TUBULAR ROLLER SHUTTER

RSM-T

www.kolliasdoors.com

TECHNICAL HANDBOOK

Index

Company Information

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General Warnings

1. The company has the right to make modifications to the product and changes to the supplied accessories without any notice.
2. The correct installation of the system is a prerequisite for its reliable and continuous operation. Therefore, it is essential to follow the instructions.
3. The motors as well as all the parts that compose the Tubular Motor Roller have all the necessary, high-standard certifications and all the necessary safety measures for the user.
4. Before connecting to the power supply, check whether the power voltage corresponds to the voltage indicated on the rating plate.
5. Connect the Tubular Motor Roller ONLY to a power supply that has the minimum required frequency and proper grounding.
6. Use the system ONLY for what it is intended, in accordance with the specific instruction manual and only with the accessories that it is equipped with or is intended to work with. The manufacturer bears no responsibility for any damage that may arise from any incorrect use of the product or intervention in its construction.
7. DO NOT touch the electrical supplies with wet hands.
8. DO NOT wash the system with corrosives or other materials.
9. DO NOT use the Tubular Motor Roller unnecessarily.
10. For any operating problem and information, contact the manufacturer.
11. Any type of electric welding is prohibited on the Tubular Motor and its auxiliary members.

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MARKING

Danger of Electrocution!

Attention!

Don’t put your hands in the drive system!
Danger of Injury!

Do not put your hands in the guides!
Danger of Injury!

Do not use corrosive materials
to clean the product!

Danger! The door is closing!
Danger of Injury!

Operation point of the Tubular Roller Shutter.

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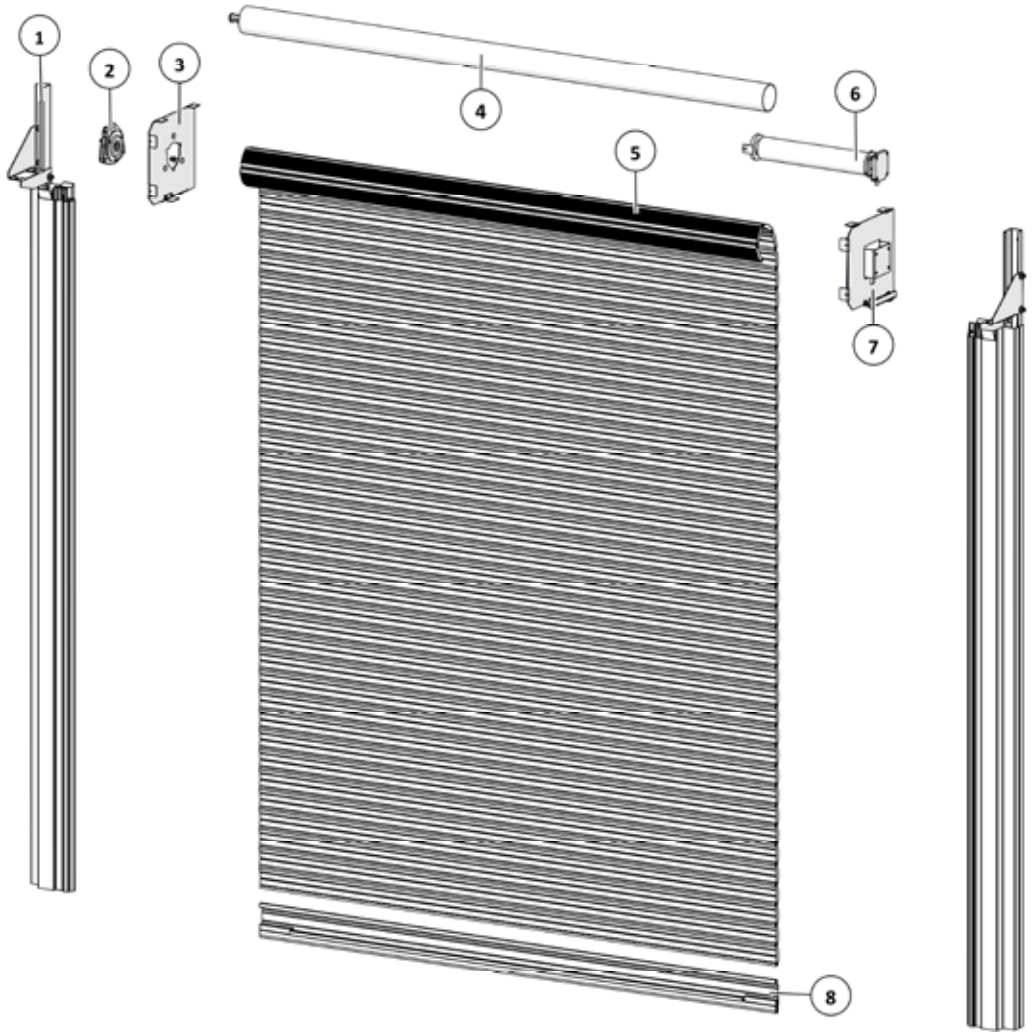
1. Technical Description

The RSM-T Tubular Motor Roller Shutter is an electrically driven door, in cases where it is desirable to avoid space constraints from the usual motor-gearbox arrangement. The main parts of a tubular motor roller shutter are presented in **Table 1**.



No.	Name
1	Guide
2	Centrifugal Brake
3	Base (Shaft, Centrifugal Brake)
4	Shaft

No.	Name
5	Curtain
6	Tubular Motor
7	Motor Base
8	Bottom Slat

Table 1. Main parts of Tubular Roller Shutter RSM-T.

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The rotation of the shaft, on which the curtain is fixed **(Figure 2),** is being done by a tubular motor (see **Figure 1**), which is placed inside the shaft **(Figure 3)**.

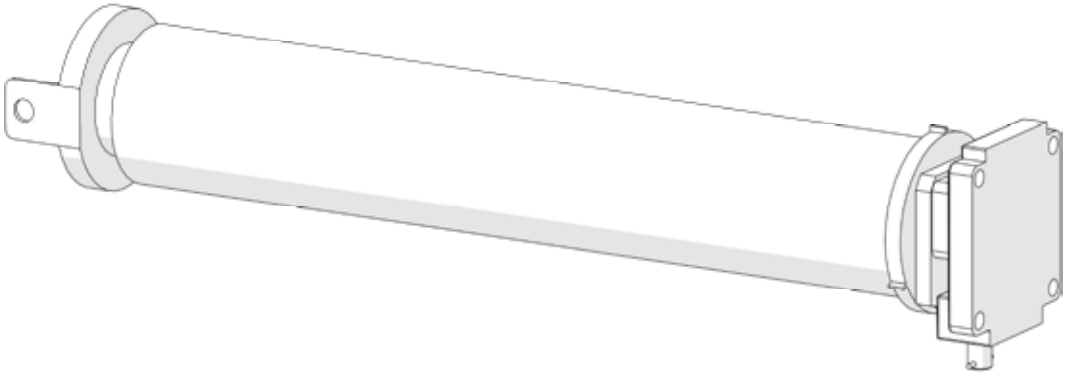

Figure 1

The part of the motor that is located outside the shaft is supported on the base, which in turn is supported by the vertical guide (Figure 2, Figure 3), which is supported on the building's infrastructure.

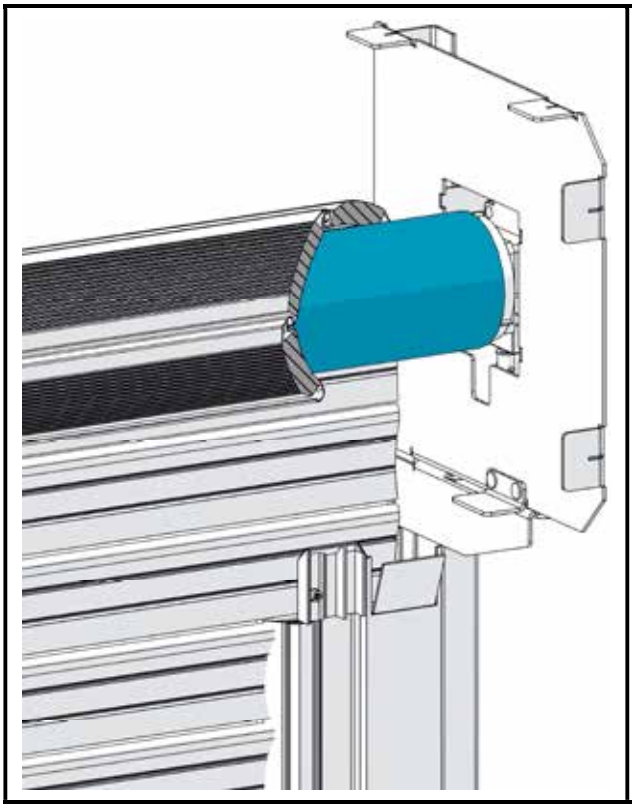

Figure 2

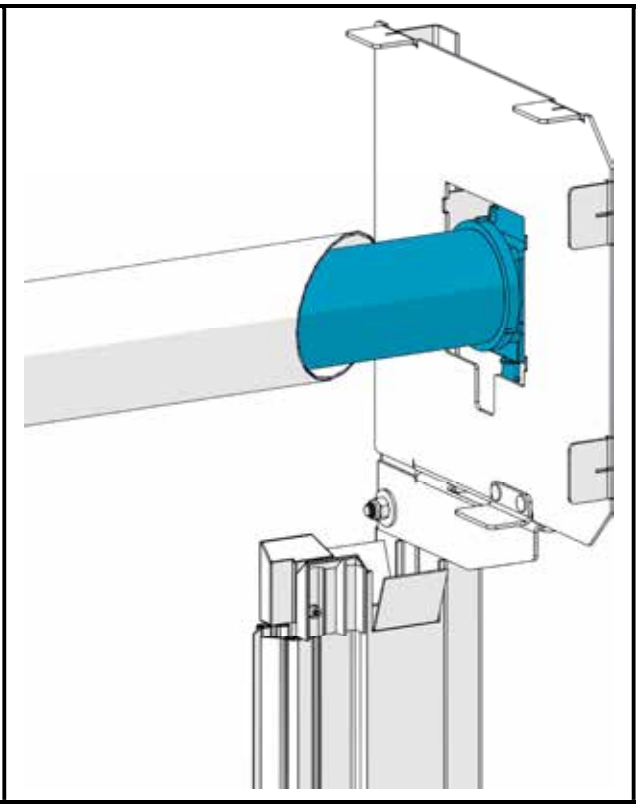

Figure 3

Where possible, support is provided directly to the building's structural elements; otherwise, a metal frame is required.

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The structural elements of the product's parts, as well as their accessories, are made of hot-dip galvanized steel sheets that are electrostatically painted with a 120μm thick polyester-based paint, for increased resistance to oxidation.

The bottom slat of the curtain has a special configuration (**Figure 4-A**), which enhances its robustness and stability. The bottom slat is equipped with high-quality reinforced EPDM rubber (Figure 4-B), to ensure tightness with the floor.

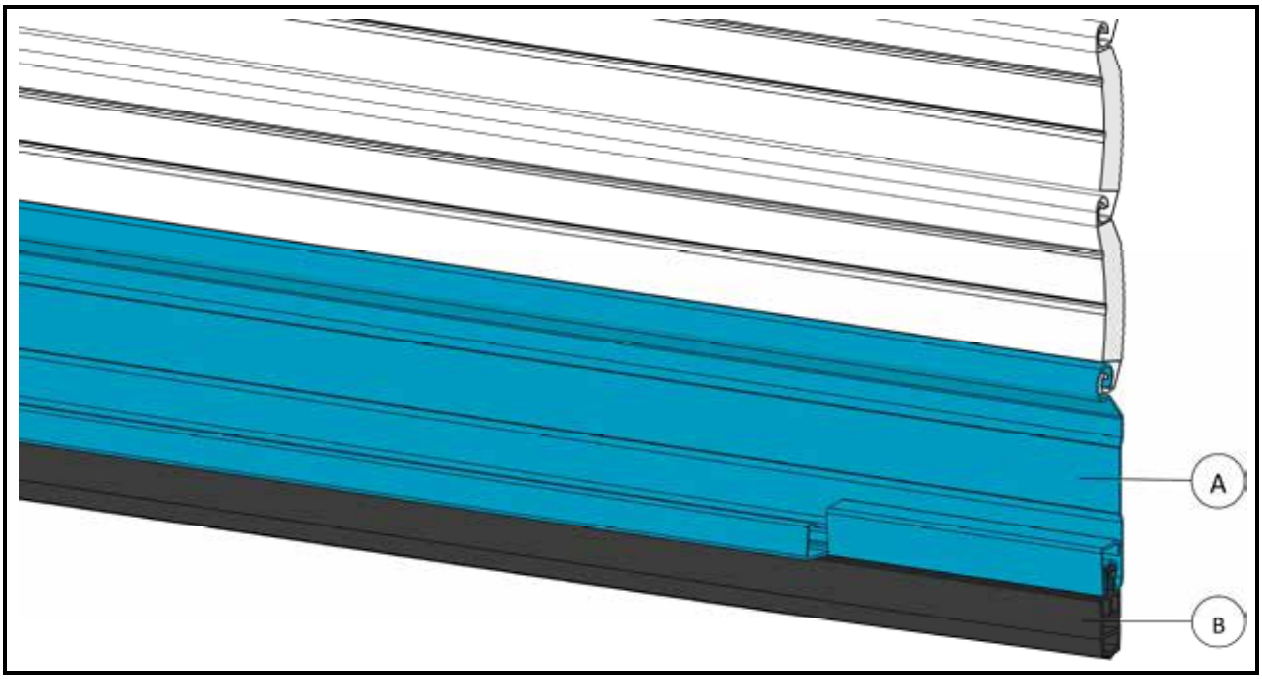

Figure 4

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2. Control Unit

The control unit, with an operating voltage of 230V AC/ 16A 50Hz, regulates the operation of the electric motor electronically. It is equipped with a microprocessor, having the ability and capacity to convert its operational logic using DIP switches. All control units have already been configured according to the customer's specifications at the time of order.

