

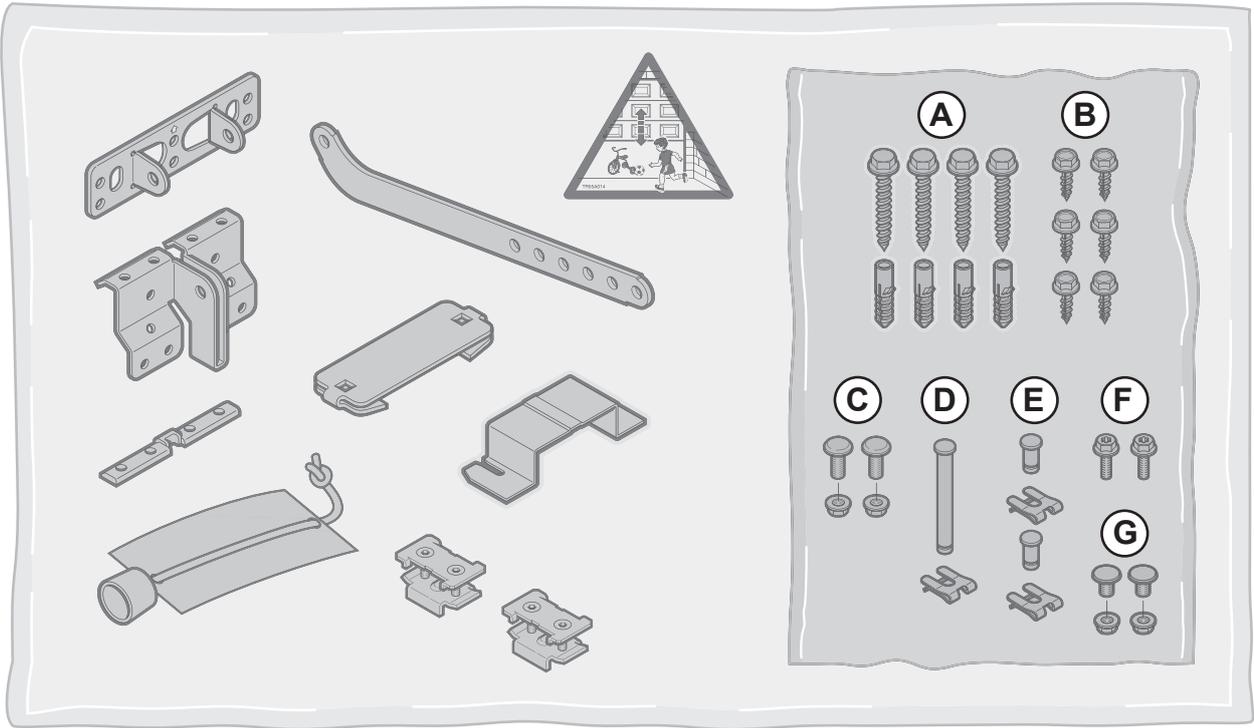
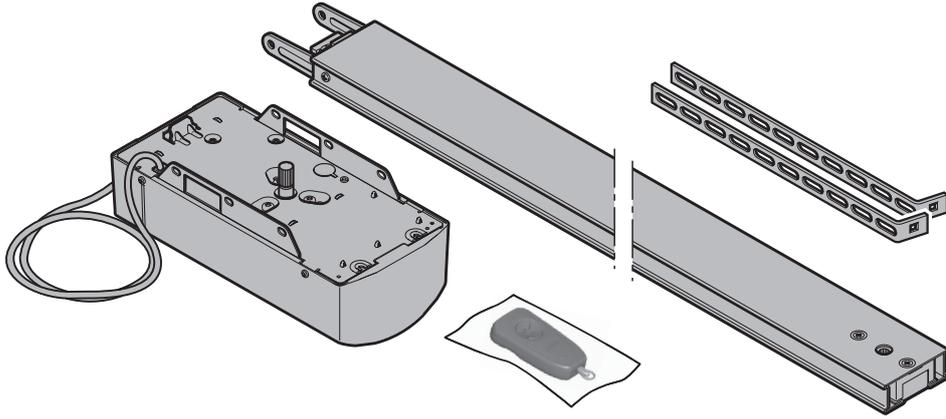


# **Instructions for Fitting, Operating and Maintenance**

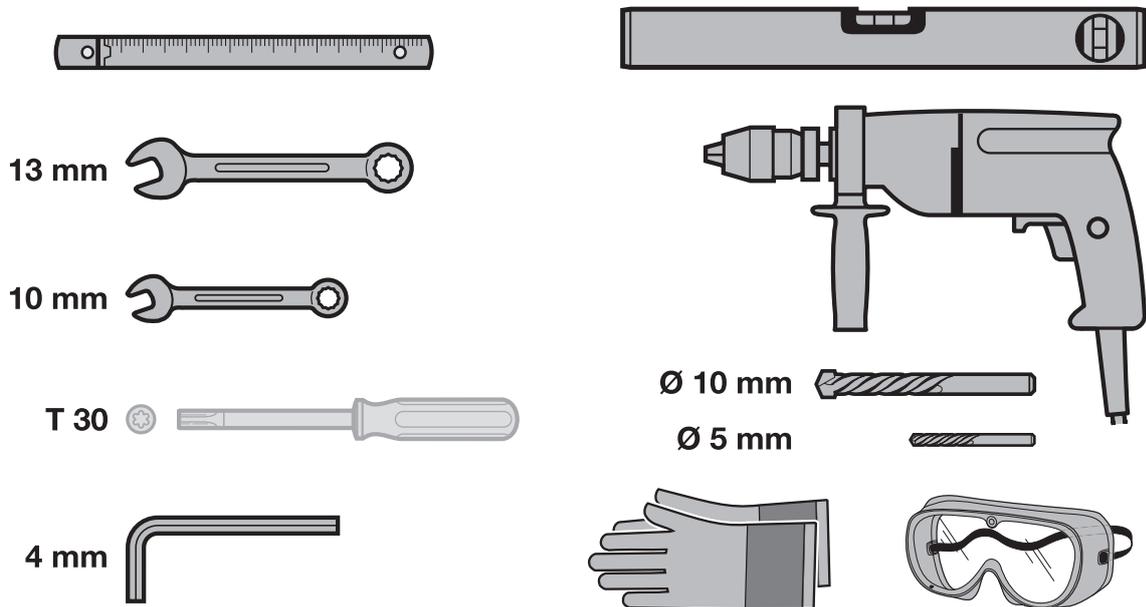
**Garage door operator**



# A



# B



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## ILLUSTRATED SECTION

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**Dear Customer,**

**We are delighted that you have chosen a quality product from our company.**

## 1 ABOUT THESE INSTRUCTIONS

- These instructions are original operating instructions as outlined in the EC Directive 2006/42/EC. Read through all of the instructions carefully, as they contain important information about the product. Pay attention to and follow the instructions provided, particularly the safety instructions and warnings.
- Please keep these instructions in a safe place and make sure that they are available to all users at all times!
- Instructions in languages other than German are translations of these original operating instructions.

## 2 INSTRUCTIONS

### 2.1 Further applicable documents

The following documents for safe handling and maintenance of the door system must be placed at the disposal of the end user:

- These instructions
- The garage door operating instructions

### 2.2 Intended use

- The garage door operator is intended exclusively for impulse operation of spring-compensated sectional and up-and-over doors in the private / non-commercial sector.
- Note the manufacturer's specifications regarding the door and operator combination. Potential hazards as outlined in DIN EN 13241-1 are avoided by construction and fitting according to our guidelines. Door systems that are located in a public area and which only have one protective device, such as a power limit, may only be operated under supervision.
- The garage door operator is designed for operation in dry areas.

### 2.3 Non-intended use

- The operator must not be used for doors without a safety catch.
- The garage door opener must **not** be installed outside. Parts of the door must not extend onto public footpaths or streets.
- The garage door opener must **not** be operated in **explosive environments**.
- The construction of the operator is not designed for operation with sluggish doors, i.e. doors that can hardly or not at all be opened or closed manually.

### 2.4 Fitter qualification

Only correct fitting and maintenance in compliance with the instructions by a competent / specialist company or a competent / qualified person ensures safe and flawless operation of the system. According to EN 12635, a specialist is a person with suitable training, specialist knowledge and practical experience sufficient to correctly and safely fit, test, and maintain a door system.

### 2.5 Warnings used



The general warning symbol indicates a danger that can lead to **injury** or **death**.

In this manual, the general warning symbol will be used in connection with the caution levels described below.

	<b>DANGER!</b>
Indicates a danger that can immediately lead to death or serious injuries.	
	<b>WARNING!</b>
Indicates a danger that can lead to death or serious injuries.	
	<b>CAUTION!</b>
Indicates a danger that can lead to minor or moderate injuries.	
	<b>ATTENTION!</b>
Indicates a danger that can lead to damage or destruction of the product.	

### 2.6 International colour code according to IEC 757

<b>WH</b>	White	<b>GN</b>	Green
<b>BN</b>	Brown	<b>YE</b>	Yellow
<b>BK</b>	Black	<b>RD</b>	Red
<b>OG</b>	Orange	<b>BU</b>	Blue
<b>GY</b>	Grey	<b>VT</b>	Violet
<b>RS</b>	Pink		

### 2.7 Definitions used

#### Hold-open phase

Waiting phase at the Open end-of-travel position before the door closes with an automatic timer.

#### Automatic timer

Automatic closing of the door after a set time has elapsed and after reaching the Open end-of-travel position.

#### DIL switches

Switches on the control circuit board for setting the control.

#### Impulse sequence control

With each push of the button, the door is started against the previous direction of travel or the motion of the door is stopped.

#### Learning runs

Door runs in which the travel and the forces needed for moving the door are taught in.

#### Normal operation

Door travel with the taught-in travel distances and forces.

#### Reference run

Door cycle towards the OPEN end-of-travel position in order to set the home position.

#### Reversal limit

If a safety device is activated, the door moves into the opposite direction (safety reversal) up to the reversal limit shortly before the Close end-of-travel position. If this limit is passed, no reversal occurs to ensure that the door reaches the end-of-travel position without disrupting travel.

**Safety reversal / reversing**

Door travel in the opposite direction when the safety device or power limit is activated.

**Travel**

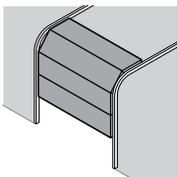
The distance the door takes to move from the Open end-of-travel position to the Close end-of-travel position.

**Pre-warning time**

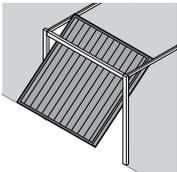
The time between the travel command (impulse) and the start of travel.

**2.8 Information on the illustrated section**

The illustrated section shows how to fit the operator on a sectional door. Deviations for fitting with an up-and-over door are also shown. For this purpose, the following letters are assigned to the figures:



(a) = Sectional door



(b) = Up-and-over door

**2.9 Symbols used**

	2.5	= See text section 2.5
--	-----	------------------------

	= Factory setting
--	-------------------

**3 SAFETY INSTRUCTIONS**

## WARNING!

**Danger of injury due to unwanted door travel!**  
Incorrect assembly or handling of the operator may trigger unwanted door travel that may result in persons or objects being trapped.

- ▶ Follow all the instructions provided in this manual.
- ▶ Install control devices at a height of at least 1.5 m (out of the reach of children).
- ▶ Fit permanently installed control devices (such as buttons, etc.) within sight of the door, but away from moving parts.

**Incorrectly fitted control devices (e.g. buttons) may trigger unwanted door travel. Persons or objects may be jammed as a result.**

## WARNING!

**Danger of injury during door travel!**  
If people or objects are in the area around the door while the door is in motion, this can lead to injuries or damage.

- ▶ Children are not allowed to play near the door system.
- ▶ Make sure that no persons or objects are in the door's area of travel.
- ▶ If the door system has only one safety feature, only operate the garage door operator if you are within sight of the door's area of travel.
- ▶ Monitor the door travel until the door has reached the end-of-travel position.
- ▶ Only drive or pass through remote control door systems if the door is in the Open end-of-travel position!
- ▶ Never stay standing under the open door.

**3.1 Safety instructions for fitting**

- The specialist carrying out the work must ensure that installation is conducted in compliance with the prevailing national job safety rules and regulations and those governing the operation of electrical equipment. In the process, the relevant national guidelines must be observed. Potential hazards as outlined in DIN EN 13241-1 are avoided by construction and fitting according to our guidelines.
- The garage ceiling must guarantee secure fastening of the operator. For ceilings which are too high or too light, the operator must be fastened with additional struts.
- **The mains plug must be disconnected before any work is performed on the operator.**

## DANGER!

**Compensating springs are under high tension**

Serious injuries may occur while adjusting or loosening the compensating springs!

- ▶ For your own safety, only have a specialist conduct work on the door compensating springs and, if necessary, maintenance and repair work!
- ▶ Never try to replace, adjust, repair or reposition the compensating springs for the counterbalance of the door or the spring mountings yourself.
- ▶ In addition, check the entire door system (joints, door bearings, cables, springs and fastenings) for wear and possible damage.
- ▶ Check for the presence of rust, corrosion, and cracks.

A malfunction in the door system or an incorrectly aligned door can cause serious injuries!

- ▶ Do not use the door system if repair or adjustment work must be conducted!

## 4 FITTING

### 4.1 Inspect door / door system

The door must be in a flawless mechanical condition, as well as correctly balanced, so that it can be easily operated by hand (EN 12604).

- ▶ Lift the door by approx. one metre and let it go. The door should stay in this position and neither move downward nor upward. If the door does move in either direction, there is a danger that the compensating springs / weights are not properly adjusted or are defective. In this case, increased wear and malfunctioning of the door system can be expected.
- ▶ Check whether the door can be opened and closed correctly.
- ▶ The mechanical locking devices of the door that are not needed with a garage door operator must be put out of commission. This especially includes the locking mechanisms of the door lock.
- ▶ The fitter must check that the fitting materials supplied are suitable for the purpose and the intended fitting location.

### 4.2 Clearance required

- The clearance between the highest point of door travel and the ceiling (even when opening the door) must be at least 30 mm. See Figures 1.1a and 1.2b.
- If the clearance is smaller, the operator can also be mounted behind the opened door if enough space is available. In this case, an extended fitting bracket (ordered separately) must be used.
- The garage door operator can be arranged up to max. 500 mm off-centre.
- The electrical outlet should be fitted approx. 500 mm from the operator head.

 **Check these dimensions!**

### 4.3 Preparing the door

	<h1>WARNING!</h1>
<b>Danger to life from the pull rope!</b>	
A running rope may lead to strangulation.	
▶ Remove the rope while fitting the operator (see Figure 1.2a).	

- ▶ Completely disassemble the mechanical door locking on the sectional door. See figure 1.3a on **page 22**.
- ▶ With an off-centre reinforcement profile on the sectional door, fit the link bracket on the nearest reinforcement profile to the left or right. See figure 1.5a on **page 23**.
- ▶ For sectional doors with centre door locking, arrange the lintel joint and link bracket max. 50 cm off-centre. See figure 1.6a on **page 24**.
- ▶ Render the mechanical door locking on the up-and-over door inoperable. For door models not covered here, block the catches on site. See Figures 1.3b/1.4b/1.5b on **page 25**.
- ▶ In a deviation from the illustrated section, attach the lintel ceiling console and link bracket max. 50 cm off-centre for up-and-over doors with ornamental iron door handles. See figure 1.6b on **page 26**.
- ▶ For N 80 doors with timber infill, the bottom holes on the lintel joint must be used for fitting. See figure 1.7b on **page 26**.

### 4.4 Fitting the boom

	<h1>WARNING!</h1>
<b>Unsuitable fixing material</b>	
Use of unsuitable fixing material may mean that the operator is insecurely attached and could come loose.	
▶ The fitter must check the suitability of the provided fixing material (plugs) for use in the intended fitting location.	
▶ Only use the provided fixing materials (plugs) in concrete $\geq$ B15 (see Figures 1.6a/1.8b/2.4).	

	<h1>ATTENTION!</h1>
<ul style="list-style-type: none"> <li>▪ <i>Before the boom is fitted on the lintel and under the ceiling, shift the slide carriage approx. 20 cm towards the middle of the boom. This is no longer possible once the end stops and operator have been fitted.</i></li> <li>▪ <i>Only use the booms recommended by us for the garage door operators – depending on the respective application!</i></li> <li>▪ <i>Drilling dust and chippings can lead to malfunctions. Cover the operator during drilling work..</i></li> </ul>	

#### Note

A second suspension is recommended with divided rails (available under accessories) (see figure 2.5 on **page 28**).

### 4.5 Boom operating modes

#### 4.5.1 Manual operation

The slide carriage is disengaged from the belt lock to enable the door to be moved by hand. For disengaging the slide carriage: Pull on the cord of the mechanical release. See figure 4 on **page 31**.

#### 4.5.2 Automated operation

The belt lock is engaged in the slide carriage to enable the door to be moved with the operator. For preparing the slide carriage for engaging:

- Press the green knob. See figure 6 on **page 31**.
- Move the belt in the direction of the slide carriage until the belt lock engages.

### 4.6 Emergency release

	<h1>WARNING!</h1>
<b>Danger of injury by fast-closing door!</b>	
If the cord knob is actuated while the door is open, there is a danger that the door will close rapidly if the springs are weak, broken or defective, or if the counterbalance is inadequate.	
▶ Only pull the cord knob when the door is closed!	

An emergency release is necessary for garages without a second entrance that prevents the possibility of being locked out; this must be ordered separately.

- ▶ Check the emergency release monthly for proper function.

## 4.7 Determining the end-of-travel positions

### Note

If the door cannot easily be pushed manually into the desired OPEN or CLOSE end-of-travel position, this means that the door mechanism is too stiff for operation with the garage door operator and must be inspected.

### 4.7.1 Fitting the Open end stop

- ▀ Assemble the fitting bracket.
- ▀ Loosely insert the end stop in the boom between the slide carriage and operator. Push the door into the Open end-of-travel position by hand. This will push the end stop into the correct position. See figure 5.1 on **page 31**.
- ▀ Fix the end stop.

### Note

In case the door does not reach the complete passage height in the end-of-travel position, the end stop can be removed so that the integrated end stop (on the operator head) is used.

### 4.7.2 Fitting the Close end stop

- ▀ Loosely insert the end stop in the boom between the slide carriage and door. Push the door into the Close end-of-travel position by hand.
- ▀ Move the end stop by approx. 10 mm in the Close direction. See figure 5.2 on **page 31**.
- ▀ Fix the end stop.

## 4.8 Tension of the toothed belt

The toothed belt of the operator boom is tensioned optimally ex-factory. During the start-up and slow-down phase, with larger doors it is possible that the belt will briefly hang out of the boom profile. However, this does not constitute a technical malfunction and does not negatively affect the function and service life of the operator.

