Installation Manual

High-Speed Stacking Door - NovoFold

EN

V03 - 12-2020

Installation Manual

NovoFold

English

REVISIONS TABLE

No.	Date	Prepared by	Checked by	Approved by	Comments
01	02-02-2017	A.R.P.	H.A.L.	I.L.T.	
02	07-09-2017	A.R.P.	H.A.L.	I.L.T.	
03	18-06-2018	H.A.L.	H.A.L.	I.L.T.	
04	05-08-2019	H.A.L.	H.A.L.	I.L.T.	

CONTENTS LIST

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1. PURPOSE / SCOPE

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This instruction manual details the components and steps to follow during the installation when carried out by the manufacturer or when carried out under its responsibility, as well as the installation of the door in cases in which it is supplied by Novoferm as a complete kit, and when this installation is carried out by an installer chosen by the user. The risks related to the installation are also set out. Installations in which components not supplied by Novoferm are used do not fall within the scope of this document.

Only the correct installation and maintenance, carried out by a competent organisation or person, in accordance with the instructions given in this manual, can ensure the safe installation, operation and use (including maintenance and repair) of an industrial door used for the transport of vehicles and persons.

Please read these operating instructions carefully and comply with all contents and safety instructions.

The instructions in this manual cannot, by themselves, make the work safe and do not preclude the operator from observing the safety code or local or national law, rules or regulations.

The images and diagrams are generic and therefore this information may vary due to constant research and development by NOVOFERM.

2. REGULATIONS

During the installation of the door, the following regulations must be observed:

- European Construction Products Regulation (EU) No. 305/2011.
- Machinery Directive (2006/42/EC).
- Low Voltage Directive (2014/35/EU)
- Electromagnetic Compatibility Directive (2014/30/EC)
- Radio Equipment Directive (2014/53/EU)
- EN 13241:2016. Industrial, commercial garage doors and gates. Product standard.
  Part 1: Products without fire resistance or smoke control characteristics.
- EN ISO 12100:2012. Machinery safety General design principles. Risk assessment and risk reduction.
- EN 614-1:2006+A1:2009. Machinery safety Ergonomic design principles.
  Part 1: Terminology and general principles.
- EN 12433-1:2000. Industrial, commercial garage doors and gates. Terminology.
  Part 1: Types of doors.
- EN 12433-2:2000. Industrial, commercial garage doors and gates. Terminology.
  Part 2: Door components.
- EN 12453:2001. Industrial, commercial garage doors and gates.
  Safety in the use of motorized doors. Requirements.
- EN 12604:2000. Industrial, commercial garage doors and gates.
  Mechanical aspects. Requirements.

3. INSTALLERS

This manual is intended for professional installers only, meaning those persons or organisations that provide door installation and improvement services to third parties.

Professional installers must have at their disposal competent persons, adequately trained, qualified in their knowledge and practical experience, and must be in possession of this instruction manual in order to enable them to carry out the installation correctly and safely. Partially trained personnel will only be used as assistants under the supervision of the installer.

These competent persons must update their skills and knowledge in line with the emergence of new techniques and product developments, and the professional installer shall keep training records. They shall also have the ability to verify conformity with European standards EN 12604 and EN 12453

4. INSTALLATION

4.A. Important warnings

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The contents of this manual must be read completely before assembly. For the safe assembly and use of the door, we recommend that you follow the instructions in this manual carefully. After completing the assembly and checking the installed product, the user will be informed about the methods of use and the risks associated with the use of the door.

Assembly, electrical connections and regulations must be carried out by qualified personnel in compliance with the standards in force and according to the instructions given.

Work on the industrial door should only be carried out when the door is not in operation.

The components are made of high quality, sustainable and durable materials. However, during installation all necessary precautions must be taken to avoid damage.

Defective parts must always be replaced with original parts, otherwise the safe and proper functioning of the door cannot be guaranteed and there is a risk that the warranty will be invalidated.

The programmable operating system software must not be modified. Only the supplier will be able to modify or add anything to the product.

The motor must be used exclusively for the purpose for which it was designed. Any other use should be considered inappropriate and therefore dangerous.

The safety devices (photocells, sensing strips, etc.) must be installed in compliance with the standards in force, as well as the installation environment, the operation of the system, and the force exerted by the door. Safety devices must protect the entire area of the door's trajectory in order to prevent entrapment or shearing.

The electrical installation establishes the execution and commissioning of the electrical installations, which must only be carried out by authorised installers, in accordance with local and/or national regulations, and the appropriate technical documentation must be provided.

ATTENTION:

- During installation there is a risk that components will fall, which may cause injury to persons or damage to objects.
- There is a risk of electrocution if there is contact with the mains voltage. Make sure that the electrical installation on the client's premises meets the applicable safety requirements.
- During all work on the doors, make sure that the power is disconnected and protect it against unauthorised use.
- Only carry out welding and grinding work when this is expressly permitted. Be careful, since there may be a risk of fire or explosion. Ensure that there is sufficient ventilation for welding or grinding, as dust and other flammable substances may pose a risk of explosion.

If in doubt, request assistance from qualified personnel.

After the installation is completed, the correct operation of the door will be verified by filling in the corresponding register that certifies such verifications.

For any information or interpretation regarding that set out in this manual, do not hesitate to contact the technical support service:

Novoferm Nederland BV

088-8888112

www.novoferm.nl

4.B. Elements that make up the kit

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The door assembly kit consists of the elements detailed below:

- Lateral guides: two welded assemblies formed by:
  Folded sheet metal drawer.
  Protective seals.
  Top and bottom cover.
- Top drawer: a welded assembly formed by:
  Folded sheet metal drawer.
  Bottom and lateral covers.
  Profile for fastening the canvas.
  Shaft supports with bearings.
  Motor supports.
  Shaft.
  Pulleys for the belts.
- Belts.
- Canvas: Made of PVC-coated polyester and fitted with horizontal metal profiles for the reinforcements and buckles for the belts. It can incorporate built-in windows.
- Motor.
- Control panel.
- Photocell / reflector
- Bottom safety edge.
- Reflector.
- Hardware bag.
- Loops for fixing the belts to one of the reinforcements.
- Documentation: Use and maintenance manuals.

4.C. List of tools and equipment required for assembly

The following is a list of tools required for the assembly and commissioning of the door:

- Truck-Mounted Crane. Reach truck or forklift
- Lead wire, coloured tracing wire, markers, pencils, level and crossbar.
- Manual electrode welding machine.
- Drilling machine with drill bits for steel ø 6, 8, 10, 12, 14, 15
- Percussion drill with bits ø 6, 8, 10, 12, 14, 15.
- Screwdriver.
- Grinder.
- Tool box composed of: hammer, set of screwdrivers with star or flat head, set of hexagonal wrenches, locking pliers (at least two), normal pliers, pincers, 6, 8, 10, 12, 13, 14, 17, 24 fixed spanners, sheet shears, flat and round file, 5 m metre, gauge.
- Construction clamps.
- Grip wrenches
- Extensions with socket and plug according to EEC standards, for 230 v.
- Extension with socket and plug according to EEC standards, for 380 v.
- 230v mobile adapters for industrial power outlet and personal power outlet.
- Rolling scaffolding according to the standard adapted to the dimensions of the door to be installed.
- Ladder (2 - 6 m).
- Set of adapted plugs with dimensions suitable for the type of structure.
- Self-tapping and self-drilling screws.
- Mechanical fixing bolts.
- Metal slings and straps.
- Safety equipment: Work clothes, safety boots, ear protection, thick canvas gloves, high visibility vest, goggles, helmet and everything needed to prevent and signal hazards in the workplace.

ATTENTION: Installers must strictly comply with the rules on safety in the workplace, on the work site and the safety of the installations.

4.D. Pre-assembly steps

ATTENTION: All terms set out here with regard to safety are general terms. Along with this manual, you should always have available the manual for the prevention of occupational hazards, which provides more detailed information on safety measures.

4.D.1. Arrival at the work site

 Mandatory head protection	 Mandatory foot protection

The safety helmet will be worn at all times on the work site to protect against possible falling objects. Boots should also be worn with the sole protected against sharp elements and the upper area of the toes protected with metal reinforcements to avoid damage caused by blows and crushing from falling heavy material.

When arriving at the work site, contact the client or representative, verify that the space where the door will be placed is tidy and free of obstacles, and supervise the site indicated for the unloading of the material. The site intended for the storage of material shall be as close to the opening as possible.

Ensure that a three-phase and/or single-phase power supply is available.

4.D.2. Unloading of materials

When unloading material, weight less than or equal to 50 kg will be unloaded manually by two operators, while a boom or crane will be used for unloading weights over 50 kg.

 Mandatory head protection	 Mandatory foot protection	 Mandatory hand protection	 Mandatory body protection

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- The upper drawer and the lateral guides can be easily handled and transported by forklifts or pallet trucks, or by hand by several people depending on the weight (variable depending on the model and size of the door).
- The canvas shall be handled with care so as not to damage its surface or reinforcements. Methods according to weight shall be used for their displacement.
- The rest of the elements that compose the kit are easily handled manually.

For the distribution and storage of material the following will be taken into account:

- Place the materials as close as possible to the opening, in a safe location where there is no risk that they will fall or become deformed.
- Place the materials in areas protected from the weather and away from dust-generating machines.
- Keep the transit areas free.

