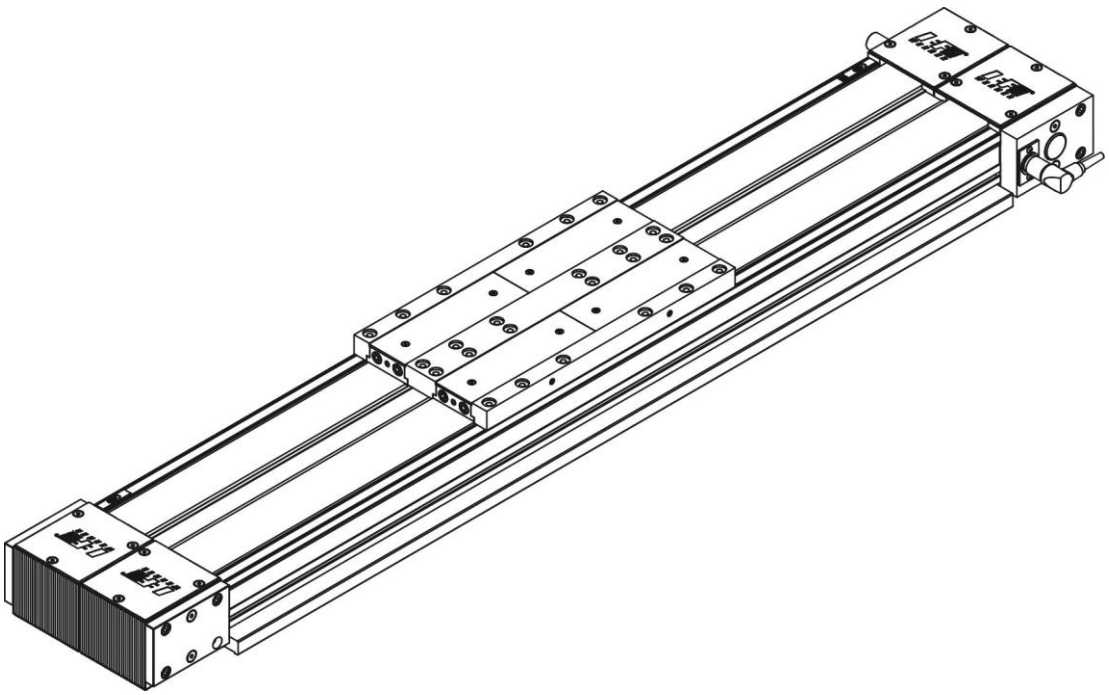
Operating instructions

Product name: Module 160/15 ZR10
Product-ID: TG1002071



Original version DE | Translation of the original instructions

IEF-Werner GmbH | Wendelhofstraße 6 | DE-78120 Furtwangen | www.ief-werner.de

Use

- The operating instructions must be available near by the component at all times.
- The operating instructions are an integral part of the component / device.
- Always use the complete original (or the original translation) of these operating instructions.

Supplier & Manufacturer

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Service

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1 Declaration of incorporation

EC declaration of incorporation in the sense of the EC directive 2006/42/EC (machinery), Annex II B

The manufacturer:
IEF-Werner GmbH
Wendelhofstraße 6
78120 Furtwangen – Germany

hereby declares that the following products (the incomplete machine/component):

Designation	IEF-Werner parts group number
Module 160/15 ZR10	TG1002071

where possible based on the scope of delivery, correspond to the following basic requirements of the directive on Machinery (2006/42/EC):
Annex I, item: 1.1.2; 1.1.3; 1.1.5; 1.3.2; 1.3.4; 1.5.1; 1.7.3; 1.7.4;

The incomplete machine also corresponds to the following further directives:
Directive 2004/108/EC of the council, dated 15 December 2004, for harmonisation of the legal provisions of the member states on electromagnetic compatibility.
Directive 2006/95/EC of the council, dated 12 December 2006, for harmonisation of the legislation of the member states regarding electrical equipment for use within specified voltage thresholds.

The technical documents were generated according to Annex VII part B and may be electronically submitted to the national authorities upon justified request.

List of some applied harmonised standards:
EN ISO 12100-1,-2 / EN ISO 13857 / EN ISO 13850 / EN 60201-1

Commissioning of the incomplete machine (component/device) delivered by us is not permitted until it has been determined that the overall system into which the component is installed meets the basic safety and health protection requirements according to Annex I of the above EC directive 2006/42/EC.

Name of the documentation officer: Frank Reichelt, technical editor
Address of the documentation officer: see manufacturer's address

Furtwangen, November 2014 Manfred Bär (Manager)

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2 Safety

2.1 Definition of Warning Notes

⚠ DANGER

Indicates danger.

Non-observance of the safety provisions causes death.

⚠ WARNING

Indicates potential danger.

Non-observance of the safety provisions may cause death or severe injury

⚠ CAUTION

Indicates potential danger.

Non-observance of the safety provisions may cause injury.

ATTENTION

Indicates potential danger.

Non-observance of the safety provisions may cause property damage.

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2.2 General Warning Notes

The module 160/15 ZR10 must only be commissioned by specialists who have received safety-technical instructions and are able to assess potential dangers. Furthermore, all chapters of these operating instructions must have been read and understood completely.

⚠ DANGER

Warning of dangerous electrical voltage.

The system must be powered down for all assembly, disassembly or repair work.
Non-observance of the safety provisions may cause death.

⚠ WARNING

Linear modules must only be operated with their protective device/s.

Linear modules always have to be operated in connection with suitable safety devices (e.g., safety cell, protective room, protective housing, light curtain).

⚠ CAUTION

Warning of hot surface.

During operation, the heated drive, in particular of stepper motors may cause skin burns when touched. Install a protective device, if possible! Do not touch the marked areas or wait for an adequate cooling time.

ATTENTION

Do not remove plugs or clamps when live.

Motor connectors or clamps must not be inserted or disconnected when live.
Risk of burning of the contacts and risk of flying sparks

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2.2.1 Special Hazard Warnings

In addition, this Original User's Manual also contains the following special hazard warning:

⚠ WARNING

Danger from crushing of limbs.

These points of the components pose the danger of crushing limbs in operation.

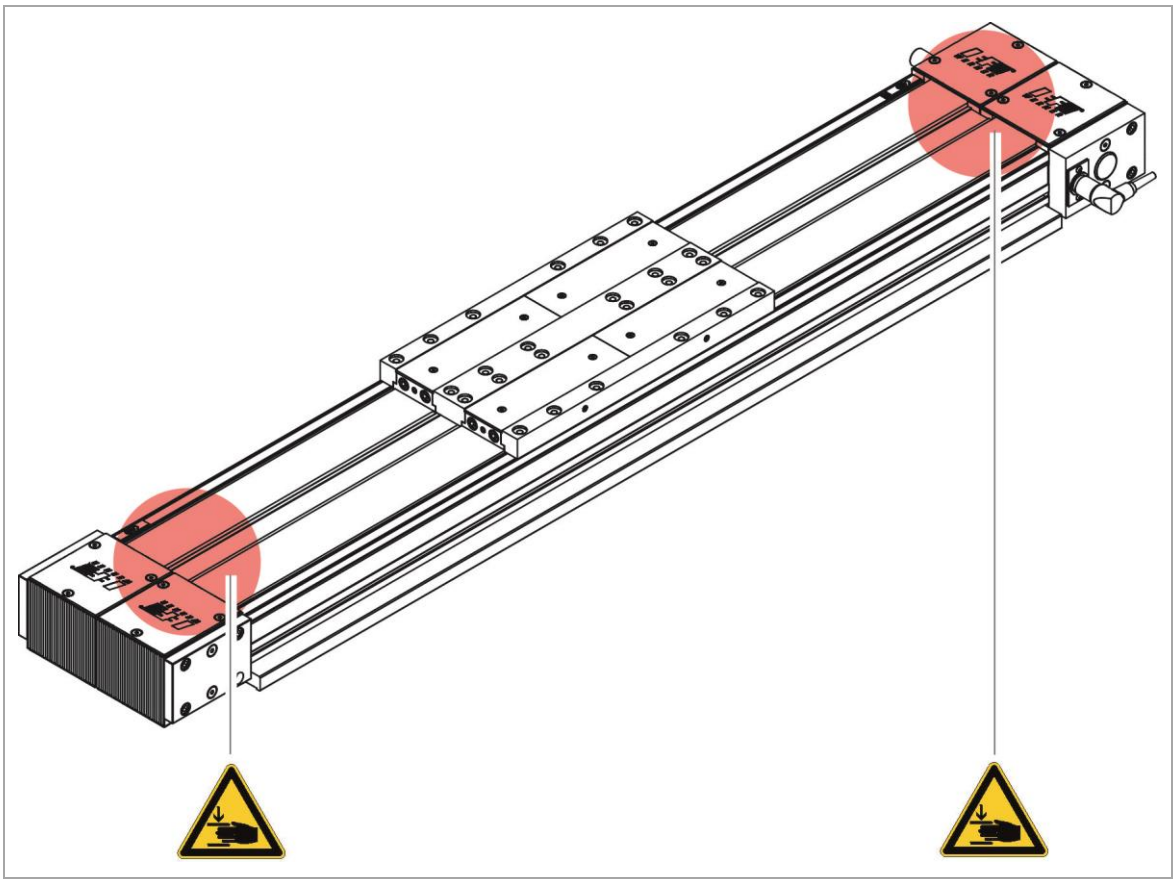

Figure 1 Dangers on Module 160/15 ZR10

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3 Intended Use

The linear unit module 160/15 ZR10 was designed for use in the commercial area. Use of a high-quality guide warrants high dynamics and good running behaviour. The internal guide system is protected from contamination by the toothed belt. Additionally, the guide elements have special seals that protect the guide tracks from gross contamination. Use of the linear unit module 160/15 ZR10 under conditions with increased contamination and abrasive dusts, however, should be avoided because there are no further protective measures like bellows, etc.

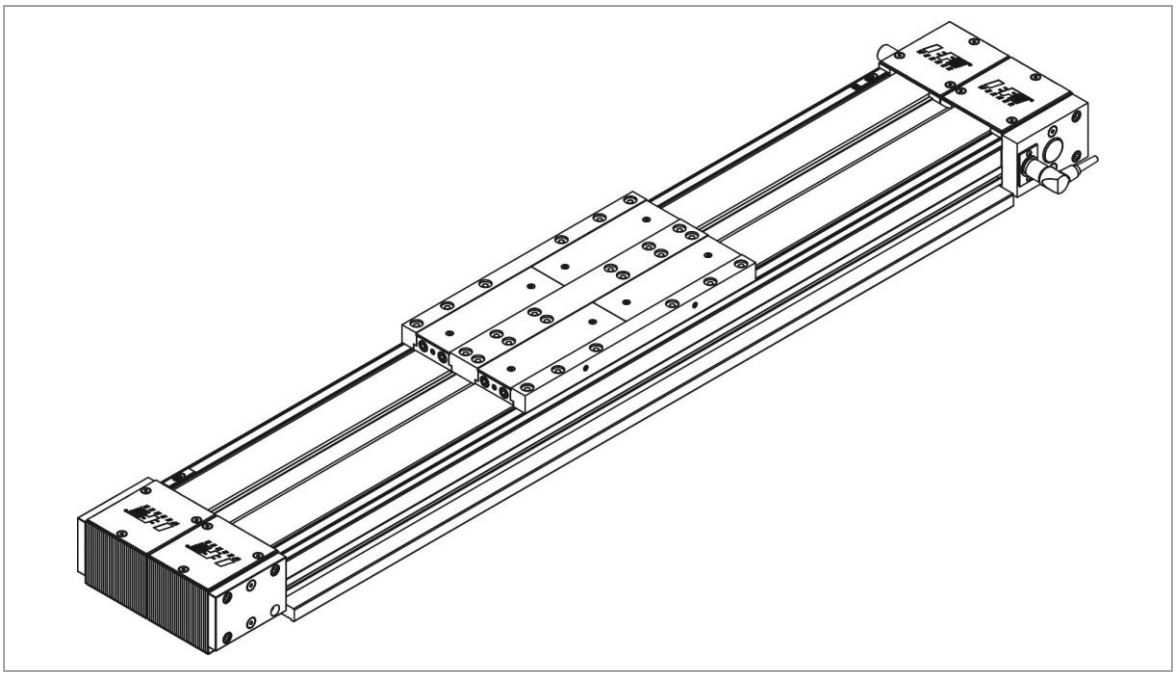

Figure 2 Linear unit Module 160/15 ZR10

When using the linear unit Module 160/15 ZR10, attention must be paid to the fact that torques generated as a result of the design of the linear unit cause increased tilting of the carriage to the side. By the use of two parallel guide rails acting upon the carriage, tilting moments may be well absorbed.

The areas of use for the linear module 160/15 ZR10 are accordingly diverse. They range from stop adjustment in the wood industry to equipment systems for SMD-components, joining and pressing processes in precision mechanics, loading and unloading stations of tool machines, to manipulators for the packaging industry.

3.1 Reasonably foressable misuse

The linear module 160/15 ZR10 is not to be used for certain applications such as the transport of persons and animals or as a pressing/bending device for cold working of metal.

Use of the linear module without additional measures is also not possible in special fields of application, such as the chemical or food industry or in explosive atmospheres.

In case of doubt, consult the manufacturer.

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4 Description of the Main Assemblies

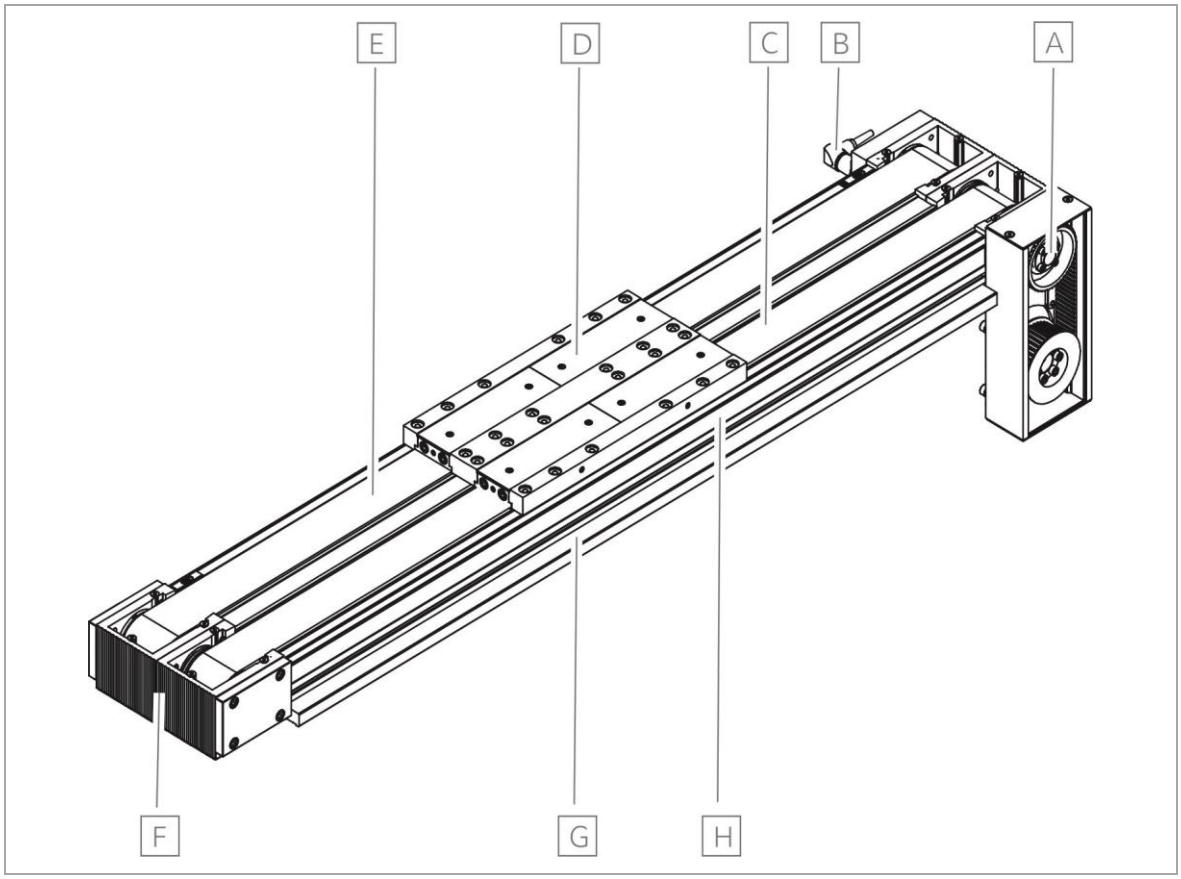

Figure 3 Main assembly groups of the module

A Belt gear
(several installation variants possible)
B Limit switch connector
C Toothed belt / drive train
D Carriage unit
E Revolving toothed belt
F Deflection unit
G Profile
H Basic body

