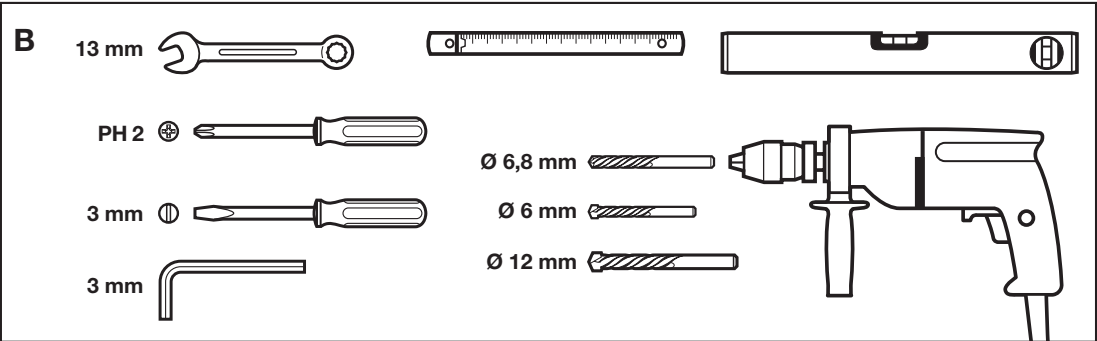
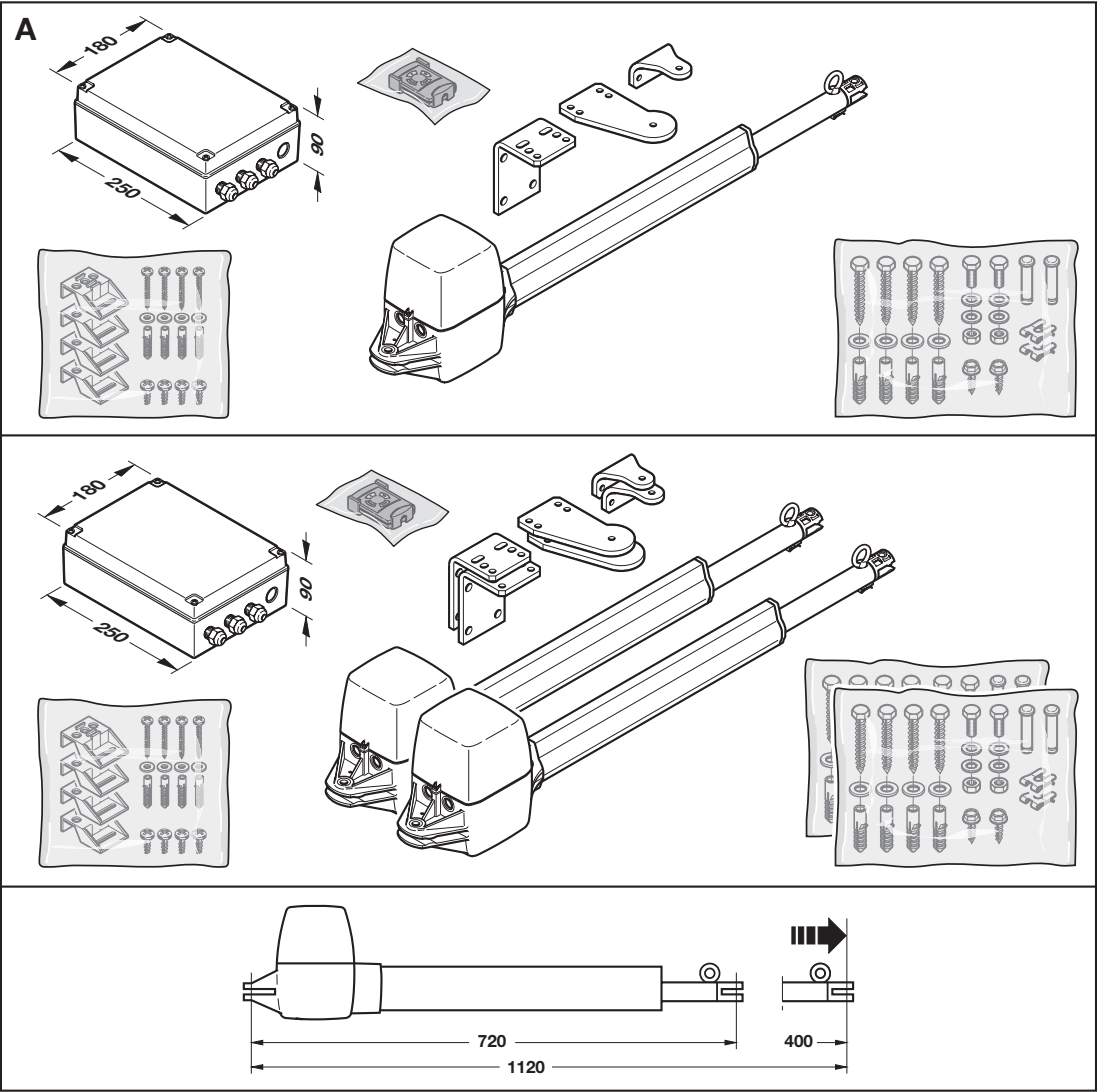



- (D) Anleitung für Montage, Betrieb und Wartung**  
Drehmotorantrieb
- (GB) Installation, Operating and Maintenance Instructions**  
Hinged Gate Operator
- (F) Instructions pour le montage, l'utilisation et l'entretien**  
Motorisation pour portail d'entrée pivotant
- (NL) Handleiding voor montage, bediening en onderhoud**  
Draaihekaandrijving
- (I) Istruzioni per il montaggio, l'uso e la manutenzione**  
Motorizzazione per cancelli girevoli
- (E) Instrucciones de montaje, funcionamiento y mantenimiento**  
Automatismo para puerta batiente
- (P) Instruções de montagem, funcionamento e manutenção**  
Automatismo para portões de abertura lateral

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## Dear Customer,

Thank you for choosing this quality product from our company. Keep these instructions in a safe place for later reference!

Please carefully read and follow these instructions. They provide you with important information on the safe installation, operation and correct care/maintenance of your hinged gate operator, thus ensuring that this product will give you satisfaction for many years to come.

Please observe all our safety notes and warnings, specifically headed **CAUTION** or **Note**.



### CAUTION

Installation, maintenance, repair and dismantling of the hinged gate operator may only be carried out by specialists.

### Note

The inspection log book and instructions for safe handling and maintenance of the gate system must be placed at the disposal of the end user.

## 1 IMPORTANT INFORMATION ON SAFETY



### CAUTION

Incorrect installation or handling of the operator could result in serious injury. For this reason, it is important to follow all the instructions in this manual!

### 1.1 Important safety instructions

The hinged gate operator is designed and intended **exclusively** for the operation of smooth-running hinged gates in the **domestic/non-commercial sector**. The maximum permissible gate length and maximum weight must not be exceeded. **It is not permitted to use the operator on larger or heavier gates or in the commercial sector!**

Please observe the manufacturer's specifications regarding the gate and operator combination. Possible hazards as defined in EN 12604, EN 12445 and EN 12453 are prevented by the design itself and by carrying out installation in accordance with our guidelines. Gate systems used by the general public and equipped with a single protective device, e.g. force limit, may only be used when monitored.

### 1.1.1 Warranty

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

### Note

Should the hinged gate operator fail, a specialist must be immediately entrusted with its inspection/repair.

### 1.1.2 Checking the gate/gate system

The design of the operator is not suitable nor intended for the opening and closing of heavy gates, i.e. gates that can no longer be opened or closed manually.

**Before installing the operator, it is therefore necessary to check the gate and make sure that it can also be easily moved by hand.**

In addition, check the entire gate system (gate pivots, bearings and fastenings) for wear and possible damage. Check for signs of rust, corrosion or fractures. The gate system may not be used if repair or adjustment work needs to be carried out. Always remember that a fault in the gate system or a misaligned gate can also cause severe injury.

### Note

Before installing the operator and in the interests of personal safety, make sure that any necessary repairs to the gate are carried out by a qualified service engineer.

### 1.2 Important instructions for safe installation

Any further processing must ensure that the national regulations governing the operation of electrical equipment are complied with

**1.2.1 Prior to installation**, any mechanical locks not needed for power operation of the hinged gate, should be deactivated. This includes in particular any locking mechanisms connected with the gate lock.

**1.2.2 When carrying out the installation work** the applicable regulations regarding working safety must be complied with.


### Note

Always cover the operator before drilling, since drilling dust and shavings can lead to malfunctions.

### 1.2.3 After installation


The installer of the gate system must declare conformity DIN EN 13241-1 in accordance with the scope of application.

### 1.3 Warnings




**Make sure that**


- permanently installed controls (such as push buttons or similar devices) are installed within sight of the gate but well away from any moving parts and at a height of at least 1.5 metres. It is vital that they are installed out of the reach of children!



- neither persons nor objects are located within the gate's range of travel.



- children do not play around with the gate system!



- the provided warning signs are attached at an easily visible place on the gate (see Figure 2).

### 1.4 Maintenance advice

The hinged gate operator is maintenance-free. For your own safety, however, we recommend having the gate system checked **by a specialist in accordance with the manufacturer's specifications**.

#### Note

The function of all the safety and protective devices must be checked **once a month** and, if necessary, any faults or defects rectified immediately.

Inspection and maintenance work may only be carried out by a specialist. In this connection, please contact your supplier. A visual inspection may be carried out by the owner.

If repairs become necessary, please contact your supplier. We would like to point out that any repairs not carried out properly or with due professionalism shall render the warranty null and void.

### 1.5 Information on the illustrated section

The illustrated section shows operator installation on a single-leaf and double-leaf hinged gate. Some of the figures also include the symbol shown below together with a text reference. These references to specific texts in the ensuing text section provide you with important information regarding installation and operation of the hinged gate operator.

#### Example:



= see text section, Chapter 2.2

In addition, in both the text section and the illustrated section at the points where the DIL switches to set the controls are explained, the following symbol is shown.



= This symbol indicates the **factory setting(s) of the DIL switches**.

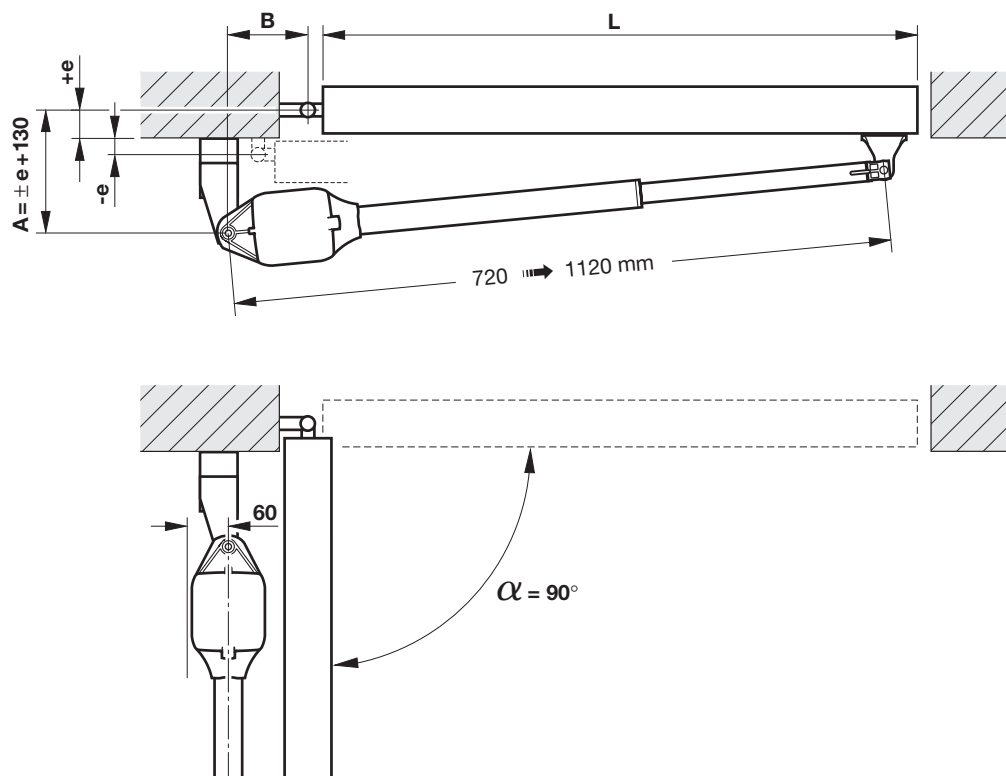
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1



