

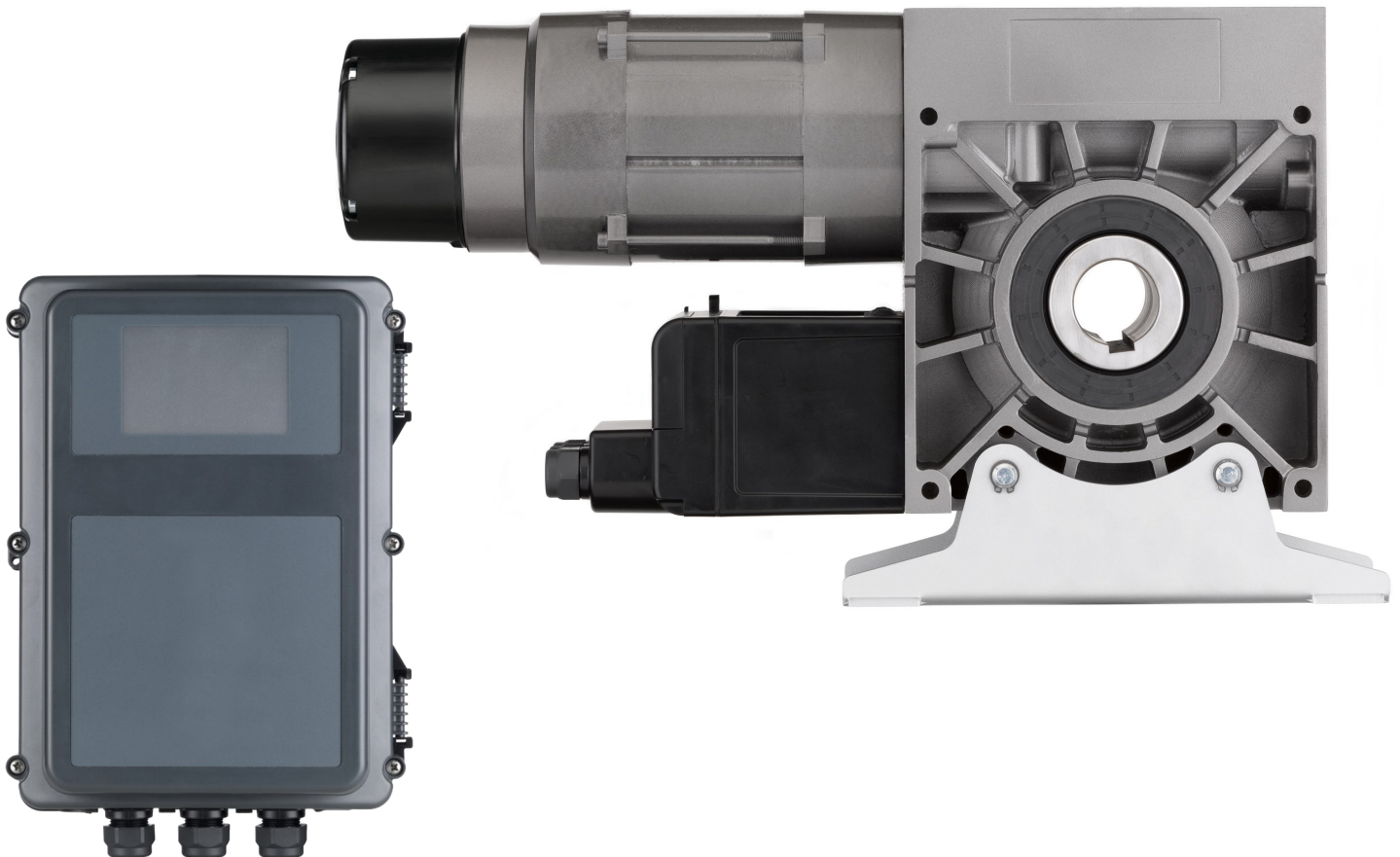
# Manual : N° 1434

## Installation & Connection

### *Murax P110 Shutter and Dentel Grille*



*E400-E750 operators  
with CS300T box*



(Document reserved for installers)

# Contents

Required equipment .....	p.2
Installation instructions .....	p.3
Operator information .....	p.4
Installation of guiding rails and axis .....	p.5
Shutter installation principle .....	p.8
Mounting the Murax shutter .....	p.9
Mounting the Dentel shutter .....	p.12
Connection to the CS300T box .....	p.13
Connection to the operator .....	p.14
Connection to the box bearing plate .....	p.14
Hold to run operation .....	p.15
Mixed operation .....	p.16
Emergency stop .....	p.17
Connection to mains .....	p.17
Programming .....	p.18
Operation of relay outputs .....	p.20
Option : Flashing orange lights .....	p.20
Display and deletion of defects .....	p.21
Reinitialization of factory settings .....	p.21
Reading of cycle number .....	p.22
Finishes .....	p.23
In case of problems with maneuver .....	p.23
In case of poor operator functioning .....	p.23
Option : Mounting of winch (E400 operator) .....	p.24
Option : Mounting of winch (E750 operator) .....	p.25
Emergency maneuver by crank .....	p.27
Technical assistance contact .....	p.27
Option : Emergency maneuver by winch .....	p.28

## Required equipment

- |                     |                     |
|---------------------|---------------------|
| - Lifting equipment | - Flat wrenches     |
| - Clamps            | - Hexagon keys      |
| - Spirit level      | - Pipe wrenches     |
| - Plumb bob         | - Screwdriver       |
| - Tape measure (5m) | - Grease and brush  |
| - Hammer drill      | - Multi-grip pliers |

# Installation instructions

## WARNING!



To ensure that this product is assembled, used and maintained in complete safety, it is important to follow the instructions provided in this document. For everyone's safety, observe the following precautionary measures.



- \* Before beginning the assembly, read this manual carefully.
- \* This fence element must be installed by a professional technician. Electrical work must be carried out by a qualified electrician.
- \* All the parts delivered are specifically sized for this product. Adding and/or using other parts may be detrimental to safety and may affect the product's warranty.
- \* Any modification or improvement of this fence element must be compliant with the standard EN 13241 + A2. In this case, a "modification/transformation" file must be created by the installer as per the standard EN 12635 annex C.
- \* Considerable force must be applied in the case of shutters or grilles. This work must therefore be carried out in accordance with the safety instructions. Use the appropriate tools to install these products. Make sure to work on stable ground ; Use a balanced, non-slip ladder.
- \* Ensure that the assembly area is adequately lit, clear, clean and clearly marked out.
- \* Ensure that no other people are present at the assembly site apart from the installers. Non-authorized persons (children for example !) who are present at the site risk injury during assembly.
- \* All the components of this fence element must be installed in compliance with the installation instructions provided in this manual.
- \* All the requirements of the standards EN 13241 + A2 must be met and verified if necessary.

### **Max. locking torques :**

- Assembly screw : **10 Nm**
- Shutter clip screw : **12 Nm**

### **Min. working load per attachment point :**

- Plates : **300 daN**
- Guiding rails : **40 daN**

**Please note :** If installing on an iron structure, the guiding rails and plates can be welded to the building. In this case, a cord of approximately 50 mm must be attached to 50 mm each side, roughly 800 mm apart.

## Operator information

	E400 operator		E750 operator
Output torque (Nm)	420		750
Output rotation speed (min -1)	12		10
Operator power (Kw)	1.1		1.4
Operating voltage (V)	230/3~ + ½	400/3~ + ½	400/3~ + ½
Power supply frequency (Hz)	50		
Control circuit voltage (V)	24		
Nominal operator current (A)	8.83	5.1	3.9
Operator continuous operation time (%)	60		25
Power supply under your responsibility (mm <sup>2</sup> )	5 x 1,5		
Protection under your responsibility (A)	10		
Protection class (IP)	54		
Temperature range (°C)	-20 / +60		
Continuous sound pressure level (dB (A))	< 70		
Unit weight (kg)	27		29

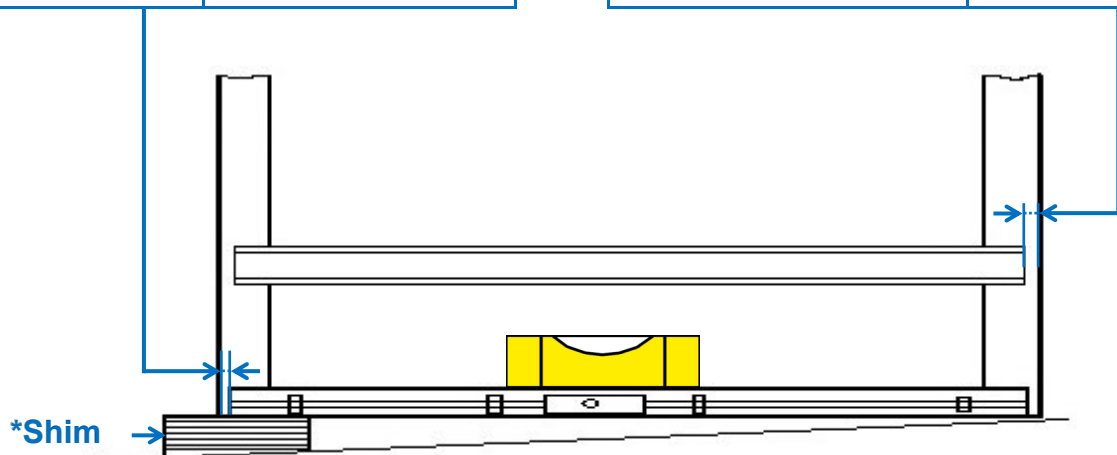
# Installation of guiding rails and axis



The clearances for the hurricane guiding rails and the noise reduction clips vary, refer to the corresponding manual which is included in the accessory pack.

End-slat	
The inner clearance on each side must be observed in accordance with the depth of the guiding rail	
Bottom clearance of guiding rail	Depth of guiding rail
8 mm	40 / 60 mm
8 mm	80 / 100 mm

Intermediate slats or Corrugated tubes	
The inner clearance on each side must be observed in accordance with the depth of the guiding rail	
Bottom clearance of guiding rail	Depth of guiding rail
8 mm	40 / 60 mm
12 mm	80 / 100 mm

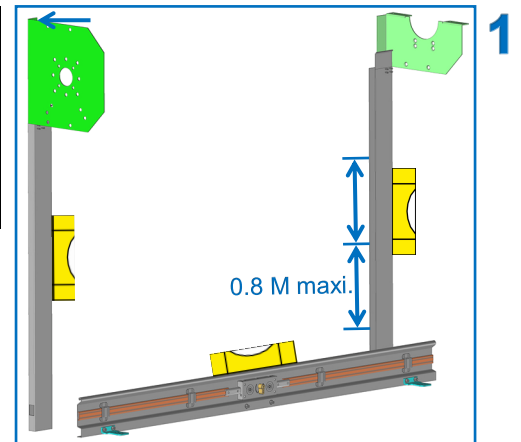


**Operator side :** It is essential to leave a space of 180 mm at the back of the guiding rail to accommodate the operator.

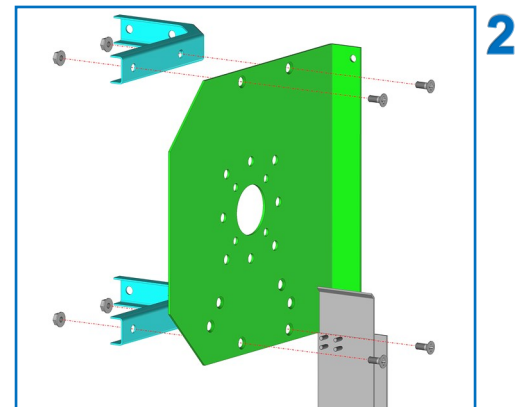
**Opposite side to the operator :** It is essential to leave a space of 100 mm at the back of the guiding rail to install the bearing and the clamping washer.