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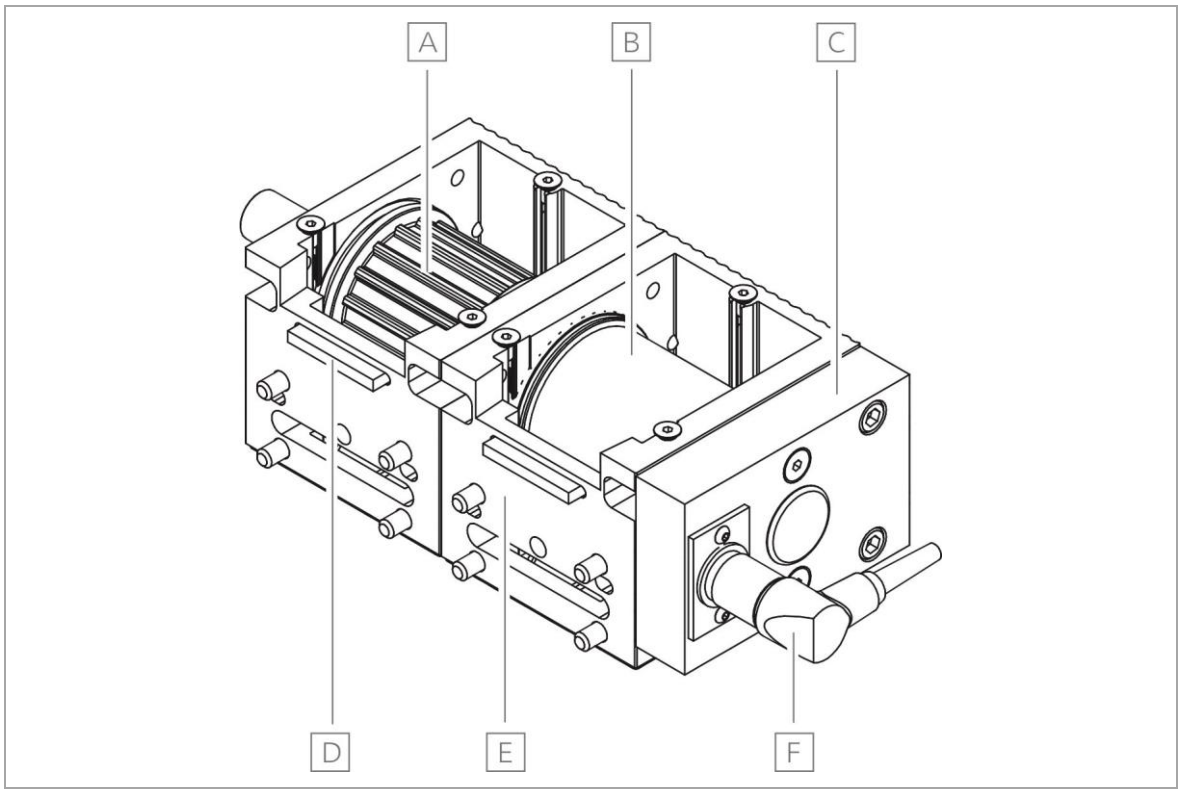

Figure 4 Drive unit

A Driven toothed disk
B Roller for the revolving toothed belt
C Bearing cover
D Damper
E Housing
F Limit switch connector

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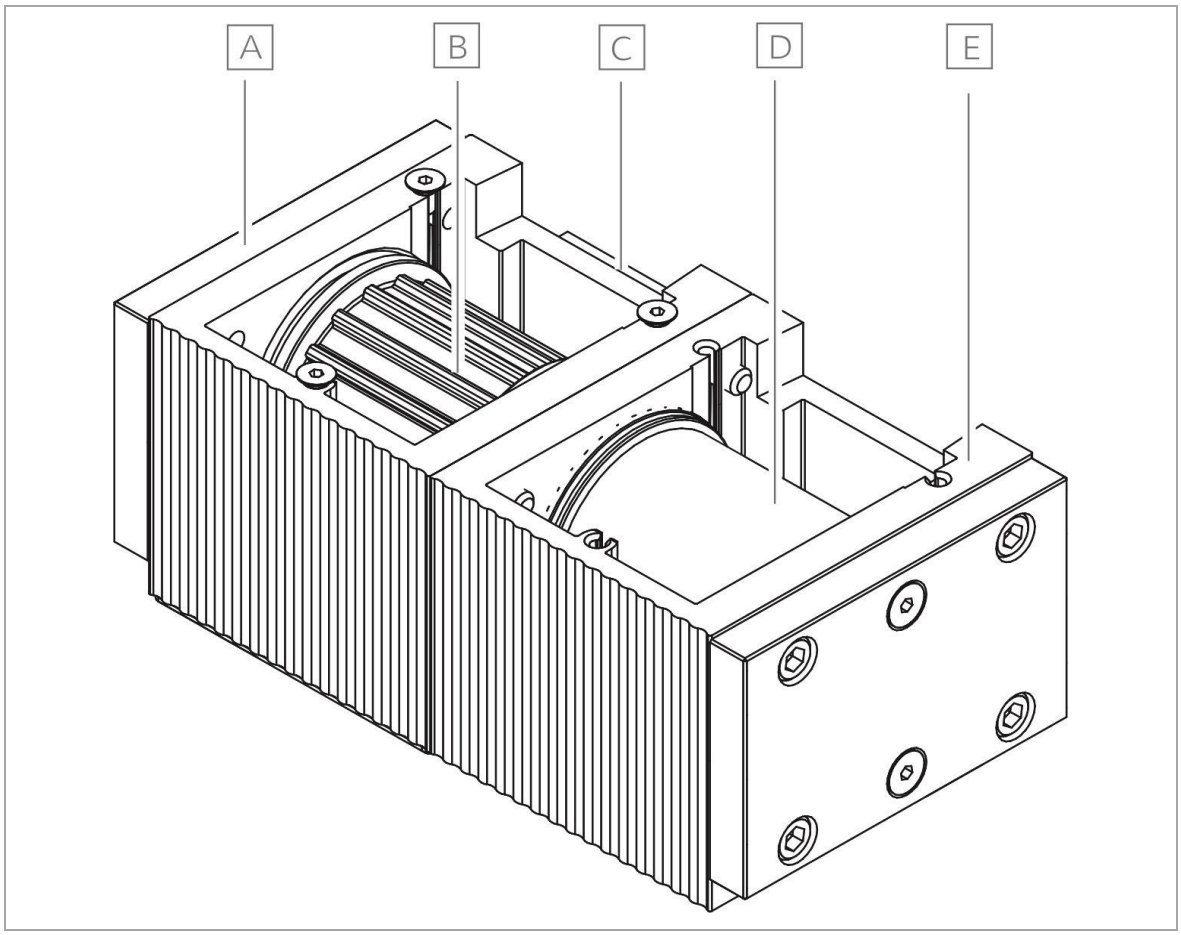

Figure 5 Deflection unit

A Bearing cover
B Driving toothed disk
C Damper
D Roller for the revolving toothed belt
E Housing

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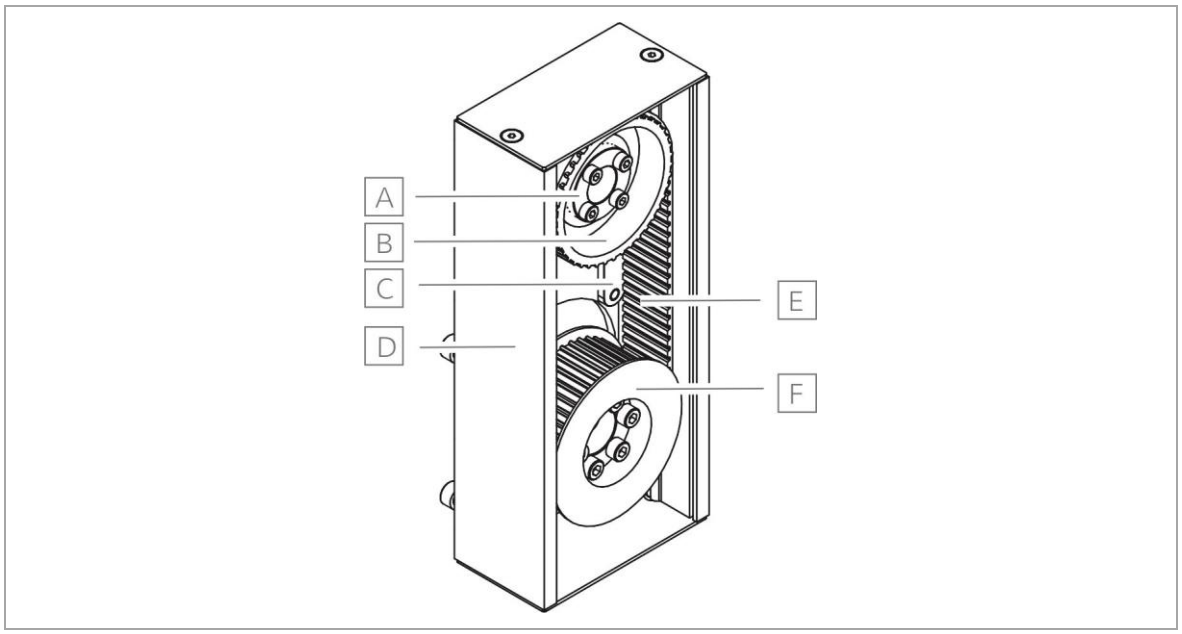

Figure 6 Belt gear

A Clamping set
B Toothed disk
C Sliding block
D Gearbox housing
E Toothed belt
F Toothed disk (for mounting on motor or planetary gear)

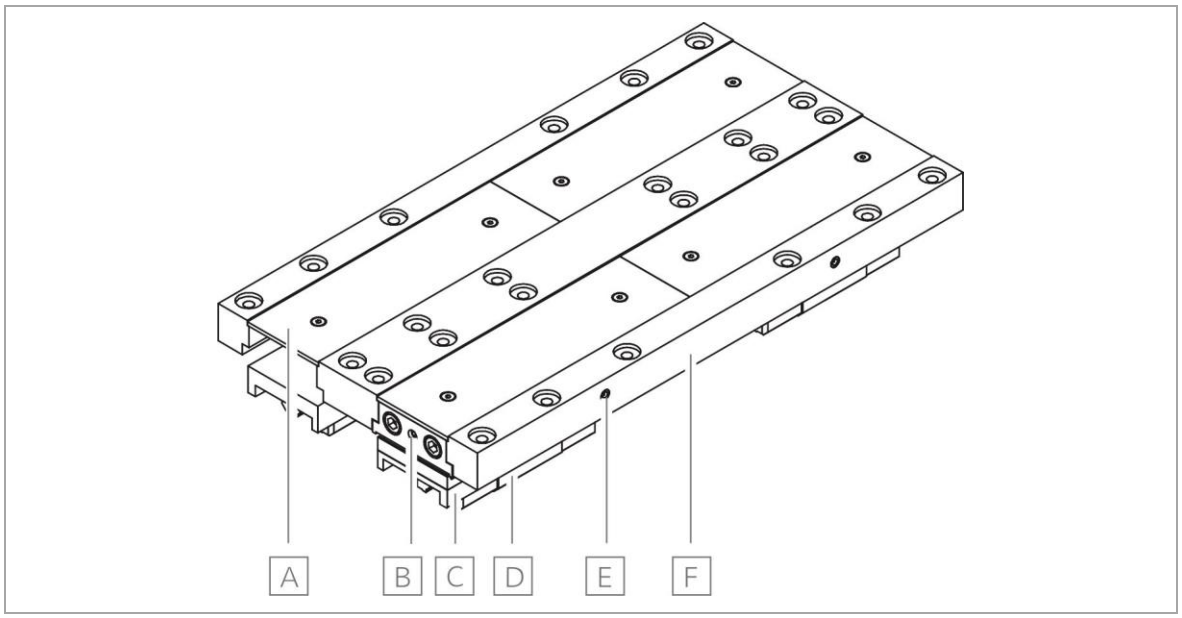

Figure 7 Slide unit

A Carriage cover
B Pressure piece
C Distance plate
D Guide carriage (4 pieces)
E Lubrication nipple
F Carriage plate

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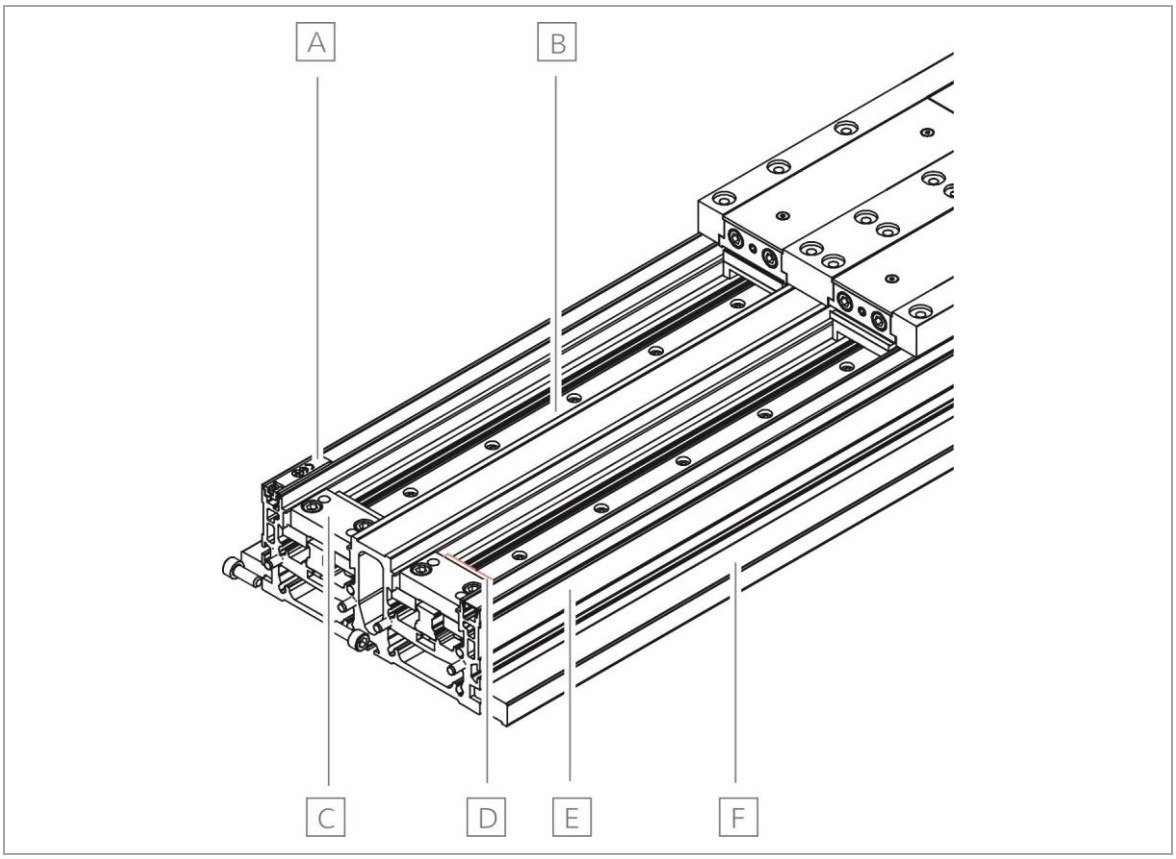

Figure 8 Basic body

A Inductive switch/ limit switch
B Rail guide
C Adjustable stop (optional)
D Damper
E Basic body
F Profile

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5 Assembly Instructions

5.1 Installation Position

The installation position is optional, i.e. the linear module 160/15 ZR10 can be used horizontally as well as vertically.

ATTENTION

In the vertical installation position, use only motors with spring-operated brake to prevent the lowering of the drive in de-energized condition!