Figure 5

Figure 6

Figure 7

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2.1. Connections

Figure 8

No.	Indication	Description
1	ANT	Antenna stem connection.
2	GND	Grounding connection.
3	CLOSE BUT	Input for 'CLOSE' button (Normally open).
4	COM	Common contact for 'OPEN'-'CLOSE' switches.
5	OPEN BUT	Input for 'OPEN' button (Normally open).
6	PHOTO	Photocell connection (Normally closed).
7	GND	Grounding connection.
8	SAF. EDG.	Input for safety edge (Normally closed). If not used, it is recommended to connect an 8K2 resistor.
9	24V AC	Output 24V AC.
10	CLOSE MOTOR	Output 'CLOSE' for the motor.
11	COM	Common output for motor.
12	OPEN MOTOR	'OPEN' output for motor.
13	N	Neutral

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14	LIGHT	Output, either for a beacon or a light. A light of 230V AC up to 250W can be connected.
15	GND	Grounding connection.
16	GND	Grounding connection.
17	L	Power Supply 230V AC.
18	N	Neutral.

Table 2. Control panel connection description

2.2. Setting the operating times

Maximum automated open and close time of the door:

When the curtain approaches the upper or lower position, the control unit will stop the operation of the motor after the maximum set operating time has passed.

Setting:

- Lowering the curtain to the lowest position.
- Set all DIP-switches to OFF position.

  By momentarily pressing the TIME button, the LEARN light will turn on. Then, the curtain will automatically start to open. The opening of the door is stopped due to the activation of the limit switch. The opening time is memorized in the microprocessor and is now defined as the *maximum* opening time. The closing time is equal to the opening time.

  Also, the time setting is set by pressing the TIME button continuously. As soon as the curtain reaches the highest point, the TIME button is released and the LEARN light will turn off. The time is memorized.
- Return the DIP switches to their initial position.

Maximum automated close time of the door:

When the curtain approaches the lowest point and the lower limit switch is out of operation, the curtain stops automatically after the maximum set operating time has passed.

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Setting:

- Open the door fully.

  By momentarily pressing the TIME button, the LEARN light will turn on. Then, the curtain will automatically start closing and will stop to the lowest point due to the activation of the limit switch. The closing time is memorized in the microprocessor and is now defined as the maximum closing time.

  Also, the time setting is achieved by pressing and holding the TIME button. As soon as the door reaches the lowest point, the TIME button is released and the LEARN light turns off. The closing time is memorized.

Indication of exceeding the maximum open or close time:

In case a limit switch does not operate, the opening or closing time of the door will be exceeded. Thus, when DIP-switch No.1 is in the ON position, the beacon starts flashing.

Automated closing time of the door:

As soon as the door reaches the lowest point, the automated closing time starts counting. After this time has passed, the door starts to close. In the event of activation of the photocell or the safety switch, the time starts counting again from the beginning.

Setting:

- Closing the door fully.
- Setting the DIP-switch No.5 in the ON position.
- By momentarily pressing the TIME button on the board, the automated descent time begins to count. The time between the second momentary pressing of the TIME button is memorized in the microprocessor and is now defined as the automated closing time.
- When DIP-switch No.5 is in the ON position, the automated closing time is activated. It is deactivated when the DIP-switch is set to the OFF position.

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2.3. Available DIP-switches

DIP-switch	Position	Function
1	ON	The lighting relay is blinking. Blinking of the light or beacon connected to the "LIGHT" output of the panel.
	OFF	The lighting relay is flashing. The display stops 30 seconds after the door stops opening/closing.
2	ON	The lighting relay is controlled by remote control. The condition is that switch No.1 is in the OFF position. If the switch is in the ON position, the light can be activated when the door is not moving.
	OFF	The lighting relay is not controlled by remote control.
3	ON	In case the safety edge detects an obstacle, the closing of the door stops, and the opening begins.
	OFF	If the safety edge detects an obstacle, the closing of the door stops.
4	ON	By momentarily pressing the 'OPEN' button, automated opening starts, while by holding down the 'CLOSE' button (dead man mode), the door closes.
	OFF	By momentarily pressing the 'OPEN' button, the OPEN-STOP-CLOSE-STOP functions are executed sequentially, while by holding down the 'CLOSE' button, the door closes.
5	ON	After the stand-by time for automated close 'auto close' has passed, the door closes automatically, even after a power failure. Until the door reaches the lowest point, the beacon is in operation.
	OFF	Automated close is disabled.

Table 3

2.4. Remote control with integrated board

Optionally, the RSM-T can be operated by remote control. In this case, the board has a built-in remote control board. Setting up the remote control involves a combination of actions on the board (**Figure 9**) and on the remote control (**Figure 10**). The process is preceded by a momentary press of the LEARN button (**Figure 9**). This results in a LED indication (**Figure 9**). This is followed by a long press of the remote control button (**Figure 10**), which needs to be set.

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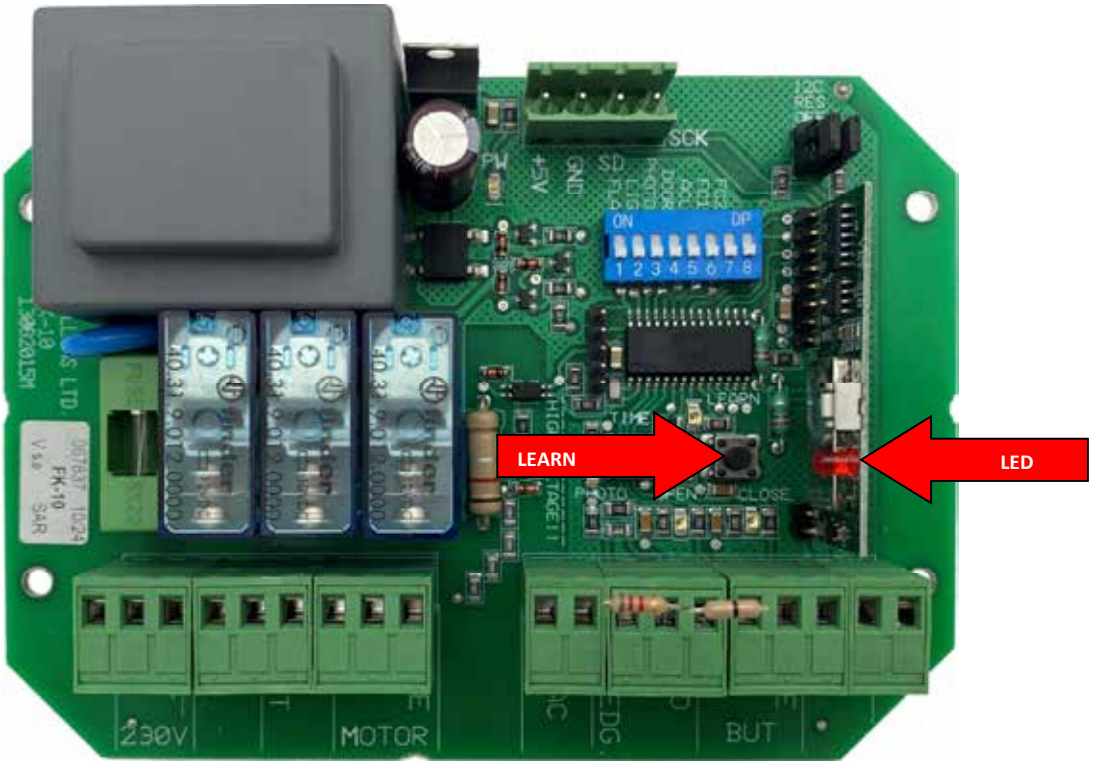

Figure 9

In the case of setting up multiple remote controls with the same setting, the same button (channel) is always selected, otherwise the panel will memorize the new channel.

Figure 10

In the event that more channels are needed (5 to 10), the setting is achieved by pressing 2 buttons on the remote control simultaneously, according to the table below.

Channel	Button
1	1
2	2
3	3
4	4
5	1 & 2

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6	2 & 3
7	3 & 4
8	1 & 3
9	2 & 4
10	1 & 4

Table 4. Setting combinations up to 10 channels

2.4.1. Deleting remote control settings

Deleting the remote control settings requires holding down the receiver (white button, see **Figure 11**) of the remote control board for 8 seconds.

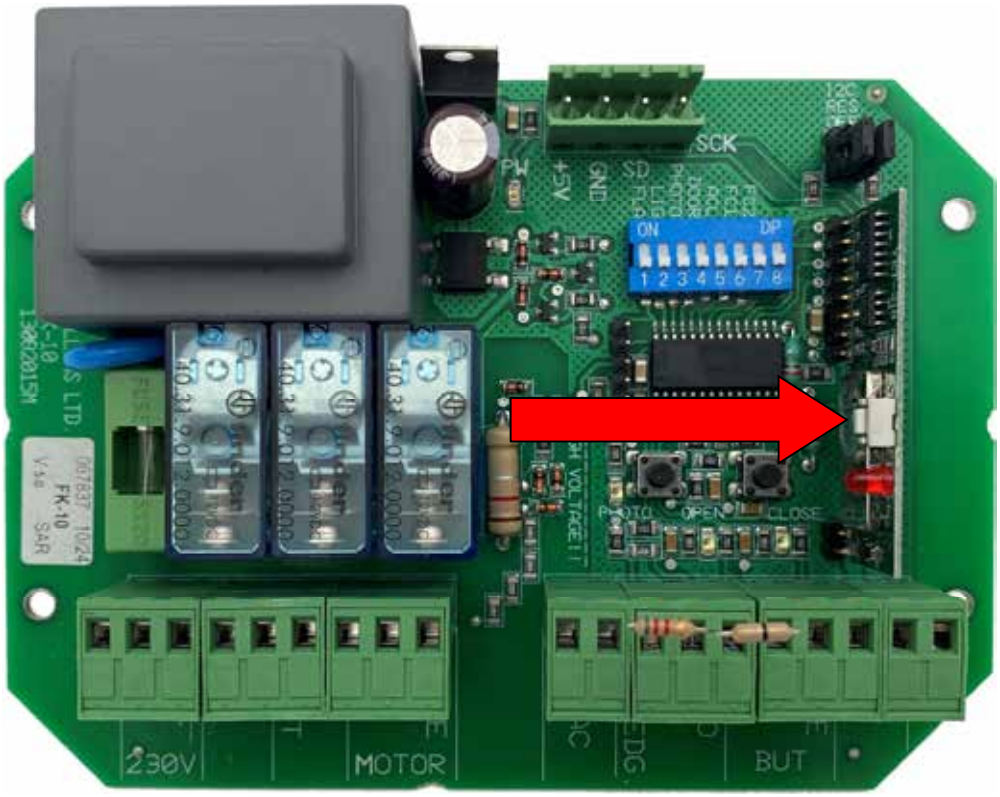

Figure 11

2.5. Remote control with external receiver

In addition, there is the possibility of remote control with an external receiver (**Figure 12**), which is connected to the control panel board.

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Figure 12

The remote control is initially set by momentarily pressing the button on the side of the receiver (**Figure 14**). This results in the receiver LED changing from green to orange. This is followed by a long press on the remote control button (**Figure 13**), which needs to be set. When the remote control button is held down, the receiver LED flashes at a constant rate. When the indicator returns to green (steady), it signals the successful completion of the process.

Figure 13

2.5.1. Deleting the remote control settings

Deleting the remote control settings requires pressing and holding the button (**Figure 14**) on the side of the receiver for 8 seconds.