3.1.2

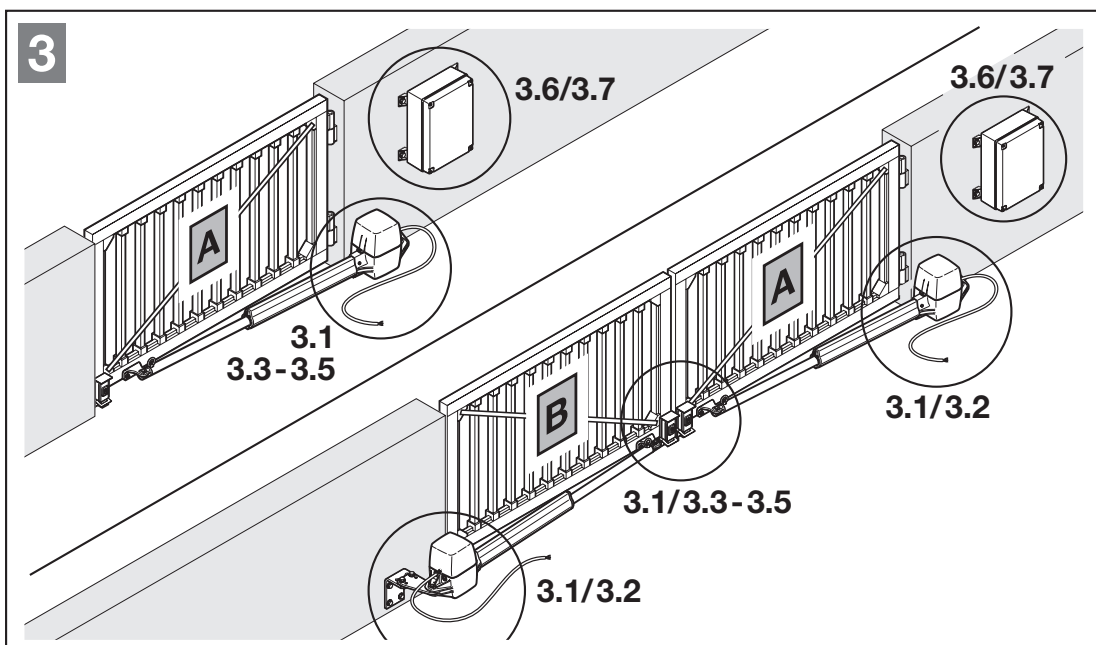
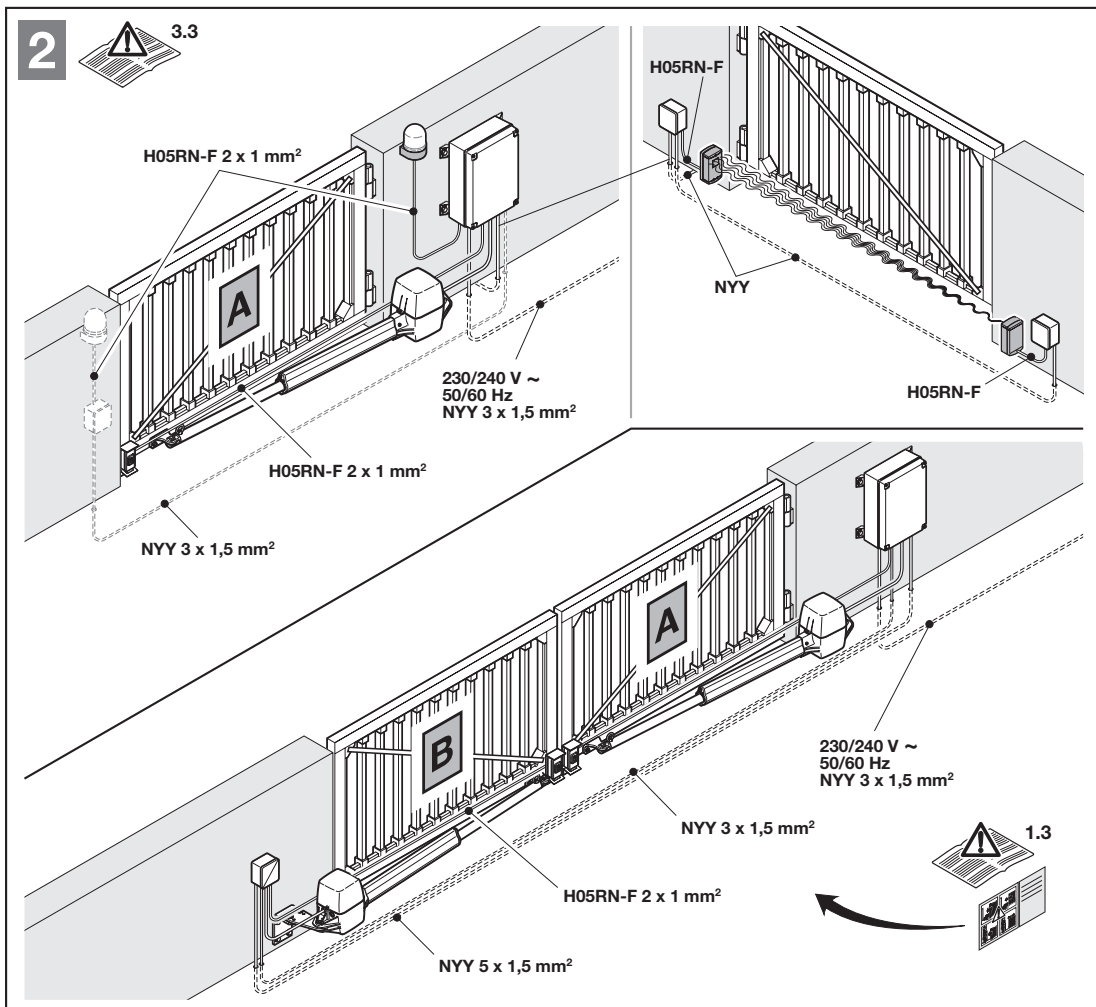


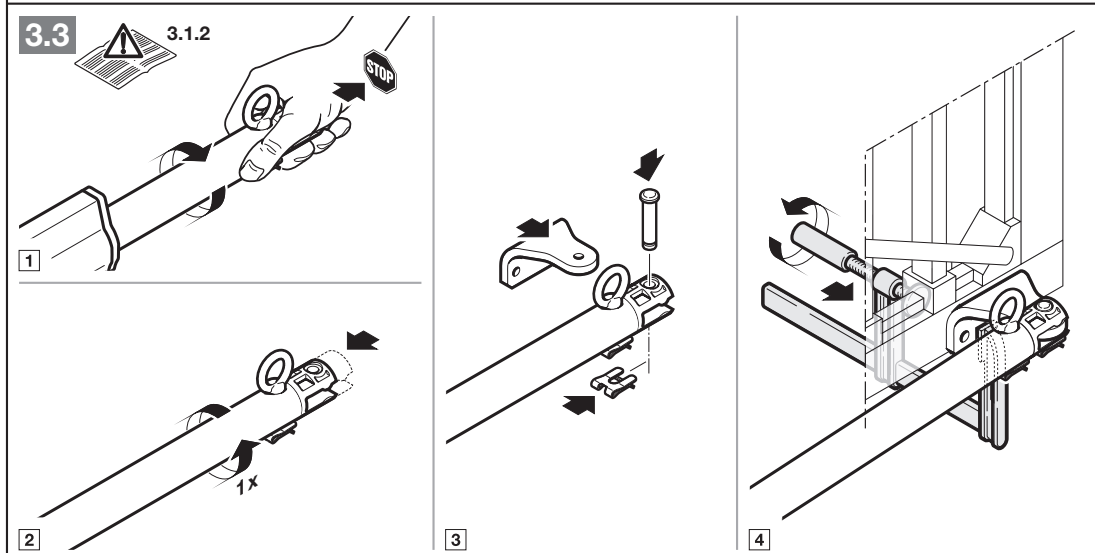
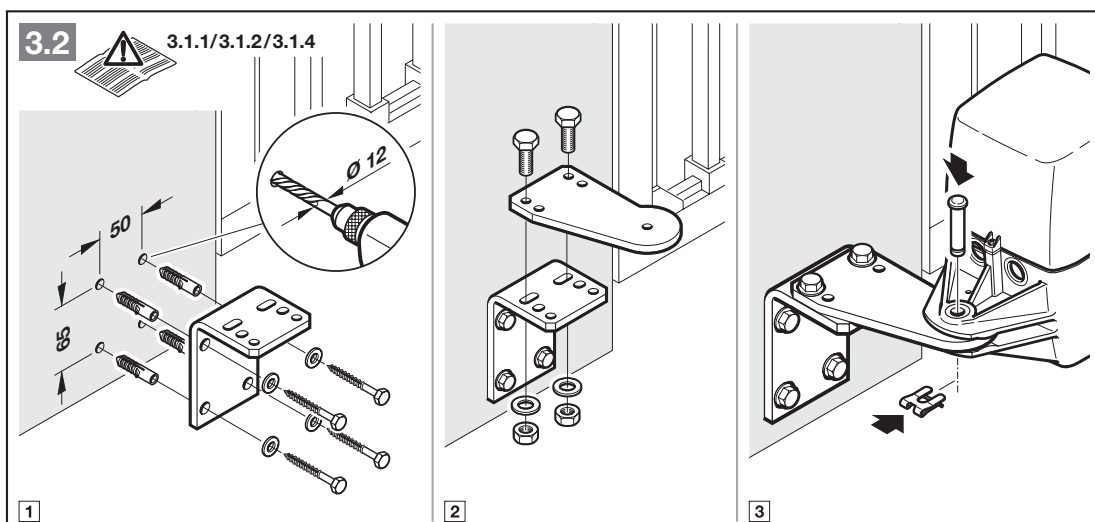
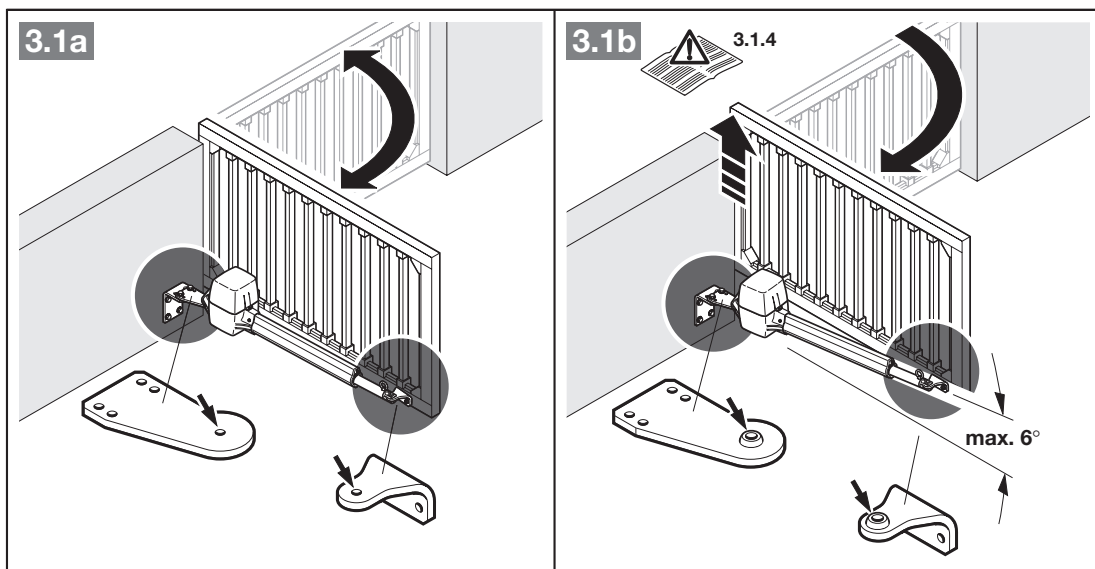
L = max. 2500 mm, e = -30 → +150 mm



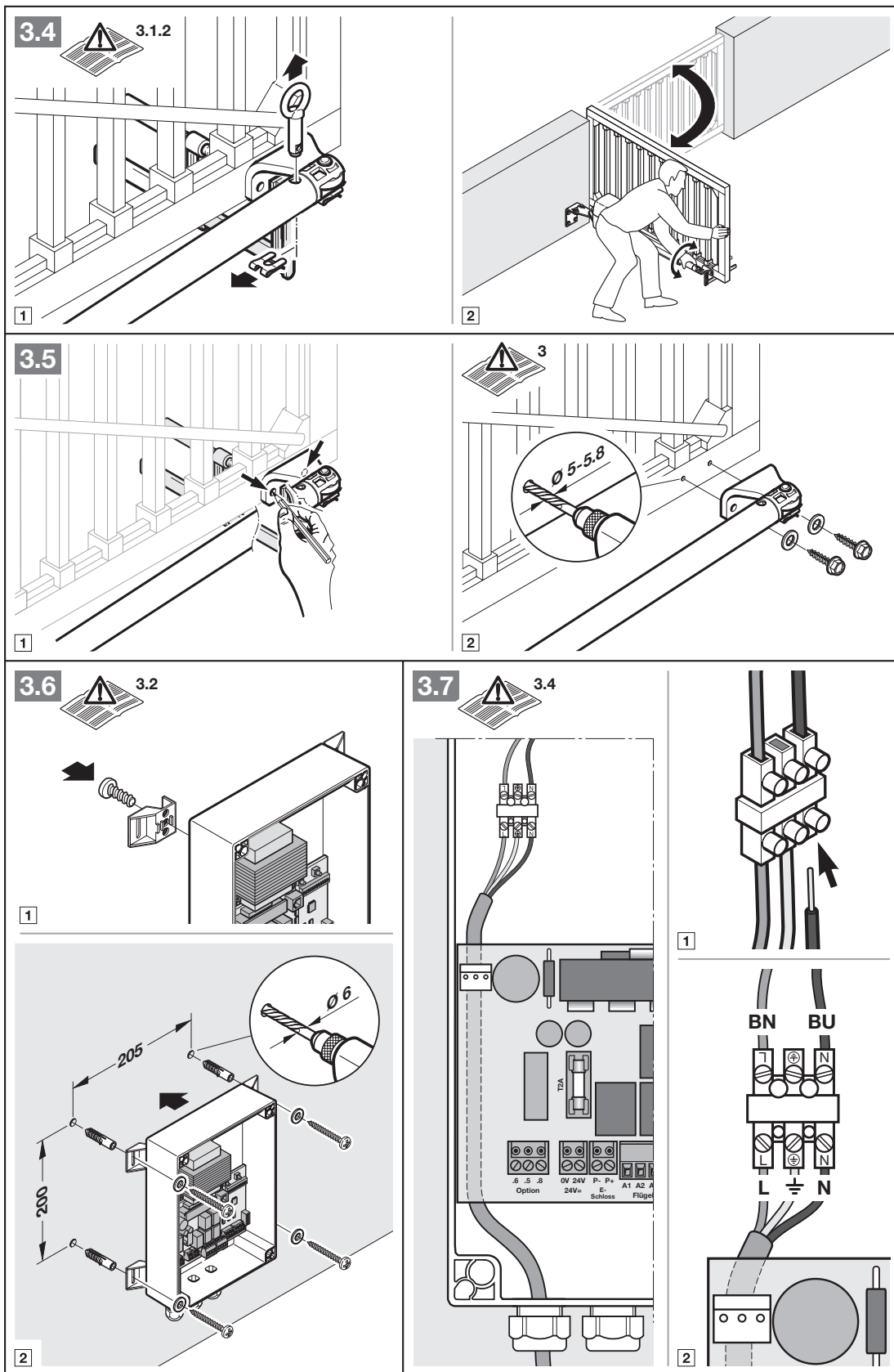
3.1.3

A [mm]	e [mm]	B [mm]								
		100	110	120	130	140	150	160	170	180
100	-30	95°	100°	105°	110°	115°	118°	120°	122°	125°
120	-10	95°	100°	105°	108°	112°	115°	117°	120°	122°
140	10	95°	100°	103°	105°	108°	112°	115°	118°	120°
160	30	95°	98°	100°	102°	105°	108°	112°	115°	110°
180	50	93°	96°	98°	100°	103°	105°	108°	103°	98°
200	70	93°	96°	98°	100°	103°	105°	100°	95°	92°
220	90	93°	95°	97°	99°	102°	97°	93°	90°	–
240	110	93°	95°	97°	99°	94°	90°	–	–	–
260	130	92°	94°	90°	–	–	–	–	–	–
280	150	90°	–	–	–	–	–	–	–	–

