



# MASSEN

## Automatic Landing Door

### Side-opening & Centre-Opening



Technical Manual  
V210 – 10/2015  
MTMECMASSEN\_210\_EN

- Installation • Assembly • Commissioning •
- Use • Maintenance •



SUMMARY OF MODIFICATIONS IN REGARD WITH THE PREVIOUS VERSION:

MTMECPAP05AI200

INDEX SECTION	DESCRIPTION OF THE MODIFICATION	MODIFICATION CONCERNING			
		Physical Product	Functions Features	Figures	Writing
3.2	Adaptation to new Standard EN 81-20 of the lower wall-mounted fixing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5.3	Adaptation to new Standard EN 81-20 of turn stop	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7 y 8	Adaptation to new Standard EN 81-20 of door interlocking	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
11	Adaptation to new Standard EN 81-20 of MASSEN maintenance installation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<b>CONTENTS</b>	<b>Page</b>
<b>0. PRELIMINARY REMARK</b> .....	<b>4</b>
<b>1. TOOLS REQUIRED AND INDIVIDUAL PROTECTION EQUIPMENT</b> .....	<b>4</b>
<b>2. PACKAGE DESCRIPTION</b> .....	<b>5</b>
<b>3. ASSEMBLY OF DEMOUNTABLE DOOR FRAME</b> .....	<b>6</b>
3.1. Introduction .....	6
3.2. Variations for Assembly depending on overhangs .....	6
3.3. Assembly in shaft of door sill .....	7
3.4. Joint of uprights – door sill .....	9
3.5. Header assembly .....	10
3.6. Header adjustment.....	11
3.7. Positioning of closing upright cover (only in side-opening doors) .....	12
<b>4. POSITIONING OF PANEL PROTECTION</b> .....	<b>13</b>
<b>5. PANEL ASSEMBLY DESCRIPTION</b> .....	<b>13</b>
5.1. Positioning of panels.....	14
5.2. Panel adjustment .....	15
5.3. Positioning of turn stop on quick panel of MASSEN T3 and MASSEN C4 doors .....	17
5.4. Positioning of guide shoes .....	17
<b>6. POSITIONING OF LOCK</b> .....	<b>17</b>
<b>7. CHECK OF LOCK AND AUTOMATIC CLOSING OF THE LANDING DOOR LOCK</b> .....	<b>17</b>
<b>8. USE OF THE EMERGENCY UNLOCKING KEY. RESCUE OPERATIONS</b> .....	<b>18</b>
<b>9. POSITIONING OF PULLING WHEELS</b> .....	<b>20</b>
<b>10. POSITIONING OF TOE GUARD SHOE</b> .....	<b>20</b>
<b>11. INSTALLATION MAINTENANCE</b> .....	<b>21</b>
11.1. Installation owner.....	21
11.2. Periodic maintenance .....	21
11.3. Components to be checked.....	22
11.4. Mechanical Interlocking of the type EP-05 .....	22
11.5. Replacement of the guide shoes.....	22
11.6. Greasing .....	22
11.7. Movement relationships between carriages .....	23
11.8. Replacement of the carriage wheels.....	23
11.8.1. T2 Door.....	24
11.8.1.1. Slow carriage .....	24
11.8.1.2. Quick carriage .....	24
11.8.2. C2 Door.....	25
11.8.3. C4 Door.....	26
11.8.3.1. Slow carriage .....	26
11.8.3.2 Quick carriage .....	27
11.8.4. T3 Door.....	27
11.8.4.1. For clear openings equal to or greater than 700 mm .....	27
11.8.4.2. For clear openings of 600 mm and 650 mm.....	30
<b>12. FIXING OF ELECTRICAL CABINET TO LANDING DOOR</b> .....	<b>32</b>
12.1. Rear-view of door, façade and electrical cabinet .....	32
12.2. Positioning of façade and electrical cabinet. ....	32
<b>APPENDIX I: SYSTEM FOR UPPER FIXING WITHOUT WALL (OPTIONAL ACCESSORY)</b> .....	<b>33</b>

**O. PRELIMINARY REMARK**

There is a quick install guide inside every package of disassembled doors, which briefly shows the procedure steps and the assembly sequence with illustrations. Nevertheless, in order to ensure the proper assembly, if it is the first time you are using these doors, it is important to read the full manual before starting the door installation in order to become familiar with the procedure and the assembly sequence.

**T2 DOOR**

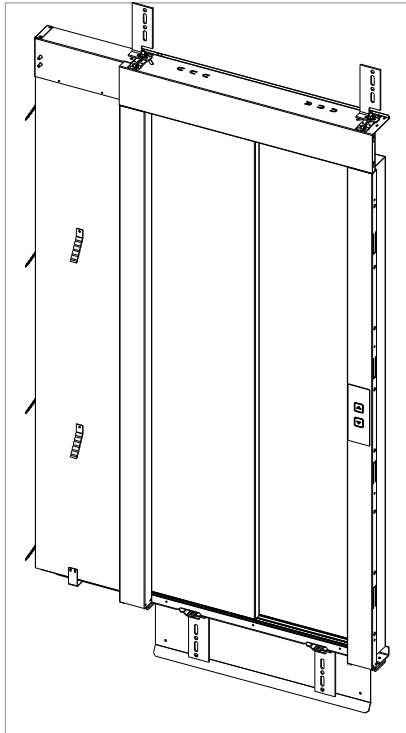


IMAGE 0.1

**T3 DOOR**

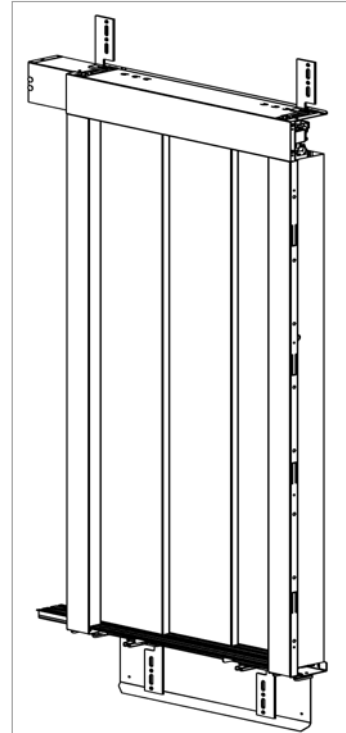


IMAGE 0.2

**C2 DOOR**

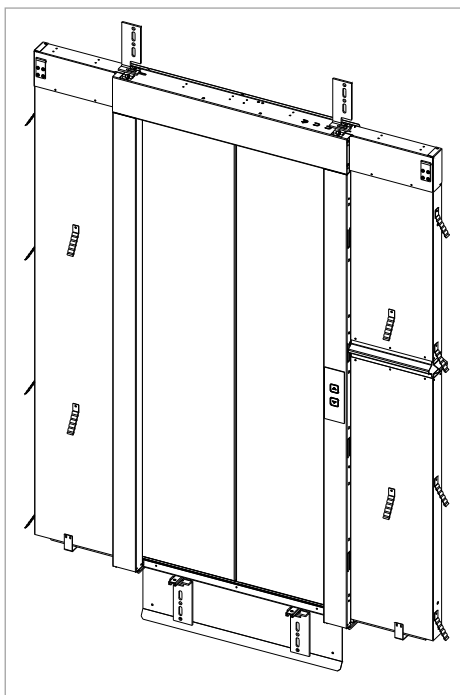


IMAGE 0.3

**C4 DOOR**

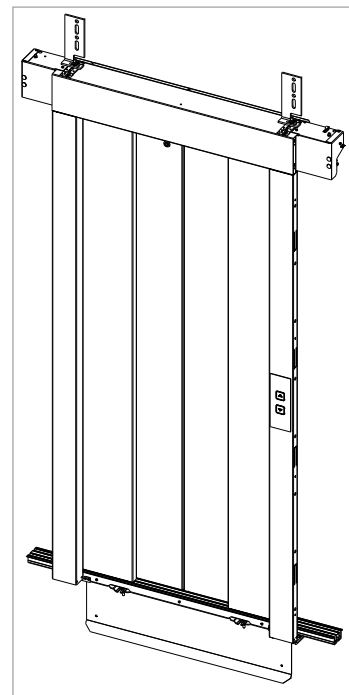


IMAGE 0.4

**1. TOOLS REQUIRED AND INDIVIDUAL PROTECTION EQUIPMENT**


Neither the tools nor the individual protection equipment are included in the pack.

**Individual Protection Equipment**

Helmet  
 Anti-cut gloves  
 Reinforced boots  
 Safety belt  
 Goggles or shield  
 Back belt



IMAGE 1.1

TOOLS	ASSEMBLY PHASES	MAINTENANCE
1 Nr. 5 Allen wrench		Wheel adjustment
1 Nr. 6 Allen wrench	Panel assembly	Panel adjustment and wheel replacement
1 Nr. 8 Allen wrench	Assembly of MASSEN T3 uprights with reduced frame	
1 Nr. 7 Flat Fixed Wrench/ Rattle	Lock assembly	
1 Nr. 13 Cranked Flat Fixed Wrench / Rattle	Panel assembly /panel protection	Adjustment of panels and replacement of wheels
1 Nr. 17 Flat Fixed Wrench/ Rattle	Frame assembly and angle bracket fixing	
1 Nr. 19 Flat Fixed Wrench/ Rattle	Frame anchoring to wall	
1 Nr. 25 Flat Fixed Wrench	Panel assembly	Panel adjustment
1 Star screwdriver	Operating panel assembly	Operating panel maintenance
1 Bob plumb	Frame assembly	
1 Level	Frame assembly	
1 Alignment gauge	Frame assembly	
1 Angle bracket	Panel assembly	Panel adjustment
1 Riveting machine	Frame, toe guard and panel protection	
1 Percussion drill	Frame anchoring to wall	
1 Hammer	Frame anchoring to wall	
1 Permanent marker	Frame anchoring to wall	
1 Tape measure	Frame anchoring to wall	
Bits with 12 diameter	Frame anchoring to wall	
Ø12 Wall fixing plugs (DESAFIX M12 x 75 type)	Frame anchoring to wall	
2 Pressing pliers	Frame anchoring to wall	
1 PR Tool 		Replacement of wheels

**2. PACKAGE DESCRIPTION**

To avoid any deterioration to the material, it is recommended to proceed in the following order when unpacking:  
 Open the top cover and take out the components in the following order:

1. Hardware box.
2. Door sill.
3. Common upright.
4. Closing upright.
5. Header set.
6. Panels.
7. Closing upright cover.
8. Foot guard plate.
9. Panel protector (optional accessory)

**PACKAGE**

DESCRIPTION	T2	C2	C4	T3
	UNITS			
UPRIGHT SET FOR OPENING SIDE	1	2	2	1
UPRIGHT FOR CLOSING SIDE	1	-	-	1
DOOR SILL	1	1	1	1
HEADER SET	1	1	1	1
LANDING PANELS	2	2	4	3
LANDING TOE GUARD PLATE	1	1	1	1
KIT OF ACCESSORIES:				
Hardware bag for fixing frame	1	1	1	1
Hardware bag for fixing panels	1	1	1	2
Hardware bag for angle bracket fixing to door	1	1	1	1
Hardware bag for toe guard plate fixing	1	1	1	1
Hardware bag for panel protection fixing (optional)	1	2	-	-
Hardware bag for fixing door to wall (optional)	1	1	1	1
Hardware bag for C4 door	-	-	1	-
Angle brackets for fixing door to wall	4 / 6 ( * )	4 / 7 ( * )	4	4
Certificate of the notified body	1	1	1	1
Assembly manual and a couple of keys for emergency opening (only one per order)	1	1	1	1



IMAGE 2.1



IMAGE 2.2

(\* ) Only clear openings greater than 900 mm

### 3. ASSEMBLY OF DEMOUNTABLE DOOR FRAME

#### 3.1. Introduction

In this chapter, the assembly of the dismantled frame of an automatic landing door is shown from inside the shaft. (The assembly of the frame outside the shaft would be done in a similar way).

We will begin by taking the unitary packaging box of the dismantled door to the floor where the assembly will take place. This is an important advantage compared to the frame assembly outside the shaft, especially in those facilities where space is limited, as we do not have to manoeuvre the assembled frame in order to take it to the shaft. In addition, the work of levelling and lower fixing (door sill) is much easier.

It is recommended to begin the assembly of the landing doors starting with the last floor and finishing on the ground floor. This way, we will avoid dirt falling on the mechanisms of doors on lower floors.

This assembly is the most suitable when the platform and floor of the car are assembled in the shaft, but if the jambs, panels and roof of the car are also assembled, it is advisable to assemble the landing door of the ground floor outside the shaft and then bring it near in order to fix it to the wall. Otherwise, there would be access problems, for the lower floor, in the door sill-upright-header joining points. On the other floors, there will not have any problem, as the assembly of the door frame will be carried out from the car roof.

In order to determine the proper positioning of the landing doors, the layout of the shaft will be used (see example shown in image 3.1). Plumb lines will be used to determine the beginning of the clear opening or rather **the beginning of the door sill bracket of the car platform will be used to determine the clear opening beginning**, as the ends of this support coincide with the clear opening beginning.

Later, the alignment gauge use is shown to mark reference points on landing doors and car door sill bracket. **The use of this gauge (optional) is highly recommended, it ensures accurate and fast assembly.** The green mark will be used in later stages of assembly as a reference point for alignment with the car door operator. This mark remains in the centre of the clear opening in the central doors and is moved 15 mm towards the interior of the closing upright in side-opening doors.

Before assembling the doors, it is necessary to check that there is a fixing wall higher than 2200 mm from the level of the finished floor, or with a fixing profile higher than 2250 mm from the level of the finished floor (for doors of a 2000 mm clear opening height).

Once we have all of the components on the floor, we will begin the assembly.

T2 DOOR

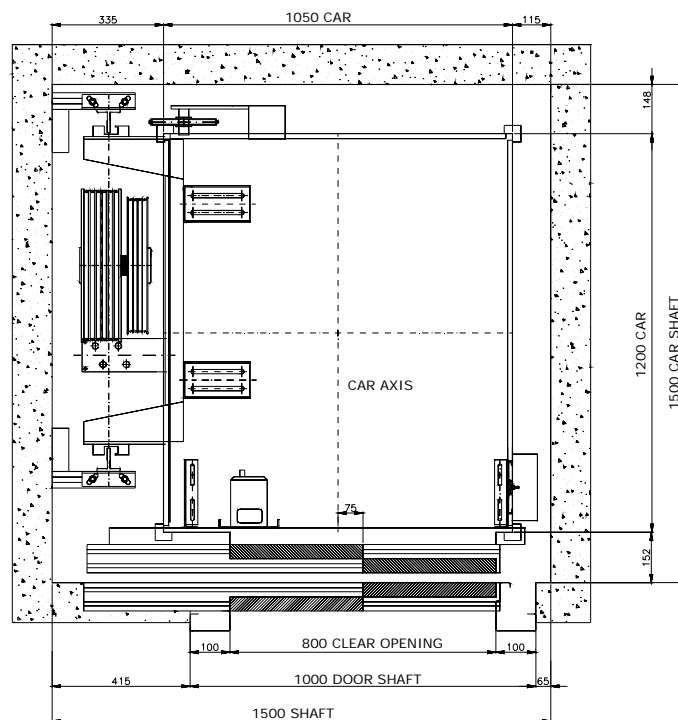


IMAGE 3.1

3.2. Variations for Assembly depending on overhangs

T2/C4 door represented

MP Assembly (30 mm overhang)

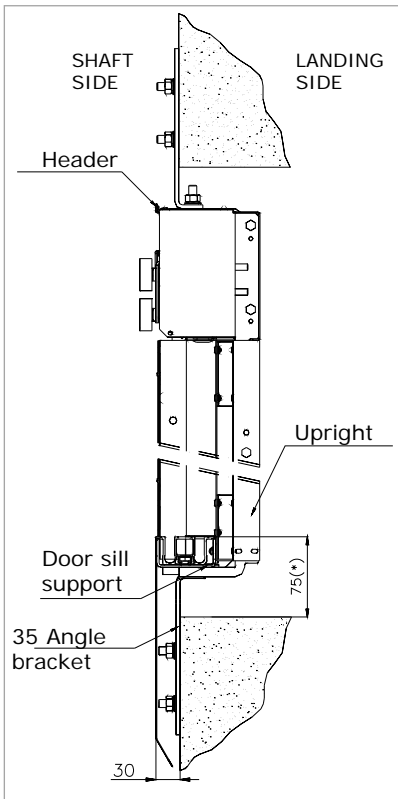


IMAGE 3.2

Overhang door sill assembly

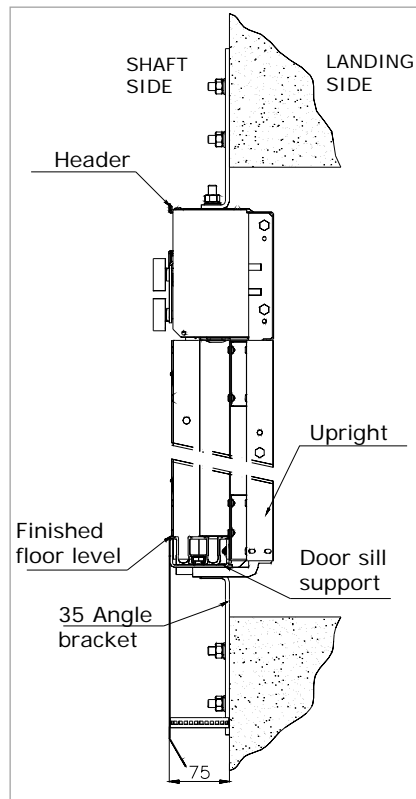


IMAGE 3.3

Full overhang door assembly

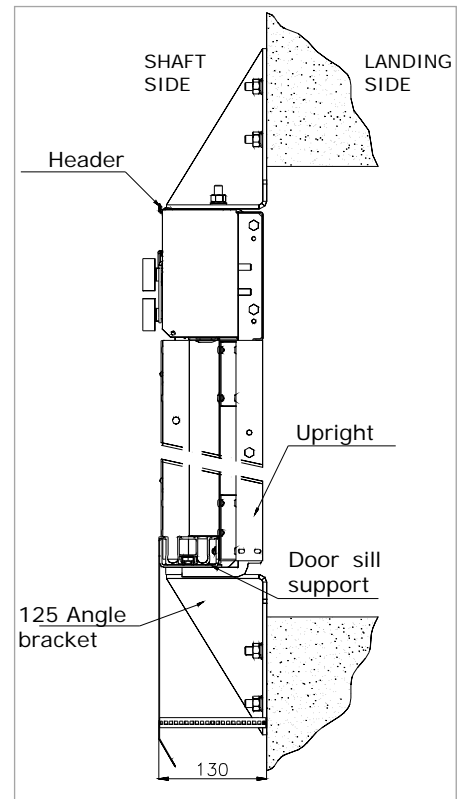


IMAGE 3.4

(\*) Minimum measurements for placing the wall fixing angle bracket in position 1. Essential in overhangs < 35 mm.