## 4.9 Fitting the operator head

- ▀ Fix the operator head. See figure 7 on **page 32**.

## 4.10 Fixing the warning sign

- ▀ Fix the crushing warning sign in a prominent, cleaned and degreased place, for example near to the permanently installed button for moving the operator. See figure 8 on **page 32**.

## 5 INITIAL START-UP/CONNECTING ADDITIONAL COMPONENTS



## DANGER!

### Mains voltage

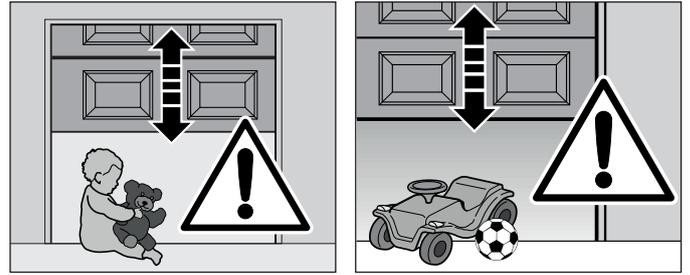
Contact with the mains voltage presents the danger of a deadly electric shock.

For that reason, observe the following warnings under all circumstances:

- ▀ Electrical connections may only be made by a qualified electrician.
- ▀ The on-site electrical installation must conform to the applicable protective regulations (230 / 240 V AC, 50 / 60 Hz)!
- ▀ Disconnect the mains plug and the plug of the emergency battery whenever performing work on the door system.



## WARNING!



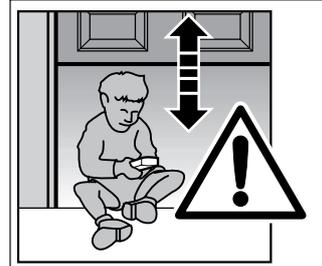
### Danger of injury during door travel!

If people or objects are in the area around the door while the door is in motion, this can lead to injuries or damage.

- ▀ Children are not allowed to play near the door system.
- ▀ Make sure that no persons or objects are in the door's area of travel.
- ▀ If the door system has only one safety feature, only operate the garage door operator if you are within sight of the door's area of travel.
- ▀ Monitor the door travel until the door has reached the end-of-travel position.
- ▀ Only drive or pass through remote control door systems if the door is in the Open end-of-travel position!
- ▀ Never stay standing under the open door.



## WARNING!



### Danger of injury during door travel!

Persons may be injured by door travel if the hand transmitter is actuated.

- ▀ Make sure that the hand transmitters are kept away from children and can only be used by people who have been instructed on how the remotecontrol door functions!
- ▀ If the door has only one safety device, only operate the hand transmitter if you are within sight of the door!
- ▀ Only drive or pass through remote control door systems if the door is in the Open end-of-travel position!
- ▀ Never stay standing under the open door.
- ▀ Please note that unwanted door travel may occur if a hand transmitter button is accidentally pressed (e.g. if stored in a pocket / handbag).



## CAUTION!

### Danger of crushing in the boom

Do not reach into the boom with your fingers during door travel, as this can cause crushing.

- ▀ Do not reach into the boom during door travel



## CAUTION!

### Danger of injury from the cord knob

If you hang on the cord knob, you may fall and injure yourself. The operator could break away and injure persons or damage objects that are located underneath, or the operator itself could be destroyed.

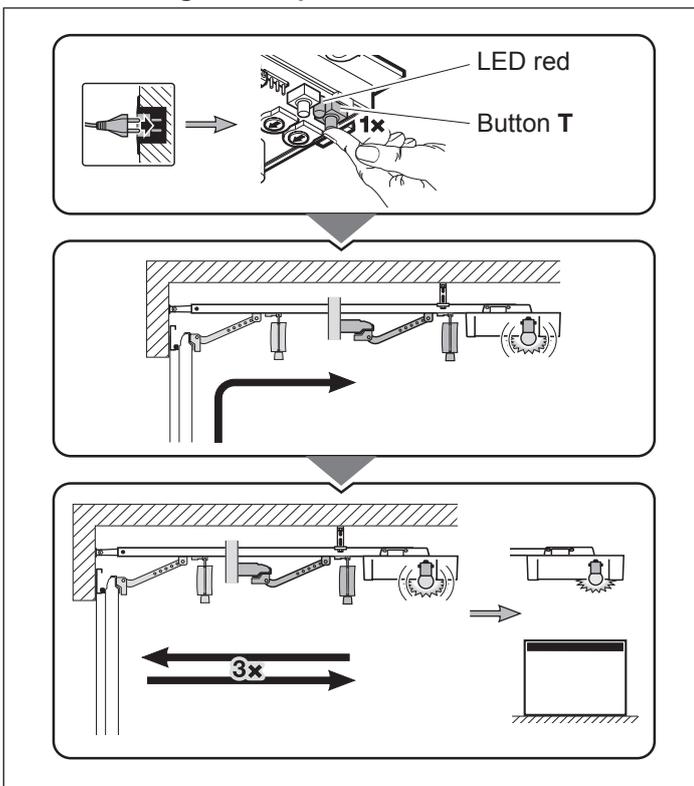
- ▶ Do not hang on the cord knob with your body weight.



## ATTENTION!

- External voltage on the connecting terminals of the control will destroy the electronics!
- To prevent malfunctions: Duct the operator's connection cables (24 V DC) in an installation system that is separate from other supply lines (230 V AC)!

### 5.1 Teaching in the operator



When teaching in, the operator is adjusted to the door. The travel length, required force for opening and closing, and any connected safety devices are automatically taught in and saved in a power failure-proof manner. The data is only valid for this door.

#### Note

The operator light is off if the operator has not been taught in. The operator light flashes during the learning runs or a reference run. After the learning runs are finished, the operator light is continuously illuminated and goes out after approx. 2 minutes.

- The slide carriage must be engaged and there may not be any obstacles in the function range of the safety devices.
- Safety devices must be fitted and connected beforehand.
- If a connected wicket door contact with self-testing has been successfully taught in, the red LED will flash 7x after the learning run.
- If further safety devices are connected at a later point, a new learning run is required.
- All existing door data must be deleted if the operator is to be taught in again (see section 5.3).
- When teaching in, the connected safety devices are not active.

#### To start the learning runs:

1. Plug in the mains plug.  
The operator light will flash 2x.
2. Press the circuit board button **T**.
  - The door will open and briefly stop in the Open end-of-travel position.
  - To teach in the travel, the door automatically closes, then opens, closes again and opens again.
  - The door closes and opens once more and the required forces are taught in.

The operator light flashes during the learning runs.

- The door will stop in the Open end-of-travel position. The operator light remains illuminated and goes out after approx. 2 minutes.
- If a self-testing wicket door contact has been successfully taught in, the red LED will flash 7x.

**The operator has been taught in and is ready for operation.**

#### To abort a learning run:

- ▶ Press the circuit board button **T** or an external control element with impulse function. The door stops. The operator light is continuously illuminated.
- ▶ Press the circuit board button **T** to start the entire teach-in process again.



## WARNING!

Since during the learning/programming procedure the force cutoff and the safety equipment is without function, it is essential that the installer stays with the equipment and exercises increased vigilance

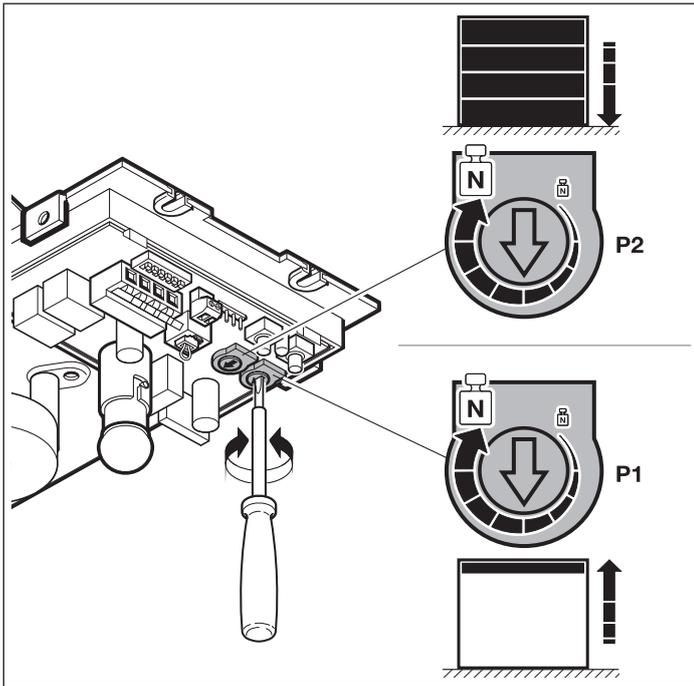
- ▶ After the learning runs, the person commissioning the system must check the function(s) of the safety equipment.

**The system is ready for operation only after this.**

#### Note

If the operator stops with the operator light flashing or before reaching the end stop, the pre-set forces are too low and must be readjusted.

## 5.2 Adjusting the forces



### CAUTION!

#### Danger of injury due to the force value being set too high (potentiometers P1 / P2)

When the force value is set too high, the power limit is less sensitive. This could lead to injury or damage.

- ▶ Do not set a force value that is too high.

The forces required for the learning in run are automatically adjusted during each door cycle. For safety reasons, it is necessary that the forces should not be readjusted indefinitely when the travel behaviour of the door becomes worse (e.g. the spring tension weakens). Otherwise risks to safety may arise with manual operation of the door (e.g. the door may fall down). For this purpose, the maximum forces provided for opening and closing have a limited presetting in delivery condition (centre position of the potentiometers).

#### Proceed as follows if the Open end stop is not reached:

- Turn **P1** clockwise by one eighth of a rotation.
- Press the button **T**.  
The door moves in the Close direction.
- Press the button **T** again before the door reaches the Close end-of-travel position.  
The door stops.
- Press the button **T** again.  
The door will move to the Open end-of-travel position.

If the Open end stop is not reached again, repeat steps 1 to 4.

#### Proceed as follows if the Close end stop is not reached:

- Turn **P2** clockwise by one eighth of a rotation.
- Delete the door data (see section 5.3).
- Teach in the operator again (see section 5.1).

If the Close end stop is not reached again, repeat steps 1 to 3.

#### Note

The forces actually needed are stored during the learning run. The maximum forces set on the potentiometer have little effect on the sensitivity of the power limit. The forces set at the factory can be used for operating standard doors.

## 5.3 Deleting door data

The existing door data must be deleted before the operator can be taught in again.

#### To reset to the factory settings:

1. Disconnect the mains plug and, if applicable, the plug of the emergency battery.
2. Press and hold the button **T**.
3. Reconnect the mains plug.
4. Release the button **T** once the operator light flashes once. The door data has been deleted.
5. Teach in the operator again.

#### Note

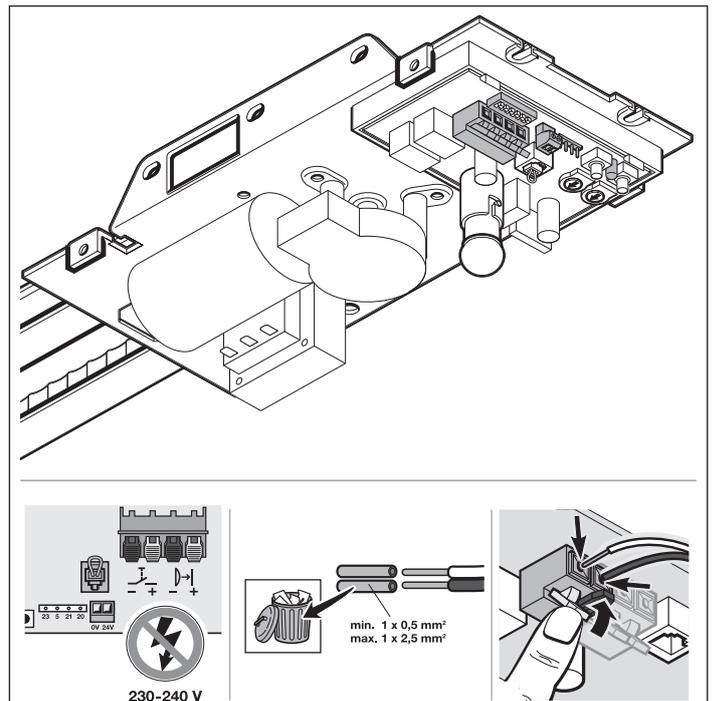
In the delivery condition, no door data has been stored and the operator can be immediately taught in. The taught-in impulse radio codes are not changed.

## 6 INSTALL ACCESSORIES

Note the warning- and safety instructions „5 Initial start-up/ Connecting additional components“ on page 7

### 6.1 Electrical connection / Connecting terminals

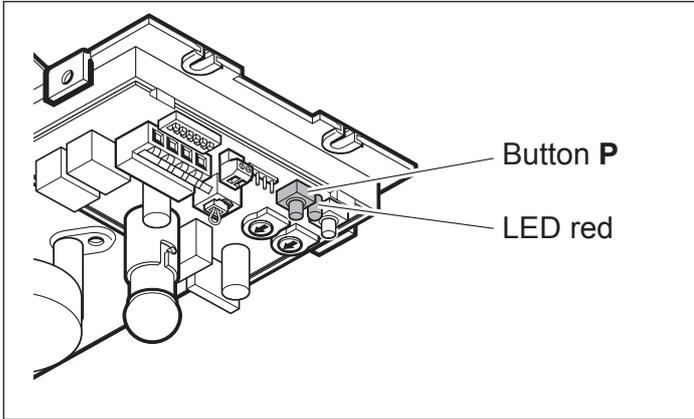
- ▶ The connection terminals can be accessed by opening the inspection window. The terminals that the additional components are connected to, such as volt-free internal push buttons, key switches or photocells, only carry a non-hazardous low-voltage current of approx. 24 V DC.
- ▶ All connecting terminals can be given multiple assignments, but with a maximum of. 1 x 2,5 mm<sup>2</sup>.
- ⚠ **The mains plug must be disconnected before any work is performed on the operator!**
- ⚠ **Loading of the operator by all accessories: max. 100 mA.**



## 6.2 Radio receiver/Integrated radio module

A maximum of 100 different hand transmitter buttons can be taught in and distributed to the Impulse (Open-Stop-Close-Stop) and partial opening functions. If more buttons are taught in, the one taught in first will be deleted. The following requirements must be met in order to teach in hand transmitter buttons:

- The operator is at rest.
- The pre-warning or hold-open phase is not active.



### 6.2.1 Teaching in the Impulse function (Channel 1)

1. Briefly press the **P** button. (Pressing it twice will immediately end the process).  
The red LED now flashes 1x.
2. Press the hand transmitter button whose radio code you want to transmit and keep it pressed.  
If a valid radio code is detected, the red LED will flash quickly.
3. Release the hand transmitter button.  
**The hand transmitter button has been taught in and is now ready for operation.**  
The red LED flashes slowly (1x) and other hand transmitter buttons may be taught in.
4. Repeat steps 2 + 3 to teach in further hand transmitter buttons.
5. **If no further hand transmitter buttons are to be taught in or to end the process:**
  - ▶ Press the **P** button twice or wait for the timeout.  
The operator light is continuously illuminated.

#### Timeout:

If no valid radio code is recognised within 20 seconds, the operator automatically switches to operation mode.

#### Note

If the same hand transmitter button is taught in on two different channels, it will be deleted on the first taught-in channel.

### 6.2.2 Teaching in the Partial opening function (Channel 2)

A door position pre-set at the factory or any other door position can be programmed.

	Approx. 260 mm slide travel before the Close end-of-travel position
Any	At least 120 mm slide travel before each end-of-travel position

#### To teach in the pre-set position:

1. Move the door into the Open or Close end-of-travel position.
2. Briefly press the **P** button twice.  
(Pressing it three times will immediately end the process).  
The red LED now flashes twice.
3. Press the hand transmitter button whose radio code you want to transmit and keep it pressed.  
If a valid radio code is detected, the red LED will flash quickly.
4. Release the hand transmitter button.  
**The hand transmitter button has been taught in for the partial opening function.**  
The red LED flashes slowly (2x) and other hand transmitter buttons may be taught in.
5. Repeat steps 3 + 4 to teach in further hand transmitter buttons.
6. **If no further hand transmitter buttons are to be taught in or to end the process:**
  - ▶ Press the **P** button once or wait for the timeout.  
The operator light is continuously illuminated.

#### To teach in any position:

1. Move the door into the desired position (but at least 120 mm before the end-of-travel position).
2. Briefly press the **P** button twice.  
(Pressing it three times will immediately end the process).  
The red LED now flashes twice.
3. Press the hand transmitter button whose radio code you want to transmit and keep it pressed.  
If a valid radio code is detected, the red LED will flash quickly.
4. Release the hand transmitter button.  
**The hand transmitter button has been taught in for the partial opening function.**  
The red LED flashes slowly (2x) and other hand transmitter buttons may be taught in.
5. Repeat steps 3 + 4 to teach in further hand transmitter buttons.
6. **If no further hand transmitter buttons are to be taught in or to end the process:**
  - ▶ Press the **P** button once or wait for the timeout.  
The operator light is continuously illuminated.

#### Timeout:

If no valid radio code is recognised within 20 seconds, the operator automatically switches to operation mode.

#### Note

If the same hand transmitter button is taught in on two different channels, it will be deleted on the first taught-in channel.

### 6.2.3 Deleting all radio codes

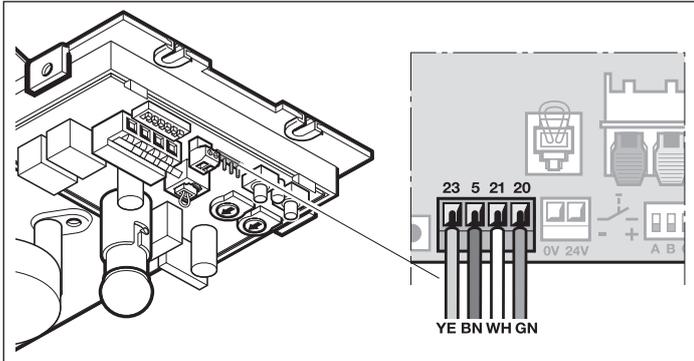
1. Press and hold the **P** button.  
The red LED flashes slowly, signalling the readiness for deletion.  
The red LED will start to flash quickly.  
The data of all the hand transmitters' learned radio codes is deleted.
  2. Release the **P** button.
- ⚠ If the P button is released prematurely, the process will be aborted and the radio codes are not deleted.**
- ⚠ All taught-in remote controls are now cleared from memory; it is not possible to clear individual remote controls!!**

### 6.3 External receiver

If the range is limited, the functions impulse or partial opening can be controlled with an external radio receiver. If an external radio receiver is retrofitted, the data in the integrated radio receiver must be deleted.