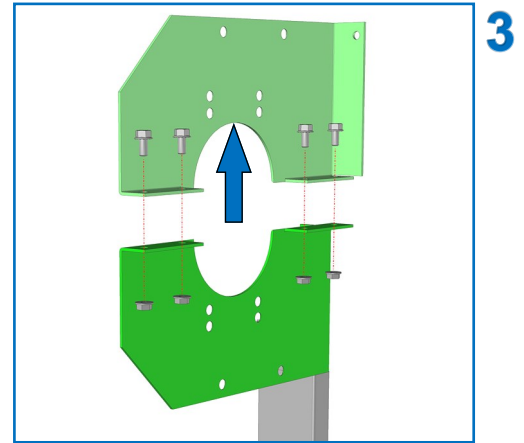
- 1 - Provisionally attach the guiding rails using the clamps.
  - Position the end-slat horizontally (a shim may potentially be needed at the bottom of the guiding rail\*), ensuring that the clearance is respected.
  - Check that the guiding rails are plumb.
  - Permanently attach the guiding rails and the upper section of the winding plate.



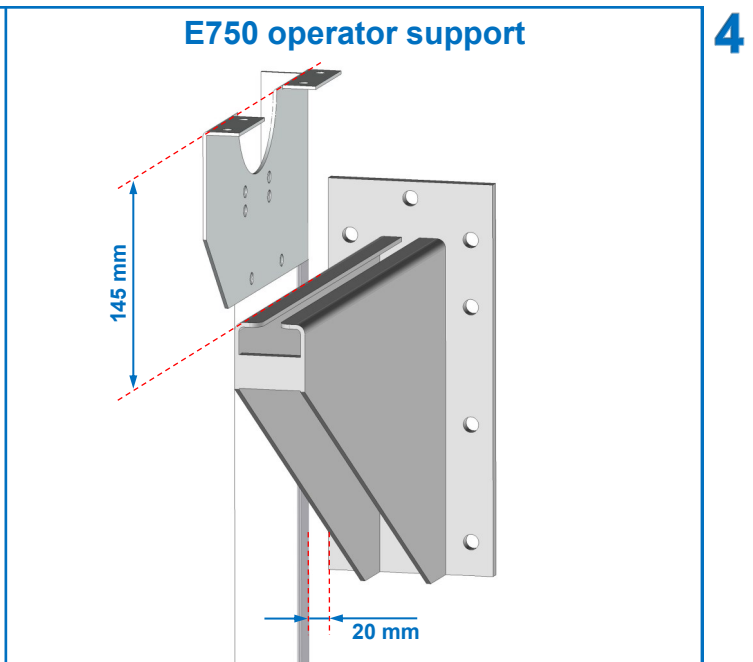
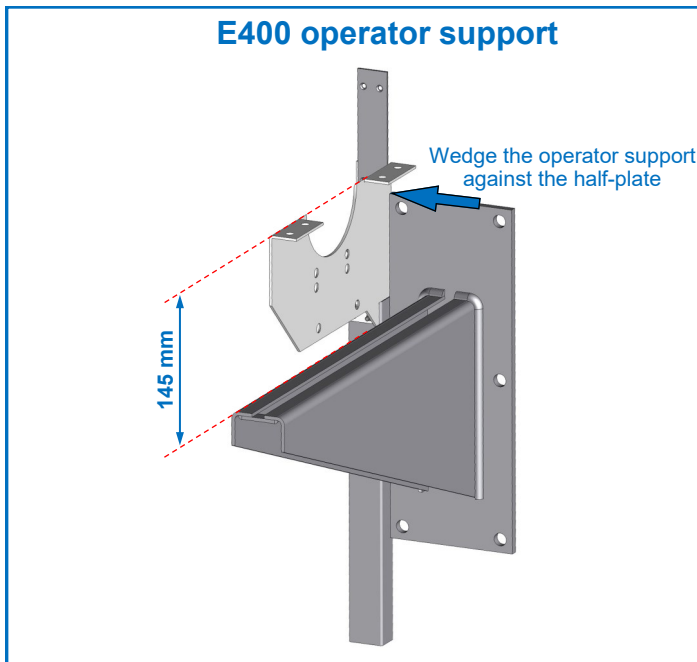
- 2 - Opposite side to the operator (OO) :
  - Attach the reinforcement brackets to the winding plate with FZ M8x20 ZN screws and HE M8 ZN nuts.
  - Attach the assembly to the wall using the brackets (pins and screws not provided).



- 3 - Operator side (OS) :**  
 - Disassemble the upper half winding plate.



- 4 - Operator side (OS) :**



Firmly attach the support to the wall with the steel pins and 6 screws TH M14 (pins and screws not provided).

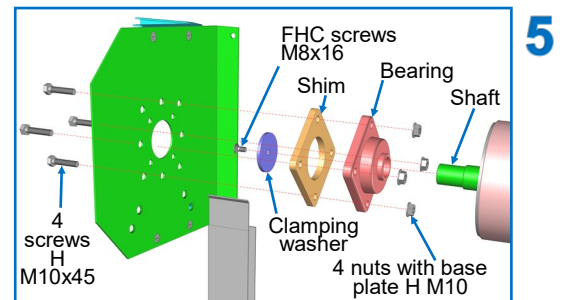
Firmly attach the support to the wall with the steel pins and 10 screws TH M12 (pins and screws not provided).



**The weight of the shutter is carried by the winding plate (OS) and the operator support ; therefore, the support must be attached to the wall very carefully.**

- 5 - Installing the shaft :**
- Fit the bearing onto the shaft, screw the clamping washer to the end of the shaft with the FHC M8x16 screw with threadlock.
  - On the operator side, position the keyed shaft on the lower half-plate.
  - On the opposite side, screw the bearing to the plate with the corresponding screws, inserting shim in between them.

**Opposite side to the operator (OO)**



6 - Installing the operator : Stick it on the keyed shaft.

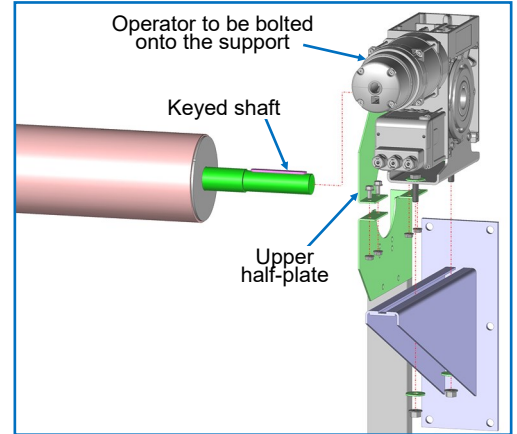


**The axis must be parallel with the header and the keyed shaft must be centered on the plate.**

Position it on its support and attach it with 2 bolts M12x45 and 4 flat washers of 12.

Reassemble the upper half winding plate and attach it to the wall.

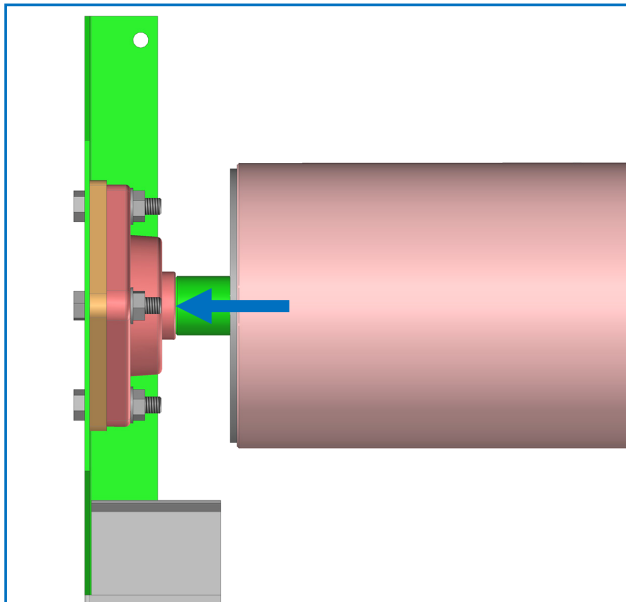
**Operator side (OS)**



**The plates must always remain parallel during the maneuver ; Add extra reinforcements (not provided).**

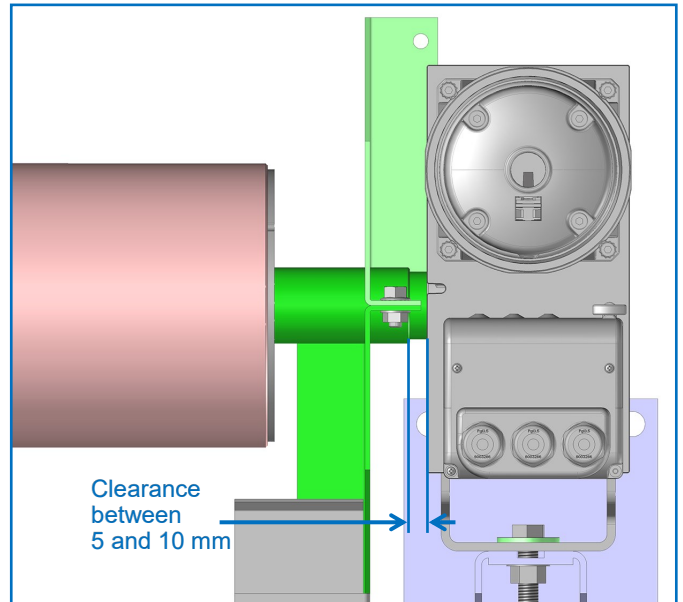
7 - Once the structure is assembled, check :

