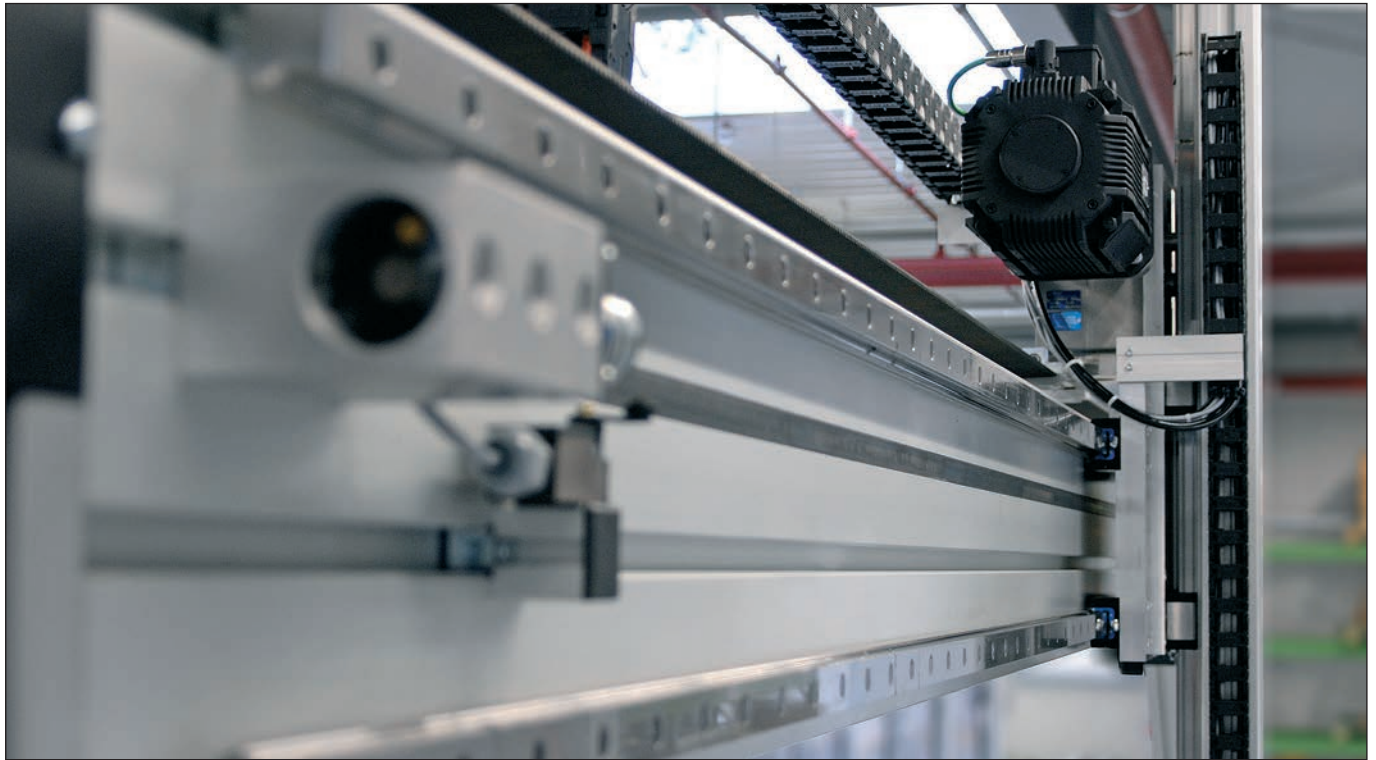


The STRONG dimension...

Heavy duty linear units D-Line

Heavy duty linear units D-Line



The **STRONG** dimension in handling systems for heavy loads has a name: **D-Line**

This whole new range of linear units is based on BLOCAN® heavy-duty profiles (D-profiles).

D-Line puts into practice all the advantages of the latest developments in aluminium-alloy technology. This ensures a low specific weight, thus keeping the drive unit as small as possible – which is of great benefit when using axis that operate in sequence. Increased dynamic performance for the efficient use of short cycle times.

FEM calculation helps to create highly-efficient geometric arrangements designed to produce profiles with extra bend-resistance. In comparison to conventional steel linear units, the use of D-Line delivers weight reductions of around 35%.

Modular design breaks the limits to ensure that you obtain the best-possible configuration for your particular situation.

Guide shafts or ball rail? Timing belt or rack? Individual axis or gantry system?

No need to worry, as D-Line can adapt to your specific system. Machining of profiles is not necessary due to a new developed compensating element (patented) for connection between guide table and runner blocks.

A wide selection of accessories and standardised chassis components complete our range. We will be pleased to discuss your application.

Heavy duty linear units D-Line - Contents

| | |
|----------------------------|--|
| D-Line linear units | <ul style="list-style-type: none"> ■ Timing-belt drive, roller guide 4 ■ Timing-belt drive, ball rail guide..... 7 ■ Rack and pinion drive, roller guide 10 ■ Rack and pinion drive, ball rail guide..... 12 |
| System profiles | <ul style="list-style-type: none"> ■ D-80x80 21 ■ D-80x160 21 ■ D-80x240 22 ■ D-160x160 22 ■ D-160x240 23 ■ D-160x320 24 ■ Press mount connector 25 |
| System components | <ul style="list-style-type: none"> ■ Track roller module 14 ■ Guide shafts/Housing profile..... 14 ■ Toothed rack..... 14 ■ Guide rail/Runner block 14 ■ Bumper 14 ■ Pulley box 14 ■ Timing belt 14 ■ Connecting element for limit switch 14 ■ Connecting element for proximity limit switch 14 ■ Safty unit 16 ■ Mount connector 26 ■ Angle bracket..... 28 ■ Bracing plates..... 30 ■ Corner connecting plate 30 ■ Frame joint 31 ■ Connecting plate..... 32 ■ Cover plates..... 32 ■ Keyed clamp connector -Q/P- 33 ■ Slot stones 34 ■ Foot connecting plate..... 38 ■ Base plate 39 ■ Levelling foot 40 ■ Cover profile..... 42 ■ Power track chain 42 |
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Timing-belt drive

The guide body of the linear unit consist of extruded aluminium profiles from the familiar BLOCAN®- system range of D-profiles. These are supplied in standard lengths of 6 m. See the max. travel data in the ordering tables. It is technically possible two join two profiles to each other at

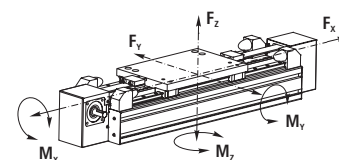
the ends to obtain a greater stroke length (of up to 14 m). You should however consult with our Technical Department before doing so. Optional fixing holes can be made in the guide tables to customer specifications on request.

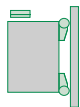
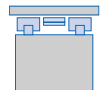
Technical description

| | |
|------------------------|--|
| Timing belt: | Timing belt with steel reinforcement (GT-8M) Pitch: 8 mm Width: 60 mm |
| Pulley box: | Steel, black, powder-coated |
| Guide table: | EN AW 5083 |
| Guide profile: | Extruded aluminium, clear anodised |
| Guide shafts: | Heat-treated steel, inductively hardened HRC 62 hard-chrome plated surface |
| Guide rails: | hardened, ground, precision-class N |
| Shaft bearings: | sealed single-row grooved ball bearings |
| AktiveØ pulley wheel: | 122.23 mm |
| Circumf. pulley wheel: | 383.80 mm |
| Positioning accuracy: | ±0,15 mm/300mm travel |
| max. travel speed | 5 m/s (Track roller) / 3 m/s (Ball rail) |

Load data* of timing belt units

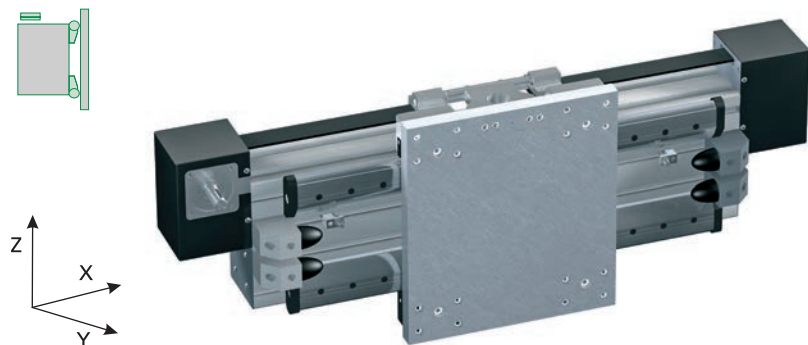
*With reference to carriage (static values, guide element resting on full surface)



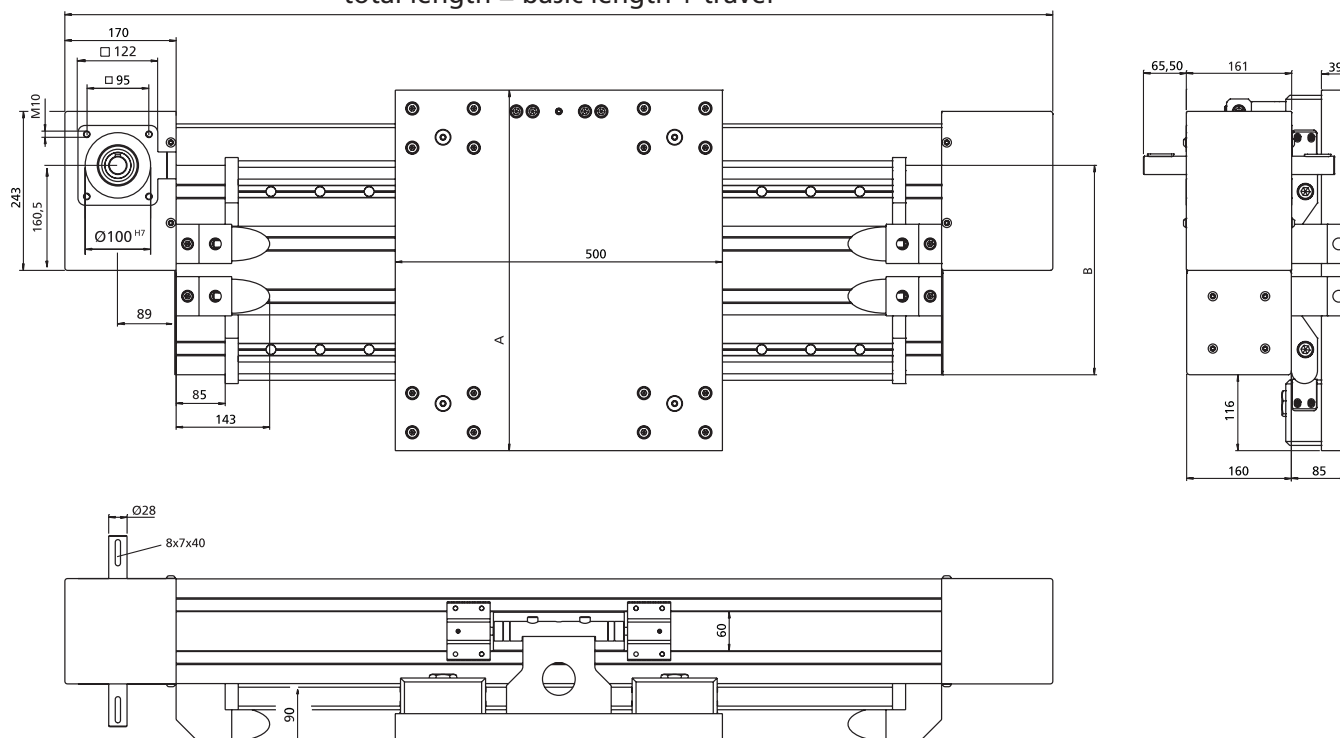
| Type | Fx | Fy | Fz | Mx | My | Mz |
|---|--------|---------|---------|---------|---------|---------|
|  D-160x240 | 4700 N | 14000 N | 14000 N | 1200 Nm | 550 Nm | 1200 Nm |
| D-160x320 | 4700 N | 14000 N | 14000 N | 1200 Nm | 550 Nm | 1200 Nm |
|  D-160x320 | 4700 N | 14000 N | 14000 N | 1200 Nm | 1200 Nm | 550 Nm |
|  D-160x160 | 4700 N | 30000 N | 10000 N | 1300 Nm | 2450 Nm | 6880 Nm |
| D-160x240 | 4700 N | 30000 N | 10000 N | 2500 Nm | 2450 Nm | 6880 Nm |
| D-160x320 | 4700 N | 30000 N | 10000 N | 3800 Nm | 2450 Nm | 6880 Nm |
|  D-160x160 | 4700 N | 10000 N | 30000 N | 1300 Nm | 6880 Nm | 2450 Nm |
| D-160x320 | 4700 N | 10000 N | 30000 N | 3800 Nm | 6880 Nm | 2450 Nm |

Order information:

- Longer travel lengths available on request
- On request, this unit is also available as roller guide without timing belt drive



total length = basic length + travel

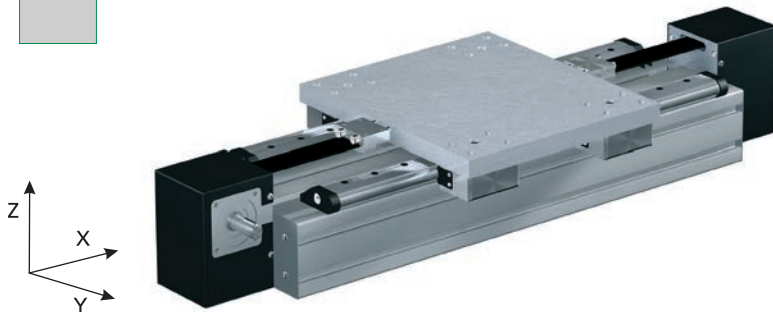


| Type | Basic lengtht | A | B | Max. travel | Weight [kg] | |
|-----------|---------------|-----|-----|-------------|--------------|---------------|
| | | | | | Basic length | per 1m travel |
| D-160x240 | 1126 | 471 | 240 | 5214 | 129.0 | 55.0 |
| D-160x320 | 1126 | 551 | 320 | 9214 | 135.2 | 62.3 |

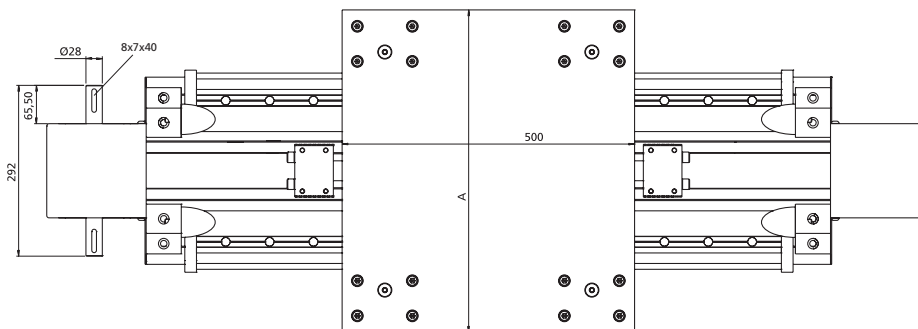
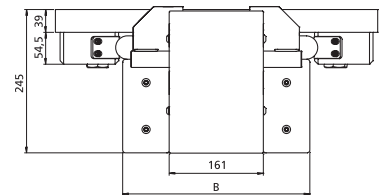
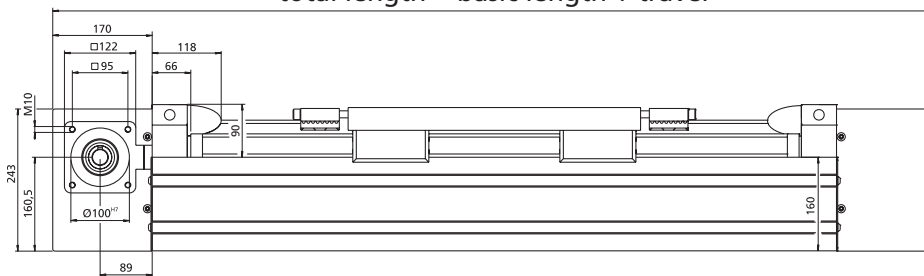
Timing-belt drive, ball rail guide

Order information:

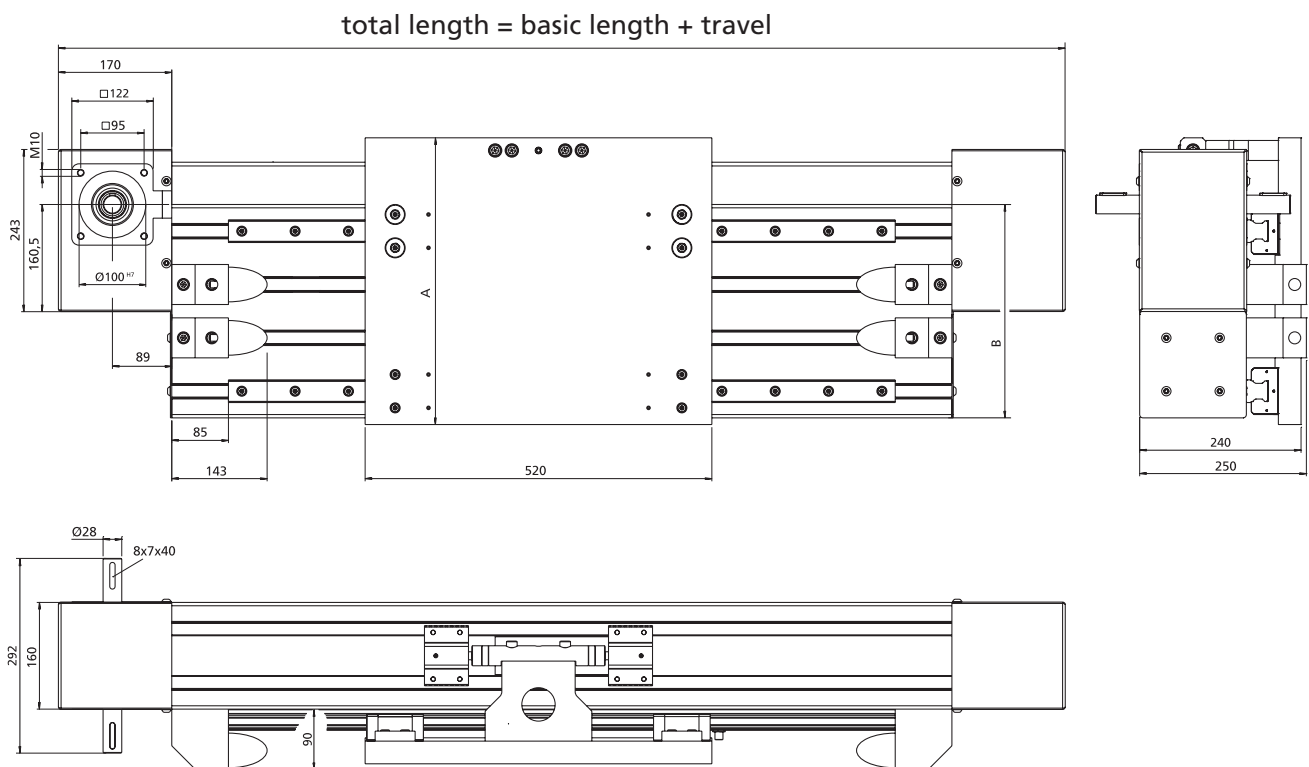
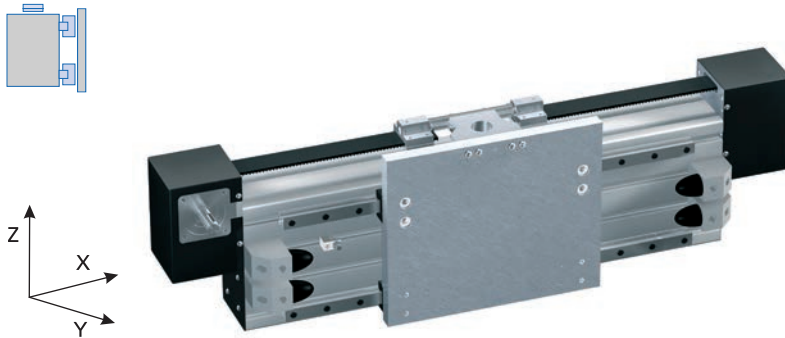
- Longer travel lengths available on request
- On request, this unit is also available as roller guide without timing belt drive



total length = basic length + travel



| Type | Basic length | A | B | Max. travel | Weight [kg] | |
|-----------|--------------|-----|-----|-------------|--------------|---------------|
| | | | | | Basic length | per 1m travel |
| D-160x320 | 1076 | 551 | 320 | 9264 | 131.1 | 62.3 |