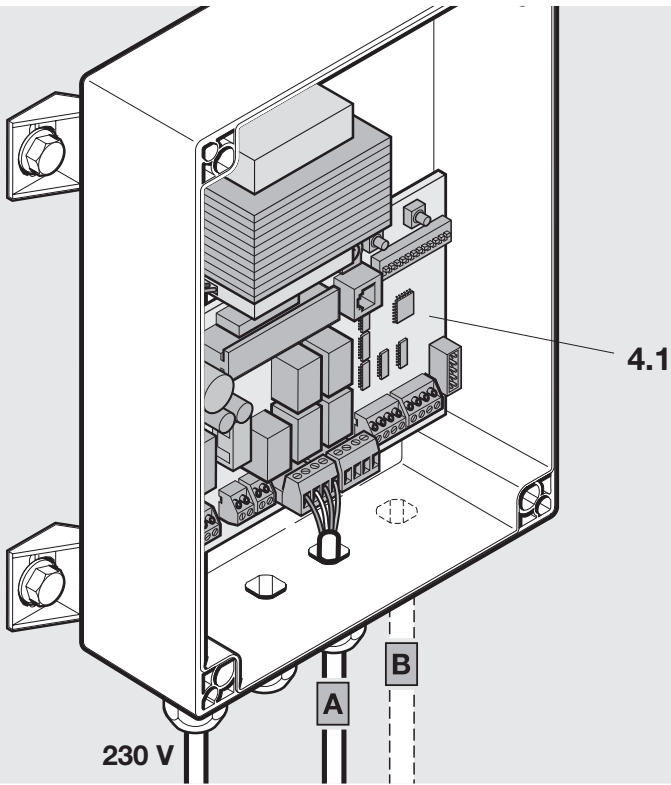




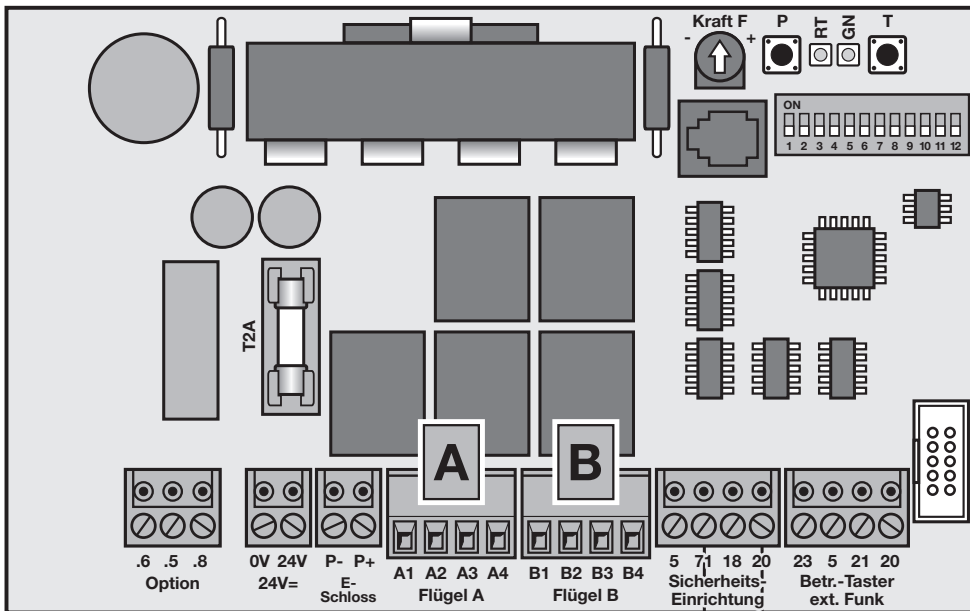




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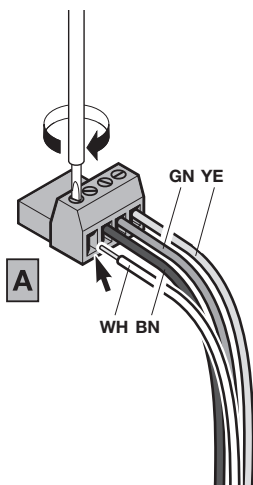
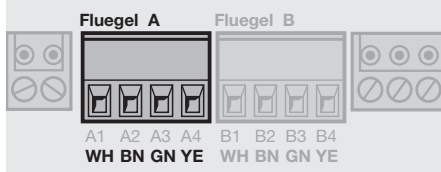
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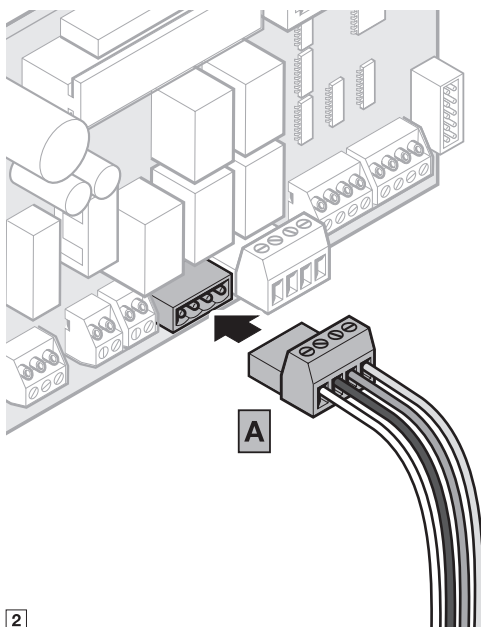
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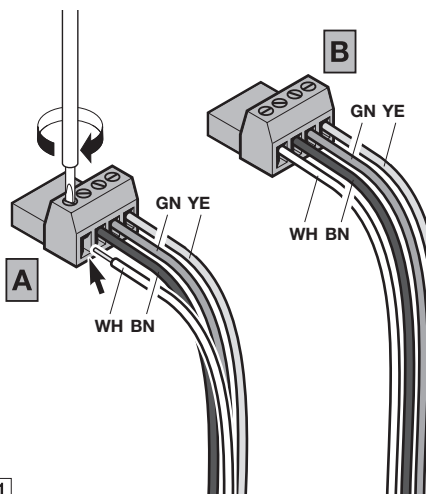
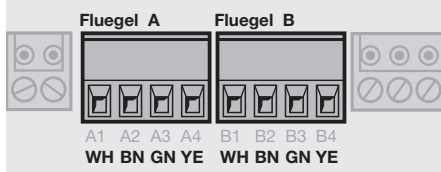


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4.3



3.4.3

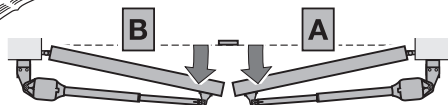


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4.3a



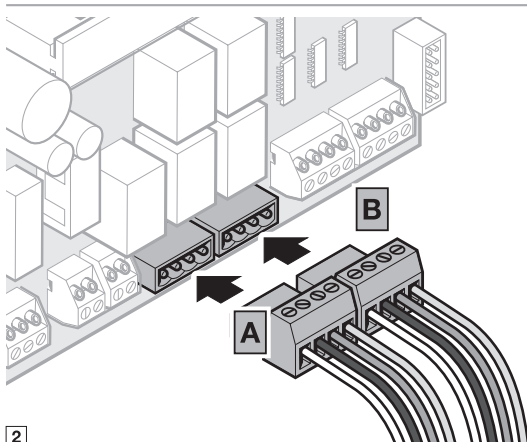
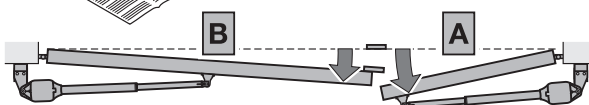
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4.3b

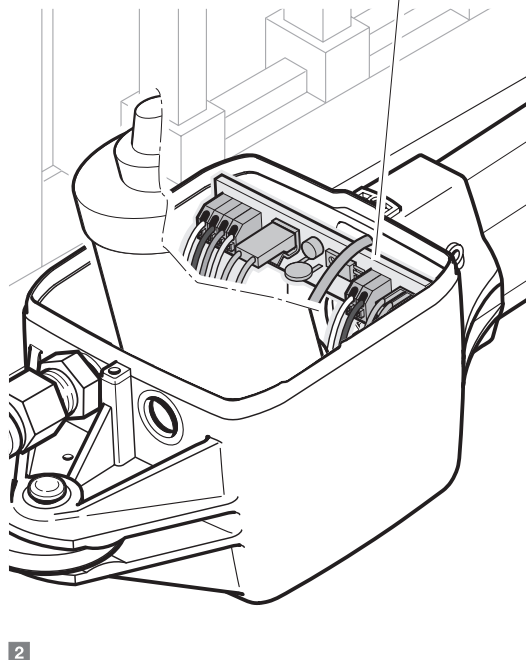
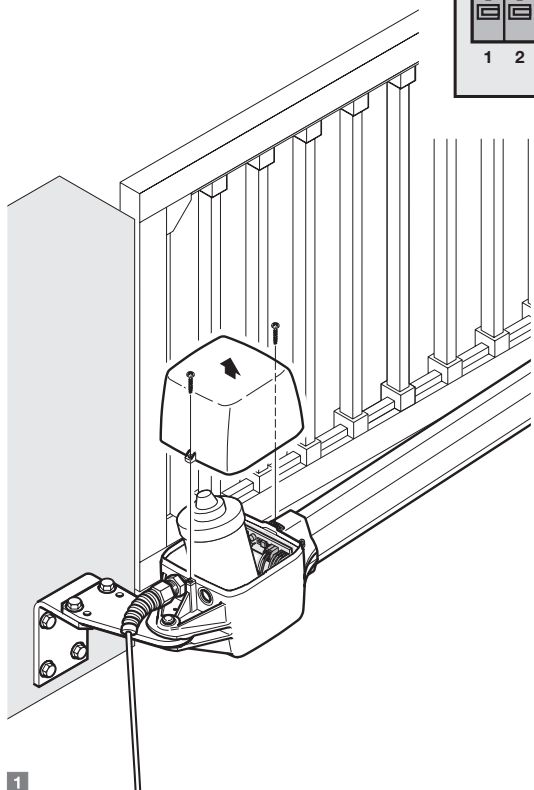
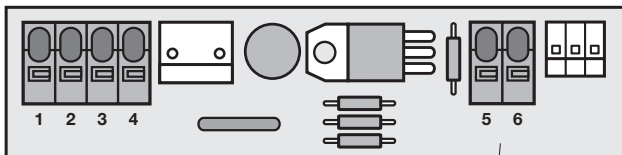


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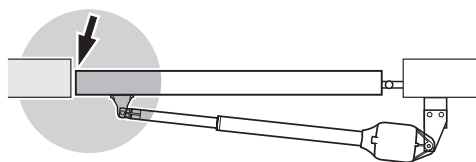


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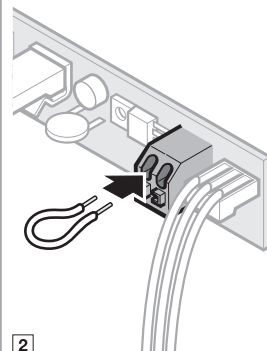
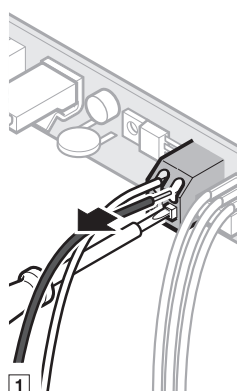
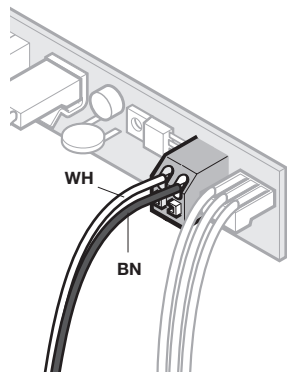
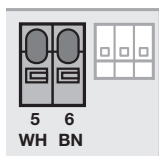
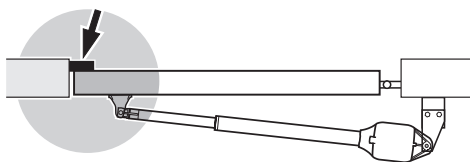
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## 4.4a



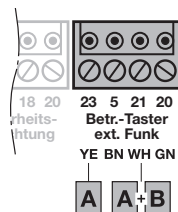
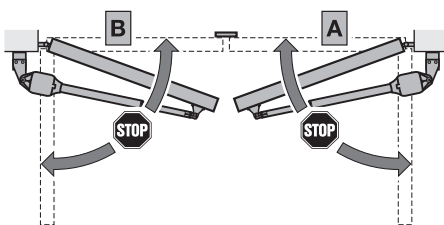
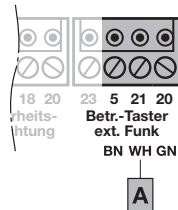
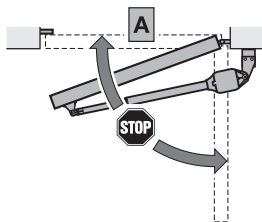
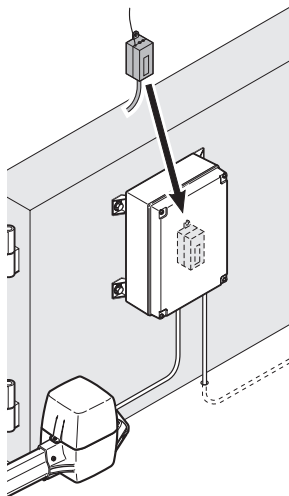
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4.5



