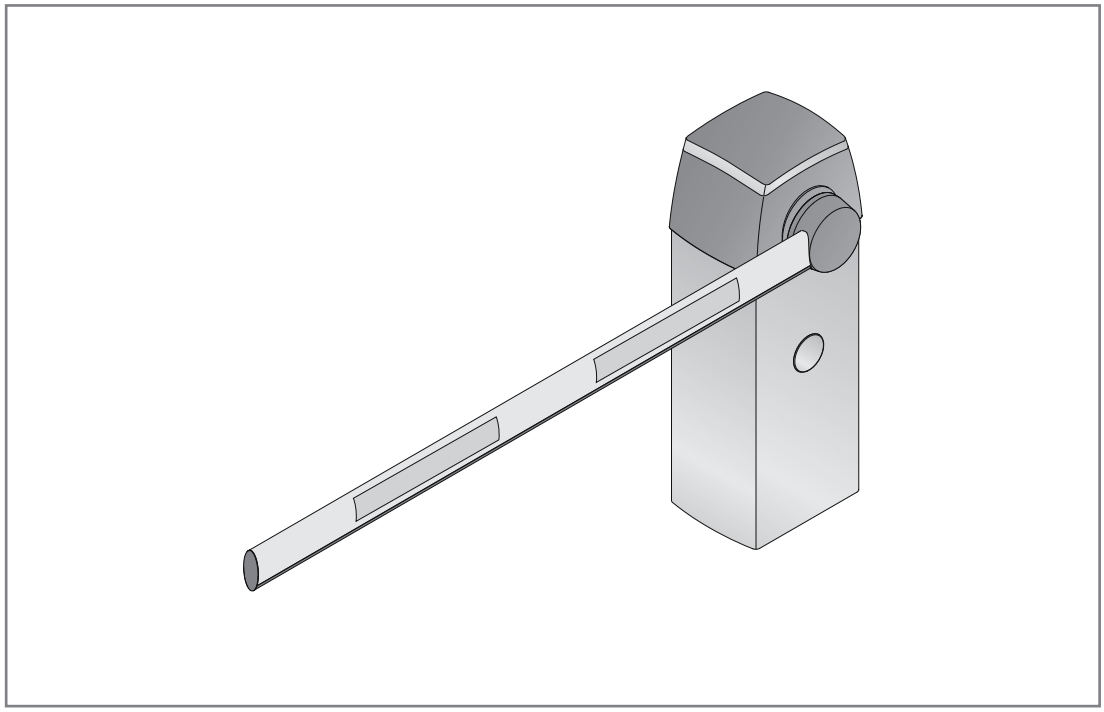
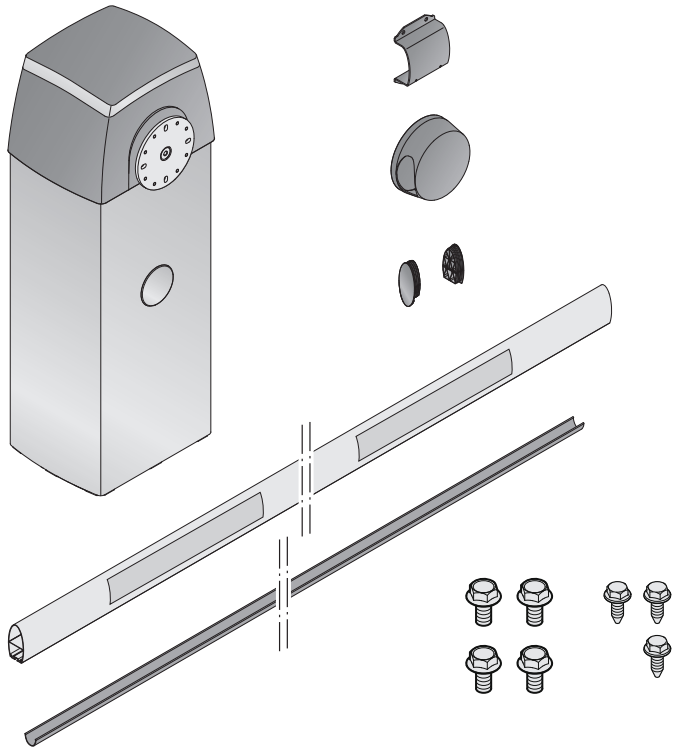


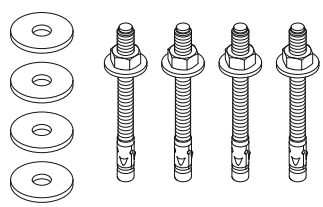
EN

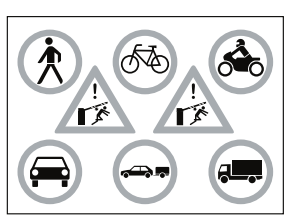
Instructions for fitting, operating and maintenance
Barrier BS 60

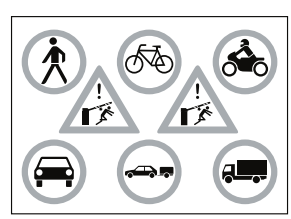
HA90F071 / 07-2023 / AL

A









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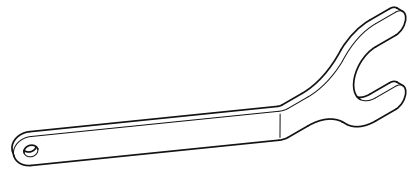

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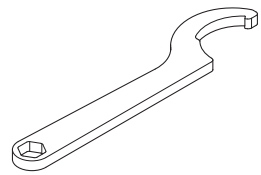

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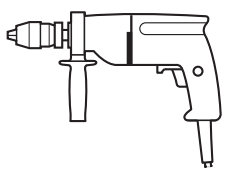
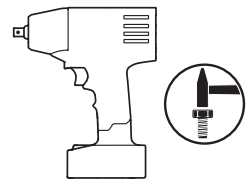
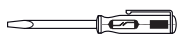
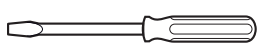




Ø 12 mm





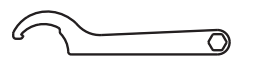
10 mm

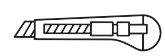
5 mm

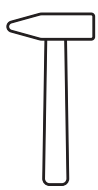
8 mm

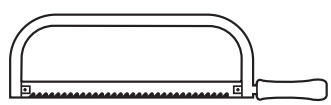
18 mm

58 - 62 mm









Contents

* Accessory, not included as standard equipment.

Dear Customer,

We thank you for choosing a quality product from our company.

1 About these instructions

These instructions are **original operating instructions** as outlined in EC Directive 2006/42/EC.

These instructions contain important information on the product.

- ▶ Read through all of the instructions carefully.
- ▶ Observe the notices. Pay particular attention to the safety instructions and warnings.
- ▶ Keep these instructions in a safe place for later reference.
- ▶ Make sure that these instructions are available to the user at all times.

1.1 Further applicable documents

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

- These instructions
- The enclosed log book
- Protective device instructions

1.2 Warnings used

The general warning symbol indicates a danger that can lead to **injury** or **death**. In the text, the general warning symbol will be used in connection with the caution levels described below. In the illustrated section, an additional instruction refers back to the explanation in the text section.

⚠ DANGER

Indicates a danger that immediately leads to death or serious injuries.

⚠ WARNING

Indicates a danger that can lead to death or serious injuries.

⚠ CAUTION

Indicates a danger that can lead to minor or moderate injuries.

ATTENTION

Indicates a danger that can lead to **damage** or **destruction of the product**.

1.3 Symbols used


Important note for avoiding material damage and personal injury


Correct arrangement or activity


Non-permissible arrangement or activity


Warning of the barrier


Warning of hand injuries


High exertion of force


Check for ease of movement


Inspection


Factory setting

7-segment display


Display is illuminated


Display flashes slowly


Display flashes quickly


Decimal flashes

1.4 Abbreviations used

Colour code for cables, single conductors and components The colour abbreviations for cable and strand identification and for components conform to the international colour code in accordance with IEC 60757:			
BK	Black	**BU**	Blue
BN	Brown	**GY**	Grey
YE	Yellow	**WH**	White
GN	Green	**RD / BU**	Red / blue

1.5 Glossary

Automatic closing phase

When the set time period has elapsed, the barrier boom automatically moves to the CLOSE end-of-travel position.

Normal operation

Normal operation is a barrier boom run with taught-in travel distances and forces.

Reference run

During the reference run, the CLOSE end-of-travel position for the barrier boom is determined and stored.

Reversal run / safety reversal

Behaviour of the barrier when a protective device or the power limit is activated.

Barrier

A blocking device for blocking roads.

Barrier system

A barrier with the associated accessories.

Barrier boom

The alarm contact element on barriers that blocks the road.

Barrier boom holder

A connection element connecting the barrier boom to the barrier.

Timeout

A defined time period within which an action is expected, e.g. menu selection or function activation. If this time period elapses without an action, the barrier automatically switches back to operation mode.

Pre-warning phase / closing delay

The time between the travel command (impulse) and the start of a barrier boom run.

Factory reset

Resetting of the taught-in values to the delivery condition / factory setting.

2 Safety instructions

⚠ WARNING

Danger of injury due to non-observance of the instructions for fitting, operating and maintenance.

These instructions contain important information on the safe use of the product. Possible dangers are emphasised.

- ▶ Read through all of the instructions carefully.
- ▶ Follow all safety instructions provided in this document.
- ▶ Keep these instructions accessible.

2.1 Intended use

The maximum intensity of use is 1000 movement cycles per day.

The barrier serves the following purposes:

- Blocking / opening of entrances and exits of car parks or multi-storey car parks.
- Access regulation for vehicles in the private, commercial or industrial sector.

2.2 Non-intended use

The use of the barrier is not permissible:

- In potentially explosive areas.
- By pedestrians, bicyclists or motorcyclists.

2.3 Qualification of personnel

To perform work on the product, the personnel undertaking these tasks must meet certain requirements. The groups of persons are classified as follows:

2.3.1 Operator

The operator is responsible for the physical structure where the product is used. The operator has the following tasks:

- Instructing users.
- Complying with the legal workplace safety rules and regulations.
- Complying with the valid safety, accident prevention and environmental protection regulations.
- Providing and observing documentation.
- Ensuring that the product is always in perfect technical working order.
- Ensure the separation of pedestrian and vehicle traffic with suitable measures. Constructional separations, such as a walkway next to the carriageway, must be complemented by warnings and suitable signs.

2.3.2 Specialist personnel

Specialist personnel is responsible for fitting, initial start-up, maintenance, dismantling and disposal of the product. The following points must be considered:

- Work must only be performed by qualified employees who are familiar with the assembly technology as well as the valid safety regulations.
- Electrical installations must only be performed by qualified electricians.

2.3.3 Users

Users are permitted to perform work for operation and maintenance of the product. Requirements for users:

- Instruction on the product by the operator.
- Knowledge of these instructions.

2.4 Safety instructions for fitting

⚠ WARNING

Danger of injury by unsuitable fixing materials.

- ▶ See warning *Section 5*

ATTENTION

Danger of damage caused by dirt.

- ▶ See warning *Section 5.4*

2.5 Safety instructions for installation

⚠ DANGER

Deadly electric shock from mains voltage.

- ▶ See warning *Section 6*

ATTENTION

Danger of functional defects.

- ▶ See warning *Section 6*

Danger of material damage.

- ▶ See warning *Section 6*

2.6 Safety instructions for initial start-up and for operation

⚠ WARNING

Danger of injury due to faulty protective devices.

▶ See warning *Section 10.1*

Danger of injury during barrier boom travel.

▶ See warning *Section 13*

⚠ CAUTION

Risk of crushing due to barrier boom travel.

▶ See warning *Section 13*

2.7 Safety instructions for inspection and maintenance

⚠ WARNING

Danger of injury by spring tension.

▶ See warning *Section 14*

Danger of injury due to unexpected barrier boom travel.

▶ See warning *Section 14*

⚠ CAUTION

Hazard of trapping and crushing by the spring tension.

▶ See warning *Section 14.4.2*

2.8 Safety instructions for dismantling

⚠ DANGER

Deadly electric shock from mains voltage.

▶ See warning *Section 15*

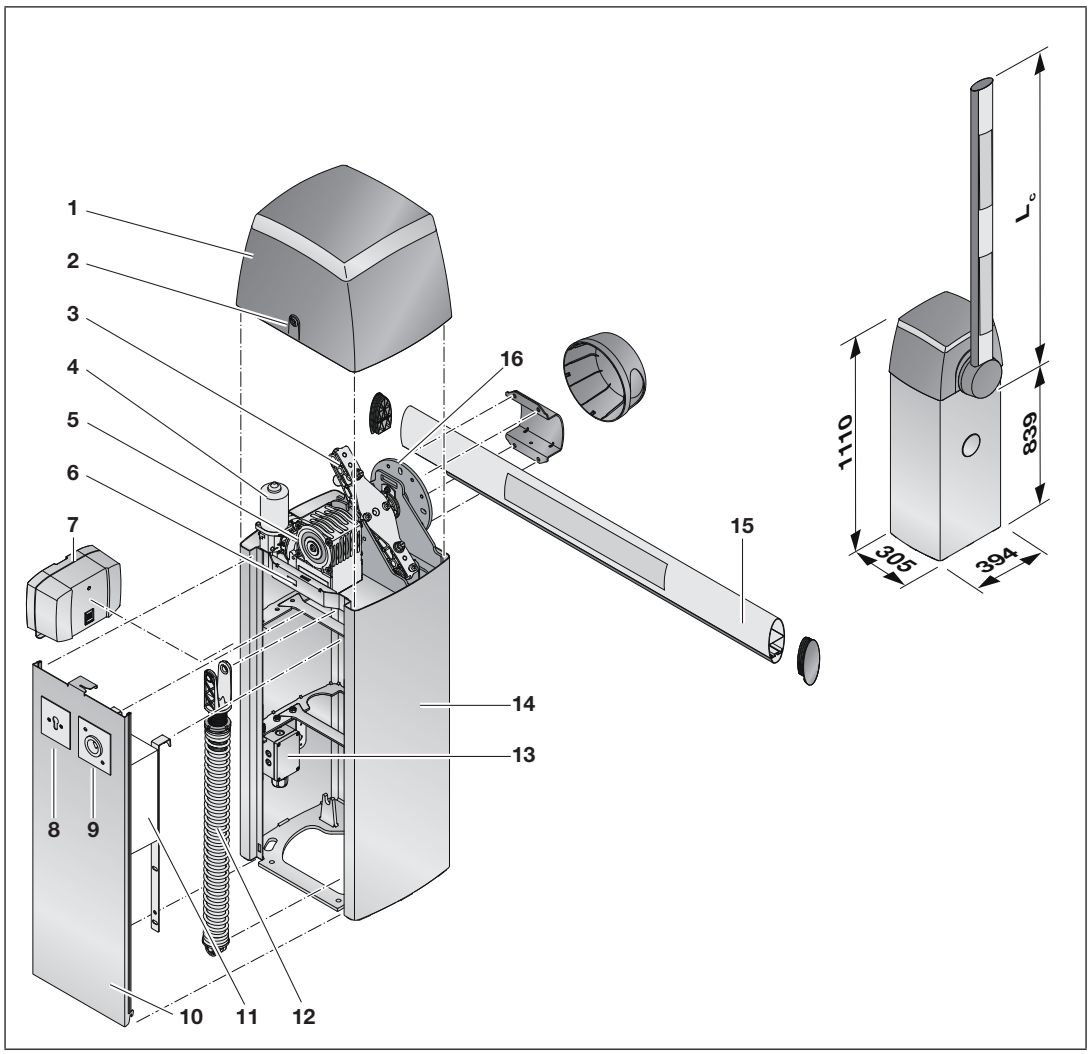
3 Transport and storage

Observe the following during the transport and storage of the barrier / packaging unit:

- ▶ Use appropriate lifting equipment for transport.
- ▶ Store the barrier in closed or at least covered and dry areas.
- ▶ Secure the barrier against tipping over and damage.
- ▶ Transport the barrier safely and professionally to the construction site.
  - – Provide loading / transport safety devices.
  - – Transport with low vibration.

4 Product description

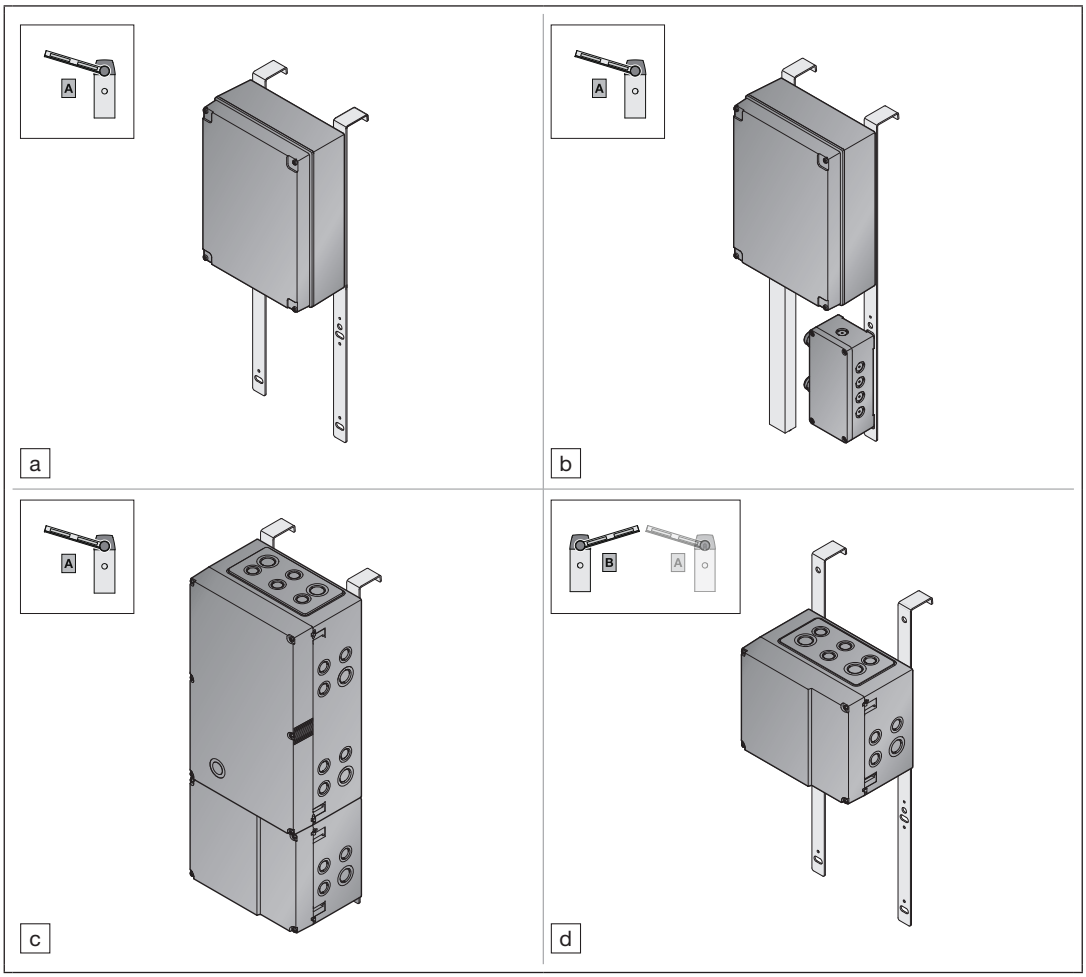
4.1 Barrier



1 Barrier cover
2 Lock
3 End position buffer
4 Direct current motor (24 V DC)
5 Gearbox
6 Service switch
7 Emergency battery HNA-Outdoor*
8 Key switch
9 Fire brigade switch*
10 Barrier housing door
11 Control housing, see *Section 4.2*
12 Spring
13 Connecting socket
14 Barrier housing
15 Barrier boom
16 Barrier boom holder

* Accessory, not included as standard equipment.

4.2 Control housing



Single barrier operation

Barrier A

a Basic
(without extensions)

b Basic
(with separate power supply unit and UAP 1)

c Extended
(incl. extension options)

Barrier synchronous operation

Barrier B

d Synchronous
(with connection circuit board for side barrier)

4.3 Protective device

Each BS 60 barrier with a required minimum protection level of C and D in accordance with DIN EN 12453 must, in addition to force cut-out, be equipped with a protective device (compliant, approved add-on device, e.g. photocell*). This reduces the risk of contact with the barrier boom.

* Accessory, not included as standard equipment.

5 Fitting

Fitting must only be carried out by qualified specialised personnel.

▶ See *Section 2.3.2*

Fitting must be carried out by 2 persons.

⚠ WARNING

Danger of injury by unsuitable fixing materials.

Use of unsuitable fixing materials may mean that the barrier is insecurely attached and could come loose.

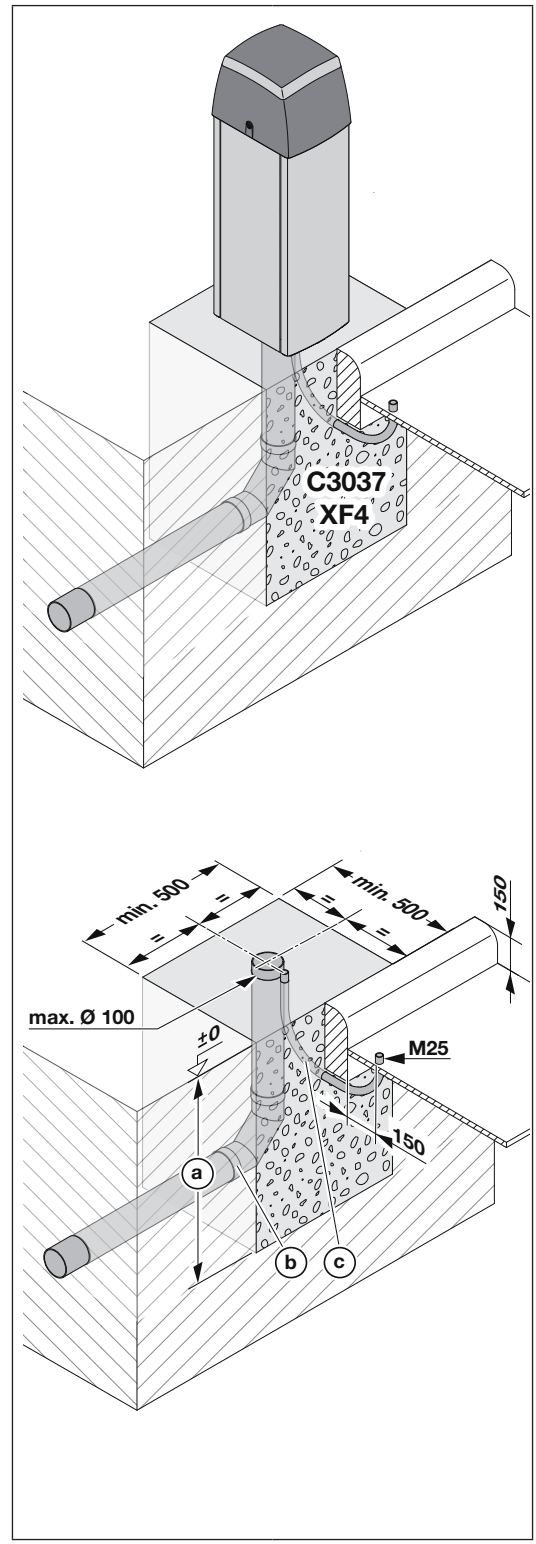
- ▶ Check whether the supplied fixing materials (plugs) are suitable for the intended fitting site.
- ▶ Make sure that only officially approved fixing materials are used.

5.1 Foundation requirements

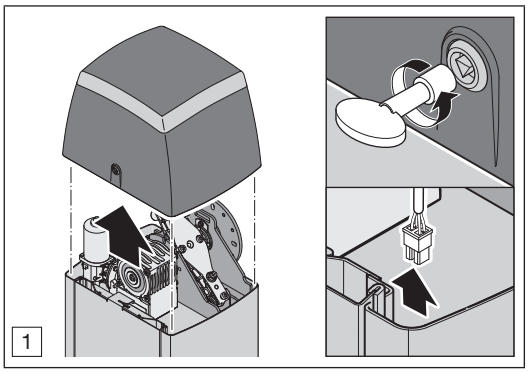
Building material	Concrete
Strength class	C3037 (B35)
Exposition class	XF4
Dimensions	500 × 500 mm
Depth ⓐ	Frost-free depth (in Germany = 800 mm)
Tube ⓑ	Tube for supply and connection cables. To facilitate the passage of the cables, implement the 90° angle with two 45° couplings.
Tube ⓒ	Tube M25 for the induction loop. The tube must be accessible from the road surface.

In order for the barrier to be fitted evenly and horizontally, the base area of the foundation must be smoothed (max. 1 mm deviation).

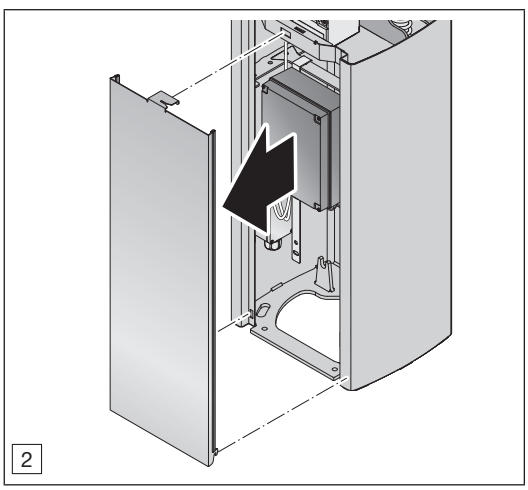
5.2 Constructing the foundation

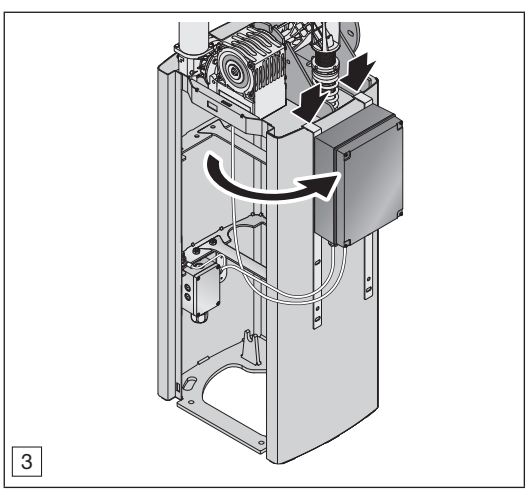


5.3 Opening the barrier housing



When the barrier cover is lifted and the door is opened, the service switch interrupts the hold circuit. Barrier boom travel is no longer possible.





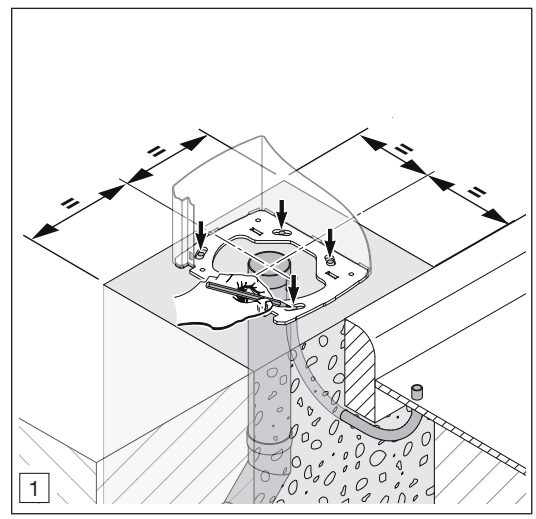
5.4 Barrier housing fitting

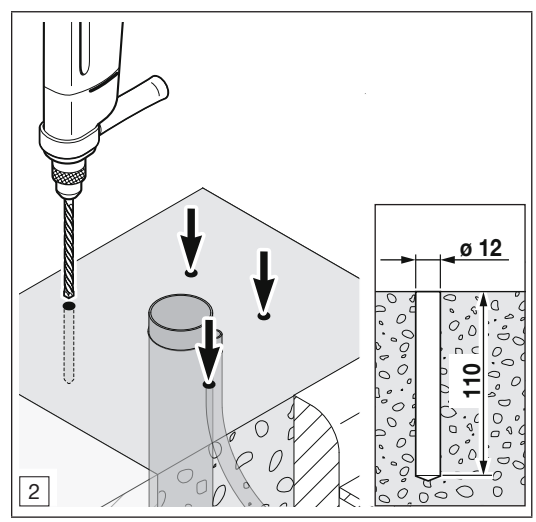
ATTENTION

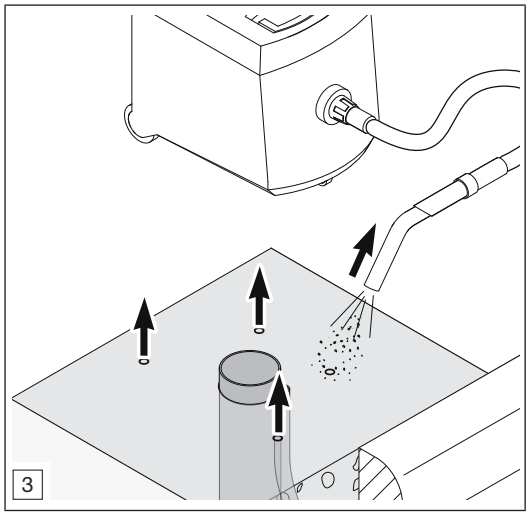
Danger of damage caused by dirt.
Drilling dust and chippings can lead to malfunctions.
▶ Cover the complete barrier during drilling works.

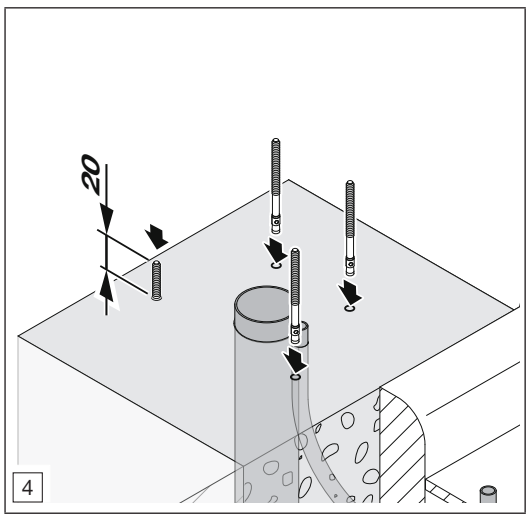
NOTE:

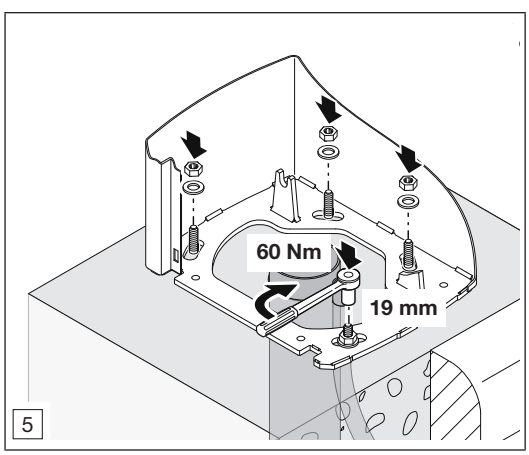
The foundation must be hardened before fitting the barrier housing.