Figure 14

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2.6. Control panel wiring diagram

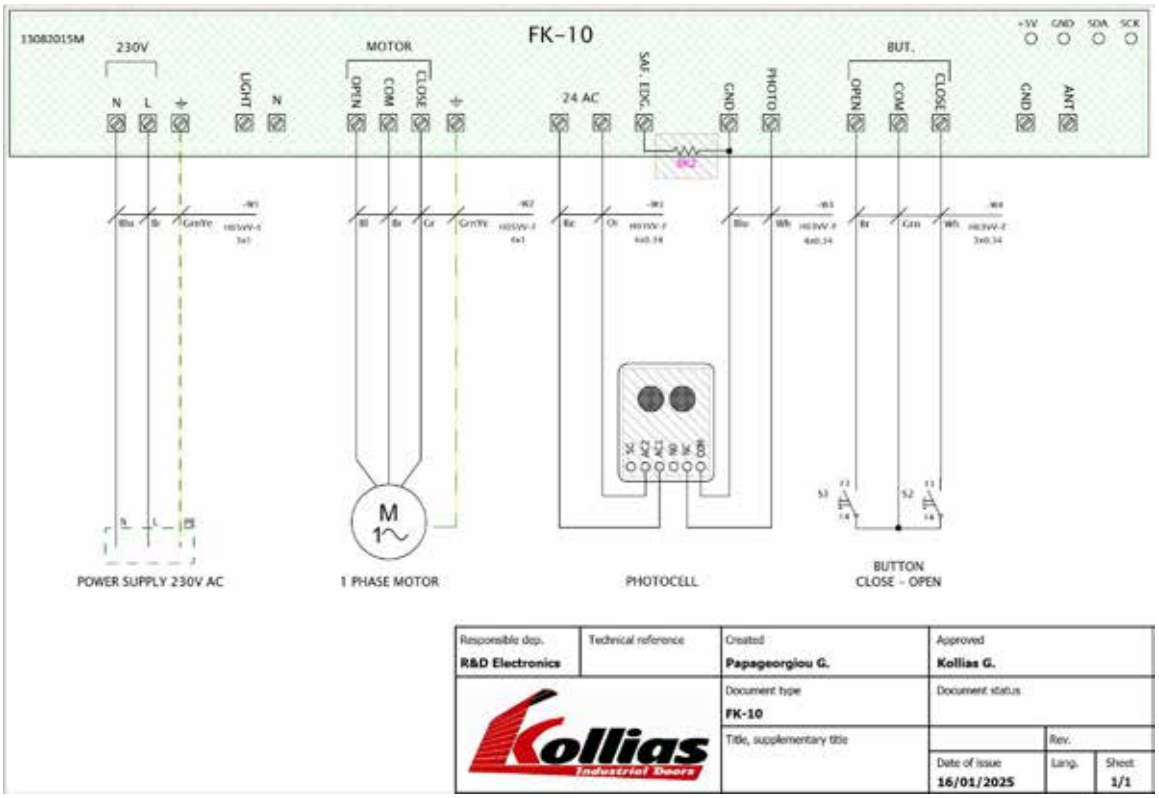

Figure 15

3. Technical Specifications

Technical Characteristics of motor 300M

Type	MTe	**300M**
Power	P	**0.94 kW**
Rotations	n	**9 rpm**
Moment	T_m	**300Nm**
Voltage	V_m	**230V**
Operation Intensity	I_m	**4.08A**

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Operation Frequency	F_r	**50 Hz**
Protection Degree	MP_r	**IP44**

Technical Characteristics of motor 120M

Type	MTe	**120M**
Power	P	**0.35 kW**
Rotations	n	**9 rpm**
Moment	T_m	**120Nm**
Voltage	V_m	**230V**
Operation Intensity	I_m	**1.56A**
Operation Frequency	F_r	**50 Hz**
Protection Degree	MP_r	**IP44**

Technical Characteristics of Electrical Components

Control Unit	ETe	**FK-10**
DIP Switch Voltage	V_{SEQ}	**24V**
Power Outlet	Rtw	**4W**
Protection Degree	EPr	**IP55**

4. Installation Instructions

Step 1: Basics checks before installation

Before any installation work begins, we must ensure that the space to the right (WR) and left (WL) of the opening, as well as the total height (HT) is sufficient for the installation of the guides (this movement is not required when the installation is done in a "tunnel").

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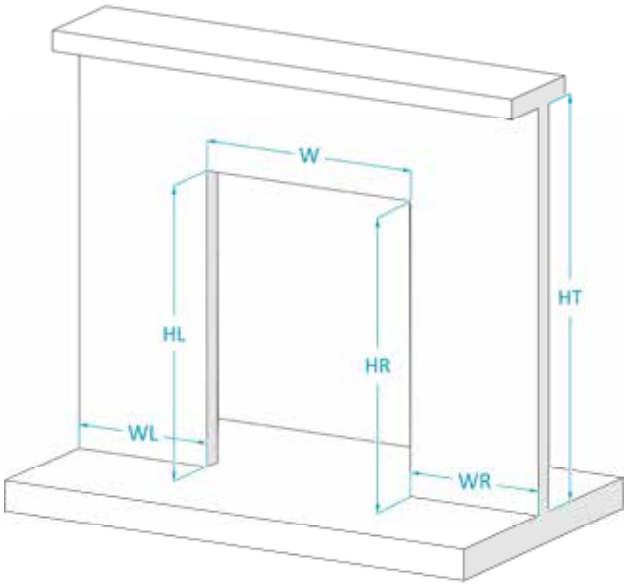

Figure 16

It is also necessary to check if the floor has a slope, so that the necessary corrective actions can be taken, by cutting off part of the lower part of the guide, which will be placed in the highest position (**Figure 17**).

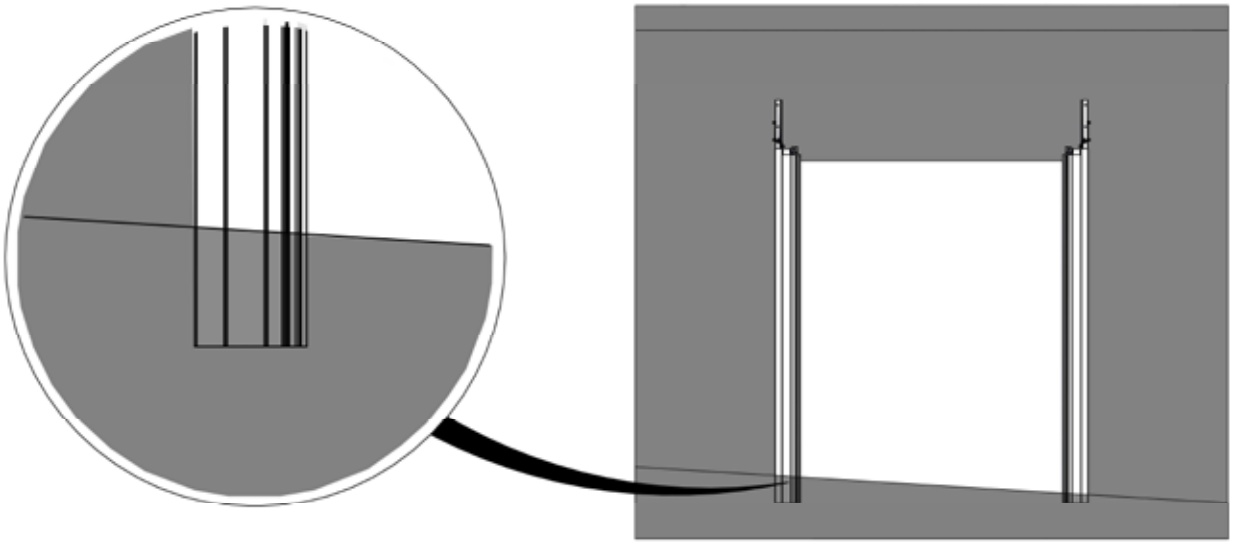

Figure 17

The purpose of checking the height difference of the floor is to ensure that after lifting and supporting the guides, the bearings of the shaft retaining bases are at the same height position.

Step 2: Placing the guides

Once the exact location of the guides has been determined, one of the guides is suspended (**Figure 18**) and checked with a level to ensure that it is in a vertical position (**Figure 19**). Attention is required to ensure that the shaft support base is perpendicular to the building (**Figure 20**), an element that will ensure the

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proper operation of the roller shutter. Finally, we support the guide, depending on the case, with screws, plugs or welding, giving emphasis to the positions near the base of the roller shutter.

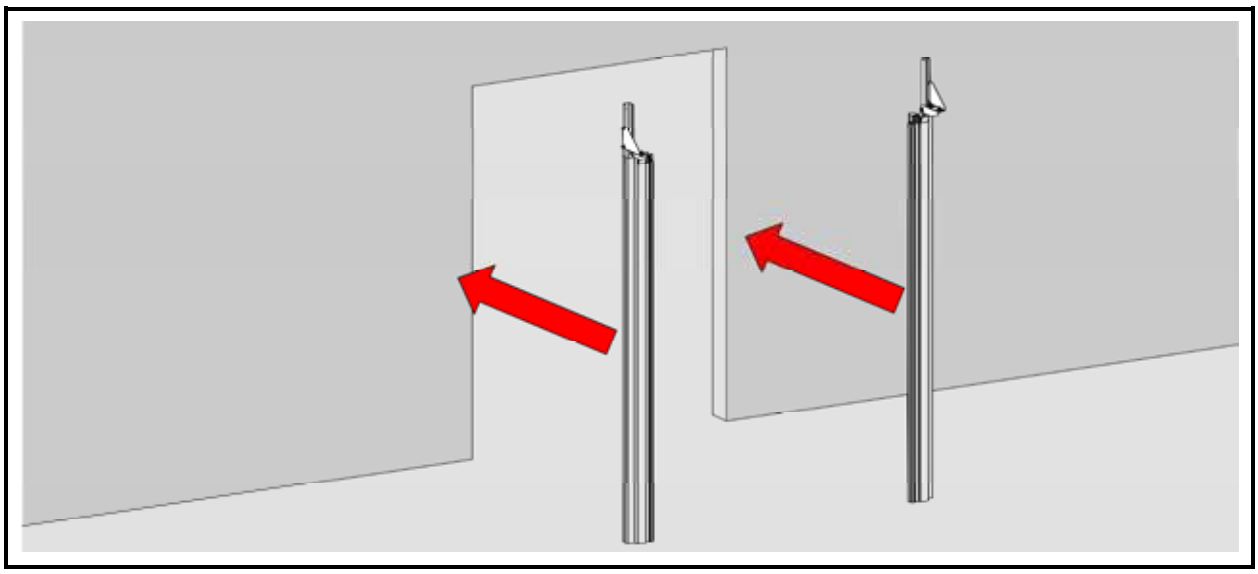

Figure 18

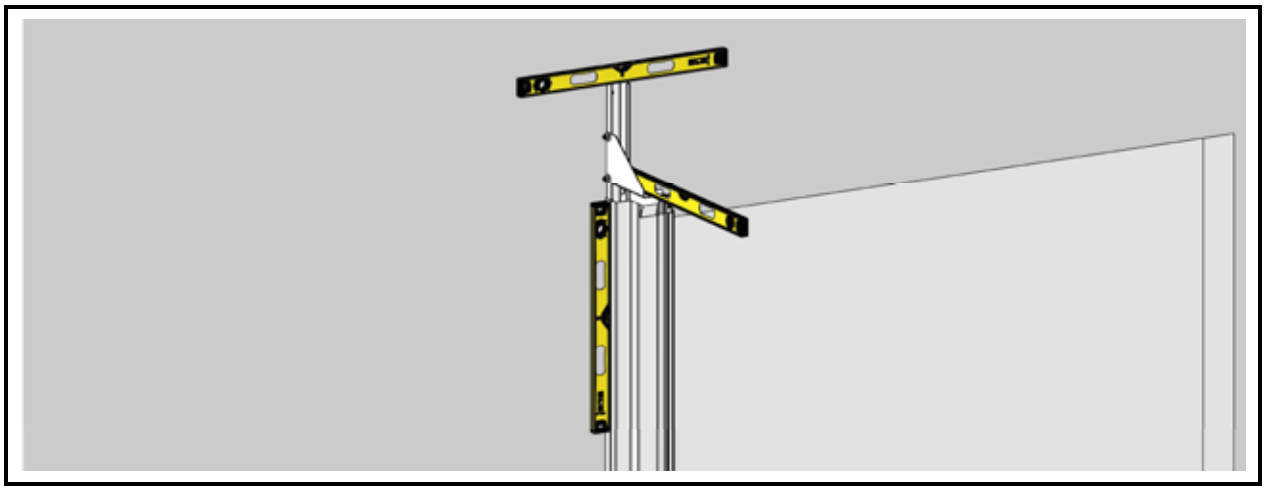

Figure 19

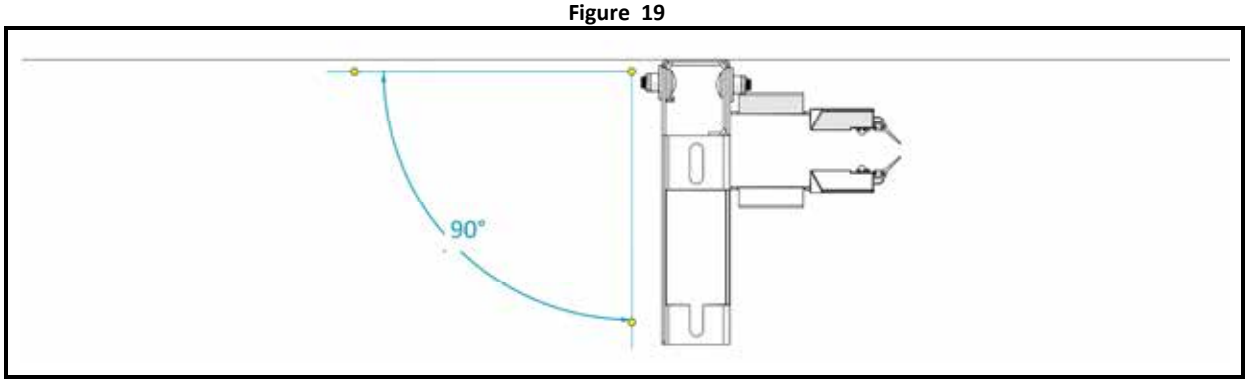

Figure 20

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Step 3: Determining the distance of the guides

The second guide is suspended, and the same actions are carried out as with the first. To safely define the distance between the guides, it is recommended to take measurements on both the upper and lower sides of the guide (**Figure 21**). As with the first guide, attention is required so that the shaft support base is perpendicular to the building, as shown in **Figure 20**.