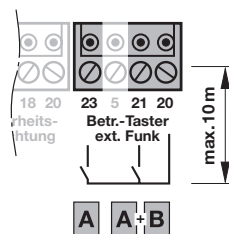
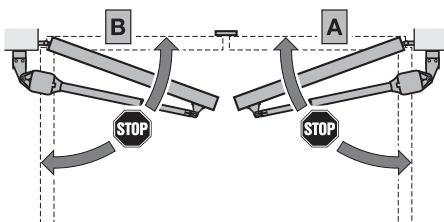
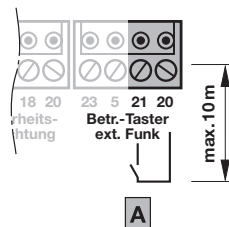
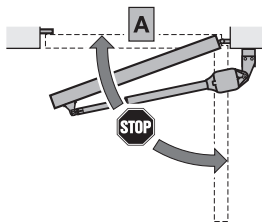
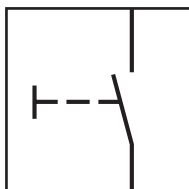
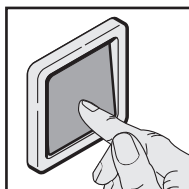
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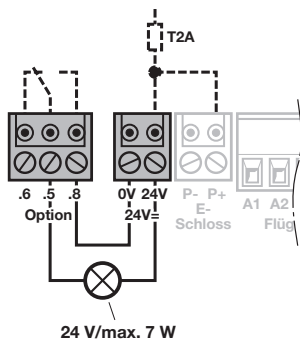
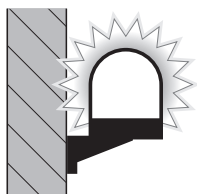
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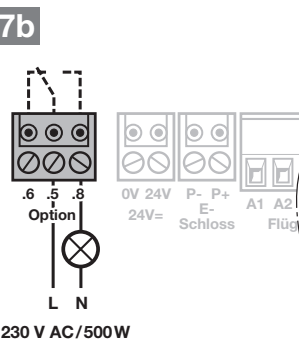
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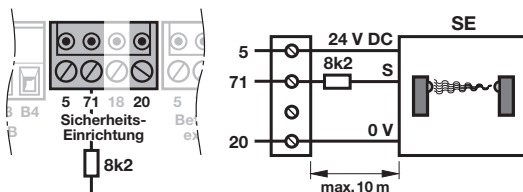
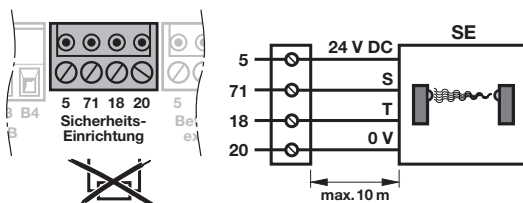
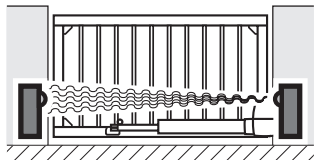
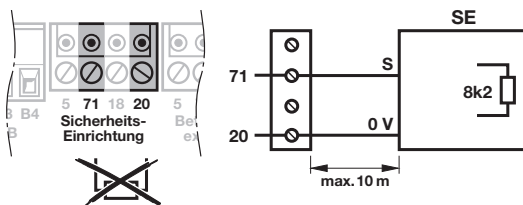
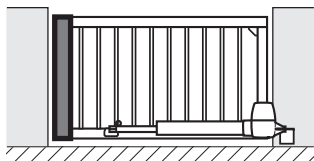
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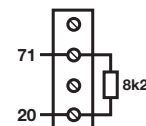
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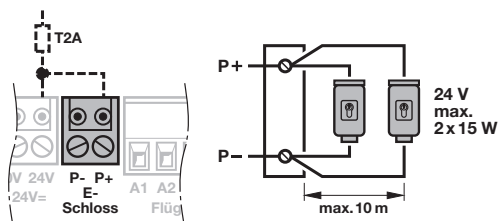
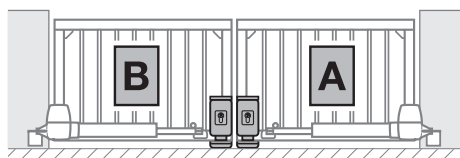
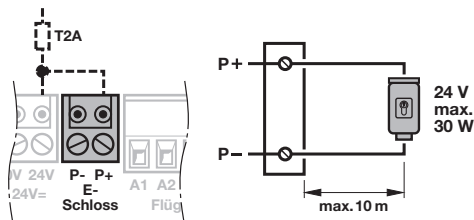
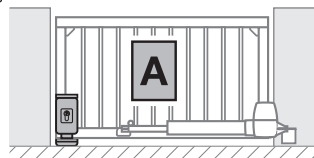
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4.8a



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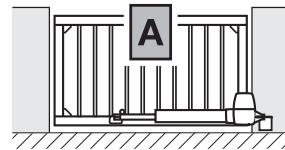
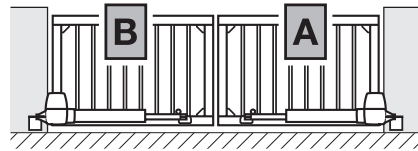


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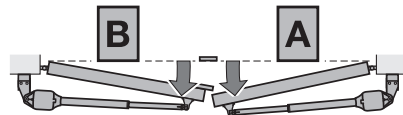
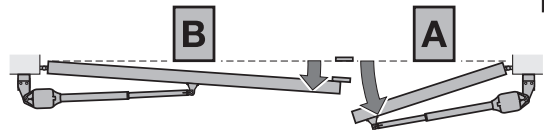


**OFF** 

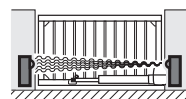
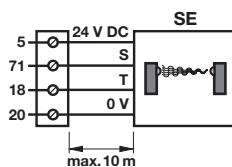
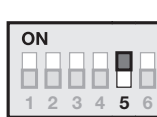
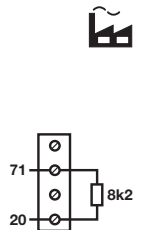
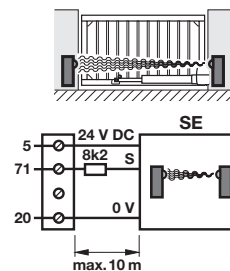
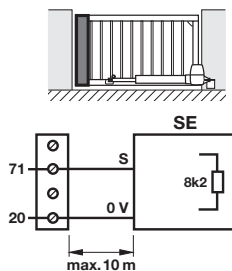
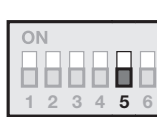
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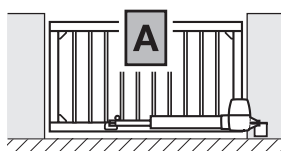
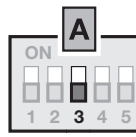
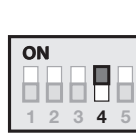
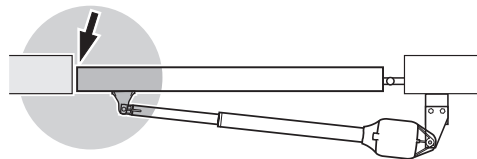
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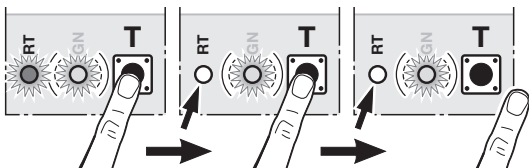
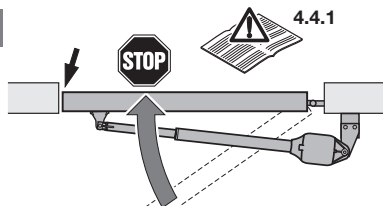
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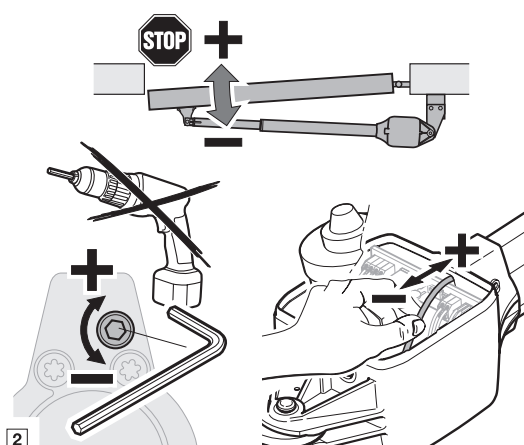
# 6a



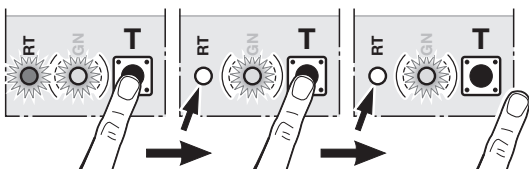
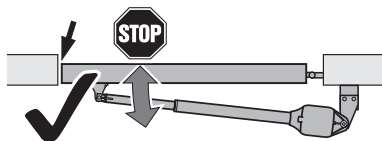
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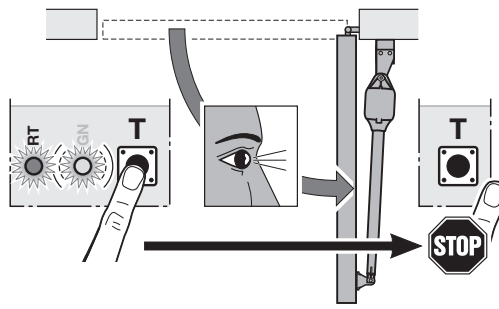
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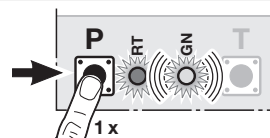
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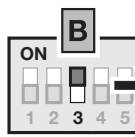
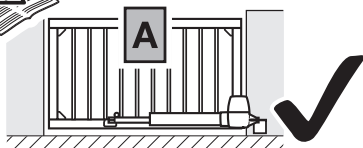
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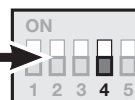
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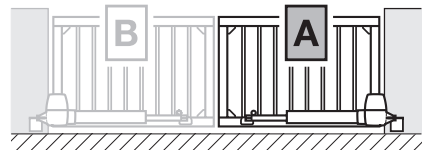
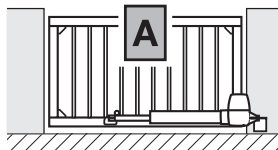
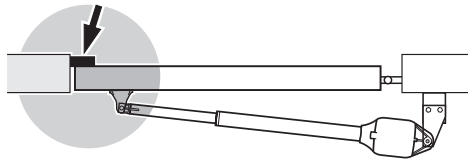


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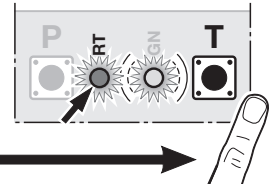
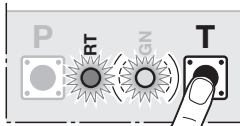
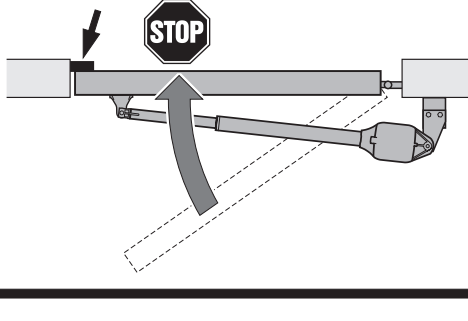




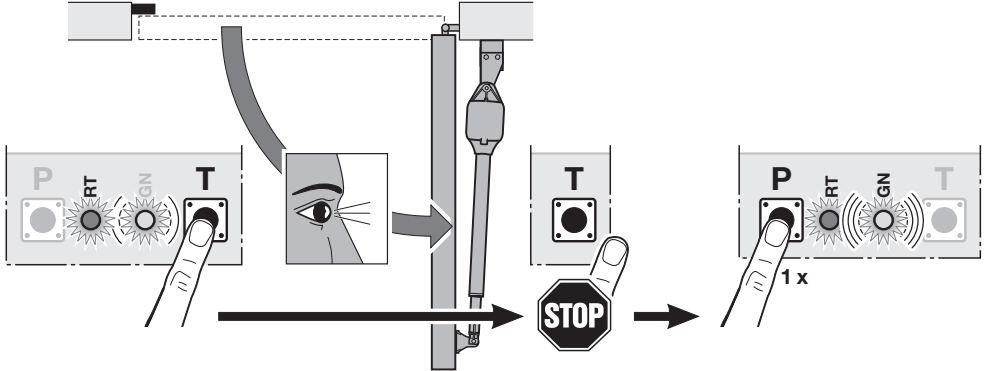
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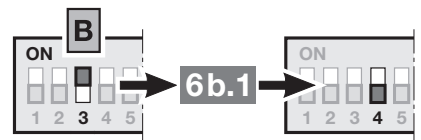
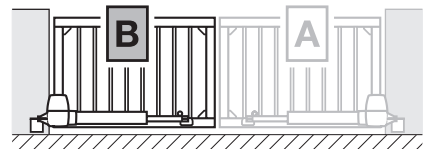
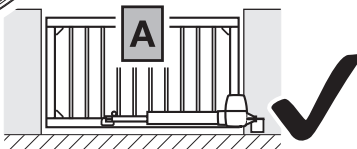


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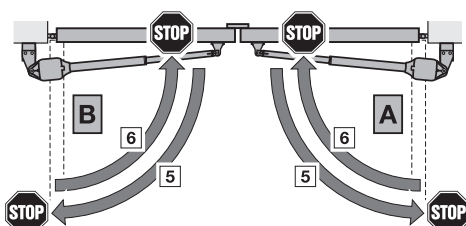
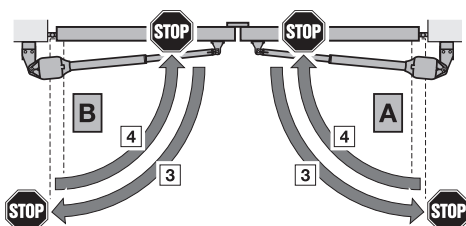
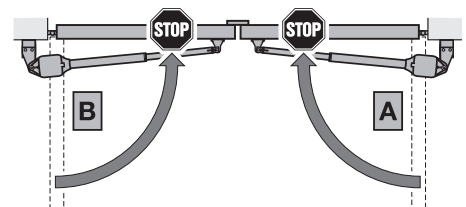
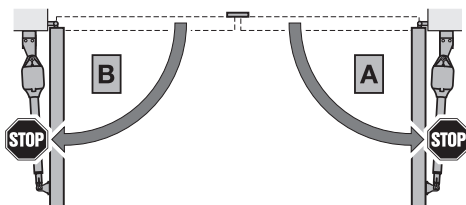
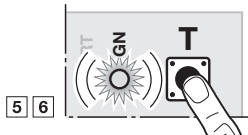
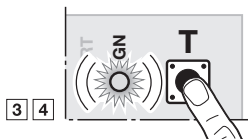
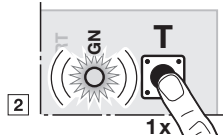