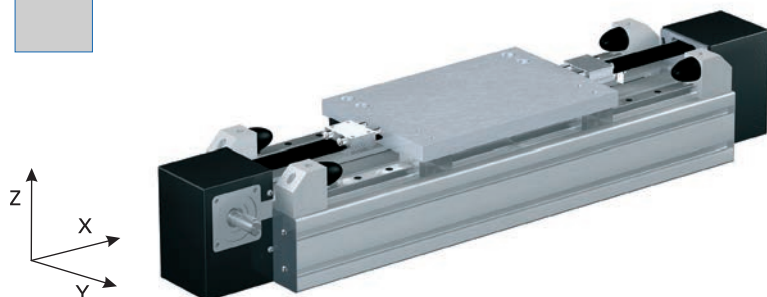


| Type | Basic length | A | B | Max. travel | Weight [kg] | |
|-----------|--------------|-----|-----|-------------|--------------|---------------|
| | | | | | Basic length | per 1m travel |
| D-160x160 | 1146 | 270 | 160 | 5194 | 98.6 | 35.6 |
| D-160x240 | 1146 | 350 | 240 | 5194 | 118.6 | 43.3 |
| D-160x320 | 1146 | 430 | 320 | 9194 | 128.0 | 50.6 |

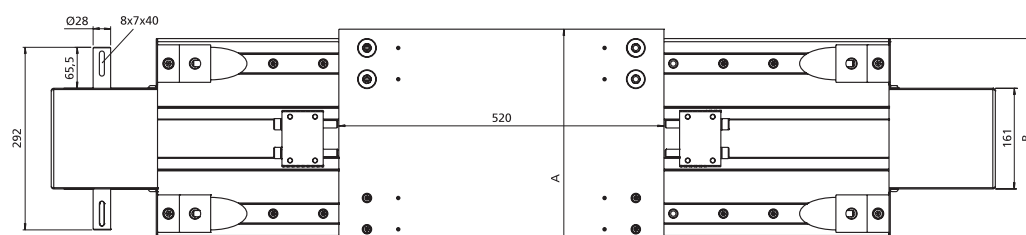
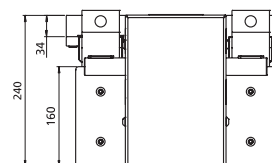
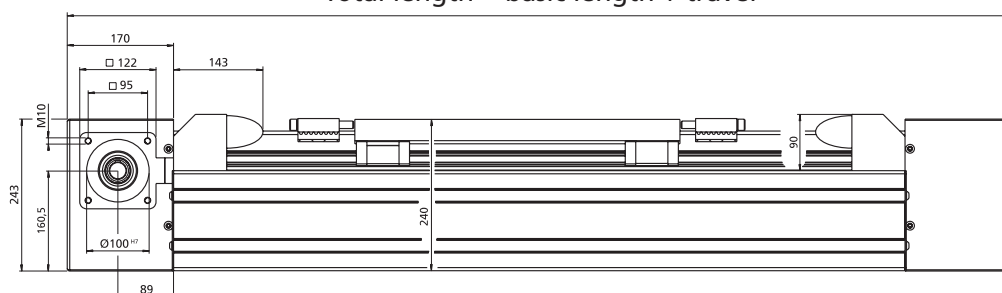
Timing-belt drive, ball rail guide

Order information:

- Longer travel lengths available on request
- On request, this unit is also available as roller guide without timing belt drive



Total length = basic length + travel



| Type | Basic length | A | B | max. travel | Weight [kg] | |
|-----------|--------------|-----|-----|-------------|--------------|---------------|
| | | | | | Basic length | per 1m travel |
| D-160x160 | 1146 | 185 | 160 | 5194 | 92.2 | 35.6 |
| D-160x320 | 1146 | 345 | 320 | 9194 | 121.6 | 50.6 |



Rack and pinion drive

The guide body of the linear unit consist of extruded aluminium profiles from the familiar BLOCAN®- system range of D-profiles.

These are supplied in standard lengths of 6 m. See the max. travel data in the ordering tables. It is technically possible two join two profiles to each other at the ends to obtain a greater travel length (of up to 50 m).

You should however consult with our Technical Department before doing so.

Rack and pinions with angled teeth are used on versions with ballball rail guides.

Technical description

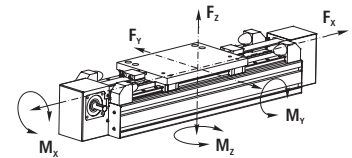
| | Roller guide | Ball rail system |
|-----------------------|--|-------------------------------------|
| Rack: | Inductively hardened | |
| Pinion: | Hardened teeth, teeth and collar ground | |
| Module: | 4 | 3 |
| Graduated circle: | on request | Ø 63.66 mm |
| Number of teeth: | on request | 20 |
| Guide table: | EN AW 5083 | |
| Guide profile: | Extruded aluminium, clear anodised | |
| Guide shafts: | Heat-treated steell, inductively hardened HRC 62 hard-chrome plated surface | - |
| Guide rails: | - | hardened, ground, precision-class N |
| Positioning accuracy: | ±0,2 mm/300mm travel | |
| max. travel speed: | 5 m/s | 3 m/s |

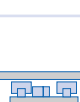
Load data* of linear units with rack and pinion drive

The maximum load along the X-axis depends on the motor.

*referring to the guide table

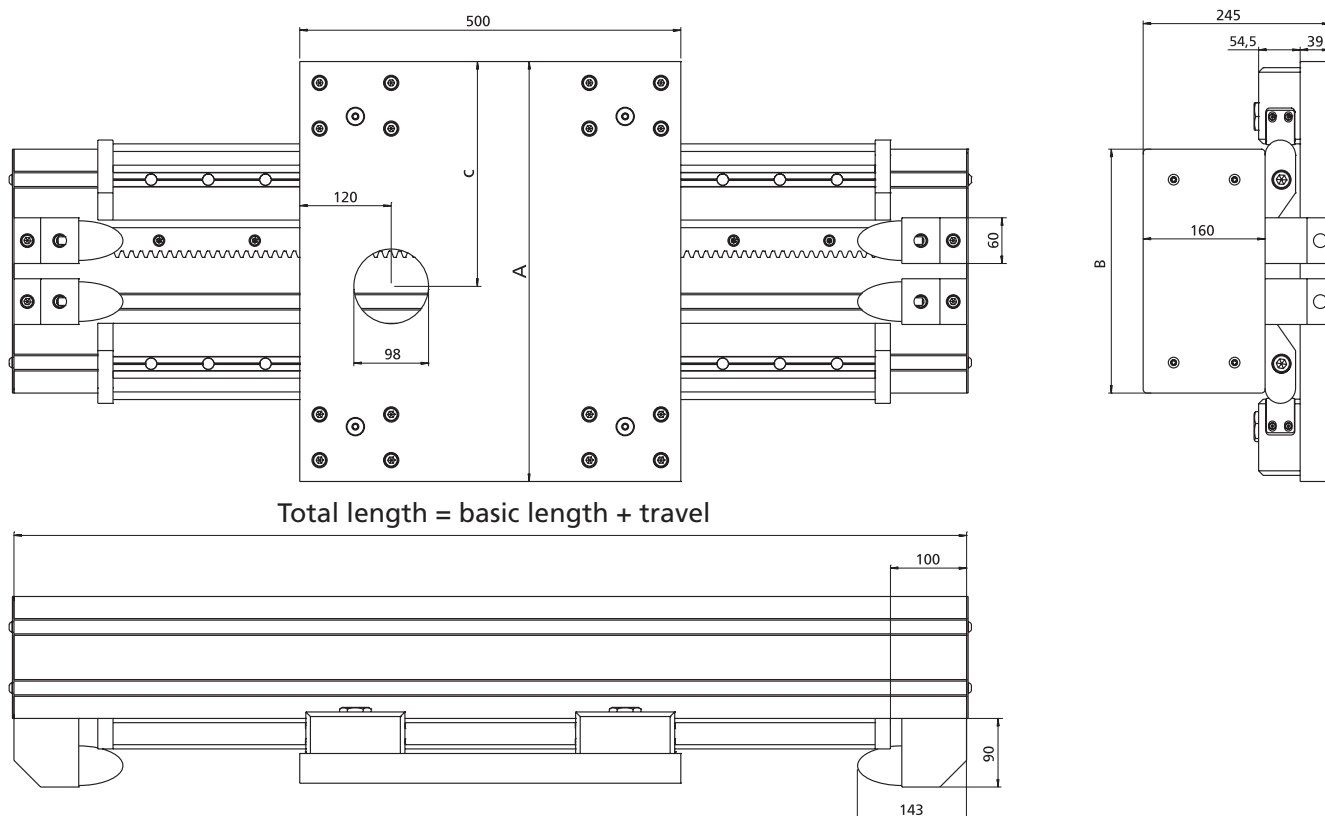
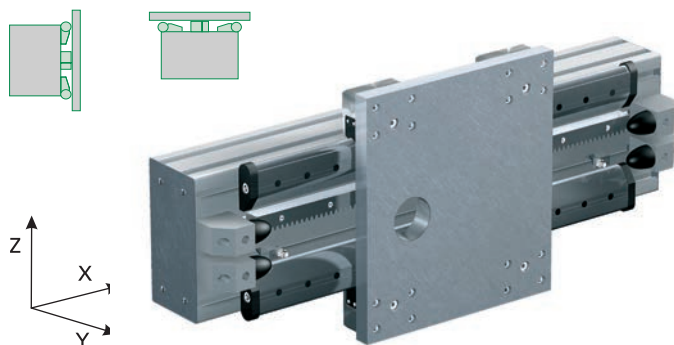
(values static, linear unit is completely supported)



| Type | max. input torque | Fy | Fz | Mx | My | Mz |
|---|-------------------|---------|---------|---------|---------|---------|
|  D-160x320 | 381 Nm | 10000 N | 10000 N | 1200 Nm | 550 Nm | 1200 Nm |
|  D-160x320 | 381 Nm | 10000 N | 10000 N | 1200 Nm | 1200 Nm | 550 Nm |
|  D-80x240 | 194 Nm | 30000 N | 10000 N | 2500 Nm | 1700 Nm | 5180 Nm |
|  D-160x240 | 194 Nm | 30000 N | 10000 N | 2500 Nm | 1700 Nm | 5180 Nm |
|  D-160x320 | 194 Nm | 30000 N | 10000 N | 3800 Nm | 1700 Nm | 5180 Nm |
|  D-80x240 | 194 N | 10000 N | 30000 N | 2500 Nm | 5180 Nm | 1700 Nm |
|  D-160x240 | 194 N | 10000 N | 30000 N | 2500 Nm | 5180 Nm | 1700 Nm |
|  D-160x320 | 194 N | 10000 N | 30000 N | 3800 Nm | 5180 Nm | 1700 Nm |

Order information:

- Longer travel lengths available on request
- On request, this unit is also available as roller guide without rack and pinion drive



| Type | Basic length | A | B | C | max. travel | Weight [kg] | |
|-----------|--------------|-----|-----|-----|-------------|--------------|---------------|
| | | | | | | Basic length | per 1m travel |
| D-160x320 | 786 | 551 | 320 | 295 | 9214 | 92.6 | 73.4 |

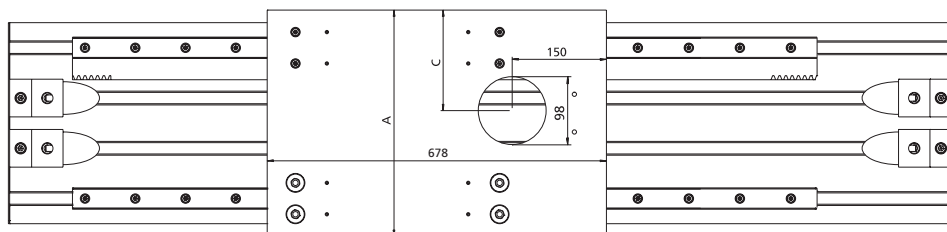
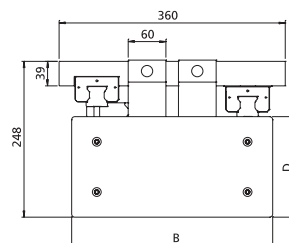
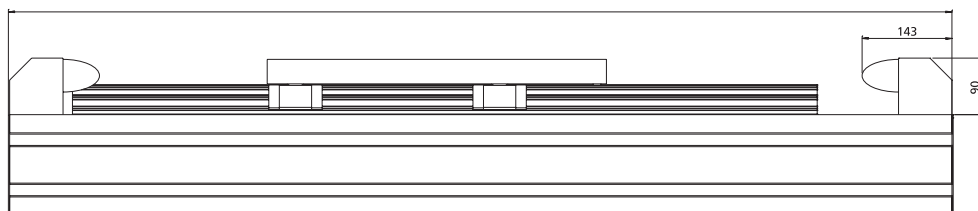
Rack and pinion drive, ball rail guide

Order information:

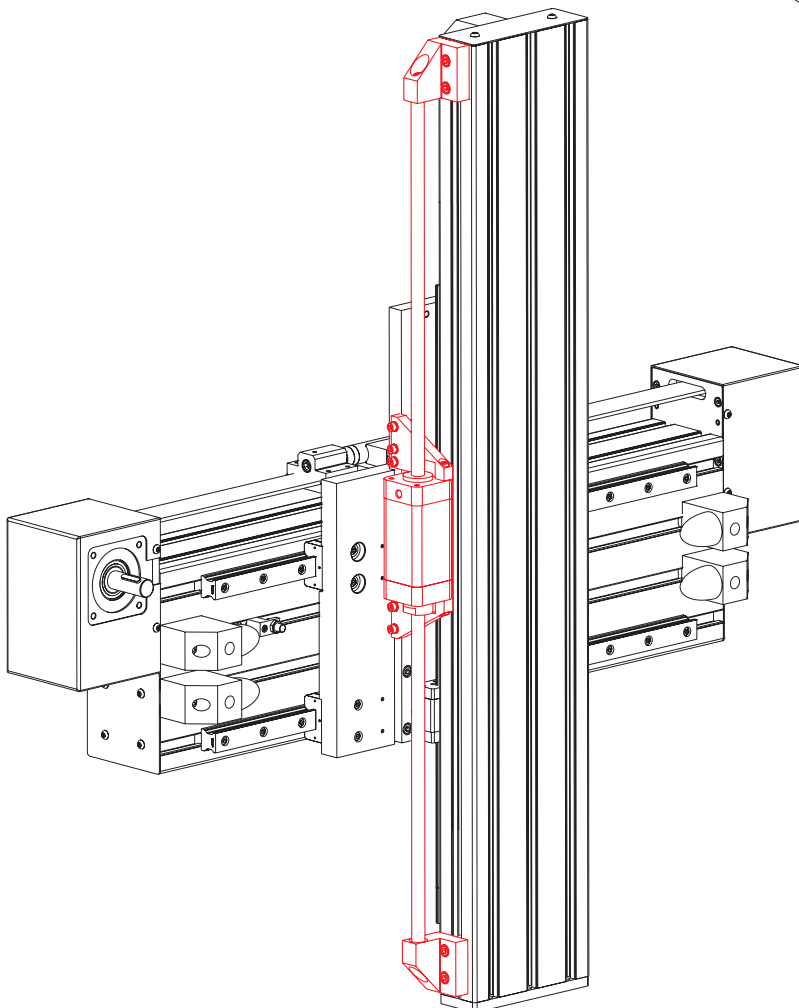
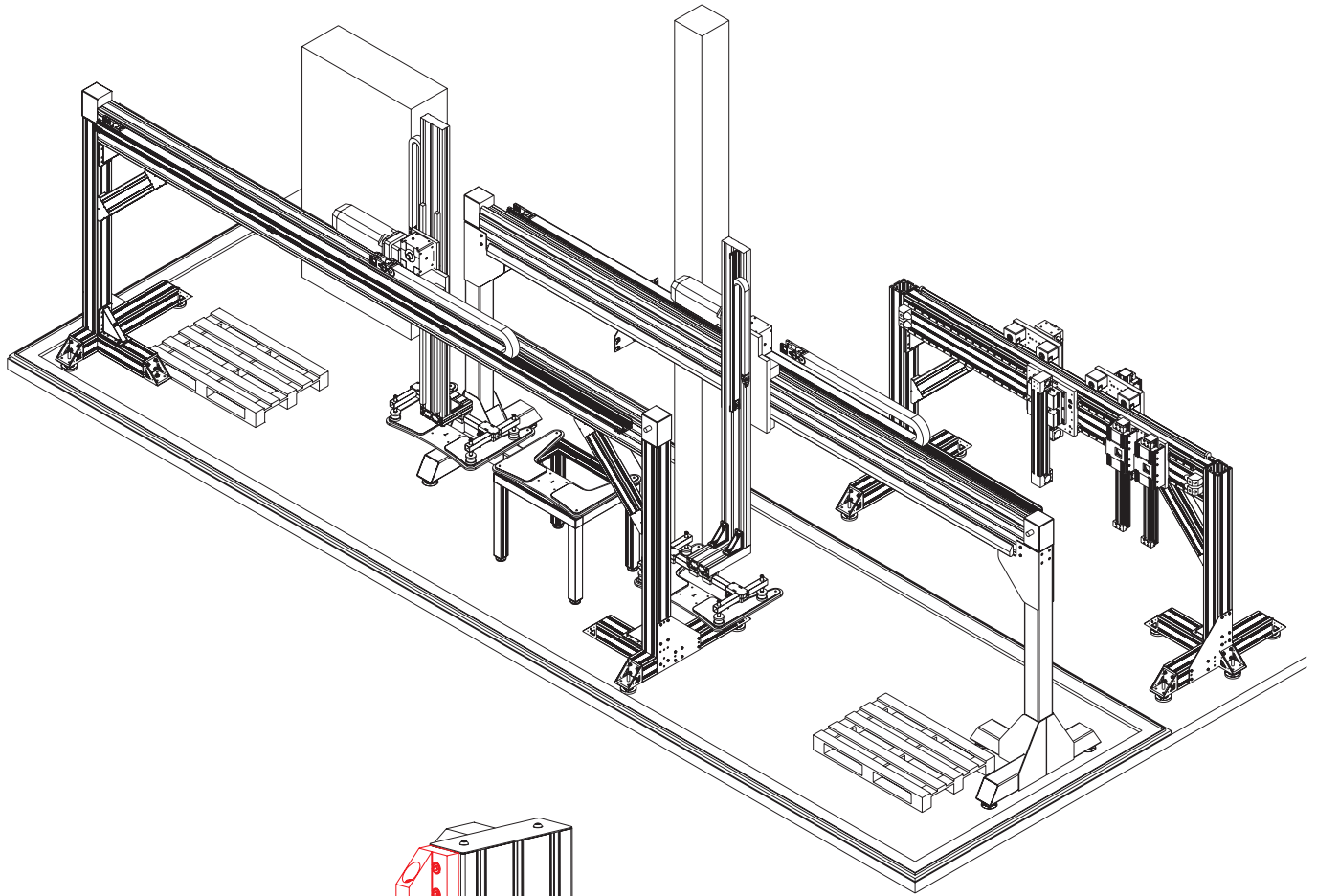
- Longer travel lengths available on request
- On request, this unit is also available as roller guide without rack and pinion drive