#### Note

If an arbitrary partial opening position is required, this must first be programmed as described in chapter 6.2.2. It is then essential to delete the data of the integrated radio receiver.

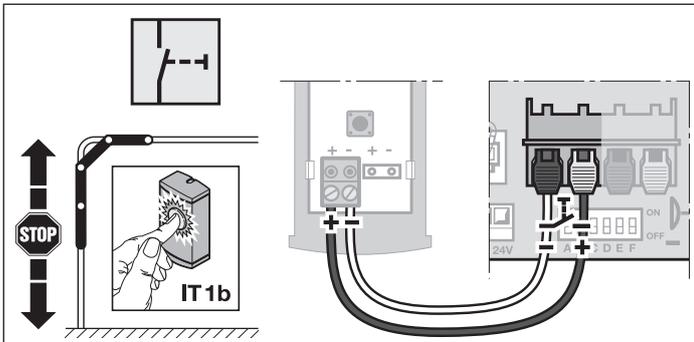


- ▶ Plug radio receiver into the 4-pin base.
  - Green wire (GN) → terminal 20 (0 V)
  - White wire (WH) → terminal 21 (Channel 1)
  - Yellow wire (YE) → terminal 23 (Channel 2)
  - Brown wire (BN) → terminal 5 (+24 V)

#### Connector must engage properly!

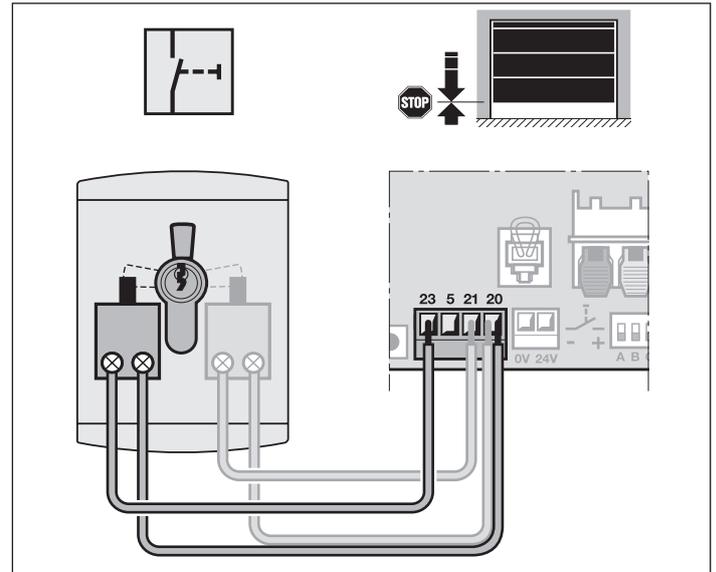
- ▶ See the manual of the receiver for information on teaching in the remote control buttons to the receiver.

### 6.4 External impulse button



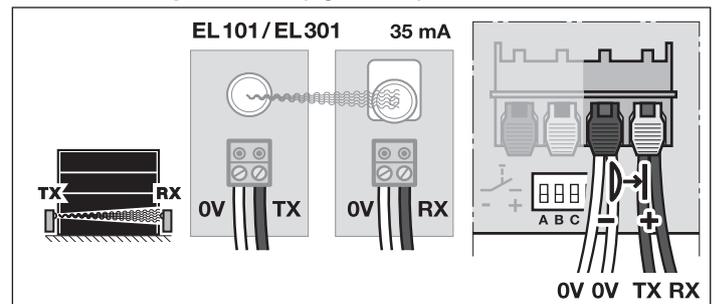
One or more buttons with normally open contacts (volt-free), such as internal push buttons or key switches, can be connected in parallel.

### 6.5 External impulse button for partial opening



One or more buttons with normally open contacts (volt-free), such as key switches, can be connected in parallel.

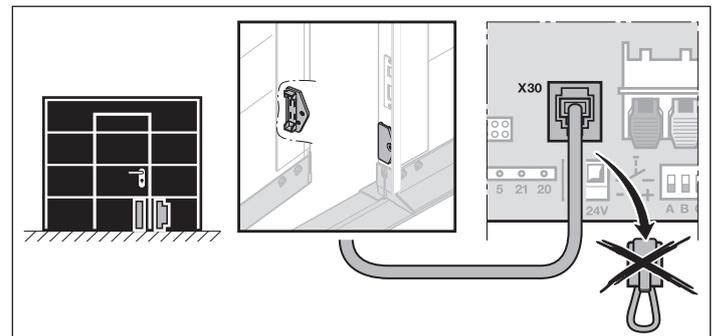
### 6.6 2-wire photocell (dynamic)



#### Notes:

- Follow the fitting instructions when mounting photocells.
- The photocell must be connected before the learning run.
- A new learning run is required if the photocell is removed.

### 6.7 Tested wicket door contact



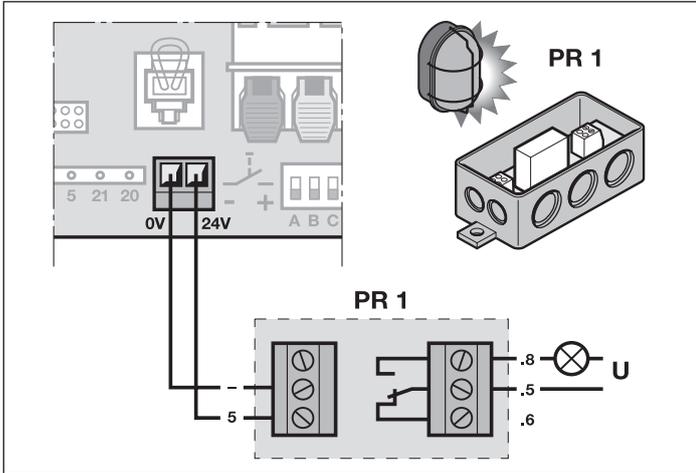
- ▶ Connect wicket door contacts that switch to ground (0 V) as shown in Figure.

**Notes:**

- The wicket door contact must be connected before the learning run.
- A new learning run is required if the wicket door contact is removed.

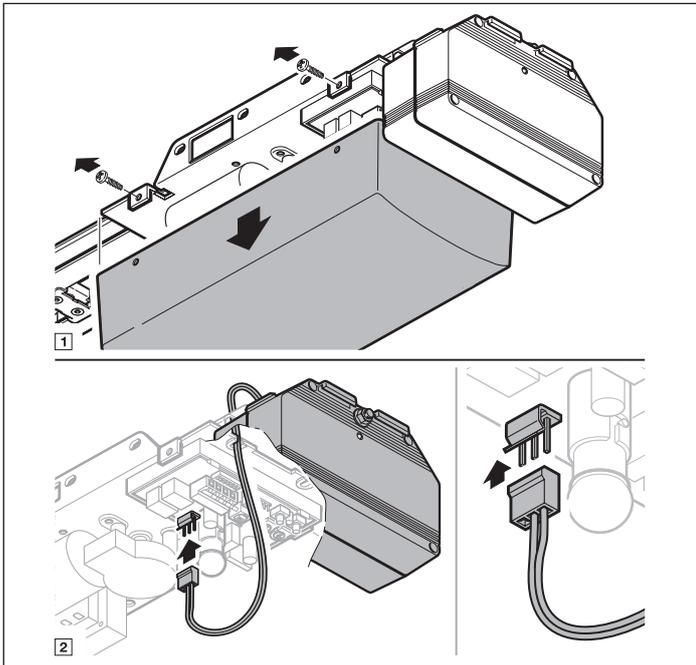
Door cycles are immediately halted and permanently prevented when the wicket door contact is opened.

**6.8 Option relay PR 1**



Option relay PR 1 is required to connect an external lamp or warning light.

**6.9 Emergency battery HNA 18**



To enable door movement in the event of a power failure, an optional emergency battery can be connected. The system automatically switches to battery operation. During battery operation, the operator light remains switched off.



**WARNING!**

**Danger of injury due to unexpected door travel**

Unexpected door travel may occur when the emergency battery is still connected despite the mains plug being pulled out.

- ▶ Disconnect the mains plug **and** the plug of the emergency battery whenever performing work on the door system.

**7 DIL SWITCH FUNCTIONS**

Several of the operator's functions must be programmed using the DIL switches. Before initial start-up, the DIL switches are in factory settings, i.e. the switches are in the OFF position.

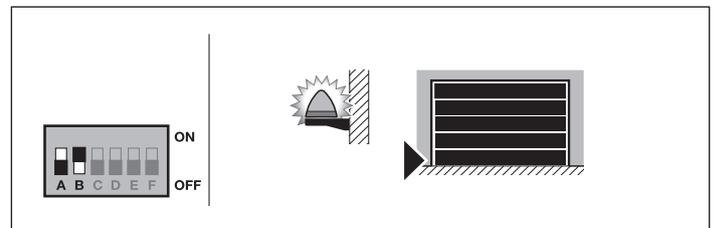
The following requirements must be met in order to change DIL switch settings:

- The operator is at rest.
- No radio control is being programmed.

A change to the DIL switches will have an immediate effect on the function.

Set the DIL switches as described below in accordance with the national regulations, the desired safety equipment and the on-site circumstances.

**7.1 Close limit switch reporting**



A	OFF	CLOSE limit switch reporting activated
B	ON	

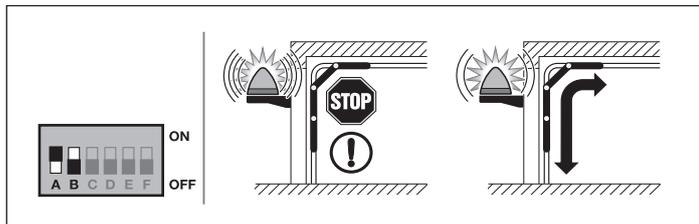
*Tab. 1: Function of the operator light and the option relay with activated CLOSE limit switch reporting*

Operator light	<ul style="list-style-type: none"> <li>• Permanent light during the door run</li> <li>• Illumination period after reaching the Close end-of-travel position</li> </ul>
Option relay	Picks up when the Close end-of-travel position is reached

## 7.2 Pre-warning phase

If the pre-warning phase is activated, it will always start before start of travel from any position.

If the automatic timer is set, the pre-warning phase will only start from the Open end-of-travel position.

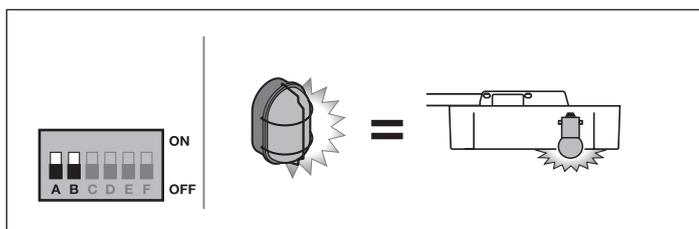


A	ON	Pre-warning phase activated
B	OFF 	

Tab. 2: Function of the operator light and the option relay with activated pre-warning phase

Operator light	<ul style="list-style-type: none"> <li>Quick flashing during the pre-warning phase</li> <li>Permanent light during the door run</li> </ul>
Option relay	Clocks during the pre-warning phase and door travel (warning lamp function)

## 7.3 External light



A	OFF 	External light activated
B	OFF 	

Tab. 3: Function of the operator light and the option relay with external illumination

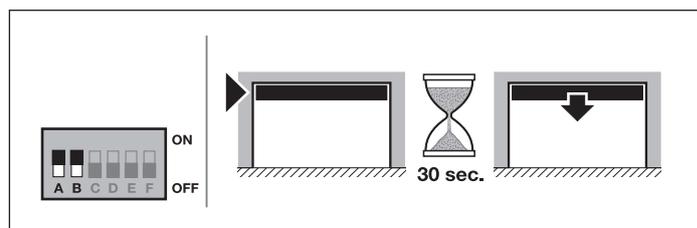
Operator light	<ul style="list-style-type: none"> <li>Permanent light during the door run</li> <li>Illumination period after reaching the Close end-of-travel position</li> </ul>
Option relay	Gleiche Funktion wie Antriebsbeleuchtung

## 7.4 Automatic timer

With an automatic timer, the door is only opened with a travel command. The door closes automatically after the hold-open phase of approx. 30 seconds and the pre-warning phase have elapsed. After an impulse or after the photocell has been passed, the hold-open phase will be restarted automatically.

### Note

The automatic timer may only be activated within the scope of DIN EN 12453 if at least one additional safety device (photocell) is connected besides the standard power limit.

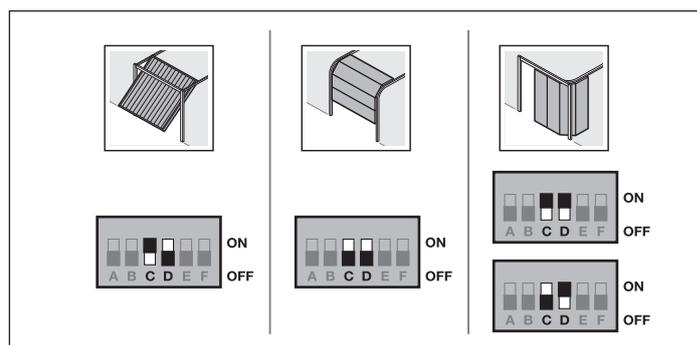


A	ON	Automatic timer activated
B	ON	

Tab. 4: Function of the operator, the operator light and the option relay with activated automatic timer

Operator	After hold-open phase and pre-warning phase, automatic timer from the OPEN end-of-travel position
Operator light	<ul style="list-style-type: none"> <li>Permanent light during the hold-open phase and the door run</li> <li>Flashes during the pre-warning phase</li> </ul>
Option relay	<ul style="list-style-type: none"> <li>Permanent contact during the hold-open phase (only from the Open end-of-travel position)</li> <li>Clocks during the pre-warning phase and door travel</li> </ul>

## 7.5 Door type (soft stop)



C	ON	Up-and-over door, long soft stop
C	OFF 	Sectional door, short soft stop

In a side sliding sectional door, the soft stop in the Close direction can be set using a combination of DIL switches C + D (depending on the track application of the side sliding sectional door).

If a long soft stop is set in the Close direction, the operator must start with a long soft start in the Open direction.

If a short soft stop is set in the Close direction, the operator will start normally in the Open direction.

C	ON	Side sliding sectional door, <ul style="list-style-type: none"> <li>Long soft stop in the Close direction</li> <li>Short soft stop in the Open direction</li> <li>Long soft start in the Open direction</li> </ul>
D	ON	

C	OFF		Side sliding sectional door, <ul style="list-style-type: none"> <li>• Short soft stop in the Close and Open direction</li> <li>• Short soft start in the Open direction</li> </ul>
D	ON		

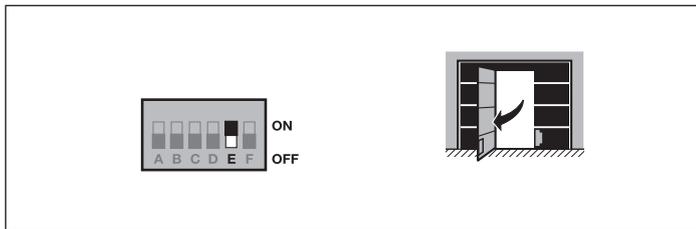
With the side sliding sectional door setting, the power limit in the Open direction works as follows:

- ▶ The operator stops, briefly reverses in the Close direction and takes the stress off the obstacle.

### 7.6 Static current circuit / stop with self-testing

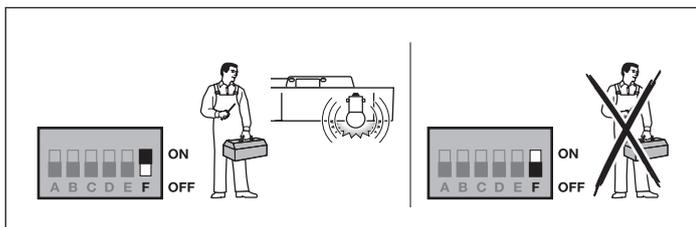
A wicket door contact with self-testing is automatically detected and taught in during the learning run. After a successful learning run, the red LED flashes 7x.

A new learning run is required if the wicket door contact with self-testing is removed.



E	ON		Activated, for wicket door contact with self-testing. The self-testing is checked before each door run (operation only possible with a wicket door contact that can be tested).
E	OFF		Safety equipment without self-testing

### 7.7 Door maintenance display



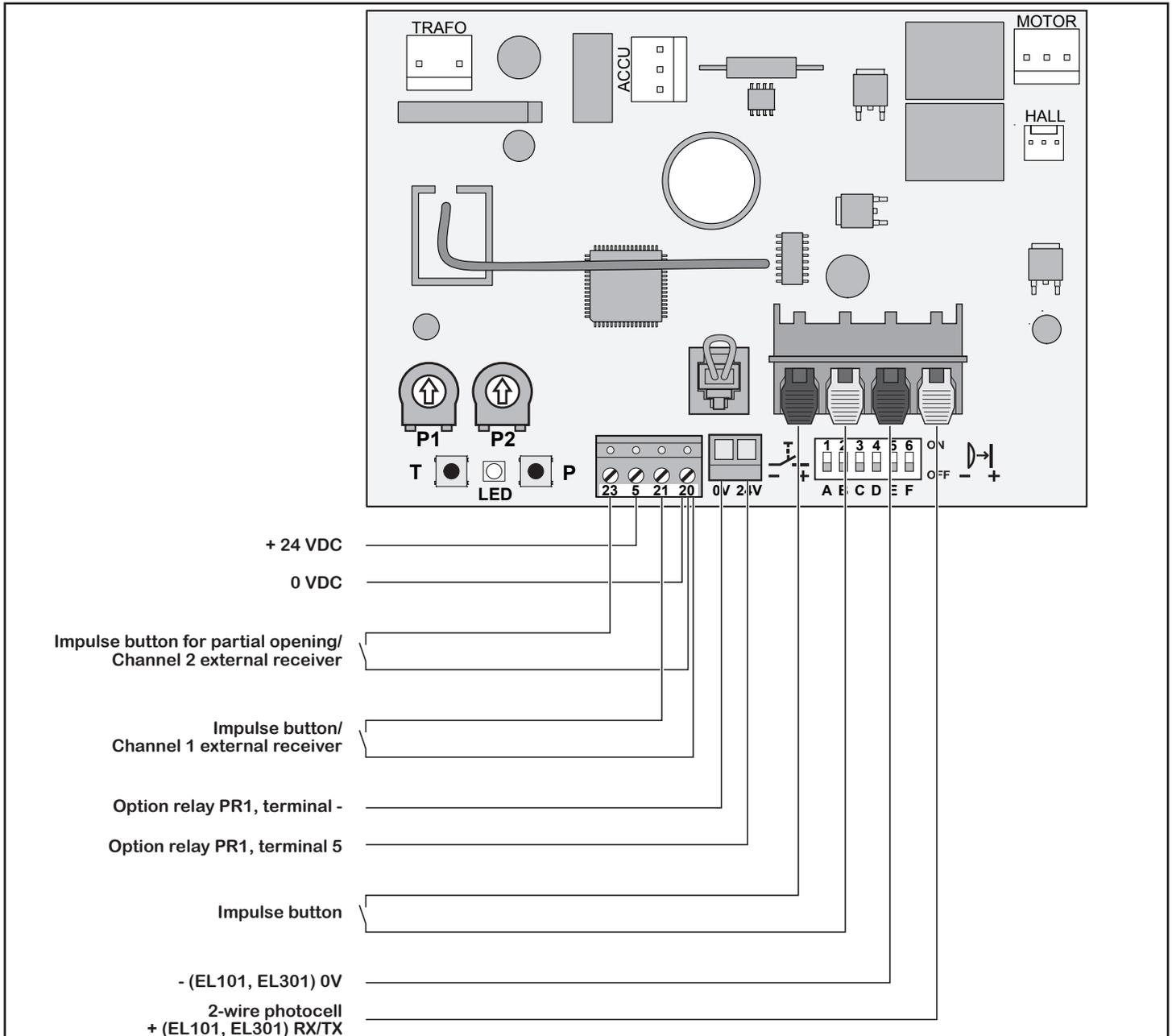
F	ON		Activated, exceeding the maintenance cycle is signalled by the operator light flashing 3x at the end of every door run
F	OFF		Not activated, no signal after the maintenance cycle is exceeded.