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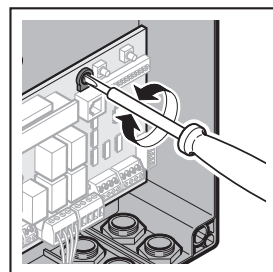
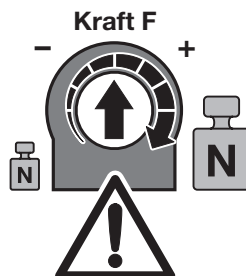
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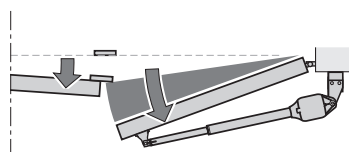
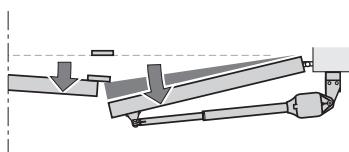
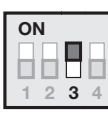
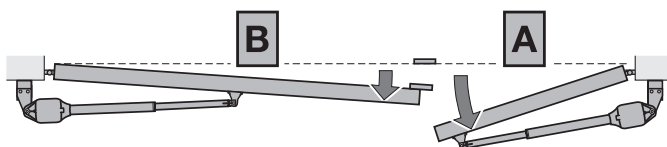
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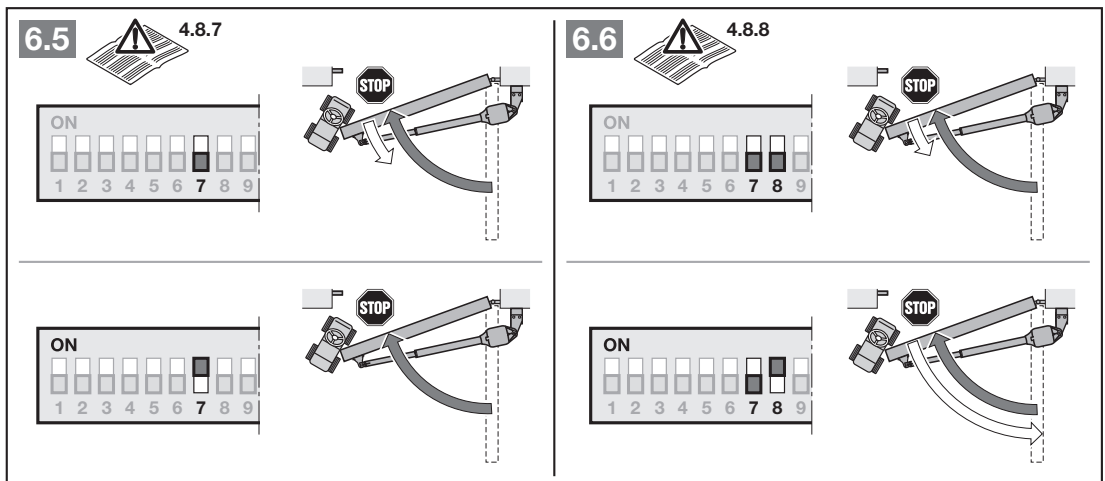
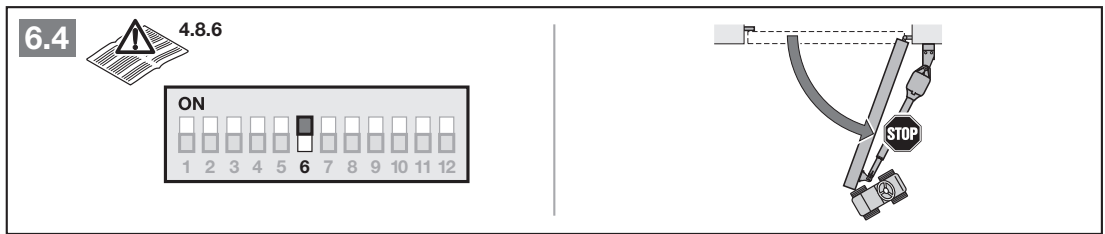
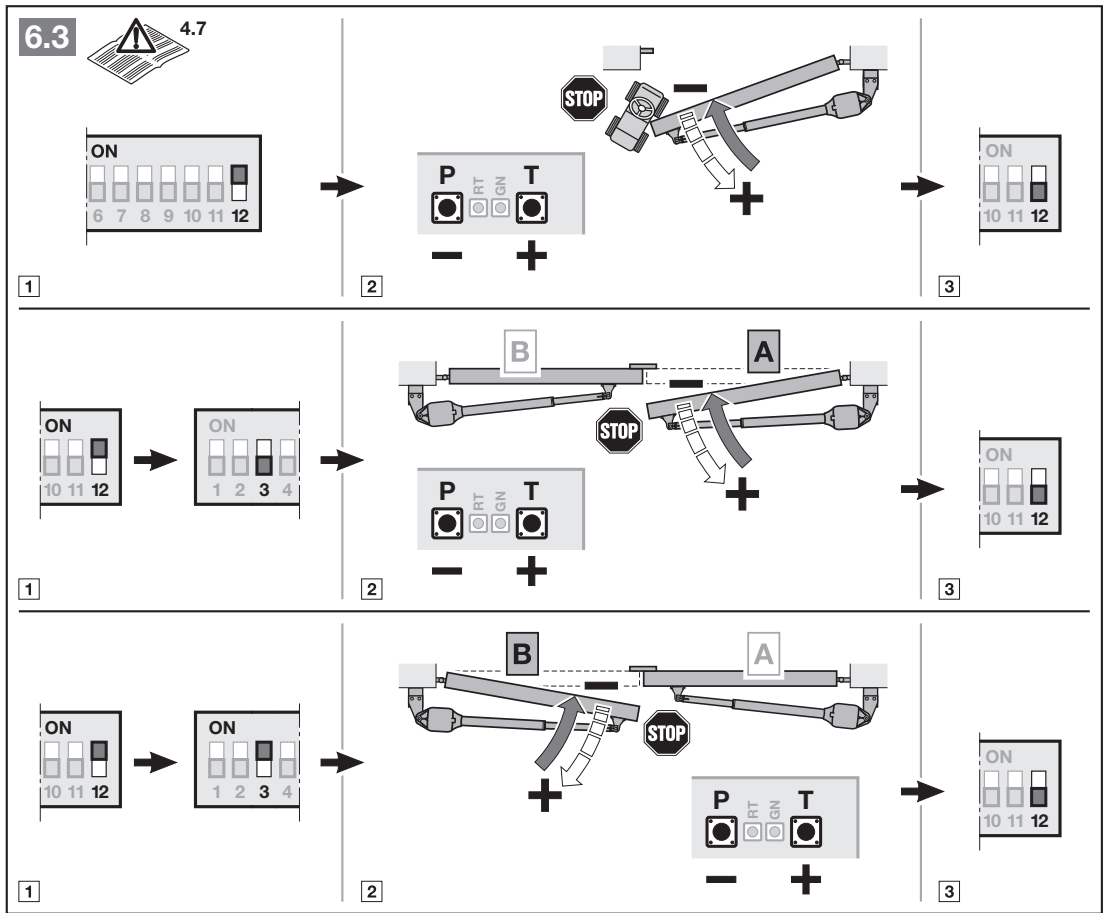


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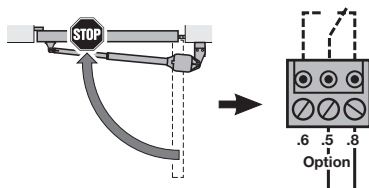
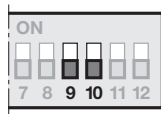


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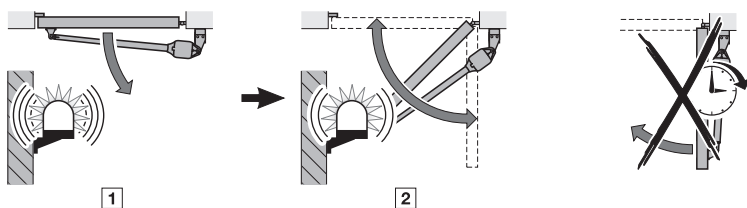
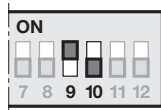




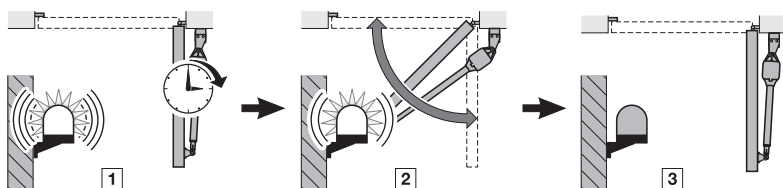
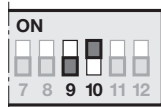
## 6.7 4.8.9



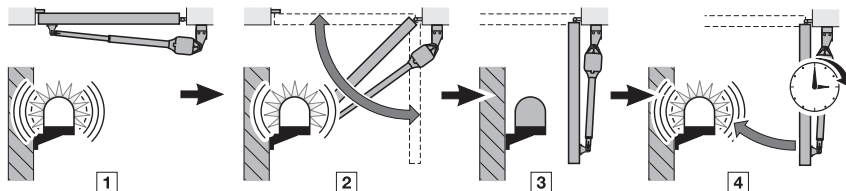
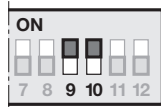
## 6.8 4.8.9



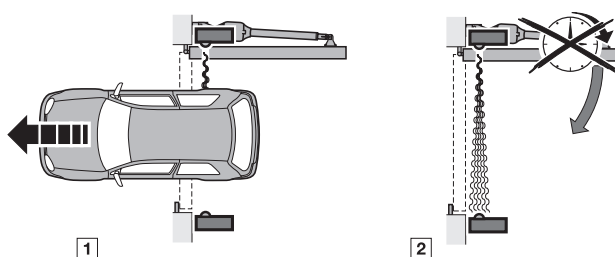
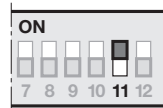
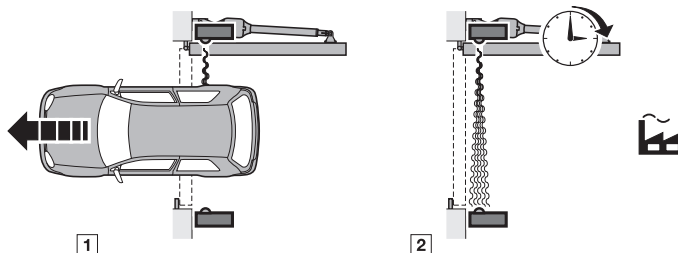
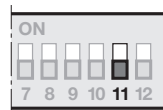
## 6.9 4.8.9