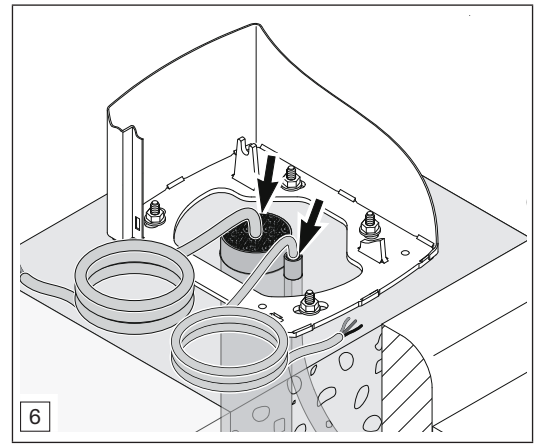






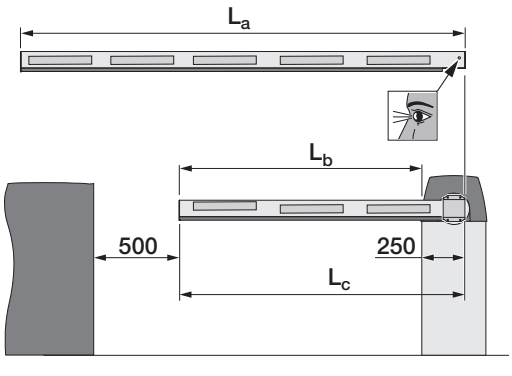




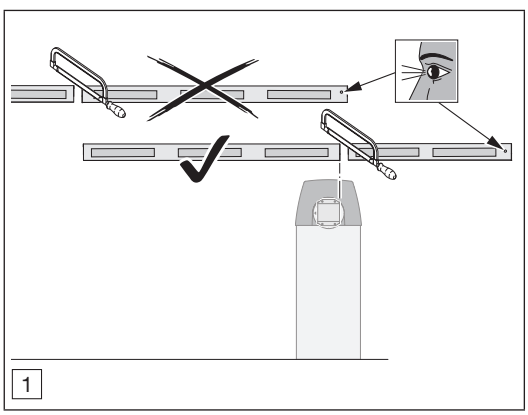


- Check the cable length.
  Cable length from the surface of the foundation:
  2 m
- Professionally implement the sealings to protect the barrier against humidity and insects:
  – Seal the cable duct (tube) in the barrier housing, e.g. using well sealing foam.

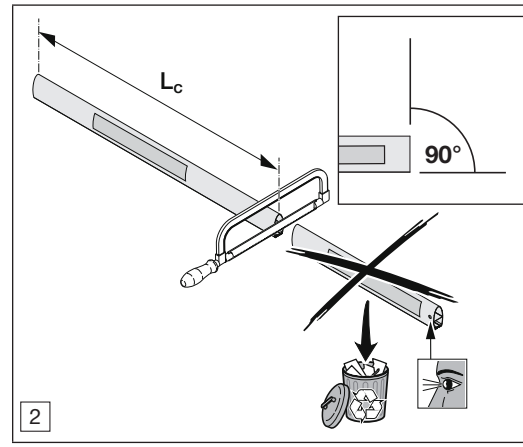
5.5 Barrier boom fitting

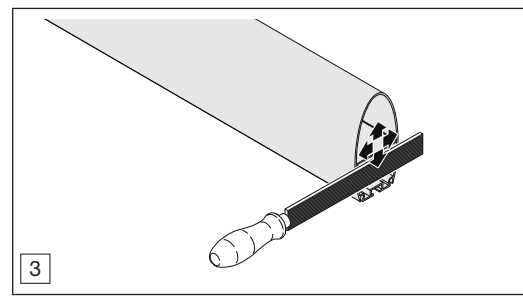


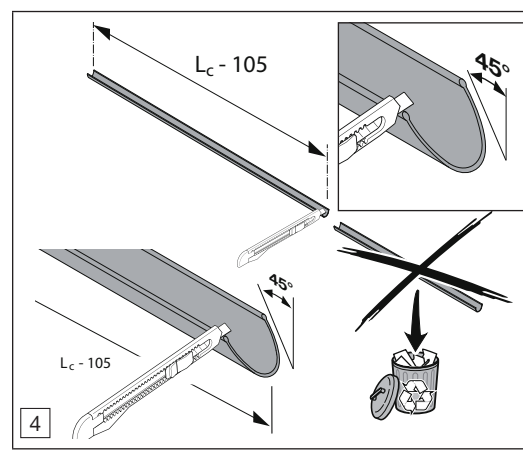
L_a	Standard length (3000 / 4000 / 5000 / 6000 mm)
L_b	Barrier width
$L_c = L_b + 250$	Shortened length
The minimum distance from fixed objects must be at least 500 mm in accordance with ASR A1.7.	

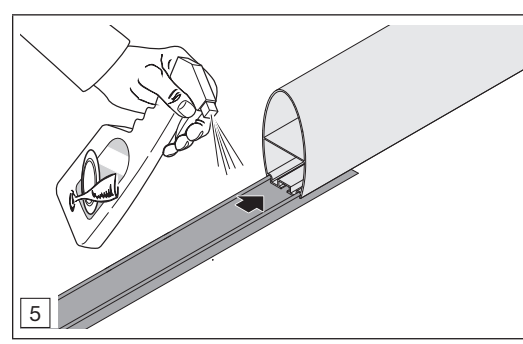


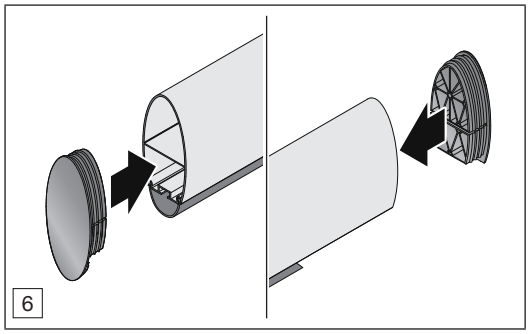
▶ If required, shorten the barrier boom.







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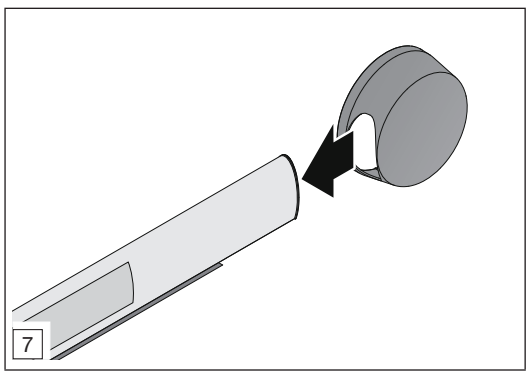
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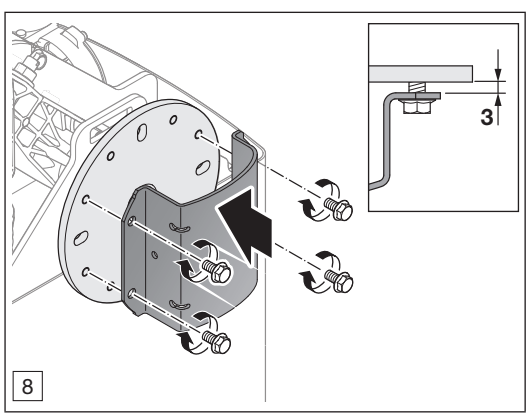
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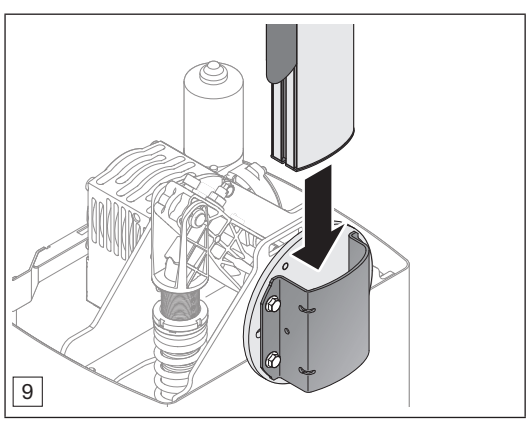
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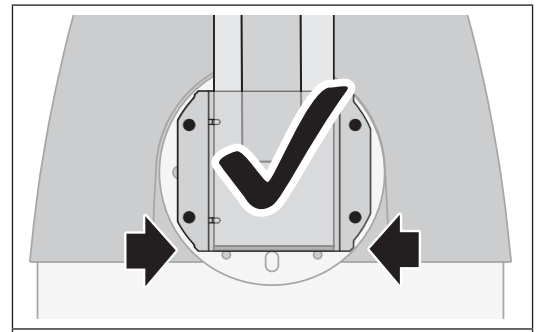

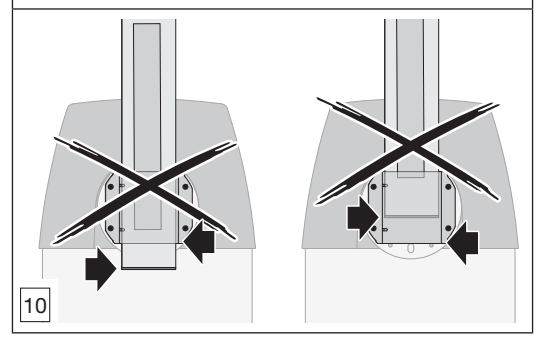
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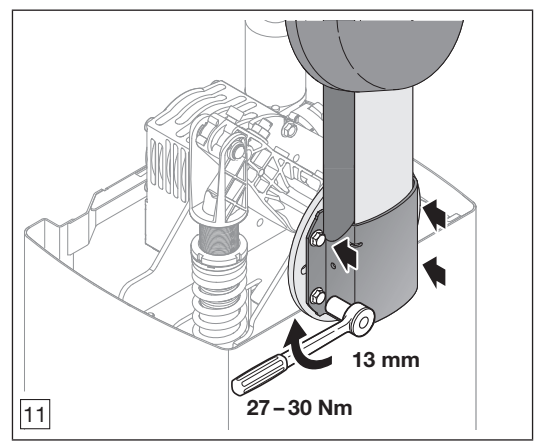
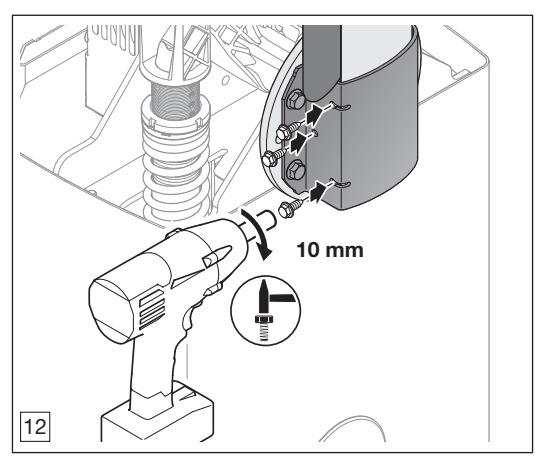
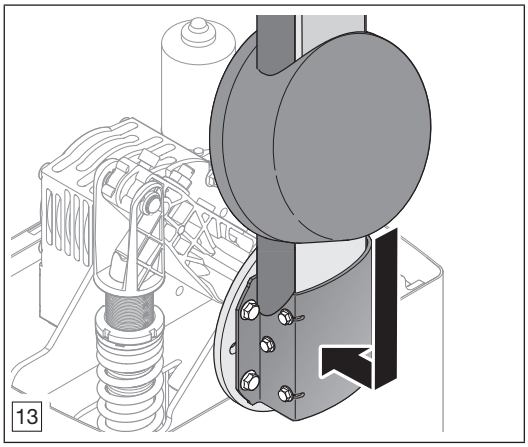

13 mm
27 – 30 Nm
11


10 mm
12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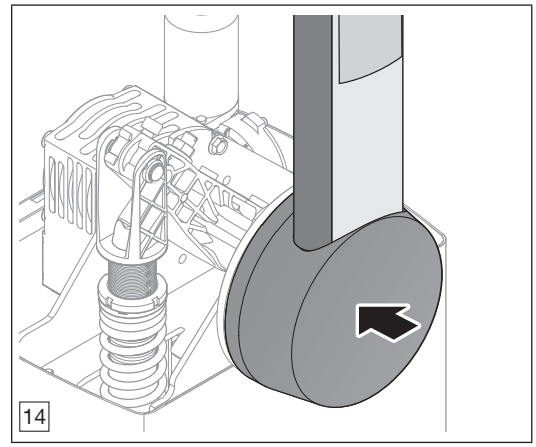

14

5.6 Checking the fixing of the spring

BS 60	Menu 4		Menu 5		Menu 6		
Barrier boom length L_a	2.0 m – < 2.5 m	2.5 m – 3.0 m	> 3.0 m – 3.5 m	> 3.5 m – 4.0 m	> 4.0 m – 4.5 m	> 4.5 m – 5.0 m	> 5.0 m – 6.0 m
Barrier width L_b	Up to 2.25 m	Up to 2.75 m	Up to 3.25 m	Up to 3.75 m	Up to 4.25 m	Up to 4.75 m	Up to 5.75 m
Spring variant	Ø 5.5 mm	Ø 7.0 mm	Ø 7.0 mm	Ø 7.0 mm	Ø 7.0 mm	Ø 8.5 mm	Ø 8.5 mm
Spring suspension position (internal / external) ▶ See *Figure 1*	**I**	**I**	**I**	**O**	**O**	**I**	**O**

NOTE

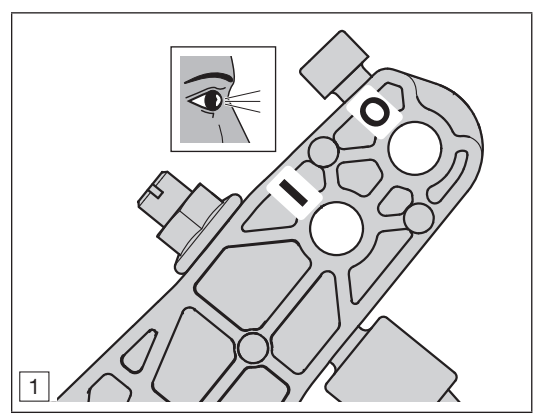
The spring variant and suspension position of the springs must be observed depending on the boom length.

⚠ CAUTION

Hazard of trapping and crushing by the spring tension.

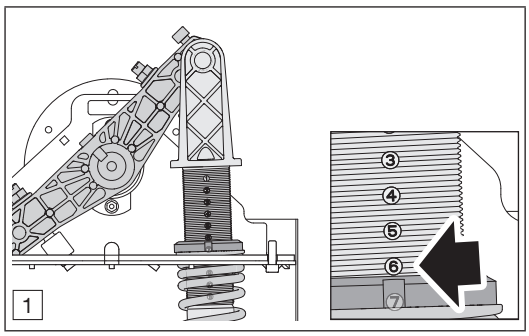
When replacing the spring, there is a hazard of trapping and crushing on the spring and in the barrier.

▶ Wear protective gloves when fitting the new spring.

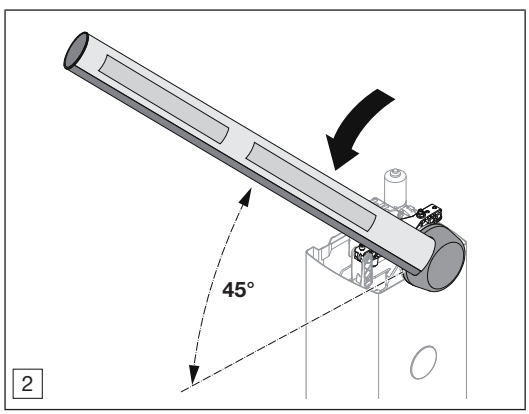


1

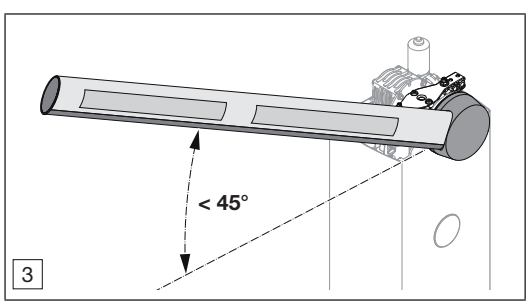
5.7 Checking the balance of the barrier boom



- Actuate the maintenance release.
  - See *Section 13.1.1*

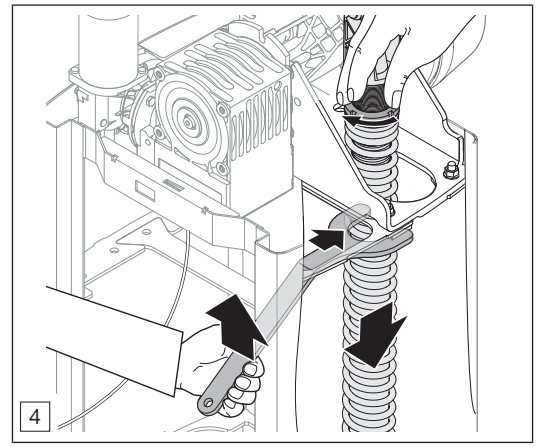


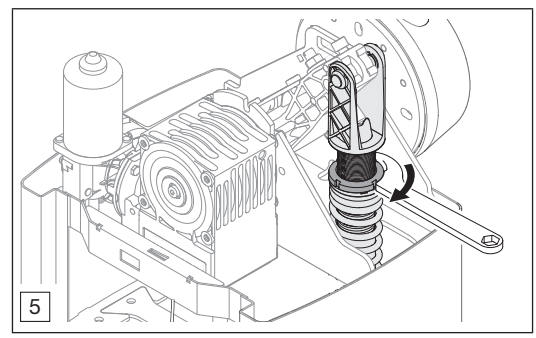
- Move the barrier boom to 45° by hand.
  The barrier boom must remain in press-and-release operation.

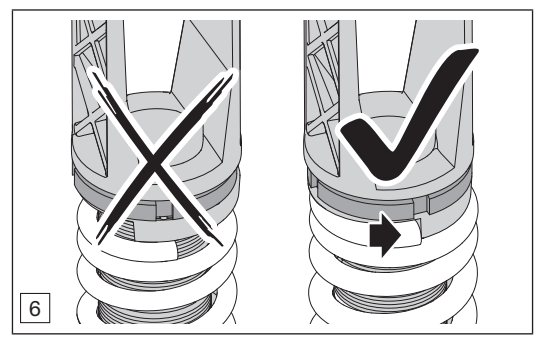


If the barrier boom moves towards the CLOSE end-of-travel position:

- Increase the spring tension.

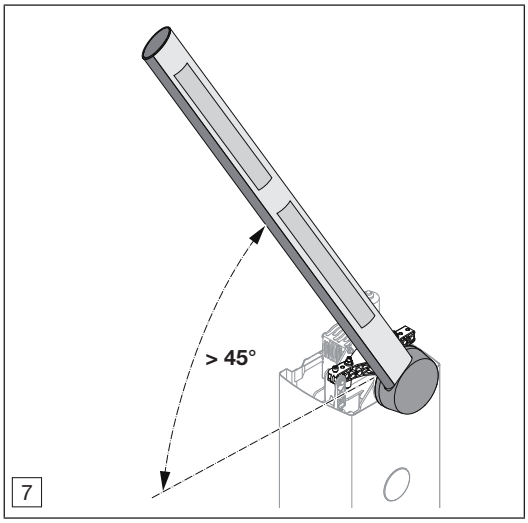






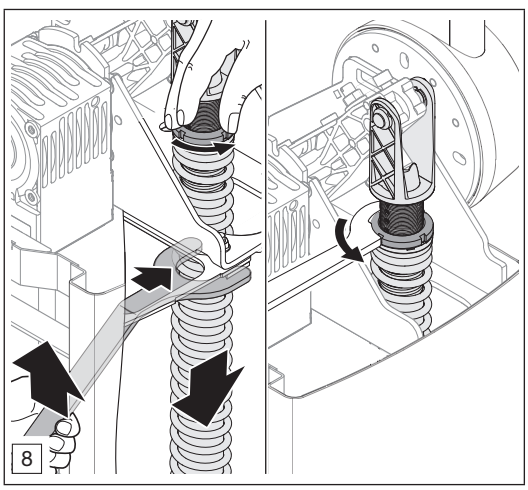
NOTE

- Make sure the spring is fitted correctly.
- Make sure that the ends of the spring are located before the stop of the spring support.



If the barrier boom moves towards the OPEN end-of-travel position:

▶ Reduce the spring tension.



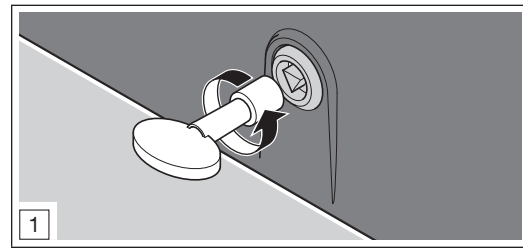
▶ Reset the maintenance release.
  ▶ See *Section 13.1.2*

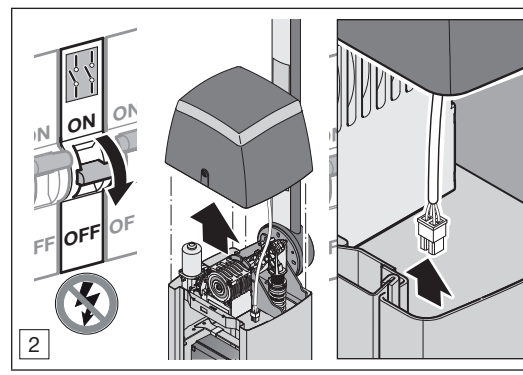
▶ Move the barrier boom until the gearbox engages.

5.8 End-of-travel positions of the barrier boom

If the barrier boom is not correctly aligned in the OPEN and CLOSE end-of-travel positions:

▶ Set the end-of-travel positions.



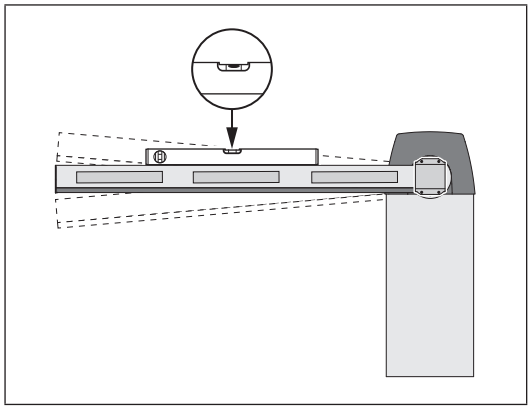


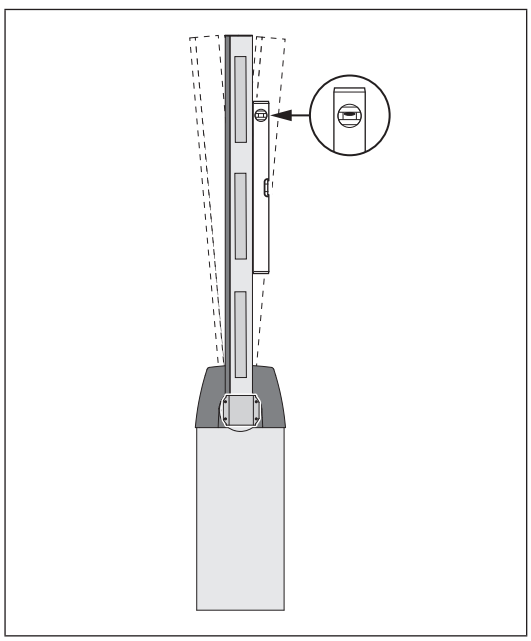
When the barrier cover is lifted and the door is opened, the service switch interrupts the hold circuit. Barrier boom travel is no longer possible.

Prerequisites

- The barrier boom is fitted.
- The spring is fitted and adjusted.
- The barrier boom is counterbalanced.
- The maintenance release is actuated.
  ▶ See *Section 13.1.1*

5.8.1 Checking the barrier boom end-of-travel positions





5.8.2 Adjusting the barrier boom end-of-travel positions

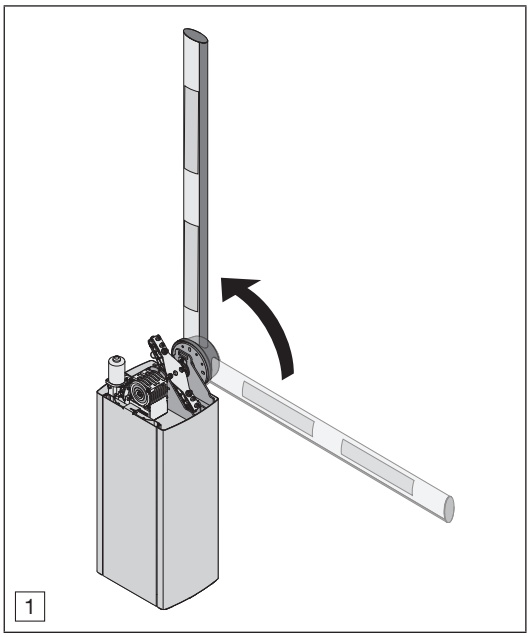
⚠ CAUTION

Danger of injury due to actuated maintenance release

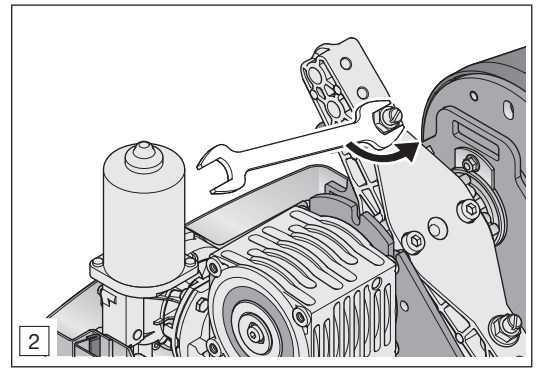
When the maintenance release is actuated, there is a risk of an uncontrolled barrier boom movement in the direction of the OPEN or CLOSE end-of-travel position.

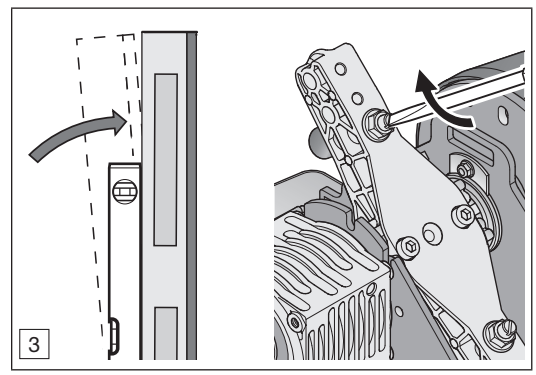
- ▶ Secure the barrier boom against uncontrolled closing by having a 2nd employee fix the barrier boom.

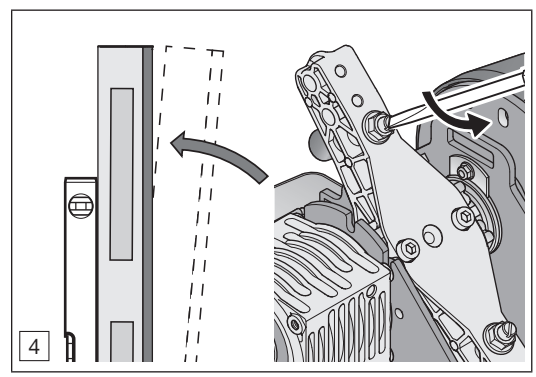
Setting the OPEN end-of-travel position

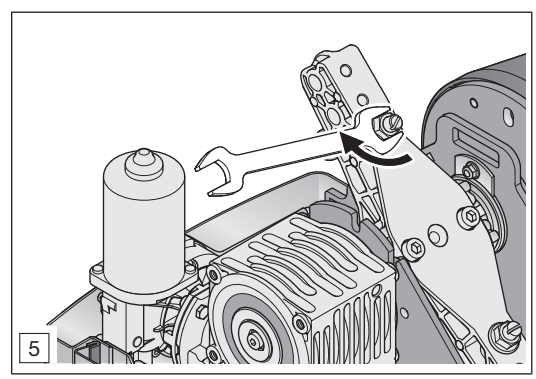


- ▶ Move the barrier boom to the OPEN end-of-travel position by hand. The spring is now relaxed.
- ▶ Secure the barrier boom against uncontrolled closing.

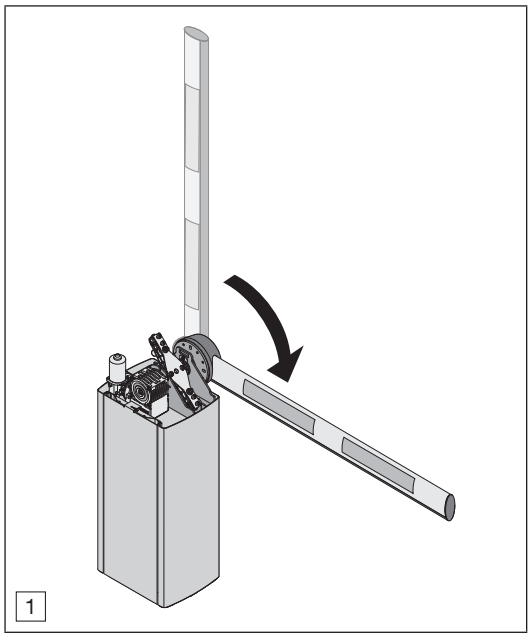




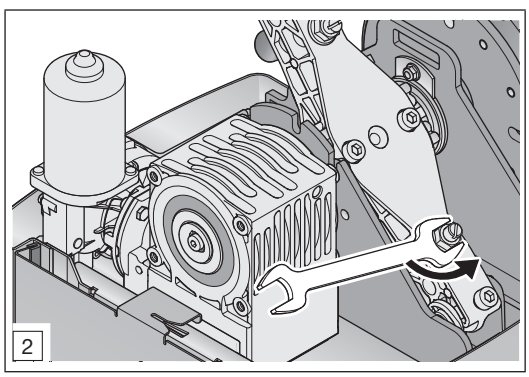


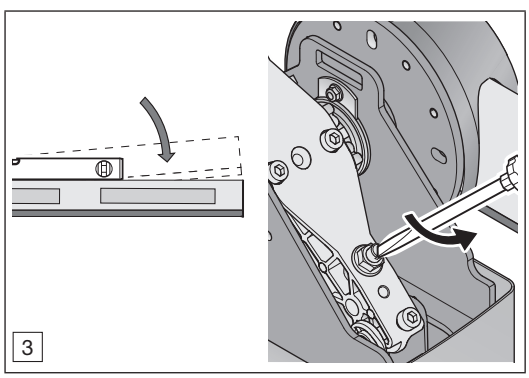


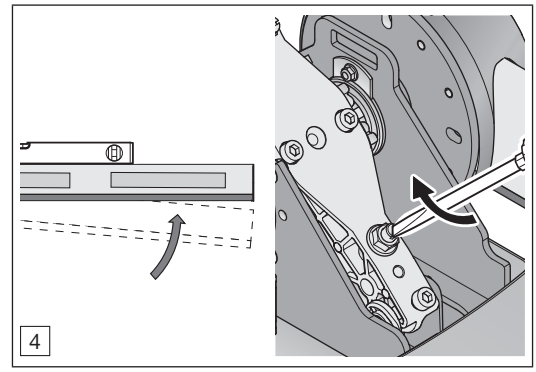
Setting the CLOSE end-of-travel position

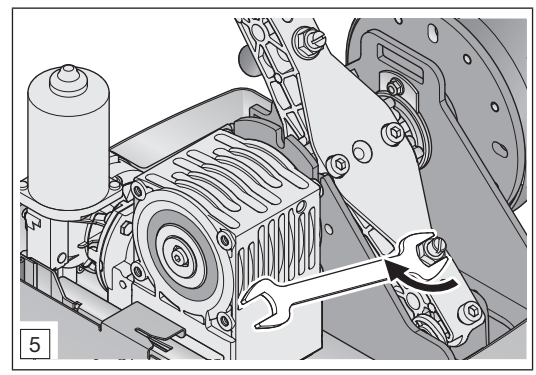


- Move the barrier boom to the CLOSE end-of-travel position by hand.









