FIRE RATED ROLLER SHUTTER

RSM-FRK70

E60 | E90 | E120

www.kolliasdoors.com

TECHNICAL HANDBOOK

Ver.1 – 11/2025

INDEX

COMPANY INFO

Company Name: KOLLIAS Ltd.

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Phone No: 0030 23510 36036

E-mail: info@kolliasdoors.com

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GENERAL WARNINGS

1. The company has the right to make modifications to the product and changes to the components supplied without any notice.
2. The correct installation of the product is a prerequisite for its reliable and continuous operation. It is therefore essential to follow the instructions.
3. The motors as well as all the parts that frame the Fire Rated Roller Shutter have all the necessary, high-standard certification data 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 attached to the Fire Rated Roller Shutter.
5. Connect the Fire Rated Roller Shutter ONLY to a supply that has the minimum required frequency and the appropriate grounding.
6. Use the product ONLY for what it is intended, according to the instruction manual and only with the accessories it is equipped with or intended to work with. The manufacturer is not responsible 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 Fire Rated Roller Shutter unnecessarily.
10. For any operating problem and information, contact the manufacturer.
11. Any type of electric welding on the Fire Rated Roller Shutter and its auxiliary members is prohibited.

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MARKINGS

Danger of Electrocution!

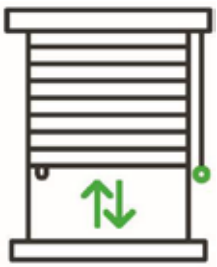
Attention!

Do not place your hands in the drive system!
There is danger of bodily harm!

Do not place your hands in the guides!
There is danger of bodily harm!

The use of corrosive materials
as cleaning agents is prohibited.

Danger! Descending steel curtain!
There is danger of bodily harm!



Operation point of the
Fire Rated Roller Shutter.

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TECHNICAL DESCRIPTION

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The RSM-FRK70 Fire-Resistant Industrial Security Roller Shutters are electrically operated systems intended to cover internal and/or external building openings, primarily providing protection in the event of a fire by adequately sealing the opening, ensuring integrity, and preventing the passage of flames.

The system has undergone laboratory fire-resistance testing in accordance with EN 1634-1 and has been classified as follows, according to EN 13501-2: **E 120, Category B**.

The product carries a Declaration of Performance (DoP) in accordance with standards EN 13241 and EN 16034 and an Extended Application Report (EXAP) in accordance with EN 15269-10.

Testing shot

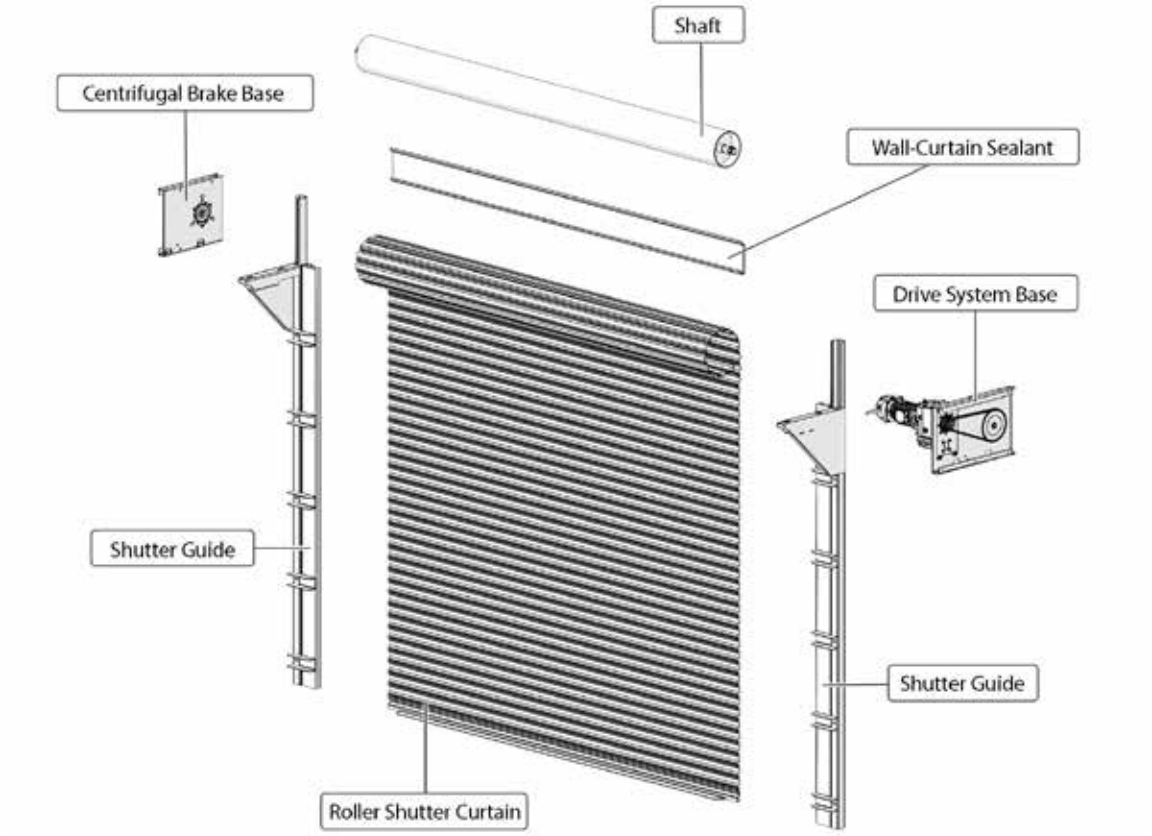

Figure 1. *Main parts of Fire Rated Roller Shutter RSM-FRK70*

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The system consists of three main sections, made up of individual components. The shaft is supported by the reinforced brackets of the movement guides. The guides are fixed onto the structural elements of the building's infrastructure and are supported either by anchors or bolts, depending on the structural element.

The curtain is the main sealing element of the opening and prevents the transmission of fire between internal spaces or between internal and external areas, by obstructing the spread of thermal load and flames. It is made up of single skin profiles. The curtain operates within the vertical guides, and winds around the shaft.

The operation of the curtain between the upper and lower limits is defined by the limit switches. There are also mechanical stops for additional safety. The bottom slat of the curtain is thicker, enhancing its rigidity and stability, and providing the necessary sealing with the floor. In case of a failure that results in the uncontrolled drop of the curtain, the centrifugal brake stops and locks it mechanically. (Figure 2).

