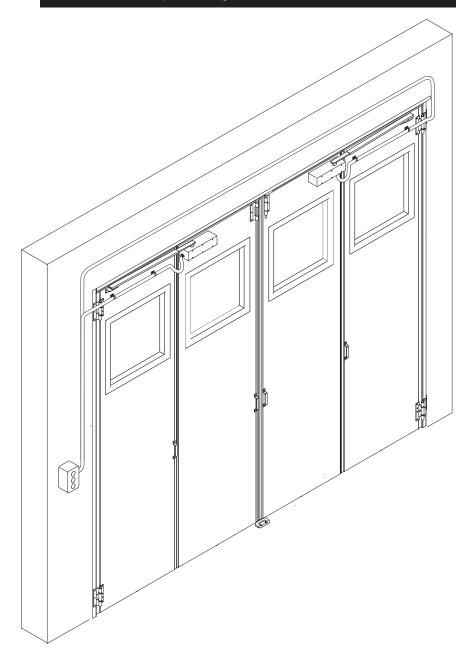
## FOLDING DOORS WITH DRIVE

Installation, Operating, and Maintenance Manual





06I2019 **EN** 

**DESIGN I SAFETY I SERVICE** 

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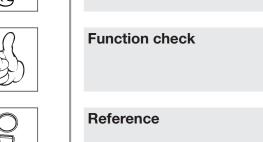
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#### **Symbol Explanation** 2.





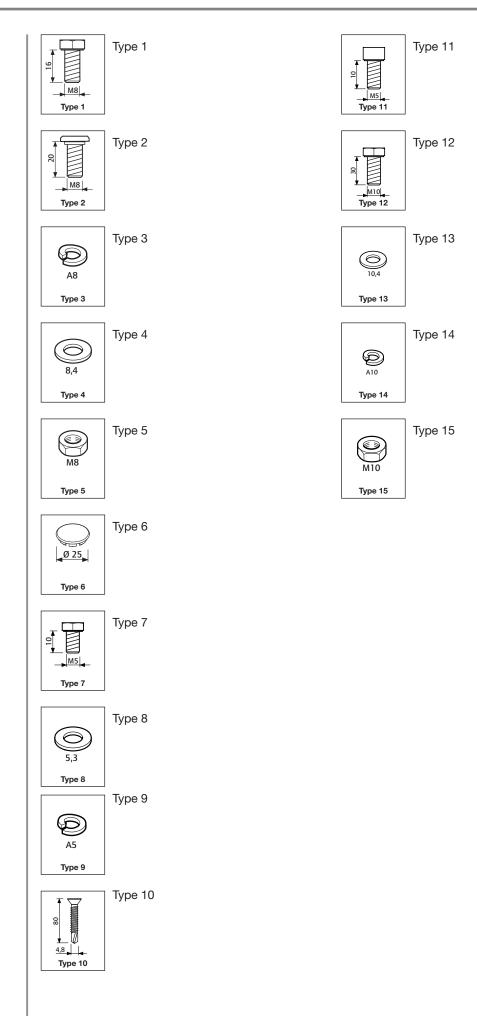




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## 3. Overview of screws



## 4.1 Target group

#### Installation should only be carried out by fully qualified specialists.

Qualified and trained door installation specialists have

- knowledge of general and special safety and accident prevention regulations,
- participated in training courses for the application of safety equipment,
- been trained in the safe use of hand and electric tools,
- regularly attended training held by the manufacturer,
- familiarity with ASR A1.7 (guidelines for workplaces).



#### **Caution!**

Connection to the electrical power supply may only be carried out by a qualified electrician.

Qualified electricians have

- knowledge of the general and special safety and accident prevention regulations,
- knowledge of the applicable electrotechnical regulations (e.g. DIN VDE 0100 part 600k, DIN VDE 0100-722),
- the capability of recognising risks and avoiding potential hazards,
- familiarity with the operating instructions.

## 4.2 Warranty

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#### A warranty as regards functioning and safety can only be provided if

- the safety and warning notices have been adhered to
- installation has been carried out correctly and in the order specified in the instructions
- only original Teckentrup accessories have been used
- no additional objects are attached to the door
- the supplied parts have not been adjusted or adapted
- regular door maintenance has been carried out
- the operator has been provided with all the relevant operating instructions (door, drive system and safety equipment).

## 4.3 General safety instructions



#### Caution!

- Cordon off the danger zone prior to installation.
- Ensure that people who are not involved with door installation are kept away from the danger zone.
   Installation should only be carried out by fully qualified specialists.
- Installation has to be carried out from a secure position (e.g. scaffolding).
- Supplied drawings take precedence over any other drawings.
- To prevent crushing, the door should only be opened and closed when no-one is located in the door travel area.
- In the event of defects or irregularities, the door must not be used and a fully trained and qualified fitter should come and inspect the door system.

### 4.4 Installation site requirements

The door should only be installed in walls which have been tested and are approved for the static loading.

The following types of wall are permissible:

- Masonry in accordance with DIN 1053-1, min. masonry compressive strength class 12 min. masonry mortar group IIa, wall thickness ≥ 175 mm.
- Concrete in accordance with DIN 1045, min. masonry strength class B15, wall thickness ≥ 140 mm.
- Autoclaved aerated concrete blocks and high precision units in accordance with DIN 4165, min. masonry strength class 4.
- Steel construction with static documentation.

The following wall plugs are recommended:

- Masonry: Fischer FUR

Fischer FAZ, Fischer FH-S

- Autoclaved aerated concrete: on request
- The finished floor must be level and horizontal.