- Once you've finished making adjustments, reset the maintenance release.
  - See *Section 13.1.2*
- Switch the mains voltage of the barrier on.
- Start up the barrier.
  - See *Section 7.1*

6 Installation

Installation must be carried out by qualified specialised personnel.

▶ See *Section 2.3.2*

Electrotechnical works must only be performed by qualified electricians.

▶ See *Section 2.3.2*

⚠ DANGER

Deadly electric shock from mains voltage.

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

- ▶ Electrical connections may only be made by a qualified electrician.
- ▶ Make sure that the on-site electrical installation conforms to the respective, applicable protective regulations (230 / 240 V AC, 50 / 60 Hz).
- ▶ Ensure that an all-pole mains isolator switch with corresponding pre-fuse is available on site.
- ▶ Make sure that a damaged mains connection cable is exchanged by a qualified electrician.
- ▶ Before all electrical work on the barrier, switch off the all-pole mains isolator switch.
- ▶ Secure the barrier all-pole mains isolator switch against being switched on again without authorisation.

ATTENTION

Danger of functional defects.

Connection cables and supply cables laid together can result in malfunctions.

- ▶ Lay the connection cables (24 V DC) of the control in an installation system that is separate from the supply lines (230 / 240 V AC).

ATTENTION

Danger of material damage.

External voltage on the connecting terminals of the control will destroy the electronics.

- ▶ Do not apply any mains voltage (230 / 240 V AC) to the connecting terminals of the control.

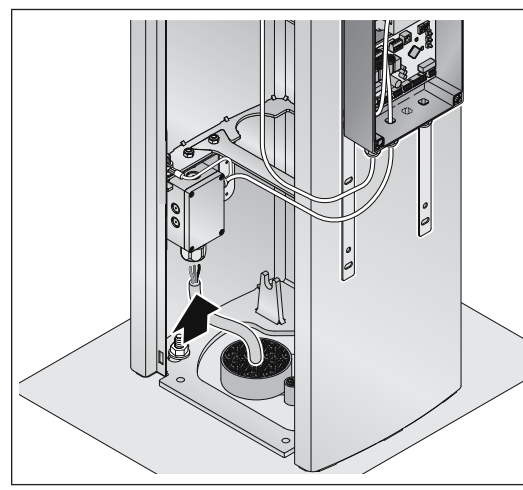
6.1 Connection to the mains voltage

The on-site connecting voltage must match the voltage information on the data label of the barrier.

- ▶ Check via a written proof that the mains lead and the protection comply with the valid regulations. If no written proof is available, check whether the valid regulations for the on-site mains lead were complied with.
- ▶ Document this check.
- ▶ Open the barrier housing.
- ▶ Attach the mains lead to the terminals.
- ▶ Secure the strain relief of the mains lead.

After connecting the barrier to the mains lead:

- ▶ Make sure that an electrical inspection is performed in accordance with the valid regulations.



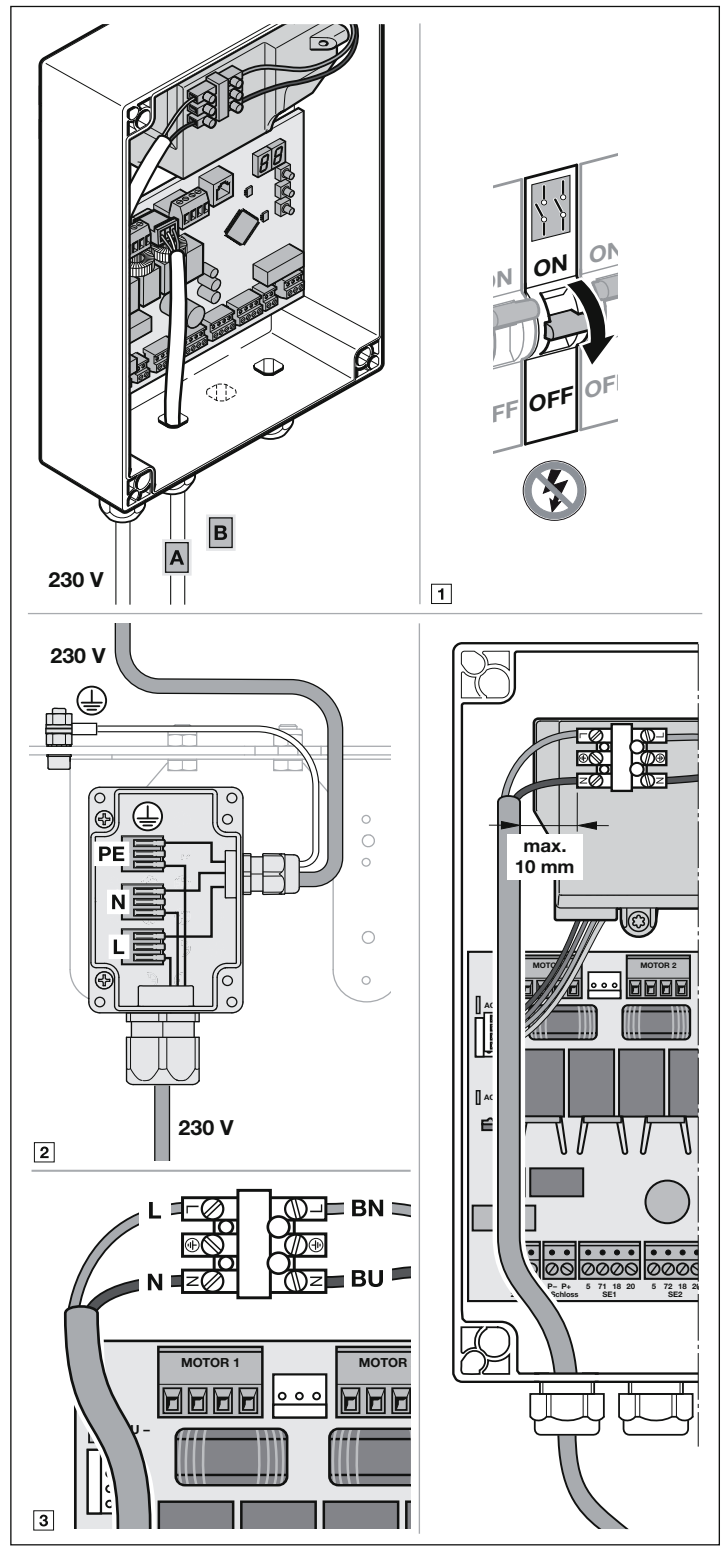
- ▶ Pull all cables into the barrier control from below without twisting them.
- ▶ Connect the mains lead (3×1.5 mm^2) directly to the plug terminal on the power supply unit.

NOTICES

For all leads underground, use underground cables.

- mains lead NYY-J 3×1.5 mm^2
- Control line between barrier A and barrier B:
  - $6 \times 2 \times 0.8$ mm,
  - Cable length: max. 14 m

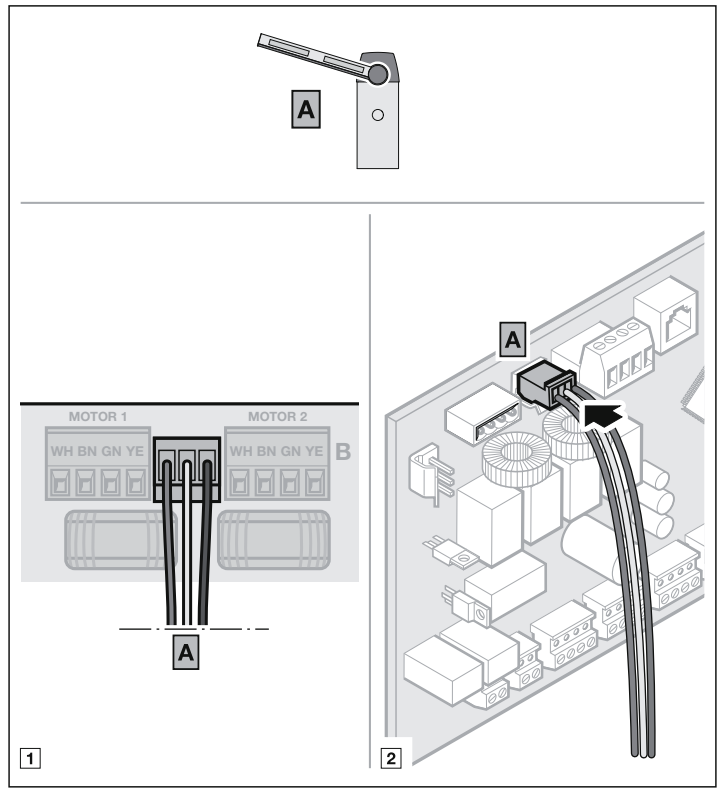
If the connection has to be extended with underground cables, use a splash-water protected junction box (protection category IP 65, to be provided on-site).



6.2 Connecting barriers

Single barrier operation, barrier A

- Connect the connection cable to the circuit board.



Barrier synchronous operation, barrier A and B

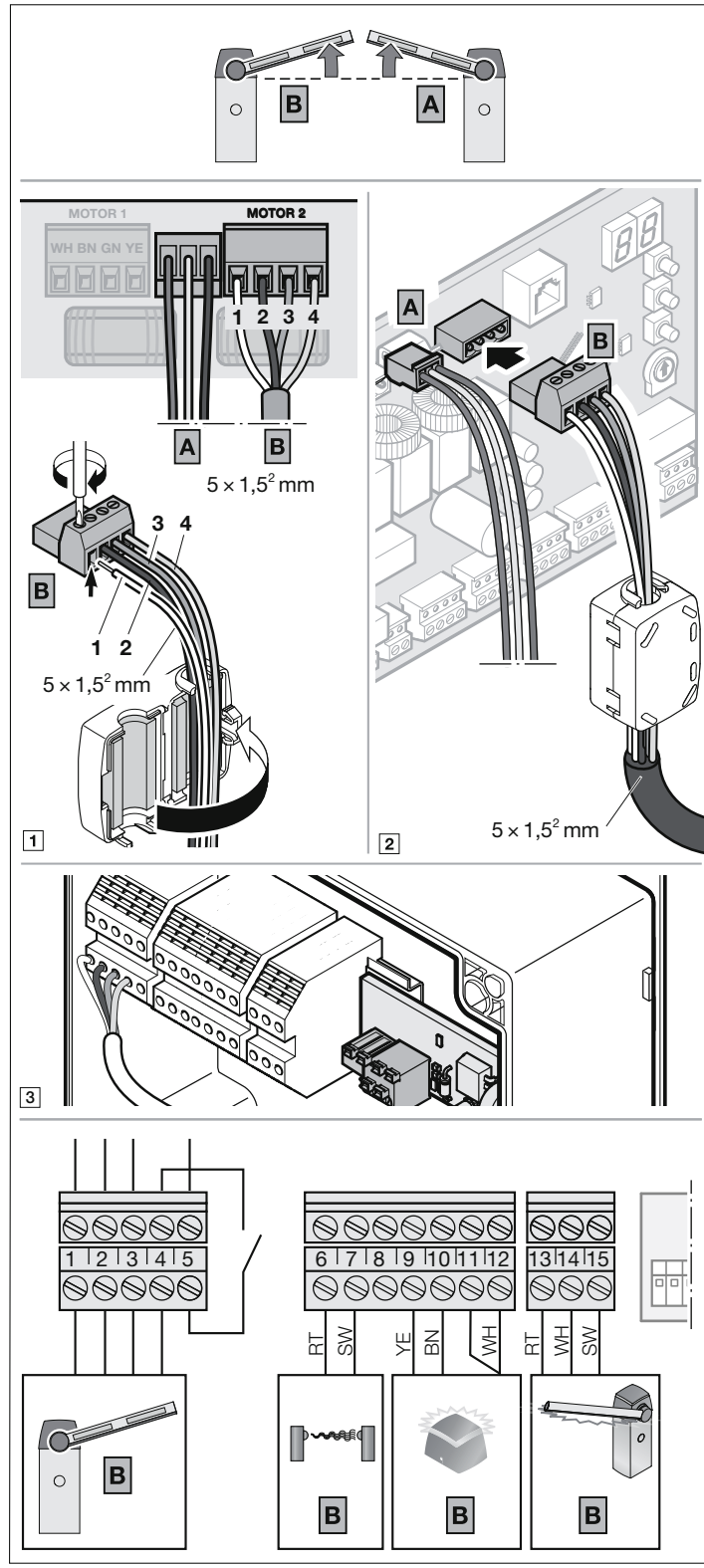
- Plug the connection cable for **barrier B** into the **Motor 2** connector on the circuit board.

NOTE

On the connection cable between barrier A and barrier B, a split ferrite must be fixed on the line on the side of barrier A.

- Make sure that all the individual conductors for the motor connection circuit board and the photocell go through the ferrite.

- In barrier B, plug the connection cable into the socket on the motor connection circuit board.



6.3 Connecting additional components/accessories

▶ Note the safety instructions in *Section 2.5*.

ATTENTION!

If external voltage is applied, it will destroy the electronics.

▶ Do not apply any mains voltage (230 / 240 V AC) to the connecting terminals.

All connecting terminals can have multiple assignments:

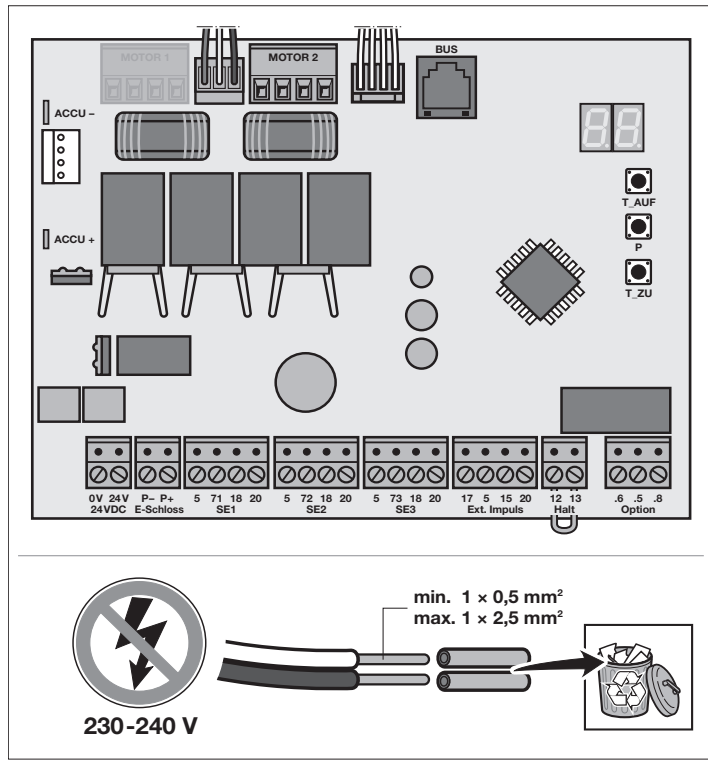
- Minimum thickness: 1 × 0.5 mm2
- Maximum thickness: 1 × 2.5 mm2

The system jack BUS enables the connection of accessories with special functions. Connected accessories are automatically detected.

NOTE:

Loading of the barrier by all accessories: **max. 800 mA.** See the figures for component power consumption.

If the power consumption for all accessories is > 800 mA, use a separate power supply unit.



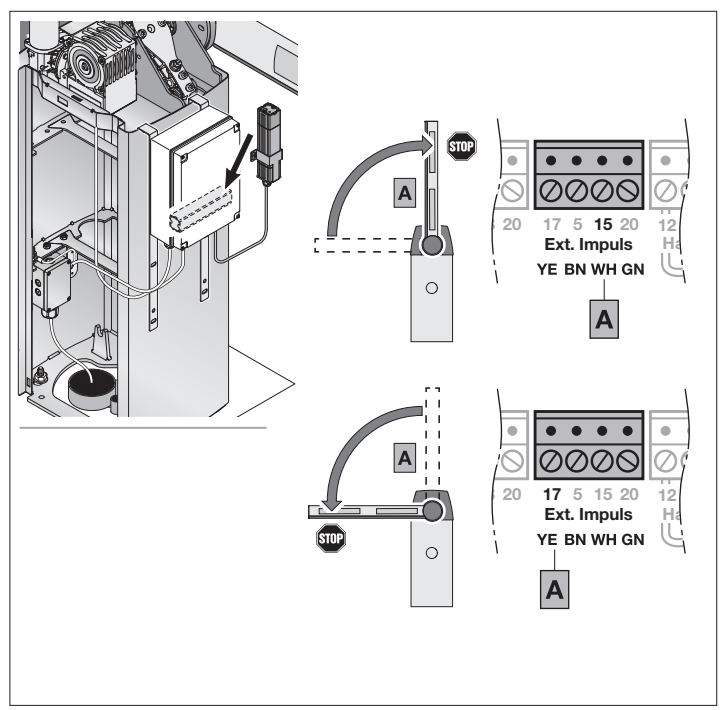
6.3.1 External radio receiver*

▶ Connect the wires of an external radio receiver BDE221 or BDE321 as follows:

GN	Terminal **20** (0 V)
WH	Terminal **15** (Open barrier travel command)
BN	Terminal **5** (+24 V)
YE	Terminal **17** (Close barrier travel command)

Or

▶ Insert the plug of the BDE221 or BDE321 receiver in the corresponding socket.



* Accessory, not included as standard equipment.

6.3.2 External button*

One or more buttons with normally open contacts (volt-free or switching to 0 V), e.g. key switch, can be connected in parallel.

Cable length: max. 30 m.

Open barrier travel command

1st contact	Terminal **15**
2nd contact	Terminal **20**

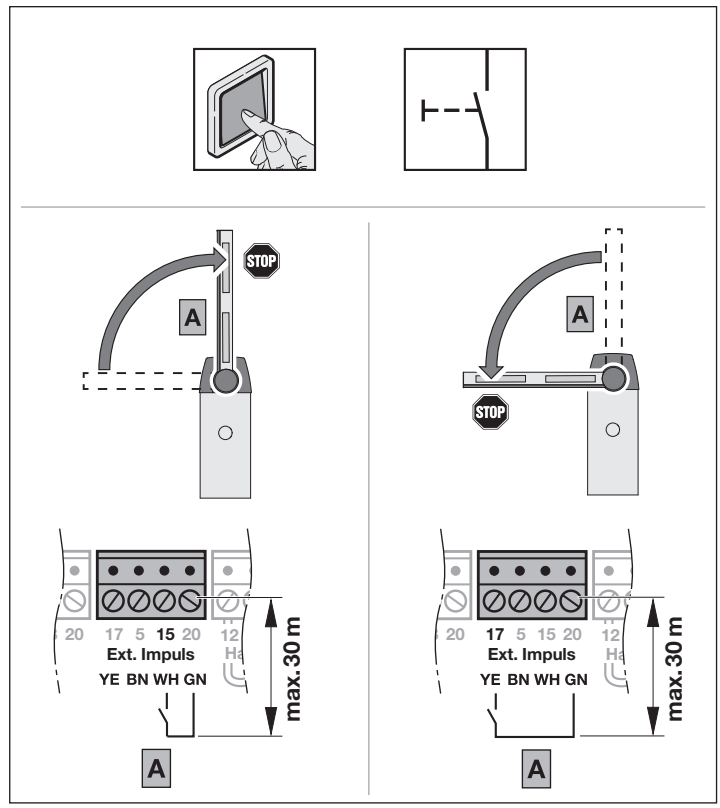
Close barrier travel command

1st contact	Terminal **17**
2nd contact	Terminal **20**

NOTE:

If auxiliary voltage is required for an external button, a voltage of +24 V DC is available on terminal **5** (to terminal **20** = 0 V).

Connect the power supply of an external radio receiver (with potential-free relay contacts) to terminals 5 (+24 V) and 20 (0 V).

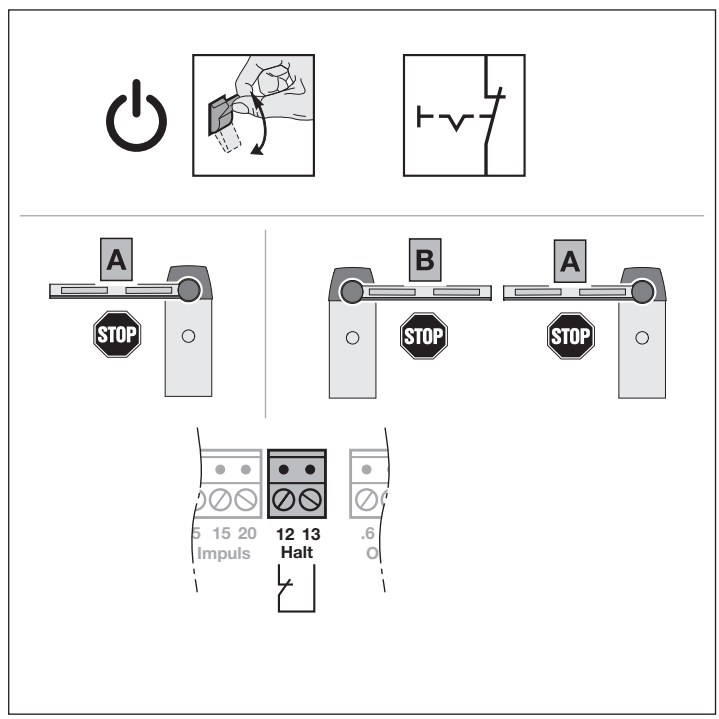


6.3.3 Cut-off (stop or static current circuit)*

NOTE:

Opening the contact immediately stops barrier boom travel. Travel is aborted completely.

The stop or static current circuit input is **not** a monitored connection according to EN ISO 13849 PLc.



* Accessory, not included as standard equipment.

6.3.4 Barrier cover warning light and barrier boom LED lighting strip*

Connect the barrier cover warning light or the barrier boom LED lighting strips to the volt-free contacts on the *Option* plug.

a Barrier cover warning light LED, red and green

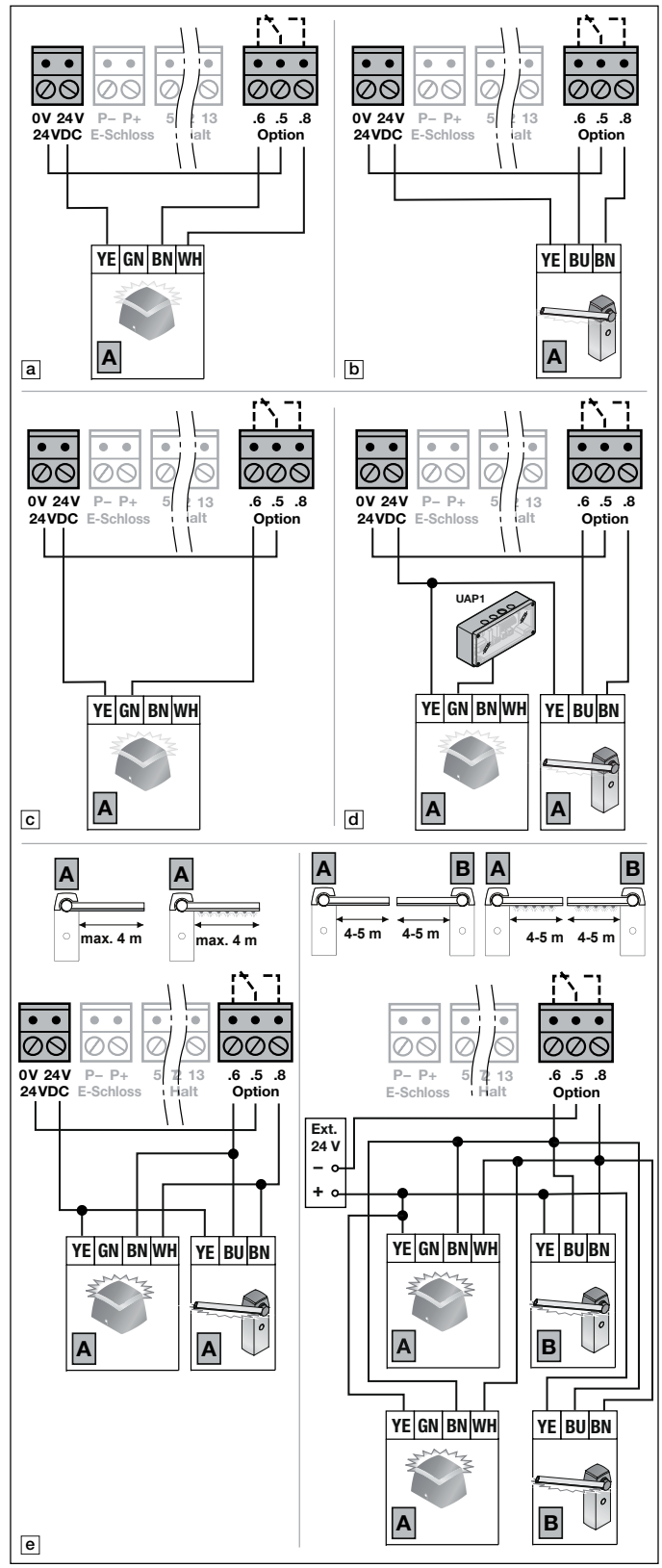
b Barrier boom LED lighting strips LED, red and green

c Barrier cover illumination LED, orange

d Barrier boom illumination LED, red and green
and
Barrier cover illumination LED, orange

e Barrier boom illumination LED, red and green
and
Barrier cover illumination LED, red and green

▶ Set the function in menu 31.



* Accessory, not included as standard equipment.

6.3.5 Protective devices*

On the safety circuits **SE1**, **SE2** and **SE3**, connect the protective devices, such as:

- photocell,
- Induction loop.

If you want to connect 2 photocells per safety circuit, the photocell expander LSE 1* or LSE 2* is required.

NOTE:

Check the non self-testing protective devices (e.g. static photocells) every six months.

Protective device SE 1

SE1	• 2-wire photocell, dynamic • 3-wire photocell, static with testing • 3-wire photocell, static without testing • Fire alarm system • Fire brigade switch

Settings

▶ See *Section 9.1.13*, menu 41

Terminal assignment

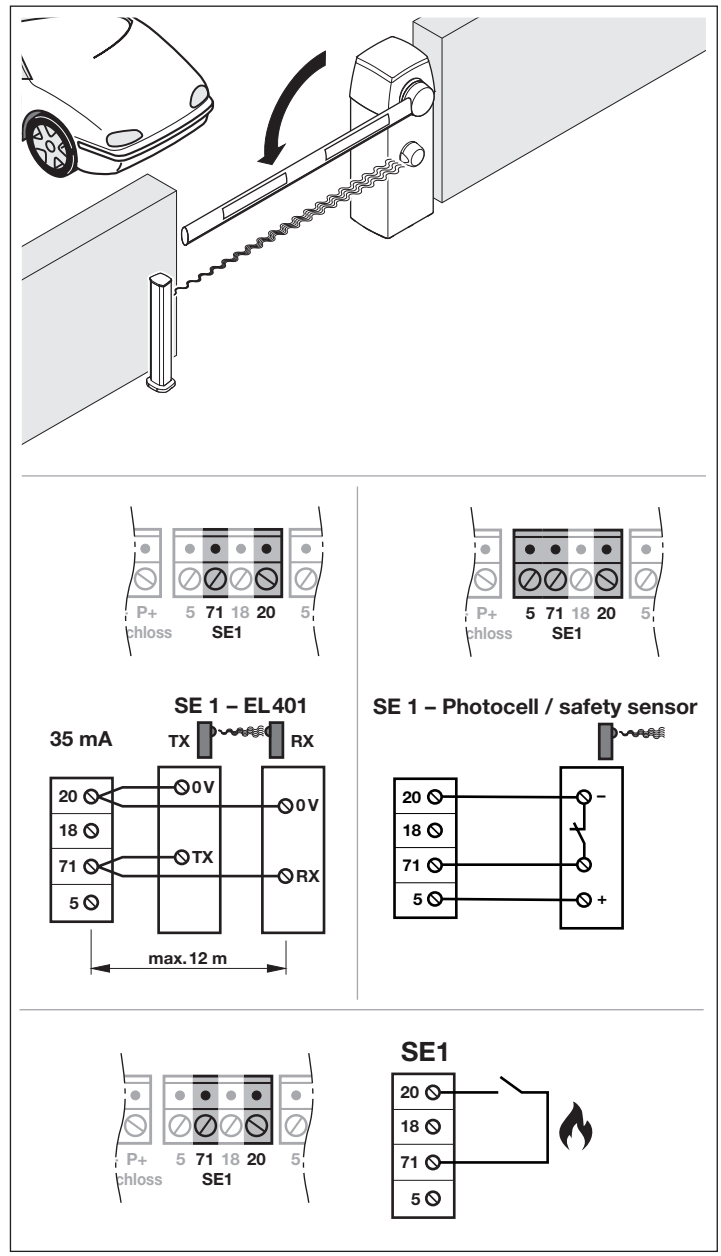
Terminal **20**	0 V (power supply)
Terminal **18**	Test signal
Terminal **71**	Input, switch signal SE1
Terminal **5**	+24 V (power supply)

Set the effective direction and reversing behaviour in menu 42.

	Barrier boom CLOSE effective direction, short reversing

NOTE

If a fire alarm system or fire brigade switch is connected, the effective direction is ignored.



* Accessory, not included as standard equipment.