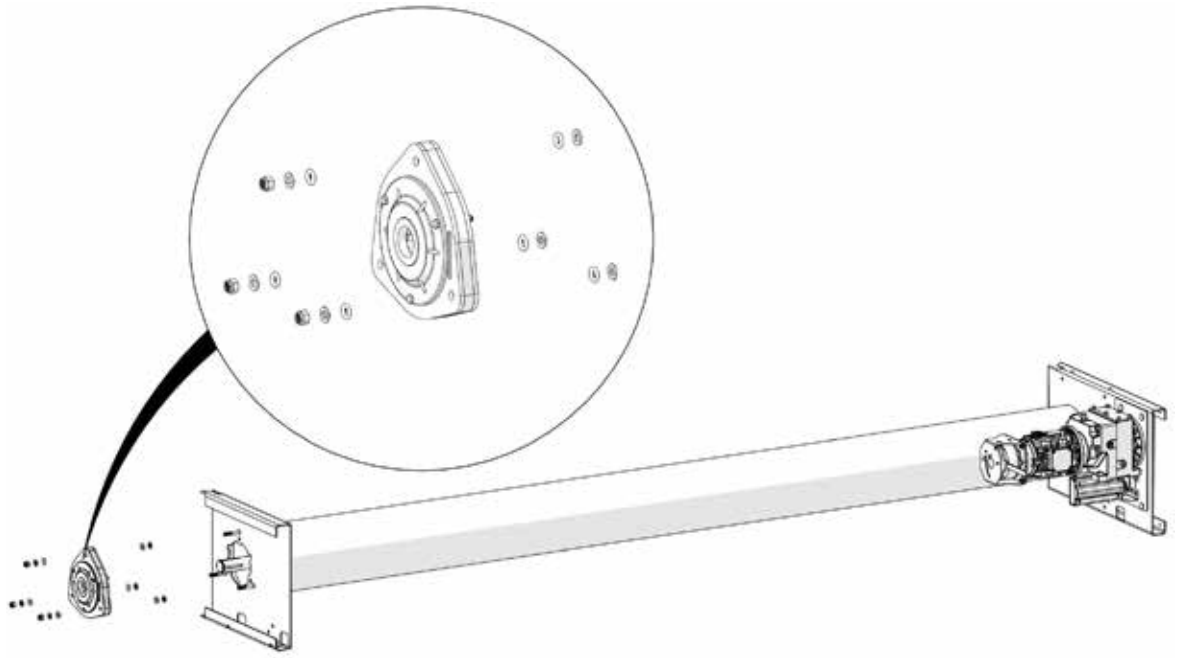

***Figure 2**. Centrifugal Brake*

The shaft is rotated by a three-phase electrical motor and a linear gearbox. The drive system also includes the chain, the chain wheels, and the stub axles (Figure *3*).

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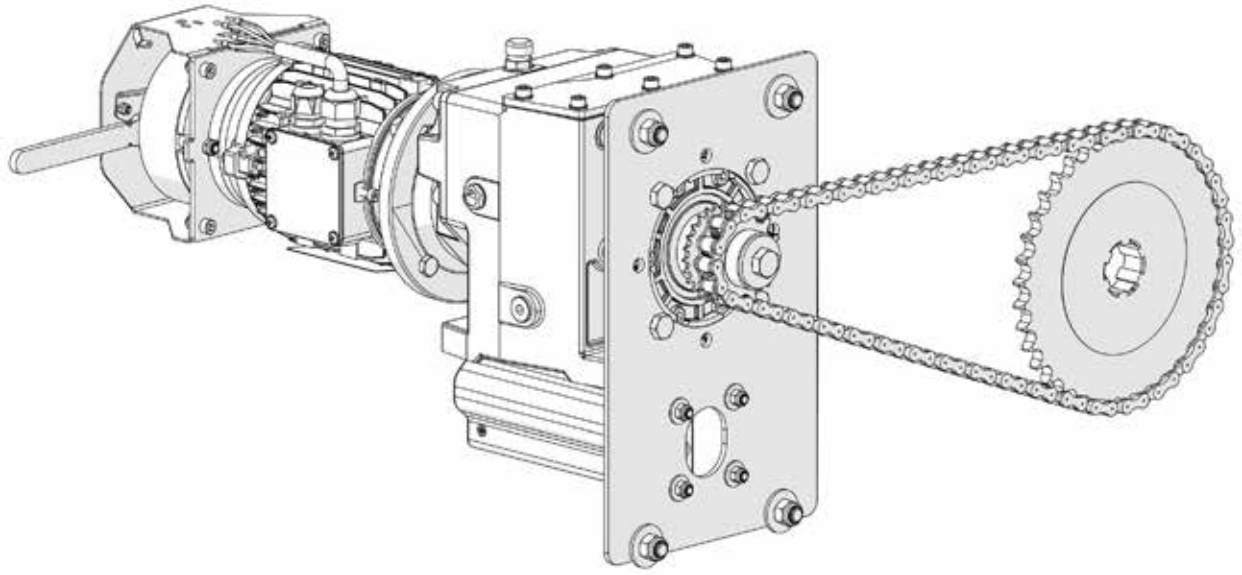

Figure 3. *Drive system*

In case of power shortage, the door can be opened manually, by a crank placed in the socket of the drive system. (*Figure 4*).

The structural components of the Fire Rated Roller Shutter, as well as the parts that compose them, are produced by high quality steel, chosen with regards to the thermal loads, mechanical loads, and resistance to corrosion. The curtain is made up by hot-dipped galvanized parts DX51D, as per EN 10346 standard.

The guides of the Fire Rated Roller Shutter are also produced by DX51D parts. The rest of the components are produced by structural steel S235JR, as per EN 10025 standard.

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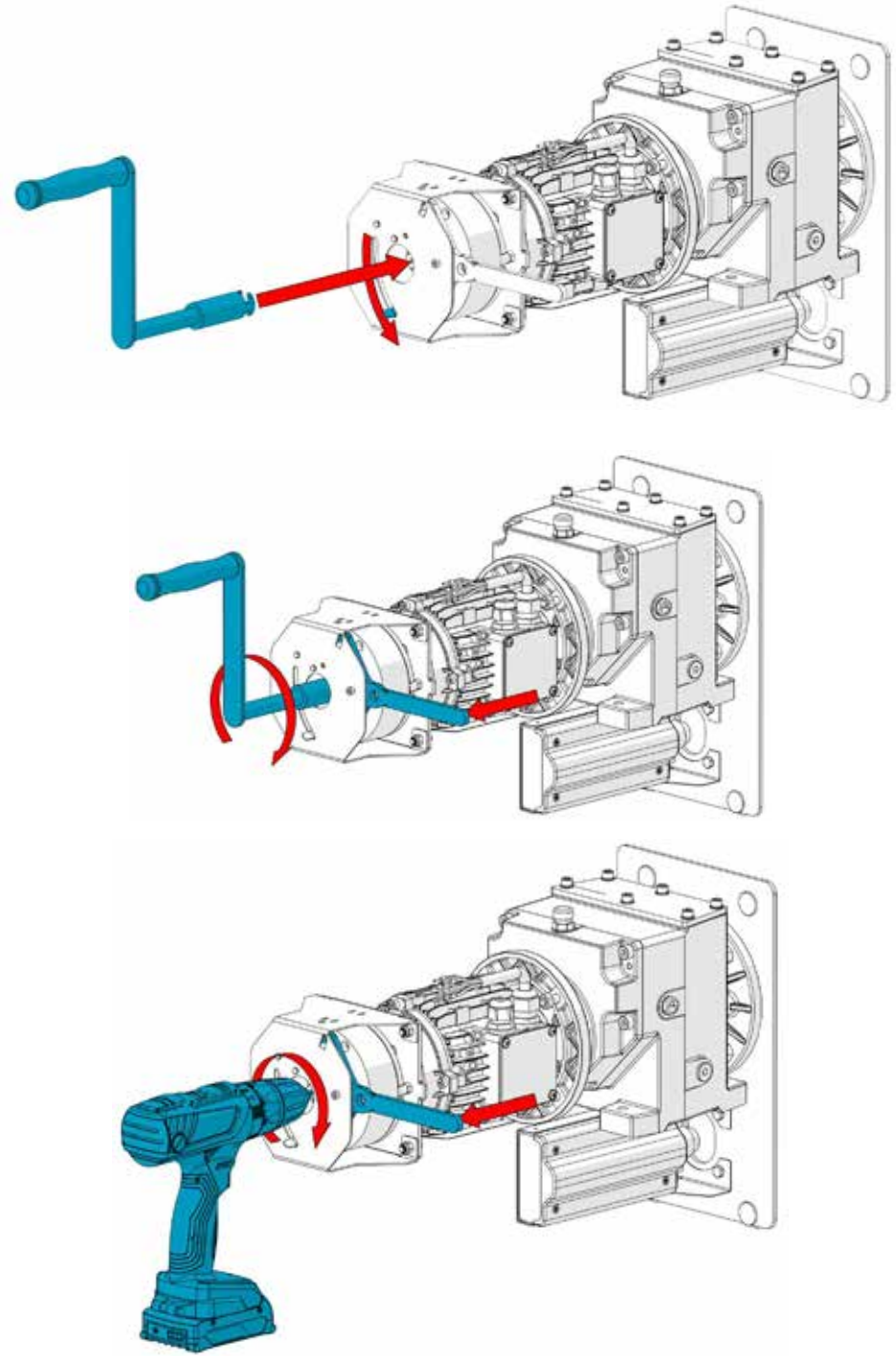