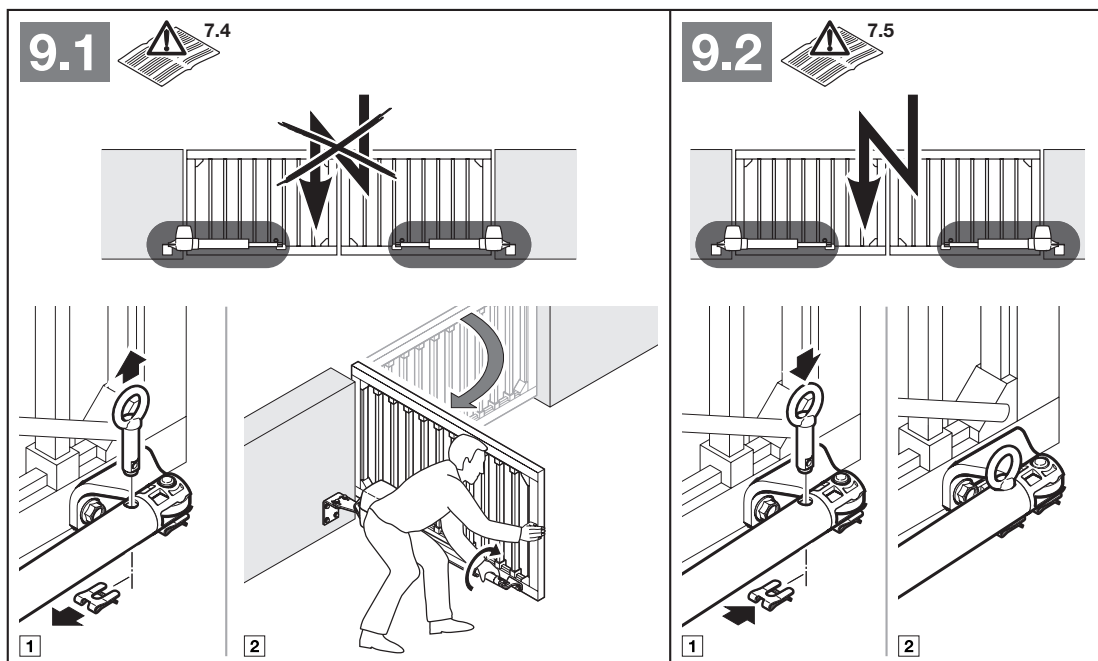
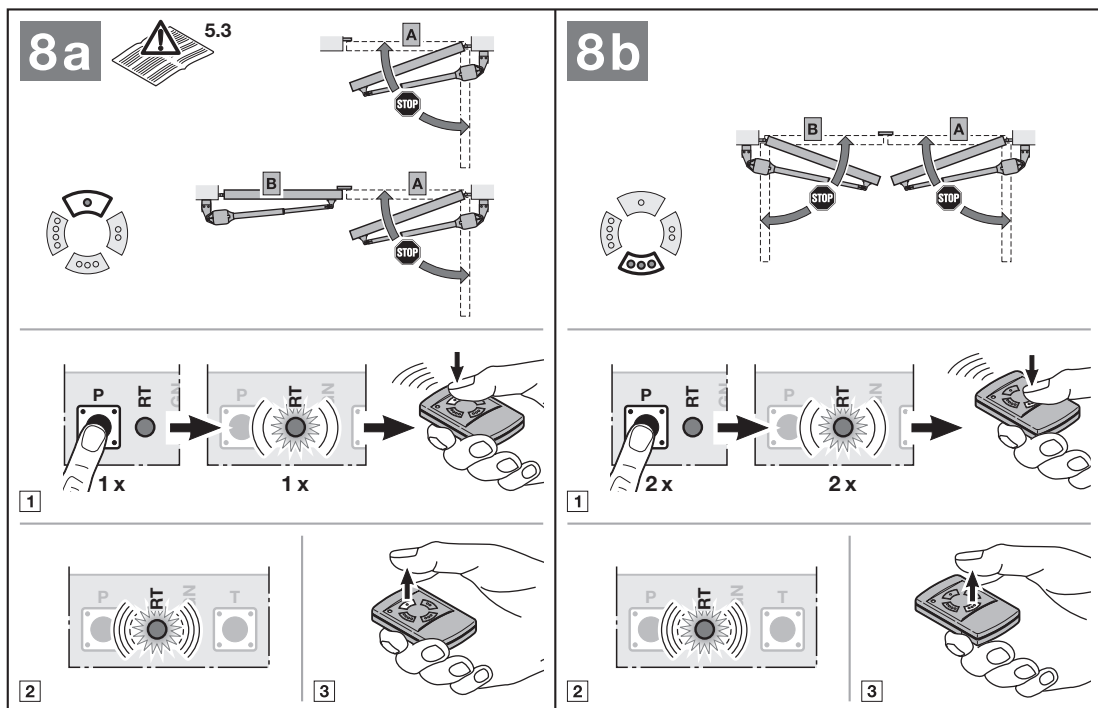
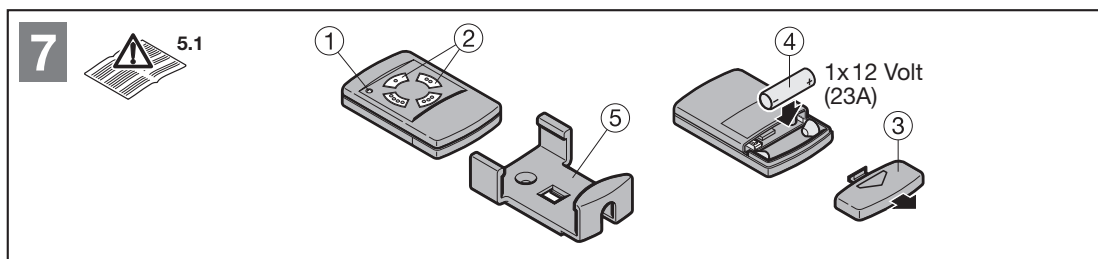


## 6.10 4.8.9



## 6.11 4.8.10





## 2 DEFINITIONS

### Hold-open phase

Waiting phase at the OPEN end-of-travel position before the gate closes when using the automatic timer.

### Automatic timer

Automatic closing of the gate following elapse of a set phase, after reaching the OPEN end-of-travel position.

### DIL switches

Switches on the control unit circuit board for setting the controls.

### Through-traffic photocell

When the gate is passed through, the photocell stops the hold-open phase and resets itself to a preset value.

### Travel leaf

Leaf that is opened and closed along with the traffic leaf for through-traffic.

### Leaf offset

The leaf offset ensures the correct closing order with overlapping fittings.

### Traffic leaf

Leaf that is opened and closed for pedestrian traffic.

### Impulse operation/impulse control

A sequence of impulses, which allows the gate to alternately OPEN-STOP-CLOSE-STOP.

### Force learning cycle

A learning cycle during which the necessary forces are learned.

### Normal cycle

Gate travel applying the learned distances and forces.

### Reference cycle

Gate travel in the closing direction in order to lay down the standard setting.

### Reversing cycle

Gate travels in the opposite direction after activation of the safety devices.

### Reversing limit

The reversing limit separates the area between reversal or stopping of the gate when the force is cut off at the CLOSE end-of-travel position.

### Distance learning cycle

The distances are learned during this cycle.

### Dead man's travel

The gate travels only as long as the buttons are pressed.

### Advanced warning phase

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

### Factory reset

Resetting the learned values to the delivery status/ex factory setting

### Colour code for cables, single conductors and components

The abbreviations of the colours for identifying the cables, conductors and components comply with the international colour code according to IEC 757:

<b>BK</b>	= black	<b>PK</b>	= pink
<b>BN</b>	= brown	<b>RD</b>	= red
<b>BU</b>	= blue	<b>SR</b>	= silver
<b>GD</b>	= gold	<b>TQ</b>	= turquoise
<b>GN</b>	= green	<b>VT</b>	= violet
<b>GN/YE</b>	= green/yellow	<b>WH</b>	= white
<b>GY</b>	= grey	<b>YE</b>	= yellow
<b>OG</b>	= orange		

## 3 PREPARATION FOR INSTALLATION

Before installing the operator and in the interests of personal safety, make sure that any necessary repairs to the gate system are carried out by a qualified service engineer.

Only correct fitting and maintenance in compliance with the instructions by a competent/specialist company or a competent/qualified person ensure safe and flawless operation of the system.

The specialist carrying out the work must ensure that installation is conducted in compliance with the prevailing national regulations on occupational safety and those governing the operation of electrical equipment. In the process, the relevant national guidelines must be observed. Possible hazards are prevented by the design itself and by carrying out installation in accordance with our guidelines.

### Note

The function of all the safety and protective devices, must be checked **once a month** and, if necessary, any faults or defects rectified immediately.



### CAUTION

Only ever operate the hinged gate when you have full view of the movement range of the gate. Before driving in or out of the gateway, always check that the gate has fully opened. You must never drive or walk through gateways unless the entrance gate has reached the OPEN end-of-travel position. In addition, check the entire gate system (gate pivots, bearings and fastenings) for wear and possible damage. Check for signs of rust, corrosion or fractures.

The gate system may not be used if repair or adjustment work needs to be carried out. Always remember that a fault in the gate system or a misaligned gate can cause severe injury. ➤

All persons using the gate system must be shown how to operate it properly and safely. Demonstrate and test the mechanical release as well as the safety return. To do this, halt the closing gate by grasping it with both hands. The gate system must initiate the safety return.



**CAUTION**

Whenever the gate is moving, never touch the main or secondary closing edges. Risk of crushing or severing fingers!

Prior to installation, any of the gate's mechanical locks and latches not needed for power operation of the hinged gate should be deactivated and, if necessary, removed completely. This includes in particular any locking mechanisms connected with the gate lock. In addition, check that the gate is in a flawless mechanical condition, so that it can be easily operated by hand and opens and closes properly (EN 12604).

**Note**

The installer must check that the fitting materials supplied are suitable for the purpose and intended place of installation. Contrary to the illustrated section, for other gate types use the respectively suitable connectors (e.g. for timber gates use wood screws), as well as the proper hole depths. Contrary to the illustrated section, the required core hole diameter may vary depending on material thickness or strength. The required diameter may be Ø 5.0-5.5 mm for aluminium and Ø 5.7-5.8 mm for steel.

### 3.1 Installing the hinged gate operator

#### 3.1.1 Installation fundamentals for a long operator service life

- The A and B dimension should be as equal as possible for uniform gate speed; the max. difference should not exceed 40 mm.
- The gate speed has a direct influence on the occurring forces, which should be kept as low as possible at the gate closing edges (**important for the force limit in accordance with DIN EN 12453/12445**):
  - Use the entire spindle stroke, if possible
  - An increasing A dimension reduces the speed at the CLOSE gate closing edge.
  - An increasing B dimension reduces the speed at the OPEN gate closing edge.
  - A large B dimension should always be selected for a large gate opening angle. If this is done, the operator must be programmed for a slow speed (see Chapter 4.5.1).
- The max. gate opening angle decreases if the A dimension increases.
  - The operator must be programmed for a slow speed if there is a gate opening angle and a small A dimension.
- To reduce the overall forces on the spindle,
  - The A dimension
  - and distance between the gate's pivot and spindle fastening on the gate should be as large as possible.

#### Fastening the fittings

Appropriate special fittings are available as accessories.

##### • Stone or concrete posts

- Observe the recommendations for the distances from the edges for plug holes. This minimum distance is one plug length of the supplied plugs.
- Turn the plugs so that they spread parallel to the edge.
- Adhesive bond anchors, in which a grub screw is bonded in the brickwork without tension, is an improvement.
- With masoned posts, a large steel plate that covers several stones should be screwed on and the post bracket mounted or welded onto this plate.
- A bracket plate fastened around the post edge is also suitable for fixing.

##### • Steel posts

- Check whether the available support is stable enough, otherwise it will have to be reinforced.
- It may make sense to use riveting nuts.
- The fittings can also be directly welded on.

##### • Wooden posts

- The gate hardware must be completely screwed through. Use large steel washers or, even better, a steel plate on the rear of the post, so the fastening cannot loosen itself.

#### 3.1.2 Establishing the fitting dimensions

The e dimension must be determined as shown in Fig. 1. Then determine the minimum opening angle required.

**Note**

An unnecessarily high opening angle will cause the gate travel behaviour to deteriorate.

First, the e dimension must be determined as shown in Fig. 1. For this purpose, select the e dimension closest to this in the e column of the table. The minimum opening angle required must now be selected from the appropriate row.

**Note**

If no suitable A(e) dimension can be found, a different hole pattern must be used on the post fitting, or the post must be supported. Please note that the values indicated in the table may only be standard values.

Then find the appropriate B dimension in row 1 of the table.

Now install the post fitting in accordance with the determined dimensions and fasten the operator here (see Figure 3.2/3.3). Then unscrew the connecting rod to the maximum. To create a reserve, the connecting rod must then be screwed back in by one rotation (not if the e dimension is 150 mm, see Figure 3.3). Before actually installing the hinged gate operator, fasten it to the gate with screw clamps. The final installation dimension is then checked by manually moving gate into the end positions with the operator uncoupled (see Figure 3.4).

### 3.1.3 Preferred range

If an A/B dimension combination is selected from the grey section (see Figure 1), you can assume that the operational forces are maintained in accordance with DIN EN 12453, if the installation instructions and following conditions are observed:

- The gate's centre of gravity must be in the middle of the gate (maximum permissible deviation  $\pm 20\%$ ).
- The DP2 sound-absorbing seal (item no. 436 304) is installed on the closing edge.
- The operator is programmed for a slow speed (see Chapter 4.5.2).
- The reversing limit at 50 mm opening width is monitored over the entire length of the main closing edge and maintained (see Chapter 4.7).

### 3.1.4 Fastening the operator

When installing the hinged gate operator, pay attention that it is installed horizontally, stably, and securely on both the wall post/post as well as on the gate leaf. Also use other suitable connecting elements, if necessary. Unsuitable connecting elements will not be able to withstand the forces caused by opening and closing.

#### Note

For hinged gates with lifting hinges (up to max. 6"), an accessory set\* (see Figure 3.1b) is required that must be ordered separately. This set is installed as shown in Figure 3.2.

#### Note

Always cover the operator and control before drilling, since drilling dust and shavings can lead to malfunctions.

### 3.2 Installing the operator control

The control housing must be installed as shown in Figure 3.6. Pay attention that the control is installed vertically with the cable fixings towards the bottom. The length of the connecting cable between the operator and control may be max. 10 m.

### 3.3 Electrical connection



#### CAUTION

The following points apply to all work involving electric:

- **Electrical connections may only be made by a qualified electrician!**
- **The on-site electrical installation must comply with the respective safety regulations!**
- **All the cables must be inserted into the control from underneath and be free from distortion.**
- **Before performing any work on the gate system, always disconnect the operator from the power supply.**
- **External voltage at any of the control system's connecting terminals will completely destroy the electronics!**

- **To avoid malfunctions, ensure that the operator cables are laid in an installation system separate to the mains supply line!**
- **Cables laid in the ground must always be of the NYY type (underground cable, max. Ø 12 mm) (see Figure 2).**
- **If using underground cables as an extension, the connection for the operator lines must be in a splash-proof junction box (IP65).**

### 3.4 Connecting standard components

Mains connection is made directly at the plug terminal to the transformer via the NYY underground cable (see Figure 3.7).

#### 3.4.1 Connecting the operator for a single-leaf gate system

Install the operator cables in the plug on leaf A (Flügel A) as shown in Figure 4.2.

#### 3.4.2 Connecting the operator for a double-leaf gate system without a threshold (see Figure 4.3a)

If the leaf sizes are different, the smaller leaf is the traffic leaf or leaf A.

#### 3.4.3 Connecting the operator for a double-leaf gate system with a threshold (see Figure 4.3b)

In gates with a threshold, the first leaf that opens is the traffic leaf or leaf A (Flügel A). The operator cable for leaf B (Flügel B) is connected to plug B as shown in Figure 4.3.

#### 3.4.4 Determining the end-of-travel position detection

See Figure 4.4a for the limit switch or Figure 4.4b for the limit stop (deactivate limit switch).

### 3.5 Connecting additional components/accessories

#### Note

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

#### 3.5.1 Connecting an external radio receiver\*

(see Figure 4.5)

The wires of the radio receiver (ext. Funk) should be connected as follows:

- **GN** to terminal 20 (0 V)
- **WH** to terminal 21 (channel 1 signal)
- **BN** to terminal 5 (+24 V)
- **YE** to terminal 23 (channel 2 signal for the traffic leaf); only with a 2-channel receiver.

#### Note

The aerial wire of external radio receivers should not come into contact with metal objects (nails, bracing, etc.). The best alignment to achieve an optimum range must be established by trial and error. When used at the same time, GSM 900 mobile phones can affect the range of the radio remote control.