4.E. Door assembly

4.E.1. Component diagram

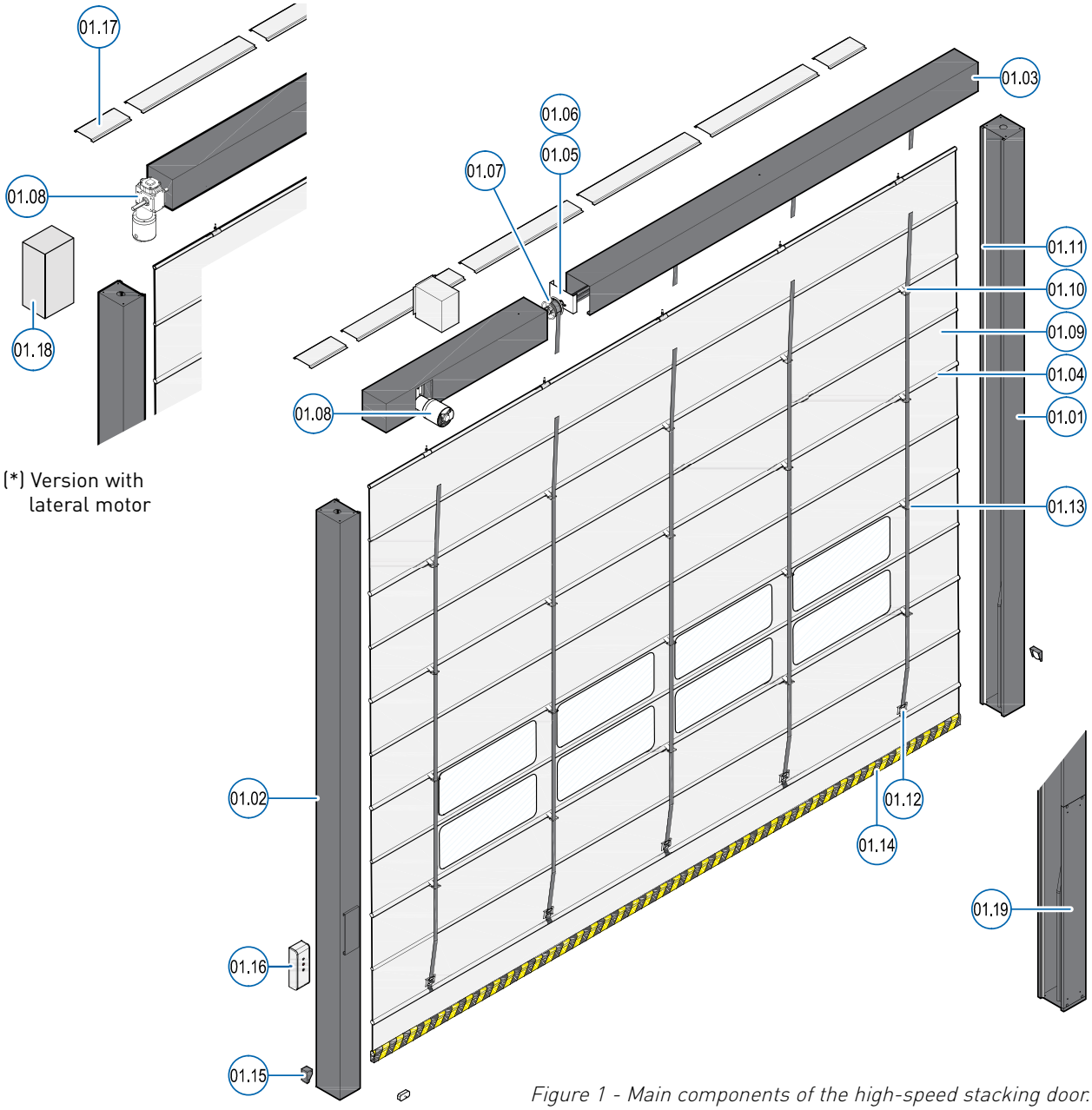

Figure 1 - Main components of the high-speed stacking door.

No.	Item	No.	Item	No.	Item
01	Right lateral guide	08	Motor	15	Photocell
02	Left lateral guide	09	Door curtain (canvas)	16	Control panel
03	Top drawer	10	Belt	17	Top drawer covers
04	Reinforcement bars	11	Protective seal	18	Motor cover
05	Shaft support with bearings	12	Belt clip	19	EasyReplace cover (option) See 4.E.5b (page 22) for more information
06	Shaft	13	Buckle		
07	Pulley for the belt	14	Bottom safety band		

4.E.2. Initial checks

The following aspects should be checked before assembly:

- Check that the door has not been damaged in any way that could compromise its installation or operational safety. The aim is to check that all the packaging material is intact.
- Verify that the material received matches that detailed in section 4.B of this document, counting and checking it item by item.
- Check that the information given in the assembly order is correct, primarily:
- Check that the dimensions of the opening, width and diagonal measurements, are exact and conform to the dimensions of the door.

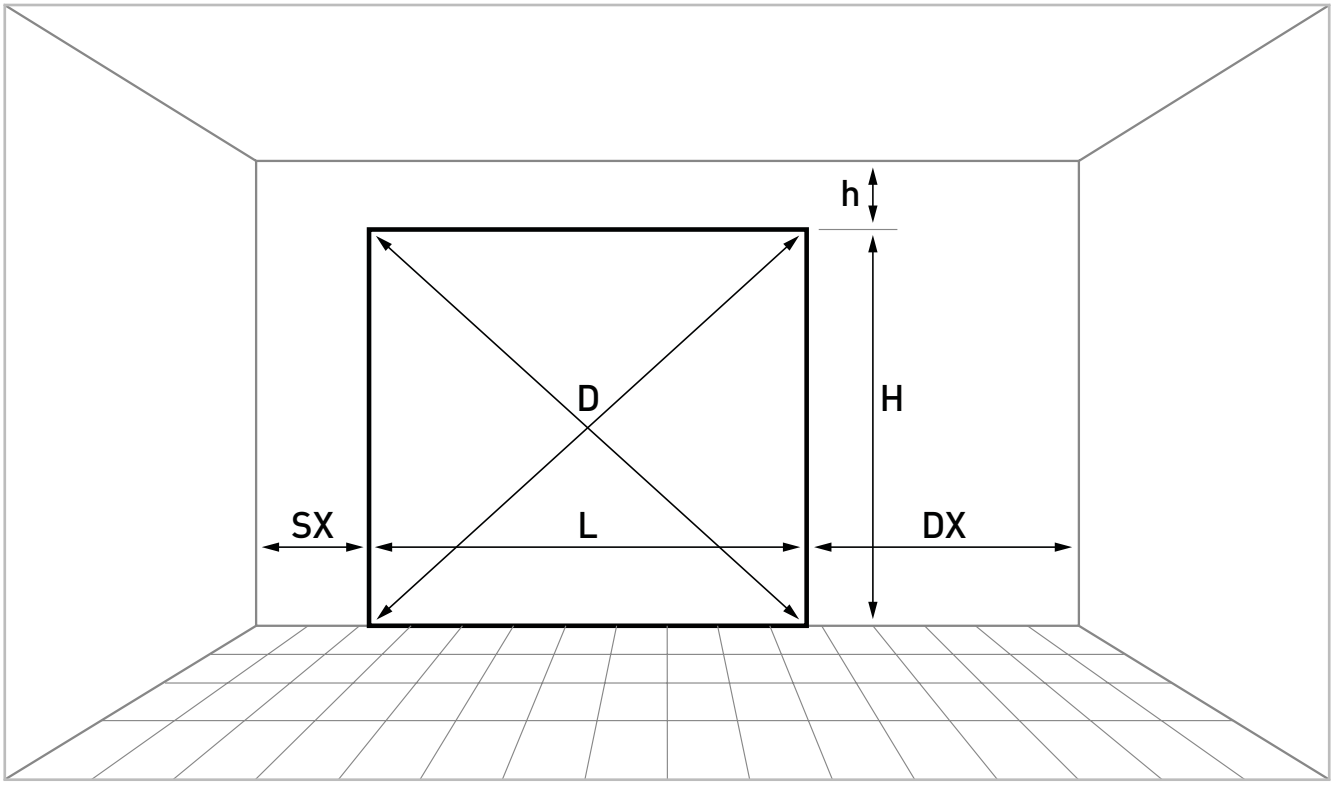

Figure 2 - Width and diagonal shaft dimensions.

L = width of the opening

H = height of the opening

h = lintel height = 1070 mm.

D = diagonals

SX = left lateral space = 220 mm.

DX = right lateral space = 220 mm.

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Lateral motor configuration

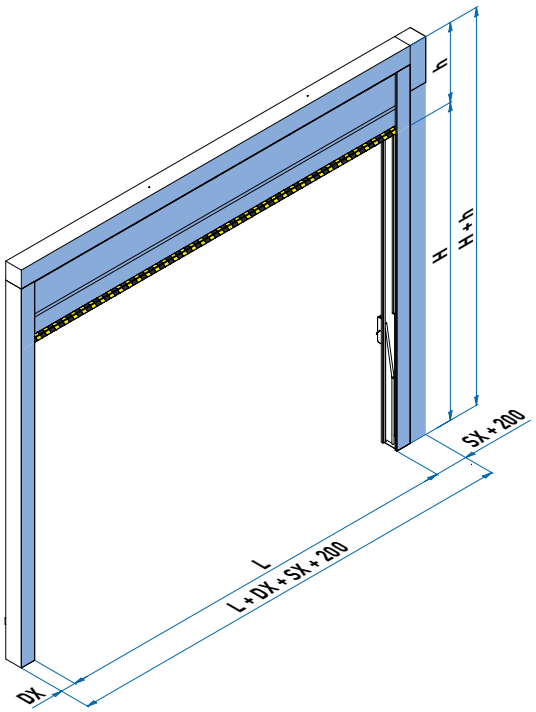

Figure 3.a - Required right-left lateral space and lintel of the opening.

Front motor configuration

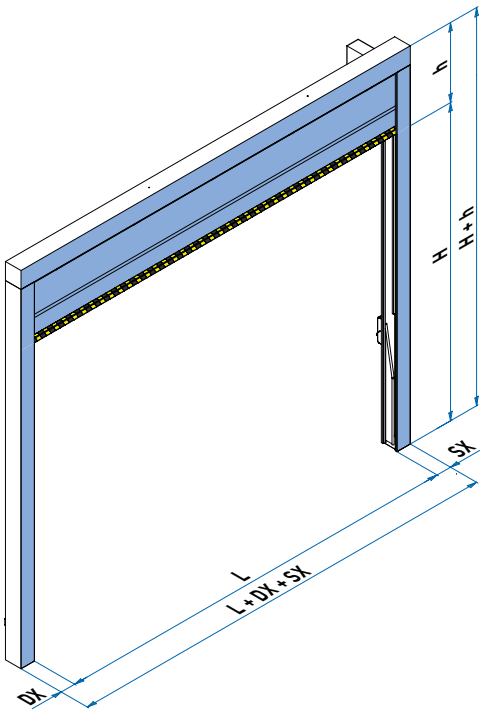

Figure 3.b - Required right-left lateral space and lintel of the opening.