Figure 4. *Crank Socket*

The shaft is produced by structural steel S235JR with hollow circular section, with dimensions calculated as to bear the operational and thermal loads that it will be subjected to in case of fire. The bases of the Fire Rated Shutter are produced by the same material.

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The Fire Rated Roller Shutter RSM-FRK70 has a modern control panel, which is directly connected to the central fire alarm panel of the building and manages the closing of the door in case of an emergency. The activation of the closing can be triggered in the following ways:

- Manually, by the closing button which is next to the door.
- Automatically, by receiving the close command from the central fire alarm panel of the building.
- Automatically, by a command via a command triggered by the detection of fire phenomena, such as:
  - Sudden temperature spike (head detector)
  - Smoke detection

Important Notes

- ***The type and size of materials used in the fire-rated shutters strictly follow the laboratory tests and certifications the product has received; consequently, no modification of these materials is permitted.***
- ***Fire-rated shutters are intended for a limited number of operating cycles, due to their restricted movement speed, the increased weight of the curtain, and the potential wear caused to the insulation material by friction with the curtain.***

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TECHNICAL CHARACTERISTICS

OF THE DRIVE SYSTEMS

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TECHNICAL CHARACTERISTICS TABLE OF DRIVE SYSTEM PYR 20

Motor Characteristics		
Type	MTe	**M 71 C4**
Rated Power	P	**0,75 Kw**
Rotations	n	**1360 rpm**
Voltage	V_m	**400 V**
Current	I_m	**2.0A**
Frequency	F_r	**50 Hz**
Power Factor (cosφ)	PF	**0.77**
Poles	PL	**2**
Phases	PN	**3**
Insulation	MP_f	**F**
Protection	MP_r	**IP54**
Electric Brake Characteristics		
Voltage	V_{BR}	**12 V**
Power	P_{BR}	**150 Watt**
Gap	cl	**0.5 – 0.7mm**
Tractive Force	F	**4500 N**
Momentary Braking Torque	T_{BR}	**30 Nm**
Centrifugal Brake Characteristics		
Type	CBTe	**H40**
Hub Diameter	DH	**40 mm**
Max. Torque Reaction	T_{CB}	**750 Nm**
Engagement Rotations	n_{CB}	**25 rpm**
Switch Voltage	V_s	**5 V**
Technical Characteristics of Chains		
Chain Type	CTe	**8B**
Pitch	p	**1/2"**
Sprocket Teeth (Driven)	Z_s	**60**
Sprocket Teeth (Drive)	Z_r	**14**

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Shaft Characteristics		
External Diameter – Shaft Thickness	Φ_1	**219x3 mm**
	Φ_2	**273x4 mm**
	Φ_3	**330x5 mm**
Stub Axle Diameter (Drive)	D_m	**40 mm**
Stub Axle Diameter (Driven)	D_{CB}	**40 mm**
Control Panel Characteristics		
Control Panel Type	ETe	**FBM-2**
Switch Voltage	V_{SEQ}	**12 V**
Protection	EPr	**IP54**

TECHNICAL CHARACTERISTICS TABLE OF DRIVE SYSTEM PYR 25

Motor Characteristics		
Type	MTe	**M 71 C4**
Power	P	**0,75 Kw**
Rotations	n	**1360 rpm**
Voltage	V_m	**400 V**
Current	I_m	**2.0A**
Frequency	F_r	**50 Hz**
Power Factor (cosφ)	PF	**0.77**
Poles	PL	**2**
Phases	PN	**3**
Insulation	MP_f	**F**
Protection	MP_r	**IP54**
Electric Brake Characteristics		
Voltage	V_{BR}	**12 V**
Power	P_{BR}	**150 Watt**
Gap	cl	**0.5 – 0.7mm**
Tractive Force	F	**4500 N**
Momentary Braking Torque	T_{BR}	**30 Nm**

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Centrifugal Brake Characteristics		
Type	CBTe	**H40**
Hub Diameter	DH	**40 mm**
Max. Torque Reaction	T_{CB}	**750 Nm**
Engagement Rotations	n_{CB}	**24 rpm**
Switch Voltage	V_s	**5 V**
Technical Characteristics of Chains		
Chain Type	CTe	**10B**
Pitch	p	**5/8"**
Sprocket Teeth (Driven)	Z_s	**60**
Sprocket Teeth (Drive)	Z_r	**12**
Shaft Characteristics		
External Diameter – Shaft Thickness	Φ_1	**219x3 mm**
	Φ_2	**273x4 mm**
	Φ_3	**330x5 mm**
Stub Axle Diameter (Driven)	D_m	**40 mm**
Stub Axle Diameter (Drive)	D_{CB}	**40 mm**
Control Panel Characteristics		
Control Panel Type	ETe	**FBM-2**
Switch Voltage	V_{SEQ}	**12 V**
Protection	EPr	**IP54**

TECHNICAL CHARACTERISTICS TABLE OF DRIVE SYSTEM PYR 30

Motor Characteristics		
Type	MTe	**T 80BX4**
Power	P	**1,1 Kw**
Rotations	n	**1370 rpm**
Voltage	V_m	**400 V**
Current	I_m	**4.8A**
Frequency	F_r	**50 Hz**
Power Factor (cosφ)	PF	**0.78**

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Poles	PL	**2**
Phases	PN	**3**
Insulation	MP_f	**F**
Protection	MP_r	**IP55**
Electric Brake Characteristics		
Voltage	V_{BR}	**110 V**
Power	P_{BR}	**150 Watt**
Gap	cl	**0.5 – 0.7mm**
Tractive Force	F	**4500 N**
Momentary Braking Torque	T_{BR}	**30 Nm**
Centrifugal Brake Characteristics		
Type	CBTe	**S50**
Hub Diameters	DH	**50 mm**
Max. Torque Reaction	T_{CB}	**1400 Nm**
Engagement Rotations	n_{CB}	**24 rpm**
Switch Voltage	V_s	**5 V**
Technical Characteristics of Chains		
Chain Type	CTe	**12B 60H**
Pitch	p	**3/4"**
Sprocket Teeth (Driven)	Z_s	**60**
Sprocket Teeth (Drive)	Z_r	**12**
Shaft Characteristics		
External Diameter – Shaft Thickness	Φ_1	**219x3 mm**
	Φ_2	**273x4 mm**
	Φ_3	**330x5 mm**
Stub Axle Diameter (Driven)	D_m	**50 mm**
Stub Axle Diameter (Drive)	D_{CB}	**50 mm**
Control Panel Characteristics		
Control Panel Type	ETe	**FBM-2**
Switch Voltage	V_{SEQ}	**12 V**
Protection	EPr	**IP54**

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INSTALLATION MANUAL

USER MANUAL

MAINTENANCE MANUAL

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GENERAL SAFETY RULES

Note: Save these instructions for future use.