- Concrete:

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- The walls at the opening side have to be aligned.
- The door must not open into public thoroughfares.
- Ensure sufficient drainage in the area in front of the door.
  - The door must be mounted to the adjacent constructional elements in a way that satisfies the following requirements:
    - Loads on the opened and closed door are accommodated securely and permanently.
    - Loads which develop due to the door movement are accommodated securely and permanently.
    - The forces should not affect the stability of the adjacent wall.
- Always observe and adhere to local regulations if the door is installed in potentially explosive areas.
   The operator must inform the fitter of these regulations.
  - Earthing work should only be carried out by trained and qualified personnel.
- Make sure there are no installation or electrical wires within or on the wall in the installation area.
- The protection class IP 55 of the drives must be taken into consideration. Direct penetration of water must be prevented.
- A separate entrance or a wicket door is recommended.
- A 3-pole CEE connection with 230 volts, 1 phase, and 10 Ampere fuse must be available on site.

### 4.5 Door installation instructions

- Leave all the components in the packaging until they are required for assembly.
- Depending on the type of door, the door must be installed either within or to the face of the opening.
- Types of mounting not specified in the instructions must be approved by the manufacturer in advance.
- Insofar as no finish is provided, doors which are installed outdoors must be provided with a finishing coat no later than three (3) months after installation.
- The ready-for-use door must satisfy the requirements of EN 12604.

### 4.6 Door operation instructions

- The door system may only be commissioned when the minimum protection in accordance with DIN EN 12453 is provided.
- Never place any objects within the movement range of the door.
- The door must be either fully open or fully closed, but not be left in an intermediate position.
- The door leaves are opened and closed with the drives.
- The door leaves can be opened using the emergency unlocking function in the case of an emergency.

### 5.1 Scope of delivery

- Door pack
- Accessories pack
- Door specific drawing
- Testing book with wiring diagram

Refer to the enclosed packing list for details.



#### Note:

If no wall plugs for the installation are ordered, the recommendations must be followed (4.4 Requirements for the setup/installation location).

#### **Connection cable:**

The following or equivalent cables are supplied for connection:

DrivesOelflex<sup>R</sup> 2 x 2.5 mm²Safety contact stripOelflex<sup>R</sup> 4 x 0.25 mm²Switch, key switch, andwireless receiver:Oelflex<sup>R</sup> 5 x 0.75 mm²

## 5.2 Illustration and installation methods

The generally accepted illustrations show the installation type in the soffit. See the door-specific drawing for the installation type and the door opening direction.

Technical details subject to change.



#### **Reference:**

See the enclosed installation manual for installation methods that are not described in these instructions.

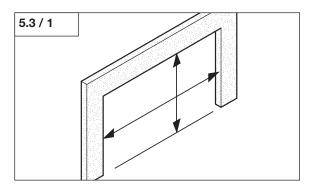


## 5.3 Dimensional checks

#### **Reference:**

Please refer to the order confirmation or the door specific drawing for the order dimensions of the door.

• Compare the order dimensions of the door and the actual structural conditions.





#### Note:

In order to install the door, the following conditions must be fulfilled:

- The finished floor should be level and horizontal.
- The walls at the opening side must be parallel to one another.
- The wall distances of the opened door must be maintained.
  - ened door must be

5.3/2

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Check the subsurface.

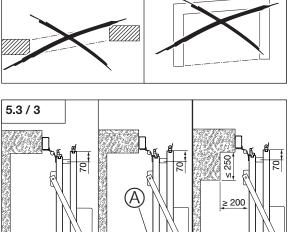


#### **Caution!**

In order to prevent people from becoming trapped, a safety contact strip (A) must be affixed on the door leaf for observance of the minimum clearance to the wall in accordance with DIN EN 12604.

• Check the wall distances on the opening side.

Please consult the manufacturer for permissible maximum deviations prior to assembly.

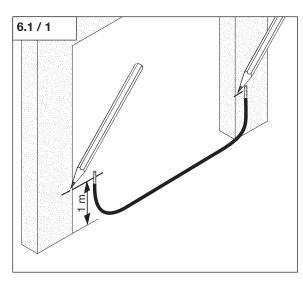


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## 6.1 Preparing frame

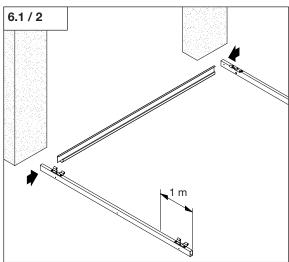
- Use a pencil to mark the 1 metre level on the assembly side.
- Transfer the 1 metre level to the opposite side.

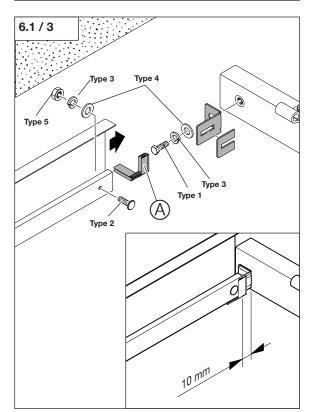




#### Note:

- The frame must be screwed into position as follows: The hinges must be aligned correctly.
- To enable subsequent adjustment of the frame, a 10 mm gap must be observed between the side frame element and the upper frame element.
   The gap must be sealed with the supplied rubber strip (A).
- Lay the frame elements in front of the opening.
- Use a pencil to mark the 1 metre level on the side frames.
- Screw the frame elements together.















## 6.2 Installation of bottom buffer (optional)

• Install the brackets.

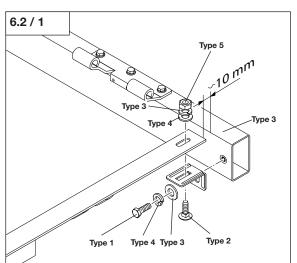




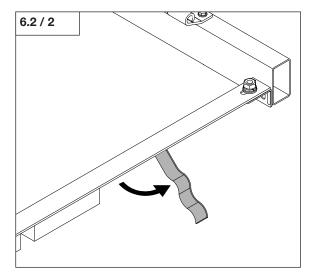








• Pull all installation anchors outwards before setting up.