Protective device SE 2

SE2	• 2-wire photocell, dynamic • 3-wire photocell, static with testing • 3-wire photocell, static without testing • Fire alarm system • Fire brigade switch

Settings

▶ See *Section 9.1.14*, menu 43

Terminal assignment

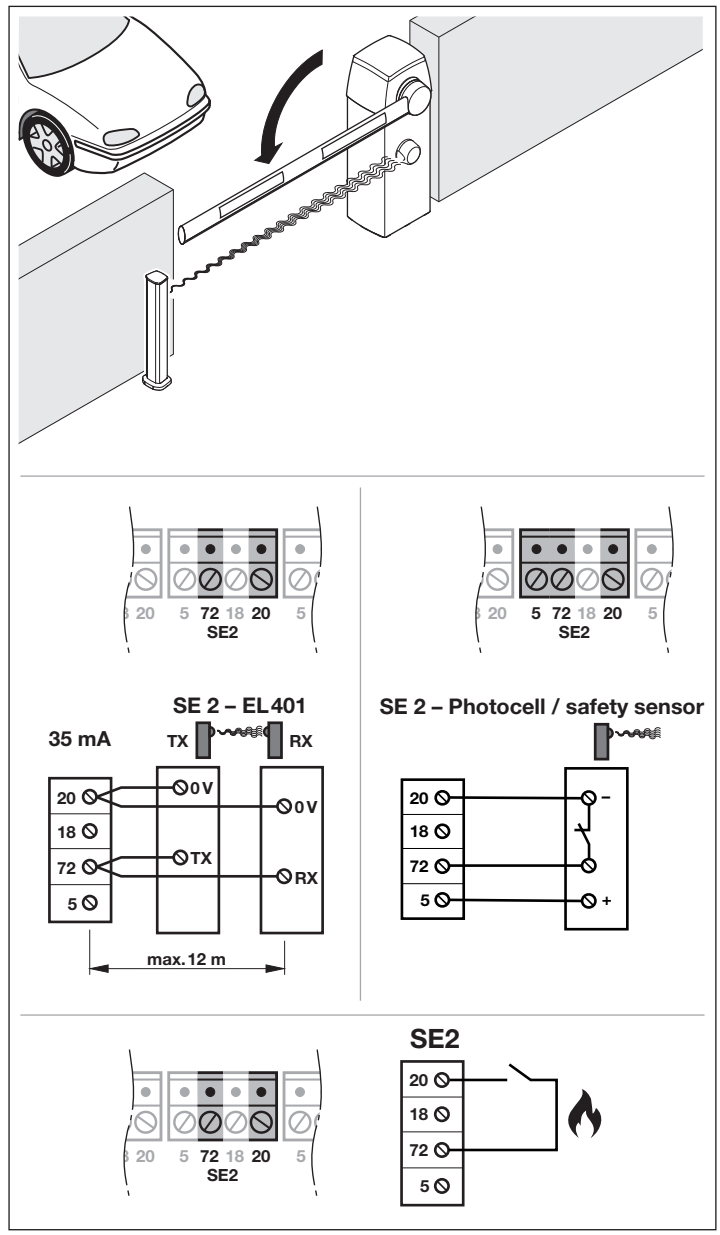
Terminal **20**	0 V (power supply)
Terminal **18**	Test signal
Terminal **72**	Input, switch signal SE2
Terminal **5**	+24 V (power supply)

Set the effective direction and reversing behaviour in menu 44.

	Barrier boom CLOSE effective direction, short reversing

NOTE

If a fire alarm system or fire brigade switch is connected, the effective direction is ignored.



Protective device SE 3

SE3	• 2-wire photocell, dynamic • 3-wire photocell, static with testing • 3-wire photocell, static without testing • Induction loop detector • Through-traffic photo-cell

Settings

▶ See *Section 9.1.15*, menu 45

Terminal assignment

Terminal **20**	0 V (power supply)
Terminal **18**	Test signal
Terminal **73**	Input, switch signal SE3
Terminal **5**	+24 V (power supply)

Set the effective direction and reversing behaviour in menu 46.

	Barrier boom CLOSE effective direction, short reversing

NOTE

Unintended barrier boom travel can occur:

– If the protective device configuration is changed;
– Due to hold-open phase activation.

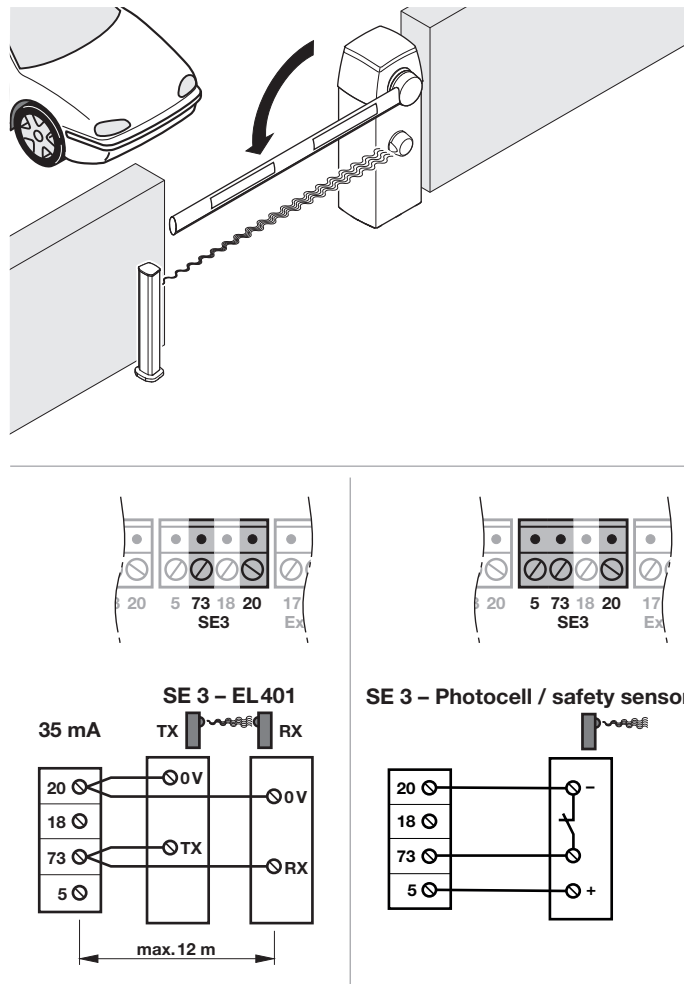
If you want to prevent this unintended travel, move the barrier boom to the CLOSE end-of-travel position once manually after leaving the menu. Then, the travel commands will once again work as the protective device has been freed up and the hold-open phase reset.

⚠ WARNING

Danger of injury due to intended or unintended barrier boom travel.

If the barrier is open, it moves towards the CLOSE end-of-travel position if the status of protective device SE3 changes from *occupied* to *free* and the automatic timer is activated (menu 34). Example:

- When passing over a protective device in normal operation or in case of maintenance work on the open housing.
- When connecting or disconnecting a live protective device.
- Make sure that no persons or objects are located within the barrier's area of travel when the protective devices are released.



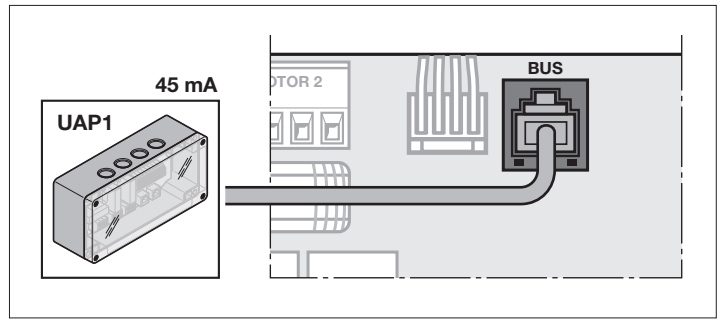
6.3.6 Universal adapter print UAP 1* or UAP 1-300*

Connection option for the universal adapter print UAP 1 or UAP 1-300.

The universal adapter print UAP1 is used for the following additional functions:

- For choosing direction (OPEN / CLOSE) and partial opening via external control elements,
- For OPEN and CLOSE limit switch reporting,
- For switching external lighting (2-min light), e.g. outdoor lighting.

▶ Set the function in menu 30.



* Accessory, not included as standard equipment.

6.3.7 Emergency battery HNA-Outdoor*

To enable barrier boom travel in the event of a power failure, an optional emergency battery can be connected. The system is switched to battery operation automatically.

⚠ WARNING

Danger of injury due to unexpected barrier boom travel

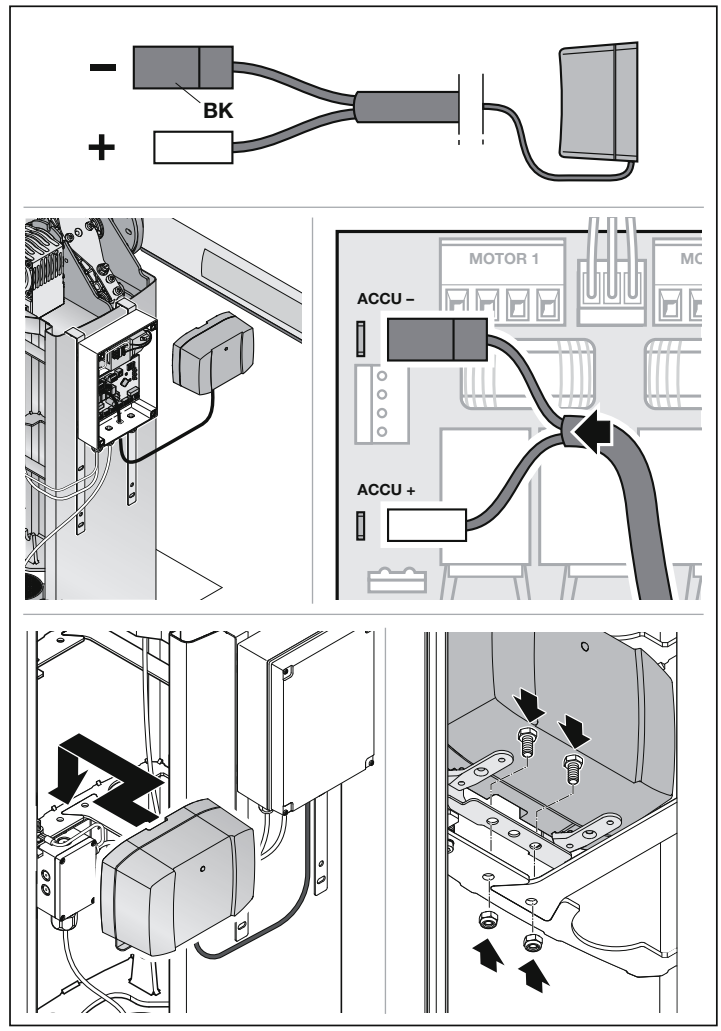
If an emergency battery is connected, the barrier boom may move unexpectedly, even if the barrier system is de-energised.

- ▶ Before performing any work, the barrier system must be de-energised.
- ▶ Unplug the emergency battery plug.
- ▶ Safeguard the barrier system against being switched on again without authorisation.

- ▶ Fit the emergency battery in the barrier housing on the side opposite the compression springs.

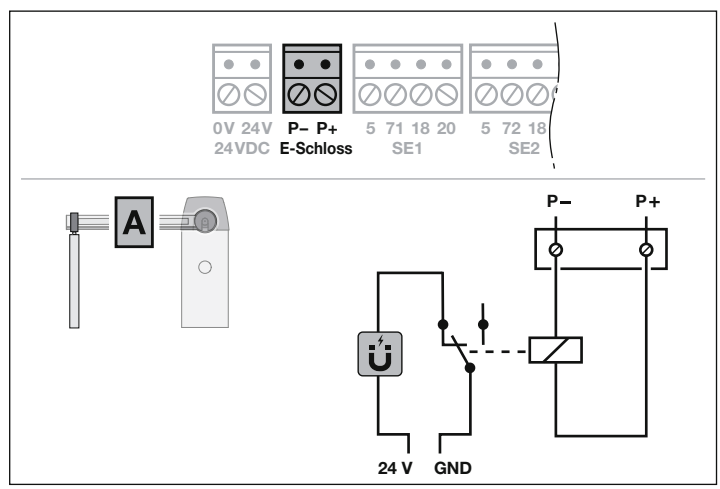
NOTE

The emergency battery only enables travel at a reduced speed.



6.3.8 Magnet*

- ▶ Connect the wires to the **E-Schloss (electric lock)** connecting terminals.



* Accessory, not included as standard equipment.

7 Initial start-up

Initial start-up must be carried out by qualified specialised personnel.

▶ See *Section 2.3.2*

⚠ CAUTION

Risk of crushing due to barrier boom travel.

During barrier boom travel, there can be areas with crushing hazard between the barrier housing and barrier boom.

▶ Do not reach in between the barrier housing and barrier boom during barrier boom travel.

During learning runs, the barrier is adjusted. The travel distance, the required force for travel in the OPEN / CLOSE end-of-travel position direction and the connected protective devices are taught in automatically and saved in a power failure-proof manner.

NOTICES

- No obstacles may be located in the function range of the protective devices.
- Protective devices must be fitted and connected beforehand.
- The opening sense and closing sense are determined during the learning runs. After successful initial start-up, only a factory reset and new learning runs can change the senses.
- During the learning runs, the option relay does not cycle.
- While the travel is being taught in, the barrier boom moves in slow travel.
- There is no timeout during initial start-up.

7.1 Preparing the initial start-up

When the barrier cover is lifted and the door is opened, the service switch interrupts the hold circuit. Barrier boom travel is no longer possible.

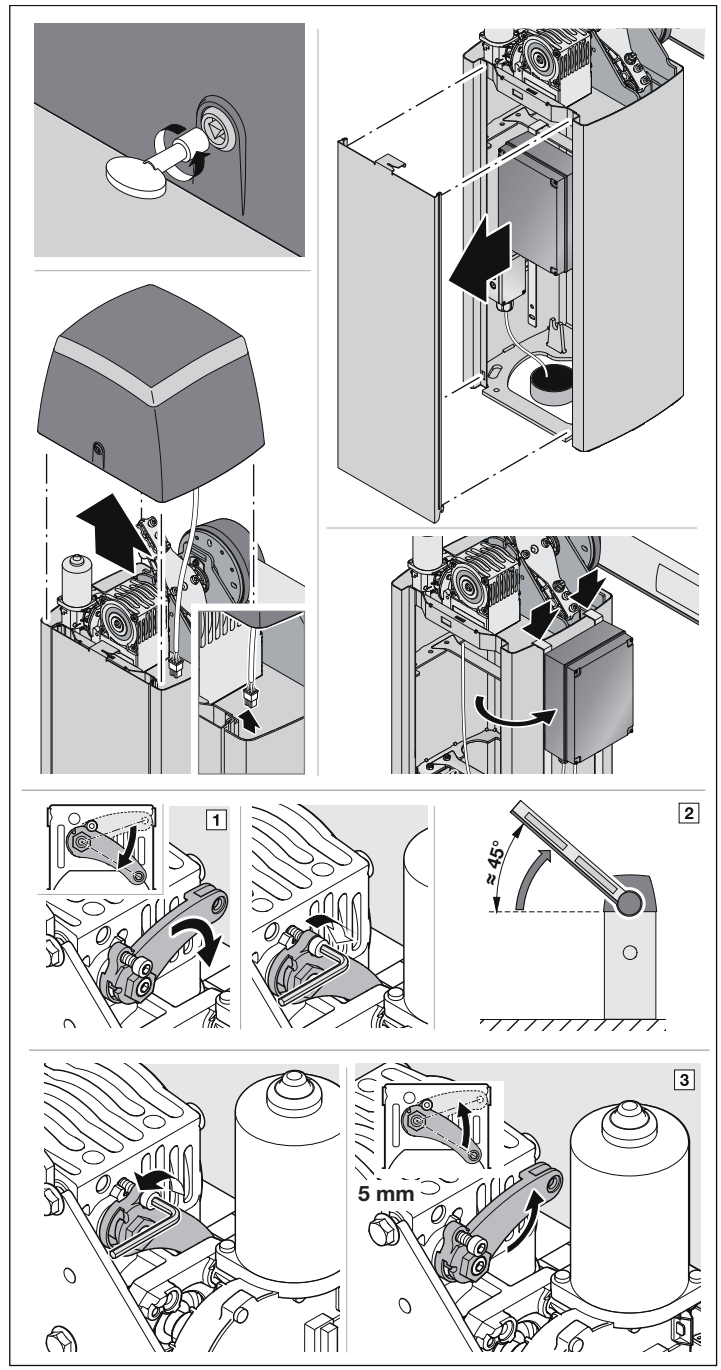
1. Actuate the maintenance release.
2. Move the barrier boom to 45° by hand.

NOTE

The barrier boom must remain in press-and-release operation. If the barrier boom moves in the direction of the end-of-travel position, check the balance.

▶ *See Section 5.7*

3. Reset the maintenance release.
4. Move the barrier boom until the gearbox engages.



7.2 Selecting the barrier type

The barrier type is preset in the delivery condition. The current barrier type must only be selected after a factory reset.

⚠ CAUTION

Risk of injury due to incorrectly selected barrier type

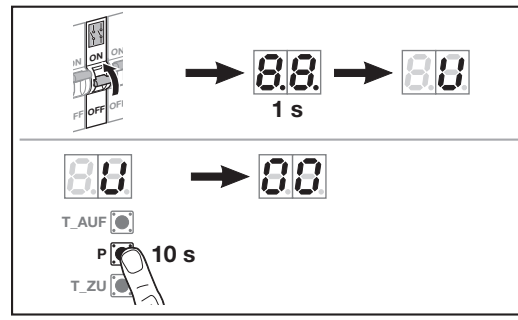
If an incorrect barrier type is selected, unspecific values are set as default. Barrier system malfunctions may cause injuries.

- ▶ Only choose the menus that correspond to the barrier system you have.

Menu	Barrier type	
02	Barrier BS 60	
04	Barrier boom length 2 - 3 m	
05	Barrier boom length > 3 - 4 m	
06.	Barrier boom length > 4 – 6 m	
08	Single barrier operation	
08.	Barrier synchronous operation	
09	Partial opening barrier A	
09.	Partial opening barrier B	

7.3 Menu settings on a barrier that has not been taught in

The following steps allow you to change parameters, e.g. the power limit and / or speeds before initial start-up.



1. Connect the power supply.
   On the display
   – **8.8.** is illuminated for 1 second,
   – **U** is then illuminated continuously.
2. Press and hold the **P** button for 10 seconds.
   – **00** is illuminated. All available menus are visible.

To exit the menus:

1. Select menu **00**.
2. Press the **P** button.

You can then begin initial start-up.

7.4 Teach in barrier

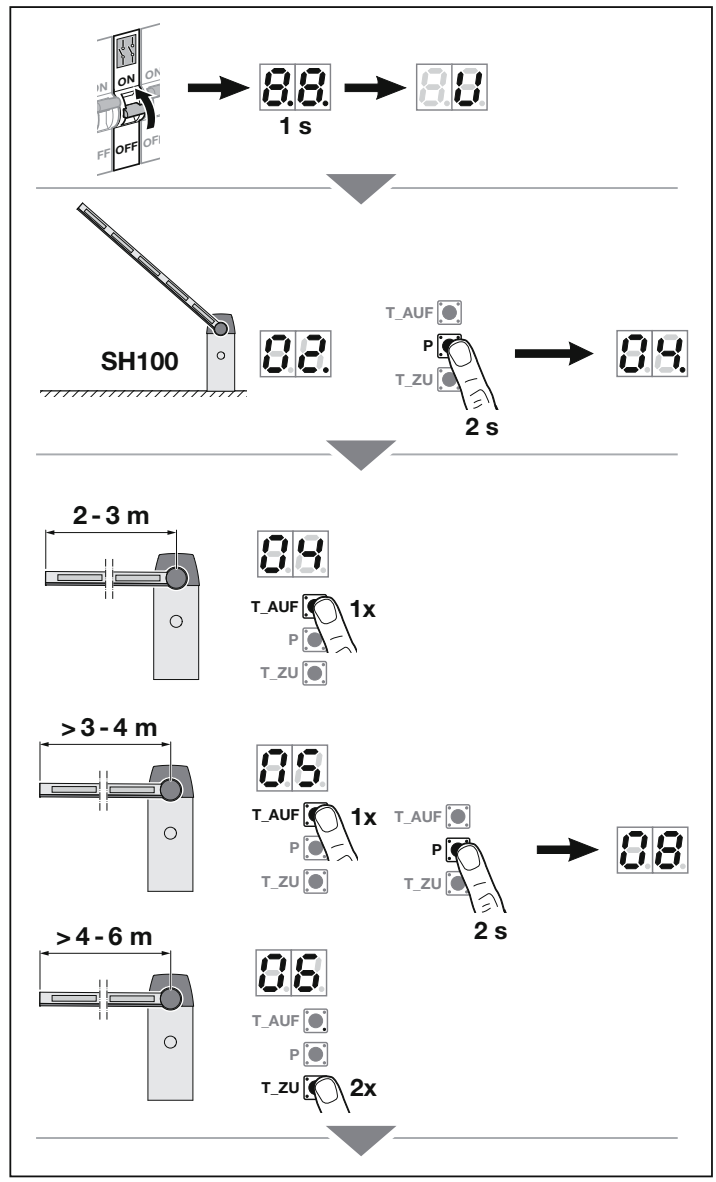
1. Connect the power supply. On the display
   - **8.8.** is illuminated for 1 second,
   - **U** is then illuminated continuously.
2. Press the **Open** button
   - **02.** is shown for barrier BS 60.
3. Press and hold the **P** button.
   - **04.** is illuminated.
4. Press the **Open** or **Close** button and select
   - **04** Boom length 2 - 3 m
   - **05** Boom length > 3 - 4 m
   - **06** Boom length > 4 - 6 m
5. Press and hold the **P** button
   - **08** is illuminated (single barrier operation).

Single barrier operation

NOTE

When the barrier cover is lifted and the door is opened, the service switch interrupts the hold circuit. Barrier boom travel is no longer possible.

6. Press and hold the **P** button for single barrier operation
   - **LA** is illuminated for 1 second (teach-in barrier boom A),
   - **L_** flashes.



Barrier synchronous operation

7. For barrier synchronous operation, press the **Open** or **Close** button
   – **08.** is illuminated.
8. Press and hold the **P** button
   – **09** is illuminated (partial opening barrier A).

Partial opening

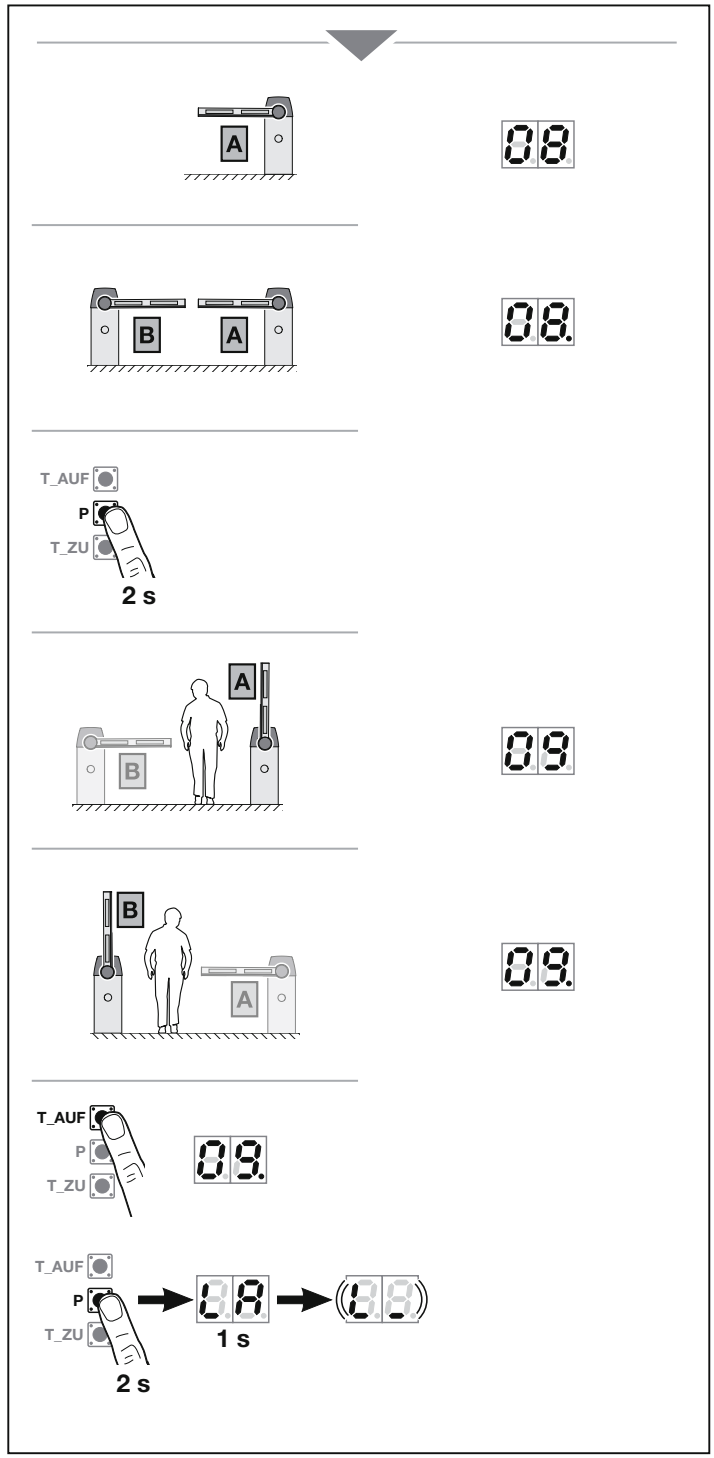
(can only be accessed if barrier synchronous operation is activated in parameter 8)

Barrier A

9. Press and hold the **P** button for partial opening of barrier A.
   – **LA** is illuminated for 1 second (teach-in barrier boom A),
   – **L _** flashes.

Barrier B

10. Press the **T-Auf** (door open) or **T-Zu** (door close) button for partial opening of barrier B.
    – **09.** is illuminated.
11. Press and hold the **P** button for partial opening of barrier B
    – **LA** is illuminated for 1 second (teach-in barrier boom A),
    – **L _** flashes.



7.5 Single barrier operation

7.5.1 Teaching in the end-of-travel positions

1. Press and hold the **Close** button.
   – The barrier boom moves towards the CLOSE end-of-travel position.
   – **L _** is illuminated.

NOTE

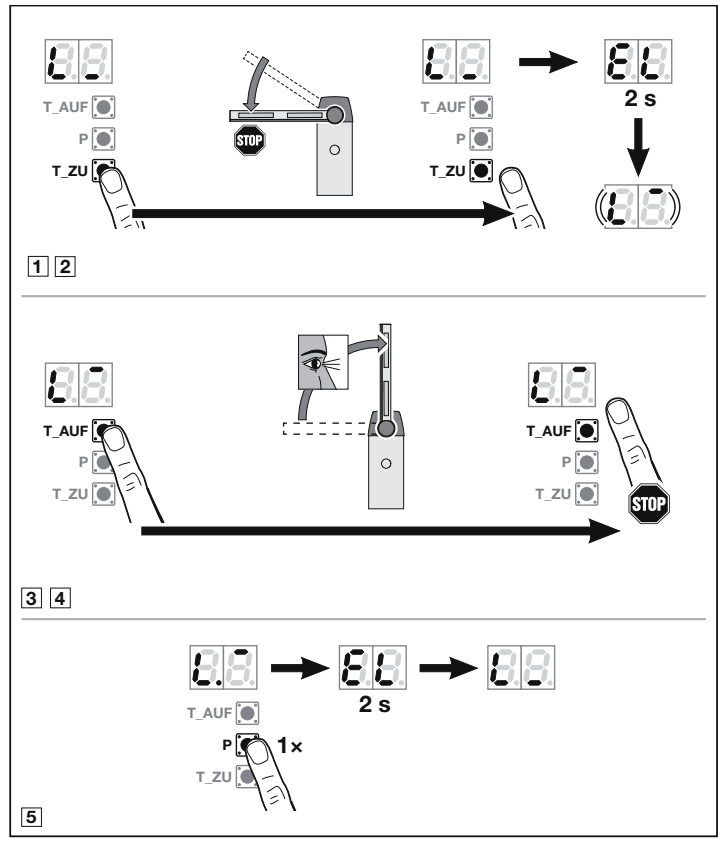
If the barrier boom moves towards the OPEN end-of-travel position, reverse the rotational direction:

- ▶ Briefly release the **Close** button.
- ▶ Press and hold the **Close** button again.

2. Release the **Close** button when the barrier boom is stopped by the integrated end stop.
   – **EL** is illuminated for 2 seconds,
   – **L¯** flashes with end stop.

The CLOSE end-of-travel position has been taught in.

3. Press and hold the **OPEN** button.
   – The barrier boom moves towards the OPEN end-of-travel position.
   – **L¯** is illuminated.
4. Release the **Open** button when the desired position for the OPEN end-of-travel position has been reached. Minimum travel 65°. If this angle is exceeded, the decimal point on the left is illuminated.
   Fine adjustment can be performed with the **Open** / **Close** buttons.
5. Press the **P** button to save this position.
   – **EL** is illuminated for 2 seconds,
   – **L _** is illuminated.



If the selected position is less than 65°, the error **8** appears with a flashing decimal point. **U** is then illuminated.

The end-of-travel position is also determined by an increase in force when the mechanical OPEN end-of-travel position is reached. You no longer have to press the **P** button in this case.

7.5.2 Teaching in forces

During force learning runs, no protective devices may be tripped.

Force learning runs:

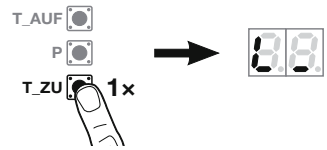
1. Press the **Close** button.
   - The barrier boom moves to the CLOSE end-of-travel position. L_ is illuminated.
2. Press the **Open** button.
   - The barrier boom moves to the OPEN end-of-travel position. L_ is illuminated.
   - Once the barrier boom arrives, **11** flashes.

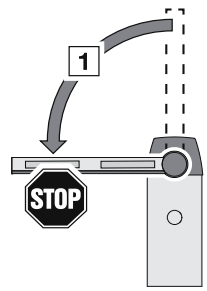
Cancelling force learning runs:

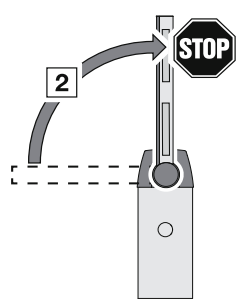
An impulse stops the force learning runs, e.g. by pressing the **Open** / **Close** buttons.

U is then illuminated.

Initial start-up is restarted after cancellation. The settings in menus **01** – **09** are maintained.







7.6 Barrier synchronous operation

7.6.1 Teaching in the end-of-travel positions for barrier boom A

1. Press and hold the **Close** button.
   – The barrier boom moves towards the CLOSE end-of-travel position.
   – **L_** is illuminated.