- Make sure that the floor on which the pre-assembly is to be carried out is smooth and has the right dimensions for the door to be placed horizontally. Check that the floor where the door is to be assembled is level.
- Check whether the building materials of the opening in which the door is to be installed are concrete/brick or metal. This information will determine the system for fixing the door to the hole. In both cases, metal brackets are supplied that are screwed/welded to the drawer, and in turn, screwed/welded to the wall.
- In case of doubt or contradictory data, please contact Novoferm.
- Avoid installing the door in places where its use and duration are incompatible with the materials used to manufacture it. (e.g. Strongly corrosive environment). If in doubt, please contact Novoferm.
- The installation of the door while children are present, or in any case while in the presence of persons not related to the assembly work, is forbidden. We recommend that the assembly be carried out by qualified installers.

Before connecting the motor, check that:

- The data on the motor plate is compatible with the mains data.
- The product is connected to an efficient earthing system.
- A differential switch has been installed on the panel that controls the motor.
- Apply the signs provided for by current regulations to identify hazardous areas.
- Before connecting the power supply, check that the installed power is greater than that required by the automated system.
- Carry out the earthing according to the safety regulations in force.
- The installer must inform the user about the automatic and manual emergency operation of the door and give him/her the instructions for use.
- The manufacturer cannot be held responsible for any damage caused as a result of failure to comply with these rules.

ATTENTION: The company is not responsible for the installation not being earthed or the lack of differential switch.

4.E.3. Door placement

 Mandatory head protection	 Mandatory foot protection	 Mandatory hand protection
 Mandatory eye protection	 Mandatory hearing protection	 Mandatory body protection

4.E.3.a. Door placement - no space restriction.

The lateral guides are set out on the floor, making sure that their inner side is facing upwards.

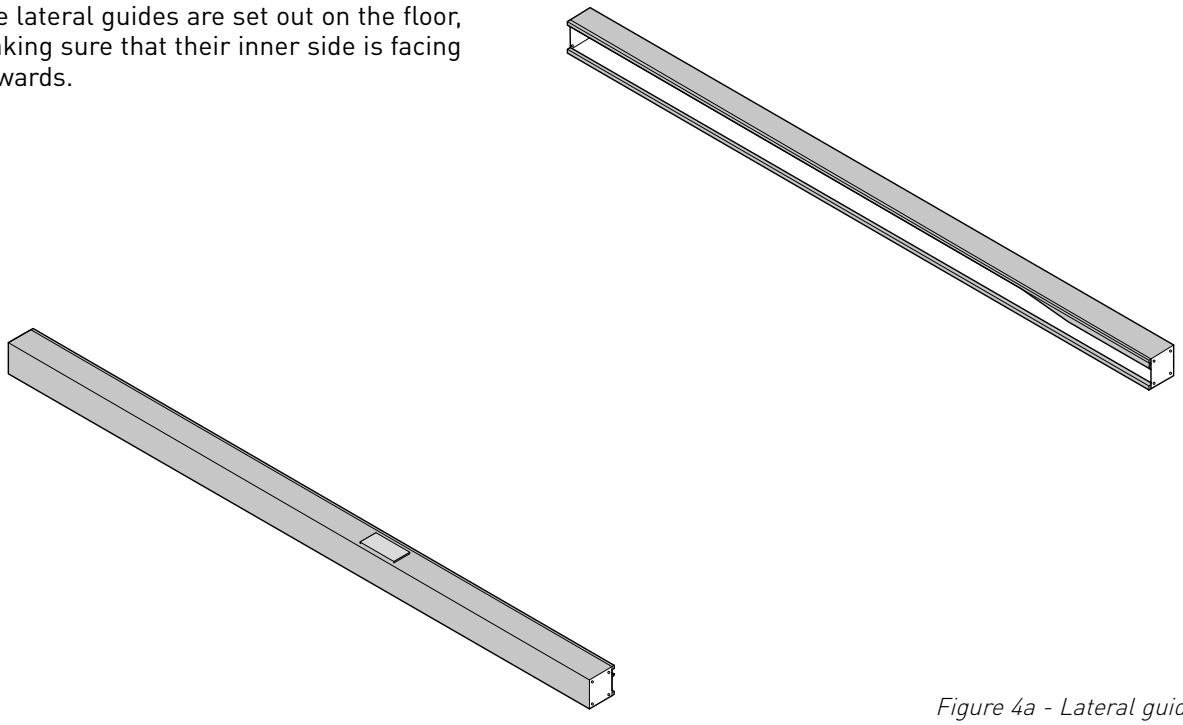

Figure 4a - Lateral guides.

- Pay attention to the correct position of the lateral guides! The door curtain guides on the underside of the side rails must always point inwards, as must the door leaf straps.

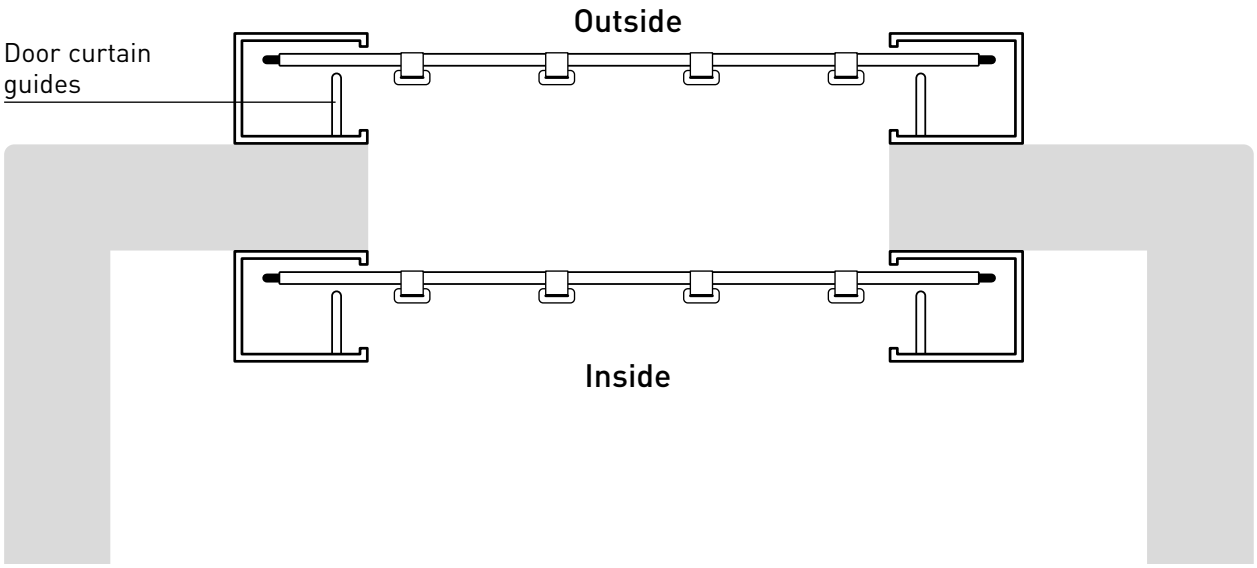

Figure 4b - Determining the correct position of the side guides

- Place the upper drawer on the lateral guides and connect it to them by screwing the plates together.

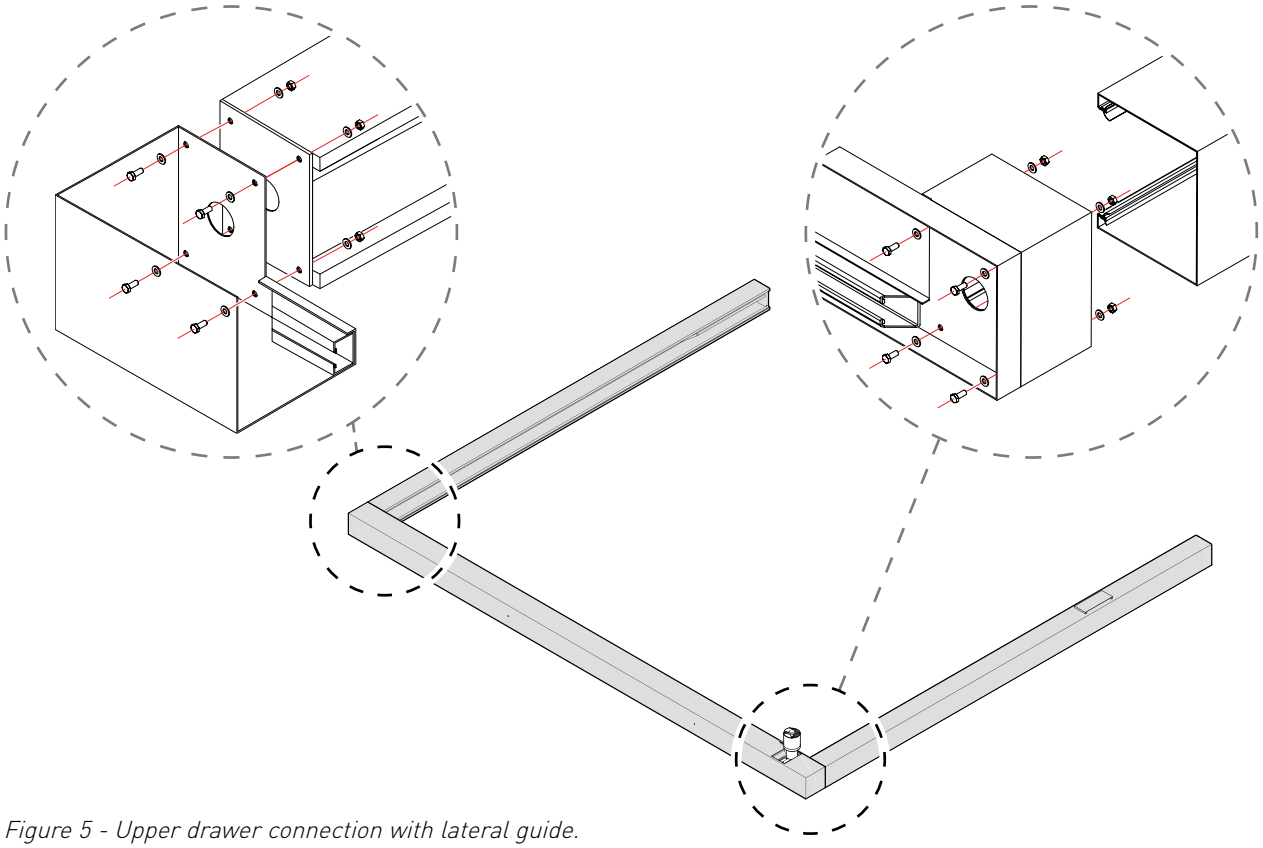

Figure 5 - Upper drawer connection with lateral guide.

