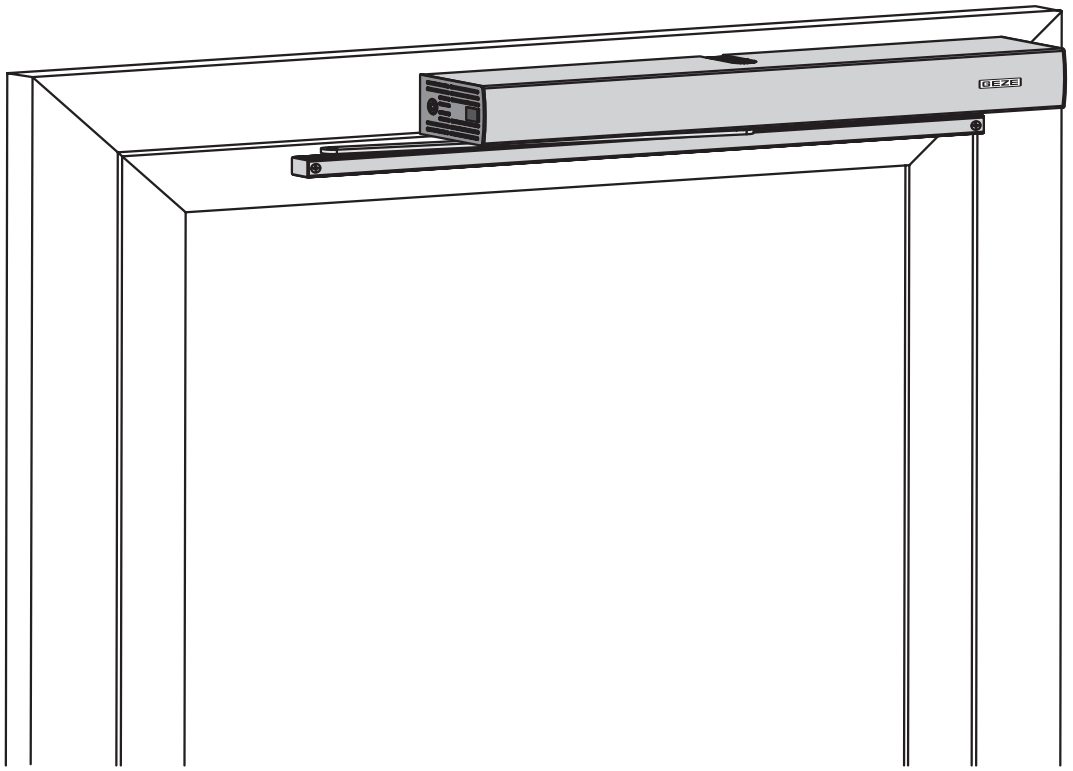


Slimdrive EMD Invers

EN Installation and service instructions

138676-05

GEZE

Contents

1 Introduction

1.1 Symbols and illustrations

Warning notices
In these instructions, warnings are used to warn against material damage and injuries.
- ▶ Always read and observe these warning notices.
- ▶ Observe all measures marked with the warning symbol and warning word .

Warning symbol	Warning word	Meaning
	**WARNING**	Danger to persons. Non-compliance can result in death or serious injuries.

Further symbols and illustrations
Important information and technical notes are highlighted to explain correct operation.

Symbol	Meaning
	means “important note”. Information to prevent property damage, to understand or optimise the operation sequences.
	means “additional Information”
▶	Symbol for an action: This means you have to do something. ▶ If there are several actions to be taken, keep to the given order.

1.2 Product liability

In compliance with the liability of the manufacturer for his products as defined in the German “Product Liability Act”, compliance with the information contained in this brochure (product information and intended use, misuse, product performance, product maintenance, obligations to provide information and instructions) must be ensured. Failure to comply releases the manufacturer from his statutory liability.

1.3 Reference documents

Type	Name
Wiring diagram	Slimdrive EMD / Slimdrive EMD-F
Cable plan	Slimdrive EMD / Slimdrive EMD-F

The diagrams are subject to change without notice. Use only the most recent version.

2 Fundamental safety precautions

2.1 Intended use

The Slimdrive EMD Invers door drive is designed for the automatic opening and closing of single-action swing doors.
The Slimdrive EMD Invers is designed solely for use
- in dry rooms
- In entrances and interior areas of pedestrian traffic in commercial plants and public areas,
- in private areas.

The Slimdrive EMD Invers
- is designated for use on SHEV fresh air supplies
- is designated for use on escape and rescue routes
- must not be used on fire or smoke protection doors
- must not be used for potentially explosive areas.

Any other use than the intended use, such as permanent manual operation with the drive de-energised, as well as any modification to the product, is not permitted.

2.2 Safety notices

- The mandatory installation, maintenance and repair work must be performed by properly trained personnel authorised by GEZE.
- The country-specific laws and regulations are to be observed during safety-related tests.
- If unauthorised changes are made to the system, GEZE cannot be held liable in any way whatsoever for any resulting damage, and the statement of approval for use in escape and rescue routes is no longer valid.
- GEZE does not accept any warranty for combinations with third-party products.
- Furthermore, only original GEZE parts may be used for repair and maintenance work.
- The connection to the mains voltage must be made by a professional electrician. Perform the power connection and equipment earth conductor test in accordance with VDE 0100 Part 610.
- Use an on-site automatic cut-out as the line-side disconnecting device, the dimensioning of which is matched to the type, cross-section, type of routing and ambient conditions of the on-site power supply circuit. The automatic cut-out must have at least 4 A and max. 16 A.
- Protect the display programme switch against unauthorised access.
- In compliance with Machinery Directive 2006/42/EC, a risk analysis must be performed and the door system identified in accordance with CE Marking Directive 93/68/EEC before the door system is commissioned.
- Observe the latest versions of directives, standards and country-specific regulations, in particular:
  - ASR A1.7 “Directives for doors and gates”
  - DIN EN 16005 “Power operated pedestrian doorsets – Safety in use – Requirements and test methods”
  - VDE 0100; Part 610 “Erection of low-voltage installations”
  - Accident prevention regulations, especially DGUV regulation 1 “Principles of prevention” and DGUV regulation 3 “Electrical installations and equipment”
  - DIN EN 60335-2-103 "Safety of electrical devices for home use and similar purposes - Part 2-103: Special requirements for drives for gates, doors and windows”
  - DIN 18263-4 “Building hardware - controlled door closing devices - Part 4: Automatic swing door operators with self-closing function”
  - DIN 18650 “Building hardware - Powered pedestrian doors”
  - DIN 18040 “Barrier-free construction”

The product should be installed or incorporated in such a way that effortless access to the product is guaranteed during any repairs and/or maintenance, and that any removal costs do not stand out of economic proportion to the value of the product.

2.3 Safety-conscious working

- Secure workplace against unauthorised entry.
- Watch the swivelling range of long system parts.
- Never carry out work with a high safety risk (e.g. installing the drive or cover) while alone.
- Secure the cover/drive panels against falling.
- Use only the cables specified on the cable plan provided. Cables must be shielded in compliance with the wiring diagram.
- Secure loose, internal drive cables with cable ties.
- Before working on the electrical system:
  - disconnect the drive from the 230 V mains and check to ensure that it is not supplied with power.
  - Note that if an uninterruptible power supply (UPS) is used, the system will still be supplied with voltage despite the fact that the power supply is disconnected.
- Always use insulated wire-end ferrules for wire cores.
- Attach safety stickers to glass leaves.
- Danger of injury with opened drive. Hair, clothing, cables, etc. can be drawn in by rotating parts.
- Danger of injury caused by unsecured crushing, impact, drawing-in or shearing spots.
- Danger of injury due to glass breakage.
- Danger of injury due to sharp edges in the drive.
- Danger of injury during installation through freely moving parts.

2.4 Inspection of the installed system

Measures for protection and prevention of pinching, impact, shearing or drawing-in spots:

- Check the function of safety sensors and movement detectors.
- Check protective earth connection to all metal parts that can be touched.
- Perform a safety analysis (risk analysis).

2.5 Environmentally conscious working

- When disposing of the door system, separate the different materials and have them recycled.
- Do not dispose of batteries and rechargeable batteries with household waste.
- Legal regulations must be observed during the disposal of the door system.

3 Overview

3.1 Tools and aids

Tool	Size
Drill bit	Ø 4.2 mm
Threading tap	M 5
Allen key set	1.5 mm … 6 mm
Screwdriver	Blade width 3 and 5 mm, Phillips-tip
Centre punch	
Hammer	
Wire stripper	
Crimping pliers for cables	
Torque spanner up to 15 Nm	
Hook wrench ID no. 111247	20–22 mm

3.2 Consumables

Tool	Use/type
Self-adhesive tape	for fixing the drilling template
Screw thread lock	medium duty, removable

4 Supplied by GEZE and completeness

▶ Open packaging units and check for completeness.

4.1 The Slimdrive EMD Invers door drive with roller guide rail or link arm

- Drive unit
  - 1 drive
  - 1 set of fixing screws
  - Drilling templates
- Cover

Depending on order:
- Roller guide rail

or
- Link arm (closer size depending on reveal depth)

4.2 Accessories (optional)

Activation devices in compliance with the details in the wiring diagram.

4.2.1 Mechanical accessories

- Door stop buffer/integrated opening restrictor (only for roller guide rail)
- Mounting plate(s) with a set of fixing screws
- Spindle extension

4.2.2 Electrical accessories

- Display programme switch
- Door transmission cable
- Emergency exit electric strike
- Motor lock

Additional optional accessories possible.

5 Transportation and storage

- The Slimdrive EMD Invers door drive is not built for hard knocks or for falling from a height. Do not throw, do not drop.
- Storage temperatures under -30 °C and above +60 °C can result in damage to the device.
- Protect against humidity.

6 Product description

6.1 System description and technical data

The Slimdrive EMD Invers
- is a swing door drive with fully automatic operation activated by sensors or push buttons.
- operates electrically during opening and closing.

Use of 2x Slimdrive EMD Invers is possible for 2-leaf doors. In the case of a power failure or triggered alarm it opens mechanically.

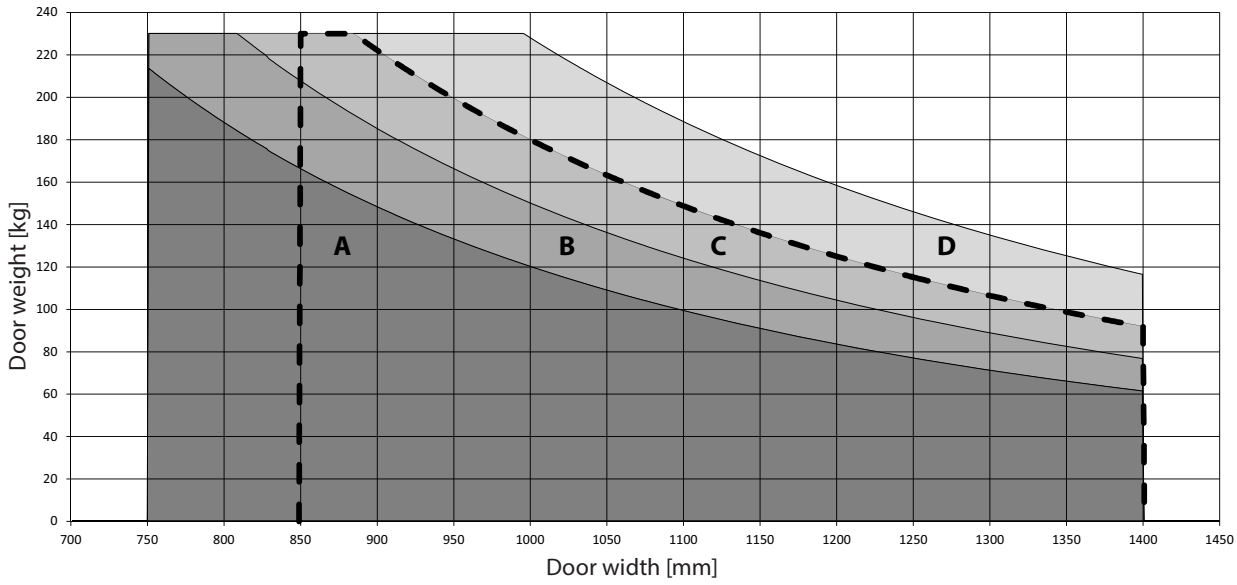
6.1.1 Max. range of use Slimdrive EMD Invers

This chart makes it possible to determine the maximum values for the door width or door weights. It can also be used to identify the right drive for existing door dimensions.

The tables underneath the diagrams specify the shortest permissible opening times for 90° door angles for the individual diagram areas A - D.

The use of a 2-leaf system with two Slimdrive EMD Invers drives is possible under the **following conditions**:
- It must be ensured that the two door leaves do not jam and block each other during opening, since the drives do not have a mechanical opening sequence control.
- If necessary, corresponding information is to be obtained beforehand from the door manufacturer.

Limit with opening times up to 90° door opening width



Area of application for installation with roller guide rail

Shortest possible opening times of areas A-D

Diagram area	Opening time [s]	Closing time [s]
Transom installation-hinge side-roller guide rail		
A	3	4.5
B	4	5.5
C	5	6.5
D	not permissible	
Transom installation-opposite hinge side-link arm		
A	3	4
B	3	4.5
C	4	5.5
D	5	6.5

Diagram area	Opening time [s]	Closing time [s]
Transom installation-opposite hinge side-roller guide rail		
A	4	4.5
B	4.5	5.5
C	5	5.5
D	not permissible	
Door leaf installation-hinge side-roller guide rail		
A	4	4.5
B	4.5	5.5
C	4.5	5.5
D	not permissible	

6.1.2 Mechanical data

Dimensions (H x D x L):	70 mm × 122 mm × 650 mm
Max. ambient temperature range:	–15 °C … +50 °C
Drive mass:	approx. 9 kg

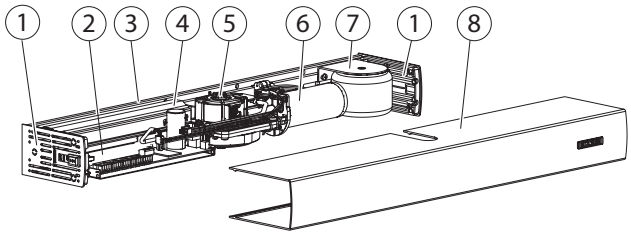
6.1.3 Electrical data

Mains connection:	230 V AC, +10 % / –14 %, 50 Hz
Power consumption:	max. 230 W
Externally connectable devices:	24 V DC, total max. 1 A

6.2 Basic structure and extension

6.2.1 Drive

1 Side panels
2 Control unit
3 Base plate
4 Power storage device
5 Drive axle
6 Motor gear unit
7 Transformer
8 Cover
(for 2-leaf version also possible as continuous or with intermediate cover.
For 1-leaf version also possible as continuous or with cover extension)

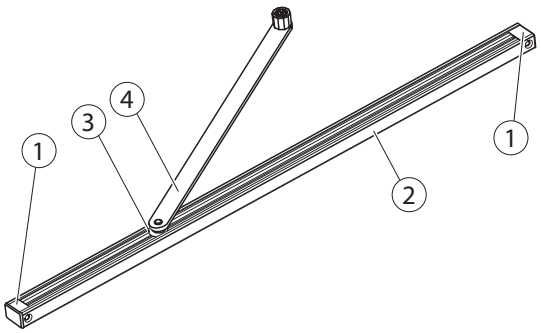


6.2.2 Roller guide rail with roller lever

Installation depends on the type of installation chosen.