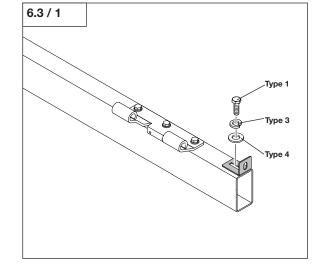
## 6.3 Frame installation in the soffit

Install the brackets.

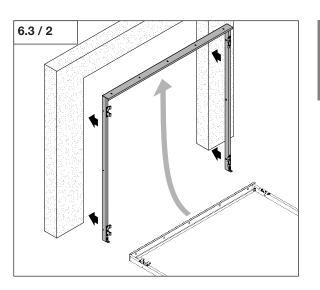








- Stand the frame up.
- Position the frame within the opening.



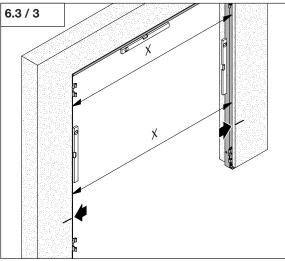


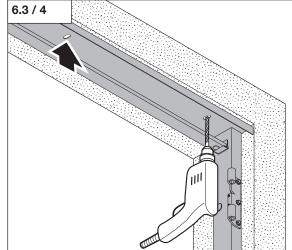
## Attention!

The frame should not be welded into position.

The frame must be aligned to the centre, on the datum marker, and vertically.

- Align the frame.
- Fix the frame in the aligned position.
- Check the overall frame dimension (X).
- Drill the fastening holes through the punched holes in the header.





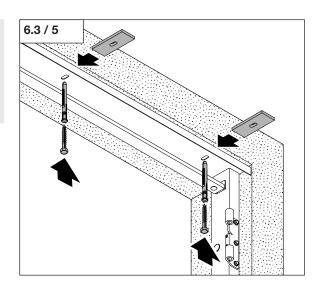
## 6. Installation

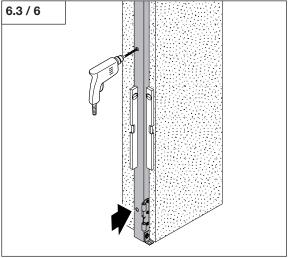


### Note:

- The frame should not twist or buckle when tightening the screws.

- Any unevenness or spaces between the header and the frame must be underfilled.
- Doors with strain relief must be levelled out.
- Screw the frame to the header.
- Clean any drilling dust off the frame.
- Drill through all the pre-marked holes of the side frame into the wall.

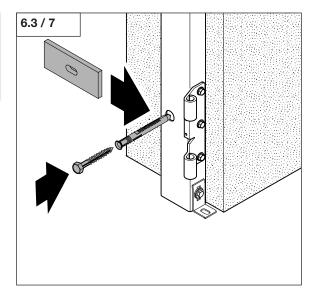






#### Note:

- The frame should not twist or buckle when tightening the screws.
- Any unevenness or spaces between the header and the frame must be underfilled.
- Screw the side frames to the wall.



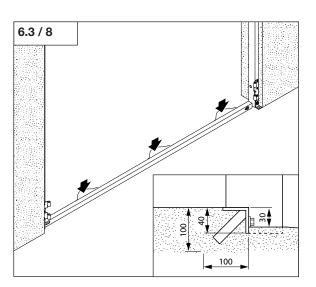


### **Bottom buffer (optional)**

• Fill the bottom buffer.

#### Note:

The filling must be hardened before carrying out any further work.



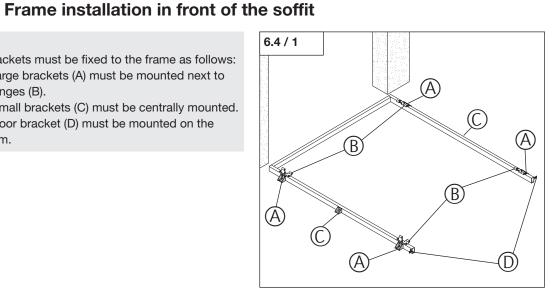


#### Note:

• Install all brackets.

6.4

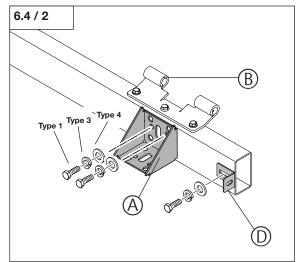
- The brackets must be fixed to the frame as follows: - The large brackets (A) must be mounted next to the hinges (B).
- The small brackets (C) must be centrally mounted.
- The floor bracket (D) must be mounted on the bottom.



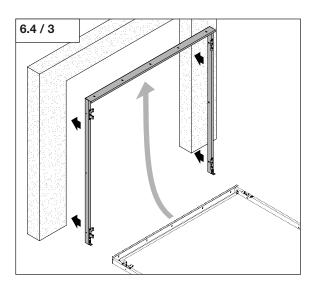








- Stand the frame up.
- Position the frame to the face of the opening.

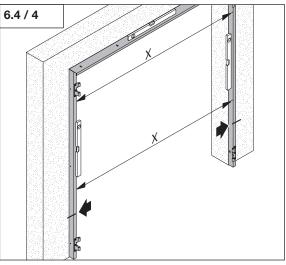


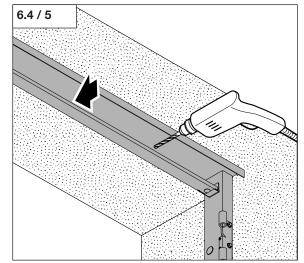


## Attention!

The frame should not be welded into position.

- Align the frame to the middle.
- Align the frame to the 1 metre level.
- Align the frame vertically.
- Fix the frame in the aligned position.
- Check the overall frame dimension (X).
- Drill the fastening holes through the punched holes in the header.