ATTENTION

- The area around the Fire Rated Roller Shutters must be secured during installation.
- The installation of the door must be done by certified personnel (at least two) and as per standard EN 12635.
- For safety reasons and proper installation, follow the steps given in this manual.
- Fire Rated Roller Shutters can only be installed on substructures with adequate static adequacy.
- The substructures must be approved by the manufacturer of the Fire Rated Roller Shutters.
- The installation must be done with the use of safety equipment (f.e. scaffolding).

ELLIMINATING THE RISK OF CORROSION

The following steps must be taken:

- Provide adequate water drainage at the Fire Rated Roller Shutter installation area.
- The building must be dry and properly ventilated.
- Avoid contact with corrosive and caustic materials.
- Cover the Fire Rated Roller Shutter when carrying out mortar, cement, or plaster coating works.

INSTALLATION PERSONNEL REQUIREMENTS

The following are required of the installation personnel:

- Knowledge of safety and accident prevention regulations.
- Knowledge of applicable electrical regulations.
- Training in the use and maintenance of appropriate safety equipment.
- Adequate education and training from certified installation electricians.
- Ability to recognize the hazards that may be caused by electricity.
- Ability to apply the following standards:
- EN 12635 («Industrial, commercial and garage doors - Safety devices for electrically operated doors and garage doors - Installation and use»)

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- EN 12453 («Industrial, commercial and garage doors - Safety devices for electrically operated doors and garage doors - Requirements»)
- EN 12445 («Industrial, commercial and garage doors - Safety devices for power-operated doors and garage doors - Test methods»)

REQUIREMENTS OF THE OWNER OF THE INSTALLED DEVICE

- Update on how to use the device.
- Keeping the operating manual.
- Knowledge of general safety and accident prevention regulations.

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INSTALLATION MANUAL

Step 1: Basic checks before the installation of the Fire Rated Roller Shutter

First, we make sure that there is enough room on the right, left and top side of the opening (WR, WL, HT), for the installation of the guides (this is not needed when the Fire Rated Shutter is installed inside the opening). When the floor has an inclination, the guide that will be placed in the highest point must be cut (picture 5), so that the supports of the bases end up at the exact same height.

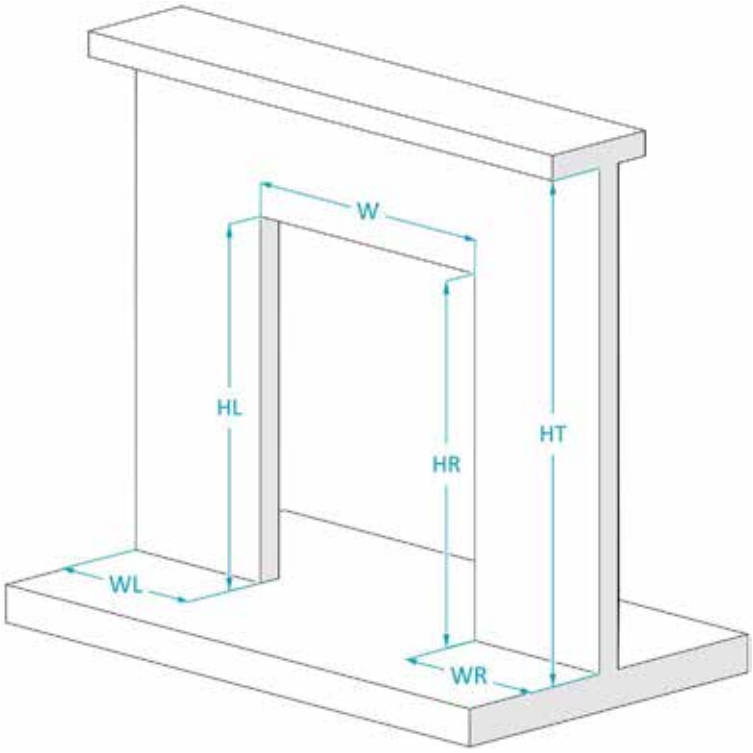

Figure 5. *Dimensions that must be checked before installing the guides*

Step 2: Installation of the guides of the Fire Rated Roller Shutter

When the exact point of installation has been defined, we lift one and place it vertically, using a spirit level or a laser. The support base must be vertical to the building for the door to operate as intended.

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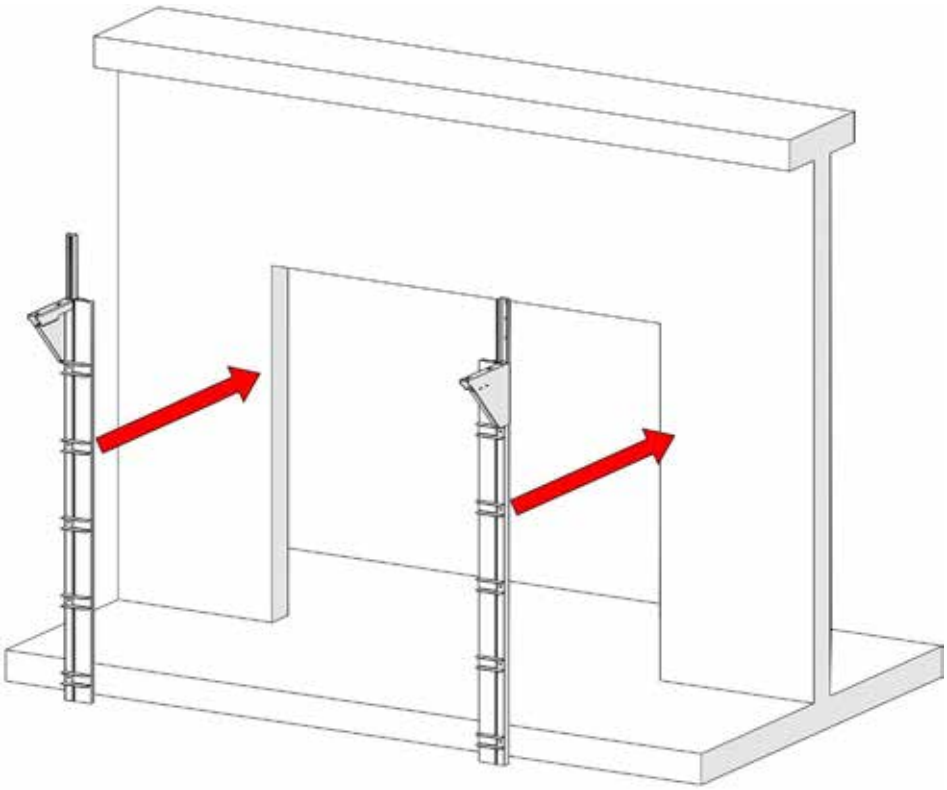

Figure 6. *Installing the guides of the Fire Rated Roller Shutter*

After lifting the guide, we continue with its support, depending on the type of structural element of the building with bolts or plugs. Near the support of the base, a minimum of three support points is required. Finally, we support the guide at every meter of length of the guide.

After completing the lifting and supporting of the guides, the roller shutter base supports must be at the same height. Otherwise, there is a risk of malfunction, which may cause premature wear and tear on its mechanical components.