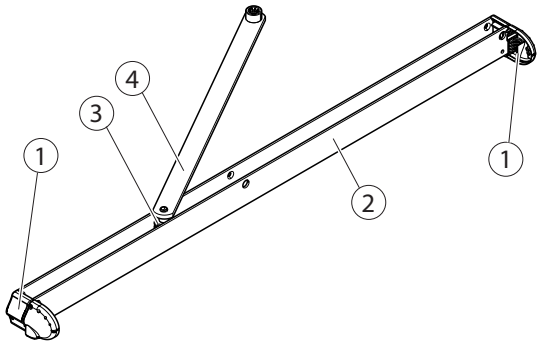
Standard guide rail with roller lever:

1 Cap
2 Rail
3 Roller
4 Roller lever



Sensor roller guide rail with roller lever:

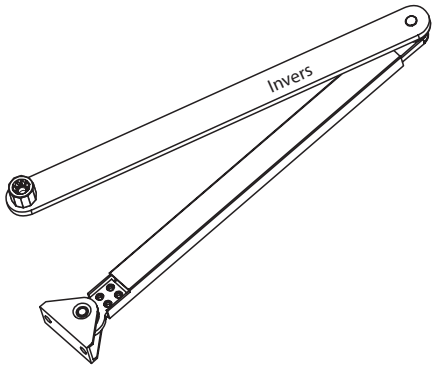
1 End cap
2 Rail
3 Roller
4 Roller lever



6.2.3 Link arm

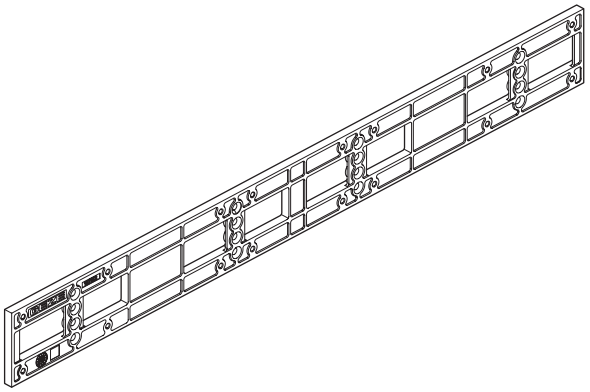
Standard link arm:

for reveal depth SD:
- 0–100 mm
- 100–200 mm
- 200–300 mm
- 300–400 mm



6.2.4 Mounting plate for drives (option)

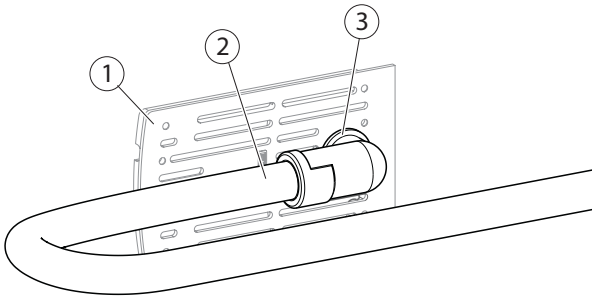
A mounting plate may be necessary, depending on the installation situation.
A mounting plate is generally recommended to make installation easier.
With 2-leaf version also available with continuous mounting plate or with intermediate mounting plate.
With 1-leaf version also available with continuous mounting plate or with mounting plate for extension kit.



6.2.5 Door transmission cable

Serves as cable protection for use of moving parts to static elements (doors, windows).

1 Side panel
2 Door transmission cable
3 Nut 2× (on the back)



6.2.6 Activation devices (accessories)

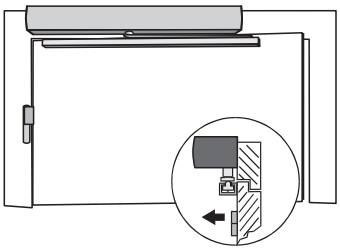
See wiring diagram.

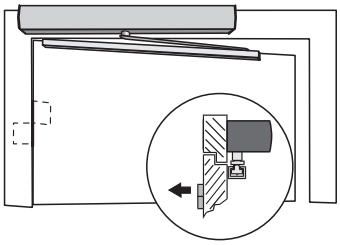
6.3 Installation, types of door stop

- To protect the drive, the opening angle of the door always has to be limited by a door stop buffer.
- Loads due to wind pressure, negative pressure or excess pressure must be taken into account.

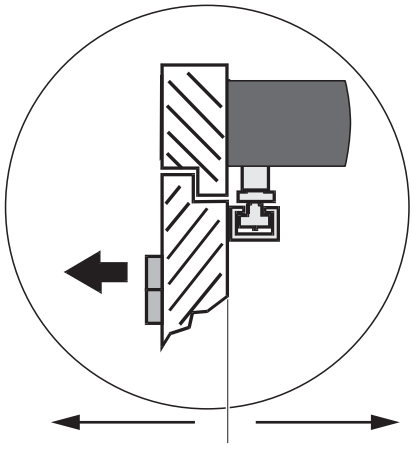
- The 2-leaf version corresponds to the 1-leaf type of installation.
- With outward opening exterior doors the type of installation transom installation opposite hinge side with link arm is recommended for exterior doors (wind load).

The Slimdrive EMD Invers allows the following types of door, each for doors DIN left and DIN right:

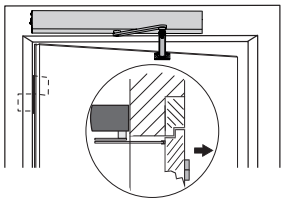
Type of installation	Dimension	Slimdrive EMD Invers
Transom installation hinge side with roller guide rail 	Reveal depth LT [mm]	0
	▫ With internal hinges	0
	Door overlap Ü [mm]	30
	▫ With internal hinges	0
	Max. door opening angle TÖW [°] [1] [2] [3]	approx. 120
	Length of roller guide rail L = [mm]	760
	Length of roller lever L = [mm]	430
	Hinge clearance [mm]	325

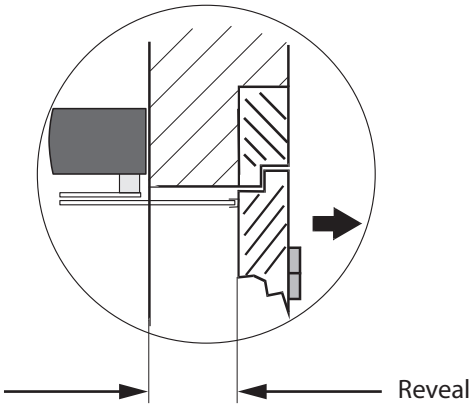
Type of installation	Dimension	Slimdrive EMD Invers
Transom installation opposite hinge side with roller guide rail 	Reveal depth LT [mm]	-15 … +30
	Max. door leaf thickness [mm]	120
	Max. door opening angle TÖW [°] [1] [2]	approx. 130
	Length of roller guide rail L = [mm]	760
	Length of roller lever L = [mm]	430
	Hinge clearance	325

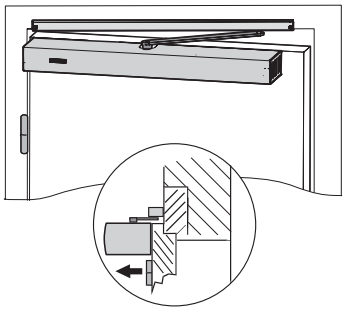
1 Without integrated opening restrictor. An integrated opening restrictor can influence the door opening angle
2 The max. door opening angle can only be achieved with an alternative lever from the lever range from GEZE GmbH. The max. standard opening angle is 100°, see table in chapter 8.6.1
3 Depending on the structural circumstances



Reveal: + –

Type of installation	Dimension	Slimdrive EMD Invers
Transom installation opposite hinge side with link arm 	Reveal depth LT [mm]	0–100 100–200 200–300 300–400
	Max. door leaf thickness [mm]	120
	Max. door opening angle TÖW [°] [3]	approx. 110
	Hinge clearance [mm]	325



Type of installation	Dimension	Slimdrive EMD Invers
Door leaf installation hinge side with roller guide rail 	Door overlap Ü [mm]	0
	Max. door opening angle TÖW [°] [1] [2]	approx. 115
	Length of roller guide rail L = [mm]	760
	Length of roller lever L = [mm]	430
	Hinge clearance [mm]	355

1 Without integrated opening restrictor. An integrated opening restrictor can influence the door opening angle
2 The max. door opening angle can only be achieved with an alternative lever from the lever range from GEZE GmbH. The max. standard opening angle is 100°, see table in chapter 8.6.1
3 Depending on the structural circumstances

7 Preparing installation

7.1 General installation information

- Observe all the instructions. Incorrect installation can result in serious injuries.
- The specified ambient temperature range at the installation location of the drive must be observed.
- After completing installation, the settings and functionality of the drive have to be checked.

7.1.1 Preparations to be made on site

Use of a motor lock or an emergency exit electric strike is recommended to compensate the opening torque of the opening spring in closed position of the door.

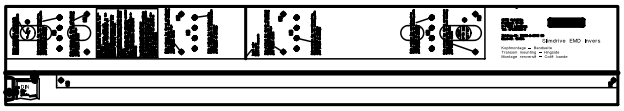
Checking of the location conditions and the required space

- The substructure must ensure safe attachment of the drive.
- ▶ Only use suitable means of fastening such as wall plugs, riveting nuts, etc.
- ▶ Before installation of the drive check whether the door leaf is in a good mechanical state and can be opened and closed easily.
- ▶ Lay cables in accordance with the cable plan.
- ▶ Check the planned type of installation on the leaf or frame profile (see section 5.3).

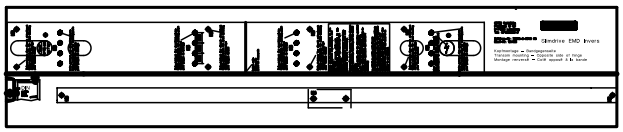
7.1.2 Position the fitting template

The top of the door must be aligned exactly horizontally, both in the closed and in the open position.

- ▶ Use the correct fitting template in accordance with the installation type (chapter 5.3).
- ▶ Take the type of attachment into account (direct fastening or with mounting plate (chapter 5.3)).
- ▶ Align the fitting template parallel to the top of the door.
- ▶ Affix the template with adhesive tape in compliance with the specified installation type.
  Heed the door and type of door stop sketches on the template.



Transom installation / hinge side



Transom installation / opposite hinge side

Door leaf installation / hinge side

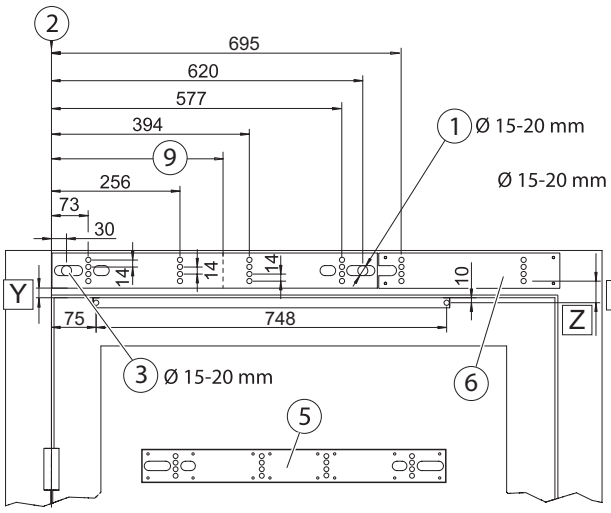
- ▶ In the case of non-flush impact doors, separate or fold the template along the perforation.
- ▶ Pre-drill timber doors with Ø 2.5 mm.

7.2 Fitting dimensions for the installation types

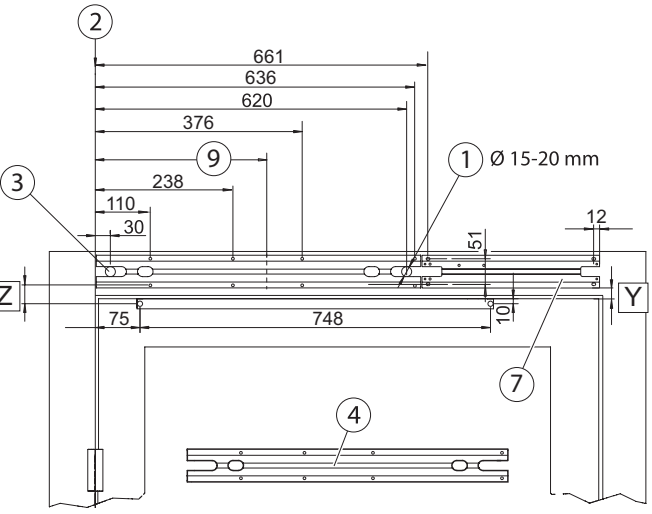
7.2.1 Transom installation hinge side with roller guide rail (single leaf)

- Hole pattern DIN left and DIN right reversed.
- ▶ Note the separate installation instructions when using a sensor roller guide rail.

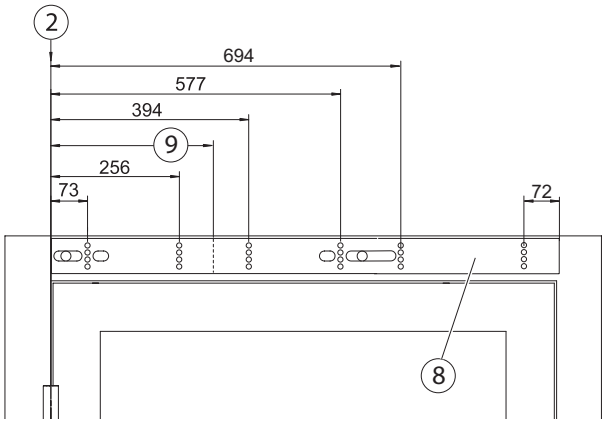
Attachment with mounting plate



Direct attachment



Fixing with continuous mounting plate

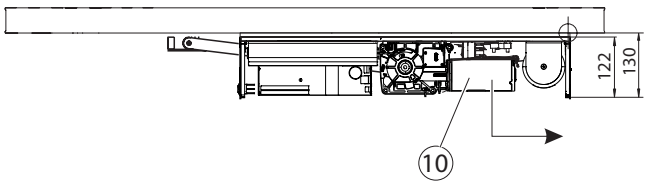


1 Low-voltage connection (sensors, electric strike, programme switch and lock switch contact)
2 Dimensional reference centre of hinge
3 Concealed power supply 230 V / 50 Hz for power supply circuit
4 Base plate *)
5 Mounting plate **)
6 Mounting plate for extension kit, split
7 Base plate for extension kit
8 Mounting plate for extension kit, continuous
9 Hinge clearance 325 mm

*) Use 8 x M5 screws or chipboard screws for fastening
**) use at least 2 x M5 screws or chipboard screws for each vertical row of holes

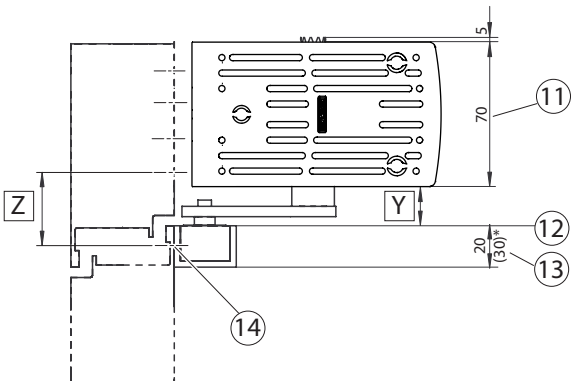
Fitting alignment

- Mount the motor (10) and transformer facing the hinge side.