## 6. Installation

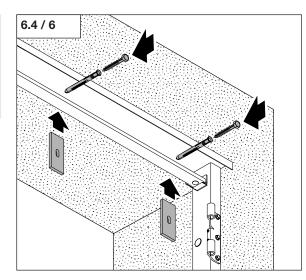


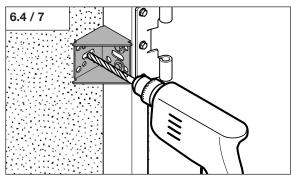
#### Note:

- The frame should not twist or buckle when tightening the screws.

- Any unevenness or spaces between the header and the frame must be underfilled.
- Doors with strain relief must be levelled out.
- Screw the frame to the header.
- Clean any drilling dust off the frame.

• Drill through the elongated holes of the fastening brackets.

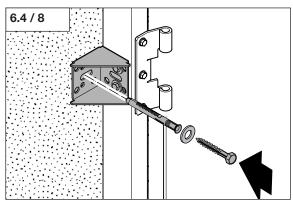






#### Note:

- The frame should not twist or buckle when tightening the screws.
- Any unevenness or spaces between the header and the frame must be underfilled.
- Screw the side frames with the fixing brackets to the wall.



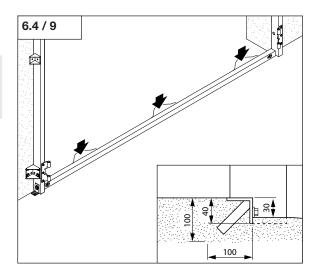
## <u>A</u>

### Bottom buffer (optional)

• Fill the bottom buffer.

#### Note:

The filling must be hardened before carrying out any further work.



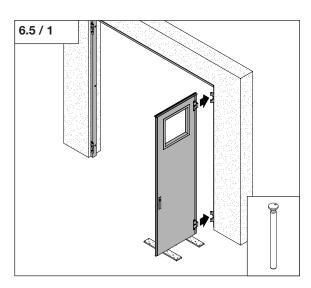
### 6.5 Assembling the door leaves

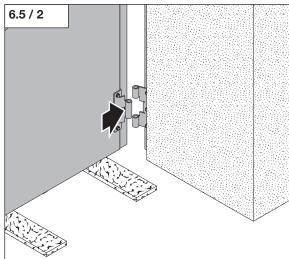


#### Note:

The following points must be observed for the assembly of the door leaves:

- The door leaves must be carefully removed from the packaging.
- The door leaves must be removed and installed in the specified sequence.
- The door leaves must be placed on wooden blocks.
- To ensure a long service life, the hinges and bolts must be cleaned and lubricated prior to assembly.





• Position the door leaf in the lower hinge.

## 6. Installation

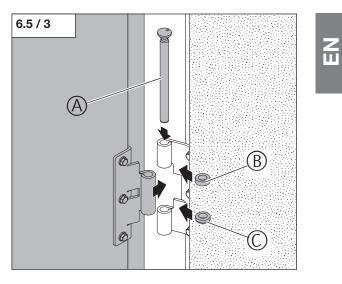


#### Note:

The bearing (C) must be installed so that the rounded side faces downwards.

- A Bolt
- B Spacer
- C Bearing (rounded side faces downwards)
- Connect the door leaf to the frame.

• Secure the bolt with the set screw.



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- 6.5/5

• Position the door leaf in the upper hinge.

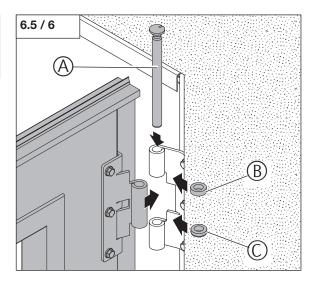
## 6. Installation



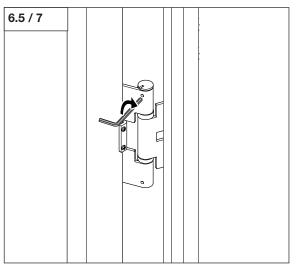
#### Note:

The bearing (C) must be installed so that the rounded side faces downwards.

- A Bolt
- B Spacer
- C Bearing (rounded side faces downwards)
- Connect the door leaf to the frame.



• Secure the bolt with the set screw.

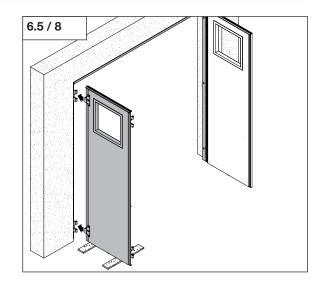


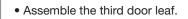


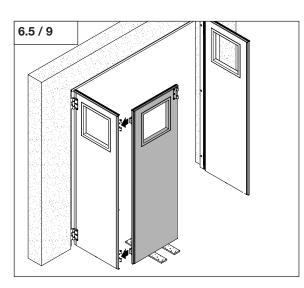
#### **Attention!**

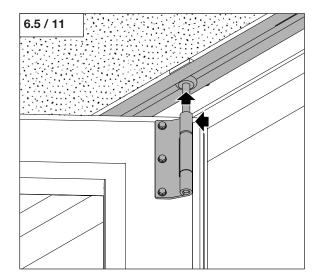
In order not to damage the door leaves and frame, the door leaves must be protected against being knocked over and from undue movements after mounting.

• Assemble the second door leaf on the opposite frame side.



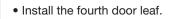


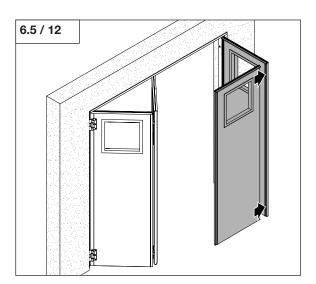




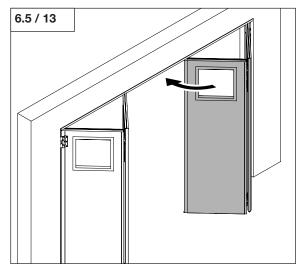
• Swivel the second door leaf below the top frame element.