**Opposite side to the operator (OO)**



Shoulder abuts the bearing

**Operator side (OS)**



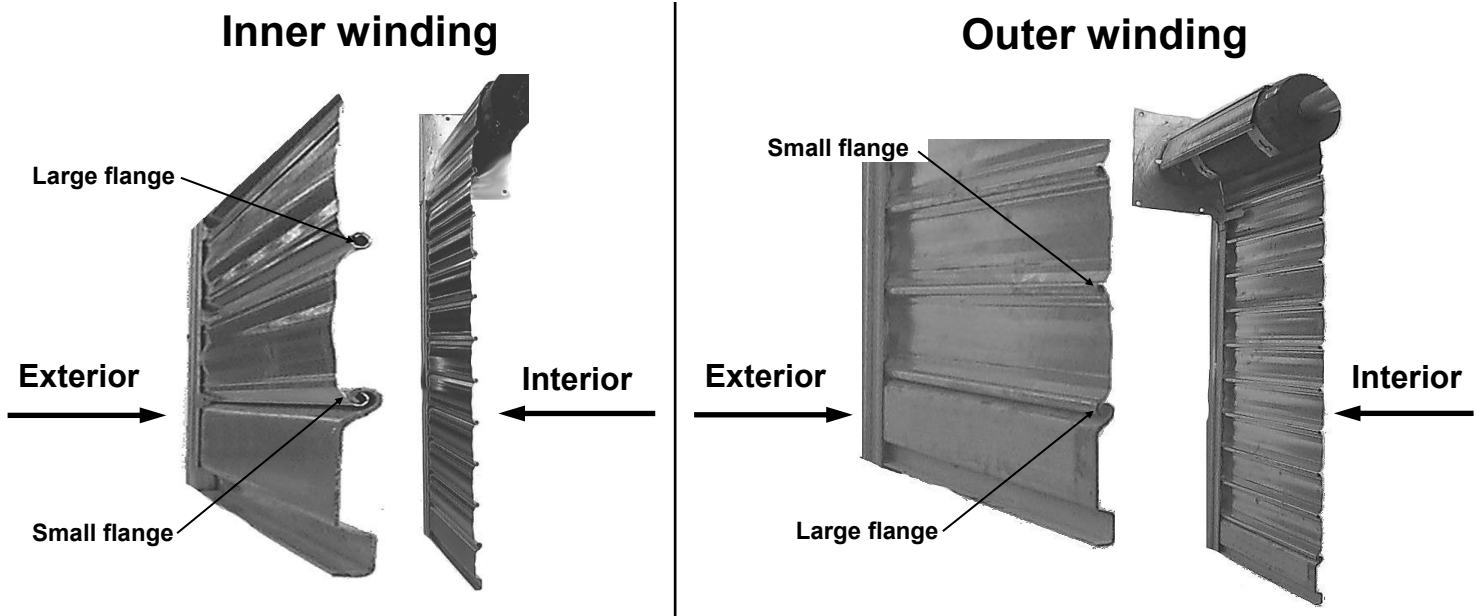
Between the shoulder and the operator

# Shutter installation principle

## Winding direction

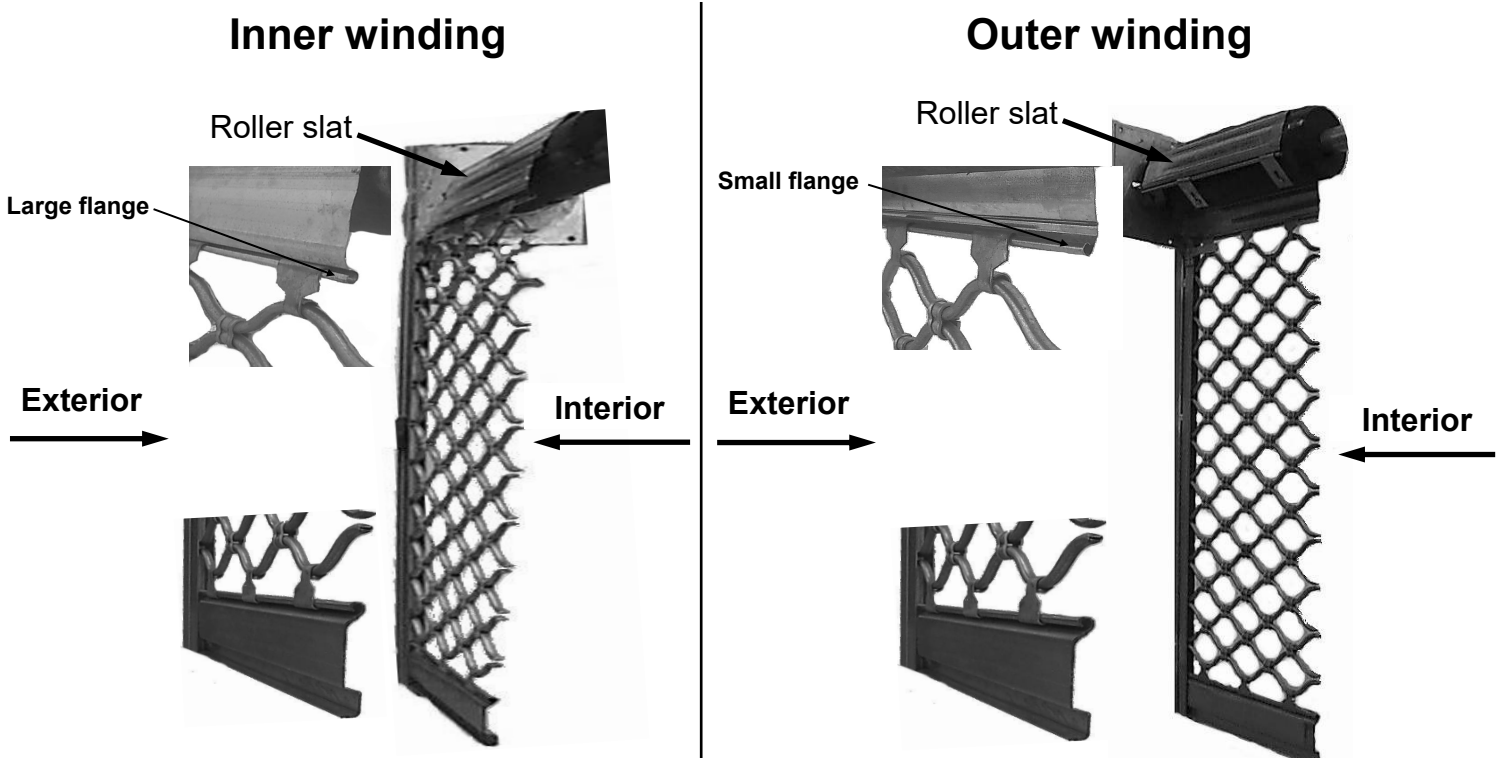
### SOLID or MICROPERFORATED MURAX SHUTTER

A Microperforated shutter always requires 3 full roller slats in the upper section



### or DENTEL SHUTTER

A Dentel shutter always requires 3 full roller slats in the upper section





# Mounting the Murax shutter



The height and the rolling of the shutter are calculated with a precise number of slats. All the slats provided must be installed.

How the shutter is assembled depends on the space available on the assembly site at the back of the guiding rails.

## Case No. 1 : You have plenty of space

You have, on one side at least, a length longer than the length of the slats (for example : installation on the facade of a building)

- 1- Assemble (roughly) a meter's length of the shutter on the floor using the shutter clips.

**WARNING, in winding direction.**

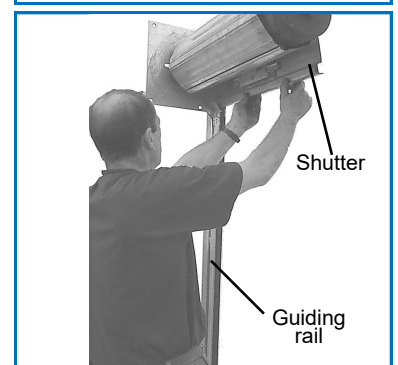
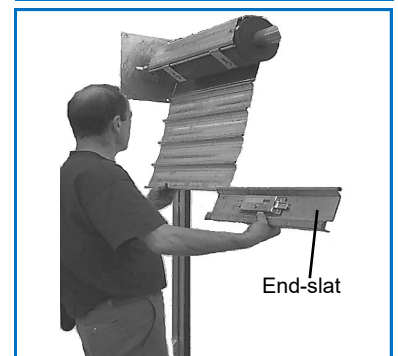
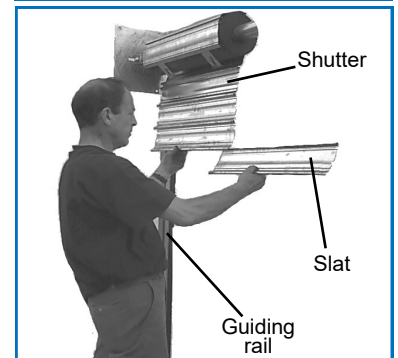
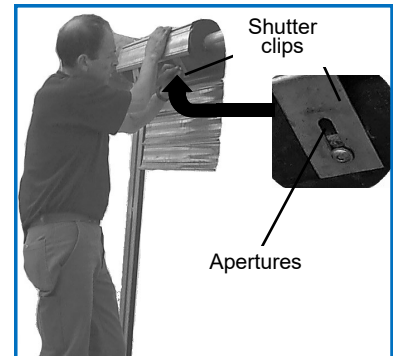
- 2- Attach it to the axis, letting the slats hang outside of the guiding rails.



Before tightening the fastening screws, make sure that the screw heads do not touch a slat flange when winding. If so, adjust all the clips so that they are at the same distance using the apertures.

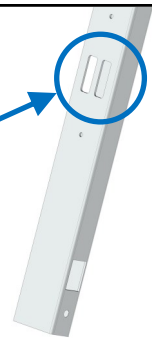
- 3- Then, insert each slat from the side until the end-slat.

**Please note :** Align the ends of the slats.



**New and mandatory :**

If right guiding rail machined interior view, mount the HOMIRIS magnet holder "kit AGR-039", on the 3rd slat from the bottom (right side). The kit and manual are included in the accessory pack.



For windbreak end-pieces, see the corresponding instructions, for the order of slats with end-pieces.

- 4- Roll the shutter above the start curves.

- 5- Insert the final slat in the guiding rail and unwind the shutter.

**Please note :** Check the alignment of the slats and the clearances on each side.

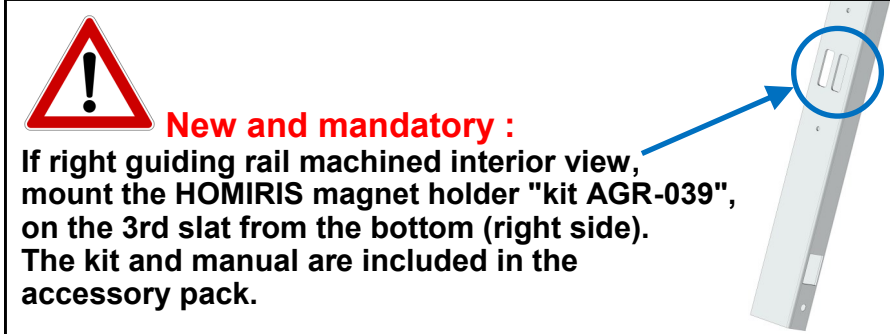
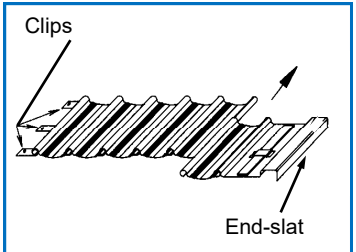
- 6- Remember to adjust the start curves .

## Case No. 2 : You do not have any space

You do not have any space at the back of the guiding rails  
(for example, installation in a corridor)

- 1- Create the shutter by threading the slats together, without forgetting the clips.

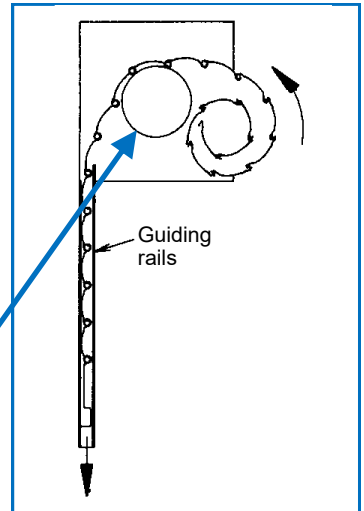
**WARNING, in winding direction.**



- 2- Roll the assembled shutter starting from the clips and moving towards the end-slat .

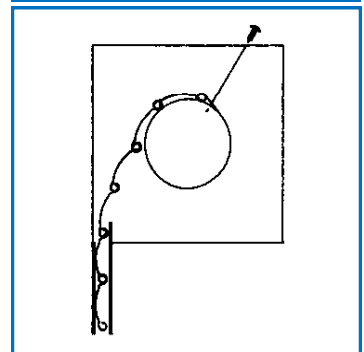
- 3- Lift the shutter up to the tube using a hoist or an alternative lifting system.

**!** To avoid scratching the slats while unrolling them, ensure that the axle is protected (e.g. with a box, etc.).



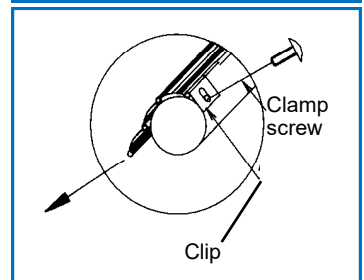
- 4- Unroll the shutter in the guiding rails starting from the end-slat.

- 5- Slide each clip into place until it is opposite its corresponding hole.

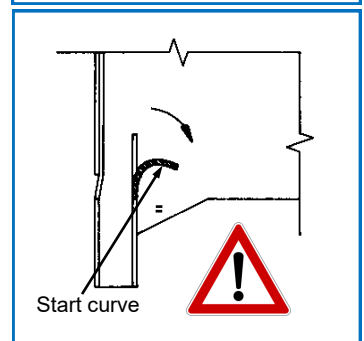


- 6- Attach the shutter to the tube using the clips.