If the barrier boom moves towards the OPEN end-of-travel position, reverse the rotational direction:

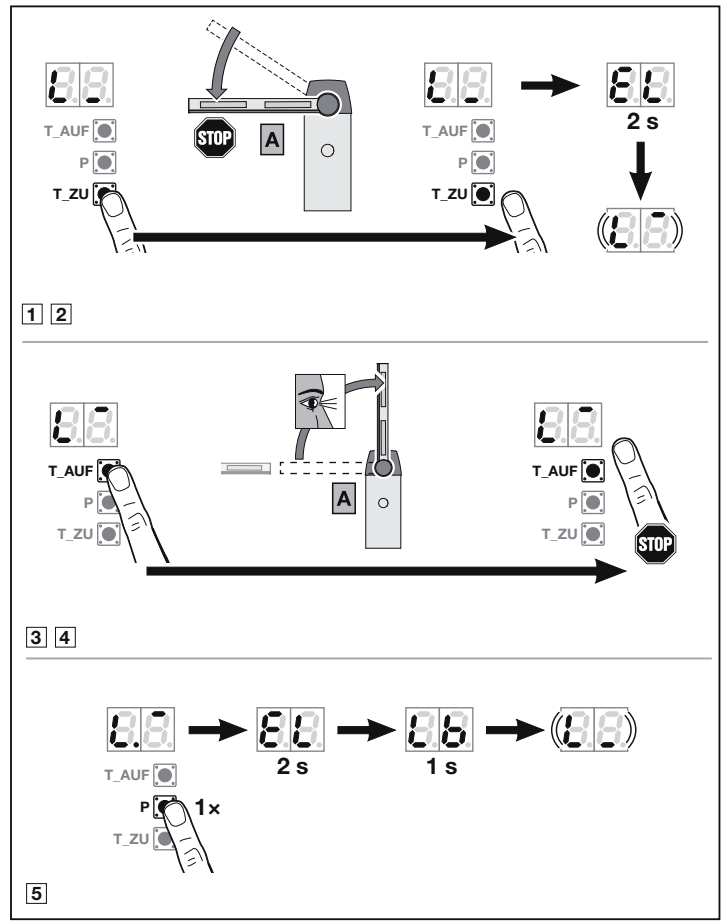
▶ Briefly release the **Close** button.

▶ Press and hold the **Close** button again.

2. Release the **Close** button when the barrier boom is stopped by the on-site end stop.
   – **EL** is illuminated for 2 seconds,
   – **L¯** flashes with end stop.

The CLOSE end-of-travel position has been taught in.

3. Press and hold the **Open** button.
   – The barrier boom moves towards the OPEN end-of-travel position.
   – **L¯** is illuminated.
4. Release the **Open** button when the desired OPEN end-of-travel position has been reached. Minimum travel 65°. If this angle is exceeded, the decimal point on the left is illuminated. Fine adjustment can be performed with the **Open** / **Close** buttons.
5. To save this position, press the **P** button.
   – **EL** is illuminated for 2 seconds,
   – **Lb** is illuminated for 1 second (**teach-in** barrier boom **B**),
   – **L_** flashes with end stop.



If the selected position is less than 65°, the error **8** appears with a flashing decimal point. **U** is then illuminated.

The end-of-travel position is also determined by an increase in force when the mechanical OPEN end-of-travel position is reached. You no longer have to press the **P** button in this case.

7.6.2 Teaching in the end-of-travel positions for barrier boom B

Barrier **A** is open.

1. Press and hold the **Close** button.
   – The barrier boom moves towards the CLOSE end-of-travel position.
   – **L _** is illuminated.

If the barrier boom moves towards the OPEN end-of-travel position, reverse the rotational direction:

- ▶ Briefly release the **Close** button.
- ▶ Press and hold the **Close** button again.

2. When the barrier boom is stopped by the on-site end stop, release the **Close** button.
   – **EL** is illuminated for 2 seconds,
   – **L¯** flashes with end stop.

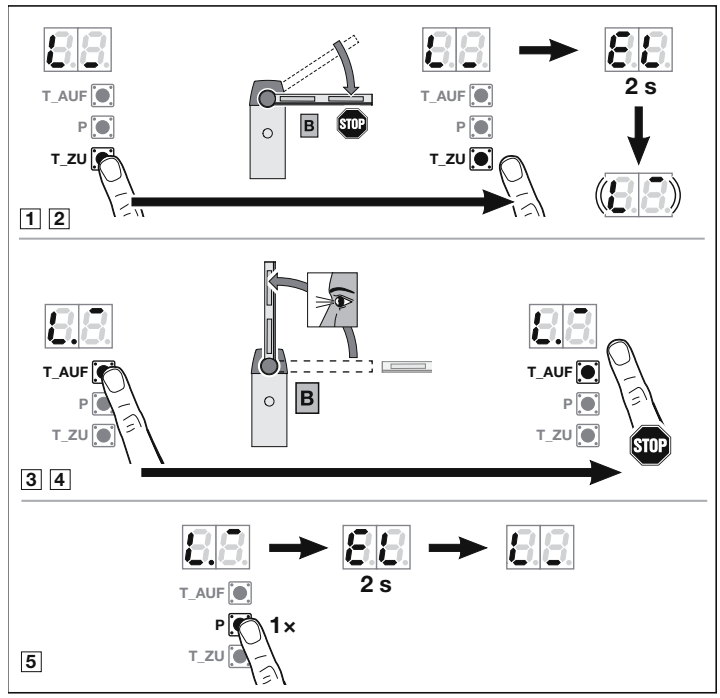
The CLOSE end-of-travel position has been taught in.

If the position taught in is not the desired end position:

- ▶ Proceed as with barrier boom **A**.

3. Press and hold the **Open** button.
   – The barrier boom moves towards the OPEN end-of-travel position.
   – **L¯** is illuminated.
4. Release the **Open** button when the desired OPEN end-of-travel position has been reached. Minimum travel 65°. If this angle is exceeded, the decimal point on the right is illuminated. Fine adjustment can be performed with the **Open** / **Close** buttons.
5. To save this position, press the **P** button.
   – **EL** is illuminated for 2 seconds,
   – **L _** is illuminated.

If the selected position is less than 65°, the error **8** appears with a flashing decimal point. **U** is then illuminated.



The end-of-travel position is also determined by an increase in force when the mechanical OPEN end-of-travel position is reached. You no longer have to press the **P** button in this case.

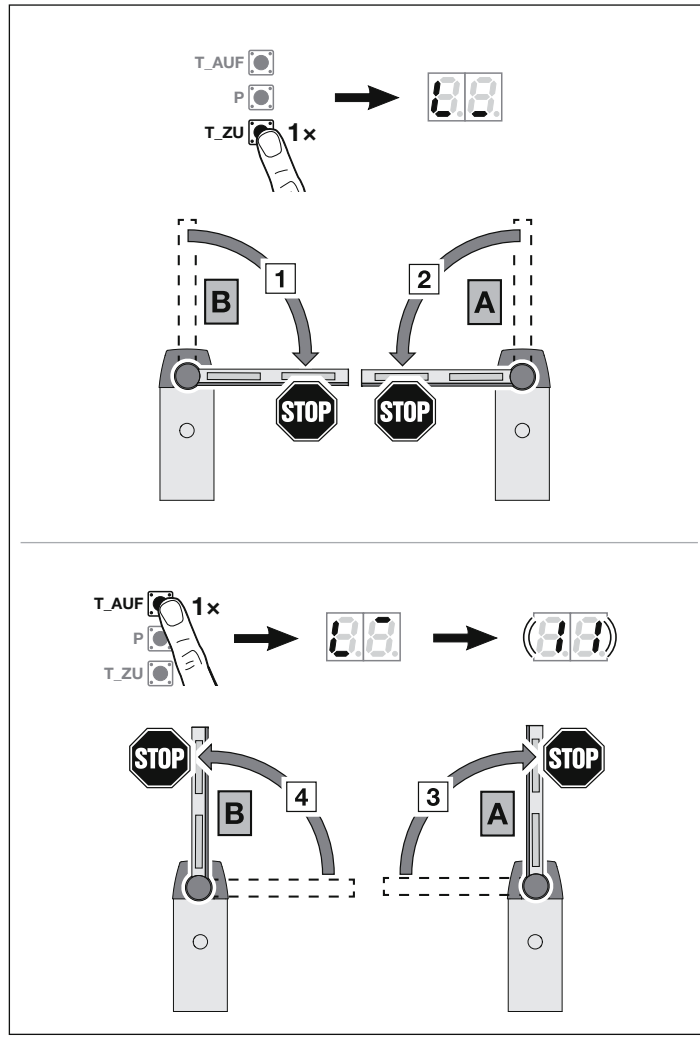
- ▶ After teaching in the end-of-travel positions in barrier synchronous operation, check the alignment of the barrier booms.
- ▶ If necessary, re-adjust the end-of-travel positions of the barrier booms, see *Section 5.8.2.*

7.6.3 Teaching in forces

During force learning runs, no protective devices may be tripped. The force learning runs are performed with a very long barrier boom offset.

Force learning runs:

1. Press the **Close** button.
   - Barrier boom **B** moves towards the CLOSE end-of-travel position. Barrier boom **A** follows.
   - Both barrier booms travel to the CLOSE end-of-travel position. L_ is illuminated.
2. Press the **Open** button.
   - Barrier boom **A** moves towards the OPEN end-of-travel position. L_ is illuminated. Barrier boom **B** follows.
   - Both barrier booms travel to the OPEN end-of-travel position. L_ is illuminated.
   - As soon as the two barrier booms arrive, **11** flashes.
3. Press the **P** button, **11** is illuminated.



Cancelling force learning runs:

An impulse stops the force learning runs, e.g. by pressing the **Open** / **Close** buttons.

On the display, a **U** is then illuminated.

The settings in menus 01 – 09 are maintained. Initial start-up is restarted after cancellation.

NOTE

Menu items **11**, **12**, **13**, **14** and **15** are not used. If you accidentally activate one of the menus (menu number flashes), press the **P** button again to exit the menu (menu number lights up).

To exit programming mode:

1. Use the **Open** / **Close** buttons to select menu **00**.
2. Press the **P** button.

Or

▶ No input for 60 seconds (timeout).
All inputs are saved. The barrier switches to operation mode.

8 Required force learning runs

If you make changes in menus **52** – **57**, **92** and **97**, new force learning runs are required.

If you are in programming mode, you can make the desired changes in all menus.

You do not have to perform the force learning runs until after you leave programming mode via menu **00**. After leaving programming mode and during the reference run, the following display flashes for

Single barrier operation 

Barrier synchronous operation 

9 Menus

⚠ WARNING

Danger of injury due to improper setting!
Settings in the advanced menus that change the factory setting may only be made by specialists. Changes made by non-specialists can cause substantial danger to life and limb.
▶ Contact your specialist dealer if necessary.

NOTICES

- Menu **00** is the 1st visible menu in programming mode
- Menu **00** is also used to exit the programming mode.
- Menus **01** – **09** are only accessible during initial start-up.
- After initial start-up, only the available menus **10** – **99** are visible.
- A decimal point next to the menu number indicates an active menu.

To switch to programming mode:

▶ Press the **P** button until the **00** display is illuminated.

To select a menu:

▶ Use the **Open** / **Close** buttons to select the desired menu. Press and hold the **Open** / **Close** buttons for fast run-through.

To activate the menu with individual functions:

▶ Press the **P** button for 2 seconds.
The decimal point next to the menu number is illuminated.
The menu is active immediately.

To activate a menu with selectable parameters:

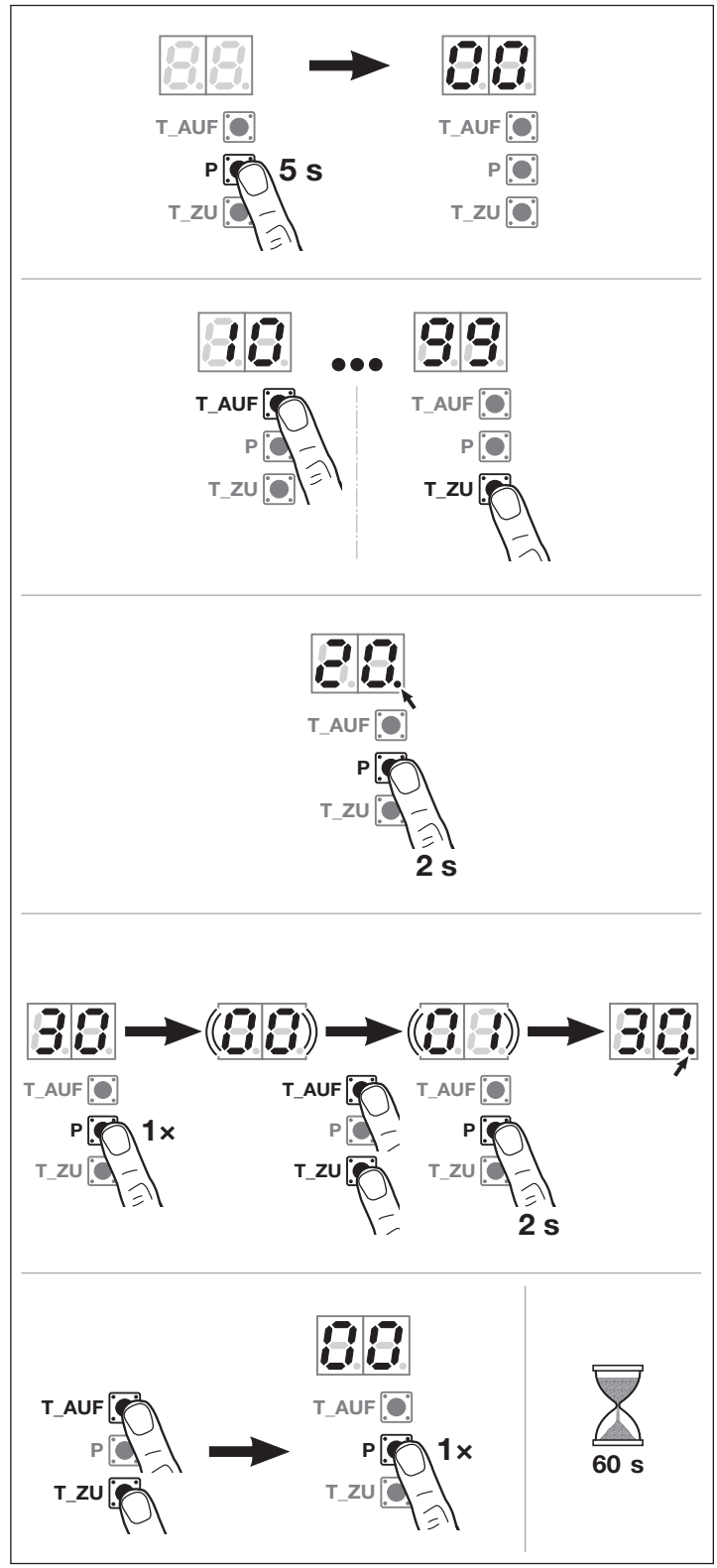
1. Press the **P** button.
   The active parameter flashes.
2. With the **Open** / **Close** buttons, select the desired parameter.
3. Press the **P** button for 2 seconds.
4. The parameter is immediately active.
   The menu number illuminates with decimal point.

To exit programming mode:

1. Use the **Open** / **Close** buttons to select menu **00**.
2. Press the **P** button.

Or

▶ No input for 60 seconds (timeout).
All inputs are saved. The barrier switches to operation mode.



9.1 Menu description

A table containing all of the menus can be found in *Section 18*.

Settings that change the factory setting may only be made by specialists. Contact your specialist dealer.

9.1.1 Menu 01 – 09: Boom length

You only need menus **01** – **09** to commission the barrier. These menus are only available during initial start-up or after a factory reset.

When you choose the boom length, all specific values are automatically set, such as:

- Speeds,
- Soft stop,
- etc.

9.1.2 Menu 10: Learning runs

Learning runs are necessary:

- If the end-of-travel positions have been adjusted,
- After service or maintenance work,
- If protective devices, such as photocells, have been retrofitted,
- If changes have been made to the barrier.

NOTE:

Once menu **10** is activated:

- Any barrier data (travel and forces) are deleted.
- The menu can no longer be exited early. Travel and forces have to be taught in again!
- There is no timeout.

To start learning runs:

1. Select menu **10**.
2. Press the **P** button for 5 seconds.
   – **10** flashes,
   – Next, 00 or 80 flashes**.**
3. Press the **Close** button.
   The barrier boom moves to the CLOSE end-of-travel position.
   – 00 or 80 flashes.
   Once the end-of-travel position has been reached:
   – **LA** is illuminated for 1 second,
   – **L**¯ flashes with end stop.
4. Press and hold the **Open** button.
   The barrier boom moves towards the OPEN end-of-travel position.
   – **L**¯ is illuminated.

NOTE

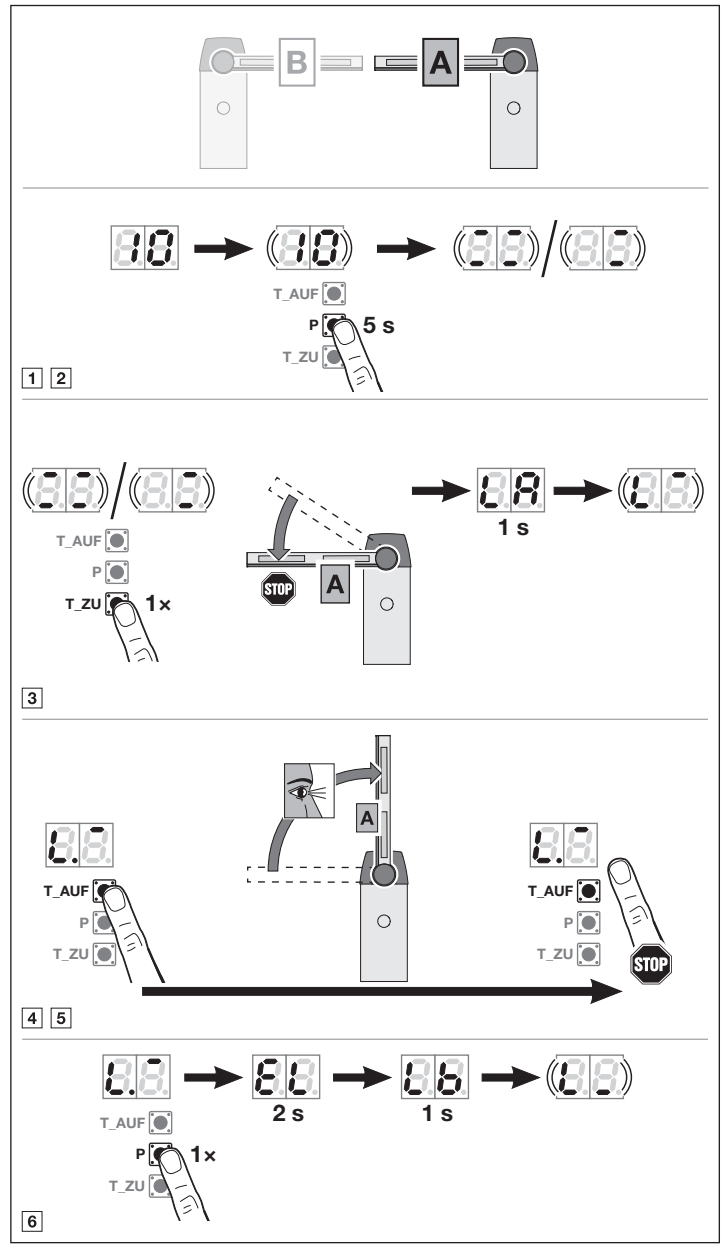
The decimal point does not illuminate until an opening angle of 65°.

5. Release the **Open** button when the desired OPEN end-of-travel position has been reached. Minimum travel approx. 65°. Fine adjustment can be performed with the Open / Close buttons.
6. To save this position, press the **P** button.
   a. If barrier **B** is available:
   – **EL** is illuminated for 2 seconds, **Lb** is illuminated for 1 second (**teach-in** barrier boom **B**),
   – **L** _ flashes with end stop.
   b. If barrier **B** is not available:
   – **EL** is illuminated for 2 seconds,
   – **L** _ is illuminated.

NOTE

When approaching the mechanical end-of-travel position, this end-of-travel position is saved automatically. You do not have to press the **P** button in this case.

If the selected position is less than 65°, the error **8** appears with a flashing decimal point. **U** is then illuminated.



Barrier boom B, if available:

1. Perform steps *4* + *5* as with barrier boom **A**.
2. Press the **P** button.
   – **EL** is illuminated for 2 seconds,
   – **L _** is illuminated.

NOTE

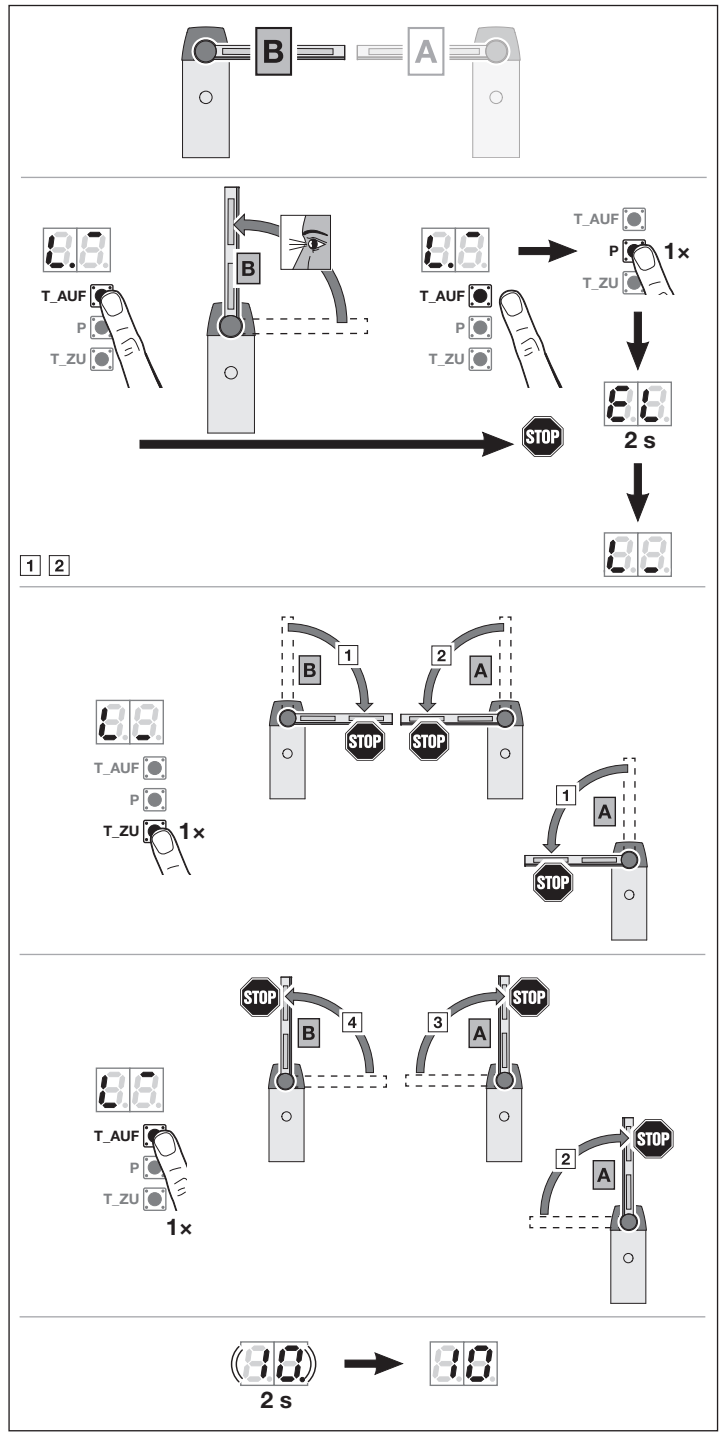
When approaching the mechanical end-of-travel position, this end-of-travel position is saved automatically. You do not have to press the **P** button in this case.

Teach in forces (barrier synchronous operation)

1. Press the **Close** button.
   – Barrier boom **B** moves towards the CLOSE end-of-travel position. Barrier boom **A** follows.
   – Both barrier booms travel to the CLOSE end-of-travel position. L _ is illuminated.
2. Press the **Open** button.
   – Barrier boom **A** moves towards the OPEN end-of-travel position. L _ is illuminated. Barrier boom **B** follows.
   – Both barrier booms travel to the OPEN end-of-travel position. L _ is illuminated.
   – As soon as both barrier booms have arrived, **10.** flashes very quickly for 2 seconds.
   – **10** is then illuminated continuously.

Teach in forces (single barrier operation)

1. Press the **Close** button.
   – The barrier boom moves to the CLOSE end-of-travel position. L _ is illuminated.
2. Press the **Open** button.
   – The barrier boom moves to the OPEN end-of-travel position. L _ is illuminated.
   – As soon as the barrier boom has arrived, **10.** flashes very quickly for 2 seconds.
   – **10** is then illuminated continuously.



On the menus described in the following:

▶ See also *Section 18*

9.1.3 Menu 20 – 24: Illumination / illumination period (internal relay)

As soon as the barrier boom is set in motion, the internal illumination switches on. Once the barrier boom has ended its travel, the illumination remains on corresponding to the time set (illumination period).

To set the desired function:

▶ Select the menu for the desired function.
  ▶ See *Section 9*

20	Internal illumination deactivated	
21	Internal illumination / illumination period 30 seconds	
22	Internal illumination / illumination period 60 seconds	
23	Internal illumination / illumination period 120 seconds	
24	Internal illumination / illumination period 180 seconds	

If menu **20** is activated, barrier boom travel does not activate illumination. Menu **31 –** parameter **07** is also automatically activated.

If menu **21 – 24** is activated, menu **31 –** parameter **00 –** is also automatically activated.

Timeout

If you do not press the **P** button to save within 60 seconds, the pre-set menu is maintained.

9.1.4 Menu 25 – 28: Illumination / illumination period (external relay)

An external control element (e.g. hand transmitter or button) switches the illumination on, which remains on corresponding to the time set (illumination period).

To set the desired function:

▶ Select the menu for the desired function.
  ▶ See *Section 9*

25	External illumination deactivated	
26	External illumination / illumination period 5 minutes	
27	External illumination / illumination period 10 minutes	
28	External illumination / illumination period, HOR 1* function or UAP 1* relay 3 ON / OFF	

If menu **25** is activated, an external control element does not activate illumination.

If menu **28** is activated, the illumination can be switched on or off permanently via the additional prints HOR 1* or UAP 1* relay 3.
Menu **28** is not possible in combination with menu **25**.

Timeout

If you do not press the **P** button to save within 60 seconds, the pre-set menu is maintained.

9.1.5 Menu 30: External relay functions

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

Further functions, such as OPEN and CLOSE limit switch reporting, choosing direction or illumination, can be switched with the universal adapter print UAP 1* relay 3 or UAP 1-300*.

To set the desired function:

▶ Select the menu and the parameter of the desired function.
  ▶ See *Section 9*

30	**External relay functions HCP*, HOR 1*, UAP* relay 3**		
	00	External illumination function	
	01	OPEN end-of-travel position message	
	02	CLOSE end-of-travel position message	
	03	Partial opening position message	
	04	Momentary signal at the time of OPEN or partial opening command	
	05	Error message on the display (malfunction)	
	06	Start warning / advance warning [1)] permanent signal	
	07	Start warning / advance warning [1)] flashing	
	08	Relay energises during travel and de-energises in the end-of-travel positions	
	09	Maintenance interval signal (display **In**)	
	10	Start warning / advance warning [1)] flashing, only in CLOSE direction	

1) Advance warning only if activated in menu 32.

If in menu **30**

– parameter **00** is activated, menu **26** is also automatically activated.
– parameter **01-10** is activated, menu **25** is also automatically activated.

* Accessory, not included as standard equipment.

Timeout

If you do not press the **P** button to save the desired parameter within 60 seconds, the default parameter is maintained.

9.1.6 Menu 31: Internal relay functions

Required e.g. to connect an external lamp or warning light.

To set the desired function:

- ▶ Select the menu and the parameter of the desired function.
  - ▶ See *Section 9*

31	Internal relay functions		
	00	Internal illumination function	
	01	OPEN end-of-travel position message	
	02	CLOSE end-of-travel position message	
	03	Partial opening position message	
	04	Momentary signal at the time of OPEN or partial opening command	
	05	Error message on the display (malfunction)	
	06	Start warning / advance warning [1)] permanent signal	
	07	Start warning / advance warning [1)] flashing	
	08	Relay energises during travel and de-energises in the end-of-travel positions.	
	09	Maintenance interval signal (display **In**)	
	10	Start warning / advance warning [1)]flashing, only in CLOSE direction	

1) Advance warning only if activated in menu 32.

If in menu **31**

- parameter **00** is activated, menu **22** is also automatically activated.
- parameter **01 – 10** is activated, menu **20** is also automatically activated.

Timeout

If you do not press the **P** button to save the desired parameter within 60 seconds, the default parameter is maintained.

9.1.7 Menu 32: Pre-warning phase

If a travel command is output, a warning light connected to the option relay flashes before barrier boom travel begins.
The pre-warning phase is active in the OPEN and CLOSE end-of-travel position directions.

To set the desired function:

- ▶ Select the menu and the parameter of the desired function.
  - ▶ See *Section 9*

32	Pre-warning time		
	00	Deactivated If a travel command is output, the barrier boom begins to move right away.	
	01	1 second	
	02	2 seconds	
	03	3 seconds	
	04	4 seconds	
	05	5 seconds	
	06	10 seconds	
	07	15 seconds	
	08	20 seconds	
	09	30 seconds	
	10	60 seconds	

Timeout

If you do not press the **P** button to save the desired parameter within 60 seconds, the default parameter is maintained.

9.1.8 Menu 34: Automatic timer

With the automatic timer, the barrier opens upon a travel command. Once the set hold-open phase and pre-warning phase have elapsed, the barrier closes automatically. If the barrier receives a travel command while it is closing, the barrier boom stops moving.

NOTICES

- An **additional** protective device (photocell) must be taught in first.
- If the automatic timer is set (menus **34** – **35**), the pre-warning phase is also automatically activated (menu **32** – parameter **02**).

To set the desired function:

▶ Select the menu and the parameter of the desired function.

▶ See *Section 9*

34	Automatic timer		
	00	Deactivated	⌂
	01	Hold-open phase of 1 second	
	02	Hold-open phase of 5 seconds	
	03	Hold-open phase of 10 seconds	
	04	Hold-open phase of 15 seconds	
	05	Hold-open phase of 30 seconds	
	06	Hold-open phase of 60 seconds	
	07	Hold-open phase of 90 seconds	
	08	Hold-open phase of 120 seconds	
	09	Hold-open phase of 180 seconds	
	10	Hold-open phase of 240 seconds	

NOTE

Activating the hold-open phase also activates the pre-warning phase (menu 32).

Timeout

If you do not press the **P** button to save the desired parameter within 60 seconds, the default parameter is maintained.

9.1.9 Menu 35: Automatic timer from the partial opening position

NOTICES

- An **additional** protective device (photocell) must be taught in first.
- If the automatic timer is set (menus **34** – **35**), the pre-warning phase is also automatically activated (menu **32** – parameter **02**).