- Loosen the set screw on the track roller bracket.
- Push the roller into the guide rail.
- Fix the set screw in the groove of the track roller.





• Swivel the fourth door leaf below the top frame element.

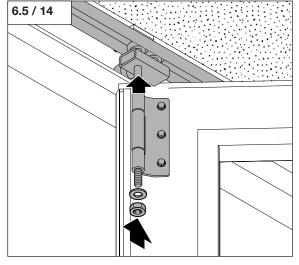


- Insert the supporting roller in the guide rail.
- Slide the roller bracket over the supporting roller.
- Firmly screw the roller bracket in place.
- Screw the nut onto the supporting roller.



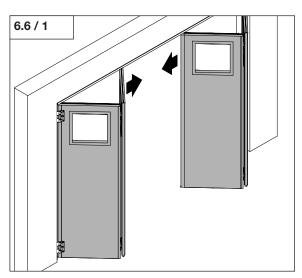
#### Note:

The height of the door leaf can be adjusted with the supporting roller.



## 6.6 Adjusting the door

• Close the door.

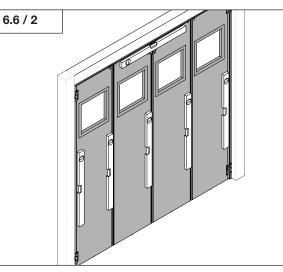




#### Function check:

- The following points must be fulfilled:
- The door must close easily and fully.
- The door must close tightly.
- The rubber seals must provide a flush fit and finish.
- The door must be aligned vertically and horizontally.

If the functional check is unsatisfactory, the door must be adjusted until all the requirements are met.



The following measures can be used to adjust the door.

#### Adapting the side frame

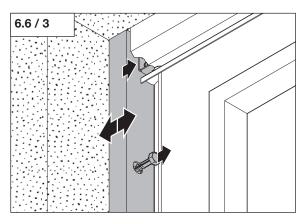
- Loosen the bracket on the frame.
- Loosen the frame from the wall.

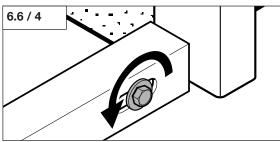


#### Note:

For doors with a bottom buffer, the screw on the buffer must be slightly loosened.

- Adjust the door by moving the frame.
- Retighten the bracket.
- Screw the frame to the wall.
- Tighten the bottom buffer.





## 6. Installation



#### Adjusting the hinges

#### Note:

Adjustment of the door via the hinges must be carried out one hinge at a time. Changes to the hinges accumulate.

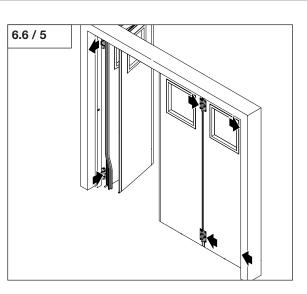
#### Upper hinge

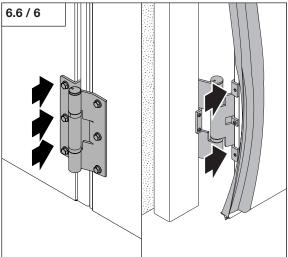
The hinges can be tightened via M6x20 Torx screw.

#### Lower hinge

The hinge can be adjusted via the M8 set screw.

- Loosen the hinge at the door leaf.
- Partially remove the rubber profile from the holder.
- Adjust the door leaf via the Torx screws at the top and bottom (max. 3 mm).
- Push the rubber profile back into the holder.
- Tighten the hinge at the door leaf.





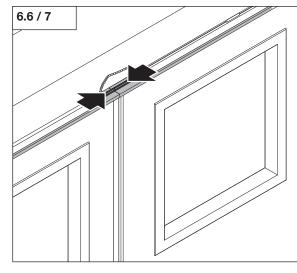
## b b

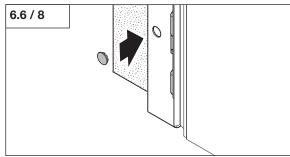
Note:

Adjusting the rubber seal

When the door is closed, the rubber seals must not be crushed or deformed.

• Adjust the rubber seals to ensure a flush fit and finish.







• Place the caps on the holes in the side frames.

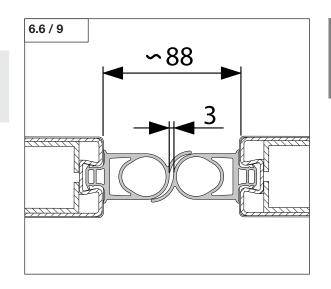


#### Adjusting the safety contact strips

#### Note:

The door leaf must be adjusted in order to prevent the triggering of the safety contact strips while the door is closing.

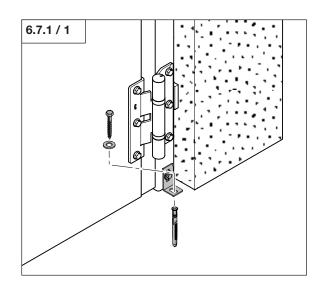
• Check the safety contact strip clearances and adjust them as necessary.