**!** Before tightening the fastening screws, make sure that the screw heads do not touch a slat flange when winding. If so, adjust all the clips so that they are at the same distance using the apertures.



- 7- Remember to adjust the start curves.



### Case No. 3 : You do not have enough space

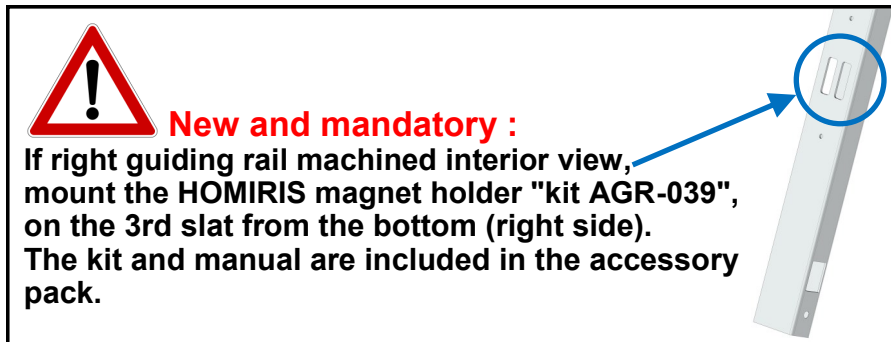
You do not have enough space inside and the shutter is not very thick  
(for example : Installation inside a building with small reservations)

1- Assemble 12 to 15 slats on the axis outside of the guiding rails.

**WARNING, in winding direction.**

2- Position them to the side of the assembled part of the shutter.

3- Insert the slats one by one from the outside until the end-slat.



4- Reposition the shutter behind the guiding rails.

5- Align the ends of the slats.

6- Roll the shutter above the start curves.

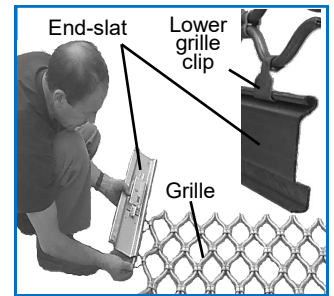
7- Insert the final blade in the guiding rails and unwind the shutter.


**Please note :** Check the alignment of the slats and the clearances on each side.

8- Remember to adjust the start curves.

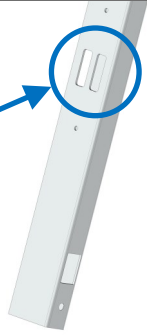
# Mounting the Dentel shutter

- 1- Insert the end-slat into the bottom clips.  
By default, above the final blade, 2 solid slats must be inserted.  
**WARNING, in winding direction.**

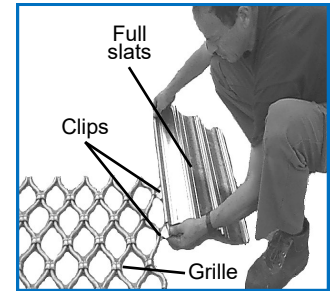




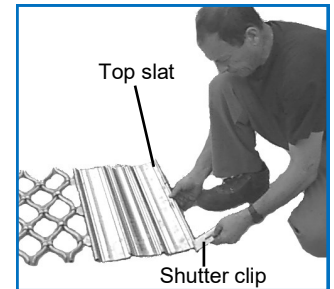
**New and mandatory :**  
If right guiding rail machined interior view, mount the HOMIRIS magnet holder "kit AGR-039", on the 3rd slat from the bottom (right side). The kit and manual are included in the accessory pack.



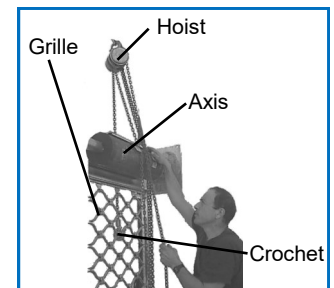
- 2- Insert the 3 full slats into the top clips.  
**WARNING, in winding direction.**




- 3- Insert the shutter clips into the final top slat.



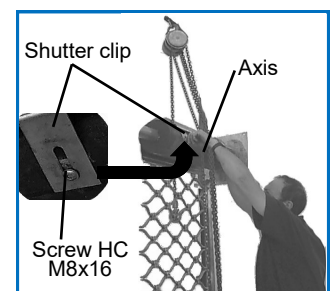
- 4- Attach at least 2 hoists to the wall above the axis.
  - Attach the hoists to the grille, 1 m above the shutter.
  - Install the grille using the hoists and position the slats around the axis.



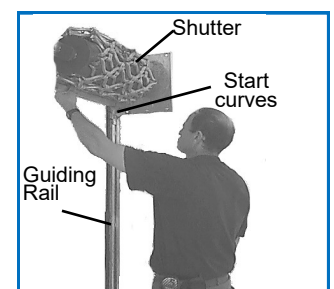
- 5- Slide each clip into place until it is opposite its corresponding hole.
  - Screw the clips to the shutter on the axis using the screws HC M8x16.



**Before tightening the fastening screws, make sure that the screw heads do not touch a slat flange when winding. If so, adjust all the clips so that they are at the same distance using the apertures.**



- 6- Roll the shutter above the start curves.



- 7- Insert the end-slat in the guiding rails and unwind the shutter.

- 8- Remember to adjust the start curves.

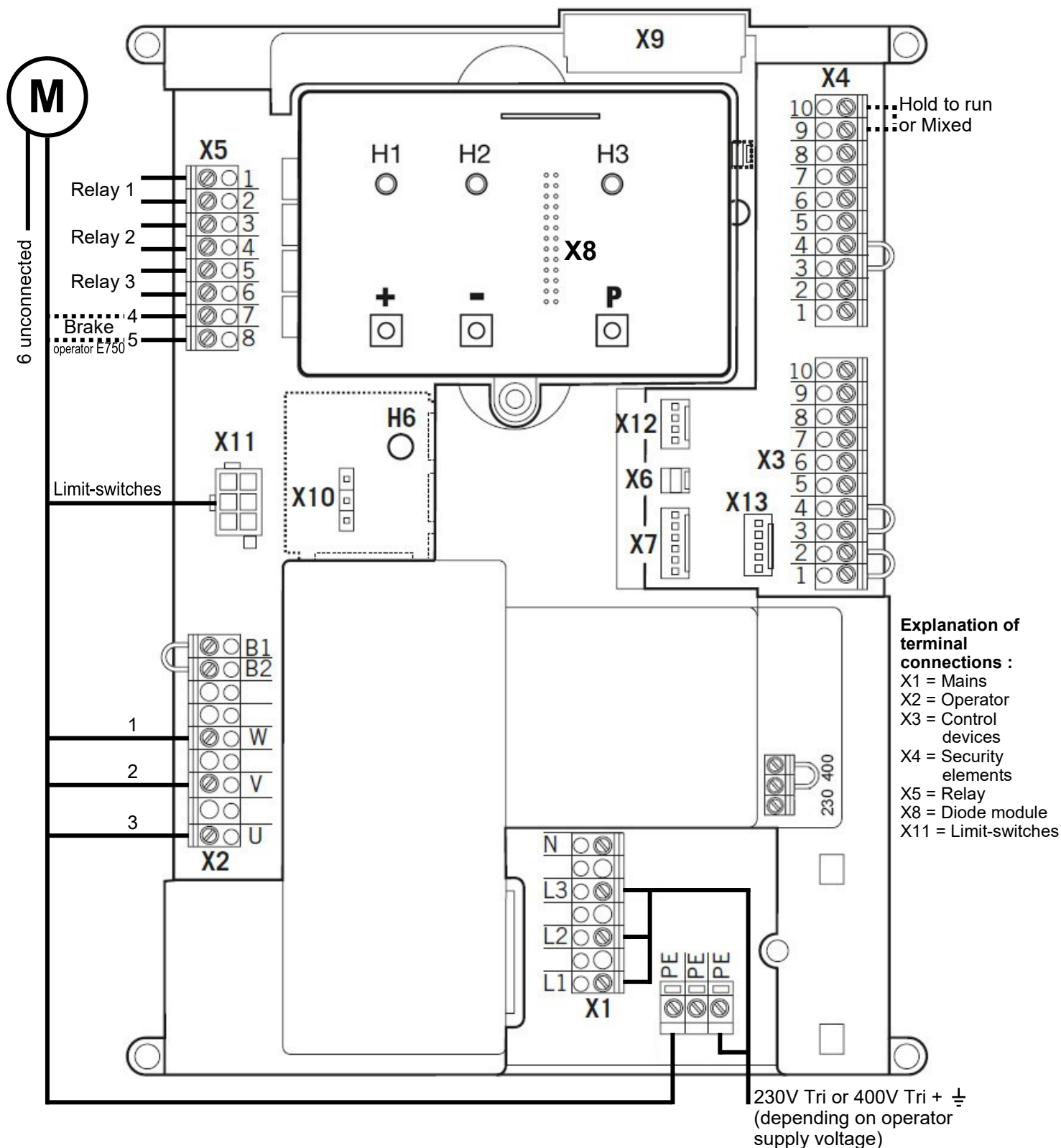
# Connection to the CS300T box



The fixed controls must be installed within sight of the door but away from any moving parts and at a height of at least 1.5 m from the floor.



The CS300T control box has been designed exclusively to control operators with encoders.



**Explanation of terminal connections :**  
 X1 = Mains  
 X2 = Operator  
 X3 = Control devices  
 X4 = Security elements  
 X5 = Relay  
 X8 = Diode module  
 X11 = Limit-switches



**Before connecting the control box to the mains, check that :**

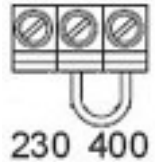
- The gear operator is installed and connected to the box.
- The control boxes and safety elements are connected to the box.
- The box is installed.

## IMPORTANT

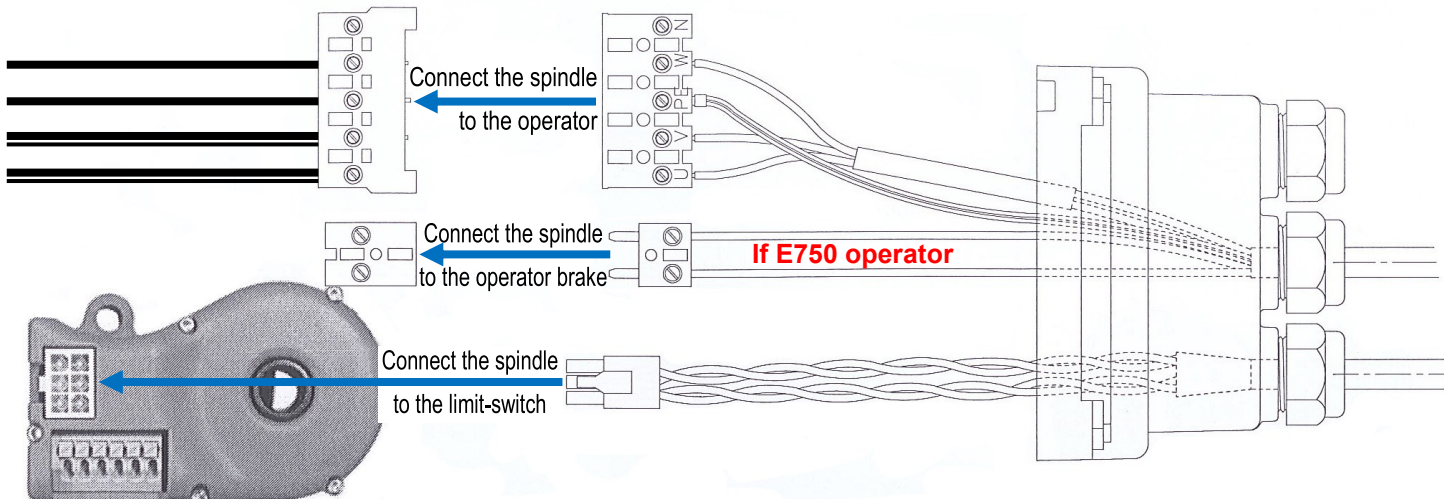
- In the presence of three-phase current, there must be a right-turning field.
- In the case of a fixed connection, an all-pole main switch, accessible to the user and in the immediate vicinity of the control box, must be used.
- Ensure the power line is protected using a differential circuit-breaker (10A) for each pole situated upstream.



