material: PU timing belt, white,

PAZ coating on toothed side,

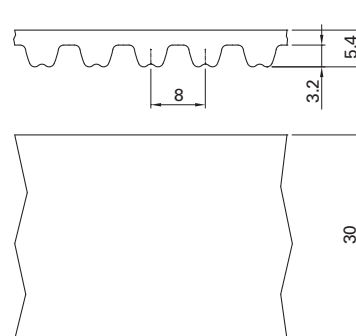
Max. tensile load: 2000 N

Recommended pre-tension of

timing belt: 0.1 % = approx. 500 N pre-

tension

Timing Belt designation: RPU-8M-30-PAZ

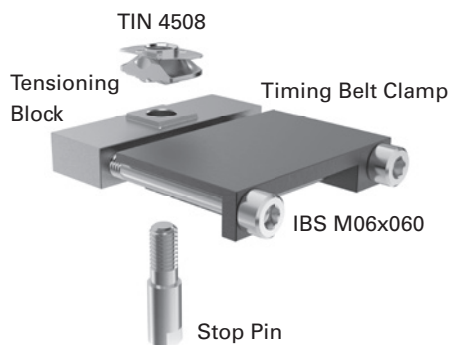


Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Timing Belt RPU-8M-30-PAZ, cut to length	LIL 3008 SNN ____	0.155 kg

LIN 3221

Timing Belt Clamp

**Application**

For attaching and tensioning the timing belt

Technical Data

Material: black anodized aluminum,

stainless steel, galvanized steel

Max. tensile load: 2000 N

Scope of Delivery

1 Tensioning Block

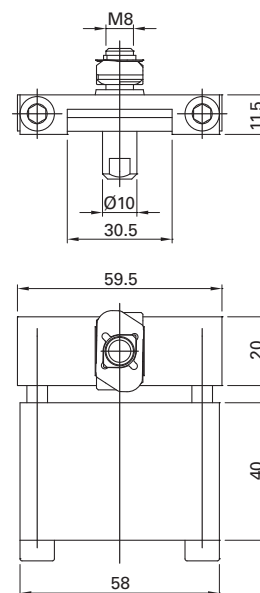
1 Timing Belt Clamp

1 Stop Pin

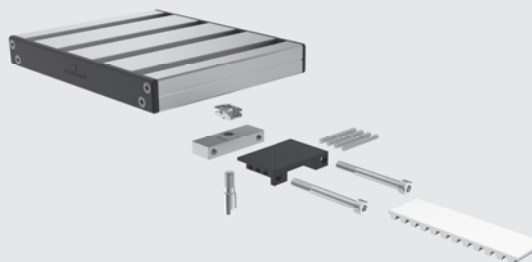
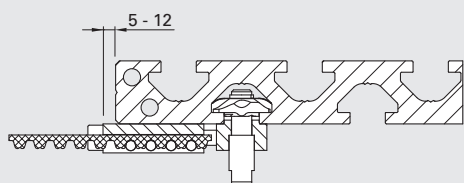
4 Timing Belt Pins

2 Screws IBS M06x060

1 Drop-in Nut TIN 4508



Application



Order Code

Description	Order Code	
	Length	Weight
Timing Belt Clamp Kit	LIN 3221	0.205 kg

LIN 500_

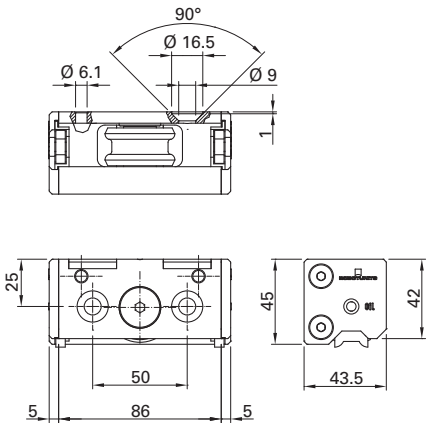
Single Idler

Application
Roller device for Linear Motion Units, integrated felt wipers for cleaning and lubrication.

Technical Data
Material: clear or black anodized aluminum, black, tempered steel or galvanized steel, black PA6 composite, pressed felt

Bearing load capacity per single idler
Radial: max. 1500 N
Axial: max. 750 N

The carriage is adjusted using the eccentric idlers and an eccentric wrench LIN 9990.
Assembly instructions: page 181



Order Code

Description	Scope of Delivery				Order Code	Weight
	LIN 5000	LIN 5002	Grooved pin	SKS M08x055		
Single Idler Kit, concentric	1		2	2	LIN 5001	0.375 kg
Single Idler Kit, eccentric		1	2	2	LIN 5003	0.375 kg

LIN 501_

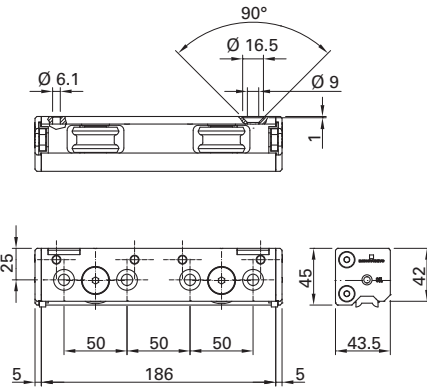
Double Idler

Application
Roller device for Linear Motion Units, integrated felt wipers for cleaning and lubrication.

Technical Data
Material: clear or black anodized aluminum, black, tempered steel or galvanized steel, black PA6 composite, pressed felt

Bearing load capacity per double idler
Radial: max. 3000 N
Axial: max. 1500 N

The carriage is adjusted using the eccentric idlers and an eccentric wrench LIN 9990.
Assembly instructions: page 181

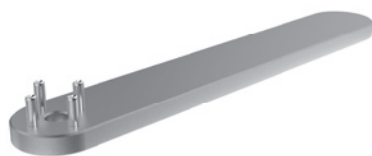


Order Code

Description	Scope of Delivery				Order Code	Weight
	LIN 5010	LIN 5012	Grooved pin	SKS M08x055		
Double Idler Kit, concentric	1		4	4	LIN 5011	0.755 kg
Double Idler Kit, eccentric		1	4	4	LIN 5013	0.755 kg

LIN 9990

Wrench

**Application**

For adjusting and tightening the eccentric bolt of the Idlers

Technical Data

Material: galvanized steel

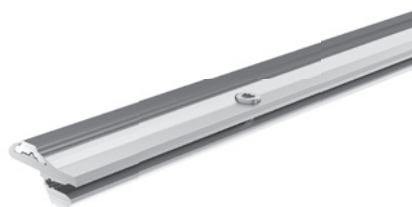


Order Code

Description	Order Code	Weight
Wrench	LIN 9990	0.177 kg

LIL 5000

Guiderail

**Application**

Guide rollers can be added later to any 50 mm series extrusions

Technical Data

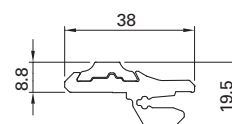
Material: tempered, brushed steel
HRC 58 +3, clear anodized aluminum

Scope of Delivery

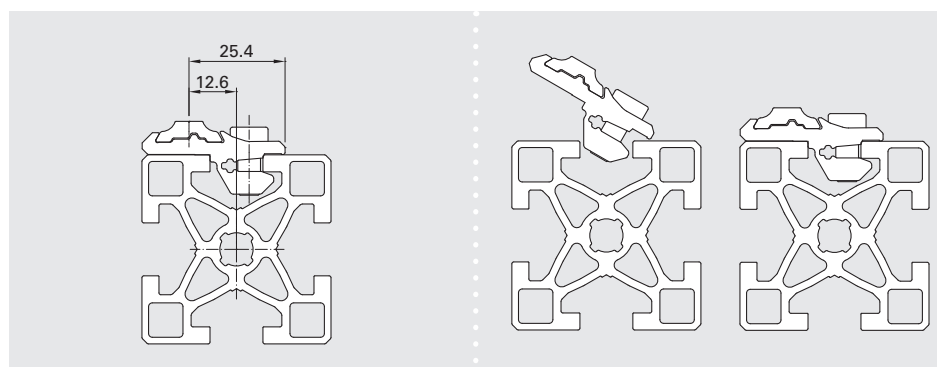
Guiderail, Rolled Steel
and Aluminum
screw IBS M06x012 NIKO

Tightening torque

IBS M06x012NIKO = 12 Nm



Assembly



Order Code

Description	Order Code ¹	Weight/Meter
Guiderail	Length	
Guiderail, stock length 6050 mm (usable length 6000 mm)	LIL 5000 SNN ____	1.105 kg
	LIL 5000 NNN 6050	1.105 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

LIN 1501 / LIN 2001

Carriage Plate

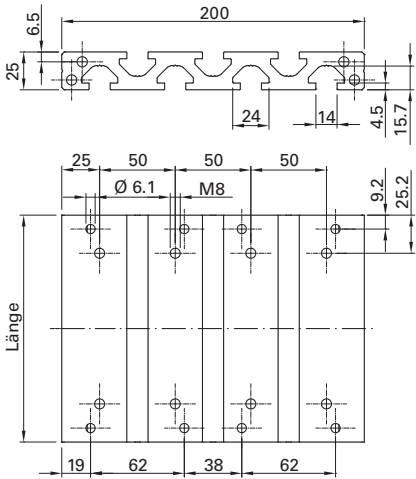


Application
Carriage Plate for mounting components, assembled with Double Idlers

Technical Data
Material: clear anodized aluminum, PA6 black

Scope of Delivery
1 Carriage Plate
2 End Caps CAP 2521

Carriage plate 50 (length 150) = LIL 5010
Carriage plate 100 (length 200) = LIL 1010
Assembly instructions: page 181



Order Code

		Order Code	
Description	Length		Weight
Carriage Plate 50 Kit	150 mm	LIN 1501	1.150 kg
Carriage Plate 100 Kit	200 mm	LIN 2001	1.530 kg

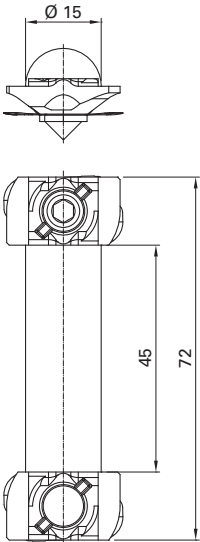
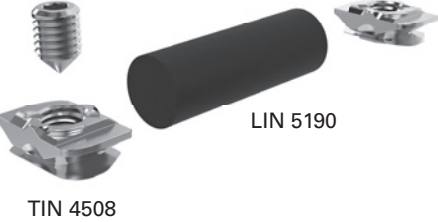
LIN 5191

Limit Stop

Application
Mechanical end stop, prevents pulley damage

Technical Data/Scope of Delivery
Material: galvanized steel, rubber
Used in combination with LIN 3221 timing belt clamp.

GST M08x012 SPI



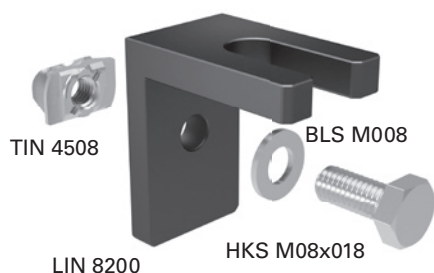
Order Code

Description	Scope of Delivery			Order Code	Weight
	LIN 5190	TIN 4508	GST M08x012 SPI		
Limit Stop Kit	1	2	1	LIN 5191	0.036 kg

Drawing dimensions in mm

LIN 8201

Proximity Switch Bracket

**Application**

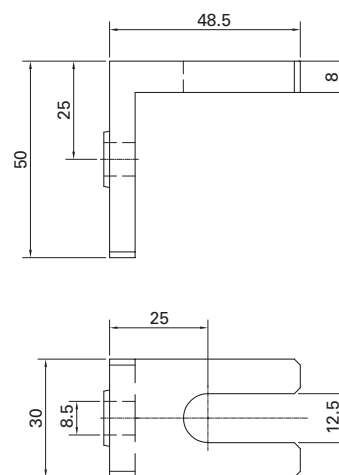
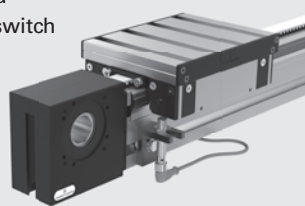
Used for mounting proximity switch; the idler is the switching surface.