Total length = basic length + travel



| Type | Basic length | A | B | C | D | max. travel | Weight [kg] | |
|---------|--------------|-----|-----|-----|-----|-------------|--------------|---------------|
| | | | | | | | Basic length | per 1m travel |
| 80x240 | 924 | 280 | 240 | 160 | 80 | 5076 | 40.7 | 43.6 |
| 160x240 | 924 | 280 | 240 | 160 | 160 | 5076 | 47.7 | 53.6 |
| 160x320 | 924 | 360 | 320 | 160 | 160 | 9076 | 58.2 | 60.6 |



Accessories

Track roller module



Track roller module



Guide shafts and housing profile



Rack



Straight teeth for roller guide

Rack



Angled teeth for ball rail guide

Bumper



Guide shaft



Runner block



Connecting element for limit switch



Pulley box



Pulley box with drive pins



Connecting element for proximity limit switch





RK ROSE+KRIEGER



D-Line system components

Brakes / Holding of linear axes

Holding

This means, when the machine is switched off, e.g. the Z-axis is moved to its initial position and then it is secured against falling down. In this way, it will be possible to replace for instance the motor or the gear unit easily.

Slowing down

That means, if the power or control unit fail or an emergency switch off is caused, the axis will be slowed down during its travel.

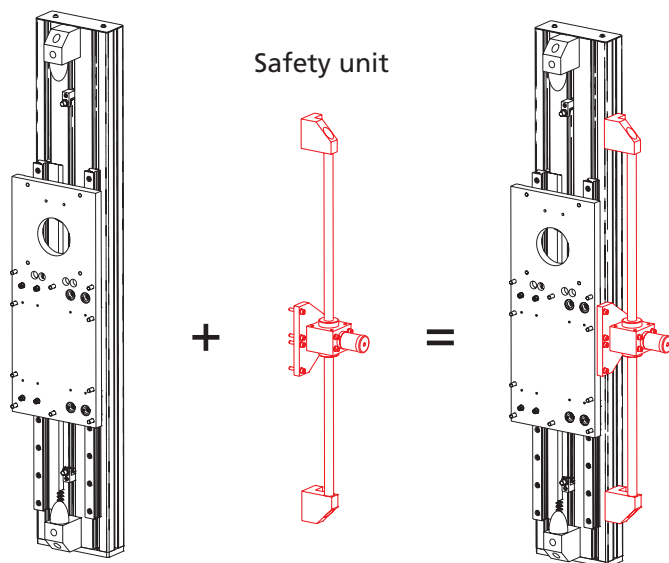
Holding of linear axes

Typical machine with linear axes are gantries, linear robots, machining centres and integrated production systems. If in case of tooling or maintenance the access to the work area or the dangerous area is required, all dangerous drives have to be stopped and the slide units, especially the vertical axes must be held in fixed position. This is often done using additional holding brakes which will engage when the drive control regulates the speed of the slide down to zero. If the machine fails, e.g. because of power or control failure and depending on the programming of the EMERGENCY-OFF, additionally the remaining kinetic energy must be reduced in controlled way.

Revised Machine Directive

The European Directive 98/37/EG (Machine Directive) regulates the introduction of machines into the European market. It was first issued in 1992 and now it has been revised. The new Machine Directive is planned to be implemented in the first half year of 2006. After that, a 24-month time period starts. Within this period, the member states have to implement this directive into national legislation. From the middle of 2007, another 18-month transient period starts. Within this period, both directives, the old and the new one, can be applied. In 2009 at latest, the products and documents must definitely comply with the new directive.

Further information on gravity loaded axes (vertical axes) are available on request. They include information about the risk analysis, example for measures and an allocation to the customary brake units.



Vertical linear axis - roller guide
or ball rail guide

Safety unit

The D-Line linear axes can also subsequently be equipped with a safety unit. Here, we distinguish between three versions. KPE for holding (e.g. meanwhile maintenance), KEC for braking (e.g. at a stopover) or KEC-S for braking (e.g. at a stopover) and brakes (e.g. emergency stop) of linear axes.

Holding of linear axes, version KPE



Static holding force 5000 N

- Unit clamps the shaft without

Note:

Not certified for the application in safety-relevant controls.

Braking of linear axes, version KPC



Static holding force 3200 N

- Unit clamps and holds the shaft without pressure also in case of power failure

Note:

Not certified for the application in safety-relevant controls.

- Hold a bar at a stopover

Holding and braking – safe holding of linear axes, version KEC-S



Static holding force 3200 N

- Unit clamps and holds the shaft without pressure also in case of power failure in case of safety-relevant applications
- Application of a brake unit (dynamic application). Slowing down or stopping of movements, interruption of a movement if the dangerous area is entered

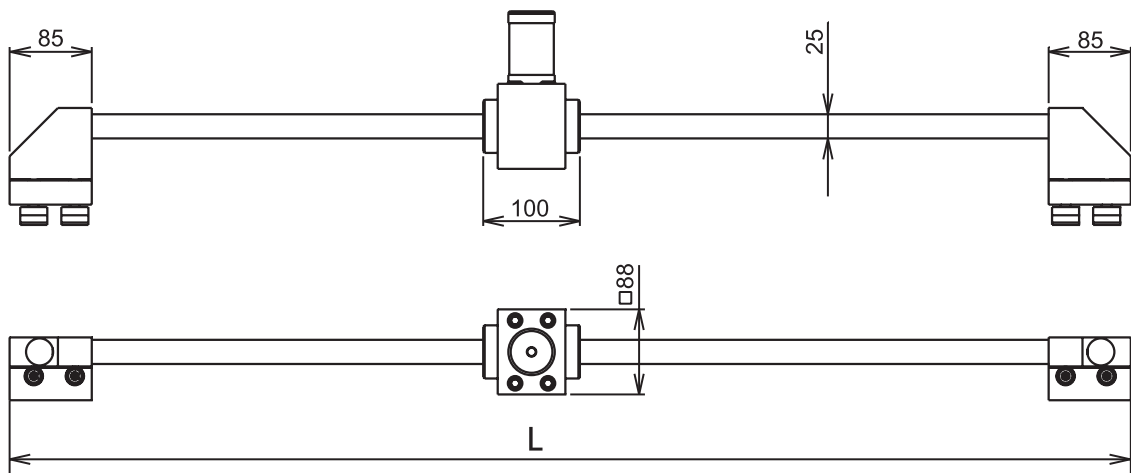
Note:

Certified for the application in safety-relevant control units by the Berufsgenossenschaftlichen Institut für Arbeitssicherheit (BGIA) (institute of the professional association).

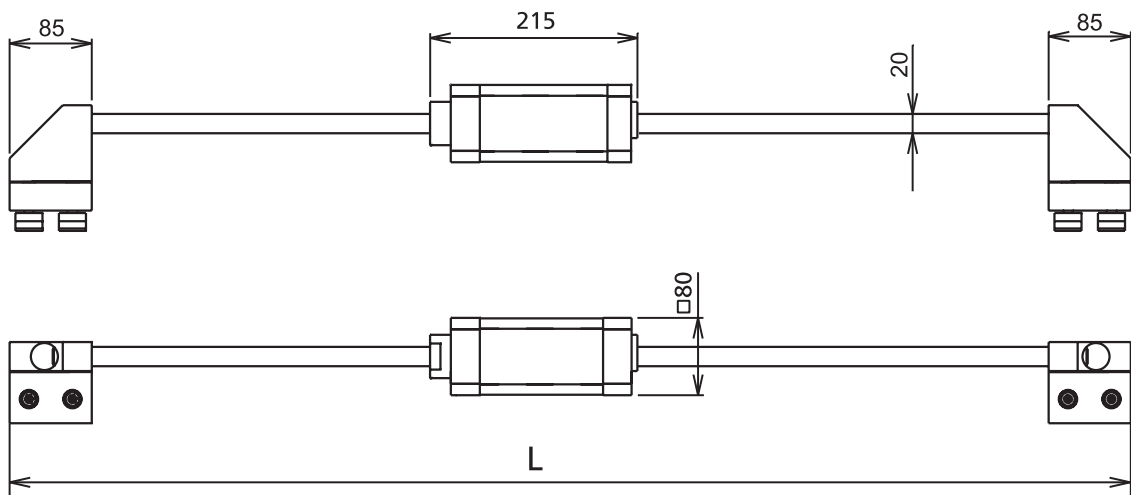
D-Line system components

Safety unit

■ Diagram without fixtures for the slide guide



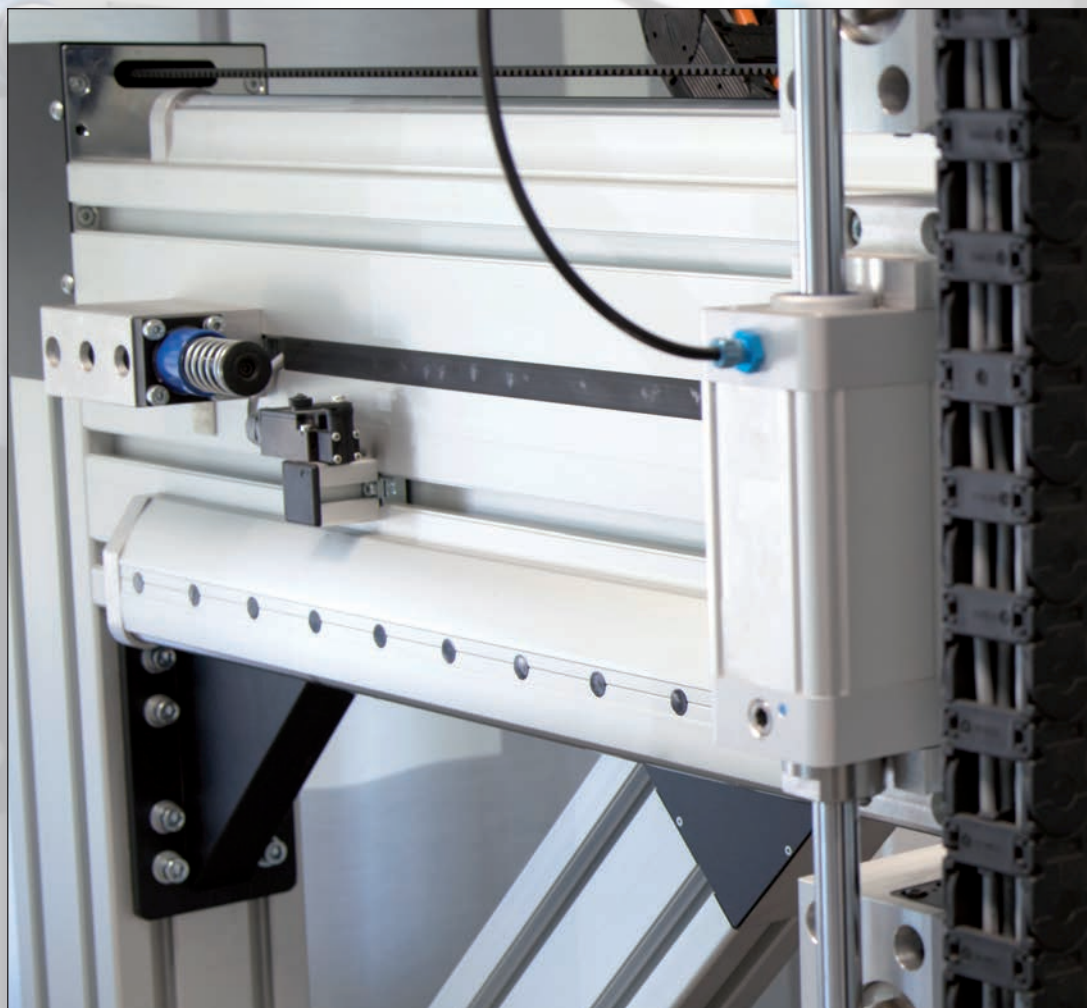
KPE



KPC /
KPC-S



RK ROSE+KRIEGER



D-Line System profiles

Heavy duty with maximum stability

The basis of the heavy duty linear units are the well-known heavy duty profiles from the product range group BLOCAN®-Profile assembling system.

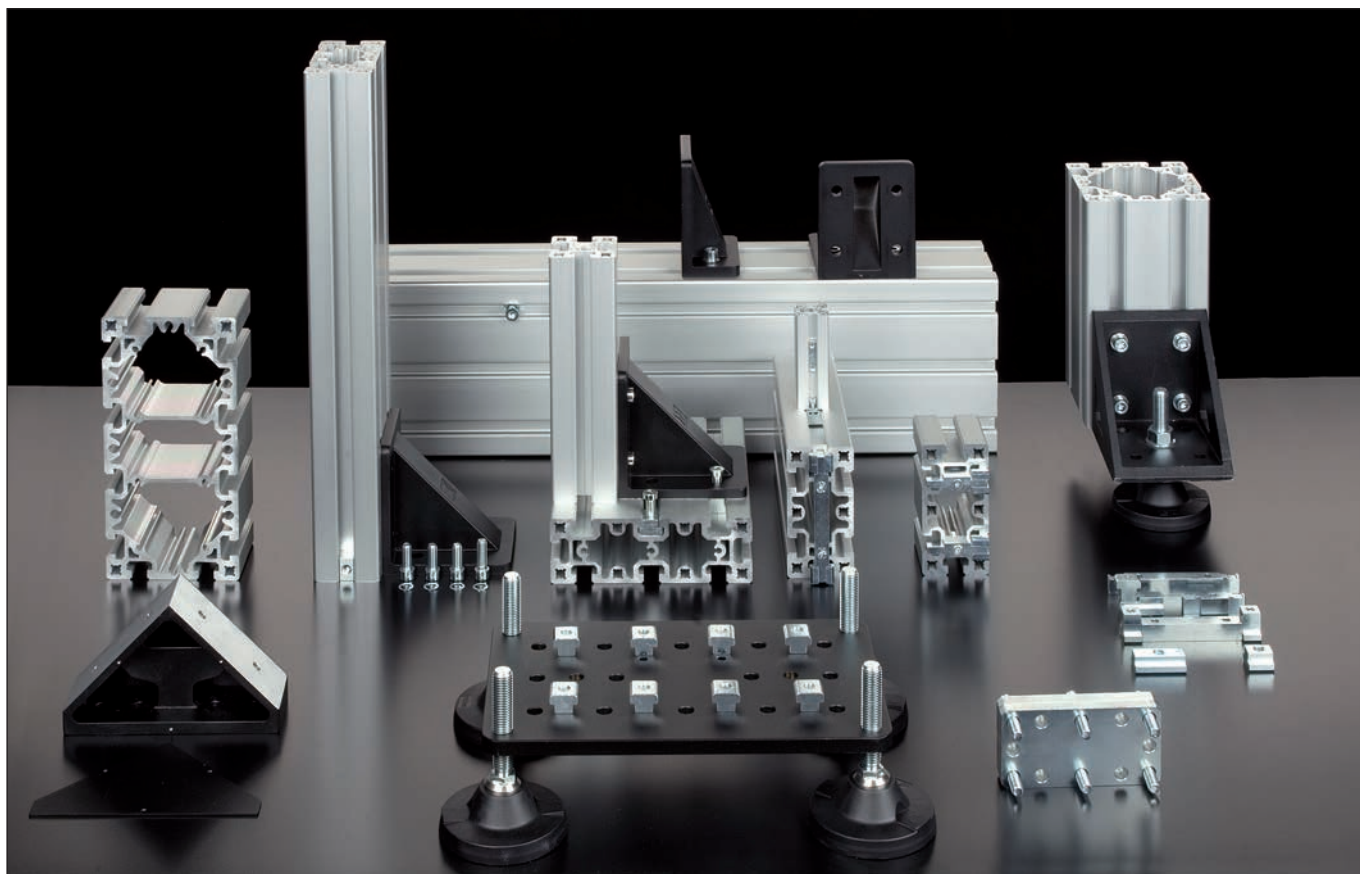
The aluminium profiles 80x80, 80x160, 80x240, 160x160, 160x240 and 160x320 mm combine very high bending and torsion resistance with relatively little weight. This way, even big gantry cranes and machine support structures that used to be mounted exclusively on steel structures, can be now built with lightweight aluminium profiles.

By means of DIN slot stones add-on parts can be fitted to the 18 mm wide profile slots.