- Other overhangs:

Overhangs < 20 mm

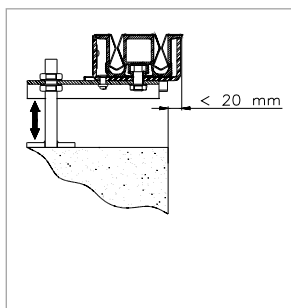


IMAGE 3.5

Position 1

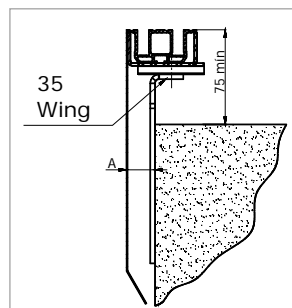


IMAGE 3.6

Position 2

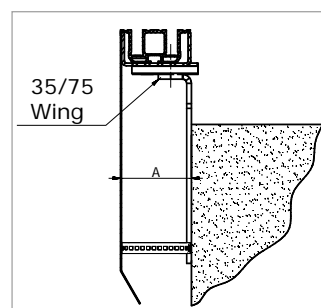


IMAGE 3.7

Angle bracket

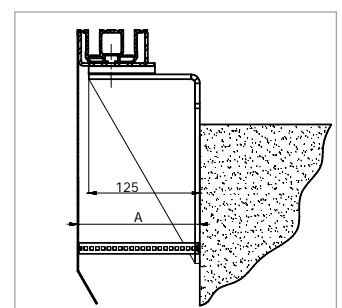


IMAGE 3.8

	DOOR	FIXING TYPES					
		THREADED ROD OVERHANGS <20 mm	35 WING OF ANGLE BRACKET	75 OF ANGLE BRACKET	98 ANGLE BRACKET	125 ANGLE BRACKET	150 ANGLE BRACKET
				POSITION 2			
MEASUREMENT A	T2	0-20	20-85	76-99	100-125	126-150	151-180
	T3	0-20	20-100	-	101-125	126-150	151-200
	C2	0-20	20-75	76-99	100-125	126-150	151-170
	C4	0-20	20-85	86-99	100-125	126-150	151-180

- MP standard overhang; A = 30 mm
- Overhang door sill; A = 75 mm (T2/C4), A = 55 mm (C2), A = 111 mm (T3)
- Full overhang door A ≥ 130 mm (T2/C4), A ≥ 110 mm (C2), A ≥ 166 mm (T3)

**3.3. Assembly in shaft of door sill**

1. Place fixing angle brackets (35/75 or 125 wing depending on order and door overhang), meeting the measurements shown in the images 3.9 and 3.10. Fix them to the wall through one of its vertical slotted hole (1) using a fixing plug.
2. Then, position the door sill unit upon the angle brackets and adjust it so as to meet the indications shown on these images:
  - Using a bubble level, adjust the angle bracket height until checking the door sill is levelled. Firmly tighten the wall fixing screws.
  - For doors with clear opening > 900 mm, set an additional angle bracket on sill base.
  - Fix the alignment gauge to the door sill support and carry out following to properly position the landing door sill set with respect to the car door sill support. (See images 3.12 and 3.13).
  - Move the landing door sill set and gauge until it is in full contact with the car door sill bracket, this guarantees 30 mm clearance between door sills (See close-up R of image 3.11).
  - Move the landing door sill set and gauge until making the clear opening beginning mark on the gauge coincide with the car door sill support side (See close-up R of image 3.11).
  - Firmly tighten the fixing screws of the door sill set to the angle brackets for fixing to wall.
3. Once the door sill is adjusted and the car alignment coincidence checked, a second fixing plug will be placed on each angle bracket, in one of the Ø13 mm drill holes (2), for the set to be totally fixed.

**T2 / T3 DOOR**

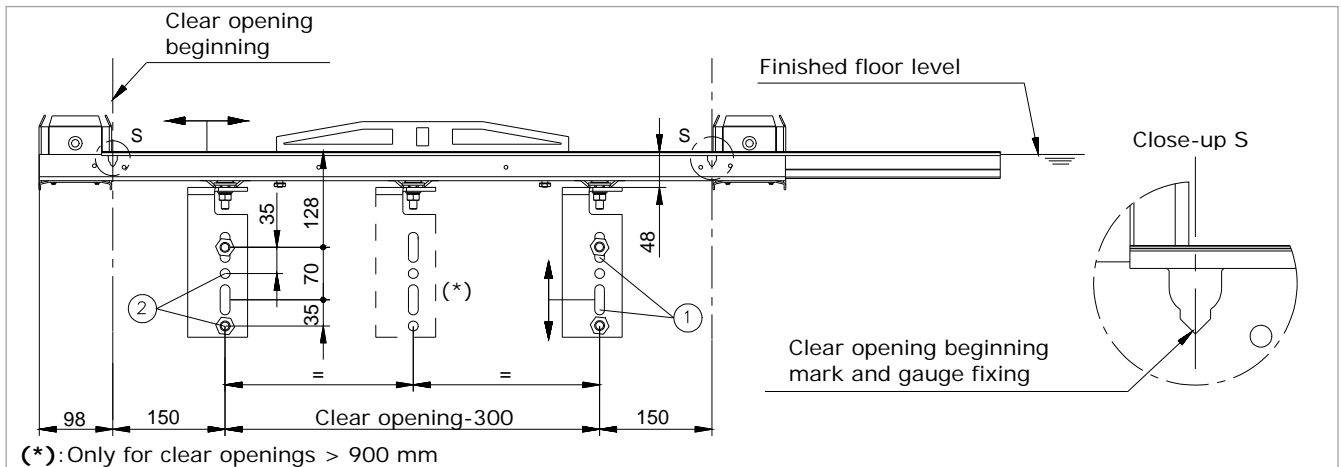


IMAGE 3.9

**C2 / C4 DOOR**

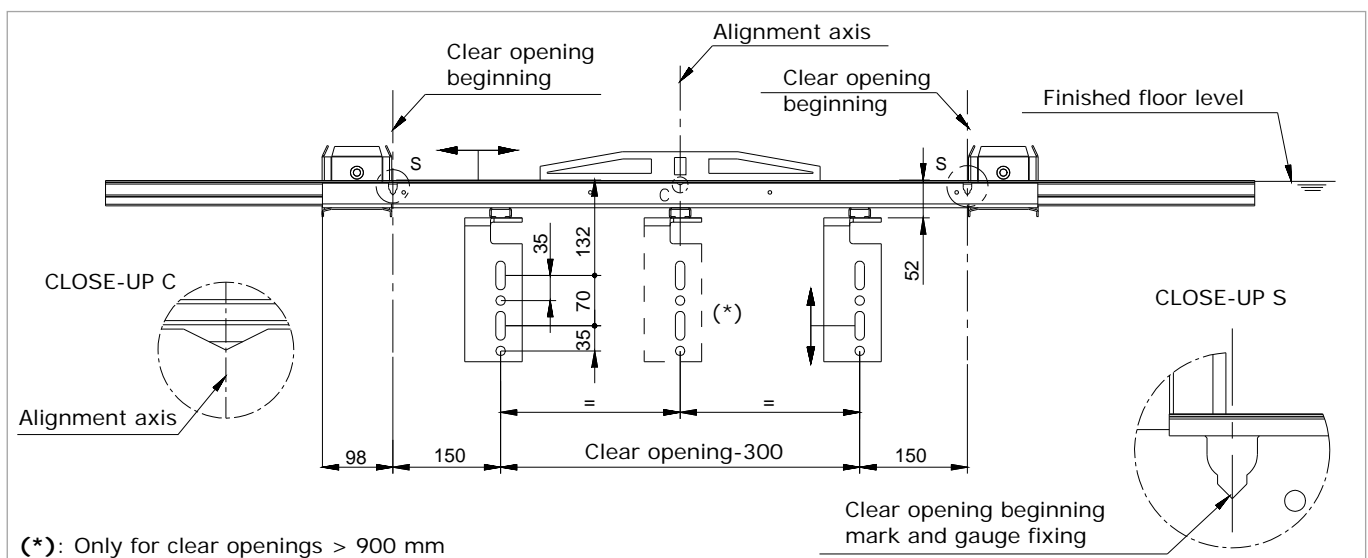


IMAGE 3.10



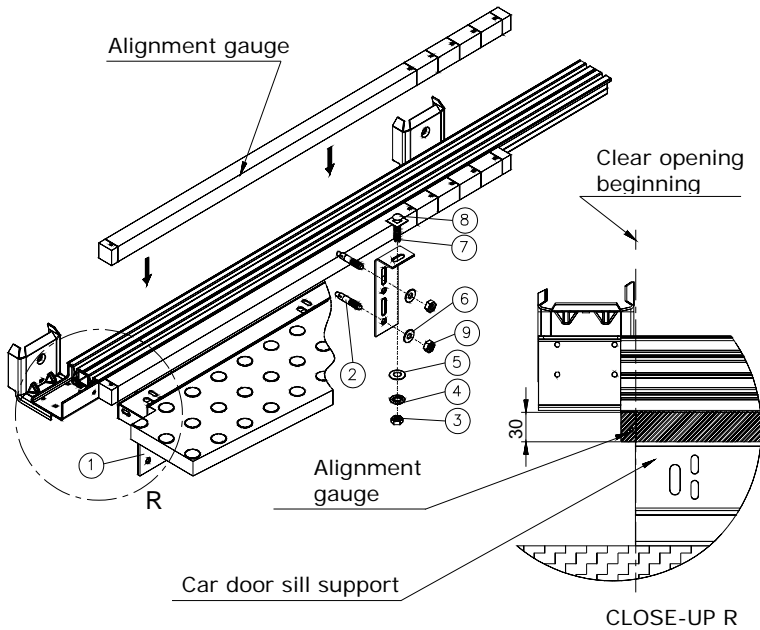


IMAGE 3.11

	PART NAME	UNITS
1	FIXING ANGLE BRACKET	2
2	M12 x 75 PLUG FOR FIXING TO WALL	4
3	DIN 934 M10 NUT	2
4	DIN 6798_J Ø10 WASHER	2
5	DIN 125 Ø10 WASHER	2
6	DIN 125 Ø12 WASHER	4
7	DIN 603 M10 x 35 SCREW	2
8	FIXING PLATE WITH SLOTTED HOLES	2
9	DIN 934 M12 NUT	4

**Note:** The hardware bag for fixing angle brackets to wall is optional.

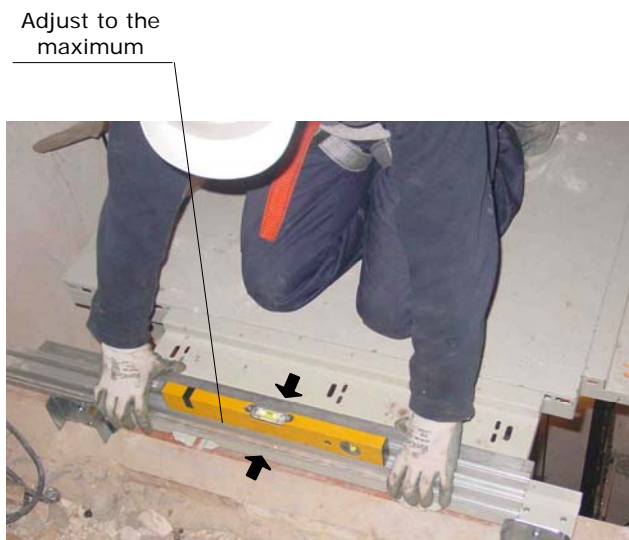


IMAGE 3.12

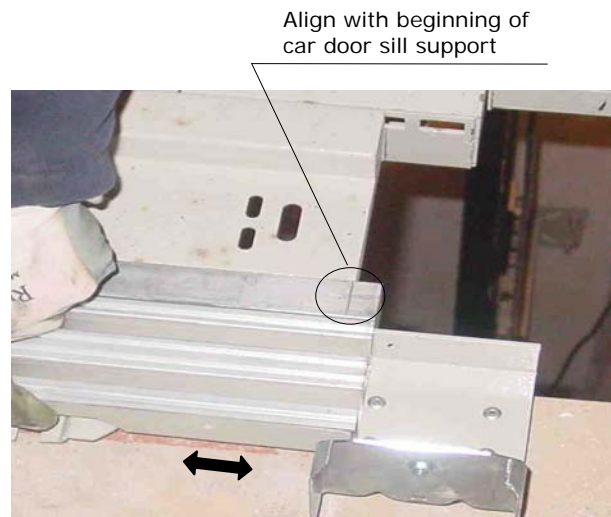


IMAGE 3.13

4. According to the Standard EN 81-20 (5.3.4.1), the distance between the car door sill and the landing door sill shall never be greater than 35 mm. For MASSEN doors, this distance is adjusted at approx. **30 mm**, through using, if possible, the alignment gauge.

### 3.4. Joint of uprights – door sill

1. Fit the uprights in the door sill support until checking they are in contact with the entrance stop, as shown in the following images.



**Warning:** The side eyelets (mark 6 in images 3.14 y 3.15) must be at the lower end.

2. Position and tighten screws (marks 2 and 3 in images 3.14 and 3.15, refer also to image 3.17) and rivet the door sill support to the closing upright, only for side-opening (image 3.14 and 3.18).
3. Open attachment claws to wall.



C2 / C4 DOOR

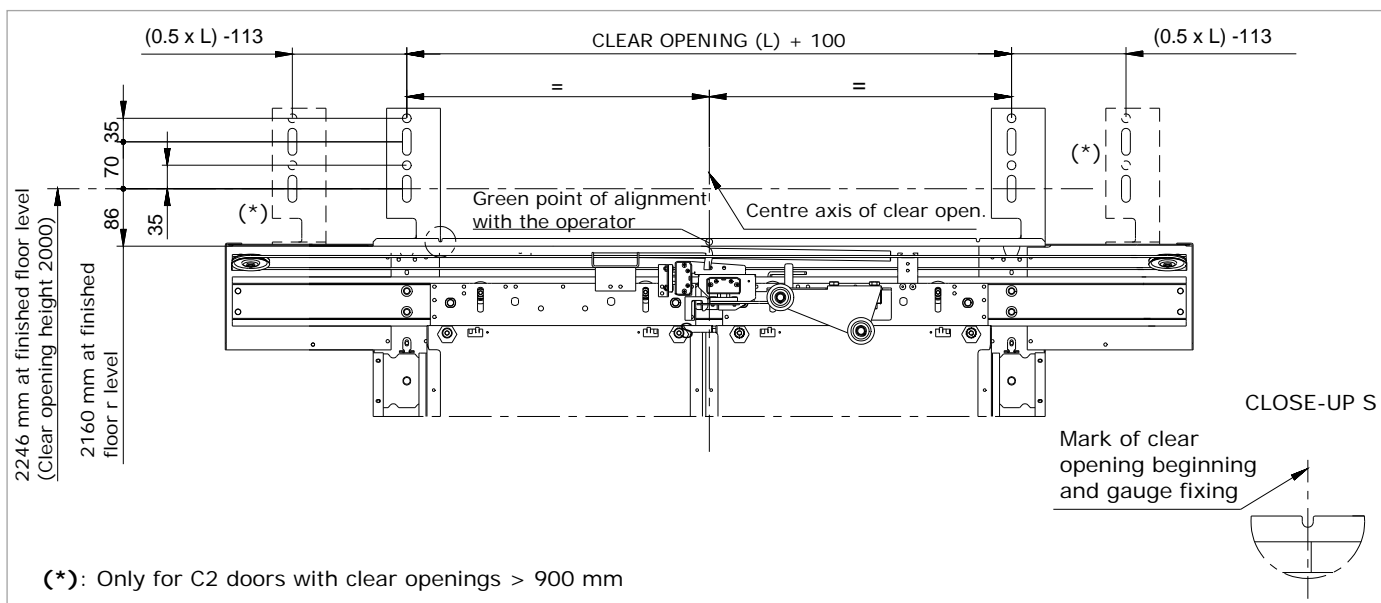


IMAGE 3.20

1. Provisionally screw the fixing angle brackets of the header to the wall, in such a way they remain fixed to the eyelet and with the vertical wing as close as possible to interior shaft (image 3.21).
2. Assemble the header on the platform (of the car floor) and lift it until the upright top ends are slightly above the waist.
3. Take the header through the roof and fit the header set onto the uprights (image 3.22). Check that the header and header supplement are in contact with the upright, pushing the header supplement downwards if necessary.