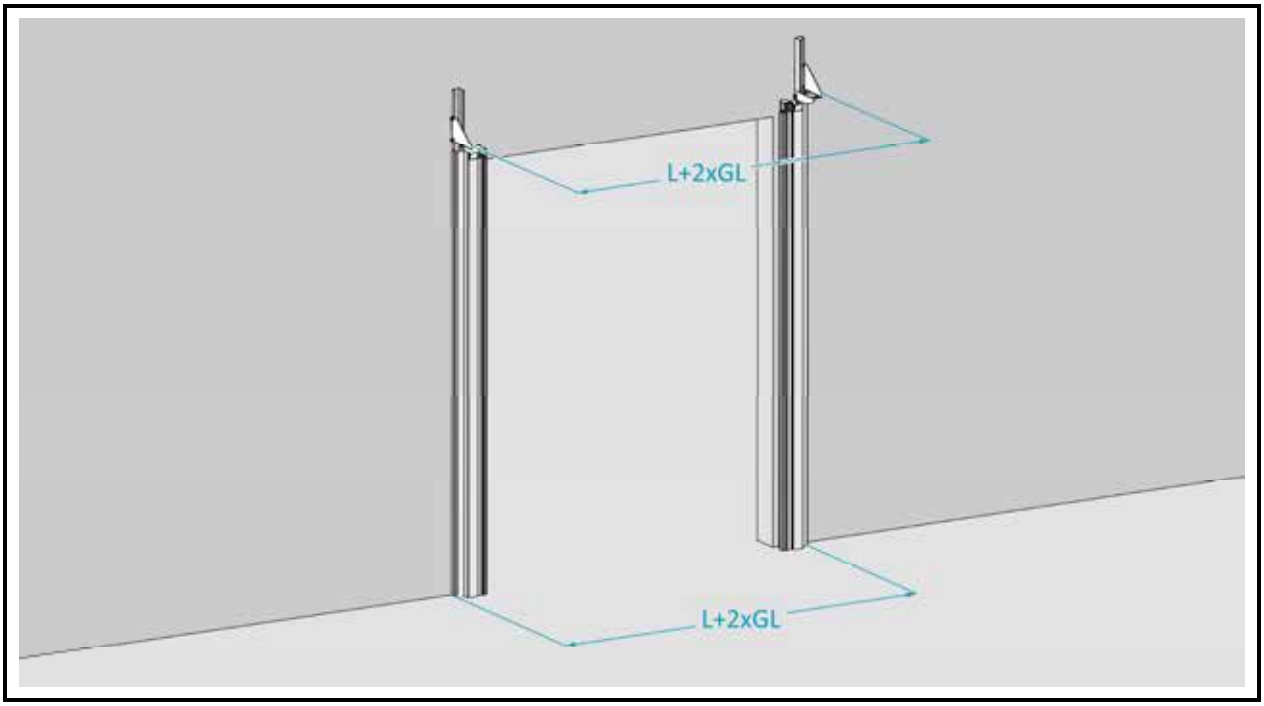

Figure 21

GUIDE	G60-AL6	G60-AL10	G60-AL13
GL (mm)	150	180	210

Figure 22

The support of the guide system, depending on the case, is done with with screws, plugs or welding, giving emphasis to the positions near the base of the shaft. Attention, in case screws or plugs are used, the support is made on the hollow beam and not on the guide, inside which the curtain passes. The length “L”, as well as the height “H” is indicated on the product packaging.

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Step 4: Installing the winding system

The next step involves lifting the winding system, adjusting the shaft bases to the guide supports (**Figure 23**). They are fixed on the supports by screws.

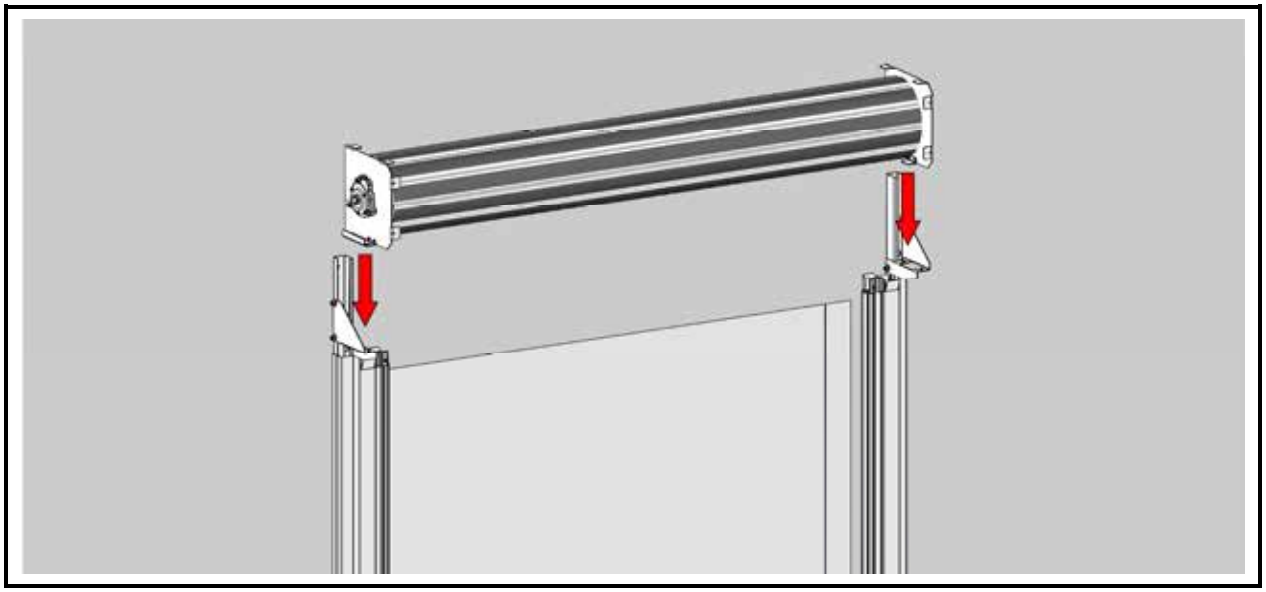
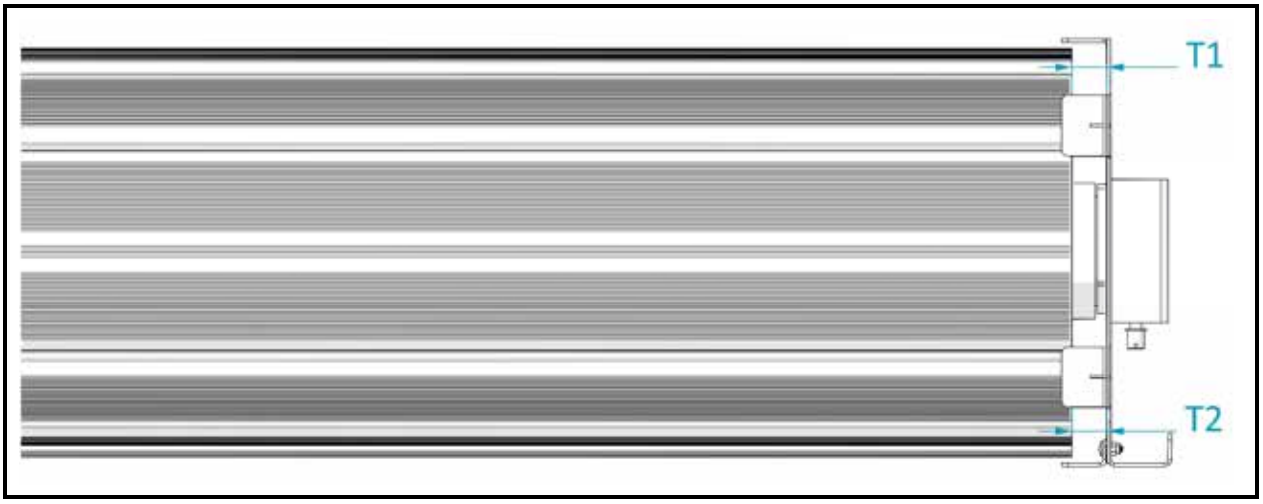


Figure 23

A visual check is then carried out to ensure that the gap between the shaft and the bases (motor - centrifugal brake) is the same (T1 = T2, see **Figure 24**). This gap is designed vary, especially on the motor base side.



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Step 5: Adjusting the curtain on the guides

To rotate the shaft of the curtain, the crank must be placed in its reception in the motor, as seen in **Figure 25.**

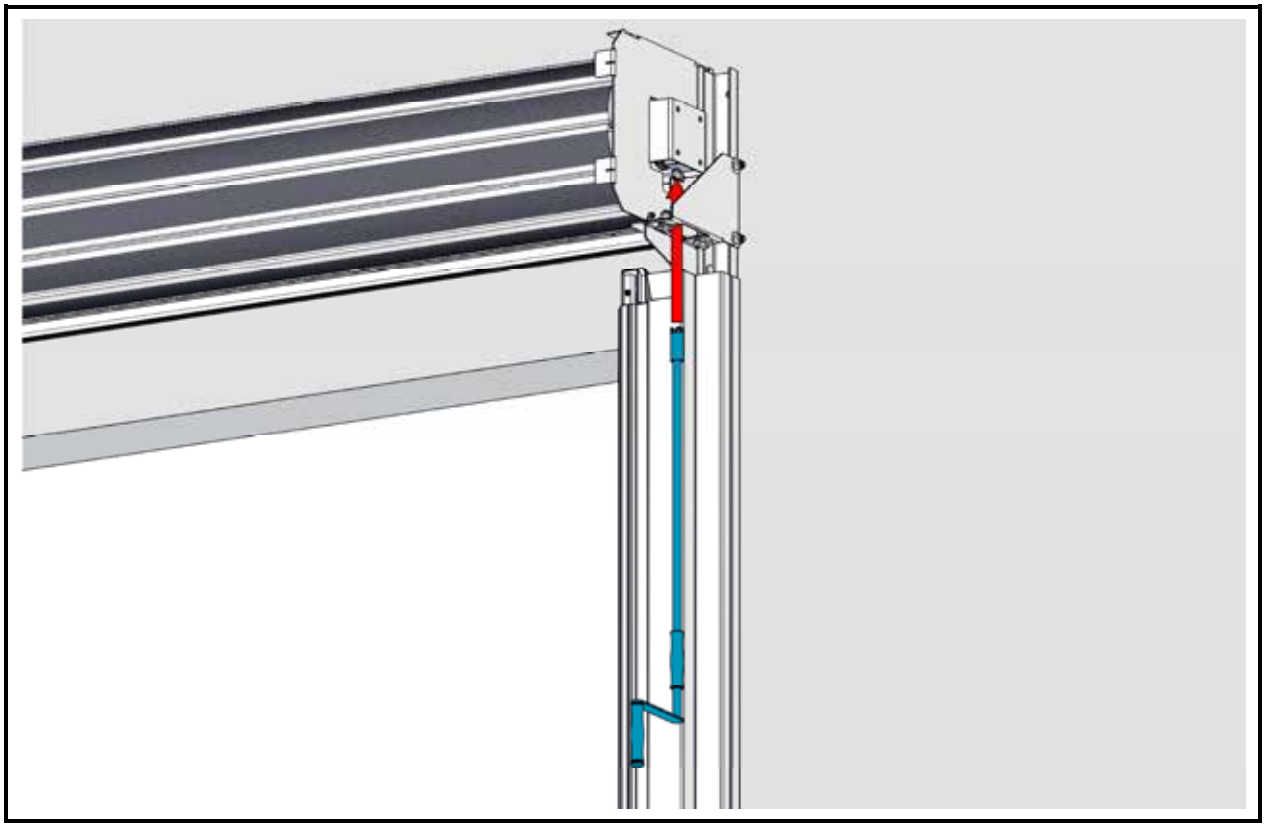

Figure 25

Then, the bottom slat (and by extension the curtain) is adjusted on the guides (**Picture 26**), allowing descent of the curtain at about 500mm.