- The reinforcements of the door curtain are guided in the lateral guides and the upper reinforcement is fixed to the horizontal drawer, introducing the threaded studs in the holes of the profile which is fixed to the drawer. Using these fixings, the height of the canvas can be adjusted.

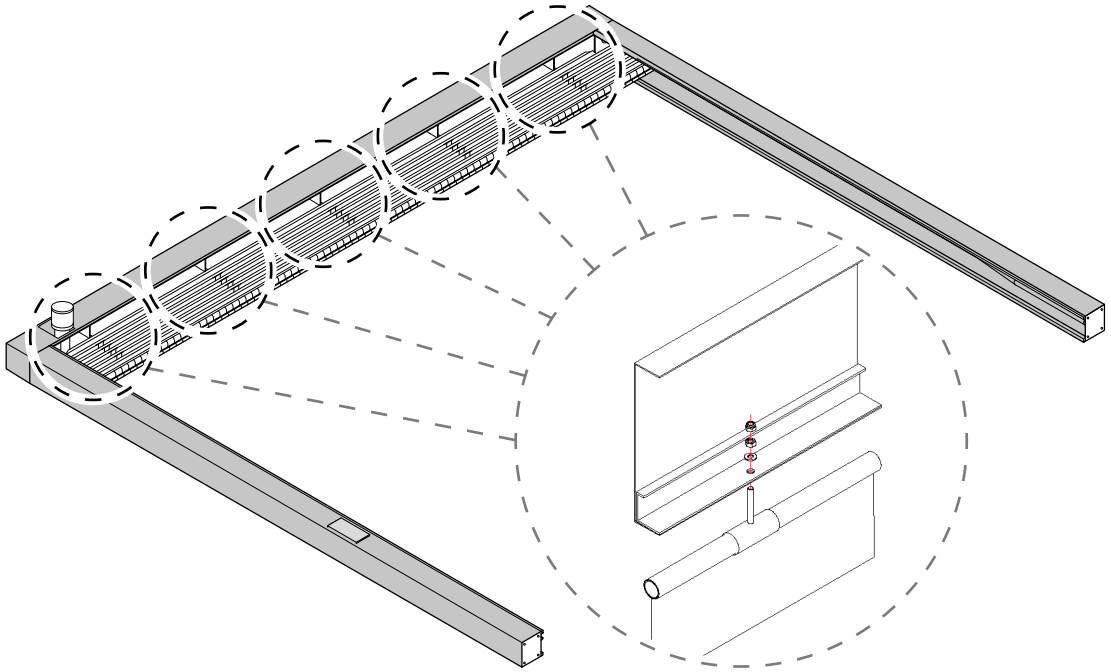

Figure 6 - Fixing the upper reinforcement of the canvas with the drawer.

- The set of lateral guides, the upper drawer and the door curtain are lifted using the boom and placed into the opening where they will be assembled. Placement of eyebolts for lifting.

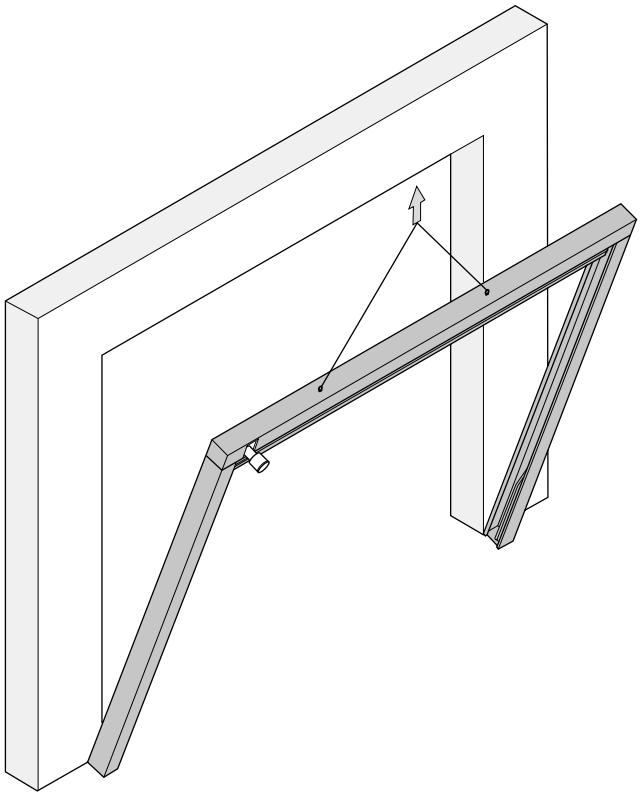

Figure 7 - Presentation of the lateral guides, the upper drawer and the canvas in the opening.

- Levelling and plumbing.

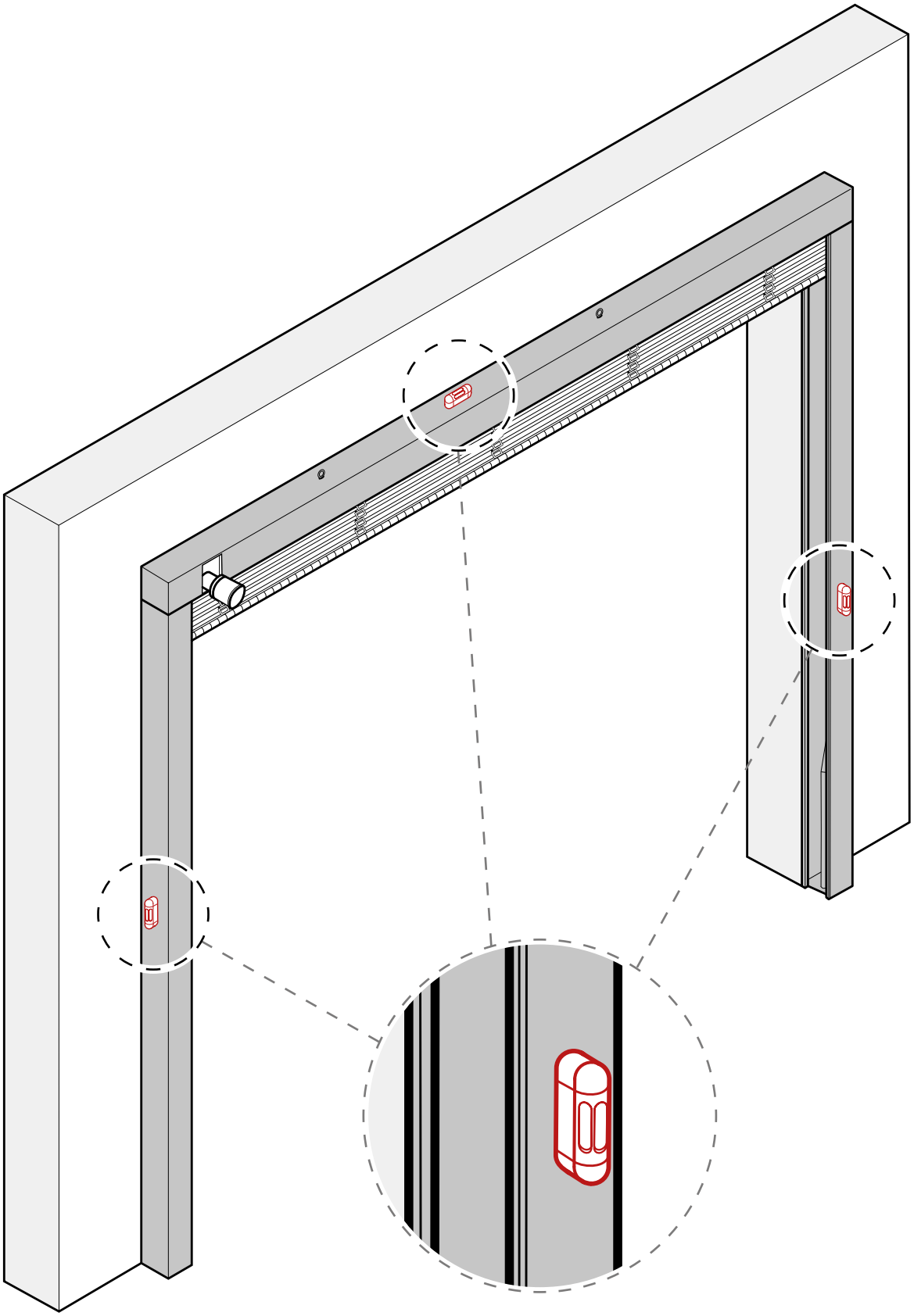

Figure 8 - Door levelling.

- Fixing to the frame:

  If the opening is made of concrete/brick, the fastening will be achieved using a plastic plug and a coach screw, or a 10x80 mm metal plug.

  If the opening has a metal pre-frame, the fastening will be carried out with M10 screws of variable length depending on the dimensions of the metal pre-frame.

  In both cases the clamping will be carried out using the metal brackets supplied with the door, which have a hole in one wing so that they can be screwed to the drawer, and another hole in the other wing so that they can be screwed to the wall.