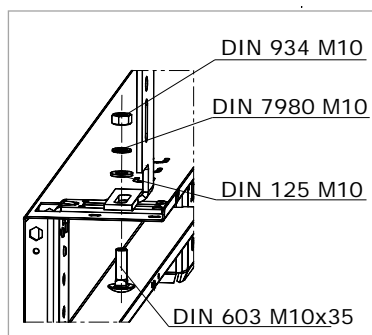


IMAGE 3.21

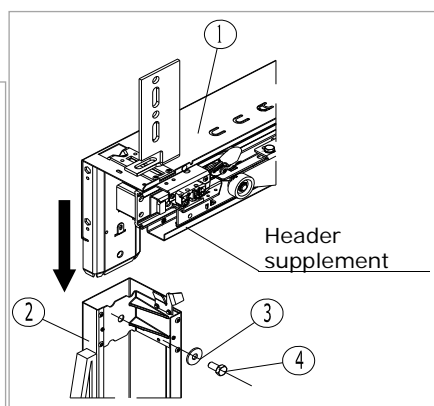


IMAGE 3.22

Nr.	PART NAME
1	HEADER SET
2	CLOSING UPRIGHT SET
3	DIN 9021 M10 WASHER
4	DIN 933 M10 x 20 SCREW

4. Provisionally fix the angle brackets to the upper fixing profile (using pressing pliers), or to the fixing plugs to wall, previously placed.
5. Once the header set is provisionally fixed to the wall, fasten and tighten the header fixing hardware to uprights (image 3.24).



IMAGE 3.23

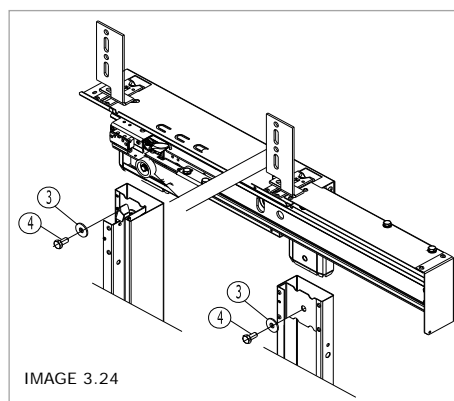


IMAGE 3.24

### 3.6. Header adjustment

1. Lift the platform up to the level of the header's upper part.
2. Coupling the alignment gauge to header (image 3.25), move the set (gauge + header) until obtaining the following references with respect to the car door sill support (images 3.26 and 3.27):
  - a. A clearance of 30 mm between car door sill bracket and the top header bend.
  - b. A proper alignment of the clear opening beginning at landing door and car. The header's notch and the gauge's "0" mark will be aligned with the beginning of the car's door sill support.

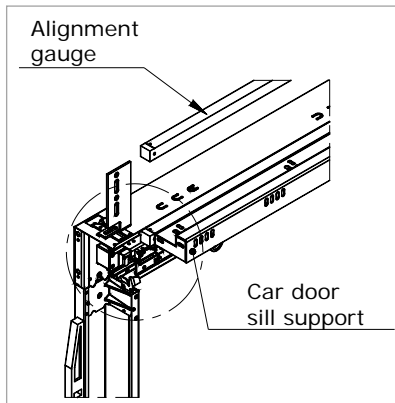


IMAGE 3.25

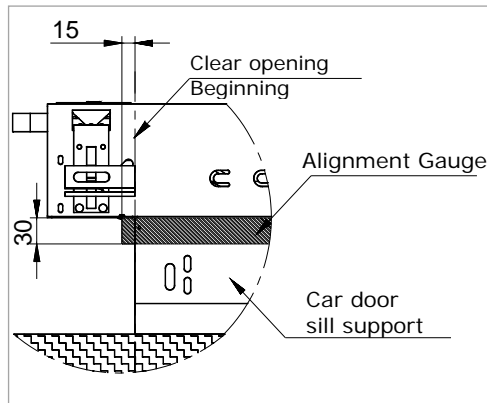


IMAGE 3.26

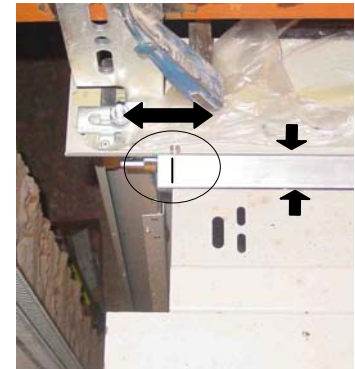


IMAGE 3.27

3. Tighten the angle bracket hardware and check the proper levelling of the frame in the 2 directions using the bubble level.
4. Once the installation of all the doors is finished, the alignment will again be checked before the final fixing to the wall.
- ⚠ For the correct operation of the door, it is essential that the alignment axis is perfectly centred on the sill and header.
5. Upon completion of all building works and before installing the car door operator, the plastic protecting from the dirt of the construction work that covers the header should be removed (image 3.28).



IMAGE 3.28

### 3.7. Positioning of closing upright cover (only in side-opening doors)

1. Insert the screws in the upright drills, but do not full tighten (image 3.29).
2. Fit the upright cover on its screws in the closing upright (image 3.30).
3. Press the cover downwards to adjust the screws in the eyelet ends and tighten.

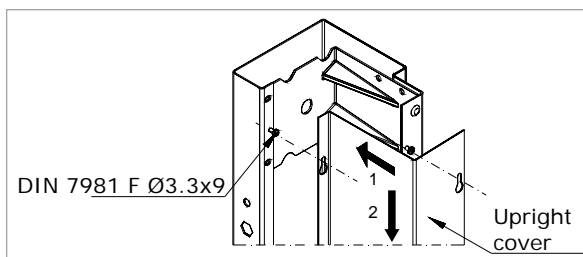


IMAGE 3.29

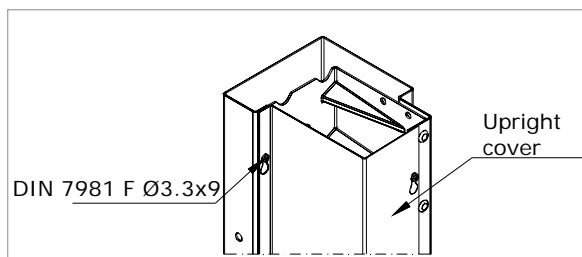


IMAGE 3.30



The cover should be perfectly placed and the screws tightened after electrical installation

**4. POSITIONING OF PANEL PROTECTION**

(OPTIONAL ACCESSORY, ONLY AVAILABLE FOR T2/C2 DOORS)

1. Screw lower reinforcements (mark 3) to the door sill just as it is shown in images 4.1 and 4.2: the front bracket, fixed through the interior drill, and the one in the door sill end through the external drill.
2. Place the panel protection rivets on the upright, header and lower fixings, always riveting from inside the shaft:
  - Before starting to rivet, we will position an upper rivet and at least two side rivets to ensure the proper positioning of the panel protection onto the upright and header. Check the coincidence of the drill holes and eyelets at all fixing points.
  - It is essential to position all rivets to avoid deformities and subsequent conflicts with the opening of the panels (image 4.3).

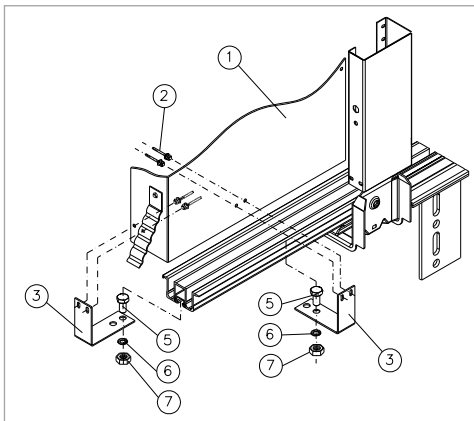


IMAGE 4.1

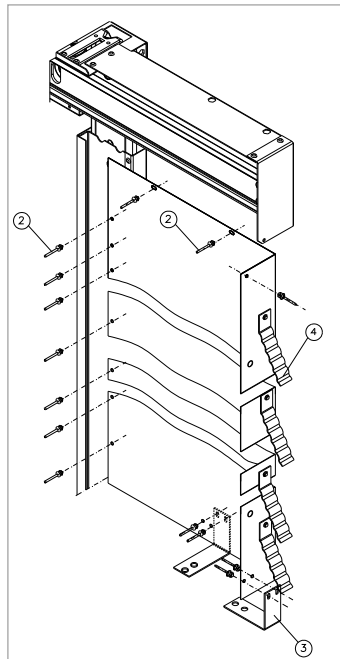


IMAGE 4.2

Nr.	PART NAME	UNITS	
		T2	C2
1	PANEL PROTECTION	1	2
2	Ø4.8 x 10 RIVET (aluminium)	14	28
3	LOWER REINFORCEMENT	2	4
4	LOCK CLAWS	6	12
5	DIN 933 M8 x 16 SCREW	2	4
6	DIN 6798 J M8 WASHER	2	4
7	DIN 934 M8 NUT	2	4



IMAGE 4.3

**Cable guide for the C2 button panel**

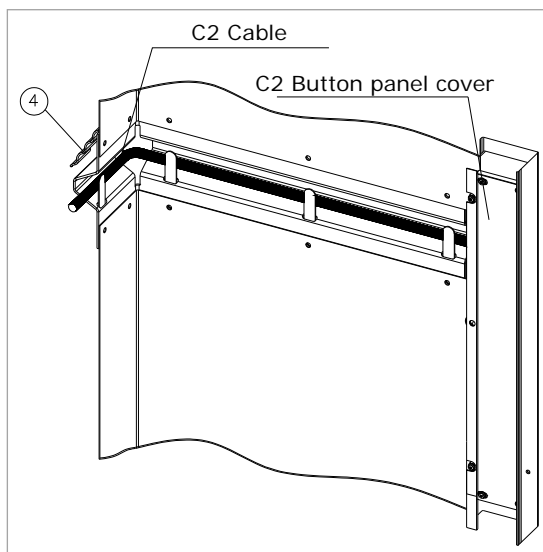


IMAGE 4.4



IMAGE 4.5



Always remove the button panel cover before positioning the right panel protection (see image 4.4).

5. PANEL ASSEMBLY DESCRIPTION

5.1. Positioning of panels

For T2, C2 and T3 doors, we start the positioning of the panels with the carriages in closed door position. But, for C4 doors, we start with a space of approximately 15 cm between the quick carriages (image 5.4). Without this space, it will not be possible to hang on the slow panels, as they would interfere with the lower wheels of the quick carriage.

With the **slow panel** (T2 / T3 / C4) or right panel (C2) or **middle panel** (T3) sloping (image 5.1) and moved **about 4 cm** in the opening direction (image 5.2), to avoid interferences amongst the fire-fighting maze, we insert the lower part into door sill channel. With the panel already vertically placed, it is moved until it reaches its final position and it is hung on the carriage hooks (image 5.3).

T2 / T3 / C2 DOOR

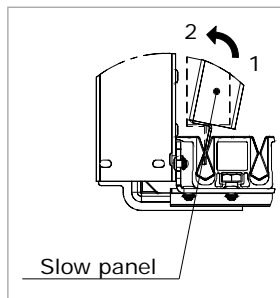


IMAGE 5.1

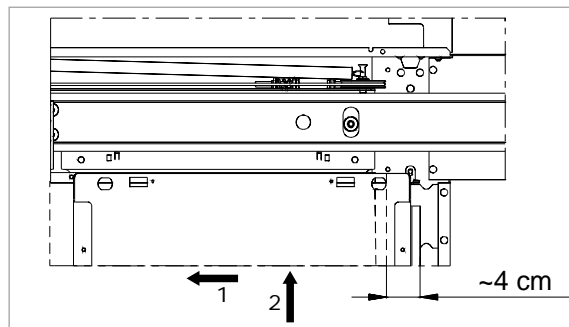


IMAGE 5.2

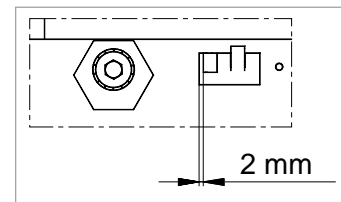


IMAGE 5.3

C4 DOOR

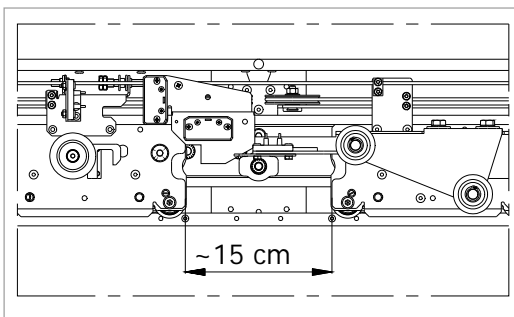


IMAGE 5.4

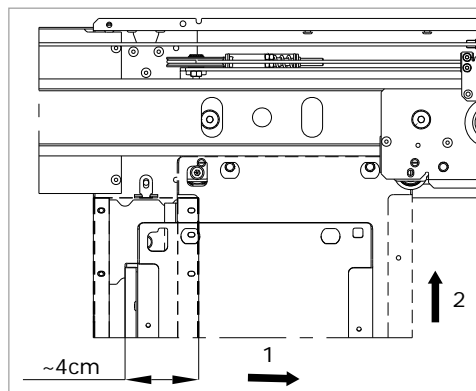


IMAGE 5.5

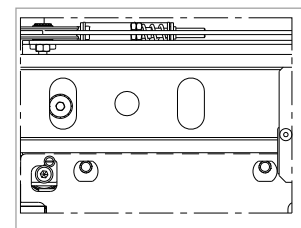


IMAGE 5.6

With the **quick panel** (T2 / T3 / C4) or left panel (C2) inclined and moved **about 20 cm** in the opening direction (image 5.7), to avoid interferences from the upper end with the pulling wheel plate, we insert the lower part into the door sill channel. With the panel already vertically placed, it is moved until it reaches its final position passing behind the pulling wheels and it is hung on the carriage hooks (image 5.8).

T2 / T3 / C2 DOOR

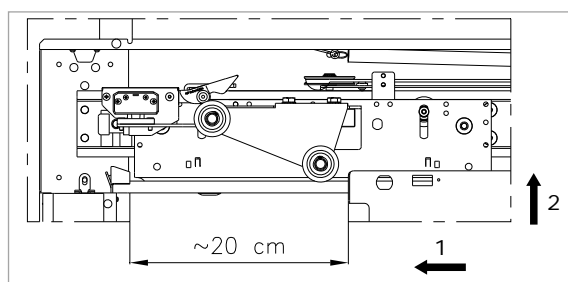


IMAGE 5.7

C4 DOOR

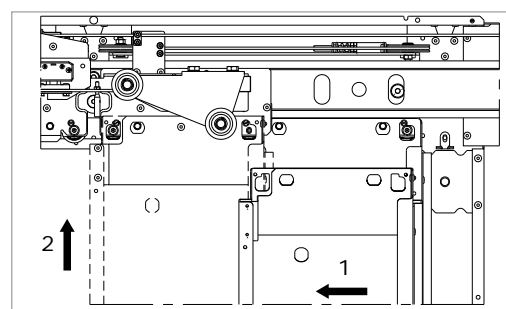


IMAGE 5.8

Place the screws through the eccentric hooks with the less eccentric side of the hook facing upwards (image 5.9) and ensuring that the cylindrical projection is inside the panel housing.

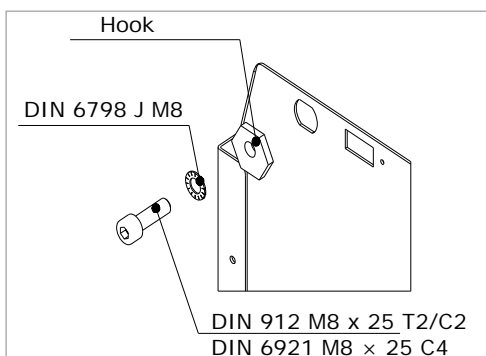


IMAGE 5.9

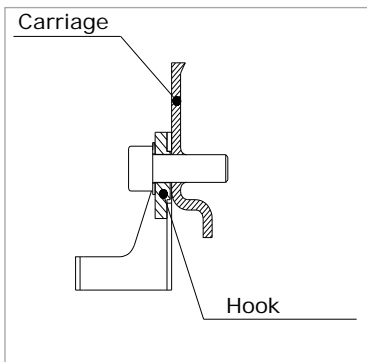


IMAGE 5.10



IMAGE 5.11

Fixing the hooks with the Nr.25 wrench so that they do not turn, firmly tighten the screws (Nr. 6 Allen wrench for T2/C2 doors and Nr.13 cranked Allen wrench for C4 doors).