5.2 Overview of motor attachment versions

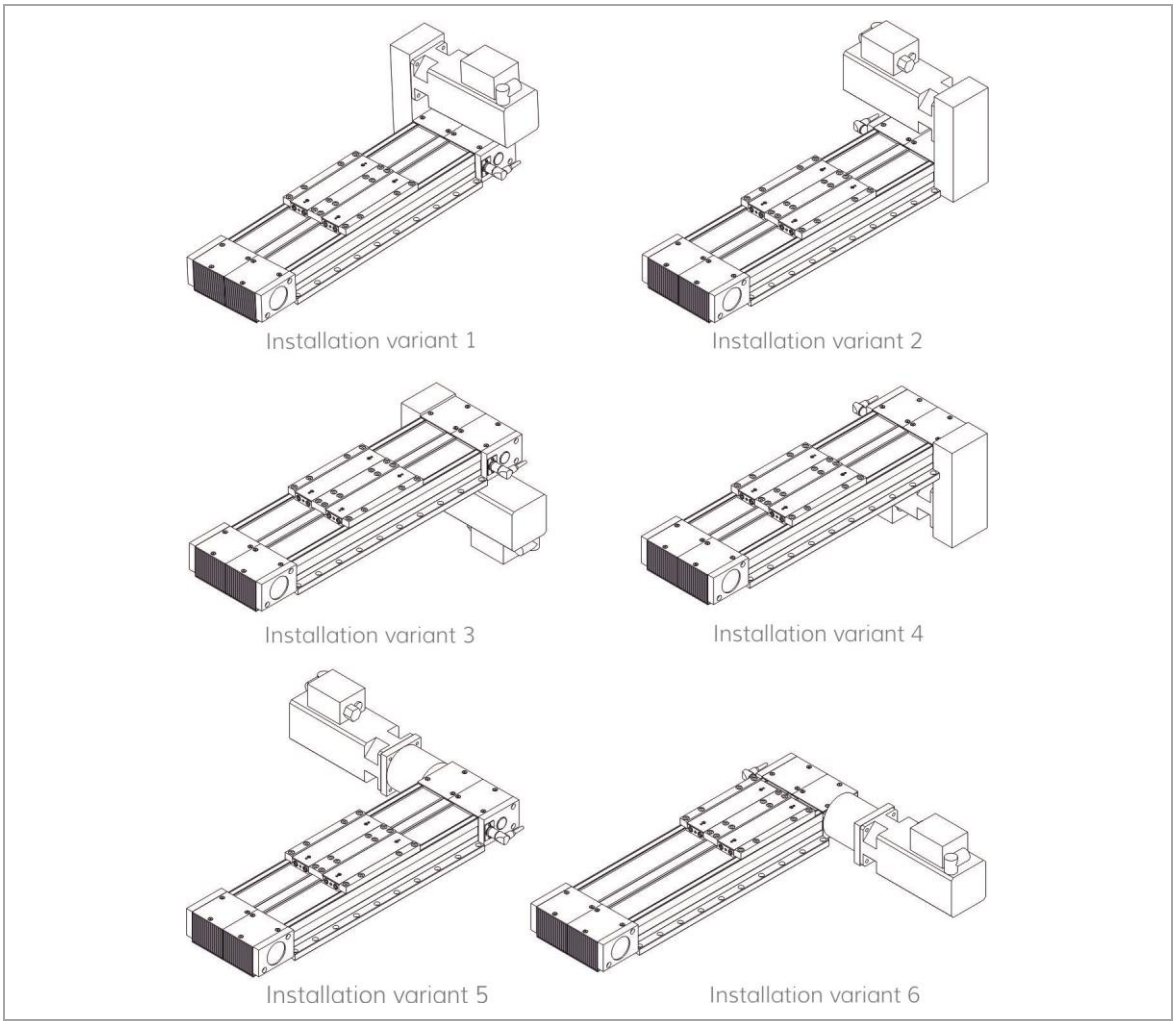

Figure 9 Installation variants Module 160/15 ZR10

5.2.1 Module 160/15 ZR10, Installation variant 1

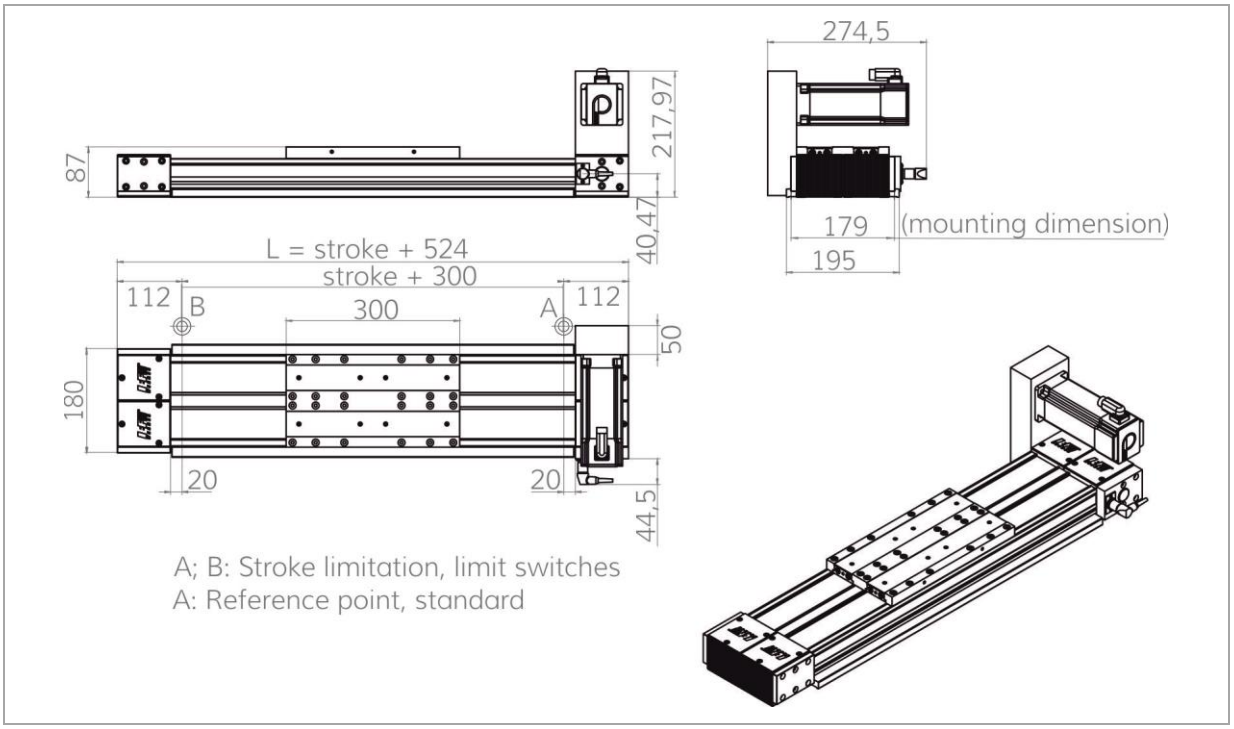

Figure 10 Module 160/15 ZR10, installation variant 1

5.2.2 Module 160/15 ZR10 Installation variant 5

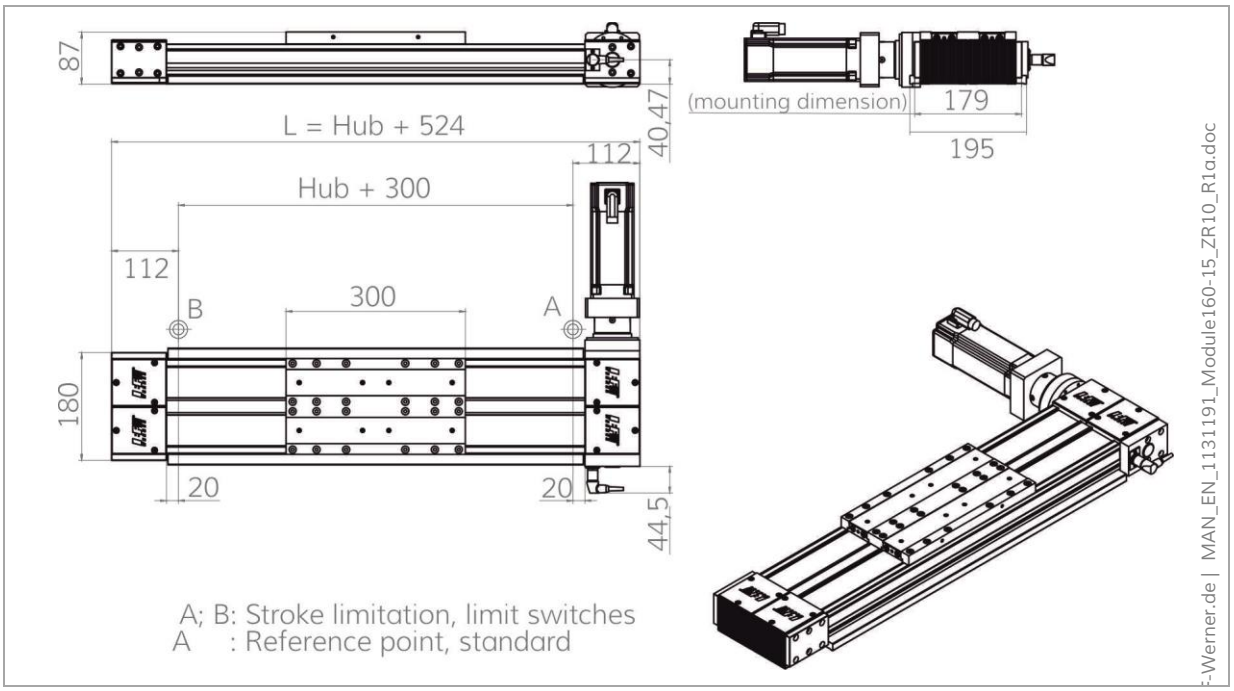

Figure 11 Module 160/15 ZR10, installation variant 5

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5.3 Attachment

In most use cases, the linear module 160/15 ZR10 is attached to a level mounting surface with clamping profiles/clamping elements. The carriage moves freely.

The linear module should not be attached otherwise, e.g. by additional bores in the basic unit. These bores will nearly always lead to clamping of the guide basis and damage to internal parts of the module.

The clamping surface should have a levelness of 0.1 mm/m².

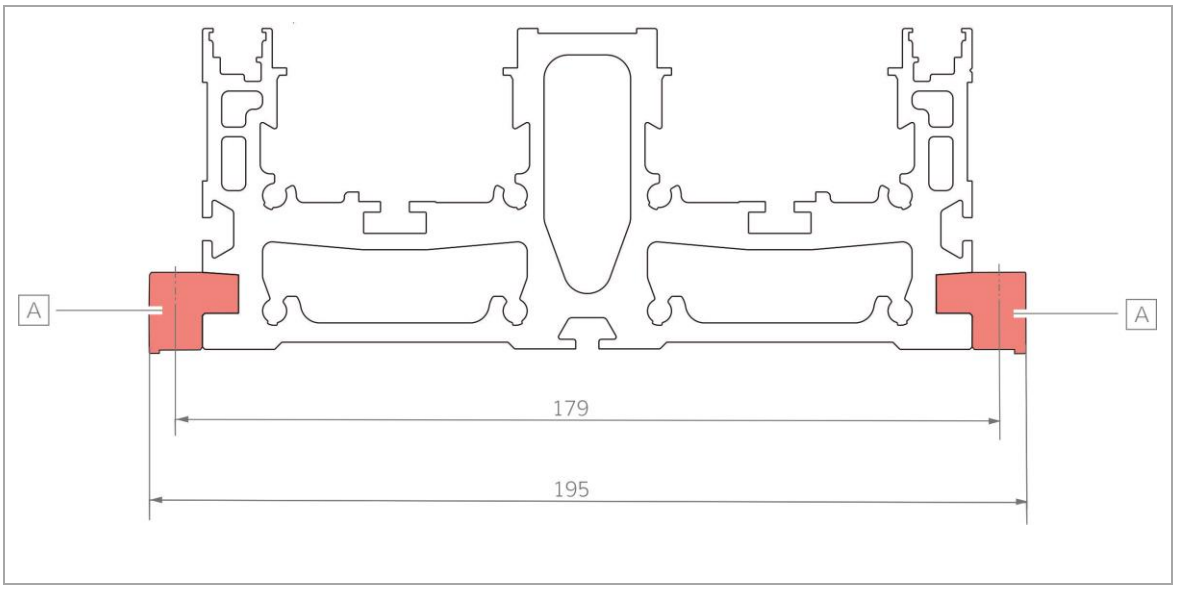

Figure 12 Cross-section with clamping elements and dimensions (Module 160/15 ZR10)

A Clamping element

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5.3.1 Installation of actuators

Actuators to be installed on the linear module (pick-up modules, cylinders) are usually attached to the linear unit using the drill template on the carriage.

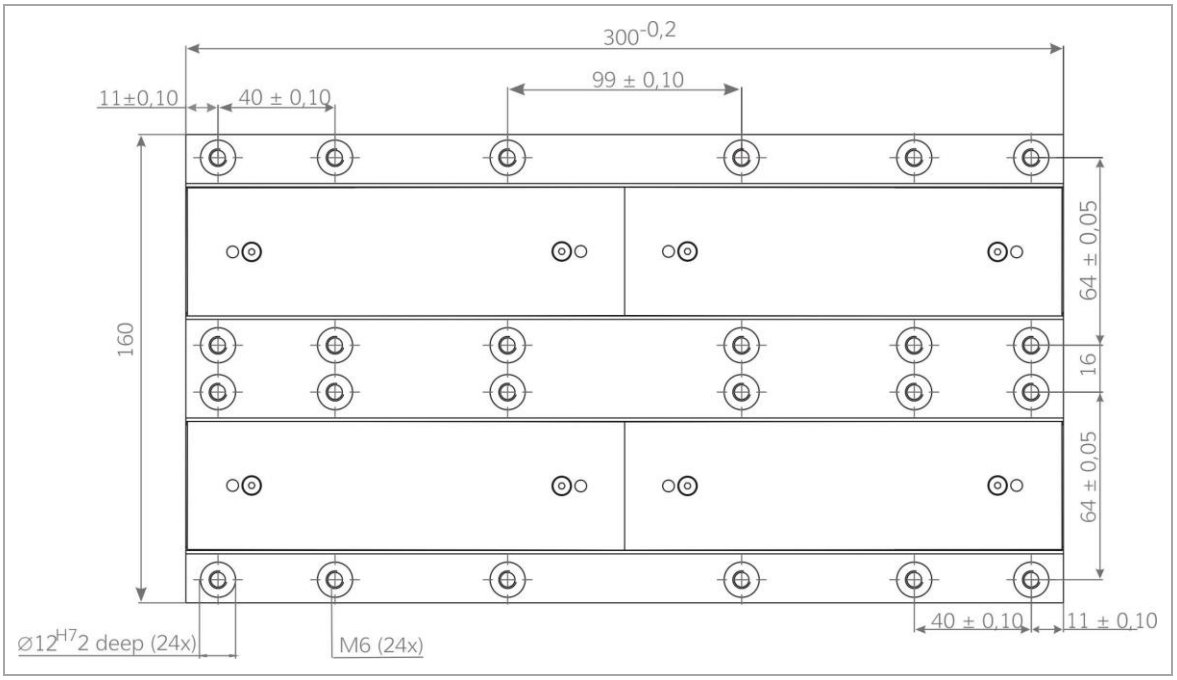

Figure 13 Drilling pattern standard carriage

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5.4 Wiring

5.4.1 Motors

ATTENTION

The electrical connection of the motors is performed according to the motor data sheet.
For customer-specific motors, the data sheet must be requested from the respective manufacturer and the motor connected accordingly.

5.4.2 Initiators

Inductive proximity switches (PNP normally closed contacts, article no.: 025165) are used as standard limit switches for the running path. These switches are no safety limit switches pursuant to EN60204-1. Optionally, (also subsequently) an additional reference point switch (PNP normally open contact article no.: 726744), can be installed in the linear module.

The active button is marked with a coloured circle. Normally closed contacts are marked with a green dot, normally open contacts with a red dot. The initiators and their supply lines are protected in a cable channel integrated in the basic unit, and are wired to a joint plug.

A plastic strip serves to cover the cable channel. An initiator can be replaced or relocated easily after removal of this plastic strip from the cable channel.