**By default, the box bearing plate is configured for 400V three-phase. In the case of a 230V three-phase operator, move the jumper on the terminal block below the red housing to the 230V position.**



## Connection to the operator



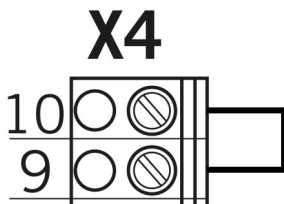
## Connection to the box bearing plate

- 1- Connect the gear operator to terminal block X2.
- 2- If E750 operator, connect the operator brake to terminal block X5.
- 3- Connect the digital limit switch system (encoder) to terminal board X11.
- 4- Connect the control boxes and any safety devices to terminal strip X3.

# Hold to run operation



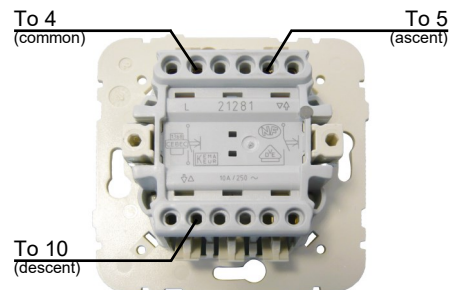
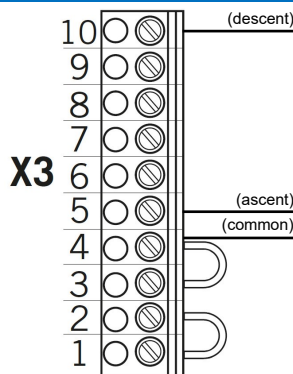
Only a control device requiring sustained action should be installed and used.



**On the bearing plate of the CS300T box :**  
 Bridge terminals 9 and 10 on terminal block X4, using the jumper taped to the box, for hold-to-run operation.

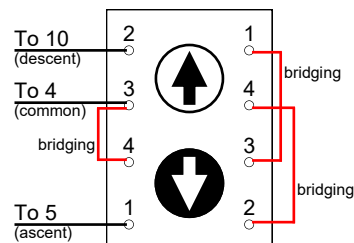
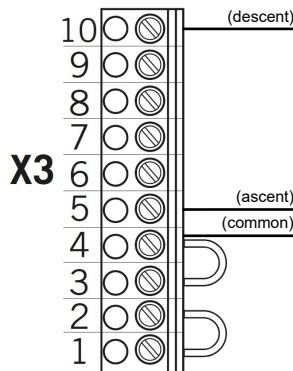
## Connection of the controls to the X3 terminal of CS300T box

### Button box



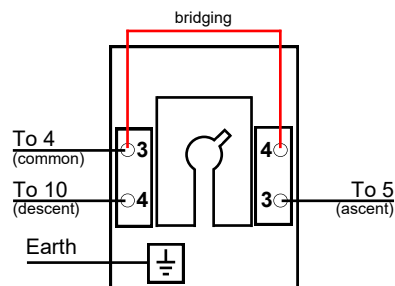
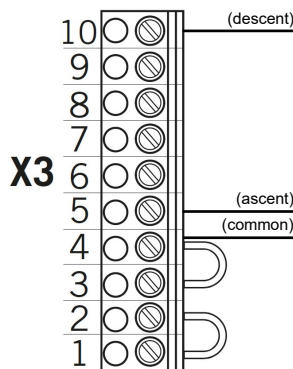
Wall-mounted/built-in button box (BBA1/BBE1)

### 2-button box



Wall-mounted 2-button box (BBA2)

### Key switch box



Wall-mounted/built-in key switch box (BCA/BCE)

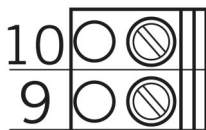
# Mixed operation

## Ascent pulse - Descent hold to run



According to EN 12453 : 2001 §4.1.1 and §4.1.2, mixed operation must not be used with a Dentel Grille or a shutter with mixed Dentel located less than 2.5 meters from the ground. Failure to comply with these recommendations will result in a hazardous situation that could result in death or serious injury. The choice of this operation, engages the entire responsibility of the installer.

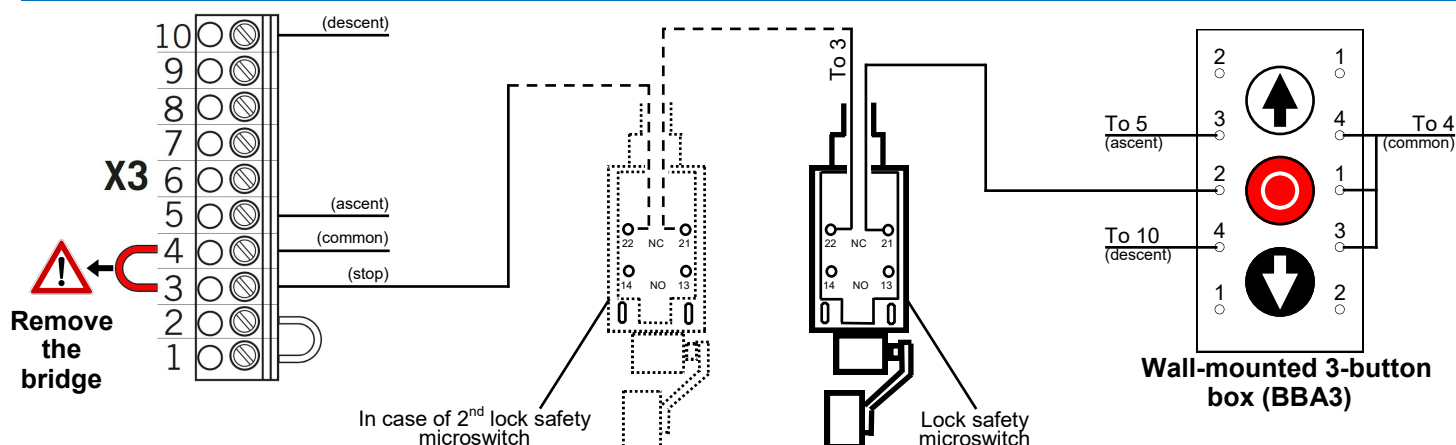
### X4



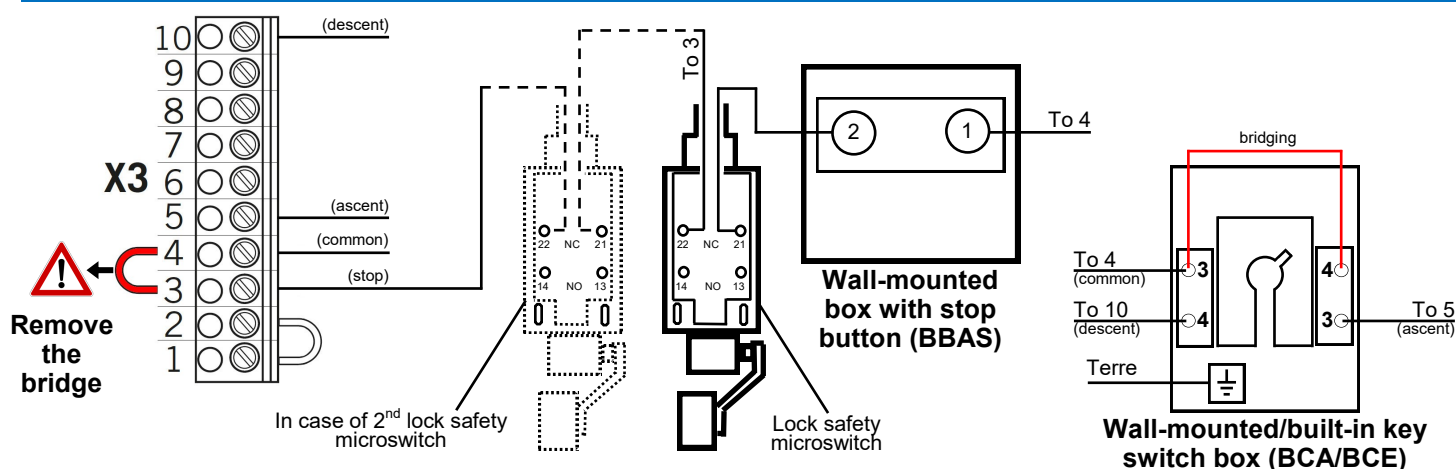
**On the bearing plate of the CS300T box :**  
No jumper between terminals 9 and 10 on terminal strip X4 for mixed operation.

## Connection of the controls to the X3 terminal of the CS300T box

### 3-button box + Micro switch

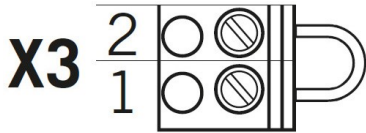


### Key switch box + Stop Button Box + Microswitch



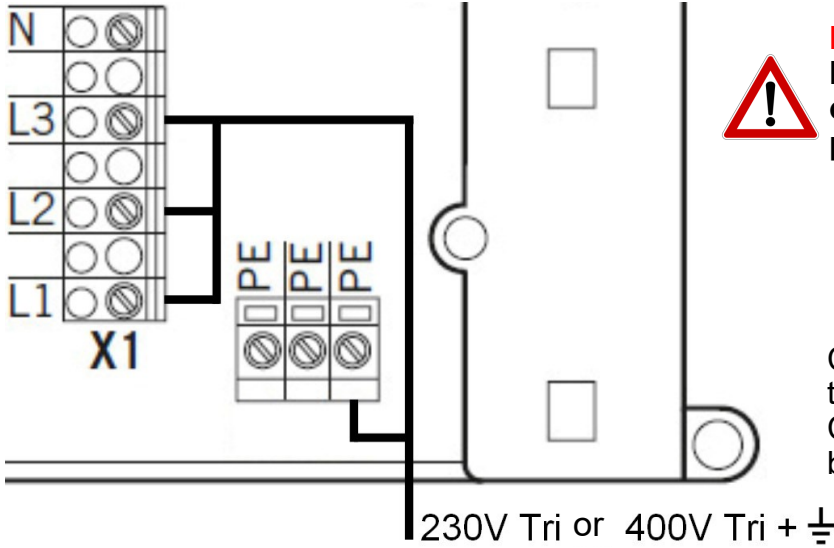


## Emergency stop



It is possible to connect an emergency stop device.

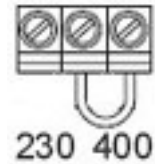
## Connection to mains



**Reminder :**



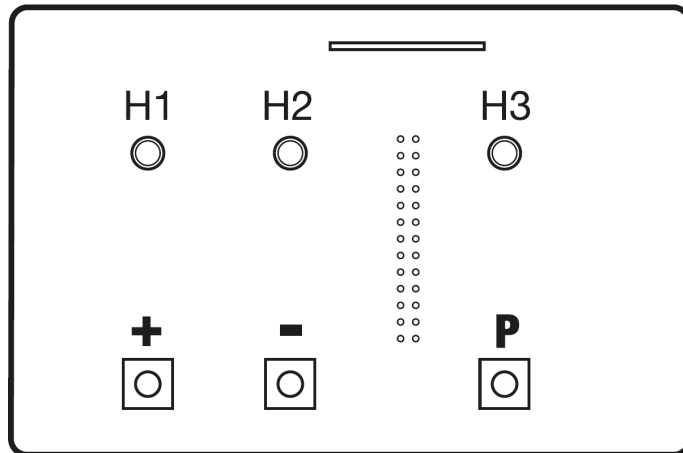
Before powering up, check the position of the 230/400V jumper depending on the power supply of the operator.