### 5.2. Panel adjustment

- **Panel turning (Vertical adjustment):**

- When opening the door, if the panels are not vertically aligned with regards to the upright, their inclination may be adjusted by turning the hexagonal hooks (image 5.10).

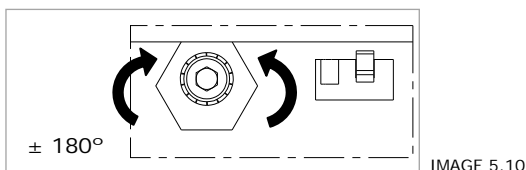


IMAGE 5.10

- **Adjustment from a height:**

- Using the two hexagonal hooks in the same way, we can raise the panel up to 4 mm (image 5.11).

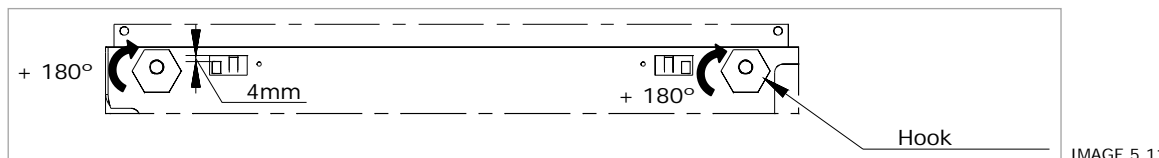


IMAGE 5.11

- **Panel movement (T2 Horizontal adjustment):**

With the door open, if the panels are not flush with the opening upright (image 5.12), or with the door closed, if the quick panel reaches the upright stop faster than the quick carriage to the carriage stop (image 5.13), the panels should be horizontally adjusted in the following way (image 5.14):

- Loosen the hook screws
- Move the panels in the appropriate direction.
- Retighten hook screws, ensuring that the position of the hexagons remains unchanged.

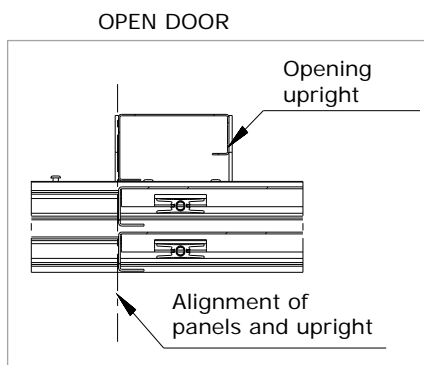


IMAGE 5.12

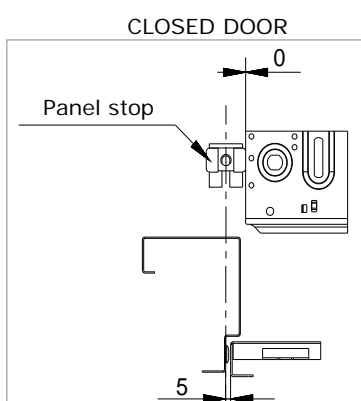


IMAGE 5.13

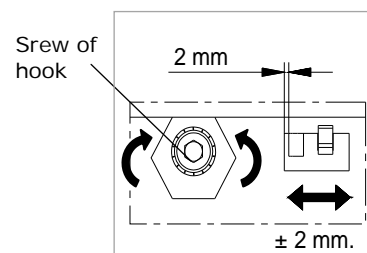


IMAGE 5.14

- Panel movement (C2 Horizontal adjustment):**  
 With the door open, if the panels are not even with regards to the uprights or, with the door closed, if the panels make contact with one another before the carriage stop with the carriages, the forwards movement of the panels should be adjusted by moving them slightly on their hooks in the same way as indicated in the previous section.

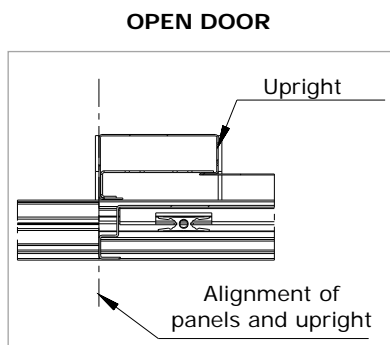


IMAGE 5.15

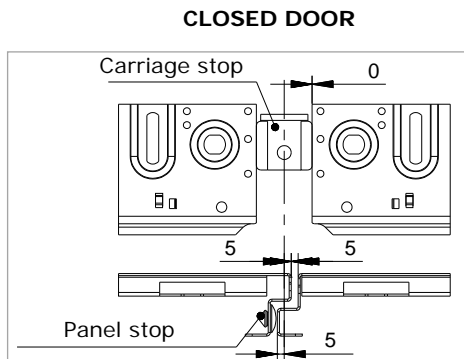


IMAGE 5.16

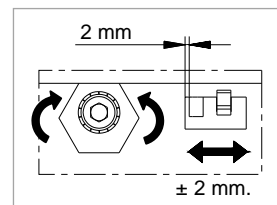


IMAGE 5.17

- Panel movement (C4 Horizontal adjustment):**

With the door closed, adjust the right quick panel so as to meet the height shown in image 5.18.

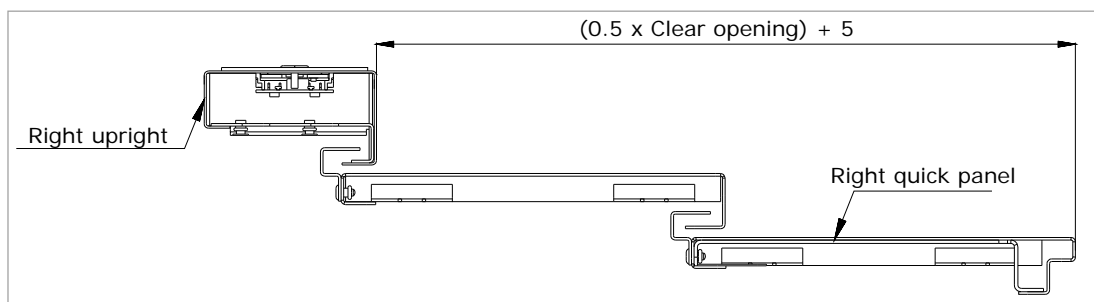


IMAGE 5.18

After setting the quick right panel, open the doors and adjust all the other panels, so that all of them are perfectly aligned with the uprights (image 5.19).

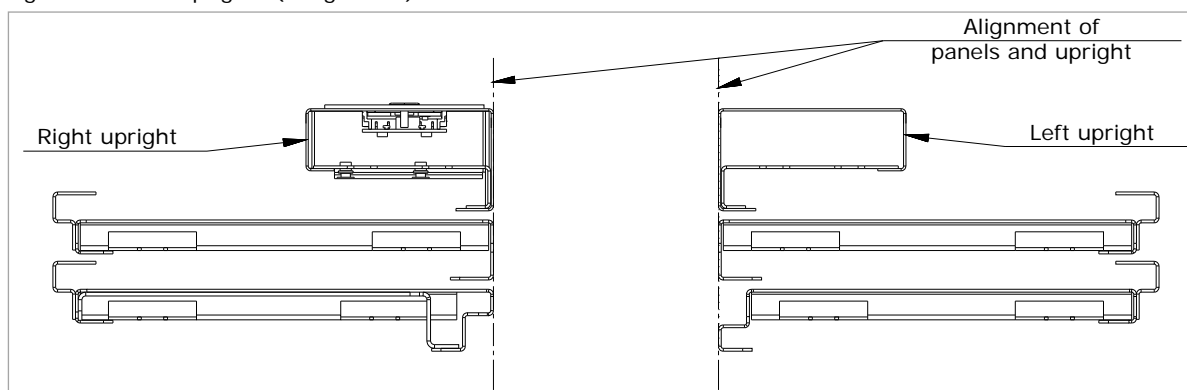


IMAGE 5.19

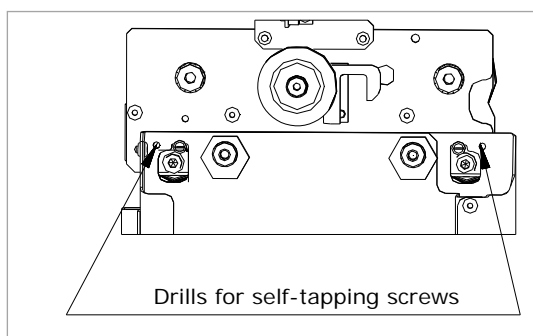


IMAGE 5.20

After checking that the adjustment of all the panels is right, both in open and closed position, place the self-tapping screws (DIN 7504 Ø3.5 x 9.5) (image 5.20).



**5.3. Positioning of turn stop on quick panel of MASSEN T3 and MASSEN C4 doors**

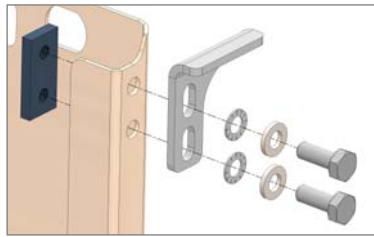


IMAGE 5.21

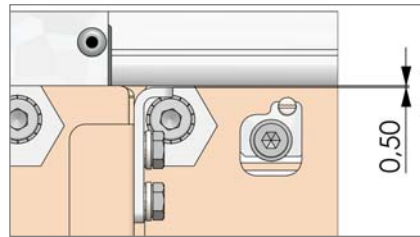


IMAGE 5.22

**5.4. Positioning of guide shoes**

Before the lift commissioning, remove the door sill protection (optional) and position the guide shoes by pressing very firmly until the attachment "click" is heard. (Position the guide shoes with the grooves facing upwards. (See image 5.21, close-up S).

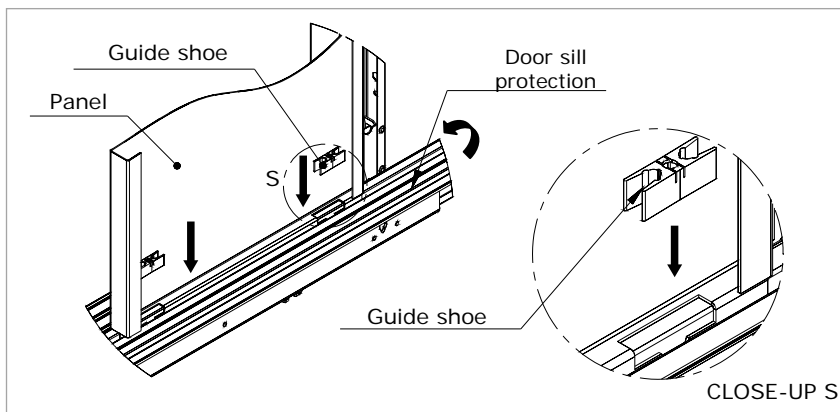


IMAGE 5.23



Position the guide shoes with the grooves facing upwards and pressing until you hear "click"

**6. POSITIONING OF LOCK**

If the door is provided with a lock on panel, the sequence of operations for a proper lock setting is the following one (image 6.1):

1. Place the lock on the panel and tighten the nut.
2. Insert threaded cable connection into the square hole of the lock axis and ensure with the self-locking nut.
3. Hook the carabiner on the cable to lock hook.

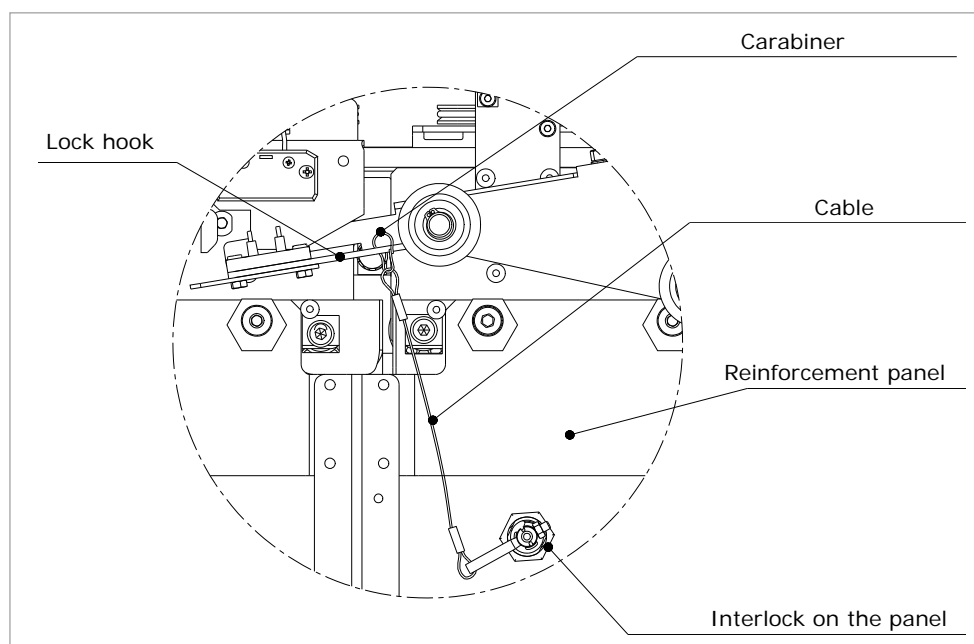


IMAGE 6.1

### 7. CHECK OF LOCK AND AUTOMATIC CLOSING OF THE LANDING DOOR LOCK

Once the door is assembled, the proper operation of the lock and emergency unlocking is to be checked. Also check that the safety chain contacts are properly wired and connected to the electrical installation. To do so, just interrupt the chain while they are activated.

#### Locked door in idle state

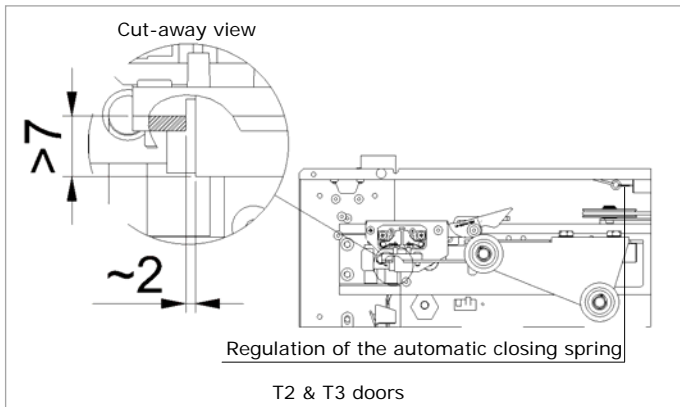


IMAGE 7.1

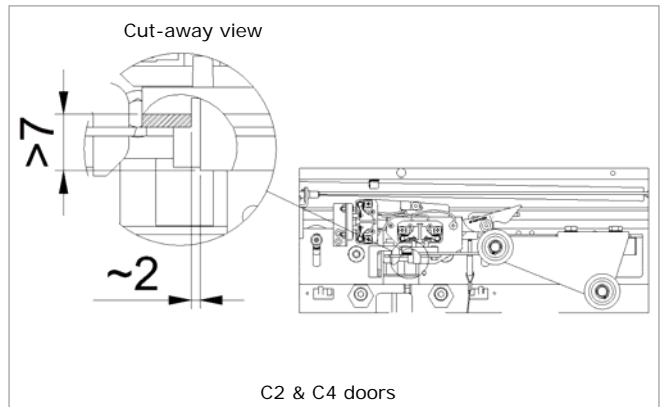


IMAGE 7.2

Check that the quick carriage moves about 2mm in the opening direction before the mechanical locking occurs and there is a mechanical overlap greater than 7 mm when the lock hook interrupts the safety series.

#### Emergency interlocking

With the guides and door sill clean, and the panel guide shoes in place, check that the automatic closing spring tension is enough to get the door closed and interlocked by itself from a 50 mm-opening. For C4 door, adjust the spring in such a way that its minimum length is **1150 mm** when the doors are closed. This check shall be carried out when the car is out of the door locking area.

### 8. USE OF THE EMERGENCY UNLOCKING KEY. RESCUE OPERATIONS

This operation needs the intervention of a competent authorized person, properly trained by the maintenance company. The rescue shall be made only through the landing doors.