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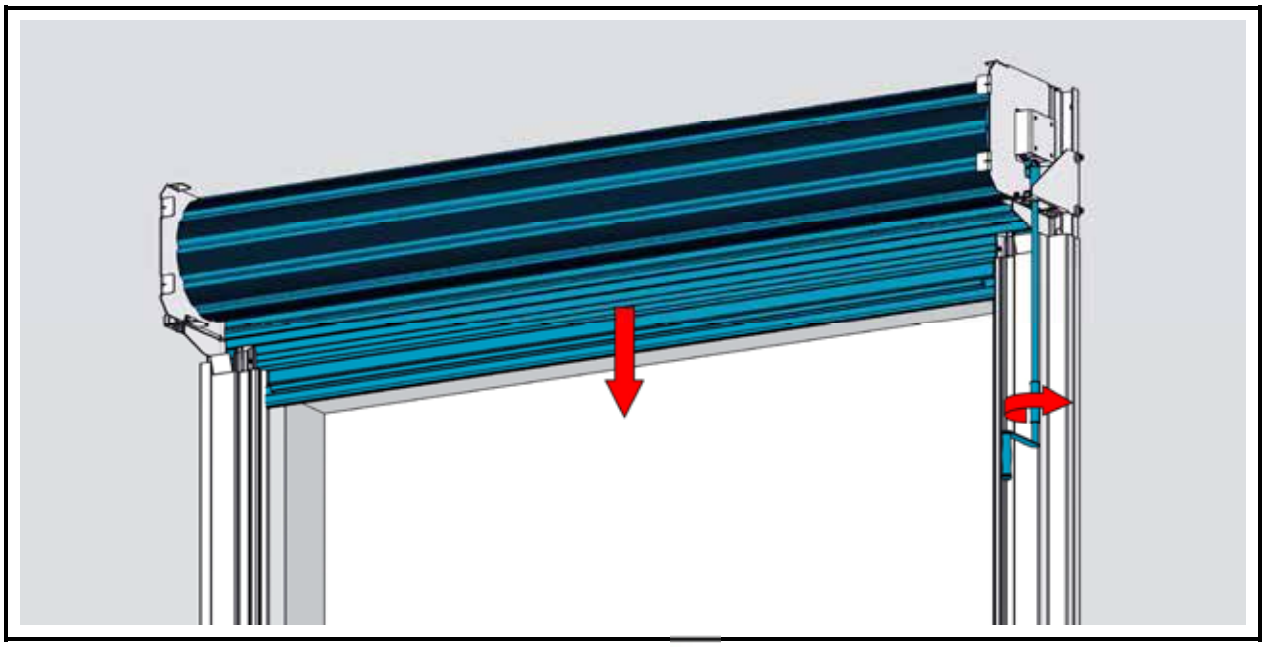
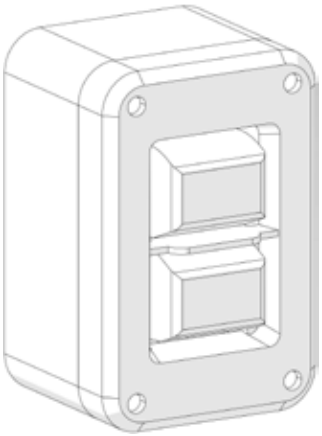


Picture 26

Step 6: Adjusting the limit switches

The connection of the control unit to the boutonniere (**Figure 27**) must already be done, making sure the BROWN cable is connected to the OPEN button and the YELLOW cable to the CLOSE button. Then, the control unit is supplied with three-phase current and then we adjust the limit switches.



Picture 27

The curtain then rises until the bottom slat is 150mm from the upper edge of the guide (**Figure 38**) by pressing the control button.

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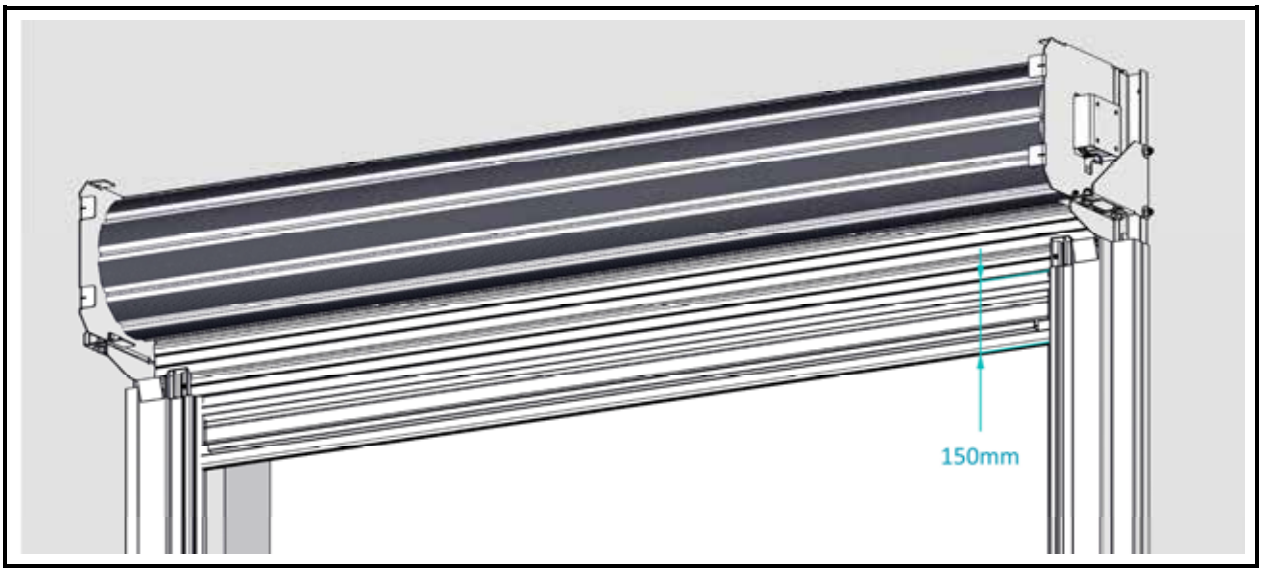

Figure 28

If the curtain does not reach the desired position, the limit switch adjustment screw (**Figure 29**) is rotated until it does. The limit switch screw is rotated by using a tool (**Figure 30**) which is supplied by the manufacturer in the packaging of the product.

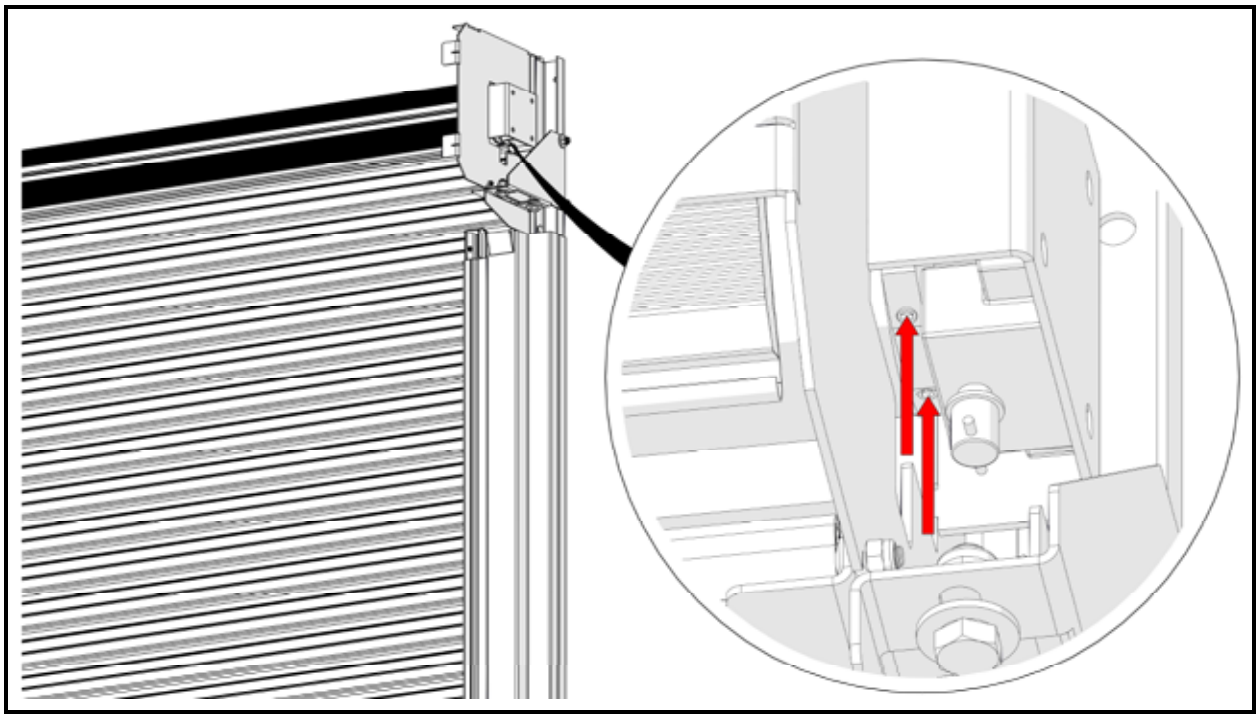

Figure 29

Regardless of the type of installation, right or left, screw "A" adjusts the closing and screw "B" the opening of the curtain (**Figure 31**).

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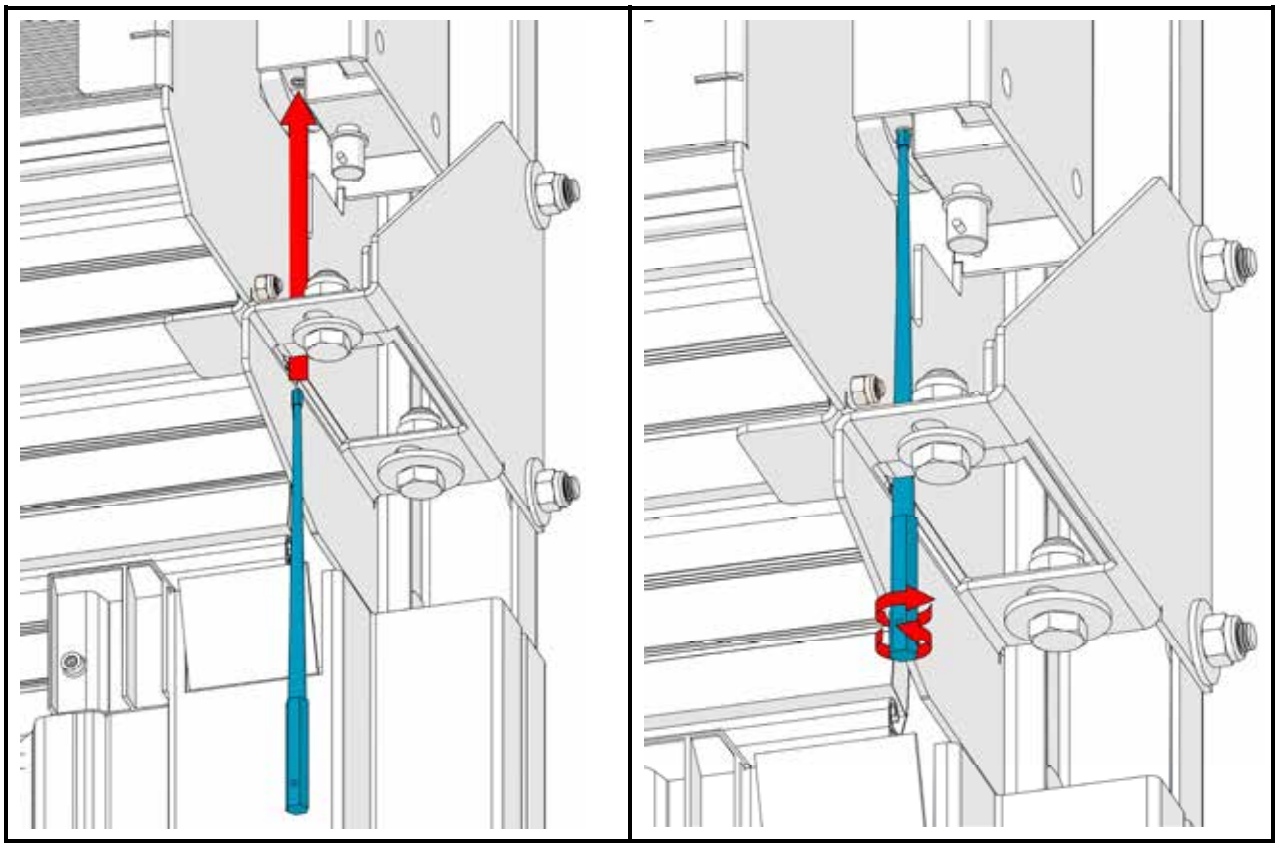