To set the desired function:

▶ Select the menu and the parameter of the desired function.

▶ See *Section 9*

35	Automatic timer – partial opening		
	00	Deactivated	⌂
	01	Hold-open phase of 1 second	
	02	Hold-open phase of 5 seconds	
	03	Hold-open phase of 10 seconds	
	04	Hold-open phase of 15 seconds	
	05	Hold-open phase of 30 seconds	
	06	Hold-open phase of 60 seconds	
	07	Hold-open phase of 90 seconds	
	08	Hold-open phase of 120 seconds	
	09	Hold-open phase of 180 seconds	
	10	Hold-open phase of 240 seconds	

Timeout

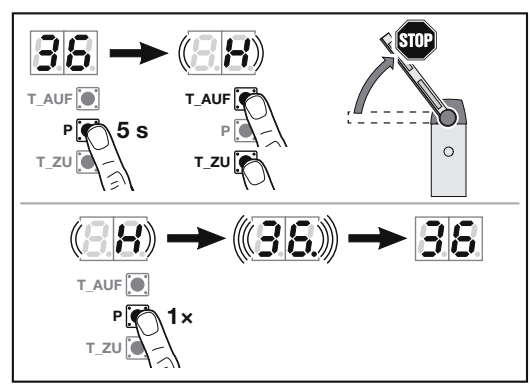
If you do not press the **P** button to save the desired parameter within 60 seconds, the default parameter is maintained.

9.1.10 Menu 36: Change partial opening position

The partial opening position can be triggered via the additional print UAP 1* or UAP 1-300*.

Partial opening position

Barrier synchronous operation	Single barrier operation
Is pre-set to the complete opening width of barrier boom **A** at the factory.	Is pre-set to half of the taught-in travel at the factory.



* Accessory, not included as standard equipment.

To change the partial opening position:

1. Select menu **36**.
2. Press the **P** button for 5 seconds and activate the menu.
3. Move the barrier boom to the desired position with the **Open** or **Close** buttons.
   During travel the following flashes:
   – 8H in case of single barrier operation,
   – 88 in case of barrier synchronous operation.
4. To save this position, press the **P** button.
   – **36** flashes quickly; the decimal point is illuminated.
   – **36** is illuminated.

The changed partial opening position is saved.

If the selected position is too close to the CLOSE end-of-travel position, error **1** appears with a flashing decimal point.

▶ See *Section 17.1*

The smallest possible position is automatically set.

9.1.11 Menu 39: Impulse behaviour during the hold-open phase

The time set for the automatic timer corresponds to the barrier boom's hold-open phase before the barrier automatically closes.

39	Impulse behaviour		
	00	An impulse extends the hold-open phase. Triggered by: • An external control element with impulse function.	☆
	01	An impulse interrupts the hold-open phase. Closing takes place immediately after the pre-warning phase elapses. Triggered by: • An external control element with impulse function, • The **Close** button.	

9.1.12 Menu 40: Operating mode (impulse processing)

40	Operating mode		
	00	Press-and-hold	
	01	Impulse sequence	☆
	02	Impulse sequence only in the end-of-travel position	

Press-and-hold

- A permanent contact on terminals 20 and 15 or pressing the **Open** button moves the barrier boom towards the OPEN end-of-travel position.
- A permanent contact on terminals 20 and 17 or pressing the **Close** button moves the barrier boom towards the CLOSE end-of-travel position.
- If a permanent contact is interrupted or the **Open** / **Close** button is released, the barrier boom stops.

Impulse sequence (only via UAP1*)

Open – Stop – Close – Stop – Open – Stop – ...

Impulse sequence only in the end-of-travel position

The barrier boom moves to the OPEN or CLOSE end-of-travel position.

During travel, the barrier boom cannot be stopped by an impulse or direction command.

9.1.13 Menu 41 – 42: Protective device SE 1

Connected protective devices are automatically detected during learning runs.

41	Protective device SE 1		
	00	Deactivated	☆
	01	2-wire photocell, dynamic	
	02	3-wire photocell, static with testing	
	03	3-wire photocell, static without testing (no automatic detection)	
	04	Resistance contact strip 8k2	
	05	Fire brigade switch / fire alarm system OPEN barrier (no automatic detection)	
	06	Fire brigade switch / fire alarm system CLOSE barrier (no automatic detection)	

42	Functions SE 1		
	00	CLOSE barrier effective direction, short reversing	☆
	01	CLOSE barrier effective direction, long reversing until the end-of-travel position	
	02	CLOSE barrier effective direction, relieve	

* Accessory, not included as standard equipment.

9.1.14 Menu 43 – 44: Protective device SE 2

Connected protective devices are automatically detected during learning runs.

43	Protective device SE 2		
	00	Deactivated	☑
	01	2-wire photocell, dynamic	
	02	3-wire photocell, static with testing	
	03	3-wire photocell, static without testing (no automatic detection)	
	04	Resistance contact strip 8k2	
	05	Fire brigade switch / fire alarm system OPEN barrier (no automatic detection)	
	06	Fire brigade switch / fire alarm system CLOSE barrier (no automatic detection)	

44	Functions SE 2		
	00	CLOSE barrier effective direction, short reversing	☑
	01	CLOSE barrier effective direction, long reversing until the end-of-travel position	
	02	CLOSE barrier effective direction, relieve	

9.1.15 Menu 45 – 46: Protective device SE 3

Connected protective devices are automatically detected during learning runs.

45	Protective device SE 3		
	00	Deactivated	☑
	01	2-wire photocell, dynamic	
	02	3-wire photocell, static with testing	
	03	3-wire photocell, static without testing (no automatic detection)	
	04	Induction loop detector ISD (only closing loop SLS, no automatic detection)	

46	Functions SE 3		
	00	CLOSE barrier effective direction, short reversing	
	01	CLOSE barrier effective direction, long reversing until the end-of-travel position	
	02	CLOSE barrier effective direction, relieve	
	07	Through-traffic photocell, CLOSE barrier effective direction, relieve	☑

NOTE

As soon as there is no obstacle in the photocell beam, the barrier closes without a new travel command when the hold-open phase is activated (menu 34) and the protective device SE3 is connected (function 7).

9.1.16 Menu 48 – 49: Behaviour when power limit is tripped

Towards the OPEN end-of-travel position

If the power limit is tripped during a barrier boom run towards the OPEN end-of-travel position, in menu **48**, set how the barrier should behave.

48	Behaviour when power limit is tripped		
	00	OPEN barrier effective direction, short reversing	
	01	OPEN barrier effective direction, long reversing	☑
	02	OPEN barrier effective direction, relieve	

Towards the CLOSE end-of-travel position

If the power limit is tripped during a barrier boom run towards the CLOSE end-of-travel position, in menu **49**, set how the barrier should behave.

49	Behaviour when power limit is tripped		
	00	CLOSE barrier effective direction, short reversing	
	01	CLOSE barrier effective direction, long reversing until the end-of-travel position	☑
	02	CLOSE barrier effective direction, relieve	

9.1.17 Menu 50 – 51: Power limit

The power limit function provides safety and protection for persons and objects alike. When the power limit is tripped, the barrier boom stops. The barrier then behaves according to the parameters set in menu **48** and **49**.

During the learning runs, the force required for the travel of the barrier boom in the OPEN / CLOSE end-of-travel position is taught in automatically.

Special fitting situations may mean that the previously taught-in force is not sufficient. This can result in unintended reversing. In such cases, the power limit can be adjusted to be more or less sensitive.

⚠ WARNING

Danger of injury resulting from too large force increase

If the force is set too high, the power limit is less sensitive. The barrier boom does not stop on time when closing. This can lead to injury or damage.

- ▶ Do not set the force too high.
- ▶ Check the set force with suitable force measurement equipment. Check for permissible values within the scope of EN 12453 and EN 12445 or the corresponding national regulations.
- ▶ If the measured force for parameter **00** is too high, reduce the speed for normal travel and slow travel.

50	**Power limit in the OPEN direction**		
51	**Power limit in the CLOSE direction**		
	00	More sensitive (reduction in force)	
	01	More sensitive (reduction in force)	
	02	More sensitive (reduction in force)	
	03	More sensitive (reduction in force)	
	04	Force after learning run	🏭
	05	Less sensitive (increase in force)	
	06	Less sensitive (increase in force)	
	07	Less sensitive (increase in force)	
	08	Less sensitive (increase in force)	
	09	Less sensitive (increase in force)	
	10	Less sensitive (increase in force)	

9.1.18 Menu 52 – 53: Speed

The speeds for normal travel are pre-set in line with the standards after teach-in. The speed can be changed for each direction in increments.

⚠ WARNING

Danger of injury resulting from high force due to high speed

If the speed is set too high, this can result in greater operating forces than specified in EN 12453. This can lead to injury or damage.

- ▶ Do not set the speed too high.
- ▶ After adjusting the speed, check the force with suitable force measurement equipment. Check for permissible values within the scope of EN 12453 or the corresponding national regulations.
- ▶ If the measured force for parameter **00** is too high, reduce the speed.

After the speed is changed, new force learning runs are required.

- ▶ See *Section 8*

52	**OPENING speed**		
53	**CLOSING speed**		
	00	Very fast	🏭
	01	Fast	
	02	Medium	
	03	Slow	

9.1.19 Menu 54 – 55: Slow travel speed

⚠ WARNING

Danger of injury resulting from high force due to high speed

If the speed is set too high, this can result in greater operating forces than specified in EN 12453. This can lead to injury or damage.

- ▶ Do not set the speed too high.
- ▶ After adjusting the speed, check the force with suitable force measurement equipment. Check for permissible values within the scope of EN 12453 or the corresponding national regulations.
- ▶ If the measured force for parameter **00** is too high, reduce the speed.

The slow travel speed is set at the range of 30 – 60% of the normal speed. The slow travel speed can be changed for each direction in increments.

After the slow travel speed is changed, new force learning runs are required.

▶ See *Section 8*

54	**OPEN slow travel speed**		
55	**CLOSE slow travel speed**		
	00	Maximum	
	01	Medium	
	02	Slow	

9.1.20 Menu 56 – 57: Changing the starting points for slow travel

The starting points for slow travel are pre-set after the end-of-travel positions are taught in.

- *Starting point* of normal travel towards the CLOSE end-of-travel position:
  – From the OPEN end-of-travel position to 40° before the CLOSE end-of-travel position.
- *Stop point* of normal travel towards the CLOSE end-of-travel position:
  – 20° before the CLOSE end-of-travel position.
- *Starting point* of normal travel towards the OPEN end-of-travel position:
  – From the CLOSE end-of-travel position to 40° before the OPEN end-of-travel position.
- *Stop point* of normal travel towards the OPEN end-of-travel position:
  – 20° before the OPEN end-of-travel position.

⚠ WARNING

Danger of injury resulting from high force due to high speed at the measurement points

If the speed is set too high in menu **53** and the starting points for slow travel are too short in menus **56** and **57**, this can result in greater operating forces at the measurement points than specified in EN 12453. This can lead to injury or damage.

▶ Do not set the speed too high or the starting points too short.

▶ After adjusting the speed, check the force with suitable force measurement equipment. Check for permissible values within the scope of EN 12453 or the corresponding national regulations.

▶ If the measured force is too high, reduce the speed.

Changing the starting points for barrier boom A:

1. Select menu **56**.
2. Press the **P** button for 5 seconds.
   – The direction symbols for the next run flash slowly.
3. Press the **Open** button *.
   – Barrier boom **A** moves to the OPEN end-of-travel position.
4. Press the **Close** button.
   – Barrier boom **A** moves towards the CLOSE end-of-travel position at slow travel speed (press-and-release operation).
5. When the barrier boom passes the desired position to begin normal travel, briefly press the **P** button.
   – The position is saved.
   – The barrier boom moves towards the CLOSE end-of-travel position at normal speed.
6. When the barrier boom passes the desired position to begin slow travel, briefly press the **P** button.
   – The position is saved.
   – The barrier boom moves towards the CLOSE end-of-travel position at slow travel speed.
7. Press the **Open** button.
   – The barrier boom moves towards the OPEN end-of-travel position at slow travel speed (press-and-release operation).
8. When the barrier boom passes the desired position to begin normal travel, briefly press the **P** button.
   – The position is saved.
   – The barrier boom moves towards the OPEN end-of-travel position at normal speed.
9. When the barrier boom passes the desired position to begin slow travel, briefly press the **P** button.
   – The position is saved.
   – The barrier boom moves to the OPEN end-of-travel position at slow travel speed.
   – **56** flashes quickly.
   – **56.** is illuminated continuously.

The starting points for barrier boom A slow travel are changed.

Changing the starting points for barrier boom B:

1. Select menu **57**.
2. Press the **P** button for 5 seconds.
   – The direction symbols flash slowly.
3. Press the **Open** button*.
   – Barrier boom **A** and barrier boom **B** move to the OPEN end-of-travel position.
4. Press the **Close** button.
   – Barrier boom **B** moves towards the CLOSE end-of-travel position at slow travel speed (press-and-release operation).
5. When the barrier boom passes the desired position to begin normal travel, briefly press the **P** button.
   – The position is saved.
   – The barrier boom moves towards the CLOSE end-of-travel position at normal speed.

* If the barrier booms are already in the required end-of-travel positions, this step is omitted.

6. When the barrier boom passes the desired position to begin slow travel, briefly press the **P** button.
   – The position is saved.
   – The barrier boom moves towards the CLOSE end-of-travel position at slow travel speed.
7. Press the **Open** button.
   – The barrier boom moves towards the OPEN end-of-travel position at slow travel speed (press-and-release operation).
8. When the barrier boom passes the desired position to begin normal travel, briefly press the **P** button.
   – The position is saved. The barrier boom moves towards the OPEN end-of-travel position at normal speed.
9. When the barrier boom passes the desired position to begin slow travel, briefly press the **P** button.
   – The position is saved.
   – The barrier boom moves to the OPEN end-of-travel position at slow travel speed.
   – **57** flashes quickly.
   – **57.** is illuminated continuously.

The starting points for barrier boom B slow travel are changed.

After the starting points are changed, new force learning runs are required.

▶ See *Section 8*

NOTES

- The starting points for slow travel can also be set to overlap. In this case, all travel is performed in slow travel.
- If the selected starting point is too close to the end-of-travel position, the error 8 appears with a flashing decimal point. The smallest possible position is automatically set.
- If no new starting points are selected, the error **8** appears with a flashing decimal point. The start points are not changed.

9.1.21 Menu 65: Magnet

Before the barrier boom moves towards the OPEN end-of-travel position, the magnet in the boom support is deactivated.

65	**Magnet**		
	00	Deactivated	
	01	Activated	

9.1.22 Menu 88: Barrier type

The settings selected in menus **02 – 09** during initial start-up can be shown in menu **88**.

To query the settings:

1. Select menu **88**.
2. Press the **P** button for 5 seconds.
   The set menus are illuminated in the display for 1 second each.

To exit the menu:

▶ Press the **P** button.

Timeout

If the timeout of 30 seconds elapses, the barrier will automatically switch back to operation mode.

9.1.23 Menu 89: Maintenance display

In menu **89** the maintenance display is activated. After the maintenance interval is exceeded, ***In*** is displayed during all barrier boom travel.

89	**Maintenance display**		
	00	Deactivated	
	01	10000 cycles	
	02	20000 cycles	
	03	40000 cycles	
	04	60000 cycles	
	05	80000 cycles	
	06	100000 cycles	
	07	150000 cycles	
	08	180 days	
	09	360 days	

9.1.24 Menu 90: Reset/delete counter for maintenance display

1. Select menu **90**.
2. Press the **P** button for 5 seconds.
   – **90** flashes slowly for 5 seconds,
   – **90.** flashes very quickly for 2 seconds,
   – **90** is illuminated.

The maintenance display is reset / cleared.

9.1.25 Menu 91: Read-out of the last 10 error messages

The last 10 error messages are stored in menu **91**.

1. Select menu **91**.
2. Press the **P** button and activate the menu.
   The display immediately switches to the error memory.
   – The last error is displayed.
   – Alternately, the main error is illuminated with a decimal point and the sub-error is illuminated without a decimal point.
3. Press the **Close** button.
   The error saved before the very last error is displayed.
4. Repeat step 3 until all stored errors are read out.
   After display of the last error **––** will be displayed**.**
5. If you press the **Close** button again, the last error is displayed once again.

To display the errors once more in reverse order:

▶ Press the **Open** button.

To exit the menu:

▶ Press the **P** button.

Timeout

If the timeout of 30 seconds elapses while reading out the error memory, the barrier will automatically switch back to operation mode.

9.1.26 Menu 92: Delete operating forces

If the operating forces are deleted, force learning runs are then absolutely mandatory.

▶ See *Section 8*

1. Move the barrier boom to the OPEN end-of-travel position.
2. Select menu **92**.
3. Press the **P** button for 5 seconds.
   – **92** flashes slowly for 5 seconds,
   – **92.** flashes very quickly for 2 seconds,
   – **92** is illuminated.

The operating forces are reset.

9.1.27 Menu 93: Move into the position of the last power limit error

Menu **93** slowly moves the barrier boom to the position at which the last power limit error occurred.

To approach the position:

1. Select menu **93**.
2. Press the **P** button for 5 seconds.
   93. is illuminated continuously.
3. Press the **Open** button *****.
   The barrier boom opens.
   The barrier boom remains in the OPEN end-of-travel position.
4. Press the **Open** / **Close** button or an external control element with impulse function.
   – The barrier boom travels slowly to the position at which the last power limit error occurred. **93.** flashes during travel.
   – When the position is reached, **93** is illuminated continuously.

If no power limit error is stored:
The error display **8** appears.

▶ Press the **Open** / **Close** button.
The barrier returns to menu **93.**

9.1.28 Menu 94: Reset/delete error memory

1. Select menu **94**.
2. Press the **P** button for 5 seconds.
   On the display
   – **94** flashes slowly for 5 seconds,
   – **94.** flashes very quickly for 2 seconds,
   – **94** is illuminated.

The error memory is reset / cleared.

9.1.29 Menu 95: Read out movement cycles

Example: 65948 movement cycles

1. Select menu **95**.
2. Press the **P** button and activate the menu.
   –– is illuminated.
3. Press the **Open** button.
   The last two digits of the movement cycles are displayed (in the example, **48**).
4. Press the **Open** button.
   The next two digits of the movement cycles are displayed (in the example, **59**).
5. Press the **Open** button.
   The next two digits of the movement cycles are displayed (in the example, **06**).
   If you press the **Close** button again, **––** is displayed again.
6. To display the numbers once more in reverse order, press the **Close** button.
7. To exit the menu, press the **P** button.

* If the barrier boom is already in the OPEN end-of-travel position, this step is omitted.

9.1.30 Menu 96: Read out operating hours

Example: 176459 operating hours

1. Select menu **96**.
2. Press the **P** button and activate the menu. **––** is illuminated.
3. Press the **Open** button. The last two digits of the operating hours are displayed (in the example, **59**).
4. Press the **Open** button. The next two digits of the operating hours are displayed (in the example, **64**).
5. Press the **Open** button. The 1st two digits of the operating hours are displayed (in the example, **17**).
6. If you press the **Open** button again, **––** is displayed again.
7. To display the numbers once more in reverse order, press the **Close** button.
8. To exit the menu, press the **P** button.

9.1.31 Menu 97: Delete starting points for slow travel

Menu **97** resets the starting points for slow travel set in menu 56 – 57 to delivery condition.

After the starting points for slow travel are reset, new force learning runs are required.

▶ See *Section 8*

1. Select menu **97**.
2. Press the **P** button for 5 seconds.
   - **97** flashes slowly for 5 seconds,
   - **97.** flashes very quickly for 2 seconds,
   - **97** is illuminated.

The starting points are reset.

9.1.32 Menu 99: Factory reset

The factory reset returns all settings to the factory setting. Taught-in travel distances and forces are reset to delivery condition.

1. Open the barrier boom.
2. Select menu **99**.
3. Press the **P** button for 5 seconds.
   - **99** flashes slowly for 5 seconds,
   - **C** is illuminated for 1 second,
   - **8.8.** flashes,
   - **U** is illuminated.

The factory reset is completed.

If the factory reset was not successful, the barrier automatically switches back to operation mode.

NOTE:

Taught-in radio codes are maintained.

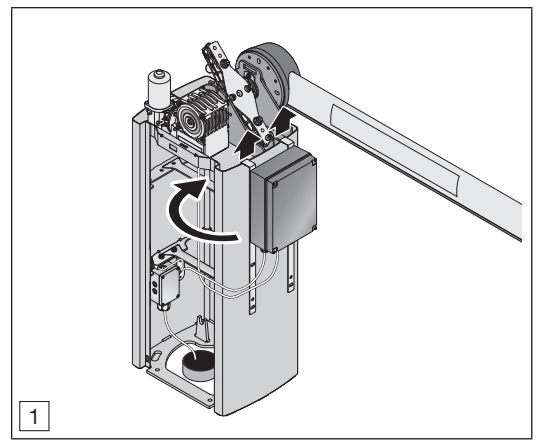
10 Final work

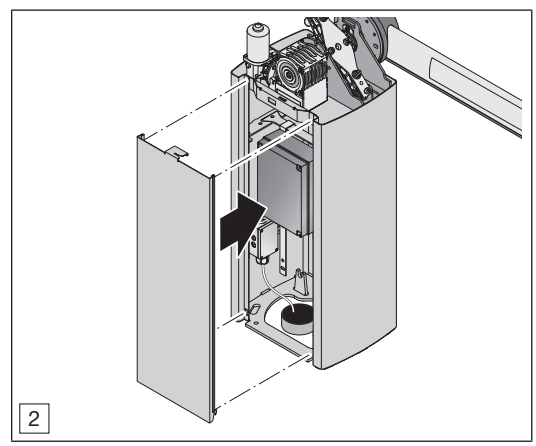
The final work must be carried out by qualified specialised personnel.

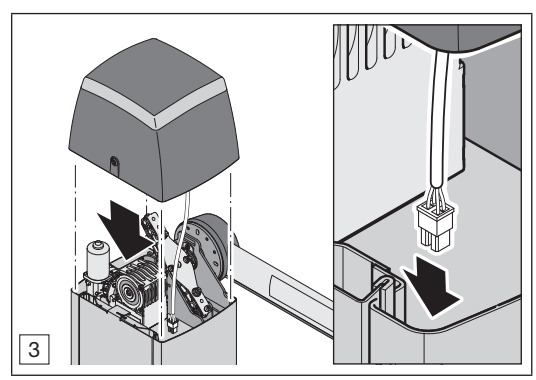
▶ See *Section 2.3.2*

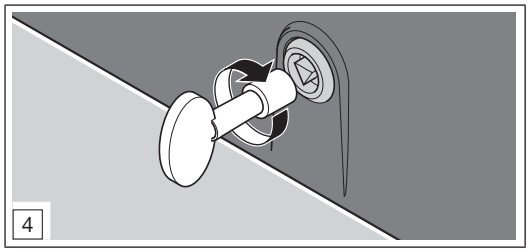
Upon completion of all required steps for initial start-up:

▶ Close the barrier cover.

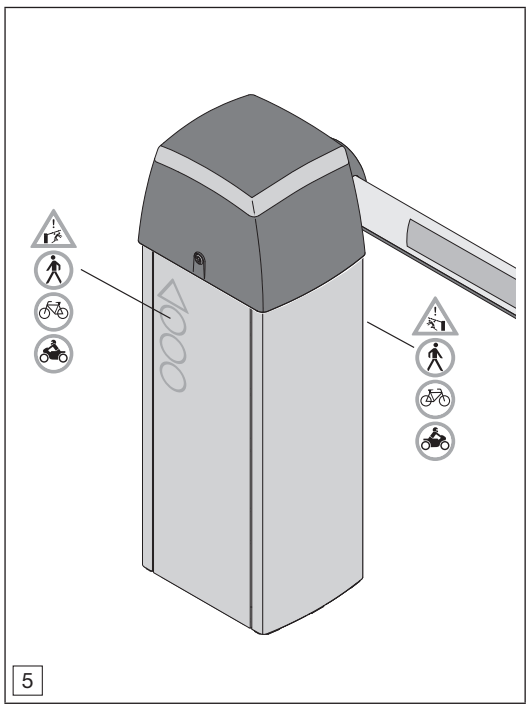








4

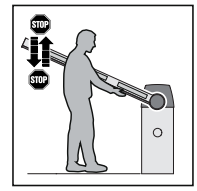


5

- Attach the supplied warnings for your application to the barrier housing.

10.1 Function check

To check the safety reversal:



1. Hold the barrier boom with both hands while the barrier **closes**.
   The barrier boom must stop and initiate the safety reversal.
2. Hold the barrier boom with both hands while the barrier **opens**.
   The barrier boom must stop and initiate the safety reversal.

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

Function test for the protective device:

- Give the Close barrier travel command.
- Interrupt the photocell beam / the sensor field of the protective device during barrier boom travel. **The barrier boom is relieved / reverses immediately.**

NOTE:

If the result of one of the function tests is negative, immediately arrange for a specialist to carry out an inspection or repairs.

⚠ WARNING

Danger of injury due to faulty protective devices.
In case of an error, a non-functional protective device can result in injury.

- Make sure that the barrier boom is not loaded with add-on parts (e.g. signs, reflectors).
- After the learning runs, check the function of the protective device.

The system is ready for operation only after this.

11 Radio

⚠ CAUTION

Danger of injury due to unintended barrier boom travel.

Unintended barrier boom travel may occur while teaching in the radio system.

- ▶ Make sure no persons or objects are in the barrier's area of travel when teaching in the radio system.

If you start up, enhance or change the radio system:

- Perform a function check.
- Only use original parts.
- Local conditions may affect the range of the radio system.

12 External radio receiver*

If the range is limited, the functions choosing direction OPEN / CLOSE can be controlled with an external radio receiver.

NOTICES

- External radio receivers with aerial wires must not come into contact with objects made of metal (nails, struts etc.).
- Determine the best orientation by trial and error.
- When used at the same time, GSM -900 mobile phones can affect the range.

12.1 Teaching in a radio code on the external radio receiver

- ▶ Teach in the radio code for a hand transmitter button using the operating instructions for the external receiver.

13 Operation

Operation by user.

- ▶ See *Section 2.3.3*

⚠ WARNING

Danger of injury during barrier boom travel.

The moving barrier boom can lead to injuries and damage in the area of the barrier.

- ▶ Children are not allowed to play near the barrier.
- ▶ Make sure that no persons or objects are in the barrier's area of travel.
- ▶ Monitor the barrier boom travel until the end-of-travel position is reached.
- ▶ Do not pass the barrier area until the barrier boom has opened completely.
- ▶ Never remain standing in the area of the open barrier boom.

⚠ CAUTION

Danger of injury due to barrier boom travel.

During barrier boom travel, there can be areas with crushing hazard between the barrier housing and barrier boom.

- ▶ Do not reach in between the barrier housing and barrier boom during barrier boom travel.

ATTENTION

Danger of damage caused by wind load.

In case of excessive wind forces the barrier boom may be damaged.

- ▶ Check the barrier boom for possible damage and deformation after every storm.

13.1 Maintenance release

If you want to move the barrier boom to the OPEN or CLOSE end-of-travel position by hand, without an electrical operator, you will have to actuate the maintenance release.

* Accessory, not included as standard equipment.

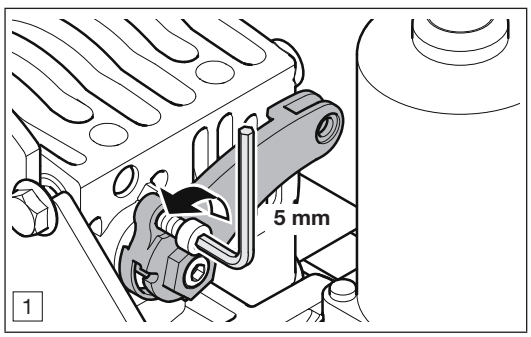
⚠ CAUTION

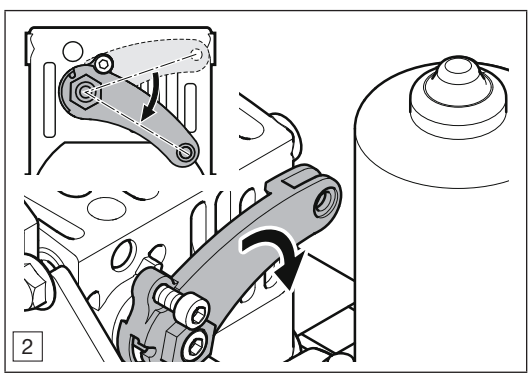
Danger of injury due to actuated maintenance release

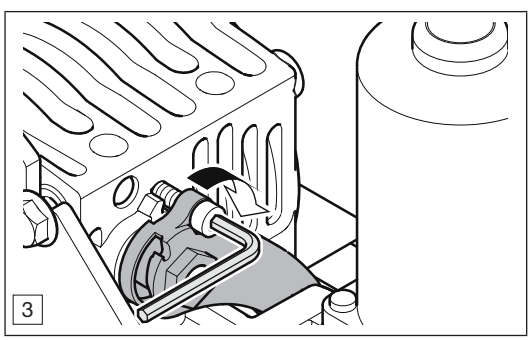
When the maintenance release is actuated, there is a risk of a fast barrier boom movement in the direction of the CLOSE end-of-travel position.

- ▶ Make sure that no one is in the barrier boom's area of travel.
- ▶ Make sure that the barrier boom does not remain in the OPEN end-of-travel position with the maintenance release actuated. This prevents uncontrolled downward movements of the barrier boom in the direction of the CLOSE end-of-travel position.

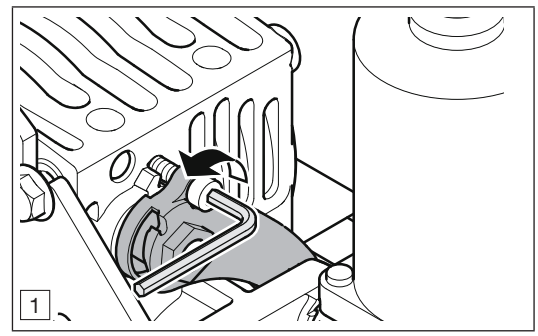
13.1.1 Actuating the maintenance release

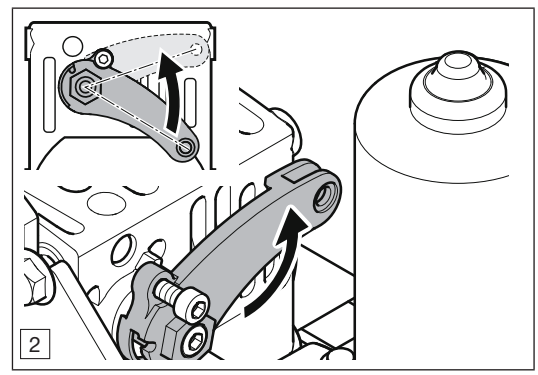


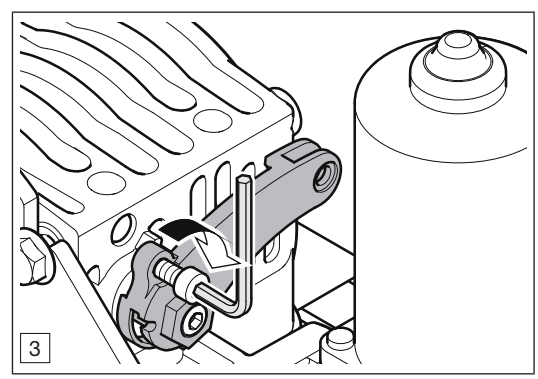




13.1.2 Resetting the maintenance release







- ▶ Teach in the barrier again.
  - ▶ See *Section 7.4*

13.2 Operating conditions

In normal operation, different operating conditions may occur, to which the barrier reacts accordingly.