Connect the cables for earthing on the PE terminal strip.  
Connect the bearing plate of the CS300T box to the mains, on terminal block X1.

# Programming

## LED module presentation



### Explanations :

- Diode off
- Diode on
- Diode flashing

**H3** : Box on

With the diode module, the control has 2 modes.

**Mode 1** → **AUTOMATIC** : No LEDs flashing.

**Mode 2** → **ADJUSTMENT** : At least one LED is flashing.

Pressing the button **P** for **2 seconds**, allows to change mode.

### Description of mode 1 → AUTOMATIC

Operating mode when the shutter is in use.

LED display :

H1	H2	Status
<input checked="" type="radio"/>	<input type="radio"/>	The shutter is open ; the programmed high limit-switch is reached.
<input type="radio"/>	<input checked="" type="radio"/>	The shutter is closed ; the programmed low limit-switch is reached.
<input type="radio"/>	<input type="radio"/>	The shutter is in the intermediate position ; no limit-switch is reached.
<input checked="" type="radio"/>	<input checked="" type="radio"/>	The shutter was moved past the up/down limit-switches. (Shutter stop ; Reprogram limit-switches).

### Description of mode 2 → ADJUSTMENT

Mode used to set the limit-switch.



**In ADJUSTMENT mode, there is no stop position because the limit-switches are reached. Overrunning the limit-switches may damage the shutter or grille.**

LED display :

H1	H2	Status
<input checked="" type="radio"/>	<input checked="" type="radio"/>	In this shutter position ; the high limit-switch is programmed.
<input checked="" type="radio"/>	<input type="radio"/>	In this shutter position ; the low limit-switch is programmed.
<input type="radio"/>	<input type="radio"/>	In this shutter position ; the low/high limit-switches are not programmed.

## Setting the limit-switches

Press the **P key for 2 seconds** to switch to the **ADJUSTMENT** mode.

### - Setting the TOP limit-switch :

Open the shutter by pressing the **+** key (**opening**).



**If the shutter does not rise, change the operator rotation direction by switching the U and V wires on the X2 terminal block.**

Move shutter to desired upper position ; Adjust if necessary, with key **- (close)** or the **+** (**open**) key.

Store the position of the HIGH limit switch by simultaneously pressing key **P** then **+** until LED **H1 becomes fixed** and LED **H2 flashes**.

"The HIGH limit switch is set".

### - Setting the BOTTOM limit-switch :

Close the shutter by pressing the **-** key (**closing**).

Move shutter to **desired low position** ; Adjust if necessary, with key **+** (**open**) or the **- (close)** key.

Store the BOTTOM limit-switch position by simultaneously pressing the key **P** then **-** until LED **H1 flashes** and LED **H2 becomes fixed**.

"The BOTTOM limit switch is set ".

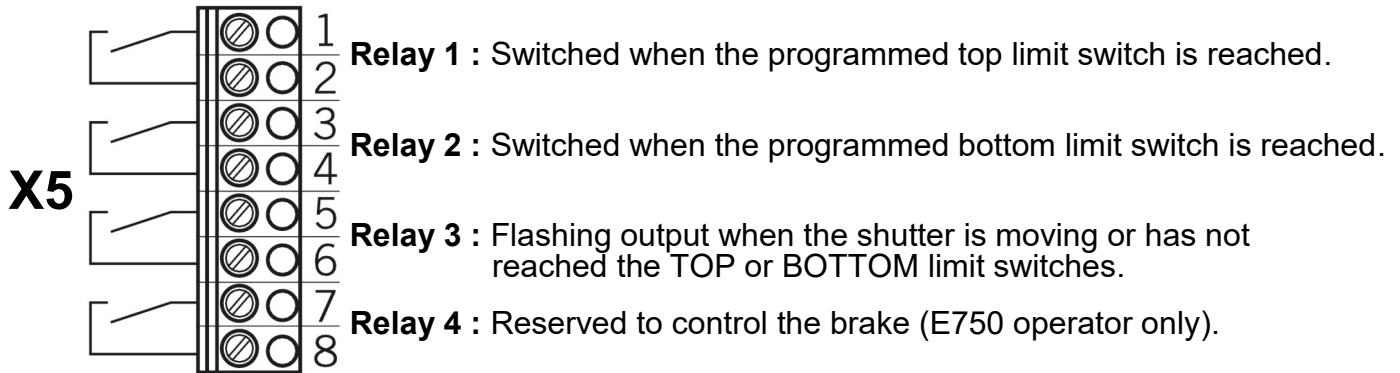
Press the **P key for 2 seconds** to switch to the **AUTOMATIC** mode.

**Operation is functional.**

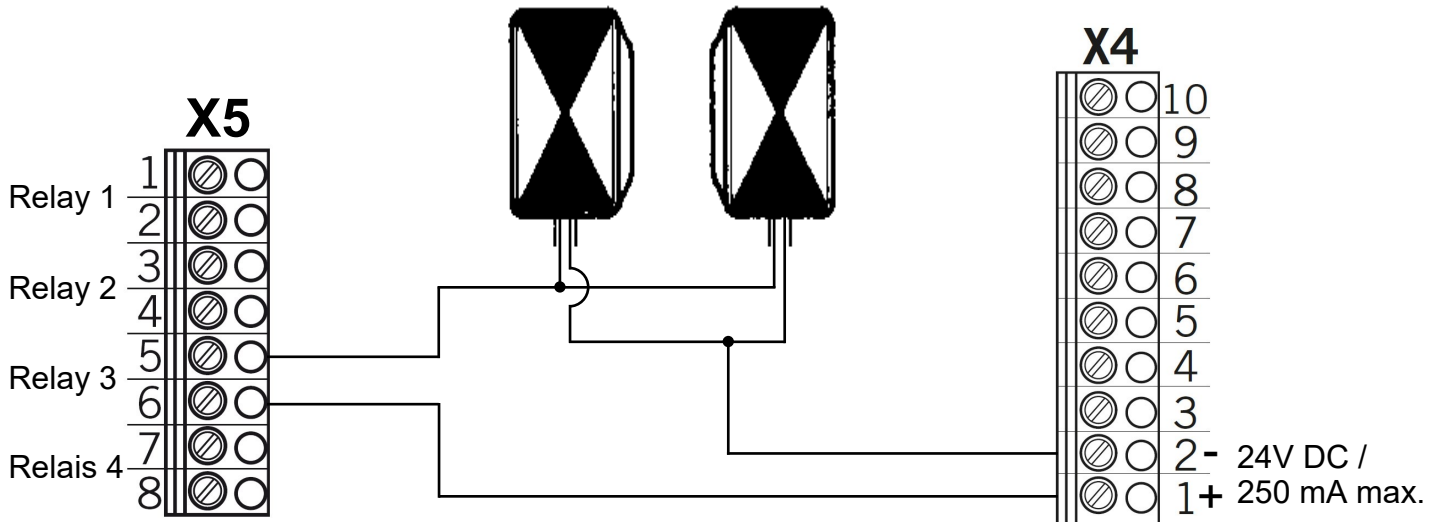
**Please note** : If you want to change the position of the TOP or BOTTOM limit switch after saving it ; Repeat the above procedure (enter the ADJUSTMENT mode, then resume the setting of the corresponding limit switch).

## Operation of relay outputs

Additional potential-free closing contacts : Min. 10 mA - Max. 230V AC/4A.



## Option : Flashing orange lights (24V - Maxi 2 x 3W)



## Display and deletion of defects

**LED H3** → Green Color

LED display	Defect	Correction
<b>H3</b> : Off	No operating voltage	Check the power supply at L1, L2 and L3 (X1 terminal)

**LED H1 and H2** → Red Color

**Scenario 1** : No mistake.

The LEDs operate as described in AUTOMATIC and ADJUST mode.

**Scenario 2** : There are one or more errors.

The H1 LED lights up steady and the H2 LED indicates the error code.

H2 LED display	Defect	Cause	Correction	Priority
<b>1 flash and LED H6 off (orange color)</b>	Security chain	The security chain is open.	Switch off, check the safety chain: X3 : 1+2 → Lack of bridge or emergency stop engaged. X6 : Lack of bridge. X11 : Wires 4+8 → Operator safety circuit open. X3 : 3+4 → External stop button. X7 : 1+2 → Bridge missing.	1
<b>2 flashes</b>	Encoder error	Transmission of signal between encoder and bearing plate interrupted.	Switch off and check the X11 connection, the connection of the encoder cables to the operator, change them if faulty or change the encoder.	2
<b>3 flashes</b>	Limit switch error	Shutter is outside programmed limit switch area. Limit switches are not yet programmed.	Reprogram the limit switches.	3
<b>4 flashes</b>	Rotating field error	Left rotating field.	Switch off the power supply, then reverse the wires U and V on terminal block X2.	4
<b>5 flashes</b>	Force error	Operator forces too much.	Check that the shutter does not jam (presence of hard dots). Reset the control after removing the hard dots.	5
<b>6 clignotements</b>	Run time error	Overrun of length of recorded movement.	Check that the shutter does not jam (presence of hard dots). Reset the control after removing the hard dots.	6

**Please note** : If there are several errors, the overriding error is displayed 1st.

## Reinitialization of factory settings

- 1- Cut the power supply to the box.
- 2- Simultaneously press the **+** and **-** keys.
- 3- While keeping the keys **+** and **- pressed**, switch the power to the box back on.
- 4- When the **2 red LEDs, H1 and H2 flash** (~5 seconds), release the **+** and **-** keys.

The installation is now in the ADJUST mode.

**Results** : The recorded settings of the limit-switches are therefore deleted and all the parameters will return to the factory settings.

# Reading of cycle number by LED H1 and H2

- 1- Move the shutter to **TOP limit-switch position**.
- 2- Simultaneously press the **+** key then the **P** key and hold them down **~5 seconds**.

**Information :**

- The change from one digit to another is indicated by the flashing of the **LED H1 : ●**.
- The digits of the cycle are displayed by the flashing of the **LED H2**  
 1,...9 = Long flashing : ■ et 0 = Short flashing : □.
- The format of the cycle counter is : **000000** and the reading direction starts from the end.

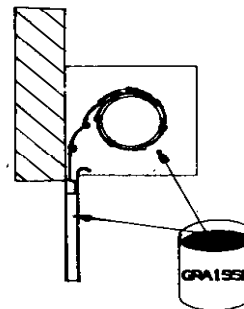
**Example :** 10408 cycles.

<b>H1</b>									●		●					●		●		●	
<b>H2</b>	■	■	■	■	■	■	■	■	□		■	■	■	■		□		■		□	
	8								0		4				0		1		0		

## Finishes

### IMPORTANT

Carefully grease the inside of the guiding rails and winding plates

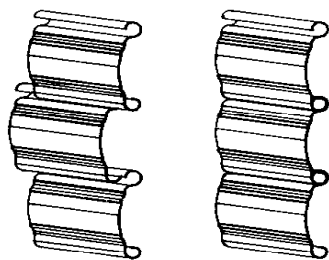


## In case of problems with the maneuver



If the anti-fall guard is blocked, contact a trained installer.

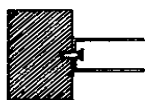
If the shutter is crooked when moving up and down  
(gap larger than 4 cm on the end-slat)



NO

YES

Check that the slats are correctly aligned

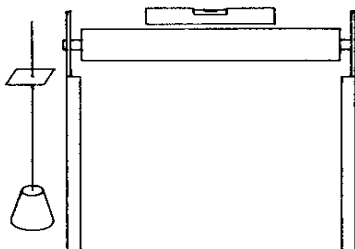


NO

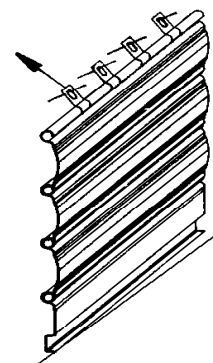


YES

Remove any blockages from inside the guiding rails



Check that the rails are correctly aligned and that the axis is perfectly horizontal



Raise the shutter to the lowest side using the lights of the clips

## In case of poor operator functioning

**Never run the operator in forced operation by directly actuating the power contactors**

### If 400V three-phase operator :

Check the 400V voltage between each phase.