Figure 30

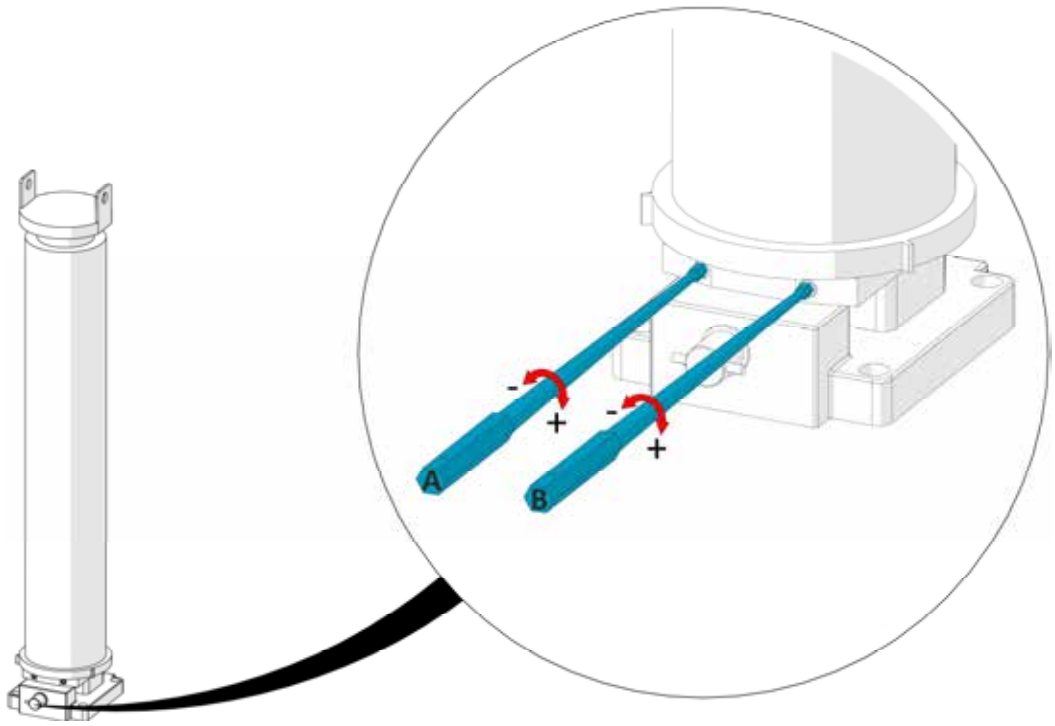

Figure 31

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Then the screen is lowered and raised again, in order to check that the previous terminal setting is accurate. In case this is not the case, the correction and the process are repeated. The same procedure is followed in order to adjust the lower position of the screen, by adjusting the screw.

Step 7: Placing the control unit

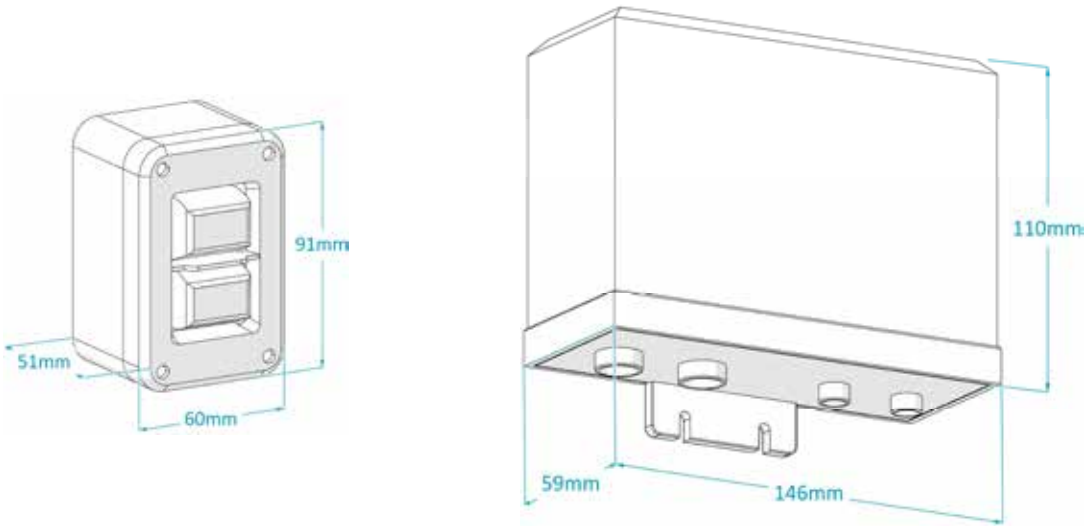

Figure 32

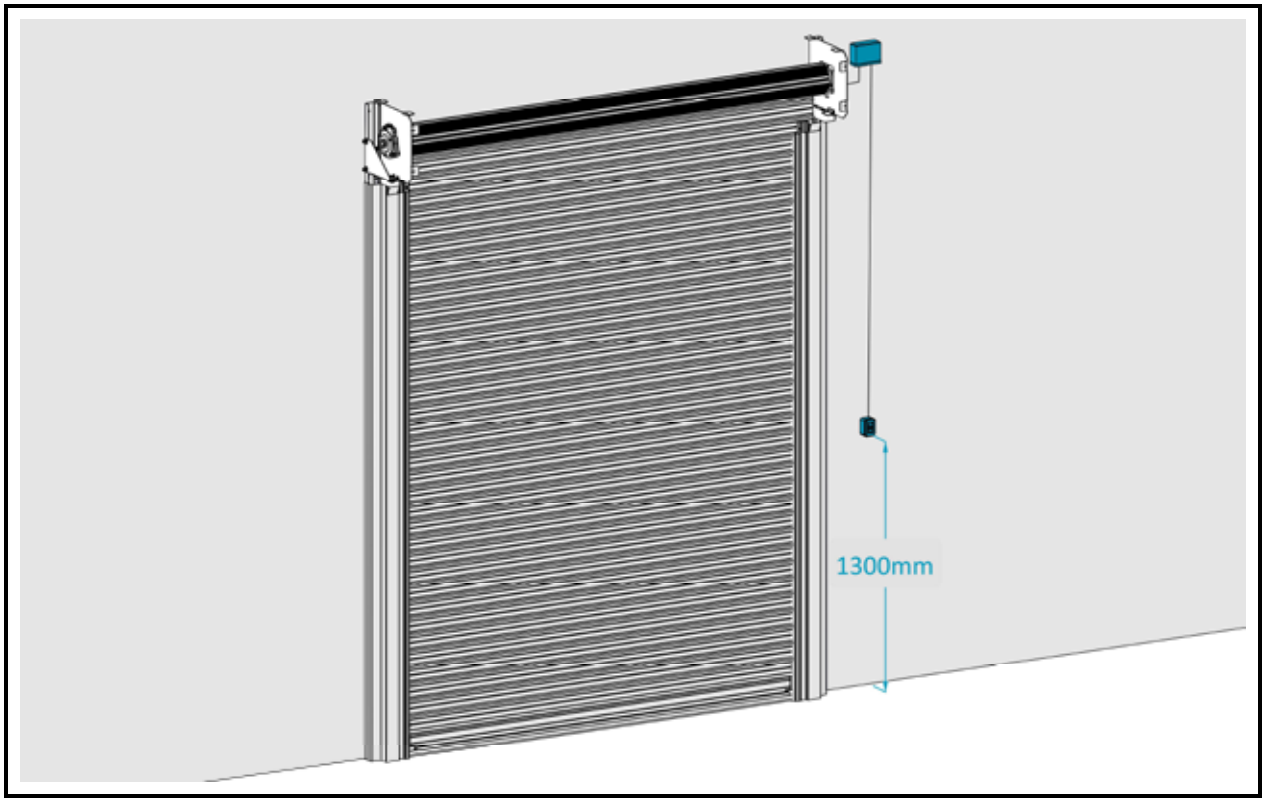

Figure 33

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With the limit switch configuration complete, the next step is to position the control unit near the door and at a height suitable for the user (approximately 1300mm from the floor, see **Figure 33**).

Step 8: Placing the photocell

The photocell (**Figure 34**) is mounted on the guide beams at a height of approximately 500mm from the floor. It is recommended that the two parts that make up the photocell sensor are at the same height, opposite each other, as shown in **Figure 35**. The connection to the control unit is made at the "PHOTO" contact.".