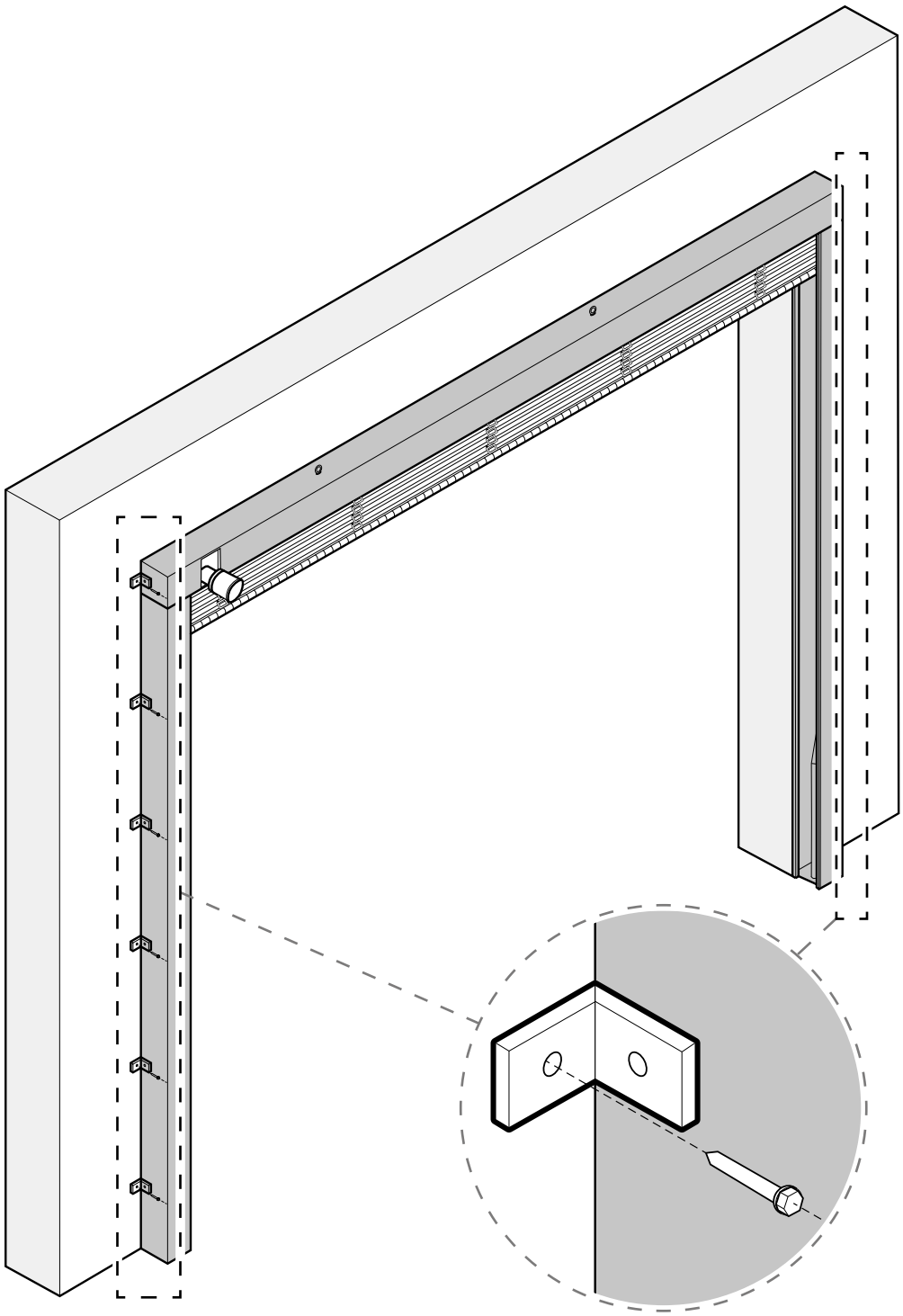

Figure 9 - Door fixing.

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- By turning the motor with the manually operated chain, the belts are passed through the buckles placed on the door curtain and fixed to the penultimate reinforcement using the clips supplied with the door.

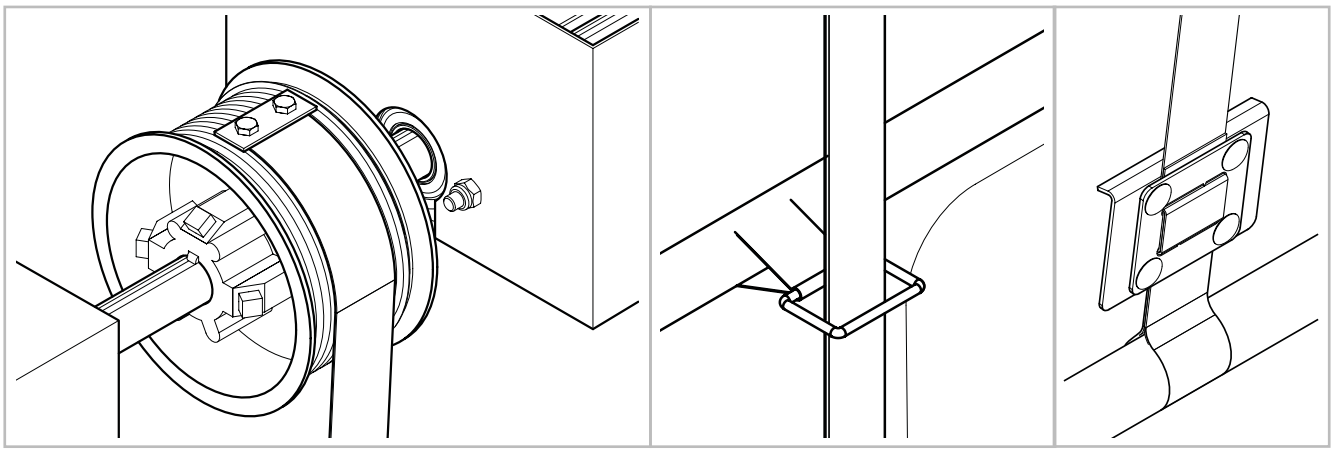

Figure 10 - Canvas buckle and clip.

- Fix the top drawer covers with 6.3x18 mm hexagon head self-tapping screws.

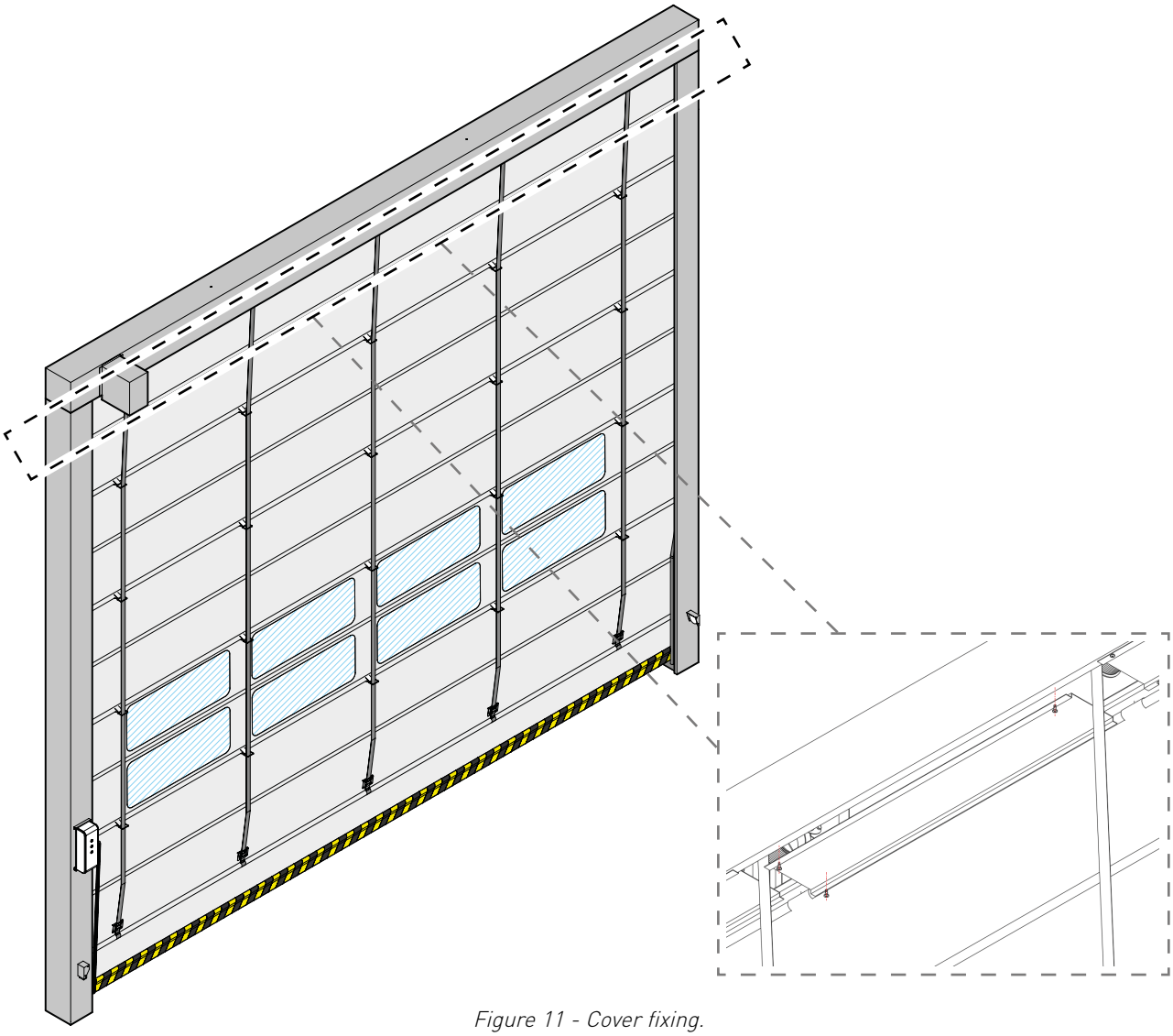

Figure 11 - Cover fixing.

- Connect the motor to the control panel according to each model. Use the existing cable duct in the lateral drawer for this purpose. See motor and frame models in 4.E.7.

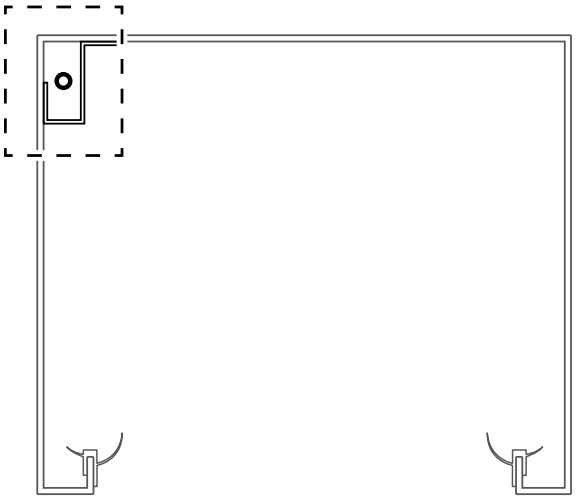

Figure 12 -Cable Duct Situation.