Space requirement and attachment for roller guide rail

11 Space requirement for Slimdrive EMD Invers
12 Dimensional reference top edge door profile (= top edge roller guide rail)
13 Space requirement for roller guide rail
*) Dimension when a deeper roller guide rail is used
14 Attachment of roller guide rail with M5 screws or chipboard screws



Dimension Y: Upper edge of the roller guide rail – lower edge of the drive

Dimension Y	Base plate	Mounting plate
Standard	21	19
With spindle extension	47	45

Dimension Z: Fixing drill hole for the roller guide rail – lower fixing drill hole for the mounting plate/base plate

Dimension Z	Base plate	Mounting plate
Standard	38	43
With spindle extension	64	69

Mounting elements

	Steel/aluminium doors	Timber doors
Drive attachment without mounting plate (direct attachment)	8 cylinder head screws M5 × 22 and riveting nuts M5	8 wood screws with button head Ø5 × 40
Attachment of the mounting plate	8 countersunk screws M5 × 25 and riveting nuts M5	8 wood screws with countersunk head Ø5 × 50
Drive attachment on mounting plate	8x cylinder head screws M5 × 10	8 cylinder head screws M5 × 10
Standard roller guide rail, deep roller guide rail	2 countersunk head screws M5 × 40 and riveting nuts M5	2 wood screws with countersunk head Ø5 × 50

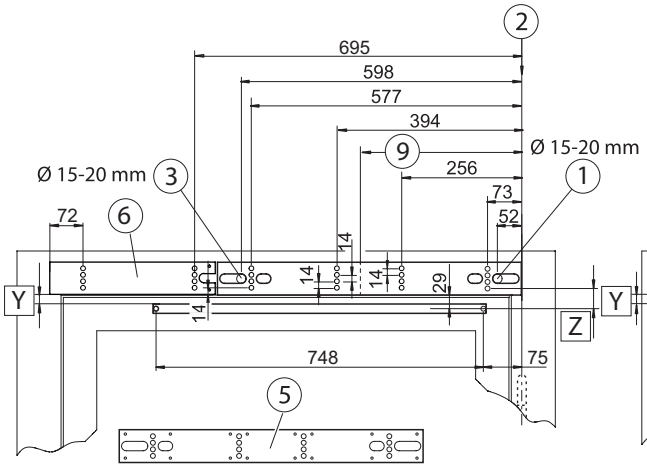
Fasteners (optional)

	Steel/aluminium doors	Timber doors
Attachment of the extension kit without mounting plate (direct attachment)	4 cylinder head screws M5 × 22 and riveting nuts M5	4 wood screws with button head Ø5x40
Attachment of the extension kit with mounting plate		
▫ Split mounting plate	4 cylinder head screws M5 × 22 and riveting nuts M5	4 wood screws with button head Ø5 × 40
▫ Continuous mounting plate	2 cylinder head screws M5 × 22 and riveting nuts M5	2 wood screws with button head Ø5 × 40
Attachment of base plate of the extension kit on mounting plate	4 cylinder head screws M5 × 10	4 cylinder head screws M5 × 10

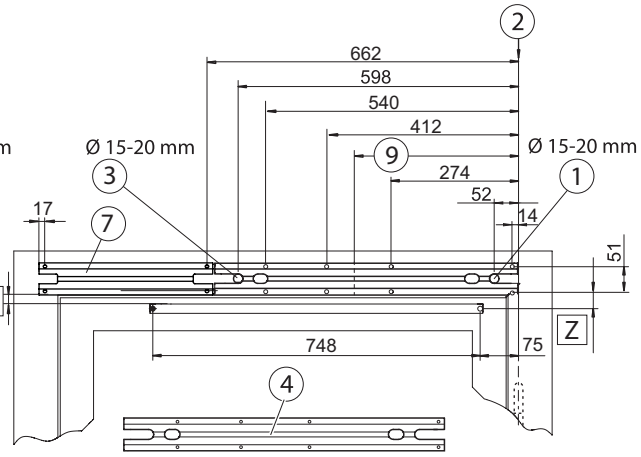
7.2.2 Transom installation opposite hinge side with roller guide rail (single leaf)

- With outward opening exterior doors the type of installation transom installation opposite hinge side with link arm is recommended for exterior doors (wind load).
- Hole pattern DIN left and DIN right reversed.
- ▶ Note the separate installation instructions when using a sensor roller guide rail.

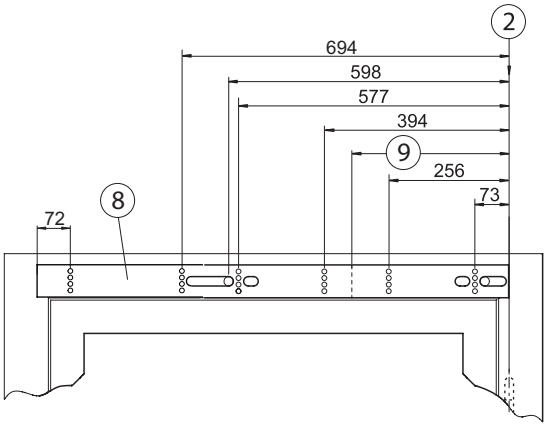
Attachment with mounting plate



Direct attachment



Fixing with continuous mounting plate

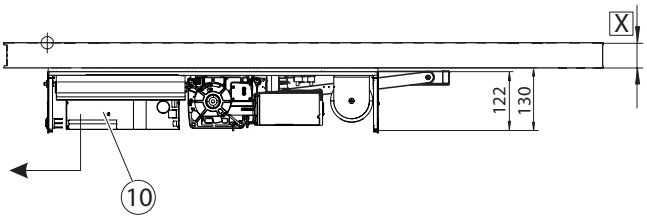


1 Low-voltage connection (sensors, electric strike, programme switch and lock switch contact)
2 Dimensional reference centre of hinge
3 Concealed power supply 230 V / 50 Hz for power supply circuit
4 Base plate *)
5 Mounting plate **)
6 Mounting plate for extension kit, split
7 Base plate for extension kit
8 Mounting plate for extension kit, continuous
9 Hinge clearance 325 mm

*) Use 8 x M5 screws or chipboard screws for fastening
**) screw in at least 2 x M5 screws or chipboard screws for each vertical row of holes

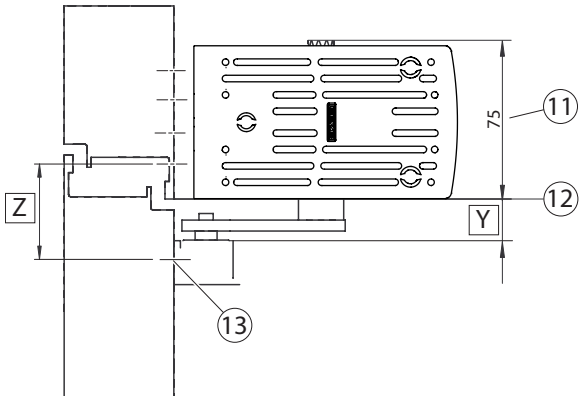
Fitting alignment

- Mount control unit (10) facing the hinge side.



Space requirement and attachment for roller guide rail

11 Space requirement for Slimdrive EMD Invers
12 Dimensional reference lower edge frame (lintel)
13 Attachment of roller guide rail with M5 screws or chipboard screws



Dimension Y: Upper edge of the roller guide rail – lower edge of the drive

Dimension Y	Base plate	Mounting plate
Standard	21	19
With spindle extension	47	45

Dimension Z: Fixing drill hole for the roller guide rail – lower fixing drill hole for the mounting plate/base plate

Dimension Z	Base plate	Mounting plate
Standard	38	43
With spindle extension	64	69

Mounting elements

	Steel/aluminium doors	Timber doors
Drive attachment without mounting plate (direct attachment)	8 cylinder head screws M5 × 22 and riveting nuts M5	8 wood screws with button head Ø5 × 40
Attachment of the mounting plate	8 countersunk screws M5 × 25 and riveting nuts M5	8 wood screws with countersunk head Ø5 × 50
Drive attachment on mounting plate	8x cylinder head screws M5 × 10	8 cylinder head screws M5 × 10
Standard roller guide rail, deep roller guide rail	2 countersunk head screws M5 × 40 and riveting nuts M5	2 wood screws with countersunk head Ø5 × 50

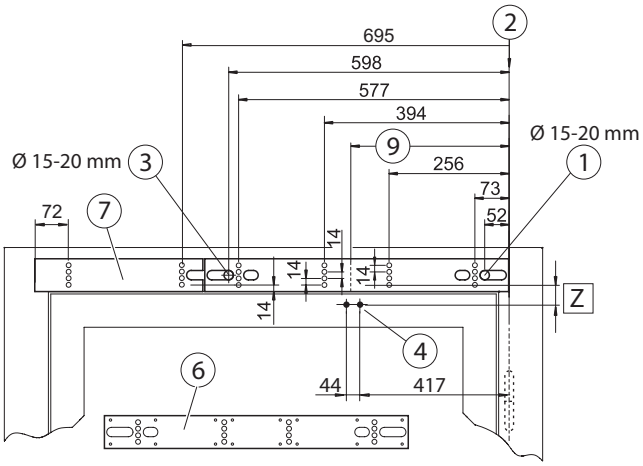
Fasteners (optional)

	Steel/aluminium doors	Timber doors
Attachment of the extension kit without mounting plate (direct attachment)	4 cylinder head screws M5 × 22 and riveting nuts M5	4 wood screws with button head Ø5x40
Attachment of the extension kit with mounting plate		
▫ Split mounting plate	4 cylinder head screws M5 × 22 and riveting nuts M5	4 wood screws with button head Ø5 × 40
▫ Continuous mounting plate	2 cylinder head screws M5 × 22 and riveting nuts M5	2 wood screws with button head Ø5 × 40
Attachment of base plate of the extension kit on mounting plate	4 cylinder head screws M5 × 10	4 cylinder head screws M5 × 10

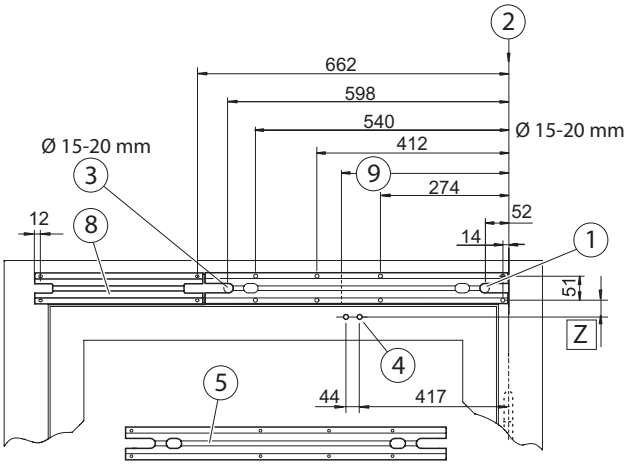
7.2.3 Transom installation opposite hinge side with link arm (single leaf)

- Hole pattern DIN left and DIN right reversed.

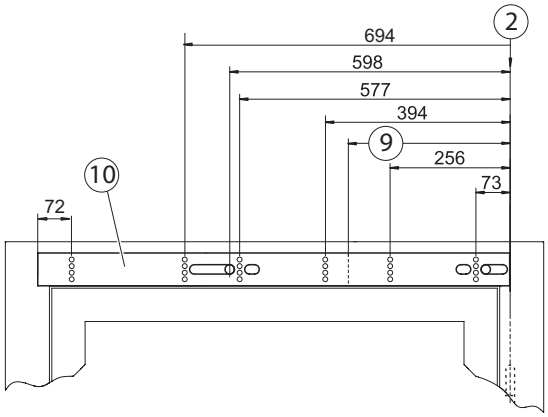
Attachment with mounting plate



Direct attachment



Fixing with continuous mounting plate

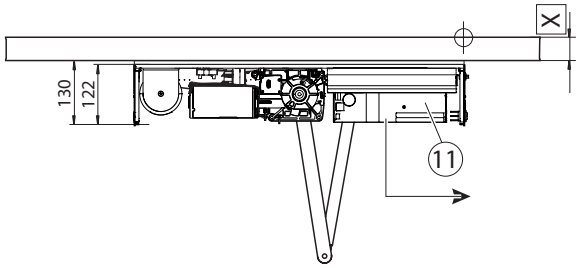


1 Low-voltage connection (sensors, electric strike, programme switch and lock switch contact)
2 Dimensional reference centre of hinge
3 Concealed power supply 230 V / 50 Hz for power supply circuit
4 For fitting dimensions of the link arm, see the instruction manual “Installation EMD Invers link arms”
5 Base plate *)
6 Mounting plate **)
7 Mounting plate for extension kit, split
8 Base plate for extension kit
9 Hinge clearance 325 mm
10 Mounting plate for extension kit, continuous

*) Use 8 x M5 screws or chipboard screws for fastening
**) screw in at least 2 x M5 screws or chipboard screws for each vertical row of holes

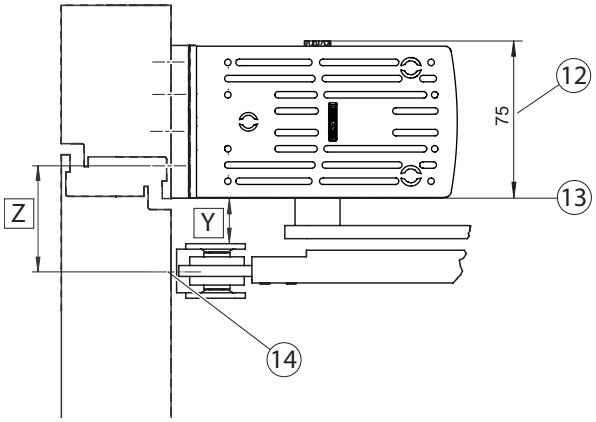
Fitting alignment

- Mount control unit (11) facing the hinge side.