#### Emergency unlocking operation

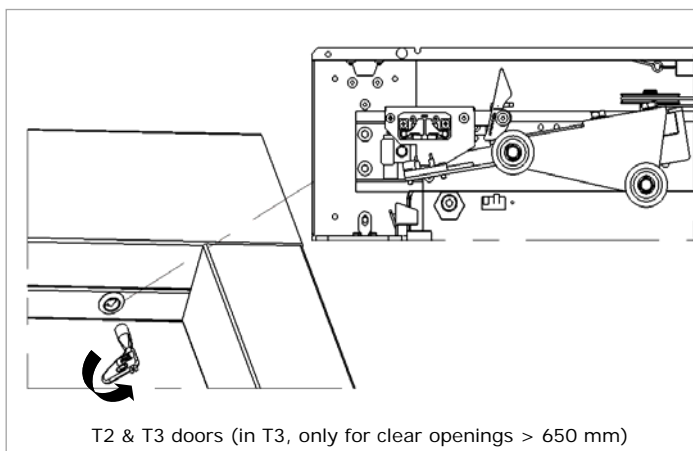


IMAGE 8.1

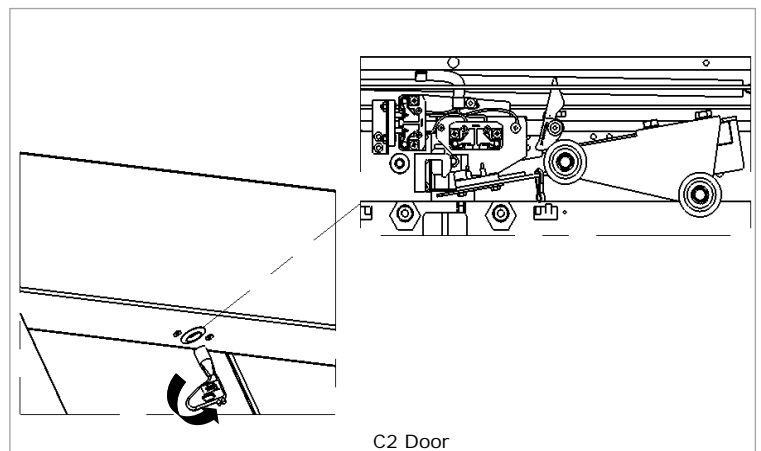


IMAGE 8.2

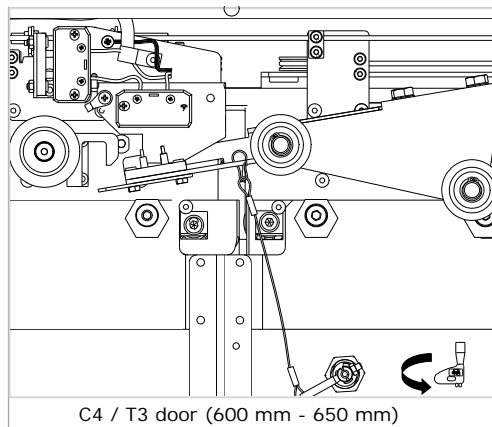


IMAGE 8.3

The door should open without any problem when performing the following operation sequence:

1. With the key turned, pull the slow panel edge in the opening direction.
2. Once the panel moved forwards a few centimetres, stop actuating the lock.

**Car door:** If the car door is interlocked, when opening the landing door, there is a device or a door handle, duly identified to unlock and open the car door. (Should you need further details, refer to the manual about operator and car door).

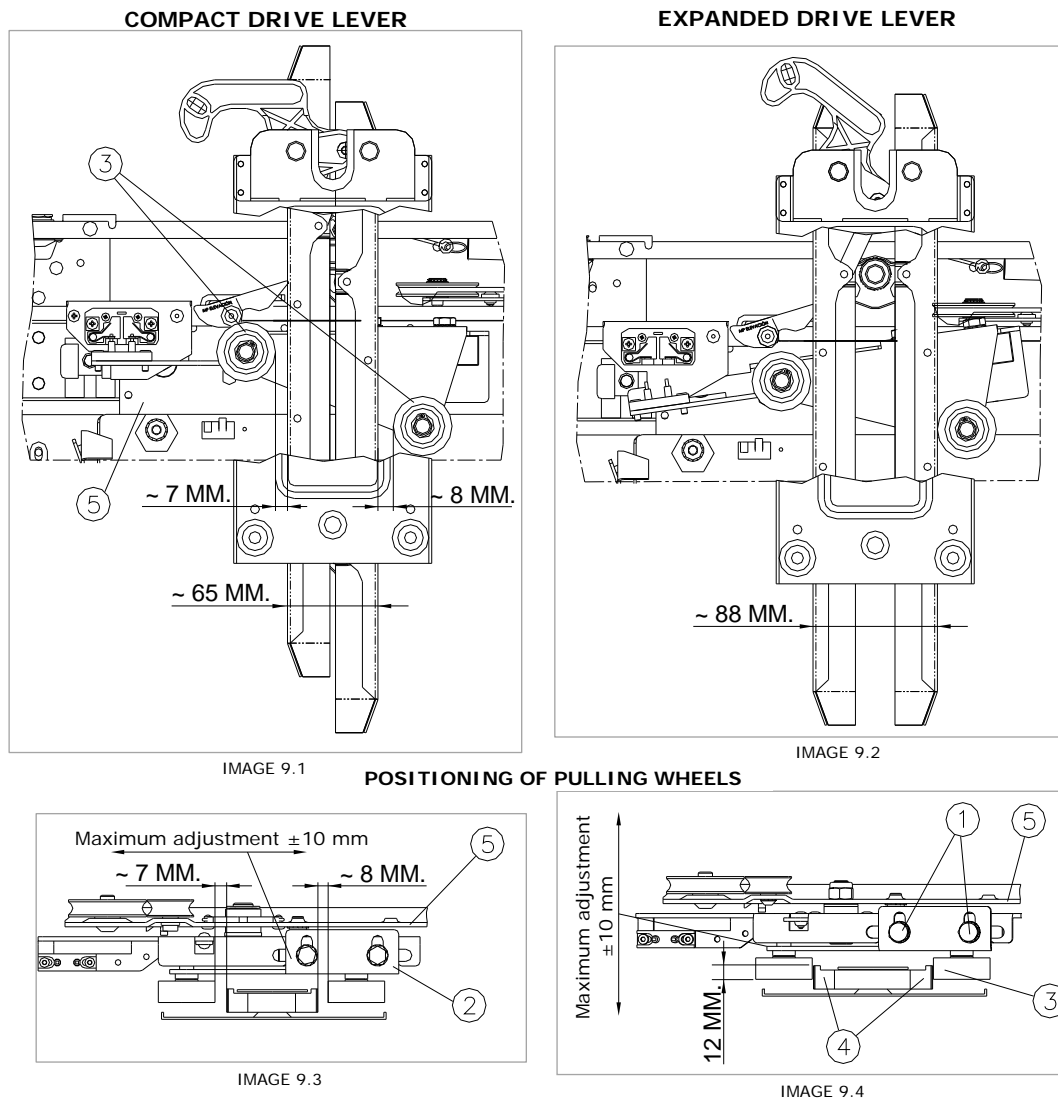


3. In order to avoid serious accidents (falling risk or shearing, or death danger) which could result from an unlocking which was not followed by effective relocking, after opening the door, check the effective closing and relocking of the door. Moving by hand the panels in the opening direction, prove that after about 2mm of movement the mechanical interlocking occurs.

**Emergency unlocking key:** Shall be available on the site of the lift installation and accessible only to authorized persons. (Machinery room, machinery cabinet, or emergency and test panel)

**9. POSITIONING OF PULLING WHEELS**

Once the car door operator is installed, it is necessary to check the drive lever's slats are properly centred with regards to the pulling wheels of the landing door. If an adjustment is required, we will proceed in the following way:



(The steps described here below are referred to images 9.3 and 9.4)

1. Slightly loosen screws (mark 1), until it is possible to move the pulling set by hand.
2. Bring the car nearer, so that the drive lever starts entering among the pulling wheels (mark 3).
3. Stop the car and position the pulling set device (mark 2), so that the drive lever is centred, approximately meeting the measurements on the drawing (7 and 8mm). In addition to being centred with the drive lever, it has to be taken into account that the overlap between the drive lever slats (mark 4) and the pulling wheels (mark 3), should be approximately 12 mm (see images of pulling wheel positioning).
4. Once positioned, we mark its position (using a permanent marker).
5. Lowering the car slightly for more comfortable access, we tighten the screws (mark 1), ensuring that the pulling device (mark 2) did not moved from the indicated position.
6. Special precaution should be taken so that, when tightening the screws, the parallelism between pulling device and carriage is kept.

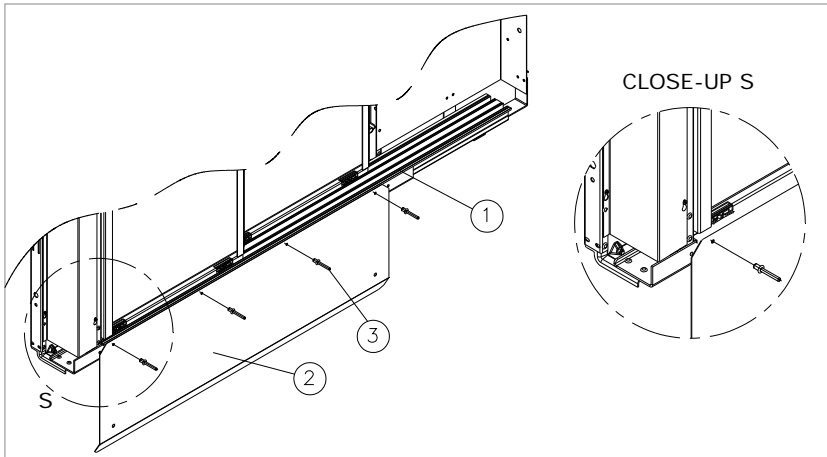
**WARNING:**

For a proper unlocking, the proper adjustment of the landing door pulling wheels should be checked. The space between the slats of the compact drive lever and the wheels should be similar.



Check that the drive lever in compact position passes through without touching the wheels and that, when passing, the car door sill does not touch the pulling wheels of the landing doors.

**10. POSITIONING OF TOE GUARD SHOE**



Nr.	PART NAME	UNITS (T2-C2)
1	DOOR SILL	1
2	TOE GUARD SHOE	1
3	Ø 4.8 x 9 RIVET	4

To position the toe guard shoe, the door sill set will be riveted as indicated in image 10.1.

IMAGE 10.1

They are to be positioned at the end, after checking the door alignment, when the positioning adjustments are finished on all the floors and after ending the building work finishing touches inside the shaft.

In the case of overhangs over 30 mm, stiffeners are to be placed on the lower part of the toe guard shoe, for this purpose, the following steps are to be carried out:

1. Fasten the toe guard shoe according to indications mentioned in the previous point.
2. Measure clearance between toe guard shoe and wall (images 10.2 and 10.3).
3. Using pliers, shape fixing plates and position the caged nuts (image 10.4).
4. Assemble the set on the lower ends of the toe guard plate and fix the plates to the wall using a plastic plug and a screw (not supplied).

**T2 & C4 DOOR**

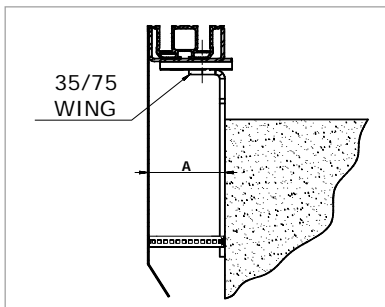


IMAGE 10.2

**C2 DOOR**

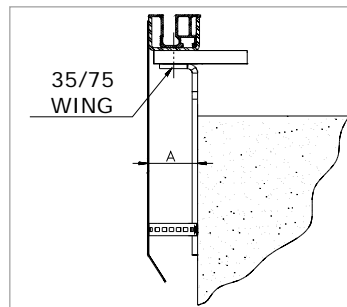


IMAGE 10.3

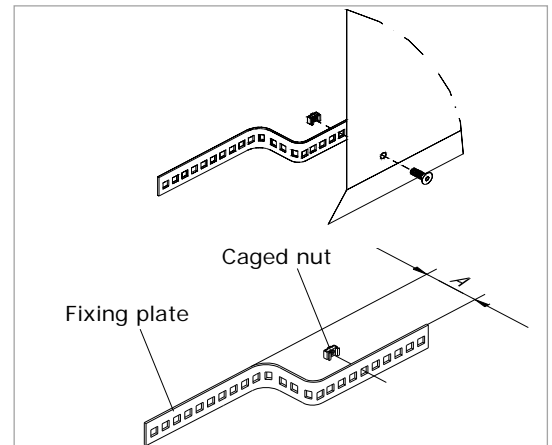


IMAGE 10.4

**11. INSTALLATION MAINTENANCE**

**11.1. Installation owner**

The Installation owner shall keep it in safe condition of operation. To achieve this, the owner shall use a maintenance organisation according to the requirements of Standard EN 13015.

**11.2. Periodic maintenance**

A maintenance shall be carried out periodically to ensure, in particular, the installation safety.

In determining the frequency of maintenance interventions, the following non-exhaustive list should be considered:

- Number of trips per year, operating time and any non-operating periods of time.
- Age and condition of the installation.
- Location and type of building in which the installation is installed, as well as the needs of the users and/or the kind of goods transported.
- Local environment where the installation is situated, as well as external environmental elements, e.g. weather conditions (rain, heat, cold, etc.) or vandalism.

Therefore, there is no way to determine a regular time period valid for all the installations. But, although depending of each particular installation, it should be considered mandatory to check at least every 4 months the mentioned components.

**NOTE:** The actual frequency of maintenance interventions can be more accurately determined where a remote monitoring system is connected to the installation.

### 11.3. Components to be checked

Hereafter, we describe some points to be taken into account in the periodic door checks. These indications together with your experience will ensure a safe and convenient maintenance for the installation.

For a proper operation, it is essential to regularly clean with a brush the dust or other waste that may be collected in door sill guides and channels.

- Check the device for emergency opening and rescue, as described in chapter 8.
- Check the operation of the interlocking device (safety components) and the electrical contacts (safety chain), as described in chapter 7.
- Check the effective relocking, after an emergency opening of the door, as described in chapter 8.
- Check the free movement of doors.
- Check the door guidance (top guidance and guide shoe of sill). If there is any obstruction due to wear or deterioration of wheels or guide shoes, replace them as indicated below.
- Check the door clearances (they shall be lower than 10 mm)
- Check the good condition of cable, chain or belt.
- Check the lubrication. (No need to grease guide shoes, wheels, nor guide rails. On the contrary, grease and oil can cause a damage. Refer to the chapter about greasing below).
- Check the device for re-opening of doors (photocells and re-opening when there is any obstacle)
- Check the the Kinetic energy and force required to stop the progress of panels. Refer to the chapters about this subject in the manual of car door operator.

### 11.4. Mechanical Interlocking of the type EP-05

Periodically, the safety unlocking and the automatic closure by the spring must be checked as is indicated in Chapter 7. Check the state of the electrical contact, the lock hook oscillation and the state of the O-ring seal which serves as a lock hook stop.

### 11.5. Replacement of the guide shoes

If vibrations in the panels are observed due to the existence of clearances between the guide shoes and the door sill channel, it is advisable to replace the guide shoes by acting in the following way:

- Levering with a screwdriver, remove the deteriorated guide shoes.
- Position the new guide shoes following the indications in the following diagram.

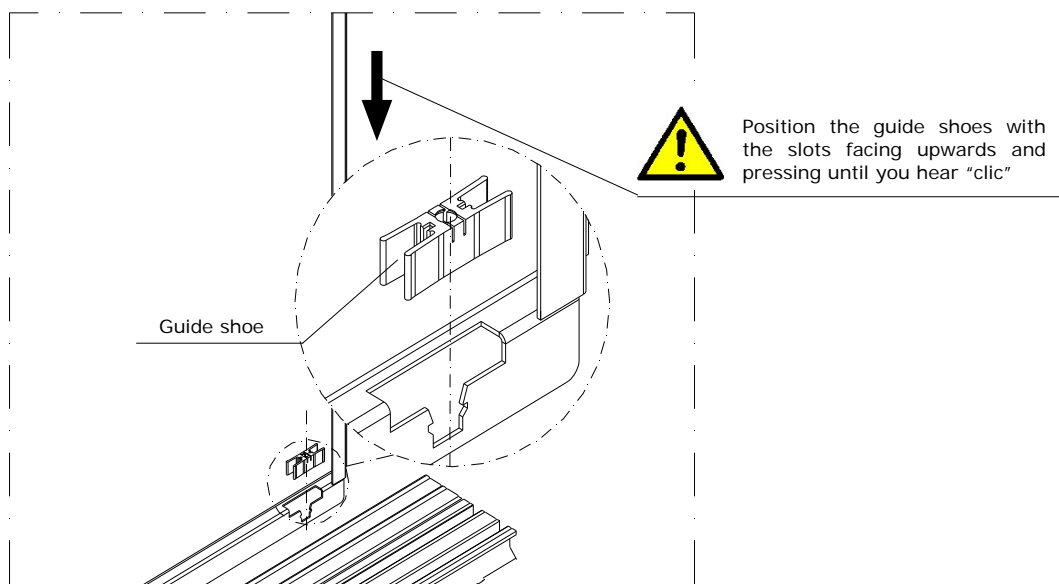


IMAGE 11.38

### 11.6. Greasing

Greasing is not required on any of the door components. Raceways for wheels, guide rails or guide shoes should never be greased.

### 11.7. Movement relationships between carriages

If for some reason you need to restore the travel distance of carriages, fix the wire clamps holding the carriages according to the hereafter described positions:

- **T2 / T3 Door:**

Quick carriage: In door open position, the distance between the quick carriage and the closing stop will be "Clear opening "L" (mm) + 10 mm" (image 11.1).

Slow carriage and the middle one: the slow carriage and the middle one should be aligned with the quick carriage.