### 3.5.2 Connecting an external button\* for the impulse control (see Figure 4.6)

One or more buttons with closer contacts (potential-free), e.g. key switches, can be connected in parallel, max. lead length 10 m.

#### Single-leaf gate system:

Impulse control:

First contact to terminal **21**

Second contact to terminal **20**

#### Double-leaf gate system:

Impulse control travel command for traffic leaf (A):

First contact to terminal **23**

Second contact to terminal **20**

Impulse control travel command for traffic leaf (A) and travel leaf (B):

First contact to terminal **21**

Second contact to terminal **20**

#### Note

If auxiliary voltage is needed for an external push button, then a voltage of +24 V DC is available for this at terminal **5** (against terminal **20** = 0 V).

### 3.5.3 Connecting a warning light\* (see Figure 4.7a)

A warning light or CLOSE end-of-travel signal can be connected via the potential-free contacts on the option plug (Option). The voltage at the 24 V DC plug can be used for operation (warning signals prior to and during gate travel) using a 24 V lamp (max. 7 W).

#### Note

If a 230 V warning lamp (see Chapter 4.4.1) is used, it must be directly supplied with power (see Figure 4.7b).

### 3.5.4 Connecting safety devices\* (see Figure 4.8/4.8a)

An optical safety device or 8k2 resistance contact strip can be connected. The selection must be set via the DIL switch (Chapter 4.8.5):

**Klemme 20** 0 V voltage supply

**Klemme 18** With self-monitoring (if available)

**Klemme 71** Safety device signal  
(Sicherheitseinrichtung)

**Klemme 5** +24 V voltage supply



#### CAUTION

Safety devices without a self-monitoring unit (e.g. static photocells) must be tested twice a year. They may only be used to protect property!

#### Note

Several optical safety devices can be connected using a photocell expander\*.

### 3.5.5 Connecting an electro lock\* (see Figure 4.9)

Connecting an electro lock/locks

The polarity does not have to be taken into account when connecting electro locks from the accessories list.

## 4 INITIAL OPERATION OF THE OPERATOR

#### Note

Before initial operation, check that all the connecting cables are correctly installed at the connecting terminals. The leaf/leaves must be **half open** and the operator coupled.

### 4.1 General

The control system is programmed via the DIL switches. Changes to the DIL switch settings may only be made provided

- the operator is at rest
- the advance warning or hold-open phase is not active.

### 4.2 Overview of set-up mode

#### • Make preparations (see Chapter 4.3)

#### • Learning the gate's end-of-travel positions

(see Chapter 4.4)

- Detecting the CLOSE end-of-travel position via the integrated limit switch (see Chapter 4.4.1)
- Detecting the end-of-travel position via mechanical limit stops (see Chapter 4.4.2)

#### • Perform force learning cycle (see Chapter 4.5)

#### • Set the leaf offset, if necessary (see Chapter 4.6)

#### • Set the reversing limits, if necessary

(see Chapter 4.7)

### 4.3 Preparation

- The gate is half open.
- The operator is coupled.
- All the DIL switches must be at the factory setting, i.e. all the switches must be at **OFF** (see Figure 5).
- The following DIL switches must be set:

**DIL switch 1: Single-leaf operation/double-leaf operation** (see Figure 5.1)

<b>1 OFF</b>	Double-leaf operation
<b>1 ON</b>	Single-leaf operation

#### DIL switch 2: With/without leaf offset

(see Figure 5.2)

<b>2 OFF</b>	With leaf offset: Leaf A opens before leaf B; Leaf B closes before leaf A.
<b>2 ON</b>	Without leaf offset: Open and close leaves A and B simultaneously


#### DIL switch 5: SE safety device (see Figure 5.3)

The safety device is set with or without self-monitoring using this switch.

<b>5 OFF</b>	- unmonitored, static photocell - 8k2 resistance contact strip - No safety device (8k2 resistance between terminals 20/71, factory setting)
<b>5 ON</b>	Photocell with self-monitoring

**DIL switch 6: function of the safety device when opening** (see Figure **6.4**)

The function of the safety device when opening is set with this switch.

<b>6 OFF</b> 	Without function
<b>6 ON</b>	Stop the leaves


**4.4 Learning the gate's end-of-travel positions**

- The following DIL switches must be set:

**DIL switch 4: Set-up mode** (see Figure **6**)

<b>4 ON</b>	Set-up mode ON
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**DIL switch 3: Leaf selection/size of leaf offset** (see Figure **6a/6b**)

<b>3 OFF</b> 	Leaf selection function: Single-leaf (A), double-leaf traffic leaf (A)
------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------

We recommend using a mechanical limit stop in the CLOSE end-of-travel position, because

- the leaf will lie firmly against the limit stop and cannot be moved by wind
- leaves in double-leaf systems are aligned exactly flush with each other when in CLOSE end-of-travel position

**Note**

The safety devices are not active during set-up mode.

**Note**

In double-leaf systems with leaf offset, be sure to start the learning process with leaf A (traffic leaf).

**4.4.1 Recording the CLOSE end-of-travel position via the integrated limit switch** (see Figure **6a.1**)

**Note**

Before learning the end-of-travel positions, make sure that the integrated limit switch is activated. The BN/WH wires of the limit switch are clamped to plug 5/6 (see Figure **4.4a**). The options relay has the same function as the red LED during set-up. The limit switch setting can be viewed from afar via the connected lamp (lamp/LED off = limit switch reached – see Figure **4.7b**).

- Uncouple the operator
- Slowly close the gate by hand
- The LED (or the lamp connected to the options relay) will go out when the limit switch is reached
- Adjust the limit switch if necessary (see Figure **6a.1**) and move the gate accordingly until the desired CLOSE end-of-travel position is reached
- Open the gate again halfway
- Re-couple the operator

Press circuit board button **T** and keep it pressed. The leaf will move to the limit switch and the red LED will go out. Now release the button.

**Note**

If the gate moves in the OPEN direction, check the motor connection and, if necessary, reconnect (see Figure **4.2/4.3**). Then perform a factory reset (see Chapter 6) and repeat the procedure.

Readjust if the position of the limit switch does not correspond to the desired position. For this purpose, the adjusting screw is adjusted with an Allen key (3 mm).

**At the same time** carefully move the limit switch line in the appropriate direction to support it.

**Note**

Do **not** use a cordless screwdriver to adjust! One rotation of the adjusting screw equals 1 mm on the spindle.

**Correcting the end-of-travel positions:**

Increase end-of-travel position → Turn adjusting screw towards "-" step-by-step

Decrease end-of-travel position → Turn adjusting screw towards "+" step-by-step

Follow the set end-of-travel position until the red LED goes out using the impulse function in dead man operation and circuit board button **T**. Repeat this process until the required end-of-travel position has been reached.

**OPEN end-of-travel position**

Move the operator to the desired OPEN end-of-travel position using the impulse function in dead man operation and circuit board button **T**. Press button **P** to confirm this position. The green LED will signal that the end-of-travel position is detected by quickly flashing.

**Double-leaf gate system**

With a double-leaf gate system, **DIL** switch **3** must be **ON** (function: leaf selection) and the steps listed in Chapter 4.4.1 repeated for leaf B (see Figure **6a.2**).

**4.4.2 Detecting the end-of-travel position via mechanical limit stops\*** (see Figure **6b.1**)

**Note**

It is **essential** that you deactivate the integrated limit switch before learning the end-of-travel positions via mechanical limit stops. Open the operator and remove the WH and BN wires from terminals 5 and 6. Insert a wire jumper (not in the scope of delivery) (see Figure **4.4b**). Then close the operator.

**CLOSE end-of-travel position**

Press circuit board button **T** and keep it pressed. Move the operator in the CLOSE direction until the control shuts **itself** off. Then release the button. The red LED will remain illuminated after the end-of-travel position has been detected.

**Note**

If the gate moves in the OPEN direction, check the motor connection and, if necessary, reconnect (see Figure **4.2/4.3**). Then perform a factory reset (see Chapter 6) and repeat the procedure.

### OPEN end-of-travel position

Move to the desired OPEN end-of-travel position using the impulse function in dead man operation and circuit board button **T**. Press button **P** to confirm this position. The green LED will signal that the end-of-travel position is detected by quickly flashing.

### Double-leaf gate system

With a double-leaf gate system, **DIL** switch **3** (function: leaf selection) must be **ON** and the steps in Chapter 4.4.2 repeated for leaf B (see Figure **6b.2**).

#### Note

During the learning process, the end-of-travel positions are partially or fully detected by a force cut-off activation. The learning force must be large enough so the force cut-off is not unintentionally triggered. Increase the learning force if the force cut-off is unintentionally triggered during the learning cycle or if the end-of-travel positions are not reached (see Chapter 4.5.1).

### 4.4.3 Completion of set-up mode

After completion of the set-up mode, set **DIL** switch **4** (function: learning the gate travel) to **OFF**. The green LED signals that forces must be learned by flashing quickly (see Figure **6a.2/6b.2**).

#### Note

The safety devices are activated.

### 4.5 Learning the forces

Once the end-of-travel positions have been learned or specific changes made, the forces must be learned. For this, three successive gate cycles must take place, throughout which none of the safety devices may be triggered. Recording the forces takes place automatically by press-and-release (maintained function) in both directions, i.e. once an impulse has been given, the operator causes the gate to travel to the end-of-travel position. The green LED flashes throughout. This LED is steadily illuminated once the force learning cycles have been completed.

#### Learning the forces for the OPEN end-of-travel position:

Press circuit board button **T** once, the operator automatically moves into the OPEN end-of-travel position.

#### Learning the forces for the CLOSE end-of-travel position:

Press circuit board button **T** once, the operator automatically moves into the CLOSE end-of-travel position.

**This procedure must be repeated twice.**



#### CAUTION

Due to special installation situations, it can, however, happen that the previously learned forces prove inadequate which can lead to unjustified reversing. Readjust the forces in such cases. The force should not be set too high, as this can cause injury to persons and/or damage to the gate.

### 4.5.1 Changing the learned forces

A potentiometer is available to set the force limits of the gate when opening and closing; it is identified with **Kraft F** (Force F) on the control circuit board. The increase in the force limit is a percentage increase in relation to the learned values, where the setting of the potentiometer denotes the following force increase (see Figure **6.1**):

<b>Full left</b>	+ 0 % force
<b>Centred</b>	+ 15 % force
<b>Full right</b>	+ 75 % force



#### CAUTION

The learned force setting must be checked using a suitable force measuring device to make sure that the values are permissible within the application scope of European Standards EN 12453 and EN 12445 or the corresponding national regulations.

### 4.5.2 Creep speed

If the potentiometer setting is at 0% and the force measured by the force measuring device is still too high, it can be changed via a reduced travel speed.

- **DIL** switch **4** at **ON**
- After approx. 3 seconds, if the green LED is flashing, set **DIL** switch **12** to **ON** (function: moderate speed)
- **DIL** switch **4** at **OFF**
- **DIL** switch **12** at **OFF**
- Three consecutive force learning cycles must then be performed (see Chapter 4.5)
- Recheck with the force measuring device

### 4.6 Size of the leaf offset

To avoid collisions in double-leaf systems during gate travel, a large leaf offset is useful for asymmetric gates with thresholds, whereas a smaller leaf offset is sufficient for symmetric gates with thresholds, (**DIL** switch **2** at **OFF**)

#### **DIL** switch **3**: Leaf selection/large leaf offset

(see Figure **6.2**)

Function Size of leaf offset:

<b>ON</b>	Small leaf offset
<b>OFF</b>	Large leaf offset

### 4.7 Reversing limit

During operation with mechanical limit stops, the gate must differentiate between two options: whether the leaf contacts the limit stop (leaf stops) or an obstruction (leaf reverses direction). The limit range can be changed as follows (see Figure **6.3** and Chapter 3.1.3). To adjust, set **DIL** switch **12** to **ON**. Select the appropriate leaf with **DIL** switch **3**. Pay attention that the selected leaf is able to move freely in a double-leaf system, depending on the threshold.

The reversing limit can now be set step-by-step. The reversing limit is reduced by briefly pressing circuit board button **P** and increased by briefly pressing circuit board **T**.

During the procedure to learn the reversing limits, the red LED displays the following settings: ➤

- Off** → Minimum reversing limit, the red LED is permanently illuminated
- On** → Maximum reversing limit, the red LED is permanently off

To store the set reversing limit(s), **DIL switch 12** must be set to **OFF**.

**Note**

After the reversing limits have been set, **DIL switch 3** must be reset according to the selected leaf offset.

#### 4.8 Overview and settings of the DIL switches

**Changes to the DIL switch settings may only be made provided**

- **the operator is at rest**
- **the advance warning or hold-open phase is not active.**

Set the DIL switches in accordance with the national regulations, the required safety devices and the given local conditions.

##### 4.8.1 DIL switch 1: Single or double leaf operation

See Chapter 4.3

##### 4.8.2 DIL switch 2: With/without leaf offset

See Chapter 4.3

##### 4.8.3 DIL switch 3: Leaf selection/large leaf offset

See Chapter 4.4.1/4.6

##### 4.8.4 DIL switch 4: Set-up mode

See Chapter 4.4

##### 4.8.5 DIL switch 5: SE safety device


See Chapter 4.3

##### 4.8.6 DIL switch 6: function of the safety device when opening

See Chapter 4.3


##### 4.8.7 DIL switch 7: function of the safety device when closing (see Figure 6.5)

The function of the safety device when closing is set with this switch.

<b>7 OFF</b> 	The leaves reverse towards OPEN
<b>7 ON</b>	Stop the leaves



##### 4.8.8 DIL switch 8: reversing towards OPEN (see Figure 6.6)

The reversing length is set with this switch; i.e. this switch refers to the switch position of **DIL switch 7 → OFF**


<b>8 OFF</b> 	Brief reversing towards OPEN
<b>8 ON</b>	Reversing to the OPEN end-of-travel position

##### 4.8.9 DIL switch 9 / DIL switch 10


The functions of the operator (automatic timer/advanced warning phase) and the function of the options relay are set with **DIL switch 9** in combination with **DIL switch 10**.