Step 3 : Defining the distance between the guides

We take the same steps with the second guide, as we did with the first. To define the distance between the guides, we should measure the gross width (Wt) both at the top and at the bottom.

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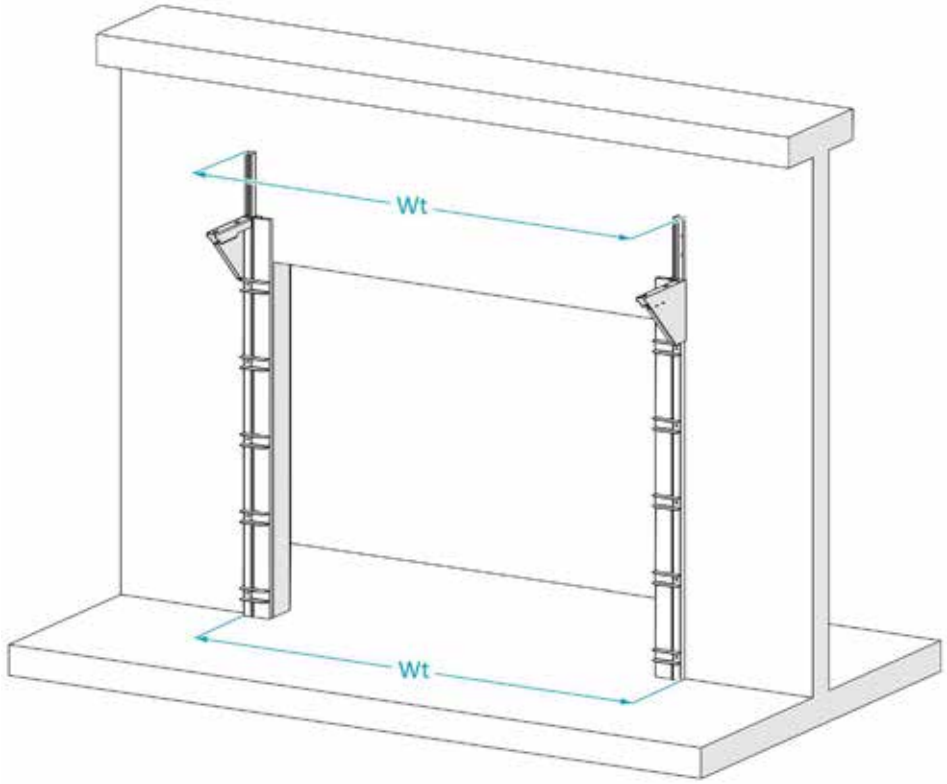

Figure 7. *Defining the distance between the guides*

Bolts and screws must be used on the fixing beam of the guides, and not at the part at which the curtain of the shutter is operating (Picture 10).

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Step 4: Installing the insulation element between the curtain and the wall.

The insulation element is fixed with screws or bolts, depending on the structural element.

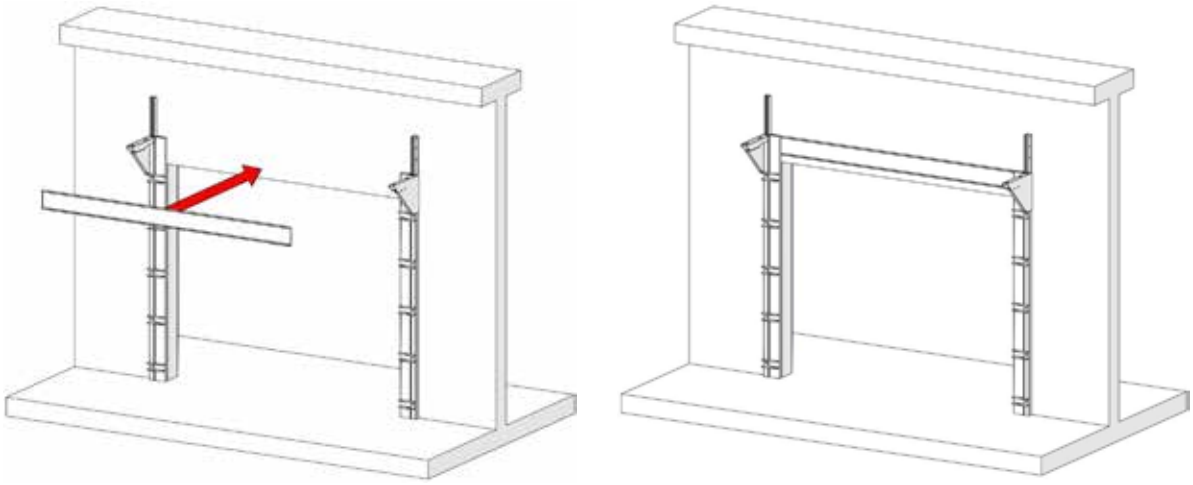

Figure 8. *Installation of the insulation element*

Step 5: Installation of the roller shutter on the supports and checking the gap between the shaft and the base

We lift the roller shutter over the guides and carefully place the bases of the shutter on the base supports of the guides.

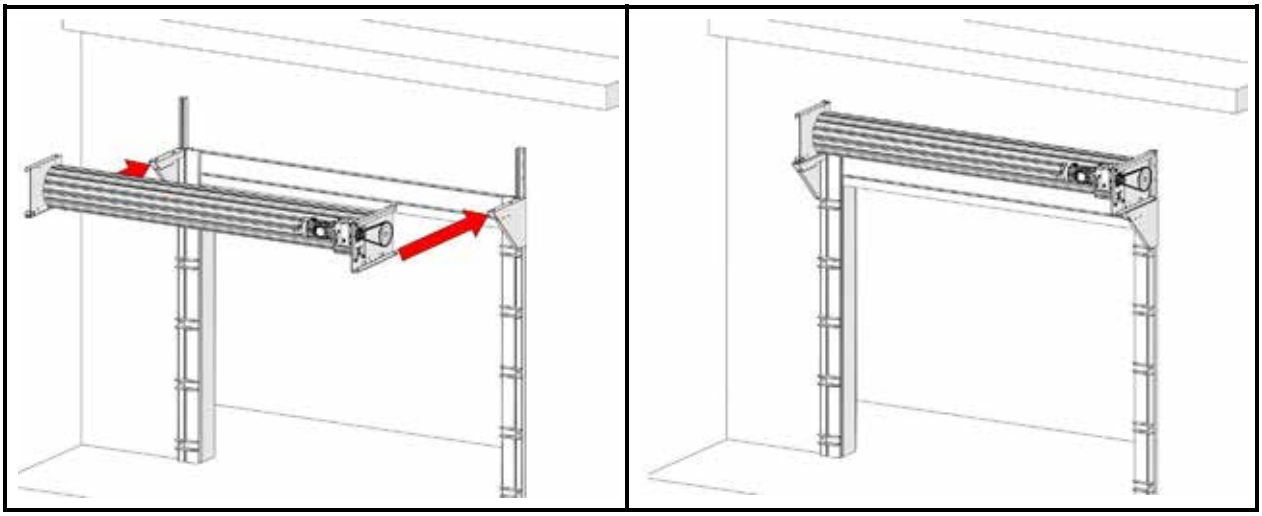

Figure 9. Installing the roller shutter

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Then, we place the screws of the base – base supports and before fixing them we make a visual check to ensure that the gap shown in Picture 10 is consistent (T1 = T2). That gap can be partly modified. The driving chain must be stretched for the shutter to operate properly.