Technical Data

Material: black anodized aluminum, galvanized steel

Application

Bracket and proximity switch



Order Code

Description	Scope of Delivery				Order Code	Weight
	LIN 8200	TIN 4508	HKS M08x018	BLS M008	LIN 8201	0.175 kg
Proximity Switch Bracket Kit	1	1	1	1		

LIN 8310

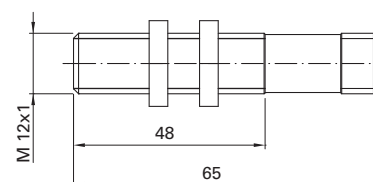
Proximity Switch

**Application**

Inductive proximity switch for monitoring the travel limit Mounted with Proximity Switch Bracket LIN 8201

Technical Data

Switching distance: 4 mm, 24V DC, PNP N/O contact, outer thread M12x1
Material: galvanized steel



Order Code

Description	Order Code	Weight
	LIN 8310	0.185 kg
Proximity Switch, M12x1		

LIN 8312

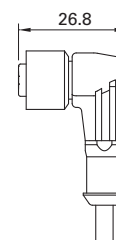
Angle Plug With Cable

**Application**

Used with Proximity Switch LIN8310 to monitor travel limit

Technical Data

Cable length: 5 m
Head A connection type: socket, M12
4-pin, angled with LED
Head B connection type: loose cable end



Order Code

Description	Order Code	Weight
	LIN 8312	0.020 kg
Angle Plug With Cable, 5 m		

LIN 5241

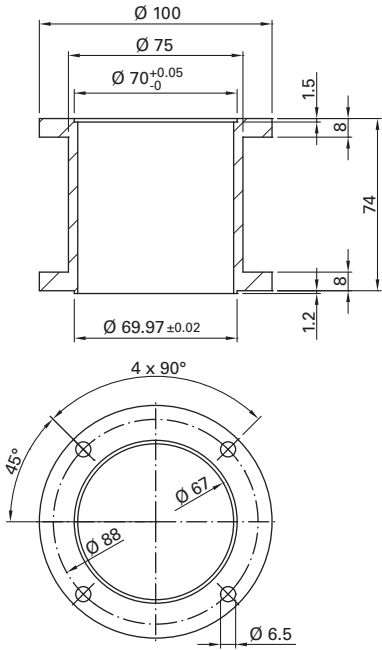
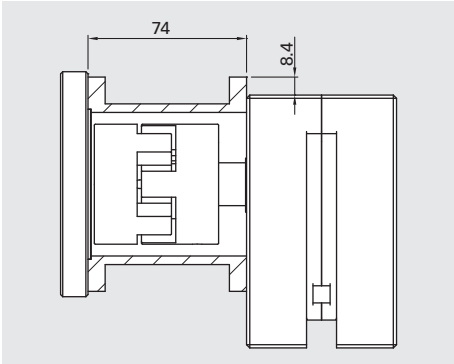
Motor Flange



Application
To attach motor to Timing Belt Pulley

Technical Data
Material: clear anodized aluminum,
galvanized steel

Assembly

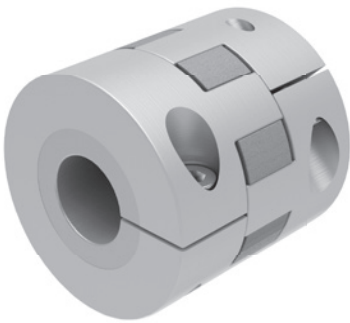


Order Code

Description	Scope of Delivery			Order Code	Weight
	LIN 5240	IBS M06x20	BLS M006		
Motor Flange Kit	1	8	8	LIN 5241	0.390 kg

LIN 523_

Coupling



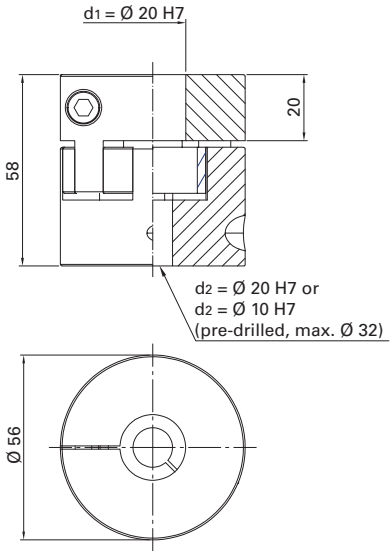
Application
To connect motor to drive shaft

Technical Data
Material: cast aluminum

Transferable torque: 60 Nm
Tightening torque: 15 Nm

Scope of Delivery
LIN 5236:
2 Coupling Halves with Ø 20
1 Coupling Star

LIN 5237:
1 Coupling Half, Ø 10 pre-drilled
1 Coupling Half with Ø 20
1 Coupling Star



Order Code

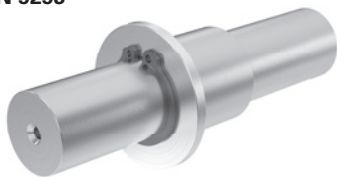
Description	Order Code	Weight
Coupling d1 = d2 = 20 mm	LIN 5236	0.360 kg
Coupling d1 = 20 mm, d2 = 10 pre-drilled	LIN 5237	0.360 kg

Drawing dimensions in mm

LIN 52__

Driveshaft/Encoder Shaft

LIN 5253



Application

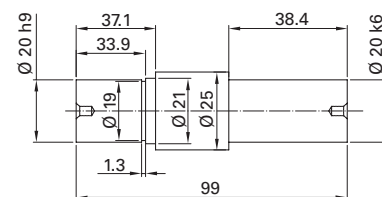
To connect Coupling to Timing Belt Pulley

Technical Data

Material: stainless steel

Other diameters and lengths possible upon request.

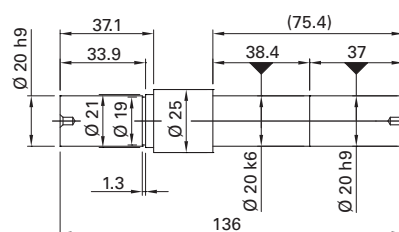
LIN 5253



LIN 5255



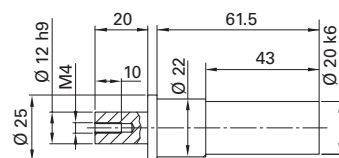
LIN 5255



LIN 5248

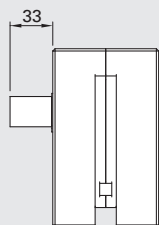


LIN 5248

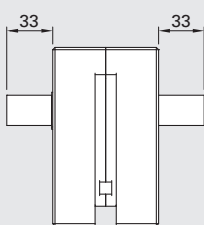


Dimensions

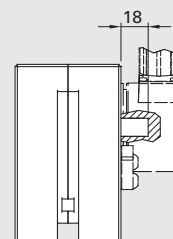
LIN 5253



LIN 5255



LIN 5248



Order Code

Description	Scope of Delivery					Order Code	Weight
	LIN 5252	LIN 5254	LIN 5248	BLS M020	SIR 020x1.2		
Single Drive Shaft Kit	1	-	-	1	1	LIN 5253	0.300 kg
Double Drive Shaft Kit	-	1	-	1	1	LIN 5255	0.400 kg
Encoder Shaft	-	-	1	-	-	LIN 5248	0.190 kg

Drawing dimensions in mm

LIN 5246

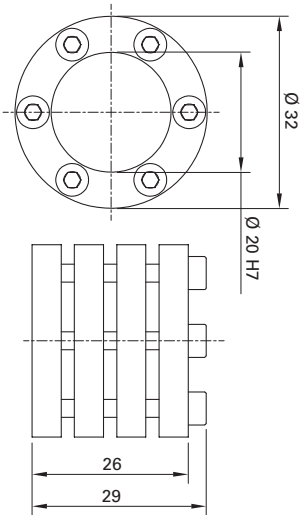
Expanding Coupling



Application
To connect motor or drive shaft
(diameter = 20 mm) with Timing Belt
Pulley

Technical Data
Material: tempered steel

Transferable torque: 60 Nm
Tightening torque per screw: 2 Nm
Shaft tolerance: k6



Order Code

Description		Order Code	Weight
Expanding Coupling		LIN 5246	0.070 kg



LIN 750_

Encoder

**Application**

For fitting to C8T timing belt pulley or
LIN timing belt pulley

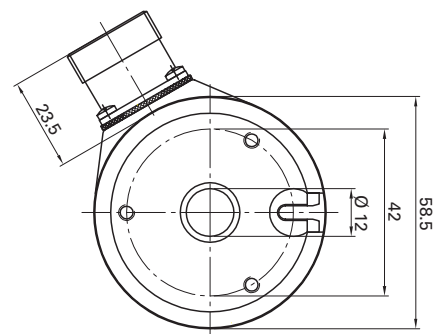
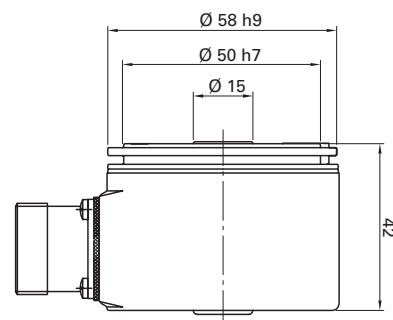
Technical Data

Material: aluminum housing
Speed: max 4000 rpm
Increments: 2000 increments/rev.
Power requirement: 60 mA (10 VDC)
30 mA (24 VDC)
Supply voltage: 10 to 30 VDC
IP rating: IP64
Output: push/pull

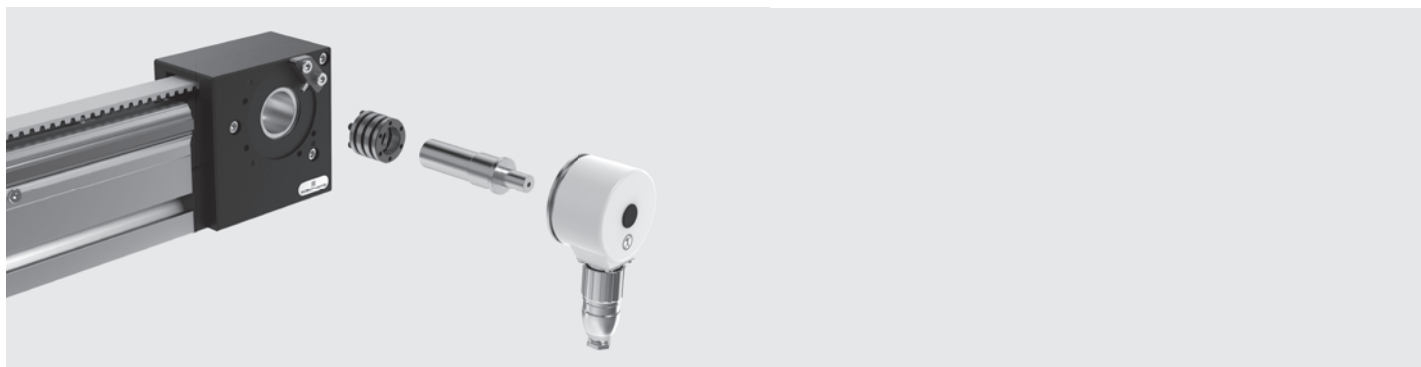
Scope of Delivery

Encoder Kit LIN 7501
1 Encoder LIN 7500
including round connector
1 Encoder Shaft LIN 5248
1 Expanding Coupling LIN 5246
1 Torque Arm
2 Screws IBS M06x016 NIKO
1 Clamping Pin SPS 4x12

Encoder LIN 7500
1 Encoder LIN 7500
including round connector



Assembly



Order Code

Description	Order Code	
	Weight	
Encoder Kit for Linear Motion Unit	LIN 7501	0.660 kg
Encoder including round connector	LIN 7500	0.335 kg

Drawing dimensions in mm

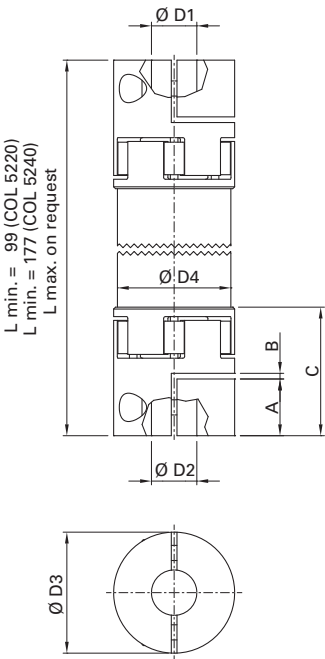


Application
Shaft for connecting 2 belt conveyors
or two linear motion units.