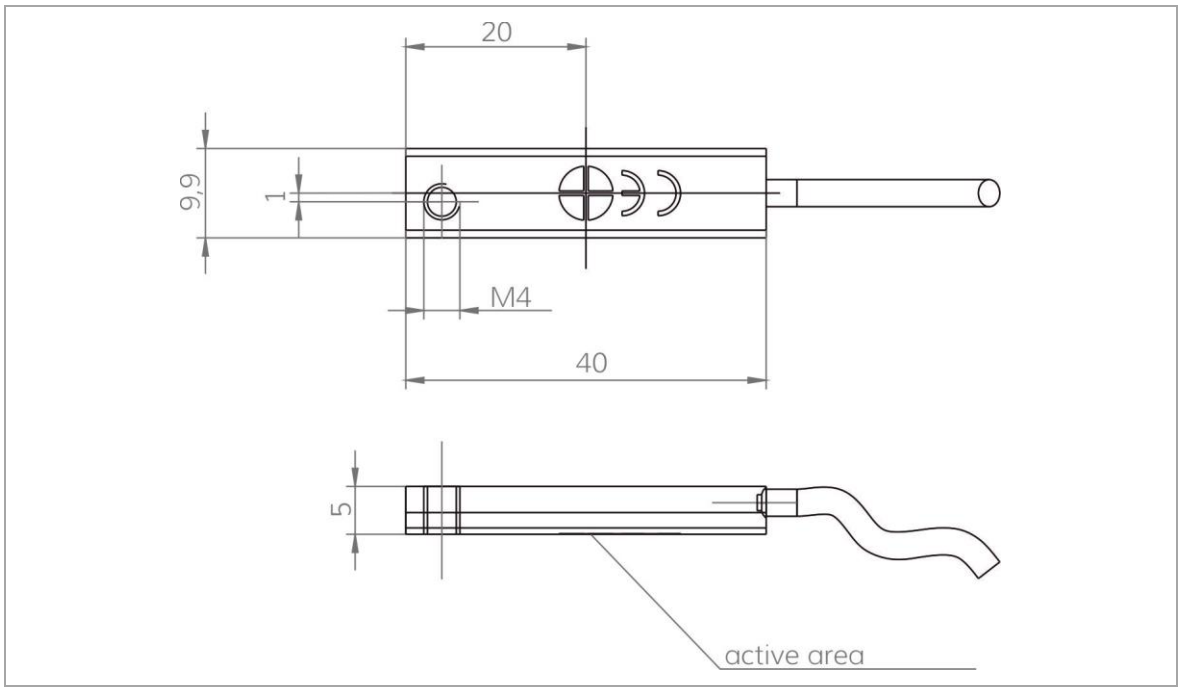

Figure 14 Scaled sketch of inductive proximity switch

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Figure 15 Pin assignment PNP normally closed contact

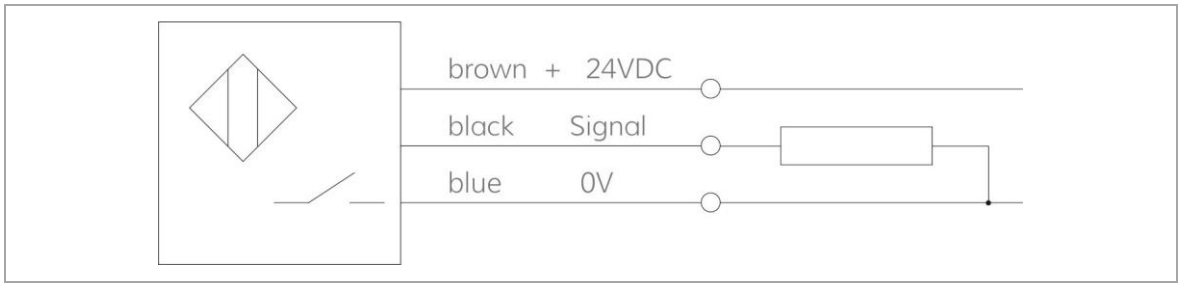

Figure 16 Pin assignment PNP normally open contact

Technical Data of Initiators

Parameter	Value
Operating voltage incl. residual ripple	(10 ... 30) VDC ≤ 15 %
Current load capacity	I_a ≤ 200 mA
Voltage drop at I_a max.	≤ 2.5 V
Switching frequency	≤ 1000 Hz
Own current consumption	≤ 15 mA
Nominal operating distance on steel	1.5 mm ± 10 %
Switching hysteresis	(3 ... 20) %
Reproducibility (U = const.)	± 0.01 mm
Operating temperature	- 25 °C ... + 70 °C
Protection class	IP 65
Short-circuit proof	yes
Protected against polarity reversal	yes

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Limit Switch Pins

The limit position switch is assigned as follows:

Pin-No.	Assignment	IEF-Werner cables
1	+ 24 V	brown
2	Limit switch negative direction	green
3	0 V	white
4	Limit switch positive direction	yellow
5	Reference switch	grey

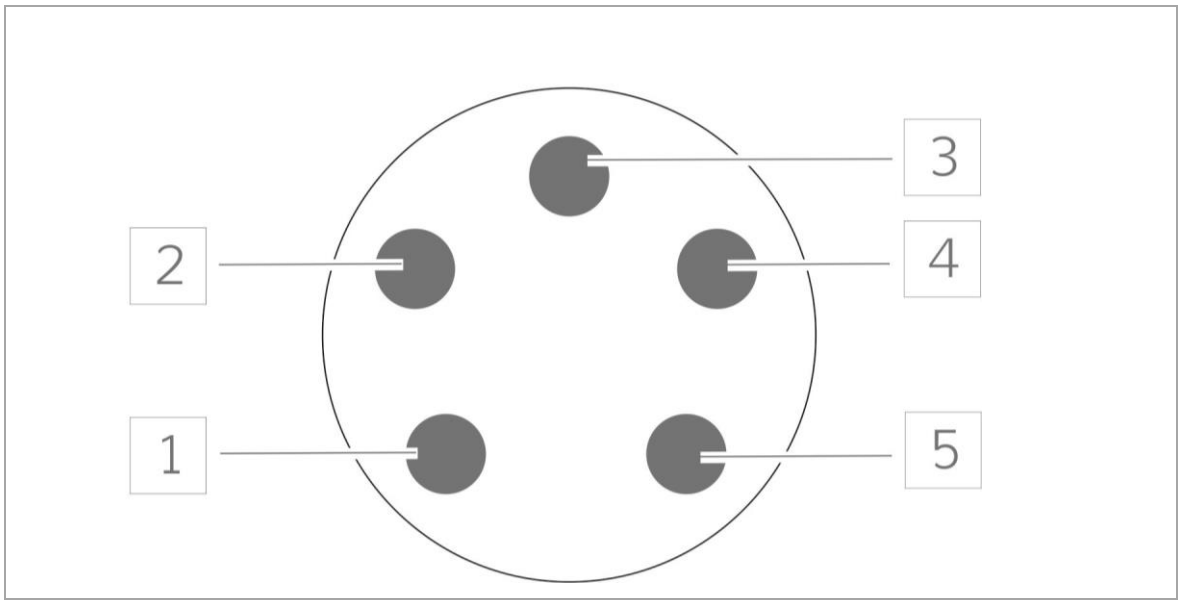

Figure 17 Pin assignment of limit switch

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5.4.3 Cable routing

For all moving cables, suitable cable routing has to be used to effectively prevent cable breaks.
The minimum radius r_{min} for cable routing chains is calculated for IEF-Werner cables according to the following formula:

$$r_{min} \geq 10 \times \text{cable diameter}$$

When different cables are used, EN 60204 must be observed. In addition, it must be ensured that a space reserve of 30% is kept free within the routing chains. A strain relief for the cables has to be attached at the outlet of the cable routing chain.

We recommend purchasing genuine cables and energy chains of IEF-Werner GmbH.
Please contact us. We will gladly advise you.

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5.5 Technical Data

5.5.1 Tightening Torques for Screw Connections

Screw 8.8	Tightening torque [Nm]
M3	1.1
M4	2.5
M5	5.0
M6	8.5
M8	21.0
M10	41.0
M12	71.0
Screw 12.9	Tightening torque [Nm]
M4 (guide rail attachment)	4.9

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5.5.2 Technical Data of the Linear Module 160/15 ZR10

Parameter	Value
Repeating accuracy	+/- 0.05 mm
Weight (without motor)	11,8 Kg
Weight increase per 100 mm stroke	1.4 Kg
Maximum movement speed	5 m/s
Maximum acceleration	40 m/s²
Max. transferable feed force at max. movement speed (5 m/s)	1505 N
Guide stiffness x	Tilting of the carriage unit at lateral load (see Figure 22 , 35)
Feed constant (V_k) (feed per turn of the pinion)	160 mm
Idle torque	2.3 Nm
Mass inertia	42.5 kg • cm^2
Area inertias of the profile cross-section at the centre of gravity	
Ix =	1196016 mm^4
Iy =	8689482 mm^4

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Type plate

The type labels of the module 160/15 ZR10 are attached on as follows positions (gear, flange):

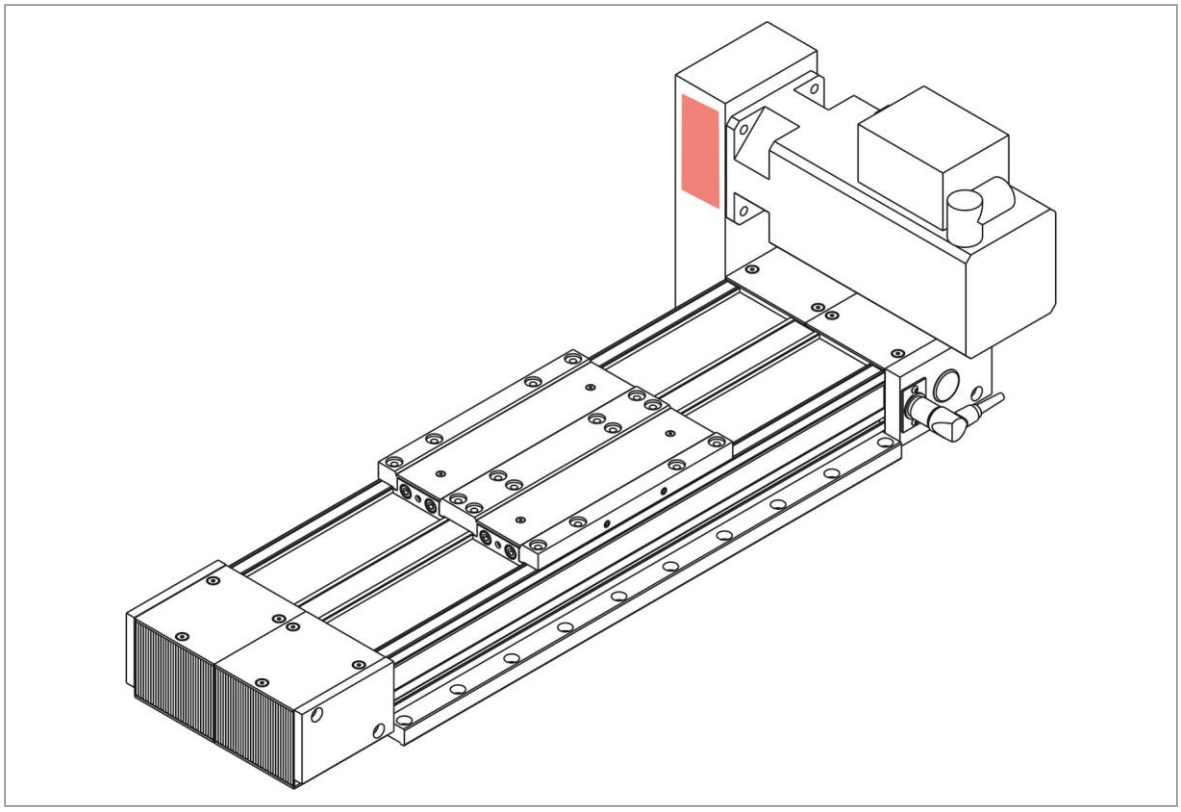

Figure 18 Position of the type plate

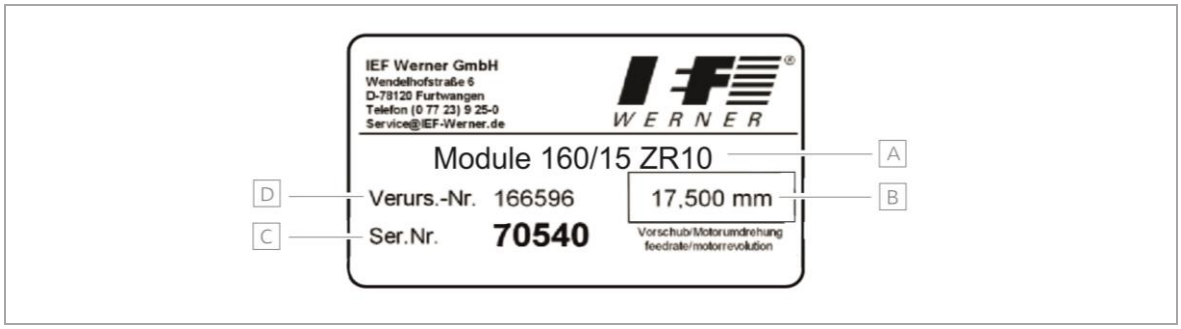

Figure 19 Type plate

A Type designation
B Feed/ motor revs
C Serial number
D Order number

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5.5.3 Technical Data when using a Planetary Gear

Before commissioning, observe the possible input speeds of the gear manufacturers. Too-high input speeds can lead to increased wear at the gear and/or thermal problems.

The precision of the linear unit is influenced by the reverse play of the gears.

Example:

The gear reverse play (S) is 9 angle minutes.

How high is the reverse play at the carriage of the linear unit?

Infeed constant of the linear unit (Vk): 140 mm

Reverse play at the carriage = (Vk • S) / (360x60)
= (140 mm • 9) / (360x60)
= 0.058 mm

Consider the information of the respective gear manufacturer in any case.

e.g. http://www.neugart.de/index.php/gb/products/Standard-gearboxes/PSN
WITTENSTEIN alpha - Home

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5.5.4 Axis Distances and Tooth Numbers

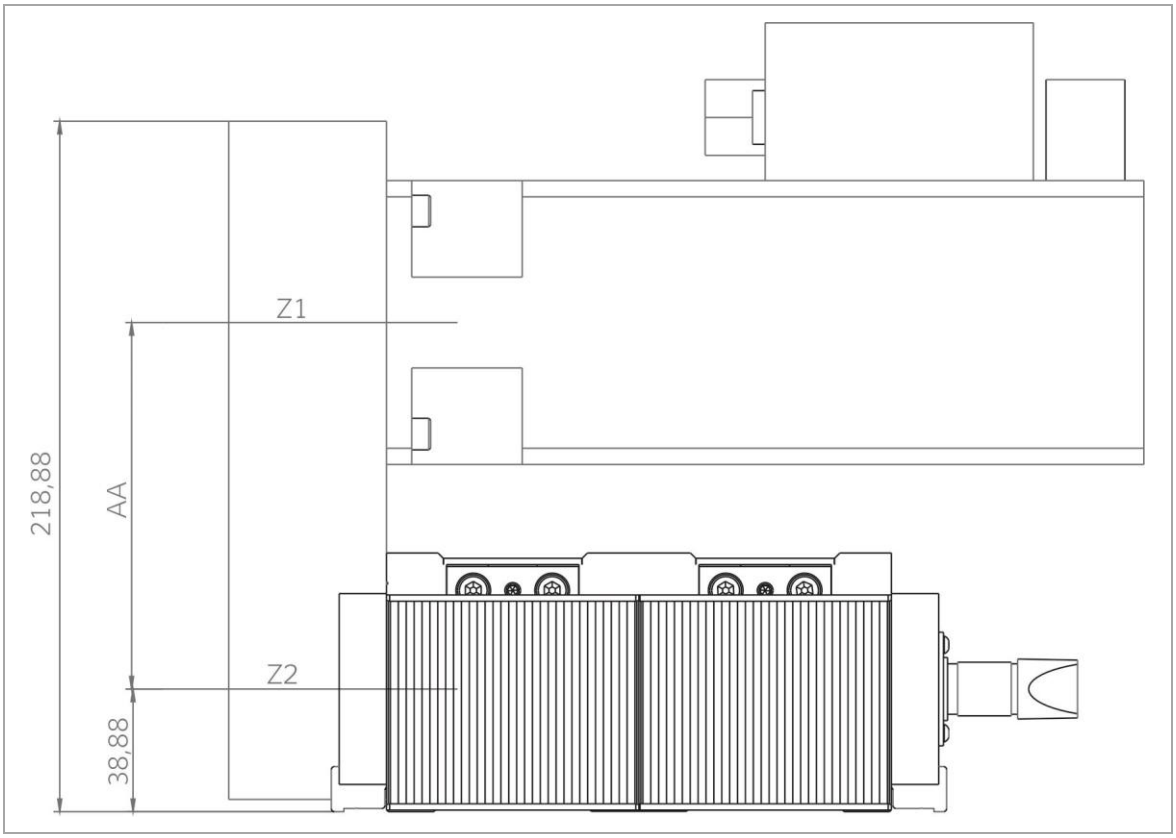

Figure 20 Explanations on the table axis distances, Part group no.: 1000475

Comply with the following axis distances in the required standard reductions:

i	Toothed disc Z1	Toothed disc Z2	Drilled hole drive	Length of toothed belt	AA [mm]	feed constant [mm]
1:1	42	42	max ø32 mm	450 mm	120	160
2,1:1	20	42	max. ø16 mm	390 mm	116.18	76.190
2,625:1	16	42	max. ø14 mm	390 mm	120.73	60.952
3:1	14	42	max. ø12 mm	375 mm	115.35	53.333