Operating conditions	Behaviour of the barrier
The barrier boom is blocked when travelling to the OPEN end-of-travel position.	1) Force cut-out with obstacle detection. 2) The barrier boom stops. 3) The barrier boom moves to the CLOSE end-of-travel position.
The barrier boom is blocked when travelling to the CLOSE end-of-travel position.	1) Force cut-out with obstacle detection. 2) The barrier boom stops. 3) The barrier boom moves to the OPEN end-of-travel position.

13.3 Behaviour during a power failure

During a power failure, the barrier boom remains in the current position.

13.4 Behaviour after the power returns

After the power returns, with the next impulse, the barrier travels once towards CLOSE end-of-travel position.

13.5 Decoupling without power failure

For a new reference run towards the CLOSE end-of-travel position to be performed automatically, the power supply has to be disconnected once after coupling.

13.6 Reference run

Single barrier operation

Barrier synchronous operation

A reference run is required:

- If the position of the barrier boom is unknown after a power failure.
- If the power limit is activated 3 × in a row during a run towards the OPEN or CLOSE end-of-travel position.
- If the control or UAP* hold circuit trips.

A reference run is performed:

- Only towards the CLOSE end-of-travel position.
- At a reduced speed.
- With a minor increase in force of the most recently taught-in forces.
- Without power limit

* Accessory, not included as standard equipment.

A travel command towards the OPEN / CLOSE end-of-travel position triggers the reference run. The barrier boom moves to the CLOSE end-of-travel position.

If the area at risk is not secured with a photocell or a similar safety device, you may only initiate the reference run if you are in view of the barrier.

14 Inspection and maintenance

Inspection and maintenance must be carried out by qualified specialised personnel.

▶ See *Section 2.3.2*

To ensure that the safety level remains constant, we recommend that the barrier is regularly inspected and maintained by a specialist according to the inspection plan:

- Barriers **without** self-testing protective device: **every six months**
- Barriers **with** self-testing safety device: **annually**

▶ See *Log book*

In general, independent of the inspection plan, it should always be made sure that the screw fittings to the roadway and the foundation are tight and durably resilient.

⚠ WARNING

Danger of injury by spring tension.

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

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

Defects on the barrier can lead to severe injuries.

- ▶ Do not use the barrier if repair or adjustment work must be conducted.

⚠ WARNING

Danger of injury due to unexpected barrier boom travel.

Unexpected barrier boom travel may occur if the barrier system is inadvertently actuated by third persons during inspection and maintenance work.

- ▶ For all work on the barrier system switch off the line protection switch.
- ▶ Safeguard the barrier system against being switched on again without authorisation.

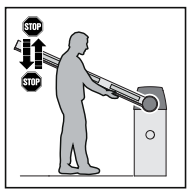
An inspection or required repair may only be executed by a specialist. If necessary, contact your specialist dealer.

The operator can perform a visual inspection.

- ▶ Check all safety and protective functions **monthly**.
- ▶ Check all protective devices without self-testing **every six months**.
- ▶ Check **every six months** whether the mains lead and the protection comply with the valid regulations.
- ▶ You must remedy any existing faults or defects **immediately**.

14.1 Checking safety reversal / reversing

To check the safety reversal:



Hold the barrier boom with both hands while the barrier **closes**.
The barrier boom must stop and initiate the safety reversal.
Hold the barrier boom with both hands while the barrier **opens**.
The barrier boom must stop and initiate the safety reversal.

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

Function test for the protective device:

- ▶ Give the Close barrier travel command.
- ▶ Interrupt the photocell beam / the sensor field of the protective device during barrier boom travel. **The barrier boom is relieved / reverses immediately.**
- ▶ Release the photocell beam / the sensor field of the protective device again.

NOTE:

If the result of one of the function tests is negative, immediately arrange for a specialist to carry out an inspection or repairs.

⚠ WARNING

Danger of injury due to faulty protective devices.
In case of an error, a non-functional protective device can result in injury.

- ▶ Make sure that the barrier boom is not loaded with add-on parts (e.g. signs, reflectors).
- ▶ After the learning runs, check the function of the protective device.

The system is ready for operation only after this.

14.2 Checking the spring pre-load

If the barrier boom does not open or close correctly, the spring pre-load must be checked.

14.2.1 Prerequisites

- The mains voltage is switched on.
- The barrier cover is closed.
- The barrier boom is in the CLOSE end-of-travel position.

14.2.2 Control run

- ▶ Switch the mains voltage off.

Correct spring pre-load

- ▶ Switch the mains voltage on.
- ▶ Alternate between giving the Open barrier and Close barrier travel commands.
  When the OPEN / CLOSE end-of-travel position is reached, the barrier boom must stop gently.

Incorrect spring pre-load

- The barrier boom opens too quickly.
- The barrier boom closes too slowly or incompletely.
- The barrier boom does not move fully or jolts to the OPEN end-of-travel position.
- The barrier boom does not move fully or jolts to the CLOSE end-of-travel position.
- The barrier boom remains closed.

The spring pre-load must be adjusted.

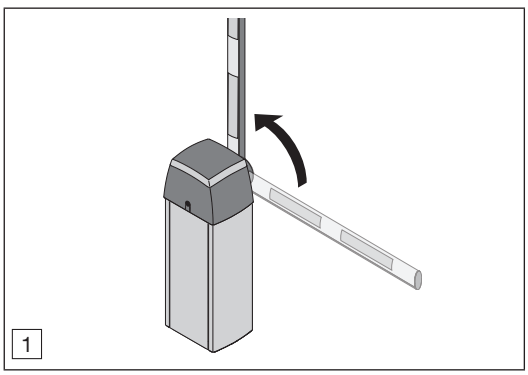
- ▶ See *Section 14.3*

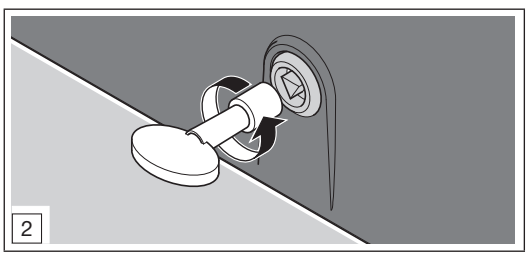
14.3 Adjusting the spring pre-load

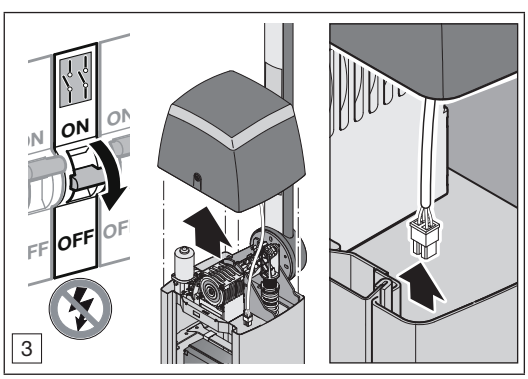
The spring pre-load must be adjusted under the following conditions:

- Control of the spring pre-load was negative.
  ▶ See *Section 14.2*
- The barrier boom was shortened.

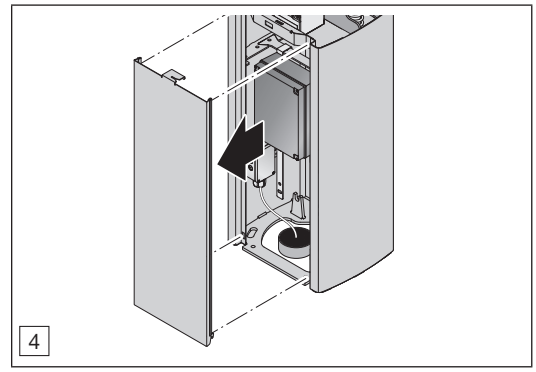
14.3.1 Prerequisites

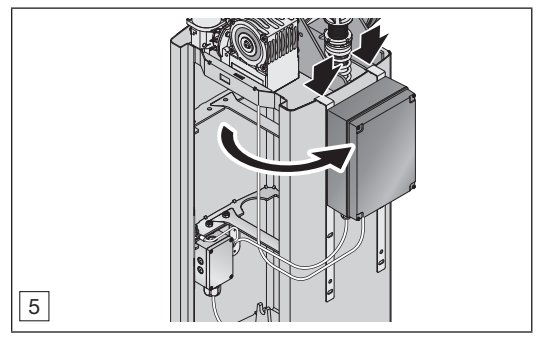






When the barrier cover is lifted and the door is opened, the service switch interrupts the hold circuit. Barrier boom travel is no longer possible.





▶ Check the balance of the barrier boom.
  ▶ See *Section 5.7*

14.3.2 Adjustment work

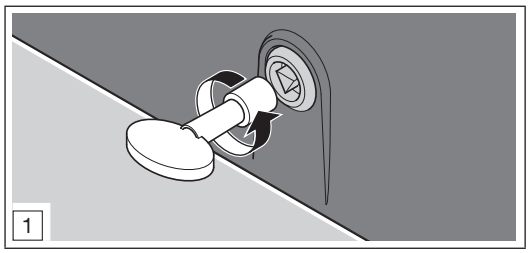
▶ Perform a reference run.
  ▶ See *Section 13.6*
▶ Conduct a function test.
▶ Start up the barrier.

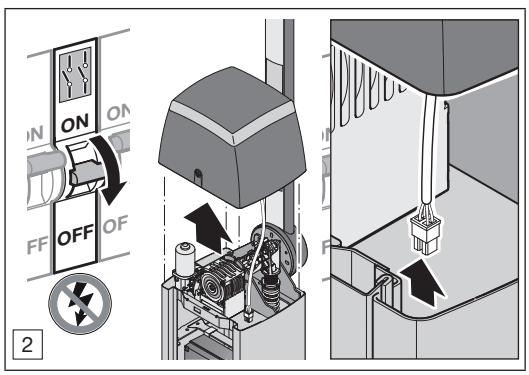
14.4 Spring replacement

The spring must be replaced under the following conditions:

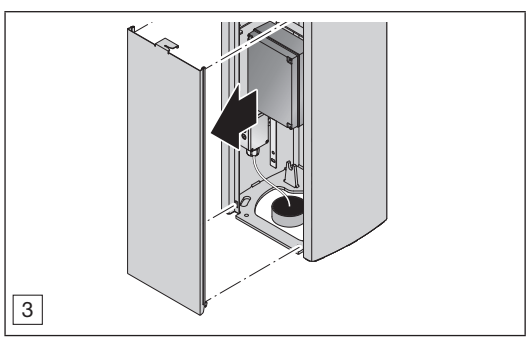
- In case of spring break.
- In case of other technical requirements.

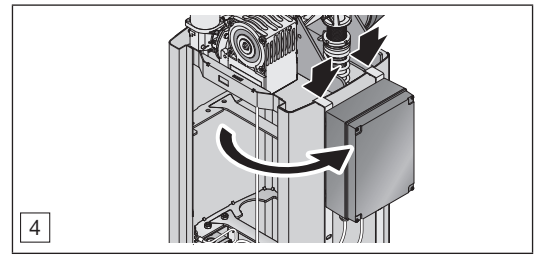
14.4.1 Prerequisites



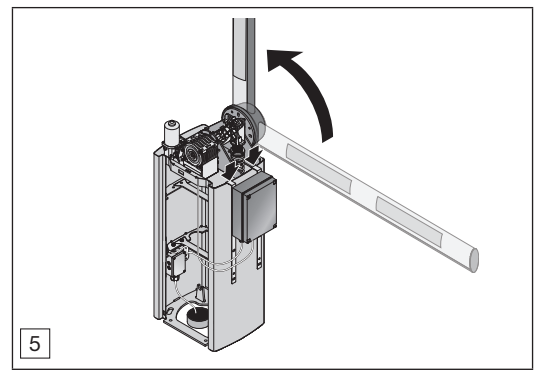


When the barrier cover is lifted and the door is opened, the service switch interrupts the hold circuit. Barrier boom travel is no longer possible.





▶ Actuate the maintenance release.
  ▶ See *Section 13.1.1*



14.4.2 Spring replacement

BS 60	Menu 4		Menu 5		Menu 6		
Barrier boom length L_a	2.0 m – < 2.5 m	2.5 m – 3.0 m	> 3.0 m – 3.5 m	> 3.5 m – 4.0 m	> 4.0 m – 4.5 m	> 4.5 m – 5.0 m	> 5.0 m – 6.0 m
Barrier width L_b	Up to 2.25 m	Up to 2.75 m	Up to 3.25 m	Up to 3.75 m	Up to 4.25 m	Up to 4.75 m	Up to 5.75 m
Spring variant	Ø 5.5 mm	Ø 7.0 mm	Ø 7.0 mm	Ø 7.0 mm	Ø 7.0 mm	Ø 8.5 mm	Ø 8.5 mm
Spring suspension position (internal / external) ▶ *See figure 6*	**I**	**I**	**I**	**O**	**O**	**I**	**O**

NOTE

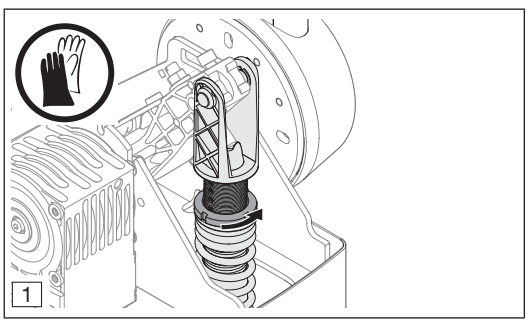
The spring variant and suspension position of the springs must be observed depending on the boom length.

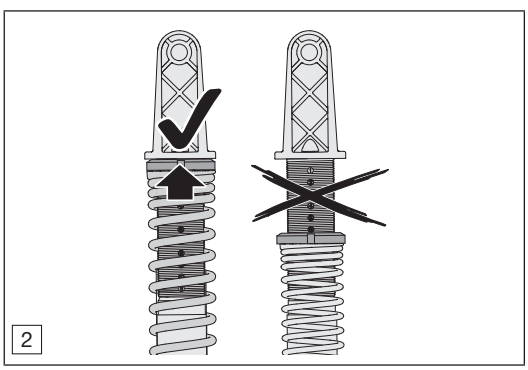
⚠ CAUTION

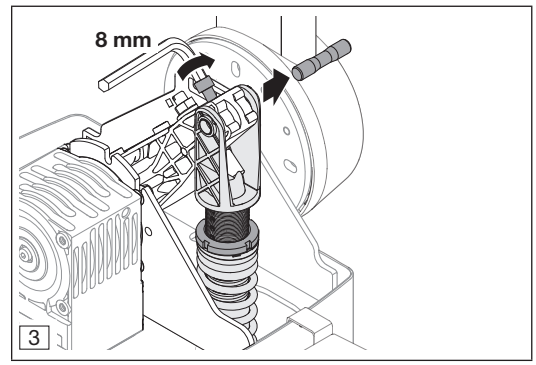
Hazard of trapping and crushing by the spring tension.

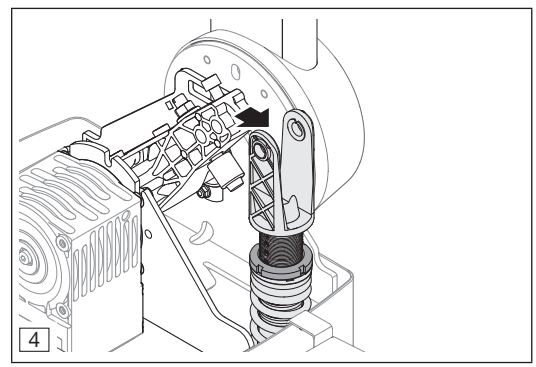
When replacing the spring, there is a hazard of trapping and crushing on the spring and in the barrier.

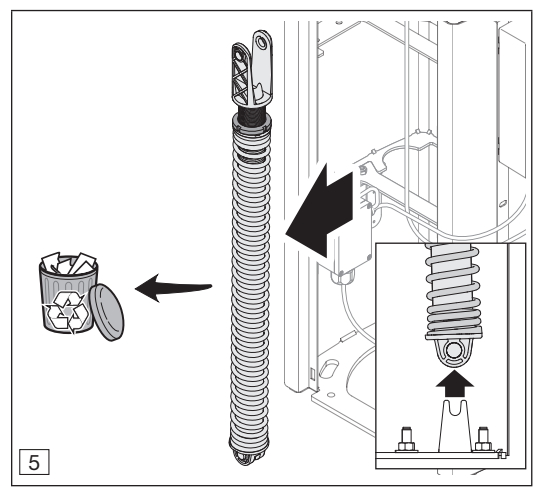
▶ Wear protective gloves when fitting the new spring.

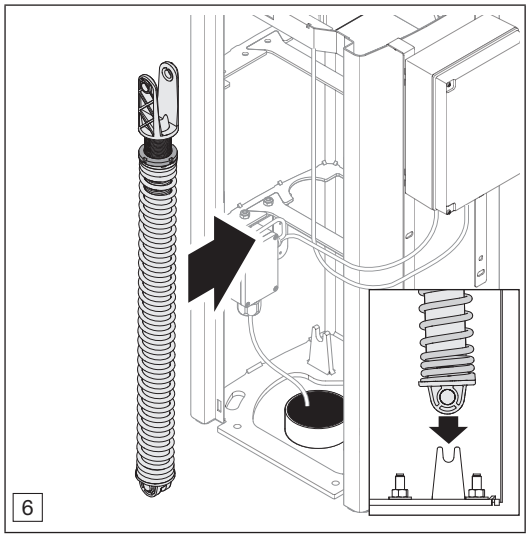


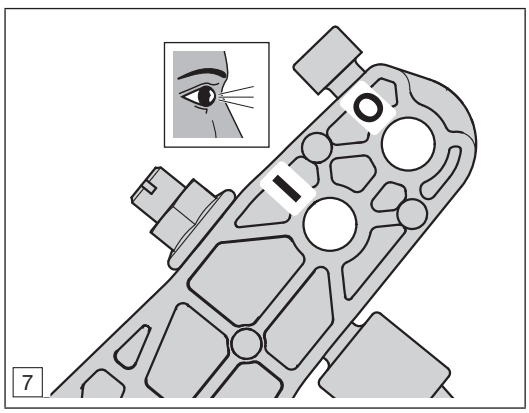


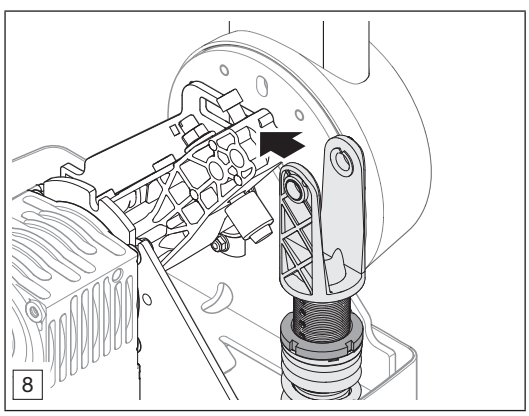


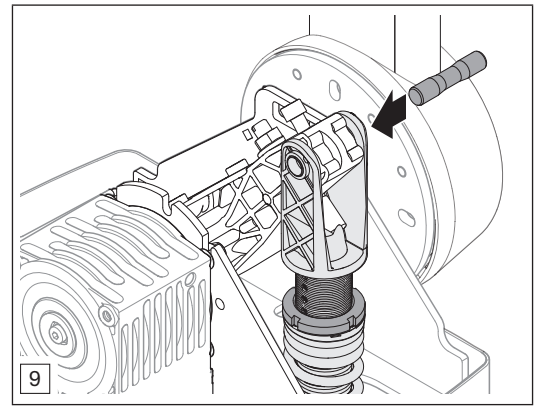


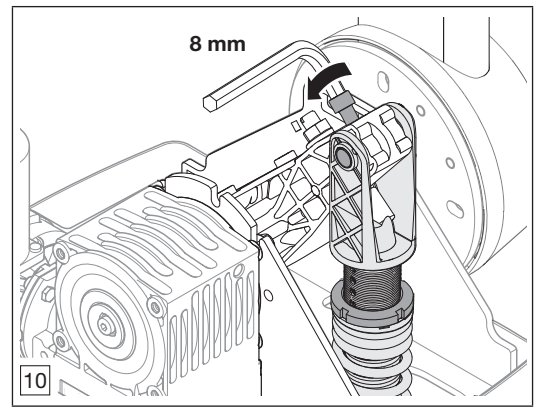












- Test on the boom pull lever, whether the friction protection and the spacer are present.
- Check the balance of the barrier boom.
  - See *Section 5.7*
- Check the barrier boom end-of-travel positions.
  - See *Section 5.8.1*
- If necessary, adjust the barrier boom end-of-travel positions.
  - See *Section 5.8.2*
- Reset the maintenance release.
  - See *Section 13.1.2*
- Perform a reference run.
  - See *Section 13.6*
- Conduct a function test.
- Start up the barrier.

15 Dismantling and disposal

Dismantling work must only be performed by qualified specialised personnel.

- ▶ See *Section 2.3.2*

⚠ DANGER

Deadly electric shock from mains voltage.

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

- ▶ Before all electrical work, switch the barrier off. Safeguard the barrier against being switched on again without authorisation.

NOTE:

Observe all the applicable regulations governing workplace safety when dismantling the door.

- ▶ Have a specialist dismantle the barrier in the reverse order of these instructions and dispose of it properly.

16 Technical data

Maximum barrier width		5750 mm
Opening time / closing phase		3 to 6 s
Max. cycles / day		1000
Max. cycles / hour		200
Maximum service life		Up to 2000000 cycles
Motor		24 V DC gearbox motor SW2L, 2-channel / 4-pin
Mains voltage		230 – 240 V~, 50 Hz
Radio		868 MHz
Power input*		150 W
Nominal torque		95 Nm
Maximum torque		190 Nm
Maximum idle speed		Approx. 5 rpm
Standby		< 1 W
Permissible ambient temperature		-20°C to +60°C
Maximum humidity		93%, non-condensing
Protection category		IP44 barrier IP65 control
Weight	Barrier housing Barrier boom	50 kg Approx. 1.4 kg/m
Dimensions	Barrier housing (W× H × D) Barrier boom (W × H)	320 × 1120 × 405 mm 50 × 100 mm

Variables that can have a negative effect on and reduce the maximum service life of the barrier system.	a) Unfavourable operating conditions and menu settings, e.g. • frequent interruptions to barrier boom movements, • increased power limit, • higher ON-time. b) External environmental effects, such as very sandy or salty environments. c) Overdue service and maintenance intervals.

* Depending on the barrier boom length and potential optional extras, the power input may be higher.

17 Displaying errors / warnings and operating modes

17.1 Display of errors and warnings

Display	Error/warning	Possible cause	Remedy
	Setting the partial opening position not possible	The partial opening position is too close to the CLOSE end-of-travel position.	The partial opening position must be larger.
	Protective device on SE1	No protective device is connected.	Connect a protective device or deactivate it in the menu.
		The protective device signal is interrupted.	Set / align the protective device.
			Check the connecting leads. Replace the connecting leads if necessary.
		The protective device is defective.	Replace the protective device.
	Protective device on SE2	No protective device is connected.	Connect a protective device or deactivate it in the menu.
		The protective device signal is interrupted.	Set / align the protective device.
			Check the connecting leads. Replace the connecting leads if necessary.
		The protective device is defective.	Replace the protective device.
	Protective device on SE3	No protective device is connected.	Connect a protective device or deactivate it in the menu.
		The protective device signal is interrupted.	Set / align the protective device.
			Check the connecting leads. Replace the connecting leads if necessary.
		The protective device is defective.	Replace the protective device.
	Power limit in the CLOSE direction	Barrier boom movement is difficult or uneven.	Decouple the barrier and check whether the barrier boom is balanced at 45°. Adjust the spring tension if necessary.
			Correct barrier boom travel.
		Obstacle in barrier area.	Remove the obstacle. Teach in the barrier again if necessary.
	Static current circuit interrupted	The normally closed contact on terminal 12 / 13 is open.	Close the contact.
		The static current circuit of the UAP is interrupted.	Check the static current circuit of the UAP.
	Power limit in the OPEN direction	Barrier boom movement is difficult or uneven.	Decouple the barrier and check whether the barrier boom is balanced at 45°. Adjust the spring tension if necessary.
		Obstacle in barrier area.	Remove the obstacle. Teach in the barrier again if necessary.
	System error	Internal error	Perform a factory reset. Teach in the barrier again. Replace the barrier if necessary.
	Travel time limit	The motor run time is too long.	Check the barrier mechanics.
		The barrier boom is in the CLOSE end-of-travel position, a reference run is not possible.	Actuate the maintenance release, move the barrier boom slightly in the direction of the OPEN end-of-travel position. Reset the maintenance release. Carry out a reference run.

Display	Error/warning	Possible cause	Remedy
	Communication error	Communication with additional print is faulty (e.g. UAP 1* or UAP 1-300*)	Check the connecting leads. Replace if necessary.
			Check the additional print. Replace the additional print if necessary.
	Control elements/operation	Error during input	Check and change the input.
		Input of invalid value	Check and change the input value.
		The travel distance taught in is not long enough.	Teach in the barrier. ▶ See *Section 7.4*
	Specifically for taught-in protective devices	Protective device with self-testing is interrupted.	Test the protective device. If necessary, replace the protective device.
	Undervoltage		In battery operation: signalling In the event of power supply undervoltage: Internal error without signalling
	Voltage error (Overvoltage / undervoltage)		Charge the battery. Check the voltage source.
	Barrier synchronous operation: No reference point, barrier position unknown	power failure	Barrier boom travel to the CLOSE end-of-travel position.
		Power limit tripped 3 × in a row.	
		Hold circuit interrupted at one of the connected universal adapter prints (UAP*).	
		Hold circuit interrupted at terminal 12/13.	
	Single barrier operation: No reference point, barrier position unknown	power failure	Barrier boom travel to the CLOSE end-of-travel position.
		Power limit tripped 3 × in a row.	
		Hold circuit interrupted at one of the connected universal adapter prints (UAP*).	
		Hold circuit interrupted at terminal 12/13.	
	Maintenance interval signal flashes during all barrier boom travel and in the end-of-travel positions.	No error The maintenance interval set by the fitter has been exceeded.	Have the barrier system inspected and maintained by a specialist in accordance with manufacturer specifications.
			Adjust or reset the maintenance interval.

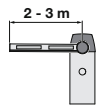
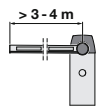
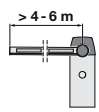
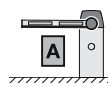
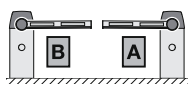
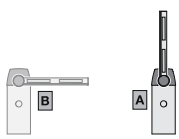
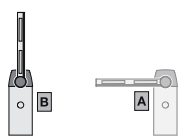
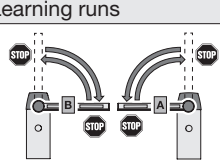
17.2 Operating condition display

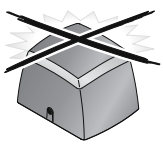
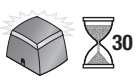
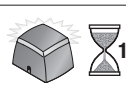
	Boot process		The barrier is not taught in. ▶ Teach in the barrier. ▶ See *Section 7.4*
	Barrier booms A and B are in the CLOSE end-of-travel position.		Barrier booms A and B are in the OPEN end-of-travel position.
	Barrier booms A and B move to the CLOSE end-of-travel position.		Barrier booms A and B move to the OPEN end-of-travel position or the automatic timer is active.

* Accessory, not included as standard equipment.

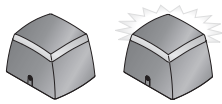
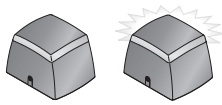
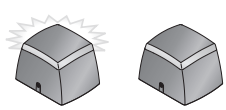
	Barrier booms A and B are in the CLOSE end-of-travel position. The pre-warning phase is active.		Barrier booms A and B are in the OPEN end-of-travel position. The pre-warning phase is active.
	Barrier boom A moves to the partial opening position.		Barrier boom A is in the partial opening position.
	Barrier booms A and B are in an intermediate position. The pre-warning phase is active.		Barrier boom A is in an intermediate position.
	Communication with the barrier is being established.		Learning run towards the CLOSE end-of-travel position.
	Standby (flashes slowly)		
	Barrier boom A is in the CLOSE end-of-travel position.		Barrier boom A is in the OPEN end-of-travel position.
	Barrier boom A moves towards the CLOSE end-of-travel position.		Barrier boom A moves to the OPEN end-of-travel position or the automatic timer is active.
	Barrier boom A is in the CLOSE end-of-travel position. The pre-warning phase is active.		Barrier boom A is in the OPEN end-of-travel position. The pre-warning phase is active.
	Barrier boom A is in an intermediate position.		Barrier boom A is in an intermediate position. The pre-warning phase is active.
	Communication with the barrier is being established.		Barrier boom A is in the partial opening position.
	Barrier boom A is in the partial opening position. The automatic timer is active.		Barrier boom A is in the partial opening position. The pre-warning phase is active.