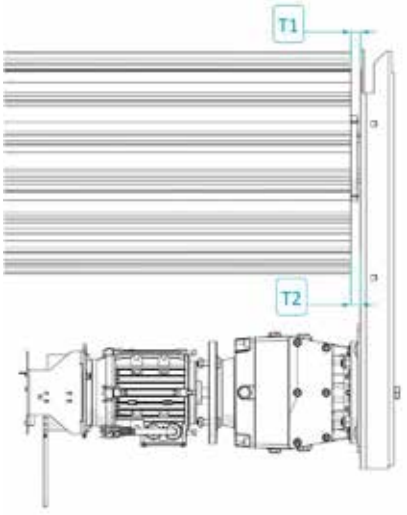

Figure 10. Base – Shaft gap

Step 6: Adjusting the curtain on the guides

After fixing the bases on the base supports, we manually rotate the shaft with the crank, until the bottom slat of the curtain is within the guides. It is suggested that the door is powered with electricity when about 50cm of the curtain is within the guides.

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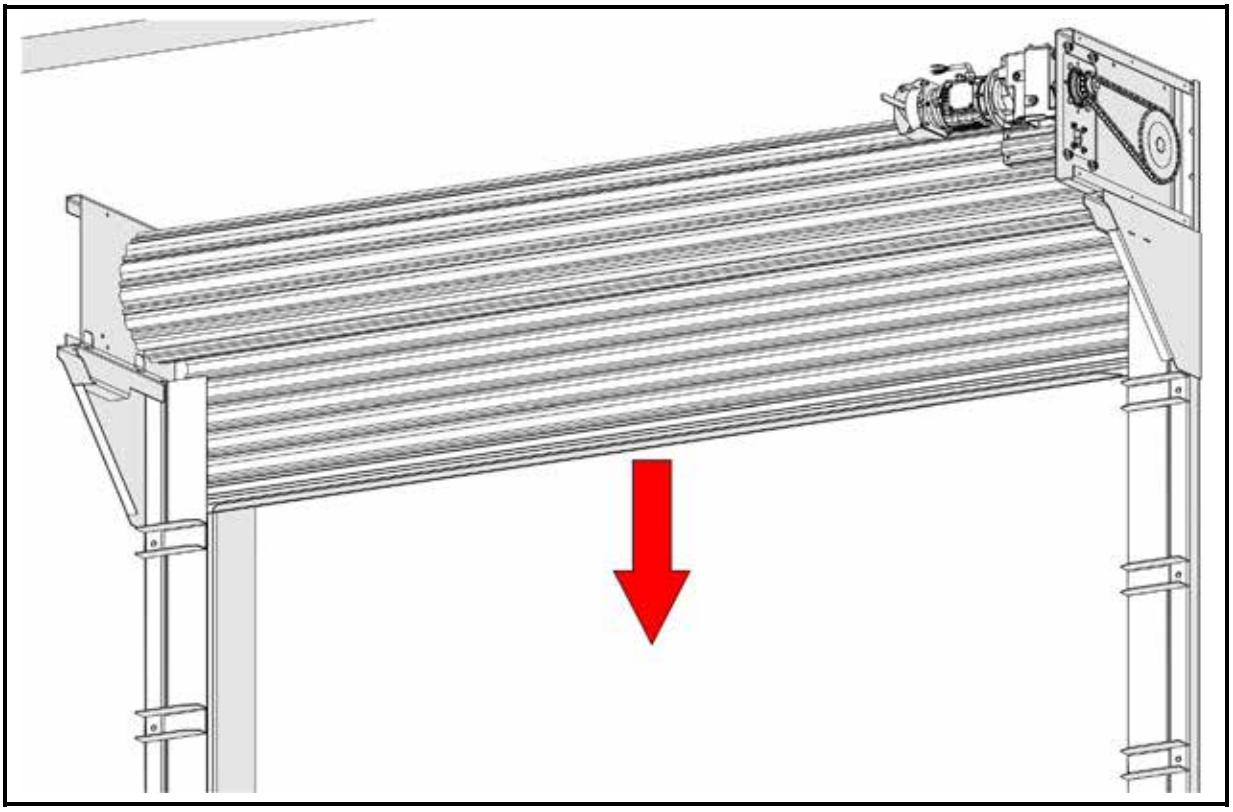

Figure 11. *Adjusting the curtain in the guides*

Step 7: Connecting the centrifugal brake to the control panel

After removing the grounding marked NC D in the control panel (FBM-2) we connect it to the centrifugal brake with a 2x0,5mm cable (the 2x05mm cable will only transfer a command, not electricity). The cable will pass over the shutter, either within a channel or supported directly onto the wall.

If the switch of the centrifugal brake is lifted (sudden drop of the curtain), the electrical circuit will stop the operation of the motor.

Step 8: Adjusting the limit switches

We connect the control panel to the butonniere (picture 12), making sure that the brown wire is connected to the opening button and the yellow wire on the closing button. Then, we power the control panel with three-phase current and start setting the limit switches.

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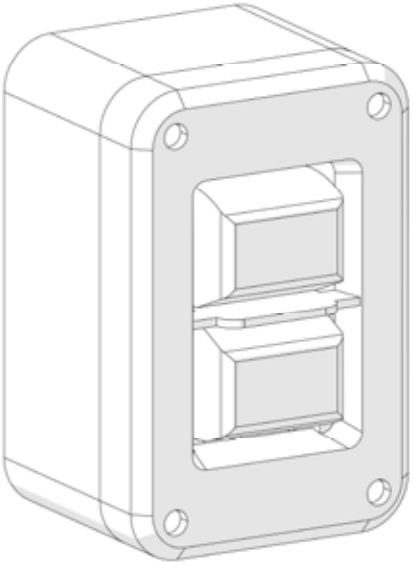

Figure 12. *Butonniere*

Control Panel FBM-2 has a phase monitor, so any possible fault will be detected and indicated with a LED light. In case that happens, we reverse two of the three phases, but in no way do we change the connection of the motor on the control board.

Then we lower the shutter until the bottom slat contacts the floor. At this position, we must adjust it so that the right-hand slider, which controls the downward movement, presses the corresponding contact. To move the slider by hand, the locking screw must be loosened, allowing it to rotate freely.

After completing this step, we tighten the screw again by hand. Next, we raise the shutter and lower it again to check that the previous limit switch adjustment is accurate. If this is not the case, we repeat the process.