- Check the direction of rotation of the motor using the open and close buttons. If it is not correct, switch the position of the L1 and L2 cables with the power switched off.
- Programme the box according to the instructions in each box. See 4.E.8
- Limit switch setting OPEN.
- Limit switch setting CLOSE.
- Connect the various accessories (photocell, lower safety band, signs, etc.).

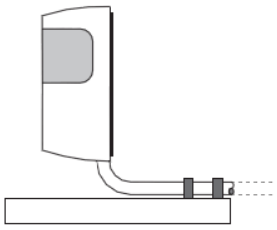

Figure 13 - Photocell.

Bottom safety band: see detail in the attached manual.

Installation

- It is recommended that the connection box be installed as shown in the figure below.

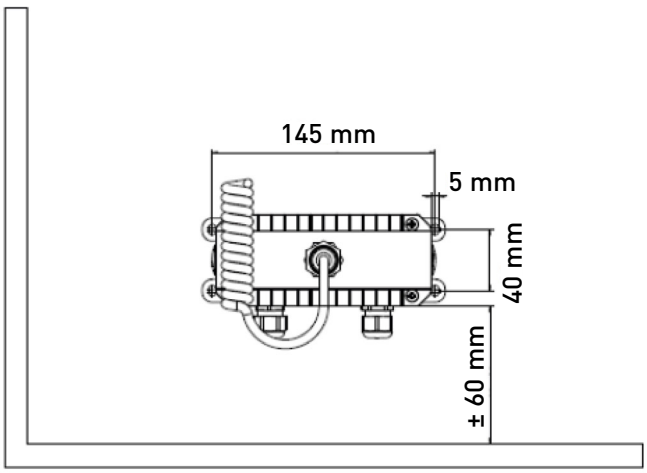

Figure 14 - Connection box installation.

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Placing of the cables in the door section.

First adjust the length of the connection line by making a loop. The ends of the loop are then secured with electrical tape or similar. Before pulling the connection lines through, you must first cut them to around 3 cm. Now you can easily pull the line through the box with a suitable tool.

Cable insertion

Insert the plugged ends of the line into the two lower screw connections.
To do this, proceed as follows:

- Remove the box cover.
- Pull the cable through the stuffing box and fit the rubber ring.
- Pass the cable with the plug through the housing.
- Connect the plug and place the rubber ring on the stuffing box.
- Turn and tighten the box.

Installation of the plugs

- The receiver and transmitter cable is placed directly into the connection box and is plugged in.

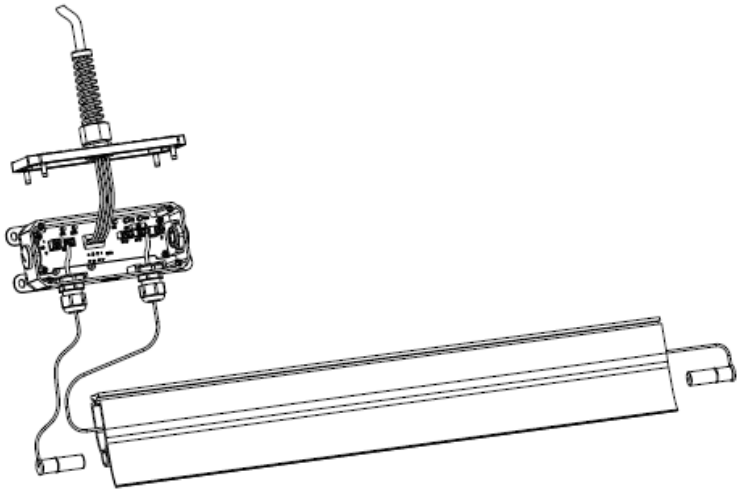

Figure 15 - Bottom safety edge with optical sensors.

- Check the perfect operation of the drive and the effective efficiency of the control panel, safety devices, etc.

4.E.3.a. Door placement - reduced space

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- Pay attention to the correct position of the lateral guides! The door curtain guides on the underside of the side rails must always point inwards, as must the door leaf straps.

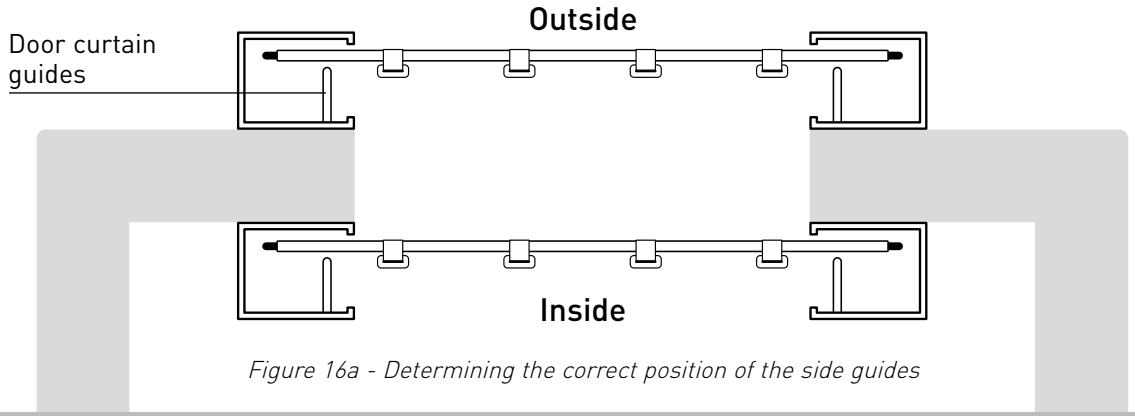

Figure 16a - Determining the correct position of the side guides

- Assemble the first side and plumb it. Assemble the second side and plumb it.

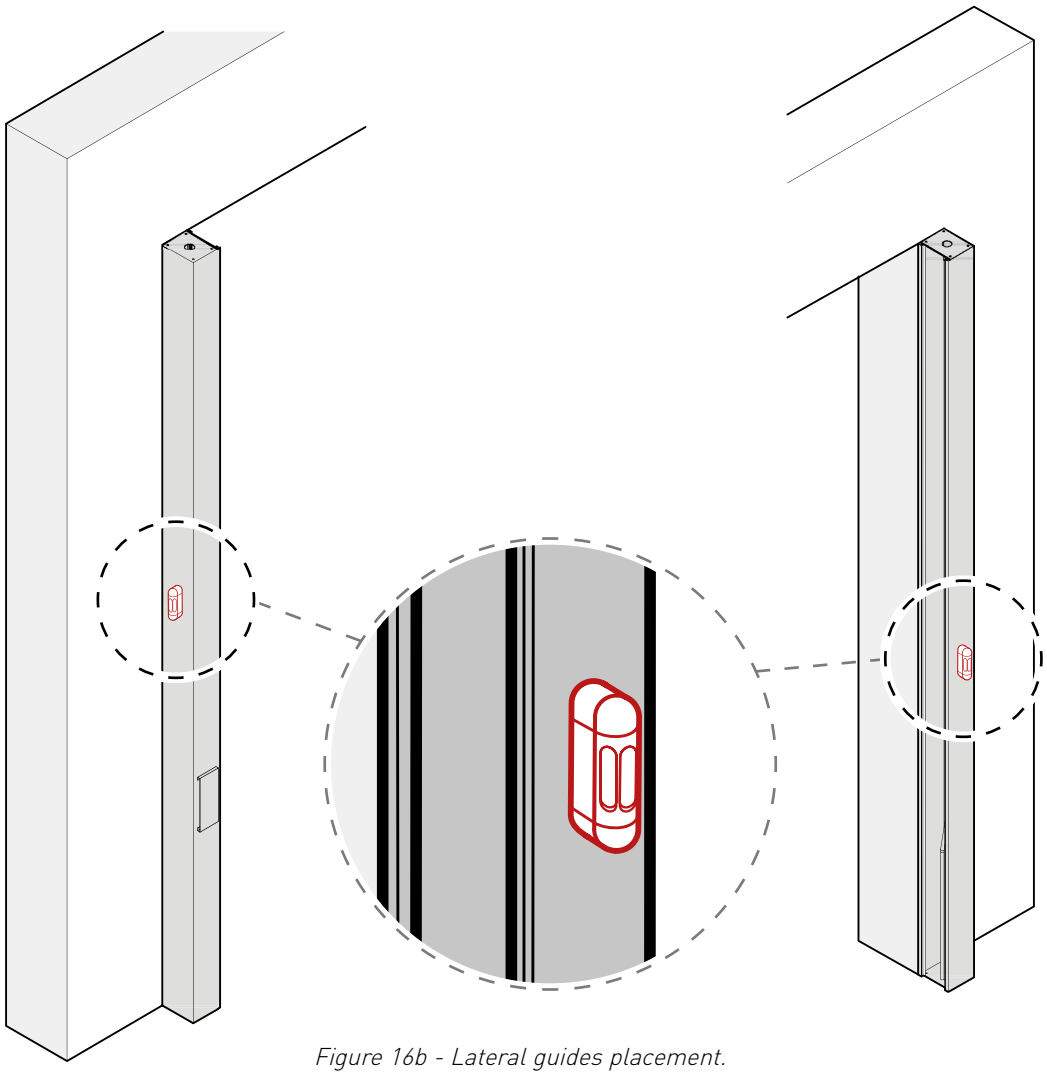

Figure 16b - Lateral guides placement.

- Scanning and checking the space.