Space requirement and attachment for roller guide rail

12 Space requirement for Slimdrive EMD Invers
13 Dimensional reference lower edge frame (lintel)
14 Attachment of link arm with M5 screws or chipboard screws



Dimension Y: Upper edge of the link arm bearing block – lower edge of the drive

Dimension Y	Base plate	Mounting plate
Standard	24	22
With spindle extension	50	48

Dimension Z: Fixing drill hole for the link arm – lower fixing drill hole for the mounting plate/base plate

Dimension Z	Base plate	Mounting plate
Standard	43	48
With spindle extension	69	74

Mounting elements

	Steel/aluminium doors	Timber doors
Drive attachment without mounting plate (direct attachment)	8 cylinder head screws M5 × 22 and riveting nuts M5	8 wood screws with button head Ø5 × 40
Attachment of the mounting plate	8 countersunk screws M5 × 25 and riveting nuts M5	8 wood screws with countersunk head Ø5 × 50
Drive attachment on mounting plate	8x cylinder head screws M5 × 10	8 cylinder head screws M5 × 10
Fastening of link arm	2 cylinder head screws M6 × 20 and riveting nuts M6	2 wood screws with button head Ø5 × 50

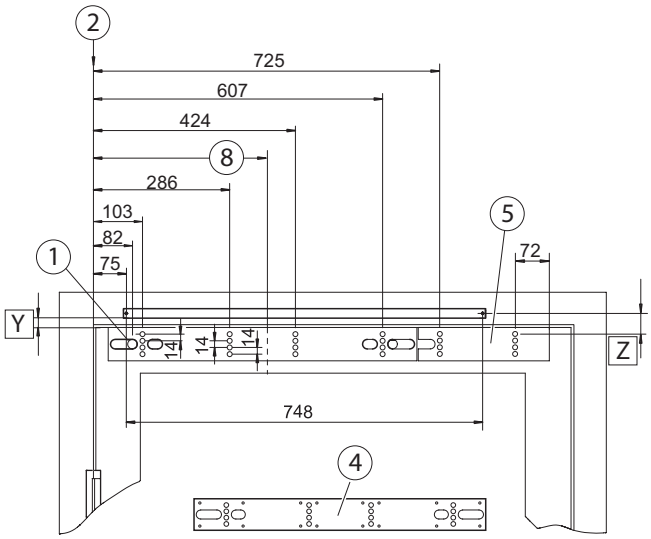
Fasteners (optional)

	Steel/aluminium doors	Timber doors
Attachment of the extension kit without mounting plate (direct attachment)	4 cylinder head screws M5 × 22 and riveting nuts M5	4 wood screws with button head Ø5x40
Attachment of the extension kit with mounting plate		
▫ Split mounting plate	4 cylinder head screws M5 × 22 and riveting nuts M5	4 wood screws with button head Ø5 × 40
▫ Continuous mounting plate	2 cylinder head screws M5 × 22 and riveting nuts M5	2 wood screws with button head Ø5 × 40
Attachment of base plate of the extension kit on mounting plate	4 cylinder head screws M5 × 10	4 cylinder head screws M5 × 10

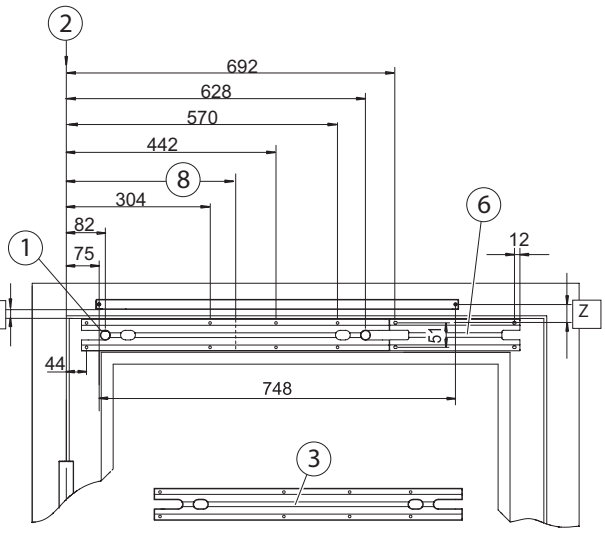
7.2.4 Door leaf installation hinge side (single leaf)

- Hole pattern DIN left and DIN right reversed.
- ▶ Check whether the door can be opened wide enough.
- ▶ Connect all the cables with door transmission to the junction boxes (concealed/surface mounting).
- ▶ Note the separate installation instructions when using a sensor roller guide rail.

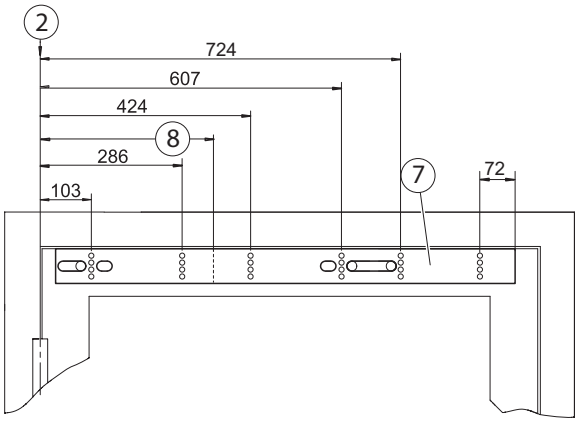
Attachment with mounting plate



Direct attachment



Fixing with continuous mounting plate



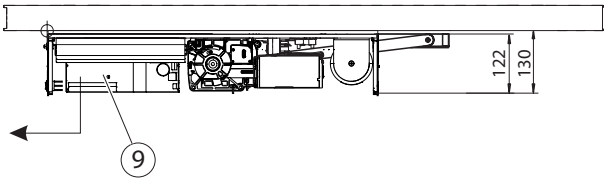
1 Line-feed for common door transmission for
- Power supply circuit
- Sensors, electric strike, programme switch and lock switch contact

2 Dimensional reference centre of hinge
3 Base plate *)
4 Mounting plate **)
5 Mounting plate for extension kit, split
6 Base plate for extension kit
7 Mounting plate for extension kit, continuous
8 Hinge clearance 355 mm

*) Use 8 x M5 screws or chipboard screws for fastening
**) screw in at least 2 x M5 screws or chipboard screws for each vertical row of holes

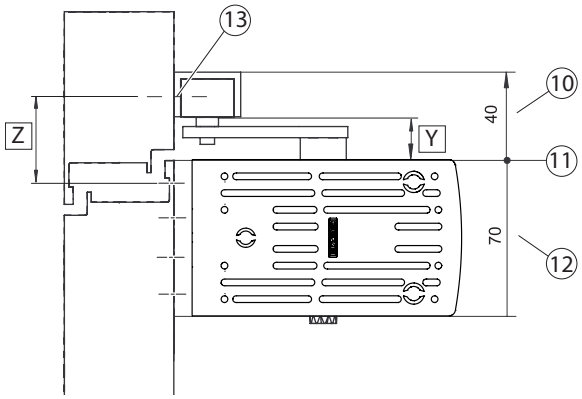
Fitting alignment

- Mount control unit (9) facing the hinge side.



Space requirement and attachment for roller guide rail

10 Space requirement for roller guide rail
11 Dimensional reference top edge door profile
12 Space requirement for Slimdrive EMD Invers
13 Attachment of roller guide rail with M5 screws or chipboard screws



Dimension Y: Lower edge of the roller guide rail – upper edge of the drive

Dimension Y	Base plate	Mounting plate
Standard	21	19
With spindle extension	47	45

Dimension Z: Fixing drill hole for the roller guide rail – upper fixing drill hole for the mounting plate/base plate

Dimension Z	Base plate	Mounting plate
Standard	38	43
With spindle extension	64	69

Mounting elements

	Steel/aluminium doors	Timber doors
Drive attachment without mounting plate (direct attachment)	8 cylinder head screws M5 × 22 and riveting nuts M5	8 wood screws with button head Ø5 × 40
Attachment of the mounting plate	8 countersunk screws M5 × 25 and riveting nuts M5	8 wood screws with countersunk head Ø5 × 50
Drive attachment on mounting plate	8x cylinder head screws M5 × 10	8 cylinder head screws M5 × 10
Standard roller guide rail, deep roller guide rail	2 countersunk head screws M5 × 40 and riveting nuts M5	2 wood screws with countersunk head Ø5 × 50

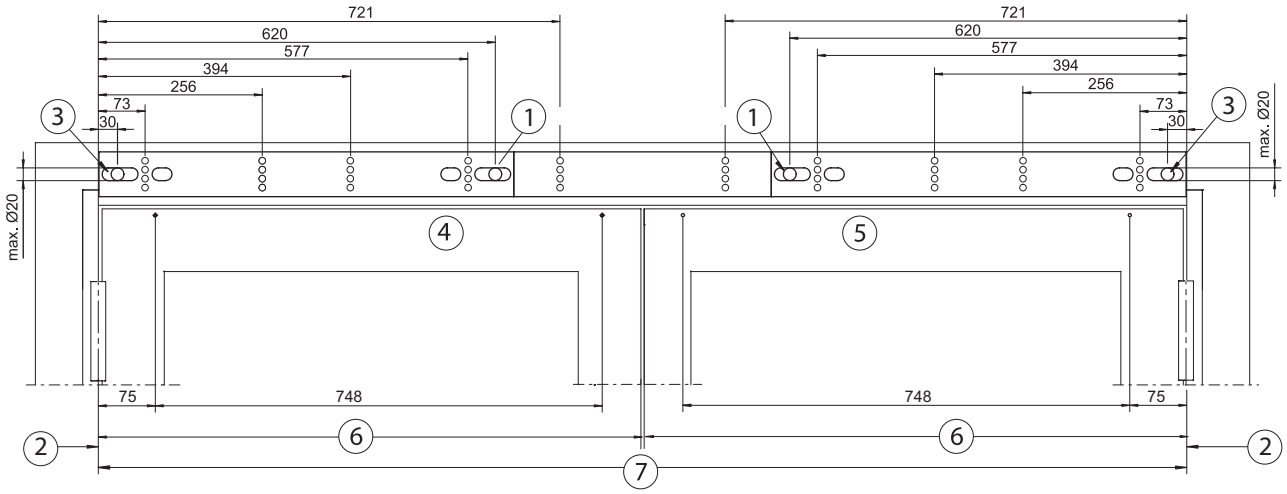
Fasteners (optional)

	Steel/aluminium doors	Timber doors
Attachment of the extension kit without mounting plate (direct attachment)	4 cylinder head screws M5 × 22 and riveting nuts M5	4 wood screws with button head Ø5x40
Attachment of the extension kit with mounting plate		
▫ Split mounting plate	4 cylinder head screws M5 × 22 and riveting nuts M5	4 wood screws with button head Ø5 × 40
▫ Continuous mounting plate	2 cylinder head screws M5 × 22 and riveting nuts M5	2 wood screws with button head Ø5 × 40
Attachment of base plate of the extension kit on mounting plate	4 cylinder head screws M5 × 10	4 cylinder head screws M5 × 10

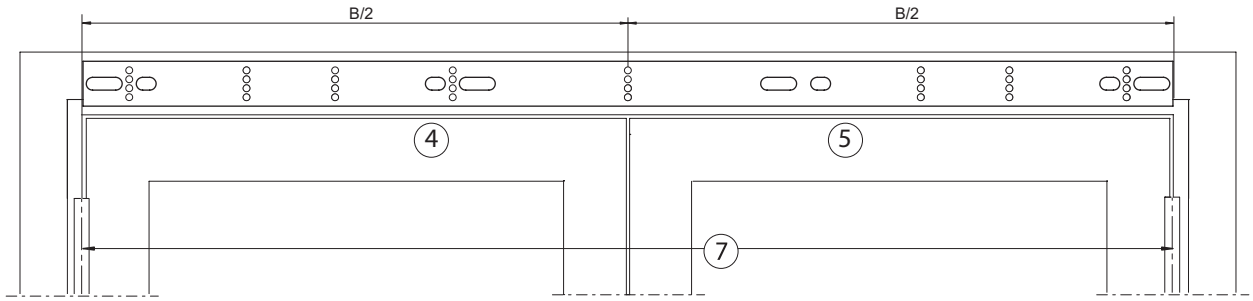
7.2.5 Transom installation hinge side with roller guide rail (double leaf)

- ▶ For vertical clearance measurement see chapter 7.2.1.
- ▶ Use 2× fitting template as with single-leaf version.