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5.5.5 Load cases

Torques and carrying capacities

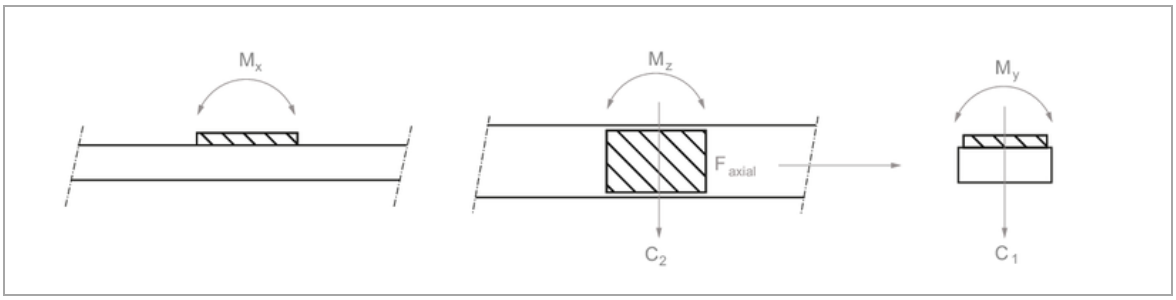

Figure 21 Torques and carrying capacities

The table below shows possible torques and carrying capacities:

Parameter	Value
Torque Mx	200 Nm
Torque My	150 Nm
Torque Mz	200 Nm
Carrying capacity C1	2000 N
Carrying capacity C2	1000 N

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Tilting of the carriage unit at lateral load

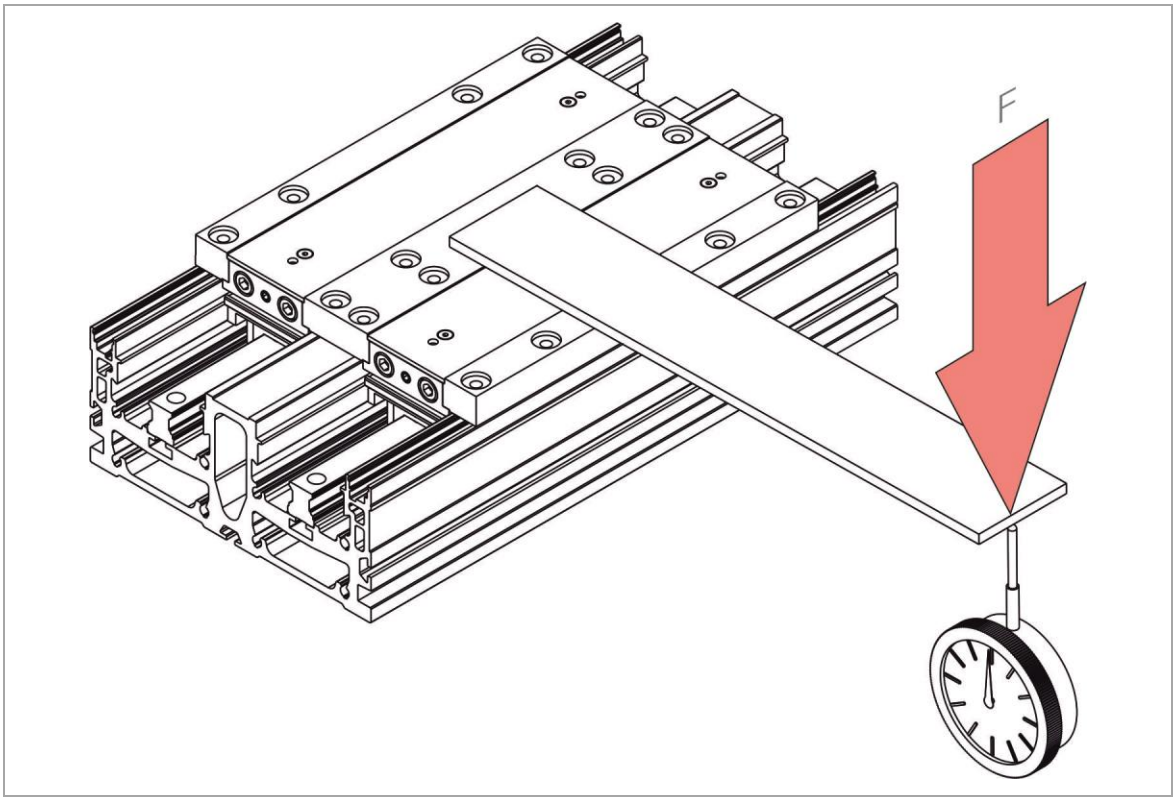

Figure 22 Tilting of the carriage

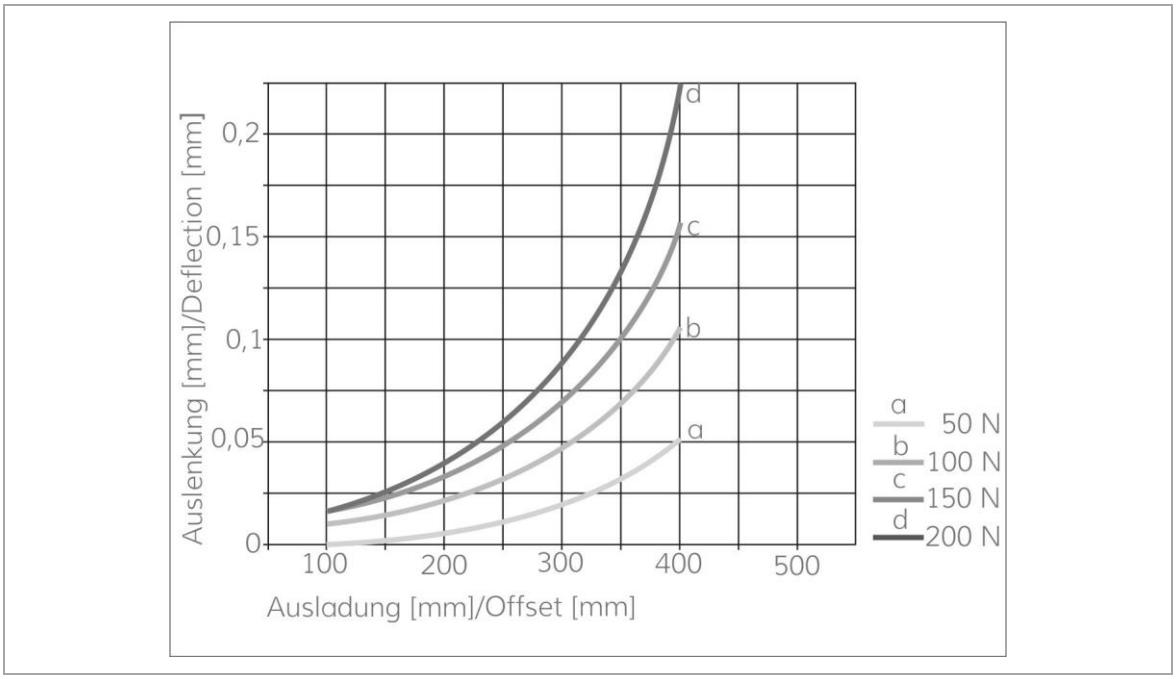

Figure 23 Deflection at lateral load

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6 Maintenance

6.1 Re-lubrication of the guide carriage

During the design of the linear module 160/15 ZR10, importance was placed on the use of low-maintenance components. All roller elements were provided with lifetime lubrication in the factory.

The guide carriages are equipped with attached lubrication elements. This makes it possible to achieve a running performance of 10000 km with initial lubrication. In single-shift operation, this corresponds to nearly 5 years at a stroke of 500 mm and 20 cycles per minute.

Once the indicated running output is reached, the guide carriage can be re-lubricated with a special grease press (IEF-item no.: 1055123). The grease gun is filled with the high-performance lubricant Dynalub.

Never use any grease that contains ester oils.

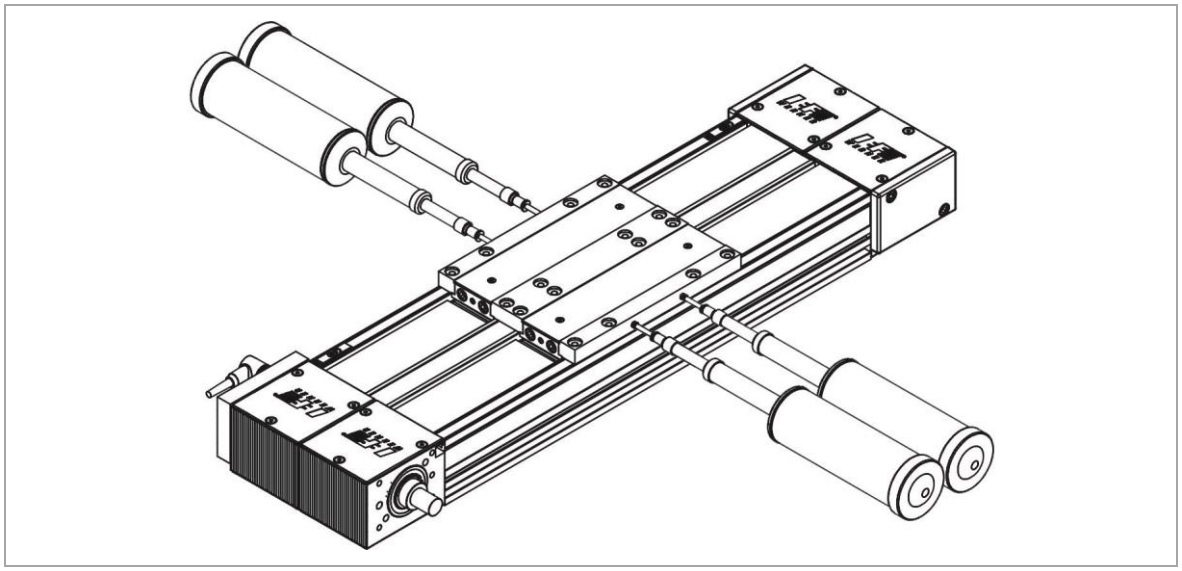

Figure 24 Lubrication of the guide carriages (carriages with 4 external lubrications)

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7 Troubleshooting

Interference	Reason	Correction
Increased running noise	Nominal service life of guide carriage exceeded	Replace all guide carriages
	Guide carriage worn due to overload (too-high torque, etc.)	Replace all guide carriages. Reduce load
	Guide carriage worn from strong contamination	Replace all guide carriages, clean guide rails and relubricate
	Guide rails worn	Replace guide rails, replace all guide carriages, check load, protect linear module from strong contamination
	Guide rails corroded	Replace all guide rails, replace guide carriages if required
	Deflection unit worn	Replace deflection unit
	Drive unit worn	Replace drive unit
	Toothed belt runs dry	Slightly lubricate toothed belt on the toothed inner side
	Toothed belt tension too high	Re-set toothed belt tension at the carriage part
	Toothed belt runs diagonally	Align toothed belt with belt fastener (pressure piece and tooth segment), tighten cylindrical screws M6 evenly!
	Toothed belt strongly contaminated on the toothed inner side	Replace toothed belt, protect linear module from strong contamination
	Toothed belt defective	Replace toothed belt
	Motor (motor bearing) defective	Replace motor
	For motor with brake: Brake does not disengage	Apply current to the brake, if the brake still does not open, replace motor

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Interference	Reason	Correction
Linear drive unit does not move	Limit switch cable not connected	Connect the cable
	Limit switch defective	Replace limit switch
	Limit switch cable defective	Check limit switch cable
	Solder connection on socket has come loose	Solder on wires
	Motor connected incorrectly	Check and change connector assignment, if required
	Motor defective	Replace motor
	Error in power electronics or control unit	Check the power electronics or the control unit
	Motor cable defective	Check motor cable, replace cable, if required
	For belt gear: Toothed disc slips through	Engage clamp set tightly and secure screws with threadlocker
	For planetary gear: Clutch between motor and planetary gear slips	Engage clutch tightly and secure screws with threadlocker
	For motor with brake: Brake does not disengage	Apply current to the brake, if the brake still does not open, replace motor
Play on reversal	Gearbox toothed belt not tensioned	Tension gear toothed belt
	Motor toothed disk has play (key connection)	Replace motor toothed disc if motor shaft keyway is damaged, replace motor
	Tension drive toothed belt	
Linear drive unit moves mechanically against the stop during the reference run	Incorrect direction of rotation	Change motor direction of rotation
	Broken motor cable	Replace cable

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8 Repair

⚠ DANGER

Warning of dangerous electrical voltage.

The system must be powered down for all assembly, disassembly or repair work.
Non-observance of the safety provisions may cause death.

ATTENTION

Any repairs must only be performed by specialist personnel who have read and understood the operating instructions.

Only use genuine spare parts, since IEF-Werner GmbH will not assume any warranty otherwise.

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8.1 Factory-setting of the toothed belt tension

The toothed belt tension of the axial toothed belt is set via adjustment screws.

The toothed belt tension is correctly set at delivery.

- Do not remove the threadlocker from the adjustment screws.

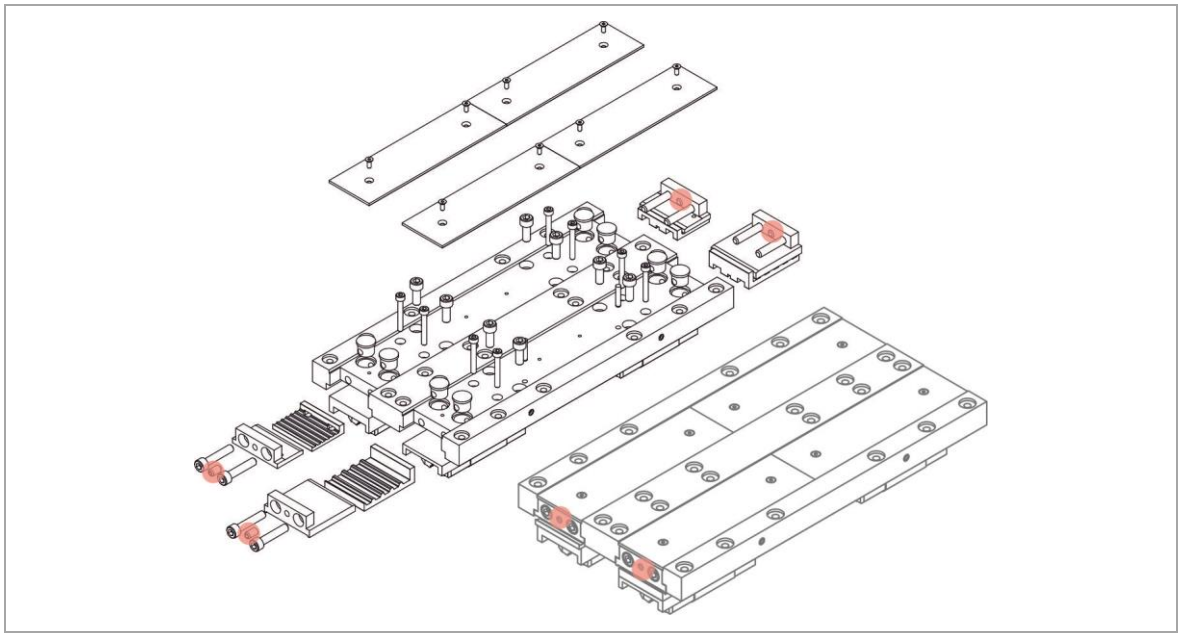

Figure 25 Adjustment screws for belt tension

- The belt tension of the gear toothed belt (motor installation variants 1- 4) is 150 N.