Technical Data
Material: aluminum, elastomer star

COL 5220
M nom. 12 Nm
M max. 25 Nm
Tightening torque: 4 Nm

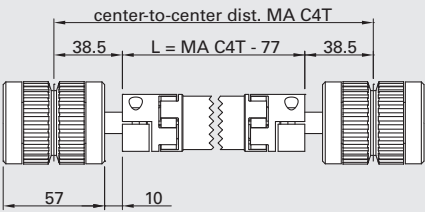
COL 5240
M nom. 60 Nm
M max. 120 Nm
Tightening torque: 15 Nm



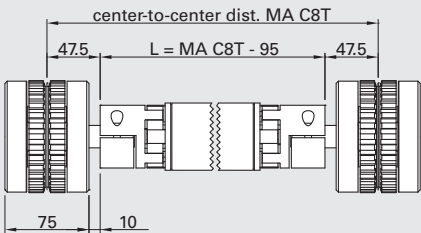
Dimensions

	D1	D2	D3	D4	A	W	C
COL 5220	12	12	32	30	15	1.5	34
COL 5240	20	20	56	60	30	2	63

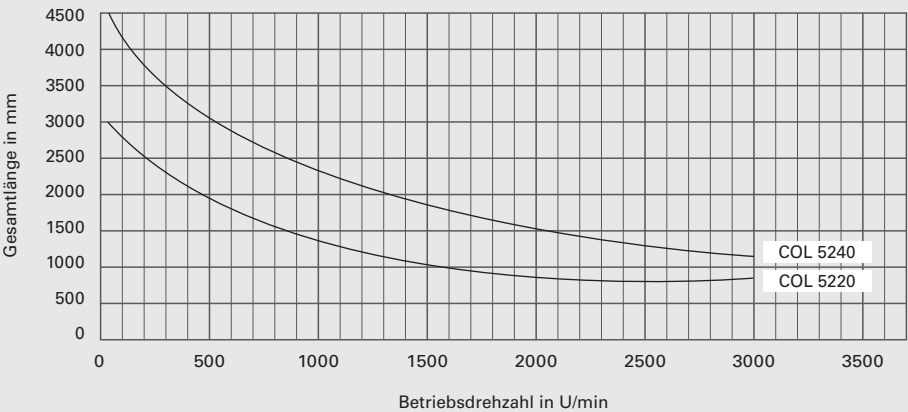
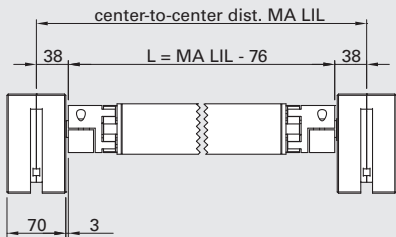
COL 5220 (C4T)



COL 5240 (C8T)



COL 5240 (LIL)



Order Code

Description	Order Code ¹
Connection Shaft With Couplings VWZ-30 / d = 12 mm	COL 5220 SNN ____
Connection Shaft With Couplings VWZ-60 / d = 20 mm	COL 5240 SNN ____

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

CAP _____

End Cap

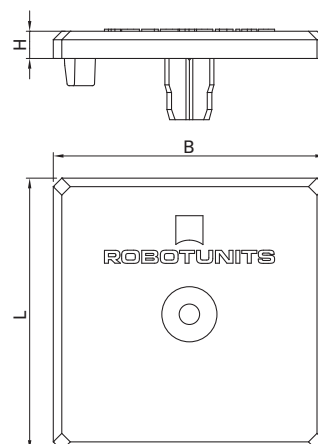
**Application**

Used for covering the ends of extrusions

- Self-centering
- Retained through expanding anchor
- Reusable

Technical Data

Material: black ABS V0 composite

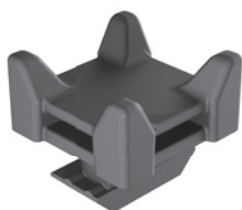


Order Code

Description	L	W	H	Scope of Delivery		Order Code	Weight
				CAP	BKS 4x13		
End Cap Kit 16x40	16	40	5	1	2	CAP 1641	0.002 kg
End Cap Kit 40x40	40	40	4	1	1	CAP 4041	0.005 kg
End Cap Kit 40x80	40	80	4	1	2	CAP 4081	0.009 kg
End Cap Kit 80x80 (2 x CAP 4081)	80	80	4	2	4	CAP 8081	0.018 kg
End Cap Kit 50x50	50	50	5	1	1	CAP 5051	0.010 kg
End Cap Kit 50x100	50	100	5	1	2	CAP 5011	0.019 kg
End Cap Kit 50x200 (2 x CAP 5011)	50	200	5	2	4	CAP 5021	0.038 kg
End Cap Kit 100x100 (2 x CAP 5011)	100	100	5	2	4	CAP 1011	0.038 kg
End Cap Kit 100x200 (4 x CAP 5011)	100	200	5	4	8	CAP 1021	0.076 kg
End Cap Kit 25x200	25	200	5	1	4	CAP 2521	0.022 kg

PIN 4530

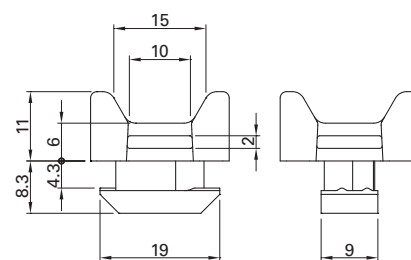
Cable Block

**Application**

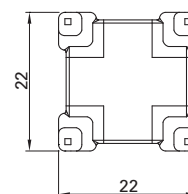
To secure cables, hoses, and lines to extrusions using cable ties in x/y direction from the T-slot

Technical Data

Material: PA composite
fiberglass-reinforced, black



Assembly



Order Code

Description	Order Code	Weight
Cable Block	PIN 4530	0.005 kg
Cable Blocks, 50 pcs.	PIN 4530 PAC 0050	0.240 kg

PIN 4590

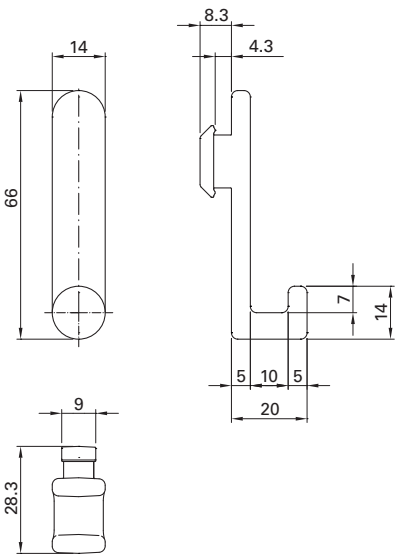
Plastic Hook



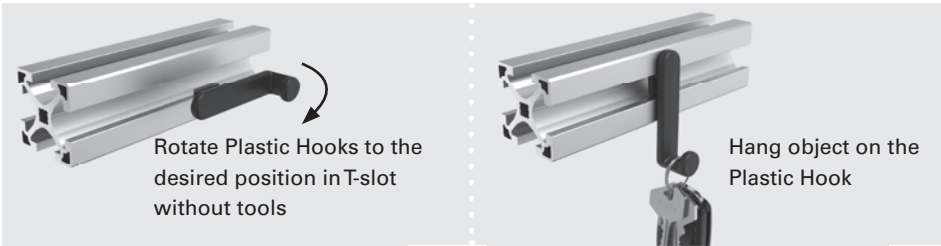
Application
For hanging items and objects along the T-slot

Technical Data
Material: PA composite
fiberglass-reinforced, black

Load capacity: max. 10 kg



Function



Order Code

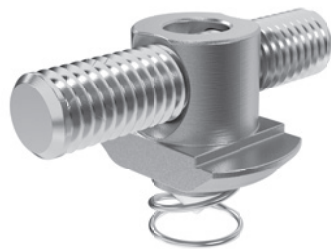
Description	Order Code	Weight
Plastic Hook	PIN 4590	0.010 kg

TIN 4501

Fine-Tuning And Fixing Element



Base Part with
GST M08x021 SPI GST M08x040

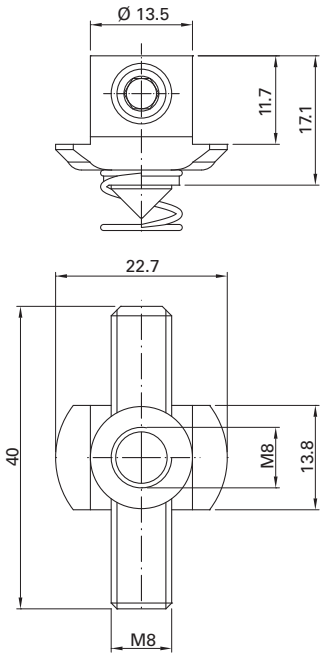


Spring

Application
Used for securing and fine tuning component positions. Post insertion possible, can be used with 40 mm and 50 mm series extrusions, e.g.:
• Conveyor Belt Tracking
• Fine adjustment of cross bars
• Securing connections

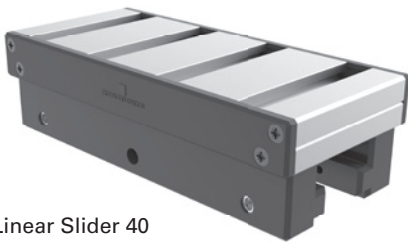
Technical Data
Material: galvanized steel

TIN 4501 can also be used for electrical grounding.



Order Code

Description	Scope of Delivery				Order Code	Weight
	Base Part	Spring	GST M08x012 SPI	GST M08x040	TIN 4501	0.029 kg
Fine-Tuning And Fixing Element Kit	1	1	1	1		



Linear Slider 40



Linear Slider 40 with clamping lever

Application

Manual device for clamping / adjusting a slide on the extrusion

Technical Data

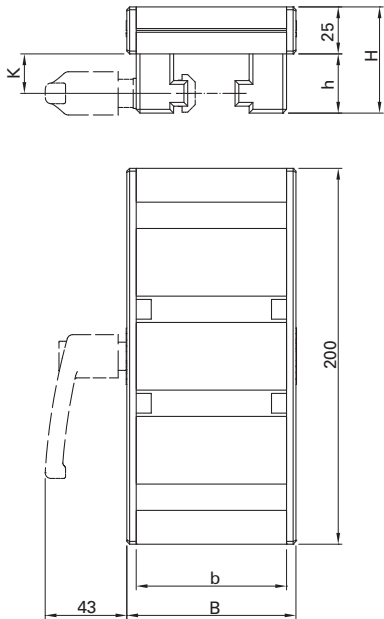
Material: clear anodized aluminum
POM-C black, ABS V0 black, galvanized steel

Scope of Delivery

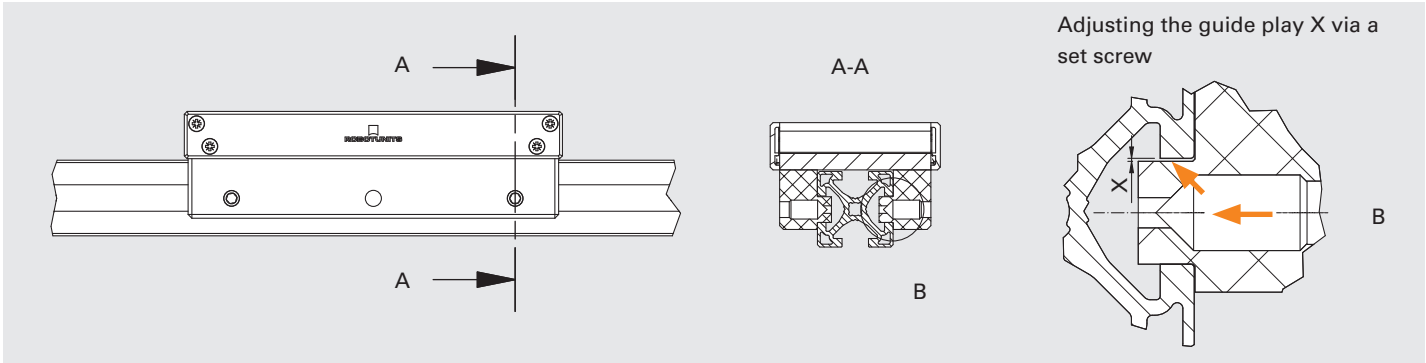
Completely pre-assembled, consisting of:

- 1 Extrusion 25 x 200 PIL 2520
- 2 Sliding guide blocks 40 or 50
- 2 End Caps CAP 2521
- 4 Cylinder screws with hexagon socket IBSM08X035 or 040
- 4 Drop-in Nuts TIN 4508
- 4 Set screws with socket head and tip GSTM10X020SPI
- 1 Clamping lever (for LIN 4041/5051)
- 1 Washer BLS M008 (for LIN 4041/5051)
- 1 T-Nut TIN 6008 (for LIN 4041/5051)

The Linear Slider is not suitable for cantilevered loads and is NOT a replacement for a Linear Motion Unit.