The maintenance interval is reached when the operator has been in operation for more than 1 year since the last teaching-in or the operator has reached or exceeded more than 2000 door closing actions.

**Note**

The maintenance data is reset by teaching in the operator again (see section 5.1 on page 8).

## 8 CIRCUIT BOARD OVERVIEW / SHORT INSTRUCTIONS OF PROGRAMMING

**8.1 Brief programming instruction for opener**

The limit stops are installed and the slider is inserted.

- Insert the mains plug. The light flashes twice.
- Briefly press the board button T.
- The door opens until it reaches the door open limit stop; it then closes and opens three more times.
- The door remains in the door open final position.

**The opener has been taught and is ready for operation.**

**8.2 Deleting door data**

If the opener has to be taught again, existing door data must be deleted.

- Remove the mains plug.
- Press and hold the board button T.
- Insert the mains plug again.
- As soon as the light flashes once, release the board button T.

**The door data is deleted and the opener can be re-taught.**

**8.3 Deleting all radio codes**

- Press and hold the board button P.
- The red LED first flashes slowly (ready for deletion).
- The red LED flashes quickly.
- Release the board button P.

**All taught radio codes are deleted.**

**8.4 Brief programming instruction for radio channel 1**

- Press the board button P once; the red LED flashes once.
- Press the desired hand-held transmitter button and hold it down until the red LED flashes quickly.
- Release the hand-held transmitter button.
- The red LED continues to flash once; additional hand-held transmitter buttons can be taught.
- To complete the teaching process, press the board button P twice or wait about 20 seconds.
- The red LED and the opener light illuminate continuously.

**The hand transmitter button has been taught and is ready for operation.**

**8.5 Brief programming instruction for radio channel 2 (to control partial opening)**

The opener is taught and is in one of the end positions.

- Press the board button P twice; the red LED flashes twice.
- Press the desired hand-held transmitter button and hold it down until the red LED flashes quickly.
- Release the hand-held transmitter button.
- The red LED continues to flash twice; additional hand-held transmitter buttons can be taught.
- To complete the teaching process, press the board button P once or wait about 20 seconds.
- The red LED and the opener light illuminate continuously.

**The hand transmitter button has been taught and is ready for operation.**

## 9 OVERVIEW OF DIL SWITCH FUNCTIONS

DIL A	DIL B	Function	Option relay function	
OFF	OFF	External light activated	Relay the same as operator light (external light function)	
ON	OFF	Pre-warning phase activated	Relay clocks during the pre-warning phase and the door run (warning lamp function).	
OFF	ON	CLOSE limit switch reporting activated	The relay picks up in the Close end-of-travel position ( Close reporting function)	
ON	ON	Automatic timer activated, photocell must be installed	Relay clocks during the pre-warning phase and the door run, permanent contact during the hold-open phase (only from the Open end-of-travel position)	

DIL C	DIL D	Door type (soft stop)		
OFF	OFF	Sectional door	Short soft stop	
ON	OFF	Up-and-over door	Long soft stop	
OFF	ON	Side sliding sectional doors	<ul style="list-style-type: none"> <li>• Short soft stop in the Close and Open direction,</li> <li>• Short soft start in the Open direction.</li> </ul>	
ON	ON	Side sliding sectional doors	<ul style="list-style-type: none"> <li>• Long soft stop in the Close direction,</li> <li>• Short soft in the Open direction,</li> <li>• Long soft start in the Open direction.</li> </ul>	

DIL E	Static current circuit / stop with self-testing		
OFF	Safety equipment without self-testing		
ON	Wicket door contact with self-testing activated. The self-testing is checked before each door run (operation only possible with a wicket door contact that can be tested)		

DIL F	Door maintenance display		
OFF	Not activated, no signal after the maintenance cycle is exceeded		
ON	Activated, exceeding the maintenance cycle is signalled by the operator light flashing at the end of every door run.		

## 10 DISPLAY OF MESSAGES AND ERRORS

### 10.1 Operator light messages

When the mains plug is inserted, without the circuit board button **T** (with opened vision panel) being pressed, the operator lighting flashes, twice, three or four times.

#### 2x flashing

No door data is present or the door data has been deleted (delivery condition). The operator can be taught in immediately.

#### 3x flashing

Saved door data is present, but the last door position is not known. For this reason, the next run will be a OPEN reference run. Door travel in normal operation will follow.

#### 4x flashing

Saved door data is present and the last door position is sufficiently known, i.e. normal door runs that take the impulse

sequence control (OPEN-STOP-CLOSE-STOP-OPEN, etc.) into account can proceed immediately (normal behaviour after a successful teach-in and power failure). For safety reasons, the door will always open upon the first impulse command after a power failure during a door run.

### 10.2 Display of errors / warnings / information

The red diagnostic LED is visible through the vision panel even when the housing is closed. This LED helps to easily identify causes when operation does not go according to plan. This LED is continuously illuminated in normal operation.

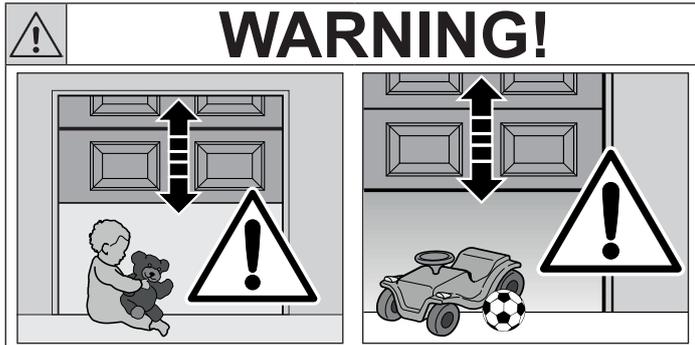
#### Note

If normal operation of the garage door operator with the radio module / receiver or the button **T** is otherwise possible, a short circuit in the external button's connecting lead or in the button itself can be recognised through the behaviour described here.

Display	Error / warning	Possible cause	Remedy
	Safety equipment (photocells)	No photocell is connected	Connecting a photocell
		The light beam is interrupted	Adjust the photocell
		The photocell is defective	Exchange the photocell
	Power limit in the Close direction	The door is too sluggish or does not move smoothly	Correct the door travel
		Obstacle in door area	Remove the obstacle and teach in the operator again, if necessary
	Static current circuit open	The wicket door is open	Close the wicket door
		The magnet has been fitted the wrong way	Fit the magnet correctly (see the instructions for the wicket door contact)
		The testing result is not OK	Exchange the wicket door contact
	Power limit in the Open direction	The door is too sluggish or does not move smoothly	Correct the door travel
		Obstacle in door area	Remove the obstacle and teach in the operator again, if necessary
	System error	Internal error	Give a new travel command (impulse) <sup>1</sup> and move the door into the Open end-of-travel position
			Restore the factory setting (see section 5.3 on page 9), teach in the operator again or exchange, if necessary
	Travel time limit	The belt is torn	Exchange the belt
		The operator is defective	Exchange the operator
	Wicket door contact with self-testing taught in	No error. Only a confirmation that it has been successfully taught in	
	The operator has not been taught in	The operator has not been taught in yet	Teach in the operator (see section 5.1 on page 8)
	No reference point	Power failure The operator requires an Open reference run	Give a new travel command (impulse) <sup>1</sup> and move the door into the Open end-of-travel position

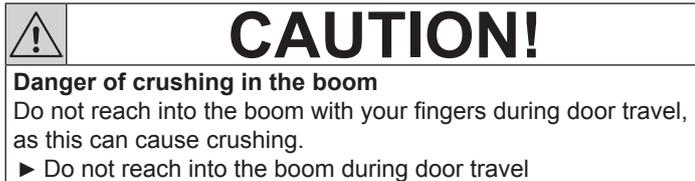
<sup>1</sup>) with an external button, the radio module or the circuit board button **T**.

## 11 OPERATION

**Danger of injury during door travel!**

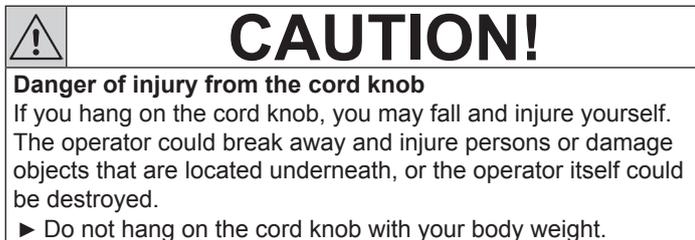
If people or objects are in the area around the door while the door is in motion, this can lead to injuries or damage.

- ▶ Children are not allowed to play near the door system.
- ▶ Make sure that no persons or objects are in the door's area of travel.
- ▶ If the door system has only one safety feature, only operate the garage door operator if you are within sight of the door's area of travel.
- ▶ Monitor the door travel until the door has reached the end-of-travel position.
- ▶ Only drive or pass through remote control door systems if the door is in the Open end-of-travel position!
- ▶ Never stay standing under the open door.

**Danger of crushing in the boom**

Do not reach into the boom with your fingers during door travel, as this can cause crushing.

- ▶ Do not reach into the boom during door travel

**Danger of injury from the cord knob**

If you hang on the cord knob, you may fall and injure yourself. The operator could break away and injure persons or damage objects that are located underneath, or the operator itself could be destroyed.

- ▶ Do not hang on the cord knob with your body weight.

**Danger of injuries due to the hot lamp**

Touching the lamp during or immediately following operation can lead to burns.

- ▶ Do not touch the lamp if it is switched on or was recently switched on.

**ATTENTION!****Damage due to the cord of the mechanical release**

If the cord of the mechanical release becomes caught on a roof carrier system or other parts of the vehicle or door, this can lead to damage.

- ▶ Make sure that the cable cannot become caught.

**Heat generation due to the illumination**

As a result of heat being generated by the operator light, there is a risk of damage if the spacing is inadequate.

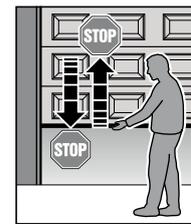
- ▶ The smallest distance to easily inflammable materials or heat-sensitive surfaces must be at least 0.1 m (see Figure 7 on page 32).

**Note**

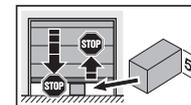
As a general rule, conduct the initial function tests and the initial start-up or extension of the radio system inside the garage.

**11.1 Instructing users**

- ▶ All persons using the door system must be shown how to operate the garage door operator properly and safely.
- ▶ Demonstrate and test the mechanical release as well as the safety reversal.

**11.2 Safety reversal**

- ▶ To check the safety reversal, stop the door with both hands while it is closing. The door system must stop and initiate the safety reversal.
- ▶ Stop the door with both hands while it is opening. The door system must switch off.
- ▶ Position a test object with a height of approx. 50 mm in the centre of the opening and close the door. The door system must stop and initiate the safety reversal as soon as it reaches the obstacle.



- ▶ In the event of a failure of the safety reversal, a specialist must be commissioned immediately for the inspection and repair work.

**11.3 Normal operation****11.3.1 Channel 1 / Impulse function**

In normal operation, the garage door operator works with the impulse sequence control.

The door behaves as follows if an external button (at terminal 20 / 21 or at the intercom clamp), a taught-in hand transmitter button for the impulse function (channel 1) or the button **T** is pushed.:

- 1st impulse: → The door runs towards an end-of-travel position.
- 2nd impulse: → The door stops.
- 3rd impulse: → The door runs in the opposite direction.
- 4th impulse: → The door stops.
- 5th impulse: → The door runs in the direction of the end-of-travel position selected in the 1st impulse.

etc.

### 11.3.2 Channel 2 / Partial opening function

The door behaves as follows if an external button (at terminal 20 / 23) or a taught-in hand transmitter button for the partial opening function (channel 2) is pushed.

From the Close end-of-travel position:

- 1st impulse: → The door moves in the partial opening direction.
- 2nd impulse: → The door stops.
- 3rd impulse: → The door moves in the partial opening direction.

etc.

From the Open end-of-travel position:

- 1. Impuls: → The door moves in the partial opening direction.
- 2nd impulse: → The door stops.
- 3rd impulse: → The door moves in the partial opening direction.

etc.

From the partial opening position:

- Impulse at terminal 20/21 → The door moves in the Open direction.
- Impulse at terminal 20/23 → The door moves in the Close direction.

The operator light will light up during a door run and go out after approx. 2 minutes.

### 11.4 Behaviour during a power failure / Behaviour after the power returns (without emergency battery)

- ▶ To be able to open or close the garage door by hand during a power failure, it must be disengaged from the slide carriage while the door is closed, see „*Manual operation*“ on page 6.
- ▶ After the power returns, the slide carriage for automatic operation must be re-engaged, see „*Automated operation*“ on page 6.

Due to safety reasons, if the power fails during operation, the first impulse command will always open the door.

## 12 INSPECTION AND MAINTENANCE

- ▶ The garage door operator is maintenance-free.
- ▶ In the interest of your own safety, we recommend having the door system inspected and maintained by a qualified person in accordance with the manufacturer's specifications.



## WARNING!

### Danger of injury due to unexpected door travel!

Unexpected door travel may occur during inspection and maintenance work if the door system is inadvertently actuated by other persons.

- ▶ Disconnect the mains plug and the plug of the emergency battery whenever performing work on the door system.
- ▶ Safeguard the door system against being switched on again without authorisation.

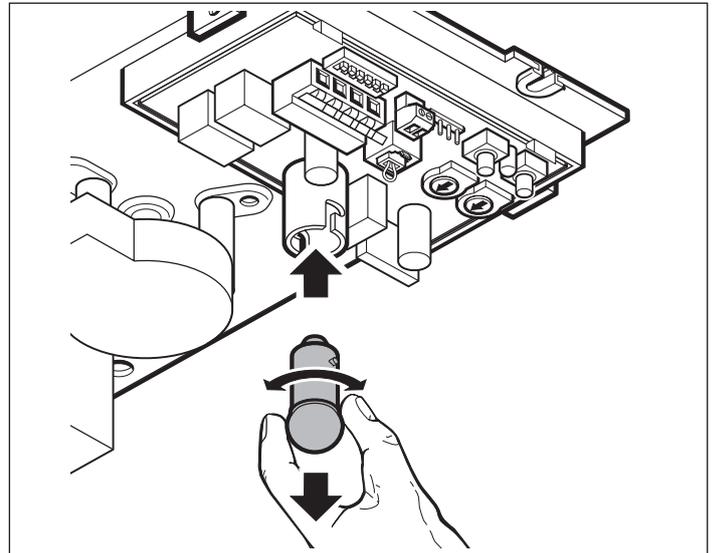
Inspection and repairs may only be carried out by a qualified person. Contact your supplier for this purpose.

A visual inspection may be carried out by the operator.

- ▶ Check all safety and protective functions **monthly**.
- ▶ Check safety devices without self-testing every **six months**.
- ▶ Any malfunctions and / or defects must be remedied **immediately**.

### 12.1 Replacement bulb

- ▶ Only use a 24 V / 10 W B(a) 15 s bulb.
- ▶ Exchange the light bulb only if the operator is voltage-free.



## 13 OPTIONAL ACCESSORIES

Optional accessories are not included in the scope of delivery.

Loading of the operator by all electrical accessories:  
max. 100 mA.

The following accessories can be connected to the operator:

- One-way photocell, self-testing dynamic photocell
- External radio receiver
- External impulse buttons (e.g. key switches)
- Emergency battery for emergency power supply
- Wicket door contact
- Warning light (in combination with the relay PR 1)

## 14 DISMANTLING AND DISPOSAL

- ▶ When dismantling the door, observe the applicable regulations governing work safety.
- ▶ Have a specialist dismantle the garage door operator in the reverse order of these instructions and dispose of it properly.

## 15 WARRANTY CONDITIONS

### 15.1 Warranty

We shall be exempt from our warranty obligations and product liability in the event that the customer carries out his own structural alterations or undertakes improper installation work or arranges for same to be carried out by others without our prior approval and contrary to the fitting guidelines we have provided. Moreover, we shall accept no responsibility for the inadvertent or negligent use of the operator and the accessories nor for improper maintenance of the door and its counterbalance. Batteries and light bulbs are also not covered by the warranty.

### 15.2 Warranty period

In addition to the statutory warranty provided by the dealer in the sales contract, we grant the following warranty for parts from the date of purchase:

- **60 months** for the operator mechanics, motor and motor control
- **24 months** on radio equipment, accessories and special systems

There is no warranty on consumables (e.g. fuses, batteries, lamps). Claims made under the warranty do not extend the warranty period. For replacement parts and repairs the warranty period is six months or at least the remainder of the warranty period.