<b>9 OFF</b> 	<b>10 OFF</b> 	<b>Operator</b> No special function
		<b>Options relay</b> Relay picks up in the CLOSE end-of-travel position

(see Figure 6.7)

<b>9 ON</b>	<b>10 OFF</b> 	<b>Operator</b> Advance warning phase for all leaf travel, no automatic timer
		<b>Options relay</b> Relay clocks rapidly during the warning phase, normally during the travel phase.

(see Figure 6.8)

<b>9 OFF</b> 	<b>10 ON</b>	<b>Operator</b> Automatic timer, advance warning phase only for automatic timed closing
		<b>Options relay</b> Relay clocks rapidly during the advance warning phase, normally during the travel phase and is OFF during the hold-open phase.

(see Figure 6.9)

<b>9 ON</b>	<b>10 ON</b>	<b>Operator</b> Advance warning phase for all leaf travel, with automatic timer
		<b>Options relay</b> Relay clocks rapidly during the advance warning phase, normally during the travel phase and is OFF during the hold-open phase.


(see Figure 6.10)

**Note**

Automatic timed closing is only possible from the stipulated end-of-travel position. The automatic timer is deactivated if it fails three times. The operator must be restarted with an impulse.

##### 4.8.10 DIL switch 11: safety photocell as a through-traffic photocell (see Figure 6.11)

If automatic timed closing is activated, a tested photocell will have additional functions.

<b>11 OFF</b> 	- Photocell function as a safety device in the CLOSE direction. If the photocell is covered, the hold-open phase will be restarted after expiration, the set hold-open phase will run until finished after through-traffic is over.
---------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<b>11 ON</b>	<ul style="list-style-type: none"> <li>- Photocell function as a safety device in the CLOSE direction.</li> <li>- Additional function as a through-traffic photocell. If the photocell is covered, the hold-open phase will be restarted after expiration and shortened after through traffic is over.</li> </ul>
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#### 4.8.11 DIL switch 12: Reversing limit/travel speed

– see Chapter 4.5.1/4.7

## 5 RADIO REMOTE CONTROL

### 5.1 Description of the hand transmitter (see Figure 7)

- ① LED
- ② Push buttons
- ③ Battery compartment cover
- ④ Battery
- ⑤ Hand transmitter holder

### 5.2 Integral radio module

With an integral radio module, the "impulse" function (OPEN-STOP-CLOSE-STOP) and the "traffic leaf" function can be taught to a maximum of 6 different hand transmitters. If more than 6 hand transmitters are taught, the functions on the one taught first are deleted.

Radio programming/deleting data is only possible if

- no set-up mode is activated (**DIL switch 4 at OFF**)
- the leaves are not moving
- no advance warning or hold-open phase is presently active

#### Note

One of the buttons must be programmed for an integral radio module to actuate the operator via radio. The hand transmitter and operator must be at least 1 m apart. When used at the same time, GSM 900 mobile phones can affect the range of the radio remote control.

### 5.3 Programming the hand transmitter buttons for an integral radio module

Briefly press circuit board button **P** once (for channel 1 = leaf A) or twice (for channel 2 = leaves A + B). Pressing circuit board button **P** again will immediately end radio programming. Depending on the channel being learned, the red LED will flash 1x (for channel 1) or 2x (for channel 2). During this time, a hand transmitter button can be registered for the desired function. Press the button, until the red LED on the circuit board flashes rapidly. The code of this hand transmitter button is now stored in the operator (see Figure 8a/8b).

### 5.4 Deleting the data for the internal radio module

Press circuit board button **P** and keep it pressed. The red LED flashes slowly, signalling the readiness for deletion. The flashing then becomes more rapid. Afterwards, the data of the hand transmitters' learned radio codes is deleted.

### 5.5 Connecting an external radio receiver\*

Instead of an integral radio module, an external radio receiver can be used for the "impulse" or "traffic leaf" functions to control the hinged gate operator. Insert the plug of the receiver in the corresponding slot (see Figure 4.5). To avoid double assignments, delete the data of the integral radio module when using an external radio receiver (see Ch. 5.4).



#### CAUTION

Keep hand transmitters out of the reach of children. They may only be used by persons who have been shown how the remote-controlled gate system works! The hand transmitter may only be used if the gate is in sight! You may only pass through a remote-controlled gate once it has come to a complete standstill. When programming and extending the remote control, make sure no persons or objects are within the gate's range of travel. After programming or extending the remote control, check the functions.

## 6 FACTORY RESET

To reset the control system (learned end-of-travel positions, forces), proceed as follows:

Set **DIL switch 4 to ON**. **Immediately** press circuit board button **P** 1x. If the red LED is quickly flashing, **immediately set DIL switch 4 to OFF**.

The control system has now been reset to the factory setting.

## 7 OPERATING THE HINGED GATE OPERATOR

Only ever operate the hinged gate when you have full view of the movement range of the gate. Before driving in or out of the gateway, always check that the gate has fully opened. You must never drive or walk through gateways unless the entrance gate has reached the OPEN end-of-travel position.



All persons using the gate system must be shown how to operate it properly and safely. Demonstrate and test the mechanical release as well as the safety return. To do this, halt the closing gate by grasping it with both hands. The gate system must initiate the safety return.



#### CAUTION

Never reach with your fingers between the hinges of the gate during gate travel → **Danger of crushing!** There is also a **trap and shearing risk** along the main and secondary closing edges!

The control system is set for normal operation. The gate can be moved in impulse operation (OPEN-STOP-CLOSE-STOP) by pressing circuit board button T, the external button or if impulse 1 is triggered.

Leaf A (traffic leaf) will be opened if impulse 2 is triggered, if the leaf was previously closed (see Figure 4.5/4.7). If the leaf offset has been activated, leaf A can only be moved if leaf B is in the CLOSE end-of-travel position.


### 7.1 Reversing with force limit

### 7.2 Reversing while opening

If the force limit is triggered while opening, the respective leaf will briefly reverse towards CLOSE, i.e. the operator moves the gate in the opposite direction and subsequently stops. The non-participating leaf is stopped in double-leaf operation.

### 7.3 Reversing while closing

If the force limit is triggered while closing, the behaviour of the leaves will depend on the setting for **DIL switch 8** (reversing towards OPEN).

<b>8 OFF</b> 	The leaf where the force limit occurred will briefly reverse towards OPEN. The non-participating leaf stops.
<b>8 ON</b>	Both leaves reverse to the OPEN end-of-travel position

### 7.4 Behaviour during a power failure

The hinged gate must be uncoupled from the operator in order to open or close it during a power failure (see Figure 9.1). If the gate is additionally secured with floor locking, this must first be unlocked with an appropriate key.

### 7.5 Behaviour following a power failure

Re-couple the gate to the operator after power has been restored (see Figure 9.2). A necessary reference cycle following a power failure is automatically performed during the next command impulse. During this reference cycle the options relay clocks and a connected warning light flashes slowly.

## 8 MAINTENANCE

The hinged gate operator and control are maintenance-free. Have the gate system checked by a specialist in accordance with the manufacturer's specifications.

### Note

Inspection and maintenance work may only be carried out by a specialist. In this connection, please contact your supplier. A visual inspection may be carried out by the owner. If repairs become necessary, please contact your supplier. We would like to point out that any repairs not carried out properly or with due professionalism shall render the warranty null and void.

## 8.1 Operation, error and warning messages

### 8.1.1 LED GN

The green LED (Figure 4.1) indicates the operating state of the controller:

- Steady illumination: normal state, all OPEN end-of-travel positions and forces learned.
- Fast flashing: force learning cycles must be performed.
- Slow flashing: set-up mode – end-of-travel setting

### 8.1.2 LED RD

- In set-up mode:
  - Off: limit switch of the selected leaf actuated
  - On: limit switch of the selected leaf not actuated
- Setting the reversing limits:
  - Flashing frequency is dependent on (proportional to) the selected reversing limit
  - Minimum reversing limit: red LED is permanently off
  - Maximum reversing limit: red LED is permanently on
- Radio programming display
  - Flashing as described in Chapter 5.3 above
- Display of the push button inputs
  - Actuated = on
  - Not actuated = off

### Error/diagnosis display

The red LED helps to easily identify causes when operation does not go according to plan

<b>Display:</b> <b>Error/warning:</b> <b>Possible cause:</b>  <b>Remedy:</b>	<b>2x flashing</b> Safety/protection device has responded - Safety/protection device has been actuated. - Safety/protection device defective - Without the SE, 8k2 resistance between terminal 20 and 71 missing - Check safety/protection device - Check whether the appropriate resistance is available without a connected security/safety device
<b>Display:</b> <b>Error/warning:</b> <b>Possible cause:</b> <b>Remedy:</b>	<b>3x flashing</b> Force limit in CLOSE direction Obstruction in gate area Remove obstruction; check forces, and increase if necessary
<b>Display:</b> <b>Error/warning:</b> <b>Possible cause:</b> <b>Remedy:</b>	<b>5x flashing</b> Force limit in OPEN direction Obstruction in gate area Remove obstruction; check forces, and increase if necessary
<b>Display:</b> <b>Error/warning:</b> <b>Possible cause:</b> <b>Remedy:</b>	<b>6x flashing</b> System error Internal error Restore the factory setting (see Chapter 6) and repeat the learning procedure for the control system; replace, if necessary.

## 8.2 Error acknowledgement

If an error occurs, this can be acknowledged, provided the error is no longer pending. On pressing the internal or external OPEN and CLOSE buttons or on generating an impulse, the error is deleted and the gate travels in the corresponding direction.

## 9 DISMANTLING

Have the hinged gate operator dismantled and disposed of by a specialist.

## 10 OPTIONAL ACCESSORIES (NOT INCLUDED IN THE SCOPE OF SUPPLY)

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

- External radio receivers
- External impulse button, e.g. key switch
- External code and transponder switches
- One-way photocell
- Warning lamp/signal light
- Electro lock for post locking
- Electro lock for floor locking
- Photocell expander
- Splash-proof junction box
- Stop plate
- Special installation fittings

## 11 TERMS AND CONDITIONS OF THE WARRANTY

### Warranty period

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

- a) 5 years on operator mechanics, motor and motor control system
- b) 2 years on radio equipment, impulse generator, accessories and special systems

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

### Prerequisites

A claim under this warranty is only valid for the country in which the equipment was bought. The product must have been purchased through our authorised distribution channels.

A claim under this warranty exists only for damage to the object of the contract itself. Reimbursement of expenditure for dismantling and installation, testing of corresponding parts, as well as demands for lost profits and compensation for damages, are excluded from the warranty. The receipt of purchase substantiates your right to claim under the warranty.

## Performance

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

Excluded is damage due to:

- improper installation and connection
- improper putting into service and operation
- external influences, such as fire, water, abnormal weather conditions
- mechanical damage due to accidents, dropping, impact
- negligent or deliberate destruction
- normal wear or deficient maintenance
- repair by non-qualified persons
- use of non-original parts
- removal or defacing of the type plate

Replaced parts become our property.

## 12 TECHNICAL DATA

**Max. gate width:** 2.500 mm

**Max. gate height:** 2.000 mm

**Max. gate weight:** 220 kg

**Rated load:** See type plate

**Max. pulling and pushing force:** See type plate

**Spindle speed at 600 N:** Approx. 20 mm/s

**Gate locking:** Electro lock for post and floor locking, recommended from a leaf width  $\geq 1.500$  mm

**Operator release:** On operator, with eye bolt

**Operator housing:** Aluminium and plastic

**Power supply:** Nominal voltage 230 V / 50 Hz  
Power consumption approx.  
0.15 kW, stand by: 5 W

**Control system:** Microprocessor control system, programmable via 12 DIL switches, control voltage 24 V DC, protection category IP 65


**Operating mode:** S2, short-time duty 4 minutes


**Temperature range:** -20 °C to +60 °C


<b>Travel limit/force limit:</b>	Electronic
<b>Automatic cut-out:</b>	Force limit for both operational directions, self-programming and self-monitoring
<b>Hold-open phase for automatic timed closing:</b>	60 seconds (photocell required)
<b>Motor:</b>	Spindle unit with 24 V DC motor and worm gears, protection category IP 44
<b>Radio remote control:</b>	2-channel receiver, hand transmitter





### 13 OVERVIEW OF DIL SWITCH FUNCTIONS


<b>DIL 1 Single or double-leaf operation</b>		
OFF	Double-leaf operation	
ON	Single-leaf operation	


<b>DIL 2 With/without leaf offset (only with double-leaf operation)</b>		
OFF	Leaf A opens before leaf B, leaf B closes before leaf A	
ON	Leaves A and B open and close simultaneously without offset	


<b>DIL 3 Leaf selection/size of leaf offset</b>		
OFF	Leaf A set-up/large leaf offset	
ON	Leaf B set-up/small leaf offset	


<b>DIL 4 Set-up mode</b>		
OFF	Normal operation in press-and-release operation	
ON	Set-up mode ON	


<b>DIL 5 SE safety device</b>		
OFF	Safety device without self-monitoring	
ON	Safety device with self-monitoring	


<b>DIL 6 Function of the safety device when opening</b>		
OFF	No effect	
ON	Stop leaves	

<b>DIL 7 Function of the safety device when closing</b>		
OFF	Leaves reverse towards OPEN	
ON	Stop leaves	

<b>DIL 8 Reversing towards OPEN</b>		
OFF	Brief reversing towards OPEN	
ON	Reversing to OPEN end-of-travel position	

DIL 9	DIL 10	Operator function	Options relay function	
OFF	OFF	No special function	Relay picks up in the CLOSE end-of-travel position	
ON	OFF	Advance warning phase for all leaf travel, no automatic timer	Relay clocks rapidly during the warning phase, normally during the travel phase.	
OFF	ON	Automatic timer, advance warning phase only for automatic timed closing	Relay clocks rapidly during the advance warning phase, normally during the travel phase and is OFF during the hold-open phase.	
ON	ON	Advance warning phase for all leaf travel, with automatic timer	Relay clocks rapidly during the advance warning phase, normally during the travel phase and is OFF during the hold-open phase.	

<b>DIL 11 Safety photocell as a through-traffic photocell</b>		
OFF	Safety photocell not activated as a through-traffic photocell	
ON	Safety photocell activated as a through-traffic photocell	

<b>DIL 12 Reversing limit/travel speed</b>		
OFF	No function/full travel speed	
ON	Set up reversing limit/moderate travel speed	