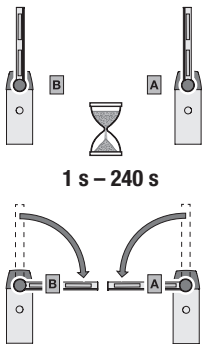
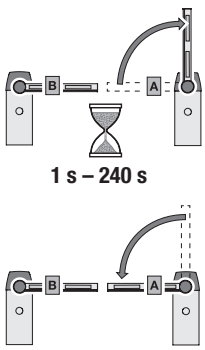
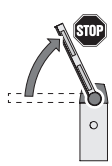
18 Menu and programming overview

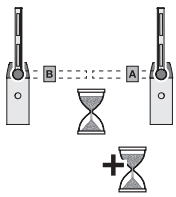
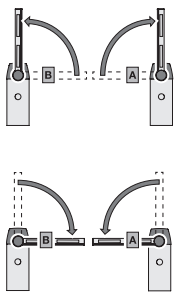
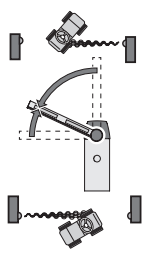
Symbol	Menu	Function / parameter	Note:
	00		Open / exit programming mode
Barrier			
Barrier BS 60	02		
Select barrier boom length			
	04	Barrier boom length 2 – 3 m	
	05	Barrier boom length > 3 – 4 m	
	06	Barrier boom length > 4 – 6 m	
Select barrier operation			
	08	Single barrier operation	
	08.	Barrier synchronous operation	
Select barrier with partial opening			
	09	Partial opening barrier A	
	09.	Partial opening barrier B	
Learning runs			
	10	Teaching in end-of-travel positions and forces again after service / maintenance or changes	

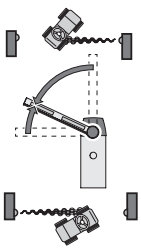
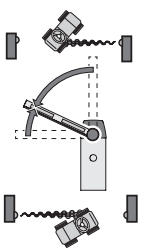
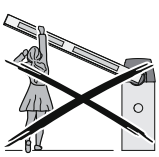
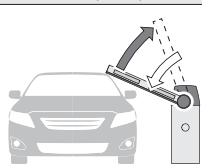
Symbol	Menu	Function / parameter	Note:
Teach-in hand transmitter*			
	11	not used	
	12	not used	
	13	not used	
	14	not used	
	15	not used	
Deleting all radio codes			
	19	not used	
Illumination, illumination period (internal relay)			
	20	Internal illumination deactivated	Menu **31**, parameter **07** is automatically activated.
	21	Internal illumination, illumination period 30 s	Menu **31**, parameter **00** is automatically activated.
	22	Internal illumination, illumination period 60 s	
	23	Internal illumination, illumination period 120 s	
	24	Internal illumination, illumination period 180 s	
Illumination / illumination period (external relay)			
	25	External illumination deactivated	
	26	External illumination, illumination period 5 min	
	27	External illumination, illumination period 10 min	
	28	External illumination, illumination period, HOR 1* function or UAP 1** relay 3 ON / OFF	

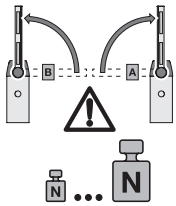
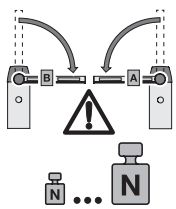
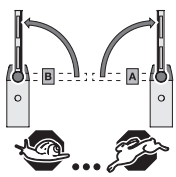
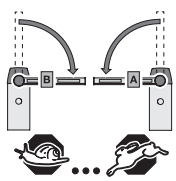
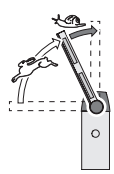
* Accessory, not included as standard equipment.
** Accessory, not included as standard equipment.

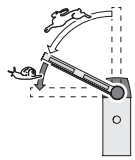
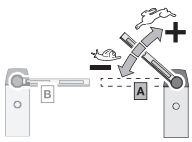
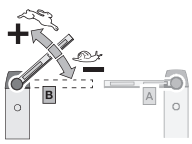
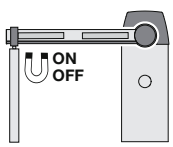
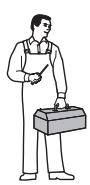
Symbol	Menu	Function / parameter			Note:
Additional functions (external relay)					(HOR 1* or UAP 1* relay 3)
	30	Parameters	00	External illumination function	Menu **26** is automatically activated.
			01	OPEN end-of-travel position message	Menu **25** is automatically activated.
			02	CLOSE end-of-travel position message	
			03	Partial opening position message	
			04	Momentary signal at the time of OPEN or partial opening travel command	
			05	Error message on the display (malfunction)	
			06	Start warning / advance warning [1] permanent signal	
			07	Start warning / advance warning [1] flashing	
			08	Relay energises during travel and de-energises in the end-of-travel positions	
			09	Maintenance interval signal (display **In**)	
			10	Start warning / advance warning [1] flashing, only in CLOSE barrier direction	
		1) Advance warning only if activated in menu 32.			
Additional functions (internal relay)					
	31	Parameters	00	Internal illumination	Menu **22** is automatically activated.
			01	OPEN limit switch reporting	Menu **20** is automatically activated.
			02	CLOSE limit switch reporting	
			03	Partial opening position message	
			04	Momentary signal at the time of OPEN or partial opening travel command	
			05	Error message on the display (malfunction)	
			06	Start warning / advance warning [1] permanent signal	
			07	Start warning / advance warning [1] flashing	
			08	Relay energises during travel	
			09	Maintenance interval signal (display **In**)	
			10	Start warning / advance warning [1] flashing, only in CLOSE direction	
		1) Advance warning only if activated in menu 32.			
Pre-warning time					
 **1-60 s**	32	Parameters	00	Advance warning deactivated	
			01	Advance warning 1 s	
			02	Advance warning 2 s	
			03	Advance warning 3 s	
			04	Advance warning 4 s	
			05	Advance warning 5 s	
			06	Advance warning 10 s	
			07	Advance warning 15 s	
			08	Advance warning 20 s	
			09	Advance warning 30 s	
			10	Advance warning 60 s	

Symbol	Menu	Function / parameter			Note:
Automatic timer / hold-open phase					**Photocell required**
	34	Parameters	**00**	Hold-open phase deactivated	
			01	Hold-open phase 1 s	Menu **32**, parameter **02** is automatically activated.
			02	Hold-open phase 5 s	
			03	Hold-open phase 10 s	
			04	Hold-open phase 15 s	
			05	Hold-open phase 30 s	
			06	Hold-open phase 60 s	
			07	Hold-open phase 90 s	
			08	Hold-open phase 120 s	
			09	Hold-open phase 180 s	
			10	Hold-open phase 240 s	
Automatic timer / partial opening					**Photocell required**
	35	Parameters	**00**	Hold-open phase deactivated	
			01	Hold-open phase 1 s	Menu **32**, parameter **02** is automatically activated.
			02	Hold-open phase 5 s	
			03	Hold-open phase 10 s	
			04	Hold-open phase 15 s	
			05	Hold-open phase 30 s	
			06	Hold-open phase 60 s	
			07	Hold-open phase 90 s	
			08	Hold-open phase 120 s	
			09	Hold-open phase 180 s	
			10	Hold-open phase 240 s	
Change partial opening position					
	36				

Symbol	Menu	Function / parameter			Note:
Impulse behaviour – automatic timer / hold-open phase					
	39	Parameters	00	The impulse extends the hold-open phase (with all control elements except CLOSE)	
			01	The impulse interrupts the hold-open phase (with all control elements except OPEN)	
Operating mode					
	40	Parameters	00	Press-and-hold	
			01	Impulse sequence (normal operation)	
			02	Impulse sequence only in the end-of-travel position	
Protective device SE 1					
	41	Parameters	00	Protective device deactivated	
			01	2-wire photocell, dynamic	
			02	3-wire photocell, static with testing	
			03	3-wire photocell, static without testing	No automatic detection
			04	Resistance contact strip 8k2	
			05	Fire brigade switch / fire alarm system OPEN barrier	No automatic detection
			06	Fire brigade switch / fire alarm system CLOSE barrier	No automatic detection
	42	Parameters	00	CLOSE barrier effective direction, short reversing	
			01	CLOSE barrier effective direction, long reversing until the end-of-travel position	
			02	CLOSE barrier effective direction, relieve	

Symbol	Menu	Function / parameter			Note:
Protective device SE 2					
	43	Parameters	00	Protective device deactivated	
			01	2-wire photocell, dynamic	
			02	3-wire photocell, static with testing	
			03	3-wire photocell, static without testing	No automatic detection
			04	Resistance contact strip 8k2	
			05	Fire brigade switch / fire alarm system OPEN barrier	No automatic detection
			06	Fire brigade switch / fire alarm system CLOSE barrier	No automatic detection
	44	Parameters	00	CLOSE barrier effective direction, short reversing	
			01	CLOSE barrier effective direction, long reversing until the end-of-travel position	
			02	CLOSE barrier effective direction, relieve	
Protective device SE 3					
	45	Parameters	00	Protective device deactivated	
			01	2-wire photocell, dynamic	
			02	3-wire photocell, static with testing	
			03	3-wire photocell, static without testing	No automatic detection
			04	Induction loop detector ISD (Only closing loop SLS)	No automatic detection
	46	Parameters	00	CLOSE barrier effective direction, short reversing	
			01	CLOSE barrier effective direction, long reversing until the end-of-travel position	
			02	CLOSE barrier effective direction, relieve	
			07	Through-traffic photocell, CLOSE barrier effective direction, relieve	
Behaviour upon power limit activation, OPEN					
	48	Parameters	00	OPEN barrier effective direction, short reversing	
			01	OPEN barrier effective direction, long reversing	
			02	OPEN barrier effective direction, relieve	
Behaviour upon power limit activation, CLOSE					
	49	Parameters	00	CLOSE barrier effective direction, short reversing	
			01	CLOSE barrier effective direction, long reversing	
			02	CLOSE barrier effective direction, relieve	

Symbol	Menu	Function / parameter			Note:
Power limit, OPEN					
	S0	Parameters	00	More sensitive (reduction in force)	
			01	More sensitive (reduction in force)	
			02	More sensitive (reduction in force)	
			03	More sensitive (reduction in force)	
			04	Force after learning run	
			05	Less sensitive (increase in force)	
			06	Less sensitive (increase in force)	
			07	Less sensitive (increase in force)	
			08	Less sensitive (increase in force)	
			09	Less sensitive (increase in force)	
			10	Less sensitive (increase in force)	
Power limit, CLOSE					
	S1	Parameters	00	More sensitive (reduction in force)	
			01	More sensitive (reduction in force)	
			02	More sensitive (reduction in force)	
			03	More sensitive (reduction in force)	
			04	Force after learning run	
			05	Less sensitive (increase in force)	
			06	Less sensitive (increase in force)	
			07	Less sensitive (increase in force)	
			08	Less sensitive (increase in force)	
			09	Less sensitive (increase in force)	
			10	Less sensitive (increase in force)	
OPENING speed					
	S2	Parameters	00	Very fast	
			01	Fast	
			02	Medium	
			03	Slow	
CLOSING speed					
	S3	Parameters	00	Very fast	
			01	Fast	
			02	Medium	
			03	Slow	
OPEN slow travel speed					
	S4	Parameters	00	Maximum	
			01	Medium	
			02	Slow	

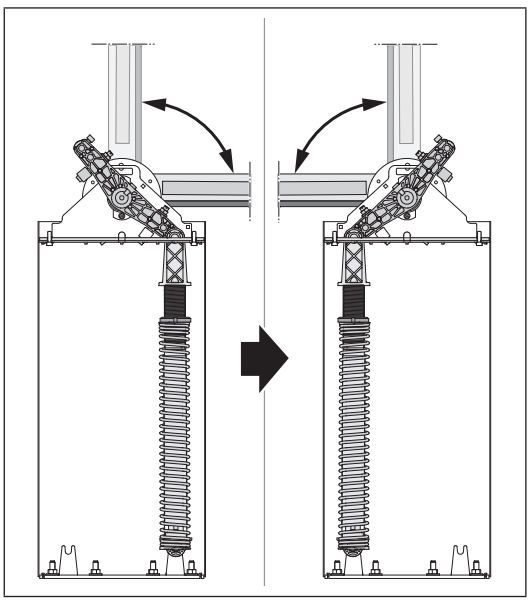
Symbol	Menu	Function / parameter			Note:
CLOSE slow travel speed					
	55	Parameters	**00**	Maximum	
			01	Medium	
			02	Slow	
Changing the starting points for slow travel – barrier boom A					
	56				▶ See *Section 9.1.20*
Changing the starting points for slow travel – barrier boom B					
	57				▶ See *Section 9.1.20*
Magnet					
	65	Parameters	**00**	Magnet deactivated	
			01	Magnet activated	
Service/diagnosis					
	88	Display	**02**	Barrier SH 100	for 1 second each
			04	Barrier boom length 2 – 3 m or	
			05	Barrier boom length > 3 – 4 m or	
			06	Barrier boom length > 4 – 6 m	
			08	Single barrier operation or	
			08.	Barrier synchronous operation	
			09	Partial opening barrier A or	
			09.	Partial opening barrier B	
	89	Parameters	**00**	Maintenance display deactivated	
			01	10000 cycles	
			02	20000 cycles	
			03	40000 cycles	
			04	60000 cycles	
			05	80000 cycles	
			06	100000 cycles	
			07	150000 cycles	
			08	180 days	
			09	360 days	

Symbol	Menu	Function / parameter	Note:
	90	Delete / reset counter for maintenance display	
	91	Readout of the last 10 error messages	
	92	Reset / delete operating forces	
	93	Move into the position of the last power limit error	
	94	Reset/delete error memory	
	95	Read out all barrier cycles	
	96	Read out total number of operating hours	
	97	Reset / delete slow travel setting	
	99	Performing a factory reset	

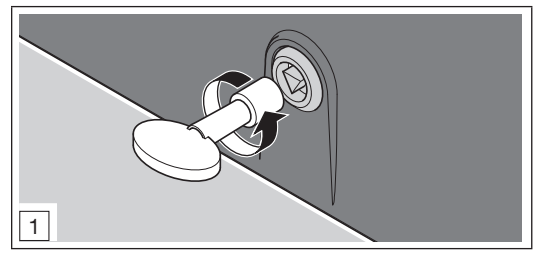
19 Additional information for initial start-up and operation

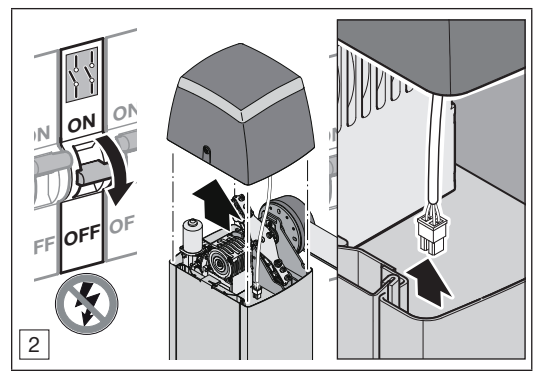
19.1 Converting the barrier to left-hand operation

If the situation requires, the barrier has to be converted to left-hand operation.

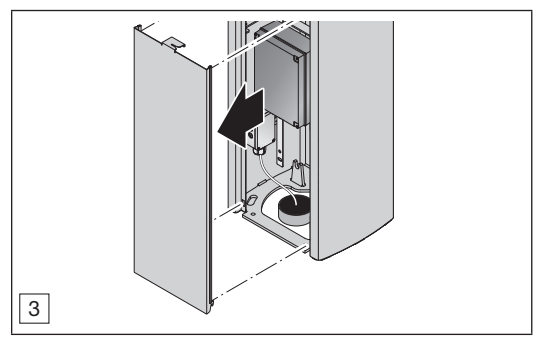


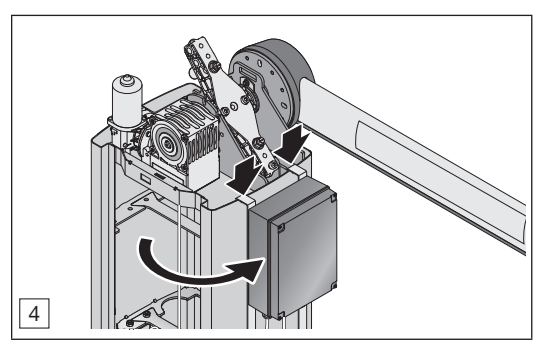
19.1.1 Prerequisites



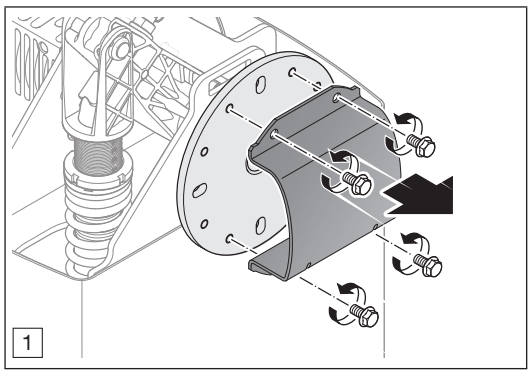


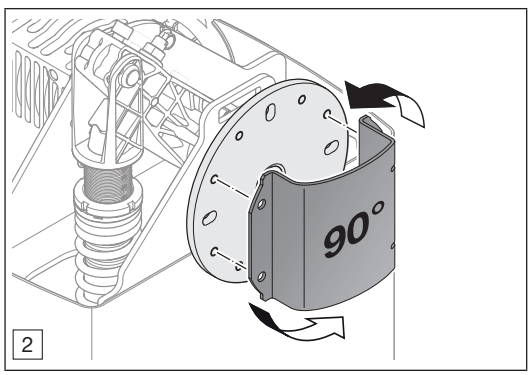
When the barrier cover is lifted and the door is opened, the service switch interrupts the hold circuit. Barrier boom travel is no longer possible.

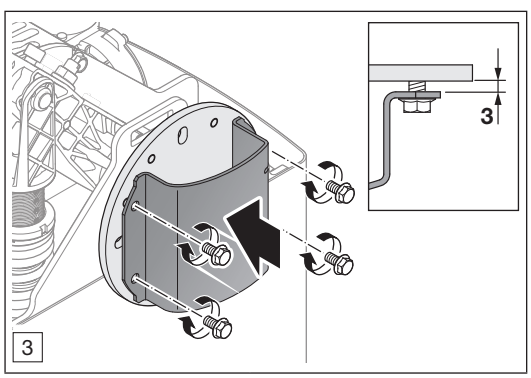




19.1.2 Change position of the barrier boom holder







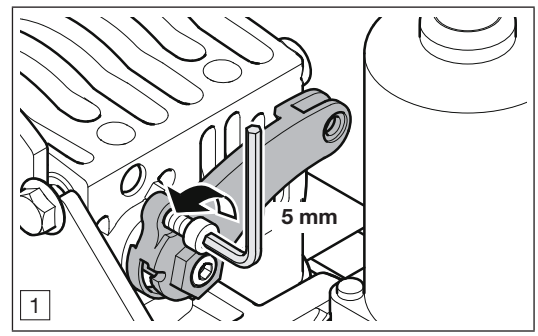
19.1.3 Actuating the maintenance release

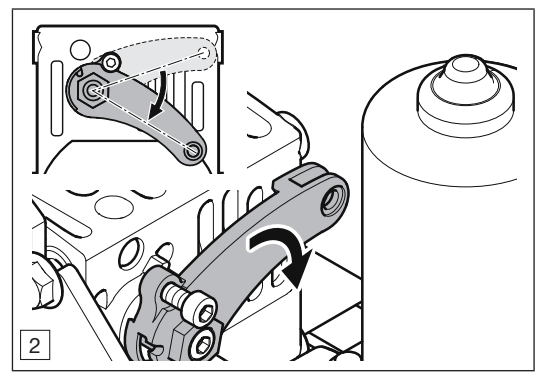
⚠ CAUTION

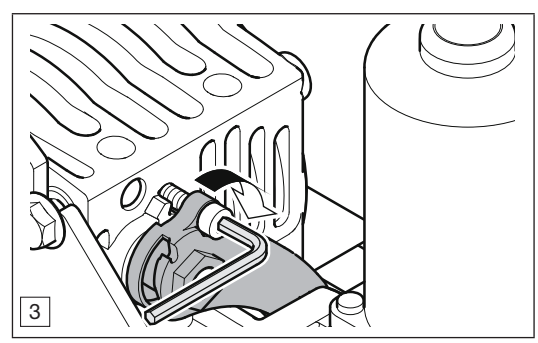
Danger of injury when actuating the maintenance release.

If the barrier is closed, there is a risk of a fast movement towards the OPEN end-of-travel position at the barrier boom holder when actuating the maintenance release.

- ▶ Make sure that no one is in the barrier boom holder's area of travel.







19.1.4 Spring replacement

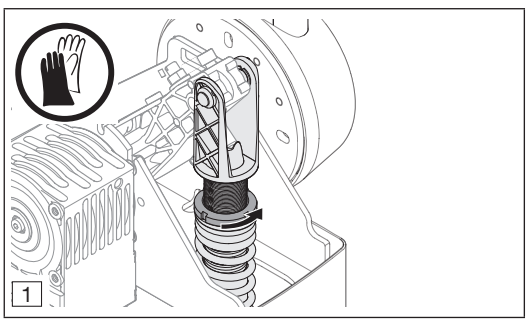
BS 60	Menu 4		Menu 5		Menu 6		
Barrier boom length L_a	2.0 m – < 2.5 m	2.5 m – 3.0 m	> 3.0 m – 3.5 m	> 3.5 m – 4.0 m	> 4.0 m – 4.5 m	> 4.5 m – 5.0 m	> 5.0 m – 6.0 m
Barrier width L_b	Up to 2.25 m	Up to 2.75 m	Up to 3.25 m	Up to 3.75 m	Up to 4.25 m	Up to 4.75 m	Up to 5.75 m
Spring variant	Ø 5.5 mm	Ø 7.0 mm	Ø 7.0 mm	Ø 7.0 mm	Ø 7.0 mm	Ø 8.5 mm	Ø 8.5 mm
Spring suspension position (internal / external) ▶ *See figure 6*	**I**	**I**	**I**	**O**	**O**	**I**	**O**

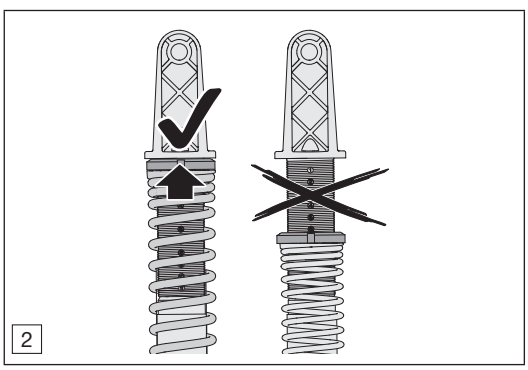
⚠ CAUTION

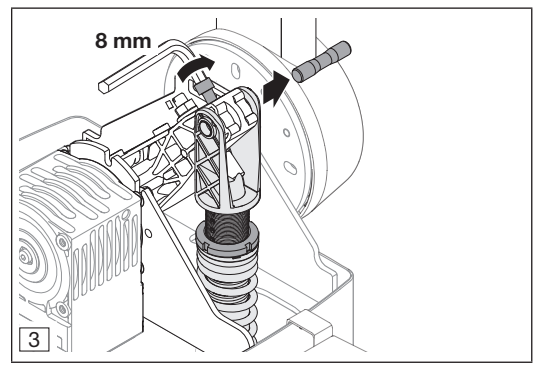
Hazard of trapping and crushing by the spring tension.

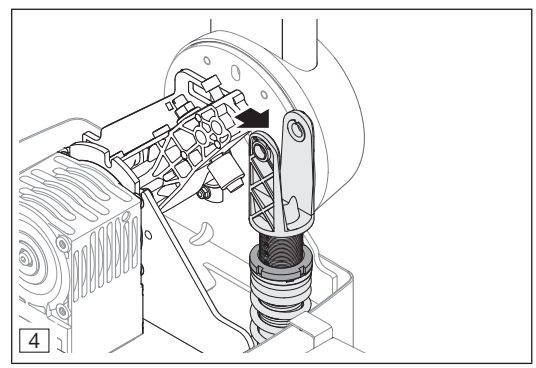
When replacing the spring, there is a hazard of trapping and crushing on the spring and in the barrier.

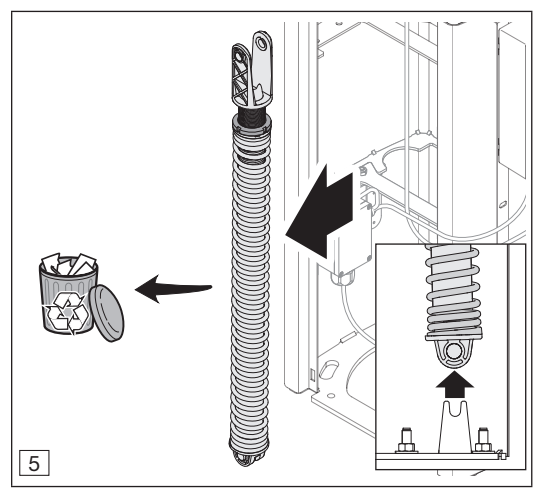
▶ Wear protective gloves when fitting the new spring.

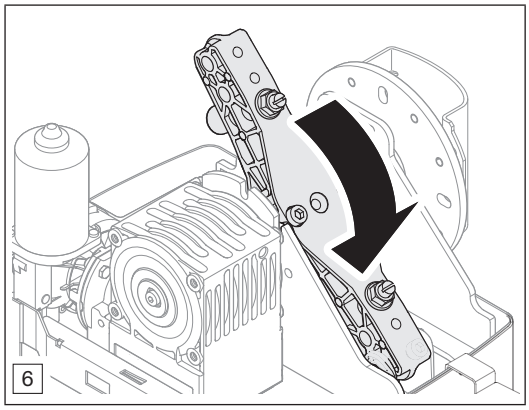


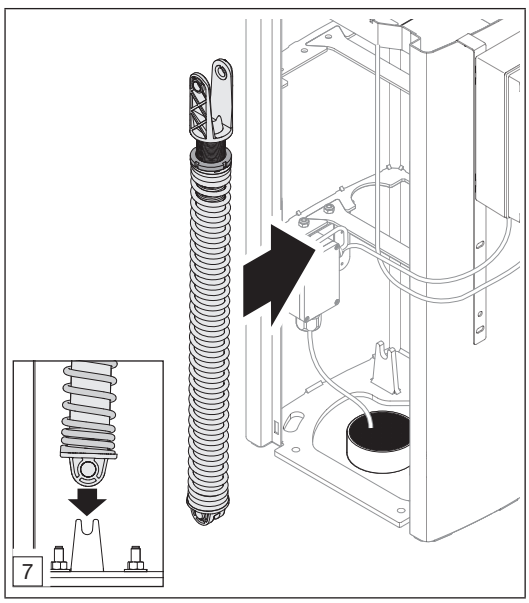


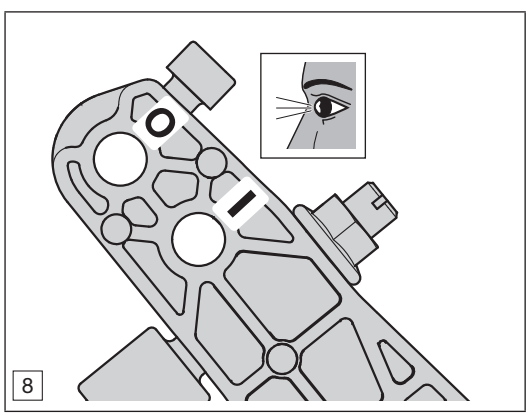


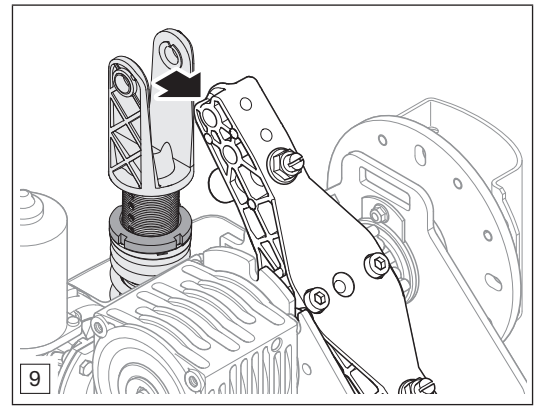


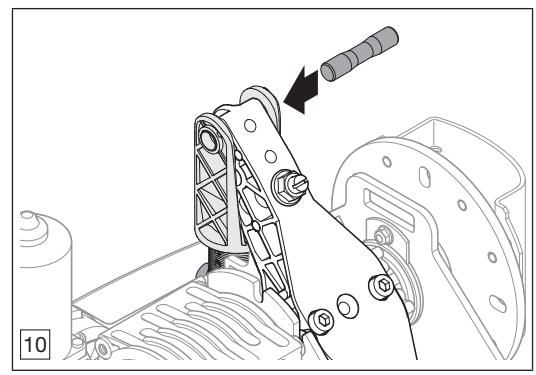


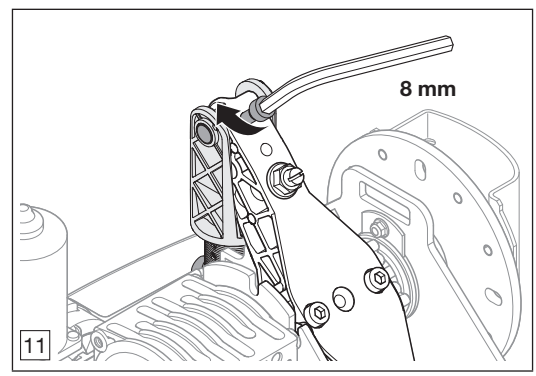






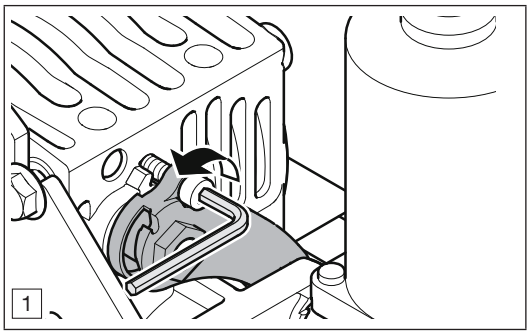


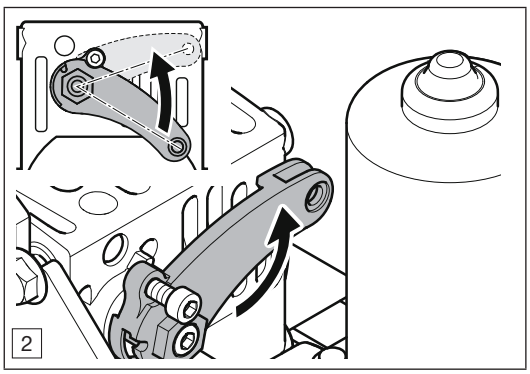


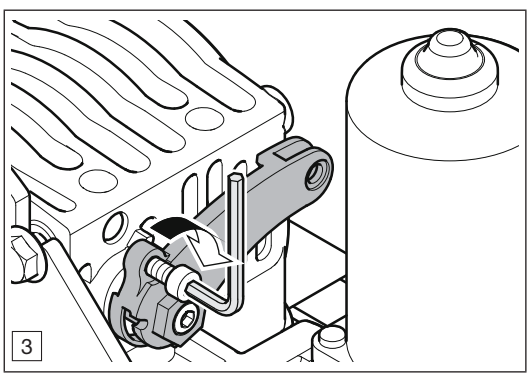


- ▶ Test on the boom pull lever, whether the friction protection and the spacer are present.
- ▶ Adjust the spring pre-load.
  - ▶ See *Section 14.3*
- ▶ Reset the maintenance release.
  - ▶ See *Section 13.1.2*
- ▶ Perform a reference run.
  - ▶ See *Section 13.6*
- ▶ Conduct a function test.
- ▶ Start up the barrier.

19.1.5 Resetting the maintenance release







BS 60

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