### 15.3 Prerequisites

A claim under this warranty is only valid for the country in which the equipment was bought. The product must have been purchased through our authorised distribution channels. A claim under this warranty exists only for damage to the object of the contract itself. Reimbursement of expenditure for dismantling and fitting, testing of corresponding parts, as well as demands for lost profits and compensation for damages, are excluded from the warranty. The receipt of purchase substantiates your right to claim under the warranty. Replaced parts become our property

### 15.4 Performance

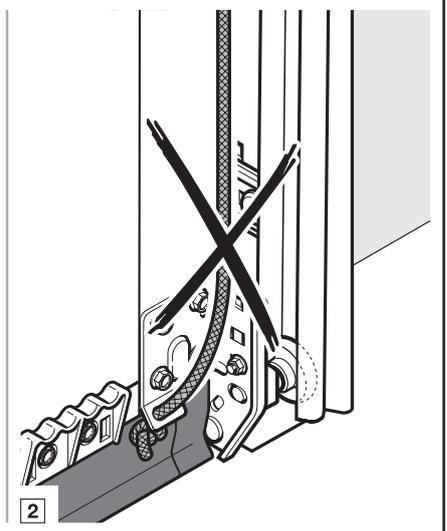
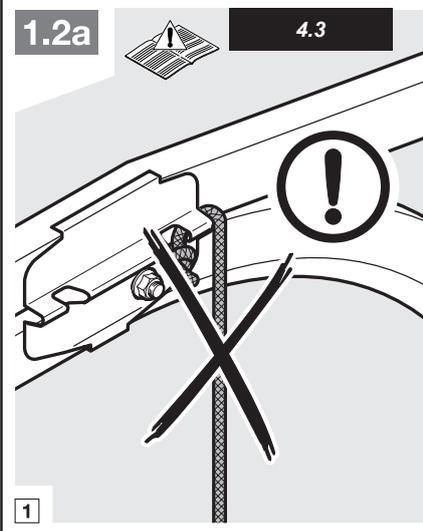
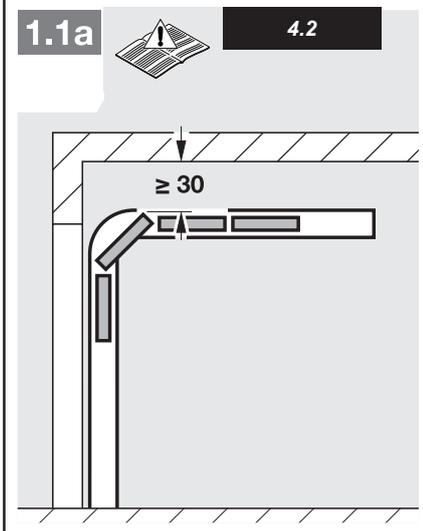
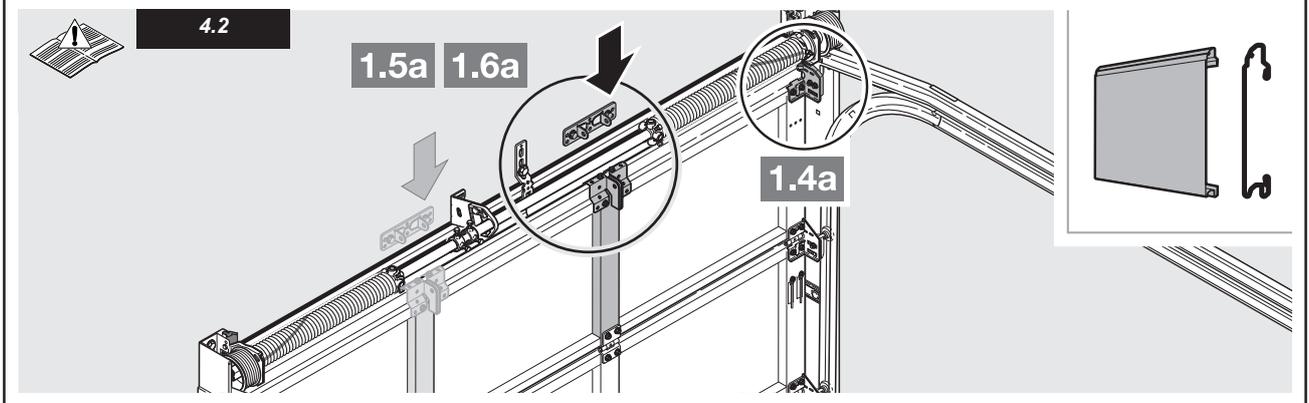
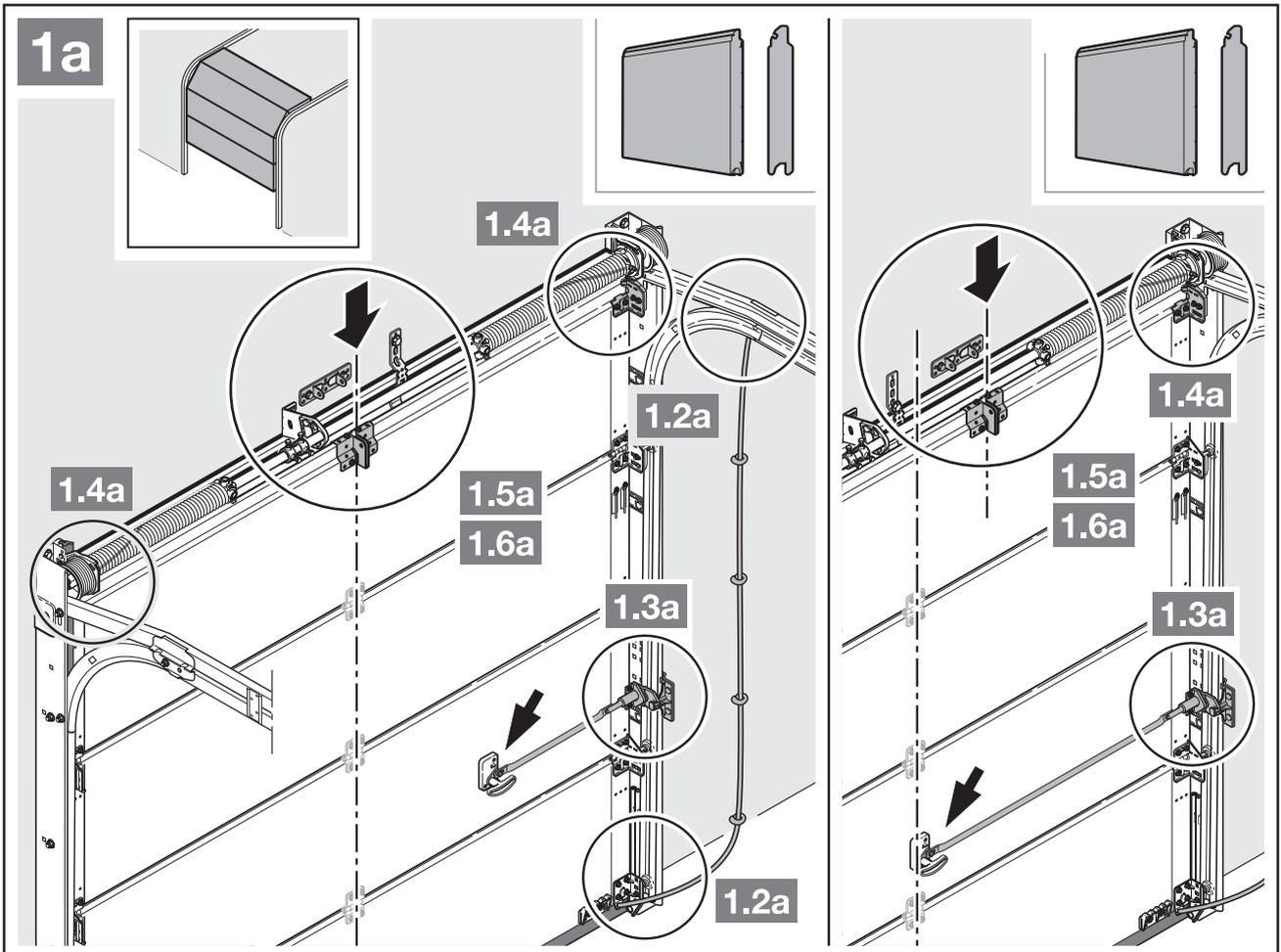
For the duration of the warranty we shall eliminate any product defects that are proven to be attributable to a material or manufacturing fault. We pledge to replace free of charge and at our discretion the defective goods with nondefective goods, to carry out repairs, or to grant a price reduction.

Damages caused by the following are excluded:

- Improper fitting and connection
- Improper initial start-up and operation
- External factors such as fire, water, abnormal environmental conditions
- Mechanical damage caused by accidents, falls, impacts
- Negligent or intentional destruction
- Normal wear or deficient maintenance
- Repairs conducted by unqualified persons
- Use of non-original parts
- Removal or defacing of the data label

## 16 TECHNICAL DATA

<b>Mains voltage:</b>	230/240V, 50/60 Hz
<b>Stand-by:</b>	Approx. 6,5 W
<b>Protection category</b>	Only for dry rooms
<b>Temperature range</b>	-20 °C to +60 °C
<b>Replacement bulb</b>	24 V / 10 W B(a) 15s
<b>Automatic safety cut-out</b>	Is automatically taught in for both directions separately. Self-learning, wear-free, as it has no mechanical switches.
<b>End-of-travel position cut-out force limit</b>	Automatic safety cut-out, readjusting at every door run.
<b>Rated load</b>	250 N
<b>Pull and push force</b>	600 N
<b>Power</b>	0,2 kW
<b>Duty cycle</b>	KB 2 min.
<b>Motor</b>	Direct current motor with hall sensor
<b>Transformer</b>	With thermal protection
<b>Connection</b>	No-screw connection technology for external equipment with 24 V DC low safety voltage, such as internal and external buttons with impulse operation.
<b>Special functions</b>	<ul style="list-style-type: none"> <li>• Operator light, 2-minute light ex factory</li> <li>• Stop/off switch can be connected</li> <li>• Photocell can be connected</li> <li>• Option relay for warning lamp, additional external illumination can be connected</li> <li>• Wicket door contact</li> </ul>
<b>Emergency release</b>	Actuated from inside with pull cord in the event of a power failure
<b>Universal fittings</b>	For up-and-over doors and Sectional doors
<b>Door travel speed*</b>	approx. 13 cm/s
* Dependent on door size and weight	
<b>Airborne sound emission of the garage door operator</b>	≤ 70 dB (A)
<b>Operator boom</b>	Extremely flat (no more than 30 mm high) with integral door security kit. Boom in toothed belt or synthetic belt version
<b>Use</b>	Exclusively for private garages. Not intended for industrial/commercial use.

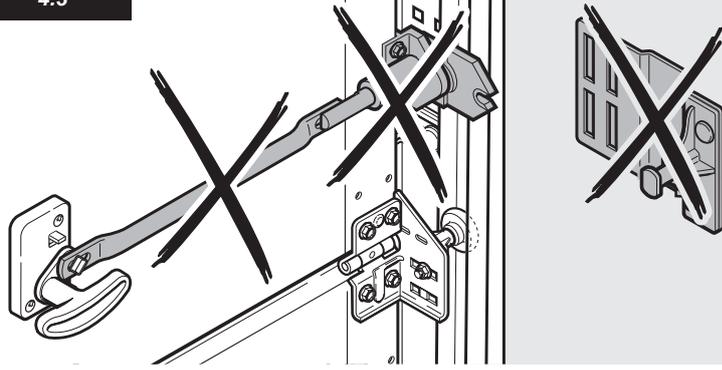




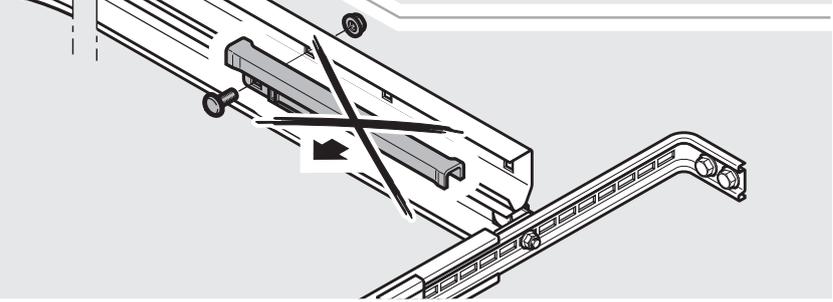
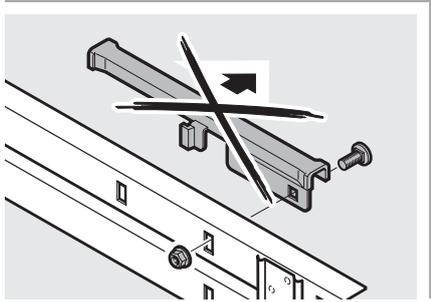
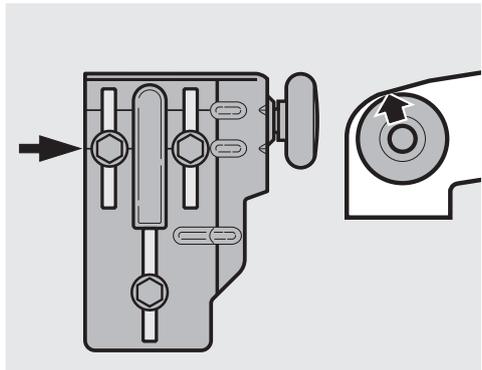
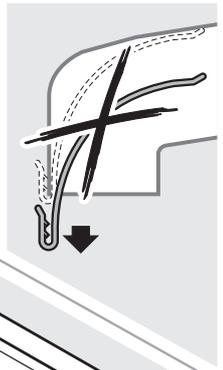
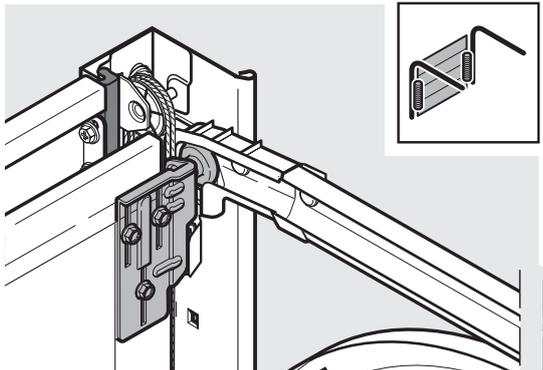
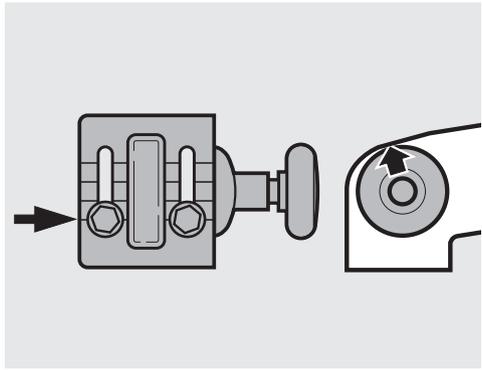
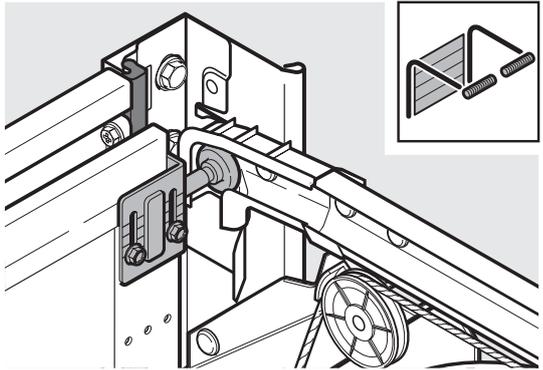
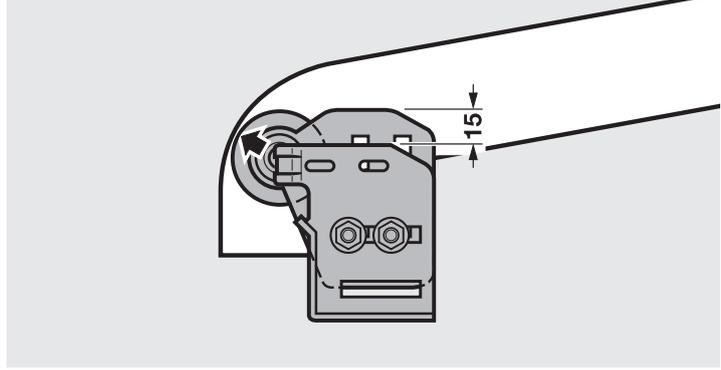
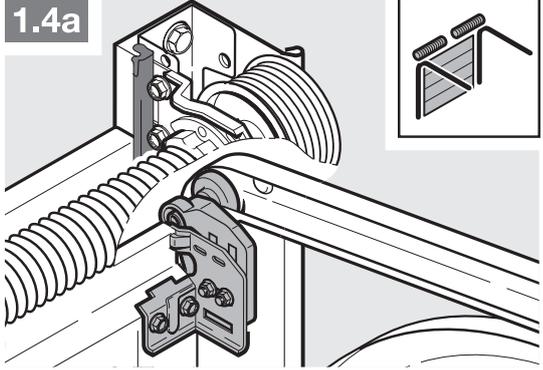
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4.3