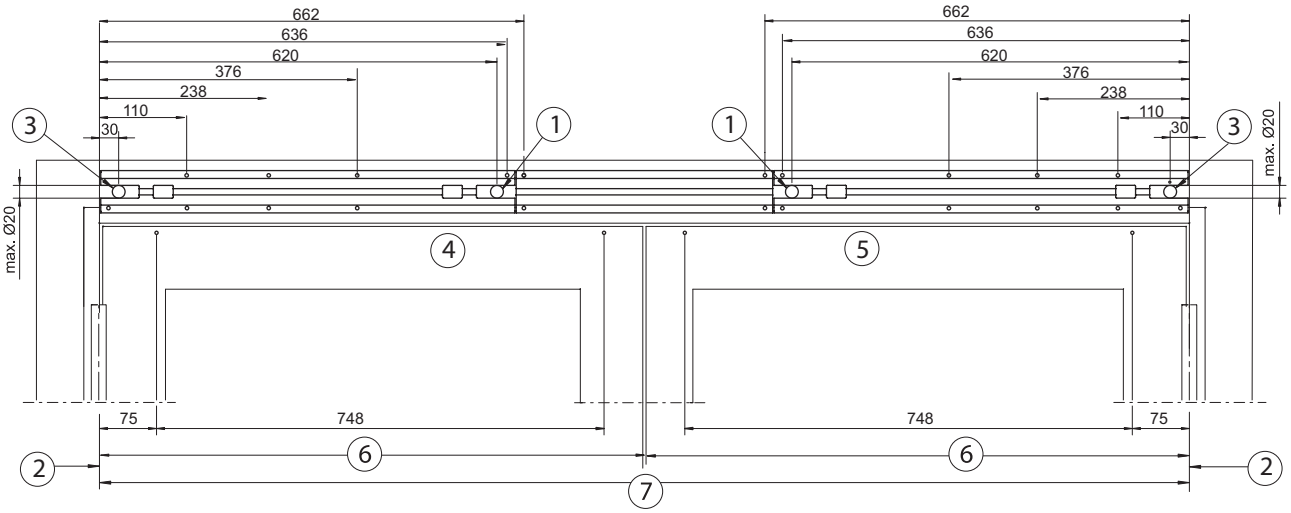
Fastening 2x Slimdrive EMD Invers with intermediate mounting plate



Fastening 2x Slimdrive EMD Invers with continuous mounting plate
See above for missing dimensions



Direct fastening 2x Slimdrive EMD Invers



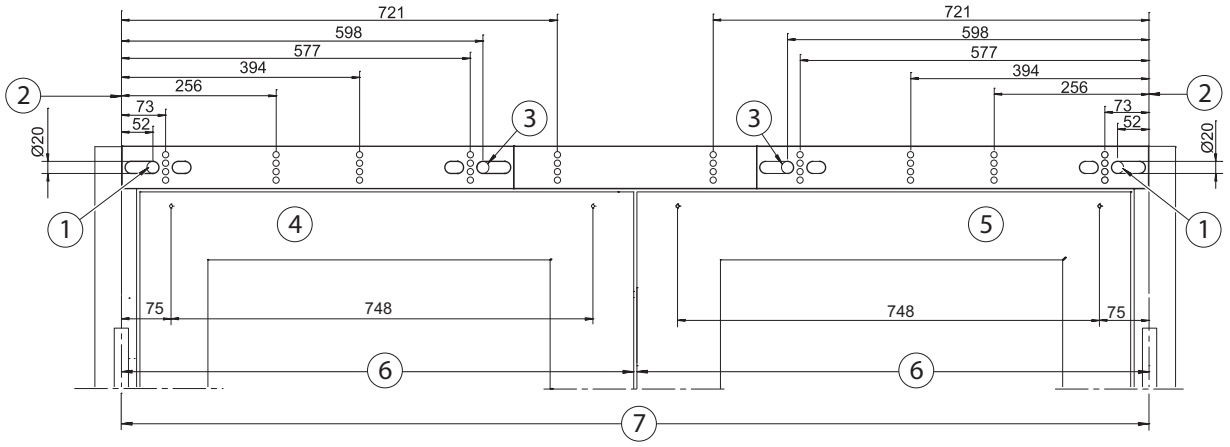
1	Concealed line- feed for low-voltage connection: sensors, electric strike, programme switch and lock switch contact	4	Active leaf
2	Dimensional reference centre of hinge	5	Passive leaf
3	Concealed cable guide for mains connection 230 V / 50 Hz	6	Door leaf width
		7	Hinge clearance B

7.2.6 Transom installation opposite hinge side with roller guide rail (double leaf)

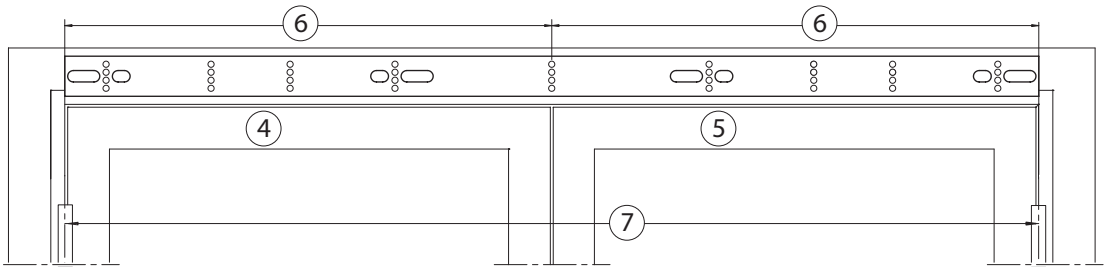
▶ For vertical clearance measurement see chapter 7.2.2.

- With outward opening exterior doors the type of installation transom installation opposite hinge side with link arm is recommended for exterior doors (wind load).
- ▶ Use fitting template as with single-leaf version.

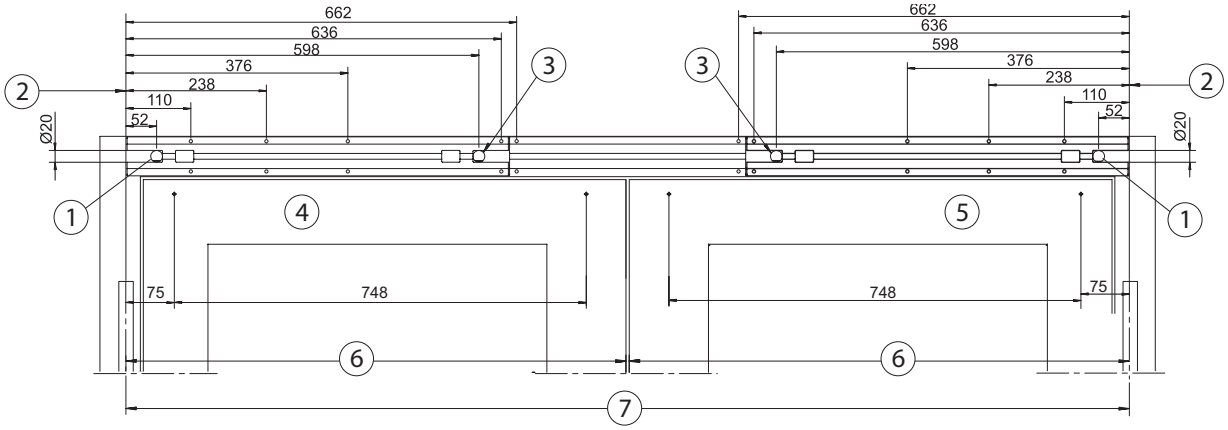
Fastening 2x Slimdrive EMD Invers with intermediate mounting plate



Fastening 2x Slimdrive EMD Invers with continuous mounting plate
See above for missing dimensions



Direct fastening 2x Slimdrive EMD Invers



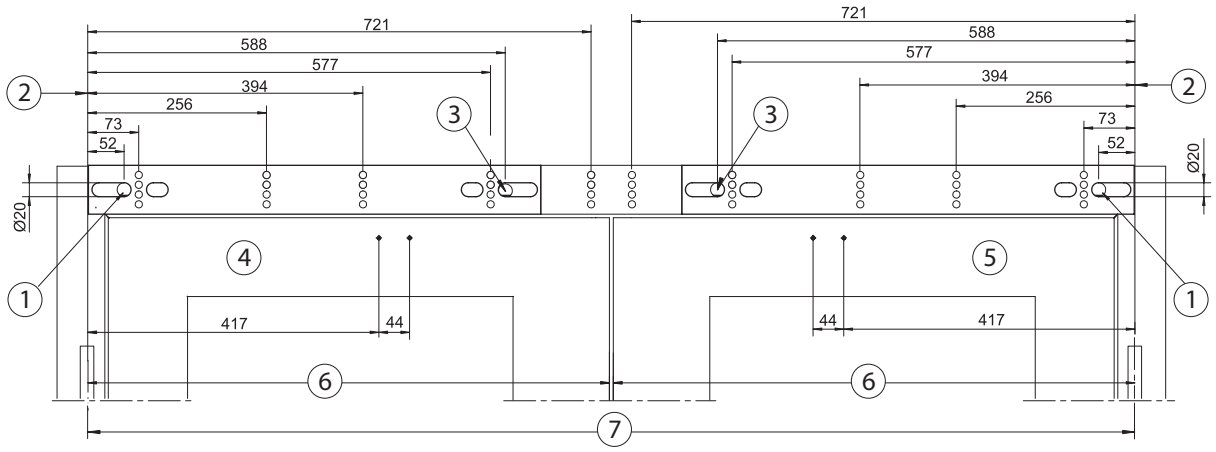
1	Concealed line- feed for low-voltage connection: sensors, electric strike, programme switch and lock switch contact	4	Active leaf
2	Dimensional reference centre of hinge	5	Passive leaf
3	Concealed cable guide for mains connection 230 V / 50 Hz	6	Door leaf width
		7	Hinge clearance B

7.2.7 Transom installation opposite hinge side with link arm (double leaf)

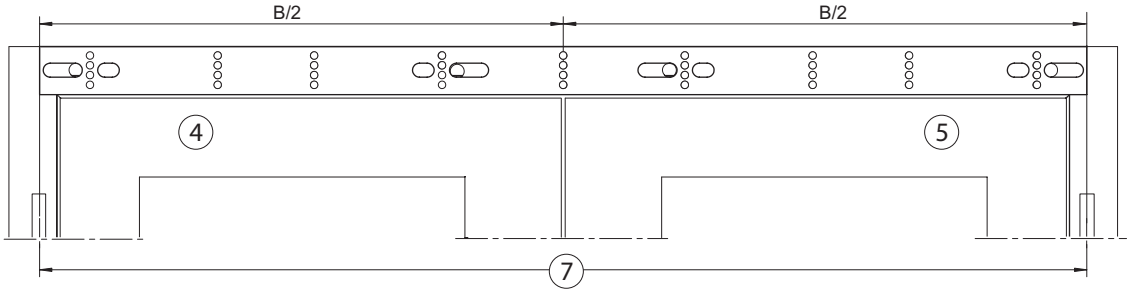
▶ For vertical clearance measurement see chapter 7.2.3.

▶ Use fitting template as with single-leaf version.

Fastening 2x Slimdrive EMD Invers with intermediate mounting plate

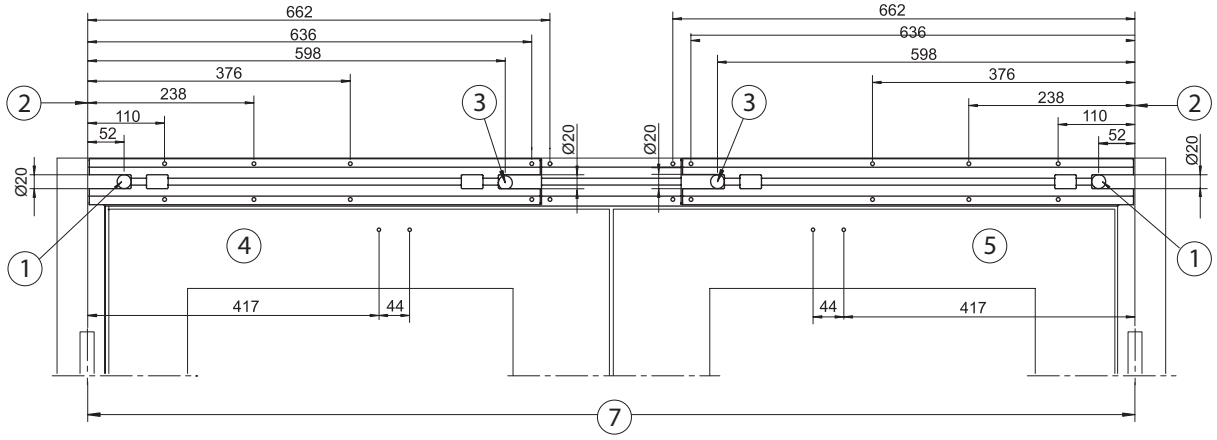


Fastening 2x Slimdrive EMD Invers with continuous mounting plate
See above for missing dimensions



1	Concealed line- feed for low-voltage connection: sensors, electric strike, programme switch and lock switch contact	4	Active leaf
2	Dimensional reference centre of hinge	5	Passive leaf
3	Concealed cable guide for mains connection 230 V / 50 Hz	6	Door leaf width
		7	Hinge clearance B

Direct fastening 2x Slimdrive EMD Invers



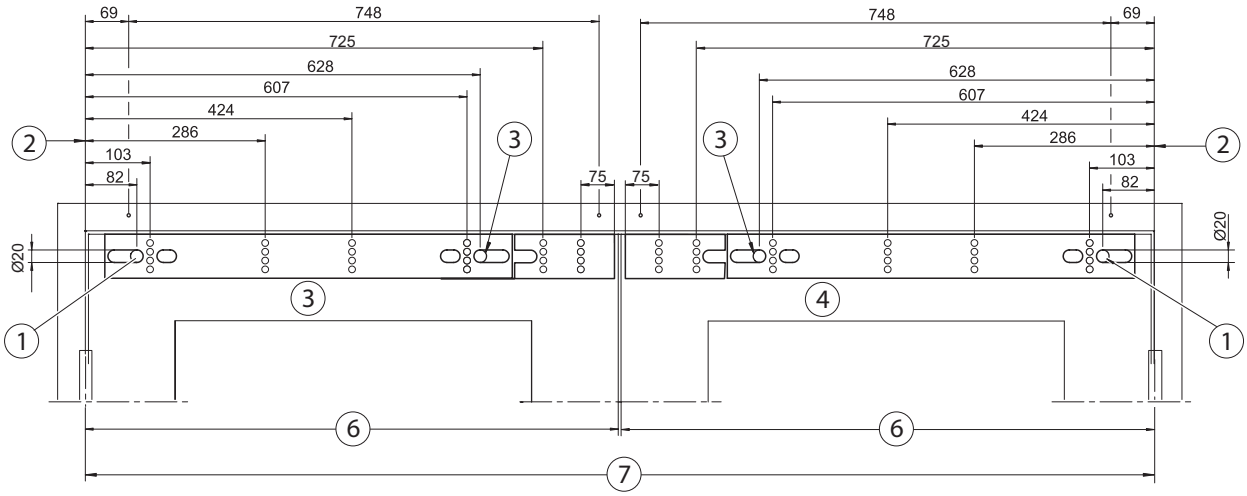
1	Concealed line- feed for low-voltage connection: sensors, electric strike, programme switch and lock switch contact	4	Active leaf
2	Dimensional reference centre of hinge	5	Passive leaf
3	Concealed cable guide for mains connection 230 V / 50 Hz	6	Door leaf width
		7	Hinge clearance B

7.2.8 Door leaf installation hinge side with roller guide rail (double leaf)

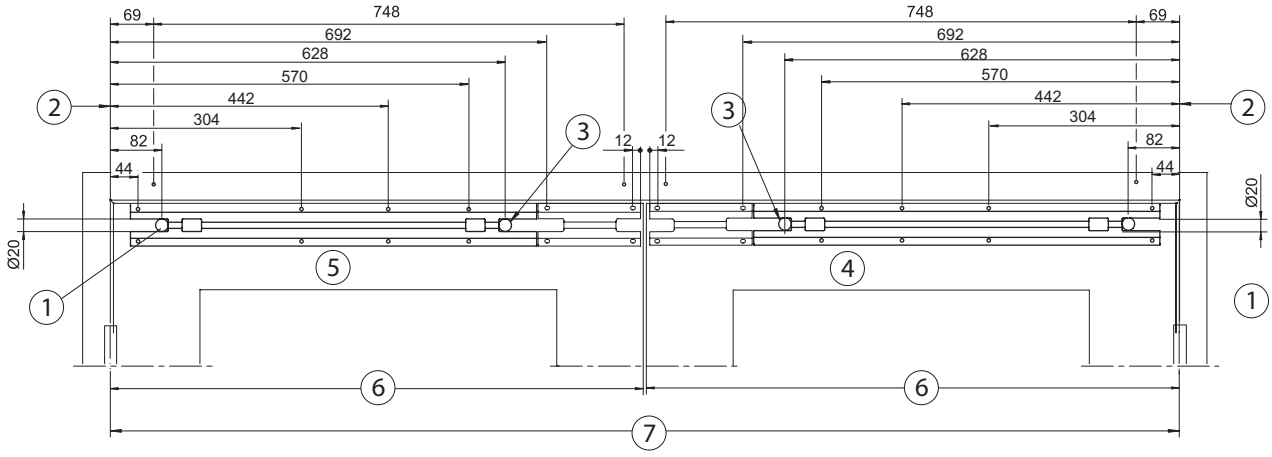
▶ For vertical clearance measurement see chapter 7.2.4.