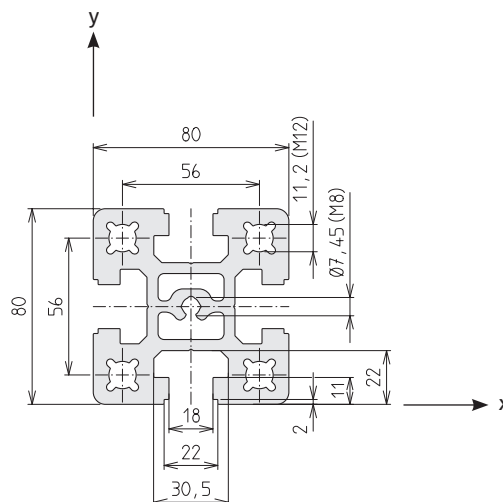
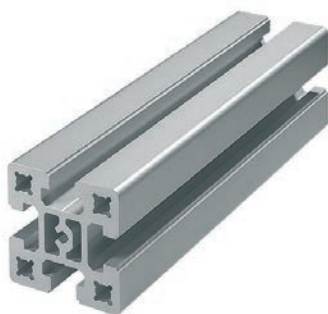
Also our existing BLOCAN® products (with a 10 mm profile slot) can be attached without difficulties to the new profiles by means of accessories. Thus, we carry on our RK modular system philosophy which permeates all our product ranges.

A further highlight in this profile range, are the special designed press mount connectors for the heavy duty area.

The name is self explanatory: the profiles are connected under pressure thus guaranteeing a high load bearing capacity. The connection can be disassembled again at any time. Here, no machining of the aluminium profiles is needed thus decreasing considerably the assembly costs in comparison with other profile systems and steel structures.




D-80x80

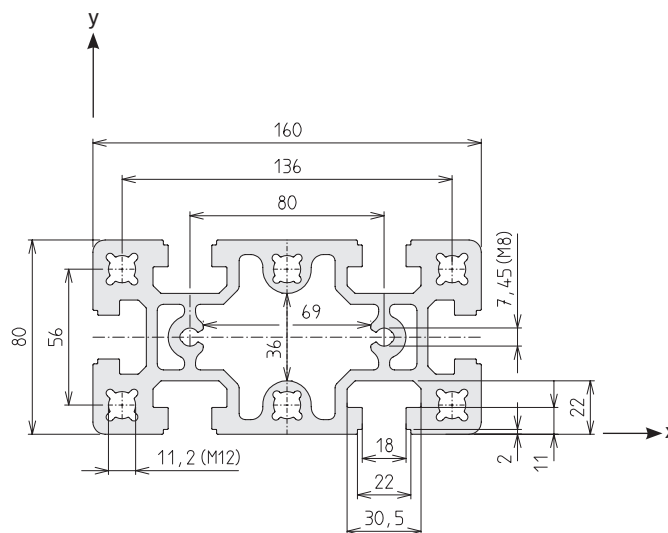
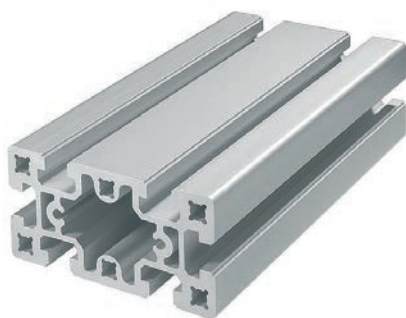


| Code No. profile D-80x80 | | | Anod. coating |
|--------------------------|-----|--------------|---------------|
| 4C45000 | cut | max. 6000 mm | natural |
| 4C45001 | bar | à 6000 mm | natural |

| | | |
|----------------|-------|-----------------|
| Surface | 3200 | mm ² |
| I _x | 198,0 | cm ⁴ |
| I _y | 199,3 | cm ⁴ |
| W _x | 49,6 | cm ³ |
| W _y | 49,8 | cm ³ |
| Weight | 8581 | g/m |

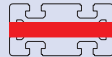

| Connection | Required qty per connection | Slot geometry | Press mount connector | Code No. / pcs |
|---|-----------------------------|---------------|-----------------------|----------------|
|  Press mount connector longit+transv. | 1 pcs | D | -N- 80 | 4C16701 |

D-80x160



| Code No. profile D-80x160 | | | Anod. coating |
|---------------------------|-----|--------------|---------------|
| 4C15000 | cut | max. 6000 mm | natural |
| 4C15001 | bar | à 6000 mm | natural |

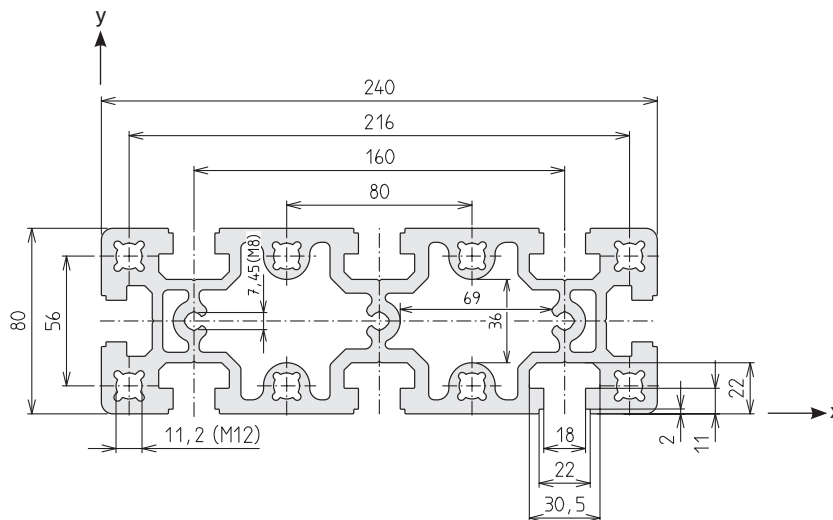
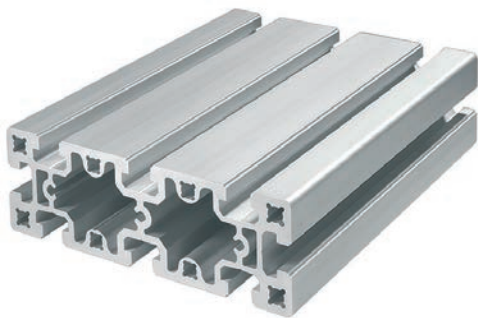
| | | |
|----------------|--------|-----------------|
| Surface | 5212 | mm ² |
| I _x | 367,5 | cm ⁴ |
| I _y | 1397,0 | cm ⁴ |
| W _x | 91,6 | cm ³ |
| W _y | 174,6 | cm ³ |
| Weight | 14073 | g/m |

| Connection | Required qty per connection | Slot geometry | Press mount connector | Code No. / pcs |
|---|-----------------------------|---------------|-----------------------|----------------|
|  longit. | 1 pcs | D | -N- 160 | 4C16700 |
|  transv. | 2 pcs | | -N- 80 | 4C16701 |

Note: Drillings are designed for self-tapping screw channels (M8/M12)

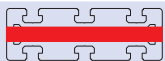
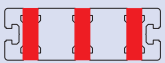
D-Line System profiles

D-80x240

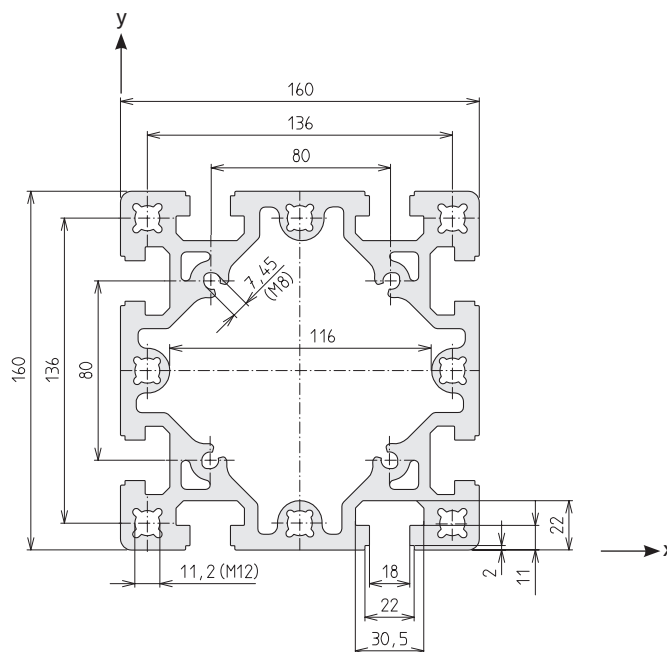
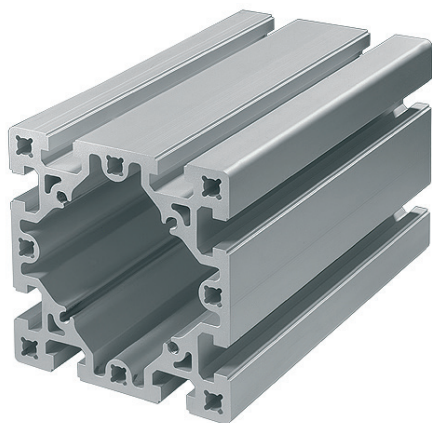


| Code No. profile D-80x240 | | | Anod. coating |
|---------------------------|-----|--------------|---------------|
| 4C55000 | cut | max. 6000 mm | natural |
| 4C55001 | bar | à 6000 mm | natural |

| | | |
|----------------|--------|-----------------|
| Surface | 7422 | mm ² |
| I _x | 540,8 | cm ⁴ |
| I _y | 4268,2 | cm ⁴ |
| W _x | 135,2 | cm ³ |
| W _y | 355,7 | cm ³ |
| Weight | 20015 | g/m |


| Connection | Required qty per connection | Slot geometry | Press mount connector | Code No. / pcs |
|---|-----------------------------|---------------|-----------------------|----------------|
|  longit. | 1 pcs | D | -N- 240 | 4C56700 |
|  transv. | 3 pcs | | -N- 80 | 4C16701 |

D-160x160



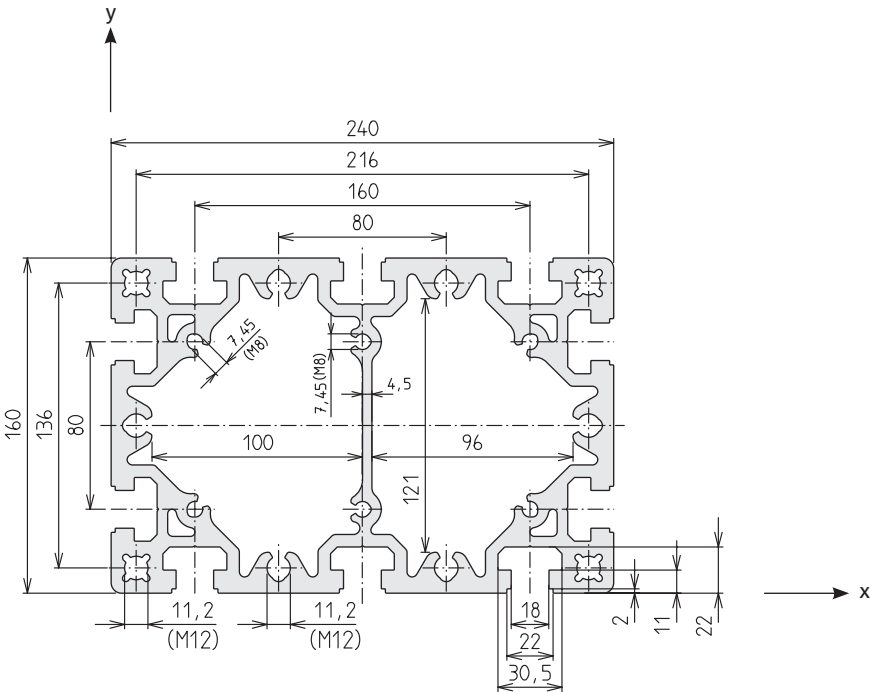
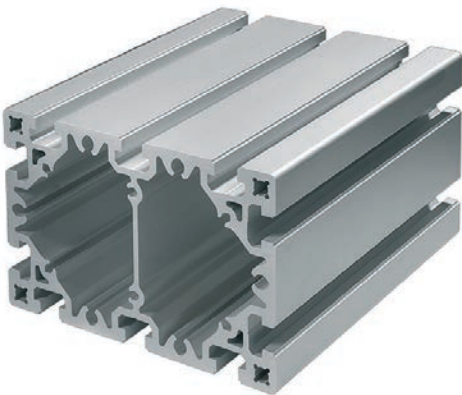
| Code No. profile D-160x160 | | | Anod. coating |
|----------------------------|-----|--------------|---------------|
| 4C25000 | cut | max. 6200 mm | natural |
| 4C25001 | bar | à 6300 mm | natural |

| | | |
|----------------|--------|-----------------|
| Surface | 8131 | mm ² |
| I _x | 2493,6 | cm ⁴ |
| I _y | 2493,6 | cm ⁴ |
| W _x | 311,7 | cm ³ |
| W _y | 311,7 | cm ³ |
| Weight | 21955 | g/m |

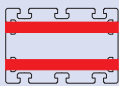
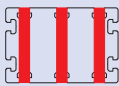
| Connection | Required qty per connection | Slot geometry | Press mount connector | Code No. / pcs |
|--|-----------------------------|---------------|-----------------------|----------------|
|  longit+transv. | 2 pcs | D | -N- 160 | 4C16700 |

Note: Drillings are designed for self-tapping screw channels (M8/M12)

D-160x240



| Code No. profile D-160x240 | | | Anod. coating |
|----------------------------|-----|--------------|---------------|
| 4C65000 | cut | max. 6000 mm | natural |
| 4C65001 | bar | à 6000 mm | natural |

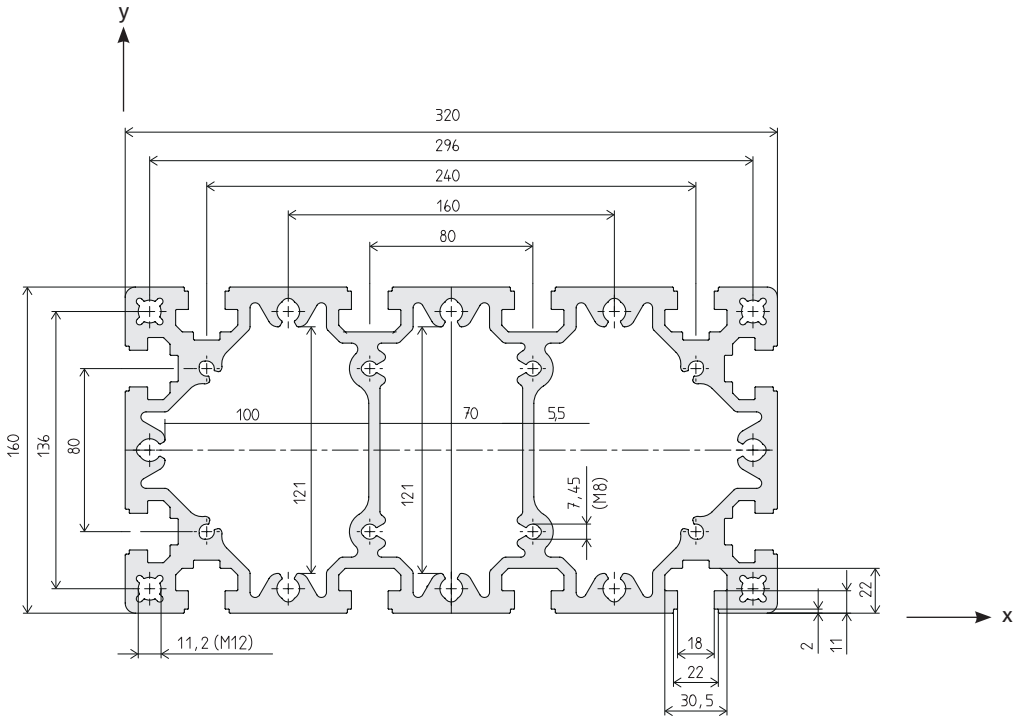
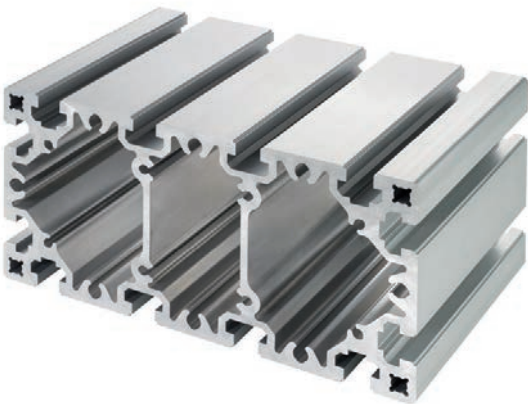
| Connection | Required qty per connection | Slot geometry | Press mount connector | Code No./pcs |
|--|-----------------------------|---------------|-----------------------|--------------|
|  <div>longit.</div> | 2 pcs | D | -N- 240 | 4C56700 |
|  <div>transv.</div> | 3 pcs | | -N- 160 | 4C16700 |

| | | |
|----------------|--------|-----------------|
| Surface | 10986 | mm ² |
| I _x | 3601,5 | cm ⁴ |
| I _y | 7333,4 | cm ⁴ |
| W _x | 450,2 | cm ³ |
| W _y | 611,1 | cm ³ |
| Weight | 29647 | g/m |

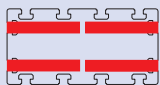
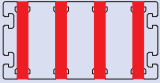
Note: Drillings are designed for self-tapping screw channels (M8/M12)

D-Line System profiles

D-160x320



| Code No. profile D-160x320 | | | Anod. coating |
|----------------------------|-----|--------------|---------------|
| 4C35000 | cut | max. 6200 mm | natural |
| 4C35001 | bar | à 6300 mm | natural |

| Connection | Required qty per connection | Slot geometry | Press mount connector | Code No. / pcs |
|---|-----------------------------|---------------|-----------------------|----------------|
|  longit. | 4 pcs | D | -N- 160/320 | 4C36700 |
|  transv. | 4 pcs | | -N- 160 | 4C16700 |

| | | |
|----------------|---------|-----------------|
| Surface | 13671 | mm ² |
| I _x | 4656,0 | cm ⁴ |
| I _y | 15618,3 | cm ⁴ |
| W _x | 582,0 | cm ³ |
| W _y | 976,1 | cm ³ |
| Weight | 36912 | g/m |

Note: Drillings are designed for self-tapping screw channels (M8/M12)

Press mount connector

- simple, cost-effective and high profile connection
- no profile machining necessary
- can be disconnected at any time and reused
- minimal effort required in construction

Material: Galvanised steel

Includes:

The Order No. includes one press mount connector. Depending on the orientation of the connection (longitudinal or transverse), the appropriate number of press mount connectors must be ordered.