1.4a

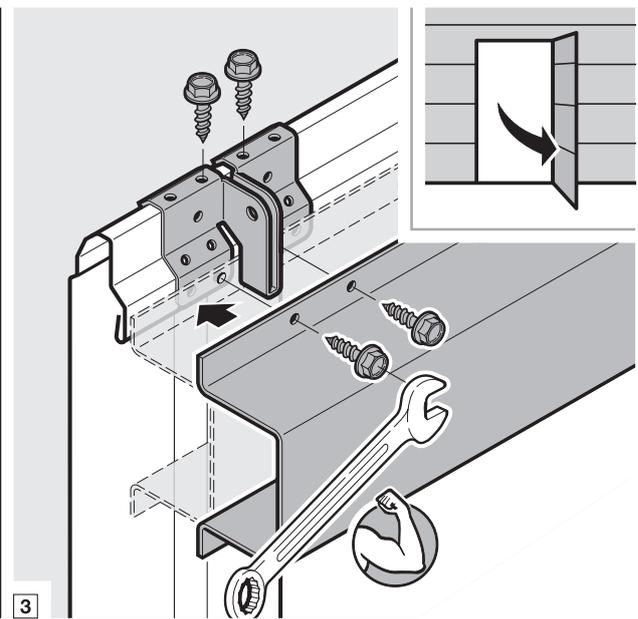
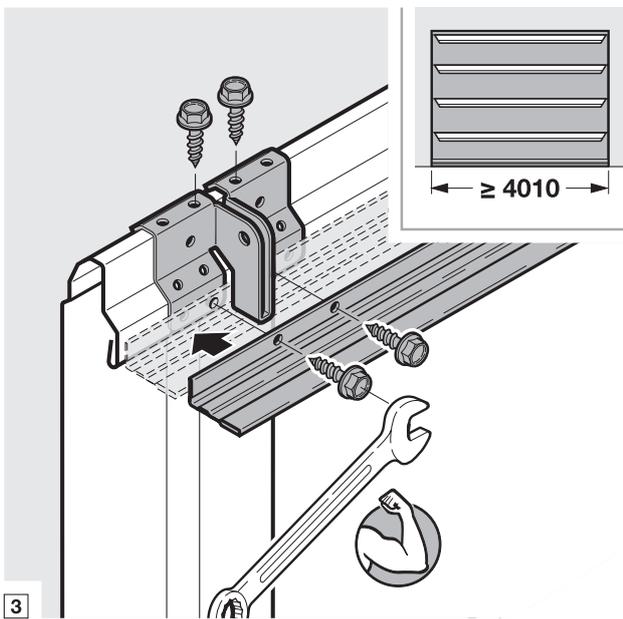
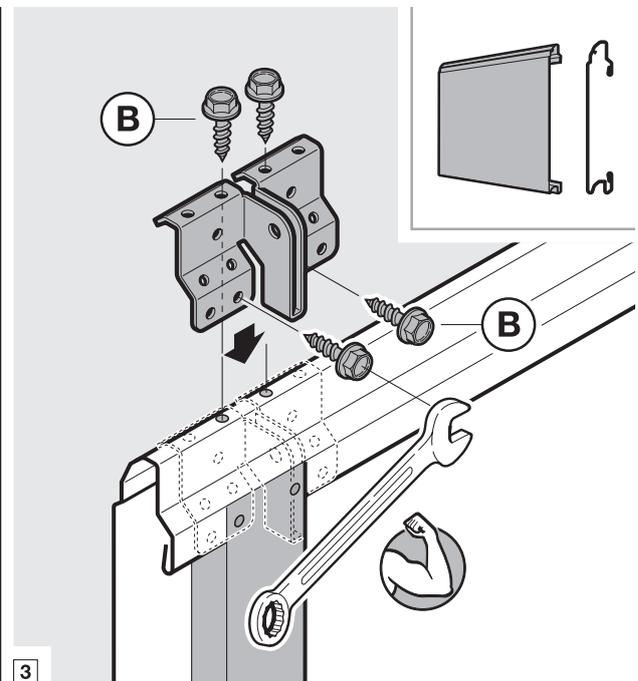
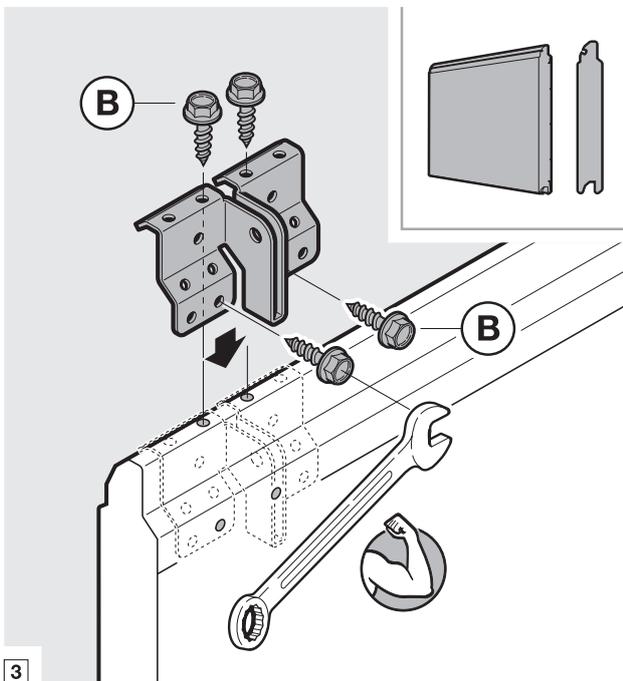
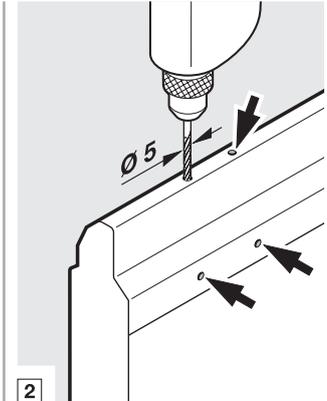
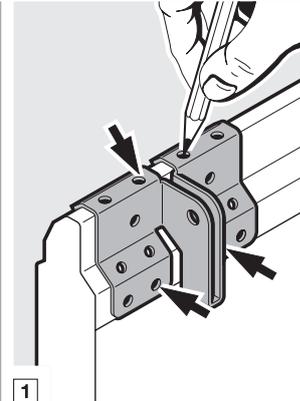
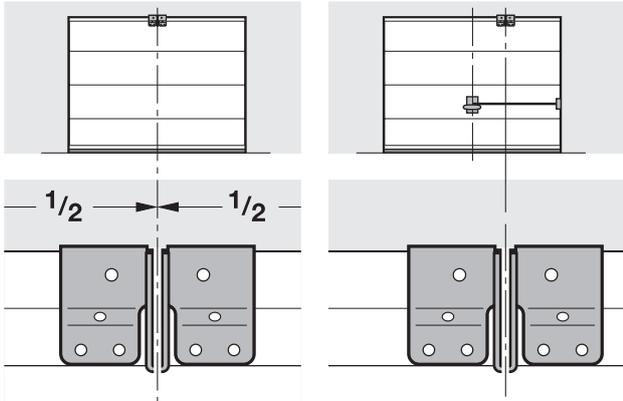
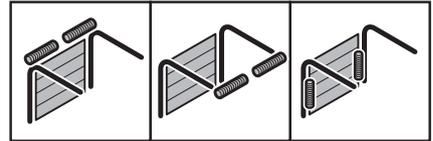




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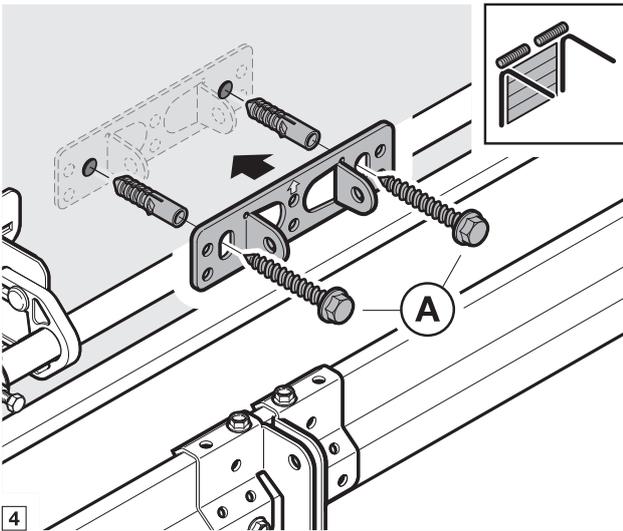
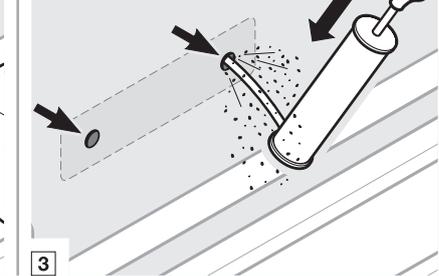
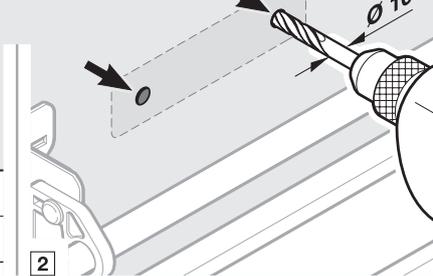
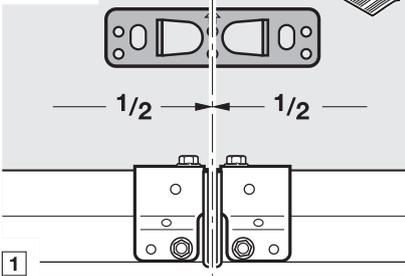
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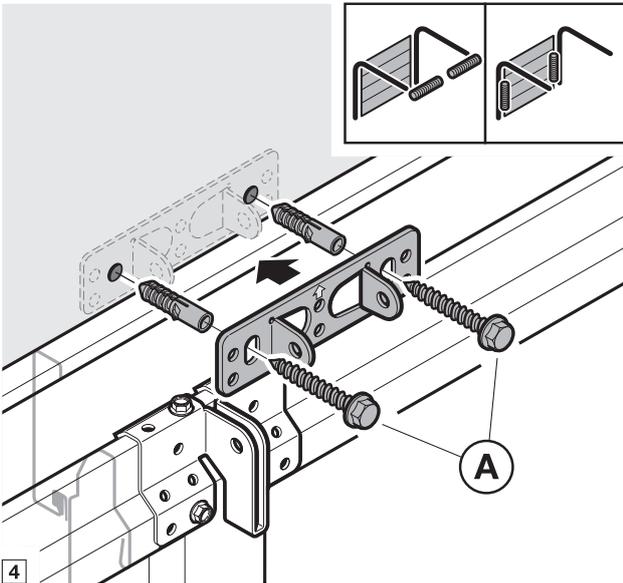
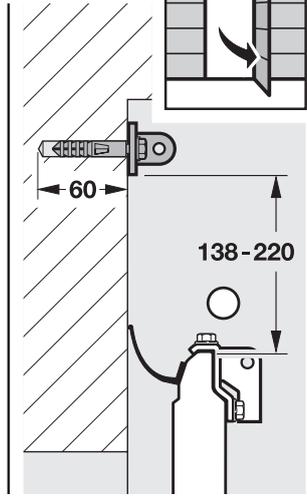
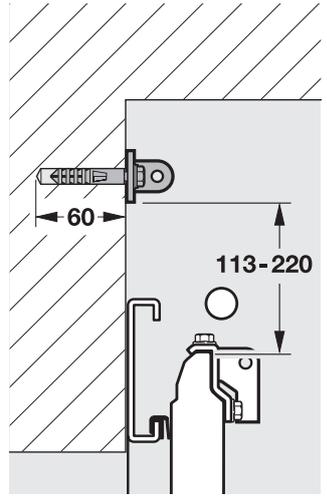


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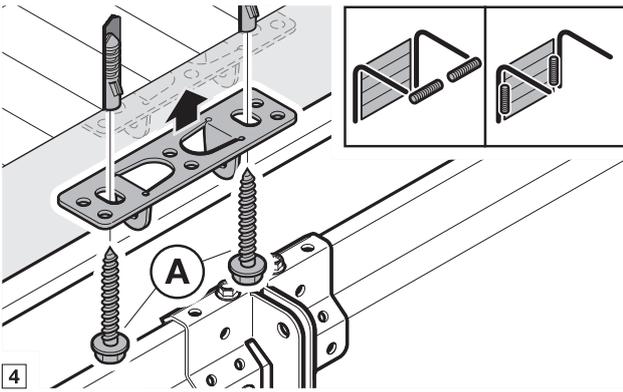
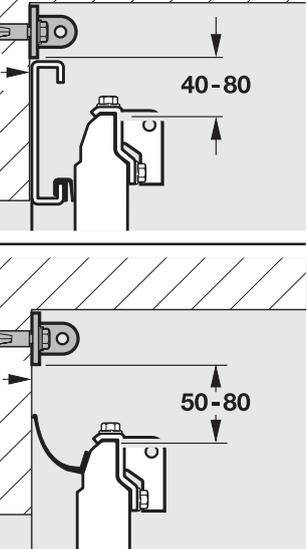
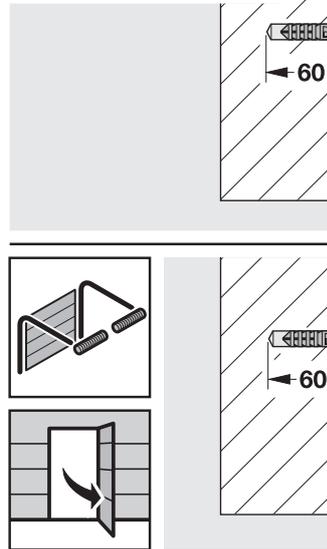
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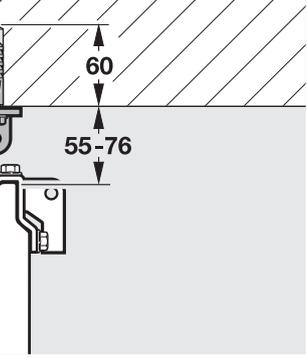
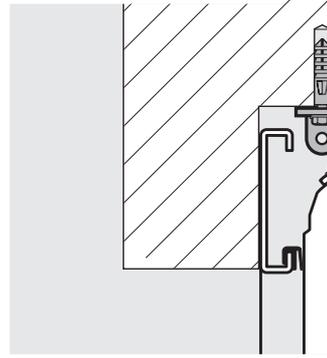
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**1b**

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1.7b  
1.8b

1.3b  
1.4b  
1.5b

1.1b

**1.1b**

N 80 = 50  
DF 98 = 85  
N 800 = 50

N 80

1

2

N 800

1

2

**1.2b**

4.2

$\geq 30$

**1.3b**

4.3

1

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**1.4b**

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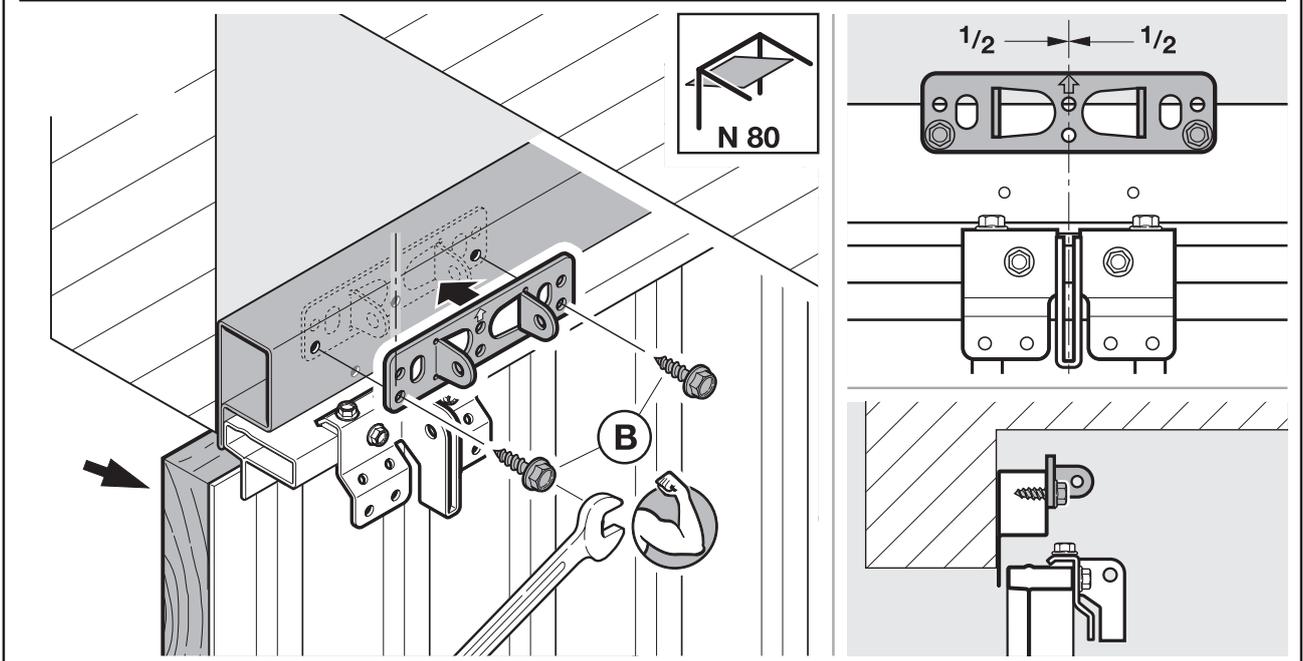
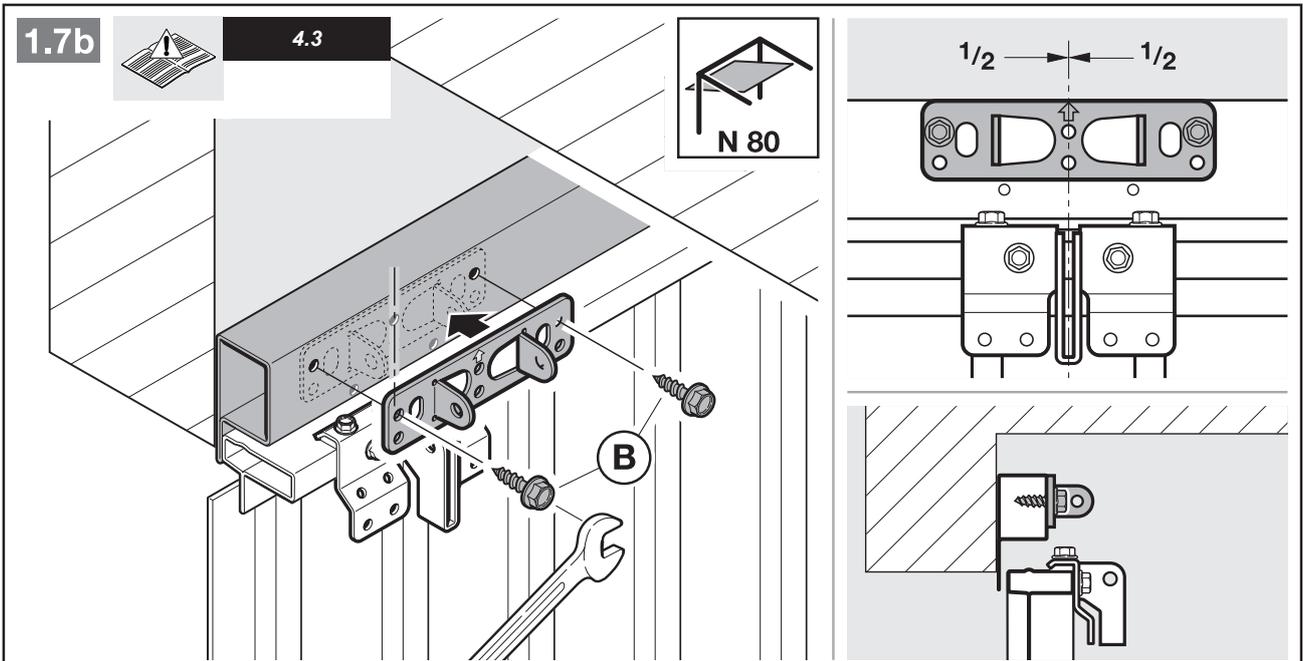
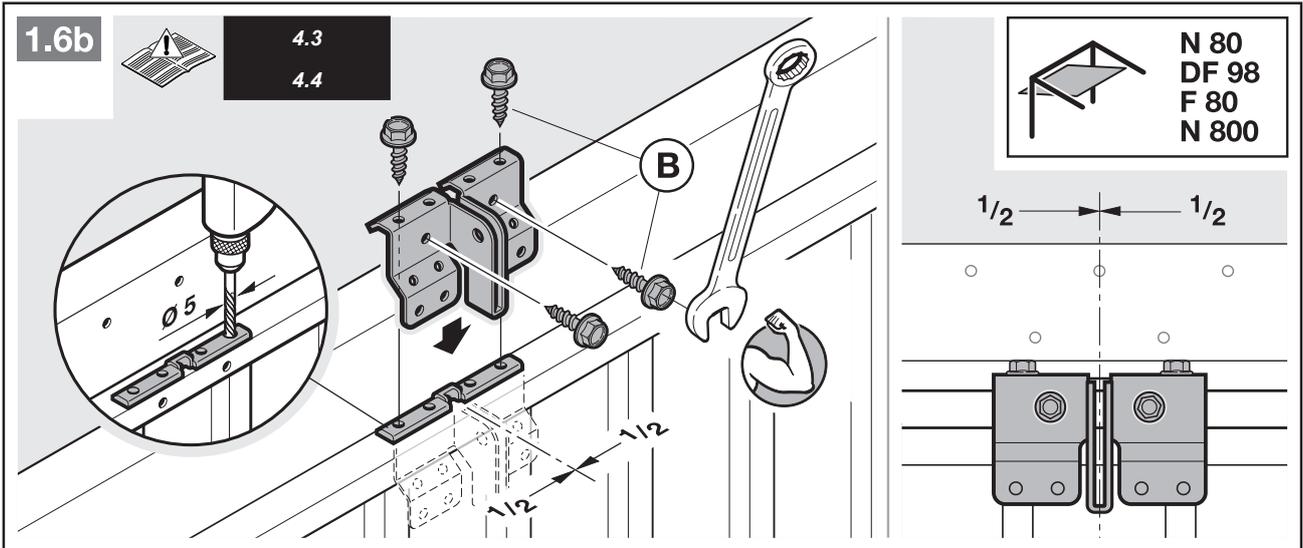
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**1.5b**