- **C2 Door:**

Both carriages should be set in contact with the centre stop.

- **C4 Door:**

- The relationship between the fast and the slow carriage of the same side is set by tightening the clamp with the carriages duly positioned, as shown in image 11.2.

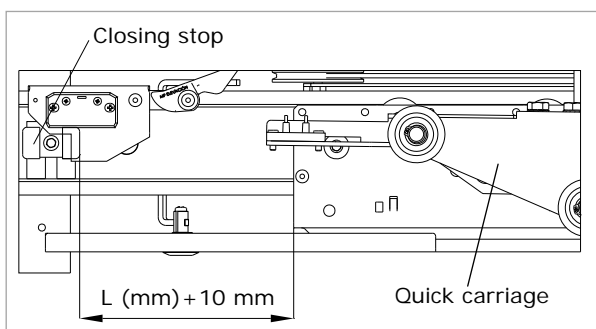


IMAGE 11.1

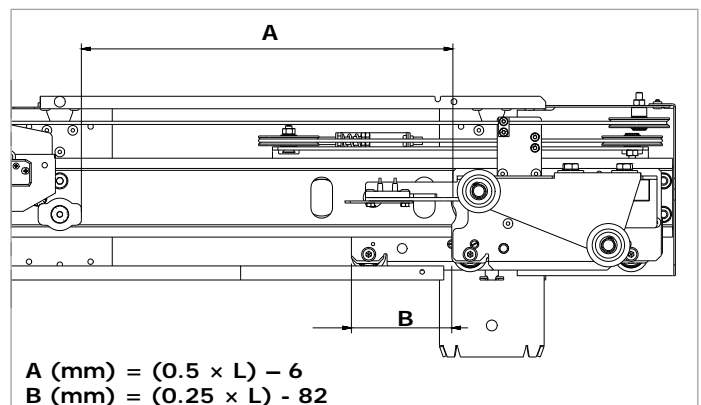


IMAGE 11.2

**Note:** This process will be followed for both sides.



The relationship between fast carriages on either side is set by tightening the clamps after checking that both carriages are in contact with the centre stop.

### 11.8. Replacement of the carriage wheels

The carriage wheels have a tread with a radius profile lower than the one of the guide rail. Therefore, they rest on 2 points leaving a gap between the guide rail and the tread bottom. As they wear out, this gap will decrease until the wheels are completely resting on the guide rail. Then, a slight vibration during panel movement may be noticed, and as the vibration increases, the replacement of wheels will be advisable.

Should a bearing be damaged for any reason and the wheels make a cyclical noise when turning, the faulty wheel should be replaced.

Another possible reason for replacement is that of the possible eccentric deformity which may occur in the wheels of an assembled door which has been inoperative for a long period of time. After the commissioning and a period of operation, the vibration does not disappear, they should be replaced.

Over use, the adjustment between the small wheels (Ø33 x 12) and the guide rail have a tendency to create a bigger gap. To correct this, we will proceed by slightly loosening the wheel screw with the help of a nr.5 Allen wrench to slide its axle upwards without losing oblong slot record. Once the gap with the upper tread is removed, the screw will be firmly retightened.



**WARNING:** Interferences between guide rail and anti-derailment stop (under the carriage), problems with alignment between the drive lever's slats and the pulling wheels and assembly problems may occur if you do not strictly follow the procedure described below.

**11.8.1. T2 Door**
**TOOLS NEEDED:**

Spanners nr.13 and 25  
Allen wrenches nr.3, 5 and 6  
Permanent marker

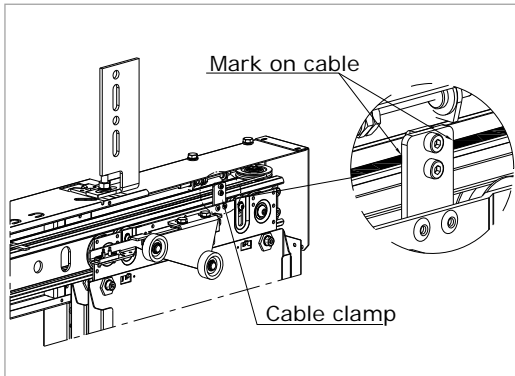
**11.8.1.1. Slow carriage**


IMAGE 11.3

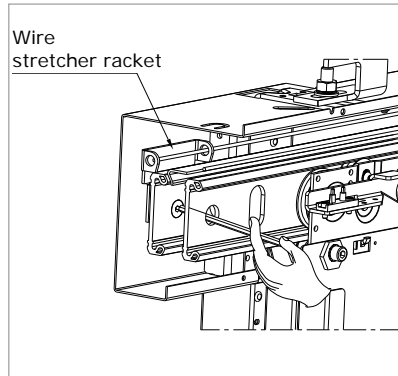


IMAGE 11.4

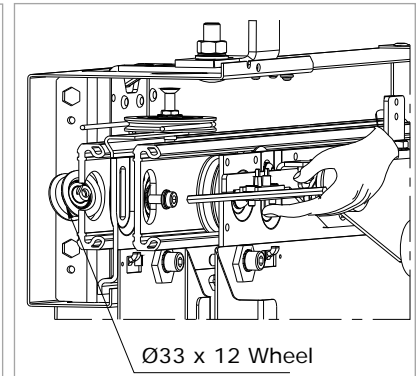


IMAGE 11.5

**a. Upper wheel replacement (Ø 33 x 12)**

- Remove emergency spring and take panels to open door position.
- Before loosening the cable clamp (nr. 3 Allen wrench), mark its position on the cable with a marker (image 11.3). Loosen upper screw until the carriage movement is free.
- Next, using nr. 5 Allen wrench, we will remove the screw from the wire stretcher bracket (image 11.4).
- Move the slow carriage until being able to see the wheel screw to be removed through the quick guide rail eyelet (image 11.5). Once the screw is removed, push the wheel until it falls behind the slow guide through the drill hole for that purpose. In the same way, we will introduce the new wheel reversely through this same drill hole, positioning it with our fingertips until fitting its axle into the eyelet of the carriage. Without releasing the wheel, insert its locking screw and lift it until it engages completely in the upper guide rail tread. Keeping it in this position, tighten the screw firmly.
- Once the wheels are replaced, place the wire stretcher bracket and cable clamp again in the same position we had marked.

**b. Lower wheel replacement (Ø 55 x 12)**

In this case, it will be necessary to loosen the cable clamp by following the procedure described before, but no need to take the wire stretcher bracket down.

Once a wheel is removed, it is recommended to replace it before removing the other one, as if both wheels are replaced simultaneously this makes the operation to attach the new wheels rather difficult.

We will proceed in a similar way to that of the upper Ø 33 x 12 wheel replacement but, in this case, it will be possible to replace the wheel by taking it out through the carriage side and between the two guides. Place the cable clamp in the marked position again.

**11.8.1.2. Quick carriage**

- Remove the emergency spring and open the door about 20 cm.
- Remove the quick panel. (Allen wrench nr. 6 and spanner nr. 25).
- Mark the tow cable on both sides of the cable clamp with a permanent marker. Release the cable. To do this, remove the lower screw on the cable clamp and loosen the higher one. (Allen wrench nr. 3)
- Remove the driving roller support and the counterweight (see image 11.6). If the driving roller support is not within the standard position of adjustment, mark its position so that it can be replaced with the same adjustment after having replaced the rollers (Spanner nr. 13)
- Remove the lock hook stop with care so as to stop the washer from falling (image 11.7). (Allen wrench nr. 5)
- Loosen the screws on the Ø33 x 12 rollers, and completely remove the screw on the Ø55 x 12 rollers of the side opening. (Allen wrenches nr. 5 and 6).
- Separate the carriage from the guide rail, according to the steps shown in pictures (images 11.8, 11.9 and 11.10).
- Then, replace the Ø33 x 12 rollers, placing them in the middle of the adjustment eyelet, slightly tight. Replace also the Ø55 x 12 roller of the closing side.
- Follow the reverse process to that indicated in the sequence of pictures to put the carriage back on the guide rail.
- Put the Ø55 x 12 wheel upon the guide rail and move the carriage until the wheel axis oblong slot coincides with its base on the carriage. Position and tighten the screw. (Allen wrench nr. 6).
- Adjust the Ø33 x 12 rollers.



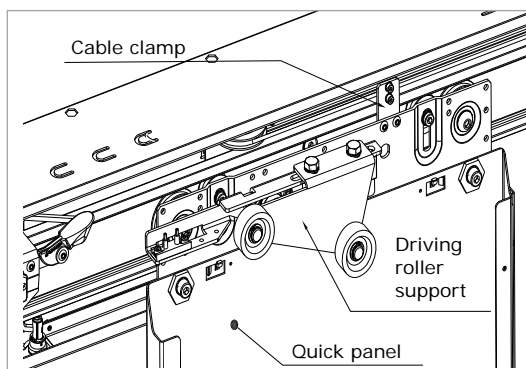


IMAGE 11.6

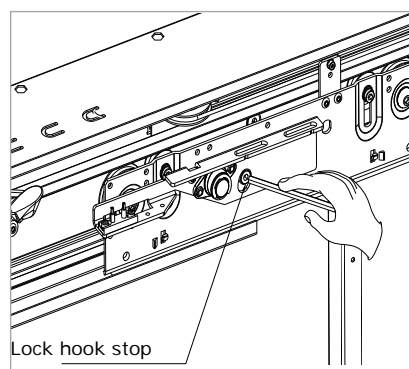


IMAGE 11.7



IMAGE 11.8

Tilt the carriage by pressing on the bottom



IMAGE 11.9

Raise and separate the opening side of the carriage, keeping fixed the lower end of the closing side.



IMAGE 11.10

Separate from the guide rail the lower end of the closing side.

- Put back the lock hook stop, the driving roller support and the counterweight into their positions, paying attention to the details in the following diagram (image 11.11).

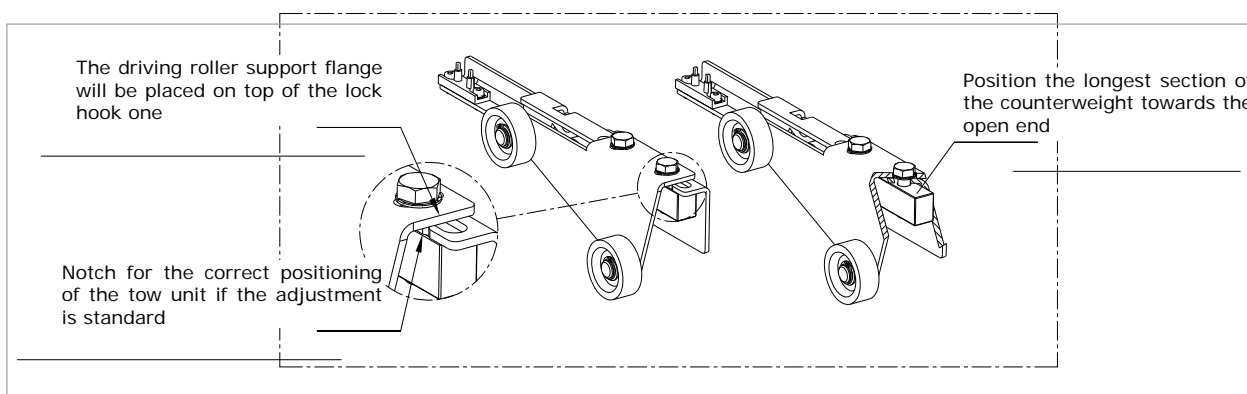



IMAGE 11.11

- Fasten the cable to the cable clamp using the marked points to help to position it.
- Position and adjust the quick panel.
- Put back the emergency spring into its position.

### 11.8.2. C2 Door

To replace the C2 door wheels, proceed according to the instructions described in paragraph **11.6.1.1**

**11.8.3. C4 Door**
**11.8.3.1. Slow carriage**

 Do not start replacing the second wheel until the first has been replaced. The carriage must never be without the two  $\varnothing 55 \times 12$  wheels.

In order to make the wheel replacement operation easier in the C4 door carriages, please proceed as follows:

1. No need to remove the panels.
2. Remove the spring.
3. Remove the cables from the pulleys **without releasing the screws**, by making them derail (image 11.12).
4. Loosen the lower bearings without removing them.
5. Remove the screw of the  $55 \times 22 \varnothing$  wheels through the drill holes in the fast guide rail. Keep pushing the panel to avoid the wheel axis inside the carriage oblong slot (images 11.13 and 11.14).



IMAGE 11.12

Force the rope and open the doors



IMAGE 11.13

Press the panel while loosen or tighten the  $\varnothing 55 \times 12$  wheel screw



IMAGE 11.14

$\varnothing 55 \times 12$  wheel axis fitted axis inside the carriage oblong slot

6. Press the Wheel axis to take it out from the carriage, and then remove the damaged wheel.
7. Fit the new wheel on the treadway and move it until it is in place, behind the carriage.
8. In order to fit the wheel shaft in the carriage oblong slot, move the wheel through the drill hole in the fast guide rail.
9. Place the screw while keep on pressing the panel in order to get the wheel axis inside the carriage oblong slot.
10. Move the carriage and repeat the process with the second  $\varnothing 55 \times 12$  wheel.
11. Adjust lower bearings.
12. Fit the cables on the pulleys; in order to make this operation easier, please proceed as follows:

**NOTE:** Gloves must be used to work with the cables.

a) Pulling rope:

- Fit panels and carriages in the open door position.
- Make sure the terminals of the ropes in the cable stretcher support are properly fitted.
- Manually place the cable on the pulley on the opening side.
- To insert the cable on the closing side pulley, hold it with the screwdriver and, at the same time, move the carriage in the closing direction (image 11.15).

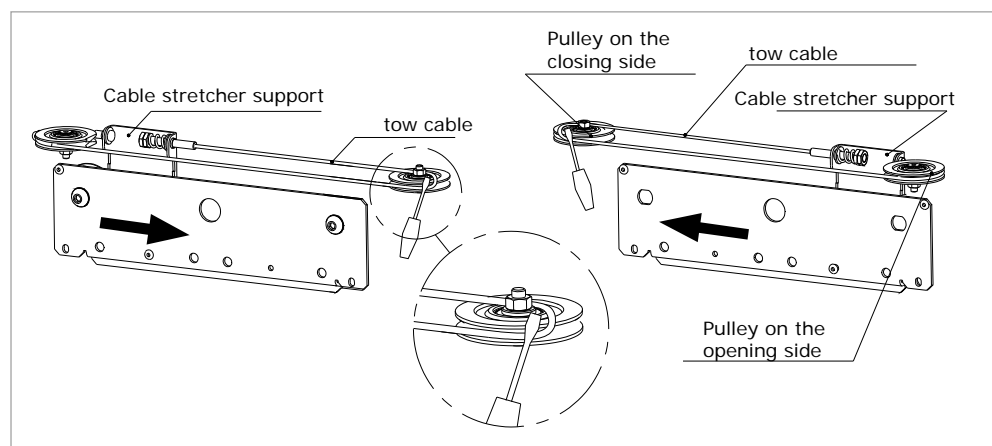


IMAGE 11.15

b) Traction rope:

- Fit the panels in the closed door position.
- Make sure the terminals in the cable stretcher support are correctly fitted.
- Manually place the rope in the pulley on the left side (inside view of the door).
- To insert the cable on the right side pulley, hold it with the screwdriver and, at the same time, move the quick carriages in the opening direction (image 11.16).

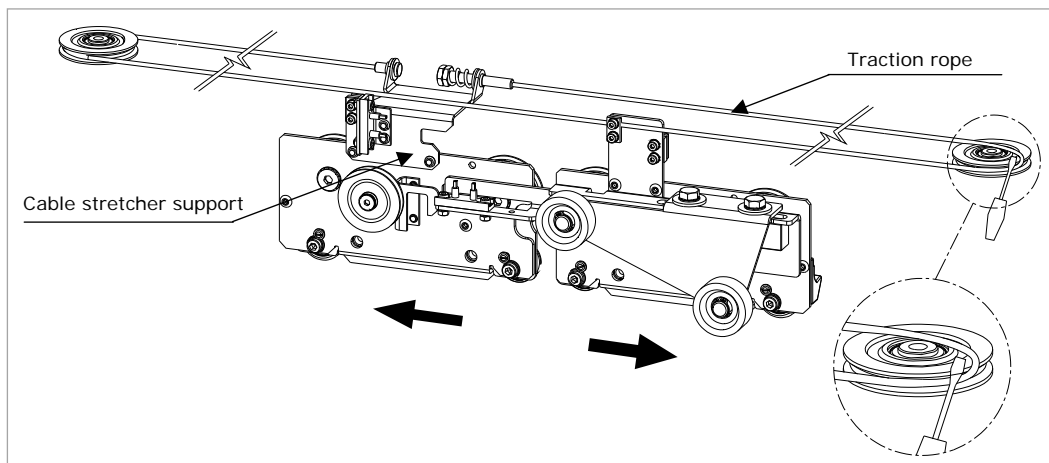


IMAGE 11.16

### 11.8.3.2 Quick carriage

In the fast carriages, the access to the wheels is easier and their replacement is easier as well. To get to the screws of the  $\varnothing 55 \times 12$  wheels of the left carriage, remove the lock hook stop (image 11.17).