Please note the information and the connection pictograms in the profile data on page 21–24

Type -N-



| Code No. | Type | Weight | for profile (required quant. per connection) |
|----------|------------|---------|---|
| 4C16701 | -N-80 | 0.30 kg | 80x80 (1x), 80x160 (2x), 80x240 (3x) |
| 4C16700 | -N-160 | 0.52 kg | 80x160 (1x), 160x160 (2x), 160x240 (3x), 160x320 (4x) |
| 4C36700 | -N-160/320 | 0.52 kg | 160x320 (4x) |
| 4C56700 | -N-240 | 0.73 kg | 80x240 (1x), 160x240 (2x) |

Type -R-



| Code No. | Type | Weight | for profile (required quant. per connection) |
|----------|------------|---------|---|
| 4C16711 | -R-80 | 0.25 kg | 80x80 (1x), 80x160 (2x), 80x240 (3x) |
| 4C16710 | -R-160 | 0.48 kg | 80x160 (1x), 160x160 (2x), 160x240 (3x), 160x320 (4x) |
| 4C36710 | -R-160/320 | 0.48 kg | 160x320 (4x) |
| 4C56710 | -R-240 | 0.69 kg | 80x240 (1x), 160x240 (2x) |

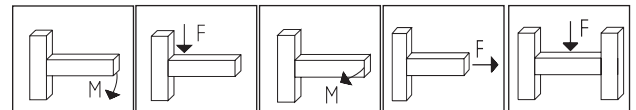
Load data

D-profiles with press mount connector -static-



Press mount connector -N-

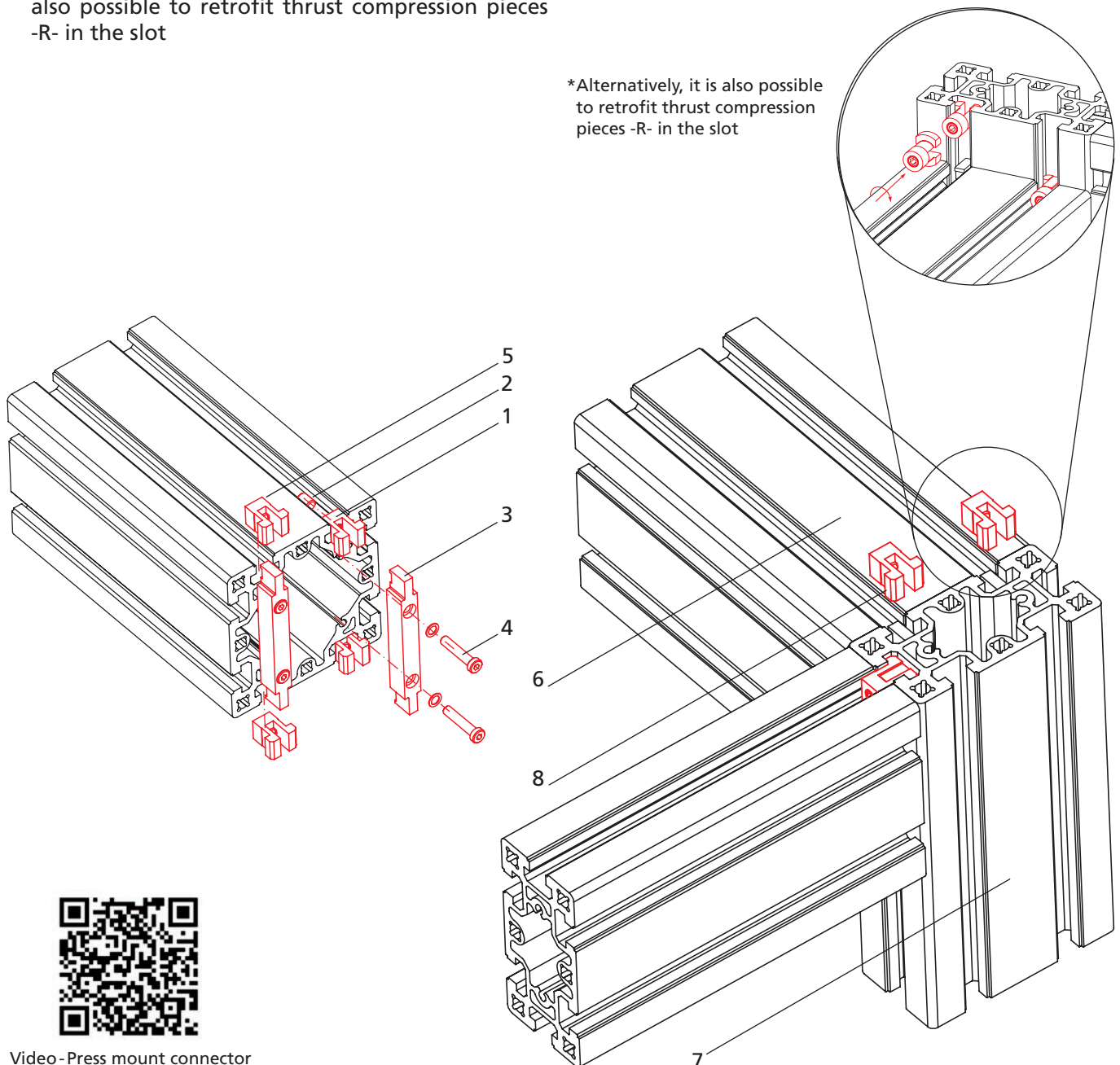
Press mount connector -R-



| Comprised press mount connector | Version | Profile | Weight | M [Nm] | F [N] | M [Nm] | F [N] | F [N] |
|---------------------------------|----------------------------------|-------------------|---------|--------|-------|--------|-------|-------|
| 1x | Press mount connector Typ -N- | 80x80 | 0.30 kg | 560 | 2900 | 560 | 11000 | 4300 |
| 1x | | 80x160 (longit.) | 0.52 kg | 1700 | 7500 | 1120 | 28000 | 11000 |
| 2x | | 80x160 (transv.) | 0.60 kg | 1700 | 10000 | 1120 | 28000 | 15000 |
| 1x | | 80x240 (longit.) | 0.73 kg | 2800 | 6000 | 1120 | 28000 | 9000 |
| 3x | | 80x240 (transv.) | 0.90 kg | 3000 | 8600 | 1680 | 33000 | 12900 |
| 2x | | 160x160 | 1.04 kg | 3200 | 15000 | 3200 | 56000 | 22000 |
| 2x | | 160x240 (longit.) | 1.46 kg | 5600 | 12000 | 5000 | 56000 | 18000 |
| 3x | | 160x240 (transv.) | 1.56 kg | 5800 | 18000 | 5200 | 79000 | 27000 |
| 4x | | 160x320 (longit.) | 2.08 kg | 7800 | 18000 | 4000 | 62000 | 36000 |
| 4x | | 160x320 (transv.) | 2.08 kg | 8000 | 28000 | 6500 | 98000 | 42000 |
| 1x | Press mount connector Typ -R- | 80x80 | 0.25 kg | 560 | 2900 | 560 | 11000 | 4300 |
| 1x | | 80x160 (longit.) | 0.48 kg | 1700 | 7500 | 1120 | 28000 | 11000 |
| 2x | | 80x160 (transv.) | 0.50 kg | 1700 | 10000 | 1120 | 28000 | 15000 |
| 1x | | 80x240 (longit.) | 0.69 kg | 2800 | 6000 | 1120 | 28000 | 9000 |
| 3x | | 80x240 (transv.) | 0.75 kg | 3000 | 8600 | 1680 | 33000 | 12900 |
| 2x | | 160x160 | 0.96 kg | 3200 | 15000 | 3200 | 56000 | 22000 |
| 2x | | 160x240 (longit.) | 1.38 kg | 5600 | 12000 | 5000 | 56000 | 18000 |
| 3x | | 160x240 (transv.) | 1.44 kg | 5800 | 18000 | 5200 | 79000 | 27000 |
| 4x | | 160x320 (longit.) | 1.92 kg | 7800 | 18000 | 4000 | 62000 | 36000 |
| 4x | | 160x320 (transv.) | 1.92 kg | 8000 | 28000 | 6500 | 98000 | 42000 |

Assembly steps (press mount connector -N-)

1. Screw set screw M10 (2) into thrust compression piece -N- (1)
2. Place the thrust compression piece -N- (1) into the profile for the connection strip (3) as an assembly aid
3. Align the connection strip (3) and fix it in the screw channel with M8 socket head cap screws (4). It is recommended to create the thread with a thread forming tap. Tighten it just until the connector is fixed, max. 5 Nm. However, oiled screws can be screwed directly into the profile. *Alternatively, it is also possible to retrofit thrust compression pieces -R- in the slot
4. Remove the thrust compression pieces (5) and push them into the slot(s) of the profile to be fixed*
5. Insert the profile with the connection strips (6) into the profile with the thrust compression pieces (7)
6. Push the thrust compression pieces (8) into the connection strip
7. Tighten the set screws M10 (2) to 25 Nm (Type -N- and -R- 80 to 12 Nm)



Video - Press mount connector

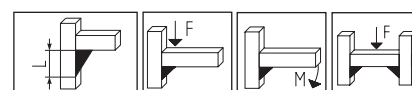
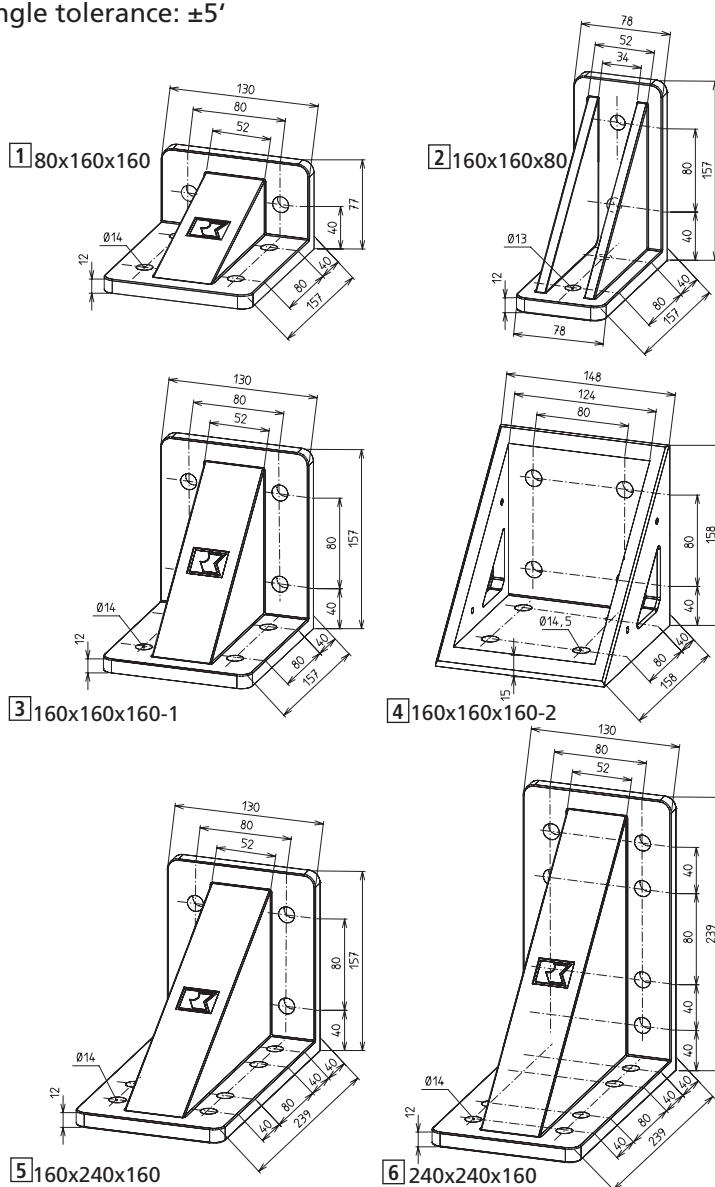
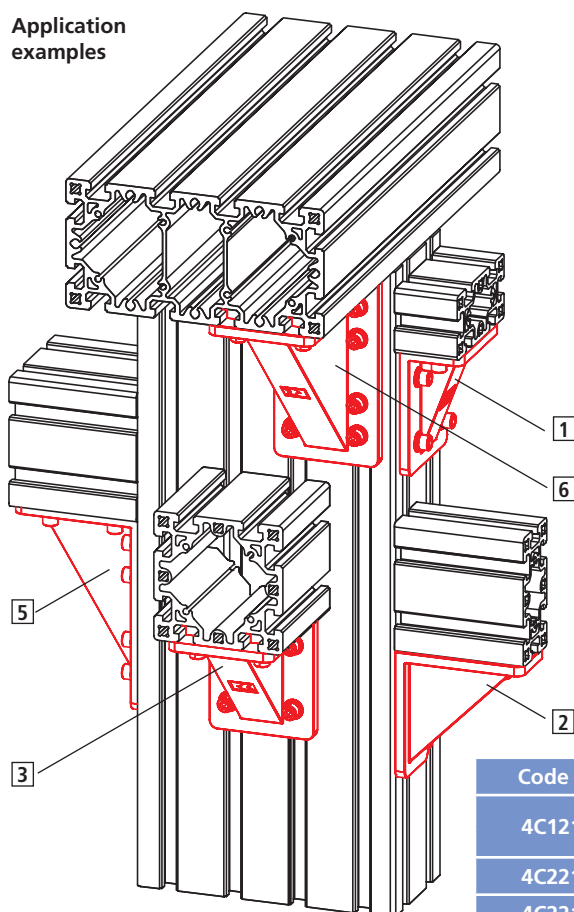
Right-angle connections

Angle bracket

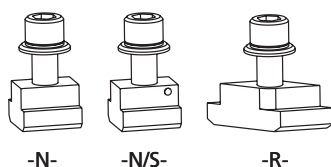
Material: Gravity die-cast aluminium, Angle tolerance: $\pm 5^\circ$



Application examples



| Code No. | Type | Weight | L [mm] | F [N] | M [Nm] | F [N] |
|----------|---------------|--------|--------|-------|--------|-------|
| 4C12100 | 80x160x160 | 1.0 kg | 80 | 11000 | 810 | 30000 |
| | | | 160 | 26200 | 810 | 55000 |
| 4C22100 | 160x160x80 | 1.2 kg | 160 | 13100 | 1500 | 29000 |
| 4C22101 | 160x160x160-1 | 1.5 kg | 160 | 22000 | 3100 | 58000 |
| 4C22102 | 160x160x160-2 | 2.1 kg | 160 | 22000 | 2500 | 36000 |
| 4C22103 | 160x240x160 | 2.1 kg | 160 | 24000 | 2700 | 53000 |
| | | | 240 | 35000 | 2800 | 75000 |
| 4C22104 | 240x240x160 | 2.8 kg | 240 | 40300 | 6200 | 75000 |



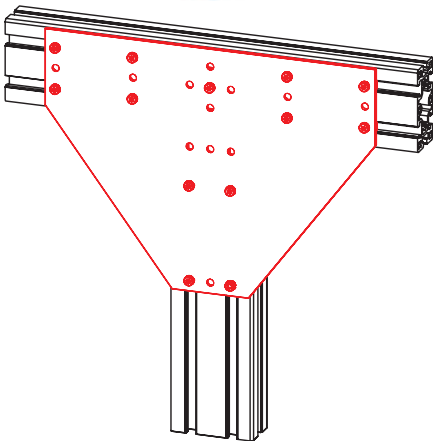
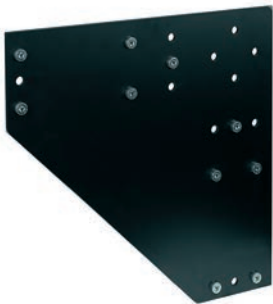
Fixing sets for angle bracket (one screw with slot stone and washer)

| Code No. | Type | Weight |
|----------|--------------------------|---------|
| 4C16200 | M12x30, slot stone -N- | 0.14 kg |
| 4C16201 | M12x30, slot stone -N/S- | 0.14 kg |
| 4C16202 | M12x30, slot stone -R- | 0.13 kg |



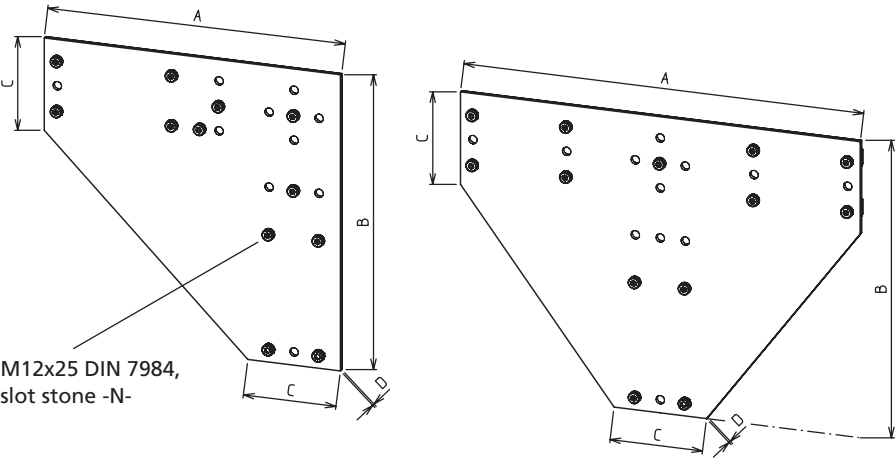
D-Line system components

Bracing plate



- The bracing plates are for the superficial bracing of a profile connection

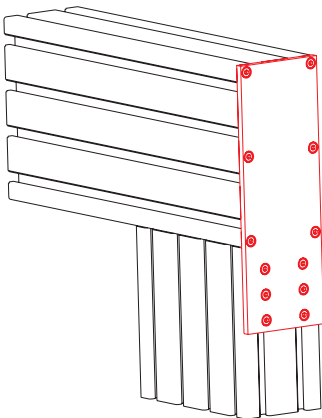
Material: Black powder-coated steel
Includes: Complete with fastenings



[mm]

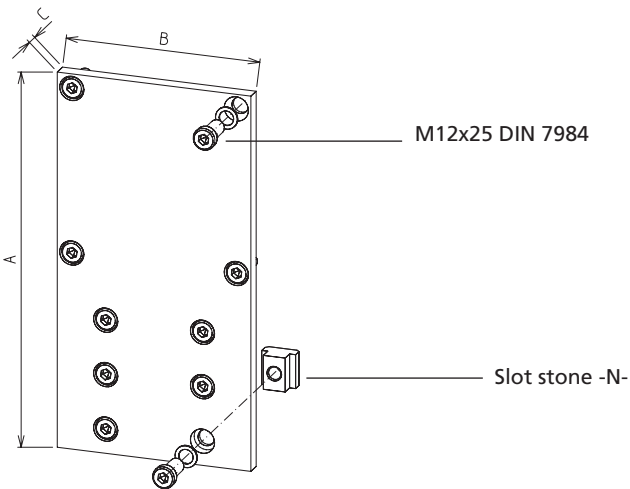
| Code No. | Type | A | B | C | D | Weight |
|----------|------|-----|-----|-----|---|---------|
| 4C12110 | -L- | 474 | 474 | 148 | 6 | 9.3 kg |
| 4C12111 | -T- | 640 | 474 | 148 | 6 | 12.0 kg |

Corner connecting plate



- The corner connecting plate is for supporting the press mount connectors (e.g. relieving high tensile loads)

Material: Black powder-coated steel
Includes: Complete with fastenings



[mm]

| Code No. | Type | A | B | C | Weight |
|----------|---------|-----|-----|----|--------|
| 4C22400 | 160x160 | 310 | 160 | 12 | 5.3 kg |
| 4C22401 | 160x320 | 470 | 160 | 12 | 7.7 kg |