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2





**1.8b**

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**3**

**DF 98**

**A**

$\frac{1}{2}$   $\frac{1}{2}$

**60**

**90**

**3**

**F 80**

**A**

$\frac{1}{2}$   $\frac{1}{2}$

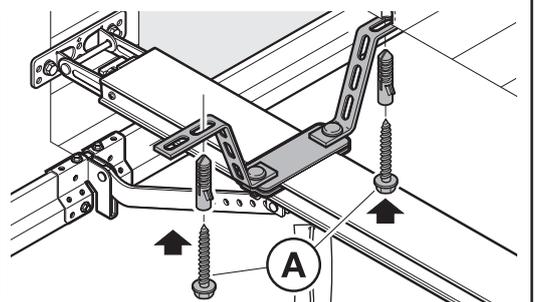
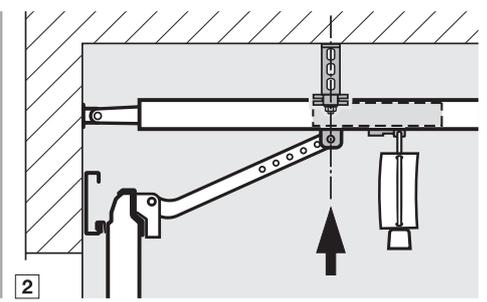
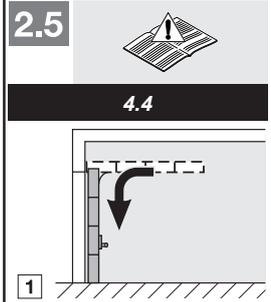
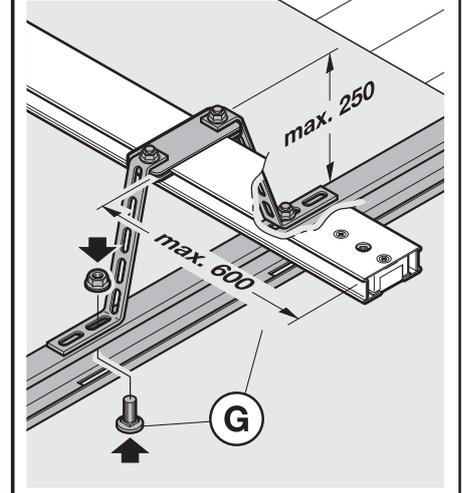
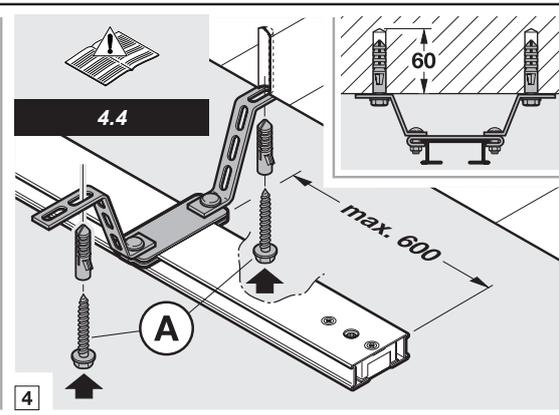
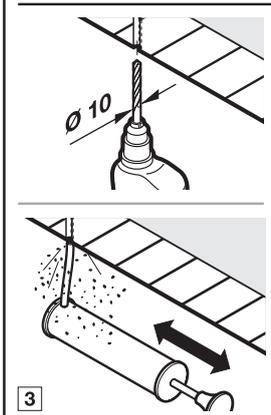
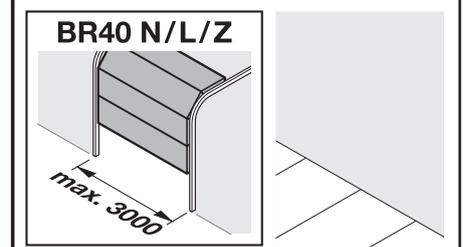
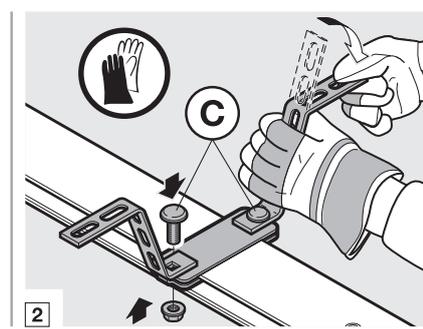
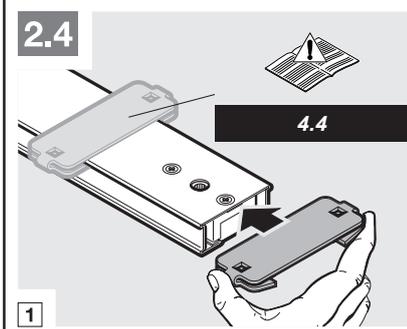
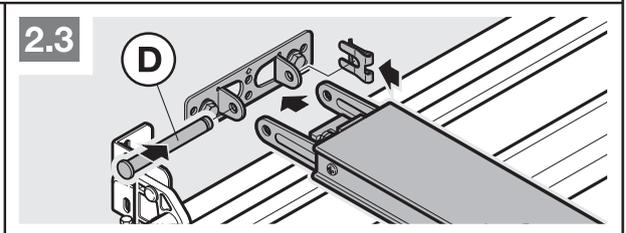
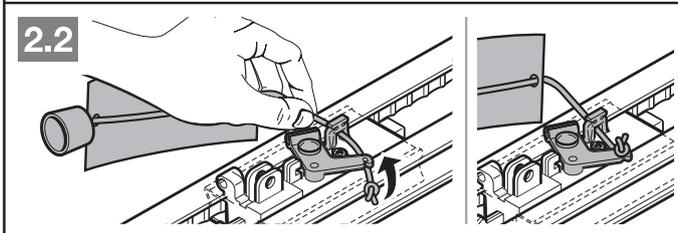
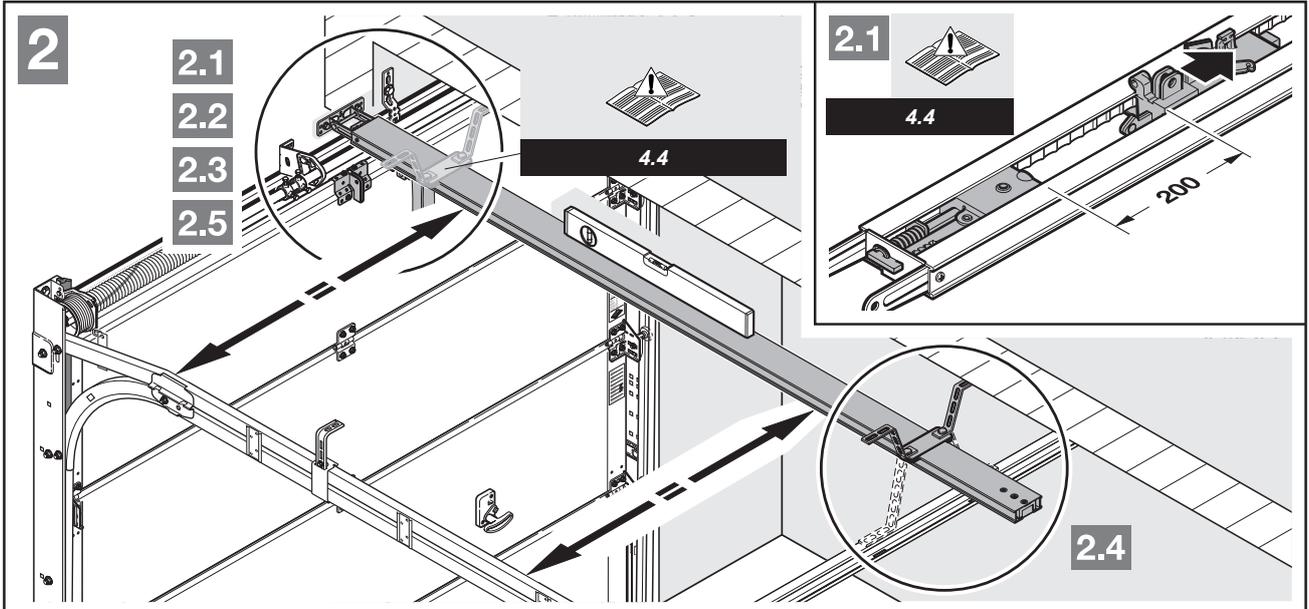
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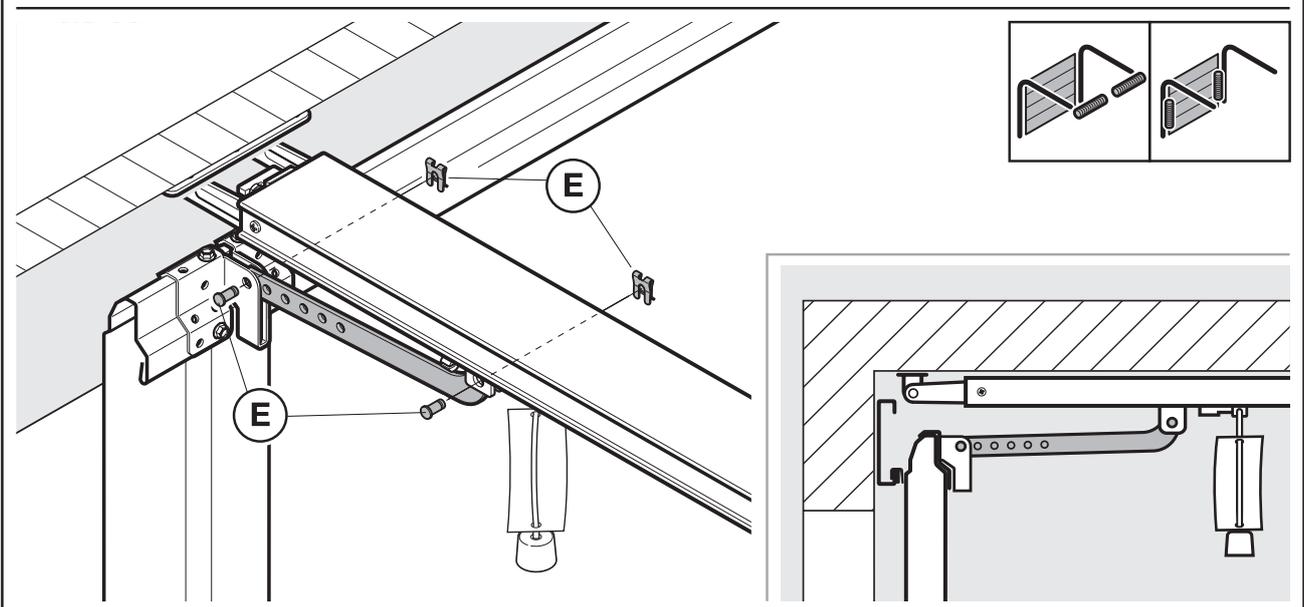
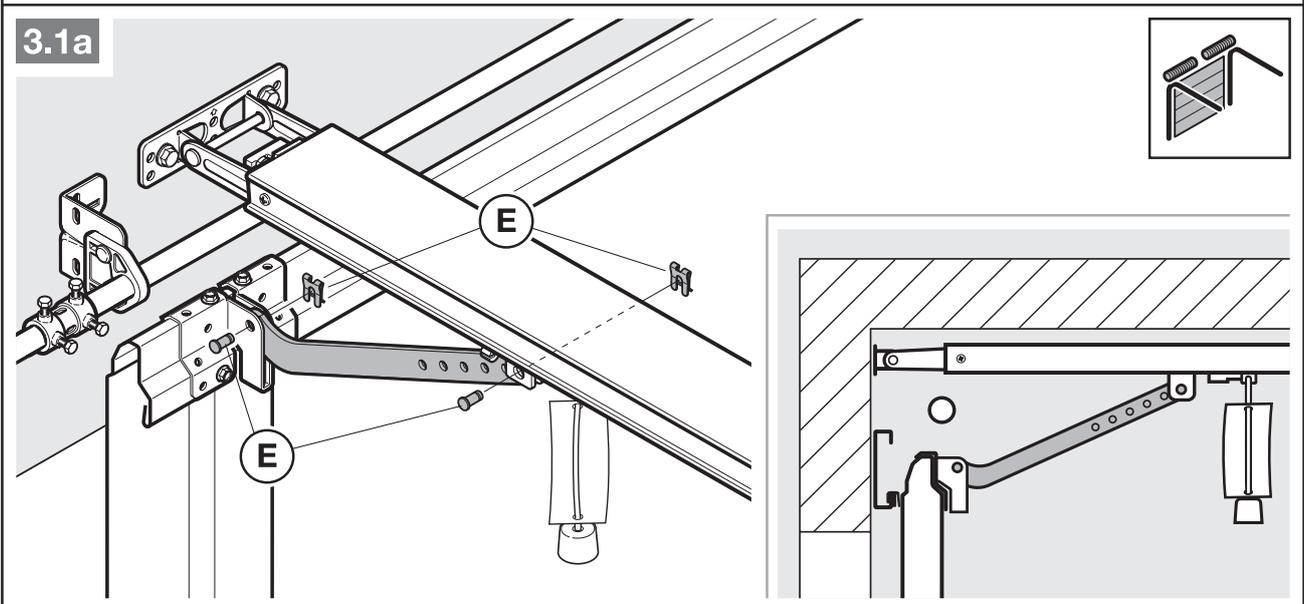
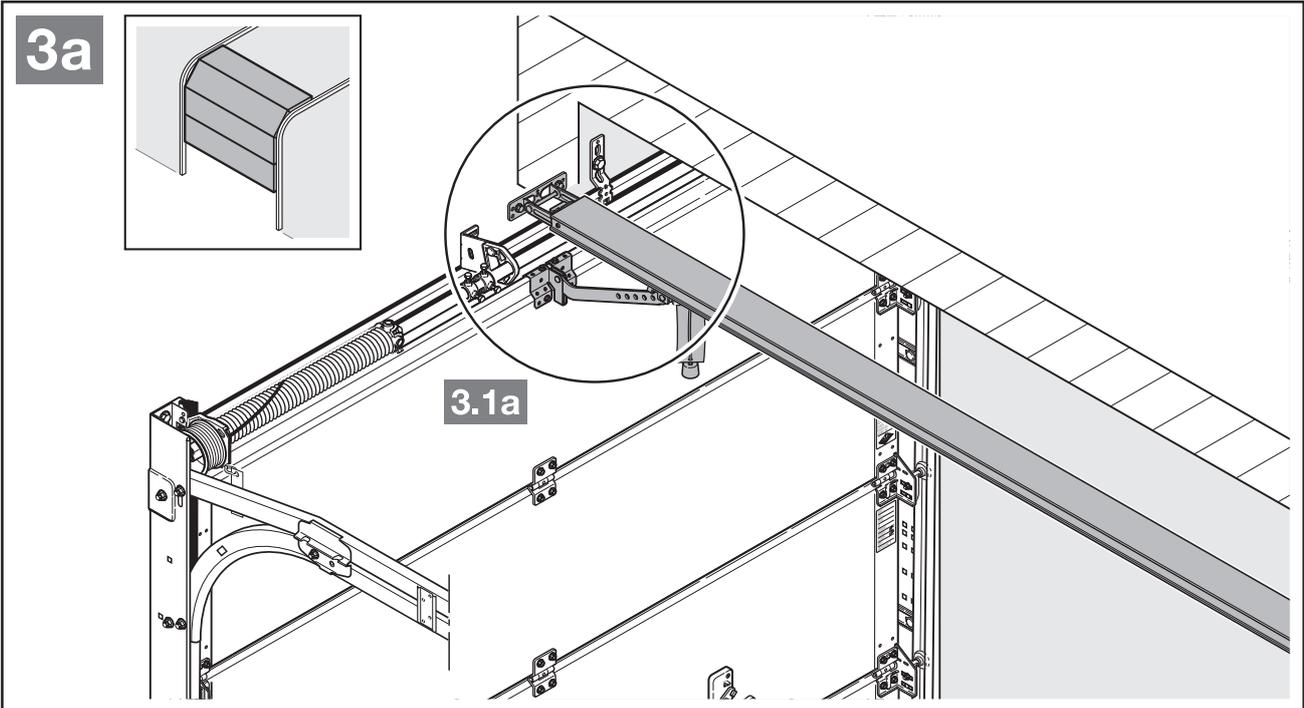
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**B**