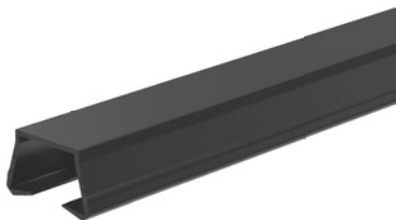
Assembly



Order Code

Description	b	B	h	H	K	Order Code	Weight
Linear Slider 40	80	90	31.5	56.5	21	LIN 4040	1.170 kg
Linear Slider 40 with clamping lever	80	90	31.5	56.5	21	LIN 4041	1.245 kg
Linear Slider 50	90	100	36.5	61.5	26	LIN 5050	1.245 kg
Linear Slider 50 with clamping lever	90	100	36.5	61.5	26	LIN 5051	1.400 kg

Zeichnungen: Maße in mm

**Application**

For covering T-slots and fastening
4 - 8 mm thick panels

- Dust protection
- Splash guard
- Cable routing
- Cover extrusion for LED lighting with CAL 4508

Technical Data

Material: impact-resistant PVC with soft lip

Stock length: 2000 mm

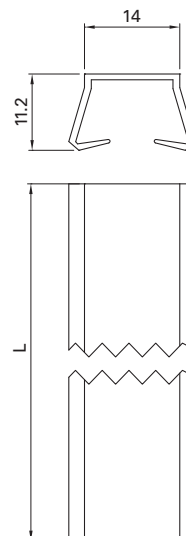
LED lighting with CAL4508*

Max. power of the LED: 20 W/m

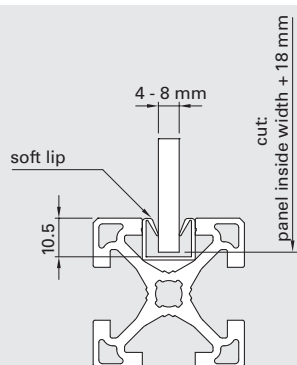
Light intensity 1 m below the extrusion

with a luminous flux of 2000 lm/m:

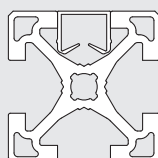
850 Lux



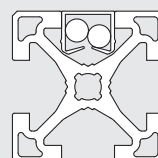
Application



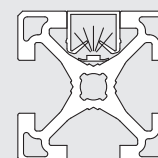
Application as
insert extrusion



Application as a
cover extrusion



Application as a
cover extrusion for
cable routing



Application as a
cover extrusion with
LED lighting*

Order Code

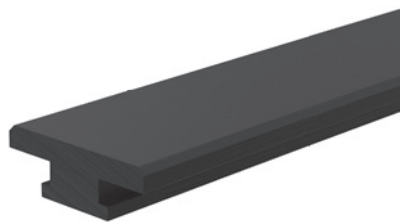
Description	Order Code ¹	
	Length	Weight/Meter
Cover/Insert Extrusion, black, cut to length	CAL 4500 SNN ____	0.050 kg
Cover/Insert Extrusion, black, stock length 2000 mm	CAL 4500 NNN 2000	0.050 kg
Cover/Insert Extrusion, black, 160 lengths at 2000 mm	CAL 4500 PAC 0160	0.050 kg
Cover/Insert Extrusion, RAL 1021 yellow, cut to length	CAL 4504 SNN ____	0.050 kg
Cover/Insert Extrusion, RAL 1021 yellow, stock length 2000 mm	CAL 4504 NNN 2000	0.050 kg
Cover/Insert Extrusion, RAL 1021 yellow, 160 lengths at 2000 mm	CAL 4504 PAC 0160	0.050 kg
Cover/Insert Extrusion, white transparent, cut to length	CAL 4508 SNN ____	0.050 kg
Cover/Insert Extrusion, white transparent, stock length 2000 mm	CAL 4508 NNN 2000	0.050 kg
Cover/Insert Extrusion, white transparent, 160 lengths at 2000 mm	CAL 4508 PAC 0160	0.050 kg
Cover/Insert Extrusion, RAL 7004 gray, cut to length	CAL 4510 SNN ____	0.050 kg
Cover/Insert Extrusion, RAL 7004 gray, length 2000 mm	CAL 4510 NNN 2000	0.050 kg
Cover/Insert Extrusion, RAL 7004 gray, 160 lengths at 2000 mm	CAL 4510 PAC 0160	0.050 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

CAL 4540

T-Slot Sliding Rail

**Application**

Simple linear guidance in the T-slot

Technical Data

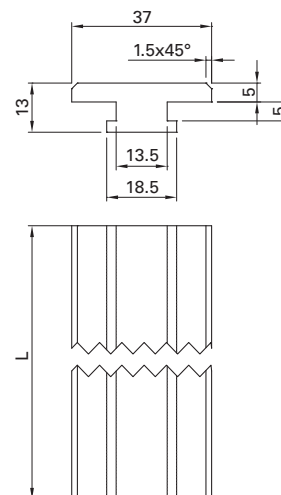
Material: PAS-PE3 composite, black

Stock length: 2000 mm

Temperature range:

-10° to 70° continuous,

90° to 100° short-term



Order Code

		Order Code ¹	
Description		Length	Weight/Meter
T-Slot Sliding Rail, cut to length		CAL 4540 SNN _ _ _ _	0.222 kg
T-Slot Sliding Rail, stock length: 2000 mm		CAL 4540 NNN 2000	0.222 kg

CAL 4545

Aluminum Cover Extrusion

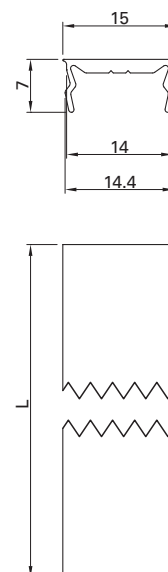
**Application**

Used for covering T-slots:

- Dust protection
- Splash guard
- Cable routing

Technical Data

Material: anodized aluminum



Order Code

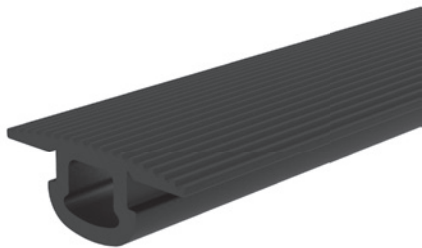
	Order Code ¹	
Description	Length	Weight/Meter
Aluminium Cover Extrusion, cut to length	CAL 4545 SNN ____	0.043 kg
Aluminum Cover Extrusion, stock length: 2050 mm (usable length 2000 mm)	CAL 4545 NNN 2050	0.043 kg

1) Please complete the order code by adding the desired length.

Drawing dimensions in mm

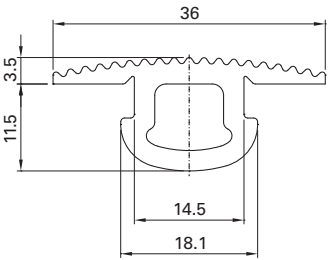
CAL 4560

Anti-Slip Profile



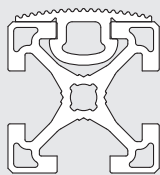
Application
Anti-slip protection for steps
(ladders, stairs, etc.)

Technical Data
Material: NBR 80 Shore A
Temperature Range:
-30° to 100° continuous,
-50° to 120° short-term



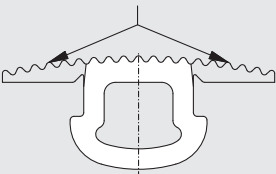
Application

Function of Anti-Slip Profile



Rework

Cut away this part of the profile



Modification for use as door gasket,
bumper, etc.

Useful for many purposes!

The non-slip extrusion can also be used
as a sealing extrusion or a buffer extru-
sion by cutting the side rubber lips.

Order Code

Description	Order Code ¹	
	Length	Weight/Meter
Anti-Slip Profile, cut to length	CAL 4560 SNN _ _ _ _ _	0.213 kg
Anti-Slip Profile, roll length 20 m	CAL 4560 PAC 20000	0.213 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

CAL 4565

Gasket

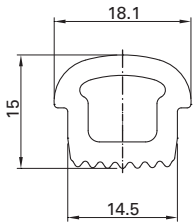


Application

- Door gasket
- Stops/buffers (drawers, doors)
 - Travel stops

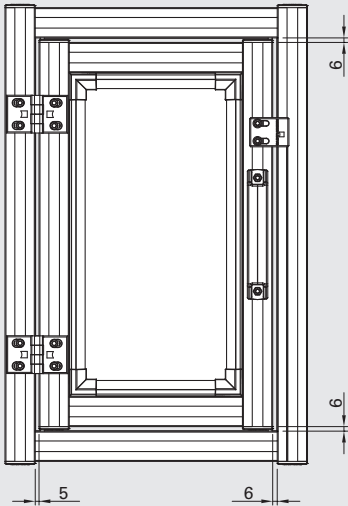
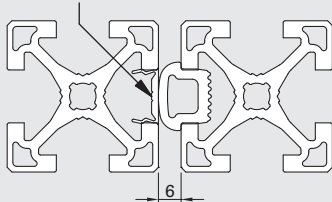
Technical Data

Material: NBR 80 Shore A
Temperature Range:
-30° to 100° continuous,
-50° to 120° short-term



Function

Aluminum Cover Extrusion CAL 4545



Order Code

Description	Order Code ¹	Weight/Meter
	Length	
Gasket, cut to length	CAL 4565 SNN _ _ _ _ _	0.160 kg

1) Please complete the order code by adding the desired length.
Drawing dimensions in mm

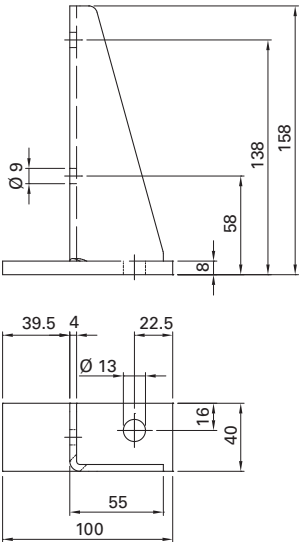
BAP 205_

Safety Fence Floor Bracket



Application
Floor mount of stands and safety fence panels built with 40 mm series extrusions

Technical Data
Material: steel, gray powder coating
Height adjustment - 20 / + 5 mm



Assembly



Order Code

Description	Scope of Delivery					Order Code	Weight
	BAP 2050	TIN 4508	IBS M08x016NIKO	HKS M08x040	BLS M008		
Safety Fence Floor Bracket	1	-	-	-	-	BAP 2050	0.568 kg
Safety Fence Floor Bracket Kit	1	2	2	1	2	BAP 2051	0.638 kg

BAP 2900

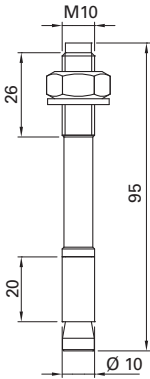
Anchor Bolt



Application
For anchoring structures to the floor

Technical Data
Material: galvanized steel

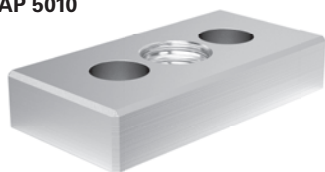
Permitted tensile load: 6.7 kN
(concrete hardness class C20/25)
Minimum anchor depth: 60 mm



Order Code

Description	Order Code	Weight
Anchor Bolt	BAP 2900	0.055 kg

BAP 4080
BAP 5010



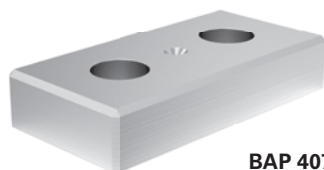
Application

Used for attaching leveling bases or other transportation devices.

Technical Data

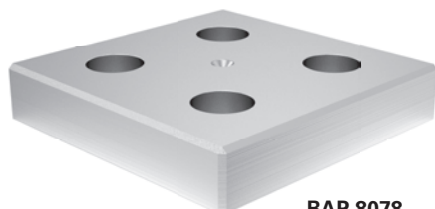
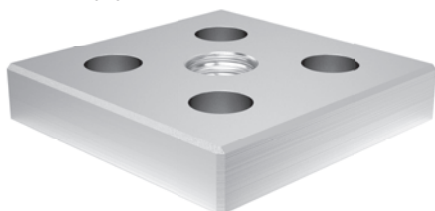
Material: galvanized steel

Application

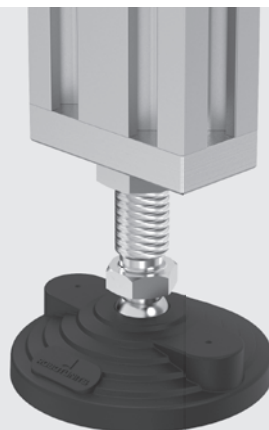


BAP 4078
BAP 5008

BAP 8080
BAP 1010

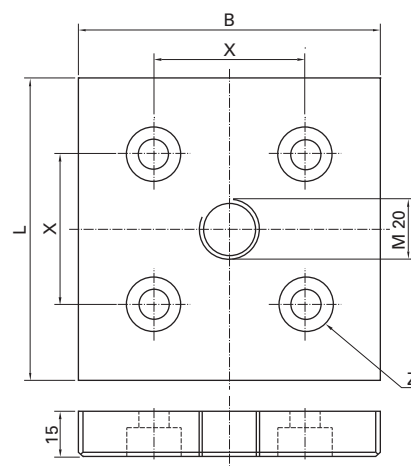
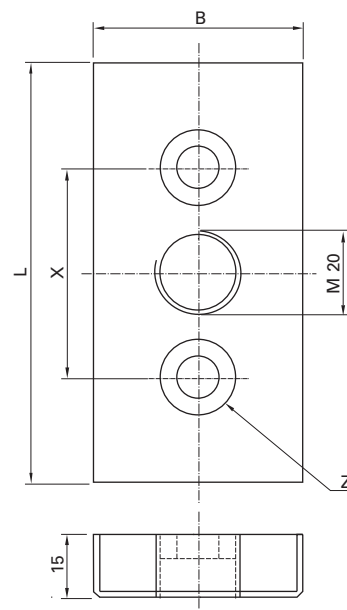