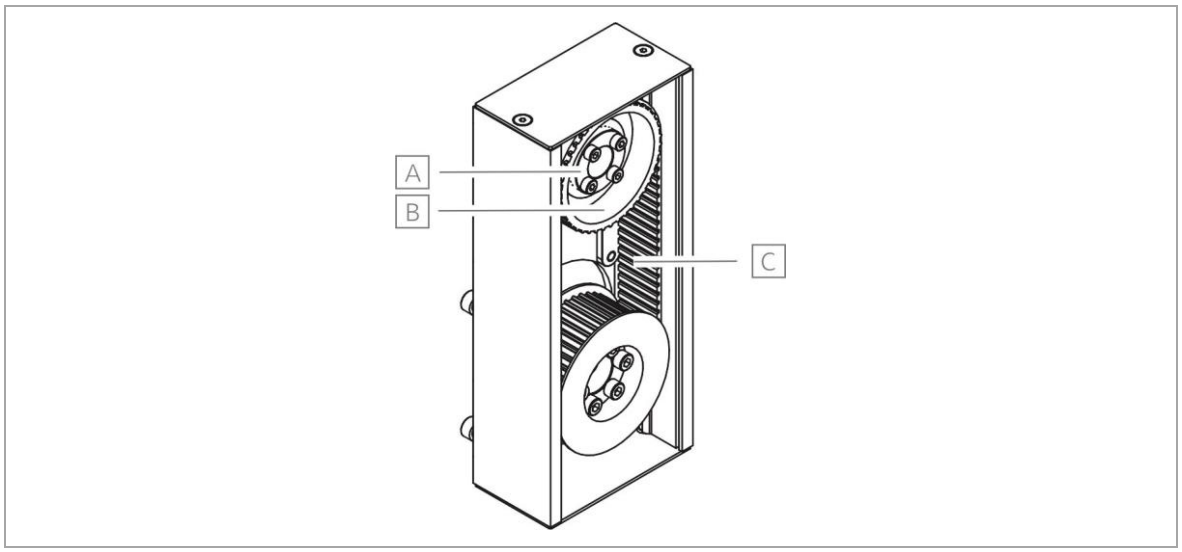

Figure 26 Belt gear

A Clamping set
B Toothed disk
C Toothed belt

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8.2 Replace toothed belt

Please proceed as follows to replace the toothed belt:

Step 1 Loosen the fastening screws M6x35.

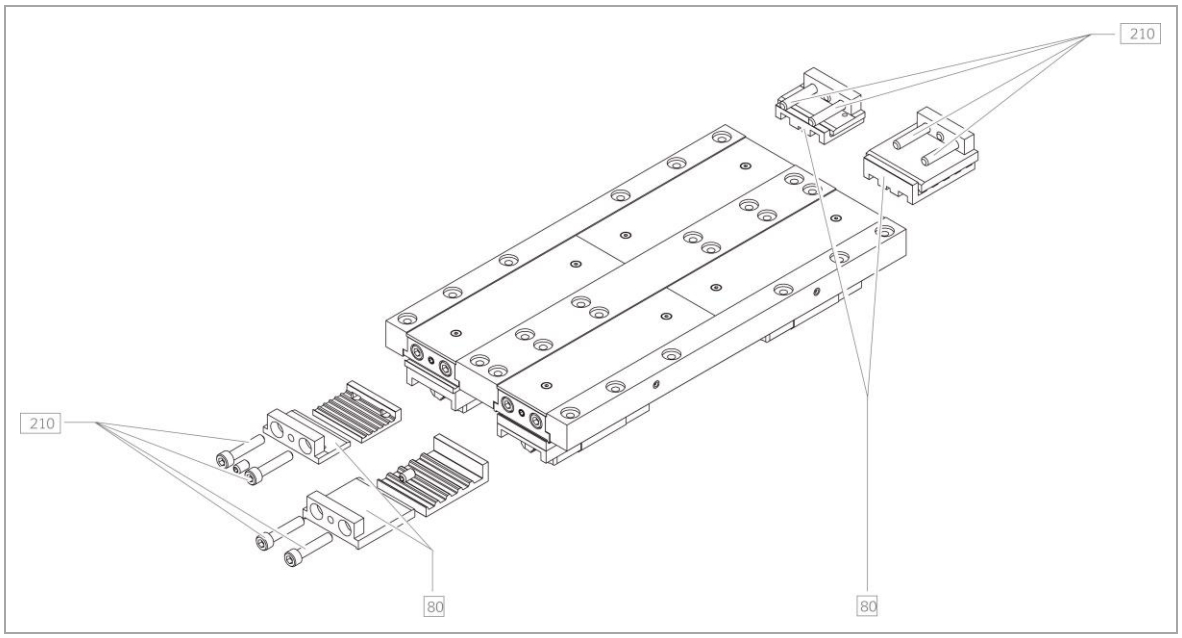

Figure 27 Loosen fastening screws

80 pressure pieces

210 fastening screws

Step 2 Remove pressure pieces.

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Step 3 Remove covers.

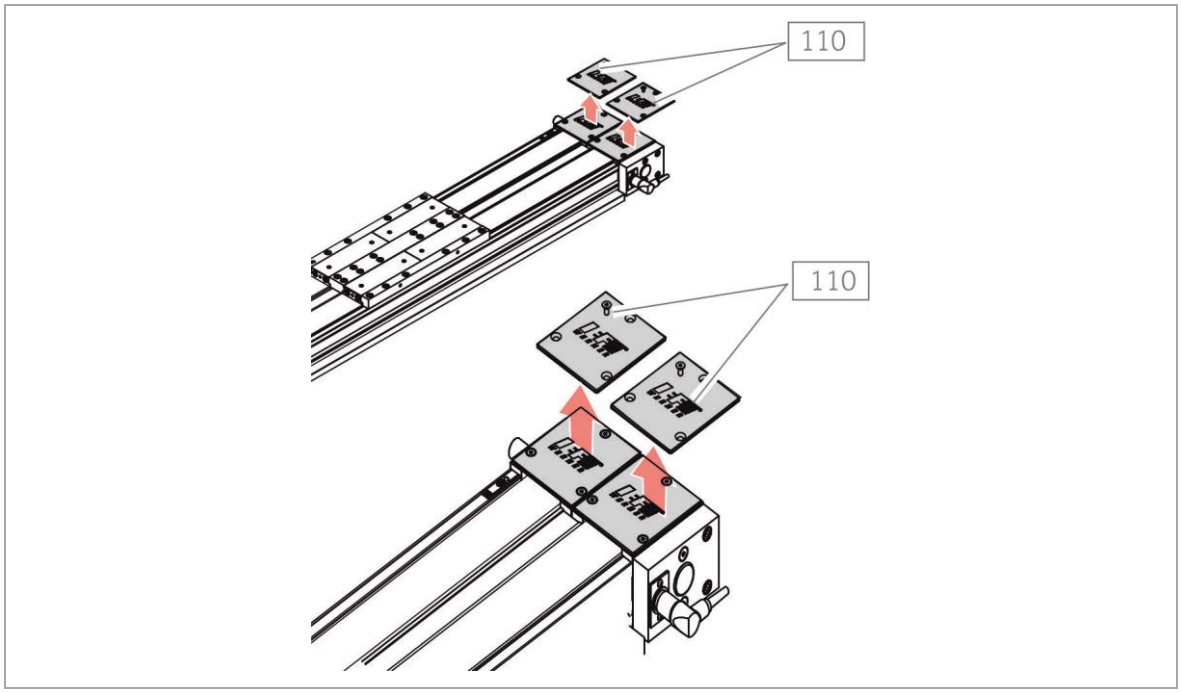

Figure 28 Remove covers

110 Covers (8 pieces)

Step 4 Remove defective toothed belt, install new toothed belt.

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Step 5 Insert toothed belt in tooth segment.

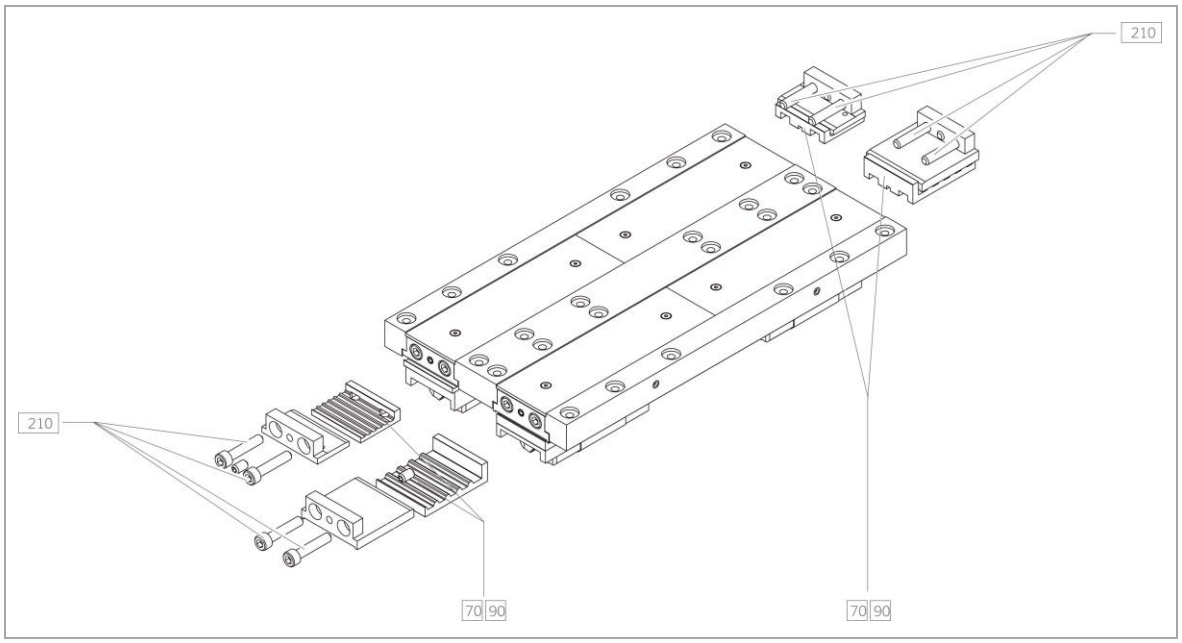

Figure 29 Toothed segment

210 fastening screws 70/90 Toothed segment

Step 6 Tension the pressure piece with screws M6x35 to 'block'.

Step 7 Attach covers again.

The belt tension is pre-set at the factory. Do not remove the threadlocker from the adjustment screws.

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Reference side of the guide system

The two guide rails are both aligned at the outer edge of the basic body. The reference side of the carriage plate, marked by two unilateral alignment pins, is on the same side as the reference side of the basic unit (marked by a 90° groove). In the new condition, the guide carriages are harder to push. After a short run-in time (1-2 days), the pushing resistance reduces to its regular amount. The two adapter plates are applied to the guide carriages on the reference side of each guide carriage.

Carriage plate and adapter plates must not be swapped with the carriage plate and adapter plate of other linear units of module 160/15 ZR10!

Do not swap adapter plates within one linear unit!

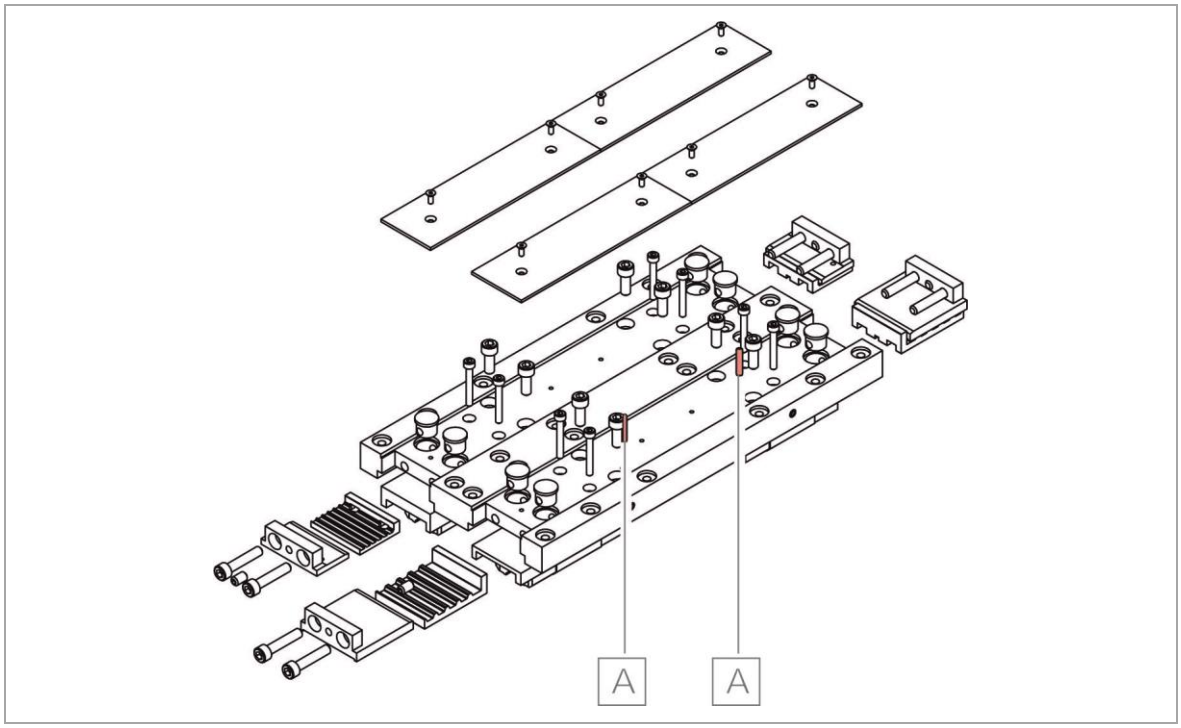

Figure 30 Reference side

A Dowel pins (mark the reference side of the slide)

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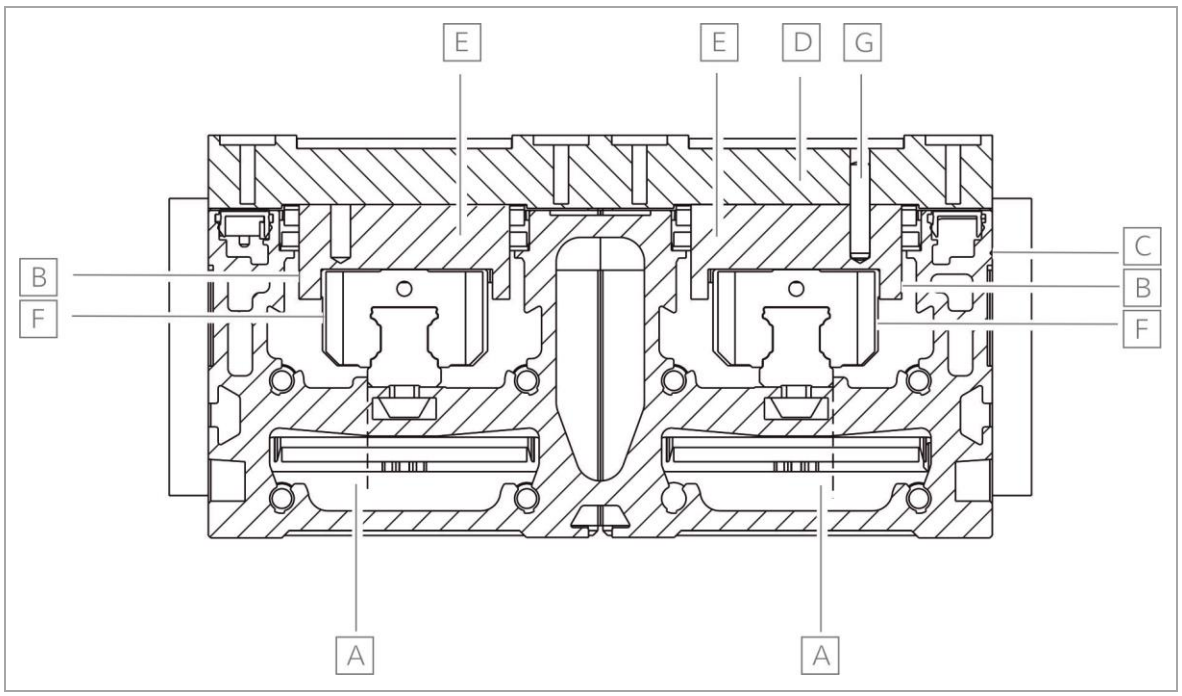