**N 800**

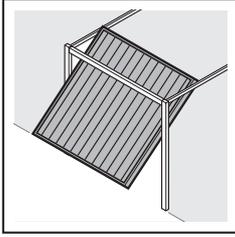
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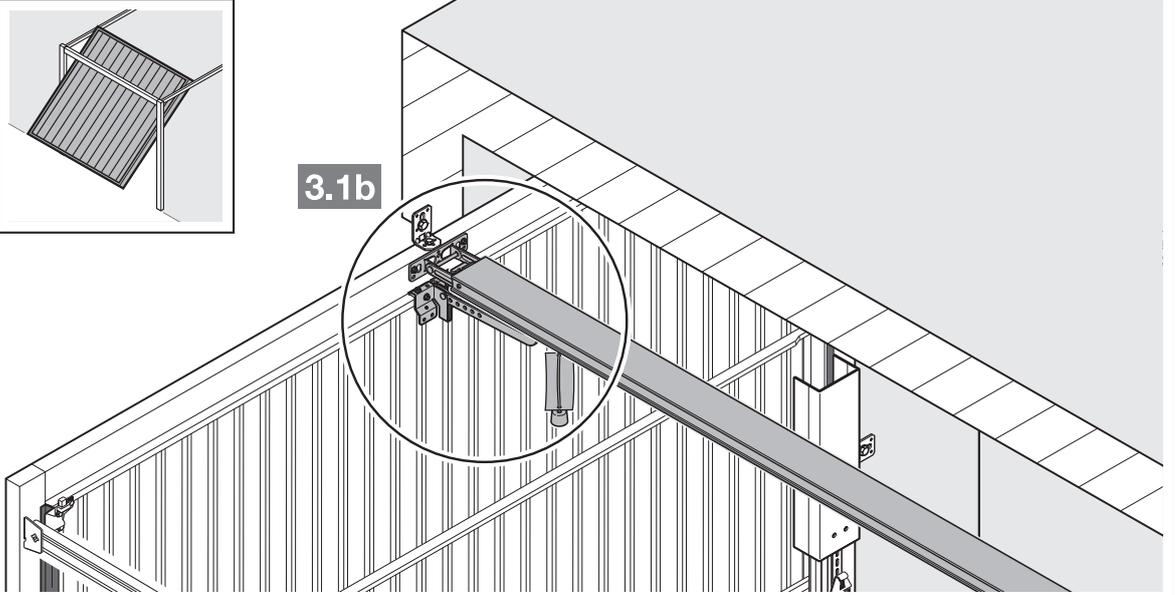




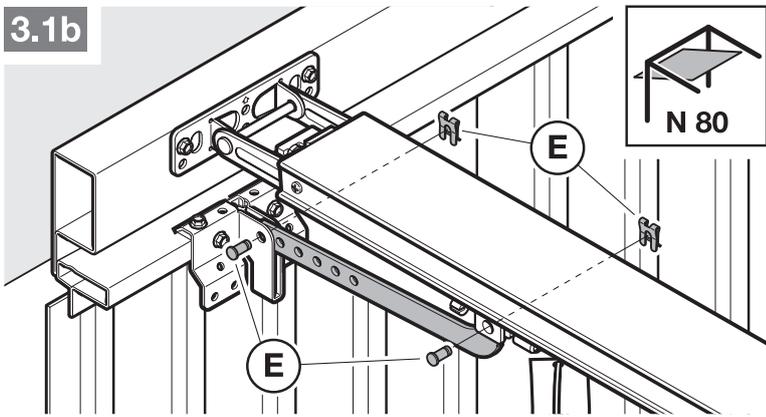
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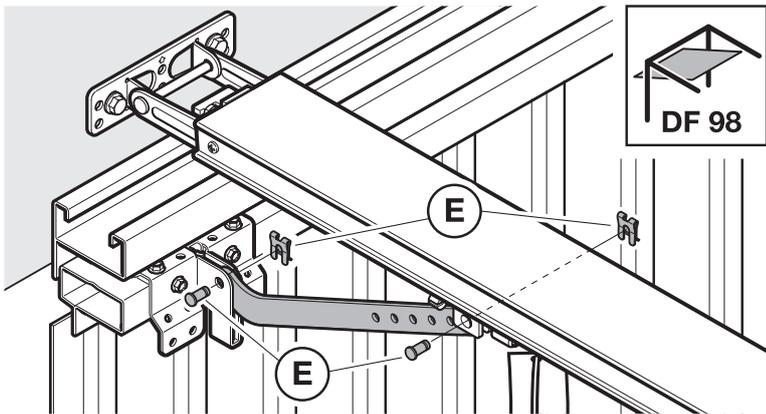
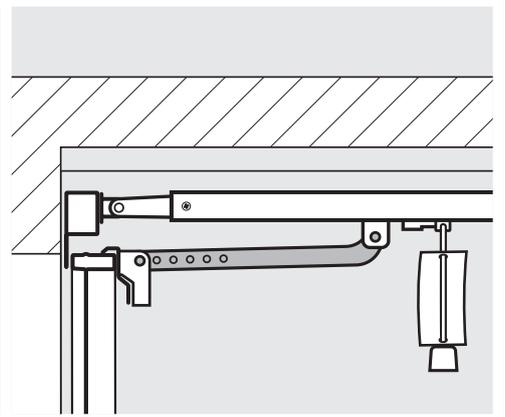
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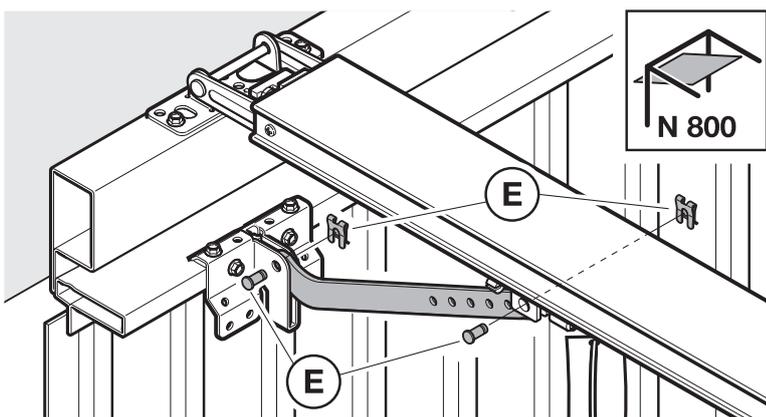
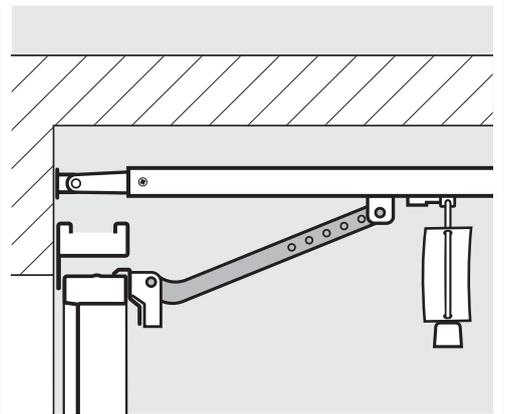
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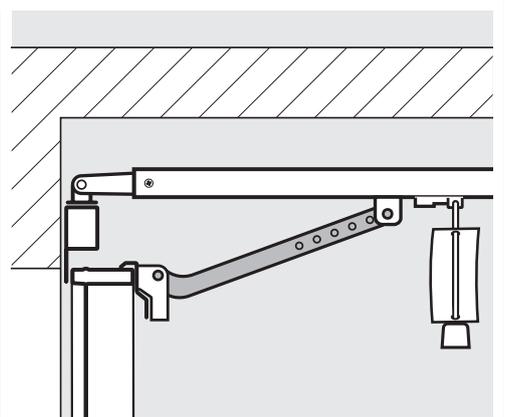
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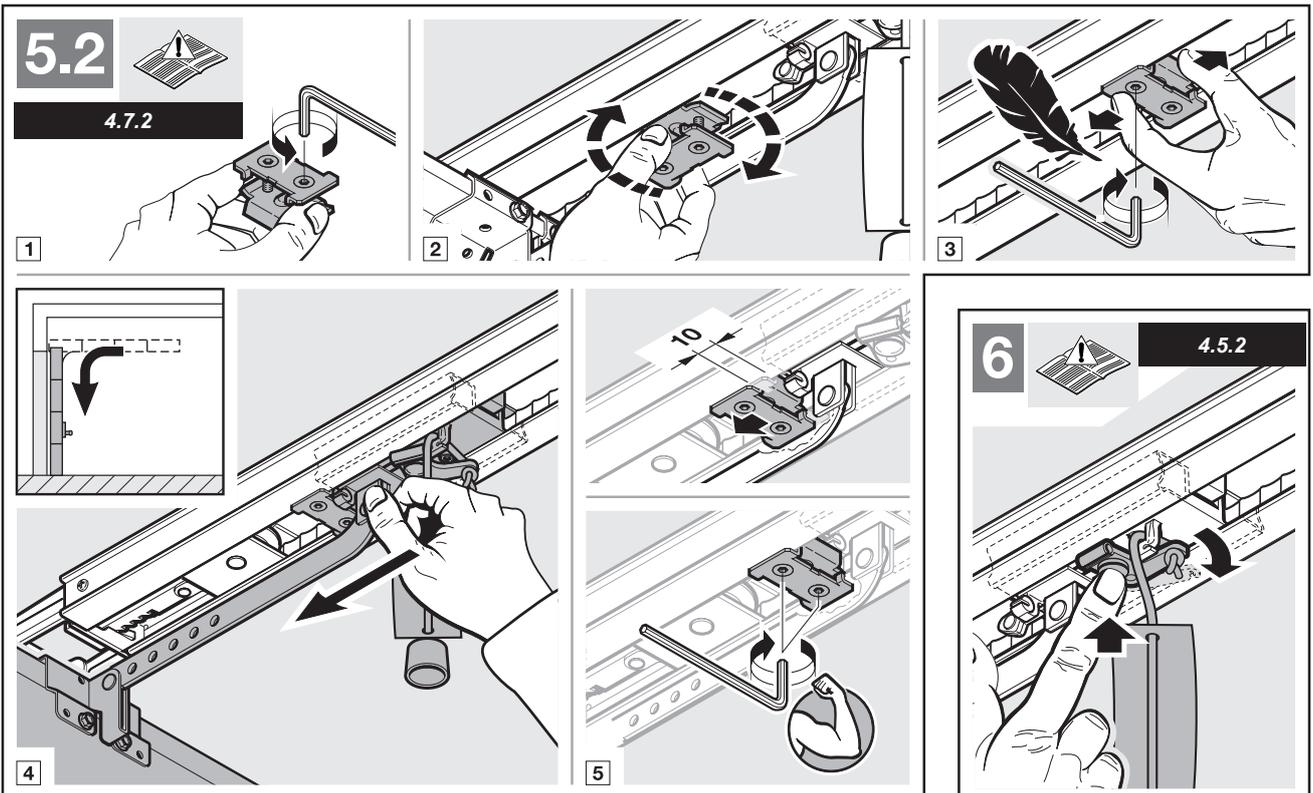
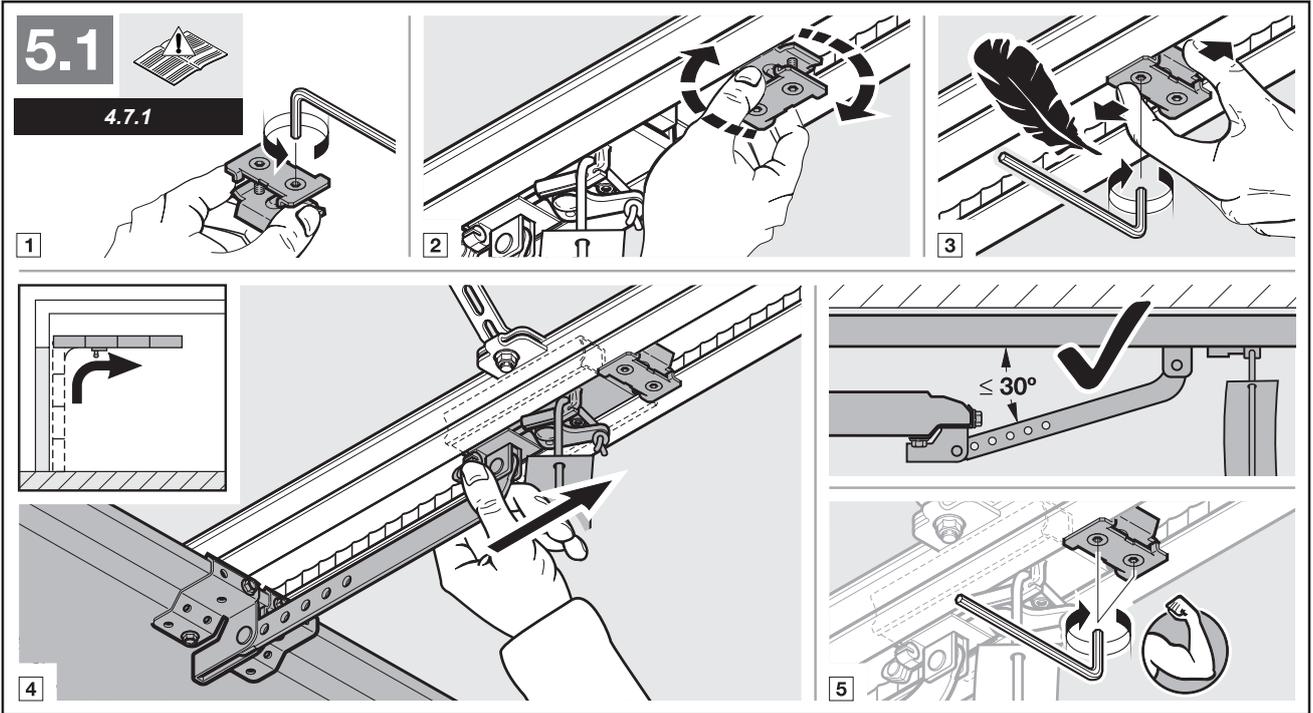
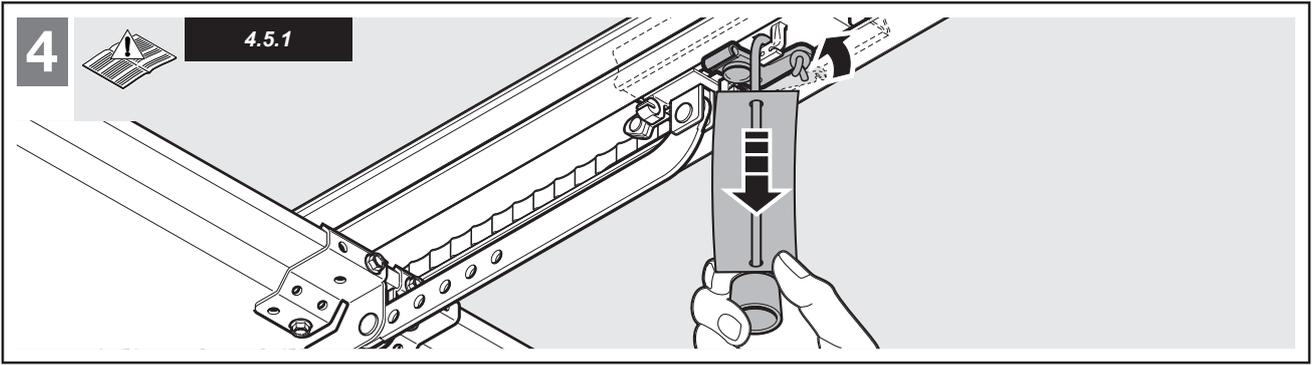


DF 98



N 800



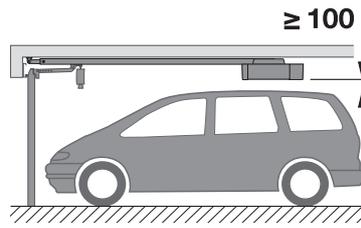




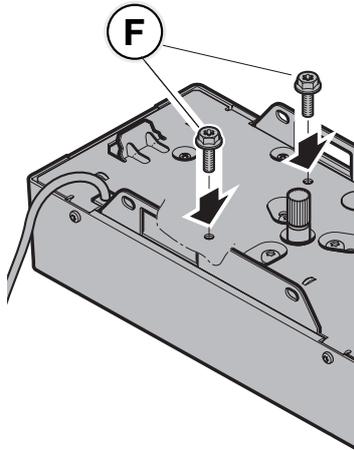
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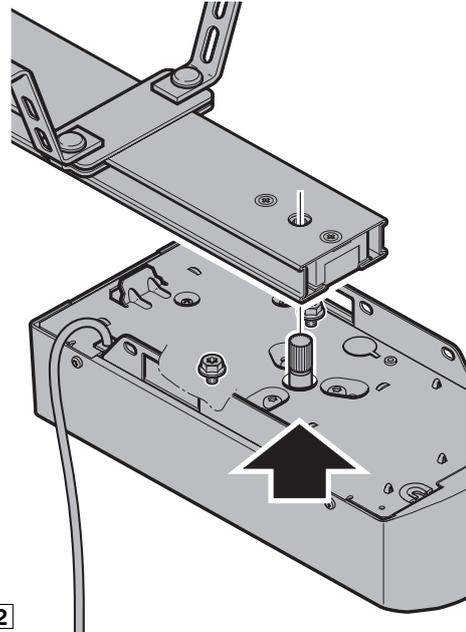
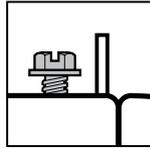
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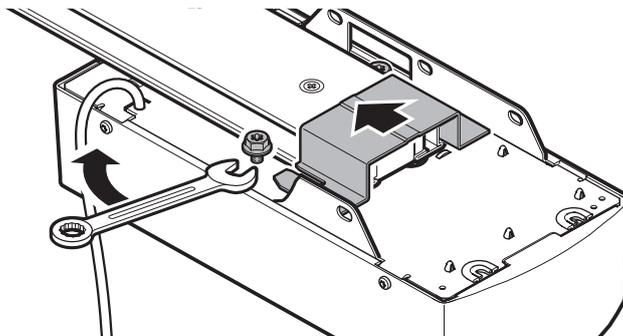
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1



2

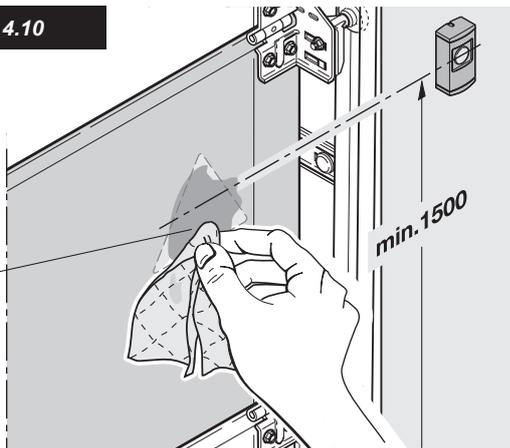


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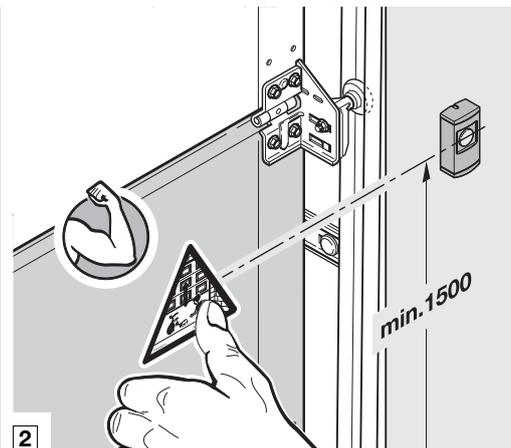
8



4.10



1



2