▶ Use fitting template as with single-leaf version.

Fastening 2x Slimdrive EMD Invers with mounting plate



Direct fastening 2x Slimdrive EMD Invers

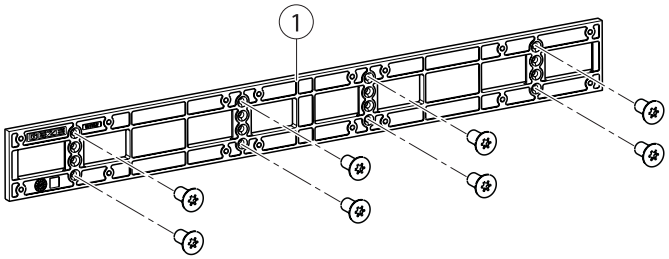


1	Concealed line- feed for low-voltage connection: sensors, electric strike, programme switch and lock switch contact	4	Active leaf
2	Dimensional reference centre of hinge	5	Passive leaf
3	Concealed cable guide for mains connection 230 V / 50 Hz	6	Door leaf width
		7	Hinge clearance B

8 Installation

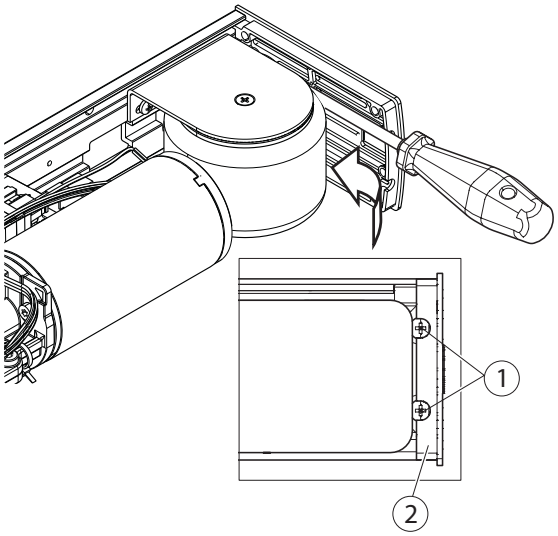
8.1 Fitting mounting plate (option)

- If appropriate, screw the mounting plate (1) on using at least two screws per row of holes.

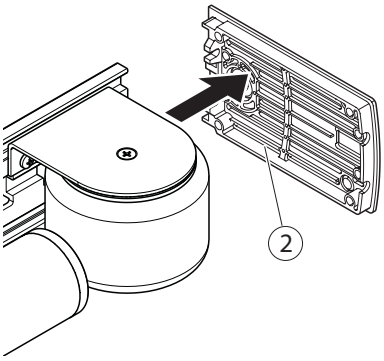


8.2 Exchanging the side panel for split or continuous cover (option)

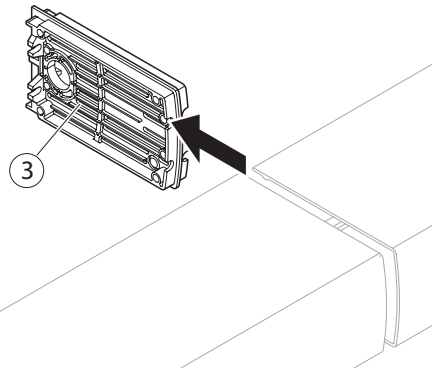
- Loosen 2 screws (1) as far as necessary until the side panel (2) can be removed.

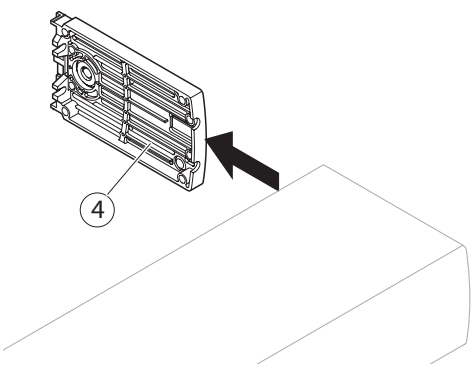


- Remove the side panel (2).



- Fit the side panel for partitioned cover (3) or side panel for continuous cover (4).

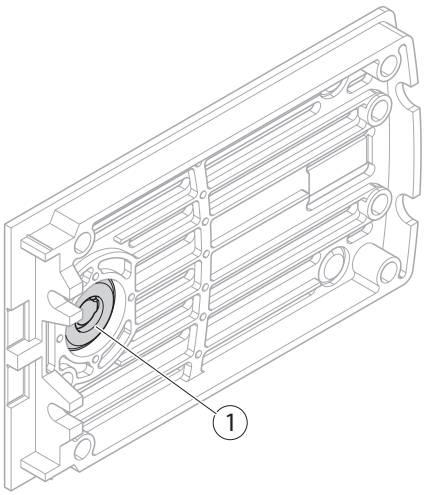




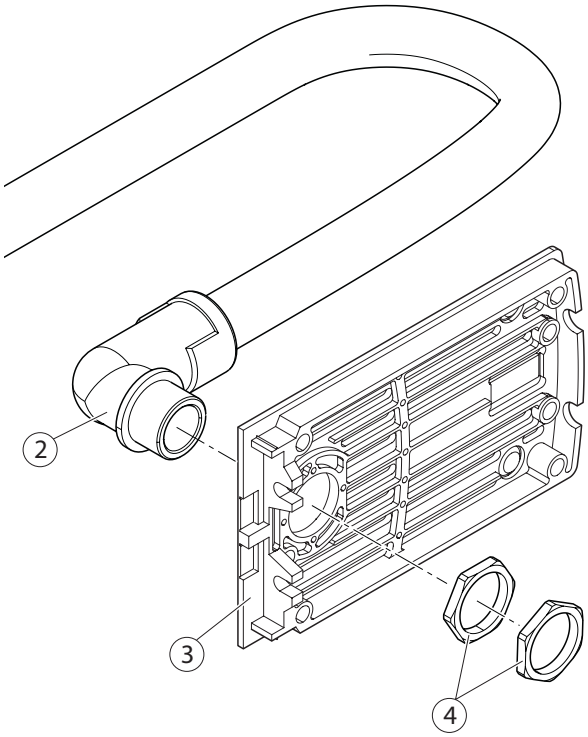
- Tighten screws (1).

8.3 Cable guide via door transmission cable for door leaf installation (option)

- Remove the side panel (see chapter 8.2).
- Break out the drill hole (1) for the cable feedthrough.



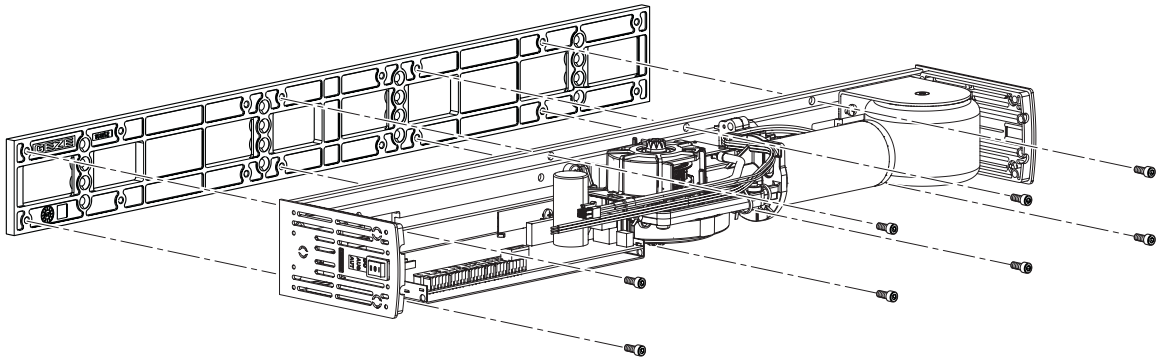
- Push the door transmission cable (2) through the side panel (3).
- Secure with 2 hexagon nuts (4).
- Install the side panel (see chapter 8.2).



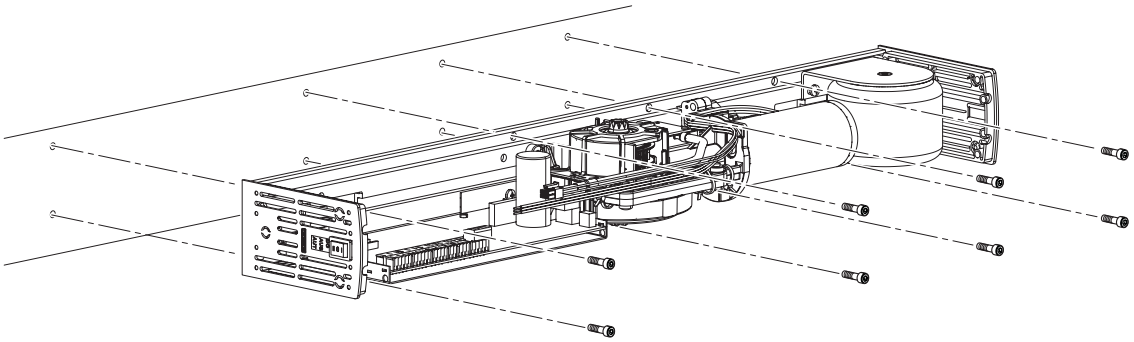
8.4 Installing the drive

During drive installation, ensure that the power supply cables are not pinched.

With mounting plate



Direct attachment

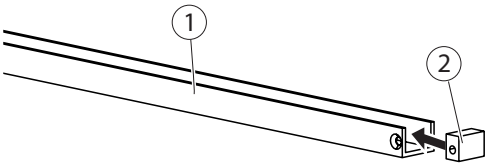


- Screw the drive on using the recommended screw material, see chapter 7.2.

8.5 Mounting the roller guide rail

How to install the sensor roller guide rail is described in the enclosed installation instructions or in the installation instructions enclosed with the sensors.

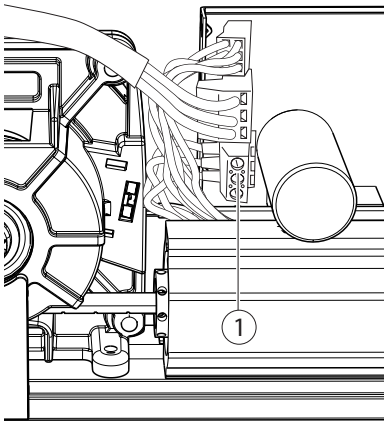
- Slide the filling pieces (2) into the roller guide rail (1) and screw in place at the marked spot.



8.6 Mounting the roller lever (for installation with roller guide rail)

WARNING!
Danger of injury
The mounted and pre-tensioned lever is braked electrically. If the control unit is replaced or a motor cable is disconnected, the stored energy of a tensioned lever is freed without braking and the lever accelerates back into its initial position.

- ▶ Do not disconnect any of the motor cables (1).
- ▶ Check the correct connection.



- For installation of the lever use only the Allen screw supplied with coating in the lower thread section.
- To prevent damage to the crown gearing of the roller lever, make sure it is inserted onto the pivot correctly.

8.6.1 Use of the roller lever types depending on the type of installation

Type of installation	Installation side	Roller lever*
Transom installation hinge side	DIN left	Standard
	DIN right	Standard
Transom installation opposite hinge side	DIN left	Door leaf DIN left
	DIN right	Door leaf DIN right
Door leaf installation hinge side	DIN left	Door leaf DIN left
	DIN right	Door leaf DIN right

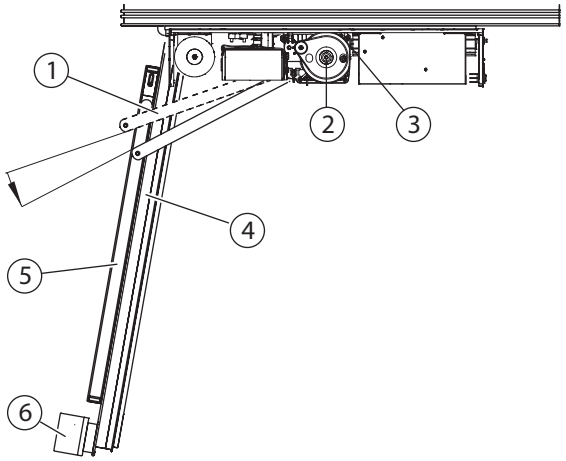
* Also heed the marking on the roller lever

Table applies for door opening angle TÖW of 100° for transom installation hinge side roller guide rail and transom installation opposite hinge side roller guide rail.

- ▶ Ask GEZE GmbH about suitable levers for larger door opening angles.

8.6.2 Transom installation hinge side with roller guide rail

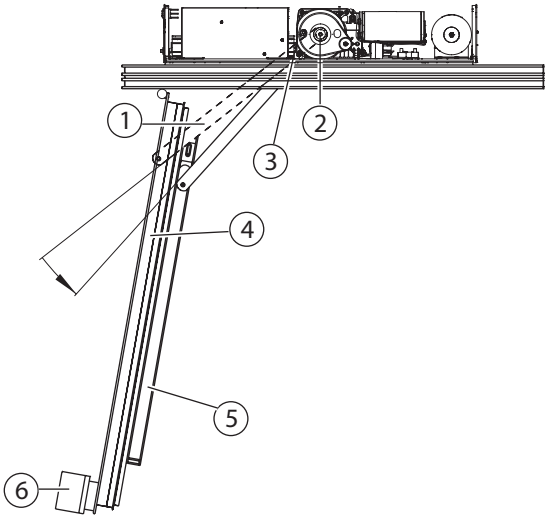
- Open the door (4).
- Attach the lever (1) as shown with the dashed line.
- Screw in the Allen screw (2), tightening torque = approx. 15 Nm
- Pre-load the lever (1) and insert it into the roller guide rail (5), closing the door at the same time.
- Install the stop buffer (6).
- If necessary, vary the spring pre-load at the hole nut (3).



8.6.3 Transom installation opposite hinge side with roller guide rail

Ensure that the correct lever DIN right or DIN left is installed, conforming to the order.
See stamp on the roller lever.