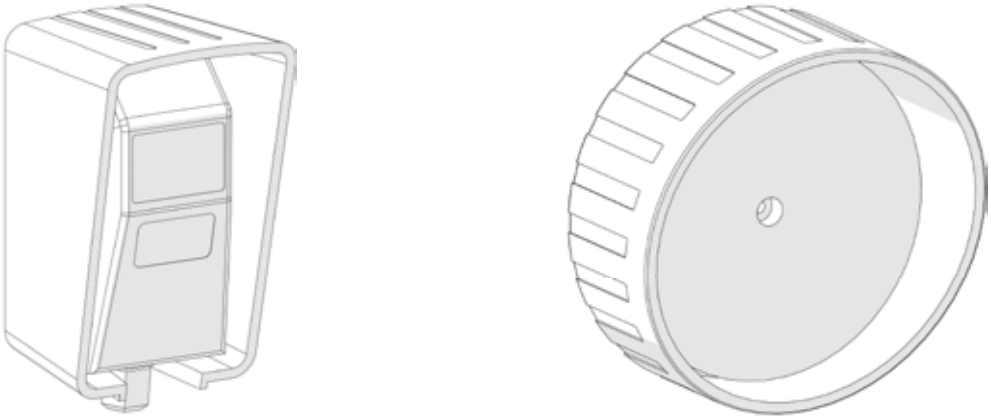

Figure 34

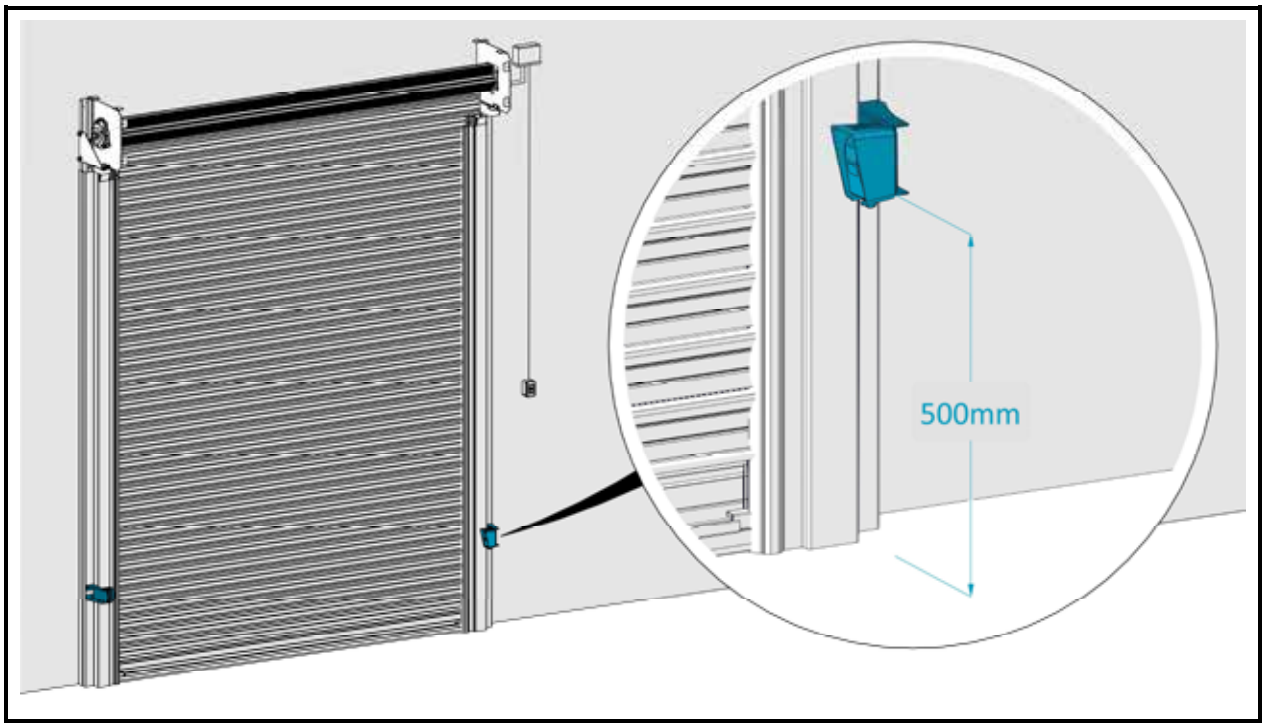

Figure 35

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Step 8: Placing the cover

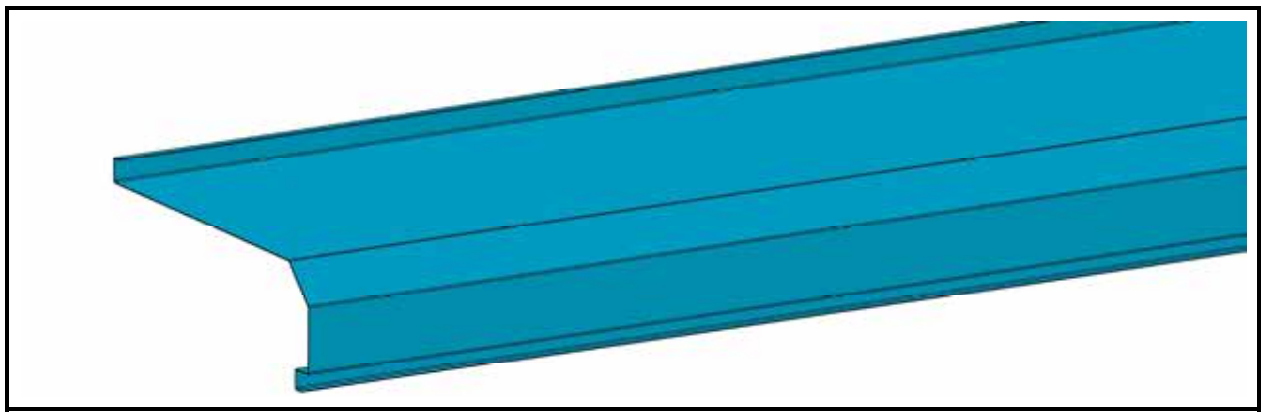

Figure 36

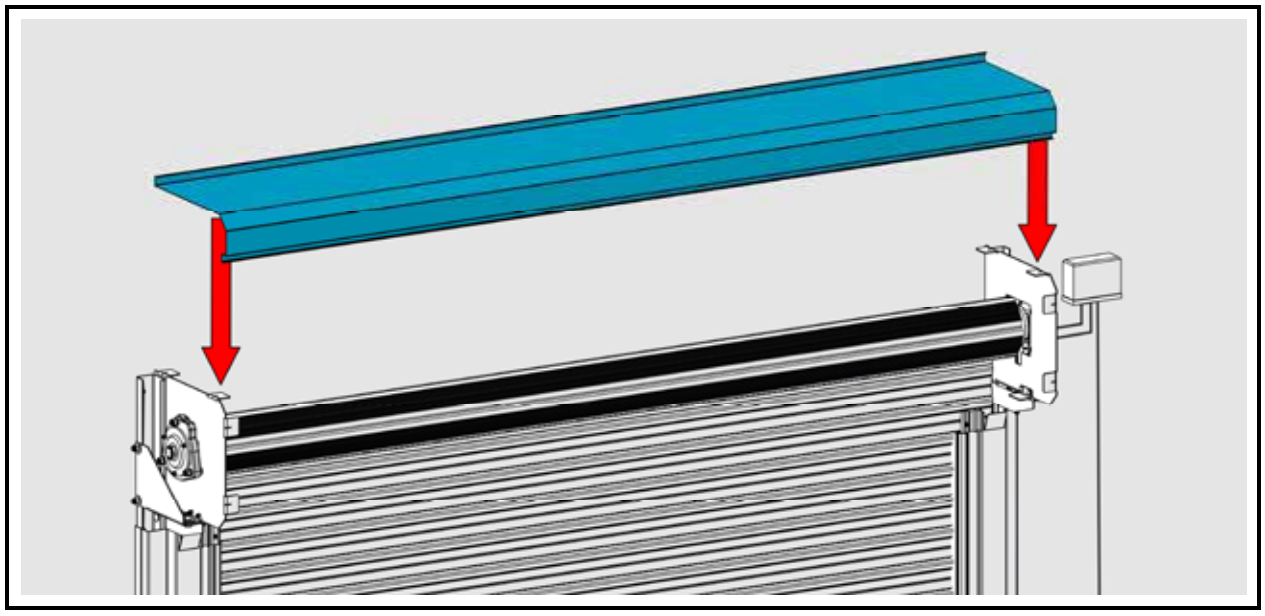

Figure 37

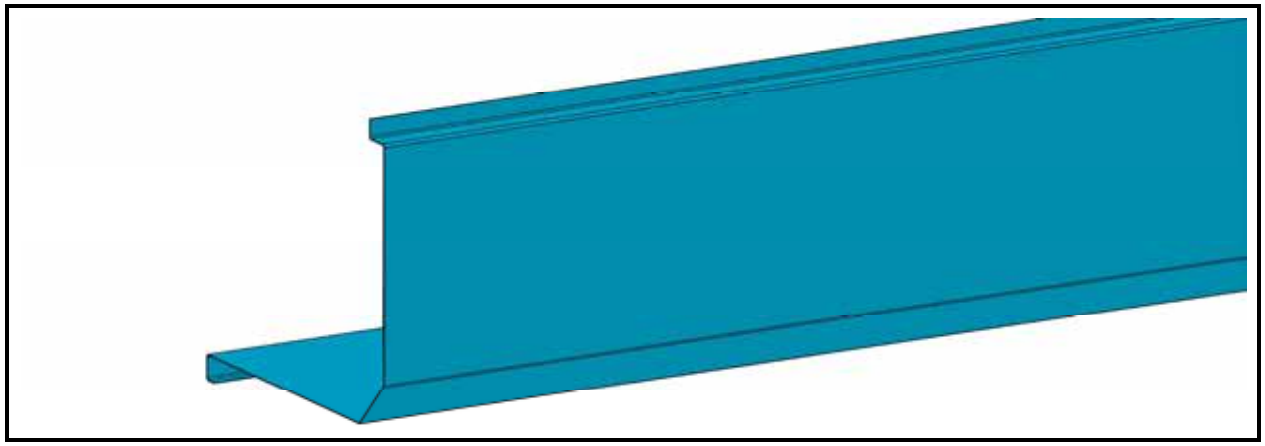

Figure 38

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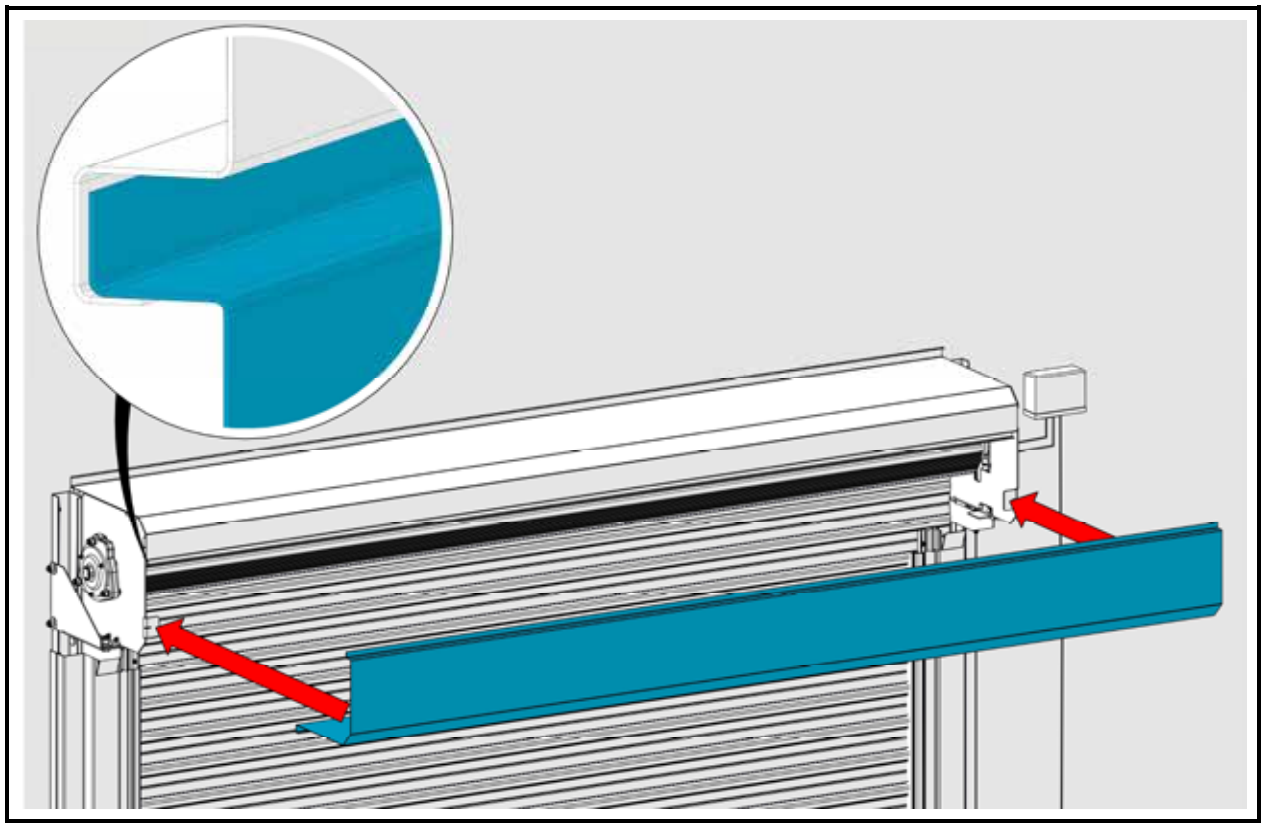

Figure 39

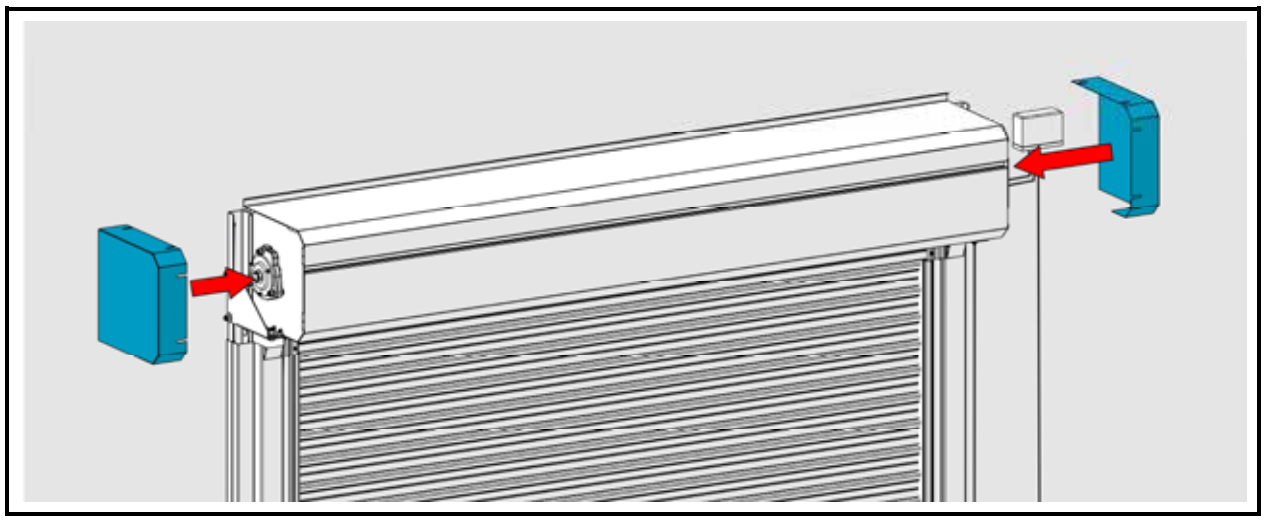

Figure 40

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5. Operation Manual

The function of the RSM-T is strictly limited to covering the opening of the space in which it is installed (**Figure 41**). No other use of the Tubular Roller is permitted (e.g. lifting work). This door is designed and manufactured to withstand all loads that may occur during its proper use.

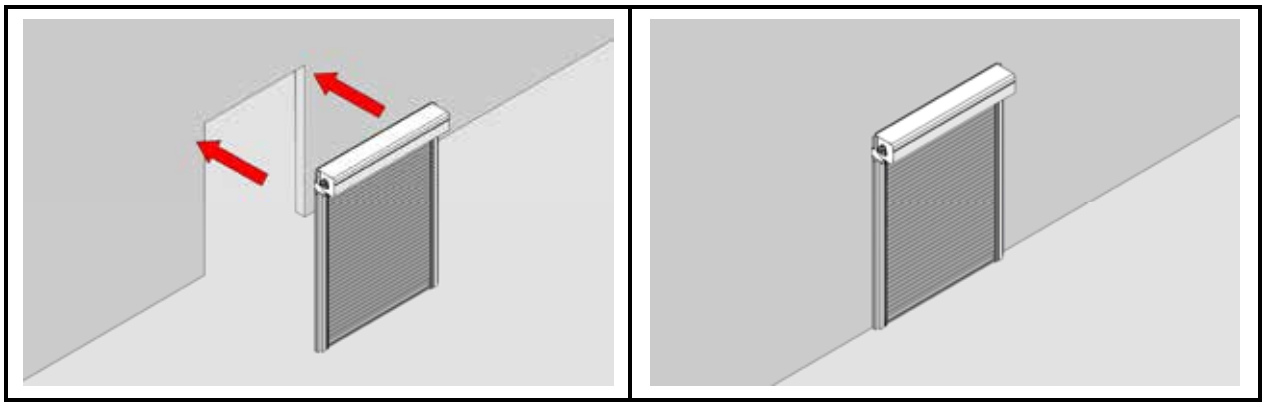

Figure 41

Any other use of the RSM-T may result in operating loads that have not been taken into account in their static design and therefore the manufacturer bears no responsibility for the possible failure of any material or any resulting accident.