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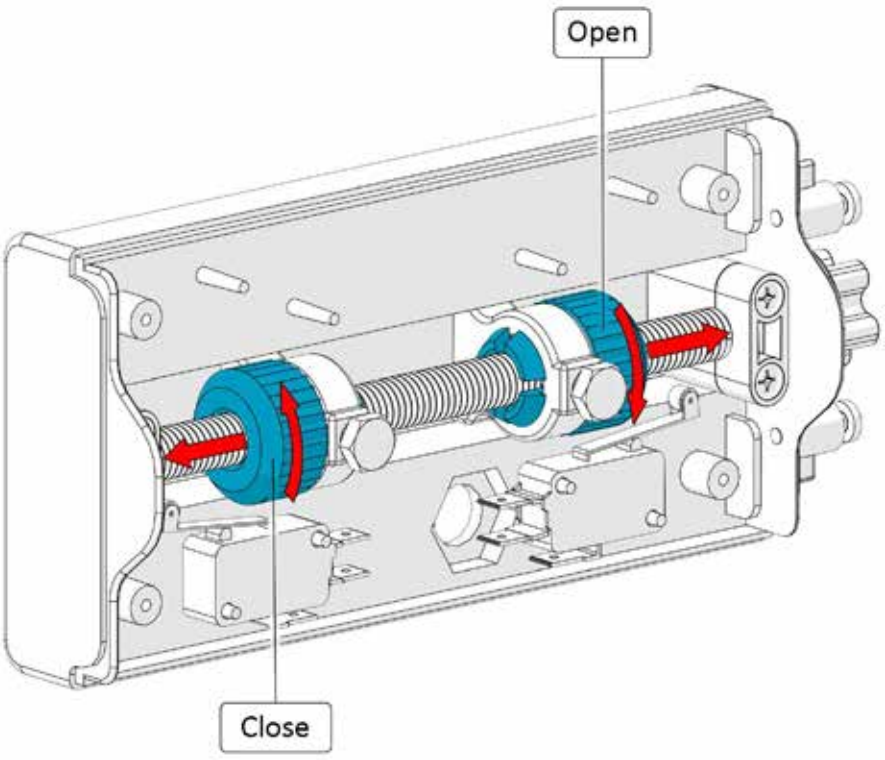

Figure 13. Limit Switch

Then, we begin the process of setting the upper position of the shutter. By pressing the up button (BROWN wire), the limit switch sliders move to the left. We raise the shutter until the position where the bottom slat and one slat of the shutter profile are inside the guides. At this position, we must adjust it so that the left-hand slider, which controls the upward movement, presses the corresponding contact. Next, we lower the shutter and raise it again to check that the previous limit switch adjustment is accurate.

If this is not the case, we repeat the process.

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OPERATION MANUAL

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The use of the fire-rated roller shutter is strictly limited to the compartmentalization of the area in which it has been installed, providing protection in the event of a fire. No other use is permitted (e.g. lifting operations). Fire rated shutters are designed, engineered, and manufactured to withstand all loads that may occur during their proper use. Any improper use of the shutters may result in operational loads that have not been considered in their structural design. Therefore, the manufacturer bears no responsibility for any potential material failure or any resulting accident.

OPERATION BY BUTONNIERE

The operation is fully controlled and automated. The curtain is set into upward or downward motion with a momentary press of the corresponding button on the fixed butonniere, and it stops immediately upon pressing the same button again. Upward and downward operation alternate, provided that the previous movement has first been stopped. When the curtain reaches its upper or lower limit position, it stops automatically by means of the limit switches.

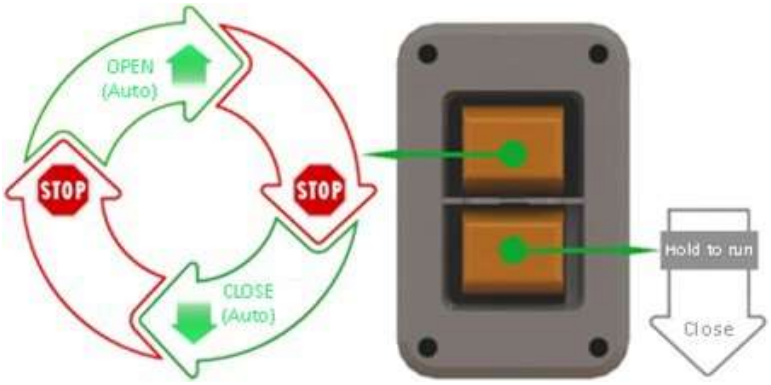

Figure 14. Butonniere Operation

The downward movement of the curtain can also be achieved by continuously pressing the down button on the butonniere. The downward operation is interrupted either by releasing the button or automatically via the limit switch when the curtain reaches its lowest position. In the event of a power supply drop, all shutter operation stops immediately. Once the power supply is restored to the required levels, a new command must be given via the butonniere, as any previously issued command is automatically cancelled.

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MANUAL OVERRIDE

The motor has a crank socket, through which the manual override takes place.

Manual operation should only be carried out when necessary, with the most common causes of shutter malfunction being:

1. Power outage
2. Voltage drop
3. Electrical fuse failure
4. Electrical fault in the circuit or motor

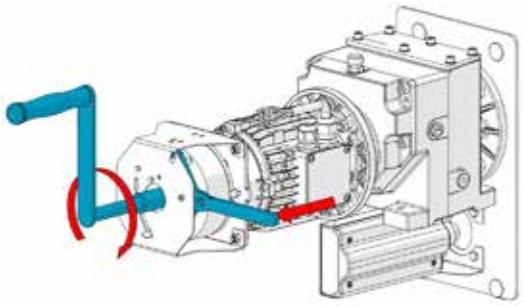

Figure 15. Manual override *(crank)*

During manual operation, the limit switches are deactivated. Therefore, special attention is required when both lowering and raising the shutter. Under no circumstances should the operating limits of the shutter be exceeded, as this may cause damage to the limit switch mechanisms.

Manual operation of the shutter is performed by inserting and pressing the crank handle. In this way, the power supply is automatically interrupted, which is visually indicated by the indicator light turning off. For manual raising or lowering of the shutter, a relatively large number of rotations will be required due to the presence of the gearbox.

To reactivate the electrical circuit of the shutter after using the crank handle, it must be removed from its socket while simultaneously checking that the indicator light turns on. If this does not occur, it is possible that the switch located inside the crank handle socket has not returned to its initial position. Reinsert the crank handle and, using gentle movements, attempt to release (reset) the switch

ATTENTION!

To avoid injury

- Open or close the door, only when there are no obstacles in the way of the curtain.
- Do not operate the door when heavy wind loads are present.
- Make sure that the door is not operated by children or unauthorized personnel.

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MAINTENANCE MANUAL

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Proper maintenance of the fire-resistant industrial shutter is an essential requirement for its smooth, quiet operation and long service life. The maintenance of the system includes the following tasks.

Monthly / Frequent maintenance work

1. **Visual check**

- Checking that the limit switch is operating properly.

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

The shutter is correctly adjusted and the curtain is in its normal lowered position when the bottom slat rests on the floor and the profiles maintain a consistent distance between each other.

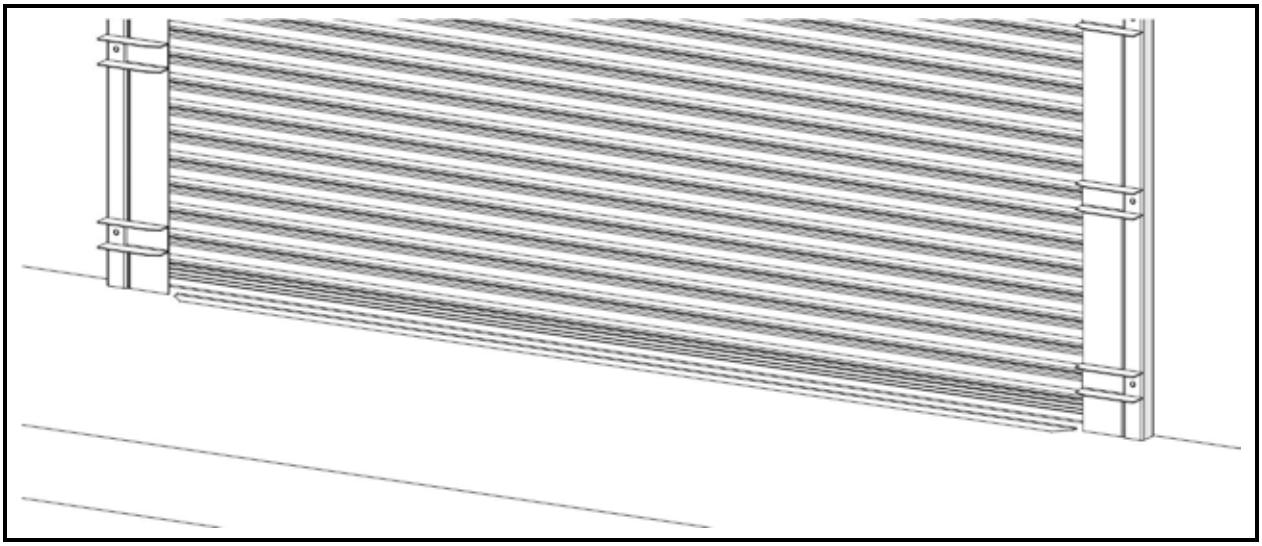

***Figure 16**. Lower position of the curtain*

The shutter is correctly adjusted and the curtain is in its maximum raised position when the bottom slat is approximately 200 mm away from the base mounting position of the shutter.