## 6.7 Fixing frames

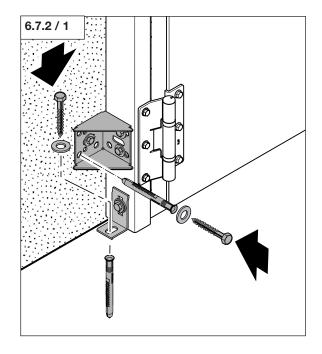
#### 6.7.1 Frame installation in the soffit

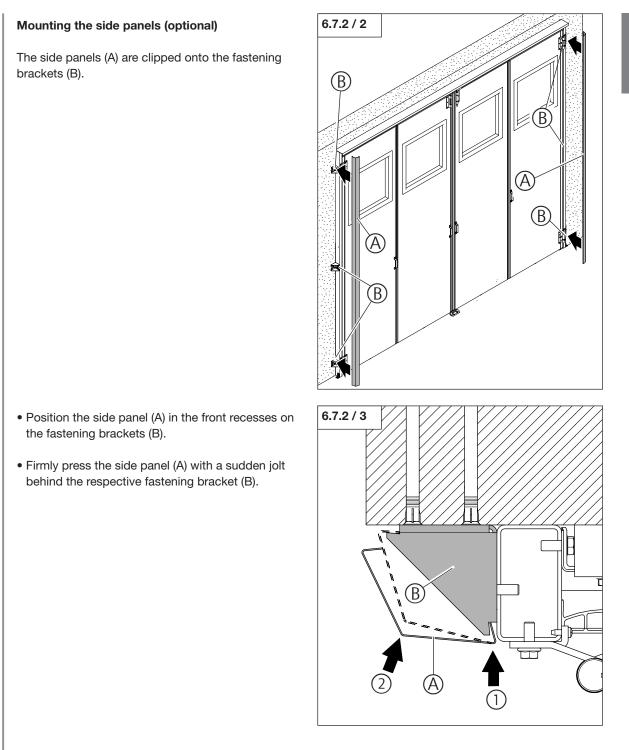
• Screw the side frames to the floor with the floor bracket.



#### 6.7.2 Frame installation in front of the soffit

- Screw the side frames to the floor with the floor bracket.
- Screw another screw into the wall through all fastening brackets.





## 6.8 Installation of buffers

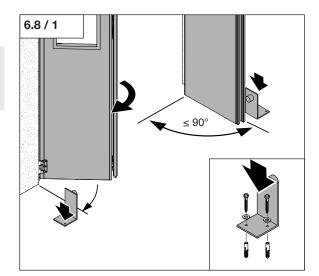
#### Door Open end stop installation



#### **Attention!**

So as not to damage the door, the door leaves may not be opened wider than 90°.

• Install the door stoppers.

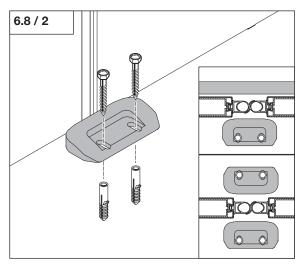




#### Door guide installation

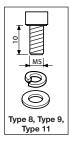
**Note:** For doors with a bottom buffer, only one door guide must be installed.

• Screw the door guides centrally in front of the door.

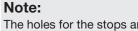


#### Door Closed end stop installation

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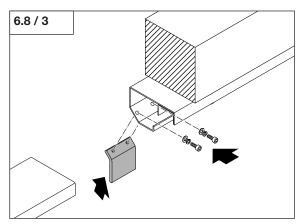


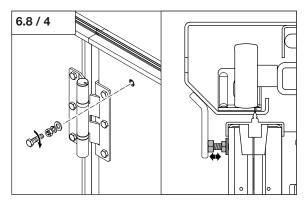




The holes for the stops are pre-drilled in the frame and on the door leaves.

- Open both door sides.
- Screw in the stops on each side of the frame.
- Screw the stop screws into the door leaf.
- Adjust the door stop with the stop screws.





## 6.9 Drive installation

the installation of the drives (A).

#### Note:

**Reference:** 

door leaves.

The holes for the installation of the drives (A) and the brackets (B) are pre-drilled in the door leaves.

The drive manual instructions must be followed for

• Screw the drives (A) and the brackets (B) onto the

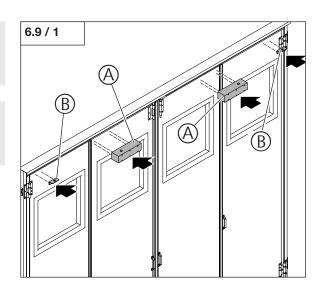


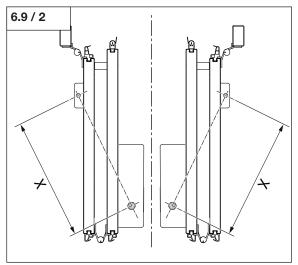




8,4 Type 4

- Open both door sides.
- Determine the dimension X between the pivots.

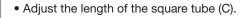




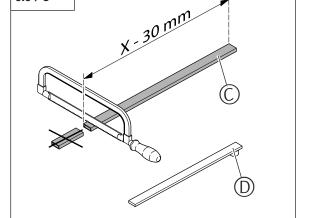


► M5 ◄ Type 7

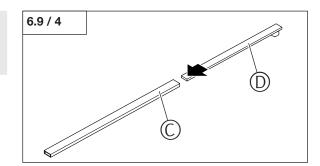




Determined length X - 30 mm



6.9/3





#### Note: The connection rod (D) must be greased before insertion.

• Slide the connection rod (D) into the square tube (C).

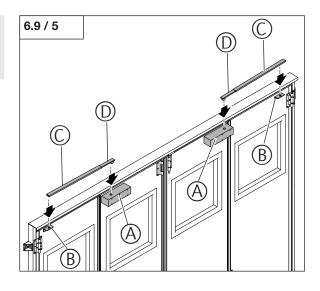
## 6. Installation



#### Note:

The fastening material is included with the drive.

- Screw the connection rod (D) onto the drive (A).
- Screw the square tube (C) onto the bracket (B).