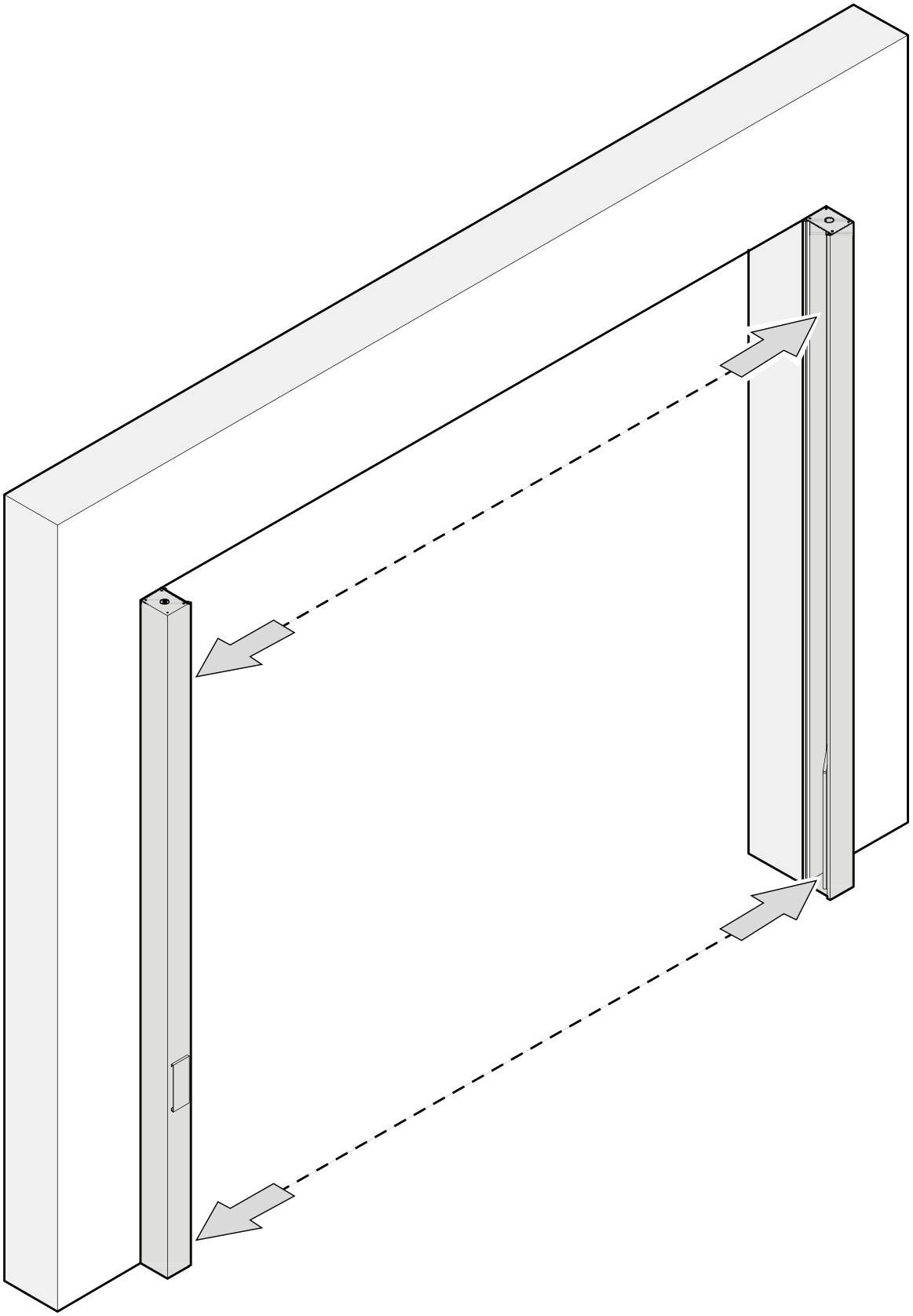

Figure 17 - Lateral check.

Raise top drawer, tie it to the lateral drawers and fix it provisionally.

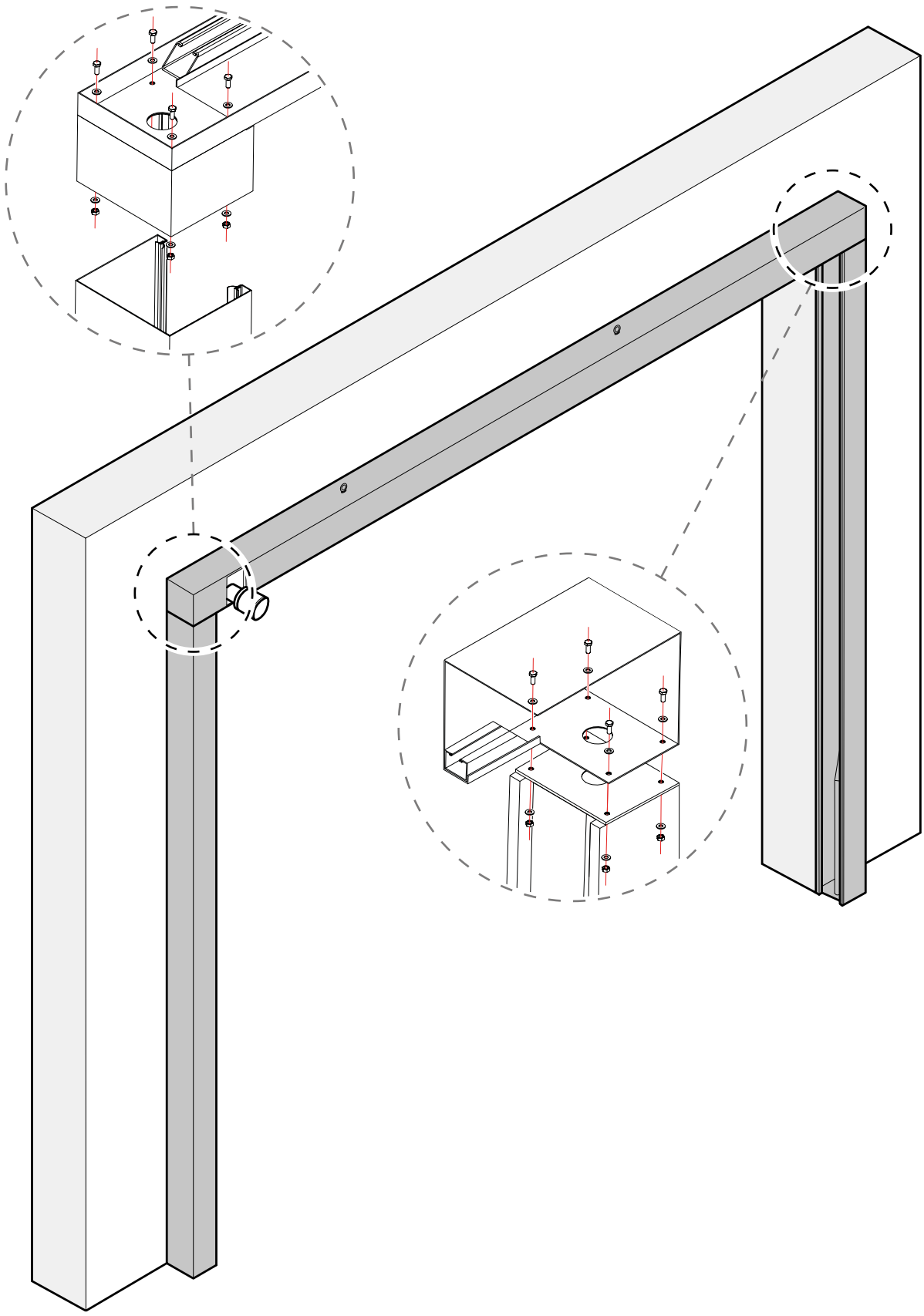

Figure 18 - Upper drawer connection with lateral guides.

- Insert the door curtain sideways with the forklift and lift it up to fix it in the upper drawer. Then proceed with the unrolling of the door curtain gradually.

Attention:
If your NovoFold is equipped with the EasyReplace option, you can also lift the door curtain using the tension straps. For an extensive instructional video, please visit https://youtu.be/JVQPFdQgeSQ or use the QR code on the left.

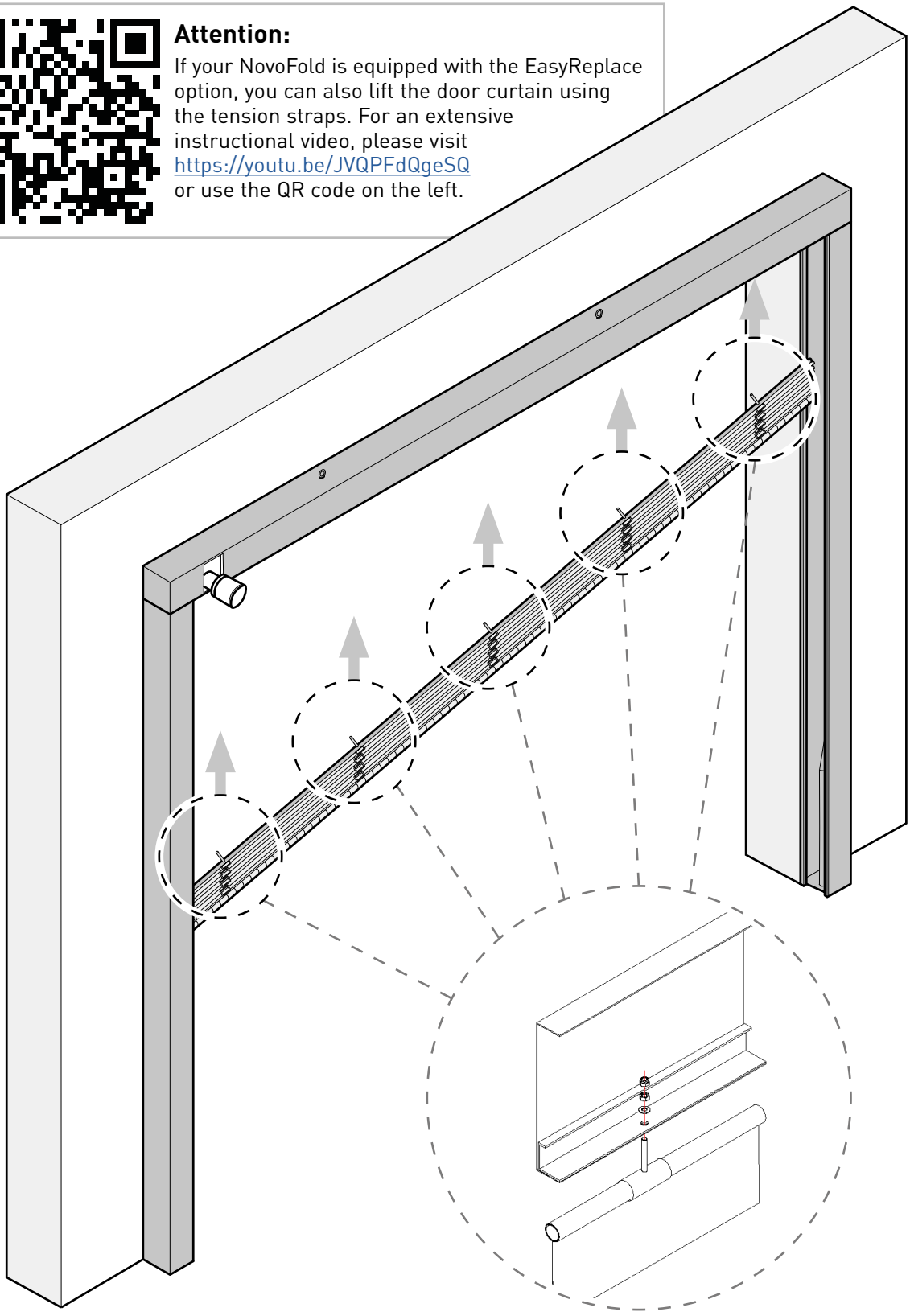

Figure 19 - Door curtain assembly.