BAP 8078
BAP 1008



Used as leveling base

Used as transport plate



Order Code

Description	L	W	X	Z ¹	Order Code	Weight
Base And Transport Plate 40x80, no thread	80	40	40	IBS M08x020	BAP 4078	0.343 kg
Base And Transport Plate 40x80, M20 thread	80	40	40	IBS M08x020	BAP 4080	0.312 kg
Base And Transport Plate 80x80, no thread	80	80	40	IBS M08x020	BAP 8078	0.682 kg
Base And Transport Plate 80x80, M20 thread	80	80	40	IBS M08x020	BAP 8080	0.655 kg
Base And Transport Plate 50x100, no thread	100	50	50	IBS M10x030	BAP 5008	0.533 kg
Base And Transport Plate 50x100, M20 thread	100	50	50	IBS M10x030	BAP 5010	0.503 kg
Base And Transport Plate 100x100, no thread	100	100	50	IBS M10x030	BAP 1008	1.049 kg
Base And Transport Plate 100x100, M20 thread	100	100	50	IBS M10x030	BAP 1010	1.018 kg

1) Not included in the scope of delivery
Drawing dimensions in mm

BAS __08

Leveling Base M8

BAS 4008



BAS 5108



Application

Pivoting, height adjustable floor bracket for stands, frames and enclosures

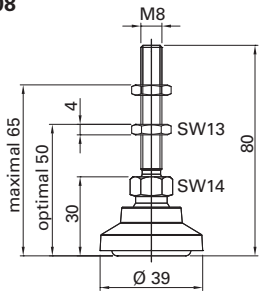
- Continuous height adjustment (+/- 15 mm)
- Vibration damping
- Ball joint

Technical Data

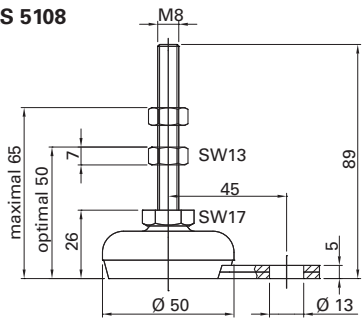
BAS 4008
Material: galvanized steel;
PA 6 composite; rubber
Max. load 350 kg

BAS 5108
Material: galvanized steel, rubber
Max. load 800 kg

BAS 4008



BAS 5108



Order Code

Description		Order Code	Weight
Leveling Base, M8x40		BAS 4008	0.062 kg
Leveling Base with Mounting Plate M8x50		BAS 5108	0.140 kg

BAS __10

Leveling Base M10

BAS 5010



BAS 5110



Application

Pivoting, height adjustable floor bracket for stands, frames and enclosures

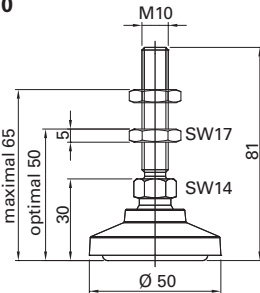
- Continuous height adjustment (+/- 15 mm)
- Vibration damping
- Ball joint

Technical Data

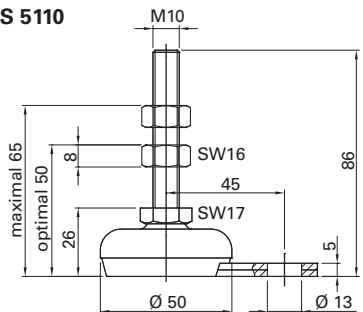
BAS 5010
Material: galvanized steel;
PA 6 composite; rubber
Max. load 470 kg

BAS 5110
Material: galvanized steel, rubber
Max. load 800 kg

BAS 5010



BAS 5110



Order Code

Description		Order Code	Weight
Leveling Base, M10x50		BAS 5010	0.087 kg
Leveling Base with Mounting Plate M10x50		BAS 5110	0.180 kg

BAS 1_20

Leveling Base M20

BAS 1020

**Application**

Pivoting, height adjustable floor bracket for stands, frames and enclosures

- Continuous height adjustment (+/- 30 mm)
- Vibration damping
- Ball joint

Technical Data

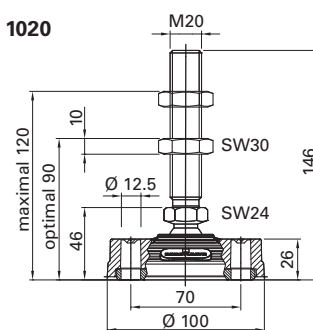
BAS 1020

Material: galvanized steel;

PA 6 composite; rubber

Max. load 1000 kg

BAS 1020



BAS 1120



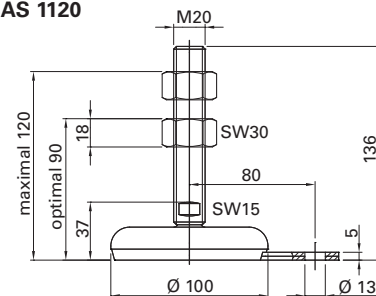
BAS 1120

Material: galvanized steel;

PA 6 composite; rubber

Max. load 1000 kg

BAS 1120



Order Code

Description	Order Code	
	Weight	
	Order Code	Weight
Leveling Base, M20x100	BAS 1020	0.496 kg
Leveling Base with Mounting Plate M20x100	BAS 1120	0.690 kg



CAS_08_

Castor With Plate

CAS 0080

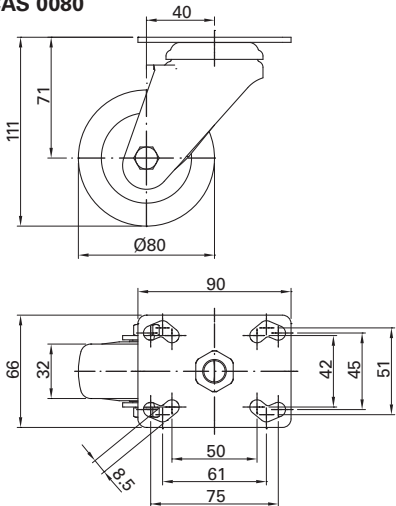


Application
Transport carts of all types

Technical Data
Material: galvanized steel, rubber

Safe working load: 100 kg

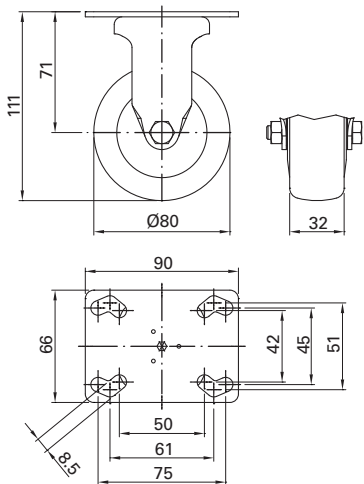
CAS 0080



CAS 0082



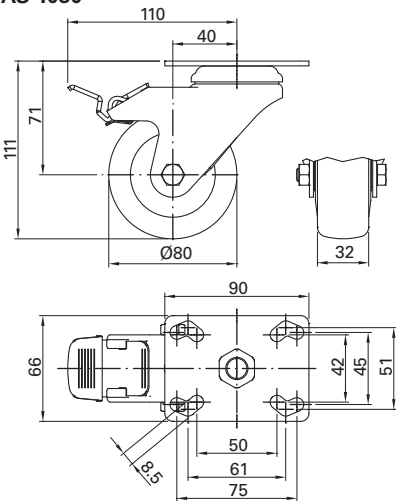
CAS 0082



CAS 1080



CAS 1080



Order Code

Order Code		Weight
Description		
Swivel Castor With Plate 80 mm	CAS 0080	0.604 kg
Rigid Castor With Plate 80 mm	CAS 0082	0.462 kg
Swivel Castor With Plate and Brake 80 mm	CAS 1080	0.716 kg

CAS 2080

**Application**

Transport carts of all types

Technical Data

Material: galvanized steel, rubber

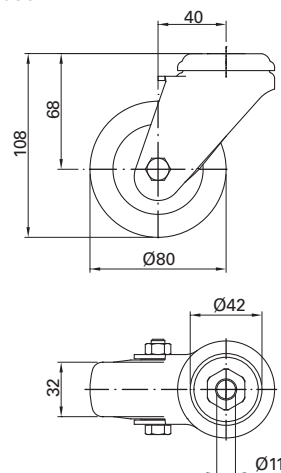
Safe working load: 100 kg

Fastening material for end-to-end assembly on the extrusion (not included in the scope of delivery);

PIL 4040: BLSM008S04, IBSM08x035

PIL 5050: BLSM010, IBSM10x040

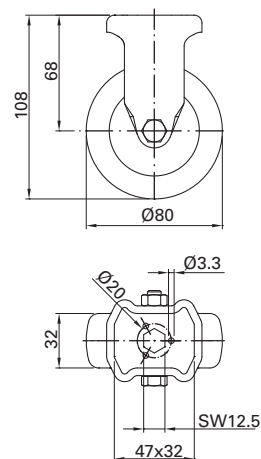
CAS 2080



CAS 2082



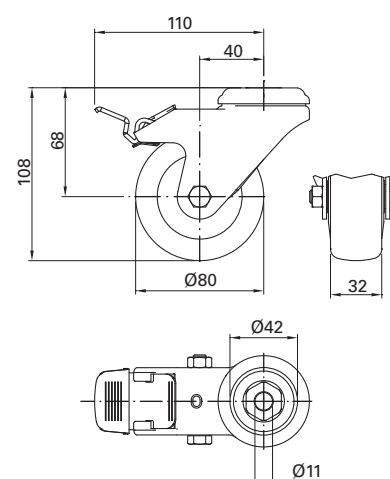
CAS 2082



CAS 3080



CAS 3080



Order Code

Description	Order Code	Weight
Swivel Castor With Bolt Hole Fitting 80 mm	CAS 2080	0.489 kg
Rigid Castor With Bolt Hole Fitting 80 mm	CAS 2082	0.317 kg
Swivel Castor With Bolt Hole Fitting and Brake 80 mm	CAS 3080	0.597 kg

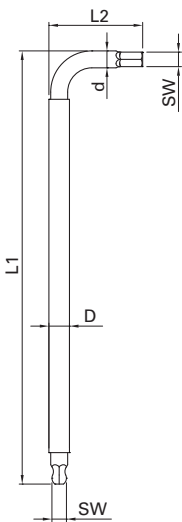
EQC 1001_

Allen Key For Hex Socket Head Cap Screws



Application
Allen Key with ball head for manual tightening the hex socket head cap screws for 40 and 50mm series fasteners.
A plastic sleeve prevents damage to the edges of the T-slot.

Technical Data
Material: high-quality, plastic-coated tool steel

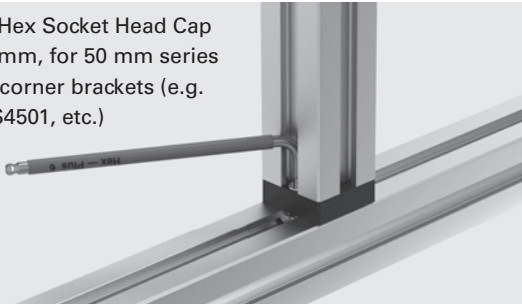


Application

Allen Key For Hex Socket Head Cap Screws, size 5 mm, for 40 mm series fasteners (FAS4041, FAS4081)



Allen Key For Hex Socket Head Cap Screws, size 6mm, for 50 mm series fasteners and corner brackets (e.g. FAS5051, GUS4501, etc.)



Order Code



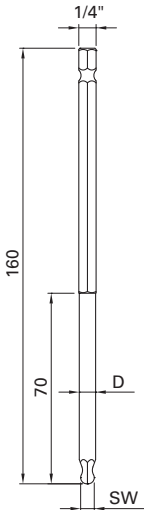
Description	SW	d	D	L1	L2	Order Code	Weight
Allen Key For Hex Socket Head Cap Screws, 5 mm	5	6	7.5	160	35	EQC10016	0.040 kg
Allen Key For Hex Socket Head Cap Screws, 6 mm	6	7	8.5	180	40	EQC10017	0.060 kg

Drawing dimensions in mm



Application
1/4" Hex Bit with ball head for impact driver to tighten the hex socket head cap screws for 40 and 50mm series fasteners.
Cylindrical end prevents damage to the edges of the T-slot.