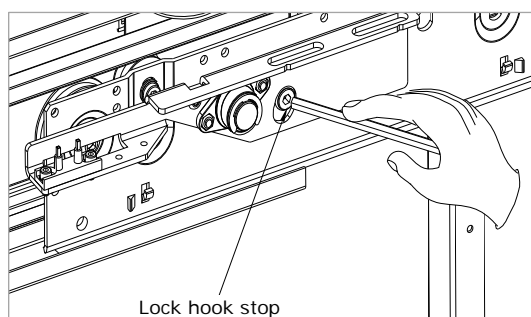


IMAGE 11.17

### 11.8.4. T3 Door

To replace the wheels in T3 doors, the PR tool will be required (image 11.18).

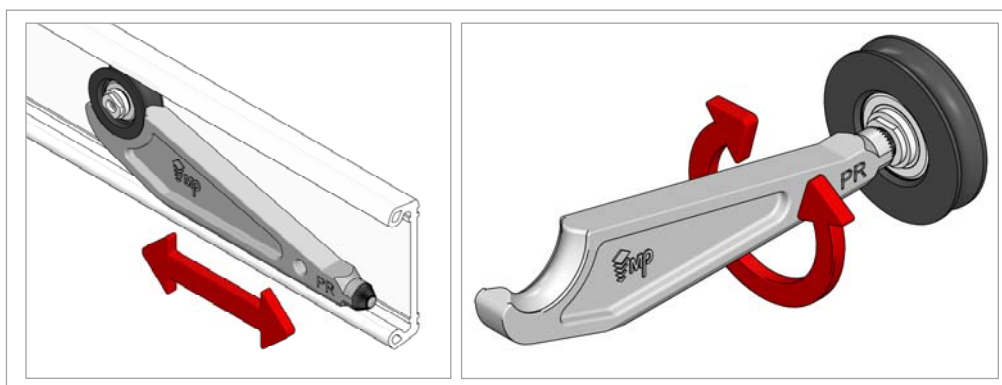


IMAGE 11.18

11.8.4.1. For clear openings equal to or greater than 700 mm

In doors with clear opening greater than 700 mm, we recommend to replace the wheels by pairs, in the opening side or in the closing side (image 11.19). But never remove at once the 4 wheels from a carriage.

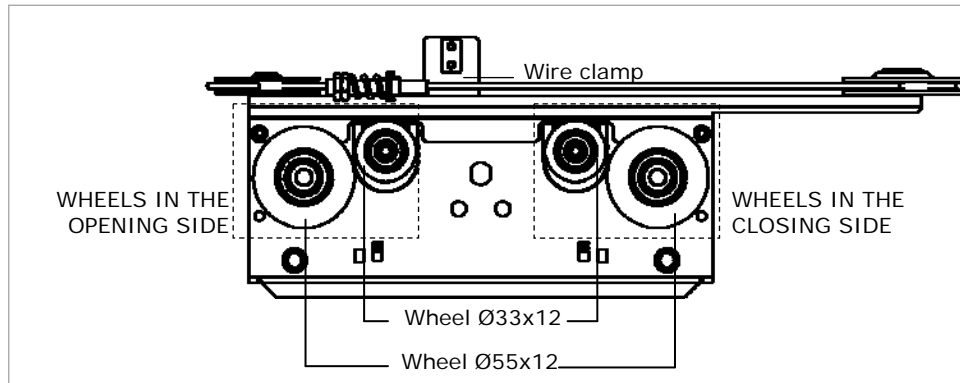
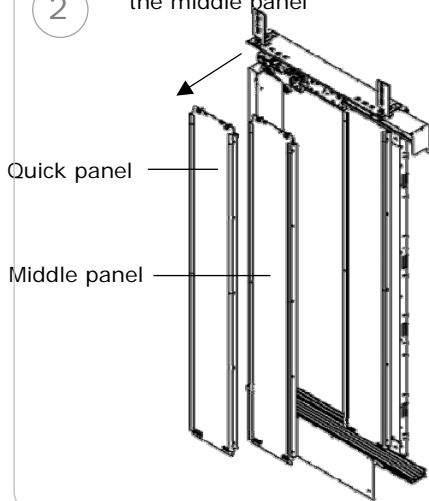


IMAGE 11.19

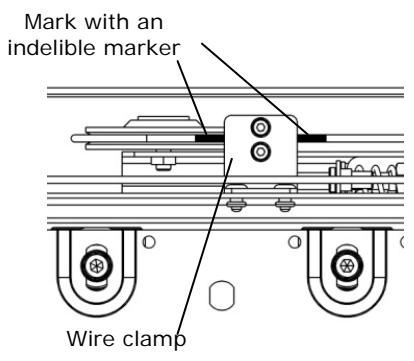
Here below, the required steps to replace a pair of wheels are described, using the example of a slow carriage. The same procedure will be followed for all the other wheels.

1 Remove the emergency spring

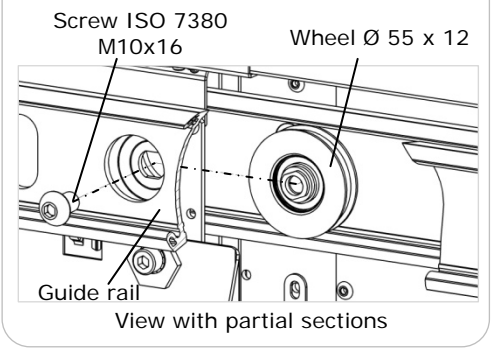
2 Remove the quick panel and the middle panel



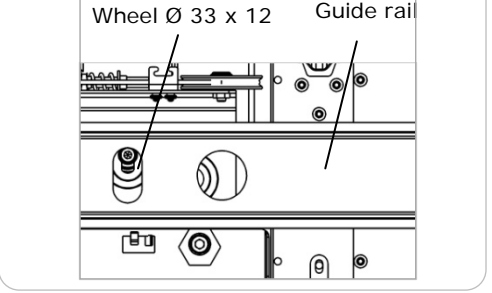
3 To ensure the proper relative position of the carriages, make a mark with an indelible pen at each side of the wire clamps, for both the middle carriage and the quick carriage. Then, loosen the screws of the wire clamp, but do not remove them



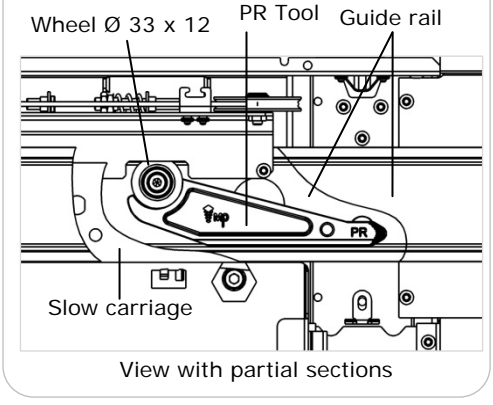
4 Through the drills existing on the guide rails, remove the screw of the Ø55x12 wheel. Push on the wheel axis to get it out of its housing on the carriage and remove the defective wheel through the carriage side, between the 2 guide rails



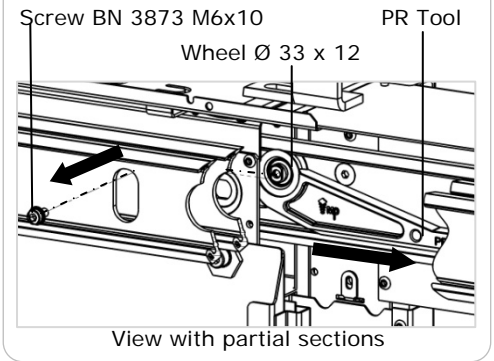
5 Move sideways the carriage to reach the screw of the Ø 33 x 12 wheel



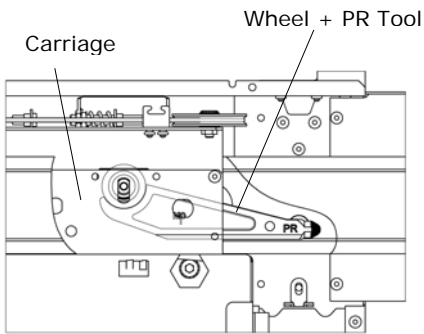
6 Place the PR tool on the slow guide rail and move it behind the carriage to until it snaps into the Ø33x12 wheel



7 Remove the screw and slide the PR tool with the wheel on the guide rail to reach a position enabling the wheel extraction

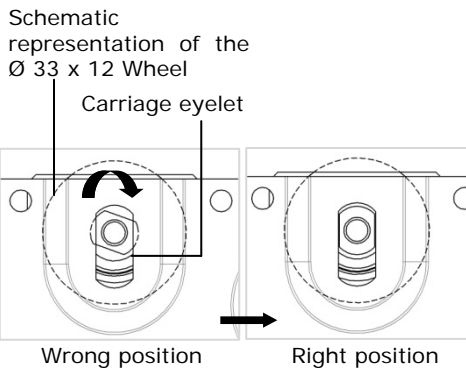


8 Place the new wheel on the PR tool and position the set behind the carriage, so as the wheel axis is seen through the carriage eyelet

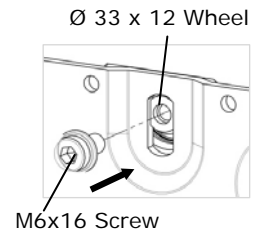


View with partial sections

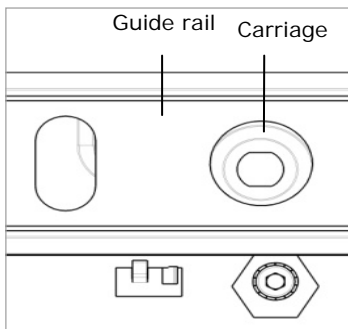
9 With a Phillips screwdriver, turn the wheel axis until it snaps into the carriage eyelet



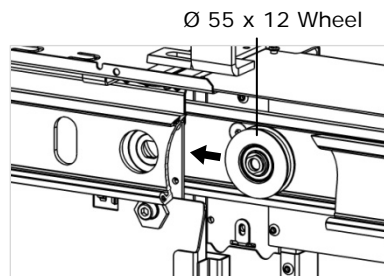
10 Keep pressing the panel so as the wheel axis does not get out from the carriage oblong slot, place the screw and turn until the axis oblong slot snaps into the carriage eyelet, but do not full tighten



11 Move the carriage to reach the drill of the Ø55x12 wheel

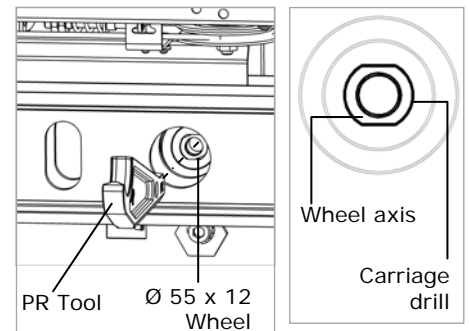


12 Place the wheel on the guide rail and move it until the axis is seen through the carriage drill



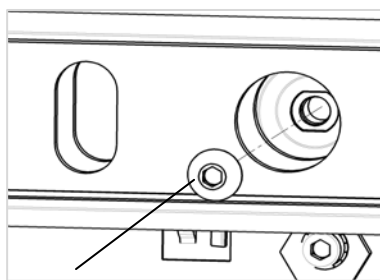
View with partial sections

13 With the PR tool, turn the wheel axis until it snaps into the carriage drill

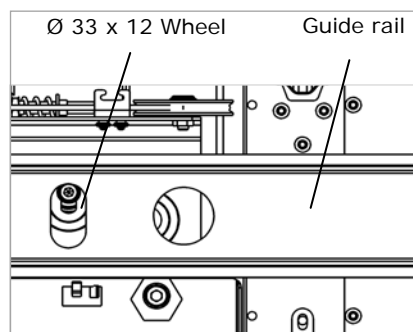


SEE IMAGE 11.18

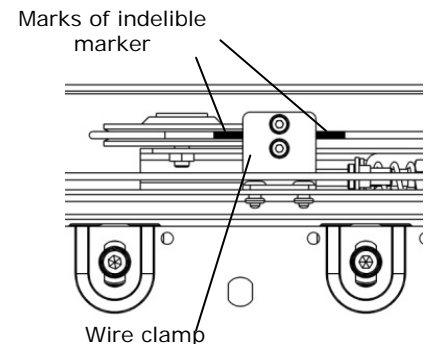
14 Keep pressing the panel so as the wheel axis does not get out from the carriage oblong slot, place the screw and tighten



15 Move the carriage to be able to handle the Ø33x12 wheel. Move the fixing screw of the wheel and place it as high as possible; there, tighten the screw



16 When all the wheels to be replaced are renewed, place the wire clamps between the cable marks previously made at step 3 and tighten the screws of the wire clamps



- 17
- Place and adjust the middle and quick panels.
  - Place the emergency spring.



Check that the door closes itself from an opening of 50 mm.

11.8.4.2. For clear openings of 600 mm and 650 mm

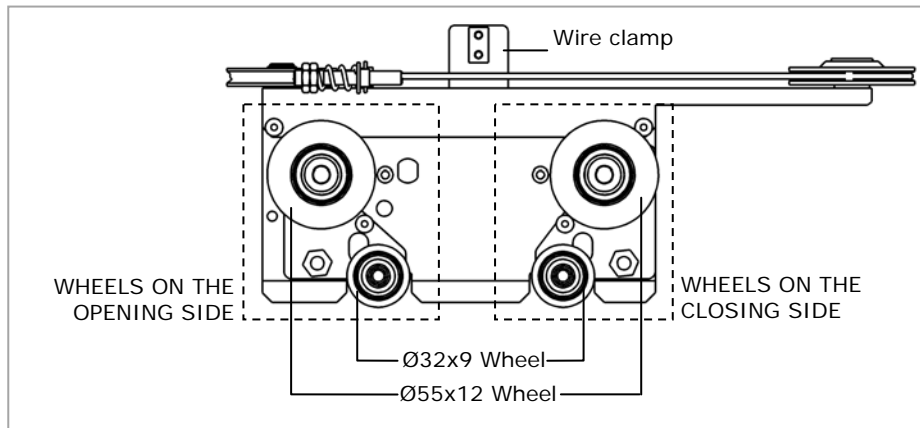
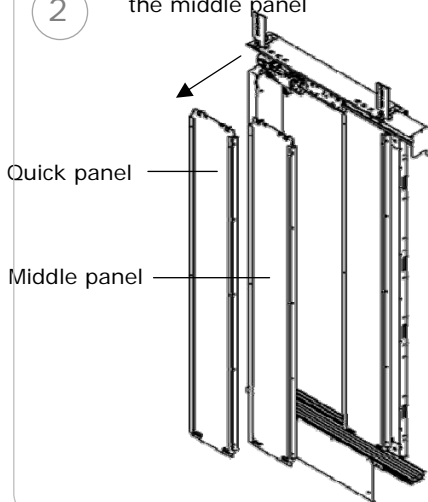


IMAGE 11.33

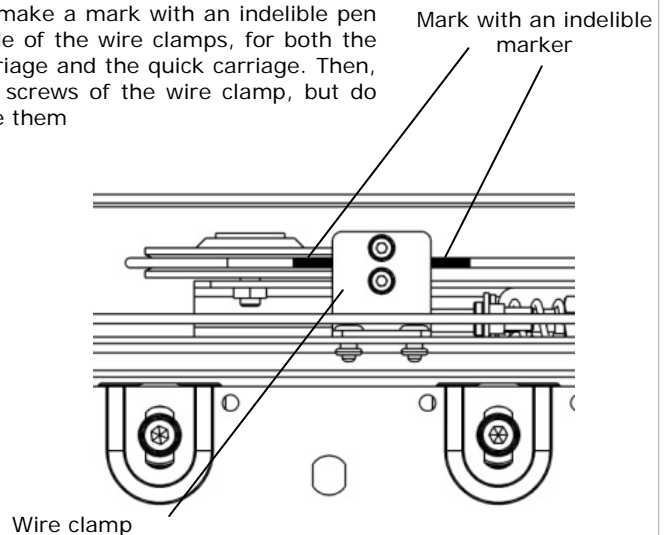
Here below, the required steps to replace a pair of wheels are described, using the example of a slow carriage. The same procedure will be followed for all the other wheels.