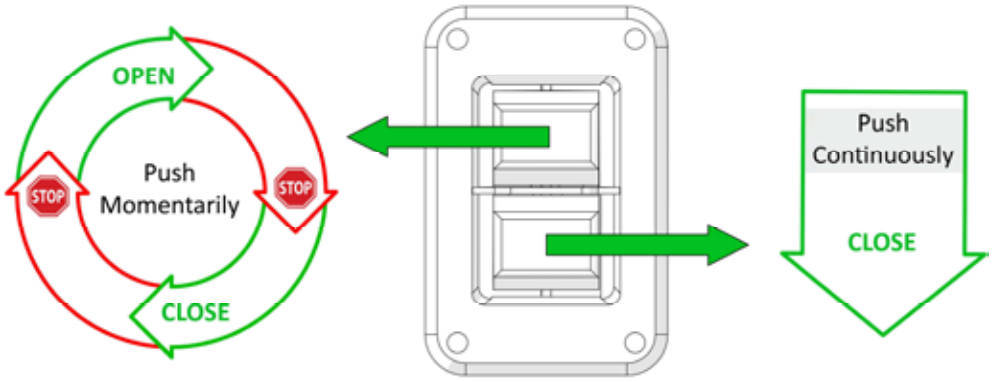

Figure 42

The operation of the Tubular Roller Shutter is fully automated. The roller shutter is activated by the operator's actions on the control unit. **Figure 42** shows the default control unit setting. More programming and adjustment options are listed in sections 2.2, 2.3, 2.4 and 2.5. The RSM-T is recommended for low frequency of operating cycles. In case of thermal tripping, it is recommended to stop the operation of the roller shutter until the motor temperature returns to an operational level.

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5.1. Manual override

In case of a power failure, all roller shutter functions are immediately interrupted. In the event of a power failure or fault, the RSM-T is operated manually by using a crank **(Figure 43, Figure 44**). After the voltage has been restored to the operating levels, action on the control unit is required, as any command given has been automatically cancelled.

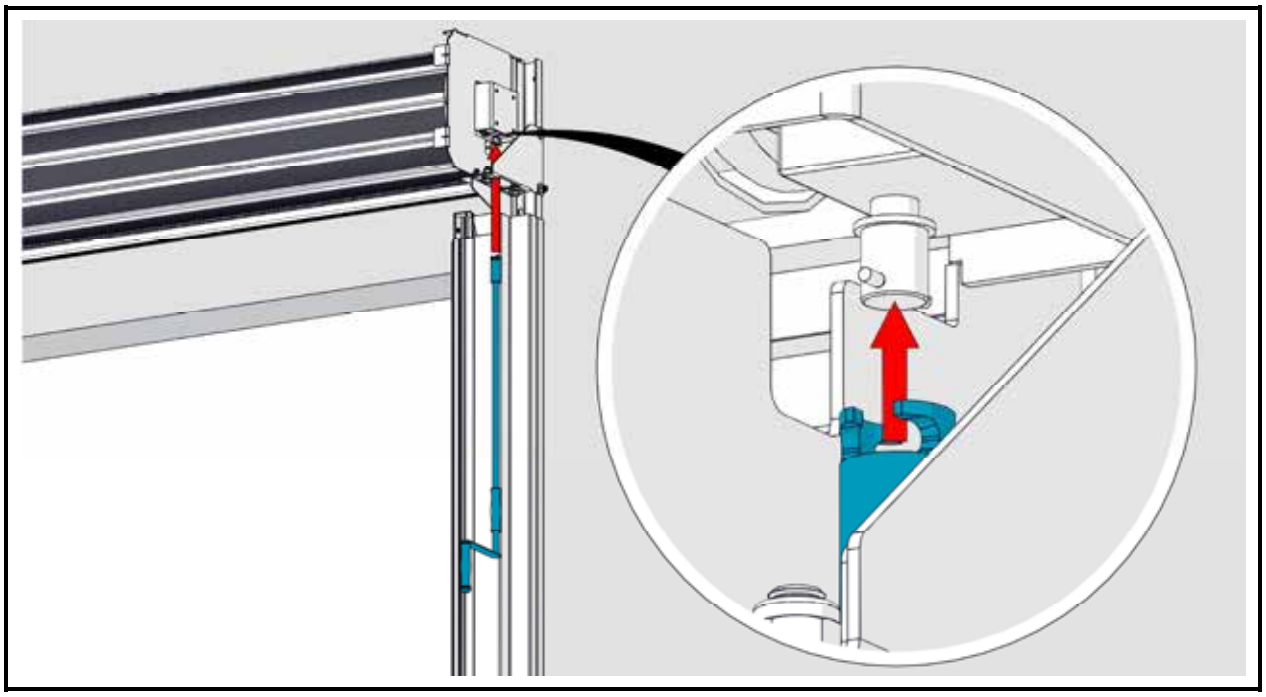

Figure 43

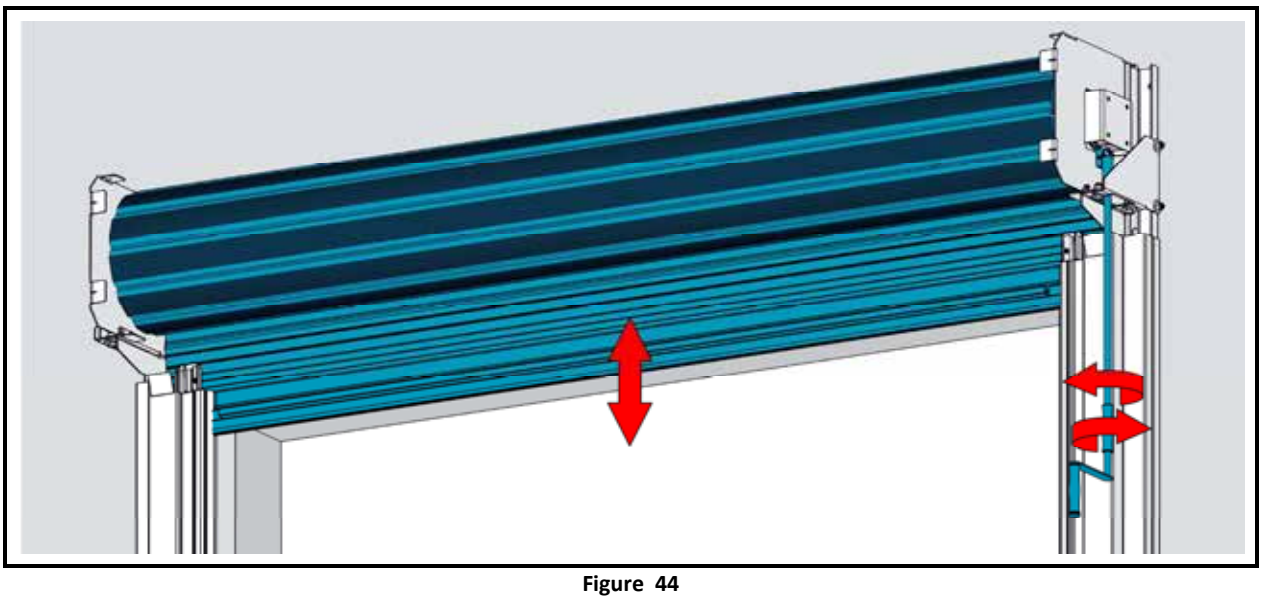

Figure 44

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6. Maintenance manual

Proper maintenance of the roller shutter is a prerequisite for its smooth and quiet operation and longevity. Maintenance of the device includes the following tasks.

Checking the correct operation of the limit switches

The limit switches of the curtain determine limit positions. Visually check whether the limit switches are correctly adjusted by following the procedure below:

- The roller shutter is correctly adjusted and the curtain is properly lowered when the sealing rubber touches the floor and the profiles maintain a constant distance between them.

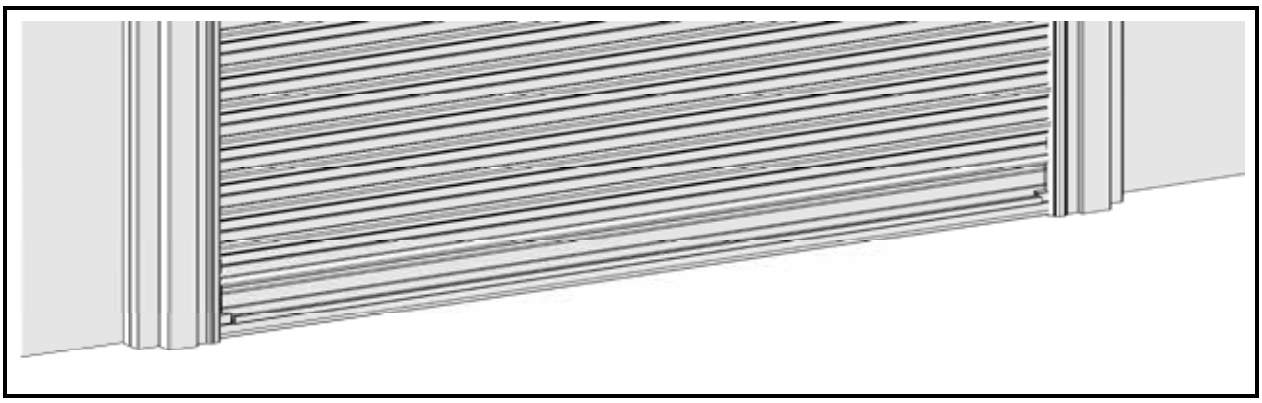

Figure 45

- The roller shutter is correctly adjusted and the curtain is in its maximum open position when the sealing rubber is approximately 200mm away from the roller shutter base.

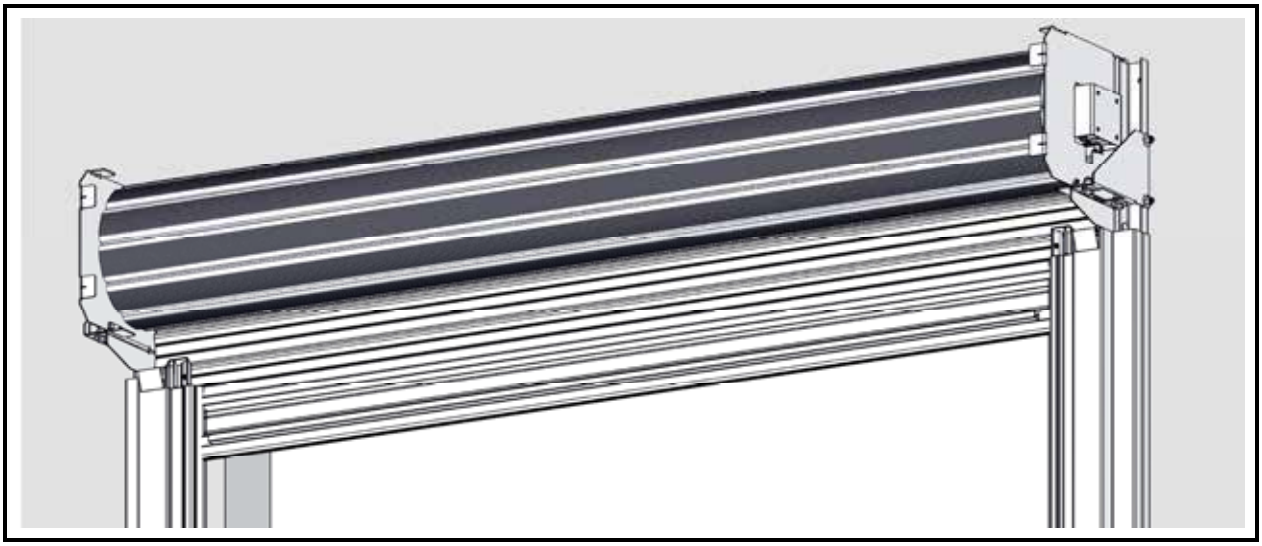

Figure 46

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If any of the above does not occur, please contact the manufacturer so that a specialized team can be sent to make the appropriate adjustments.

Checking the sealing and sliding of the curtain

The aluminum profile along the length of the guide fits EPDM rubber and PVC profiles, which are used for sealing of the guides and smooth sliding of the curtain. Depending on the frequency of use and the operating conditions of the roller shutter (use under strong wind pressure), they may suffer normal wear and tear. In such a case, it is recommended to replace them, so that maximum sealing and silent movement of the curtain are ensured. For the best visual inspection of these elements, it is recommended that the curtain be raised, ensuring better visibility.

Cleaning the roller shutter

Clean the product on a regular basis, especially if it is in an environment with dust, mud or other types of dirt. Always use a dry or slightly damp cloth. Do not use chemical cleaners or other corrosive materials. If the curtain contains windows, do not use household cleaners, but only a damp cloth.

ATTENTION

- The door should be maintained more frequently if it is operated heavily.
- All faulty equipment must be replaced with original parts.
- The door should be maintained by trained personnel.
- These instructions must be followed while performing maintenance work.
- Keep to the warnings and safety instructions.
- Door maintenance must be documented.

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