Check the 230V voltage between phase/neutral (if neutral present).

Checking the earth (in TT mode) : Voltage between phase/earth = 230V and between neutral/earth = 0V.

### If 230V three-phase operator :

Triple-phase operator : check the 230V voltage between each.

Check the 230V voltage between phase/neutral (if neutral present).

Check the earth (in TT mode) : Voltage between phase/earth = 230V and between neutral/earth = 0V.

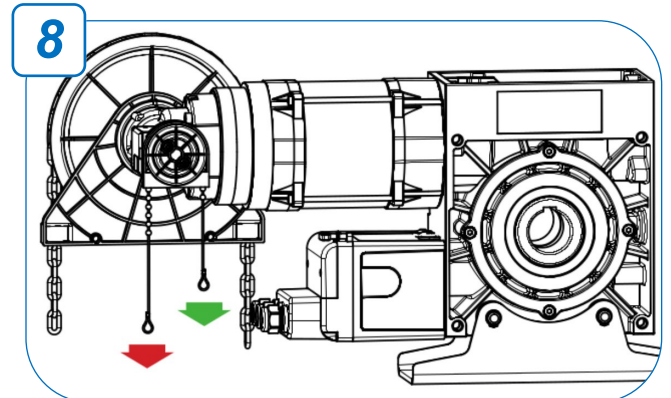
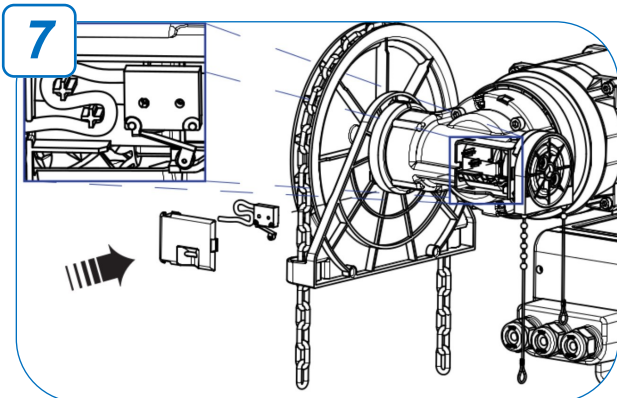
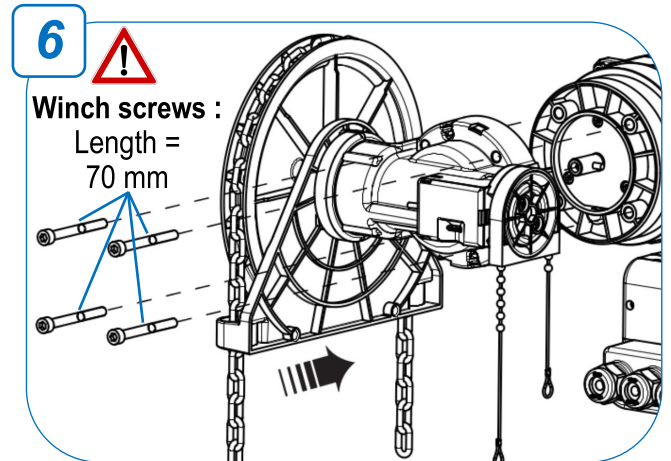
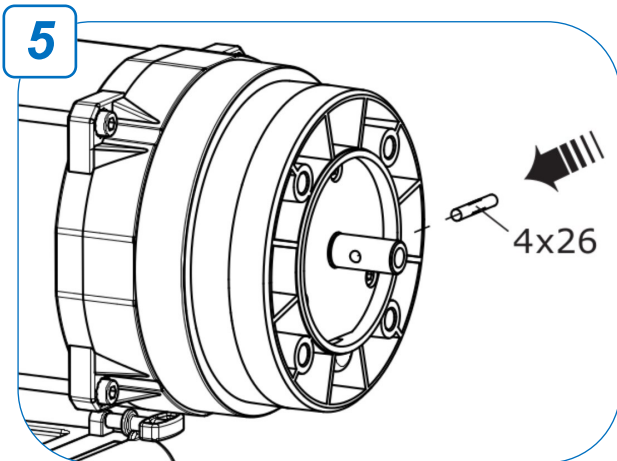
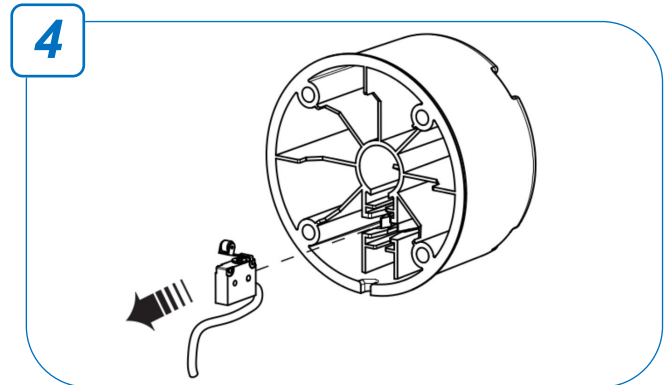
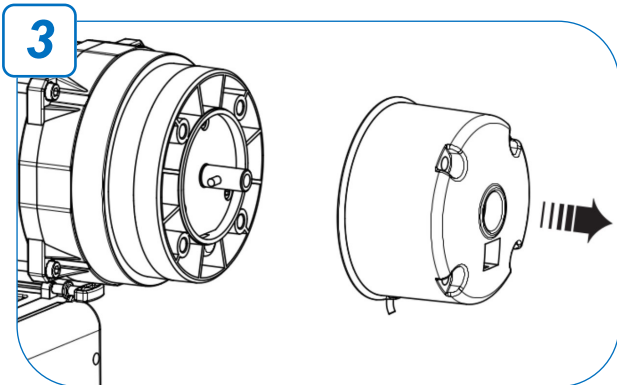
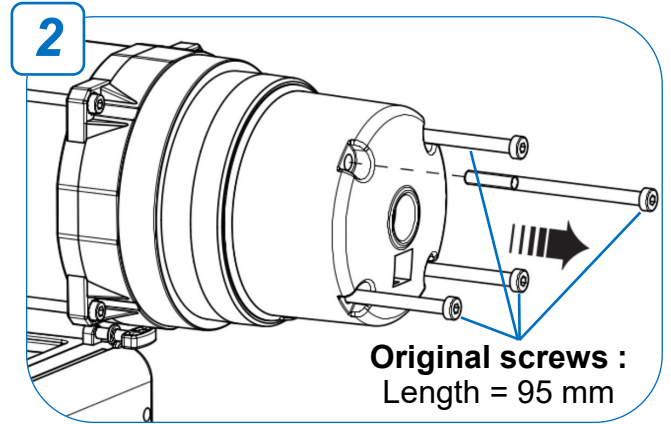
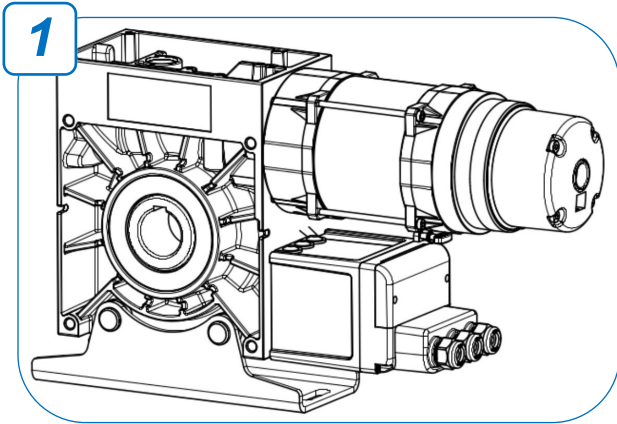
Check that the emergency operation control is not activated.

# Option : Mounting of winch (E400 operator)



To fix the winch, use the 4 screws provided with the winch (Length 70 mm) instead of the 4 original screws (Length 95 mm).

Do not use an electrical screwdriver to tighten the screws, as this might damage the operator.

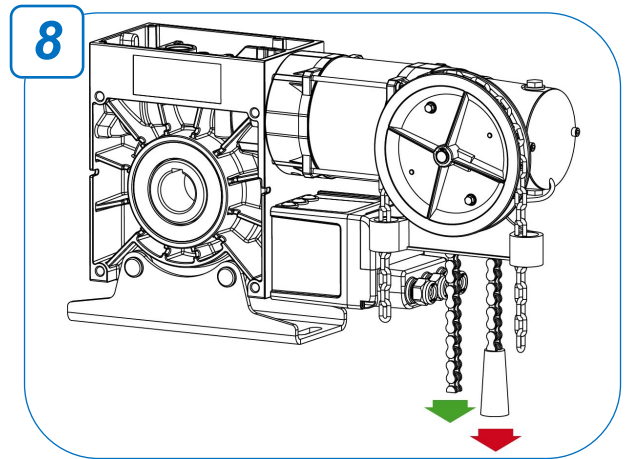
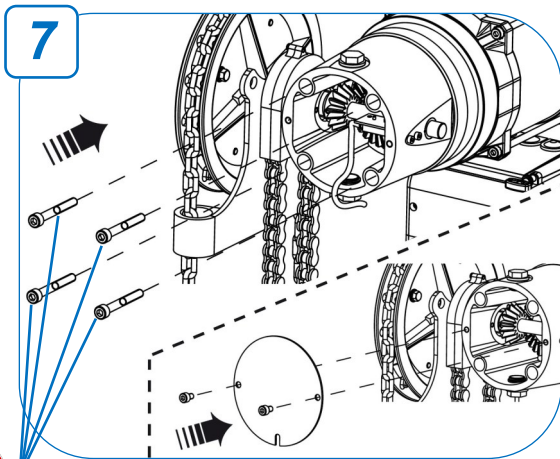
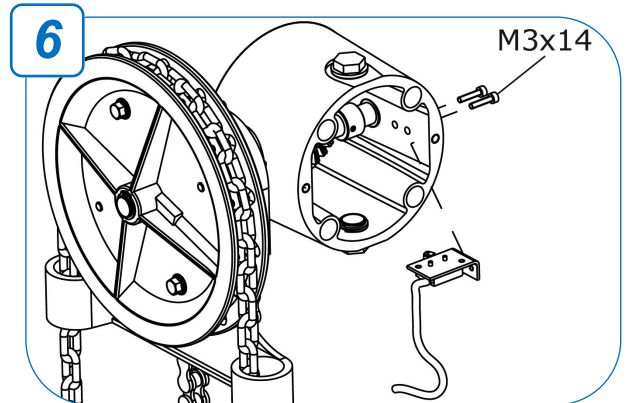
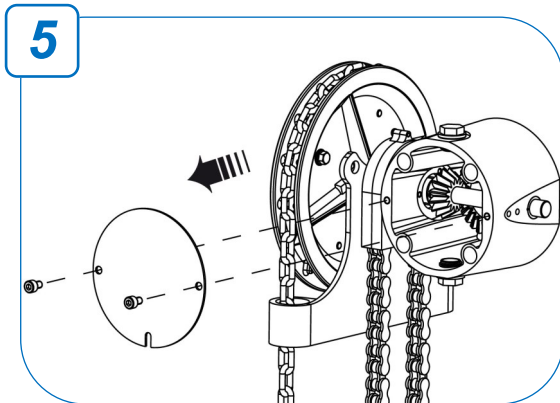
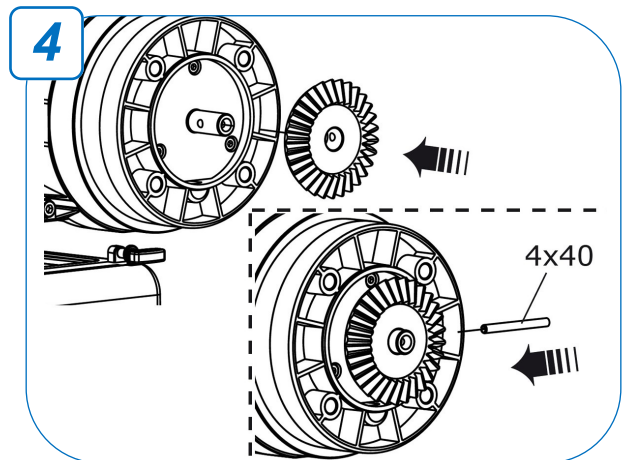
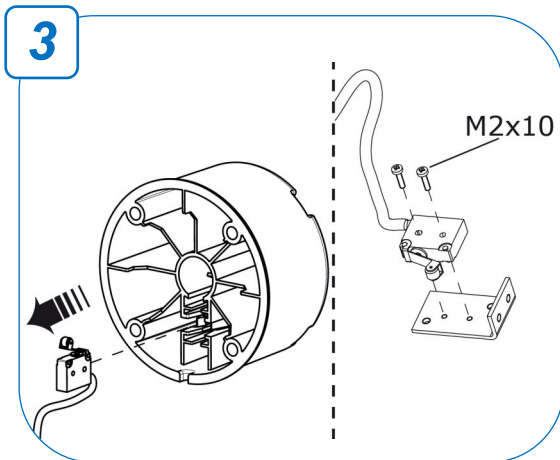
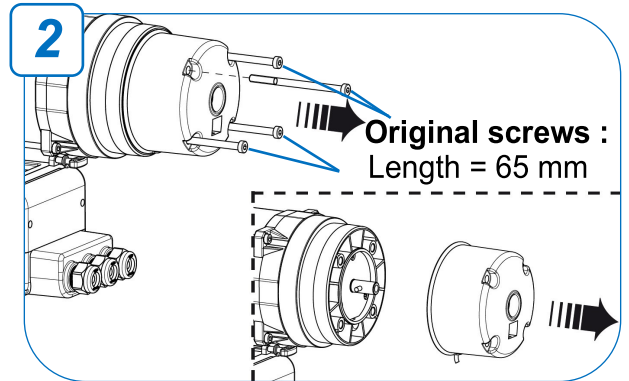
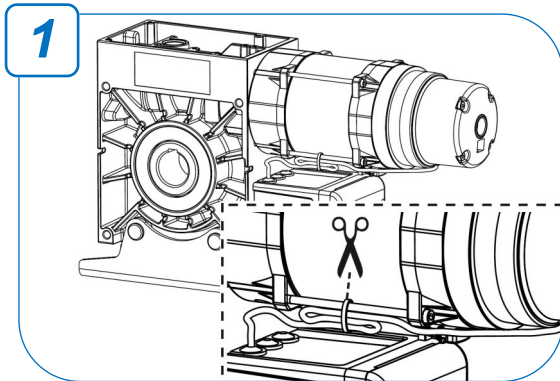