Figure 31 Guide system

A Rail attached to edge
B During the assembly press part from the outside to the inside
C Reference mark
D Carriage plate
E Adapter plate
F Reference side of the carriage
G Align cylindrical pin to reference side

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9 Parts lists and drawings

9.1 Module 160/15 ZR10, Parts group No.: 1002071

Drawing item	Article no,	Part (1) Parts group (0)	Usage	Designation
10	1000478	0		Basic body 160/15 ZR10
20	1000688	0		Ball rail guide type 15
30	1071943	1		Toothed belt E-strand 45ATL10
40	1028964	1		Cylindrical screw DIN 912-M4x16-12.9
50	1023994	1		Slot nut M4 flat; type 80/160/15
60	1071759	1		Case with buffer , type M80/15 ZR10
70	626037	1		Cylindrical screw, galvanized DIN 912-M6x20
80	1034373	1		Cover M80/160/15 plastic
90	1043514	1		Countersunk screw, stainless steel DIN 7991; Type: M4 x10 V2A
---	1071906	1		Bearing cover; Type: ZR10
110	1071901	1		Bearing cover; Type: ZR 10 M80/15 ZR10
120	1044440	1		Plastic clip ; 10.8 x 5.5 mm
130	1044440	1		Plastic clip ; 10.8 x 5.5 mm
140	1071761	1		Drive set module AT10; Type: M80/15 ZR10
---	1051647	1		Drive set module PLFE 64; Type M80/15 ZR 10
---	1078588	1		Flange lower part AT10; Type PLFE 64
---	1078587	1		Flange upper part AT10; Type PLFE64
150	1071765	1	+	Deflection unit AT10; Type: M80/15 ZR10
160	1106730	1		Long carriage L=300mm; Type: M160/15 ZR10
---	1115298	1		Long carriage L=300 mm; Type M160/15 ZR10 both guides closed
---	1000041	1		Motors

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Drawing item	Article no,	Part (1) Parts group (0)	Usage	Designation
---	1001358	1		Gear box; Type: M80/15 ZR10
---	1000476	1		Flange; Type: M80/15
170	1019192	1		Clamping element 105; Type 105
---	028674	1		Clamping element 105; Type 105 easyLINE
---	220702	1	+	Clamping element 140; Type 104
---	1021641	1	+	Clamping element 80; Type 80/15 ZR10
180	1027030	1	+	Cylindrical screw, stainless steel DIN912; Type: M6 x16/V2A
190	626330	1		Cylinder pin DIN 6325; Type: 5m6 x 24
200	028585	1	+	Limit switch holder; Type: easyLINE
210	025165	1	+	Inductive switch, NC contact
220	726744	1	+	Inductive switch, NO contact
230	030887	1		Special screw M4 x 7/V2A
240	725164	1		Angled coupling; Type: WKV50/6
250	725163	1	+	Installation plug, round; Type: SFV 50/6
260	025626	0	+	Retaining plate
280	1072646	0	+	Fillister head screw, stainless steel ISO 7380-M3x8/V2A
---	1018827	0	+	Mechanical end stop; Type: M80/16/15
290	1103078	1	+	Cover plate on axis; Type: M160/15
300	732284	0	+	Plastic cover D=25/20.5 black
310	627687	1	+	Cylindrical screw DIN6912; Type: M6 x 16
320	1021376	1		Toothed belt 49ATL5 with strand E 0,6 mm
330	1121095	1		Deflection unit AT10 for closed version; Type: M160/15 ZR10
340	626137	1		Countersunk screw, galvanized; Type M5 x 25
350	627003	1		Countersunk screw galvanized; Type M5 x 16

+ use depending on design

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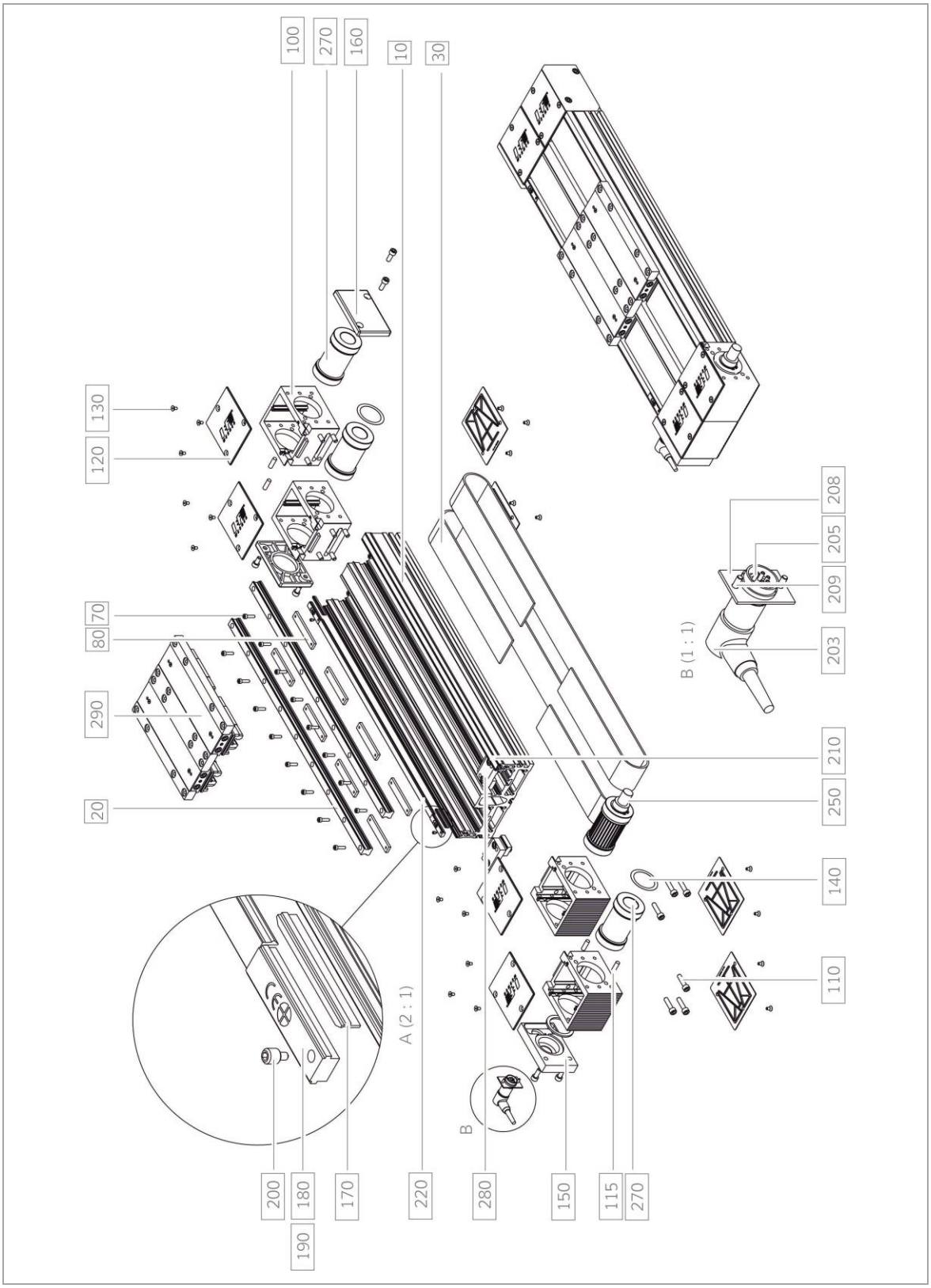

Figure 32 Parts group no. TG1002071 , exploded view

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9.2 Long carriage module 160/15 ZR10, length 300 mm complete
Part No.: 1115298

Drawing item	Article	Part (1) / Parts group (0)	Designation
10	1106729	1	Carriage plate
20	1071474	1	Distance plate
30	1116628	1	Distance plate for toothed segment
40	1046583	1	Guiding carriage for carriage with external greasing
50	1018770	1	Cover
60	1023942	1	Threaded bushing
70	1059202	1	Toothed segment, steel
80	1023935	1	Pressure piece
90	1071472	1	Toothed element
110	1031602	1	O-Ring, Typ: 1.80 – 1.80
120	1028704	1	T.-lubrication nipple, DIN 3405, Type D4
130	1059444	1	Dowel pin DIN 6325; Type: 3m6 x 5
140	1108465	1	Dowel pin DIN 7; Type: 3m6 x 10/V2A
150	1072713	1	Dowel pin, stainless steel DIN6325; Type: 4m6 x 20/V2A
160	1072610	1	Countersunk screw, stainless steel DIN7991; Type: M3 x 8/V2A
170	1043506	1	Cylindrical screw, stainless steel; Type: M4 x 10/V2A
180	626977	1	Cylindrical screw, stainless steel; Type: M4 x 16/V2A
190	1045120	1	Cylindrical screw, stainless steel; Type: M4 x 30/V2A
200	1027030	1	Cylindrical screw, stainless steel DIN912; Type: M6 x 16/V2A
210	1019272	1	Cylinder screw, stainless steel DIN912; Type: M6 x 30/V2A
220	58044	1	Grub screw, stainless steel DIN913; Typ: M6 x 10/V2A

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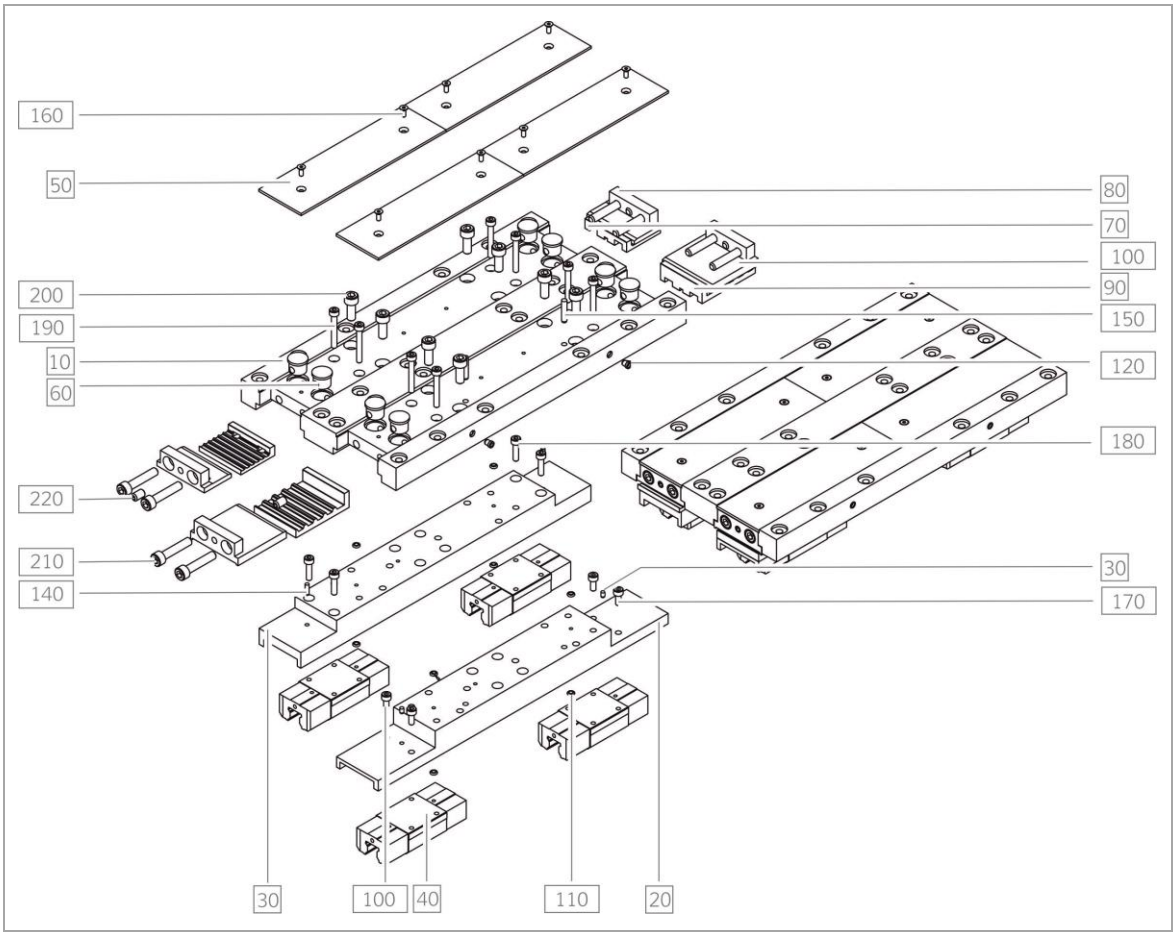

Figure 33 Module 160/15 ZR10, long carriage complete, exploded view

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9.3 (Belt) Gear Box Module 160/15 ZR10, Parts group: 1001358

Drawing item	Article	Part (1) / Parts group (0)	Usage	Designation
10	1071927	1	+	Gear box housing ZR10; Type: M80/15 ZR10
20	29690	1		Toothed disk St 28.5 AT5/42-0
30	1007376	1	+	Toothed disk St 32.0 AT5/42-2
40	28722	1	+	Toothed disk St 32.0 AT5/42-2
50	1006664	1	+	Toothed disk St 32.0 AT5/42-2
60	0732770	1		Clamping set 16/32
70	0732770	1	+	Clamping set 16/32
80	0732294	1	+	Clamping set; Type: PSV 2061 20x38
90	0734168	1	+	Clamping set; Type: PSV 2061 22x40
95	0526735	1	+	Toothed disk St 43.0 AT5/20-2 incl. clamping set 12
98	0525983	1	+	Toothed disk St 43.0 AT5/20-2 incl. clamping set 14
100	0525984	1	+	Toothed disk St 43.0 AT5/20-2 incl. clamping set 16
110	1005790	1	+	Toothed disk St 37.0 AT5/14-2 incl. clamping set 10
120	1005756	1	+	Toothed disk St 37.0 AT5/14-2 incl. clamping set 12
130	1025513	1		Belt gear lid; Type: 80/15
140	1042097	1		Motion link
150	626039	1		Countersunk screw, galvanized DIN 7991-M4x8
160	1004001	1		Insertion cover for gear; Type: pL 200
170	730353	1	+	Toothed belt (rot); Type: 25AT5/390 GEN III
180	732286	1	+	Toothed belt (rot); Type: 25AT5/375 GEN III
190	0908243	1	+	Toothed belt (red); Type: 25AT5/450 GEN III

+ use depending on design

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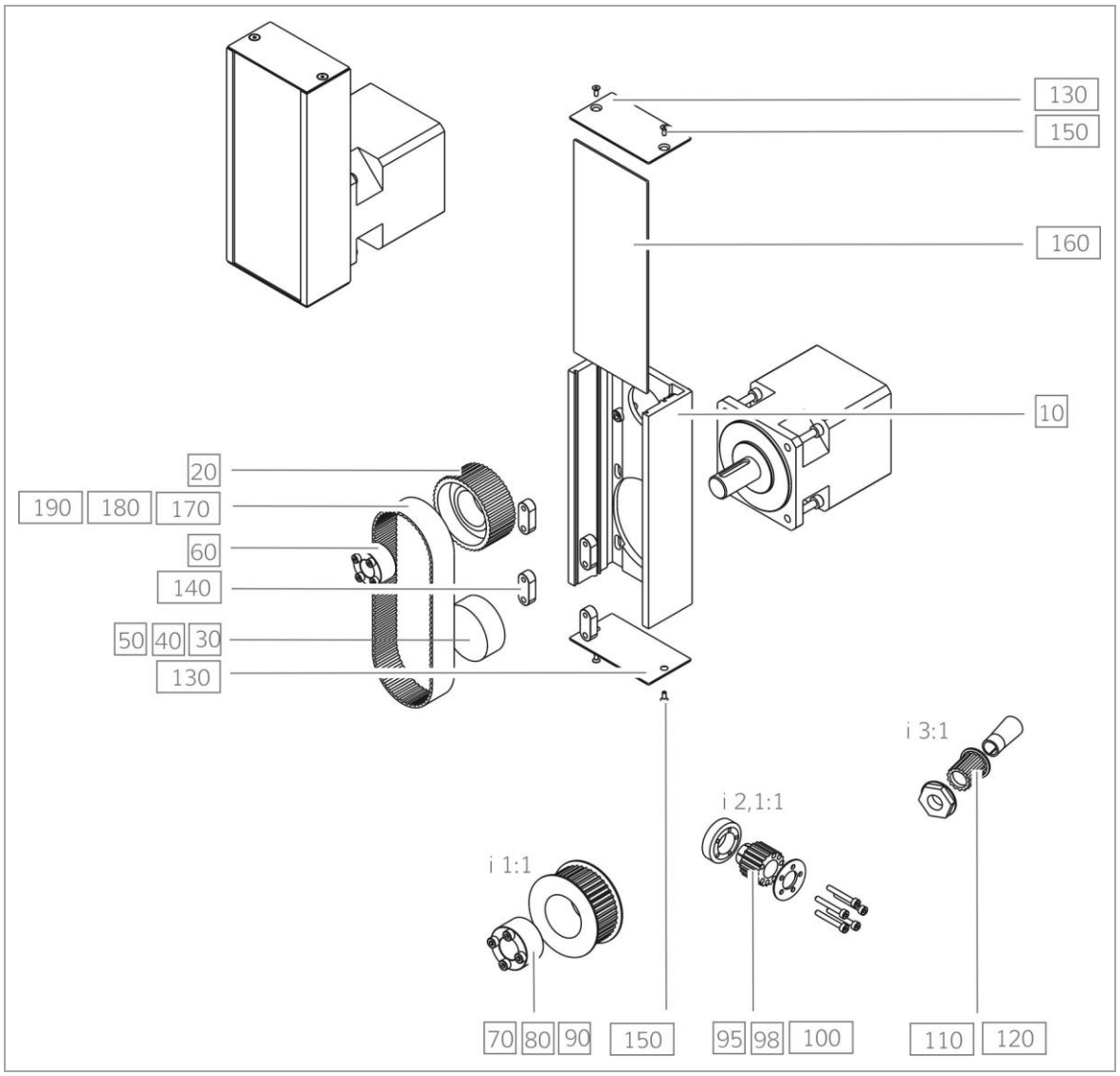