- All other operations are identical to those described in section 4.E.3.a.

4.E.4 Release operation

Depending on the characteristics of the door, there are two possibilities for manual operation if necessary:

4.E.4.a Crank drive

Once it has been checked that the door cannot be operated, the following steps must be taken:

- Remove the crank from its holder and insert it into the designated housing, turning it as far as it will go (1). When performing this operation, the control phase is interrupted and the electric drive of the door is also non-operational.
- Apply the shaft brake lever to release the shaft and make the door easier to open
- Open the door manually by turning the handle (2). The shaft brake must be kept free during this manoeuvre.

ATTENTION: Reconnect the shaft brake before releasing the crank. If this is not done, the door will close abruptly.

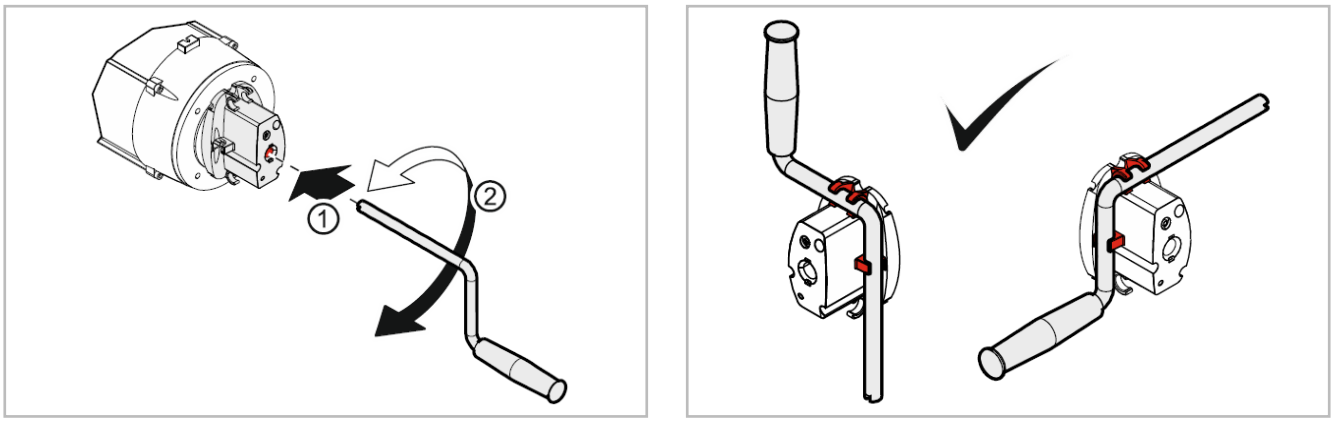

Figure 20 - Detail of the crank release system.

- After finishing the manual operation, the crank is removed and returned to its original position. This also puts the electrical system of the motor back into operation.

4.E.4.b Chain drive (option)

Once it has been checked that the door cannot be operated, the following steps must be taken:

- Pull the red handle to activate the release system. When performing this operation the electric door drive is switched off.
- Pull the chain to open or close the door manually.
- Pull the green handle to deactivate the release system. This causes the electrical system of the motor to start up again.

ATTENTION: Under no circumstances should the door be unlocked without first disconnecting the power supply.

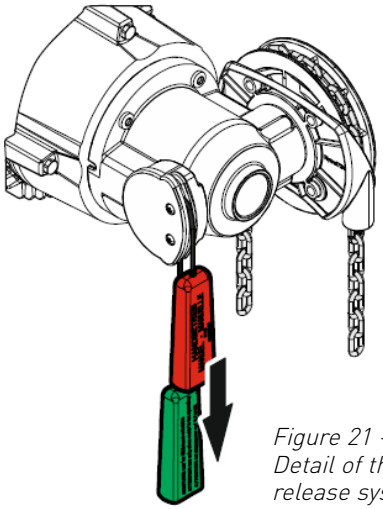

Figure 21 - Detail of the chain release system.

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4.E.5 Troubleshooting

The motor is not working:

- Check if the installation has been correctly carried out
- Check the motor for voltage

The motor has no power:

- Release the motor and check if the door shows any excessive resistance in its way.

If, after carrying out all the checks and adjustments indicated, the fault persists, please contact your distributor or the nearest technical service centre, stating the fault observed in as much detail as possible.

4.E.5b EasyReplace option

If your NovoFold is equipped with the EasyReplace option, a damaged door curtain can easily be changed. For an extensive instruction video, please visit https://youtu.be/JVQPFdQgeSQ or use the QR code on the right.

4.E.6 Technical characteristics of the motors

The door can be equipped with one of the following drives.

For doors with a surface area ⩽ 9 m²

SI 6.115		
Output torque	60	Nm
Number of output revolutions	115	rpm
Drive shaft / hollow shaft	25 / 40	mm
Fall time	310	Nm
Parachute system (test point/certificate number)	14-003612-PR01	
Maximum output speed connection / disconnection with frequency converter operation	200 / 120	rpm
Operating voltage	3~ 400	V
Working current	2,00	A
Operating frequency	50	Hz
Power factor cos φ	0,76	
Maximum connections per hour	45	h-1
Manual force emergency operation	167	N
Type of protection	IP 54	
Limit switch area (maximum speed of the drive shaft / hollow shaft)	20	
Braking torque of the brake	5	Nm
Braking voltage	103-130	VDC
Type of rectifier	EGR 230/103	
Temperature range	-10 / +40 (+60)	°C

For doors with 9 < surface area ⩽ 25 m²

SI 12.90		
Output torque	120	Nm
Number of output revolutions	90	rpm
Drive shaft / hollow shaft	25 / 40	mm
Fall time	510	Nm
Parachute system (test point/certificate number)	14-003612-PR01	
Maximum output speed connection / disconnection with frequency converter operation	156 / 90	rpm
Operating voltage	3~ 400	V
Working current	2,00	A
Operating frequency	50	Hz
Power factor cos φ	0,76	
Maximum connections per hour	60	h-1
Manual force emergency operation	257	N
Type of protection	IP 54	
Limit switch area (maximum speed of the drive shaft / hollow shaft)	20	
Braking torque of the brake	9	Nm
Braking voltage	103-130	VDC
Type of rectifier	EGR 230/103	
Temperature range	-10 / +40 (+60)	°C

For doors with a surface area > 25 m²

SI 20.90		
Output torque	200	Nm
Number of output revolutions	90	rpm
Drive shaft / hollow shaft	30 / 40	mm
Fall time	635	Nm
Parachute system (test point/certificate number)	14-003612-PR01	
Output speed Open / Close with variable frequency drive operation	156 / 90	rpm
Static moment of retention	250	Nm
Operating voltage	3~ 400	V
Operating current	6,4 / 3,8	A
Operating frequency	50	Hz
Motor power	1,8	kW
Maximum connections per hour	45	h-1
Type of protection	IP 54	
Limit switch area (maximum speed of the drive shaft / hollow shaft)	10 / 20	
Maximum manual force	203 / 100	Nm
Temperature range	-10 / +40 (+60)	°C

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4.E.7 Ratio of the installed motor to the required control panel

In all cases the control panel will be the TS971 or TS981.

4.E.8 Installation and programming of the control panel

			
Mandatory head protection	**Mandatory foot protection**	**Mandatory hand protection**	**Mandatory body protection**

- Before installing the panel, read the enclosed manual carefully and perform the connections as indicated.
- A diagram is included to facilitate the panel connections.
- Any connection that is not properly made can cause personal injury and/or irreparable damage to the product.
- The installation to which the panel is connected must comply with the low voltage regulations in force.
- Before connecting or handling the panel, it must be disconnected from the mains.
- When installing the motors and peripheral circuits, the voltage must be disconnected from the panel.

In compliance with the European Low Voltage Directive, we inform you of the following requirements:

- For permanently connected equipment, an easily accessible disconnection device must be incorporated into the wiring.
- It is mandatory to install this equipment in an upright position and firmly attached it to the building structure.
- This equipment must always be located inside the building and in a place where it cannot be affected by water.
- The output relay contacts of this equipment should be switched to a voltage lower than 42 Vac or 60 Vdc, depending on the type of relay used.
- This equipment may only be handled by a specialized installer, their maintenance staff or a properly trained operator.
- The instructions for use of this equipment must always remain in the possession of the user.

The CE mark affixed to this device means that it complies with the provisions the provisions set out in:
EU Regulation 305/2011.

- EU Machinery Directive 2006/42/EEC
- Low Voltage Electrical Equipment Directive 2014/35/EU
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU

4.E.9 Installation of accessories

- All accessories delivered with the door will be accompanied by its installation and instruction manual.
- Read these manuals carefully and install the product accordingly.

4.E.10 Final checks

Check the perfect fixing of the door structure to the opening. Ensure the correct tightening of the screws and plugs for fixing to the brick/concrete door space or to the metal pre-frame, or visually inspect the welding of the fixing points.

Attach the marking label, which proves that the machine has been manufactured and installed in full compliance with the safety regulations identified by the serial number on the plate.

Explain the operation to the owner and provide the corresponding documentation:

- Operating instructions
- Routine maintenance instructions, together with the maintenance log.

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