If any of the above conditions are not met, please contact the manufacturer.

- Check for deformations, damages, or loosening of the curtain.
- Check for rust or corrosion.
- Inspection of the housing and the guides.
- Visual check of the drive system.

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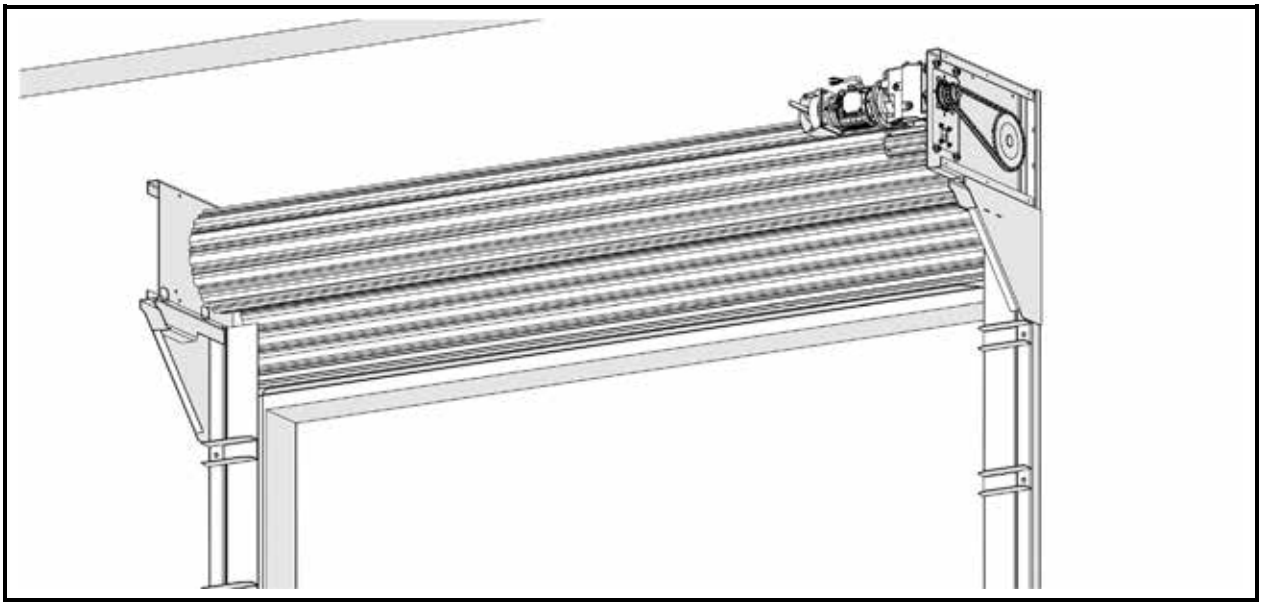

***Figure 17**. Highest point of the curtain.*

The fire rated shutter is equipped with an industrial electric motor and a gearbox using a worm gear – spur wheel system. Keep the system clean from dust and dirt. The gearbox does not require maintenance, as it contains long-life lubricant; however, check for any possible leaks. In the event of a leak, contact an authorized service team immediately. Also, visually inspect the condition of the power supply cables of the electric motor. If any wear or damage is observed, contact an authorized service team immediately.

2. **Movement check**
    - Checking that the movement of the curtain is smooth.
    - Test for unobstructed operation of the downward mechanism in the event of a fire (if a counterweight or motor with thermal signal is present).

3. **Cleaning**
    - Cleaning the guides and surfaces from dust, residues or grease.

Clean the product at regular intervals, 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.

- Clean the sensors and/or activation systems.

4. **Security check**
    - Verification of the operation of the thermal differential detector and the smoke detector.

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- Checking the connection with the fire detection panel (if it exists).

Semi-Annual or Annual Maintenance Tasks (to be performed by a qualified technician)

1. **Lubrication**

- Lubrication of the movable parts of the drive chain, shafts and bases with proper lubricant.

If the shutters is installed at an environment with more dust and humidity than usual, the lubrication must be done more often.

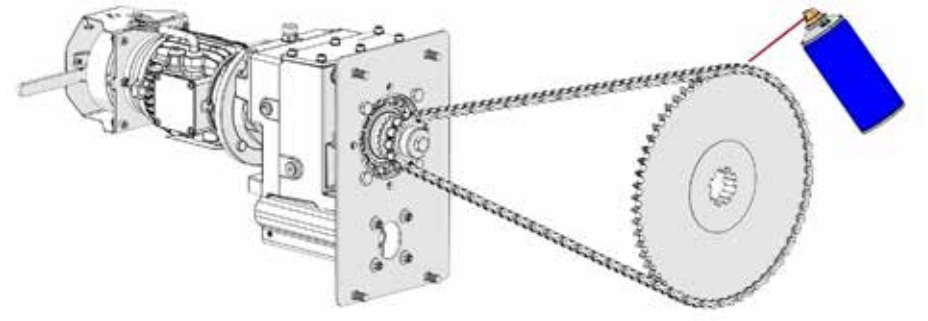

Figure 18. Lubricating the drive chain.

In fire rated shutters, the speed does not exceed 0.2 m/sec, and therefore, according to DIN 8195, the chosen lubrication method is manual lubrication. The materials used for lubricating the chain are:

- Thick lubricants (grease)
- Lubrication oil

Depending on the ambient temperature, according to DIN 8195, the use of lubricating oil with a certain viscosity class is required. For example, we mention:

Temperature °C	Lubricating oil viscosity class
-5 < t < +25	SAE 30
25 < t < 45	SAE 40
45 < t < 65	SAE 50

As mentioned above, for determining the chain lubrication interval, the determining factor is the conditions prevailing in the installation location of the roller shutter, as the movement speed is considered very low.

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2. **Electrical systems**
    - Checking of automations and backup systems.
    - Activation test by fire detection system or manually.

General Recommendations

1. Maintaining a maintenance record with dates, actions and technician signatures.
2. Marking the shutters with a “Fire Rated Shutter – Do Not Obstruct” label.
3. Training of staff to identify problems and use in case of emergency.

ATTENTION!

- Maintenance should be performed more frequently if the door is subjected to a high level of use.
- All defective parts must be replaced with original parts
- Maintenance must be performed by trained personnel.
- These instructions must be followed when performing maintenance work.
- It is important to observe the warnings and safety instructions.
- The maintenance of the door must be documented.

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