# Option : Mounting of winch (E750 operator)



To fix the winch, use the 4 screws provided with the winch (Length 50 mm) instead of the 4 original screws (Length 65 mm).  
Do not use an electric screwdriver to tighten the screws, as this might damage the operator.

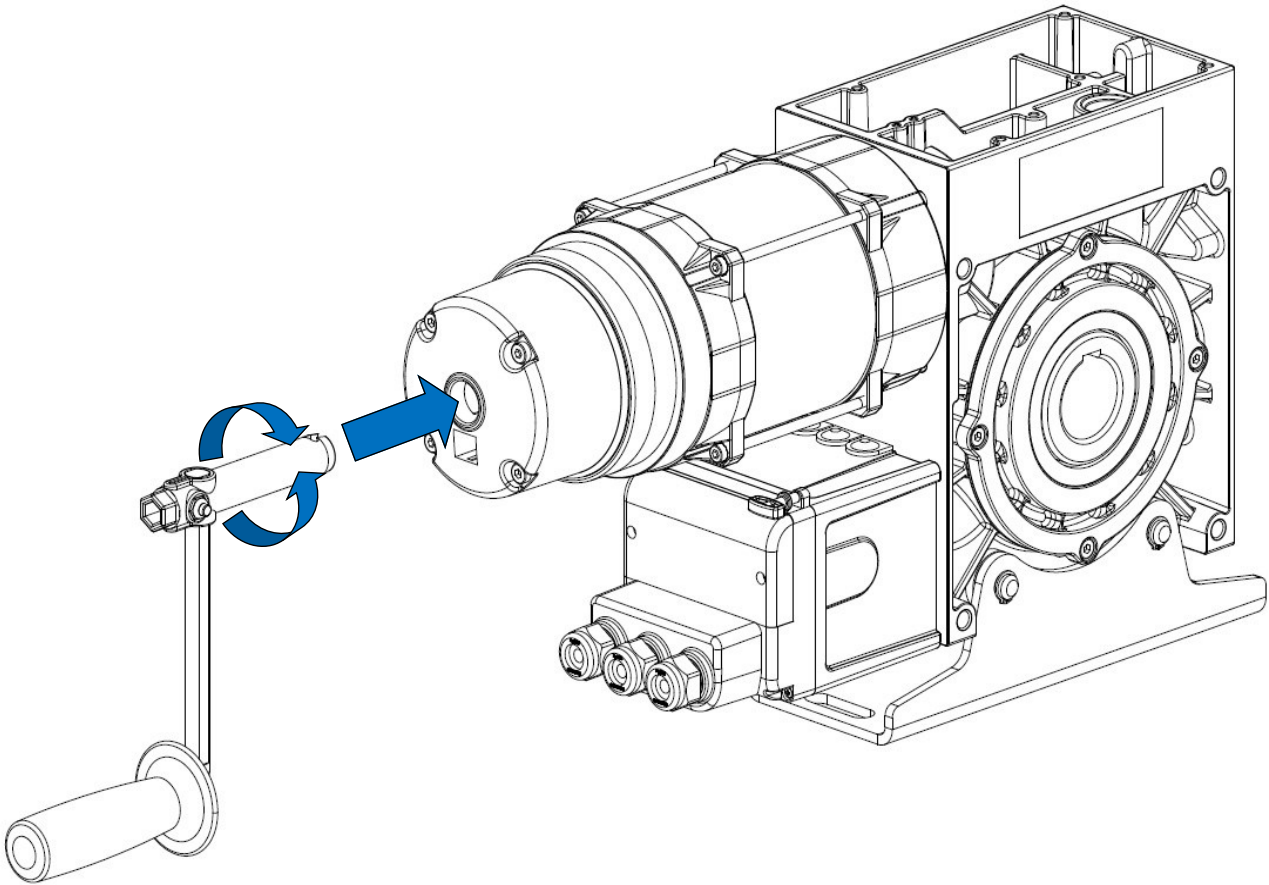


Winch screws : Length = 50 mm



to detach and display next to the fence element

## Emergency maneuver by crank



- 1- Insert the crank into the operator as far as the stop (the operator power supply is cut off and the shutter cannot operate electrically).
- 2- Turn the crank in one direction to open the shutter and in the other direction to close it.
- 3- Once repairs are completed, remove the crank (the operator power is reactivated and the shutter can operate electronically).



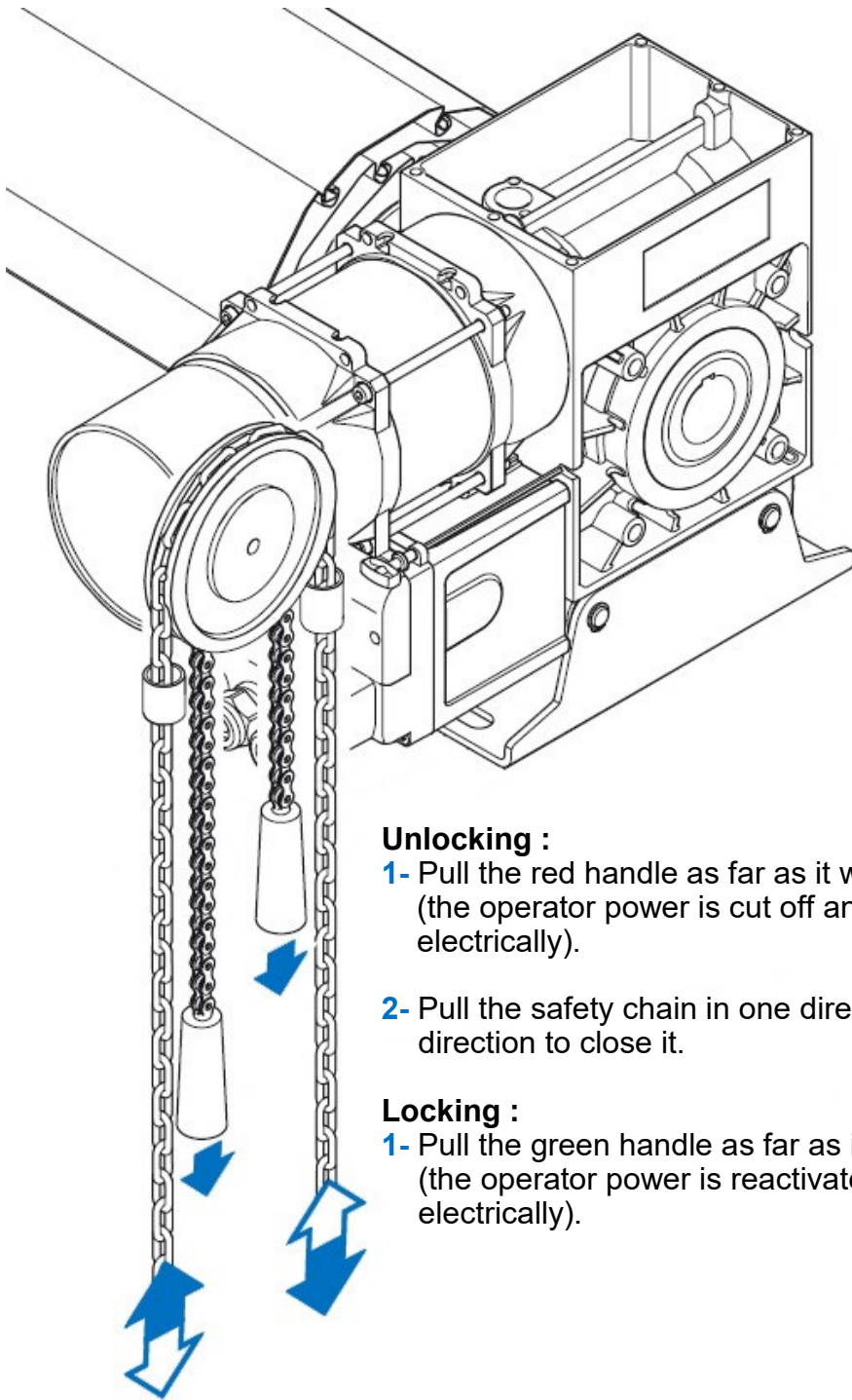
**Never pull the operator brake when repairing the operator or when it is in operation.**

## Technical assistance contact

(Installer's stamp)

to detach and display next to the fence element

## Option : Emergency maneuver by winch



### Unlocking :

- 1- Pull the red handle as far as it will go.  
(the operator power is cut off and the shutter cannot operate electrically).
- 2- Pull the safety chain in one direction to open the shutter and in the other direction to close it.

### Locking :

- 1- Pull the green handle as far as it will go.  
(the operator power is reactivated and the shutter can operate electrically).



**Never pull the operator brake when repairing the operator or when it is in operation.**