Frame joint

- For supporting a structure at a 45° angle under high loads

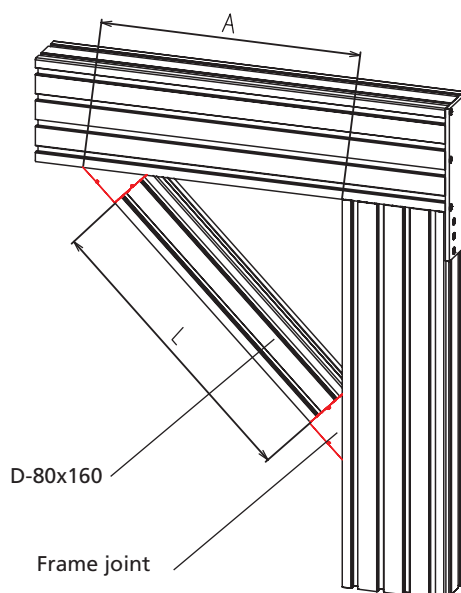
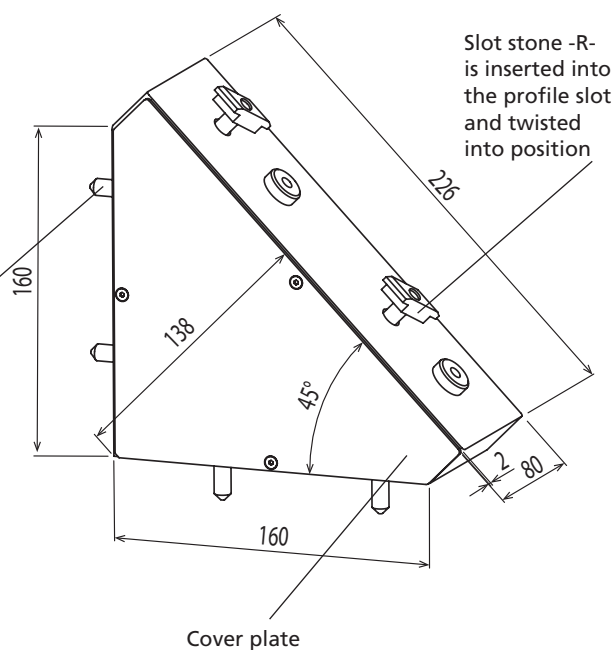
Material: Black powder-coated gravity die-cast aluminium

Includes: One complete frame joint with fastenings

2 cover plates with fastenings available as an accessory



The set screw is screwed into the screw channel of the D-80x160



Cut to size D-80x160:
 $L = (A : 0,707) - 355$

[mm]

| Code No. | Type | Weight |
|----------|------------------|--------|
| 4C12105 | Frame joint 45° | 1.8 kg |
| 4C12106 | Two cover plates | 0.6 kg |

D-Line system components

Connecting plate

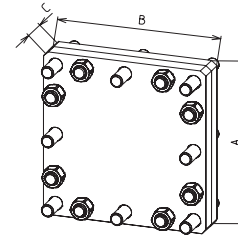
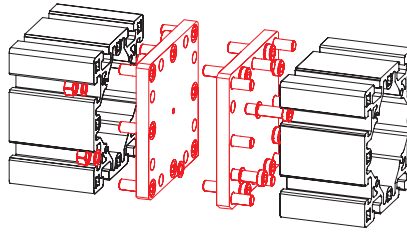
- For the flange connection of profile ends
- For extending profiles and extending existing structures

Material:

Galvanised steel

Includes:

Complete fixing set for one connection



[mm]

| Code No. | Type | A | B | C | Weight |
|----------|--------|----|-----|----|--------|
| 4C46410 | 80x80 | 80 | 160 | 30 | 1.7 kg |
| 4C16410 | 80x160 | 80 | 160 | 30 | 3.3 kg |
| 4C56410 | 80x240 | 80 | 240 | 30 | 4.9 kg |

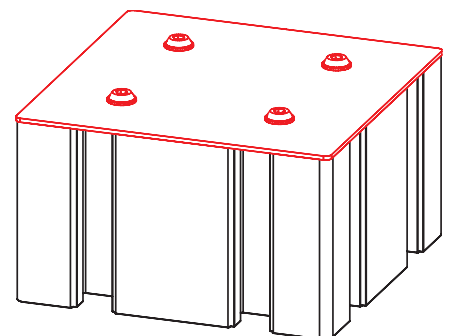
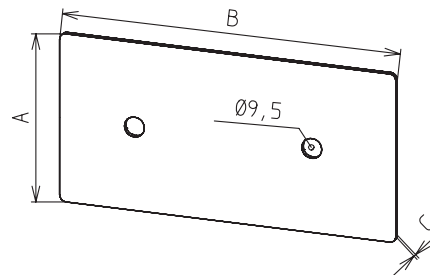
[mm]

| Code No. | Type | A | B | C | Weight |
|----------|---------|-----|-----|----|---------|
| 4C16411 | 160x160 | 160 | 160 | 30 | 6.5 kg |
| 4C66410 | 160x240 | 160 | 240 | 40 | 14.3 kg |
| 4C16412 | 160x320 | 160 | 320 | 40 | 16.6 kg |

Cover plates

- For covering the profile ends
- Fixed with socket head button screws

Material: Black powder-coated galvanised steel



[mm]

| Code No. | Type | A | B | C | Weight |
|----------|---------|-----|-----|---|--------|
| 4C42410 | 80x80 | 80 | 80 | 2 | 0.1 kg |
| 4C12410 | 80x160 | 80 | 160 | 2 | 0.2 kg |
| 4C52410 | 80x240 | 80 | 240 | 2 | 0.3 kg |
| 4C22410 | 160x160 | 160 | 160 | 2 | 0.4 kg |
| 4C62410 | 160x240 | 160 | 240 | 2 | 0.6 kg |
| 4C32410 | 160x320 | 160 | 320 | 2 | 0.8 kg |

Keyed clamp connector -P-

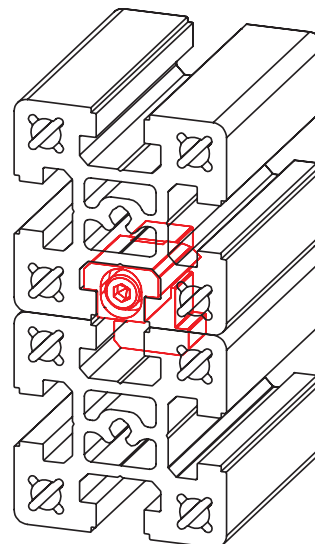
- For parallel flange mounting of profiles
- No profile machining necessary

Material:

Galvanised steel

Includes:

Complete fixing set for one connection



| Code No. | Type | Weight |
|----------|---------------------------|---------|
| 4C16502 | Keyed clamp connector -P- | 0.22 kg |

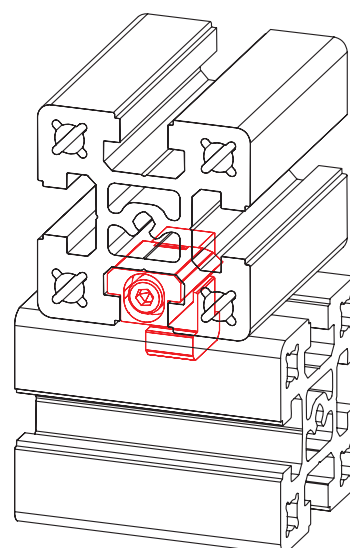
Keyed clamp connector -Q-

- Simple realisation of cross connections
- No profile machining necessary

Material: Galvanised steel

Includes:

Complete fixing set for one connection



| Code No. | Type | Weight |
|----------|---------------------------|---------|
| 4C16501 | Keyed clamp connector -Q- | 0.22 kg |

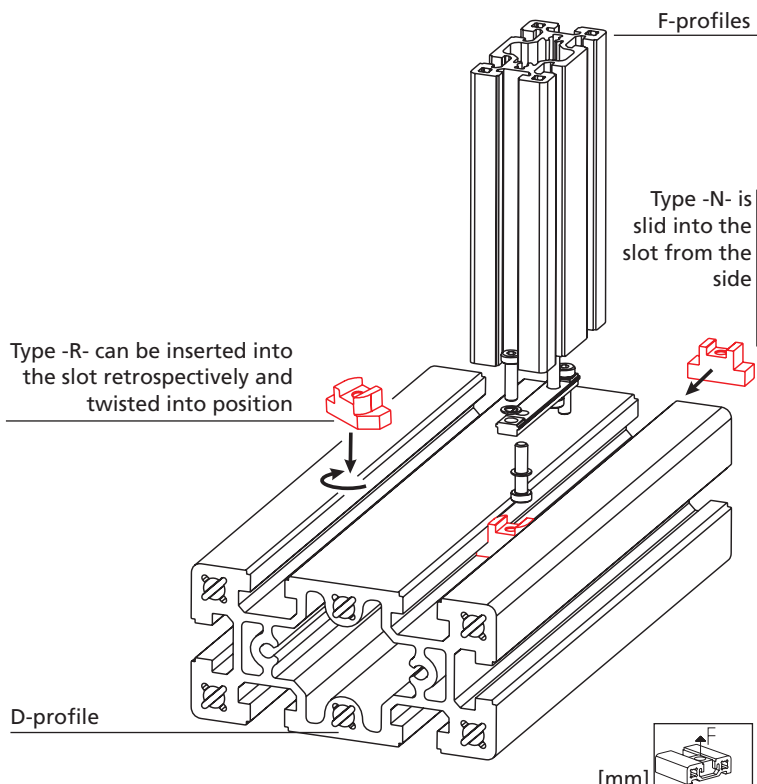
D-Line system components

Adapter slot stone



- For connecting the elements of the profile assembly system with the 10 mm-wide slot to the D-profiles with the 18 mm-wide slot

Material: Galvanised steel
Includes:
1 adapter slot stone



*Slot 18 mm = D-profiles
Slot 10 mm = F-profiles

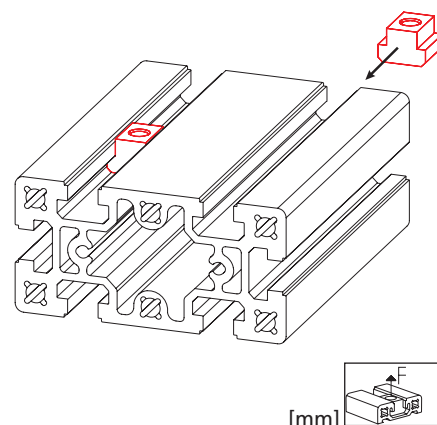
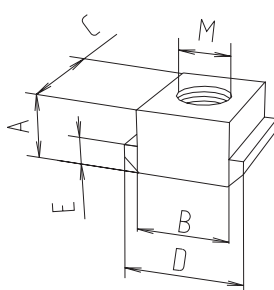
| Code No. | Type | Version | F [N] |
|----------|------|-------------------|-------|
| 4C12201 | -N- | Slot 18 to 10 mm* | 10000 |
| 4C12202 | -R- | Slot 18 to 10 mm* | 9000 |

Slot stone -N- (similar to DIN 508)



- For fixing accessories to a profile.
- This slot stone should be slid into place before assembly

Material: Galvanised steel
Strength class 8

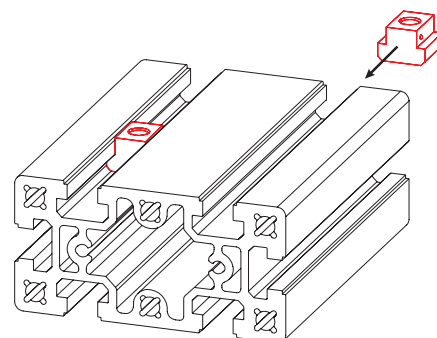
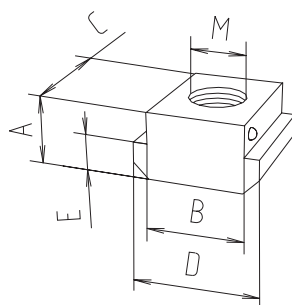


| Code No. | Type | A | B -0,3/-0,6 | C | D | E | M | Weight | F [N] |
|----------|------|------|-------------|----|----|----|-----|--------|-------|
| 4C12203 | M8 | 18.5 | 18 | 28 | 28 | 10 | M8 | 0.1 kg | 20000 |
| 4C12204 | M10 | 18.5 | 18 | 28 | 28 | 10 | M10 | 0.1 kg | 25000 |
| 4C12205 | M12 | 18.5 | 18 | 28 | 28 | 10 | M12 | 0.1 kg | 35000 |

Slot stone -N/S- (similar to DIN 508)

- Same geometry and function as slot stone -N-
- A spring clip prevents the slot stone from slipping
- For easier attachment mounting

Material: Galvanised steel
Strength class 8

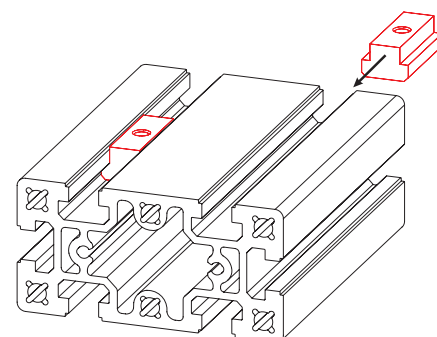
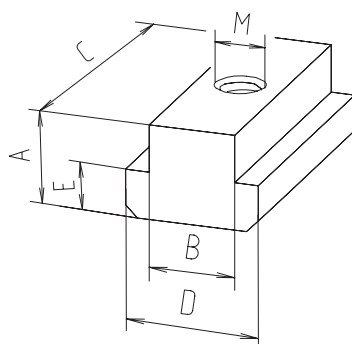


| Code No. | Type | A | B -0,3/-0,6 | C | D | E | M | Weight | F [N] |
|----------|------|------|-------------|----|----|----|-----|--------|-------|
| 4C12206 | M8 | 18.5 | 18 | 28 | 28 | 10 | M8 | 0.1 kg | 20000 |
| 4C12207 | M10 | 18.5 | 18 | 28 | 28 | 10 | M10 | 0.1 kg | 25000 |
| 4C12208 | M12 | 18.5 | 18 | 28 | 28 | 10 | M12 | 0.1 kg | 35000 |

Slot stone -N/L- (similar to DIN 508)

- Same geometry and function as slot stone -N-
- Higher perm. force due to the longer version

Material: Galvanised steel
Strength class 8



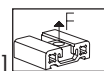
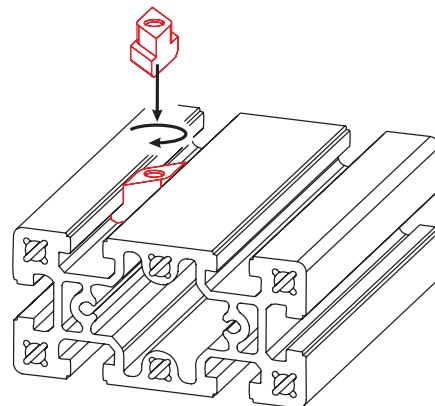
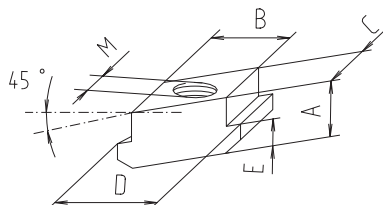
| Code No. | Type | A | B -0,3/-0,6 | C | D | E | M | Weight | F [N] |
|----------|------|------|-------------|----|----|----|-----|--------|-------|
| 4C12209 | M10 | 18.5 | 18 | 56 | 28 | 10 | M10 | 0.2 kg | 25000 |
| 4C12210 | M12 | 18.5 | 18 | 56 | 28 | 10 | M12 | 0.2 kg | 35000 |

D-Line system components

Slot stone -R-

- The slot stone is inserted anywhere in the profile slot
- The action of tightening the slot stone turns it into its final clamping position

Material: Galvanised steel
Strength class 8



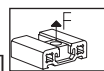
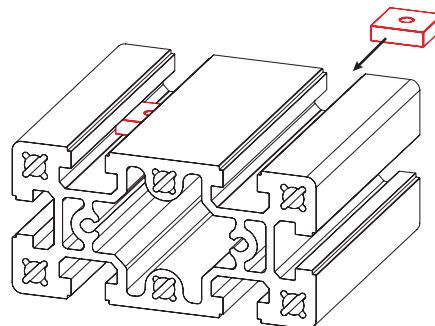
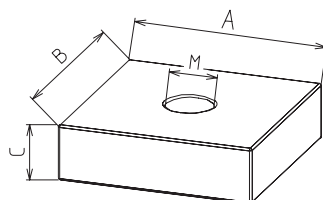
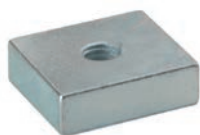
[mm]

| Code No. | Type | A | B -0,3/-0,6 | C | D | E | M | Weight | F [N] |
|----------|------|------|-------------|----|----|----|-----|--------|-------|
| 4C12211 | M8 | 18.5 | 18 | 18 | 28 | 10 | M8 | 0.1 kg | 20000 |
| 4C12212 | M10 | 18.5 | 18 | 18 | 28 | 10 | M10 | 0.1 kg | 25000 |
| 4C12213 | M12 | 18.5 | 18 | 18 | 28 | 10 | M12 | 0.1 kg | 35000 |

Slot stone -VF-

- For fixing attachments under low loads
- Slide into the profile slot from the side

Material: Galvanised steel



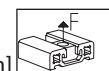
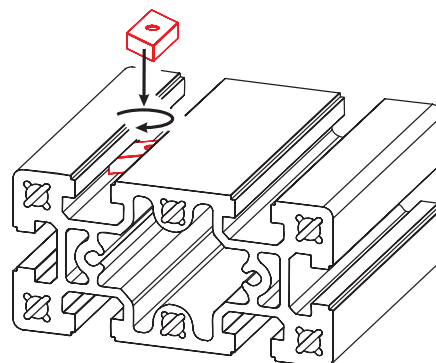
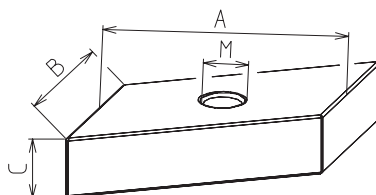
[mm]

| Code No. | Type | A | B | C | M | Weight |
|----------|------|----|----|---|----|---------|
| 4C16204 | M6 | 28 | 28 | 8 | M6 | 0.05 kg |
| 4C16203 | M8 | 28 | 28 | 8 | M8 | 0.04 kg |