Technical Data
Material: high-quality, tool steel



Application

1/4" Hex Bit With Ball End, 5 mm for fasteners 40x40 (FAS 4041)



1/4" Hex Bit With Ball End, 6 mm for fasteners 50x50 (FAS 5051)

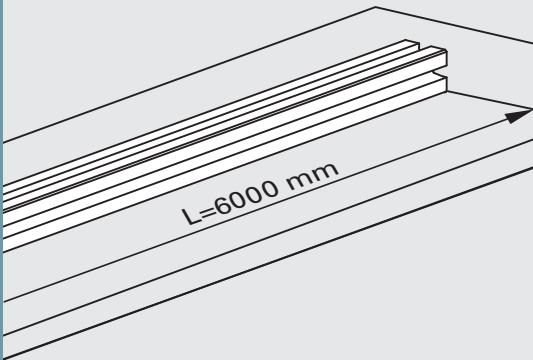
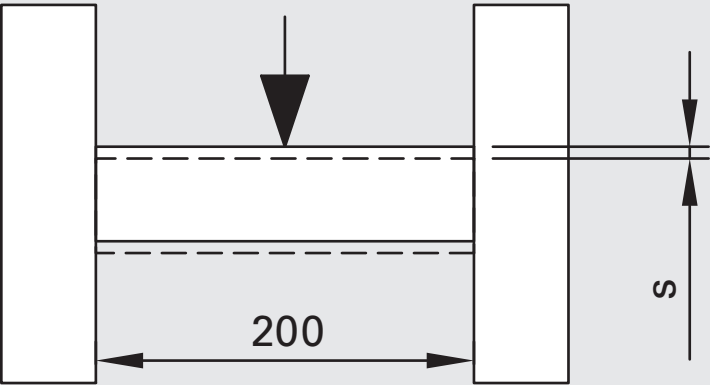
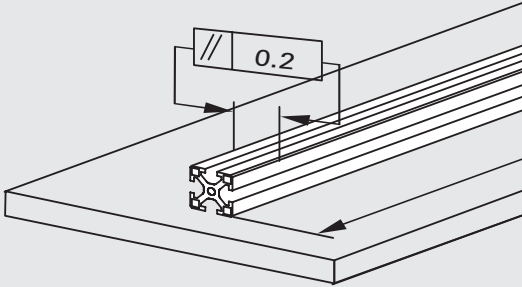


Order Code



Description			Order Code	Weight
1/4" Hex Bit With Ball End, 5 x 160 mm	SW	D	EQC10051	0.040 kg
1/4" Hex Bit With Ball End, 6 x 160 mm	5	6	EQC10052	0.060 kg
	6	6.7		

Drawing dimensions in mm



Technical appendix

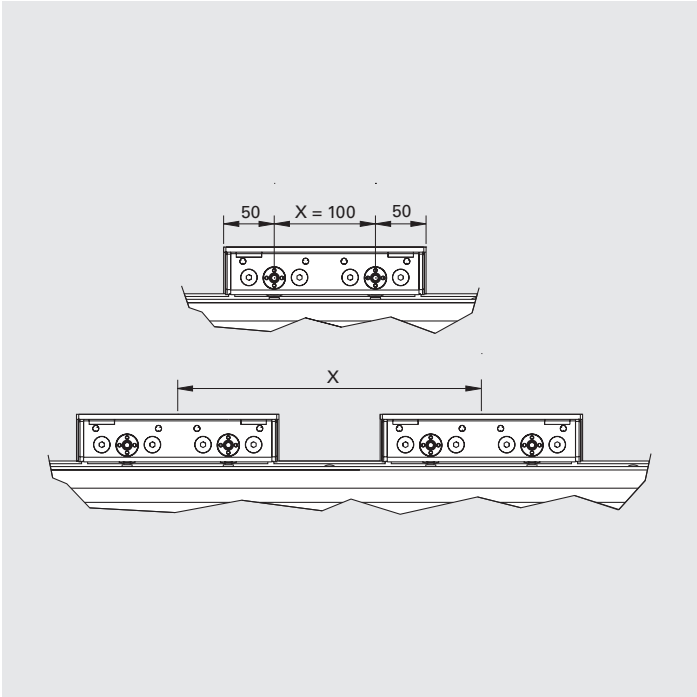
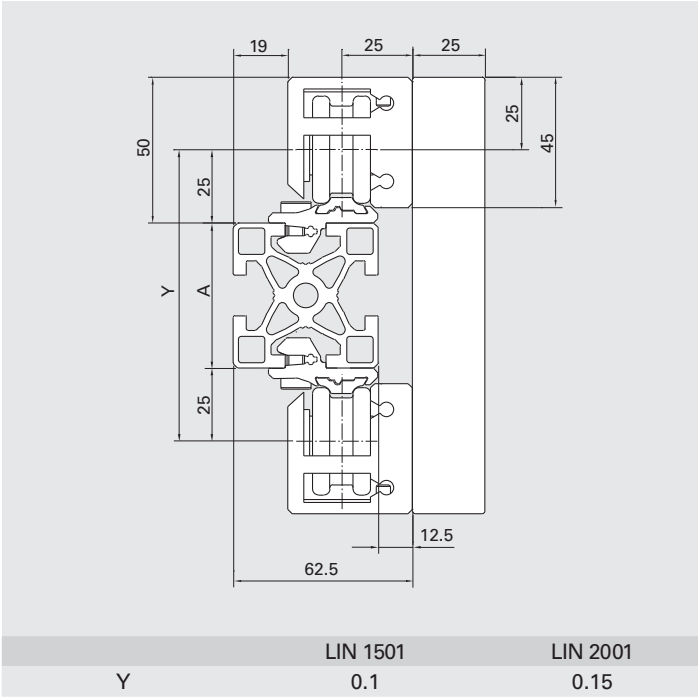
Linear Motion System Description Key	Page 180
Linear Motion System Dimension	Page 180
Linear Motion System Carriage Combination Examples	Page 180
Linear Motion System Load Capacity	Page 181
Linear Motion System Assembly Tips	Page 181
Linear Motion System Calculations.....	Page 182
Extrusion Tolerances	Page 184
Deflection Calculations	Page 185
Torsion Calculations	Page 185
Standard Screw Drawing.....	Page 185
Fastener Loads.....	Page 186
Safety Distances for Safety Systems.....	Page 187
Part Description Index.....	Page 192
Part Number Index	Page 195



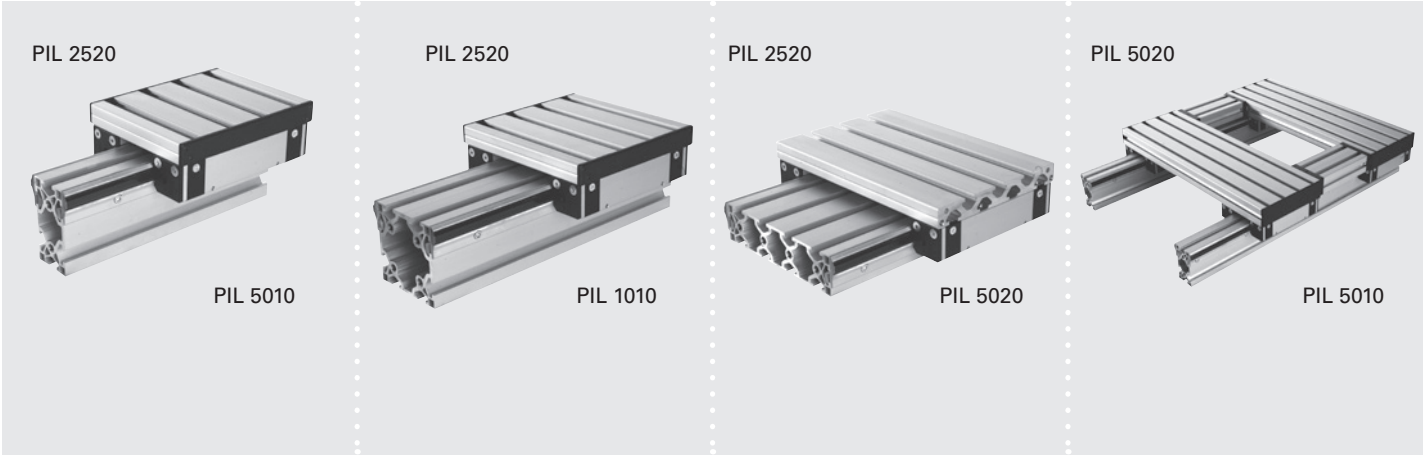
Linear Motion System Description Key

$F_{(x,y,z) \text{ max.}}$	[N]	maximum rated external static load
$F_{(x,y,z)}$	[N]	actual external static load
F_R	[N]	maximum rated load / roller - radial (max. 1500 N)
F_A	[N]	Maximum rated load / roller - axial (max. 750 N)
$M_{(x,y,z) \text{ max.}}$	[Nm]	maximum rated static torque load
$a_{\text{max.}}$	[m/s ²]	maximum rated acceleration
X	[m]	distance between rollers in direction of motion
Y	[m]	distance between rollers perpendicular to direction of motion
A	[m]	extrusion width between rollers
g	[m/s ²]	gravitational acceleration (approx. 9.81 m/s ²)
m_1	[kg]	mass of carriage and lever
m_2	[kg]	mass of mounted parts
$F_{a \text{ req.}}$	[N]	required drive power
$M_{d \text{ hor req.}}$	[Nm]	required drive torque in horizontal direction
$M_{d \text{ ver req.}}$	[Nm]	required drive torque in vertical direction
L_1	[m]	distance of center of gravity of carriage plate and lever
L2	[m]	distance of center of gravity of mounted parts and/or distance of forces F (x,y,z)

Linear Motion System Dimensions



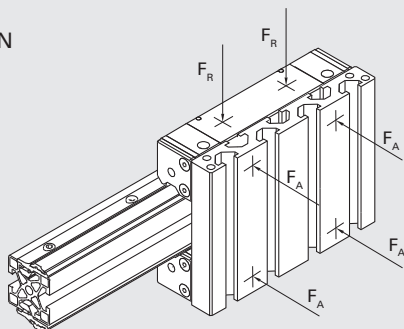
Linear Motion System Carriage Combination Examples



Linear Motion System Load Capacity

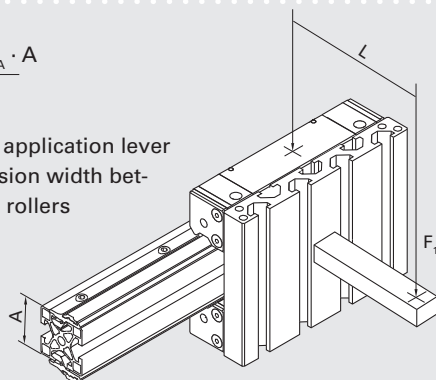
$$F_R < 1500 \text{ N}$$

$$F_A < 750 \text{ N}$$



$$F_1 \leq \frac{2 \cdot F_A \cdot A}{L}$$

L = Force application lever
A = extrusion width between rollers



Technical Data

Acceleration: $a_{\max.} < 15 \text{ m/s}^2$

Max. drive torque: 60 Nm

Forces: F_R [N] permissible load / roller - radial (max. 1500 N)

F_A [N] permissible load / roller - axial (max. 750 N)

Maintenance:

Lubrication: In order to ensure maximum service life of the guide rail make sure that it is sufficiently lubricated.

Check the scraper and lubrication devices on a regular basis and re-lubricate as needed.

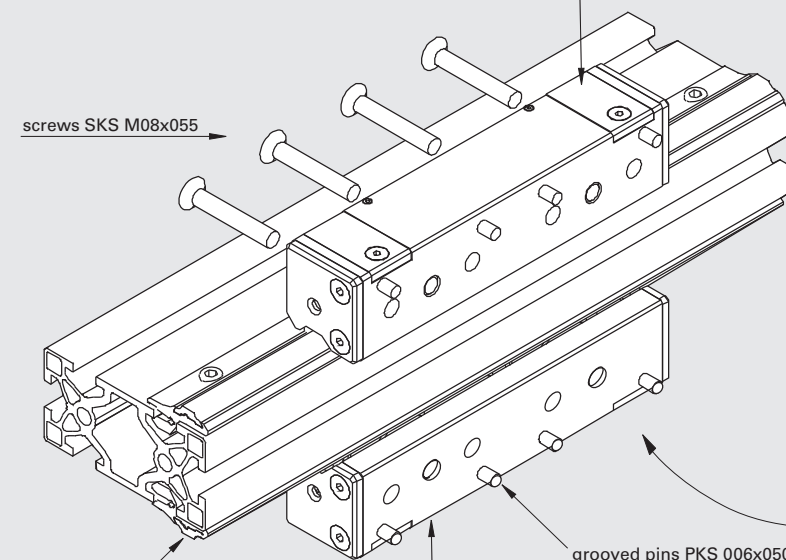
Load: Load data is valid for one type of load and one direction of load.

"Static design" refers to weight and operation forces. "Dynamic design" refers to weight and acceleration forces.