## 6.10 Drive connection and safety equipment



#### **Attention!**

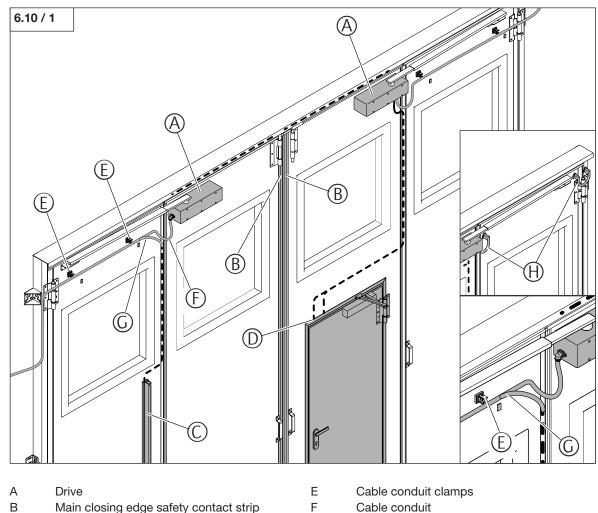
In order to avoid damage to the cable, the cable conduit (F) must be installed with a sufficiently large loop at the threshold between the door leaves. The space required for the installation of the cable conduit (F) must be determined with the door open.



#### Note:

The type of cable installation depends on the configuration of the door. The cables are installed on the door leaf with cable conduit clips (E) or optionally with a door feedthrough (H).

The required safety equipment depends on the respective door situation. Folding doors which are operated with a dead man's control do not require safety contact strips on the main closing edges (B).



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- В Main closing edge safety contact strip С Safety contact strip
- Door leaf surface (if necessary)
- D Wicket door safety contact

- Cable conduit
- Cable conduit crossover
- Door leaf feedthroughs (optional)

#### **Reference:**

The use of a door leaf safety contact strip (C) depends on the local circumstances. The conditions for the use of a door leaf safety contact strip (C) are described in 5.3 / 3.

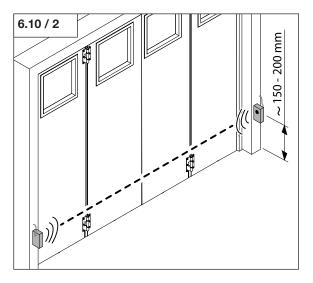
- Fasten the cable conduit clamps (E) to the door leaf.
- Install the cable conduit (F/H).
- Guide the cable of the safety equipment (B+C+D) and the drives (A) through the cable conduit (F) to the control.
- Close the cable conduit clamps (E).
- Guide all cable to the control.



#### Caution!

In order to prevent personal injury, the door system must be safeguarded with at least one light barrier when operated in pulse control operating mode. Additional light barriers can be installed for improved safety. No light barriers are needed in dead man's control operating mode.

- Install the light barrier.
- Guide all cable of the light barrier to the control.





#### **Reference:**

Refer to the control manual and the accompanying wiring diagram for the connection of the cable to the control.

- Connect the drives and all safety equipment to the control.
- Connect at least one switch for the opening and closing of the door to the control.

## 6.11 Emergency unlocking mechanism installation

#### **Inside drives**

Operation of the unlocking mechanism takes place via a rope (A) installed on the drive.

• Fasten the rope (A) on the drive.



#### **Function check:**

The rope (A) must fulfil the following requirements:

- It must be permanently connected to the unlocking mechanism.
- It must hang freely.
- It may not be pinched during door movements.

#### **Outside drives**

Operation of the unlocking device takes place with a deflection (B).

- Remove the cover (C).
- Guide the deflection (B) through the pre-drilled holes to the drive from the inside.
- Fasten the rope (A) on the deflection (B).
- Guide the deflection (B) through the collet (D) into the drive (E).
- Place the eccentric disc (F) on the deflection (B).
- Adjust the eccentric disc (F).

**Function check:** 

• Fasten the collet (D) and the eccentric disc (F).

The eccentric disc (F) must be adjusted such that the drive is unlocked when the rope (A) is pulled.



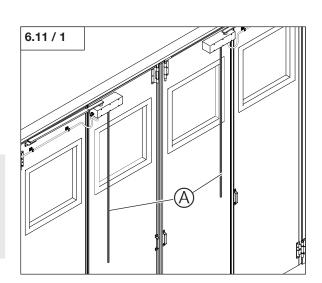
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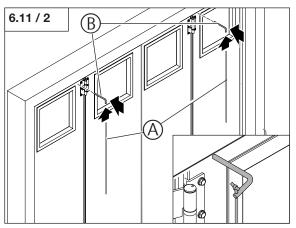


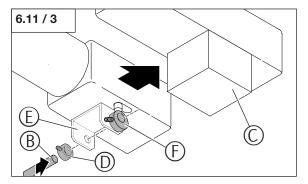
#### Note:

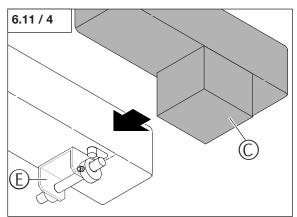
The cover (C) must be secured against burglary with two screws from the inside.

- Screw the cover (C) onto the drive (E).
- Screw on the cover (C) from the inside with two screws.









## 6.12 Commissioning

#### Determining the closing sequence

#### **Reference:**

The control unit manual must be complied with for the determining of the closing sequence.



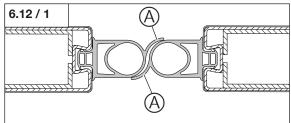
#### Note:

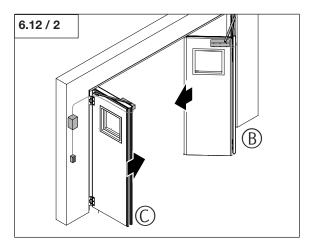
To guarantee smooth operation of the door, the sealing lips (A) must always be correctly arranged in front of one another. In order to guarantee this, the following conditions must be taken into consideration:

- The right door leaf side (B) must always be closed before the left door leaf side (C).
- before the left door leaf side (C).
  The right door leaf side (B) must always be opened after the left door leaf side (C).