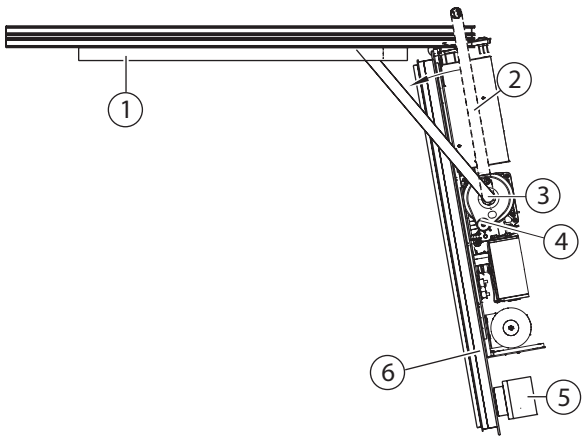
- Open the door (4).
- Attach the lever (1) as shown with the dashed line.
- Screw in the Allen screw (2), tightening torque = approx. 15 Nm
- Pre-load the lever (1) and insert it into the roller guide rail (5), closing the door at the same time.
- Install the stop buffer (6).
- If necessary, vary the spring pre-load at the hole nut (3).



8.6.4 Door leaf installation hinge side with roller guide rail

- Ensure that the correct lever DIN right or DIN left is installed, conforming to the order. See stamp on the roller lever.
- If the frame makes installing the lever difficult:
- ▶ Mount the roller lever on the drive before the drive is installed.
- ▶ Mount the drive with roller lever.

- ▶ Open the door (4) to the maximum opening width, fix it there.
- ▶ Attach the lever (1) as shown with the dashed line.
- ▶ Screw in the Allen screw (2), tightening torque = approx. 15 Nm
- ▶ Preload the lever (1) and insert it into the roller guide rail (5).
- ▶ Install the stop buffer (6).
- ▶ If necessary, vary the spring pre-load at the hole nut (3).



8.6.5 Installing the integrated opening restrictor

How to install the integrated opening restrictor is described in the installation instructions enclosed in the packaging unit of the opening restrictor.

8.6.6 Disassembling the roller lever

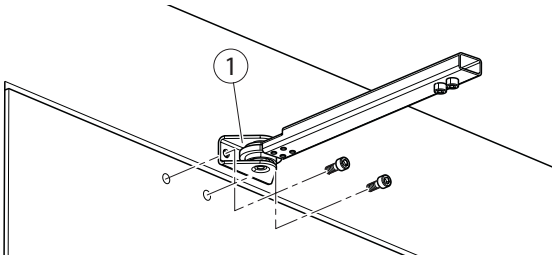
The lever is disassembled in the reverse order of installation for all types.

- ▶ Move the door to the closed position.
  - Put the drive in a de-energised state or press the manual trigger switch.
- ▶ Hook the roller lever (1) out of the roller guide rail.
- ▶ Hold the roller lever (1) and guide it slowly into the end position.
- ▶ Remove the Allen screw (2) and take the roller lever (1) off.

8.7 Link arm

8.7.1 Install the link arm bearing block

- Screw the link arm bearing block (1) on with 2 screws.

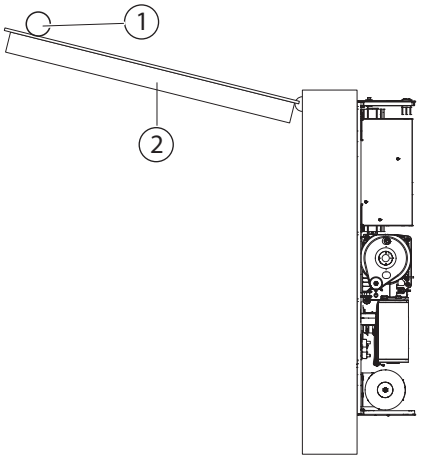


8.7.2 Mounting the link arm

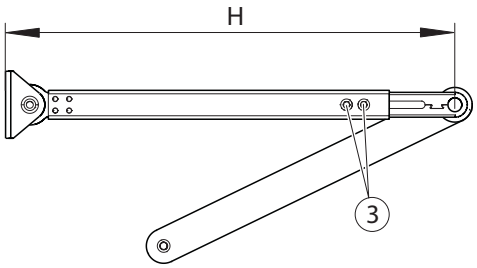
- Observe the instructions in the link arm packaging.

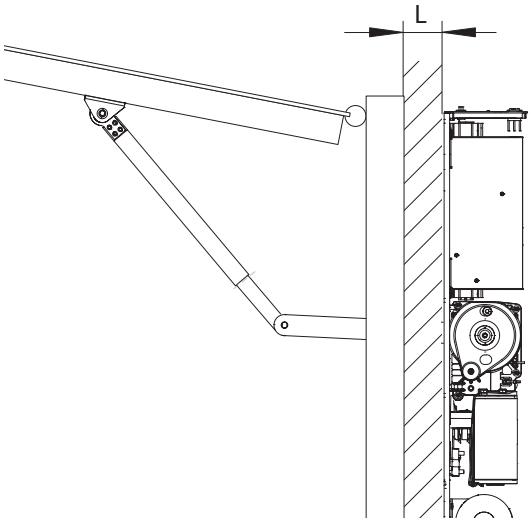
For the installation dimensions, see chapter 7.2.3.
Type of installation: Transom installation opposite hinge side

- Open the door (2) and define door opening angle TÖW.
- Set buffer (1), refer also to chapter 8.8.

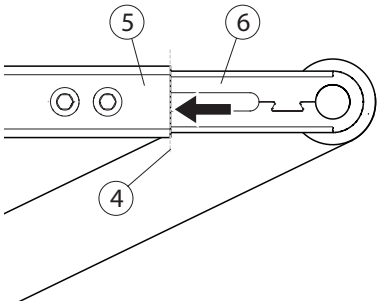


- Loosen the screws (3) at the link arm:
- Set telescope to length:
  - with mounting plate:
    Dimension H = 398 mm + reveal depth L
  - Without mounting plate:
    Dimension H = 390 mm + reveal depth L

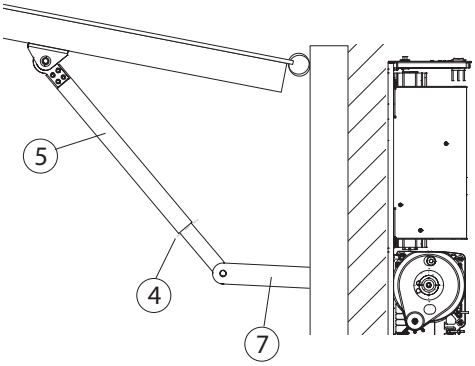




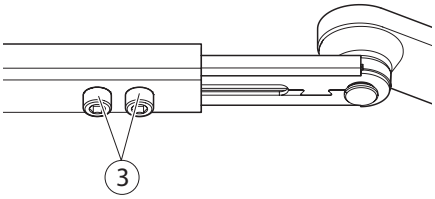
- Set the marking (4) for how far the inner shank (6) has to be pushed into the outer shank (5).



- Install the drive-side lever (7) on the drive shaft and attach as marked.
- Install the door-side lever (5) on the door.
- Push the telescopic shanks inside one another up to the marking (4). Pre-load the drive-side lever (7) by approx. 5° while doing this.

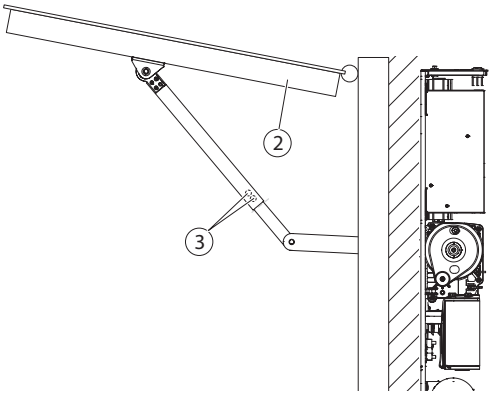


- Tighten the screws (3), tightening torque 15 Nm.



8.7.3 Dismantling the link arm

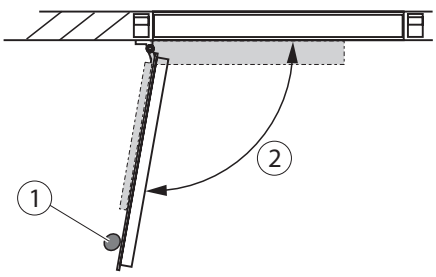
- Move door (2) to open position.
  - Put the drive in a de-energised state or press the manual trigger switch.
- Loosen screws (3).
  The pre-load is released, keep hold of the link arm and guide it slowly into the end position.
  The position shown by the dashed line is reached.
- Disassemble the link arm.



8.8 Mounting the door stop buffer

For dimensions of the door opening widths (2) see chapter 6.3.

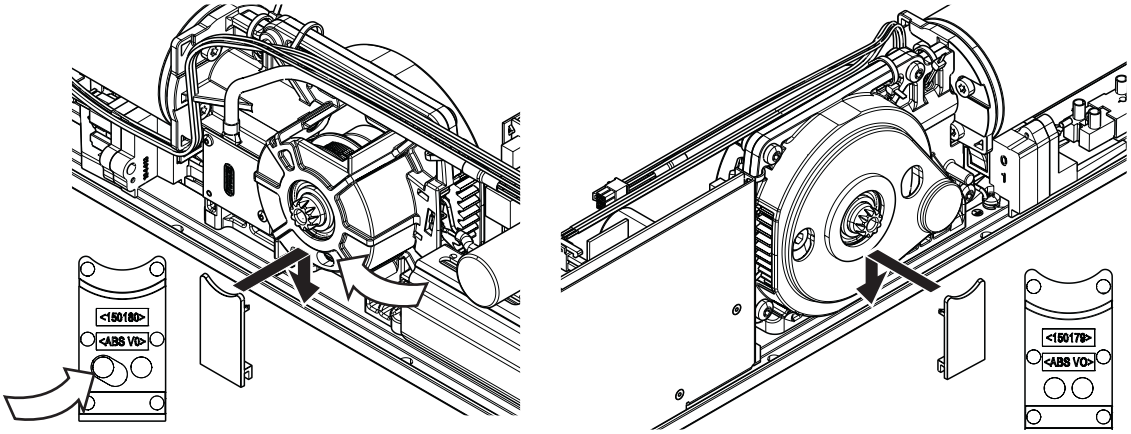
- Open and close the door by hand to check the space required.
- During door leaf installation on the cable guide, watch out for the pinch and shearing points of the door edges.
- Mount a stop (1) or an integrated opening restrictor (only for roller guide rail).



8.9 Mounting the shaft covers

There is only a minimum difference between the two shaft covers. There is a symbol for an oblong hole on the back of the left-hand shaft cover, which is on the gear as well (see arrows).
- ▶ During installation, make sure that the shaft covers are installed on the right side.

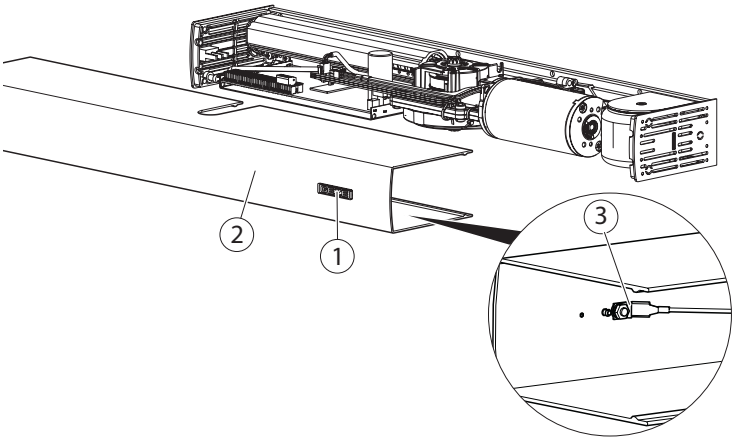
- ▶ Fit the left and right shaft covers as shown in the diagram below.



8.10 Attaching the cover

- ▶ Make sure that no cables become jammed.
- ▶ Lay the cover earthing cable in such a way that it is not near moving parts.

- ▶ Clip on the GEZE logo (1) in a suitable position on the cover and turn by 180° if necessary.
- ▶ Insert the cover earthing cable with the tab connector on the earthing lug (3).
- ▶ Slide the cover (2) over the drive and engage it.



8.11 Installing the activation sensors

- ▫ Sensors installed on the wall or ceiling have to be positioned so that the door does not move through the detection area of the sensor during opening and closing since self-activation might be possible otherwise.
- ▫ For electrical connections, see the wiring diagram.

9 Electrical connection

9.1 Mains connection

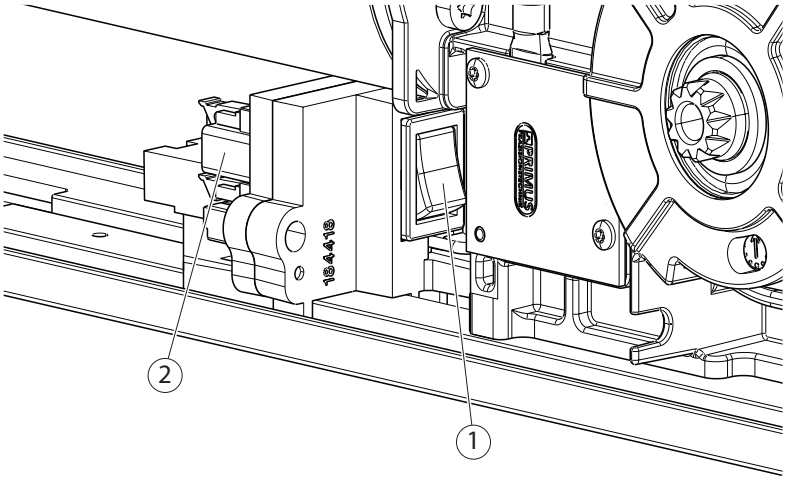
WARNING!
Risk of fatal injury due to electric shock!
- ▶ Get a qualified electrician to connect and disconnect the electrical system (230 V).
- ▶ Carry out mains connection and earth conductor test in accordance with VDE 0100 Part 610.
- ▶ Before working on the electrical system, always disconnect the system from the mains.
- ▶ Heed the wiring diagram.

- In accordance with the valid regulations it must be possible to de-energise the drive unit at a suitable point. In the case of a fixed connection on site, an upstream main switch must be provided.
- If flexible cables are used, always use insulated wire-end ferrules.

9.2 Terminal assignment and cables

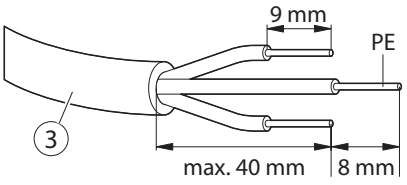
- The cables for the mains connection and the control cable must be available on site (see cable plan).
- During work on the electrical system, the drive must be disconnected from the mains at the main switch (1) under the motor.

- ▶ Switch the drive off at the main switch (1) at the mains connection (switch position 0).