1 Remove the emergency spring

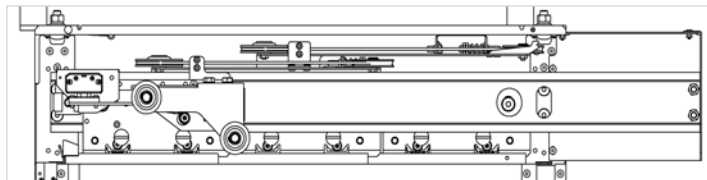
2 Remove the quick panel and the middle panel



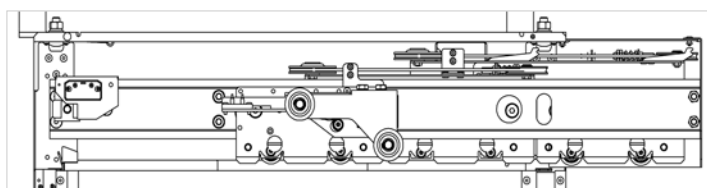
3 To ensure the proper relative position of the carriages, make a mark with an indelible pen at each side of the wire clamps, for both the middle carriage and the quick carriage. Then, loosen the screws of the wire clamp, but do not remove them



4 Move the carriages until the slow one is located at the opening end

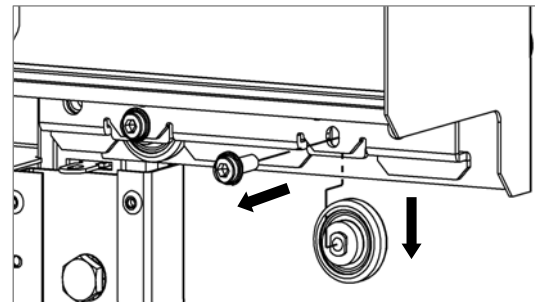


Carriages in normal position

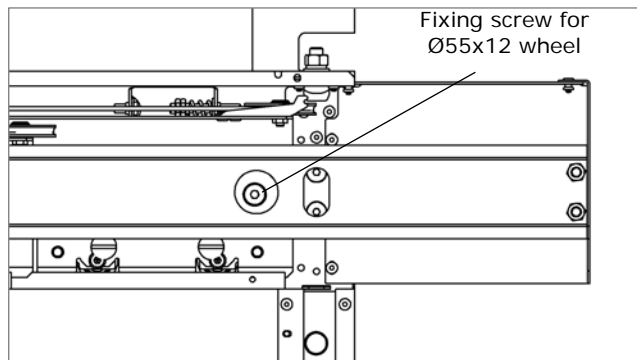


Slow carriage at the opening end

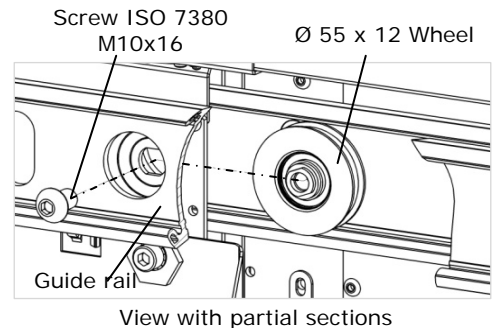
5 Remove the M6x20 screw and extract the Ø32x9 wheel on the opening side



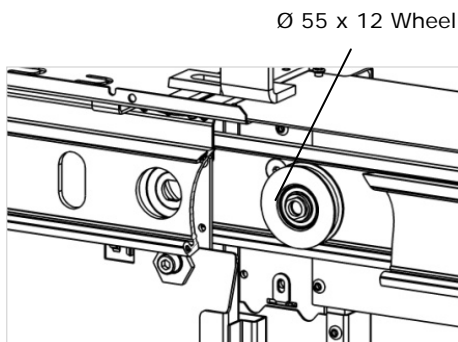
- 6 Move the carriage until being able to reach the fixing screw of the Ø55x12 wheel through the guide rail drill



- 7 Remove the screw of the Ø55x12 wheel. Push on the wheel axis to get it out of its housing on the carriage and remove the defective wheel through the carriage side, between the 2 guide rails

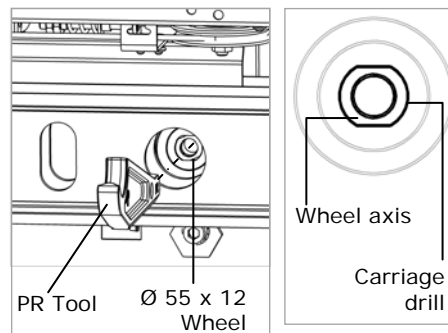


- 8 Place the new wheel of Ø55x12 on the guide rail and move it until the axis is seen through the carriage drill



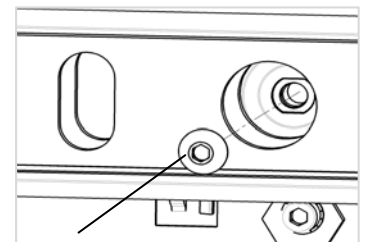
Vista con secciones parciales

- 9 With the PR tool, turn the wheel axis until it snaps into the carriage drill

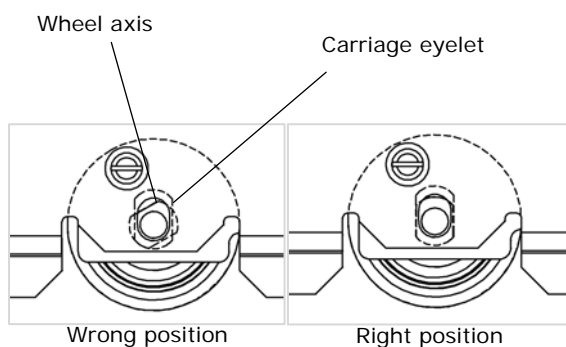


SEER IMAGE 11.18

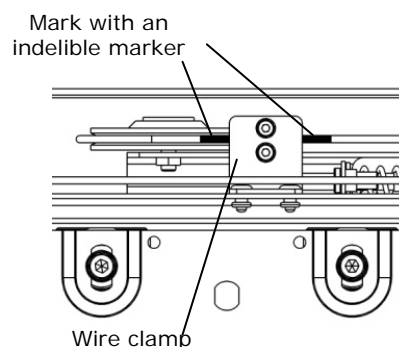
- 10 Keep pressing the panel or carriage so as the wheel axis does not get out from the carriage oblong slot, place the screw and tighten



- 11 Place the Ø32x9 wheel and check that the Wheel axis snaps into the carriage eyelet. Then, adjust it until ensuring it is in contact with the guide rail. Finally, put the screw and tighten it



- 12 When all the wheels to be replaced are renewed, place the wire clamps between the cable marks previously made at step 3 and tighten the screws of the wire clamps



- 13
- Place and adjust the panels.
  - Place the emergency spring.



Check that the door closes itself from an opening of 50 mm.

## 12. FIXING OF ELECTRICAL CABINET TO LANDING DOOR

### 12.1. Rear-view of door, façade and electrical cabinet

T2 / T3 DOOR

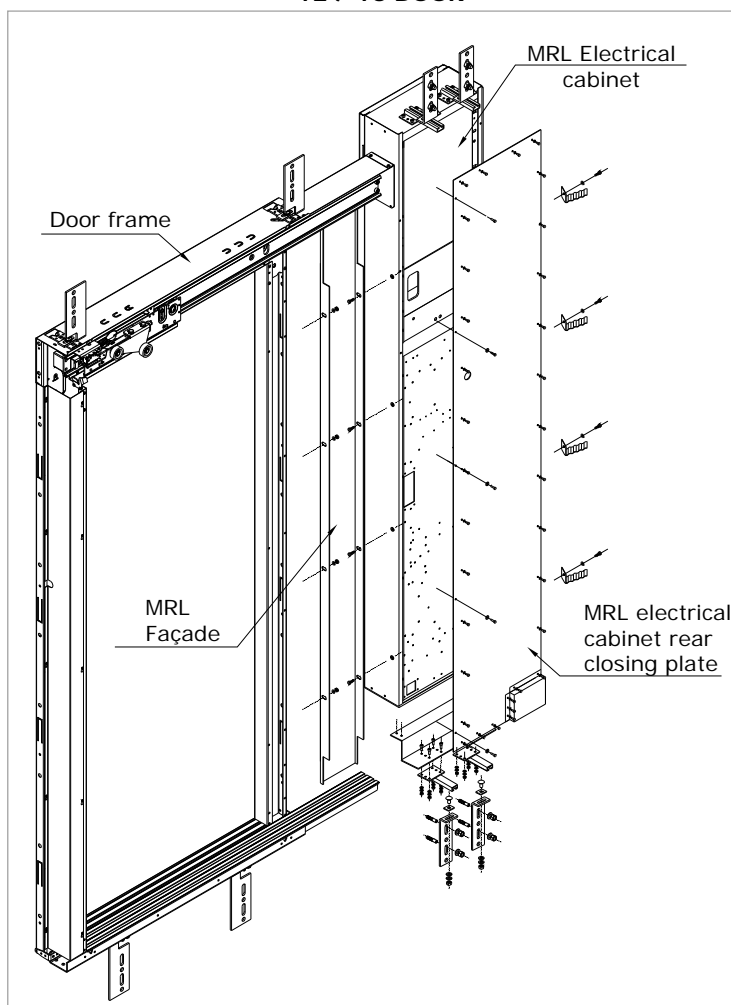


IMAGE 12.1

C2 / C4 DOOR

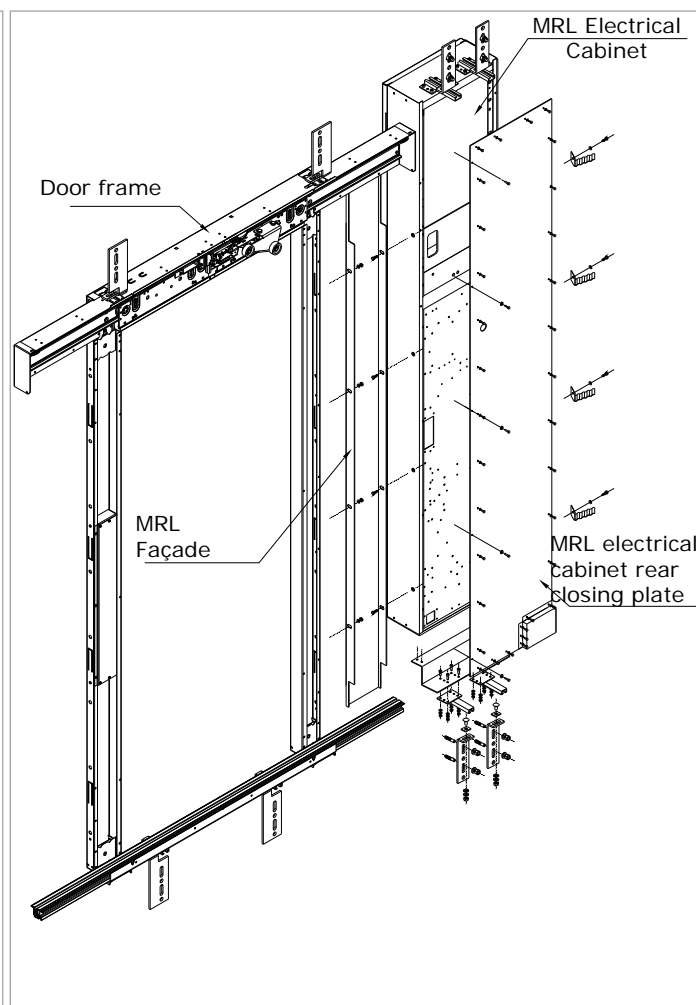


IMAGE 12.2

### 12.2. Positioning of façade and electrical cabinet.

- Once the door is fixed and adjusted, we will proceed to assemble the façade.

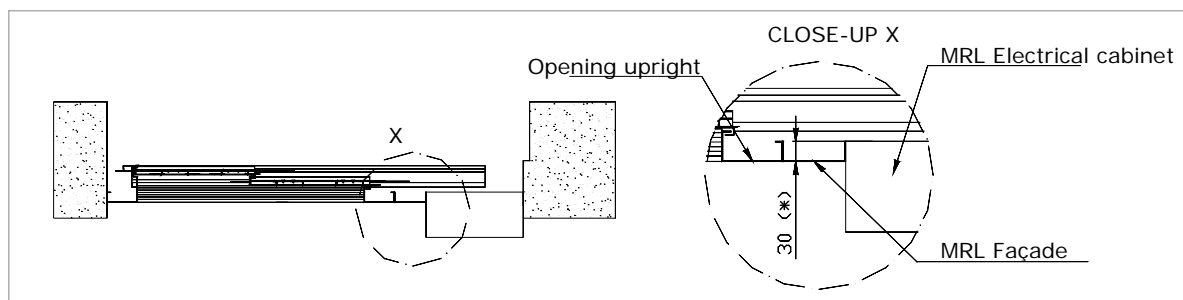


IMAGE 12.3

- Join the façade to the door, so as to get it flush with the opening upright as is shown in the following drawing.
- We will place the lock claws on the side of the cabinet that will be in contact with the wall.
- To avoid friction between door panels and the back of the cabinet, this one will be located as shown in close-up X:

(\*) The clearance between the side seen from the façade and the back of the cabinet will be 30 mm maximum.

- Finally, the gap between the cabinet and the wall will be covered by building work and the rest of the door's peripheral gap as well.



**APPENDIX I : SYSTEM FOR UPPER FIXING WITHOUT WALL (OPTIONAL ACCESSORY)**

This system consists of putting a 40 x 40 x 4 angular profile in place which will function as an upper bracket. The angle brackets fixing the door to the wall on its upper part will be attached to this profile. As illustrated in the following drawing A.1

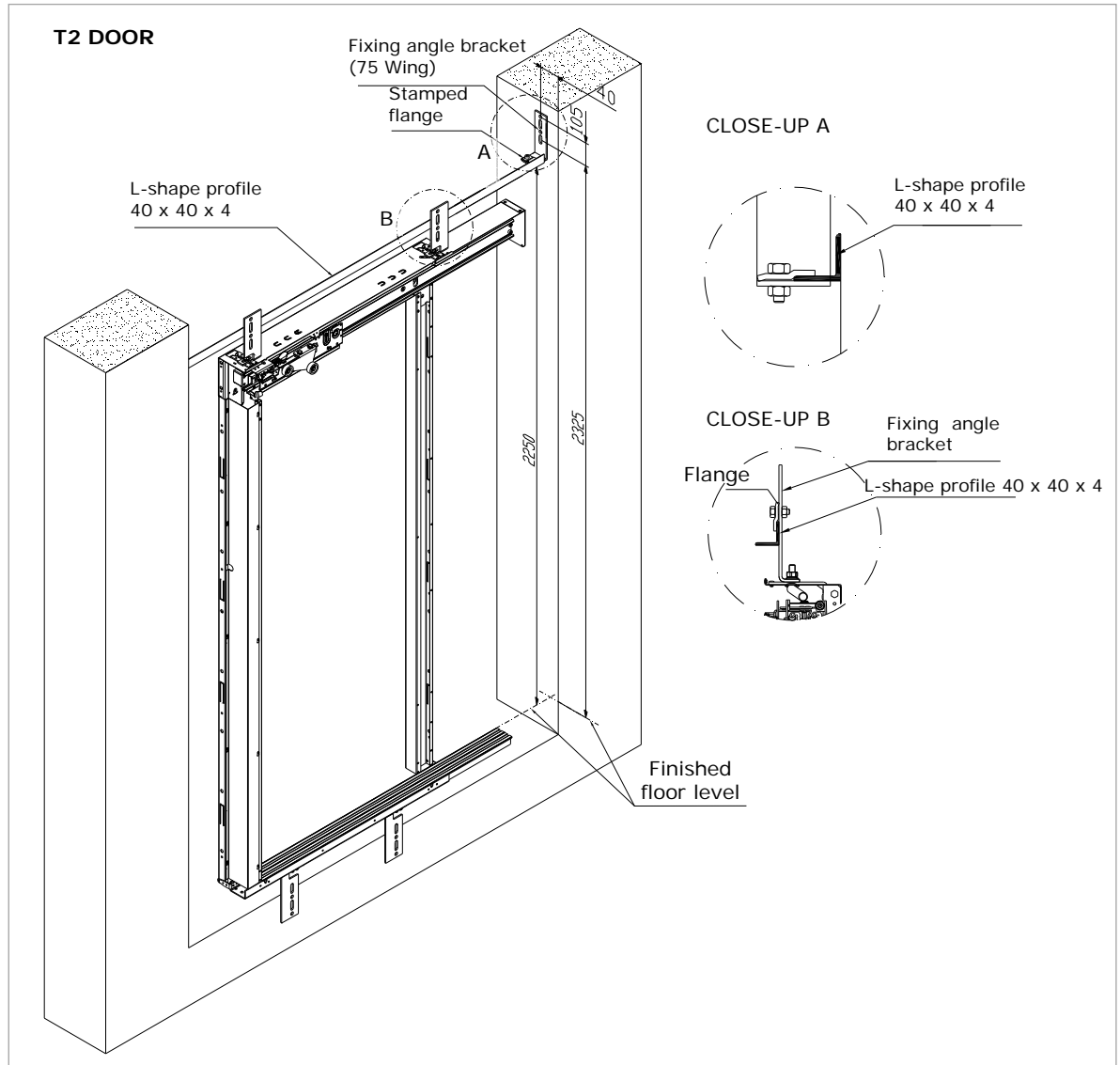


IMAGE A.1

**Assembly**

1. Place the angle brackets used as profile brackets fastened by a DESAFIX M12 x 75 plug at 2325 mm on the finished floor level and 40 mm into the landing. This way, the profile will be at 2250 mm from the finished floor level.
2. Once the two angle brackets are placed, meeting the measurements in the drawing, the profile is positioned on them, bearing in mind that the flat side is to be facing the inside of the lift shaft.
3. Once the upper profile is placed, the normal assembly of the door will continue. Bear in mind that when carrying out the upper fixing of the header set, we will have to join the angle brackets to the angular profile by means of flanges or welding beads.



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Technical Manual translated from the original in Spanish, available at MP website.

Products constantly developed, the specifications can be modified without prior notice.