Linear Motion System Assembly Tips

Idle concentric LIN 5001 / LIN 5011

screws SKS M08x055

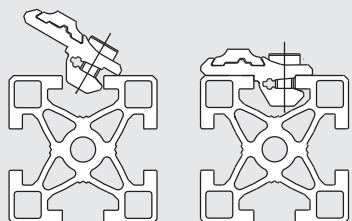
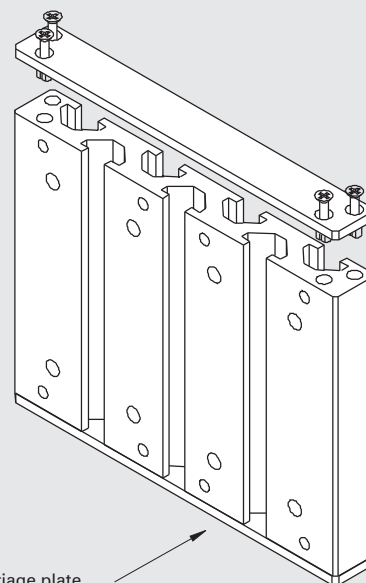


installation of guide rail
LIL 5000 SNN

Idle eccentric LIN 5003 / LIN 5013

grooved pins PKS 006x050

carriage plate
LIN 1501 / LIN 2001

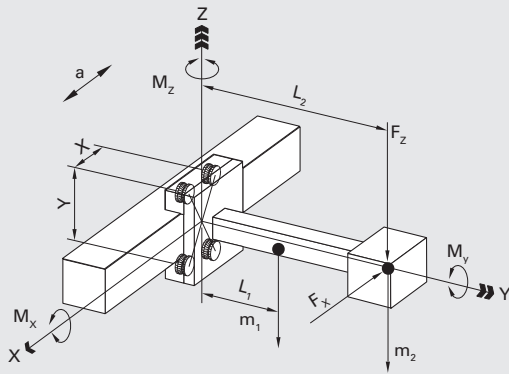


insert

press to right-hand side
and tighten

Linear Motion System Calculations

Application A (horizontal)



Static design:

$$M_{X \max.} = 2 \cdot F_A \cdot A$$

$$F_{Z \max.} = \frac{M_{X \max.} - g(m_1 \cdot L_1 + m_2 \cdot L_2)}{L_2}$$

$$M_{Z \max.} = 2 \cdot F_A \cdot X$$

$$F_{X \max.} = \frac{M_{Z \max.}}{L_2}$$

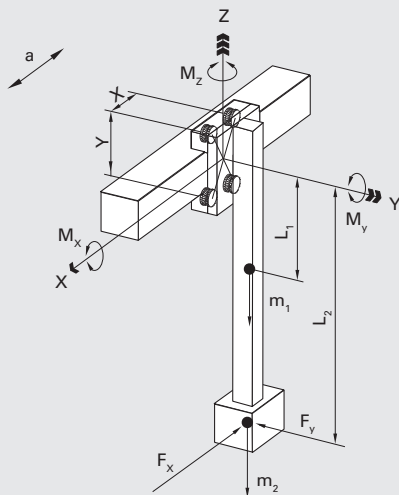
Dynamic design:

$$a_{\max.} = \frac{F_A \cdot X}{(m_1 \cdot L_1 + m_2 \cdot L_2) \cdot 4} - \frac{g \cdot X}{9 \cdot Y}$$

$$F_{a \text{ req.}} = (m_1 + m_2) \cdot a_{\max.} + 10N$$

$$M_{d \text{ hor req.}} = F_{a \text{ req.}} \cdot 0.035 \text{ m} \cdot 1.8$$

Application B (horizontal)



Static design:

$$M_{X \max.} = 2 \cdot F_A \cdot A$$

$$F_{Y \max.} = \frac{M_{X \max.}}{L_2}$$

$$M_{Y \max.} = (F_R - \frac{(m_1 + m_2) \cdot g}{2}) \cdot (\sqrt{x^2 + y^2} - 0.036)$$

$$F_{X \max.} = \frac{M_{Y \max.}}{L_2}$$

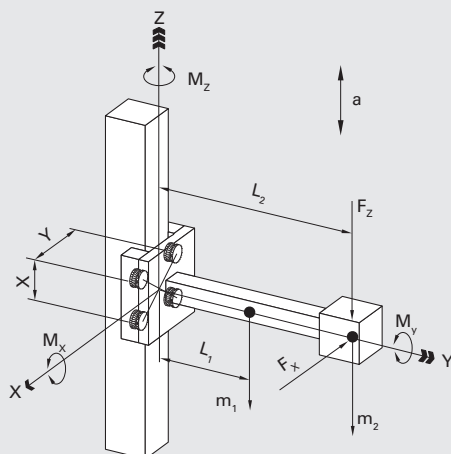
Dynamic design:

$$a_{\max.} = \frac{(F_R - \frac{(m_1 + m_2) \cdot g}{2}) \cdot (\sqrt{x^2 + y^2} - 0.036)}{(m_1 \cdot L_1 + m_2 \cdot L_2) \cdot 2}$$

$$F_{a \text{ req.}} = (m_1 + m_2) \cdot a_{\max.} + 10N$$

$$M_{d \text{ hor req.}} = F_{a \text{ req.}} \cdot 0.035 \text{ m} \cdot 1.8$$

Application C (vertical)



Static design:

$$M_{X \max.} = 2 \cdot F_A \cdot X$$

$$F_{Z \max.} = \frac{M_{X \max.} - g \cdot (m_1 \cdot L_1 + m_2 \cdot L_2)}{L_2}$$

$$M_{Z \max.} = 2 \cdot F_A \cdot Y$$

$$F_{X \max.} = \frac{M_{Z \max.}}{L_2}$$

Dynamic design:

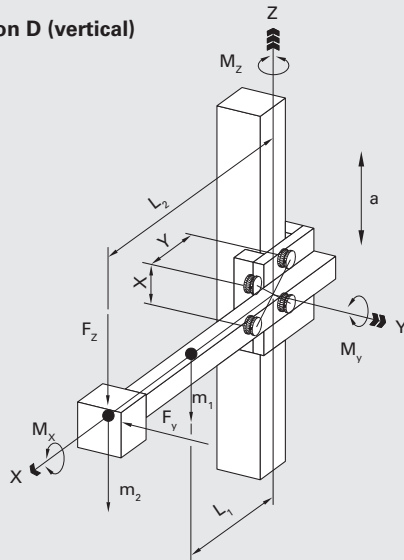
$$a_{\max.} = \frac{2 \cdot F_A \cdot X}{(m_1 \cdot L_1 + m_2 \cdot L_2) \cdot 2} - g$$

$$F_{a \text{ req.}} = (m_1 + m_2) \cdot (a_{\max.} + g) + 10N$$

$$M_{d \text{ ver req.}} = \frac{F_{a \text{ req.}} \cdot 0.035 \text{ m}}{1.8}$$

Linear Motion System Calculations

Application D (vertical)



Static design:

$$M_{Y \max.} = FR \cdot \sqrt{x^2 + y^2 - 0.036}$$

$$F_{Z \max.} = \frac{M_{Y \max.} - g(m_1 \cdot L_1 + m_2 \cdot L_2)}{L_2}$$

$$M_{Z \max.} = 2 \cdot F_A \cdot Y$$

$$F_{Y \max.} = \frac{M_{Z \max.}}{L_2}$$

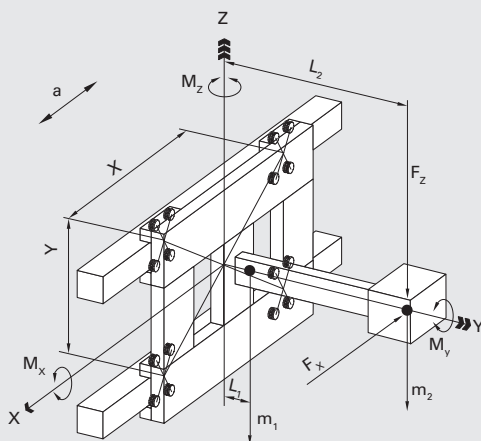
Dynamic design:

$$a_{\max.} = \frac{F_R \cdot (\sqrt{x^2 + y^2} - 0.036)}{(m_1 \cdot L_1 + m_2 \cdot L_2) \cdot 2} - g$$

$$F_{a \text{ req.}} = (m_1 + m_2) \cdot (a_{\max.} + g) + 10N$$

$$M_{d \text{ ver req.}} = F_{a \text{ req.}} \cdot 0.035 \text{ m} \cdot 1.8$$

Application E (horizontal)



Static design:

$$M_{X \max.} = 8 \cdot F_A \cdot (y - 0.15)$$

$$F_{Z \max.} = \frac{M_{X \max.} - g(m_1 \cdot L_1 + m_2 \cdot L_2)}{L_2}$$

$$M_{Z \max.} = 4 \cdot F_A \cdot X$$

$$F_{X \max.} = \frac{M_{Z \max.}}{L_2}$$

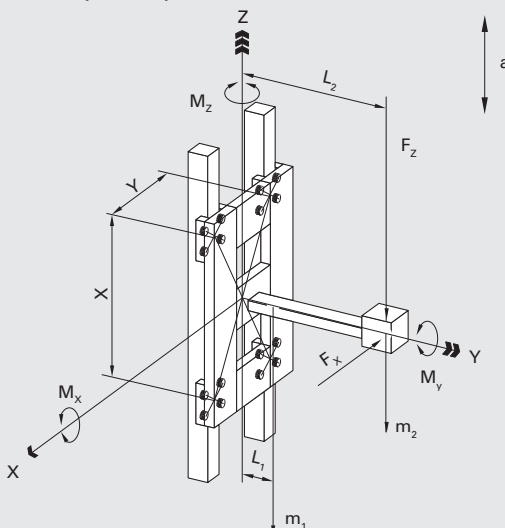
Dynamic design:

$$a_{\max.} = \frac{4 \cdot F_A \cdot X}{(m_1 \cdot L_1 + m_2 \cdot L_2) \cdot 2}$$

$$F_{a \text{ req.}} = (m_1 + m_2) \cdot a_{\max.} + 40N$$

$$M_{d \text{ hor req.}} = F_{a \text{ req.}} \cdot 0.035 \text{ m} \cdot 1.8$$

Application F (vertical)



Static design:

$$M_{X \max.} = 4 \cdot F_A \cdot X$$

$$F_{Z \max.} = \frac{M_{X \max.} - g(m_1 \cdot L_1 + m_2 \cdot L_2)}{L_2}$$

$$M_{Z \max.} = 4 \cdot F_A \cdot Y$$

$$F_{X \max.} = \frac{M_{Z \max.}}{L_2}$$

Dynamic design:

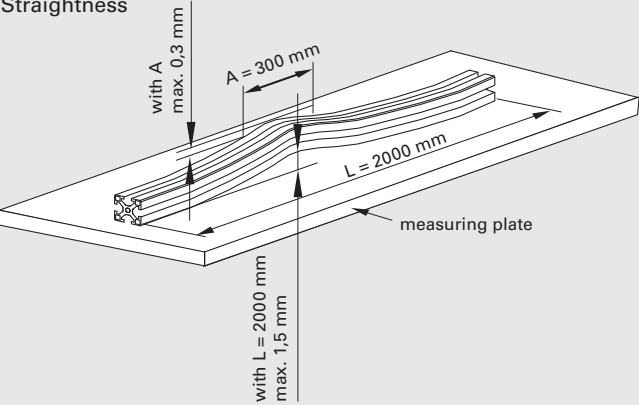
$$a_{\max.} = \frac{4 \cdot F_A \cdot X}{(m_1 \cdot L_1 + m_2 \cdot L_2) \cdot 2} - g$$

$$F_{a \text{ req.}} = (m_1 + m_2) \cdot (a_{\max.} + g) + 40N$$

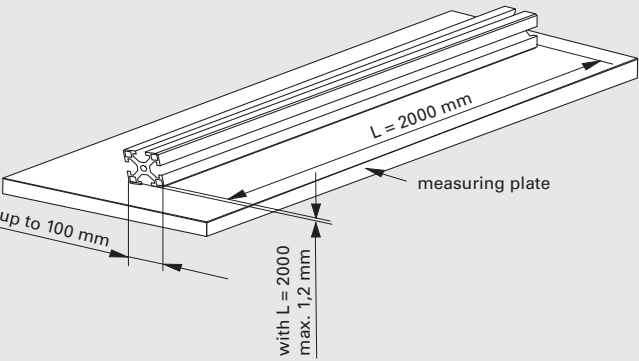
$$M_{d \text{ ver req.}} = F_{a \text{ req.}} \cdot 0.035 \text{ m} \cdot 1.8$$

Extrusion Tolerances

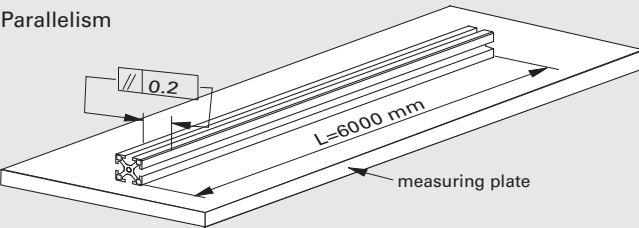
Straightness



Torsion



Parallelism



Technical data – extrusions:

Material description:	EN AW-6063 - T66
Minimum tensile strength R_m (in direction of pressure):	245 N/mm ²
Yield strength R_p (in direction of pressure):	200 N/mm ²
Modulus of elasticity E:	70000 N/mm ²
Shear Modulus G:	26000 N/mm ²
Coefficient of linear expansion:	$\alpha = 23 \cdot 10^{-6} \text{ 1/K}$
Brinell hardness:	approx. 70 HB
Breaking elongation A5:	12%
Material density:	2.7 kg/dm ³
Cutting data:	
Length tolerance (up to 6000 mm):	$\pm 0.2 \text{ mm}$
Rectangular accuracy:	up to 50 mm $\pm 0.05 \text{ mm}$ up to 100 mm $\pm 0.1 \text{ mm}$ up to 200 mm $\pm 0.2 \text{ mm}$
Tolerances for precision extrusions:	DIN EN 12020-2
Groove tolerance:	14 $+0.25 / -0 \text{ mm}$

E	[N/mm ²]	Modulus of elasticity
F	[N]	Load
F _G	[N]	Net weight
f	[mm]	Deflection
L	[mm]	Length
I	[cm ⁴]	Moment of inertia (see extrusion data sheets)
W	[cm ³]	Section modulus (see extrusion data sheets)
$\sigma_{max.}$	[N/mm ²]	Permissible voltage (recommendation 70 N/mm ²)
M _t	[Nmm]	Torque
I _t	[cm ⁴]	Torsional moment of area
G	[26000 N/mm ²]	Sheer Modulus
φ	[°]	Rotation angle

Deflection Calculations

Load case example 1



Deflection by force F

$$f = \frac{F \cdot L^3}{3 \cdot E \cdot I \cdot 10^4} \text{ [mm]}$$

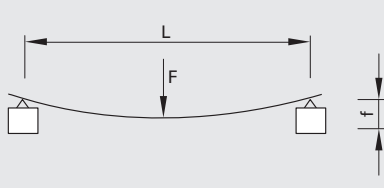
Deflection under own weight

$$f = \frac{F_G \cdot L^3}{8 \cdot E \cdot I \cdot 10^4} \text{ [mm]}$$

Bending stress σ max.

$$\sigma = \frac{F \cdot L}{W \cdot 10^3} \text{ [N/mm}^2\text{]}$$

Load case example 2



$$f = \frac{F \cdot L^3}{48 \cdot E \cdot I \cdot 10^4} \text{ [mm]}$$

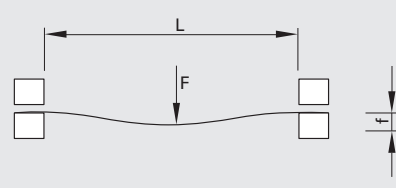
Deflection under own weight

$$f = \frac{5 \cdot F_G \cdot L^3}{384 \cdot E \cdot I \cdot 10^4} \text{ [mm]}$$

Bending stress σ max.

$$\sigma = \frac{F \cdot L}{4 \cdot W \cdot 10^3} \text{ [N/mm}^2\text{]}$$

Load case example 3



$$f = \frac{F \cdot L^3}{192 \cdot E \cdot I \cdot 10^4} \text{ [mm]}$$

Deflection under own weight

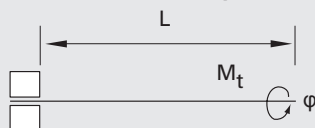
$$f = \frac{F_G \cdot L^3}{384 \cdot E \cdot I \cdot 10^4} \text{ [mm]}$$

Bending stress σ max.

$$\sigma = \frac{F \cdot L}{8 \cdot W \cdot 10^3} \text{ [N/mm}^2\text{]}$$

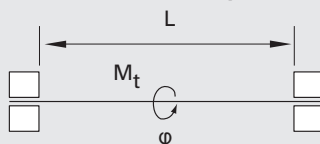
Torsion Calculations

Load case example 1



$$\Phi = \frac{180^\circ \cdot M_t \cdot L}{\pi \cdot G \cdot I_t \cdot 10^4} \text{ [mm]}$$

Load case example 2



$$\Phi = \frac{180^\circ \cdot M_t \cdot L}{\pi \cdot 4 \cdot G \cdot I_t \cdot 10^4} \text{ [mm]}$$

Checking the shear stress

The critical factor for failure of an extrusion subject to torsional load is in practice not so much the exceeding of the maximum approved torsional load applied to the extrusion, but rather elastic deformation (torsion). This deformation will affect the functioning of any parts to be assembled onto the extrusion, and so a more torsion-resistant extrusion must be selected, well before the approved maximum values for the torsional load have been reached.

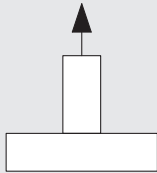
Standard Screw Drawing

Code	Screw designation	ISO standard	DIN standard
IBS M_x__	Socket-head cap screw	ISO 4762	DIN 912
IBS M_x__NIKO	Socket-head cap screw with flat head		DIN 6912
SKS M_x__	Socket-head countersunk screw	ISO 10642	DIN 7991
LKS M_x__	Button head cap screw with socket head	ISO 7380	
HKS M_x__	Hexagon head screw	ISO 4017	DIN 933
SKM M__	Hexagonal nut	ISO 4032	DIN 934
SKM M__FLA	Hexagonal nut, flat form	ISO 4035	DIN 936
BLS M__	Washer	ISO 7089	DIN 125
BLS M__S__	Washer		DIN 7349
GST M_x__	Set screw with socket head and conical cup	ISO 4026	DIN 913
GST M_x__SPI	Set screw with socket head and tip	ISO 4027	DIN 914
GST M_x__FED	Spring-loaded pressure part with band and hexagonal socket head		
BKS _x__	Countersunk flat head tapping screw	ISO 7050	DIN 7982
PAF _x_x__	Key	ISO 773	DIN 6885
PKS _x__	Grooved pin	ISO 8745	DIN 1472
SIR _x__	Circlip		DIN 471
SPS _x__	Clamping pin, lightweight	ISO 13337	DIN 7346

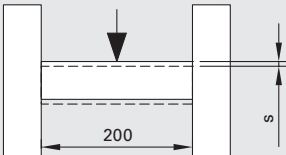
Fastener Loads

Static Test
Basic values only

A safety factor of 3
is recommended.

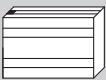
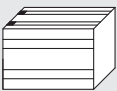
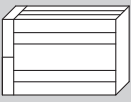
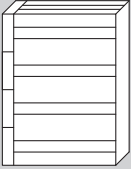
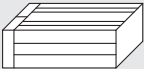
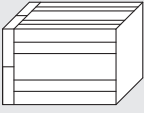
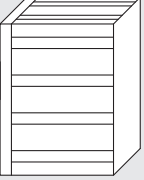
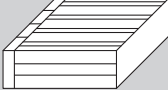
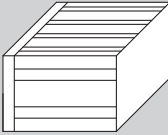


Maximum force
(Breaking force)



Maximum force
(Deflection force)

Deflection force
at s = 1 mm

Fastener with 2 drop-in nuts and bolts		PIL 4040	21 kN	12 kN	5.5 kN
		PIL 4080 (upright)			
Fastener with 4 drop-in nuts and bolts		PIL 4080 (flat)	43 kN	21 kN	11.5 kN
		PIL 8080			
Fastener with 2 drop-in nuts and bolts		PIL 5050	40 kN	10 kN	6 kN
		PIL 5010 (upright)			
		PIL 5020 (upright)			
Fastener with 4 drop-in nuts and bolts		PIL 5010 (flat)	76 kN	19 kN	9.5 kN
		PIL 1010			
		PIL 1020 (upright)	64 kN	12 kN	8 kN
Fastener with 8 drop-in nuts and bolts		PIL 5020 (flat)	150 kN	35 kN	15 kN
		PIL 1020 (flat)	110 kN		

Safety Distances for Safety Systems

General safety distances

Safety distances relative to human size must be taken into consideration when securing dangerous areas. These safety distances are based on the reach of a person (14 years or older) in the direction of the dangerous area with their own body parts and without the use of objects, then a safety margin is added.

Opening width e	Safety clearance		
	Slot	Square	Circle
$e \leq 4$	≥ 2	≥ 2	≥ 2
$4 < e \leq 6$	≥ 10	≥ 5	≥ 5
$6 < e \leq 8$	≥ 20	≥ 15	≥ 5
$8 < e \leq 10$	≥ 80	≥ 25	≥ 20
$10 < e \leq 12$	≥ 100	≥ 80	≥ 80
$12 < e \leq 20$	≥ 120	≥ 120	≥ 120
$20 < e \leq 30$	$\geq 850^*$	≥ 120	≥ 120
$30 < e \leq 40$	≥ 850	≥ 200	≥ 120
$40 < e \leq 120$	≥ 850	≥ 850	≥ 850

* If the length of the slit-shaped opening ≤ 65 mm, the thumb acts as a limit and the safety distance can be reduced to 200 mm.

Reaching around edges

When reaching around arbitrary edges, the safety distances are as follows:

for the hand from the base to the tips of the fingers
at least 130 mm

for the hand from the wrist to the tips of the fingers
at least 230 mm

for the arm from the elbow to the tips of the fingers
at least 550 mm

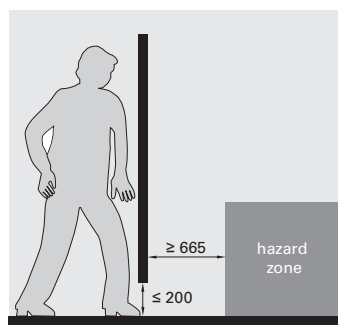
for the arm from the shoulder to the tips of the fingers
at least 850 mm

Entry into dangerous areas with the lower limbs

Acc to DIN EN ISO 13857, for a ground clearance ≤ 200 mm, the foot safety distance must be ≥ 665 mm. This strictly assumes a standing position without any additional assistance.

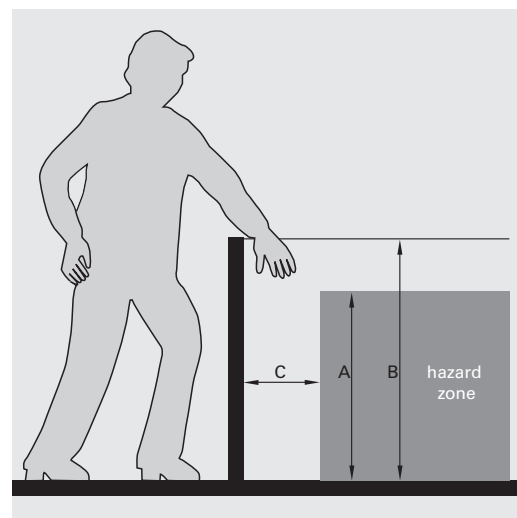
According to DIN EN ISO 13857, slotted openings > 180 mm and square or round openings > 240 mm permit entry for the entire body.

If there is a risk of slipping or abuse, the specified value may be unsuitable. Additional measures may be necessary to restrict access.



Reaching over edges on work or safety equipment

When reaching over edges on equipment or safety mechanisms, the required safety distance is satisfied if the height of the dangerous area in mm (A) and the height of the protective structure in mm (B) are no less than the corresponding value in the table below for horizontal distance from the dangerous area in mm (C). This assumes that the protective structure has a height of over 1000 mm. The area between the safety structure and the dangerous area may not be entered.



Height of danger area in mm (A)	Height of protective structure in mm (B)							
	2400	2200	2000	1800	1600	1400	1200	1000
	Horizontal distance from danger area in mm (C)							
2400	300	400	600	700	800	900	1000	1100
	100	100	100	100	100	100	100	100
2200	300	400	600	800	900	1000	1200	1300
	-	250	350	400	500	500	600	600
2000	-	400	600	800	900	1100	1300	1400
	-	-	350	500	600	700	900	1100
1800	-	-	600	800	900	1100	1400	1500
	-	-	-	600	900	900	1000	1100
1600	-	-	500	800	900	1100	1400	1500
	-	-	-	500	900	900	1000	1300
1400	-	-	-	800	900	1100	1400	1500
	-	-	-	100	800	900	1000	1300
1200	-	-	-	700	900	1100	1400	1500
	-	-	-	-	500	900	1000	1400
1000	-	-	-	-	800	1000	1400	1500
	-	-	-	-	300	900	1000	1400
800	-	-	-	-	600	900	1300	1500
	-	-	-	-	-	600	900	1300
600	-	-	-	-	-	800	1300	1400
	-	-	-	-	-	-	500	1200
400	-	-	-	-	-	400	1200	1400
	-	-	-	-	-	-	300	1200
Values for high risk					Values for low risk			

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**Notice:**

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