Figure 34 Belt gearbox Module 160/15 ZR10, exploded drawing

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9.4 Flange

Parts group No.: 1000476

Drawing item	Article no.	Part (1)/ Parts group (0)	Usage	Designation
10	1022105	1		Flange axial
20	1022129	1		Flange plate axial
30	734161	1		Plastic cover
40	626037	1		Cylindrical screw DIN 912 - M6x20-8.8
50	626244	1		Cylindrical screw DIN 912 - M6x60-8.8
60	627215	1		Retention ring DIN 472-47-1.75
70	1022199	1	+	Coupling Ø=16
75	1022203	1		Ring gear red
80	1022201	1	+	Coupling Ø=20
90	1022202	1	+	Coupling Ø=22
100	1006530	1	+	Sleeve 12/16
110	1007310	1	+	Sleeve 15/20
120	1008886	1	+	Sleeve 14/16
130	1022206	1	+	Sleeve 19/22

+ use depends on design

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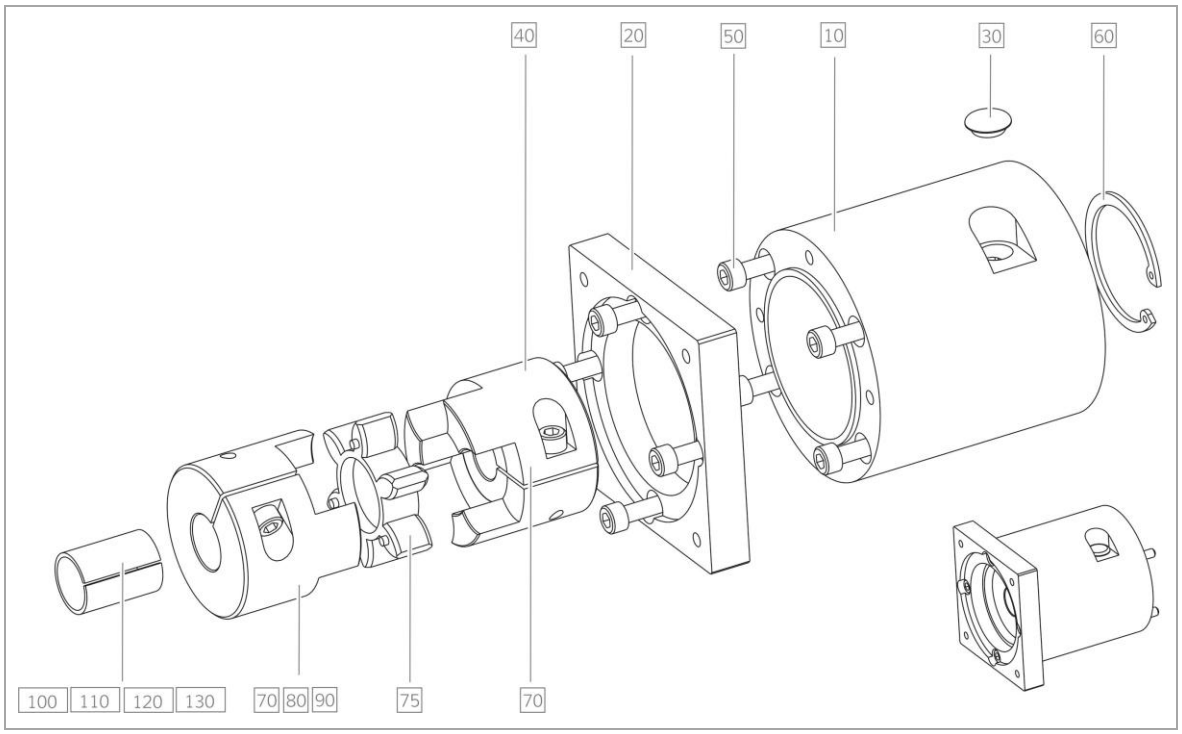

Figure 35 Flange Module 160/15 ZR10, i=1:1

Additionally, please observe the wear parts lists included with the delivery according to the order.

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9.5 Design-specific assemblies/ components

9.5.1 Installation flange gearbox (e.g. planetary gear type PLFE64)

The following different drive sets for flange gearboxes may be used:

Designation	Part No.:
Drive unit M80/15 ZR10 PLFE64	1081647

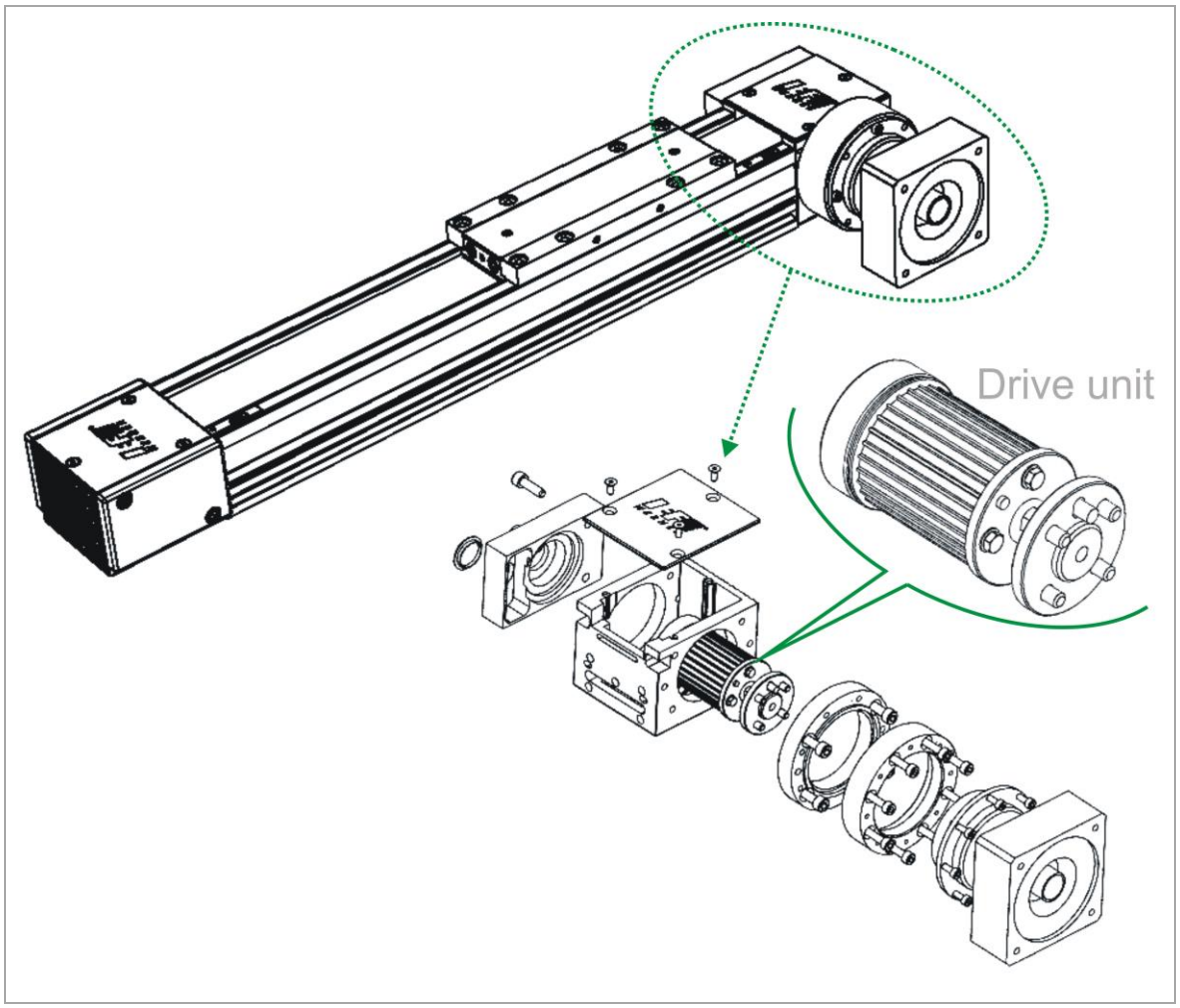

Figure 36 Installation flange gear (example with drive unit 1081647)

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9.5.2 Centering ring

The threaded bores M6 make different axis configurations possible on the carriage, possibly using an adapter plate.

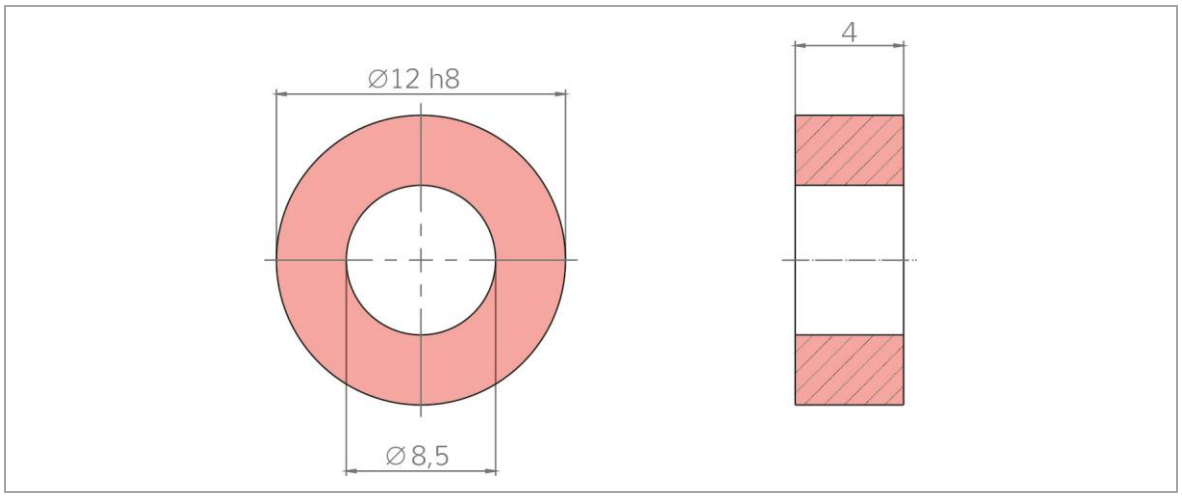

Figure 37 Centering ring (article no.: 1024021

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9.5.3 Overview Clamping elements

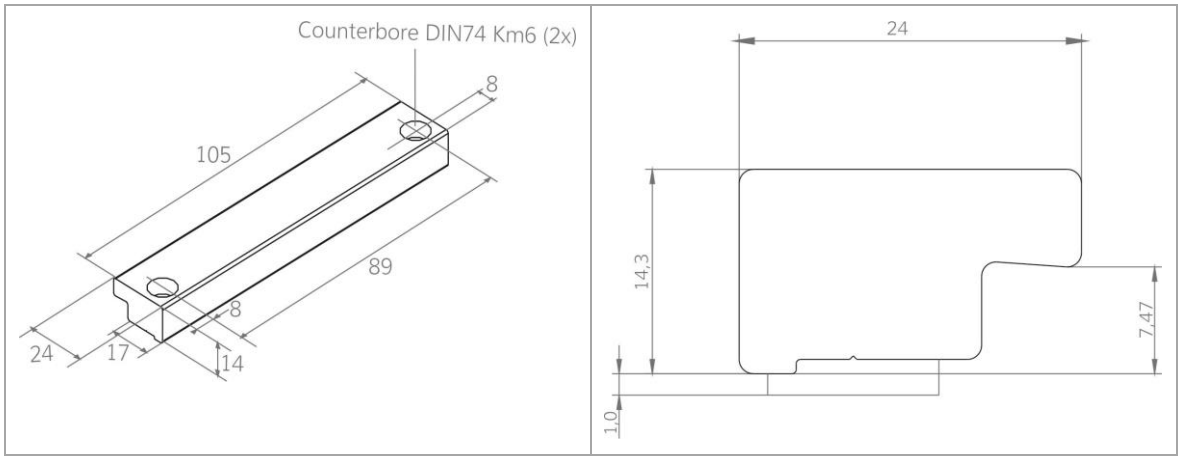

Figure 38 Clamping element (Article No.: 1125715)

Clamping element, example type 105 Scaled drawing clamping element

Clamping element Type:	L1 in mm	L2 in mm	Article number
16	0	16	220701
65	49	65	1062169
80	64	80	1021641
105	89	105	28674
115	99	115	1054491
140	124	140	220702
160	64	160	1039032
Undrilled		customer-specific	1019192

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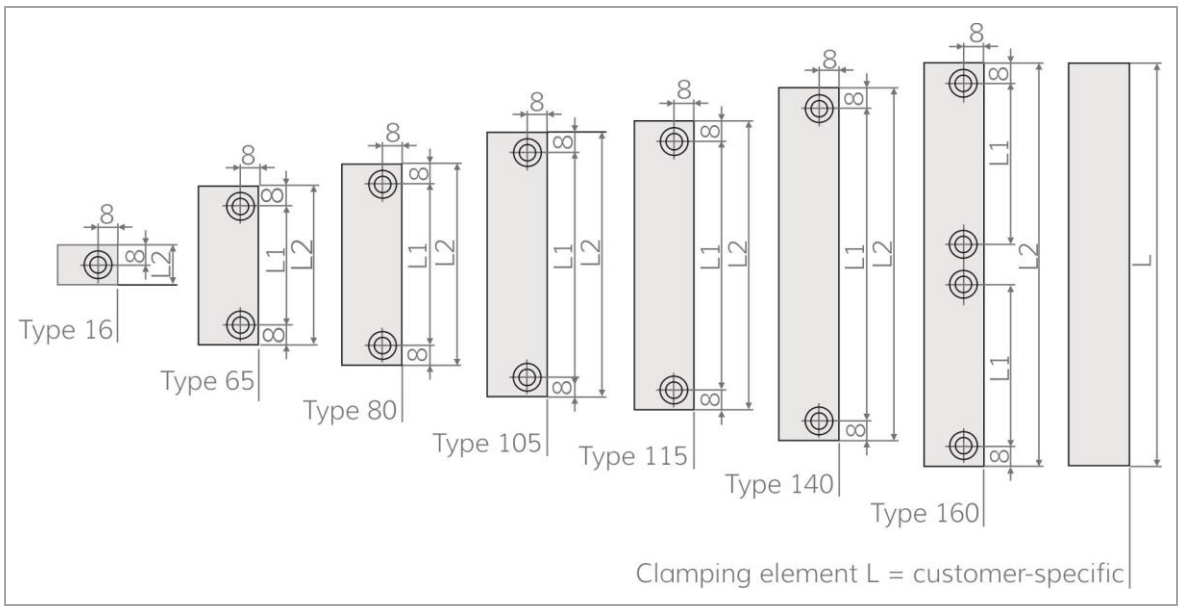

Figure 39 Overview clamping elements

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