The left and right door leaf pairs are determined from the side on which the door folds together.

- B Right door leaf pair
- C Left door leaf pair
- Adjust the closing sequence using the control.





#### Adjusting limit positions



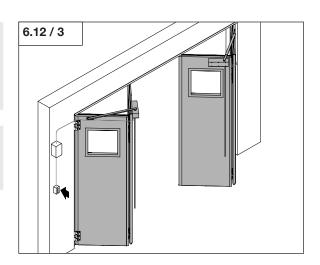


#### Note:

The limit positions are checked and determined by the control. The control requires approximately 4 opening and closing processes to correctly adjust the limit positions.

**Reference:** Chapter 7.3 'Emergency unlocking' must be followed for the opening of the door.

- Move the door to the half-open position with the emergency operation.
- Perform the teach-in runs in order to adjust the limit positions.





## 6.13 Final work

#### **Function check:**

Before commissioning of the door, all functions, safety equipment, and the emergency unlocking must be tested by a trained and qualified installer. The functional testing must be carried out in compliance with ASR A1.7. The door may only be commissioned after the successful testing of all functions, safety equipment, and the emergency unlocking.



#### Attention!

To prevent damage to the surface, the door must be protected against spots of mortar, cement, plaster or paint.

#### 6.13.1 Sealing

• Use permanently elastic sealing to seal the frame (insulation).



#### 6.13.2 Painting

Note:

The application of top coats containing alkyd resin on galvanized substrates can lead to a later loss of adhesion of the overall coating on outside surfaces which are exposed to harsh weather conditions. If harsh weather conditions are expected, a 2K acrylic or 2K polyester paint must be used.

#### Doors with a 2K-HS filling primer

The components can be painted with a standard top coat paint.

#### Doors with powder-coating or strip coating



#### Note:

Insofar as no finish is provided, doors which are installed outdoors must be provided with a finishing coat no later than three (3) months after installation.

The surface must be sanded and cleaned before carrying out further processing tasks. A solvent-based 2K polyurethane paint can be used for single-layer painting. Always apply a solvent-based Epoxy primer before using synthetic-resin varnishes.

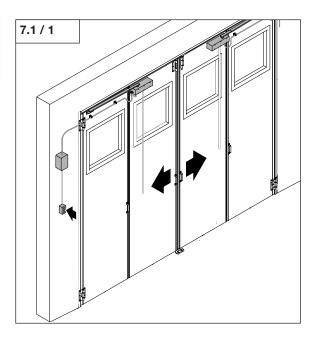


## 7.1 Opening the door

#### Reference:

The control unit manual must be followed for the opening of the door.

• Press the switch for the OPEN door pulse.



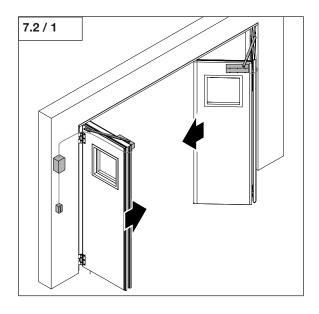
## 7.2 Closing the door

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#### **Reference:**

The control unit manual must be followed for the closing of the door.

• Press the switch for the CLOSE door pulse.



## 7.3 Emergency unlocking

#### Note:

Using the emergency unlocking, the folding door can also be opened without the drive. The emergency unlocking may only be used in the case of an emergency. Use of the emergency unlocking during normal operation must be permanently blocked.

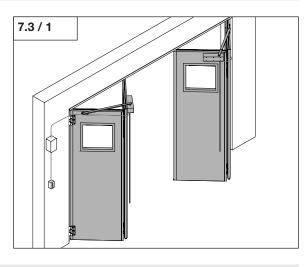


#### **Reference:**

Adjustment of the limit positions is described in chapter 6.12.

The limit positions must be readjusted after use of the emergency unlocking.

- Move the door to the centre position.
- Adjust the limit positions.



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#### Note:

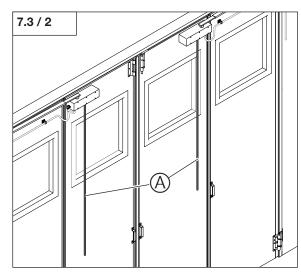
When engaging, it must be ensured that the gear and drive are connected slowly. The Emergency OPEN button on the switch must be pressed during the emergency unlocking in order to de-energise the system.

#### Inside drives

• Pull the rope (A) down in order to disengage the drive.

The door can be opened manually.

If the door should be operated with the drive again, the drive must be re-engaged.

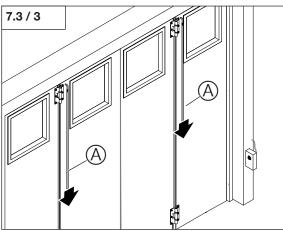


#### **Outside drives**

• Pull the rope (A) down in order to disengage the drive.

The door can be opened manually.

If the door should be operated with the drive again, the drive must be re-engaged.



## 8. Maintenance



#### Note:

The folding door with drive and its associated components must undergo regular maintenance by competent installers. Maintenance must be carried out at least every 12 months. All maintenance work must be documented in a testing book.

The folding door with drive is designed for 100,000 operating cycles. If the 100,000 operating cycles are exceeded, a general inspection must be carried out by the manufacturer.



#### **Reference:**

Refer to the testing book for further information about the inspections and intervals.

#### The following maintenance tasks must be carried out by the operator once a week:

- Visually inspect the door leaves, guide rails, seals and glazing.
- Check the correct attachment of the guide rails, hinges and frame elements (clean the guide rails if necessary).
- Check the correct position of the hinges and bolts (grease the bolts if necessary).
- Check the correct functioning of all the locking mechanisms, guide rollers, locks and hardware.
- Check the surfaces for damage. Damaged surfaces must be touched up (corrosion protection).

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