Slot stone -RF-

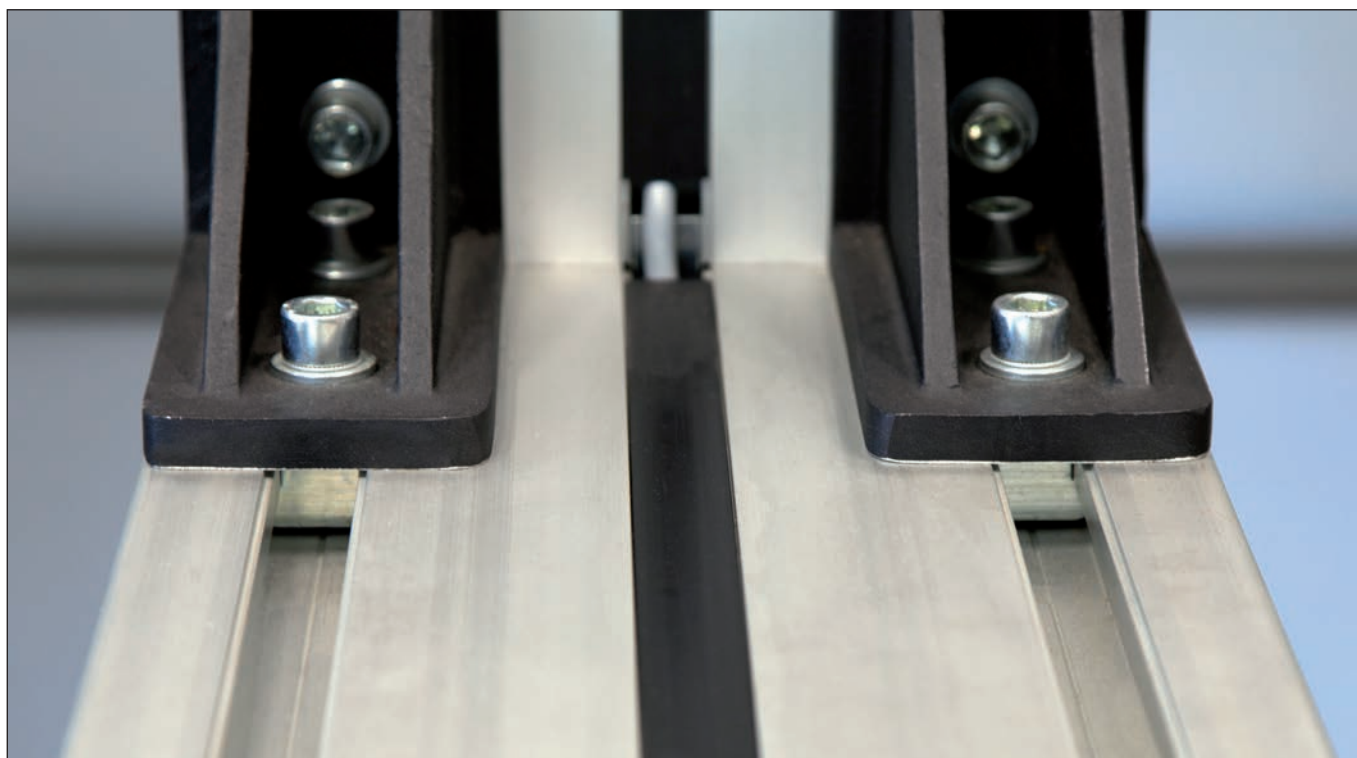
- For fixing attachments under low loads
- The slot stone is inserted anywhere in the profile slot
- The action of tightening the slot stone turns it into its final clamping position

Material: Galvanised steel



[mm]

| Code No. | Type | A | B | C | M | Weight |
|----------|------|----|----|---|----|---------|
| 4C16205 | M6 | 28 | 18 | 8 | M6 | 0.04 kg |
| 4C16206 | M8 | 28 | 18 | 8 | M8 | 0.04 kg |



Connecting plate

Foot connecting plate

- Connecting plate with tapped holes for levelling foot
- Also suitable for eye bolt
- Starting from type 160x240 the plate has 2 tapped holes

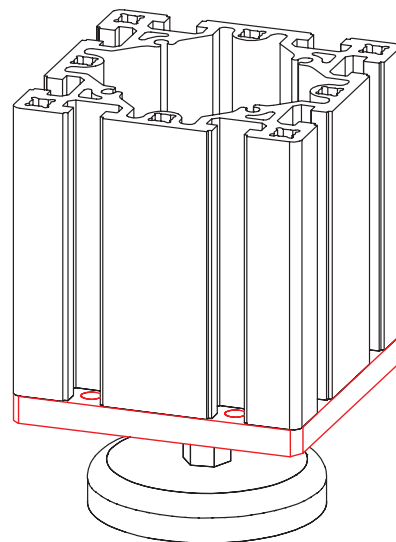
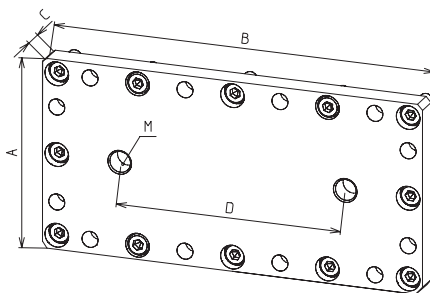
Material:

Galvanised steel

Includes:

Connecting plate with complete fixation set for the fixation to a profile

*The profile 80 x 80 has a screw hole of Ø 7.45 (M8). If a connecting plate/levelling foot M12 is used, this channel has to be drilled out. Preferably, the mentioned drill rig should be used for that.



Setting range 0-28mm,
Max. pressure force 20 KN

| [mm] | | | | | | | |
|----------|--|-----|-----|----|-----|----|--------|
| Code No. | Type | A | B | C | D | M | Weight |
| 4C46405 | 80x80* | 80 | 80 | 15 | 0 | 12 | 0.7 kg |
| 4C16405 | 80x160 | 80 | 160 | 15 | 0 | 20 | 1.4 kg |
| 4C56405 | 80x240 | 80 | 240 | 15 | 130 | 12 | 2.2 kg |
| 4C26405 | 160x160 | 160 | 160 | 15 | 0 | 20 | 2.9 kg |
| 4C66405 | 160x240 | 160 | 240 | 20 | 130 | 20 | 5.8 kg |
| 4C36405 | 160x320 | 160 | 320 | 20 | 190 | 20 | 7.7 kg |
| 4006652 | Drill rig for profile D-80 x 80 / levelling foot M12 | | | | | | |

Base plate

- For taking high supporting forces
- The four levelling feet help to align a structure exactly
- If necessary, the feet can be screwed to the floor

Material: Black powder-coated galvanised steel base plate, reinforced black polyamide foot, galvanised spindle, galvanised fastenings

Includes: Complete base plate with four levelling feet and fastenings for the connection of one profile



Fig. 1

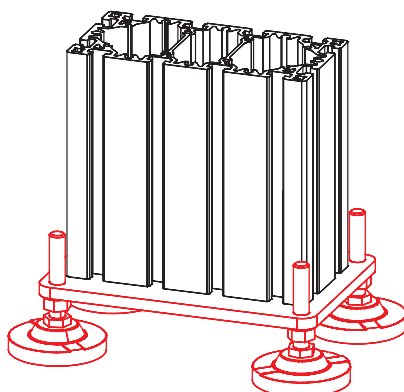


Fig. 2

Base plate with slot stones for the cross connection of one profile 160x320

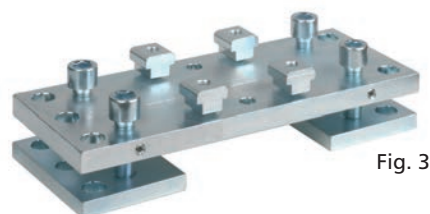
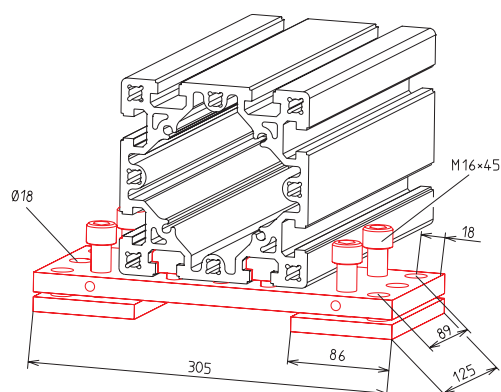
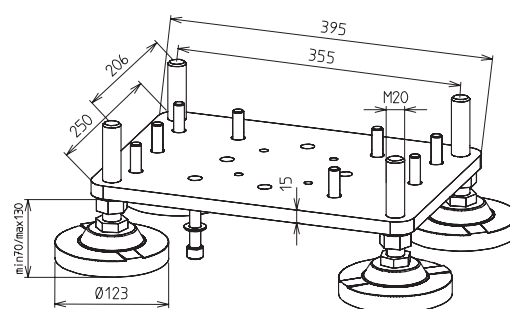


Fig. 3



Fmax per foot
45000 N



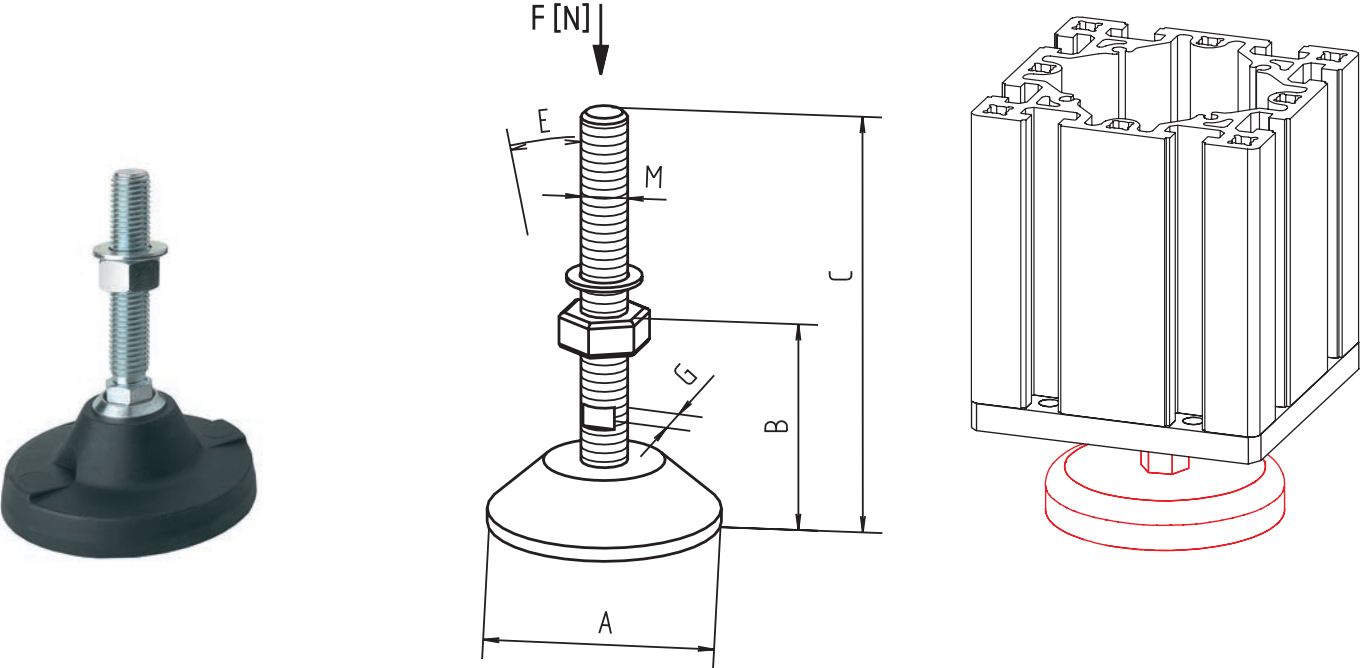
| Code No. | for profile | Weight | Fig. |
|----------|--------------------------|---------|------|
| 4C26406 | 160x160 | 13.3 kg | 1 |
| 4C36408 | 160x240 | 13.6 kg | 1 |
| 4C36406 | 160x320 | 13.7 kg | 1 |
| 4C36407 | 160x320 with slot stones | 14.7 kg | 2 |
| 4C26407 | 160, adjustable | 8.2 kg | 3 |

D-Line system components

Levelling foot

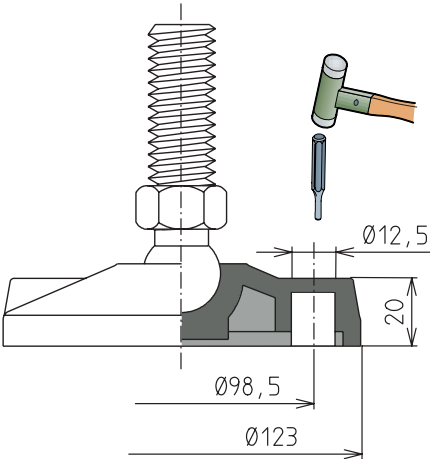
- The levelling feet are available in different versions

Material:
Black plastic foot, galvanised spindle



*With vibration absorber

**With this version, 2 fixing holes can be punched through



| [mm] | | | | | | | | | |
|--------------------------------------|--------------------------------|-----|----|-----|-----|-----|----|--------|-------|
| Code No. | Type | A | B | C | M | E | G | Weight | F [N] |
| 4016301 | M8 | 47 | 15 | 40 | M8 | 15° | – | 0.03 | 1500 |
| 4016303 | M12 | 80 | 24 | 117 | M12 | 15° | 12 | 0.14 | 7000 |
| 4046312 | M20* | 123 | 70 | 215 | M20 | 15° | 16 | 0.70 | 10000 |
| 4696302 | M20 | 123 | 61 | 207 | M20 | 15° | 16 | 0.60 | 20000 |
| Foot with fixing hole** (see sketch) | | | | | | | | | |
| 4C16300 | M20 | 123 | 70 | 155 | M20 | 8° | 22 | 0.60 | 45000 |
| 4016606 | Fasteners 8x60 (4 pcs package) | | | | | | | | |

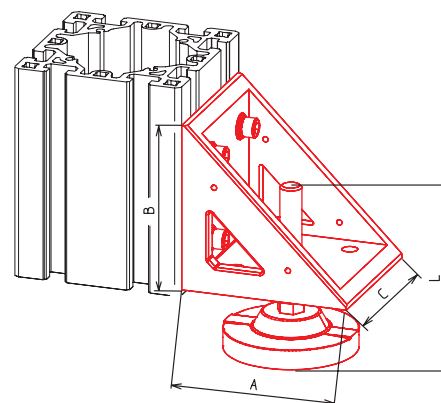
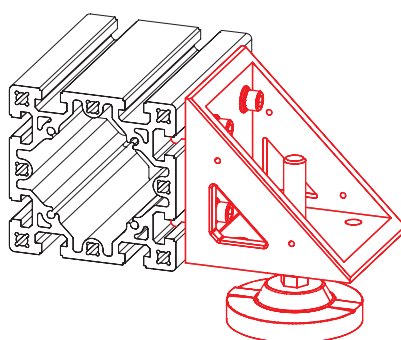
Levelling foot with fixing bracket

- This fixing bracket can be used if it is necessary for structural reasons to attach a foot to the side of the profile

Material: Gravity die-cast aluminium angle bracket,
fastenings: Galvanised spindlet

Includes:

One fixing bracket with levelling foot and fastenings



[mm]

| Code No. | Type | A | B | C | L | Weight |
|----------|------|-----|-----|-----|-----|--------|
| 4C22105 | M20 | 158 | 158 | 148 | 155 | 3.3 kg |



D-Line system components

Cover profile

- Flush slot cover
- Dirt/Dust protection
- Cable fixing in slot

Material: PVC, black

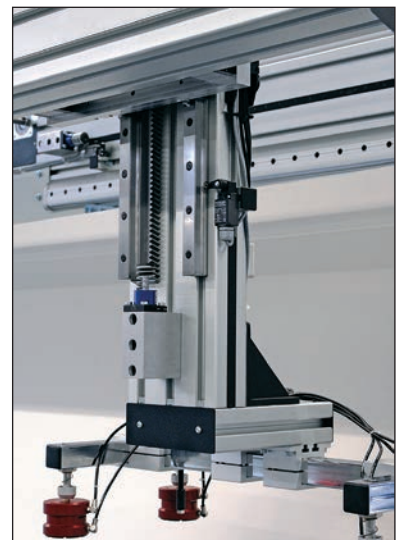
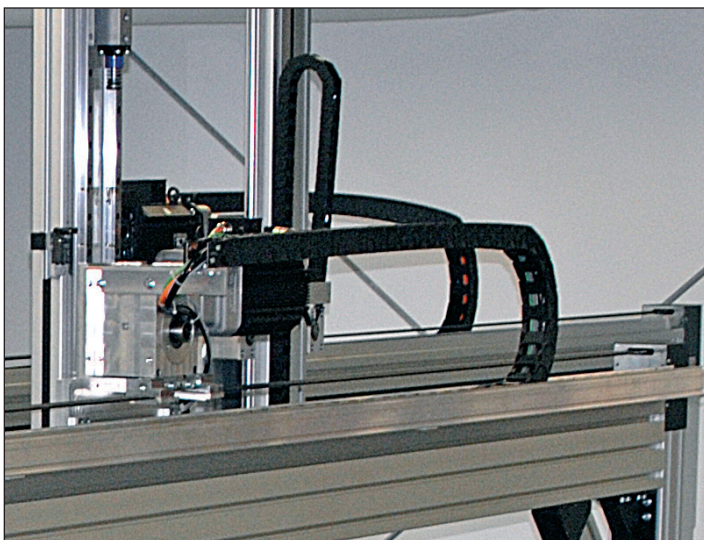


| Code No. | Type |
|----------|---------|
| 4C10501 | 2 m-bar |

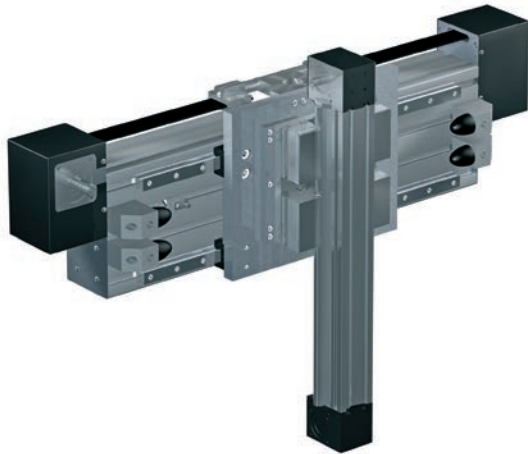
Power track chain

- A few parameters must be set in order to design a suitable power track chain. These include among others: The number and size of the cables to be laid and their smallest permissible bending radii, the weight of the cables, determination of the exact length of the chain and the test as to whether a delivery tray is required.
- We would be delighted to help in selecting a power track chain.