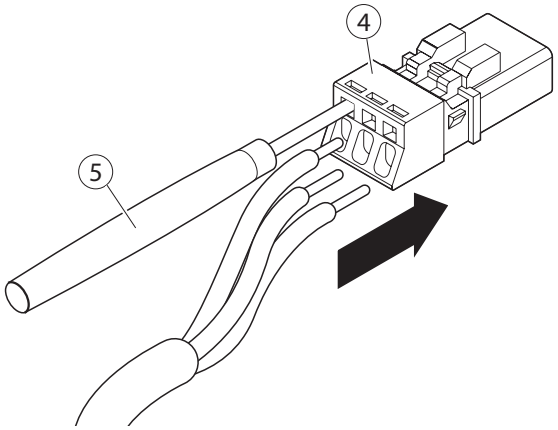


- ▶ Connect the 230 V mains cable (3) to the connector (4) in accordance with the wiring diagram (included with the drive) as follows:

- ▶ Strip the mains cable (3).
- Sheath removal length = 48 mm
- Stripping length = 9 mm
- PE line lead = 8 mm



- ▶ Insert screwdriver (5) or similar into the opening of the connector (4).
- ▶ Push the wires into the connector (4).
- ▶ Remove screwdriver (5) again.
- ▶ Connect 230 V mains cable in accordance with the wiring diagram with connector (2) at the connector socket (4).



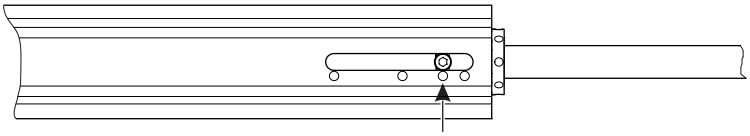
10 Settings

10.1 Setting the opening torque

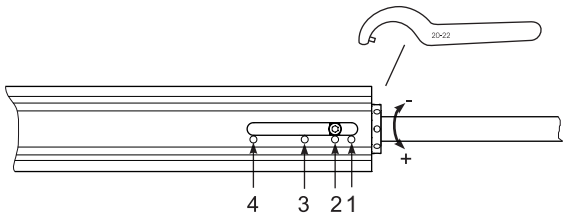
▶ A hook wrench size 20-22 mm is required for setting.

- For commissioning, it is recommended to set the spring pre-load to marking 1.
- ▶ Set the opening torque at the power storage device in such a way that the door opens securely.
- After the spring pre-load has been changed, the drive must re-learn, see wiring diagram.

In the factory, the power storage device is set as shown in the illustration below:

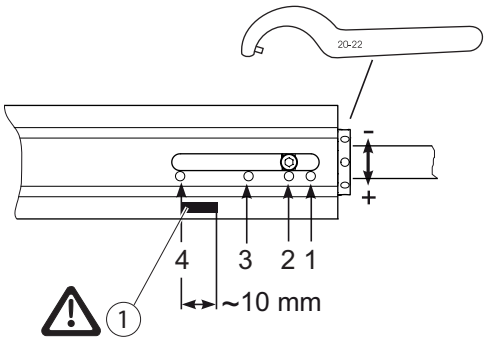


10.1.1 Setting for using the roller guide rail



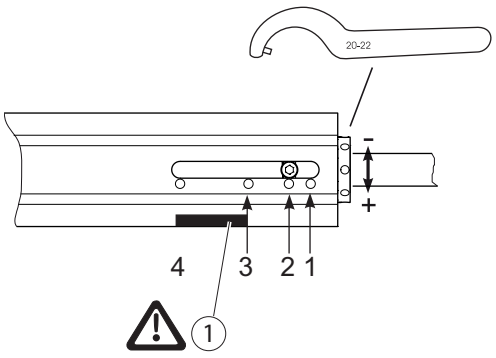
10.1.2 Settings in installation type transom installation hinge side with internal door hinges

Damage to the power storage device!
The area (1) is not permitted for internal hinges for transom installation type hinge side mounting type.
▶ Maximum power storage device setting up to marking with hole nut wrench size 20–22 mm.



10.1.3 Setting for using the link arm

Damage to the drive and door system!
▶ The area above (1) is not permitted when a link arm is used and must not be set.



10.2 Opening speed in de-energised state

This special case occurs in the event of a power failure or fire alarm or when the drive is switched off electrically. The opening speed is electrically controlled in this operating status too.
See the wiring diagram for how to set the opening speed.

10.3 Entries on the identification plate

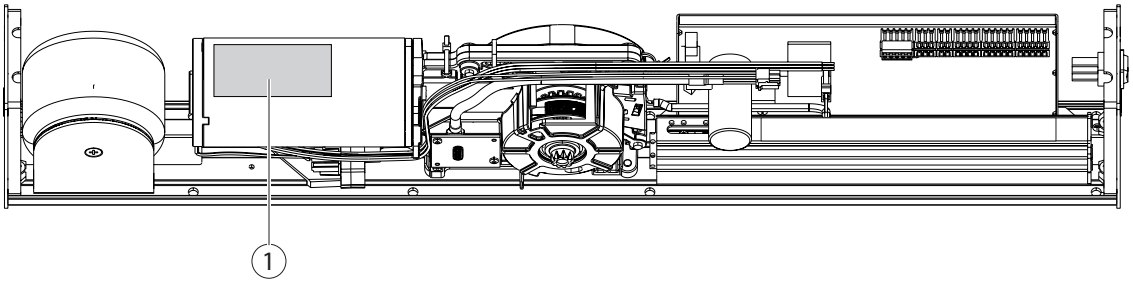
Before commissioning of the swing door system set up, markings must be made on the identification plate.

- The entries are also required for configured drives.
- If electrical commissioning does not directly follow drive installation, the spring must be set to the smallest pre-load in order to move the drive to low-energy function in accordance with the requirements of the Machinery Directive.
- Within electrical commissioning, the door opening torque of the power storage device must be set in accordance with intended use of the door system as a personal protection door, see chapter 10.1.

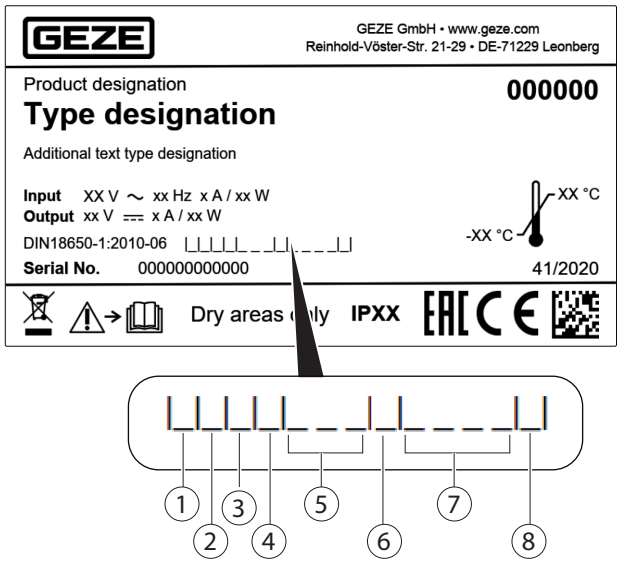
▶ Enter the correct marking on the identification plate.

- The entries on the identification plate must be made in accordance with EN 60335-1: 2012-11-01, chapter 7.14, using a pen that is resistant to mineral oils and water.

Position of the identification plate on EMD Invers



1 Identification plate



① **Drive type (first character)**

1 Swing door drive (classified in the factory)

② **Durability of the drive (second character)**

2 500,000 test cycles, with at least 1,200 cycles/day (classified in the factory)

③ **Type of door design (third character)**

1 Swing door (classification factory provided)

④ **Suitability as a fire protection door (fourth character)**
A distinction is made between four classes of fire protection doors:

0 Not suitable as fire protection door (classified in the factory)

⑤ **Safety devices on the drive (fifth character)**
A distinction is made between three classes in terms of safety requirements:

1 Force limitation

2 Connection for external safety systems which have been approved by the drive manufacturer

3 Low-energy

Note: Several classes may be specified.

⑥ **Special requirements made on the drive/functions/installations (sixth character)**
Two out of five application classes are relevant for the swing door drive:

0 No special requirements

2 On rescue routes without turning fitting

Note: Only one class may be specified.

⑦ **Safety at powered pedestrian doors – version/installation (seventh character)**
A distinction is made between five classes of safety devices on door leaves:

0 No safety devices

1 With sufficiently dimensioned safety distances

2 With protection against crushing, shearing and drawing-in of fingers

3 With built-in turning fitting unit

4 With sensor-controlled protective devices

Note: Several classes may be specified!

⑧ **Ambient temperature (eighth character)**

2 –15 °C to +50 °C (classified in the factory)

11 Commissioning tests

For 1-leaf system

▶ With the door closed, switch the current off.

The door must open mechanically and must not be prevented from opening by an emergency exit electric strike or motor lock, for example.

For 2-leaf system

▶ With the door closed, switch the current off.

Both door leaves must open immediately and must not cause each other to jam, see chapter 6.1.1.

12 Service mode

Access to the service mode is via the service terminal ST220, the display programme switch DPS or GEZEconnects. The functions of the respective operating units are described in the wiring diagram.

13 Service and maintenance

The maintenance work described below must be performed by an expert on the Slimdrive EMD Inverse at least once a year or after 500,000 cycles.

If there is a display programme switch, the service display lights up in the display.

▶ Service and maintenance should then be carried out promptly.

13.1 Dangers during mechanical service

WARNING!

Risk of fatal injury due to electric shock!

▶ Disconnect the power supply from the drive using the on-site main switch and secure it against being switched back on again or switch the drive off at the main switch (see chapter 9.2)

WARNING!

Risk of injury due to falling cover.

Risk of fatal injury due to electric shock!

The cover is held with a catch mechanism at the drive side panels.

▶ Unplug the earthing cable (yellow-green) from the cable lug at the cover.

▶ When re-installing, plug this earth cable back in at the same point before fitting the cover. Otherwise there is a risk of an electric shock if a short-circuit to earth occurs.

WARNING!

Danger of injury caused by crushing!

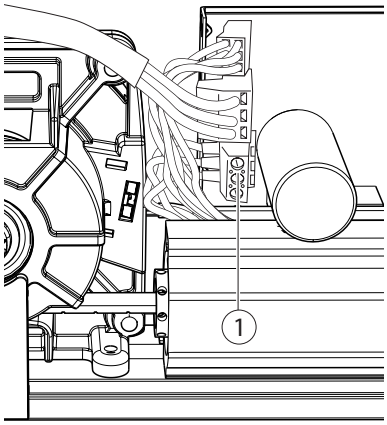
▶ Ensure that you have no extremities in the swivelling range during swing movements of the lever or of the link arm.

Electrical brake in de-energised state

The Slimdrive EMD Invers has a brake which is controlled electrically for the opening speed.

This is operable during a power failure, with an electrically deactivated device and in the case of a fire alarm (generator principle).

WARNING!
Danger of injury
The mounted and pre-tensioned lever is braked electrically. If the control unit is replaced or a motor cable is disconnected, the stored energy of a tensioned lever is freed without braking and the lever accelerates back into its initial position.
- Do not disconnect any of the motor cables (1).
- Check the correct connection.



WARNING!
Risk of burns due to hot motor.
The motor in the drive can become very hot after continuous operation or poor ease of movement or other defects.
- Disconnect the system from the mains before working on the motor.
- Let the motor cool down.

13.2 Maintenance work

The Slimdrive EMD Invers is maintenance-free to a great extent and no extensive work has to be carried out with the exception of that specified below:
- Check the roller lever or the link arm for damage, replace if necessary.
- Check fixing screws for tightness.
- Tighten the fixing screw for the link arm or roller lever with 15 Nm.
- Check the O-rings on the roller in the rail, replace if necessary (for disassembly of the roller lever see chapter 8.6.6).
- Clean the inside of the roller guide rail.
- Check that the door latch functions correctly and is clean, oil lightly if necessary.

Test run
- Switch the drive off at the main switch.
- Ensure that the door moves properly.
- Check the correct installation, closing and opening sequence control (for 2-leaf doors).
- Check the opening speed (see chapter 10), change if necessary (see wiring diagram, chapter, “Control unit and supply terminals”).
- Switch on the mains voltage again.

13.3 Electrical service

- Keep the test documents up-to-date and make them available.

The number of openings, operating hours and remaining time until the next servicing can be queried as described in the wiring diagram (see wiring diagram, chapters “Commissioning and service” and “Service mode”).
- After completing the maintenance work, always execute the Learning function for the Slimdrive EMD Invers (see wiring diagram, chapter “Commissioning and service”).
- Check the function of the activation and presence sensors and replace if necessary.

13.4 Electrical faults

Fault messages are saved and can be retrieved using the service terminal ST220, the display programme switch DPS or GEZEconnects.
If a fault is currently active, it is shown every 10 seconds on the display programme switch or the service terminal ST220.
If the dot lights up in the left half of the display programme switch, the system was unable to completely initialise after being switched on. Either there is an obstruction or something in the system itself has become jammed.
The dot extinguishes as soon as the door has been opened completely and closed again once.
For troubleshooting and fault elimination see the fault table in the wiring diagram, chapter “Fault messages” chapter.

- ▶ After changes to the drive (spring pre-load, fitting dimensions, change in the coupling elements) or modifications to the “Open” safety sensor, check the control parameters (see wiring diagram).
- ▶ Reteach the drive (see wiring diagram).

14 Installation checklist Slimdrive EMD Invers

No.	Test	In chapter	On page	Completed
1	All cables laid out correctly for the installation of the Slimdrive EMD Invers?	–	–	
2	Option: Mounting plate installed?	8.1	27	
3	Drive unit installed?	8.4	29	
4	Option: For 1-leaf drive with extension kit or 2-leaf system: Side panels exchanged against side panel for continuous or partitioned cover?	8.2	27	
5	Option: Door transmission cable installed with door leaf installation?	8.3	28	
6	Roller guide rail installed?	8.5	29	
7	Link arm bearing block installed?	8.7.1	33	
8	Option: Adapter for sensor link arm installed?	8.7.1	33	
9	230 V connection established?	9.1	36	
	Option: connection can be set up later by a qualified electrician possible; separate 230 V Schuko plug cable used for set-up?	–	–	
10	Lever fixed to drive? Lever pre-load ≠ Spring pre-load. ▶ Follow the installation instructions.	8.7	33	
	Option: Spindle extension attached?	–	–	
11	Connection to the door element established (roller lever hooked into the rail or link arm clamped)?	8.6 8.7.2	30 33	
12	Shaft cover installed?	8.9	35	
13	Mechanical ease of movement of the door checked?	–	–	
14	Opening torque set? Limits related to max. spring pre-load taken into account? The opening time for the de-energised state is set using the three-position switch on the F-printed circuit board (see wiring diagram, chapter “Control unit and supply terminals”).	10.1	37	
15	Safety sensors fitted?	–	–	
16	Peripheral cables connected?	–	–	
17	All cables secured?	–	–	
18	Slimdrive EMD Invers put into operation with ST220, GEZEconnects or DPS (see wiring diagram)?	–	–	
19	Cover attached? Protective earth conductor connected?	–	–	
20	Door stop buffer or opening restrictor installed?	8.8	34	

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