Material: PVC, black

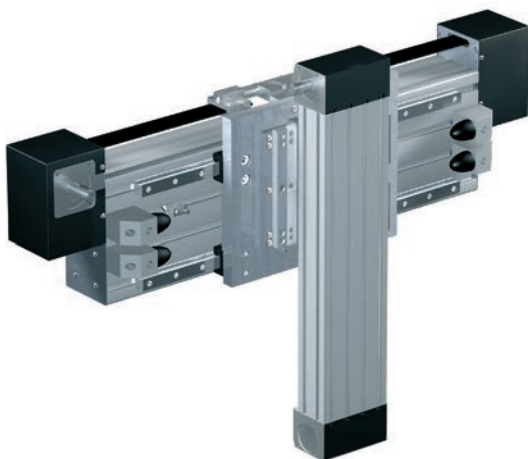


All D-Line products can also be combined with RK standard linear units



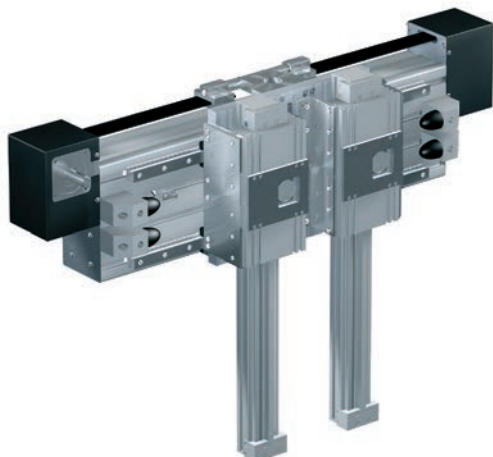
Example 1:

X-axis D-Line 160x320, ball rail guide with timing belt drive, Z-Achse with timing belt unit LMZ 100



Example 2:

X-axis D-Line 160x320, ball rail system with timing belt drive, Z-axis with timing belt unit MultiLine II, optionally with roller guide or ball rail guide

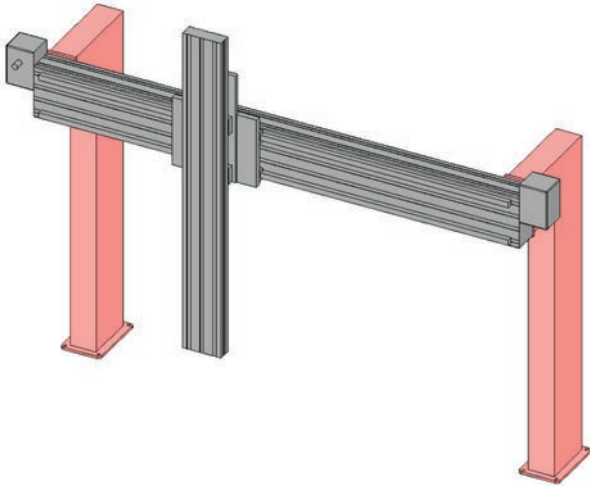


Example 3:

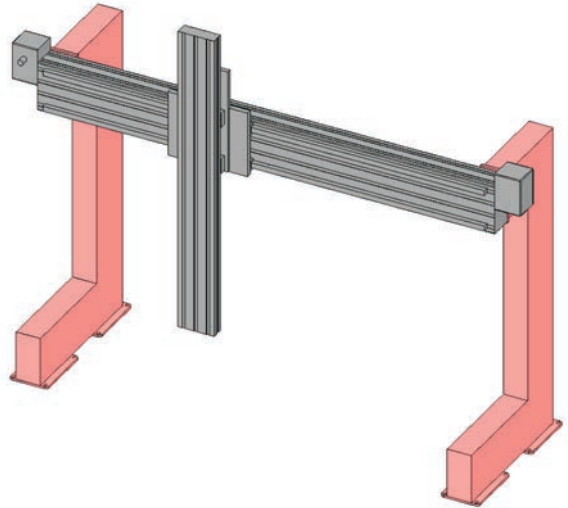
X-axis D-Line 160x320, ball rail guide with timing belt drive,
Z-axis with rack and pinion unit SQ II ZST, two units are fitted in parallel in this case

Stand variants

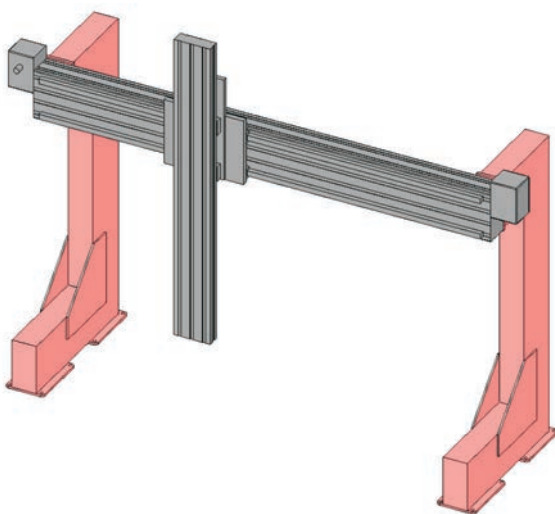
Gantry 1



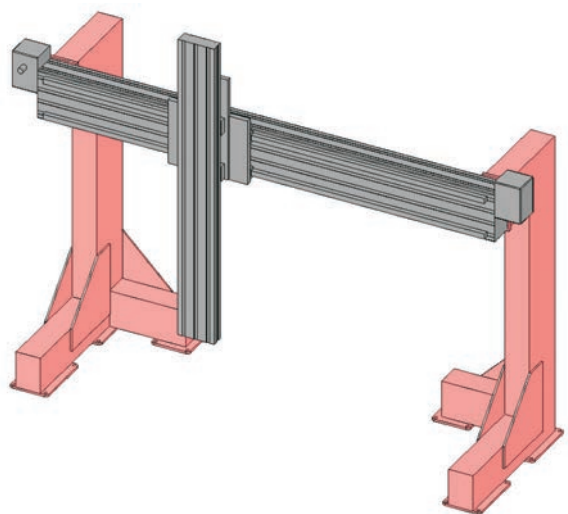
Gantry 2



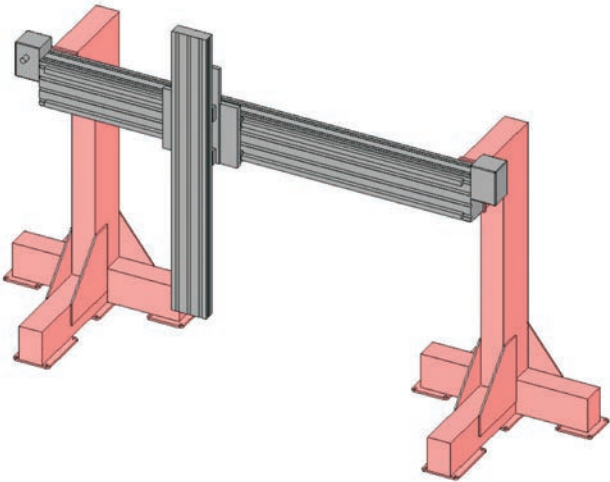
Gantry 3



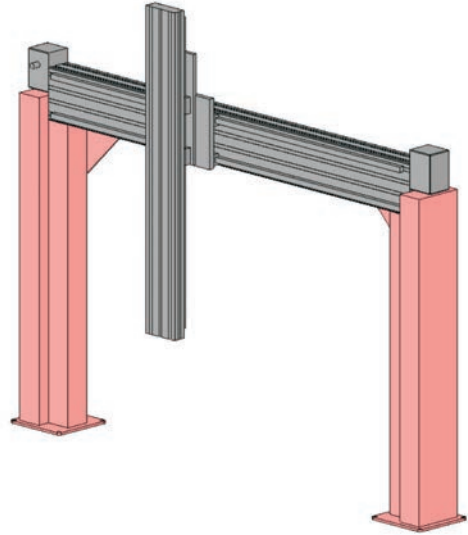
Gantry 4



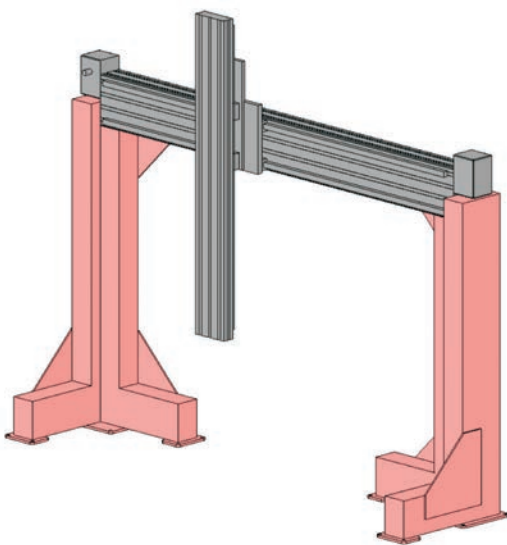
Gantry 5



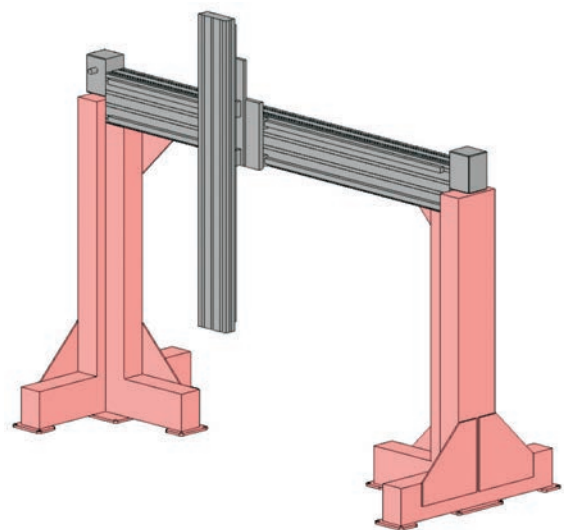
Gantry 6



Gantry 7



Gantry 8



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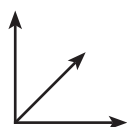
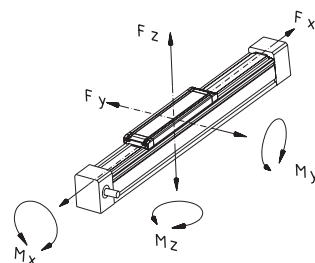
Street:..... Town/City:.....

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Contact person: Dept.:

Observations:.....

Sketch:



Please tick as appropriate

Ambient factors/site of installation/special requirement:

.....

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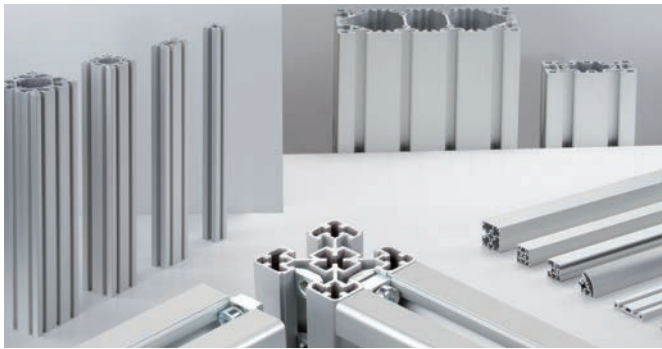
| | | | |
|---|------------------------------------|---------------------------------------|-------------------------------------|
| Installation position: | <input type="radio"/> X-axis | <input type="radio"/> Y-axis | <input type="radio"/> Z-axis |
| Location of guide table: | <input type="radio"/> horizontal | <input type="radio"/> vertical | |
| Drive system: | <input type="radio"/> Belt drive | <input type="radio"/> Rack and pinion | <input type="radio"/> without drive |
| Guide: | <input type="radio"/> Roller guide | <input type="radio"/> Ball rail guide | |
| Transversing speed: | m/s | Acceleration:..... | m/s ² |
| Transversing path: | mm | | cycle time t seconds |
| Load data: | Force F_x |N | Torque M_xNm |
| | Force F_y |N | Torque M_yNm |
| | Force F_z |N | Torque M_zNm |
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- ✓ Multidimensional linear axis modules
- ✓ Complete drive solutions

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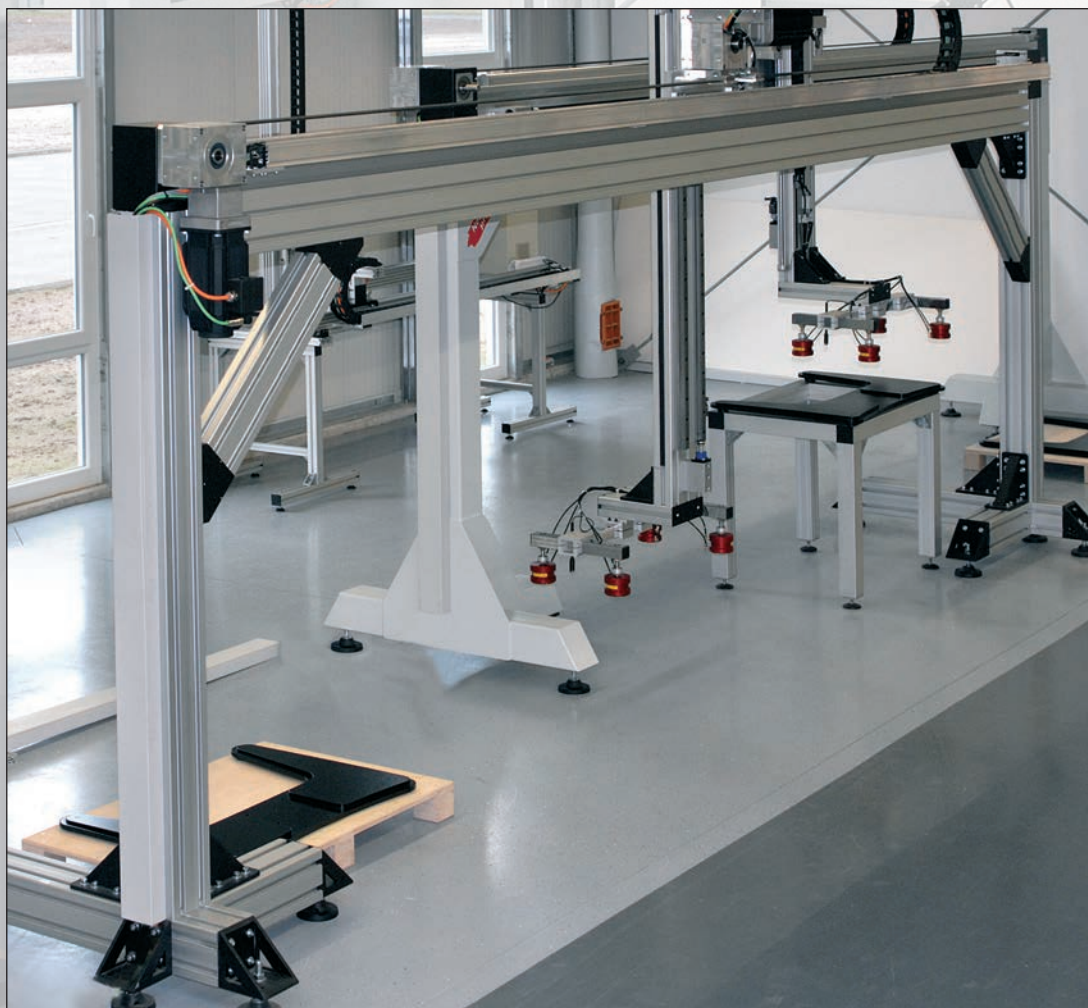
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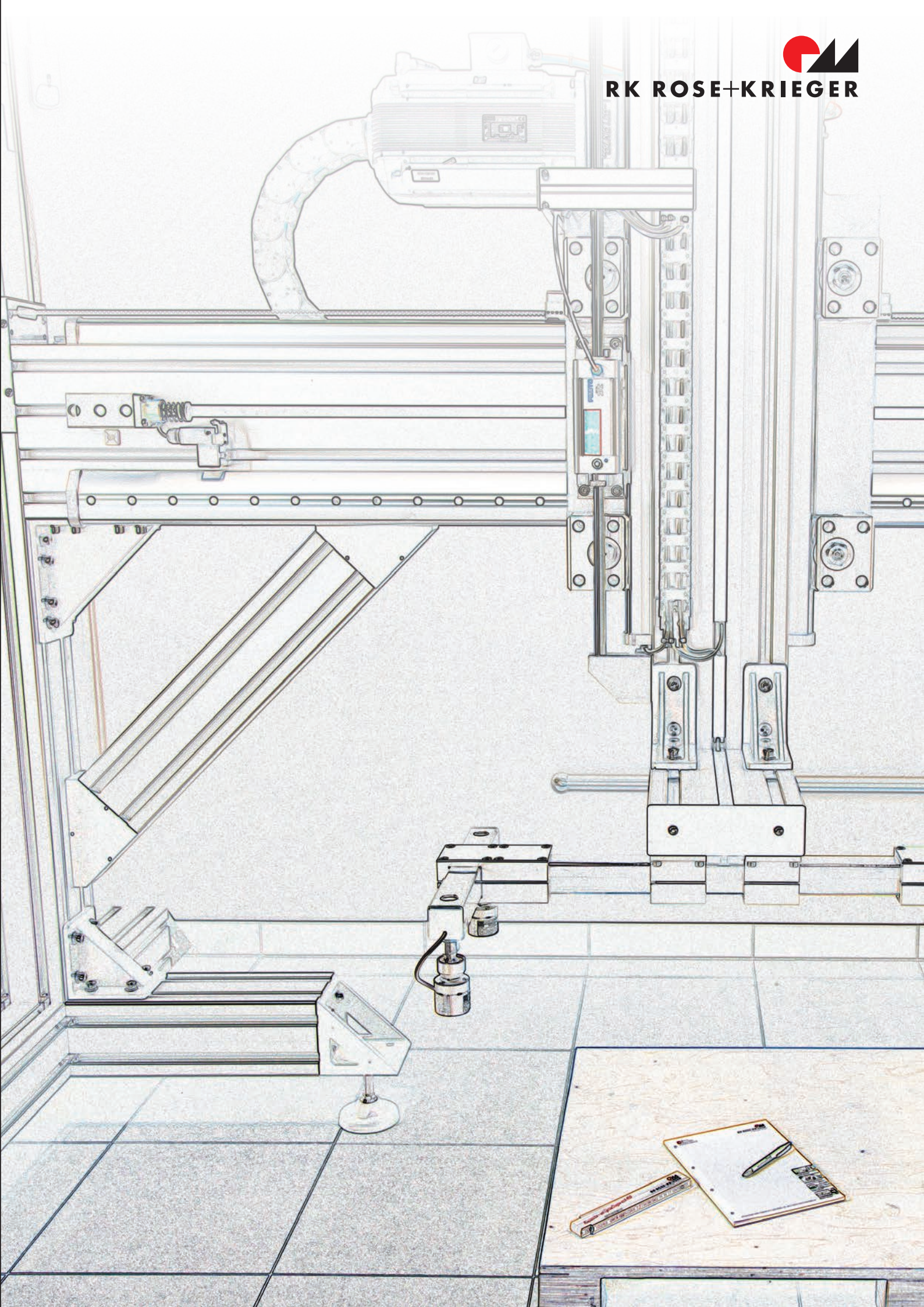
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